

SCPI Command Reference Volume 3

Agilent Technologies E4428C/38C ESG Signal Generators

This guide applies to the following signal generator models:

E4428C ESG Analog Signal Generator

E4438C ESG Vector Signal Generator

Due to our continuing efforts to improve our products through firmware and hardware revisions, signal generator design and operation may vary from descriptions in this guide. We recommend that you use the latest revision of this guide to ensure you have up-to-date product information. Compare the print date of this guide (see bottom of page) with the latest revision, which can be downloaded from the following website:

<http://www.agilent.com/find/esg>



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SCPI Command Reference, Volume 1

1. SCPI Basics	1
Command Reference Information	2
SCPI Command Listings	2
Key and Data Field Cross Reference	2
Supported Field	2
SCPI Basics	3
Common Terms	3
Command Syntax	4
Command Types	5
Command Tree	6
Command Parameters and Responses	7
Program Messages	12
File Name Variables	13
File Types and Directory Structure	14
MSUS (Mass Storage Unit Specifier) Variable	16
Quote Usage with SCPI Commands	17
Binary, Decimal, Hexadecimal, and Octal Formats	18
2. Basic Function Commands	19
Correction Subsystem ([:SOURce]:CORRection)	20
:FLATness:LOAD	20
:FLATness:PAIR	20
:FLATness:POINts	20
:FLATness:PRESet	21
:FLATness:STORe	21
[:STATe]	21
Digital Modulation Subsystem—E4438C ([:SOURce])	22
:BURSt:SOURce	22
:BURSt:STATe	22
:DM:EXTernal:ALC:BANDwidth BWIDTH	22
:DM:EXTernal:HCRest[:STATe]	23
:DM:EXTernal:FILTer	23
:DM:EXTernal:FILTer:AUTO	23
:DM:EXTernal:POLarity	24
:DM:EXTernal:SOURce	24

Contents

:DM:IQADjustment:BBG:QSKew	25
:DM:IQADjustment:EXTernal:COFFset	26
:DM:IQADjustment:EXTernal:DIOFFset	26
:DM:IQADjustment:EXTernal:DQOFFset	27
:DM:IQADjustment:EXTernal:GAIN	27
:DM:IQADjustment:EXTernal:IOFFset	27
:DM:IQADjustment:EXTernal:IQATten	28
:DM:IQADjustment:EXTernal:QOFFset	28
:DM:IQADjustment:GAIN	29
:DM:IQADjustment:IOFFset	29
:DM:IQADjustment:QOFFset	30
:DM:IQADjustment:QSKew	30
:DM:IQADjustment:SKEW	31
:DM:IQADjustment:SKEW:Path	32
:DM:IQADjustment[:STATe]	32
:DM:MODulation:FILTer	32
:DM:MODulation:FILTer:AUTO	33
:DM:MODulation:ATTen	33
:DM:MODulation:ATTen:AUTO	34
:DM:POLarity[:ALL]	34
:DM:SKEW:PATH	35
:DM:SKEW[:STATe]	35
:DM:SOURce	35
:DM:SRATio	36
:DM:STATe	37
Frequency Subsystem ([:SOURce])	38
:FREQuency:CHANnels:BAND	38
:FREQuency:CHANnels:NUMBer	40
:FREQuency:CHANnels[:STATe]	41
:FREQuency:FIXed	41
:FREQuency:MODE	42
:FREQuency:MULTiplier	42
:FREQuency:OFFSet	43
:FREQuency:OFFSet:STATe	43
:FREQuency:REFeRence	43
:FREQuency:REFeRence:STATe	44
:FREQuency:STARt	44
:FREQuency:STOP	45

:FREQuency:SYNThesis	45
:FREQuency[:CW]	46
:FREQuency[:CW]:STEP[:INCRement]	47
:PHASe:REFerence	47
:PHASe[:ADJust]	47
:ROSCillator:SOURce	47
:ROSCillator:SOURce:AUTO	48
List/Sweep Subsystem ([:SOURce])	49
:LIST:DIRection	50
:LIST:DWELI	50
:LIST:DWELI:POINts	51
:LIST:DWELI:TYPE	51
:LIST:FREQuency	51
:LIST:FREQuency:POINts	52
:LIST:MANual	52
:LIST:MODE	53
:LIST:POWer	53
:LIST:POWer:POINts	53
:LIST:RETRace	54
:LIST:TRIGger:SOURce	54
:LIST:TYPE	55
:LIST:TYPE:LIST:INITialize:FSTep	55
:LIST:TYPE:LIST:INITialize:PRESet	56
:SWEep:DWELI	56
:SWEep:POINts	57
Power Subsystem ([:SOURce]:POWer)	58
:ALC:BANdwidth BWIDth	58
:ALC:BANdwidth	59
:ALC:LEVel	60
:ALC:SEARch	60
:ALC:SEARch:REFerence	61
:ALC:SEARch:SPAN:START	61
:ALC:SEARch:SPAN:STOP:SPAN:STOP	61
:ALC:SEARch:SPAN:TYPE	62
:ALC:SEARch:SPAN[:STATe]	62
:ALC[:STATe]	62
:ALTernte:AMPLitude	63
:ALTernte:MANual	63

Contents

:ALternate:STATe	64
:ALternate:TRIGger[:SOURce].	64
:ATTenuation.	65
:ATTenuation:AUTO	65
:MODE	66
:REFerence	66
:REFerence:STATe	67
:STARt	67
:STOP	68
[:LEVel][:IMMediate]:OFFSet	68
[:LEVel][:IMMediate][:AMPLitude]	69
[:LEVel][:IMMediate][:AMPLitude]:STEP	69
3. System Commands	71
Calibration Subsystem (:CALibration).	72
:DCFM	72
:IQ	72
:IQ:DC	72
:IQ:DEFault	73
:IQ:FULL	73
:IQ:STARt.	74
:IQ:STOP	74
Communication Subsystem (:SYSTem:COMMunicate)	75
:GPIB:ADDRess	75
:GTLocal	75
:LAN:CONFig	75
:LAN:GATEway.	76
:LAN:HOSTname	76
:LAN:IP	76
:LAN:SUBNet	77
:PMETer:ADDRess.	77
:PMETer:CHANnel	77
:PMETer:IDN	78
:PMETer:TIMEout	78
:SERial:BAUD	79
:SERial:ECHO	79
:SERial:RESet.	79
:SERial:TOUT	80

Diagnostic Subsystem (:DIAGnostic[:CPU]:INFORMATION)	81
:BOARDs	81
:CCOut:ATTenuator	81
:CCOut:PON	81
:CCOut:PROTection	81
:DISPlay:OTIME	82
:LIcense:AUXiliary	82
:LIcense:WAVeform	82
:OPTions	83
:OPTions:DETail	83
:OTIME	83
:REVision	83
:SDATe	84
:WLICence[:VALue]	84
Display Subsystem (:DISPlay)	85
:ANNOtation:AMPLitude:UNIT	85
:ANNOtation:CLOCK:DATE:FORMat	85
:ANNOtation:CLOCK[:STATe]	85
:BRIGHtness	86
:CAPTure	86
:CONTRast	86
:INVerse	87
:REMote	87
[:WINDow][:STATe]	87
IEEE 488.2 Common Commands	88
*CLS	88
*ESE	88
*ESE?	88
*ESR?	89
*IDN?	89
*OPC	89
*OPC?	90
*OPT?	90
*PSC	90
*PSC?	90
*RCL	90
*RST	91
*SAV	91

Contents

*SRE	91
*SRE?	92
*STB?	92
*TRG	92
*TST?	92
*WAI	93
Memory Subsystem (:MEMory)	94
:CATalog:BINary	94
:CATalog:BIT	94
:CATalog:CDMa	95
:CATalog:CDMA	95
:CATalog:DMOD	95
:CATalog:DWCDma	96
:CATalog:FCDMa	96
:CATalog:FIR	97
:CATalog:FSK	97
:CATalog:IQ	98
:CATalog:LIST	98
:CATalog:MCDMa	99
:CATalog:MDMod	99
:CATalog:MDWCdma	100
:CATalog:MFCdma	100
:CATalog:MTONe	101
:CATalog:RCDMa	101
:CATalog:SEQ	102
:CATalog:SHAPE	102
:CATalog:STATe	103
:CATalog:UFLT	103
:CATalog:UWCDma	104
:CATalog[:ALL]	104
:COPY[:NAME]	105
:DATA	105
:DATA:APPend	106
:DATA:BIT	107
:DATA:FIR	108
:DATA:FSK	109
:DATA:IQ	110
:DATA:PRAM:FILE:BLOCK	112

:DATA:PRAM:FILE:LIST	113
:DATA:PRAM	114
:DATA:PRAM:BLOCK	114
:DATA:PRAM:LIST	114
:DATA:SHAPE	114
:DATA:SHAPE	115
:DATA:UNPRotected	116
:DELeTe:ALL	117
:DELeTe:BINary	118
:DELeTe:BIT	118
:DELeTe:CDMa	118
:DELeTe:CDMA	118
:DELeTe:DMOD	118
:DELeTe:DWCDma	119
:DELeTe:FCDMa	119
:DELeTe:FIR	119
:DELeTe:FSK	119
:DELeTe:IQ	119
:DELeTe:LIST	120
:DELeTe:MCDMa	120
:DELeTe:MDMod	120
:DELeTe:MDWCdma	120
:DELeTe:MFCdma	120
:DELeTe:MTONe	121
:DELeTe:RCDMa	121
:DELeTe:SEQ	121
:DELeTe:SHAPE	121
:DELeTe:STATe	121
:DELeTe:UFLT	122
:DELeTe:UWCDma	122
:DELeTe[:NAME]	122
:FREE[:ALL]	122
:LOAD:LIST	123
:MOVE	123
:STATe:COMMeNt	123
:STORe:LIST	123
Mass Memory Subsystem (:MMEMory)	124
:CATalog	124

Contents

:COPY	124
:DATA	125
:DELeTe:NVWFm	125
:DELeTe:WFM	125
:DELeTe:WFM1	125
:DELeTe[:NAME]	126
:HEADer:CLEar	126
:HEADer:DESCription	126
:LOAD:LIST	127
:MOVE	127
:STORe:LIST	127
Output Subsystem (:OUTPut)	128
:BLANKing:AUTO	128
:BLANKing:STATe	128
:MODulation[:STATe]	129
[:STATe]	129
Route Subsystem (:ROUte:HARDWare:DGENerator)	130
:INPut:BPOLarity	130
:INPut:CPOLarity	130
:INPut:DPOLarity	131
:INPut:SPOLarity	131
:IPOLarity:BGATe	131
:IPOLarity:CLOCK	132
:IPOLarity:DATA	132
:IPOLarity:SSYNc	132
:OPOLarity:CLOCK	133
:OPOLarity:DATA	133
:OPOLarity:SSYNc	134
:OUTPut:CPOLarity	134
:OUTPut:DCS[:STATe]	135
:OUTPut:DPOLarity	135
:OUTPut:SPOLarity	135
Status Subsystem (:STATus)	136
:OPERation:BASeband:CONDition	136
:OPERation:BASeband:ENABle	136
:OPERation:BASeband:NTRansition	137
:OPERation:BASeband:PTRansition	137
:OPERation:BASeband[:EVENT]	138

:OPERation:CONDition	138
:OPERation:ENABle.	139
:OPERation:NTRansition	139
:OPERation:PTRansition.	140
:OPERation[:EVENT]	140
:PRESet	140
:QUEStionable:BERT:CONDition	141
:QUEStionable:BERT:ENABle.	141
:QUEStionable:BERT:NTRansition	142
:QUEStionable:BERT:PTRansition.	142
:QUEStionable:BERT[:EVENT]	143
:QUEStionable:CALibration:CONDition.	143
:QUEStionable:CALibration:ENABle	143
:QUEStionable:CALibration:NTRansition	144
:QUEStionable:CALibration:PTRansition	144
:QUEStionable:CALibration[:EVENT]	145
:QUEStionable:CONDition.	145
:QUEStionable:ENABle	146
:QUEStionable:FREQuency:CONDition	146
:QUEStionable:FREQuency:ENABle.	146
:QUEStionable:FREQuency:NTRansition	147
:QUEStionable:FREQuency:PTRansition.	147
:QUEStionable:FREQuency[:EVENT]	147
:QUEStionable:MODulation:CONDition.	148
:QUEStionable:MODulation:ENABle	148
:QUEStionable:MODulation:NTRansition	149
:QUEStionable:MODulation:PTRansition	149
:QUEStionable:MODulation[:EVENT]	149
:QUEStionable:NTRansition.	150
:QUEStionable:POWer:CONDition	150
:QUEStionable:POWer:ENABle.	151
:QUEStionable:POWer:NTRansition	151
:QUEStionable:POWer:PTRansition.	151
:QUEStionable:POWer[:EVENT]	152
:QUEStionable:PTRansition	152
:QUEStionable[:EVENT].	153
System Subsystem (:SYSTEM)	154
:CAPability	154

Contents

:DATE	154
:ERRor[:NEXT]	155
:ERRor:SCPI[:SYNTax]	155
:FILEsystem:SAFEmode	155
:HELP:MODE	156
:IDN	156
:LANGuage	156
:OPT	157
:PON:TYPE	157
:PRESet	158
:PRESet:ALL	158
:PRESet:LANGuage	158
:PRESet:PERSistent	159
:PRESet:PN9	159
:PRESet:TYPE	160
:PRESet[:USER]:SAVE	160
:SECurity:DISPlay	160
:SECurity:ERASeall	161
:SECurity:LEVel	161
:SECurity:LEVel:STATe	162
:SECurity:OVERwrite	163
:SECurity:SANitize	163
:SSAVer:DELay	163
:SSAVer:MODE	164
:SSAVer:STATe	164
:TIME	165
:VERSion	165
Trigger Subsystem	166
:ABORt	166
:INITiate:CONTinuous[:ALL]	166
:INITiate[:IMMediate][:ALL]	167
:TRIGger:OUTPut:POLarity	167
:TRIGger[:SEQuence]:SLOPe	168
:TRIGger[:SEQuence]:SOURce	168
:TRIGger[:SEQuence][:IMMediate]	169
Unit Subsystem (:UNIT)	170
:POWer	170

4. Analog Commands	171
Amplitude Modulation Subsystem ([:SOURce])	172
:AM[1]2.....	172
:AM:INTErnal:FREQuency:STEP[:INCRement]	172
:AM:WIDeband:STATe.....	173
:AM[1]2:EXTErnal[1]2:COUPLing	173
:AM[1]2:INTErnal[1]:FREQuency	174
:AM[1]2:INTErnal[1]:FREQuency:ALTErnatE.....	174
:AM[1]2:INTErnal[1]:FREQuency:ALTErnatE:AMPLitUde:PERCent.....	175
:AM[1]2:INTErnal[1]:FUNCTion:SHAPE.....	175
:AM[1]2:INTErnal[1]:SWEep:TIME	175
:AM[1]2:INTErnal[1]:SWEep:TRIGger.....	176
:AM[1]2:SOURce.....	176
:AM[1]2:STATe	177
:AM[1]2[:DEPTH]	177
:AM[1]2[:DEPTH]:TRACk	178
:AM[:DEPTH]:STEP[:INCRement]	178
Frequency Modulation Subsystem ([:SOURce])	179
:FM[1]2.....	179
:FM:INTErnal:FREQuency:STEP[:INCRement]	180
:FM[1]2:EXTErnal[1]2:COUPLing	180
:FM[1]2:INTErnal[1]:FREQuency	181
:FM[1]2:INTErnal[1]:FREQuency:ALTErnatE	181
:FM[1]2:INTErnal[1]:FREQuency:ALTErnatE:AMPLitUde:PERCent	182
:FM[1]2:INTErnal[1]:FUNCTion:SHAPE.....	182
:FM[1]2:INTErnal[1]:SWEep:TIME	183
:FM[1]2:INTErnal[1]:SWEep:TRIGger	183
:FM[1]2:SOURce.....	184
:FM[1]2:STATe.....	184
:FM[1]2[:DEViation]	185
:FM[1]2[:DEViation]:TRACk	185
Low Frequency Output Subsystem ([:SOURce]:LFOutput)	186
:AMPLitUde.....	186
:FUNCTion[1]:FREQuency	186
:FUNCTion[1]:FREQuency:ALTErnatE	187
:FUNCTion[1]:FREQuency:ALTErnatE:AMPLitUde:PERCent.....	187
:FUNCTion[1]:PERiod.....	188
:FUNCTion[1]:PWIDth	188

Contents

:FUNction[1]:SHAPE	189
:FUNction[1]:SWEep:TIME	189
:FUNction[1]:SWEep:TRIGger	189
:SOURce	190
:STATe	190
Phase Modulation Subsystem ([:SOURce])	191
:PM[1]2:.....	191
:PM:INternal:FREQuency:STEP[:INCRement]	192
:PM[1]2:BANDwidth BWIDth	192
:PM[1]2:EXTernal[1]:COUPling	193
:PM[1]2:INternal[1]:FREQuency	193
:PM[1]2:INternal[1]:FREQuency:ALternate	194
:PM[1]2:INternal[1]:FREQuency:ALternate:AMPLitude:PERCent	194
:PM[1]2:INternal[1]:FUNction:SHAPE	195
:PM[1]2:INternal[1]:SWEep:TIME	195
:PM[1]2:INternal[1]:SWEep:TRIGger	195
:PM[1]2:SOURce	196
:PM[1]2:STATe	196
:PM[1]2[:DEViation]	197
:PM[1]2[:DEViation]:TRACk	197
:PM[:DEViation]:STEP[:INCRement]	198
Pulse Modulation Subsystem ([:SOURce]:PULM)	199
:INternal[1]:FREQuency	199
:INternal[1]:FREQuency:STEP	199
:INternal[1]:FUNction:SHAPE	200
:INternal[1]:PERiod	200
:INternal[1]:PERiod:STEP[:INCRement]	200
:INternal[1]:PWIDth	201
:INternal[1]:PWIDth:STEP	201
:SOURce	202
:STATe	202
5. Component Test Digital Commands	203
All Subsystem–Option 001/601 or 002/602 ([:SOURce])	204
:RADio:ALL:OFF	204
AWGN ARB Subsystem–Option 403 ([:SOURce]:RADio:AWGN:ARB)	205
:BWIDth	205
:IQ:EXTernal:FILTer	205

:IQ:EXternal:FILTer:AUTO	206
:HEADer:CLear	206
:HEADer:SAVE	206
:IQ:MODulation:ATTen	207
:IQ:MODulation:ATTen:AUTO	207
:IQ:MODulation:FILTer	208
:IQ:MODulation:FILTer:AUTO	208
:MDEStination:AAMPLitude	209
:MDEStination:ALCHold	209
:MDEStination:PULSe	210
:MPOLarity:MARKer1 2 3 4	212
:LENgth	212
:REFeRence:EXTernal:FREQUency	212
:REFeRence[:SOURce]	213
:SCLock:RATE	213
:SEED	214
[:STATE]	214
CDMA ARB Subsystem–Option 401 ([:SOURce]:RADio:CDMA:ARB)	215
:CLIPping:I	215
:CLIPping:POStion	215
:CLIPping:Q	215
:CLIPping:TYPE	216
:CLIPping[:IJQ]	216
:CRATe	216
:IQ:EXTernal:FILTer	217
:IQ:EXTernal:FILTer:AUTO	217
:FILTer	218
:FILTer:ALPHa	219
:FILTer:BBT	219
:FILTer:CHANnel	220
:HEADer:CLear	220
:HEADer:SAVE	220
:IQMap	221
:IQ:MODulation:ATTen	221
:IQ:MODulation:ATTen:AUTO	221
:IQ:MODulation:FILTer	222
:IQ:MODulation:FILTer:AUTO	222
:MDEStination:AAMPLitude	222

Contents

:MDEStination:ALCHold	223
:MDEStination:PULSe	224
:MPOLarity:MARKer1 2 3 4	226
:OSAMple	226
:REFeRence:EXTeRnal:FREQUency	226
:REFeRence[:SOURce]	227
:RETRigger	227
:SCLock:RATE	228
:SETup	228
:SETup:CHANnel	229
:SETup:MCARrier	230
:SETup:MCARrier:STORE	231
:SETup:MCARrier:TABLE	231
:SETup:STORE	232
:TRIGger:TYPE	233
:TRIGger:TYPE:CONTInuous[:TYPE]	234
:TRIGger:TYPE:GATE:ACTive	235
:TRIGger[:SOURce]	235
:TRIGger[:SOURce]:EXTeRnal:DELay	236
:TRIGger[:SOURce]:EXTeRnal:DELay:STATE	237
:TRIGger[:SOURce]:EXTeRnal:SLOPe	237
:TRIGger[:SOURce]:EXTeRnal[:SOURce]	238
:WLENgth	238
[:STATE]	239
CDMA2000 ARB Subsystem–Option 401 ([:SOURce]:RADio:CDMA2000:ARB)	240
:CLIPping:I	240
:CLIPping:POSition	240
:CLIPping:Q	240
:CLIPping:TYPE	241
:CLIPping[:IJQ]	241
:IQ:EXTeRnal:FILTer	241
:IQ:EXTeRnal:FILTer:AUTO	242
:FILTer	242
:FILTer:ALPHa	243
:FILTer:BBT	244
:FILTer:CHANnel	244
:HEADer:CLEar	245
:HEADer:SAVE	245

:IQ:MODulation:ATTen	245
:IQ:MODulation:ATTen:AUTO	246
:IQ:MODulation:FILTer	246
:IQ:MODulation:FILTer:AUTO	246
:IQMap	247
:LINK	247
:LINK:FORWard:SETup	247
:LINK:FORWard:SETup:MCARrier	248
:LINK:FORWard:SETup:MCARrier:STORE	249
:LINK:FORWard:SETup:MCARrier:TABLE	249
:LINK:FORWard:SETup:MCARrier:TABLE:NCARriers	250
:LINK:FORWard:SETup:STORE	251
:LINK:FORWard:SETup:TABLE:APPLY	251
:LINK:FORWard:SETup:TABLE:CHANnel	252
:LINK:FORWard:SETup:TABLE:NCHannels	253
:LINK:FORWard:SETup:TABLE:PADJust	253
:LINK:REVerse:RCONfig	253
:LINK:REVerse:SETup	254
:LINK:REVerse:SETup:STORE	254
:LINK:REVerse:SETup:TABLE:APPLY	255
:LINK:REVerse:SETup:TABLE:CHANnel	255
:LINK:REVerse:SETup:TABLE:NCHannels	256
:LINK:REVerse:SETup:TABLE:PADJust	256
:MDEStination:AAMPLitude	257
:MDEStination:ALCHold	257
:MDEStination:PULSe	258
:MPOLarity:MARKer1 2 3 4	260
:REFerence:EXTernal:FREQuency	260
:REFerence[:SOURce]	260
:RETRigger	261
:REVision	261
:SCLock:RATE	262
:SPReading:RATE	262
:SPReading:TYPE	263
:SPReading:TYPE:MCARrier:SPACing	263
:TRIGger:TYPE	263
:TRIGger:TYPE:CONTinuous[:TYPE]	265
:TRIGger:TYPE:GATE:ACTive	266

Contents

:TRIGger[:SOURce]	266
:TRIGger[:SOURce]:EXTernal:DELay	267
:TRIGger[:SOURce]:EXTernal:DELay:STATe	268
:TRIGger[:SOURce]:EXTernal:SLOPe	268
:TRIGger[:SOURce]:EXTernal[:SOURce]	269
[:STATe]	269
Dmodulation Subsystem–Option 001/601 or 002/602 ([:SOURce]:RADio:DMODulation:ARB)	270
:IQ:EXTernal:FILTer	270
:IQ:EXTernal:FILTer:AUTO	270
:FILTer	271
:FILTer:ALPHa	272
:FILTer:BBT	272
:FILTer:CHANnel	273
:HEADer:CLear	273
:HEADer:SAVE	273
:IQ:MODulation:ATTen	274
:IQ:MODulation:ATTen:AUTO	274
:IQ:MODulation:FILTer	275
:IQ:MODulation:FILTer:AUTO	275
:MDEStination:AAMPLitude	276
:MDEStination:ALCHold	276
:MDEStination:PULSe	277
:MODulation:FSK[:DEViation]	279
:MODulation[:TYPE]	279
:MPOLarity:MARKer1 2 3 4	280
:REFerence:EXTernal:FREQuency	280
:REFerence[:SOURce]	281
:RETRigger	281
:SCLock:RATE	282
:SETup	282
:SETup:MCARrier	283
:SETup:MCARrier:PHASe	283
:SETup:MCARrier:STORE	284
:SETup:MCARrier:TABLE	284
:SETup:MCARrier:TABLE:NCARriers	285
:SETup:STORE	285
:SRATe	286
:TRIGger:TYPE	287

:TRIGger:TYPE:CONTInuous[:TYPE]	288
:TRIGger:TYPE:GATE:ACTive	289
:TRIGger[:SOURce]	290
:TRIGger[:SOURce]:EXTErnal:DELay	291
:TRIGger[:SOURce]:EXTErnal:DELay:STATe	291
:TRIGger[:SOURce]:EXTErnal:SLOPe	292
:TRIGger[:SOURce]:EXTErnal[:SOURce].	292
[:STATe]	293
Dual ARB Subsystem—Option 001/601 or 002/602 (:SOURce):RADio:ARB)	294
:CLIPping	294
:GENerate:SINE	294
:HEADer:CLEar	295
:HEADer:RMS	295
:HEADer:SAVE.	297
:HCRest[:STATe].	297
:IQ:EXTErnal:FILTEr	298
:IQ:EXTErnal:FILTEr:AUTO	298
:IQ:MODulation:ATTen	298
:IQ:MODulation:ATTen:AUTO	299
:IQ:MODulation:FILTEr	299
:IQ:MODulation:FILTEr:AUTO	300
:MARKer:CLEar.	300
:MARKer:CLEar:ALL	301
:MARKer:ROtate	302
:MARKer:[SET]	302
:MDEStination:AAMPLitude.	305
:MDEStination:ALCHold	305
:MDEStination:PULSe	306
:MPOLarity:MARKer1 2 3 4.	308
:NOISE:BFACtor.	308
:NOISE:CBWidth	309
:NOISE:CN	309
:NOISE[:STATe]	310
:REFerence:EXTErnal:FREQuency.	310
:REFerence[:SOURce]	311
:RETRigger	311
:RSCALing.	312
:SCALing	312

Contents

:SCLock:RATE	313
:SEquence	313
:TRIGger:TYPE	315
:TRIGger:TYPE:CONTInuous[:TYPE]	317
:TRIGger:TYPE:GATE:ACTive	317
:TRIGger:TYPE:SADVance[:TYPE]	318
:TRIGger:TYPE:SADVance[:TYPE]	318
:TRIGger[:SOURce]	320
:TRIGger[:SOURce]:EXTernal:DELay:SAMPLEs	321
:TRIGger[:SOURce]:EXTernal:DELay:STATe OFF ON 1 0	321
:TRIGger[:SOURce]:EXTernal:DELay:STATe	321
:TRIGger[SOURce]:EXTernal:DELay[:TIME]	322
:TRIGger[:SOURce]:EXTernal:SLOPe	322
:TRIGger[:SOURce]:EXTernal[:SOURce]	323
:WAVEform	323
:Waveform:NHEADers	324
[:STATE]	324
Multitone Subsystem—Option 001/601 or 002/602 ([:SOURce]:RADio:MTONE:ARB)	326
Creating a Multitone Waveform	326
:HEADer:CLear	326
:HEADer:SAVE	326
:IQ:EXTernal:FILTer	327
:IQ:EXTernal:FILTer:AUTO	327
:IQ:MODulation:ATTen	328
:IQ:MODulation:ATTen:AUTO	328
:IQ:MODulation:FILTer	329
:IQ:MODulation:FILTer:AUTO	329
:MDESTination:AAMPLitude	329
:MDESTination:ALCHold	330
:MDESTination:PULSe	331
:MPOLarity:MARKer1 2 3 4	333
:REFerence:EXTernal:FREQUency	333
:REFerence[:SOURce]	333
:ROW	334
:RSCAling	335
:SCLock:RATE	335
:SETup	336
:SETup:STORe	336

:SETup:TABLE	336
:SETup:TABLE:FSPacing	337
:SETup:TABLE:NTONes	337
:SETup:TABLE:PHASe:INITialize	338
:SETup:TABLE:PHASe:INITialize:SEED	338
[:STATe]	339
Wideband CDMA ARB Subsystem–Option 400 ([:SOURce]:RADio:WCDMa:TGPP:ARB)	340
:CLIPping:I	340
:CLIPping:POSition	340
:CLIPping:Q	340
:CLIPping:TYPE	341
:CLIPping[:IJQ]	341
:CRATe	342
:FILTer	342
:FILTer:ALPHa	343
:FILTer:BBT	343
:FILTer:CHANnel	344
:HEADer:CLEar	344
:HEADer:SAVE	344
:IQ:EXTernal:FILTer	344
:IQ:EXTernal:FILTer:AUTO	345
:IQMap	345
:IQ:MODulation:ATTen	346
:IQ:MODulation:ATTen:AUTO	346
:IQ:MODulation:FILTer	346
:IQ:MODulation:FILTer:AUTO	347
:LINK	347
:LINK:DOWN:OACP	347
:LINK:DOWN:SETup	348
:LINK:DOWN:SETup:MCARrier	349
:LINK:DOWN:SETup:MCARrier:CLIPping:I	350
:LINK:DOWN:SETup:MCARrier:CLIPping:Q	351
:LINK:DOWN:SETup:MCARrier:CLIPping:TYPE	351
:LINK:DOWN:SETup:MCARrier:CLIPping[:IJQ]	351
:LINK:DOWN:SETup:MCARrier:SCODE:AINCrement	352
:LINK:DOWN:SETup:MCARrier:STORE	352
:LINK:DOWN:SETup:MCARrier:TABLE	353
:LINK:DOWN:SETup:MCARrier:TABLE:NCARriers	355

Contents

:LINK:DOWN:SETup:MCARrier:TOFFset:AINCrement	355
:LINK:DOWN:SETup:STORE	355
:LINK:DOWN:SETup:TABLE:APPLY	356
:LINK:DOWN:SETup:TABLE:CHANnel	356
:LINK:DOWN:SETup:TABLE:NCHannels?	361
:LINK:DOWN:SETup:TABLE:PADJust	361
:LINK:DOWN:TFCI	361
:LINK:UP:OACP	362
:LINK:UP:SCRAMBLE	362
:LINK:UP:SDPDch	362
:LINK:UP:SETup	363
:LINK:UP:SETup:STORE	364
:LINK:UP:SETup:TABLE:APPLY	364
:LINK:UP:SETup:TABLE:CHANnel	364
:LINK:UP:SETup:TABLE:GUNit	366
:LINK:UP:SETup:TABLE:NCHannel	366
:LINK:UP:TFCI	366
:MDEStination:AAMplitude	367
:MDEStination:ALCHold	367
:MDEStination:PULSe	368
:MPOLarity:MARKer1 2 3 4	370
:REFerence:EXTernal:FREQuency	370
:REFerence[:SOURce]	370
:RETRigger	371
:REVision	371
:SCLock:RATE	372
:TRIGger:TYPE	372
:TRIGger:TYPE:CONTinuous[:TYPE]	374
:TRIGger:TYPE:GATE:ACTive	374
:TRIGger[:SOURce]	375
:TRIGger[:SOURce]:EXTernal:DELay	376
:TRIGger[:SOURce]:EXTernal:DELay:STATe	376
:TRIGger[:SOURce]:EXTernal:SLOPe	377
:TRIGger[:SOURce]:EXTernal[:SOURce]	377
[:STATe]	378

SCPI Command Reference, Volume 2

6. Digital Signal Interface Module Commands	379
Digital Subsystem—Option 003 and 004 ([:SOURCE])	380
:DIGital:CLOCK:CPS 1 2 4	380
:DIGital:CLOCK:PHASe	380
:DIGital:CLOCK:POLarity	381
:DIGital:CLOCK:RATE	382
:DIGital:CLOCK:REFerence:FREQuency	382
:DIGital:CLOCK:SKEW	383
:DIGital:CLOCK:SOURCe	383
:DIGital:DATA:ALIGNment	384
:DIGital:DATA:BORDER	384
:DIGital:DATA:DIRection	385
:DIGital:DATA:IGain	385
:DIGital:DATA:INEGate	386
:DIGital:DATA:IOFFset	386
:DIGital:DATA:IQSWap	387
:DIGital:DATA:NFORmat	387
:DIGital:DATA:POLarity:FRAMe	387
:DIGital:DATA:POLarity:IQ	388
:DIGital:DATA:QGain	388
:DIGital:DATA:QNEGate	389
:DIGital:DATA:QOFFset	390
:DIGital:DATA:ROTation	390
:DIGital:DATA:SCALing	391
:DIGital:DATA:SIZE	391
:DIGital:DATA:STYPe	392
:DIGital:DATA:TYPE	392
:DIGital:DIAGnostic:LOOPback	393
:DIGital:LOGic[:TYPE]	393
:DIGital:PCONfig	394
:DIGital:PRESet:PTHROUGH	395
:DIGital[:STATe]	395
7. Bit Error Rate Test (BERT) Commands	397
Calculate Subsystem—Option UN7 and 300 (:CALCulate:BERT)	398

Contents

:BTS:LOOPback:EDGE:ETCH:F43:COMParator:CRITeria:ERATe	398
:BTS:LOOPback:EDGE:ETCH:F43:COMParator:CRITeria[:SElect]	398
:BTS:LOOPback:EDGE:MCS5:COMParator:CRITeria:ERATe	399
:BTS:LOOPback:EDGE:MCS5:COMParator:CRITeria[:SElect]	399
:BTS:LOOPback:EDGE:MCS9:COMParator:CRITeria:ERATe	399
:BTS:LOOPback:EDGE:MCS9:COMParator:CRITeria[:SElect]	400
:BTS:LOOPback:EDGE:UNCoded:COMParator:CRITeria:ERATe	400
:BTS:LOOPback:EDGE:UNCoded:COMParator:CRITeria[:SElect]	401
:BTS:LOOPback:GSM:CS1:COMParator:CRITeria:ERATe	401
:BTS:LOOPback:GSM:CS1:COMParator:CRITeria[:SElect]	402
:BTS:LOOPback:GSM:CS4:COMParator:CRITeria:ERATe	402
:BTS:LOOPback:GSM:CS4:COMParator:CRITeria[:SElect]	402
:BTS:LOOPback:GSM:MCS1:COMParator:CRITeria:ERATe	403
:BTS:LOOPback:GSM:MCS1:COMParator:CRITeria[:SElect]	403
:BTS:LOOPback:GSM:COMParator:CRITeria:CIB	404
:BTS:LOOPback:GSM:COMParator:CRITeria:CII	404
:BTS:LOOPback:GSM:COMParator:CRITeria:FERasure	404
:BTS:LOOPback:GSM:COMParator:CRITeria[:SElect]	405
[:BAsEband]:COMParator:MODE	405
[:BAsEband]:COMParator:THReshold	406
[:BAsEband]:COMParator[:STATe]	406
[:BAsEband]:DISPlay:MODE:	407
[:BAsEband]:DISPlay:UPDate:	407
Data Subsystem–Option UN7 and 300 (:DATA)	408
:BERT:BTS:LOOPback:EDGE:ETCH:F43[:DATA]	408
:BERT:BTS:LOOPback:EDGE:MCS5[:DATA]	409
:BERT:BTS:LOOPback:EDGE:MCS9[:DATA]	410
:BERT:BTS:LOOPback:EDGE:UNCoded[:DATA]	410
:BERT:BTS:LOOPback:GSM[:DATA]	410
:BERT:BTS:LOOPback:GSM:CS1[:DATA]	412
:BERT:BTS:LOOPback:GSM:CS4[:DATA]	413
:BERT:BTS:LOOPback:GSM:MCS1[:DATA]	413
:BERT:AUXout	413
[:DATA]	415
Input Subsystem–Option UN7 (:INPut:BERT[: BAsEband])	416
:CGATe:DELay:CLOCK	416
:CGATe:DELay:MODE	416
:CGATe:DELay:TIME	417

:CGATe:DELAy[:STATe].	417
:CGATe:POLarity	418
:CGATe[:STATe].	418
:CLOCK:DELAy:RESolution	418
:CLOCK:DELAy:TIME.	419
:CLOCK:DELAy[:STATe].	419
:CLOCK:POLarity	420
:DATA:POLarity	420
:IMPedance	420
:THReshold	421
Measure Subsystem–Option 300 (:MEASure[:SCALar]:BERT:BTS:LOOPback)	422
:EDGE:MCS5[:SENSitivity]	422
:EDGE:MCS9[:SENSitivity]	422
:EDGE:UNCoded[:SENSitivity].	423
:GSM[:SENSitivity]	424
Sense Subsystem–Options UN7 and 300 ([:SOURce]:SENSe:BERT)	425
:BTS:LOOPback:EDGE:ETCH:F43:BLOCK:COUNt	425
:BTS:LOOPback:EDGE:ETCH:F43:CONTAin	425
:BTS:LOOPback:EDGE:ETCH:F43:STOP:CRITeria:EBLOCK	426
:BTS:LOOPback:EDGE:ETCH:F43:STOP:CRITeria[:SElect]	426
:BTS:LOOPback:EDGE:FTRigger:EXTernal:DELAy	427
:BTS:LOOPback:EDGE:FTRigger:EXTernal:POLarity	427
:BTS:LOOPback:EDGE:FTRigger[SElect]	428
:BTS:LOOPback:EDGE:MCS5:BLOCK:COUNt.	428
:BTS:LOOPback:EDGE:MCS5:CONTAin	429
:BTS:LOOPback:EDGE:MCS5:ESENSitivity	429
:BTS:LOOPback:EDGE:MCS5:HAMPLitude	429
:BTS:LOOPback:EDGE:MCS5:LAMPLitude.	430
:BTS:LOOPback:EDGE:MCS5:PAMPLitude	430
:BTS:LOOPback:EDGE:MCS5:SBLock:COUNt	430
:BTS:LOOPback:EDGE:MCS5:SBLock:INITial.	431
:BTS:LOOPback:EDGE:MCS5:STOP:CRITeria:EBLOCK.	431
:BTS:LOOPback:EDGE:MCS5:STOP:CRITeria[:SElect]	431
:BTS:LOOPback:EDGE:MCS9:BLOCK:COUNt.	432
:BTS:LOOPback:EDGE:MCS9:CONTAin	432
:BTS:LOOPback:EDGE:MCS9:ESENSitivity	432
:BTS:LOOPback:EDGE:MCS9:HAMPLitude	433
:BTS:LOOPback:EDGE:MCS9:LAMPLitude.	433

Contents

:BTS:LOOPback:EDGE:MCS9:PAMPlitude	434
:BTS:LOOPback:EDGE:MCS9:SBLock:COUNT	434
:BTS:LOOPback:EDGE:MCS9:SBLock:INITial	434
:BTS:LOOPback:EDGE:MCS9:STOP:CRITeria:EBLock	435
:BTS:LOOPback:EDGE:MCS9:STOP:CRITeria[:SElect]	435
:BTS:LOOPback:EDGE:MEASurement:STOP	435
:BTS:LOOPback:EDGE:MEASurement:TSLot	436
:BTS:LOOPback:EDGE:MEASurement[:MODE]	436
:BTS:LOOPback:EDGE:SINVert	437
:BTS:LOOPback:EDGE:SYNC:AGain	437
:BTS:LOOPback:EDGE:SYNC:RF	437
:BTS:LOOPback:EDGE:SYNC[:SOURce]	438
:BTS:LOOPback:EDGE:TRIGger[:SOURce]	438
:BTS:LOOPback:EDGE:ULINK:OFFSet	439
:BTS:LOOPback:EDGE:UNCoded:BIT:COUNT	439
:BTS:LOOPback:EDGE:UNCoded:ESENSitivity	439
:BTS:LOOPback:EDGE:UNCoded:HAMPLitude	440
:BTS:LOOPback:EDGE:UNCoded:LAMPLitude	440
:BTS:LOOPback:EDGE:UNCoded:PAMPLitude	441
:BTS:LOOPback:EDGE:UNCoded:SBIT:COUNT	441
:BTS:LOOPback:EDGE:UNCoded:SBIT:INITial	441
:BTS:LOOPback:EDGE:UNCoded:STOP:CRITeria:EBIT	442
:BTS:LOOPback:EDGE:UNCoded:STOP:CRITeria[:SElect]	442
:BTS:LOOPback:EDGE[:STATe]	442
:BTS:LOOPback:GSM:CS1:BLOCK:COUNT	443
:BTS:LOOPback:GSM:CS1:CONTain	443
:BTS:LOOPback:GSM:CS1:STOP:CRITeria:EBLock	444
:BTS:LOOPback:GSM:CS1:STOP:CRITeria[:SElect]	444
:BTS:LOOPback:GSM:CS4:BLOCK:COUNT	444
:BTS:LOOPback:GSM:CS4:CONTain	445
:BTS:LOOPback:GSM:CS4:STOP:CRITeria:EBLock	445
:BTS:LOOPback:GSM:CS4:STOP:CRITeria[:SElect]	446
:BTS:LOOPback:GSM:ESENSitivity	446
:BTS:LOOPback:GSM:FRAME:CIB	446
:BTS:LOOPback:GSM:FRAME:CII	446
:BTS:LOOPback:GSM:FRAME:COUNT	447
:BTS:LOOPback:GSM:HAMPLitude	447
:BTS:LOOPback:GSM:LAMPLitude	447

:BTS:LOOPback:GSM:MCS1:BLOCK:COUNT	448
:BTS:LOOPback:GSM:MCS1:CONTain	448
:BTS:LOOPback:GSM:MCS1:STOP:CRITeria:EBLock	448
:BTS:LOOPback:GSM:MCS1:STOP:CRITeria[:SElect]	449
:BTS:LOOPback:GSM:MEASurement:STOP	449
:BTS:LOOPback:GSM:MEASurement:TSLot	449
:BTS:LOOPback:GSM:MEASurement[:MODE]	450
:BTS:LOOPback:GSM:PAMplitude	450
:BTS:LOOPback:GSM:SFRame:COUNT	450
:BTS:LOOPback:GSM:SFRame:INITial	451
:BTS:LOOPback:GSM:SINVert	451
:BTS:LOOPback:GSM:STOP:CRITeria:CIB	451
:BTS:LOOPback:GSM:STOP:CRITeria:CII	452
:BTS:LOOPback:GSM:STOP:CRITeria:FERasure	452
:BTS:LOOPback:GSM:STOP:CRITeria[:SElect]	452
:BTS:LOOPback:GSM:SYNC:RF	453
:BTS:LOOPback:GSM:SYNC[:SOURce]	454
:BTS:LOOPback:GSM:TRIGger[:SOURce]	454
:BTS:LOOPback:GSM:ULINK:OFFSet	455
:BTS:LOOPback:GSM[:STATe]	455
[:BASeband]:PRBS:FUNCTion:SPIGnore:DATA	455
[:BASeband]:PRBS:FUNCTion:SPIGnore[:STATe]	456
[:BASeband]:PRBS[:DATA]	456
[:BASeband]:RSYNc:THReshold	456
[:BASeband]:RSYNc[:STATe]	457
[:BASeband]:STATe	457
[:BASeband]:STOP:CRITeria:EBIT	457
[:BASeband]:STOP:CRITeria[:SElect]	458
[:BASeband]:TBITs	458
[:BASeband]:TRIGger:BDELay	459
[:BASeband]:TRIGger:BDELay:STATe	459
[:BASeband]:TRIGger:COUNT	459
[:BASeband]:TRIGger:POLarity	460
[:BASeband]:TRIGger[:SOURce]	460
8. Receiver Test Digital Commands	461
All Subsystem–Option 001/601 or 002/602 ([:SOURce])	462
:RADio:ALL:OFF	462

Contents

AWGN Real-Time Subsystem–Option 403 ([:SOURCE]:RADio:AWGN:RT)	463
:BWIDth	463
[:STATe]	463
Bluetooth Subsystem–Option 406 ([:SOURCE]:RADio:BLUEtooth:ARB)	464
:AMADdr	464
:BDADdr.	464
:BURSt[:STATe].	464
:CGDelay	465
:DATA	465
:IQ:EXTernal:FILTer.	466
:IQ:EXTernal:FILTer:AUTO	466
:HEADer:CLEAr	467
:HEADer:SAVE	467
:IMPairments	467
:IMPairments:AWGN	468
:IMPairments:AWGN:CNR	468
:IMPairments:AWGN:NSEEd.	469
:IMPairments:DDEViation	469
:IMPairments:FDType	470
:IMPairments:FOFFset	470
:IMPairments:MINDeX.	471
:IMPairments:STERror.	472
:IQ:MODulation:ATTen	472
:IQ:MODulation:ATTen:AUTO	473
:IQ:MODulation:FILTer	473
:IQ:MODulation:FILTer:AUTO	474
:MDEStination:AAMPliTude	474
:MDEStination:ALCHold.	474
:MDEStination:PULSe	475
:MPOLarity:MARKer1 2 3 4	475
:MPOLarity:MARKer1.	475
:MPOLarity:MARKer2.	476
:MPOLarity:MARKer3.	476
:MPOLarity:MARKer4.	476
:PACKet	476
:REFernce:EXTernal:FREQUency	477
:REFeRence[:SOURCE]	477
:RSYMBols	478

:SCLock:RATE	478
[:STATe]	478
CDMA2000 BBG Subsystem–Option 401 ([:SOURce]:RADio:CDMA2000[:BBG])	479
:LMODe	479
[:FORWard]:BBCLock	480
[:FORWard]:CHIPrate	480
[:FORWard]:ESDeLay	480
[:FORWard]:FILTer	481
[:FORWard]:FILTer:ALPHa	482
[:FORWard]:FILTer:BBT	482
[:FORWard]:FILTer:CHANnel	482
[:FORWard]:LCSTate	483
[:FORWard]:FFCH:DATA	483
[:FORWard]:FFCH:DATA:FIX4	484
[:FORWard]:FFCH:EBNO	484
[:FORWard]:FFCH:FOFFset	485
[:FORWard]:FFCH:LCMask	485
[:FORWard]:FFCH:LCMask:ESN	486
[:FORWard]:FFCH:LCMask:HEADer	486
[:FORWard]:FFCH:POWer	486
[:FORWard]:FFCH:PRAMp	487
[:FORWard]:FFCH:PRTime	487
[:FORWard]:FFCH:QOF	487
[:FORWard]:FFCH:RATE	488
[:FORWard]:FFCH:RCONfig	488
[:FORWard]:FFCH:WALSh	488
[:FORWard]:FFCH[:STATe]	489
[:FORWard]:FPCH:DATA	489
[:FORWard]:FPCH:EBNO	489
[:FORWard]:FPCH:LCMask	490
[:FORWard]:FPCH:LCMask:F1	490
[:FORWard]:FPCH:LCMask:F2	490
[:FORWard]:FPCH:LCMask:F3	491
[:FORWard]:FPCH:MESSAge	491
[:FORWard]:FPCH:POWer	491
[:FORWard]:FPCH:RATE	492
[:FORWard]:FPCH:WALSh	492
[:FORWard]:FPCH[:STATe]	492

Contents

[:FORWard]:FPICh:ECNO	493
[:FORWard]:FPICh:POWEr	493
[:FORWard]:FPICh[:STATe].	494
[:FORWard]:FSCH[1]2:DATA.	494
[:FORWard]:FSCH[1]2:DATA:FIX4.	494
[:FORWard]:FSCH[1]2:EBNO	495
[:FORWard]:FSCH[1]2:FOFFset.	495
[:FORWard]:FSCH[1]2:LCMask.	496
[:FORWard]:FSCH[1]2:LCMask:ESN	496
[:FORWard]:FSCH[1]2:LCMask:HEADer	496
[:FORWard]:FSCH[1]2:POWEr.	497
[:FORWard]:FSCH[1]2:QOF.	497
[:FORWard]:FSCH[1]2:RATE.	497
[:FORWard]:FSCH[1]2:RCONfig	498
[:FORWard]:FSCH[1]2:TCODE	498
[:FORWard]:FSCH[1]2:WALSh	498
[:FORWard]:FSCH[1]2[:STATe]	499
[:FORWard]:FSYNc:CFRequency	499
[:FORWard]:FSYNc:DAYLt.	499
[:FORWard]:FSYNc:EBNO	500
[:FORWard]:FSYNc:ECFRequency	500
[:FORWard]:FSYNc:LPSec	501
[:FORWard]:FSYNc:LTMoff	501
[:FORWard]:FSYNc:MPREv	501
[:FORWard]:FSYNc:MSGType	502
[:FORWard]:FSYNc:NID	502
[:FORWard]:FSYNc:POWEr.	502
[:FORWard]:FSYNc:PRATe	503
[:FORWard]:FSYNc:PREV	503
[:FORWard]:FSYNc:RESErved	503
[:FORWard]:FSYNc:SID	504
[:FORWard]:FSYNc:STYPE.	504
[:FORWard]:FSYNc:SYSTime.	504
[:FORWard]:FSYNc:WALSh	505
[:FORWard]:FSYNc[:STATe].	505
[:FORWard]:NOISE:CN	505
[:FORWard]:NOISE[:STATe]	506
[:FORWard]:OCNS:EBNO	506

[:FORWard]:OCNS:POWer	507
[:FORWard]:OCNS:WALSh	508
[:FORWard]:OCNS[:STATe]	508
[:FORWard]:PADJust	508
[:FORWard]:POLarity	509
[:FORWard]:QPCH:CCI	509
[:FORWard]:QPCH:EBNO	509
[:FORWard]:QPCH:PI	510
[:FORWard]:QPCH:POWer	510
[:FORWard]:QPCH:RATE	511
[:FORWard]:QPCH:WALSh	511
[:FORWard]:QPCH[:STATe]	511
[:FORWard]:SRATe	511
:PNOFFset	512
:REVerse:BBCLock	512
:REVerse:CHIPrate	513
:REVerse:ESDelay	513
:REVerse:FILTer	514
:REVerse:FILTer:ALPHa	515
:REVerse:FILTer:BBT	515
:REVerse:FILTer:CHANnel	516
:REVerse:LCMask	516
:REVerse:LCSTate	516
:REVerse:PADJust	517
:REVerse:POLarity[:ALL]	517
:REVerse:NOISe:CN	517
:REVerse:NOISe[:STATe]	518
:REVerse:RC12:ACCess:RACH:DATA	518
:REVerse:RC12:ACCess:RACH:DATA:FIX4	519
:REVerse:RC12:ACCess:RACH:EBNO	519
:REVerse:RC12:ACCess:RACH:FLENgth	520
:REVerse:RC12:ACCess:RACH:FOFFset	520
:REVerse:RC12:ACCess:RACH:POWer	520
:REVerse:RC12:ACCess:RACH:RCONfig	521
:REVerse:RC12:ACCess:RACH:RATE	521
:REVerse:RC12:ACCess:RACH[:STATe]	521
:REVerse:RC12:TRAFfic:RSCH:DATA	522
:REVerse:RC12:TRAFfic:RSCH:DATA:FIX4	522

Contents

:REVerse:RC12:TRAFfic:RSCH:FLENgth	522
:REVerse:RC12:TRAFfic:RSCH:FOFFset	523
:REVerse:RC12:TRAFfic:RSCH:POWer	523
:REVerse:RC12:TRAFfic:RSCH:RATE	523
:REVerse:RC12:TRAFfic:RSCH:RCONfig	524
:REVerse:RC12:TRAFfic:RSCH[:STATe]	524
:REVerse:RC34:CCONtrol:RCCCh:DATA	524
:REVerse:RC34:CCONtrol:RCCCh:DATA:FIX4	525
:REVerse:RC34:CCONtrol:RCCCh:EBNO	525
:REVerse:RC34:CCONtrol:RCCCh:FLENgth	526
:REVerse:RC34:CCONtrol:RCCCh:FOFFset	526
:REVerse:RC34:CCONtrol:RCCCh:POWer	526
:REVerse:RC34:CCONtrol:RCCCh:RCONfig	527
:REVerse:RC34:CCONtrol:RCCCh:RATE	527
:REVerse:RC34:CCONtrol:RCCCh:WALSh	527
:REVerse:RC34:CCONtrol:RCCCh[:STATe]	528
:REVerse:RC34:CCONtrol:RPICH:ECNO	528
:REVerse:RC34:CCONtrol:RPICH:GRATe	529
:REVerse:RC34:CCONtrol:RPICH:POWer	529
:REVerse:RC34:CCONtrol:RPICH:WALSh	529
:REVerse:RC34:CCONtrol:RPICH[:STATe]	530
:REVerse:RC34:EACCess:REACH:DATA	530
:REVerse:RC34:EACCess:REACH:DATA:FIX4	530
:REVerse:RC34:EACCess:REACH:EBNO	531
:REVerse:RC34:EACCess:REACH:FOFFset	531
:REVerse:RC34:EACCess:REACH:POWer	532
:REVerse:RC34:EACCess:REACH:RCONfig	532
:REVerse:RC34:EACCess:REACH:RATE	532
:REVerse:RC34:EACCess:REACH:WALSh	533
:REVerse:RC34:EACCess:REACH[:STATe]	533
:REVerse:RC34:EACCess:RPICH:ECNO	533
:REVerse:RC34:EACCess:RPICH:GRATe	534
:REVerse:RC34:EACCess:RPICH:POWer	534
:REVerse:RC34:EACCess:RPICH:WALSh	534
:REVerse:RC34:EACCess:RPICH[:STATe]	535
:REVerse:RC34:TRAFfic:RDCCh:DATA	535
:REVerse:RC34:TRAFfic:RDCCh:DATA:FIX4	535
:REVerse:RC34:TRAFfic:RDCCh:EBNO	536

:REVerse:RC34:TRAFfic:RDCCh:FLENgth	536
:REVerse:RC34:TRAFfic:RDCCh:FOFFset.	536
:REVerse:RC34:TRAFfic:RDCCh:POWer	537
:REVerse:RC34:TRAFfic:RDCCh:RATE.	537
:REVerse:RC34:TRAFfic:RDDCh:RCONfig.	537
:REVerse:RC34:TRAFfic:RDCCh:WALSh	538
:REVerse:RC34:TRAFfic:RDCCh[:STATe]	538
:REVerse:RC34:TRAFfic:RFCH:DATA.	538
:REVerse:RC34:TRAFfic:RFCH:DATA:FIX4.	539
:REVerse:RC34:TRAFfic:RFCH:EBNO	539
:REVerse:RC34:TRAFfic:RFCH:FLENgth	540
:REVerse:RC34:TRAFfic:RFCH:FOFFset.	540
:REVerse:RC34:TRAFfic:RFCH:POWer	540
:REVerse:RC34:TRAFfic:RFCH:RCONfig	541
:REVerse:RC34:TRAFfic:RFCH:RATE.	541
:REVerse:RC34:TRAFfic:RFCH:WALSh	541
:REVerse:RC34:TRAFfic:RFCH[:STATe]	541
:REVerse:RC34:TRAFfic:RSCH[1]2:DATA	542
:REVerse:RC34:TRAFfic:RSCH[1]2:DATA:FIX4	542
:REVerse:RC34:TRAFfic:RSCH[1]2:DATA:EBNO	542
:REVerse:RC34:TRAFfic:RSCH[1]2:FLENgth.	543
:REVerse:RC34:TRAFfic:RSCH[1]2:FOFFset	543
:REVerse:RC34:TRAFfic:RSCH[1]2:POWer	544
:REVerse:RC34:TRAFfic:RSCH[1]2:RCONfig	544
:REVerse:RC34:TRAFfic:RSCH[1]2:RATE	544
:REVerse:RC34:TRAFfic:RSCH[1]2:TCODE.	545
:REVerse:RC34:TRAFfic:RSCH[1]2:WALSh.	545
:REVerse:RC34:TRAFfic:RSCH[1]2[:STATe]	545
:REVerse:REFeRence:EXTeRnal:FREQuency	546
:REVerse:REFeRence[:SOURce].	546
:REVerse:TADVance	546
:REVerse:TEDGE	547
:REVerse:SRATE	547
[:STATe]	547
Custom Subsystem–Option 001/601or 002/602 ([:SOURce]:RADio:CUSTom).	548
:ALPha	548
:ASK	548
:BBCLock	549

Contents

:BBT	549
:BRATe	550
:BURSt:SHAPe:FALL:DELay	552
:BURSt:SHAPe:FALL:TIME	552
:BURSt:SHAPe:FDELay	553
:BURSt:SHAPe:FTIME	553
:BURSt:SHAPe:RDELay	554
:BURSt:SHAPe:RISE:DELay	554
:BURSt:SHAPe:RISE:TIME	555
:BURSt:SHAPe:RTIME	556
:BURSt:SHAPe[:TYPE]	556
:CHANnel	557
:DATA	557
:DATA:FIX4	558
:DATA:PRAM	558
:DENCode	559
:EDATa:DELay	559
:EDCLock	559
:EREFerence	560
:EREFerence:VALue	560
:FILTer	561
:IQ:SCALE	562
:MODulation:FSK[:DEViation]	563
:MODulation:MSK[:PHASe]	563
:MODulation:UFSK	564
:MODulation:UIQ	564
:MODulation[:TYPE]	564
:POLarity[:ALL]	565
:SRATe	565
:STANdard:SELEct	567
:TRIGger:TYPE	567
:TRIGger:TYPE:CONTinuous[:TYPE]	568
:TRIGger:TYPE:GATE:ACTive	568
:TRIGger[:SOURce]	569
:TRIGger[:SOURce]:EXTernal:DELay	570
:TRIGger[:SOURce]:EXTernal:DELay:STATe	570
:TRIGger[:SOURce]:EXTernal:SLOPe	571
:TRIGger[:SOURce]:EXTernal[:SOURce]	571

[:STATe]	572
DECT Subsystem–Option 402 ([:SOURce]:RADio:DECT)	573
:ALPha	573
:BBCLock	573
:BBT	574
:BRATe	574
:BURSt:PN9	575
:BURSt:SHAPe:FALL:DELay	576
:BURSt:SHAPe:FALL:TIME	576
:BURSt:SHAPe:FDELay	577
:BURSt:SHAPe:FTIME	577
:BURSt:SHAPe:RDELay	578
:BURSt:SHAPe:RISE:DELay	578
:BURSt:SHAPe:RISE:TIME	579
:BURSt:SHAPe:RTIME	580
:BURSt:SHAPe[:TYPE]	580
:BURSt[:STATe]	581
:CHANnel	581
:DATA	582
:DATA:FIX4	582
:DATA:PRAM	583
:DEFault	583
:EDATa:DELay	583
:EDCLock	584
:EREFerence	584
:EREFerence:VALue	585
:FILTer	585
:IQ:SCALE	586
:MODulation:FSK[:DEViation]	586
:MODulation:MSK[:PHASe]	587
:MODulation:UFSK	587
:MODulation:UIQ	588
:MODulation[:TYPE]	588
:POLarity[:ALL]	588
:PPart:SLOT0 [1] 2 3 4 5 6 7 8 9 10 11[:TYPE]	589
:PPart:SLOT0 [1] 2 3 4 5 6 7 8 9 10 11:CUSTom	589
:PPart:SLOT0 [1] 2 3 4 5 6 7 8 9 10 11:CUSTom:FIX4	590
:PPart:SLOT0 [1] 2 3 4 5 6 7 8 9 10 11:LCAPacity:A	590

Contents

:PPart:SLOT0 [1]2 3 4 5 6 7 8 9 10 11:LCAPacity:P	591
:PPart:SLOT0 [1]2 3 4 5 6 7 8 9 10 11:LCAPacity:S	591
:PPart:SLOT0 [1]2 3 4 5 6 7 8 9 10 11:LCAPacity[:B]	592
:PPart:SLOT0 [1]2 3 4 5 6 7 8 9 10 11:LCAPacity[:B]:FIX4	592
:PPart:SLOT0 [1]2 3 4 5 6 7 8 9 10 11:LCAPacity:POWer	593
:PPart:SLOT0 [1]2 3 4 5 6 7 8 9 10 11:STATe	593
:PPart:SLOT0 [1]2 3 4 5 6 7 8 9 10 11:TRAFfic:A	593
:PPart:SLOT0 [1]2 3 4 5 6 7 8 9 10 11:TRAFfic:P	594
:PPart:SLOT0 [1]2 3 4 5 6 7 8 9 10 11:TRAFfic:S	594
:PPart:SLOT0 [1]2 3 4 5 6 7 8 9 10 11:TRAFfic[:B]	595
:PPart:SLOT0 [1]2 3 4 5 6 7 8 9 10 11:TRAFfic[:B]:FIX4	595
:PPart:SLOT0 [1]2 3 4 5 6 7 8 9 10 11:ZLCapacity:A	596
:PPart:SLOT0 [1]2 3 4 5 6 7 8 9 10 11:ZLCapacity:P	596
:PPart:SLOT0 [1]2 3 4 5 6 7 8 9 10 11:ZLCapacity:A	596
:PPart:SLOT0 [1]2 3 4 5 6 7 8 9 10 11:ZLCapacity[:B]	597
:PPart:SLOT0 [1]2 3 4 5 6 7 8 9 10 11:ZLCapacity[:B]:FIX4	597
:PPart:SLOT0 [1]2 3 4 5 6 7 8 9 10 11:ZTRaffic:A	598
:PPart:SLOT0 [1]2 3 4 5 6 7 8 9 10 11:ZTRaffic:P	598
:PPart:SLOT0 [1]2 3 4 5 6 7 8 9 10 11:ZTRaffic:S	598
:PPart:SLOT0 [1]2 3 4 5 6 7 8 9 10 11:ZTRaffic[:B]	599
:PPart:SLOT0 [1]2 3 4 5 6 7 8 9 10 11:ZTRaffic[:B]:FIX4	599
:RFPart:SLOT0 [1]2 3 4 5 6 7 8 9 10 11[:TYPE]	600
:RFPart:SLOT0 [1]2 3 4 5 6 7 8 9 10 11:CUSTom	600
:RFPart:SLOT0 [1]2 3 4 5 6 7 8 9 10 11:CUSTom:FIX4	601
:RFPart:SLOT0 [1]2 3 4 5 6 7 8 9 10 11:DUMM2:A	601
:RFPart:SLOT0 [1]2 3 4 5 6 7 8 9 10 11:DUMM2:P	602
:RFPart:SLOT0 [1]2 3 4 5 6 7 8 9 10 11:DUMM2:S	602
:RFPart:SLOT0 [1]2 3 4 5 6 7 8 9 10 11:DUMM[1]:A	602
:RFPart:SLOT0 [1]2 3 4 5 6 7 8 9 10 11:DUMM[1]:P	603
:RFPart:SLOT0 [1]2 3 4 5 6 7 8 9 10 11:DUMM[1]:S	603
:RFPart:SLOT0 [1]2 3 4 5 6 7 8 9 10 11:LCAPacity:A	603
:RFPart:SLOT0 [1]2 3 4 5 6 7 8 9 10 11:LCAPacity:P	604
:RFPart:SLOT0 [1]2 3 4 5 6 7 8 9 10 11:LCAPacity:S	604
:RFPart:SLOT0 [1]2 3 4 5 6 7 8 9 10 11:LCAPacity[:B]	604
:RFPart:SLOT0 [1]2 3 4 5 6 7 8 9 10 11:LCAPacity[:B]:FIX4	605
:RFPart:SLOT0 [1]2 3 4 5 6 7 8 9 10 11:LCAPacity:POWer	605
:RFPart:SLOT0 [1]2 3 4 5 6 7 8 9 10 11:STATe	606
:RFPart:SLOT0 [1]2 3 4 5 6 7 8 9 10 11:TRAFfic:A	606

:RFPart:SLOT0[1] 2 3 4 5 6 7 8 9 10 11:TRAFfic:P	606
:RFPart:SLOT0[1] 2 3 4 5 6 7 8 9 10 11:TRAFfic:S	607
:RFPart:SLOT0[1] 2 3 4 5 6 7 8 9 10 11:TRAFfic[:B]	607
:RFPart:SLOT0[1] 2 3 4 5 6 7 8 9 10 11:TRAFfic[:B]:FIX4	608
:RFPart:SLOT0[1] 2 3 4 5 6 7 8 9 10 11:ZLCapacity:A	608
:RFPart:SLOT0[1] 2 3 4 5 6 7 8 9 10 11:ZLCapacity:P	608
:RFPart:SLOT0[1] 2 3 4 5 6 7 8 9 10 11:ZLCapacity:S	609
:RFPart:SLOT0[1] 2 3 4 5 6 7 8 9 10 11:ZLCapacity[:B]	609
:RFPart:SLOT0[1] 2 3 4 5 6 7 8 9 10 11:ZLCapacity[:B]:FIX4	610
:RFPart:SLOT0[1] 2 3 4 5 6 7 8 9 10 11:ZTRAffic:A	610
:RFPart:SLOT0[1] 2 3 4 5 6 7 8 9 10 11:ZTRAffic:P	610
:RFPart:SLOT0[1] 2 3 4 5 6 7 8 9 10 11:ZTRAffic:S	611
:RFPart:SLOT0[1] 2 3 4 5 6 7 8 9 10 11:ZTRAffic[:B]	611
:RFPart:SLOT0[1] 2 3 4 5 6 7 8 9 10 11:ZTRAffic[:B]:FIX4	612
:SECOndary:RECall	612
:SECOndary:SAVE	612
:SECOndary:TRIGger[:SOURce]	613
:SECOndary[:STATe]	613
:SOUT	614
:SOUT:OFFSet	614
:SOUT:SLOT	615
:SRATe	615
:TRIGger:TYPE	616
:TRIGger:TYPE:CONTInuous[:TYPE]	617
:TRIGger:TYPE:GATE:ACTive	618
:TRIGger[:SOURce]	618
:TRIGger[:SOURce]:EXTernal:DELay	619
:TRIGger[:SOURce]:EXTernal:SLOPe	620
:TRIGger[:SOURce]:EXTernal[:SOURce]	620
:TRIGger[:SOURce]:EXTernal:DELay:STATe	621
[:STATe]	621
EDGE Subsystem–Option 402 ([:SOURce]:RADio:EDGE)	622
:ALPHa	622
:BBCLock	622
:BBT	623
:BURSt:SHAPe:FALL:DELay	623
:BURSt:SHAPe:FDELay	624
:BURSt:SHAPe:FALL:TIME	625

Contents

:BURSt:SHAPE:FTIME	625
:BURSt:SHAPE:RDElay	626
:BURSt:SHAPE:RISE:DElay	627
:BURSt:SHAPE:RISE:TIME	627
:BURSt:SHAPE:RTIME	628
:BURSt:SHAPE[:TYPE]	629
:BURSt[:STATe]	629
:CHANnel	630
:DATA	630
:DATA:PRAM	631
:DATA:FIX4	631
:DEFault	632
:EDATa:DElay	632
:EDCLock	632
:EREFerence	633
:EREFerence:VALue	633
:FILTer	634
:IQ:SCALE	635
:MODulation:FSK[:DEViation]	635
:MODulation:MSK[:PHASe]	636
:MODulation:UFSK	636
:MODulation:UIQ	636
:MODulation[:TYPE]	637
:POLarity[:ALL]	637
:SECondary:RECall	638
:SECondary:SAVE	638
:SECondary:TRIGger[:SOURce]	638
:SECondary[:STATe]	639
:SLOT0[1]2 3 4 5 6 7:CUSTom	639
:SLOT0[1]2 3 4 5 6 7:CUSTom:FIX4	640
:SLOT0[1]2 3 4 5 6 7:CUSTom:GUARd	640
:SLOT0[1]2 3 4 5 6 7:GMSK:ENCryption	641
:SLOT0[1]2 3 4 5 6 7:GMSK:ENCryption:CS1:DATA	642
:SLOT0[1]2 3 4 5 6 7:GMSK:ENCryption:CS4:DATA	643
:SLOT0[1]2 3 4 5 6 7:GMSK:ENCryption:DLINK:MCS1:DATA	643
:SLOT0[1]2 3 4 5 6 7:GMSK:ENCryption:FIX4	643
:SLOT0[1]2 3 4 5 6 7:GMSK:ENCryption:TCH:FS:DATA	644
:SLOT0[1]2 3 4 5 6 7:GMSK:ENCryption:ULINK:MCS1:DATA	644

:SLOT0[1]2 3 4 5 6 7:GMSK:STeal	645
:SLOT0[1]2 3 4 5 6 7:GMSK:TSEquence	645
:SLOT0[1]2 3 4 5 6 7:MULTIslot	646
:SLOT0[1]2 3 4 5 6 7:NORMAl:ENCRyption	646
:SLOT0:NORMAl:ENCRyption:BCH:BCC	648
:SLOT0:NORMAl:ENCRyption:BCH:CELLId	649
:SLOT0:NORMAl:ENCRyption:BCH:LAC	649
:SLOT0:NORMAl:ENCRyption:BCH:MCC	649
:SLOT0:NORMAl:ENCRyption:BCH:MNC	650
:SLOT0:NORMAl:ENCRyption:BCH:PLMN	650
:SLOT0[1]2 3 4 5 6 7:NORMAl:ENCRyption:DLINK:MCS5:DATA	650
:SLOT0[1]2 3 4 5 6 7:NORMAl:ENCRyption:DLINK:MCS9:DATA	651
:SLOT0[1]2 3 4 5 6 7:NORMAl:ENCRyption:ETCH:F43:DATA	651
:SLOT0[1]2 3 4 5 6 7:NORMAl:ENCRyption:FIX4	652
:SLOT0[1]2 3 4 5 6 7:NORMAl:ENCRyption:ULINK:MCS5:DATA	652
:SLOT0[1]2 3 4 5 6 7:NORMAl:ENCRyption:ULINK:MCS9:DATA	653
:SLOT0[1]2 3 4 5 6 7:NORMAl:ENCRyption:UNCodeD	653
:SLOT0[1]2 3 4 5 6 7:NORMAl:GUARd	654
:SLOT0[1]2 3 4 5 6 7:NORMAl:T1	654
:SLOT0[1]2 3 4 5 6 7:NORMAl:T2	655
:SLOT0[1]2 3 4 5 6 7:NORMAl:TSEquence	655
:SLOT0[1]2 3 4 5 6 7:LCAPacity:POWer	655
:SLOT0[1]2 3 4 5 6 7:STAtE	656
:SLOT0[1]2 3 4 5 6 7[:TYPE]	656
:SOUT:	657
:SOUT:OFFSet	657
:SOUT:SLOT	658
:SRATe	658
:TRIGger:TYPE	660
:TRIGger:TYPE:CONTInuous[:TYPE]	660
:TRIGger:TYPE:GATE:ACTive	661
:TRIGger[:SOURce]	662
:TRIGger[:SOURce]:EXTernal:DELay	663
:TRIGger[:SOURce]:EXTernal:DELay:FINe	663
:TRIGger[:SOURce]:EXTernal:DELay:STAtE	664
:TRIGger[:SOURce]:EXTernal:SLOPe	664
:TRIGger[:SOURce]:EXTernal[:SOURce]	665
[:STAtE]	665

SCPI Command Reference, Volume 3

9. Receiver Test Digital Commands (continued)	667
3GPP W-CDMA HSPA Subsystem–Option 419 ([:SOURce]:RADio:WCDMa:HSPA[:BBG]) ..	668
File Overview	668
Managing ESG Setting Conflicts and Error Messages	670
:DLINK:APPLy	671
:DLINK:AWGN:CN	671
:DLINK:AWGN[:STATe]	672
:DLINK:BBCLock[:SOURce]	672
:DLINK:CPICH:CCODE	672
:DLINK:CPICH:POWer	673
:DLINK:CPICH[:STATe]	673
:DLINK:DPCH:CCODE	673
:DLINK:DPCH:DATA	674
:DLINK:DPCH:DATA:FIX4	674
:DLINK:DPCH:DCH[1] 2 3 4 5 6:BSIZe	675
:DLINK:DPCH:DCH[1] 2 3 4 5 6:CRC	675
:DLINK:DPCH:DCH[1] 2 3 4 5 6:CTYPe	676
:DLINK:DPCH:DCH[1] 2 3 4 5 6:DATA	676
:DLINK:DPCH:DCH[1] 2 3 4 5 6:DATA:FIX4	677
:DLINK:DPCH:DCH[1] 2 3 4 5 6:NBLocks	677
:DLINK:DPCH:DCH[1] 2 3 4 5 6:RMATtribute	678
:DLINK:DPCH:DCH[1] 2 3 4 5 6:TTI	678
:DLINK:DPCH:DCH[1] 2 3 4 5 6[:STATe]	678
:DLINK:DPCH:POWer	679
:DLINK:DPCH:SFORmat	679
:DLINK:DPCH:SSCoffset	680
:DLINK:DPCH:TFCI	680
:DLINK:DPCH:TOFFset	681
:DLINK:DPCH:TPC:NSTeps	681
:DLINK:DPCH:TPC:PATtern	681
:DLINK:DPCH:TRPosition	682
:DLINK:DPCH[:STATe]	682
:DLINK:EAGCh:AGSCOpe	683
:DLINK:EAGCh:AGValue	683
:DLINK:EAGCh:CCODE	684
:DLINK:EAGCh:ERNTI	685

:DLINK:EAGCh:Power	685
:DLINK:EAGCh[:STATe]	685
:DLINK:EHICCh:CCODE	686
:DLINK:EHICCh:INDicator	686
:DLINK:EHICCh:POWer	687
:DLINK:EHICCh:SSINdex	687
:DLINK:EHICCh:TOFFset	687
:DLINK:EHICCh[:STATe]	688
:DLINK:ERGCh:CCODE	688
:DLINK:ERGCh:POWer	688
:DLINK:ERGCh:RGValue	689
:DLINK:ERGCh:SSINdex	689
:DLINK:ERGCh:TOFFset	690
:DLINK:ERGCh[:STATe]	690
:DLINK:FILTer	690
:DLINK:FILTer:ALPHa	691
:DLINK:FILTer:BBT	692
:DLINK:FILTer:CHANnel	692
:DLINK:HSBurst	692
:DLINK:HSDPa:AMC:CQIMapping:UECategory	693
:DLINK:HSDPa:AMC:CPATtern	693
:DLINK:HSDPa:FCONtrol	694
:DLINK:HSDPa:HARQ:APATtern	695
:DLINK:HSDPa:HARQ:MNHTrans	696
:DLINK:HSDPa:HARQ:RVSequence[1] 2 3 4 5 6 7 8	696
:DLINK:HSDPa[1] 2 3 4:BSINfo	697
:DLINK:HSDPa[1] 2 3 4:HSPDSch:COFFset	697
:DLINK:HSDPa[1] 2 3 4:HSPDSch:DATA	698
:DLINK:HSDPa[1] 2 3 4:HSPDSch:DATA:FIX4	698
:DLINK:HSDPa:HSPDSch:DSCH:DATA	699
:DLINK:HSDPa:HSPDSch:DSCH:DATA:FIX4	699
:DLINK:HSDPa:HSPDSch:DSCH:IRBSize	700
:DLINK:HSDPa:HSPDSch:NCODe	700
:DLINK:HSDPa[1] 2 3 4:HSPDSch:POWer	700
:DLINK:HSDPa[1] 2 3 4:HSPDSch:SFORmat	701
:DLINK:HSDPa[1] 2 3 4:HSPDSch[:STATe]	701
:DLINK:HSDPa[1] 2 3 4:HSSCch:CCODE	702
:DLINK:HSDPa[1] 2 3 4:HSSCch:DATA	702

Contents

:DLINK:HSDPa[1] 2 3 4:HSSCch:DATA:FIX4	703
:DLINK:HSDPa[1] 2 3 4:HSSCch:POWer	703
:DLINK:HSDPa[1] 2 3 4:ITTI	704
:DLINK:HSDPa[1] 2 3 4:ITTI:PATtern	704
:DLINK:HSDPa:NHPRocess	705
:DLINK:HSDPa[1] 2 3 4:RVPParameter	705
:DLINK:HSDPa[1] 2 3 4:UEID	706
:DLINK:HSDPa[1] 2 3 4[:STATe]	706
:DLINK:OCNS[1] 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16:CCODE	707
:DLINK:OCNS[1] 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16:DATA	707
:DLINK:OCNS[1] 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16:MODulation	708
:DLINK:OCNS[1] 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16:POWer	708
:DLINK:OCNS[1] 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16:SF	708
:DLINK:OCNS[1] 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16:SSCoffset	709
:DLINK:OCNS[1] 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16:TOFFset	709
:DLINK:OCNS[1] 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16[:STATe]	710
:DLINK:PCCPch:BCH:DATA	710
:DLINK:PCCPch:BCH:DATA:FIX4	710
:DLINK:PCCPch:CCODE	711
:DLINK:PCCPch:POWer	711
:DLINK:PCCPch[:STATe]	712
:DLINK:PICH:CCODE	712
:DLINK:PICH:DATA	712
:DLINK:PICH:DATA:FIX4	713
:DLINK:PICH:POWer	713
:DLINK:PICH[:STATe]	714
:DLINK:POLarity	714
:DLINK:PSCH:POWer	714
:DLINK:PSCH[:STATe]	715
:DLINK:SCRamblecode	715
:DLINK:SSCH:POWer	715
:DLINK:SSCH[:STATe]	716
:DLINK:TXDiversity	716
:LINK	716
:ULINK:APPLy	717
:ULINK:AWGN:CN	717
:ULINK:AWGN[:STATe]	718
:ULINK:BBReference:EXternal:MRATe	718

:ULINK:BBReference:EXTeRnal[:SOURce]	718
:ULINK:CRATe	719
:ULINK:DPCCh:CCODE	719
:ULINK:DPCCh:DATA	719
:ULINK:DPCCh:DATA:FIX4	720
:ULINK:DPCCh:FBI:PATTeRn	720
:ULINK:DPCCh:FBI:PATTeRn:FIX	720
:ULINK:DPCCh:POWEr	721
:ULINK:DPCCh:SFORmat	721
:ULINK:DPCCh:TFCI	722
:ULINK:DPCCh:TPC:NSTePs	722
:ULINK:DPCCh:TPC:PATTeRn	722
:ULINK:DPCCh[:STATe]	723
:ULINK:DPDCh:CCODE	723
:ULINK:DPDCh:DATA	724
:ULINK:DPDCh:DATA:FIX4	724
:ULINK:DPDCh:DCH[1] 2 3 4 5 6:BSIZE	725
:ULINK:DPDCh:DCH[1] 2 3 4 5 6:CRC	725
:ULINK:DPDCh:DCH[1] 2 3 4 5 6:CTYPE	726
:ULINK:DPDCh:DCH[1] 2 3 4 5 6:DATA	726
:ULINK:DPDCh:DCH[1] 2 3 4 5 6:DATA:FIX4	727
:ULINK:DPDCh:DCH[1] 2 3 4 5 6:NBLocks	727
:ULINK:DPDCh:DCH[1] 2 3 4 5 6:RMATtribute	728
:ULINK:DPDCh:DCH[1] 2 3 4 5 6:TTL	728
:ULINK:DPDCh:DCH2 3 4 5 6[:STATe]	728
:ULINK:DPDCh:POWEr	729
:ULINK:DPDCh:SFORmat	729
:ULINK:DPDCh[:STATe]	730
:ULINK:FCLock:INTeRval	730
:ULINK:FCLock:POLarity	730
:ULINK:FILTeR	731
:ULINK:FILTeR:ALPHa	731
:ULINK:FILTeR:BBT	732
:ULINK:FILTeR:CHANnel	732
:ULINK:FOFFset	733
:ULINK:HCONfig	733
:ULINK:HSDPcch:APATteRn	733
:ULINK:HSDPcch:APOWEr	734

Contents

:ULINK:HSDPcch:CCODE	734
:ULINK:HSDPcch:CPATtern	735
:ULINK:HSDPcch:CPOWer	735
:ULINK:HSDPcch:NPOWer	736
:ULINK:HSDPcch:SFDelay	736
:ULINK:HSDPcch[:STATe]	736
:ULINK:HSUPa:EDPCch:DATA	737
:ULINK:HSUPa:EDPCch:DATA:FIX4	737
:ULINK:HSUPa:EDPCch:POWer	737
:ULINK:HSUPa:EDPCch[:STATe]	738
:ULINK:HSUPa:EDPDch:DATA	738
:ULINK:HSUPa:EDPDch:DATA:FIX4	738
:ULINK:HSUPa:EDPDch:EDCH:DATA	739
:ULINK:HSUPa:EDPDch:EDCH:DATA:FIX4	739
:ULINK:HSUPa:EDPDch:MCCodes	740
:ULINK:HSUPa:EDPDch:PLNMax	741
:ULINK:HSUPa:EDPDch:POWer	741
:ULINK:HSUPa:EDPDch:SNPHchs	741
:ULINK:HSUPa:EDPDch[:STATe]	742
:ULINK:HSUPa:ETABle	742
:ULINK:HSUPa:ETFCi	743
:ULINK:HSUPa:HARQ:APATtern	743
:ULINK:HSUPa:HARQ:APATtern[:EXTernal]:DELay	744
:ULINK:HSUPa:HARQ:APATtern[:EXTernal]:INPut	744
:ULINK:HSUPa:HARQ:APATtern[:EXTernal]:POLarity	745
:ULINK:HSUPa:HARQ:MNRTrans	745
:ULINK:HSUPa:HARQ[:MODE]	745
:ULINK:HSUPa:HARQ:HBIT	746
:ULINK:HSUPa:HPRocess	746
:ULINK:HSUPa:RSN	747
:ULINK:HSUPa:RVINdex	747
:ULINK:HSUPa:TFC:EPATtern[:EXTernal]:DELay	747
:ULINK:HSUPa:TFC:EPATtern[:EXTernal]:INPut	748
:ULINK:HSUPa:TFC:EPATtern[:EXTernal]:POLarity	748
:ULINK:HSUPa:TFC:EPATtern	749
:ULINK:HSUPa:TFC[:ALT]:EDPCch:POWer	749
:ULINK:HSUPa:TFC[:ALT]:EDPDch:EDCH:DATA	750
:ULINK:HSUPa:TFC[:ALT]:EDPDch:EDCH:DATA:FIX4	750

:ULINK:HSUPa:TFC[:ALT]:EDPDch:POWer	751
:ULINK:HSUPa:TFC[:ALT]EDPDch:SNPHchs	751
:ULINK:HSUPa:TFC[:ALT]:ETABle	752
:ULINK:HSUPa:TFC[:ALT]:ETFCI	752
:ULINK:HSUPa:TTI	752
:ULINK:HSUPa[:STATe]	753
:ULINK:NMDPch	753
:ULINK:POLarity	753
:ULINK:SCRamblecode	754
:ULINK:SDELaY	754
:ULINK:SFNRst:POLarity	754
:ULINK:SYNC:MODE	755
:ULINK:SYNC[:SOURce]	755
:ULINK:TGAP:PSI[1]:CFN	756
:ULINK:TGAP:PSI[1]:D	756
:ULINK:TGAP:PSI[1]:L1	756
:ULINK:TGAP:PSI[1]:L2	757
:ULINK:TGAP:PSI[1]:PL1	757
:ULINK:TGAP:PSI[1]:PRC	757
:ULINK:TGAP:PSI[1]:PS	757
:ULINK:TGAP:PSI[1]:SN	758
:ULINK:TOFFset	758
:ULINK:TPControl:PATtern	759
:ULINK:TPControl:PATtern[:EXternal]:INPut	759
:ULINK:TPControl:PATtern[:EXternal]:POLarity	759
:ULINK:TPControl:POWer:INITial	760
:ULINK:TPControl:POWer:MAXimum	760
:ULINK:TPControl:POWer:MINimum	761
:ULINK:TPControl:POWer:STEP	761
:ULINK:TPControl[:STATe]	762
[:STATe]	762
GPS Subsystem–Option 409 ([:SOURce]:RADio[1] 2 3 4:GPS)	763
:DATA	763
:DMODE	763
:DSHift	764
:FILTer	764
:FILTer:ALPHa	765
:FILTer:BBT	766

Contents

:FILTer:CHANnel	766
:IQPHase	767
:PCODE	767
:RCODE	767
:REFCik	768
:REFFreq.	768
:SATid	769
[:STATe]	769
GSM Subsystem–Option 402 ([:SOURce]:RADio:GSM).	770
:ALPha	770
:BBCLock	770
:BBT	771
:BRATe	771
:BURSt:PN9	772
:BURSt:SHAPe:FALL:DELay	773
:BURSt:SHAPe:FALL:TIME	773
:BURSt:SHAPe:FDELay	774
:BURSt:SHAPe:FTIME	775
:BURSt:SHAPe:RDELay	775
:BURSt:SHAPe:RISE:DELay	776
:BURSt:SHAPe:RISE:TIME	777
:BURSt:SHAPe:RTIME	777
:BURSt:SHAPe[:TYPE].	778
:BURSt[:STATe].	778
:CHANnel	779
:DATA	779
:DATA:PRAM.	780
:DATA:FIX4	780
:DEFault	780
:DENCode.	781
EDATa:DELay	781
:EDCLock	781
:EREference	782
:EREference:VALue.	782
:FILTer	783
:IQ:SCALE	784
:MODulation:FSK[:DEViation]	784
:MODulation:MSK[:PHASe]	785

:MODulation:UFSK	785
:MODulation:UIQ	785
:MODulation[:TYPE]	786
:POLarity[:ALL]	786
:SECondary:RECall	787
:SECondary:SAVE	787
:SECondary:TRIGger[:SOURce]	787
:SECondary[:STATe]	788
:SLOT0 [1] 2 3 4 5 6 7:ACCess:ENCRyption	788
:SLOT0 [1] 2 3 4 5 6 7:ACCess:ENCRyption:FIX4	788
:SLOT0 [1] 2 3 4 5 6 7:ACCess:ETAil	789
:SLOT0 [1] 2 3 4 5 6 7:ACCess:SSEquence	789
:SLOT0 [1] 2 3 4 5 6 7:ACCess:CUSTom	789
:SLOT0 [1] 2 3 4 5 6 7:CUSTom:FIX4	790
:SLOT0 [1] 2 3 4 5 6 7:DUMMy:TSEquence	790
:SLOT0 [1] 2 3 4 5 6 7:MULTIslot	790
SLOT0 [1] 2 3 4 5 6 7:NORMal:ENCRyption	791
:SLOT0:NORMal:ENCRyption:BCH1:BCC	793
:SLOT0:NORMal:ENCRyption:BCH1:CELLid	793
:SLOT0:NORMal:ENCRyption:BCH1:LAC	793
:SLOT0:NORMal:ENCRyption:BCH1:MCC	794
:SLOT0:NORMal:ENCRyption:BCH1:MNC	794
:SLOT0:NORMal:ENCRyption:BCH1:PLMN	794
:SLOT0 [1] 2 3 4 5 6 7:NORMal:ENCRyption:CS1:DATA	795
:SLOT0 [1] 2 3 4 5 6 7:NORMal:ENCRyption:CS4:DATA	795
:SLOT0 [1] 2 3 4 5 6 7:NORMal:ENCRyption:DLINK:MCS1:DATA	795
:SLOT0 [1] 2 3 4 5 6 7:NORMal:ENCRyption:FIX4	796
:SLOT0 [1] 2 3 4 5 6 7:NORMal:ENCRyption:TCH:FS:DATA	796
:SLOT0 [1] 2 3 4 5 6 7:NORMal:ENCRyption:ULINK:MCS1:DATA	796
:SLOT0 [1] 2 3 4 5 6 7:NORMal:STeal	797
:SLOT0 [1] 2 3 4 5 6 7:NORMal:TSEquence	797
:SLOT0 [1] 2 3 4 5 6 7:POWer	798
:SLOT0 [1] 2 3 4 5 6 7:STATe	798
:SLOT0 [1] 2 3 4 5 6 7:SYNC:ENCRyption	798
:SLOT0 [1] 2 3 4 5 6 7:SYNC:ENCRyption:FIX4	799
:SLOT0 [1] 2 3 4 5 6 7:SYNC:TSEquence	799
:SLOT0 [1] 2 3 4 5 6 7[:TYPE]	799
:SOUT	800

Contents

:SOUT:OFFSet	800
:SOUT:SLOT	801
:SRATe	801
:TRIGger:EXTernal:DELay	802
:TRIGger:TYPE	803
:TRIGger:TYPE:CONTInuous[:TYPE]	803
:TRIGger:TYPE:GATE:ACTive.	804
:TRIGger[:SOURce]	804
:TRIGger[:SOURce]:EXTernal:DELay	805
:TRIGger[:SOURce]:EXTernal:DELay:FINE	806
:TRIGger[:SOURce]:EXTernal:DELay:STATe	806
:TRIGger[:SOURce]:EXTernal:SLOPe	806
:TRIGger[:SOURce]:EXTernal[:SOURce]	807
[:STATe]	808
HSDPA over W-CDMA Subsystem–Option 418 ([:SOURce]:RADio:WCDMa:HSDPa[:BBG])	809
File Overview	809
Managing ESG Setting Conflicts and Error Messages	811
:DLINK:APPLy	811
:DLINK:AWGN:CN	812
:DLINK:AWGN[:STATe]	812
:DLINK:BBCLock[:SOURce]	812
:DLINK:CPICH:CCODE	813
:DLINK:CPICH:POWer	813
:DLINK:CPICH[:STATe]	813
:DLINK:DPCH:CCODE	813
:DLINK:DPCH:DATA	814
:DLINK:DPCH:DATA:FIX4	814
:DLINK:DPCH:DCH[1] 2 3 4 5 6:BSIZe	815
:DLINK:DPCH:DCH[1] 2 3 4 5 6:CTYPe	815
:DLINK:DPCH:DCH[1] 2 3 4 5 6:CRC	816
:DLINK:DPCH:DCH[1] 2 3 4 5 6:DATA	816
:DLINK:DPCH:DCH[1] 2 3 4 5 6:DATA:FIX4	816
:DLINK:DPCH:DCH[1] 2 3 4 5 6:NBLocks	817
:DLINK:DPCH:DCH[1] 2 3 4 5 6:RMATtribute	817
:DLINK:DPCH:DCH[1] 2 3 4 5 6:TTI	818
:DLINK:DPCH:DCH2 3 4 5 6[:STATe]	818
:DLINK:DPCH:POWer	818
:DLINK:DPCH:SFORmat	819

:DLINK:DPCH:SSCOffset	819
:DLINK:DPCH:TFCI	820
:DLINK:DPCH:TOFFset	820
:DLINK:DPCH:TPC:NSTeps	821
:DLINK:DPCH:TPC:PATtern	821
:DLINK:DPCH:TRPosition	822
:DLINK:DPCH[:STATe]	822
:DLINK:FILTer	822
:DLINK:FILTer:ALPHa	823
:DLINK:FILTer:BBT	823
:DLINK:FILTer:CHANnel	824
:DLINK:HSBurst	824
:DLINK:HSDPa:AMC:CQIMapping:UECategory	825
:DLINK:HSDPa:AMC:CPATtern	825
:DLINK:HSDPa:FCONtrol	826
:DLINK:HSDPa:HARQ:APATtern	827
:DLINK:HSDPa:HARQ:MNHTrans	827
:DLINK:HSDPa:HARQ:RVSequence[1] 2 3 4 5 6 7 8	828
:DLINK:HSDPa[1] 2 3 4:BSINfo	829
:DLINK:HSDPa[1] 2 3 4:HSPDSch:COFFset	829
:DLINK:HSDPa[1] 2 3 4:HSPDSch:DATA	829
:DLINK:HSDPa[1] 2 3 4:HSPDSch:DATA:FIX4	830
:DLINK:HSDPa:HSPDSch:DSCH:DATA	830
:DLINK:HSDPa:HSPDSch:DSCH:DATA:FIX4	831
:DLINK:HSDPa:HSPDSch:DSCH:IRBSize	831
:DLINK:HSDPa:HSPDSch:NCODe	832
:DLINK:HSDPa[1] 2 3 4:HSPDSch:POWer	832
:DLINK:HSDPa[1] 2 3 4:HSPDSch:SFORmat	833
:DLINK:HSDPa[1] 2 3 4:HSPDSch[:STATe]	833
:DLINK:HSDPa[1] 2 3 4:HSSCch:CCode	834
:DLINK:HSDPa[1] 2 3 4:HSSCch:DATA	834
:DLINK:HSDPa[1] 2 3 4:HSSCch:DATA:FIX4	835
:DLINK:HSDPa[1] 2 3 4:HSSCch:POWer	835
:DLINK:HSDPa[1] 2 3 4:ITTI	836
:DLINK:HSDPa[1] 2 3 4:ITTI:PATtern	836
:DLINK:HSDPa:NHPRocess	837
:DLINK:HSDPa[1] 2 3 4:RVParameter	837
:DLINK:HSDPa[1] 2 3 4:UEID	838

Contents

:DLINK:HSDPa[1] 2 3 4[:STATe]	838
:DLINK:OCNS[1] 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16:CCODE	839
:DLINK:OCNS[1] 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16:DATA	839
:DLINK:OCNS[1] 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16:POWer	840
:DLINK:OCNS[1] 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16:SSCOffset	840
:DLINK:OCNS[1] 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16:TOFFset	841
:DLINK:OCNS[1] 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16[:STATe]	841
:DLINK:PCCPch:BCH:DATA	841
:DLINK:PCCPch:BCH:DATA:FIX4	842
:DLINK:PCCPch:CCODE	842
:DLINK:PCCPch:POWer	843
:DLINK:PCCPch[:STATe]	843
:DLINK:PICH:CCODE	843
:DLINK:PICH:DATA	844
:DLINK:PICH:DATA:FIX4	844
:DLINK:PICH:POWer	845
:DLINK:PICH[:STATe]	845
:DLINK:POLarity	845
:DLINK:PSCH:POWer	846
:DLINK:PSCH[:STATe]	846
:DLINK:SCRamblecode	846
:DLINK:SSCH:POWer	847
:DLINK:SSCH[:STATe]	847
:DLINK:TXDiversity	847
:LINK	848
:ULINK:APPLy	848
:ULINK:AWGN:CN	848
:ULINK:AWGN[:STATe]	849
:ULINK:BBReference:EXternal:MRATe	849
:ULINK:BBReference[:SOURce]	849
:ULINK:DPCCh:CCODE	850
:ULINK:DPCCh:DATA	850
:ULINK:DPCCh:DATA:FIX4	851
:ULINK:DPCCh:FBI:PATtern	851
:ULINK:DPCCh:FBI:PATtern:FIX	852
:ULINK:DPCCh:POWer	852
:ULINK:DPCCh:SFORmat	853
:ULINK:DPCCh[:STATe]	853

:ULINK:DPCCCh:TFCl	853
:ULINK:DPCCCh:TPC:NSTeps	854
:ULINK:DPCCCh:TPC:PATtern	854
:ULINK:DPDCh:CCODE	855
:ULINK:DPDCh:DATA	855
:ULINK:DPDCh:DATA:FIX4	855
:ULINK:DPDCh:DCH[1] 2 3 4 5 6:BSIZE	856
:ULINK:DPDCh:DCH[1] 2 3 4 5 6:CRC	856
:ULINK:DPDCh:DCH[1] 2 3 4 5 6:CTYPE	856
:ULINK:DPDCh:DCH[1] 2 3 4 5 6:DATA	857
:ULINK:DPDCh:DCH[1] 2 3 4 5 6:DATA:FIX4	857
:ULINK:DPDCh:DCH[1] 2 3 4 5 6:NBLocks	858
:ULINK:DPDCh:DCH[1] 2 3 4 5 6:RMATtribute	858
:ULINK:DPDCh:DCH[1] 2 3 4 5 6:TTI	859
:ULINK:DPDCh:DCH2 3 4 5 6[:STATE]	859
:ULINK:DPDCh:POWER	860
:ULINK:DPDCh:SFORmat	860
:ULINK:DPDCh[:STATE]	860
:ULINK:FCLock:INTerval	861
:ULINK:FCLock:POLarity	861
:ULINK:FILTer	862
:ULINK:FILTer:ALPHa	862
:ULINK:FILTer:BBT	863
:ULINK:FILTer:CHANnel	863
:ULINK:FOFFset	864
:ULINK:HSDPcch:APATtern	864
:ULINK:HSDPcch:APOWER	865
:ULINK:HSDPcch:CCODE	865
:ULINK:HSDPcch:CPATtern	865
:ULINK:HSDPcch:CPOWER	866
:ULINK:HSDPcch:NPOWER	866
:ULINK:HSDPcch:SFDelay	866
:ULINK:HSDPcch[:STATE]	867
:ULINK:POLarity	867
:ULINK:SCRamblecode	867
:ULINK:SDElay	868
:ULINK:SFNRst:POLarity	868
:ULINK:SYNC:MODE	869

Contents

:ULINK:SYNC[:SOURce]	869
:ULINK:TOFFset	869
[:STATe]	870
NADC Subsystem–Option 402 ([:SOURce]:RADio[:NADC])	871
:ALPha	871
:BBCLock	871
:BBT	872
:BRATe	872
:BURSt:PN9	873
:BURSt:SHAPE[:TYPE]	874
:BURSt:SHAPE:FALL:DELay	874
:BURSt:SHAPE:FALL:TIME	875
:BURSt:SHAPE:FDELay	875
:BURSt:SHAPE:FTIME	876
:BURSt:SHAPE:RDELay	877
:BURSt:SHAPE:RISE:DELay	877
:BURSt:SHAPE:RISE:TIME	878
:BURSt:SHAPE:RTIME	879
:BURSt[:STATe]	879
:BURSt:SHAPE[:TYPE]	880
:CHANnel	880
:DATA	881
:DATA:PRAM	881
:DATA:FIX4	882
:DEFault	882
:EDATa:DELay	882
:EDCLock	883
:EREFerence	883
:EREFerence:VALue	884
:FILTer	884
:FRATe	885
:IQ:SCALE	885
:MODulation:FSK[:DEViation]	886
:MODulation:MSK[:PHASe]	886
:MODulation:UFSK	886
:MODulation:UIQ	887
:MODulation[:TYPE]	887
:REPeat	888

:POLarity[:ALL]	888
:SECondary:RECall	888
:SECondary:SAVE	889
:SECondary:TRIGger[:SOURce]	889
:SECondary[:STAtE]	889
:SLOT[1] 2 3 4 5 6:DCUStom	890
:SLOT[1] 2 3 4 5 6:DCUStom:FIX4	890
:SLOT[1] 2 3 4 5 6:DTCHannel:CDLocator	891
:SLOT[1] 2 3 4 5 6:DTCHannel:CDVCcode	891
:SLOT[1] 2 3 4 5 6:DTCHannel:SACChannel	891
:SLOT[1] 2 3 4 5 6:DTCHannel:SWORd	892
:SLOT[1] 2 3 4 5 6:DTCHannel[:DATA]	892
:SLOT[1] 2 3 4 5 6:DTCHannel[:DATA]FIX4	893
:SLOT[1] 2 3 4 5 6:POWer	893
:SLOT[1] 2 3 4 5 6:STAtE	893
:SLOT[1] 2 3 4 5 6:UCUStom	894
:SLOT[1] 2 3 4 5 6:UCUStom:FIX4	894
:SLOT[1] 2 3 4 5 6:UTCHannel:CDVCcode	894
:SLOT[1] 2 3 4 5 6:UTCHannel:SACChannel	895
:SLOT[1] 2 3 4 5 6:UTCHannel:SWORd	895
:SLOT[1] 2 3 4 5 6:UTCHannel[:DATA]	895
:SLOT[1] 2 3 4 5 6:UTCHannel[:DATA]:FIX4	896
:SLOT[1] 2 3 4 5 6[:TYPE]	896
:SOUT	897
:SOUT:OFFSet	897
:SOUT:SLOT	898
:SRATe	898
:TRIGger:TYPE	899
:TRIGger:TYPE:CONTInuous[:TYPE]	900
:TRIGger:TYPE:GATE:ACTive	901
:TRIGger[:SOURce]	901
:TRIGger[:SOURce]:EXTernal:DELay	902
:TRIGger[:SOURce]:EXTernal:DELay:STAtE	903
:TRIGger[:SOURce]:EXTernal:SLOPe	903
:TRIGger[:SOURce]:EXTernal[:SOURce]	903
[:STAtE]	904
PDC Subsystem–Option 402 ([:SOURce]:RADio:PDC)	905
:ALPha	905

Contents

:BBCLock	905
:BBT	906
:BRATe	906
:BURSt:PN9	907
:BURSt:SHAPE:FALL:DELay	908
:BURSt:SHAPE:FALL:TIME	908
:BURSt:SHAPE:FDELay	909
:BURSt:SHAPE:FTIME	910
:BURSt:SHAPE:RDELay	910
:BURSt:SHAPE:RISE:DELay	911
:BURSt:SHAPE:RISE:TIME	912
:BURSt:SHAPE:RTIME	912
:BURSt:SHAPE[:TYPE]	913
:BURSt[:STATE]	913
:CHANnel	914
:DATA	914
:DATA:PRAM	915
:DATA:FIX4	915
:DEFault	915
:EDATa:DELay	916
:EDCLock	916
:EREFerence	916
:EREFerence:VALue	917
:FILTer	917
:FRATe	918
:IQ:SCALE	918
:MODulation:FSK[:DEViation]	919
:MODulation:MSK[:PHASe]	919
:MODulation:UFSK	920
:MODulation:UIQ	920
:MODulation[:TYPE]	920
:POLarity[:ALL]	921
:SECondary:RECall	921
:SECondary:SAVE	921
:SECondary:TRIGger[:SOURce]	922
:SECondary[:STATE]	922
:SLOT0[1]2 3 4 5:DCUSTom	923
:SLOT0[1]2 3 4 5:DCUSTom:FIX4	923

:SLOT0[1]2 3 4 5:DTCHannel:CCODE	923
:SLOT0[1]2 3 4 5:DTCHannel:SACChannel	924
:SLOT0[1]2 3 4 5:DTCHannel:SWORd	924
:SLOT0[1]2 3 4 5:DTCHannel[:TCHannel]	924
:SLOT0[1]2 3 4 5:DTCHannel[:TCHannel]:FIX4	925
:SLOT0[1]2 3 4:POWer	925
:SLOT0[1]2 3 4 5:STATe	926
:SLOT0[1]2 3 4 5:UCUStom	926
:SLOT0[1]2 3 4 5:UCUStom:FIX4	926
:SLOT0[1]2 3 4 5:UTCHannel:CCODE	927
:SLOT0[1]2 3 4 5:UTCHannel:SACChannel	927
:SLOT0[1]2 3 4 5:UTCHannel:SWORd	927
:SLOT0[1]2 3 4 5:UTCHannel[:TCHannel]	928
:SLOT0[1]2 3 4 5:UTCHannel[:TCHannel]:FIX4	928
:SLOT0[1]2 3 4 5:UVOX:CCODE	929
:SLOT0[1]2 3 4 5:UVOX:SACChannel	929
:SLOT0[1]2 3 4 5:UVOX:SWORd	929
:SLOT0[1]2 3 4 5[:TYPE]	930
:SOUT	930
:SOUT:OFFSet	930
:SOUT:SLOT	931
:SRATe	931
:TRIGger:TYPE	933
:TRIGger:TYPE:CONTInuous[:TYPE]	933
:TRIGger:TYPE:GATE:ACTive	934
:TRIGger[:SOURce]	934
:TRIGger[:SOURce]:EXTernal:DELay	935
:TRIGger[:SOURce]:EXTernal:DELay:STATe	936
:TRIGger[:SOURce]:EXTernal:SLOPe	936
:TRIGger[:SOURce]:EXTernal[:SOURce]	937
[:STATe]	937
PHS Subsystem–Option 402 ([:SOURce]:RADio:PHS)	938
:ALPha	938
:BBCLock	938
:BBT	939
:BRATe	939
:BURSt:PN9	940
:BURSt:SCRamble:SEED	941

Contents

:BURSt:SCRamble[:STATe].	941
:BURSt:SHAPE:FALL:DELAy	942
:BURSt:SHAPE:FALL:TIME	942
:BURSt:SHAPE:FDELAy	943
:BURSt:SHAPE:FTIME	944
:BURSt:SHAPE:RDELAy	944
:BURSt:SHAPE:RISE:DELAy	945
:BURSt:SHAPE:RISE:TIME	946
:BURSt:SHAPE:RTIME	946
:BURSt:SHAPE[:TYPE].	947
:BURSt[:STATe].	947
:CHANnel	948
:DATA	948
:DATA:PRAM.	949
:DATA:FIX4	949
:DEFault	949
:DLINK:SLOT[1] 2 3 4:CUSTom	950
:DLINK:SLOT[1] 2 3 4:CUSTom:FIX4	950
:DLINK:SLOT[1] 2 3 4:POWEr	950
:DLINK:SLOT[1] 2 3 4:SCHannel:CSID	951
:DLINK:SLOT[1] 2 3 4:SCHannel:IDLE	951
:DLINK:SLOT[1] 2 3 4:SCHannel:PSID	951
:DLINK:SLOT[1] 2 3 4:SCHannel:UWORD.	952
:DLINK:SLOT[1] 2 3 4:STATe	952
:DLINK:SLOT[1] 2 3 4:TCHannel:SACChannel	952
:DLINK:SLOT[1] 2 3 4:TCHannel:UWORD.	953
:DLINK:SLOT[1] 2 3 4:TCHannel[:TCHannel].	953
:DLINK:SLOT[1] 2 3 4:TCHannel[:TCHannel]:FIX4	953
:DLINK:SLOT[1] 2 3 4[:TYPE]	954
:EDATa:DELAy	954
:EDCLock	954
:EREference	955
:EREference:VALue.	955
:FILTer	956
:IQ:SCALE	957
:MODulation:FSK[:DEViation]	957
:MODulation:MSK[:PHASe]	958
:MODulation:UFSK	958

:MODulation:UIQ	958
:MODulation[:TYPE]	959
:POLarity[:ALL]	959
:SECondary:RECall	959
:SECondary:SAVE	960
:SECondary:TRIGger[:SOURce]	960
:SECondary[:STATE]	960
:SOUT	961
:SOUT:OFFSet	961
:SOUT:SLOT	962
:SRATe	962
:TRIGger:TYPE	963
:TRIGger:TYPE:CONTinuous[:TYPE]	964
:TRIGger:TYPE:GATE:ACTive	965
:TRIGger[:SOURce]:EXTernal:DELay	965
:TRIGger[:SOURce]:EXTernal:DELay:STATe	966
:TRIGger[:SOURce]:EXTernal:SLOPe	966
:TRIGger[:SOURce]:EXTernal[:SOURce]	966
:TRIGger[:SOURce]	967
:ULINK:SLOT[1]2 3 4:CUSTom	968
:ULINK:SLOT[1]2 3 4:CUSTom:FIX4	969
:ULINK:SLOT[1]2 3 4:POWer	969
:ULINK:SLOT[1]2 3 4:SCHannel:CSID	969
:ULINK:SLOT[1]2 3 4:SCHannel:IDLE	970
:ULINK:SLOT[1]2 3 4:SCHannel:PSID	970
:ULINK:SLOT[1]2 3 4:SCHannel:UWORD	970
:ULINK:SLOT[1]2 3 4:STATe	971
:ULINK:SLOT[1]2 3 4:TCHannel:SACChannel	971
:ULINK:SLOT[1]2 3 4:TCHannel:UWORD	971
:ULINK:SLOT[1]2 3 4:TCHannel[:TCHannel]	972
:ULINK:SLOT[1]2 3 4:TCHannel[:TCHannel:FIX4]	972
:ULINK:SLOT[1]2 3 4[:TYPE]	972
[:STATE]	973
TETRA Subsystem–Option 402 ([:SOURce]:RADio:TETRa)	974
:ALPha	974
:BBCLock	974
:BBT	975
:BRATe	975

Contents

:BURSt:PN9	976
:BURSt:SCRamble:SEED	977
:BURSt:SCRamble[:STATe]	977
:BURSt:SHAPE:FALL:DELAy	977
:BURSt:SHAPE:FALL:TIME	978
:BURSt:SHAPE:FDELAy	979
:BURSt:SHAPE:FTIME	979
:BURSt:SHAPE:RDELAy	980
:BURSt:SHAPE:RISE:DELAy	981
:BURSt:SHAPE:RISE:TIME	981
:BURSt:SHAPE:RTIME	982
:BURSt:SHAPE[:TYPE]	983
:BURSt[:STATe]	983
:CHANnel	984
:DATA	984
:DATA:PRAM.	985
:DATA:FIX4	985
:DEFault	986
:EDATa:DELAy	986
:EDCLock	986
:EREFerence	987
:EREFerence:VALue.	987
:FILTer	988
:IQ:SCALE	989
:MODulation:FSK[:DEViation]	989
:MODulation:MSK[:PHASE]	990
:MODulation:UFSK	990
:MODulation:UIQ	990
:MODulation[:TYPE]	991
:POLarity[:ALL]	991
:SECOndary:RECall	992
:SECOndary:SAVE	992
:SECOndary:TRIGger[:SOURce]	992
:SECOndary[:STATe]	993
:SLOT[1] 2 3 4:DCCustom	993
:SLOT[1] 2 3 4:DCCustom:FIX4	993
:DCNormal:B1	994
:DCNormal:B2	994

:SLOT[1] 2 3 4:DCNormal:TSEquence	994
:SLOT[1] 2 3 4:DCNormal[:DATA]	995
:SLOT[1] 2 3 4:DCNormal[:DATA]:FIX4	995
:SLOT[1] 2 3 4:DCSync:B	996
:SLOT[1] 2 3 4:DCSync:FCOR	996
:SLOT[1] 2 3 4:DCSync:SSB	996
:SLOT[1] 2 3 4:DCSync:STS	997
:SLOT[1] 2 3 4:DCSync[:DATA]	997
:SLOT[1] 2 3 4:DCSync[:DATA]:FIX4	997
:SLOT[1] 2 3 4:DDCustom	998
:SLOT[1] 2 3 4:DDCustom:FIX4	998
:SLOT[1] 2 3 4:DDNormal:B1	999
:SLOT[1] 2 3 4:DDNormal:B2	999
:SLOT[1] 2 3 4:DDNormal:TSEquence	999
:SLOT[1] 2 3 4:DDNormal[:DATA]	1000
:SLOT[1] 2 3 4:DDNormal[:DATA]:FIX4	1000
:SLOT[1] 2 3 4:DDSync:B	1001
:SLOT[1] 2 3 4:DDSync:FCOR	1001
:SLOT[1] 2 3 4:DDSync:SSB	1001
:SLOT[1] 2 3 4:DDSync:STS	1002
:SLOT[1] 2 3 4:DDSync[:DATA]	1002
:SLOT[1] 2 3 4:DDSync[:DATA]:FIX4	1002
:SLOT[1] 2 3 4:POWer	1003
:SLOT[1] 2 3 4:STATe	1003
:SLOT[1] 2 3 4:UC1:TSEquence	1003
:SLOT[1] 2 3 4:UC1[:DATA]	1004
:SLOT[1] 2 3 4:UC1[:DATA]:FIX4	1004
:SLOT[1] 2 3 4:UC2:TSEquence	1004
:SLOT[1] 2 3 4:UC2[:DATA]	1005
:SLOT[1] 2 3 4:UC2[:DATA]:FIX4	1005
:SLOT[1] 2 3 4:UCUStom	1005
:SLOT[1] 2 3 4:UCUStom:FIX4	1006
:SLOT[1] 2 3 4:UNORmal:TSEquence	1006
:SLOT[1] 2 3 4:UNORmal[:DATA]	1006
:SLOT[1] 2 3 4:UNORmal[:DATA]:FIX4	1007
:SLOT[1] 2 3 4[:TYPE]	1007
:SOUT	1008
:SOUT:OFFSet	1008

Contents

:SOUT:SLOT	1009
:SRAtE	1009
:TRIGger:TYPE	1011
:TRIGger:TYPE:CONTInuous[:TYPE]	1011
:TRIGger:TYPE:GATE:ACTive	1012
:TRIGger[:SOURce]	1013
:TRIGger[:SOURce]:EXTernal:DELay	1014
:TRIGger[:SOURce]:EXTernal:DELay:STATe	1014
:TRIGger[:SOURce]:EXTernal:SLOPe	1015
:TRIGger[:SOURce]:EXTernal[:SOURce]	1015
[:STATe]	1016
Wideband CDMA Base Band Generator Subsystem–Option 400 ([:SOURce]:RADio:WCDMa:TGPP[:BBG])	1017
:BBCLock	1017
:BBCLock:EXT:RATE	1017
:DLINK:APPLy	1018
:DLINK:AWGN:CN	1018
:DLINK:AWGN:CPOWer	1018
:DLINK:AWGN:ECNO	1019
:DLINK:AWGN:ECRPower	1019
:DLINK:AWGN:ECRef	1019
:DLINK:AWGN:FNBW	1020
:DLINK:AWGN:NPOWer	1020
:DLINK:AWGN:TICPower	1020
:DLINK:AWGN[:STATe]	1021
:DLINK:BBCLock	1021
:DLINK:CARB:CMODE:CCODE	1021
:DLINK:CARB:CMODE:DATA	1022
:DLINK:CARB:CMODE:FOFFset	1022
:DLINK:CARB:CMODE:FSTRuct	1022
:DLINK:CARB:CMODE:POWer	1023
:DLINK:CARB:CMODE:PRATio	1023
:DLINK:CARB:CMODE:SCTYpe	1023
:DLINK:CARB:CMODE:SFORmat	1024
:DLINK:CARB:CMODE:SSCodeos	1024
:DLINK:CARB:CMODE:TFIRst	1025
:DLINK:CARB:CMODE:TGL	1025
:DLINK:CARB:CMODE[:STATe]	1025
:DLINK:CPICh:CCODE	1026

:DLINK:CPICH:POWer	1026
:DLINK:CPICH[:STATe]	1026
:DLINK:CRATe	1027
:DLINK:DPCH[1]:BALance	1027
:DLINK:DPCH[1]:BINitalize	1027
:DLINK:DPCH[1]2:ALL[:STATe]	1028
:DLINK:DPCH[1]2:CCODE	1028
:DLINK:DPCH[1]2:DATA	1028
:DLINK:DPCH[1]2:DATA:FIX4	1029
:DLINK:DPCH[1]2:POWer	1029
:DLINK:DPCH[1]2:RCSetup	1030
:DLINK:DPCH[1]2:SLOTformat	1031
:DLINK:DPCH[1]2:SRATe	1031
:DLINK:DPCH[1]2:SSCodeos	1031
:DLINK:DPCH[1]2:TFCI:PATtern	1032
:DLINK:DPCH[1]2:TOFFset	1032
:DLINK:DPCH[1]2:TPC:NUMSteps	1033
:DLINK:DPCH[1]2:TPC:PATtern	1033
:DLINK:DPCH[1]2[:STATe]	1034
:DLINK:FILTer	1034
:DLINK:FILTer:ALPHa	1035
:DLINK:FILTer:BBT	1035
:DLINK:FILTer:CHANnel	1036
:DLINK:MSYNc	1036
:DLINK:OCNS[1]2 3 4 5 6 7 8 9 10 11 12 13 14 15 16:ALL[:STATe]	1036
:DLINK:OCNS[1]2 3 4 5 6 7 8 9 10 11 12 13 14 15 16:CCODE	1037
:DLINK:OCNS[1]2 3 4 5 6 7 8 9 10 11 12 13 14 15 16:DATA	1037
:DLINK:OCNS[1]2 3 4 5 6 7 8 9 10 11 12 13 14 15 16:POWer	1037
:DLINK:OCNS[1]2 3 4 5 6 7 8 9 10 11 12 13 14 15 16:SRATe	1038
:DLINK:OCNS[1]2 3 4 5 6 7 8 9 10 11 12 13 14 15 16:SSCodeos	1038
:DLINK:OCNS[1]2 3 4 5 6 7 8 9 10 11 12 13 14 15 16:TOFFset	1039
:DLINK:OCNS[1]2 3 4 5 6 7 8 9 10 11 12 13 14 15 16[:STATe]	1039
:DLINK:OOSTest[:STATe]	1039
:DLINK:OOSTest:DTXGate:POLarity	1040
:DLINK:PADJust	1040
:DLINK:PCCPch:BCHData	1040
:DLINK:PCCPch:BCHData:FIX4	1041
:DLINK:PCCPch:CCODE	1041

Contents

:DLINK:PCCPch:POWer	1041
:DLINK:PCCPch[:STATe]	1042
:DLINK:PICH:CCode	1042
:DLINK:PICH:DATA	1042
:DLINK:PICH:DATA:FIX4	1043
:DLINK:PICH:PIBits	1043
:DLINK:PICH:PINdicator	1043
:DLINK:PICH:POWer	1044
:DLINK:PICH[:STATe]	1044
:DLINK:POLarity	1044
:DLINK:PSCH:POWer	1045
:DLINK:PSCH[:STATe]	1045
:DLINK:RPANel:INPut:ALTPower	1045
:DLINK:RPANel:INPut:BBGRef	1046
:DLINK:RPANel:INPut:BGATe	1046
:DLINK:RPANel:INPut:PTRigger1	1046
:DLINK:RPANel:INPut:PTRigger2	1047
:DLINK:RPANel:OUTPut:DCLock	1047
:DLINK:RPANel:OUTPut:DOUT	1049
:DLINK:RPANel:OUTPut:EVENT1	1050
:DLINK:RPANel:OUTPut:EVENT2	1050
:DLINK:RPANel:OUTPut:EVENT3	1051
:DLINK:RPANel:OUTPut:EVENT4	1051
:DLINK:RPANel:OUTPut:SSYNc	1052
:DLINK:SCH[:STATe]	1052
:DLINK:SCRamblecode	1052
:DLINK:SDElay	1053
:DLINK:SSCH:POWer	1053
:DLINK:SSCH:SSGRoup	1053
:DLINK:SSCH[:STATe]	1054
:DLINK:TGAP:FSTRuct	1054
:DLINK:TGAP:POFFset	1054
:DLINK:TGAP:PSI[1]:CFN	1055
:DLINK:TGAP:PSI[1]:CMMethod	1055
:DLINK:TGAP:PSI[1]:D	1056
:DLINK:TGAP:PSI[1]:L1	1056
:DLINK:TGAP:PSI[1]:L2	1056
:DLINK:TGAP:PSI[1]:PL1	1057

:DLINK:TGAP:PSI[1]:PL2	1057
:DLINK:TGAP:PSI[1]:PRC	1057
:DLINK:TGAP:PSI[1]:PS	1058
:DLINK:TGAP:PSI[1]:SN	1058
:DLINK:TGAP:RPARameter	1058
:DLINK:TGAP:SCFN	1059
:DLINK:TGAP:STARt:TRIGger	1059
:DLINK:TGAP:STARt:TRIGger:POLarity	1059
:DLINK:TGAP:STOP:TRIGger	1060
:DLINK:TGAP:STOP:TRIGger:POLarity	1060
:DLINK:TGAP[::STATe]	1060
:DLINK:TSETup	1061
:DLINK:TXDV	1062
:DLINK[:TGRoup [A]B]:DCH[1]2 3 4 5 6:BLKSize	1063
:DLINK[:TGRoup [A]B]:DCH[1]2 3 4 5 6:BPFRame	1064
:DLINK[:TGRoup [A]B]:DCH[1]2 3 4 5 6:BRATe	1064
:DLINK[:TGRoup [A]B]:DCH[1]2 3 4 5 6:BSSize	1064
:DLINK[:TGRoup [A]B]:DCH[1]2 3 4 5 6:CODE	1065
:DLINK[:TGRoup [A]B]:DCH[1]2 3 4 5 6:CRC	1066
:DLINK[:TGRoup [A]B]:DCH[1]2 3 4 5 6:DATA	1066
:DLINK[:TGRoup [A]B]:DCH[1]2 3 4 5 6:DATA:EINSert	1067
:DLINK[:TGRoup [A]B]:DCH[1]2 3 4 5 6:DATA:FIX4	1067
:DLINK[:TGRoup [A]B]:DCH[1]2 3 4 5 6:NBLocks	1068
:DLINK[:TGRoup [A]B]:DCH[1]2 3 4 5 6:POSITION	1069
:DLINK[:TGRoup [A]B]:DCH[1]2 3 4 5 6:PPERcentage	1069
:DLINK[:TGRoup [A]B]:DCH[1]2 3 4 5 6:RMATch	1070
:DLINK[:TGRoup [A]B]:DCH[1]2 3 4 5 6:TTI	1070
:DLINK[:TGRoup [A]B]:DCH[1]2 3 4 5 6[::STATe]	1071
:LINK	1071
:POLarity[::ALL]	1071
:ULINK:APPLY	1072
:ULINK:AWGN:CN	1072
:ULINK:AWGN:CPOWer	1073
:ULINK:AWGN:DRATe	1073
:ULINK:AWGN:EBNO	1073
:ULINK:AWGN:EBRef	1074
:ULINK:AWGN:FNBW	1074
:ULINK:AWGN:NPOWer	1075

Contents

:ULINK:AWGN:TICPower	1075
:ULINK:AWGN[:STATe]	1075
:ULINK:CRATe	1076
:ULINK:DPCCh:BETA	1076
:ULINK:DPCCh:CCODE	1077
:ULINK:DPCCh:DATA	1077
:ULINK:DPCCh:DATA:FIX4	1078
:ULINK:DPCCh:FBI:PATtern	1078
:ULINK:DPCCh:FBI:PATtern:FIX	1079
:ULINK:DPCCh:FBI[:STATe]	1079
:ULINK:DPCCh:POWER	1080
:ULINK:DPCCh:RATE	1080
:ULINK:DPCCh:SLOTformat	1080
:ULINK:DPCCh:TFCI:PATtern	1081
:ULINK:DPCCh:TFCI:PATtern:FIX	1081
:ULINK:DPCCh:TFCI[:STATe]	1082
:ULINK:DPCCh:TPC:NSTeps	1082
:ULINK:DPCCh:TPC:PATtern	1083
:ULINK:DPCCh:TPC:PATtern:FIX4	1084
:ULINK:DPCCh:TPC:PATtern:TRIGger:POLarity	1084
:ULINK:DPCCh:TPC:PATtern:TRIGger[:STATe]	1085
:ULINK:DPCCh:TPOWER	1085
:ULINK:DPCCh[:STATe]	1086
:ULINK:DPDCh:BETA	1086
:ULINK:DPDCh:CCODE	1087
:ULINK:DPDCh:DATA	1088
:ULINK:DPDCh:DATA:FIX4	1088
:ULINK:DPDCh:POWER	1089
:ULINK:DPDCh:RATE	1089
:ULINK:DPDCh:RBER	1090
:ULINK:DPDCh:SLOTformat	1091
:ULINK:DPDCh:TBER[:CLENgth]	1092
:ULINK:DPDCh:TBER:ELENgth	1092
:ULINK:DPDCh:TPOWER	1093
:ULINK:DPDCh[:STATe]	1093
:ULINK:FCLock:INTerval	1093
:ULINK:FCLock:POLarity	1094
:ULINK:FILTer	1094

:ULINK:FILTer:ALPHa	1095
:ULINK:FILTer:BBT	1096
:ULINK:FILTer:CHANnel	1096
:ULINK:FOFFset	1097
:ULINK:PADJust	1097
:ULINK:PHYSical[1]:TYPE	1097
:ULINK:PMODE:TPControl:HOLD	1098
:ULINK:PMODE:TPControl:POWer:INITial	1098
:ULINK:PMODE:TPControl:POWer:MAXimum	1099
:ULINK:PMODE:TPControl:POWer:MINimum	1099
:ULINK:PMODE:TPControl:POWer:RESet	1100
:ULINK:PMODE:TPControl:POWer:STEP	1100
:ULINK:PMODE:TPControl:TRIGger:POLarity	1101
:ULINK:PMODE[:SElect]	1101
:ULINK:PRACH:AICH:NUMBer	1101
:ULINK:PRACH:AICH:POLarity	1102
:ULINK:PRACH:AWGN:CN	1102
:ULINK:PRACH:AWGN:CPOWer	1103
:ULINK:PRACH:AWGN:DRATe	1103
:ULINK:PRACH:AWGN:EBNO	1103
:ULINK:PRACH:AWGN:ECNO	1104
:ULINK:PRACH:AWGN:EREF	1104
:ULINK:PRACH:AWGN:NPOWer	1105
:ULINK:PRACH:AWGN:TICPower	1105
:ULINK:PRACH:AWGN[:STATe]	1105
:ULINK:PRACH:MESSAge:CPART:BETA	1106
:ULINK:PRACH:MESSAge:CPART:DATA	1106
:ULINK:PRACH:MESSAge:CPART:DATA:FIX4	1107
:ULINK:PRACH:MESSAge:CPART:POWer	1107
:ULINK:PRACH:MESSAge:CPART:RATE	1108
:ULINK:PRACH:MESSAge:CPART:SLOTformat	1108
:ULINK:PRACH:MESSAge:CPART:TFCI:PATtern	1109
:ULINK:PRACH:MESSAge:CPART:TFCI:PATtern:FIX	1109
:ULINK:PRACH:MESSAge:CPART:TFCI[:STATe]	1110
:ULINK:PRACH:MESSAge:DPART:BETA	1110
:ULINK:PRACH:MESSAge:DPART:DATA	1111
:ULINK:PRACH:MESSAge:DPART:DATA:FIX4	1111
:ULINK:PRACH:MESSAge:DPART:POWer	1112

Contents

:ULINK:PRACH:MESSAge:DPARt:RATE	1112
:ULINK:PRACH:MESSAge:DPARt:SLOTformat	1113
:ULINK:PRACH:MODE[:SElect]	1114
:ULINK:PRACH:MULTi:MESSAge:TPOWer	1115
:ULINK:PRACH:MULTi:MESSAge[:STATe]	1115
:ULINK:PRACH:MULTi:NUMBer	1115
:ULINK:PRACH:MULTi:PREamble:NUMBer	1116
:ULINK:PRACH:MULTi:PREamble:POWer:INITial	1116
:ULINK:PRACH:MULTi:PREamble:POWer:MAX	1117
:ULINK:PRACH:MULTi:PREamble:POWer:RSUp	1117
:ULINK:PRACH:MULTi:PREamble:PPM	1117
:ULINK:PRACH:MULTi:UE[1] 2 3 4 5 6 7 8:MESSAge:CPARt:CCODE	1118
:ULINK:PRACH:MULTi:UE[1] 2 3 4 5 6 7 8:MESSAge:DPARt:CCODE	1118
:ULINK:PRACH:MULTi:UE[1] 2 3 4 5 6 7 8:PREamble:SIGNature	1118
:ULINK:PRACH:MULTi:UE[1] 2 3 4 5 6 7 8:SPOsition[1] 2 3 4 5 6 7 8[:ASLot]	1119
:ULINK:PRACH:MULTi:UE[1] 2 3 4 5 6 7 8[:STATe]	1120
:ULINK:PRACH:PREamble:POWer:AVERAge	1120
:ULINK:PRACH:PREamble:POWer:MODE	1121
:ULINK:PRACH:RPARameter	1121
:ULINK:PRACH:SCRamblecode	1122
:ULINK:PRACH:SDElay	1122
:ULINK:PRACH:SUBChannel	1123
:ULINK:PRACH:TOFFset	1123
:ULINK:PRACH:TPA	1124
:ULINK:PRACH:TPM	1124
:ULINK:PRACH:TPOWer	1125
:ULINK:PRACH:TPP	1125
:ULINK:PRACH:TRIGger	1126
:ULINK:PRACH:TRIGger:POLarity	1126
:ULINK:PRACH:TRIGger:SOURce	1126
:ULINK:PRACH:TTI	1127
:ULINK:PRACH[:SINGle]:MESSAge[:STATe]	1127
:ULINK:PRACH[:SINGle]:NUMBer	1128
:ULINK:PRACH[:SINGle]:MESSAge:CPARt:CCODE	1128
:ULINK:PRACH[:SINGle]:MESSAge:DPARt:CCODE	1129
:ULINK:PRACH[:SINGle]:MESSAge:TPOWer	1130
:ULINK:PRACH[:SINGle]:NUMBer	1130
:ULINK:PRACH[:SINGle]:PREamble:NUMBer	1131

:ULINK:PRACH[:SINGLE]:PREamble:POWER:INITIAL	1131
:ULINK:PRACH[:SINGLE]:PREamble:POWER:MAX	1132
:ULINK:PRACH[:SINGLE]:PREamble:POWER:RSTep	1132
:ULINK:PRACH[:SINGLE]:PREamble:PPM	1133
:ULINK:PRACH[:SINGLE]:PREamble:SIGNature	1133
:ULINK:RMCHannel	1134
:ULINK:RPANel:DPCH:INPut:ALTPower	1134
:ULINK:RPANel:DPCH:INPut:BBGRef	1135
:ULINK:RPANel:DPCH:INPut:BGATe	1135
:ULINK:RPANel:DPCH:INPut:PTRigger1	1135
:ULINK:RPANel:DPCH:INPut:PTRigger2	1136
:ULINK:RPANel:DPCH:OUTPut:DCLock	1136
:ULINK:RPANel:DPCH:OUTPut:DOUT	1137
:ULINK:RPANel:DPCH:OUTPut:EVENT1	1138
:ULINK:RPANel:DPCH:OUTPut:EVENT2	1138
:ULINK:RPANel:DPCH:OUTPut:EVENT3	1139
:ULINK:RPANel:DPCH:OUTPut:EVENT4	1139
:ULINK:RPANel:DPCH:OUTPut:SSYNc	1140
:ULINK:RPANel:PRACH:INPut:ALTPower	1140
:ULINK:RPANel:PRACH:INPut:BBGRef	1141
:ULINK:RPANel:PRACH:INPut:BGATe	1141
:ULINK:RPANel:PRACH:INPut:PTRigger1	1141
:ULINK:RPANel:PRACH:INPut:PTRigger2	1142
:ULINK:RPANel:PRACH:OUTPut:DCLock	1142
:ULINK:RPANel:PRACH:OUTPut:DOUT	1144
:ULINK:RPANel:PRACH:OUTPut:EVENT1	1144
:ULINK:RPANel:PRACH:OUTPut:EVENT2	1145
:ULINK:RPANel:PRACH:OUTPut:EVENT3	1146
:ULINK:RPANel:PRACH:OUTPut:EVENT4	1146
:ULINK:RPANel:PRACH:OUTPut:SSYNc	1147
:ULINK:SCRamblecode	1148
:ULINK:SDElay	1148
:ULINK:SFNRst:POLarity	1148
:ULINK:SYNC:MODE	1149
:ULINK:SYNC[:SOURce]	1149
:ULINK:TGAP:POFFset	1150
:ULINK:TGAP:PSI[1] 2 3 4 5 6:CFN	1150
:ULINK:TGAP:PSI[1]:CMMethod	1151

Contents

:ULINK:TGAP:PSI[1] 2 3 4 5 6:D	1151
:ULINK:TGAP:PSI[1] 2 3 4 5 6:L1	1152
:ULINK:TGAP:PSI[1] 2 3 4 5 6:L2	1152
:ULINK:TGAP:PSI[1] 2 3 4 5 6:PL1	1152
:ULINK:TGAP:PSI[1] 2 3 4 5 6:PL2	1153
:ULINK:TGAP:PSI[1] 2 3 4 5 6:POWer	1153
:ULINK:TGAP:PSI[1] 2 3 4 5 6:PRC	1153
:ULINK:TGAP:PSI[1] 2 3 4 5 6:PS	1154
:ULINK:TGAP:PSI[1] 2 3 4 5 6:SN	1154
:ULINK:TGAP:RPARameter	1154
:ULINK:TGAP:SCFN	1155
:ULINK:TGAP[:STATe]	1155
:ULINK:TGAP:STARt:TRIGger	1156
:ULINK:TGAP:STARt:TRIGger:POLarity	1156
:ULINK:TGAP:STOP:TRIGger	1156
:ULINK:TGAP:STOP:TRIGger:POLarity	1156
:ULINK:TOFFset	1157
:ULINK:TSTatus:COMPRESSED	1157
:ULINK:TSTatus:RACH	1157
:ULINK:TSTatus:RECeive	1158
:ULINK:TSTatus:SYNC	1158
:ULINK:[TGRoup[1]]:DCH[1] 2 3 3 5 6:BLKSize	1158
:ULINK[:TGRoup[1]]:DCH[1] 2 3 4 5 6:BPFRame	1159
:ULINK[:TGRoup[1]]:DCH[1] 2 3 4 5 6:BRATe	1159
:ULINK:[TGRoup[1]]:DCH[1] 2 3 3 5 6:CODE	1159
:ULINK:[TGRoup[1]]:DCH[1] 2 3 3 5 6:CRC	1160
:ULINK:[TGRoup[1]]:DCH[1] 2 3 3 5 6:DATA	1160
:ULINK[:TGRoup[1]]:DCH[1] 2 3 4 5 6:DATA:BER:ACTual	1161
:ULINK[:TGRoup[1]]:DCH[1] 2 3 4 5 6:DATA:BER:ERRor:BIT	1161
:ULINK[:TGRoup[1]]:DCH[1] 2 3 4 5 6:DATA:BER:TOTal:BIT	1161
:ULINK[:TGRoup[1]]:DCH[1] 2 3 4 5 6:DATA:BER[:VALue]	1162
:ULINK[:TGRoup[1]]:DCH[1] 2 3 4 5 6:DATA:BLER:ACTual	1162
:ULINK[:TGRoup[1] 2:DCH[1] 2 3 4 5 6:DATA:BLER:ERRor:BLOCK	1162
:ULINK[:TGRoup[1] 2:DCH[1] 2 3 4 5 6:DATA:BLER:TOTal:BLOCK	1163
:ULINK[:TGRoup[1]]:DCH[1] 2 3 4 5 6:DATA:BLER[:VALue]	1163
:ULINK[:TGRoup[1]]:DCH[1] 2 3 4 5 6:DATA:EINsert	1164
:ULINK[:TGRoup[1]]:DCH[1] 2 3 4 5 6:DATA:FIX4	1164
:ULINK[:TGRoup[1]]:DCH[1] 2 3 4 5 6:NBLock	1165

:ULINK[:TGRoup [1]]:DCH[1] 2 3 4 5 6:PPERcentage	1165
:ULINK[:TGRoup[1]]:DCH[1] 2 3 4 5 6:RMATch	1165
:ULINK[:TGRoup[1]]:DCH[1] 2 3 4 5 6:TTI	1166
:ULINK[:TGRoup[1]]:DCH[1] 2 3 4 5 6[:STATe]	1166
:ULINK[:TGRoup[1]]:RACH[1]:BLKSize	1166
:ULINK[:TGRoup [1]]:RACH[1]:BPF rame	1167
:ULINK[:TGRoup [1]]:RACH[1]:BRATe	1167
:ULINK[:TGRoup[1]]:RACH[1]:CODE	1167
:ULINK[:TGRoup[1]]:RACH[1]:CRC	1167
:ULINK[:TGRoup[1]]:RACH[1]:DATA	1168
:ULINK[:TGRoup[1]]:RACH[1]:DATA:BER:ACTual	1168
:ULINK[:TGRoup[1]]:RACH[1]:DATA:BER:ERRor:BIT	1168
:ULINK[:TGRoup[1]]:RACH[1]:DATA:BER:TOTal:BIT	1169
:ULINK[:TGRoup[1]]:RACH[1]:DATA:BER[:VALue]	1169
:ULINK[:TGRoup[1]]:RACH[1]:DATA:BLER:ACTual	1169
:ULINK[:TGRoup[1]]:RACH[1]:DATA:BLER:ERRor:BLOCK	1170
:ULINK[:TGRoup[1]]:RACH[1]:DATA:BLER:TOTal:BLOCK	1170
:ULINK[:TGRoup[1]]:RACH[1]:DATA:BLER[:VALue]	1170
:ULINK[:TGRoup[1]]:RACH[1]:DATA:EINsert	1171
:ULINK[:TGRoup[1]]:RACH[1]:DATA:FIX4	1171
:ULINK[:TGRoup[1]]:RACH[1]:NBLOCK	1172
:ULINK[:TGRoup [1]]:RACH[1]:PPERcentage	1172
:ULINK[:TGRoup[1]]:RACH[1]:RMATch	1172
:ULINK[:TGRoup[1]]:RACH[1]:TTI	1173
:ULINK[:TGRoup[1]]:RACH[1][:STATe]	1173
[:STATe]	1173

Contents

Documentation Overview

Installation Guide

- Safety Information
- Getting Started
- Operation Verification
- Regulatory Information

User's Guide

- E4428C Analog Signal Generator Overview
- E4423C Analog Signal Generator Overview
- Basic Operation
- Basic Digital Operation
- AWGN Waveform Generator
- Analog Modulation
- Digital Signal Interface Module
- Bluetooth Signals
- BERT
- CDMA Digital Modulation
- GPS Modulation
- Multitone Waveform Generator
- Custom Digital Modulation
- Real Time TDMA Formats
- W-CDMA Digital Modulation for Component Test
- W-CDMA Uplink Digital Modulation for Receiver Test
- W-CDMA Downlink Digital Modulation for Receiver Test
- Troubleshooting

Programming Guide

- Getting Started with Remote Operation
- Using IO Interfaces
- Programming Examples
- Programming the Status Register System
- Creating and Downloading Waveform Files
- Creating and Downloading User-Data Files

SCPI Reference

Volume 1:

- SCPI Basics
- Basic Function Commands
- System Commands
- Analog Commands
- Component Test Digital Commands

Volume 2:

- Digital Signal Interface Module Commands
- Bit Error Rate Test (BERT) Commands
- Receiver Test Digital Commands

Volume 3:

- Receiver Test Digital Commands (continued)

Compatibility with E44xxB SCPI Commands

- Overview
- E4428C/38C SCPI Commands
- ESG E44xxB Commands
- 8648A/B/C/D Commands
- 8658B, 8657A/B/D/J Programming Codes

Service Guide

- Troubleshooting
- Replaceable Parts
- Assembly Replacement
- Post-Repair Procedures
- Safety and Regulatory

Key and Data Field Reference

Volume 1:

- Symbols, Numerics, A-H

Volume 2:

- Volume 2: I-Z

9 Receiver Test Digital Commands (continued)

This chapter provides a continuation of SCPI descriptions for commands dedicated to digital real-time testing using the E4438C ESG Vector Signal Generator. This chapter contains the following sections:

- “3GPP W-CDMA HSPA Subsystem–Option 419 ([:SOURce]:RADio:WCDMa:HSPA[:BBG])” on page 668
- “GPS Subsystem–Option 409 ([:SOURce]:RADio[1]|2|3|4:GPS)” on page 763
- “GSM Subsystem–Option 402 ([:SOURce]:RADio:GSM)” on page 770
- “HSDPA over W-CDMA Subsystem–Option 418 ([:SOURce]:RADio:WCDMa:HSDPa[:BBG])” on page 809
- “NADC Subsystem–Option 402 ([:SOURce]:RADio[:NADC])” on page 871
- “PDC Subsystem–Option 402 ([:SOURce]:RADio:PDC)” on page 905
- “PHS Subsystem–Option 402 ([:SOURce]:RADio:PHS)” on page 938
- “TETRA Subsystem–Option 402 ([:SOURce]:RADio:TETRa)” on page 974
- “Wideband CDMA Base Band Generator Subsystem–Option 400 ([:SOURce]:RADio:WCDMa:TGPP[:BBG])” on page 1017

3GPP W-CDMA HSPA Subsystem–Option 419 ([:SOURCE]:RADIO:WCDMA:HSPA[:BBG])

The commands in this subsystem support the remote functionality of the Signal Studio for 3GPP W-CDMA HSPA software. For a complete description of terms and HSPA functionality, refer to the software online help. Commands used for configuring the carrier signal and performing general signal generator functions are located in different SCPI command subsystems found within the SCPI Command Reference volumes.

There are two methods to determine the SCPI commands for a setup. One method is to locate each individual command listed in this subsystem and others within the *SCPI Command Reference* volumes. The other method is to use the HSPA software UI. After downloading a UI setup to the ESG, the software lets you export a SCPI file that contains the commands used in the UI setup. Refer to the HSPA software online help for information on this feature.

File Overview

The ESG's memory catalog (signal generator memory) uses several file types, each assigned with a unique syntax to recall the file. This section provides information on using files with SCPI commands.

This subsystem uses the following two command variables to represent two different file types stored in signal generator memory:

"<file name>" Bit file
"<user FIR>" FIR file

For more information on managing and using files, refer to the resources in the following list:

- [“File Name Variables” on page 13](#) for information on the file name syntax
- [Table 1-4 on page 14](#) for a listing of the different file types
- ESG Signal Generator *Programming Guide* for information on downloading bit files
- ESG Signal Generator *User's Guide* for information on creating and editing bit and FIR files using the signal generator

The HSPA software interface downloads user files (bit and FIR file types) to the ESG when **USER** is the software data or filter type selection. You can see these files on the ESG by pressing **Utility > Memory Catalog > Catalog Type** and then selecting the file type, or by using the SCPI commands located in the Memory subsystem. User files are located on the ESG in the following directory path: /USER/<file type directory>/<file name>. Table 9-1 shows the software naming convention for the different files created by the HSPA software.

Table 9-1 HSPA Software Downloaded File Names

Link Direction	Data Source	File Name	ESG File Type
Downlink and Uplink	Filter	<project name>-FIR	FIR
Downlink	BCH	<project name>-BCH	Bit
	PICH	<project name>-PICH	
	DCH	<project name>-DCH	
	DPCH	<project name>-DPCH	
	DCH _x ^a	<project name>-DCH _x ^a	
	Inter-TTI	<project name>-ITTI _x ^b	
	HARQ ACK/NACK Pattern	<project name>-DLCPT	
	AMC CQI Pattern	<project name>-DLAPT	
	HS-DSCH	<project name>-DSCH1	
	HS-PDSCH	<project name>-HSPD _x ^b	
	HS-SCCH	<project name>-HSSCC _x ^b	
	E-AGCH Absolute Grant Scope	<project name>-EAGCH_AGS	
	E-AGCH Absolute Grant Value	<project name>-EAGCH_AGV	
	E-RGCH	<project name>-ERGCH	
E-HICH	<project name>-EHICH		

Table 9-1 HSPA Software Downloaded File Names

Link Direction	Data Source	File Name	ESG File Type
Uplink	DPCCH	<project name>-DPCCH	Bit
	FBI	<project name>-FBI	
	TPC	<project name>-TPC	
	DPDCH	<project name>-DPDCH	
	DCHx ^a	<project name>-DCHx ^a	
	ACK Pattern	<project name>-APAT	
	CQI Pattern	<project name>-CPAT	
	EDPCCH Pattern	<project name>-EDPCCH	
	EDPDCH Pattern	<project name>-EDPDCH	
	EDCH Pattern	<project name>-EDCH	
	EDPDCH (alternate) Pattern	<project name>-EDCHA	
	HARQ ACK Pattern	<project name>-UAPT	
	TFC E-TFCI User Pattern	<project name>-UETT	
	Happy Bit Pattern	<project name>-HBIT	
EXT Pattern	<project name>-EPAT		

a. x is the DCH number (1–6).

b. x is the channel number (1–4) for the HSDPA, the HS-PDSCH and the HS-SCCH.

Managing ESG Setting Conflicts and Error Messages

The ESG reports setting conflicts as error messages. When a setting conflict occurs, an error number and a brief message appear at the bottom of the ESG display. You can view the full text of the error message in either of two ways: by using the front panel of the ESG, or by executing SCPI commands.

Front Panel Press **Utility > Error Info**.

SCPI Execute the SCPI error commands described in the “[System Subsystem \(:SYSTEM\)](#)” on page 154.

For more information on Error messages, refer to the signal generator *Programming Guide* for remote viewing or the signal generator *User's Guide* for front panel viewing.

:DLINK:APPLY

Supported E4438C with Option 419

```
[ :SOURCE ] :RADIO:WCDMA:HSPA[ :BBG ] :DLINK:APPLY
[ :SOURCE ] :RADIO:WCDMA:HSPA[ :BBG ] :DLINK:APPLY?
```

This command applies changes to the channel setup and data for active downlink physical and transport channels, immediately starting the channel coding generation process. A progress bar may appear on the ESG display indicating that the new signal parameters are being applied. Signal parameters are also applied when the modulation format is turned on.

Use the query to determine whether or not execution of this command is required. It returns the following responses:

0	Command execution is not required.
1	Command execution is required.

NOTE The apply query response is valid only when downlink HSPA format is active.

The apply function will not work if there is a conflict with range values and coupled parameters. For example, if all the physical channel codes are not orthogonal to each other, the new settings are not applied to the signal when this command is executed. Resolve any conflicts before reapplying the changes. The ESG reports an error when conflicts occur.

:DLINK:AWGN:CN

Supported E4438C with Option 419

```
[ :SOURCE ] :RADIO:WCDMA:HSPA[ :BBG ] :DLINK:AWGN:CN <val>
[ :SOURCE ] :RADIO:WCDMA:HSPA[ :BBG ] :DLINK:AWGN:CN?
```

This command sets the downlink in-band carrier to noise ratio (C/N) value using AWGN.

***RST** 0

Range –30 to 30

Remarks Setting the command parameter while the signal is active also requires executing the apply command. Refer to “**:DLINK:APPLY**” on page 671.

3GPP W-CDMA HSPA Subsystem–Option 419 ([:SOURCE]:RADIO:WCDMA:HSPA[:BBG])**:DLINK:AWGN[:STATE]****Supported** E4438C with Option 419

[:SOURCE]:RADIO:WCDMA:HSPA[:BBG]:DLINK:AWGN[:STATE] ON|OFF|0|1

[:SOURCE]:RADIO:WCDMA:HSPA[:BBG]:DLINK:AWGN[:STATE]?

This command turns the downlink AWGN on or off.

RST** 0**Remarks** Setting the command parameter while the signal is active also requires executing the apply command. Refer to “:DLINK:APPLY” on page 671.**:DLINK:BBCLock[:SOURCE]*Supported** E4438C with Option 419

[:SOURCE]:RADIO:WCDMA:HSPA[:BBG]:DLINK:BBCLock[:SOURCE]

{INTERNAL}|EXTERNAL

[:SOURCE]:RADIO:WCDMA:HSPA[:BBG]:DLINK:BBCLock[:SOURCE]?

This command selects the downlink baseband generator chip clock source, which is either internal to the signal generator or applied externally.

RST** INT**Remarks** When using an external chip clock source, connect the signal to the DATA CLOCK connector on the front panel of the ESG.**:DLINK:CPICH:CCODE*Supported** E4438C with Option 419

[:SOURCE]:RADIO:WCDMA:HSPA[:BBG]:DLINK:CPICH:CCODE?

This query returns the CPICH channelization code, which is always set to zero.

:DLINK:CPICH:POWER

Supported E4438C with Option 419

```
[ :SOURCE ] :RADIO:WCDMA:HSPA[ :BBG ] :DLINK:CPICH:POWER <val>
```

```
[ :SOURCE ] :RADIO:WCDMA:HSPA[ :BBG ] :DLINK:CPICH:POWER?
```

This command sets the CPICH power level. The variable <val> is expressed in decibels (dB).

***RST** 3.30000000E+000

Range –40 to 0

Remarks Setting the command parameter while the signal is active also requires executing the apply command. Refer to “:DLINK:APPLY” on page 671.

:DLINK:CPICH[:STATE]

Supported E4438C with Option 419

```
[ :SOURCE ] :RADIO:WCDMA:HSPA[ :BBG ] :DLINK:CPICH[ :STATE ] ON | OFF | 1 | 0
```

```
[ :SOURCE ] :RADIO:WCDMA:HSPA[ :BBG ] :DLINK:CPICH[ :STATE ]?
```

This command turns the CPICH on or off.

***RST** 1

Remarks Setting the command parameter while the signal is active also requires executing the apply command. Refer to “:DLINK:APPLY” on page 671.

:DLINK:DPCH:CCODE

Supported E4438C with Option 419

```
[ :SOURCE ] :RADIO:WCDMA:HSPA[ :BBG ] :DLINK:DPCH:CCODE <val>
```

```
[ :SOURCE ] :RADIO:WCDMA:HSPA[ :BBG ] :DLINK:DPCH:CCODE?
```

This command sets the downlink DPCH channel code number.

3GPP W-CDMA HSPA Subsystem–Option 419 ([:SOURCE]:RADIO:WCDMA:HSPA[:BBG])

*RST	10
Range	0–511
Remarks	<p>Setting the command parameter while the signal is active also requires executing the apply command. Refer to “DLINK:APPLY” on page 671.</p> <p>The channel code is coupled with the slot format and all other physical channel codes. If the channel code exceeds the limits of the slot format or if it is not orthogonal with all other physical channel codes, the apply function (downlink apply command) will not work. If any channel codes fail to meet this criteria, the apply function (downlink apply command) will not work.</p>

:DLINK:DPCH:DATA

Supported	E4438C with Option 419
	<pre>[:SOURCE] :RADIO:WCDMA:HSPA[:BBG] :DLINK:DPCH:DATA PN9 PN15 FIX4 DCH "<file name>" [:SOURCE] :RADIO:WCDMA:HSPA[:BBG] :DLINK:DPCH:DATA?</pre>
	This command configures the downlink DPCH data pattern.
DCH	This selects the transport channel as the data source. The DCH selection is not available for a DPCH slot format of 16.
"<file name>"	This represents a data pattern file stored in signal generator memory. The data pattern must contain at least one bit or the apply function (downlink apply command) will not work. Refer to “ File Overview ” on page 668 for more information on files.
*RST	PN9
Remarks	Setting the command parameter while the signal is active also requires executing the apply command. Refer to “ DLINK:APPLY ” on page 671.

:DLINK:DPCH:DATA:FIX4

Supported	E4438C with Option 419
	<pre>[:SOURCE] :RADIO:WCDMA:HSPA[:BBG] :DLINK:DPCH:DATA:FIX4 <val> [:SOURCE] :RADIO:WCDMA:HSPA[:BBG] :DLINK:DPCH:DATA:FIX4?</pre>
	This command sets the downlink DPCH repeating 4-bit binary data pattern.
	The variable <val> accepts values in binary, hexadecimal, or decimal format; however, the query returns only binary values.

*RST	0
Range	0–15
Remarks	Setting the command parameter while the signal is active also requires executing the apply command. Refer to “:DLINK:APPLY” on page 671.

:DLINK:DPCH:DCH[1] | 2 | 3 | 4 | 5 | 6:BSIZE

Supported E4438C with Option 419

```
[ :SOURCE ] : RADIO : WCDMA : HSPA [ : BBG ] : DLINK : DPCH : DCH [ 1 ] | 2 | 3 | 4 | 5 | 6
:BSIZE <val>
[ :SOURCE ] : RADIO : WCDMA : HSPA [ : BBG ] : DLINK : DPCH : DCH [ 1 ] | 2 | 3 | 4 | 5 | 6 :BSIZE?
```

This command sets the block size for the selected downlink DCH.

*RST	20
Range	0–5000
Remarks	<p>Setting the command parameter while the signal is active also requires executing the apply command. Refer to “:DLINK:APPLY” on page 671.</p> <p>The number of data bits per DCH cannot exceed 200,000. To maintain this data bit limit, the ESG calculates the product of the block size and the number of blocks. If the product of these two parameters exceeds 200,000, the apply function (downlink apply command) will not work.</p>

:DLINK:DPCH:DCH[1] | 2 | 3 | 4 | 5 | 6:CRC

Supported E4438C with Option 419

```
[ :SOURCE ] : RADIO : WCDMA : HSPA [ : BBG ] : DLINK : DPCH : DCH [ 1 ] | 2 | 3 | 4 | 5 | 6 :CRC 0 | 8 |
12 | 16 | 24
[ :SOURCE ] : RADIO : WCDMA : HSPA [ : BBG ] : DLINK : DPCH : DCH [ 1 ] | 2 | 3 | 4 | 5 | 6 :CRC?
```

This command sets the number of CRC bits for the selected downlink DCH.

*RST	8
Remarks	Setting the command parameter while the signal is active also requires executing the apply command. Refer to “:DLINK:APPLY” on page 671.

:DLINK:DPCH:DCH[1] | 2 | 3 | 4 | 5 | 6:CTYPE**Supported** E4438C with Option 419

```
[ :SOURCE ] :RADIO:WCDMA:HSPA[ :BBG ] :DLINK:DPCH:DCH[ 1 ] | 2 | 3 | 4 | 5 | 6 :CTYPE
HCONv | TCONv | TURBo | NONE
[ :SOURCE ] :RADIO:WCDMA:HSPA[ :BBG ] :DLINK:DPCH:DCH[ 1 ] | 2 | 3 | 4 | 5 | 6 :CTYPE?
```

This command sets the coder type for the selected downlink DCH.

HCONv This choice selects the 1/2 rate convolutional encoder.

TCONv This choice selects the 1/3 rate convolutional encoder.

TURBo This choice selects the turbo coder.

NONE This choice selects no coding.

***RST** HCON

Remarks Setting the command parameter while the signal is active also requires executing the apply command. Refer to “[:DLINK:APPLY](#)” on page 671.

:DLINK:DPCH:DCH[1] | 2 | 3 | 4 | 5 | 6:DATA**Supported** E4438C with Option 419

```
[ :SOURCE ] :RADIO:WCDMA:HSPA[ :BBG ] :DLINK:DPCH:DCH[ 1 ] | 2 | 3 | 4 | 5 | 6 :DATA PN9 |
PN15 | FIX4 | "<file name>"
[ :SOURCE ] :RADIO:WCDMA:HSPA[ :BBG ] :DLINK:DPCH:DCH[ 1 ] | 2 | 3 | 4 | 5 | 6 :DATA?
```

This command configures the data for the selected downlink DCH.

"<file name>" This variable represents a data pattern file stored in signal generator memory. The data pattern must contain at least one bit or the apply function (downlink apply command) will not work. Refer to “[File Overview](#)” on page 668 for more information on files.

***RST** PN9

Remarks Setting the command parameter while the signal is active also requires executing the apply command. Refer to “[:DLINK:APPLY](#)” on page 671.

:DLINK:DPCH:DCH[1] | 2 | 3 | 4 | 5 | 6:DATA:FIX4

Supported E4438C with Option 419

```
[ :SOURCE ] : RADIO : WCDMA : HSPA [ : BBG ] : DLINK : DPCH : DCH [ 1 ] | 2 | 3 | 4 | 5 | 6 : DATA :  
FIX4 <val>
```

```
[ :SOURCE ] : RADIO : WCDMA : HSPA [ : BBG ] : DLINK : DPCH : DCH [ 1 ] | 2 | 3 | 4 | 5 | 6 : DATA : FIX4 ?
```

This command sets the repeating 4-bit binary data pattern for the selected downlink DCH. The variable <val> accepts values in binary, hexadecimal, or decimal format; however, the query returns only binary values.

***RST** 0

Range 0–15

Remarks Setting the command parameter while the signal is active also requires executing the apply command. Refer to “:DLINK:APPLY” on page 671.

:DLINK:DPCH:DCH[1] | 2 | 3 | 4 | 5 | 6:NBLocks

Supported E4438C with Option 419

```
[ :SOURCE ] : RADIO : WCDMA : HSPA [ : BBG ] : DLINK : DPCH : DCH [ 1 ] | 2 | 3 | 4 | 5 | 6 :  
NBLocks <val>
```

```
[ :SOURCE ] : RADIO : WCDMA : HSPA [ : BBG ] : DLINK : DPCH : DCH [ 1 ] | 2 | 3 | 4 | 5 | 6 : NBLocks ?
```

This command sets the number of data blocks for the selected downlink DCH.

***RST** 1

Range 0–512

Remarks Setting the command parameter while the signal is active also requires executing the apply command. Refer to “:DLINK:APPLY” on page 671.

The number of data bits per DCH cannot exceed 200,000. To maintain this data bit limit, the ESG calculates the product of the block size and the number of blocks. If the product of these two parameters exceeds 200,000, the apply function (downlink apply command) will not work.

:DLINK:DPCH:DCH[1] | 2 | 3 | 4 | 5 | 6:RMATtribute**Supported** E4438C with Option 419

[:SOURCE]:RADIO:WCDMA:HSPA[:BBG]:DLINK:DPCH:DCH[1] | 2 | 3 | 4 | 5 | 6:RMATtribute <val>

[:SOURCE]:RADIO:WCDMA:HSPA[:BBG]:DLINK:DPCH:DCH[1] | 2 | 3 | 4 | 5 | 6:RMATtribute?

This command sets the rate matching attribute for the selected downlink DCH.

RST** 1**Range** 1–256**Remarks** Setting the command parameter while the signal is active also requires executing the apply command. Refer to “:DLINK:APPLY” on page 671.**:DLINK:DPCH:DCH[1] | 2 | 3 | 4 | 5 | 6:TTI*Supported** E4438C with Option 419

[:SOURCE]:RADIO:WCDMA:HSPA[:BBG]:DLINK:DPCH:DCH[1] | 2 | 3 | 4 | 5 | 6:TTI 10 | 20 | 40 | 80

[:SOURCE]:RADIO:WCDMA:HSPA[:BBG]:DLINK:DPCH:DCH[1] | 2 | 3 | 4 | 5 | 6:TTI?

This command sets the TTI for the selected downlink DCH.

The choices are expressed in millisecond (ms).

RST** 10**Remarks** Setting the command parameter while the signal is active also requires executing the apply command. Refer to “:DLINK:APPLY” on page 671.**:DLINK:DPCH:DCH[1] | 2 | 3 | 4 | 5 | 6[:STATE]*Supported** E4438C with Option 419

[:SOURCE]:RADIO:WCDMA:HSPA[:BBG]:DLINK:DPCH:DCH[1] | 2 | 3 | 4 | 5 | 6[:STATE] ON | OFF | 1 | 0

[:SOURCE]:RADIO:WCDMA:HSPA[:BBG]:DLINK:DPCH:DCH[1] | 2 | 3 | 4 | 5 | 6[:STATE]?

This command turns the selected downlink DCH on or off; DCH1 is always on.

***RST** DCH 1: 1 DCH 2–6: 0

Remarks Setting the command parameter while the signal is active also requires executing the apply command. Refer to “:DLINK:APPLY” on page 671.

The apply command will not work and the ESG will report an error if you turn on a DCH where lower numbered DCHs are off. For example, turning on DCH5 requires turning on DCH2–4. The reverse is true when turning off the DCHs.

:DLINK:DPCH:POWer

Supported E4438C with Option 419

```
[ :SOURCE ] : RADIO : WCDMA : HSPA [ : BBG ] : DLINK : DPCH : POWer <val>  
[ :SOURCE ] : RADIO : WCDMA : HSPA [ : BBG ] : DLINK : DPCH : POWer?
```

This command sets the downlink DPCH power level.

***RST** -1.02000000E+001

Range -40 to 0

Remarks Setting the command parameter while the signal is active also requires executing the apply command. Refer to “:DLINK:APPLY” on page 671.

:DLINK:DPCH:SFORmat

Supported E4438C with Option 419

```
[ :SOURCE ] : RADIO : WCDMA : HSPA [ : BBG ] : DLINK : DPCH : SFORmat <val>  
[ :SOURCE ] : RADIO : WCDMA : HSPA [ : BBG ] : DLINK : DPCH : SFORmat?
```

This command configures the downlink DPCH slot format.

***RST** 0

Range 0–16

Remarks Setting the command parameter while the signal is active also requires executing the apply command. Refer to “:DLINK:APPLY” on page 671.

The slot format is coupled with the channel code, so a change in one value may require a change in the other. If the channel code exceeds the limits of the slot format or if it is not orthogonal with all other physical channel codes, the apply function (downlink apply command) will not work.

:DLINK:DPCH:SSCoffset**Supported** E4438C with Option 419

[:SOURCE]:RADIO:WCDMA:HSPA[:BBG]:DLINK:DPCH:SSCoffset <val>

[:SOURCE]:RADIO:WCDMA:HSPA[:BBG]:DLINK:DPCH:SSCoffset?

This command sets the downlink DPCH secondary scrambling code offset.

RST** +0**Range** 0–15**Remarks** Setting the command parameter while the signal is active also requires executing the apply command. Refer to “:DLINK:APPLY” on page 671.**:DLINK:DPCH:TFCI*Supported** E4438C with Option 419

[:SOURCE]:RADIO:WCDMA:HSPA[:BBG]:DLINK:DPCH:TFCI <val>

[:SOURCE]:RADIO:WCDMA:HSPA[:BBG]:DLINK:DPCH:TFCI?

This command sets the TFCI 10-bit pattern for the downlink DPCH.

The variable <val> accepts values in binary, hexadecimal, or decimal format, however the query returns only binary values.

***RST** +0**Range** 0–1023**Remarks** Setting the command parameter while the signal is active also requires executing the apply command. Refer to “:DLINK:APPLY” on page 671.

Setting the TFCI bits is optional; they describe the type of service in use, for example voice or data.

:DLINK:DPCH:TOFFset

Supported E4438C with Option 419

```
[ :SOURCE ] :RADio:WCDMa:HSPA[ :BBG ] :DLINK:DPCH:TOFFset <val>  
[ :SOURCE ] :RADio:WCDMa:HSPA[ :BBG ] :DLINK:DPCH:TOFFset?
```

This command adjusts the downlink DPCH timing offset.

The variable <val> is expressed in chips.

***RST** +0

Range 0–149

Remarks Setting the command parameter while the signal is active also requires executing the apply command. Refer to “:DLINK:APPLY” on page 671.

:DLINK:DPCH:TPC:NSTeps

Supported E4438C with Option 419

```
[ :SOURCE ] :RADio:WCDMa:HSPA[ :BBG ] :DLINK:DPCH:TPC:NSTeps <val>  
[ :SOURCE ] :RADio:WCDMa:HSPA[ :BBG ] :DLINK:DPCH:TPC:NSTeps?
```

This command sets the number of steps for the down and up (DUP) or up and down (UDOWn) TPC pattern selections.

***RST** +1

Range 1–80

Remarks Setting the command parameter while the signal is active also requires executing the apply command. Refer to “:DLINK:APPLY” on page 671.

:DLINK:DPCH:TPC:PATtern

Supported E4438C with Option 419

```
[ :SOURCE ] :RADio:WCDMa:HSPA[ :BBG ] :DLINK:DPCH:TPC:PATtern UDOWn | DUP | UALL |  
DALL | "<file name>"  
[ :SOURCE ] :RADio:WCDMa:HSPA[ :BBG ] :DLINK:DPCH:TPC:PATtern?
```

This command configures the downlink DPCH TPC pattern for increasing or decreasing, or increasing and decreasing the UE power level.

3GPP W-CDMA HSPA Subsystem–Option 419 ([:SOURCE]:RADIO:WCDMA:HSPA[:BBG])

UDOWN	The TPC pattern repetitively steps up and down.
DUP	The TPC pattern repetitively steps down and up.
UALL	The TPC pattern consecutively steps up.
DALL	The TPC pattern consecutively steps down.
"<file name>"	This variable represents a TPC pattern file stored in signal generator memory. The pattern must contain at least one bit or the apply function (downlink apply command) will not work. Refer to “File Overview” on page 668 for more information on files.
*RST	UDOW
Remarks	Setting the command parameter while the signal is active also requires executing the apply command. Refer to “:DLINK:APPLY” on page 671 . Each step in a TPC pattern signals an increase or decrease of 1 dB in the UE output power level.

:DLINK:DPCH:TRPosition

Supported E4438C with Option 419

[:SOURCE] : RADIO : WCDMA : HSPA [:BBG] : DLINK : DPCH : TRPosition ?

This query returns the downlink DPCH transport channel position that is always set to FIX.

:DLINK:DPCH[:STATE]

Supported E4438C with Option 419

[:SOURCE] : RADIO : WCDMA : HSPA [:BBG] : DLINK : DPCH [:STATE] ON | OFF | 1 | 0

[:SOURCE] : RADIO : WCDMA : HSPA [:BBG] : DLINK : DPCH [:STATE] ?

This command turns the downlink DPCH on or off.

***RST** 1

Remarks Setting the command parameter while the signal is active also requires executing the apply command. Refer to [“:DLINK:APPLY” on page 671](#).

:DLINK:EAGCh:AGScope

Supported E4438C with Option 419

```
[ :SOURce ]:RADio:WCDMa:HSPA[ :BBG ]:DLINK:EAGCh:AGScope ALL_0 | ALL_1 |
"<file name>"
[ :SOURce ]:RADio:WCDMa:HSPA[ :BBG ]:DLINK:EAGCh:AGScope?
```

This command sets an absolute scope pattern.

ALL_0, ALL_1 These choices configure an absolute grant scope pattern.

"<file name>" This variable represents an absolute scope pattern value. Create this file either by using the absolute grant scope pattern Data Type Entry window and downloading the file to the ESG, or by using the ESG Real Time W-CDMA table editor to create a bit file with the following bit patterns:

- absolute grant scope of 1, 0 using a 1-bit pattern, 1, 0. In the file, do not use delimiters between subframes; enter subframe bits as a binary string.

When creating a pattern, you can determine the number of active subframes, up to 1,280, which are numbered from 0 to 1,279. A subframe is active when it contains 1 bit.

***RST** ALL_0

Remarks Setting the command parameter while the signal is active also requires executing the apply command. Refer to “:DLINK:APPLY” on page 671.

:DLINK:EAGCh:AGValue

Supported E4438C with Option 419

```
[ :SOURce ]:RADio:WCDMa:HSPA[ :BBG ]:DLINK:EAGCh:AGValue
ALL_0 | ALL_1 | ALL_2 | ALL_3 | ALL_4 | ALL_5 | ALL_6 | ALL_7 | ALL_8 | ALL_9 | ALL_10 | ALL_1
1 | ALL_12 | ALL_13 | ALL_14 | ALL_15 | ALL_16 | ALL_17 | ALL_18 | ALL_19 | ALL_20 | ALL_21 |
ALL_22 | ALL_23 | ALL_24 | ALL_25 | ALL_26 | ALL_27 | ALL_28 | ALL_29 | ALL_30 | ALL_31 |
"<file name>"
[ :SOURce ]:RADio:WCDMa:HSPA[ :BBG ]:DLINK:EAGCh:AGValue?
```

This command sets an absolute grant value pattern.

3GPP W-CDMA HSPA Subsystem–Option 419 ([:SOURCE]:RADIO:WCDMA:HSPA[:BBG])

ALL_1 to ALL_31 These choices configure an absolute grant value pattern.

"<file name>" This variable represents an absolute grant pattern value. Create this file either by using the absolute grant value pattern Data Type Entry window and downloading the file to the ESG or by using the ESG Real Time W-CDMA table editor to create a bit file with the following bit patterns:

- absolute grant value of 0– 31 using an 8-bit pattern, 00000000 to 00011111
In the file, do not use delimiters between subframes; enter subframe bits as a binary string.

When creating a pattern, you can determine the number of active subframes, up to 1,280, which are numbered from 0 to 1,279. A subframe is active when it contains 8 bits. If a subframe contains at least 1 bit, but less than 8 bits, the apply function (downlink apply command) will not work.

***RST** ALL_0

Remarks Setting the command parameter while the signal is active also requires executing the apply command. Refer to [“:DLINK:APPLY” on page 671](#).

:DLINK:EAGCh:CCODE

Supported E4438C with Option 419

```
[ :SOURCE ] : RADIO : WCDMA : HSPA [ : BBG ] : DLINK : EAGCh : CCODE <val>
```

```
[ :SOURCE ] : RADIO : WCDMA : HSPA [ : BBG ] : DLINK : EAGCh : CCODE?
```

This command sets the downlink E-AGCH channel code number.

***RST** 14

Range 0–127

Remarks Setting the command parameter while the signal is active also requires executing the apply command. Refer to [“:DLINK:APPLY” on page 671](#).

The channel code is coupled with the slot format and all other physical channel codes. Set the channel code so it does not exceed the limits of the slot format and ensure that all physical channel codes are orthogonal to each other. If any of the channel codes fail to meet this criteria, the apply function (downlink apply command) will not work.

:DLINK:EAGCh:ERNTI

Supported E4438C with Option 419

```
[ :SOURCE ] :RADIO:WCDMA:HSPA[ :BBG ] :DLINK:EAGCh:ERNTI <val>  
[ :SOURCE ] :RADIO:WCDMA:HSPA[ :BBG ] :DLINK:EAGCh:ERNTI?
```

This command sets E-RNTI (E-DCH Radio Network Temporary Identifier).

***RST** 0

Range 0–255

Remarks Setting the command parameter while the signal is active also requires executing the apply command. Refer to “:DLINK:APPLY” on page 671.

:DLINK:EAGCh:Power

Supported E4438C with Option 419

```
[ :SOURCE ] :RADIO:WCDMA:HSPA[ :BBG ] :DLINK:EAGCh:POWER <val>  
[ :SOURCE ] :RADIO:WCDMA:HSPA[ :BBG ] :DLINK:EAGCh:POWER?
```

This command sets the power level for the E-AGCH.

***RST** –20.00000000E+000

Range –40 to 0

Remarks Setting the command parameter while the signal is active also requires executing the apply command. Refer to “:DLINK:APPLY” on page 671.

:DLINK:EAGCh[:STATe]

Supported E4438C with Option 419

```
[ :SOURCE ] :RADIO:WCDMA:HSPA[ :BBG ] :DLINK:EAGCh[ :STATe ] ON | OFF | 1 | 0  
[ :SOURCE ] :RADIO:WCDMA:HSPA[ :BBG ] :DLINK:EAGCh[ :STATe ]?
```

This command turns the downlink E-AGCH on or off.

***RST** 1

Remarks Setting the command parameter while the signal is active also requires executing the apply command. Refer to “:DLINK:APPLY” on page 671.

:DLINK:EHICH:CCODE**Supported** E4438C with Option 419

[:SOURCE]:RADIO:WCDMA:HSPA[:BBG]:DLINK:EHICH:CCODE <val>

[:SOURCE]:RADIO:WCDMA:HSPA[:BBG]:DLINK:EHICH:CCODE?

This command sets the downlink E-HICH channel code number.

***RST** 5**Range** 0–127**Remarks** Setting the command parameter while the signal is active also requires executing the apply command. Refer to “:DLINK:APPLY” on page 671.

The channel code is coupled with the slot format and all other physical channel codes. Set the channel code so it does not exceed the limits of the slot format and ensure that all physical channel codes are orthogonal to each other. If any of the channel codes fail to meet this criteria, the apply function (downlink apply command) will not work.

:DLINK:EHICH:INDicator**Supported** E4438C with Option 419

[:SOURCE]:RADIO:WCDMA:HSPA[:BBG]:DLINK:EHICH:INDicator

ALL_1|ALL_0|ALL_M1|"<file name>"

[:SOURCE]:RADIO:WCDMA:HSPA[:BBG]:DLINK:EHICH:INDicator?

This command sets a HARQ acknowledgement indicator pattern.

ALL_<val> These choices configure an HARQ acknowledgement indicator pattern.

"<file name>" This variable represents an HARQ pattern file stored in signal generator memory. Create this file either by using the HARQ pattern Data Type Entry window and downloading the file to the ESG, or by using the ESG Real Time W-CDMA table editor to create a bit file with the following bit patterns:

HARQ pattern of 1, 0, –1 using at 2-bit pattern: 01, 00, 10.

In the file, do not use delimiters between subframes; enter the subframe bits as a binary string.

When creating a pattern, you can determine the number of active subframes, from 1 to 1,280. The subframes are numbered 0 to 1,279. A subframe is active when it contains 1 bit.

***RST** ALL_1
Remarks Setting the command parameter while the signal is active also requires executing the apply command. Refer to “:DLINK:APPLY” on page 671.

:DLINK:EHICH:POWER

Supported E4438C with Option 419

```
[ :SOURCE ] : RADIO : WCDMA : HSPA [ : BBG ] : DLINK : EHICH : POWER <val>  
[ :SOURCE ] : RADIO : WCDMA : HSPA [ : BBG ] : DLINK : EHICH : POWER ?
```

This command sets the power level for the E-HICH.

***RST** -20.00000000E+000

Range -40 to 0

Remarks Setting the command parameter while the signal is active also requires executing the apply command. Refer to “:DLINK:APPLY” on page 671.

:DLINK:EHICH:SSINDEX

Supported E4438C with Option 419

```
[ :SOURCE ] : RADIO : WCDMA : HSPA [ : BBG ] : DLINK : EHICH : SSINDEX <val>  
[ :SOURCE ] : RADIO : WCDMA : HSPA [ : BBG ] : DLINK : EHICH : SSINDEX ?
```

This command sets the downlink E-HICH signature sequence index number.

***RST** 0

Range 0–39

Remarks Setting the command parameter while the signal is active also requires executing the apply command. Refer to “:DLINK:APPLY” on page 671.

:DLINK:EHICH:TOFFSET

Supported E4438C with Option 419

```
[ :SOURCE ] : RADIO : WCDMA : HSPA [ : BBG ] : DLINK : EHICH : TOFFSET <val>  
[ :SOURCE ] : RADIO : WCDMA : HSPA [ : BBG ] : DLINK : EHICH : TOFFSET ?
```

This command adjusts the downlink E-HICH timing offset (tE-HICH).

3GPP W-CDMA HSPA Subsystem–Option 419 ([:SOURCE]:RADIO:WCDMA:HSPA[:BBG])

*RST	–17920
Range	–17920, –10240, 5120, 12800, 20480, 28160, 43520, 51200
Remarks	Setting the command parameter while the signal is active also requires executing the apply command. Refer to “:DLINK:APPLY” on page 671.

:DLINK:EHICH[:STATE]

Supported E4438C with Option 419

```
[ :SOURCE ] : RADIO : WCDMA : HSPA [ : BBG ] : DLINK : EHICH [ : STATE ] ON | OFF | 1 | 0
[ :SOURCE ] : RADIO : WCDMA : HSPA [ : BBG ] : DLINK : EHICH [ : STATE ] ?
```

This command turns the downlink E-HICH on or off.

*RST	1
Remarks	Setting the command parameter while the signal is active also requires executing the apply command. Refer to “:DLINK:APPLY” on page 671.

:DLINK:ERGCh:CCODE

Supported E4438C with Option 419

```
[ :SOURCE ] : RADIO : WCDMA : HSPA [ : BBG ] : DLINK : ERGCh : CCODE <val>
[ :SOURCE ] : RADIO : WCDMA : HSPA [ : BBG ] : DLINK : ERGCh : CCODE ?
```

This command sets the downlink E-RGCH channel code number.

*RST	6
Range	0–127
Remarks	Setting the command parameter while the signal is active also requires executing the apply command. Refer to “:DLINK:APPLY” on page 671.

:DLINK:ERGCh:POWER

Supported E4438C with Option 419

```
[ :SOURCE ] : RADIO : WCDMA : HSPA [ : BBG ] : DLINK : ERGCh : POWER <val>
[ :SOURCE ] : RADIO : WCDMA : HSPA [ : BBG ] : DLINK : ERGCh : POWER ?
```

This command sets the power level for the E-ERGCH.

*RST	–20.00000000E+000
Range	–40 to 0
Remarks	Setting the command parameter while the signal is active also requires executing the apply command. Refer to “:DLINK:APPLY” on page 671.

:DLINK:ERGCh:RGValue

Supported E4438C with Option 419

```
[ :SOURce ] :RADio:WCDMa:HSPA[ :BBG ] :DLINK:ERGCh:RGValue
ALL_1|ALL_0|ALL_M1 | "<file name>"
[ :SOURce ] :RADio:WCDMa:HSPA[ :BBG ] :DLINK:ERGCh:RGValue?
```

This command sets a relative grant pattern.

ALL_<val> These choices configure a relative grant value pattern

"<file name>" This variable represents a relative grant value pattern file stored in signal generator memory. Create this file either by using the relative grant value pattern Data Type Entry window and downloading the file to the ESG, or by using the ESG Real Time W-CDMA table editor to create a bit file with the following bit patterns:

- relative grant value pattern of 1, 0, –1 using at 2-bit pattern: 01, 00, 10. In the file, do not use delimiters between subframes; enter subframe bits as a binary string.

When creating a pattern, you can determine the number of active subframes, from 1 to 1,280. The subframes are numbered 0 to 1,279. A subframe is active when it contains 1 bit.

***RST** ALL_1

Remarks Setting the command parameter while the signal is active also requires executing the apply command. Refer to “:DLINK:APPLY” on page 671.

:DLINK:ERGCh:SSINdex

Supported E4438C with Option 419

```
[ :SOURce ] :RADio:WCDMa:HSPA[ :BBG ] :DLINK:ERGCh:SSINdex <val>
[ :SOURce ] :RADio:WCDMa:HSPA[ :BBG ] :DLINK:ERGCh:SSINdex?
```

This command sets the downlink E-RGCH signature sequence index number.

3GPP W-CDMA HSPA Subsystem–Option 419 ([:SOURCE]:RADIO:WCDMA:HSPA[:BBG])

*RST	0
Range	0–39
Remarks	Setting the command parameter while the signal is active also requires executing the apply command. Refer to “:DLINK:APPLY” on page 671.

:DLINK:ERGCh:TOFFset

Supported E4438C with Option 419

```
[ :SOURCE ] : RADIO : WCDMA : HSPA [ : BBG ] : DLINK : ERGCh : TOFFset <val>
[ :SOURCE ] : RADIO : WCDMA : HSPA [ : BBG ] : DLINK : ERGCh : TOFFset ?
```

This command adjusts the downlink E-RGCH timing offset (tE-RGCH).

The variable <val> is expressed in chips.

*RST	–17920
Range	–17920, –10240, 5120, 12800, 20480, 28160, 43520, 51200
Remarks	Setting the command parameter while the signal is active also requires executing the apply command. Refer to “:DLINK:APPLY” on page 671.

:DLINK:ERGCh[:STATe]

Supported E4438C with Option 419

```
[ :SOURCE ] : RADIO : WCDMA : HSPA [ : BBG ] : DLINK : ERGCh [ : STATE ] ON | OFF | 1 | 0
[ :SOURCE ] : RADIO : WCDMA : HSPA [ : BBG ] : DLINK : ERGCh [ : STATE ] ?
```

This command turns the downlink E-RGCH on or off.

*RST	0
Remarks	Setting the command parameter while the signal is active also requires executing the apply command. Refer to “:DLINK:APPLY” on page 671.

:DLINK:FILTer

Supported E4438C with Option 419

```
[ :SOURCE ] : RADIO : WCDMA : HSPA [ : BBG ] : DLINK : FILTer RNYQuist | NYQuist |
GAUSSian | RECTangle | IS95 | IS95_EQ | IS95_MOD | IS95_MOD_EQ | AC4Fm | UGaussian |
" <user FIR> "
[ :SOURCE ] : RADIO : WCDMA : HSPA [ : BBG ] : DLINK : FILTer ?
```

This command selects the downlink filter type.

IS95	This filter meets the criteria of the IS-95 standard.
IS95_EQ	This filter is a combination of the IS-95 filter (above) and the equalizer filter described in the IS-95 standard and is best suited for IS-95 baseband filtering.
IS95_MOD	This filter meets the criteria of the IS-95 error function (for improved adjacent channel performance) with lower passband rejection than the filter specified in the IS-95 standard.
IS95_MOD_EQ	This filter is a combination of the equalizer filter described in the IS-95 standard and a filter that meets the criteria of the IS-95 error function (for improved adjacent channel performance), with lower passband rejection.
UGGaussian	This is a GSM Gaussian filter with a fixed BbT value of 0.300.
AC4Fm	This is a predefined Association of Public Safety Communications Officials (APCO) specified compatible 4-level frequency modulation (C4FM) filter.
"<user FIR>"	This variable represents any FIR filter file stored in signal generator memory. Refer to “File Overview” on page 668 for more information on files.
*RST	RNYQ
Remarks	Setting the command parameter while the signal is active also requires executing the apply command. Refer to “:DLINK:APPLY” on page 671 .

:DLINK:FILTer:ALPHa

Supported E4438C with Option 419

```
[ :SOURCE ] :RADio:WCDMa:HSPA[ :BBG ] :DLINK:FILTer:ALPHa <val>
[ :SOURCE ] :RADio:WCDMa:HSPA[ :BBG ] :DLINK:FILTer:ALPHa?
```

This command sets the downlink Nyquist or root Nyquist filter alpha value.

***RST** +2.20000000E-001

Range 0–1

Remarks Setting the command parameter while the signal is active also requires executing the apply command. Refer to [“:DLINK:APPLY” on page 671](#).

Executing this command while a filter other than Nyquist or root Nyquist is selected changes the parameter value, but it is not used by the signal generator until one of the Nyquist filters is selected.

3GPP W-CDMA HSPA Subsystem–Option 419 ([:SOURCE]:RADIO:WCDMA:HSPA[:BBG])**:DLINK:FILTer:BBT****Supported** E4438C with Option 419

[:SOURCE]:RADIO:WCDMA:HSPA[:BBG]:DLINK:FILTer:BBT <val>

[:SOURCE]:RADIO:WCDMA:HSPA[:BBG]:DLINK:FILTer:BBT?

This command sets the downlink Gaussian filter BbT value.

***RST** +5.00000000E-001**Range** 0–1**Remarks** Setting the command parameter while the signal is active also requires executing the apply command. Refer to “:DLINK:APPLY” on page 671.

Executing this command while a filter other than the Gaussian filter is selected changes the parameter value, but it is not used by the signal generator until the Gaussian filter is selected.

:DLINK:FILTer:CHANnel**Supported** E4438C with Option 419

[:SOURCE]:RADIO:WCDMA:HSPA[:BBG]:DLINK:FILTer:CHANnel EVM|ACP

[:SOURCE]:RADIO:WCDMA:HSPA[:BBG]:DLINK:FILTer:CHANnel?

Execute this command to optimize a downlink filter for minimized EVM or for minimized ACP.

EVM This choice provides the most ideal passband.**ACP** This choice improves stopband rejection for the root Nyquist and Nyquist filters.***RST** EVM**Remarks** Setting the command parameter while the signal is active also requires executing the apply command. Refer to “:DLINK:APPLY” on page 671.

To change the filter selection, refer to “:DLINK:FILTer” on page 690.

:DLINK:HSBurst**Supported** E4438C with Option 419

[:SOURCE]:RADIO:WCDMA:HSPA[:BBG]:DLINK:HSBurst ON|OFF|1|0

[:SOURCE]:RADIO:WCDMA:HSPA[:BBG]:DLINK:HSBurst?

This command sets the handling of the off slot periods for the downlink HSDPA channels.

ON 1	This choice turns off the ESG ALC feature and uses DTX during the off slots.
OFF 0	This choice continuously transmits the HSDPA channels filling the off slots with dummy bits.
*RST	0
Remarks	Setting the command parameter while the signal is active also requires executing the apply command. Refer to “:DLINK:APPLY” on page 671.

:DLINK:HSDPa:AMC:CQIMapping:UECategory

Supported E4438C with Option 419

```
[ :SOURCE ] :RADio:WCDMa:HSPA[ :BBG ] :DLINK:HSDPa:AMC:CQIMapping:
UECategory <val>
[ :SOURCE ] :RADio:WCDMa:HSPA[ :BBG ] :DLINK:HSDPa:AMC:CQIMapping:UECategory?
```

This command sets the UE category that determines the CQI mapping table per the 3GPP standards.

***RST** 5

Range 1–12

Remarks To use this command's parameter in a setup, you must also set AMC as the feedback selection. Refer to the “:DLINK:HSDPa:FCONtrol” on page 694 for selecting the feedback type.

Setting the command parameter while the signal is active also requires executing the apply command. Refer to “:DLINK:APPLY” on page 671.

:DLINK:HSDPa:AMC:CPATtern

Supported E4438C with Option 419

```
[ :SOURCE ] :RADio:WCDMa:HSPA[ :BBG ] :DLINK:HSDPa:AMC:CPATtern ALL_1 | ALL_2 |
ALL_3 | ALL_4 | ALL_5 | ALL_6 | ALL_7 | ALL_8 | ALL_9 | ALL_10 | ALL_11 | ALL_12 | ALL_13 |
ALL_14 | ALL_15 | ALL_16 | ALL_17 | ALL_18 | ALL_19 | ALL_20 | ALL_21 | ALL_22 | ALL_23 |
ALL_24 | ALL_25 | ALL_26 | ALL_27 | ALL_28 | ALL_29 | ALL_30 | "<file_name>"
[ :SOURCE ] :RADio:WCDMa:HSPA[ :BBG ] :DLINK:HSDPa:AMC:CPATtern?
```

This command sets a simulated UE CQI pattern that determines HSDPA1's response including the modulation type (QPSK or 16QAM) and the constellation version for 16QAM per the set UE category.

ALL_1 to ALL_30 These choices configure a simulated UE ACK response with a single CQI value for 1,280 subframes.

"<file name>" This variable represents a CQI pattern file stored in signal generator memory.

3GPP W-CDMA HSPA Subsystem–Option 419 ([:SOURCE]:RADio:WCDMa:HSPA[:BBG])

Create this file either by using the AMC CQI pattern Data Type Entry window and downloading the file to the ESG, or by using the ESG Real Time W-CDMA table editor to create a bit file with the following bit patterns:

- CQI value of 1–30 using an 8-bit pattern, 00000001 to 00011110
- DTX is represented by 11111111

In the file, do not use delimiters between subframes; enter subframe bits as a binary string.

When creating a pattern, you can determine the number of active subframes from 1 to 1,280. The subframes are numbered 0 to 1,279. A subframe is active when it contains 8-bits. If a subframe contains at least 1-bit but less than 8-bits, the apply function (downlink apply command) will not work.

***RST** ALL_21

Remarks To use this command's parameter in a setup, you must also set AMC as the feedback selection. Refer to the “:DLINK:HSDPa:FCONtrol” on page 694 for selecting the feedback type.

Setting the command parameter while the signal is active also requires executing the apply command. Refer to “:DLINK:APPLY” on page 671.

:DLINK:HSDPa:FCONtrol

Supported E4438C with Option 419

```
[ :SOURCE ] :RADio:WCDMa:HSPA[ :BBG ] :DLINK:HSDPa:FCONtrol NONE | HARQ | AMC
[ :SOURCE ] :RADio:WCDMa:HSPA[ :BBG ] :DLINK:HSDPa:FCONtrol?
```

This command sets the HSDPA1 feedback control type.

NONE This choice turns off the feedback control.

HARQ This choice provides UE feedback using the HARQ process. This selection provides the capability of configuring a simulated UE ACK/NACK response, setting the maximum number of HARQ transmissions, and providing up to eight different RV parameters.

AMC This choice provides UE feedback using adaptive modulation coding. This selection provides the capability of configuring a simulated UE CQI response aligned with a UE category input.

***RST** NONE

Remarks Setting the command parameter while the signal is active also requires executing the apply command. Refer to “:DLINK:APPLY” on page 671.

:DLINK:HSDPa:HARQ:APATtern

Supported E4438C with Option 419

```
[ :SOURCE ] :RADio :WCDMa :HSPA [ :BBG ] :DLINK :HSDPa :HARQ :APATtern ACK_ALL |  
"<file name>"  
[ :SOURCE ] :RADio :WCDMa :HSPA [ :BBG ] :DLINK :HSDPa :HARQ :APATtern?
```

This command sets a simulated UE ACK/NACK pattern that determines HSDPA1's HARQ response.

ACK_ALL This choice configures 1,280 subframes for a simulated ACK only response.

"<file name>" This variable represents an ACK pattern file stored in signal generator memory. Create this file either by using the HARQ ACK/NACK pattern Data Type Entry window and download the file to the ESG, or by using the ESG Real Time W-CDMA table editor to create a bit file with the following bit patterns:

- An ACK response is represented by 00.
- A NACK response is represented by 01.
- DTX is represented by 10.

In the file, do not use delimiters between subframes; enter subframe bits as a binary string.

When creating a pattern, you can determine the number of active subframes from 1 to 1,280. The subframes are numbered 0 to 1,279. A subframe is active when it contains 2-bits. If a subframe contains only 1-bit, the apply function (downlink apply command) will not work.

***RST** ACK_ALL

Remarks To use this command's parameter in a setup, you must also set HARQ as the feedback selection. Refer to the “:DLINK:HSDPa:FCONtrol” on page 694 for selecting the feedback type.

Setting the command parameter while the signal is active also requires executing the apply command. Refer to “:DLINK:APPLY” on page 671.

:DLINK:HSDPa:HARQ:MNHTrans**Supported** E4438C with Option 419

```
[ :SOURCE ] :RADIO:WCDMA:HSPA[ :BBG ] :DLINK:HSDPa:HARQ:MNHTrans <val>
[ :SOURCE ] :RADIO:WCDMA:HSPA[ :BBG ] :DLINK:HSDPa:HARQ:MNHTrans?
```

This command configures the HSDPA1 maximum number of HARQ transmissions for the HARQ function.

Use the command for UE performance testing or for specifying an arbitrary number of HARQ transmissions. When the software encounters a UE NACK response that is set by the HARQ ACK pattern command (see “[:DLINK:HSDPa:HARQ:APATern](#)” on page 695), the software re-sends the same packet payload until either the maximum number of HARQ transmissions is reached or a simulated ACK response is encountered. Whenever the software re-sends the same packet payload, it also transmits another RV parameter that is configured by the RV sequence command.

***RST** 1**Range** 1–8

Remarks To use this command's parameter in a setup, you must also set HARQ as the feedback selection. Refer to the “[:DLINK:HSDPa:FCONtrol](#)” on page 694 for selecting the feedback type.

Setting the command parameter while the signal is active also requires executing the apply command. Refer to “[:DLINK:APPLY](#)” on page 671.

:DLINK:HSDPa:HARQ:RVSequence[1] | 2 | 3 | 4 | 5 | 6 | 7 | 8**Supported** E4438C with Option 419

```
[ :SOURCE ] :RADIO:WCDMA:HSPA[ :BBG ] :DLINK:HSDPa:HARQ:RVSequence[ 1 ] | 2 | 3 | 4 |
5 | 6 | 7 | 8 <val>
[ :SOURCE ] :RADIO:WCDMA:HSPA[ :BBG ] :DLINK:HSDPa:HARQ:RVSequence[ 1 ] | 2 | 3 | 4 |
5 | 6 | 7 | 8?
```

This command sets the HSDPA1 RV parameter sequence used with the maximum number of HARQ transmission setting. You can set eight different RV parameters for the RV sequence.

During simulated ACK responses, the software uses the first RV parameter. When the software encounters a simulated NACK response, it sends data using the next RV parameter. The software keeps incrementing to the next RV parameter in the sequence until it receives a simulated ACK response. When the software encounters an ACK response, the RV sequence resets to the first RV parameter.

***RST** 0

Range 0–7

Remarks To use this command's parameter in a setup, you must also set HARQ as the feedback selection. Refer to the “:DLINK:HSDPa:FCONtrol” on page 694 for selecting the feedback type.

Setting the command parameter while the signal is active also requires executing the apply command. Refer to “:DLINK:APPLY” on page 671.

:DLINK:HSDPa[1] | 2 | 3 | 4:BSINfo

Supported E4438C with Option 419

```
[ :SOURce ] :RADio:WCDMa:HSPA[ :BBG ] :DLINK:HSDPa[ 1 ] | 2 | 3 | 4 :BSINfo <val>
[ :SOURce ] :RADio:WCDMa:HSPA[ :BBG ] :DLINK:HSDPa[ 1 ] | 2 | 3 | 4 :BSINfo?
```

This command sets the HS-DSCH block size. HSDPA1 is the only HSDPA channel configuration that supports the HS-DSCH; however, the block size information parameter is also available for HSDPA2–4 for HS-SCCH coding purposes.

***RST** 36

Range 0–63

Remarks Setting the command parameter while the signal is active also requires executing the apply command. Refer to “:DLINK:APPLY” on page 671.

:DLINK:HSDPa[1] | 2 | 3 | 4:HSPDsch:COFFset

Supported E4438C with Option 419

```
[ :SOURce ] :RADio:WCDMa:HSPA[ :BBG ] :DLINK:HSDPa[ 1 ] | 2 | 3 | 4 :HSPDsch:
COFFset <val>
[ :SOURce ] :RADio:WCDMa:HSPA[ :BBG ] :DLINK:HSDPa[ 1 ] | 2 | 3 | 4 :HSPDsch:COFFset?
```

This command sets the HS-PDSCH code offset. The code offset is used in determining the HS-PDSCH channel code.

***RST** HSDPA1: 4 HSDPA2: 8 HSDPA3: 9 HSDPA4: 10

Range 1–16

Remarks Setting the command parameter while the signal is active also requires executing the apply command. Refer to “:DLINK:APPLY” on page 671.

Set all physical channel codes orthogonal to each other. For any channel codes that fail this criteria, the apply function (downlink apply command) will not work.

:DLINK:HSDPa[1] | 2 | 3 | 4:HSPDSch:DATA**Supported** E4438C with Option 419

```
[ :SOURCE ] :RADIO:WCDMA:HSPA[ :BBG ] :DLINK:HSDPa[ 1 ] | 2 | 3 | 4 :HSPDSch:DATA
PN9 | FIX4 | "<file name>" | DSCH
[ :SOURCE ] :RADIO:WCDMA:HSPA[ :BBG ] :DLINK:HSDPa[ 1 ] | 2 | 3 | 4 :HSPDSch:DATA?
```

This command configures the HS-PDSCH data type.

DSCH This choice is the HS-DSCH selection that is supported on only HSDPA1. Selecting the DSCH choice for HSDPA2–4 will generate an error.

"<file name>" This variable represents a data pattern file stored in signal generator memory. The data pattern must contain at least one bit or the apply function (downlink apply command) will not work. Refer to [“File Overview” on page 668](#) for more information on files.

***RST** PN9

Remarks Setting the command parameter while the signal is active also requires executing the apply command. Refer to [“:DLINK:APPLY” on page 671](#).

:DLINK:HSDPa[1] | 2 | 3 | 4:HSPDSch:DATA:FIX4**Supported** E4438C with Option 419

```
[ :SOURCE ] :RADIO:WCDMA:HSPA[ :BBG ] :DLINK:HSDPa[ 1 ] | 2 | 3 | 4 :HSPDSch:DATA:
FIX4 <val>
[ :SOURCE ] :RADIO:WCDMA:HSPA[ :BBG ] :DLINK:HSDPa[ 1 ] | 2 | 3 | 4 :HSPDSch:DATA:
FIX4?
```

This command sets the HS-PDSCH repeating 4-bit binary data pattern.

The variable <val> accepts values in binary, hexadecimal, or decimal format, however the query returns only binary values.

***RST** 0

Range 0–15

Remarks Setting the command parameter while the signal is active also requires executing the apply command. Refer to [“:DLINK:APPLY” on page 671](#).

:DLINK:HSDPa:HSPDSch:DSCH:DATA

Supported E4438C with Option 419

```
[ :SOURCE ] : RADIO : WCDMA : HSPA [ : BBG ] : DLINK : HSDPa : HSPDSch : DSCH : DATA  
PN9 | FIX4 | "<file name>"  
[ :SOURCE ] : RADIO : WCDMA : HSPA [ : BBG ] : DLINK : HSDPa : HSPDSch : DSCH : DATA ?
```

This command defines the HS-DSCH data type for HSDPA1. The HS-DSCH is not supported on HSDPA2–4.

"<file name>" This variable represents a data pattern file stored in signal generator memory. The data pattern must contain at least one bit or the apply function (downlink apply command) will not work. Refer to [“File Overview” on page 668](#) for more information on files.

***RST** PN9

Remarks Setting the command parameter while the signal is active also requires executing the apply command. Refer to [“:DLINK:APPLY” on page 671](#).

:DLINK:HSDPa:HSPDSch:DSCH:DATA:FIX4

Supported E4438C with Option 419

```
[ :SOURCE ] : RADIO : WCDMA : HSPA [ : BBG ] : DLINK : HSDPa : HSPDSch : DSCH : DATA :  
FIX4 <val>  
[ :SOURCE ] : RADIO : WCDMA : HSPA [ : BBG ] : DLINK : HSDPa : HSPDSch : DSCH : DATA : FIX4 ?
```

This command defines the HS-DSCH repeating 4-bit binary data pattern for HSDPA1. The HS-DSCH is not supported on HSDPA2–4.

The variable <val> accepts values in binary, hexadecimal, or decimal format, however the query returns only binary values.

***RST** 0

Range 0–15

Remarks Setting the command parameter while the signal is active also requires executing the apply command. Refer to [“:DLINK:APPLY” on page 671](#).

:DLINK:HSDPa:HSPDSch:DSCH:IRBSize**Supported** E4438C with Option 419

```
[ :SOURCE ] : RADIO : WCDMA : HSPA [ :BBG ] : DLINK : HSDPa : HSPDSch : DSCH : IRBSize <val>
[ :SOURCE ] : RADIO : WCDMA : HSPA [ :BBG ] : DLINK : HSDPa : HSPDSch : DSCH : IRBSize?
```

This command sets the HS-DSCH IR buffer size per the HARQ process for HSDPA1. The HS-DSCH is not supported on HSDPA2–4.

***RST** 9600**Range** 960–28800

Remarks Setting the command parameter while the signal is active also requires executing the apply command. Refer to “[:DLINK:APPLY](#)” on page 671.

:DLINK:HSDPa:HSPDsch:NCODE**Supported** E4438C with Option 419

```
[ :SOURCE ] : RADIO : WCDMA : HSPA [ :BBG ] : DLINK : HSDPa : HSPDsch : NCODE <val>
[ :SOURCE ] : RADIO : WCDMA : HSPA [ :BBG ] : DLINK : HSDPa : HSPDsch : NCODE?
```

This command sets number of codes for the HS-PDSCH on HSDPA1. HSDPA2–4 do not support multicodes.

***RST** 1**Range** 1–15

Remarks Setting the command parameter while the signal is active also requires executing the apply command. Refer to “[:DLINK:APPLY](#)” on page 671.

Set all physical channel codes so they are orthogonal to each other. If any of the channel codes fail to meet this criteria, the apply function (downlink apply command) will not work.

:DLINK:HSDPa[1] | 2 | 3 | 4:HSPDsch:POWer**Supported** E4438C with Option 419

```
[ :SOURCE ] : RADIO : WCDMA : HSPA [ :BBG ] : DLINK : HSDPa [ 1 ] | 2 | 3 | 4 : HSPDsch :
POWer <val>
[ :SOURCE ] : RADIO : WCDMA : HSPA [ :BBG ] : DLINK : HSDPa [ 1 ] | 2 | 3 | 4 : HSPDsch : POWer?
```

This command sets the HS-PDSCH power level.

The variable <val> is expressed in decibels (dB).

***RST** –1.02000000E+001
Range –40 to 0
Remarks Setting the command parameter while the signal is active also requires executing the apply command. Refer to “:DLINK:APPLY” on page 671.

:DLINK:HSDPa[1] | 2 | 3 | 4:HSPDsch:SFORmat

Supported E4438C with Option 419
[:SOURCE]:RADio:WCDMa:HSPA[:BBG]:DLINK:HSDPa[1] | 2 | 3 | 4:HSPDsch:SFORmat
0 | 1
[:SOURCE]:RADio:WCDMa:HSPA[:BBG]:DLINK:HSDPa[1] | 2 | 3 | 4:HSPDsch:SFORmat?

This command sets the HS-PDSCH slot format.

0 This sets the modulation type to QPSK.
1 This sets the modulation type to 16QAM.

***RST** 1
Remarks Setting the command parameter while the signal is active also requires executing the apply command. Refer to “:DLINK:APPLY” on page 671.

:DLINK:HSDPa[1] | 2 | 3 | 4:HSPDsch[:STATe]

Supported E4438C with Option 419
[:SOURCE]:RADio:WCDMa:HSPA[:BBG]:DLINK:HSDPa[1] | 2 | 3 | 4:HSPDsch[:STATe]
ON | OFF | 1 | 0
[:SOURCE]:RADio:WCDMa:HSPA[:BBG]:DLINK:HSDPa[1] | 2 | 3 | 4:HSPDsch[:STATe]?

This command turns the selected HS-PDSCH on or off.

***RST** HSDPA1: 1 HSDPA2–4: 0
Remarks Setting the command parameter while the signal is active also requires executing the apply command. Refer to “:DLINK:APPLY” on page 671.

The HS-PDSCH turns on only when the HS-SCCH is on. Turning off the HS-SCCH also turns off the active HS-PDSCH. To turn the HS-SCCH on or off, see “:DLINK:HSDPa[1]|2|3|4[:STATe]” on page 706.

:DLINK:HSDPa[1] | 2 | 3 | 4:HSSCch:CCODE**Supported** E4438C with Option 419

```
[ :SOURCE ] :RADIO:WCDMA:HSPA[:BBG]:DLINK:HSDPa[1] | 2 | 3 | 4:HSSCch:CCODE <val>
[ :SOURCE ] :RADIO:WCDMA:HSPA[:BBG]:DLINK:HSDPa[1] | 2 | 3 | 4:HSSCch:CCODE?
```

This command sets the HS-SCCH channel code.

***RST** HSDPA1: 4 HSDPA2: 5 HSDPA3: 6 HSDPA4: 7**Range** 1–127**Remarks** Setting the command parameter while the signal is active also requires executing the apply command. Refer to “[:DLINK:APPLY](#)” on page 671.

Set all physical channel codes so they are orthogonal to each other. If any of the channel codes fail to meet this criteria, the apply function (downlink apply command) will not work.

:DLINK:HSDPa[1] | 2 | 3 | 4:HSSCch:DATA**Supported** E4438C with Option 419

```
[ :SOURCE ] :RADIO:WCDMA:HSPA[:BBG]:DLINK:HSDPa[1] | 2 | 3 | 4:HSSCch:DATA
PN9 | FIX4 | "<file name>" | STD
[ :SOURCE ] :RADIO:WCDMA:HSPA[:BBG]:DLINK:HSDPa[1] | 2 | 3 | 4:HSSCch:DATA?
```

This command sets the data type for the selected downlink HS-SCCH.

STD This choice configures the bit field as defined by the 3GPP standards.

"<file name>" This variable represents a data pattern file stored in signal generator memory. The data pattern must contain at least one bit or the apply function (downlink apply command) will not work. Refer to “[File Overview](#)” on page 668 for more information on files.

***RST** STD**Remarks** Setting the command parameter while the signal is active also requires executing the apply command. Refer to “[:DLINK:APPLY](#)” on page 671.

:DLINK:HSDPa[1] | 2 | 3 | 4:HSSCch:DATA:FIX4

Supported E4438C with Option 419

```
[ :SOURCE ] :RADIO:WCDMA:HSPA[:BBG]:DLINK:HSDPa[ 1 ] | 2 | 3 | 4:HSSCch:DATA:  
FIX4 <val>
```

```
[ :SOURCE ] :RADIO:WCDMA:HSPA[:BBG]:DLINK:HSDPa[ 1 ] | 2 | 3 | 4:HSSCch:DATA:FIX4?
```

This command sets the HS-SCCH repeating 4-bit binary data pattern.

The variable <val> accepts values in binary, hexadecimal, or decimal format; however, the query returns only binary values.

***RST** 0

Range 0–15

Remarks Setting the command parameter while the signal is active also requires executing the apply command. Refer to “:DLINK:APPLY” on page 671.

:DLINK:HSDPa[1] | 2 | 3 | 4:HSSCch:POWER

Supported E4438C with Option 419

```
[ :SOURCE ] :RADIO:WCDMA:HSPA[:BBG]:DLINK:HSDPa[ 1 ] | 2 | 3 | 4:HSSCch:  
POWER <val>
```

```
[ :SOURCE ] :RADIO:WCDMA:HSPA[:BBG]:DLINK:HSDPa[ 1 ] | 2 | 3 | 4:HSSCch:POWER?
```

This command sets the HS-SCCH power level.

The variable <val> is expressed in decibels (dB).

***RST** –1.02000000E+001

Range –40 to 0

Remarks Setting the command parameter while the signal is active also requires executing the apply command. Refer to “:DLINK:APPLY” on page 671.

:DLINK:HSDPa[1]|2|3|4:ITTI**Supported** E4438C with Option 419

```
[ :SOURCE ] :RADIO:WCDMA:HSPA[ :BBG ] :DLINK:HSDPa[ 1 ] | 2 | 3 | 4 : ITTI <val>
[ :SOURCE ] :RADIO:WCDMA:HSPA[ :BBG ] :DLINK:HSDPa[ 1 ] | 2 | 3 | 4 : ITTI?
```

This command sets the static inter-TTI pattern value for the selected HSDPA.

The variable <val> is expressed in subframes (one subframe = 2 ms).

***RST** 8**Range** 1–16

Remarks To use a static pattern, select FIX as the choice for the [:DLINK:HSDPa\[1\]|2|3|4:ITTI:PATTERN](#) command.

Setting the command parameter while the signal is active also requires executing the apply command. Refer to “[:DLINK:APPLY](#)” on page 671.

:DLINK:HSDPa[1]|2|3|4:ITTI:PATTERN**Supported** E4438C with Option 419

```
[ :SOURCE ] :RADIO:WCDMA:HSPA[ :BBG ] :DLINK:HSDPa[ 1 ] | 2 | 3 | 4 : ITTI : PATTERN
FIX | "<file name>"
[ :SOURCE ] :RADIO:WCDMA:HSPA[ :BBG ] :DLINK:HSDPa[ 1 ] | 2 | 3 | 4 : ITTI : PATTERN?
```

This command selects which method sets the inter-TTI pattern for the selected HSDPA.

FIX This choice enables a static pattern. To configure the pattern, see “[:DLINK:HSDPa\[1\]|2|3|4:ITTI](#)”.

"<file name>" This variable represents an inter-TTI pattern file stored in signal generator memory. Creating and using a file provides the option of having a flexible inter-TTI pattern where you can vary the distance between HS-PDSCH transmissions. To create a file, use one or a combination of the following methods:

- To create a file internal to the software, use the inter-TTI user pattern editor.
- To create a file external to the software, use a text editor.

For more information, see the Signal Studio for 3GPP W-CDMA HSPA software online help.

The file name follows the form <project name>-ITTIx, where 'x' is the HSDPA number from one to four. The inter-TTI pattern must contain at least one bit, or the apply function (downlink apply command) will not work.

***RST** FIX

Remarks Setting the command parameter while the signal is active also requires executing the apply command. Refer to “:DLINK:APPLY” on page 671.

:DLINK:HSDPa:NHPRocess

Supported E4438C with Option 419

```
[ :SOURCE ] : RADIO : WCDMA : HSPA [ : BBG ] : DLINK : HSDPa : NHPRocess <val>  
[ :SOURCE ] : RADIO : WCDMA : HSPA [ : BBG ] : DLINK : HSDPa : NHPRocess?
```

This command sets the HS-DSCH number of HARQ processes for HSDPA1. For HSDPA2–4, this parameter is fixed at one and is used only for HS-SCCH coding purposes.

***RST** 4

Range 1–8

Remarks Setting the command parameter while the signal is active also requires executing the apply command. Refer to “:DLINK:APPLY” on page 671.

:DLINK:HSDPa[1] | 2 | 3 | 4:RVParameter

Supported E4438C with Option 419

```
[ :SOURCE ] : RADIO : WCDMA : HSPA [ : BBG ] : DLINK : HSDPa [ 1 ] | 2 | 3 | 4 : RVParameter <val>  
[ :SOURCE ] : RADIO : WCDMA : HSPA [ : BBG ] : DLINK : HSDPa [ 1 ] | 2 | 3 | 4 : RVParameter?
```

This command sets the HS-DSCH RV parameter. For HSDPA2–4, which do not support an HS-DSCH, this parameter is used only for HS-SCCH coding purposes.

***RST** 0

Range 0–7

Remarks Setting the command parameter while the signal is active also requires executing the apply command. Refer to “:DLINK:APPLY” on page 671.

:DLINK:HSDPa[1] | 2 | 3 | 4:UEID**Supported** E4438C with Option 419

```
[ :SOURCE ] :RADIO:WCDMA:HSPA[ :BBG ] :DLINK:HSDPa[ 1 ] | 2 | 3 | 4 :UEID <val>
[ :SOURCE ] :RADIO:WCDMA:HSPA[ :BBG ] :DLINK:HSDPa[ 1 ] | 2 | 3 | 4 :UEID?
```

This command sets the UEID.

RST** HSDPA1: 0 HSDPA2: 1 HSDPA3: 2 HSDPA4: 3**Range** 0–65535**Remarks** Setting the command parameter while the signal is active also requires executing the apply command. Refer to “[:DLINK:APPLY](#)” on page 671.**:DLINK:HSDPa[1] | 2 | 3 | 4[:STATE]*Supported** E4438C with Option 419

```
[ :SOURCE ] :RADIO:WCDMA:HSPA[ :BBG ] :DLINK:HSDPa[ 1 ] | 2 | 3 | 4 [ :STATE ] ON | OFF |
1 | 0
[ :SOURCE ] :RADIO:WCDMA:HSPA[ :BBG ] :DLINK:HSDPa[ 1 ] | 2 | 3 | 4 [ :STATE ]?
```

This command turns the selected downlink HSDPA channel on or off.

- | | |
|---------|---|
| ON (1) | <ul style="list-style-type: none"> • Turns on the HS-SCCH for the selected HSDPA. • Enables turning on the HS-PDSCH for the selected HSDPA. |
| OFF (0) | <ul style="list-style-type: none"> • Turns off the HS-SCCH for the selected HSDPA. • Turns off the active HS-PDSCH for the selected HSDPA. |

***RST** HSDPA1: 1 HSDPA2–4: 0**Remarks** Setting the command parameter while the signal is active also requires executing the apply command. Refer to “[:DLINK:APPLY](#)” on page 671.Refer to “[:DLINK:HSDPa\[1\] | 2 | 3 | 4:HSPDSch\[:STATE\]](#)” on page 701 for turning the HS-PDSCH on or off.

An HSDPA consists of a HS-SCCH and a HS-PDSCH; the HS-DSCH is supported on only HSDPA1.

:DLINK:OCNS[1] | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16:CCODE

Supported E4438C with Option 419

```
[ :SOURCE ] :RADIO:WCDMA:HSPA[ :BBG ] :DLINK:OCNS[ 1 ] | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 |
12 | 13 | 14 | 15 | 16:CCODE <val>
[ :SOURCE ] :RADIO:WCDMA:HSPA[ :BBG ] :DLINK:OCNS[ 1 ] | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 |
12 | 13 | 14 | 15 | 16:CCODE?
```

This command sets the channel code for the selected downlink OCNS.

*RST	OCNS1: 2	OCNS2: 3	OCNS3: 4	OCNS4: 5
	OCNS5: 6	OCNS6: 7	OCNS7: 8	OCNS8: 9
	OCNS9: 10	OCNS10: 11	OCNS11: 12	OCNS12: 13
	OCNS13: 14	OCNS14: 15	OCNS15: 16	OCNS16: 17

Range 1–127

Remarks Setting the command parameter while the signal is active also requires executing the apply command. Refer to “[:DLINK:APPLY](#)” on page 671.

:DLINK:OCNS[1] | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16:DATA

Supported E4438C with Option 419

```
[ :SOURCE ] :RADIO:WCDMA:HSPA[ :BBG ] :DLINK:OCNS[ 1 ] | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 |
12 | 13 | 14 | 15 | 16:DATA PN9 | PN15
[ :SOURCE ] :RADIO:WCDMA:HSPA[ :BBG ] :DLINK:OCNS[ 1 ] | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 |
12 | 13 | 14 | 15 | 16:DATA?
```

This command configures the data pattern for the selected downlink OCNS.

***RST** PN9

Remarks Setting the command parameter while the signal is active also requires executing the apply command. Refer to “[:DLINK:APPLY](#)” on page 671.

3GPP W-CDMA HSPA Subsystem–Option 419 ([:SOURCE]:RADIO:WCDMA:HSPA[:BBG])

:DLINK:OCNS[1] | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16:MODulation**Supported** E4438C with Option 419

[:SOURCE]:RADIO:WCDMA:HSPA[:BBG]:DLINK:OCNS[1]|2|3|4|5|6|7|8|9|10|11|12|13|14|15|16:MODulation<val>

[:SOURCE]:RADIO:WCDMA:HSPA[:BBG]:DLINK:OCNS[1]|2|3|4|5|6|7|8|9|10|11|12|13|14|15|16:MODulation?

This command sets the modulation for the selected downlink OCNS.

RST** QPSK**Range** QPSK | QAM16**Remarks** Setting the command parameter while the signal is active also requires executing the apply command. Refer to “:DLINK:APPLY” on page 671.**:DLINK:OCNS[1] | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16:POWer*Supported** E4438C with Option 419

[:SOURCE]:RADIO:WCDMA:HSPA[:BBG]:DLINK:OCNS[1]|2|3|4|5|6|7|8|9|10|11|12|13|14|15|16:POWer <val>

[:SOURCE]:RADIO:WCDMA:HSPA[:BBG]:DLINK:OCNS[1]|2|3|4|5|6|7|8|9|10|11|12|13|14|15|16:POWer?

This command sets the power level for the selected downlink OCNS.

The variable <val> is expressed in units of dB.

***RST** OCNS1: -6 OCNS2: -8 OCNS3: -8 OCNS4: -10
OCNS5: -7 OCNS6: -9 OCNS7-16: -10**Range** -40 to 0**Remarks** Setting the command parameter while the signal is active also requires executing the apply command. Refer to “:DLINK:APPLY” on page 671.**:DLINK:OCNS[1] | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16:SF****Supported** E4438C with Option 419

[:SOURCE]:RADIO:WCDMA:HSPA[:BBG]:DLINK:OCNS[1]|2|3|4|5|6|7|8|9|10|11|12|13|14|15|16:SF<val>

[:SOURCE]:RADIO:WCDMA:HSPA[:BBG]:DLINK:OCNS[1]|2|3|4|5|6|7|8|9|10|11|12|13|14|15|16:SF?

This command sets the spreading factor for the selected downlink OCNS.

***RST** 128
Range 16 | 128
Remarks Setting the command parameter while the signal is active also requires executing the apply command. Refer to “:DLINK:APPLY” on page 671.

:DLINK:OCNS[1] | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16:SSCoffset

Supported E4438C with Option 419

```
[ :SOURCE ] :RADio:WCDMa:HSPA[ :BBG ] :DLINK:OCNS[ 1 ] | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 |
12 | 13 | 14 | 15 | 16 :SSCoffset <val>
[ :SOURCE ] :RADio:WCDMa:HSPA[ :BBG ] :DLINK:OCNS[ 1 ] | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 |
12 | 13 | 14 | 15 | 16 :SSCoffset?
```

This command sets the secondary scrambling code offset for the selected downlink OCNS.

***RST** 0
Range 0–15
Remarks Setting the command parameter while the signal is active also requires executing the apply command. Refer to “:DLINK:APPLY” on page 671.

:DLINK:OCNS[1] | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16:TOFFset

Supported E4438C with Option 419

```
[ :SOURCE ] :RADio:WCDMa:HSPA[ :BBG ] :DLINK:OCNS[ 1 ] | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 |
12 | 13 | 14 | 15 | 16 :TOFFset <val>
[ :SOURCE ] :RADio:WCDMa:HSPA[ :BBG ] :DLINK:OCNS[ 1 ] | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 |
12 | 13 | 14 | 15 | 16 :TOFFset?
```

This command adjusts the timing offset for the OCNS.

***RST** OCNS1: 1 OCNS2: 2 OCNS3: 3 OCNS4: 4
OCNS5: 5 OCNS6: 6 OCNS7: 7 OCNS8: 8
OCNS9: 9 OCNS10: 10 OCNS11: 11 OCNS12: 12
OCNS13: 13 OCNS14: 14 OCNS15: 15 OCNS16: 16
Range 0–149
Remarks Setting the command parameter while the signal is active also requires executing the apply command. Refer to “:DLINK:APPLY” on page 671.

3GPP W-CDMA HSPA Subsystem–Option 419 ([:SOURCE]:RADIO:WCDMA:HSPA[:BBG])**:DLINK:OCNS[1|2|3|4|5|6|7|8|9|10|11|12|13|14|15|16[:STATE]****Supported** E4438C with Option 419

[:SOURCE]:RADIO:WCDMA:HSPA[:BBG]:DLINK:OCNS[1|2|3|4|5|6|7|8|9|10|11|12|13|14|15|16[:STATE] ON|OFF|1|0

[:SOURCE]:RADIO:WCDMA:HSPA[:BBG]:DLINK:OCNS[1|2|3|4|5|6|7|8|9|10|11|12|13|14|15|16[:STATE]?

This command turns the selected OCNS on or off.

RST** 0**Remarks** Setting the command parameter while the signal is active also requires executing the apply command. Refer to “[:DLINK:APPLY](#)” on page 671.**:DLINK:PCCPch:BCH:DATA*Supported** E4438C with Option 419

[:SOURCE]:RADIO:WCDMA:HSPA[:BBG]:DLINK:PCCPch:BCH:DATA PN9|PN15|FIX4|<file name>

[:SOURCE]:RADIO:WCDMA:HSPA[:BBG]:DLINK:PCCPch:BCH:DATA?

This command sets the BCH data format that is transmitted on the P-CCPCH.

<file name> This variable represents a data pattern file stored in signal generator memory. The data pattern must contain at least one bit or the apply function (downlink apply command) will not work. Refer to “[File Overview](#)” on page 668 for more information on files.

RST** FIX4**Remarks** Setting the command parameter while the signal is active also requires executing the apply command. Refer to “[:DLINK:APPLY](#)” on page 671.**:DLINK:PCCPch:BCH:DATA:FIX4*Supported** E4438C with Option 419

[:SOURCE]:RADIO:WCDMA:HSPA[:BBG]:DLINK:PCCPch:BCH:DATA:FIX4 <val>

[:SOURCE]:RADIO:WCDMA:HSPA[:BBG]:DLINK:PCCPch:BCH:DATA:FIX4?

This command sets the BCH repeating 4-bit binary data pattern.

The variable <val> accepts values in binary, hexadecimal, or decimal format; however, the query returns only binary values.

*RST	0
Range	0–15
Remarks	Setting the command parameter while the signal is active also requires executing the apply command. Refer to “:DLINK:APPLY” on page 671.

:DLINK:PCCPch:CCODE

Supported E4438C with Option 419

```
[ :SOURCE ] : RADIO : WCDMA : HSPA [ : BBG ] : DLINK : PCCPch : CCODE <val>  
[ :SOURCE ] : RADIO : WCDMA : HSPA [ : BBG ] : DLINK : PCCPch : CCODE?
```

This command sets the P-CCPCH channel code.

*RST	+1
Range	0–255
Remarks	Setting the command parameter while the signal is active also requires executing the apply command. Refer to “:DLINK:APPLY” on page 671. Set all physical channel codes so they are orthogonal to each other. If any of the channel codes fail to meet this criteria, the apply function (downlink apply command) will not work.

:DLINK:PCCPch:POWer

Supported E4438C with Option 419

```
[ :SOURCE ] : RADIO : WCDMA : HSPA [ : BBG ] : DLINK : PCCPch : POWer <val>  
[ :SOURCE ] : RADIO : WCDMA : HSPA [ : BBG ] : DLINK : PCCPch : POWer?
```

This command sets the P-CCPCH power level.

The variable <val> is expressed in decibels (dB).

*RST	–5.30000000E+000
Range	–40 to 0
Remarks	Setting the command parameter while the signal is active also requires executing the apply command. Refer to “:DLINK:APPLY” on page 671.

:DLINK:PCCPch[:STATE]**Supported** E4438C with Option 419

```
[ :SOURCE ] :RADIO:WCDMA:HSPA[ :BBG ] :DLINK:PCCPch[ :STATE ] ON | OFF | 1 | 0
[ :SOURCE ] :RADIO:WCDMA:HSPA[ :BBG ] :DLINK:PCCPch[ :STATE ] ?
```

This command turns the P-CCPCH on or off.

RST** 1**Remarks** Setting the command parameter while the signal is active also requires executing the apply command. Refer to “[:DLINK:APPLY](#)” on page 671.**:DLINK:PICH:CCODE*Supported** E4438C with Option 419

```
[ :SOURCE ] :RADIO:WCDMA:HSPA[ :BBG ] :DLINK:PICH:CCODE <val>
[ :SOURCE ] :RADIO:WCDMA:HSPA[ :BBG ] :DLINK:PICH:CCODE?
```

This command sets the PICH channelization code.

***RST** +3**Range** 0–255**Remarks** Setting the command parameter while the signal is active also requires executing the apply command. Refer to “[:DLINK:APPLY](#)” on page 671.

Set all physical channel codes so they are orthogonal to each other. If any of the channel codes fail to meet this criteria, the downlink apply command will not work.

:DLINK:PICH:DATA**Supported** E4438C with Option 419

```
[ :SOURCE ] :RADIO:WCDMA:HSPA[ :BBG ] :DLINK:PICH:DATA PN9 | PN15 | FIX4 |
"<file name>"
[ :SOURCE ] :RADIO:WCDMA:HSPA[ :BBG ] :DLINK:PICH:DATA?
```

This command sets the PICH data type.

"<file name>" This variable represents a data pattern file stored in signal generator memory. The data pattern must contain at least one bit or the apply function (downlink apply command) will not work. Refer to “[File Overview](#)” on page 668 for more information on files.

***RST** PN9

Remarks Setting the command parameter while the signal is active also requires executing the apply command. Refer to “:DLINK:APPLY” on page 671.

:DLINK:PICH:DATA:FIX4

Supported E4438C with Option 419

```
[ :SOURCE ] :RADio:WCDMa:HSPA[ :BBG ] :DLINK:PICH:DATA:FIX4 <val>  
[ :SOURCE ] :RADio:WCDMa:HSPA[ :BBG ] :DLINK:PICH:DATA:FIX4?
```

This command sets the PICH repeating 4-bit binary data pattern.

The variable <val> accepts values in binary, hexadecimal, or decimal format; however, the query returns only binary values.

***RST** 0

Range 0–15

Remarks Setting the command parameter while the signal is active also requires executing the apply command. Refer to “:DLINK:APPLY” on page 671.

:DLINK:PICH:POWer

Supported E4438C with Option 419

```
[ :SOURCE ] :RADio:WCDMa:HSPA[ :BBG ] :DLINK:PICH:POWer <val>  
[ :SOURCE ] :RADio:WCDMa:HSPA[ :BBG ] :DLINK:PICH:POWer?
```

This command sets the PICH power level.

The variable <val> is expressed in decibels (dB).

***RST** -8.300000000E+000

Range -40 to 0

Remarks Setting the command parameter while the signal is active also requires executing the apply command. Refer to “:DLINK:APPLY” on page 671.

3GPP W-CDMA HSPA Subsystem–Option 419 ([:SOURCE]:RADIO:WCDMA:HSPA[:BBG])**:DLINK:PICH[:STATE]****Supported** E4438C with Option 419

```
[ :SOURCE ] :RADIO:WCDMA:HSPA[ :BBG ] :DLINK:PICH[ :STATE ] ON | OFF | 1 | 0
[ :SOURCE ] :RADIO:WCDMA:HSPA[ :BBG ] :DLINK:PICH[ :STATE ] ?
```

This command turns the PICH on or off.

RST** 0**Remarks** Setting the command parameter while the signal is active also requires executing the apply command. Refer to “[:DLINK:APPLY](#)” on page 671.**:DLINK:POLarity*Supported** E4438C with Option 419

```
[ :SOURCE ] :RADIO:WCDMA:HSPA[ :BBG ] :DLINK:POLarity NORMAL | INVERTed | INVERT
[ :SOURCE ] :RADIO:WCDMA:HSPA[ :BBG ] :DLINK:POLarity ?
```

This command selects the phase polarity of the downlink signal.

NORMAL This choice selects normal polarity.

INVERTed, INVERT These choices perform the same function, inverting the internal Q signal.

RST** NORM**Remarks** Setting the command parameter while the signal is active also requires executing the apply command. For more information, refer to “[:DLINK:APPLY](#)” on page 671.**:DLINK:PSCH:POWer*Supported** E4438C with Option 419

```
[ :SOURCE ] :RADIO:WCDMA:HSPA[ :BBG ] :DLINK:PSCH:POWer <val>
[ :SOURCE ] :RADIO:WCDMA:HSPA[ :BBG ] :DLINK:PSCH:POWer ?
```

This command sets the PSCH power level.

The variable <val> is expressed in decibels (dB).

***RST** -8.30000000E+000**Range** -40 to 0**Remarks** Setting the command parameter while the signal is active also requires executing the apply command. Refer to “[:DLINK:APPLY](#)” on page 671.

:DLINK:PSCH[:STATE]

Supported E4438C with Option 419

```
[ :SOURCE ] :RADIO:WCDMA:HSPA [ :BBG ] :DLINK:PSCH [ :STATE ] ON | OFF | 1 | 0  
[ :SOURCE ] :RADIO:WCDMA:HSPA [ :BBG ] :DLINK:PSCH [ :STATE ] ?
```

This command turns the PSCH on or off.

***RST** 1

Remarks Setting the command parameter while the signal is active also requires executing the apply command. For more information, refer to “:DLINK:APPLY” on page 671.

:DLINK:SCRamblecode

Supported E4438C with Option 419

```
[ :SOURCE ] :RADIO:WCDMA:HSPA [ :BBG ] :DLINK:SCRamblecode <val>  
[ :SOURCE ] :RADIO:WCDMA:HSPA [ :BBG ] :DLINK:SCRamblecode ?
```

This command sets the downlink scramble code number.

***RST** +0

Range 0–511

Remarks Setting the command parameter while the signal is active also requires executing the apply command. Refer to “:DLINK:APPLY” on page 671.

:DLINK:SSCH:POWer

Supported E4438C with Option 419

```
[ :SOURCE ] :RADIO:WCDMA:HSPA [ :BBG ] :DLINK:SSCH:POWer <val>  
[ :SOURCE ] :RADIO:WCDMA:HSPA [ :BBG ] :DLINK:SSCH:POWer ?
```

This command sets the SSCH power level. The variable <val> is expressed in decibels (dB)

***RST** –8.30000000E+000

Range –40 to 0

Remarks Setting the command parameter while the signal is active also requires executing the apply command. Refer to “:DLINK:APPLY” on page 671.

3GPP W-CDMA HSPA Subsystem–Option 419 ([:SOURCE]:RADIO:WCDMA:HSPA[:BBG])**:DLINK:SSCH[:STATE]****Supported** E4438C with Option 419

```
[ :SOURCE ] :RADIO:WCDMA:HSPA[ :BBG ] :DLINK:SSCH[ :STATE ] ON | OFF | 1 | 0
[ :SOURCE ] :RADIO:WCDMA:HSPA[ :BBG ] :DLINK:SSCH[ :STATE ] ?
```

This command turns the SSCH on or off.

RST** 1**Remarks** Setting the command parameter while the signal is active also requires executing the apply command. Refer to “**:DLINK:APPLY**” on page 671.**:DLINK:TXDiversity*Supported** E4438C with Option 419

```
[ :SOURCE ] :RADIO:WCDMA:HSPA[ :BBG ] :DLINK:TXDiversity NONE | OANT1 | OANT2
[ :SOURCE ] :RADIO:WCDMA:HSPA[ :BBG ] :DLINK:TXDiversity ?
```

This command selects the downlink signal transmit diversity mode.

NONE This choice disables the transmit diversity mode.

OANT1 This choice selects the transmit diversity openloop antenna 1 mode.

OANT2 This choice selects the transmit diversity openloop antenna 2 mode.

***RST** NONE**Remarks** To configure both antennas (one and two) requires two ESGs.
Setting the command parameter while the signal is active also requires executing the apply command. Refer to “**:DLINK:APPLY**” on page 671.**:LINK****Supported** E4438C with Option 419

```
[ :SOURCE ] :RADIO:WCDMA:HSPA[ :BBG ] :LINK DOWN | UP
[ :SOURCE ] :RADIO:WCDMA:HSPA[ :BBG ] :LINK ?
```

This command sets the uplink or downlink mode.

***RST** UP

:ULINK:APPLY

Supported E4438C with Option 419

```
[ :SOURCE ] :RADIO:WCDMA:HSPA[ :BBG ] :ULINK:APPLY  
[ :SOURCE ] :RADIO:WCDMA:HSPA[ :BBG ] :ULINK:APPLY?
```

This command applies changes to the channel setup and data for active physical and transport channels, immediately starting the channel coding generation process. A progress bar may appear on the ESG display indicating that the new signal parameters are being applied. Turning on the HSPA modulation format also applies the signal parameters.

The query response determines whether or not there is a need to execute the command. It returns the following responses:

0	Command execution is not required.
1	Command execution is required.

NOTE The query response is only valid while the HSPA format is active.

When there is a setting conflict (ESG reports an error) with the range values or coupled parameters, or both, executing the uplink apply command does not apply the new changes until the conflicts are resolved. After resolving the setting conflicts, execute the command to apply the new settings.

:ULINK:AWGN:CN

Supported E4438C with Option 419

```
[ :SOURCE ] :RADIO:WCDMA:HSPA[ :BBG ] :ULINK:AWGN:CN <val>  
[ :SOURCE ] :RADIO:WCDMA:HSPA[ :BBG ] :ULINK:AWGN:CN?
```

This command sets the uplink in-band carrier to noise ratio (C/N) value using AWGN.

***RST** 0 dB

Range –30 to 30 dB

Remarks Setting the command parameter while the signal is active also requires executing the apply command. Refer to [:ULINK:APPLY](#)”.

3GPP W-CDMA HSPA Subsystem–Option 419 ([:SOURCE]:RADIO:WCDMA:HSPA[:BBG])

:ULINK:AWGN[:STATE]

Supported E4438C with Option 419

```
[ :SOURCE ] :RADIO:WCDMA:HSPA[ :BBG ] :ULINK:AWGN[ :STATE ] ON | OFF | 0 | 1
[ :SOURCE ] :RADIO:WCDMA:HSPA[ :BBG ] :ULINK:AWGN[ :STATE ] ?
```

This command turns the uplink AWGN on or off.

***RST** 0

Remarks Setting the command parameter while the signal is active also requires executing the apply command. Refer to “:ULINK:APPLY” on page 717.

:ULINK:BBReference:EXTERNAL:MRATE

Supported E4438C with Option 419

```
[ :SOURCE ] :RADIO:WCDMA:HSPA[ :BBG ] :ULINK:BBReference:EXTERNAL:MRATE
X1 | X2 | X4
[ :SOURCE ] :RADIO:WCDMA:HSPA[ :BBG ] :ULINK:BBReference:EXTERNAL:MRATE ?
```

This command configures the ESG, so it can accept an external baseband generator clock that is a multiple of the internal 3.84 MHz chip clock.

X1 This sets the ESG to accept an external clock rate identical to the chip clock.

X2 This sets the ESG to accept an external clock rate that is two times the rate of the chip clock.

X4 This sets the ESG to accept an external clock rate that is four times the rate of the chip clock.

***RST** X1

:ULINK:BBReference:EXTERNAL[:SOURCE]

Supported E4438C with Option 419

```
[ :SOURCE ] :RADIO:WCDMA:HSPA[ :BBG ] :ULINK:BBReference[ :SOURCE ] { INTERNAL } |
EXTERNAL
[ :SOURCE ] :RADIO:WCDMA:HSPA[ :BBG ] :ULINK:BBReference ?
```

This command selects the baseband generator reference source for the radio uplink channel.

***RST** INT

Remarks Setting the command parameter while the signal is active also requires executing the apply command. Refer to “:ULINK:APPLY” on page 717.

:ULINK:CRATe

Supported E4438C with Option 419
[:SOURCE]:RADIo:WCDMa:HSPA[:BBG]:ULINK:CRATe <val>
[:SOURCE]:RADIo:WCDMa:HSPA[:BBG]:ULINK:CRATe?

This command sets the chip rate (in units of samples).

***RST** 3.840000 Mcps
Range .24000 - 4.224 Mcps

:ULINK:DPCCh:CCODE

Supported E4438C with Option 419
[:SOURCE]:RADIo:WCDMa:HSPA[:BBG]:ULINK:DPCCh:CCODE?

This query returns the channelization code for the uplink DPCCH. The slot format determines the channelization code in accordance with the 3GPP standards.

:ULINK:DPCCh:DATA

Supported E4438C with Option 419
[:SOURCE]:RADIo:WCDMa:HSPA[:BBG]:ULINK:DPCCh:DATA PN9 | PN15 | FIX4 | STD |
"<file name>"
[:SOURCE]:RADIo:WCDMa:HSPA[:BBG]:ULINK:DPCCh:DATA?

This command configures the uplink DPCCH data pattern.

STD This sets the DPCCH bit fields according to the 3GPP standards.
"<file name>" This variable represents a data pattern file stored in signal generator memory. The data pattern must contain at least one bit or the apply function (uplink apply command) will not work. Refer to [“File Overview” on page 668](#) for more information on files.

***RST** STD

Remarks Setting the command parameter while the signal is active also requires executing the apply command. Refer to [“:ULINK:APPLY” on page 717](#).

:ULINK:DPCCh:DATA:FIX4**Supported** E4438C with Option 419

```
[ :SOURCE ] : RADIO : WCDMA : HSPA [ : BBG ] : ULINK : DPCCh : DATA : FIX4 <val>
[ :SOURCE ] : RADIO : WCDMA : HSPA [ : BBG ] : ULINK : DPCCh : DATA : FIX4?
```

This command sets the uplink DPCCH repeating 4-bit binary data pattern.

The variable <val> accepts values in binary, hexadecimal, or decimal format; however, the query returns only binary values.

RST** 0**Range** 0–15**Remarks** Setting the command parameter while the signal is active also requires executing the apply command. Refer to “:ULINK:APPLY” on page 717.**:ULINK:DPCCh:FBI:PATtern*Supported** E4438C with Option 419

```
[ :SOURCE ] : RADIO : WCDMA : HSPA [ : BBG ] : ULINK : DPCCh : FBI : PATtern PN9 | PN15 | FIX |
"<file name>"
[ :SOURCE ] : RADIO : WCDMA : HSPA [ : BBG ] : ULINK : DPCCh : FBI : PATtern?
```

This command configures the uplink DPCCH FBI pattern.

"<file name>" This variable represents a data pattern file stored in signal generator memory. The data pattern must contain at least one bit or the apply function (uplink apply command) will not work. Refer to “File Overview” on page 668 for more information on files.

RST** FIX**Remarks** Setting the command parameter while the signal is active also requires executing the apply command. Refer to “:ULINK:APPLY” on page 717.**:ULINK:DPCCh:FBI:PATtern:FIX*Supported** E4438C with Option 419

```
[ :SOURCE ] : RADIO : WCDMA : HSPA [ : BBG ] : ULINK : DPCCh : FBI : PATtern : FIX <val>
[ :SOURCE ] : RADIO : WCDMA : HSPA [ : BBG ] : ULINK : DPCCh : FBI : PATtern : FIX?
```

This command sets the 30-bit FBI pattern for the uplink DPCCH.

The variable <val> accepts values in binary, hexadecimal, or decimal format; however, the query returns only binary values.

3GPP W-CDMA HSPA Subsystem–Option 419 ([:SOURCE]:RADIO:WCDMA:HSPA[:BBG])

*RST	+0
Range	0–1073741823
Remarks	Setting the command parameter while the signal is active also requires executing the apply command. Refer to “:ULINK:APPLY” on page 717.

:ULINK:DPCCh:POWer

Supported	E4438C with Option 419
	[:SOURCE] : RADIO : WCDMA : HSPA [: BBG] : ULINK : DPCCh : POWer <val>
	[:SOURCE] : RADIO : WCDMA : HSPA [: BBG] : ULINK : DPCCh : POWer?

This command sets the uplink DPCCH power level.

The variable <val> is expressed in decibels (dB)

*RST	–2.69000000E+000
Range	–40 to 0
Remarks	Setting the command parameter while the signal is active also requires executing the apply command. Refer to “:ULINK:APPLY” on page 717.

:ULINK:DPCCh:SFORmat

Supported	E4438C with Option 419
	[:SOURCE] : RADIO : WCDMA : HSPA [: BBG] : ULINK : DPCCh : SFORmat <val>
	[:SOURCE] : RADIO : WCDMA : HSPA [: BBG] : ULINK : DPCCh : SFORmat?

This command sets the uplink DPCCH slot format.

*RST	+0
Range	0–5
Remarks	Setting the command parameter while the signal is active also requires executing the apply command. Refer to “:ULINK:APPLY” on page 717.
	The slot format determines the settings for other parameters in accordance with 3GPP standards.

:ULINK:DPCCh:TFCI**Supported** E4438C with Option 419

[:SOURCE]:RADIO:WCDMA:HSPA[:BBG]:ULINK:DPCCh:TFCI <val>

[:SOURCE]:RADIO:WCDMA:HSPA[:BBG]:ULINK:DPCCh:TFCI?

This command sets the uplink DPCCH TFCI 10-bit data pattern.

The variable <val> accepts values in binary, hexadecimal, or decimal format; however, the query returns only decimal values.

RST** +0**Range** 0–1023**Remarks** Setting the command parameter while the signal is active also requires executing the apply command. Refer to “:ULINK:APPLY” on page 717.**:ULINK:DPCCh:TPC:NSteps*Supported** E4438C with Option 419

[:SOURCE]:RADIO:WCDMA:HSPA[:BBG]:ULINK:DPCCh:TPC:NSteps <val>

[:SOURCE]:RADIO:WCDMA:HSPA[:BBG]:ULINK:DPCCh:TPC:NSteps?

This command sets the number of steps for the down and up (DUP) or up and down (UDOWn) TPC pattern selections.

The variable <val> is expressed in decibels (dB).

RST** +1**Range** 1–80**Remarks** Setting the command parameter while the signal is active also requires executing the apply command. Refer to “:ULINK:APPLY” on page 717.**:ULINK:DPCCh:TPC:PATtern*Supported** E4438C with Option 419

[:SOURCE]:RADIO:WCDMA:HSPA[:BBG]:ULINK:DPCCh:TPC:PATtern

UDOWn|DUP|UALL|DALL| "<file name>"

[:SOURCE]:RADIO:WCDMA:HSPA[:BBG]:ULINK:DPCCh:TPC:PATtern?

This command configures the uplink DPCCH TPC pattern for increasing or decreasing, or increasing and decreasing the BTS power level.

3GPP W-CDMA HSPA Subsystem–Option 419 ([:SOURCE]:RADIO:WCDMA:HSPA[:BBG])

UDOWN	The TPC pattern repetitively steps up and down.
DUP	The TPC pattern repetitively steps down and up.
UALL	The TPC pattern consecutively steps up.
DALL	The TPC pattern consecutively steps down.
"<file name>"	This variable represents a power pattern file stored in signal generator memory. The pattern must contain at least one bit or the apply function (downlink apply command) will not work. Refer to “File Overview” on page 668 for more information on files.
*RST	UDOW
Remarks	Setting the command parameter while the signal is active also requires executing the apply command. Refer to “:ULINK:APPLY” on page 717 . Each step in a TPC pattern signals an increase or decrease of 1 dB in the BTS output power level.

:ULINK:DPCCh[:STATe]

Supported E4438C with Option 419

```
[ :SOURCE ] : RADIO : WCDMA : HSPA [ : BBG ] : ULINK : DPCCh [ : STATe ] ON | OFF | 1 | 0
[ :SOURCE ] : RADIO : WCDMA : HSPA [ : BBG ] : ULINK : DPCCh [ : STATe ] ?
```

This command turns the uplink DPCCH on or off.

***RST** 1

Remarks Setting the command parameter while the signal is active also requires executing the apply command. Refer to [“:ULINK:APPLY” on page 717](#).

:ULINK:DPDCh:CCODE

Supported E4438C with Option 419

```
[ :SOURCE ] : RADIO : WCDMA : HSPA [ : BBG ] : ULINK : DPDCh : CCODE ?
```

This query returns the uplink DPDCH channelization code.

The slot format determines the channelization code in accordance with the 3GPP standards. See [“:ULINK:DPDCh:SFORmat” on page 729](#) for setting the slot format.

3GPP W-CDMA HSPA Subsystem–Option 419 ([:SOURCE]:RADIO:WCDMA:HSPA[:BBG])

:ULINK:DPDCh:DATA

Supported E4438C with Option 419

```
[ :SOURCE ] : RADIO : WCDMA : HSPA [ : BBG ] : ULINK : DPDCh : DATA PN9 | PN15 | FIX4 | DCH |
"<file name>"
[ :SOURCE ] : RADIO : WCDMA : HSPA [ : BBG ] : ULINK : DPDCh : DATA?
```

This command configures the uplink DPDCH data pattern.

DCH This choice selects the transport channel as the data source.

"<file name>" This variable represents a data pattern file stored in signal generator memory. The data pattern must contain at least one bit or the apply function (uplink apply command) will not work. Refer to [“File Overview” on page 668](#) for more information on files.

***RST** PN9

Remarks Setting the command parameter while the signal is active also requires executing the apply command. Refer to [“:ULINK:APPLY” on page 717](#).

:ULINK:DPDCh:DATA:FIX4

Supported E4438C with Option 419

```
[ :SOURCE ] : RADIO : WCDMA : HSPA [ : BBG ] : ULINK : DPDCh : DATA : FIX4 <val>
[ :SOURCE ] : RADIO : WCDMA : HSPA [ : BBG ] : ULINK : DPDCh : DATA : FIX4?
```

This command sets the uplink DPDCH repeating 4-bit binary data pattern.

The variable <val> accepts values in binary, hexadecimal, or decimal format; however, the query returns only binary values.

***RST** 0

Range 0–15

Remarks Setting the command parameter while the signal is active also requires executing the apply command. Refer to [“:ULINK:APPLY” on page 717](#).

:ULINK:DPDCh:DCH[1]|2|3|4|5|6:BSIZE

Supported E4438C with Option 419

```
[ :SOURCE ] : RADIO : WCDMA : HSPA [ : BBG ] : ULINK : DPDCh : DCH [ 1 ] | 2 | 3 | 4 | 5 | 6 :  
BSIZE <val>
```

```
[ :SOURCE ] : RADIO : WCDMA : HSPA [ : BBG ] : ULINK : DPDCh : DCH [ 1 ] | 2 | 3 | 4 | 5 | 6 : BSIZE ?
```

This command sets the block size for the selected uplink DCH.

***RST** 20

Range 0–5000

Remarks Setting the command parameter while the signal is active also requires executing the apply command. Refer to “[:ULINK:APPLY](#)” on page 717.

The number of data bits per DCH cannot exceed 200,000. To maintain this data bit limit, the ESG calculates the product of the block size and the number of blocks. If the product of these two parameters exceeds 200,000, the apply function (uplink apply command) will not work.

:ULINK:DPDCh:DCH[1]|2|3|4|5|6:CRC

Supported E4438C with Option 419

```
[ :SOURCE ] : RADIO : WCDMA : HSPA [ : BBG ] : ULINK : DPDCh : DCH [ 1 ] | 2 | 3 | 4 | 5 | 6 : CRC  
0 | 8 | 12 | 16 | 24
```

```
[ :SOURCE ] : RADIO : WCDMA : HSPA [ : BBG ] : ULINK : DPDCh : DCH [ 1 ] | 2 | 3 | 4 | 5 | 6 : CRC ?
```

This command sets the number of CRC bits for the selected uplink DCH.

***RST** 8

Remarks Setting the command parameter while the signal is active also requires executing the apply command. Refer to “[:ULINK:APPLY](#)” on page 717.

:ULINK:DPDCh:DCH[1] | 2 | 3 | 4 | 5 | 6:CTYPe**Supported** E4438C with Option 419

```
[ :SOURCE ] : RADIO : WCDMA : HSPA [ : BBG ] : ULINK : DPDCh : DCH [ 1 ] | 2 | 3 | 4 | 5 | 6 : CTYPe
HCONv | TCONv | TURBo | NONE
[ :SOURCE ] : RADIO : WCDMA : HSPA [ : BBG ] : ULINK : DPDCh : DCH [ 1 ] | 2 | 3 | 4 | 5 | 6 : CTYPe?
```

This command selects the encoder type for the selected uplink DCH.

HCONv This choice selects the 1/2 rate convolutional encoder.

TCONv This choice selects the 1/3 rate convolutional encoder.

TURBo This choice selects the turbo coder.

NONE This choice selects no coding.

***RST** HCON

Remarks Setting the command parameter while the signal is active also requires executing the apply command. Refer to “:ULINK:APPLY” on page 717.

:ULINK:DPDCh:DCH[1] | 2 | 3 | 4 | 5 | 6:DATA**Supported** E4438C with Option 419

```
[ :SOURCE ] : RADIO : WCDMA : HSPA [ : BBG ] : ULINK : DPDCh : DCH [ 1 ] | 2 | 3 | 4 | 5 | 6 : DATA PN9 |
PN15 | FIX4 | "<file name>"
[ :SOURCE ] : RADIO : WCDMA : HSPA [ : BBG ] : ULINK : DPDCh : DCH [ 1 ] | 2 | 3 | 4 | 5 | 6 : DATA?
```

This command configures the data for the selected uplink DCH.

"<file name>" This variable represents a data pattern file stored in signal generator memory. The data pattern must contain at least one bit or the apply function (uplink apply command) will not work. Refer to “File Overview” on page 668 for more information on files.

***RST** PN9

Remarks Setting the command parameter while the signal is active also requires executing the apply command. Refer to “:ULINK:APPLY” on page 717.

:ULINK:DPDCh:DCH[1] | 2 | 3 | 4 | 5 | 6:DATA:FIX4

Supported E4438C with Option 419

```
[ :SOURCE ] :RADIO:WCDMA:HSPA[ :BBG ] :ULINK:DPDCh:DCH[ 1 ] | 2 | 3 | 4 | 5 | 6 :DATA  
:FIX4 <val>  
[ :SOURCE ] :RADIO:WCDMA:HSPA[ :BBG ] :ULINK:DPDCh:DCH[ 1 ] | 2 | 3 | 4 | 5 | 6 :DATA  
:FIX4?
```

This command sets the repeating 4-bit binary data pattern for the selected uplink DCH.

The variable <val> accepts values in binary, hexadecimal, or decimal format; however, the query returns only binary values.

***RST** 0

Range 0–15

Remarks Setting the command parameter while the signal is active also requires executing the apply command. Refer to “:ULINK:APPLY” on page 717.

:ULINK:DPDCh:DCH[1] | 2 | 3 | 4 | 5 | 6:NBLocks

Supported E4438C with Option 419

```
[ :SOURCE ] :RADIO:WCDMA:HSPA[ :BBG ] :ULINK:DPDCh:DCH[ 1 ] | 2 | 3 | 4 | 5 | 6 :NBLocks  
<val>  
[ :SOURCE ] :RADIO:WCDMA:HSPA[ :BBG ] :ULINK:DPDCh:DCH[ 1 ] | 2 | 3 | 4 | 5 | 6 :NBLocks?
```

This command sets the number of blocks for the selected uplink DCH.

***RST** 1

Range 0–512

Remarks Setting the command parameter while the signal is active also requires executing the apply command. Refer to “:ULINK:APPLY” on page 717.

The number of data bits per DCH cannot exceed 200,000. To maintain this data bit limit, the block size is multiplied by the number of blocks. If the product of these two parameters exceeds 200,000, the uplink apply command will not work.

:ULINK:DPDCh:DCH[1] | 2 | 3 | 4 | 5 | 6:RMATtribute**Supported** E4438C with Option 419

```
[:SOURCE]:RADIO:WCDMA:HSPA[:BBG]:ULINK:DPDCh:DCH[1] | 2 | 3 | 4 | 5 | 6:
RMATtribute <val>
[:SOURCE]:RADIO:WCDMA:HSPA[:BBG]:ULINK:DPDCh:DCH[1] | 2 | 3 | 4 | 5 | 6:
RMATtribute?
```

This command sets the rate matching attribute for the selected uplink DCH.

***RST** 1**Range** 1–256

Remarks Setting the command parameter while the signal is active also requires executing the apply command. For more information, refer to “[:ULINK:APPLY](#)” on [page 717](#).

:ULINK:DPDCh:DCH[1] | 2 | 3 | 4 | 5 | 6:TTI**Supported** E4438C with Option 419

```
[:SOURCE]:RADIO:WCDMA:HSPA[:BBG]:ULINK:DPDCh:DCH[1] | 2 | 3 | 4 | 5 | 6:TTI
10 | 20 | 40 | 80
[:SOURCE]:RADIO:WCDMA:HSPA[:BBG]:ULINK:DPDCh:DCH[1] | 2 | 3 | 4 | 5 | 6:TTI?
```

This command sets the TTI for the selected uplink DCH.

The choices are expressed in millisecond (ms).

***RST** 10

Remarks Setting the command parameter while the signal is active also requires executing the apply command. For more information, refer to “[:ULINK:APPLY](#)” on [page 717](#).

:ULINK:DPDCh:DCH2 | 3 | 4 | 5 | 6[:STATE]**Supported** E4438C with Option 419

```
[:SOURCE]:RADIO:WCDMA:HSPA[:BBG]:ULINK:DPDCh:DCH2 | 3 | 4 | 5 | 6[:STATE]
ON | OFF | 1 | 0
[:SOURCE]:RADIO:WCDMA:HSPA[:BBG]:ULINK:DPDCh:DCH2 | 3 | 4 | 5 | 6[:STATE]?
```

This command turns the selected uplink DCH on or off; DCH1 is always on.

***RST** DCH 1: 1 DCH 2– 6: 0

Remarks Setting the command parameter while the signal is active also requires executing the apply command. Refer to “:ULINK:APPLY” on page 717.

The apply command will not work and the ESG will report an error if you turn on a DCH where lower numbered DCHs are off. For example, turning on DCH5 requires turning on DCH2–4. The reverse is true when turning off the DCHs.

:ULINK:DPDCh:POWer

Supported E4438C with Option 419

```
[ :SOURCE ] : RADIO : WCDMA : HSPA [ : BBG ] : ULINK : DPDCh : POWer <val>  
[ :SOURCE ] : RADIO : WCDMA : HSPA [ : BBG ] : ULINK : DPDCh : POWer?
```

This command sets the uplink DPDCH power level.

The variable <val> is expressed in decibels (dB).

***RST** +0.00000000E+00

Range –40 to 0

Remarks Setting the command parameter while the signal is active also requires executing the apply command. Refer to “:ULINK:APPLY” on page 717.

:ULINK:DPDCh:SFORmat

Supported E4438C with Option 419

```
[ :SOURCE ] : RADIO : WCDMA : HSPA [ : BBG ] : ULINK : DPDCh : SFORmat <val>  
[ :SOURCE ] : RADIO : WCDMA : HSPA [ : BBG ] : ULINK : DPDCh : SFORmat?
```

This command sets the uplink DPDCH slot format.

***RST** +2

Range 0– 6

Remarks Setting the command parameter while the signal is active also requires executing the apply command. Refer to “:ULINK:APPLY” on page 717.

The slot format determines the settings for other parameters in accordance with the 3GPP standards.

3GPP W-CDMA HSPA Subsystem–Option 419 ([:SOURCE]:RADIO:WCDMA:HSPA[:BBG])**:ULINK:DPDCh[:STATe]****Supported** E4438C with Option 419

```
[:SOURCE]:RADIO:WCDMA:HSPA[:BBG]:ULINK:DPDCh[:STATe] ON|OFF|1|0
[:SOURCE]:RADIO:WCDMA:HSPA[:BBG]:ULINK:DPDCh[:STATe]?
```

This command turns the uplink DPDCH on or off.

RST** 1**Remarks** Setting the command parameter while the signal is active also requires executing the apply command. Refer to “:ULINK:APPLY” on page 717.**:ULINK:FCLock:INTERval*Supported** E4438C with Option 419

```
[:SOURCE]:RADIO:WCDMA:HSPA[:BBG]:ULINK:FCLock:INTERval 10|20|40|80|2560
[:SOURCE]:RADIO:WCDMA:HSPA[:BBG]:ULINK:FCLock:INTERval?
```

This command selects the frame clock interval for the synchronization signal.

The frame clock interval is set in milliseconds (ms).

***RST** 80**Remarks** Ensure that the selected interval is equal to or longer than the longest transport channel TTI period.

This command is applicable only when FCLock is the sync source selection. See “:ULINK:SYNC[:SOURCE]” on page 755 for selecting the sync source.

:ULINK:FCLock:POLarity**Supported** E4438C with Option 419

```
[:SOURCE]:RADIO:WCDMA:HSPA[:BBG]:ULINK:FCLock:POLarity POSitive|
NEGative
[:SOURCE]:RADIO:WCDMA:HSPA[:BBG]:ULINK:FCLock:POLarity?
```

This command sets the frame clock polarity.

POSitive This choice sets the clock gate to trigger when the signal is high.

NEGative This choice sets the clock gate to trigger when the signal is low.

***RST** POS**Remarks** This command is applicable only when FCLock is the sync source selection. See “:ULINK:SYNC[:SOURCE]” on page 755 for selecting the sync source.

:ULINK:FILTer

Supported E4438C with Option 419

```
[ :SOURCE ]:RADio:WCDMa:HSPA[ :BBG ]:ULINK:FILTer RNYQuist | NYQuist |
GAUSSian | RECTangle | IS95 | IS95_EQ | IS95_MOD | IS95_MOD_EQ | AC4Fm | UGGaussian |
"<user FIR>"
[ :SOURCE ]:RADio:WCDMa:HSPA[ :BBG ]:ULINK:FILTer?
```

This command selects the uplink filter type.

IS95	This filter meets the criteria of the IS-95 standard.
IS95_EQ	This filter is a combination of the IS-95 filter (above) and the equalizer filter described in the IS-95 standard and is best suited for IS-95 baseband filtering.
IS95_MOD	This filter meets the criteria of the IS-95 error function (for improved adjacent channel performance) with lower passband rejection than the filter specified in the IS-95 standard.
IS95_MOD_EQ	This filter is a combination of the equalizer filter described in the IS-95 standard and a filter that meets the criteria of the IS-95 error function (for improved adjacent channel performance), with lower passband rejection.
UGGaussian	This is a GSM Gaussian filter with a fixed BbT value of 0.300.
AC4Fm	This is a predefined Association of Public Safety Communications Officials (APCO) specified compatible 4-level frequency modulation (C4FM) filter.
"<user FIR>"	This variable represents any FIR filter file stored in signal generator memory. Refer to “File Overview” on page 668 for more information on files.
*RST	RNYQ
Remarks	Setting the command parameter while the signal is active also requires executing the apply command. Refer to “:ULINK:APPLY” on page 848 .

:ULINK:FILTer:ALPHa

Supported E4438C with Option 419

```
[ :SOURCE ]:RADio:WCDMa:HSPA[ :BBG ]:ULINK:FILTer:ALPHa <val>
[ :SOURCE ]:RADio:WCDMa:HSPA[ :BBG ]:ULINK:FILTer:ALPHa?
```

This command sets the uplink Nyquist or root Nyquist filter alpha value.

3GPP W-CDMA HSPA Subsystem–Option 419 ([:SOURCE]:RADIO:WCDMA:HSPA[:BBG])

*RST	+2.20000000E–001
Range	0–1
Remarks	Setting the command parameter while the signal is active also requires executing the apply command. Executing this command while a filter other than Nyquist or root Nyquist is selected changes the parameter value, but it is not used by the signal generator until one of the Nyquist filters is selected. Refer to “:ULINK:APPLY” on page 717 .

:ULINK:FILTer:BBT

Supported	E4438C with Option 419
	[:SOURCE] :RADIo:WCDMA:HSPA[:BBG] :ULINK:FILTer:BBT <val>
	[:SOURCE] :RADIo:WCDMA:HSPA[:BBG] :ULINK:FILTer:BBT?

This command sets the uplink Gaussian filter BbT value.

*RST	+5.00000000E–001
Range	0–1
Remarks	Setting the command parameter while the signal is active also requires executing the apply command. Refer to “:ULINK:APPLY” on page 717 . Executing this command while a filter other than the Gaussian filter is selected changes the parameter value, but it is not used by the signal generator until the Gaussian filter is selected.

:ULINK:FILTer:CHANnel

Supported	E4438C with Option 419
	[:SOURCE] :RADIo:WCDMA:HSPA[:BBG] :ULINK:FILTer:CHANnel EVM ACP
	[:SOURCE] :RADIo:WCDMA:HSPA[:BBG] :ULINK:FILTer:CHANnel?

This command optimizes an uplink filter for minimized EVM or for minimized ACP.

EVM	This choice provides the most ideal passband.
ACP	This choice improves stopband rejection for the root Nyquist and Nyquist filters.
*RST	EVM
Remarks	Setting the command parameter while the signal is active also requires executing the apply command. Refer to “:ULINK:APPLY” on page 717 . To change the filter selection, refer to “:ULINK:FILTer” on page 731 .

:ULINK:FOFFset

Supported E4438C with Option 419

```
[ :SOURCE ] :RADio:WCDMa:HSPA[ :BBG ] :ULINK:FOFFset <val>  
[ :SOURCE ] :RADio:WCDMa:HSPA[ :BBG ] :ULINK:FOFFset?
```

This command sets the CFN starting frame within the SFN by setting a frame offset relative to SFN zero.

***RST** 0

Range 0–255

Remarks The command adds delays to the internal frame counter by specifying the starting frame number count. When the frame offset (FOFFset) is set to 0, the frame number starts at the system sync trigger. When the FOFFset is set to 2, the signal generator triggers two frames after the SFN RST. For additional information, refer to 3GPP TS25.402 for SFN and CFN relationship.

:ULINK:HCONfig

Supported E4438C with Option 419

```
[ :SOURCE ] :RADio:WCDMa:HSPA[ :BBG ] :ULINK:HCONfig 0|1  
[ :SOURCE ] :RADio:WCDMa:HSPA[ :BBG ] :ULINK:HCONfig?
```

This command sets HS-DSCH to be configured.

***RST** 1

:ULINK:HSDPcch:APATtern

Supported E4438C with Option 419

```
[ :SOURCE ] :RADio:WCDMa:HSPA[ :BBG ] :ULINK:HSDPcch:APATtern NONE|ACK_ALL|  
"<file name>"  
[ :SOURCE ] :RADio:WCDMa:HSPA[ :BBG ] :ULINK:HSDPcch:APATtern?
```

This command sets the HS-DPCCH ACK/NACK transmission pattern for each of the 1280 subframes that make up the pattern.

3GPP W-CDMA HSPA Subsystem–Option 419 ([:SOURCE]:RADio:WCDMa:HSPA[:BBG])

NONE	This choice sets all subframes to DTX.
"<file name>"	<p>This variable represents an ACK pattern file stored in signal generator memory. The file must contain 2,560-bits of data (2-bits per subframe) or the apply function (uplink apply command) will not work.</p> <ul style="list-style-type: none"> • An ACK response is represented by 00. • A NACK response is represented by 01. • DTX is represented by 10. <p>Enter the 2,560-bits into the file as a binary string.</p> <p>Refer to “File Overview” on page 668 for more information on files.</p>
*RST	ACK_ALL
Remarks	Setting the command parameter while the signal is active also requires executing the apply command. Refer to “:ULINK:APPLY” on page 717 .

:ULINK:HSDPcch:APOWer

Supported	E4438C with Option 419
	[:SOURCE]:RADio:WCDMa:HSPA[:BBG]:ULINK:HSDPcch:APOWer <val> [:SOURCE]:RADio:WCDMa:HSPA[:BBG]:ULINK:HSDPcch:APOWer?
	This command sets the HS-DPCCH ACK part power level.
	The variable <val> is expressed in decibels (dB).
*RST	-2.69000000E+000
Range	-40 to 0
Remarks	Setting the command parameter while the signal is active also requires executing the apply command. Refer to “:ULINK:APPLY” on page 717 .

:ULINK:HSDPcch:CCODE

Supported	E4438C with Option 419
	[:SOURCE]RADio:WCDMa:HSPA[:BBG]:ULINK:HSDPcch:CCODE?
	This query returns the HS-DPCCH channelization code.

:ULINK:HSDPcch:CPATtern

Supported E4438C with Option 419

```
[ :SOURCE ] :RADio:WCDMa:HSPA[ :BBG ] :ULINK:HSDPcch:CPATtern NONE |
"<file name>"
[ :SOURCE ] :RADio:WCDMa:HSPA[ :BBG ] :ULINK:HSDPcch:CPATtern?
```

This command sets the HS-DPCCH CQI transmission pattern for each of the 1280 subframes that make up the pattern.

NONE This choice sets all subframes to DTX.

"<file name>" This variable represents a bit file stored in signal generator memory. The file must contain 10,240-bits of data (8-bits per subframe) or the apply function (uplink apply command) will not work.

- A CQI response range is one to thirty using 8-bits, 00000001 to 00011110.
- DTX is represented by 11111111.

Enter the 10,240-bits into the file as a binary string.

Refer to [“File Overview” on page 668](#) for more information on files.

***RST** NONE

Remarks Setting the command parameter while the signal is active also requires executing the apply command. Refer to [“:ULINK:APPLY” on page 717](#).

:ULINK:HSDPcch:CPOWer

Supported E4438C with Option 419

```
[ :SOURCE ] :RADio:WCDMa:HSPA[ :BBG ] :ULINK:HSDPcch:CPOWer <val>
[ :SOURCE ] :RADio:WCDMa:HSPA[ :BBG ] :ULINK:HSDPcch:CPOWer?
```

This command sets the HS-DPCCH CQI part power level.

The variable <val> is expressed in decibels (dB).

***RST** -2.69000000E+000

Range -40 to 0

Remarks Setting the command parameter while the signal is active also requires executing the apply command. Refer to [“:ULINK:APPLY” on page 717](#).

:ULINK:HSDPcch:NPOWer**Supported** E4438C with Option 419

[:SOURCE]:RADIO:WCDMA:HSPA[:BBG]:ULINK:HSDPcch:NPOWer <val>

[:SOURCE]:RADIO:WCDMA:HSPA[:BBG]:ULINK:HSDPcch:NPOWer?

This command sets the HS-DPCCH NACK part power level. The variable <val> is expressed in decibels (dB).

***RST** -2.69000000E+000**Range** -40 to 0

Remarks Setting the command parameter while the signal is active also requires executing the apply command. Refer to “:ULINK:APPLY” on page 717.

:ULINK:HSDPcch:SFDelay**Supported** E4438C with Option 419

[:SOURCE]:RADIO:WCDMA:HSPA[:BBG]:ULINK:HSDPcch:SFDelay <val>

[:SOURCE]:RADIO:WCDMA:HSPA[:BBG]:ULINK:HSDPcch:SFDelay?

This command sets the HS-DPCCH subframe delay. The variable <val> is expressed in units of 256 chips.

***RST** 0**Range** 0–150

Remarks Setting the command parameter while the signal is active also requires executing the apply command. Refer to “:ULINK:APPLY” on page 717.

:ULINK:HSDPcch[:STATe]**Supported** E4438C with Option 419

[:SOURCE]:RADIO:WCDMA:HSPA[:BBG]:ULINK:HSDPcch[:STATe] ON|OFF|1|0

[:SOURCE]:RADIO:WCDMA:HSPA[:BBG]:ULINK:HSDPcch[:STATe]?

This command turns the HS-DPCCH on or off.

***RST** 1

Remarks Setting the command parameter while the signal is active also requires executing the apply command. Refer to “:ULINK:APPLY” on page 717.

:ULINK:HSUPa:EDPCch:DATA

Supported E4438C with Option 419

```
[ :SOURCE ] :RADIO:WCDMA:HSPA[ :BBG ] :ULINK:HSUPa:EDPCch:DATA  
PN9 | FIX4 | STD | "<file name>"  
[ :SOURCE ] :RADIO:WCDMA:HSPA[ :BBG ] :ULINK:HSUPa:EDPCch:DATA?
```

This command sets the data type for the selected downlink E-DPCCH.

STD This choice configures the bit field as defined by the 3GPP standards.

"<file name>" This variable represents a data pattern file stored in signal generator memory. The data pattern must contain at least one bit or the apply function will not work.

***RST** STD

Remarks Setting the command parameter while the signal is active also requires executing the apply command. Refer to “:ULINK:APPLY” on page 717.

:ULINK:HSUPa:EDPCch:DATA:FIX4

Supported E4438C with Option 419

```
[ :SOURCE ] :RADIO:WCDMA:HSPA[ :BBG ] :ULINK:HSUPa:EDPCch:DATA:FIX4 <val>  
[ :SOURCE ] :RADIO:WCDMA:HSPA[ :BBG ] :ULINK:HSUPa:EDPCch:DATA:FIX4?
```

This command sets the data type for E-DPCCH repeating 4-bit binary pattern.

The variable <val> accepts values in binary, hexadecimal, or decimal format; however, the query returns only binary values.

***RST** 0

Range 0–15

Remarks Setting the command parameter while the signal is active also requires executing the apply command. Refer to “:ULINK:APPLY” on page 717.

:ULINK:HSUPa:EDPCch:POWer

Supported E4438C with Option 419

```
[ :SOURCE ] :RADIO:WCDMA:HSPA[ :BBG ] :ULINK:HSUPa:EDPCch:POWer <val>  
[ :SOURCE ] :RADIO:WCDMA:HSPA[ :BBG ] :ULINK:HSUPa:EDPCch:POWer?
```

This command sets the E-DPCCH power level. The variable <val> is expressed in decibels (dB).

3GPP W-CDMA HSPA Subsystem–Option 419 ([:SOURCE]:RADIO:WCDMA:HSPA[:BBG])

*RST	–2.69000000E+000
Range	–40 to 0 dB
Remarks	Setting the command parameter while the signal is active also requires executing the apply command. Refer to “:ULINK:APPLY” on page 848.

:ULINK:HSUPa:EDPCch[:STATE]

Supported	E4438C with Option 419
	[:SOURCE] : RADIO : WCDMA : HSPA [:BBG] : ULINK : HSUPa : EDPCch [:STATE] ON OFF 1 0
	[:SOURCE] : RADIO : WCDMA : HSPA [:BBG] : ULINK : HSUPa : EDPCch [:STATE] ?

This command turns the E-DPCCH on or off.

*RST	1
Remarks	Setting the command parameter while the signal is active also requires executing the apply command. Refer to “:ULINK:APPLY” on page 717.

:ULINK:HSUPa:EDPDch:DATA

Supported	E4438C with Option 419
	[:SOURCE] : RADIO : WCDMA : HSPA [:BBG] : ULINK : HSUPa : EDPDch : DATA :
	PN9 FIX4 STD "<file name>"
	[:SOURCE] : RADIO : WCDMA : HSPA [:BBG] : ULINK : HSUPa : EDPDch : DATA ?

This command sets the data type for the selected downlink E-DPDCH.

STD	This choice configures the bit field as defined by the 3GPP standards.
"<file name>"	This variable represents a data pattern file stored in signal generator memory. The data pattern must contain at least one bit or the apply function will not work.
*RST	STD

:ULINK:HSUPa:EDPDch:DATA:FIX4

Supported	E4438C with Option 419
	[:SOURCE] : RADIO : WCDMA : HSPA [:BBG] : ULINK : HSUPa : EDPDch : DATA : FIX4 <val>
	[:SOURCE] : RADIO : WCDMA : HSPA [:BBG] : ULINK : HSUPa : EDPDch : DATA ?

This command sets the data type for E-DPDCH repeating 4-bit binary pattern.

The variable <val> accepts values in binary, hexadecimal, or decimal format; however, the query returns only binary values.

*RST	0
Range	0–15
Remarks	Setting the command parameter while the signal is active also requires executing the apply command. Refer to “:ULINK:APPLY” on page 717.

:ULINK:HSUPa:EDPDch:EDCH:DATA

Supported E4438C with Option 419

```
[ :SOURCE ] : RADIO : WCDMA : HSPA [ : BBG ] : ULINK : HSUPa : EDPDch : DATA PN9 | FIX4 | STD |
"<file name>"
[ :SOURCE ] : RADIO : WCDMA : HSPA [ : BBG ] : ULINK : HSUPa : EDPDch : DATA?
```

This command defines the E-DCH data type.

"<file name>" This variable represents a data pattern file stored in signal generator memory. The data pattern must contain at least one bit or the apply function will not work.

*RST	PN9
Remarks	Setting the command parameter while the signal is active also requires executing the apply command. Refer to “:ULINK:APPLY” on page 717.

:ULINK:HSUPa:EDPDch:EDCH:DATA:FIX4

Supported E4438C with Option 419

```
[ :SOURCE ] : RADIO : WCDMA : HSPA [ : BBG ] : ULINK : HSUPa : EDPDch : EDCH : DATA : FIX4 <val>
[ :SOURCE ] : RADIO : WCDMA : HSPA [ : BBG ] : ULINK : HSUPa : EDPDch : EDCH : DATA : FIX4?
```

This command sets the E-DPDCH repeating 4-bit binary data pattern.

The variable <val> accepts values in binary, hexadecimal, or decimal format; however, the query returns only binary values.

*RST	0
Range	0–15
Remarks	Setting the command parameter while the signal is active also requires executing the apply command. Refer to “:ULINK:APPLY” on page 717.

:ULINK:HSUPa:EDPDch:MCCodes**Supported** E4438C with Option 419

```
[ :SOURCE ] :RADIO:WCDMA:HSPA[ :BBG ] :ULINK:HSUPa:EDPDch:MCCodes
SF256 | SF128 | SF64 | SF32 | SF16 | SF8 | SF4 | SF4SF4 | SF2SF2 | SF4SF4SF2SF2
[ :SOURCE ] :RADIO:WCDMA:HSPA[ :BBG ] :ULINK:HSUPa:EDPDch:MCCodes?
```

This command sets the maximum channelization codes for E-DPDCH.

SF256	Set the spreading factor to 256 and the number of E-DPDCH to 1
SF128	Set the spreading factor to 128 and the number of E-DPDCH to 1
SF64	Set the spreading factor to 64 and the number of E-DPDCH to 1
SF32	Set the spreading factor to 32 and the number of E-DPDCH to 1
SF16	Set the spreading factor to 16 and the number of E-DPDCH to 1
SF8	Set the spreading factor to 8 and the number of E-DPDCH to 1
SF4	Set the spreading factor to 4 and the number of E-DPDCH to 1
SF4SF4	Set the spreading factor to 4 and the number of E-DPDCH to 2
SF2SF2	Set the spreading factor to 2 and the number of E-DPDCH to 2
SF4SF4SF2SF2	Set the spreading factor to 4 for 2 E-DPDCHs and spreading factor to 2 for 2 E-DPDCHs
*RST	SF4SF4SF2SF2

Remarks The maximum channelization codes are used together with the E-DCH configuration, and PL-non-MAX to automatically calculate the physical channel codes according to TS 25.212 (4.8.4.1).

:ULINK:HSUPa:EDPDch:PLNMax

Supported E4438C with Option 419

```
[ :SOURCE ] :RADIo:WCDMa:HSPA[ :BBG ] :ULINK:HSUPa:EDPDch:PLNMax <val>
[ :SOURCE ] :RADIo:WCDMa:HSPA[ :BBG ] :ULINK:HSUPa:EDPDch:PLNMax?
```

This command sets the PL non-max value for the E-DPDCH used in the determination of SF and number of E-DPDCHs as defined in TS 25.212 (4.8.4.1) for compressed mode.

***RST** 0.44

Resolution 0.04

Range 0.44 to 1.0

:ULINK:HSUPa:EDPDch:POWer

Supported E4438C with Option 419

```
[ :SOURCE ] :RADIo:WCDMa:HSPA[ :BBG ] :ULINK:HSUPa:EDPDch:POWer <val>
[ :SOURCE ] :RADIo:WCDMa:HSPA[ :BBG ] :ULINK:HSUPa:EDPCch:POWer?
```

This command sets the E-DPDCH power level. The variable <val> is expressed in decibels (dB).

***RST** +0.00000000E+001

:ULINK:HSUPa:EDPDch:SNPHchs

Supported E4438C with Option 419

```
[ :SOURCE ] :RADIo:WCDMa:HSPA[ :BBG ] :ULINK:HSUPa:EDPDch:SNPHchs
SF256 | SF128 | SF64 | SF32 | SF16 | SF8 | SF4 | SF4SF4 | SF2SF2 | SF4SF4SF2SF2 | AUTO
[ :SOURCE ] :RADIo:WCDMa:HSPA[ :BBG ] :ULINK:HSUPa:EDPCch:SNPHchs?
```

This command sets the SF and number of E-DPDCHs to configure the physical channel manually. To configure the physical channel as defined in TS 25.212 (4.8.4.1), refer to [“:ULINK:HSUPa:EDPDch:MCCodes” on page 740](#).

SF256 Set the spreading factor to 256 and the number of E-DPDCH to 1

SF128 Set the spreading factor to 128 and the number of E-DPDCH to 1

SF64 Set the spreading factor to 64 and the number of E-DPDCH to 1

SF32 Set the spreading factor to 32 and the number of E-DPDCH to 1

SF16 Set the spreading factor to 16 and the number of E-DPDCH to 1

SF8 Set the spreading factor to 8 and the number of E-DPDCH to 1

3GPP W-CDMA HSPA Subsystem–Option 419 ([:SOURCE]:RADIO:WCDMA:HSPA[:BBG])

SF4	Set the spreading factor to 4 and the number of E-DPDCH to 1
SF4SF4	Set the spreading factor to 4 and the number of E-DPDCH to 2
SF2SF2	Set the spreading factor to 2 and the number of E-DPDCH to 2
SF4SF4SF2SF2	Set the spreading factor to 4 for 2 E-DPDCHs and spreading factor to 2 for 2 E-DPDCHs
AUTO	Calculate the spreading factor and number of codes automatically from maximum channelization codes, PL non-max, E-TFCI table selection, and E-TFCI index as defined in TS 25.212 (4.8.4.1).
*RST	SF4
Remarks	ULINK:TGAP:PSI[1]:PS can be set ACTIVE only when the :ULINK:HSUPa:EDPDch:SNPHchs is AUTO.

:ULINK:HSUPa:EDPDch[:STATE]

Supported E4438C with Option 419

```
[ :SOURCE ] : RADIO : WCDMA : HSPA [ : BBG ] : ULINK : HSUPa : EDPDch [ : STATE ]
[ :SOURCE ] : RADIO : WCDMA : HSPA [ : BBG ] : ULINK : HSUPa : EDPCch [ : STATE ] ?
```

This command turns the E-DPDCH on or off.

***RST** 1

:ULINK:HSUPa:ETABLE

Supported E4438C with Option 419

```
[ :SOURCE ] : RADIO : WCDMA : HSPA [ : BBG ] : ULINK : HSUPa : EDPDch : ETABLE 0 | 1
[ :SOURCE ] : RADIO : WCDMA : HSPA [ : BBG ] : ULINK : HSUPa : EDPCch : ETABLE ?
```

This command selects the E-TFCI tables as specified in E-TFCI Table Selection, TS 25.321 Annex B.

***RST** 1

:ULINK:HSUPa:ETFCi

Supported E4438C with Option 419
 [:SOURCE]:RADIO:WCDMA:HSPA[:BBG]:ULINK:HSUPa:ETFCi <val>
 [:SOURCE]:RADIO:WCDMA:HSPA[:BBG]:ULINK:HSUPa:ETFCi?

This command sets the E-TFC index 7-bit pattern.

***RST** 41
Range 0–127 if E-TFCI Table = 0 and TTI = 2 ms
 0–125 if E-TFCI Table = 1 and TTI = 2 ms
 0–127 if E-TFCI Table = 0 and TTI = 10 ms
 0–120 if E-TFCI Table = 1 and TTI = 10 ms

:ULINK:HSUPa:HARQ:APATtern

Supported E4438C with Option 419
 [:SOURCE]:RADIO:WCDMA:HSPA[:BBG]:ULINK:HSUPa:HARQ:APATtern
 ACK_ALL|EXTERNAL|"<file name>"
 [:SOURCE]:RADIO:WCDMA:HSPA[:BBG]:ULINK:HSUPa:HARQ:APATtern?

This command sets a simulated Node B ACK/NACK pattern that determines HSUPA's HARQ response.

ACK_ALL This choice configures 1,280 subframes (if TTI=2ms) or 1,280 frames (if TTI=10ms) for a simulated ACK only response. For a long transmission, up to 18000 (sub)frames can be configured.

“<file name>” This variable represents an ACK pattern file stored in signal generator memory. Create this file either by using the HARQ ACK/NACK pattern Data Type Entry window and download the file to the ESG, or by using the ESG Real Time W-CDMA table editor to create a bit file with the following bit patterns:

- An ACK response is represented by 0.
- A NACK response is represented by 1.

In the file, do not use delimiters between (sub)frames; enter (sub)frame bits as a binary string. When creating a pattern, you can determine the number of active (sub)frames from 1 to 1,280. The (sub)frames are numbered 0 to 1,279.

External This choice selects specifies an external ACK/NACK pattern.
***RST** ACK_ALL

:ULINK:HSUPa:HARQ:APATtern[:EXternal]:DELay**Supported** E4438C with Option 419

[:SOURCE]:RADIO:WCDMA:HSPA[:BBG]:ULINK:HSUPa:HARQ:APATtern[:EXternal]:DELay <val>

[:SOURCE]:RADIO:WCDMA:HSPA[:BBG]:ULINK:HSUPa:HARQ:APATtern[:EXternal]:DELay?

This command sets the amount of time between the head of a transmitted process and the sampling point of the external ACK/NACK signal corresponding with the process.

The variable <val> is expressed in chips with a resolution of 256.

RST** 7680**:ULINK:HSUPa:HARQ:APATtern[:EXternal]:INPut*Supported** E4438C with Option 419

[:SOURCE]:RADIO:WCDMA:HSPA[:BBG]:ULINK:HSUPa:HARQ:APATtern[:EXternal]:INPut ALTP|BGAT|PTR2

[:SOURCE]:RADIO:WCDMA:HSPA[:BBG]:ULINK:HSUPa:HARQ:APATtern[:EXternal]:INPut?

This command sets the amount of time between the head of a transmitted process and the sampling point of the external ACK/NACK signal corresponding with the process.

The variable <val> is expressed in chips with a resolution of 256.

ALTP This choice sets the input port of the external signal to ALT PWR IN.

BGAT This choice sets the input port of the external signal to BURST GATE IN.

PTR2 This choice sets the input port of the external signal to PATT TRIG IN 2.

***RST** BGAT

:ULINK:HSUPa:HARQ:APATtern[:EXternal]:POLarity

Supported E4438C with Option 419

```
[ :SOURCE ] : RADIo : WCDMa : HSPA [ : BBG ] : ULINk : HSUPa : HARQ : APATtern [ : EXTernal ] :  
POLarity POSitive | NEGative  
[ :SOURCE ] : RADIo : WCDMa : HSPA [ : BBG ] : ULINk : HSUPa : HARQ : APATtern [ : EXTernal ] :  
POLarity?
```

This command sets the ACK/NACK signal polarity.

POSitive This choice sets the pattern signal to ACK when the external signal is low and NACK when the external signal is high.

NEGative This choice sets the pattern signal to ACK when the external signal is high and NACK when the external signal is low.

***RST** POS

:ULINK:HSUPa:HARQ:MNRTrans

Supported E4438C with Option 419

```
[ :SOURCE ] : RADIo : WCDMa : HSPA [ : BBG ] : ULINk : HSUPa : HARQ : MNRTrans <val>  
[ :SOURCE ] : RADIo : WCDMa : HSPA [ : BBG ] : ULINk : HSUPa : HARQ : MNRTrans?
```

This command sets the maximum number of retransmissions.

Range 0–15

***RST** 15

:ULINK:HSUPa:HARQ[:MODE]

Supported E4438C with Option 419

```
[ :SOURCE ] : RADIo : WCDMa : HSPA [ : BBG ] : ULINk : HSUPa : HARQ [ : MODE ] NONE |  
IREdundancy | CCOMbining  
[ :SOURCE ] : RADIo : WCDMa : HSPA [ : BBG ] : ULINk : HSUPa : HARQ [ : MODE ] ?
```

This command sets the HARQ mode to use None, Incremental Redundancy, or Chase Combining for retransmission.

Incr Redundancy This choice sends different coded bits instead of the same coded packets, when a NACK is received.

Chase Combining This choice provides UE feedback by sending the same coded packet again upon reception of a NACK signal.

***RST** NONE

:ULINK:HSUPa:HARQ:HBIT**Supported** E4438C with Option 419

```
[ :SOURCE ] :RADIo:WCDMA:HSPA[ :BBG ] :ULINK:HSUPa:HARQ:HBIT
HAPPy|NHAPPy| "<file name>"
[ :SOURCE ] :RADIo:WCDMA:HSPA[ :BBG ] :ULINK:HSUPa:HARQ:HBIT?
```

This command sets the HSUPA happy bit.

HAPPy This choice sets the happy bit to happy.

NHAPPy This choice sets the happy bit to not happy.

“<file name>” This variable represents a happy bit pattern file stored in signal generator memory. Create this file either by using the Happy Bit Pattern Data Type Entry window and download the file to the ESG, or by using the ESG Real Time W-CDMA table editor to create a bit file with the following bit patterns:

- A not happy response is represented by 0.
- A happy response is represented by 1.

***RST** HAPPy

:ULINK:HSUPa:HPROcess**Supported** E4438C with Option 419

```
[ :SOURCE ] :RADIo:WCDMA:HSPA[ :BBG ] :ULINK:HSUPa:HPROcess[ 0 ] | 1 | | 2 | 3 | 4 | 5 | 6 | 7
[ :STATE ] ON|OFF|1|0
[ :SOURCE ] :RADIo:WCDMA:HSPA[ :BBG ] :ULINK:HSUPa:HPROcess[ 0 ] 1 | | 2 | 3 | 4 | 5 | 6 | 7
[ :STATE ] ?
```

This command turns the uplink HSUPA Hybrid ARQ Process on or off for the selected HARQ process.

1|ON TX the process #n

2|OFF DTX the process #n

***RST** 1

:ULINK:HSUPa:RSN

Supported E4438C with Option 419

```
[ :SOURCE ] :RADio:WCDMa:HSPA[ :BBG ] :ULINK:HSUPa:RSN 0 | 1 | 2 | 3  
[ :SOURCE ] :RADio:WCDMa:HSPA[ :BBG ] :ULINK:HSUPa:RSN?
```

This command sets the HSUPA retransmission sequence number (RSN) when HARQ mode is not selected.

***RST** 0

Remarks Setting the command parameter while the signal is active also requires executing the apply command. Refer to “:ULINK:APPLY” on page 717.

:ULINK:HSUPa:RVIndex

Supported E4438C with Option 419

```
[ :SOURCE ] :RADio:WCDMa:HSPA[ :BBG ] :ULINK:HSUPa:RVIndex 0 | 1 | 2 | 3  
[ :SOURCE ] :RADio:WCDMa:HSPA[ :BBG ] :ULINK:HSUPa:RVIndex?
```

This command sets the RV control when the HARQ mode is not selected.

***RST** 0

Remarks Setting the command parameter while the signal is active also requires executing the apply command. Refer to “:ULINK:APPLY” on page 717.

:ULINK:HSUPa:TFC:EPATtern[:EXternal]:DELay

Supported E4438C with Option 419

```
[ :SOURCE ] :RADio:WCDMa:HSPA[ :BBG ] :ULINK:HSUPa:TFC:EPATtern[ :EXternal ] :  
DELay <val>  
[ :SOURCE ] :RADio:WCDMa:HSPA[ :BBG ] :ULINK:HSUPa:TFC:EPATtern[ :EXternal ] :  
DELay?
```

This command sets the amount of time between the head of a transmitted process and the sampling point of the external signal corresponding with the E-TFCI pattern control.

<val> The variable <val> is expressed in chips with a resolution of 256.

***RST** 7680

3GPP W-CDMA HSPA Subsystem–Option 419 ([:SOURCE]:RADio:WCDMa:HSPA[:BBG])

Range	0 to 153344 (for TTI = 10 ms) 0 to 61184 (for TTI = 2 ms)
Remarks	Setting the command parameter while the signal is active also requires executing the apply command. Refer to “:ULINK:APPLY” on page 717.

:ULINK:HSUPa:TFC:EPATtern[:EXtErnal]:INPut

Supported E4438C with Option 419

```
[ :SOURCE ] :RADio:WCDMa:HSPA[ :BBG ] :ULINK:HSUPa:TFC:EPATtern[ :EXtErnal ] :
INPut ALTP|BGAT|PTR2
[ :SOURCE ] :RADio:WCDMa:HSPA[ :BBG ] :ULINK:HSUPa:TFC:EPATtern[ :EXtErnal ] :
INPut?
```

This command selects the input port for the external TFC E-TFCI pattern signal.

ALTP	This choice sets the input port of the external signal to ALT PWR IN.
BGAT	This choice sets the input port of the external signal to BURST GATE IN.
PTR2	This choice sets the input port of the external signal to PATT TRIG IN 2.
*RST	BGAT
Remarks	Setting the command parameter while the signal is active also requires executing the apply command. Refer to “:ULINK:APPLY” on page 717.

:ULINK:HSUPa:TFC:EPATtern[:EXtErnal]:POLarity

Supported E4438C with Option 419

```
[ :SOURCE ] :RADio:WCDMa:HSPA[ :BBG ] :ULINK:HSUPa:TFC:EPATtern[ :EXtErnal ] :
POLarity POSitive|NEGative
[ :SOURCE ] :RADio:WCDMa:HSPA[ :BBG ] :ULINK:HSUPa:TFC:EPATtern[ :EXtErnal ] :
POLarity?
```

This command sets the external E-TFCI pattern control signal polarity.

POSitive	This choice sets the pattern signal to MAIN when the external signal is low and ALT when the external signal is high.
NEGative	This choice sets the pattern signal to MAIN when the external signal is high and ALT when the external signal is low.
*RST	POS
Remarks	Setting the command parameter while the signal is active also requires executing the apply command. Refer to “:ULINK:APPLY” on page 717.

:ULINK:HSUPa:TFC:EPATtern

Supported E4438C with Option 419

```
[ :SOURCE ] :RADio:WCDMa:HSPA[ :BBG ] :ULINK:HSUPa:TFC:EPATtern
MAIN|EXTernal| "<file name>"
[ :SOURCE ] :RADio:WCDMa:HSPA[ :BBG ] :ULINK:HSUPa:TFC:EPATtern?
```

This command sets the MAIN and ALT TFC pattern to be used.

MAIN_ALL This choice configures all subframes for a simulated MAIN only response.

EXT This choice selects an external signal to control the data pattern.

"<file name>" This variable represents a MAIN/ALT pattern file stored in signal generator memory. Create this file either by using the TFC pattern Data Type Entry window and download the file to the ESG, or by using the ESG Real Time W-CDMA table editor to create a bit file with the following bit patterns:

- A MAIN response is represented by 0.
- An ALT response is represented by 1

In the file, do not use delimiters between (sub)frames; enter (sub)frame bits as a binary string.

***RST** MAIN

Remarks Setting the command parameter while the signal is active also requires executing the apply command. Refer to [“:ULINK:APPLY” on page 717](#).

:ULINK:HSUPa:TFC[:ALT]:EDPCch:POWer

Supported E4438C with Option 419

```
[ :SOURCE ] :RADio:WCDMa:HSPA[ :BBG ] :ULINK:HSUPa:TFC[ :ALT ] :EDPCch:
POWer <val>
[ :SOURCE ] :RADio:WCDMa:HSPA[ :BBG ] :ULINK:HSUPa:TFC[ :ALT ] :EDPCch:POWer?
```

This command sets the E-DPCCH power level of the alternate TFC setting.

The variable <val> is expressed in decibels (dB).

***RST** -2.69000000E+000

Range -40 to 0

:ULINK:HSUPa:TFC[:ALT]:EDPDch:EDCH:DATA**Supported** E4438C with Option 419

```
[ :SOURCE ] : RADIO : WCDMA : HSPA [ : BBG ] : ULINK : HSUPa : TFC [ : ALT ] : EDPDch : EDCH : DATA
PN9 | FIX4 | "<file name>"
[ :SOURCE ] : RADIO : WCDMA : HSPA [ : BBG ] : ULINK : HSUPa : TFC [ : ALT ] : EDPDch : EDCH : DATA?
```

This command defines the alternate E-DCH data type.

EDCH This choice selects E-DCH for data.

"<file name>" This variable represents a data pattern file stored in signal generator memory. The data pattern must contain at least one bit or the apply function will not work.

***RST** PN9

Remarks Setting the command parameter while the signal is active also requires executing the apply command. Refer to “:ULINK:APPLY” on page 717.

:ULINK:HSUPa:TFC[:ALT]:EDPDch:EDCH:DATA:FIX4**Supported** E4438C with Option 419

```
[ :SOURCE ] : RADIO : WCDMA : HSPA [ : BBG ] : ULINK : HSUPa : TFC [ : ALT ] : EDPDch : EDCH : DATA :
FIX4 <val>
[ :SOURCE ] : RADIO : WCDMA : HSPA [ : BBG ] : ULINK : HSUPa : TFC [ : ALT ] : EDPDch : EDCH : DATA :
FIX4?
```

This command defines the E-DCH repeating 4-bit binary data pattern when the alternate TFC setting is used.

The variable <val> accepts values in binary, hexadecimal, or decimal format; however, the query returns only binary values.

***RST** 0

Range 0–15

Remarks Setting the command parameter while the signal is active also requires executing the apply command. Refer to “:ULINK:APPLY” on page 717.

:ULINK:HSUPa:TFC[:ALT]:EDPDch:POWer

Supported E4438C with Option 419

```
[ :SOURCE ] : RADIO : WCDMA : HSPA [ : BBG ] : ULINK : HSUPa : TFC [ : ALT ] : EDPDch :
POWer <val>
[ :SOURCE ] : RADIO : WCDMA : HSPA [ : BBG ] : ULINK : HSUPa : TFC [ : ALT ] : EDPDch : POWer?
```

This command sets the E-DPDCH power level of the alternate TFC setting.

The variable <val> is expressed in decibels (dB).

***RST** 0.00000000E+00

Range -40 to 0

:ULINK:HSUPa:TFC[:ALT]EDPDch:SNPHchs

Supported E4438C with Option 419

```
[ :SOURCE ] : RADIO : WCDMA : HSPA [ : BBG ] : ULINK : HSUPa : TFC [ : ALT ] : EDPDch : SNPHchs
SF256 | SF128 | SF64 | SF32 | SF16 | SF8 | SF4 | SF4SF4 | SF2SF2 | SF4SF4SF2SF2
[ :SOURCE ] : RADIO : WCDMA : HSPA [ : BBG ] : ULINK : HSUPa : TFC [ : ALT ] : EDPDch : SNPHchs?
```

This command sets the SF and number of E-DPDCHs of the TFC alternate setting.

- SF256 Set the spreading factor to 256 and the number of E-DPDCH to 1
- SF128 Set the spreading factor to 128 and the number of E-DPDCH to 1
- SF64 Set the spreading factor to 64 and the number of E-DPDCH to 1
- SF16 Set the spreading factor to 16 and the number of E-DPDCH to 1
- SF8 Set the spreading factor to 8 and the number of E-DPDCH to 1
- SF4 Set the spreading factor to 4 and the number of E-DPDCH to 1
- SF4SF4 Set the spreading factor to 4 and the number of E-DPDCH to 2
- SF2SF2 Set the spreading factor to 2 and the number of E-DPDCH to 2
- SF4SF4SF2SF2 Set the spreading factor to 4 for 2 E-DPDCHs and the spreading factor to 2 for 2 E-DPDCHs
- *RST** SF4

:ULINK:HSUPa:TFC[:ALT]:ETABLE**Supported** E4438C with Option 419

```
[ :SOURCE ] :RADIo:WCDMA:HSPA[ :BBG ] :ULINK:HSUPa:TFC[ :ALT ] :ETABLe 0|1
[ :SOURCE ] :RADIo:WCDMA:HSPA[ :BBG ] :ULINK:HSUPa:TFC[ :ALT ] :ETABLe?
```

This command sets the E-TFCI table selection of the TFC alternate setting as shown in the E-TFCI Table Selection, TS 25.321 Annex B.

0 This choice selects Table 0.

1 This choice selects Table 1.

RST** 1**Remarks** Setting the command parameter while the signal is active also requires executing the apply command. Refer to “:ULINK:APPLY” on page 717.**:ULINK:HSUPa:TFC[:ALT]:ETFICI*Supported** E4438C with Option 419

```
[ :SOURCE ] :RADIo:WCDMA:HSPA[ :BBG ] :ULINK:HSUPa:TFC[ :ALT ] :ETFICI <value>
[ :SOURCE ] :RADIo:WCDMA:HSPA[ :BBG ] :ULINK:HSUPa:TFC[ :ALT ] :ETFICI?
```

This command sets the E-TFC index 7-bit pattern for the TFC alternate setting. The TTI value controls the E-TFCI value as described in range field below. If a value exceeds its range, the value is clipped to the allowed maximum value for the current configuration.

***RST** 41

Range 0-127 if E-TFCI Table = 0
 0-125 if E-TFCI Table = 1 and TTI = 2 ms
 0-120 if E-TFCI Table = 1 and TTI = 10 ms

:ULINK:HSUPa:TTI**Supported** E4438C with Option 419

```
[ :SOURCE ] :RADIo:WCDMA:HSPA[ :BBG ] :ULINK:HSUPa:TTI 2|10
[ :SOURCE ] :RADIo:WCDMA:HSPA[ :BBG ] :ULINK:HSUPa:TTI?
```

This command sets the static TTI value for the HSUPA.

***RST** 10

:ULINK:HSUPa[:STATe]

Supported E4438C with Option 419

```
[ :SOURCE ] :RADio:WCDMa:HSPA[ :BBG ] :ULINK:HSUPa : [ :STATe ] ON | OFF | 1 | 0  
[ :SOURCE ] :RADio:WCDMa:HSPA[ :BBG ] :ULINK:HSUPa : [ :STATe ] ?
```

This command turns the uplink HSUPA state to ON | 1 or OFF | 0.

***RST** 1

:ULINK:NMDPdch

Supported E4438C with Option 419

```
[ :SOURCE ] :RADio:WCDMa:HSPA[ :BBG ] :ULINK:NMDPdch 0 | 1  
[ :SOURCE ] :RADio:WCDMa:HSPA[ :BBG ] :ULINK:NMDPdch ?
```

This command sets the Nmax-dpdch (maximum number of simultaneous uplink DPDCH).

***RST** 0

Remarks Setting the command parameter while the signal is active also requires executing the apply command. Refer to “[:ULINK:APPLY](#)” on page 717.

:ULINK:POLarity

Supported E4438C with Option 419

```
[ :SOURCE ] :RADio:WCDMa:HSPA[ :BBG ] :ULINK:POLarity NORMAL | INVerted | INVert  
[ :SOURCE ] :RADio:WCDMa:HSPA[ :BBG ] :ULINK:POLarity ?
```

This command selects the phase polarity of the uplink signal.

NORMAL This choice selects normal polarity.

INVerted, INVert These choices perform the same function, inverting the internal Q signal.

***RST** NORM

Remarks Setting the command parameter while the signal is active also requires executing the apply command. Refer to “[:ULINK:APPLY](#)” on page 717.

:ULINK:SCRamblecode**Supported** E4438C with Option 419

```
[ :SOURCE ]:RADIO:WCDMA:HSPA[ :BBG]:ULINK:SCRamblecode <val>
[ :SOURCE ]:RADIO:WCDMA:HSPA[ :BBG]:ULINK:SCRamblecode?
```

This command sets the scramble code.

RST** +0**Range** 0–16777215**:ULINK:SDElay*Supported** E4438C with Option 419

```
[ :SOURCE ]:RADIO:WCDMA:HSPA[ :BBG]:ULINK:SDElay <val>
[ :SOURCE ]:RADIO:WCDMA:HSPA[ :BBG]:ULINK:SDElay?
```

This command sets the uplink DPCH delay, measured in slots.

***RST** +0**Range** 0–119**Remarks** Calculate the delay between downlink and uplink DPCH, in slots, using the following formulas. Total Delay = (T0) + (TOFFset) + ((SDElay) * 2560 chips)

- T0 = 1024 chips
- TOFFset is set by “:ULINK:TOFFset” on page 758

Slot Delay = (Total Delay - T0) / 2560

:ULINK:SFNRst:POLarity**Supported** E4438C with Option 419

```
[ :SOURCE ]:RADIO:WCDMA:HSPA[ :BBG]:ULINK:SFNRst:POLarity POSitive|
NEGative
[ :SOURCE ]:RADIO:WCDMA:HSPA[ :BBG]:ULINK:SFNRst:POLarity?
```

This command sets the polarity of the system frame number reset signal for the uplink synchronization source.

POSitive	This choice sets the signal to trigger when the trigger signal is high.
NEGative	This choice sets the signal to trigger when the trigger signal is low.
*RST	POS
Remarks	This command is applicable only when SFN_RST is the sync source selection. See “:ULINK:SYNC[:SOURce]” on page 755 for selecting the sync source.

:ULINK:SYNC:MODE

Supported E4438C with Option 419

```
[ :SOURce ] :RADio:WCDMa:HSPA[ :BBG ] :ULINK:SYNC:MODE SINGLE | CONTinuous
[ :SOURce ] :RADio:WCDMa:HSPA[ :BBG ] :ULINK:SYNC:MODE?
```

This command selects the uplink frame synchronization triggering mode.

SINGLE The signal generator, once triggered, generates frames based on the reference clock.

CONTinuous The signal generator continuously aligns the frame timing with the frame sync trigger signal.

***RST** SING

:ULINK:SYNC[:SOURce]

Supported E4438C with Option 419

```
[ :SOURce ] :RADio:WCDMa:HSPA[ :BBG ] :ULINK:SYNC[ :SOURce ] SFN_RST | FCLock
[ :SOURce ] :RADio:WCDMa:HSPA[ :BBG ] :ULINK:SYNC[ :SOURce ]?
```

This command selects the uplink frame synchronization source type.

SFN_RST The uplink signal triggers on the system frame number reset signal.

FCLock The uplink signal triggers on the frame clock.

***RST** FCL

:ULINK:TGAP:PSI[1]:CFN**Supported** E4438C with Option 419

[:SOURCE]:RADIO:WCDMA:HSPA[:BBG]:ULINK:TGAP:PSI[1]:CFN <val>

[:SOURCE]:RADIO:WCDMA:HSPA[:BBG]:ULINK:TGAP:PSI[1]:CFN?

This command sets the connection frame number (CFN) for the first radio frame of the first pattern 1.

RST** 0**Range** 0–255**Remarks** In the signal generator, CFN is counted internally, relative to the system sync signal.**:ULINK:TGAP:PSI[1]:D*Supported** E4438C with Option 419

[:SOURCE]:RADIO:WCDMA:HSPA[:BBG]:ULINK:TGAP:PSI[1]:D <val>

[:SOURCE]:RADIO:WCDMA:HSPA[:BBG]:ULINK:TGAP:PSI[1]:D?

This command sets the transmission gap distance. It specifies the number of slots between the starting slots of two consecutive transmission gaps within a transmission gap pattern. A value of 0 indicates that there is only one transmission gap within the transmission gap pattern.

RST** 0**Range** 0, 15–269**:ULINK:TGAP:PSI[1]:L1*Supported** E4438C with Option 419

[:SOURCE]:RADIO:WCDMA:HSPA[:BBG]:ULINK:TGAP:PSI[1]:L1 3|4|5|7|10|14

[:SOURCE]:RADIO:WCDMA:HSPA[:BBG]:ULINK:TGAP:PSI[1]:L1?

This command specifies the length of the first transmission gap (TGL1). The length is expressed in number of slots.

***RST** +7

:ULINK:TGAP:PSI[1]:L2

Supported E4438C with Option 419

```
[ :SOURCE ] : RADIO : WCDMA : HSPA [ : BBG ] : ULINK : TGAP : PSI [ 1 ] : L2 0 | 3 | 4 | 5 | 7 | 10 | 14  
[ :SOURCE ] : RADIO : WCDMA : HSPA [ : BBG ] : ULINK : TGAP : PSI [ 1 ] : L2 ?
```

This command specifies the length of the second transmission gap (TGL2). When the value is set to 0, TGL2=TGL1.

***RST** 0

:ULINK:TGAP:PSI[1]:PL1

Supported E4438C with Option 419 and Option 400

```
[ :SOURCE ] : RADIO : WCDMA : HSPA [ : BBG ] : ULINK : TGAP : PSI [ 1 ] : PL1 <val>  
[ :SOURCE ] : RADIO : WCDMA : HSPA [ : BBG ] : ULINK : TGAP : PSI [ 1 ] : PL1 ?
```

This command specifies the duration of the transmission gap pattern length 1 (TGPL1). The pattern length is expressed in number of frames.

***RST** +2

Range 1–144

:ULINK:TGAP:PSI[1]:PRC

Supported E4438C with Option 419

```
[ :SOURCE ] : RADIO : WCDMA : HSPA [ : BBG ] : ULINK : TGAP : PSI [ 1 ] : PRC <val>  
[ :SOURCE ] : RADIO : WCDMA : HSPA [ : BBG ] : ULINK : TGAP : PSI [ 1 ] : PRC ?
```

This command sets the transmission gap pattern repetition count. The pattern repetition count (PRC) sets the number of transmission gap patterns within the transmission gap pattern sequence.

***RST** 0

Range 0–511

Remarks A value of 0 indicates that the PRC will continue indefinitely.

:ULINK:TGAP:PSI[1]:PS

Supported E4438C with Option 419

```
[ :SOURCE ] : RADIO : WCDMA : HSPA [ : BBG ] : ULINK : TGAP : PSI [ 1 ] : PS ACTIVE | INACTIVE  
[ :SOURCE ] : RADIO : WCDMA : HSPA [ : BBG ] : ULINK : TGAP : PSI [ 1 ] : PS ?
```

This command sets the transmission gap pattern status.

3GPP W-CDMA HSPA Subsystem–Option 419 ([:SOURCE]:RADIO:WCDMA:HSPA[:BBG])

ACTive	This choice sets the compressed mode active.
INACTive	This choice sets the compressed mode inactive.
*RST	INAC

:ULINK:TGAP:PSI[1]:SN

Supported E4438C with Option 419

```
[ :SOURCE ] :RADIO:WCDMA:HSPA[ :BBG ] :ULINK:TGAP:PSI[ 1 ] :SN <val>
[ :SOURCE ] :RADIO:WCDMA:HSPA[ :BBG ] :ULINK:TGAP:PSI[ 1 ] :SN?
```

This command specifies the timeslot number of the first transmission gap within the first radio frame.

***RST** +11

Range 0–14

:ULINK:TOFFset

Supported E4438C with Option 419

```
[ :SOURCE ] :RADIO:WCDMA:HSPA[ :BBG ] :ULINK:TOFFset <val>
[ :SOURCE ] :RADIO:WCDMA:HSPA[ :BBG ] :ULINK:TOFFset?
```

This command sets the uplink DPCH timing offset (delay), measured in chips.

***RST** 0

Range –512 to 2560

Remarks The downlink signal timing is provided by the synchronization signal. Calculate the delay between downlink and uplink DPCH, in chips, using the following formulas:

$$\text{Total Delay} = (T0) + (\text{TOFFset}) + ((\text{SDElay}) * 2560 \text{ chips})$$

- T0 = 1024 chips
- SDElay is set by “:ULINK:SDElay” on page 754

$$\text{Chip Delay} = (\text{Total Delay} - T0) \text{ mod } 2560$$

:ULINK:TPControl:PATtern

Supported E4438C with Option 419

```
[ :SOURCE ] :RADio:WCDMa:HSPA[ :BBG ] :ULINK:TPControl:PATtern
"<file name>" | EXTernal
[ :SOURCE ] :RADio:WCDMa:HSPA[ :BBG ] :ULINK:TPControl:PATtern?
```

This command sets a user pattern that determines the power control response and controls the power of the user's equipment (UE). The increase/decrease direction for UE power level changes is determined by the transmit power control (TPC) pattern.

"<file name>" This choice specifies a user file. 0: DOWN, 1: UP

EXTernal This choice specifies an external TPC pattern.

***RST** EXTernal

:ULINK:TPControl:PATtern[:EXTernal]:INPut

Supported E4438C with Option 419

```
[ :SOURCE ] :RADio:WCDMa:HSPA[ :BBG ] :ULINK:HSUPa:TFC:EPATtern[ :EXTernal ] :
INPut ALTP | BGAT | PTR2
[ :SOURCE ] :RADio:WCDMa:HSPA[ :BBG ] :ULINK:HSUPa:TFC:EPATtern[ :EXTernal ] :
INPut?
```

This command sets the input port of the external Ack/Nack signal.

ALTP This choice sets the input port of the external signal to ALT PWR IN.

BGAT This choice sets the input port of the external signal to BURST GATE IN.

PTR2 This choice sets the input port of the external signal to PATT TRIG IN 2.

***RST** PTR2

Remarks Setting the command parameter while the signal is active also requires executing the apply command. Refer to "[:ULINK:APPLY](#)" on page 717.

:ULINK:TPControl:PATtern[:EXTernal]:POLarity

Supported E4438C with Option 419

```
[ :SOURCE ] :RADio:WCDMa:HSPA[ :BBG ] :ULINK:TPControl[ :EXTernal ] :POLarity
POSitive | NEGative
[ :SOURCE ] :RADio:WCDMa:HSPA[ :BBG ] :ULINK:TPControl[ :EXTernal ] :POLarity?
```

This command sets the external TPC signal polarity.

3GPP W-CDMA HSPA Subsystem–Option 419 ([:SOURCE]:RADio:WCDMa:HSPA[:BBG])

POSitive	This choice sets the pattern signal to DOWN when the external signal is low and sets the pattern signal to UP when the external signal is high.
NEGative	This choice sets the pattern signal to DOWN when the external signal is high and sets the pattern signal to UP when the external signal is low.
*RST	POS
Remarks	Setting the command parameter while the signal is active also requires executing the apply command. Refer to “:ULINK:APPLY” on page 717.

:ULINK:TPControl:POWer:INITial

Supported E4438C with Option 419

```
[ :SOURCE ] :RADio:WCDMa:HSPA[ :BBG ] :ULINK:TPControl:POWer:INITial <val>
[ :SOURCE ] :RADio:WCDMa:HSPA[ :BBG ] :ULINK:TPControl:POWer:INITial?
```

This command sets the initial power of the transmission power control, in dB (relative to Max Power: 0.00 dB).

***RST** +0.00000000E+000

Range 0 to –40 dB

Remarks If the parameter set by this command is changed while the signal is active, the “:ULINK:APPLY” on page 717 must be executed for the change to occur. The value must be larger than or equal to the minimum transmit power. The power difference between the initial power and the maximum power should be a multiple value of the power step. Initial power is relative to the maximum power (amplitude) set on the signal generator.

:ULINK:TPControl:POWer:MAXimum

Supported E4438C with Option 419

```
[ :SOURCE ] :RADio:WCDMa:HSPA[ :BBG ] :ULINK:TPControl:POWer:MAXimum?
```

This query returns the maximum power of the transmit power control, relative to Maximum Power, in dB. The value shown for this parameter will always be 0.00 dB, and is a relative value to the maximum amplitude set for the signal generator.

For example, if the signal generator amplitude is set to –20 dBm, the Minimum Power is set to –40 dB, and the Initial Power is set to –10 dB, then the absolute initial power level will be –30 dBm, which is 10 dBm below the signal generator amplitude, and the absolute minimum power will be –60 dBm, which is 40 dBm below the signal generator amplitude.

***RST** +0.00000000E+000

:ULINK:TPControl:POWER:MINimum

Supported E4438C with Option 419

```
[ :SOURCE ] : RADIO : WCDMA : HSPA [ : BBG ] : ULINK : TPControl : POWER : MINimum <val>  
[ :SOURCE ] : RADIO : WCDMA : HSPA [ : BBG ] : ULINK : TPControl : POWER : MINimum?
```

This command sets the initial power of the transmission power control, in dB (relative to Max Power: 0.00 dB).

The minimum power value must be less than or equal to the value used for initial power. Minimum power is decreased in increments determined by the value set for the power step. The power difference between minimum and maximum power should be a multiple of the power step value.

Minimum power is limited by the amplitude set on the signal generator. The signal generator amplitude must be set to –96 dBm or lower for the minimum power to be set to –40 dB.

*RST – 4.00000000E+001

Range – 40 to 0 dB

Remarks Setting the command parameter while the signal is active also requires executing the apply command. Refer to “:ULINK:APPLY” on page 717.

:ULINK:TPControl:POWER:STEP

Supported E4438C with Option 419

```
[ :SOURCE ] : RADIO : WCDMA : HSPA [ : BBG ] : ULINK : TPControl : POWER : STEP  
DB0_5 | DB1_0 | DB2_0 | DB3_0  
[ :SOURCE ] : RADIO : WCDMA : HSPA [ : BBG ] : ULINK : TPControl : POWER : STEP?
```

This command sets the power control step size. Initial power can only be increased in steps set by the power step command.

*RST DB0_5

Remarks Setting the command parameter while the signal is active also requires executing the apply command. Refer to “:ULINK:APPLY” on page 717.

3GPP W-CDMA HSPA Subsystem–Option 419 ([:SOURCE]:RADIO:WCDMA:HSPA[:BBG])

:ULINK:TPControl[:STATE]

Supported E4438C with Option 419

```
[ :SOURCE ] :RADIO:WCDMA:HSPA[ :BBG ] :ULINK:TPControl [ :STATE ] 1 | 0 | ON | OFF  
[ :SOURCE ] :RADIO:WCDMA:HSPA[ :BBG ] :ULINK:TPControl [ :STATE ] ?
```

This command enables or disables the transmission power control.

***RST** 0

[:STATE]

Supported E4438C with Option 419

```
[ :SOURCE ] :RADIO:WCDMA:HSPA[ :BBG ] [ :STATE ] ON | OFF | 1 | 0  
[ :SOURCE ] :RADIO:WCDMA:HSPA[ :BBG ] [ :STATE ] ?
```

This command turns the HSPA functionality on or off.

***RST** 0

Remarks This command only works when there is at least one active physical channel within the selected link.

GPS Subsystem–Option 409 ([:SOURce]:RADio[1] | 2 | 3 | 4:GPS)

:DATA

Supported E4438C with Option 409

```
[ :SOURce ] :RADio :GPS :DATA PN9 | PN15 | FIX4 | "<user file>"  
[ :SOURce ] :RADio :GPS :DATA ?
```

This command sets the data type for the selected data mode.

***RST** PN9

Key Entry PN9 PN15 FIX4 User file

Remarks This command is only effective when the data mode is RAW or ENCOded. To set the data mode, refer to **”:DMODE”**.

:DMODE

Supported E4438C with Option 409

```
[ :SOURce ] :RADio :GPS :DMODE RAW | ENCOded | TLM  
[ :SOURce ] :RADio :GPS :DMODE ?
```

This command sets the data mode.

RAW This choice modulates data onto the C/A (coarse acquisition) code at 50-bits per second. No parity bits are computed by the signal generator. Every 6 seconds, 300-bits from the source data are transmitted.

ENCOded This choice modulates data onto the C/A (coarse acquisition) code at 50-bits per second. The signal generator computes 6 parity bits for every 24 data bits from the selected data source. Every six seconds, 240-bits of the source data are transmitted along with 60-bits of computed parity.

TLM This choice transmits a standard default navigation data transmission which includes a telemetry word (TLM), a handover word (HOW), and default navigation data. The signal generator transmits an incrementing time-of-week (TOW) as part of the HOW.

*RST	RAW
Key Entry	Data Mode Raw Enc TLM
Remarks	Since the TLM mode transmits default navigation data, there is no data selection for this mode. For selecting the data type when RAW or ENCOded is the selection, refer to “:DATA” on page 763.

:DSHift

Supported E4438C with Option 409

```
[ :SOURce ]:RADio:GPS:DSHift <val>
```

```
[ :SOURce ]:RADio:GPS:DSHift?
```

This command sets the frequency and chip rate offsets to simulate a doppler shift.

The variable <val> is expressed in units of hertz (Hz to kHz).

***RST** +0.00000000E+000

Range –125 to 125

Key Entry Doppler Shift

Remarks The lower bound of the doppler shift is limited by the frequency set on the signal generator. For example, if the signal generator frequency is set to 100 kHz, then the lower limit of the doppler shift would be 0.00 Hz. The doppler shift can not extend lower than the limitations of the signal generator

:FILTer

Supported E4438C with Option 409

```
[ :SOURce ]:RADio:GPS:FILTer RNYQuist | NYQuist | GAUSSian | RECTangle |
```

```
IS95 | IS95_EQ | IS95_MOD | IS95_MOD_EQ | AC4Fm | UGGaussian | "<user FIR>"
```

```
[ :SOURce ]:RADio:GPS:FILTer?
```

This command sets the pre-modulation filter type.

IS95 This choice selects a filter that meets the criteria of the IS-95 standard.

IS95_EQ This choice selects a filter which is a combination of the IS-95 filter (above) and the equalizer filter described in the IS-95 standard. This filter is only used for IS-95 baseband filtering.

IS95_MOD	This choice selects a filter that meets the criteria of the IS-95 error function (for improved adjacent channel performance) with lower passband rejection than the filter specified in the IS-95 standard.																		
IS95_MOD_EQ	This choice selects a filter which is a combination of the equalizer filter described in the IS-95 standard and a filter that meets the criteria of the IS-95 error function (for improved adjacent channel performance) with lower passband rejection.																		
AC4Fm	This choice selects a predefined Association of Public Safety Communications Officials (APCO) specified compatible 4-level frequency modulation (C4FM) filter.																		
UGGaussian	This choice selects a backwards compatible GSM Gaussian filter (Gaussian filter with a fixed BbT value of 0.300) for the ESG E44xxB Option UN3 or UN4.																		
"<user FIR>"	This variable is any filter file that you have stored into memory.																		
*RST	RECT																		
Key Entry	<table border="0" style="width: 100%;"> <tr> <td style="text-align: left;">Root Nyquist</td> <td style="text-align: left;">Nyquist</td> <td style="text-align: left;">Gaussian</td> <td style="text-align: left;">Rectangle</td> <td style="text-align: left;">IS-95</td> <td style="text-align: left;">IS-95 w/EQ</td> </tr> <tr> <td style="text-align: left;">IS-95 Mod</td> <td style="text-align: left;">IS-95 Mod w/EQ</td> <td style="text-align: left;">APCO25 C4FM</td> <td style="text-align: left;">UN3/4 GSM</td> <td style="text-align: left;">Gaussian</td> <td></td> </tr> <tr> <td colspan="6" style="text-align: left;">User FIR</td> </tr> </table>	Root Nyquist	Nyquist	Gaussian	Rectangle	IS-95	IS-95 w/EQ	IS-95 Mod	IS-95 Mod w/EQ	APCO25 C4FM	UN3/4 GSM	Gaussian		User FIR					
Root Nyquist	Nyquist	Gaussian	Rectangle	IS-95	IS-95 w/EQ														
IS-95 Mod	IS-95 Mod w/EQ	APCO25 C4FM	UN3/4 GSM	Gaussian															
User FIR																			

:FILTer:ALPHA

Supported E4438C with Option 409

```
[ :SOURce ] :RADio :GPS :FILTer :ALPHA <val>
[ :SOURce ] :RADio :GPS :FILTer :ALPHA?
```

This command sets the Nyquist or root Nyquist filter’s alpha value.

The filter alpha value can be set to the minimum value (0), maximum value (1), or in between by using fractional numeric values (0.001–0.999).

***RST** +2.20000000E-001

Range 0.000–1.000

Key Entry **Filter Alpha**

Remarks To change the current filter type, refer to “:FILTer” on page 764.

:FILTer:BBT**Supported** E4438C with Option 409

[:SOURCE]:RADio:GPS:FILTer:BBT <val>

[:SOURCE]:RADio:GPS:FILTer:BBT?

This command changes the bandwidth-multiplied-by-bit-time (BbT) filter parameters.

The filter BbT value can be set to the minimum value (0), the maximum value (1), or in between by using fractional numeric values (0.001–0.999)

***RST** +5.00000000E-001**Range** 0.000–1.000**Key Entry** Filter BbT

Remarks This command is effective only after choosing a Gaussian filter. It does not have an effect on other types of filters.

To change the current filter type, refer to “:FILTer” on page 764.

:FILTer:CHANnel**Supported** E4438C with Option 409

[:SOURCE]:RADio:GPS:FILTer:CHANnel EVM|ACP

[:SOURCE]:RADio:GPS:FILTer:CHANnel?

This command optimizes the Nyquist and root Nyquist filters to minimize error vector magnitude (EVM) or to minimize adjacent channel power (ACP).

EVM This choice provides the most ideal passband.

ACP This choice improves stopband rejection.

***RST** EVM**Key Entry** Optimize FIR For EVM ACP

Remarks To change the current filter type, refer to “:FILTer” on page 764.

:IQPHase

Supported E4438C with Option 409
[:SOURce]:RADio:GPS:IQPHase NORMal | INVerted
[:SOURce]:RADio:GPS:IQPHase?

This command sets the I/Q phase for the GPS signal.

NORMal This choice selects normal phase polarity.

INVerted This choice inverts the internal Q signal.

***RST** NORM

Key Entry IQ Phase Normal Invert

:PCODE

Supported E4438C with Option 409
[:SOURce]:RADio:GPS:PCODE <val>
[:SOURce]:RADio:GPS:PCODE?

This command sets the P code power relative to the C/A code power.

***RST** -3

Range -40 to 0

Key Entry P Code Pwr

Remarks This command is normally used when the CAP (C/A+P) ranging mode choice is selected. Refer to **":RCODE"** for selecting the ranging mode.

:RCODE

Supported E4438C with Option 409
[:SOURce]:RADio:GPS:RCODE CA | P | CAP
[:SOURce]:RADio:GPS:RCODE?

This command selects the ranging code for the GPS transmission.

CA This choice selects a 1023-bit pseudorandom C/A (coarse acquisition) code that is BPSK modulated onto the L1 (1575.42 MHz) carrier. The C/A code factory set chip rate is 1.023 Mcps using a 10.23 Mcps reference clock.

GPS Subsystem–Option 409 ([:SOURce]:RADio[1] | 2 | 3 | 4:GPS)

P	This choice selects the precise (P) code which is a very long pseudorandom sequence that is BPSK modulated onto the L2 (1227.6 MHz) carrier. The P code factory set chip rate is 10.23 Mcps using a 10.23 Mcps reference clock.
CAP	This choice permits both the C/A (coarse acquisition) and P (precise) codes to modulate the L1 (1575.42 MHz) carrier simultaneously by providing the P code on the Q component and the C/A code in quadrature on the I component.
*RST	CA
Key Entry	Ranging Code C/A P C/A+P

:REFClk

Supported	E4438C with Option 409
	[:SOURce] :RADio :GPS :REFClk INT Ext
	[:SOURce] :RADio :GPS :REFClk ?

This command sets the GPS reference clock to either internal or external.

INT	This selection sets the signal generator to use the internal chip clock.
EXT	This selection sets the signal generator to use an external chip clock which is supplied to the DATA CLOCK INPUT connector.
*RST	INT
Key Entry	GPS Ref Clk

:REFFreq

Supported	E4438C with Option 409
	[:SOURce] :RADio :GPS :REFFreq <val><unit>
	[:SOURce] :RADio :GPS :REFFreq ?

This command sets the GPS reference clock frequency. If an external source is being used, its frequency must match the value set with this command

*RST	+1.02300000E+007
Range	1kCPS–12.5MCPS
Key Entry	GPS Ref (f0)
Remarks	Changing the GPS reference frequency will change the P and C/A code chip rates.

:SATid

Supported E4438C with Option 409

[:SOURCE] :RADio :GPS :SATid <val>

[:SOURCE] :RADio :GPS :SATid?

This command selects the pseudorandom number (PRN) code used for transmission.

Satellite identification numbers 1–32 are used for GPS satellites. Satellite identification numbers 33–37 are reserved for ground transmitter use in the real-world system.

***RST** +1

Range 1–37

Key Entry Satellite ID

[:STATE]

Supported E4438C with Option 409

[:SOURCE] :RADio :GPS [:STATE] ON | OFF | 1 | 0

[:SOURCE] :RADio :GPS [:STATE]?

This command enables or disables the real-time GPS signal.

***RST** 0

Key Entry Real-time GPS Off On

GSM Subsystem–Option 402 ([:SOURce]:RADio:GSM)

:ALPha

Supported E4438C with Option 402

```
[ :SOURce ] :RADio :GSM :ALPha <val>  
[ :SOURce ] :RADio :GSM :ALPha ?
```

This command changes the Nyquist or root Nyquist filter’s alpha value.

The filter alpha value can be set to the minimum level (0), the maximum level (1), or in between by using fractional numeric values (0.001–0.999).

***RST** +5.00000000E–001

Range 0.000–1.000

Key Entry Filter Alpha

Remarks To change the current filter type, refer to “:FILTer” on page 783.

:BBCLock

Supported E4438C with Option 402

```
[ :SOURce ] :RADio :GSM :BBCLock INT[1] | EXT[1]  
[ :SOURce ] :RADio :GSM :BBCLock ?
```

This command toggles the data (bit) clock input to the baseband generator board to either internal or external. This command is independent in each mode and works for both non-burst (continuous) and burst modes. This allows for a matrix of selections between burst/non-burst, internal/external data generation, internal/external data clock, and external bit/symbol data clock.

INT[1] This choice selects the signal generator internal data clock.

EXT[1] This choice selects an external data clock input.

***RST** INT

Key Entry BBG Data Clock Ext Int

Remarks A data clock or continuous symbol sync input must be supplied when external mode is used.

This will be ignored if the external reference is set to EXTERNAL. To change the external reference type, refer to “:EREFerence” on page 782.

:BBT

Supported E4438C with Option 402

[:SOURce]:RADio:GSM:BBT <val>

[:SOURce]:RADio:GSM:BBT?

This command changes the bandwidth-multiplied-by-bit-time (BbT) filter parameter.

The filter BbT value can be set to the maximum level (1) or in between the minimum level (0.100) and maximum level by using fractional numeric values (0.101–0.999).

***RST** +3.00000000E–001

Range 0.100–1.000

Key Entry Filter BbT

Remarks This command is effective only after choosing a Gaussian filter. It does not have an effect on other types of filters.

To change the current filter type, refer to “:FILTer” on page 783.

:BRATe

Supported E4438C with Option 402

[:SOURce]:RADio:GSM:BRATe <val>

[:SOURce]:RADio:GSM:BRATe?

This command sets the bit rate in bits per second (bps–Mbps). The maximum bit rate is dependent on the modulation type and filter as shown in the following tables.

NOTE When using multiframe, limit the symbol rate to no more than 271 ksps. Although higher rates may work, they are not supported. See “:SRATe” on page 801 for data stated as symbol rates.

The IQ digital data stream is shaped by a FIR filter. The filter length and associated latency and frequency response are dependent on the bit rate as shown in the following tables. The signal generator selects a filter length.

For higher bit rates, the FIR filter length may be truncated (if the minimum filter size allows it) which will impact the relative timing of the modulated data, as well as the actual filter response (see the symbol rate command “:SRATe” on page 962). Refer to “:FILTer” on page 783 for information on filter symbol widths.

To change the modulation type, refer to “:MODulation[:TYPE]” on page 786.

Receiver Test Digital Commands (continued)
GSM Subsystem–Option 402 ([:SOURCE]:RADio:GSM)

When the bit rate is changed, the ESG reconfigures the baseband generator. The time required to reconfigure the baseband generator is inversely proportional to the bit rate: lower bit rates require more time.

***RST** +2.70833333E+005

Range	Modulation Type	Bit Rate Range		
		16 Symbol Wide Filter	32 Symbol Wide Filter	64 Symbol Wide Filter
BPSK, FSK2, MSK		1bps–50Mbps	1bps–25Mbps	1bps–12.5Mbps
C4FM, OQPSK, FSK4		2bps–50Mbps	2bps–25Mbps	2bps–12.5Mbps
OQPSKI95, QPSK				
P4QPPSK, QPSKIS95				
GRAYQPSK, QAM4				
D8PSK, EDGE, FSK8, PSK8		3bps–50Mbps	3bps–25Mbps	3bps–12.5Mbps
FSK16, PSK16, QAM16		4bps–50Mbps	4bps–25Mbps	4bps–12.5Mbps
QAM32		5bps–50Mbps	5bps–25Mbps	5bps–12.5Mbps
QAM64		6bps–50Mbps	6bps–25Mbps	6bps–12.5Mbps
QAM128		7bps–50Mbps	7bps–25Mbps	7bps–12.5Mbps
QAM256		8bps–50Mbps	8bps–25Mbps	8bps–12.5Mbps

Key Entry **Symbol Rate**

:BURSt:PN9

Supported E4438C with Option 402

[:SOURCE] :RADio:GSM: BURSt: PN9 NORMal | QUICk
 [:SOURCE] :RADio:GSM: BURSt: PN9?

This command controls the software PN9 generation.

NORMal This choice produces a maximum length PN9 sequence.

QUICk This choice produces a truncated PN9 sequence.

***RST** NORM

Key Entry PN9 Mode Normal Quick

Remarks Use Normal mode for bit-error-rate tests where a maximum length PN9 sequence is required.

:BURSt:SHAPe:FALL:DELay

Supported E4438C with Option 402

[:SOURce] :RADio:GSM:BURSt:SHAPe:FALL:DELay <val>

[:SOURce] :RADio:GSM:BURSt:SHAPe:FALL:DELay?

This command sets the burst shape fall delay.

The variable <val> is expressed in bits. The minimum and maximum values depend upon modulation type and symbol rate.

***RST** +0.00000000E+000

Range –11.0625 to 99

Key Entry **Fall Delay**

Remarks The setting enabled by this command is not affected by signal generator power-on, preset, or *RST.

To change the modulation type, refer to “:MODulation[:TYPE]” on page 786. Refer to “:SRATe” on page 962 for a list of the minimum and maximum symbol rate values.

“:BURSt:SHAPe:FDELay” on page 774 performs the same function; in compliance with the SCPI standard, both commands are listed.

For concept information on burst shaping, refer to the *E4428C/38C ESG Signal Generators User’s Guide*.

:BURSt:SHAPe:FALL:TIME

Supported E4438C with Option 402

[:SOURce] :RADio:GSM:BURSt:SHAPe:FALL:TIME <val>

[:SOURce] :RADio:GSM:BURSt:SHAPe:FALL:TIME?

This command sets the burst shape fall time.

The variable <val> is expressed in bits. The minimum and maximum values depend upon modulation type and symbol rate.

***RST** +1.00000000E+001

Range 0.0625–127.9375

Key Entry	Fall Time
Remarks	<p>The setting enabled by this command is not affected by signal generator power-on, preset, or *RST.</p> <p>To change the modulation type, refer to “:MODulation[:TYPE]” on page 786. Refer to “:SRATE” on page 962 for a list of the minimum and maximum symbol rate values.</p> <p>“:BURSt:SHAPe:FTIME” on page 775 performs the same function; in compliance with the SCPI standard, both commands are listed.</p> <p>For concept information on burst shaping, refer to the <i>E4428C/38C ESG Signal Generators User’s Guide</i>.</p>

:BURSt:SHAPe:FDElay

Supported	E4438C with Option 402
	<pre>[:SOURCE] :RADIO:GSM: BURSt: SHAPe: FDElay <val> [:SOURCE] :RADIO:GSM: BURSt: SHAPe: FDElay?</pre>
	<p>This command sets the burst shape fall delay.</p> <p>The variable <val> is expressed in bits. The minimum and maximum values depend upon modulation type and symbol rate.</p>
*RST	+0.00000000E+000
Range	–11.0625 to 99
Key Entry	Fall Delay
Remarks	<p>The setting enabled by this command is not affected by signal generator power-on, preset, or *RST.</p> <p>To change the modulation type, refer to “:MODulation[:TYPE]” on page 786. Refer to “:SRATE” on page 962 for a list of the minimum and maximum symbol rate values.</p> <p>“:BURSt:SHAPe:FALL:DElay” on page 773 performs the same function; in compliance with the SCPI standard, both commands are listed.</p> <p>For concept information on burst shaping, refer to the <i>E4428C/38C ESG Signal Generators User’s Guide</i>.</p>

:BURSt:SHAPe:FTIME

Supported E4438C with Option 402

[:SOURce] :RADio:GSM:BURSt:SHAPe:FTIME <val>

[:SOURce] :RADio:GSM:BURSt:SHAPe:FTIME?

This command sets the burst shape fall time.

The variable <val> is expressed in bits. The minimum and maximum values depend upon modulation type and symbol rate.

***RST** +3.00000000E+000

Range 0.0625–127.9375

Key Entry Fall Time

Remarks The setting enabled by this command is not affected by signal generator power-on, preset, or *RST.

To change the modulation type, refer to “:MODulation[:TYPE]” on page 786. Refer to “:SRATE” on page 962 for a list of the minimum and maximum symbol rate values.

“:BURSt:SHAPe:FALL:TIME” on page 773 performs the same function; in compliance with the SCPI standard, both commands are listed.

For concept information on burst shaping, refer to the *E4428C/38C ESG Signal Generators User’s Guide*.

:BURSt:SHAPe:RDELay

Supported E4438C with Option 402

[:SOURce] :RADio:GSM:BURSt:SHAPe:RDELay <val>

[:SOURce] :RADio:GSM:BURSt:SHAPe:RDELay?

This command sets the burst shape rise delay.

The variable <val> is expressed in bits. The minimum and maximum values depend upon modulation type and symbol rate. For concept information on burst shaping, refer to the *E4428C/38C ESG Signal Generators User’s Guide*.

***RST** +0.00000000E+000

Range –8.0625 to 99

Key Entry Rise Delay

Remarks The setting enabled by this command is not affected by signal generator power-on, preset, or *RST.

To change the modulation type, refer to “:MODulation[:TYPE]” on page 786. Refer to “:SRATe” on page 962 for a list of the minimum and maximum symbol rate values.

“:BURSt:SHAPe:RISE:DELay” on page 776 performs the same function; in compliance with the SCPI standard, both commands are listed.

:BURSt:SHAPe:RISE:DELay

Supported E4438C with Option 402

```
[ :SOURce ] :RADio:GSM: BURSt: SHAPe:RISE: DELay <val>  
[ :SOURce ] :RADio:GSM: BURSt: SHAPe:RISE: DELay?
```

This command sets the burst shape rise delay.

The variable <val> is expressed in bits. The minimum and maximum values depend upon modulation type and symbol rate. For concept information on burst shaping, refer to the *E4428C/38C ESG Signal Generators User’s Guide*.

***RST** +0.00000000E+000

Range –8.0625 to 99

Key Entry Rise Delay

Remarks The setting enabled by this command is not affected by signal generator power-on, preset, or *RST.

To change the modulation type, refer to “:MODulation[:TYPE]” on page 786. Refer to “:SRATe” on page 962 for a list of the minimum and maximum symbol rate values.

“:BURSt:SHAPe:RDELay” on page 775 performs the same function; in compliance with the SCPI standard, both commands are listed.

:BURSt:SHAPe:RISE:TIME

Supported E4438C with Option 402

[:SOURCE] :RADIo:GSM:BURSt:SHAPe:RISE:TIME <val>

[:SOURCE] :RADIo:GSM:BURSt:SHAPe:RISE:TIME?

This command sets the burst shape rise time.

The variable <val> is expressed in bits. The minimum and maximum values depend upon modulation type and symbol rate. For concept information on burst shaping, refer to the *E4428C/38C ESG Signal Generators User's Guide*.

***RST** +3.00000000E+000

Range 0.0625–11.1875

Key Entry Rise Time

Remarks The setting enabled by this command is not affected by signal generator power-on, preset, or *RST.

To change the modulation type, refer to “:MODulation[:TYPE]” on page 786. Refer to “:SRAtE” on page 962 for a list of the minimum and maximum symbol rate values.

“:BURSt:SHAPe:RTIME” on page 777 performs the same function; in compliance with the SCPI standard, both commands are listed.

:BURSt:SHAPe:RTIME

Supported E4438C with Option 402

[:SOURCE] :RADIo:GSM:BURSt:SHAPe:RTIME <val>

[:SOURCE] :RADIo:GSM:BURSt:SHAPe:RTIME?

This command sets the burst shape rise time.

The variable <val> is expressed in bits. The minimum and maximum values depend upon modulation type and symbol rate. For concept information on burst shaping, refer to the *E4428C/38C ESG Signal Generators User's Guide*.

***RST** +3.00000000E+000

Range 0.0625–11.1875

Key Entry Rise Time

Remarks The setting enabled by this command is not affected by signal generator power-on, preset, or *RST.

To change the modulation type, refer to “:MODulation[:TYPE]” on page 786. Refer to “:SRATE” on page 962 for a list of the minimum and maximum symbol rate values.

“:BURSt:SHAPe:RISE:TIME” on page 777 performs the same function; in compliance with the SCPI standard, both commands are listed.

:BURSt:SHAPe[:TYPE]

Supported E4438C with Option 402

```
[ :SOURce ] :RADio :GSM :BURSt :SHAPe [ :TYPE ] SINE | "<file name>"
[ :SOURce ] :RADio :GSM :BURSt :SHAPe [ :TYPE ] ?
```

This command specifies the burst shape as either SINE or a user-defined file ("<file name>").

SINE This choice selects a state that is defined by the burst rise and fall *RST values, as the default burst shape type.

"<file name>" This choice selects a user designated file from signal generator memory (non-volatile).

***RST** SINE

Key Entry Sine User File

:BURSt[:STATe]

Supported E4438C with Option 402

```
[ :SOURce ] :RADio :GSM :BURSt [ :STATe ] ON | OFF | 1 | 0
[ :SOURce ] :RADio :GSM :BURSt [ :STATe ] ?
```

This command enables or disables the burst function.

ON (1) This choice enables the transmission of framed data. If all timeslots which are switched on are up traffic channels or custom, you will be bursting the timeslots that are on; there will be no RF carrier during the off timeslots.

If you have switched on any timeslot that you have configured as a down traffic channel, the RF carrier is not switched off between any of the timeslots. The off timeslots are transmitted as a continuous series of ones for the time period of the off timeslots.

OFF (0) This choice enables the transmission of unframed data.

***RST** 0
Key Entry Data Format Pattern Framed

:CHANnel

Supported E4438C with Option 402
[:SOURce]:RADio:GSM:CHANnel EVM|ACP
[:SOURce]:RADio:GSM:CHANnel?

This command optimizes the Nyquist and root Nyquist filters to minimize error vector magnitude (EVM) or to minimize adjacent channel power (ACP).

EVM This choice provides the most ideal passband.

ACP This choice improves stopband rejection.

***RST** ACP

Key Entry Optimize FIR For Evm ACP

Remarks To change the current filter type, refer to “:FILTer” on page 783.

:DATA

Supported E4438C with Option 402
[:SOURce]:RADio:GSM:DATA PN9|PN11|PN15|PN20|PN23|FIX4|"<file name>"|
EXT|P4|P8|P16|P32|P64|PRAM
[:SOURce]:RADio:GSM:DATA?

This command sets the data pattern type (pseudo-random number sequence, 4-bit pattern, sequence of 1’s and 0’s, data from an external source, or a user file) for unframed data transmission.

***RST** PN23

Key Entry	PN9	PN11	PN15	PN20	PN23	FIX4	User File	Ext
	4 1’s & 4 0’s	8 1’s & 8 0’s	16 1’s & 16 0’s	32 1’s & 32 0’s	64 1’s & 64 0’s	PRAM File		

Remarks Refer to “File Name Variables” on page 13 for information on the file name syntax.

:DATA:PRAM

Supported E4438C with Option 402

```
[ :SOURCE ]:RADIO:GSM:DATA:PRAM "<file_name>"
```

```
[ :SOURCE ]:RADIO:GSM:DATA:PRAM?
```

This command selects a pattern RAM (PRAM) file as the pattern data type for the GSM (Global System for Mobile communication) format.

"<file_name>" This variable designates the PRAM file in WFM1. Refer to [“File Name Variables” on page 13](#) for information on the file name syntax.

Key Entry PRAM File

Remarks Selecting this data source forces the burst source to INTERNAL to allow framing control.

The PRAM file must reside in the signal generator’s volatile memory (WFM1) in order to be accessed by this command. For more information on PRAM files, refer to [“:DATA:PRAM:FILE:BLOCK” on page 112](#).

:DATA:FIX4

Supported E4438C with Option 402

```
[ :SOURCE ]:RADIO:GSM:DATA:FIX4 <val>
```

```
[ :SOURCE ]:RADIO:GSM:DATA:FIX4?
```

This command sets the binary, 4-bit repeating sequence data pattern for unframed transmission according to the modulation type, symbol rate, filter, and burst shape selected for the GSM modulation format.

***RST** #B0000

Range #B0000–#B1111 or 0–15

Key Entry FIX4

Remarks FIX4 must already be defined as the data type.

:DEFAULT

Supported E4438C with Option 402

```
[ :SOURCE ]:RADIO:GSM:DEFAULT
```

This command returns all of the GSM format parameters to their factory default conditions. It does not affect any other signal generator parameters.

Key Entry Restore GSM Factory Default

:DENCode

Supported E4438C with Option 402

[:SOURce]:RADio:GSM:DENCode ON|OFF|1|0
 [:SOURce]:RADio:GSM:DENCode?

This command enables or disables the differential data encoding function. Once this function is enabled, data bits are encoded prior to modulation; each modulated bit is 1 if the data bit is different from the previous one, or 0 if the data bit is the same as the previous one.

***RST** 1

Key Entry **Diff Data Encode Off On**

EDATa:DELay

Supported E4438C with Option 402

[:SOURce]:RADio:GSM:EDATa:DELay?

This query returns the amount of delay (in symbols) from the external data input to the beginning of the symbol on the I OUT and Q OUT rear panel connectors and the front panel RF OUTPUT connector.

Remarks When the format is turned off, the delay value is unchanged; the query will return the same delay value if the format is on or off.

:EDCLock

Supported E4438C with Option 402

[:SOURce]:RADio:GSM:EDCLock SYMBol|NORMal
 [:SOURce]:RADio:GSM:EDCLock?

This command sets the external data clock use.

SYMBol This choice specifies that a continuous symbol clock signal must be provided to the SYMBOL SYNC input connector.

NORMal This choice specifies that the DATA CLOCK input connector requires a bit clock. The SYMBOL SYNC input connector requires a (one-shot or continuous) symbol sync signal.

***RST** NORM

Key Entry **Ext Data Clock Normal Symbol**

Receiver Test Digital Commands (continued)
GSM Subsystem–Option 402 ([:SOURCE]:RADIO:GSM)

Remarks Both choices have no effect in internal clock mode. Refer to “:BBCLock” on page 770 to select EXT as the data clock type.

:EREFerence

Supported E4438C with Option 402

```
[ :SOURCE ] :RADIO:GSM:EREFerence INT|EXT  
[ :SOURCE ] :RADIO:GSM:EREFerence?
```

This command selects either an internal or external bit-clock reference for the data generator.

***RST** INT

Key Entry BBG Ref Ext Int

Remarks If the EXT choice is selected, the external source’s frequency value must be applied to the BASEBAND GEN REF IN rear panel connector. The external reference and external data clock are not applicable at the same time. If both are selected, then the external reference takes precedence.

:EREFerence:VALue

Supported E4438C with Option 402

```
[ :SOURCE ] :RADIO:GSM:EREFerence:VALue <val>  
[ :SOURCE ] :RADIO:GSM:EREFerence:VALue?
```

This command sets the expected bit-clock reference frequency value for an externally applied reference signal.

The variable <val> is expressed in units of hertz (Hz–MHz).

***RST** +1.30000000E+007

Range 2.5E5–1E8

Key Entry Ext BBG Ref Freq

Remarks The value specified by this command is effective only when you are using an external reference applied to the BASEBAND GEN REF IN rear panel connector.

Refer to “:EREFerence” on page 782 to select EXT (external source) as the reference for the bit-clock reference.

:FILTer

Supported E4438C with Option 402

```
[ :SOURce ] :RADio :GSM :FILTer RNYQuist | NYQuist | GAUSSian | RECTangle |
IS95 | IS95_EQ | IS95_MOD | IS95_MOD_EQ | AC4Fm | UGGaussian | "<user FIR>"
[ :SOURce ] :RADio :GSM :FILTer?
```

This command selects the pre-modulation filter type.

- IS95 This choice selects a filter that meets the criteria of the IS-95 standard.
- IS95_EQ This choice selects a filter which is a combination of the IS-95 filter (above) and the equalizer filter described in the IS-95 standard. This filter is only used for IS-95 baseband filtering.
- IS95_MOD This choice selects a filter that meets the criteria of the IS-95 error function (for improved adjacent channel performance) with lower passband rejection than the filter specified in the IS-95 standard.
- IS95_MOD_EQ This choice selects a filter which is a combination of the equalizer filter described in the IS-95 standard and a filter that meets the criteria of the IS-95 error function (for improved adjacent channel performance), with lower passband rejection.
- AC4Fm This choice selects a predefined Association of Public Safety Communications Officials (APCO) specified compatible 4-level frequency modulation (C4FM) filter.
- UGGaussian This choice selects a backwards compatible GSM Gaussian filter (Gaussian filter with a fixed BbT value of 0.300) for the ESG E44xxB Option UN3 or UN4.
- "<user FIR>" This variable is any filter file that you have stored into memory.

***RST** GAUS

Key Entry **Root Nyquist** **Nyquist** **Gaussian** **Rectangle** **IS-95** **IS-95 w/EQ**
IS-95 Mod **IS-95 Mod w/EQ** **APCO 25 C4FM** **UN3/4 GSM Gaussian**
User FIR

Remarks Refer to [“File Name Variables” on page 13](#) for information on the file name syntax.

:IQ:SCALE

Supported E4438C with Option 402

[:SOURCE] :RADIO:GSM:IQ:SCALE <val>

[:SOURCE] :RADIO:GSM:IQ:SCALE?

This command sets the amplitude of the I/Q outputs for better adjacent channel power (ACP); lower scaling values equate to better ACP.

The variable <val> is expressed in units of percent.

***RST** +100

Range 1–200

Key Entry I/Q Scaling

Remarks This command has no effect with MSK or FSK modulation.

:MODulation:FSK[:DEVIation]

Supported E4438C with Option 402

[:SOURCE] :RADIO:GSM:MODulation:FSK[:DEVIation] <val>

[:SOURCE] :RADIO:GSM:MODulation:FSK[:DEVIation]?

This command sets the symmetric FSK frequency deviation value.

The variable <val> is expressed in units of Hertz and the maximum range value equals the current symbol rate value multiplied by four, limited to 20 MHz.

***RST** +4.00000000E+002

Range 0–2E7

Key Entry Freq Dev

Remarks To change the modulation type, refer to “:MODulation[:TYPE]” on page 786.

Refer to “:SRATE” on page 962 for a list of the minimum and maximum symbol rate values.

To set an asymmetric FSK deviation value, refer to the *E4428C/38C ESG Signal Generators User’s Guide* for more information.

:MODulation:MSK[:PHASe]

Supported E4438C with Option 402

```
[ :SOURce ]:RADio:GSM:MODulation:MSK[:PHASe] <val>  
[ :SOURce ]:RADio:GSM:MODulation:MSK[:PHASe]?
```

This command sets the MSK phase deviation value. The variable <val> is in units of degrees

***RST** +9.00000000E+001

Range 0–100

Key Entry Phase Dev

:MODulation:UFSK

Supported E4438C with Option 402

```
[ :SOURce ]:RADio:GSM:MODulation:UFSK "<file name>"  
[ :SOURce ]:RADio:GSM:MODulation:UFSK?
```

This command selects a user-defined FSK file from the signal generator memory.

Key Entry User FSK

Remarks The user-defined FSK file is held in signal generator memory until the command that selects user FSK as the modulation type is sent. See “:MODulation[:TYPE]” on page 786 to change the current modulation type.

See “File Name Variables” on page 13 for information on the file name syntax.

:MODulation:UIQ

Supported E4438C with Option 402

```
[ :SOURce ]:RADio:GSM:MODulation:UIQ "<file name>"  
[ :SOURce ]:RADio:GSM:MODulation:UIQ?
```

This command selects a user-defined I/Q file from the signal generator memory.

Key Entry User I/Q

Remarks The user-defined I/Q file is held in signal generator memory until the command that selects user I/Q as the modulation type is sent. Refer to “:MODulation[:TYPE]” on page 786 to change the current modulation type.

See “File Name Variables” on page 13 for information on the file name syntax.

:MODulation[:TYPE]

Supported E4438C with Option 402

```
[ :SOURce ]:RADio:GSM:MODulation[ :TYPE ] BPSK | QPSK | IS95QPSK |
GRAYQPSK | OQPSK | IS95OQPSK | P4DQPSK | PSK8 | PSK16 | D8PSK | MSK | FSK2 | FSK4 | FSK8 |
FSK16 | C4FM | QAM4 | QAM16 | QAM32 | QAM64 | QAM128 | QAM256 | UIQ | UFSK
[ :SOURce ]:RADio:GSM:MODulation[ :TYPE ]?
```

This command sets the modulation type for the GSM personality.

***RST** MSK

Key Entry	BPSK	QPSK	IS-95 QPSK	Gray Coded QPSK	OQPSK			
	IS-95 OQPSK	$\pi/4$ DQPSK	8PSK	16PSK	D8PSK	MSK	2-Lvl FSK	
	4-Lvl FSK	8-Lvl FSK	16-Lvl FSK	C4FM	4QAM	16QAM	32QAM	
	64QAM	128QAM	256QAM	User I/Q	User FSK			

:POLarity[:ALL]

Supported E4438C with Option 402

```
[ :SOURce ]:RADio:GSM:POLarity[ :ALL ] NORMal | INVerted
[ :SOURce ]:RADio:GSM:POLarity[ :ALL ]?
```

This command sets the rotation direction of the phase modulation vector.

NORMal This choice selects normal phase polarity.

INVerted This choice inverts the internal Q signal.

***RST** NORM

Key Entry Phase Polarity Normal Invert

Remarks This command is useful for lower sideband mixing applications.

:SECONDARY:RECALL

Supported E4438C with Option 402

[:SOURCE] :RADIO:GSM:SECONDARY:RECALL

This command recalls the secondary frame configuration, overwriting the current state.

Key Entry Recall Secondary Frame State

Remarks To save a secondary frame state, refer to “:SECONDARY:SAVE” on page 787.

A secondary frame is not active until the secondary state is enabled. To activate a secondary frame, refer to “:SECONDARY[:STATE]” on page 788.

:SECONDARY:SAVE

Supported E4438C with Option 402

[:SOURCE] :RADIO:GSM:SECONDARY:SAVE

This command saves the current frame configuration as the secondary frame with the filename GSM_SECONDARY_FRAME.

Key Entry Save Secondary Frame State

Remarks To recall the secondary frame state (saved in non-volatile signal generator memory), refer to “:SECONDARY:RECALL” on page 787.

:SECONDARY:TRIGGER[:SOURCE]

Supported E4438C with Option 402

[:SOURCE] :RADIO:GSM:SECONDARY:TRIGGER [:SOURCE] KEY | EXT | BUS

[:SOURCE] :RADIO:GSM:SECONDARY:TRIGGER [:SOURCE] ?

This command selects the type of triggering for the secondary frame.

KEY This choice enables triggering by pressing the front panel **Trigger** hardkey.

EXT This choice enables triggering using an externally applied signal at the PATT TRIG IN rear panel connector or the PATT TRIG IN 2 pin on the rear panel AUX I/O connector. To select the appropriate connector, refer to “:TRIGGER[:SOURCE]:EXTERNAL[:SOURCE]” on page 807.

BUS This choice enables GPIB triggering using the *TRG or GET command or LAN and RS-232 triggering using the *TRG command.

Key Entry Trigger Key Ext Bus

:SECondary[:STATe]

Supported E4438C with Option 402

```
[ :SOURCE ] :RADIo:GSM:SECondary[ :STATe ] ON|OFF|1|0  
[ :SOURCE ] :RADIo:GSM:SECondary[ :STATe ] ?
```

This command enables or disables the ability to switch to the secondary frame.

***RST** 0

Key Entry Secondary Frame Off On

Remarks A frame must already be saved as the secondary frame in order to turn the secondary state function on. To save a frame as the secondary frame, refer to “:SECondary:SAVE” on page 787.

:SLOT0|[1]|2|3|4|5|6|7:ACCess:ENCRyption

Supported E4438C with Option 402

```
[ :SOURCE ] :RADIo:GSM:SLOT0|[1]|2|3|4|5|6|7:ACCess:ENCRyption  
PN9|PN15|FIX4| "<file name>"|EXT|P4|P8|P16|P32|P64  
[ :SOURCE ] :RADIo:GSM:SLOT0|[1]|2|3|4|5|6|7:ACCess:ENCRyption?
```

This command creates and configures an access encrypted data field.

***RST** PN9

Key Entry PN9 PN15 FIX4 User File Ext 4 1's & 4 0's 8 1's & 8 0's
16 1's & 16 0's 32 1's & 32 0's 64 1's & 64 0's

Remarks See “File Name Variables” on page 13 for information on the file name syntax.

:SLOT0|[1]|2|3|4|5|6|7:ACCess:ENCRyption:FIX4

Supported E4438C with Option 402

```
[ :SOURCE ] :RADIo:GSM:SLOT0|[1]|2|3|4|5|6|7:ACCess:ENCRyption:FIX4 <val>  
[ :SOURCE ] :RADIo:GSM:SLOT0|[1]|2|3|4|5|6|7:ACCess:ENCRyption:FIX4?
```

This command sets the binary, 4-bit repeating sequence data pattern that is used in the selected access timeslot encryption field.

***RST** #B0000

Range #B0000–#B1111 or 0–15

Key Entry FIX4

Remarks FIX4 must already be defined as the data type.

:SLOT0|[1]|2|3|4|5|6|7:ACCess:ETAIL

Supported E4438C with Option 402

```
[ :SOURce ]:RADio:GSM:SLOT0|[1]|2|3|4|5|6|7:ACCess:ETAIL <bit_pattern>
[ :SOURce ]:RADio:GSM:SLOT0|[1]|2|3|4|5|6|7:ACCess:ETAIL?
```

This command specifies the extended tail bits (8 bits) field for the selected access timeslot.

***RST** #H3A

Range #H00–#HFF

Key Entry ET

:SLOT0|[1]|2|3|4|5|6|7:ACCess:SSEquence

Supported E4438C with Option 402

```
[ :SOURce ]:RADio:GSM:SLOT0|[1]|2|3|4|5|6|7:ACCess:SSEquence <bit_pattern>
[ :SOURce ]:RADio:GSM:SLOT0|[1]|2|3|4|5|6|7:ACCess:SSEquence?
```

This command specifies the synchronization sequence bits (41 bits) for the selected access timeslot.

***RST** #H096FF335478

Range #H0–#H1FFFFFFFF

Key Entry SS

:SLOT0|[1]|2|3|4|5|6|7:ACCess:CUSTom

Supported E4438C with Option 402

```
[ :SOURce ]:RADio:GSM:SLOT0|[1]|2|3|4|5|6|7:CUSTom PN9|PN15|FIX4|
"<file name>"|EXT|P4|P8|P16|P32|P64
[ :SOURce ]:RADio:GSM:SLOT0|[1]|2|3|4|5|6|7:CUSTom?
```

This command configures the data field for the selected custom timeslot.

***RST** PN9

Key Entry **PN9** **PN15** **FIX4** **User File** **Ext** **4 1's & 4 0's** **8 1's & 8 0's**
 16 1's & 16 0's **32 1's & 32 0's** **64 1's & 64 0's**

Remarks See [“File Name Variables”](#) on page 13 for information on the file name syntax.

:SLOT0|[1]|2|3|4|5|6|7:CUSTom:FIX4

Supported E4438C with Option 402

```
[ :SOURce ]:RADio:GSM:SLOT0|[1]|2|3|4|5|6|7:CUSTom:FIX4 <val>  
[ :SOURce ]:RADio:GSM:SLOT0|[1]|2|3|4|5|6|7:CUSTom:FIX4?
```

This command sets the binary, 4-bit repeating sequence data pattern that is used in the selected custom timeslot.

***RST** #B0000

Range #B0000–#B1111 or 0–15

Key Entry FIX4

Remarks FIX4 must already be defined as the data type.

:SLOT0|[1]|2|3|4|5|6|7:DUMMy:TSEQuence

Supported E4438C with Option 402

```
[ :SOURce ]:RADio:GSM:SLOT0|[1]|2|3|4|5|6|7:DUMMy:TSEQuence TSC0|  
TSC1|TSC2|TSC3|TSC4|TSC5|TSC6|TSC7|<bit_pattern>  
[ :SOURce ]:RADio:GSM:SLOT0|[1]|2|3|4|5|6|7:DUMMy:TSEQuence?
```

This command changes the 26-bit dummy training sequence (TS) for the selected dummy timeslot.

***RST** #H0000000

Range <bit_pattern>: #H0–#H3FFFFFF

Key Entry TSC0 TSC1 TSC2 TSC3 TSC4 TSC5 TSC6 TSC7
Custom TS

Remarks When normal preset is selected, the preset hexadecimal value for TS reflects the GSM protocol, however you may use this command to enter a new value.

:SLOT0|[1]|2|3|4|5|6|7:MULTIslot

Supported E4438C with Option 402

```
[ :SOURce ]:RADio:GSM:SLOT0|[1]|2|3|4|5|6|7:MULTIslot ON|OFF|1|0  
[ :SOURce ]:RADio:GSM:SLOT0|[1]|2|3|4|5|6|7:MULTIslot?
```

This command turns bursting (ramping) on or off between the selected timeslot and the next higher numbered adjacent timeslot.

ON (1) This choice turns ramping off between timeslots.

OFF (0) This choice turns ramping on between timeslots.

***RST** 0

Key Entry **Multislot Off On**

SLOT0|[1]|2|3|4|5|6|7:NORMAL:ENCRyption

Supported E4438C with Option 402

```
[:SOURCE]:RADIO:GSM:SLOT0|[1]|2|3|4|5|6|7:NORMAL:ENCRyption
PN9|PN15|FIX4|"<filename>"|EXT|P4|P8|P16|P32|P64|TCHFS|TCHHS|CS1|CS4|
DMCS1|UMCS1|BCH1|BCH2
[:SOURCE]:RADIO:GSM:SLOT0|[1]|2|3|4|5|6|7:NORMAL:ENCRyption?
```

This command creates and configures an encrypted data field for a normal timeslot.

- | | |
|-----------|--|
| PN9 | This choice uses a standard PN9 bit pattern. In the case of TDMA bursted data, a PN9 repeats continuously, running from one timeslot to the matching timeslot in the next frame. |
| PN15 | This choice uses a standard PN15 bit pattern. In the case of TDMA bursted data, a PN15 repeats continuously, running from one timeslot to the matching timeslot in the next frame. |
| FIX4 | This choice uses a fixed 4-bit pattern. The selected 4-bit pattern will be repeated as necessary to fill the selected data to set the desired pattern. |
| User File | This choice selects a user-supplied file to be used as the bit pattern. In the case of TDMA bursted data, enough bits must be supplied to fill the desired number of timeslots (left over bit are ignored). User files contain 8 data bits per byte. |
| EXT | This choice uses an external user signal as the modulating data stream. Serial data is supplied via the front panel DATA BNC connector. |
| P4 | This choice selects a data pattern with 4 1's followed by 4 0's. The selected pattern will be repeated as necessary to fill the selected data area. |
| P8 | This choice selects a data pattern with 8 1's followed by 8 0's. The selected pattern will be repeated as necessary to fill the selected data area. |
| P16 | This choice selects a data pattern with 16 1's followed by 16 0's. The selected pattern will be repeated as necessary to fill the selected data area. |
| P32 | This choice selects a data pattern with 32 1's followed by 32 0's. The selected pattern will be repeated as necessary to fill the selected data area. |
| P64 | This choice selects a data pattern with 64 1's followed by 64 0's. The selected pattern will be repeated as necessary to fill the selected data area. |
| TCHFS | This choice selects traffic channel with full rate speech (TCH/FS). This channel would be represented by a 26 frame multiframe with an SACCH and IDLE frame. |

GSM Subsystem–Option 402 ([:SOURCE]:RADio:GSM)

TCHHS	This choice selects traffic channel with half rate speech (TCH/HS). This is when a complex coding scheme is used that can allow two mobile stations to share the same timeslot. On an ESG this is represented by having one timeslot with a normal burst and user definable training sequence and the same timeslot on an alternate frame using a dummy burst. This represents the situation where TCH/HS is being used in one timeslot and the other timeslot is not being used.						
CS-1	This choice selects the CS-1 channel, a packet data traffic channel with block type 1 as per 3GPP standard GSM 05.03.						
CS4	This choice selects the CS-4 channel, a packet data traffic channel with block type 4 as per 3GPP standard GSM 05.03.						
DMCS1	This choice selects the downlink MCS-1 channel, a packet data traffic channel with block type 5 as per 3GPP standard GSM 05.03.						
UMCS1	This choice selects the uplink MCS-1 channel, a packet data traffic channel with block type 5 as per 3GPP standard GSM 05.03.						
BCH1	This choice selects a non-combined broadcast channel. BCH1 can only be set in timeslot zero and can be the only multiframe type in a frame. This means that BCH1 will conflict with the following parameters: TCH/FS, TCH/HS, CS-1, CS-4, DMCS-1 and UMCS-1.						
BCH2	This choice selects a combined broadcast channel. BCH2 can only be set in timeslot zero and can be the only multiframe type in a frame. This means that BCH2 will conflict with the following parameters: TCH/FS, TCH/HS, CS-1, CS-4, DMCS-1, and UMCS-1.						
*RST	PN9						
Range	BCH1: 0–65535 BCH2: 0–65535						
Key Entry	PN9	PN15	FIX4	User File	Ext	4 1's & 4 0's	8 1's & 8 0's
	16 1's & 16 0's		32 1's & 32 0's		64 1's & 64 0's	TCH/FS	TCH/HS
	CS-1	CS-4	Downlink MCS-1		Uplink MCS-1		
Remarks	See “File Name Variables” on page 13 for information on the file name syntax.						

:SLOT0:NORMAL:ENCRyption:BCH1:BCC

Supported E4438C with Option 416

[:SOURCE] :RADIo:GSM:SLOT0:NORMAl:ENCRyption:BCH1:BCC <val>

[:SOURCE] :RADIo:GSM:SLOT0:NORMAl:ENCRyption:BCH1:BCC?

This command sets the broadcast control code (BCC) which is used to indicate what training sequence is being used by the basestation in the forward channels. This code will allow the mobile station to decode the other channels in the broadcast channel.

***RST** 0

Range 0–7

:SLOT0:NORMAL:ENCRyption:BCH1:CELLid

Supported E4438C with Option 416

[:SOURCE] :RADIo:GSM:SLOT0:NORMAl:ENCRyption:BCH1:CELLid <val>

[:SOURCE] :RADIo:GSM:SLOT0:NORMAl:ENCRyption:BCH1:CELLid?

This command sets the cell identification. This will identify a cell within a location area.

***RST** 0

Range 0–65535

:SLOT0:NORMAL:ENCRyption:BCH1:LAC

Supported E4438C with Option 416

[:SOURCE] :RADIo:GSM:SLOT0:NORMAl:ENCRyption:BCH1:LAC <val>

[:SOURCE] :RADIo:GSM:SLOT0:NORMAl:ENCRyption:BCH1:LAC?

This command sets the location area code (LAC). The location area code provides 16 bits to allow the administrator to define a location.

***RST** 0

Range 0–65535

:SLOT0:NORMAL:ENCRyption:BCH1:MCC

Supported E4438C with Option 416

```
[ :SOURCE ] :RADIo:GSM:SLOT0:NORMAl:ENCRyption:BCH1:MCC <val>  
[ :SOURCE ] :RADIo:GSM:SLOT0:NORMAl:ENCRyption:BCH1:MCC?
```

This command sets the mobile country code (MCC). The mobile country code is a 12 bit number used to represent the country where the basestation is located.

***RST** 0

Range 0–4095

:SLOT0:NORMAL:ENCRyption:BCH1:MNC

Supported E4438C with Option 416

```
[ :SOURCE ] :RADIo:GSM:SLOT0:NORMAl:ENCRyption:BCH1:MNC <val>  
[ :SOURCE ] :RADIo:GSM:SLOT0:NORMAl:ENCRyption:BCH1:MNC?
```

This command sets the mobile network code (MNC). The mobile network code is the individual number a network will be assigned.

***RST** 0

Range 0–255

Remarks Federal regulation mandates that a 3-digit MNC will be used. For the ESG implementation the upper four bits are set to 1111.

:SLOT0:NORMAL:ENCRyption:BCH1:PLMN

Supported E4438C with Option 416

```
[ :SOURCE ] :RADIo:GSM:SLOT0:NORMAl:ENCRyption:BCH1:PLMN <val>  
[ :SOURCE ] :RADIo:GSM:SLOT0:NORMAl:ENCRyption:BCH1:PLMN?
```

This command is used to set the Public Land Mobile Network (PLMN) which is used to indicate the country the phone is in. PLMN is also referred to as the National Country Code (NCC).

***RST** 0

Range 0–7

:SLOT0|[1]|2|3|4|5|6|7:NORMAL:ENCRyption:CS1:DATA

Supported E4438C with Option 402

```
[ :SOURCE ] :RADIo:GSM:SLOT0 |[1]|2|3|4|5|6|7:NORMAl:ENCRyption:CS1:DATA  
PN9 |PN15  
[ :SOURCE ] :RADIo:GSM:SLOT0 |[1]|2|3|4|5|6|7:NORMAl:ENCRyption:CS1:DATA?
```

This command sets the bit pattern for the CS1 packet data traffic channel.

***RST** PN9

Key Entry PN9 PN15

:SLOT0|[1]|2|3|4|5|6|7:NORMAL:ENCRyption:CS4:DATA

Supported E4438C with Option 402

```
[ :SOURCE ] :RADIo[1]|2|3|4:GSM:SLOT0 |[1]|2|3|4|5|6|7:NORMAl:ENCRyption:CS4  
:DATA PN9 |PN15  
[ :SOURCE ] :RADIo[1]|2|3|4:GSM:SLOT0 |[1]|2|3|4|5|6|7:NORMAl:ENCRyption:CS4  
:DATA?
```

This command selects the encryption field data, if the selected timeslot uses the packet data block type 4 coding scheme.

***RST** PN9

Key Entry PN9 PN15

Remarks Refer to “SLOT0|[1]|2|3|4|5|6|7:NORMAL:ENCRyption” on page 791 for selecting the coding scheme.

:SLOT0|[1]|2|3|4|5|6|7:NORMAL:ENCRyption:DLINK:MCS1:DATA

Supported E4438C with Option 402

```
[ :SOURCE ] :RADIo:GSM:SLOT0 |[1]|2|3|4|5|6|7:NORMAl:ENCRyption:DLINK:MCS1:  
DATA PN9 |PN15  
[ :SOURCE ] :RADIo:GSM:SLOT0 |[1]|2|3|4|5|6|7:NORMAl:ENCRyption:DLINK:MCS1:  
DATA?
```

This command sets the bit pattern for the downlink MCS1 packet data traffic channel.

***RST** PN9

Key Entry PN9 PN15

:SLOT0|[1]|2|3|4|5|6|7:NORMAL:ENCRyption:FIX4

Supported E4438C with Option 402

```
[ :SOURCE ]:RADIO:GSM:SLOT0|[1]|2|3|4|5|6|7:NORMAL:ENCRyption:FIX4 <val>  
[ :SOURCE ]:RADIO:GSM:SLOT0|[1]|2|3|4|5|6|7:NORMAL:ENCRyption:FIX4?
```

This command sets the binary, 4-bit repeating sequence data pattern that is used in the selected normal timeslot encryption field.

***RST** #B0000

Range #B0000–#B1111 or 0–15

Key Entry FIX4

Remarks FIX4 must already be defined as the data type.

:SLOT0|[1]|2|3|4|5|6|7:NORMAL:ENCRyption:TCH:FS:DATA

Supported E4438C with Option 402

```
[ :SOURCE ]:RADIO:GSM:SLOT0|[1]|2|3|4|5|6|7:NORMAL:ENCRyption:TCH:FS:DATA  
PN9|PN15  
[ :SOURCE ]:RADIO:GSM:SLOT0|[1]|2|3|4|5|6|7:NORMAL:ENCRyption:TCH:FS:DATA?
```

This command sets the bit pattern for the TCH/FS channel.

***RST** PN9

Key Entry PN9 PN15

:SLOT0|[1]|2|3|4|5|6|7:NORMAL:ENCRyption:ULINK:MCS1:DATA

Supported E4438C with Option 402

```
[ :SOURCE ]:RADIO:GSM:SLOT0|[1]|2|3|4|5|6|7:NORMAL:ENCRyption:ULINK:MCS1:  
DATA PN9|PN15  
[ :SOURCE ]:RADIO:GSM:SLOT0|[1]|2|3|4|5|6|7:NORMAL:ENCRyption:ULINK:MCS1:  
DATA?
```

This command sets the bit pattern for the uplink MCS1 packet data traffic channel.

***RST** PN9

Key Entry PN9 PN15

:SLOT0|[1]|2|3|4|5|6|7:NORMAL:STeal

Supported E4438C with Option 402

```
[ :SOURCE ]:RADIO:GSM:SLOT0|[1]|2|3|4|5|6|7:NORMAL:STeal <val>
[ :SOURCE ]:RADIO:GSM:SLOT0|[1]|2|3|4|5|6|7:NORMAL:STeal?
```

This command specifies the normal stealing bits for the selected timeslot. The single bit defines the value for both 1-bit fields.

***RST** #H0

Range #H0–#H1

Key Entry S

:SLOT0|[1]|2|3|4|5|6|7:NORMAL:TSEquence

Supported E4438C with Option 402

```
[ :SOURCE ]:RADIO:GSM:SLOT0|[1]|2|3|4|5|6|7:NORMAL:TSEquence
TSC0|TSC1|TSC2|TSC3|TSC4|TSC5|TSC6|TSC7|<bit_pattern>
[ :SOURCE ]:RADIO:GSM:SLOT0|[1]|2|3|4|5|6|7:NORMAL:TSEquence?
```

This command changes the 26-bit training sequence (TS) for a normal timeslot. The preset hexadecimal value (when normal preset is selected) for TS reflects the GSM protocol, however you can enter a new value by using this command. The hexadecimal values for the 8 training sequence codes are listed below:

***RST** #H0000000

Range <bit_pattern>: #H0–#H3FFFFFF

Key Entry TSC0 TSC1 TSC2 TSC3 TSC4 TSC5 TSC6 TSC7

Custom TS

Remarks The preset hexadecimal value (when normal preset is selected) for TS reflects the GSM protocol, however you can enter a new value by using this command.

:SLOT0|[1]|2|3|4|5|6|7:POWer

Supported E4438C with Option 402

```
[ :SOURce ]:RADio:GSM:SLOT0 |[1]|2|3|4|5|6|7:POWer MAIN|DELTA
[ :SOURce ]:RADio:GSM:SLOT0 |[1]|2|3|4|5|6|7:POWer?
```

This command defines the RF output power level for the selected timeslot.

- MAIN This choice specifies RF output as the main power level.
- DELTA This choice specifies RF output as the alternative power level.
- *RST MAIN

Key Entry Timeslot Ampl Main Delta

:SLOT0|[1]|2|3|4|5|6|7:STATe

Supported E4438C with Option 402

```
[ :SOURce ]:RADio:GSM:SLOT0 |[1]|2|3|4|5|6|7:STATe ON|OFF|1|0
[ :SOURce ]:RADio:GSM:SLOT0 |[1]|2|3|4|5|6|7:STATe?
```

This command enables or disables the operating state of the selected timeslot.

*RST Timeslot 0: 1 Timeslot 1–7: 0

Key Entry Timeslot Off On

:SLOT0|[1]|2|3|4|5|6|7:SYNC:ENCRyption

Supported E4438C with Option 402

```
[ :SOURce ]:RADio:GSM:SLOT0 |[1]|2|3|4|5|6|7:SYNC:ENCRyption PN9|PN11|PN15|
PN20|PN23|FIX4|"<file name>"|EXT|P4|P8|P16|P32|P64
[ :SOURce ]:RADio:GSM:SLOT0 |[1]|2|3|4|5|6|7:SYNC:ENCRyption?
```

This command creates and configures an encrypted data field for a synchronization timeslot.

*RST PN9

Key Entry

PN9	PN11	PN15	PN20	PN23	FIX4	User File	EXT
4 1's & 4 0's	8 1's & 8 0's	16 1's & 16 0's	32 1's & 32 0's	64 1's & 64 0's			

Remarks Refer to [“File Name Variables” on page 13](#) for information on the file name syntax.

:SLOT0|[1]|2|3|4|5|6|7:SYNC:ENCryption:FIX4

Supported E4438C with Option 402

```
[ :SOURce ]:RADio:GSM:SLOT0|[1]|2|3|4|5|6|7:SYNC:ENCryption:FIX4 <val>
[ :SOURce ]:RADio:GSM:SLOT0|[1]|2|3|4|5|6|7:SYNC:ENCryption:FIX4?
```

This command sets the binary, 4-bit repeating sequence data pattern that is used in the selected synchronization timeslot encryption field.

***RST** #B0000

Range #B0000–#B1111 or 0–15

Key Entry FIX4

Remarks FIX4 must already be defined as the data type.

:SLOT0|[1]|2|3|4|5|6|7:SYNC:TSEquence

Supported E4438C with Option 402

```
[ :SOURce ]:RADio:GSM:SLOT0|[1]|2|3|4|5|6|7:SYNC:TSEquence <bit_pattern>
[ :SOURce ]:RADio:GSM:SLOT0|[1]|2|3|4|5|6|7:SYNC:TSEquence?
```

This command customizes the training sequence (TS) for the selected synchronization timeslot. The preset hexadecimal value (when normal preset is selected) for TS reflects the GSM protocol, however you can enter a new value by using this command.

***RST** #HB962040F2D45761B

Range #H0–#FFFFFFFFFFFFFFFF

Key Entry TS

:SLOT0|[1]|2|3|4|5|6|7[:TYPE]

Supported E4438C with Option 402

```
[ :SOURce ]:RADio:GSM:SLOT0|[1]|2|3|4|5|6|7[:TYPE] CUSTom|NORMaL|
FCORrection|SYNC|DUMMy|ACCess|NORMAL_ALL
[ :SOURce ]:RADio:GSM:SLOT0|[1]|2|3|4|5|6|7[:TYPE]?
```

This command sets the timeslot type for the selected timeslot.

***RST** NORMAL

Key Entry Custom Normal FCorr Sync Dummy Access Normal All

:SOUT

Supported E4438C with Option 402

```
[ :SOURCE ] :RADio:GSM:SOUT FRAME | SLOT | ALL
[ :SOURCE ] :RADio:GSM:SOUT?
```

This command sets the synchronization location (within the pattern of data) and the type of output at the EVENT 1 rear panel connector.

FRAME This choice outputs a 1-bit signal, synchronized to the bit selected by the synchronization output offset command, for a framed data pattern.

SLOT This choice outputs a 1-bit signal, synchronized to the bit selected by the synchronization output offset command, for a selected timeslot.

ALL This choice outputs a 1-bit signal, synchronized to the bit selected by the synchronization output offset command, for all active timeslots.

***RST** FRAME

Key Entry	Begin Frame	Begin Timeslot #	All Timeslots
------------------	--------------------	-------------------------	----------------------

:SOUT:OFFSet

Supported E4438C with Option 402

```
[ :SOURCE ] :RADio:GSM:SOUT:OFFSet <val>
[ :SOURCE ] :RADio:GSM:SOUT:OFFSet?
```

This command sets the offset value for the location of the output synchronization signal on the EVENT1 rear panel connector relative to the beginning of the framed data pattern or timeslot.

The variable <val> is expressed as a number of bits.

***RST** +0

Range –155 to 155

Key Entry Sync Out Offset

Remarks Negative values move the synchronization output signal earlier; positive values move it later.

To change the output of the EVENT1 rear panel connector to SLOT, refer to “:SOUT” on page 800.

:SOUT:SLOT

Supported E4438C with Option 402

[:SOURce] :RADio:GSM:SOUT:SLOT <val>

[:SOURce] :RADio:GSM:SOUT:SLOT?

This command selects the timeslot that will trigger a 1-bit output signal at the EVENT 1 rear panel connector.

***RST** +0

Range 0–7

Key Entry Begin Timeslot #

Remarks To change the output of the EVENT1 rear panel connector to SLOT, refer to [“:SOUT” on page 800](#).

:SRATe

Supported E4438C with Option 402

[:SOURce] :RADio:GSM:SRATe <val>

[:SOURce] :RADio:GSM:SRATe?

This command sets the transmission symbol rate. Symbol rate is the bit rate divided by the bits per symbol. A change in the symbol rate affects the bit rate. Refer to [“:BRATe” on page 771](#) for information on bit rate.

The variable <val> is expressed in units of symbols per second (sps–Mps) and the maximum symbol rate depends on the filter. Refer to [“:FILTer” on page 783](#) for minimum filter symbol width.

NOTE When using multiframe, limit the symbol rate to no more than 271 ksp/s. Although higher rates may work, they are not supported.

The filter may have to be truncated down to 32 or 16 symbols wide to achieve the highest symbol rate. The signal generator’s internal filters are not truncated below their minimum filter length and user-defined FIR filters are not truncated. If the filter cannot be truncated then the symbol rate is limited to the maximum rate of the narrowest filter size possible.

The relative timing of the modulated data, as well as the actual filter response is affected when the filter is truncated.

When the symbol rate changes, the ESG reconfigures the baseband generator. The time required to reconfigure the baseband generator is inversely proportional to the symbol rate: lower symbol rates require more time.

Receiver Test Digital Commands (continued)
GSM Subsystem–Option 402 ([:SOURCE]:RADio:GSM)

To change the modulation type, refer to “:MODulation[:TYPE]” on page 786.

***RST** +2.70833333E+006

Range	Modulation Type	Symbol Rate Range		
		<i>16 Symbol Wide Filter</i>	<i>32 Symbol Wide Filter</i>	<i>64 Symbol Wide Filter</i>
	BPSK, FSK2, MSK	1sps–50Msps	1sps–25Msps	1sps–12.5Msps
	C4FM, OQPSK, FSK4	2sps–25Msps	2sps–12.5Msps	2sps–6.25Msps
	OQPSKI95, QPSK			
	P4QPPSK, QPSKI95			
	GRAYQPSK, QAM4			
	D8PSK, EDGE, FSK8, PSK8	3sps–16.666666666 Msps	3sps–8.333333333 Msps	3sps–4.166666666Msps
	FSK16, PSK16, QAM16	4sps–12.5Msps	4sps–6.25Msps	4sps–3.125Msps
	QAM32	5sps–10Msps	5sps–5Msps	5sps–2.5Msps
	QAM64	6sps–8.333333333 Msps	6sps–4.166666666 Msps	6sps–2.083333333 Msps
	QAM128	7sps–7.142857142 Msps	7sps–3.571428572 Msps	7sps–1.785714285 Msps
	QAM256	8sps–6.25Msps	8sps–3.125 Msps	8sps–1.5625 Msps

NOTE Using I/Q skew will half the minimum number of symbols for the selected filter.

Key Entry **Symbol Rate**

:TRIGger:EXternal:DELay

Supported E4438C with Option 416

[:SOURCE]:RADio:GSM:TRIGger:EXternal:DELay <val>
 [:SOURCE]:RADio:GSM:TRIGger:EXternal:DELay?

This command sets the trigger delay for synchronizing the ESG. The variable <val> is expressed in number of symbols.

***RST** +0

Range 0–1048575

:TRIGger:TYPE

Supported E4438C with Option 402

```
[ :SOURce ] :RADio:GSM:TRIGger:TYPE CONTInuous | SINGle | GATE
[ :SOURce ] :RADio:GSM:TRIGger:TYPE?
```

This command sets the trigger type.

CONTInuous The framed data sequence repeats continuously; the sequence restarts every time the previous playback is completed. To customize continuous triggering, refer to [“:TRIGger:TYPE:CONTInuous\[:TYPE\]” on page 803](#).

SINGle The framed data sequence plays once for every trigger received.

GATE An external trigger signal interrupts the playback while the gating signal is in the inactive state. Playback resumes when the external control signal returns to the active state. The active state can be set to high or low.

***RST** CONT

Key Entry Continuous Single Gated

:TRIGger:TYPE:CONTInuous[:TYPE]

Supported E4438C with Option 402

```
[ :SOURce ] :RADio:GSM:TRIGger:TYPE:CONTInuous[ :TYPE ] FREE | TRIGger | RESet
[ :SOURce ] :RADio:GSM:TRIGger:TYPE:CONTInuous[ :TYPE ]?
```

This commands selects the waveform’s response to a trigger signal while using the continuous trigger mode. See [“:TRIGger:TYPE” on page 803](#) for more information on triggering modes.

The following list describes the waveform’s response to each of the command choices:

FREE Turning the ARB format on immediately triggers the waveform. The waveform repeats until the format is turned off or another trigger or waveform is selected.

TRIGger The waveform waits for a trigger before play begins. When the waveform receives the trigger, it plays continuously until you turn the format off, select another trigger, or choose another waveform file.

RESet The waveform waits for a trigger before play begins. When the waveform receives the trigger, it plays continuously. Subsequent triggers reset the waveform to the beginning. For a waveform sequence, this means to the beginning of the first segment in the sequence.

***RST** FREE

Key Entry Free Run Trigger & Run Reset & Run

:TRIGger:TYPE:GATE:ACTive

Supported E4438C with Option 402

```
[ :SOURCE ] :RADio:GSM:TRIGger:TYPE:GATE:ACTive LOW|HIGH  
[ :SOURCE ] :RADio:GSM:TRIGger:TYPE:GATE:ACTive?
```

This command selects the active state (gate polarity) of the gate while using the gating trigger mode.

The LOW and HIGH selections correspond to the low and high states of an external trigger signal. For example, when you select HIGH, the active state occurs during the high of the trigger signal. When the active state occurs, the ESG stops the waveform playback at the last played sample point, then restarts the playback at the next sample point when the inactive state occurs. For more information on triggering and to select gating as the trigger mode, see “:TRIGger:TYPE” on page 803.

The following list describes the signal generator’s gating behavior for the external trigger signal polarity selections:

LOW	The waveform playback stops when the trigger signal goes low (active state) and restarts when the trigger signal goes high (inactive state).
HIGH	The waveform playback stops when the trigger signal goes high (active state) and restarts when the trigger signal goes low (inactive state).
*RST	HIGH
Key Entry	Gate Active Low High

:TRIGger[:SOURCE]

Supported E4438C with Option 402

```
[ :SOURCE ] :RADio:GSM:TRIGger [ :SOURCE ] KEY|EXT|BUS  
[ :SOURCE ] :RADio:GSM:TRIGger [ :SOURCE ] ?
```

This command sets the trigger source.

For more information on triggering, see “:TRIGger:TYPE” on page 803. The following list describes the command choices:

KEY	This choice enables manual triggering by pressing the front-panel Trigger hardkey.
EXT	An externally applied signal triggers the waveform. This is the only choice that works with gating. The following conditions affect an external trigger: <ul style="list-style-type: none">• The input connector selected for the trigger signal. You have a choice between the rear-panel PATTERN TRIG IN connector or the PATT TRIG IN 2 pin on the rear-panel AUXILIARY I/O connector. To make the connector selection, see “:TRIGger[:SOURCE]:EXTernal[:SOURCE]” on page 807.

For more information on the connectors and on connecting the cables, see the *E4428C/38C ESG Signal Generators User’s Guide*.

- The trigger signal polarity:
 - gating mode, see “:TRIGger:TYPE:GATE:ACTive” on page 804
 - continuous and single modes, see “:TRIGger[:SOURce]:EXTernal:SLOPe” on page 806
- The time delay between when the ESG receives a trigger and when the waveform responds to the trigger. There are two parts to setting the delay:
 - setting the amount of delay, see “:TRIGger[:SOURce]:EXTernal:DELay” on page 805
 - turning the delay on, see “:TRIGger[:SOURce]:EXTernal:DELay:STATe” on page 806

BUS This choice enables triggering over the GPIB or LAN using the *TRG or GET commands or the AUXILIARY INTERFACE (RS-232) using the *TRG command.

*RST	KEY		
Key Entry	Trigger Key	Ext	Bus

:TRIGger[:SOURce]:EXTernal:DELay

Supported E4438C with Option 402

This command sets the number of bits to delay the signal generator’s response to an external trigger.

The bit delay is a delay between when the ESG receives the trigger and when it responds to the trigger. The delay uses the clocks of the bit-clock to time the delay. After the ESG receives the trigger and the set number of delay bits (clocks) occurs, the ESG transmits the data pattern.

The delay occurs after you enable the state. See “:TRIGger[:SOURce]:EXTernal:DELay:STATe” on page 806. You can set the number of bits either before or after enabling the state.

For more information on configuring an external trigger source and to select external as the trigger source, see “:TRIGger[:SOURce]” on page 804.

*RST	+0
Range	0–1048575
Key Entry	Ext Delay Bits

:TRIGger[:SOURCE]:EXTErnal:DELay:FINE

Supported E4438C with Option 416

```
[ :SOURCE ] :RADio:GSM:TRIGger [ :SOURCE ] :EXTErnal:DELay:FINE <val>  
[ :SOURCE ] :RADio:GSM:TRIGger [ :SOURCE ] :EXTErnal:DELay:FINE?
```

This command sets the fine trigger delay for synchronizing the ESG.

The fine delay value is added to the coarse delay setting (see “:TRIGger[:SOURCE]:EXTErnal:DELay” on page 805).

The variable <val> is expressed as a fraction of one symbol.

***RST** +0.00000000E+000

Range 0–1

:TRIGger[:SOURCE]:EXTErnal:DELay:STATe

Supported E4438C with Option 402

```
[ :SOURCE ] :RADio:GSM:TRIGger [ :SOURCE ] :EXTErnal:DELay:STATe ON|OFF|1|0  
[ :SOURCE ] :RADio:GSM:TRIGger [ :SOURCE ] :EXTErnal:DELay:STATe?
```

This command enables or disables the operating state of the external trigger delay function.

For setting the delay time, see “:TRIGger[:SOURCE]:EXTErnal:DELay” on page 805, and for more information on configuring an external source, see “:TRIGger[:SOURCE]” on page 804.

***RST** 0

Key Entry Ext Delay Off On

:TRIGger[:SOURCE]:EXTErnal:SLOPe

Supported E4438C with Option 402

```
[ :SOURCE ] :RADio:GSM:TRIGger [ :SOURCE ] :EXTErnal:SLOPe POSitive|NEGative  
[ :SOURCE ] :RADio:GSM:TRIGger [ :SOURCE ] :EXTErnal:SLOPe?
```

This command sets the polarity for an external trigger signal while using the continuous, single triggering mode. To set the polarity for gating, see “:TRIGger:TYPE:GATE:ACTive” on page 804.

The POSitive and NEGative selections correspond to the high (positive) and low (negative) states of the external trigger signal. For example, when you select POSitive, the waveform responds (plays) during the high state of the trigger signal. When the ESG receives multiple trigger occurrences when only one is required, the signal generator uses the first trigger and ignores the rest.

For more information on configuring an external trigger source and to select external as the trigger source, see “:TRIGger[:SOURce]” on page 804.

***RST** NEG
Key Entry Ext Polarity Neg Pos

:TRIGger[:SOURce]:EXTErnal[:SOURce]

Supported E4438C with Option 402

```
[ :SOURce ] :RADio:GSM:TRIGger [ :SOURce ] :EXTErnal [ :SOURce ] EPT1 |
EPT2 | EPTRIGGER1 | EPTRIGGER2
[ :SOURce ] :RADio:GSM:TRIGger [ :SOURce ] :EXTErnal [ :SOURce ] ?
```

This command selects which PATTERN TRIG IN connection the ESG uses to accept an externally applied trigger signal when external is the trigger source selection.

For more information on configuring an external trigger source and to select external as the trigger source, see “:TRIGger[:SOURce]” on page 804. For more information on the rear-panel connectors, see the *E4428C/38C ESG Signal Generators User’s Guide*.

The following list describes the command choices:

EPT1	This choice is synonymous with EPTRIGGER1 and selects the PATTERN TRIG IN rear-panel connector.
EPT2	This choice is synonymous with EPTRIGGER2 and selects the PATT TRIG IN 2 pin on the rear-panel AUXILIARY I/O connector.
EPTRIGGER1	This choice is synonymous with EPT1 and selects the PATTERN TRIG IN rear-panel connector.
EPTRIGGER2	This choice is synonymous with EPT2 and selects the PATT TRIG IN 2 pin on the rear-panel AUXILIARY I/O connector.
*RST	EPT1
Key Entry	Patt Trig In 1 Patt Trig In 2

Receiver Test Digital Commands (continued)
GSM Subsystem–Option 402 ([:SOURCE]:RADio:GSM)

[:STATE]

Supported E4438C with Option 402

[:SOURCE] :RADio:GSM [:STATE] ON | OFF | 1 | 0

[:SOURCE] :RADio:GSM [:STATE] ?

This command enables or disables the GSM modulation format.

***RST** 0

Key Entry GSM Off On

Remarks Although the GSM modulation is enabled with this command, the RF carrier is not modulated unless you also activate the front panel **Mod On/Off** hardkey.

HSDPA over W-CDMA Subsystem–Option 418 ([:SOURCE]:RADio:WCDMa:HSDPa[:BBG])

The commands in this subsystem support the remote functionality of the Signal Studio for HSDPA over W-CDMA software. For a complete description of terms and HSDPA functionality, refer to the software online help. Commands used for configuring the carrier signal and performing general signal generator functions are located in different SCPI command subsystems found within the SCPI Command Reference volumes.

There are two methods to determine the SCPI commands for a setup. One method is to locate each individual command listed in this subsystem and others within the *SCPI Command Reference* volumes. The other method is to use the HSDPA software UI. After downloading a UI setup to the ESG, the software lets you export a SCPI file that contains the commands used in the UI setup. Refer to the HSDPA software online help for information on this feature.

File Overview

The ESG's memory catalog (signal generator memory) uses several file types, each assigned with a unique syntax to recall the file. This section provides information on using files with SCPI commands.

This subsystem uses the following two command variables to represent two different file types stored in signal generator memory:

"<file name>" Bit file
"<user FIR>" FIR file

For more information on managing and using files, refer to the resources in the following list:

- [“File Name Variables” on page 13](#) for information on the file name syntax
- [Table 1-4 on page 14](#) for a listing of the different file types
- *E4428C/38C ESG Signal Generators Programming Guide* for information on downloading bit files
- *E4428C/38C ESG Signal Generators User's Guide* for information on creating and editing bit and FIR files using the signal generator

NOTE To create or edit HSDPA files with the ESG, use the table editors located in the Real Time W-CDMA modulation format. Access the bit table editor through the **Data** field and then select **User File** as the data source. Access the FIR filter table editor through the **Filter** field and then select **Define User FIR** as the filter type.

The HSDPA software interface downloads user files (bit and FIR file types) to the ESG when **USER** is the software data or filter type selection. You can see these files on the ESG by pressing **Utility > Memory Catalog > Catalog Type** and then selecting the file type, or by using the SCPI commands located in the Memory subsystem. User files are located on the ESG in the following directory path: /USER/<file type directory>/<file name>. [Table 9-2](#) shows the software naming convention for the different files created by the HSDPA software.

Table 9-2 HSDPA Software Downloaded File Names

Link Direction	Data Source	File Name	ESG File Type
Downlink and Uplink	Filter	<project name>–FIR	FIR
Downlink	BCH	<project name>–BCH	Bit
	PICH	<project name>–PICH	
	DPCH	<project name>–DPCH	
	DCH _x ^a	<project name>–DCH _x ^a	
	Inter-TTI	<project name>–ITTI _x ^b	
	HARQ ACK/NACK Pattern	<project name>–DLCPT	
	AMC CQI Pattern	<project name>–DLAPT	
	HS-DSCH	<project name>–DSCH1	
	HS-PDSCH	<project name>–HSPD _x ^b	
	HS-SCCH	<project name>–HSSCC _x ^b	
Uplink	DPCCH	<project name>–DPCCH	
	FBI	<project name>–FBI	
	TPC	<project name>–TPC	
	DPDCH	<project name>–DPDCH	
	DCH _x ^a	<project name>–DCH _x ^a	
	ACK Pattern	<project name>–APAT	
	CQI Pattern	<project name>–CPAT	

a. x is the DCH number (1–6).

b. x is the channel number (1–4) for the HSDPA, the HS-PDSCH and the HS-SCCH.

Managing ESG Setting Conflicts and Error Messages

The ESG reports setting conflicts as error messages. When a setting conflict occurs, an error number and a brief message appear at the bottom of the ESG display. You can view the full text of the error message in either of two ways: by using the front panel of the ESG, or by executing SCPI commands.

Front Panel Press **Utility > Error Info**.

SCPI Execute the SCPI error commands described in the “[System Subsystem \(:SYSTEM\)](#)” on page 154.

For more information on Error messages, refer to the *E4428C/38C ESG Signal Generators Programming Guide* for remote viewing or the *E4428C/38C ESG Signal Generators User’s Guide* for front panel viewing.

:DLINK:APPLY

Supported E4438C with Option 418

```
[ :SOURCE ] : RADIO : WCDMA : HSDPA [ : BBG ] : DLINK : APPLY
[ :SOURCE ] : RADIO : WCDMA : HSDPA [ : BBG ] : DLINK : APPLY ?
```

This command applies changes to the channel setup and data for active downlink physical and transport channels, immediately starting the channel coding generation process. A progress bar may appear on the ESG display indicating that the new signal parameters are being applied. Signal parameters are also applied when the HSDPA modulation format is turned on.

Use the query to determine whether or not execution of this command is required. It returns the following responses:

```
0                    Command execution is not required.
1                    Command execution is required.
```

NOTE The apply query response is valid only when downlink HSDPA format is active.

The apply function will not work if there is a conflict with range values and coupled parameters. For example, if all the physical channel codes are not orthogonal to each other, the new settings are not applied to the signal when this command is executed. Resolve any conflicts before reapplying the changes. The ESG reports an error when conflicts occur.

:DLINK:AWGN:CN**Supported** E4438C with Option 418

[:SOURCE]:RADio:WCDMa:HSDPa[:BBG]:DLINK:AWGN:CN <val>

[:SOURCE]:RADio:WCDMa:HSDPa[:BBG]:DLINK:AWGN:CN?

This command sets the downlink in-band carrier to noise ratio (C/N) value using AWGN.

RST** 0**Range** –30 to 30**Remarks** Setting the command parameter while the signal is active also requires executing the apply command. Refer to “:DLINK:APPLY” on page 811.**:DLINK:AWGN[:STATE]*Supported** E4438C with Option 418

[:SOURCE]:RADio:WCDMa:HSDPa[:BBG]:DLINK:AWGN[:STATE] ON|OFF|0|1

[:SOURCE]:RADio:WCDMa:HSDPa[:BBG]:DLINK:AWGN[:STATE]?

This command turns the downlink AWGN on or off.

RST** 0**Remarks** Setting the command parameter while the signal is active also requires executing the apply command. Refer to “:DLINK:APPLY” on page 811.**:DLINK:BBClock[:SOURCE]*Supported** E4438C with Option 418

[:SOURCE]:RADio:WCDMa:HSDPa[:BBG]:DLINK:BBClock[:SOURCE] INT|EXT

[:SOURCE]:RADio:WCDMa:HSDPa[:BBG]:DLINK:BBClock[:SOURCE]?

This command selects the downlink baseband generator chip clock source, which is either internal to the signal generator or applied externally.

***RST** INT**Remarks** When using an external chip clock source, connect the signal to the DATA CLOCK connector on the front panel of the ESG.

:DLINK:CPICH:CCODE

Supported E4438C with Option 418

[:SOURCE] :RADIO:WCDMA:HSDPA[:BBG]:DLINK:CPICH:CCODE?

This query returns the CPICH channelization code, which is always set to zero.

:DLINK:CPICH:POWER

Supported E4438C with Option 418

[:SOURCE] :RADIO:WCDMA:HSDPA[:BBG]:DLINK:CPICH:POWER <val>

[:SOURCE] :RADIO:WCDMA:HSDPA[:BBG]:DLINK:CPICH:POWER?

This command sets the CPICH power level. The variable <val> is expressed in decibels (dB).

***RST** 3.30000000E+000

Range -40 to 0

Remarks Setting the command parameter while the signal is active also requires executing the apply command. Refer to “:DLINK:APPLY” on page 811.

:DLINK:CPICH[:STATE]

Supported E4438C with Option 418

[:SOURCE] :RADIO:WCDMA:HSDPA[:BBG]:DLINK:CPICH[:STATE] ON|OFF|1|0

[:SOURCE] :RADIO:WCDMA:HSDPA[:BBG]:DLINK:CPICH[:STATE]?

This command turns the CPICH on or off.

***RST** 1

Remarks Setting the command parameter while the signal is active also requires executing the apply command. Refer to “:DLINK:APPLY” on page 811.

:DLINK:DPCH:CCODE

Supported E4438C with Option 418

[:SOURCE] :RADIO:WCDMA:HSDPA[:BBG]:DLINK:DPCH:CCODE <val>

[:SOURCE] :RADIO:WCDMA:HSDPA[:BBG]:DLINK:DPCH:CCODE?

This command sets the downlink DPCH channel code number.

***RST** 10

Range 0–511

HSDPA over W-CDMA Subsystem–Option 418 ([:SOURCE]:RADio:WCDMa:HSDPa[:BBG])

- Remarks** Setting the command parameter while the signal is active also requires executing the apply command. Refer to “:DLINK:APPLY” on page 811.
- The channel code is coupled with the slot format and all other physical channel codes. Set the channel code to not exceed limits of the slot format and ensure that all physical channel codes are orthogonal to each other. If any channel codes fail to meet this criteria, the apply function (downlink apply command) will not work.

:DLINK:DPCH:DATA

Supported E4438C with Option 418

```
[ :SOURCE ] :RADio :WCDMa :HSDPa [ :BBG ] :DLINK :DPCH :DATA PN9 | PN15 | FIX4 | DCH |
"<file name>"
[ :SOURCE ] :RADio :WCDMa :HSDPa [ :BBG ] :DLINK :DPCH :DATA?
```

This command configures the downlink DPCH data pattern.

DCH This selects the transport channel as the data source. The DCH selection is not available for a DPCH slot format of 16.

"<file name>" This represents a data pattern file stored in signal generator memory. The data pattern must contain at least one bit or the apply function (downlink apply command) will not work. Refer to “File Overview” on page 809 for more information on files.

***RST** PN9

Remarks Setting the command parameter while the signal is active also requires executing the apply command. Refer to “:DLINK:APPLY” on page 811.

:DLINK:DPCH:DATA:FIX4

Supported E4438C with Option 418

```
[ :SOURCE ] :RADio :WCDMa :HSDPa [ :BBG ] :DLINK :DPCH :DATA :FIX4 <val>
[ :SOURCE ] :RADio :WCDMa :HSDPa [ :BBG ] :DLINK :DPCH :DATA :FIX4?
```

This command sets the downlink DPCH repeating 4-bit binary data pattern.

The variable <val> accepts values in binary, hexadecimal, or decimal format, however the query returns only binary values.

***RST** 0

Range 0–15

Remarks Setting the command parameter while the signal is active also requires executing the apply command. Refer to “:DLINK:APPLY” on page 811.

HSDPA over W-CDMA Subsystem—Option 418 ([:SOURCE]:RADIO:WCDMA:HSDPA[:BBG])

:DLINK:DPCH:DCH[1] | 2 | 3 | 4 | 5 | 6:BSIZE**Supported** E4438C with Option 418[:SOURCE]:RADIO:WCDMA:HSDPA[:BBG]:DLINK:DPCH:DCH[1] | 2 | 3 | 4 | 5 | 6
:BSIZE <val>

[:SOURCE]:RADIO:WCDMA:HSDPA[:BBG]:DLINK:DPCH:DCH[1] | 2 | 3 | 4 | 5 | 6:BSIZE?

This command sets the block size for the selected downlink DCH.

***RST** 20**Range** 0–5000**Remarks** Setting the command parameter while the signal is active also requires executing the apply command. Refer to “[:DLINK:APPLY](#)” on page 811.

The number of data bits per DCH cannot exceed 200,000. To maintain this data bit limit, the ESG calculates the product of the block size and the number of blocks. If the product of these two parameters exceeds 200,000, the apply function (downlink apply command) will not work.

:DLINK:DPCH:DCH[1] | 2 | 3 | 4 | 5 | 6:CTYPE**Supported** E4438C with Option 418[:SOURCE]:RADIO:WCDMA:HSDPA[:BBG]:DLINK:DPCH:DCH[1] | 2 | 3 | 4 | 5 | 6
:CTYPE HCONv | TCONv | TURBo | NONE

[:SOURCE]:RADIO:WCDMA:HSDPA[:BBG]:DLINK:DPCH:DCH[1] | 2 | 3 | 4 | 5 | 6:CTYPE?

This command sets the coder type for the selected downlink DCH.

HCONv This choice selects the 1/2 rate convolutional encoder.**TCONv** This choice selects the 1/3 rate convolutional encoder.**TURBo** This choice selects the turbo coder.**NONE** This choice selects no coding.***RST** HCON**Remarks** Setting the command parameter while the signal is active also requires executing the apply command. Refer to “[:DLINK:APPLY](#)” on page 811.

:DLINK:DPCH:DCH[1] | 2 | 3 | 4 | 5 | 6:CRC**Supported** E4438C with Option 418

[:SOURce]:RADio:WCDMa:HSDPa[:BBG]:DLINK:DPCH:DCH[1] | 2 | 3 | 4 | 5 | 6:CRC 0 | 8 | 12 | 16 | 24

[:SOURce]:RADio:WCDMa:HSDPa[:BBG]:DLINK:DPCH:DCH[1] | 2 | 3 | 4 | 5 | 6:CRC?

This command sets the number of CRC bits for the selected downlink DCH.

RST** 8**Remarks** Setting the command parameter while the signal is active also requires executing the apply command. Refer to “[DLINK:APPLY](#)” on page 811.**:DLINK:DPCH:DCH[1] | 2 | 3 | 4 | 5 | 6:DATA*Supported** E4438C with Option 418

[:SOURce]:RADio:WCDMa:HSDPa[:BBG]:DLINK:DPCH:DCH[1] | 2 | 3 | 4 | 5 | 6:DATA PN9 | PN15 | FIX4 | "<file name>"

[:SOURce]:RADio:WCDMa:HSDPa[:BBG]:DLINK:DPCH:DCH[1] | 2 | 3 | 4 | 5 | 6:DATA?

This command configures the data for the selected downlink DCH.

"<file name>" This variable represents a data pattern file stored in signal generator memory. The data pattern must contain at least one bit or the apply function (downlink apply command) will not work. Refer to “[File Overview](#)” on page 809 for more information on files.***RST** PN9**Remarks** Setting the command parameter while the signal is active also requires executing the apply command. Refer to “[DLINK:APPLY](#)” on page 811.**:DLINK:DPCH:DCH[1] | 2 | 3 | 4 | 5 | 6:DATA:FIX4****Supported** E4438C with Option 418

[:SOURce]:RADio:WCDMa:HSDPa[:BBG]:DLINK:DPCH:DCH[1] | 2 | 3 | 4 | 5 | 6:DATA:FIX4 <val>

[:SOURce]:RADio:WCDMa:HSDPa[:BBG]:DLINK:DPCH:DCH[1] | 2 | 3 | 4 | 5 | 6:DATA:FIX4?

This command sets the repeating 4-bit binary data pattern for the selected downlink DCH.

HSDPA over W-CDMA Subsystem—Option 418 ([:SOURCE]:RADIO:WCDMA:HSDPA[:BBG])

The variable <val> accepts values in binary, hexadecimal, or decimal format, however the query returns only binary values.

*RST	0
Range	0–15
Remarks	Setting the command parameter while the signal is active also requires executing the apply command. Refer to “:DLINK:APPLY” on page 811.

:DLINK:DPCH:DCH[1] | 2 | 3 | 4 | 5 | 6:NBLocks

Supported E4438C with Option 418

```
[ :SOURCE ] :RADIO:WCDMA:HSDPA[ :BBG ] :DLINK:DPCH:DCH[ 1 ] | 2 | 3 | 4 | 5 | 6 :
NBLocks <val>
```

```
[ :SOURCE ] :RADIO:WCDMA:HSDPA[ :BBG ] :DLINK:DPCH:DCH[ 1 ] | 2 | 3 | 4 | 5 | 6 :NBLocks?
```

This command sets the number of data blocks for the selected downlink DCH.

*RST	1
Range	0–512
Remarks	Setting the command parameter while the signal is active also requires executing the apply command. Refer to “:DLINK:APPLY” on page 811.

The number of data bits per DCH cannot exceed 200,000. To maintain this data bit limit, the ESG calculates the product of the block size and the number of blocks. If the product of these two parameters exceeds 200,000, the apply function (downlink apply command) will not work.

:DLINK:DPCH:DCH[1] | 2 | 3 | 4 | 5 | 6:RMATtribute

Supported E4438C with Option 418

```
[ :SOURCE ] :RADIO:WCDMA:HSDPA[ :BBG ] :DLINK:DPCH:DCH[ 1 ] | 2 | 3 | 4 | 5 | 6 :
RMATtribute <val>
```

```
[ :SOURCE ] :RADIO:WCDMA:HSDPA[ :BBG ] :DLINK:DPCH:DCH[ 1 ] | 2 | 3 | 4 | 5 | 6 :
RMATtribute?
```

This command sets the rate matching attribute for the selected downlink DCH.

*RST	1
Range	1–256
Remarks	Setting the command parameter while the signal is active also requires executing the apply command. Refer to “:DLINK:APPLY” on page 811.

:DLINK:DPCH:DCH[1] | 2 | 3 | 4 | 5 | 6:TTI**Supported** E4438C with Option 418

[:SOURCE]:RADio:WCDMa:HSDPa[:BBG]:DLINK:DPCH:DCH[1] | 2 | 3 | 4 | 5 | 6:TTI 10 | 20 | 40 | 80

[:SOURCE]:RADio:WCDMa:HSDPa[:BBG]:DLINK:DPCH:DCH[1] | 2 | 3 | 4 | 5 | 6:TTI?

This command sets the TTI for the selected downlink DCH.

The choices are expressed in millisecond (ms).

RST** 10**Remarks** Setting the command parameter while the signal is active also requires executing the apply command. Refer to “:DLINK:APPLY” on page 811.**:DLINK:DPCH:DCH2 | 3 | 4 | 5 | 6[:STATE]*Supported** E4438C with Option 418

[:SOURCE]:RADio:WCDMa:HSDPa[:BBG]:DLINK:DPCH:DCH2 | 3 | 4 | 5 | 6[:STATE] ON | OFF | 1 | 0

[:SOURCE]:RADio:WCDMa:HSDPa[:BBG]:DLINK:DPCH:DCH2 | 3 | 4 | 5 | 6[:STATE]?

This command turns the selected downlink DCH on or off; DCH1 is always on.

***RST** DCH 1: 1 DCH 2–6: 0**Remarks** Setting the command parameter while the signal is active also requires executing the apply command. Refer to “:DLINK:APPLY” on page 811.

The apply command will not work and the ESG will report an error if you turn on a DCH where lower numbered DCHs are off. For example, turning on DCH5 requires turning on DCH2–4. The reverse is true when turning off the DCHs.

:DLINK:DPCH:POWer**Supported** E4438C with Option 418

[:SOURCE]:RADio:WCDMa:HSDPa[:BBG]:DLINK:DPCH:POWer <val>

[:SOURCE]:RADio:WCDMa:HSDPa[:BBG]:DLINK:DPCH:POWer?

This command sets the downlink DPCH power level.

***RST** –1.02000000E+001**Range** –40 to 0

HSDPA over W-CDMA Subsystem—Option 418 ([:SOURCE]:RADIO:WCDMA:HSDPA[:BBG])

Remarks Setting the command parameter while the signal is active also requires executing the apply command. Refer to “:DLINK:APPLY” on page 811.

:DLINK:DPCH:SFORmat

Supported E4438C with Option 418

```
[ :SOURCE ] :RADIO:WCDMA:HSDPA[ :BBG ] :DLINK:DPCH:SFORmat <val>
[ :SOURCE ] :RADIO:WCDMA:HSDPA[ :BBG ] :DLINK:DPCH:SFORmat?
```

This command configures the downlink DPCH slot format.

***RST** 0

Range 0–16

Remarks Setting the command parameter while the signal is active also requires executing the apply command. Refer to “:DLINK:APPLY” on page 811.

The slot format is coupled with the channel code, so a change in one value may require a change in the other. If the channel code exceeds the limits of the slot format or if it is not orthogonal with all other physical channel codes, the apply function (downlink apply command) will not work.

:DLINK:DPCH:SSCOffset

Supported E4438C with Option 418

```
[ :SOURCE ] :RADIO:WCDMA:HSDPA[ :BBG ] :DLINK:DPCH:SSCOffset <val>
[ :SOURCE ] :RADIO:WCDMA:HSDPA[ :BBG ] :DLINK:DPCH:SSCOffset?
```

This command sets the downlink DPCH secondary scrambling code offset.

***RST** +0

Range 0–15

Remarks Setting the command parameter while the signal is active also requires executing the apply command. Refer to “:DLINK:APPLY” on page 811.

:DLINK:DPCH:TFCI

Supported E4438C with Option 418

```
[ :SOURCE ] :RADIO:WCDMA:HSDPA [ :BBG ] :DLINK:DPCH:TFCI <val>
```

```
[ :SOURCE ] :RADIO:WCDMA:HSDPA [ :BBG ] :DLINK:DPCH:TFCI?
```

This command sets the TFCI 10-bit pattern for the downlink DPCH.

The variable <val> accepts values in binary, hexadecimal, or decimal format, however the query returns only binary values.

***RST** +0

Range 0–1023

Remarks Setting the command parameter while the signal is active also requires executing the apply command. Refer to “[:DLINK:APPLY](#)” on page 811.

Setting the TFCI bits is optional; they describe the type of service in use, for example voice or data.

:DLINK:DPCH:TOFFset

Supported E4438C with Option 418

```
[ :SOURCE ] :RADIO:WCDMA:HSDPA [ :BBG ] :DLINK:DPCH:TOFFset <val>
```

```
[ :SOURCE ] :RADIO:WCDMA:HSDPA [ :BBG ] :DLINK:DPCH:TOFFset?
```

This command adjusts the downlink DPCH timing offset.

The variable <val> is expressed in chips.

***RST** +0

Range 0–149

Remarks Setting the command parameter while the signal is active also requires executing the apply command. Refer to “[:DLINK:APPLY](#)” on page 811.

HSDPA over W-CDMA Subsystem—Option 418 ([:SOURCE]:RADIO:WCDMA:HSDPA[:BBG])

:DLINK:DPCH:TPC:NSTeps**Supported** E4438C with Option 418

[:SOURCE]:RADIO:WCDMA:HSDPA[:BBG]:DLINK:DPCH:TPC:NSTeps <val>

[:SOURCE]:RADIO:WCDMA:HSDPA[:BBG]:DLINK:DPCH:TPC:NSTeps?

This command sets the number of steps for the down and up (DUP) or up and down (UDOWn) TPC pattern selections.

***RST** +1**Range** 1–80

Remarks Setting the command parameter while the signal is active also requires executing the apply command. Refer to “:DLINK:APPLY” on page 811.

:DLINK:DPCH:TPC:PATtern**Supported** E4438C with Option 418

[:SOURCE]:RADIO:WCDMA:HSDPA[:BBG]:DLINK:DPCH:TPC:PATtern UDOWn|DUP|UALL|DALL| "<file name>"

[:SOURCE]:RADIO:WCDMA:HSDPA[:BBG]:DLINK:DPCH:TPC:PATtern?

This command configures the downlink DPCH TPC pattern for increasing or decreasing, or increasing and decreasing the UE power level.

UDOWn The TPC pattern repetitively steps up and down.

DUP The TPC pattern repetitively steps down and up.

UALL The TPC pattern consecutively steps up.

DALL The TPC pattern consecutively steps down.

"<file name>" This variable represents a TPC pattern file stored in signal generator memory. The pattern must contain at least one bit or the apply function (downlink apply command) will not work. Refer to “File Overview” on page 809 for more information on files.

***RST** UDOW

Remarks Setting the command parameter while the signal is active also requires executing the apply command. Refer to “:DLINK:APPLY” on page 811.

Each step in a TPC pattern signals an increase or decrease of 1 dB in the UE output power level.

:DLINK:DPCH:TRPosition**Supported** E4438C with Option 418

[:SOURCE]:RADIO:WCDMA:HSDPA[:BBG]:DLINK:DPCH:TRPosition?

This query returns the downlink DPCH transport channel position that is always set to FIX.

:DLINK:DPCH[:STATE]**Supported** E4438C with Option 418

[:SOURCE]:RADIO:WCDMA:HSDPA[:BBG]:DLINK:DPCH[:STATE] ON|OFF|1|0

[:SOURCE]:RADIO:WCDMA:HSDPA[:BBG]:DLINK:DPCH[:STATE]?

This command turns the downlink DPCH on or off.

RST** 1**Remarks** Setting the command parameter while the signal is active also requires executing the apply command. Refer to “:DLINK:APPLY” on page 811.**:DLINK:FILTer*Supported** E4438C with Option 418[:SOURCE]:RADIO:WCDMA:HSDPA[:BBG]:DLINK:FILTer RNYQuist|NYQuist|GAUSSian|RECTangle|IS95|IS95_EQ|IS95_MOD|IS95_MOD_EQ|AC4Fm|UGGaussian|"
" <user FIR> "

[:SOURCE]:RADIO:WCDMA:HSDPA[:BBG]:DLINK:FILTer?

This command selects the downlink filter type.

IS95 This filter meets the criteria of the IS-95 standard.

IS95_EQ This filter is a combination of the IS-95 filter (above) and the equalizer filter described in the IS-95 standard and is best suited for IS-95 baseband filtering.

IS95_MOD This filter meets the criteria of the IS-95 error function (for improved adjacent channel performance) with lower passband rejection than the filter specified in the IS-95 standard.

IS95_MOD_EQ This filter is a combination of the equalizer filter described in the IS-95 standard and a filter that meets the criteria of the IS-95 error function (for improved adjacent channel performance), with lower passband rejection.

UGGaussian This is a GSM Gaussian filter with a fixed BbT value of 0.300.

AC4Fm This is a predefined Association of Public Safety Communications Officials (APCO) specified compatible 4-level frequency modulation (C4FM) filter.

HSDPA over W-CDMA Subsystem—Option 418 ([:SOURCE]:RADIO:WCDMA:HSDPa[:BBG])

"<user FIR>"	This variable represents any FIR filter file stored in signal generator memory. Refer to “File Overview” on page 809 for more information on files.
*RST	RNYQ
Remarks	Setting the command parameter while the signal is active also requires executing the apply command. Refer to “:DLINK:APPLY” on page 811 .

:DLINK:FILTer:ALPHA

Supported E4438C with Option 418

```
[ :SOURCE ] :RADIo:WCDMA:HSDPa[ :BBG ] :DLINK:FILTer:ALPHA <val>
[ :SOURCE ] :RADIo:WCDMA:HSDPa[ :BBG ] :DLINK:FILTer:ALPHA?
```

This command sets the downlink Nyquist or root Nyquist filter alpha value.

***RST** +2.20000000E-001

Range 0-1

Remarks Setting the command parameter while the signal is active also requires executing the apply command. Refer to [“:DLINK:APPLY” on page 811](#).

Executing this command while a filter other than Nyquist or root Nyquist is selected changes the parameter value, but it is not used by the signal generator until one of the Nyquist filters is selected.

:DLINK:FILTer:BBT

Supported E4438C with Option 418

```
[ :SOURCE ] :RADIo:WCDMA:HSDPa[ :BBG ] :DLINK:FILTer:BBT <val>
[ :SOURCE ] :RADIo:WCDMA:HSDPa[ :BBG ] :DLINK:FILTer:BBT?
```

This command sets the downlink Gaussian filter BbT value.

***RST** +5.00000000E-001

Range 0-1

Remarks Setting the command parameter while the signal is active also requires executing the apply command. Refer to [“:DLINK:APPLY” on page 811](#).

Executing this command while a filter other than the Gaussian filter is selected changes the parameter value, but it is not used by the signal generator until the Gaussian filter is selected.

:DLINK:FILTer:CHANnel**Supported** E4438C with Option 418

```
[ :SOURCE ] :RADio:WCDMa:HSDPa [ :BBG ] :DLINK:FILTer:CHANnel EVM|ACP
[ :SOURCE ] :RADio:WCDMa:HSDPa [ :BBG ] :DLINK:FILTer:CHANnel?
```

Execute this command to optimize a downlink filter for minimized EVM or for minimized ACP.

EVM This choice provides the most ideal passband

ACP This choice improves stopband rejection for the root Nyquist and Nyquist filters.

***RST** EVM

Remarks Setting the command parameter while the signal is active also requires executing the apply command. Refer to “[:DLINK:APPLY](#)” on page 811.

To change the filter selection, refer to “[:DLINK:FILTer](#)” on page 822.

:DLINK:HSBurst**Supported** E4438C with Option 418

```
[ :SOURCE ] :RADio:WCDMa:HSDPa [ :BBG ] :DLINK:HSBurst ON|OFF|1|0
[ :SOURCE ] :RADio:WCDMa:HSDPa [ :BBG ] :DLINK:HSBurst?
```

This command sets the handling of the off slot periods for the downlink HSDPA channels.

ON|1 This choice turns off the ESG ALC feature and uses DTX during the off slots.

OFF|0 This choice continuously transmits the HSDPA channels filling the off slots with dummy bits.

***RST** 0

Remarks Setting the command parameter while the signal is active also requires executing the apply command. Refer to “[:DLINK:APPLY](#)” on page 811.

HSDPA over W-CDMA Subsystem—Option 418 ([:SOURCE]:RADIO:WCDMA:HSDPA[:BBG])

:DLINK:HSDPA:AMC:CQIMapping:UECategory**Supported** E4438C with Option 418

```
[ :SOURCE ] :RADIo:WCDMA:HSDPa[ :BBG ] :DLINK:HSDPa:AMC:CQIMapping:
UECategory <val>
[ :SOURCE ] :RADIo:WCDMA:HSDPa[ :BBG ] :DLINK:HSDPa:AMC:CQIMapping:UECategory?
```

This command sets the UE category that determines the CQI mapping table per the 3GPP standards.

***RST** 5**Range** 1–12

Remarks To use this command's parameter in a setup, you must also set AMC as the feedback selection. Refer to the “[:DLINK:HSDPA:FCONtrol](#)” on page 826 for selecting the feedback type.

Setting the command parameter while the signal is active also requires executing the apply command. Refer to “[:DLINK:APPLY](#)” on page 811.

:DLINK:HSDPA:AMC:CPATtern**Supported** E4438C with Option 418

```
[ :SOURCE ] :RADIo:WCDMA:HSDPa[ :BBG ] :DLINK:HSDPa:AMC:CPATtern ALL_1 | ALL_2 |
ALL_3 | ALL_4 | ALL_5 | ALL_6 | ALL_7 | ALL_8 | ALL_9 | ALL_10 | ALL_11 | ALL_12 | ALL_13 |
ALL_14 | ALL_15 | ALL_16 | ALL_17 | ALL_18 | ALL_19 | ALL_20 | ALL_21 | ALL_22 | ALL_23 |
ALL_24 | ALL_25 | ALL_26 | ALL_27 | ALL_28 | ALL_29 | ALL_30 | "<file_name>"
[ :SOURCE ] :RADIo:WCDMA:HSDPa[ :BBG ] :DLINK:HSDPa:AMC:CPATtern?
```

This command sets a simulated UE CQI pattern that determines HSDPA1's response including the modulation type (QPSK or 16QAM) and the constellation version for 16QAM per the set UE category.

ALL_<val> These choices configure a simulated UE ACK response with a single CQI value for 1,280 subframes.

"<file name>" This variable represents a CQI pattern file stored in signal generator memory. Create this file either by using the AMC CQI pattern Data Type Entry window and downloading the file to the ESG, or by using the ESG Real Time W-CDMA table editor to create a bit file with the following bit patterns:

- CQI value of 1–30 using an 8-bit pattern, 00000001 to 00011110
- DTX is represented by 11111111

HSDPA over W-CDMA Subsystem–Option 418 ([:SOURCE]:RADio:WCDMa:HSDPa[:BBG])

In the file, do not use delimiters between subframes; enter subframe bits as a binary string.

When creating a pattern, you can determine the number of active subframes from 1 to 1,280. The subframes are numbered 0 to 1,279. A subframe is active when it contains 8-bits. If a subframe contains at least 1-bit but less than 8-bits, the apply function (downlink apply command) will not work.

***RST**

ALL_21

Remarks

To use this command's parameter in a setup, you must also set AMC as the feedback selection. Refer to the **”:DLINK:HSDPa:FCONtrol”** for selecting the feedback type.

Setting the command parameter while the signal is active also requires executing the apply command. Refer to **“:DLINK:APPLY” on page 811**.

:DLINK:HSDPa:FCONtrol**Supported** E4438C with Option 418

```
[ :SOURCE ] :RADio:WCDMa:HSDPa [ :BBG ] :DLINK:HSDPa:FCONtrol NONE | HARQ | AMC
[ :SOURCE ] :RADio:WCDMa:HSDPa [ :BBG ] :DLINK:HSDPa:FCONtrol ?
```

This command sets the HSDPA1 feedback control type.

NONE This choice turns off the feedback control.

HARQ This choice provides UE feedback using the HARQ process. This selection provides the capability of configuring a simulated UE ACK/NACK response, setting the maximum number of HARQ transmissions, and providing up to eight different RV parameters.

AMC This choice provides UE feedback using adaptive modulation coding. This selection provides the capability of configuring a simulated UE CQI response aligned with a UE category input.

***RST**

NONE

Remarks

Setting the command parameter while the signal is active also requires executing the apply command. Refer to **“:DLINK:APPLY” on page 811**

:DLINK:HSDPA:HARQ:APATtern**Supported** E4438C with Option 418

```
[ :SOURCE ] :RADIo :WCDMa :HSDPa [ :BBG ] :DLINK :HSDPa :HARQ :APATtern ACK_ALL |
"<file name>"
[ :SOURCE ] :RADIo :WCDMa :HSDPa [ :BBG ] :DLINK :HSDPa :HARQ :APATtern?
```

This command sets a simulated UE ACK/NACK pattern that determines HSDPA1's HARQ response.

ACK_ALL This choice configures 1,280 subframes for a simulated ACK only response.

"<file name>" This variable represents an ACK pattern file stored in signal generator memory. Create this file either by using the HARQ ACK/NACK pattern Data Type Entry window and download the file to the ESG, or by using the ESG Real Time W-CDMA table editor to create a bit file with the following bit patterns:

- An ACK response is represented by 00.
- A NACK response is represented by 01.
- DTX is represented by 10.

In the file, do not use delimiters between subframes; enter subframe bits as a binary string.

When creating a pattern, you can determine the number of active subframes from 1 to 1,280. The subframes are numbered 0 to 1,279. A subframe is active when it contains 2-bits. If a subframe contains only 1-bit, the apply function (downlink apply command) will not work.

***RST** ACK_ALL

Remarks To use this command's parameter in a setup, you must also set HARQ as the feedback selection. Refer to the **":DLINK:HSDPA:FCONtrol"** for selecting the feedback type.

Setting the command parameter while the signal is active also requires executing the apply command. Refer to **":DLINK:APPLY"** on page 811.

:DLINK:HSDPA:HARQ:MNHTrans**Supported** E4438C with Option 418

```
[ :SOURCE ] :RADIo :WCDMa :HSDPa [ :BBG ] :DLINK :HSDPa :HARQ :MNHTrans <val>
[ :SOURCE ] :RADIo :WCDMa :HSDPa [ :BBG ] :DLINK :HSDPa :HARQ :MNHTrans?
```

This command configures the HSDPA1 maximum number of HARQ transmissions for the HARQ function.

HSDPA over W-CDMA Subsystem–Option 418 ([:SOURCE]:RADIO:WCDMA:HSDPA[:BBG])

Use the command for UE performance testing or for specifying an arbitrary number of HARQ transmissions. When the software encounters a UE NACK response that is set by the HARQ ACK pattern command (see [”:DLINK:HSDPA:HARQ:APATtern”](#)), the software re-sends the same packet payload until either the maximum number of HARQ transmissions is reached or a simulated ACK response is encountered. Whenever the software re-sends the same packet payload, it also transmits another RV parameter that is configured by the RV sequence command.

***RST** 1

Range 1–8

Remarks To use this command's parameter in a setup, you must also set HARQ as the feedback selection. Refer to the [”:DLINK:HSDPA:FCONtrol”](#) on page 826 for selecting the feedback type.

Setting the command parameter while the signal is active also requires executing the apply command. Refer to [”:DLINK:APPLY”](#) on page 811.

:DLINK:HSDPA:HARQ:RVSequence[1]|2|3|4|5|6|7|8

Supported E4438C with Option 418

```
[ :SOURCE ] :RADIO:WCDMA:HSDPA[:BBG]:DLINK:HSDPA:HARQ:RVSequence[1]|2|3|4|5|6|7|8 <val>
```

```
[ :SOURCE ] :RADIO:WCDMA:HSDPA[:BBG]:DLINK:HSDPA:HARQ:RVSequence[1]|2|3|4|5|6|7|8?
```

This command sets the HSDPA1 RV parameter sequence used with the maximum number of HARQ transmission setting. You can set eight different RV parameters for the RV sequence.

During simulated ACK responses, the software uses the first RV parameter. When the software encounters a simulated NACK response, it sends data using the next RV parameter. The software keeps incrementing to the next RV parameter in the sequence until it receives a simulated ACK response. When the software encounters an ACK response, the RV sequence resets to the first RV parameter.

***RST** 0

Range 0–7

Remarks To use this command's parameter in a setup, you must also set HARQ as the feedback selection. Refer to the [”:DLINK:HSDPA:FCONtrol”](#) on page 826 for selecting the feedback type.

Setting the command parameter while the signal is active also requires executing the apply command. Refer to [”:DLINK:APPLY”](#) on page 811.

HSDPA over W-CDMA Subsystem—Option 418 (:SOURCE:RADIO:WCDMA:HSDPA[:BBG])

:DLINK:HSDPA[1] | 2 | 3 | 4:BSINFO**Supported** E4438C with Option 418

```
[ :SOURCE ] :RADIO:WCDMA:HSDPA[:BBG]:DLINK:HSDPA[1] | 2 | 3 | 4:BSINFO <val>
[ :SOURCE ] :RADIO:WCDMA:HSDPA[:BBG]:DLINK:HSDPA[1] | 2 | 3 | 4:BSINFO?
```

This command sets the HS-DSCH block size. HSDPA1 is the only HSDPA channel configuration that supports the HS-DSCH, however the block size information parameter is also available for HSDPA2–4 for HS-SCCH coding purposes.

RST** 36**Range** 0–63**Remarks** Setting the command parameter while the signal is active also requires executing the apply command. Refer to “:DLINK:APPLY” on page 811.**:DLINK:HSDPA[1] | 2 | 3 | 4:HSPDSCH:COFFSET*Supported** E4438C with Option 418

```
[ :SOURCE ] :RADIO:WCDMA:HSDPA[:BBG]:DLINK:HSDPA[1] | 2 | 3 | 4:HSPDSCH:COFFSET <val>
[ :SOURCE ] :RADIO:WCDMA:HSDPA[:BBG]:DLINK:HSDPA[1] | 2 | 3 | 4:HSPDSCH:COFFSET?
```

This command sets the HS-PDSCH code offset. The code offset is used in determining the HS-PDSCH channel code.

***RST** HSDPA1: 4 HSDPA2: 8 HSDPA3: 9 HSDPA4: 10**Range** 1–15**Remarks** Setting the command parameter while the signal is active also requires executing the apply command. Refer to “:DLINK:APPLY” on page 811.

Set all physical channel codes orthogonal to each other. For any channel codes that fail this criteria, the apply function (downlink apply command) will not work.

:DLINK:HSDPA[1] | 2 | 3 | 4:HSPDSCH:DATA**Supported** E4438C with Option 418

```
[ :SOURCE ] :RADIO:WCDMA:HSDPA[:BBG]:DLINK:HSDPA[1] | 2 | 3 | 4:HSPDSCH:DATA PN9 |
FIX4 | "<file name>" | DSCH
[ :SOURCE ] :RADIO:WCDMA:HSDPA[:BBG]:DLINK:HSDPA[1] | 2 | 3 | 4:HSPDSCH:DATA?
```

This command configures the HS-PDSCH data type.

HSDPA over W-CDMA Subsystem–Option 418 ([:SOURce]:RADio:WCDMa:HSDPa[:BBG])

DSCH	This choice is the HS-DSCH selection that is supported on only HSDPA1. Selecting the DSCH choice for HSDPA2–4 will generate an error.
"<file name>"	This variable represents a data pattern file stored in signal generator memory. The data pattern must contain at least one bit or the apply function (downlink apply command) will not work. Refer to “ File Overview ” on page 809 for more information on files.
*RST	PN9
Remarks	Setting the command parameter while the signal is active also requires executing the apply command. Refer to “ DLINK:APPLY ” on page 811.

:DLINK:HSDPa[1] | 2 | 3 | 4:HSPDSch:DATA:FIX4

Supported E4438C with Option 418

```
[ :SOURce ] :RADio:WCDMa:HSDPa [ :BBG ] :DLINK:HSDPa [ 1 ] | 2 | 3 | 4 :HSPDSch:DATA:
FIX4 <val>
```

```
[ :SOURce ] :RADio:WCDMa:HSDPa [ :BBG ] :DLINK:HSDPa [ 1 ] | 2 | 3 | 4 :HSPDSch:DATA:
FIX4?
```

This command sets the HS-PDSCH repeating 4-bit binary data pattern.

The variable <val> accepts values in binary, hexadecimal, or decimal format, however the query returns only binary values.

***RST** 0

Range 0–15

Remarks Setting the command parameter while the signal is active also requires executing the apply command. Refer to “[DLINK:APPLY](#)” on page 811.

:DLINK:HSDPa:HSPDSch:DSCH:DATA

Supported E4438C with Option 418

```
[ :SOURce ] :RADio:WCDMa:HSDPa [ :BBG ] :DLINK:HSDPa:HSPDSch:DSCH:DATA PN9 |
FIX4 | "<file name>"
```

```
[ :SOURce ] :RADio:WCDMa:HSDPa [ :BBG ] :DLINK:HSDPa:HSPDSch:DSCH:DATA?
```

This command defines the HS-DSCH data type for HSDPA1. The HS-DSCH is not supported on HSDPA2–4.

"<file name>" This variable represents a data pattern file stored in signal generator memory. The data pattern must contain at least one bit or the apply function (downlink apply

HSDPA over W-CDMA Subsystem—Option 418 [:SOURCE]:RADIO:WCDMA:HSDPA[:BBG]

command) will not work. Refer to “File Overview” on page 809 for more information on files.

***RST** PN9

Remarks Setting the command parameter while the signal is active also requires executing the apply command. Refer to “:DLINK:APPLY” on page 811.

:DLINK:HSDPA:HSPDSch:DSCH:DATA:FIX4

Supported E4438C with Option 418

```
[ :SOURCE ] :RADIO:WCDMA:HSDPA[:BBG]:DLINK:HSDPA:HSPDSch:DSCH:DATA:
FIX4 <val>
```

```
[ :SOURCE ] :RADIO:WCDMA:HSDPA[:BBG]:DLINK:HSDPA:HSPDSch:DSCH:DATA:FIX4?
```

This command defines the HS-DSCH repeating 4-bit binary data pattern for HSDPA1. The HS-DSCH is not supported on HSDPA2–4.

The variable <val> accepts values in binary, hexadecimal, or decimal format, however the query returns only binary values.

***RST** 0

Range 0–15

Remarks Setting the command parameter while the signal is active also requires executing the apply command. Refer to “:DLINK:APPLY” on page 811.

:DLINK:HSDPA:HSPDSch:DSCH:IRBSize

Supported E4438C with Option 418

```
[ :SOURCE ] :RADIO:WCDMA:HSDPA[:BBG]:DLINK:HSDPA:HSPDSch:DSCH:IRBSize <val>
```

```
[ :SOURCE ] :RADIO:WCDMA:HSDPA[:BBG]:DLINK:HSDPA:HSPDSch:DSCH:IRBSize?
```

This command sets the HS-DSCH IR buffer size per the HARQ process for HSDPA1. The HS-DSCH is not supported on HSDPA2–4.

***RST** 9600

Range 960–28800

Remarks Setting the command parameter while the signal is active also requires executing the apply command. Refer to “:DLINK:APPLY” on page 811.

HSDPA over W-CDMA Subsystem–Option 418 ([:SOURCE]:RADIO:WCDMA:HSDPA[:BBG])**:DLINK:HSDPA:HSPDSch:NCODE****Supported** E4438C with Option 418

[:SOURCE]:RADIO:WCDMA:HSDPA[:BBG]:DLINK:HSDPA:HSPDSch:NCODE <val>

[:SOURCE]:RADIO:WCDMA:HSDPA[:BBG]:DLINK:HSDPA:HSPDSch:NCODE?

This command sets number of codes for the HS-PDSCH on HSDPA1. HSDPA2–4 do not support multicodes.

***RST** 1**Range** 1–15

Remarks Setting the command parameter while the signal is active also requires executing the apply command. Refer to “:DLINK:APPLY” on page 811.

Set all physical channel codes so they are orthogonal to each other. If any of the channel codes fail to meet this criteria, the apply function (downlink apply command) will not work.

:DLINK:HSDPA[1] | 2 | 3 | 4:HSPDSch:POWER**Supported** E4438C with Option 418

[:SOURCE]:RADIO:WCDMA:HSDPA[:BBG]:DLINK:HSDPA[1] | 2 | 3 | 4:HSPDSch:POWER <val>

[:SOURCE]:RADIO:WCDMA:HSDPA[:BBG]:DLINK:HSDPA[1] | 2 | 3 | 4:HSPDSch:POWER?

This command sets the HS-PDSCH power level.

The variable <val> is expressed in decibels (dB).

***RST** –1.02000000E+001**Range** –40 to 0

Remarks Setting the command parameter while the signal is active also requires executing the apply command. Refer to “:DLINK:APPLY” on page 811.

HSDPA over W-CDMA Subsystem—Option 418 ([:SOURCE]:RADIO:WCDMA:HSDPA[:BBG])

:DLINK:HSDPA[1] | 2 | 3 | 4:HSPDSch:SFORmat**Supported** E4438C with Option 418

[:SOURCE]:RADIO:WCDMA:HSDPA[:BBG]:DLINK:HSDPA[1] | 2 | 3 | 4:HSPDSch:SFORmat 0 | 1

[:SOURCE]:RADIO:WCDMA:HSDPA[:BBG]:DLINK:HSDPA[1] | 2 | 3 | 4:HSPDSch:SFORmat?

This command sets the HS-PDSCH slot format.

0 This sets the modulation type to QPSK.

1 This sets the modulation type to 16QAM.

RST** 1**Remarks** Setting the command parameter while the signal is active also requires executing the apply command. Refer to “:DLINK:APPLY” on page 811.**:DLINK:HSDPA[1] | 2 | 3 | 4:HSPDSch[:STATE]*Supported** E4438C with Option 418

[:SOURCE]:RADIO:WCDMA:HSDPA[:BBG]:DLINK:HSDPA[1] | 2 | 3 | 4:HSPDSch[:STATE] ON | OFF | 1 | 0

[:SOURCE]:RADIO:WCDMA:HSDPA[:BBG]:DLINK:HSDPA[1] | 2 | 3 | 4:HSPDSch[:STATE]?

This command turns the selected HS-PDSCH on or off.

***RST** HSDPA1: 1 HSDPA2–4: 0**Remarks** Setting the command parameter while the signal is active also requires executing the apply command. Refer to “:DLINK:APPLY” on page 811.

The HS-SCCH must be on for the HS-PDSCH to turn on. Turning off the HS-SCCH also turns off the active HS-PDSCH. See “:DLINK:HSDPA[1]|2|3|4[:STATE]” on page 838 for turning the HS-SCCH on or off.

:DLINK:HSDPa[1] | 2 | 3 | 4:HSSCch:CCODE**Supported** E4438C with Option 418

[:SOURCE]:RADio:WCDMa:HSDPa[:BBG]:DLINK:HSDPa[1] | 2 | 3 | 4:HSSCch:CCODE <val>

[:SOURCE]:RADio:WCDMa:HSDPa[:BBG]:DLINK:HSDPa[1] | 2 | 3 | 4:HSSCch:CCODE?

This command sets the HS-SCCH channel code.

***RST** HSDPA1: 4 HSDPA2: 5 HSDPA3: 6 HSDPA4: 7**Range** 1–127**Remarks** Setting the command parameter while the signal is active also requires executing the apply command. Refer to “[:DLINK:APPLY](#)” on page 811.

Set all physical channel codes so they are orthogonal to each other. If any of the channel codes fail to meet this criteria, the apply function (downlink apply command) will not work.

:DLINK:HSDPa[1] | 2 | 3 | 4:HSSCch:DATA**Supported** E4438C with Option 418

[:SOURCE]:RADio:WCDMa:HSDPa[:BBG]:DLINK:HSDPa[1] | 2 | 3 | 4:HSSCch:DATA PN9 | FIX4 | "<file name>" | STD

[:SOURCE]:RADio:WCDMa:HSDPa[:BBG]:DLINK:HSDPa[1] | 2 | 3 | 4:HSSCch:DATA?

This command sets the data type for the selected downlink HS-SCCH.

STD This choice configures the bit field as defined by the 3GPP standards."<file name>" This variable represents a data pattern file stored in signal generator memory. The data pattern must contain at least one bit or the apply function (downlink apply command) will not work. Refer to “[File Overview](#)” on page 809 for more information on files.***RST** STD**Remarks** Setting the command parameter while the signal is active also requires executing the apply command. Refer to “[:DLINK:APPLY](#)” on page 811.

HSDPA over W-CDMA Subsystem—Option 418 ([:SOURCE]:RADIO:WCDMA:HSDPA[:BBG])

:DLINK:HSDPA[1] | 2 | 3 | 4:HSSCch:DATA:FIX4**Supported** E4438C with Option 418

[:SOURCE]:RADIO:WCDMA:HSDPA[:BBG]:DLINK:HSDPA[1] | 2 | 3 | 4:HSSCch:DATA:FIX4 <val>

[:SOURCE]:RADIO:WCDMA:HSDPA[:BBG]:DLINK:HSDPA[1] | 2 | 3 | 4:HSSCch:DATA:FIX4?

This command sets the HS-SCCH repeating 4-bit binary data pattern.

The variable <val> accepts values in binary, hexadecimal, or decimal format, however the query returns only binary values.

RST** 0**Range** 0–15**Remarks** Setting the command parameter while the signal is active also requires executing the apply command. Refer to “:DLINK:APPLY” on page 811.**:DLINK:HSDPA[1] | 2 | 3 | 4:HSSCch:POWER*Supported** E4438C with Option 418

[:SOURCE]:RADIO:WCDMA:HSDPA[:BBG]:DLINK:HSDPA[1] | 2 | 3 | 4:HSSCch:POWER <val>

[:SOURCE]:RADIO:WCDMA:HSDPA[:BBG]:DLINK:HSDPA[1] | 2 | 3 | 4:HSSCch:POWER?

This command sets the HS-SCCH power level.

The variable <val> is expressed in decibels (dB).

***RST** -1.02000000E+001**Range** -40 to 0**Remarks** Setting the command parameter while the signal is active also requires executing the apply command. Refer to “:DLINK:APPLY” on page 811.

:DLINK:HSDPA[1]|2|3|4:ITTI**Supported** E4438C with Option 418

```
[ :SOURCE ] :RADIO:WCDMA:HSDPA[:BBG]:DLINK:HSDPA[1]|2|3|4:ITTI <val>
[ :SOURCE ] :RADIO:WCDMA:HSDPA[:BBG]:DLINK:HSDPA[1]|2|3|4:ITTI?
```

This command sets the static inter-TTI pattern value for the selected HSDPA.

The variable <val> is expressed in subframes (one subframe = 2 ms).

***RST** 8**Range** 1–16

Remarks To use a static pattern, select FIX as the choice for the [:DLINK:HSDPA\[1\]|2|3|4:ITTI:PATTERN](#) command.

Setting the command parameter while the signal is active also requires executing the apply command. Refer to “[:DLINK:APPLY](#)” on page 811.

:DLINK:HSDPA[1]|2|3|4:ITTI:PATTERN**Supported** E4438C with Option 418

```
[ :SOURCE ] :RADIO:WCDMA:HSDPA[:BBG]:DLINK:HSDPA[1]|2|3|4:ITTI:
PATTERN FIX | "<file name>"
[ :SOURCE ] :RADIO:WCDMA:HSDPA[:BBG]:DLINK:HSDPA[1]|2|3|4:ITTI:PATTERN?
```

This command selects which method sets the inter-TTI pattern for the selected HSDPA.

FIX This choice enables a static pattern. To configure the pattern, see “[:DLINK:HSDPA\[1\]|2|3|4:ITTI](#)”.

"<file name>" This variable represents an inter-TTI pattern file stored in signal generator memory. Creating and using a file provides the option of having a flexible inter-TTI pattern where you can vary the distance between HS-PDSCH transmissions. To create a file, use one or a combination of the following methods:

- To create a file internal to the software, use the inter-TTI user pattern editor.
- To create a file external to the software, use a text editor.

For more information, see the Signal Studio for HSDPA over W-CDMA software online help.

The file name follows the form <project name>-ITTIx, where 'x' is the HSDPA number from one to four. The inter-TTI pattern must contain at least one bit, or the apply function (downlink apply command) will not work.

HSDPA over W-CDMA Subsystem—Option 418 [:SOURCE]:RADIO:WCDMA:HSDPA[:BBG]***RST** FIX**Remarks** Setting the command parameter while the signal is active also requires executing the apply command. Refer to “:DLINK:APPLY” on page 811.**:DLINK:HSDPA:NHPRocess****Supported** E4438C with Option 418[:SOURCE]:RADIO:WCDMA:HSDPA[:BBG]:DLINK:HSDPA:NHPRocess <val>
[:SOURCE]:RADIO:WCDMA:HSDPA[:BBG]:DLINK:HSDPA:NHPRocess?

This command sets the HS-DSCH number of HARQ processes for HSDPA1. For HSDPA2–4, this parameter is fixed at one and is used only for HS-SCCH coding purposes.

RST** 4**Range** 1–8**Remarks** Setting the command parameter while the signal is active also requires executing the apply command. Refer to “:DLINK:APPLY” on page 811.**:DLINK:HSDPA[1] | 2 | 3 | 4:RVParameter*Supported** E4438C with Option 418[:SOURCE]:RADIO:WCDMA:HSDPA[:BBG]:DLINK:HSDPA[1] | 2 | 3 | 4:RVParameter <val>
[:SOURCE]:RADIO:WCDMA:HSDPA[:BBG]:DLINK:HSDPA[1] | 2 | 3 | 4:RVParameter?

This command sets the HS-DSCH RV parameter. For HSDPA2–4, which do not support an HS-DSCH, this parameter is used only for HS-SCCH coding purposes.

***RST** 0**Range** 0–7**Remarks** Setting the command parameter while the signal is active also requires executing the apply command. Refer to “:DLINK:APPLY” on page 811.

HSDPA over W-CDMA Subsystem–Option 418 ([:SOURce]:RADio:WCDMa:HSDPa[:BBG])**:DLINK:HSDPa[1] | 2 | 3 | 4:UEID****Supported** E4438C with Option 418

[:SOURce]:RADio:WCDMa:HSDPa[:BBG]:DLINK:HSDPa[1] | 2 | 3 | 4:UEID <val>

[:SOURce]:RADio:WCDMa:HSDPa[:BBG]:DLINK:HSDPa[1] | 2 | 3 | 4:UEID?

This command sets the UEID.

RST** HSDPA1: 0 HSDPA2: 1 HSDPA3: 2 HSDPA4: 3**Range** 0–65535**Remarks** Setting the command parameter while the signal is active also requires executing the apply command. Refer to “:DLINK:APPLY” on page 811.**:DLINK:HSDPa[1] | 2 | 3 | 4[:STATe]*Supported** E4438C with Option 418

[:SOURce]:RADio:WCDMa:HSDPa[:BBG]:DLINK:HSDPa[1] | 2 | 3 | 4[:STATe] ON|OFF | 1 | 0

[:SOURce]:RADio:WCDMa:HSDPa[:BBG]:DLINK:HSDPa[1] | 2 | 3 | 4[:STATe]?

This command turns the selected downlink HSDPA channel on or off.

ON (1)	<ul style="list-style-type: none"> • Turns on the HS-SCCH for the selected HSDPA. • Enables turning on the HS-PDSCH for the selected HSDPA.
--------	---

OFF (0)	<ul style="list-style-type: none"> • Turns off the HS-SCCH for the selected HSDPA. • Turns off the active HS-PDSCH for the selected HSDPA.
---------	--

***RST** HSDPA1: 1 HSDPA2–4: 0**Remarks** Setting the command parameter while the signal is active also requires executing the apply command. Refer to “:DLINK:APPLY” on page 811.

Refer to “:DLINK:HSDPa[1]|2|3|4:HSPDsch[:STATe]” on page 833 for turning the HS-PDSCH on or off.

An HSDPA consists of a HS-SCCH and a HS-PDSCH, however the HS-DSCH is supported on only HSDPA1.

:DLINK:OCNS[1] | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16:CCODE

Supported E4438C with Option 418

```
[ :SOURCE ] :RADIO:WCDMA:HSDPA[:BBG]:DLINK:OCNS[1] | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 |
12 | 13 | 14 | 15 | 16:CCODE <val>
```

```
[ :SOURCE ] :RADIO:WCDMA:HSDPA[:BBG]:DLINK:OCNS[1] | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 |
12 | 13 | 14 | 15 | 16:CCODE?
```

This command sets the channel code for the selected downlink OCNS.

*RST	OCNS1: 2	OCNS2: 3	OCNS3: 4	OCNS4: 5
	OCNS5: 6	OCNS6: 7	OCNS7: 8	OCNS8: 9
	OCNS9: 10	OCNS10: 11	OCNS11: 12	OCNS12: 13
	OCNS13: 14	OCNS14: 15	OCNS15: 16	OCNS16: 17

Range 1–127

Remarks Setting the command parameter while the signal is active also requires executing the apply command. Refer to “[:DLINK:APPLY](#)” on page 811.

:DLINK:OCNS[1] | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16:DATA

Supported E4438C with Option 418

```
[ :SOURCE ] :RADIO:WCDMA:HSDPA[:BBG]:DLINK:OCNS[1] | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 |
12 | 13 | 14 | 15 | 16:DATA PN9 | PN15
```

```
[ :SOURCE ] :RADIO:WCDMA:HSDPA[:BBG]:DLINK:OCNS[1] | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 |
12 | 13 | 14 | 15 | 16:DATA?
```

This command configures the data pattern for the selected downlink OCNS.

***RST** PN9

Remarks Setting the command parameter while the signal is active also requires executing the apply command. Refer to “[:DLINK:APPLY](#)” on page 811.

HSDPA over W-CDMA Subsystem–Option 418 ([:SOURCE]:RADIO:WCDMA:HSDPA[:BBG])**:DLINK:OCNS[1]|2|3|4|5|6|7|8|9|10|11|12|13|14|15|16:POWER****Supported** E4438C with Option 418

[:SOURCE]:RADIO:WCDMA:HSDPA[:BBG]:DLINK:OCNS[1]|2|3|4|5|6|7|8|9|10|11|12|13|14|15|16:POWER <val>

[:SOURCE]:RADIO:WCDMA:HSDPA[:BBG]:DLINK:OCNS[1]|2|3|4|5|6|7|8|9|10|11|12|13|14|15|16:POWER?

This command sets the power level for the selected downlink OCNS.

The variable <val> is expressed in units of dB.

*RST	OCNS1: -6	OCNS2: -8	OCNS3: -8	OCNS4: -10
	OCNS5: -7	OCNS6: -9	OCNS7-16: -10	

Range -40 to 0**Remarks** Setting the command parameter while the signal is active also requires executing the apply command. Refer to “:DLINK:APPLY” on page 811.**:DLINK:OCNS[1]|2|3|4|5|6|7|8|9|10|11|12|13|14|15|16:SSCOFFSET****Supported** E4438C with Option 418

[:SOURCE]:RADIO:WCDMA:HSDPA[:BBG]:DLINK:OCNS[1]|2|3|4|5|6|7|8|9|10|11|12|13|14|15|16:SSCOFFSET <val>

[:SOURCE]:RADIO:WCDMA:HSDPA[:BBG]:DLINK:OCNS[1]|2|3|4|5|6|7|8|9|10|11|12|13|14|15|16:SSCOFFSET?

This command sets the secondary scrambling code offset for the selected downlink OCNS.

***RST** 0**Range** 0–15**Remarks** Setting the command parameter while the signal is active also requires executing the apply command. Refer to “:DLINK:APPLY” on page 811.

HSDPA over W-CDMA Subsystem—Option 418 ([:SOURCE]:RADIO:WCDMA:HSDPA[:BBG])

:DLINK:OCNS[1]|2|3|4|5|6|7|8|9|10|11|12|13|14|15|16:TOFFset**Supported** E4438C with Option 418

[:SOURCE]:RADIO:WCDMA:HSDPA[:BBG]:DLINK:OCNS[1]|2|3|4|5|6|7|8|9|10|11|12|13|14|15|16:TOFFset <val>

[:SOURCE]:RADIO:WCDMA:HSDPA[:BBG]:DLINK:OCNS[1]|2|3|4|5|6|7|8|9|10|11|12|13|14|15|16:TOFFset?

This command adjusts the timing offset for the OCNS.

*RST	OCNS1: 1	OCNS2: 2	OCNS3: 3	OCNS4: 4
	OCNS5: 5	OCNS6: 6	OCNS7: 7	OCNS8: 8
	OCNS9: 9	OCNS10: 10	OCNS11: 11	OCNS12: 12
	OCNS13: 13	OCNS14: 14	OCNS15: 15	OCNS16: 16

Range 0–149**Remarks** Setting the command parameter while the signal is active also requires executing the apply command. Refer to “:DLINK:APPLY” on page 811.**:DLINK:OCNS[1]|2|3|4|5|6|7|8|9|10|11|12|13|14|15|16[:STATE]****Supported** E4438C with Option 418

[:SOURCE]:RADIO:WCDMA:HSDPA[:BBG]:DLINK:OCNS[1]|2|3|4|5|6|7|8|9|10|11|12|13|14|15|16[:STATE] ON|OFF|1|0

[:SOURCE]:RADIO:WCDMA:HSDPA[:BBG]:DLINK:OCNS[1]|2|3|4|5|6|7|8|9|10|11|12|13|14|15|16[:STATE]?

This command turns the selected OCNS on or off.

RST** 0**Remarks** Setting the command parameter while the signal is active also requires executing the apply command. Refer to “:DLINK:APPLY” on page 811.**:DLINK:PCCPch:BCH:DATA*Supported** E4438C with Option 418

[:SOURCE]:RADIO:WCDMA:HSDPA[:BBG]:DLINK:PCCPch:BCH:DATA PN9|PN15|FIX4|<file name>

[:SOURCE]:RADIO:WCDMA:HSDPA[:BBG]:DLINK:PCCPch:BCH:DATA?

This command sets the BCH data format that is transmitted on the P-CCPCH.

HSDPA over W-CDMA Subsystem–Option 418 ([:SOURCE]:RADIO:WCDMA:HSDPA[:BBG])

"<file name>" This variable represents a data pattern file stored in signal generator memory. The data pattern must contain at least one bit or the apply function (downlink apply command) will not work. Refer to “File Overview” on page 809 for more information on files.

***RST** FIX4

Remarks Setting the command parameter while the signal is active also requires executing the apply command. Refer to “:DLINK:APPLY” on page 811.

:DLINK:PCCPch:BCH:DATA:FIX4

Supported E4438C with Option 418

```
[ :SOURCE ] : RADIO : WCDMA : HSDPA [ : BBG ] : DLINK : PCCPch : BCH : DATA : FIX4 <val>
[ :SOURCE ] : RADIO : WCDMA : HSDPA [ : BBG ] : DLINK : PCCPch : BCH : DATA : FIX4 ?
```

This command sets the BCH repeating 4-bit binary data pattern.

The variable <val> accepts values in binary, hexadecimal, or decimal format, however the query returns only binary values.

***RST** 0

Range 0–15

Remarks Setting the command parameter while the signal is active also requires executing the apply command. Refer to “:DLINK:APPLY” on page 811.

:DLINK:PCCPch:CCODE

Supported E4438C with Option 418

```
[ :SOURCE ] : RADIO : WCDMA : HSDPA [ : BBG ] : DLINK : PCCPch : CCODE <val>
[ :SOURCE ] : RADIO : WCDMA : HSDPA [ : BBG ] : DLINK : PCCPch : CCODE ?
```

This command sets the P-CCPCH channel code.

***RST** +1

Range 0–255

Remarks Setting the command parameter while the signal is active also requires executing the apply command. Refer to “:DLINK:APPLY” on page 811.

Set all physical channel codes so they are orthogonal to each other. If any of the channel codes fail to meet this criteria, the apply function (downlink apply command) will not work.

:DLINK:PCCPch:POWer

Supported E4438C with Option 418

```
[ :SOURCE ] :RADIo:WCDMa:HSDPa[ :BBG ] :DLINK:PCCPch:POWer <val>  
[ :SOURCE ] :RADIo:WCDMa:HSDPa[ :BBG ] :DLINK:PCCPch:POWer?
```

This command sets the P-CCPCH power level.

The variable <val> is expressed in decibels (dB).

***RST** -5.30000000E+000

Range -40 to 0

Remarks Setting the command parameter while the signal is active also requires executing the apply command. Refer to “:DLINK:APPLY” on page 811.

:DLINK:PCCPch[:STATE]

Supported E4438C with Option 418

```
[ :SOURCE ] :RADIo:WCDMa:HSDPa[ :BBG ] :DLINK:PCCPch[ :STATE ] ON|OFF|1|0  
[ :SOURCE ] :RADIo:WCDMa:HSDPa[ :BBG ] :DLINK:PCCPch[ :STATE ]?
```

This command turns the P-CCPCH on or off.

***RST** 1

Remarks Setting the command parameter while the signal is active also requires executing the apply command. Refer to “:DLINK:APPLY” on page 811.

:DLINK:PICH:CCODE

Supported E4438C with Option 418

```
[ :SOURCE ] :RADIo:WCDMa:HSDPa[ :BBG ] :DLINK:PICH:CCODE <val>  
[ :SOURCE ] :RADIo:WCDMa:HSDPa[ :BBG ] :DLINK:PICH:CCODE?
```

This command sets the PICH channelization code.

***RST** +3

Range 0–255

Remarks Setting the command parameter while the signal is active also requires executing the apply command. Refer to “:DLINK:APPLY” on page 811.

Set all physical channel codes so they are orthogonal to each other. If any of the channel codes fail to meet this criteria, the apply function (downlink apply command) will not work.

:DLINK:PICH:DATA**Supported** E4438C with Option 418

```
[:SOURCE]:RADIO:WCDMA:HSDPA[:BBG]:DLINK:PICH:DATA PN9 | PN15 | FIX4 |
"<file name>"
[:SOURCE]:RADIO:WCDMA:HSDPA[:BBG]:DLINK:PICH:DATA?
```

This command sets the PICH data type.

"<file name>" This variable represents a data pattern file stored in signal generator memory. The data pattern must contain at least one bit or the apply function (downlink apply command) will not work. Refer to [“File Overview” on page 809](#) for more information on files.

RST** PN9**Remarks** Setting the command parameter while the signal is active also requires executing the apply command. Refer to [“:DLINK:APPLY” on page 811](#).**:DLINK:PICH:DATA:FIX4*Supported** E4438C with Option 418

```
[:SOURCE]:RADIO:WCDMA:HSDPA[:BBG]:DLINK:PICH:DATA:FIX4 <val>
[:SOURCE]:RADIO:WCDMA:HSDPA[:BBG]:DLINK:PICH:DATA:FIX4?
```

This command sets the PICH repeating 4-bit binary data pattern.

The variable <val> accepts values in binary, hexadecimal, or decimal format, however the query returns only binary values.

***RST** 0**Range** 0–15**Remarks** Setting the command parameter while the signal is active also requires executing the apply command. Refer to [“:DLINK:APPLY” on page 811](#).

:DLINK:PICH:POWER

Supported E4438C with Option 418

```
[ :SOURCE ] :RADIO:WCDMA:HSDPA[:BBG]:DLINK:PICH:POWER <val>  
[ :SOURCE ] :RADIO:WCDMA:HSDPA[:BBG]:DLINK:PICH:POWER?
```

This command sets the PICH power level.

The variable <val> is expressed in decibels (dB).

***RST** -8.300000000E+000

Range -40 to 0

Remarks Setting the command parameter while the signal is active also requires executing the apply command. Refer to “:DLINK:APPLY” on page 811.

:DLINK:PICH[:STATE]

Supported E4438C with Option 418

```
[ :SOURCE ] :RADIO:WCDMA:HSDPA[:BBG]:DLINK:PICH[:STATE] ON|OFF|1|0  
[ :SOURCE ] :RADIO:WCDMA:HSDPA[:BBG]:DLINK:PICH[:STATE]?
```

This command turns the PICH on or off.

***RST** 0

Remarks Setting the command parameter while the signal is active also requires executing the apply command. Refer to “:DLINK:APPLY” on page 811.

:DLINK:POLarity

Supported E4438C with Option 418

```
[ :SOURCE ] :RADIO:WCDMA:HSDPA[:BBG]:DLINK:POLarity NORMAL|INVERTed|INVERT  
[ :SOURCE ] :RADIO:WCDMA:HSDPA[:BBG]:DLINK:POLarity?
```

This command selects the phase polarity of the downlink signal.

NORMAL This choice selects normal polarity.

INVERTed, INVERT These choices perform the same function, inverting the internal Q signal.

***RST** NORM

Remarks Setting the command parameter while the signal is active also requires executing the apply command. For more information, refer to “:DLINK:APPLY” on page 811.

:DLINK:PSCH:POWer**Supported** E4438C with Option 418

[:SOURce]:RADio:WCDMa:HSDPa[:BBG]:DLINK:PSCH:POWer <val>

[:SOURce]:RADio:WCDMa:HSDPa[:BBG]:DLINK:PSCH:POWer?

This command sets the PSCH power level.

The variable <val> is expressed in decibels (dB).

RST** -8.30000000E+000**Range** -40 to 0**Remarks** Setting the command parameter while the signal is active also requires executing the apply command. Refer to “:DLINK:APPLY” on page 811.**:DLINK:PSCH[:STATe]*Supported** E4438C with Option 418

[:SOURce]:RADio:WCDMa:HSDPa[:BBG]:DLINK:PSCH[:STATe] ON|OFF|1|0

[:SOURce]:RADio:WCDMa:HSDPa[:BBG]:DLINK:PSCH[:STATe]?

This command turns the PSCH on or off.

RST** 1**Remarks** Setting the command parameter while the signal is active also requires executing the apply command. For more information, refer to “:DLINK:APPLY” on page 811.**:DLINK:SCRamblecode*Supported** E4438C with Option 418

[:SOURce]:RADio:WCDMa:HSDPa[:BBG]:DLINK:SCRamblecode <val>

[:SOURce]:RADio:WCDMa:HSDPa[:BBG]:DLINK:SCRamblecode?

This command sets the downlink scramble code number.

***RST** +0**Range** 0–511**Remarks** Setting the command parameter while the signal is active also requires executing the apply command. Refer to “:DLINK:APPLY” on page 811.

:DLINK:SSCH:POWer

Supported E4438C with Option 418

```
[ :SOURce ]:RADio:WCDMa:HSDPa[:BBG]:DLINK:SSCH:POWer <val>
[ :SOURce ]:RADio:WCDMa:HSDPa[:BBG]:DLINK:SSCH:POWer?
```

This command sets the SSCH power level. The variable <val> is expressed in decibels (dB)

***RST** -8.3000000E+000

Range -40 to 0

Remarks Setting the command parameter while the signal is active also requires executing the apply command. Refer to “:DLINK:APPLY” on page 811.

:DLINK:SSCH[:STATe]

Supported E4438C with Option 418

```
[ :SOURce ]:RADio:WCDMa:HSDPa[:BBG]:DLINK:SSCH[:STATe] ON|OFF|1|0
[ :SOURce ]:RADio:WCDMa:HSDPa[:BBG]:DLINK:SSCH[:STATe]?
```

This command turns the SSCH on or off.

***RST** 1

Remarks Setting the command parameter while the signal is active also requires executing the apply command. Refer to “:DLINK:APPLY” on page 811.

:DLINK:TXDiversity

Supported E4438C with Option 418

```
[ :SOURce ]:RADio:WCDMa:HSDPa[:BBG]:DLINK:TXDiversity NONE|OANT1|OANT2
[ :SOURce ]:RADio:WCDMa:HSDPa[:BBG]:DLINK:TXDiversity?
```

This command selects the downlink signal transmit diversity mode.

NONE This choice disables the transmit diversity mode.

OANT1 This choice selects the transmit diversity openloop antenna 1 mode.

OANT2 This choice selects the transmit diversity openloop antenna 2 mode.

***RST** NONE

Remarks To configure both antennas (one and two) requires two ESGs.
 Setting the command parameter while the signal is active also requires executing the apply command. Refer to “:DLINK:APPLY” on page 811.

:LINK**Supported** E4438C with Option 418

[:SOURCE]:RADIO:WCDMA:HSDPA[:BBG]:LINK DOWN|UP

[:SOURCE]:RADIO:WCDMA:HSDPA[:BBG]:LINK?

This command sets the uplink or downlink mode.

RST** DOWN**:ULINK:APPLY*Supported** E4438C with Option 418

[:SOURCE]:RADIO:WCDMA:HSDPA[:BBG]:ULINK:APPLY

[:SOURCE]:RADIO:WCDMA:HSDPA[:BBG]:ULINK:APPLY?

This command applies changes to the channel setup and data for active physical and transport channels, immediately starting the channel coding generation process. A progress bar may appear on the ESG display indicating that the new signal parameters are being applied. Turning on the HSDPA modulation format also applies the signal parameters.

The query response determines whether or not there is a need to execute the command. It returns the following responses:

0 Command execution is not required.

1 Command execution is required.

NOTE The query response is only valid while the HDSPA format is active.

When there is a setting conflict (ESG reports an error) with the range values or coupled parameters, or both, executing the uplink apply command does not apply the new changes until the conflicts are resolved. After resolving the setting conflicts, execute the command to apply the new settings.

:ULINK:AWGN:CN**Supported** E4438C with Option 418

[:SOURCE]:RADIO:WCDMA:HSDPA[:BBG]:ULINK:AWGN:CN <val>

[:SOURCE]:RADIO:WCDMA:HSDPA[:BBG]:ULINK:AWGN:CN?

This command sets the uplink in-band carrier to noise ratio (C/N) value using AWGN.

***RST** 0**Range** –30 to 30

HSDPA over W-CDMA Subsystem—Option 418 ([:SOURCE]:RADIO:WCDMA:HSDPA[:BBG])

Remarks Setting the command parameter while the signal is active also requires executing the apply command. Refer to [:ULINK:APPLY](#)”.

:ULINK:AWGN[:STATE]

Supported E4438C with Option 418

```
[ :SOURCE ] :RADIO:WCDMA:HSDPA[ :BBG ] :ULINK:AWGN[ :STATE ] ON | OFF | 0 | 1
[ :SOURCE ] :RADIO:WCDMA:HSDPA[ :BBG ] :ULINK:AWGN[ :STATE ] ?
```

This command turns the uplink AWGN on or off.

***RST** 0

Remarks Setting the command parameter while the signal is active also requires executing the apply command. Refer to [“:ULINK:APPLY” on page 848](#).

:ULINK:BBReference:EXTERNAL:MRATE

Supported E4438C with Option 418

```
[ :SOURCE ] :RADIO:WCDMA:HSDPA[ :BBG ] :ULINK:BBReference:EXTERNAL:MRATE X1 |
X2 | X4
[ :SOURCE ] :RADIO:WCDMA:HSDPA[ :BBG ] :ULINK:BBReference:EXTERNAL:MRATE ?
```

This command configures the ESG, so it can accept an external baseband generator clock that is a multiple of the internal 3.84 MHz chip clock.

X1 This sets the ESG to accept an external clock rate identical to the chip clock.

X2 This sets the ESG to accept an external clock rate that is two times the rate of the chip clock.

X4 This sets the ESG to accept an external clock rate that is four times the rate of the chip clock.

***RST** X1

:ULINK:BBReference[:SOURCE]

Supported E4438C with Option 418

```
[ :SOURCE ] :RADIO:WCDMA:HSDPA[ :BBG ] :ULINK:BBReference[ :SOURCE ] INT[1] |
EXT[1]
[ :SOURCE ] :RADIO:WCDMA:HSDPA[ :BBG ] :ULINK:BBReference[ :SOURCE ] ?
```

This command selects the baseband generator reference source for the radio uplink channel.

***RST** INT

:ULINK:DPCCh:CCODE

Supported E4438C with Option 418

```
[ :SOURCE ] : RADIO : WCDMA : HSDPA [ : BBG ] : ULINK : DPCCh : CCODE ?
```

This query returns the channelization code for the uplink DPCCH.

The slot format determines the channelization code in accordance with the 3GPP standards. See “:ULINK:DPCCh:SFORmat” on page 853 for setting the slot format.

:ULINK:DPCCh:DATA

Supported E4438C with Option 418

```
[ :SOURCE ] : RADIO : WCDMA : HSDPA [ : BBG ] : ULINK : DPCCh : DATA PN9 | PN15 | FIX4 |  
" <file name> " | STD  
[ :SOURCE ] : RADIO : WCDMA : HSDPA [ : BBG ] : ULINK : DPCCh : DATA ?
```

This command configures the uplink DPCCH data pattern.

STD This sets the DPCCH bit fields according to the 3GPP standards.

"<file name>" This variable represents a data pattern file stored in signal generator memory. The data pattern must contain at least one bit or the apply function (uplink apply command) will not work. Refer to “File Overview” on page 809 for more information on files.

***RST** STD

Remarks Setting the command parameter while the signal is active also requires executing the apply command. Refer to “:ULINK:APPLY” on page 848.

HSDPA over W-CDMA Subsystem—Option 418 ([:SOURCE]:RADIO:WCDMA:HSDPA[:BBG])

:ULINK:DPCCh:DATA:FIX4**Supported** E4438C with Option 418

[:SOURCE]:RADIO:WCDMA:HSDPA[:BBG]:ULINK:DPCCh:DATA:FIX4 <val>

[:SOURCE]:RADIO:WCDMA:HSDPA[:BBG]:ULINK:DPCCh:DATA:FIX4?

This command sets the uplink DPCCH repeating 4-bit binary data pattern.

The variable <val> accepts values in binary, hexadecimal, or decimal format, however the query returns only binary values.

***RST** 0**Range** 0–15

Remarks Setting the command parameter while the signal is active also requires executing the apply command. Refer to “[:ULINK:APPLY](#)” on page 848.

:ULINK:DPCCh:FBI:PATtern**Supported** E4438C with Option 418[:SOURCE]:RADIO:WCDMA:HSDPA[:BBG]:ULINK:DPCCh:FBI:PATtern PN9|PN15|FIX|
"<file name>"

[:SOURCE]:RADIO:WCDMA:HSDPA[:BBG]:ULINK:DPCCh:FBI:PATtern?

This command configures the uplink DPCCH FBI pattern.

"<file name>" This variable represents a data pattern file stored in signal generator memory. The data pattern must contain at least one bit or the apply function (uplink apply command) will not work. Refer to “[File Overview](#)” on page 809 for more information on files.

***RST** FIX

Remarks Setting the command parameter while the signal is active also requires executing the apply command. Refer to “[:ULINK:APPLY](#)” on page 848.

HSDPA over W-CDMA Subsystem–Option 418 ([:SOURCE]:RADIO:WCDMA:HSDPA[:BBG])

:ULINK:DPCCh:FBI:PATtern:FIX

Supported E4438C with Option 418

[:SOURCE] : RADIO : WCDMA : HSDPA [:BBG] : ULINK : DPCCh : FBI : PATtern : FIX <val>

[:SOURCE] : RADIO : WCDMA : HSDPA [:BBG] : ULINK : DPCCh : FBI : PATtern : FIX?

This command sets the 30-bit FBI pattern for the uplink DPCCH.

The variable <val> accepts values in binary, hexadecimal, or decimal format, however the query returns only binary values.

***RST** +0

Range 0–1073741823

Remarks Setting the command parameter while the signal is active also requires executing the apply command. Refer to “:ULINK:APPLY” on page 848.

:ULINK:DPCCh:POWer

Supported E4438C with Option 418

[:SOURCE] : RADIO : WCDMA : HSDPA [:BBG] : ULINK : DPCCh : POWer <val>

[:SOURCE] : RADIO : WCDMA : HSDPA [:BBG] : ULINK : DPCCh : POWer?

This command sets the uplink DPCCH power level.

The variable <val> is expressed in decibels (dB)

***RST** –2.69000000E+000

Range –40 to 0

Remarks Setting the command parameter while the signal is active also requires executing the apply command. Refer to “:ULINK:APPLY” on page 848.

:ULINK:DPCCh:SFORmat

Supported E4438C with Option 418

```
[ :SOURCE ] :RADIo:WCDMA:HSDPa[ :BBG ] :ULINK:DPCCh:SFORmat <val>  
[ :SOURCE ] :RADIo:WCDMA:HSDPa[ :BBG ] :ULINK:DPCCh:SFORmat?
```

This command sets the uplink DPCCH slot format.

***RST** +0

Range 0–5

Remarks Setting the command parameter while the signal is active also requires executing the apply command. Refer to “:ULINK:APPLY” on page 848.

The slot format determines the settings for other parameters in accordance with 3GPP standards.

:ULINK:DPCCh[:STATe]

Supported E4438C with Option 418

```
[ :SOURCE ] :RADIo:WCDMA:HSDPa[ :BBG ] :ULINK:DPCCh[:STATe] ON|OFF|1|0  
[ :SOURCE ] :RADIo:WCDMA:HSDPa[ :BBG ] :ULINK:DPCCh[:STATe]?
```

This command turns the uplink DPCCH on or off.

***RST** 1

Remarks Setting the command parameter while the signal is active also requires executing the apply command. Refer to “:ULINK:APPLY” on page 848.

:ULINK:DPCCh:TFCI

Supported E4438C with Option 418

```
[ :SOURCE ] :RADIo:WCDMA:HSDPa[ :BBG ] :ULINK:DPCCh:TFCI <val>  
[ :SOURCE ] :RADIo:WCDMA:HSDPa[ :BBG ] :ULINK:DPCCh:TFCI?
```

This command sets the uplink DPCCH TFCI 10-bit data pattern.

The variable <val> accepts values in binary, hexadecimal, or decimal format, however the query returns only decimal values.

***RST** +0

Range 0–1023

Remarks Setting the command parameter while the signal is active also requires executing the apply command. Refer to “:ULINK:APPLY” on page 848.

:ULINK:DPCCh:TPC:NSTeps**Supported** E4438C with Option 418

```
[ :SOURCE ] : RADIO : WCDMA : HSDPA [ : BBG ] : ULINK : DPCCh : TPC : NSTeps <val>
[ :SOURCE ] : RADIO : WCDMA : HSDPA [ : BBG ] : ULINK : DPCCh : TPC : NSTeps?
```

This command sets the number of steps for the down and up (DUP) or up and down (UDOWn) TPC pattern selections.

The variable <val> is expressed in decibels (dB).

***RST** +1**Range** 1–80

Remarks Setting the command parameter while the signal is active also requires executing the apply command. Refer to “:ULINK:APPLY” on page 848.

:ULINK:DPCCh:TPC:PATtern**Supported** E4438C with Option 418

```
[ :SOURCE ] : RADIO : WCDMA : HSDPA [ : BBG ] : ULINK : DPCCh : TPC : PATtern
UDOWn | DUP | UALL | DALL | "<file name>"
[ :SOURCE ] : RADIO : WCDMA : HSDPA [ : BBG ] : ULINK : DPCCh : TPC : PATtern?
```

This command configures the uplink DPCCH TPC pattern for increasing or decreasing, or increasing and decreasing the BTS power level.

UDOWn The TPC pattern repetitively steps up and down.

DUP The TPC pattern repetitively steps down and up.

UALL The TPC pattern consecutively steps up.

DALL The TPC pattern consecutively steps down.

"<file name>" This variable represents a power pattern file stored in signal generator memory. The pattern must contain at least one bit or the apply function (downlink apply command) will not work. Refer to “File Overview” on page 809 for more information on files.

***RST** UDOW

Remarks Setting the command parameter while the signal is active also requires executing the apply command. Refer to “:ULINK:APPLY” on page 848.

Each step in a TPC pattern signals an increase or decrease of 1 dB in the BTS output power level.

HSDPA over W-CDMA Subsystem—Option 418 ([:SOURCE]:RADIO:WCDMA:HSDPA[:BBG])

:ULINK:DPDCh:CCODE**Supported** E4438C with Option 418

[:SOURCE]:RADIO:WCDMA:HSDPA[:BBG]:ULINK:DPDCh:CCODE?

This query returns the uplink DPDCH channelization code.

The slot format determines the channelization code in accordance with the 3GPP standards. See “:ULINK:DPDCh:SFORmat” on page 860 for setting the slot format.

:ULINK:DPDCh:DATA**Supported** E4438C with Option 418[:SOURCE]:RADIO:WCDMA:HSDPA[:BBG]:ULINK:DPDCh:DATA PN9|PN15|FIX4|DCH|
"<file name>"

[:SOURCE]:RADIO:WCDMA:HSDPA[:BBG]:ULINK:DPDCh:DATA?

This command configures the uplink DPDCH data pattern.

DCH This choice selects the transport channel as the data source.

"<file name>" This variable represents a data pattern file stored in signal generator memory. The data pattern must contain at least one bit or the apply function (uplink apply command) will not work. Refer to “File Overview” on page 809 for more information on files.

RST** PN9**Remarks** Setting the command parameter while the signal is active also requires executing the apply command. Refer to “:ULINK:APPLY” on page 848.**:ULINK:DPDCh:DATA:FIX4*Supported** E4438C with Option 418

[:SOURCE]:RADIO:WCDMA:HSDPA[:BBG]:ULINK:DPDCh:DATA:FIX4 <val>

[:SOURCE]:RADIO:WCDMA:HSDPA[:BBG]:ULINK:DPDCh:DATA:FIX4?

This command sets the uplink DPDCH repeating 4-bit binary data pattern.

The variable <val> accepts values in binary, hexadecimal, or decimal format, however the query returns only binary values.

***RST** 0**Range** 0–15

Remarks Setting the command parameter while the signal is active also requires executing the apply command. Refer to “:ULINK:APPLY” on page 848.

:ULINK:DPDCh:DCH[1] | 2 | 3 | 4 | 5 | 6:BSIZE

Supported E4438C with Option 418

```
[ :SOURce ] :RADio:WCDMa:HSDPa [ :BBG ] :ULINK:DPDCh:DCH[ 1 ] | 2 | 3 | 4 | 5 | 6 :
BSIZE <val>
[ :SOURce ] :RADio:WCDMa:HSDPa [ :BBG ] :ULINK:DPDCh:DCH[ 1 ] | 2 | 3 | 4 | 5 | 6 :BSIZE?
```

This command sets the block size for the selected uplink DCH.

***RST** 20

Range 0–5000

Remarks Setting the command parameter while the signal is active also requires executing the apply command. Refer to “:ULINK:APPLY” on page 848.

The number of data bits per DCH cannot exceed 200,000. To maintain this data bit limit, the ESG calculates the product of the block size and the number of blocks. If the product of these two parameters exceeds 200,000, the apply function (uplink apply command) will not work.

:ULINK:DPDCh:DCH[1] | 2 | 3 | 4 | 5 | 6:CRC

Supported E4438C with Option 418

```
[ :SOURce ] :RADio:WCDMa:HSDPa [ :BBG ] :ULINK:DPDCh:DCH[ 1 ] | 2 | 3 | 4 | 5 | 6 :
CRC 0 | 8 | 12 | 16 | 24
[ :SOURce ] :RADio:WCDMa:HSDPa [ :BBG ] :ULINK:DPDCh:DCH[ 1 ] | 2 | 3 | 4 | 5 | 6 :CRC?
```

This command sets the number of CRC bits for the selected uplink DCH.

***RST** 8

Remarks Setting the command parameter while the signal is active also requires executing the apply command. Refer to “:ULINK:APPLY” on page 848.

:ULINK:DPDCh:DCH[1] | 2 | 3 | 4 | 5 | 6:CTYPe

Supported E4438C with Option 418

```
[ :SOURce ] :RADio:WCDMa:HSDPa [ :BBG ] :ULINK:DPDCh:DCH[ 1 ] | 2 | 3 | 4 | 5 | 6 :
CTYPe HCONv | TCONv | TURBo | NONE
[ :SOURce ] :RADio:WCDMa:HSDPa [ :BBG ] :ULINK:DPDCh:DCH[ 1 ] | 2 | 3 | 4 | 5 | 6 :CTYPe?
```

This command selects the encoder type for the selected uplink DCH.

HSDPA over W-CDMA Subsystem—Option 418 ([:SOURce]:RADio:WCDMa:HSDPa[:BBG])

HCONv	This choice selects the 1/2 rate convolutional encoder.
TCONv	This choice selects the 1/3 rate convolutional encoder.
TURBo	This choice selects the turbo coder.
NONE	This choice selects no coding.
*RST	HCON
Remarks	Setting the command parameter while the signal is active also requires executing the apply command. Refer to “:ULINK:APPLY” on page 848.

:ULINK:DPDCh:DCH[1] | 2 | 3 | 4 | 5 | 6:DATA

Supported E4438C with Option 418

```
[ :SOURce ] :RADio :WCDMa :HSDPa [ :BBG ] :ULINK :DPDCh :DCH [ 1 ] | 2 | 3 | 4 | 5 | 6 :DATA PN9 |
PN15 | FIX4 | "<file name>"
[ :SOURce ] :RADio :WCDMa :HSDPa [ :BBG ] :ULINK :DPDCh :DCH [ 1 ] | 2 | 3 | 4 | 5 | 6 :DATA ?
```

This command configures the data for the selected uplink DCH.

"<file name>" This variable represents a data pattern file stored in signal generator memory. The data pattern must contain at least one bit or the apply function (uplink apply command) will not work. Refer to “File Overview” on page 809 for more information on files.

***RST** PN9

Remarks Setting the command parameter while the signal is active also requires executing the apply command. Refer to “:ULINK:APPLY” on page 848.

:ULINK:DPDCh:DCH[1] | 2 | 3 | 4 | 5 | 6:DATA:FIX4

Supported E4438C with Option 418

```
[ :SOURce ] :RADio :WCDMa :HSDPa [ :BBG ] :ULINK :DPDCh :DCH [ 1 ] | 2 | 3 | 4 | 5 | 6 :DATA :
FIX4 <val>
[ :SOURce ] :RADio :WCDMa :HSDPa [ :BBG ] :ULINK :DPDCh :DCH [ 1 ] | 2 | 3 | 4 | 5 | 6 :DATA :
FIX4 ?
```

This command sets the repeating 4-bit binary data pattern for the selected uplink DCH.

The variable <val> accepts values in binary, hexadecimal, or decimal format, however the query returns only binary values.

***RST** 0

Range 0–15

HSDPA over W-CDMA Subsystem–Option 418 ([:SOURce]:RADio:WCDMa:HSDPa[:BBG])

Remarks Setting the command parameter while the signal is active also requires executing the apply command. Refer to “:ULINK:APPLY” on page 848.

:ULINK:DPDCh:DCH[1] | 2 | 3 | 4 | 5 | 6:NBLocks

Supported E4438C with Option 418

```
[ :SOURce ] :RADio:WCDMa:HSDPa [ :BBG ] :ULINK:DPDCh:DCH[ 1 ] | 2 | 3 | 4 | 5 | 6 :
NBLocks <val>
```

```
[ :SOURce ] :RADio:WCDMa:HSDPa [ :BBG ] :ULINK:DPDCh:DCH[ 1 ] | 2 | 3 | 4 | 5 | 6 :NBLocks?
```

This command sets the number of blocks for the selected uplink DCH.

***RST** 1

Range 0–512

Remarks Setting the command parameter while the signal is active also requires executing the apply command. Refer to “:ULINK:APPLY” on page 848.

The number of data bits per DCH cannot exceed 200,000. To maintain this data bit limit, the block size is multiplied by the number of blocks. If the product of these two parameters exceeds 200,000, the apply function (uplink apply command) will not work.

:ULINK:DPDCh:DCH[1] | 2 | 3 | 4 | 5 | 6:RMATtribute

Supported E4438C with Option 418

```
[ :SOURce ] :RADio:WCDMa:HSDPa [ :BBG ] :ULINK:DPDCh:DCH[ 1 ] | 2 | 3 | 4 | 5 | 6 :
RMATtribute <val>
```

```
[ :SOURce ] :RADio:WCDMa:HSDPa [ :BBG ] :ULINK:DPDCh:DCH[ 1 ] | 2 | 3 | 4 | 5 | 6 :
RMATtribute?
```

This command sets the rate matching attribute for the selected uplink DCH.

***RST** 1

Range 1–256

Remarks Setting the command parameter while the signal is active also requires executing the apply command. For more information, refer to “:ULINK:APPLY” on page 848.

HSDPA over W-CDMA Subsystem—Option 418 ([:SOURCE]:RADIO:WCDMA:HSDPA[:BBG])

:ULINK:DPDCh:DCH[1]|2|3|4|5|6:TTI**Supported** E4438C with Option 418

[:SOURCE]:RADIO:WCDMA:HSDPA[:BBG]:ULINK:DPDCh:DCH[1]|2|3|4|5|6:

TTI 10|20|40|80

[:SOURCE]:RADIO:WCDMA:HSDPA[:BBG]:ULINK:DPDCh:DCH[1]|2|3|4|5|6:TTI?

This command sets the TTI for the selected uplink DCH.

The choices are expressed in millisecond (ms).

***RST** 10

Remarks Setting the command parameter while the signal is active also requires executing the apply command. For more information, refer to “:ULINK:APPLY” on page 848.

:ULINK:DPDCh:DCH2|3|4|5|6[:STATE]**Supported** E4438C with Option 418

[:SOURCE]:RADIO:WCDMA:HSDPA[:BBG]:ULINK:DPDCh:

DCH2|3|4|5|6[:STATE] ON|OFF|1|0

[:SOURCE]:RADIO:WCDMA:HSDPA[:BBG]:ULINK:DPDCh:DCH2|3|4|5|6[:STATE]?

This command turns the selected uplink DCH on or off; DCH1 is always on.

***RST** *DCH 1: 1 DCH 2–6: 0*

Remarks Setting the command parameter while the signal is active also requires executing the apply command. Refer to “:ULINK:APPLY” on page 848.

The apply command will not work and the ESG will report an error if you turn on a DCH where lower numbered DCHs are off. For example, turning on DCH5 requires turning on DCH2–4. The reverse is true when turning off the DCHs.

:ULINK:DPDCh:POWer**Supported** E4438C with Option 418

[:SOURCE]:RADio:WCDMa:HSDPa[:BBG]:ULINK:DPDCh:POWer <val>

[:SOURCE]:RADio:WCDMa:HSDPa[:BBG]:ULINK:DPDCh:POWer?

This command sets the uplink DPDCH power level.

The variable <val> is expressed in decibels (dB).

RST** +0.00000000E+000**Range** –40 to 0**Remarks** Setting the command parameter while the signal is active also requires executing the apply command. Refer to “:ULINK:APPLY” on page 848.**:ULINK:DPDCh:SFORmat*Supported** E4438C with Option 418

[:SOURCE]:RADio:WCDMa:HSDPa[:BBG]:ULINK:DPDCh:SFORmat <val>

[:SOURCE]:RADio:WCDMa:HSDPa[:BBG]:ULINK:DPDCh:SFORmat?

This command sets the uplink DPDCH slot format.

***RST** +2**Range** 0– 6**Remarks** Setting the command parameter while the signal is active also requires executing the apply command. Refer to “:ULINK:APPLY” on page 848.

The slot format determines the settings for other parameters in accordance with the 3GPP standards.

:ULINK:DPDCh[:STATe]**Supported** E4438C with Option 418

[:SOURCE]:RADio:WCDMa:HSDPa[:BBG]:ULINK:DPDCh[:STATe] ON|OFF|1|0

[:SOURCE]:RADio:WCDMa:HSDPa[:BBG]:ULINK:DPDCh[:STATe]?

This command turns the uplink DPDCH on or off.

***RST** 1**Remarks** Setting the command parameter while the signal is active also requires executing the apply command. Refer to “:ULINK:APPLY” on page 848.

HSDPA over W-CDMA Subsystem—Option 418 ([:SOURCE]:RADIO:WCDMA:HSDPA[:BBG])

:ULINK:FCLock:INTerval**Supported** E4438C with Option 418[:SOURCE]:RADIO:WCDMA:HSDPA[:BBG]:ULINK:FCLock:INTerval 10|20|40|80|2560
[:SOURCE]:RADIO:WCDMA:HSDPA[:BBG]:ULINK:FCLock:INTerval?

This command selects the frame clock interval for the synchronization signal.

The frame clock interval is set in milliseconds (ms).

***RST** 80**Remarks** Ensure that the selected interval is equal to or longer than the longest transport channel TTI period.

This command is applicable only when FCLock is the sync source selection. See “:ULINK:SYNC[:SOURCE]” on page 869 for selecting the sync source.

:ULINK:FCLock:POLarity**Supported** E4438C with Option 418[:SOURCE]:RADIO:WCDMA:HSDPA[:BBG]:ULINK:FCLock:POLarity POSitive|
NEGative
[:SOURCE]:RADIO:WCDMA:HSDPA[:BBG]:ULINK:FCLock:POLarity?

This command sets the frame clock polarity.

POSitive This choice sets the clock gate to trigger when the signal is high.**NEGative** This choice sets the clock gate to trigger when the signal is low.***RST** POS**Remarks** This command is applicable only when FCLock is the sync source selection. See “:ULINK:SYNC[:SOURCE]” on page 869 for selecting the sync source.

:ULINK:FILTer

Supported E4438C with Option 418

```
[ :SOURCE ]:RADio:WCDMa:HSDPa[:BBG]:ULINK:FILTer RNYQuist|NYQuist|
GAUSSian|RECTangle|IS95|IS95_EQ|IS95_MOD|IS95_MOD_EQ|AC4Fm|UGGaussian|
"<user FIR>"
[:SOURCE]:RADio:WCDMa:HSDPa[:BBG]:ULINK:FILTer?
```

This command selects the uplink filter type.

IS95	This filter meets the criteria of the IS-95 standard.
IS95_EQ	This filter is a combination of the IS-95 filter (above) and the equalizer filter described in the IS-95 standard and is best suited for IS-95 baseband filtering.
IS95_MOD	This filter meets the criteria of the IS-95 error function (for improved adjacent channel performance) with lower passband rejection than the filter specified in the IS-95 standard.
IS95_MOD_EQ	This filter is a combination of the equalizer filter described in the IS-95 standard and a filter that meets the criteria of the IS-95 error function (for improved adjacent channel performance), with lower passband rejection.
UGGaussian	This is a GSM Gaussian filter with a fixed BbT value of 0.300.
AC4Fm	This is a predefined Association of Public Safety Communications Officials (APCO) specified compatible 4-level frequency modulation (C4FM) filter.
"<user FIR>"	This variable represents any FIR filter file stored in signal generator memory. Refer to “File Overview” on page 809 for more information on files.
*RST	RNYQ
Remarks	Setting the command parameter while the signal is active also requires executing the apply command. Refer to “:ULINK:APPLY” on page 848 .

:ULINK:FILTer:ALPHa

Supported E4438C with Option 418

```
[ :SOURCE ]:RADio:WCDMa:HSDPa[:BBG]:ULINK:FILTer:ALPHa <val>
[:SOURCE]:RADio:WCDMa:HSDPa[:BBG]:ULINK:FILTer:ALPHa?
```

This command sets the uplink Nyquist or root Nyquist filter alpha value.

***RST** +2.20000000E-001

Range 0–1

HSDPA over W-CDMA Subsystem—Option 418 ([:SOURCE]:RADIO:WCDMA:HSDPA[:BBG])

Remarks Setting the command parameter while the signal is active also requires executing the apply command. Executing this command while a filter other than Nyquist or root Nyquist is selected changes the parameter value, but it is not used by the signal generator until one of the Nyquist filters is selected. Refer to “:ULINK:APPLY” on page 848.

:ULINK:FILTer:BBT

Supported E4438C with Option 418

```
[ :SOURCE ] : RADIo : WCDMA : HSDPa [ :BBG ] : ULINK : FILTer : BBT <val>
[ :SOURCE ] : RADIo : WCDMA : HSDPa [ :BBG ] : ULINK : FILTer : BBT?
```

This command sets the uplink Gaussian filter BbT value.

***RST** +5.00000000E-001

Range 0–1

Remarks Setting the command parameter while the signal is active also requires executing the apply command. Refer to “:ULINK:APPLY” on page 848.

Executing this command while a filter other than the Gaussian filter is selected changes the parameter value, but it is not used by the signal generator until the Gaussian filter is selected.

:ULINK:FILTer:CHANnel

Supported E4438C with Option 418

```
[ :SOURCE ] : RADIo : WCDMA : HSDPa [ :BBG ] : ULINK : FILTer : CHANnel EVM|ACP
[ :SOURCE ] : RADIo : WCDMA : HSDPa [ :BBG ] : ULINK : FILTer : CHANnel?
```

This command optimizes an uplink filter for minimized EVM or for minimized ACP.

EVM This choice provides the most ideal passband.

ACP This choice improves stopband rejection for the root Nyquist and Nyquist filters.

***RST** EVM

Remarks Setting the command parameter while the signal is active also requires executing the apply command. Refer to “:ULINK:APPLY” on page 848.

To change the filter selection, refer to “:ULINK:FILTer” on page 862.

:ULINK:FOFFset**Supported** E4438C with Option 418

[:SOURCE]:RADio:WCDMa:HSDPa[:BBG]:ULINK:FOFFset <val>

[:SOURCE]:RADio:WCDMa:HSDPa[:BBG]:ULINK:FOFFset?

This command sets the CFN starting frame within the SFN by setting a frame offset relative to SFN zero.

***RST** 0**Range** 0–255

Remarks The command adds delays to the internal frame counter by specifying the starting frame number count. When the frame offset (FOFFset) is set to 0, the frame number starts at the system sync trigger. When the FOFFset is set to 2, the signal generator triggers two frames after the SFN RST. For additional information, refer to 3GPP TS25.402 for SFN and CFN relationship.

:ULINK:HSDPcch:APATtern**Supported** E4438C with Option 418[:SOURCE]:RADio:WCDMa:HSDPa[:BBG]:ULINK:HSDPcch:APATtern NONE|ACK_ALL|"
"<file name>"

[:SOURCE]:RADio:WCDMa:HSDPa[:BBG]:ULINK:HSDPcch:APATtern?

This command sets the HS-DPCCH ACK/NACK transmission pattern for each of the 1280 subframes that make up the pattern.

NONE This choice sets all subframes to DTX.

"<file name>" This variable represents an ACK pattern file stored in signal generator memory. The file must contain 2,560-bits of data (2-bits per subframe) or the apply function (uplink apply command) will not work.

- An ACK response is represented by 00.
- A NACK response is represented by 01.
- DTX is represented by 10.

Enter the 2,560-bits into the file as a binary string.

Refer to [“File Overview” on page 809](#) for more information on files.

HSDPA over W-CDMA Subsystem—Option 418 ([:SOURCE]:RADIO:WCDMA:HSDPA[:BBG])

***RST** ACK_ALL

Remarks Setting the command parameter while the signal is active also requires executing the apply command. Refer to “:ULINK:APPLY” on page 848.

:ULINK:HSDPcch:APOWer

Supported E4438C with Option 418

```
[ :SOURCE ] :RADIo:WCDMa:HSDPa[ :BBG ] :ULINK:HSDPcch:APOWer <val>
```

```
[ :SOURCE ] :RADIo:WCDMa:HSDPa[ :BBG ] :ULINK:HSDPcch:APOWer?
```

This command sets the HS-DPCCH ACK part power level.

The variable <val> is expressed in decibels (dB).

***RST** -2.69000000E+000

Range -40 to 0

Remarks Setting the command parameter while the signal is active also requires executing the apply command. Refer to “:ULINK:APPLY” on page 848.

:ULINK:HSDPcch:CCODE

Supported E4438C with Option 418

```
[ :SOURCE ] RADIo:WCDMa:HSDPa[ :BBG ] :ULINK:HSDPcch:CCODE?
```

This query returns the HS-DPCCH channelization code.

:ULINK:HSDPcch:CPATtern

Supported E4438C with Option 418

```
[ :SOURCE ] :RADIo:WCDMa:HSDPa[ :BBG ] :ULINK:HSDPcch:CPATtern NONE |
```

```
"<file name>"
```

```
[ :SOURCE ] :RADIo:WCDMa:HSDPa[ :BBG ] :ULINK:HSDPcch:CPATtern?
```

This command sets the HS-DPCCH CQI transmission pattern for each of the 1280 subframes that make up the pattern.

NONE This choice sets all subframes to DTX.

"<file name>" This variable represents a bit file stored in signal generator memory. The file must contain 10,240-bits of data (8-bits per subframe) or the apply function (uplink apply command) will not work.

- A CQI response range is one to thirty using 8-bits, 00000001 to 00011110.

HSDPA over W-CDMA Subsystem–Option 418 ([:SOURce]:RADio:WCDMa:HSDPa[:BBG])

- DTX is represented by 11111111.

Enter the 10,240-bits into the file as a binary string.

Refer to “[File Overview](#)” on page 809 for more information on files.

***RST** NONE

Remarks Setting the command parameter while the signal is active also requires executing the apply command. Refer to “[:ULINK:APPLY](#)” on page 848.

:ULINK:HSDPcch:CPOWer

Supported E4438C with Option 418

```
[ :SOURce ] :RADio:WCDMa:HSDPa[ :BBG ] :ULINK:HSDPcch:CPOWer <val>
[ :SOURce ] :RADio:WCDMa:HSDPa[ :BBG ] :ULINK:HSDPcch:CPOWer?
```

This command sets the HS-DPCCH CQI part power level.

The variable <val> is expressed in decibels (dB).

***RST** -2.69000000E+000

Range -40 to 0

Remarks Setting the command parameter while the signal is active also requires executing the apply command. Refer to “[:ULINK:APPLY](#)” on page 848.

:ULINK:HSDPcch:NPOWER

Supported E4438C with Option 418

```
[ :SOURce ] :RADio:WCDMa:HSDPa[ :BBG ] :ULINK:HSDPcch:NPOWER <val>
[ :SOURce ] :RADio:WCDMa:HSDPa[ :BBG ] :ULINK:HSDPcch:NPOWER?
```

This command sets the HS-DPCCH NACK part power level. The variable <val> is expressed in decibels (dB).

***RST** -2.69000000E+000

Range -40 to 0

Remarks Setting the command parameter while the signal is active also requires executing the apply command. Refer to “[:ULINK:APPLY](#)” on page 848.

:ULINK:HSDPcch:SFDelay

Supported E4438C with Option 418

```
[ :SOURce ] :RADio:WCDMa:HSDPa[ :BBG ] :ULINK:HSDPcch:SFDelay <val>
[ :SOURce ] :RADio:WCDMa:HSDPa[ :BBG ] :ULINK:HSDPcch:SFDelay?
```


HSDPA over W-CDMA Subsystem—Option 418 [:SOURCE]:RADIO:WCDMA:HSDPA[:BBG]

This command sets the HS-DPCCH subframe delay. The variable <val> is expressed in units of 256 chips.

*RST	0
Range	0–150
Remarks	Setting the command parameter while the signal is active also requires executing the apply command. Refer to “:ULINK:APPLY” on page 848.

:ULINK:HSDPcch[:STATE]

Supported E4438C with Option 418

```
[ :SOURCE ] :RADIO:WCDMA:HSDPA[:BBG]:ULINK:HSDPcch[:STATE] ON|OFF|1|0
[ :SOURCE ] :RADIO:WCDMA:HSDPA[:BBG]:ULINK:HSDPcch[:STATE]?
```

This command turns the HS-DPCCH on or off.

*RST	1
Remarks	Setting the command parameter while the signal is active also requires executing the apply command. Refer to “:ULINK:APPLY” on page 848.

:ULINK:POLarity

Supported E4438C with Option 418

```
[ :SOURCE ] :RADIO:WCDMA:HSDPA[:BBG]:ULINK:POLarity NORMAL|INVERTED|INVERT
[ :SOURCE ] :RADIO:WCDMA:HSDPA[:BBG]:ULINK:POLarity?
```

This command selects the phase polarity of the uplink signal.

NORMAL	This choice selects normal polarity.
INVERTED, INVERT	These choices perform the same function, inverting the internal Q signal.

*RST	NORM
Remarks	Setting the command parameter while the signal is active also requires executing the apply command. Refer to “:ULINK:APPLY” on page 848.

:ULINK:SCRamblecode

Supported E4438C with Option 418

```
[ :SOURCE ] :RADIO:WCDMA:HSDPA[:BBG]:ULINK:SCRamblecode <val>
[ :SOURCE ] :RADIO:WCDMA:HSDPA[:BBG]:ULINK:SCRamblecode?
```

This command sets the scramble code.

HSDPA over W-CDMA Subsystem–Option 418 ([:SOURce]:RADio:WCDMa:HSDPa[:BBG])

***RST** +0
Range 0–16777215

:ULINK:SDElay

Supported E4438C with Option 418

```
[ :SOURce ] :RADio:WCDMa:HSDPa [ :BBG ] :ULINK:SDElay <val>
[ :SOURce ] :RADio:WCDMa:HSDPa [ :BBG ] :ULINK:SDElay?
```

This command sets the uplink DPCH delay, measured in slots.

***RST** +0
Range 0–119

Remarks Calculate the delay between downlink and uplink DPCH, in slots, using the following formulas. Total Delay = (T0) + (TOFFset) + ((SDElay) * 2560 chips)

- T0 = 1024 chips
- TOFFset is set by “:ULINK:TOFFset” on page 869

Slot Delay = (Total Delay – T0) / 2560

:ULINK:SFNRst:POLarity

Supported E4438C with Option 418

```
[ :SOURce ] :RADio:WCDMa:HSDPa [ :BBG ] :ULINK:SFNRst:POLarity POSitive|
NEGative
[ :SOURce ] :RADio:WCDMa:HSDPa [ :BBG ] :ULINK:SFNRst:POLarity?
```

This command sets the polarity of the system frame number reset signal for the uplink synchronization source.

POSitive This choice sets the signal to trigger when the trigger signal is high.

NEGative This choice sets the signal to trigger when the trigger signal is low.

***RST** POS

Remarks This command is applicable only when SFN_RST is the sync source selection. See “:ULINK:SYNC[:SOURce]” on page 869 for selecting the sync source.

:ULINK:SYNC:MODE

Supported E4438C with Option 418

```
[ :SOURCE ] :RADIO:WCDMA:HSDPA[:BBG]:ULINK:SYNC:MODE SINGLE|CONTINUOUS  
[ :SOURCE ] :RADIO:WCDMA:HSDPA[:BBG]:ULINK:SYNC:MODE?
```

This command selects the uplink frame synchronization triggering mode.

SINGLE The signal generator, once triggered, generates frames based on the reference clock.

CONTINUOUS The signal generator continuously aligns the frame timing with the frame sync trigger signal.

***RST** SING

:ULINK:SYNC[:SOURCE]

Supported E4438C with Option 418

```
[ :SOURCE ] :RADIO:WCDMA:HSDPA[:BBG]:ULINK:SYNC[:SOURCE] SFN_RST|FCLock  
[ :SOURCE ] :RADIO:WCDMA:HSDPA[:BBG]:ULINK:SYNC[:SOURCE]?
```

This command selects the uplink frame synchronization source type.

SFN_RST The uplink signal triggers on the system frame number reset signal.

FCLock The uplink signal triggers on the frame clock.

***RST** FCL

:ULINK:TOFFset

Supported E4438C with Option 418

```
[ :SOURCE ] :RADIO:WCDMA:HSDPA[:BBG]:ULINK:TOFFset <val>  
[ :SOURCE ] :RADIO:WCDMA:HSDPA[:BBG]:ULINK:TOFFset?
```

This command sets the uplink DPCH timing offset (delay), measured in chips.

***RST** +0

Range -512 to 2560

HSDPA over W-CDMA Subsystem–Option 418 ([:SOURce]:RADio:WCDMa:HSDPa[:BBG])

Remarks The downlink signal timing is provided by the synchronization signal.

 Calculate the delay between downlink and uplink DPCH, in chips, using the following formulas:

 Total Delay = (T0) + (TOFFset) + ((SDELaY) * 2560 chips)

- T0 = 1024 chips
- SDELaY is set by “:ULINK:SDELaY” on page 868

 Chip Delay = (Total Delay - T0) mod 2560

[:STATe]

Supported E4438C with Option 418

[:SOURce] :RADio:WCDMa:HSDPa [:BBG] [:STATe] ON | OFF | 1 | 0
[:SOURce] :RADio:WCDMa:HSDPa [:BBG] [:STATe] ?

This command turns the HSDPA functionality on or off.

***RST** 0

Remarks This command only works when there is at least one active physical channel within the selected link.

NADC Subsystem–Option 402 ([:SOURce]:RADio[:NADC])

:ALPha

Supported E4438C with Option 402

```
[ :SOURce ] :RADio [ :NADC ] :ALPha <val>  
[ :SOURce ] :RADio [ :NADC ] :ALPha?
```

This command changes the Nyquist or root Nyquist filter’s alpha value.

The filter alpha value can be set to a minimum level (0), a maximum level (1), or in between by using fractional numeric values (0.001–0.999).

***RST** +3.50000000E–001

Range 0.000–1.000

Key Entry Filter Alpha

Remarks This command is effective only after choosing a root Nyquist or Nyquist filter; it does not effect other types of filters. To change the current filter type, refer to [“:FILTer” on page 884](#).

:BBCLock

Supported E4438C with Option 402

```
[ :SOURce ] :RADio [ :NADC ] :BBCLock INT[1] | EXT[1]  
[ :SOURce ] :RADio [ :NADC ] :BBCLock?
```

This command toggles the data (bit) clock input to the baseband generator board to either internal or external. This command is independent in each mode and works for both non-burst (continuous) and burst modes. This allows for a matrix of selections between burst/non-burst, internal/external data generation, internal/external data clock, and external bit/symbol data clock.

INT[1] This choice selects the signal generator internal data clock.

EXT[1] This choice selects an external data clock input.

***RST** INT

Key Entry BBG Data Clock Ext Int

Remarks A data clock or continuous symbol sync input must be supplied when external mode is used.

:BBT

Supported E4438C with Option 402

```
[ :SOURCE ] :RADio [ :NADC ] :BBT <val>  
[ :SOURCE ] :RADio [ :NADC ] :BBT?
```

This command changes the bandwidth-multiplied-by-bit-time (BbT) filter parameter.

The filter BbT value can be set to the maximum level (1) or in between the minimum level (0.100) and maximum level by using fractional numeric values (0.101–0.999).

***RST** +5.00000000E–001

Range 0.100–1.000

Key Entry Filter BbT

Remarks This command is effective only after choosing a Gaussian filter. It does not have an effect on other types of filters. To change the current filter type, refer to [“:FILTer” on page 884](#).

:BRATe

Supported E4438C with Option 402

```
[ :SOURCE ] :RADio : [ :NADC ] :BRATe <val>  
[ :SOURCE ] :RADio : [ :NADC ] :BRATe?
```

This command sets the bit rate in bits per second (bps–Mbps). The maximum bit rate is dependent on the modulation type and filter as shown in the following tables

The IQ digital data stream is shaped by a FIR filter. The filter length and associated latency and frequency response are dependent on the bit rate as shown in the following tables. The signal generator selects a filter length.

For higher bit rates, the FIR filter length may be truncated (if the minimum filter size allows it) which will impact the relative timing of the modulated data, as well as the actual filter response (see the symbol rate command [“:SRATe” on page 962](#)). Refer to [“:FILTer” on page 884](#) for information on filter symbol widths.

To change the modulation type, refer to [“:MODulation\[:TYPE\]” on page 887](#).

When the bit rate is changed, the ESG reconfigures the baseband generator. The time required to reconfigure the baseband generator is inversely proportional to the bit rate: lower bit rates require more time.

***RST** +4.86000000E+004

Range	Modulation Type	Bit Rate Range		
		16 Symbol Wide Filter	32 Symbol Wide Filter	64 Symbol Wide Filter
	BPSK, FSK2, MSK	1bps–50Mbps	1bps–25Mbps	1bps–12.5Mbps
	C4FM, OQPSK, FSK4	2bps–50Mbps	2bps–25Mbps	2bps–12.5Mbps
	OQPSKI95, QPSK			
	P4QPPSK, QPSKIS95			
	GRAYQPSK, QAM4			
	D8PSK, EDGE, FSK8, PSK8	3bps–50Mbps	3bps–25Mbps	3bps–12.5Mbps
	FSK16, PSK16, QAM16	4bps–50Mbps	4bps–25Mbps	4bps–12.5Mbps
	QAM32	5bps–50Mbps	5bps–25Mbps	5bps–12.5Mbps
	QAM64	6bps–50Mbps	6bps–25Mbps	6bps–12.5Mbps
	QAM128	7bps–50Mbps	7bps–25Mbps	7bps–12.5Mbps
	QAM256	8bps–50Mbps	8bps–25Mbps	8bps–12.5Mbps

Key Entry **Symbol Rate**

:BURSt:PN9

Supported E4438C with Option 402

[:SOURce] :RADio [:NADC] :BURSt :PN9 NORMal | QUICk
 [:SOURce] :RADio [:NADC] :BURSt :PN9?

This command controls the software PN9 generation.

NORMal This choice produces a maximum length PN9 sequence.

QUICk This choice produces a truncated PN9 sequence.

***RST** NORM

Key Entry **PN9 Mode Normal Quick**

Remarks Use Normal mode for bit-error-rate tests where a maximum length PN9 sequence is required.

:BURSt:SHAPe[:TYPE]

Supported E4438C with Option 402

```
[ :SOURce ] :RADio [ :NADC ] :BURSt :SHAPe [ :TYPE ] SINE | "<file name>"  
[ :SOURce ] :RADio [ :NADC ] :BURSt :SHAPe [ :TYPE ] ?
```

This command specifies the burst shape as either SINE or a user-defined file ("`<file name>`").

SINE This choice selects a state that is defined by the burst rise and fall *RST values, as the default burst shape type.

"`<file name>`" This choice selects a user designated file from signal generator memory (non-volatile).

***RST** SINE

Key Entry Sine User File

:BURSt:SHAPe:FALL:DELay

Supported E4438C with Option 402

```
[ :SOURce ] :RADio [ :NADC ] :BURSt :SHAPe :FALL :DELay <val>  
[ :SOURce ] :RADio [ :NADC ] :BURSt :SHAPe :FALL :DELay ?
```

This command sets the burst shape fall delay.

The variable `<val>` is expressed in bits. The minimum and maximum values depend upon modulation type and symbol rate.

***RST** +0.00000000E+000

Range -22.3750 to 99

Key Entry Fall Delay

Remarks The setting enabled by this command is not affected by signal generator power-on, preset, or *RST.

To change the modulation type, refer to [“:MODulation\[:TYPE\]” on page 887](#). Refer to [“:SRate” on page 962](#) for a list of the minimum and maximum symbol rate values.

[“:BURSt:SHAPe:FDELay” on page 875](#) performs the same function; in compliance with the SCPI standard, both commands are listed.

For concept information on burst shaping, refer to the *E4428C/38C ESG Signal Generators User’s Guide*.

:BURSt:SHAPe:FALL:TIME

Supported E4438C with Option 402

```
[ :SOURce ] :RADIo [ :NADC ] :BURSt :SHAPe :FALL :TIME <val>  
[ :SOURce ] :RADIo [ :NADC ] :BURSt :SHAPe :FALL :TIME?
```

This command sets the burst shape fall time.

The variable <val> is expressed in bits. The minimum and maximum values depend upon modulation type and symbol rate.

***RST** +5.00000000E+000

Range 0.1250–255.8750

Key Entry Fall Time

Remarks The setting enabled by this command is not affected by signal

generator power-on, preset, or *RST.

To change the modulation type, refer to “:MODulation[:TYPE]” on page 887.
Refer to “:SRATE” on page 962 for a list of the minimum and maximum symbol rate values.

“:BURSt:SHAPe:FTIME” on page 876 performs the same function; in compliance with the SCPI standard, both commands are listed.

For concept information on burst shaping, refer to the *E4428C/38C ESG Signal Generators User’s Guide*.

:BURSt:SHAPe:FDElay

Supported E4438C with Option 402

```
[ :SOURce ] :RADIo [ :NADC ] :BURSt :SHAPe :FDElay <val>  
[ :SOURce ] :RADIo [ :NADC ] :BURSt :SHAPe :FDElay?
```

This command sets the burst shape fall delay.

The variable <val> is expressed in bits. The minimum and maximum values depend upon modulation type and symbol rate.

***RST** +0.00000000E+000

Range –22.3750 to 99

Key Entry Fall Delay

Remarks The setting enabled by this command is not affected by signal generator power-on, preset, or *RST.

To change the modulation type, refer to “:MODulation[:TYPE]” on page 887. Refer to “:SRATE” on page 962 for a list of the minimum and maximum symbol rate values.

“:BURSt:SHAPe:FALL:DELay” on page 874 performs the same function; in compliance with the SCPI standard, both commands are listed.

For concept information on burst shaping, refer to the *E4428C/38C ESG Signal Generators User’s Guide*.

:BURSt:SHAPe:FTIME

Supported E4438C with Option 402

```
[ :SOURce ] :RADio [ :NADC ] :BURSt :SHAPe :FTIME <val>  
[ :SOURce ] :RADio [ :NADC ] :BURSt :SHAPe :FTIME?
```

This command sets the burst shape fall time.

The variable <val> is expressed in bits. The minimum and maximum values depend upon modulation type and symbol rate.

***RST** +0.00000000E+000

Range 0.1250–255.8750

Key Entry Fall Time

Remarks The setting enabled by this command is not affected by signal generator power-on, preset, or *RST.

To change the modulation type, refer to “:MODulation[:TYPE]” on page 887. Refer to “:SRATE” on page 962 for a list of the minimum and maximum symbol rate values.

“:BURSt:SHAPe:FALL:TIME” on page 875 performs the same function; in compliance with the SCPI standard, both commands are listed.

For concept information on burst shaping, refer to the *E4428C/38C ESG Signal Generators User’s Guide*.

:BURSt:SHAPe:RDELaY

Supported E4438C with Option 402

[:SOURce] :RADio [:NADC] :BURSt :SHAPe :RDELaY <val>

[:SOURce] :RADio [:NADC] :BURSt :SHAPe :RDELaY?

This command sets the burst shape rise delay.

The variable <val> is expressed in bits. The minimum and maximum values depend upon modulation type and symbol rate.

***RST** +0.00000000E+000

Range -17.3750 to 99

Key Entry Rise Delay

Remarks The setting enabled by this command is not affected by signal generator power-on, preset, or *RST.

To change the modulation type, refer to “:MODulation[:TYPE]” on page 887. Refer to “:SRATE” on page 962 for minimum and maximum symbol rate values.

“:BURSt:SHAPe:RISE:DELaY” on page 877 performs the same function; in compliance with the SCPI standard, both commands are listed.

Refer to the *E4428C/38C ESG Signal Generators User’s Guide* for more information.

:BURSt:SHAPe:RISE:DELaY

Supported E4438C with Option 402

[:SOURce] :RADio [:NADC] :BURSt :SHAPe :RISE :DELaY <val>

[:SOURce] :RADio [:NADC] :BURSt :SHAPe :RISE :DELaY?

This command sets the burst shape rise delay.

The variable <val> is expressed in bits. The minimum and maximum values depend upon modulation type and symbol rate.

***RST** +0.00000000E+000

Range -17.3750 to 99

Key Entry Rise Delay

Remarks The setting enabled by this command is not affected by signal generator power-on, preset, or *RST.

To change the modulation type, refer to “:MODulation[:TYPE]” on page 887. Refer to “:SRATE” on page 962 for a list of the minimum and maximum symbol rate values.

“:BURSt:SHAPE:RDElay” on page 877 performs the same function; in compliance with the SCPI standard, both commands are listed.

Refer to the *E4428C/38C ESG Signal Generators User’s Guide* for more information.

:BURSt:SHAPE:RISE:TIME

Supported E4438C with Option 402

```
[ :SOURce ] :RADio [ :NADC ] :BURSt :SHAPE :RISE :TIME <val>  
[ :SOURce ] :RADio [ :NADC ] :BURSt :SHAPE :RISE :TIME?
```

This command sets the burst shape rise time.

The variable <val> is expressed in bits. The minimum and maximum values depend upon modulation type and symbol rate.

***RST** +5.00000000E+000

Range 0.1250–22.5000

Key Entry Rise Time

Remarks The setting enabled by this command is not affected by signal generator power-on, preset, or *RST.

To change the modulation type, refer to “:MODulation[:TYPE]” on page 887. Refer to “:SRATE” on page 962 for a list of the minimum and maximum symbol rate values.

“:BURSt:SHAPE:RTIME” on page 879 performs the same function; in compliance with the SCPI standard, both commands are listed.

For concept information on burst shaping, refer to the *E4428C/38C ESG Signal Generators User’s Guide*.

:BURSt:SHAPe:RTIME

Supported E4438C with Option 402

```
[ :SOURce ] :RADio [ :NADC ] :BURSt :SHAPe :RTIME <val>
```

```
[ :SOURce ] :RADio [ :NADC ] :BURSt :SHAPe :RTIME?
```

This command sets the burst shape rise time.

The variable <val> is expressed in bits. The minimum and maximum values depend upon modulation type and symbol rate.

***RST** +5.00000000E+000

Range 0.1250–22.5000

Key Entry Rise Time

Remarks The setting enabled by this command is not affected by signal generator power-on, preset, or *RST.

To change the modulation type, refer to “:MODulation[:TYPE]” on page 887. Refer to “:SRATE” on page 962 for a list of the minimum and maximum symbol rate values.

“:BURSt:SHAPe:RISE:TIME” on page 878 performs the same function; in compliance with the SCPI standard, both commands are listed.

For concept information on burst shaping, refer to the *E4428C/38C ESG Signal Generators User’s Guide*.

:BURSt[:STATe]

Supported E4438C with Option 402

```
[ :SOURce ] :RADio [ :NADC ] :BURSt [ :STATe ] ON | OFF | 1 | 0
```

```
[ :SOURce ] :RADio [ :NADC ] :BURSt [ :STATe ]?
```

This command enables or disables the burst function.

ON (1) This choice enables the transmission of framed data. If all timeslots which are switched on are up traffic channels or custom, you will be bursting the timeslots that are on; there will be no RF carrier during the off timeslots.

If you have switched on any timeslot that you have configured as a down traffic channel, the RF carrier is not switched off between any of the timeslots. The off timeslots are transmitted as a continuous series of ones for the time period of the off timeslots.

OFF (0) This choice enables the transmission of unframed data.

***RST** 0
Key Entry Data Format Pattern Framed

:BURSt:SHAPE[:TYPE]

Supported E4438C with Option 402

```
[ :SOURCE ] : RADIO [ : NADC ] : BURSt : SHAPE [ : TYPE ] SINE | "<file name>"
[ : SOURCE ] : RADIO [ : NADC ] : BURSt : SHAPE [ : TYPE ] ?
```

This command specifies the burst shape as either SINE or a user-defined file ("<file name>").

SINE This choice selects a state that is defined by the burst rise and fall *RST values, as the default burst shape type.

"<file name>" This choice selects a user designated file from signal generator memory (non-volatile).

***RST** SINE
Key Entry Sine User File

:CHANnel

Supported E4438C with Option 402

```
[ : SOURCE ] : RADIO [ : NADC ] : CHANnel EVM | ACP
[ : SOURCE ] : RADIO [ : NADC ] : CHANnel ?
```

This command optimizes the Nyquist and root Nyquist filters to minimize error vector magnitude (EVM) or to minimize adjacent channel power (ACP).

EVM This choice provides the most ideal passband.

ACP This choice improves stopband rejection.

***RST** ACP

Key Entry Optimize FIR For EVM ACP

Remarks To change the current filter type, refer to “:FILTer” on page 884.

:DATA

Supported E4438C with Option 402

```
[ :SOURce ] :RADIO [ :NADC ] :DATA PN9 | PN11 | PN15 | PN20 | PN23 | FIX4 | "<file name>" |
EXT | P4 | P8 | P16 | P32 | P64 | PRAM
[ :SOURce ] :RADIO [ :NADC ] :DATA?
```

This command sets a pseudo-random number sequence, 4-bit pattern, sequence of 1’s and 0’s, data from an external source, or a user file as the data pattern for unframed transmission.

***RST** PN23

Key Entry	PN9	PN11	PN15	PN20	PN23	FIX4	User File	Ext
	4 1’s & 4 0’s	8 1’s & 8 0’s	16 1’s & 16 0’s	32 1’s & 32 0’s	64 1’s & 64 0’s	PRAM File		

Remarks Refer to [“File Name Variables” on page 13](#) for information on the file name syntax.

:DATA:PRAM

Supported E4438C with Option 402

```
[ :SOURce ] :RADIO [ :NADC ] :DATA :PRAM "<file_name>"
[ :SOURce ] :RADIO [ :NADC ] :DATA :PRAM?
```

This command selects a pattern RAM (PRAM) file as the pattern data type for the NADC (North American Digital Cellular) format.

"<file_name>" This variable designates the PRAM file in WFM1. Refer to [“File Name Variables” on page 13](#) for information on the file name syntax.

Key Entry PRAM File

Remarks Selecting this data source forces the burst source to INTERNAL to allow framing control. The PRAM file must reside in the signal generator’s volatile memory (WFM1) in order to be accessed by this command. For more information refer to [“:DATA:PRAM:FILE:BLOCK” on page 112](#)

:DATA:FIX4

Supported E4438C with Option 402

```
[ :SOURCE ] : RADIO [ :NADC ] : DATA : FIX4 <val>  
[ :SOURCE ] : RADIO [ :NADC ] : DATA : FIX4?
```

This command sets the binary, 4-bit repeating sequence data pattern for unframed transmission according to the modulation type, symbol rate, filter, and burst shape selected for the NADC (North American Digital Cellular) modulation format.

***RST** #B0000

Range #B0000–#B1111 or 0–15

Key Entry FIX4

Remarks FIX4 must already be defined as the data type.

:DEFAULT

Supported E4438C with Option 402

```
[ :SOURCE ] : RADIO [ :NADC ] : DEFAULT
```

This command returns all of the NADC (North American Digital Cellular) modulation format parameters to factory settings. It does not affect any other signal generator parameters.

Key Entry Restore NADC Factory Default

:EDATa:DELaY

Supported E4438C with Option 402

```
[ :SOURCE ] : RADIO [ :NADC ] : EDATa : DELaY?
```

This query returns the amount of delay (in symbols) from the external data input to the beginning of the symbol on the I OUT and Q OUT rear panel connectors and the front panel RF OUTPUT connector.

Remarks When the format is turned off, the delay value is unchanged; the query will return the same delay value if the format is on or off.

:EDCLock

Supported E4438C with Option 402

[:SOURCE] :RADIO [:NADC] :EDCLock SYMBOL | NORMAl

[:SOURCE] :RADIO [:NADC] :EDCLock?

This command sets the external data clock use.

SYMBOL This choice specifies that a continuous symbol clock signal must be provided to the SYMBOL SYNC input connector.

NORMAl This choice specifies that the DATA CLOCK input connector requires a bit clock. The SYMBOL SYNC input connector requires a (one-shot or continuous) symbol sync signal.

***RST** NORM

Key Entry Ext Data Clock Normal Symbol

Remarks Both choices have no effect in internal clock mode. Refer to “:BBCLock” on page 871 to select EXT as the data clock type.

:EREFerence

Supported E4438C with Option 402

[:SOURCE] :RADIO [:NADC] :EREFerence INT | EXT

[:SOURCE] :RADIO [:NADC] :EREFerence?

This command selects either an internal or external bit-clock reference for the data generator.

***RST** INT

Key Entry BBG Ref Ext Int

Remarks If the EXT choice is selected, the external source’s frequency value must be applied to the BASEBAND GEN REF IN rear panel connector. The external reference and external data clock are not applicable at the same time. If both are selected, then the external reference takes precedence.

Refer to, “:EREFerence:VALue” on page 884 to enter the external reference frequency setting.

:EREFERENCE:VALue

Supported E4438C with Option 402

```
[ :SOURCE ] :RADIO [ :NADC ] :EREFERENCE:VALue <val>  
[ :SOURCE ] :RADIO [ :NADC ] :EREFERENCE:VALue?
```

This command sets the expected bit-clock reference frequency value for an externally applied reference signal.

The variable <val> is expressed in units of hertz (Hz–MHz).

***RST** +1.30000000E+007

Range 2.5E5–1E8

Key Entry Ext BBG Ref Freq

Remarks The value specified by this command is effective only when you are using an external reference applied to the BASEBAND GEN REF IN rear panel connector.

Refer to “:EREFERENCE” on page 883 to select EXT (external source) as the reference for the bit-clock.

:FILTER

Supported E4438C with Option 402

```
[ :SOURCE ] :RADIO [ :NADC ] :FILTER RNYQuist | NYQuist | GAUSSian | RECTangle | IS95 |  
IS95_EQ | IS95_MOD | IS95_MOD_EQ | AC4Fm | UGGaussian | "<user FIR>"  
[ :SOURCE ] :RADIO [ :NADC ] :FILTER?
```

This command selects the pre-modulation filter type.

IS95 This choice selects a filter that meets the criteria of the IS-95 standard.

IS95_EQ This choice selects a filter which is a combination of the IS-95 filter (above) and the equalizer filter described in the IS-95 standard. This filter is only used for IS-95 baseband filtering.

IS95_MOD This choice selects a filter that meets the criteria of the IS-95 error function (for improved adjacent channel performance) with lower passband rejection than the filter specified in the IS-95 standard.

IS95_MOD_EQ This choice selects a filter which is a combination of the equalizer filter described in the IS-95 standard and a filter that meets the criteria of the IS-95 error function (for improved adjacent channel performance), with lower passband rejection.

AC4Fm This choice selects a predefined Association of Public Safety Communications Officials (APCO) specified compatible 4-level frequency modulation (C4FM) filter.

UGGaussian This choice selects a backwards compatible GSM Gaussian filter (Gaussian filter with a fixed BbT value of 0.300) for the ESG E44xxB Option UN3 or UN4.

"<user FIR>" This variable is any filter file that you have stored into memory.

***RST** RNYQ

Key Entry **Root Nyquist Nyquist Gaussian Rectangle IS-95 IS-95 w/EQ**
IS-95 Mod IS-95 Mod w/EQ APCO 25 C4FM UN3/4 GSM Gaussian
User FIR

Remarks Refer to [“File Name Variables” on page 13](#) for information on the file name syntax.

:FRATe

Supported E4438C with Option 402

[:SOURce] :RADio [:NADC] :FRATe FULL | HALF
[:SOURce] :RADio [:NADC] :FRATe?

This command toggles between a full- or half-rate traffic channel.

FULL Selects two equally spaced timeslots of the frame. Since there are six timeslots per frame, timeslots 1, 2, and 3 are paired with timeslots 4, 5, and 6, respectively.

HALF Selects one timeslot of the frame (6 individual timeslots per frame).

***RST** FULL

Key Entry **Rate Full Half**

:IQ:SCALE

Supported E4438C with Option 402

[:SOURce] :RADio [:NADC] :IQ:SCALE <val>
[:SOURce] :RADio [:NADC] :IQ:SCALE?

This command sets the amplitude of the I/Q outputs for better adjacent channel power (ACP); lower scaling values equate to better ACP.

The variable <val> is expressed in units of percent.

***RST** +100

Range 1–200

Key Entry **I/Q Scaling**

Remarks This command has no effect with MSK or FSK modulation.

:MODulation:FSK[:DEVIation]

Supported E4438C with Option 402

```
[ :SOURCE ]:RADio[ :NADC ]:MODulation:FSK[ :DEVIation ] <val>  
[ :SOURCE ]:RADio[ :NADC ]:MODulation:FSK[ :DEVIation ]?
```

This command sets the symmetric FSK frequency deviation value. The variable <val> is expressed in units of Hertz and the maximum range value equals the current symbol rate value multiplied by four, limited to 20 MHz

***RST** +4.00000000E+002

Range 0–2E7

Key Entry Freq Dev

Remarks To change the modulation type, refer to “:MODulation[:TYPE]” on page 887.

Refer to “:SRATe” on page 962 for a list of the minimum and maximum symbol rate values.

To set an asymmetric FSK deviation value, refer to the *E4428C/38C ESG Signal Generators User’s Guide for more information.*

:MODulation:MSK[:PHASe]

Supported E4438C with Option 402

```
[ :SOURCE ]:RADio[ :NADC ]:MODulation:MSK[ :PHASe ] <val>  
[ :SOURCE ]:RADio[ :NADC ]:MODulation:MSK[ :PHASe ]?
```

This command sets the MSK phase deviation value. The variable <val> is expressed in units of degrees.

***RST** +9.00000000E+001

Range 0–100

Key Entry Phase Dev

:MODulation:UFSK

Supported E4438C with Option 402

```
[ :SOURCE ]:RADio[ :NADC ]:MODulation:UFSK "<file name>"  
[ :SOURCE ]:RADio[ :NADC ]:MODulation:UFSK?
```

This command selects a user-defined FSK file from the signal generator memory.

Key Entry **User FSK**

Remarks The user-defined FSK file is held in signal generator memory until the command that selects user FSK as the modulation type is sent. Refer to [“:MODulation\[:TYPE\]” on page 887](#) to change the current modulation type.

Refer to [“File Name Variables” on page 13](#) for information on the file name syntax.

:MODulation:UIQ

Supported E4438C with Option 402

```
[ :SOURce ] :RADIo [ :NADC ] :MODulation :UIQ "<file name>"
[ :SOURce ] :RADIo [ :NADC ] :MODulation :UIQ?
```

This command selects a user-defined I/Q file from the signal generator memory.

Key Entry **User I/Q**

Remarks The user-defined I/Q file is held in signal generator memory until the command that selects user I/Q as the modulation type is sent. Refer to [“:MODulation\[:TYPE\]” on page 887](#) to change the current modulation type.

Refer to [“File Name Variables” on page 13](#) for information on the file name syntax.

:MODulation[:TYPE]

Supported E4438C with Option 402

```
[ :SOURce ] :RADIo [ :NADC ] :MODulation [ :TYPE ] BPSK | QPSK | IS95QPSK | GRAYQPSK |
OQPSK | IS95OQPSK | P4DQPSK | PSK8 | PSK16 | D8PSK | MSK | FSK2 | FSK4 | FSK8 | FSK16 | C4FM |
QAM4 | QAM16 | QAM32 | QAM64 | QAM128 | QAM256 | UIQ | UFSK
[ :SOURce ] :RADIo [ :NADC ] :MODulation [ :TYPE ]?
```

This command sets the modulation type for the NADC personality.

***RST** **P4DQPSK**

Key Entry	BPSK	QPSK	IS-95 QPSK	Gray Coded QPSK	OQPSK			
	IS-95 OQPSK	$\pi/4$ DQPSK	8PSK	16PSK	D8PSK	MSK	2-Lvl FSK	
	4-Lvl FSK	8-Lvl FSK	16-Lvl FSK	C4FM	4QAM	16QAM	32QAM	
	64QAM	128QAM	256QAM	User I/Q	User FSK			

:REPeat

Supported E4438C with Option 402

```
[ :SOURce ] :RADio [ :NADC ] :REPeat SINGle | CONTInuous  
[ :SOURce ] :RADio [ :NADC ] :REPeat?
```

This command sets the rotation direction of the phase modulation vector.

SINGle This choice outputs one occurrence of the selected frame.

CONTInuous This choice outputs a continuous stream of the selected frame.

***RST** SING

Key Entry Frame Repeat Single Cont

:POLarity[:ALL]

Supported E4438C with Option 402

```
[ :SOURce ] :RADio [ :NADC ] :POLarity [ :ALL ] NORMal | INVerted  
[ :SOURce ] :RADio [ :NADC ] :POLarity [ :ALL ]?
```

This command sets the rotation direction of the phase modulation vector.

NORMal This choice selects normal phase polarity.

INVerted This choice inverts the internal Q signal.

***RST** NORM

Key Entry Polarity Normal Invert

:SECOndary:RECall

Supported E4438C with Option 402

```
[ :SOURce ] :RADio [ :NADC ] :SECOndary:RECall
```

This command recalls the secondary frame configuration, overwriting the current state.

Key Entry Recall Secondary Frame State

Remarks To save a secondary frame state, refer to “[:SECOndary:SAVE]” on page 889.

A secondary frame is not active until the secondary state is enabled. To activate a secondary frame, refer to “[:SECOndary[:STATe]]” on page 889.

:SECondary:SAVE

Supported E4438C with Option 402

[:SOURCE] :RADio [:NADC] :SECondary :SAVE

This command saves the current frame configuration as the secondary frame with the filename NADC_SECONDARY_FRAME.

Key Entry Save Secondary Frame State

Remarks To recall the secondary frame (saved in non-volatile signal generator memory), refer to “[:SECondary:RECall](#)” on page 888.

:SECondary:TRIGger[:SOURCE]

Supported E4438C with Option 402

[:SOURCE] :RADio [:NADC] :SECondary :TRIGger [:SOURCE] KEY | EXT | BUS
 [:SOURCE] :RADio [:NADC] :SECondary :TRIGger [:SOURCE] ?

This command selects the type of triggering for the secondary frame.

KEY This choice enables triggering by pressing the front panel **Trigger** hardkey.

EXT This choice enables triggering using an externally applied signal at the PATT TRIG IN rear panel connector or the PATT TRIG IN 2 pin on the rear panel AUX I/O connector. To select the appropriate connector, refer to “[:TRIGger\[:SOURCE\]:EXTernal\[:SOURCE\]](#)” on page 903.

BUS This choice enables GPIB triggering using the *TRG or GET command or LAN and RS-232 triggering using the *TRG command.

Key Entry Trigger Key Ext Bus

:SECondary[:STATe]

Supported E4438C with Option 402

[:SOURCE] :RADio [:NADC] :SECondary [:STATe] ON | OFF | 1 | 0
 [:SOURCE] :RADio [:NADC] :SECondary [:STATe] ?

This command enables or disables the ability to switch to the secondary frame.

***RST** 0

Key Entry Secondary Frame Off On

Receiver Test Digital Commands (continued)
NADC Subsystem—Option 402 ([:SOURCE]:RADIO[:NADC])

Remarks A frame must already be saved as the secondary frame in order to turn the secondary state function on.
To save a frame as the secondary frame, refer to “:SECONDARY:SAVE” on page 889.

:SLOT[1] | 2 | 3 | 4 | 5 | 6:DCUStom

Supported E4438C with Option 402

```
[ :SOURCE ] :RADIO [ :NADC ] :SLOT [ 1 ] | 2 | 3 | 4 | 5 | 6 :DCUStom  
PN9 | PN11 | PN15 | PN20 | PN23 | FIX4 | "<file name>" | EXT | P4 | P8 | P16 | P32 | P64  
[ :SOURCE ] :RADIO [ :NADC ] :SLOT [ 1 ] | 2 | 3 | 4 | 5 | 6 :DCUStom?
```

This command configures the data field for the selected downlink custom timeslot.

***RST** PN9

Key Entry	PN9	PN11	PN15	PN20	PN23	FIX4	User File	EXT
	4 1's & 4 0's	8 1's & 8 0's	16 1's & 16 0's	32 1's & 32 0's	64 1's & 64 0's			

Remarks Refer to “File Name Variables” on page 13 for information on the file name syntax.

:SLOT[1] | 2 | 3 | 4 | 5 | 6:DCUStom:FIX4

Supported E4438C with Option 402

```
[ :SOURCE ] :RADIO [ :NADC ] :SLOT [ 1 ] | 2 | 3 | 4 | 5 | 6 :DCUStom:FIX4 <val>  
[ :SOURCE ] :RADIO [ :NADC ] :SLOT [ 1 ] | 2 | 3 | 4 | 5 | 6 :DCUStom:FIX4?
```

This command sets the binary, 4-bit repeating sequence data pattern that is used in the selected downlink custom timeslot.

***RST** #B0000

Range #B0000–#B1111 or 0–15

Key Entry FIX4

Remarks FIX4 must already be defined as the data type.

:SLOT[1]|2|3|4|5|6:DTCHannel:CDLocator

Supported E4438C with Option 402

```
[ :SOURCE ]:RADIO[:NADC]:SLOT[1]|2|3|4|5|6:DTCHannel:  
CDLocator <bit_pattern>  
[:SOURCE]:RADIO[:NADC]:SLOT[1]|2|3|4|5|6:DTCHannel:CDLocator?
```

This command changes the 11-bit coded digital control channel locator (CDL) field.

***RST** #H000

Range #H0–#H7FF

Key Entry CDL

Remarks The preset hexadecimal value (when normal preset is selected) for CDL reflects the NADC protocol; however, you can enter a new value by using this command.

:SLOT[1]|2|3|4|5|6:DTCHannel:CDVCCode

Supported E4438C with Option 402

```
[ :SOURCE ]:RADIO[:NADC]:SLOT[1]|2|3|4|5|6:DTCHannel:  
CDVCCode <bit_pattern>  
[:SOURCE]:RADIO[:NADC]:SLOT[1]|2|3|4|5|6:DTCHannel:CDVCCode?
```

This command changes the 12-bit coded digital verification color code (CDVCC).

***RST** #H000

Range #H0–#HFFF

Key Entry CDVCC

Remarks The preset hexadecimal value (when normal preset is selected) for CDVCC reflects the NADC protocol; however, you can enter a new value by using this command.

:SLOT[1]|2|3|4|5|6:DTCHannel:SACChannel

Supported E4438C with Option 402

```
[ :SOURCE ]:RADIO[:NADC]:SLOT[1]|2|3|4|5|6:DTCHannel:  
SACChannel <bit_pattern>  
[:SOURCE]:RADIO[:NADC]:SLOT[1]|2|3|4|5|6:DTCHannel:SACChannel?
```

This command changes the 15-bit slow associated control channel.

***RST** #H000

Receiver Test Digital Commands (continued)
NADC Subsystem–Option 402 ([:SOURCE]:RADIO[:NADC])

Range	#H0–#HFFF
Key Entry	SACCH
Remarks	The preset hexadecimal value (when normal preset is selected) for SACCH reflects the value specified by the standard.

:SLOT[1] | 2 | 3 | 4 | 5 | 6:DTCHannel:SWORd

Supported	E4438C with Option 402
	[:SOURCE] :RADIO [:NADC] :SLOT [1] 2 3 4 5 6 :DTCHannel :SWORd <bit_pattern>
	[:SOURCE] :RADIO [:NADC] :SLOT [1] 2 3 4 5 6 :DTCHannel :SWORd?

This command sets the 28-bit synchronization word as the active function. This is used for slot synchronization, equalizer training, and timeslot identification.

*RST	#HA91DE4A
Range	#H0–#HFFFFFFF
Key Entry	SYNC

:SLOT[1] | 2 | 3 | 4 | 5 | 6:DTCHannel[:DATA]

Supported	E4438C with Option 402
	[:SOURCE] :RADIO [:NADC] :SLOT [1] 2 3 4 5 6 :DTCHannel [:DATA] PN9
	PN11 PN15 PN20 PN23 FIX4 "<file name>" EXT P4 P8 P16 P32 P64
	[:SOURCE] :RADIO [:NADC] :SLOT [1] 2 3 4 5 6 :DTCHannel [:DATA]?

This command sets a pseudo-random number sequence, 4-bit pattern, sequence of 1's and 0's, data from an external source, or a user file as the data pattern for the selected downlink traffic channel timeslot during framed transmission.

*RST	PN9
Key Entry	PN9 PN11 PN15 PN20 PN23 FIX4 User File EXT
	4 1's & 4 0's 8 1's & 8 0's 16 1's & 16 0's 32 1's & 32 0's
	64 1's & 64 0's

Remarks Refer to [“File Name Variables” on page 13](#) for information on the file name syntax.

:SLOT[1] | 2 | 3 | 4 | 5 | 6:DTCHannel[:DATA]FIX4

Supported E4438C with Option 402

```
[ :SOURce ] :RADio [ :NADC ] :SLOT [ 1 ] | 2 | 3 | 4 | 5 | 6 :DTCHannel [ :DATA ] :FIX4 <val>
[ :SOURce ] :RADio [ :NADC ] :SLOT [ 1 ] | 2 | 3 | 4 | 5 | 6 :DTCHannel [ :DATA ] :FIX4?
```

This command sets the binary, 4-bit repeating sequence data pattern that is used in the selected downlink traffic channel timeslot.

***RST** #B0000

Range #B0000–#B1111 or 0–15

Key Entry **FIX4**

Remarks FIX4 must already be defined as the data type.

:SLOT[1] | 2 | 3 | 4 | 5 | 6:POWER

Supported E4438C with Option 402

```
[ :SOURce ] :RADio [ :NADC ] :SLOT [ 1 ] | 2 | 3 | 4 | 5 | 6 :POWER MAIN|DELTA
[ :SOURce ] :RADio [ :NADC ] :SLOT [ 1 ] | 2 | 3 | 4 | 5 | 6 :POWER?
```

This command toggles the RF output power level function for the selected timeslot.

MAIN This choice specifies RF output as the main power level.

DELTA This choice specifies RF output as the alternative power level.

***RST** MAIN

Key Entry Timeslot Ampl Main Delta

:SLOT[1] | 2 | 3 | 4 | 5 | 6:STATE

Supported E4438C with Option 402

```
[ :SOURce ] :RADio [ :NADC ] :SLOT [ 1 ] | 2 | 3 | 4 | 5 | 6 :STATE ON|OFF|1|0
[ :SOURce ] :RADio [ :NADC ] :SLOT [ 1 ] | 2 | 3 | 4 | 5 | 6 :STATE?
```

This command enables or disables the operating state of the selected timeslot.

***RST** Timeslot 1: 1 Timeslots 2–6: 0

Key Entry Timeslot Off On

:SLOT[1] | 2 | 3 | 4 | 5 | 6:UCUStom

Supported E4438C with Option 402

```
[ :SOURce ] :RADio [ :NADC ] :SLOT [ 1 ] | 2 | 3 | 4 | 5 | 6 :UCUStom PN9 | PN11 | PN15 |
PN20 | PN23 | FIX4 | "<file name>" | EXT | P4 | P8 | P16 | P32 | P64
[ :SOURce ] :RADio [ :NADC ] :SLOT [ 1 ] | 2 | 3 | 4 | 5 | 6 :UCUStom?
```

This command configures the data field for the selected uplink custom timeslot.

***RST** PN9

Key Entry	PN9	PN11	PN15	PN20	PN23	FIX4	User File	EXT
	4 1's & 4 0's	8 1's & 8 0's	16 1's & 16 0's	32 1's & 32 0's	64 1's & 64 0's			

Remarks Refer to “File Name Variables” on page 13 for information on the file name syntax.

:SLOT[1] | 2 | 3 | 4 | 5 | 6:UCUStom:FIX4

Supported E4438C with Option 402

```
[ :SOURce ] :RADio [ :NADC ] :SLOT [ 1 ] | 2 | 3 | 4 | 5 | 6 :UCUStom:FIX4 <val>
[ :SOURce ] :RADio [ :NADC ] :SLOT [ 1 ] | 2 | 3 | 4 | 5 | 6 :UCUStom:FIX4?
```

This command sets the binary, 4-bit repeating sequence data pattern that is used in the selected uplink custom timeslot.

***RST** #B0000

Range #B0000–#B1111 or 0–15

Key Entry FIX4

Remarks FIX4 must already be defined as the data type.

:SLOT[1] | 2 | 3 | 4 | 5 | 6:UTCHannel:CDVCcode

Supported E4438C with Option 402

```
[ :SOURce ] :RADio [ :NADC ] :SLOT [ 1 ] | 2 | 3 | 4 | 5 | 6 :UTCHannel :
CDVCcode <bit_pattern>
[ :SOURce ] :RADio [ :NADC ] :SLOT [ 1 ] | 2 | 3 | 4 | 5 | 6 :UTCHannel :CDVCcode?
```

This command changes the 12-bit coded digital verification color code (CDVCC).

***RST** #H000

Range #H0–#HFFF

Key Entry CDVCC

Remarks The preset hexadecimal value (when normal preset is selected) for CDVCC reflects the NADC protocol, however you can enter a new value by using this command.

:SLOT[1] | 2 | 3 | 4 | 5 | 6:UTCHannel:SACChannel

Supported E4438C with Option 402

```
[ :SOURce ] :RADio [ :NADC ] :SLOT [ 1 ] | 2 | 3 | 4 | 5 | 6 :UTCHannel :SACChannel
<bit_pattern>
[ :SOURce ] :RADio [ :NADC ] :SLOT [ 1 ] | 2 | 3 | 4 | 5 | 6 :UTCHannel :SACChannel?
```

This command changes the 15-bit slow associated control channel.

***RST** #H000

Range #H0–#HFFF

Key Entry SACCH

Remarks The preset hexadecimal value (when normal preset is selected) for SACCH reflects the value specified by the standard.

:SLOT[1] | 2 | 3 | 4 | 5 | 6:UTCHannel:SWORd

Supported E4438C with Option 402

```
[ :SOURce ] :RADio [ :NADC ] :SLOT [ 1 ] | 2 | 3 | 4 | 5 | 6 :UTCHannel :SWORd <bit_pattern>
[ :SOURce ] :RADio [ :NADC ] :SLOT [ 1 ] | 2 | 3 | 4 | 5 | 6 :UTCHannel :SWORd?
```

This command sets the 28-bit synchronization word as the active function. This is used for slot synchronization, equalizer training, and timeslot identification.

***RST** #HA91DE4A

Range #H0–#HFFFFFFF

Key Entry SYNC

:SLOT[1] | 2 | 3 | 4 | 5 | 6:UTCHannel[:DATA]

Supported E4438C with Option 402

```
[ :SOURce ] :RADio [ :NADC ] :SLOT [ 1 ] | 2 | 3 | 4 | 5 | 6 :UTCHannel [ :DATA ] PN9 | PN15 |
FIX4 | "<file name>" | EXT | P4 | P8 | P16 | P32 | P64
[ :SOURce ] :RADio [ :NADC ] :SLOT [ 1 ] | 2 | 3 | 4 | 5 | 6 :UTCHannel [ :DATA ]?
```

Receiver Test Digital Commands (continued)
NADC Subsystem–Option 402 ([:SOURCE]:RADIO[:NADC])

This command sets a pseudo-random number sequence, 4-bit pattern, sequence of 1's and 0's, data from an external source, or a user file as the data pattern for the selected uplink traffic channel timeslot during framed transmission.

***RST** PN9

Key Entry PN9 PN11 PN15 PN20 PN23 FIX4 User File EXT
 4 1's & 4 0's 8 1's & 8 0's 16 1's & 16 0's 32 1's & 32 0's
 64 1's & 64 0's

Remarks Refer to “File Name Variables” on page 13 for information on the file name syntax.

:SLOT[1] | 2 | 3 | 4 | 5 | 6:UTCHannel[:DATA]:FIX4

Supported E4438C with Option 402

[:SOURCE] :RADIO [:NADC] :SLOT [1] | 2 | 3 | 4 | 5 | 6 :UTCHannel [:DATA] :FIX4 <val>
 [:SOURCE] :RADIO [:NADC] :SLOT [1] | 2 | 3 | 4 | 5 | 6 :UTCHannel [:DATA] :FIX4?

This command sets the binary, 4-bit repeating sequence data pattern that is used in the selected uplink traffic channel timeslot.

***RST** #B0000

Range #B0000–#B1111 or 0–15

Key Entry FIX4

Remarks FIX4 must already be defined as the data type.

:SLOT[1] | 2 | 3 | 4 | 5 | 6[:TYPE]

Supported E4438C with Option 402

[:SOURCE] :RADIO [:NADC] :SLOT [1] | 2 | 3 | 4 | 5 | 6 [:TYPE] UCUSom | DCUSom | UTCH |
 UTCH_ALL | DTCH | DTCH_ALL
 [:SOURCE] :RADIO [:NADC] :SLOT [1] | 2 | 3 | 4 | 5 | 6 [:TYPE] ?

This command sets the timeslot type for the selected timeslot.

***RST** Timeslot 1: UTCH Timeslots 2–6: UCUS

Key Entry Up Custom Down Custom Up TCH Up TCH All Down TCH
 Down TCH All

:SOUT

Supported E4438C with Option 402

```
[ :SOURce ] :RADIO [ :NADC ] :SOUT FRAME | SLOT | ALL
[ :SOURce ] :RADIO [ :NADC ] :SOUT?
```

This command sets the synchronization location (within the pattern of data) and the type of output at the EVENT 1 rear panel connector.

FRAME This choice outputs a 1-bit signal, synchronized to the bit selected by the synchronization output offset command, for a framed data pattern.

SLOT This choice outputs a 1-bit signal, synchronized to the bit selected by the synchronization output offset command, for a selected timeslot.

ALL This choice outputs a 1-bit signal, synchronized to the bit selected by the synchronization output offset command, for all active timeslots.

***RST** FRAME

Key Entry	Begin Frame	Begin Timeslot #	All Timeslots
------------------	--------------------	-------------------------	----------------------

:SOUT:OFFSet

Supported E4438C with Option 402

```
[ :SOURce ] :RADIO [ :NADC ] :SOUT:OFFSet <val>
[ :SOURce ] :RADIO [ :NADC ] :SOUT:OFFSet?
```

This command sets the offset value for the location of the output synchronization signal on the EVENT1 rear panel connector relative to the beginning of the framed data pattern or timeslot.

The variable <val> is expressed as a number of bits.

***RST** +0

Range -323 to 323

Key Entry **Sync Out Offset**

Remarks Negative values move the synchronization output signal earlier; positive values move it later.

To change the output of the EVENT1 rear panel connector to SLOT, refer to [“:SOUT” on page 897](#).

:SOUT:SLOT

Supported E4438C with Option 402

```
[ :SOURce ] :RADio [ :NADC ] :SOUT :SLOT <val>  
[ :SOURce ] :RADio [ :NADC ] :SOUT :SLOT?
```

This command selects the timeslot that will trigger a 1-bit output signal at the EVENT 1 rear panel connector.

***RST** +1

Range 1–3

Key Entry Begin Timeslot #

Remarks To change the output of the EVENT1 rear panel connector to SLOT, refer to “:SOUT” on page 897.

:SRATe

Supported E4438C with Option 402

```
[ :SOURce ] :RADio [ :NADC ] :SRATe <val>  
[ :SOURce ] :RADio [ :NADC ] :SRATe?
```

This command sets the transmission symbol rate. Symbol rate is the bit rate divided by the bits per symbol. A change in the symbol rate affects the bit rate. Refer to “:BRATe” on page 771 for information on bit rate.

The variable <val> is expressed in units of symbols per second (sps–Mps) and the maximum symbol rate depends on the filter. Refer to “:FILTer” on page 884 for minimum filter symbol width.

The filter may have to be truncated down to 32 or 16 symbols wide to achieve the highest symbol rate. The signal generator’s internal filters are not truncated below their minimum filter length and user-defined FIR filters are not truncated. If the filter cannot be truncated then the symbol rate is limited to the maximum rate of the narrowest filter size possible.

The relative timing of the modulated data, as well as the actual filter response is affected when the filter is truncated.

When the symbol rate changes, the ESG reconfigures the baseband generator. The time required to reconfigure the baseband generator is inversely proportional to the symbol rate: lower symbol rates require more time.

To change the modulation type, refer to “:MODulation[:TYPE]” on page 887.

***RST** +2.43000000E+004

Range	Modulation Type	Symbol Rate Range		
		<i>16 Symbol Wide Filter</i>	<i>32 Symbol Wide Filter</i>	<i>64 Symbol Wide Filter</i>
	BPSK, FSK2, MSK	1sps–50Msps	1sps–25Msps	1sps–12.5Msps
	C4FM, OQPSK, FSK4	2sps–25Msps	2sps–12.5Msps	2sps–6.25Msps
	OQPSKI95, QPSK			
	P4QPPSK, QPSKIS95			
	GRAYQPSK, QAM4			
	D8PSK, EDGE, FSK8, PSK8	3sps–16.666666666 Msps	3sps–8.333333333 Msps	3sps–4.166666666Msps
	FSK16, PSK16, QAM16	4sps–12.5Msps	4sps–6.25Msps	4sps–3.125Msps
	QAM32	5sps–10Msps	5sps–5Msps	5sps–2.5Msps
	QAM64	6sps–8.333333333 Msps	6sps–4.166666666 Msps	6sps–2.083333333 Msps
	QAM128	7sps–7.142857142 Msps	7sps–3.571428572 Msps	7sps–1.785714285 Msps
	QAM256	8sps–6.25Msps	8sps–3.125 Msps	8sps–1.5625 Msps

NOTE Using I/Q skew will half the minimum number of symbols for the selected filter.

Key Entry **Symbol Rate**

:TRIGger:TYPE

Supported E4438C with Option 402

[:SOURce] :RADio [:NADC] :TRIGger :TYPE CONTInuous | SINGle | GATE
 [:SOURce] :RADio [:NADC] :TRIGger :TYPE?

This command sets the trigger type.

CONTInuous	The framed data sequence repeats continuously; the sequence restarts every time the previous playback is completed. To customize continuous triggering, refer to “:TRIGger:TYPE:CONTInuous[:TYPE]” on page 900.		
SINGle	The framed data sequence plays once for every trigger received.		
GATE	An external trigger signal interrupts the playback while the gating signal is in the inactive state. Playback resumes when the external control signal returns to the active state. The active state can be set to high or low.		
*RST	CONT		
Key Entry	Continuous	Single	Gated

:TRIGger:TYPE:CONTInuous[:TYPE]

Supported E4438C with Option 402

```
[ :SOURce ] :RADio [ :NADC ] :TRIGger :TYPE :CONTInuous [ :TYPE ] FREE | TRIGger | RESet  

[ :SOURce ] :RADio [ :NADC ] :TRIGger :TYPE :CONTInuous [ :TYPE ] ?
```

This commands selects the waveform’s response to a trigger signal while using the continuous trigger mode.

For more information on triggering and to select the continuous trigger mode, see “:TRIGger:TYPE” on page 899.

The following list describes the waveform’s response to each of the command choices:

FREE	Turning the ARB format on immediately triggers the waveform. The waveform repeats until you turn the format off, select another trigger, or choose another waveform file.		
TRIGger	The waveform waits for a trigger before play begins. When the waveform receives the trigger, it plays continuously until you turn the format off, select another trigger, or choose another waveform file.		
RESet	The waveform waits for a trigger before play begins. When the waveform receives the trigger, it plays continuously. Subsequent triggers reset the waveform to the beginning. For a waveform sequence, this means to the beginning of the first segment in the sequence.		
*RST	FREE		
Key Entry	Free Run	Trigger & Run	Reset & Run

:TRIGger:TYPE:GATE:ACTive

Supported E4438C with Option 402

```
[ :SOURce ] :RADio [ :NADC ] :TRIGger :TYPE :GATE :ACTive LOW | HIGH  
[ :SOURce ] :RADio [ :NADC ] :TRIGger :TYPE :GATE :ACTive ?
```

This command selects the active state (gate polarity) of the gate while using the gating trigger mode.

The LOW and HIGH selections correspond to the low and high states of an external trigger signal. For example, when you select HIGH, the active state occurs during the high of the trigger signal. When the active state occurs, the ESG stops the waveform playback at the last played sample point, then restarts the playback at the next sample point when the inactive state occurs. For more information on triggering and to select gating as the trigger mode, see “:TRIGger:TYPE” on page 899.

The following list describes the signal generator’s external trigger signal gating behavior for the polarity selections:

LOW	The waveform playback stops when the trigger signal goes low (active state) and restarts when the trigger signal goes high (inactive state).
HIGH	The waveform playback stops when the trigger signal goes high (active state) and restarts when the trigger signal goes low (inactive state).
*RST	HIGH
Key Entry	Gate Active Low High

:TRIGger[:SOURce]

Supported E4438C with Option 402

```
[ :SOURce ] :RADio [ :NADC ] :TRIGger [ :SOURce ] KEY | EXT | BUS  
[ :SOURce ] :RADio [ :NADC ] :TRIGger [ :SOURce ] ?
```

This command sets the trigger source.

For more information on triggering, see “:TRIGger:TYPE” on page 899. The following list describes the command choices:

KEY	This choice enables manual triggering by pressing the front-panel Trigger hardkey.
EXT	An externally applied signal triggers the waveform. This is the only choice that works with gating. The following conditions affect an external trigger: <ul style="list-style-type: none">• The input connector selected for the trigger signal. You have a choice between the rear-panel PATTERN TRIG IN connector or the PATT TRIG IN 2 pin on the rear-panel AUXILIARY I/O connector. To make the connector selection, see “:TRIGger[:SOURce]:EXTernal[:SOURce]” on page 903.

For more information on the connectors and on connecting the cables, see the *E4428C/38C ESG Signal Generators User's Guide*.

- The trigger signal polarity:
 - gating mode, see “:TRIGger:TYPE:GATE:ACTive” on page 901
 - continuous and single modes, see “:TRIGger[:SOURce]:EXTernal:SLOPe” on page 903
- The time delay between when the ESG receives a trigger and when the waveform responds to the trigger. There are two parts to setting the delay:
 - setting the amount of delay, see “:TRIGger[:SOURce]:EXTernal:DELay” on page 902
 - turning the delay on, see “:TRIGger[:SOURce]:EXTernal:DELay:STATe” on page 903

BUS This choice enables triggering over the GPIB or LAN using the *TRG or GET commands or the AUXILIARY INTERFACE (RS-232) using the *TRG command.

***RST** KEY

Key Entry Trigger Key Ext Bus

:TRIGger[:SOURce]:EXTernal:DELay

Supported E4438C with Option 402

```
[ :SOURce ] :RADio [ :NADC ] :TRIGger [ :SOURce ] :EXTernal :DELay <val>
[ :SOURce ] :RADio [ :NADC ] :TRIGger [ :SOURce ] :EXTernal :DELay?
```

This command sets the number of bits to delay the ESG's response to an external trigger.

The bit delay is a delay between when the ESG receives the trigger and when it responds to the trigger. The delay uses the clocks of the bit-clock to time the delay. After the ESG receives the trigger and the set number of delay bits (clocks) occurs, the ESG transmits the data pattern.

The delay occurs after you enable the state. See “:TRIGger[:SOURce]:EXTernal:DELay:STATe” on page 903. You can set the number of bits either before or after enabling the state.

For more information on configuring an external trigger source and to select external as the trigger source, see “:TRIGger[:SOURce]” on page 901.

***RST** +0

Range 0–1048575

Key Entry Ext Delay Bits

:TRIGger[:SOURce]:EXTErnal:DELay:STATe

Supported E4438C with Option 402

```
[ :SOURce ] :RADio [ :NADC ] :TRIGger [ :SOURce ] :EXTErnal :DELay :STATe ON | OFF | 1 | 0  
[ :SOURce ] :RADio [ :NADC ] :TRIGger [ :SOURce ] :EXTErnal :DELay :STATe?
```

This command enables or disables the operating state of the external trigger delay function.

For setting the delay time, see “:TRIGger[:SOURce]:EXTErnal:DELay” on page 902, and for more information on configuring an external source, see “:TRIGger[:SOURce]” on page 901.

***RST** 0

Key Entry Ext Delay Off On

:TRIGger[:SOURce]:EXTErnal:SLOPe

Supported E4438C with Option 402

```
[ :SOURce ] :RADio [ :NADC ] :TRIGger [ :SOURce ] :EXTErnal :SLOPe POSitive | NEGative  
[ :SOURce ] :RADio [ :NADC ] :TRIGger [ :SOURce ] :EXTErnal :SLOPe?
```

This command sets the polarity for an external trigger signal while using the continuous, single triggering mode. To set the polarity for gating, see “:TRIGger:TYPE:GATE:ACTive” on page 901.

The POSitive and NEGative selections correspond to the high (positive) and low (negative) states of the external trigger signal. For example, when you select POSitive, the waveform responds (plays) during the high state of the trigger signal. When the ESGESG receives multiple trigger occurrences when only one is required, the signal generator uses the first trigger and ignores the rest.

For more information on configuring an external trigger source and to select external as the trigger source, see “:TRIGger[:SOURce]” on page 901.

***RST** POS

Key Entry Ext Polarity Neg Pos

:TRIGger[:SOURce]:EXTErnal[:SOURce]

Supported E4438C with Option 402

```
[ :SOURce ] :RADio [ :NADC ] :TRIGger [ :SOURce ] :EXTErnal [ :SOURce ] EPT1 | EJPT2 |  
EPTRIGGER1 | EPTRIGGER2  
[ :SOURce ] :RADio [ :NADC ] :TRIGger [ :SOURce ] :EXTErnal [ :SOURce ]?
```

This command selects which PATTERN TRIG IN connection the ESG uses to accept an externally applied trigger signal when external is the trigger source selection.

Receiver Test Digital Commands (continued)
NADC Subsystem–Option 402 ([:SOURce]:RADio[:NADC])

For more information on configuring an external trigger source and to select external as the trigger source, see “:TRIGger[:SOURce]” on page 901. For more information on the rear-panel connectors, see the *E4428C/38C ESG Signal Generators User’s Guide*.

The following list describes the command choices:

EPT1	This choice is synonymous with EPTRIGGER1 and selects the PATTERN TRIG IN rear-panel connector.
EPT2	This choice is synonymous with EPTRIGGER2 and selects the PATT TRIG IN 2 pin on the rear-panel AUXILIARY I/O connector.
EPTRIGGER1	This choice is synonymous with EPT1 and selects the PATTERN TRIG IN rear-panel connector.
EPTRIGGER2	This choice is synonymous with EPT2 and selects the PATT TRIG IN 2 pin on the rear-panel AUXILIARY I/O connector.
*RST	EPT1
Key Entry	Patt Trig In 1 Patt Trig In 2

[:STATe]

Supported E4438C with Option 402
[:SOURce]:RADio[:NADC][:STATe] ON|OFF|1|0
[:SOURce]:RADio[:NADC][:STATe]?

This command enables or disables the NADC modulation format.

*RST	OFF
Key Entry	NADC Off On
Remarks	Although the NADC modulation is enabled with this command, the RF carrier is not modulated unless you also activate the front panel Mod On/Off hardkey.

PDC Subsystem–Option 402 ([:SOURce]:RADio:PDC)

:ALPha

Supported E4438C with Option 402

```
[ :SOURce ] :RADio :PDC :ALPha <val>
[ :SOURce ] :RADio :PDC :ALPha ?
```

This command changes the Nyquist or root Nyquist filter’s alpha value.

The filter alpha value can be set to a minimum level (0), a maximum level (1), or in between by using fractional numeric values (0.001–0.999).

***RST** +5.00000000E–001

Range 0.000–1.000

Key Entry Filter Alpha

Remarks To change the current filter type, refer to “:FILTer” on page 917.

:BBCLock

Supported E4438C with Option 402

```
[ :SOURce ] :RADio :PDC :BBCLock INT[1] | EXT[1]
[ :SOURce ] :RADio :PDC :BBCLock ?
```

This command toggles the data (bit) clock input to the baseband generator board to either internal or external. This command is independent in each mode and works for both non-burst (continuous) and burst modes. This allows for a matrix of selections between burst/non-burst, internal/external data generation, internal/external data clock, and external bit/symbol data clock.

INT[1] This choice selects the signal generator internal data clock.

EXT[1] This choice selects an external data clock input.

***RST** INT

Key Entry Ext Data Clock Ext Int

Remarks A data clock or continuous symbol sync input must be supplied when external mode is used.

:BBT

Supported E4438C with Option 402

[:SOURCE]:RADio:PDC:BBT <val>

[:SOURCE]:RADio:PDC:BBT?

This command changes the bandwidth-multiplied-by-bit-time (BbT) filter parameter.

The filter BbT value can be set to the maximum level (1) or in between the minimum level (0.100) and maximum level by using fractional numeric values (0.101–0.999).

***RST** +5.00000000E–001

Range 0.100–1.000

Key Entry Filter BbT

Remarks This command is effective only after choosing a Gaussian filter. It does not have an effect on other types of filters.

To change the current filter type, refer to “:FILTer” on page 917.

:BRATe

Supported E4438C with Option 402

[:SOURCE]:RADio:PDC:BRATe <val>

[:SOURCE]:RADio:PDC:BRATe?

This command sets the bit rate in bits per second (bps–Mbps). The maximum bit rate is dependent on the modulation type and filter as shown in the following tables

The IQ digital data stream is shaped by a FIR filter. The filter length and associated latency and frequency response are dependent on the bit rate as shown in the following tables. The signal generator selects a filter length.

For higher bit rates, the FIR filter length may be truncated (if the minimum filter size allows it) which will impact the relative timing of the modulated data, as well as the actual filter response (see the symbol rate command “:SRATe” on page 962). Refer to “:FILTer” on page 917 for information on filter symbol widths.

To change the modulation type, refer to “:MODulation[:TYPE]” on page 920.

When the bit rate is changed, the ESG reconfigures the baseband generator. The time required to reconfigure the baseband generator is inversely proportional to the bit rate: lower bit rates require more time.

***RST** +4.20000000E+004

Range	Modulation Type	Bit Rate Range		
		16 Symbol Wide Filter	32 Symbol Wide Filter	64 Symbol Wide Filter
	BPSK, FSK2, MSK	1bps–50Mbps	1bps–25Mbps	1bps–12.5Mbps
	C4FM, OQPSK, FSK4	2bps–50Mbps	2bps–25Mbps	2bps–12.5Mbps
	OQPSKI95, QPSK			
	P4QPPSK, QPSKIS95			
	GRAYQPSK, QAM4			
	D8PSK, EDGE, FSK8, PSK8	3bps–50Mbps	3bps–25Mbps	3bps–12.5Mbps
	FSK16, PSK16, QAM16	4bps–50Mbps	4bps–25Mbps	4bps–12.5Mbps
	QAM32	5bps–50Mbps	5bps–25Mbps	5bps–12.5Mbps
	QAM64	6bps–50Mbps	6bps–25Mbps	6bps–12.5Mbps
	QAM128	7bps–50Mbps	7bps–25Mbps	7bps–12.5Mbps
	QAM256	8bps–50Mbps	8bps–25Mbps	8bps–12.5Mbps

Key Entry **Symbol Rate**

:BURSt:PN9

Supported E4438C with Option 402

[:SOURce] :RADio :PDC :BURSt :PN9 NORMAl | QUICk

[:SOURce] :RADio :PDC :BURSt :PN9?

This command controls the software PN9 generation.

NORMAl This choice produces a maximum length PN9 sequence.

QUICk This choice produces a truncated PN9 sequence.

***RST** NORM

Key Entry **PN9 Mode Normal Quick**

Remarks Use Normal mode for bit-error-rate tests where a maximum length PN9 sequence is required.

:BURSt:SHAPe:FALL:DELay

Supported E4438C with Option 402

[:SOURce] :RADio:PDC: BURSt :SHAPe :FALL :DELay <val>

[:SOURce] :RADio:PDC: BURSt :SHAPe :FALL :DELay?

This command sets the period of time that the start of the burst fall is delayed.

The variable <val> is expressed in bits. The minimum and maximum values depend upon modulation type and symbol rate.

***RST** +0.00000000E+000

Range -22.3750 to 99

Key Entry Fall Delay

Remarks The setting enabled by this command is not affected by signal generator power-on, preset, or *RST.

To change the modulation type, refer to “:MODulation[:TYPE]” on page 920.

Refer to “:SRATe” on page 962 for a list of minimum and maximum symbol rate values.

“:BURSt:SHAPe:FDELay” on page 909 performs the same function. In compliance with the SCPI standard, both commands are listed.

For concept information on burst shaping, refer to the *E4428C/38C ESG Signal Generators User’s Guide*.

:BURSt:SHAPe:FALL:TIME

Supported E4438C with Option 402

[:SOURce] :RADio:PDC: BURSt :SHAPe :FALL :TIME <val>

[:SOURce] :RADio:PDC: BURSt :SHAPe :FALL :TIME?

This command sets the period of time where the burst decreases from full power to minimum power.

The variable <val> is expressed in bits. The minimum and maximum values depend upon modulation type and symbol rate.

***RST** +1.00000000E+001

Range 0.1250–255.8750

Key Entry Fall Time

Remarks The setting enabled by this command is not affected by signal generator power-on, preset, or *RST.

To change the modulation type, refer to “:MODulation[:TYPE]” on page 920. Refer to “:SRATE” on page 962 for a list of minimum and maximum symbol rate values.

“:BURSt:SHAPe:FTIME” on page 910 performs the same function. In compliance with the SCPI standard, both commands are listed.

For concept information on burst shaping, refer to the *E4428C/38C ESG Signal Generators User’s Guide*.

:BURSt:SHAPe:FDElay

Supported E4438C with Option 402

[:SOURce] :RADio :PDC :BURSt :SHAPe :FDElay <val>
[:SOURce] :RADio :PDC :BURSt :SHAPe :FDElay?

This command sets the period of time that the start of the burst fall is delayed.

The variable <val> is expressed in bits. The minimum and maximum values depend upon modulation type and symbol rate.

***RST** +0.00000000E+000

Range –22.3750 to 99

Key Entry Fall Delay

Remarks The setting enabled by this command is not affected by signal generator power-on, preset, or *RST.

To change the modulation type, refer to “:MODulation[:TYPE]” on page 920. Refer to “:SRATE” on page 962 for a list of minimum and maximum symbol rate values.

“:BURSt:SHAPe:FALL:DElay” on page 908 performs the same function. In compliance with the SCPI standard, both commands are listed.

For concept information on burst shaping, refer to the *E4428C/38C ESG Signal Generators User’s Guide*.

:BURSt:SHAPe:FTIME

Supported E4438C with Option 402

[:SOURCE] :RADio:PDC: BURSt: SHAPe: FTIME <val>

[:SOURCE] :RADio:PDC: BURSt: SHAPe: FTIME?

This command sets the period of time where the burst decreases from full power to minimum power.

The variable <val> is expressed in bits. The minimum and maximum values depend upon modulation type and symbol rate.

***RST** +0.00000000E+000

Range 0.1250–255.8750

Key Entry Fall Time

Remarks The setting enabled by this command is not affected by signal generator power-on, preset, or *RST.

To change the modulation type, refer to “:MODulation[:TYPE]” on page 920.

Refer to “:SRATE” on page 962 for a list of minimum and maximum symbol rate values.

“:BURSt:SHAPe:FALL:TIME” on page 908 performs the same function. In compliance with the SCPI standard, both commands are listed.

For concept information on burst shaping, refer to the *E4428C/38C ESG Signal Generators User’s Guide*.

:BURSt:SHAPe:RDElay

Supported E4438C with Option 402

[:SOURCE] :RADio:PDC: BURSt: SHAPe: RDElay <val>

[:SOURCE] :RADio:PDC: BURSt: SHAPe: RDElay?

This command sets the period of time that the start of the burst rise is delayed.

The variable <val> is expressed in bits. The minimum and maximum values depend upon modulation type and symbol rate.

***RST** +0.00000000E+000

Range –18.3750 to 99

Key Entry Rise Delay

Remarks The setting enabled by this command is not affected by signal generator power-on, preset, or *RST.

To change the modulation type, refer to “:MODulation[:TYPE]” on page 920. Refer to “:SRATe” on page 962 for a list of minimum and maximum symbol rate values.

“:BURSt:SHAPe:RISE:DELay” on page 911 performs the same function. In compliance with the SCPI standard, both commands are listed.

For concept information on burst shaping, refer to the *E4428C/38C ESG Signal Generators User’s Guide*.

:BURSt:SHAPe:RISE:DELay

Supported E4438C with Option 402

```
[ :SOURce ] :RADio:PDC: BURSt: SHAPe:RISE: DELay <val>
[ :SOURce ] :RADio:PDC: BURSt: SHAPe:RISE: DELay?
```

This command sets the period of time that the start of the burst rise is delayed.

The variable <val> is expressed in bits. The minimum and maximum values depend upon modulation type and symbol rate.

***RST** +0.00000000E+000

Range –18.3750 to 99

Key Entry Rise Delay

Remarks The setting enabled by this command is not affected by signal generator power-on, preset, or *RST.

To change the modulation type, refer to “:MODulation[:TYPE]” on page 920. Refer to “:SRATe” on page 962 for a list of minimum and maximum symbol rate values.

“:BURSt:SHAPe:RDELay” on page 910 performs the same function. In compliance with the SCPI standard, both commands are listed.

For concept information on burst shaping, refer to the *E4428C/38C ESG Signal Generators User’s Guide*.

:BURSt:SHAPe:RISE:TIME

Supported E4438C with Option 402

[:SOURce] :RADio:PDC: BURSt: SHAPe:RISE:TIME <val>

[:SOURce] :RADio:PDC: BURSt: SHAPe:RISE:TIME?

This command sets the period of time where the burst increases from a minimum power to full power.

The variable <val> is expressed in bits. The minimum and maximum values depend upon modulation type and symbol rate.

***RST** +1.00000000E+001

Range 0.1250–22.5000

Key Entry Rise Time

Remarks The setting enabled by this command is not affected by signal generator power-on, preset, or *RST.

To change the modulation type, refer to “:MODulation[:TYPE]” on page 920.

Refer to “:SRATe” on page 962 for a list of minimum and maximum symbol rate values.

“:BURSt:SHAPe:RTIME” on page 912 performs the same function. In compliance with the SCPI standard, both commands are listed.

For concept information on burst shaping, refer to the *E4428C/38C ESG Signal Generators User’s Guide*.

:BURSt:SHAPe:RTIME

Supported E4438C with Option 402

[:SOURce] :RADio:PDC: BURSt: SHAPe:RTIME <val>

[:SOURce] :RADio:PDC: BURSt: SHAPe:RTIME?

This command sets the period of time where the burst increases from a minimum power to full power.

The variable <val> is expressed in bits. The minimum and maximum values depend upon modulation type and symbol rate.

***RST** +1.00000000E+001

Range 0.1250–22.5000

Key Entry Rise Time

Remarks The setting enabled by this command is not affected by signal generator power-on, preset, or *RST.

To change the modulation type, refer to “:MODulation[:TYPE]” on page 920. Refer to “:SRATe” on page 962 for a list of minimum and maximum symbol rate values.

“:BURSt:SHAPe:RISE:TIME” on page 912 performs the same function. In compliance with the SCPI standard, both commands are listed.

Refer to the *E4428C/38C ESG Signal Generators User’s Guide* for concept information.

:BURSt:SHAPe[:TYPE]

Supported E4438C with Option 402

```
[ :SOURce ] :RADio :PDC :BURSt :SHAPe [ :TYPE ] SINE | "<file name>"
[ :SOURce ] :RADio :PDC :BURSt :SHAPe [ :TYPE ] ?
```

This command specifies the burst shape as either SINE or a user-defined file ("<file name>").

SINE This choice selects a state that is defined by the burst rise and fall *RST values, as the default burst shape type.

"<file name>" This choice selects a user designated file from signal generator memory.

***RST** SINE

Key Entry Sine User File

:BURSt[:STATe]

Supported E4438C with Option 402

```
[ :SOURce ] :RADio :PDC :BURSt [ :STATe ] ON | OFF | 1 | 0
[ :SOURce ] :RADio :PDC :BURSt [ :STATe ] ?
```

This command enables or disables the burst function.

ON (1) This choice enables the transmission of framed data. If all timeslots which are switched on are up traffic channels or custom, you will be bursting the timeslots that are on; there will be no RF carrier during the off timeslots.

If you have switched on any timeslot that you have configured as a down traffic channel, the RF carrier is not switched off between any of the timeslots. The off timeslots are transmitted as a continuous series of ones for the time period of the off timeslots.

Receiver Test Digital Commands (continued)
PDC Subsystem–Option 402 ([:SOURCE]:RADio:PDC)

OFF (0) This choice enables the transmission of unframed data.
***RST** 0
Key Entry **Data Format Pattern Framed**

:CHANnel

Supported E4438C with Option 402
[:SOURCE]:RADio:PDC:CHANnel EVM|ACP
[:SOURCE]:RADio:PDC:CHANnel?

This command optimizes the Nyquist and root Nyquist filters to minimize error vector magnitude (EVM) or to minimize adjacent channel power (ACP).

EVM This choice provides the most ideal passband.
ACP This choice improves stopband rejection.
***RST** EVM

Key Entry **Optimize FIR For EVM ACP**

Remarks To change the current filter type, refer to “[:FILTer](#)” on page 917.

:DATA

Supported E4438C with Option 402
[:SOURCE]:RADio:PDC:DATA PN9|PN11|PN15|PN20|PN23|FIX4|"<file name>"|
EXT|P4|P8|P16|P32|P64|PRAM
[:SOURCE]:RADio:PDC:DATA?

This command sets the data pattern type (pseudo-random number sequence, 4-bit pattern, sequence of 1’s and 0’s, data from an external source, or a user file) for unframed data transmission.

***RST** PN23
Key Entry **PN9 PN11 PN15 PN20 PN23 FIX4 User File Ext**
4 1’s & 4 0’s 8 1’s & 8 0’s 16 1’s & 16 0’s 32 1’s & 32 0’s
64 1’s & 64 0’s PRAM File

Remarks Refer to “[File Name Variables](#)” on page 13 for information on the file name syntax.

:DATA:PRAM

Supported E4438C with Option 402

```
[ :SOURce ]:RADio:PDC:DATA:PRAM "<file_name>"
```

```
[ :SOURce ]:RADio:PDC:DATA:PRAM?
```

This command selects a pattern RAM (PRAM) file as the pattern data type for the PDC (Personal Digital Cellular) format.

"<file_name>" This variable designates the PRAM file in WFM1. Refer to [“File Name Variables” on page 13](#) for information on the file name syntax.

Key Entry PRAM File

Remarks Selecting this data source forces the burst source to INTERNAL to allow framing control.

The PRAM file must reside in the ESG’s volatile memory (WFM1) in order to be accessed by this command. See [“:DATA:PRAM:FILE:BLOCK” on page 112](#).

:DATA:FIX4

Supported E4438C with Option 402

```
[ :SOURce ]:RADio:PDC:DATA:FIX4 <val>
```

```
[ :SOURce ]:RADio:PDC:DATA:FIX4?
```

This command sets the binary, 4-bit repeating sequence data pattern for unframed transmission according to the protocols (modulation type, symbol rate, filter, and burst shape) selected for the PDC format.

***RST** #B0000

Range #B0000–#B1111 or 0–15

Key Entry FIX4

Remarks FIX4 must already be defined as the data type.

:DEFault

Supported E4438C with Option 402

```
[ :SOURce ]:RADio:PDC:DEFault
```

This command returns all of the PDC modulation format parameters to factory settings. It does not affect any other signal generator parameters.

Key Entry Restore PDC Factory Default

:EDATa:DELay

Supported E4438C with Option 402

[:SOURCE] :RADio:PDC:EDATa:DELay?

This query returns the amount of delay (in symbols) from the external data input to the beginning of the symbol on the I OUT and Q OUT rear panel connectors and the front panel RF OUTPUT connector.

Remarks When the format is turned off, the delay value is unchanged; the query will return the same delay value if the format is on or off.

:EDCLock

Supported E4438C with Option 402

[:SOURCE] :RADio:PDC:EDCLock SYMBOL | NORMal

[:SOURCE] :RADio:PDC:EDCLock?

This command sets the external data clock use.

SYMBOL This choice specifies that a continuous symbol clock signal must be provided to the SYMBOL SYNC input connector.

NORMal This choice specifies that the DATA CLOCK input connector requires a bit clock. The SYMBOL SYNC input connector requires a (one-shot or continuous) symbol sync signal.

***RST** NORM

Key Entry Ext Data Clock Normal Symbol

Remarks Both choices have no effect in internal clock mode. Refer to “:BBCLock” on [page 905](#) to select EXT as the data clock type.

:EREFerence

Supported E4438C with Option 402

[:SOURCE] :RADio:PDC:EREFerence INT | EXT

[:SOURCE] :RADio:PDC:EREFerence?

This command selects either an internal or external bit-clock reference for the data generator.

***RST** INT

Key Entry BBG Ref Ext Int

Remarks If the EXT choice is selected, the external source’s frequency value must be applied to the BASEBAND GEN REF IN rear panel connector. The external reference and external data clock are not applicable at the same time. If both are selected, then the external reference takes precedence.

Refer to, “:EREFerence:VALue” on page 917 to enter the external reference frequency setting.

:EREFerence:VALue

Supported E4438C with Option 402

```
[ :SOURCE ] :RADIo:PDC:EREFerence:VALue <val>
[ :SOURCE ] :RADIo:PDC:EREFerence:VALue?
```

This command sets the expected bit-clock reference frequency value for an externally applied reference signal.

The variable <val> is expressed in units of hertz (Hz–MHz).

***RST** +1.30000000E+007

Range 2.5E5–1E8

Key Entry Ext BBG Ref Freq

Remarks The value specified by this command is effective only when you are using an external reference applied to the BASEBAND GEN REF IN rear panel connector.

Refer to “:EREFerence” on page 916 to select EXT (external source) as the reference for the bit-clock.

:FILTer

Supported E4438C with Option 402

```
[ :SOURCE ] :RADIo:PDC:FILTer RNYQuist|NYQuist|GAUSSian|RECTangle|
IS95|IS95_EQ|IS95_MOD|IS95_MOD_EQ|AC4Fm|UGGaussian|"<user FIR>"
[ :SOURCE ] :RADIo:PDC:FILTer?
```

This command selects the pre-modulation filter type.

IS95 This choice selects a filter that meets the criteria of the IS-95 standard.

IS95_EQ This choice selects a filter which is a combination of the IS-95 filter (above) and the equalizer filter described in the IS-95 standard. This filter is only used for IS-95 baseband filtering.

IS95_MOD This choice selects a filter that meets the criteria of the IS-95 error function (for improved adjacent channel performance) with lower passband rejection than the

Receiver Test Digital Commands (continued)
PDC Subsystem–Option 402 ([:SOURce]:RADio:PDC)

	filter specified in the IS-95 standard.
IS95_MOD_EQ	This choice selects a filter which is a combination of the equalizer filter described in the IS-95 standard and a filter that meets the criteria of the IS-95 error function (for improved adjacent channel performance), with lower passband rejection.
AC4Fm	Selects a predefined Association of Public Safety Communications Officials (APCO) specified compatible 4-level frequency modulation (C4FM) filter.
UGGaussian	This choice selects a backwards compatible GSM Gaussian filter (Gaussian filter with a fixed BbT value of 0.300) for the ESG E44xxB Option UN3 or UN4.
"<user FIR>"	This variable is any filter file that you have stored into memory.
*RST	RYNQ
Key Entry	Root Nyquist Nyquist Gaussian Rectangle IS-95 IS-95 w/EQ IS-95 Mod IS-95 Mod w/EQ APCO 25 C4FM UN3/4 GSM Gaussian User FIR
Remarks	Refer to “File Name Variables” on page 13 for information on the file name syntax.

:FRATe

Supported E4438C with Option 402
[:SOURce]:RADio:PDC:FRATe FULL|HALF
[:SOURce]:RADio:PDC:FRATe?

This command toggles between a full- or half-rate traffic channel.

FULL	Selects two equally spaced timeslots of the frame. Since there are six timeslots per frame, timeslots 1, 2, and 3 are paired with timeslots 4, 5, and 6, respectively.
HALF	Selects one timeslot of the frame (6 individual timeslots per frame).
*RST	FULL
Key Entry	Rate Full Half

:IQ:SCALE

Supported E4438C with Option 402
[:SOURce]:RADio:PDC:IQ:SCALE <val>
[:SOURce]:RADio:PDC:IQ:SCALE?

This command sets the amplitude of the I/Q outputs for better adjacent channel power (ACP); lower scaling values equate to better ACP.

The variable <val> is expressed in units of percent.

*RST	+100
Range	1–200
Key Entry	I/Q Scaling
Remarks	This command has no effect with MSK or FSK modulation.

:MODulation:FSK[:DEViation]

Supported E4438C with Option 402

```
[ :SOURCE ] :RADio:PDC:MODulation:FSK[ :DEViation ] <val>  
[ :SOURCE ] :RADio:PDC:MODulation:FSK[ :DEViation ] ?
```

This command sets the symmetric FSK frequency deviation value.

The variable <val> is expressed in units of Hertz and the maximum range value equals the current symbol rate value multiplied by four, limited to 20 MHz.

***RST** +4.00000000E+002

Range 0–2E7

Key Entry Freq Dev

Remarks To change the modulation type, refer to “:MODulation[:TYPE]” on page 920.
Refer to “:SRATe” on page 962 for minimum and maximum symbol rate values.
To set an asymmetric FSK deviation value, refer to the *E4428C/38C ESG Signal Generators User’s Guide* for more information.

:MODulation:MSK[:PHASe]

Supported E4438C with Option 402

```
[ :SOURCE ] :RADio:PDC:MODulation:MSK[ :PHASe ] <val>  
[ :SOURCE ] :RADio:PDC:MODulation:MSK[ :PHASe ] ?
```

This command sets the MSK phase deviation value.

The variable <val> is expressed in units of degrees.

***RST** +9.00000000E+001

Range 0–100

Key Entry Phase Dev

:MODulation:UFSK

Supported E4438C with Option 402

```
[ :SOURCE ]:RADio:PDC:MODulation:UFSK "<file name>"
```

```
[ :SOURCE ]:RADio:PDC:MODulation:UFSK?
```

This command selects a user-defined FSK file from the signal generator memory.

Key Entry User FSK

Remarks The user-defined FSK file is held in signal generator memory until the command that selects user FSK as the modulation type is sent. Refer to [“:MODulation\[:TYPE\]” on page 920](#) to change the current modulation type.

Refer to [“File Name Variables” on page 13](#) for information on the file name syntax.

:MODulation:UIQ

Supported E4438C with Option 402

```
[ :SOURCE ]:RADio:PDC:MODulation:UIQ "<file name>"
```

```
[ :SOURCE ]:RADio:PDC:MODulation:UIQ?
```

This command selects a user-defined I/Q file from the signal generator memory.

Key Entry User I/Q

Remarks The user-defined I/Q file is held in signal generator memory until the command that selects user I/Q as the modulation type is sent. Refer to [“:MODulation\[:TYPE\]” on page 920](#) to change the current modulation type.

Refer to [“File Name Variables” on page 13](#) for information on the file name syntax.

:MODulation[:TYPE]

Supported E4438C with Option 402

```
[ :SOURCE ]:RADio:PDC:MODulation[ :TYPE ] BPSK | QPSK | IS95QPSK |  
GRAYQPSK | OQPSK | IS95OQPSK | P4DQPSK | PSK8 | PSK16 | D8PSK | MSK |  
FSK2 | FSK4 | FSK8 | FSK16 | C4FM | QAM4 | QAM16 | QAM32 | QAM64 | QAM128 | QAM256 | UIQ | UFSK  
[ :SOURCE ]:RADio:PDC:MODulation[ :TYPE ]?
```

This command sets the modulation type for the PDC personality.

*RST	P4DQPSK							
Key Entry	BPSK	QPSK	IS-95 QPSK	Gray Coded QPSK		OQPSK		
	IS-95 OQPSK	$\pi/4$ DQPSK	8PSK	16PSK	D8PSK	MSK	2-Lvl FSK	
	4-Lvl FSK	8-Lvl FSK	16-Lvl FSK	C4FM	4QAM	16QAM	32QAM	
	64QAM	128QAM	256QAM	User I/Q	User FSK			

:POLarity[:ALL]

Supported E4438C with Option 402

[:SOURCE] :RADio:PDC:POLarity[:ALL] NORMal | INVerted
[:SOURCE] :RADio:PDC:POLarity[:ALL] ?

This command sets the rotation direction for of the phase modulation vector.

NORMal This choice selects normal phase polarity.

INVerted This choice inverts the internal Q signal.

***RST** NORM

Key Entry Phase Polarity Normal Invert

:SECondary:RECall

Supported E4438C with Option 402

[:SOURCE] :RADio:PDC:SECondary:RECall

This command recalls the secondary frame configuration, overwriting the current state.

Key Entry Recall Secondary Frame State

Remarks To save a secondary frame state, refer to “:SECondary:SAVE” on page 921.

A secondary frame is not active until the secondary state is enabled. To activate a secondary frame, refer to “:SECondary[:STATE]” on page 922.

:SECondary:SAVE

Supported E4438C with Option 402

[:SOURCE] :RADio:PDC:SECondary:SAVE

This command saves the current frame configuration as the secondary frame with the filename PDC_SECONDARY_FRAME.

Key Entry Save Secondary Frame State

Remarks To recall the secondary frame (saved in non-volatile signal generator memory), refer to “:SECOndary:SAVE” on page 921.

:SECOndary:TRIGger[:SOURce]

Supported E4438C with Option 402

```
[ :SOURce ] :RADio:PDC:SECOndary:TRIGger [ :SOURce ] KEY|EXT|BUS
[ :SOURce ] :RADio:PDC:SECOndary:TRIGger [ :SOURce ] ?
```

This command selects the type of triggering for the secondary frame.

- KEY** This choice enables triggering by pressing the front panel **Trigger** hardkey.
- EXT** This choice enables triggering using an externally applied signal at the PATT TRIG IN rear panel connector or the PATT TRIG IN 2 pin on the rear panel AUX I/O connector. To select the appropriate connector, refer to “:TRIGger[:SOURce]:EXTErnal[:SOURce]” on page 937.
- BUS** This choice enables GPIB triggering using the *TRG or GET command or LAN and RS-232 triggering using the *TRG command.

Key Entry Trigger Key Ext Bus

:SECOndary[:STATe]

Supported E4438C with Option 402

```
[ :SOURce ] :RADio:PDC:SECOndary [ :STATe ] ON|OFF|1|0
[ :SOURce ] :RADio:PDC:SECOndary [ :STATe ] ?
```

This command enables or disables the ability to switch to the secondary frame.

***RST** 0

Key Entry Secondary Frame Off On

Remarks A frame must already be saved as the secondary frame in order to turn the secondary state function on.

 To save a frame as the secondary frame, refer to “:SECOndary[:STATe]” on page 922.

:SLOT0|[1]|2|3|4|5:DCUStom

Supported E4438C with Option 402

```
[ :SOURce ]:RADio:PDC:SLOT0|[1]|2|3|4|5:DCUStom PN9|PN11|PN15|
PN20|PN23|FIX4|" <file name> "|EXT|P4|P8|P16|P32|P64
[:SOURce]:RADio:PDC:SLOT0|[1]|2|3|4|5:DCUStom?
```

This command configures the data field for the selected downlink custom timeslot.

***RST** PN9

Key Entry	PN9	PN11	PN15	PN20	PN23	FIX4	User File	EXT
	4 1's & 4 0's		8 1's & 8 0's		16 1's & 16 0's		32 1's & 32 0's	
	64 1's & 64 0's							

Remarks Refer to “File Name Variables” on page 13 for information on the file name syntax.

:SLOT0|[1]|2|3|4|5:DCUSTom:FIX4

Supported E4438C with Option 402

```
[ :SOURce ]:RADio:PDC:SLOT0|[1]|2|3|4|5:DCUSTom:FIX4 <val>
[:SOURce]:RADio:PDC:SLOT0|[1]|2|3|4|5:DCUSTom:FIX4?
```

This command sets the binary, 4-bit repeating sequence data pattern that is used in the selected downlink custom timeslot.

***RST** #B0000

Range #B0000–#B1111 or 0–15

Key Entry FIX4

Remarks FIX4 must already be defined as the data type. To change the data type, refer to “:SLOT0|[1]|2|3|4|5:DCUStom” on page 923.

:SLOT0|[1]|2|3|4|5:DTCHannel:CCODE

Supported E4438C with Option 402

```
[ :SOURce ]:RADio:PDC:SLOT0|[1]|2|3|4|5:DTCHannel:CCODE <bit_pattern>
[:SOURce]:RADio:PDC:SLOT0|[1]|2|3|4|5:DTCHannel:CCODE?
```

This command changes the 8-bit color code (CC). The preset hexadecimal value (when normal preset is selected) for CC reflects the PDC protocol, however you can enter a new value using this command.

***RST** #H00

PDC Subsystem–Option 402 ([:SOURce]:RADio:PDC)**Range** #H00–#HFF**Key Entry** CC**:SLOT0|[1]|2|3|4|5:DTCHannel:SACChannel****Supported** E4438C with Option 402

```
[ :SOURce ]:RADio:PDC:SLOT0|[1]|2|3|4|5:DTCHannel:SACChannel <bit_pattern>
[ :SOURce ]:RADio:PDC:SLOT0|[1]|2|3|4|5:DTCHannel:SACChannel?
```

This command changes the 15-bit slow associated control channel (SACCH). The preset hexadecimal value (when normal preset is selected) for SACCH reflects the PDC protocol, however you can enter a new value by executing this command.

RST** #H00000**Range** #H0–#HFFFFFF**Key Entry** SACCH**:SLOT0|[1]|2|3|4|5:DTCHannel:SWORd*Supported** E4438C with Option 402

```
[ :SOURce ]:RADio:PDC:SLOT0|[1]|2|3|4|5:DTCHannel:SWORd <bit_pattern>
[ :SOURce ]:RADio:PDC:SLOT0|[1]|2|3|4|5:DTCHannel:SWORd?
```

This command sets the 20-bit synchronization word as the active function. This is used for the control and traffic physical channels.

RST** #H87A4B**Range** #H0–#HFFFFFF**Key Entry** SW**:SLOT0|[1]|2|3|4|5:DTCHannel[:TCHannel]*Supported** E4438C with Option 402

```
[ :SOURce ]:RADio:PDC:SLOT0|[1]|2|3|4|5:DTCHannel[:TCHannel] PN9|
PN11|PN15|PN20|PN23|FIX4|"<file name>"|EXT|P4|P8|P16|P32|P64
[ :SOURce ]:RADio:PDC:SLOT0|[1]|2|3|4|5:DTCHannel[:TCHannel]?
```

This command configures the data field for the selected downlink traffic channel field.

***RST** PN9

Key Entry PN9 PN11 PN15 PN20 PN23 FIX4 User File EXT
4 1's & 4 0's 8 1's & 8 0's 16 1's & 16 0's 32 1's & 32 0's
64 1's & 64 0's

Remarks See “File Name Variables” on page 13 for information on the file name syntax.

:SLOT0|[1]|2|3|4|5:DTCHannel[:TCHannel]:FIX4

Supported E4438C with Option 402

[:SOURce] :RADio :PDC :SLOT0 |[1] | 2 | 3 | 4 | 5 :DTCHannel [:TCHannel] :FIX4 <val>
[:SOURce] :RADio :PDC :SLOT0 |[1] | 2 | 3 | 4 | 5 :DTCHannel [:TCHannel] :FIX4?

This command sets the binary, 4-bit repeating sequence data pattern that is used in the selected downlink traffic channel timeslot.

***RST** #B0000

Range #B0000–#B1111 or 0–15

Key Entry FIX4

Remarks FIX4 must already be defined as the data type.

:SLOT0|[1]|2|3|4:POWer

Supported E4438C with Option 402

[:SOURce] :RADio :PDC :DLINK :SLOT0 |[1] | 2 | 3 | 4 :POWer MAIN|DELTA
[:SOURce] :RADio :PDC :DLINK :SLOT0 |[1] | 2 | 3 | 4 :POWer?

This command toggles the RF output power level function for the selected timeslot.

MAIN This choice specifies RF output as the main power level.

DELTA This choice specifies RF output as the alternative power level.

***RST** MAIN

Key Entry Timeslot Ampl Main Delta

:SLOT0|[1]|2|3|4|5:STATe

Supported E4438C with Option 402

```
[ :SOURce ]:RADio:PDC:SLOT0 |[1]|2|3|4|5:STATe ON|OFF|1|0  
[ :SOURce ]:RADio:PDC:SLOT0 |[1]|2|3|4|5:STATe?
```

This command enables or disables the operating state of the selected timeslot.

***RST** Timeslot 0: 1 Timeslots 1–5: 0

Key Entry Timeslot Off On

:SLOT0|[1]|2|3|4|5:UCUStom

Supported E4438C with Option 402

```
[ :SOURce ]:RADio:PDC:SLOT0 |[1]|2|3|4|5:UCUStom PN9|PN11|PN15|  
PN20|PN23|FIX4|"<file name>"|EXT|P4|P8|P16|P32|P64  
[ :SOURce ]:RADio:PDC:SLOT0 |[1]|2|3|4|5:UCUStom?
```

This command configures the data field for the selected uplink custom timeslot.

***RST** PN9

Key Entry

PN9	PN11	PN15	PN20	PN23	FIX4	User File	EXT
4 1's & 4 0's		8 1's & 8 0's		16 1's & 16 0's		32 1's & 32 0's	
		64 1's & 64 0's					

Remarks Refer to [“File Name Variables” on page 13](#) for information on the file name syntax.

:SLOT0|[1]|2|3|4|5:UCUStom:FIX4

Supported E4438C with Option 402

```
[ :SOURce ]:RADio:PDC:SLOT0 |[1]|2|3|4|5:UCUStom:FIX4 <val>  
[ :SOURce ]:RADio:PDC:SLOT0 |[1]|2|3|4|5:UCUStom:FIX4?
```

This command sets the binary, 4-bit repeating sequence data pattern that is used in the selected uplink custom timeslot.

***RST** #B0000

Range #B0000–#B1111 or 0–15

Key Entry FIX4

Remarks FIX4 must already be defined as the data type.

:SLOT0|[1]|2|3|4|5:UTCHannel:CCODE

Supported E4438C with Option 402

```
[ :SOURCE ] :RADIO:PDC:SLOT0 |[1]|2|3|4|5:UTCHannel:CCODE <bit_pattern>  
[ :SOURCE ] :RADIO:PDC:SLOT0 |[1]|2|3|4|5:UTCHannel:CCODE?
```

This command changes the 8-bit color code (CC). The preset hexadecimal value (when normal preset is selected) for CC reflects the PDC protocol, however you can enter a new value using this command.

***RST** #H00

Range #H00–#HFF

Key Entry CC

:SLOT0|[1]|2|3|4|5:UTCHannel:SACChannel

Supported E4438C with Option 402

```
[ :SOURCE ] :RADIO:PDC:SLOT0 |[1]|2|3|4|5:UTCHannel:SACChannel <bit_pattern>  
[ :SOURCE ] :RADIO:PDC:SLOT0 |[1]|2|3|4|5:UTCHannel:SACChannel?
```

This command changes the 15-bit slow associated control channel (SACCH). The preset hexadecimal value (when normal preset is selected) for SACCH reflects the PDC protocol, however you can enter a new value by executing this command.

***RST** #H0000

Range #H0–#H7FFF

Key Entry SACCH

:SLOT0|[1]|2|3|4|5:UTCHannel:SWORd

Supported E4438C with Option 402

```
[ :SOURCE ] :RADIO:PDC:SLOT0 |[1]|2|3|4|5:UTCHannel:SWORd <bit_pattern>  
[ :SOURCE ] :RADIO:PDC:SLOT0 |[1]|2|3|4|5:UTCHannel:SWORd?
```

This command sets the 20-bit synchronization word as the active function. This is used for the control and traffic physical channels.

***RST** #H785B4

Range #H0–#HFFFFFF

Key Entry SW

:SLOT0|[1]|2|3|4|5:UTCHannel[:TCHannel]

Supported E4438C with Option 402

```
[ :SOURce ] :RADio :PDC :SLOT0 | [ 1 ] | 2 | 3 | 4 | 5 :UTCHannel [ :TCHannel ] PN9 |
PN11 | PN15 | PN20 | PN23 | FIX4 | "<file name>" | EXT | P4 | P8 | P16 | P32 | P64
[ :SOURce ] :RADio :PDC :SLOT0 | [ 1 ] | 2 | 3 | 4 | 5 :UTCHannel [ :TCHannel ] ?
```

This command sets a pseudo-random number sequence, 4-bit pattern, sequence of 1's and 0's, data from an external source, or a user file as the data pattern type for the uplink traffic channel field.

***RST** PN9

Key Entry	PN9	PN11	PN15	PN20	PN23	FIX4	User File	EXT
	4 1's & 4 0's	8 1's & 8 0's	16 1's & 16 0's	32 1's & 32 0's	64 1's & 64 0's			

Remarks Refer to [“File Name Variables” on page 13](#) for information on the file name syntax.

:SLOT0|[1]|2|3|4|5:UTCHannel[:TCHannel]:FIX4

Supported E4438C with Option 402

```
[ :SOURce ] :RADio :PDC :SLOT0 | [ 1 ] | 2 | 3 | 4 | 5 :UTCHannel [ :TCHannel ] :FIX4 <val>
[ :SOURce ] :RADio :PDC :SLOT0 | [ 1 ] | 2 | 3 | 4 | 5 :UTCHannel [ :TCHannel ] :FIX4 ?
```

This command sets the binary, 4-bit repeating sequence data pattern that is used in the selected uplink traffic channel timeslot.

***RST** #B0000

Range #B0000–#B1111 or 0–15

Key Entry FIX4

Remarks FIX4 must already be defined as the data type.

:SLOT0|[1]|2|3|4|5:UVOX:CCODE

Supported E4438C with Option 402

```
[ :SOURCE ]:RADIO:PDC:SLOT0|[1]|2|3|4|5:UVOX:CCODE <bit_pattern>
[ :SOURCE ]:RADIO:PDC:SLOT0|[1]|2|3|4|5:UVOX:CCODE?
```

This command changes the 8-bit color code (CC). The preset hexadecimal value (when normal preset is selected) for CC reflects the PDC protocol, however you can enter a new value using this command.

***RST** #H00

Range #H00–#HFF

Key Entry CC

:SLOT0|[1]|2|3|4|5:UVOX:SACChannel

Supported E4438C with Option 402

```
[ :SOURCE ]:RADIO:PDC:SLOT0|[1]|2|3|4|5:UVOX:SACChannel <bit_pattern>
[ :SOURCE ]:RADIO:PDC:SLOT0|[1]|2|3|4|5:UVOX:SACChannel?
```

This command changes the 15-bit slow associated control channel (SACCH). The preset hexadecimal value (when normal preset is selected) for SACCH reflects the PDC protocol, however you can enter a new value by executing this command.

***RST** #H0000

Range #H0–#H7FFF

Key Entry SACCH

:SLOT0|[1]|2|3|4|5:UVOX:SWORD

Supported E4438C with Option 402

```
[ :SOURCE ]:RADIO:PDC:SLOT0|[1]|2|3|4|5:UVOX:SWORD <bit_pattern>
[ :SOURCE ]:RADIO:PDC:SLOT0|[1]|2|3|4|5:UVOX:SWORD?
```

This command changes the synchronization word, which is used for slot synchronization, equalizer training, and timeslot identification.

***RST** UTCH & UVOX: 785B4 DTCH: 87A4B

Range #H0–#HFFFFFF

Key Entry SW

Remarks The *RST hexadecimal value reflects the value specified by the indicated standard.

:SLOT0|[1]|2|3|4|5[:TYPE]

Supported E4438C with Option 402

```
[ :SOURce ]:RADio:PDC:SLOT0|[1]|2|3|4|5[:TYPE] UCUSom|DCUSom|
UTCH|UTCH_ALL|UVOX|DTCH|DTCH_ALL
[:SOURce]:RADio:PDC:SLOT0|[1]|2|3|4|5[:TYPE]?
```

This command sets the timeslot type for the selected timeslot.

***RST** UTCH

Key Entry	Up Custom	Down Custom	Up TCH	UP TCH All	Up VOX
	Down TCH	Down TCH All			

:SOUT

Supported E4438C with Option 402

```
[ :SOURce ]:RADio:PDC:SOUT FRAME|SLOT|ALL
[:SOURce]:RADio:PDC:SOUT?
```

This command sets the synchronization location (within the pattern of data) and the type of output at the EVENT 1 rear panel connector.

FRAME This choice outputs a 1-bit signal, synchronized to the bit selected by the synchronization output offset command, for a framed data pattern.

SLOT This choice outputs a 1-bit signal, synchronized to the bit selected by the synchronization output offset command, for a selected timeslot.

ALL This choice outputs a 1-bit signal, synchronized to the bit selected by the synchronization output offset command, for all active timeslots.

***RST** FRAME

Key Entry	Begin Frame	Begin Timeslot #	All Timeslots
------------------	--------------------	-------------------------	----------------------

:SOUT:OFFSet

Supported E4438C with Option 402

```
[ :SOURce ]:RADio:PDC:SOUT:OFFSet <val>
[:SOURce]:RADio:PDC:SOUT:OFFSet?
```

This command sets the offset value for the location of the output synchronization signal on the EVENT1 rear panel connector relative to the beginning of the framed data pattern or timeslot.

The variable <val> is expressed as a number bits.

***RST** +0

Range	–279 to 279
Key Entry	Sync Out Offset
Remarks	Negative values move the synchronization output signal earlier; positive values move it later. To change the output of the EVENT1 rear panel connector to SLOT, refer to “:SOUT” on page 930.

:SOUT:SLOT

Supported E4438C with Option 402

```
[ :SOURce ] :RADio:PDC:SOUT:SLOT <val>  
[ :SOURce ] :RADio:PDC:SOUT:SLOT?
```

This command selects the timeslot that will trigger a 1-bit signal at the EVENT 1 rear panel connector.

***RST** +0

Range 0–5

Key Entry Begin Timeslot #

Remarks To change the output of the EVENT1 rear panel connector to SLOT, refer to “:SOUT” on page 930.

:SRATe

Supported E4438C with Option 402

```
[ :SOURce ] :RADio:PDC:SRATe <val>  
[ :SOURce ] :RADio:PDC:SRATe?
```

This command sets the transmission symbol rate. Symbol rate is the bit rate divided by the bits per symbol. A change in the symbol rate affects the bit rate. Refer to “:BRATe” on page 771 for information on bit rate.

The variable <val> is expressed in units of symbols per second (sps–MSPS) and the maximum symbol rate depends on the filter. Refer to “:FILTer” on page 917 for minimum filter symbol width.

The filter may have to be truncated down to 32 or 16 symbols wide to achieve the highest symbol rate. The signal generator’s internal filters are not truncated below their minimum filter length and user-defined FIR filters are not truncated. If the filter cannot be truncated then the symbol rate is limited to the maximum rate of the narrowest filter size possible.

The relative timing of the modulated data, as well as the actual filter response is affected when the filter is truncated.

Receiver Test Digital Commands (continued)
PDC Subsystem–Option 402 ([:SOURce]:RADio:PDC)

When the symbol rate changes, the ESG reconfigures the baseband generator. The time required to reconfigure the baseband generator is inversely proportional to the symbol rate: lower symbol rates require more time.

To change the modulation type, refer to “:MODulation[:TYPE]” on page 920.

***RST** +2.10000000E+004

Range	Modulation Type	Symbol Rate Range		
		<i>16 Symbol Wide Filter</i>	<i>32 Symbol Wide Filter</i>	<i>64 Symbol Wide Filter</i>
	BPSK, FSK2, MSK	1sps–50Msps	1sps–25Msps	1sps–12.5Msps
	C4FM, OQPSK, FSK4	2sps–25Msps	2sps–12.5Msps	2sps–6.25Msps
	OQPSKI95, QPSK			
	P4QPPSK, QPSKIS95			
	GRAYQPSK, QAM4			
	D8PSK, EDGE, FSK8, PSK8	3sps–16.666666666 Msps	3sps–8.333333333 Msps	3sps–4.166666666Msps
	FSK16, PSK16, QAM16	4sps–12.5Msps	4sps–6.25Msps	4sps–3.125Msps
	QAM32	5sps–10Msps	5sps–5Msps	5sps–2.5Msps
	QAM64	6sps–8.333333333 Msps	6sps–4.166666666 Msps	6sps–2.083333333 Msps
	QAM128	7sps–7.142857142 Msps	7sps–3.571428572 Msps	7sps–1.785714285 Msps
	QAM256	8sps–6.25Msps	8sps–3.125 Msps	8sps–1.5625 Msps

NOTE Using I/Q skew will half the minimum number of symbols for the selected filter.

Key Entry **Symbol Rate**

:TRIGger:TYPE

Supported E4438C with Option 402

```
[ :SOURce ] :RADio:PDC:TRIGger:TYPE CONTInuous | SINGle | GATE
[ :SOURce ] :RADio:PDC:TRIGger:TYPE?
```

This command sets the trigger type.

CONTInuous The framed data sequence repeats continuously; the sequence restarts every time the previous playback is completed. To customize continuous triggering, refer to [“:TRIGger:TYPE:CONTInuous\[:TYPE\]” on page 933](#).

SINGle The framed data sequence plays once for every trigger received.

GATE An external trigger signal interrupts the playback while the gating signal is in the inactive state. Playback resumes when the external control signal returns to the active state. The active state can be set to high or low.

***RST** CONT

Key Entry Continuous Single Gated

:TRIGger:TYPE:CONTInuous[:TYPE]

Supported E4438C with Option 402

```
[ :SOURce ] :RADio:PDC:TRIGger:TYPE:CONTInuous[ :TYPE ] FREE | TRIGger | RESet
[ :SOURce ] :RADio:PDC:TRIGger:TYPE:CONTInuous[ :TYPE ]?
```

This commands selects the waveform’s response to a trigger signal while using the continuous trigger mode.

For more information on triggering and to select the continuous trigger mode, see [“:TRIGger:TYPE” on page 933](#).

The following list describes the waveform’s response to each of the command choices:

FREE Turning the ARB format on immediately triggers the waveform. The waveform repeats until you turn the format off, select another trigger, or choose another waveform file.

TRIGger The waveform waits for a trigger before play begins. When the waveform receives the trigger, it plays continuously until you turn the format off, select another trigger, or choose another waveform file.

RESet The waveform waits for a trigger before play begins. When the waveform receives the trigger, it plays continuously. Subsequent triggers reset the waveform to the beginning. For a waveform sequence, this means to the beginning of the first segment in the sequence.

***RST** FREE
Key Entry Free Run Trigger & Run Reset & Run

:TRIGger:TYPE:GATE:ACTive

Supported E4438C with Option 402

[:SOURce] :RADio:PDC:TRIGger:TYPE:GATE:ACTive LOW|HIGH
 [:SOURce] :RADio:PDC:TRIGger:TYPE:GATE:ACTive?

This command selects the active state (gate polarity) of the gate while using the gating trigger mode.

The LOW and HIGH selections correspond to the low and high states of an external trigger signal. For example, when you select HIGH, the active state occurs during the high of the trigger signal. When the active state occurs, the ESG stops the waveform playback at the last played sample point, then restarts the playback at the next sample point when the inactive state occurs. For more information on triggering and to select gating as the trigger mode, see “:TRIGger:TYPE” on page 933.

The following list describes the ESG’s gating behavior for the polarity selections:

LOW	The waveform playback stops when the trigger signal goes low (active state) and restarts when the trigger signal goes high (inactive state).
HIGH	The waveform playback stops when the trigger signal goes high (active state) and restarts when the trigger signal goes low (inactive state).
*RST	HIGH
Key Entry	Gate Active Low High

:TRIGger[:SOURce]

Supported E4438C with Option 402

[:SOURce] :RADio:PDC:TRIGger [:SOURce] KEY|EXT|BUS
 [:SOURce] :RADio:PDC:TRIGger [:SOURce]?

This command sets the trigger source.

For more information on triggering, see “:TRIGger:TYPE” on page 933. The following list describes the command choices:

KEY	This choice enables manual triggering by pressing the front-panel Trigger hardkey.
-----	---

- EXT** An externally applied signal triggers the waveform. This is the only choice that works with gating. The following conditions affect an external trigger:
- The input connector selected for the trigger signal. You have a choice between the rear-panel PATTERN TRIG IN connector or the PATT TRIG IN 2 pin on the rear-panel AUXILIARY I/O connector. To make the connector selection, see “:TRIGger[:SOURce]:EXTErnal[:SOURce]” on page 937.
 For more information on the connectors and on connecting the cables, see the *E4428C/38C ESG Signal Generators User’s Guide*.
 - The trigger signal polarity:
 - gating mode, see “:TRIGger:TYPE:GATE:ACTive” on page 934
 - continuous and single modes, see “:TRIGger[:SOURce]:EXTErnal:SLOPe” on page 936
 - The time delay between when the ESG receives a trigger and when the waveform responds to the trigger. There are two parts to setting the delay:
 - setting the amount of delay, see “:TRIGger[:SOURce]:EXTErnal:DELay” on page 935
 - turning the delay on, see “:TRIGger[:SOURce]:EXTErnal:DELay:STATe” on page 936
- BUS** This choice enables triggering over the GPIB or LAN using the *TRG or GET commands or the AUXILIARY INTERFACE (RS-232) using the *TRG command.

***RST** KEY

Key Entry	Trigger Key	Ext	Bus
------------------	--------------------	------------	------------

:TRIGger[:SOURce]:EXTErnal:DELay

Supported E4438C with Option 402

```
[ :SOURce ] :RADio:PDC:TRIGger [ :SOURce ] :EXTErnal:DELay <val>
[ :SOURce ] :RADio:PDC:TRIGger [ :SOURce ] :EXTErnal:DELay?
```

This command sets the number of bits to delay the ESG’s response to an external trigger.

The bit delay is a delay between when the ESG receives the trigger and when it responds to the trigger. The delay uses the clocks of the bit-clock to time the delay. After the ESG receives the trigger and the set number of delay bits (clocks) occurs, the ESG transmits the data pattern.

The delay occurs after you enable the state. See “:TRIGger[:SOURce]:EXTErnal:DELay:STATe” on page 936. You can set the number of bits either before or after enabling the state.

PDC Subsystem–Option 402 ([:SOURCE]:RADio:PDC)

For more information on configuring an external trigger source and to select external as the trigger source, see “:TRIGger[:SOURCE]” on page 934.

***RST** +0
Range 0–1048575
Key Entry Ext Delay Bits

:TRIGger[:SOURCE]:EXternal:DElay:STATe

Supported E4438C with Option 402

```
[ :SOURCE ] : RADio : PDC : TRIGger [ :SOURCE ] : EXternal : DElay : STATe ON | OFF | 1 | 0
[ :SOURCE ] : RADio : PDC : TRIGger [ :SOURCE ] : EXternal : DElay : STATe?
```

This command enables or disables the operating state of the external trigger delay function.

For setting the delay time, see “:TRIGger[:SOURCE]:EXternal:DElay” on page 935, and for more information on configuring an external source, see “:TRIGger[:SOURCE]” on page 934.

***RST** 0
Key Entry Ext Delay Off On

:TRIGger[:SOURCE]:EXternal:SLOPe

Supported E4438C with Option 402

```
[ :SOURCE ] : RADio : PDC : TRIGger [ :SOURCE ] : EXternal : SLOPe POSitive | NEGative
[ :SOURCE ] : RADio : PDC : TRIGger [ :SOURCE ] : EXternal : SLOPe?
```

This command sets the polarity for an external trigger signal while using the continuous, single triggering mode. To set the polarity for gating, see “:TRIGger:TYPE:GATE:ACTive” on page 934.

The POSitive and NEGative selections correspond to the high (positive) and low (negative) states of the external trigger signal. For example, when you select POSitive, the waveform responds (plays) during the high state of the trigger signal. When the ESGESG receives multiple trigger occurrences when only one is required, the signal generator uses the first trigger and ignores the rest.

For more information on configuring an external trigger source and to select external as the trigger source, see “:TRIGger[:SOURCE]” on page 934.

***RST** NEG
Key Entry Ext Polarity Neg Pos

:TRIGger[:SOURCE]:EXTeRnal[:SOURCE]

Supported E4438C with Option 402

```
[ :SOURCE ] :RADio:PDC:TRIGger [ :SOURCE ] :EXTeRnal [ :SOURCE ] EPT1 | EPT2 |
EPTRIGGER1 | EPTRIGGER2
[ :SOURCE ] :RADio:PDC:TRIGger [ :SOURCE ] :EXTeRnal [ :SOURCE ] ?
```

This command selects which PATTERN TRIG IN connection the ESG uses to accept an externally applied trigger signal when external is the trigger source selection.

For more information on configuring an external trigger source and to select external as the trigger source, see “[:TRIGger\[:SOURCE\]](#)” on page 934. For more information on the rear-panel connectors, see the *E4428C/38C ESG Signal Generators User’s Guide*.

The following list describes the command choices:

EPT1	This choice is synonymous with EPTRIGGER1 and selects the PATTERN TRIG IN rear-panel connector.
EPT2	This choice is synonymous with EPTRIGGER2 and selects the PATT TRIG IN 2 pin on the rear-panel AUXILIARY I/O connector.
EPTRIGGER1	This choice is synonymous with EPT1 and selects the PATTERN TRIG IN rear-panel connector.
EPTRIGGER2	This choice is synonymous with EPT2 and selects the PATT TRIG IN 2 pin on the rear-panel AUXILIARY I/O connector.
*RST	EPT1
Key Entry	Patt Trig In 1 Patt Trig In 2

[:STAtE]

Supported E4438C with Option 402

```
[ :SOURCE ] :RADio:PDC [ :STAtE ] ON | OFF | 1 | 0 [ :SOURCE ] :RADio:PDC [ :STAtE ] ?
```

This command enables or disables the PDC modulation format.

***RST** OFF

Key Entry **PDC Off On**

Remarks Although the PDC modulation is enabled with this command, the RF carrier is not modulated unless you also activate the front panel **Mod On/Off** hardkey.

PHS Subsystem–Option 402 ([:SOURce]:RADio:PHS)

:ALPha

Supported E4438C with Option 402

```
[ :SOURce ] :RADio :PHS :ALPha <val>  
[ :SOURce ] :RADio :PHS :ALPha ?
```

This command changes the Nyquist or root Nyquist filter’s alpha value.

The filter alpha value can be set to the minimum level (0), the maximum level (1), or in between by using fractional numeric values (0.001–0.999).

***RST** +5.00000000E–001

Range 0.000–1.000

Key Entry Filter Alpha

Remarks To change the current filter type, refer to “:FILTer” on page 956.

:BBCLock

Supported E4438C with Option 402

```
[ :SOURce ] :RADio :PHS :BBCLock INT[1] | EXT[1]  
[ :SOURce ] :RADio :PHS :BBCLock ?
```

This command toggles the data (bit) clock input to the baseband generator board to either internal or external. This command is independent in each mode and works for both non-burst (continuous) and burst modes. This allows for a matrix of selections between burst/non-burst, internal/external data generation, internal/external data clock, and external bit/symbol data clock.

INT[1] This choice selects the signal generator internal data clock.

EXT[1] This choice selects an external data clock input.

***RST** INT

Key Entry BBG Data Clock Ext Int

Remarks A data clock or continuous symbol sync input must be supplied when external mode is used.

:BBT

Supported E4438C with Option 402

[:SOURCE]:RADio:PHS:BBT <val>

[:SOURCE]:RADio:PHS:BBT?

This command changes the bandwidth-multiplied-by-bit-time (BbT) filter parameter.

The filter BbT value can be set to the maximum level (1) or in between the minimum level (0.100) and maximum level by using fractional numeric values (0.101–0.999).

***RST** +5.00000000E–001

Range 0.100–1.000

Key Entry Filter BbT

Remarks This command is effective only after choosing a Gaussian filter. It does not have an effect on other types of filters.

To change the current filter type, refer to “:FILTer” on page 956.

:BRATe

Supported E4438C with Option 402

[:SOURCE]:RADio:PHS:BRATe <val>

[:SOURCE]:RADio:PHS:BRATe?

This command sets the bit rate in bits per second (bps–Mbps). The maximum bit rate is dependent on the modulation type and filter as shown in the following tables

The IQ digital data stream is shaped by a FIR filter. The filter length and associated latency and frequency response are dependent on the bit rate as shown in the following tables. The signal generator selects a filter length.

For higher bit rates, the FIR filter length may be truncated (if the minimum filter size allows it) which will impact the relative timing of the modulated data, as well as the actual filter response (see the symbol rate command “:SRATe” on page 962). Refer to “:FILTer” on page 956 for information on filter symbol widths.

To change the modulation type, refer to “:MODulation[:TYPE]” on page 959.

When the bit rate is changed, the ESG reconfigures the baseband generator. The time required to reconfigure the baseband generator is inversely proportional to the bit rate: lower bit rates require more time.

Receiver Test Digital Commands (continued)
PHS Subsystem–Option 402 ([:SOURCE]:RADio:PHS)

***RST** +3.8400000E+005

Range	Modulation Type	Bit Rate Range		
		16 Symbol Wide Filter	32 Symbol Wide Filter	64 Symbol Wide Filter
	BPSK, FSK2, MSK	1bps–50Mbps	1bps–25Mbps	1bps–12.5Mbps
	C4FM, OQPSK, FSK4	2bps–50Mbps	2bps–25Mbps	2bps–12.5Mbps
	OQPSKI95, QPSK			
	P4QPPSK, QPSKIS95			
	GRAYQPSK, QAM4			
	D8PSK, EDGE, FSK8, PSK8	3bps–50Mbps	3bps–25Mbps	3bps–12.5Mbps
	FSK16, PSK16, QAM16	4bps–50Mbps	4bps–25Mbps	4bps–12.5Mbps
	QAM32	5bps–50Mbps	5bps–25Mbps	5bps–12.5Mbps
	QAM64	6bps–50Mbps	6bps–25Mbps	6bps–12.5Mbps
	QAM128	7bps–50Mbps	7bps–25Mbps	7bps–12.5Mbps
	QAM256	8bps–50Mbps	8bps–25Mbps	8bps–12.5Mbps

Key Entry **Symbol Rate**

:BURSt:PN9

Supported E4438C with Option 402

[:SOURCE] :RADio :PHS :BURSt :PN9 NORMal | QUICk
 [:SOURCE] :RADio :PHS :BURSt :PN9 ?

This command controls the software PN9 generation.

NORMal This choice produces a maximum length PN9 sequence.

QUICk This choice produces a truncated PN9 sequence.

***RST** NORM

Key Entry **PN9 Mode Normal Quick**

Remarks Use Normal mode for bit-error-rate tests where a maximum length PN9 sequence is required.

:BURSt:SCRamble:SEED

Supported E4438C with Option 402

```
[ :SOURce ] :RADio :PHS :BURSt :SCRamble :SEED <16-bit val>  
[ :SOURce ] :RADio :PHS :BURSt :SCRamble :SEED?
```

This command select a 16-bit scramble seed value for scrambling.

***RST** #H3FF

Range #H0–#H3FF

Key Entry Scramble Seed

Remarks Although values may be set using this command, it does not active that scramble function.

To enable the scrambling function, refer to “:BURSt:SCRamble[:STATe]” on [page 941](#).

:BURSt:SCRamble[:STATe]

Supported E4438C with Option 402

```
[ :SOURce ] :RADio :PHS :BURSt :SCRamble [ :STATe ] ON | OFF | 1 | 0  
[ :SOURce ] :RADio :PHS :BURSt :SCRamble [ :STATe ] ?
```

This command enables or disables the operating state of the scramble function.

ON (1) This choice scrambles data on the related fields, using the seed setting.

OFF (0) This choice disables the scramble function.

***RST** 0

Key Entry Scramble Off On

Remarks To set the seed setting, refer to “:BURSt:SCRamble:SEED” on [page 941](#).

:BURSt:SHAPe:FALL:DELay

Supported E4438C with Option 402

[:SOURce] :RADio:PHS: BURSt :SHAPe :FALL :DELay <val>

[:SOURce] :RADio:PHS: BURSt :SHAPe :FALL :DELay?

This command sets the burst shape fall delay.

The variable <val> is expressed in bits.

***RST** +0.00000000E+000

Range –22.1250 to 99

Key Entry Fall Delay

Remarks The setting enabled by this command is not affected by signal generator power-on, preset, or *RST.

To change the modulation type, refer to “:MODulation[:TYPE]” on page 959.

Refer to “:SRATe” on page 962 for a list of the minimum and maximum symbol rate values.

“:BURSt:SHAPe:FDELay” on page 943 performs the same function; in compliance with the SCPI standard, both commands are listed.

For concept information on burst shaping, refer to the *E4428C/38C ESG Signal Generators User’s Guide*.

:BURSt:SHAPe:FALL:TIME

Supported E4438C with Option 402

[:SOURce] :RADio:PHS: BURSt :SHAPe :FALL :TIME <val>

[:SOURce] :RADio:PHS: BURSt :SHAPe :FALL :TIME?

This command sets the burst shape fall time.

The variable <val> is expressed in bits.

***RST** +4.00000000E+001

Range 0.1250–255.8750

Key Entry Fall Time

Remarks The setting enabled by this command is not affected by signal generator power-on, preset, or *RST.

To change the modulation type, refer to “:MODulation[:TYPE]” on page 959. Refer to “:SRATE” on page 962 for a list of the minimum and maximum symbol rate values.

“:BURSt:SHAPe:FTIME” on page 944 performs the same function; in compliance with the SCPI standard, both commands are listed.

For concept information on burst shaping, refer to the *E4428C/38C ESG Signal Generators User’s Guide*.

:BURSt:SHAPe:FDElay

Supported E4438C with Option 402

```
[ :SOURce ] :RADio:PHS:BURSt:SHAPe:FDElay <val>  
[ :SOURce ] :RADio:PHS:BURSt:SHAPe:FDElay?
```

This command sets the burst shape fall delay.

The variable <val> is expressed in bits.

***RST** +0.00000000E+000

Range –22.1250 to 99

Key Entry Fall Delay

Remarks The setting enabled by this command is not affected by signal generator power-on, preset, or *RST.

To change the modulation type, refer to “:MODulation[:TYPE]” on page 959. Refer to “:SRATE” on page 962 for a list of the minimum and maximum symbol rate values.

“:BURSt:SHAPe:FALL:DElay” on page 942 performs the same function; in compliance with the SCPI standard, both commands are listed.

For concept information on burst shaping, refer to the *E4428C/38C ESG Signal Generators User’s Guide*.

:BURSt:SHAPe:FTIME

Supported E4438C with Option 402

[:SOURce] :RADio:PHS: BURSt: SHAPe: FTIME <val>

[:SOURce] :RADio:PHS: BURSt: SHAPe: FTIME?

This command sets the burst shape fall time.

The variable <val> is expressed in bits.

***RST** +4.00000000E+001

Range 0.1250–255.8750

Key Entry Fall Time

Remarks The setting enabled by this command is not affected by signal generator power-on, preset, or *RST.

To change the modulation type, refer to “:MODulation[:TYPE]” on page 959. Refer to “:SRATe” on page 962 for a list of the minimum and maximum symbol rate values.

“:BURSt:SHAPe:FALL:TIME” on page 942 performs the same function; in compliance with the SCPI standard, both commands are listed.

For concept information on burst shaping, refer to the *E4428C/38C ESG Signal Generators User’s Guide*.

:BURSt:SHAPe:RDELay

Supported E4438C with Option 402

[:SOURce] :RADio:PHS: BURSt: SHAPe: RDELay <val>

[:SOURce] :RADio:PHS: BURSt: SHAPe: RDELay?

This command sets the burst shape rise delay.

The variable <val> is expressed in bits.

***RST** +0.00000000E+000

Range –18.1250 to 99

Key Entry Rise Delay

Remarks The setting enabled by this command is not affected by signal generator power-on, preset, or *RST.

To change the modulation type, refer to “:MODulation[:TYPE]” on page 959. Refer to “:SRATE” on page 962 for a list of the minimum and maximum symbol rate values.

“:BURSt:SHAPe:RISE:DELay” on page 945 performs the same function; in compliance with the SCPI standard, both commands are listed.

For concept information on burst shaping, refer to the *E4428C/38C ESG Signal Generators User’s Guide*.

:BURSt:SHAPe:RISE:DELay

Supported E4438C with Option 402

```
[ :SOURce ] :RADio:PHS:BURSt:SHAPe:RISE:DELay <val>  
[ :SOURce ] :RADio:PHS:BURSt:SHAPe:RISE:DELay?
```

This command sets the burst shape rise delay.

The variable <val> is expressed in bits.

***RST** +0.00000000E+000

Range –18.1250 to 99

Key Entry Rise Delay

Remarks The setting enabled by this command is not affected by signal generator power-on, preset, or *RST.

To change the modulation type, refer to “:MODulation[:TYPE]” on page 959. Refer to “:SRATE” on page 962 for minimum and maximum symbol rate values.

“:BURSt:SHAPe:RDELay” on page 944 performs the same function; in compliance with the SCPI standard, both commands are listed.

See the *E4428C/38C ESG Signal Generators User’s Guide* for concept information.

:BURSt:SHAPe:RISE:TIME

Supported E4438C with Option 402

[:SOURce] :RADio:PHS:BURSt:SHAPe:RISE:TIME <val>

[:SOURce] :RADio:PHS:BURSt:SHAPe:RISE:TIME?

This command sets the burst shape rise time. The variable <val> is expressed in bits.

***RST** +4.00000000E+001

Range 0.1250–22.500

Key Entry Rise Time

Remarks The setting enabled by this command is not affected by signal generator power-on, preset, or *RST.

To change the modulation type, refer to “:MODulation[:TYPE]” on page 959. Refer to “:SRATe” on page 962 for a list of the minimum and maximum symbol rate values. The command “:BURSt:SHAPe:RTIME” on page 946 performs the same function. See the *E4428C/38C ESG Signal Generators User’s Guide* for more information.

:BURSt:SHAPe:RTIME

Supported E4438C with Option 402

[:SOURce] :RADio:PHS:BURSt:SHAPe:RTIME <val>

[:SOURce] :RADio:PHS:BURSt:SHAPe:RTIME?

This command sets the burst shape rise time. The variable <val> is expressed in bits.

***RST** +4.00000000E+001

Range 0.1250–22.500

Key Entry Rise Time

Remarks The setting enabled by this command is not affected by signal generator power-on, preset, or *RST.

To change the modulation type, refer to “:MODulation[:TYPE]” on page 959. Refer to “:SRATe” on page 962 for a list of the minimum and maximum symbol rate values.

“:BURSt:SHAPe:RISE:TIME” on page 946 performs the same function; in compliance with the SCPI standard, both commands are listed.

For concept information on burst shaping, refer to the *E4428C/38C ESG Signal Generators User’s Guide*.

:BURSt:SHAPe[:TYPE]

Supported E4438C with Option 402

```
[ :SOURce ]:RADio:PHS:BURSt:SHAPe[:TYPE] SINE| "<file name>"  
[:SOURce]:RADio:PHS:BURSt:SHAPe[:TYPE]?
```

This command specifies the burst shape as either SINE or a user-defined file ("<file name>").

SINE This choice selects a state that is defined by the burst rise and fall *RST values, as the default burst shape type.

"<file name>" This choice selects a user designated file from signal generator memory (non-volatile).

***RST** SINE

Key Entry Sine User File

:BURSt[:STATe]

Supported E4438C with Option 402

```
[ :SOURce ]:RADio:PHS:BURSt[:STATe] ON|OFF|1|0  
[:SOURce]:RADio:PHS:BURSt[:STATe]?
```

This command enables or disables the burst function.

ON (1) This choice enables the transmission of framed data. If all timeslots which are switched on are up traffic channels or custom, you will be bursting the timeslots that are on; there will be no RF carrier during the off timeslots.

If you have switched on any timeslot that you have configured as a down traffic channel, the RF carrier is not switched off between any of the timeslots. The off timeslots are transmitted as a continuous series of ones for the time period of the off timeslots.

OFF (0) This choice enables the transmission of unframed data.

***RST** 0

Key Entry Data Format Pattern Framed

:CHANnel

Supported E4438C with Option 402

```
[ :SOURce ] :RADio :PHS :CHANnel EVM | ACP
[ :SOURce ] :RADio :PHS :CHANnel ?
```

This command optimizes the Nyquist and root Nyquist filters to minimize error vector magnitude (EVM) or to minimize adjacent channel power (ACP).

EVM This choice provides the most ideal passband.

ACP This choice improves stopband rejection.

***RST** EVM

Key Entry Optimize FIR For EVM ACP

Remarks To change the current filter type, refer to “:FILTer” on page 956.

:DATA

Supported E4438C with Option 402

```
[ :SOURce ] :RADio :PHS :DATA PN9 | PN11 | PN15 | PN20 | PN23 | FIX4 |
"<file name>" | EXT | P4 | P8 | P16 | P32 | P64 | PRAM
[ :SOURce ] :RADio :PHS :DATA ?
```

This command sets the data pattern type (pseudo-random number sequence, 4-bit pattern, sequence of 1’s and 0’s, data from an external source, or a user file) for unframed data transmission.

***RST** PN23

Key Entry	PN9	PN11	PN15	PN20	PN23	FIX4	User File	Ext
	4 1’s & 4 0’s	8 1’s & 8 0’s	16 1’s & 16 0’s	32 1’s & 32 0’s	64 1’s & 64 0’s	PRAM File		

Remarks Refer to “File Name Variables” on page 13 for information on the file name syntax.

:DATA:PRAM

Supported E4438C with Option 402

```
[ :SOURce ]:RADio:PHS:DATA:PRAM "<file_name>"
```

```
[ :SOURce ]:RADio:PHS:DATA:PRAM?
```

This command selects a pattern RAM (PRAM) file as the pattern data type for the PHS (Personal Handy-phone System) format.

"<file_name>" This variable designates the PRAM file in WFM1. Refer to [“File Name Variables” on page 13](#) for information on the file name syntax.

Key Entry PRAM File

Remarks Selecting this data source forces the burst source to INTERNAL to allow framing control.

The PRAM file must reside in the signal generator’s volatile memory (WFM1) in order to be accessed by this command. For more information on PRAM files, refer to [“:DATA:PRAM:FILE:BLOCK” on page 112](#).

:DATA:FIX4

Supported E4438C with Option 402

```
[ :SOURce ]:RADio:PHS:DATA:FIX4 <val>
```

```
[ :SOURce ]:RADio:PHS:DATA:FIX4?
```

This command sets the binary, 4-bit repeating sequence data pattern for unframed transmission according to the protocols (modulation type, symbol rate, filter, and burst shape) selected for the PHS format.

***RST** #B0000

Range #B0000–#B1111 or 0–15

Key Entry FIX4

Remarks FIX4 must already be defined as the data type.

:DEFault

Supported E4438C with Option 402

```
[ :SOURce ]:RADio:PHS:DEFault
```

This command returns all of the PHS modulation format parameters to factory settings. It does not affect any other signal generator parameters.

Key Entry Restore PHS Factory Default

:DLINK:SLOT[1] | 2 | 3 | 4:CUSTom

Supported E4438C with Option 402

```
[ :SOURce ] :RADio :PHS :DLINK :SLOT [ 1 ] | 2 | 3 | 4 :CUSTom PN9 | PN11 | PN15 |
PN20 | PN23 | FIX4 | "<file name>" | EXT | P4 | P8 | P16 | P32 | P64
[ :SOURce ] :RADio :PHS :DLINK :SLOT [ 1 ] | 2 | 3 | 4 :CUSTom?
```

This command configures the data field for the selected downlink custom timeslot.

***RST** PN9

Key Entry	PN9	PN11	PN15	PN20	PN23	FIX4	User File	EXT
	4 1's & 4 0's	8 1's & 8 0's	16 1's & 16 0's	32 1's & 32 0's	64 1's & 64 0's			

Remarks Refer to [“File Name Variables” on page 13](#) for information on the file name syntax.

:DLINK:SLOT[1] | 2 | 3 | 4:CUSTom:FIX4

Supported E4438C with Option 402

```
[ :SOURce ] :RADio :PHS :DLINK :SLOT [ 1 ] | 2 | 3 | 4 :CUSTom :FIX4 <val>
[ :SOURce ] :RADio :PHS :DLINK :SLOT [ 1 ] | 2 | 3 | 4 :CUSTom :FIX4?
```

This command sets the binary, 4-bit repeating sequence data pattern that is used in the selected downlink custom timeslot.

***RST** #B0000

Range #B0000–#B1111 or 0–15

Key Entry **FIX4**

Remarks FIX4 must already be defined as the data type.

:DLINK:SLOT[1] | 2 | 3 | 4:POWer

Supported E4438C with Option 402

```
[ :SOURce ] :RADio :PHS :DLINK :SLOT [ 1 ] | 2 | 3 | 4 :POWer MAIN | DELTA
[ :SOURce ] :RADio :PHS :DLINK :SLOT [ 1 ] | 2 | 3 | 4 :POWer?
```

This command toggles the RF output power level function for the selected timeslot.

MAIN This choice specifies RF output as the main power level.

DELTA This choice specifies RF output as the alternative power level.

***RST** MAIN

Key Entry Timeslot Ampl Main Delta

:DLINK:SLOT[1] | 2 | 3 | 4:SCHannel:CSID

Supported E4438C with Option 402

```
[ :SOURce ] :RADio:PHS:DLINK:SLOT[1] | 2 | 3 | 4:SCHannel:CSID <bit_pattern>  
[ :SOURce ] :RADio:PHS:DLINK:SLOT[1] | 2 | 3 | 4:SCHannel:CSID?
```

This command changes the 42-bit cell station identification code (CSID) field of the selected downlink timeslot. The preset hexadecimal value (when normal preset is selected) for CSID reflects the PHS protocol, however you can enter a new value with this command.

***RST** #H20200020001

Range #H0–#H3FFFFFFFF

Key Entry CSID

:DLINK:SLOT[1] | 2 | 3 | 4:SCHannel:IDLE

Supported E4438C with Option 402

```
[ :SOURce ] :RADio:PHS:DLINK:SLOT[1] | 2 | 3 | 4:SCHannel:IDLE <bit_pattern>  
[ :SOURce ] :RADio:PHS:DLINK:SLOT[1] | 2 | 3 | 4:SCHannel:IDLE?
```

This command changes the 34-bit idle (IDLE) field of the selected downlink timeslot. The preset hexadecimal value (when normal preset is selected) for IDLE reflects the PHS protocol, however you can enter a new value with this command.

***RST** #H000000000

Range #H0–#H3FFFFFFFF

Key Entry IDLE

:DLINK:SLOT[1] | 2 | 3 | 4:SCHannel:PSID

Supported E4438C with Option 402

```
[ :SOURce ] :RADio:PHS:DLINK:SLOT[1] | 2 | 3 | 4:SCHannel:PSID <bit_pattern>  
[ :SOURce ] :RADio:PHS:DLINK:SLOT[1] | 2 | 3 | 4:SCHannel:PSID?
```

This command changes the 28-bit personal station identification code (PSID) field in the synchronization channel of the selected downlink timeslot. The normal preset hexadecimal value for PSID reflects the PHS protocol, however you can enter a new value with this command.

Receiver Test Digital Commands (continued)
PHS Subsystem–Option 402 ([:SOURce]:RADio:PHS)

***RST** #H0000001
Range #H0–#H3FFFFFFF
Key Entry PSID

:DLINK:SLOT[1] | 2 | 3 | 4:SCHannel:UWORD

Supported E4438C with Option 402

```
[ :SOURce ] :RADio :PHS :DLINK :SLOT [ 1 ] | 2 | 3 | 4 :SCHannel :UWORD <bit_pattern>  
[ :SOURce ] :RADio :PHS :DLINK :SLOT [ 1 ] | 2 | 3 | 4 :SCHannel :UWORD?
```

This command changes the unique word (UW) field of the selected downlink timeslot. The preset hexadecimal value (when normal preset is selected) for UW reflects the PHS protocol, however you can enter a new value with this command.

***RST** #H50EF2993
Range #H0–#HFFFFFFF
Key Entry UW

:DLINK:SLOT[1] | 2 | 3 | 4:STATe

Supported E4438C with Option 402

```
[ :SOURce ] :RADio :PHS :DLINK :SLOT [ 1 ] | 2 | 3 | 4 :STATe ON | OFF | 1 | 0  
[ :SOURce ] :RADio :PHS :DLINK :SLOT [ 1 ] | 2 | 3 | 4 :STATe?
```

This command enables or disables the operating state of the selected downlink timeslot.

***RST** Timeslot 1: 1 *Timeslots 2–4: 0*
Key Entry Timeslot Off On

:DLINK:SLOT[1] | 2 | 3 | 4:TCHannel:SACChannel

Supported E4438C with Option 402

```
[ :SOURce ] :RADio :PHS :DLINK :SLOT [ 1 ] | 2 | 3 | 4 :TCHannel :SACChannel  
<bit_pattern>  
[ :SOURce ] :RADio :PHS :DLINK :SLOT [ 1 ] | 2 | 3 | 4 :TCHannel :SACChannel?
```

This command changes the 15-bit slow associated control channel of the selected downlink timeslot. The preset hexadecimal value (when normal preset is selected) for SACCH reflects the value specified by the standard.

***RST** #H8000
Range #H0–#HFFFF

Key Entry SA

:DLINK:SLOT[1] | 2 | 3 | 4:TCHannel:UWORD

Supported E4438C with Option 402

```
[ :SOURce ]:RADio:PHS:DLINK:SLOT[1] | 2 | 3 | 4:TCHannel:UWORD <bit_pattern>
[ :SOURce ]:RADio:PHS:DLINK:SLOT[1] | 2 | 3 | 4:TCHannel:UWORD?
```

This command changes the unique word (UW) field of the selected downlink timeslot. The preset hexadecimal value (when normal preset is selected) for UW reflects the PHS protocol, however you can enter a new value with this command.

***RST** #H3D4C

Range #H0–#HFFFF

Key Entry UW

:DLINK:SLOT[1] | 2 | 3 | 4:TCHannel[:TCHannel]

Supported E4438C with Option 402

```
[ :SOURce ]:RADio:PHS:DLINK:SLOT[1] | 2 | 3 | 4:TCHannel
[ :TCHannel ] PN9 | PN11 | PN15 | PN20 | PN23 | FIX4 | "<file name>" | EXT | P4 | P8 | P16 | P32 |
P64
[ :SOURce ]:RADio:PHS:DLINK:SLOT[1] | 2 | 3 | 4:TCHannel[:TCHannel]?
```

This command customizes the selected downlink traffic channel timeslot.

***RST** PN9

Key Entry	PN9	PN11	PN15	PN20	PN23	FIX4	User File	EXT
	4 1's & 4 0's	8 1's & 8 0's	16 1's & 16 0's	32 1's & 32 0's				
	64 1's & 64 0's							

Remarks Refer to [“File Name Variables” on page 13](#) for information on the file name syntax.

:DLINK:SLOT[1] | 2 | 3 | 4:TCHannel[:TCHannel]:FIX4

Supported E4438C with Option 402

```
[ :SOURce ]:RADio:PHS:DLINK:SLOT[1] | 2 | 3 | 4:TCHannel[:TCHannel]:FIX4 <val>
[ :SOURce ]:RADio:PHS:DLINK:SLOT[1] | 2 | 3 | 4:TCHannel[:TCHannel]:FIX4?
```

This command sets the binary, 4-bit repeating sequence data pattern that is used in the selected downlink traffic channel timeslot.

Receiver Test Digital Commands (continued)
PHS Subsystem–Option 402 ([:SOURCE]:RADio:PHS)

***RST** #B0000
Range #B0000–#B1111 or 0–15
Key Entry FIX4
Remarks FIX4 must already be defined as the data type. To change the data type, refer to “:DLINK:SLOT[1]|2|3|4:TCHannel[:TCHannel]” on page 953.

:DLINK:SLOT[1]|2|3|4[:TYPE]

Supported E4438C with Option 402
[:SOURCE]:RADio:PHS:DLINK:SLOT[1]|2|3|4[:TYPE] CUSTom|TCH|TCH_ALL|SYNC
[:SOURCE]:RADio:PHS:DLINK:SLOT[1]|2|3|4[:TYPE]?

This command sets the downlink timeslot type for the selected timeslot.

***RST** Timeslot 1: TCH Timeslots 2–4: CUST
Key Entry Custom TCH TCH All SYNC

:EDATa:DElay

Supported E4438C with Option 402
[:SOURCE]:RADio:PHS:EDATa:DElay?

This query returns the amount of delay (in symbols) from the external data input to the beginning of the symbol on the I OUT and Q OUT rear panel connectors and the front panel RF OUTPUT connector.

Remarks When the format is turned off, the delay value is unchanged; the query will return the same delay value if the format is on or off.

:EDCLock

Supported E4438C with Option 402
[:SOURCE]:RADio:PHS:EDCLock SYMBol|NORMal
[:SOURCE]:RADio:PHS:EDCLock?

This command sets the external data clock use.

SYMBol This choice specifies that a continuous symbol clock signal must be provided to the SYMBOL SYNC input connector.

NORMal This choice specifies that the DATA CLOCK input connector requires a bit clock. The SYMBOL SYNC input connector requires a (one-shot or continuous) symbol sync signal.

*RST	NORM
Key Entry	Ext Data Clock Normal Symbol
Remarks	Both choices have no effect in internal clock mode. Refer to “:BBCLock” on page 938 to select EXT as the data clock type.

:EREFerence

Supported E4438C with Option 402

```
[ :SOURce ] :RADio :PHS :EREFerence INT | EXT  
[ :SOURce ] :RADio :PHS :EREFerence ?
```

This command selects either an internal or external bit-clock reference for the data generator.

*RST	INT
Key Entry	BBG Ref Ext Int
Remarks	If the EXT choice is selected, the external source’s frequency value must be applied to the BASEBAND GEN REF IN rear panel connector. The external reference and external data clock are not applicable at the same time. If both are selected, then the external reference takes precedence. Refer to, “:EREFerence:VALue” on page 955 to enter the external reference frequency setting.

:EREFerence:VALue

Supported E4438C with Option 402

```
[ :SOURce ] :RADio :PHS :EREFerence :VALue <val>  
[ :SOURce ] :RADio :PHS :EREFerence :VALue ?
```

This command sets the expected bit-clock reference frequency value for an externally applied reference signal.

The variable <val> is expressed in units of hertz (Hz–MHz).

*RST	+1.30000000E+007
Range	2.5E5–1E8

Key Entry Ext BBG Ref Freq

Remarks The value specified by this command is effective only when you are using an external reference applied to the BASEBAND GEN REF IN rear panel connector.

Refer to “[EREFerence](#)” on page 955 to select EXT (external source) as the reference for the bit-clock.

:FILTer

Supported E4438C with Option 402

```
[ :SOURce ] :RADio:PHS:FILTer RNYQuist | NYQuist | GAUSSian | RECTangle |
IS95 | IS95_EQ | IS95_MOD | IS95_MOD_EQ | AC4Fm | UGGaussian | "<user FIR>"
[ :SOURce ] :RADio:PHS:FILTer?
```

This command selects the pre-modulation filter type.

IS95 This choice selects a filter that meets the criteria of the IS-95 standard.

IS95_EQ This choice selects a filter which is a combination of the IS-95 filter (above) and the equalizer filter described in the IS-95 standard. This filter is only used for IS-95 baseband filtering.

IS95_MOD This choice selects a filter that meets the criteria of the IS-95 error function (for improved adjacent channel performance) with lower passband rejection than the filter specified in the IS-95 standard.

IS95_MOD_EQ This choice selects a filter which is a combination of the equalizer filter described in the IS-95 standard and a filter that meets the criteria of the IS-95 error function (for improved adjacent channel performance), with lower passband rejection.

AC4Fm This choice selects a predefined Association of Public Safety Communications Officials (APCO) specified compatible 4-level frequency modulation (C4FM) filter.

UGGaussian This choice selects a backwards compatible GSM Gaussian filter (Gaussian filter with a fixed BbT value of 0.300) for the ESG E44xxB Option UN3 or UN4.

"<user FIR>" This variable is any filter file that you have stored into memory.

***RST** RNYQ

Key Entry Root Nyquist Nyquist Gaussian Rectangle IS-95 IS-95 w/EQ
IS-95 Mod IS-95 Mod w/EQ APCO 25 C4FM UN3/4 GSM Gaussian
User FIR

Remarks Refer to “[File Name Variables](#)” on page 13 for information on the file name syntax.

:IQ:SCALe

Supported E4438C with Option 402

[:SOURce] :RADio :PHS :IQ :SCALe <val>

[:SOURce] :RADio :PHS :IQ :SCALe?

This command sets the amplitude of the I/Q outputs for better adjacent channel power (ACP); lower scaling values equate to better ACP.

The variable <val> is expressed in units of percent.

***RST** +100

Range 1–200

Key Entry I/Q Scaling

Remarks This command has no effect with MSK or FSK modulation.

:MODulation:FSK[:DEViation]

Supported E4438C with Option 402

[:SOURce] :RADio :PHS :MODulation :FSK [:DEViation] <val>

[:SOURce] :RADio :PHS :MODulation :FSK [:DEViation]?

This command sets the symmetric FSK frequency deviation value.

The variable <val> is expressed in units of Hertz and the maximum range value equals the current symbol rate value multiplied by four, limited to 20 MHz.

***RST** +4.00000000E+002

Range 0–2E7

Key Entry Freq Dev

Remarks To change the modulation type, refer to “:MODulation[:TYPE]” on page 959.

Refer to “:SRATE” on page 962 for a list of the minimum and maximum symbol rate values.

To set an asymmetric FSK deviation value, refer to the *E4428C/38C ESG Signal Generators User’s Guide* for more information.

:MODulation:MSK[:PHASe]

Supported E4438C with Option 402

```
[ :SOURCE ]:RADio:PHS:MODulation:MSK[ :PHASe ] <val>  
[ :SOURCE ]:RADio:PHS:MODulation:MSK[ :PHASe ]?
```

This command sets the MSK phase deviation value. The variable <val> is in units of degrees.

***RST** +9.00000000E+001

Range 0–100

Key Entry Phase Dev

:MODulation:UFSK

Supported E4438C with Option 402

```
[ :SOURCE ]:RADio:PHS:MODulation:UFSK "<file name>"  
[ :SOURCE ]:RADio:PHS:MODulation:UFSK?
```

This command selects a user-defined FSK file from the signal generator memory.

Key Entry User FSK

Remarks The user-defined FSK file is held in signal generator memory until the command that selects user FSK as the modulation type is sent. Refer to [“:MODulation\[:TYPE\]” on page 959](#) to change the current modulation type.

Refer to [“File Name Variables” on page 13](#) for information on the file name syntax.

:MODulation:UIQ

Supported E4438C with Option 402

```
[ :SOURCE ]:RADio:PHS:MODulation:UIQ "<file name>"  
[ :SOURCE ]:RADio:PHS:MODulation:UIQ?
```

This command selects a user-defined I/Q file from the signal generator memory.

Key Entry User I/Q

Remarks The user-defined I/Q file is held in signal generator memory until the command that selects user I/Q as the modulation type is sent. Refer to [“:MODulation\[:TYPE\]” on page 959](#) to change the current modulation type.

Refer to [“File Name Variables” on page 13](#) for information on the file name syntax.

:MODulation[:TYPE]

Supported E4438C with Option 402

```
[ :SOURCE ]:RADio:PHS:MODulation[ :TYPE] BPSK | QPSK | IS95QPSK |
GRAYQPSK | OQPSK | IS95OQPSK | P4DQPSK | PSK8 | PSK16 | D8PSK | MSK | FSK2 | FSK4 |
FSK8 | FSK16 | C4FM | QAM4 | QAM16 | QAM32 | QAM64 | QAM128 | QAM256 | UIQ | UFSK
[ :SOURCE ]:RADio:PHS:MODulation[ :TYPE]?
```

This command sets the modulation type for the PHS personality.

***RST** P4DQPSK

Key Entry	BPSK	QPSK	IS-95 QPSK	Gray Coded QPSK	OQPSK			
	IS-95 OQPSK	$\pi/4$ DQPSK	8PSK	16PSK	D8PSK	MSK	2-Lvl FSK	
	4-Lvl FSK	8-Lvl FSK	16-Lvl FSK	C4FM	4QAM	16QAM	32QAM	
	64QAM	128QAM	256QAM	User I/Q	User FSK			

:POLarity[:ALL]

Supported E4438C with Option 402

```
[ :SOURCE ]:RADio:PHS:POLarity[ :ALL] NORMal | INVerted
[ :SOURCE ]:RADio:PHS:POLarity[ :ALL]?
```

This command sets the rotation direction of the phase modulation vector.

NORMal This choice selects normal phase polarity.

INVerted This choice inverts the internal Q signal.

***RST** NORM

Key Entry Phase Polarity Normal Invert

:SECondary:RECall

Supported E4438C with Option 402

```
[ :SOURCE ]:RADio:PHS:SECondary:RECall
```

This command recalls the secondary frame configuration, overwriting the current state.

Key Entry Recall Secondary Frame State

Remarks To save a secondary frame state, refer to “:SECondary:SAVE” on page 960.

A secondary frame is not active until the secondary state is enabled. To activate a secondary frame, refer to “:SECondary[:STATE]” on page 960.

:SECondary:SAVE

Supported E4438C with Option 402

[:SOURce] :RADio:PHS:SECondary:SAVE

This command saves the current frame configuration as the secondary frame with the filename PHS_SECONDARY_FRAME.

Key Entry Save Secondary Frame State

Remarks To recall the secondary frame (saved in non-volatile signal generator memory), refer to “:SECondary:RECall” on page 959.

:SECondary:TRIGger[:SOURce]

Supported E4438C with Option 402

[:SOURce] :RADio:PHS:SECondary:TRIGger [:SOURce] KEY | EXT | BUS
[:SOURce] :RADio:PHS:SECondary:TRIGger [:SOURce] ?

This command selects the type of triggering for the secondary frame.

KEY This choice enables triggering by pressing the front panel **Trigger** hardkey.

EXT This choice enables triggering using an externally applied signal at the PATT TRIG IN rear panel connector or the PATT TRIG IN 2 pin on the rear panel AUX I/O connector. To select the appropriate connector, refer to “:TRIGger[:SOURce]:EXTernal[:SOURce]” on page 966.

BUS This choice enables GPIB triggering using the *TRG or GET command or LAN and RS-232 triggering using the *TRG command.

Key Entry Trigger Key Ext Bus

:SECondary[:STATE]

Supported E4438C with Option 402

[:SOURce] :RADio:PHS:SECondary [:STATE] ON | OFF | 1 | 0
[:SOURce] :RADio:PHS:SECondary [:STATE] ?

This command enables or disables the ability to switch to the secondary frame.

***RST** 0

Key Entry Secondary Frame Off On

Remarks A frame must already be saved as the secondary frame in order to turn the secondary state function on.
 To save a frame as the secondary frame, refer to “:SECOndary:SAVE” on page 960.

:SOUT

Supported E4438C with Option 402

```
[ :SOURce ] :RADio:PHS:SOUT FRAME | SLOT | ALL
[ :SOURce ] :RADio:PHS:SOUT?
```

This command sets the synchronization location (within the pattern of data) and the type of output at the EVENT 1 rear panel connector.

FRAME This choice outputs a 1-bit signal, synchronized to the bit selected by the synchronization output offset command, for a framed data pattern.

SLOT This choice outputs a 1-bit signal, synchronized to the bit selected by the synchronization output offset command, for a selected timeslot.

ALL This choice outputs a 1-bit signal, synchronized to the bit selected by the synchronization output offset command, for all active timeslots.

***RST** FRAME

Choices FRAME SLOT ALL

:SOUT:OFFSet

Supported E4438C with Option 402

```
[ :SOURce ] :RADio:PHS:SOUT:OFFSet <val>
[ :SOURce ] :RADio:PHS:SOUT:OFFSet?
```

This command sets the offset value for the location of the output synchronization signal on the EVENT1 rear panel connector relative to the beginning of the framed data pattern or timeslot.

The variable <val> is expressed as a number of bits.

***RST** +0

Range –239 to 239

Key Entry Sync Out Offset

Remarks Negative values move the synchronization output signal earlier; positive values move it later.

To change the output of the EVENT1 rear panel connector to SLOT, refer to “:SOUT” on page 961.

:SOUT:SLOT

Supported E4438C with Option 402

```
[ :SOURce ] :RADio:PHS:SOUT:SLOT <val>  
[ :SOURce ] :RADio:PHS:SOUT:SLOT?
```

This command selects the timeslot that will trigger a 1-bit output signal at the EVENT 1 rear panel connector.

***RST** +0

Range 1–4

Key Entry Begin Timeslot #

Remarks To change the output of the EVENT1 rear panel connector to SLOT, refer to “:SOUT” on page 961.

:SRATe

Supported E4438C with Option 402

```
[ :SOURce ] :RADio:PHS:SRATe <val>  
[ :SOURce ] :RADio:PHS:SRATe?
```

This command sets the transmission symbol rate. Symbol rate is the bit rate divided by the bits per symbol. A change in the symbol rate affects the bit rate. Refer to “:BRATe” on page 872 for information on bit rate.

The variable <val> is expressed in units of symbols per second (sps–MSPs) and the maximum symbol rate depends on the filter. Refer to “:FILTer” on page 956 for minimum filter symbol width.

The filter may have to be truncated down to 32 or 16 symbols wide to achieve the highest symbol rate. The signal generator’s internal filters are not truncated below their minimum filter length and user-defined FIR filters are not truncated. If the filter cannot be truncated then the symbol rate is limited to the maximum rate of the narrowest filter size possible.

The relative timing of the modulated data, as well as the actual filter response is affected when the filter is truncated.

When the symbol rate changes, the ESG reconfigures the baseband generator. The time required to reconfigure the baseband generator is inversely proportional to the symbol rate: lower symbol rates require more time.

To change the modulation type, refer to “:MODulation[:TYPE]” on page 959.

*RST +1.92000000E+004

Range	Modulation Type	Symbol Rate Range		
		16 Symbol Wide Filter	32 Symbol Wide Filter	64 Symbol Wide Filter
	BPSK, FSK2, MSK	1sps–50Msp	1sps–25Msp	1sps–12.5Msp
	C4FM, OQPSK, FSK4	2sps–25Msp	2sps–12.5Msp	2sps–6.25Msp
	OQPSKI95, QPSK			
	P4QPPSK, QPSKI95			
	GRAYQPSK, QAM4			
	D8PSK, EDGE, FSK8, PSK8	3sps–16.666666666 Msp	3sps–8.333333333 Msp	3sps–4.166666666 Msp
	FSK16, PSK16, QAM16	4sps–12.5Msp	4sps–6.25Msp	4sps–3.125Msp
	QAM32	5sps–10Msp	5sps–5Msp	5sps–2.5Msp
	QAM64	6sps–8.333333333 Msp	6sps–4.166666666 Msp	6sps–2.083333333 Msp
	QAM128	7sps–7.142857142 Msp	7sps–3.571428572 Msp	7sps–1.785714285 Msp
	QAM256	8sps–6.25Msp	8sps–3.125 Msp	8sps–1.5625 Msp

NOTE Using I/Q skew will half the minimum number of symbols for the selected filter.

Key Entry **Symbol Rate**

:TRIGger:TYPE

Supported E4438C with Option 402

[:SOURce] :RADio:PHS:TRIGger:TYPE CONTInuous | SINGle | GATE
[:SOURce] :RADio:PHS:TRIGger:TYPE?

This command sets the trigger type.

CONTInuous The framed data sequence repeats continuously; the sequence restarts every time the previous playback is completed. To customize continuous triggering, refer to “:TRIGger:TYPE:CONTInuous[:TYPE]” on page 964.

SINGle The framed data sequence plays once for every trigger received.

GATE An external trigger signal interrupts the playback while the gating signal is in the inactive state. Playback resumes when the external control signal returns to the active state. The active state can be set to high or low.

***RST** CONT

Key Entry Continuous Single Gated

:TRIGger:TYPE:CONTInuous[:TYPE]

Supported E4438C with Option 402

[:SOURce] :RADio :PHS :TRIGger :TYPE :CONTInuous [:TYPE] FREE | TRIGger | RESet
 [:SOURce] :RADio :PHS :TRIGger :TYPE :CONTInuous [:TYPE] ?

This commands selects the waveform’s response to a trigger signal while using the continuous trigger mode.

For more information on triggering and to select the continuous trigger mode, see “[:TRIGger:TYPE](#)” on page 963.

The following list describes the waveform’s response to each of the command choices:

FREE Turning the ARB format on immediately triggers the waveform. The waveform repeats until you turn the format off, select another trigger, or choose another waveform file.

TRIGger The waveform waits for a trigger before play begins. When the waveform receives the trigger, it plays continuously until you turn the format off, select another trigger, or choose another waveform file.

RESet The waveform waits for a trigger before play begins. When the waveform receives the trigger, it plays continuously. Subsequent triggers reset the waveform to the beginning. For a waveform sequence, this means to the beginning of the first segment in the sequence.

***RST** FREE

Key Entry Free Run Trigger & Run Reset & Run

:TRIGger:TYPE:GATE:ACTive

Supported E4438C with Option 402

```
[ :SOURCE ] :RADio:PHS:TRIGger:TYPE:GATE:ACTive LOW|HIGH
[ :SOURCE ] :RADio:PHS:TRIGger:TYPE:GATE:ACTive?
```

This command selects the active state (gate polarity) of the gate while using the gating trigger mode.

The LOW and HIGH selections correspond to the low and high states of an external trigger signal. For example, when you select HIGH, the active state occurs during the high of the trigger signal. When the active state occurs, the ESG stops the waveform playback at the last played sample point, then restarts the playback at the next sample point when the inactive state occurs. For more information on triggering and to select gating as the trigger mode, see “:TRIGger:TYPE” on page 963.

The following list describes the ESG’s gating behavior for the polarity selections:

LOW The waveform playback stops when the trigger signal goes low (active state) and restarts when the trigger signal goes high (inactive state).

HIGH The waveform playback stops when the trigger signal goes high (active state) and restarts when the trigger signal goes low (inactive state).

***RST** HIGH

Key Entry Gate Active Low High

:TRIGger[:SOURCE]:EXTErnal:DELAy

Supported E4438C with Option 402

```
[ :SOURCE ] :RADio:PHS:TRIGger[:SOURCE]:EXTErnal:DELAy <val>
[ :SOURCE ] :RADio:PHS:TRIGger[:SOURCE]:EXTErnal:DELAy?
```

This command sets the number of bits to delay the ESG’s response to an external trigger.

The bit delay is a delay between when the ESG receives the trigger and when it responds to the trigger. The delay uses the clocks of the bit-clock to time the delay. After the ESG receives the trigger and the set number of delay bits (clocks) occurs, the ESG transmits the data pattern.

The delay occurs after you enable the state. See “:TRIGger[:SOURCE]:EXTErnal:DELAy:STATE” on page 966. You can set the number of bits either before or after enabling the state.

For more information on configuring an external trigger source and to select external as the trigger source, see “:TRIGger[:SOURCE]” on page 967.

***RST** +0

Range 0–1048575

Key Entry Ext Delay Bits

:TRIGger[:SOURce]:EXTernal:DELay:STATe

Supported E4438C with Option 402

```
[ :SOURce ] :RADio:PHS:TRIGger [ :SOURce ] :EXTernal:DELay:STATe ON|OFF|1|0  
[ :SOURce ] :RADio:PHS:TRIGger [ :SOURce ] :EXTernal:DELay:STATe?
```

This command enables or disables the operating state of the external trigger delay function.

For setting the delay time, see “:TRIGger[:SOURce]:EXTernal:DELay” on page 965, and for more information on configuring an external source, see “:TRIGger[:SOURce]” on page 967.

***RST** 0

Key Entry Ext Delay Off On

:TRIGger[:SOURce]:EXTernal:SLOPe

Supported E4438C with Option 402

```
[ :SOURce ] :RADio:PHS:TRIGger [ :SOURce ] :EXTernal:SLOPe POSitive|NEGative  
[ :SOURce ] :RADio:PHS:TRIGger [ :SOURce ] :EXTernal:SLOPe?
```

This command sets the polarity for an external trigger signal while using the continuous, single triggering mode. To set the polarity for gating, see “:TRIGger:TYPE:GATE:ACTive” on page 965.

The POSitive and NEGative selections correspond to the high (positive) and low (negative) states of the external trigger signal. For example, when you select POSitive, the waveform responds (plays) during the high state of the trigger signal. When the ESGESG receives multiple trigger occurrences when only one is required, the signal generator uses the first trigger and ignores the rest.

For more information on configuring an external trigger source and to select external as the trigger source, see “:TRIGger[:SOURce]” on page 967.

***RST** NEG

Key Entry Ext Polarity Neg Pos

:TRIGger[:SOURce]:EXTernal[:SOURce]

Supported E4438C with Option 402

```
[ :SOURce ] :RADio:PHS:TRIGger [ :SOURce ] :EXTernal [ :SOURce ] EPT1|  
EPT2|EPTRIGGER1|EPTRIGGER2  
[ :SOURce ] :RADio:PHS:TRIGger [ :SOURce ] :EXTernal [ :SOURce ]?
```

This command selects which PATTERN TRIG IN connection the ESG uses to accept an externally applied trigger signal when external is the trigger source selection.

For more information on configuring an external trigger source and to select external as the trigger source, see “:TRIGger[:SOURce]” on page 967. For more information on the rear-panel connectors, see the *E4428C/38C ESG Signal Generators User’s Guide*.

The following list describes the command choices:

EPT1	This choice is synonymous with EPTRIGGER1 and selects the PATTERN TRIG IN rear-panel connector.
EPT2	This choice is synonymous with EPTRIGGER2 and selects the PATT TRIG IN 2 pin on the rear-panel AUXILIARY I/O connector.
EPTRIGGER1	This choice is synonymous with EPT1 and selects the PATTERN TRIG IN rear-panel connector.
EPTRIGGER2	This choice is synonymous with EPT2 and selects the PATT TRIG IN 2 pin on the rear-panel AUXILIARY I/O connector.
*RST	EPT1
Key Entry	Patt Trig In 1 Patt Trig In 2

:TRIGger[:SOURce]

Supported E4438C with Option 402

```
[ :SOURce ] :RADio:PHS:TRIGger [ :SOURce ] KEY | EXT | BUS
[ :SOURce ] :RADio:PHS:TRIGger [ :SOURce ] ?
```

This command sets the trigger source.

For more information on triggering, see “:TRIGger:TYPE” on page 963. The following list describes the command choices:

KEY	This choice enables manual triggering by pressing the front-panel Trigger hardkey.
EXT	An externally applied signal triggers the waveform. This is the only choice that works with gating. The following conditions affect an external trigger: <ul style="list-style-type: none"> • The input connector selected for the trigger signal. You have a choice between the rear-panel PATTERN TRIG IN connector or the PATT TRIG IN 2 pin on the rear-panel AUXILIARY I/O connector. To make the connector selection, see “:TRIGger[:SOURce]:EXTernal[:SOURce]” on page 966.

For more information on the connectors and on connecting the cables, see the *E4428C/38C ESG Signal Generators User’s Guide*.

- The trigger signal polarity:
 - gating mode, see “:TRIGger:TYPE:GATE:ACTive” on page 965
 - continuous and single modes, see “:TRIGger[:SOURCE]:EXTernal[:SOURCE]” on page 966
- The time delay between when the ESG receives a trigger and when the waveform responds to the trigger. There are two parts to setting the delay:
 - setting the amount of delay, see “:TRIGger[:SOURCE]:EXTernal:DELay” on page 965
 - turning the delay on, see “:TRIGger[:SOURCE]:EXTernal:DELay:STATe” on page 966

BUS This choice enables triggering over the GPIB or LAN using the *TRG or GET commands or the AUXILIARY INTERFACE (RS-232) using the *TRG command.

***RST** KEY

Key Entry	Trigger Key	Ext	Bus
------------------	--------------------	------------	------------

:ULINK:SLOT[1] | 2 | 3 | 4:CUSTom

Supported E4438C with Option 402

```
[ :SOURCE ] : RADio : PHS : ULINK : SLOT [ 1 ] | 2 | 3 | 4 : CUSTom PN9 | PN11 | PN15 |
PN20 | PN23 | FIX4 | "<file name>" | EXT | P4 | P8 | P16 | P32 | P64
[ :SOURCE ] : RADio : PHS : ULINK : SLOT [ 1 ] | 2 | 3 | 4 : CUSTom?
```

This command configures the data field for the selected uplink custom timeslot.

***RST** PN9

Key Entry	PN9	PN11	PN15	PN20	PN23	FIX4	User File	EXT
	4 1's & 4 0's	8 1's & 8 0's	16 1's & 16 0's	32 1's & 32 0's	64 1's & 64 0's			

Remarks Refer to “File Name Variables” on page 13 for information on the file name syntax.

:ULINK:SLOT[1] | 2 | 3 | 4:CUSTom:FIX4

Supported E4438C with Option 402

```
[ :SOURce ] :RADio:PHS:ULINK:SLOT[1] | 2 | 3 | 4:CUSTom:FIX4 <val>
[ :SOURce ] :RADio:PHS:ULINK:SLOT[1] | 2 | 3 | 4:CUSTom:FIX4?
```

This command sets the binary, 4-bit repeating sequence data pattern that is used in the selected uplink custom timeslot.

***RST** #B0000

Range #B0000–#B1111 or 0–15

Key Entry FIX4

Remarks FIX4 must already be defined as the data type.

:ULINK:SLOT[1] | 2 | 3 | 4:POWer

Supported E4438C with Option 402

```
[ :SOURce ] :RADio:PHS:ULINK:SLOT[1] | 2 | 3 | 4:POWer MAIN|DELTA
[ :SOURce ] :RADio:PHS:ULINK:SLOT[1] | 2 | 3 | 4:POWer?
```

This command toggles the RF output power level function for the selected timeslot.

MAIN This choice specifies RF output as the main power level.

DELTA This choice specifies RF output as the alternative power level.

***RST** MAIN

Key Entry Timeslot Ampl Main Delta

:ULINK:SLOT[1] | 2 | 3 | 4:SCHannel:CSID

Supported E4438C with Option 402

```
[ :SOURce ] :RADio:PHS:ULINK:SLOT[1] | 2 | 3 | 4:SCHannel:CSID <bit_pattern>
[ :SOURce ] :RADio:PHS:ULINK:SLOT[1] | 2 | 3 | 4:SCHannel:CSID?
```

This command changes the 42-bit cell station identification code (CSID) field of the selected uplink timeslot. The preset hexadecimal value (when normal preset is selected) for CSID reflects the PHS protocol, however you can enter a new value with this command.

***RST** #H20200020001

Range #H0–#H3FFFFFFFFF

Key Entry CSID

:ULINK:SLOT[1] | 2 | 3 | 4:SCHannel:IDLE

Supported E4438C with Option 402

```
[ :SOURce ] :RADio:PHS:ULINK:SLOT[1] | 2 | 3 | 4:SCHannel:IDLE <bit_pattern>  
[ :SOURce ] :RADio:PHS:ULINK:SLOT[1] | 2 | 3 | 4:SCHannel:IDLE?
```

This command changes the 34-bit idle (IDLE) field of the selected uplink timeslot. The preset hexadecimal value (when normal preset is selected) for IDLE reflects the PHS protocol, however you can enter a new value with this command.

***RST** #H00000000

Range #H0–#H3FFFFFFF

Key Entry IDLE

:ULINK:SLOT[1] | 2 | 3 | 4:SCHannel:PSID

Supported E4438C with Option 402

```
[ :SOURce ] :RADio:PHS:ULINK:SLOT[1] | 2 | 3 | 4:SCHannel:PSID <bit_pattern>  
[ :SOURce ] :RADio:PHS:ULINK:SLOT[1] | 2 | 3 | 4:SCHannel:PSID?
```

This command changes the 28-bit personal station identification code (PSID) field in the synchronization channel of the selected uplink timeslot. The preset (normal) hexadecimal value for PSID reflects the PHS protocol, however you can enter a new value with this command.

***RST** #H0000001

Range #H0–#H3FFFFFFF

Key Entry PSID

:ULINK:SLOT[1] | 2 | 3 | 4:SCHannel:UWORD

Supported E4438C with Option 402

```
[ :SOURce ] :RADio:PHS:ULINK:SLOT[1] | 2 | 3 | 4:SCHannel:UWORD <bit_pattern>  
[ :SOURce ] :RADio:PHS:ULINK:SLOT[1] | 2 | 3 | 4:SCHannel:UWORD?
```

This command changes the unique word (UW) field of the selected uplink timeslot. The preset hexadecimal value (when normal preset is selected) for UW reflects the PHS protocol, however you can enter a new value with this command.

***RST** #H050EF2993

Range #H0–#H0FFFFFFF

Key Entry UW

:ULINK:SLOT[1] | 2 | 3 | 4:STATe

Supported E4438C with Option 402

```
[ :SOURce ]:RADio:PHS:ULINK:SLOT[1] | 2 | 3 | 4:STATe ON|OFF|1|0  
[ :SOURce ]:RADio:PHS:ULINK:SLOT[1] | 2 | 3 | 4:STATe?
```

This command enables or disables the operating state of the selected uplink timeslot.

***RST** Timeslot 1: 1 Timeslots 2–4: 0

Key Entry Timeslot Off On

:ULINK:SLOT[1] | 2 | 3 | 4:TCHannel:SACChannel

Supported E4438C with Option 402

```
[ :SOURce ]:RADio:PHS:ULINK:SLOT[1] | 2 | 3 | 4:TCHannel:SACChannel  
<bit_pattern>  
[ :SOURce ]:RADio:PHS:ULINK:SLOT[1] | 2 | 3 | 4:TCHannel:SACChannel?
```

This command changes the 15-bit slow associated control channel of the selected uplink timeslot. The preset hexadecimal value (when normal preset is selected) for SACCH reflects the value specified by the standard.

***RST** #H8000

Range #H0–#HFFFF

Key Entry SA

:ULINK:SLOT[1] | 2 | 3 | 4:TCHannel:UWORD

Supported E4438C with Option 402

```
[ :SOURce ]:RADio:PHS:ULINK:SLOT[1] | 2 | 3 | 4:TCHannel:UWORD <bit_pattern>  
[ :SOURce ]:RADio:PHS:ULINK:SLOT[1] | 2 | 3 | 4:TCHannel:UWORD?
```

This command changes the unique word (UW) field of the selected uplink timeslot. The preset hexadecimal value (when normal preset is selected) for UW reflects the PHS protocol, however you can enter a new value with this command.

***RST** #H3D4C

Range #H0–#HFFFF

Key Entry UW

:ULINK:SLOT[1] | 2 | 3 | 4:TCHannel[:TCHannel]

Supported E4438C with Option 402

```
[ :SOURce ] :RADio :PHS :ULINK :SLOT [ 1 ] | 2 | 3 | 4 :TCHannel
[ :TCHannel ] PN9 | PN11 | PN15 | PN20 | PN23 | FIX4 | "<file name>" | EXT | P4 | P8 | P16 | P32 |
P64
[ :SOURce ] :RADio :PHS :ULINK :SLOT [ 1 ] | 2 | 3 | 4 :TCHannel [ :TCHannel ] ?
```

This command selects the data pattern for the selected uplink traffic channel timeslot.

***RST** PN9

Key Entry PN9 PN11 PN15 PN20 PN23 FIX4 User File EXT
 4 1's & 4 0's 8 1's & 8 0's 16 1's & 16 0's 32 1's & 32 0's
 64 1's & 64 0's

Remarks Refer to [“File Name Variables” on page 13](#) for information on the file name syntax.

:ULINK:SLOT[1] | 2 | 3 | 4:TCHannel[:TCHannel:FIX4]

Supported E4438C with Option 402

```
[ :SOURce ] :RADio :PHS :ULINK :SLOT [ 1 ] | 2 | 3 | 4 :TCHannel [ :TCHannel ] :FIX4 <val>
[ :SOURce ] :RADio :PHS :ULINK :SLOT [ 1 ] | 2 | 3 | 4 :TCHannel [ :TCHannel ] :FIX4 ?
```

This command sets the binary, 4-bit repeating sequence data pattern that is used in the selected uplink traffic channel timeslot.

***RST** #B0000

Range #B0000–#B1111 or 0–15

Key Entry FIX4

Remarks FIX4 must already be defined as the data type.

:ULINK:SLOT[1] | 2 | 3 | 4[:TYPE]

Supported E4438C with Option 402

```
[ :SOURce ] :RADio :PHS :ULINK :SLOT [ 1 ] | 2 | 3 | 4 [ :TYPE ] CUSTom | TCH | TCH_ALL | SYNC
[ :SOURce ] :RADio :PHS :ULINK :SLOT [ 1 ] | 2 | 3 | 4 [ :TYPE ] ?
```

This command sets the uplink timeslot type for the selected uplink timeslot.

***RST** Timeslot 1: TCH Timeslots 2–4: CUST

Key Entry Timeslot Type

[:STATe]

Supported E4438C with Option 402

[:SOURCE] :RADio :PHS [:STATe] ON | OFF | 1 | 0

[:SOURCE] :RADio :PHS [:STATe] ?

This command enables or disables the PHS modulation format.

***RST** 0

Key Entry PHS Off On

Remarks Although the PHS modulation is enabled with this command, the RF carrier is not modulated unless you also activate the front panel **Mod On/Off** hardkey.

TETRA Subsystem–Option 402 ([:SOURce]:RADio:TETRa)

:ALPha

Supported E4438C with Option 402

```
[ :SOURce ] :RADio :TETRa :ALPha <val>  
[ :SOURce ] :RADio :TETRa :ALPha ?
```

This command changes the Nyquist or root Nyquist filter’s alpha value.

The filter alpha value can be set to a minimum level (0), a maximum level (1), or in between by using fractional numeric values (0.001–0.999).

***RST** +3.50000000E–001

Range 0.000–1.000

Key Entry Filter Alpha

Remarks To change the current filter type, refer to “:FILTer” on page 988.

:BBCLock

Supported E4438C with Option 402

```
[ :SOURce ] :RADio :TETRa :BBCLock INT[1] | EXT[1]  
[ :SOURce ] :RADio :TETRa :BBCLock ?
```

This command toggles the data (bit) clock input to the baseband generator board to either internal or external. This command is independent in each mode and works for both non-burst (continuous) and burst modes. This allows for a matrix of selections between burst/non-burst, internal/external data generation, internal/external data clock, and external bit/symbol data clock.

INT[1] This choice selects the signal generator internal data clock.

EXT[1] This choice selects an external data clock input.

***RST** INT

Key Entry BBG Data Clock Ext Int

Remarks A data clock or continuous symbol sync input must be supplied when external mode is used.

:BBT

Supported E4438C with Option 402

[:SOURCE]:RADio:TETRa:BBT <val>

[:SOURCE]:RADio:TETRa:BBT?

This command changes the bandwidth-multiplied-by-bit-time (BbT) filter parameter.

The filter BbT value can be set to the maximum level (1) or in between the minimum level (0.100) and maximum level by using fractional numeric values (0.101–0.999).

***RST** +5.00000000E–001

Range 0.100–1.000

Key Entry Filter BbT

Remarks This command is effective only after choosing a Gaussian filter. It does not have an effect on other types of filters.

To change the current filter type, refer to “:FILTer” on page 988.

:BRATe

Supported E4438C with Option 402

[:SOURCE]:RADio:TETRa:BRATe <val>

[:SOURCE]:RADio:TETRa:BRATe?

This command sets the bit rate in bits per second (bps–Mbps). The maximum bit rate is dependent on the modulation type and filter as shown in the following tables

The IQ digital data stream is shaped by a FIR filter. The filter length and associated latency and frequency response are dependent on the bit rate as shown in the following tables. The signal generator selects a filter length.

For higher bit rates, the FIR filter length may be truncated (if the minimum filter size allows it) which will impact the relative timing of the modulated data, as well as the actual filter response (see the symbol rate command “:SRATe” on page 962). Refer to “:FILTer” on page 988 for information on filter symbol widths. To change the modulation type, refer to “:MODulation[:TYPE]” on page 991.

When the bit rate is changed, the ESG reconfigures the baseband generator. The time required to reconfigure the baseband generator is inversely proportional to the bit rate: lower bit rates require more time.

***RST** +3.60000000E+004

Receiver Test Digital Commands (continued)
TETRA Subsystem–Option 402 ([:SOURce]:RADio:TETRa)

Range	Modulation Type	Bit Rate Range		
		<i>16 Symbol Wide Filter</i>	<i>32 Symbol Wide Filter</i>	<i>64 Symbol Wide Filter</i>
	BPSK, FSK2, MSK	1bps–50Mbps	1bps–25Mbps	1bps–12.5Mbps
	C4FM, OQPSK, FSK4	2bps–50Mbps	2bps–25Mbps	2bps–12.5Mbps
	OQPSKI95, QPSK			
	P4QPPSK, QPSKIS95			
	GRAYQPSK, QAM4			
	D8PSK, EDGE, FSK8, PSK8	3bps–50Mbps	3bps–25Mbps	3bps–12.5Mbps
	FSK16, PSK16, QAM16	4bps–50Mbps	4bps–25Mbps	4bps–12.5Mbps
	QAM32	5bps–50Mbps	5bps–25Mbps	5bps–12.5Mbps
	QAM64	6bps–50Mbps	6bps–25Mbps	6bps–12.5Mbps
	QAM128	7bps–50Mbps	7bps–25Mbps	7bps–12.5Mbps
	QAM256	8bps–50Mbps	8bps–25Mbps	8bps–12.5Mbps

Key Entry **Symbol Rate**

:BURSt:PN9

Supported E4438C with Option 402

[:SOURce] :RADio:TETRa: BURSt: PN9 NORMAl | QUICk
 [:SOURce] :RADio:TETRa: BURSt: PN9?

This command controls the software PN9 generation.

NORMAl This choice produces a maximum length PN9 sequence.

QUICk This choice produces a truncated PN9 sequence.

***RST** NORM

Key Entry **PN9 Mode Normal Quick**

Remarks Use Normal mode for bit-error-rate tests where a maximum length PN9 sequence is required.

:BURSt:SCRamble:SEED

Supported E4438C with Option 402

```
[ :SOURce ] :RADIo:TETRa: BURSt:SCRamble:SEED <32-bit val>
```

```
[ :SOURce ] :RADIo:TETRa: BURSt:SCRamble:SEED?
```

This command sets the 32-bit scramble seed value.

***RST** #HFFFFFFF

Range #H0–#HFFFFFFF

Key Entry Scramble Seed

Remarks Although values may be set using this command, it does not active that scramble function.

Refer to “:BURSt:SCRamble[:STATe]” on page 977 to enable the scrambling function.

:BURSt:SCRamble[:STATe]

Supported E4438C with Option 402

```
[ :SOURce ] :RADIo:TETRa: BURSt:SCRamble[ :STATe] ON|OFF|1|0
```

```
[ :SOURce ] :RADIo:TETRa: BURSt:SCRamble[ :STATe]?
```

This command enables or disables the scramble function.

ON (1) This choice scrambles data on the related fields, using the seed setting.

OFF (0) This choice disables the scramble function.

***RST** 0

Key Entry Scramble Off On

Remarks To set the seed value, refer to “:BURSt:SCRamble:SEED” on page 977.

:BURSt:SHAPE:FALL:DELAy

Supported E4438C with Option 402

```
[ :SOURce ] :RADIo:TETRa: BURSt:SHAPE:FALL:DELAy <val>
```

```
[ :SOURce ] :RADIo:TETRa: BURSt:SHAPE:FALL:DELAy?
```

This command sets the burst shape fall delay.

The variable <val> is expressed in bits. The minimum and maximum values depend upon modulation type and symbol rate.

TETRA Subsystem–Option 402 ([:SOURce]:RADio:TETRa)

*RST	+0.00000000E+000
Range	–22.3750 to 99
Key Entry	Fall Delay
Remarks	<p>The setting enabled by this command is not affected by signal generator power-on, preset, or *RST.</p> <p>To change the modulation type, refer to “:MODulation[:TYPE]” on page 991. Refer to “:SRATe” on page 962 for a list of the minimum and maximum symbol rate values.</p> <p>“:BURSt:SHAPe:FDElay” on page 979 performs the same function; in compliance with the SCPI standard, both commands are listed.</p> <p>For concept information on burst shaping, refer to the <i>E4428C/38C ESG Signal Generators User’s Guide</i>.</p>

:BURSt:SHAPe:FALL:TIME

Supported	E4438C with Option 402
	[:SOURce] :RADio :TETRa :BURSt :SHAPe :FALL :TIME <val>
	[:SOURce] :RADio :TETRa :BURSt :SHAPe :FALL :TIME?
	This command sets the burst shape fall time.
	The variable <val> is expressed in bits. The minimum and maximum values depend upon modulation type and symbol rate.
*RST	+8.00000000E+000
Range	0.1250–50
Key Entry	Fall Time
Remarks	<p>The setting enabled by this command is not affected by signal generator power-on, preset, or *RST.</p> <p>To change the modulation type, refer to “:MODulation[:TYPE]” on page 991. Refer to “:SRATe” on page 962 for a list of the minimum and maximum symbol rate values.</p> <p>“:BURSt:SHAPe:FTIME” on page 979 performs the same function; in compliance with the SCPI standard, both commands are listed.</p> <p>For concept information on burst shaping, refer to the <i>E4428C/38C ESG Signal Generators User’s Guide</i>.</p>

:BURSt:SHAPe:FDELaY

Supported E4438C with Option 402

[:SOURce] :RADio:TETRa: BURSt: SHAPe: FDELaY <val>

[:SOURce] :RADio:TETRa: BURSt: SHAPe: FDELaY?

This command sets the burst shape fall delay.

The variable <val> is expressed in bits. The minimum and maximum values depend upon modulation type and symbol rate.

***RST** +0.00000000E+000

Range -22.3750 to 99

Key Entry Fall Delay

Remarks The setting enabled by this command is not affected by signal generator power-on, preset, or *RST.

To change the modulation type, refer to “:MODulation[:TYPE]” on page 991. Refer to “:SRATE” on page 962 for a list of the minimum and maximum symbol rate values.

“:BURSt:SHAPe:FALL:DELaY” on page 977 performs the same

function; in compliance with the SCPI standard, both commands are listed.

For concept information on burst shaping, refer to the *E4428C/38C ESG Signal Generators User’s Guide*.

:BURSt:SHAPe:FTIME

Supported E4438C with Option 402

[:SOURce] :RADio:TETRa: BURSt: SHAPe: FTIME <val>

[:SOURce] :RADio:TETRa: BURSt: SHAPe: FTIME?

This command sets the burst shape fall time.

The variable <val> is expressed in bits. The minimum and maximum values depend upon modulation type and symbol rate.

***RST** +8.00000000E+000

Range 0.1250–50

Key Entry Fall Time

TETRA Subsystem–Option 402 ([:SOURce]:RADio:TETRa)

Remarks The setting enabled by this command is not affected by signal generator power-on, preset, or *RST.

To change the modulation type, refer to “:MODulation[:TYPE]” on page 991. Refer to “:SRATE” on page 962 for a list of the minimum and maximum symbol rate values.

“:BURSt:SHAPe:FALL:TIME” on page 978 performs the same function; in compliance with the SCPI standard, both commands are listed.

For concept information on burst shaping, refer to the *E4428C/38C ESG Signal Generators User’s Guide*.

:BURSt:SHAPe:RDELay

Supported E4438C with Option 402

[:SOURce] :RADio:TETRa: BURSt: SHAPe: RDELay <val>

[:SOURce] :RADio:TETRa: BURSt: SHAPe: RDELay?

This command sets the burst shape rise delay. The variable <val> is expressed in bits. The minimum and maximum values depend upon modulation type and symbol rate.

***RST** +0.00000000E+000

Range –14.3750 to 99

Key Entry Rise Delay

Remarks The setting enabled by this command is not affected by signal generator power-on, preset, or *RST.

To change the modulation type, refer to “:MODulation[:TYPE]” on page 991. Refer to “:SRATE” on page 962 for a list of the minimum and maximum symbol rate values.

“:BURSt:SHAPe:RISE:DELay” on page 981 performs the same function; in compliance with the SCPI standard, both commands are listed.

See the *E4428C/38C ESG Signal Generators User’s Guide* for concept information.

:BURSt:SHAPe:RISE:DELay

Supported E4438C with Option 402

[:SOURce] :RADio:TETRa: BURSt: SHAPe:RISE: DELay <val>

[:SOURce] :RADio:TETRa: BURSt: SHAPe:RISE: DELay?

This command sets the burst shape rise delay.

The variable <val> is expressed in bits. The minimum and maximum values depend upon modulation type and symbol rate.

***RST** +0.00000000E+000

Range –14.3750 to 99

Key Entry Rise Delay

Remarks The setting enabled by this command is not affected by signal generator power-on, preset, or *RST.

To change the modulation type, refer to “:MODulation[:TYPE]” on page 991. Refer to “:SRATe” on page 962 for a list of the minimum and maximum symbol rate values.

“:BURSt:SHAPe:RDELay” on page 980 performs the same function; in compliance with the SCPI standard, both commands are listed.

For concept information on burst shaping, refer to the *E4428C/38C ESG Signal Generators User’s Guide*.

:BURSt:SHAPe:RISE:TIME

Supported E4438C with Option 402

[:SOURce] :RADio:TETRa: BURSt: SHAPe:RISE: TIME <val>

[:SOURce] :RADio:TETRa: BURSt: SHAPe:RISE: TIME?

This command sets the burst shape rise time.

The variable <val> is expressed in bits. The minimum and maximum values depend upon modulation type and symbol rate.

***RST** +8.00000000E+000

Range 0.1250–22.5000

Key Entry Rise Time

TETRA Subsystem–Option 402 ([:SOURCE]:RADio:TETRa)

Remarks The setting enabled by this command is not affected by signal generator power-on, preset, or *RST.

To change the modulation type, refer to “:MODulation[:TYPE]” on page 991. Refer to “:SRATE” on page 962 for a list of the minimum and maximum symbol rate values.

“:BURSt:SHAPe:RTIME” on page 982 performs the same function; in compliance with the SCPI standard, both commands are listed.

For concept information on burst shaping, refer to the *E4428C/38C ESG Signal Generators User’s Guide*.

:BURSt:SHAPe:RTIME

Supported E4438C with Option 402

[:SOURCE] :RADio:TETRa:BURSt:SHAPe:RTIME <val>

[:SOURCE] :RADio:TETRa:BURSt:SHAPe:RTIME?

This command sets the burst shape rise time. The variable <val> is expressed in bits. The minimum and maximum values depend upon modulation type and symbol rate.

***RST** +8.00000000E+000

Range 0.1250–22.5000

Key Entry Rise Time

Remarks The setting enabled by this command is not affected by signal generator power-on, preset, or *RST.

To change the modulation type, refer to “:MODulation[:TYPE]” on page 991. Refer to “:SRATE” on page 962 for a list of the minimum and maximum symbol rate values.

“:BURSt:SHAPe:RISE:TIME” on page 981 performs the same function; in compliance with the SCPI standard, both commands are listed.

For concept information on burst shaping, refer to the *E4428C/38C ESG Signal Generators User’s Guide*.

:BURSt:SHAPE[:TYPE]

Supported E4438C with Option 402

```
[ :SOURCE ] :RADio:TETRa:BURSt:SHAPE[:TYPE] SINE | "<file name>"
[ :SOURCE ] :RADio:TETRa:BURSt:SHAPE[:TYPE] ?
```

This command specifies the burst shape as either SINE or a user-defined file ("<file name>").

SINE This choice selects a state that is defined by the burst rise and fall *RST values as the default burst shape type.

"<file name>" This choice selects a user designated file from signal generator memory (non-volatile).

***RST** SINE

Key Entry Sine User File

:BURSt[:STATe]

Supported E4438C with Option 402

```
[ :SOURCE ] :RADio:TETRa:BURSt[:STATe] ON|OFF|1|0
[ :SOURCE ] :RADio:TETRa:BURSt[:STATe] ?
```

This command enables or disables the burst function.

ON (1) This choice enables the transmission of framed data. If all timeslots which are switched on are up traffic channels or custom, you will be bursting the timeslots that are on; there will be no RF carrier during the off timeslots.

If you have switched on any timeslot that you have configured as a down traffic channel, the RF carrier is not switched off between any of the timeslots. The off timeslots are transmitted as a continuous series of ones for the time period of the off timeslots.

OFF (0) This choice enables the transmission of unframed data.

***RST** 0

Key Entry Data Format Pattern Framed

:CHANnel

Supported E4438C with Option 402

```
[ :SOURce ] :RADio:TETRa:CHANnel EVM|ACP
[ :SOURce ] :RADio:TETRa:CHANnel?
```

This command optimizes the Nyquist and root Nyquist filters to minimize error vector magnitude (EVM) or to minimize adjacent channel power (ACP).

EVM This choice provides the most ideal passband.

ACP This choice improves stopband rejection.

***RST** EVM

Key Entry Optimize FIR For EVM ACP

Remarks To change the current filter type, refer to “:FILTer” on page 988.

:DATA

Supported E4438C with Option 402

```
[ :SOURce ] :RADio:TETRa:DATA PN9|PN11|PN15|PN20|PN23|FIX4|
"<file name>"|EXT|P4|P8|P16|P32|P64|PRAM
[ :SOURce ] :RADio:TETRa:DATA?
```

This command sets the data pattern for unframed transmission.

***RST** PN23

Key Entry	PN9	PN11	PN15	PN20	PN23	FIX4	User File	Ext
	4 1's & 4 0's	8 1's & 8 0's	16 1's & 16 0's	32 1's & 32 0's	64 1's & 64 0's	PRAM File		

Remarks Refer to “File Name Variables” on page 13 for information on the file name syntax.

:DATA:PRAM

Supported E4438C with Option 402

```
[ :SOURCE ] :RADIO :TETRA :DATA :PRAM "<file_name>"
```

```
[ :SOURCE ] :RADIO :TETRA :DATA :PRAM?
```

This command selects a pattern RAM (PRAM) file as the pattern data type for the TETRA (Trans-European Trunked Radio) format.

"<file_name>" This variable designates the PRAM file in WFM1. Refer to [“File Name Variables” on page 13](#) for information on the file name syntax.

Key Entry PRAM File

Remarks Selecting this data source forces the burst source to INTERNAL to allow framing control.

The PRAM file must reside in the signal generator’s volatile memory (WFM1) in order to be accessed by this command. For more information on PRAM files, refer to [“:DATA:PRAM:FILE:BLOCK” on page 112](#).

:DATA:FIX4

Supported E4438C with Option 402

```
[ :SOURCE ] :RADIO :TETRA :DATA :FIX4 <val>
```

```
[ :SOURCE ] :RADIO :TETRA :DATA :FIX4?
```

This command sets the binary, 4-bit repeating sequence data pattern for unframed transmission according to the modulation type, symbol rate, filter, and burst shape selected for the TETRA modulation format.

***RST** #B0000

Range #B0000–#B1111 or 0–15

Key Entry FIX4

Remarks FIX4 must already be defined as the data type. To change the data type, refer to [“:DATA” on page 984](#).

TETRA Subsystem–Option 402 ([:SOURCE]:RADio:TETRa)**:DEFault****Supported** E4438C with Option 402

[:SOURCE]:RADio:TETRa:DEFault

This command returns all of the TETRA modulation format parameters to factory settings. It does not affect any other signal generator parameters.

Key Entry Restore TETRA Factory Default**:EDATa:DELay****Supported** E4438C with Option 402

[:SOURCE]:RADio:TETRa:EDATa:DELay?

This query returns the amount of delay (in symbols) from the external data input to the beginning of the symbol on the I OUT and Q OUT rear panel connectors and the front panel RF OUTPUT connector.

Remarks When the format is turned off, the delay value is unchanged; the query will return the same delay value if the format is on or off.**:EDCLock****Supported** E4438C with Option 402

[:SOURCE]:RADio:TETRa:EDCLock SYMBOL|NORMal

[:SOURCE]:RADio:TETRa:EDCLock?

This command sets the external data clock use.

SYMBOL This choice specifies that a continuous symbol clock signal must be provided to the SYMBOL SYNC input connector.

NORMal This choice specifies that the DATA CLOCK input connector requires a bit clock. The SYMBOL SYNC input connector requires a (one-shot or continuous) symbol sync signal.

***RST** NORM**Key Entry** Ext Data Clock Normal Symbol**Remarks** Both choices have no effect in internal clock mode. Refer to “:BBCLock” on [page 974](#) to select EXT as the data clock type.

:EREFerence

Supported E4438C with Option 402

[:SOURce] :RADIo:TETRa:EREFerence INT|EXT

[:SOURce] :RADIo:TETRa:EREFerence?

This command selects either an internal or external bit-clock reference for the data generator.

***RST** INT

Key Entry **BBG Ref Ext Int**

Remarks If the EXT choice is selected, the external source’s frequency value

must be applied to the BASEBAND GEN REF IN rear panel connector. The external reference and external data clock are not applicable at the same time. If both are selected, then the external reference takes precedence.

Refer to, “[:EREFerence:VALue](#)” on [page 987](#) to enter the external reference frequency setting.

:EREFerence:VALue

Supported E4438C with Option 402

[:SOURce] :RADIo:TETRa:EREFerence:VALue <val>

[:SOURce] :RADIo:TETRa:EREFerence:VALue?

This command sets the expected bit-clock reference frequency value for an externally applied reference signal.

The variable <val> is expressed in units of hertz (Hz–MHz).

***RST** +1.30000000E+007

Range 2.5E5–1E8

Key Entry **Ext BBG Ref Freq**

Remarks The value specified by this command is effective only when you are using an external reference applied to the BASEBAND GEN REF IN rear panel connector.

Refer to “[:EREFerence](#)” on [page 987](#) to select EXT (external source) as the reference for the bit-clock.

TETRA Subsystem–Option 402 ([:SOURCE]:RADio:TETRa)

:FILTer

Supported E4438C with Option 402

```
[ :SOURCE ]:RADio:TETRa:FILTer RNYQuist|NYQuist|GAUSSian|RECTangle|
IS95|IS95_EQ|IS95_MOD|IS95_MOD_EQ|AC4Fm|UGGaussian|"<user FIR>"
[:SOURCE]:RADio:TETRa:FILTer?
```

This command selects the pre-modulation filter type.

IS95 This choice selects a filter that meets the criteria of the IS-95 standard.

IS95_EQ This choice selects a filter which is a combination of the IS-95 filter (above) and the equalizer filter described in the IS-95 standard. This filter is only used for IS-95 baseband filtering.

IS95_MOD This choice selects a filter that meets the criteria of the IS-95 error function (for improved adjacent channel performance) with lower passband rejection than the filter specified in the IS-95 standard.

IS95_MOD_EQ This choice selects a filter which is a combination of the equalizer filter described in the IS-95 standard and a filter that meets the criteria of the IS-95 error function (for improved adjacent channel performance), with lower passband rejection.

AC4Fm This choice selects a predefined Association of Public Safety Communications Officials (APCO) specified compatible 4-level frequency modulation (C4FM) filter.

UGGaussian This choice selects a backwards compatible GSM Gaussian filter (Gaussian filter with a fixed BbT value of 0.300) for the ESG E44xxB Option UN3 or UN4.

"<user FIR>" This variable is any filter file that you have stored into memory.

***RST** RNYQ

Key Entry

Root Nyquist	Nyquist	Gaussian	Rectangle	IS-95	IS-95 w/EQ
IS-95 Mod	IS-95 Mod w/EQ	APCO 25 C4FM		UN3/4 GSM Gaussian	
User FIR					

Remarks Refer to [“File Name Variables” on page 13](#) for information on the file name syntax.

:IQ:SCALe

Supported E4438C with Option 402

[:SOURCE] :RADio :TETRa :IQ :SCALe <val>

[:SOURCE] :RADio :TETRa :IQ :SCALe?

This command sets the amplitude of the I/Q outputs for better adjacent channel power (ACP); lower scaling values equate to better ACP.

The variable <val> is expressed in units of percent.

***RST** +65

Range 1–200

Key Entry I/Q Scaling

Remarks This command has no effect with MSK or FSK modulation.

:MODulation:FSK[:DEVIation]

Supported E4438C with Option 402

[:SOURCE] :RADio :TETRa :MODulation :FSK [:DEVIation] <val>

[:SOURCE] :RADio :TETRa :MODulation :FSK [:DEVIation]?

This command sets the symmetric FSK frequency deviation value.

The variable <val> is expressed in units of Hertz and the maximum range value equals the current symbol rate value multiplied by four, limited to 20 MHz.

***RST** +4.00000000E+002

Range 0–2E7

Key Entry Freq Dev

Remarks To change the modulation type, refer to “:MODulation[:TYPE]” on page 991.

Refer to “:SRATe” on page 962 for a list of the minimum and maximum symbol rate values.

To set an asymmetric FSK deviation value, refer to the *E4428C/38C ESG Signal Generators User’s Guide* for more information.

TETRA Subsystem–Option 402 ([:SOURce]:RADio:TETRa)**:MODulation:MSK[:PHASe]****Supported** E4438C with Option 402

[:SOURce]:RADio:TETRa:MODulation:MSK[:PHASe] <val>

[:SOURce]:RADio:TETRa:MODulation:MSK[:PHASe]?

This command sets the MSK phase deviation value.

The variable <val> is expressed in units of degrees.

RST** +9.00000000E+001**Range** 0–100**Key Entry** Phase Dev**:MODulation:UFSK*Supported** E4438C with Option 402

[:SOURce]:RADio:TETRa:MODulation:UFSK "<file name>"

[:SOURce]:RADio:TETRa:MODulation:UFSK?

This command selects a user-defined FSK file from the signal generator memory.

Key Entry User FSK**Remarks** The user-defined FSK file is held in signal generator memory until the command that selects user FSK as the modulation type is sent. Refer to [“:MODulation\[:TYPE\]” on page 991](#) to change the current modulation type.Refer to [“File Name Variables” on page 13](#) for information on the file name syntax.**:MODulation:UIQ****Supported** E4438C with Option 402

[:SOURce]:RADio:TETRa:MODulation:UIQ "<file name>"

[:SOURce]:RADio:TETRa:MODulation:UIQ?

This command selects a user-defined I/Q file from the signal generator memory.

Key Entry User I/Q

Remarks The user-defined I/Q file is held in signal generator memory until the command that selects user I/Q as the modulation type is sent. Refer to “:MODulation[:TYPE]” on page 991 to change the current modulation type.

Refer to “File Name Variables” on page 13 for information on the file name syntax.

:MODulation[:TYPE]

Supported E4438C with Option 402

```
[ :SOURce ] :RADio:TETRa:MODulation[ :TYPE ] BPSK | QPSK | IS95QPSK |
GRAYQPSK | OQPSK | IS95OQPSK | P4DQPSK | PSK8 | PSK16 | D8PSK | MSK | FSK2 | FSK4 |
FSK8 | FSK16 | C4FM | QAM4 | QAM16 | QAM32 | QAM64 | QAM128 | QAM256 | UIQ | UFSK
[ :SOURce ] :RADio:TETRa:MODulation[ :TYPE ] ?
```

This command sets the modulation type for the TETRA personality.

***RST** P4DQPSK

Key Entry	BPSK	QPSK	IS-95 QPSK	Gray Coded QPSK	OQPSK			
	IS-95 OQPSK	$\pi/4$ DQPSK	8PSK	16PSK	D8PSK	MSK	2-Lvl FSK	
	4-Lvl FSK	8-Lvl FSK	16-Lvl FSK	C4FM	4QAM	16QAM	32QAM	
	64QAM	128QAM	256QAM	User I/Q	User FSK			

:POLarity[:ALL]

Supported E4438C with Option 402

```
[ :SOURce ] :RADio:TETRa:POLarity[ :ALL ] NORMal | INVerted
[ :SOURce ] :RADio:TETRa:POLarity[ :ALL ] ?
```

This command sets the rotation direction of the phase modulation vector.

NORMal This choice selects normal phase polarity.

INVerted This choice inverts the internal Q signal.

***RST** NORM

Key Entry **Phase Polarity Normal Invert**

:SECondary:RECall

Supported E4438C with Option 402

[:SOURce] :RADio :TETRa :SECondary :RECall

This command recalls the secondary frame configuration, overwriting the current state.

Key Entry Recall Secondary Frame State

Remarks To save a secondary frame state, refer to “:SECondary:SAVE” on page 992.

A secondary frame is not active until the secondary state is enabled. To activate a secondary frame, refer to “:SECondary[:STATE]” on page 993.

:SECondary:SAVE

Supported E4438C with Option 402

[:SOURce] :RADio :TETRa :SECondary :SAVE

This command saves the current frame configuration as the secondary frame with the file name TETRa_SECONDARY_FRAME.

Key Entry Save Secondary Frame State

Remarks To recall the secondary frame (saved in non-volatile signal generator memory), refer to “:SECondary:RECall” on page 992.

:SECondary:TRIGger[:SOURce]

Supported E4438C with Option 402

[:SOURce] :RADio :TETRa :SECondary :TRIGger [:SOURce] KEY | EXT | BUS

[:SOURce] :RADio :TETRa :SECondary :TRIGger [:SOURce] ?

This command selects the type of triggering for the secondary frame.

KEY This choice enables triggering by pressing the front panel **Trigger** hardkey.

EXT This choice enables triggering using an externally applied signal at the PATT TRIG IN rear panel connector or the PATT TRIG IN 2 pin on the rear panel AUX I/O connector. To select the appropriate connector, refer to “:TRIGger[:SOURce]:EXTernal[:SOURce]” on page 1015.

BUS This choice enables GPIB triggering using the *TRG or GET command or LAN and RS-232 triggering using the *TRG command.

Key Entry Trigger Key Ext Bus

:SECondary[:STATe]

Supported E4438C with Option 402

```
[ :SOURCE ]:RADio:TETRa:SECondary[ :STATe] ON|OFF|1|0
[ :SOURCE ]:RADio:TETRa:SECondary[ :STATe]?
```

This command enables or disables the ability to switch to the secondary frame.

***RST** 0

Key Entry Secondary Frame Off On

Remarks A frame must already be saved as the secondary frame in order to turn the secondary state function on.

To save a frame as the secondary frame, refer to “[:SECondary:SAVE](#)” on [page 992](#).

:SLOT[1]|2|3|4:DCCustom

Supported E4438C with Option 402

```
[ :SOURCE ]:RADio:TETRa:SLOT[1]|2|3|4:DCCustom PN9|PN11|PN15|
PN20|PN23|FIX4|"<file name>"|EXT|P4|P8|P16|P32|P64
[ :SOURCE ]:RADio:TETRa:SLOT[1]|2|3|4:DCCustom?
```

This command configures the downlink continuous custom timeslot data field.

***RST** PN9

Key Entry	PN9	PN11	PN15	PN20	PN23	FIX4	User File	EXT
	4 1's & 4 0's	8 1's & 8 0's	16 1's & 16 0's	32 1's & 32 0's	64 1's & 64 0's			

Remarks Refer to “[File Name Variables](#)” on [page 13](#) for information on the file name syntax.

:SLOT[1]|2|3|4:DCCustom:FIX4

Supported E4438C with Option 402

```
[ :SOURCE ]:RADio:TETRa:SLOT[1]|2|3|4:DCCustom:FIX4 <val>
[ :SOURCE ]:RADio:TETRa:SLOT[1]|2|3|4:DCCustom:FIX4?
```

This command sets the binary, 4-bit repeating sequence data pattern that is used in the selected downlink continuous custom timeslot.

***RST** #B0000

TETRA Subsystem–Option 402 ([:SOURce]:RADio:TETRa)

Range #B0000–#B1111 or 0–15
Key Entry FIX4
Remarks FIX4 must already be defined as the data type.

:DCNormal:B1

Supported E4438C with Option 402
[:SOURce]:RADio:TETRa:SLOT[1]|2|3|4:DCNormal:B1 <val>
[:SOURce]:RADio:TETRa:SLOT[1]|2|3|4:DCNormal:B1?

This command sets the first 14 broadcast bits for the selected downlink continuous normal timeslot.

***RST** #H0000
Range #H0–#H3FFF
Key Entry B1

:DCNormal:B2

Supported E4438C with Option 402
[:SOURce]:RADio:TETRa:SLOT[1]|2|3|4:DCNormal:B2 <val>
[:SOURce]:RADio:TETRa:SLOT[1]|2|3|4:DCNormal:B2?

This command sets the last 16 broadcast bits for the selected downlink continuous normal timeslot.

***RST** #H0000
Range #H0–#HFFFF
Key Entry B2

:SLOT[1]|2|3|4:DCNormal:TSEquence

Supported E4438C with Option 402
[:SOURce]:RADio:TETRa:SLOT[1]|2|3|4:DCNormal:
TSEquence <val>
[:SOURce]:RADio:TETRa:SLOT[1]|2|3|4:DCNormal:TSEquence?

This command sets the normal training sequence bits (30-bit mid-amble) for the selected downlink continuous normal timeslot.

***RST** #H343A74
Range #H0–#H3FFFFFF
Key Entry TS

Remarks When 1E90DE is selected, the data fields are scrambled as separate logical channels.

:SLOT[1] | 2 | 3 | 4:DCNormal[:DATA]

Supported E4438C with Option 402

```
[ :SOURCE ] :RADio:TETRa:SLOT[1] | 2 | 3 | 4:DCNormal[ :DATA] PN9 | PN11 |
PN15 | PN20 | PN23 | FIX4 | "<file name>" | EXT | P4 | P8 | P16 | P32 | P64
[ :SOURCE ] :RADio:TETRa:SLOT[1] | 2 | 3 | 4:DCNormal[ :DATA] ?
```

This command configures the selected downlink continuous normal timeslot data field.

***RST** PN9

Key Entry	PN9	PN11	PN15	PN20	PN23	FIX4	User File	EXT
	4 1's & 4 0's	8 1's & 8 0's	16 1's & 16 0's	32 1's & 32 0's	64 1's & 64 0's			

Remarks Refer to [“File Name Variables” on page 13](#) for information on the file name syntax.

:SLOT[1] | 2 | 3 | 4:DCNormal[:DATA]:FIX4

Supported E4438C with Option 402

```
[ :SOURCE ] :RADio:TETRa:SLOT[1] | 2 | 3 | 4:DCNormal[ :DATA] :FIX4 <val>
[ :SOURCE ] :RADio:TETRa:SLOT[1] | 2 | 3 | 4:DCNormal[ :DATA] :FIX4 ?
```

This command sets the binary, 4-bit repeating sequence data pattern that is used in the selected downlink continuous normal timeslot.

***RST** #B0000

Range #B0000–#B1111 or 0–15

Key Entry **FIX4**

Remarks FIX4 must already be defined as the data type.

TETRA Subsystem–Option 402 ([:SOURce]:RADio:TETRa)**:SLOT[1]|2|3|4:DCSync:B****Supported** E4438C with Option 402

[:SOURce]:RADio:TETRa:SLOT[1]|2|3|4:DCSync:B <val>

[:SOURce]:RADio:TETRa:SLOT[1]|2|3|4:DCSync:B?

This command sets the broadcast bits for the selected downlink continuous synchronization timeslot.

RST** #H00000000**Range** #H0–#H3FFFFFFF**Key Entry** B**:SLOT[1]|2|3|4:DCSync:FCOR*Supported** E4438C with Option 402

[:SOURce]:RADio:TETRa:SLOT[1]|2|3|4:DCSync:FCOR <val>

[:SOURce]:RADio:TETRa:SLOT[1]|2|3|4:DCSync:FCOR?

This command sets the frequency correction bits for the selected downlink continuous synchronization timeslot.

RST** #HFF0000000000000000FF**Range** #H0–#HFFFFFFFFFFFFFFFFFFFF**Key Entry** FCOR**:SLOT[1]|2|3|4:DCSync:SSB*Supported** E4438C with Option 402

[:SOURce]:RADio:TETRa:SLOT[1]|2|3|4:DCSync:SSB <val>

[:SOURce]:RADio:TETRa:SLOT[1]|2|3|4:DCSync:SSB?

This command sets the synchronization block bits for the selected downlink synchronization continuous timeslot.

***RST** #H000000000000000000000000**Range** #H0–#HFFFFFFFFFFFFFFFFFFFFFFFF**Key Entry** SSB

:SLOT[1] | 2 | 3 | 4:DCSync:STS

Supported E4438C with Option 402

```
[ :SOURce ] :RADio :TETRa :SLOT [ 1 ] | 2 | 3 | 4 :DCSync :STS <val>
[ :SOURce ] :RADio :TETRa :SLOT [ 1 ] | 2 | 3 | 4 :DCSync :STS?
```

This command sets the synchronization training sequence for the selected downlink continuous synchronization timeslot.

***RST** #H30673A7067

Range #H0–#H3FFFFFFFF

Key Entry STS

:SLOT[1] | 2 | 3 | 4:DCSync[:DATA]

Supported E4438C with Option 402

```
[ :SOURce ] :RADio :TETRa :SLOT [ 1 ] | 2 | 3 | 4 :DCSync [ :DATA ] PN9 | PN11 |
PN15 | PN20 | PN23 FIX4 | "<file name>" | EXT | P4 | P8 | P16 | P32 | P64
[ :SOURce ] :RADio :TETRa :SLOT [ 1 ] | 2 | 3 | 4 :DCSync [ :DATA ]?
```

This command configures the selected downlink continuous synchronization timeslot data field.

***RST** PN9

Key Entry	PN9	PN11	PN15	PN20	PN23	FIX4	User File	EXT
	4 1's & 4 0's		8 1's & 8 0's		16 1's & 16 0's		32 1's & 32 0's	
	64 1's & 64 0's							

Remarks Refer to [“File Name Variables” on page 13](#) for information on the file name syntax.

:SLOT[1] | 2 | 3 | 4:DCSync[:DATA]:FIX4

Supported E4438C with Option 402

```
[ :SOURce ] :RADio :TETRa :SLOT [ 1 ] | 2 | 3 | 4 :DCSync [ :DATA ] :FIX4 <val>
[ :SOURce ] :RADio :TETRa :SLOT [ 1 ] | 2 | 3 | 4 :DCSync [ :DATA ] :FIX4?
```

This command sets the binary, 4-bit repeating sequence data pattern that is used in the selected downlink continuous synchronization timeslot.

***RST** #B0000

Range #B0000–#B1111 or 0–15

TETRA Subsystem–Option 402 ([:SOURce]:RADio:TETRa)**Key Entry** FIX4**Remarks** FIX4 must already be defined as the data type.**:SLOT[1] | 2 | 3 | 4:DDCustom****Supported** E4438C with Option 402

```
[:SOURce]:RADio:TETRa:SLOT[1] | 2 | 3 | 4:DDCustom PN9 | PN11 | PN15 |
PN20 | PN23 | FIX4 | "<file name>" | EXT | P4 | P8 | P16 | P32 | P64
[:SOURce]:RADio:TETRa:SLOT[1] | 2 | 3 | 4:DDCustom?
```

This command configures the downlink discontinuous custom timeslot data field.

***RST** PN9

Key Entry	PN9	PN11	PN15	PN20	PN23	FIX4	User File	EXT
	4 1's & 4 0's		8 1's & 8 0's		16 1's & 16 0's		32 1's & 32 0's	
			64 1's & 64 0's					

Remarks Refer to “[File Name Variables](#)” on page 13 for information on the file name syntax.**:SLOT[1] | 2 | 3 | 4:DDCustom:FIX4****Supported** E4438C with Option 402

```
[:SOURce]:RADio:TETRa:SLOT[1] | 2 | 3 | 4:DDCustom:FIX4 <val>
[:SOURce]:RADio:TETRa:SLOT[1] | 2 | 3 | 4:DDCustom:FIX4?
```

This command sets the binary, 4-bit repeating sequence data pattern that is used in the selected downlink discontinuous custom timeslot.

***RST** #B0000**Range** #B0000–#B1111 or 0–15**Key Entry** FIX4**Remarks** FIX4 must already be defined as the data type.

:SLOT[1] | 2 | 3 | 4:DDNormal:B1

Supported E4438C with Option 402

```
[ :SOURCE ] :RADio:TETRa:SLOT[ 1 ] | 2 | 3 | 4 :DDNormal :B1 <val>  
[ :SOURCE ] :RADio:TETRa:SLOT[ 1 ] | 2 | 3 | 4 :DDNormal :B1?
```

This command sets the first 14 broadcast bits for the selected downlink discontinuous normal timeslot.

***RST** #H0000

Range #H0–#H3FFF

Key Entry B1

:SLOT[1] | 2 | 3 | 4:DDNormal:B2

Supported E4438C with Option 402

```
[ :SOURCE ] :RADio:TETRa:SLOT[ 1 ] | 2 | 3 | 4 :DDNormal :B2 <val>  
[ :SOURCE ] :RADio:TETRa:SLOT[ 1 ] | 2 | 3 | 4 :DDNormal :B2?
```

This command sets the last 16 broadcast bits for the selected downlink continuous normal timeslot.

***RST** #H0000

Range #H0–#HFFFF

Key Entry B2

:SLOT[1] | 2 | 3 | 4:DDNormal:TSEquence

Supported E4438C with Option 402

```
[ :SOURCE ] :RADio:TETRa:SLOT[ 1 ] | 2 | 3 | 4 :DDNormal :TSEquence <val>  
[ :SOURCE ] :RADio:TETRa:SLOT[ 1 ] | 2 | 3 | 4 :DDNormal :TSEquence?
```

This command specifies the normal training sequence bits (30-bit mid-amble) for the selected downlink discontinuous normal timeslot.

***RST** #H343A74

Range #H0–#H3FFFFFFF

Key Entry TS

Remarks When 1E90DE is selected, the data fields are scrambled as separate logical channels.

TETRA Subsystem–Option 402 ([:SOURCE]:RADIO:TETRA)**:SLOT[1] | 2 | 3 | 4:DDNormal[:DATA]****Supported** E4438C with Option 402

```
[ :SOURCE ] :RADIO:TETRA:SLOT[ 1 ] | 2 | 3 | 4:DDNormal[ :DATA ] PN9 | PN11 |
PN15 | PN20 | PN23FIX4 | "<file name>" | EXT | P4 | P8 | P16 | P32 | P64
[ :SOURCE ] :RADIO:TETRA:SLOT[ 1 ] | 2 | 3 | 4:DDNormal[ :DATA ] ?
```

This command configures the selected downlink discontinuous normal timeslot data field.

***RST** PN9

Key Entry	PN9	PN11	PN15	PN20	PN23	FIX4	User File	EXT
	4 1's & 4 0's	8 1's & 8 0's	16 1's & 16 0's	32 1's & 32 0's	64 1's & 64 0's			

Remarks Refer to “[File Name Variables](#)” on page 13 for information on the file name syntax.

:SLOT[1] | 2 | 3 | 4:DDNormal[:DATA]:FIX4**Supported** E4438C with Option 402

```
[ :SOURCE ] :RADIO:TETRA:SLOT[ 1 ] | 2 | 3 | 4:DDNormal[ :DATA ] :FIX4 <val>
[ :SOURCE ] :RADIO:TETRA:SLOT[ 1 ] | 2 | 3 | 4:DDNormal[ :DATA ] :FIX4 ?
```

This command sets the binary, 4-bit repeating sequence data pattern that is used in the selected downlink discontinuous normal timeslot.

***RST** #B0000**Range** #B0000–#B1111 or 0–15**Key Entry** FIX4**Remarks** FIX4 must already be defined as the data type.

:SLOT[1]|2|3|4:DDSync:B

Supported E4438C with Option 402

```
[ :SOURCE ] :RADio :TETRa :SLOT[ 1 ] | 2 | 3 | 4 :DDSync :B <val>  
[ :SOURCE ] :RADio :TETRa :SLOT[ 1 ] | 2 | 3 | 4 :DDSync :B?
```

This command sets the broadcast bits for the selected downlink discontinuous synchronization timeslot.

***RST** #H00000000

Range #H0–#H3FFFFFFF

Key Entry B

:SLOT[1]|2|3|4:DDSync:FCOR

Supported E4438C with Option 402

```
[ :SOURCE ] :RADio :TETRa :SLOT[ 1 ] | 2 | 3 | 4 :DDSync :FCOR <val>  
[ :SOURCE ] :RADio :TETRa :SLOT[ 1 ] | 2 | 3 | 4 :DDSync :FCOR?
```

This command sets the frequency correction bits for the selected downlink discontinuous synchronization timeslot.

***RST** #HFF0000000000000000FF

Range #H0–#HFFFFFFFFFFFFFFFFFFFF

Key Entry FCOR

:SLOT[1]|2|3|4:DDSync:SSB

Supported E4438C with Option 402

```
[ :SOURCE ] :RADio :TETRa :SLOT[ 1 ] | 2 | 3 | 4 :DDSync :SSB <val>  
[ :SOURCE ] :RADio :TETRa :SLOT[ 1 ] | 2 | 3 | 4 :DDSync :SSB?
```

This command sets the synchronization block bits for the selected downlink synchronization discontinuous timeslot.

***RST** #H000000000000000000000000

Range #H0–#HFFFFFFFFFFFFFFFFFFFFFFFF

Key Entry SSB

:SLOT[1] | 2 | 3 | 4:DDSync:STS

Supported E4438C with Option 402

```
[ :SOURce ] :RADio :TETRa :SLOT [ 1 ] | 2 | 3 | 4 :DDSync :STS <val>
[ :SOURce ] :RADio :TETRa :SLOT [ 1 ] | 2 | 3 | 4 :DDSync :STS?
```

This command sets the synchronization training sequence for the selected downlink discontinuous synchronization timeslot.

***RST** #H30673A7067
Range #H0–#H3FFFFFFFFF
Key Entry STS

:SLOT[1] | 2 | 3 | 4:DDSync[:DATA]

Supported E4438C with Option 402

```
[ :SOURce ] :RADio :TETRa :SLOT [ 1 ] | 2 | 3 | 4 :DDSync [ :DATA ] PN9 | PN11 |
PN15 | PN20 | PN23 | FIX4 | "<file name>" | EXT | P4 | P8 | P16 | P32 | P64
[ :SOURce ] :RADio :TETRa :SLOT [ 1 ] | 2 | 3 | 4 :DDSync [ :DATA ]?
```

This command configures the selected downlink discontinuous synchronization timeslot data field.

***RST** PN9
Key Entry

PN9	PN11	PN15	PN20	PN23	FIX4	User File	EXT
4 1's & 4 0's		8 1's & 8 0's		16 1's & 16 0's		32 1's & 32 0's	
64 1's & 64 0's							

Remarks Refer to [“File Name Variables” on page 13](#) for information on the file name syntax.

:SLOT[1] | 2 | 3 | 4:DDSync[:DATA]:FIX4

Supported E4438C with Option 402

```
[ :SOURce ] :RADio :TETRa :SLOT [ 1 ] | 2 | 3 | 4 :DDSync [ :DATA ] :FIX4 <val>
[ :SOURce ] :RADio :TETRa :SLOT [ 1 ] | 2 | 3 | 4 :DDSync [ :DATA ] :FIX4?
```

This command sets the binary, 4-bit repeating sequence data pattern that is used in the selected downlink discontinuous synchronization timeslot.

***RST** #B0000
Range #B0000–#B1111 or 0–15
Key Entry FIX4

Remarks FIX4 must already be defined as the data type. To change the data type, refer to “:SLOT[1]|2|3|4:DCNormal[:DATA]” on page 995.

:SLOT[1]|2|3|4:POWer

Supported E4438C with Option 402

```
[ :SOURce ] :RADio:TETRa:SLOT[ 1 ] | 2 | 3 | 4 :POWer MAIN|DELTA
[ :SOURce ] :RADio:TETRa:SLOT[ 1 ] | 2 | 3 | 4 :POWer?
```

This command toggles the RF output power level function for the selected timeslot.

MAIN This choice specifies RF output as the main power level.

DELTA This choice specifies RF output as the alternative power level.

***RST** MAIN

Key Entry Timeslot Ampl Main Delta

:SLOT[1]|2|3|4:STATe

Supported E4438C with Option 402

```
[ :SOURce ] :RADio:TETRa:SLOT[ 1 ] | 2 | 3 | 4 :STATe ON|OFF|1|0
[ :SOURce ] :RADio:TETRa:SLOT[ 1 ] | 2 | 3 | 4 :STATe?
```

This command enables or disables the selected timeslot.

***RST** Timeslot 1: 1 Timeslot 2-4:

Key Entry Timeslot Off On

Remarks Continuous timeslots cannot be disabled.

:SLOT[1]|2|3|4:UC1:TSEquence

Supported E4438C with Option 402

```
[ :SOURce ] :RADio:TETRa:SLOT[ 1 ] | 2 | 3 | 4 :UC1:TSEquence <val>
[ :SOURce ] :RADio:TETRa:SLOT[ 1 ] | 2 | 3 | 4 :UC1:TSEquence?
```

This command specifies the extended training sequence bits (30-bit mid-amble) for the selected uplink control 1 timeslot.

***RST** #H2743A743

Range #H0–#H3FFFFFFF

Key Entry TS

:SLOT[1] | 2 | 3 | 4:UC1[:DATA]

Supported E4438C with Option 402

```
[ :SOURce ] :RADio :TETRa :SLOT [ 1 ] | 2 | 3 | 4 :UC1 [ :DATA ] PN9 | PN11 | PN15 |  
PN20 | PN23 | FIX4 | "<file name>" | EXT | P4 | P8 | P16 | P32 | P64  
[ :SOURce ] :RADio :TETRa :SLOT [ 1 ] | 2 | 3 | 4 :UC1 [ :DATA ] ?
```

This command configures the selected uplink control 1 data field.

***RST** PN9

Key Entry	PN9	PN11	PN15	PN20	PN23	FIX4	User File	EXT
	4 1's & 4 0's	8 1's & 8 0's	16 1's & 16 0's	32 1's & 32 0's	64 1's & 64 0's			

Remarks Refer to “File Name Variables” on page 13 for information on the file name syntax.

:SLOT[1] | 2 | 3 | 4:UC1[:DATA]:FIX4

Supported E4438C with Option 402

```
[ :SOURce ] :RADio :TETRa :SLOT [ 1 ] | 2 | 3 | 4 :UC1 [ :DATA ] :FIX4 <val>  
[ :SOURce ] :RADio :TETRa :SLOT [ 1 ] | 2 | 3 | 4 :UC1 [ :DATA ] :FIX4 ?
```

This command configures the uplink control 1 data field FIX4 value for the selected timeslot.

***RST** #B0000

Range #B0000–#B1111 or 0–15

Key Entry FIX4

:SLOT[1] | 2 | 3 | 4:UC2:TSEquence

Supported E4438C with Option 402

```
[ :SOURce ] :RADio :TETRa :SLOT [ 1 ] | 2 | 3 | 4 :UC2 :TSEquence <val>  
[ :SOURce ] :RADio :TETRa :SLOT [ 1 ] | 2 | 3 | 4 :UC2 :TSEquence ?
```

This command specifies the extended training sequence bits (30-bit mid-amble) for the selected uplink control 2 timeslot.

***RST** #H2743A743

Range #H0–#H3FFFFFF

Key Entry TS

:SLOT[1] | 2 | 3 | 4:UC2[:DATA]

Supported E4438C with Option 402

```
[ :SOURCE ] :RADio:TETRa:SLOT[1] | 2 | 3 | 4:UC2[ :DATA] PN9 | PN11 | PN15 |
PN20 | PN23 | FIX4 | "<file name>" | EXT | P4 | P8 | P16 | P32 | P64
[ :SOURCE ] :RADio:TETRa:SLOT[1] | 2 | 3 | 4:UC2[ :DATA] ?
```

This command configures the selected uplink control 2 data field.

***RST** PN9

Key Entry	PN9	PN11	PN15	PN20	PN23	FIX4	User File	EXT
	4 1's & 4 0's		8 1's & 8 0's		16 1's & 16 0's		32 1's & 32 0's	
	64 1's & 64 0's							

Remarks Refer to [“File Name Variables” on page 13](#) for information on the file name syntax.

:SLOT[1] | 2 | 3 | 4:UC2[:DATA]:FIX4

Supported E4438C with Option 402

```
[ :SOURCE ] :RADio:TETRa:SLOT[1] | 2 | 3 | 4:UC2[ :DATA] :FIX4 <val>
[ :SOURCE ] :RADio:TETRa:SLOT[1] | 2 | 3 | 4:UC2[ :DATA] :FIX4 ?
```

This command configures the uplink control 2 data field FIX4 value for the selected timeslot.

***RST** #B0000

Range #B0000–#B1111 or 0–15

Key Entry FIX4

:SLOT[1] | 2 | 3 | 4:UCUStom

Supported E4438C with Option 402

```
[ :SOURCE ] :RADio:TETRa:SLOT[1] | 2 | 3 | 4:UCUStom PN9 | PN11 | PN15 |
PN20 | PN23 | FIX4 | "<file name>" | EXT | P4 | P8 | P16 | P32 | P64
[ :SOURCE ] :RADio:TETRa:SLOT[1] | 2 | 3 | 4:UCUStom ?
```

This command configures the uplink custom data field.

***RST** PN9

Key Entry	PN9	PN11	PN15	PN20	PN23	FIX4	User File	EXT
	4 1's & 4 0's		8 1's & 8 0's		16 1's & 16 0's		32 1's & 32 0's	
	64 1's & 64 0's							

TETRA Subsystem–Option 402 ([:SOURce]:RADio:TETRa)

Remarks See “File Name Variables” on page 13 for information on the file name syntax.

:SLOT[1] | 2 | 3 | 4:UCUStom:FIX4

Supported E4438C with Option 402

```
[ :SOURce ] :RADio :TETRa :SLOT[ 1 ] | 2 | 3 | 4 :UCUStom :FIX4 <val>
[ :SOURce ] :RADio :TETRa :SLOT[ 1 ] | 2 | 3 | 4 :UCUStom :FIX4 ?
```

This command configures the uplink custom data field to FIX4 (4-bit repeating sequence data pattern).

***RST** #B0000

Range #B0000–#B1111 or 0–15

Key Entry FIX4

:SLOT[1] | 2 | 3 | 4:UNORmal:TSEquence

Supported E4438C with Option 402

```
[ :SOURce ] :RADio :TETRa :SLOT[ 1 ] | 2 | 3 | 4 :UNORmal :TSEquence <val>
[ :SOURce ] :RADio :TETRa :SLOT[ 1 ] | 2 | 3 | 4 :UNORmal :TSEquence ?
```

This command specifies the extended training sequence bits (22-bit mid-amble) for the selected uplink normal timeslot.

***RST** #H343A74

Range #H0–#H3FFFFFF

Key Entry TS

Remarks When 1E90DE is selected, data fields are scrambled as separate logical channels.

:SLOT[1] | 2 | 3 | 4:UNORmal[:DATA]

Supported E4438C with Option 402

```
[ :SOURce ] :RADio :TETRa :SLOT[ 1 ] | 2 | 3 | 4 :UNORmal [ :DATA ] PN9 | PN11 |
PN15 | PN20 | PN23 | FIX4 | "<file name>" | EXT | P4 | P8 | P16 | P32 | P64
[ :SOURce ] :RADio :TETRa :SLOT[ 1 ] | 2 | 3 | 4 :UNORmal [ :DATA ] ?
```

This command configures the selected uplink normal data field.

***RST** PN9

Key Entry	PN9	PN11	PN15	PN20	PN23	FIX4	User File	EXT
	4 1's & 4 0's		8 1's & 8 0's		16 1's & 16 0's		32 1's & 32 0's	
	64 1's & 64 0's							

Remarks Refer to “File Name Variables” on page 13 for information on the file name syntax.

:SLOT[1] | 2 | 3 | 4:UNORmal[:DATA]:FIX4

Supported E4438C with Option 402

```
[ :SOURCE ] :RADIO:TETRA:SLOT[ 1 ] | 2 | 3 | 4:UNORmal[ :DATA ]:FIX4 <val>
[ :SOURCE ] :RADIO:TETRA:SLOT[ 1 ] | 2 | 3 | 4:UNORmal[ :DATA ]:FIX4?
```

This command configures the uplink normal data field FIX4 value for the selected timeslot.

***RST** #B0000

Range #B0000–#B1111 or 0–15

Key Entry FIX4

:SLOT[1] | 2 | 3 | 4[:TYPE]

Supported E4438C with Option 402

```
[ :SOURCE ] :RADIO:TETRA:SLOT[ 1 ] | 2 | 3 | 4[:TYPE] UCUSTom|UC1|UC2|
UNORmal|DDNormal|DDSync|DCNormal|DCSync|DCCustom|DDCustom
[ :SOURCE ] :RADIO:TETRA:SLOT[ 1 ] | 2 | 3 | 4[:TYPE]?
```

This command sets the timeslot type for the selected timeslot.

***RST** *Timeslot 1:* UCUS *Timeslot 2-4:* UNOR

Key Entry Up Custom Up Control 1 Up Control 2 Up Normal Dn Normal Disc
Dn Sync Disc Dn Normal Cont Dn Sync Cont Dn Custom Cont
Dn Custom Disc

Remarks When downlink is selected and the frame is uplink, the following mapping is made to convert the uplink protocols to downlink; an error will be generated.

From	To (Continuous Downlink)	To (Discontinuous Downlink)
UC1	DCCustom	DDCustom
UC2	DCCustom	DDCustom
UCUSTom	DCCustom	DDCustom
UNORmal	DCNormal	DDNormal

TETRA Subsystem–Option 402 ([:SOURce]:RADio:TETRa)

When uplink is selected and the frame is downlink, the following mapping is made to convert the downlink protocols to uplink; an error will be generated.

From	To
DCCustom/ DDCustom	UCUSTom
DCNormal/ DDNormal	UNORmal
DCSync/ DDSync	UCUSTom

When continuous downlink protocols are selected, all timeslots must be on, and they cannot be turned off. Any attempts to do so will generate an error.

:SOUT

Supported E4438C with Option 402

```
[ :SOURce ] :RADio:TETRa:SOUT FRAME | SLOT | ALL
[ :SOURce ] :RADio:TETRa:SOUT?
```

This command sets the synchronization location (within the pattern of data) and the type of output at the EVENT 1 rear panel connector.

FRAME This choice outputs a 1-bit signal, synchronized to the bit selected by the synchronization output offset command, for a framed data pattern.

SLOT This choice outputs a 1-bit signal, synchronized to the bit selected by the synchronization output offset command, for a selected timeslot.

ALL This choice outputs a 1-bit signal, synchronized to the bit selected by the synchronization output offset command, for all active timeslots.

***RST** FRAME

Key Entry Begin Frame Begin Timeslot # All Timeslots

Remarks See “[:SOUT:OFFSet]” on page 1008 to change the synchronization output offset.

:SOUT:OFFSet

Supported E4438C with Option 402

```
[ :SOURce ] :RADio:TETRa:SOUT:OFFSet <val>
[ :SOURce ] :RADio:TETRa:SOUT:OFFSet?
```

This command sets the offset value for the location of the output synchronization signal on the EVENT1 rear panel connector relative to the beginning of the framed data pattern or timeslot.

The variable <val> is expressed as a number of bits.

***RST** +0
Range –509 to 509
Key Entry Sync Out Offset
Remarks Negative values move the synchronization output signal earlier; positive values move it later.
To change the output of the EVENT1 rear panel connector to SLOT, refer to “:SOUT” on page 1008.

:SOUT:SLOT

Supported E4438C with Option 402

```
[ :SOURCE ] :RADio:TETRa:SOUT:SLOT <val>  
[ :SOURCE ] :RADio:TETRa:SOUT:SLOT?
```

This command selects the timeslot that will trigger a 1-bit output signal at the EVENT 1 rear panel connector.

***RST** +1
Range 1–4
Key Entry Begin Timeslot #
Remarks SLOT must be selected as the output signal type for the EVENT 1 rear panel connector.
To change the output of the EVENT1 rear panel connector to SLOT, refer to “:SOUT” on page 1008.

:SRATe

Supported E4438C with Option 001/601 or 002/602

```
[ :SOURCE ] :RADio:TETRa:SRATe <val>  
[ :SOURCE ] :RADio:TETRa:SRATe?
```

This command sets the transmission symbol rate. Symbol rate is the bit rate divided by the bits per symbol. A change in the symbol rate affects the bit rate. Refer to “:BRATe” on page 975 for information on bit rate.

The variable <val> is expressed in units of symbols per second (sps–MSPs) and the maximum symbol rate depends on the filter. Refer to “:FILTer” on page 988 for minimum filter symbol width.

The filter may have to be truncated down to 32 or 16 symbols wide to achieve the highest symbol rate. The signal generator’s internal filters are not truncated below their minimum filter length and user-defined FIR filters are not truncated. If the filter cannot be truncated then the symbol rate is

Receiver Test Digital Commands (continued)
TETRA Subsystem–Option 402 ([:SOURCE]:RADio:TETra)

limited to the maximum rate of the narrowest filter size possible.

The relative timing of the modulated data, as well as the actual filter response is affected when the filter is truncated.

When the symbol rate changes, the ESG reconfigures the baseband generator. The time required to reconfigure the baseband generator is inversely proportional to the symbol rate: lower symbol rates require more time.

To change the modulation type, refer to “:MODulation[:TYPE]” on page 991.

***RST** +1.80000000E+004

Range	Modulation Type	Symbol Rate Range		
		<i>16 Symbol Wide Filter</i>	<i>32 Symbol Wide Filter</i>	<i>64 Symbol Wide Filter</i>
	BPSK, FSK2, MSK	1sps–50Msps	1sps–25Msps	1sps–12.5Msps
	C4FM, OQPSK, FSK4	2sps–25Msps	2sps–12.5Msps	2sps–6.25Msps
	OQPSKI95, QPSK			
	P4QPPSK, QPSKIS95			
	GRAYQPSK, QAM4			
	D8PSK, EDGE, FSK8, PSK8	3sps–16.6666666666 Msps	3sps–8.3333333333 Msps	3sps–4.1666666666Msps
	FSK16, PSK16, QAM16	4sps–12.5Msps	4sps–6.25Msps	4sps–3.125Msps
	QAM32	5sps–10Msps	5sps–5Msps	5sps–2.5Msps
	QAM64	6sps–8.3333333333 Msps	6sps–4.1666666666 Msps	6sps–2.0833333333 Msps
	QAM128	7sps–7.142857142 Msps	7sps–3.571428572 Msps	7sps–1.785714285 Msps
	QAM256	8sps–6.25Msps	8sps–3.125 Msps	8sps–1.5625 Msps

NOTE Using I/Q skew will half the minimum number of symbols for the selected filter.

Key Entry **Symbol Rate**

:TRIGger:TYPE

Supported E4438C with Option 402

```
[ :SOURCE ] :RADio:TETRa:TRIGger:TYPE CONTInuous | SINGLE | GATE
[ :SOURCE ] :RADio:TETRa:TRIGger:TYPE?
```

This command sets the trigger type.

CONTInuous The framed data sequence repeats continuously; the sequence restarts every time the previous playback is completed. To customize continuous triggering, refer to [“:TRIGger:TYPE:CONTInuous\[:TYPE\]” on page 1011](#).

SINGLE The framed data sequence plays once for every trigger received.

GATE An external trigger signal interrupts the playback while the gating signal is in the inactive state. Playback resumes when the external control signal returns to the active state. The active state can be set to high or low.

***RST** CONT

Key Entry Continuous Single Gated

:TRIGger:TYPE:CONTInuous[:TYPE]

Supported E4438C with Option 402

```
[ :SOURCE ] :RADio:TETRa:TRIGger:TYPE:CONTInuous[ :TYPE ] FREE |
TRIGger | RESet
[ :SOURCE ] :RADio:TETRa:TRIGger:TYPE:CONTInuous[ :TYPE ]?
```

This commands selects the waveform’s response to a trigger signal while using the continuous trigger mode.

For more information on triggering and to select the continuous trigger mode, see [“:TRIGger:TYPE” on page 1011](#).

The following list describes the waveform’s response to each of the command choices:

FREE Turning the ARB format on immediately triggers the waveform. The waveform repeats until you turn the format off, select another trigger, or choose another waveform file.

TRIGger The waveform waits for a trigger before play begins. When the waveform receives the trigger, it plays continuously until you turn the format off, select another trigger, or choose another waveform file.

TETRA Subsystem–Option 402 ([:SOURce]:RADio:TETRa)

RESet	The waveform waits for a trigger before play begins. When the waveform receives the trigger, it plays continuously. Subsequent triggers reset the waveform to the beginning. For a waveform sequence, this means to the beginning of the first segment in the sequence.		
*RST	FREE		
Key Entry	Free Run	Trigger & Run	Reset & Run

:TRIGger:TYPE:GATE:ACTive

Supported E4438C with Option 402

[:SOURce] :RADio:TETRa:TRIGger:TYPE:GATE:ACTive LOW|HIGH

[:SOURce] :RADio:TETRa:TRIGger:TYPE:GATE:ACTive?

This command selects the active state (gate polarity) of the gate while using the gating trigger mode.

The LOW and HIGH selections correspond to the low and high states of an external trigger signal. For example, when you select HIGH, the active state occurs during the high of the trigger signal. When the active state occurs, the ESG stops the waveform playback at the last played sample point, then restarts the playback at the next sample point when the inactive state occurs. For more information on triggering and to select gating as the trigger mode, see “:TRIGger:TYPE” on page 1011.

The following list describes the ESG’s gating behavior for the polarity selections:

LOW	The waveform playback stops when the trigger signal goes low (active state) and restarts when the trigger signal goes high (inactive state).
HIGH	The waveform playback stops when the trigger signal goes high (active state) and restarts when the trigger signal goes low (inactive state).
*RST	HIGH
Key Entry	Gate Active Low High

:TRIGger[:SOURce]

Supported E4438C with Option 402

```
[ :SOURce ] :RADio:TETRa:TRIGger [ :SOURce ] KEY | EXT | BUS
[ :SOURce ] :RADio:TETRa:TRIGger [ :SOURce ] ?
```

This command sets the trigger source.

For more information on triggering, see “:TRIGger:TYPE” on page 1011. The following list describes the command choices:

KEY This choice enables manual triggering by pressing the front-panel **Trigger** hardkey.

EXT An externally applied signal triggers the waveform. This is the only choice that works with gating. The following conditions affect an external trigger:

- The input connector selected for the trigger signal. You have a choice between the rear-panel PATTERN TRIG IN connector or the PATT TRIG IN 2 pin on the rear-panel AUXILIARY I/O connector. To make the connector selection, see “:TRIGger[:SOURce]:EXTernal[:SOURce]” on page 1015.

For more information on the connectors and on connecting the cables, see the *E4428C/38C ESG Signal Generators User’s Guide*.

- The trigger signal polarity:
 - gating mode, see “:TRIGger:TYPE:GATE:ACTive” on page 1012
 - continuous and single modes, see “:TRIGger[:SOURce]:EXTernal:SLOPe” on page 1015
- The time delay between when the ESG receives a trigger and when the waveform responds to the trigger. There are two parts to setting the delay:
 - setting the amount of delay, see “:TRIGger[:SOURce]:EXTernal:DELay” on page 1014
 - turning the delay on, see “:TRIGger[:SOURce]:EXTernal:DELay:STATe” on page 1014

BUS This choice enables triggering over the GPIB or LAN using the *TRG or GET commands or the AUXILIARY INTERFACE (RS-232) using the *TRG command.

***RST** KEY

Key Entry Trigger Key Ext Bus

:TRIGger[:SOURCE]:EXternal:DElay**Supported** E4438C with Option 402

```
[ :SOURCE ] :RADio:TETRa:TRIGger[ :SOURCE ] :EXternal:DElay <val>
[ :SOURCE ] :RADio:TETRa:TRIGger[ :SOURCE ] :EXternal:DElay?
```

This command sets the number of bits to delay the ESG’s response to an external trigger.

The bit delay is a delay between when the ESG receives the trigger and when it responds to the trigger. The delay uses the clocks of the bit-clock to time the delay. After the ESG receives the trigger and the set number of delay bits (clocks) occurs, the ESG transmits the data pattern.

The delay occurs after you enable the state. See “:TRIGger[:SOURCE]:EXternal:DElay:STATe” on page 1014. You can set the number of bits either before or after enabling the state.

For more information on configuring an external trigger source and to select external as the trigger source, see “:TRIGger[:SOURCE]” on page 1013.

RST** +0**Range** 0–1048575**Key Entry** Ext Delay Bits**:TRIGger[:SOURCE]:EXternal:DElay:STATe*Supported** E4438C with Option 402

```
[ :SOURCE ] :RADio:TETRa:TRIGger[ :SOURCE ] :EXternal:DElay:STATe
ON|OFF|1|0
[ :SOURCE ] :RADio:TETRa:TRIGger[ :SOURCE ] :EXternal:DElay:STATe?
```

This command enables or disables the operating state of the external trigger delay function.

For setting the delay time, see “:TRIGger[:SOURCE]:EXternal:DElay” on page 1014, and for more information on configuring an external source, see “:TRIGger[:SOURCE]” on page 1013.

***RST** 0**Key Entry** Ext Delay Off On

:TRIGger[:SOURCE]:EXtErnal:SLOPe

Supported E4438C with Option 402

```
[ :SOURCE ]:RADio:TETRa:TRIGger[ :SOURCE ]:EXtErnal:SLOPe POSitive|NEGative
[ :SOURCE ]:RADio:TETRa:TRIGger[ :SOURCE ]:EXtErnal:SLOPe?
```

This command sets the polarity for an external trigger signal while using the continuous, single triggering mode. To set the polarity for gating, see “[:TRIGger:TYPE:GATE:ACTive](#)” on page 1012.

The POSitive and NEGative selections correspond to the high (positive) and low (negative) states of the external trigger signal. For example, when you select POSitive, the waveform responds (plays) during the high state of the trigger signal. When the ESG receives multiple trigger occurrences when only one is required, the signal generator uses the first trigger and ignores the rest.

For more information on configuring an external trigger source and to select external as the trigger source, see “[:TRIGger\[:SOURCE\]](#)” on page 1013.

***RST** NEG

Key Entry Ext Polarity Neg Pos

:TRIGger[:SOURCE]:EXtErnal[:SOURCE]

Supported E4438C with Option 402

```
[ :SOURCE ]:RADio:TETRa:TRIGger[ :SOURCE ]:EXtErnal[ :SOURCE ] EPT1 |
EPT2 | EPTRIGGER1 | EPTRIGGER2
[ :SOURCE ]:RADio:TETRa:TRIGger[ :SOURCE ]:EXtErnal[ :SOURCE ]?
```

This command selects which PATTERN TRIG IN connection the ESG uses to accept an externally applied trigger signal when external is the trigger source selection.

For more information on configuring an external trigger source and to select external as the trigger source, see “[:TRIGger\[:SOURCE\]](#)” on page 1013. For more information on the rear-panel connectors, see the *E4428C/38C ESG Signal Generators User’s Guide*.

The following list describes the command choices:

- | | |
|------------|---|
| EPT1 | This choice is synonymous with EPTRIGGER1 and selects the PATTERN TRIG IN rear-panel connector. |
| EPT2 | This choice is synonymous with EPTRIGGER2 and selects the PATT TRIG IN 2 pin on the rear-panel AUXILIARY I/O connector. |
| EPTRIGGER1 | This choice is synonymous with EPT1 and selects the PATTERN TRIG IN rear-panel connector. |
| EPTRIGGER2 | This choice is synonymous with EPT2 and selects the PATT TRIG IN 2 pin on the rear-panel AUXILIARY I/O connector. |

TETRA Subsystem—Option 402 ([:SOURCE]:RADio:TETRa)

***RST** EPT1
Key Entry Patt Trig In 1 Patt Trig In 2

[:STATe]

Supported E4438C with Option 402

[:SOURCE] :RADio :TETRa [:STATe] ON | OFF | 1 | 0
[:SOURCE] :RADio :TETRa [:STATe] ?

This command enables or disables the TETRA modulation format.

***RST** OFF
Key Entry TETRA Off On

Remarks Although the TETRA modulation is enabled with this command, the RF carrier is not modulated unless you also activate the front panel **Mod On/Off** hardkey.

Wideband CDMA Base Band Generator Subsystem–Option 400 ([:SOURCE]:RADio:WCDMa:TGPP[:BBG])

:BBClock

Supported E4438C with Option 400

```
[ :SOURCE ] : RADio : WCDMa : TGPP [ : BBG ] : BBClock INT [ 1 ] | EXT [ 1 ]
```

```
[ :SOURCE ] : RADio : WCDMa : TGPP [ : BBG ] : BBClock ?
```

This command selects the baseband generator chip clock source for the radio uplink channel.

***RST** INT

Key Entry BBG Chip Clock Ext Int

Remarks Refer to “:BBClock:EXT:RATE” on page 1017 for the EXT clock rate selections.

:BBClock:EXT:RATE

Supported E4438C with Option 400

```
[ :SOURCE ] : RADio : WCDMa : TGPP [ : BBG ] : BBClock : EXT : RATE X1 | X2 | X4
```

```
[ :SOURCE ] : RADio : WCDMa : TGPP [ : BBG ] : BBClock : EXT : RATE ?
```

This command sets the external clock rate for the baseband generator.

X1 This choice sets an external clock rate that is identical to the chip clock (3.84 MHz).

X2 This choice sets an external clock rate that is two times the rate of the chip clock.

X4 This choice sets an external clock rate that is four times the rate of the chip clock.

***RST** X1

Key Entry Ext Clock Rate x1 x2 x4

Remarks This command only applies to uplink.

:DLINK:APPLY

Supported E4438C with Option 400

[:SOURce] :RADio:WCDMa:TGPP [:BBG] :DLINK:APPLY

[:SOURce] :RADio:WCDMa:TGPP [:BBG] :DLINK:APPLY?

This command immediately starts the channel coding generation process according to the channel setup and data entered for the downlink physical and transport channels.

Key Entry Apply Channel Setup

Remarks If pre-computing is required, then a progress bar will appear on the signal generator's display.

:DLINK:AWGN:CN

Supported E4438C with Option 400 and 403

[:SOURce] :RADio:WCDMa:TGPP [:BBG] :DLINK:AWGN:CN <val>

[:SOURce] :RADio:WCDMa:TGPP [:BBG] :DLINK:AWGN:CN?

This command sets the in band carrier to noise ratio (C/N) value in the AWGN carrier to noise.

***RST** -10.2

Range -20 to 20

Field Entry C/N value

:DLINK:AWGN:CPOWER

Supported E4438C with Option 400 and 403

[:SOURce] :RADio:WCDMa:TGPP [:BBG] :DLINK:AWGN:CPOWER?

This query returns the carrier power of the RF signal.

***RST** 0

Field Entry C Power

Wideband CDMA Base Band Generator Subsystem—Option 400 ([:SOURCE]:RADio:WCDMa:TGPP[:BBG])

:DLINK:AWGN:ECNO**Supported** E4438C with Option 400 and 403

[:SOURCE]:RADio:WCDMa:TGPP[:BBG]:DLINK:AWGN:ECNO <val>

[:SOURCE]:RADio:WCDMa:TGPP[:BBG]:DLINK:AWGN:ECNO?

This command sets the Ec/No value of the Ec Ref channel.

The variable <val> is expressed in decibels (dB).

RST** 0**Range** -30 to 30**Field Entry** Ec/No value**:DLINK:AWGN:ECRPower*Supported** E4438C with Option 400 and 403

[:SOURCE]:RADio:WCDMa:TGPP[:BBG]:DLINK:AWGN:ECRPower?

This query returns the carrier noise power in the Ec Ref channel.

RST** 0**Field Entry** Ec Ref Power**:DLINK:AWGN:ECRef*Supported** E4438C with Option 400 and 403

[:SOURCE]:RADio:WCDMa:TGPP[:BBG]:DLINK:AWGN:ECRef DPCH1 | DPCH2 | PCCPCH | PICH | CPICH

[:SOURCE]:RADio:WCDMa:TGPP[:BBG]:DLINK:AWGN:ECRef?

This command selects the reference used for the Ec/No value.

DPCH1 This choice selects 1 dedicated physical channel.

DPCH2 This choice selects 2 dedicated physical channel.

PCCPCH This choice selects a primary command control physical channel.

PICH This choice selects a paging indicator channel.

CPICH This choice selects a common pilot channel.

***RST** DPCH1**Key Entry** DPCH + 1 DPCH + 2 PCCPCH PICH CPICH

Wideband CDMA Base Band Generator Subsystem–Option 400 ([:SOURCE]:RADIO:WCDMA:TGPP[:BBG])

Remarks White noise is a frequency spectrum that is uniform over a specific frequency band. White noise has equal power per hertz over the specific frequency band.

:DLINK:AWGN:FNBW

Supported E4438C with Option 400 and 403

[:SOURCE] : RADIO : WCDMA : TGPP [: BBG] : DLINK : AWGN : FNBW ?

This query returns the flat noise bandwidth value.

***RST** +6.1440000E+006

:DLINK:AWGN:NPOWER

Supported E4438C with Option 400 and 403

[:SOURCE] : RADIO : WCDMA : TGPP [: BBG] : DLINK : AWGN : NPOWER ?

This query returns the in-band noise power portion of the total RF power.

***RST** +0

:DLINK:AWGN:TICPower

Supported E4438C with Option 400 and 403

[:SOURCE] : RADIO : WCDMA : TGPP [: BBG] : DLINK : AWGN : TICPower ?

This query returns the total in-channel power (carrier with noise) as defined by the 3GPP standard.

***RST** +0

Field Entry Total Pwr

Remarks The total in-channel power is a sum of carrier power and in-channel noise power. Changing the noise related parameters such as C/N, Eb/No, and Eb Ref will cause a recalculation of the total in-channel power.

The maximum value returned by this query depends on the power option that is installed in the signal generator.

Wideband CDMA Base Band Generator Subsystem–Option 400 ([:SOURCE]:RADIO:WCDMA:TGPP[:BBG])

:DLINK:AWGN[:STATE]**Supported** E4438C with Option 400 and 403

[:SOURCE]:RADIO:WCDMA:TGPP[:BBG]:DLINK:AWGN:STATE ON|OFF|1|0

[:SOURCE]:RADIO:WCDMA:TGPP[:BBG]:DLINK:AWGN:STATE?

This command enables or disables the additive white gaussian noise (AWGN) physical channel.

RST** 0**Key Entry** Channel State Off On**:DLINK:BBClock*Supported** E4438C with Option 400

[:SOURCE]:RADIO:WCDMA:TGPP[:BBG]:DLINK:BBClock INT[1]|EXT[1]

[:SOURCE]:RADIO:WCDMA:TGPP[:BBG]:DLINK:BBClock?

This command selects the baseband generator chip clock source for the channel.

RST** INT**Key Entry** BBG Data Clock Ext Int**:DLINK:CARB:CMODE:CCODE*Supported** E4438C with Option 400

[:SOURCE]:RADIO:WCDMA:TGPP[:BBG]:DLINK:CARB:CMODE:CCODE <val>

[:SOURCE]:RADIO:WCDMA:TGPP[:BBG]:DLINK:CARB:CMODE:CCODE?

This command sets the channel code for the chip ARB based dedicated physical channel (DPCH) in compressed mode.

***RST** 6**Range** 0–511**Field Entry** Channel Code

:DLINK:CARB:CMODE:DATA**Supported** E4438C with Option 400

[:SOURCE]:RADIO:WCDMA:TGPP[:BBG]:DLINK:CARB:CMODE:DATA PN9 | PN15

[:SOURCE]:RADIO:WCDMA:TGPP[:BBG]:DLINK:CARB:CMODE:DATA?

This command sets the dedicated physical channel (DPCH) data pattern in compressed mode (CM).

***RST** PN9**Key Entry** PN9 PN15

Remarks The data pattern contains one frame of each normal DPCH frame with a chosen slot structure. CM is enabled via spread factor reduction using a single frame method.

:DLINK:CARB:CMODE:FOFFset**Supported** E4438C with Option 400

[:SOURCE]:RADIO:WCDMA:TGPP[:BBG]:DLINK:CARB:CMODE:FOFFset <val>

[:SOURCE]:RADIO:WCDMA:TGPP[:BBG]:DLINK:CARB:CMODE:FOFFset?

This command sets the frame offset for the dedicated physical channel (DPCH) in compressed mode.

RST** 0**Range** 0–149**Field Entry** Frame Offset**:DLINK:CARB:CMODE:FSTRuct*Supported** E4438C with Option 400

[:SOURCE]:RADIO:WCDMA:TGPP[:BBG]:DLINK:CARB:CMODE:FSTRuct A | B

[:SOURCE]:RADIO:WCDMA:TGPP[:BBG]:DLINK:CARB:CMODE:FSTRuct?

This command selects the frame structure for the downlink compressed mode.

A This choice maximizes the transmission gap length in a compressed frame.

B This choice optimized for power control during a compressed frame.

***RST** A**Key Entry** A B

Wideband CDMA Base Band Generator Subsystem–Option 400 ([:SOURCE]:RADio:WCDMa:TGPP[:BBG])

:DLINK:CARB:CMODE:POWER**Supported** E4438C with Option 400

[:SOURCE]:RADio:WCDMa:TGPP[:BBG]:DLINK:CARB:CMODE:POWER <val>

[:SOURCE]:RADio:WCDMa:TGPP[:BBG]:DLINK:CARB:CMODE:POWER?

This command sets the power for the downlink compressed mode.

The variable <val> is expressed in units of decibels (dB).

RST** +0.00000000E+000**Range** –40 to 0**Field Entry** Power**:DLINK:CARB:CMODE:PRATio*Supported** E4438C with Option 400

[:SOURCE]:RADio:WCDMa:TGPP[:BBG]:DLINK:CARB:CMODE:PRATio <val>

[:SOURCE]:RADio:WCDMa:TGPP[:BBG]:DLINK:CARB:CMODE:PRATio?

This command sets the playback ratio for the downlink compressed mode.

***RST** 2**Range** 0–4096**Field Entry** Playback Ratio**Remarks** The value that is set represents the number of normal frames played between each compressed frame.

For example: 1:30

30 represents the un-compressed (normal) DPCH frames. The 30 frames will be played and then 1 compressed DPCH frame. The sequence then repeats.

:DLINK:CARB:CMODE:SCTYpe**Supported** E4438C with Option 400

[:SOURCE]:RADio:WCDMa:TGPP[:BBG]:DLINK:CARB:CMODE:SCTYpe NORMal | RIGHT | LEFT

[:SOURCE]:RADio:WCDMa:TGPP[:BBG]:DLINK:CARB:CMODE:SCTYpe?

This command sets the scramble type for the downlink compressed mode.

NORMal This choice selects scramble codes 0–8191 (16 x 511 + 15 = 8191).

Wideband CDMA Base Band Generator Subsystem–Option 400 ([:SOURCE]:RADIO:WCDMA:TGPP[:BBG])

RIGHT	This choice selects scramble codes 8192–16383 (Normal + 8192).		
LEFT	This choice selects scramble codes 16384–24575 (Normal + 16384).		
*RST	NORM		
Key Entry	Normal	Right	Left

:DLINK:CARB:CMODE:SFORmat

Supported E4438C with Option 400

```
[ :SOURCE ] : RADIO : WCDMA : TGPP [ :BBG ] : DLINK : CARB : CMODE : SFORmat <val>
[ :SOURCE ] : RADIO : WCDMA : TGPP [ :BBG ] : DLINK : CARB : CMODE : SFORmat ?
```

This command sets the slot format value for the dedicated physical channel (DPCH) in compressed mode. This value is used for both compressed and uncompressed frames.

*RST	+11
Range	1–15
Field Entry	Slot Format

:DLINK:CARB:CMODE:SSCodeos

Supported E4438C with Option 400

```
[ :SOURCE ] : RADIO : WCDMA : TGPP [ :BBG ] : DLINK : CARB : CMODE : SSCodeos <val>
[ :SOURCE ] : RADIO : WCDMA : TGPP [ :BBG ] : DLINK : CARB : CMODE : SSCodeos ?
```

This command sets the secondary scramble code offset for the dedicated physical channel (DPCH) in compressed mode.

*RST	+0
Range	0–15
Field Entry	SecScr Code OS

Wideband CDMA Base Band Generator Subsystem–Option 400 ([:SOURCE]:RADIO:WCDMA:TGPP[:BBG])

:DLINK:CARB:CMODE:TFIRST**Supported** E4438C with Option 400

[:SOURCE]:RADIO:WCDMA:TGPP[:BBG]:DLINK:CARB:CMODE:TFIRST <val>

[:SOURCE]:RADIO:WCDMA:TGPP[:BBG]:DLINK:CARB:CMODE:TFIRST?

This command sets the first slot at which a gap appears.

RST** 7**Range** 0–7**Field Entry** Tfirst**:DLINK:CARB:CMODE:TGL*Supported** E4438C with Option 400

[:SOURCE]:RADIO:WCDMA:TGPP[:BBG]:DLINK:CARB:CMODE:TGL <val>

[:SOURCE]:RADIO:WCDMA:TGPP[:BBG]:DLINK:CARB:CMODE:TGL?

This command sets the number of slots in the gap.

RST** 7**Range** 1–7**Field Entry** Tgl**:DLINK:CARB:CMODE[:STATE]*Supported** E4438C with Option 400

[:SOURCE]:RADIO:WCDMA:TGPP[:BBG]:DLINK:CARB:CMODE[:STATE] ON|OFF|1|0

[:SOURCE]:RADIO:WCDMA:TGPP[:BBG]:DLINK:CARB:CMODE[:STATE]?

This command enables or disables the downlink dedicated physical channel (DPCH) in compressed mode.

***RST** 0**Key Entry** Channel State Off On

:DLINK:CPICH:CCODE**Supported** E4438C with Option 400

[:SOURCE]:RADIO:WCDMA:TGPP[:BBG]:DLINK:CPICH:CCODE?

This query returns the common paging indicator channel (CPICH) channel code value.

RST** +0**Remarks** The channelization code is always expected to be 0.**:DLINK:CPICH:POWER*Supported** E4438C with Option 400

[:SOURCE]:RADIO:WCDMA:TGPP[:BBG]:DLINK:CPICH:POWER <val>

[:SOURCE]:RADIO:WCDMA:TGPP[:BBG]:DLINK:CPICH:POWER?

This command sets the power level for the common paging indicator channel (CPICH). The variable <val> is expressed in units of decibels (dB).

RST** -3.30000000E+000**Range** -40 to 0**Field Entry** Power**:DLINK:CPICH[:STATE]*Supported** E4438C with Option 400

[:SOURCE]:RADIO:WCDMA:TGPP[:BBG]:DLINK:CPICH[:STATE]

[:SOURCE]:RADIO:WCDMA:TGPP[:BBG]:DLINK:CPICH[:STATE]?

This command enables or disables the common paging indicator channel (CPICH).

***RST** 1**Key Entry** Channel State Off On

Wideband CDMA Base Band Generator Subsystem–Option 400 ([:SOURCE]:RADio:WCDMa:TGPP[:BBG])

:DLINK:CRATe**Supported** E4438C with Option 400

[:SOURCE]:RADio:WCDMa:TGPP[:BBG]:DLINK:CRATe <val>

[:SOURCE]:RADio:WCDMa:TGPP[:BBG]:DLINK:CRATe?

This command adjusts the chip rate.

The variable <val> is expressed in units of cycle per second (cps).

RST** +3.84000000E+006**Range** 1000∠4250000**Field Entry** Chip Rate**Remarks** The chip rate is equivalent to the spreading rate.**:DLINK:DPCH[1]:BALance*Supported** E4438C with Option 400

[:SOURCE]:RADio:WCDMa:TGPP[:BBG]:DLINK:DPCH[1]:BALance <val>

[:SOURCE]:RADio:WCDMa:TGPP[:BBG]:DLINK:DPCH[1]:BALance?

This command sets DPCH1 power while scaling the power of all available OCNS channels in order to maintain a total power of 0 dB.

The variable <val> is expressed in units of decibels (dB).

Key Entry DPCH Channel Balance**Remarks** At least one DPCH and one OCNS channel must be on prior to channel balancing. Refer to “:DLINK:DPCH[1]2[:STATe]” on page 1034 and “:DLINK:OCNS[1]2|3|4|5|6|7|8|9|10|11|12|13|14|15|16[:STATe]” on page 1039.

The command [:SOURCE]:RADio:WCDMa:TGPP[:BBG]:DLINK:DPCH[1]:BINitalize must be initiated prior to channel balancing.

:DLINK:DPCH[1]:BINitalize**Supported** E4438C with Option 400

[:SOURCE]:RADio:WCDMa:TGPP[:BBG]:DLINK:DPCH[1]:BINitalize

This command initializes the DPCH1 or DPCH2 power of the OCNS channel balancing.

Remarks To insure proper balancing, this command must be called before the channel balancing.

:DLINK:DPCH[1] | 2:ALL[:STATe]**Supported** E4438C with Option 400

[:SOURCE]:RADio:WCDMa:TGPP[:BBG]:DLINK:DPCH[1] | 2:ALL[:STATe] ON|OFF | 1 | 0

This command enables or disables both of the downlink dedicated physical channels.

Key Entry Channel State Off On**Remarks** If the parameter is changed, the apply command must be executed after the change. Refer to “:DLINK:APPLY” on page 1018.

To query the state of the individual channel, refer to “:DLINK:DPCH[1]|2[:STATe]” on page 1034

:DLINK:DPCH[1] | 2:CCODE**Supported** E4438C with Option 400

[:SOURCE]:RADio:WCDMa:TGPP[:BBG]:DLINK:DPCH[1] | 2:CCODE <val>

[:SOURCE]:RADio:WCDMa:TGPP[:BBG]:DLINK:DPCH[1] | 2:CCODE?

This command sets the downlink dedicated physical channel (DPCH) code number.

***RST** DPCH 1: 10 DPCH 2: 11**Range** 0–511**Field Entry** Chan Code**Remarks** The channel code is coupled with the slot format and symbol rate. Refer to “:DLINK:DPCH[1]|2:SLOTformat” on page 1031 and “:DLINK:DPCH[1]|2:SRATE” on page 1031.

If the parameter set by this command is changed while the signal is active, the apply command must be executed for the change to occur. Refer to “:DLINK:APPLY” on page 1018.

:DLINK:DPCH[1] | 2:DATA**Supported** E4438C with Option 400

[:SOURCE]:RADio:WCDMa:TGPP[:BBG]:DLINK:DPCH[1] | 2:DATA PN9 | PN15 | FIX4 |

"<file name>" | TGRA | TGRB

[:SOURCE]:RADio:WCDMa:TGPP[:BBG]:DLINK:DPCH[1] | 2:DATA?

This command configures the data pattern for the downlink dedicated physical channel (DPCH).

Wideband CDMA Base Band Generator Subsystem–Option 400 ([:SOURCE]:RADIO:WCDMA:TGPP[:BBG])

TGRA	This choice selects transport channel A.
TGRB	This choice selects transport channel B.
"<file name>"	This variable specifies a data pattern that has been stored in memory.
*RST	PN9
Key Entry	PN9 PN15 FIX4 "User File" Transp Chan A Transp Chan B
Remarks	The data is now independent, on each of the DPCH channels. The data is limited to PN9 and PN15 when the DPCH is in slot format 16. If the parameter set by this command is changed while the signal is active, the apply command must be executed for the change to occur. Refer to “:DLINK:APPLY” on page 1018 .

:DLINK:DPCH[1] | 2:DATA:FIX4

Supported E4438C with Option 400

```
[ :SOURCE ] : RADIO : WCDMA : TGPP [ : BBG ] : DLINK : DPCH [ 1 ] | 2 : DATA : FIX4 <val>
[ :SOURCE ] : RADIO : WCDMA : TGPP [ : BBG ] : DLINK : DPCH [ 1 ] | 2 : DATA : FIX4 ?
```

This command sets the data type to a FIX4 pattern for the downlink dedicated physical channel (DPCH). While the variable <val> can be entered in binary, hexadecimal, or decimal formats, the query returns only binary values.

***RST** #B0000

Range: 0–15

Key Entry FIX4

Remarks If the parameter set by this command is changed while the signal is active, the apply command must be executed for the change to occur. Refer to [“:DLINK:APPLY” on page 1018](#).

:DLINK:DPCH[1] | 2:POWER

Supported E4438C with Option 400

```
[ :SOURCE ] : RADIO : WCDMA : TGPP [ : BBG ] : DLINK : DPCH [ 1 ] | 2 : DATA : POWER <val>
[ :SOURCE ] : RADIO : WCDMA : TGPP [ : BBG ] : DLINK : DPCH [ 1 ] | 2 : DATA : POWER ?
```

This command sets the power level for the downlink dedicated physical channel (DPCH). The variable <val> is expressed in units of decibels (dB).

***RST** –1.02000000E+001

Range: –40 to 0

Field Entry Power

:DLINK:DPCH[1] | 2:RCSetup

Supported E4438C with Option 400

```
[ :SOURCE ] :RADio:WCDMa:TGPP [ :BBG ] :DLINK:DPCH [ 1 ] | 2:RCSetup REF122 | REF64 |
REF144 | REF384 | AMR122 | ISDN
```

```
[ :SOURCE ] :RADio:WCDMa:TGPP [ :BBG ] :DLINK:DPCH [ 1 ] | 2:RCSetup?
```

This command selects the downlink DCPH reference measurement setup for the transport channel.

REF122	This choice configures the transport channel per the 3GPP TS 34.121 specification for a downlink reference measurement channel with a 12.2 kbps rate.	
REF64	This choice configures the transport channel per the 3GPP TS 34.121 specification for a downlink reference measurement channel with a 64 kbps rate.	
REF144	This choice configures the transport channel per the 3GPP TS 34.121 specification for a downlink reference measurement channel with a 144 kbps rate.	
REF384	This choice configures the transport channel per the 3GPP TS 34.121 specification for a downlink reference measurement channel with a 384 kbps rate.	
AMR122	This choice configures the transport channel per the 3GPP TS 25.944 specification for a downlink reference measurement channel AMR with 12.2 kbps rate.	
ISDN	This choice configures the transport channel as follows: 64 kbps rate, channel 1 with 4 blocks of 640 and channel 2 with 1 block of 148 as per the 3GPP TS 25.944 specification.	

Key Entry	12.2 kbps (34.121)	64 kbps (34.121)
	144 kbps (34.121)	384 kbps (34.121)
	AMR 12.2 (25.944)	UDI ISDN (25.944)

Remarks If the parameter set by this command is changed while the signal is active, the apply command must be executed for the change to occur. Refer to “:DLINK:APPLY” on page 1018.

Wideband CDMA Base Band Generator Subsystem–Option 400 ([:SOURCE]:RADIO:WCDMA:TGPP[:BBG])

:DLINK:DPCH[1] | 2:SLOTformat**Supported** E4438C with Option 400

```
[ :SOURCE ] :RADIO:WCDMA:TGPP [ :BBG ] :DLINK:DPCH [ 1 ] | 2:DATA:SLOTformat <val>
[ :SOURCE ] :RADIO:WCDMA:TGPP [ :BBG ] :DLINK:DPCH [ 1 ] | 2:DATA:SLOTformat?
```

This command configures the slot format for the dedicated physical channel (DPCH).

***RST** 0**Range:** 0–16**Field Entry** Slot Format

Remarks The slot format is coupled with the channel code and symbol rate. The transmit power control (TPC), the transport format combination indicator (TFCI), and the Pilot bits are also set as per specification and not displayed.

For a description of slot formats, see the 3GPP Technical Specifications (TS 25.211 v3.10).

If the parameter set by this command is changed while the signal is active, the apply command must be executed for the change to occur. Refer to “:DLINK:APPLY” on page 1018.

:DLINK:DPCH[1] | 2:SRATE**Supported** E4438C with Option 400

```
[ :SOURCE ] :RADIO:WCDMA:TGPP [ :BBG ] :DLINK:DPCH [ 1 ] | 2:SRATE?
```

This query returns the symbol rate for the downlink dedicated physical channel.

RST** +7.50000000E+003**:DLINK:DPCH[1] | 2:SSCodeos*Supported** E4438C with Option 400

```
[ :SOURCE ] :RADIO:WCDMA:TGPP [ :BBG ] :DLINK:DPCH [ 1 ] | 2:SSCodeos <val>
[ :SOURCE ] :RADIO:WCDMA:TGPP [ :BBG ] :DLINK:DPCH [ 1 ] | 2:SSCodeos?
```

This command sets the secondary scrambling code offset for the downlink dedicated physical channel (DPCH).

***RST** +0**Range:** 0–15

Wideband CDMA Base Band Generator Subsystem–Option 400 ([:SOURCE]:RADio:WCDMa:TGPP[:BBG])

Field Entry 2nd Scr Offset

Remarks If the parameter set by this command is changed while the signal is active, the apply command must be executed for the change to occur. Refer to “:DLINK:APPLY” on page 1018.

:DLINK:DPCH[1] | 2:TFCI:PATtern

Supported E4438C with Option 400

```
[ :SOURCE ] :RADio:WCDMa:TGPP [ :BBG ] :DLINK:DPCH[1] | 2:TFCI:PATtern <val>
[ :SOURCE ] :RADio:WCDMa:TGPP [ :BBG ] :DLINK:DPCH[1] | 2:TFCI:PATtern?
```

This command sets a 10-bit pattern for the transport format combination indicator (TFCI) for the dedicated physical channel (DPCH).

While the variable <val> is expressed in binary or decimal formats, the query returns only decimal values.

***RST** +0

Range: 0–1023

Field Entry TFCI Pat

Remarks The TFCI is optional and describes the services in use (for example, voice or data). If the parameter set by this command is changed while the signal is active, the apply command must be executed for the change to occur. Refer to “:DLINK:APPLY” on page 1018.

:DLINK:DPCH[1] | 2:TOFFset

Supported E4438C with Option 400

```
[ :SOURCE ] :RADio:WCDMa:TGPP [ :BBG ] :DLINK:DPCH[1] | 2:TOFFset <val>
[ :SOURCE ] :RADio:WCDMa:TGPP [ :BBG ] :DLINK:DPCH[1] | 2:TOFFset?
```

This command adjusts the timing offset for the dedicated physical channel (DPCH). The variable <val> is expressed in chips.

***RST** +0

Range: 0–149

Field Entry tDPCH Offset

Remarks If the parameter set by this command is changed while the signal is active, the apply command must be executed for the change to occur. Refer to “:DLINK:APPLY” on page 1018.

Wideband CDMA Base Band Generator Subsystem–Option 400 ([:SOURCE]:RADIO:WCDMA:TGPP[:BBG])

:DLINK:DPCH[1] | 2:TPC:NUMSteps**Supported** E4438C with Option 400

[:SOURCE]:RADIO:WCDMA:TGPP[:BBG]:DLINK:DPCH[1] | 2:TPC:NUMSteps <val>

[:SOURCE]:RADIO:WCDMA:TGPP[:BBG]:DLINK:DPCH[1] | 2:TPC:NUMSteps?

This command sets the number of steps for increasing/decreasing the user's equipment (UE) power.

***RST** +1**Range:** 1–80**Field Entry** TPC Steps**Remarks** The command is used with the transmit power control (TPC) patterns up/down (UDOWN), down/up (DUP), all down(DALL), all up (UALL), external (EXT), or user file ("<file name>"). Refer to “:DLINK:DPCH[1]|2:TPC:PATtern”

If the parameter set by this command is changed while the signal is active, the apply command must be executed for the change to occur. Refer to “:DLINK:APPLY” on page 1018.

:DLINK:DPCH[1] | 2:TPC:PATtern**Supported** E4438C with Option 400

[:SOURCE]:RADIO:WCDMA:TGPP[:BBG]:DLINK:DPCH[1] | 2:TPC:PATtern UDOWN | DUP |

UALL | DALL | EXT | "<file name>"

[:SOURCE]:RADIO:WCDMA:TGPP[:BBG]:DLINK:DPCH[1] | 2:TPC:PATtern?

This command controls the power of the user's equipment (UE). The increase/decrease direction for UE power level changes is determined by the transmit power control (TPC) pattern.

UDOWN This choice repetitively steps up and down the TPC pattern.

DUP This choice repetitively steps down and up the TPC pattern.

UALL This choice consecutively steps up the TPC pattern.

DALL This choice consecutively steps down the TPC pattern.

EXT This choice specifies an external TPC pattern.

"<file name>" This choice specifies a user file.

***RST** UDOW**Key Entry** All Down All Up Down/Up Up/Down Ext User File

Wideband CDMA Base Band Generator Subsystem–Option 400 ([:SOURce]:RADio:WCDMa:TGPP[:BBG])

Remarks If the parameter set by this command is changed while the signal is active, the apply command must be executed for the change to occur. Refer to “:DLINK:APPLY” on page 1018.

:DLINK:DPCH[1] | 2[:STATe]

Supported E4438C with Option 400

```
[ :SOURce ] :RADio:WCDMa:TGPP [ :BBG ] :DLINK:DPCH [ 1 ] | 2 :ALL [ :STATe ] ON | OFF | 1 | 0
[ :SOURce ] :RADio:WCDMa:TGPP [ :BBG ] :DLINK:DPCH [ 1 ] | 2 :ALL [ :STATe ] ?
```

This command enables or disables the dedicated physical channels (DPCH1 or DPCH2).

***RST** DPCH1: 1 DPCH2: 0

Key Entry Channel State Off On

Remarks If the parameter is changed, the apply command must be executed after the change. Refer to “:DLINK:APPLY” on page 1018.

:DLINK:FILTer

Supported E4438C with Option 400

```
[ :SOURce ] :RADio:WCDMa:TGPP [ :BBG ] :DLINK:FILTer RNYQuist | NYQuist | GAUSSian |
RECTangle | IS95 | IS95_EQ | IS95_MOD | IS95_MOD_EQ | AC4Fm | UGGaussian |
" <user FIR > "
[ :SOURce ] :RADio:WCDMa:TGPP [ :BBG ] :DLINK:FILTer ?
```

This command selects the filter type for the downlink configuration.

IS95 This choice selects a filter that meets the criteria of the IS-95 standard.

IS95_EQ This choice selects a filter which is a combination of the IS-95 filter (above) and the equalizer filter described in the IS-95 standard. This filter is only used for IS-95 baseband filtering.

IS95_MOD This choice selects a filter that meets the criteria of the IS-95 error function (for improved adjacent channel performance) with lower passband rejection than the filter specified in the IS-95 standard.

IS95_MOD_EQ This choice selects a filter which is a combination of the equalizer filter described in the IS-95 standard and a filter that meets the criteria of the IS-95 error function (for improved adjacent channel performance), with lower passband rejection.

UGGaussian This choice selects a backwards compatible GSM Gaussian filter (Gaussian filter with a fixed BbT value of 0.300) for the ESG E44xxB Option UN3 or UN4.

Wideband CDMA Base Band Generator Subsystem–Option 400 [:SOURCE]:RADIO:WCDMA:TGPP[:BBG])

AC4Fm	This choice selects a predefined Association of Public Safety Communications Officials (APCO) specified compatible 4-level frequency modulation (C4FM) filter.					
"<user FIR>"	This variable is any filter file that you have stored into memory.					
*RST	RNYQ					
Key Entry	Root Nyquist	Nyquist	Gaussian	Rectangle	IS-95	IS-95 w/EQ
	IS-95 Mod	IS-95 Mod w/EQ	APCO 25 C4FM	UN3/4 GSM	Gaussian	
	User FIR					
Remarks	See “File Name Variables” on page 13 for information on the file name syntax.					

:DLINK:FILTER:ALPHA

Supported	E4438C with Option 400
	[:SOURCE] :RADIO:WCDMA:TGPP [:BBG] :DLINK:FILTER:ALPHA <val> [:SOURCE] :RADIO:WCDMA:TGPP [:BBG] :DLINK:FILTER:ALPHA?
	Execute this command to change the alpha value for a Nyquist or root Nyquist filter.
*RST	+2.20000000E-001
Range	0-1
Key Entry	Filter Alpha
Remarks	This command is effective only after selection of a root Nyquist or Nyquist filter; it does not affect other types of filters. To change the current filter type, refer to “:DLINK:FILTER” on page 1034 .

:DLINK:FILTER:BBT

Supported	E4438C with Option 400
	[:SOURCE] :RADIO:WCDMA:TGPP [:BBG] :DLINK:FILTER:BBT <val> [:SOURCE] :RADIO:WCDMA:TGPP [:BBG] :DLINK:FILTER:BBT?
	Execute this command to change the bandwidth-multiplied-by-bit-time filter parameter value.
*RST	+5.00000000E-001
Range	0.0000-1.0
Key Entry	Filter BbT
Remarks	This command is effective only after selecting a Gaussian filter; it does not affect other types of filters. See “:DLINK:FILTER” on page 1034 to change the filter type.

:DLINK:FILTer:CHANnel**Supported** E4438C with Option 400[:SOURCE]:RADio:WCDMa:TGPP[:BBG]:DLINK:FILTer:CHANnel EVM|ACP
[:SOURCE]:RADio:WCDMa:TGPP[:BBG]:DLINK:FILTer:CHANnel?

Execute this command to optimize a filter for minimized error vector magnitude (EVM) or for minimized adjacent channel power (ACP).

EVM This choice provides the most ideal passband.**ACP** This choice improves stopband rejection. This feature only applies to root Nyquist and Nyquist filters.***RST** EVM**Key Entry** Optimize FIR For EVM ACP**Remarks** To change the current filter type, refer to “:DLINK:FILTer” on page 1034.**:DLINK:MSYNc****Supported** E4438C with Option 400

[:SOURCE]:RADio:WCDMa:TGPP[:BBG]:DLINK:MSYNc

This command generates a one shot trigger pulse to synchronize multiple ESGs. This is a command only; there is no query.

Key Entry Multi ESG Sync Trigger**Remarks** The trigger pulse will be generated when the user assigns the DRPS42 signal to any output port.**:DLINK:OCNS[1]|2|3|4|5|6|7|8|9|10|11|12|13|14|15|16:ALL[:STATe]****Supported** E4438C with Option 400

[:SOURCE]:RADio:WCDMa:TGPP[:BBG]:DLINK:OCNS[1]|2|3|4|5|6|7|8|9|10|11|12|13|14|15|16:ALL[:STATe] ON|OFF|1|0

This command enables or disables all of the orthogonal channel noise simulator (OCNS) channels.

***RST** +0**Key Entry** Channel State Off On**Remarks** To query the state of the individual channel, refer to “:DLINK:OCNS[1]|2|3|4|5|6|7|8|9|10|11|12|13|14|15|16[:STATe]” on page 1039.

Wideband CDMA Base Band Generator Subsystem–Option 400 ([:SOURCE]:RADio:WCDMa:TGPP[:BBG])

:DLINK:OCNS[1] | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16:CCODE**Supported** E4438C with Option 400

[:SOURCE]:RADio:WCDMa:TGPP[:BBG]:DLINK:OCNS[1] | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16:CCODE <val>

[:SOURCE]:RADio:WCDMa:TGPP[:BBG]:DLINK:OCNS[1] | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16:CCODE?

This command sets the channel code number for the downlink orthogonal channel noise simulator (OCNS).

***RST** +24**Range** 0–255**Field Entry** Chan Code

Remarks The channel code is coupled with the symbol rate. Refer to “:DLINK:OCNS[1]|2|3|4|5|6|7|8|9|10|11|12|13|14|15|16:SRATe” on page 1038.

:DLINK:OCNS[1] | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16:DATA**Supported** E4438C with Option 400

[:SOURCE]:RADio:WCDMa:TGPP[:BBG]:DLINK:OCNS[1] | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16:DATA PN9 | PN15

[:SOURCE]:RADio:WCDMa:TGPP[:BBG]:DLINK:OCNS[1] | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16:DATA?

This command configures the data pattern for the downlink orthogonal channel noise simulator (OCNS).

RST** PN9**Key Entry** PN9 PN15**:DLINK:OCNS[1] | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16:POWer*Supported** E4438C with Option 400

[:SOURCE]:RADio:WCDMa:TGPP[:BBG]:DLINK:OCNS[1] | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16:POWer <val>

[:SOURCE]:RADio:WCDMa:TGPP[:BBG]:DLINK:OCNS[1] | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16:POWer?

This command sets the power level for the orthogonal channel noise simulator (OCNS).

Wideband CDMA Base Band Generator Subsystem—Option 400 ([:SOURce]:RADio:WCDMa:TGPP[:BBG])

The variable <val> is expressed in units of decibels (dB).

***RST** -1.200000000E+001

Range -40 to 0

Field Entry Power

:DLINK:OCNS[1]|2|3|4|5|6|7|8|9|10|11|12|13|14|15|16:SRATE

Supported E4438C with Option 400

```
[ :SOURce ] :RADio :WCDMa :TGPP [ :BBG ] :DLINK :OCNS [ 1 ] | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
13 | 14 | 15 | 16 :SRATE <val>
```

```
[ :SOURce ] :RADio :WCDMa :TGPP [ :BBG ] :DLINK :OCNS [ 1 ] | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
13 | 14 | 15 | 16 :SRATE?
```

This command selects the symbol rate for the orthogonal channel noise simulator (OCNS).

The choices are expressed in units of kilo symbols per second (ksps).

***RST** +1.50000000E+004

Key Entry 7.5 ksps 15 ksps 30 ksps 60 ksps 120 ksps 240 ksps
480 ksps 960 ksps

Remarks The symbol rate is coupled with the channel code. Refer to
“:DLINK:OCNS[1]|2|3|4|5|6|7|8|9|10|11|12|13|14|15|16:CCODE” on page 1037.

:DLINK:OCNS[1]|2|3|4|5|6|7|8|9|10|11|12|13|14|15|16:SSCodeos

Supported E4438C with Option 400

```
[ :SOURce ] :RADio :WCDMa :TGPP [ :BBG ] :DLINK :OCNS [ 1 ] | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
13 | 14 | 15 | 16 :SSCodeos <val>
```

```
[ :SOURce ] :RADio :WCDMa :TGPP [ :BBG ] :DLINK :OCNS [ 1 ] | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
13 | 14 | 15 | 16 :SSCodeos?
```

This command sets the secondary scrambling code offset for the orthogonal channel noise simulator (OCNS).

***RST** +0

Range 0–15

Field Entry 2nd Scr Offset

Wideband CDMA Base Band Generator Subsystem–Option 400 ([:SOURCE]:RADIO:WCDMA:TGPP[:BBG])

:DLINK:OCNS[1]|2|3|4|5|6|7|8|9|10|11|12|13|14|15|16:TOffset**Supported** E4438C with Option 400

[:SOURCE]:RADIO:WCDMA:TGPP[:BBG]:DLINK:OCNS[1]|2|3|4|5|6|7|8|9|10|11|12|13|14|15|16:TOffset <val>

[:SOURCE]:RADIO:WCDMA:TGPP[:BBG]:DLINK:OCNS[1]|2|3|4|5|6|7|8|9|10|11|12|13|14|15|16:TOffset?

This command adjusts the timing offset for the orthogonal channel noise simulator (OCNS) channel.

RST** +0**Range:** 0–149**Field Entry** tOCNS Offset**:DLINK:OCNS[1]|2|3|4|5|6|7|8|9|10|11|12|13|14|15|16:STATe]*Supported** E4438C with Option 400

[:SOURCE]:RADIO:WCDMA:TGPP[:BBG]:DLINK:OCNS[1]|2|3|4|5|6|7|8|9|10|11|12|13|14|15|16[:STATe] ON|OFF|1|0

[:SOURCE]:RADIO:WCDMA:TGPP[:BBG]:DLINK:OCNS[1]|2|3|4|5|6|7|8|9|10|11|12|13|14|15|16[:STATe]?

This command enables or disables the orthogonal channel noise simulator (OCNS) channel.

RST** +0**Field Entry** On/Off**:DLINK:OOSTest[:STATe]*Supported** E4438C with Option 400 and 403

[:SOURCE]:RADIO:WCDMA:TGPP[:BBG]:DLINK:OOSTest[:STATe] ON|OFF|1|0

[:SOURCE]:RADIO:WCDMA:TGPP[:BBG]:DLINK:OOSTest[:STATe]?

This command enables or disables the Out-of-Sync-Test mode.

***RST** 0**Key Entry** Out-of-Sync Test Off On**Remarks** When **Compressed Mode Off On** is set to On, Out-of-Sync Test mode cannot be enabled.When **Out-of-Sync Test Off On** is set to On, ALC is automatically disabled; when **Out-of-Sync Test Off On** is set to Off, **ALC Off On** is automatically enabled.

:DLINK:OOSTest:DTXGate:POLarity**Supported** E4438C with Option 400 and 403

```
[:SOURCE]:RADio:WCDMa:TGPP[:BBG]:DLINK:OOSTest:DTXGate:
POLarity POSitive|NEGative
[:SOURCE]:RADio:WCDMa:TGPP[:BBG]:DLINK:OOSTest:DTXGate:POLarity?
```

This command sets the multiple ESG synchronization trigger signal polarity.

RST** POS**Key Entry** DPCH1 DTX-Gate Trigger Polarity Neg Pos**:DLINK:PADJust*Supported** E4438C with Option 400

```
[:SOURCE]:RADio:WCDMa:TGPP[:BBG]:DLINK:PADJust EQUal|SCALE
[:SOURCE]:RADio:WCDMa:TGPP[:BBG]:DLINK:PADJust?
```

This command adjusts the code domain power levels of all downlink channels.

EQUal This choice will adjust all channel powers to equal power settings.

SCALE This choice will scale the channel power levels so that the sum of the powers are equal to 0 dB.

RST** EQU**Key Entry** Equal Powers Scale To 0dB**:DLINK:PCCPch:BCHData*Supported** E4438C with Option 400

```
[:SOURCE]:RADio:WCDMa:TGPP[:BBG]:DLINK:PCCPch:BCHData PN9|PN15|FIX4|
"<file name>"|TRANspch
[:SOURCE]:RADio:WCDMa:TGPP[:BBG]:DLINK:PCCPch:BCHData?
```

This command sets the broadcast channel (BCH) data format that will be transmitted on the physical common control physical channel (PCCPCH).

TRANspch This choice selects a dedicated transport channel data pattern.

"<file name>" This variable specifies a data pattern that has been stored in memory.

***RST** FIX4**Key Entry** PN9 PN15 FIX4 User File Transport CH

Wideband CDMA Base Band Generator Subsystem—Option 400 ([:SOURCE]:RADio:WCDMa:TGPP[:BBG])

:DLINK:PCCPch:BCHData:FIX4**Supported** E4438C with Option 400

[:SOURCE]:RADio:WCDMa:TGPP[:BBG]:DLINK:PCCPch:BCHData:FIX4 <val>

[:SOURCE]:RADio:WCDMa:TGPP[:BBG]:DLINK:PCCPch:BCHData:FIX4?

This command sets a fixed 4-bit binary data pattern for the primary common control physical channel (PCCPCH).

While the variable <val> can be entered in binary, hexadecimal, or decimal formats, the query returns only binary values.

RST** #B0000**Range** 0–15**Key Entry** FIX4**:DLINK:PCCPch:CCODE*Supported** E4438C with Option 400

[:SOURCE]:RADio:WCDMa:TGPP[:BBG]:DLINK:PCCPch:CCODE <val>

[:SOURCE]:RADio:WCDMa:TGPP[:BBG]:DLINK:PCCPch:CCODE?

This command sets the primary common control physical channel (PCCPCH) code to the desired code number.

RST** +1**Range** 0–255**Field Entry** Channel Code**:DLINK:PCCPch:POWer*Supported** E4438C with Option 400

[:SOURCE]:RADio:WCDMa:TGPP[:BBG]:DLINK:PCCPch:POWer <val>

[:SOURCE]:RADio:WCDMa:TGPP[:BBG]:DLINK:PCCPch:POWer?

This command sets the power level for the primary common control physical channel (PCCPCH). The variable <val> is expressed in units of decibels (dB).

***RST** -5.30000000E+000**Range** -40 to 0**Field Entry** Power

:DLINK:PCCPch[:STATE]**Supported** E4438C with Option 400

[:SOURCE]:RADio:WCDMa:TGPP[:BBG]:DLINK:PCCPch[:STATE] ON|OFF|1|0

[:SOURCE]:RADio:WCDMa:TGPP[:BBG]:DLINK:PCCPch[:STATE]?

This command enables or disables the primary common control physical channel (PCCPCH).

RST** 1**Key Entry** Channel State Off On**:DLINK:PICH:CCODE*Supported** E4438C with Option 400

[:SOURCE]:RADio:WCDMa:TGPP[:BBG]:DLINK:PICH:CCODE <val>

[:SOURCE]:RADio:WCDMa:TGPP[:BBG]:DLINK:PICH:CCODE?

This command sets the paging indicator channel (PICH) code to the desired code number.

RST** +3**Range** 0–255**Field Entry** Channel Code**:DLINK:PICH:DATA*Supported** E4438C with Option 400

[:SOURCE]:RADio:WCDMa:TGPP[:BBG]:DLINK:PICH:DATA PN9|PN15|FIX4|

<file name>"

[:SOURCE]:RADio:WCDMa:TGPP[:BBG]:DLINK:PICH:DATA?

This command configures the data pattern for the downlink paging indicator channel (PICH).

<file name>" This variable specifies a data pattern that has been stored in memory.

***RST** PN9**Key Entry** PN9 PN15 FIX4 User File

Wideband CDMA Base Band Generator Subsystem—Option 400 ([:SOURCE]:RADio:WCDMa:TGPP[:BBG])

:DLINK:PICH:DATA:FIX4**Supported** E4438C with Option 400

[:SOURCE]:RADio:WCDMa:TGPP[:BBG]:DLINK:PICH:DATA:FIX4 <val>

[:SOURCE]:RADio:WCDMa:TGPP[:BBG]:DLINK:PICH:DATA:FIX4?

This command sets a fixed 4-bit data pattern to be transmitted on a paging indicator channel (PICH).

While the variable <val> can be entered in binary, hexadecimal, or decimal formats, the query returns only binary values.

RST** #B0000**Range** 0–15**Key Entry** FIX4**:DLINK:PICH:PIBits*Supported** E4438C with Option 400

[:SOURCE]:RADio:WCDMa:TGPP[:BBG]:DLINK:PICH:PIBits?

This query returns the number of bits in the paging indicator field.

RST** +288**Field Entry** PI Bits**:DLINK:PICH:PINdicator*Supported** E4438C with Option 400

[:SOURCE]:RADio:WCDMa:TGPP[:BBG]:DLINK:PICH:PINdicator?

This query returns the number of paging indicator fields per frame.

***RST** +144**Field Entry** Paging Indicator

:DLINK:PICH:POWER**Supported** E4438C with Option 400

[:SOURCE]:RADIO:WCDMA:TGPP[:BBG]:DLINK:PICH:POWER <val>

[:SOURCE]:RADIO:WCDMA:TGPP[:BBG]:DLINK:PICH:POWER?

This command sets the power level of the paging indicator channel (PICH). The variable <val> is expressed in units of decibels (dB)

RST** -8.300000000E+000**Range** -40 to 0**Field Entry** Power**:DLINK:PICH[:STATE]*Supported** E4438C with Option 400

[:SOURCE]:RADIO:WCDMA:TGPP[:BBG]:DLINK:PICH[:STATE] ON|OFF|1|0

[:SOURCE]:RADIO:WCDMA:TGPP[:BBG]:DLINK:PICH[:STATE]?

This command enables or disables the paging indicator channel (PICH).

RST** 0**Key Entry** Channel State Off On**:DLINK:POLarity*Supported** E4438C with Option 400

[:SOURCE]:RADIO:WCDMA:TGPP[:BBG]:DLINK:POLarity NORMAL|INVERTed

[:SOURCE]:RADIO:WCDMA:TGPP[:BBG]:DLINK:POLarity?

This command selects the phase polarity of the downlink signal.

NORMAL This choice selects normal polarity.

INVERTed This choice inverts the internal Q signal.

***RST** NORM**Key Entry** Phase Polarity Normal Invert

Wideband CDMA Base Band Generator Subsystem–Option 400 ([:SOURCE]:RADIo:WCDMa:TGPP[:BBG])

:DLINK:PSCH:POWer**Supported** E4438C with Option 400

[:SOURCE]:RADIo:WCDMa:TGPP[:BBG]:DLINK:PSCH:POWer <val>

[:SOURCE]:RADIo:WCDMa:TGPP[:BBG]:DLINK:PSCH:POWer?

This command sets the power level for the primary synchronization physical channel (PSCH).

The variable <val> is expressed in units of decibels (dB).

RST** -8.30000000E+000**Range** -40 to 0**Field Entry** Power**:DLINK:PSCH[:STATe]*Supported** E4438C with Option 400

[:SOURCE]:RADIo:WCDMa:TGPP[:BBG]:DLINK:PSCH[:STATe] ON|OFF|1|0

[:SOURCE]:RADIo:WCDMa:TGPP[:BBG]:DLINK:PSCH[:STATe]?

This command enables or disables the primary synchronization physical channel (PSCH).

RST** 1**Field Entry** PSCH State**:DLINK:RPANel:INPut:ALTPower*Supported** E4438C with Option 400

[:SOURCE]:RADIo:WCDMa:TGPP[:BBG]:DLINK:RPANel:INPut:ALTPower?

This query returns the type of signal at the alternate power input (Alt power in AUX I/O connector pin#16) for the dedicated physical channel (DPCH) mode.

***RST** NONE

Remarks When **Compressed Mode Off On** is set to On, Compressed-mode stop-trigger Compressed-mode stop-trigger signal is assigned to pin 16 of the rear panel AUX I/O connector. For more information about the rear panel AUX I/O connector configuration, refer to "Signal Generator Overview" in the *E4428C/38C ESG Signal Generators User's Guide*.

:DLINK:RPANel:INPut:BBGRef**Supported** E4438C with Option 400

[:SOURCE]:RADio:WCDMa:TGPP[:BBG]:DLINK:RPANel:INPut:BBGRef?

This query returns the type of signal at the baseband generator reference input (BASEBAND GEN REF IN, rear panel connector) for the dedicated physical channel (DPCH) mode.

***RST** CCL

Remarks The signal name is baseband generator chip clock (CCL). For more information about the rear panel connector configuration, refer to "Signal Generator Overview" in the *E4428C/38C ESG Signal Generators User's Guide*.

:DLINK:RPANel:INPut:BGATe**Supported** E4438C with Option 400

[:SOURCE]:RADio:WCDMa:TGPP[:BBG]:DLINK:RPANel:INPut:BGATe?

This query returns the type of signal at the gate burst (BURST GATE IN, rear panel connector) for the dedicated physical channel (DPCH) mode.

***RST** SFNR

Remarks System Frame Number Reset (SFNR) is used for synchronization in a two ESG setup. This signal is used to tell where the frame starts.

:DLINK:RPANel:INPut:PTRigger1**Supported** E4438C with Option 400

[:SOURCE]:RADio:WCDMa:TGPP[:BBG]:DLINK:RPANel:INPut:PTRigger1?

This query returns the type of signal at the pattern trigger input 1 (PATT TRIG IN, rear panel connector) for the dedicated physical channel (DPCH) mode.

***RST** MSTI

Remarks When **Compressed Mode Off On** is set to On, Compressed-mode start-trigger (CSTT) signal is assigned to the rear panel PATT TRIG IN connector; when **Out-of-Sync Test Off On** is set to On, DPCH1 DTX-Gate (DDTX) signal is assigned to the rear panel PATT TRIG IN connector.

Multiple ESG Synchronization Trigger In (MSTI) signal is used to synchronize signals from two ESGs that have different coding to simulate transmit diversity.

Wideband CDMA Base Band Generator Subsystem–Option 400 ([:SOURCE]:RADIO:WCDMA:TGPP[:BBG])

:DLINK:RPANel:INPut:PTRigger2**Supported** E4438C with Option 400

[:SOURCE]:RADIO:WCDMA:TGPP[:BBG]:DLINK:RPANel:INPut:PTRigger2?

This query returns the type of signal at the pattern trigger input 2 (PATT TRIG IN 2, AUX I/O connector pin#17) for the dedicated physical channel (DPCH) mode.

RST** TPCB**Remarks** Transmit Power Control Bit (TPCB) signal is used to control the DPCH TPC bit.**:DLINK:RPANel:OUTPut:DCLock*Supported** E4438C with Option 400

```
[:SOURCE]:RADIO:WCDMA:TGPP[:BBG]:DLINK:RPANel:OUTPut:DCLock
DRPS0|DRPS4|DRPS5|DRPS6|DRPS10|DRPS11|DRPS13|DRPS20|DRPS21|DRPS22|
DRPS23|DRPS24|DRPS25|DRPS26|DRPS28|DRPS30|DRPS32|DRPS33|DRPS34|DRPS35|
DRPS36|DRPS37|DRPS38|DRPS39|DRPS40|DRPS41|DRPS42
[:SOURCE]:RADIO:WCDMA:TGPP[:BBG]:DLINK:RPANel:OUTPut:DCLock?
```

This command assigns a signal to the data clock output at the selected rear panel AUX I/O connector pin#6. Refer to [Table 9-3 on page 1047](#) for command parameters for the variable and output signal names.

Table 9-3 Downlink Rear Panel Signal (DRPS) Output Type

Command Parameter	Signal Out
DRPS0	NONE
DRPS4	3.84 MHz chip clock
DRPS5	SFN reset signal
DRPS6	SFN sync pulse
DRPS10	SCH slot pulse
DRPS11	10ms Frame pulse
DRPS13	80ms Frame pulse
DRPS20	DPCH data clock with DTX
DRPS21	DPCCH TPC data clock

Table 9-3 Downlink Rear Panel Signal (DRPS) Output Type

Command Parameter	Signal Out
DRPS22	DPCCH TFCI data clock
DRPS23	DPCCH Pilot data clock
DRPS24	DPCH data stream
DRPS25	DPCH TimeSlot pulse
DRPS26	DPCH 10ms Frame Pulse
DRPS28	DPCH data clock
DRPS30	DPDCH data clock w/oDTX
DRPS32	DPCH comp Frm Indicator
DRPS33	DPCH Gap Indicator
DRPS34	PICH data clock
DRPS35	PICH data
DRPS36	PICH TimeSlot pulse
DRPS37	PICH 10ms FramePulse
DRPS38	P-CCPCH data clock
DRPS39	P-CCPCH data
DRPS40	DPCH Chip-ARB-frame-pulse
DRPS41	DPCH TPC-bits-out
DRPS42	Multi-ESG Sync Trigger Out

*RST

RPS0

Wideband CDMA Base Band Generator Subsystem—Option 400 ([:SOURCE]:RADIO:WCDMA:TGPP[:BBG])

Key Entry	NONE	3.84MHz chip-clk (DRPS4)	SFN reset-signal (DRPS5)
	SFN sync-pulse (DRPS6)	SCH slot-pulse (DRPS10)	
	10ms Frame Pulse (DRPS11)	80ms Frame Pulse (DRPS13)	
	DPDCH data-clk with DTX (DRPS20)	DPCCH TPC data-clk (DRPS21)	
	DPCCH TFC I data-clk (DRPS22)	DPCCH Pilot data-clk (DRPS23)	
	DPCH data stream (DRPS24)	DPCH TimeSlot pulse (DRPS25)	
	DPCH 10ms Frame-Pulse (DRPS26)	DPCH data-clk (0) (DRPS28)	
	DPDCH data-clk withoutDTX (DRPS30)		
	DPCH Compressed Frame Indicator (DRPS32)		
	DPCH Gap Indicator (DRPS33)	PICH data-clk (DRPS34)	
	PICH data (DRPS35)	PICH TimeSlot Pulse (DRPS36)	
	PICH 10ms FramePulse (DRPS37)	P-CCPCH data-clk (DRPS38)	
	P-CCPCH data (DRPS39)	DPCH ChipARB FramePulse (DRPS40)	
	DPCH TPC-Bit Out (DRPS41)	Mlt-ESG-Sync Trigger-Out (DRPS42)	
	Remarks	For more information about the rear panel connector configurations, refer to "Signal Generator Overview" in the <i>E4428C/38C ESG Signal Generators User's Guide</i> .	

:DLINK:RPANEL:OUTPUT:DOUT

Supported E4438C with Option 400

```
[ :SOURCE ] :RADIO:WCDMA:TGPP [ :BBG ] :DLINK:RPANEL:OUTPUT:DOUT
DRPS0 | DRPS4 | DRPS5 | DRPS6 | DRPS10 | DRPS11 | DRPS13 | DRPS20 | DRPS21 | DRPS22 |
DRPS23 | DRPS24 | DRPS25 | DRPS26 | DRPS28 | DRPS30 | DRPS32 | DRPS33 | DRPS34 | DRPS35 |
DRPS36 | DRPS37 | DRPS38 | DRPS39 | DRPS40 | DRPS41 | DRPS42
[ :SOURCE ] :RADIO:WCDMA:TGPP [ :BBG ] :DLINK:RPANEL:OUTPUT:DOUT?
```

This command assigns a signal to the data output at the selected rear panel AUX I/O connector pin#7. Refer to [Table 9-3 on page 1047](#) for command parameters and output signal names.

***RST** RPS0

Key Entry Refer to **Key Entry** on [page 1049](#).

Remarks For more information about the rear panel connector configurations, refer to "Signal Generator Overview" in the *E4428C/38C ESG Signal Generators User's Guide*.

:DLINK:RPANel:OUTPut:EVENT1**Supported** E4438C with Option 400

```
[ :SOURCE ] :RADIo:WCDMA:TGPP[ :BBG ] :DLINK:RPANel:OUTPut:EVENT1
DRPS0 | DRPS4 | DRPS5 | DRPS6 | DRPS10 | DRPS11 | DRPS13 | DRPS20 | DRPS21 | DRPS22 |
DRPS23 | DRPS24 | DRPS25 | DRPS26 | DRPS28 | DRPS30 | DRPS32 | DRPS33 | DRPS34 | DRPS35 |
DRPS36 | DRPS37 | DRPS38 | DRPS39 | DRPS40 | DRPS41 | DRPS42
```

```
[ :SOURCE ] :RADIo:WCDMA:TGPP[ :BBG ] :DLINK:RPANel:OUTPut:EVENT1?
```

This command assigns a signal to the EVENT 1 rear panel output connector. Refer to [Table 9-3 on page 1047](#) for command parameters and output signal names.

***RST** RPS0**Key Entry** Refer to **Key Entry** on [page 1049](#).

Remarks For more information about the rear panel connector configurations, refer to "Signal Generator Overview" in the *E4428C/38C ESG Signal Generators User's Guide*.

:DLINK:RPANel:OUTPut:EVENT2**Supported** E4438C with Option 400

```
[ :SOURCE ] :RADIo:WCDMA:TGPP[ :BBG ] :DLINK:RPANel:OUTPut:EVENT2
DRPS0 | DRPS4 | DRPS5 | DRPS6 | DRPS10 | DRPS11 | DRPS13 | DRPS20 | DRPS21 | DRPS22 |
DRPS23 | DRPS24 | DRPS25 | DRPS26 | DRPS28 | DRPS30 | DRPS32 | DRPS33 | DRPS34 | DRPS35 |
DRPS36 | DRPS37 | DRPS38 | DRPS39 | DRPS40 | DRPS41 | DRPS42
```

```
[ :SOURCE ] :RADIo:WCDMA:TGPP[ :BBG ] :DLINK:RPANel:OUTPut:EVENT2?
```

This command assigns a signal to the EVENT 2 rear panel output connector. Refer to [Table 9-3 on page 1047](#) for command parameters and output signal names.

***RST** RPS0**Key Entry** Refer to **Key Entry** on [page 1049](#).

Remarks For more information about the rear panel connector configurations, refer to "Signal Generator Overview" in the *E4428C/38C ESG Signal Generators User's Guide*.

Wideband CDMA Base Band Generator Subsystem–Option 400 ([:SOURCE]:RADIO:WCDMA:TGPP[:BBG])

:DLINK:RPANel:OUTPut:EVENT3**Supported** E4438C with Option 400

```
[ :SOURCE ] :RADiO:WCDMA:TGPP[ :BBG ] :DLINK:RPANel:OUTPut:EVENT3
DRPS0 | DRPS4DRPS5 | DRPS6 | DRPS10 | DRPS11 | DRPS13 | DRPS20 | DRPS21 | DRPS22 |
DRPS23 | DRPS24 | DRPS25 | DRPS26 | DRPS28 | DRPS30 | DRPS32 | DRPS33 | DRPS34 | DRPS35 |
DRPS36 | DRPS37 | DRPS38 | DRPS39 | DRPS40 | DRPS41 | DRPS42
[ :SOURCE ] :RADiO:WCDMA:TGPP[ :BBG ] :DLINK:RPANel:OUTPut:EVENT3?
```

This command assigns a signal to the EVENT 3 at the selected rear panel AUX I/O connector pin#19. Refer to [Table 9-3 on page 1047](#) for command parameters and output signal names.

RST** RPS0**Key Entry** Refer to **Key Entry** on [page 1049](#).**Remarks** For more information about the rear panel connector configurations, refer to "Signal Generator Overview" in the *E4428C/38C ESG Signal Generators User's Guide*.**:DLINK:RPANel:OUTPut:EVENT4*Supported** E4438C with Option 400

```
[ :SOURCE ] :RADiO:WCDMA:TGPP[ :BBG ] :DLINK:RPANel:OUTPut:EVENT4
DRPS0 | DRPS4 | DRPS5 | DRPS6 | DRPS10 | DRPS11 | DRPS13 | DRPS20 | DRPS21 | DRPS22 |
DRPS23 | DRPS24 | DRPS25 | DRPS26 | DRPS28 | DRPS30 | DRPS32 | DRPS33 | DRPS34 | DRPS35
DRPS36 | DRPS37 | DRPS38 | DRPS39 | DRPS40 | DRPS41 | DRPS42
[ :SOURCE ] :RADiO:WCDMA:TGPP[ :BBG ] :DLINK:RPANel:OUTPut:EVENT4?
```

This command assigns a signal to the EVENT 4 at the selected rear panel AUX I/O connector pin#18. Refer to [Table 9-3 on page 1047](#) for command parameters and output signal names.

***RST** RPS0**Key Entry** Refer to **Key Entry** on [page 1049](#).**Remarks** For more information about the rear panel connector configurations, refer to "Signal Generator Overview" in the *E4428C/38C ESG Signal Generators User's Guide*.

:DLINK:RPANel:OUTPut:SSYNc**Supported** E4438C with Option 400

```
[:SOURCE]:RADio:WCDMa:TGPP[:BBG]:DLINK:RPANel:OUTPut:SSYNc
DRPS0|DRPS4|DRPS5|DRPS6|DRPS10|DRPS11|DRPS13|DRPS20|DRPS21|DRPS22|
DRPS23|DRPS24|DRPS25|DRPS26|DRPS28|DRPS30|DRPS32|DRPS33|DRPS34|DRPS35|
DRPS36|DRPS37|DRPS38|DRPS39|DRPS40|DRPS41|DRPS42
[:SOURCE]:RADio:WCDMa:TGPP[:BBG]:DLINK:RPANel:OUTPut:SSYNc?
```

This command assigns a signal to the SYM SYNC OUT at the selected rear panel AUX I/O connector pin#5. Refer to [Table 9-3 on page 1047](#) for command parameters and output signal names.

***RST** RPS0**Key Entry** Refer to **Key Entry** on [page 1049](#).

Remarks For more information about the rear panel connector configurations, refer to "Signal Generator Overview" in the *E4428C/38C ESG Signal Generators User's Guide*.

:DLINK:SCH[:STATe]**Supported** E4438C with Option 400

```
[:SOURCE]:RADio:WCDMa:TGPP[:BBG]:DLINK:SCH[:STATe] ON|OFF|1|0
```

This command enables or disables the primary and secondary synchronization channel (SSCH).

***RST** 1**Key Entry** Channel State Off On

Remarks To query the state of the individual channel, refer to “:DLINK:PSCH[:STATe]” on [page 1045](#) and “:DLINK:SSCH[:STATe]” on [page 1054](#).

:DLINK:SCRamblecode**Supported** E4438C with Option 400

```
[:SOURCE]:RADio:WCDMa:TGPP[:BBG]:DLINK:SCRamblecode <val>
[:SOURCE]:RADio:WCDMa:TGPP[:BBG]:DLINK:SCRamblecode?
```

This command selects the scramble code number.

***RST** +0**Range** 0–511**Field Entry** Scrambling Code

Wideband CDMA Base Band Generator Subsystem–Option 400 ([:SOURCE]:RADio:WCDMa:TGPP[:BBG])

:DLINK:SDElay**Supported** E4438C with Option 400

[:SOURCE]:RADio:WCDMa:TGPP[:BBG]:DLINK:SDElay <val>

[:SOURCE]:RADio:WCDMa:TGPP[:BBG]:DLINK:SDElay?

This command sets the delay of the system frame number (SFN) synchronization when a Multi-ESG-Sync Trigger-In signal is received. The variable <val> is expressed in unit of chips.

***RST** +0.00000000E+000**Range** 0–38399**Field Entry** Sync Delay

Remarks This function provides the capability of Inter-Cell Soft Handover test as described in TS.34.121 7.7.1 of the 3GPP standard. The test requires two basestations that generate the same signal but have a 10 chip timing offset. The two basestations are simulated by two ESGs and Sync Delay is the synchronization delay between the ESGs.

:DLINK:SSCH:POWer**Supported** E4438C with Option 400

[:SOURCE]:RADio:WCDMa:TGPP[:BBG]:DLINK:SSCH:POWer <val>

[:SOURCE]:RADio:WCDMa:TGPP[:BBG]:DLINK:SSCH:POWer?

This command sets the power level for the secondary synchronization channel (SSCH). The variable <val> is expressed in units of decibels (dB).

RST** –8.30000000E+000**Range** –40 to 0**Field Entry** SSCH Power**:DLINK:SSCH:SSGRoup*Supported** E4438C with Option 400

[:SOURCE]:RADio:WCDMa:TGPP[:BBG]:DLINK:SSCH:SSGRoup?

This command query returns the secondary scramble code group for the secondary synchronization channel (SSCH).

***RST** +0**Field Entry** SSCH 2nd Scramble Group

:DLINK:SSCH[:STATE]**Supported** E4438C with Option 400

[:SOURCE]:RADio:WCDMa:TGPP[:BBG]:DLINK:SSCH[:STATE] ON|OFF|1|0

This command enables or disables the secondary synchronization channel (SSCH).

RST** 1**Field Entry** SSCH State**:DLINK:TGAP:FSTRUCT*Supported** E4438C with Option 400

[:SOURCE]:RADio[1]|2|3|4:WCDMa:TGPP[:BBG]:DLINK:TGAP:FSTRUCT A|B

[:SOURCE]:RADio[1]|2|3|4:WCDMa:TGPP[:BBG]:DLINK:TGAP:FSTRUCT?

This command selects the compressed frame structure for the transmission gaps.

A The pilot field of the last slot in the transmission gap is transmitted and transmission is turned off during the rest of the transmission gap.**B** The TPC field of the first slot and the pilot field of the last slot in the transmission gap are transmitted and transmission is turned off during the rest of the transmission gap.***RST** A**Field Entry** Frame Struct**:DLINK:TGAP:POFFset****Supported** E4438C with Option 400

[:SOURCE]:RADio:WCDMa:TGPP[:BBG]:DLINK:TGAP:POFFset <val>

[:SOURCE]:RADio:WCDMa:TGPP[:BBG]:DLINK:TGAP:POFFset?

This command specifies the amount of power to be increased when the data is being compressed for the transmission gap power offset.

The variable <val> is expressed in units of decibels (dB).

***RST** +0.00000000E+000**Range** 0–6**Field Entry** PwrOffs

Wideband CDMA Base Band Generator Subsystem–Option 400 ([:SOURCE]:RADio:WCDMa:TGPP[:BBG])

:DLINK:TGAP:PSI[1]:CFN**Supported** E4438C with Option 400

[:SOURCE]:RADio:WCDMa:TGPP[:BBG]:DLINK:TGAP:PSI[1]:CFN <val>

[:SOURCE]:RADio:WCDMa:TGPP[:BBG]:DLINK:TGAP:PSI[1]:CFN?

This command sets the connection frame number (CFN) for the first radio of the first pattern 1.

***RST** 0**Range** 1–255**Field Entry** TGCFN

Remarks The connection frame number (CFN) is counted internally relative to the system sync signal.

:DLINK:TGAP:PSI[1]:CMMethod**Supported** E4438C with Option 400

[:SOURCE]:RADio:WCDMa:TGPP[:BBG]:DLINK:TGAP:PSI[1]:CMMehtod SF2|PUNcTure

[:SOURCE]:RADio:WCDMa:TGPP[:BBG]:DLINK:TGAP:PSI[1]:CMMethod?

This command selects the compressed mode (CM) method.

SF2 This choice selects a compressed mode method that reduces the spread factor (SF) by 2. This is done by reducing the spreading factor in half. When the dedicated physical data channel's (DPDCH) symbol rate is 960 kbps, the frame is not compressed because it uses the lowest SF value and cannot be reduced.

PUNcTure This choice selects a compressed mode method that punctures the convolutional encoder to a lower rate which reduces the number of symbols to be transmitted.

***RST** SF2**Key Entry** SF2 Puncture

Remarks To edit the parameters for this command using the ESG front panel keys, highlight the **CM Method** field and select either **SF2** or **Puncture** softkeys.

If the parameter is changed, the apply command must be executed after the change. Refer to “:DLINK:APPLY” on page 1018.

:DLINK:TGAP:PSI[1]:D**Supported** E4438C with Option 400

[:SOURCE]:RADIo:WCDMa:TGPP[:BBG]:DLINK:TGAP:PSI[1]:D <val>

[:SOURCE]:RADIo:WCDMa:TGPP[:BBG]:DLINK:TGAP:PSI[1]:D?

This command sets the transmission gap distance.

RST** +0**Range** 0, 15–269**Field Entry** TGD**Remarks** This command specifies the number of slots between the starting slot of two consecutive transmission gaps within a gap pattern.**:DLINK:TGAP:PSI[1]:L1*Supported** E4438C with Option 400

[:SOURCE]:RADIo:WCDMa:TGPP[:BBG]:DLINK:TGAP:PSI[1]:L1 3|4|5|7|10|14

[:SOURCE]:RADIo:WCDMa:TGPP[:BBG]:DLINK:TGAP:PSI[1]:L1?

This command specifies the length of the first transmission gap (TGL1).

The length is expressed in number of slots.

RST** 7**Field Entry** TGL1**:DLINK:TGAP:PSI[1]:L2*Supported** E4438C with Option 400

[:SOURCE]:RADIo:WCDMa:TGPP[:BBG]:DLINK:TGAP:PSI[1]:L2 3|4|5|7|10|14|OMITted

[:SOURCE]:RADIo:WCDMa:TGPP[:BBG]:DLINK:TGAP:PSI[1]:L2?

This command specifies the length of the second transmission gap (TGL2).

The length is expressed in number of slots.

***RST** OMIT**Field Entry** TGL2**Key Entry** Omitted**Remarks** When OMITted is selected, TGL2 = TGL1.

Wideband CDMA Base Band Generator Subsystem–Option 400 ([:SOURCE]:RADIO:WCDMA:TGPP[:BBG])

:DLINK:TGAP:PSI[1]:PL1**Supported** E4438C with Option 400

[:SOURCE]:RADIO:WCDMA:TGPP[:BBG]:DLINK:TGAP:PSI[1]:PL1 <val>

[:SOURCE]:RADIO:WCDMA:TGPP[:BBG]:DLINK:TGAP:PSI[1]:PL1?

This command specifies the duration of the transmission gap pattern length 1 (TGPL1).

The variable <val> is expressed in number of frames.

RST** +2**Range** 1–144**Field Entry** TGPL1**:DLINK:TGAP:PSI[1]:PL2*Supported** E4438C with Option 400

[:SOURCE]:RADIO:WCDMA:TGPP[:BBG]:DLINK:TGAP:PSI[1]:PL2 <val>|OMITted

[:SOURCE]:RADIO:WCDMA:TGPP[:BBG]:DLINK:TGAP:PSI[1]:PL2?

This command specifies the duration of the transmission gap pattern length 2 (TGPL2).

The variable is expressed in number of frames.

RST** OMIT**Range** 1–144**Key Entry** Omitted**Remarks** When OMITted is selected, TGPL2 = TGPL1.**:DLINK:TGAP:PSI[1]:PRC*Supported** E4438C with Option 400

[:SOURCE]:RADIO:WCDMA:TGPP[:BBG]:DLINK:TGAP:PSI[1]:PRC <val>|INfInity

[:SOURCE]:RADIO:WCDMA:TGPP[:BBG]:DLINK:TGAP:PSI[1]:PRC?

This command sets the transmission gap pattern repetition count.

***RST** 1**Range** 1–511**Key Entry** INfInity**Field Entry** TGPRC

Wideband CDMA Base Band Generator Subsystem–Option 400 ([:SOURCE]:RADio:WCDMa:TGPP[:BBG])

Remarks The pattern repetition count (PRC) sets the number of transmission gap patterns within the transmission gap pattern sequence. When `INFINITY` is selected, the PRC will continue indefinitely.

:DLINK:TGAP:PSI[1]:PS

Supported E4438C with Option 400

```
[ :SOURCE ] :RADio:WCDMa:TGPP [ :BBG ] :DLINK:TGAP:PSI[1]:PS ACTIVE | INACTIVE
[ :SOURCE ] :RADio:WCDMa:TGPP [ :BBG ] :DLINK:TGAP:PSI[1]:PS?
```

This command sets the transmission gap pattern status.

ACTIVE This choice activates the compressed mode.

INACTIVE This choice sets the compressed mode to inactive.

***RST** INAC

Key Entry Active Inactive

:DLINK:TGAP:PSI[1]:SN

Supported E4438C with Option 400

```
[ :SOURCE ] :RADio:WCDMa:TGPP [ :BBG ] :DLINK:TGAP:PSI[1]:SN <val>
[ :SOURCE ] :RADio:WCDMa:TGPP [ :BBG ] :DLINK:TGAP:PSI[1]:SN?
```

This command specifies the timeslot number of the first transmission gap within the first radio frame.

***RST** +11

Range 0–14

Field Entry TGSN

:DLINK:TGAP:RPARAMeter

Supported E4438C with Option 400

```
[ :SOURCE ] :RADio:WCDMa:TGPP [ :BBG ] :DLINK:TGAP:RPARAMeter DREF11 | DREF12 |
DREF21 | DREF22
[ :SOURCE ] :RADio:WCDMa:TGPP [ :BBG ] :DLINK:TGAP:RPARAMeter?
```

This command sets the downlink reference compressed mode parameters as defined in 3GPP standard.

DREF11 This choice sets the reference parameter to 1.1.

DREF12 This choice sets the reference parameter to 1.2.

DREF21 This choice sets the reference parameter to 2.1.

Wideband CDMA Base Band Generator Subsystem–Option 400 ([:SOURCE]:RADIO:WCDMA:TGPP[:BBG])

DREF22	This choice sets the reference parameter to 2.2.			
*RST	CUST			
Key Entry	DL Reference 1.1	DL Reference 1.2	DL Reference 2.1	DL Reference 2.2
Remarks	The query returns CUSTom when the parameters are set individually.			

:DLINK:TGAP:SCFN

Supported E4438C with Option 400

```
[ :SOURCE ] : RADIO : WCDMA : TGPP [ : BBG ] : DLINK : TGAP : SCFN <val>
[ :SOURCE ] : RADIO : WCDMA : TGPP [ : BBG ] : DLINK : TGAP : SCFN?
```

This command sets the stop connection frame number (CFN) when the stop trigger is used.

When the stop trigger is received at the signal generator, the compressed mode will finish even if the transmission gap pattern repetition count (TGPRC) is still remaining.

*RST +0

Range 0–255

Field Entry SCFN

Remarks The compressed mode stop trigger must be executed for this command to work. Refer to, “:DLINK:TGAP:STOP:TRIGGER” on page 1060.

:DLINK:TGAP:START:TRIGGER

Supported E4438C with Option 400

```
[ :SOURCE ] : RADIO : WCDMA : TGPP [ : BBG ] : DLINK : TGAP : START : TRIGGER
```

This command starts the signal generator compressed pattern transmission. Compressed pattern transmission begins with the specified transmission gap connection frame number (TGCFN).

Key Entry Compressed Mode Start Trigger

:DLINK:TGAP:START:TRIGGER:POLARITY

Supported E4438C with Option 400

```
[ :SOURCE ] : RADIO : WCDMA : TGPP [ : BBG ] : DLINK : TGAP : START : TRIGGER : POLARITY
POSITIVE | NEGATIVE
[ :SOURCE ] : RADIO : WCDMA : TGPP [ : BBG ] : DLINK : TGAP : START : TRIGGER : POLARITY?
```

This command sets the compressed mode start trigger polarity. The compressed pattern transmission begins when this trigger is received.

Wideband CDMA Base Band Generator Subsystem–Option 400 ([:SOURCE]:RADIO:WCDMA:TGPP[:BBG])

POSitive	This choice sets the trigger to start when the trigger signal is high.
NEGative	This choice sets the trigger to start when the trigger signal is low.
*RST	POS
Key Entry	Comp Mode Start Trigger Polarity Pos Neg

:DLINK:TGAP:STOP:TRIGger

Supported E4438C with Option 400

[:SOURCE] : RADIO : WCDMA : TGPP [: BBG] : DLINK : TGAP : STOP : TRIGger

This command stops the signal generator compressed pattern transmission. Compressed pattern transmission begins with the specified transmission gap connection frame number (TGCFN).

Key Entry Compressed Mode Stop Trigger

:DLINK:TGAP:STOP:TRIGger:POLarity

Supported E4438C with Option 400

[:SOURCE] : RADIO : WCDMA : TGPP [: BBG] : DLINK : TGAP : STOP : TRIGger : POLarity
POSitive | NEGative

[:SOURCE] : RADIO : WCDMA : TGPP [: BBG] : DLINK : TGAP : STOP : TRIGger : POLarity?

This command sets the compressed mode stop trigger polarity. The compressed pattern transmission stops when this trigger is received.

POSitive	This choice sets the trigger to stop when the trigger signal is high.
NEGative	This choice sets the trigger to stop when the trigger signal is low.
*RST	POS
Key Entry	Comp Mode Stop Trigger Polarity Pos Neg

:DLINK:TGAP[:STATE]

Supported E4438C with Option 400

[:SOURCE] : RADIO : WCDMA : TGPP [: BBG] : DLINK : TGAP [: STATE] 1 | 0 | ON | OFF
[:SOURCE] : RADIO : WCDMA : TGPP [: BBG] : DLINK : TGAP [: STATE] ?

This command enables or disables the transmission gap compressed mode.

*RST	0
Key Entry	Compressed Mode On Off

Wideband CDMA Base Band Generator Subsystem–Option 400 ([:SOURCE]:RADio:WCDMa:TGPP[:BBG])

Remarks When compressed mode is enabled, DPCH2 is automatically disabled and can't be enabled.

If the parameter set by this command is changed while the signal is active, the apply command must be executed for the change to occur. Refer to “:DLINK:APPLY” on page 1018.

:DLINK:TSETup

Supported E4438C with Option 400

[:SOURCE] :RADio:WCDMa:TGPP [:BBG] :DLINK:TSETup REFSensitiv | MAXinput | ACS | BLOcking | SPURious | INTermod | PERFreq

This command configures the test setup for the downlink channels.

REFSensitivity This choice selects reference sensitivity. This is the minimum receiver input power measured at the antenna connector.

MAXinput This choice selects maximum input interference. The receiver is stressed with high-levels of interference from unwanted signals.

ACS This choice selects adjacent channel selectivity (ACS). This is the receiver ability to receive a wanted signal at the assigned channel frequency with the presence of adjacent signals.

ACS is the ratio of the receiver filter attenuation (on the assigned channel) to the receive filter attenuation on the adjacent channel(s).

BLOcking This choice selects the blocking characteristics. This is a measure of the receiver ability to receive a wanted signal at the assigned channel frequency in the presence of an unwanted interferer on frequencies other than those of the adjacent channels.

SPURious This choice selects spurious emission power. The emissions are generated or amplified by a receiver.

INTermod This choice selects intermodulation. Third order intermodulation (TIO) or higher mixing of the two interfering RF signals signal in the band of the desired channel.

PERFreq This choice selects the performance requirement of the dedicated channel. This is a static propagation conditions that is determined by the maximum block error rate (BLER) allowed when the receiver input signal is at a specified Eb/No limit.

Key Entry	Ref Sensitivity	Max Input	ACS	Blocking
	Spurious Response	Intermod	Performance Req	

:DLINK:TXDV**Supported** E4438C with Option 400

```
[ :SOURCE ] :RADIo:WCDMa:TGPP [ :BBG ] :DLINK:TXDV NONE | OANT1 | OANT2 | OANTO1 | OANTO2
[ :SOURCE ] :RADIo:WCDMa:TGPP [ :BBG ] :DLINK:TXDV?
```

This command selects the transmit diversity mode of the downlink signal.

NONE This choice disables the transmit diversity mode.

OANT1 This choice selects a Transmit Diversity Openloop Antenna 1 mode.

OANT2 This choice selects a Transmit Diversity Openloop Antenna 2 mode.

OANTO1 This choice selects a Transmit Diversity Openloop Antenna 1 mode with the SCH TSTD (Synchronization Channel Transmit Switched Time Diversity) off.

OANTO2 This choice selects a Transmit Diversity Openloop Antenna 2 mode with the SCH TSTD (Synchronization Channel Transmit Switched Time Diversity) off.

***RST** NONE

Field Entry TX Diversity

Key Entry None OpenLoop Ant1 OpenLoop Ant2
 OpenLoop Ant1 SCH TSTD OFF OpenLoop Ant2 SCH TSTD OFF

Wideband CDMA Base Band Generator Subsystem—Option 400 ([:SOURCE]:RADIo:WCDMa:TGPP[:BBG])

:DLINK[:TGRoup [A] | B]:DCH[1] | 2 | 3 | 4 | 5 | 6:BLKSize**Supported** E4438C with Option 400

[:SOURCE]:RADIo:WCDMa:TGPP[:BBG]:DLINK[:TGRoup[A] | B]:DCH[1] | 2 | 3 | 4 | 5 | 6:BLKSize <val>

[:SOURCE]:RADIo:WCDMa:TGPP[:BBG]:DLINK[:TGRoup[A] | B]:DCH[1] | 2 | 3 | 4 | 5 | 6:BLKSize?

This command sets the block size (BLKSize) for the selected dedicated transport channel (DCH). The transport channel position affects the behavior of this command as described below.

Transport Channel Mode	Signal Generator Behavior
FLEXible	Changing the block size causes the signal generator to recalculate the block set size. The block size, number of blocks and the block set size values are interdependent as shown in the following formula: $\text{block size} = \text{block set size} \div \text{number of blocks}$
FIXed	There are two signal generator behaviors in this mode: <ul style="list-style-type: none"> change the block size to zero, and it remains zero regardless of the block set size and number of blocks values change the block size to a value other than zero, and the signal generator recalculates the block size as a quotient of the block set size and the number of blocks (block set size \div number of blocks), ignoring the value entered by the command

***RST** 20**Range** 0–5000**Field Entry** Blk Size

Remarks If the parameter set by this command is changed while the signal is active, the apply command must be executed for the change to occur. Refer to “:DLINK:APPLY” on page 1018.

For information on the number of blocks and block set size commands, see “:DLINK[:TGRoup [A]|B]:DCH[1]|2|3|4|5|6:NBLocks” on page 1068, and “:DLINK[:TGRoup [A]|B]:DCH[1]|2|3|4|5|6:BSSize” on page 1064.

Refer to the “:DLINK[:TGRoup [A]|B]:DCH[1]|2|3|4|5|6:POSITION” command on page 1069 for information on setting the transport channel position.

:DLINK[:TGRoup [A] | B]:DCH[1] | 2 | 3 | 4 | 5 | 6:BPFRame**Supported** E4438C with Option 400

[:SOURce]:RADio:WCDMa:TGPP[:BBG]:DLINK[:TGRoup[A] | B]:DCH[1] | 2 | 3 | 4 | 5 | 6:BPFRame?

This query returns the number of bits per frame for the selected dedicated transport channel (DCH).

RST** 60**Field Entry** Bits/Frame**:DLINK[:TGRoup [A] | B]:DCH[1] | 2 | 3 | 4 | 5 | 6:BRATe*Supported** E4438C with Option 400

[:SOURce]:RADio:WCDMa:TGPP[:BBG]:DLINK[:TGRoup[A] | B]:DCH[1] | 2 | 3 | 4 | 5 | 6:BRATe?

This query returns the block rate for the selected dedicated transport channel (DCH).

RST** 20**:DLINK[:TGRoup [A] | B]:DCH[1] | 2 | 3 | 4 | 5 | 6:BSSize*Supported** E4438C with Option 400

[:SOURce]:RADio:WCDMa:TGPP[:BBG]:DLINK[:TGRoup[A] | B]:DCH[1] | 2 | 3 | 4 | 5 | 6:BSSize <val>

[:SOURce]:RADio:WCDMa:TGPP[:BBG]:DLINK[:TGRoup[A] | B]:DCH[1] | 2 | 3 | 4 | 5 | 6:BSSize?

This command sets the block set size (BSSize) for the selected dedicated transport channel (DCH). The transport channel position affects the behavior of this command as described below.

Transport Channel Mode**Signal Generator Behavior**

FLEXible	This command has no effect on the block size value. The block size value changes only when there is a value change in the number of blocks or the block size according to the following formula:
----------	--

$$\text{block set size} \geq \text{block size} \times \text{number of blocks}$$

Wideband CDMA Base Band Generator Subsystem–Option 400 ([:SOURCE]:RADio:WCDMa:TGPP[:BBG])

Transport Channel Mode	Signal Generator Behavior
FIXed	<p>Changing the block set size value automatically changes the block size, so that the block set size approximates or is the product of the block size and number of blocks values:</p> $\text{block set size} \geq \text{block size} \times \text{number of blocks}$ <p>The change in the block set size value generates a settings conflict error, which the signal generator corrects when it recalculates the block size value.</p>
*RST	20
Range	0–200000
Field Entry	Blk Set Size
Remarks	<p>Refer to the “:DLINK[:TGRoup [A] B]:DCH[1] 2 3 4 5 6:POSition” command on page 1069 for information on setting the transport channel position.</p> <p>For information on the number of blocks and block size commands, see “:DLINK[:TGRoup [A] B]:DCH[1] 2 3 4 5 6:NBLocks” on page 1068, and “:DLINK[:TGRoup [A] B]:DCH[1] 2 3 4 5 6:BLKSize” on page 1063.</p> <p>If the parameter set by this command is changed while the signal is active, the apply command must be executed for the change to occur. Refer to “:DLINK:APPLy” on page 1018.</p>

:DLINK[:TGRoup [A]|B]:DCH[1]|2|3|4|5|6:CODE

Supported E4438C with Option 400

[:SOURCE] :RADio:WCDMa:TGPP [:BBG] :DLINK [:TGRoup [A] | B] :DCH [1] | 2 | 3 | 4 | 5 | 6 :
CODE HCONv | TCONv | TURBo | NONE

[:SOURCE] :RADio:WCDMa:TGPP [:BBG] :DLINK [:TGRoup [A] | B] :DCH [1] | 2 | 3 | 4 | 5 | 6 :
CODE?

This command selects the encoder type.

HCONv	This choice selects coding with the 1/2 rate convolutional encoder.
TCONv	This choice selects coding with the 1/3 rate convolutional encoder.
TURBo	This choice selects coding with the turbo coder.
NONE	This choice selects no coding.

Wideband CDMA Base Band Generator Subsystem–Option 400 ([:SOURCE]:RADio:WCDMa:TGPP[:BBG])

*RST	HCON
Key Entry	1/2 Conv 1/3 Conv Turbo None
Remarks	If the parameter set by this command is changed while the signal is active, the apply command must be executed for the change to occur. Refer to “:DLINK:APPLY” on page 1018.

:DLINK[:TGRoup [A] | B]:DCH[1] | 2 | 3 | 4 | 5 | 6:CRC

Supported	E4438C with Option 400
	[:SOURCE] :RADio:WCDMa:TGPP[:BBG] :DLINK[:TGRoup[A] B] :DCH[1] 2 3 4 5 6 :CRC <val>
	[:SOURCE] :RADio:WCDMa:TGPP[:BBG] :DLINK[:TGRoup[A] B] :DCH[1] 2 3 4 5 6 :CRC?

This command sets the number of cyclic redundancy check (CRC) bits for the dedicated transport channel (DCH).

*RST	8
Field Entry	CRC Size
Remarks	If the parameter set by this command is changed while the signal is active, the apply command must be executed for the change to occur. Refer to “:DLINK:APPLY” on page 1018.

:DLINK[:TGRoup [A] | B]:DCH[1] | 2 | 3 | 4 | 5 | 6:DATA

Supported	E4438C with Option 400
	[:SOURCE] :RADio:WCDMa:TGPP[:BBG] :DLINK[:TGRoup[A] B] :DCH[1] 2 3 4 5 6 :DATA PN9 FIX4 "<file name>"
	[:SOURCE] :RADio:WCDMa:TGPP[:BBG] :DLINK[:TGRoup[A] B] :DCH[1] 2 3 4 5 6 :DATA?

This command configures the data for the downlink dedicated transport channel (DCH) selected.

"<file name>" This variable specifies a data pattern that has been stored in memory.

*RST	PN9
Key Entry	PN9 FIX4 "<User File>"
Remarks	If the parameter set by this command is changed while the signal is active, the apply command must be executed for the change to occur. Refer to “:DLINK:APPLY” on page 1018.

Wideband CDMA Base Band Generator Subsystem–Option 400 ([:SOURCE]:RADIO:WCDMA:TGPP[:BBG])

:DLINK[:TGRoup [A] | B]:DCH[1] | 2 | 3 | 4 | 5 | 6:DATA:EINSErt**Supported** E4438C with Option 400[:SOURCE]:RADIO:WCDMA:TGPP[:BBG]:DLINK[:TGRoup[A] | B]:DCH[1] | 2 | 3 | 4 | 5 | 6:
DATA:EINSErt BLER | BER | NONE[:SOURCE]:RADIO:WCDMA:TGPP[:BBG]:DLINK[:TGRoup[A] | B]:DCH[1] | 2 | 3 | 4 | 5 | 6:
DATA:EINSErt?

This command selects the error insertion mode.

BLER This choice selects a block error rate (BLER) mode.**BER** This choice selects a bit error rate (BER) mode.**NONE** This choice selects no BLER or BER mode (no error blocks or bit are inserted)***RST** NONE**Key Entry** **BLER** **BER** **None****:DLINK[:TGRoup [A] | B]:DCH[1] | 2 | 3 | 4 | 5 | 6:DATA:FIX4****Supported** E4438C with Option 400[:SOURCE]:RADIO:WCDMA:TGPP[:BBG]:DLINK[:TGRoup[A] | B]:DCH[1] | 2 | 3 | 4 | 5 | 6:
DATA:FIX4 <val>[:SOURCE]:RADIO:WCDMA:TGPP[:BBG]:DLINK[:TGRoup[A] | B]:DCH[1] | 2 | 3 | 4 | 5 | 6:
DATA:FIX4?

This command sets a fixed data type to be transmitted on the selected downlink dedicated transport channel (DCH).

While the variable <val> can be entered in binary, hexadecimal, or decimal formats, the query returns only binary values.

RST** #B0000**Range** 0–15**Key Entry** **FIX4*Remarks** If the parameter set by this command is changed while the signal is active, the apply command must be executed for the change to occur. Refer to “:DLINK:APPLY” on page 1018.

:DLINK[:TGRoup [A] | B]:DCH[1] | 2 | 3 | 4 | 5 | 6:NBLocks**Supported** E4438C with Option 400

```
[ :SOURce ] :RADio:WCDMa:TGPP[ :BBG ] :DLINK[ :TGRoup[A] | B ] :DCH[ 1 ] | 2 | 3 | 4 | 5 | 6 :
NBLocks <val>
[ :SOURce ] :RADio:WCDMa:TGPP[ :BBG ] :DLINK[ :TGRoup[A] | B ] :DCH[ 1 ] | 2 | 3 | 4 | 5 | 6 :
NBLocks?
```

This command sets the number of blocks (NBLocks) transmitted by the selected downlink dedicated transport channel (DCH). The transport channel position affects the behavior of this command as described below.

Transport Channel Mode	Signal Generator Behavior
FLEXible	<p>Changing the number of blocks causes the signal generator to recalculate the block set size; <i>block size</i> remains constant. The equation is as follows:</p> $\text{number of blocks} \leq \text{block set size} \div \text{block size}$
FIXed	<p>Changing the number of blocks causes the signal generator to recalculate the block size; <i>block set size</i> remains constant. Changing the number of blocks also causes the ESG to generate a settings conflict error that is corrected when the signal generator recalculates the block size. The equation is as follows:</p> $\text{number of blocks} \leq \text{block set size} \div \text{block size}$
*RST	1
Range	1–64
Field Entry	# of Blocks
Remarks	<p>Refer to the “:DLINK[:TGRoup [A] B]:DCH[1] 2 3 4 5 6:POSITION” command on page 1069 for information on setting the transport channel position.</p> <p>For information on the block size (BLKSize) and block set size (BSSize) commands, see “:DLINK[:TGRoup [A] B]:DCH[1] 2 3 4 5 6:BLKSize” on page 1063 and “:DLINK[:TGRoup [A] B]:DCH[1] 2 3 4 5 6:BSSize” on page 1064.</p> <p>If the parameter set by this command is changed while the signal is active, the apply command must be executed for the change to occur. Refer to “:DLINK:APPLY” on page 1018.</p>

Wideband CDMA Base Band Generator Subsystem—Option 400 ([:SOURCE]:RADIo:WCDMa:TGPP[:BBG])

:DLINK[:TGRoup [A] | B]:DCH[1] | 2 | 3 | 4 | 5 | 6:POSITION**Supported** E4438C with Option 400

[:SOURCE]:RADIo:WCDMa:TGPP[:BBG]:DLINK[:TGRoup[A] | B]:DCH[1] | 2 | 3 | 4 | 5 | 6:POSITION FLEXible | FIXed

[:SOURCE]:RADIo:WCDMa:TGPP[:BBG]:DLINK[:TGRoup[A] | B]:DCH[1] | 2 | 3 | 4 | 5 | 6:POSITION?

This command selects a position for the data transmitted by the downlink dedicated transport channel (DCH).

The transport position selection, flexible or fixed, determines how the three block settings, block set size, block size, and number of blocks, for the transport channel are determined.

FLEXible This choice allows the signal generator to automatically set the block set size. The relationship between block set size, block size, and number of blocks is as follows:

$$\text{block set size} = \text{number of blocks} \times \text{block size}$$

FIXed This choice allows a user-defined block set size. The relationship between block set size, block size, and number of blocks is as follows:

$$\text{block set size} \geq \text{number of blocks} \times \text{block size}$$
***RST** FLEX**Key Entry** Transp Position Flexible Fixed

Remarks For more information on the block parameters, refer to the “:DLINK[:TGRoup [A] | B]:DCH[1] | 2 | 3 | 4 | 5 | 6:NBLocks” command on [page 1069](#), the “:DLINK[:TGRoup [A] | B]:DCH[1] | 2 | 3 | 4 | 5 | 6:BSSize” command on [page 1064](#) and the “:DLINK[:TGRoup [A] | B]:DCH[1] | 2 | 3 | 4 | 5 | 6:BLKSize” command on [page 1063](#).

:DLINK[:TGRoup [A] | B]:DCH[1] | 2 | 3 | 4 | 5 | 6:PPERcentage**Supported** E4438C with Option 400

[:SOURCE]:RADIo:WCDMa:TGPP[:BBG]:DLINK[:TGRoup[A] | B]:DCH[1] | 2 | 3 | 4 | 5 | 6:PPERcentage?

This query returns the percentage of the total bits removed from or added to the fully coded channel.

:DLINK[:TGRoup [A] | B]:DCH[1] | 2 | 3 | 4 | 5 | 6:RMATCh**Supported** E4438C with Option 400

```
[ :SOURce ] :RADio:WCDMa:TGPP[ :BBG ] :DLINK[ :TGRoup[A] | B ] :DCH[ 1 ] | 2 | 3 | 4 | 5 | 6 :
RMATCh <val>
[ :SOURce ] :RADio:WCDMa:TGPP[ :BBG ] :DLINK[ :TGRoup[A] | B ] :DCH[ 1 ] | 2 | 3 | 4 | 5 | 6 :
RMATCh?
```

This command sets the rate matching attribute.

***RST** 1**Range** 1–256**Field Entry** Rate Match Attr

Remarks If the parameter set by this command is changed while the signal is active, the apply command must be executed for the change to occur. Refer to [“:DLINK:APPLY” on page 1018](#).

:DLINK[:TGRoup [A] | B]:DCH[1] | 2 | 3 | 4 | 5 | 6:TTI**Supported** E4438C with Option 400

```
[ :SOURce ] :RADio:WCDMa:TGPP[ :BBG ] :DLINK[ :TGRoup[A] | B ] :DCH[ 1 ] | 2 | 3 | 4 | 5 | 6 :
TTI 10000 | 20000 | 40000 | 80000
[ :SOURce ] :RADio:WCDMa:TGPP[ :BBG ] :DLINK[ :TGRoup[A] | B ] :DCH[ 1 ] | 2 | 3 | 4 | 5 | 6 :
TTI?
```

This command sets the transmission time interval (TTI) allowed for the dedicated channel (DCH) to transmit.

The choices are expressed in units of milliseconds (msec) where 20000=20 msec.

***RST** 10000**Field Entry** TTI

Remarks If the parameter set by this command is changed while the signal is active, the apply command must be executed for the change to occur. Refer to [“:DLINK:APPLY” on page 1018](#).

Wideband CDMA Base Band Generator Subsystem–Option 400 ([:SOURCE]:RADIO:WCDMA:TGPP[:BBG])

:DLINK[:TGRoup [A] | B]:DCH[1] | 2 | 3 | 4 | 5 | 6[:STATE]**Supported** E4438C with Option 400

```
[:SOURCE]:RADIO:WCDMA:TGPP[:BBG]:DLINK[:TGRoup[A] | B]:DCH[1] | 2 | 3 | 4 | 5 |
6[:STATE] ON|OFF|1|0
[:SOURCE]:RADIO:WCDMA:TGPP[:BBG]:DLINK[:TGRoup[A] | B]:DCH[1] | 2 | 3 | 4 | 5 |
6[:STATE]?
```

This command enables or disables the selected dedicated transport channel (DCH).

***RST** DCH 1: 1 DCH 2–6: 0**Key Entry** TrCH State Off On

Remarks DCH1 reset value cannot be turned off. The channels must be turned on sequentially. If one channel is turned off then all higher numbered channels will automatically be turned off.

If the parameter is changed, the apply command must be executed after the change. Refer to “[:DLINK:APPLY](#)” on page 1018.

:LINK**Supported** E4438C with Option 400

```
[:SOURCE]:RADIO:WCDMA:TGPP[:BBG]:LINK DOWN|UP
[:SOURCE]:RADIO:WCDMA:TGPP[:BBG]:LINK?
```

This command sets the uplink or downlink mode.

RST** DOWN**Key Entry** Link Down Up**:POLarity[:ALL]*Supported** E4438C with Option 400

```
[:SOURCE]:RADIO:WCDMA:TGPP[:BBG]:POLarity[:ALL] NORMal | INVert
[:SOURCE]:RADIO:WCDMA:TGPP[:BBG]:POLarity[:ALL]?
```

This command selects the polarity for the Q channel.

NORMal This choice selects normal phase polarity.

INVert This choice inverts the internal Q signal.

***RST** NORM**Key Entry** Phase Polarity Normal Invert

:ULINK:APPLY**Supported** E4438C with Option 400

[:SOURCE]:RADIo:WCDMa:TGPP[:BBG]:ULINK:APPLY

[:SOURCE]:RADIo:WCDMa:TGPP[:BBG]:ULINK:APPLY?

This command immediately starts the channel coding generation process according to the channel setup and data for the uplink physical and transport channels.

The query returns a response that determines whether or not the execution of the command is necessary. The response from the query is as follows:

- 1 This response is returned if the execution of the command is required.
- 0 This response is returned if the execution of the command is not required.

RST** +0**Key Entry** Apply Channel Setup**:ULINK:AWGN:CN*Supported** E4438C with Option 400 and 403

[:SOURCE]:RADIo:WCDMa:TGPP[:BBG]:ULINK:AWGN:CN <val>

[:SOURCE]:RADIo:WCDMa:TGPP[:BBG]:ULINK:AWGN:CN?

This command sets the in band carrier to noise ratio. The noise is the total noise level of the in-channel.

The variable <val> is expressed in units of decibels (dB).

***RST** -1.80000000E+001**Range** -30 to 30**Field Entry** C/N value

Remarks In compressed mode, carrier power means normal frame power. A change in the C/N value will change the Eb/No value and vice versa.

Wideband CDMA Base Band Generator Subsystem—Option 400 ([:SOURCE]:RADio:WCDMa:TGPP[:BBG])

:ULINK:AWGN:CPOWer**Supported** E4438C with Option 400 and 403

[:SOURCE]:RADio:WCDMa:TGPP[:BBG]:ULINK:AWGN:CPOWer?

This query returns the carrier power level when the additive white gaussian noise (AWGN) is on.

The power value is expressed in units of decibels (dBm/3.84 MHz).

RST** -1.56957537E+002**Field Entry** C Power**Remarks** In compressed mode, carrier power means normal frame power.**:ULINK:AWGN:DRATe*Supported** E4438C with Option 400 and 403

[:SOURCE]:RADio:WCDMa:TGPP[:BBG]:ULINK:AWGN:DRATe?

This query returns the data rate of the Eb reference channel.

RST** +1.22000000E+004**Field Entry** Ref Data Rate**:ULINK:AWGN:EBNO*Supported** E4438C with Option 400 and 403

[:SOURCE]:RADio:WCDMa:TGPP[:BBG]:ULINK:AWGN:EBNO <val>

[:SOURCE]:RADio:WCDMa:TGPP[:BBG]:ULINK:AWGN:EBNO?

This command sets the Eb/No ratio. The Eb is defined as the carrier power divided by the bit rate. No is noise power divided by the bandwidth (3.84MHz).

The variable <val> setting is affected by the carrier to noise ratio (C/N) and the data rate. A change to either of these values will affect your Eb/No setting. Use the formula in the range field to determine a correct Eb/No value.

***RST** +6.97971394E+000**Range** $E_b/N_o = C/N \times 3.84\text{MHz}/\text{Data Rate}$ **Field Entry** Eb/No value (dB)

:ULINK:AWGN:EBRef

Supported E4438C with Option 400 and 403

```
[ :SOURce ] :RADio:WCDMa:TGPP[ :BBG ] :ULINK:AWGN:EBRef DPCCh | DPDCh | DCH1 |
DCH2 | DCH3 | DCH4 | DCH5 | DCH6
[ :SOURce ] :RADio:WCDMa:TGPP[ :BBG ] :ULINK:AWGN:EBRef?
```

This command selects the Eb reference and it is used in the Eb/No value.

DPCCh This choice selects a dedicated physical control channel.

DPDCh This choice selects a dedicated physical data channel.

DCH1 This choice select dedicated transport channel 1.

DCH2 This choice select dedicated transport channel 2.

DCH3 This choice select dedicated transport channel 3.

DCH4 This choice select dedicated transport channel 4.

DCH5 This choice select dedicated transport channel 5.

DCH6 This choice select dedicated transport channel 6.

***RST** DCH1

Key Entry DPCCH DPDCH DCH1 DCH2
DCH3 DCH4 DCH5 DCH6

Remarks If the parameter set by this command is changed while the signal is active, the apply command must be executed for the change to occur. Refer to “:ULINK:APPLY” on page 1072.

:ULINK:AWGN:FNBW

Supported E4438C with Option 400 and 403

```
[ :SOURce ] :RADio:WCDMa:TGPP[ :BBG ] :ULINK:AWGN:FNBW?
```

This query returns the flat noise bandwidth (BW). Flat noise bandwidth is calculated by $BW=(1.6) \times$ (Chip rate) and the result is close to the 0 dB roll-off point.

***RST** +6.14400000E+006

Field Entry Flat Noise BW

Wideband CDMA Base Band Generator Subsystem–Option 400 ([:SOURCE]:RADIO:WCDMA:TGPP[:BBG])

:ULINK:AWGN:NPOWER**Supported** E4438C with Option 400 and 403

[:SOURCE]:RADIO:WCDMA:TGPP[:BBG]:ULINK:AWGN:NPOWER?

This query returns the in-channel noise level when the additive white gaussian noise (AWGN) is on.

The power value is expressed in units of decibels (dBm/3.84 MHz).

RST** -1.38957537E+002**Field Entry** N Power**:ULINK:AWGN:TICPower*Supported** E4438C with Option 400 and 403

[:SOURCE]:RADIO:WCDMA:TGPP[:BBG]:ULINK:AWGN:TICPower?

This query returns the total in-channel power (carrier with noise) as defined by the 3GPP standard.

Field Entry TotalPwr**Remarks** The total in-channel power is a sum of carrier power and in-channel noise power. Changing the noise related parameters such as C/N, Eb/No, and Eb Ref will cause a recalculation of the total in-channel power.

The maximum value returned by this query depends on the power option that is installed in the signal generator.

:ULINK:AWGN[:STATE]**Supported** E4438C with Option 400 and 403

[:SOURCE]:RADIO:WCDMA:TGPP[:BBG]:ULINK:AWGN:STATE ON|OFF|1|0

[:SOURCE]:RADIO:WCDMA:TGPP[:BBG]:ULINK:AWGN:STATE?

This command enables or disables the additive white gaussian noise (AWGN). AWGN can only be turned on when DPCCH is selected as the physical channel. Refer to “:ULINK:PHYSICAL[1]:TYPE” on page 1097.

***RST** 0**Key Entry** Channel State Off On**Remarks** If the parameter is changed, the apply command must be executed after the change. Refer to “:ULINK:APPLY” on page 1072.

:ULINK:CRATe**Supported** E4438C with Option 400

[:SOURCE]:RADio:WCDMa:TGPP[:BBG]:ULINK:CRATe <val>

[:SOURCE]:RADio:WCDMa:TGPP[:BBG]:ULINK:CRATe?

This command sets the chip rate for the uplink configuration. The variable <val> is expressed in cycles per second (cps).

RST** +3.84000000E+006**Range** 1E3–4.25E6**Field Entry** Chip Rate**Remarks** The chip rate is equivalent to the spreading rate of the channel.**:ULINK:DPCCh:BETA*Supported** E4438C with Option 400

[:SOURCE]:RADio:WCDMa:TGPP[:BBG]:ULINK:DPCCh:BETA <val>

[:SOURCE]:RADio:WCDMa:TGPP[:BBG]:ULINK:DPCCh:BETA?

This command sets the beta value for the uplink dedicated physical control channel (DPCCH). The beta value and the power ratio are coupled. When the power ratio is updated, the beta value is converted to the beta ratio (amplitude ratio).

***RST** +11**Range** 0–15**Field Entry** Beta**Remarks** After this command is sent, the channel power level for the DPCCH is re-calculated. If the channel power is set directly, the beta value of this command becomes invalid and is reset to –1.

If the parameter set by this command is changed while the signal is active, the apply command must be executed for the change to occur. Refer to “:ULINK:APPLY” on page 1072.

Wideband CDMA Base Band Generator Subsystem–Option 400 ([:SOURCE]:RADIo:WCDMA:TGPP[:BBG])

:ULINK:DPCCh:CCODE**Supported** E4438C with Option 400

[:SOURCE]:RADIo:WCDMA:TGPP[:BBG]:ULINK:DPCCh:CCODE <val>

[:SOURCE]:RADIo:WCDMA:TGPP[:BBG]:ULINK:DPCCh:CCODE?

This command sets the channelization code for the uplink dedicated physical control channel (DPCCH).

***RST** 0**Range** 0–255**Field Entry** Channel Code

Remarks If the parameter set by this command is changed while the signal is active, the apply command must be executed for the change to occur. Refer to [“:ULINK:APPLY” on page 1072](#).

:ULINK:DPCCh:DATA**Supported** E4438C with Option 400

[:SOURCE]:RADIo:WCDMA:TGPP[:BBG]:ULINK:DPCCh:DATA PN9 | PN15 | FIX4 |

"<file name>" | STD

[:SOURCE]:RADIo:WCDMA:TGPP[:BBG]:ULINK:DPCCh:DATA?

This command configures the data pattern for the uplink dedicated physical control channel (DPCCH).

STD This choice sets the DPCCH to use the bits field as defined by the slot format.

"<file name>" This variable specifies a data pattern that has been stored in memory.

***RST** STD**Key Entry** PN9 PN15 FIX4 User File 3GPP STD

Remarks If the parameter set by this command is changed while the signal is active, the apply command must be executed for the change to occur. Refer to [“:ULINK:APPLY” on page 1072](#).

:ULINK:DPCCh:DATA:FIX4**Supported** E4438C with Option 400

[:SOURCE]:RADIo:WCDMa:TGPP[:BBG]:ULINK:DPCCh:DATA:FIX4 <val>

[:SOURCE]:RADIo:WCDMa:TGPP[:BBG]:ULINK:DPCCh:DATA:FIX4?

This command sets the 4-bit data pattern of the uplink dedicated physical control channel (DPCCH).

While the variable <val> can be entered in binary, hexadecimal, or decimal formats, the query returns only binary values.

***RST** #B0000**Range** 0–15**Key Entry** FIX4

Remarks If the parameter set by this command is changed while the signal is active, the apply command must be executed for the change to occur. Refer to [“:ULINK:APPLY” on page 1072](#).

:ULINK:DPCCh:FBI:PATtern**Supported** E4438C with Option 400[:SOURCE]:RADIo:WCDMa:TGPP[:BBG]:ULINK:DPCCh:FBI:PATtern PN9|PN15|FIX|
"<file name>"

[:SOURCE]:RADIo:WCDMa:TGPP[:BBG]:ULINK:DPCCh:FBI:PATtern?

This command configures the pattern of the feedback information (FBI) for the uplink dedicated physical control channel (DPCCH).

"<file name>" This variable specifies a data pattern that has been stored in memory.

***RST** FIX**Key Entry** PN9 PN15 FIX User File

Remarks If the parameter set by this command is changed while the signal is active, the apply command must be executed for the change to occur. Refer to [“:ULINK:APPLY” on page 1072](#).

Wideband CDMA Base Band Generator Subsystem–Option 400 ([:SOURCE]:RADIO:WCDMA:TGPP[:BBG])

:ULINK:DPCCh:FBI:PATtern:FIX

Supported E4438C with Option 400

```
[ :SOURCE ] : RADIO : WCDMA : TGPP [ : BBG ] : ULINK : DPCCh : FBI : PATtern : FIX <val>
```

```
[ :SOURCE ] : RADIO : WCDMA : TGPP [ : BBG ] : ULINK : DPCCh : FBI : PATtern : FIX?
```

This command sets the 30-bit feedback information (FBI) pattern for the uplink dedicated physical control channel (DPCCH).

While the variable <val> can be entered in binary, hexadecimal, or decimal formats, the query returns only decimal values.

***RST** +0

Range 0–10737418235

Key Entry FIX

Remarks If the parameter set by this command is changed while the signal is active, the apply command must be executed for the change to occur. Refer to “:ULINK:APPLY” on page 1072.

:ULINK:DPCCh:FBI[:STATe]

Supported E4438C with Option 400

```
[ :SOURCE ] : RADIO : WCDMA : TGPP [ : BBG ] : ULINK : DPCCh : FBI [ : STATe ] ?
```

This query returns whether or not the feedback information (FBI) bits are included in the uplink dedicated physical control channel (DPCCH). The FBI is included when a status of one is returned. A zero indicates no FBI.

***RST** 0

Range N/A

Field Entry FBI State

:ULINK:DPCCh:POWer**Supported** E4438C with Option 400

[:SOURCE]:RADio:WCDMa:TGPP[:BBG]:ULINK:DPCCh:POWer <val>

[:SOURCE]:RADio:WCDMa:TGPP[:BBG]:ULINK:DPCCh:POWer?

This command sets the power level for the uplink dedicated physical control channel (DPCCH).

The variable <val> is expressed in units of decibels (dB).

***RST** -2.69000000E+000**Range** -40 to 0**Field Entry** DPCCH Power

Remarks If the parameter set by this command is changed while the signal is active, the apply command must be executed for the change to occur. Refer to [“:ULINK:APPLY” on page 1072](#).

:ULINK:DPCCh:RATE**Supported** E4438C with Option 400

[:SOURCE]:RADio:WCDMa:TGPP[:BBG]:ULINK:DPCCh:RATE?

This query returns the symbol rate for the uplink dedicated physical control channel (DPCCH).

RST** +1.50000000E+004**Field Entry** Symbol Rate**:ULINK:DPCCh:SLOTformat*Supported** E4438C with Option 400

[:SOURCE]:RADio:WCDMa:TGPP[:BBG]:ULINK:DPCCh:SLOTformat <val>

[:SOURCE]:RADio:WCDMa:TGPP[:BBG]:ULINK:DPCCh:SLOTformat?

This command sets the slot format for the uplink dedicated physical control channel (DPCCH). The variable <val> is expressed in unit of bits.

***RST** +0**Range** 0–5**Field Entry** Slot Format

Wideband CDMA Base Band Generator Subsystem–Option 400 ([:SOURCE]:RADIO:WCDMA:TGPP[:BBG])

Remarks If the parameter set by this command is changed while the signal is active, the apply command must be executed for the change to occur. Refer to “:ULINK:APPLY” on page 1072.

:ULINK:DPCCh:TFCI:PATtern

Supported E4438C with Option 400

```
[ :SOURCE ] : RADIO : WCDMA : TGPP [ : BBG ] : ULINK : DPCCh : TFCI : PATtern PN9 | PN15 | FIX |
"<file name>"
```

```
[ :SOURCE ] : RADIO : WCDMA : TGPP [ : BBG ] : ULINK : DPCCh : TFCI : PATtern?
```

This command configures the transport format combination indicator (TFCI) bit pattern for the uplink dedicated physical control channel (DPCCH).

"<file name>" This variable specifies a data pattern that has been stored in memory.

***RST** FIX

Key Entry PN9 PN15 FIX User File

Remarks If the parameter set by this command is changed while the signal is active, the apply command must be executed for the change to occur. Refer to “:ULINK:APPLY” on page 1072.

:ULINK:DPCCh:TFCI:PATtern:FIX

Supported E4438C with Option 400

```
[ :SOURCE ] : RADIO : WCDMA : TGPP [ : BBG ] : ULINK : DPCCh : TFCI : PATtern : FIX <val>
```

```
[ :SOURCE ] : RADIO : WCDMA : TGPP [ : BBG ] : ULINK : DPCCh : TFCI : PATtern : FIX?
```

This command sets the transport format combination indicator (TFCI) 10-bit data pattern for the uplink dedicated physical control channel (DPCCH).

While the variable <val> can be entered in binary, hexadecimal, or decimal formats, the query returns only decimal values.

***RST** +0

Range 0–1023

Field Entry TFCI Pattern

Remarks If the parameter set by this command is changed while the signal is active, the apply command must be executed for the change to occur. Refer to “:ULINK:APPLY” on page 1072.

:ULINK:DPCCh:TFCI[:STATe]**Supported** E4438C with Option 400

[:SOURCE]:RADIO:WCDMA:TGPP[:BBG]:ULINK:DPCCh:TFCI[:STATe]?

This query returns the status of the transport format combination indicator (TFCI) for the uplink dedicated physical control channel (DPCCH).

RST** 1**Range** N/A**Field Entry** TFCI State**:ULINK:DPCCh:TPC:NSTeps*Supported** E4438C with Option 400

[:SOURCE]:RADIO:WCDMA:TGPP[:BBG]:ULINK:DPCCh:TPC:NSTeps <val>

[:SOURCE]:RADIO:WCDMA:TGPP[:BBG]:ULINK:DPCCh:TPC:NSTeps?

This command sets the number of steps to increase or decrease the transmit power control (TPC) for the uplink dedicated physical control channel (DPCCH).

The variable <val> is expressed in units of decibels (dB).

***RST** +1**Range** 1–80**Field Entry** TPC Pat Steps**Remarks** Refer to “:ULINK:DPCCh:TPC:PATtern” on page 1083.

If the parameter set by this command is changed while the signal is active, the apply command must be executed for the change to occur. Refer to “:ULINK:APPLY” on page 1072.

Wideband CDMA Base Band Generator Subsystem–Option 400 ([:SOURCE]:RADIO:WCDMA:TGPP[:BBG])

:ULINK:DPCCh:TPC:PATtern**Supported** E4438C with Option 400

```
[ :SOURCE ] : RADIO : WCDMA : TGPP [ : BBG ] : ULINK : DPCCh : TPC : PATtern PN9 | PN15 | FIX4 |
"<file name>" | UDOW | DUP | UALL | DALL
[ :SOURCE ] : RADIO : WCDMA : TGPP [ : BBG ] : ULINK : DPCCh : TPC : PATtern?
```

This command configures the transmit power control (TPC) pattern for the uplink dedicated physical control channel (DPCCH).

"<file name>" This variable specifies a data pattern that has been stored in memory.

UDOW This choice repetitively steps up and down the TPC pattern.

DUP This choice repetitively steps down and up the TPC pattern.

UALL This choice consecutively steps up the TPC pattern.

DALL This choice consecutively steps down the TPC pattern.

***RST** PN9

Key Entry PN9 PN15 FIX4 "<file name>" Up/Down Down/Up All Up

All Down

Remarks Refer to [“:ULINK:DPCCh:TPC:NSTeps” on page 1082](#).

If the parameter set by this command is changed while the signal is active, the apply command must be executed for the change to occur. Refer to [“:ULINK:APPLY” on page 1072](#).

:ULINK:DPCCh:TPC:PATtern:FIX4**Supported** E4438C with Option 400

[:SOURCE]:RADio:WCDMa:TGPP[:BBG]:ULINK:DPCCh:TPC:PATtern:FIX4 <val>

[:SOURCE]:RADio:WCDMa:TGPP[:BBG]:ULINK:DPCCh:TPC:PATtern:FIX4?

This command sets the transmit power control (TPC) 4 bit data pattern for the uplink dedicated physical control channel (DPCCH).

While the variable <val> can be entered in binary, hexadecimal, or decimal formats, the query returns only binary values.

***RST** #B0000**Range** 0–15**Field Entry** TPC Pattern

Remarks If the parameter set by this command is changed while the signal is active, the apply command must be executed for the change to occur. Refer to [“:ULINK:APPLY” on page 1072](#).

:ULINK:DPCCh:TPC:PATtern:TRIGger:POLarity**Supported** E4438C with Option 400

[:SOURCE]:RADio:WCDMa:TGPP[:BBG]:ULINK:DPCCh:TPC:PATtern:TRIGger:POLarity POSitive|NEGative

[:SOURCE]:RADio:WCDMa:TGPP[:BBG]:ULINK:DPCCh:TPC:PATtern:TRIGger:POLarity?

This command sets the transmit power control (TPC) pattern trigger polarity for the uplink dedicated physical control channel (DPCCH).

POSitive This choice sets the pattern signal to trigger when the signal is high.**NEGative** This choice sets the pattern signal to trigger when the signal is low.***RST** POS**Key Entry** TPC Pat Trig Polarity Neg Pos

Remarks If the parameter set by this command is changed while the signal is active, the apply command must be executed for the change to occur. Refer to [“:ULINK:APPLY” on page 1072](#).

Wideband CDMA Base Band Generator Subsystem–Option 400 ([:SOURCE]:RADIO:WCDMA:TGPP[:BBG])

:ULINK:DPCCh:TPC:PATtern:TRIGger[:STATe]**Supported** E4438C with Option 400[:SOURCE]:RADIO:WCDMA:TGPP[:BBG]:ULINK:DPCCh:TPC:PATtern:
TRIGger[:STATe] ON|OFF|1|0[:SOURCE]:RADIO:WCDMA:TGPP[:BBG]:ULINK:DPCCh:TPC:PATtern:
TRIGger[:STATe]?

This command enables or disables the transmit power control (TPC) pattern trigger state for the uplink dedicated physical control channel (DPCCH).

***RST** 0**Field Entry** TPC UserFile Trig

Remarks The TPC pattern trigger input is located on the AUX I/O connector (ALT PWR IN, pin#16). For more information about the rear panel AUX I/O connector, refer to "Signal Generator Overview" in the *E4428C/38C ESG Signal Generators User's Guide*. If the parameter is changed, the apply command must be executed after the change. Refer to "[:ULINK:APPLY](#)" on page 1072.

:ULINK:DPCCh:TPOWer**Supported** E4438C with Option 400

[:SOURCE]:RADIO:WCDMA:TGPP[:BBG]:ULINK:DPCCh:TPOWer?

This query returns the "Total Power" value displayed on the user interface (UI). The power value is the relative power difference between the total in-channel signal power and the active channel reference power (0dB).

***RST** +0.00000000E+000

Remarks If the parameter set by this command is changed while the signal is active, the apply command must be executed for the change to occur. Refer to "[:ULINK:APPLY](#)" on page 1072.

:ULINK:DPCCh[:STATe]**Supported** E4438C with Option 400

[:SOURCE]:RADio:WCDMa:TGPP[:BBG]:ULINK:DPCCh[:STATe] ON|OFF|1|0

[:SOURCE]:RADio:WCDMa:TGPP[:BBG]:ULINK:DPCCh[:STATe]?

This command enables or disables the operating state for the uplink dedicated physical control channel (DPCCH).

***RST** 1**Field Entry** Channel State

Remarks If the parameter is changed, the apply command must be executed after the change. Refer to “:ULINK:APPLY” on page 1072.

:ULINK:DPDCh:BETA**Supported** E4438C with Option 400

[:SOURCE]:RADio:WCDMa:TGPP[:BBG]:ULINK:DPDCh:BETA <val>

[:SOURCE]:RADio:WCDMa:TGPP[:BBG]:ULINK:DPDCh:BETA?

This command sets the beta value for uplink dedicated physical data channel (DPDCH).

***RST** +15**Range** 0–15**Field Entry** Beta

Remarks The beta value and power ratio are coupled. After this command is sent, the value of the channel power level of the DPDCH is re-calculated.

If the channel power is set directly, the value of this command becomes invalid and is set to –1.

If the parameter set by this command is changed while the signal is active, the apply command must be executed for the change to occur. Refer to “:ULINK:APPLY” on page 1072.

Wideband CDMA Base Band Generator Subsystem–Option 400 ([:SOURCE]:RADIO:WCDMA:TGPP[:BBG])

:ULINK:DPDCh:CCODE**Supported** E4438C with Option 400

[:SOURCE]:RADIO:WCDMA:TGPP[:BBG]:ULINK:DPDCh:CCODE <val>

[:SOURCE]:RADIO:WCDMA:TGPP[:BBG]:ULINK:DPDCh:CCODE?

This command sets the channelization code for the uplink dedicated physical data channel (DPDCH). There are commands that are associated with the channelization code and they are the slot format and the symbol rate.

If the slot format is changed, so will the symbol rate. If the symbol rate is changed, so will the slot format. In addition, the channelization code will change. If current channelization code exceed the new maximum value for the specified slot format or symbol rate, a setting conflict error is generated and the value is clipped to the maximum value. Refer to [Table 9-4 on page 1087](#).

Table 9-4 Channelization Code Maximum Value

Channelization Code	Slot Format	Symbol Rate
255	0	15
127	1	30
63	2	60
31	3	120
15	4	240
7	5	780
3	6	960

***RST** +16**Range** 0–255**Field Entry** Channel Code

Remarks Refer to “:ULINK:DPDCh:SLOTformat” on page 1091 and “:ULINK:DPDCh:RATE” on page 1089. If the parameter set by this command is changed while the signal is active, the apply command must be executed for the change to occur. Refer to “:ULINK:APPLY” on page 1072.

:ULINK:DPDCh:DATA

Supported E4438C with Option 400

```
[ :SOURCE ] :RADio:WCDMa:TGPP [ :BBG ] :ULINK:DPDCh:DATA PN9 | PN15 | FIX4 |
"<file name>" | TRANspch
[ :SOURCE ] :RADio:WCDMa:TGPP [ :BBG ] :ULINK:DPDCh:DATA?
```

This command configures the data pattern of the uplink dedicated physical data channel (DPDCH).

TRANspch This choice sets the data that is generated from the transport channel setup.

"<file name>" This variable specifies a data pattern that has been stored in memory.

***RST** TRAN

Key Entry **PN9 PN15 FIX4 User File Transport CH**

Remarks If the parameter set by this command is changed while the signal is active, the apply command must be executed for the change to occur. Refer to [“:ULINK:APPLY” on page 1072](#).

:ULINK:DPDCh:DATA:FIX4

Supported E4438C with Option 400

```
[ :SOURCE ] :RADio:WCDMa:TGPP [ :BBG ] :ULINK:DPDCh:DATA:FIX4 <val>
[ :SOURCE ] :RADio:WCDMa:TGPP [ :BBG ] :ULINK:DPDCh:DATA:FIX4?
```

This command sets the fixed 4-bit binary data for the uplink dedicated physical data channel (DPDCH).

While the variable <val> can be entered in binary, hexadecimal, or decimal formats, the query returns only binary values.

***RST** #B0000

Range 0–15

Field Entry Data

Remarks If the parameter set by this command is changed while the signal is active, the apply command must be executed for the change to occur. Refer to [“:ULINK:APPLY” on page 1072](#).

Wideband CDMA Base Band Generator Subsystem–Option 400 ([:SOURCE]:RADio:WCDMa:TGPP[:BBG])

:ULINK:DPDCh:POWer**Supported** E4438C with Option 400

[:SOURCE]:RADio:WCDMa:TGPP[:BBG]:ULINK:DPDCh:POWer <val>

[:SOURCE]:RADio:WCDMa:TGPP[:BBG]:ULINK:DPDCh:POWer?

This command sets the power level for the uplink dedicated physical data channel (DPDCH).

The variable <val> is expressed in units of decibels (dB).

***RST** +0.00000000E+000**Range** –40 to 0**Field Entry** DPDCH Power

Remarks The power ratio and the beta value are coupled. After the beta value is specified and sent, the value of the channel power level of the DPDCH is re-calculated.

If the parameter set by this command is changed while the signal is active, the apply command must be executed for the change to occur. Refer to “:ULINK:APPLY” on page 1072.

:ULINK:DPDCh:RATE**Supported** E4438C with Option 400

[:SOURCE]:RADio:WCDMa:TGPP[:BBG]:ULINK:DPDCh:RATE <val>

[:SOURCE]:RADio:WCDMa:TGPP[:BBG]:ULINK:DPDCh:RATE?

This command sets the symbol rate for the uplink dedicated physical data channel (DPDCH). There are commands that are associated with the symbol rate and they are the channelization code and the slot format.

If the slot format is changed, so will the symbol rate. If the symbol rate is changed, so will the slot format. In addition, the channelization code will change. If current channelization code exceed the new maximum value for the specified slot format or symbol rate, a setting conflict error is generated and the value is clipped to the maximum value. Refer to [Table 9-5](#).

Table 9-5 Channelization Code Maximum Value

Channelization Code	Slot Format	Symbol Rate
255	0	15
127	1	30

Table 9-5 Channelization Code Maximum Value

Channelization Code	Slot Format	Symbol Rate
63	2	60
31	3	120
15	4	240
7	5	780
3	6	960

The variable <val> is expressed in units of kilo symbols per second (ksps).

***RST** +6.00000000E+004

Range 15000–960000

Field Entry Symbol Rate

Remarks Refer to “:ULINK:DPDCh:CCODE” on page 1087 and “:ULINK:DPDCh:RATE” on page 1089. If the parameter set by this command is changed while the signal is active, the apply command must be executed for the change to occur. Refer to “:ULINK:APPLY” on page 1072.

:ULINK:DPDCh:RBER

Supported E4438C with Option 400

[:SOURCE] :RADio:WCDMa:TGPP [:BBG] :ULINK:DPDCh:RBER?

This query returns inserted error bit rate which is specified by the transport channel cycle length and transport channel error length commands.

Inserted error bit rate is calculated by the following formula: $\text{TrCH BER ErrLen} / \text{TrCH BER Cycle}$. Refer to “:ULINK:DPDCh:TBER[:CLENGTH]” on page 1092 and “:ULINK:DPDCh:TBER:ELENGTH” on page 1092.

***RST** 0.0

Field Entry TrCH BER

Wideband CDMA Base Band Generator Subsystem–Option 400 ([:SOURCE]:RADIO:WCDMA:TGPP[:BBG])

:ULINK:DPDCh:SLOTformat**Supported** E4438C with Option 400

[:SOURCE]:RADIO:WCDMA:TGPP[:BBG]:ULINK:DPDCh:SLOTformat <val>

[:SOURCE]:RADIO:WCDMA:TGPP[:BBG]:ULINK:DPDCh:SLOTformat?

This command sets the slot format for the uplink dedicated physical data channel (DPDCH).

There are commands that are associated with the slot format and they are the channelization code and the symbol rate.

If the slot format is changed, so will the symbol rate. If the symbol rate is changed, so will the slot format. In addition, the channelization code will change. If current channelization code exceed the new maximum value for the specified slot format or symbol rate, a setting conflict error is generated and the value is clipped to the maximum value. Refer to [Table 9-6 on page 1091](#).

Table 9-6 Channelization Code Maximum Value

Channelization Code	Slot Format	Symbol Rate
255	0	15
127	1	30
63	2	60
31	3	120
15	4	240
7	5	780
3	6	960

***RST** +2**Range** 0–6**Field Entry** Slot Format

Remarks Refer to “:ULINK:DPDCh:CCODE” on page 1087 and “:ULINK:DPDCh:RATE” on page 1089. If the parameter set by this command is changed while the signal is active, the apply command must be executed for the change to occur. Refer to “:ULINK:APPLY” on page 1072.

:ULINK:DPDCh:TBER[:CLEngth]**Supported** E4438C with Option 400

[:SOURCE]:RADio:WCDMa:TGPP[:BBG]:ULINK:DPDCh:TBER[:CLEngth] <val>

[:SOURCE]:RADio:WCDMa:TGPP[:BBG]:ULINK:DPDCh:TBER[:CLEngth]?

This command sets the cycle length of the Transport Channel BER insertion of dedicated physical channel (DPCH).

***RST** 0**Range** 0–65535**Field Entry** TrCH BER Cycle

Remarks A zero in the TrCH BER Cycle field, disables the error insertion function (error rate equals 0%).

:ULINK:DPDCh:TBER:ELEngth**Supported** E4438C with Option 400

[:SOURCE]:RADio:WCDMa:TGPP[:BBG]:ULINK:DPDCh:TBER:ELEngth <val>

[:SOURCE]:RADio:WCDMa:TGPP[:BBG]:ULINK:DPDCh:TBER:ELEngth?

This command sets the error length of the Transport Channel BER.

***RST** 0**Range** 0–4095**Field Entry** TrCH BER ErrLen

Remarks The Transport Channel BER error length must be smaller than or equal to the Transport Channel BER cycle length.

The TrCH ELEN (transport channel error length) is truncated by the TrCH CLEN (transport channel cycle length) when the TrCH BER cycle length is smaller than TrCH BER length.

Wideband CDMA Base Band Generator Subsystem–Option 400 ([:SOURCE]:RADio:WCDMa:TGPP[:BBG])

:ULINK:DPDCh:TPOWer**Supported** E4438C with Option 400

[:SOURCE]:RADio:WCDMa:TGPP[:BBG]:ULINK:DPDCh:TPOWer?

This query returns the “Total Power” value displayed on the user interface (UI). The power value is the relative power difference between the total in-channel signal power and the active channel reference power (0dB).

RST** +0**:ULINK:DPDCh[:STATe]*Supported** E4438C with Option 400[:SOURCE]:RADio:WCDMa:TGPP[:BBG]:ULINK:DPDCh[:STATe] ON|OFF|1|0
[:SOURCE]:RADio:WCDMa:TGPP[:BBG]:ULINK:DPDCh[:STATe]?

This command enables or disables the operating state for the uplink dedicated physical data channel (DPDCH).

RST** 1**Field Entry** Channel State**Remarks** If the parameter is changed, the apply command must be executed after the change. Refer to “:ULINK:APPLY” on page 1072.**:ULINK:FCLock:INTerval*Supported** E4438C with Option 400[:SOURCE]:RADio:WCDMa:TGPP[:BBG]:ULINK:FCLock:INTerval FCL10|FCL20|
FCL40|FCL80|FCL2560
[:SOURCE]:RADio:WCDMa:TGPP[:BBG]:ULINK:FCLock:INTerval?

This command selects the frame clock interval supplied to the source.

The frame clock interval is set in units of milliseconds (msec).

***RST** FCL80**Key Entry** 10 msec 20 msec 40 msec 80 msec 2560 msec**Remarks** This command is not used when the sync source is set to ESG. Refer to “:ULINK:SYNC[:SOURCE]” on page 1149.

:ULINK:FCLock:POLarity**Supported** E4438C with Option 400

```
[:SOURCE]:RADio:WCDMa:TGPP[:BBG]:ULINK:FCLock:POLarity POSitive|NEGative
[:SOURCE]:RADio:WCDMa:TGPP[:BBG]:ULINK:FCLock:POLarity?
```

This command sets the polarity of the frame clock for the uplink synchronization source.

POSitive This choice sets the clock gate to trigger when the signal is high.

NEGative This choice sets the clock gate to trigger when the signal is low.

***RST** POS

Key Entry Frame Clock Polarity Neg Pos

Remarks This command is not used when the sync source is set to ESG. Refer to “:ULINK:SYNC[:SOURCE]” on page 1149.

:ULINK:FILTer**Supported** E4438C with Option 400

```
[:SOURCE]:RADio:WCDMa:TGPP[:BBG]:ULINK:FILTer RNYQuist|NUQuist|GAUSSian|
RECTangle|IS95|IS95_EQ|IS95_MOD|IS95_MOD_EQ|AC4Fm| UGGaussian|
"<user FIR>"
[:SOURCE]:RADio:WCDMa:TGPP[:BBG]:ULINK:FILTer?
```

This command selects the filter type for the uplink configuration.

IS95 This choice selects a filter that meets the criteria of the IS-95 standard.

IS95_EQ This choice selects a filter which is a combination of the IS-95 filter (above) and the equalizer filter described in the IS-95 standard. This filter is only used for IS-95 baseband filtering.

IS95_MOD This choice selects a filter that meets the criteria of the IS-95 error function (for improved adjacent channel performance) with lower passband rejection than the filter specified in the IS-95 standard.

IS95_MOD_EQ This choice selects a filter which is a combination of the equalizer filter described in the IS-95 standard and a filter that meets the criteria of the IS-95 error function (for improved adjacent channel performance), with lower passband rejection.

AC4Fm This choice selects a predefined Association of Public Safety Communications Officials (APCO) specified compatible 4-level frequency modulation (C4FM) filter.

Wideband CDMA Base Band Generator Subsystem–Option 400 ([:SOURCE]:RADIO:WCDMA:TGPP[:BBG])

UGGaussian	This choice selects a backwards compatible GSM Gaussian filter (Gaussian filter with a fixed BbT value of 0.300) for the ESG E44xxB Option UN3 or UN4.					
"<user FIR>"	This variable is any filter file that you have stored into memory.					
*RST	RNYQ					
Key Entry	Root Nyquist	Nyquist	Gaussian	Rectangle	IS-95	IS-95 w/EQ
	IS-95 Mod	IS-95 Mod w/EQ	APCO 25 C4FM	UN3/4 GSM Gaussian		
	User FIR					
Remarks	Refer to “ File Name Variables ” on page 13 for information on the file name syntax.					

:ULINK:FILTer:ALPHa

Supported E4438C with Option 400

[:SOURCE] :RADIO :WCDMA :TGPP [:BBG] :ULINK :FILTer :ALPHa <val>

[:SOURCE] :RADIO :WCDMA :TGPP [:BBG] :ULINK :FILTer :ALPHa?

This command changes the alpha value for the Nyquist or root Nyquist filter.

***RST** +2.20000000E-001

Range 0.000–1.000

Key Entry **Filter Alpha**

Remarks This command is effective only after a root Nyquist or Nyquist filter is selected; it does not affect other types of filters.

To change the current filter type, refer to “[:ULINK:FILTer](#)” on page 1094.

:ULINK:FILTer:BBT

Supported E4438C with Option 400

```
[ :SOURCE ] :RADio:WCDMa:TGPP [ :BBG ] :ULINK:FILTer:BBT <value>
```

```
[ :SOURCE ] :RADio:WCDMa:TGPP [ :BBG ] :ULINK:FILTer:BBT?
```

This command changes the bandwidth-multiplied-by-bit-time filter parameter value for the Gaussian filter.

***RST** +5.00000000E-001

Range 0.000–1.000

Key Entry Filter BbT

Remarks This command is effective only after a Gaussian filter is selected; it does not affect other types of filters.

To change the current filter type, refer to “[:ULINK:FILTer](#)” on page 1094.

:ULINK:FILTer:CHANnel

Supported E4438C with Option 400

```
[ :SOURCE ] :RADio:WCDMa:TGPP [ :BBG ] :ULINK:FILTer:CHANnel EVM|ACP
```

```
[ :SOURCE ] :RADio:WCDMa:TGPP [ :BBG ] :ULINK:FILTer:CHANnel?
```

This command optimizes a filter for minimized error vector magnitude (EVM) or for minimized adjacent channel power (ACP).

EVM This choice provides the most ideal passband.

ACP This choice improves stopband rejection. This feature only applies to root Nyquist and Nyquist filters.

***RST** EVM

Key Entry Optimize FIR For EVM ACP

Remarks To change the current filter type, refer to “[:ULINK:FILTer](#)” on page 1094.

Wideband CDMA Base Band Generator Subsystem–Option 400 ([:SOURCE]:RADIO:WCDMA:TGPP[:BBG])

:ULINK:FOFFset

Supported E4438C with Option 400

```
[ :SOURCE ] :RADIo:WCDMa:TGPP[ :BBG ] :ULINK:FOFFset <val>
```

```
[ :SOURCE ] :RADIo:WCDMa:TGPP[ :BBG ] :ULINK:FOFFset?
```

This command sets the SFN-CFN frame number offset. The command adds in delays of the internal frame counter by specifying the starting frame number count.

When the FOFFset is set to “0,” the frame number starts at the system sync trigger.

An example of specifying a frame number count: Set the FOFFset to 2. This makes the signal generator to trigger 2 frames after the SFN RST.

***RST** 0

Range 0–255

Key Entry SFN-CFN Frame Offset

Remarks For additional information, refer to 3GPP TS25.402 for SFN and CFN relationship.

:ULINK:PADJust

Supported E4438C with Option 400

```
[ :SOURCE ] :RADIo:WCDMa:TGPP[ :BBG ] :ULINK:PADJust EQUal | SCALe
```

This command adjusts the code domain power levels of all uplink channels.

EQUal This choice will adjust all channel powers to equal power settings.

SCALe This choice will scale the channel power levels so that the sum of the powers are equal to 0 dB.

Key Entry Equal Powers Scale To 0dB

:ULINK:PHYSical[1]:TYPE

Supported E4438C with Option 400

```
[ :SOURCE ] :RADIo:WCDMa:TGPP[ :BBG ] :ULINK:PHYSical[1]:TYPE PRACH | DPCCCh
```

```
[ :SOURCE ] :RADIo:WCDMa:TGPP[ :BBG ] :ULINK:PHYSical[1]:TYPE?
```

This command sets the physical channel type.

PRACH This choice selects a physical random access channel type.

DPCCh This choice selects a dedicated physical control channel type.

***RST** DPCC

Key Entry PRACH DPCC

:ULINK:PMODE:TPControl:HOLD

Supported E4438C with Option 400

```
[ :SOURCE ] :RADio:WCDMa:TGPP [ :BBG ] :ULINK:PMODE:TPControl:HOLD 1 | 0 | ON | OFF
```

```
[ :SOURCE ] :RADio:WCDMa:TGPP [ :BBG ] :ULINK:PMODE:TPControl:HOLD?
```

This command sets the transmission power control of the dedicated physical channel (DPCH).

ON This choice enables the power hold mode.

OFF This choice disables the power hold mode and enables the dynamic power control

***RST** 1

Key Entry Power Hold Off On

Remarks The power hold mode is automatically enabled when the dedicated physical channel (DPCH) **Power Mode Norm TPC** is set to **TPC** (refer to “:ULINK:PMODE[:SElect]” on page 1101).

:ULINK:PMODE:TPControl:POWer:INITial

Supported E4438C with Option 400

```
[ :SOURCE ] :RADio:WCDMa:TGPP [ :BBG ] :ULINK:PMODE:TPControl:POWer:
```

```
INITial <val>
```

```
[ :SOURCE ] :RADio:WCDMa:TGPP [ :BBG ] :ULINK:PMODE:TPControl:POWer:INITial?
```

This command sets the initial power (in dB; relative to Max Power: 0.00 dB) of the DPCH power control.

***RST** +0.00000000E+000

Range 0 to -40

Field Entry Init Power

Wideband CDMA Base Band Generator Subsystem–Option 400 ([:SOURCE]:RADio:WCDMa:TGPP[:BBG])

Remarks	<p>If the parameter set by this command is changed while the signal is active, the apply command must be executed for the change to occur. Refer to “:ULINK:APPLY” on page 1072.</p> <p>The value of <val> must be smaller or equal to the value use for the command: “:ULINK:PMODE:TPControl:POWER:MINimum” on page 1099. Init Power is relative to Max Power (the amplitude set on the signal generator). For more information refer to “:ULINK:PMODE:TPControl:POWER:MAXimum” on page 1099.</p>
----------------	--

:ULINK:PMODE:TPControl:POWER:MAXimum

Supported E4438C with Option 400

[:SOURCE] :RADio:WCDMa:TGPP[:BBG] :ULINK:PMODE:TPControl:POWER:MAXimum?

This query returns the maximum power (in dB; relative to Max Power) of the dedicated physical channel (DPCH).

Max Power is a grayed out field that will always be 0.00 dB. The value of this field is a relative value to the maximum amplitude set for the signal generator. For example, if the signal generator amplitude is set to -20 dBm, the Min Power set to -40 dB, and the Init Power is set to -10 dB, then the absolute initial power level will be -30 dBm (10 dBm below the signal generator amplitude) and the absolute minimum power will be -60 dBm (40 dBm below the signal generator amplitude).

***RST** +0.00000000E+000

Field Entry Max Power

Remarks The value of this query will always be zero. The maximum power is mapped to the actual RF output power.

:ULINK:PMODE:TPControl:POWER:MINimum

Supported E4438C with Option 400

[:SOURCE] :RADio:WCDMa:TGPP[:BBG] :ULINK:PMODE:TPControl:POWER:MINimum <val>

[:SOURCE] :RADio:WCDMa:TGPP[:BBG] :ULINK:PMODE:TPControl:POWER:MINimum?

This command sets the minimum power of the dedicated physical channel (DPCH). The variable <val> is expressed in units of dB.

***RST** -4.00000000E+001

Range -40 to 0

Field Entry Min Power

Wideband CDMA Base Band Generator Subsystem–Option 400 ([:SOURCE]:RADio:WCDMa:TGPP[:BBG])

- Remarks** If the parameter set by this command is changed while the signal is active, the apply command must be executed for the change to occur. Refer to [“:ULINK:APPLY” on page 1072](#).
- The minimum power is decreased in increments determined by the value set for the Power Step. Refer to [“:ULINK:PMODE:TPControl:POWer:STEP” on page 1100](#). Minimum power is limited by the amplitude set on the signal generator. The signal generator amplitude must be set to -96 dBm or lower for the minimum power to be set to -40 dB. For more information, refer to [“:ULINK:PMODE:TPControl:POWer:MAXimum” on page 1099](#).

:ULINK:PMODE:TPControl:POWer:RESet

Supported E4438C with Option 400

```
[ :SOURCE ] :RADio:WCDMa:TGPP [ :BBG ] :ULINK:PMODE:TPControl:POWer:RESet
[ :SOURCE ] :RADio:WCDMa:TGPP [ :BBG ] :ULINK:PMODE:TPControl:POWer:MINimum?
```

This command resets the transmit power of the dedicated physical channel (DPCH) to the initial power.

Key Entry Reset to Initial Power

Remarks When the DPCH power mode is changed to TPControl, this command is performed. Refer to [“:ULINK:PMODE\[:SElect\]” on page 1101](#) to select the power mode. Any time the power mode is changed, the start power is always set to the initial power.

:ULINK:PMODE:TPControl:POWer:STEP

Supported E4438C with Option 400

```
[ :SOURCE ] :RADio:WCDMa:TGPP [ :BBG ] :ULINK:PMODE:TPControl:POWer:
STEP DB0_5 | DB1_0 | DB2_0 | DB3_0
[ :SOURCE ] :RADio:WCDMa:TGPP [ :BBG ] :ULINK:PMODE:TPControl:POWer:STEP?
```

This command set the power step of the dedicated physical channel (DPCH) power control. Initial power can only be increased in steps set by the power step.

***RST** DB0_5

Key Entry Power Step

Remarks If the parameter set by this command is changed while the signal is active, the apply command must be executed for the change to occur. Refer to [“:ULINK:APPLY” on page 1072](#).

:ULINK:PMODE:TPControl:TRIGger:POLarity**Supported** E4438C with Option 400

[:SOURCE]:RADIo:WCDMa:TGPP[:BBG]:ULINK:PMODE:TPControl:TRIGger:POLarity POSitive|NEGative

[:SOURCE]:RADIo:WCDMa:TGPP[:BBG]:ULINK:PMODE:TPControl:TRIGger:POLarity?

This command sets the uplink dedicated physical channel (DCPH) transmit power control signal polarity.

RST** POS**Key Entry** Power Control Signal Polarity Neg Pos**:ULINK:PMODE[:SElect]*Supported** E4438C with Option 400

[:SOURCE]:RADIo:WCDMa:TGPP[:BBG]:ULINK:PMODE[:SElect] NORMal|TPControl

[:SOURCE]:RADIo:WCDMa:TGPP[:BBG]:ULINK:PMODE[:SElect]?

This command sets the dedicated physical channel (DPCH) power control mode.

NORMal This choice selects the normal power mode. Compressed frames are available.

TPC This choice selects the TPC power mode. Compressed gaps are not available.

RST** NORM**Key Entry** Power Mode Norm TPC**:ULINK:PRACH:AICH:NUMBER*Supported** E4438C with Option 400

[:SOURCE]:RADIo:WCDMa:TGPP[:BBG]:ULINK:PRACH:AICH:NUMBER?

This query returns the number of received acquisition indication channel (AICH) trigger during one configured physical random access channel (PRACH) signal generation.

The result value can be queried after the PRACH signal generation is completed and until the next PRACH generation trigger is received.

The signal begins when the PRACH start trigger and ends when the specified number of signals are generated.

To specify a number of PRACHs, refer to “[:ULINK:PRACH[:SINGLE]:PREamble:NUMBER” on [page 1131](#).

***RST** –1

Wideband CDMA Base Band Generator Subsystem–Option 400 ([:SOURCE]:RADio:WCDMa:TGPP[:BBG])

Field Entry	Number of AICH
Remarks	A -1 status represents a PRACH generation is on going.

:ULINK:PRACH:AICH:POLarity

Supported E4438C with Option 400

```
[ :SOURCE ] : RADio : WCDMa : TGPP [ : BBG ] : ULINK : PRACH : AICH :
POLarity POSition | NEGative
[ :SOURCE ] : RADio : WCDMa : TGPP [ : BBG ] : ULINK : PRACH : AICH : POLarity ?
```

This command sets the trigger signal polarity for the acquisition indication channel (AICH).

POSitive	This choice sets the signal polarity to trigger when the signal goes high.
NEGative	This choice sets the signal polarity to trigger when the signal goes low.
*RST	POS

Key Entry AICH Trigger Polarity Pos Neg

Remarks If the parameter set by this command is changed while the signal is active, the apply command must be executed for the change to occur. Refer to “:ULINK:APPLY” on page 1072

:ULINK:PRACH:AWGN:CN

Supported E4438C with Option 400 and 403

```
[ :SOURCE ] : RADio : WCDMa : TGPP [ : BBG ] : ULINK : PRACH : AWGN : CN <val>
[ :SOURCE ] : RADio : WCDMa : TGPP [ : BBG ] : ULINK : PRACH : AWGN : CN ?
```

This command sets the in band carrier to noise ratio.

The variable <val> is expressed in units of decibels (dB).

***RST** -2.25005194E+001

Range -30 to 30

Field Entry C/N value

Remarks A change in the C/N value will change the Eb/No value and vice versa.

Wideband CDMA Base Band Generator Subsystem—Option 400 ([:SOURCE]:RADIo:WCDMa:TGPP[:BBG])

:ULINK:PRACH:AWGN:CPOWer**Supported** E4438C with Option 400 and 403

[:SOURCE]:RADIo:WCDMa:TGPP[:BBG]:ULINK:PRACH:AWGN:CPOWer?

This query returns the carrier power level when the physical random access channel's (PRACH) additive white gaussian noise (AWGN) is on.

RST** -1.61435521E+002**Field Entry** C Power**:ULINK:PRACH:AWGN:DRATe*Supported** E4438C with Option 400 and 403

[:SOURCE]:RADIo:WCDMa:TGPP[:BBG]:ULINK:PRACH:AWGN:DRATe?

This query returns the data rate of the Eb reference channel.

RST** +1.22000000E+004**Field Entry** Ref Data Rate**:ULINK:PRACH:AWGN:EBNO*Supported** E4438C with Option 400 and 403

[:SOURCE]:RADIo:WCDMa:TGPP[:BBG]:ULINK:PRACH:AWGN:EBNO <val>

[:SOURCE]:RADIo:WCDMa:TGPP[:BBG]:ULINK:PRACH:AWGN:EBNO?

This command sets the Eb/No value. The Eb is defined as carrier divided by the bit rate. No is noise power divided by the bandwidth (3.84 MHz). This ratio is only referred when EREF is CONTrol or DATA.

The variable <val> setting is affected by the carrier to noise ratio (C/N) and the data rate. A change to either of these values will affect your Eb/No setting. Use the formula in the range field to determine a correct Eb/No value.

***RST** +4.10000000E+000**Range** $Eb/No = C/N \times 3.84MHz/DataRate$ **Field Entry** Eb/No

:ULINK:PRACH:AWGN:ECNO**Supported** E4438C with Option 400 and 403

[:SOURCE]:RADio:WCDMa:TGPP[:BBG]:ULINK:PRACH:AWGN:ECNO <val>

[:SOURCE]:RADio:WCDMa:TGPP[:BBG]:ULINK:PRACH:AWGN:ECNO?

This command sets the E_c/N_o value. The E_c is defined as carrier divided by the chip rate. N_o is the noise power divided by the bandwidth (3.84 MHz). This ratio is only referred when EREF is PREAMBLE.

RST** -2.05000000E+001**Range** -30 to 30**Field Entry** E_c/N_o value**:ULINK:PRACH:AWGN:EREF*Supported** E4438C with Option 400 and 403[:SOURCE]:RADio:WCDMa:TGPP[:BBG]:ULINK:PRACH:AWGN:EREF PREAMBLE |
CONTrol | DATA | RACH

[:SOURCE]:RADio:WCDMa:TGPP[:BBG]:ULINK:PRACH:AWGN:EREF?

This command selects the E_b (E_c) reference. It is used for specifying the bit (chip) rate of physical/transport channel.

PREAMBLE This choice selects a preamble part as the E_c/N_o reference.**CONTrol** This choice selects a message control part as the E_b/N_o reference.**DATA** This choice selects a message data part as the E_b/N_o reference.**RACH** This choice selects a random access channel as the E_b/N_o reference.***RST** RACH**Key Entry** Preamble Msg Ctrl Msg Data RACH TrCH

Remarks If the parameter set by this command is changed while the signal is active, the apply command must be executed for the change to occur. Refer to “:ULINK:APPLY” on page 1072.

Wideband CDMA Base Band Generator Subsystem–Option 400 ([:SOURCE]:RADIO:WCDMA:TGPP[:BBG])

:ULINK:PRACH:AWGN:NPOWER**Supported** E4438C with Option 400 and 403

[:SOURCE]:RADIO:WCDMA:TGPP[:BBG]:ULINK:PRACH:AWGN:NPOWER?

This query returns the in-channel noise level when the additive white gaussian noise (AWGN) is on.

RST** -1.38935002E+002**Field Entry** N Power**:ULINK:PRACH:AWGN:TICPower*Supported** E4438C with Option 400 and 403

[:SOURCE]:RADIO:WCDMA:TGPP[:BBG]:ULINK:PRACH:AWGN:TICPOWER?

This query returns the in-channel power within the 3.84 MHz bandwidth.

***RST** **DPCH:** -1.38924800E+002
 Single PRACH: -1.38924800E+002
 Multiple PRACH: -1.56970651E+002

Field Entry TotalPwr**:ULINK:PRACH:AWGN[:STATE]****Supported** E4438C with Option 400 and 403

```
[:SOURCE]:RADIO:WCDMA:TGPP[:BBG]:ULINK:PRACH:AWGN[:STATE] ON|OFF|1|0
[:SOURCE]:RADIO:WCDMA:TGPP[:BBG]:ULINK:PRACH:AWGN[:STATE]?
```

This command enables or disables the additive white gaussian noise (AWGN) for the physical random access channel (PRACH). The AWGN can only be turned on when PRACH is selected as the physical channel.

***RST** 0**Key Entry** Channel State Off On**Remarks** Refer to “:ULINK:PHYSICAL[1]:TYPE” on page 1097.

If the parameter is changed, the apply command must be executed after the change. Refer to “:ULINK:APPLY” on page 1072.

:ULINK:PRACH:MESSAge:CPART:BETA**Supported** E4438C with Option 400

[:SOURCE]:RADio:WCDMa:TGPP[:BBG]:ULINK:PRACH:MESSAge:CPART:BETA <val>

[:SOURCE]:RADio:WCDMa:TGPP[:BBG]:ULINK:PRACH:MESSAge:CPART:BETA?

This command sets the beta ratio (amplitude ratio) for the physical random access channel (PRACH) message control part. The variable <val> is an integer value.

Changing the control power value (see “:ULINK:PRACH:MESSAge:CPART:POWer” on page 1107 for information on setting PRACH control power) changes the beta to power ratio, and the ESG may not be able to compute a proper control beta value. If this occurs, the query will return a minus one (-1).

***RST** +11**Range** 0–15**Field Entry** Ctrl Beta**Remarks** A change to the beta value will also cause a change to the control power setting.

If the parameter set by this command is changed while the signal is active, the apply command must be executed for the change to occur. Refer to “:ULINK:APPLY” on page 1072.

:ULINK:PRACH:MESSAge:CPART:DATA**Supported** E4438C with Option 400

[:SOURCE]:RADio:WCDMa:TGPP[:BBG]:ULINK:PRACH:MESSAge:CPART:DATA PN9 | PN15 | FIX4 | "<file name>" | STD

[:SOURCE]:RADio:WCDMa:TGPP[:BBG]:ULINK:PRACH:MESSAge:CPART:DATA?

This command selects the data type to be inserted into the physical random access channel (PRACH) message control part.

STD This choice selects a slot format defined in the 3GPP standard.

"<file name>" This variable specifies a data pattern that has been stored in memory.

***RST** STD**Key Entry** PN9 PN15 FIX4 User File 3GPP STD

Remarks If the parameter set by this command is changed while the signal is active, the apply command must be executed for the change to occur. Refer to “:ULINK:APPLY” on page 1072.

Wideband CDMA Base Band Generator Subsystem–Option 400 ([:SOURCE]:RADio:WCDMa:TGPP[:BBG])

:ULINK:PRACH:MESSAge:CPART:DATA:FIX4**Supported** E4438C with Option 400

[:SOURCE]:RADio:WCDMa:TGPP[:BBG]:ULINK:PRACH:MESSAge:CPART:DATA:FIX4 <val>

[:SOURCE]:RADio:WCDMa:TGPP[:BBG]:ULINK:PRACH:MESSAge:CPART:DATA:FIX4?

This command sets a fixed 4 bit pattern for use as physical random access channel (PRACH) message part data.

While the variable <val> can be entered in binary, hexadecimal, or decimal formats, the query returns only binary values.

***RST** #B0000**Range** 0–15**Key Entry** Fix4

Remarks If the parameter set by this command is changed while the signal is active, the apply command must be executed for the change to occur. Refer to [“:ULINK:APPLY” on page 1072](#).

:ULINK:PRACH:MESSAge:CPART:POWER**Supported** E4438C with Option 400

[:SOURCE]:RADio:WCDMa:TGPP[:BBG]:ULINK:PRACH:MESSAge:CPART:POWER <val>

[:SOURCE]:RADio:WCDMa:TGPP[:BBG]:ULINK:PRACH:MESSAge:CPART:POWER?

This command sets the power level for the physical random access channel (PRACH) message control part.

The variable <val> is expressed in units of decibels (dB).

***RST** –2.69000000E+000**Range** –40 to 0**Field Entry** Ctrl Pwr

Remarks Changing the control power changes the beta to power ratio. Refer to [“:ULINK:PRACH:MESSAge:CPART:BETA” on page 1106](#) for more information.

If the parameter set by this command is changed while the signal is active, the apply command must be executed for the change to occur. Refer to [“:ULINK:APPLY” on page 1072](#)

:ULINK:PRACH:MESSAge:CPART:RATE

Supported E4438C with Option 400

[:SOURCE] :RADIO:WCDMA:TGPP [:BBG] :ULINK:PRACH:MESSAge:CPART:RATE?

This query returns the message data part symbol rate for the physical random access channel (PRACH).

***RST** +1.50000000E+004

Key Entry Symbol Rate

Remarks The symbol rate of 15 kbps is the only supported rate per the 3GPP standards, TS 25.211 v3.10 (2002-03).

:ULINK:PRACH:MESSAge:CPART:SLOTformat

Supported E4438C with Option 400

[:SOURCE] :RADIO:WCDMA:TGPP [:BBG] :ULINK:PRACH:MESSAge:CPART:SLOTformat?

This query returns the message control part slot format for the physical random access channel (PRACH).

***RST** 0

Range 0–3

Field Entry Slot Format

Remarks The slot format is a static value set to zero in accordance with the 3GPP standards, TS 25.211 v3.10 (2002-03).

Wideband CDMA Base Band Generator Subsystem–Option 400 ([:SOURCE]:RADio:WCDMa:TGPP[:BBG])

:ULINK:PRACH:MESSAge:CPART:TFCI:PATtern**Supported** E4438C with Option 400[:SOURCE]:RADio:WCDMa:TGPP[:BBG]:ULINK:PRACH:MESSAge:CPART:TFCI:
PATtern PN9|PN15|FIX| "<file name>"

[:SOURCE]:RADio:WCDMa:TGPP[:BBG]:ULINK:PRACH:MESSAge:CPART:TFCI:PATtern?

This command selects data type to be inserted into the transport format combination indicator (TFCI) of the message control part located in the physical random access channel (PRACH).

"<file name>" This variable specifies a data pattern that has been stored in memory.

***RST** FIX**Key Entry** PN9 PN15 FIX User File

Remarks If the parameter set by this command is changed while the signal is active, the apply command must be executed for the change to occur. Refer to [“:ULINK:APPLY” on page 1072](#).

:ULINK:PRACH:MESSAge:CPART:TFCI:PATtern:FIX**Supported** E4438C with Option 400[:SOURCE]:RADio:WCDMa:TGPP[:BBG]:ULINK:PRACH:MESSAge:CPART:TFCI:PATtern:
FIX <val>[:SOURCE]:RADio:WCDMa:TGPP[:BBG]:ULINK:PRACH:MESSAge:CPART:TFCI:PATtern:
FIX?

This command sets a fixed bit pattern to be inserted into the transport format combination indicator (TFCI).

While the variable <val> can be entered in binary, hexadecimal, or decimal formats, the query returns only decimal values.

***RST** +0**Range** 0–1023**Field Entry** TFCI Pattern

Remarks If the parameter set by this command is changed while the signal is active, the apply command must be executed for the change to occur. Refer to [“:ULINK:APPLY” on page 1072](#).

:ULINK:PRACH:MESSAge:CPART:TFCI[:STATe]**Supported** E4438C with Option 400

[:SOURCE]:RADio:WCDMa:TGPP[:BBG]:ULINK:PRACH:MESSAge:CPART:TFCI[:STATe]?

This query returns the transport format combination indicator (TFCI) bits to determine if they exist or not in the currently specified slot format. A query returned with a “1” determines a TFCI exists and a “0,” no bits exist.

RST** 1**Field Entry** TFCI State**:ULINK:PRACH:MESSAge:DPART:BETA*Supported** E4438C with Option 400

[:SOURCE]:RADio:WCDMa:TGPP[:BBG]:ULINK:PRACH:MESSAge:DPART:BETA <val>

[:SOURCE]:RADio:WCDMa:TGPP[:BBG]:ULINK:PRACH:MESSAge:DPART:BETA?

This command sets the beta ratio (amplitude ratio) for the message data part of the physical random access channel (PRACH).

The variable <val> is an integer value. Changing the data power value (refer to, “:ULINK:PRACH:MESSAge:DPART:POWer” on page 1112 for more information on setting PRACH data power) changes the beta to power ratio, and the signal generator may not be able to compute a proper data beta value. If this occurs, the query will return a minus one (-1).

***RST** +15**Range** 0–15**Field Entry** Data Beta**Remarks** A change to the beta value will also cause a change to the data power setting.

If the parameter set by this command is changed while the signal is active, the apply command must be executed for the change to occur. Refer to “:ULINK:APPLY” on page 1072.

Wideband CDMA Base Band Generator Subsystem–Option 400 ([:SOURCE]:RADIO:WCDMA:TGPP[:BBG])

:ULINK:PRACH:MESSAge:DPART:DATA**Supported** E4438C with Option 400

```
[ :SOURCE ] : RADIO : WCDMA : TGPP [ : BBG ] : ULINK : PRACH : MESSAge : DPART : DATA PN9 |
PN15 | FIX4 | "<file name>" | TRANSpch
[ :SOURCE ] : RADIO : WCDMA : TGPP [ : BBG ] : ULINK : PRACH : MESSAge : DPART : DATA?
```

This command sets the data type to be inserted into physical random access channel (PRACH) message data part.

TRANSpch This choice sets the data that is generated from the transport channel setup.

"<file name>" This variable specifies a data pattern that has been stored in memory.

***RST** TRAN

Key Entry PN9 PN15 FIX4 User File Transport CH

Remarks If the parameter set by this command is changed while the signal is active, the apply command must be executed for the change to occur. Refer to [“:ULINK:APPLY” on page 1072](#).

:ULINK:PRACH:MESSAge:DPART:DATA:FIX4**Supported** E4438C with Option 400

```
[ :SOURCE ] : RADIO : WCDMA : TGPP [ : BBG ] : ULINK : PRACH : MESSAge : DPART : DATA :
FIX4 <val>
[ :SOURCE ] : RADIO : WCDMA : TGPP [ : BBG ] : ULINK : PRACH : MESSAge : DPART : DATA : FIX4?
```

This command sets a pseudo-random pattern as output data type in the message data part of the physical random access channel (PRACH).

While the variable <val> is expressed in binary or decimal formats, the query returns only binary values.

***RST** #B0000

Range 0∠15

Key Entry FIX4

Remarks If the parameter set by this command is changed while the signal is active, the apply command must be executed for the change to occur. Refer to [“:ULINK:APPLY” on page 1072](#).

:ULINK:PRACH:MESSAge:DPART:POWer**Supported** E4438C with Option 400

[:SOURCE]:RADIo:WCDMa:TGPP[:BBG]:ULINK:PRACH:MESSAge:DPART:POWer <val>

[:SOURCE]:RADIo:WCDMa:TGPP[:BBG]:ULINK:PRACH:MESSAge:DPART:POWer?

This command sets the power level for the physical random access channel (PRACH) message data part.

The variable <val> is expressed in units of decibels (dB).

***RST** +0.00000000E+000**Range** -40 to 0**Field Entry** Data Pwr

Remarks Changing the data power changes the beta to power ratio. Refer to [“:ULINK:PRACH:MESSAge:DPART:BETA” on page 1110](#) for more information.

If the parameter set by this command is changed while the signal is active, the apply command must be executed for the change to occur. Refer to [“:ULINK:APPLY” on page 1072](#)

:ULINK:PRACH:MESSAge:DPART:RATE**Supported** E4438C with Option 400

[:SOURCE]:RADIo:WCDMa:TGPP[:BBG]:ULINK:PRACH:MESSAge:DPART:RATE <val>

[:SOURCE]:RADIo:WCDMa:TGPP[:BBG]:ULINK:PRACH:MESSAge:DPART:RATE?

This command sets the symbol rate for the message data part of the physical random access channel (PRACH).

There are commands that are associated with the symbol rate and they are the channelization code and the slot format.

If the slot format is changed, so will the symbol rate. If the symbol rate is changed, so will the slot format. In addition, the channelization code will change. If current channelization code exceed the new maximum value for the specified slot format or symbol rate, a setting conflict error is generated and the value is clipped to the maximum value. Refer to [Table 9-7](#).

Table 9-7 Channelization Code Maximum Value

Channelization Code	Slot Format	Symbol Rate
255	0	15
127	1	30
63	2	60
31	3	120

The variable <val> is expressed in units of kilo symbols per second (ksps).

***RST** 60

Range 15–120

Field Entry Symbol Rate

Remarks Channel code value is determined by slot format choice. Refer to [“:ULINK:PRACH:MESSAGE:DPART:SLOTformat”](#) on page 1113 and [“:ULINK:PRACH\[:SINGLE\]:MESSAGE:DPART:CCODE”](#) on page 1129.

If the parameter set by this command is changed while the signal is active, the apply command must be executed for the change to occur. Refer to [“:ULINK:APPLY”](#) on page 1072.

:ULINK:PRACH:MESSAGE:DPART:SLOTformat

Supported E4438C with Option 400

```
[ :SOURCE ] : RADIo : WCDMA : TGPP [ : BBG ] : ULINK : PRACH : MESSAGE : DPART :
SLOTformat <val>
```

```
[ :SOURCE ] : RADIo : WCDMA : TGPP [ : BBG ] : ULINK : PRACH : MESSAGE : DPART : SLOTformat ?
```

This command sets the slot format value for the message data part of the physical random access channel (PRACH).

There are commands that are associated with the slot format and they are the channelization code and the symbol rate.

If the slot format is changed, so will the symbol rate. If the symbol rate is changed, so will the slot format. In addition, the channelization code will change. If current channelization code exceed the new maximum value for the specified slot format or symbol rate, a setting conflict error is generated and the value is clipped to the maximum value. Refer to [Table 9-8](#).

Table 9-8 Channelization Code Maximum Value

Channelization Code	Slot Format	Symbol Rate
255	0	15
127	1	30
63	2	60
31	3	120

The variable <val> is expressed in units of kilo symbols per second (ksps).

***RST** 2

Range 0–3

Field Entry Slot Format

Remarks Refer to “[:ULINK:PRACH:MESSAge:DPARt:RATE]” on page 1112 and “[:ULINK:PRACH[:SINGLE]:MESSAge:DPARt:CCODE]” on page 1129.

If the parameter set by this command is changed while the signal is active, the apply command must be executed for the change to occur. Refer to “[:ULINK:APPLY]” on page 1072.

[:ULINK:PRACH:MODE[:SElect]]

Supported E4438C with Option 400

```
[ :SOURce ] :RADio :WCDMa :TGPP [ :BBG ] :ULINK : PRACH : MODE [ :SElect ] SINGLE | MULTi
[ :SOURce ] :RADio :WCDMa :TGPP [ :BBG ] :ULINK : PRACH : MODE [ :SElect ] ?
```

This command sets the channel mode of the physical random access channel (PRACH).

SINGLE This choice generates a single PRACH.

MULTi This choice generates up to eight PRACHes.

***RST** SING

Key Entry PRACH Mode **Single** **Multi**

Wideband CDMA Base Band Generator Subsystem–Option 400 ([:SOURCE]:RADIo:WCDMa:TGPP[:BBG])

:ULINK:PRACH:MULTi:MESSAge:TPOWer**Supported** E4438C with Option 400

[:SOURCE]:RADIo:WCDMa:TGPP[:BBG]:ULINK:PRACH:MULTi:MESSAge:TPOWer <val>

[:SOURCE]:RADIo:WCDMa:TGPP[:BBG]:ULINK:PRACH:MULTi:MESSAge:TPOWer?

This command sets the message total power value in the physical random access channel (PRACH). The total power indicates a power of one PRACH.

***RST** -1.54060000E+002**Range** -1.00 to 1.94**Field Entry** Msg Pwr

Remarks This value is used only when POWER:MODE is set to TOTAL. Refer to “:ULINK:PRACH:PREAmble:POWer:MODE” on page 1121.

The maximum power for this command is limited by the power of the signal generator (ESG maximum power – 18.06 dBm). If the signal generator power is set to +20 dBm, the maximum value of this command is +1.94 dBm.

:ULINK:PRACH:MULTi:MESSAge[:STATe]**Supported** E4438C with Option 400

[:SOURCE]:RADIo:WCDMa:TGPP[:BBG]:ULINK:PRACH:MULTi:MESSAge[:STATe]

ON|OFF

[:SOURCE]:RADIo:WCDMa:TGPP[:BBG]:ULINK:PRACH:MULTi:MESSAge[:STATe]?

This command enables or disables the message part of the physical random access channel (PRACH) for the multiple PRACH mode.

RST** ON**Field Entry** Message Part**:ULINK:PRACH:MULTi:NUMBer*Supported** E4438C with Option 400

[:SOURCE]:RADIo:WCDMa:TGPP[:BBG]:ULINK:PRACH:MULTi:NUMBer <val>|INFinity

[:SOURCE]:RADIo:WCDMa:TGPP[:BBG]:ULINK:PRACH:MULTi:NUMBer?

This command specifies the number of the physical random access channel (PRACH) 80 ms configuration patterns to be transmitted after the PRACH start trigger has been received.

Wideband CDMA Base Band Generator Subsystem–Option 400 ([:SOURCE]:RADio:WCDMa:TGPP[:BBG])

INFINITY	This choice means the repeating number will continue while the PRACH mode is selected and the start trigger is ignored.
*RST	1
Range	1–2147447836
Field Entry	Number of 80ms
Remarks	If the parameter set by this command is changed while the signal is active, the apply command must be executed for the change to occur. Refer to “:ULINK:APPLY” on page 1072.

:ULINK:PRACH:MULTI:PREAmble:NUMBER

Supported E4438C with Option 400

[:SOURCE] :RADio:WCDMa:TGPP [:BBG] :ULINK:PRACH:MULTi:PREAmble:NUMBER?

This query returns the number of Preambles on the multiple physical random access channel (PRACH) mode. This number is fixed to 1 in the current version.

***RST** 1

Field Entry Num of Pre

:ULINK:PRACH:MULTI:PREAmble:POWER:INITIAL

Supported E4438C with Option 400

[:SOURCE] :RADio:WCDMa:TGPP [:BBG] :ULINK:PRACH:MULTi:PREAmble:POWER:INITIAL?

This query returns the initial power of PRACH preambles on the multiple physical random access channel (PRACH) mode.

***RST** –1.54060000E+002

Range –154.06 to 10

Field Entry Init Pwr

Remarks For the multiple PRACH mode, the initial power is the same as the maximum power for the PRACH preamble.

:ULINK:PRACH:MULTi:PREamble:POWer:MAX**Supported** E4438C with Option 400

[:SOURCE]:RADIo:WCDMa:TGPP[:BBG]:ULINK:PRACH:MULTi:PREamble:POWer:Max<val>

[:SOURCE]:RADIo:WCDMa:TGPP[:BBG]:ULINK:PRACH:MULTi:PREamble:POWer:Max?

This command sets the power of the preamble on the multiple physical random access channel (PRACH) mode.

***RST** -1.54060000E+002**Range** -1.0 to 1.94**Field Entry** Max Pwr

Remarks The maximum power for this command is limited by the power of the signal generator (ESG maximum power – 18.06 dBm). If the signal generator power is set to +20 dBm, the maximum value of this command is +1.94 dBm.

:ULINK:PRACH:MULTi:PREamble:POWer:RSTep**Supported** E4438C with Option 400

[:SOURCE]:RADIo:WCDMa:TGPP[:BBG]:ULINK:PRACH:MULTi:PREamble:POWer:RSTep?

This query, for the multiple physical random access channel (PRACH) mode, always returns zero, because power ramping is not supported for the multiple PRACH mode.

RST** +0**Field Entry** Ramp Step**:ULINK:PRACH:MULTi:PREamble:PPM*Supported** E4438C with Option 400

[:SOURCE]:RADIo:WCDMa:TGPP[:BBG]:ULINK:PRACH:MULTi:PREamble:PPM <val>

[:SOURCE]:RADIo:WCDMa:TGPP[:BBG]:ULINK:PRACH:MULTi:PREamble:PPM?

This command sets the difference between the preamble and the message control part in the physical random access channel (PRACH).

***RST** -4.56000000E+000**Range** -20 to 10**Field Entry** Pp-m

:ULINK:PRACH:MULTi:UE[1] | 2 | 3 | 4 | 5 | 6 | 7 | 8:MESSAge:CPART:CCODE**Supported** E4438C with Option 400

[:SOURCE]:RADio:WCDMa:TGPP[:BBG]:ULINK:PRACH:MULTi:UE[1] | 2 | 3 | 4 | 5 | 6 | 7 | 8:MESSAge:CPART:CCODE?

This query returns the channel code of the message control part of physical random access channel (PRACH) on the multiple PRACH mode.

RST** 255**Range** 0–255**Field Entry** CHCode Ct1**Remarks** This command affects the PRACH setting on the multiple PRACH mode only.**:ULINK:PRACH:MULTi:UE[1] | 2 | 3 | 4 | 5 | 6 | 7 | 8:MESSAge:DPART:CCODE*Supported** E4438C with Option 400

[:SOURCE]:RADio:WCDMa:TGPP[:BBG]:ULINK:PRACH:MULTi:UE[1] | 2 | 3 | 4 | 5 | 6 | 7 | 8:MESSAge:DPART:CCODE?

This query returns the channel code of the message data part of physical random access channel (PRACH) on the multiple PRACH mode.

RST** 245**Range** 0–255**Field Entry** ChCode Dat**Remarks** This command affects the PRACH setting on the multiple PRACH mode only.**:ULINK:PRACH:MULTi:UE[1] | 2 | 3 | 4 | 5 | 6 | 7 | 8:PREAmble:SIGNature*Supported** E4438C with Option 400

[:SOURCE]:RADio:WCDMa:TGPP[:BBG]:ULINK:PRACH:MULTi:UE[1] | 2 | 3 | 4 | 5 | 6 | 7 | 8:PREAmble:SIGNature <val>

[:SOURCE]:RADio:WCDMa:TGPP[:BBG]:ULINK:PRACH:MULTi:UE[1] | 2 | 3 | 4 | 5 | 6 | 7 | 8:PREAmble:SIGNature?

This command sets the signature encoded in the multiple physical random access channel's (PRACH) preamble.

***RST**

	Signature
--	-----------

Wideband CDMA Base Band Generator Subsystem–Option 400 ([:SOURce]:RADio:WCDMa:TGPP[:BBG])

UE	1	0
	2	1
	3	2
	4	3
	5	4
	6	5
	7	6
	8	7

Field Entry Pre Sig

Remarks If the parameter set by this command is changed while the signal is active, the apply command must be executed for the change to occur. Refer to [“:ULINK:APPLY” on page 1072](#).

:ULINK:PRACH:MULTi:UE[1]|2|3|4|5|6|7|8:SPOStion[1]|2|3|4|5|6|7|8[:ASLot]

Supported E4438C with Option 400

[[:SOURce]:RADio:WCDMa:TGPP[:BBG]:ULINK:PRACH:MULTi:UE[1]|2|3|4|5|6|7|8:SPOStion[1]|2|3|4|5|6|7|8[:ASLot] <val>|OFF

[[:SOURce]:RADio:WCDMa:TGPP[:BBG]:ULINK:PRACH:MULTi:UE[1]|2|3|4|5|6|7|8:SPOStion[1]|2|3|4|5|6|7|8[:ASLot]?

This command sets each physical random access channel (PRACH) start access slot position within 80ms.

*RST

		Start Access Slot Pos							
		1	2	3	4	5	6	7	8
UE	1	0	OFF	OFF	OFF	OFF	OFF	OFF	OFF
	2	0	OFF	OFF	OFF	OFF	OFF	OFF	OFF
	3	0	OFF	OFF	OFF	OFF	OFF	OFF	OFF
	4	0	OFF	OFF	OFF	OFF	OFF	OFF	OFF
UE	5	0	OFF	OFF	OFF	OFF	OFF	OFF	OFF
	6	0	OFF	OFF	OFF	OFF	OFF	OFF	OFF
	7	0	OFF	OFF	OFF	OFF	OFF	OFF	OFF
	8	0	OFF	OFF	OFF	OFF	OFF	OFF	OFF

Range 0–59

Field Entry Start Access Slot Position in 80ms Period

Remarks This command can only be executed while in the PRACH Mode is set to Multi. Refer to [“:ULINK:PRACH:MODE\[:SElect\]” on page 1114](#).

If the parameter set by this command is changed while the signal is active, the apply command must be executed for the change to occur. Refer to [“:ULINK:APPLY” on page 1072](#).

Wideband CDMA Base Band Generator Subsystem–Option 400 ([:SOURce]:RADio:WCDMa:TGPP[:BBG])**:ULINK:PRACH:MULTi:UE[1] | 2 | 3 | 4 | 5 | 6 | 7 | 8[:STATe]****Supported** E4438C with Option 400

```
[ :SOURce ] :RADio:WCDMa:TGPP[ :BBG ] :ULINK:PRACH:MULTi:UE[ 1 ] | 2 | 3 | 4 | 5 | 6 | 7 | 8
[ :STATe ] 0 | 1 | ON | OFF
[ :SOURce ] :RADio:WCDMa:TGPP[ :BBG ] :ULINK:PRACH:MULTi:UE[ 1 ] | 2 | 3 | 4 | 5 | 6 | 7 | 8
[ :STATe ] ?
```

This command enables or disables each physical random access channel (PRACH) individually on the multiple PRACH mode.

***RST**

		State
UE	1	ON
	2	OFF
	3	OFF
	4	OFF
	5	OFF
	6	OFF
	7	OFF
	8	OFF

Field Entry On/Off

Remarks This command will not run if the power of all assigned physical random access channels exceed the power of the signal generator.

If the parameter set by this command is changed while the signal is active, the apply command must be executed for the change to occur. Refer to [“:ULINK:APPLY” on page 1072](#).

:ULINK:PRACH:PREamble:POWer:AVERage**Supported** E4438C with Option 400

```
[ :SOURce ] :RADio:WCDMa:TGPP[ :BBG ] :ULINK:PRACH:PREamble:POWer:AVERage?
```

This query returns the average power of preambles that were sent before the acquisition indication channel (AICH) trigger was received.

***RST** -999**Field Entry** Preamble power average

Remarks The average power value can be queried after the physical random access channel's (PRACH) signal generation is completed. Refer to [“:ULINK:PRACH\[:SINGLE\]:PREamble:NUMBer” on page 1131](#).

Wideband CDMA Base Band Generator Subsystem–Option 400 ([:SOURCE]:RADio:WCDMa:TGPP[:BBG])

:ULINK:PRACH:PREamble:POWer:MODE**Supported** E4438C with Option 400

[:SOURCE]:RADio:WCDMa:TGPP[:BBG]:ULINK:PRACH:PREamble:POWer:MODE PPM | TOTAl

[:SOURCE]:RADio:WCDMa:TGPP[:BBG]:ULINK:PRACH:PREamble:POWer:MODE?

This command sets the message power calculation mode for the physical random access channel (PRACH).

PPM This choice calculates the message power based on the power differences between the preamble and the message control part. The difference is specified by the PPM command. This is based on 3GPP standards.

TOTAl This choice calculates message power based on power differences between preamble and message total part. The message total power is specified by the MESSAge:TPOWer command. Refer to [“:ULINK:PRACH\[:SINGLE\]:MESSAge:TPOWer”](#) on page 1130.

***RST** PPM**Key Entry** PRACH Power Setup Mode Pp-m Total

Remarks If the parameter set by this command is changed while the signal is active, the apply command must be executed for the change to occur. Refer to [“:ULINK:APPLY”](#) on page 1072.

:ULINK:PRACH:RPARAmeter**Supported** E4438C with Option 400

[:SOURCE]:RADio:WCDMa:TGPP[:BBG]:ULINK:PRACH:RPARAmeter TB168 | TB360

[:SOURCE]:RADio:WCDMa:TGPP[:BBG]:ULINK:PRACH:RPARAmeter?

This command sets a set of parameters as defined in 3GPP Standard (TS25.104) Reference Measurement Channel for the uplink (UL) physical random access channel (PRACH).

TB168 This choice sets the parameters for the transport block size = 168.

TB360 This choice sets the parameters for the transport block size = 360.

***RST** TB168**Key Entry** TrCh BlkSize 168 TrCh BlkSize 360

Wideband CDMA Base Band Generator Subsystem–Option 400 ([:SOURCE]:RADio:WCDMa:TGPP[:BBG])

Remarks When parameters are sets individually, CUSTom is returned for the query.

If the parameter set by this command is changed while the signal is active, the apply command must be executed for the change to occur. Refer to “:ULINK:APPLY” on page 1072.

:ULINK:PRACH:SCRamblecode

Supported E4438C with Option 400

```
[ :SOURCE ] : RADio : WCDMa : TGPP [ : BBG ] : ULINK : PRACH : SCRamblecode <val>
[ :SOURCE ] : RADio : WCDMa : TGPP [ : BBG ] : ULINK : PRACH : SCRamblecode?
```

This command sets the physical random access channel’s (PRACH) scrambling code.

***RST** +0

Range 0–8191

Field Entry PRACH Scrambling Code

Remarks The signature data is scrambled against a 4096 chip segment of the 225 complex gold code generator.

If the parameter set by this command is changed while the signal is active, the apply command must be executed for the change to occur. Refer to “:ULINK:APPLY” on page 1072.

:ULINK:PRACH:SDElay

Supported E4438C with Option 400

```
[ :SOURCE ] : RADio : WCDMa : TGPP [ : BBG ] : ULINK : PRACH : SDElay <val>
[ :SOURCE ] : RADio : WCDMa : TGPP [ : BBG ] : ULINK : PRACH : SDElay?
```

This command sets the number of timeslots to be delayed from the uplink synchronization source. One timeslot is equivalent to 2560 chips.

The variable <val> range is dependent on the Tp-a setting.

***RST** +0

Range

Tp-a Setting	<val>
0	-14 to 119
7680	-11 to 119
12800	-9 to 119

Wideband CDMA Base Band Generator Subsystem–Option 400 ([:SOURCE]:RADIO:WCDMA:TGPP[:BBG])

Key Entry	Timeslot Offset
Remarks	The actual amount of timing difference is $(\text{TOFFset} + \text{SDElay} * 2560) - (\text{Tp-a})$. If the parameter set by this command is changed while the signal is active, the apply command must be executed for the change to occur. Refer to “:ULINK:APPLY” on page 1072. To set the Tp-a value, refer to “:ULINK:PRACH:TPA” on page 1124.

:ULINK:PRACH:SUBChannel

Supported	E4438C with Option 400
	<code>[:SOURCE] :RADIO:WCDMA:TGPP [:BBG] :ULINK:PRACH:SUBChannel <val></code> <code>[:SOURCE] :RADIO:WCDMA:TGPP [:BBG] :ULINK:PRACH:SUBChannel?</code>
	This command sets the sub-channel number to send the first preamble of the physical random access channel’s (PRACH).
*RST	+0
Range	0–11
Field Entry	Start Sub-Channel#
Remarks	If the parameter set by this command is changed while the signal is active, the apply command must be executed for the change to occur. Refer to “:ULINK:APPLY” on page 1072.

:ULINK:PRACH:TOFFset

Supported	E4438C with Option 400
	<code>[:SOURCE] :RADIO:WCDMA:TGPP [:BBG] :ULINK:PRACH:TOFFset <val></code> <code>[:SOURCE] :RADIO:WCDMA:TGPP [:BBG] :ULINK:PRACH:TOFFset?</code>
	This command sets additional timing offset for the physical random access channel (PRACH). The timing offset is to adjust the time distance from the uplink PRACH frame timing which is the downlink’s AICH framing timing minus the Tp-a to the actual uplink PRACH signal frame timing from the signal generator. The downlink’s AICH frame timing is provided by the synchronization signal. The The variable <val> is expressed in chips.
*RST	+0

Wideband CDMA Base Band Generator Subsystem–Option 400 ([:SOURCE]:RADio:WCDMa:TGPP[:BBG])

Range	–512 to 2560
Key Entry	Timing Offset
Remarks	The actual timing offset is the timing difference from the synchronization signal from the signal generator’s RF signal (TOFFset + SDElay * 2560) – (Tp–a). If the parameter set by this command is changed while the signal is active, the apply command must be executed for the change to occur. Refer to “:ULINK:APPLY” on page 1072.

:ULINK:PRACH:TPA

Supported E4438C with Option 400

```
[ :SOURCE ] : RADio : WCDMa : TGPP [ : BBG ] : ULINK : PRACH : TPA 0 | 7680 | 12800
```

```
[ :SOURCE ] : RADio : WCDMa : TGPP [ : BBG ] : ULINK : PRACH : TPA?
```

This command sets the time period (distance) between the physical random access channel’s (PRACH) preamble to the acquisition indication channel’s (AICH) frame.

The variable <val> is expressed in units of “chip”.

***RST** 7680

Key Entry **Base Delay Tp–a**

Remarks The actual timing offset is (TOFFset + SDElay * 2560) – (Tp–a).

If the parameter set by this command is changed while the signal is active, the apply command must be executed for the change to occur. Refer to “:ULINK:APPLY” on page 1072.

This command is not used when the sync source is set to ESG. Refer to “:ULINK:SYNC[:SOURCE]” on page 1149.

:ULINK:PRACH:TPM

Supported E4438C with Option 400

```
[ :SOURCE ] : RADio : WCDMa : TGPP [ : BBG ] : ULINK : PRACH : TPM <val>
```

```
[ :SOURCE ] : RADio : WCDMa : TGPP [ : BBG ] : ULINK : PRACH : TPM?
```

This command sets the time period between the preamble and the message part.

The variable <val> is expressed in access slot units.

Wideband CDMA Base Band Generator Subsystem–Option 400 ([:SOURCE]:RADIO:WCDMA:TGPP[:BBG])

*RST	+3
Range	1–15
Field Entry	Tp–m
Remarks	If the parameter set by this command is changed while the signal is active, the apply command must be executed for the change to occur. Refer to “:ULINK:APPLY” on page 1072 . This command is used for single and multiple physical random access channel (PRACH) modes.

:ULINK:PRACH:TPOWer

Supported E4438C with Option 400

[:SOURCE] : RADIO : WCDMA : TGPP [:BBG] : ULINK : PRACH : TPOWer ?

This query returns the total power value of the physical random access channels (PRACH).

The value is the relative power difference between the total in-channel signal power of the PRACH message part and the active channel reference power (0dB) in the message part.

***RST** +0

Remarks This command is used for single and multiple physical random access channel (PRACH) modes.

:ULINK:PRACH:TPP

Supported E4438C with Option 400

[:SOURCE] : RADIO : WCDMA : TGPP [:BBG] : ULINK : PRACH : TPP <val>

[:SOURCE] : RADIO : WCDMA : TGPP [:BBG] : ULINK : PRACH : TPP ?

This command sets the time period between the preamble and another preamble before the message part.

The variable <val> is expressed in access slot units.

***RST** +3

Range 1–60

Field Entry Tp–p

Wideband CDMA Base Band Generator Subsystem–Option 400 ([:SOURce]:RADio:WCDMa:TGPP[:BBG])

- Remarks** If the parameter set by this command is changed while the signal is active, the apply command must be executed for the change to occur. Refer to [“:ULINK:APPLY” on page 1072](#).
- This command is used for single and multiple physical random access channel (PRACH) modes.

:ULINK:PRACH:TRIGger

- Supported** E4438C with Option 400

```
[ :SOURce ] :RADio:WCDMa:TGPP [ :BBG ] :ULINK:PRACH:TRIGger
```

This command specifies the start of the physical random access channel’s (PRACH) pattern.

- Key Entry** PRACH Trigger

- Remarks** The PRACH trigger source must be set to “Trigger” before executing this command. Refer to [“:ULINK:PRACH:TRIGger:SOURce” on page 1126](#).

:ULINK:PRACH:TRIGger:POLarity

- Supported** E4438C with Option 400

```
[ :SOURce ] :RADio:WCDMa:TGPP [ :BBG ] :ULINK:PRACH:TRIGger :
```

```
POLarity POSitive|NEGative
```

```
[ :SOURce ] :RADio:WCDMa:TGPP [ :BBG ] :ULINK:PRACH:TRIGger:POLarity?
```

This command sets the trigger polarity of the physical random access channel type (PRACH).

POSitive This choice sets the signal to trigger when the trigger signal is high.

NEGative This choice sets the signal to trigger when the trigger signal is low.

- *RST** POS

- Key Entry** PRACH Trigger Polarity Neg Pos

- Remarks** If the parameter set by this command is changed while the signal is active, the apply command must be executed for the change to occur. Refer to [“:ULINK:APPLY” on page 1072](#).

:ULINK:PRACH:TRIGger:SOURce

- Supported** E4438C with Option 400

```
[ :SOURce ] :RADio:WCDMa:TGPP [ :BBG ] :ULINK:PRACH:TRIGger :
```

```
SOURce IMMEDIATE|TRIGger
```

```
[ :SOURce ] :RADio:WCDMa:TGPP [ :BBG ] :ULINK:PRACH:TRIGger:SOURce?
```

Wideband CDMA Base Band Generator Subsystem–Option 400 ([:SOURCE]:RADio:WCDMa:TGPP[:BBG])

This command sets the trigger source of the physical random access channel (PRACH).

IMMEDIATE This choice resets the waveform and immediately replays it from the start.

TRIGGER This choice plays the waveform after receiving the trigger command.

***RST** IMMEDIATE

Key Entry PRACH Trigger Source Immedi Trigger

Remarks Refer to “:ULINK:PRACH:TRIGGER:POLARITY” on page 1126 and “:ULINK:PRACH:TRIGGER” on page 1126 for additional information.

If the parameter set by this command is changed while the signal is active, the apply command must be executed for the change to occur. Refer to “:ULINK:APPLY” on page 1072.

:ULINK:PRACH:TTI

Supported E4438C with Option 400

[:SOURCE] :RADio:WCDMa:TGPP [:BBG] :ULINK:PRACH:TTI 10000 | 20000

[:SOURCE] :RADio:WCDMa:TGPP [:BBG] :ULINK:PRACH:TTI ?

This command sets the transmission time interval (TTI) period of the message part.

The choices are expressed in units of milliseconds (msec) where 20000=20 msec.

***RST** +20000

Field Entry TTI

Remarks If the parameter set by this command is changed while the signal is active, the apply command must be executed for the change to occur. Refer to “:ULINK:APPLY” on page 1072.

:ULINK:PRACH[:SINGLE]:MESSAGE[:STATE]

Supported E4438C with Option 400

[:SOURCE] :RADio:WCDMa:TGPP [:BBG] :ULINK:PRACH [:SINGLE] :MESSAGE [:STATE]
ON | OFF | AICH

[:SOURCE] :RADio:WCDMa:TGPP [:BBG] :ULINK:PRACH [:SINGLE] :MESSAGE [:STATE] ?

This command enables or disables the message part of the physical random access channel (PRACH).

ON This choice enables the message part to be generated after the number of preambles are generated. The “Number of Preamble” must be specified.

Wideband CDMA Base Band Generator Subsystem–Option 400 ([:SOURCE]:RADio:WCDMa:TGPP[:BBG])

OFF	This choice does not allow the message part to be generated. Only the preambles are transmitted.
AICH	This choice enables the acquisition indication channel preamble power ramping mode.
*RST	ON
Key Entry	On Off AICH
Remarks	For more information about the rear panel AUX I/O connector, refer to "Signal Generator Overview" in the <i>E4428C/38C ESG Signal Generators User's Guide</i> . If the parameter set by this command is changed while the signal is active, the apply command must be executed for the change to occur. Refer to “:ULINK:APPLY” on page 1072 .

:ULINK:PRACH[:SINGLE]:NUMBER

Supported E4438C with Option 400

```
[ :SOURCE ] : RADio : WCDMa : TGPP [ : BBG ] : ULINK : PRACH [ : SINGLE ] : NUMBER <val> |
INFinity
[ :SOURCE ] : RADio : WCDMa : TGPP [ : BBG ] : ULINK : PRACH [ : SINGLE ] : NUMBER?
```

This command specifies the number of the physical random access channel (PRACH) patterns to repeat after the PRACH start trigger has been received.

INFinity This choice means the repeating number will continue while the PRACH mode is selected and the start trigger is ignored.

***RST** 1

Range 1–2147483647

Field Entry Number of PRACH

Remarks If the parameter set by this command is changed while the signal is active, the apply command must be executed for the change to occur. Refer to [“:ULINK:APPLY” on page 1072](#).

:ULINK:PRACH[:SINGLE]:MESSAGE:CPART:CCODE

Supported E4438C with Option 400

```
[ :SOURCE ] : RADio : WCDMa : TGPP [ : BBG ] : ULINK : PRACH [ : SINGLE ] : MESSAGE : CPART :
CCODE <val>
[ :SOURCE ] : RADio : WCDMa : TGPP [ : BBG ] : ULINK : PRACH [ : SINGLE ] : MESSAGE : CPART :
CCODE?
```

Wideband CDMA Base Band Generator Subsystem–Option 400 ([:SOURCE]:RADio:WCDMa:TGPP[:BBG])

This command sets the channelization code for the physical random access channel (PRACH) message control part.

***RST** +15

Range 0–255

Field Entry Channel Code

Remarks If the parameter set by this command is changed while the signal is active, the apply command must be executed for the change to occur. Refer to “:ULINK:APPLY” on page 1072.

:ULINK:PRACH[:SINGLE]:MESSAGE:DPART:CCODE

Supported E4438C with Option 400

```
[ :SOURCE ] : RADio : WCDMa : TGPP [ : BBG ] : ULINK : PRACH [ : SINGLE ] : MESSAGE : DPART :
CCODE <val>
```

```
[ :SOURCE ] : RADio : WCDMa : TGPP [ : BBG ] : ULINK : PRACH [ : SINGLE ] : MESSAGE : DPART :
CCODE?
```

This command sets the channelization code for the physical random access channel (PRACH) message data part.

There are commands that are associated with the channelization code and they are the slot format and the symbol rate.

If the slot format is changed, so will the symbol rate. If the symbol rate is changed, so will the slot format. In addition, the channelization code will change. If current channelization code exceed the new maximum value for the specified slot format or symbol rate, a setting conflict error is generated and the value is clipped to the maximum value. Refer to [Table 9-9](#).

Table 9-9 Channelization Code Maximum value

Channelization Code	Slot Format	Symbol Rate
255	0	15
127	1	30
63	2	60
31	3	120

***RST** +0

Range 0–255

Wideband CDMA Base Band Generator Subsystem–Option 400 ([:SOURCE]:RADio:WCDMa:TGPP[:BBG])

Field Entry	Channel Code
Remarks	Channel code value is determined by slot format choice. Refer to “:ULINK:PRACH:MESSAGE:DPART:SLOTformat” on page 1113 and “:ULINK:PRACH:MESSAGE:DPART:RATE” on page 1112. If the parameter set by this command is changed while the signal is active, the apply command must be executed for the change to occur. Refer to “:ULINK:APPLY” on page 1072.

:ULINK:PRACH[:SINGLE]:MESSAGE:TPOWer

Supported	E4438C with Option 400
	[:SOURCE] :RADio:WCDMa:TGPP[:BBG] :ULINK:PRACH[:SINGLE] :MESSAGE :TPOWer <val> [:SOURCE] :RADio:WCDMa:TGPP[:BBG] :ULINK:PRACH[:SINGLE] :MESSAGE:TPOWer?
	This command sets the message total power value for the single physical random access channel (PRACH) and multiple PRACH modes. The variable <val> is expressed in units of decibels (dB). The RF output power is limited to the signal generator’s specifications
*RST	–1.36000000E+002
Range	–136 to 20
Field Entry	Msg Pwr
Remarks	This value is used only when POWER:MODE is set to TOTAL. Refer to “:ULINK:PRACH:PREamble:POWer:MODE” on page 1121. If the parameter set by this command is changed while the signal is active, the apply command must be executed for the change to occur. Refer to “:ULINK:APPLY” on page 1072.

:ULINK:PRACH[:SINGLE]:NUMBER

Supported	E4438C with Option 400
	[:SOURCE] :RADio:WCDMa:TGPP[:BBG] :ULINK:PRACH[:SINGLE] :NUMBER <val> INFIinity [:SOURCE] :RADio:WCDMa:TGPP[:BBG] :ULINK:PRACH[:SINGLE] :NUMBER?
	This command specifies the number of the physical random access channel (PRACH) patterns to repeat after the PRACH start trigger has been received.
INFIinity	This choice means the repeating number will continue while the PRACH mode is selected and the start trigger is ignored.

Wideband CDMA Base Band Generator Subsystem–Option 400 ([:SOURCE]:RADIO:WCDMA:TGPP[:BBG])

*RST	1
Range	1–2147447836
Field Entry	Number of PRACH
Remarks	If the parameter set by this command is changed while the signal is active, the apply command must be executed for the change to occur. Refer to “:ULINK:APPLY” on page 1072.

:ULINK:PRACH[:SINGLE]:PREAmble:NUMBER

Supported E4438C with Option 400

```
[ :SOURCE ] : RADIO : WCDMA : TGPP [ : BBG ] : ULINK : PRACH [ : SINGLE ] : PREAmble :
NUMBER <val> | INFINITY
```

```
[ :SOURCE ] : RADIO : WCDMA : TGPP [ : BBG ] : ULINK : PRACH [ : SINGLE ] : PREAmble : NUMBER ?
```

This command specifies the number of preambles to repeat in one physical random access channel (PRACH) pattern.

INFINITY This choice means the repeating preamble will play continuously while the PRACH mode is selected.

*RST	1
-------------	---

Range	1–8388607
--------------	-----------

Field Entry	PRACH Timing Setup: Number of Preamble PRACH Power Setup: Num of Pre
--------------------	---

:ULINK:PRACH[:SINGLE]:PREAmble:POWER:INITIAL

Supported E4438C with Option 400

```
[ :SOURCE ] : RADIO : WCDMA : TGPP [ : BBG ] : ULINK : PRACH [ : SINGLE ] : PREAmble :
POWER : INITIAL ?
```

This query returns the initial preamble power from POWER:Max value, RSTep (ramp step) and PREAmble:NUMBER commands.

*RST	–1.36000000E+002
-------------	------------------

Field Entry	Init Pwr
--------------------	----------

:ULINK:PRACH[:SINGLE]:PREAmble:POWer:MAX**Supported** E4438C with Option 400

[:SOURCE]:RADio:WCDMa:TGPP[:BBG]:ULINK:PRACH[:SINGLE]:PREAmble:POWer:MAX <val>

[:SOURCE]:RADio:WCDMa:TGPP[:BBG]:ULINK:PRACH[:SINGLE]:PREAmble:POWer:MAX?

This command sets the maximum preamble power for the physical random access channel (PRACH).

In power ramping mode (RSTep is a non-zero value), the preamble power can go up until the acquisition indication channel's (AICH) signal is not received (maximum power).

The variable <val> is expressed in units of decibels (dB).

***RST** -1.36000000E+002**Range** -136 to 20**Field Entry** Max Pwr

Remarks The actual RF output is limited to the signal generator's specifications although the value can be entered up to 20 dBm.

If the parameter set by this command is changed while the signal is active, the apply command must be executed for the change to occur. Refer to [“:ULINK:APPLY” on page 1072](#).

:ULINK:PRACH[:SINGLE]:PREAmble:POWer:RSTep**Supported** E4438C with Option 400

[:SOURCE]:RADio:WCDMa:TGPP[:BBG]:ULINK:PRACH[:SINGLE]:PREAmble:POWer:RSTep <val>

[:SOURCE]:RADio:WCDMa:TGPP[:BBG]:ULINK:PRACH[:SINGLE]:PREAmble:POWer:RSTep?

This command sets the power ramping steps for the single physical random access channel (PRACH) preamble.

The variable <val> is expressed in units of decibels (dB).

***RST** 0**Range** 0–10**Field Entry** Ramp Step

Wideband CDMA Base Band Generator Subsystem–Option 400 ([:SOURCE]:RADio:WCDMa:TGPP[:BBG])

Remarks If the parameter set by this command is changed while the signal is active, the apply command must be executed for the change to occur. Refer to “:ULINK:APPLY” on page 1072.

This command is used for single and multiple physical random access channel (PRACH) modes.

:ULINK:PRACH[:SINGLE]:PREamble:PPM

Supported E4438C with Option 400

```
[ :SOURCE ] :RADio:WCDMa:TGPP [ :BBG ] :ULINK:PRACH [ :SINGLE ] :PREamble:PPM <val>
[ :SOURCE ] :RADio:WCDMa:TGPP [ :BBG ] :ULINK:PRACH [ :SINGLE ] :PREamble:PPM?
```

This command sets the power difference between the preamble and the message control part in the single physical random access channel (PRACH).

The variable <val> is expressed in units of decibels (dB).

***RST** -4.56032509E+000

Range -20 to 10

Field Entry Pp-m

Remarks If the parameter set by this command is changed while the signal is active, the apply command must be executed for the change to occur. Refer to “:ULINK:APPLY” on page 1072.

:ULINK:PRACH[:SINGLE]:PREamble:SIGNature

Supported E4438C with Option 400

```
[ :SOURCE ] :RADio:WCDMa:TGPP [ :BBG ] :ULINK:PRACH [ :SINGLE ] :PREamble:
SIGNature <val>
[ :SOURCE ] :RADio:WCDMa:TGPP [ :BBG ] :ULINK:PRACH [ :SINGLE ] :PREamble:
SIGNature?
```

This command sets the signature encoded in the single physical random access channel’s (PRACH) preamble.

***RST** +0

Range 0–15

Field Entry Signature

Wideband CDMA Base Band Generator Subsystem–Option 400 ([:SOURce]:RADio:WCDMa:TGPP[:BBG])

Remarks If the parameter set by this command is changed while the signal is active, the apply command must be executed for the change to occur. Refer to “:ULINK:APPLY” on page 1072.

:ULINK:RMCHannel

Supported E4438C with Option 400

```
[ :SOURce ] :RADio :WCDMa :TGPP [ :BBG ] :ULINK :RMCHannel RMC122 | RMC64 | RMC144 |
RMC384 | UDI64 | AMR122
```

```
[ :SOURce ] :RADio :WCDMa :TGPP [ :BBG ] :ULINK :RMCHannel ?
```

This command configures the uplink reference measurement (RMC) channel by providing a one command access to a typical RMC configuration.

RMC122 This choice selects a reference measurement channel with a 12.2 kbps rate as per 3GPP TS 25.141.

RMC64 This choice selects a reference measurement channel with a 64.0 kbps rate as per 3GPP TS 25.141.

RMC144 This choice selects a reference measurement channel with a 144.0 kbps rate as per 3GPP TS 25.141.

RMC384 This choice selects a reference measurement channel with a 384.0 kbps rate as per 3GPP TS 25.141.

UDI64 This choice selects an ISDN unrestricted digital information 1B with a 64.0 kbps rate as per 3GPP TS 25.944.

ARM122 This choice selects an adaptive multiple rate of 12.2 kbps as per 3GPP TS 25.944.

***RST** RMC122

Key Entry	RMC122 kbps (25.141)	RMC64 kbps (25.141)
	RMC144 kbps (25.141)	RMC384 kbps (25.141)
	AMR 122 kbps	UDI 64 kbps

:ULINK:RPANel:DPCH:INPut:ALTPower

Supported E4438C with Option 400

```
[ :SOURce ] :RADio :WCDMa :TGPP [ :BBG ] :ULINK :RPANel :DPCH :INPut :ALTPower ?
```

This query returns the type of signal at the alternate power input (ALT PWR IN, AUX I/O connector pin#16) for the dedicated physical channel (DPCH) mode.

***RST** USER

Wideband CDMA Base Band Generator Subsystem–Option 400 [:SOURCE]:RADio:WCDMa:TGPP[:BBG]

Remarks The signal name is TPC user file trigger (USER). For more information about the rear panel connector configurations, refer to "Signal Generator Overview" in the *E4428C/38C ESG Signal Generators User's Guide*.

:ULINK:RPANel:DPCH:INPut:BBGRef

Supported E4438C with Option 400

[:SOURCE] :RADio:WCDMa:TGPP[:BBG] :ULINK:RPANel:DPCH:INPut:BBGRef?

This query returns the type of signal at the baseband generator reference input (BASEBAND GEN REF IN, rear panel connector) for the dedicated physical channel (DPCH) mode.

***RST** CCL

Remarks The signal name is baseband generator chip clock (CCL). For more information about the rear panel connector configurations, refer to "Signal Generator Overview" in the *E4428C/38C ESG Signal Generators User's Guide*.

:ULINK:RPANel:DPCH:INPut:BGATe

Supported E4438C with Option 400

[:SOURCE] :RADio:WCDMa:TGPP[:BBG] :ULINK:RPANel:DPCH:INPut:BGATe?

This query returns the type of signal at the gate burst (BURST GATE IN, rear panel connector) for the dedicated physical channel (DPCH) mode.

***RST** CSTT

Remarks In compressed mode the signal name is compressed mode start trigger (CSST). In power control mode, the signal name is DPCH power control signal (DPCS). For more information about the rear panel connector configurations, refer to "Signal Generator Overview" in the *E4428C/38C ESG Signal Generators User's Guide*

:ULINK:RPANel:DPCH:INPut:PTRigger1

Supported E4438C with Option 400

[:SOURCE] :RADio:WCDMa:TGPP[:BBG] :ULINK:RPANel:DPCH:INPut:PTRigger1?

This query returns the type of signal at the pattern trigger input 1 (PATT TRIG IN 1, rear panel) for the dedicated physical channel (DPCH) mode.

***RST** FSYN

Wideband CDMA Base Band Generator Subsystem–Option 400 ([:SOURCE]:RADio:WCDMa:TGPP[:BBG])

Remarks The signal name is frame synchronization (FSYN). For more information about the rear panel connector configurations, refer to "Signal Generator Overview" in the *E4428C/38C ESG Signal Generators User's Guide*.

:ULINK:RPANel:DPCH:INPut:PTRigger2

Supported E4438C with Option 400

```
[ :SOURCE ] :RADio:WCDMa:TGPP [ :BBG ] :ULINK:RPANel:DPCH:INPut:PTRigger2?
```

This query returns the type of signal at the pattern trigger input 2 (PATT TRIG IN 2, AUX I/O connector pin#17) for the dedicated physical channel (DPCH) mode.

***RST** CSPT

Remarks The signal name is compress mode stop trigger (CSPT). For more information about the rear panel connector configurations, refer to "Signal Generator Overview" in the *E4428C/38C ESG Signal Generators User's Guide*.

:ULINK:RPANel:DPCH:OUTPut:DCLock

Supported E4438C with Option 400

```
[ :SOURCE ] :RADio:WCDMa:TGPP [ :BBG ] :ULINK:RPANel:DPCH:OUTPut:DCLock RPS0 |
RPS1 | RPS2 | RPS3 | RPS4 | RPS5 | RPS6 | RPS7 | RPS8 | RPS9 | RPS10
[ :SOURCE ] :RADio:WCDMa:TGPP [ :BBG ] :ULINK:RPANel:DPCH:OUTPut:DCLock?
```

This command assigns a signal to the data clock output at the selected rear panel AUX I/O connector pin#6. Refer to [Table 9-10 on page 1136](#) for command parameters and output signal type.

Table 9-10 Rear Panel Signal (RPS) Output Type

Command Parameter	Signal Out
RPS0	None
RPS1	Chip Clock
RPS2	DPDCH raw data
RPS3	DPDCH raw data clock
RPS4	DPCCH raw data
RPS5	DPCCH raw data clock

Table 9-10 Rear Panel Signal (RPS) Output Type

Command Parameter	Signal Out
RPS6	10ms frame pulse
RPS7	Trigger sync reply
RPS8	Compressed frame
RPS9	TTI frame pulse
RPS10	CFN #0 frame pulse

***RST** RPS1

Key Entry NONE (RPS0) Chip Clock (RPS1) DPDCH Raw Data (RPS2)
 DPDCH Data Raw Clock (RPS3) DPCCH Raw Data (RPS4)
 DPCCH Raw Data Clock (RPS5) 10 ms Frame Pulse (RPS6)
 Trigger Sync Reply (RPS7) Compressed Frame (RPS8)
 TTI Frame Clock (RPS9) CFN #0 Frame Pulse (RPS10)

Remarks For more information about the rear panel connector configurations, refer to "Signal Generator Overview" in the *E4428C/38C ESG Signal Generators User's Guide*.

:ULINK:RPANel:DPCH:OUTPut:DOUT

Supported E4438C with Option 400

```
[ :SOURCE ] :RADio:WCDMa:TGPP[ :BBG ] :ULINK:RPANel:DPCH:OUTPut:DOUT RPS0 |
RPS1 | RPS2 | RPS3 | RPS4 | RPS5 | RPS6 | RPS7 | RPS8 | RPS9 | RPS10
[ :SOURCE ] :RADio:WCDMa:TGPP[ :BBG ] :ULINK:RPANel:DPCH:OUTPut:DOUT?
```

This command assigns a signal to the data output at the selected rear panel AUX I/O connector pin#7. Refer to [Table 9-10 on page 1136](#) for command parameters and output signal type.

***RST** RPS4

Key Entry NONE (RPS0) Chip Clock (RPS1) DPDCH Raw Data (RPS2)
 DPDCH Data Raw Clock (RPS3) DPCCH Raw Data (RPS4)
 DPCCH Raw Data Clock (RPS5) 10 ms Frame Pulse (RPS6)
 Trigger Sync Reply (RPS7) Compressed Frame (RPS8)
 TTI Frame Clock (RPS9) CFN #0 Frame Pulse (RPS10)

Wideband CDMA Base Band Generator Subsystem—Option 400 ([:SOURCE]:RADio:WCDMa:TGPP[:BBG])

Remarks For more information about the rear panel connector configurations, refer to "Signal Generator Overview" in the *E4428C/38C ESG Signal Generators User's Guide*.

:ULINK:RPANel:DPCH:OUTPut:EVENT1

Supported E4438C with Option 400

```
[ :SOURCE ] :RADio:WCDMa:TGPP [ :BBG ] :ULINK:RPANel:DPCH:OUTPut:
EVENT1 RPS0 | RPS1 | RPS2 | RPS3 | RPS4 | RPS5 | RPS6 | RPS7 | RPS8 | RPS9 | RPS10
[ :SOURCE ] :RADio:WCDMa:TGPP [ :BBG ] :ULINK:RPANel:DPCH:OUTPut:EVENT1?
```

This command assigns a signal to the EVENT 1 at the rear panel output connector. Refer to [Table 9-10 on page 1136](#) for command parameters and output signal type.

***RST** RPS2

Key Entry	NONE (RPS0)	Chip Clock (RPS1)	DPDCH Raw Data (RPS2)
	DPDCH Data Raw Clock (RPS3)		DPCCH Raw Data (RPS4)
	DPCCH Raw Data Clock (RPS5)		10 ms Frame Pulse (RPS6)
	Trigger Sync Reply (RPS7)		Compressed Frame (RPS8)
	Frame Clock (RPS9)		CFN #0 Frame Pulse (RPS10)

Remarks For more information about the rear panel connector configurations, refer to "Signal Generator Overview" in the *E4428C/38C ESG Signal Generators User's Guide*.

:ULINK:RPANel:DPCH:OUTPut:EVENT2

Supported E4438C with Option 400

```
[ :SOURCE ] :RADio:WCDMa:TGPP [ :BBG ] :ULINK:RPANel:DPCH:OUTPut:
EVENT2 RPS0 | RPS1 | RPS2 | RPS3 | RPS4 | RPS5 | RPS6 | RPS7 | RPS8 | RPS9 | RPS10
[ :SOURCE ] :RADio:WCDMa:TGPP [ :BBG ] :ULINK:RPANel:DPCH:OUTPut:EVENT2?
```

This command assigns a signal to the EVENT 2 at the rear panel output connector. Refer to [Table 9-10 on page 1136](#) for command parameters and output signal types.

***RST** RPS3

Key Entry	NONE (RPS0)	Chip Clock (RPS1)	DPDCH Raw Data (RPS2)
	DPDCH Data Raw Clock (RPS3)		DPCCH Raw Data (RPS4)
	DPCCH Raw Data Clock (RPS5)		10 ms Frame Pulse (RPS6)
	Trigger Sync Reply (RPS7)		Compressed Frame (RPS8)

Wideband CDMA Base Band Generator Subsystem–Option 400 [:SOURCE]:RADio:WCDMa:TGPP[:BBG]

	TTI Frame Clock (RPS9)	CFN #0 Frame Pulse (RPS10)
Remarks	For more information about the rear panel connector configurations, refer to "Signal Generator Overview" in the <i>E4428C/38C ESG Signal Generators User's Guide</i> .	

:ULINK:RPANel:DPCH:OUTPut:EVENT3

Supported E4438C with Option 400

```
[ :SOURCE ] :RADio:WCDMa:TGPP[ :BBG ] :ULINK:RPANel:DPCH:OUTPut :
EVENT3 RPS0|RPS1|RPS2|RPS3|RPS4|RPS5|RPS6|RPS7|RPS8|RPS9|RPS10
[ :SOURCE ] :RADio:WCDMa:TGPP[ :BBG ] :ULINK:RPANel:DPCH:OUTPut:EVENT3?
```

This command assigns a signal to the EVENT 3 output at the selected rear panel AUX I/O connector pin#19. Refer to [Table 9-10 on page 1136](#) for command parameters and output signal type.

***RST** RPS0

Key Entry	NONE (RPS0)	Chip Clock (RPS1)	DPDCH Raw Data (RPS2)
	DPDCH Data Raw Clock (RPS3)		DPCCH Raw Data (RPS4)
	DPCCH Raw Data Clock (RPS5)		10 ms Frame Pulse (RPS6)
	Trigger Sync Reply (RPS7)		Compressed Frame (RPS8)
	TTI Frame Clock (RPS9)		CFN #0 Frame Pulse (RPS10)

Remarks For more information about the rear panel connector configurations, refer to "Signal Generator Overview" in the *E4428C/38C ESG Signal Generators User's Guide*.

:ULINK:RPANel:DPCH:OUTPut:EVENT4

Supported E4438C with Option 400

```
[ :SOURCE ] :RADio:WCDMa:TGPP[ :BBG ] :ULINK:RPANel:DPCH:OUTPut :
EVENT4 RPS0|RPS1|RPS2|RPS3|RPS4|RPS5|RPS6|RPS7|RPS8|RPS9|RPS10
[ :SOURCE ] :RADio:WCDMa:TGPP[ :BBG ] :ULINK:RPANel:DPCH:OUTPut:EVENT4?
```

This command assigns a signal to the EVENT 4 output at the selected rear panel AUX I/O connector pin#18. Refer to [Table 9-10 on page 1136](#) for command parameters and output signal type.

***RST** RPS0

Key Entry	NONE (RPS0)	Chip Clock (RPS1)	DPDCH Raw Data (RPS2)
	DPDCH Data Raw Clock (RPS3)		DPCCH Raw Data (RPS4)
	DPCCH Raw Data Clock (RPS5)		10 ms Frame Pulse (RPS6)

Wideband CDMA Base Band Generator Subsystem–Option 400 ([:SOURce]:RADio:WCDMa:TGPP[:BBG])

	Trigger Sync Reply (RPS7)	Compressed Frame (RPS8)
	TTI Frame Clock (RPS9)	CFN #0 Frame Pulse (RPS10)
Remarks	For more information about the rear panel connector configurations, refer to "Signal Generator Overview" in the <i>E4428C/38C ESG Signal Generators User's Guide</i> .	

:ULINK:RPANel:DPCH:OUTPut:SSYNc

Supported E4438C with Option 400

```
[ :SOURce ] :RADio :WCDMa :TGPP [ :BBG ] :ULINK :RPANel :DPCH :OUTPut :SSYNc RPS0 |
RPS1 | RPS2 | RPS3 | RPS4 | RPS5 | RPS6 | RPS7 | RPS8 | RPS9 | RPS10
[ :SOURce ] :RADio :WCDMa :TGPP [ :BBG ] :ULINK :RPANel :DPCH :OUTPut :SSYNc?
```

This command assigns a signal to SYM SYNC OUT at the selected rear panel AUX I/O connector pin#5. Refer to [Table 9-10 on page 1136](#) for command parameters and output signal type.

***RST** RPS6

Key Entry	NONE (RPS0)	Chip Clock (RPS1)	DPDCH Raw Data (RPS2)
	DPDCH Data Raw Clock (RPS3)	DPCCH Raw Data (RPS4)	
	DPCCH Raw Data Clock (RPS5)	10 ms Frame Pulse (RPS6)	
	Trigger Sync Reply (RPS7)	Compressed Frame (RPS8)	
	TTI Frame Clock (RPS9)	CFN #0 Frame Pulse (RPS10)	

Remarks For more information about the rear panel connector configurations, refer to "Signal Generator Overview" in the *E4428C/38C ESG Signal Generators User's Guide*.

:ULINK:RPANel:PRACH:INPut:ALTPower

Supported E4438C with Option 400

```
[ :SOURce ] :RADio :WCDMa :TGPP [ :BBG ] :ULINK :RPANel :PRACH :INPut :ALTPower?
```

This query returns the signal type at the ALT PWR IN (alternate power in) connector pin for the physical random access channel (PRACH) mode.

***RST** NONE

Field Entry Alt power in

Remarks For more information about the rear panel AUX I/O connector pin configuration, refer to "Signal Generator Overview" in the *E4428C/38C ESG Signal Generators User's Guide*.

Wideband CDMA Base Band Generator Subsystem–Option 400 ([:SOURCE]:RADIO:WCDMA:TGPP[:BBG])

:ULINK:RPANel:PRACH:INPut:BBGRef**Supported** E4438C with Option 400

[:SOURCE]:RADIO:WCDMA:TGPP[:BBG]:ULINK:RPANel:PRACH:INPut:BBGRef?

This query returns the type of signal at the baseband generator reference input (BASEBAND GEN REF IN, rear panel connector) for the physical random access channel (PRACH) mode.

***RST** CCL

Remarks The signal name is baseband generator chip clock (CCL). For more information about the rear panel connector configurations, refer to "Signal Generator Overview" in the *E4428C/38C ESG Signal Generators User's Guide*.

:ULINK:RPANel:PRACH:INPut:BGATe**Supported** E4438C with Option 400

[:SOURCE]:RADIO:WCDMA:TGPP[:BBG]:ULINK:RPANel:PRACH:INPut:BGATe?

This query returns the signal type at the BURST GATE IN connector for the physical random access channel (PRACH) mode.

***RST** PSTR**Field Entry** Burst gate in

Remarks The signal name is PRACH start trigger (PSTR). For more information about the rear panel connector configurations, refer to "Signal Generator Overview" in the *E4428C/38C ESG Signal Generators User's Guide*.

:ULINK:RPANel:PRACH:INPut:PTRigger1**Supported** E4438C with Option 400

[:SOURCE]:RADIO:WCDMA:TGPP[:BBG]:ULINK:RPANel:PRACH:INPut:PTRigger1?

This query returns the signal type at the pattern trigger in 1 (PATT TRIG IN) connector for the physical random access channel (PRACH) mode.

***RST** FSYN**Field Entry** Pattern trigger in 1

Remarks The signal name is frame synchronization (FSYN). For more information about the rear panel I/O connectors' configuration, refer to "Signal Generator Overview" in the *E4428C/38C ESG Signal Generators User's Guide*.

:ULINK:RPANel:PRACH:INPut:PTRigger2**Supported** E4438C with Option 400

[:SOURCE]:RADio:WCDMa:TGPP[:BBG]:ULINK:RPANel:PRACH:INPut:PTRigger2?

This query returns the signal type at the pattern trigger input 2 (PATT TRIG IN 2 AUX I/O connector pin#17) for the physical random access channel (PRACH) mode.

***RST** AITR**Field Entry** Pattern trigger in 2

Remarks The signal name is AICH trigger (AITR). For more information about the rear panel connector configurations, refer to "Signal Generator Overview" in the *E4428C/38C ESG Signal Generators User's Guide*.

:ULINK:RPANel:PRACH:OUTPut:DCLock**Supported** E4438C with Option 400

```
[:SOURCE]:RADio:WCDMa:TGPP[:BBG]:ULINK:RPANel:PRACH:OUTPut:DCLock RPS0 |
RPS1 | RPS6 | RPS7 | RPS11 | RPS12 | RPS13 | RPS14 | RPS15 | RPS16 |
RPS17 | RPS19 | RPS20 | RPS21 | RPS22 | RPS23 | RPS24 | RPS25
[:SOURCE]:RADio:WCDMa:TGPP[:BBG]:ULINK:RPANel:PRACH:OUTPut:DCLock?
```

This command assigns a signal at the data clock output for the selected rear panel AUX I/O connector pin#6.

RPS0 none

RPS1 This choice assigns the chip clock signal.

RPS6 This choice assigns the 10ms frame pulse signal.

RPS7 This choice assigns the trigger sync reply signal.

RPS11 This choice assigns the message-data raw data signal. In the multiple PRACH mode, RPS11 outputs the message-data raw data signal of PRACH#1. If the PRACH#1 is not "on", no signal output is output.

RPS12 This choice assigns the message-data raw clock signal. In the multiple PRACH mode, RPS12 outputs the message-data raw clock signal of PRACH#1. If the PRACH#1 is not "on", no signal output is output.

RPS14 This choice assigns the message-ctrl raw data clock signal. In the multiple PRACH mode, RPS14 outputs the message-control raw data clock signal of PRACH#1. If the PRACH#1 is not "on", no signal output is output.

RPS15 This choice assigns the preamble raw data signal. In the multiple PRACH mode,

Wideband CDMA Base Band Generator Subsystem–Option 400 ([:SOURCE]:RADio:WCDMa:TGPP[:BBG])

	RPS15	outputs the preamble raw data signal of PRACH#1. If the PRACH#1 is not “on”, no signal output is output.
RPS16		This choice assigns the preamble raw data clock signal. In the multiple PRACH mode, RPS16 outputs the preamble raw data clock signal of PRACH#1. If the PRACH#1 is not “on”, no signal output is output.
RPS17		This choice assigns the sub channel timing signal. Sub channel timing is used on the single PRACH mode.
RPS19		This choice assigns the PRACH processing signal. This signal indicates the PRACH is generating.
RPS20		This choice assigns the 80ms frame pulse signal.
RPS21		This choice assigns the preamble pulse signal. This signal indicates the preamble timing of all configured PRACHes. One pulse for one preamble. In the multiple PRACH mode, this output relates to PRACH#1. If the PRACH#1 in not “on”, no signal is output.
RPS22		This choice assigns the message pulse signal. This signal indicates the message part timing of all configured PRACHes. In the multiple PRACH mode, this output relates to PRACH#1. If the PRACH#1 in not “on”, no signal is output.
RPS23		This choice assigns the PRACH pulse signal. This signal indicates the start timing of all configured PRACHes. In the multiple PRACH mode, this output relates to PRACH#1. If the PRACH#1 in not “on”, no signal is output.
RPS24		This choice assigns the ESG synchronization signal. This signal is used for the multiple EAG synchronization on the multiple PRACH mode.
RPS25		This choice assigns the PRACH start trigger echo back signal. The PRACH start trigger echo back signal is used for the multiple ESG connection on the multiple PRACH mode.
*RST		RPS0
Key Entry	NONE (RPS0)	Chip Clock (RPS1) Message-Data Raw Data (RPS11)
	10ms Frame Pulse (RPS6)	Trigger Sync Reply (RPS7)
	Message-Data Raw Clock (RPS12)	Message-Control Raw Data (RPS13)
	Message-Control Raw Data Clock(RPS14)	
	Preamble Raw Data(RPS15)	Preamble Raw Data Clock(RPS16)
	Sub Channel Timing(RPS17)	PRACH Processing(RPS19)
	80ms Frame Pulse(RPS20)	Preamble Pulse(RPS21)
	Message Pulse(RPS22)	PRACH Pulse(RPS23)
	ESG-Sync Sig(RPS24)	Start-Trigger EchoBack(RPS25)

Wideband CDMA Base Band Generator Subsystem–Option 400 ([:SOURCE]:RADio:WCDMa:TGPP[:BBG])

Remarks For more information about the rear panel connector configurations, refer to "Signal Generator Overview" in the *E4428C/38C ESG Signal Generators User's Guide*.

:ULINK:RPANel:PRACH:OUTPut:DOUT

Supported E4438C with Option 400

```
[ :SOURCE ] :RADio:WCDMa:TGPP[ :BBG ] :ULINK:RPANel:PRACH:OUTPut:DOUT RPS0 |
RPS1 |RPS6 |RPS7 |RPS11 |RPS12 |RPS13 |RPS14 |RPS14 |RPS15 |RPS16 |RPS17 |RPS19 |
RPS20 |RPS21 |RPS22 |RPS23 |RPS24 |RPS25
[ :SOURCE ] :RADio:WCDMa:TGPP[ :BBG ] :ULINK:RPANel:PRACH:OUTPut:DOUT?
```

This command assigns a signal to the data output at the selected rear panel AUX I/O connector pin#7.

For parameter descriptions refer to “:ULINK:RPANel:PRACH:OUTPut:DCLock” on page 1142.

***RST** RPS0

Key Entry

NONE (RPS0)	Chip Clock (RPS1)	Message-Data Raw Data (RPS11)
10ms Frame Pulse (RPS6)	Trigger Sync Reply (RPS7)	
Message-Data Raw Clock (RPS12)	Message-Control Raw Data (RPS13)	
Message-Control Raw Data Clock(RPS14)		
Preamble Raw Data(RPS15)	Preamble Raw Data Clock(RPS16)	
Sub Channel Timing(RPS17)	PRACH Processing(RPS19)	
80ms Frame Pulse(RPS20)	Preamble Pulse(RPS21)	
Message Pulse(RPS22)	PRACH Pulse(RPS23)	
ESG-Sync Sig(RPS24)	Start-Trigger EchoBack(RPS25)	

Remarks For more information about the rear panel connector configurations, refer to "Signal Generator Overview" in the *E4428C/38C ESG Signal Generators User's Guide*.

:ULINK:RPANel:PRACH:OUTPut:EVENT1

Supported E4438C with Option 400

```
[ :SOURCE ] :RADio:WCDMa:TGPP[ :BBG ] :ULINK:RPANel:PRACH:OUTPut:EVENT1 RPS0 |
RPS1 |RPS6 |RPS7 |RPS11 |RPS12 |RPS13 |RPS14 |RPS14 |RPS15 |RPS16 |RPS17 |RPS19 |
RPS20 |RPS21 |RPS22 |RPS23 |RPS24 |RPS25
[ :SOURCE ] :RADio:WCDMa:TGPP[ :BBG ] :ULINK:RPANel:PRACH:OUTPut:EVENT1?
```

This command assigns a signal to the EVENT 1 at the selected rear panel connector.

For parameter descriptions refer to “:ULINK:RPANel:PRACH:OUTPut:DCLock” on page 1142.

Wideband CDMA Base Band Generator Subsystem–Option 400 ([:SOURCE]:RADIO:WCDMA:TGPP[:BBG])

*RST	RPS0
Key Entry	NONE (RPS0) Chip Clock (RPS1) Message-Data Raw Data (RPS11) 10ms Frame Pulse (RPS6) Trigger Sync Reply (RPS7) Message-Data Raw Clock (RPS12) Message-Control Raw Data (RPS13) Message-Control Raw Data Clock(RPS14) Preamble Raw Data(RPS15) Preamble Raw Data Clock(RPS16) Sub Channel Timing(RPS17) PRACH Processing(RPS19) 80ms Frame Pulse(RPS20) Preamble Pulse(RPS21) Message Pulse(RPS22) PRACH Pulse(RPS23) ESG-Sync Sig(RPS24) Start-Trigger EchoBack(RPS25)
Remarks	For more information about the rear panel connector configurations, refer to "Signal Generator Overview" in the <i>E4428C/38C ESG Signal Generators User's Guide</i> .

:ULINK:RPANel:PRACH:OUTPut:EVENT2

Supported E4438C with Option 400

```
[ :SOURCE ] :RADIo:WCDMA:TGPP[ :BBG ] :ULINK:RPANel:PRACH:OUTPut:EVENT2 RPS0|
RPS1|RPS6|RPS7|RPS11|RPS12|RPS13|RPS14|RPS14|RPS15|RPS16|RPS17|RPS19|RPS20|RPS21|
RPS22|RPS23|RPS24|RPS25
```

```
[ :SOURCE ] :RADIo:WCDMA:TGPP[ :BBG ] :ULINK:RPANel:PRACH:OUTPut:EVENT2?
```

This command assigns a signal to the EVENT 2 at the rear panel connector.

For parameter descriptions refer to “:ULINK:RPANel:PRACH:OUTPut:DCLock” on page 1142.

*RST	RPS0
Key Entry	NONE (RPS0) Chip Clock (RPS1) Message-Data Raw Data (RPS11) 10ms Frame Pulse (RPS6) Trigger Sync Reply (RPS7) Message-Data Raw Clock (RPS12) Message-Control Raw Data (RPS13) Message-Control Raw Data Clock(RPS14) Preamble Raw Data(RPS15) Preamble Raw Data Clock(RPS16) Sub Channel Timing(RPS17) PRACH Processing(RPS19) 80ms Frame Pulse(RPS20) Preamble Pulse(RPS21) Message Pulse(RPS22) PRACH Pulse(RPS23) ESG-Sync Sig(RPS24) Start-Trigger EchoBack(RPS25)

Wideband CDMA Base Band Generator Subsystem–Option 400 ([:SOURCE]:RADio:WCDMa:TGPP[:BBG])

Remarks For more information about the rear panel connector configurations, refer to "Signal Generator Overview" in the *E4428C/38C ESG Signal Generators User's Guide*.

:ULINK:RPANel:PRACH:OUTPut:EVENT3

Supported E4438C with Option 400

```
[ :SOURCE ] :RADio:WCDMa:TGPP[ :BBG ] :ULINK:RPANel:PRACH:OUTPut:EVENT3 RPS0 |
RPS1 | RPS6 | RPS7 | RPS11 | RPS12 | RPS13 | RPS14 | RPS14 | RPS15 | RPS16 | RPS17 | RPS19 |
RPS20 | RPS21 | RPS22 | RPS23 | RPS24 | RPS25
[ :SOURCE ] :RADio:WCDMa:TGPP[ :BBG ] :ULINK:RPANel:PRACH:OUTPut:EVENT3?
```

This command assigns a signal to the EVENT 3 output at the selected rear panel AUX I/O connector pin#19.

For parameter descriptions refer to “[:ULINK:RPANel:PRACH:OUTPut:DCLock](#)” on page 1142.

***RST** RPS0

Key Entry

NONE (RPS0)	Chip Clock (RPS1)	Message-Data Raw Data (RPS11)
10ms Frame Pulse (RPS6)	Trigger Sync Reply (RPS7)	
Message-Data Raw Clock (RPS12)	Message-Control Raw Data (RPS13)	
Message-Control Raw Data Clock(RPS14)		
Preamble Raw Data(RPS15)	Preamble Raw Data Clock(RPS16)	
Sub Channel Timing(RPS17)	PRACH Processing(RPS19)	
80ms Frame Pulse(RPS20)	Preamble Pulse(RPS21)	
Message Pulse(RPS22)	PRACH Pulse(RPS23)	
ESG-Sync Sig(RPS24)	Start-Trigger EchoBack(RPS25)	

Remarks For more information about the rear panel connector configurations, refer to "Signal Generator Overview" in the *E4428C/38C ESG Signal Generators User's Guide*.

:ULINK:RPANel:PRACH:OUTPut:EVENT4

Supported E4438C with Option 400

```
[ :SOURCE ] :RADio:WCDMa:TGPP[ :BBG ] :ULINK:RPANel:PRACH:OUTPut:EVENT4 4RPS0 |
RPS1 | RPS6 | RPS7 | RPS11 | RPS12 | RPS13 | RPS14 | RPS14 | RPS15 | RPS16 | RPS17 | RPS19 |
RPS20 | RPS21 | RPS22 | RPS23 | RPS24 | RPS25
[ :SOURCE ] :RADio:WCDMa:TGPP[ :BBG ] :ULINK:RPANel:PRACH:OUTPut:EVENT4?
```

This command assigns a signal to the EVENT 4 output at the selected rear panel AUX I/O connector pin#18.

Wideband CDMA Base Band Generator Subsystem–Option 400 [:SOURCE]:RADIo:WCDMa:TGPP[:BBG]

For parameter descriptions refer to “:ULINK:RPANel:PRACH:OUTPut:DCLock” on page 1142.

*RST	RPS0
Key Entry	NONE (RPS0) Chip Clock (RPS1) Message-Data Raw Data (RPS11) 10ms Frame Pulse (RPS6) Trigger Sync Reply (RPS7) Message-Data Raw Clock (RPS12) Message-Control Raw Data (RPS13) Message-Control Raw Data Clock(RPS14) Preamble Raw Data(RPS15) Preamble Raw Data Clock(RPS16) Sub Channel Timing(RPS17) PRACH Processing(RPS19) 80ms Frame Pulse(RPS20) Preamble Pulse(RPS21) Message Pulse(RPS22) PRACH Pulse(RPS23) ESG-Sync Sig(RPS24) Start-Trigger EchoBack(RPS25)
Remarks	For more information about the rear panel connector configurations, refer to "Signal Generator Overview" in the <i>E4428C/38C ESG Signal Generators User's Guide</i> .

:ULINK:RPANel:PRACH:OUTPut:SSYNc

Supported E4438C with Option 400

```
[ :SOURCE ] :RADIo:WCDMa:TGPP[ :BBG ] :ULINK:RPANel:PRACH:OUTPut:SSYNc RPS0 |
RPS1 | RPS6 | RPS7 | RPS11 | RPS12 | RPS13 | RPS14 | RPS14 | RPS15 | RPS16 | RPS17 | RPS19 |
RPS20 | RPS21 | RPS22 | RPS23 | RPS24 | RPS25
```

```
[ :SOURCE ] :RADIo:WCDMa:TGPP[ :BBG ] :ULINK:RPANel:PRACH:OUTPut:SSYNc?
```

This command assigns a signal to SYM SYNC OUT at the selected rear panel AUX I/O connector pin#5.

For parameter descriptions refer to “:ULINK:RPANel:PRACH:OUTPut:DCLock” on page 1142.

*RST	RPS0
Key Entry	NONE (RPS0) Chip Clock (RPS1) Message-Data Raw Data (RPS11) 10ms Frame Pulse (RPS6) Trigger Sync Reply (RPS7) Message-Data Raw Clock (RPS12) Message-Control Raw Data (RPS13) Message-Control Raw Data Clock(RPS14) Preamble Raw Data(RPS15) Preamble Raw Data Clock(RPS16) Sub Channel Timing(RPS17) PRACH Processing(RPS19) 80ms Frame Pulse(RPS20) Preamble Pulse(RPS21) Message Pulse(RPS22) PRACH Pulse(RPS23)

Wideband CDMA Base Band Generator Subsystem–Option 400 ([:SOURCE]:RADio:WCDMa:TGPP[:BBG])

	ESG-Sync Sig(RPS24)	Start-Trigger EchoBack(RPS25)
Remarks	For more information about the rear panel connector configurations, refer to "Signal Generator Overview" in the <i>E4428C/38C ESG Signal Generators User's Guide</i> .	

:ULINK:SCRamblecode

Supported E4438C with Option 400

```
[ :SOURCE ] : RADio : WCDMa : TGPP [ : BBG ] : ULINK : SCRamblecode <val>
```

```
[ :SOURCE ] : RADio : WCDMa : TGPP [ : BBG ] : ULINK : SCRamblecode?
```

This command sets the uplink scramble code.

***RST** +0

Range 0–16777215

Field Entry Scrambling Code

:ULINK:SDElay

Supported E4438C with Option 400

```
[ :SOURCE ] : RADio : WCDMa : TGPP [ : BBG ] : ULINK : SDElay <val>
```

```
[ :SOURCE ] : RADio : WCDMa : TGPP [ : BBG ] : ULINK : SDElay?
```

This command sets the number of timeslots to be delayed for the dedicated physical channel (DPCH).

***RST** +0

Range 0–119

Key Entry Timeslot Offset

Remarks The actual amount of timing offset is $(T0) + (TOFFset) + (SDElay) * 2560$ chips, where $T0 = 1024$ chips.

This command is not used when the sync source is set to ESG. Refer to “:ULINK:SYNC[:SOURCE]” on page 1149.

:ULINK:SFNRst:POLarity

Supported E4438C with Option 400

```
[ :SOURCE ] : RADio : WCDMa : TGPP [ : BBG ] : ULINK : SFNRst : POLarity POSitive|NEGative
```

```
[ :SOURCE ] : RADio : WCDMa : TGPP [ : BBG ] : ULINK : SFNRst : POLarity?
```

Wideband CDMA Base Band Generator Subsystem–Option 400 ([:SOURCE]:RADIO:WCDMA:TGPP[:BBG])

This command sets the polarity of the system frame number reset signal for the uplink synchronization source.

POSitive This choice sets the signal to trigger when the trigger signal is high.

NEGative This choice sets the signal to trigger when the trigger signal is low.

***RST** POS

Key Entry SFN RST Polarity Neg Pos

Remarks This command is not used when the sync source is set to ESG. Refer to “:ULINK:SYNC[:SOURCE]” on page 1149.

:ULINK:SYNC:MODE

Supported E4438C with Option 400

[:SOURCE] :RADIO:WCDMA:TGPP [:BBG] :ULINK:SYNC:MODE SINGLE | CONTInuous

[:SOURCE] :RADIO:WCDMA:TGPP [:BBG] :ULINK:SYNC:MODE?

This command selects the uplink frame synchronization triggering mode.

SINGLE This choice sets the signal generator, once triggered, to generate frames based on the reference clock.

CONTInuous This choice sets the signal generator to continuously align the frame sync trigger signal and the frame timing.

***RST** SING

Key Entry Frame Sync Trigger Mode Single Cont

:ULINK:SYNC[:SOURCE]

Supported E4438C with Option 400

[:SOURCE] :RADIO:WCDMA:TGPP [:BBG] :ULINK:SYNC [:SOURCE] SFN_RST | FCLock | ESG

[:SOURCE] :RADIO:WCDMA:TGPP [:BBG] :ULINK:SYNC [:SOURCE] ?

This command selects the uplink frame synchronization source type.

SFN_RST This choice sets the signal to trigger on the system frame number reset signal.

FCLock This choice sets the signal to trigger on the frame clock.

ESG This choice sets the signal to trigger on the synchronization signal of a primary ESG.

***RST** FCL

Key Entry Sync Source SFN FCIk ESG

:ULINK:TGAP:POFFset**Supported** E4438C with Option 400

[:SOURCE]:RADio:WCDMa:TGPP[:BBG]:ULINK:TGAP:POFFset <val> | AUTO

[:SOURCE]:RADio:WCDMa:TGPP[:BBG]:ULINK:TGAP:POFFset?

This command specifies the amount of power to be increased when the data is being compressed for the transmission gap power offset.

AUTO This choice sets the power to increase using the gap pattern parameters calculation based on 3GPP standard. When AUTO is selected, the query returns “AUTO” as the value.

The variable <val> is expressed in units of decibels (dB).

***RST** AUTO**Range** 0–6**Field Entry** PwrOffs

Remarks If the parameter set by this command is changed while the signal is active, the apply command must be executed for the change to occur. Refer to “:ULINK:APPLY” on page 1072.

:ULINK:TGAP:PSI[1] | 2 | 3 | 4 | 5 | 6:CFN**Supported** E4438C with Option 400

[:SOURCE]:RADio:WCDMa:TGPP[:BBG]:ULINK:TGAP:PSI[1] | 2 | 3 | 4 | 5 | 6:CFN <val>

[:SOURCE]:RADio:WCDMa:TGPP[:BBG]:ULINK:TGAP:PSI[1] | 2 | 3 | 4 | 5 | 6:CFN?

This command sets the connection frame number (CFN) for the first radio frame of the first pattern 1.

***RST** 0**Range** 1–255**Field Entry** TGCFN

Remarks In the signal generator, CFN is counted internally relative to the system sync signal.

Wideband CDMA Base Band Generator Subsystem—Option 400 ([:SOURCE]:RADio:WCDMa:TGPP[:BBG])

:ULINK:TGAP:PSI[1]:CMMethod**Supported** E4438C with Option 400

```
[ :SOURCE ] :RADio:WCDMa:TGPP [ :BBG ] :ULINK:TGAP:PSI [ 1 ] :CMMethod SF2 | HIGHer
[ :SOURCE ] :RADio:WCDMa:TGPP [ :BBG ] :ULINK:TGAP:PSI [ 1 ] :CMMethod?
```

This command selects the compressed mode (CM) method.

SF2 This choice selects a compressed mode method that reduced the spread factor (SF) by 2. This is done by increasing the data rate by reducing the spreading factor in half. When the dedicated physical data channel's (DPDCH) symbol rate is 960 kbps, the frame is not compressed because it uses the lowest SF value and it cannot be reduced.

HIGHer This choice selects a higher layer scheduling method. The emulated higher layer scheduling method mode keeps the same physical layer data rate even when a transmission gap is created.

***RST** SF2**Key Entry** SF/2 Higher Layer

Remarks If the parameter set by this command is changed while the signal is active, the apply command must be executed for the change to occur. Refer to [“:ULINK:APPLY” on page 1072](#).

The ULINK:APPLY command will fail if the CM method is higher layer and DPDCH data is TrCH. CM method should be SF/2 if the DPDCH data is TrCH.

:ULINK:TGAP:PSI[1] | 2 | 3 | 4 | 5 | 6:D**Supported** E4438C with Option 400

```
[ :SOURCE ] :RADio:WCDMa:TGPP [ :BBG ] :ULINK:TGAP:PSI [ 1 ] | 2 | 3 | 4 | 5 | 6 :D
<val> | UNDeFined
[ :SOURCE ] :RADio:WCDMa:TGPP [ :BBG ] :ULINK:TGAP:PSI [ 1 ] | 2 | 3 | 4 | 5 | 6 :D?
```

This command sets the transmission gap distance. The command specifies the number of slots between the starting slots of two consecutive transmission gaps within a transmission gap pattern.

UNDeFined This choice sets one transmission gap. When UNDeFined is selected, then there is only one transmission gap within the transmission gap pattern.

***RST** UND**Range** 15–269**Field Entry** TGD

Wideband CDMA Base Band Generator Subsystem–Option 400 ([:SOURCE]:RADio:WCDMa:TGPP[:BBG])**:ULINK:TGAP:PSI[1] | 2 | 3 | 4 | 5 | 6:L1****Supported** E4438C with Option 400[:SOURCE]:RADio:WCDMa:TGPP[:BBG]:ULINK:TGAP:PSI[1] | 2 | 3 | 4 | 5 | 6
:L1 3 | 4 | 5 | 7 | 10 | 14

[:SOURCE]:RADio:WCDMa:TGPP[:BBG]:ULINK:TGAP:PSI[1] | 2 | 3 | 4 | 5 | 6:L1?

This command specifies the length of the first transmission gap (TGL1). The length is expressed in number of slots.

RST** +7**Field Entry** TGL1**:ULINK:TGAP:PSI[1] | 2 | 3 | 4 | 5 | 6:L2*Supported** E4438C with Option 400[:SOURCE]:RADio:WCDMa:TGPP[:BBG]:ULINK:TGAP:PSI[1] | 2 | 3 | 4 | 5 | 6
:L2 3 | 4 | 5 | 7 | 10 | 14 | OMITted

[:SOURCE]:RADio:WCDMa:TGPP[:BBG]:ULINK:TGAP:PSI[1] | 2 | 3 | 4 | 5 | 6:L2?

This command specifies the length of the second transmission gap (TGL2). When OMITted is selected, TGL2=TGL1.

RST** OMIT**Field Entry** TGL2**:ULINK:TGAP:PSI[1] | 2 | 3 | 4 | 5 | 6:PL1*Supported** E4438C with Option 400[:SOURCE]:RADio:WCDMa:TGPP[:BBG]:ULINK:TGAP:PSI[1] | 2 | 3 | 4 | 5 | 6:PL1 <val>
[:SOURCE]:RADio:WCDMa:TGPP[:BBG]:ULINK:TGAP:PSI[1] | 2 | 3 | 4 | 5 | 6:PL1?

This command specifies the duration of the transmission gap pattern length 1 (TGPL1). The pattern length is expressed in number of frames.

***RST** +2**Range** 1–144**Field Entry** TGPL1

Wideband CDMA Base Band Generator Subsystem–Option 400 ([:SOURCE]:RADIo:WCDMa:TGPP[:BBG])

:ULINK:TGAP:PSI[1]|2|3|4|5|6:PL2**Supported** E4438C with Option 400[:SOURCE]:RADIo:WCDMa:TGPP[:BBG]:ULINK:TGAP:PSI[1]|2|3|4|5|6:PL2 <val> |
OMITted

[:SOURCE]:RADIo:WCDMa:TGPP[:BBG]:ULINK:TGAP:PSI[1]|2|3|4|5|6:PL2?

This command specifies the duration of the transmission gap pattern length 2 (TGPL2).

The variable <val> is expressed in number of frames. When OMITted is selected, TGPL2=TGPL1.

RST** OMIT**Range** 1–144**Field Entry** TGPL2**Key Entry** Omitted**:ULINK:TGAP:PSI[1]|2|3|4|5|6:POWer*Supported** E4438C with Option 400

[:SOURCE]:RADIo:WCDMa:TGPP[:BBG]:ULINK:TGAP:PSI[1]|2|3|4|5|6:POWer?

This query returns each power level for a compressed slot.

The return string has five real numbers followed by dBm (for normal power) or dB (for before/after gap power) separated by a single space character. When a value does not exist because of a specified compressed pattern (Example: Gap2 does not exist when TGD is “UNDefined”), it returns “–dB.”

Normal power value represents an actual power level in dBm and relative power is represented in dB.

:ULINK:TGAP:PSI[1]|2|3|4|5|6:PRC**Supported** E4438C with Option 400[:SOURCE]:RADIo:WCDMa:TGPP[:BBG]:ULINK:TGAP:PSI[1]|2|3|4|5|6:PRC <val> |
INFIinity

[:SOURCE]:RADIo:WCDMa:TGPP[:BBG]:ULINK:TGAP:PSI[1]|2|3|4|5|6:PRC?

This command sets the transmission gap pattern repetition count. The pattern repetition count (PRC) sets the number of transmission gap patterns within the transmission gap pattern sequence.

***RST** INF**Range** 1–511**Field Entry** TGPRC

Wideband CDMA Base Band Generator Subsystem–Option 400 ([:SOURce]:RADio:WCDMa:TGPP[:BBG])

Key Entry	Infinity
Remarks	When INFINITY is selected, the PRC will continue indefinitely.

:ULINK:TGAP:PSI[1] | 2 | 3 | 4 | 5 | 6:PS

Supported E4438C with Option 400

```
[ :SOURce ] :RADio:WCDMa:TGPP [ :BBG ] :ULINK:TGAP:PSI [ 1 ] | 2 | 3 | 4 | 5 | 6 :PS ACTive |
INACTive
```

```
[ :SOURce ] :RADio:WCDMa:TGPP [ :BBG ] :ULINK:TGAP:PSI [ 1 ] | 2 | 3 | 4 | 5 | 6 :PS?
```

This command sets the transmission gap pattern status.

ACTive This choice sets the compressed mode active.

INACTive This choice sets the compressed mode inactive.

***RST** INAC

Key Entry TGPS Active Inactive

:ULINK:TGAP:PSI[1] | 2 | 3 | 4 | 5 | 6:SN

Supported E4438C with Option 400

```
[ :SOURce ] :RADio:WCDMa:TGPP [ :BBG ] :ULINK:TGAP:PSI [ 1 ] | 2 | 3 | 4 | 5 | 6 :SN <val>
```

```
[ :SOURce ] :RADio:WCDMa:TGPP [ :BBG ] :ULINK:TGAP:PSI [ 1 ] | 2 | 3 | 4 | 5 | 6 :SN?
```

This command specifies the timeslot number of the first transmission gap within the first radio frame.

***RST** +11

Range 0–14

Field Entry TGSN

:ULINK:TGAP:RPARAmeter

Supported E4438C with Option 400

```
[ :SOURce ] :RADio:WCDMa:TGPP [ :BBG ] :ULINK:TGAP:RPARAmeter DREF11 | DREF12 |
DREF21 | DREF22
```

```
[ :SOURce ] :RADio:WCDMa:TGPP [ :BBG ] :ULINK:TGAP:RPARAmeter?
```

This command sets the downlink reference compressed mode parameters as defined in 3GPP Standard TS25.101.

DREF11 This choice sets the reference parameter to 1.1.

DREF12 This choice sets the reference parameter to 1.2.

Wideband CDMA Base Band Generator Subsystem–Option 400 ([:SOURCE]:RADio:WCDMa:TGPP[:BBG])

DREF21	This choice sets the reference parameter to 2.1.		
DREF22	This choice sets the reference parameter to 2.2.		
*RST	CUST		
Key Entry	DL Reference 1.1	DL Reference 1.2	DL Reference 2.1
	DL Reference 2.2		
Remarks	The query returns CUSTom when the parameters are set individually.		

:ULINK:TGAP:SCFN

Supported E4438C with Option 400

```
[ :SOURCE ] :RADio:WCDMa:TGPP [ :BBG ] :ULINK:TGAP:SCFN <val>
```

```
[ :SOURCE ] :RADio:WCDMa:TGPP [ :BBG ] :ULINK:TGAP:SCFN?
```

This command sets the stop connection frame number (CFN) when the stop trigger is used.

When the stop trigger is received at the signal generator, the next stop CFN, the compressed mode will finish even if the transmission gap pattern repetition count (TGPRC) is still remaining.

*RST +0

Range 0–255

Field Entry SCFN

Remarks The compressed mode stop trigger must be used for this command to executed. Refer to “:ULINK:TGAP:STOP:TRIGger” on page 1156.

If the parameter set by this command is changed while the signal is active, the apply command must be executed for the change to occur. Refer to “:ULINK:APPLY” on page 1072.

This command is not used when the sync source is set to ESG. Refer to “:ULINK:SYNC[:SOURCE]” on page 1149.

:ULINK:TGAP[:STATe]

Supported E4438C with Option 400

```
[ :SOURCE ] :RADio:WCDMa:TGPP [ :BBG ] :ULINK:TGAP [ :STATe ] ON|OFF|1|0
```

```
[ :SOURCE ] :RADio:WCDMa:TGPP [ :BBG ] :ULINK:TGAP [ :STATe ] ?
```

This command enables or disables the uplink transmission gap pattern.

*RST 1

Key Entry **Compress Mode Off On**

:ULINK:TGAP:START:TRIGger

Supported E4438C with Option 400

[:SOURCE] : RADIO : WCDMA : TGPP [: BBG] : ULINK : TGAP : START : TRIGger

This command starts the compressed mode trigger.

Key Entry **Compressed Mode Start Trigger**

:ULINK:TGAP:START:TRIGger:POLarity

Supported E4438C with Option 400

[:SOURCE] : RADIO : WCDMA : TGPP [: BBG] : ULINK : TGAP : START : TRIGger :

POLarity POSitive|NEGative

[:SOURCE] : RADIO : WCDMA : TGPP [: BBG] : ULINK : TGAP : START : TRIGger : POLarity?

This command sets the compressed mode start trigger signal polarity.

POSitive This choice sets the trigger to start when the trigger signal is high.

NEGative This choice sets the trigger to start when the trigger signal is low.

***RST** POS

Key Entry **Comp Mode Start Trigger Polarity Neg Pos**

:ULINK:TGAP:STOP:TRIGger

Supported E4438C with Option 400

[:SOURCE] : RADIO : WCDMA : TGPP [: BBG] : ULINK : TGAP : STOP : TRIGger

This command stops the compressed mode trigger.

Key Entry **Compressed Mode Stop Trigger**

:ULINK:TGAP:STOP:TRIGger:POLarity

Supported E4438C with Option 400

[:SOURCE] : RADIO : WCDMA : TGPP [: BBG] : ULINK : TGAP : STOP : TRIGger :

POLarity POSitive|NEGative

[:SOURCE] : RADIO : WCDMA : TGPP [: BBG] : ULINK : TGAP : STOP : TRIGger : POLarity?

This command sets the compressed mode stop trigger signal polarity.

Wideband CDMA Base Band Generator Subsystem–Option 400 ([:SOURCE]:RADio:WCDMa:TGPP[:BBG])

POSitive	This choice sets the trigger to stop when the trigger signal is high.
NEGative	This choice sets the trigger to stop when the trigger signal is low.
*RST	POS
Key Entry	Comp Mode Stop Trigger Polarity Neg Pos

:ULink:TOFFset

Supported E4438C with Option 400

```
[ :SOURCE ] :RADio:WCDMa:TGPP [ :BBG ] :ULink:TOFFset <val>
```

```
[ :SOURCE ] :RADio:WCDMa:TGPP [ :BBG ] :ULink:TOFFset?
```

This command sets additional timing offset for the dedicated physical channel (DPCH). Timing offset is the time delay between the downlink signal and the uplink signal. The downlink signal timing is provided by the synchronization signal.

***RST** +0

Range –512 to 2560

Key Entry **Timing Offset**

Remarks The actual amount of timing offset is (T0) + (TOFFset) + (SDElay) where T0 = 1024 chips.

:ULink:TStatus:COMPressed

Supported E4438C with Option 400

```
[ :SOURCE ] :RADio:WCDMa:TGPP [ :BBG ] :ULink:TStatus:COMPressed?
```

This query returns the status of compressed pattern generation. A “0” response indicates the compressed mode pattern signal is not generating. A “1” response indicates that the compressed mode pattern signal is generating.

***RST** 0

:ULink:TStatus:RACH

Supported E4438C with Option 400

```
[ :SOURCE ] :RADio:WCDMa:TGPP [ :BBG ] :ULink:TStatus:RACH?
```

This query returns the status of the physical random access channel (PRACH). A “0” response indicates the PRACH signal is not generating. A “1” response indicates that the PRACH signal is generating.

***RST** 0

:ULINK:TStatus:RECeive

Supported E4438C with Option 400

```
[ :SOURCE ] :RADio:WCDMa:TGPP [ :BBG ] :ULINK:TStatus:RECeive?
```

This query returns the frame synchronization signal reception status.

When the frame synchronization signal is received after synchronization configuration, the received value becomes “1.” If the signal is not received, the value is “0.”

***RST** 0

:ULINK:TStatus:SYNC

Supported E4438C with Option 400

```
[ :SOURCE ] :RADio:WCDMa:TGPP [ :BBG ] :ULINK:TStatus:SYNC?
```

This query returns the frame synchronization status. A “0” status indicates frame synchronization is fine or no frame synchronization signal is received). A “1” indicates frame synchronization is out sync and the synchronization signal does not match with the signal generator’s timing. The signal generator will generate incorrect data

***RST** 0

:ULINK:[TGRoup[1]]:DCH[1] | 2 | 3 | 3 | 5 | 6:BLKSize

Supported E4438C with Option 400

```
[ :SOURCE ] :RADio:WCDMa:TGPP [ :BBG ] :ULINK: [ TGRoup [ 1 ] ] :DCH [ 1 ] |
2 | 3 | 4 | 5 | 6 :BLKSize <val>
```

```
[ :SOURCE ] :RADio:WCDMa:TGPP [ :BBG ] :ULINK: [ TGRoup [ 1 ] ] :DCH [ 1 ] |
2 | 3 | 4 | 5 | 6 :BLKSize?
```

This command sets the block size for the selected uplink dedicated channel (DCH).

***RST** DCH1: 244 DCH2: 100 DCH3,4,5,6: 20

Range 0–5000

Key Entry Blk Size

Remarks If the parameter set by this command is changed while the signal is active, the apply command must be executed for the change to occur. Refer to “:ULINK:APPLY” on page 1072.

Wideband CDMA Base Band Generator Subsystem–Option 400 ([:SOURCE]:RADIO:WCDMA:TGPP[:BBG])

:ULINK[:TGRoup[1]]:DCH[1] | 2 | 3 | 4 | 5 | 6:BPFRame**Supported** E4438C with Option 400

[:SOURCE]:RADIO:WCDMA:TGPP[:BBG]:ULINK[:TGRoup[1]]:DCH[1] | 2 | 3 | 4 | 5 | 6:BPFRame?

This query returns the number of bits per frame for the selected dedicated transport channel (DCH).

RST** DCH1: 490 DCH2: 110 DCH3–6: 60**Field Entry** Bits/Frame**:ULINK[:TGRoup[1]]:DCH[1] | 2 | 3 | 4 | 5 | 6:BRATe*Supported** E4438C with Option 400

[:SOURCE]:RADIO:WCDMA:TGPP[:BBG]:ULINK[:TGRoup[1]]:DCH[1] | 2 | 3 | 4 | 5 | 6:BRATe?

This query returns the bit rate for the selected dedicated transport channel (DCH)

RST** DCH1: 12200 DCH2: 2500 DCH3–6: 2000**Range** 0–5000**:ULINK[:TGRoup[1]]:DCH[1] | 2 | 3 | 3 | 5 | 6:CODE*Supported** E4438C with Option 400[:SOURCE]:RADIO:WCDMA:TGPP[:BBG]:ULINK[:TGRoup[1]]:DCH[1] | 2 | 3 | 4 | 5 | 6:CODE HCONv | TCONv | TURBo | NONE
[:SOURCE]:RADIO:WCDMA:TGPP[:BBG]:ULINK[:TGRoup[1]]:DCH[1] | 2 | 3 | 4 | 5 | 6:CODE?

This command sets the encoder type for the uplink dedicated channel (DCH) selected.

HCONv This choice selects a coding with the 1/2 rate convolutional encoder.**TCONv** This choice selects a coding with the 1/3 rate convolutional encoder.**TURBo** This choice selects a coding with the turbo coder.**NONE** This choice selects no coding type.***RST** DCH1,2: TCONv DCH3,4,5,6: HCONv**Key Entry** 1/2 Conv 1/3 Conv Turbo NONE**Remarks** If the choice, set by this command, is changed while the signal is active, the apply command must be sent to set the change. See “:ULINK:APPLY” on page 1072.

:ULINK:[TGRoup[1]]:DCH[1] | 2 | 3 | 3 | 5 | 6: CRC**Supported** E4438C with Option 400

```
[ :SOURCE ] :RADio:WCDMa:TGPP [ :BBG ] :ULINK : [ TGRoup [ 1 ] ] :DCH [ 1 ] |
2 | 3 | 4 | 5 | 6 :CRC 0 | 8 | 12 | 16 | 24
[ :SOURCE ] :RADio:WCDMa:TGPP [ :BBG ] :ULINK : [ TGRoup [ 1 ] ] :DCH [ 1 ] |
2 | 3 | 4 | 5 | 6 :CRC?
```

This command specifies the number of cyclic redundancy code (CRC) bits to be added to each transport channel block.

***RST** DCH1: 16 DCH2: 12 DCH3,4,5,6: 8**Field Entry** CRC Size

Remarks If the parameter set by this command is changed while the signal is active, the apply command must be executed for the change to occur. Refer to [“:ULINK:APPLY” on page 1072](#).

:ULINK:[TGRoup[1]]:DCH[1] | 2 | 3 | 3 | 5 | 6: DATA**Supported** E4438C with Option 400

```
[ :SOURCE ] :RADio:WCDMa:TGPP [ :BBG ] :ULINK : [ TGRoup [ 1 ] ] :DCH [ 1 ] |
2 | 3 | 4 | 5 | 6 :DATA PN9 | FIX4 | "<file name>"
[ :SOURCE ] :RADio:WCDMa:TGPP [ :BBG ] :ULINK : [ TGRoup [ 1 ] ] :DCH [ 1 ] |
2 | 3 | 4 | 5 | 6 :DATA?
```

This command configures the data type to be inserted into the selected uplink dedicated channel (DCH).

"<file name>" This variable specifies a data pattern that has been stored in memory.

***RST** PN9**Key Entry** PN9 FIX4 User File

Remarks If the parameter set by this command is changed while the signal is active, the apply command must be executed for the change to occur. Refer to [“:ULINK:APPLY” on page 1072](#).

Wideband CDMA Base Band Generator Subsystem—Option 400 ([:SOURCE]:RADIo:WCDMa:TGPP[:BBG])

:ULINK[:TGRoup[1]]:DCH[1] | 2 | 3 | 4 | 5 | 6:DATA:BER:ACTual**Supported** E4438C with Option 400[:SOURCE]:RADIo:WCDMa:TGPP[:BBG]:ULINK[:TGRoup[1]]:DCH[1] |
2 | 3 | 4 | 5 | 6:DATA:BER:ACTual?

This query returns the actual inserted error ratio in the uplink dedicated channel (DCH) selected.

RST** +0.0000000E+000**Remarks** The actual bit error rate can be different from the specified bit error rate due to the internal bit generation.**:ULINK[:TGRoup[1]]:DCH[1] | 2 | 3 | 4 | 5 | 6:DATA:BER:ERRor:BIT*Supported** E4438C with Option 400[:SOURCE]:RADIo:WCDMa:TGPP[:BBG]:ULINK[:TGRoup[1]]:DCH[1] | 2 | 3 | 4 | 5 | 6:
DATA:BER:ERRor:BIT?

This query returns the actual error bits inserted in total number of bits.

RST** +0**Field Entry** Error Bits**:ULINK[:TGRoup[1]]:DCH[1] | 2 | 3 | 4 | 5 | 6:DATA:BER:TOTal:BIT*Supported** E4438C with Option 400[:SOURCE]:RADIo:WCDMa:TGPP[:BBG]:ULINK[:TGRoup[1]]:DCH[1] | 2 | 3 | 4 | 5 | 6:
DATA:BER:TOTal:BIT?

This query returns the total number of bits inserted for the bit error ratio calculation.

***RST** 0**Field Entry** Total Bits

:ULINK[:TGRoup[1]]:DCH[1] | 2 | 3 | 4 | 5 | 6:DATA:BER[:VALue]**Supported** E4438C with Option 400[:SOURCE]:RADio:WCDMa:TGPP[:BBG]:ULINK[:TGRoup[1]]:DCH[1] | 2 | 3 | 4 | 5 | 6:
DATA:BER[:VALue] <val>[:SOURCE]:RADio:WCDMa:TGPP[:BBG]:ULINK[:TGRoup[1]]:DCH[1] | 2 | 3 | 4 | 5 | 6:
DATA:BER[:VALue]?

This command specifies the bit error rate (BER) value to be inserted into the selected uplink dedicated channel (DCH). The variable <val> is expressed in decimal form as a percent ratio (1.0=100%).

***RST** 0.0000000+000**Range** 0.0001–1.0**Field Entry** BER

Remarks If the parameter set by this command is changed while the signal is active, the apply command must be executed for the change to occur. Refer to [“:ULINK:APPLY” on page 1072](#).

:ULINK[:TGRoup[1]]:DCH[1] | 2 | 3 | 4 | 5 | 6:DATA:BLER:ACTual**Supported** E4438C with Option 400[:SOURCE]:RADio:WCDMa:TGPP[:BBG]:ULINK[:TGRoup[1]]:DCH[1] |
2 | 3 | 4 | 5 | 6:DATA:BLER:ACTual?

This query returns the actual block error ratio inserted.

***RST** 0.0000000E+000

Remarks The actual block error rate can be different from the specified block error rate due to the internal bit generation.

:ULINK[:TGRoup[1] | 2]:DCH[1] | 2 | 3 | 4 | 5 | 6:DATA:BLER:ERRor:BLOCK**Supported** E4438C with Option 400[:SOURCE]:RADio:WCDMa:TGPP[:BBG]:ULINK[:TGRoup[1] | 2]:DCH[1] | 2 | 3 | 4 | 5 | 6:
DATA:BLER:ERRor:BLOCK?

This query returns the number of error blocks inserted.

***RST** +0**Field Entry** Error Blocks

Wideband CDMA Base Band Generator Subsystem–Option 400 ([:SOURCE]:RADIo:WCDMA:TGPP[:BBG])

:ULINK[:TGRoup[1] | 2:DCH[1] | 2 | 3 | 4 | 5 | 6:DATA:BLER:TOTal:BLOCK**Supported** E4438C with Option 400

[:SOURCE]:RADIo:WCDMA:TGPP[:BBG]:ULINK[:TGRoup[1] | 2:DCH[1] | 2 | 3 | 4 | 5 | 6:DATA:BLER:TOTal:BLOCK?

This query returns the error blocks actually inserted in total number of blocks.

RST** +0**Field Entry** Total Blocks**:ULINK[:TGRoup[1]]:DCH[1] | 2 | 3 | 4 | 5 | 6:DATA:BLER[:VALue]*Supported** E4438C with Option 400

[:SOURCE]:RADIo:WCDMA:TGPP[:BBG]:ULINK[:TGRoup[1]]:DCH[1] | 2 | 3 | 4 | 5 | 6:DATA:BLER[:VALue] <val>

[:SOURCE]:RADIo:WCDMA:TGPP[:BBG]:ULINK[:TGRoup[1]]:DCH[1] | 2 | 3 | 4 | 5 | 6:DATA:BLER[:VALue]?

This command specifies the block error rate (BLER) value to be inserted into the selected uplink dedicated channel (DCH).

The variable <val> is expressed in decimal form as a percent ratio (1.0=100%).

***RST** +0.00000000E+000**Range** 0.0–1.00**Field Entry** BLER**Remarks** If the parameter set by this command is changed while the signal is active, the apply command must be executed for the change to occur. Refer to [“:ULINK:APPLY” on page 1072](#).

:ULINK[:TGRoup[1]]:DCH[1] | 2 | 3 | 4 | 5 | 6:DATA:EINSert**Supported** E4438C with Option 400[:SOURCE]:RADio:WCDMa:TGPP[:BBG]:ULINK[:TGRoup[1]]:DCH[1] | 2 | 3 | 4 | 5 | 6:
DATA:EINSert BLER|BER|NONE[:SOURCE]:RADio:WCDMa:TGPP[:BBG]:ULINK[:TGRoup[1]]:DCH[1] | 2 | 3 | 4 | 5 | 6:
DATA:EINSert?

This command selects the error insertion mode.

BLER This choice selects a block error rate (BLER) mode.**BER** This choice selects a bit error rate (BER) mode.**NONE** This choice selects no BLER or BER mode (no error blocks or bits inserted).***RST** NONE**Key Entry** **BLER** **BER** **None****:ULINK[:TGRoup[1]]:DCH[1] | 2 | 3 | 4 | 5 | 6:DATA:FIX4****Supported** E4438C with Option 400[:SOURCE]:RADio:WCDMa:TGPP[:BBG]:ULINK[:TGRoup[1]]:DCH[1] | 2 | 3 | 4 | 5 | 6:
DATA:FIX4 <val>[:SOURCE]:RADio:WCDMa:TGPP[:BBG]:ULINK[:TGRoup[1]]:DCH[1] | 2 | 3 | 4 | 5 | 6:
DATA:FIX4?

This command sets the 4 bit data pattern for the selected uplink dedicated channel (DCH).

While the variable <val> can be entered in binary, hexadecimal, or decimal formats, the query returns only binary values.

***RST** #B0000**Range** 0–15**Key Entry** **FIX4**

Wideband CDMA Base Band Generator Subsystem–Option 400 ([:SOURCE]:RADio:WCDMa:TGPP[:BBG])

:ULINK[:TGRoup[1]]:DCH[1] | 2 | 3 | 4 | 5 | 6:NBLock**Supported** E4438C with Option 400[:SOURCE]:RADio:WCDMa:TGPP[:BBG]:ULINK[:TGRoup[1]]:DCH[1] | 2 | 3 | 4 | 5 | 6 :
NBLock <val>[:SOURCE]:RADio:WCDMa:TGPP[:BBG]:ULINK[:TGRoup[1]]:DCH[1] | 2 | 3 | 4 | 5 | 6 :
NBLock?

This command specifies the number of transport blocks coded on to the selected dedicated channel (DCH).

RST** +1**Range** 0–4095**Field Entry** Num of Blk**:ULINK[:TGRoup [1]]:DCH[1] | 2 | 3 | 4 | 5 | 6:PPERcentage*Supported** E4438C with Option 400[:SOURCE]:RADio:WCDMa:TGPP[:BBG]:ULINK[:TGRoup[1]]:DCH[1] | 2 | 3 | 4 | 5 | 6 :
PPERcentage?

This query returns the percentage of the total bits removed from or added to the fully coded channel.

The value is returned in the unit of percent and a negative value means repetition.

Field Entry Puncture**:ULINK[:TGRoup[1]]:DCH[1] | 2 | 3 | 4 | 5 | 6:RMATch****Supported** E4438C with Option 400[:SOURCE]:RADio:WCDMa:TGPP[:BBG]:ULINK[:TGRoup[1]]:DCH[1] | 2 | 3 | 4 | 5 | 6 :
RMATch <val>[:SOURCE]:RADio:WCDMa:TGPP[:BBG]:ULINK[:TGRoup[1]]:DCH[1] | 2 | 3 | 4 | 5 | 6 :
RMATch?

This command specifies the rate matching parameters of each dedicated channel (DCH) selected.

***RST** DCH1: 2 DCH2: 12 DCH3,4,5,6: 1**Range** 1–256**Field Entry** Rate Match Attr

:ULINK[:TGRoup[1]]:DCH[1]|2|3|4|5|6:TTI**Supported** E4438C with Option 400[:SOURCE]:RADio:WCDMa:TGPP[:BBG]:ULINK[:TGRoup[1]]:DCH[1]|2|3|4|5|6:
TTI 10000|20000|40000|80000

[:SOURCE]:RADio:WCDMa:TGPP[:BBG]:ULINK[:TGRoup[1]]:DCH[1]|2|3|4|5|6:TTI?

This command sets the transmission time interval (TTI) period for the dedicated channel (DCH) selected. TTI is the time interval of the amount of data to be transmitted.

The choices are expressed in units of milliseconds (msec) where 20000 = 20 msec.

RST** DCH1: 20000 DCH2: 40000 DCH3,4,5,6: 10000**Field Entry** TTI**Remarks** The data amount equals the block size (BLKsize) times the number of transport blocks (NBlock).**:ULINK[:TGRoup[1]]:DCH[1]|2|3|4|5|6[:STATe]*Supported** E4438C with Option 400[:SOURCE]:RADio:WCDMa:TGPP[:BBG]:ULINK[:TGRoup[1]]:DCH[1]|
2|3|4|5|6[:STATe] ON|OFF|1|0[:SOURCE]:RADio:WCDMa:TGPP[:BBG]:ULINK[:TGRoup[1]]:DCH[1]|
2|3|4|5|6[:STATe]?

This command enables or disables the operating state of the dedicated channel (DCH) selected.

RST** DCH1,2: 1 DCH3,4,5,6: 0**Key Entry** TrCH State Off On**:ULINK[:TGRoup[1]]:RACH[1]:BLKSize*Supported** E4438C with Option 400[:SOURCE]:RADio:WCDMa:TGPP[:BBG]:ULINK[:TGRoup[1]]:RACH[1]:BLKSize <val>
[:SOURCE]:RADio:WCDMa:TGPP[:BBG]:ULINK[:TGRoup[1]]:RACH[1]:BLKSize?

This command sets the transport block size for the random access channel (RACH) coding where the input data is carried.

***RST** +168**Range** 0–5000**Field Entry** Blk Size

Wideband CDMA Base Band Generator Subsystem–Option 400 ([:SOURCE]:RADio:WCDMa:TGPP[:BBG])

Remarks If the parameter set by this command is changed while the signal is active, the apply command must be executed for the change to occur. Refer to “:ULINK:APPLY” on page 1072.

:ULINK[:TGRoup [1]]:RACH[1]:BPFRame

Supported E4438C with Option 400

[:SOURCE] : RADio : WCDMa : TGPP [: BBG] : ULINK [: TGRoup [1]] : RACH [1] : BPFRame?

This query returns the bits per frame for the selected random access channel (RACH).

***RST** +600

:ULINK[:TGRoup [1]]:RACH[1]:BRATe

Supported E4438C with Option 400

[:SOURCE] : RADio : WCDMa : TGPP [: BBG] : ULINK [: TGRoup [1]] : RACH [1] : BRATe?

This query returns the bit rate for the random access transport channel (RACH).

***RST** +8400

:ULINK[:TGRoup[1]]:RACH[1]:CODE

Supported E4438C with Option 400

[:SOURCE] : RADio : WCDMa : TGPP [: BBG] : ULINK [: TGRoup [1]] : RACH [1] : CODE?

This query returns the type of channel coding for error protection.

***RST** HCON

:ULINK[:TGRoup[1]]:RACH[1]:CRC

Supported E4438C with Option 400

[:SOURCE] : RADio : WCDMa : TGPP [: BBG] : ULINK [: TGRoup [1]] : RACH [1] :
CRC 0 | 8 | 12 | 16 | 24

[:SOURCE] : RADio : WCDMa : TGPP [: BBG] : ULINK [: TGRoup [1]] : RACH [1] : CRC?

This command specifies the number of cyclic redundancy code (CRC) bits that are to be added to each transport channel block.

***RST** +16

Field Entry CRC Size

Wideband CDMA Base Band Generator Subsystem–Option 400 ([:SOURCE]:RADio:WCDMa:TGPP[:BBG])

Remarks If the parameter set by this command is changed while the signal is active, the apply command must be executed for the change to occur. Refer to “:ULINK:APPLY” on page 1072.

:ULINK[:TGRoup[1]]:RACH[1]:DATA

Supported E4438C with Option 400

```
[ :SOURCE ] : RADio : WCDMa : TGPP [ : BBG ] : ULINK [ : TGRoup [ 1 ] ] : RACH [ 1 ] : DATA PN9 |
FIX4 | "<file name>"
[ :SOURCE ] : RADio : WCDMa : TGPP [ : BBG ] : ULINK [ : TGRoup [ 1 ] ] : RACH [ 1 ] : DATA?
```

This command sets the type of data to be inserted into the random access channel (RACH).

"<file name>" This variable specifies a data pattern that has been stored in memory.

***RST** PN9

Key Entry PN9 FIX4 User File

Remarks If the parameter set by this command is changed while the signal is active, the apply command must be executed for the change to occur. Refer to “:ULINK:APPLY” on page 1072.

:ULINK[:TGRoup[1]]:RACH[1]:DATA:BER:ACTual

Supported E4438C with Option 400

```
[ :SOURCE ] : RADio : WCDMa : TGPP [ : BBG ] : ULINK [ : TGRoup [ 1 ] ] : RACH [ 1 ] : DATA : BER :
ACTual?
```

This query returns the actual error ratio inserted.

***RST** +0

Range 0–5000

Key Entry Actual BER

Remarks The specified error ratio and actual ratio will not match when the internal bit generation goes into “pre-computing” mode.

:ULINK[:TGRoup[1]]:RACH[1]:DATA:BER:ERRor:BIT

Supported E4438C with Option 400

```
[ :SOURCE ] : RADio : WCDMa : TGPP [ : BBG ] : ULINK [ : TGRoup [ 1 ] ] : RACH [ 1 ] : DATA : BER :
ERRor : BIT?
```

Wideband CDMA Base Band Generator Subsystem–Option 400 ([:SOURCE]:RADIO:WCDMA:TGPP[:BBG])

This query returns the actual error bits inserted for the total number of bits.

***RST** 0

:ULINK[:TGRoup[1]]:RACH[1]:DATA:BER:TOTAL:BIT

Supported E4438C with Option 400

[:SOURCE] : RADIO : WCDMA : TGPP [: BBG] : ULINK [: TGRoup [1]] : RACH [1] : DATA : BER : TOTAL : BIT ?

This query returns the total number of bits inserted for the bit error ratio calculation.

***RST** 0

Remarks The specified error ratio and actual ratio will not match when the internal bit generation goes into “pre-computing” mode.

:ULINK[:TGRoup[1]]:RACH[1]:DATA:BER[:VALUE]

Supported E4438C with Option 400

[:SOURCE] : RADIO : WCDMA : TGPP [: BBG] : ULINK [: TGRoup [1]] : RACH [1] : DATA : BER [: VALUE] <val>

[:SOURCE] : RADIO : WCDMA : TGPP [: BBG] : ULINK [: TGRoup [1]] : RACH [1] : DATA : BER [: VALUE] ?

This command sets the bit error rate value for the random access channel (RACH).

***RST** +0.00000000E+000

Range 0.0000–1.0

Field Entry BER

Remarks If the parameter set by this command is changed while the signal is active, the apply command must be executed for the change to occur. Refer to “:ULINK:APPLY” on page 1072.

:ULINK[:TGRoup[1]]:RACH[1]:DATA:BLER:ACTUAL

Supported E4438C with Option 400

[:SOURCE] : RADIO : WCDMA : TGPP [: BBG] : ULINK [: TGRoup [1]] : RACH [1] : DATA : BLER : ACTUAL ?

This query returns the actual error ratio inserted.

***RST** 0.00000000E+000

Wideband CDMA Base Band Generator Subsystem–Option 400 ([:SOURCE]:RADio:WCDMa:TGPP[:BBG])

Remarks The specified error ratio and actual error ratio will not match when the internal bit generation goes into “pre-computing” mode.

:ULINK[:TGRoup[1]]:RACH[1]:DATA:BLER:ERROR:BLOCK

Supported E4438C with Option 400

```
[ :SOURCE ] : RADio : WCDMa : TGPP [ : BBG ] : ULINK [ : TGRoup [ 1 ] ] : RACH [ 1 ] : DATA :
BLER : ERROR : BLOCK ?
```

This query returns the actual block errors inserted in the total number of blocks.

***RST** +0

Remarks The specified error ratio and actual error ratio will not match when the internal bit generation goes into “pre-computing” mode.

:ULINK[:TGRoup[1]]:RACH[1]:DATA:BLER:TOTAL:BLOCK

Supported E4438C with Option 400

```
[ :SOURCE ] : RADio : WCDMa : TGPP [ : BBG ] : ULINK [ : TGRoup [ 1 ] ] : RACH [ 1 ] : DATA :
BLER : TOTAL : BLOCK ?
```

This query returns the total blocks inserted for the block error ratio calculation.

***RST** +0

Remarks The specified error ratio and actual error ratio will not match when the internal bit generation goes into “pre-computing” mode.

:ULINK[:TGRoup[1]]:RACH[1]:DATA:BLER[:VALue]

Supported E4438C with Option 400

```
[ :SOURCE ] : RADio : WCDMa : TGPP [ : BBG ] : ULINK [ : TGRoup [ 1 ] ] : RACH [ 1 ] : DATA :
BLER [ : VALue ] <val>
[ :SOURCE ] : RADio : WCDMa : TGPP [ : BBG ] : ULINK [ : TGRoup [ 1 ] ] : RACH [ 1 ] : DATA :
BLER [ : VALue ] ?
```

This command sets the inserted block error rate value. The variable <val> is expressed in decimal form, but it is a percent ratio (1.0=100%).

***RST** 0

Range 0.0001–1.0

Field Entry BLER

Wideband CDMA Base Band Generator Subsystem–Option 400 ([:SOURCE]:RADIO:WCDMA:TGPP[:BBG])

Remarks If the parameter set by this command is changed while the signal is active, the apply command must be executed for the change to occur. Refer to “:ULINK:APPLY” on page 1072.

:ULINK[:TGRoup[1]]:RACH[1]:DATA:EINSErt

Supported E4438C with Option 400

```
[ :SOURCE ] : RADIo : WCDMA : TGPP [ : BBG ] : ULINK [ : TGRoup [ 1 ] ] : RACH [ 1 ] : DATA :
EINSErt BLER | BER | NONE
[ :SOURCE ] : RADIo : WCDMA : TGPP [ : BBG ] : ULINK [ : TGRoup [ 1 ] ] : RACH [ 1 ] : DATA : EINSErt ?
```

This command selects an error mode or no error insertion.

BLER This choice selects block error rate (BLER) mode.

BER This choice selects a bit error rate (BER) mode.

NONE This choice selects no BLER or BER mode (no error blocks or bits inserted).

***RST** NONE

Key Entry **BLER** **BER** **None**

Remarks If the parameter set by this command is changed while the signal is active, the apply command must be executed for the change to occur. Refer to “:ULINK:APPLY” on page 1072.

:ULINK[:TGRoup[1]]:RACH[1]:DATA:FIX4

Supported E4438C with Option 400

```
[ :SOURCE ] : RADIo : WCDMA : TGPP [ : BBG ] : ULINK [ : TGRoup [ 1 ] ] : RACH [ 1 ] : DATA :
FIX4 <val>
[ :SOURCE ] : RADIo : WCDMA : TGPP [ : BBG ] : ULINK [ : TGRoup [ 1 ] ] : RACH [ 1 ] : DATA : FIX4 ?
```

This command sets a fixed 4 bit pattern for use as a data pattern.

While the variable <val> can be entered in binary, hexadecimal, or decimal formats, the query returns only binary values.

***RST** #B0000

Range 0–15

Field Entry Data

Remarks If the parameter set by this command is changed while the signal is active, the apply command must be executed for the change to occur. Refer to “:ULINK:APPLY” on page 1072.

:ULINK[:TGRoup[1]]:RACH[1]:NBLOCK**Supported** E4438C with Option 400

[:SOURCE]:RADio:WCDMa:TGPP[:BBG]:ULINK[:TGRoup[1]]:RACH[1]:NBLOCK <val>

[:SOURCE]:RADio:WCDMa:TGPP[:BBG]:ULINK[:TGRoup[1]]:RACH[1]:NBLOCK?

This command sets the number of transport blocks coded into one random access channel (RACH).

***RST** +1**Range** 0–4095**Field Entry** Num of Blk**Remarks** The total input data into one RACH is the block size (BLKsize) multiplied by the number of transport blocks (NBLOCK).

If the parameter set by this command is changed while the signal is active, the apply command must be executed for the change to occur. Refer to [“:ULINK:APPLY” on page 1072](#)

:ULINK[:TGRoup [1]]:RACH[1]:PPERcentage**Supported** E4438C with Option 400

[:SOURCE]:RADio:WCDMa:TGPP[:BBG]:ULINK[:TGRoup[1]]:RACH[1]:PPERcentage?

This query returns the percentage of the total bits removed from or added to the fully coded channel.

RST** –2.12500000E+002**Field Entry** Puncture**:ULINK[:TGRoup[1]]:RACH[1]:RMArch*Supported** E4438C with Option 400

[:SOURCE]:RADio:WCDMa:TGPP[:BBG]:ULINK:RACH[1]:RMArch?

This query returns the rate match parameters of each random access channel (RACH).

***RST** +1

Wideband CDMA Base Band Generator Subsystem—Option 400 ([:SOURCE]:RADIO:WCDMA:TGPP[:BBG])

:ULINK[:TGRoup[1]]:RACH[1]:TTI**Supported** E4438C with Option 400[:SOURCE]:RADIO:WCDMA:TGPP[:BBG]:ULINK[:TGRoup[1]]:RACH[1]:
TTI 10000|20000

[:SOURCE]:RADIO:WCDMA:TGPP[:BBG]:ULINK[:TGRoup[1]]:RACH[1]:TTI?

This command sets the transmission time interval (TTI) period for the random access channel (RACH).

The choices are expressed in units of milliseconds (msec) where 20000=20 msec.

***RST** 20000**Field Entry** TTI

Remarks If the parameter set by this command is changed while the signal is active, the apply command must be executed for the change to occur. Refer to “:ULINK:APPLY” on page 1072.

:ULINK[:TGRoup[1]]:RACH[1][:STATe]**Supported** E4438C with Option 400

[:SOURCE]:RADIO:WCDMA:TGPP[:BBG]:ULINK[:TGRoup[1]]:RACH[1][:STATe]?

This query returns the state of the random access channel (RACH).

RST** 1**[:STATe]*Supported** E4438C with Option 400

[:SOURCE]:RADIO:WCDMA:TGPP[:BBG][:STATe] ON|OFF|1|0

[:SOURCE]:RADIO:WCDMA:TGPP[:BBG][:STATe]?

This command enables or disables W-CDMA functionality.

***RST** 0**Key Entry** W-CDMA Off On

Symbols

of Blocks field, [1068](#)
 # of Carriers softkey, [283](#), [285](#)
 # Points softkey, [57](#)
 # Skipped Points softkey, [302](#)
 ΦM Dev, [197](#)
 ΦM Dev Couple Off On, [197](#)
 FM ΦM Normal High BW, [192](#)
 ΦM Off On, [196](#)
 ΦM Path 1 2, [191](#)
 ΦM Stop Rate, [194](#)
 ΦM Sweep Time, [195](#)
 ΦM Tone 2 Ampl Percent of Peak, [194](#)

Numerics

0.7V,1.4V,1.65V,2.5V softkey, [421](#)
 1 DPCH softkey, [348](#), [353](#)
 1.23 MHz softkey, [263](#)
 1.25 MHz softkey, [263](#)
 1/2 Conv softkey, [1065](#), [1067](#), [1159](#)
 1/3 Conv softkey, [1065](#), [1067](#), [1159](#)
 10 msec softkey, [1093](#)
 1048576 softkey, [212](#)
 10ms Frame Pulse (DRPS11) softkey, [1047](#), [1049](#),
[1050](#), [1051](#), [1052](#)
 10ms Frame Pulse (RPS6) softkey
See wideband CDMA base band generator
 subsystem keys and fields
 12.2 kbps (34.121) softkey, [1030](#)
 128QAM softkey
See custom subsystem keys
See DECT subsystem keys
See Dmodulation subsystem keys
See EDGE subsystem keys
See GSM subsystem keys
See NADC subsystem keys
See PDC subsystem keys
See PHS subsystem keys
See TETRA subsystem keys
 131072 softkey, [212](#)
 144 kbps (34.121) softkey, [1030](#)
 16 1's & 16 0's softkey
See custom subsystem keys
See DECT subsystem keys

16 1's & 16 0's softkey (continued)
See EDGE subsystem keys
See GSM subsystem keys
See NADC subsystem keys
See PDC subsystem keys
See PHS subsystem keys
See TETRA subsystem keys
 16384 softkey, [212](#)
 16-Lvl FSK softkey
See DECT subsystem keys
See PHS subsystem keys
 16PSK softkey
See custom subsystem keys
See DECT subsystem keys
See Dmodulation subsystem keys
See EDGE subsystem keys
See GSM subsystem keys
See NADC subsystem keys
See PDC subsystem keys
See PHS subsystem keys
See TETRA subsystem keys
 16QAM softkey
See custom subsystem keys
See DECT subsystem keys
See Dmodulation subsystem keys
See EDGE subsystem keys
See GSM subsystem keys
See NADC subsystem keys
See PDC subsystem keys
See PHS subsystem keys
See TETRA subsystem keys
 2 Carriers softkey, [349](#)
 2 SR3 Carriers softkey, [248](#)
 2.100 MHz softkey, [32](#), [208](#), [222](#), [246](#), [275](#), [299](#),
[329](#), [346](#), [473](#)
 20 msec softkey, [1093](#)
 2560 msec softkey, [1093](#)
 256QAM softkey
See custom subsystem keys
See DECT subsystem keys
See Dmodulation subsystem keys
See EDGE subsystem keys
See GSM subsystem keys
See NADC subsystem keys
See PDC subsystem keys

Index

256QAM softkey (continued)

See PHS subsystem keys

See TETRA subsystem keys

262144 softkey, [212](#)

2-Lvl FSK softkey

See custom subsystem keys

See DECT subsystem keys

See Dmodulation subsystem keys

See EDGE subsystem keys

See GSM subsystem keys

See NADC subsystem keys

See PDC subsystem keys

See PHS subsystem keys

See TETRA subsystem keys

2nd Scr Offset field, [1031](#), [1038](#)

3 Carriers softkey, [230](#), [248](#), [349](#)

3 DPCH softkey, [348](#), [353](#)

3.84MHz chip-clk (DRPS4) softkey, [1047](#), [1049](#),
[1050](#), [1051](#), [1052](#)

32 1's & 32 0's softkey

See custom subsystem keys

See DECT subsystem keys

See EDGE subsystem keys

See GSM subsystem keys

See NADC subsystem keys

See PDC subsystem keys

See PHS subsystem keys

See TETRA subsystem keys

32 Ch Fwd softkey, [228](#), [231](#)

32768 softkey, [212](#)

32QAM softkey

See custom subsystem keys

See DECT subsystem keys

See Dmodulation subsystem keys

See EDGE subsystem keys

See GSM subsystem keys

See NADC subsystem keys

See PDC subsystem keys

See PHS subsystem keys

See TETRA subsystem keys

384 kbps (34.121) softkey, [1030](#)

3GPP W-CDMA HSPA SCPI commands, [668](#)

4 1's & 4 0's softkey

See custom subsystem keys

See DECT subsystem keys

4 1's & 4 0's softkey (continued)

See EDGE subsystem keys

See GSM subsystem keys

See NADC subsystem keys

See PDC subsystem keys

See PHS subsystem keys

See TETRA subsystem keys

4 Carriers softkey, [230](#), [248](#), [349](#)

40 msec softkey, [1093](#)

40.000 MHz softkey, [32](#), [205](#), [208](#), [217](#), [222](#), [241](#),
[246](#), [270](#), [275](#), [298](#), [299](#), [327](#), [329](#), [344](#), [346](#),
[466](#), [473](#)

4-Lvl FSK softkey

See custom subsystem keys

See DECT subsystem keys

See Dmodulation subsystem keys

See EDGE subsystem keys

See GSM subsystem keys

See NADC subsystem keys

See PDC subsystem keys

See PHS subsystem keys

See TETRA subsystem keys

4QAM softkey

See custom subsystem keys

See DECT subsystem keys

See Dmodulation subsystem keys

See EDGE subsystem keys

See GSM subsystem keys

See NADC subsystem keys

See PDC subsystem keys

See PHS subsystem keys

See TETRA subsystem keys

5 Channel softkey, [254](#)

524288 softkeys, [212](#)

64 1's & 64 0's softkey

See custom subsystem keys

See DECT subsystem keys

See EDGE subsystem keys

See GSM subsystem keys

See NADC subsystem keys

See PDC subsystem keys

See PHS subsystem keys

See TETRA subsystem keys

64 Ch Fwd softkey, [228](#), [231](#)

64 kbps (34.121) softkey, [1030](#)

- 64QAM softkey
See custom subsystem keys
See DECT subsystem keys
See Dmodulation subsystem keys
See EDGE subsystem keys
See GSM subsystem keys
See NADC subsystem keys
See PDC subsystem keys
See PHS subsystem keys
See TETRA subsystem keys
- 65536 softkey, [212](#)
- 8 1's & 8 0's softkey
See custom subsystem keys
See DECT subsystem keys
See EDGE subsystem keys
See GSM subsystem keys
See NADC subsystem keys
See PDC subsystem keys
See PHS subsystem keys
See TETRA subsystem keys
- 8 Bit Pattern softkey, [465](#)
- 8 Channel softkey, [254](#)
- 80 msec softkey, [1093](#)
- 80ms Frame Pulse (DRPS13) softkey, [1047](#), [1049](#),
[1050](#), [1051](#), [1052](#)
- 80ms Frame Pulse (RPS20) softkey
See wideband CDMA base band generator
subsystem keys and fields
- 8648A/B/C/D softkey, [156](#), [158](#)
- 8656B,8657A/B softkey, [156](#), [158](#)
- 8657D NADC softkey, [156](#), [158](#)
- 8657D PDC softkey, [156](#), [158](#)
- 8657J PHS softkey, [156](#), [158](#)
- 8-Lvl FSK softkey
See DECT subsystem keys
See PHS subsystem keys
- 8PSK softkey
See custom subsystem keys
See DECT subsystem keys
See Dmodulation subsystem keys
See EDGE subsystem keys
See GSM subsystem keys
See NADC subsystem keys
See PDC subsystem keys
See PHS subsystem keys
- 8PSK softkey (continued)
See TETRA subsystem keys
- 9 Ch Fwd softkey, [228](#), [231](#)
- 9 Channel softkey, [247](#)
- ## A
- A field softkey
See DECT subsystem keys
- A softkey, [1022](#)
- abort list/step sweep, [166](#)
- Access denied, [116](#)
- Access softkey, [799](#)
- ACS softkey, [1061](#)
- Activate Secure Display softkey, [160](#)
- Active softkey, [1058](#)
- Actual BER softkey, [1168](#)
- Actual BLER field, [1162](#), [1169](#)
- Add Comment To Seq[n] Reg[nn] softkey, [123](#)
- Adjust Gain softkey, [437](#)
- Adjust Phase softkey, [47](#)
- AICH softkey, [1127](#)
- AICH Trigger Polarity Pos Neg softkey, [1102](#)
- ALC
BW
100 Hz, 1 kHz, 10 kHz, [58](#)
Auto, [58](#), [59](#)
Off,On, [58](#), [59](#)
- ALC BW Normal Narrow, [22](#)
- ALC BW Setting
Auto, [58](#), [59](#)
- alc hold markers
awgn subsystem, [209](#)
cdma subsystem, [223](#)
cdma2000 arb subsystem, [257](#)
dmodulation subsystem, [276](#)
dual arb subsystem, [305](#)
multitone subsystem, [330](#), [331](#)
wideband CDMA ARB subsystem, [367](#)
wideband CDMA ARBsubsystem, [367](#)
- ALC level, [60](#)
- ALC Off On softkey, [62](#)
- All Down softkey, [1033](#), [1083](#)
- All softkey, [104](#), [122](#)
- All Timeslots softkey
See DECT subsystem keys

Index

All Timeslots softkey (continued)

See EDGE subsystem keys

See GSM subsystem keys

See NADC subsystem keys

See PDC subsystem keys

See PHS subsystem keys

See TETRA subsystem keys

All Up softkey, [1033](#), [1083](#)

Alt Amp Delta softkey, [63](#)

Alt Ampl Off On softkey, [64](#)

Alt power in field, [1140](#)

alternate amplitude markers

awgn arb subsystem, [209](#)

cdma subsystem, [222](#)

cdma2000 arb subsystem, [257](#)

dmodulation subsystem, [276](#)

dual arb subsystem, [305](#)

multitone arb subsystem, [329](#)

multitone subsystem, [329](#)

wideband CDMA ARB subsystem, [367](#)

AM softkeys

AM Depth, [177](#)

AM Depth Couple Off On, [178](#)

AM Off On, [177](#)

AM Off On softkey, [173](#)

AM Path 1 2, [172](#)

AM Stop Rate, [174](#)

AM Sweep Rate, [175](#)

AM Tone 2 Ampl Percent Of Peak, [175](#)

AM Tone 2 Rate, [174](#)

AM wideband, [173](#)

AM_ADDR softkey, [464](#)

Ampl softkeys

Ampl, [49](#), [66](#)

Ampl Offset, [68](#)

Ampl Ref Off On, [67](#)

Ampl Ref Set, [66](#)

Ampl Start, [49](#), [67](#)

Ampl Stop, [49](#), [68](#)

Amplitude hardkey, [66](#), [69](#)

amplitude modulation subsystem keys

AM Depth, [177](#)

AM Depth Couple Off On, [178](#)

AM Off On, [173](#), [177](#)

AM Path 1 2, [172](#)

amplitude modulation subsystem keys (*continued*)

AM Stop Rate, [174](#)

AM Sweep Rate, [175](#)

AM Tone 2 Ampl Percent Of Peak, [175](#)

AM Tone 2 Rate, [174](#)

Bus, [176](#)

Dual-Sine, [175](#)

Ext, [176](#)

Ext Coupling DC AC, [173](#)

Ext1, [176](#)

Ext2, [176](#)

Free Run softkey, [176](#)

Incr Set, [172](#), [178](#)

Internal, [176](#)

Noise, [175](#)

Ramp, [175](#)

Sine, [175](#)

Square, [175](#)

Swept-Sine, [175](#)

Triangle, [175](#)

Trigger Key, [176](#)

amplitude step, [69](#)

AMR 12.2 kbps softkey, [1030](#), [1134](#)

APCO 25 C4FM softkey

See CDMA ARB subsystem keys

See CDMA2000 ARB subsystem keys

See CDMA2000 BBG subsystem keys and fields

See custom subsystem keys

See DECT subsystem keys

See Dmodulation subsystem keys

See EDGE subsystem keys

See GPS subsystem keys

See GSM subsystem keys

See NADC subsystem keys

See PDC subsystem keys

See PHS subsystem keys

See TETRA subsystem keys

See wideband CDMA ARB subsystem keys

See wideband CDMA base band generator
subsystem keys and fields

APCO 25 w/C4FM softkey, [282](#), [283](#), [284](#)

APCO 25 w/C4QPSK softkey, [282](#), [283](#), [284](#)

APCO 25 w/CQPSK softkey, [567](#)

Apply Channel Setup softkey, [251](#), [255](#), [356](#), [364](#),
[1018](#), [1072](#)

- Apply to Waveform softkey, [300](#), [302](#)
- Arb AWGN Off On softkey, [214](#)
- ARB Off On softkey, [324](#)
- ARB Reference Ext Int softkey
 - See AWGN subsystem keys
 - See bluetooth subsystem keys
 - See CDMA ARB subsystem keys
 - See CDMA2000 ARB subsystem keys
 - See Dmodulation subsystem keys
 - See dual ARB subsystem keys
 - See multitone subsystem keys
 - See wideband CDMA ARB subsystem keys
- ARB Sample Clock softkey, [213](#), [228](#), [262](#), [282](#),
[313](#), [335](#), [372](#), [478](#)
- arbitrary waveform
 - runtime scaling, [312](#), [335](#)
 - scaling files, [312](#)
- Atten Hold Off On softkey, [65](#)
- Auto softkey, [58](#), [59](#)
- automatic leveling control, [62](#)
- Aux I/O Trigger Polarity Pos Neg softkey, [460](#)
- Aux softkey
 - See sense subsystem keys
- Auxiliary Software Options softkey, [82](#)
- AWGN Off On softkey, [468](#)
- AWGN subsystem keys
 - 1048576, [212](#)
 - 131072, [212](#)
 - 16384, [212](#)
 - 2.100 MHz, [208](#)
 - 262144, [212](#)
 - 32768, [212](#)
 - 40.000 MHz, [205](#), [208](#)
 - 524288, [212](#)
 - 65536, [212](#)
 - Arb AWGN Off On, [214](#)
 - ARB Reference Ext Int, [213](#)
 - ARB Sample Clock, [213](#)
 - Bandwidth, [205](#)
 - Clear Header, [206](#)
 - I/Q Mod Filter Manual Auto, [208](#)
 - I/Q Output Filter Manual Auto, [206](#)
 - Marker 1, [209](#), [210](#)
 - Marker 1 Polarity Neg Pos, [212](#)
 - Marker 2, [209](#), [210](#)
- AWGN subsystem keys (*continued*)
 - Marker 2 Polarity Neg Pos, [212](#)
 - Marker 3, [209](#), [210](#)
 - Marker 3 Polarity Neg Pos, [212](#)
 - Marker 4, [209](#), [210](#)
 - Marker 4 Polarity Neg Pos, [212](#)
 - Modulator Atten Manual Auto, [207](#)
 - Noise Seed Fixed Random, [214](#)
 - None, [209](#), [210](#)
 - Reference Freq, [212](#)
 - Save Setup To Header, [206](#)
 - Through, [205](#), [208](#)
 - Waveform Length, [212](#)
- B**
- B softkey, [996](#), [1001](#), [1022](#)
- B1 softkey, [994](#), [999](#)
- B2 softkey, [994](#), [999](#)
- Bandwidth softkey, [205](#), [463](#)
- Base Delay Tp-a softkey, [1124](#)
- BBG Chip Clock Ext Int softkey
 - See wideband CDMA base band generator subsystem keys and fields
- BBG Data Clock Ext Int softkey
 - See custom subsystem keys
 - See DECT subsystem keys
 - See GSM subsystem keys
 - See NADC subsystem keys
 - See PHS subsystem keys
 - See TETRA subsystem keys
- BBG Data Clock field, [480](#)
- BBG Ref Ext Int softkey
 - See custom subsystem keys
 - See DECT subsystem keys
 - See EDGE subsystem keys
 - See GSM subsystem keys
 - See NADC subsystem keys
 - See PDC subsystem keys
 - See PHS subsystem keys
 - See TETRA subsystem keys
- BBG1 softkey, [24](#), [35](#)
- BD_ADDR softkey, [464](#)
- Begin Data Format Pattern Framed softkey
 - See DECT subsystem keys
 - See EDGE subsystem keys

Index

Begin Data Format Pattern Framed softkey

(continued)

See GSM subsystem keys

See NADC subsystem keys

See PDC subsystem keys

See PHS subsystem keys

See TETRA subsystem keys

Begin Frame softkey

See DECT subsystem keys

See EDGE subsystem keys

See GSM subsystem keys

See NADC subsystem keys

See PDC subsystem keys

See PHS subsystem keys

See TETRA subsystem keys

Begin Timeslot # softkey

See DECT subsystem keys

See EDGE subsystem keys

See GSM subsystem keys

See NADC subsystem keys

See PDC subsystem keys

See PHS subsystem keys

See TETRA subsystem keys

BER Display % Exp softkey, 407

BER field, 1162, 1169

BER Mode Off On softkey

See sense subsystem keys

BER softkey, 1164, 1171

BERT Off On softkey, 457

BERT Resync Off On softkey, 457

Beta field, 1076, 1086

Binary softkey, 94, 124

binary values, 18

Bit Count softkey

See sense subsystem keys

Bit Delay Off On softkey, 459

Bit Order softkey, 384

Bit Rate field

See CDMA2000 BBG subsystem keys and fields

Bit softkey, 94

BLER field, 1163, 1170

BLER softkey, 1164, 1171

Blk Set Size field, 1064

Blk Size field, 1063, 1158, 1166

Block Count softkey

See calculate subsystem keys

See sense subsystem keys

Block Erasure softkey

See sense subsystem keys

Blocking softkey, 1061

Bluetooth Off On softkey, 478

Bluetooth softkey, 567

bluetooth subsystem keys

2.100 MHz, 473

40.000 MHz, 466, 473

8 Bit Pattern, 465

AM_ADDR, 464

ARB Reference Ext Int, 477

ARB Sample Clock, 478

AWGN Off On, 468

BD_ADDR, 464

Bluetooth Off On, 478

Burst Off On, 464

Burst Power Ramp, 478

C/N[1 MHz], 468

Clear Header, 467

Clock/Gate Delay, 465

Continuous PN9, 465

Drift Deviation, 469

Freq Drift Type Linear Sine, 470

Freq Offset, 470

I/Q Mod Filter Manual Auto, 474

I/Q Output Filter Manual Auto, 466

Impairments Off On, 467

Marker 1, 474, 475

Marker 1 Polarity Neg Pos, 475

Marker 2, 474, 475

Marker 2 Polarity Neg Pos, 476

Marker 3, 474, 475

Marker 3 Polarity Neg Pos, 476

Marker 4, 474, 475

Marker 4 Polarity Neg Pos, 476

Mod Index, 471

Modulator Atten Manual Auto, 472, 473

Noise Seed, 469

None, 474, 475

Packet (DH1), 476

Reference Freq, 477

Save Setup To Header, 467

bluetooth subsystem keys (*continued*)

Symbol Timing Err, 472

Through, 466, 473

Truncated PN9, 465

boolean SCPI parameters, 10

boolean, numeric response data, 11

BPSK softkey

See custom subsystem keys

See DECT subsystem keys

See Dmodulation subsystem keys

See EDGE subsystem keys

See GSM subsystem keys

See NADC subsystem keys

See PDC subsystem keys

See PHS subsystem keys

See TETRA subsystem keys

Brightness softkey, 86

Build New Waveform Sequence softkey, 313

burst

shape, 115

Burst Envelope Int Ext Off softkey, 22

Burst gate in field, 1141

Burst Gate In Polarity Neg Pos softkey, 130, 131

Burst Off On softkey, 464

Burst Power Ramp softkey, 478

Bus softkey

list trigger source, 54

See amplitude modulation subsystem keys

See CDMA ARB subsystem keys

See CDMA2000 ARB subsystem keys

See DECT subsystem keys

See Dmodulation subsystem keys

See dual ARB subsystem keys

See EDGE subsystem keys

See frequency modulation subsystem keys

See GSM subsystem keys

See low frequency output subsystem keys

See NADC subsystem keys

See PDC subsystem keys

See phase modulation subsystem keys

See PHS subsystem keys

See sense subsystem keys

See TETRA subsystem keys

See trigger subsystem keys

See wideband CDMA ARB subsystem keys

C

C Power field, 1073, 1103

C/N softkey, 505, 517

C/N value field, 1018, 1072, 1102

C/N[1 MHz] softkey, 468

C4FM softkey, 959

calculate subsystem keys

BER Display % Exp, 407

Block Count, 425

Class II RBER, 404, 405

Class 1b RBER, 404, 405

Cycle End, 405

Error Rate, 398, 399, 400, 401, 402, 403

Exceeds Any Limit, 405

Fail Hold, 405

Frame Erasure, 404, 405

No Limits, 399, 402, 403, 405

Pass/Fail Limits, 406

Pass/Fail Off On, 406

Update Display Cycle End Cont, 407

calibration subsystem keys

DCFM/DCΦM Cal, 72

Execute Cal, 72, 73

I/Q Calibration, 72

Revert to Default Cal Settings, 73

Start Frequency, 74

Stop Frequency, 74

Carrier Bandwidth softkey, 309

Carrier Phases Fixed Random softkey, 283

Carrier to Noise Ratio softkey, 309

CC softkey, 923, 927, 929

CDL softkey, 891

CDMA ARB subsystem keys

2.100 MHz, 222

3 Carriers, 230

32 Ch Fwd, 228, 231

4 Carriers, 230

40.000 MHz, 217, 222

64 Ch Fwd, 228, 231

9 Ch Fwd, 228, 231

APCO 25 C4FM, 218

ARB Reference Ext Int, 227

ARB Sample Clock, 228

Bus, 235

CDMA Off On, 239

Index

CDMA ARB subsystem keys (*continued*)

Chip Rate, [216](#)
Clear Header, [220](#)
Clip |I+jQ| To, [216](#)
Clip |I| To, [215](#)
Clip |Q| To, [215](#)
Clip At PRE POST FIR Filter, [215](#)
Clipping Type |I+jQ| |I|,|Q|, [216](#)
Continuous, [233](#), [263](#)
CPICH, [357](#)
Custom CDMA Multicarrier, [230](#)
Custom CDMA State, [228](#), [231](#)
Equal Powers, [229](#)
Ext, [235](#)
Ext Delay Off On, [237](#)
Ext Delay Time, [236](#)
Ext Polarity Neg Pos, [237](#)
Filter Alpha, [219](#)
Filter BbT, [219](#)
Free Run, [234](#)
Gate Active Low High, [235](#)
Gated, [233](#), [263](#)
Gaussian, [218](#)
I/Q Mapping Normal Invert, [221](#)
I/Q Mod Filter Manual Auto, [222](#)
I/Q Output Filter Manual Auto, [217](#)
Immediate, [227](#)
IS-2000 SR3 DS, [218](#)
IS-95, [218](#)
IS-95 Mod, [218](#)
IS-95 Mod w/EQ, [218](#)
IS-95 w/EQ, [218](#)
IS-97 Levels, [229](#)
Marker 1, [222](#), [223](#), [224](#)
Marker 1 Polarity Neg Pos, [226](#)
Marker 2, [222](#), [223](#), [224](#)
Marker 2 Polarity Neg Pos, [226](#)
Marker 3, [222](#), [223](#), [224](#)
Marker 3 Polarity Neg Pos, [226](#)
Marker 4, [222](#), [223](#), [224](#)
Marker 4 Polarity Neg Pos, [226](#)
Modulator Atten Manual Auto, [221](#)
Multicarrier Off On, [228](#)
None, [222](#), [223](#), [224](#)
Nyquist, [218](#)

CDMA ARB subsystem keys (*continued*)

Off, [227](#)
On, [227](#)
Optimize FIR For EVM ACP, [220](#)
Oversample Ratio, [226](#)
Paging, [229](#)
Patt Trig In 1, [238](#)
Patt Trig In 2, [238](#)
Pilot, [228](#), [229](#), [231](#)
Rectangle, [218](#)
Reference Freq, [226](#)
Reset & Run, [234](#)
Reverse, [228](#)
Root Nyquist, [218](#)
Save Setup To Header, [220](#)
Scale to 0dB, [229](#)
Single, [233](#), [263](#)
Store Custom CDMA State, [232](#)
Store Custom Multicarrier, [231](#)
Sync, [229](#)
Through, [217](#), [222](#)
Traffic, [229](#)
Trigger & Run, [234](#)
Trigger Key, [235](#)
UN3/4 GSM Gaussian, [218](#)
User FIR, [218](#)
Waveform Length, [238](#)
WCDMA, [218](#)
CDMA Freq field, [499](#)
CDMA Off On softkey, [239](#)
CDMA softkey, [95](#)
CDMA2000 ARB subsystem keys
1.23 MHz, [263](#)
1.25 MHz, [263](#)
2 SR3 Carriers, [248](#)
2.100 MHz, [246](#)
3 Carriers, [248](#)
4 Carriers, [248](#)
40.000 MHz, [241](#), [246](#)
5 Channel, [254](#)
8 Channel, [254](#)
9 Channel, [247](#)
APCO 25 C4FM, [242](#)
Apply Channel Setup, [251](#), [255](#)
ARB Reference Ext Int, [260](#)

CDMA2000 ARB subsystem keys (*continued*)

ARB Sample Clock, 262
Bus, 266
CDMA2000 Off On, 269
Clear Header, 245
Clip |I+jQ| To, 241
Clip |I| To, 240
Clip |Q| To, 240
Clip At PRE POST FIR Filter, 240
Clipping Type |I+jQ| |I|,|Q|, 241
Config, 252, 255
Continuous, 263
Custom CDMA2000 Carrier, 247, 249
Custom CDMA2000 Multicarrier, 248
Custom CDMA2000 State, 254
Edit Channel Setup, 252, 255
Equal Powers, 253, 256
Ext, 266
Ext Delay Off On, 268
Ext Delay Time, 267
Ext Polarity Neg Pos, 268
Filter Alpha, 243
Filter BbT, 244
Free Run, 265
Gate Active Low High, 266
Gated, 263
Gaussian, 242
I/Q Mapping Normal Invert, 247
I/Q Mod Filter Manual Auto, 246
I/Q Output Filter Manual Auto, 242
Immediate, 261
Insert Row, 252, 255
IS-2000 SR3 DS, 242
IS-95, 242
IS-95 Mod, 242
IS-95 Mod w/EQ, 242
IS-95 w/EQ, 242
Link Forward Reverse, 247
Marker 1, 257, 258
Marker 1 Polarity Neg Pos, 260
Marker 2, 257, 258
Marker 2 Polarity Neg Pos, 260
Marker 3, 257, 258
Marker 3 Polarity Neg Pos, 260
Marker 4, 257, 258

CDMA2000 ARB subsystem keys (*continued*)

Marker 4 Polarity Neg Pos, 260
Modulator Atten Manual Auto, 245, 246
Multicarrier Off On, 247
None, 257, 258
Nyquist, 242
Off, 261
On, 261
Optimize FIR For EVM ACP, 244
Patt Trig In 1, 269
Patt Trig In 2, 269
Pilot, 247, 254
PN Offset, 252, 255
Radio Config, 253
Rate, 252, 255
Rectangle, 242
Reference Freq, 260
Reset & Run, 265
Root Nyquist, 242
Save Setup To Header, 245
Scale to 0dB, 253, 256
Single, 263
Spread Rate 1, 247, 254, 262
Spread Rate 3, 247, 254, 262
Spreading Type Direct Mcarrier, 247, 263
SR1 9 Channel, 249
SR1 Pilot, 249
SR3 Direct 9 Channel, 249
SR3 Direct Pilot, 249
SR3 Mcarrier 9 Channel, 249
SR3 MCarrier Pilot, 249
Store Custom CDMA State, 251, 254
Store Custom Multicarrier, 249
Through, 241, 246
Trigger & Run, 265
Trigger Key, 266
UN3/4 GSM Gaussian, 242
User FIR, 242
Walsh Code, 252, 255
WCDMA, 242

CDMA2000 BBG subsystem keys and fields
APCO 25 C4FM, 481, 514
BBG Data Clock, 480
Bit Rate, 488, 492, 497, 511, 521, 523, 527, 532,
537, 541, 544

Index

CDMA2000 BBG subsystem keys and fields

(continued)

C/N, 505, 517
CDMA Freq, 499
CDMA2000 Off On, 547
Change, 509
Chip Rate, 480, 513
DAYLT, 499
EbNo, 484, 489, 495, 500, 506, 509, 519, 525, 527, 531, 536, 539, 542
EcNo, 493, 528, 533
Equal Powers, 508, 517
Even Second Delay, 480, 513
Ext, 483, 494, 522
Ext CDMA Freq, 500
External, 512
Falling, 547
Field 1, 490
Field 2, 490
Field 3, 491
Filter Alpha, 482, 515
Filter BbT, 482, 485, 515
FIX4, 483, 484, 494, 518, 519, 522, 524, 525, 530, 535, 539, 542
Frame Length, 520, 522, 526, 536, 540, 543
Frame Offset, 495, 520, 523, 526, 531, 536, 540, 543
FSYNCH Type, 504
Full, 529, 534
Gaussian, 481, 514
Half, 529, 534
Header, 486, 496
Internal, 512
Inverted, 517
IS-95, 481, 514
IS-95 MOD, 514
IS-95 Mod, 481
IS-95 MOD w/EQ, 514
IS-95 Mod w/EQ, 481
IS-95 w/EQ, 481, 514
Leap Seconds, 501
Link Forward Reverse, 479
Long Code Mask, 516
Long Code State, 483, 516
LTM OFF, 501

CDMA2000 BBG subsystem keys and fields

(continued)

Message Type, 502
Network ID, 502
Noise Off On, 506, 518
Normal, 517
Nyquist, 481, 514
Optimize FIR For EVM ACP, 482, 516
P Rev, 503
P Rev Min, 501
Paging Indicator, 510
Permuted ESN, 486, 496
Phase Polarity, 509
PN Offset, 512
PN15, 483, 494, 518, 522, 524, 530, 535, 538, 542
PN9, 483, 494, 518, 522, 524, 530, 535, 538, 542
Power, 486, 491, 493, 497, 502, 507, 510, 520, 523, 526, 529, 532, 534, 537, 540, 544
PRAT, 503
QOF, 487, 497
Quarter, 529, 534
Radio Config, 488, 498, 521, 524, 532, 537, 541, 544
RadioConfig 1/2 Access, 479
RadioConfig 1/2 Traffic, 479
RadioConfig 3/4 Common Control, 479
RadioConfig 3/4 Enhanced Access, 479
RadioConfig 3/4 Traffic, 479
Ramp, 487
Ramp Time, 487
Rectangle, 481, 514
Reserved, 503
Rising, 547
Root Nyquist, 481, 514
Scale to 0dB, 508, 517
Spread Rate, 511
State, 492, 494, 499, 505, 508, 511, 521, 524, 528, 530, 533, 535, 538, 541, 545
State field, 489
System ID, 504
Time, 504
Trigger Advance, 546
Turbo Coding, 498, 545
UN3/4 GSM Gaussian, 481, 514

- CDMA2000 BBG subsystem keys and fields
(*continued*)
- User File, 483, 489, 494, 518, 522, 524, 530, 535, 538, 542
 - User FIR, 481, 514
 - Walsh, 492, 498, 505, 508, 511, 527, 529, 533, 534, 538, 541, 545
 - Walsh field, 488
- CDMA2000 Off On softkey, 269, 547
- CDPD softkey, 282, 283, 284, 567
- CDVCC softkey, 891, 894
- CFN #0 Frame Pulse (RPS10) softkey
See wideband CDMA base band generator subsystem keys and fields
- Chan Code field, 1028, 1037
- Chan Code softkey, 1027
- Change field, 509
- Channel Code field, 1087, 1128
See wideband CDMA base band generator subsystem keys and fields
- Channel Number softkey, 40
- Channel softkey, 356, 364
- Channel State field, 1086, 1093
- Channel State Off On softkey, 1105
See wideband CDMA base band generator subsystem keys and fields
- ChCode Ctl field, 1118
- ChCode Dat field, 1118
- Chip Clock (RPS1) softkey
See wideband CDMA base band generator subsystem keys and fields
- Chip Rate field, 480, 513, 1027, 1076
- Chip Rate softkey, 216, 342
- Class Ib Bit Error softkey, 451, 452
- Class II Bit Error softkey, 452
- Class II RBER softkey, 404, 405
- Class Ib RBER softkey, 404, 405
- Clear Header softkey, 206, 220, 245, 273, 295, 326, 344, 467
- clearing markers, 300
- Clip |I+jQ| To softkey, 216, 241
- Clip |I| To softkey, 215, 240, 340, 350
- Clip |Q| To softkey, 215, 240, 340, 351
- Clip At PRE POST FIR Filter, 215
- Clip At PRE POST FIR Filter softkey, 240, 340
- Clip Type |I+jQ| To softkey, 341, 351
- Clipping Type |I+jQ| |I|,|Q| softkey, 216, 241, 294, 341, 351
- Clock Delay Off On softkey, 419
- Clock Per Sample softkey, 380
- Clock Phase softkey, 380
- Clock Polarity Neg Pos softkey, 420
- Clock Polarity softkey, 381
- Clock Rate softkey, 382
- Clock Skew softkey, 383
- Clock Source softkey, 383
- Clock Time Delay softkey, 419
- Clock/Gate Delay softkey, 465
- command tree, SCPI, 6, 7
- Common Mode I/Q Offset softkey, 26
- communication subsystem keys
- Default Gateway, 76
 - GPIB Address, 75
 - Hostname, 76
 - IP Address, 76
 - LAN Config, 75
 - Meter Address, 77
 - Meter Channel A B, 77
 - Meter Timeout, 78
 - Power Meter, 78
 - Reset RS-232, 79
 - RS-232 Baud Rate, 79
 - RS-232 ECHO Off On, 79
 - RS-232 Timeout, 80
 - Subnet Mask, 77
- Comp Mode Start Trigger Polarity Neg Pos softkey, 1156
- Comp Mode Start Trigger Polarity Pos Neg softkey, 1059, 1060
- Comp Mode Stop Trigger Polarity Neg Pos softkey, 1156
- Comp Mode Stop Trigger Polarity Pos Neg softkey, 1060
- Compressed Frame (RPS8) softkey
See wideband CDMA base band generator subsystem keys and fields
- Compressed Mode Off On softkey, 1155
- Compressed Mode Start Trigger softkey, 1036, 1059, 1156
- Compressed Mode Stop Trigger softkey, 1060, 1156

Index

- Config softkey, [252](#), [255](#)
- Configure Cal Array softkey, [20](#)
- continuous
 - segment advance, [318](#)
- Continuous PN9 softkey, [465](#)
- Continuous softkey
 - dual ARB subsystem keys, [318](#)
 - See* CDMA ARB subsystem keys
 - See* CDMA2000 ARB subsystem keys
 - See* custom subsystem keys
 - See* DECT subsystem keys
 - See* Dmodulation subsystem keys
 - See* dual ARB subsystem keys
 - See* EDGE subsystem keys
 - See* GSM subsystem keys
 - See* NADC subsystem keys
 - See* PDC subsystem keys
 - See* PHS subsystem keys
 - See* TETRA subsystem keys
 - See* wideband CDMA ARB subsystem keys
- Copy File softkey, [105](#), [114](#), [124](#)
- correction subsystem keys
 - Configure Cal Array, [20](#)
 - Flatness Off On, [21](#)
 - Load From Selected File, [20](#)
 - Preset List, [21](#)
 - Store To File, [21](#)
- CPICH softkey, [357](#)
- CRC Size field, [1066](#), [1160](#), [1167](#)
- creating a waveform
 - sequence, dual ARB, [313](#)
- creating a waveform, multitone, [326](#)
- CS-1 softkey, [641](#), [642](#), [791](#)
- CS-4 softkey, [641](#), [643](#), [795](#)
- CSID softkey, [951](#), [969](#)
- Ctrl Beta field, [1106](#)
- Ctrl Pwr field, [1107](#)
- Custom CDMA Multicarrier softkey, [230](#)
- Custom CDMA State softkey, [228](#), [231](#)
- Custom CDMA2000 Carrier softkey, [247](#), [249](#)
- Custom CDMA2000 Multicarrier softkey, [248](#)
- Custom CDMA2000 State softkey, [254](#)
- Custom Digital Mod State softkey, [283](#), [284](#)
- Custom Off On softkey, [572](#)
- Custom softkey, [589](#), [600](#), [656](#), [799](#), [954](#)
- custom subsystem keys
 - 128QAM, [564](#)
 - 16 1's & 16 0's, [557](#)
 - 16PSK, [564](#)
 - 16QAM, [564](#)
 - 256QAM, [564](#)
 - 2-Lvl FSK, [564](#)
 - 32 1's & 32 0's, [557](#)
 - 32QAM, [564](#)
 - 4 1's & 4 0's, [557](#)
 - 4-Lvl FSK, [564](#)
 - 4QAM, [564](#)
 - 64 1's & 64 0's, [557](#)
 - 64QAM, [564](#)
 - 8 1's & 8 0's, [557](#)
 - 8PSK, [564](#)
 - APCO 25 C4FM, [561](#)
 - APCO 25 w/CQPSK, [567](#)
 - BBG Data Clock Ext Int, [549](#)
 - BBG Ref Ext Int, [560](#)
 - Bit Rate, [550](#)
 - Bluetooth, [567](#)
 - BPSK, [564](#)
 - Bus, [569](#)
 - CDPD, [567](#)
 - Continuous, [567](#)
 - Custom Off On, [572](#)
 - D8PSK, [564](#)
 - Diff Data Encode Off On, [559](#)
 - Ext, [557](#), [569](#)
 - Ext BBG Ref Freq, [560](#)
 - Ext Data Clock Normal Symbol, [559](#)
 - Ext Delay Bits, [570](#)
 - Ext Delay Off On, [570](#)
 - Ext Polarity Neg Pos, [571](#)
 - Fall Delay, [552](#), [553](#)
 - Fall Time, [552](#), [553](#)
 - Filter Alpha, [548](#)
 - Filter BbT, [549](#)
 - FIX4, [557](#), [558](#)
 - Free Run, [568](#)
 - Freq Dev, [563](#)
 - Gate Active Low High, [568](#)
 - Gated, [567](#)
 - Gaussian, [561](#)

custom subsystem keys (*continued*)

Gray Coded QPSK, [564](#)
 I/Q Scaling, [562](#)
 IS-95, [561](#)
 IS-95 Mod, [561](#)
 IS-95 Mod w/EQ, [561](#)
 IS-95 OQPSK, [564](#)
 IS-95 QPSK, [564](#)
 IS-95 w/EQ, [561](#)
 MSK, [564](#)
 None, [567](#)
 Nyquist, [561](#)
 Optimize FIR For EVM ACP, [557](#)
 OQPSK, [564](#)
 $\pi/4$ DQPSK, [564](#)
 Patt Trig In 1, [571](#)
 Patt Trig In 2, [571](#)
 Phase Dev, [563](#)
 Phase Polarity Normal Invert, [565](#)
 PN11, [557](#)
 PN15, [557](#)
 PN20, [557](#)
 PN23, [557](#)
 PN9, [557](#)
 PRAM Files, [558](#)
 QPSK, [564](#)
 Rectangle, [561](#)
 Reset & Run, [568](#)
 Rise Delay, [554](#)
 Rise Time, [555](#), [556](#)
 Root Nyquist, [561](#)
 Single, [567](#)
 Symbol Rate, [565](#)
 Trigger & Run, [568](#)
 Trigger Key, [569](#)
 UN3/4 GSM Gaussian, [561](#)
 User File, [557](#)
 User FIR, [561](#)
 User FSK, [564](#)
 User I/Q, [564](#)
 Custom TS softkey, [645](#), [655](#), [790](#), [797](#)
 Custom WCDMA State softkey, [363](#)
 Cycle Count softkey, [459](#)
 Cycle End softkey, [405](#)

D

D8PSK softkey
 See custom subsystem keys
 See DECT subsystem keys
 See Dmodulation subsystem keys
 See EDGE subsystem keys
 See GSM subsystem keys
 See NADC subsystem keys
 See PDC subsystem keys
 See PHS subsystem keys
 See TETRA subsystem keys
 data
 memory subsystem, [105](#)
 data append
 memory subsystem, [106](#)
 Data Beta field, [1110](#)
 data bit, [107](#)
 data block, [114](#)
 Data Clock Out Neg Pos softkey, [133](#)
 Data Clock Polarity Neg Pos softkey, [130](#), [132](#), [134](#)
 Data field, [1088](#), [1171](#)
 data files, [105](#)
 data FSK, [109](#)
 data IQ, [110](#)
 Data Mode Raw Enc TLM softkey, [763](#), [764](#)
 Data Out Polarity Neg Pos softkey, [133](#), [135](#)
 Data Polarity Neg Pos softkey, [131](#), [132](#), [420](#)
 Data Pwr field, [1112](#)
 Data Rate field, [1038](#)
 data subsystem keys
 Error Out, [413](#)
 PN9, [413](#)
 Reference Out, [413](#)
 Data Type softkey, [392](#)
 DATA/CLK/SYNC Rear Outputs Off On softkey, [135](#)
 DAYLT field, [499](#)
 dBm softkey, [170](#)
 dBuV softkey, [170](#)
 dBuVemf softkey, [170](#)
 DC softkey, [189](#)
 DCFM/DCΦM Cal softkey, [72](#)
 DCH1 softkey, [1074](#)
 DCH2 softkey, [1074](#)
 DCH3 softkey, [1074](#)

Index

- DCH4 softkey, [1074](#)
- DCH5 softkey, [1074](#)
- DCH6 softkey, [1074](#)
- decimal values, [18](#)
- Dect Off On softkey, [621](#)
- DECT softkey, [282](#), [283](#), [284](#)
- DECT subsystem keys
 - 128QAM, [588](#)
 - 16 1's & 16 0's, [582](#), [589](#), [592](#), [595](#), [597](#), [599](#), [600](#), [604](#), [607](#), [609](#), [611](#)
 - 16-Lvl FSK, [582](#)
 - 16PSK, [588](#)
 - 16QAM, [588](#)
 - 256QAM, [588](#)
 - 2-Lvl FSK, [588](#)
 - 32 1's & 32 0's, [582](#), [589](#), [592](#), [595](#), [597](#), [599](#), [600](#), [604](#), [607](#), [609](#), [611](#)
 - 32QAM, [588](#)
 - 4 1's & 4 0's, [582](#), [589](#), [592](#), [595](#), [597](#), [599](#), [600](#), [604](#), [607](#), [609](#), [611](#)
 - 4-Lvl FSK, [588](#)
 - 4QAM, [588](#)
 - 64 1's & 64 0's, [582](#), [589](#), [592](#), [595](#), [597](#), [599](#), [600](#), [604](#), [607](#), [609](#), [611](#)
 - 64QAM, [588](#)
 - 8 1's & 8 0's, [582](#), [589](#), [592](#), [595](#), [597](#), [599](#), [600](#), [604](#), [607](#), [609](#), [611](#)
 - 8-Lvl FSK, [582](#)
 - 8PSK, [588](#)
- A field, [590](#), [593](#), [596](#), [598](#), [601](#), [602](#), [603](#), [606](#), [608](#), [610](#)
- All Timeslots, [614](#)
- APCO 25 C4FM, [585](#)
- BBG Data Clock Ext Int, [573](#)
- BBG Ref Ext Int, [584](#)
- Begin Frame, [614](#)
- Begin Timeslot #, [614](#), [615](#)
- Bit Rate, [574](#)
- BPSK, [588](#)
- Bus, [613](#), [618](#)
- Continuous, [616](#)
- Custom, [589](#), [600](#)
- D8PSK, [588](#)
- Data Format Pattern Framed, [581](#)
- Dect Off On, [621](#)
- DECT subsystem keys (*continued*)
 - DM0, [589](#), [592](#), [595](#), [597](#), [599](#), [600](#), [604](#), [607](#), [609](#), [611](#)
 - DM1, [589](#), [592](#), [595](#), [597](#), [599](#), [600](#), [604](#), [607](#), [609](#), [611](#)
 - Dummy Bearer 1, [600](#)
 - Dummy Bearer 2, [600](#)
 - Ext, [582](#), [589](#), [592](#), [595](#), [597](#), [599](#), [600](#), [604](#), [607](#), [609](#), [611](#), [613](#), [618](#)
 - Ext Data Clock Normal Symbol, [584](#)
 - Ext Delay Bits, [619](#)
 - Ext Delay Off On, [621](#)
 - Ext Polarity Neg Pos, [620](#)
 - FACC, [589](#), [592](#), [595](#), [597](#), [599](#), [600](#), [604](#), [607](#), [609](#), [611](#)
 - Fall Delay, [576](#), [577](#)
 - Fall Time, [576](#), [577](#)
 - FDEV1_FS, [589](#), [592](#), [595](#), [597](#), [599](#), [600](#), [604](#), [607](#), [609](#), [611](#)
 - FDEV1_HS, [589](#), [592](#), [595](#), [597](#), [599](#), [600](#), [604](#), [607](#), [609](#), [611](#)
 - FDEV2_FS, [589](#), [592](#), [595](#), [597](#), [599](#), [600](#), [604](#), [607](#), [609](#), [611](#)
 - Filter Alpha, [573](#)
 - Filter BbT, [574](#)
 - FIX4, [582](#), [589](#), [590](#), [592](#), [595](#), [597](#), [599](#), [600](#), [601](#), [604](#), [605](#), [607](#), [608](#), [609](#), [610](#), [611](#), [612](#)
 - Free Run, [617](#)
 - Freq Dev, [586](#)
 - Gate Active Low High, [618](#)
 - Gated, [616](#)
 - Gaussian, [585](#)
 - Gray Coded QPSK, [588](#)
 - I/Q Scaling, [586](#)
 - IS-95, [585](#)
 - IS-95 Mod, [585](#)
 - IS-95 Mod w/EQ, [585](#)
 - IS-95 OQPSK, [588](#)
 - IS-95 QPSK, [588](#)
 - IS-95 w/EQ, [585](#)
 - Low Capacity, [589](#), [600](#)
 - Low Capacity with Z field, [589](#), [600](#)
 - MSK, [588](#)
 - Nyquist, [585](#)
 - Optimize FIR For EVM ACP, [581](#)

- DECT subsystem keys (*continued*)
- OQPSK, 588
 - P, 591, 594, 596, 598, 602, 603, 604, 606, 608, 610
 - $\pi/4$ DQPSK, 588
 - Patt Trig In 1, 620
 - Patt Trig In 2, 620
 - Phase Dev, 587
 - Phase Polarity Normal Invert, 588
 - PN11, 582, 589, 592, 595, 597, 599, 600, 607, 609, 611
 - PN15, 582, 589, 592, 595, 597, 599, 600, 604, 607, 609, 611
 - PN20, 582, 589, 592, 595, 597, 599, 600, 607, 609, 611
 - PN23, 582, 589, 592, 595, 597, 599, 600, 607, 609, 611
 - PN9, 582, 589, 592, 595, 597, 599, 600, 604, 607, 609, 611
 - PN9 Mode Normal Quick, 575
 - QPSK, 588
 - Recall Secondary Frame State, 612
 - Rectangle, 585
 - Reset & Run, 617
 - Restore DECT Factory Default, 583
 - Rise Delay, 578
 - Rise Time, 579, 580
 - Root Nyquist, 585
 - S, 591, 594, 596, 598, 602, 603, 604, 607, 609, 611
 - Save Secondary Frame State, 612
 - Secondary Frame Off On, 613
 - Sine, 556, 580
 - Single, 616
 - Sync Out Offset, 614
 - Timeslot Ampl Main Delta, 593, 605
 - Timeslot Off On, 593, 606
 - Traffic Bearer, 589, 600
 - Traffic Bearer with Z field, 589, 600
 - Trigger & Run, 617
 - Trigger Key, 613, 618
 - UN3/4 GSM Gaussian, 585
 - User File, 556, 580, 582, 589, 592, 595, 597, 599, 600, 604, 607, 609, 611
 - User FIR, 585
 - User FSK, 587, 588
 - User I/Q, 588
 - dect subsystem keys
 - PRAM File, 583
 - DECT subsystem keys
 - Symbol Rate, 615
 - Default Gateway softkey, 76
 - Delay Bits softkey, 459
 - Delete All NVWFM Files softkey, 125
 - Delete All WFM Files softkey, 125
 - Delete All WFM1 Files softkey, 125
 - Delete File softkey, 126
 - Delete softkeys
 - Delete All ARB CDMA Files, 118
 - Delete All ARB DMOD Files, 118
 - Delete All ARB DWCDMA Files, 119
 - Delete All ARB FCDMA Files, 119
 - Delete All ARB MCDMA Files, 120
 - Delete All ARB MDMOD Files, 120
 - Delete All ARB MDWCDMA Files, 120
 - Delete All ARB MFCDMA Files, 120
 - Delete All ARB MTONE Files, 121
 - Delete All ARB RCDMA Files, 121
 - Delete All ARB UWCDMA Files, 122
 - Delete All Binary Files, 118
 - Delete All Bit Files, 118
 - Delete All Files, 117
 - Delete All FIR Files, 119
 - Delete All FSK Files, 119
 - Delete All I/Q Files, 119
 - Delete All List Files, 120
 - Delete All SEQ Files, 121
 - Delete All SHAPE Files, 121
 - Delete All State Files, 121
 - Delete All UFLT Files, 122
 - Delete File, 122
 - DHCP, 75
 - Diagnostic Info softkey, 81, 82, 83, 84, 89
 - diagnostic subsystem keys
 - Auxiliary Software Options, 82
 - Diagnostic Info, 81, 82, 83, 84
 - Installed Board Info, 81
 - Options Info, 83
 - diagnostic subsystem softkeys
 - Waveform Licenses, 82, 84
 - Diff Data Encode Off On softkey, 559, 781
 - Diff. Mode I Offset softkey, 26

Index

- Diff. Mode Q Offset softkey, [27](#)
- Digital Modulation Off On softkey, [293](#)
- digital modulation subsystem keys
 - 2.100 MHz, [32](#)
 - 40.000 MHz, [32](#)
 - ALC BW Normal Narrow, [22](#)
 - BBG1, [24](#), [35](#)
 - Burst Envelope Int Ext Off, [22](#)
 - Common Mode I/Q Offset, [26](#)
 - Diff. Mode I Offset, [26](#)
 - Diff. Mode Q Offset, [27](#)
 - Ext 50 Ohm, [24](#), [35](#)
 - Ext 600 Ohm, [24](#), [35](#)
 - Ext In 600 Ohm I Offset, [27](#)
 - Ext In 600 Ohm Q Offset, [28](#)
 - High Crest Mode Off On, [23](#)
 - I Offset, [29](#)
 - I/Q Adjustments Off On, [32](#)
 - I/Q Gain Balance Source 1, [29](#)
 - I/Q Mod Filter Manual Auto, [33](#)
 - I/Q Off On, [37](#)
 - I/Q Out Gain Balance, [27](#)
 - I/Q Output Atten, [28](#)
 - I/Q Timing Skew, [31](#)
 - I/Q Timing Skew Path softkey, [32](#)
 - Int I/Q Skew Corrections RF BB Off, [35](#)
 - Int Phase Polarity Normal Invert, [24](#), [34](#)
 - Modulator Atten Manual Auto, [33](#), [34](#)
 - Off, [24](#), [35](#)
 - Q Offset, [30](#)
 - Quadrature Angle Adjustment, [25](#), [30](#)
 - Sum, [24](#)
 - Summing Ratio (SRC1/SRC2) x.xx dB, [36](#)
 - Through, [32](#)
- digital signal interface module, [380](#)
- digital subsystem softkeys, [387](#)
 - Bit Order, [384](#)
 - Clock Per Sample, [380](#)
 - Clock Phase, [380](#)
 - Clock Polarity, [381](#)
 - Clock Rate, [382](#)
 - Clock Skew, [383](#)
 - Clock Source, [383](#)
 - Data Type, [392](#)
 - Direction, [385](#)
 - digital subsystem softkeys, [387](#) (*continued*)
 - Frame Polarity, [387](#)
 - I Gain, [385](#)
 - I Offset, [386](#)
 - IQ Polarity, [388](#)
 - Logic Type, [393](#)
 - Loop Back Test Type, [393](#)
 - N5102A Off On, [395](#)
 - Negate I, [386](#)
 - Negate Q, [389](#)
 - Pass Through Preset, [395](#)
 - Port Config, [394](#)
 - Q Gain, [388](#)
 - Q Offset, [390](#)
 - Reference Frequency, [382](#)
 - Rotation, [390](#)
 - Scaling, [391](#)
 - Signal Type, [392](#)
 - Swap IQ, [387](#)
 - Word Alignment, [384](#)
 - Word Size, [391](#)
 - Direction softkey, [385](#)
 - discrete response data, [11](#)
 - discrete SCPI parameters, [9](#)
 - display
 - secure mode, [160](#)
 - display contrast hardkeys, [86](#)
 - display subsystem keys
 - Brightness, [86](#)
 - display contrast, [86](#)
 - Inverse Video Off On, [87](#)
 - Update in Remote Off On, [87](#)
 - DL Reference 1.1 softkey, [1154](#)
 - wideband CDMA base band generator subsystem softkeys
 - DL Reference 1.1, [1058](#)
 - DL Reference 1.2 softkey, [1154](#)
 - wideband CDMA base band generator subsystem softkeys
 - DL Reference 1.2, [1058](#)
 - DL Reference 2.1 softkey, [1154](#)
 - wideband CDMA base band generator subsystem softkeys
 - DL Reference 2.1, [1058](#)

- DL Reference 2.2 softkey, [1154](#)
 - wideband CDMA base band generator subsystem softkeys
 - DL Reference 2.2, [1058](#)
- DM0 softkey
 - See DECT subsystem keys
- DM1 softkey
 - See DECT subsystem keys
- DMOD softkey, [95](#)
- Dmodulation subsystem keys
 - # of Carriers, [283](#), [285](#)
 - 128QAM, [279](#)
 - 16PSK, [279](#)
 - 16QAM, [279](#)
 - 2.100 MHz, [275](#)
 - 256QAM, [279](#)
 - 2-Lvl FSK, [279](#)
 - 32QAM, [279](#)
 - 40.000 MHz, [270](#), [275](#)
 - 4-Lvl FSK, [279](#)
 - 4QAM, [279](#)
 - 64QAM, [279](#)
 - 8PSK, [279](#)
 - APCO 25 C4FM, [271](#)
 - APCO 25 w/C4FM, [282](#), [283](#), [284](#)
 - APCO 25 w/C4QPSK, [282](#), [283](#), [284](#)
 - ARB Reference Ext Int, [281](#)
 - ARB Sample Clock, [282](#)
 - BPSK, [279](#)
 - Bus, [290](#)
 - Carrier Phases Fixed Random, [283](#)
 - CDPD, [282](#), [283](#), [284](#)
 - Clear Header, [273](#)
 - Continuous, [287](#)
 - Custom Digital Mod State, [283](#), [284](#)
 - D8PSK, [279](#)
 - DECT, [282](#), [283](#), [284](#)
 - Digital Modulation Off On, [293](#)
 - EDGE, [282](#), [283](#), [284](#)
 - Ext, [290](#)
 - Ext Delay Off On, [291](#)
 - Ext Delay Time, [291](#)
 - Ext Polarity Neg Pos, [292](#)
 - Filter Alpha, [272](#)
 - Filter BbT, [272](#)
 - Dmodulation subsystem keys (*continued*)
 - Free Run, [288](#)
 - Freq Dev, [279](#)
 - Freq Spacing, [283](#)
 - Gate Active Low High, [289](#)
 - Gated, [287](#)
 - Gaussian, [271](#)
 - Gray Coded QPSK, [279](#)
 - GSM, [282](#), [283](#), [284](#)
 - I/Q Mod Filter Manual Auto, [275](#)
 - I/Q Output Filter Manual Auto, [270](#)
 - Immediate, [281](#)
 - Initialize Table, [284](#)
 - Insert Row, [249](#), [284](#)
 - IS-2000 SR3 DS, [271](#)
 - IS-95, [271](#)
 - IS-95 Mod, [271](#)
 - IS-95 Mod w/EQ, [271](#)
 - IS-95 OQPSK, [279](#)
 - IS-95 QPSK, [279](#)
 - IS-95 w/EQ, [271](#)
 - Load/Store, [284](#)
 - Marker 1, [276](#), [277](#)
 - Marker 1 Polarity Neg Pos, [280](#)
 - Marker 2, [276](#), [277](#)
 - Marker 2 Polarity Neg Pos, [280](#)
 - Marker 3, [276](#), [277](#)
 - Marker 3 Polarity Neg Pos, [280](#)
 - Marker 4, [276](#), [277](#)
 - Marker 4 Polarity Neg Pos, [280](#)
 - Modulator Atten Manual Auto, [274](#)
 - MSK, [279](#)
 - Multicarrier Off On, [282](#)
 - NADC, [282](#), [283](#), [284](#)
 - None, [276](#), [277](#)
 - Nyquist, [271](#)
 - Off, [281](#)
 - On, [281](#)
 - Optimize FIR For EVM ACP, [273](#)
 - OQPSK, [279](#)
 - $\pi/4$ DQPSK, [279](#)
 - Patt Trig In 1, [292](#)
 - Patt Trig In 2, [292](#)
 - PDC, [282](#), [283](#), [284](#)
 - PHS, [282](#), [283](#), [284](#)

Index

Dmodulation subsystem keys (*continued*)

- PWT, [282](#), [283](#), [284](#)
- QPSK, [279](#)
- Rectangle, [271](#)
- Reference Freq, [212](#), [280](#)
- Reset & Run, [288](#)
- Root Nyquist, [271](#)
- Save Setup To Header, [273](#)
- Select File, [249](#), [282](#)
- Single, [287](#)
- Store Custom Dig Mod State, [285](#)
- Symbol Rate, [286](#)
- TETRA, [282](#), [283](#), [284](#)
- Through, [270](#), [275](#)
- Trigger & Run, [288](#)
- Trigger Key, [290](#)
- UN3/4 GSM Gaussian, [271](#)
- User FIR, [271](#)
- WCDMA, [271](#)
- Dn Custom Cont softkey, [1007](#)
- Dn Normal Cont softkey, [1007](#)
- Dn Normal Disc softkey, [1007](#)
- Dn Sync Cont softkey, [1007](#)
- Dn Sync Disc softkey, [1007](#)
- Do Power Search softkey, [60](#), [62](#)
- documentation, [lxxiii](#)
- Doppler Shift softkey, [764](#)
- Down Custom softkey, [896](#), [930](#)
- Down TCH All softkey, [896](#), [930](#)
- Down TCH softkey, [896](#), [930](#)
- Down/Up softkey, [1033](#), [1083](#)
- Downlink MCS-1 softkey, [641](#), [643](#), [791](#)
- Downlink MCS-5 softkey, [646](#)
- Downlink MCS-9 softkey, [646](#)
- downloading files, [116](#)
- DPCCH + 1 DPDCH softkey, [363](#)
- DPCCH + 2 DPDCH softkey, [363](#)
- DPCCH + 3 DPCCH softkey, [363](#)
- DPCCH + 4 DPDCH softkey, [363](#)
- DPCCH + 5 DPDCH softkey, [363](#)
- DPCCH Pilot data-clk (DRPS23) softkey, [1047](#),
[1049](#), [1050](#), [1051](#), [1052](#)
- DPCCH Power field, [1080](#)
- DPCCH Raw Data (RPS4) softkey
 - See* wideband CDMA base band generator subsystem keys and fields
- DPCCH Raw Data Clock (RPS5) softkey
 - See* wideband CDMA base band generator subsystem keys and fields
- DPCCH softkey, [363](#), [1074](#), [1097](#)
- DPCCH TFC I data-clk (DRPS22) softkey, [1047](#),
[1049](#), [1050](#), [1051](#), [1052](#)
- DPCCH TPC indicator (DRPS21) softkey, [1047](#),
[1049](#), [1050](#), [1051](#), [1052](#)
- DPCH + 1 softkey, [1019](#), [1020](#)
- DPCH + 2 softkey, [1019](#), [1020](#)
- DPCH Channel Balance softkey, [1027](#)
- DPCH Compressed Frame Indicator (DRPS32) softkey, [1047](#), [1049](#), [1050](#), [1051](#), [1052](#)
- DPCH data stream (DRPS24) softkey, [1047](#), [1049](#),
[1050](#), [1051](#), [1052](#)
- DPCH data-clk (0) (DRPS28) softkey, [1047](#), [1049](#),
[1050](#), [1051](#), [1052](#)
- DPCH Gap Indicator (DRPS33) softkey, [1047](#),
[1049](#), [1050](#), [1051](#), [1052](#)
- DPCH softkey, [357](#)
- DPCH TimeSlot pulse (DRPS25) softkey, [1047](#),
[1049](#), [1050](#), [1051](#), [1052](#)
- DPCH10ms Frame-Pulse (DRPS26) softkey, [1047](#),
[1049](#), [1050](#), [1051](#), [1052](#)
- DPDCH data-clk withDTX (DRPS20) softkey,
[1047](#), [1049](#), [1050](#), [1051](#), [1052](#)
- DPDCH data-clk WithOutDTX (DRPS30) softkey,
[1047](#), [1049](#), [1050](#), [1051](#), [1052](#)
- DPDCH Power field, [1089](#)
- DPDCH Raw Data (RPS2) softkey
 - See* wideband CDMA base band generator subsystem keys and fields
- DPDCH Raw DataClock (RPS3) softkey
 - See* wideband CDMA base band generator subsystem keys and fields
- DPDCH softkey, [1074](#)
- Drift Deviation softkey, [469](#)
- dual ARB subsystem
 - generate sine, [294](#)
 - markers, *See* markers
 - runtime scaling, [312](#)
 - scaling waveform files, [312](#)

- dual ARB subsystem (*continued*)
 - Through, 298
- dual ARB subsystem keys
 - # Skipped Points, 302
 - 2.100 MHz, 299
 - 40.000 MHz, 298, 299
 - Apply to Waveform, 300, 302
 - ARB Off On, 324
 - ARB Reference Ext Int, 23, 311
 - ARB Sample Clock, 313
 - Build New Waveform Sequence, 313
 - Bus, 320
 - Carrier Bandwidth, 309
 - Carrier to Noise Ratio, 309
 - Clear Header, 295
 - Clipping Type |I+jQ| |I_i|Q_i], 294
 - Continuous, 318
 - Edit Repetitions, 313
 - Ext, 320
 - Ext Delay, 321
 - Ext Delay Samples, 321
 - Ext Delay Time, 322
 - Ext Polarity Neg Pos, 322
 - First Mkr Point, 300, 302
 - Free Run, 317
 - Gate Active Low High, 317
 - Gated, 315
 - Header RMS, 295
 - I/Q Mod Filter Manual Auto, 300
 - I/Q Output Filter Manual Auto, 297, 298
 - Immediate, 311
 - Insert Waveform, 313
 - Last Mkr Point, 300, 302
 - Marker 1, 305
 - Marker 1 2 3 4, 300
 - Marker 2, 305
 - Marker 3, 305
 - Marker 4, 305
 - Marker Polarity Neg Pos, 308, 333, 370, 475
 - Markers, 302, 306
 - Modulator Atten Manual Auto, 298, 299
 - Name and Store, 313
 - Noise Bandwidth Factor, 308
 - None, 305, 306
 - Off, 311, 321
- dual ARB subsystem keys (*continued*)
 - On, 311
 - Patt Trig In 1, 323
 - Patt Trig In 2, 323
 - Real-time Noise Off On, 310
 - Reference Freq, 310
 - Reset & Run, 317
 - Samples, 321
 - Save Setup To Header, 297
 - Scale Waveform Data, 312
 - Scaling, 312
 - Segment Advance, 315
 - Select Waveform, 323, 324
 - Set Marker Off All Points, 301
 - Set Marker Off Range Of Points, 300
 - Set Marker On Range Of Points, 302
 - Single, 315, 318
 - Through, 298, 299
 - Time, 321
 - Toggle Marker 1 2 3 4, 313
 - Trigger & Run, 317
 - Trigger Key, 320
 - Waveform Runtime Scaling, 312
- Dual-Sine softkey, 175, 182, 189, 195
- Dummy Bearer 1 softkey, 600
- Dummy Bearer 2 softkey, 600
- Dummy softkey, 799
- DWCDMA softkey, 96
- Dwell Type List Step softkey, 51
- E**
 - Eb/No field, 1103
 - Eb/No value (dB) field, 1073
 - EbNo field, 506
 - See CDMA2000 BBG subsystem keys and fields
 - Ec/No value field, 1019, 1104
 - EcNo field, 493, 528, 533
 - EDGE BERT Off On softkey, 442
 - EDGE Off On softkey, 665
 - EDGE softkey, 282, 283, 284, 634
 - EDGE subsystem keys
 - 128QAM, 637
 - 16 1's & 16 0's, 630, 639, 641, 646
 - 16PSK, 637
 - 16QAM, 637

Index

EDGE subsystem keys (*continued*)

256QAM, 637
2-Lvl FSK, 637
32 1's & 32 0's, 630, 639, 641, 646
32QAM, 637
4 1's & 4 0's, 630, 639, 641, 646
4-Lvl FSK, 637
4QAM, 637
64 1's & 64 0's, 630, 639, 641, 646
64QAM, 637
8 1's & 8 0's, 630, 639, 641, 646
8PSK, 637
All Timeslots, 657
APCO 25 C4FM, 634
BBG Ref Ext Int, 633
Begin Frame, 657
Begin Timeslot #, 657, 658
BPSK, 637
Bus, 638, 662
Continuous, 660
CS-1, 641, 642
CS-4, 641, 643
Custom, 656
Custom TS, 645, 655
D8PSK, 637
Data Format Pattern Framed, 629
Downlink MCS-1, 641, 643
Downlink MCS-5, 646
Downlink MCS-9, 646
EDGE, 634
EDGE Off On, 665
E-TCH/F43.2, 646
Ext, 630, 638, 639, 646, 662
Ext BBG Ref Freq, 633
Ext Data Clock Ext Int, 622
Ext Data Clock Normal Symbol, 632
Ext Delay Bits, 663
Ext Delay Off On, 664
Ext Polarity Neg Pos, 664
Fall Delay, 623, 624
Fall Time, 625
Filter Alpha, 622
Filter BbT, 623
FIX4, 630, 631, 639, 640, 641, 643, 646, 652
Free Run, 660

EDGE subsystem keys (*continued*)

Freq Dev, 635
G, 640, 654
Gate Active Low High, 661
Gated, 660
Gaussian, 634
GMSK, 656
Gray Coded QPSK, 637
I/Q Scaling, 635
IS-95, 634
IS-95 Mod, 634
IS-95 Mod w/EQ, 634
IS-95 OQPSK, 637
IS-95 QPSK, 637
IS-95 w/EQ, 634
MSK, 637
Multislot Off On, 646
Normal, 656
Normal All, 656
Nyquist, 634
Optimize FIR For EVM ACP, 630
OQPSK, 637
 $\pi/4$ DQPSK, 637
Patt Trig In 1, 665
Patt Trig In 2, 665
Phase Dev, 636
Phase Polarity Normal Invert, 637
PN11, 630, 639, 646
PN15, 630, 639, 641, 642, 643, 644, 646, 650, 651, 652, 653
PN20, 630, 639, 646
PN23, 630, 639, 646
PN9, 630, 639, 641, 642, 643, 644, 646, 650, 651, 652, 653
QPSK, 637
Recall Secondary Frame State, 638
Rectangle, 634
Reset & Run, 660
Restore EDGE Factory Default, 632
Rise Delay, 626, 627
Rise Time, 627, 628
Root Nyquist, 634
S, 645
Save Secondary Frame State, 638
Secondary Frame Off On, 639

- EDGE subsystem keys (*continued*)
- Sine, [629](#)
 - Single, [660](#)
 - Symbol Rate, [658](#)
 - Sync Out Offset, [657](#)
 - T1, [654](#)
 - T2, [655](#)
 - TCH/FS, [641](#), [644](#)
 - Timeslot Ampl Main Delta, [655](#)
 - Timeslot Off On, [656](#)
 - Trigger & Run, [660](#)
 - Trigger Key, [638](#), [662](#)
 - TSC0, [645](#), [655](#)
 - TSC1, [645](#), [655](#)
 - TSC2, [645](#), [655](#)
 - TSC3, [645](#), [655](#)
 - TSC4, [645](#), [655](#)
 - TSC5, [645](#), [655](#)
 - TSC6, [645](#), [655](#)
 - TSC7, [645](#), [655](#)
 - UN3/4 GSM Gaussian, [634](#)
 - Uncoded, [646](#)
 - Uplink MCS-1, [641](#), [644](#)
 - Uplink MCS-5, [646](#)
 - Uplink MCS-9, [646](#)
 - User File, [629](#), [630](#), [639](#), [641](#), [646](#)
 - User FIR, [634](#)
 - User FSK, [636](#), [637](#)
 - User I/Q, [636](#), [637](#)
- edge subsystem keys
- PRAM File, [631](#)
- Edit Channel Setup softkey, [252](#), [255](#)
- Edit Repetitions softkey, [313](#)
- Enter Secure Mode softkey, [162](#)
- Equal Energy per Symbol softkey, [361](#)
- Equal Powers softkey
- See* CDMA ARB subsystem keys
 - See* CDMA2000 ARB subsystem keys
 - See* CDMA2000 BBG subsystem keys and fields
 - See* wideband CDMA base band generator subsystem keys and fields
- Erase All softkey, [161](#)
- Erase and Overwrite All softkey, [163](#)
- Erase and Sanitize All softkey, [163](#)
- Erase softkey, [161](#)
- ERROR
- 221, [116](#)
 - Error BER softkey, [1168](#)
 - Error Bits softkey, [1161](#)
 - Error Blocks field, [1162](#)
 - Error Count softkey, [442](#)
 - See* sense subsystem keys
 - Error Info softkey, [155](#)
 - error messages, resolving, [670](#), [811](#)
 - Error Out softkey, [413](#)
 - Error Rate softkey
 - See* calculate subsystem keys
 - See* calculate subsystem keys
 - ESG file overview, [668](#), [809](#)
 - ET softkey, [789](#)
 - E-TCH/F43.2 softkey, [646](#)
 - Even Second Delay field, [480](#), [513](#)
 - Exceeds Any Limit softkey, [405](#)
 - Exceeds Any Thresholds softkey
 - See* sense subsystem keys
 - Execute Cal softkey, [72](#), [73](#)
 - Ext 50 Ohm softkey, [24](#), [35](#)
 - Ext 600 Ohm softkey, [24](#), [35](#)
 - Ext BBG Ref Freq softkey
 - See* custom subsystem keys
 - See* EDGE subsystem keys
 - See* GSM subsystem keys
 - See* NADC subsystem keys
 - See* PDC subsystem keys
 - See* PHS subsystem keys
 - See* TETRA subsystem keys
 - Ext CDMA Freq field, [500](#)
 - Ext Clock Rate x1 x2 x4 softkey, [1017](#)
 - Ext Data Clock Ext Int softkey
 - See* EDGE subsystem keys
 - See* PDC subsystem keys
 - Ext Data Clock Normal Symbol softkey
 - See* custom subsystem keys
 - See* DECT subsystem keys
 - See* EDGE subsystem keys
 - See* GSM subsystem keys
 - See* NADC subsystem keys
 - See* PDC subsystem keys
 - See* PHS subsystem keys
 - See* TETRA subsystem keys

Index

Ext Delay Bits softkey

- See custom subsystem keys
- See DECT subsystem keys
- See EDGE subsystem keys
- See GSM subsystem keys
- See NADC subsystem keys
- See PDC subsystem keys
- See PHS subsystem keys
- See TETRA subsystem keys

Ext Delay Off On softkey

- See CDMA ARB subsystem keys
- See CDMA2000 ARB subsystem keys
- See custom subsystem keys
- See DECT subsystem keys
- See Dmodulation subsystem keys
- See EDGE subsystem keys
- See GSM subsystem keys
- See NADC subsystem keys
- See PDC subsystem keys
- See PHS subsystem keys
- See TETRA subsystem keys
- See wideband CDMA ARB subsystem keys

Ext Delay Samples softkey, [321](#)

Ext Delay softkey, [321](#)

Ext Delay Time softkey, [236](#), [267](#), [291](#), [322](#), [376](#)

Ext Frame Trigger Delay softkey, [427](#)

Ext In 600 Ohm I Offset softkey, [27](#)

Ext In 600 Ohm Q Offset softkey, [28](#)

Ext Polarity Neg Pos softkey

- See CDMA ARB subsystem keys
- See CDMA2000 ARB subsystem keys
- See custom subsystem keys
- See DECT subsystem keys
- See Dmodulation subsystem keys
- See dual ARB subsystem keys
- See EDGE subsystem keys
- See GSM subsystem keys
- See NADC subsystem keys
- See PDC subsystem keys
- See PHS subsystem keys
- See TETRA subsystem keys
- See wideband CDMA ARB subsystem keys

Ext softkey

- List/Sweep subsystem, [54](#)
- See amplitude modulation subsystem keys

Ext softkey (continued)

- See CDMA ARB subsystem keys
- See CDMA2000 ARB subsystem keys
- See CDMA2000 BBG subsystem keys and fields
- See custom subsystem keys
- See DECT subsystem keys
- See Dmodulation subsystem keys
- See dual ARB subsystem keys
- See EDGE subsystem keys
- See frequency modulation subsystem keys
- See GSM subsystem keys
- See low frequency output subsystem keys
- See NADC subsystem keys
- See PDC subsystem keys
- See phase modulation subsystem keys
- See PHS subsystem keys
- See sense subsystem keys
- See TETRA subsystem keys
- See trigger subsystem keys
- See wideband CDMA ARB subsystem keys
- See wideband CDMA base band generator subsystem keys and fields

Ext softkeys

- Ext Coupling DC AC, [173](#), [180](#), [193](#)
- Ext Detector, [63](#)
- Ext Pulse, [202](#)
- Ext1, [176](#), [184](#), [196](#)
- Ext2, [176](#), [184](#), [196](#)

extended numeric SCPI parameter, [8](#)

External Frame Trigger Polarity Neg Pos softkey, [427](#)

External softkey, [512](#)

F

FACC softkey

- See DECT subsystem keys

Fail Hold softkey, [405](#)

Fall Delay softkey

- See custom subsystem keys
- See DECT subsystem keys
- See EDGE subsystem keys
- See GSM subsystem keys
- See NADC subsystem keys
- See PDC subsystem keys
- See PHS subsystem keys

- Fall Delay softkey (continued)*
See TETRA subsystem keys
- Fall Time softkey
See custom subsystem keys
See DECT subsystem keys
See EDGE subsystem keys
See GSM subsystem keys
See NADC subsystem keys
See PDC subsystem keys
See PHS subsystem keys
See TETRA subsystem keys
- Falling softkey, [547](#)
- FBI State field, [1079](#)
- FCDMA softkey, [96](#)
- FCOR softkey, [996](#), [1001](#)
- FCorr softkey, [799](#)
- FDEV1_FS softkey
See DECT subsystem keys
- FDEV1_HS softkey
See DECT subsystem keys
- FDEV2_FS softkey
See DECT subsystem keys
- Field 1 field, [490](#)
- Field 2 field, [490](#)
- Field 3 field, [491](#)
- file
names, [105](#)
retrieval, [116](#)
systems, [14](#)
types, [14](#)
- file overview, HSDPA, [809](#)
- file overview, HSPA, [668](#)
- Filter Alpha softkey, [1095](#)
See CDMA ARB subsystem keys
See CDMA2000 ARB subsystem keys
See CDMA2000 BBG subsystem keys and fields
See custom subsystem keys
See DECT subsystem keys
See Dmodulation subsystem keys
See EDGE subsystem keys
See GPS subsystem keys
See GSM subsystem keys
See NADC subsystem keys
See PDC subsystem keys
See PHS subsystem keys
See TETRA subsystem keys
See wideband CDMA ARB subsystem keys
See wideband CDMA base band generator subsystem keys and fields
- Filter Alpha softkey, [1095 \(continued\)](#)
See TETRA subsystem keys
See wideband CDMA ARB subsystem keys
See wideband CDMA base band generator subsystem keys and fields
- Filter BbT softkey, [1096](#)
See CDMA ARB subsystem keys
See CDMA2000 ARB subsystem keys
See CDMA2000 BBG subsystem keys and fields
See custom subsystem keys
See DECT subsystem keys
See Dmodulation subsystem keys
See EDGE subsystem keys
See GPS subsystem keys
See GSM subsystem keys
See NADC subsystem keys
See PDC subsystem keys
See PHS subsystem keys
See TETRA subsystem keys
See wideband CDMA ARB subsystem keys
See wideband CDMA base band generator subsystem keys and fields
- FIR data, [108](#)
- FIR softkey, [97](#)
- First Mkr Point softkey, [300](#), [302](#)
- First Spread Code softkey, [356](#), [364](#)
- FIX softkey, [1079](#)
- FIX4 softkey, [643](#), [1078](#), [1107](#), [1111](#)
See CDMA2000 BBG subsystem keys and fields
See custom subsystem keys
See DECT subsystem keys
See EDGE subsystem keys
See GPS subsystem keys
See GSM subsystem keys
See NADC subsystem keys
See PDC subsystem keys
See PHS subsystem keys
See TETRA subsystem keys
See wideband CDMA baseband generator subsystem keys and fields
- Flat Noise BW field, [1074](#)
- Flatness Off On softkey, [21](#)
- FM softkeys
FM Dev, [185](#)
FM Dev Couple Off On, [185](#)

Index

FM softkeys (*continued*)

- FM Off On, [184](#)
- FM Path 1 2, [179](#)
- FM Stop Rate, [181](#)
- FM Sweep Rate, [183](#)
- FM Tone 2 Amp Percent of Peak, [182](#)
- FM Tone 2 Rate, [181](#)
- forgiving listening and precise talking, [7](#)
- Frame Clock Polarity Neg Pos softkey, [1094](#)
- Frame Count softkey
 - See sense subsystem keys
- Frame Erasure softkey, [452](#)
 - See calculate subsystem keys
- Frame Length field
 - See CDMA2000 BBG subsystem keys and fields
- Frame Offset field
 - See CDMA2000 BBG subsystem keys and fields
- Frame offset field, [536](#)
- Frame Polarity softkey, [387](#)
- Frame Repeat Single Cont softkey, [888](#)
- Frame Struct field, [1054](#)
- Frame Sync Trigger Mode Single Cont softkey, [1149](#)
- Frame Trigger Source Int Ext softkey, [428](#)
- Free Run softkey
 - list trigger source, [54](#)
 - See amplitude modulation subsystem keys
 - See CDMA ARB subsystem keys
 - See CDMA2000 ARB subsystem keys
 - See custom subsystem keys
 - See DECT subsystem keys
 - See Dmodulation subsystem keys
 - See dual ARB subsystem keys
 - See EDGE subsystem keys
 - See frequency modulation subsystem keys
 - See GSM subsystem keys
 - See low frequency output subsystem keys
 - See NADC subsystem keys
 - See PDC subsystem keys
 - See phase modulation subsystem keys
 - See PHS subsystem keys
 - See TETRA subsystem keys
 - See trigger subsystem keys
 - See wideband CDMA ARB subsystem keys

Freq Dev softkey

- See custom subsystem keys
 - See DECT subsystem keys
 - See Dmodulation subsystem keys
 - See EDGE subsystem keys
 - See GSM subsystem keys
 - See NADC subsystem keys
 - See PDC subsystem keys
 - See TETRA subsystem keys
- ### Freq softkeys
- Freq, [42, 49](#)
 - Freq & Ampl, [49](#)
 - Freq Channels Off On, [41](#)
 - Freq Drift Type Linear Sine, [470](#)
 - Freq Multiplier, [42](#)
 - Freq Offset, [43, 470](#)
 - Freq Ref Off On, [44](#)
 - Freq Ref Set, [43](#)
 - Freq Spacing, [283, 336, 337](#)
 - Freq Start, [44, 49](#)
 - Freq Stop, [45, 49](#)
- ### Frequency hardkey, [38, 41, 42, 45, 46](#)
- ### frequency modulation subsystem keys
- Bus, [183](#)
 - Dual-Sine, [182](#)
 - Ext, [183](#)
 - Ext Coupling DC AC, [180](#)
 - Ext1, [184](#)
 - Ext2, [184](#)
 - FM Dev, [185](#)
 - FM Dev Couple Off On, [185](#)
 - FM Off On, [184](#)
 - FM Path 1 2, [179](#)
 - FM Stop Rate, [181](#)
 - FM Sweep Rate, [183](#)
 - FM Tone 2 Amp Percent of Peak, [182](#)
 - FM Tone 2 Rate, [181](#)
 - Free Run, [183](#)
 - Incr Set, [180](#)
 - Internal 1, [184](#)
 - Internal 2, [184](#)
 - Noise, [182](#)
 - Ramp, [182](#)
 - Sine, [182](#)
 - Square, [182](#)

- frequency modulation subsystem keys (*continued*)
 Swept-Sine, 182
 Triangle, 182
 Trigger Key, 183
- frequency subsystem keys
 Adjust Phase, 47
 Channel Number, 40
 Freq, 42, 49
 Freq Channels Off On, 41
 Freq Multiplier, 42
 Freq Offset, 43
 Freq Ref Off On, 44
 Freq Ref Set, 43
 Freq Start, 44, 49
 Freq Stop, 45, 49
 Frequency, 38, 41, 42, 45, 46
 Off, 42, 49
 Phase Ref Set, 47
 Ref Oscillator Source Auto Off On, 48
- FSK softkey, 97
- FSYNCH Type field, 504
- Full softkey, 529, 534
- Function Generator softkey, 190
- G**
- G softkey, 640, 654
- Gain Unit dB Lin Index softkey, 366
- Gate Active Low High softkey
See CDMA ARB subsystem keys
See CDMA2000 ARB subsystem keys
See custom subsystem keys
See DECT subsystem keys
See Dmodulation subsystem keys
See dual ARB subsystem keys
See EDGE subsystem keys
See GSM subsystem keys
See NADC subsystem keys
See PDC subsystem keys
See PHS subsystem keys
See TETRA subsystem keys
See wideband CDMA ARB subsystem keys
- Gate Clk Delay softkey, 416
- Gate Delay Off On softkey, 417
- Gate Mode Time Clk softkey, 416
- Gate Off On softkey, 418
- Gate Polarity Neg Pos softkey, 418
- Gate Time Delay softkey, 417
- Gated softkey
See CDMA ARB subsystem keys
See CDMA2000 ARB subsystem keys
See custom subsystem keys
See DECT subsystem keys
See Dmodulation subsystem keys
See dual ARB subsystem keys
See EDGE subsystem keys
See GSM subsystem keys
See NADC subsystem keys
See PDC subsystem keys
See PHS subsystem keys
See TETRA subsystem keys
See wideband CDMA ARB subsystem keys
- Gaussian softkey
See CDMA ARB subsystem keys
See CDMA2000 ARB subsystem keys
See CDMA2000 BBG subsystem keys and fields
See custom subsystem keys
See DECT subsystem keys
See Dmodulation subsystem keys
See EDGE subsystem keys
See GPS subsystem keys
See GSM subsystem keys
See NADC subsystem keys
See PDC subsystem keys
See PHS subsystem keys
See TETRA subsystem keys
See wideband CDMA ARB subsystem keys
See wideband CDMA base band generator
 subsystem keys and fields
- generate sine, 294
- GMSK softkey, 656
- Goto Row softkey, 334
- GPIB Address softkey, 75
- GPS Ref (f0) softkey, 768
- GPS Ref Clk Ext Int softkey, 768
- GPS subsystem
 Data Mode Raw Enc TLM, 764
- GPS subsystem keys
 APCO 25 C4FM, 764
 Data Mode Raw Enc TLM, 763
 Doppler Shift, 764

Index

GPS subsystem keys (*continued*)

Filter Alpha, [765](#)
Filter BbT, [766](#)
FIX4, [763](#)
Gaussian, [764](#)
GPS Ref (f0), [768](#)
GPS Ref Clk Ext Int, [768](#)
IQ Phase Normal Invert, [767](#)
IS-95, [764](#)
IS-95 Mod, [764](#)
IS-95 Mod w/EQ, [764](#)
IS-95 w/EQ, [764](#)
Nyquist, [764](#)
Optimize FIR For EVM ACP, [766](#)
P Code Pwr, [767](#)
PN15, [763](#)
PN9, [763](#)
Ranging Code C/A P C/A+P, [767](#)
Real-time GPS Off On, [769](#)
Rectangle, [764](#)
Root Nyquist, [764](#)
Satellite ID, [769](#)
UN3/4 GSM Gaussian, [764](#)
User File, [763](#)
User FIR, [764](#)

Gray Coded QPSK softkey

See custom subsystem keys
See DECT subsystem keys
See Dmodulation subsystem keys
See EDGE subsystem keys
See GSM subsystem keys
See NADC subsystem keys
See PDC subsystem keys
See PHS subsystem keys
See TETRA subsystem keys

GSM BERT Off On softkey, [455](#)

GSM Off On softkey, [808](#)

GSM softkey, [282](#), [283](#), [284](#)

GSM subsystem keys

128QAM, [786](#)
16 1's & 16 0's, [779](#), [788](#), [789](#), [791](#), [798](#)
16PSK, [786](#)
16QAM, [786](#)
256QAM, [786](#)
2-Lvl FSK, [786](#)

GSM subsystem keys (*continued*)

32 1's & 32 0's, [779](#), [788](#), [789](#), [791](#), [798](#)
32QAM, [786](#)
4 1's & 4 0's, [779](#), [788](#), [789](#), [791](#), [798](#)
4-Lvl FSK, [786](#)
4QAM, [786](#)
64 1's & 64 0's, [779](#), [788](#), [789](#), [791](#), [798](#)
64QAM, [786](#)
8 1's & 8 0's, [779](#), [788](#), [789](#), [791](#), [798](#)
8PSK, [786](#)
Access, [799](#)
All Timeslots, [800](#)
APCO 25 C4FM, [783](#)
BBG Data Clock Ext Int, [770](#)
BBG Ref Ext Int, [782](#)
Begin Frame, [800](#)
Begin Timeslot #, [800](#), [801](#)
Bit Rate, [771](#)
BPSK, [786](#)
Bus, [787](#), [804](#)
Continuous, [803](#)
CS-1, [791](#)
CS-4, [795](#)
Custom, [799](#)
Custom TS, [790](#), [797](#)
D8PSK, [786](#)
Data Format Pattern Framed, [778](#)
Diff Data Encode Off On, [781](#)
Downlink MCS-1, [791](#)
Dummy, [799](#)
ET, [789](#)
Ext, [779](#), [787](#), [788](#), [789](#), [798](#), [804](#)
Ext BBG Ref Freq, [585](#), [782](#)
Ext Data Clock Normal Symbol, [781](#)
Ext Delay Bits, [805](#)
Ext Delay Off On, [806](#)
Ext Polarity Neg Pos, [806](#)
Fall Delay, [773](#), [774](#)
Fall Time, [773](#), [775](#)
FCorr, [799](#)
Filter Alpha, [770](#)
Filter BbT, [771](#)
FIX4, [779](#), [780](#), [788](#), [789](#), [790](#), [791](#), [796](#), [798](#), [799](#)
Free Run, [803](#)
Freq Dev, [784](#)

GSM subsystem keys (*continued*)

Gate Active Low High, 804
 Gated, 803
 Gaussian, 783
 Gray Coded QPSK, 786
 GSM Off On, 808
 I/Q Scaling, 784
 IS-95, 783
 IS-95 Mod, 783
 IS-95 Mod w/EQ, 783
 IS-95 OQPSK, 786
 IS-95 QPSK, 786
 IS-95 w/EQ, 783
 MSK, 786
 Multislot Off On, 790
 Normal, 799
 Normal All, 799
 Nyquist, 783
 Optimize FIR For EVM ACP, 779
 OQPSK, 786
 $\pi/4$ DQPSK, 786
 Patt Trig In 1, 807
 Patt Trig In 2, 807
 Phase Dev, 785
 Phase Polarity Normal Invert, 786
 PN11, 779, 798
 PN15, 779, 788, 789, 791, 795, 796, 798
 PN20, 779, 798
 PN23, 779, 798
 PN9, 779, 788, 789, 791, 795, 796, 798
 PN9 Mode Normal Quick, 772
 QPSK, 786
 Recall Secondary Frame State, 787
 Rectangle, 783
 Reset & Run, 803
 Restore Factory Default, 780
 Rise Delay, 775, 776
 Rise Time, 777
 Root Nyquist, 783
 S, 797
 Save Secondary Frame State, 787
 Secondary Frame Off On, 788
 Sine, 778
 Single, 803
 SS, 789

GSM subsystem keys (*continued*)

Symbol Rate, 801
 Sync, 799
 Sync Out Offset, 800
 TCH/FS, 791
 Timeslot Ampl Main Delta, 798
 Timeslot Off On, 798
 Trigger & Run, 803
 Trigger Key, 787, 804
 TS, 799
 TSC0, 790, 797
 TSC1, 790, 797
 TSC2, 790, 797
 TSC3, 790, 797
 TSC4, 790, 797
 TSC5, 790, 797
 TSC6, 790, 797
 TSC7, 790, 797
 UN3/4 GSM Gaussian, 783
 Uplink MCS-1, 791
 User File, 778, 779, 788, 789, 791, 798
 User FIR, 783
 User FSK, 785, 786
 User I/Q, 785, 786
 gsm subsystem keys
 PRAM Files, 780
 guides, lxxiii

H

Half softkey, 529, 534
 Header field, 486, 496
 Help Mode Single Cont softkey, 156
 hexadecimal values, 18
 High Amplitude softkey
 See sense subsystem keys
 High Crest Mode Off On softkey, 23
 Higher Layer softkey, 1151
 Hostname softkey, 76
 HSDPA file overview, 809
 HSDPA over W-CDMA SCPI commands, 809
 HSDPA user files, 809
 HSPA file overview, 668
 HSPA user files, 668

Index

- I
- I Gain softkey, 385
- I Offset softkey, 29, 386
- I/Q Adjustments Off On softkey, 32
- I/Q Calibration softkey, 72
- I/Q Gain Balance Source 1 softkey, 29
- I/Q Mapping Normal Invert softkey, 221, 247, 345
- I/Q Mod Filter Manual Auto softkey, 33, 208, 222, 246, 275, 300, 329, 347, 474
- I/Q Off On softkey, 37
- I/Q Out Gain Balance softkey, 27
- I/Q Output Atten softkey, 28
- I/Q Output Filter Manual Auto softkey, 206, 217, 242, 270, 297, 298, 327, 345, 466
- I/Q Scaling softkey
 - See custom subsystem keys
 - See DECT subsystem keys
 - See EDGE subsystem keys
 - See GSM subsystem keys
 - See NADC subsystem keys
 - See PDC subsystem keys
 - See PHS subsystem keys
 - See TETRA subsystem keys
- I/Q softkey, 98
- I/Q Timing Skew Path, 32
- I/Q timing Skew softkey, 31
- IDLE softkey, 951, 970
- IEEE 488.2 common command keys
 - Diagnostic Info, 89
 - Instrument Options, 90
 - RECALL Reg, 90
 - Run Complete Self Test, 92
 - Save Reg, 91
 - Save Seq[n] Reg[nn], 91
 - Select Seq, 90
- Immediate softkey, 227, 261, 281, 311
 - See sense subsystem keys
- Impairments Off On softkey, 467
- Impedance 75 Ohm High softkey, 420
- Incr Set hardkey, 69
 - See amplitude modulation subsystem keys
 - See frequency modulation subsystem keys
 - See phase modulation subsystem keys
- Increment Scramble Code softkey, 352
- Increment Timing Offset softkey, 355
- Infinity softkey, 1057, 1153
- Init Power field, 1098
- Init Pwr field, 1116, 1131
- Initial Bit Count softkey, 441
- Initial Block Count softkey, 431, 434
- Initial Frame Count softkey, 451
- Initialize Phase Fixed Random softkey, 338
- Initialize Table softkey, 284
- input subsystem keys
 - 0.7V, 421
 - 1.4V, 421
 - 1.6V, 421
 - 2.5V, 421
 - Clock Delay Off On, 419
 - Clock Polarity Neg Pos, 420
 - Clock Time Delay, 419
 - Data Polarity Neg Pos, 420
 - Gate Clk Delay, 416
 - Gate Delay Off On, 417
 - Gate Mode Time Clk, 416
 - Gate Off On, 418
 - Gate Polarity Neg Pos, 418
 - Gate Time Delay, 417
 - Impedance 75 Ohm High, 420
 - Resolution, 418
- Insert Row softkey, 249, 252, 255, 284
- Insert Waveform softkey, 313
- installation guide, lxxiii
- Installed Board Info softkey, 81
- Instrument Options softkey, 90
- Int I/Q Skew Corrections RF BB Off softkey, 35
- Int softkeys
 - Int Doublet, 202
 - Int Free-Run, 202
 - Int Gated, 202
 - Int Phase Polarity Normal Invert, 24, 34
 - Int Triggered, 202
- integer response data, 11
- Intermod softkey, 1061
- Internal softkeys
 - Internal, 63, 176, 512
 - Internal 1, 184, 196
 - Internal 2, 184, 196
 - Internal Monitor, 190
 - Internal Square, 202

- Inverse Video Off On softkey, 87
- Inverted softkey, 517
- IP address, 75
- IP Address softkey, 76
- IQ Phase Normal Invert softkey, 767
- IQ Polarity softkey, 388
- IS-2000 SR3 DS softkey
 - See CDMA ARB subsystem keys
 - See CDMA2000 ARB subsystem keys
 - See Dmodulation subsystem keys
 - See wideband CDMA ARB subsystem keys
- IS-95 Mod softkey
 - See CDMA ARB subsystem keys
 - See CDMA2000 ARB subsystem keys
 - See CDMA2000 BBG subsystem keys and fields
 - See custom subsystem keys
 - See DECT subsystem keys
 - See Dmodulation subsystem keys
 - See EDGE subsystem keys
 - See GPS subsystem keys
 - See GSM subsystem keys
 - See NADC subsystem keys
 - See PDC subsystem keys
 - See PHS subsystem keys
 - See TETRA subsystem keys
 - See wideband CDMA ARB subsystem keys
 - See wideband CDMA base band subsystem keys and fields
- IS-95 Mod w/EQ softkey
 - See CDMA ARB subsystem keys
 - See CDMA2000 ARB subsystem keys
 - See CDMA2000 BBG subsystem keys and fields
 - See custom subsystem keys
 - See DECT subsystem keys
 - See Dmodulation subsystem keys
 - See EDGE subsystem keys
 - See GPS subsystem keys
 - See GSM subsystem keys
 - See NADC subsystem keys
 - See PDC subsystem keys
 - See PHS subsystem keys
 - See TETRA subsystem keys
 - See wideband CDMA ARB subsystem keys
 - See wideband CDMA base band generator subsystem keys and fields
- IS-95 OQPSK softkey
 - See custom subsystem keys
 - See DECT subsystem keys
 - See Dmodulation subsystem keys
 - See EDGE subsystem keys
 - See GSM subsystem keys
 - See NADC subsystem keys
 - See PDC subsystem keys
 - See PHS subsystem keys
 - See TETRA subsystem keys
- IS-95 QPSK softkey
 - See custom subsystem keys
 - See DECT subsystem keys
 - See Dmodulation subsystem keys
 - See EDGE subsystem keys
 - See GSM subsystem keys
 - See NADC subsystem keys
 - See PDC subsystem keys
 - See PHS subsystem keys
 - See TETRA subsystem keys
- IS-95 softkey
 - See CDMA ARB subsystem keys
 - See CDMA2000 ARB subsystem keys
 - See CDMA2000 BBG subsystem keys and fields
 - See custom subsystem keys
 - See DECT subsystem keys
 - See Dmodulation subsystem keys
 - See EDGE subsystem keys
 - See GPS subsystem keys
 - See GSM subsystem keys
 - See NADC subsystem keys
 - See PDC subsystem keys
 - See PHS subsystem keys
 - See TETRA subsystem keys
 - See wideband CDMA ARB subsystem keys
 - See wideband CDMA base band generator subsystem keys and fields
- IS-95 w/EQ softkey
 - See CDMA ARB subsystem keys
 - See CDMA2000 ARB subsystem keys
 - See CDMA2000 BBG subsystem keys and fields
 - See custom subsystem keys
 - See DECT subsystem keys
 - See Dmodulation subsystem keys
 - See EDGE subsystem keys

Index

IS-95 w/EQ softkey (continued)

See GPS subsystem keys

See GSM subsystem keys

See NADC subsystem keys

See PDC subsystem keys

See PHS subsystem keys

See TETRA subsystem keys

See wideband CDMA ARB subsystem keys

IS-97 Levels softkey, 229

J

jy, 932

L

LAN Config softkey, 75

Last Mkr Point softkey, 300, 302

Leap Seconds field, 501

Left Alternate softkey, 356

Left softkey, 1023

LF Out softkeys

LF Out Amplitude, 186

LF Out Off On, 190

LF Out Stop Freq, 186, 187, 193

LF Out Sweep Rate, 188

LF Out Sweep Time, 189

LF Out Tone 2 Ampl % of Peak, 187

LF Out Tone 2 Freq, 186, 187, 193

Link Down Up softkey, 347, 1071

Link Forward Reverse softkey, 247, 479

list data, 114

List softkey, 98, 124

list/sweep subsystem keys

Points, 57

Ampl, 49, 66

Ampl Start, 49, 67

Ampl Stop, 49, 68

Dwell Type List Step, 51

Freq, 42, 49

Freq & Ampl, 49

Freq Start, 44, 49

Freq Stop, 45, 49

Load List From Step Sweep, 55

Manual Mode Off On, 53

Manual Point, 52

list/sweep subsystem keys (*continued*)

Off, 42, 49, 66

Preset List, 56

Step Dwell, 56

Sweep Direction Down Up, 50

Sweep Retrace Off On, 54

Sweep Type List Step, 55

Load From Selected File softkey, 20, 123, 127, 336

Load List From Step Sweep softkey, 55

Load/Store softkey, 284

Logic Type softkey, 393

Long Code Mask field, 516

Long Code State field, 483, 516

Loop Back Test Type softkey, 393

Low Amplitude softkey, 430, 433

See sense subsystem keys

Low Capacity softkey, 589, 600

Low Capacity with Z field softkey, 589, 600

low frequency output subsystem keys

Bus, 189

DC, 189

Dual-Sine, 189

Ext, 189

Free Run, 189

Function Generator, 190

Internal Monitor, 190

LF Out Amplitude, 186

LF Out Off On, 190

LF Out Stop Freq, 186, 187, 193

LF Out Sweep Rate, 188

LF Out Sweep Time, 189

LF Out Tone 2 Ampl % of Peak, 187

LF Out Tone 2 Freq, 186, 187, 193

Noise, 189

Ramp, 189

Sine, 189

Square, 189

Swept-Sine, 189

Triangle, 189

Trigger Key, 189

LTM OFF field, 501

M

Manual Mode Off On softkey, 53

Manual Point softkey, 52

- Marker 1 2 3 4 softkey, 302
- Marker 1 Polarity Neg Pos softkey, 212, 226, 260, 280, 475
 - dual ARB subsystem, 308, 333, 475
 - wideband CDMA ARB subsystem, 370
- Marker 1 softkey, 209, 210, 222, 223, 224, 257, 258, 276, 277, 305, 329, 330, 331, 367, 368, 474, 475
 - dual ARB subsystem, 306
- Marker 2 Polarity Neg Pos softkey, 212, 226, 260, 280, 476
 - dual ARB subsystem, 308, 333, 370, 475
- Marker 2 softkey, 209, 210, 222, 223, 224, 257, 258, 276, 277, 305, 329, 330, 331, 367, 368, 474, 475
 - dual ARB subsystem, 306
- Marker 3 Polarity Neg Pos softkey, 212, 226, 260, 280, 476
 - dual ARB subsystem, 308, 333, 475
 - wideband CDMA ARB subsystem, 370
- Marker 3 softkey, 209, 210, 222, 223, 224, 257, 258, 276, 277, 305, 329, 330, 331, 367, 368, 474, 475
 - dual ARB subsystem, 306
- Marker 4 Polarity Neg Pos softkey, 212, 226, 260, 280, 476
 - dual ARB subsystem, 308, 333, 475
 - wideband CDMA ARB subsystem, 370
- Marker 4 softkey, 209, 210, 222, 223, 224, 257, 258, 276, 277, 305, 329, 330, 331, 367, 368, 474, 475
 - dual ARB subsystem, 306
- marker polarity, 212
- Marker softkey, 300
- Markers, 300
- markers
 - alc hold
 - AWGN subsystem, 209
 - CDMA ARB subsystem, 223
 - CDMA2000 ARB subsystem, 257
 - Dmodulation subsystem, 276
 - dual ARB subsystem, 305
 - multitone subsystem, 330, 331
 - wideband CDMA ARB subsystem, 367
 - alternate amplitude
 - AWGN subsystem, 209
 - CDMA ARB subsystem, 222
 - CDMA2000 ARB subsystem, 257
 - Dmodulation subsystem, 276
- markers (*continued*)
 - alternate amplitude
 - dual ARB subsystem, 305
 - multitone subsystem, 329
 - wideband CDMA ARB subsystem, 367
 - clearing, 300
 - marker polarity
 - CDMA ARB subsystem, 226
 - CDMA2000 ARB subsystem, 260
 - Dmodulation subsystem, 280
 - dual ARB subsystem, 308, 475
 - multitone subsystem, 333
 - wideband CDMA ARB subsystem, 370
 - polarity
 - AWGN subsystem, 212
 - RF blanking/pulse
 - AWGN subsystem, 210
 - CDMA ARB subsystem, 224
 - CDMA2000 ARB subsystem, 258
 - Demodulation subsystem, 277
 - dual ARB subsystem, 306
 - wideband CDMA ARB subsystem, 368
 - setting, 302
 - shifting points, 302
- mass memory subsystem keys
 - Binary, 124
 - Copy File, 124
 - Delete All NVWFM Files, 125
 - Delete All WFM Files, 125
 - Delete All WFM1 Files, 125
 - Delete File, 126
 - List, 124
 - Load From Selected File, 127
 - Rename File, 127
 - State, 124
 - Store To File, 127
 - User Flatness, 124
- Max Input softkey, 1061
- Max Power field, 1099
- Max Pwr field, 1117, 1132
- MCDMA softkey, 99
- MDMOD softkey, 99
- MDWCDMA softkey, 100
- Measurement Mode BER% Search softkey, 450
- Measurement Mode BLER% Search softkey, 436

Index

- memory subsystem, [107](#), [109](#), [110](#)
- memory subsystem keys, [113](#), [115](#)
 - Add Comment To Seq[n] Reg[nn], [123](#)
 - All, [104](#), [122](#)
 - Binary, [94](#)
 - Bit, [94](#)
 - CDMA, [95](#)
 - Copy File, [105](#), [114](#)
 - Data PRAM, [112](#)
 - Delete All ARB CDMA Files, [118](#)
 - Delete All ARB DMOD Files, [118](#)
 - Delete All ARB DWCDMA Files, [119](#)
 - Delete All ARB FCDMA Files, [119](#)
 - Delete All ARB MCDMA Files, [120](#)
 - Delete All ARB MDWCDMA Files, [120](#)
 - Delete All ARB MTONE Files, [121](#)
 - Delete All ARB RCDMA Files, [121](#)
 - Delete All ARB UWCDMA Files, [122](#)
 - Delete All Binary Files, [118](#)
 - Delete All Bit Files, [118](#)
 - Delete All Files, [117](#)
 - Delete All FIR Files, [119](#)
 - Delete All FSK Files, [119](#)
 - Delete All I/Q Files, [119](#)
 - Delete All List Files, [120](#)
 - Delete All MDMOD Files, [120](#)
 - Delete All MFCDMA Files, [120](#)
 - Delete All SEQ Files, [121](#)
 - Delete All SHAPE Files, [121](#)
 - Delete All State Files, [121](#)
 - Delete All UFLT Files, [122](#)
 - Delete File, [122](#)
 - DMOD, [95](#)
 - DWCDMA, [96](#)
 - FCDMA, [96](#)
 - FIR, [97](#)
 - FSK, [97](#)
 - I/Q, [98](#)
 - List, [98](#)
 - Load From Selected File, [123](#)
 - MCDMA, [99](#)
 - MDMOD, [99](#)
 - MDWCDMA, [100](#)
 - MFCDMA, [100](#)
 - MTONE, [101](#)
 - memory subsystem keys, [113](#), [115](#) (*continued*)
 - Oversample Ratio, [108](#)
 - RCDMA, [101](#)
 - Rename File, [123](#)
 - SEQ, [102](#)
 - SHAPE, [102](#)
 - State, [103](#)
 - Store To File, [123](#)
 - User Flatness, [103](#)
 - UWCDMA, [104](#)
 - Message Data Raw Data (RPS11) softkey
 - See* wideband CDMA base band generator subsystem keys and fields
 - Message Part field, [1115](#)
 - Message Pulse (RPS22) softkey
 - See* wideband CDMA base band generator subsystem keys and fields
 - Message Type field, [502](#)
 - Message-Control Raw Data Clock (RPS12) softkey
 - See* wideband CDMA base band generator subsystem keys and fields
 - Meter Address softkeys, [77](#)
 - Meter Channel A B softkey, [77](#)
 - Meter Timeout softkey, [78](#)
 - MFCDMA softkey, [100](#)
 - Min Power field, [1099](#)
 - Mod Index softkey, [471](#)
 - Mod On/Off hardkey, [129](#)
 - Modulator Atten Manual Auto softkey, [33](#), [34](#), [207](#), [221](#), [245](#), [246](#), [274](#), [298](#), [299](#), [328](#), [346](#), [472](#), [473](#)
 - Msg Ctrl softkey, [1104](#)
 - Msg Data softkey, [1104](#)
 - Msg Pwr field, [1115](#), [1130](#)
 - MSK softkey
 - See* custom subsystem keys
 - See* DECT subsystem keys
 - See* Dmodulation subsystem keys
 - See* EDGE subsystem keys
 - See* GSM subsystem keys
 - See* NADC subsystem keys
 - See* PDC subsystem keys
 - See* PHS subsystem keys
 - See* TETRA subsystem keys
 - MTONE softkey, [101](#)
 - multicarrier, [348](#)

Multicarrier Off On softkey, 228, 247, 282
 Multicarrier softkey, 348
 Multislot Off On softkey, 646, 790
 Multitone Off On softkey, 339
 multitone subsystem keys
 2.100 MHz, 329
 40.000 MHz, 327, 329
 ARB Reference Ext Int, 333
 ARB Sample Clock, 335
 Clear Header, 326
 Freq Spacing, 336, 337
 Goto Row, 334
 I/Q Mod Filter Manual Auto, 329
 I/Q Output Filter Manual Auto, 327
 Initialize Phase Fixed Random, 338
 Load From Selected File, 336
 Marker 1, 329, 330, 331
 Marker 2, 329, 330, 331
 Marker 3, 329, 330, 331
 Marker 4, 329, 330, 331
 Modulator Atten Manual Auto, 328
 Multitone Off On, 339
 None, 329, 330, 331
 Number Of Tones, 336, 337
 Random Seed Fixed Random, 338
 Reference Freq, 333
 Save Setup To Header, 326
 Store To File, 336
 Through, 327, 329
 Toggle State, 334, 336
 Waveform Runtime Scaling, 335
 mV softkey, 170
 mVemf softkey, 170

N

N Power field, 1075, 1105
 N5102A, 380
 See digital subsystem
 N5102A Off On softkey, 395
 NADC Off On softkey, 904
 NADC softkey, 282, 283, 284
 NADC subsystem keys
 128QAM, 887
 16 1's & 16 0's, 881, 890, 892, 894, 895
 16PSK, 887

NADC subsystem keys (*continued*)
 16QAM, 887
 256QAM, 887
 2-Lvl FSK, 887
 32 1's & 32 0's, 881, 890, 892, 894, 895
 32QAM, 887
 4 1's & 4 0's, 881, 890, 892, 894, 895
 4-Lvl FSK, 887
 4QAM, 887
 64 1's & 64 0's, 881, 890, 892, 894, 895
 64QAM, 887
 8 1's & 8 0's, 881, 890, 892, 894, 895
 8PSK, 887
 All Timeslots, 897
 APCO 25 C4FM, 884
 BBG Data Clock Ext Int, 871
 BBG Ref Ext Int, 883
 Begin Frame, 897
 Begin Timeslot #, 897, 898
 Bit Rate, 872
 BPSK, 887
 Bus, 889, 901
 CDL, 891
 CDVCC, 891, 894
 Continuous, 899
 D8PSK, 887
 Data Format Pattern Framed, 879
 Down Custom, 896
 Down TCH, 896
 Down TCH All, 896
 Ext, 881, 889, 890, 892, 894, 895, 901
 Ext BBG Ref Freq, 884
 Ext Data Clock Normal Symbol, 883
 Ext Delay Bits, 902
 Ext Delay Off On, 903
 Ext Polarity Neg Pos, 903
 Fall Delay, 874, 875
 Fall Time, 875, 876
 Filter Alpha, 871
 Filter BbT, 872
 FIX4, 881, 882, 890, 892, 893, 894, 895, 896
 Frame Repeat Single Cont, 888
 Free Run, 900
 Freq Dev, 886
 Gate Active Low High, 901

Index

NADC subsystem keys (*continued*)

Gated, 899
Gaussian, 884
Gray Coded QPSK, 887
I/Q Scaling, 885
IS-95, 884
IS-95 Mod, 884
IS-95 Mod w/EQ, 884
IS-95 OQPSK, 887
IS-95 QPSK, 887
IS-95 w/EQ, 884
MSK, 887
NADC Off On, 904
Nyquist, 884
Optimize FIR For EVM ACP, 880
OQPSK, 887
 $\pi/4$ DQPSK, 887
Patt Trig In 1, 903
Patt Trig In 2, 903
Phase Dev, 886
PN11, 881, 890, 892, 894, 895
PN15, 881, 890, 892, 894, 895
PN20, 881, 890, 892, 894, 895
PN23, 881, 890, 892, 894, 895
PN9, 881, 890, 892, 894, 895
PN9 Mode Normal Quick, 873
Polarity Normal Invert, 888
QPSK, 887
Rate Full Half, 885
Recall Secondary Frame State, 888
Rectangle, 884
Reset & Run, 900
Restore NADC Factory Default, 882
Rise Delay, 877
Rise Time, 878, 879
Root Nyquist, 884
SACCH, 891, 895
Save Secondary Frame State, 889
Secondary Frame Off On, 889
Sine, 874, 880
Single, 899
Symbol Rate, 898
SYNC, 892, 895
Sync Out Offset, 897
Timeslot Ampl Main Delta, 893

NADC subsystem keys (*continued*)

Timeslot Off On, 893
Trigger & Run, 900
Trigger Key, 889, 901
UN3/4 GSM Gaussian, 884
Up Custom, 896
Up TCH, 896
Up TCH All, 896
User File, 874, 880, 881, 890, 892, 894, 895
User FIR, 884
User FSK, 886, 887
User I/Q, 887
nadc subsystem keys
PRAM Files, 881
Name and Store softkey, 313
Negate I softkey, 386
Negate Q softkey, 389
Network ID field, 502
No Limits softkey
See calculate subsystem keys
No Thresholds softkey
See sense subsystem keys
Noise Bandwidth Factor softkey, 308
Noise Off On softkey, 506, 518
Noise Seed Fixed Random softkey, 214
Noise Seed softkey, 469
Noise softkey, 175, 182, 189, 195
NONE (RPS0) softkey
See wideband CDMA base band generator
subsystem keys and fields
NONE softkey, 1159
None softkey, 161, 209, 210, 222, 223, 224, 257,
258, 276, 277, 305, 306, 329, 330, 331, 367,
368, 474, 475, 567, 1065, 1067, 1164, 1171
Normal All softkey, 656, 799
Normal softkey, 517, 656, 799, 1023
Num of Blk field, 1165, 1172
Num of Pre field, 1116, 1131
Number of AICH field, 1101
Number of PRACH 80ms field, 1115
Number of PRACH field, 1128, 1130
Number of Preamble field, 1131
Number Of Tones softkey, 336, 337
numeric boolean response data, 11
Numeric Format, 387

- Numeric Format softkey, [387](#)
- numeric SCPI parameter, [8](#)
- numeric, extended SCPI parameter, [8](#)
- Nyquist softkey
 - See CDMA ARB subsystem keys
 - See CDMA2000 ARB subsystem keys
 - See CDMA2000 BBG subsystem keys and fields
 - See custom subsystem keys
 - See DECT subsystem keys
 - See Dmodulation subsystem keys
 - See EDGE subsystem keys
 - See GPS subsystem keys
 - See GSM subsystem keys
 - See NADC subsystem keys
 - See PDC subsystem keys
 - See PHS subsystem keys
 - See TETRA subsystem keys
 - See wideband CDMA ARB subsystem keys
 - See wideband CDMA base band generator subsystem keys and fields
- O**
- OCNS softkey, [357](#)
- octal values, [18](#)
- Off softkey, [24](#), [35](#), [42](#), [49](#), [66](#), [227](#), [261](#), [281](#), [311](#), [1127](#)
- Off softkey, dual ARB trigger delay, [321](#)
- Omitted softkey, [1057](#), [1153](#)
- On softkey, [227](#), [261](#), [281](#), [311](#), [1127](#)
- On/Off field, [1039](#), [1120](#)
- OpenLoop Ant1 SCH TSTD OFF softkey, [1062](#)
- OpenLoop Ant1 softkey, [1062](#)
- OpenLoop Ant2 SCH TSTD OFF softkey, [1062](#)
- OpenLoop Ant2 softkey, [1062](#)
- Optimize ACP ADJ ALT softkey, [347](#), [362](#)
- Optimize FIR For EVM ACP softkey, [1096](#)
 - See CDMA ARB subsystem keys
 - See CDMA2000 ARB subsystem keys
 - See CDMA2000 BBG subsystem keys and fields
 - See custom subsystem keys
 - See DECT subsystem keys
 - See Dmodulation subsystem keys
 - See EDGE subsystem keys
 - See GPS subsystem keys
 - See GSM subsystem keys
- Optimize FIR For EVM ACP softkey, [1096](#)
 - (continued)
 - See NADC subsystem keys
 - See PDC subsystem keys
 - See PHS subsystem keys
 - See TETRA subsystem keys
 - See wideband CDMA ARB subsystem keys
 - See wideband CDMA base band generator subsystem keys and fields
- options
 - 001/002
 - all subsystem, [204](#), [462](#)
 - custom subsystem, [548](#)
 - Dmodulation subsystem, [270](#)
 - dual ARB subsystem, [294](#)
 - multitone subsystem, [326](#)
 - 400
 - wideband CDMA ARB subsystem, [340](#)
 - wideband CDMA base band generator subsystem, [1017](#)
 - 401
 - CDMA ARB subsystem, [215](#)
 - CDMA2000 ARB subsystem, [240](#)
 - CDMA2000 BBG subsystem, [479](#)
 - 402
 - DECT subsystem, [573](#)
 - EDGE subsystem, [622](#)
 - GSM subsystem, [770](#)
 - NADC subsystem, [871](#)
 - PDC subsystem, [905](#)
 - PHS subsystem, [938](#)
 - TETRA subsystem, [974](#)
 - 403
 - AWGN real-time subsystem, [463](#)
 - AWGN subsystem, [205](#)
 - 406
 - bluetooth subsystem, [464](#)
 - 409
 - GPS subsystem, [763](#)
 - UN7/300
 - calculate subsystem, [398](#)
 - data subsystem, [408](#)
 - input subsystem, [416](#), [422](#)
 - sense subsystem, [425](#)
- Options Info softkey, [83](#)

Index

OQPSK softkey

- See* custom subsystem keys
- See* DECT subsystem keys
- See* Dmodulation subsystem keys
- See* EDGE subsystem keys
- See* GSM subsystem keys
- See* NADC subsystem keys
- See* PDC subsystem keys
- See* PHS subsystem keys
- See* TETRA subsystem keys

Output Blanking Off On Auto softkey, 128

output subsystem keys

- Mod On/Off, 129
- Output Blanking Off On Auto, 128
- RF On/Off, 129

Oversample Ratio softkey, 108, 226

Overwrite softkey, 161

P

P Code Pwr softkey, 767

P Rev field, 503

P Rev Min field, 501

P softkey, 591

$\pi/4$ DQPSK softkey

- See* custom subsystem keys
- See* DECT subsystem keys
- See* Dmodulation subsystem keys
- See* EDGE subsystem keys
- See* GSM subsystem keys
- See* NADC subsystem keys
- See* PDC subsystem keys
- See* PHS subsystem keys
- See* TETRA subsystem keys

Packet (DH1) softkey, 476

Paging Indicator field, 510, 1043

Paging softkey, 229

parameter types. *See* SCPI commands parameter types

Pass Amplitude softkey, 430, 434

- See* sense subsystem keys

Pass Through Preset softkey, 395

Pass/Fail Limits softkey, 406

Pass/Fail Off On softkey, 406

paths, SCPI command tree, 7

Patt Trig In 1 softkey

- See* CDMA ARB subsystem keys
- See* CDMA2000 ARB subsystem keys
- See* custom subsystem keys
- See* DECT subsystem keys
- See* Dmodulation subsystem keys
- See* dual ARB subsystem keys
- See* EDGE subsystem keys
- See* GSM subsystem keys
- See* NADC subsystem keys
- See* PDC subsystem keys
- See* PHS subsystem keys
- See* TETRA subsystem keys
- See* wideband CDMA ARB subsystem keys
- subsystem keys

Patt Trig In 2 softkey

- See* CDMA ARB subsystem keys
- See* CDMA2000 ARB subsystem keys
- See* custom subsystem keys
- See* DECT subsystem keys
- See* Dmodulation subsystem keys
- See* dual ARB subsystem keys
- See* EDGE subsystem keys
- See* GSM subsystem keys
- See* NADC subsystem keys
- See* PDC subsystem keys
- See* PHS subsystem keys
- See* TETRA subsystem keys
- See* wideband CDMA ARB subsystem keys
- subsystem keys

Pattern trigger in 1 field, 1141

Pattern trigger in 2 field, 1142

PCCPCH + SCH + 3 DPCH softkey, 348, 353

PCCPCH + SCH +1 DPCH softkey, 348, 353

PCCPCH + SCH softkey, 348, 353

P-CCPCH data (DRPS39) softkey, 1047, 1049, 1050, 1051, 1052

P-CCPCH data-clk (DRPS38) softkey, 1047, 1049, 1050, 1051, 1052

PCCPCH softkey, 1019, 1020

PDC Off On softkey, 937

PDC softkey, 282, 283, 284

PDC subsystem keys

- 128QAM, 920

- 16 1's & 16 0's, 914, 923, 924, 926, 928

PDC subsystem keys (*continued*)

16PSK, 920
16QAM, 920
256QAM, 920
2-Lvl FSK, 920
32 1's & 32 0's, 914, 923, 924, 926, 928
32QAM, 920
4 1's & 4 0's, 914, 923, 924, 926, 928
4-Lvl FSK, 920
4QAM, 920
64 1's & 64 0's, 914, 923, 924, 926, 928
64QAM, 920
8 1's & 8 0's, 914, 923, 924, 926, 928
8PSK, 920
All Timeslots, 930
APCO 25 C4FM, 917
BBG Ref Ext Int, 916
Begin Frame, 930
Begin Timeslot #, 930, 931
Bit Rate, 906
BPSK, 920
Bus, 922, 934
CC, 923, 927, 929
Continuous, 933
D8PSK, 920
Data Format Pattern Framed, 913
Down Custom, 930
Down TCH, 930
Down TCH All, 930
Ext, 914, 922, 923, 924, 926, 928, 934
Ext BBG Ref Freq, 917
Ext Data Clock Ext Int, 905
Ext Data Clock Normal Symbol, 916
Ext Delay Bits, 935
Ext Delay Off On, 936
Ext Polarity Neg Pos, 936
Fall Delay, 908, 909
Fall Time, 908, 910
Filter Alpha, 905
Filter BbT, 906
FIX4, 914, 915, 923, 924, 925, 926, 928
Free Run, 933
Freq Dev, 919
Gate Active Low High, 934
Gated, 933

PDC subsystem keys (*continued*)

Gaussian, 917
Gray Coded QPSK, 920
I/Q Scaling, 918
IS-95, 917
IS-95 Mod, 917
IS-95 Mod w/EQ, 917
IS-95 OQPSK, 920
IS-95 QPSK, 920
IS-95 w/EQ, 917
MSK, 920
Nyquist, 917
Optimize FIR For EVM ACP, 914
OQPSK, 920
 $\pi/4$ DQPSK, 920
Patt Trig In 1, 937
Patt Trig In 2, 937
PDC Off On, 937
Phase Dev, 919
Phase Polarity Normal Invert, 921
PN11, 914, 924, 926, 928
PN15, 914, 923, 924, 926, 928
PN20, 914, 924, 926, 928
PN23, 914, 924, 926, 928
PN9, 914, 923, 924, 926, 928
PN9 Mode Normal Quick, 907
QPSK, 920
Rate Full Half, 918
Recall Secondary Frame State, 921
Rectangle, 917
Reset & Run, 933
Restore PDC Factory Default, 915
Rise Delay, 910, 911
Rise Time, 912
Root Nyquist, 917
SACCH, 924, 927, 929
Save Secondary Frame State, 921
Secondary Frame Off On, 922
Sine, 913
Single, 933
SW, 924, 927, 929
Symbol Rate, 931
Sync Out Offset, 930
Timeslot Ampl Main Delta, 925
Timeslot Off On, 926

Index

PDC subsystem keys (*continued*)

Trigger & Run, [933](#)
Trigger Key, [922](#), [934](#)
UN3/4 GSM Gaussian, [917](#)
Up Custom, [930](#)
Up TCH, [930](#)
Up TCH All, [930](#)
Up VOX, [930](#)
User File, [913](#), [914](#), [923](#), [924](#), [926](#), [928](#)
User FIR, [917](#)
User FSK, [920](#)
User I/Q, [920](#)

pdcc subsystem keys

PRAM Files, [915](#)

Performance Req softkey, [1061](#)

Permuted ESN field, [486](#), [496](#)

Phase Dev softkey

See custom subsystem keys
See DECT subsystem keys
See EDGE subsystem keys
See GSM subsystem keys
See NADC subsystem keys
See PDC subsystem keys
See PHS subsystem keys
See TETRA subsystem keys

phase modulation subsystem keys

Φ M Sweep Time softkey, [195](#)
FM Φ M Normal High BW softkey, [192](#)
 Φ M Dev Couple Off On, [197](#)
 Φ M Dev softkey, [197](#)
 Φ M Off On softkey, [196](#)
 Φ M Path 1 2, [191](#)
 Φ M Tone 2 Ampl Percent of Peak, [194](#)
 Φ M Tone 2 Rate, [194](#)
Bus, [195](#)
Dual-Sine, [195](#)
Ext, [195](#)
Ext Coupling DC AC, [193](#)
Ext1, [196](#)
Ext2, [196](#)
Free Run, [195](#)
Incr Set, [192](#), [198](#)
Internal 1, [196](#)
Internal 2, [196](#)
Noise, [195](#)

phase modulation subsystem keys (*continued*)

Ramp, [195](#)
Sine, [195](#)
Square, [195](#)
Swept-Sine, [195](#)
Triangle, [195](#)
Trigger Key, [195](#)

Phase Polarity field, [509](#)

Phase Polarity Normal Invert softkey

See custom subsystem keys
See DECT subsystem keys
See EDGE subsystem keys
See GSM subsystem keys
See PDC subsystem keys
See PHS subsystem keys
See TETRA subsystem keys
See wideband CDMA base band generator
subsystem keys and fields

Phase Polarity Normal Inverted softkey, [1071](#)

Phase Ref Set softkey, [47](#)

PHS Off On softkey, [973](#)

PHS softkey, [282](#), [283](#), [284](#)

PHS subsystem keys

128QAM, [959](#)
16 1's & 16 0's, [948](#), [950](#), [953](#), [968](#), [972](#)
16-Lvl FSK, [959](#)
16PSK, [959](#)
16QAM, [959](#)
256QAM, [959](#)
2-Lvl FSK, [959](#)
32 1's & 32 0's, [948](#), [950](#), [953](#), [968](#), [972](#)
32QAM, [959](#)
4 1's & 4 0's, [948](#), [950](#), [953](#), [968](#), [972](#)
4-Lvl FSK, [959](#)
4QAM, [959](#)
64 1's & 64 0's, [948](#), [950](#), [953](#), [968](#), [972](#)
64QAM, [959](#)
8 1's & 8 0's, [948](#), [950](#), [953](#), [968](#), [972](#)
8-Lvl FSK, [959](#)
8PSK, [959](#)
All Timeslots, [961](#)
APCO 25 C4FM, [956](#)
BBG Data Clock Ext Int, [938](#)
BBG Ref Ext Int, [955](#)
Begin Frame, [961](#)

PHS subsystem keys (*continued*)

Begin Timeslot #, 961, 962
 Bit Rate, 939
 BPSK, 959
 Bus, 960, 967
 C4FM, 959
 Continuous, 963
 CSID, 951, 969
 Custom, 954
 D8PSK, 959
 Data Format Pattern Framed, 947
 Ext, 948, 950, 953, 960, 967, 968, 972
 Ext BBG Ref Freq, 955
 Ext Data Clock Normal Symbol, 954
 Ext Delay Bits, 965
 Ext Delay Off On, 966
 Ext Polarity Neg Pos, 966
 Fall Delay, 942, 943
 Fall Time, 942, 944
 Filter Alpha, 938
 Filter BbT, 939
 FIX4, 948, 949, 950, 953, 968, 969, 972
 Free Run, 964
 Gate Active Low High, 965
 Gated, 963
 Gaussian, 956
 Gray Coded QPSK, 959
 I/Q Scaling, 957
 IDLE, 951, 970
 IS-95, 956
 IS-95 Mod, 956
 IS-95 Mod w/EQ, 956
 IS-95 OQPSK, 959
 IS-95 QPSK, 959
 IS-95 w/EQ, 956
 MSK, 959
 Nyquist, 956
 Optimize FIR For EVM ACP, 948
 OQPSK, 959
 $\pi/4$ DQPSK, 959
 Patt Trig In 1, 966
 Patt Trig In 2, 966
 Phase Dev, 957, 958
 Phase Polarity Normal Invert, 959
 PHS Off On, 973

PHS subsystem keys (*continued*)

PN11, 948, 950, 953, 968, 972
 PN15, 948, 950, 953, 968, 972
 PN20, 948, 950, 953, 968, 972
 PN23, 948, 950, 953, 968, 972
 PN9, 948, 950, 953, 968, 972
 PN9 Mode Normal Quick, 940
 PSID, 951, 970
 QPSK, 959
 Recall Secondary Frame State, 959
 Rectangle, 956
 Reset & Run, 964
 Restore PHS Factory Default, 949
 Rise Delay, 944, 945
 Rise Time, 946
 Root Nyquist, 956
 SA, 952, 971
 Save Secondary Frame State, 960
 Scramble Off On, 941
 Scramble Seed, 941
 Secondary Frame Off On, 960
 Sine, 947
 Single, 963
 Symbol Rate, 962
 SYNC, 954
 Sync Out Offset, 961
 TCH, 954
 TCH All, 954
 Timeslot Ampl Main Delta, 950, 969
 Timeslot Off On, 952, 971
 Timeslot Type, 972
 Trigger & Run, 964
 Trigger Key, 960, 967
 UN3/4 GSM Gaussian, 956
 User File, 947, 948, 950, 953, 968, 972
 User FIR, 956
 User FSK, 958, 959
 User I/Q, 958, 959
 UW, 952, 953, 970, 971

phs subsystem keys
 PRAM Files, 949
 PI Bits field, 1043
 PICH 10ms FramePulse (DRPS37) softkey, 1047,
 1049, 1050, 1051, 1052

Index

PICH data (DRPS35) softkey, [1047](#), [1049](#), [1050](#), [1051](#), [1052](#)

PICH data-clk (DRPS34) softkey, [1047](#), [1049](#), [1050](#), [1051](#), [1052](#)

PICH softkey, [357](#), [1019](#), [1020](#)

PICH TimeSlot Pulse (DRPS36) softkey, [1047](#), [1049](#), [1050](#), [1051](#), [1052](#)

Pilot softkey, [228](#), [229](#), [231](#), [247](#), [254](#)

Playback Ratio field, [1023](#)

PN Offset field, [512](#)

PN Offset softkey, [252](#), [255](#)

PN11 softkey

See custom subsystem keys

See DECT subsystem keys

See EDGE subsystem keys

See GSM subsystem keys

See NADC subsystem keys

See PDC subsystem keys

See PHS subsystem keys

See sense subsystem keys

See TETRA subsystem keys

PN15 softkey

See CDMA2000 BBG subsystem keys and fields

See custom subsystem keys

See DECT subsystem keys

See EDGE subsystem keys

See GPS subsystem keys

See GSM subsystem keys

See NADC subsystem keys

See PDC subsystem keys

See PHS subsystem keys

See sense subsystem keys

See TETRA subsystem keys

See wideband CDMA base band generator
subsystem keys and fields

PN20 softkey

See custom subsystem keys

See DECT subsystem keys

See EDGE subsystem keys

See GSM subsystem keys

See NADC subsystem keys

See PDC subsystem keys

See PHS subsystem keys

See sense subsystem keys

See TETRA subsystem keys

PN23 softkey

See custom subsystem keys

See DECT subsystem keys

See EDGE subsystem keys

See GSM subsystem keys

See NADC subsystem keys

See PDC subsystem keys

See PHS subsystem keys

See sense subsystem keys

See TETRA subsystem keys

PN9 Mode Normal Quick softkey

See DECT subsystem keys

See GSM subsystem keys

See NADC subsystem keys

See PDC subsystem keys

See PHS subsystem keys

See TETRA subsystem keys

PN9 Mode Preset softkey, [159](#)

PN9 softkey

See CDMA2000 BBG subsystem keys and fields

See custom subsystem keys

See data subsystem keys

See DECT subsystem keys

See EDGE subsystem keys

See GPS subsystem keys

See GSM subsystem keys

See NADC subsystem keys

See PDC subsystem keys

See PHS subsystem keys

See sense subsystem keys

See TETRA subsystem keys

See wideband CDMA base band generator
subsystem keys and fields

polarity

awgn subsystem, [212](#)

markers

cdma arb subsystem, [226](#)

cdma2000 arb subsystem, [260](#)

dmodulation subsystem, [280](#)

dual ARB subsystem, [308](#), [475](#)

multitone subsystem, [333](#)

wideband CDMA ARB subsystem, [370](#)

polarity markers

awgn subsystem, [212](#)

Polarity Normal Invert softkey, [888](#)

- Port Config softkey, [394](#)
- Power Control Signal Polarity Neg Pos softkey, [1101](#)
- Power field
 - See* CDMA2000 BBG subsystem keys and fields
 - See* wideband CDMA baseband generator subsystem keys and fields
- Power Hold Off On softkey, [1098](#)
- Power Meter softkey, [78](#)
- Power Mode Norm TPC softkey, [1101](#)
- Power On Last Preset softkey, [157](#)
- Power Search Manual Auto softkey, [60, 62](#)
- Power Search Reference Fixed Mod softkey, [61](#)
- Power softkey, [364](#)
- power subsystem keys
 - ALC Off On, [62](#)
 - Alt Amp Delta, [63](#)
 - Alt Ampl Off On, [64](#)
 - Ampl, [49, 66](#)
 - Ampl Offset, [68](#)
 - Ampl Ref Off On, [67](#)
 - Ampl Ref Set, [66](#)
 - Ampl Start, [49, 67](#)
 - Ampl Stop, [49, 68](#)
 - Amplitude, [66, 69](#)
 - Atten Hold Off On, [65](#)
 - Auto, [58, 59](#)
 - Do Power Search, [60, 62](#)
 - Ext Detector, [63](#)
 - Internal, [63](#)
 - Off, [49, 66](#)
 - Power Search Manual Auto, [60, 62](#)
 - Power Search Reference Fixed Mod, [61](#)
 - Set ALC Level, [60](#)
 - Set Atten, [65](#)
 - Source Module, [63](#)
 - Span Type User Full softkey, [62](#)
 - Start Frequency, [61](#)
 - step, [69](#)
 - Stop Frequency, [61](#)
- PPCCPCH softkey, [357, 358](#)
- Pp-m field, [1117, 1133](#)
- PRACH Mode Single Multi softkey, [1114](#)
- PRACH Power Setup Mode Pp-m Total softkey, [1121](#)
- PRACH Processing (RPS19) softkey
 - See* wideband CDMA base band generator subsystem keys and fields
- PRACH Scrambling Code field, [1122](#)
- PRACH softkey, [1097](#)
- PRACH Trigger Polarity Neg Pos softkey, [1126](#)
- PRACH Trigger softkey, [1126](#)
- PRACH Trigger Source Immedi Trigger softkey, [1126](#)
- PRAM
 - downloads, [112](#)
 - list, [113](#)
- PRAM DATA BLOCK, [114](#)
- pram files
 - CUSTOM subsystem keys, [558](#)
 - DECT subsystem keys, [583](#)
 - EDGE subsystem keys, [631](#)
 - GSM subsystem keys, [780](#)
 - NADC subsystem keys, [881](#)
 - PDC subsystem keys, [915](#)
 - PHS subsystem keys, [949](#)
 - TETRA subsystem keys, [985](#)
- PRAM LIST, [114](#)
- PRAM?, [114](#)
- PRAT field, [503](#)
- Pre Sig field, [1118](#)
- Preamble power average field, [1120](#)
- Preamble Pulse (RPS21) softkey
 - See* wideband CDMA base band generator subsystem keys and fields
- Preamble Raw Data (RPS15) softkey
 - See* wideband CDMA base band generator subsystem keys and fields
- Preamble Raw Data Clock (RPS16) softkey
 - See* wideband CDMA base band generator subsystem keys and fields
- Preamble softkey, [1104](#)
- precise talking and forgiving listening, [7](#)
- Preset hardkey, [158](#)
- Preset List softkey, [21, 56](#)
- Preset Normal User softkey, [160](#)
- programming guide, [lxxiii](#)
- PSCH softkey, [357](#)
- PSCH State field, [1045](#)
- PSID softkey, [951, 970](#)

Index

pulse modulation subsystem keys

- Ext Pulse, [202](#)
- Int Doublet, [202](#)
- Int Free-Run, [202](#)
- Int Gated, [202](#)
- Int Triggered, [202](#)
- Internal Square, [202](#)
- Pulse Off On, [202](#)
- Pulse Period, [200](#)
- Pulse Rate, [199](#)
- Pulse Width, [201](#)

Pulse softkeys

- Pulse Off On, [202](#)
- Pulse Period, [200](#)
- Pulse Rate, [199](#)
- Pulse Width, [201](#)

Pulse/RF blanking, [306](#)

pulse/RF blanking markers

- awgn subsystem, [210](#)
- cdma arb subsystem, [224](#)
- cdma2000 arb, [258](#)
- dmodulation, [277](#)
- dual ARB subsystem, [306](#)
- wideband cdma arb, [368](#)

Puncture fields, [1165](#), [1172](#)

Puncture softkey, [1055](#)

PwrOffs field, [1054](#), [1150](#)

PWT softkey, [282](#), [283](#), [284](#)

Q

Q Gain softkey, [388](#)

Q Offset softkey, [30](#), [390](#)

QOF field, [487](#), [497](#)

QPSK softkey

- See* custom subsystem keys
- See* DECT subsystem keys
- See* Dmodulation subsystem keys
- See* EDGE subsystem keys
- See* GSM subsystem keys
- See* NADC subsystem keys
- See* PDC subsystem keys
- See* PHS subsystem keys
- See* TETRA subsystem keys

Quadrature Angle Adjustment softkey, [25](#), [30](#)

Quarter softkey, [529](#), [534](#)

quotes, SCPI command use of, [17](#)

R

RACH TrCH softkey, [1104](#)

Radio Config field

See CDMA2000 BBG subsystem keys and fields

Radio Config softkey, [253](#)

RadioConfig 1/2 Access softkey, [479](#)

RadioConfig 1/2 Traffic softkey, [479](#)

RadioConfig 3/4 Common Control softkey, [479](#)

RadioConfig 3/4 Enhanced Access softkey, [479](#)

RadioConfig 3/4 Traffic softkey, [479](#)

Ramp field, [487](#)

Ramp softkey, [175](#), [182](#), [189](#), [195](#)

Ramp Step field, [1117](#), [1132](#)

Ramp Time field, [487](#)

Random Seed Fixed Random softkey, [338](#)

Random softkey, [356](#), [364](#)

Ranging Code C/A P C/A+P softkey, [767](#)

Rate Full Half softkey, [885](#), [918](#)

Rate Match Attr field, [1070](#), [1165](#), [1172](#)

Rate softkey, [252](#), [255](#)

RCDMA softkey, [101](#)

real response data, [10](#)

Real-time AWGN Off On softkey, [463](#)

real-time AWGN subsystem keys

Bandwidth, [463](#)

Real-time AWGN Off On, [463](#)

Real-time GPS Off On softkey, [769](#)

Real-time Noise softkey, [310](#)

RECALL Reg softkey, [90](#)

Recall Secondary Frame State softkey

See DECT subsystem keys

See EDGE subsystem keys

See GSM subsystem keys

See NADC subsystem keys

See PDC subsystem keys

See PHS subsystem keys

See TETRA subsystem keys

Rectangle softkey

See CDMA ARB subsystem keys

See CDMA2000 ARB subsystem keys

See CDMA2000 BBG subsystem keys and fields

See custom subsystem keys

See DECT subsystem keys

- Rectangle softkey (continued)*
See Dmodulation subsystem keys
See EDGE subsystem keys
See GPS subsystem keys
See GSM subsystem keys
See NADC subsystem keys
See PDC subsystem keys
See PHS subsystem keys
See TETRA subsystem keys
See wideband CDMA ARB subsystem keys
See wideband CDMA base band generator subsystem keys and fields
- Ref Data Rate field, [1073](#), [1103](#)
Ref Oscillator Source Auto Off On softkey, [48](#)
Ref Sensitivity softkey, [1061](#)
Reference Freq softkey, [477](#)
See AWGN subsystem keys
See bluetooth subsystem keys
See CDMA ARB subsystem keys
See CDMA2000 ARB subsystem keys
See Dmodulation subsystem keys
See dual ARB subsystem keys
See multitone subsystem keys
See wideband CDMA ARB subsystem keys
- Reference Frequency softkey, [382](#)
Reference Out softkey, [413](#)
references, [lxxiii](#)
Rename File, [123](#)
Rename File softkey, [127](#)
Reserved field, [503](#)
Reset & Run softkey
See CDMA ARB subsystem keys
See CDMA2000 ARB subsystem keys
See custom subsystem keys
See DECT subsystem keys
See Dmodulation subsystem keys
See dual ARB subsystem keys
See EDGE subsystem keys
See GSM subsystem keys
See NADC subsystem keys
See PDC subsystem keys
See PHS subsystem keys
See TETRA subsystem keys
See wideband CDMA ARB subsystem keys
- Reset RS-232 softkey, [79](#)
Reset to Initial Power softkey, [1100](#)
Resolution softkey, [418](#)
resolving error messages/setting conflicts, [670](#), [811](#)
response data types. *See* SCPI commands response types
- Restore DECT Factory Default softkey, [583](#)
Restore EDGE Factory Default softkey, [632](#)
Restore Factory Default softkey, [780](#)
Restore NADC Factory Default softkey, [882](#)
Restore PDC Factory Default softkey, [915](#)
Restore PHS Factory Default softkey, [949](#)
Restore Sys Defaults softkey, [159](#)
Restore TETRA Factory Default softkey, [986](#)
Resync Limits softkey, [456](#)
Retrigger Mode Off On softkey, [371](#)
Reverse softkey, [228](#)
Revert to Default Cal Settings softkey, [73](#)
rf blanking, [306](#)
RF blanking/pulse markers
awgn subsystem, [210](#)
cdma arb subsystem, [224](#)
cdma2000 arb subsystem, [258](#)
dmodulation subsystem, [277](#)
dual ARB subsystem, [306](#)
wideband cdma arb subsystem, [368](#)
- RF On/Off hardkey, [129](#)
Right Alternate softkey, [356](#)
Right softkey, [1023](#)
Rise Delay softkey
See custom subsystem keys
See DECT subsystem keys
See EDGE subsystem keys
See GSM subsystem keys
See NADC subsystem keys
See PDC subsystem keys
See PHS subsystem keys
See TETRA subsystem keys
- Rise Time softkey
See custom subsystem keys
See DECT subsystem keys
See EDGE subsystem keys
See GSM subsystem keys
See NADC subsystem keys
See PDC subsystem keys
See PHS subsystem keys

Index

Rise Time softkey (continued)

See TETRA subsystem keys

Rising softkey, [547](#)

RMC 144 kbps (25.141) softkey, [1134](#)

RMC 384 kbps (25.141) softkey, [1134](#)

RMC 64 kbps (25.141) softkey, [1134](#)

RMC122 kbps (25.141) softkey, [1134](#)

RMS header info, [295](#)

Root Nyquist softkey

See CDMA ARB subsystem keys

See CDMA2000 ARB subsystem keys

See CDMA2000 BBG subsystem keys and fields

See custom subsystem keys

See DECT subsystem keys

See Dmodulation subsystem keys

See EDGE subsystem keys

See GPS subsystem keys

See GSM subsystem keys

See NADC subsystem keys

See PDC subsystem keys

See PHS subsystem keys

See TETRA subsystem keys

See wideband CDMA ARB subsystem keys

See wideband CDMA base band generator
subsystem keys and fields

rotate markers, [302](#)

Rotation softkey, [390](#)

route subsystem keys

Burst Gate In Polarity Neg Pos, [130](#), [131](#)

Data Clock Out Neg Pos, [133](#)

Data Clock Polarity Neg Pos, [130](#), [132](#), [134](#)

Data Out Polarity Neg Pos, [133](#), [135](#)

Data Polarity Neg Pos, [131](#), [132](#)

DATA/CLK/SYNC Rear Outputs Off On, [135](#)

Symbol Sync Out Polarity Neg Pos, [134](#), [135](#)

Symbol Sync Polarity Neg Pos, [131](#), [132](#)

RS-232 Baud Rate softkey, [79](#)

RS-232 ECHO Off On softkeys, [79](#)

RS-232 Timeout softkeys, [80](#)

Run Complete Self Test softkey, [92](#)

runtime scaling, [312](#), [335](#)

S

S softkey, [645](#), [797](#)

See DECT subsystem keys

SA softkey, [952](#), [971](#)

SACCH softkey, [891](#), [895](#), [924](#), [927](#), [929](#)

Samples softkey, dual ARB trigger delay, [321](#)

Sanitize softkey, [161](#)

Satellite ID softkey, [769](#)

Save Reg softkey, [91](#)

Save Secondary Frame State softkey

See DECT subsystem keys

See EDGE subsystem keys

See GSM subsystem keys

See NADC subsystem keys

See PDC subsystem keys

See PHS subsystem keys

See TETRA subsystem keys

Save Seq[n] Reg[nn] softkey, [91](#)

Save Setup To Header softkey, [206](#), [220](#), [245](#), [273](#),
[297](#), [326](#), [344](#), [467](#)

Save User Preset softkey, [160](#)

Scale to 0dB softkey

See CDMA ARB subsystem keys

See CDMA2000 ARB subsystem keys

See CDMA2000 BBG subsystem keys and fields

See wideband CDMA ARB subsystem keys

See wideband CDMA base band generator
subsystem keys and fields

Scale Waveform Data softkey, [312](#)

scaling

during playback, [312](#), [335](#)

waveform files, [312](#)

Scaling softkey, [312](#), [391](#)

SCCPCH softkey, [357](#), [358](#)

SCFN field, [1059](#), [1155](#)

SCH slot-pulse (DRPS10) softkey, [1047](#), [1049](#),
[1050](#), [1051](#), [1052](#)

SCPI

errors, [155](#)

SCPI command subsystems

3GPP W-CDMA HSPA, [668](#)

all, [462](#)

amplitude modulation, [172](#)

AWGN, [205](#)

AWGN real-time, [463](#)

bluetooth, [464](#)

calculate, [398](#)

calibration, [72](#)

SCPI command subsystems (*continued*)

CDMA ARB, 215
 CDMA2000 ARB, 240
 CDMA2000 BBG, 479
 communication, 75
 correction, 20
 custom, 548
 data, 408
 DECT, 573
 diagnostic, 81
 digital, 380
 digital modulation, 22
 display, 85
 Dmodulation, 270
 Dual ARB, 294
 E4438C, 204
 EDGE, 622
 frequency, 38
 frequency modulation, 179
 GPS subsystem, 763
 GSM, 770
 HSDPA over W-CDMA, 809
 IEEE 488.2 common commands, 88
 input, 416, 422
 list/sweep, 49
 low frequency output, 186
 mass memory, 124
 memory, 94
 multitone, 326
 N5102A, 380
 NADC, 871
 output, 128
 PDC, 905
 phase modulation, 191
 PHS, 938
 power, 58
 pulse modulation, 199
 route, 130
 sense, 425
 status, 136
 system, 154
 TETRA, 974
 trigger, 166
 unit, 170
 wideband CDMA ARB, 340

SCPI command subsystems (*continued*)

wideband CDMA base band generator, 1017
 SCPI commands
 command tree paths, 7
 parameter and response types, 7
 parameter types
 boolean, 10
 discrete, 9
 extended numeric, 8
 numeric, 8
 string, 10
 response data types
 discrete, 11
 integer, 11
 numeric boolean, 11
 real, 10
 string, 11
 root command, 6
 SCPI reference, lxxiii
 SCPI softkey, 156, 158
 Scramble Code softkey, 356, 362, 364
 Scramble Off On softkey, 941, 977
 Scramble Offset softkey, 356, 364
 Scramble Seed softkey, 941, 977
 Scrambling Code field, 1052, 1053, 1148
 Screen Saver Delay
 1 hr softkey, 163
 Screen Saver Mode softkeys, 164
 Screen Saver Off On softkeys, 164
 Second DPDCH I Q softkey, 362
 Secondary Frame Off On softkey
 See DECT subsystem keys
 See EDGE subsystem keys
 See GSM subsystem keys
 See NADC subsystem keys
 See PDC subsystem keys
 See PHS subsystem keys
 See TETRA subsystem keys
 secure wave directory, 116
 security functions
 erase, 161
 none, 161
 overwrite, 161, 163
 sanitize, 161, 163
 secure display, 160

Index

security functions (*continued*)

secure mode, 162

segment advance

trigger response, 318

Segment Advance softkey, 315

Select File softkey, 249, 282

Select Seq softkey, 90

Select Waveform softkey, 323, 324

sense subsystem keys

Adjust Gain, 437

Aux, 438, 454, 460

Aux I/O Trigger Polarity Pos Neg, 460

BER Mode Off On, 425, 429, 448

BERT Off On, 457

BERT Resync Off On, 457

Bit Count, 439, 441

Bit Delay Off On, 459

Block Count, 428, 430, 432, 444, 448

Block Erasure, 426, 431, 444, 445, 446, 448, 449

Bus, 438, 454, 460

Class Ib Bit Error, 451, 452

Class II Bit Error, 452

Cycle Count, 459

Delay Bits, 459

EDGE BERT Off On, 442

Error Count, 442, 457

Exceeds Any Thresholds, 452

Ext, 438, 454, 460

Ext Frame Trigger Delay, 427

External Frame Polarity Net Pos, 427

Frame Count, 447, 450

Frame Erasure, 452

Frame Trigger Source Int Ext, 428

GSM BERT Off On, 455

High Amplitude, 429, 433, 440

Immediate, 438, 454, 460

Initial Bit Count, 441

Initial Block Count, 431, 434

Initial Frame Count, 451

Low Amplitude, 430, 433, 440, 447

Measurement Mode BER% Search, 450

Measurement Mode BLER% Search, 436

No Thresholds, 426, 431, 446, 449, 452, 458

Pass Amplitude, 430, 434, 441

PN11, 456

sense subsystem keys (*continued*)

PN15, 456

PN20, 456

PN23, 456

PN9, 456

Resync Limits, 456

Spcl Pattern 0's 1's, 455

Spcl Pattern Ignore Off On, 456

Spectrum Invert Off On, 437, 451

Stop Measurement, 435, 449

Sync Source BCH PDCH, 438

Sync Source BCH TCH, 454

Synchronize to BCH/PDCH, 437

Synchronize to BCH/TCH, 453

Target BER %, 429, 432

Timeslot, 436, 449

Total Bits, 458

Trigger Key, 438, 454, 460

Uplink Timing Advance, 439, 455

SEQ softkey, 102

sequence, creating, 313

service

guide, lxxiii

Set ALC Level softkey, 60

Set Atten softkey, 65

Set Marker Off All Points softkey, 301

Set Marker Off Range Of Points softkey, 300

Set Marker On Range Of Points softkey, 302

setting conflicts, resolving, 670, 811

setting markers, 302

setup sweep, 49

SF/2 softkey, 1151

SF2 softkey, 1055

SFN reset-signal (DRPS5) softkey, 1047, 1049,
1050, 1051, 1052

SFN RST Polarity softkey, 1148

SFN-CFN Frame Offset softkey, 1097

SHAPE softkey, 102

shift markers, 302

Signal Type softkey, 392

Signature field, 1133

Sine softkey

See amplitude modulation subsystem keys

See DECT subsystem keys

See EDGE subsystem keys

- Sine softkey (continued)*
 - See* frequency modulation subsystem keys
 - See* GSM subsystem keys
 - See* low frequency output subsystem keys
 - See* NADC subsystem keys
 - See* PDC subsystem keys
 - See* phase modulation subsystem keys
 - See* PHS subsystem keys
 - See* TETRA subsystem keys
- single
 - segment advance, [318](#)
- Single softkey
 - dual ARB subsystem keys, [318](#)
 - See* CDMA ARB subsystem keys
 - See* CDMA2000 ARB subsystem keys
 - See* custom subsystem keys
 - See* DECT subsystem keys
 - See* Dmodulation subsystem keys
 - See* dual ARB subsystem keys
 - See* EDGE subsystem keys
 - See* GSM subsystem keys
 - See* NADC subsystem keys
 - See* PDC subsystem keys
 - See* PHS subsystem keys
 - See* TETRA subsystem keys
 - See* wideband CDMA ARB subsystem keys
- Single Sweep softkey, [167](#)
- skew, [31](#), [32](#)
- skew, quadrature (angle) adjustment
 - BBG, [25](#)
 - RF path, [30](#)
- Slot Format field, [1024](#), [1031](#), [1080](#), [1091](#), [1108](#), [1113](#)
- softkey, [123](#)
- software options, [82](#)
- Source Module softkey, [63](#)
- Span Type User Full softkey, [62](#)
- Spcl Pattern 0's 1's softkey, [455](#)
- Spcl Pattern Ignore Off On softkey, [456](#)
- Spectrum Invert Off On softkey
 - See* sense subsystem keys
- Spread Rate 1 softkey, [247](#), [254](#), [262](#)
- Spread Rate 3, [254](#)
- Spread Rate 3 softkey, [247](#), [262](#)
- Spread Rate field, [511](#)
- Spreading Type Direct Mcarrier, [247](#)
- Spreading Type Direct Mcarrier softkey, [263](#)
- Spurious Response softkey, [1061](#)
- Square softkey, [175](#), [182](#), [189](#), [195](#)
- square wave pulse rate
 - internally generated, [199](#)
- SR1 9 Channel softkey, [249](#)
- SR1 Pilot softkey, [249](#)
- SR3 Direct 9 Channel softkey, [249](#)
- SR3 Direct Pilot softkey, [249](#)
- SR3 Mcarrier 9 Channel softkey, [249](#)
- SR3 MCarrier Pilot softkey, [249](#)
- SS softkey, [789](#)
- SSB softkey, [996](#), [1001](#)
- SSCH 2nd Scramble Group field, [1053](#)
- SSCH Power field, [1053](#)
- SSCH softkey, [357](#)
- SSCH State field, [1054](#)
- Standard softkey, [356](#)
- Start Access Slot Position in 80ms Period field, [1119](#)
- Start Frequency softkey, [61](#), [74](#)
- Start Sub-Channel# field, [1123](#)
- State field
 - See* CDMA2000 BBG subsystem keys and fields
- State softkey, [103](#), [124](#)
- STD softkey, [1077](#)
- Step Dwell softkey, [56](#)
- Step Power field, [1100](#)
- Stop Frequency softkey, [61](#), [74](#)
- Stop Measurement softkey
 - See* sense subsystem keys
- Store Custom CDMA State softkey, [232](#), [251](#), [254](#)
- Store Custom Dig Mod State softkey, [285](#)
- Store Custom Multicarrier softkey, [231](#), [249](#)
- Store Custom W-CDMA State softkey, [352](#), [355](#)
- Store To File softkey, [21](#), [123](#), [127](#), [336](#), [364](#)
- string response data, [11](#)
- string SCPI parameter, [10](#)
- strings, quote usage, [17](#)
- STS softkey, [997](#), [1002](#)
- Sub Channel Timing (RPS17) softkey
 - See* wideband CDMA base band generator subsystem keys and fields
- Subnet Mask softkey, [77](#)

Index

- subsystems, SCPI commands
 - See SCPI command subsystems
- Sum softkey, 24
- Summing Ratio (SRC1/SRC2) x.xx dB softkey, 36
- SW softkey, 924, 927, 929
- Swap IQ softkey, 387
- Sweep Direction Down Up softkey, 50
- Sweep Repeat Single Cont softkey, 166
- Sweep Retrace Off On softkey, 54
- sweep setup, 49
- Sweep Type List Step softkey, 55
- sweep/list subsystem keys
 - Load From Selected File
 - Store to File, 49
- Swept-Sine softkey, 175, 182, 189, 195
- Symbol Out Polarity Neg Pos softkey, 134
- Symbol Rate field, 1080, 1089, 1112
- Symbol Rate softkey, 286, 356, 364, 658, 1108
- Symbol Sync Out Polarity Neg Pos softkey, 135
- Symbol Sync Polarity Neg Pos softkey, 131, 132
- Symbol Timing Err softkey, 472
- Sync Out Offset softkey, 614, 657, 800, 897, 930, 961, 1008
- SYNC softkey, 892, 895, 954
- Sync softkey, 229, 799
- Sync Source BCH PDCH softkey, 438
- Sync Source BCH TCH softkey, 454
- Sync Source SFN FClk ESG softkey, 1149
- Synchronize to BCH/PDCH softkey, 437
- Synchronize to BCH/TCH softkey, 453
- System ID field, 504
- system subsystem keys
 - 8648A/B/C/D, 156, 158
 - 8656B,8657A/B, 156, 158
 - 8657D NADC, 156, 158
 - 8657D PDC, 156, 158
 - 8657J PHS, 156, 158
 - Activate Secure Display, 160
 - Enter Secure Mode, 162
 - erase, 161
 - Erase All, 161
 - Erase and Overwrite All, 163
 - Erase and Sanitize All, 163
 - Error Info, 155
 - Help Mode Single Cont, 156
- system subsystem keys (*continued*)
 - none, 161
 - overwrite, 161
 - PN9 Mode Preset, 159
 - Power On Last Preset, 157
 - Preset, 158
 - Preset Normal User, 160
 - Restore Sys Defaults, 159
 - sanitize, 161
 - Save User Preset, 160
 - SCPI, 156, 158
 - Screen Saver Delay
 - 1 hr, 163
 - Screen Saver Mode, 164
 - Screen Saver Off On, 164
 - Time/Date, 154, 165
 - View Next Error Message, 155
- T
- T1 softkey, 654
- T2 softkey, 655
- Target BER % softkey
 - See sense subsystem keys
- TCH All softkey, 954
- TCH softkey, 954
- TCH/FS softkey, 641, 644, 791
- tDPCH Offset field, 1032
- Test Model 1 w/16 DPCH softkey, 348, 353
- Test Model 1 w/32 DPCH softkey, 348, 353
- Test Model 1 w/64 DPCH softkey, 348, 353
- Test Model 2 softkey, 348, 353
- Test Model 3 w/16 DPCH softkey, 348, 353
- Test Model 3 w/32 DPCH softkey, 348, 353
- Test Model 4 softkey, 348, 353
- Test Model 5 w/2HSPDSCH softkey, 348, 353
- Test Model 5 w/4HSPDSCH softkey, 348, 353
- Test Model 5 w/8HSPDSCH softkey, 348, 353
- TETRA Off On softkey, 1016
- TETRA softkey, 282, 283, 284
- TETRA subsystem keys
 - 128QAM, 991
 - 16 1's & 16 0's, 984, 993, 995, 997, 998, 1000, 1002, 1004, 1005, 1006
 - 16PSK, 991
 - 16QAM, 991

TETRA subsystem keys (*continued*)

256QAM, 991
 2-Lvl FSK, 991
 32 1's & 32 0's, 984, 993, 995, 997, 998, 1000,
 1002, 1004, 1005, 1006
 32QAM, 991
 4 1's & 4 0's, 984, 993, 995, 997, 998, 1000, 1002,
 1004, 1005, 1006
 4-Lvl FSK, 991
 4QAM, 991
 64 1's & 64 0's, 984, 993, 995, 997, 998, 1000,
 1002, 1004, 1005, 1006
 64QAM, 991
 8 1's & 8 0's, 984, 993, 995, 997, 998, 1000, 1002,
 1004, 1005, 1006
 8PSK, 991
 All Timeslots, 1008
 APCO 25 C4FM, 988
 B, 996, 1001
 B1, 994, 999
 B2, 994, 999
 BBG Data Clock Ext Int, 974
 BBG Ref Ext Int, 987
 Begin Frame, 1008
 Begin Timeslot #, 1008, 1009
 Bit Rate, 975
 BPSK, 991
 Bus, 992, 1013
 Continuous, 1011
 D8PSK, 991
 Data Format Pattern Framed, 983
 Dn Custom Cont, 1007
 Dn Normal Cont, 1007
 Dn Normal Disc, 1007
 Dn Sync Cont, 1007
 Dn Sync Disc, 1007
 Ext, 984, 992, 993, 995, 997, 998, 1000, 1002,
 1004, 1005, 1006, 1013
 Ext BBG Ref Freq, 987
 Ext Data Clock Normal Symbol, 986
 Ext Delay Bits, 1014
 Ext Delay Off On, 1014
 Ext Polarity Neg Pos, 1015
 Fall Delay, 977, 979
 Fall Time, 978, 979

TETRA subsystem keys (*continued*)

FCOR, 996, 1001
 Filter Alpha, 974
 Filter BbT, 975
 FIX4, 984, 985, 993, 995, 997, 998, 1000, 1002,
 1004, 1005, 1006, 1007
 Free Run, 1011
 Freq Dev, 989
 Gate Active Low High, 1012
 Gated, 1011
 Gaussian, 988
 Gray Coded QPSK, 991
 I/Q Scaling, 989
 IS-95, 988
 IS-95 Mod, 988
 IS-95 Mod w/EQ, 988
 IS-95 OQPSK, 991
 IS-95 QPSK, 991
 IS-95 w/EQ, 988
 MSK, 991
 Nyquist, 988
 Optimize FIR For EVM ACP, 984
 OQPSK, 991
 $\pi/4$ DQPSK, 991
 Patt Trig In 1, 1015
 Patt Trig In 2, 1015
 Phase Dev, 990
 Phase Polarity Normal Invert, 991
 PN11, 984, 993, 995, 997, 998, 1000, 1002, 1004,
 1005, 1006
 PN15, 984, 993, 995, 997, 998, 1000, 1002, 1004,
 1005, 1006
 PN20, 984, 993, 995, 997, 998, 1000, 1002, 1004,
 1005, 1006
 PN23, 984, 993, 995, 997, 998, 1000, 1002, 1004,
 1005, 1006
 PN9, 984, 993, 995, 997, 998, 1000, 1002, 1004,
 1005, 1006
 PN9 Mode Normal Quick, 976
 QPSK, 991
 Recall Secondary Frame State, 992
 Rectangle, 988
 Reset & Run, 1011
 Restore TETRA Factory Default, 986
 Rise Delay, 980, 981

Index

TETRA subsystem keys (*continued*)

Rise Time, [981](#), [982](#)
Root Nyquist, [988](#)
Save Secondary Frame State, [992](#)
Scramble Off On, [977](#)
Scramble Seed, [977](#)
Secondary Frame Off On, [993](#)
Sine, [983](#)
Single, [1011](#)
SSB, [996](#), [1001](#)
STS, [997](#), [1002](#)
Symbol Rate, [1009](#)
Sync Out Offset, [1008](#)
TETRA Off On, [1016](#)
Timeslot Ampl Main Delta, [1003](#)
Timeslot Off On, [1003](#)
Trigger & Run, [1011](#)
Trigger Key, [992](#), [1013](#)
TS, [994](#), [999](#), [1003](#), [1004](#), [1006](#)
UN3/4 GSM Gaussian, [988](#)
Up Control 1, [1007](#)
Up Control 2, [1007](#)
Up Custom, [1007](#)
Up Normal, [1007](#)
User File, [983](#), [984](#), [993](#), [995](#), [997](#), [998](#), [1000](#),
[1002](#), [1004](#), [1005](#), [1006](#)
User FIR, [988](#)
User FSK, [990](#), [991](#)
User I/Q, [990](#), [991](#)
tetra subsystem keys
PRAM Files, [985](#)
TFCI Field Off On softkey, [356](#), [361](#), [364](#), [366](#)
TFCI Pat field, [1032](#)
TFCI Pattern field, [1081](#), [1109](#)
TFCI State field, [1082](#), [1110](#)
Tfirst field, [1025](#)
TGCFN field, [1055](#), [1150](#)
TGD field, [1056](#), [1151](#)
Tgl field, [1025](#)
TGL1 field, [1056](#), [1152](#)
TGL2 field, [1056](#), [1152](#), [1153](#)
TGPL1 field, [1057](#), [1152](#)
TGPRC field, [1153](#)
TGPS Inactive Active softkey, [1154](#)
TGSN field, [1058](#), [1154](#)

Through softkey, [32](#), [205](#), [208](#), [217](#), [222](#), [241](#), [246](#),
[270](#), [275](#), [298](#), [299](#), [327](#), [329](#), [344](#), [346](#), [466](#), [473](#)
Time field, [504](#)
Time softkey, dual ARB trigger delay, [321](#)
Time/Date softkey, [154](#), [165](#)
Timeslot Ampl Main Delta softkey
See DECT subsystem keys
See EDGE subsystem keys
See NADC subsystem keys
See PDC subsystem keys
See PHS subsystem keys
See TETRA subsystem keys
Timeslot Off On softkey
See DECT subsystem keys
See EDGE subsystem keys
See GSM subsystem keys
See NADC subsystem keys
See PHS subsystem keys
See TETRA subsystem keys
Timeslot Offset softkey, [1122](#)
Timeslot softkey
See sense subsystem keys
Timeslot Type softkey, [972](#)
Timing Offset softkey, [1123](#), [1148](#), [1157](#)
tOCNS Offset field, [1039](#)
Toggle Marker 1 2 3 4 softkey, [313](#)
Toggle State softkey, [334](#), [336](#)
Total Bits field, [1161](#)
Total Bits softkey, [458](#)
Total Block field, [1163](#)
TotalPwr field, [1075](#), [1105](#)
TPC Pat Steps field, [1082](#)
TPC Pat Trig Polarity Neg Pos softkey, [1084](#)
TPC Pattern field, [1084](#)
TPC Steps field, [1033](#)
TPC UserFile Trig field, [1085](#)
Tp-m field, [1124](#)
Tp-p field, [1125](#)
Traffic Bearer softkey, [589](#), [600](#)
Traffic Bearer with Z field softkey, [589](#), [600](#)
Traffic softkey, [229](#)
Transp Chan A softkey, [1028](#)
Transp Chan B softkey, [1028](#)
Transp Position Flexible Fixed softkey, [1069](#)
Transport CH softkey, [1040](#)

- TrCH BER field, [1090](#)
 - TrCh BlkSize 168 softkey, [1121](#)
 - TrCh BlkSize 360 softkey, [1121](#)
 - TrCH State Off On softkey, [1173](#)
 - TrCHI State Off On softkey, [1071](#)
 - Triangle softkey, [175](#), [182](#), [189](#), [195](#)
 - Trigger & Run softkey
 - See* CDMA ARB subsystem keys
 - See* CDMA2000 ARB subsystem keys
 - See* custom subsystem keys
 - See* DECT subsystem keys
 - See* Dmodulation subsystem keys
 - See* dual ARB subsystem keys
 - See* EDGE subsystem keys
 - See* GSM subsystem keys
 - See* NADC subsystem keys
 - See* PDC subsystem keys
 - See* PHS subsystem keys
 - See* TETRA subsystem keys
 - See* wideband CDMA ARB subsystem keys
 - Trigger Advance field, [546](#)
 - Trigger In Polarity Neg Pos softkey, [168](#)
 - Trigger Key softkey
 - list/sweep subsystem, [54](#)
 - See* amplitude modulation subsystem keys
 - See* CDMA ARB subsystem keys
 - See* CDMA2000 ARB subsystem keys
 - See* DECT subsystem keys
 - See* Dmodulation subsystem keys
 - See* dual ARB subsystem keys
 - See* EDGE subsystem keys
 - See* frequency modulation subsystem keys
 - See* GSM subsystem keys
 - See* low frequency output subsystem keys
 - See* NADC subsystem keys
 - See* PDC subsystem keys
 - See* phase modulation subsystem keys
 - See* PHS subsystem keys
 - See* sense subsystem keys
 - See* TETRA subsystem keys
 - See* trigger subsystem keys
 - See* wideband CDMA ARB subsystem keys
 - Trigger Out Polarity Neg Pos softkey, [167](#)
 - trigger source, list sweep, [54](#)
 - trigger subsystem keys
 - Bus, [168](#), [546](#)
 - Ext, [168](#), [546](#)
 - Free Run, [168](#), [546](#)
 - Single Sweep, [167](#)
 - Sweep Repeat Single Cont, [166](#)
 - Trigger In Polarity Neg Pos, [168](#)
 - Trigger Key, [168](#), [546](#)
 - Trigger Out Polarity Neg Pos, [167](#)
 - Trigger Sync Reply (RPS7) softkey
 - See* wideband CDMA base band generator subsystem keys and fields
 - triggers
 - response selection
 - segment advance mode, dual ARB, [318](#)
 - Truncated PN9 softkey, [465](#)
 - TS softkey, [799](#), [994](#), [999](#), [1003](#), [1004](#), [1006](#)
 - TSC0 softkey, [645](#), [655](#), [790](#), [797](#)
 - TSC1 softkey, [645](#), [655](#), [790](#), [797](#)
 - TSC2 softkey, [645](#), [655](#), [790](#), [797](#)
 - TSC3 softkey, [645](#), [655](#), [790](#), [797](#)
 - TSC4 softkey, [645](#), [655](#), [790](#), [797](#)
 - TSC5 softkey, [645](#), [655](#), [790](#), [797](#)
 - TSC6 softkey, [645](#), [655](#), [790](#), [797](#)
 - TSC7, [645](#), [790](#), [797](#)
 - TSC7 softkey, [645](#), [655](#), [790](#), [797](#)
 - TTI field, [1070](#), [1127](#), [1166](#), [1173](#)
 - TTI Frame Clock (RPS9) softkey
 - See* wideband CDMA base band generator subsystem keys and fields
 - Turbo Coding field, [498](#), [545](#)
 - Turbo softkey, [1065](#), [1067](#), [1159](#)
 - Type softkey, [356](#), [364](#)
- ## U
- UDI 64 kbps softkey, [1134](#)
 - UDI ISDN (25.101) softkey, [1030](#)
 - UN3/4 GSM Gaussian softkey
 - See* CDMA ARB subsystem keys
 - See* CDMA2000 ARB subsystem keys
 - See* CDMA2000 BBG subsystem keys and fields
 - See* custom subsystem keys
 - See* DECT subsystem keys
 - See* Dmodulation subsystem keys
 - See* EDGE subsystem keys

Index

UN3/4 GSM Gaussian softkey (continued)

See GPS subsystem keys

See GSM subsystem keys

See NADC subsystem keys

See PDC subsystem keys

See PHS subsystem keys

See TETRA subsystem keys

See wideband CDMA ARB subsystem keys

See wideband CDMA base band generator
subsystem keys and fields

Uncoded softkey, [646](#)

unit subsystem keys

dBm, [170](#)

dBuV, [170](#)

dBuVemf, [170](#)

mV, [170](#)

mVemf, [170](#)

uV, [170](#)

uVemf, [170](#)

unprotected

memory subsystem, [116](#)

unspecified RMS, [295](#)

Up Control 1 softkey, [1007](#)

Up Control 2 softkey, [1007](#)

Up Custom softkey, [896](#), [930](#), [1007](#)

Up Normal softkey, [1007](#)

Up TCH All softkey, [896](#), [930](#)

Up TCH softkey, [896](#), [930](#)

Up VOX softkey, [930](#)

Up/Down softkey, [1033](#), [1083](#)

Update Display Cycle End Cont softkey, [407](#)

Update in Remote Off On softkey, [87](#)

Uplink MCS-1 softkey, [641](#), [644](#), [791](#)

Uplink MCS-5 softkey, [646](#)

Uplink MCS-9 softkey, [646](#)

Uplink Timing Advance softkey

See sense subsystem keys

uploading files, [116](#)

user

documentation, [lxxiii](#)

User File softkey

See CDMA2000 BBG subsystem keys and fields

See custom subsystem keys

See DECT subsystem keys

See EDGE subsystem keys

User File softkey (continued)

See GPS subsystem keys

See GSM subsystem keys

See NADC subsystem keys

See PDC subsystem keys

See PHS subsystem keys

See TETRA subsystem keys

See wideband CDMA base band generator
subsystem keys and fields

user files, HSDPA, [809](#)

user files, HSPA, [668](#)

User FIR softkey

See CDMA ARB subsystem keys

See CDMA2000 ARB subsystem keys

See CDMA2000 BBG subsystem keys and fields

See custom subsystem keys

See DECT subsystem keys

See Dmodulation subsystem keys

See EDGE subsystem keys

See GPS subsystem keys

See GSM subsystem keys

See NADC subsystem keys

See PDC subsystem keys

See PHS subsystem keys

See TETRA subsystem keys

See wideband CDMA ARB subsystem keys

See wideband CDMA base band generator
subsystem keys and fields

User Flatness softkey, [103](#), [124](#)

User FSK softkey

See custom subsystem keys

See DECT subsystem keys

See EDGE subsystem keys

See GSM subsystem keys

See NADC subsystem keys

See PDC subsystem keys

See PHS subsystem keys

See TETRA subsystem keys

User I/Q softkey

See custom subsystem keys

See DECT subsystem keys

See EDGE subsystem keys

See GSM subsystem keys

See NADC subsystem keys

See PDC subsystem keys

User I/Q softkey (continued)

See PHS subsystem keys

See TETRA subsystem keys

uV softkey, 170

uVemf softkey, 170

UW softkey, 952, 953, 970, 971

UWCDMA softkey, 104

V

View Next Error Message softkey, 155

W

Walsh Code softkey, 252, 255

Walsh field

See CDMA2000 BBG subsystem keys and fields

waveform

sequence, dual ARB, 313

Waveform Length softkey, 212, 238

waveform license time remaining, 84

Waveform Licenses softkey, 82, 84

Waveform Runtime Scaling softkey, 312, 335

waveform scaling

during playback, 312, 335

files, 312

waveform, creating a multitone, 326

W-CDMA Off On softkey, 378, 1173

WCDMA softkey

See CDMA ARB subsystem keys

See CDMA2000 ARB subsystem keys

See Dmodulation subsystem keys

See wideband CDMA ARB subsystem keys

wideband AM, 173

wideband CDMA ARB subsystem keys

1 DPCH, 348, 353

2 Carriers, 349

2.100 MHz, 346

3 Carriers, 349

3 DPCH, 348, 353

4 Carriers, 349

40.000 MHz, 344, 346

APCO 25 C4FM, 342

Apply Channel Setup, 356, 364

ARB Reference Ext Int, 370

ARB Sample Clock, 372

wideband CDMA ARB subsystem keys (*continued*)

Bus, 375

Channel, 356, 364

Chip Rate, 342

Clear Header, 344

Clip |I| To, 340, 350

Clip |Q| To, 340, 351

Clip At PRE POST FIR Filter, 340

Clip Type |I+jQ| To, 341, 351

Clipping Type |I+jQ| |I|,|Q|, 341, 351

Continuous, 372

Custom WCDMA State, 363

DPCCCH, 363

DPCCCH + 1 DPDCH, 363

DPCCCH + 2 DPDCH, 363

DPCCCH + 3 DPDCH, 363

DPCCCH + 4 DPDCH, 363

DPCCCH + 5 DPDCH, 363

DPCH, 357

Equal Energy per Symbol, 361

Ext Delay Off On, 376

Ext Delay Time, 376

Ext Key, 375

Ext Polarity Neg Pos, 377

Filter Alpha, 343

Filter BbT, 343

First Spread Code, 356, 364

Free Run, 374

Gain Unit dB Lin Index, 366

Gate Active Low High, 374

Gated, 372

Gaussian, 342

I/Q Mapping Norma Invert, 345

I/Q Mod Filter Manual Auto, 347

I/Q Output Filter Manual Auto, 345

Increment Scramble Code, 352

Increment Timing Offset, 355

IS-2000 SR3 DS, 342

IS-95, 342

IS-95 Mod, 342

IS-95 Mod w/EQ, 342

IS-95 w/EQ, 342

Left Alternate, 356

Link Down Up, 347

Marker 1, 367, 368

Index

wideband CDMA ARB subsystem keys (*continued*)

Marker 2, [367](#), [368](#)
Marker 3, [367](#), [368](#)
Marker 4, [367](#), [368](#)
Marker Polarity Neg Pos, [370](#)
Modulator Atten Manual Auto, [346](#)
None, [367](#), [368](#)
Nyquist, [342](#)
OCNS, [357](#)
Optimize ACP ADJ ALT, [347](#), [362](#)
Optimize FIR For EVM ACP, [344](#)
Patt Trig In 1, [377](#)
Patt Trig In 2, [377](#)
PCCPCH + SCH, [348](#), [353](#)
PCCPCH + SCH + 1 DPCH, [348](#), [353](#)
PCCPCH + SCH + 3 DPCH, [348](#), [353](#)
PICH, [357](#)
Power, [364](#)
PPCCPCH, [357](#), [358](#)
PSCH, [357](#)
Random, [356](#), [364](#)
Rectangle, [342](#)
Reference Freq, [370](#)
Reset & Run, [374](#)
Retrigger Mode Off On, [371](#)
Right Alternate, [356](#)
Root Nyquist, [342](#)
Save Setup To Header, [344](#)
Scale to 0dB, [361](#)
SCCPCH, [357](#), [358](#)
Scramble Code, [356](#), [362](#), [364](#)
Scramble Offset, [356](#), [364](#)
Second DPDCH I Q, [362](#)
Single, [372](#)
SSCH, [357](#)
Standard, [356](#)
Store Custom W-CDMA State, [352](#), [355](#)
Store To File, [364](#)
Symbol Rate, [356](#), [364](#)
Test Model 1 w/16 DPCH, [348](#), [353](#)
Test Model 1 w/32 DPPCH, [348](#), [353](#)
Test Model 1 w/64 DPCH, [348](#), [353](#)
Test Model 2, [348](#), [353](#)
Test Model 3 w/16 DPCH, [348](#), [353](#)
Test Model 3 w/32 DPCH, [348](#), [353](#)

wideband CDMA ARB subsystem keys (*continued*)

Test Model 4, [348](#), [353](#)
Test Model 5 w/2HSPDSCH, [348](#), [353](#)
Test Model 5 w/4HSPDSCH, [348](#), [353](#)
Test Model 5 w/8HSPDSCH, [348](#), [353](#)
TFCI Field Off On, [356](#), [361](#), [364](#), [366](#)
Through, [344](#), [346](#)
Trigger & Run, [374](#)
Trigger Key, [375](#)
Type, [356](#), [364](#)
UN3/4 GSM Gaussian, [342](#)
User FIR, [342](#)
WCDMA, [342](#)
W-CDMA Off On, [378](#)

wideband CDMA base band generator subsystem

keys and fields
of Blocks, [1068](#)
1/2 Conv, [1065](#), [1067](#), [1159](#)
1/3 Conv, [1065](#), [1067](#), [1159](#)
10 msec, [1093](#)
10ms Frame Pulse (DRPS11), [1047](#), [1049](#), [1050](#),
[1051](#), [1052](#)
10ms Frame Pulse (RPS6), [1142](#), [1144](#), [1145](#),
[1146](#), [1147](#)
12.2 kbps (34.121), [1030](#)
144 kbps (34.121), [1030](#)
20 msec, [1093](#)
2560 msec, [1093](#)
2nd Scr Offset, [1031](#), [1038](#)
3.84MHz chip-clk (DRPS4), [1047](#), [1049](#), [1050](#),
[1051](#), [1052](#)
384 kbps (34.121), [1030](#)
40 msec, [1093](#)
64 kbps (34.121), [1030](#)
80 msec, [1093](#)
80ms Frame Pulse (DRPS13), [1047](#), [1049](#), [1050](#),
[1051](#), [1052](#)
80ms Frame Pulse (RPS20), [1142](#), [1144](#), [1145](#),
[1146](#), [1147](#)
A, [1022](#)
ACS, [1061](#)
Active, [1058](#)
Actual BER, [1168](#)
Actual BLER, [1162](#), [1169](#)
AICH, [1127](#)

- wideband CDMA base band generator subsystem
 keys and fields (*continued*)
 AICH Trigger Polarity Pos Neg, 1102
 All Down, 1033, 1083
 All Up, 1033, 1083
 Alt power in, 1140
 AMR 12.2 kbps, 1030, 1134
 APCO 25 C4FM, 1034, 1094
 Apply Channel Setup, 1018, 1072
 B, 1022
 Base Delay Tp-a, 1124
 BBG Chip Clock Ext Int, 1017
 BBG Data Clock Ext In, 1021
 BER, 1162, 1164, 1169, 1171
 Beta, 1076, 1086
 BLER, 1163, 1164, 1170, 1171
 Blk Set Size, 1064
 Blk Size, 1063, 1158, 1166
 Blocking, 1061
 Burst gate in, 1141
 C Power, 1073
 C Power value, 1103
 C/N value, 1018, 1072, 1102
 CFN #0 Frame Pulse (RPS10), 1136
 Chan Code, 1027, 1028, 1037
 Channel Code, 1042, 1077, 1087, 1128, 1129
 Channel Code field, 1041
 Channel State, 1086, 1093
 Channel State Off On, 1021, 1025, 1026, 1028,
 1034, 1036, 1039, 1040, 1042, 1044, 1052,
 1075, 1105, 1159, 1166, 1167
 ChCode Ctl, 1118
 ChCode Dat, 1118
 Chip Clock (RPS1), 1136, 1142, 1144, 1145, 1146,
 1147
 Chip Rate, 1027, 1076
 Comp Mode Start Trigger Polarity Neg Pos, 1156
 Comp Mode Start Trigger Polarity Pos Neg, 1059,
 1060
 Comp Mode Stop Trigger Polarity Neg Pos, 1156
 Comp Mode Stop Trigger Polarity Pos Neg, 1060
 Compressed Mode Off On, 1155
 Compressed Mode Start Trigger, 1036, 1059, 1156
 Compressed Mode Stop Trigger, 1060, 1156
 CRC Size, 1066, 1160, 1167
- wideband CDMA base band generator subsystem
 keys and fields (*continued*)
 Ctrl Beta, 1106
 Ctrl Pwr, 1107
 Data, 1088
 Data Beta, 1110
 Data field, 1171
 Data Pwr, 1112
 Data Rate, 1038
 DCH1, 1074
 DCH2, 1074
 DCH3, 1074
 DCH4, 1074
 DCH5, 1074
 DCH6, 1074
 DL Reference 1.1, 1154
 DL Reference 1.2, 1154
 DL Reference 2.1, 1154
 DL Reference 2.2, 1154
 Down/Up, 1033, 1083
 DPCCCH, 1074, 1097
 DPCCCH Pilot data-clk (DRPS23), 1047, 1049,
 1050, 1051, 1052
 DPCCCH Power, 1080
 DPCCCH Raw Data (RPS4), 1136
 DPCCCH Raw Data Clock (RPS5), 1136
 DPCCCH TFCI data-clk (DRPS22), 1047, 1049,
 1050, 1051, 1052
 DPCCCH TPC indicator (DRPS21), 1047, 1049,
 1050, 1051, 1052
 DPCH + 1, 1019, 1020
 DPCH + 2, 1019, 1020
 DPCH 10ms Frame-Pulse (DRPS26), 1047, 1049,
 1050, 1051, 1052
 DPCH Channel Balance, 1027
 DPCH Compressed Frame Indicator (DRPS32),
 1047, 1049, 1050, 1051, 1052
 DPCH data stream (DRPS24), 1047, 1049, 1050,
 1051, 1052
 DPCH data-clk (0) (DRPS28), 1047, 1049, 1050,
 1051, 1052
 DPCH Gap Indicator (DRPS33), 1047, 1049,
 1050, 1051, 1052
 DPCH TimeSlot pulse (DRPS25), 1047, 1049,
 1050, 1051, 1052

Index

wideband CDMA base band generator subsystem
 keys and fields (*continued*)
DPDCH, 1074
DPDCH data-clk withDTX (DRPS20), 1047,
 1049, 1050, 1051, 1052
DPDCH data-clk WithOutDTX (DRPS30), 1047,
 1049, 1050, 1051, 1052
DPDCH Power, 1089
DPDCH Raw Data (RPS2), 1136
DPDCH Raw Data Clock (RPS3), 1136
Eb/No, 1103
Eb/No value (dB), 1073
Ec/No value, 1019, 1104
Equal Powers, 1040, 1097
Error BER, 1168
Error Bits, 1161
Error Blocks, 1162
Ext, 1033
Ext Clock Rate x1 x2 x4, 1017
FBI State, 1079
Filter Alpha, 1035, 1095
Filter BbT, 1035, 1096
FIX, 1079
FIX4, 1029, 1040, 1041, 1042, 1043, 1066, 1067,
 1078, 1088, 1106, 1107, 1109, 1111, 1164,
 1168
Flat Noise BW, 1074
Frame Clock Polarity Neg Pos, 1094
Frame Struct, 1054
Frame Sync Trigger Mode Single Cont, 1149
Gaussian, 1034, 1094
Higher Layer, 1151
Infinity, 1057, 1153
Init Power, 1098
Init Pwr, 1116, 1131
Intermod, 1061
IS-95, 1034, 1094
IS-95 Mod, 1034, 1094
IS-95 Mod w/EQ, 1034, 1094
IS-95 w/EQ, 1094
Left, 1023
Link Down Up, 1071
Max Input, 1061
Max Power, 1099
Max Pwr, 1117, 1132

wideband CDMA base band generator subsystem
 keys and fields (*continued*)
 Message Data Raw Data (RPS11), 1142, 1144,
 1145, 1146, 1147
 Message Part, 1115
 Message Pulse (RPS22), 1142, 1144, 1145, 1146,
 1147
 Message-Control Raw Data (RPS13), 1144, 1145,
 1146, 1147
 Message-Control Raw Data Clock (RPS12), 1142,
 1144, 1145, 1146, 1147
 Min Power, 1099
 Msg Ctrl, 1104
 Msg Data, 1104
 Msg Pwr, 1115, 1130
 N Power, 1075, 1105
 NONE, 1159
 None, 1065, 1067, 1164, 1171
 NONE (RPS0), 1136, 1142, 1144, 1145, 1146,
 1147
 Normal, 1023
 Num of Blk, 1165, 1172
 Num of Pre, 1116, 1131
 Number of AICH, 1101
 Number of PRACH, 1128, 1130
 Number of PRACH 80ms, 1115
 Number of Preamble, 1131
 Nyquist, 1034, 1094
 Off, 1127
 Omitted, 1057, 1153
 On, 1127
 On/Off, 1039, 1120
 OpenLoop Ant1, 1062
 OpenLoop Ant1 SCH TSTD OFF, 1062
 OpenLoop Ant2, 1062
 OpenLoop Ant2 SCH TSTD OFF, 1062
 Optimize FIR For EVM ACP, 1036, 1096
 Paging Indicator, 1043
 Pattern trigger in 1, 1141
 Pattern trigger in 2, 1142
 PCCPCH, 1019, 1020
 P-CCPCH data (DRPS39), 1047, 1049, 1050,
 1051, 1052
 P-CCPCH data-clk (DRPS38), 1047, 1049, 1050,
 1051, 1052

- wideband CDMA base band generator subsystem
 keys and fields (*continued*)
 Performance Req, [1061](#)
 Phase Polarity Normal Invert, [1044](#)
 Phase Polarity Normal Inverted, [1071](#)
 PI Bits, [1043](#)
 PICH, [1019](#), [1020](#)
 PICH 10ms FramePulse (DRPS37), [1047](#), [1049](#),
[1050](#), [1051](#), [1052](#)
 PICH data (DRPS35), [1047](#), [1049](#), [1050](#), [1051](#),
[1052](#)
 PICH data-clk (DRPS34), [1047](#), [1049](#), [1050](#),
[1051](#), [1052](#)
 PICH TimeSlot Pulse (DRPS36), [1047](#), [1049](#),
[1050](#), [1051](#), [1052](#)
 Playback Ratio, [1023](#)
 PN15, [1022](#), [1028](#), [1037](#), [1040](#), [1042](#), [1077](#), [1078](#),
[1081](#), [1083](#), [1088](#), [1106](#), [1109](#), [1111](#)
 PN9, [1022](#), [1028](#), [1037](#), [1040](#), [1042](#), [1066](#), [1077](#),
[1078](#), [1081](#), [1083](#), [1088](#), [1106](#), [1109](#), [1111](#),
[1160](#), [1168](#)
 Power, [1023](#), [1026](#), [1029](#), [1037](#), [1041](#), [1044](#), [1045](#)
 Power Control Signal Polarity Neg Pos, [1101](#)
 Power Hold Off On, [1098](#)
 Power Mode Norm TPC, [1101](#)
 Pp-m, [1117](#), [1133](#)
 PRACH, [1097](#)
 PRACH Mode Single Multi, [1114](#)
 PRACH Power Setup Mode Pp-m Total, [1121](#)
 PRACH Processing (RPS19), [1142](#), [1144](#), [1145](#),
[1146](#), [1147](#)
 PRACH Scrambling Code, [1122](#)
 PRACH Trigger, [1126](#)
 PRACH Trigger Polarity Neg Pos, [1126](#)
 PRACH Trigger Source Immedi Trigger, [1126](#)
 Pre Sig, [1118](#)
 Preamble, [1104](#)
 Preamble power average, [1120](#)
 Preamble Pulse (RPS21), [1142](#), [1144](#), [1145](#), [1146](#),
[1147](#)
 Preamble Raw Data (RPS15), [1142](#), [1144](#), [1145](#),
[1146](#), [1147](#)
 Preamble Raw Data Clock (RPS16), [1142](#), [1144](#),
[1145](#), [1146](#), [1147](#)
 PSCH State, [1045](#)
- wideband CDMA base band generator subsystem
 keys and fields (*continued*)
 Puncture, [1055](#), [1165](#), [1172](#)
 PwrOffs, [1054](#), [1150](#)
 RACH TrCH, [1104](#)
 Ramp Step, [1117](#), [1132](#)
 Rate Match Attr, [1070](#), [1165](#), [1172](#)
 Rectangle, [1034](#), [1094](#)
 Ref Data Rate, [1073](#), [1103](#)
 Ref Sensitivity, [1061](#)
 Reset to Initial Power, [1100](#)
 Right, [1023](#)
 RMC 144 kbps (25.141), [1134](#)
 RMC 384 kbps (25.141), [1134](#)
 RMC 64 kbps (25.141), [1134](#)
 RMC122 kbps (25.141), [1134](#)
 Root Nyquist, [1034](#), [1094](#)
 Scale to 0dB, [1040](#), [1097](#)
 SCFN, [1059](#), [1155](#)
 SCH slot-pulse (DRPS10), [1047](#), [1049](#), [1050](#),
[1051](#), [1052](#)
 Scrambling Code, [1052](#), [1053](#), [1148](#)
 SF/2, [1151](#)
 SF2, [1055](#)
 SFN reset-signal (DRPS5), [1047](#), [1049](#), [1050](#),
[1051](#), [1052](#)
 SFN RST Polarity, [1148](#)
 SFN-CFN Frame Offset, [1097](#)
 Signature, [1133](#)
 Slot Format, [1024](#), [1031](#), [1080](#), [1091](#), [1108](#), [1113](#)
 Spurious Response, [1061](#)
 SSCH 2nd Scramble Group, [1053](#)
 SSCH Power, [1053](#)
 SSCH State, [1054](#)
 Start Access Slot Position in 80ms Period, [1119](#)
 Start Sub-Channel#, [1123](#)
 STD, [1077](#)
 Step Power, [1100](#)
 Sub Channel Timing (RPS17), [1142](#), [1144](#), [1145](#),
[1146](#), [1147](#)
 Symbol Rate, [1080](#), [1089](#), [1108](#), [1112](#)
 Sync Source SFN FCIk ESG, [1149](#)
 tDPCH Offset, [1032](#)
 TFCI Pat, [1032](#)
 TFCI Pattern, [1081](#), [1109](#)

Index

- wideband CDMA base band generator subsystem
 - keys and fields (*continued*)
 - TFCI State, [1082](#), [1110](#)
 - Tfirst, [1025](#)
 - TGCFN, [1055](#), [1150](#)
 - TGD, [1056](#), [1151](#)
 - Tgl, [1025](#)
 - TGL1, [1056](#), [1152](#)
 - TGL2, [1056](#), [1152](#)
 - TGPL1, [1057](#), [1152](#)
 - TGPL2, [1153](#)
 - TGPRC, [1153](#)
 - TGPS Inactive Active, [1154](#)
 - TGSN, [1058](#), [1154](#)
 - Timeslot Offset, [1122](#)
 - Timing Offset, [1123](#), [1148](#), [1157](#)
 - tOCNS Offset, [1039](#)
 - Total Bits, [1161](#)
 - Total Blocks, [1163](#)
 - TotalPwr, [1075](#), [1105](#)
 - TPC Pat Steps, [1082](#)
 - TPC Pat Trig Polarity Neg Pos, [1084](#)
 - TPC Pattern, [1084](#)
 - TPC Steps, [1033](#)
 - TPC UserFile Trig, [1085](#)
 - Tp-m, [1124](#)
 - Tp-p, [1125](#)
 - Transp Chan A, [1028](#)
 - Transp Chan B, [1028](#)
 - Transp Position Flexible Fixed, [1069](#)
 - Transport CH, [1040](#)
 - TrCH BER, [1090](#)
 - TrCh BlkSize 168, [1121](#)
 - TrCh BlkSize 360, [1121](#)
 - TrCH State Off On, [1071](#), [1173](#)
 - Trigger Sync Reply (RPS7), [1142](#), [1144](#), [1145](#),
[1146](#), [1147](#)
 - TTI, [1070](#), [1127](#), [1166](#), [1173](#)
 - TTI Frame Clock (RPS9), [1136](#)
 - Turbo, [1065](#), [1067](#), [1159](#)
 - UDI 64 kbps, [1134](#)
 - UDI ISDN (25.101), [1030](#)
 - UN3/4 GSM Gaussian, [1034](#)
 - Up/Down, [1033](#), [1083](#)
- wideband CDMA base band generator subsystem
 - keys and fields (*continued*)
 - User File, [1028](#), [1033](#), [1040](#), [1042](#), [1066](#), [1077](#),
[1078](#), [1081](#), [1088](#), [1106](#), [1109](#), [1111](#), [1160](#),
[1168](#)
 - User FIR, [1034](#), [1094](#)
 - W-CDMA Off On, [1173](#)
 - Word Alignment softkey, [384](#)
 - Word Size softkey, [391](#)