

SCPI Command Reference, Volume 3

Agilent Technologies ESG Vector Signal Generator

This guide applies to the following signal generator model:

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:

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	3
Command Types	5
Command Tree	6
Command Parameters and Responses	8
Program Messages	12
File Name Variables	13
MSUS (Mass Storage Unit Specifier) Variable	14
Quote Usage with SCPI Commands	15
Binary, Decimal, Hexadecimal, and Octal Formats	16
 2. Basic Function Commands	 17
Correction Subsystem ([:SOURce]:CORREction)	18
:FLATness:LOAD	18
:FLATness:PAIR	18
:FLATness:POINts	18
:FLATness:PRESet	19
:FLATness:STORE	19
[:STATe]	20
Digital Modulation Subsystem ([:SOURce])	21
:BURSt:SOURce	21
:BURSt:STATe	21
:DM:EXTernal:ALC:BANDwidth BWIDth	21
:DM:EXTernal:HICRest[:STATe]	22
:DM:EXTernal:FILTer	22
:DM:EXTernal:FILTer:AUTO	23
:DM:EXTernal:POLarity	23
:DM:EXTernal:SOURce	23
:DM:IQADjustment:EXTernal:COFFset	24

Contents

:DM:IQADjustment:EXternal:DIOFFset	24
:DM:IQADjustment:EXternal:DQOFFset	25
:DM:IQADjustment:EXternal:GAIN	25
:DM:IQADjustment:EXternal:IOFFset	26
:DM:IQADjustment:EXternal:IQATten	26
:DM:IQADjustment:EXternal:QOFFset	26
:DM:IQADjustment:GAIN	27
:DM:IQADjustment:IOFFset	27
:DM:IQADjustment:QOFFset	28
:DM:IQADjustment:QSKew	28
:DM:IQADjustment:SKEW	29
:DM:IQADjustment[:STATe]	29
:DM:MODulation:FILTer	30
:DM:MODulation:FILTer:AUTO	30
:DM:MODulation:ATTen	31
:DM:MODulation:ATTen:AUTO	31
:DM:MODulation:ATTen:EXternal	31
:DM:MODulation:ATTen:EXternal:LEVel	32
:DM:MODulation:ATTen:EXternal:LEVel:MEASurement	32
:DM:MODulation:ATTen:OPTimize:BANDwidth	32
:DM:POLarity[:ALL]	33
:DM:SKEW:PATH	33
:DM:SKEW[:STATe]	34
:DM:SOURce	34
:DM:STATe	35
Frequency Subsystem ([:SOURce])	36
:FREQuency:CHANnels:BAND	36
:FREQuency:CHANnels:NUMBer	37
:FREQuency:CHANnels[:STATe]	38
:FREQuency:FIXed	39
:FREQuency:MODE	39
:FREQuency:MULTiplier	40
:FREQuency:OFFSet	40
:FREQuency:OFFSet:STATe	41
:FREQuency:REference	41
:FREQuency:REference:STATe	41
:FREQuency:START	42
:FREQuency:STOP	42

:FREQUency:SYNThesis	43
:FREQUency[:CW]	43
:PHASe:REFerence	44
:PHASe[:ADJusT]	44
:ROSCillator:SOURce	45
:ROSCillator:SOURce:AUTO	45
List/Sweep Subsystem ([:SOURce])	46
:LIST:DIRection	46
:LIST:DWELl	46
:LIST:DWELl:POINts	47
:LIST:DWELl:TYPE	47
:LIST:FREQUency	47
:LIST:FREQUency:POINts	48
:LIST:MANual	48
:LIST:MODE	49
:LIST:POWer	49
:LIST:POWer:POINts	50
:LIST:TRIGger:SOURce	50
:LIST:TYPE	50
:LIST:TYPE:LIST:INITialize:FSStep	51
:LIST:TYPE:LIST:INITialize:PRESet	51
:SWEep:DWELl	52
:SWEep:POINts	52
Power Subsystem ([:SOURce]:POWer)	53
:ALC:BANdwidth	53
:ALC:SEARch	53
:ALC:SEARch:REFerence	54
:ALC:SEARch:SPAN:START	54
:ALC:SEARch:SPAN:STOP	55
:ALC:SEARch:SPAN:TYPE FULLIUSER	55
:ALC:SEARch:SPAN[:STATe] ON OFF 1 0	56
:ALC[:STATe]	56
:ALTerate:AMPLitude	56
:ALTerate:MANual	57
:ALTerate:STATe	57
:ALTerate:TRIGger[:SOURce]	58
:ATTenuation:AUTO	58
:MODE	59

Contents

:REference	59
:REference:STAtE	60
:STARt	60
:STOP	61
[:LEVel][:IMMediate]:OFFSet	61
[:LEVel][:IMMediate][:AMPLitude]	62
Pulse Subsystem ([:SOURce]:PULSe)	63
:FREQuency:STEP	63
3. System Commands	65
Calibration Subsystem (:CALibration)	66
:DCFM	66
:IQ	66
:IQ:DC	66
:IQ:DEFault	67
:IQ:FULL	68
:IQ:STARt	68
:IQ:STOP	69
Communication Subsystem (:SYSTem:COMMunicate)	70
:GPIB:ADDRes	70
:LAN:GATEway	70
:LAN:HOSTname	70
:LAN:IP	71
:LAN:SUBNet	71
:PMETer:ADDRes	72
:PMETer:CHANnel	72
:PMETer:IDN	72
:PMETer:TIMEout	73
:SERial:BAUD	73
:SERial:ECHO	74
:SERial:RESet	74
:SERial:TOUT	74
Diagnostic Subsystem (:DIAGnostic[:CPU]:INFORmation)	76
:BOARds	76
:CCOunt:ATTenuator	76
:CCOunt:PON	76
:CCOunt:PROTection	77
:DISPlay:OTIME	77

:OPTions	77
:OPTions:DETail	78
:OTIME	78
:REVision	78
:SDATe	79
Display Subsystem (:DISPlay)	80
:ANNotation:AMPLitude:UNIT	80
:ANNotation:CLOCK:DATE:FORMat	80
:ANNotation:CLOCK[:STATe]	80
:BRIGHtness	81
:CAPTure	81
:CONTRast	82
:INVerse	82
:REMote	82
[:WINDow][:STATe]	83
IEEE 488.2 Common Commands	84
*CLS	84
*ESE	84
*ESE?	84
*ESR?	85
*IDN?	85
*OPC	86
*OPC?	86
*PSC	86
*PSC?	87
*RCL	87
*RST	87
*SAV	88
*SRE	88
*SRE?	88
*STB?	89
*TRG	89
*TST?	89
*WAI	90
Memory Subsystem (:MEMory)	91
:CATalog:BINary	91
:CATalog:BIT	91
:CATalog:CDMa	92

Contents

:CATalog:DMOD	92
:CATalog:DWCDma	93
:CATalog:FCDMa	93
:CATalog:FIR	94
:CATalog:FSK	94
:CATalog:IQ	95
:CATalog:LIST	95
:CATalog:MCDMa	95
:CATalog:MDMod	96
:CATalog:MDWCdma	96
:CATalog:MFCdma	97
:CATalog:MTONE	97
:CATalog:RCDMa	98
:CATalog:SEQ	98
:CATalog:SHAPE	99
:CATalog:STATE	99
:CATalog:UFLT	100
:CATalog:UWCDma	100
:CATalog[:ALL]	101
:COPY[:NAME]	101
:DATA	102
:DATA:BIT	102
:DATA:FIR	103
:DATA:FSK	104
:DATA:IQ	105
:DATA:PRAM?	106
:DATA:PRAM:BLOCK	106
:DATA:PRAM:LIST	106
:DATA:SHAPE	107
:DElete:ALL	107
:DElete:BINary	108
:DElete:BIT	108
:DElete:CDMa	108
:DElete:DMOD	109
:DElete:DWCDma	109
:DElete:FCDMa	109
:DElete:FIR	110
:DElete:FSK	110

:DELeTe:IQ	110
:DELeTe:LIST	111
:DELeTe:MCDMa	111
:DELeTe:MDMod	111
:DELeTe:MDWCdma	111
:DELeTe:MFCdma	112
:DELeTe:MTONe	112
:DELeTe:RCDMa	112
:DELeTe:SEQ	113
:DELeTe:SHAPE	113
:DELeTe:STATe	113
:DELeTe:UFLT	114
:DELeTe:UWCDma	114
:DELeTe[:NAME]	114
:FREE[:ALL]	115
:LOAD:LIST	115
:MOVE	115
:STATe:COMMeNt	116
:STORe:LIST	116
Mass Memory Subsystem (:MMEMory)	117
:CATalog	117
:COPI	118
:DATA	119
:DELeTe:NVWFm	119
:DELeTe:WFM	119
:DELeTe:WFM1	120
:DELeTe[:NAME]	120
:HEADer:CLEAr	120
:HEADer:DESCRiption	121
:LOAD:LIST	121
:MOVE	121
:STORe:LIST	122
Output Subsystem (:OUTPut)	123
:BLANking:AUTO	123
:BLANking:STATe	123
:MODulation[:STATe]	123
[:STATe]	124
Route Subsystem (:ROUte:HARDware:DGENerator)	125

Contents

:INPut:BPOLarity	125
:INPut:CPOLarity	125
:INPut:DPOLarity	125
:INPut:SPOLarity	126
:INPut:TPOLarity	126
:IPOLarity:BGATe	126
:IPOLarity:CLOCK	127
:IPOLarity:DATA	127
:IPOLarity:SSYNc	127
:IPOLarity:TRIGger	128
:OPOLarity:CLOCK	128
:OPOLarity:DATA	128
:OPOLarity:EVENT[1] 2 3 4	129
:OPOLarity:SSYNc	129
:OUTPut:CPOLarity	129
:OUTPut:DCS[:STATe]	130
:OUTPut:DPOLarity	130
:OUTPut:EPOL[1] 2 3 4	130
:OUTPut:SPOLarity	131
Status Subsystem (:STATus)	132
:OPERation:BASeband:CONDition	132
:OPERation:BASeband:ENABle	132
:OPERation:BASeband:NTRansition	132
:OPERation:BASeband:PTRansition	133
:OPERation:BASeband[:EVENT]	133
:OPERation:CONDition	134
:OPERation:ENABle	134
:OPERation:NTRansition	134
:OPERation:PTRansition	135
:OPERation[:EVENT]	135
:PRESet	136
:QUEStionable:BERT:CONDition	136
:QUEStionable:BERT:ENABle	136
:QUEStionable:BERT:NTRansition	137
:QUEStionable:BERT:PTRansition	137
:QUEStionable:BERT[:EVENT]	138
:QUEStionable:CALibration:CONDition	138
:QUEStionable:CALibration:ENABle	139

:QUESTionable:CALibration:NTRansition	139
:QUESTionable:CALibration:PTRansition	139
:QUESTionable:CALibration[:EVENT]	140
:QUESTionable:CONDition	140
:QUESTionable:ENABle	141
:QUESTionable:FREQuency:CONDition	141
:QUESTionable:FREQuency:ENABle	141
:QUESTionable:FREQuency:NTRansition	142
:QUESTionable:FREQuency:PTRansition	142
:QUESTionable:FREQuency[:EVENT]	143
:QUESTionable:MODulation:CONDition	143
:QUESTionable:MODulation:ENABle	143
:QUESTionable:MODulation:NTRansition	144
:QUESTionable:MODulation:PTRansition	144
:QUESTionable:MODulation[:EVENT]	145
:QUESTionable:NTRansition	145
:QUESTionable:POWer:CONDition	145
:QUESTionable:POWer:ENABle	146
:QUESTionable:POWer:NTRansition	146
:QUESTionable:POWer:PTRansition	147
:QUESTionable:POWer[:EVENT]	147
:QUESTionable:PTRansition	148
:QUESTionable[:EVENT]	148
System Subsystem (:SYSTem)	149
:CAPability	149
:DATE	149
:ERRor[:NEXT]	150
:ERRor:SCPI[:SYNTax]	150
:HELP:MODE	150
:IDN	151
:LANGUage	151
:PON:TYPE	152
:PRESet	152
:PRESet:ALL	153
:PRESet:LANGUage	153
:PRESet:PERsistent	154
:PRESet:PN9	154
:PRESet:TYPE	154

Contents

:PRESet[:USER]:SAVE	155
:SECurity:DISPlay ONIOFF110	155
:SECurity:ERASeall	156
:SECurity:LEVel NONEIERASelOVERwrite SANitize	156
:SECurity:LEVel:STATe ONIOFF110	157
:SECurity:OVERwrite	157
:SECurity:SANitize	158
:SSAVer:DELay	158
:SSAVer:MODE	159
:SSAVer:STATe	159
:TIME	159
:VERSion	160
Trigger Subsystem	161
:ABORt	161
:INITiate:CONTInuous[:ALL]	161
:INITiate[:IMMediate][:ALL]	161
:TRIGger:OUTPut:POLarity	162
:TRIGger[:SEQuence]:SLOPe	162
:TRIGger[:SEQuence]:SOURce	163
:TRIGger[:SEQuence][:IMMediate]	163
Unit Subsystem (:UNIT)	164
:POWer	164

4. Analog Commands **165**

Amplitude Modulation Subsystem ([:SOURce])	166
:AM[1] 2...	166
:AM:INTernal:FREQuency:STEP[:INCRement]	166
:AM:WIDeband:STATe	167
:AM[1] 2:EXTernal[1] 2:COUPling	167
:AM[1] 2:INTernal[1]:FREQuency	168
:AM[1] 2:INTernal[1]:FREQuency:ALTErnate	168
:AM[1] 2:INTernal[1]:FREQuency:ALTErnate:AMPLitude:PERCent	168
:AM[1] 2:INTernal[1]:FUNCTion:SHAPE	169
:AM[1] 2:INTernal[1]:SWEep:TIME	169
:AM[1] 2:INTernal[1]:SWEep:TRIGger	169
:AM[1] 2:SOURce	170
:AM[1] 2:STATe	170
:AM[1] 2[:DEPTH]	171

:AM[1]2[:DEPT]h]:TRACk	171
:AM[:DEPT]h]:STEP[:INCR]ement]	172
Frequency Modulation Subsystem ([:SOUR]ce)	173
:FM[1]2...	173
:FM:INTErnal:FREQUency:STEP[:INCR]ement]	173
:FM[1]2:EXTErnal[1]2:COUPLing	174
:FM[1]2:INTErnal[1]:FREQUency	174
:FM[1]2:INTErnal[1]:FREQUency:ALTErnate	175
:FM[1]2:INTErnal[1]:FREQUency:ALTErnate:AMPLitude:PERCent	175
:FM[1]2:INTErnal[1]:FUNCTio:n:SHAPE	175
:FM[1]2:INTErnal[1]:SWEep:TIME	176
:FM[1]2:INTErnal[1]:SWEep:TRIGger	176
:FM[1]2:SOURce	177
:FM[1]2:STATe	177
:FM[1]2[:DEV]iation]	178
:FM[1]2[:DEV]iation]:TRACk	178
Low Frequency Output Subsystem ([:SOUR]ce):LFOutput	179
:AMPLitude	179
:FUNCTio[n]1:FREQUency	179
:FUNCTio[n]1:FREQUency:ALTErnate	179
:FUNCTio[n]1:FREQUency:ALTErnate:AMPLitude:PERCent	180
:FUNCTio[n]1:PERiod	180
:FUNCTio[n]1:PWIDth	181
:FUNCTio[n]1:SHAPE	181
:FUNCTio[n]1:SWEep:TIME	181
:FUNCTio[n]1:SWEep:TRIGger	182
:SOURce	182
:STATe	183
Phase Modulation Subsystem ([:SOUR]ce)	184
:PM[1]2...	184
:PM:INTErnal:FREQUency:STEP[:INCR]ement]	184
:PM[1]2:BANdwidth BWIDth	185
:PM[1]2:EXTErnal[1]2:COUPLing	185
:PM[1]2:INTErnal[1]:FREQUency	185
:PM[1]2:INTErnal[1]:FREQUency:ALTErnate	186
:PM[1]2:INTErnal[1]:FREQUency:ALTErnate:AMPLitude:PERCent	186
:PM[1]2:INTErnal[1]:FUNCTio:n:SHAPE	187
:PM[1]2:INTErnal[1]:SWEep:TIME	187

Contents

:PM[1]2:INTErnal[1]:SWEep:TRIGger	187
:PM[1]2:SOURce	188
:PM[1]2:STATe	188
:PM[1]2[:DEViation]	189
:PM[1]2[:DEViation]:TRACk	190
:PM[:DEViation]:STEP[:INCRement]	190
Pulse Modulation Subsystem ([:SOURce]:PULM)	191
:INTErnal[1]:FREQuency	191
:INTErnal[1]:FUNCTion:SHAPE	191
:INTErnal[1]:PERiod	191
:INTErnal[1]:PERiod:STEP[:INCRement]	192
:INTErnal[1]:PWIDth	192
:INTErnal[1]:PWIDth:STEP	193
:SOURce	193
:STATe	193
5. Component Test Digital Commands	195
All Subsystem–Option 001/601 or 002/602 ([:SOURce])	196
:RADio:ALL:OFF	196
AWGN ARB Subsystem–Option 403 ([:SOURce]:RADio:AWGN:ARB)	197
:BWIDth	197
:IQ:EXTErnal:FILTer	197
:IQ:EXTErnal:FILTer:AUTO	197
:HEADer:CLEar	198
:HEADer:SAVE	198
:IQ:MODulation:ATTen	198
:IQ:MODulation:ATTen:AUTO	199
:IQ:MODulation:FILTer	199
:IQ:MODulation:FILTer:AUTO	200
:MDESTination:PULSe	200
:MDESTination:AAMPLitude	200
:MDESTination:ALCHold	201
:MPOLarity:MARKer1	201
:MPOLarity:MARKer2	201
:MPOLarity:MARKer3	202
:MPOLarity:MARKer4	202
:LENGth	202
:REFerence:EXTErnal:FREQuency	202

:REfERENCE[:SOURce]	203
:SCLock:RATE	203
:SEED	204
[:STATe]	204
CDMA ARB Subsystem–Option 401 ([:SOURce]:RADio:CDMA:ARB)	205
:CLIPping:I	205
:CLIPping:POSition	205
:CLIPping:Q	205
:CLIPping:TYPE	206
:CLIPping[:IJQ]	206
:CRATe	206
:IQ:EXTernal:FILTer	207
:IQ:EXTernal:FILTer:AUTO	207
:FILTer	208
:FILTer:ALPHa	209
:FILTer:BBT	209
:FILTer:CHANnel	209
:HEADer:CLEAr	210
:HEADer:SAVE	210
:IQMap	210
:IQ:MODulation:ATTen	211
:IQ:MODulation:ATTen:AUTO	211
:IQ:MODulation:FILTer	212
:IQ:MODulation:FILTer:AUTO	212
:MDESTination:PULSe	212
:MDESTination:AAMPLitude	213
:MDESTination:ALCHold	213
:MPOLarity:MARKer1	213
:MPOLarity:MARKer2	214
:MPOLarity:MARKer3	214
:MPOLarity:MARKer4	214
:OSAMple	215
:REfERENCE:EXTernal:FREQuency	215
:REfERENCE[:SOURce]	215
:RETRigger	216
:SCLock:RATE	216
:SETup	217
:SETup:CHANnel	218

Contents

:SETup:MCARrier	219
:SETup:MCARrier:STORE	219
:SETup:MCARrier:TABLE	220
:SETup:STORE	220
:TRIGger:TYPE	221
:TRIGger:TYPE:CONTInuous[:TYPE]	222
:TRIGger:TYPE:GATE:ACTive	222
:TRIGger[:SOURce]	223
:TRIGger[:SOURce]:EXTernal[:SOURce]	223
:TRIGger[:SOURce]:EXTernal:DELay	224
:TRIGger[:SOURce]:EXTernal:DELay:STATe	224
:TRIGger[:SOURce]:EXTernal:SLOPe	225
:WLENgth	225
[[:STATe]	225
CDMA2000 ARB Subsystem–Option 401 ([:SOURce]:RADio:CDMA2000:ARB)	227
:CLIPping:I	227
:CLIPping:POSition	227
:CLIPping:Q	227
:CLIPping:TYPE	228
:CLIPping[:IJQ]	228
:IQ:EXTernal:FILTer	228
:IQ:EXTernal:FILTer:AUTO	229
:FILTer	229
:FILTer:ALPHa	230
:FILTer:BBT	231
:FILTer:CHANnel	231
:HEADer:CLEar	232
:HEADer:SAVE	232
:IQ:MODulation:ATTen	232
:IQ:MODulation:ATTen:AUTO	232
:IQ:MODulation:FILTer	233
:IQ:MODulation:FILTer:AUTO	233
:IQMap	234
:LINK	234
:LINK:FORWard:SETup	234
:LINK:FORWard:SETup:MCARrier	235
:LINK:FORWard:SETup:MCARrier:STORE	236
:LINK:FORWard:SETup:MCARrier:TABLE	236

:LINK:FORWARD:SETup:MCARrier:TABLE:NCARriers	237
:LINK:FORWARD:SETup:STORE	238
:LINK:FORWARD:SETup:TABLE:APPLY	239
:LINK:FORWARD:SETup:TABLE:CHANnel	239
:LINK:FORWARD:SETup:TABLE:NCHannels	240
:LINK:FORWARD:SETup:TABLE:PADJust	240
:LINK:REVerse:RCONfig	241
:LINK:REVerse:SETup	241
:LINK:REVerse:SETup:STORE	241
:LINK:REVerse:SETup:TABLE:APPLY	242
:LINK:REVerse:SETup:TABLE:CHANnel	243
:LINK:REVerse:SETup:TABLE:NCHannels	244
:LINK:REVerse:SETup:TABLE:PADJust	244
:MDEStination:PULSe	244
:MDEStination:AAMPLitude	245
:MDEStination:ALCHold	245
:MPOLarity:MARKer1	245
:MPOLarity:MARKer2	245
:MPOLarity:MARKer3	246
:MPOLarity:MARKer4	246
:REFerence:EXTernal:FREQuency	246
:REFerence[:SOURce]	247
:RETRigger	247
:REVision	248
:SCLock:RATE	248
:SPReading:RATE	248
:SPReading:TYPE	249
:SPReading:TYPE:MCARrier:SPACing	249
:TRIGger:TYPE	250
:TRIGger:TYPE:CONTInuous[:TYPE]	250
:TRIGger:TYPE:GATE:ACTive	251
:TRIGger[:SOURce]	251
:TRIGger[:SOURce]:EXTernal[:SOURce]	252
:TRIGger[:SOURce]:EXTernal:DELay	252
:TRIGger[:SOURce]:EXTernal:DELay:STATE	253
:TRIGger[:SOURce]:EXTernal:SLOPe	253
[:STATE]	253
Dmodulation Subsystem–Option 001/601 or 002/602 ([:SOURce]:RADio:DMODulation:ARB)	255

Contents

:IQ:EXternal:FILTer	255
:IQ:EXternal:FILTer:AUTO	255
:FILTer	256
:FILTer:ALPHa	257
:FILTer:BBT	257
:FILTer:CHANnel	257
:HEADer:CLEar	258
:HEADer:SAVE	258
:IQ:MODulation:ATTen	258
:IQ:MODulation:ATTen:AUTO	259
:IQ:MODulation:FILTer	259
:IQ:MODulation:FILTer:AUTO	260
:MDEStination:PULSe	260
:MDEStination:AAMPLitude	260
:MDEStination:ALCHold	261
:MODulation:FSK[:DEVIation]	261
:MODulation[:TYPE]	261
:MPOLarity:MARKer1	262
:MPOLarity:MARKer2	262
:MPOLarity:MARKer3	262
:MPOLarity:MARKer4	263
:REFerence:EXternal:FREQuency	263
:REFerence[:SOURce]	264
:RETRigger	264
:SCLock:RATE	264
:SETup	265
:SETup:MCARrier	265
:SETup:MCARrier:PHASe	266
:SETup:MCARrier:STORE	266
:SETup:MCARrier:TABLE	267
:SETup:MCARrier:TABLE:NCARriers	268
:SETup:STORE	268
:SRATE	268
:TRIGger:TYPE	270
:TRIGger:TYPE:CONTinuous[:TYPE]	270
:TYPE:GATE:ACTive	271
:TRIGger[:SOURce]	271
:TRIGger[:SOURce]:EXternal:DELay	272

:TRIGger[:SOURce]:EXTernal:DELay:STATe	272
:TRIGger[:SOURce]:EXTernal:SLOPe	272
:TRIGger[:SOURce]:EXTernal[:SOURce]	273
[:STATe]	273
Dual ARB Subsystem–Option 001/601 or 002/602 ([:SOURce]:RADio:ARB)	275
:CLIPping	275
:GENerate:SINE	275
:HEADer:CLEar	276
:HEADer:SAVE	276
:HCResT[:STATe]	276
:IQ:EXTernal:FILTer	277
:IQ:EXTernal:FILTer:AUTO	277
:IQ:MODulation:ATTen	278
:IQ:MODulation:ATTen:AUTO	278
:IQ:MODulation:FILTer	279
:IQ:MODulation:FILTer:AUTO	279
:MARKer:CLEar	279
:MARKer:CLEar:ALL	280
:MARKer:ROtate	280
:MARKer:[SET]	281
:MDEStination:PULSe	282
:MDEStination:AAMPlitude	282
:MDEStination:ALCHold	282
:MPOLarity:MARKer1	283
:MPOLarity:MARKer2	283
:MPOLarity:MARKer3	283
:MPOLarity:MARKer4	283
:REFerence:EXTernal:FREQuency	284
:REFerence[:SOURce]	284
:RETRigger	285
:RSCALing	285
:SCALing	285
:SCLock:RATE	286
:SEQuence	286
:TRIGger:TYPE	287
:TRIGger:TYPE:CONTInuous[:TYPE]	287
:TRIGger:TYPE:GATE:ACTive	288
:TRIGger:TYPE:SADVance[:TYPE]	288

Contents

:TRIGger[:SOURce]	289
:TRIGger[:SOURce]:EXTernal[:SOURce]	289
:TRIGger[SOURce]:EXTernal:DELay	290
:TRIGger[:SOURce]:EXTernal:DELay:STATe	290
:TRIGger[:SOURce]:EXTernal:SLOPe	291
:WAVeform	291
[:STATe]	291
Multitone Subsystem–Option 001/601 or 002/602 ([:SOURce]:RADio:MTONe:ARB)	292
Creating a Multitone Waveform	292
:HEADer:CLEar	292
:HEADer:SAVE	292
:IQ:EXTernal:FILTer	293
:IQ:EXTernal:FILTer:AUTO	293
:IQ:MODulation:ATTen	293
:IQ:MODulation:ATTen:AUTO	294
:IQ:MODulation:FILTer	294
:IQ:MODulation:FILTer:AUTO	295
:MDEStination:PULSe	295
:MDEStination:AAMPLitude	295
:MDEStination:ALCHold	296
:MPOLarity:MARKer1	296
:MPOLarity:MARKer2	296
:MPOLarity:MARKer3	297
:MPOLarity:MARKer4	297
:REFerence:EXTernal:FREQuency	297
:REFerence[:SOURce]	298
:ROW	298
:SCLock:RATE	299
:SETup	299
:SETup:STORe	300
:SETup:TABLE	300
:SETup:TABLE:FSPacing	301
:SETup:TABLE:NTONes	301
:SETup:TABLE:PHASe:INITialize	302
:SETup:TABLE:PHASe:INITialize:SEED	302
[:STATe]	302
Wideband CDMA ARB Subsystem–Option 400 ([:SOURce]:RADio:WCDMa:TGPP:ARB)	304
:CLIPping:I	304

:CLIPping:POSition	304
:CLIPping:Q	304
:CLIPping:TYPE	305
:CLIPping[:IJQ]	305
:CRATe	306
:FILTer	306
:FILTer:ALPHa	307
:FILTer:BBT	307
:FILTer:CHANnel	307
:HEADer:CLEar	308
:HEADer:SAVE	308
:IQ:EXTernal:FILTer	308
:IQ:EXTernal:FILTer:AUTO	309
:IQMap	309
:IQ:MODulation:ATTen	310
:IQ:MODulation:ATTen:AUTO	310
:IQ:MODulation:FILTer	310
:IQ:MODulation:FILTer:AUTO	311
:LINK	311
:LINK:DOWN:OACP	312
:LINK:DOWN:SETup	312
:LINK:DOWN:SETup:MCARrier	313
:LINK:DOWN:SETup:MCARrier:CLIPping:I	314
:LINK:DOWN:SETup:MCARrier:CLIPping:Q	315
:LINK:DOWN:SETup:MCARrier:CLIPping:TYPE	315
:LINK:DOWN:SETup:MCARrier:CLIPping[:IJQ]	315
:LINK:DOWN:SETup:MCARrier:SCODE:AINCrement	316
:LINK:DOWN:SETup:MCARrier:STORE	316
:LINK:DOWN:SETup:MCARrier:TABLE	317
:LINK:DOWN:SETup:MCARrier:TABLE:NCARriers	319
:LINK:DOWN:SETup:MCARrier:TOFFset:AINCrement	319
:LINK:DOWN:SETup:STORE	319
:LINK:DOWN:SETup:TABLE:APPLY	320
:LINK:DOWN:SETup:TABLE:CHANnel	321
:LINK:DOWN:SETup:TABLE:NCHannels?	325
:LINK:DOWN:SETup:TABLE:PADJust	326
:LINK:DOWN:TFCI	326
:LINK:UP:OACP	326

Contents

:LINK:UP:SCRAMBLE.	327
:LINK:UP:SDPDch	327
:LINK:UP:SETup	327
:LINK:UP:SETup:STORe	328
:LINK:UP:SETup:TABLE:APPLy	329
:LINK:UP:SETup:TABLE:CHANnel	329
:LINK:UP:SETup:TABLE:GUNit	330
:LINK:UP:SETup:TABLE:NCHannel	331
:LINK:UP:TFCI	331
:MDEStination:PULSe	331
:MDEStination:AAMPLitude	332
:MDEStination:ALCHold	332
:MPOLarity:MARKer1.	332
:MPOLarity:MARKer2.	332
:MPOLarity:MARKer3.	333
:MPOLarity:MARKer4.	333
:REFerence:EXTernal:FREQUency	333
:REFerence[:SOURce]	334
:RETRigger.	334
:REVision	335
:SCLock:RATE.	335
:TRIGger:TYPE:CONTinuous[:TYPE]	335
:TRIGger:TYPE	336
:TRIGger:TYPE:GATE:ACTive.	336
:TRIGger[:SOURce].	337
:TRIGger[:SOURce]:EXTernal:DELay	337
:TRIGger[:SOURce]:EXTernal:DELay:STATe	338
:TRIGger[:SOURce]:EXTernal:SLOPe	338
:TRIGger[:SOURce]:EXTernal[:SOURce]	338
[:STATe]	339

SCPI Command Reference, Volume 2

6. Bit Error Rate Test (BERT) Commands	341
Calculate Subsystem–Option UN7 and 300 (:CALCulate:BERT).....	342
:BTS:LOOPback:EDGE:ETCH:F43:COMParator:CRITeria:ERATe	342
:BTS:LOOPback:EDGE:ETCH:F43:COMParator:CRITeria[:SElect].....	342
:BTS:LOOPback:EDGE:MCS5:COMParator:CRITeria:ERATe	342
:BTS:LOOPback:EDGE:MCS5:COMParator:CRITeria[:SElect].....	343
:BTS:LOOPback:EDGE:MCS9:COMParator:CRITeria:ERATe	343
:BTS:LOOPback:EDGE:MCS9:COMParator:CRITeria[:SElect].....	344
:BTS:LOOPback:EDGE:UNCoded:COMParator:CRITeria:ERATe	344
:BTS:LOOPback:EDGE:UNCoded:COMParator:CRITeria[:SElect].....	344
:BTS:LOOPback:GSM:CS1:COMParator:CRITeria:ERATe	345
:BTS:LOOPback:GSM:CS1:COMParator:CRITeria[:SElect]	345
:BTS:LOOPback:GSM:CS4:COMParator:CRITeria:ERATe	346
:BTS:LOOPback:GSM:CS4:COMParator:CRITeria[:SElect]	346
:BTS:LOOPback:GSM:MCS1:COMParator:CRITeria:ERATe	347
:BTS:LOOPback:GSM:MCS1:COMParator:CRITeria[:SElect].....	347
:BTS:LOOPback:GSM:COMParator:CRITeria:CIB	347
:BTS:LOOPback:GSM:COMParator:CRITeria:CII	348
:BTS:LOOPback:GSM:COMParator:CRITeria:FERasure	348
:BTS:LOOPback:GSM:COMParator:CRITeria[:SElect]	348
[:BASEband]:COMParator:MODE	349
[:BASEband]:COMParator:THReshold	350
[:BASEband]:COMParator[:STATe]	350
[:BASEband]:DISPlay:MODE:.....	350
[:BASEband]:DISPlay:UPDate:	351
Data Subsystem–Option UN7 and 300 (:DATA)	352
:BERT:BTS:LOOPback:EDGE:ETCH:F43[:DATA]	352
:BERT:BTS:LOOPback:EDGE:MCS5[:DATA].....	353
:BERT:BTS:LOOPback:EDGE:MCS9[:DATA].....	354
:BERT:BTS:LOOPback:EDGE:UNCoded[:DATA]	354
:BERT:BTS:LOOPback:GSM[:DATA].....	355
:BERT:BTS:LOOPback:GSM:CS1[:DATA].....	357
:BERT:BTS:LOOPback:GSM:CS4[:DATA].....	357
:BERT:BTS:LOOPback:GSM:MCS1[:DATA].....	358
:BERT:AUXout	358
[:DATA].....	360

Contents

Input Subsystem—Option UN7 (:INPut:BERT[: BAsEband])	361
:CGATe:DELay:CLOCK	361
:CGATe:DELay:MODE	361
:CGATe:DELay:TIME	362
:CGATe:DELay[:STATe]	362
:CGATe:POLarity	362
:CGATe[:STATe]	363
:CLOCK:DELay:RESolution	363
:CLOCK:DELay:TIME	364
:CLOCK:DELay[:STATe]	364
:CLOCK:POLarity	364
:DATA:POLarity	365
:IMPedance	365
:THReshold	366
Measure Subsystem—Option 300 (:MEASure[:SCALar]:BERT:BTS:LOOPback)	367
:EDGE:MCS5[:SENSitivity]	367
:EDGE:MCS9[:SENSitivity]	367
:EDGE:UNCoded[:SENSitivity]	368
:GSM[:SENSitivity]	369
Sense Subsystem—Options UN7 and 300 ([:SOURce]:SENSe:BERT)	370
:BTS:LOOPback:EDGE:ETCH:F43:BLOCK:COUNt	370
:BTS:LOOPback:EDGE:ETCH:F43:CONTAin	370
:BTS:LOOPback:EDGE:ETCH:F43:STOP:CRITeria:EBLock	370
:BTS:LOOPback:EDGE:ETCH:F43:STOP:CRITeria[:SElect]	371
:BTS:LOOPback:EDGE:FTRigger:EXTernal:DELay	371
:BTS:LOOPback:EDGE:FTRigger:EXTernal:POLarity	372
:BTS:LOOPback:EDGE:FTRigger[SElect]	372
:BTS:LOOPback:EDGE:MCS5:BLOCK:COUNt	372
:BTS:LOOPback:EDGE:MCS5:CONTAin	373
:BTS:LOOPback:EDGE:MCS5:ESENSitivity	373
:BTS:LOOPback:EDGE:MCS5:HAMPLitude	373
:BTS:LOOPback:EDGE:MCS5:LAMPLitude	374
:BTS:LOOPback:EDGE:MCS5:PAMPLitude	374
:BTS:LOOPback:EDGE:MCS5:SBLock:COUNt	375
:BTS:LOOPback:EDGE:MCS5:SBLock:INITial	375
:BTS:LOOPback:EDGE:MCS5:STOP:CRITeria:EBLock	375
:BTS:LOOPback:EDGE:MCS5:STOP:CRITeria[:SElect]	376
:BTS:LOOPback:EDGE:MCS9:BLOCK:COUNt	376

:BTS:LOOPback:EDGE:MCS9:CONtain	376
:BTS:LOOPback:EDGE:MCS9:ESEnsitivity	377
:BTS:LOOPback:EDGE:MCS9:HAMPplitude	377
:BTS:LOOPback:EDGE:MCS9:LAMPplitude	377
:BTS:LOOPback:EDGE:MCS9:PAMPplitude	378
:BTS:LOOPback:EDGE:MCS9:SBLOCK:COUNT	378
:BTS:LOOPback:EDGE:MCS9:SBLOCK:INITIAL	379
:BTS:LOOPback:EDGE:MCS9:STOP:CRITERIA:EBLOCK	379
:BTS:LOOPback:EDGE:MCS9:STOP:CRITERIA[SElect]	379
:BTS:LOOPback:EDGE:MEASUREMENT:STOP	380
:BTS:LOOPback:EDGE:MEASUREMENT:TSLot	380
:BTS:LOOPback:EDGE:MEASUREMENT[:MODE]	381
:BTS:LOOPback:EDGE:SINVert	381
:BTS:LOOPback:EDGE:SYNC:AGain	381
:BTS:LOOPback:EDGE:SYNC:RF	382
:BTS:LOOPback:EDGE:SYNC[SOURce]	382
:BTS:LOOPback:EDGE:TRIGger[:SOURce]	383
:BTS:LOOPback:EDGE:ULINK:OFFSet	383
:BTS:LOOPback:EDGE:UNCoded:BIT:COUNT	384
:BTS:LOOPback:EDGE:UNCoded:ESEnsitivity	384
:BTS:LOOPback:EDGE:UNCoded:HAMPplitude	384
:BTS:LOOPback:EDGE:UNCoded:LAMPplitude	385
:BTS:LOOPback:EDGE:UNCoded:PAMPplitude	385
:BTS:LOOPback:EDGE:UNCoded:SBIT:COUNT	385
:BTS:LOOPback:EDGE:UNCoded:SBIT:INITIAL	386
:BTS:LOOPback:EDGE:UNCoded:STOP:CRITERIA:EBIT	386
:BTS:LOOPback:EDGE:UNCoded:STOP:CRITERIA[SElect]	386
:BTS:LOOPback:EDGE[STATE]	387
:BTS:LOOPback:GSM:CS1:BLOCK:COUNT	387
:BTS:LOOPback:GSM:CS1:CONtain	388
:BTS:LOOPback:GSM:CS1:STOP:CRITERIA:EBLOCK	388
:BTS:LOOPback:GSM:CS1:STOP:CRITERIA[SElect]	388
:BTS:LOOPback:GSM:CS4:BLOCK:COUNT	389
:BTS:LOOPback:GSM:CS4:CONtain	389
:BTS:LOOPback:GSM:CS4:STOP:CRITERIA:EBLOCK	389
:BTS:LOOPback:GSM:CS4:STOP:CRITERIA[SElect]	390
:BTS:LOOPback:GSM:ESEnsitivity	390
:BTS:LOOPback:GSM:FRAME:CIB	391

Contents

:BTS:LOOPback:GSM:FRAMe:CII	391
:BTS:LOOPback:GSM:FRAMe:COUNT	391
:BTS:LOOPback:GSM:HAMPLitude	392
:BTS:LOOPback:GSM:LAMPLitude	392
:BTS:LOOPback:GSM:MCS1:BLOCK:COUNT	392
:BTS:LOOPback:GSM:MCS1:CONTain	393
:BTS:LOOPback:GSM:MCS1:STOP:CRITERia:EBLOCK	393
:BTS:LOOPback:GSM:MCS1:STOP:CRITERia[:SElect]	393
:BTS:LOOPback:GSM:MEASurement:STOP	394
:BTS:LOOPback:GSM:MEASurement:TSLot	394
:BTS:LOOPback:GSM:MEASurement[:MODE]	395
:BTS:LOOPback:GSM:PAMPLitude	395
:BTS:LOOPback:GSM:SFRame:COUNT	395
:BTS:LOOPback:GSM:SFRame:INITial	396
:BTS:LOOPback:GSM:SINVert	396
:BTS:LOOPback:GSM:STOP:CRITERia:CIB	396
:BTS:LOOPback:GSM:STOP:CRITERia:CII	397
:BTS:LOOPback:GSM:STOP:CRITERia:FERasure	397
:BTS:LOOPback:GSM:STOP:CRITERia[:SElect]	397
:BTS:LOOPback:GSM:SYNC:RF	398
:BTS:LOOPback:GSM:SYNC[:SOURce]	399
:BTS:LOOPback:GSM:TRIGger[:SOURce]	399
:BTS:LOOPback:GSM:ULink:OFFSet	400
:BTS:LOOPback:GSM[:STATe]	400
[:BAsEband]:PRBS:FUNCTion:SPIgnore:DATA	400
[:BAsEband]:PRBS:FUNCTion:SPIgnore[:STATe]	401
[:BAsEband]:PRBS[:DATA]	401
[:BAsEband]:RSYNc:THReshold	402
[:BAsEband]:RSYNc[:STATe]	402
[:BAsEband]:STATe	402
[:BAsEband]:STOP:CRITERia:EBIT	403
[:BAsEband]:STOP:CRITERia[:SElect]	403
[:BAsEband]:TBITs	404
[:BAsEband]:TRIGger:BDELay	404
[:BAsEband]:TRIGger:BDELay:STATe	404
[:BAsEband]:TRIGger:COUNT	405
[:BAsEband]:TRIGger:POLarity	405
[:BAsEband]:TRIGger[:SOURce]	405

7. Receiver Test Digital Commands	407
All Subsystem–Option 001/601 or 002/602 ([:SOURce])	408
:RADio:ALL:OFF.	408
AWGN Real-Time Subsystem–Option 403 ([:SOURce]:RADio:AWGN:RT)	409
:BWIDth	409
[:STATe]	409
Bluetooth Subsystem–Option 406 ([:SOURce]:RADio:BLUeTooth:ARB).	410
:AMADdr	410
:BDADdr.	410
:BURSt[:STATe]	410
:CGDelay.	411
:DATA	411
:IQ:EXTernal:FILTer.	412
:IQ:EXTernal:FILTer:AUTO.	412
:HEADer:CLEar	413
:HEADer:SAVE.	413
:IMPairments.	413
:IMPairments:AWGN	414
:IMPairments:AWGN:CNR	414
:IMPairments:AWGN:NSEed	414
:IMPairments:DDEviation	415
:IMPairments:FDType.	415
:IMPairments:FOFFset	416
:IMPairments:MINdex	416
:IMPairments:STERror	417
:IQ:MODulation:ATTen	417
:IQ:MODulation:ATTen:AUTO	418
:IQ:MODulation:FILTer	418
:IQ:MODulation:FILTer:AUTO	419
:MDEStination:PULSe	419
:MDEStination:AAMPLitude.	419
:MDEStination:ALCHold	420
:MPOLarity:MARKer1	420
:MPOLarity:MARKer2.	420
:MPOLarity:MARKer3	421
:MPOLarity:MARKer4	421
:PACKet.	421
:REFerence:EXTernal:FREQUency	421

Contents

:REfERENCE[:SOURce]	422
:RSYMBOLS	422
:SCLock:RATE	423
[:STATe]	423
CDMA2000 BBG Subsystem–Option 401 ([:SOURce]:RADio:CDMA2000[:BBG])	424
:LMODe	424
[:FORWard]:BBCLock	424
[:FORWard]:CHIPrate	425
[:FORWard]:ESDdelay	425
[:FORWard]:FILTer	426
[:FORWard]:FILTer:ALPHa	426
[:FORWard]:FILTer:BBT	427
[:FORWard]:FILTer:CHANnel	427
[:FORWard]:LCState	428
[:FORWard]:FFCH:DATA	428
[:FORWard]:FFCH:DATA:FIX4	428
[:FORWard]:FFCH:EBNO	429
[:FORWard]:FFCH:FOFFset	430
[:FORWard]:FFCH:LCMask	430
[:FORWard]:FFCH:LCMask:ESN	430
[:FORWard]:FFCH:LCMask:HEADer	431
[:FORWard]:FFCH:POWER	431
[:FORWard]:FFCH:PRAMp	431
[:FORWard]:FFCH:PRTIME	432
[:FORWard]:FFCH:QOF	432
[:FORWard]:FFCH:RATE	433
[:FORWard]:FFCH:RCONfig	433
[:FORWard]:FFCH:WALSh	433
[:FORWard]:FFCH[:STATe]	434
[:FORWard]:FPCH:DATA	434
[:FORWard]:FPCH:EBNO	434
[:FORWard]:FPCH:LCMask	435
[:FORWard]:FPCH:LCMask:F1	435
[:FORWard]:FPCH:LCMask:F2	435
[:FORWard]:FPCH:LCMask:F3	436
[:FORWard]:FPCH:MESSAge	436
[:FORWard]:FPCH:POWER	437
[:FORWard]:FPCH:RATE	437

[FORWARD]:FPCH:WALSh	437
[FORWARD]:FPCH[:STATe]	438
[FORWARD]:FPICH:ECNO	438
[FORWARD]:FPICH:POWer	438
[FORWARD]:FPICH[:STATe]	439
[FORWARD]:FSCH[1]2:DATA	439
[FORWARD]:FSCH[1]2:DATA:FIX4	439
[FORWARD]:FSCH[1]2:EBNO	440
[FORWARD]:FSCH[1]2:FOFFset	440
[FORWARD]:FSCH[1]2:LCMask	441
[FORWARD]:FSCH[1]2:LCMask:ESN	441
[FORWARD]:FSCH[1]2:LCMask:HEADer	441
[FORWARD]:FSCH[1]2:POWer	442
[FORWARD]:FSCH[1]2:QOF	442
[FORWARD]:FSCH[1]2:RATE	442
[FORWARD]:FSCH[1]2:RCONfig	443
[FORWARD]:FSCH[1]2:TCODE	443
[FORWARD]:FSCH[1]2:WALSh	443
[FORWARD]:FSCH[1]2[:STATe]	444
[FORWARD]:FSYNc:CFRequency	444
[FORWARD]:FSYNc:DAYLt	445
[FORWARD]:FSYNc:EBNO	445
[FORWARD]:FSYNc:ECFRequency	445
[FORWARD]:FSYNc:LPSec	446
[FORWARD]:FSYNc:LTMoff	446
[FORWARD]:FSYNc:MPREv	447
[FORWARD]:FSYNc:MSGType	447
[FORWARD]:FSYNc:NID	447
[FORWARD]:FSYNc:POWer	448
[FORWARD]:FSYNc:PRATe	448
[FORWARD]:FSYNc:PREV	448
[FORWARD]:FSYNc:RESErved	449
[FORWARD]:FSYNc:SID	449
[FORWARD]:FSYNc:STYPe	449
[FORWARD]:FSYNc:SYSTime	450
[FORWARD]:FSYNc:WALSh	450
[FORWARD]:FSYNc[:STATe]	450
[FORWARD]:NOISe:CN	451

Contents

[:FORWARD]:NOISE[:STATE]	451
[:FORWARD]:OCNS:POWER	452
[:FORWARD]:OCNS:WALSh	452
[:FORWARD]:OCNS[:STATE]	452
[:FORWARD]:PADJust	453
[:FORWARD]:POLarity	453
[:FORWARD]:QPCH:CCI	453
[:FORWARD]:QPCH:EBNO	454
[:FORWARD]:QPCH:PI	454
[:FORWARD]:QPCH:POWER	455
[:FORWARD]:QPCH:RATE	455
[:FORWARD]:QPCH:WALSh	455
[:FORWARD]:QPCH[:STATE]	456
[:FORWARD]:SRATE	456
:PNOFFset	456
:REVerse:BBCLock	457
:REVerse:CHIPrate	457
:REVerse:ESDdelay	457
:REVerse:FILTer	458
:REVerse:FILTer:ALPHa	459
:REVerse:FILTer:BBT	459
:REVerse:FILTer:CHANnel	459
:REVerse:LCMask	460
:REVerse:LCState	460
:REVerse:PADJust	461
:REVerse:POLarity[:ALL]	461
:REVerse:NOISE:CN	461
:REVerse:NOISE[:STATE]	462
:REVerse:RC12:ACCess:RACH:DATA	462
:REVerse:RC12:ACCess:RACH:DATA:FIX4	463
:REVerse:RC12:ACCess:RACH:EBNO	463
:REVerse:RC12:ACCess:RACH:FLENgth	464
:REVerse:RC12:ACCess:RACH:FOFFset	464
:REVerse:RC12:ACCess:RACH:POWER	464
:REVerse:RC12:ACCess:RACH:RCONfig	465
:REVerse:RC12:ACCess:RACH:RATE	465
:REVerse:RC12:ACCess:RACH[:STATE]	465
:REVerse:RC12:TRAFfic:RSCH:DATA	466

:REVerse:RC12:TRAFfic:RSCH:DATA:FIX4	466
:REVerse:RC12:TRAFfic:RSCH:FLENgth	466
:REVerse:RC12:TRAFfic:RSCH:FOFFset	467
:REVerse:RC12:TRAFfic:RSCH:POWer	467
:REVerse:RC12:TRAFfic:RSCH:RATE	467
:REVerse:RC12:TRAFfic:RSCH:RCONfig	468
:REVerse:RC12:TRAFfic:RSCH[:STATe]	468
:REVerse:RC34:CCONtrol:RCCCh:DATA	468
:REVerse:RC34:CCONtrol:RCCCh:DATA:FIX4	468
:REVerse:RC34:CCONtrol:RCCCh:EBNO	469
:REVerse:RC34:CCONtrol:RCCCh:FLENgth	469
:REVerse:RC34:CCONtrol:RCCCh:FOFFset	470
:REVerse:RC34:CCONtrol:RCCCh:POWer	470
:REVerse:RC34:CCONtrol:RCCCh:RCONfig	471
:REVerse:RC34:CCONtrol:RCCCh:RATE	471
:REVerse:RC34:CCONtrol:RCCCh:WALSh	471
:REVerse:RC34:CCONtrol:RCCCh[:STATe]	471
:REVerse:RC34:CCONtrol:RPICH:ECNO	472
:REVerse:RC34:CCONtrol:RPICH:GRATe	472
:REVerse:RC34:CCONtrol:RPICH:POWer	473
:REVerse:RC34:CCONtrol:RPICH:WALSh	473
:REVerse:RC34:CCONtrol:RPICH[:STATe]	473
:REVerse:RC34:EACCess:REACH:DATA	474
:REVerse:RC34:EACCess:REACH:DATA:FIX4	474
:REVerse:RC34:EACCess:REACH:EBNO	474
:REVerse:RC34:EACCess:REACH:FOFFset	475
:REVerse:RC34:EACCess:REACH:POWer	475
:REVerse:RC34:EACCess:REACH:RCONfig	476
:REVerse:RC34:EACCess:REACH:RATE	476
:REVerse:RC34:EACCess:REACH:WALSh	476
:REVerse:RC34:EACCess:REACH[:STATe]	477
:REVerse:RC34:EACCess:RPICH:ECNO	477
:REVerse:RC34:EACCess:RPICH:GRATe	477
:REVerse:RC34:EACCess:RPICH:POWer	478
:REVerse:RC34:EACCess:RPICH:WALSh	478
:REVerse:RC34:EACCess:RPICH[:STATe]	479
:REVerse:RC34:TRAFfic:RDCCh:DATA	479
:REVerse:RC34:TRAFfic:RDCCh:DATA:FIX4	479

Contents

:REVerse:RC34:TRAFfic:RDCCh:EBNO	480
:REVerse:RC34:TRAFfic:RDCCh:FLENgth	480
:REVerse:RC34:TRAFfic:RDCCh:FOFFset	480
:REVerse:RC34:TRAFfic:RDCCh:POWer.	481
:REVerse:RC34:TRAFfic:RDCCh:RATE	481
:REVerse:RC34:TRAFfic:RDDCh:RCONfig	482
:REVerse:RC34:TRAFfic:RDCCh:WALSh	482
:REVerse:RC34:TRAFfic:RDCCh[:STATe].	482
:REVerse:RC34:TRAFfic:RFCH:DATA	482
:REVerse:RC34:TRAFfic:RFCH:DATA:FIX4.	483
:REVerse:RC34:TRAFfic:RFCH:EBNO	483
:REVerse:RC34:TRAFfic:RFCH:FLENgth	484
:REVerse:RC34:TRAFfic:RFCH:FOFFset.	484
:REVerse:RC34:TRAFfic:RFCH:POWer	484
:REVerse:RC34:TRAFfic:RFCH:RCONfig	485
:REVerse:RC34:TRAFfic:RFCH:RATE.	485
:REVerse:RC34:TRAFfic:RFCH:WALSh	485
:REVerse:RC34:TRAFfic:RFCH[:STATe]	486
:REVerse:RC34:TRAFfic:RSCH[1]2:DATA.	486
:REVerse:RC34:TRAFfic:RSCH[1]2:DATA:FIX4	486
:REVerse:RC34:TRAFfic:RSCH[1]2:DATA:EBNO.	487
:REVerse:RC34:TRAFfic:RSCH[1]2:FLENgth	487
:REVerse:RC34:TRAFfic:RSCH[1]2:FOFFset	488
:REVerse:RC34:TRAFfic:RSCH[1]2:POWer	488
:REVerse:RC34:TRAFfic:RSCH[1]2:RCONfig	488
:REVerse:RC34:TRAFfic:RSCH[1]2:RATE.	489
:REVerse:RC34:TRAFfic:RSCH[1]2:TCODE.	489
:REVerse:RC34:TRAFfic:RSCH[1]2:WALSh	489
:REVerse:RC34:TRAFfic:RSCH[1]2[:STATe]	490
:REVerse:REFeRence:EXTeRnal:FREQuency.	490
:REVerse:REFeRence[:SOURce]	490
:REVerse:TADVance.	491
:REVerse:TEDGe	491
:REVerse:SRATE.	492
[:STATe]	492
Custom Subsystem—Option 001/601 or 002/602 ([:SOURce]:RADio:CUSTom).	493
:ALPha	493
:BBCLock	493

:BBT	494
:BRATe	494
:BURSt:SHAPe:FALL:DELay	495
:BURSt:SHAPe:FALL:TIME	496
:BURSt:SHAPe:FDELay	496
:BURSt:SHAPe:FTIME	497
:BURSt:SHAPe:RDELay	497
:BURSt:SHAPe:RISE:DELay	498
:BURSt:SHAPe:RISE:TIME	498
:BURSt:SHAPe:RTIME	499
:BURSt:SHAPe[:TYPE]	499
:CHANnel	500
:DATA	500
:DATA:FIX4	501
:DENCode	501
:EDATa:DELay	501
:EDCLock	502
:EREference	502
:EREference:VALue	503
:FILTer	503
:IQ:SCALE	504
:MODulation:FSK[:DEViation]	504
:MODulation:MSK[:PHASe]	505
:MODulation:UFSK	505
:MODulation:UIQ	506
:MODulation[:TYPE]	506
:POLarity[:ALL]	506
:SRATe	507
:STANdard:SElect	508
:TRIGger:TYPE	509
:TRIGger:TYPE:CONTinuous[:TYPE]	509
:TRIGger:TYPE:GATE:ACTive	510
:TRIGger[:SOURce]	510
:TRIGger[:SOURce]:EXTernal[:SOURce]	511
:TRIGger[:SOURce]:EXTernal:DELay	511
:TRIGger[:SOURce]:EXTernal:DELay:STATe	512
:TRIGger[:SOURce]:EXTernal:SLOPe	512
[:STATe]	512

Contents

DECT Subsystem–Option 402 ([:SOURce]:RADio:DECT)	514
:ALPha	514
:BBCLock	514
:BBT	515
:BRATe	515
:BURSt:PN9	516
:BURSt:SHAPe:FALL:DELay	517
:BURSt:SHAPe:FALL:TIME	517
:BURSt:SHAPe:FDELay	518
:BURSt:SHAPe:FTIME	518
:BURSt:SHAPe:RDELay	519
:BURSt:SHAPe:RISE:DELay	519
:BURSt:SHAPe:RISE:TIME	520
:BURSt:SHAPe:RTIME	520
:BURSt:SHAPe[:TYPE]	521
:BURSt[:STATe]	521
:CHANnel	522
:DATA	522
:DATA:FIX4	523
:DEFault	523
:EDATa:DELay	523
:EDCLock	524
:EREFerence	524
:EREFerence:VALue	525
:FILTer	525
:IQ:SCALe	526
:MODulation:FSK[:DEViation]	526
:MODulation:MSK[:PHASe]	527
:MODulation:UFSK	527
:MODulation:UIQ	528
:MODulation[:TYPE]	528
:POLarity[:ALL]	528
:PPart:SLOT0 [1] 2 3 4[:TYPE]	529
:PPart:SLOT0 [1] 2 3 4 5 6 7 8 9 10 11:CUSTom	529
:PPart:SLOT0 [1] 2 3 4 5 6 7 8 9 10 11:CUSTom:FIX4	530
:PPart:SLOT0 [1] 2 3 4 5 6 7 8 9 10 11:LCAPacity:A	530
:PPart:SLOT0 [1] 2 3 4 5 6 7 8 9 10 11:LCAPacity:P	530
:PPart:SLOT0 [1] 2 3 4 5 6 7 8 9 10 11:LCAPacity:S	531

:PPart:SLOT0[1]2 3 4 5 6 7 8 9 10 11:LCAPacity[:B]	531
:PPart:SLOT0[1]2 3 4 5 6 7 8 9 10 11:LCAPacity[:B]:FIX4	532
:PPart:SLOT0[1]2 3 4 5 6 7 8 9 10 11:LCAPacity:POWer	532
:PPart:SLOT0[1]2 3 4 5 6 7 8 9 10 11:STATe	533
:PPart:SLOT0[1]2 3 4 5 6 7 8 9 10 11:TRAFfic:A	533
:PPart:SLOT0[1]2 3 4 5 6 7 8 9 10 11:TRAFfic:P	533
:PPart:SLOT0[1]2 3 4 5 6 7 8 9 10 11:TRAFfic:S	534
:PPart:SLOT0[1]2 3 4 5 6 7 8 9 10 11:TRAFfic[:B]	534
:PPart:SLOT0[1]2 3 4 5 6 7 8 9 10 11:TRAFfic[:B]:FIX4	534
:PPart:SLOT0[1]2 3 4 5 6 7 8 9 10 11:ZLCapacity:A	535
:PPart:SLOT0[1]2 3 4 5 6 7 8 9 10 11:ZLCapacity:P	535
:PPart:SLOT0[1]2 3 4 5 6 7 8 9 10 11:ZLCapacity:A	536
:PPart:SLOT0[1]2 3 4 5 6 7 8 9 10 11:ZLCapacity[:B]	536
:PPart:SLOT0[1]2 3 4 5 6 7 8 9 10 11:ZLCapacity[:B]:FIX4	537
:PPart:SLOT0[1]2 3 4 5 6 7 8 9 10 11:ZTRAffic:A	537
:PPart:SLOT0[1]2 3 4 5 6 7 8 9 10 11:ZTRAffic:P	537
:PPart:SLOT0[1]2 3 4 5 6 7 8 9 10 11:ZTRAffic:S	538
:PPart:SLOT0[1]2 3 4 5 6 7 8 9 10 11:ZTRAffic[:B]	538
:PPart:SLOT0[1]2 3 4 5 6 7 8 9 10 11:ZTRAffic[:B]:FIX4	539
:RFPart:SLOT0[1]2 3 4[:TYPE]	539
:RFPart:SLOT0[1]2 3 4 5 6 7 8 9 10 11:CUSTom	539
:RFPart:SLOT0[1]2 3 4 5 6 7 8 9 10 11:CUSTom:FIX4	540
:RFPart:SLOT0[1]2 3 4 5 6 7 8 9 10 11:DUMM2:A	540
:RFPart:SLOT0[1]2 3 4 5 6 7 8 9 10 11:DUMM2:P	541
:RFPart:SLOT0[1]2 3 4 5 6 7 8 9 10 11:DUMM2:S	541
:RFPart:SLOT0[1]2 3 4 5 6 7 8 9 10 11:DUMM[1]:A	541
:RFPart:SLOT0[1]2 3 4 5 6 7 8 9 10 11:DUMM[1]:P	542
:RFPart:SLOT0[1]2 3 4 5 6 7 8 9 10 11:DUMM[1]:S	542
:RFPart:SLOT0[1]2 3 4 5 6 7 8 9 10 11:LCAPacity:A	543
:RFPart:SLOT0[1]2 3 4 5 6 7 8 9 10 11:LCAPacity:P	543
:RFPart:SLOT0[1]2 3 4 5 6 7 8 9 10 11:LCAPacity:S	543
:RFPart:SLOT0[1]2 3 4 5 6 7 8 9 10 11:LCAPacity[:B]	544
:RFPart:SLOT0[1]2 3 4 5 6 7 8 9 10 11:LCAPacity[:B]:FIX4	544
:RFPart:SLOT0[1]2 3 4 5 6 7 8 9 10 11:LCAPacity:POWer	545
:RFPart:SLOT0[1]2 3 4 5 6 7 8 9 10 11:STATe	545
:RFPart:SLOT0[1]2 3 4 5 6 7 8 9 10 11:TRAFfic:A	545
:RFPart:SLOT0[1]2 3 4 5 6 7 8 9 10 11:TRAFfic:P	546
:RFPart:SLOT0[1]2 3 4 5 6 7 8 9 10 11:TRAFfic:S	546

Contents

:RFPart:SLOT0[1] 2 3 4 5 6 7 8 9 10 11:TRAFfic[:B]	546
:RFPart:SLOT0[1] 2 3 4 5 6 7 8 9 10 11:TRAFfic[:B]:FIX4	547
:RFPart:SLOT0[1] 2 3 4 5 6 7 8 9 10 11:ZLCapacity:A	547
:RFPart:SLOT0[1] 2 3 4 5 6 7 8 9 10 11:ZLCapacity:P	548
:RFPart:SLOT0[1] 2 3 4 5 6 7 8 9 10 11:ZLCapacity:S	548
:RFPart:SLOT0[1] 2 3 4 5 6 7 8 9 10 11:ZLCapacity[:B]	548
:RFPart:SLOT0[1] 2 3 4 5 6 7 8 9 10 11:ZLCapacity[:B]:FIX4	549
:RFPart:SLOT0[1] 2 3 4 5 6 7 8 9 10 11:ZTRAffic:A	549
:RFPart:SLOT0[1] 2 3 4 5 6 7 8 9 10 11:ZTRAffic:P	550
:RFPart:SLOT0[1] 2 3 4 5 6 7 8 9 10 11:ZTRAffic:S	550
:RFPart:SLOT0[1] 2 3 4 5 6 7 8 9 10 11:ZTRAffic[:B]	550
:RFPart:SLOT0[1] 2 3 4 5 6 7 8 9 10 11:ZTRAffic[:B]:FIX4	551
:SECondary:RECall	551
:SECondary:SAVE	552
:SECondary:TRIGger[:SOURce]	552
:SECondary[:STATe]	552
:SOUT	553
:SOUT:OFFSet	553
:SOUT:SLOT	554
:SRATe	554
:TRIGger:TYPE	556
:TRIGger:TYPE:CONTInuous[:TYPE]	556
:TRIGger:TYPE:GATE:ACTive	557
:TRIGger[:SOURce]	557
:TRIGger[:SOURce]:EXTernal[:SOURce]	557
:TRIGger[:SOURce]:EXTernal:DELay	558
:TRIGger[:SOURce]:EXTernal:SLOPe	559
:TRIGger[:SOURce]:EXTernal:DELay:STATe	559
[:STATe]	559
EDGE Subsystem–Option 402 ([:SOURce]:RADio:EDGE)	560
:ALPHa	560
:BBCLock	560
:BBT	561
:BURSt:SHAPe:FALL:DELay	561
:BURSt:SHAPe:FDELay	562
:BURSt:SHAPe:FALL:TIME	562
:BURSt:SHAPe:FTIME	563
:BURSt:SHAPe:RDELay	563

:BURSt:SHAPE:RISE:DELay	564
:BURSt:SHAPE:RISE:TIME	565
:BURSt:SHAPE:RTIME	565
:BURSt:SHAPE[:TYPE]	566
:BURSt[:STATe]	566
:CHANnel	567
:DATA	567
:DATA:FIX4	568
:DEFault	568
:EDATa:DELay	568
:EDCLock	569
:EREference	569
:EREference:VALue	570
:FILTer	570
:IQ:SCALE	571
:MODulation:FSK[:DEViation]	571
:MODulation:MSK[:PHASe]	572
:MODulation:UFSK	572
:MODulation:UIQ	573
:MODulation[:TYPE]	573
:POLarity[:ALL]	573
:SECondary:RECall	574
:SECondary:SAVE	574
:SECondary:TRIGger[:SOURce]	575
:SECondary[:STATe]	575
:SLOT0[1] 2 3 4 5 6 7:CUSTom	575
:SLOT0[1] 2 3 4 5 6 7:CUSTom:FIX4	576
:SLOT0[1] 2 3 4 5 6 7:CUSTom:GUARd	576
:SLOT0[1] 2 3 4 5 6 7:NORMal:ENCrypTion	577
:SLOT0:NORMal:ENCrypTion:BCH:BCC	577
:SLOT0:NORMal:ENCrypTion:BCH:CELLid	578
:SLOT0:NORMal:ENCrypTion:BCH:LAC	578
:SLOT0:NORMal:ENCrypTion:BCH:MCC	578
:SLOT0:NORMal:ENCrypTion:BCH:MNC	579
:SLOT0:NORMal:ENCrypTion:BCH:PLMN	579
:SLOT0[1] 2 3 4 5 6 7:NORMal:ENCrypTion:DLINK:MCS5:DATA	579
:SLOT0[1] 2 3 4 5 6 7:NORMal:ENCrypTion:DLINK:MCS9:DATA	580
:SLOT0[1] 2 3 4 5 6 7:NORMal:ENCrypTion:ETCH:F43:DATA	580

Contents

:SLOT0[1] 2 3 4 5 6 7:NORMal:ENCRyption:FIX4	580
:SLOT0[1] 2 3 4 5 6 7:NORMal:ENCRyption:ULINK:MCS5:DATA	581
:SLOT0[1] 2 3 4 5 6 7:NORMal:ENCRyption:ULINK:MCS9:DATA	581
:SLOT0[1] 2 3 4 5 6 7:NORMal:ENCRyption:UNCOded	582
:SLOT0[1] 2 3 4 5 6 7:NORMal:GUARd	582
:SLOT0[1] 2 3 4 5 6 7:NORMal:T1	583
:SLOT0[1] 2 3 4 5 6 7:NORMal:T2	583
:SLOT0[1] 2 3 4 5 6 7:NORMal:TSEQUence	583
:SLOT0[1] 2 3 4 5 6 7:LCAPacity:POWer	584
:SLOT0[1] 2 3 4 5 6 7:STATe	584
:SLOT0[1] 2 3 4 5 6 7[:TYPE]	584
:SOUT:	585
:SOUT:OFFSet	585
:SOUT:SLOT	586
:SRATe	586
:TRIGger:TYPE	588
:TRIGger:TYPE:CONTInuous[:TYPE]	588
:TRIGger:TYPE:GATE:ACTive	589
:TRIGger[:SOURce]	589
:TRIGger[:SOURce]:EXTernal[:SOURce]	590
:TRIGger[:SOURce]:EXTernal:DELay	590
:TRIGger[:SOURce]:EXTernal:DELay:FINe	591
:TRIGger[:SOURce]:EXTernal:DELay:STATe	591
:TRIGger[:SOURce]:EXTernal:SLOPe	591
[:STATe]	592

SCPI Command Reference, Volume 3

8. Receiver Test Digital Commands (continued)	593
GPS Subsystem–Option409	
([:SOURce]:RADio[1 2 3 4:GPS)	594
:DATA	594
:DMODE	594
:DSHift	595
:FILTer	595
:FILTer:ALPHa	596
:FILTer:BBT	596
:FILTer:CHANnel	597
:IQPHase	597
:PCODE	598
:RCODE	598
:REFClk	598
:REFFreq	599
:SATid	599
[:STATe]	600
GSM Subsystem–Option 402 ([:SOURce]:RADio:GSM)	601
:ALPha	601
:BBCLock	601
:BBT	602
:BRATe	602
:BURSt:PN9	603
:BURSt:SHAPe:FALL:DELay	604
:BURSt:SHAPe:FALL:TIME	604
:BURSt:SHAPe:FDELay	605
:BURSt:SHAPe:FTIME	606
:BURSt:SHAPe:RDELay	606
:BURSt:SHAPe:RISE:DELay	607
:BURSt:SHAPe:RISE:TIME	607
:BURSt:SHAPe:RTIME	608
:BURSt:SHAPe[:TYPE]	609
:BURSt[:STATe]	609
:CHANnel	610
:DATA	610
:DATA:FIX4	610

Contents

:DEFault	611
:DENCode	611
:EDATa:DELay	611
:EDCLock	612
:EREFerence	612
:EREFerence:VALue	613
:FILTer	613
:IQ:SCALE	614
:MODulation:FSK[:DEViation]	614
:MODulation:MSK[:PHASe]	615
:MODulation:UFSK	615
:MODulation:UIQ	616
:MODulation[:TYPE]	616
:POLarity[:ALL]	617
:SECondary:RECall	617
:SECondary:SAVE	617
:SECondary:TRIGger[:SOURce]	618
:SECondary[:STATE]	618
:SLOT0[1] 2 3 4 5 6 7:ACCess:ENCRyption	618
:SLOT0[1] 2 3 4 5 6 7:ACCess:ENCRyption:FIX4	619
:SLOT0[1] 2 3 4 5 6 7:ACCess:ETAil	619
:SLOT0[1] 2 3 4 5 6 7:ACCess:SSEQuence	620
:SLOT0[1] 2 3 4 5 6 7:ACCess:CUSTom	620
:SLOT0[1] 2 3 4 5 6 7:CUSTom:FIX4	620
:SLOT0[1] 2 3 4 5 6 7:DUMMy:TSEQuence	621
:SLOT0[1] 2 3 4 5 6 7:NORMal:ENCRyption	621
:SLOT0:NORMal:ENCRyption:BCH:BCC	623
:SLOT0:NORMal:ENCRyption:BCH:CELLid	623
:SLOT0:NORMal:ENCRyption:BCH:LAC	623
:SLOT0:NORMal:ENCRyption:BCH:MCC	624
:SLOT0:NORMal:ENCRyption:BCH:MNC	624
:SLOT0:NORMal:ENCRyption:BCH:PLMN	624
:SLOT0[1] 2 3 4 5 6 7:NORMal:ENCRyption:CS1:DATA	625
:SLOT0[1] 2 3 4 5 6 7:NORMal:ENCRyption:DLINK:MCS1:DATA	625
:SLOT0[1] 2 3 4 5 6 7:NORMal:ENCRyption:FIX4	625
:SLOT0[1] 2 3 4 5 6 7:NORMal:ENCRyption:TCH:FS:DATA	626
:SLOT0[1] 2 3 4 5 6 7:NORMal:ENCRyption:ULINK:MCS1:DATA	626
:SLOT0[1] 2 3 4 5 6 7:NORMal:STeal	626

:SLOT0[1] 2 3 4 5 6 7:NORMal:TSEquence	627
:SLOT0[1] 2 3 4 5 6 7:POWer.	627
:SLOT0[1] 2 3 4 5 6 7:STATe	628
:SLOT0[1] 2 3 4 5 6 7:SYNC:ENCRyption	628
:SLOT0[1] 2 3 4 5 6 7:SYNC:ENCRyption:FIX4	628
:SLOT0[1] 2 3 4 5 6 7:SYNC:TSEquence	629
:SLOT0[1] 2 3 4 5 6 7[:TYPE]	629
:SOUT	629
:SOUT:OFFSet	630
:SOUT:SLOT	630
:SRATe	631
:TRIGger:EXTernal:DELay	632
:TRIGger:TYPE	632
:TRIGger:TYPE:CONTInuous[:TYPE]	633
:TRIGger:TYPE:GATE:ACTive.	633
:TRIGger[:SOURce]	634
:TRIGger[:SOURce]:EXTernal[:SOURce].	634
:TRIGger[:SOURce]:EXTernal:DELay	635
:TRIGger[:SOURce]:EXTernal:DELay:FINE.	635
:TRIGger[:SOURce]:EXTernal:DELay:STATe	636
:TRIGger[:SOURce]:EXTernal:SLOPe	636
[:STATe]	636
NADC Subsystem–Option 402 ([:SOURce]:RADio[:NADC])	638
:ALPha	638
:BBCLock	638
:BBT	639
:BRATe	639
:BURSt:PN9	640
:BURSt:SHAPe[:TYPE]	641
:BURSt:SHAPe:FALL:DELay	641
:BURSt:SHAPe:FALL:TIME	642
:BURSt:SHAPe:FDELay	642
:BURSt:SHAPe:FTIME.	643
:BURSt:SHAPe:RDELay	644
:BURSt:SHAPe:RISE:DELay.	644
:BURSt:SHAPe:RISE:TIME	645
:BURSt:SHAPe:RTIME.	645
:BURSt[:STATe]	646

Contents

:BURSt:SHAPE[:TYPE]	647
:CHANnel	647
:DATA	647
:DATA:FIX4	648
:DEFault	648
:EDATa:DELay	648
:EDCLock	649
:EREFerence	649
:EREFerence:VALue	650
:FILTer	650
:FRATe	651
:IQ:SCALE	651
:MODulation:FSK[:DEViation]	652
:MODulation:MSK[:PHASe]	652
:MODulation:UFSK	653
:MODulation:UIQ	653
:MODulation[:TYPE]	654
:REPeat	654
:POLarity[:ALL]	654
:SECondary:RECall	655
:SECondary:SAVE	655
:SECondary:TRIGger[:SOURce]	655
:SECondary[:STATe]	656
:SLOT[1] 2 3 4 5 6:DCUStom	656
:SLOT[1] 2 3 4 5 6:DCUStom:FIX4	657
:SLOT[1] 2 3 4 5 6:DTCHannel:CDLocator	657
:SLOT[1] 2 3 4 5 6:DTCHannel:CDVCcode	657
:SLOT[1] 2 3 4 5 6:DTCHannel:SACChannel	658
:SLOT[1] 2 3 4 5 6:DTCHannel:SWORd	658
:SLOT[1] 2 3 4 5 6:DTCHannel[:DATA]	659
:SLOT[1] 2 3 4 5 6:DTCHannel[:DATA]FIX4	659
:SLOT[1] 2 3 4 5 6:POWer	659
:SLOT[1] 2 3 4 5 6:STATe	660
:SLOT[1] 2 3 4 5 6:UCUStom	660
:SLOT[1] 2 3 4 5 6:UCUStom:FIX4	660
:SLOT[1] 2 3 4 5 6:UTCHannel:CDVCcode	661
:SLOT[1] 2 3 4 5 6:UTCHannel:SACChannel	661
:SLOT[1] 2 3 4 5 6:UTCHannel:SWORd	662

:SLOT[1] 2 3 4 5 6:UTCHannel[:DATA]	662
:SLOT[1] 2 3 4 5 6:UTCHannel[:DATA]:FIX4	662
:SLOT[1] 2 3 4 5 6[:TYPE]	663
:SOUT	663
:SOUT:OFFSet	664
:SOUT:SLOT	664
:SRATe	664
:TRIGger[:SOURce]	666
:TRIGger:TYPE	666
:TRIGger:TYPE:CONTInuous[:TYPE]	667
:TRIGger:TYPE:GATE:ACTive	667
:TRIGger[:SOURce]:EXTeRnal[:SOURce]	668
:TRIGger[:SOURce]:EXTeRnal:DELAy	668
:TRIGger[:SOURce]:EXTeRnal:DELAy:STATE	669
:TRIGger[:SOURce]:EXTeRnal:SLOPe	669
[:STATE]	669
PDC Subsystem—Option 402 ([:SOURce]:RADio:PDC)	671
:ALPha	671
:BBCLock	671
:BBT	672
:BRATe	672
:BURSt:PN9	673
:BURSt:SHAPe:FALL:DELAy	674
:BURSt:SHAPe:FALL:TIME	674
:BURSt:SHAPe:FDELAy	675
:BURSt:SHAPe:FTIME	675
:BURSt:SHAPe:RDELAy	676
:BURSt:SHAPe:RISE:DELAy	677
:BURSt:SHAPe:RISE:TIME	677
:BURSt:SHAPe:RTIME	678
:BURSt:SHAPe[:TYPE]	678
:BURSt[:STATE]	679
:CHANnel	679
:DATA	680
:DATA:FIX4	680
:DEFault	681
:EDATa:DELAy	681
:EDCLock	681

Contents

:EReference	682
:EReference:VALue	682
:FILTer	683
:FRATe	683
:IQ:SCALe	684
:MODulation:FSK[:DEVIation]	684
:MODulation:MSK[:PHASe]	685
:MODulation:UFSK	685
:MODulation:UIQ	686
:MODulation[:TYPE]	686
:POLarity[:ALL]	686
:SECondary:RECall	687
:SECondary:SAVE	687
:SECondary:TRIGger[:SOURce]	688
:SECondary[:STATe]	688
:SLOT0[1] 2 3 4 5:DCUStom	688
:SLOT0[1] 2 3 4 5:DCUSTom:FIX4	689
:SLOT0[1] 2 3 4 5:DTCHannel:CCODE	689
:SLOT0[1] 2 3 4 5:DTCHannel:SACChannel	690
:SLOT0[1] 2 3 4 5:DTCHannel:SWORd	690
:SLOT0[1] 2 3 4 5:DTCHannel[:TCHannel]	690
:SLOT0[1] 2 3 4 5:DTCHannel[:TCHannel]:FIX4	691
:SLOT0[1] 2 3 4:POWer	691
:SLOT0[1] 2 3 4 5:STATe	691
:SLOT0[1] 2 3 4 5:UCUStom	692
:SLOT0[1] 2 3 4 5:UCUStom:FIX4	692
:SLOT0[1] 2 3 4 5:UTCHannel:CCODE	692
:SLOT0[1] 2 3 4 5:UTCHannel:SACChannel	693
:SLOT0[1] 2 3 4 5:UTCHannel:SWORd	693
:SLOT0[1] 2 3 4 5:UTCHannel[:TCHannel]	693
:SLOT0[1] 2 3 4 5:UTCHannel[:TCHannel]:FIX4	694
:SLOT0[1] 2 3 4 5:UVOX:CCODE	694
:SLOT0[1] 2 3 4 5:UVOX:SACChannel	695
:SLOT0[1] 2 3 4 5:UVOX:SWORd	695
:SLOT0[1] 2 3 4 5[:TYPE]	695
:SOUT	696
:SOUT:OFFSet	696
:SOUT:SLOT	697

:SRATe	697
:TRIGger:TYPE	699
:TRIGger:TYPE:CONTInuous[:TYPE]	699
:TRIGger:TYPE:GATE:ACTive	700
:TRIGger[:SOURce]	700
:TRIGger[:SOURce]:EXTernal[:SOURce]	700
:TRIGger[:SOURce]:EXTernal:DELay	701
:TRIGger[:SOURce]:EXTernal:DELay:STATe	702
:TRIGger[:SOURce]:EXTernal:SLOPe	702
[:STATe]	702
PHS Subsystem–Option 402 ([:SOURce]:RADio:PHS)	703
:ALPha	703
:BBCLock	703
:BBT	704
:BRATe	704
:BURSt:PN9	705
:BURSt:SCRamble:SEED	706
:BURSt:SCRamble[:STATe]	706
:BURSt:SHAPe:FALL:DELay	706
:BURSt:SHAPe:FALL:TIME	707
:BURSt:SHAPe:FDELay	708
:BURSt:SHAPe:FTIME	708
:BURSt:SHAPe:RDELay	709
:BURSt:SHAPe:RISE:DELay	709
:BURSt:SHAPe:RISE:TIME	710
:BURSt:SHAPe:RTIME	710
:BURSt:SHAPe[:TYPE]	711
:BURSt[:STATe]	711
:CHANnel	712
:DATA	712
:DATA:FIX4	713
:DEFault	713
:DLINK:SLOT[1] 2 3 4:CUSTom	713
:DLINK:SLOT[1] 2 3 4:CUSTom:FIX4	714
:DLINK:SLOT[1] 2 3 4:POWer	714
:DLINK:SLOT[1] 2 3 4:SCHannel:CSID	715
:DLINK:SLOT[1] 2 3 4:SCHannel:IDLE	715
:DLINK:SLOT[1] 2 3 4:SCHannel:PSID	715

Contents

:DLINK:SLOT[1] 2 3 4:SCHannel:UWORD.	716
:DLINK:SLOT[1] 2 3 4:STATe	716
:DLINK:SLOT[1] 2 3 4:TCHannel:SACChannel	716
:DLINK:SLOT[1] 2 3 4:TCHannel:UWORD.	717
:DLINK:SLOT[1] 2 3 4:TCHannel[:TCHannel]	717
:DLINK:SLOT[1] 2 3 4:TCHannel[:TCHannel]:FIX4	718
:DLINK:SLOT[1] 2 3 4[:TYPE]	718
:EDATa:DELay	718
:EDCLock	719
:EREFerence	719
:EREFerence:VALue.	719
:FILTer	720
:IQ:SCALE	721
:MODulation:FSK[:DEViation]	721
:MODulation:MSK[:PHASe]	722
:MODulation:UFSK	722
:MODulation:UIQ	722
:MODulation[:TYPE]	723
:POLarity[:ALL].	723
:SECondary:RECall	724
:SECondary:SAVE	724
:SECondary:TRIGger[:SOURce]	724
:SECondary[:STATe]	725
:SOUT	725
:SOUT:OFFSet	726
:SOUT:SLOT	726
:SRATe	727
:TRIGger:TYPE	728
:TRIGger:TYPE:CONTInuous[:TYPE]	728
:TRIGger:TYPE:GATE:ACTive.	729
:TRIGger[:SOURce].	729
:TRIGger[:SOURce]:EXTernal[:SOURce]	730
:TRIGger[:SOURce]:EXTernal:DELay	731
:TRIGger[:SOURce]:EXTernal:DELay:STATe	731
:TRIGger[:SOURce]:EXTernal:SLOPe	731
:ULINK:SLOT[1] 2 3 4:CUSTom	732
:ULINK:SLOT[1] 2 3 4:CUSTom:FIX4	732
:ULINK:SLOT[1] 2 3 4:POWer	732

:ULINK:SLOT[1]2 3 4:SCHannel:CSID	733
:ULINK:SLOT[1]2 3 4:SCHannel:IDLE	733
:ULINK:SLOT[1]2 3 4:SCHannel:PSID	733
:ULINK:SLOT[1]2 3 4:SCHannel:UWORD	734
:ULINK:SLOT[1]2 3 4:STATe	734
:ULINK:SLOT[1]2 3 4:TCHannel:SACChannel	734
:ULINK:SLOT[1]2 3 4:TCHannel:UWORD	735
:ULINK:SLOT[1]2 3 4:TCHannel[:TCHannel]	735
:ULINK:SLOT[1]2 3 4:TCHannel[:TCHannel:FIX4	736
:ULINK:SLOT[1]2 3 4[:TYPE]	736
[:STATe]	736
TETRA Subsystem–Option 402 ([:SOURce]:RADio:TETRa)	738
:ALPha	738
:BBCLock	738
:BBT	739
:BRATe	739
:BURSt:PN9	740
:BURSt:SCRamble:SEED	741
:BURSt:SCRamble[:STATe]	741
:BURSt:SHAPe:FALL:DELay	741
:BURSt:SHAPe:FALL:TIME	742
:BURSt:SHAPe:FDELay	743
:BURSt:SHAPe:FTIME	743
:BURSt:SHAPe:RDELay	744
:BURSt:SHAPe:RISE:DELay	744
:BURSt:SHAPe:RISE:TIME	745
:BURSt:SHAPe:RTIME	746
:BURSt:SHAPe[:TYPE]	746
:BURSt[:STATe]	747
:CHANnel	747
:DATA	748
:DATA:FIX4	748
:DEFault	748
:EDATa:DELay	749
:EDCLock	749
:EREFerence	750
:EREFerence:VALue	750
:FILTer	750

Contents

:IQ:SCALE	751
:MODulation:FSK[:DEViation]	752
:MODulation:MSK[:PHASe]	752
:MODulation:UFSK	753
:MODulation:UIQ	753
:MODulation[:TYPE]	753
:POLarity[:ALL]	754
:SECondary:RECall	754
:SECondary:SAVE	755
:SECondary:TRIGger[:SOURce]	755
:SECondary[:STATe]	755
:SLOT[1] 2 3 4:DCCustom	756
:SLOT[1] 2 3 4:DCCustom:FIX4	756
:DCNormal:B1	757
:DCNormal:B2	757
:SLOT[1] 2 3 4:DCNormal:TSEquence	757
:SLOT[1] 2 3 4:DCNormal[:DATA]	758
:SLOT[1] 2 3 4:DCNormal[:DATA]:FIX4	758
:SLOT[1] 2 3 4:DcSync:B	758
:SLOT[1] 2 3 4:DcSync:FCOR	759
:SLOT[1] 2 3 4:DcSync:SSB	759
:SLOT[1] 2 3 4:DcSync:STS	759
:SLOT[1] 2 3 4:DcSync[:DATA]	760
:SLOT[1] 2 3 4:DcSync[:DATA]:FIX4	760
:SLOT[1] 2 3 4:DDCustom	760
:SLOT[1] 2 3 4:DDCustom:FIX4	761
:SLOT[1] 2 3 4:DDNormal:B1	761
:SLOT[1] 2 3 4:DDNormal:B2	762
:SLOT[1] 2 3 4:DDNormal:TSEquence	762
:SLOT[1] 2 3 4:DDNormal[:DATA]	762
:SLOT[1] 2 3 4:DDNormal[:DATA]:FIX4	763
:SLOT[1] 2 3 4:DDSync:B	763
:SLOT[1] 2 3 4:DDSync:FCOR	763
:SLOT[1] 2 3 4:DDSync:SSB	764
:SLOT[1] 2 3 4:DDSync:STS	764
:SLOT[1] 2 3 4:DDSync[:DATA]	764
:SLOT[1] 2 3 4:DDSync[:DATA]:FIX4	765
:SLOT[1] 2 3 4:POWer	765

:SLOT[1] 2 3 4:STATe	766
:SLOT[1] 2 3 4:UC1:TSEquence	766
:SLOT[1] 2 3 4:UC1[:DATA]	766
:SLOT[1] 2 3 4:UC1[:DATA]:FIX4	767
:SLOT[1] 2 3 4:UC2:TSEquence	767
:SLOT[1] 2 3 4:UC2[:DATA]	767
:SLOT[1] 2 3 4:UC2[:DATA]:FIX4	768
:SLOT[1] 2 3 4:UCUStom	768
:SLOT[1] 2 3 4:UCUStom:FIX4	768
:SLOT[1] 2 3 4:UNORmal:TSEquence	769
:SLOT[1] 2 3 4:UNORmal[:DATA]	769
:SLOT[1] 2 3 4:UNORmal[:DATA]:FIX4	770
:SLOT[1] 2 3 4[:TYPE]	770
:SOUT	771
:SOUT:OFFSet	771
:SOUT:SLOT	772
:SRATe	772
:TRIGger:TYPE	774
:TRIGger:TYPE:CONTInuous[:TYPE]	774
:TRIGger:TYPE:GATE:ACTive	775
:TRIGger[:SOURce]	775
:TRIGger[:SOURce]:EXTernal[:SOURce]	776
:TRIGger[:SOURce]:EXTernal:DELay	776
:TRIGger[:SOURce]:EXTernal:DELay:STATe	777
:TRIGger[:SOURce]:EXTernal:SLOPe	777
[:STATe]	777
Wideband CDMA Base Band Generator Subsystem–Option 400	
([:SOURce]:RADio:WCDMA:TGPP[:BBG])	779
:BBCLock	779
:BBCLock:EXT:RATE	779
:DLINK:APPLy	779
:DLINK:AWGN:CN	780
:DLINK:AWGN:CPower	780
:DLINK:AWGN:ECNO	780
:DLINK:AWGN:ECRPower	781
:DLINK:AWGN:ECRef	781
:DLINK:AWGN:FNBW	782
:DLINK:AWGN:NPower	782
:DLINK:AWGN:TTLPower	782

Contents

:DLINK:AWGN[:STATe]	783
:DLINK:BBCLock	783
:DLINK:CARB:CMODE:CCODE	783
:DLINK:CARB:CMODE:DATA	784
:DLINK:CARB:CMODE:FOFFset	784
:DLINK:CARB:CMODE:FSTRuct	784
:DLINK:CARB:CMODE:POWer	785
:DLINK:CARB:CMODE:PRATio	785
:DLINK:CARB:CMODE:SCTYpe	785
:DLINK:CARB:CMODE:SFORmat	786
:DLINK:CARB:CMODE:SSCodeos	786
:DLINK:CARB:CMODE:TFIRst	787
:DLINK:CARB:CMODE:TGL	787
:DLINK:CARB:CMODE[:STATe]	787
:DLINK:CPICH:CCODE	788
:DLINK:CPICH:POWer	788
:DLINK:CPICH[:STATe]	788
:DLINK:CRATe	789
:DLINK:DPCH[1]:BALance	789
:DLINK:DPCH[1]:BINitalize	789
:DLINK:DPCH[1] 2:ALL[:STATe]	790
:DLINK:DPCH[1] 2:CCODE	790
:DLINK:DPCH[1] 2:DATA	791
:DLINK:DPCH[1] 2:DATA:FIX4	791
:DLINK:DPCH[1] 2:POWer	792
:DLINK:DPCH[1] 2:RCSetup	792
:DLINK:DPCH[1] 2:SLOTformat	793
:DLINK:DPCH[1] 2:SRATe	793
:DLINK:DPCH[1] 2:SSCodeos	794
:DLINK:DPCH[1] 2:TFCI:PATtern	794
:DLINK:DPCH[1] 2:TOFFset	795
:DLINK:DPCH[1] 2:TPC:NUMSteps	795
:DLINK:DPCH[1] 2:TPC:PATtern	796
:DLINK:DPCH[1] 2[:STATe]	796
:DLINK:FILTer	796
:DLINK:FILTer:ALPHA	797
:DLINK:FILTer:BBT	798
:DLINK:FILTer:CHANnel	798

:DLINK:MSYNc	799
:DLINK:OCNS[1] 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16: ALL[:STATe]	799
:DLINK:OCNS[1] 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16:CCODE	799
:DLINK:OCNS[1] 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16:DATA	800
:DLINK:OCNS[1] 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16:POWer	800
:DLINK:OCNS[1] 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16:SRATe	800
:DLINK:OCNS[1] 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16:SSCodeos	801
:DLINK:OCNS[1] 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16:TOFFset	801
:DLINK:OCNS[1] 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16[:STATe]	802
:DLINK:OOSTest[:STATe]	802
:DLINK:OOSTest:DTXGate:POLarity	802
:DLINK:PADJust	803
:DLINK:PCCPch:BCHData	803
:DLINK:PCCPch:BCHData:FIX4	804
:DLINK:PCCPch:CCODE	804
:DLINK:PCCPch:POWer	804
:DLINK:PCCPch[:STATe]	805
:DLINK:PICH:CCODE	805
:DLINK:PICH:DATA	805
:DLINK:PICH:DATA:FIX4	806
:DLINK:PICH:PIBits	806
:DLINK:PICH:PINDicator	806
:DLINK:PICH:POWer	807
:DLINK:PICH[:STATe]	807
:DLINK:POLarity	807
:DLINK:PSCH:POWer	808
:DLINK:PSCH[:STATe]	808
:DLINK:RPANel:INPut:ALTPower	808
:DLINK:RPANel:INPut:BBGRef	809
:DLINK:RPANel:INPut:BGATe	809
:DLINK:RPANel:INPut:PTRigger1	809
:DLINK:RPANel:INPut:PTRigger2	810
:DLINK:RPANel:OUTPut:DCLock	810
:DLINK:RPANel:OUTPut:DOUT	812
:DLINK:RPANel:OUTPut:EVENT1	813
:DLINK:RPANel:OUTPut:EVENT2	813
:DLINK:RPANel:OUTPut:EVENT3	814
:DLINK:RPANel:OUTPut:EVENT4	814

Contents

:DLINK:RPANel:OUTPut:SSYNc	814
:DLINK:SCH[:STATe]	815
:DLINK:SCRamblecode	815
:DLINK:SDElay	816
:DLINK:SSCH:POWer	816
:DLINK:SSCH:SSGRoup	816
:DLINK:SSCH[:STATe]	817
:DLINK:TSTatus:COMpressed	817
:DLINK:TSETup	817
:DLINK:TGAP:POFFset	818
:DLINK:TGAP:PSI[1]:CFN	819
:DLINK:TGAP:PSI[1]:CMMethod	819
:DLINK:TGAP:PSI[1]:D	820
:DLINK:TGAP:PSI[1]:L1	820
:DLINK:TGAP:PSI[1]:L2	820
:DLINK:TGAP:PSI[1]:PL1	821
:DLINK:TGAP:PSI[1]:PL2	821
:DLINK:TGAP:PSI[1]:PRC	821
:DLINK:TGAP:PSI[1]:PS	822
:DLINK:TGAP:PSI[1]:SN	822
:DLINK:TGAP:RPARameter	822
:DLINK:TGAP:SCFN	823
:DLINK:TGAP:STARt:TRIGger	823
:DLINK:TGAP:STARt:TRIGger:POLarity	824
:DLINK:TGAP:STOP:TRIGger	824
:DLINK:TGAP:STOP:TRIGger:POLarity	824
:DLINK:TGAP[:STATe]	825
:DLINK:TXDV	825
:DLINK[:TGRoup [A]B]:DCH[1] 2 3 4 5 6:BLKSize	826
:DLINK[:TGRoup [A]B]:DCH[1] 2 3 4 5 6:BPFFrame	826
:DLINK[:TGRoup [A]B]:DCH[1] 2 3 4 5 6:BRATe	826
:DLINK[:TGRoup [A]B]:DCH[1] 2 3 4 5 6:BSSize	827
:DLINK[:TGRoup [A]B]:DCH[1] 2 3 4 5 6:CODE	827
:DLINK[:TGRoup [A]B]:DCH[1] 2 3 4 5 6:CRc	828
:DLINK[:TGRoup [A]B]:DCH[1] 2 3 4 5 6:DATA	828
:DLINK[:TGRoup [A]B]:DCH[1] 2 3 4 5 6:DATA:EINsert	829
:DLINK[:TGRoup [A]B]:DCH[1] 2 3 4 5 6:DATA:FIX4	829
:DLINK[:TGRoup [A]B]:DCH[1] 2 3 4 5 6:NBLocks	830

:DLINK[:TGRoup [A]B]:DCH[1] 2 3 4 5 6:POSition	830
:DLINK[:TGRoup [A]B]:DCH[1] 2 3 4 5 6:PPERcentage	831
:DLINK[:TGRoup [A]B]:DCH[1] 2 3 4 5 6:RMATch	831
:DLINK[:TGRoup [A]B]:DCH[1] 2 3 4 5 6:TTL	831
:DLINK[:TGRoup [A]B]:DCH[1] 2 3 4 5 6[:STATe]	832
:LINK	832
:POLarity[:ALL]	833
:ULINK:APPLY	833
:ULINK:AWGN:CN	833
:ULINK:AWGN:CPOWer	834
:ULINK:AWGN:DRATe	834
:ULINK:AWGN:EBNO	834
:ULINK:AWGN:EBRef	835
:ULINK:AWGN:FNBW	836
:ULINK:AWGN:NPOWer	836
:ULINK:AWGN:TICPower	836
:ULINK:AWGN[:STATe]	837
:ULINK:CRATe	837
:ULINK:DPCCh:BETA	837
:ULINK:DPCCh:CCODE	838
:ULINK:DPCCh:DATA	838
:ULINK:DPCCh:DATA:FIX4	839
:ULINK:DPCCh:FBI:PATtern	839
:ULINK:DPCCh:FBI:PATtern:FIX	840
:ULINK:DPCCh:FBI[:STATe]	840
:ULINK:DPCCh:POWer	840
:ULINK:DPCCh:RATE	841
:ULINK:DPCCh:SLOTformat	841
:ULINK:DPCCh:TFCI:PATtern	842
:ULINK:DPCCh:TFCI:PATtern:FIX	842
:ULINK:DPCCh:TFCI[:STATe]	843
:ULINK:DPCCh:TPC:NSTeps	843
:ULINK:DPCCh:TPC:PATtern	843
:ULINK:DPCCh:TPC:PATtern:FIX4	844
:ULINK:DPCCh:TPC:PATtern:TRIGger:POLarity	844
:ULINK:DPCCh:TPC:PATtern:TRIGger[:STATe]	845
:ULINK:DPCCh:TPOWer	845
:ULINK:DPCCh[:STATe]	846

Contents

:ULINK:DPDCh:BETA	846
:ULINK:DPDCh:CCODE	847
:ULINK:DPDCh:DATA	848
:ULINK:DPDCh:DATA:FIX4	848
:ULINK:DPDCh:POWER	849
:ULINK:DPDCh:RATE	849
:ULINK:DPDCh:RBER	850
:ULINK:DPDCh:SLOTformat	851
:ULINK:DPDCh:TBER[:CLENgth]	852
:ULINK:DPDCh:TBER:ELENgth	852
:ULINK:DPDCh:TPOWer	852
:ULINK:DPDCh[:STATe]	853
:ULINK:FCLock:INTerval	853
:ULINK:FCLock:POLarity	854
:ULINK:FILTer	854
:ULINK:FILTer:ALPHa	855
:ULINK:FILTer:BBT	855
:ULINK:FILTer:CHANnel	856
:ULINK:FOFFset	856
:ULINK:PADJust	857
:ULINK:PHYSical[1]:TYPE	857
:ULINK:PMODE:TPControl:HOLD	857
:ULINK:PMODE:TPControl:POWer:INITial	858
:ULINK:PMODE:TPControl:POWer:MAXimum	858
:ULINK:PMODE:TPControl:POWer:MINimum	859
:ULINK:PMODE:TPControl:POWer:RESet	859
:ULINK:PMODE:TPControl:POWer:STEP	860
:ULINK:PMODE:TPControl:TRIGger:POLarity	860
:ULINK:PMODE[:SElect]	861
:ULINK:PRACH:AICH:NUMBer	861
:ULINK:PRACH:AICH:POLarity	861
:ULINK:PRACH:AWGN:CN	862
:ULINK:PRACH:AWGN:CPOWer	862
:ULINK:PRACH:AWGN:DRATe	863
:ULINK:PRACH:AWGN:EBNO	863
:ULINK:PRACH:AWGN:ECNO	863
:ULINK:PRACH:AWGN:EREF	864
:ULINK:PRACH:AWGN:NPOWer	864

:ULINK:PRACH:AWGN:TICPower	865
:ULINK:PRACH:AWGN[:STATe]	865
:ULINK:PRACH:MESSAge:CPART:BETA	865
:ULINK:PRACH:MESSAge:CPART:DATA	866
:ULINK:PRACH:MESSAge:CPART:DATA:FIX4	866
:ULINK:PRACH:MESSAge:CPART:POWer	867
:ULINK:PRACH:MESSAge:CPART:RATE	867
:ULINK:PRACH:MESSAge:CPART:SLOTformat	868
:ULINK:PRACH:MESSAge:CPART:TFCI:PATtern	868
:ULINK:PRACH:MESSAge:CPART:TFCI:PATtern:FIX	868
:ULINK:PRACH:MESSAge:CPART:TFCI[:STATe]	869
:ULINK:PRACH:MESSAge:DPART:BETA	869
:ULINK:PRACH:MESSAge:DPART:DATA	870
:ULINK:PRACH:MESSAge:DPART:DATA:FIX4	870
:ULINK:PRACH:MESSAge:DPART:POWer	871
:ULINK:PRACH:MESSAge:DPART:RATE	871
:ULINK:PRACH:MESSAge:DPART:SLOTformat	872
:ULINK:PRACH:MODE[:SElect]	873
:ULINK:PRACH:MULTi:MESSAge:TPOWer	874
:ULINK:PRACH:MULTi:MESSAge[:STATe]	874
:ULINK:PRACH:MULTi:NUMBER	874
:ULINK:PRACH:MULTi:PREAmble:NUMBER	875
:ULINK:PRACH:MULTi:PREAmble:POWer:INITIAL	875
:ULINK:PRACH:MULTi:PREAmble:POWer:MAX	876
:ULINK:PRACH:MULTi:PREAmble:POWer:RSTep	876
:ULINK:PRACH:MULTi:PREAmble:PPM	876
:ULINK:PRACH:MULTi:UE[1] 2 3 4 5 6 7 8:MESSAge:CPART: CCODE	877
:ULINK:PRACH:MULTi:UE[1] 2 3 4 5 6 7 8:MESSAge:DPART: CCODE	877
:ULINK:PRACH:MULTi:UE[1] 2 3 4 5 6 7 8:PREAmble:SIGNature	877
:ULINK:PRACH:MULTi:UE[1] 2 3 4 5 6 7 8:SPOSition[1] 2 3 4 5 6 7 8[:ASLot]	878
:ULINK:PRACH:MULTi:UE[1] 2 3 4 5 6 7 8[:STATe]	879
:ULINK:PRACH:PREAmble:POWer:AVERAge	879
:ULINK:PRACH:PREAmble:POWer:MODE	880
:ULINK:PRACH:RPARAmeter	880
:ULINK:PRACH:SCRAmblecode	881
:ULINK:PRACH:SDELay	881
:ULINK:PRACH:SUBChannel	882

Contents

:ULINK:PRACH:TOFFset	882
:ULINK:PRACH:TPA	883
:ULINK:PRACH:TPM	883
:ULINK:PRACH:TPOWer	884
:ULINK:PRACH:TPP	884
:ULINK:PRACH:TRIGger	885
:ULINK:PRACH:TRIGger:POLarity	885
:ULINK:PRACH:TRIGger:SOURce	886
:ULINK:PRACH:TTL	886
:ULINK:PRACH[:SINGle]:MESSAge[:STATe]	887
:ULINK:PRACH[:SINGle]:NUMBer	887
:ULINK:PRACH[:SINGle]:MESSAge:CPARt:CCODE	888
:ULINK:PRACH[:SINGle]:MESSAge:DPARt:CCODE	888
:ULINK:PRACH[:SINGle]:MESSAge:TPOWer	889
:ULINK:PRACH[:SINGle]:NUMBer	890
:ULINK:PRACH[:SINGle]:PREamble:NUMBer	890
:ULINK:PRACH[:SINGle]:PREamble:POWER:INITial	891
:ULINK:PRACH[:SINGle]:PREamble:POWER:MAX	891
:ULINK:PRACH[:SINGle]:PREamble:POWER:RSTep	892
:ULINK:PRACH[:SINGle]:PREamble:PPM	892
:ULINK:PRACH[:SINGle]:PREamble:SIGNature	893
:ULINK:RMCHannel	893
:ULINK:RPANel:DPCH:INPut:ALTPower	894
:ULINK:RPANel:DPCH:INPut:BBGRef	894
:ULINK:RPANel:DPCH:INPut:BGATe	895
:ULINK:RPANel:DPCH:INPut:PTRigger1	895
:ULINK:RPANel:DPCH:INPut:PTRigger2	895
:ULINK:RPANel:DPCH:OUTPut:DCLock	896
:ULINK:RPANel:DPCH:OUTPut:DOUt	897
:ULINK:RPANel:DPCH:OUTPut:EVENt1	897
:ULINK:RPANel:DPCH:OUTPut:EVENt2	898
:ULINK:RPANel:DPCH:OUTPut:EVENt3	898
:ULINK:RPANel:DPCH:OUTPut:EVENt4	899
:ULINK:RPANel:DPCH:OUTPut:SSYNc	899
:ULINK:RPANel:PRACH:INPut:ALTPower	900
:ULINK:RPANel:PRACH:INPut:BBGRef	900
:ULINK:RPANel:PRACH:INPut:BGATe	901
:ULINK:RPANel:PRACH:INPut:PTRigger1	901

:ULINK:RPANel:PRACH:INPut:PTRigger2	901
:ULINK:RPANel:PRACH:OUTPut:DCLock	902
:ULINK:RPANel:PRACH:OUTPut:DOUT	903
:ULINK:RPANel:PRACH:OUTPut:EVENT1	904
:ULINK:RPANel:PRACH:OUTPut:EVENT2	905
:ULINK:RPANel:PRACH:OUTPut:EVENT3	905
:ULINK:RPANel:PRACH:OUTPut:EVENT4	906
:ULINK:RPANel:PRACH:OUTPut:SSYNc	907
:ULINK:SCRamblecode	907
:ULINK:SDElay	908
:ULINK:SFNRst:POLarity	908
:ULINK:SYNC:MODE	909
:ULINK:SYNC[:SOURce]	909
:ULINK:TGAP:POFFset	909
:ULINK:TGAP:PSI[1] 2 3 4 5 6:CFN	910
:ULINK:TGAP:PSI[1]:CMMethod	910
:ULINK:TGAP:PSI[1] 2 3 4 5 6:D	911
:ULINK:TGAP:PSI[1] 2 3 4 5 6:L1	911
:ULINK:TGAP:PSI[1] 2 3 4 5 6:L2	912
:ULINK:TGAP:PSI[1] 2 3 4 5 6:PL1	912
:ULINK:TGAP:PSI[1] 2 3 4 5 6:PL2	912
:ULINK:TGAP:PSI[1] 2 3 4 5 6:POWER	913
:ULINK:TGAP:PSI[1] 2 3 4 5 6:PRC	913
:ULINK:TGAP:PSI[1] 2 3 4 5 6:PS	914
:ULINK:TGAP:PSI[1] 2 3 4 5 6:SN	914
:ULINK:TGAP:RPARameter	914
:ULINK:TGAP:SCFN	915
:ULINK:TGAP[:STATe]	916
:ULINK:TGAP:START:TRIGger	916
:ULINK:TGAP:START:TRIGger:POLarity	916
:ULINK:TGAP:STOP:TRIGger	917
:ULINK:TGAP:STOP:TRIGger:POLarity	917
:ULINK:TOFFset	917
:ULINK:TSTatus:COMPressed	918
:ULINK:TSTatus:RACH	918
:ULINK:TSTatus:RECeive	918
:ULINK:TSTatus:SYNC	919
:ULINK:[TGRoup[1]]:DCH[1] 2 3 5 6:BLKSize	919

Contents

:ULINK[:TGRoup[1]]:DCH[1] 2 3 4 5 6:BPFRame	920
:ULINK[:TGRoup[1]]:DCH[1] 2 3 4 5 6:BRATe	920
:ULINK[:TGRoup[1]]:DCH[1] 2 3 4 5 6:CODE	920
:ULINK[:TGRoup[1]]:DCH[1] 2 3 4 5 6:CRC	921
:ULINK[:TGRoup[1]]:DCH[1] 2 3 4 5 6:DATA	921
:ULINK[:TGRoup[1]]:DCH[1] 2 3 4 5 6:DATA:BER:ACTual	922
:ULINK[:TGRoup[1]]:DCH[1] 2 3 4 5 6:DATA:BER:ERRor:BIT	922
:ULINK[:TGRoup[1]]:DCH[1] 2 3 4 5 6:DATA:BER:TOTal:BIT	922
:ULINK[:TGRoup[1]]:DCH[1] 2 3 4 5 6:DATA:BER[:VALue]	923
:ULINK[:TGRoup[1]]:DCH[1] 2 3 4 5 6:DATA:BLER:ACTual	923
:ULINK[:TGRoup[1]]:2:DCH[1] 2 3 4 5 6:DATA:BLER:ERRor:BLOCK	923
:ULINK[:TGRoup[1]]:2:DCH[1] 2 3 4 5 6:DATA:BLER:TOTal:BLOCK	924
:ULINK[:TGRoup[1]]:DCH[1] 2 3 4 5 6:DATA:BLER[:VALue]	924
:ULINK[:TGRoup[1]]:DCH[1] 2 3 4 5 6:DATA:EINsert	925
:ULINK[:TGRoup[1]]:DCH[1] 2 3 4 5 6:DATA:FIX4	925
:ULINK[:TGRoup[1]]:DCH[1] 2 3 4 5 6:NBLock	926
:ULINK[:TGRoup [1]]:DCH[1] 2 3 4 5 6:PPERcentage	926
:ULINK[:TGRoup[1]]:DCH[1] 2 3 4 5 6:RMATch	926
:ULINK[:TGRoup[1]]:DCH[1] 2 3 4 5 6:TTI	927
:ULINK[:TGRoup[1]]:DCH[1] 2 3 4 5 6[:STATe]	927
:ULINK[:TGRoup[1]]:RACH[1]:BLKSize	927
:ULINK[:TGRoup [1]]:RACH[1]:BPFRame	928
:ULINK[:TGRoup [1]]:RACH[1]:BRATe	928
:ULINK[:TGRoup[1]]:RACH[1]:CODE	929
:ULINK[:TGRoup[1]]:RACH[1]:CRC	929
:ULINK[:TGRoup[1]]:RACH[1]:DATA	929
:ULINK[:TGRoup[1]]:RACH[1]:DATA:BER:ACTual	930
:ULINK[:TGRoup[1]]:RACH[1]:DATA:BER:ERRor:BIT	930
:ULINK[:TGRoup[1]]:RACH[1]:DATA:BER:TOTal:BIT	930
:ULINK[:TGRoup[1]]:RACH[1]:DATA:BER[:VALue]	931
:ULINK[:TGRoup[1]]:RACH[1]:DATA:BLER:ACTual	931
:ULINK[:TGRoup[1]]:RACH[1]:DATA:BLER:ERRor:BLOCK	931
:ULINK[:TGRoup[1]]:RACH[1]:DATA:BLER:TOTal:BLOCK	932
:ULINK[:TGRoup[1]]:RACH[1]:DATA:BLER[:VALue]	932
:ULINK[:TGRoup[1]]:RACH[1]:DATA:EINsert	933
:ULINK[:TGRoup[1]]:RACH[1]:DATA:FIX4	933
:ULINK[:TGRoup[1]]:RACH[1]:NBLock	934
:ULINK[:TGRoup [1]]:RACH[1]:PPERcentage	934

:ULINK[:TGRoup[1]]:RACH[1]:RMATch	934
:ULINK[:TGRoup[1]]:RACH[1]:TTI	935
:ULINK[:TGRoup[1]]:RACH[1][:STATe]	935
[:STATe]	935

Contents

8 Receiver Test Digital Commands (continued)

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

- “GPS Subsystem–Option409 ([:SOURCE]:RADio[1|2|3|4]:GPS)” on page 594
- “GSM Subsystem–Option 402 ([:SOURCE]:RADio:GSM)” on page 601
- “NADC Subsystem–Option 402 ([:SOURCE]:RADio[:NADC])” on page 638
- “PDC Subsystem–Option 402 ([:SOURCE]:RADio:PDC)” on page 671
- “PHS Subsystem–Option 402 ([:SOURCE]:RADio:PHS)” on page 703
- “TETRA Subsystem–Option 402 ([:SOURCE]:RADio:TETRa)” on page 738
- “Wideband CDMA Base Band Generator Subsystem–Option 400 ([:SOURCE]:RADio:WCDMa:TGPP[:BBG])” on page 779

GPS Subsystem–Option409 **([:SOURce]:RADio[1]|2|3|4:GPS)**

:DATA

Supported All with Option 409

```
[:SOURce]:RADio[1]|2|3|4:GPS:DATA PN9|PN15|FIX4| "<user file>"
[:SOURce]:RADio[1]|2|3|4: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 All with Option 409

```
[:SOURce]:RADio[1]|2|3|4:GPS:DMODE RAW|ENCOded|TLM
[:SOURce]:RADio[1]|2|3|4:GPS:DMODE?
```

This command sets 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 594.

:DSHift

Supported All with Option 409

```
[:SOURce]:RADio[1]|2|3|4:GPS:DSHift <val>
[:SOURce]:RADio[1]|2|3|4: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 All with Option 409

```
[:SOURce]:RADio[1]|2|3|4:GPS:FILTer RNYQuist|NYQuist|GAUSSian|RECTangle|
IS95|IS95_EQ|IS95_MOD|IS95_MOD_EQ|AC4Fm|UGGaussian|"<user FIR>"
[:SOURce]:RADio[1]|2|3|4: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

GPS Subsystem–Option409 ([:SOURce]:RADio[1]|2|3|4:GPS)

	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> <tr> <td>Root Nyquist</td> <td>Nyquist</td> <td>Gaussian</td> <td>Rectangle</td> <td>IS-95</td> <td>IS-95 w/EQ</td> </tr> <tr> <td>IS-95 Mod</td> <td>IS-95 Mod w/EQ</td> <td>APC025 C4FM</td> <td>UN3/4 GSM Gaussian</td> <td></td> <td></td> </tr> <tr> <td>User FIR</td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </table>	Root Nyquist	Nyquist	Gaussian	Rectangle	IS-95	IS-95 w/EQ	IS-95 Mod	IS-95 Mod w/EQ	APC025 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	APC025 C4FM	UN3/4 GSM Gaussian																
User FIR																			
Remarks	N/A																		

:FILTer:ALPHA

Supported All with Option 409

```
[:SOURce]:RADio[1]|2|3|4:GPS:FILTer:ALPHA <val>
[:SOURce]:RADio[1]|2|3|4: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 595.

:FILTer:BBT

Supported All with Option 409

```
[:SOURce]:RADio[1]|2|3|4:GPS:FILTer:BBT <val>
[:SOURce]:RADio[1]|2|3|4: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 595.

:FILTer:CHANnel

Supported All with Option 409

[:SOURce] :RADio [1] | 2 | 3 | 4 :GPS :FILTer :CHANnel
 [:SOURce] :RADio [1] | 2 | 3 | 4 :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 595.

:IQPHase

Supported All with Option 409

[:SOURce] :RADio [1] | 2 | 3 | 4 :GPS :IQPHase NORMal | INVerted
 [:SOURce] :RADio [1] | 2 | 3 | 4 :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**

Remarks N/A

GPS Subsystem—Option 409 ([:SOURCE]:RADIo[1]|2|3|4:GPS)**:PCODE****Supported** All with Option 409

[:SOURCE]:RADIo[1]|2|3|4:GPS:PCODE <val>

[:SOURCE]:RADIo[1]|2|3|4: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** All with Option 409

[:SOURCE]:RADIo[1]|2|3|4:GPS:RCODE CA|P|CAP

[:SOURCE]:RADIo[1]|2|3|4: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.

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*Remarks** N/A**:REFCik****Supported** All with Option 409

```
[:SOURce]:RADio[1]|2|3|4:GPS:REFClk [INT]|Ext
[:SOURce]:RADio[1]|2|3|4: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
Remarks	N/A

:REFFreq

Supported All with Option 409

```
[:SOURce]:RADio[1]|2|3|4:GPS:REFFreq <val><unit>
[:SOURce]:RADio[1]|2|3|4: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 All with Option 409

```
[:SOURce]:RADio[1]|2|3|4:GPS:SATid <val>
[:SOURce]:RADio[1]|2|3|4: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

GPS Subsystem–Option409 ([:SOURCE]:RADio[1]|2|3|4:GPS)

Remarks	N/A
----------------	-----

[:STATe]

Supported	All with Option 409
------------------	---------------------

```
[ :SOURCE ] :RADio [1] | 2 | 3 | 4 :GPS [ :STATe ] ON | OFF | 1 | 0
```

```
[ :SOURCE ] :RADio [1] | 2 | 3 | 4 :GPS [ :STATe ] ?
```

This command enables or disables the real-time GPS signal.

*RST	0
-------------	---

Key Entry	Real-time GPS Off On
------------------	-----------------------------

Remarks	N/A
----------------	-----

GSM Subsystem—Option 402 ([:SOURCE]:RADio:GSM)

:ALPha

Supported All 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 613.

:BBCLock

Supported All 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 612.

:BBT

Supported All 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 613.

:BRATe

Supported All with Option 402

```
[:SOURCE]:RADio:GSM:BRATe <val>
[:SOURCE]:RADio:GSM:BRATe?
```

This command sets the bit rate.

The variable <val> is expressed in units of bits per second (bps–Mbps) and the maximum range value is dependent upon the source of data (internal or external), the modulation type, and filter.

***RST** +2.70833333E+005

Range	<i>Modulation Type</i>	<i>Bits per Symbol</i>	<i>Internal Data</i>	<i>External Serial Data</i>
	BPSK	1	1–50 Mbps	1–50 Mbps
	FSK2			
	MSK			

Range

<i>Modulation Type</i>	<i>Bits per Symbol</i>	<i>Internal Data</i>	<i>External Serial Data</i>
C4FM	2	2–100 Mbps	2–50 Mbps
FSK4			
OQPSK			
OQPSK195			
P4QPPSK			
QAM4			
QPSK			
QPSKIS95			
QPSKISAT			
D8PSK	3	3–100 Mbps	3–50 Mbps
EDGE			
FSK8			
PSK8			
FSK16	4	4–100 Mbps	4–50 Mbps
PSK16			
QAM16			
QAM32	5	5–100 Mbps	5–50 Mbps
QAM64	6	6–100 Mbps	6–50 Mbps
QAM256	7	8–100 Mbps	8–50 Mbps

Key Entry

Symbol Rate

Remarks

When user-defined filters are selected using the command in section “:FILTer” on page 613, the upper bit rate will be restricted in line with the following symbol rate restriction:

- FIR filter length > 32 symbols: upper limit is 12.5 Msps
- FIR filter length > 16 symbols: upper limit is 25 Msps

When internal FIR filters are used, the limits of the above table always apply. For higher symbol rates, the FIR filter length will be truncated and will impact the relative timing of the modulated data, as well as the actual filter response (see “:SRATe” on page 631).

A change in the bit rate value will affect the symbol rate value; refer to “:SRATe” on page 631 for a list of the minimum and maximum symbol rate values.

To change the modulation type, refer to “:MODulation[:TYPE]” on page 616.

:BURSt:PN9

Supported

All with Option 402

[:SOURce] :RADio:GSM: BURSt:PN9 NORMAl | QUICk

Receiver Test Digital Commands (continued)
GSM Subsystem—Option 402 ([:SOURCE]:RADio:GSM)

[: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 All 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 616. Refer to “:SRATE” on page 631 for a list of the minimum and maximum symbol rate values.

“:BURSt:SHAPe:FDELay” on page 605 performs the same function; in compliance with the SCPI standard, both commands are listed.

For concept information on burst shaping, refer to the *User’s Guide*.

:BURSt:SHAPe:FALL:TIME

Supported All 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 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 616. Refer to “:SRATE” on page 631 for a list of the minimum and maximum symbol rate values.

“:BURSt:SHAPE:FTIME” on page 606 performs the same function; in compliance with the SCPI standard, both commands are listed.

For concept information on burst shaping, refer to the *User’s Guide*.

:BURSt:SHAPE:FDElay

Supported All with Option 402

[:SOURce] :RADio:GSM: BURSt:SHAPE:FDElay <val>

[:SOURce] :RADio:GSM: 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 –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 616. Refer to “:SRATE” on page 631 for a list of the minimum and maximum symbol rate values.

“:BURSt:SHAPE:FALL:DElay” on page 604 performs the same function; in compliance with the SCPI standard, both commands are listed.

For concept information on burst shaping, refer to the *User's Guide*.

:BURSt:SHAPe:FTIME

Supported All 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 616.

Refer to “:SRATE” on page 631 for a list of the minimum and maximum symbol rate values.

“:BURSt:SHAPe:FALL:TIME” on page 604 performs the same function; in compliance with the SCPI standard, both commands are listed.

For concept information on burst shaping, refer to the *User's Guide*.

:BURSt:SHAPe:RDElay

Supported All 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.

***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 616. Refer to “:SRATE” on page 631 for a list of the minimum and maximum symbol rate values.

“:BURSt:SHAPe:RISE:DELay” on page 607 performs the same function; in compliance with the SCPI standard, both commands are listed.

For concept information on burst shaping, refer to the *User’s Guide*.

:BURSt:SHAPe:RISE:DELay

Supported All 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.

***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 616. Refer to “:SRATE” on page 631 for a list of the minimum and maximum symbol rate values.

“:BURSt:SHAPe:RDELay” on page 606 performs the same function; in compliance with the SCPI standard, both commands are listed.

For concept information on burst shaping, refer to the *User’s Guide*.

:BURSt:SHAPe:RISE:TIME

Supported All 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.

Receiver Test Digital Commands (continued)
GSM Subsystem—Option 402 ([:SOURCE]:RADio:GSM)

The variable <val> is expressed in bits. The minimum and maximum values depend upon modulation type and symbol rate.

***RST** +3.00000000E+000

Range 0.0625–11.1875

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 616. Refer to “:SRATE” on page 631 for a list of the minimum and maximum symbol rate values.

“:BURSt:SHAPe:RTIME” on page 608 performs the same function; in compliance with the SCPI standard, both commands are listed.

For concept information on burst shaping, refer to the *User’s Guide*.

:BURSt:SHAPe:RTIME

Supported All 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.

***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 616. Refer to “:SRATE” on page 631 for a list of the minimum and maximum symbol rate values.

“:BURSt:SHAPe:RISE:TIME” on page 607 performs the same function; in compliance with the SCPI standard, both commands are listed.

For concept information on burst shaping, refer to the *User’s Guide*.

:BURSt:SHAPE[:TYPE]

Supported All 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**

Remarks N/A

:BURSt[:STATe]

Supported All 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

Remarks N/A

:CHANnel

Supported All 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 613.

:DATA

Supported All with Option 402

```
[ :SOURCE ] :RADIO:GSM:DATA PN9|PN11|PN15|PN20|PN23|FIX4| "<file name>" |
EXT|P4|P8|P16|P32|P64
[ :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			

Remarks Refer to “File Name Variables” on page 13 for information on the file name syntax.

:DATA:FIX4

Supported All 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 All 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.

*RST	N/A
Range	N/A
Key Entry	Restore GSM Factory Default
Remarks	N/A

:DENCode

Supported All 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
Remarks	N/A

:EDATa:DELay

Supported All 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

Receiver Test Digital Commands (continued)
GSM Subsystem—Option 402 ([:SOURCE]:RADIO:GSM)

the symbol on the I OUT and Q OUT rear panel connectors and the front panel RF OUTPUT connector.

*RST	N/A
Range	N/A
Key Entry	N/A
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 All 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
Remarks	Both choices have no effect in internal clock mode. Refer to “ :BBClock ” on page 601 to select EXT as the data clock type.

:EREFerence

Supported All 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 All 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 612 to select EXT (external source) as the reference for the bit-clock reference.

:FILTer

Supported All 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.

Receiver Test Digital Commands (continued)
GSM Subsystem—Option 402 ([:SOURCE]:RADio:GSM)

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 All 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 All 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 616. Refer to “:SRATE” on page 631 for a list of the minimum and maximum symbol rate values. To set an asymmetric FSK deviation value, refer to the <i>User’s Guide</i> for more information.

:MODulation:MSK[:PHASe]

Supported	All with Option 402
	<code>[:SOURce]:RADio:GSM:MODulation:MSK[:PHASe] <val></code> <code>[:SOURce]:RADio:GSM:MODulation:MSK[:PHASe]?</code>
	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
Remarks	N/A

:MODulation:UFSK

Supported	All with Option 402
	<code>[:SOURce]:RADio:GSM:MODulation:UFSK "<file name>"</code> <code>[:SOURce]:RADio:GSM:MODulation:UFSK?</code>
	This command selects a user-defined FSK file from the signal generator memory.
*RST	N/A
Range	N/A
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 616 to change the current

modulation type.

Refer to “File Name Variables” on page 13 for information on the file name syntax.

:MODulation:UIQ

Supported All 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.

***RST** N/A

Range N/A

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 616 to change the current modulation type.
 Refer to “File Name Variables” on page 13 for information on the file name syntax.

:MODulation[:TYPE]

Supported All 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|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	256QAM	User I/Q	User FSK			

Remarks N/A

:POLarity[:ALL]

Supported All 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 All with Option 402

```
[ :SOURCE ] :RADio:GSM:SECondary:RECall
```

This command recalls the secondary frame configuration, overwriting the current state.

***RST** N/A

Range N/A

Key Entry **Recall Secondary Frame State**

Remarks To save a secondary frame state, refer to “:SECondary:SAVE” on page 617.

A secondary frame is not active until the secondary state is enabled. To activate a secondary frame, refer to “:SECondary[:STATE]” on page 618.

:SECondary:SAVE

Supported All 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.

***RST** N/A

Range N/A

Key Entry **Save Secondary Frame State**

Receiver Test Digital Commands (continued)
GSM Subsystem—Option 402 ([:SOURCE]:RADio:GSM)

Remarks To recall the secondary frame state (saved in non-volatile signal generator memory), refer to “:SECondary:RECall” on page 617.

:SECondary:TRIGger[:SOURce]

Supported All 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 634.
BUS This choice enables GPIB triggering using the *TRG or GET command or LAN and RS-232 triggering using the *TRG command.

***RST** N/A

Key Entry **Trigger Key Ext Bus**

Remarks N/A

:SECondary[:STATe]

Supported All 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 617.

:SLOT0|[1]|2|3|4|5|6|7:ACCess:ENCRyption

Supported All 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	Refer to “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 All 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 All 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
Remarks	N/A

:SLOT0|[1]|2|3|4|5|6|7:ACCess:SSEquence

Supported All 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–#H1FFFFFFFFF
Key Entry **SS**
Remarks N/A

:SLOT0|[1]|2|3|4|5|6|7:ACCess:CUSTom

Supported All 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 Refer to “File Name Variables” on page 13 for information on the file name syntax.

:SLOT0|[1]|2|3|4|5|6|7:CUSTom:FIX4

Supported All 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 All 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–#H3FFFFFFF

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:NORMAl:ENCryption

Supported All 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|TCHF5|TCHHS|CS1|CS-4|
DMCS1|UMCS1|BCH|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.
- 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.
- CS-4 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.
- BCH This choice selects a non-combined broadcast channel. BCH can only be set in timeslot zero and can be the only multiframe type in a frame. This means that BCH 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. BCH can only be set in timeslot zero and can be the only multiframe type in a frame. This means that BCH will conflict with the following parameters: TCH/FS, TCH/HS, CS-1, CS-4, DMCS-1, and UMCS-1.

*RST	PN9
Range	BCH: 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	Refer to “File Name Variables” on page 13 for information on the file name syntax.

:SLOT0:NORMal:ENCRyption:BCH:BCC

Supported All with Option 416

```
[:SOURCE]:RADio:GSM:SLOT0:NORMal:ENCRyption:BCH:BCC <val>
[:SOURCE]:RADio:GSM:SLOT0:NORMal:ENCRyption:BCH: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
Remarks	N/A

:SLOT0:NORMal:ENCRyption:BCH:CELLid

Supported All with Option 416

```
[:SOURCE]:RADio:GSM:SLOT0:NORMal:ENCRyption:BCH:CELLid <val>
[:SOURCE]:RADio:GSM:SLOT0:NORMal:ENCRyption:BCH:CELLid?
```

This command sets the cell identification. The purpose of the cell identity information element is to identify a cell within a location area.

*RST	0
Range	0–65535
Remarks	N/A

:SLOT0:NORMal:ENCRyption:BCH:LAC

Supported All with Option 416

Receiver Test Digital Commands (continued)
GSM Subsystem—Option 402 ([:SOURCE]:RADio:GSM)

```
[ :SOURCE ] :RADio:GSM:SLOT0:NORMal:ENCRyption:BCH:LAC <val>  
[ :SOURCE ] :RADio:GSM:SLOT0:NORMal:ENCRyption:BCH: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
Remarks N/A

:SLOT0:NORMal:ENCRyption:BCH:MCC

Supported All with Option 416

```
[ :SOURCE ] :RADio:GSM:SLOT0:NORMal:ENCRyption:BCH:MCC <val>  
[ :SOURCE ] :RADio:GSM:SLOT0:NORMal:ENCRyption:BCH: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
Remarks N/A

:SLOT0:NORMal:ENCRyption:BCH:MNC

Supported All with Option 416

```
[ :SOURCE ] :RADio:GSM:SLOT0:NORMal:ENCRyption:BCH:MNC <val>  
[ :SOURCE ] :RADio:GSM:SLOT0:NORMal:ENCRyption:BCH: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:BCH:PLMN

Supported All with Option 416

```
[ :SOURCE ] :RADio:GSM:SLOT0:NORMal:ENCRyption:BCH:PLMN <val>
```

[:SOURCE]:RADIO:GSM:SLOT0:NORMAL:ENCRYPTION:BCH: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
Remarks N/A

:SLOT0|[1]|2|3|4|5|6|7:NORMAL:ENCRYPTION:CS1:DATA

Supported All 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**
Remarks N/A

:SLOT0|[1]|2|3|4|5|6|7:NORMAL:ENCRYPTION:DLINK:MCS1:DATA

Supported All 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**
Remarks N/A

:SLOT0|[1]|2|3|4|5|6|7:NORMAL:ENCRYPTION:FIX4

Supported All 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?

Receiver Test Digital Commands (continued)
GSM Subsystem—Option 402 ([:SOURCE]:RADIO:GSM)

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 All 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**
Remarks N/A

:SLOT0|[1]|2|3|4|5|6|7:NORMAL:ENCRyption:ULINK:MCS1:DATA

Supported All 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**
Remarks N/A

:SLOT0|[1]|2|3|4|5|6|7:NORMAL:STeal

Supported All 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**
Remarks N/A

:SLOT0|[1]|2|3|4|5|6|7:NORMal:TSEquence

Supported All 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–#H3FFFFFFF
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 All 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**

Remarks N/A

:SLOT0|[1]|2|3|4|5|6|7:STATe

Supported All 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**

Remarks N/A

:SLOT0|[1]|2|3|4|5|6|7:SYNC:ENCRyption

Supported All 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 All 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 All 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-#HFFFFFFFFFFFFFFFF
Key Entry **TS**
Remarks N/A

:SLOT0|[1]|2|3|4|5|6|7[:TYPE]

Supported All 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**
Remarks N/A

:SOUT

Supported All 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

Receiver Test Digital Commands (continued)
GSM Subsystem—Option 402 ([:SOURCE]:RADio:GSM)

	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	N/A		

:SOUT:OFFSet

Supported All 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 629.

:SOUT:SLOT

Supported All 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 629.

:SRATe

Supported All with Option 402

[:SOURCE]:RADIO:GSM:SRATe <val>

[:SOURCE]:RADIO:GSM:SRATe?

This command sets the transmission symbol rate.

The variable <val> is expressed in units of bits per second (bps–Mbps) and the maximum range value is dependent upon the source of data (internal or external), the modulation type, and filter.

***RST** +2.70833333E+005

Range	<i>Modulation Type</i>	<i>Bits per Symbol</i>	<i>Internal Data</i>	<i>External Serial Data</i>
	BPSK	1	1–50 Msps	1–50 Msps
	FSK2			
	MSK			
	C4FM	2	1–50 Msps	1–25 Msps
	FSK4			
	OQPSK			
	OQPSK195			
	P4QPPSK			
	QAM4			
	QPSK			
	QPSKIS95			
	QPSKISAT			
EDGE				
FSK8				
PSK8				
	FSK16	4	1–25 Msps	1–12.5 Msps
	PSK16			
	QAM16			
	QAM32	5	1–20 Msps	1–10 Msps
	QAM64	6	1–16.67 Msps	1–8.33 Msps
	QAM256	7	1–12.50 Msps	1–6.25 Msps

Key Entry **Symbol Rate**

Remarks When user-defined filters are selected using the command in section “:FILTer” on

page 613, the upper bit rate will be restricted in line with the following symbol rate restriction:

- FIR filter length > 32 symbols: upper limit is 12.5 Msps
- FIR filter length > 16 symbols: upper limit is 25 Msps

When internal FIR filters are used, the limits of the above table always apply. For higher symbol rates, the FIR filter length will be truncated as follows:

- Above 12.5 Msps, the FIR length will be truncated to 32 symbols
- Above 25 Msps, the FIR length will be truncated to 16 symbols

This will impact the relative timing of the modulated data, as well as the actual filter response (see “:BRATe” on page 602).

A change in the symbol rate value will affect the bit rate value; refer to “:BRATe” on page 602 for a list of the minimum and maximum symbol

rate values.

To change the modulation type, refer to “:MODulation[:TYPE]” on page 616.

:TRIGger:EXtErnal:DELay

Supported All 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

Remarks N/A

:TRIGger:TYPE

Supported All 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 633.		
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
Remarks	N/A		

:TRIGger:TYPE:CONTInuous[:TYPE]

Supported All with Option 402

```
[ :SOURce ] :RADio:GSM:TRIGger:TYPE:CONTInuous [ :TYPE ] FREE | TRIGger | RESet
[ :SOURce ] :RADio:GSM:TRIGger:TYPE:CONTInuous [ :TYPE ] ?
```

This command customizes the continuous trigger selection.

FREE	This choice immediately transmits a framed data sequence that is continuously repeated.		
TRIGger	This choice causes the framed data sequence to wait for a trigger. Once a trigger is received, the transmission of a continuously repeated framed data sequence begins.		
RESet	This choice immediately restarts a continuously repeated framed data sequence upon receiving a trigger.		

*RST FREE

Key Entry **Free Run** **Trigger & Run** **Reset & Run**

Remarks To select CONTInuous as the trigger type, refer to “:TRIGger:TYPE” on page 632.

:TRIGger:TYPE:GATE:ACTive

Supported All with Option 402

```
[ :SOURce ] :RADio:GSM:TRIGger:TYPE:GATE:ACTive LOW | HIGH
[ :SOURce ] :RADio:GSM:TRIGger:TYPE:GATE:ACTive ?
```

This command toggles the polarity of the active state of the external gating input signal; GATE must

Receiver Test Digital Commands (continued)
GSM Subsystem—Option 402 ([:SOURCE]:RADio:GSM)

be selected as the arb trigger type.

LOW	The sequence runs while the selected external control gating signal is low and restarts when the gate returns to the high level.
HIGH	The sequence runs while the selected external control gating signal is high and restarts when the gate returns to the low level.
*RST	HIGH
Key Entry	Gate Active Low High
Remarks	To select GATE as the ARB trigger type, refer to “:TRIGger:TYPE” on page 632.

:TRIGger[:SOURCE]

Supported All with Option 402

```
[ :SOURCE ] :RADio:GSM:TRIGger [ :SOURCE ] KEY | EXT | BUS
[ :SOURCE ] :RADio:GSM:TRIGger [ :SOURCE ] ?
```

This command sets the trigger source.

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 634.		
BUS	This choice enables GPIB triggering using the *TRG or GET command or LAN and RS-232 triggering using the *TRG command.		
*RST	KEY		
Key Entry	Trigger Key	Ext	Bus
Remarks	N/A		

:TRIGger[:SOURCE]:EXTernal[:SOURCE]

Supported All with Option 402

```
[ :SOURCE ] :RADio:GSM:TRIGger [ :SOURCE ] :EXTernal [ :SOURCE ] EPT1 |
EPT2 | EPTRIGGER1 | EPTRIGGER2
[ :SOURCE ] :RADio:GSM:TRIGger [ :SOURCE ] :EXTernal [ :SOURCE ] ?
```

This command specifies which PATT TRIG IN connection, rear panel connector or AUX I/O connector, will be used to accept an externally applied trigger signal.

EPT1	This choice is synonymous with EPTRIGGER1 and selects the PATT TRIG IN
------	--

	rear panel connector for the external signal connection.
EPT2	This choice is synonymous with EPTRIGGER2 and selects the PATT TRIG IN 2 pin on the rear panel AUX I/O connector for the external signal connection.
EPTRIGGER1	This choice is synonymous with EPT1 and selects the PATT TRIG IN rear panel connector for the external signal connection.
EPTRIGGER2	This choice is synonymous with EPT2 and selects the PATT TRIG IN 2 pin on the rear panel AUX I/O connector for the external signal connection.
*RST	EPT1
Key Entry	Patt Trig In 1 Patt Trig In 2
Remarks	This command is effective only if an external trigger is selected as the trigger source. Refer to “:TRIGger[:SOURce]” on page 634. For more information about the rear panel AUX I/O connector pin configuration, refer to the <i>User’s Guide</i> .

:TRIGger[:SOURce]:EXtErnal:DELay

Supported	All with Option 402
	[:SOURce] :RADio:GSM:TRIGger [:SOURce] :EXtErnal:DELay <val> [:SOURce] :RADio:GSM:TRIGger [:SOURce] :EXtErnal:DELay?
	This command specifies the number of delay bits for the external trigger delay. The variable <val> is expressed in bits. There is 1 bit per symbol for the GSM format.
*RST	+0
Range	0–1048576
Key Entry	Ext Delay Bits
Remarks	This command is effective only if an external trigger is selected as the trigger source. Refer to “:TRIGger[:SOURce]” on page 634.

:TRIGger[:SOURce]:EXtErnal:DELay:FINE

Supported	All 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”

Receiver Test Digital Commands (continued)
GSM Subsystem—Option 402 ([:SOURCE]:RADio:GSM)

on page 635).

The variable <val> is expressed as a fraction of one symbol.

*RST	+0.00000000E+000
Range	0–1
Remarks	N/A

:TRIGger[:SOURCE]:EXTernal:DELay:STATe

Supported All 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.

***RST** 0

Key Entry **Ext Delay Off On**

Remarks This command is effective only if an external trigger is selected as the trigger source. Refer to “:TRIGger[:SOURCE]” on page 634.

:TRIGger[:SOURCE]:EXTernal:SLOPe

Supported All 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 the external trigger.

***RST** NEG

Key Entry **Ext Polarity Neg Pos**

Remarks This command is effective only if an external trigger is selected as the trigger source. Refer to “:TRIGger[:SOURCE]” on page 634.

[:STATe]

Supported All 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.

NADC Subsystem–Option 402 ([:SOURce]:RADio[:NADC])

:ALPha

Supported All 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 650.

:BBCLock

Supported All 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 All 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 650.

:BRATe

Supported All with Option 402

```
[:SOURCE]:RADio[:NADC]:BRATe <val>
[:SOURCE]:RADio[:NADC]:BRATe?
```

This command sets the bit rate.

The variable <val> is expressed in units of bits per second (bps–Mbps) and the maximum range value is dependent upon the source of data (internal or external), the modulation type, and filter.

***RST** +4.86000000E+004

Range	<i>Modulation Type</i>	<i>Bits per Symbol</i>	<i>Internal Data</i>	<i>External Serial Data</i>
	BPSK	1	1–50 Mbps	1–50 Mbps
	FSK2			
	MSK			

Receiver Test Digital Commands (continued)
NADC Subsystem—Option 402 ([:SOURce]:RADio[:NADC])

Range

<i>Modulation Type</i>	<i>Bits per Symbol</i>	<i>Internal Data</i>	<i>External Serial Data</i>
C4FM	2	2–100 Mbps	2–50 Mbps
FSK4			
OQPSK			
OQPSK195			
P4QPPSK			
QAM4			
QPSK			
QPSKIS95			
QPSKISAT			
D8PSK	3	3–100 Mbps	3–50 Mbps
EDGE			
FSK8			
PSK8			
FSK16	4	4–100 Mbps	4–50 Mbps
PSK16			
QAM16			
QAM32	5	5–100 Mbps	5–50 Mbps
QAM64	6	6–100 Mbps	6–50 Mbps
QAM256	7	8–100 Mbps	8–50 Mbps

Key Entry

Symbol Rate

Remarks

When user-defined filters are selected using the command in section “[:FILTer](#)” on page 650, the upper bit rate will be restricted in line with the following symbol rate restriction:

- FIR filter length > 32 symbols: upper limit is 12.5 Msps
- FIR filter length > 16 symbols: upper limit is 25 Msps

When internal FIR filters are used, the limits of the above table always apply. For higher symbol rates, the FIR filter length will be truncated and will impact the relative timing of the modulated data, as well as the actual filter response (see “[:SRATe](#)” on page 664).

A change in the bit rate value will affect the symbol rate value; refer to “[:SRATe](#)” on page 664 for a list of the minimum and maximum symbol rate values.

To change the modulation type, refer to “[:MODulation\[:TYPE\]](#)” on page 654.

:BURSt:PN9

Supported

All 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 All 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**

Remarks N/A

:BURSt:SHAPE:FALL:DELay

Supported All 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

Receiver Test Digital Commands (continued)
NADC Subsystem—Option 402 ([:SOURce]:RADio[:NADC])

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 654. Refer to “:SRATE” on page 664 for a list of the minimum and maximum symbol rate values.</p> <p>“:BURSt:SHAPE:FDElay” on page 642 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>User’s Guide</i>.</p>

:BURSt:SHAPE:FALL:TIME

Supported	All with Option 402
	<pre>[:SOURce] :RADio [:NADC] :BURSt :SHAPE :FALL :TIME <val> [:SOURce] :RADio [:NADC] :BURSt :SHAPE :FALL :TIME?</pre>
	<p>This command sets the burst shape fall time.</p> <p>The variable <val> is expressed in bits. The minimum and maximum values depend upon modulation type and symbol rate.</p>
*RST	+5.00000000E+000
Range	0.1250–255.8750
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 654. Refer to “:SRATE” on page 664 for a list of the minimum and maximum symbol rate values.</p> <p>“:BURSt:SHAPE:FTIME” on page 643 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>User’s Guide</i>.</p>

:BURSt:SHAPE:FDElay

Supported	All 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 654. Refer to “[:SRATE]” on page 664 for a list of the minimum and maximum symbol rate values.

“[:BURSt:SHAPe:FALL:DElay]” on page 641 performs the same function; in compliance with the SCPI standard, both commands are listed.

For concept information on burst shaping, refer to the *User’s Guide*.

:BURSt:SHAPe:FTIME

Supported All 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 654. Refer to “[:SRATE]” on page 664 for a list of the minimum and maximum symbol rate values.

“:BURSt:SHAPe:FALL:TIME” on page 642 performs the same function; in compliance with the SCPI standard, both commands are listed.

For concept information on burst shaping, refer to the *User’s Guide*.

:BURSt:SHAPe:RDElay

Supported All 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 654. Refer to “:SRATE” on page 664 for a list of the minimum and maximum symbol rate values.

“:BURSt:SHAPe:RISE:DElay” on page 644 performs the same function; in compliance with the SCPI standard, both commands are listed.

For concept information on burst shaping, refer to the *User’s Guide*.

:BURSt:SHAPe:RISE:DElay

Supported All 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	<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 654. Refer to “:SRATE” on page 664 for a list of the minimum and maximum symbol rate values.</p> <p>“:BURSt:SHAPe:RDElay” on page 644 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>User’s Guide</i>.</p>

:BURSt:SHAPe:RISE:TIME

Supported	All with Option 402
	<pre>[:SOURCE] :RADio [:NADC] :BURSt :SHAPe :RISE :TIME <val> [:SOURCE] :RADio [:NADC] :BURSt :SHAPe :RISE :TIME?</pre>
	<p>This command sets the burst shape rise time.</p> <p>The variable <val> is expressed in bits. The minimum and maximum values depend upon modulation type and symbol rate.</p>
*RST	+5.00000000E+000
Range	0.1250–22.5000
Key Entry	Rise 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 654. Refer to “:SRATE” on page 664 for a list of the minimum and maximum symbol rate values.</p> <p>“:BURSt:SHAPe:RTIME” on page 645 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>User’s Guide</i>.</p>

:BURSt:SHAPe:RTIME

Supported	All with Option 402
	<pre>[:SOURCE] :RADio [:NADC] :BURSt :SHAPe :RTIME <val> [:SOURCE] :RADio [:NADC] :BURSt :SHAPe :RTIME?</pre>

Receiver Test Digital Commands (continued)
NADC Subsystem—Option 402 ([:SOURce]:RADio[:NADC])

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 654. Refer to “:SRATE” on page 664 for a list of the minimum and maximum symbol rate values.

“:BURSt:SHAPE:RISE:TIME” on page 645 performs the same function; in compliance with the SCPI standard, both commands are listed.

For concept information on burst shaping, refer to the *User’s Guide*.

:BURSt[:STATe]

Supported All 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**

Remarks N/A

:BURSt:SHAPE[:TYPE]

Supported All 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**

Remarks N/A

:CHANnel

Supported All 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 650.

:DATA

Supported All with Option 402

```
[:SOURCE]:RADio[:NADC]:DATA PN9|PN11|PN15|PN20|PN23|FIX4 | "<file name>" |
EXT|P4|P8|P16|P32|P64
[:SOURCE]:RADio[:NADC]:DATA ?
```

This command sets a pseudo-random number sequence, 4-bit pattern, sequence of 1's and 0's, data

Receiver Test Digital Commands (continued)
NADC Subsystem—Option 402 ([:SOURce]:RADio[:NADC])

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							
Remarks	Refer to “File Name Variables” on page 13 for information on the file name syntax.							

:DATA:FIX4

Supported	All 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 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	All with Option 402
	[:SOURce] :RADio [:NADC] :DEFault

This command returns all of the NADC modulation format parameters to factory settings. It does not affect any other signal generator parameters.

*RST	N/A
Range	N/A
Key Entry	Restore NADC Factory Default
Remarks	N/A

:EDATa:DELay

Supported	All 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.

*RST	N/A
Range	N/A
Key Entry	N/A
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 All 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 638](#) to select EXT as the data clock type.

:EREFerence

Supported All 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

Receiver Test Digital Commands (continued)
NADC Subsystem—Option 402 ([:SOURce]:RADio[:NADC])

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 650 to enter the external reference frequency setting.

:EREFerence:VALue

Supported All 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 649 to select EXT (external source) as the reference for the bit-clock.

:FILTer

Supported All 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	<table border="0" style="width: 100%;"> <tr> <td>Root Nyquist</td> <td>Nyquist</td> <td>Gaussian</td> <td>Rectangle</td> <td>IS-95</td> <td>IS-95 w/EQ</td> </tr> <tr> <td>IS-95 Mod</td> <td>IS-95 Mod w/EQ</td> <td>APCO 25 C4FM</td> <td>UN3/4 GSM</td> <td>Gaussian</td> <td></td> </tr> <tr> <td colspan="6">User FIR</td> </tr> </table>	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					
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	All 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
Remarks	N/A

:IQ:SCALE

Supported	All with Option 402
	[:SOURCE]:RADio[:NADC]:IQ:SCALE <val>
	[:SOURCE]:RADio[:NADC]:IQ:SCALE?

Receiver Test Digital Commands (continued)
NADC Subsystem—Option 402 ([:SOURce]:RADio[:NADC])

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 All 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 654. Refer to “:SRATE” on page 664 for a list of the minimum and maximum symbol rate values. To set an asymmetric FSK deviation value, refer to the <i>User’s Guide for more information</i> .

:MODulation:MSK[:PHASe]

Supported All 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
Remarks	N/A

:MODulation:UFSK

Supported All 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.

***RST** N/A

Range N/A

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 654](#) to change the current modulation type.

Refer to [“File Name Variables” on page 13](#) for information on the file name syntax.

:MODulation:UIQ

Supported All 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.

***RST** N/A

Range N/A

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 654](#) to change the current modulation type.

Refer to [“File Name Variables” on page 13](#) for information on the file name syntax.

:MODulation[:TYPE]

Supported All 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|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	256QAM	User I/Q	User FSK				

Remarks N/A

:REPeat

Supported All 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**

Remarks N/A

:POLarity[:ALL]

Supported All 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
Remarks	N/A

:SECondary:RECall

Supported All with Option 402

[:SOURce] :RADio [:NADC] :SECondary:RECall

This command recalls the secondary frame configuration, overwriting the current state.

*RST N/A

Range N/A

Key Entry **Recall Secondary Frame State**

Remarks To save a secondary frame state, refer to “:SECondary:SAVE” on page 655.

A secondary frame is not active until the secondary state is enabled. To activate a secondary frame, refer to “:SECondary[:STATe]” on page 656.

:SECondary:SAVE

Supported All 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.

*RST N/A

Range N/A

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 655.

:SECondary:TRIGger[:SOURce]

Supported All with Option 402

[:SOURce] :RADio [:NADC] :SECondary:TRIGger [:SOURce] KEY | EXT | BUS
[:SOURce] :RADio [:NADC] :SECondary:TRIGger [:SOURce] ?

Receiver Test Digital Commands (continued)
NADC Subsystem—Option 402 (:SOURce]:RADio[:NADC])

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 668.		
BUS	This choice enables GPIB triggering using the *TRG or GET command or LAN and RS-232 triggering using the *TRG command.		
*RST	N/A		
Key Entry	Trigger Key	Ext	Bus
Remarks	N/A		

:SECOndary[:STATE]

Supported All 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
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 655.

:SLOT[1] | 2 | 3 | 4 | 5 | 6:DCUStom

Supported All 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	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 All 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 All 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 All 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?
```

Receiver Test Digital Commands (continued)
NADC Subsystem—Option 402 ([:SOURce]:RADio[:NADC])

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 All 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
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 All 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
Remarks	N/A

:SLOT[1]|2|3|4|5|6:DTCHannel[:DATA]

Supported All 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 All 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 All 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.

Receiver Test Digital Commands (continued)
NADC Subsystem—Option 402 ([:SOURce]:RADio[:NADC])

DELTA This choice specifies RF output as the alternative power level.
***RST** MAIN
Key Entry **Timeslot Ampl Main Delta**
Remarks N/A

:SLOT[1]|2|3|4|5|6:STATe

Supported All 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**
Remarks N/A

:SLOT[1]|2|3|4|5|6:UCUStom

Supported All 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 All 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 All 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 All 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 All 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**
Remarks N/A

:SLOT[1]|2|3|4|5|6:UTCHannel[:DATA]

Supported All 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]?
```

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 All 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 All 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
Remarks N/A

:SOUT

Supported All 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**
Remarks N/A

:SOUT:OFFSet

Supported All 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 663](#).

:SOUT:SLOT

Supported All 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 663](#).

:SRATe

Supported All with Option 402

```
[ :SOURce ] :RADio [ :NADC ] :SRATe <val>  
[ :SOURce ] :RADio [ :NADC ] :SRATe?
```

This command sets the transmission symbol rate.

The variable <val> is expressed in units of bits per second (bps–Mbps) and the maximum range value is dependent upon the source of data (internal or external), the modulation type, and filter.

***RST** +2.4300000E+004

Range	<i>Modulation Type</i>	<i>Bits per Symbol</i>	<i>Internal Data</i>	<i>External Serial Data</i>
	BPSK	1	1–50 Msps	1–50 Msps
	FSK2			
	MSK			
	C4FM	2	1–50 Msps	1–25 Msps
	FSK4			
	OQPSK			
	OQPSK195			
	P4QPPSK			
	QAM4			
	QPSK			
	QPSKIS95			
	QPSKISAT			
	D8PSK	3	1–33.33 Msps	1–16.67 Msps
	EDGE			
	FSK8			
	PSK8			
	FSK16	4	1–25 Msps	1–12.5 Msps
	PSK16			
	QAM16			
	QAM32	5	1–20 Msps	1–10 Msps
	QAM64	6	1–16.67 Msps	1–8.33 Msps
	QAM256	7	1–12.50 Msps	1–6.25 Msps

Key Entry

Symbol Rate

Remarks

When user-defined filters are selected using the command in section “[:FILTER](#)” on [page 650](#), the upper bit rate will be restricted in line with the following symbol rate restriction:

- FIR filter length > 32 symbols: upper limit is 12.5 Msps
- FIR filter length > 16 symbols: upper limit is 25 Msps

When internal FIR filters are used, the limits of the above table always apply. For higher symbol rates, the FIR filter length will be truncated as follows:

- Above 12.5 Msps, the FIR length will be truncated to 32 symbols
- Above 25 Msps, the FIR length will be truncated to 16 symbols

This will impact the relative timing of the modulated data, as well as the

actual filter response (see “:BRATe” on page 639).

A change in the symbol rate value will affect the bit rate value; refer to “:BRATe” on page 639 for a list of the minimum and maximum symbol rate values.

To change the modulation type, refer to “:MODulation[:TYPE]” on page 654.

:TRIGger[:SOURce]

Supported All with Option 402

```
[ :SOURce ] :RADio [ :NADC ] :TRIGger [ :SOURce ] KEY | EXT | BUS
[ :SOURce ] :RADio [ :NADC ] :TRIGger [ :SOURce ] ?
```

This command sets the trigger source.

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 668.		
BUS	This choice enables GPIB triggering using the *TRG or GET command or LAN and RS-232 triggering using the *TRG command.		
*RST	KEY		
Key Entry	Trigger Key	Ext	Bus
Remarks	N/A		

:TRIGger:TYPE

Supported All 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 667.
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
Remarks	N/A		

:TRIGger:TYPE:CONTInuous[:TYPE]

Supported All with Option 402

```
[ :SOURce ] :RADio [ :NADC ] :TRIGger :TYPE :CONTInuous [ :TYPE ] FREE | TRIGger | RESet
[ :SOURce ] :RADio [ :NADC ] :TRIGger :TYPE :CONTInuous [ :TYPE ] ?
```

This command customizes the continuous trigger selection.

FREE This choice immediately transmits a framed data sequence that is continuously repeated.

TRIGger This choice causes the framed data sequence to wait for a trigger. Once a trigger is received, the transmission of a continuously repeated framed data sequence begins.

RESet This choice immediately restarts a continuously repeated framed data sequence upon receiving a trigger.

***RST** FREE

Key Entry **Free Run** **Trigger & Run** **Reset & Run**

Remarks To select CONTInuous as the trigger type, refer to “:TRIGger:TYPE” on [page 666](#).

:TRIGger:TYPE:GATE:ACTive

Supported All with Option 402

```
[ :SOURce ] :RADio [ :NADC ] :TRIGger :TYPE :GATE :ACTive LOW | HIGH
[ :SOURce ] :RADio [ :NADC ] :TRIGger :TYPE :GATE :ACTive ?
```

This command toggles the polarity of the active state of the external gating input signal; GATE must be selected as the arb trigger type.

LOW The sequence runs while the selected external control gating signal is low and restarts when the gate returns to the high level.

HIGH The sequence runs while the selected external control gating signal is high and restarts when the gate returns to the low level.

***RST** HIGH

Key Entry **Gate Active Low High**

Remarks To select GATE as the ARB trigger type, refer to “:TRIGger:TYPE” on page 666.

:TRIGger[:SOURce]:EXTernal[:SOURce]

Supported All with Option 402

```
[ :SOURce ] :RADio [ :NADC ] :TRIGger [ :SOURce ] :EXTernal [ :SOURce ] EPT1 | EJPT2 |
EPTRIGGER1 | EPTRIGGER2
[ :SOURce ] :RADio [ :NADC ] :TRIGger [ :SOURce ] :EXTernal [ :SOURce ] ?
```

This command specifies which PATT TRIG IN connection, rear panel connector or AUX I/O connector, will be used to accept an externally applied trigger signal.

EPT1 This choice is synonymous with EPTRIGGER1 and selects the PATT TRIG IN rear panel connector for the external signal connection.

EPT2 This choice is synonymous with EPTRIGGER2 and selects the PATT TRIG IN 2 pin on the rear panel AUX I/O connector for the external signal connection.

EPTRIGGER1 This choice is synonymous with EPT1 and selects the PATT TRIG IN rear panel connector for the external signal connection.

EPTRIGGER2 This choice is synonymous with EPT2 and selects the PATT TRIG IN 2 pin on the rear panel AUX I/O connector for the external signal connection.

***RST** EPT1

Key Entry **Patt Trig In 1** **Patt Trig In 2**

Remarks To change the trigger source to EXT, refer to “:TRIGger[:SOURce]” on page 666.
 For more information about the rear panel AUX I/O connector pin configuration, refer to the *User’s Guide*.

:TRIGger[:SOURce]:EXTernal:DELay

Supported All with Option 402

```
[ :SOURce ] :RADio [ :NADC ] :TRIGger [ :SOURce ] :EXTernal :DELay <val>
[ :SOURce ] :RADio [ :NADC ] :TRIGger [ :SOURce ] :EXTernal :DELay ?
```

This command specifies the number of delay bits for the external trigger delay.

The variable <val> is expressed in bits.

***RST** +0

Range 0–1048576

Key Entry **Ext Delay Bits**

Remarks This command is effective only if an external trigger is selected as the trigger source. Refer to “:TRIGger[:SOURCE]” on page 666.

:TRIGger[:SOURCE]:EXtErnal:DELay:STATe

Supported All 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.

***RST** 0

Key Entry **Ext Delay Off On**

Remarks This command is effective only if an external trigger is selected as the trigger source. Refer to “:TRIGger[:SOURCE]” on page 666.

:TRIGger[:SOURCE]:EXtErnal:SLOPe

Supported All with Option 402

```
[ :SOURCE ] :RADio [ :NADC ] :TRIGger [ :SOURCE ] :EXtErnal :SLOPe POSitive | NEGative  
[ :SOURCE ] :RADio [ :NADC ] :TRIGger [ :SOURCE ] :EXtErnal :SLOPe?
```

This command sets the polarity of the external trigger.

***RST** POS

Key Entry **Ext Polarity Neg Pos**

Remarks This command is effective only if an external trigger is selected as the trigger source. Refer to “:TRIGger[:SOURCE]” on page 666.

[:STATe]

Supported All 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

Receiver Test Digital Commands (continued)
NADC Subsystem–Option 402 ([:SOURce]:RADio[:NADC])

Mod On/Off hardkey.

PDC Subsystem–Option 402 ([:SOURce]:RADio:PDC)

:ALPha

Supported All 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 683.

:BBCLock

Supported All 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 All 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 683.

:BRATe

Supported All with Option 402

```
[ :SOURCE ] :RADio:PDC:BRATe <val>  
[ :SOURCE ] :RADio:PDC:BRATe?
```

This command sets the bit rate.

The variable <val> is expressed in units of bits per second (bps–Mbps) and the maximum range value is dependent upon the source of data (internal or external), the modulation type, and filter.

***RST** +4.20000000E+004

Range	Modulation Type	Bits per Symbol	Internal Data	External Serial Data
	BPSK	1	1–50 Mbps	1–50 Mbps
	FSK2			
	MSK			
	C4FM	2	2–100 Mbps	2–50 Mbps
	FSK4			
	OQPSK			
	OQPSK195			
	P4QPPSK			
	QAM4			

Range

<i>Modulation Type</i>	<i>Bits per Symbol</i>	<i>Internal Data</i>	<i>External Serial Data</i>
QPSK	2	2–100 Mbps	2–50 Mbps
QPSKIS95			
QPSKISAT			
D8PSK	3	3–100 Mbps	3–50 Mbps
EDGE			
FSK8			
PSK8			
FSK16	4	4–100 Mbps	4–50 Mbps
PSK16			
QAM16			
QAM32	5	5–100 Mbps	5–50 Mbps
QAM64	6	6–100 Mbps	6–50 Mbps
QAM256	7	8–100 Mbps	8–50 Mbps

Key Entry

Symbol Rate

Remarks

When user-defined filters are selected using the command in section “:FILTer” on page 683, the upper bit rate will be restricted in line with the following symbol rate restriction:

- FIR filter length > 32 symbols: upper limit is 12.5 Msps
- FIR filter length > 16 symbols: upper limit is 25 Msps

When internal FIR filters are used, the limits of the above table always apply. For higher symbol rates, the FIR filter length will be truncated and will impact the relative timing of the modulated data, as well as the actual filter response (see “:SRATe” on page 697).

A change in the bit rate value will affect the value of the symbol rate; refer to “:SRATe” on page 697 for a list of minimum and maximum symbol rate values.

To change the modulation type, refer to “:MODulation[:TYPE]” on page 686.

:BURSt:PN9

Supported

All 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.

Receiver Test Digital Commands (continued)
PDC Subsystem—Option 402 ([:SOURCE]:RADio:PDC)

*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 All 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 686. Refer to “:SRATE” on page 697 for a list of minimum and maximum symbol rate values.

“:BURSt:SHAPe:FDELay” on page 675 performs the same function. In compliance with the SCPI standard, both commands are listed.

For concept information on burst shaping, refer to the *User’s Guide*.

:BURSt:SHAPe:FALL:TIME

Supported All 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	<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 686. Refer to “:SRATE” on page 697 for a list of minimum and maximum symbol rate values.</p> <p>“:BURSt:SHAPe:FTIME” on page 675 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>User’s Guide</i>.</p>

:BURSt:SHAPe:FDElay

Supported All 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 686. Refer to “:SRATE” on page 697 for a list of minimum and maximum symbol rate values.

“:BURSt:SHAPe:FALL:DElay” on page 674 performs the same function. In compliance with the SCPI standard, both commands are listed.

For concept information on burst shaping, refer to the *User’s Guide*.

:BURSt:SHAPe:FTIME

Supported All with Option 402

Receiver Test Digital Commands (continued)
PDC Subsystem—Option 402 ([:SOURCE]:RADIO:PDC)

```
[ :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 686. Refer to “:SRATE” on page 697 for a list of minimum and maximum symbol rate values.

“:BURSt:SHAPE:FALL:TIME” on page 674 performs the same function. In compliance with the SCPI standard, both commands are listed.

For concept information on burst shaping, refer to the *User’s Guide*.

:BURSt:SHAPE:RDElay

Supported All 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 686. Refer to “:SRATE” on page 697 for a list of minimum and maximum symbol rate values.

“:BURSt:SHAPe:RISE:DELay” on page 677 performs the same function. In compliance with the SCPI standard, both commands are listed.

For concept information on burst shaping, refer to the *User’s Guide*.

:BURSt:SHAPe:RISE:DELay

Supported All 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 686. Refer to “:SRATE” on page 697 for a list of minimum and maximum symbol rate values.

“:BURSt:SHAPe:RDELay” on page 676 performs the same function. In compliance with the SCPI standard, both commands are listed.

For concept information on burst shaping, refer to the *User’s Guide*.

:BURSt:SHAPe:RISE:TIME

Supported All 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	<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 686. Refer to “:SRATE” on page 697 for a list of minimum and maximum symbol rate values.</p> <p>“:BURSt:SHAPe:RTIME” on page 678 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>User’s Guide</i>.</p>

:BURSt:SHAPe:RTIME

Supported All 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	<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 686. Refer to “:SRATE” on page 697 for a list of minimum and maximum symbol rate values.</p> <p>“:BURSt:SHAPe:RISE:TIME” on page 677 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>User’s Guide</i>.</p>
----------------	---

:BURSt:SHAPe[:TYPE]

Supported All 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.
" <code><file name></code> "	This choice selects a user designated file from signal generator memory.
*RST	SINE
Key Entry	Sine User File
Remarks	N/A

:BURSt[:STATe]

Supported All 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.

OFF (0) This choice enables the transmission of unframed data.

***RST** 0

Key Entry **Data Format Pattern Framed**

Remarks N/A

:CHANnel

Supported All 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.

Receiver Test Digital Commands (continued)
PDC Subsystem—Option 402 ([:SOURCE]:RADIO:PDC)

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 683.

:DATA

Supported All with Option 402

```
[:SOURCE]:RADIO:PDC:DATA PN9|PN11|PN15|PN20|PN23|FIX4|"<file name>"|
EXT|P4|P8|P16|P32|P64
[: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

Remarks Refer to “File Name Variables” on page 13 for information on the file name syntax.

:DATA:FIX4

Supported All 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 All 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.

***RST** N/A

Range N/A

Key Entry **Restore PDC Factory Default**

Remarks N/A

:EDATa:DELaY

Supported All 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.

***RST** N/A

Range N/A

Key Entry N/A

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 All 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

Receiver Test Digital Commands (continued)
PDC Subsystem—Option 402 ([:SOURCE]:RADio:PDC)

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 671 to select EXT as the data clock type.

:EREFerence

Supported All 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 682 to enter the external reference frequency setting.

:EREFerence:VALue

Supported All 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 682 to select EXT (external source) as the reference for the bit-clock.

:FILTer

Supported All 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 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** 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 All with Option 402

Receiver Test Digital Commands (continued)
PDC Subsystem—Option 402 ([:SOURCE]:RADio:PDC)

```
[: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
Remarks	N/A

:IQ:SCALe

Supported All 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 All 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 686. Refer to “:SRATE” on page 697 for a list of minimum and maximum symbol rate values. To set an asymmetric FSK deviation value, refer to the <i>User’s Guide</i> for more information.

:MODulation:MSK[:PHASe]

Supported	All with Option 402
	<code>[:SOURCE]:RADio:PDC:MODulation:MSK[:PHASe] <val></code> <code>[:SOURCE]:RADio:PDC:MODulation:MSK[:PHASe]?</code>
	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
Remarks	N/A

:MODulation:UFSK

Supported	All with Option 402
	<code>[:SOURCE]:RADio:PDC:MODulation:UFSK "<file name>"</code> <code>[:SOURCE]:RADio:PDC:MODulation:UFSK?</code>
	This command selects a user-defined FSK file from the signal generator memory.
*RST	N/A
Range	N/A
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 686 to change the current modulation type. Refer to “File Name Variables” on page 13 for information on the file name syntax.

:MODulation:UIQ

Supported All 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.

***RST** N/A

Range N/A

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 686](#) to change the current modulation type. Refer to [“File Name Variables” on page 13](#) for information on the file name syntax.

:MODulation[:TYPE]

Supported All 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|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	256QAM	User I/Q	User FSK			

Remarks N/A

:POLarity[:ALL]

Supported All 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**

Remarks N/A

:SECondary:RECall

Supported All with Option 402

[:SOURCE]:RADio:PDC:SECondary:RECall

This command recalls the secondary frame configuration, overwriting the current state.

***RST** N/A

Range N/A

Key Entry **Recall Secondary Frame State**

Remarks To save a secondary frame state, refer to “:SECondary:SAVE” on page 687.

A secondary frame is not active until the secondary state is enabled. To

activate a secondary frame, refer to “:SECondary[:STATE]” on page 688.

:SECondary:SAVE

Supported All 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.

***RST** N/A

Range N/A

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 687.

:SECondary:TRIGger[:SOURce]

Supported All 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 700 .		
BUS	This choice enables GPIB triggering using the *TRG or GET command or LAN and RS-232 triggering using the *TRG command.		
*RST	N/A		
Key Entry	Trigger Key	Ext	Bus
Remarks	N/A		

:SECondary[:STATe]

Supported All 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 688 .

:SLOT0 | [1] | 2 | 3 | 4 | 5:DCUStom

Supported All 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	8 1's & 8 0's	16 1's & 16 0's	16 1's & 16 0's	32 1's & 32 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 All 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 688 .

:SLOT0 | [1] | 2 | 3 | 4 | 5 :DTCHannel:CCODE

Supported All 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
Range	#H00–#HFF
Key Entry	CC
Remarks	N/A

:SLOT0|[1]|2|3|4|5:DTCHannel:SACChannel

Supported All 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**

Remarks N/A

:SLOT0|[1]|2|3|4|5:DTCHannel:SWORd

Supported All 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**

Remarks N/A

:SLOT0|[1]|2|3|4|5:DTCHannel[:TCHannel]

Supported All 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 Refer to “File Name Variables” on page 13 for information on the file name syntax.

:SLOT0|[1]|2|3|4|5:DTCHannel[:TCHannel]:FIX4

Supported All 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 All 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**

Remarks N/A

:SLOT0|[1]|2|3|4|5:STATe

Supported All 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*

Receiver Test Digital Commands (continued)
PDC Subsystem—Option 402 ([:SOURce]:RADio:PDC)

Key Entry **Timeslot Off On**
Remarks N/A

:SLOT0|[1]|2|3|4|5:UCUStom

Supported All 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 All 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 All 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
Remarks	N/A

:SLOT0|[1]|2|3|4|5:UTCHannel:SACChannel

Supported All 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
Remarks	N/A

:SLOT0|[1]|2|3|4|5:UTCHannel:SWORd

Supported All 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
Remarks	N/A

:SLOT0|[1]|2|3|4|5:UTCHannel[:TCHannel]

Supported All with Option 402

Receiver Test Digital Commands (continued)
PDC Subsystem—Option 402 ([:SOURCE]:RADIO:PDC)

```
[: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 All 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 All 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

Remarks N/A

:SLOT0|[1]|2|3|4|5:UVOX:SACChannel

Supported All 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**

Remarks N/A

:SLOT0|[1]|2|3|4|5:UVOX:SWORD

Supported All 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 All 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.

Receiver Test Digital Commands (continued)
PDC Subsystem—Option 402 ([:SOURCE]:RADio:PDC)

*RST	UTCH				
Key Entry	Up Custom	Down Custom	Up TCH	UP TCH All	Up VOX
	Down TCH	Down TCH All			
Remarks	N/A				

:SOUT

Supported All 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
Remarks	N/A		

:SOUT:OFFSet

Supported All 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 696.

:SOUT:SLOT

Supported All 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 696.

:SRATe

Supported All with Option 402

```
[ :SOURce ] :RADio :PDC :SRATe <val>
[ :SOURce ] :RADio :PDC :SRATe?
```

This command sets the transmission symbol rate.

The variable <val> is expressed in units of bits per second (bps–Mbps) and the maximum range value is dependent upon the source of data (internal or external), the modulation type, and filter.

***RST** +2.10000000E+004

Range	<i>Modulation Type</i>	<i>Bits per Symbol</i>	<i>Internal Data</i>	<i>External Serial Data</i>
	BPSK	1	1–50 Msps	1–50 Msps
	FSK2			
	MSK			

Receiver Test Digital Commands (continued)
PDC Subsystem–Option 402 ([:SOURce]:RADio:PDC)

Range

<i>Modulation Type</i>	<i>Bits per Symbol</i>	<i>Internal Data</i>	<i>External Serial Data</i>
C4FM	2	1–50 Msps	1–25 Msps
FSK4			
OQPSK			
OQPSK195			
P4QPPSK			
QAM4			
QPSK			
QPSKIS95			
QPSKISAT			
D8PSK	3	1–33.33 Msps	1–16.67 Msps
EDGE			
FSK8			
PSK8			
FSK16	4	1–25 Msps	1–12.5 Msps
PSK16			
QAM16			
QAM32	5	1–20 Msps	1–10 Msps
QAM64	6	1–16.67 Msps	1–8.33 Msps
QAM256	7	1–12.50 Msps	1–6.25 Msps

Key Entry

Symbol Rate

Remarks

When user-defined filters are selected using the command in section “[:FILTer](#)” on [page 683](#), the upper bit rate will be restricted in line with the following symbol rate restriction:

- FIR filter length > 32 symbols: upper limit is 12.5 Msps
- FIR filter length > 16 symbols: upper limit is 25 Msps

When internal FIR filters are used, the limits of the above table always apply. For higher symbol rates, the FIR filter length will be truncated as follows:

- Above 12.5 Msps, the FIR length will be truncated to 32 symbols
- Above 25 Msps, the FIR length will be truncated to 16 symbols

This will impact the relative timing of the modulated data, as well as the actual filter response (see “[:BRATe](#)” on [page 672](#)).

A change in the symbol rate value will affect the value of the bit rate; refer to “[:BRATe](#)” on [page 672](#) for a list of minimum and maximum symbol rate values.

To change the modulation type, refer to “[:MODulation\[:TYPE\]](#)” on [page 686](#).

:TRIGger:TYPE

Supported All 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 699](#).

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**

Remarks N/A

:TRIGger:TYPE:CONTInuous[:TYPE]

Supported All with Option 402

```
[ :SOURCE ] :RADIO:PDC:TRIGger:TYPE:CONTInuous [ :TYPE ] FREE | TRIGger | RESet
[ :SOURCE ] :RADIO:PDC:TRIGger:TYPE:CONTInuous [ :TYPE ] ?
```

This command customizes the continuous trigger selection.

FREE This choice immediately transmits a framed data sequence that is continuously repeated.

TRIGger This choice causes the framed data sequence to wait for a trigger. Once a trigger is received, the transmission of a continuously repeated framed data sequence begins.

RESet This choice immediately restarts a continuously repeated framed data sequence upon receiving a trigger.

***RST** FREE

Key Entry **Free Run Trigger & Run Reset & Run**

Remarks To select CONTInuous as the trigger type, refer to [“:TRIGger:TYPE” on page 699](#).

:TRIGger:TYPE:GATE:ACTive

Supported All with Option 402

```
[ :SOURCE ] :RADio:PDC:TRIGger:TYPE:GATE:ACTive LOW|HIGH
[ :SOURCE ] :RADio:PDC:TRIGger:TYPE:GATE:ACTive?
```

This command toggles the polarity of the active state of the external gating input signal; GATE must be selected as the arb trigger type.

LOW The sequence runs while the selected external control gating signal is low and restarts when the gate returns to the high level.

HIGH The sequence runs while the selected external control gating signal is high and restarts when the gate returns to the low level.

***RST** HIGH

Key Entry Gate Active Low High

Remarks To select GATE as the ARB trigger type, refer to “:TRIGger:TYPE” on page 699.

:TRIGger[:SOURCE]

Supported All with Option 402

```
[ :SOURCE ] :RADio:PDC:TRIGger [ :SOURCE ] KEY|EXT|BUS
[ :SOURCE ] :RADio:PDC:TRIGger [ :SOURCE ] ?
```

This command sets the trigger source.

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 700.

BUS This choice enables GPIB triggering using the *TRG or GET command or LAN and RS-232 triggering using the *TRG command.

***RST** KEY

Key Entry Trigger Key Ext Bus

Remarks N/A

:TRIGger[:SOURCE]:EXTernal[:SOURCE]

Supported All with Option 402


```
[ :SOURce ] :RADio:PDC:TRIGger [ :SOURce ] :EXTErnal [ :SOURce ] EPT1 |
EPT2 | EPTRIGGER1 | EPTRIGGER2
[ :SOURce ] :RADio:PDC:TRIGger [ :SOURce ] :EXTErnal [ :SOURce ] ?
```

This command specifies which PATT TRIG IN connection, rear panel connector or AUX I/O connector, will be used to accept an externally applied trigger signal.

- | | |
|-------------------|--|
| EPT1 | This choice is synonymous with EPTRIGGER1 and selects the PATT TRIG IN rear panel connector for the external signal connection. |
| EPT2 | This choice is synonymous with EPTRIGGER2 and selects the PATT TRIG IN 2 pin on the rear panel AUX I/O connector for the external signal connection. |
| EPTRIGGER1 | This choice is synonymous with EPT1 and selects the PATT TRIG IN rear panel connector for the external signal connection. |
| EPTRIGGER2 | This choice is synonymous with EPT2 and selects the PATT TRIG IN 2 pin on the rear panel AUX I/O connector for the external signal connection. |
| *RST | EPT1 |

Key Entry **Patt Trig In 1** **Patt Trig In 2**

Remarks This command is effective only if an external trigger is selected as the trigger source. Refer to “:TRIGger[:SOURce]” on page 700.

For more information about the rear panel AUX I/O connector pin configuration, refer to the *User’s Guide*.

:TRIGger[:SOURce]:EXTErnal:DELAy

Supported All with Option 402

```
[ :SOURce ] :RADio:PDC:TRIGger [ :SOURce ] :EXTErnal:DELAy <val>
[ :SOURce ] :RADio:PDC:TRIGger [ :SOURce ] :EXTErnal:DELAy?
```

This command specifies the number of delay bits for the external trigger delay.

The variable <val> is expressed in bits.

***RST** +0

Range 0–1048576

Key Entry **Ext Delay Bits**

Remarks This command is effective only if an external trigger is selected as the trigger source. Refer to “:TRIGger[:SOURce]” on page 700.

:TRIGger[:SOURCE]:EXtErnal:DELay:STATe

Supported All 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.

***RST** 0

Key Entry Ext Delay Off On

Remarks This command is effective only if an external trigger is selected as the trigger source. Refer to “:TRIGger[:SOURCE]” on page 700.

:TRIGger[:SOURCE]:EXtErnal:SLOPe

Supported All with Option 402

```
[ :SOURCE ] :RADio:PDC:TRIGger [ :SOURCE ] :EXtErnal:SLOPe POSitive|NEGative  
[ :SOURCE ] :RADio:PDC:TRIGger [ :SOURCE ] :EXtErnal:SLOPe?
```

This command sets the polarity of the external trigger.

***RST** NEG

Key Entry Ext Polarity Neg Pos

Remarks This command is effective only if an external trigger is selected as the trigger source. Refer to “:TRIGger[:SOURCE]” on page 700.

[:STATe]

Supported All 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 All 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 720.

:BBCLock

Supported All 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 All 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 720.

:BRATe

Supported All with Option 402

[:SOURCE] :RADio:PHS:BRATe <val>

[:SOURCE] :RADio:PHS:BRATe?

This command sets the bit rate.

The variable <val> is expressed in units of bits per second (bps–Mbps) and the maximum range value is dependent upon the source of data (internal or external), the modulation type, and filter.

***RST** +3.84000000E+005

Range	Modulation Type	Bits per Symbol	Internal Data	External Serial Data
	BPSK	1	1–50 Mbps	1–50 Mbps
	FSK2			
	MSK			
	C4FM	2	2–100 Mbps	2–50 Mbps
	FSK4			
	OQPSK			
	OQPSK195			
	P4QPPSK			
	QAM4			

Range

<i>Modulation Type</i>	<i>Bits per Symbol</i>	<i>Internal Data</i>	<i>External Serial Data</i>
QPSK	2	2–100 Mbps	2–50 Mbps
QPSKIS95			
QPSKISAT			
D8PSK	3	3–100 Mbps	3–50 Mbps
EDGE			
FSK8			
PSK8			
FSK16	4	4–100 Mbps	4–50 Mbps
PSK16			
QAM16			
QAM32	5	5–100 Mbps	5–50 Mbps
QAM64	6	6–100 Mbps	6–50 Mbps
QAM256	7	8–100 Mbps	8–50 Mbps

Key Entry

Symbol Rate

Remarks

When user-defined filters are selected using the command in section “[:FILTer](#)” on [page 720](#), the upper bit rate will be restricted in line with the following symbol rate restriction:

- FIR filter length > 32 symbols: upper limit is 12.5 Msps
- FIR filter length > 16 symbols: upper limit is 25 Msps

When internal FIR filters are used, the limits of the above table always apply. For higher symbol rates, the FIR filter length will be truncated and will impact the relative timing of the modulated data, as well as the actual filter response (see “[:SRATe](#)” on [page 727](#)).

A change in the bit rate value will affect the symbol rate value; refer to “[:SRATe](#)” on [page 727](#) for a list of the minimum and maximum symbol rate values.

To change the modulation type, refer to “[:MODulation\[:TYPE\]](#)” on [page 723](#).

:BURSt:PN9

Supported

All 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	All with Option 402
	<code>[:SOURCE]:RADio:PHS:BURSt:SCRamble:SEED <16-bit val></code> <code>[:SOURCE]:RADio:PHS:BURSt:SCRamble:SEED?</code>
	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 706 .

:BURSt:SCRamble[:STATe]

Supported	All with Option 402
	<code>[:SOURCE]:RADio:PHS:BURSt:SCRamble[:STATe] ON OFF 1 0</code> <code>[:SOURCE]:RADio:PHS:BURSt:SCRamble[:STATe]?</code>
	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 706 .

:BURSt:SHAPe:FALL:DELay

Supported	All 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 723. Refer to “:SRATE” on page 727 for a list of the minimum and maximum symbol rate values.

“:BURSt:SHAPe:FDELay” on page 708 performs the same function; in compliance with the SCPI standard, both commands are listed.

For concept information on burst shaping, refer to the *User’s Guide*.

:BURSt:SHAPe:FALL:TIME

Supported All 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 723. Refer to “:SRATE” on page 727 for a list of the minimum and maximum symbol rate values.

“:BURSt:SHAPe:FTIME” on page 708 performs the same function; in compliance with the SCPI standard, both commands are listed.

For concept information on burst shaping, refer to the *User's Guide*.

:BURSt:SHAPe:FDElay

Supported All 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 723. Refer to “:SRATE” on page 727 for a list of the minimum and maximum symbol rate values.

“:BURSt:SHAPe:FALL:DElay” on page 706 performs the same function; in compliance with the SCPI standard, both commands are listed.

For concept information on burst shaping, refer to the *User's Guide*.

:BURSt:SHAPe:FTIME

Supported All 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 723. Refer to “:SRATE” on page 727 for a list of the minimum and maximum symbol rate values.

“:BURSt:SHAPe:FALL:TIME” on page 707 performs the same function; in compliance with the SCPI standard, both commands are listed.

For concept information on burst shaping, refer to the *User’s Guide*.

:BURSt:SHAPe:RDElay

Supported All 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 723. Refer to “:SRATE” on page 727 for a list of the minimum and maximum symbol rate values.

“:BURSt:SHAPe:RISE:DElay” on page 709 performs the same

function; in compliance with the SCPI standard, both commands are listed.

For concept information on burst shaping, refer to the *User’s Guide*.

:BURSt:SHAPe:RISE:DElay

Supported All 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.

Receiver Test Digital Commands (continued)
PHS Subsystem—Option 402 ([:SOURce]:RADio:PHS)

*RST	+0.00000000E+000
Range	–18.1250 to 99
Key Entry	Rise 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 723. Refer to “:SRATe” on page 727 for a list of the minimum and maximum symbol rate values.</p> <p>“:BURSt:SHAPE:RDElay” on page 709 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>User’s Guide</i>.</p>

:BURSt:SHAPE:RISE:TIME

Supported	All with Option 402
	<pre>[:SOURce] :RADio:PHS :BURSt :SHAPE:RISE:TIME <val> [:SOURce] :RADio:PHS :BURSt :SHAPE:RISE:TIME?</pre>
	<p>This command sets the burst shape rise time.</p> <p>The variable <val> is expressed in bits.</p>
*RST	+4.00000000E+001
Range	0.1250–22.500
Key Entry	Rise 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 723. Refer to “:SRATe” on page 727 for a list of the minimum and maximum symbol rate values.</p> <p>“:BURSt:SHAPE:RTIME” on page 710 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>User’s Guide</i>.</p>

:BURSt:SHAPE:RTIME

Supported	All 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 723. Refer to “:SRATE” on page 727 for a list of the minimum and maximum symbol rate values.

“:BURSt:SHAPe:RISE:TIME” on page 710 performs the same function; in compliance with the SCPI standard, both commands are listed.

For concept information on burst shaping, refer to the *User’s Guide*.

:BURSt:SHAPe[:TYPE]

Supported All 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**

Remarks N/A

:BURSt[:STATe]

Supported All with Option 402

Receiver Test Digital Commands (continued)
PHS Subsystem–Option 402 ([:SOURCE]:RADio:PHS)

```
[: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**

Remarks N/A

:CHANnel

Supported All 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 720.

:DATA

Supported All with Option 402

```
[:SOURCE]:RADio:PHS:DATA PN9|PN11|PN15|PN20|PN23|FIX4|  
"<file name>"|EXT|P4|P8|P16|P32|P64  
[: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							
Remarks	Refer to “File Name Variables” on page 13 for information on the file name syntax.							

:DATA:FIX4

Supported All 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 All 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.

*RST	N/A
Range	N/A
Key Entry	Restore PHS Factory Default
Remarks	N/A

:DLINK:SLOT[1] | 2 | 3 | 4:CUSTom

Supported All with Option 402

Receiver Test Digital Commands (continued)
PHS Subsystem–Option 402 ([:SOURce]:RADio:PHS)

```
[: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 All 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 All 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
Remarks	N/A

:DLINK:SLOT[1] | 2 | 3 | 4:SCHannel:CSID

Supported All 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–#H3FFFFFFFFF
Key Entry **CSID**
Remarks N/A

:DLINK:SLOT[1] | 2 | 3 | 4:SCHannel:IDLE

Supported All 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–#H3FFFFFFFFF
Key Entry **IDLE**
Remarks N/A

:DLINK:SLOT[1] | 2 | 3 | 4:SCHannel:PSID

Supported All 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 preset hexadecimal value (when normal preset is selected) 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**
Remarks N/A

:DLINK:SLOT[1] | 2 | 3 | 4:SCHannel:UWORD

Supported All 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**
Remarks N/A

:DLINK:SLOT[1] | 2 | 3 | 4:STATe

Supported All 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**
Remarks N/A

:DLINK:SLOT[1] | 2 | 3 | 4:TCHannel:SACChannel

Supported All 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**
Remarks N/A

:DLINK:SLOT[1] | 2 | 3 | 4:TCHannel:UWORD

Supported All 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**
Remarks N/A

:DLINK:SLOT[1] | 2 | 3 | 4:TCHannel[:TCHannel]

Supported All 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 All 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.

***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 717.

:DLINK:SLOT[1] | 2 | 3 | 4[:TYPE]

Supported All 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**

Remarks N/A

:EDATa:DELAy

Supported All 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.

***RST** N/A

Range N/A

Key Entry N/A

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 All 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 703 to select EXT as the data clock type.

:EREFerence

Supported All 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 719 to enter the external reference frequency setting.

:EREFerence:VALue

Supported All with Option 402

Receiver Test Digital Commands (continued)
PHS Subsystem–Option 402 ([:SOURCE]:RADIO:PHS)

```
[:SOURCE]:RADIO:PHS:REFERENCE:VALUE <val>
[:SOURCE]:RADIO:PHS:REFERENCE: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 “[:REFERENCE](#)” on page 719 to select EXT (external source) as the reference for the bit-clock.

:FILTER

Supported All 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	All with Option 402
	<code>[:SOURCE] :RADio:PHS:IQ:SCALe <val></code> <code>[:SOURCE] :RADio:PHS:IQ:SCALe?</code>
	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	All with Option 402
	<code>[:SOURCE] :RADio:PHS:MODulation:FSK[:DEVIation] <val></code> <code>[:SOURCE] :RADio:PHS:MODulation:FSK[:DEVIation]?</code>
	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 723 .

Refer to “:SRATE” on page 727 for a list of the minimum and maximum symbol rate values.

To set an asymmetric FSK deviation value, refer to the *User’s Guide* for more information.

:MODulation:MSK[:PHASe]

Supported All 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 expressed in units of degrees.

***RST** +9.00000000E+001

Range 0–100

Key Entry **Phase Dev**

Remarks N/A

:MODulation:UFSK

Supported All 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.

***RST** N/A

Range N/A

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 723 to change the current modulation type.

Refer to “File Name Variables” on page 13 for information on the file name syntax.

:MODulation:UIQ

Supported All 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.

*RST	N/A
Range	N/A
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 723 to change the current modulation type. Refer to “File Name Variables” on page 13 for information on the file name syntax.

:MODulation[:TYPE]

Supported All 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|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	256QAM	User I/Q	User FSK				
Remarks	N/A							

:POLarity[:ALL]

Supported All 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.

Receiver Test Digital Commands (continued)
PHS Subsystem—Option 402 ([:SOURCE]:RADio:PHS)

INVerted	This choice inverts the internal Q signal.
*RST	NORM
Key Entry	Phase Polarity Normal Invert
Remarks	N/A

:SECOndary:RECall

Supported All with Option 402

[:SOURCE] :RADio:PHS:SECOndary:RECall

This command recalls the secondary frame configuration, overwriting the current state.

***RST** N/A

Range N/A

Key Entry **Recall Secondary Frame State**

Remarks To save a secondary frame state, refer to “:SECOndary:SAVE” on page 724.

A secondary frame is not active until the secondary state is enabled. To activate a secondary frame, refer to “:SECOndary[:STATE]” on page 725.

:SECOndary:SAVE

Supported All 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.

***RST** N/A

Range N/A

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 724.

:SECOndary:TRIGger[:SOURCE]

Supported All 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 730.		
BUS	This choice enables GPIB triggering using the *TRG or GET command or LAN and RS-232 triggering using the *TRG command.		
*RST	N/A		
Key Entry	Trigger Key	Ext	Bus
Remarks	N/A		

:SECondary[:STATe]

Supported All 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 724.

:SOUT

Supported All 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

Receiver Test Digital Commands (continued)
PHS Subsystem—Option 402 ([:SOURCE]:RADio:PHS)

	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
Remarks	N/A

:SOUT:OFFSet

Supported All 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 725](#).

:SOUT:SLOT

Supported All 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 725.

:SRATe

Supported All with Option 402

[:SOURCE]:RADio:PHS:SRATe <val>

[:SOURCE]:RADio:PHS:SRATe?

This command sets the transmission symbol rate.

The variable <val> is expressed in units of bits per second (bps–Mbps) and the maximum range value is dependent upon the source of data (internal or external), the modulation type, and filter.

***RST** +1.92000000E+005

Range

<i>Modulation Type</i>	<i>Bits per Symbol</i>	<i>Internal Data</i>	<i>External Serial Data</i>
BPSK	1	1–50 Msps	1–50 Msps
FSK2			
MSK			
C4FM	2	1–50 Msps	1–25 Msps
FSK4			
OQPSK			
OQPSK195			
P4QPPSK			
QAM4			
QPSK			
QPSKIS95			
QPSKISAT			
D8PSK			
EDGE			
FSK8			
PSK8			
FSK16	4	1–25 Msps	1–12.5 Msps
PSK16			
QAM16			
QAM32	5	1–20 Msps	1–10 Msps
QAM64	6	1–16.67 Msps	1–8.33 Msps
QAM256	7	1–12.50 Msps	1–6.25 Msps

Key Entry **Symbol Rate**

Remarks When user-defined filters are selected using the command in section “:FILTer” on page 720, the upper bit rate will be restricted in line with the following symbol rate restriction:

Receiver Test Digital Commands (continued)
PHS Subsystem–Option 402 ([:SOURce]:RADio:PHS)

- FIR filter length > 32 symbols: upper limit is 12.5 Msps
- FIR filter length > 16 symbols: upper limit is 25 Msps

When internal FIR filters are used, the limits of the above table always apply. For higher symbol rates, the FIR filter length will be truncated as follows:

- Above 12.5 Msps, the FIR length will be truncated to 32 symbols
- Above 25 Msps, the FIR length will be truncated to 16 symbols

This will impact the relative timing of the modulated data, as well as the actual filter response (see “:BRATe” on page 704).

A change in the symbol rate value will affect the bit rate value; refer to “:BRATe” on page 704 for a list of the minimum and maximum symbol

rate values.

To change the modulation type, refer to “:MODulation[:TYPE]” on page 723.

:TRIGger:TYPE

Supported All 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 728.

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**

Remarks N/A

:TRIGger:TYPE:CONTInuous[:TYPE]

Supported All with Option 402

```
[:SOURCE]:RADio:PHS:TRIGger:TYPE:CONTInuous[:TYPE] FREE|TRIGger|RESet
[:SOURCE]:RADio:PHS:TRIGger:TYPE:CONTInuous[:TYPE]?
```

This command customizes the continuous trigger selection.

FREE	This choice immediately transmits a framed data sequence that is continuously repeated.
TRIGger	This choice causes the framed data sequence to wait for a trigger. Once a trigger is received, the transmission of a continuously repeated framed data sequence begins.
RESet	This choice immediately restarts a continuously repeated framed data sequence upon receiving a trigger.
*RST	FREE
Key Entry	Free Run Trigger & Run Reset & Run
Remarks	To select CONTInuous as the trigger type, refer to “:TRIGger:TYPE” on page 728 .

:TRIGger:TYPE:GATE:ACTive

Supported All with Option 402

```
[:SOURCE]:RADio:PHS:TRIGger:TYPE:GATE:ACTive LOW|HIGH
[:SOURCE]:RADio:PHS:TRIGger:TYPE:GATE:ACTive?
```

This command toggles the polarity of the active state of the external gating input signal; GATE must be selected as the arb trigger type.

LOW	The sequence runs while the selected external control gating signal is low and restarts when the gate returns to the high level.
HIGH	The sequence runs while the selected external control gating signal is high and restarts when the gate returns to the low level.
*RST	HIGH
Key Entry	Gate Active Low High
Remarks	To select GATE as the ARB trigger type, refer to “:TRIGger:TYPE” on page 728 .

:TRIGger[:SOURCE]

Supported All with Option 402

```
[:SOURCE]:RADio:PHS:TRIGger[:SOURCE] KEY|EXT|BUS
[:SOURCE]:RADio:PHS:TRIGger[:SOURCE]?
```

Receiver Test Digital Commands (continued)
PHS Subsystem–Option 402 ([:SOURCE]:RADio:PHS)

This command sets the trigger source.

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 730.		
BUS	This choice enables GPIB triggering using the *TRG or GET command or LAN and RS-232 triggering using the *TRG command.		
*RST	KEY		
Key Entry	Trigger Key	Ext	Bus
Remarks	N/A		

:TRIGger[:SOURCE]:EXTeRnal[:SOURCE]

Supported All with Option 402

```
[ :SOURCE ] :RADio:PHS:TRIGger [ :SOURCE ] :EXTeRnal [ :SOURCE ] EPT1 |
EPT2 | EPTRIGGER1 | EPTRIGGER2
[ :SOURCE ] :RADio:PHS:TRIGger [ :SOURCE ] :EXTeRnal [ :SOURCE ] ?
```

This command specifies which PATT TRIG IN connection, rear panel connector or AUX I/O connector, will be used to accept an externally applied trigger signal.

EPT1	This choice is synonymous with EPTRIGGER1 and selects the PATT TRIG IN rear panel connector for the external signal connection.	
EPT2	This choice is synonymous with EPTRIGGER2 and selects the PATT TRIG IN 2 pin on the rear panel AUX I/O connector for the external signal connection.	
EPTRIGGER1	This choice is synonymous with EPT1 and selects the PATT TRIG IN rear panel connector for the external signal connection.	
EPTRIGGER2	This choice is synonymous with EPT2 and selects the PATT TRIG IN 2 pin on the rear panel AUX I/O connector for the external signal connection.	
*RST	EPT1	
Key Entry	Patt Trig In 1	Patt Trig In 2
Remarks	This command is effective only if an external trigger is selected as the trigger source. Refer to “:TRIGger[:SOURCE]” on page 729.	

For more information about the rear panel AUX I/O connector pin configuration, refer to the *User’s Guide*.

:TRIGger[:SOURCE]:EXTernal:DELay

Supported All with Option 402

```
[ :SOURCE ] :RADio:PHS:TRIGger [ :SOURCE ] :EXTernal:DELay <val>  
[ :SOURCE ] :RADio:PHS:TRIGger [ :SOURCE ] :EXTernal:DELay?
```

This command specifies the number of delay bits for the external trigger delay.

The variable <val> is expressed in bits.

***RST** +0

Range 0–1048576

Key Entry **Ext Delay Bits**

Remarks This command is effective only if an external trigger is selected as the trigger source. Refer to “:TRIGger[:SOURCE]” on page 729.

:TRIGger[:SOURCE]:EXTernal:DELay:STATe

Supported All 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.

***RST** 0

Key Entry **Ext Delay Off On**

Remarks This command is effective only if an external trigger is selected as the trigger source. Refer to “:TRIGger[:SOURCE]” on page 729.

:TRIGger[:SOURCE]:EXTernal:SLOPe

Supported All with Option 402

```
[ :SOURCE ] :RADio:PHS:TRIGger [ :SOURCE ] :EXTernal:SLOPe POSitive|NEGative  
[ :SOURCE ] :RADio:PHS:TRIGger [ :SOURCE ] :EXTernal:SLOPe?
```

This command sets the polarity of the external trigger.

***RST** NEG

Key Entry **Ext Polarity Neg Pos**

Remarks This command is effective only if an external trigger is selected as the trigger source. Refer to “:TRIGger[:SOURCE]” on page 729.

:ULINK:SLOT[1] | 2 | 3 | 4:CUSTOm

Supported All 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 All 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 All 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**
Remarks N/A

:ULINK:SLOT[1] | 2 | 3 | 4:SCHannel:CSID

Supported All 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**
Remarks N/A

:ULINK:SLOT[1] | 2 | 3 | 4:SCHannel:IDLE

Supported All 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** #H000000000
Range #H0–#H3FFFFFFFFF
Key Entry **IDLE**
Remarks N/A

:ULINK:SLOT[1] | 2 | 3 | 4:SCHannel:PSID

Supported All 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?

Receiver Test Digital Commands (continued)
PHS Subsystem—Option 402 ([:SOURce]:RADio:PHS)

This command changes the 28-bit personal station identification code (PSID) field in the synchronization channel of the selected uplink timeslot. The preset hexadecimal value (when normal preset is selected) for PSID reflects the PHS protocol, however you can enter a new value with this command.

***RST** #H0000001
Range #H0—#H3FFFFFFF
Key Entry **PSID**
Remarks N/A

:ULINK:SLOT[1] | 2 | 3 | 4:SCHannel:UWORD

Supported All 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**
Remarks N/A

:ULINK:SLOT[1] | 2 | 3 | 4:STATe

Supported All 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**
Remarks N/A

:ULINK:SLOT[1] | 2 | 3 | 4:TCHannel:SACChannel

Supported All 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
Remarks	N/A

:ULINK:SLOT[1]|2|3|4:TCHannel:UWORD

Supported All 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
Remarks	N/A

:ULINK:SLOT[1]|2|3|4:TCHannel[:TCHannel]

Supported All 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	

Receiver Test Digital Commands (continued)
PHS Subsystem—Option 402 ([:SOURce]:RADio:PHS)

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 All 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 All 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**

Remarks N/A

[:STATe]

Supported All 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 All 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 750.

:BBCLock

Supported All 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 All 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 750.

:BRATe

Supported All with Option 402

```
[:SOURce]:RADio:TETRa:BRATe <val>
[:SOURce]:RADio:TETRa:BRATe?
```

This command sets the bit rate.

The variable <val> is expressed in units of bits per second (bps–Mbps) and the maximum range value is dependent upon the source of data (internal or external), the modulation type, and filter.

***RST** +3.60000000E+004

Range	<i>Modulation Type</i>	<i>Bits per Symbol</i>	<i>Internal Data</i>	<i>External Serial Data</i>
	BPSK	1	1–50 Mbps	1–50 Mbps
	FSK2			
	MSK			
	C4FM	2	2–100 Mbps	2–50 Mbps
	FSK4			
	OQPSK			
	OQPSK195			
	P4QPPSK			
	QAM4			

Receiver Test Digital Commands (continued)
TETRA Subsystem—Option 402 ([:SOURCE]:RADio:TETRa)

Range

<i>Modulation Type</i>	<i>Bits per Symbol</i>	<i>Internal Data</i>	<i>External Serial Data</i>
QPSK	2	2–100 Mbps	2–50 Mbps
QPSKIS95			
QPSKISAT			
D8PSK	3	3–100 Mbps	3–50 Mbps
EDGE			
FSK8			
PSK8			
FSK16	4	4–100 Mbps	4–50 Mbps
PSK16			
QAM16			
QAM32	5	5–100 Mbps	5–50 Mbps
QAM64	6	6–100 Mbps	6–50 Mbps
QAM256	7	8–100 Mbps	8–50 Mbps

Key Entry

Symbol Rate

Remarks

When user-defined filters are selected using the command in section “:FILTer” on page 750, the upper bit rate will be restricted in line with the following symbol rate restriction:

- FIR filter length > 32 symbols: upper limit is 12.5 Msps
- FIR filter length > 16 symbols: upper limit is 25 Msps

When internal FIR filters are used, the limits of the above table always apply. For higher symbol rates, the FIR filter length will be truncated and will impact the relative timing of the modulated data, as well as the actual filter response (see “:SRATe” on page 772).

A change in the bit rate value will affect the symbol rate value; refer to “:SRATe” on page 772 for a list of the minimum and maximum symbol rate values.

To change the modulation type, refer to “:MODulation[:TYPE]” on page 753.

:BURSt:PN9

Supported

All 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 All 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 741 to enable the scrambling function.

:BURSt:SCRamble[:STATe]

Supported All 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 741.

:BURSt:SHAPe:FALL:DELay

Supported All with Option 402

Receiver Test Digital Commands (continued)
TETRA Subsystem—Option 402 ([:SOURCE]:RADio:TETRa)

```
[ :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.

***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 753. Refer to “[:SRATE]” on page 772 for a list of the minimum and maximum symbol rate values.

“[:BURSt:SHAPE:FDELay]” on page 743 performs the same function; in compliance with the SCPI standard, both commands are listed.

For concept information on burst shaping, refer to the *User’s Guide*.

:BURSt:SHAPE:FALL:TIME

Supported All 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 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 753. Refer to “[:SRATE]” on page 772 for a list of the minimum and maximum symbol rate values.

“:BURSt:SHAPe:FTIME” on page 743 performs the same function; in compliance with the SCPI standard, both commands are listed.

For concept information on burst shaping, refer to the *User’s Guide*.

:BURSt:SHAPe:FDElay

Supported All 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 753. Refer to “:SRATE” on page 772 for a list of the minimum and maximum symbol rate values.

“:BURSt:SHAPe:FALL:DElay” on page 741 performs the same function; in compliance with the SCPI standard, both commands are listed.

For concept information on burst shaping, refer to the *User’s Guide*.

:BURSt:SHAPe:FTIME

Supported All 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

Receiver Test Digital Commands (continued)
TETRA Subsystem—Option 402 ([:SOURce]:RADio:TETRa)

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 753. Refer to “:SRATE” on page 772 for a list of the minimum and maximum symbol rate values.</p> <p>“:BURSt:SHAPE:FALL:TIME” on page 742 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>User’s Guide</i>.</p>

:BURSt:SHAPE:RDElay

Supported	All with Option 402
	<pre>[:SOURce] :RADio:TETRa: BURSt:SHAPE:RDElay <val> [:SOURce] :RADio:TETRa: BURSt:SHAPE:RDElay?</pre>
	<p>This command sets the burst shape rise 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	–14.3750 to 99
Key Entry	Rise 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 753. Refer to “:SRATE” on page 772 for a list of the minimum and maximum symbol rate values.</p> <p>“:BURSt:SHAPE:RISE:DElay” on page 744 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>User’s Guide</i>.</p>

:BURSt:SHAPE:RISE:DElay

Supported	All 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 753. Refer to “:SRATE” on page 772 for a list of the minimum and maximum symbol rate values.

“:BURSt:SHAPe:RDELay” on page 744 performs the same function; in compliance with the SCPI standard, both commands are listed.

For concept information on burst shaping, refer to the *User’s Guide*.

:BURSt:SHAPe:RISE:TIME

Supported All 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**

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 753. Refer to “:SRATE” on page 772 for a list of the minimum and maximum symbol rate values.

“:BURSt:SHAPe:RTIME” on page 746 performs the same function; in compliance with the SCPI standard, both commands are listed.

For concept information on burst shaping, refer to the *User’s Guide*.

:BURSt:SHAPe:RTIME

Supported All 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 753. Refer to “:SRATE” on page 772 for a list of the minimum and maximum symbol rate values.

“:BURSt:SHAPe:RISE:TIME” on page 745 performs the same function;

in compliance with the SCPI standard, both commands are listed.

For concept information on burst shaping, refer to the *User’s Guide*.

:BURSt:SHAPe[:TYPE]

Supported All 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

Remarks N/A

:BURSt[:STATe]

Supported All 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

Remarks N/A

:CHANnel

Supported All 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

Receiver Test Digital Commands (continued)
TETRA Subsystem—Option 402 ([:SOURCE]:RADio:TETRa)

Remarks To change the current filter type, refer to “:FILTer” on page 750.

:DATA

Supported All with Option 402

```
[ :SOURCE ] :RADio:TETRa:DATA PN9 | PN11 | PN15 | PN20 | PN23 | FIX4 |
"<file name>" | EXT | P4 | P8 | P16 | P32 | P64
[ :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	8 1's & 8 0's	16 1's & 16 0's	16 1's & 16 0's	16 1's & 16 0's	32 1's & 32 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.

:DATA:FIX4

Supported All 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 748.

:DEFault

Supported All 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.

*RST	N/A
Range	N/A
Key Entry	Restore TETRA Factory Default
Remarks	N/A

:EDATa:DELaY

Supported All 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.

*RST	N/A
Range	N/A
Key Entry	N/A
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 All 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 738 to select EXT as the data clock type.

TETRA Subsystem—Option 402 ([:SOURCE]:RADio:TETRa)**:EREFerence**

Supported All 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 750 to enter the external reference frequency setting.

:EREFerence:VALue

Supported All 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 750 to select EXT (external source) as the reference for the bit-clock.

:FILTer

Supported All 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 All 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.

TETRA Subsystem—Option 402 ([:SOURce]:RADio:TETRa)

*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 All 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 753.
Refer to “:SRATe” on page 772 for a list of the minimum and maximum symbol rate values.
To set an asymmetric FSK deviation value, refer to the *User’s Guide* for more information.

:MODulation:MSK[:PHASe]

Supported All 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**

Remarks N/A

:MODulation:UFSK

Supported All 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.

***RST** N/A

Range N/A

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 753](#) to change the current modulation type.

Refer to [“File Name Variables” on page 13](#) for information on the file name syntax.

:MODulation:UIQ

Supported All 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.

***RST** N/A

Range N/A

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 753](#) to change the current modulation type.

Refer to [“File Name Variables” on page 13](#) for information on the file name syntax.

:MODulation[:TYPE]

Supported All with Option 402

```
[ :SOURCE ] :RADio:TETRa:MODulation[:TYPE] BPSK|QPSK|IS95QPSK|  
GRAYQPSK|OQPSK|IS95OQPSK|P4DQPSK|PSK8|PSK16|D8PSK|MSK|FSK2|FSK4|
```

Receiver Test Digital Commands (continued)
TETRA Subsystem—Option 402 ([:SOURCE]:RADIO:TETRA)

FSK8 | FSK16 | C4FM | QAM4 | QAM16 | QAM32 | QAM64 | 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	256QAM	User I/Q	User FSK				
Remarks	N/A							

:POLarity[:ALL]

Supported All 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
Remarks	N/A

:SECondary:RECall

Supported All with Option 402
[:SOURCE]:RADIO:TETRA:SECondary:RECall

This command recalls the secondary frame configuration, overwriting the current state.

*RST	N/A
Range	N/A
Key Entry	Recall Secondary Frame State
Remarks	To save a secondary frame state, refer to “:SECondary:SAVE” on page 755. A secondary frame is not active until the secondary state is enabled. To activate a secondary frame, refer to “:SECondary[:STATe]” on page 755.

:SECondary:SAVE

Supported All with Option 402

[:SOURce]:RADio:TETRa:SECondary:SAVE

This command saves the current frame configuration as the secondary frame with the filename TETRa_SECONDARY_FRAME.

***RST** N/A

Range N/A

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 754.

:SECondary:TRIGger[:SOURce]

Supported All 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 776.

BUS This choice enables GPIB triggering using the *TRG or GET command or LAN and RS-232 triggering using the *TRG command.

***RST** N/A

Key Entry **Trigger Key Ext Bus**

Remarks N/A

:SECondary[:STATe]

Supported All 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.

Receiver Test Digital Commands (continued)
TETRA Subsystem—Option 402 (:SOURce):RADio:TETRa)

***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 755](#).

:SLOT[1]|2|3|4:DCCustom

Supported All 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 All 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

Range #B0000–#B1111 or 0–15

Key Entry **FIX4**

Remarks FIX4 must already be defined as the data type.

:DCNormal:B1

Supported All 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**

Remarks N/A

:DCNormal:B2

Supported All 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**

Remarks N/A

:SLOT[1]|2|3|4:DCNormal:TSEquence

Supported All 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 All 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 All 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.

:SLOT[1] | 2 | 3 | 4:DCSync:B

Supported All 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**
Remarks N/A

:SLOT[1]|2|3|4:DCSync:FCOR

Supported All 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–#HFFFFFFFFFFFFFFFFFFFFF
Key Entry **FCOR**
Remarks N/A

:SLOT[1]|2|3|4:DCSync:SSB

Supported All 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–#HFFFFFFFFFFFFFFFFFFFFFFFFF
Key Entry **SSB**
Remarks N/A

:SLOT[1]|2|3|4:DCSync:STS

Supported All 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.

Receiver Test Digital Commands (continued)
TETRA Subsystem—Option 402 ([:SOURce]:RADio:TETRa)

***RST** #H30673A7067
Range #H0–#H3FFFFFFFFF
Key Entry **STS**
Remarks N/A

:SLOT[1]|2|3|4:DCSync[:DATA]

Supported All with Option 402

[:SOURce] :RADio:TETRa:SLOT[1]|2|3|4:DCSync[:DATA] PN9|PN11|
 PN15|PN20|PN23FIX4|"<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 All 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
Key Entry **FIX4**
Remarks FIX4 must already be defined as the data type.

:SLOT[1]|2|3|4:DDCustom

Supported All 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 All 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 All 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
Remarks	N/A

:SLOT[1]|2|3|4:DDNormal:B2

Supported All 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**

Remarks N/A

:SLOT[1]|2|3|4:DDNormal:TSEquence

Supported All 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.

:SLOT[1]|2|3|4:DDNormal[:DATA]

Supported All 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	8 1's & 8 0's	16 1's & 16 0's	16 1's & 16 0's	16 1's & 16 0's	32 1's & 32 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 All 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 All 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**

Remarks N/A

:SLOT[1]|2|3|4:DDSync:FCOR

Supported All 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.

Receiver Test Digital Commands (continued)
TETRA Subsystem—Option 402 ([:SOURce]:RADio:TETRa)

***RST** #HFF0000000000000000FF
Range #H0—#HFFFFFFFFFFFFFFFFFFFFF
Key Entry **FCOR**
Remarks N/A

:SLOT[1]|2|3|4:DDSync:SSB

Supported All 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—#HFFFFFFFFFFFFFFFFFFFFF
Key Entry **SSB**
Remarks N/A

:SLOT[1]|2|3|4:DDSync:STS

Supported All 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**
Remarks N/A

:SLOT[1]|2|3|4:DDSync[:DATA]

Supported All 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 All 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 758.

:SLOT[1]|2|3|4:POWer

Supported All 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
Remarks	N/A

:SLOT[1]|2|3|4:STATe

Supported All 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 All 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**

Remarks N/A

:SLOT[1]|2|3|4:UC1[:DATA]

Supported All 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 All 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**

Remarks N/A

:SLOT[1]|2|3|4:UC2:TSEquence

Supported All 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**

Remarks N/A

:SLOT[1]|2|3|4:UC2[:DATA]

Supported All 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	

Receiver Test Digital Commands (continued)
TETRA Subsystem—Option 402 ([:SOURce]:RADio:TETRa)

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 All 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**
Remarks N/A

:SLOT[1]|2|3|4:UCUStom

Supported All 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

Remarks Refer to “File Name Variables” on page 13 for information on the file name syntax.

:SLOT[1]|2|3|4:UCUStom:FIX4

Supported All 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 selected uplink custom data field to FIX4 (4-bit repeating sequence data

pattern).

***RST** #B0000
Range #B0000–#B1111 or 0–15
Key Entry **FIX4**
Remarks N/A

:SLOT[1]|2|3|4:UNORmal:TSEquence

Supported All 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, the data fields are scrambled as separate logical channels.

:SLOT[1]|2|3|4:UNORmal[:DATA]

Supported All 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 All 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**
Remarks N/A

:SLOT[1]|2|3|4[:TYPE]

Supported All 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

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 All 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 To change the synchronization output offset value, refer to “[:SOUT:OFFSet](#)” on [page 771](#).

:SOUT:OFFSet

Supported All 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.

TETRA Subsystem—Option 402 ([:SOURce]:RADio:TETRa)

*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 771.

:SOUT:SLOT

Supported	All 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 771.

:SRATe

Supported	All with Option 402
	[:SOURce] :RADio:TETRa:SRATe <val>
	[:SOURce] :RADio:TETRa:SRATe?

This command sets the transmission symbol rate.

The variable <val> is expressed in units of bits per second (bps–Mbps) and the maximum range value is dependent upon the source of data (internal or external), the modulation type, and filter.

***RST** +1.80000000E+004

Range	<i>Modulation Type</i>	<i>Bits per Symbol</i>	<i>Internal Data</i>	<i>External Serial Data</i>
	BPSK	1	1–50 Msps	1–50 Msps
	FSK2			
	MSK			
	C4FM	2	1–50 Msps	1–25 Msps
	FSK4			
	OQPSK			
	OQPSK195			
	P4QPPSK			
	QAM4			
	QPSK			
	QPSKIS95			
	QPSKISAT			
D8PSK	3	1–33.33 Msps	1–16.67 Msps	
EDGE				
FSK8				
PSK8				
FSK16	4	1–25 Msps	1–12.5 Msps	
PSK16				
QAM16				
QAM32	5	1–20 Msps	1–10 Msps	
QAM64	6	1–16.67 Msps	1–8.33 Msps	
QAM256	7	1–12.50 Msps	1–6.25 Msps	

Key Entry

Symbol Rate

Remarks

When user-defined filters are selected using the command in section “:FILTer” on page 750, the upper bit rate will be restricted in line with the following symbol rate restriction:

- FIR filter length > 32 symbols: upper limit is 12.5 Msps
- FIR filter length > 16 symbols: upper limit is 25 Msps

When internal FIR filters are used, the limits of the above table always apply. For higher symbol rates, the FIR filter length will be truncated as follows:

- Above 12.5 Msps, the FIR length will be truncated to 32 symbols
- Above 25 Msps, the FIR length will be truncated to 16 symbols

This will impact the relative timing of the modulated data, as well as the actual filter response (see “:BRATe” on page 739).

A change in the symbol rate value will affect the bit rate value; refer to “:BRATe”

on page 739 for a list of the minimum and maximum bit rate values.
 To change the modulation type, refer to “:MODulation[:TYPE]” on page 753.

:TRIGger:TYPE

Supported All 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 774.
- 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**

Remarks N/A

:TRIGger:TYPE:CONTInuous[:TYPE]

Supported All with Option 402

```
[:SOURce]:RADio:TETRa:TRIGger:TYPE:CONTInuous[:TYPE] FREE |
TRIGger | RESet
[:SOURce]:RADio:TETRa:TRIGger:TYPE:CONTInuous[:TYPE]?
```

This command customizes the continuous trigger selection.

- FREE** This choice immediately transmits a framed data sequence that is continuously repeated.
- TRIGger** This choice causes the framed data sequence to wait for a trigger. Once a trigger is received, the transmission of a continuously repeated framed data sequence begins.
- RESet** This choice immediately restarts a continuously repeated framed data sequence upon receiving a trigger.

*RST	FREE
Key Entry	Free Run Trigger & Run Reset & Run
Remarks	To select CONTinuous as the trigger type, refer to “:TRIGger:TYPE” on page 774 .

:TRIGger:TYPE:GATE:ACTive

Supported All with Option 402

```
[ :SOURce ] :RADio:TETRa:TRIGger:TYPE:GATE:ACTive LOW|HIGH
[ :SOURce ] :RADio:TETRa:TRIGger:TYPE:GATE:ACTive?
```

This command toggles the polarity of the active state of the external gating input signal; GATE must be selected as the arb trigger type.

LOW The sequence runs while the selected external control gating signal is low and restarts when the gate returns to the high level.

HIGH The sequence runs while the selected external control gating signal is high and restarts when the gate returns to the low level.

***RST** HIGH

Key Entry **Gate Active Low High**

Remarks To select GATE as the ARB trigger type, refer to “:TRIGger:TYPE” on [page 774](#).

:TRIGger[:SOURce]

Supported All with Option 402

```
[ :SOURce ] :RADio:TETRa:TRIGger [ :SOURce ] KEY|EXT|BUS
[ :SOURce ] :RADio:TETRa:TRIGger [ :SOURce ] ?
```

This command sets the trigger source.

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 776](#).

BUS This choice enables GPIB triggering using the *TRG or GET command or LAN and RS-232 triggering using the *TRG command.

***RST** KEY

Key Entry **Trigger Key Ext Bus**

Remarks N/A

:TRIGger[:SOURCE]:EXTernal[:SOURCE]

Supported All with Option 402

```
[ :SOURCE ] :RADio:TETRa:TRIGger [ :SOURCE ] :EXTernal [ :SOURCE ] EPT1 |
EPT2 | EPTRIGGER1 | EPTRIGGER2
[ :SOURCE ] :RADio:TETRa:TRIGger [ :SOURCE ] :EXTernal [ :SOURCE ] ?
```

This command specifies which PATT TRIG IN connection, rear panel connector or AUX I/O connector, will be used to accept an externally applied trigger signal.

EPT1 This choice is synonymous with EPTRIGGER1 and selects the PATT TRIG IN rear panel connector for the external signal connection.

EPT2 This choice is synonymous with EPTRIGGER2 and selects the PATT TRIG IN 2 pin on the rear panel AUX I/O connector for the external signal connection.

EPTRIGGER1 This choice is synonymous with EPT1 and selects the PATT TRIG IN rear panel connector for the external signal connection.

EPTRIGGER2 This choice is synonymous with EPT2 and selects the PATT TRIG IN 2 pin on the rear panel AUX I/O connector for the external signal connection.

***RST** EPT1

Key Entry **Patt Trig In 1** **Patt Trig In 2**

Remarks This command is effective only if an external trigger is selected as the trigger source. Refer to “:TRIGger[:SOURCE]” on page 775.

For more information about the rear panel AUX I/O connector pin configuration, refer to the *User’s Guide*.

:TRIGger[:SOURCE]:EXTernal:DELay

Supported All with Option 402

```
[ :SOURCE ] :RADio:TETRa:TRIGger [ :SOURCE ] :EXTernal:DELay <val>
[ :SOURCE ] :RADio:TETRa:TRIGger [ :SOURCE ] :EXTernal:DELay?
```

This command specifies the number of delay bits for the external trigger delay.

The variable <val> is expressed in bits.

***RST** +0

Range 0–1048576

Key Entry **Ext Delay Bits**

Remarks This command is effective only if an external trigger is selected as the trigger source. Refer to “:TRIGger[:SOURce]” on page 775.

:TRIGger[:SOURce]:EXTernal:DELay:STATe

Supported All 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.

***RST** 0

Key Entry Ext Delay Off On

Remarks This command is effective only if an external trigger is selected as the trigger source. Refer to “:TRIGger[:SOURce]” on page 775.

:TRIGger[:SOURce]:EXTernal:SLOPe

Supported All with Option 402

```
[ :SOURce ] :RADio:TETRa:TRIGger [ :SOURce ] :EXTernal:SLOPe POSitive|NEGative  
[ :SOURce ] :RADio:TETRa:TRIGger [ :SOURce ] :EXTernal:SLOPe?
```

This command sets the polarity of the external trigger.

***RST** NEG

Key Entry Ext Polarity Neg Pos

Remarks This command is effective only if an external trigger is selected as the trigger source. Refer to “:TRIGger[:SOURce]” on page 775.

[:STATe]

Supported All 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

TETRA Subsystem—Option 402 ([:SOURce]:RADio:TETRa)

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 All 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 779 for the EXT clock rate selections.

:BBClock:EXT:RATE

Supported All 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 All with Option 400

Wideband CDMA Base Band Generator Subsystem—Option 400 ([:SOURce]:RADio:WCDMa:TGPP[:BBG])

```
[: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.

*RST	N/A
Range	N/A
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 All 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
Remarks	N/A

:DLINK:AWGN:CPower

Supported All 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
Range	N/A
Field Entry	C Power
Remarks	N/A

:DLINK:AWGN:ECNO

Supported All with Option 400 and 403

Wideband CDMA Base Band Generator Subsystem—Option 400 ([:SOURCE]:RADIO:WCDMA:TGPP[:BBG])

```
[: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
Remarks	N/A

:DLINK:AWGN:ECRPower

Supported All 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
Range	N/A
Field Entry	Ec Ref Power
Remarks	N/A

:DLINK:AWGN:ECRef

Supported All 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.

Wideband CDMA Base Band Generator Subsystem—Option 400 ([:SOURce]:RADio:WCDMa:TGPP[:BBG])

*RST	DPCH1
Key Entry	DPCH + 1 DPCH + 2 PCCPCH PICH CPICH
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	All 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
Range	N/A
Key Entry	N/A
Remarks	N/A

:DLINK:AWGN:NPower

Supported	All 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
Range	N/A
Key Entry	N/A
Remarks	N/A

:DLINK:AWGN:TTPower

Supported	All with Option 400 and 403
	[:SOURce] :RADio:WCDMa:TGPP [:BBG] :DLINK:AWGN:TTPower?
	This query returns the in-channel total power of the RF signal.
*RST	+0
Range	N/A
Field Entry	Total Pwr

Wideband CDMA Base Band Generator Subsystem—Option 400 ([:SOURCE]:RADIO:WCDMA:TGPP[:BBG])

Remarks N/A

:DLINK:AWGN[:STATe]

Supported All 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**

Remarks N/A

:DLINK:BBClock

Supported All 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**

Remarks N/A

:DLINK:CARB:CMODE:CCODE

Supported All 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

Remarks N/A

:DLINK:CARB:CMODE:DATA**Supported** All 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 data pattern for the dedicated physical channel (DPCH) 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** All 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**Remarks** N/A**:DLINK:CARB:CMODE:FSTRuct*Supported** All 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])

Remarks N/A

:DLINK:CARB:CMODE:POWER

Supported All 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

Remarks N/A

:DLINK:CARB:CMODE:PRATIO

Supported All 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 uncompressed (normal) DPCH frames. The 30 frames will be played and then 1 compressed DPCH frame. The sequence then repeats.

:DLINK:CARB:CMODE:SCTYPE

Supported All with Option 400

```
[ :SOURCE ] :RADIO:WCDMA:TGPP [ :BBG ] :DLINK:CARB:CMODE:
SCTYPE NORMAL | RIGHT | LEFT
[ :SOURCE ] :RADIO:WCDMA:TGPP [ :BBG ] :DLINK:CARB:CMODE:SCTYPE?
```

Wideband CDMA Base Band Generator Subsystem—Option 400 ([:SOURCE]:RADio:WCDMa:TGPP[:BBG])

This command sets the scramble type for the downlink compressed mode.

NORMAL	This choice selects scramble codes 0–8191 (16 x 511 + 15 = 8191).		
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
Remarks	N/A		

:DLINK:CARB:CMODE:SFORmat

Supported All 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
Remarks	N/A

:DLINK:CARB:CMODE:SSCodeos

Supported All 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
Remarks	N/A

Wideband CDMA Base Band Generator Subsystem—Option 400 ([:SOURCE]:RADIO:WCDMA:TGPP[:BBG])**:DLINK:CARB:CMODE:TFIRST****Supported** All 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

Remarks N/A

:DLINK:CARB:CMODE:TGL**Supported** All 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

Remarks N/A

:DLINK:CARB:CMODE[:STATE]**Supported** All 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

Remarks N/A

:DLINK:CPICH:CCODE**Supported** All 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**Range** N/A**Key Entry** N/A**Remarks** The channelization code is always expected to be 0.**:DLINK:CPICH:POWER*Supported** All 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**Remarks** N/A**:DLINK:CPICH[:STATE]*Supported** All 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**Remarks** N/A

Wideband CDMA Base Band Generator Subsystem—Option 400 ([:SOURCE]:RADio:WCDMa:TGPP[:BBG])**:DLINK:CRATe**

Supported All 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** +3.8400000E+006

Range 1000∠4250000

Field Entry Chip Rate

Remarks The chip rate is equivalent to the spreading rate.

:DLINK:DPCH[1]:BALance

Supported All 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).

***RST** N/A

Range N/A

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 796 and “:DLINK:OCNS[1]2|3|4|5|6|7|8|9|10|11|12|13|14|15|16[:STATe]” on page 802.

The command [:SOURCE]:RADio:WCDMa:TGPP[:BBG]:DLINK:DPCH[1]:BINitialize must be initiated prior to channel balancing.

:DLINK:DPCH[1]:BINitialize

Supported All with Option 400

```
[ :SOURCE ] :RADio:WCDMa:TGPP [ :BBG ] :DLINK:DPCH[1]:BINitialize
```

This command initializes the DPCH1 or DPCH2 power of the OCNS channel balancing.

Wideband CDMA Base Band Generator Subsystem—Option 400 ([:SOURce]:RADio:WCDMa:TGPP[:BBG])

*RST	N/A
Range	N/A
Key Entry	N/A
Remarks	To insure proper balancing, this command must be called before the channel balancing.

:DLINK:DPCH[1] | 2:ALL[:STATe]

Supported All 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.

***RST** N/A

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 779.

To query the state of the individual channel, refer to “[:DLINK:DPCH\[1\]|2\[:STATe\]](#)” on page 796

:DLINK:DPCH[1] | 2:CCODE

Supported All 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 793 and “[:DLINK:DPCH\[1\]|2:SRATE](#)” on page 793.

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 779.

Wideband CDMA Base Band Generator Subsystem—Option 400 ([:SOURCE]:RADIO:WCDMA:TGPP[:BBG])

:DLINK:DPCH[1]|2:DATA**Supported** All 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).

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 779.

:DLINK:DPCH[1]|2:DATA:FIX4**Supported** All 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 units.

***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 779.

:DLINK:DPCH[1] | 2:POWer

Supported All 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

Remarks N/A

:DLINK:DPCH[1] | 2:RCSetup

Supported All 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 configures the downlink reference measurement setup for the transport channel.

REF122 This choice configures the transport channel per the 3G TS 34.121 specification to a downlink reference measurement channel 12.2 kbps rate.

REF64 This choice configures the transport channel per the 3G TS 34.121 specification to a downlink reference measurement channel 64 kbps rate.

REF144 This choice configures the transport channel per the 3G TS 34.121 specification to a downlink reference measurement channel 144 kbps rate.

REF384 This choice configures the transport channel per the 3G TS 34.121 specification to a downlink reference measurement channel 384 kbps rate.

AMR122 This choice configures the transport channel per the 3G TS 25.944 specification to a downlink reference measurement channel AMR 12.2 kbps rate.

Wideband CDMA Base Band Generator Subsystem—Option 400 ([:SOURCE]:RADIO:WCDMA:TGPP[:BBG])

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.			
*RST	N/A			
Key Entry	12.2 kbps (34.121 v3.10)	64 kbps (34.121 v3.10)	144 kbps (34.121 v3.10)	384 kbps (34.121 v3.10)
	AMR 12.2 (25.944 v4.1)	UDI ISDN (25.944 v4.1)		
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 779 .			

:DLINK:DPCH[1] | 2:SLOTformat

Supported All 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 779](#).

:DLINK:DPCH[1] | 2:SRATe

Supported All 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

Wideband CDMA Base Band Generator Subsystem—Option 400 ([:SOURCE]:RADio:WCDMa:TGPP[:BBG])

Range:	N/A
Key Entry	N/A
Remarks	N/A

:DLINK:DPCH[1]|2:SSCodeos

Supported All 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

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 779](#).

:DLINK:DPCH[1]|2:TFCI:PATtern

Supported All 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 779.

:DLINK:DPCH[1] | 2:TOFFset

Supported All 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 779.

:DLINK:DPCH[1] | 2:TPC:NUMSteps

Supported All 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” on page 796

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 779.

:DLINK:DPCH[1] | 2:TPC:PATtern**Supported** All 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.

***RST** UDOW**Key Entry** All Down All Up Down/Up Up/Down Ext 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 779](#).

:DLINK:DPCH[1] | 2[:STATe]**Supported** All 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 779](#).

:DLINK:FILTer**Supported** All with Option 400

[:SOURCE]:RADio:WCDMa:TGPP[:BBG]:DLINK:FILTer RNYQuist | NYQuist | GAUSSian |

Wideband CDMA Base Band Generator Subsystem—Option 400 ([:SOURCE]:RADio:WCDMa:TGPP[:BBG])

```
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.												
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	<table> <thead> <tr> <th>Root Nyquist</th> <th>Nyquist</th> <th>Gaussian</th> <th>Rectangle</th> <th>IS-95</th> <th>IS-95 w/EQ</th> </tr> </thead> <tbody> <tr> <td>IS-95 Mod</td> <td>IS-95 Mod w/EQ</td> <td>APCO 25 C4FM</td> <td>UN3/4 GSM Gaussian</td> <td></td> <td></td> </tr> </tbody> </table>	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		
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.												

:DLINK:FILTer:ALPHA

Supported All 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

Wideband CDMA Base Band Generator Subsystem—Option 400 ([:SOURce]:RADio:WCDMa:TGPP[:BBG])

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 796.

:DLINK:FILTer:BBT

Supported All 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 selection of a Gaussian filter; it does not affect other types of filters. To change the current filter type, refer to “:DLINK:FILTer” on page 796.

:DLINK:FILTer:CHANnel

Supported All 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 796.

Wideband CDMA Base Band Generator Subsystem—Option 400 ([:SOURCE]:RADio:WCDMa:TGPP[:BBG])**:DLINK:MSYNc****Supported** All 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.

***RST** N/A**Range** N/A**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** All 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 802.

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

Wideband CDMA Base Band Generator Subsystem—Option 400 ([:SOURce]:RADio:WCDMa:TGPP[:BBG])

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 800.

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

Supported All 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
Remarks	N/A

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

Supported All 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).

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

*RST	–1.200000000E+001
Range	–40 to 0
Field Entry	Power
Remarks	N/A

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

Supported All with Option 400

Wideband CDMA Base Band Generator Subsystem—Option 400 ([:SOURCE]:RADio:WCDMa:TGPP[:BBG])

```
[ :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 799.

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

Supported All 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
Remarks	N/A

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

Supported All 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.

Wideband CDMA Base Band Generator Subsystem—Option 400 ([:SOURCE]:RADIO:WCDMA:TGPP[:BBG])

***RST** +0
Range: 0–149
Field Entry tOCNS Offset
Remarks N/A

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

Supported All 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
Remarks N/A

:DLINK:OOSTest[:STATE]

Supported All 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 All with Option 400 and 403

```
[:SOURCE]:RADIO:WCDMA:TGPP[:BBG]:DLINK:OOSTest:DTXGate:
POLarity POSitive|NEGative
```

Wideband CDMA Base Band Generator Subsystem—Option 400 ([:SOURCE]:RADio:WCDMa:TGPP[:BBG])

```
[: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**

Remarks N/A

:DLINK:PADJust

Supported All 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**

Remarks N/A

:DLINK:PCCPch:BCHData

Supported All 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**

Remarks N/A

:DLINK:PCCPch:BCHData:FIX4

Supported All 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 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 units.

***RST** #B0000

Range 0–15

Key Entry **FIX4**

Remarks N/A

:DLINK:PCCPch:CCODE

Supported All 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

Remarks N/A

:DLINK:PCCPch:POWer

Supported All 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).

Wideband CDMA Base Band Generator Subsystem—Option 400 ([:SOURCE]:RADIO:WCDMA:TGPP[:BBG])

***RST** -5.30000000E+000
Range -40 to 0
Field Entry Power
Remarks N/A

:DLINK:PCCPch[:STATE]

Supported All 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**
Remarks N/A

:DLINK:PICH:CCODE

Supported All 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
Remarks N/A

:DLINK:PICH:DATA

Supported All 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).

Wideband CDMA Base Band Generator Subsystem—Option 400 ([:SOURce]:RADio:WCDMa:TGPP[:BBG])

"<file name>"	This variable specifies a data pattern that has been stored in memory.		
*RST	PN9		
Key Entry	PN9	PN15	FIX4 User File
Remarks	N/A		

:DLINK:PICH:DATA:FIX4

Supported All 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 units.

*RST	#B0000
Range	0–15
Key Entry	FIX4
Remarks	N/A

:DLINK:PICH:PIBits

Supported All 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
Range	N/A
Field Entry	PI Bits
Remarks	N/A

:DLINK:PICH:PINDicator

Supported All with Option 400

```
[ :SOURce ] :RADio:WCDMa:TGPP [ :BBG ] :DLINK:PICH:PINDicator?
```

This query returns the number of paging indicator fields per frame.

Wideband CDMA Base Band Generator Subsystem—Option 400 ([:SOURCE]:RADIO:WCDMA:TGPP[:BBG])

*RST	+144
Range	N/A
Field Entry	Paging Indicator
Remarks	N/A

:DLINK:PICH:POWer

Supported All 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
Remarks	N/A

:DLINK:PICH[:STATe]

Supported All 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
Remarks	N/A

:DLINK:POLarity

Supported All with Option 400

```
[ :SOURCE ] :RADio:WCDMa:TGPP [ :BBG ] :DLINK:POLarity NORMAL | INVverted
[ :SOURCE ] :RADio:WCDMa:TGPP [ :BBG ] :DLINK:POLarity?
```

This command selects the phase polarity of the downlink signal.

Wideband CDMA Base Band Generator Subsystem—Option 400 ([:SOURce]:RADio:WCDMa:TGPP[:BBG])

NORMAL	This choice selects normal polarity.
INVERTed	This choice inverts the internal Q signal.
*RST	NORM
Key Entry	Phase Polarity Normal Invert
Remarks	N/A

:DLINK:PSCH:POWer

Supported All 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

Remarks N/A

:DLINK:PSCH[:STATe]

Supported All 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

Remarks N/A

:DLINK:RPANel:INPut:ALTPower

Supported All with Option 400

```
[ :SOURce ] :RADio:WCDMa:TGPP [ :BBG ] :DLINK:RPANel:INPut:ALTPower?
```

Wideband CDMA Base Band Generator Subsystem—Option 400 ([:SOURCE]:RADIO:WCDMA:TGPP[:BBG])

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

Key Entry N/A

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 User's Guide.

:DLINK:RPANEL:INPUT:BBGRef

Supported All 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

Key Entry N/A

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 User's Guide.

:DLINK:RPANEL:INPUT:BGATE

Supported All 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

Key Entry N/A

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 All with Option 400

Wideband CDMA Base Band Generator Subsystem—Option 400 ([:SOURCE]:RADIO:WCDMA:TGPP[:BBG])

[: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**Key Entry** N/A

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.

:DLINK:RPANEL:INPUT:PTRIGGER2**Supported** All 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**Key Entry** N/A

Remarks Transmit Power Control Bit (TPCB) signal is used to control the DPCH TPC bit.

:DLINK:RPANEL:OUTPUT:DCLOCK**Supported** All 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 8-1 on page 811](#) for command parameters for the variable and output signal

names.

Table 8-1 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
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

Table 8-1 Downlink Rear Panel Signal (DRPS) Output Type

Command Parameter	Signal Out
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

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 User's Guide.

:DLINK:RPANel:OUTPut:DOUT**Supported**

All 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 |
```


Wideband CDMA Base Band Generator Subsystem—Option 400 ([:SOURCE]:RADIO:WCDMA:TGPP[:BBG])

DRPS36 | DRPS37 | DRPS38 | DRPS39 | DRPS40 | DRPS41 | DRPS42
 [:SOURCE]:RADIO:WCDMA:TGPP[:BBG]:DLINK:RPAne1: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 8-1 on page 811](#) for command parameters and output signal names.

***RST** RPS0

Key Entry Refer to **Key Entry** on [page 812](#).

Remarks For more information about the rear panel connector configurations, refer to "Signal Generator Overview" in the User's Guide.

:DLINK:RPAne1:OUTPut:EVENT1

Supported All with Option 400

[:SOURCE]:RADIO:WCDMA:TGPP[:BBG]:DLINK:RPAne1: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:RPAne1:OUTPut:EVENT1?

This command assigns a signal to the EVENT 1 rear panel output connector. Refer to [Table 8-1 on page 811](#) for command parameters and output signal names.

***RST** RPS0

Key Entry Refer to **Key Entry** on [page 812](#).

Remarks For more information about the rear panel connector configurations, refer to "Signal Generator Overview" in the User's Guide.

:DLINK:RPAne1:OUTPut:EVENT2

Supported All with Option 400

[:SOURCE]:RADIO:WCDMA:TGPP[:BBG]:DLINK:RPAne1: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:RPAne1:OUTPut:EVENT2?

This command assigns a signal to the EVENT 2 rear panel output connector. Refer to [Table 8-1 on page 811](#) for command parameters and output signal names.

***RST** RPS0

Wideband CDMA Base Band Generator Subsystem—Option 400 ([:SOURce]:RADio:WCDMa:TGPP[:BBG])

Key Entry	Refer to Key Entry on page 812 .
Remarks	For more information about the rear panel connector configurations, refer to "Signal Generator Overview" in the User's Guide.

:DLINK:RPANel:OUTPut:EVENT3

Supported All with Option 400

```
[ :SOURce ] :RADio:WCDMa:TGPP [ :BBG ] :DLINK:RPANel:OUTPut:EVENT3
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:EVENT3?
```

This command assigns a signal to the EVENT 3 at the selected rear panel AUX I/O connector pin#19. Refer to [Table 8-1 on page 811](#) for command parameters and output signal names.

***RST** RPS0

Key Entry Refer to **Key Entry** on [page 812](#).

Remarks For more information about the rear panel connector configurations, refer to "Signal Generator Overview" in the User's Guide.

:DLINK:RPANel:OUTPut:EVENT4

Supported All 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 8-1 on page 811](#) for command parameters and output signal names.

***RST** RPS0

Key Entry Refer to **Key Entry** on [page 812](#).

Remarks For more information about the rear panel connector configurations, refer to "Signal Generator Overview" in the User's Guide.

:DLINK:RPANel:OUTPut:SSYNc

Supported All with Option 400

Wideband CDMA Base Band Generator Subsystem—Option 400 ([:SOURCE]:RADIO:WCDMA:TGPP[:BBG])

```
[:SOURCE]:RADIO:WCDMA:TGPP[:BBG]:DLINK:RPAne1: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:RPAne1: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 8-1 on page 811](#) for command parameters and output signal names.

***RST** RPS0

Key Entry Refer to **Key Entry** on [page 812](#).

Remarks For more information about the rear panel connector configurations, refer to "Signal Generator Overview" in the User's Guide.

:DLINK:SCH[:STATe]

Supported All 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 808](#) and [“:DLINK:SSCH\[:STATe\]” on page 817](#).

:DLINK:SCRamblecode

Supported All 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

Remarks N/A

:DLINK:SDElay**Supported** All 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** All 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**Remarks** N/A**:DLINK:SSCH:SSGRoup*Supported** All with Option 400

[:SOURCE]:RADIO:WCDMA:TGPP[:BBG]:DLINK:SSCH:SSGRoup?

This command query returns the secondary scramble code group for the secondary synchronization

Wideband CDMA Base Band Generator Subsystem—Option 400 ([:SOURCE]:RADio:WCDMa:TGPP[:BBG])

channel (SSCH).

*RST	+0
Range	N/A
Field Entry	SSCH 2nd Scramble Group
Remarks	N/A

:DLINK:SSCH[:STATE]

Supported All 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
Remarks	N/A

:DLINK:TStatus:COMPRESSED

Supported All with Option 400

[:SOURCE] :RADio:WCDMa:TGPP [:BBG] :DLINK:TStatus:COMPRESSED?

This query returns the status of the compressed mode pattern generation.

0	indicates the compressed mode pattern signal is not generating
1	indicates the compressed mode pattern signal is generating

*RST	0
Range	N/A
Key Entry	N/A
Remarks	N/A

:DLINK:TSETup

Supported All 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.

Wideband CDMA Base Band Generator Subsystem—Option 400 ([:SOURce]:RADio:WCDMa:TGPP[:BBG])

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.			
*RST	N/A			
Key Entry	Ref Sensitivity	Max Input	ACS	Blocking
	Spurious Response	Intermod	Performance Req	
Remarks	N/A			

:DLINK:TGAP:POFFset

Supported All 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

Wideband CDMA Base Band Generator Subsystem—Option 400 ([:SOURce]:RADio:WCDMa:TGPP[:BBG])

Field Entry PwrOffs

Remarks N/A

:DLINK:TGAP:PSI[1]:CFN

Supported All 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 All 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 779.

:DLINK:TGAP:PSI[1]:D**Supported** All 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** All 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**Remarks** N/A**:DLINK:TGAP:PSI[1]:L2*Supported** All 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**

Wideband CDMA Base Band Generator Subsystem—Option 400 ([:SOURCE]:RADIO:WCDMA:TGPP[:BBG])

Remarks When OMITted is selected, TGL2 = TGL1.

:DLINK:TGAP:PSI[1]:PL1

Supported All 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

Remarks N/A

:DLINK:TGAP:PSI[1]:PL2

Supported All 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 All 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

Wideband CDMA Base Band Generator Subsystem—Option 400 ([:SOURce]:RADio:WCDMa:TGPP[:BBG])

Key Entry	Infinity
Field Entry	TGPRC
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	All 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
Remarks	N/A

:DLINK:TGAP:PSI[1]:SN

Supported	All 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
Remarks	N/A

:DLINK:TGAP:RPARAmeter

Supported	All with Option 400
	[:SOURce] :RADio:WCDMa:TGPP [:BBG] :DLINK:TGAP:RPARAmeter DREF11 DREF12 DREF21 DREF22 [:SOURce] :RADio:WCDMa:TGPP [:BBG] :DLINK:TGAP:RPARAmeter?

Wideband CDMA Base Band Generator Subsystem—Option 400 ([:SOURCE]:RADio:WCDMa:TGPP[:BBG])

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.

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 All 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 824.

:DLINK:TGAP:START:TRIGger

Supported All 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).

***RST** N/A

Range N/A

Key Entry **Compressed Mode Start Trigger**

Remarks N/A

:DLINK:TGAP:START:TRIGger:POLarity**Supported** All 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.

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**

Remarks N/A

:DLINK:TGAP:STOP:TRIGger**Supported** All 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).

***RST** N/A

Range N/A

Key Entry **Compressed Mode Stop Trigger**

Remarks N/A

:DLINK:TGAP:STOP:TRIGger:POLarity**Supported** All 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.

Wideband CDMA Base Band Generator Subsystem—Option 400 ([:SOURCE]:RADIO:WCDMA:TGPP[:BBG])

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
Remarks	N/A

:DLINK:TGAP[:STATE]

Supported All 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
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 779.

:DLINK:TXDV

Supported All 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

Wideband CDMA Base Band Generator Subsystem—Option 400 ([:SOURCE]:RADio:WCDMa:TGPP[:BBG])

Key Entry	None	OpenLoop Ant1	OpenLoop Ant2
	OpenLoop Ant1 SCH TSTD OFF		OpenLoop Ant2 SCH TSTD OFF
Remarks	N/A		

:DLINK[:TGRoup [A] | B]:DCH[1] | 2 | 3 | 4 | 5 | 6:BLKSize

Supported All 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 :
BLKSSize?

This command sets the coupling block size for the selected dedicated transport channel (DCH).

With transportation position in fixed mode, block size is limited to 0 or equal to the block set size. Refer to, “[:DLINK\[:TGRoup \[A\]|B\]:DCH\[1\]|2|3|4|5|6:POSition](#)” on page 830 for more information.

***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 779.

:DLINK[:TGRoup [A] | B]:DCH[1] | 2 | 3 | 4 | 5 | 6:BPFRame

Supported All with Option 400

[:SOURCE] :RADio:WCDMa:TGPP [:BBG] :DLINK [:TGRoup [A] | B] :DCH [1] | 2 | 3 | 4 | 5 | 6 :
BPFRame?

This query returns the block per frame for the selected dedicated transport channel (DCH).

***RST** 20

Range N/A

Key Entry N/A

Remarks N/A

:DLINK[:TGRoup [A] | B]:DCH[1] | 2 | 3 | 4 | 5 | 6:BRATe

Supported All with Option 400

Wideband CDMA Base Band Generator Subsystem—Option 400 ([:SOURCE]:RADIO:WCDMA:TGPP[:BBG])

```
[: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
Range	N/A
Key Entry	N/A
Remarks	N/A

:DLINK[:TGRoup [A]|B]:DCH[1]|2|3|4|5|6:BSSize

Supported All with Option 400

```
[:SOURCE]:RADIO:WCDMA:TGPP[:BBG]:DLINK[:TGRoup[A]|B]:DCH[1]|2|3|4|5|6:
BSSize?
```

This query returns the block set size for the selected dedicated transport channel (DCH).

Block set size is a multiple of block size and number of blocks. Changing the block size value will also change the value for block set size. The value for number of blocks does not change when changing block size.

*RST	20
Range	0–200000
Field Entry	Blk Set Size
Remarks	This field is grayed out for the transport position flexible and fixed modes. To change the DCH positioning, refer to “:DLINK[:TGRoup [A] B]:DCH[1] 2 3 4 5 6:POSition” on page 830.

:DLINK[:TGRoup [A]|B]:DCH[1]|2|3|4|5|6:CODE

Supported All 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.

Wideband CDMA Base Band Generator Subsystem—Option 400 ([:SOURce]:RADio:WCDMa:TGPP[:BBG])

TURBo	This choice selects coding with the turbo coder.
NONE	This choice selects no coding.
*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 779.

:DLINK[:TGRoup [A] | B]:DCH[1] | 2 | 3 | 4 | 5 | 6:CRC

Supported	All 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 779.

:DLINK[:TGRoup [A] | B]:DCH[1] | 2 | 3 | 4 | 5 | 6:DATA

Supported	All 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

Wideband CDMA Base Band Generator Subsystem—Option 400 ([:SOURCE]:RADIO:WCDMA:TGPP[:BBG])

apply command must be executed for the change to occur. Refer to “:DLINK:APPLY” on page 779.

:DLINK[:TGRoup [A] | B]:DCH[1] | 2 | 3 | 4 | 5 | 6:DATA:EINSert

Supported All 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**

Remarks N/A

:DLINK[:TGRoup [A] | B]:DCH[1] | 2 | 3 | 4 | 5 | 6:DATA:FIX4

Supported All 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 units.

***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 779.

:DLINK[:TGRoup [A] | B]:DCH[1] | 2 | 3 | 4 | 5 | 6:NBLocks**Supported** All 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 transmitted by the active downlink dedicated transport channel (DCH).

Number of blocks and block size are multiplied to equal the value in the block set size field. Refer to, “:DLINK[:TGRoup [A]|B]:DCH[1]|2|3|4|5|6:BSSize” on page 827 for more information.

***RST** 1**Range** 1–64**Field Entry** # of Blocks

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 779.

:DLINK[:TGRoup [A] | B]:DCH[1] | 2 | 3 | 4 | 5 | 6:POSITION**Supported** All 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 the coupling mode.

FLEXible This choice sets the block set size (BSSize) and tracks the block size.

FIXed This choice allows the block set size (BSSize) and block size to be edited. The values are limited to two values equal to BSSize or 0. An error message is generated if a value other than these is entered and the setting will default to the BSSize.

RST** FLEX**Key Entry** **Transp Position Flexible Fixed*Remarks** N/A

Wideband CDMA Base Band Generator Subsystem—Option 400 ([:SOURCE]:RADIO:WCDMA:TGPP[:BBG])**:DLINK[:TGRoup [A] | B]:DCH[1] | 2 | 3 | 4 | 5 | 6:PPERcentage****Supported** All 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.

RST** N/A**Range** N/A**Key Entry** N/A**Remarks** N/A**:DLINK[:TGRoup [A] | B]:DCH[1] | 2 | 3 | 4 | 5 | 6:RMATch*Supported** All 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 779](#).**:DLINK[:TGRoup [A] | B]:DCH[1] | 2 | 3 | 4 | 5 | 6:TTI*Supported** All with Option 400

[:SOURCE]:RADIO:WCDMA:TGPP[:BBG]:DLINK[:TGRoup[A] | B]:DCH[1] | 2 | 3 | 4 | 5 | 6:TTI 1000 | 2000 | 4000 | 8000

[: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.

Wideband CDMA Base Band Generator Subsystem—Option 400 ([:SOURce]:RADio:WCDMa:TGPP[:BBG])

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 779.

:DLINK[:TGRoup [A] | B]:DCH[1] | 2 | 3 | 4 | 5 | 6[:STATe]

Supported All 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 779.

:LINK

Supported All 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**

Remarks N/A

Wideband CDMA Base Band Generator Subsystem—Option 400 ([:SOURCE]:RADio:WCDMa:TGPP[:BBG])**:POLarity[:ALL]****Supported** All 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**

Remarks N/A

:ULINK:APPLY**Supported** All 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

Range N/A

Key Entry **Apply Channel Setup**

Remarks N/A

:ULINK:AWGN:CN**Supported** All with Option 400 and 403

```
[:SOURCE]:RADio:WCDMa:TGPP[:BBG]:ULINK:AWGN:CN <val>
[:SOURCE]:RADio:WCDMa:TGPP[:BBG]:ULINK:AWGN:CN?
```

Wideband CDMA Base Band Generator Subsystem—Option 400 ([:SOURce]:RADio:WCDMa:TGPP[:BBG])

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.

:ULINK:AWGN:CPOWer

Supported All 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
Range	N/A
Field Entry	C Power
Remarks	In compressed mode, carrier power means normal frame power.

:ULINK:AWGN:DRATe

Supported All 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
Range	N/A
Field Entry	Ref Data Rate
Remarks	N/A

:ULINK:AWGN:EBNO

Supported All with Option 400 and 403

Wideband CDMA Base Band Generator Subsystem—Option 400 ([:SOURCE]:RADio:WCDMa:TGPP[:BBG])

```
[: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 Eb/No = C/N x 3.84MHz/DataRate

Field Entry Eb/No value (dB)

Remarks N/A

:ULINK:AWGN:EBRef

Supported All 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 833.

:ULINK:AWGN:FNBW

Supported All 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

Range N/A

Field Entry Flat Noise BW

Remarks N/A

:ULINK:AWGN:NPOWER

Supported All 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

Range N/A

Field Entry N Power

Remarks N/A

:ULINK:AWGN:TICPower

Supported All with Option 400 and 403

[:SOURCE] : RADIO : WCDMA : TGPP [: BBG] : ULINK : AWGN : TICPOWER ?

This query returns the total in-channel power with 3.84 MHz bandwidth.

***RST** -1.38910651E+002

Range -138.9 to 20

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.

Wideband CDMA Base Band Generator Subsystem—Option 400 ([:SOURCE]:RADio:WCDMa:TGPP[:BBG])

The maximum value of this query depends on the power option that is installed in the signal generator.

:ULINK:AWGN[:STATe]

Supported All 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 857.

***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 833.

:ULINK:CRATe

Supported All 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 All 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

Wideband CDMA Base Band Generator Subsystem—Option 400 ([:SOURce]:RADio:WCDMa:TGPP[:BBG])

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 833.

:ULINK:DPCCh:CCODE

Supported All 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 833.

:ULINK:DPCCh:DATA

Supported All 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.

Wideband CDMA Base Band Generator Subsystem—Option 400 ([:SOURCE]:RADIO:WCDMA:TGPP[:BBG])

"<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 833.

:ULINK:DPCCh:DATA:FIX4

Supported All 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 units.

***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 833.

:ULINK:DPCCh:FBI:PATtern

Supported All 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

Wideband CDMA Base Band Generator Subsystem—Option 400 ([:SOURCE]:RADIO:WCDMA:TGPP[:BBG])

apply command must be executed for the change to occur. Refer to “:ULINK:APPLY” on page 833.

:ULINK:DPCCh:FBI:PATtern:FIX

Supported All 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 833.

:ULINK:DPCCh:FBI[:STATe]

Supported All 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

Remarks N/A

:ULINK:DPCCh:POWer

Supported All with Option 400

```
[ :SOURCE ] : RADIO : WCDMA : TGPP [ : BBG ] : ULINK : DPCCh : POWer <val>
```

Wideband CDMA Base Band Generator Subsystem—Option 400 ([:SOURCE]:RADIO:WCDMA:TGPP[:BBG])

```
[ :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 833](#).

:ULINK:DPCCh:RATE

Supported All 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

Range N/A

Field Entry Symbol Rate

Remarks N/A

:ULINK:DPCCh:SLOTformat

Supported All 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 833.

:ULINK:DPCCh:TFCI:PATtern

Supported All 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 833.

:ULINK:DPCCh:TFCI:PATtern:FIX

Supported All 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 833.

Wideband CDMA Base Band Generator Subsystem—Option 400 ([:SOURCE]:RADIO:WCDMA:TGPP[:BBG])**:ULINK:DPCCh:TFCI[:STATe]****Supported** All 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**Remarks** N/A**:ULINK:DPCCh:TPC:NSTeps*Supported** All 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 843.

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 833.

:ULINK:DPCCh:TPC:PATtern**Supported** All 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?

Wideband CDMA Base Band Generator Subsystem—Option 400 ([:SOURce]:RADio:WCDMa:TGPP[:BBG])

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 843](#).

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 833](#).

:ULINK:DPCCh:TPC:PATtern:FIX4

Supported All 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 units.

***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 833](#).

:ULINK:DPCCh:TPC:PATtern:TRIGger:POLarity

Supported All with Option 400

Wideband CDMA Base Band Generator Subsystem—Option 400 ([:SOURCE]:RADIO:WCDMA:TGPP[:BBG])

```
[: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 833.

:ULINK:DPCCh:TPC:PATtern:TRIGger[:STATe]

Supported All 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 User's Guide. If the parameter is changed, the apply command must be executed after the change. Refer to “:ULINK:APPLY” on page 833.

:ULINK:DPCCh:TPOWer

Supported All with Option 400

```
[:SOURCE]:RADIO:WCDMA:TGPP[:BBG]:ULINK:DPCCh:TPOWer?
```

Wideband CDMA Base Band Generator Subsystem—Option 400 ([:SOURce]:RADio:WCDMa:TGPP[:BBG])

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

Range N/A

Key Entry N/A

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 833.

:ULINK:DPCCh[:STATe]

Supported All 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 833.

:ULINK:DPDCh:BETA

Supported All 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

Wideband CDMA Base Band Generator Subsystem—Option 400 ([:SOURCE]:RADIO:WCDMA:TGPP[:BBG])

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 833.

:ULINK:DPDCh:CCODE

Supported All 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 8-2 on page 847](#).

Table 8-2 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

Wideband CDMA Base Band Generator Subsystem—Option 400 ([:SOURce]:RADio:WCDMa:TGPP[:BBG])

Remarks Refer to “:ULINK:DPDCh:SLOTformat” on page 851 and “:ULINK:DPDCh:RATE” on page 849. 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 833.

:ULINK:DPDCh:DATA

Supported All 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 833.

:ULINK:DPDCh:DATA:FIX4

Supported All 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 units.

***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 833.

:ULINK:DPDCh:POWer

Supported All 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 833.

:ULINK:DPDCh:RATE

Supported All 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 8-3](#).

Table 8-3 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

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 847 and “:ULINK:DPDCh:RATE” on page 849. 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 833.

:ULINK:DPDCh:RBER

Supported All 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 852 and “:ULINK:DPDCh:TBER:ELENGTH” on page 852.

***RST** 0.0

Range N/A

Wideband CDMA Base Band Generator Subsystem—Option 400 ([:SOURCE]:RADIO:WCDMA:TGPP[:BBG])**Field Entry** TrCH BER**Remarks** N/A**:ULINK:DPDCh:SLOTformat****Supported** All 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 8-4 on page 851](#).

Table 8-4 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** +2**Range** 0–6**Field Entry** Slot Format**Remarks** Refer to “:ULINK:DPDCh:CCODE” on page 847 and “:ULINK:DPDCh:RATE”

Wideband CDMA Base Band Generator Subsystem—Option 400 ([:SOURce]:RADio:WCDMa:TGPP[:BBG])

on page 849. 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 833.

:ULINK:DPDCh:TBER[:CLENgth]

Supported All 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 All 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.

:ULINK:DPDCh:TPOWer

Supported All with Option 400

Wideband CDMA Base Band Generator Subsystem—Option 400 ([:SOURCE]:RADIO:WCDMA:TGPP[:BBG])

```
[: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
Range	N/A
Key Entry	N/A
Remarks	N/A

:ULINK:DPDCh[:STATe]

Supported All 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 833.

:ULINK:FCLock:INTerval

Supported All 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 909.

:ULINK:FClock:POLarity**Supported** All 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 909.

:ULINK:FILTer**Supported** All 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 All 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 854](#).

:ULINK:FILTER:BBT

Supported All 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**

Wideband CDMA Base Band Generator Subsystem—Option 400 ([:SOURCE]:RADio:WCDMa:TGPP[:BBG])

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 854.

:ULINK:FILTer:CHANnel

Supported All 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 854.

:ULINK:FOFFset

Supported All 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.

Wideband CDMA Base Band Generator Subsystem—Option 400 ([:SOURCE]:RADio:WCDMa:TGPP[:BBG])**:ULINK:PADJust**

Supported All 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.

***RST** N/A

Key Entry **Equal Powers** **Scale To 0dB**

Remarks N/A

:ULINK:PHYSical[1]:TYPE

Supported All with Option 400

```
[:SOURCE]:RADio:WCDMa:TGPP[:BBG]:ULINK:PHYSical[1]:TYPE PRACH|DPCCh
```

```
[: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**

Remarks N/A

:ULINK:PMODE:TPControl:HOLD

Supported All 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

Wideband CDMA Base Band Generator Subsystem—Option 400 ([:SOURce]:RADio:WCDMa:TGPP[:BBG])

*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 861).

:ULINK:PMODE:TPControl:POWer:INITial

Supported All 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`

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 833.

The value of <val> must be smaller or equal to the value use for the command: “:ULINK:PMODE:TPControl:POWer:MINimum” on page 859. `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 858.

:ULINK:PMODE:TPControl:POWer:MAXimum

Supported All 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

Wideband CDMA Base Band Generator Subsystem—Option 400 ([:SOURce]:RADio:WCDMa:TGPP[:BBG])

absolute minimum power will be -60 dBm (40 dBm below the signal generator amplitude).

***RST** +0.00000000E+000

Range N/A

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 All 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

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 833](#).

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 860](#). 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 see [“:ULINK:PMODE:TPControl:POWer:MAXimum” on page 858](#).

:ULINK:PMODE:TPControl:POWer:RESet

Supported All 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.

*RST	N/A
Range	N/A
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 861 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 All 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 833.

:ULINK:PMODE:TPControl:TRIGger:POLarity

Supported All 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 set the transmit power control signal polarity of the uplink dedicated physical channel (DPCH).

*RST	POS
Key Entry	Power Control Signal Polarity Neg Pos
Remarks	N/A

Wideband CDMA Base Band Generator Subsystem—Option 400 ([:SOURCE]:RADio:WCDMa:TGPP[:BBG])**:ULINK:PMODE[:SElect]**

Supported All 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
-----------	-------------------	-------------	------------

Remarks N/A

:ULINK:PRACH:AICH:NUMBER

Supported All 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 PRACHes, refer to “:ULINK:PRACH[:SINGLE]:PREAmble:NUMBER” on [page 890](#).

***RST** -1

Range N/A

Field Entry Number of AICH

Remarks A -1 status represents a PRACH generation is on going.

:ULINK:PRACH:AICH:POLarity

Supported All with Option 400

```
[ :SOURCE ] :RADio:WCDMa:TGPP [ :BBG ] :ULINK:PRACH:AICH:
POLarity POSition|NEGative
```

Wideband CDMA Base Band Generator Subsystem—Option 400 ([:SOURCE]:RADio:WCDMa:TGPP[:BBG])

```
[: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 833

:ULINK:PRACH:AWGN:CN

Supported All 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.

:ULINK:PRACH:AWGN:CPOWer

Supported All 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

Range N/A

Field Entry C Power

Remarks N/A

Wideband CDMA Base Band Generator Subsystem—Option 400 ([:SOURCE]:RADIO:WCDMA:TGPP[:BBG])**:ULINK:PRACH:AWGN:DRATE**

Supported All 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

Range N/A

Field Entry Ref Data Rate

Remarks N/A

:ULINK:PRACH:AWGN:EBNO

Supported All 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 $E_b/N_o = C/N \times 3.84\text{MHz}/\text{DataRate}$

Field Entry Eb/No

Remarks N/A

:ULINK:PRACH:AWGN:ECNO

Supported All 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 Ec/No value. The Ec is defined as carrier divided by the chip rate. No is the noise power divided by the bandwidth (3.84 MHz). This ratio is only referred when EREF is PREAMBLE.

***RST** -2.05000000E+001

Wideband CDMA Base Band Generator Subsystem—Option 400 ([:SOURce]:RADio:WCDMa:TGPP[:BBG])

Range	–30 to 30
Field Entry	Ec/No value
Remarks	N/A

:ULINK:PRACH:AWGN:EREF

Supported All 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 Eb (Ec) reference. It is used for specifying the bit (chip) rate of physical/transport channel.

PREamble	This choice selects a preamble part as the Ec/No reference.
CONTRol	This choice selects a message control part as the Eb/No reference.
DATA	This choice selects a message data part as the Eb/No reference.
RACH	This choice selects a random access channel as the Eb/No 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 833.

:ULINK:PRACH:AWGN:NPOWER

Supported All 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

Range N/A

Field Entry N Power

Remarks N/A

Wideband CDMA Base Band Generator Subsystem—Option 400 ([:SOURCE]:RADIO:WCDMA:TGPP[:BBG])**:ULINK:PRACH:AWGN:TICPower**

Supported All 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
```

Range N/A

Field Entry TotalPwr

Remarks N/A

:ULINK:PRACH:AWGN[:STATe]

Supported All 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 857.

If the parameter is changed, the apply command must be executed after the change. Refer to “:ULINK:APPLY” on page 833.

:ULINK:PRACH:MESSAge:CPARt:BETA

Supported All 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 (refer to,

Wideband CDMA Base Band Generator Subsystem—Option 400 ([:SOURce]:RADio:WCDMa:TGPP[:BBG])

“:ULINK:PRACH:MESSAge:CPARt:POWER” on page 867 for more information on setting PRACH control power) changes the beta to power ratio, and the signal generator 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 833.

:ULINK:PRACH:MESSAge:CPARt:DATA

Supported All 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 833.

:ULINK:PRACH:MESSAge:CPARt:DATA:FIX4

Supported All 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.

Wideband CDMA Base Band Generator Subsystem—Option 400 ([:SOURCE]:RADIO:WCDMA:TGPP[:BBG])

While the variable <val> can be entered in binary, hexadecimal, or decimal formats, the query returns only binary units.

***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 833](#).

:ULINK:PRACH:MESSAGE:CPART:POWER

Supported All 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 865](#) 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 833](#)

:ULINK:PRACH:MESSAGE:CPART:RATE

Supported All 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

Range N/A

Wideband CDMA Base Band Generator Subsystem—Option 400 ([:SOURce]:RADio:WCDMa:TGPP[:BBG])

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	All with Option 400
	<code>[:SOURce]:RADio:WCDMa:TGPP[:BBG]:ULINK:PRACH:MESSAge:CPARt:SLOTformat?</code>
	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).

:ULINK:PRACH:MESSAge:CPARt:TFCI:PATtern

Supported	All with Option 400
	<code>[:SOURce]:RADio:WCDMa:TGPP[:BBG]:ULINK:PRACH:MESSAge:CPARt:TFCI:PATtern PN9 PN15 FIX "<file name>"</code>
	<code>[:SOURce]:RADio:WCDMa:TGPP[:BBG]:ULINK:PRACH:MESSAge:CPARt:TFCI:PATtern?</code>
	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).
<code>"<file name>"</code>	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 833 .

:ULINK:PRACH:MESSAge:CPARt:TFCI:PATtern:FIX

Supported	All with Option 400
	<code>[:SOURce]:RADio:WCDMa:TGPP[:BBG]:ULINK:PRACH:MESSAge:CPARt:TFCI:PATtern:</code>

Wideband CDMA Base Band Generator Subsystem—Option 400 ([:SOURCE]:RADIO:WCDMA:TGPP[:BBG])

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 833.

:ULINK:PRACH:MESSAGE:CPART:TFCI[:STATE]

Supported All 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

Range N/A

Field Entry TFCI State

Remarks N/A

:ULINK:PRACH:MESSAGE:DPART:BETA

Supported All 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,

Wideband CDMA Base Band Generator Subsystem—Option 400 ([:SOURCE]:RADIo:WCDMa:TGPP[:BBG])

“:ULINK:PRACH:MESSAge:DPARt:POWer” on page 871 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 833.

:ULINK:PRACH:MESSAge:DPARt:DATA

Supported All 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 833.

:ULINK:PRACH:MESSAge:DPARt:DATA:FIX4

Supported All 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).

Wideband CDMA Base Band Generator Subsystem—Option 400 ([:SOURCE]:RADIO:WCDMA:TGPP[:BBG])

While the variable <val> is expressed in binary or decimal formats, the query returns only binary units

***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 833.

:ULINK:PRACH:MESSAGE:DPART:POWER

Supported All 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 869 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 833

:ULINK:PRACH:MESSAGE:DPART:RATE

Supported All with Option 400

[:SOURCE] :RADIO:WCDMA:TGPP [:BBG] :ULINK:PRACH:MESSAGE:DPART:RATE 15KBPS

[: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 8-5](#).

Table 8-5 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 872 and “:ULINK:PRACH[:SINGLE]:MESSAge:DPART:CCODE” on page 888.

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 833.

:ULINK:PRACH:MESSAge:DPART:SLOTformat

Supported All 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.

Wideband CDMA Base Band Generator Subsystem—Option 400 ([:SOURCE]:RADIO:WCDMA:TGPP[:BBG])

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 8-6](#).

Table 8-6 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 871 and “:ULINK:PRACH[:SINGLE]:MESSAGE:DPART:CCODE” on page 888.

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 833.

:ULINK:PRACH:MODE[:SElect]

Supported All 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])

Remarks N/A

:ULINK:PRACH:MULTi:MESSAge:TPOWer

Supported All 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 880.

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 All 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

Remarks N/A

:ULINK:PRACH:MULTi:NUMBer

Supported All with Option 400

```
[ :SOURce ] :RADio:WCDMa:TGPP [ :BBG ] :ULINK:PRACH:MULTi:NUMBer <val> | INFINITY
[ :SOURce ] :RADio:WCDMa:TGPP [ :BBG ] :ULINK:PRACH:MULTi:NUMBer?
```

Wideband CDMA Base Band Generator Subsystem—Option 400 ([:SOURCE]:RADIO:WCDMA:TGPP[:BBG])

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.

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 833.

:ULINK:PRACH:MULTi:PREAmble:NUMBER

Supported All 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
Range	N/A
Field Entry	Num of Pre
Remarks	N/A

:ULINK:PRACH:MULTi:PREAmble:POWER:INITIAL

Supported All 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** All 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** All with Option 400

```
[:SOURce]:RADio:WCDMa:TGPP[:BBG]:ULINK:PRACH:MULTi:PREAmble:POWer:RSTep?
```

This query returns will always return zero for the multiple physical random access channel (PRACH) mode. Power ramping is not supported for the multiple PRACH mode.

RST** +0**Range** N/A**Field Entry** Ramp Step**Remarks** N/A**:ULINK:PRACH:MULTi:PREAmble:PPM*Supported** All 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

Wideband CDMA Base Band Generator Subsystem—Option 400 ([:SOURCE]:RADIO:WCDMA:TGPP[:BBG])

Range	-20 to 10
Field Entry	Pp-m
Remarks	N/A

:ULINK:PRACH:MULTI:UE[1]|2|3|4|5|6|7|8:MESSAGE:CPART:CCODE

Supported All 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 Ctl

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 All 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 All with Option 400

[:SOURCE] :RADIO:WCDMA:TGPP [:BBG] :ULINK:PRACH:MULTI:UE [1] | 2 | 3 | 4 | 5 | 6 | 7 | 8 :

Wideband CDMA Base Band Generator Subsystem—Option 400 ([:SOURce]:RADio:WCDMa:TGPP[:BBG])

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
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 833.

:ULINK:PRACH:MULTi:UE[1]|2|3|4|5|6|7|8:SPOStion[1]|2|3|4|5|6|7|8[:ASLot]

Supported All 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
	5	0	OFF	OFF	OFF	OFF	OFF	OFF	OFF
UE	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

Wideband CDMA Base Band Generator Subsystem—Option 400 ([:SOURce]:RADio:WCDMa:TGPP[:BBG])

Remarks This command can only be executed while in the PRACH Mode is set to Multi. Refer to “:ULINK:PRACH:MODE[:SElect]” on page 873.

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 833.

:ULINK:PRACH:MULTi:UE[1]|2|3|4|5|6|7|8[:STATe]

Supported All 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 833.

:ULINK:PRACH:PREamble:POWer:AVERage

Supported All 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

Wideband CDMA Base Band Generator Subsystem—Option 400 ([:SOURce]:RADio:WCDMa:TGPP[:BBG])

Range	N/A
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 890.

:ULINK:PRACH:PREAmble:POWer:MODE

Supported All 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 889.

***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 833.

:ULINK:PRACH:RPARAmeter

Supported All 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.

Wideband CDMA Base Band Generator Subsystem—Option 400 ([:SOURce]:RADio:WCDMa:TGPP[:BBG])

TB360	This choice sets the parameters for the transport block size = 360.	
*RST	TB168	
Key Entry	TrCh BlkSize 168	TrCh BlkSize 360
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 833.

:ULINK:PRACH:SCRamblecode

Supported All 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 833.

:ULINK:PRACH:SDElay

Supported All 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.

Wideband CDMA Base Band Generator Subsystem—Option 400 ([:SOURce]:RADio:WCDMa:TGPP[:BBG])

*RST	+0
Range	<i>Tp-a Setting</i> <val>
	0 -14 to 119
	7680 -11 to 119
	12800 -9 to 119
Key Entry	Timeslot Offset
Remarks	The actual amount of timing difference 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 833. To set the Tp-a value, refer to “:ULINK:PRACH:TPA” on page 883.

:ULINK:PRACH:SUBChannel

Supported	All with Option 400
	[:SOURce] :RADio:WCDMa:TGPP [:BBG] :ULINK:PRACH:SUBChannel <val>
	[:SOURce] :RADio:WCDMa:TGPP [:BBG] :ULINK:PRACH:SUBChannel?
	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 833.

:ULINK:PRACH:TOFFset

Supported	All with Option 400
	[:SOURce] :RADio:WCDMa:TGPP [:BBG] :ULINK:PRACH:TOFFset <val>
	[:SOURce] :RADio:WCDMa:TGPP [:BBG] :ULINK:PRACH:TOFFset?
	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

Wideband CDMA Base Band Generator Subsystem—Option 400 ([:SOURCE]:RADio:WCDMa:TGPP[:BBG])

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

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 833](#).

:ULINK:PRACH:TPA

Supported All 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 833](#).

This command is not used when the sync source is set to ESG. Refer to [“:ULINK:SYNC\[:SOURCE\]” on page 909](#).

:ULINK:PRACH:TPM

Supported All with Option 400

Wideband CDMA Base Band Generator Subsystem—Option 400 ([:SOURCE]:RADIo:WCDMa:TGPP[:BBG])

```
[: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.

***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 833](#).

This command is used for single and multiple physical random access channel (PRACH) modes.

:ULINK:PRACH:TPOWer

Supported All 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

Range N/A

Key Entry N/A

Remarks This command is used for single and multiple physical random access channel (PRACH) modes.

:ULINK:PRACH:TPP

Supported All 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.

Wideband CDMA Base Band Generator Subsystem—Option 400 ([:SOURCE]:RADIO:WCDMA:TGPP[:BBG])

The variable <val> is expressed in access slot units.

***RST** +3

Range 1–60

Field Entry TP-P

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 833.

This command is used for single and multiple physical random access channel (PRACH) modes.

:ULINK:PRACH:TRIGGER

Supported All 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.

***RST** N/A

Range N/A

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 886.

:ULINK:PRACH:TRIGGER:POLARITY

Supported All 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

Wideband CDMA Base Band Generator Subsystem—Option 400 ([:SOURCE]:RADio:WCDMa:TGPP[:BBG])

apply command must be executed for the change to occur. Refer to “:ULINK:APPLY” on page 833.

:ULINK:PRACH:TRIGGER:SOURCE

Supported All with Option 400

```
[ :SOURCE ] :RADio:WCDMa:TGPP [ :BBG ] :ULINK:PRACH:TRIGGER :
SOURCE IMMEDIATE|TRIGGER
```

```
[ :SOURCE ] :RADio:WCDMa:TGPP [ :BBG ] :ULINK:PRACH:TRIGGER :SOURCE?
```

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 Immediate Trigger**

Remarks Refer to “:ULINK:PRACH:TRIGGER:POLARITY” on page 885 and “:ULINK:PRACH:TRIGGER” on page 885 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 833.

:ULINK:PRACH:TTI

Supported All 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 833.

Wideband CDMA Base Band Generator Subsystem—Option 400 ([:SOURCE]:RADIo:WCDMa:TGPP[:BBG])

:ULINK:PRACH[:SINGLE]:MESSAge[:STATe]**Supported** All 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.**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 User's Guide.

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 833.

:ULINK:PRACH[:SINGLE]:NUMBer**Supported** All 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.***RST** 1**Range** 1–2147483647**Field Entry** Number of PRACH

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 833.

:ULINK:PRACH[:SINGLE]:MESSAGE:CPART:CCODE

Supported All 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?
```

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 833.

:ULINK:PRACH[:SINGLE]:MESSAGE:DPART:CCODE

Supported All 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

Wideband CDMA Base Band Generator Subsystem—Option 400 ([:SOURCE]:RADio:WCDMa:TGPP[:BBG])

and the value is clipped to the maximum value. Refer to [Table 8-7](#).

Table 8-7 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

Field Entry Channel Code

Remarks Channel code value is determined by slot format choice. Refer to “:ULINK:PRACH:MESSAge:DPART:SLOTformat” on page 872 and “:ULINK:PRACH:MESSAge:DPART:RATE” on page 871.

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 833.

:ULINK:PRACH[:SINGLE]:MESSAge:TPOWer

Supported All 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

Wideband CDMA Base Band Generator Subsystem—Option 400 ([:SOURce]:RADio:WCDMa:TGPP[:BBG])

“:ULINK:PRACH:PREamble:POWer:MODE” on page 880.

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 833.

:ULINK:PRACH[:SINGLE]:NUMBER

Supported All 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 1–2147447836

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 833.

:ULINK:PRACH[:SINGLE]:PREamble:NUMBER

Supported All 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

Wideband CDMA Base Band Generator Subsystem—Option 400 ([:SOURCE]:RADIO:WCDMA:TGPP[:BBG])

Field Entry	<i>PRACH Timing Setup</i> : Number of Preamble <i>PRACH Power Setup</i> : Num of Pre
Remarks	N/A

:ULINK:PRACH[:SINGLE]:PREAmble:POWER:INITIAL

Supported All 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

Range N/A

Field Entry Init Pwr

Remarks N/A

:ULINK:PRACH[:SINGLE]:PREAmble:POWER:MAX

Supported All 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

Wideband CDMA Base Band Generator Subsystem—Option 400 ([:SOURCE]:RADio:WCDMa:TGPP[:BBG])

apply command must be executed for the change to occur. Refer to “:ULINK:APPLY” on page 833.

:ULINK:PRACH[:SINGLE]:PREamble:POWER:RSTep

Supported All 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

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 833.

This command is used for single and multiple physical random access channel (PRACH) modes.

:ULINK:PRACH[:SINGLE]:PREamble:PPM

Supported All 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

Wideband CDMA Base Band Generator Subsystem—Option 400 ([:SOURCE]:RADio:WCDMa:TGPP[:BBG])

apply command must be executed for the change to occur. Refer to “:ULINK:APPLY” on page 833.

:ULINK:PRACH[:SINGLE]:PREAmble:SIGNature

Supported All 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

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 833.

:ULINK:RMCHannel

Supported All 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 channel by providing a one command access to a typical service channel configuration.

RMC122 This choice selects a reference measurement channel with a 12.2 kbps rate (25.141 v3.9).

RMC64 This choice selects a reference measurement channel with a 64.0 kbps rate (25.141 v3.9).

RMC144 This choice selects a reference measurement channel with a 144.0 kbps rate (25.141 v3.9).

RMC384 This choice selects a reference measurement channel with a 384.0 kbps rate (25.141 v3.9).

Wideband CDMA Base Band Generator Subsystem—Option 400 ([:SOURCE]:RADIO:WCDMA:TGPP[:BBG])

ARM122	This choice selects an adaptive multiple rate of 12.2 kbps (25.141 v3.4).	
UDI64	This choice selects an ISDN unrestricted digital information 1B with a 64.0 kbps rate (25.141 v3.4).	
*RST	RMC122	
Key Entry	RMC122 kbps (25.141 v3.9)	RMC64 kbps (25.141 v3.9)
	RMC144 kbps (25.141 v3.9)	RMC384 kbps (25.141 v3.9)
	ARM122 kbps (25.141v3.4)	UDI64 kbps(25.141v3.4)
Remarks	N/A	

:ULINK:RPANEL:DPCH:INPut:ALTPower

Supported All 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

Range N/A

Key Entry N/A

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 User's Guide.

:ULINK:RPANEL:DPCH:INPut:BBGRef

Supported All 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

Range N/A

Key Entry N/A

Remarks The signal name is baseband generator chip clock (CCL). For more information

Wideband CDMA Base Band Generator Subsystem—Option 400 ([:SOURCE]:RADio:WCDMa:TGPP[:BBG])

about the rear panel connector configurations, refer to "Signal Generator Overview" in the User's Guide.

:ULINK:RPANel:DPCH:INPut:BGATe

Supported All 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

Range N/A

Key Entry N/A

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 User's Guide

:ULINK:RPANel:DPCH:INPut:PTRigger1

Supported All 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

Range N/A

Key Entry N/A

Remarks The signal name is frame synchronization (FSYN). For more information about the rear panel connector configurations, refer to "Signal Generator Overview" in the User's Guide.

:ULINK:RPANel:DPCH:INPut:PTRigger2

Supported All 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

Wideband CDMA Base Band Generator Subsystem—Option 400 ([:SOURCE]:RADio:WCDMa:TGPP[:BBG])

connector pin#17) for the dedicated physical channel (DPCH) mode.

***RST** CSPT

Range N/A

Key Entry N/A

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 User's Guide.

:ULINK:RPANel:DPCH:OUTPut:DCLock

Supported All 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 8-8 on page 896](#) for command parameters and output signal type.

Table 8-8 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
RPS6	10ms frame pulse
RPS7	Trigger sync reply
RPS8	Compressed frame
RPS9	TTI frame pulse
RPS10	CFN #0 frame pulse

Wideband CDMA Base Band Generator Subsystem—Option 400 ([:SOURCE]:RADio:WCDMa:TGPP[:BBG])

*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 User's Guide.

:ULINK:RPANel:DPCH:OUTPut:DOUT

Supported All 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 8-8 on page 896](#) 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)
Remarks	For more information about the rear panel connector configurations, refer to "Signal Generator Overview" in the User's Guide.

:ULINK:RPANel:DPCH:OUTPut:EVENT1

Supported All 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 8-8 on page 896](#) for command parameters and output signal type.

Wideband CDMA Base Band Generator Subsystem—Option 400 ([:SOURCE]:RADio:WCDMa:TGPP[:BBG])

*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 User's Guide.

:ULINK:RPANel:DPCH:OUTPut:EVENT2

Supported All 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 8-8 on page 896](#) 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) 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 User's Guide.

:ULINK:RPANel:DPCH:OUTPut:EVENT3

Supported All 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 8-8 on page 896](#) for command parameters and output signal type.

Wideband CDMA Base Band Generator Subsystem—Option 400 ([:SOURCE]:RADio:WCDMa:TGPP[:BBG])

*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 User's Guide.		

:ULINK:RPANel:DPCH:OUTPut:EVENT4

Supported All 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 8-8 on page 896](#) 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 User's Guide.		

:ULINK:RPANel:DPCH:OUTPut:SSYNc

Supported All 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 8-8 on page 896](#) for command parameters and output signal

Wideband CDMA Base Band Generator Subsystem—Option 400 ([:SOURce]:RADio:WCDMa:TGPP[:BBG])

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 User's Guide.

:ULINK:RPANel:PRACH:INPut:ALTPower

Supported All 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

Range N/A

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 User's Guide.

:ULINK:RPANel:PRACH:INPut:BBGRef

Supported All 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

Range N/A

Key Entry N/A

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 User's Guide.

Wideband CDMA Base Band Generator Subsystem—Option 400 ([:SOURCE]:RADio:WCDMa:TGPP[:BBG])**:ULINK:RPANel:PRACH:INPut:BGATe****Supported** All 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**Range** N/A**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 User's Guide.

:ULINK:RPANel:PRACH:INPut:PTRigger1**Supported** All 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**Range** N/A**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 User's Guide.

:ULINK:RPANel:PRACH:INPut:PTRigger2**Supported** All 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**Range** N/A

Wideband CDMA Base Band Generator Subsystem—Option 400 ([:SOURce]:RADio:WCDMa:TGPP[:BBG])

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 User's Guide.

:ULINK:RPANel:PRACH:OUTPut:DCLock

Supported All 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, 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.

Wideband CDMA Base Band Generator Subsystem—Option 400 ([:SOURCE]:RADio:WCDMa:TGPP[:BBG])

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)	

Remarks For more information about the rear panel connector configurations, refer to "Signal Generator Overview" in the User's Guide.

:ULINK:RPANel:PRACH:OUTPut:DOUT

Supported All with Option 400

[:SOURCE] :RADio:WCDMa:TGPP [:BBG] :ULINK:RPANel:PRACH:OUTPut :

Wideband CDMA Base Band Generator Subsystem—Option 400 ([:SOURCE]:RADio:WCDMa:TGPP[:BBG])

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 902.

***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 User's Guide.

:ULINK:RPANel:PRACH:OUTPut:EVENT1

Supported All 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 902.

***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)**

Wideband CDMA Base Band Generator Subsystem—Option 400 ([:SOURCE]:RADio:WCDMa:TGPP[:BBG])

	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 User's Guide.	

:ULINK:RPANel:PRACH:OUTPut:EVENT2

Supported All 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 902.

***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 User's Guide.

:ULINK:RPANel:PRACH:OUTPut:EVENT3

Supported All 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
```

Wideband CDMA Base Band Generator Subsystem—Option 400 ([:SOURCE]:RADio:WCDMa:TGPP[:BBG])

[: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 902.

***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 User's Guide.

:ULINK:RPANel:PRACH:OUTPut:EVENT4

Supported All 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.

For parameter descriptions refer to “:ULINK:RPANel:PRACH:OUTPut:DClock” on page 902.

***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)	

Wideband CDMA Base Band Generator Subsystem—Option 400 ([:SOURCE]:RADIO:WCDMA:TGPP[:BBG])

	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 User's Guide.	

:ULINK:RPANel:PRACH:OUTPut:SSYNc

Supported All 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 902.

***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 User's Guide.

:ULINK:SCRamblecode

Supported All with Option 400

```
[ :SOURCE ] :RADIo:WCDMa:TGPP [ :BBG ] :ULINk:SCRamblecode <val>
[ :SOURCE ] :RADIo:WCDMa:TGPP [ :BBG ] :ULINk:SCRamblecode?
```

Wideband CDMA Base Band Generator Subsystem—Option 400 ([:SOURce]:RADio:WCDMa:TGPP[:BBG])

This command sets the uplink scramble code.

*RST	+0
Range	0–16777215
Field Entry	Scrambling Code
Remarks	N/A

:ULINK:SDElay

Supported All 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 909.

:ULINK:SFNRst:POLarity

Supported All with Option 400

[:SOURce] :RADio:WCDMa:TGPP [:BBG] :ULINK:SFNRst:POLarity POSitive|NEGative

[:SOURce] :RADio:WCDMa:TGPP [: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
Key Entry	SFN RST Polarity Neg Pos
Remarks	This command is not used when the sync source is set to ESG. Refer to

Wideband CDMA Base Band Generator Subsystem—Option 400 ([:SOURCE]:RADio:WCDMa:TGPP[:BBG])

“:ULINK:SYNC[:SOURCE]” on page 909.

:ULINK:SYNC:MODE

Supported All 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**

Remarks N/A

:ULINK:SYNC[:SOURCE]

Supported All 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 FClock ESG**

Remarks N/A

:ULINK:TGAP:POFFset

Supported All with Option 400

```
[ :SOURCE ] :RADio:WCDMa:TGPP [ :BBG ] :ULINK:TGAP:POFFset <val> | AUTO
```

Wideband CDMA Base Band Generator Subsystem—Option 400 ([:SOURce]:RADio:WCDMa:TGPP[:BBG])

[: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 833.

:ULINK:TGAP:PSI[1]|2|3|4|5|6:CFN

Supported All 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.

:ULINK:TGAP:PSI[1]:CMMethod

Supported All 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

Wideband CDMA Base Band Generator Subsystem—Option 400 ([:SOURCE]:RADIO:WCDMA:TGPP[:BBG])

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 833.

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 All 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

Remarks N/A

:ULINK:TGAP:PSI[1]|2|3|4|5|6:L1

Supported All 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 ?
```

Wideband CDMA Base Band Generator Subsystem—Option 400 ([:SOURCE]:RADIO:WCDMA:TGPP[:BBG])

This command specifies the length of the first transmission gap (TGL1). The length is expressed in number of slots.

***RST** +7
Field Entry TGL1
Remarks N/A

:ULINK:TGAP:PSI[1]|2|3|4|5|6:L2

Supported All 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).

The variable <val> is expressed in number of slots. When OMITted is selected, TGL2=TGL1.

***RST** OMIT
Field Entry TGL2
Remarks N/A

:ULINK:TGAP:PSI[1]|2|3|4|5|6:PL1

Supported All 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
Remarks N/A

:ULINK:TGAP:PSI[1]|2|3|4|5|6:PL2

Supported All with Option 400

```
[ :SOURCE ] :RADiO:WCDMA:TGPP [ :BBG ] :ULINK:TGAP:PSI [ 1 ] | 2 | 3 | 4 | 5 | 6 :PL2
```

Wideband CDMA Base Band Generator Subsystem—Option 400 ([:SOURCE]:RADio:WCDMa:TGPP[:BBG])

<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
Remarks	N/A

:ULINK:TGAP:PSI[1]|2|3|4|5|6:POWer

Supported All 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.

*RST	N/A
Range	N/A
Key Entry	N/A
Remarks	N/A

:ULINK:TGAP:PSI[1]|2|3|4|5|6:PRC

Supported All with Option 400

[:SOURCE] : RADio : WCDMa : TGPP [: BBG] : ULINK : TGAP : PSI [1] | 2 | 3 | 4 | 5 | 6 : PRC

<val> | INFinity

[: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
-------------	-----

Wideband CDMA Base Band Generator Subsystem—Option 400 ([:SOURce]:RADio:WCDMa:TGPP[:BBG])

Range	1–511
Field Entry	TGPRC
Key Entry	Infinity
Remarks	When INFINITY is selected, the PRC will continue indefinitely.

:ULINK:TGAP:PSI[1]|2|3|4|5|6:PS

Supported All 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**

Remarks N/A

:ULINK:TGAP:PSI[1]|2|3|4|5|6:SN

Supported All 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

Remarks N/A

:ULINK:TGAP:RPARAmeter

Supported All with Option 400

```
[:SOURce]:RADio:WCDMa:TGPP[:BBG]:ULINK:TGAP:
RPARAmeter DREF11|DREF12|DREF21|DREF22
```

Wideband CDMA Base Band Generator Subsystem—Option 400 ([:SOURCE]:RADIO:WCDMA:TGPP[:BBG])

```
[: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.		
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 All 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	<p>The compressed mode stop trigger must be used for this command to executed. Refer to “:ULINK:TGAP:STOP:TRIGGER” on page 917.</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 “:ULINK:APPLY” on page 833.</p> <p>This command is not used when the sync source is set to ESG. Refer to “:ULINK:SYNC[:SOURCE]” on page 909.</p>

Wideband CDMA Base Band Generator Subsystem—Option 400 ([:SOURce]:RADio:WCDMa:TGPP[:BBG])**:ULINK:TGAP[:STATe]****Supported** All 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*Remarks** N/A**:ULINK:TGAP:START:TRIGger****Supported** All with Option 400

[:SOURce]:RADio:WCDMa:TGPP[:BBG]:ULINK:TGAP:START:TRIGger

This command starts the compressed mode trigger.

RST** N/A**Range** N/A**Key Entry** **Compressed Mode Start Trigger*Remarks** N/A**:ULINK:TGAP:START:TRIGger:POLarity****Supported** All 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*Remarks** N/A

Wideband CDMA Base Band Generator Subsystem—Option 400 ([:SOURCE]:RADIO:WCDMA:TGPP[:BBG])**:ULINK:TGAP:STOP:TRIGGER****Supported** All with Option 400

[:SOURCE]:RADIO:WCDMA:TGPP[:BBG]:ULINK:TGAP:START:TRIGGER

This command stops the compressed mode trigger.

RST** N/A**Range** N/A**Key Entry** **Compressed Mode Stop Trigger*Remarks** N/A**:ULINK:TGAP:STOP:TRIGGER:POLARITY****Supported** All 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.

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*Remarks** N/A**:ULINK:TOFFSET****Supported** All 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

Wideband CDMA Base Band Generator Subsystem—Option 400 ([:SOURce]:RADio:WCDMa:TGPP[:BBG])

Key Entry	Timing Offset
Remarks	The actual amount of timing offset is (T0) + (TOFFset) + (SDElay) where T0 = 1024 chips.

:ULINK:TStatus:COMPRESSED

Supported All 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
Range	N/A
Key Entry	N/A
Remarks	N/A

:ULINK:TStatus:RACH

Supported All 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
Range	N/A
Key Entry	N/A
Remarks	N/A

:ULINK:TStatus:RECEIVE

Supported All with Option 400

[:SOURce] :RADio:WCDMa:TGPP [:BBG] :ULINK:TStatus:RECEIVE?

This query returns the frame synchronization signal reception status.

Wideband CDMA Base Band Generator Subsystem—Option 400 ([:SOURCE]:RADIO:WCDMA:TGPP[:BBG])

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
Range	N/A
Key Entry	N/A
Remarks	N/A

:ULINK:TSTATUS:SYNC

Supported All 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
Range	N/A
Key Entry	N/A
Remarks	N/A

:ULINK:[TGRoup[1]]:DCH[1] | 2 | 3 | 3 | 5 | 6:BLKSize

Supported All 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	<i>DCH1</i> : 244 <i>DCH2</i> : 100 <i>DCH3,4,5,6</i> : 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 833 .

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** All with Option 400

[:SOURce]:RADio:WCDMa:TGPP[:BBG]:ULINK[:TGRoup[1]]:DCH[1]|2|3|4|5|6:BPFRame?

This query returns the block per frame for the selected dedicated transport channel (DCH).

RST** *DCH1:* 490 *DCH2:* 110 *DCH3,4,5,6:* 60**Range** 0–5000**Key Entry** N/A**Remarks** N/A**:ULINK[:TGRoup[1]]:DCH[1]|2|3|4|5|6:BRATe*Supported** All 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 *DCH3,4,5,6:* 2000**Range** 0–5000**Key Entry** N/A**Remarks** N/A**:ULINK[:TGRoup[1]]:DCH[1]|2|3|3|5|6:CODE*Supported** All 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.

Wideband CDMA Base Band Generator Subsystem—Option 400 ([:SOURCE]:RADio:WCDMa:TGPP[:BBG])

NONE	This choice selects no coding type.
*RST	<i>DCH1,2</i> : TCONv <i>DCH3,4,5,6</i> : HCONv
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 “:ULINK:APPLY” on page 833.

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

Supported All 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 833.

:ULINK:[TGRoup[1]]:DCH[1]|2|3|3|5|6:DATA

Supported All 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

Wideband CDMA Base Band Generator Subsystem—Option 400 ([:SOURCE]:RADIo:WCDMa:TGPP[:BBG])

apply command must be executed for the change to occur. Refer to “:ULINK:APPLY” on page 833.

:ULINK[:TGRoup[1]]:DCH[1] | 2 | 3 | 4 | 5 | 6:DATA:BER:ACTual

Supported All 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

Range N/A

Key Entry N/A

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 All 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

Range N/A

Field Entry Error Bits

Remarks N/A

:ULINK[:TGRoup[1]]:DCH[1] | 2 | 3 | 4 | 5 | 6:DATA:BER:TOTal:BIT

Supported All 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

Range N/A

Wideband CDMA Base Band Generator Subsystem—Option 400 ([:SOURCE]:RADIO:WCDMA:TGPP[:BBG])

Field Entry Total Bits

Remarks N/A

:ULINK[:TGRoup[1]]:DCH[1] | 2 | 3 | 4 | 5 | 6:DATA:BER[:VALue]

Supported All 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, but it is 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 833.

:ULINK[:TGRoup[1]]:DCH[1] | 2 | 3 | 4 | 5 | 6:DATA:BLER:ACTual

Supported All 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

Range N/A

Field Entry N/A

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 All with Option 400

Wideband CDMA Base Band Generator Subsystem—Option 400 ([:SOURce]:RADio:WCDMa:TGPP[:BBG])

```
[ :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
Range N/A
Field Entry Error Blocks
Remarks N/A

:ULINK[:TGRoup[1]|2:DCH[1]|2|3|4|5|6:DATA:BLER:TOTal:BLOCK

Supported All 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
Range N/A
Field Entry Total Blocks
Remarks N/A

:ULINK[:TGRoup[1]]:DCH[1]|2|3|4|5|6:DATA:BLER[:VALue]

Supported All 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, but it is a percent ratio (1.0=100%).

***RST** +0.00000000E+000
Range 0.0–1.00
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 833.

:ULINK[:TGRoup[1]]:DCH[1]|2|3|4|5|6:DATA:EINSErt

Supported All 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**

Remarks N/A

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

Supported All 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 units.

***RST** #B0000

Range 0–15

Key Entry **FIX4**

Remarks N/A

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** All 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**Remarks** N/A**:ULINK[:TGRoup [1]]:DCH[1]|2|3|4|5|6:PPERcentage*Supported** All 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.

RST** N/A**Range** N/A**Field Entry** Puncture**Remarks** N/A**:ULINK[:TGRoup[1]]:DCH[1]|2|3|4|5|6:RMATCh*Supported** All 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?

Wideband CDMA Base Band Generator Subsystem—Option 400 ([:SOURCE]:RADio:WCDMa:TGPP[:BBG])

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

Remarks N/A

:ULINK[:TGRoup[1]]:DCH[1] | 2 | 3 | 4 | 5 | 6:TTI

Supported All 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 All 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**

Remarks N/A

:ULINK[:TGRoup[1]]:RACH[1]:BLKSize

Supported All with Option 400

Wideband CDMA Base Band Generator Subsystem—Option 400 ([:SOURCE]:RADIO:WCDMA:TGPP[:BBG])

```
[: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
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 833.

:ULINK[:TGRoup [1]]:RACH[1]:BPFRame

Supported	All 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
Range	N/A
Key Entry	N/A
Remarks	N/A

:ULINK[:TGRoup [1]]:RACH[1]:BRATe

Supported	All 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
Range	N/A
Key Entry	N/A
Remarks	N/A

Wideband CDMA Base Band Generator Subsystem—Option 400 ([:SOURCE]:RADIo:WCDMa:TGPP[:BBG])

:ULINK[:TGRoup[1]]:RACH[1]:CODE**Supported** All 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**Range** N/A**Key Entry** N/A**Remarks** N/A**:ULINK[:TGRoup[1]]:RACH[1]:CRC*Supported** All 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**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 833](#).**:ULINK[:TGRoup[1]]:RACH[1]:DATA*Supported** All 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**

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 833.

:ULINK[:TGRoup[1]]:RACH[1]:DATA:BER:ACTual

Supported All 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 All with Option 400

[:SOURce] :RADio:WCDMa:TGPP [:BBG] :ULINK [:TGRoup [1]] :RACH [1] :DATA:BER:ERRor:BIT?

This query returns the actual error bits inserted for the total number of bits.

***RST** 0

Range N/A

Key Entry N/A

Remarks N/A

:ULINK[:TGRoup[1]]:RACH[1]:DATA:BER:TOTal:BIT

Supported All 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

Wideband CDMA Base Band Generator Subsystem—Option 400 ([:SOURCE]:RADIO:WCDMA:TGPP[:BBG])

Range	N/A
Key Entry	N/A
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 All 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 833.

:ULINK[:TGRoup[1]]:RACH[1]:DATA:BLER:ACTual

Supported All 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

Range N/A

Key Entry N/A

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 All with Option 400

Wideband CDMA Base Band Generator Subsystem—Option 400 ([:SOURCE]:RADio:WCDMa:TGPP[:BBG])

```
[ :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
Range	N/A
Key Entry	N/A
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 All 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
Range	N/A
Key Entry	N/A
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 All 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 833.

:ULINK[:TGRoup[1]]:RACH[1]:DATA:EINSert

Supported All 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 833.

:ULINK[:TGRoup[1]]:RACH[1]:DATA:FIX4

Supported All 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 units.

***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 833.

Wideband CDMA Base Band Generator Subsystem—Option 400 ([:SOURce]:RADio:WCDMa:TGPP[:BBG])**:ULINK[:TGRoup[1]]:RACH[1]:NBLOCK****Supported** All 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 833](#)

:ULINK[:TGRoup [1]]:RACH[1]:PPERcentage**Supported** All 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**Range** N/A**Field Entry** Puncture**Remarks** N/A**:ULINK[:TGRoup[1]]:RACH[1]:RMArch*Supported** All 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**Range** N/A**Key Entry** N/A

Wideband CDMA Base Band Generator Subsystem—Option 400 ([:SOURCE]:RADIO:WCDMA:TGPP[:BBG])

Remarks N/A

:ULINK[:TGRoup[1]]:RACH[1]:TTI

Supported All 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 833](#).

:ULINK[:TGRoup[1]]:RACH[1][:STATe]

Supported All 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

Range N/A

Key Entry N/A

Remarks N/A

[:STATe]

Supported All 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

Receiver Test Digital Commands (continued)

Wideband CDMA Base Band Generator Subsystem—Option 400 ([:SOURCE]:RADio:WCDMa:TGPP[:BBG])

Key Entry **W-CDMA Off On**

Remarks N/A

Symbols

of Blocks field, 830
 # of Carriers softkey, 265, 268
 # Points softkey, 52
 # Skipped Points softkey, 281
 ΦM Dev, 189
 ΦM Dev Couple Off On, 190
 FM ΦM Normal High BW, 185
 ΦM Off On, 188
 ΦM Path 1 2, 184
 ΦM Stop Rate, 186
 ΦM Sweep Time, 187
 ΦM Tone 2 Ampl Percent of Peak, 186

Numerics

0.7V,1.4V,1.65V,2.5V softkey, 366
 1 DPCH softkey, 312, 317
 1.23 MHz softkey, 249
 1.25 MHz softkey, 249
 1/2 Conv softkey, 827, 829, 920
 1/3 Conv softkey, 827, 829, 920
 10 msec softkey, 853
 1048576 softkey, 202
 10ms Frame Pulse (DRPS11) softkey, 810, 812, 813, 814
 10ms Frame Pulse (RPS6) softkey
 See wideband CDMA base band generator
 subsystem keys and fields
 12.2 kbps (34.121 v3.8) softkey, 792
 131072 softkey, 202
 144 kbps (34.121 v3.8) softkey, 792
 16 1's & 16 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
 16384 softkey, 202
 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, 313
 2 SR3 Carriers softkey, 235
 2.100 MHz softkey, 199, 212, 233, 259, 279, 294, 310, 418
 20 msec softkey, 853
 2560 msec softkey, 853
 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
 See PHS subsystem keys
 See TETRA subsystem keys
 262144 softkey, 202
 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

Index

2-Lvl FSK softkey (continued)

See PHS subsystem keys

See TETRA subsystem keys

2nd Scr Offset field, [794](#), [801](#)

3 Carriers softkey, [219](#), [235](#), [313](#)

3 DPCH softkey, [312](#), [317](#)

3.84MHz chip-clk (DRPS4) softkey, [810](#), [812](#), [813](#),
[814](#)

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, [217](#), [220](#)

32768 softkey, [202](#)

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 v3.8) softkey, [792](#)

4 1's & 4 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

4 Carriers softkey, [219](#), [235](#), [313](#)

40 msec softkey, [853](#)

40.000 MHz softkey, [197](#), [199](#), [207](#), [212](#), [228](#), [233](#),
[255](#), [259](#), [277](#), [279](#), [293](#), [294](#), [308](#), [310](#), [412](#), [418](#)

4-Lvl FSK softkey

See custom subsystem keys

4-Lvl FSK softkey (continued)

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, [241](#)

524288 softkeys, [202](#)

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, [217](#), [220](#)

64 kbps (34.121 v3.8) softkey, [792](#)

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, [202](#)

8 1's & 8 0's softkey

See custom subsystem keys

- 8 1's & 8 0's softkey (*continued*)
 - 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, [411](#)
 - 8 Channel softkey, [241](#)
 - 80 msec softkey, [853](#)
 - 80ms Frame Pulse (DRPS13) softkey, [810](#), [812](#), [813](#), [814](#)
 - 80ms Frame Pulse (RPS20) softkey
 - See wideband CDMA base band generator subsystem keys and fields
 - 8648A/B/C/D softkey, [151](#), [153](#)
 - 8656B,8657A/B softkey, [151](#), [153](#)
 - 8657D NADC softkey, [151](#), [153](#)
 - 8657D PDC softkey, [151](#), [153](#)
 - 8657J PHS softkey, [151](#), [153](#)
 - 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
 - See TETRA subsystem keys
 - 9 Ch Fwd softkey, [217](#), [220](#)
 - 9 Channel softkey, [234](#)
- A**
- A field softkey
 - See DECT subsystem keys
 - A softkey, [784](#)
 - Access softkey, [629](#)
 - ACS softkey, [817](#)
 - Active softkey, [822](#)
 - Actual BER softkey, [930](#)
 - Actual BLER field, [923](#), [931](#)
 - Add Comment To Seq[n] Reg[nn] softkey, [116](#)
 - Adjust Gain softkey, [381](#)
 - Adjust Phase softkey, [44](#)
 - AICH softkey, [887](#)
 - AICH Trigger Polarity Pos Neg softkey, [861](#)
 - ALC BW Normal Narrow, [53](#)
 - ALC BW Normal Narrow softkey, [21](#)
 - ALC Off On softkey, [56](#)
 - All Down softkey, [796](#), [843](#)
 - All softkey, [101](#), [115](#)
 - All Timeslots 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
 - All Up softkey, [796](#), [843](#)
 - Alt Amp Delta softkey, [56](#)
 - Alt Ampl Off On softkey, [57](#)
 - Alt power in field, [900](#)
 - AM softkeys
 - AM Depth, [171](#)
 - AM Depth Couple Off On, [171](#)
 - AM Off On, [170](#)
 - AM Off On softkey, [167](#)
 - AM Path 1 2, [166](#)
 - AM Stop Rate, [168](#)
 - AM Sweep Rate, [169](#)
 - AM Tone 2 Ampl Percent Of Peak, [168](#)
 - AM Tone 2 Rate, [168](#)
 - AM_ADDR softkey, [410](#)
 - Ampl softkeys
 - Ampl, [59](#)
 - Ampl Offset, [61](#)
 - Ampl Ref Off On, [60](#)
 - Ampl Ref Set, [59](#)
 - Ampl Start, [60](#)
 - Ampl Stop, [61](#)
 - Amplitude hardkey, [59](#), [62](#)
 - amplitude modulation subsystem keys
 - AM Depth, [171](#)
 - AM Depth Couple Off On, [171](#)

Index

- amplitude modulation subsystem keys (*continued*)
 - AM Off On, [167](#), [170](#)
 - AM Path 1 2, [166](#)
 - AM Stop Rate, [168](#)
 - AM Sweep Rate, [169](#)
 - AM Tone 2 Ampl Percent Of Peak, [168](#)
 - AM Tone 2 Rate, [168](#)
 - Bus, [169](#)
 - Dual-Sine, [169](#)
 - Ext, [169](#)
 - Ext Coupling DC AC, [167](#)
 - Ext1, [170](#)
 - Ext2, [170](#)
 - Free Run softkey, [169](#)
 - Incr Set, [166](#), [172](#)
 - Internal, [170](#)
 - Noise, [169](#)
 - Ramp, [169](#)
 - Sine, [169](#)
 - Square, [169](#)
 - Swept-Sine, [169](#)
 - Triangle, [169](#)
 - Trigger Key, [169](#)
- AMR 12.2 kbps softkey, [792](#), [893](#)
- 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, [265](#), [267](#)
- APCO 25 w/C4QPSK softkey, [265](#), [267](#)
- APCO 25 w/CQPSK softkey, [508](#)
- Apply Channel Setup softkey, [239](#), [242](#), [320](#), [329](#), [779](#), [833](#)
- Arb AWGN Off On softkey, [204](#)
- ARB Off On softkey, [291](#)
- 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, [203](#), [216](#), [248](#), [264](#), [286](#), [299](#), [335](#), [423](#)
- Atten Hold Off On softkey, [58](#)
- automatic leveling control, [56](#)
- Aux I/O Trigger Polarity Pos Neg softkey, [405](#)
- Aux softkey
 - See* sense subsystem keys
- AWGN Off On softkey, [414](#)
- AWGN subsystem keys
 - 1048576, [202](#)
 - 131072, [202](#)
 - 16384, [202](#)
 - 2.100 MHz, [199](#)
 - 262144, [202](#)
 - 32768, [202](#)
 - 40.000 MHz, [197](#), [199](#)
 - 524288, [202](#)
 - 65536, [202](#)
 - Arb AWGN Off On, [204](#)
 - ARB Reference Ext Int, [203](#)
 - ARB Sample Clock, [203](#)
 - Bandwidth, [197](#)
 - Clear Header, [198](#)
 - I/Q Mod Filter Manual Auto, [200](#)
 - I/Q Output Filter Manual Auto, [197](#)
 - Marker 1, [200](#), [201](#)
 - Marker 1 Polarity Neg Pos, [201](#)
 - Marker 2, [200](#), [201](#)
 - Marker 2 Polarity Neg Pos, [201](#)
 - Marker 3, [200](#), [201](#)
 - Marker 3 Polarity Neg Pos, [202](#)
 - Marker 4, [200](#), [201](#)

- AWGN subsystem keys (*continued*)
 Marker 4 Polarity Neg Pos, 202
 Modulator Atten Manual Auto, 198, 199
 Noise Seed Fixed Random, 204
 None, 200, 201
 Reference Freq, 202
 Save Setup To Header, 198
 Through, 197, 199
 Waveform Length, 202
- B**
- B softkey, 758, 763, 784
 B1 softkey, 757, 761
 B2 softkey, 757, 762
 Bandwidth softkey, 197, 409
 Base Delay Tp-a softkey, 883
 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, 424
 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, 23, 34
 BD_ADDR softkey, 410
 Begin Data Format Pattern Framed 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
 Begin Data Format Pattern Framed softkey
 (*continued*)
 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, 350
 BER field, 923, 931
 BER Mode Off On softkey
 See sense subsystem keys
 BER softkey, 925, 933
 BERT Off On softkey, 402
 BERT Resync Off On softkey, 402
 Beta field, 837, 846
 Binary softkey, 91, 117
 binary values, 16
 Bit Count softkey
 See sense subsystem keys
 Bit Delay Off On softkey, 404
 Bit Rate field
 See CDMA2000 BBG subsystem keys and fields
 Bit softkey, 91
 BLER field, 924, 932
 BLER softkey, 925, 933
 Blk Set Size field, 827
 Blk Size field, 826, 919, 927
 Block Count softkey
 See calculate subsystem keys
 See sense subsystem keys
 Block Erasure softkey
 See sense subsystem keys
 Blocking softkey, 817

Index

Bluetooth Off On softkey, 423

Bluetooth softkey, 508

bluetooth subsystem keys

2.100 MHz, 418

40.000 MHz, 412, 418

8 Bit Pattern, 411

AM_ADDR, 410

ARB Reference Ext Int, 422

ARB Sample Clock, 423

AWGN Off On, 414

BD_ADDR, 410

Bluetooth Off On, 423

Burst Off On, 410

Burst Power Ramp, 422

C/N[1 MHz], 414

Clear Header, 413

Clock/Gate Delay, 411

Continuous PN9, 411

Drift Deviation, 415

Freq Drift Type Linear Sine, 415

Freq Offset, 416

I/Q Mod Filter Manual Auto, 419

I/Q Output Filter Manual Auto, 412

Impairments Off On, 413

Marker 1, 419, 420

Marker 1 Polarity Neg Pos, 420

Marker 2, 419, 420

Marker 2 Polarity Neg Pos, 420

Marker 3, 419, 420

Marker 3 Polarity Neg Pos, 421

Marker 4, 419, 420

Marker 4 Polarity Neg Pos, 421

Mod Index, 416

Modulator Atten Manual Auto, 417, 418

Noise Seed, 414

None, 419, 420

Packet (DH1), 421

Reference Freq, 421

Save Setup To Header, 413

Symbol Timing Err, 417

Through, 412, 418

Truncated PN9, 411

boolean SCPI parameters, 10

boolean, numeric response data, 12

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, 81

Build New Waveform Sequence softkey, 286

Burst Envelope Int Ext Off softkey, 21

Burst gate in field, 901

Burst Gate In Polarity Neg Pos softkey, 125, 126

Burst Off On softkey, 410

Burst Power Ramp softkey, 422

Bus softkey

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 list/sweep 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, 834, 862

C/N softkey, 451, 461

C/N value field, 780, 833, 862

C/N[1 MHz] softkey, 414

C4FM softkey, 723

- calculate subsystem keys
 - BER Display % Exp, 350
 - Block Count, 370
 - Class II RBER, 348
 - Class Ib RBER, 347, 348
 - Cycle End, 349
 - Error Rate, 342, 344, 345, 346, 347
 - Exceeds Any Limit, 348
 - Fail Hold, 349
 - Frame Erasure, 348
 - No Limits, 343, 346, 347, 348
 - Pass/Fail Limits, 350
 - Pass/Fail Off On, 350
 - Update Display Cycle End Cont, 351
- calibration subsystem keys
 - DCFM/DCΦM Cal, 66
 - Execute Cal, 66, 68
 - I/Q Calibration, 66
 - Revert to Default Cal Settings, 67
 - Start Frequency, 68
 - Stop Frequency, 69
- Carrier Phases Fixed Random softkey, 266
- CC softkey, 689, 692, 694
- CDL softkey, 657
- CDMA ARB subsystem keys
 - 2.100 MHz, 212
 - 3 Carriers, 219
 - 32 Ch Fwd, 217, 220
 - 4 Carriers, 219
 - 40.000 MHz, 207, 212
 - 64 Ch Fwd, 217, 220
 - 9 Ch Fwd, 217, 220
 - APCO 25 C4FM, 208
 - ARB Reference Ext Int, 215
 - ARB Sample Clock, 216
 - Bus, 223
 - CDMA Off On, 225
 - Chip Rate, 206
 - Clear Header, 210
 - Clip |I+jQ| To, 206
 - Clip |I| To, 205
 - Clip |Q| To, 205
 - Clip At PRE POST FIR Filter, 205
 - Clipping Type |I+jQ| |I|,|Q|, 206
 - Continuous, 221
 - CDMA ARB subsystem keys (*continued*)
 - CPICH, 322
 - Custom CDMA Multicarrier, 219
 - Custom CDMA State, 217, 220
 - Equal Powers, 218
 - Ext, 223
 - Ext Delay Off On, 224
 - Ext Delay Time, 224
 - Ext Polarity Neg Pos, 225
 - Filter Alpha, 209
 - Filter BbT, 209
 - Free Run, 222
 - Gate Active Low High, 222
 - Gated, 221
 - Gaussian, 208
 - I/Q Mapping Normal Invert, 210
 - I/Q Mod Filter Manual Auto, 212
 - I/Q Output Filter Manual Auto, 207
 - Immediate, 216
 - IS-2000 SR3 DS, 208
 - IS-95, 208
 - IS-95 Mod, 208
 - IS-95 Mod w/EQ, 208
 - IS-95 w/EQ, 208
 - IS-97 Levels, 218
 - Marker 1, 212, 213
 - Marker 1 Polarity Neg Pos, 213
 - Marker 2, 212, 213
 - Marker 2 Polarity Neg Pos, 214
 - Marker 3, 212, 213
 - Marker 3 Polarity Neg Pos, 214
 - Marker 4, 212, 213
 - Marker 4 Polarity Neg Pos, 214
 - Modulator Atten Manual Auto, 211
 - Multicarrier Off On, 217
 - None, 212, 213
 - Nyquist, 208
 - Off, 216
 - On, 216
 - Optimize FIR For EVM ACP, 209
 - Oversample Ratio, 215
 - Paging, 218
 - Patt Trig In 1, 223
 - Patt Trig In 2, 223
 - Pilot, 217, 218, 220

Index

CDMA ARB subsystem keys (*continued*)

- Rectangle, [208](#)
- Reference Freq, [215](#)
- Reset & Run, [222](#)
- Reverse, [217](#)
- Root Nyquist, [208](#)
- Save Setup To Header, [210](#)
- Scale to 0dB, [218](#)
- Single, [221](#)
- Store Custom CDMA State, [220](#)
- Store Custom Multicarrier, [219](#)
- Sync, [218](#)
- Through, [207](#), [212](#)
- Traffic, [218](#)
- Trigger & Run, [222](#)
- Trigger Key, [223](#)
- UN3/4 GSM Gaussian, [208](#)
- User FIR, [208](#)
- Waveform Length, [225](#)
- WCDMA, [208](#)

CDMA Freq field, [444](#)

CDMA Off On softkey, [225](#)

CDMA softkey, [92](#)

CDMA2000 ARB subsystem keys

- 1.23 MHz, [249](#)
- 1.25 MHz, [249](#)
- 2 SR3 Carriers, [235](#)
- 2.100 MHz, [233](#)
- 3 Carriers, [235](#)
- 4 Carriers, [235](#)
- 40.000 MHz, [228](#), [233](#)
- 5 Channel, [241](#)
- 8 Channel, [241](#)
- 9 Channel, [234](#)
- APCO 25 C4FM, [229](#)
- Apply Channel Setup, [239](#), [242](#)
- ARB Reference Ext Int, [247](#)
- ARB Sample Clock, [248](#)
- Bus, [251](#)
- CDMA2000 Off On, [253](#)
- Clear Header, [232](#)
- Clip I+|jQ| To, [228](#)
- Clip I| To, [227](#)
- Clip |Q| To, [227](#)
- Clip At PRE POST FIR Filter, [227](#)

CDMA2000 ARB subsystem keys (*continued*)

- Clipping Type I+|jQ| I|,|Q|, [228](#)
- Config, [239](#), [243](#)
- Continuous, [250](#)
- Custom CDMA2000 Carrier, [234](#), [236](#)
- Custom CDMA2000 Multicarrier, [235](#)
- Custom CDMA2000 State, [241](#)
- Edit Channel Setup, [239](#), [243](#)
- Equal Powers, [240](#), [244](#)
- Ext, [251](#)
- Ext Delay Off On, [253](#)
- Ext Delay Time, [252](#)
- Ext Polarity Neg Pos, [253](#)
- Filter Alpha, [230](#)
- Filter BbT, [231](#)
- Free Run, [250](#)
- Gate Active Low High, [251](#)
- Gated, [250](#)
- Gaussian, [229](#)
- I/Q Mapping Normal Invert, [234](#)
- I/Q Mod Filter Manual Auto, [233](#)
- I/Q Output Filter Manual Auto, [229](#)
- Immediate, [247](#)
- Insert Row, [239](#), [243](#)
- IS-2000 SR3 DS, [229](#)
- IS-95, [229](#)
- IS-95 Mod, [229](#)
- IS-95 Mod w/EQ, [229](#)
- IS-95 w/EQ, [229](#)
- Link Forward Reverse, [234](#)
- Marker 1, [244](#), [245](#)
- Marker 1 Polarity Neg Pos, [245](#)
- Marker 2, [244](#), [245](#)
- Marker 2 Polarity Neg Pos, [245](#)
- Marker 3, [244](#), [245](#)
- Marker 3 Polarity Neg Pos, [246](#)
- Marker 4, [244](#), [245](#)
- Marker 4 Polarity Neg Pos, [246](#)
- Modulator Atten Manual Auto, [232](#)
- Multicarrier Off On, [234](#)
- None, [244](#), [245](#)
- Nyquist, [229](#)
- Off, [247](#)
- On, [247](#)
- Optimize FIR For EVM ACP, [231](#)

CDMA2000 ARB subsystem keys (*continued*)

Patt Trig In 1, 252
 Patt Trig In 2, 252
 Pilot, 234, 241
 PN Offset, 239, 243
 Radio Config, 241
 Rate, 239, 243
 Rectangle, 229
 Reference Freq, 246
 Reset & Run, 250
 Root Nyquist, 229
 Save Setup To Header, 232
 Scale to 0dB, 240, 244
 Single, 250
 Spread Rate 1, 234, 241, 248
 Spread Rate 3, 234, 241, 248
 Spreading Type Direct Mcarrier, 234, 249
 SR1 9 Channel, 236
 SR1 Pilot, 236
 SR3 Direct 9 Channel, 236
 SR3 Direct Pilot, 236
 SR3 Mcarrier 9 Channel, 236
 SR3 MCarrier Pilot, 236
 Store Custom CDMA State, 238, 241
 Store Custom Multicarrier, 236
 Through, 228, 233
 Trigger & Run, 250
 Trigger Key, 251
 UN3/4 GSM Gaussian, 229
 User FIR, 229
 Walsh Code, 239, 243
 WCDMA, 229

CDMA2000 BBG subsystem keys and fields

APCO 25 C4FM, 426, 458
 BBG Data Clock, 424
 Bit Rate, 433, 437, 442, 455, 465, 467, 471, 476,
 481, 485, 489
 C/N, 451, 461
 CDMA Freq, 444
 CDMA2000 Off On, 492
 Change, 453
 Chip Rate, 425, 457
 DAYLT, 445
 EbNo, 429, 434, 440, 445, 454, 463, 469, 471,
 474, 480, 483, 487

CDMA2000 BBG subsystem keys and fields
(*continued*)

EcNo, 438, 472, 477
 Equal Powers, 453, 461
 Even Second Delay, 425, 457
 Ext, 428, 439, 466
 Ext CDMA Freq, 445
 External, 457
 Falling, 491
 Field 1, 435
 Field 2, 435
 Field 3, 436
 Filter Alpha, 426, 459
 Filter BbT, 427, 430, 459
 FIX4, 428, 439, 462, 463, 466, 468, 474, 479, 483,
 486
 Frame Length, 464, 466, 469, 480, 484, 487
 Frame Offset, 440, 464, 467, 470, 475, 480, 484,
 488
 FSYNCH Type, 449
 Full, 472, 477
 Gaussian, 426, 458
 Half, 472, 477
 Header, 431, 441
 Internal, 457
 Inverted, 461
 IS-95, 426, 458
 IS-95 MOD, 458
 IS-95 Mod, 426
 IS-95 MOD w/EQ, 458
 IS-95 Mod w/EQ, 426
 IS-95 w/EQ, 426, 458
 Leap Seconds, 446
 Link Forward Reverse, 424
 Long Code Mask, 460
 Long Code State, 428, 460
 LTM OFF, 446
 Message Type, 447
 Network ID, 447
 Noise Off On, 451, 462
 Normal, 461
 Nyquist, 426, 458
 Optimize FIR For EVM ACP, 427, 459
 P Rev, 448
 P Rev Min, 447

Index

CDMA2000 BBG subsystem keys and fields

(continued)

- Paging Indicator, [454](#)
- Permuted ESN, [430](#), [441](#)
- Phase Polarity, [453](#)
- PN Offset, [456](#)
- PN15, [428](#), [439](#), [462](#), [466](#), [468](#), [474](#), [479](#), [482](#), [486](#)
- PN9, [428](#), [439](#), [462](#), [466](#), [468](#), [474](#), [479](#), [482](#), [486](#)
- Power, [431](#), [437](#), [438](#), [442](#), [448](#), [452](#), [455](#), [464](#),
[467](#), [470](#), [473](#), [475](#), [478](#), [481](#), [484](#), [488](#)
- PRAT, [448](#)
- QOF, [432](#), [442](#)
- Quarter, [472](#), [477](#)
- Radio Config, [433](#), [443](#), [465](#), [468](#), [476](#), [482](#), [485](#),
[488](#)
- RadioConfig 1/2 Access, [424](#)
- RadioConfig 1/2 Traffic, [424](#)
- RadioConfig 3/4 Common Control, [424](#)
- RadioConfig 3/4 Enhanced Access, [424](#)
- RadioConfig 3/4 Traffic, [424](#)
- Ramp, [431](#)
- Ramp Time, [432](#)
- Rectangle, [426](#), [458](#)
- Reserved, [449](#)
- Rising, [491](#)
- Root Nyquist, [426](#), [458](#)
- Scale to 0dB, [453](#), [461](#)
- Spread Rate, [456](#)
- State, [438](#), [439](#), [444](#), [450](#), [452](#), [456](#), [465](#), [468](#), [471](#),
[473](#), [477](#), [479](#), [482](#), [486](#), [490](#)
- State field, [434](#)
- System ID, [449](#)
- Time, [450](#)
- Trigger Advance, [491](#)
- Turbo Coding, [443](#), [489](#)
- UN3/4 GSM Gaussian, [426](#), [458](#)
- User File, [428](#), [434](#), [439](#), [462](#), [466](#), [468](#), [474](#), [479](#),
[482](#), [486](#)
- User FIR, [426](#), [458](#)
- Walsh, [437](#), [443](#), [450](#), [452](#), [455](#), [471](#), [473](#), [476](#),
[478](#), [482](#), [485](#), [489](#)
- Walsh field, [433](#)
- CDMA2000 Off On softkey, [253](#), [492](#)
- CDPD softkey, [265](#), [267](#), [508](#)
- CDVCC softkey, [657](#), [661](#)
- CFN #0 Frame Pulse (RPS10) softkey
 - See wideband CDMA base band generator subsystem keys and fields
- Chan Code field, [790](#), [799](#)
- Chan Code softkey, [789](#)
- Change field, [453](#)
- Channel Code field, [847](#), [888](#)
 - See wideband CDMA base band generator subsystem keys and fields
- Channel softkey, [321](#), [329](#)
- Channel State field, [846](#), [853](#)
- Channel State Off On softkey, [865](#)
 - See wideband CDMA base band generator subsystem keys and fields
- ChCode Ctl field, [877](#)
- ChCode Dat field, [877](#)
- Chip Clock (RPS1) softkey
 - See wideband CDMA base band generator subsystem keys and fields
- Chip Rate field, [425](#), [457](#), [789](#), [837](#)
- Chip Rate softkey, [206](#), [306](#)
- Class Ib Bit Error softkey, [396](#), [397](#)
- Class II Bit Error softkey, [397](#)
- Class II RBER softkey, [348](#)
- Class Ib RBER softkey, [347](#), [348](#)
- Clear Header softkey, [198](#), [210](#), [232](#), [258](#), [276](#), [292](#),
[308](#), [413](#)
- Clip II+jQI To softkey, [206](#), [228](#)
- Clip III To softkey, [205](#), [227](#), [304](#), [314](#)
- Clip IQI To softkey, [205](#), [227](#), [304](#), [315](#)
- Clip At PRE POST FIR Filter, [205](#)
- Clip At PRE POST FIR Filter softkey, [227](#), [304](#)
- Clip Type II+jQI To softkey, [305](#), [315](#)
- Clipping Type II+jQI III,IQI softkey, [206](#), [228](#), [275](#),
[305](#), [315](#)
- Clock Delay Off On softkey, [364](#)
- Clock Polarity Neg Pos softkey, [364](#)
- Clock Time Delay softkey, [364](#)
- Clock/Gate Delay softkey, [411](#)
- command tree, SCPI, [6](#), [7](#)
- Common Mode I/Q Offset softkey, [24](#)
- communication subsystem keys
 - Default Gateway, [70](#)
 - GPIB Address, [70](#)
 - Hostname, [70](#)

- communication subsystem keys (*continued*)
 - IP Address, [71](#)
 - Meter Address, [72](#)
 - Meter Channel A B, [72](#)
 - Meter Timeout, [73](#)
 - Power Meter, [72](#)
 - Reset RS-232, [74](#)
 - RS-232 Baud Rate, [73](#)
 - RS-232 ECHO Off On, [74](#)
 - RS-232 Timeout, [74](#)
 - Subnet Mask, [71](#)
- Comp Mode Start Trigger Polarity Neg Pos softkey, [916](#)
- Comp Mode Start Trigger Polarity Pos Neg softkey, [824](#), [825](#)
- Comp Mode Stop Trigger Polarity Neg Pos softkey, [917](#)
- Comp Mode Stop Trigger Polarity Pos Neg softkey, [824](#)
- Compressed Frame (RPS8) softkey
 - See wideband CDMA base band generator subsystem keys and fields
- Compressed Mode Off On softkey, [916](#)
- Compressed Mode Start Trigger softkey, [799](#), [823](#), [916](#)
- Compressed Mode Stop Trigger softkey, [824](#), [917](#)
- Config softkey, [239](#), [243](#)
- Configure Cal Array softkey, [18](#)
- Continuous PN9 softkey, [411](#)
- Continuous 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
- Copy File softkey, [101](#), [106](#), [107](#), [118](#)
- correction subsystem keys
 - Configure Cal Array, [18](#)
 - Flatness Off On, [20](#)
 - Load From Selected File, [18](#)
 - Preset List, [19](#)
 - Store To File, [19](#)
- CPICH softkey, [322](#)
- CRC Size field, [828](#), [921](#), [929](#)
- creating a waveform, multitone, [292](#)
- CS-1 softkey, [621](#)
- CSID softkey, [715](#), [733](#)
- Ctrl Beta field, [865](#)
- Ctrl Pwr field, [867](#)
- Custom CDMA Multicarrier softkey, [219](#)
- Custom CDMA State softkey, [217](#), [220](#)
- Custom CDMA2000 Carrier softkey, [234](#), [236](#)
- Custom CDMA2000 Multicarrier softkey, [235](#)
- Custom CDMA2000 State softkey, [241](#)
- Custom Digital Mod State softkey, [265](#), [267](#)
- Custom Off On softkey, [512](#)
- Custom softkey, [529](#), [539](#), [584](#), [629](#), [718](#)
- custom subsystem keys
 - 16 1's & 16 0's, [500](#)
 - 16PSK, [506](#)
 - 16QAM, [506](#)
 - 256QAM, [506](#)
 - 2-Lvl FSK, [506](#)
 - 32 1's & 32 0's, [500](#)
 - 32QAM, [506](#)
 - 4 1's & 4 0's, [500](#)
 - 4-Lvl FSK, [506](#)
 - 4QAM, [506](#)
 - 64 1's & 64 0's, [500](#)
 - 64QAM, [506](#)
 - 8 1's & 8 0's, [500](#)
 - 8PSK, [506](#)
 - APCO 25 C4FM, [503](#)
 - APCO 25 w/CQPSK, [508](#)
 - BBG Data Clock Ext Int, [493](#)
 - BBG Ref Ext Int, [502](#)
 - Bluetooth, [508](#)
 - BPSK, [506](#)
 - Bus, [510](#)
 - CDPD, [508](#)
 - Continuous, [509](#)

Index

custom subsystem keys (*continued*)

Custom Off On, 512
D8PSK, 506
Diff Data Encode Off On, 501
Ext, 500, 510
Ext BBG Ref Freq, 503
Ext Data Clock Normal Symbol, 502
Ext Delay Bits, 511
Ext Delay Off On, 512
Ext Polarity Neg Pos, 512
Fall Delay, 495, 496
Fall Time, 496, 497
Filter Alpha, 493
Filter BbT, 494
FIX4, 500, 501
Free Run, 509
Freq Dev, 504
Gate Active Low High, 510
Gated, 509
Gaussian, 503
Gray Coded QPSK, 506
I/Q Scaling, 504
IS-95, 503
IS-95 Mod, 503
IS-95 Mod w/EQ, 503
IS-95 OQPSK, 506
IS-95 QPSK, 506
IS-95 w/EQ, 503
MSK, 506
None, 508
Nyquist, 503
Optimize FIR For EVM ACP, 500
OQPSK, 506
 $\pi/4$ DQPSK, 506
Patt Trig In 1, 511
Patt Trig In 2, 511
Phase Dev, 505
Phase Polarity Normal Invert, 506
PN11, 500
PN15, 500
PN20, 500
PN23, 500
PN9, 500
QPSK, 506
Rectangle, 503

custom subsystem keys (*continued*)

Reset & Run, 509
Rise Delay, 497, 498
Rise Time, 498, 499
Root Nyquist, 503
Single, 509
Symbol Rate, 507
Trigger & Run, 509
Trigger Key, 510
UN3/4 GSM Gaussian, 503
User File, 500
User FIR, 503
User FSK, 505, 506
User I/Q, 506
Custom TS softkey, 583, 621, 627
Custom WCDMA State softkey, 327
Cycle Count softkey, 405
Cycle End softkey, 349

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 Beta field, 869

Data Clock Out Neg Pos softkey, 128

Data Clock Polarity Neg Pos softkey, 125, 127, 129

Data field, 848, 933

Data Mode Raw Enc TLM softkey, 594

Data Out Polarity Neg Pos softkey, 128, 130

Data Polarity Neg Pos softkey, 125, 127, 365

Data Pwr field, 871

Data Rate field, 800

data subsystem keys

Error Out, 358

PN9, 358

Reference Out, 358

DATA/CLK/SYNC Rear Outputs Off On softkey,
130

- DAYLT field, 445
 dBm softkey, 164
 dBuV softkey, 164
 dBuVemf softkey, 164
 DC softkey, 181
 DCFM/DC Φ M Cal softkey, 66
 DCH1 softkey, 835
 DCH2 softkey, 835
 DCH3 softkey, 835
 DCH4 softkey, 835
 DCH5 softkey, 835
 DCH6 softkey, 835
 decimal values, 16
 Dect Off On softkey, 559
 DECT softkey, 265, 267
 DECT subsystem keys
 16 1's & 16 0's, 522, 529, 531, 534, 536, 538, 539, 544, 546, 548, 550
 16-Lvl FSK, 522
 16PSK, 528
 16QAM, 528
 256QAM, 528
 2-Lvl FSK, 528
 32 1's & 32 0's, 522, 529, 531, 534, 536, 538, 539, 544, 546, 548, 550
 32QAM, 528
 4 1's & 4 0's, 522, 529, 531, 534, 536, 538, 539, 544, 546, 548, 550
 4-Lvl FSK, 528
 4QAM, 528
 64 1's & 64 0's, 522, 529, 531, 534, 536, 538, 539, 544, 546, 548, 550
 64QAM, 528
 8 1's & 8 0's, 522, 529, 531, 534, 536, 538, 539, 544, 546, 548, 550
 8-Lvl FSK, 522
 8PSK, 528
 A field, 530, 533, 535, 537, 540, 541, 543, 545, 547, 549
 All Timeslots, 553
 APCO 25 C4FM, 525
 BBG Data Clock Ext Int, 514
 BBG Ref Ext Int, 524
 Begin Frame, 553
 Begin Timeslot #, 553, 554
 DECT subsystem keys (*continued*)
 BPSK, 528
 Bus, 552, 557
 Continuous, 556
 Custom, 529, 539
 D8PSK, 528
 Data Format Pattern Framed, 521
 Dect Off On, 559
 DM0, 529, 531, 534, 536, 538, 539, 544, 546, 548, 550
 DM1, 529, 531, 534, 536, 538, 539, 544, 546, 548, 550
 Dummy Bearer 1, 539
 Dummy Bearer 2, 539
 Ext, 522, 529, 531, 534, 536, 538, 539, 544, 546, 548, 550, 552, 557
 Ext Data Clock Normal Symbol, 524
 Ext Delay Bits, 558
 Ext Delay Off On, 559
 Ext Polarity Neg Pos, 559
 FACC, 529, 531, 534, 536, 538, 539, 544, 546, 548, 550
 Fall Delay, 517, 518
 Fall Time, 517, 518
 FDEV1_FS, 529, 531, 534, 536, 538, 539, 544, 546, 548, 550
 FDEV1_HS, 529, 531, 534, 536, 538, 539, 544, 546, 548, 550
 FDEV2_FS, 529, 531, 534, 536, 538, 539, 544, 546, 548, 550
 Filter Alpha, 514
 Filter BbT, 515
 FIX4, 522, 523, 529, 530, 531, 532, 534, 536, 537, 538, 539, 540, 544, 546, 547, 548, 549, 550, 551
 Free Run, 556
 Freq Dev, 526
 Gate Active Low High, 557
 Gated, 556
 Gaussian, 525
 Gray Coded QPSK, 528
 I/Q Scaling, 526
 IS-95, 525
 IS-95 Mod, 525
 IS-95 Mod w/EQ, 525

Index

DECT subsystem keys (*continued*)

IS-95 OQPSK, [528](#)
IS-95 QPSK, [528](#)
IS-95 w/EQ, [525](#)
Low Capacity, [529](#), [539](#)
Low Capacity with Z field, [529](#), [539](#)
MSK, [528](#)
Nyquist, [525](#)
Optimize FIR For EVM ACP, [522](#)
OQPSK, [528](#)
P, [530](#), [533](#), [535](#), [537](#), [541](#), [542](#), [543](#), [546](#), [548](#), [550](#)
 $\pi/4$ DQPSK, [528](#)
Patt Trig In 1, [557](#)
Patt Trig In 2, [557](#)
Phase Dev, [527](#)
Phase Polarity Normal Invert, [528](#)
PN11, [522](#), [529](#), [531](#), [534](#), [536](#), [538](#), [539](#), [546](#), [548](#), [550](#)
PN15, [522](#), [529](#), [531](#), [534](#), [536](#), [538](#), [539](#), [544](#), [546](#), [548](#), [550](#)
PN20, [522](#), [529](#), [531](#), [534](#), [536](#), [538](#), [539](#), [546](#), [548](#), [550](#)
PN23, [522](#), [529](#), [531](#), [534](#), [536](#), [538](#), [539](#), [546](#), [548](#), [550](#)
PN9, [522](#), [529](#), [531](#), [534](#), [536](#), [538](#), [539](#), [544](#), [546](#), [548](#), [550](#)
PN9 Mode Normal Quick, [516](#)
QPSK, [528](#)
Recall Secondary Frame State, [551](#)
Rectangle, [525](#)
Reset & Run, [556](#)
Restore DECT Factory Default, [523](#)
Rise Delay, [519](#)
Rise Time, [520](#)
Root Nyquist, [525](#)
S, [531](#), [534](#), [536](#), [538](#), [541](#), [542](#), [543](#), [546](#), [548](#), [550](#)
Save Secondary Frame State, [552](#)
Secondary Frame Off On, [552](#)
Sine, [499](#), [521](#)
Single, [556](#)
Symbol Rate, [554](#)
Sync Out Offset, [553](#)
Timeslot Ampl Main Delta, [532](#), [545](#)
Timeslot Off On, [533](#), [545](#)
Traffic Bearer, [529](#), [539](#)

DECT subsystem keys (*continued*)

Traffic Bearer with Z field, [529](#), [539](#)
Trigger & Run, [556](#)
Trigger Key, [552](#), [557](#)
UN3/4 GSM Gaussian, [525](#)
User File, [499](#), [521](#), [522](#), [529](#), [531](#), [534](#), [536](#), [538](#), [539](#), [544](#), [546](#), [548](#), [550](#)
User FIR, [525](#)
User FSK, [527](#), [528](#)
User I/Q, [528](#)
Default Gateway softkey, [70](#)
Delay Bits softkey, [404](#)
Delete All NVWFM Files softkey, [119](#)
Delete All WFM Files softkey, [119](#)
Delete All WFM1 Files softkey, [120](#)
Delete File softkey, [120](#)
Delete softkeys
Delete All ARB CDMA Files, [108](#)
Delete All ARB DMOD Files, [109](#)
Delete All ARB DWCDMA Files, [109](#)
Delete All ARB FCDMA Files, [109](#)
Delete All ARB MCDMA Files, [111](#)
Delete All ARB MDMOD Files, [111](#)
Delete All ARB MDWCDMA Files, [111](#)
Delete All ARB MFCDMA Files, [112](#)
Delete All ARB MTONE Files, [112](#)
Delete All ARB RCDMA Files, [112](#)
Delete All ARB UWCDMA Files, [114](#)
Delete All Binary Files, [108](#)
Delete All Bit Files, [108](#)
Delete All Files, [107](#)
Delete All FIR Files, [110](#)
Delete All FSK Files, [110](#)
Delete All I/Q Files, [110](#)
Delete All List Files, [111](#)
Delete All SEQ Files, [113](#)
Delete All SHAPE Files, [113](#)
Delete All State Files, [113](#)
Delete All UFLT Files, [114](#)
Delete File, [114](#)
Diagnostic Info softkey, [76](#), [77](#), [78](#), [79](#), [85](#)
diagnostic subsystem keys
Diagnostic Info, [76](#), [77](#), [78](#), [79](#)
Installed Board Info, [76](#)
Options Info, [77](#), [78](#)

- Diff Data Encode Off On softkey, [501](#), [611](#)
- Diff. Mode I Offset softkey, [24](#)
- Diff. Mode Q Offset softkey, [25](#)
- Digital Modulation Off On softkey, [273](#)
- digital modulation subsystem keys
 - ALC BW Normal Narrow, [21](#)
 - BBG1, [23](#), [34](#)
 - Burst Envelope Int Ext Off, [21](#)
 - Common Mode I/Q Offset, [24](#)
 - Diff. Mode I Offset, [24](#)
 - Diff. Mode Q Offset, [25](#)
 - Ext 50 Ohm, [23](#), [34](#)
 - Ext 600 Ohm, [23](#), [34](#)
 - Ext In 600 Ohm I Offset, [26](#)
 - Ext In 600 Ohm Q Offset, [26](#)
 - High Crest Mode Off On, [22](#)
 - I Offset, [27](#)
 - I/Q Adjustments Off On, [29](#)
 - I/Q Gain Balance Source 1, [27](#)
 - I/Q Off On, [35](#)
 - I/Q Out Gain Balance, [25](#)
 - I/Q Output Atten, [26](#)
 - I/Q Skew, [29](#)
 - Int I/Q Skew Corrections Off Int Ext, [33](#), [34](#)
 - Int Phase Polarity Normal Invert, [23](#), [33](#)
 - Off, [23](#), [34](#)
 - Q Offset, [28](#)
 - Quadrature Skew, [28](#)
- discrete response data, [11](#)
- discrete SCPI parameters, [9](#)
- display contrast hardkeys, [82](#)
- display subsystem keys
 - Brightness, [81](#)
 - display contrast, [82](#)
 - Inverse Video Off On, [82](#)
 - Update in Remote Off On, [82](#)
- DL Reference 1.1 softkey, [914](#)
 - wideband CDMA base band generator subsystem softkeys
 - DL Reference 1.1, [822](#)
- DL Reference 1.2 softkey, [914](#)
 - wideband CDMA base band generator subsystem softkeys
 - DL Reference 1.2, [822](#)
- DL Reference 2.1 softkey, [914](#)
 - wideband CDMA base band generator subsystem softkeys
 - DL Reference 2.1, [822](#)
- DL Reference 2.2 softkey, [914](#)
 - wideband CDMA base band generator subsystem softkeys
 - DL Reference 2.2, [822](#)
- DM0 softkey
 - See* DECT subsystem keys
- DM1 softkey
 - See* DECT subsystem keys
- DMOD softkey, [92](#)
- Dmodulation subsystem keys
 - # of Carriers, [265](#), [268](#)
 - 16PSK, [261](#)
 - 16QAM, [261](#)
 - 2.100 MHz, [259](#)
 - 256QAM, [261](#)
 - 2-Lvl FSK, [261](#)
 - 32QAM, [261](#)
 - 40.000 MHz, [255](#), [259](#)
 - 4-Lvl FSK, [261](#)
 - 4QAM, [261](#)
 - 64QAM, [261](#)
 - 8PSK, [261](#)
 - APCO 25 C4FM, [256](#)
 - APCO 25 w/C4FM, [265](#), [267](#)
 - APCO 25 w/C4QPSK, [265](#), [267](#)
 - ARB Reference Ext Int, [264](#)
 - ARB Sample Clock, [264](#)
 - BPSK, [261](#)
 - Bus, [271](#)
 - Carrier Phases Fixed Random, [266](#)
 - CDPD, [265](#), [267](#)
 - Clear Header, [258](#)
 - Continuous, [270](#)
 - Custom Digital Mod State, [265](#), [267](#)
 - D8PSK, [261](#)
 - DECT, [265](#), [267](#)
 - Digital Modulation Off On, [273](#)
 - EDGE, [265](#), [267](#)
 - Ext, [271](#)
 - Ext Delay Off On, [272](#)
 - Ext Delay Time, [272](#)

Index

Dmodulation subsystem keys (*continued*)

Ext Polarity Neg Pos, 272
Filter Alpha, 257
Filter BbT, 257
Free Run, 270
Freq Dev, 261
Freq Spacing, 265
Gate Active Low High, 271
Gated, 270
Gaussian, 256
Gray Coded QPSK, 261
GSM, 265, 267
I/Q Mod Filter Manual Auto, 260
I/Q Output Filter Manual Auto, 255
Immediate, 264
Initialize Table, 267
Insert Row, 236, 267
IS-2000 SR3 DS, 256
IS-95, 256
IS-95 Mod, 256
IS-95 Mod w/EQ, 256
IS-95 OQPSK, 261
IS-95 QPSK, 261
IS-95 w/EQ, 256
Load/Store, 266
Marker 1, 260, 261
Marker 1 Polarity Neg Pos, 262
Marker 2, 260, 261
Marker 2 Polarity Neg Pos, 262
Marker 3, 260, 261
Marker 3 Polarity Neg Pos, 262
Marker 4, 260, 261
Marker 4 Polarity Neg Pos, 263
Modulator Atten Manual Auto, 258, 259
MSK, 261
Multicarrier Off On, 265
NADC, 265, 267
None, 260, 261
Nyquist, 256
Off, 264
On, 264
Optimize FIR For EVM ACP, 257
OQPSK, 261
 $\pi/4$ DQPSK, 261
Patt Trig In 1, 273

Dmodulation subsystem keys (*continued*)

Patt Trig In 2, 273
PDC, 265, 267
PHS, 265, 267
PWT, 265, 267
QPSK, 261
Rectangle, 256
Reference Freq, 202, 263
Reset & Run, 270
Root Nyquist, 256
Save Setup To Header, 258
Select File, 236, 265
Single, 270
Store Custom Dig Mod State, 268
Symbol Rate, 268
TETRA, 265, 267
Through, 255, 259
Trigger & Run, 270
Trigger Key, 271
UN3/4 GSM Gaussian, 256
User FIR, 256
User FSK, 261
User I/Q, 261
WCDMA, 256
Dn Custom Cont softkey, 770
Dn Normal Cont softkey, 770
Dn Normal Disc softkey, 770
Dn Sync Cont softkey, 770
Dn Sync Disc softkey, 770
Do Power Search softkey, 53, 54, 55, 56
Doppler Shift softkey, 595
Down Custom softkey, 663, 695
Down TCH All softkey, 663, 695
Down TCH softkey, 663, 695
Down/Up softkey, 796, 843
Downlink MCS-1 softkey, 621
Downlink MCS-5 softkey, 577
Downlink MCS-9 softkey, 577
DPCCH + 1 DPDCH softkey, 327
DPCCH + 2 DPDCH softkey, 327
DPCCH + 3 DPCCH softkey, 327
DPCCH + 4 DPDCH softkey, 327
DPCCH + 5 DPDCH softkey, 327
DPCCH Pilot data-clk (DRPS23) softkey, 810, 812, 813, 814

- DPCCH Power field, [840](#)
- 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, [327](#), [835](#), [857](#)
- DPCCH TFC I data-clk (DRPS22) softkey, [810](#),
[812](#), [813](#), [814](#)
- DPCCH TPC indicator (DRPS21) softkey, [810](#), [812](#),
[813](#), [814](#)
- DPCH + 1 softkey, [781](#), [782](#)
- DPCH + 2 softkey, [781](#), [782](#)
- DPCH Channel Balance softkey, [789](#)
- DPCH Compressed Frame Indicator (DRPS32)
 softkey, [810](#), [812](#), [813](#), [814](#)
- DPCH data stream (DRPS24) softkey, [810](#), [812](#),
[813](#), [814](#)
- DPCH data-clk (0) (DRPS28) softkey, [810](#), [812](#),
[813](#), [814](#)
- DPCH Gap Indicator (DRPS33) softkey, [810](#), [812](#),
[813](#), [814](#)
- DPCH softkey, [322](#)
- DPCH TimeSlot pulse (DRPS25) softkey, [810](#), [812](#),
[813](#), [814](#)
- DPCH10ms Frame-Pulse (DRPS26) softkey, [810](#),
[812](#), [813](#), [814](#)
- DPDCH data-clk withDTX (DRPS20) softkey, [810](#),
[812](#), [813](#), [814](#)
- DPDCH data-clk WithOutDTX (DRPS30) softkey,
[810](#), [812](#), [813](#), [814](#)
- DPDCH Power field, [849](#)
- 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, [835](#)
- Drift Deviation softkey, [415](#)
- dual ARB subsystem
 Through, [277](#)
- dual ARB subsystem keys
 # Skipped Points, [281](#)
- dual ARB subsystem keys (*continued*)
 2.100 MHz, [279](#)
 40.000 MHz, [277](#), [279](#)
 ARB Off On, [291](#)
 ARB Reference Ext Int, [22](#), [23](#), [30](#), [31](#), [32](#), [284](#)
 ARB Sample Clock, [286](#)
 Build New Waveform Sequence, [286](#)
 Bus, [289](#)
 Clear Header, [276](#)
 Clipping Type II+jQI III,IQI, [275](#)
 Continuous, [288](#)
 Edit Repetitions, [286](#)
 Edit Selected Waveform Sequence, [286](#)
 Ext, [289](#)
 Ext Delay Off On, [290](#)
 Ext Delay Time, [290](#)
 Ext Polarity Neg Pos, [291](#)
 First Mkr Point, [279](#), [281](#)
 Free Run, [287](#)
 Gate, [287](#)
 Gate Active Low High, [288](#)
 I/Q Mod Filter Manual Auto, [279](#)
 I/Q Output Filter Manual Auto, [276](#), [277](#)
 Immediate, [285](#)
 Last Mkr Point, [279](#), [281](#)
 Marker 1, [282](#)
 Marker 1 2, [279](#), [281](#)
 Marker 1 Polarity Neg Pos, [283](#)
 Marker 2, [282](#)
 Marker 2 Polarity Neg Pos, [283](#)
 Marker 3, [282](#)
 Marker 3 Polarity Neg Pos, [283](#)
 Marker 4, [282](#)
 Marker 4 Polarity Neg Pos, [283](#)
 Modulator Atten Manual Auto, [278](#)
 None, [282](#)
 Off, [285](#)
 On, [285](#)
 Patt Trig In 1, [289](#)
 Patt Trig In 2, [289](#)
 Reference Freq, [284](#)
 Reset & Run, [287](#)
 Save Setup To Header, [276](#)
 Scaling, [285](#)
 Segment Advance, [287](#)

Index

dual ARB subsystem keys (*continued*)

- Select Waveform, [291](#)
- Set Marker Off All Points, [280](#)
- Single, [287](#), [288](#)
- Through, [277](#), [279](#)
- Toggle Marker 1, [286](#)
- Trigger & Run, [287](#)
- Trigger Key, [289](#)
- Waveform Runtime Scaling, [285](#)

Dual-Sine softkey, [169](#), [175](#), [181](#), [187](#)

Dummy Bearer 1 softkey, [539](#)

Dummy Bearer 2 softkey, [539](#)

Dummy softkey, [629](#)

DWCDMA softkey, [93](#)

Dwell Type List Step softkey, [47](#)

E

Eb/No field, [863](#)

Eb/No value (dB) field, [834](#)

EbNo field

See CDMA2000 BBG subsystem keys and fields

Ec/No value field, [780](#), [863](#)

EcNo field, [438](#), [472](#), [477](#)

EDGE BERT Off On softkey, [387](#)

EDGE Off On softkey, [592](#)

EDGE softkey, [265](#), [267](#), [570](#)

EDGE subsystem keys

16 1's & 16 0's, [567](#), [575](#), [577](#)

16PSK, [573](#)

16QAM, [573](#)

256QAM, [573](#)

2-Lvl FSK, [573](#)

32 1's & 32 0's, [567](#), [575](#), [577](#)

32QAM, [573](#)

4 1's & 4 0's, [567](#), [575](#), [577](#)

4-Lvl FSK, [573](#)

4QAM, [573](#)

64 1's & 64 0's, [567](#), [575](#), [577](#)

64QAM, [573](#)

8 1's & 8 0's, [567](#), [575](#), [577](#)

8PSK, [573](#)

All Timeslots, [585](#)

APCO 25 C4FM, [570](#)

BBG Ref Ext Int, [569](#)

Begin Frame, [585](#)

EDGE subsystem keys (*continued*)

Begin Timeslot #, [585](#), [586](#)

BPSK, [573](#)

Bus, [575](#), [589](#)

Continuous, [588](#)

Custom, [584](#)

Custom TS, [583](#)

D8PSK, [573](#)

Data Format Pattern Framed, [566](#)

Downlink MCS-5, [577](#)

Downlink MCS-9, [577](#)

EDGE, [570](#)

EDGE Off On, [592](#)

E-TCH/F43.2, [577](#)

Ext, [567](#), [575](#), [577](#), [589](#)

Ext BBG Ref Freq, [570](#)

Ext Data Clock Ext Int, [560](#)

Ext Data Clock Normal Symbol, [569](#)

Ext Delay Bits, [590](#)

Ext Delay Off On, [591](#)

Ext Polarity Neg Pos, [591](#)

Fall Delay, [561](#), [562](#)

Fall Time, [562](#), [563](#)

Filter Alpha, [560](#)

Filter BbT, [561](#)

FIX4, [567](#), [568](#), [575](#), [576](#), [577](#), [580](#)

Free Run, [588](#)

Freq Dev, [571](#)

G, [576](#), [582](#)

Gate Active Low High, [589](#)

Gated, [588](#)

Gaussian, [570](#)

Gray Coded QPSK, [573](#)

I/Q Scaling, [571](#)

IS-95, [570](#)

IS-95 Mod, [570](#)

IS-95 Mod w/EQ, [570](#)

IS-95 OQPSK, [573](#)

IS-95 QPSK, [573](#)

IS-95 w/EQ, [570](#)

MSK, [573](#)

Normal, [584](#)

Normal All, [584](#)

Nyquist, [570](#)

Optimize FIR For EVM ACP, [567](#)

EDGE subsystem keys (*continued*)

OQPSK, 573
 $\pi/4$ DQPSK, 573
 Patt Trig In 1, 590
 Patt Trig In 2, 590
 Phase Dev, 572
 Phase Polarity Normal Invert, 573
 PN11, 567, 575, 577
 PN15, 567, 575, 577, 579, 580, 581, 582
 PN20, 567, 575, 577
 PN23, 567, 575, 577
 PN9, 567, 575, 577, 579, 580, 581, 582
 QPSK, 573
 Recall Secondary Frame State, 574
 Rectangle, 570
 Reset & Run, 588
 Restore EDGE Factory Default, 568
 Rise Delay, 563, 564
 Rise Time, 565
 Root Nyquist, 570
 Save Secondary Frame State, 574
 Secondary Frame Off On, 575
 Sine, 566
 Single, 588
 Symbol Rate, 586
 Sync Out Offset, 585
 T1, 583
 T2, 583
 Timeslot Ampl Main Delta, 584
 Timeslot Off On, 584
 Trigger & Run, 588
 Trigger Key, 575, 589
 TSC0, 583
 TSC1, 583
 TSC2, 583
 TSC3, 583
 TSC4, 583
 TSC5, 583
 TSC6, 583
 TSC7, 583
 UN3/4 GSM Gaussian, 570
 Uncoded, 577
 Uplink MCS-5, 577
 Uplink MCS-9, 577
 User File, 566, 567, 575, 577

EDGE subsystem keys (*continued*)

User FIR, 570
 User FSK, 572, 573
 User I/Q, 573
 Edit Channel Setup softkey, 239, 243
 Edit Repetitions softkey, 286
 Edit Selected Waveform Sequence softkey, 286
 Equal Energy per Symbol softkey, 326
 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
 Error BER softkey, 930
 Error Bits softkey, 922
 Error Blocks field, 923
 Error Count softkey, 386
 See sense subsystem keys
 Error Info softkey, 150
 Error Out softkey, 358
 Error Rate softkey
 See calculate subsystem keys
 See calculate subsystem keys
 ET softkey, 619
 E-TCH/F43.2 softkey, 577
 Even Second Delay field, 425, 457
 Event 1 Polarity Neg Pos softkey, 129, 130
 Event 2 Polarity Neg Pos softkey, 129, 130
 Exceeds Any Limit softkey, 348
 Exceeds Any Thresholds softkey
 See sense subsystem keys
 Execute Cal softkey, 66, 68
 Ext 50 Ohm softkey, 23, 34
 Ext 600 Ohm softkey, 23, 34
 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, 445
 Ext Clock Rate x1 x2 x4 softkey, 779

Index

- 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
- 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 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 Delay Time softkey, [224](#), [252](#), [272](#), [290](#), [337](#)
- Ext Frame Trigger Delay softkey, [371](#)
- Ext In 600 Ohm I Offset softkey, [26](#)
- Ext In 600 Ohm Q Offset softkey, [26](#)
- 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
- Ext Polarity Neg Pos softkey (continued)
 - 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
 - See amplitude modulation subsystem keys
 - 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 list/sweep 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, [167](#), [174](#), [185](#)
 - Ext Detector, [57](#)
 - Ext Pulse, [193](#)
 - Ext1, [170](#), [177](#), [188](#)
 - Ext2, [170](#), [177](#), [188](#)
- extended numeric SCPI parameter, [9](#)
- External Frame Trigger Polarity Neg Pos softkey, [372](#)
- External softkey, [457](#)

F

FACC softkey

See DECT subsystem keys

Fail Hold softkey, [349](#)

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

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, [491](#)

FBI State field, [840](#)

FCDMA softkey, [93](#)

FCOR softkey, [759](#), [763](#)

FCorr softkey, [629](#)

FDEV1_FS softkey

See DECT subsystem keys

FDEV1_HS softkey

See DECT subsystem keys

FDEV2_FS softkey

See DECT subsystem keys

Field 1 field, [435](#)

Field 2 field, [435](#)

Field 3 field, [436](#)

file

systems, [117](#)

types, [117](#)

Filter Alpha softkey, [855](#)

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

Filter Alpha softkey, 855 (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

Filter BbT softkey, [855](#)

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 softkey, [94](#)

First Mkr Point softkey, [279](#), [281](#)

First Spread Code softkey, [321](#), [329](#)

FIX softkey, [840](#)

FIX4 softkey, [839](#), [866](#), [870](#)

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

Index

FIX4 softkey, 839, 866, 870 (continued)

See wideband CDMA baseband generator
subsystem keys and fields

Flat Noise BW field, [836](#)

Flatness Off On softkey, [20](#)

FM softkeys

FM Dev, [178](#)

FM Dev Couple Off On, [178](#)

FM Off On, [177](#)

FM Path 1 2, [173](#)

FM Stop Rate, [175](#)

FM Sweep Rate, [176](#)

FM Tone 2 Amp Percent of Peak, [175](#)

FM Tone 2 Rate, [175](#)

forgiving listening and precise talking, [8](#)

Frame Clock Polarity Neg Pos softkey, [854](#)

Frame Count softkey

See sense subsystem keys

Frame Erasure softkey, [397](#)

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, [480](#)

Frame Repeat Single Cont softkey, [654](#)

Frame Sync Trigger Mode Single Cont softkey, [909](#)

Frame Trigger Source Int Ext softkey, [372](#)

Free Run softkey

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 list/sweep 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

Free Run softkey (continued)

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 Drift Type Linear Sine softkey, [415](#)

Freq Offset softkey, [416](#)

Freq softkeys

Freq, [39](#)

Freq Multiplier, [40](#)

Freq Offset, [38, 40, 41](#)

Freq Ref Off On, [41](#)

Freq Ref Set, [41](#)

Freq Start, [42](#)

Freq Spacing softkey, [265, 300, 301](#)

Frequency hardkey, [36, 37, 39, 43](#)

frequency modulation subsystem keys

Bus, [176](#)

Dual-Sine, [175](#)

Ext, [176](#)

Ext Coupling DC AC, [174](#)

Ext1, [177](#)

Ext2, [177](#)

FM Dev, [178](#)

FM Dev Couple Off On, [178](#)

FM Off On, [177](#)

FM Path 1 2, [173](#)

FM Stop Rate, [175](#)

FM Sweep Rate, [176](#)

FM Tone 2 Amp Percent of Peak, [175](#)

FM Tone 2 Rate, [175](#)

Free Run, [176](#)

Incr Set, [173](#)

Internal 1, [177](#)

Internal 2, [177](#)

Noise, [175](#)

Ramp, [175](#)

- frequency modulation subsystem keys (*continued*)
 Sine, [175](#)
 Square, [175](#)
 Swept-Sine, [175](#)
 Triangle, [175](#)
 Trigger Key, [176](#)
- frequency subsystem keys
 Adjust Phase, [44](#)
 Freq, [39](#)
 Freq Multiplier, [40](#)
 Freq Offset, [38](#), [40](#), [41](#)
 Freq Ref Off On, [41](#)
 Freq Ref Set, [41](#)
 Freq Start, [42](#)
 Frequency, [36](#), [37](#), [39](#), [43](#)
 Phase Ref Set, [44](#)
 Ref Oscillator Source Auto Off On, [45](#)
- FSK softkey, [94](#)
 FSYNCH Type field, [449](#)
 Full softkey, [472](#), [477](#)
 Function Generator softkey, [182](#)
- G**
- G softkey, [576](#), [582](#)
 Gain Unit dB Lin Index softkey, [330](#)
 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, [361](#)
 Gate Delay Off On softkey, [362](#)
 Gate Mode Time Clk softkey, [361](#)
 Gate Off On softkey, [363](#)
 Gate Polarity Neg Pos softkey, [362](#)
 Gate softkey, [287](#)
- Gate Time Delay softkey, [362](#)
 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 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
- Goto Row softkey, [298](#)
 GPIB Address softkey, [70](#)
 GPS Ref (f0) softkey, [599](#)
 GPS Ref Clk Ext Int softkey, [598](#)
 GPS subsystem
 Data Mode Raw Enc TLM, [594](#)
 GPS subsystem keys
 APCO 25 C4FM, [595](#)
 Data Mode Raw Enc TLM, [594](#)
 Doppler Shift, [595](#)
 Filter Alpha, [596](#)
 Filter BbT, [596](#)
 FIX4, [594](#)
 Gaussian, [595](#)

Index

GPS subsystem keys (*continued*)

- GPS Ref (f0), [599](#)
- GPS Ref Clk Ext Int, [598](#)
- IQ Phase Normal Invert, [597](#)
- IS-95, [595](#)
- IS-95 Mod, [595](#)
- IS-95 Mod w/EQ, [595](#)
- IS-95 w/EQ, [595](#)
- Nyquist, [595](#)
- Optimize FIR For EVM ACP, [597](#)
- P Code Pwr, [598](#)
- PN15, [594](#)
- PN9, [594](#)
- Ranging Code C/A P C/A+P, [598](#)
- Real-time GPS Off On, [600](#)
- Rectangle, [595](#)
- Root Nyquist, [595](#)
- Satellite ID, [599](#)
- UN3/4 GSM Gaussian, [595](#)
- User File, [594](#)
- User FIR, [595](#)

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, [400](#)

GSM Off On softkey, [636](#)

GSM softkey, [265](#), [267](#)

GSM subsystem keys

- 16 1's & 16 0's, [610](#), [618](#), [620](#), [621](#), [628](#)
- 16PSK, [616](#)
- 16QAM, [616](#)
- 256QAM, [616](#)
- 2-Lvl FSK, [616](#)
- 32 1's & 32 0's, [610](#), [618](#), [620](#), [621](#), [628](#)
- 32QAM, [616](#)
- 4 1's & 4 0's, [610](#), [618](#), [620](#), [621](#), [628](#)
- 4-Lvl FSK, [616](#)
- 4QAM, [616](#)

GSM subsystem keys (*continued*)

- 64 1's & 64 0's, [610](#), [618](#), [620](#), [621](#), [628](#)
- 64QAM, [616](#)
- 8 1's & 8 0's, [610](#), [618](#), [620](#), [621](#), [628](#)
- 8PSK, [616](#)
- Access, [629](#)
- All Timeslots, [629](#)
- APCO 25 C4FM, [613](#)
- BBG Data Clock Ext Int, [601](#)
- BBG Ref Ext Int, [612](#)
- Begin Frame, [629](#)
- Begin Timeslot #, [629](#), [630](#)
- BPSK, [616](#)
- Bus, [618](#), [634](#)
- Continuous, [632](#)
- CS-1, [621](#)
- Custom, [629](#)
- Custom TS, [621](#), [627](#)
- D8PSK, [616](#)
- Data Format Pattern Framed, [609](#)
- Diff Data Encode Off On, [611](#)
- Downlink MCS-1, [621](#)
- Dummy, [629](#)
- ET, [619](#)
- Ext, [610](#), [618](#), [620](#), [628](#), [634](#)
- Ext BBG Ref Freq, [525](#), [613](#)
- Ext Data Clock Normal Symbol, [612](#)
- Ext Delay Bits, [635](#)
- Ext Delay Off On, [636](#)
- Ext Polarity Neg Pos, [636](#)
- Fall Delay, [604](#), [605](#)
- Fall Time, [604](#), [606](#)
- FCorr, [629](#)
- Filter Alpha, [601](#)
- Filter BbT, [602](#)
- FIX4, [610](#), [618](#), [619](#), [620](#), [621](#), [625](#), [628](#)
- Free Run, [633](#)
- Freq Dev, [614](#)
- Gate Active Low High, [633](#)
- Gated, [632](#)
- Gaussian, [613](#)
- Gray Coded QPSK, [616](#)
- GSM Off On, [636](#)
- I/Q Scaling, [614](#)
- IS-95, [613](#)

GSM subsystem keys (*continued*)

IS-95 Mod, 613
 IS-95 Mod w/EQ, 613
 IS-95 OQPSK, 616
 IS-95 QPSK, 616
 IS-95 w/EQ, 613
 MSK, 616
 Normal, 629
 Normal All, 629
 Nyquist, 613
 Optimize FIR For EVM ACP, 610
 OQPSK, 616
 $\pi/4$ DQPSK, 616
 Patt Trig In 1, 634
 Patt Trig In 2, 634
 Phase Dev, 615
 Phase Polarity Normal Invert, 617
 PN11, 610, 628
 PN15, 610, 618, 620, 621, 625, 626, 628
 PN20, 610, 628
 PN23, 610, 628
 PN9, 610, 618, 620, 621, 625, 626, 628
 PN9 Mode Normal Quick, 603
 QPSK, 616
 Recall Secondary Frame State, 617
 Rectangle, 613
 Reset & Run, 633
 Restore Factory Default, 611
 Rise Delay, 606, 607
 Rise Time, 607, 608
 Root Nyquist, 613
 S, 626
 Save Secondary Frame State, 617
 Secondary Frame Off On, 618
 Sine, 609
 Single, 632
 SS, 620
 Symbol Rate, 631
 Sync, 629
 Sync Out Offset, 630
 TCH/FS, 621
 Timeslot Ampl Main Delta, 627
 Timeslot Off On, 628
 Trigger & Run, 633
 Trigger Key, 618, 634

GSM subsystem keys (*continued*)

TS, 629
 TSC0, 621, 627
 TSC1, 621, 627
 TSC2, 621, 627
 TSC3, 621, 627
 TSC4, 621, 627
 TSC5, 621, 627
 TSC6, 621, 627
 TSC7, 621, 627
 UN3/4 GSM Gaussian, 613
 Uplink MCS-1, 621
 User File, 609, 610, 618, 620, 621, 628
 User FIR, 613
 User FSK, 615, 616
 User I/Q, 616

H

Half softkey, 472, 477
 Header field, 431, 441
 Help Mode Single Cont softkey, 150, 151
 hexadecimal values, 16
 High Amplitude softkey
 See sense subsystem keys
 High Crest Mode Off On softkey, 22
 Higher Layer softkey, 910
 Hostname softkey, 70

I

I Offset softkey, 27
 I/Q Adjustments Off On softkey, 29
 I/Q Calibration softkey, 66
 I/Q Gain Balance Source 1 softkey, 27
 I/Q Mapping Normal Invert softkey, 210, 234, 309
 I/Q Mod Filter Manual Auto softkey, 200, 212, 233, 260, 279, 295, 311, 419
 I/Q Off On softkey, 35
 I/Q Out Gain Balance softkey, 25
 I/Q Output Atten softkey, 26
 I/Q Output Filter Manual Auto softkey, 197, 207, 229, 255, 276, 277, 293, 309, 412
 I/Q Scaling softkey
 See custom subsystem keys
 See DECT subsystem keys

Index

I/Q Scaling 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

I/Q Skew softkey, 29

I/Q softkey, 95

IDLE softkey, 715, 733

IEEE 488.2 common command keys

- Diagnostic Info, 85
- RECALL Reg, 87
- Run Complete Self Test, 89
- Save Reg, 88
- Save Seq[n] Reg[nn], 88
- Select Seq, 87

Immediate softkey, 216, 247, 264, 285

See sense subsystem keys

Impairments Off On softkey, 413

Impedance 75 Ohm High softkey, 365

Incr Set hardkey

- See* amplitude modulation subsystem keys
- See* frequency modulation subsystem keys
- See* phase modulation subsystem keys

Increment Scramble Code softkey, 316

Increment Timing Offset softkey, 319

Infinity softkey, 821, 913

Init Power field, 858

Init Pwr field, 875, 891

Initial Bit Count softkey, 386

Initial Block Count softkey, 375, 379

Initial Frame Count softkey, 396

Initialize Phase Fixed Random softkey, 302

Initialize Table softkey, 267

input subsystem keys

- 0.7V, 366
- 1.4V, 366
- 1.6V, 366
- 2.5V, 366
- Clock Delay Off On, 364
- Clock Polarity Neg Pos, 364
- Clock Time Delay, 364
- Data Polarity Neg Pos, 365
- Gate Clk Delay, 361

input subsystem keys (*continued*)

- Gate Delay Off On, 362
- Gate Mode Time Clk, 361
- Gate Off On, 363
- Gate Polarity Neg Pos, 362
- Gate Time Delay, 362
- Impedance 75 Ohm High, 365
- Resolution, 363

Insert Row softkey, 236, 239, 243, 267

Installed Board Info softkey, 76

Int I/Q Skew Corrections Off Int Ext softkey, 33, 34

Int softkeys

- Int Doublet, 193
- Int Free-Run, 193
- Int Gated, 193
- Int Phase Polarity Normal Invert, 23, 33
- Int Triggered, 193

integer response data, 11

Intermod softkey, 817

Internal softkeys

- Internal, 57, 170, 457
- Internal 1, 177, 188
- Internal 2, 177, 188
- Internal Monitor, 182
- Internal Square, 193

Inverse Video Off On softkey, 82

Inverted softkey, 461

IP Address softkey, 71

IQ Phase Normal Invert softkey, 597

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

IS-95 Mod softkey (continued)

- 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
- 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, 218***L**

- Last Mkr Point softkey, [279](#), [281](#)
- Leap Seconds field, [446](#)
- Left Alternate softkey, [321](#)
- Left softkey, [785](#)
- LF Out softkeys
 - LF Out Amplitude, [179](#)
 - LF Out Off On, [183](#)
 - LF Out Stop Freq, [179](#), [185](#)
 - LF Out Sweep Rate, [180](#), [181](#)
 - LF Out Sweep Time, [181](#)

Index

LF Out softkeys (*continued*)

LF Out Tone 2 Ampl % of Peak, 180

LF Out Tone 2 Freq, 179, 185

Link Down Up softkey, 311, 832

Link Forward Reverse softkey, 234, 424

List softkey, 95, 117

list/sweep subsystem keys

Points, 52

Bus, 50

Dwell Type List Step, 47

Ext, 50

Free Run softkey, 50

Load List From Step Sweep, 51

Manual Mode Off On, 49

Manual Point, 48

Preset List, 51

Step Dwell, 52

Sweep Direction Down Up, 46

Sweep Type List Step, 50

Trigger Key, 50

Load From Selected File softkey, 18, 115, 121, 299

Load List From Step Sweep softkey, 51

Load/Store softkey, 266

Long Code Mask field, 460

Long Code State field, 428, 460

Low Amplitude softkey, 374, 377

See sense subsystem keys

Low Capacity softkey, 529, 539

Low Capacity with Z field softkey, 529, 539

low frequency output subsystem keys

Bus, 182

DC, 181

Dual-Sine, 181

Ext, 182

Free Run, 182

Function Generator, 182

Internal Monitor, 182

LF Out Amplitude, 179

LF Out Off On, 183

LF Out Stop Freq, 179, 185

LF Out Sweep Rate, 180, 181

LF Out Sweep Time, 181

LF Out Tone 2 Ampl % of Peak, 180

LF Out Tone 2 Freq, 179, 185

Noise, 181

low frequency output subsystem keys (*continued*)

Ramp, 181

Sine, 181

Square, 181

Swept-Sine, 181

Triangle, 181

Trigger Key, 182

LTM OFF field, 446

M

Manual Mode Off On softkey, 49

Manual Point softkey, 48

Marker 1 2 softkey, 279, 281

Marker 1 Polarity Neg Pos softkey, 201, 213, 245, 262, 283, 296, 332, 420

Marker 1 softkey, 200, 201, 212, 213, 244, 245, 260, 261, 282, 295, 296, 331, 332, 419, 420

Marker 2 Polarity Neg Pos softkey, 201, 214, 245, 262, 283, 296, 332, 420

Marker 2 softkey, 200, 201, 212, 213, 244, 245, 260, 261, 282, 295, 296, 331, 332, 419, 420

Marker 3 Polarity Neg Pos softkey, 202, 214, 246, 262, 283, 297, 333, 421

Marker 3 softkey, 200, 201, 212, 213, 244, 245, 260, 261, 282, 295, 296, 331, 332, 419, 420

Marker 4 Polarity Neg Pos softkey, 202, 214, 246, 263, 283, 297, 333, 421

Marker 4 softkey, 200, 201, 212, 213, 244, 245, 260, 261, 282, 295, 296, 331, 332, 419, 420

mass memory subsystem keys

Binary, 117

Copy File, 118

Delete All NVWFM Files, 119

Delete All WFM Files, 119

Delete All WFM1 Files, 120

Delete File, 120

List, 117

Load From Selected File, 121

Rename File, 121

State, 117

Store To File, 122

User Flatness, 117

Max Input softkey, 817

Max Power field, 858

Max Pwr field, 876, 891

- MCDMA softkey, [95](#)
- MDMOD softkey, [96](#)
- MDWCDMA softkey, [96](#)
- Measurement Mode BER% Search softkey, [395](#)
- Measurement Mode BLER% Search softkey, [381](#)
- memory subsystem keys
 - Add Comment To Seq[n] Reg[nn], [116](#)
 - All, [101](#), [115](#)
 - Binary, [91](#)
 - Bit, [91](#)
 - CDMA, [92](#)
 - Copy File, [101](#), [106](#), [107](#)
 - Delete All ARB CDMA Files, [108](#)
 - Delete All ARB DMOD Files, [109](#)
 - Delete All ARB DWCDMA Files, [109](#)
 - Delete All ARB FCDMA Files, [109](#)
 - Delete All ARB MCDMA Files, [111](#)
 - Delete All ARB MDWCDMA Files, [111](#)
 - Delete All ARB MTONE Files, [112](#)
 - Delete All ARB RCDMA Files, [112](#)
 - Delete All ARB UWCDMA Files, [114](#)
 - Delete All Binary Files, [108](#)
 - Delete All Bit Files, [108](#)
 - Delete All Files, [107](#)
 - Delete All FIR Files, [110](#)
 - Delete All FSK Files, [110](#)
 - Delete All I/Q Files, [110](#)
 - Delete All List Files, [111](#)
 - Delete All MDMOD Files, [111](#)
 - Delete All MFCDMA Files, [112](#)
 - Delete All SEQ Files, [113](#)
 - Delete All SHAPE Files, [113](#)
 - Delete All State Files, [113](#)
 - Delete All UFLT Files, [114](#)
 - Delete File, [114](#)
 - DMOD, [92](#)
 - DWCDMA, [93](#)
 - FCDMA, [93](#)
 - FIR, [94](#)
 - FSK, [94](#)
 - I/Q, [95](#)
 - List, [95](#)
 - Load From Selected File, [115](#)
 - MCDMA, [95](#)
 - MDMOD, [96](#)
- memory subsystem keys (*continued*)
 - MDWCDMA, [96](#)
 - MFCDMA, [97](#)
 - MTONE, [97](#)
 - Oversample Ratio, [103](#)
 - RCDMA, [98](#)
 - Rename File, [115](#)
 - SEQ, [98](#)
 - SHAPE, [99](#)
 - State, [99](#)
 - Store To File, [116](#)
 - User Flatness, [100](#)
 - UWCDMA, [100](#)
- Message Data Raw Data (RPS11) softkey
 - See* wideband CDMA base band generator subsystem keys and fields
- Message Part field, [874](#)
- Message Pulse (RPS22) softkey
 - See* wideband CDMA base band generator subsystem keys and fields
- Message Type field, [447](#)
- Message-Control Raw Data Clock (RPS12) softkey
 - See* wideband CDMA base band generator subsystem keys and fields
- Meter Address softkeys, [72](#)
- Meter Channel A B softkey, [72](#)
- Meter Timeout softkey, [73](#)
- MFCDMA softkey, [97](#)
- Min Power field, [859](#)
- Mod Index softkey, [416](#)
- Mod On/Off hardkey, [123](#)
- Modulator Atten Manual Auto softkey, [198](#), [199](#), [211](#), [232](#), [258](#), [259](#), [278](#), [293](#), [294](#), [310](#), [417](#), [418](#)
- Msg Ctrl softkey, [864](#)
- Msg Data softkey, [864](#)
- Msg Pwr field, [874](#), [889](#)
- 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

Index

MSK softkey (continued)

See TETRA subsystem keys
MTONE softkey, 97
Multicarrier Off On softkey, 217, 234, 265
Multitone Off On softkey, 302
multitone subsystem keys
 2.100 MHz, 294
 40.000 MHz, 293, 294
 ARB Reference Ext Int, 298
 ARB Sample Clock, 299
 Clear Header, 292
 Freq Spacing, 300, 301
 Goto Row, 298
 I/Q Mod Filter Manual Auto, 295
 I/Q Output Filter Manual Auto, 293
 Initialize Phase Fixed Random, 302
 Load From Selected File, 299
 Marker 1, 295, 296
 Marker 1 Polarity Neg Pos, 296
 Marker 2, 295, 296
 Marker 2 Polarity Neg Pos, 296
 Marker 3, 295, 296
 Marker 3 Polarity Neg Pos, 297
 Marker 4, 295, 296
 Marker 4 Polarity Neg Pos, 297
 Modulator Atten Manual Auto, 293, 294
 Multitone Off On, 302
 None, 295, 296
 Number Of Tones, 300, 301
 Random Seed Fixed Random, 302
 Reference Freq, 297
 Save Setup To Header, 292
 Store To File, 300
 Through, 293, 294
 Toggle State, 298, 300
mV softkey, 164
mVemf softkey, 164

N

N Power field, 836, 864
NADC Off On softkey, 669
NADC softkey, 265, 267
NADC subsystem keys
 16 1's & 16 0's, 647, 656, 659, 660, 662
 16PSK, 654

NADC subsystem keys (continued)

 16QAM, 654
 256QAM, 654
 2-Lvl FSK, 654
 32 1's & 32 0's, 647, 656, 659, 660, 662
 32QAM, 654
 4 1's & 4 0's, 647, 656, 659, 660, 662
 4-Lvl FSK, 654
 4QAM, 654
 64 1's & 64 0's, 647, 656, 659, 660, 662
 64QAM, 654
 8 1's & 8 0's, 647, 656, 659, 660, 662
 8PSK, 654
 All Timeslots, 663
 APCO 25 C4FM, 650
 BBG Data Clock Ext Int, 638
 BBG Ref Ext Int, 649
 Begin Frame, 663
 Begin Timeslot #, 663, 664
 BPSK, 654
 Bus, 655, 666
 CDL, 657
 CDVCC, 657, 661
 Continuous, 666
 D8PSK, 654
 Data Format Pattern Framed, 646
 Down Custom, 663
 Down TCH, 663
 Down TCH All, 663
 Ext, 647, 655, 656, 659, 660, 662, 666
 Ext BBG Ref Freq, 650
 Ext Data Clock Normal Symbol, 649
 Ext Delay Bits, 668
 Ext Delay Off On, 669
 Ext Polarity Neg Pos, 669
 Fall Delay, 641, 642
 Fall Time, 642, 643
 Filter Alpha, 638
 Filter BbT, 639
 FIX4, 647, 648, 656, 657, 659, 660, 662
 Frame Repeat Single Cont, 654
 Free Run, 667
 Freq Dev, 652
 Gate Active Low High, 667
 Gated, 666

NADC subsystem keys (*continued*)

Gaussian, 650
 Gray Coded QPSK, 654
 I/Q Scaling, 651
 IS-95, 650
 IS-95 Mod, 650
 IS-95 Mod w/EQ, 650
 IS-95 OQPSK, 654
 IS-95 QPSK, 654
 IS-95 w/EQ, 650
 MSK, 654
 NADC Off On, 669
 Nyquist, 650
 Optimize FIR For EVM ACP, 647
 OQPSK, 654
 $\pi/4$ DQPSK, 654
 Patt Trig In 1, 668
 Patt Trig In 2, 668
 Phase Dev, 652
 PN11, 647, 656, 659, 660, 662
 PN15, 647, 656, 659, 660, 662
 PN20, 647, 656, 659, 660, 662
 PN23, 647, 656, 659, 660, 662
 PN9, 647, 656, 659, 660, 662
 PN9 Mode Normal Quick, 640
 Polarity Normal Invert, 654
 QPSK, 654
 Rate Full Half, 651
 Recall Secondary Frame State, 655
 Rectangle, 650
 Reset & Run, 667
 Restore NADC Factory Default, 648
 Rise Delay, 644
 Rise Time, 645
 Root Nyquist, 650
 SACCH, 658, 661
 Save Secondary Frame State, 655
 Secondary Frame Off On, 656
 Sine, 641, 647
 Single, 666
 Symbol Rate, 664
 SYNC, 658, 662
 Sync Out Offset, 664
 Timeslot Ampl Main Delta, 659
 Timeslot Off On, 660

NADC subsystem keys (*continued*)

Trigger & Run, 667
 Trigger Key, 655, 666
 UN3/4 GSM Gaussian, 650
 Up Custom, 663
 Up TCH, 663
 Up TCH All, 663
 User File, 641, 647, 656, 659, 660, 662
 User FIR, 650
 User FSK, 653, 654
 User I/Q, 653, 654
 Network ID field, 447
 No Limits softkey
 See calculate subsystem keys
 No Thresholds softkey
 See sense subsystem keys
 Noise Off On softkey, 451, 462
 Noise Seed Fixed Random softkey, 204
 Noise Seed softkey, 414
 Noise softkey, 169, 175, 181, 187
 NONE (RPS0) softkey
 See wideband CDMA base band generator
 subsystem keys and fields
 NONE softkey, 920
 None softkey, 200, 201, 212, 213, 244, 245, 260,
 261, 282, 295, 296, 331, 332, 419, 420, 508,
 827, 829, 925, 933
 Normal All softkey, 584, 629
 Normal softkey, 461, 584, 629, 785
 Num of Blk field, 926, 934
 Num of Pre field, 875, 890
 Number of AICH field, 861
 Number of PRACH 80ms field, 874
 Number of PRACH field, 887, 890
 Number of Preamble field, 890
 Number Of Tones softkey, 300, 301
 numeric boolean response data, 12
 numeric SCPI parameter, 8
 numeric, extended SCPI parameter, 9
 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

Index

Nyquist 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

0

- OCNS softkey, [322](#)
- octal values, [16](#)
- Off softkey, [23](#), [34](#), [216](#), [247](#), [264](#), [285](#), [887](#)
- Omitted softkey, [821](#), [912](#)
- On softkey, [216](#), [247](#), [264](#), [285](#), [887](#)
- On/Off field, [802](#), [879](#)
- OpenLoop Ant1 SCH TSTD OFF softkey, [825](#)
- OpenLoop Ant1 softkey, [825](#)
- OpenLoop Ant2 SCH TSTD OFF softkey, [825](#)
- OpenLoop Ant2 softkey, [825](#)
- Optimize ACP ADJ ALT softkey, [312](#), [326](#)
- Optimize FIR For EVM ACP softkey, [856](#)
 - 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
- options
 - 001/002
 - all subsystem, [196](#), [408](#)

options (continued)

- 001/002
 - custom subsystem, [493](#)
 - Dmodulation subsystem, [255](#)
 - dual ARB subsystem, [275](#)
 - multitone subsystem, [292](#)
- 400
 - wideband CDMA ARB subsystem, [304](#)
 - wideband CDMA base band generator subsystem, [779](#)
- 401
 - CDMA ARB subsystem, [205](#)
 - CDMA2000 ARB subsystem, [227](#)
 - CDMA2000 BBG subsystem, [424](#)
- 402
 - DECT subsystem, [514](#)
 - EDGE subsystem, [560](#)
 - GSM subsystem, [601](#)
 - NADC subsystem, [638](#)
 - PDC subsystem, [671](#)
 - PHS subsystem, [703](#)
 - TETRA subsystem, [738](#)
- 403
 - AWGN real-time subsystem, [409](#)
 - AWGN subsystem, [197](#)
- 406
 - bluetooth subsystem, [410](#)
- 409
 - GPS subsystem, [594](#)
- UN7/300
 - calculate subsystem, [342](#)
 - data subsystem, [352](#)
 - input subsystem, [361](#), [367](#)
 - sense subsystem, [370](#)
- Options Info softkey, [77](#), [78](#)
- 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, [123](#)

output subsystem keys

 Mod On/Off, [123](#)

 Output Blanking Off On Auto, [123](#)

 RF On/Off, [124](#)

Oversample Ratio softkey, [103](#), [215](#)

P

P Code Pwr softkey, [598](#)

P Rev field, [448](#)

P Rev Min field, [447](#)

P softkey, [530](#)

$\pi/4$ 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, [421](#)

Paging Indicator field, [454](#), [806](#)

Paging softkey, [218](#)

parameter types. *See* SCPI commands parameter types

Pass Amplitude softkey, [374](#), [378](#)

See sense subsystem keys

Pass/Fail Limits softkey, [350](#)

Pass/Fail Off On softkey, [350](#)

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

Patt Trig In 1 softkey (continued)

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 Trig In Polarity Neg Pos softkey, [126](#), [128](#)

Pattern trigger in 1 field, [901](#)

Pattern trigger in 2 field, [901](#)

PCCPCH + SCH + 3 DPCH softkey, [312](#), [317](#)

PCCPCH + SCH +1 DPCH softkey, [312](#), [317](#)

PCCPCH + SCH softkey, [312](#), [317](#)

P-CCPCH data (DRPS39) softkey, [810](#), [812](#), [813](#),
[814](#)

P-CCPCH data-clk (DRPS38) softkey, [810](#), [812](#),
[813](#), [814](#)

PCCPCH softkey, [781](#), [782](#)

PDC Off On softkey, [702](#)

PDC softkey, [265](#), [267](#)

PDC subsystem keys

 16 1's & 16 0's, [680](#), [688](#), [690](#), [692](#), [693](#)

 16PSK, [686](#)

 16QAM, [686](#)

 256QAM, [686](#)

 2-Lvl FSK, [686](#)

 32 1's & 32 0's, [680](#), [688](#), [690](#), [692](#), [693](#)

 32QAM, [686](#)

 4 1's & 4 0's, [680](#), [688](#), [690](#), [692](#), [693](#)

 4-Lvl FSK, [686](#)

 4QAM, [686](#)

 64 1's & 64 0's, [680](#), [688](#), [690](#), [692](#), [693](#)

 64QAM, [686](#)

 8 1's & 8 0's, [680](#), [688](#), [690](#), [692](#), [693](#)

Index

PDC subsystem keys (*continued*)

8PSK, 686
All Timeslots, 696
APCO 25 C4FM, 683
BBG Ref Ext Int, 682
Begin Frame, 696
Begin Timeslot #, 696, 697
BPSK, 686
Bus, 688, 700
CC, 689, 692, 694
Continuous, 699
D8PSK, 686
Data Format Pattern Framed, 679
Down Custom, 695
Down TCH, 695
Down TCH All, 695
Ext, 680, 688, 690, 692, 693, 700
Ext BBG Ref Freq, 682
Ext Data Clock Ext Int, 671
Ext Data Clock Normal Symbol, 681
Ext Delay Bits, 701
Ext Delay Off On, 702
Ext Polarity Neg Pos, 702
Fall Delay, 674, 675
Fall Time, 674, 675
Filter Alpha, 671
Filter BbT, 672
FIX4, 680, 688, 689, 690, 691, 692, 693, 694
Free Run, 699
Freq Dev, 684
Gate Active Low High, 700
Gated, 699
Gaussian, 683
Gray Coded QPSK, 686
I/Q Scaling, 684
IS-95, 683
IS-95 Mod, 683
IS-95 Mod w/EQ, 683
IS-95 OQPSK, 686
IS-95 QPSK, 686
IS-95 w/EQ, 683
MSK, 686
Nyquist, 683
Optimize FIR For EVM ACP, 679
OQPSK, 686

ΠΑΧ συβαστημ κειψο (*continued*)

$\pi/4$ DQPSK, 686
Patt Trig In 1, 700
Patt Trig In 2, 700
PDC Off On, 702
Phase Dev, 685
Phase Polarity Normal Invert, 686
PN11, 680, 690, 692, 693
PN15, 680, 688, 690, 692, 693
PN20, 680, 690, 692, 693
PN23, 680, 690, 692, 693
PN9, 680, 688, 690, 692, 693
PN9 Mode Normal Quick, 673
QPSK, 686
Rate Full Half, 683
Recall Secondary Frame State, 687
Rectangle, 683
Reset & Run, 699
Restore PDC Factory Default, 681
Rise Delay, 676, 677
Rise Time, 677, 678
Root Nyquist, 683
SACCH, 690, 693, 695
Save Secondary Frame State, 687
Secondary Frame Off On, 688
Sine, 678
Single, 699
SW, 690, 693, 695
Symbol Rate, 697
Sync Out Offset, 696
Timeslot Ampl Main Delta, 691
Timeslot Off On, 691
Trigger & Run, 699
Trigger Key, 688, 700
UN3/4 GSM Gaussian, 683
Up Custom, 695
Up TCH, 695
Up TCH All, 695
Up VOX, 695
User File, 678, 680, 688, 690, 692, 693
User FIR, 683
User FSK, 685, 686
User I/Q, 686
Performance Req softkey, 817
Permuted ESN field, 430, 441

- 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
 - ΦM Sweep Time softkey, 187
 - FM ΦM Normal High BW softkey, 185
 - ΦM Dev Couple Off On, 190
 - ΦM Dev softkey, 189
 - ΦM Off On softkey, 188
 - ΦM Path 1 2, 184
 - ΦM Tone 2 Ampl Percent of Peak, 186
 - ΦM Tone 2 Rate, 186
 - Bus, 187
 - Dual-Sine, 187
 - Ext, 187
 - Ext Coupling DC AC, 185
 - Ext1, 188
 - Ext2, 188
 - Free Run, 187
 - Incr Set, 184, 190
 - Internal 1, 188
 - Internal 2, 188
 - Noise, 187
 - Ramp, 187
 - Sine, 187
 - Square, 187
 - Swept-Sine, 187
 - Triangle, 187
 - Trigger Key, 187
- Phase Polarity field, 453
- 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
- Phase Polarity Normal Invert softkey (continued)
 - See wideband CDMA base band generator subsystem keys and fields
- Phase Polarity Normal Inverted softkey, 833
- Phase Ref Set softkey, 44
- PHS Off On softkey, 736
- PHS softkey, 265, 267
- PHS subsystem keys
 - 16 1's & 16 0's, 712, 713, 717, 732, 735
 - 16-Lvl FSK, 723
 - 16PSK, 723
 - 16QAM, 723
 - 256QAM, 723
 - 2-Lvl FSK, 723
 - 32 1's & 32 0's, 712, 713, 717, 732, 735
 - 32QAM, 723
 - 4 1's & 4 0's, 712, 713, 717, 732, 735
 - 4-Lvl FSK, 723
 - 4QAM, 723
 - 64 1's & 64 0's, 712, 713, 717, 732, 735
 - 64QAM, 723
 - 8 1's & 8 0's, 712, 713, 717, 732, 735
 - 8-Lvl FSK, 723
 - 8PSK, 723
 - All Timeslots, 725
 - APCO 25 C4FM, 720
 - BBG Data Clock Ext Int, 703
 - BBG Ref Ext Int, 719
 - Begin Frame, 725
 - Begin Timeslot #, 725, 726
 - BPSK, 723
 - Bus, 724, 729
 - C4FM, 723
 - Continuous, 728
 - CSID, 715, 733
 - Custom, 718
 - D8PSK, 723
 - Data Format Pattern Framed, 711
 - Ext, 712, 713, 717, 724, 729, 732, 735
 - Ext BBG Ref Freq, 719
 - Ext Data Clock Normal Symbol, 719
 - Ext Delay Bits, 731
 - Ext Delay Off On, 731
 - Ext Polarity Neg Pos, 731
 - Fall Delay, 706, 708

Index

PHS subsystem keys (*continued*)

Fall Time, [707](#), [708](#)
Filter Alpha, [703](#)
Filter BbT, [704](#)
FIX4, [712](#), [713](#), [714](#), [717](#), [718](#), [732](#), [735](#), [736](#)
Free Run, [728](#)
Gate Active Low High, [729](#)
Gated, [728](#)
Gaussian, [720](#)
Gray Coded QPSK, [723](#)
I/Q Scaling, [721](#)
IDLE, [715](#), [733](#)
IS-95, [720](#)
IS-95 Mod, [720](#)
IS-95 Mod w/EQ, [720](#)
IS-95 OQPSK, [723](#)
IS-95 QPSK, [723](#)
IS-95 w/EQ, [720](#)
MSK, [723](#)
Nyquist, [720](#)
Optimize FIR For EVM ACP, [712](#)
OQPSK, [723](#)
 $\pi/4$ DQPSK, [723](#)
Patt Trig In 1, [730](#)
Patt Trig In 2, [730](#)
Phase Dev, [721](#), [722](#)
Phase Polarity Normal Invert, [723](#)
PHS Off On, [736](#)
PN11, [712](#), [713](#), [717](#), [732](#), [735](#)
PN15, [712](#), [713](#), [717](#), [732](#), [735](#)
PN20, [712](#), [713](#), [717](#), [732](#), [735](#)
PN23, [712](#), [713](#), [717](#), [732](#), [735](#)
PN9, [712](#), [713](#), [717](#), [732](#), [735](#)
PN9 Mode Normal Quick, [705](#)
PSID, [715](#), [733](#)
QPSK, [723](#)
Recall Secondary Frame State, [724](#)
Rectangle, [720](#)
Reset & Run, [728](#)
Restore PHS Factory Default, [713](#)
Rise Delay, [709](#)
Rise Time, [710](#)
Root Nyquist, [720](#)
SA, [716](#), [734](#)
Save Secondary Frame State, [724](#)

PHS subsystem keys (*continued*)

Scramble Off On, [706](#)
Scramble Seed, [706](#)
Secondary Frame Off On, [725](#)
Sine, [711](#)
Single, [728](#)
Symbol Rate, [727](#)
SYNC, [718](#)
Sync Out Offset, [726](#)
TCH, [718](#)
TCH All, [718](#)
Timeslot Ampl Main Delta, [714](#), [732](#)
Timeslot Off On, [716](#), [734](#)
Timeslot Type, [736](#)
Trigger & Run, [728](#)
Trigger Key, [724](#), [729](#)
UN3/4 GSM Gaussian, [720](#)
User File, [711](#), [712](#), [713](#), [717](#), [732](#), [735](#)
User FIR, [720](#)
User FSK, [722](#), [723](#)
User I/Q, [722](#), [723](#)
UW, [716](#), [717](#), [734](#), [735](#)
PI Bits field, [806](#)
PICH 10ms FramePulse (DRPS37) softkey, [810](#),
[812](#), [813](#), [814](#)
PICH data (DRPS35) softkey, [810](#), [812](#), [813](#), [814](#)
PICH data-clk (DRPS34) softkey, [810](#), [812](#), [813](#),
[814](#)
PICH softkey, [322](#), [781](#), [782](#)
PICH TimeSlot Pulse (DRPS36) softkey, [810](#), [812](#),
[813](#), [814](#)
Pilot softkey, [217](#), [218](#), [220](#), [234](#), [241](#)
Playback Ratio field, [785](#)
PN Offset field, [456](#)
PN Offset softkey, [239](#), [243](#)
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, 154
- PN9 softkey
 - See CDMA2000 BBG subsystem keys and fields
 - See custom subsystem keys
- PN9 softkey (continued)
 - 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 Normal Invert softkey, 654
- Power Control Signal Polarity Neg Pos softkey, 860
- Power field
 - See CDMA2000 BBG subsystem keys and fields
 - See wideband CDMA baseband generator subsystem keys and fields
- Power Hold Off On softkey, 857
- Power Meter softkey, 72
- Power Mode Norm TPC softkey, 861
- Power On Last Preset softkey, 152
- Power Search Manual Auto softkey, 53, 54, 55, 56
- Power softkey, 329
- power subsystem keys
 - ALC BW Normal Narrow, 53
 - ALC Off On, 56
 - Alt Amp Delta, 56
 - Alt Ampl Off On, 57
 - Ampl, 59
 - Ampl Offset, 61
 - Ampl Ref Off On, 60
 - Ampl Ref Set, 59
 - Ampl Start, 60
 - Ampl Stop, 61
 - Amplitude, 59, 62
 - Atten Hold Off On, 58
 - Do Power Search, 53, 54, 55, 56
 - Ext Detector, 57
 - Internal, 57
 - Power Search Manual Auto, 53, 54, 55, 56
 - Source Module, 57
- PPCCPCH softkey, 322, 323
- Pp-m field, 876, 892

Index

PRACH Mode Single Multi softkey, [873](#)
PRACH Power Setup Mode Pp-m Total softkey, [880](#)
PRACH Processing (RPS19) softkey
 See wideband CDMA base band generator subsystem keys and fields
PRACH Scrambling Code field, [881](#)
PRACH softkey, [857](#)
PRACH Trigger Polarity Neg Pos softkey, [885](#)
PRACH Trigger softkey, [885](#)
PRACH Trigger Source Immedi Trigger softkey, [886](#)
PRAT field, [448](#)
Pre Sig field, [877](#)
Preamble power average field, [879](#)
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, [864](#)
precise talking and forgiving listening, [8](#)
Preset hardkey, [152](#)
Preset List softkey, [19](#), [51](#)
Preset Normal User softkey, [154](#)
PSCH softkey, [322](#)
PSCH State field, [808](#)
PSID softkey, [715](#), [733](#)
pulse modulation subsystem keys
 Ext Pulse, [193](#)
 Int Doublet, [193](#)
 Int Free-Run, [193](#)
 Int Gated, [193](#)
 Int Triggered, [193](#)
 Internal Square, [193](#)
 Pulse Delay, [63](#)
 Pulse Off On, [193](#)
 Pulse Period, [191](#)
 Pulse Rate, [191](#)
 Pulse Width, [192](#)

Pulse softkeys
 Pulse Delay, [63](#)
 Pulse Off On, [193](#)
 Pulse Period, [191](#)
 Pulse Rate, [191](#)
 Pulse Width, [192](#)
Puncture fields, [926](#), [934](#)
Puncture softkey, [819](#)
PwrOffs field, [818](#), [909](#)
PWT softkey, [265](#), [267](#)

Q

Q Offset softkey, [28](#)
QOF field, [432](#), [442](#)
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 Skew softkey, [28](#)
Quarter softkey, [472](#), [477](#)
quotes, SCPI command use of, [15](#)

R

RACH TrCH softkey, [864](#)
Radio Config field
 See CDMA2000 BBG subsystem keys and fields
Radio Config softkey, [241](#)
RadioConfig 1/2 Access softkey, [424](#)
RadioConfig 1/2 Traffic softkey, [424](#)
RadioConfig 3/4 Common Control softkey, [424](#)
RadioConfig 3/4 Enhanced Access softkey, [424](#)
RadioConfig 3/4 Traffic softkey, [424](#)
Ramp field, [431](#)
Ramp softkey, [169](#), [175](#), [181](#), [187](#)
Ramp Step field, [876](#), [892](#)
Ramp Time field, [432](#)
Random Seed Fixed Random softkey, [302](#)
Random softkey, [321](#), [329](#)

- Ranging Code C/A P C/A+P softkey, [598](#)
Rate Full Half softkey, [651](#), [683](#)
Rate Match Attr field, [831](#), [926](#), [934](#)
Rate softkey, [239](#), [243](#)
RCDMA softkey, [98](#)
real response data, [11](#)
Real-time AWGN Off On softkey, [409](#)
real-time AWGN subsystem keys
 Bandwidth, [409](#)
 Real-time AWGN Off On, [409](#)
Real-time GPS Off On softkey, [600](#)
RECALL Reg softkey, [87](#)
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
 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, [834](#), [863](#)
Ref Oscillator Source Auto Off On softkey, [45](#)
Ref Sensitivity softkey, [817](#)
Reference Freq softkey, [421](#)
 See AWGN subsystem keys
 See bluetooth subsystem keys
 See CDMA ARB subsystem keys
 See CDMA2000 ARB subsystem keys
Reference Freq softkey, 421 (continued)
 See Dmodulation subsystem keys
 See dual ARB subsystem keys
 See multitone subsystem keys
 See wideband CDMA ARB subsystem keys
Reference Out softkey, [358](#)
Rename File, [115](#)
Rename File softkey, [121](#)
Reserved field, [449](#)
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, [74](#)
Reset to Initial Power softkey, [859](#)
Resolution softkey, [363](#)
response data types. See SCPI commands response
 types
Restore DECT Factory Default softkey, [523](#)
Restore EDGE Factory Default softkey, [568](#)
Restore Factory Default softkey, [611](#)
Restore NADC Factory Default softkey, [648](#)
Restore PDC Factory Default softkey, [681](#)
Restore PHS Factory Default softkey, [713](#)
Restore Sys Defaults softkey, [154](#)
Restore TETRA Factory Default softkey, [748](#)
Resync Limits softkey, [402](#)
Retrigger Mode Off On softkey, [334](#)
Reverse softkey, [217](#)
Revert to Default Cal Settings softkey, [67](#)
RF On/Off hardkey, [124](#)
Right Alternate softkey, [321](#)
Right softkey, [785](#)
Rise Delay softkey
 See custom subsystem keys

Index

Rise Delay softkey (*continued*)

- 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
- See TETRA subsystem keys

Rising softkey, [491](#)

RMC 144 kbps (25.141 v3.9) softkey, [893](#)

RMC 384 kbps (25.141 v3.9) softkey, [893](#)

RMC 64 kbps (25.141 v3.9) softkey, [893](#)

RMC122 kbps (25.141 v3.9) softkey, [893](#)

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

route subsystem keys

- Burst Gate In Polarity Neg Pos, [125](#), [126](#)
- Data Clock Out Neg Pos, [128](#)
- Data Clock Polarity Neg Pos, [125](#), [127](#), [129](#)
- Data Out Polarity Neg Pos, [128](#), [130](#)
- Data Polarity Neg Pos, [125](#), [127](#)

route subsystem keys (*continued*)

- DATA/CLK/SYNC Rear Outputs Off On, [130](#)
- Event 1 Polarity Neg Pos, [129](#), [130](#)
- Event 2 Polarity Neg Pos, [129](#), [130](#)
- Pattern Trig In Polarity Neg Pos, [128](#)
- Pattern Trig Polarity Neg Pos, [126](#)
- Symbol Sync Out Polarity Neg Pos, [129](#), [131](#)
- Symbol Sync Polarity Neg Pos, [126](#), [127](#)

RS-232 Baud Rate softkey, [73](#)

RS-232 ECHO Off On softkeys, [74](#)

RS-232 Timeout softkeys, [74](#)

Run Complete Self Test softkey, [89](#)

S

S softkey, [626](#)

- See DECT subsystem keys

SA softkey, [716](#), [734](#)

SACCH softkey, [658](#), [661](#), [690](#), [693](#), [695](#)

Satellite ID softkey, [599](#)

Save Reg softkey, [88](#)

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, [88](#)

Save Setup To Header softkey, [198](#), [210](#), [232](#), [258](#),
[276](#), [292](#), [308](#), [413](#)

Save User Preset softkey, [155](#), [156](#), [157](#), [158](#)

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

Scaling softkey, [285](#)

SCCPCH softkey, [322](#), [323](#)

SCFN field, [823](#), [915](#)

SCH slot-pulse (DRPS10) softkey, [810](#), [812](#), [813](#),
[814](#)

- SCPI command subsystems
 - all, 196, 408
 - amplitude modulation, 166
 - AWGN, 197
 - AWGN real-time, 409
 - bluetooth, 410
 - calculate, 342
 - calibration, 66
 - CDMA ARB, 205
 - CDMA2000 ARB, 227
 - CDMA2000 BBG, 424
 - communication, 70
 - correction, 18
 - custom, 493
 - data, 352
 - DECT, 514
 - diagnostic, 76
 - digital modulation, 21
 - display, 80
 - Dmodulation, 255
 - Dual ARB, 275
 - EDGE, 560
 - frequency, 36
 - frequency modulation, 173
 - GPS subsystem, 594
 - GSM, 601
 - IEEE 488.2 common commands, 84
 - input, 361, 367
 - list/sweep, 46
 - low frequency output, 179
 - mass memory, 117
 - memory, 91
 - multitone, 292
 - NADC, 638
 - output, 123
 - PDC, 671
 - phase modulation, 184
 - PHS, 703
 - power, 53
 - pulse, 63
 - pulse modulation, 191
 - route, 125
 - sense, 370
 - status, 132
 - system, 149
- SCPI command subsystems (*continued*)
 - TETRA, 738
 - trigger, 161
 - unit, 164
 - wideband CDMA ARB, 304
 - wideband CDMA base band generator, 779
- SCPI commands
 - command tree paths, 7
 - parameter and response types, 8
 - parameter types
 - boolean, 10
 - discrete, 9
 - extended numeric, 9
 - numeric, 8
 - string, 10
 - response data types
 - discrete, 11
 - integer, 11
 - numeric boolean, 12
 - real, 11
 - string, 12
 - root command, 6
- SCPI softkey, 151, 153
- Scramble Code softkey, 321, 327, 329
- Scramble Off On softkey, 706, 741
- Scramble Offset softkey, 321, 329
- Scramble Seed softkey, 706, 741
- Scrambling Code field, 815, 816, 907
- Screen Saver Delay
 - 1 hr softkey, 158
- Screen Saver Mode softkeys, 159
- Screen Saver Off On softkeys, 159
- Second DPDCH I Q softkey, 327
- 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
- Segment Advance softkey, 287
- Select File softkey, 236, 265
- Select Seq softkey, 87
- Select Waveform softkey, 291

Index

sense subsystem keys

Adjust Gain, 381
Aux, 383, 399, 405
Aux I/O Trigger Polarity Pos Neg, 405
BER Mode Off On, 370, 373, 393
BERT Off On, 402
BERT Resync Off On, 402
Bit Count, 384, 385
Bit Delay Off On, 404
Block Count, 372, 375, 376, 389, 392
Block Erasure, 370, 371, 375, 376, 388, 389, 390, 393
Bus, 383, 399, 405
Class Ib Bit Error, 396, 397
Class II Bit Error, 397
Cycle Count, 405
Delay Bits, 404
EDGE BERT Off On, 387
Error Count, 386, 403
Exceeds Any Thresholds, 397
Ext, 383, 399, 405
Ext Frame Trigger Delay, 371
External Frame Polarity Net Pos, 372
Frame Count, 391, 395
Frame Erasure, 397
Frame Trigger Source Int Ext, 372
GSM BERT Off On, 400
High Amplitude, 373, 377, 384
Immediate, 383, 399, 405
Initial Bit Count, 386
Initial Block Count, 375, 379
Initial Frame Count, 396
Low Amplitude, 374, 377, 385, 392
Measurement Mode BER% Search, 395
Measurement Mode BLER% Search, 381
No Thresholds, 371, 376, 390, 393, 397, 403
Pass Amplitude, 374, 378, 385
PN11, 401
PN15, 401
PN20, 401
PN23, 401
PN9, 401
Resync Limits, 402
Spcl Pattern 0's 1's, 400
Spcl Pattern Ignore Off On, 401

sense subsystem keys (*continued*)

Spectrum Invert Off On, 381, 396
Stop Measurement, 380, 394
Sync Source BCH PDCH, 382
Sync Source BCH TCH, 399
Synchronize to BCH/PDCH, 382
Synchronize to BCH/TCH, 398
Target BER %, 373, 377
Timeslot, 380, 394
Total Bits, 404
Trigger Key, 383, 399, 405
Uplink Timing Advance, 383, 400
SEQ softkey, 98
Set Marker Off All Points softkey, 280
SF/2 softkey, 910
SF2 softkey, 819
SFN reset-signal (DRPS5) softkey, 810, 812, 813, 814
SFN RST Polarity softkey, 908
SFN-CFN Frame Offset softkey, 856
SHAPE softkey, 99
Signature field, 893
Sine softkey
 See amplitude modulation subsystem keys
 See DECT 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
Single 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

- Single softkey (continued)*
 See PHS subsystem keys
 See TETRA subsystem keys
 See wideband CDMA ARB subsystem keys
- Single Sweep softkey, 161
- Slot Format field, 786, 793, 841, 851, 868, 872
- softkey, 115
- Source Module softkey, 57
- Spcl Pattern 0's 1's softkey, 400
- Spcl Pattern Ignore Off On softkey, 401
- Spectrum Invert Off On softkey
 See sense subsystem keys
- Spread Rate 1 softkey, 234, 241, 248
- Spread Rate 3, 241
- Spread Rate 3 softkey, 234, 248
- Spread Rate field, 456
- Spreading Type Direct Mcarrier, 234
- Spreading Type Direct Mcarrier softkey, 249
- Spurious Response softkey, 817
- Square softkey, 169, 175, 181, 187
- SR1 9 Channel softkey, 236
- SR1 Pilot softkey, 236
- SR3 Direct 9 Channel softkey, 236
- SR3 Direct Pilot softkey, 236
- SR3 Mcarrier 9 Channel softkey, 236
- SR3 MCarrier Pilot softkey, 236
- SS softkey, 620
- SSB softkey, 759, 764
- SSCH 2nd Scramble Group field, 816
- SSCH Power field, 816
- SSCH softkey, 322
- SSCH State field, 817
- Standard softkey, 321
- Start Access Slot Position in 80ms Period field, 878
- Start Frequency softkey, 68
- Start Sub-Channel# field, 882
- State field
 See CDMA2000 BBG subsystem keys and fields
- State softkey, 99, 117
- STD softkey, 838
- Step Dwell softkey, 52
- Step Power field, 860
- Stop Frequency softkey, 69
- Stop Measurement softkey
 See sense subsystem keys
- Store Custom CDMA State softkey, 220, 238, 241
- Store Custom Dig Mod State softkey, 268
- Store Custom Multicarrier softkey, 219, 236
- Store Custom W-CDMA State softkey, 316, 319
- Store To File softkey, 19, 116, 122, 300, 328
- string response data, 12
- string SCPI parameter, 10
- strings, quote usage, 15
- STS softkey, 759, 764
- Sub Channel Timing (RPS17) softkey
 See wideband CDMA base band generator
 subsystem keys and fields
- Subnet Mask softkey, 71
- subsystems, SCPI commands
 See SCPI command subsystems
- SW softkey, 690, 693, 695
- Sweep Direction Down Up softkey, 46
- Sweep Repeat Single Cont softkey, 161
- Sweep Type List Step softkey, 50
- Swept-Sine softkey, 169, 175, 181, 187
- Symbol Out Polarity Neg Pos softkey, 129
- Symbol Rate field, 841, 849, 871
- Symbol Rate softkey, 268, 321, 329, 586, 867
- Symbol Sync Out Polarity Neg Pos softkey, 131
- Symbol Sync Polarity Neg Pos softkey, 126, 127
- Symbol Timing Err softkey, 417
- Sync Out Offset softkey, 553, 585, 630, 664, 696,
 726, 771
- SYNC softkey, 658, 662, 718
- Sync softkey, 218, 629
- Sync Source BCH PDCH softkey, 382
- Sync Source BCH TCH softkey, 399
- Sync Source SFN FCIk ESG softkey, 909
- Synchronize to BCH/PDCH softkey, 382
- Synchronize to BCH/TCH softkey, 398
- System ID field, 449
- system subsystem keys
 8648A/B/C/D, 151, 153
 8656B,8657A/B, 151, 153
 8657D NADC, 151, 153
 8657D PDC, 151, 153
 8657J PHS, 151, 153
 Error Info, 150
 Help Mode Single Cont, 150, 151
 PN9 Mode Preset, 154

Index

system subsystem keys (*continued*)

- Power On Last Preset, [152](#)
- Preset, [152](#)
- Preset Normal User, [154](#)
- Restore Sys Defaults, [154](#)
- Save User Preset, [155](#), [156](#), [157](#), [158](#)
- SCPI, [151](#), [153](#)
- Screen Saver Delay
 - 1 hr, [158](#)
- Screen Saver Mode, [159](#)
- Screen Saver Off On, [159](#)
- Time/Date, [149](#), [159](#)
- View Next Error Message, [150](#)

T

- T1 softkey, [583](#)
- T2 softkey, [583](#)
- Target BER % softkey
 - See* sense subsystem keys
- TCH All softkey, [718](#)
- TCH softkey, [718](#)
- TCH/FS softkey, [621](#)
- tDPCH Offset field, [795](#)
- Test Model 1 w/16 DPCH softkey, [312](#), [317](#)
- Test Model 1 w/32 DPCH softkey, [312](#), [317](#)
- Test Model 1 w/64 DPCH softkey, [312](#), [317](#)
- Test Model 2 softkey, [312](#), [317](#)
- Test Model 3 w/16 DPCH softkey, [312](#), [317](#)
- Test Model 3 w/32 DPCH softkey, [312](#), [317](#)
- Test Model 4 softkey, [312](#), [317](#)
- Test Model 5 w/2HSPDSCH softkey, [312](#), [317](#)
- Test Model 5 w/4HSPDSCH softkey, [312](#), [317](#)
- Test Model 5 w/8HSPDSCH softkey, [312](#), [317](#)
- TETRA Off On softkey, [777](#)
- TETRA softkey, [265](#), [267](#)
- TETRA subsystem keys
 - 16 1's & 16 0's, [748](#), [756](#), [758](#), [760](#), [762](#), [764](#), [766](#), [767](#), [768](#), [769](#)
 - 16PSK, [753](#)
 - 16QAM, [753](#)
 - 256QAM, [753](#)
 - 2-Lvl FSK, [753](#)
 - 32 1's & 32 0's, [748](#), [756](#), [758](#), [760](#), [762](#), [764](#), [766](#), [767](#), [768](#), [769](#)
 - 32QAM, [753](#)

TETRA subsystem keys (*continued*)

- 4 1's & 4 0's, [748](#), [756](#), [758](#), [760](#), [762](#), [764](#), [766](#), [767](#), [768](#), [769](#)
- 4-Lvl FSK, [753](#)
- 4QAM, [753](#)
- 64 1's & 64 0's, [748](#), [756](#), [758](#), [760](#), [762](#), [764](#), [766](#), [767](#), [768](#), [769](#)
- 64QAM, [753](#)
- 8 1's & 8 0's, [748](#), [756](#), [758](#), [760](#), [762](#), [764](#), [766](#), [767](#), [768](#), [769](#)
- 8PSK, [753](#)
- All Timeslots, [771](#)
- APCO 25 C4FM, [750](#)
- B, [758](#), [763](#)
- B1, [757](#), [761](#)
- B2, [757](#), [762](#)
- BBG Data Clock Ext Int, [738](#)
- BBG Ref Ext Int, [750](#)
- Begin Frame, [771](#)
- Begin Timeslot #, [771](#), [772](#)
- BPSK, [753](#)
- Bus, [755](#), [775](#)
- Continuous, [774](#)
- D8PSK, [753](#)
- Data Format Pattern Framed, [747](#)
- Dn Custom Cont, [770](#)
- Dn Normal Cont, [770](#)
- Dn Normal Disc, [770](#)
- Dn Sync Cont, [770](#)
- Dn Sync Disc, [770](#)
- Ext, [748](#), [755](#), [756](#), [758](#), [760](#), [762](#), [764](#), [766](#), [767](#), [768](#), [769](#), [775](#)
- Ext BBG Ref Freq, [750](#)
- Ext Data Clock Normal Symbol, [749](#)
- Ext Delay Bits, [776](#)
- Ext Delay Off On, [777](#)
- Ext Polarity Neg Pos, [777](#)
- Fall Delay, [741](#), [743](#)
- Fall Time, [742](#), [743](#)
- FCOR, [759](#), [763](#)
- Filter Alpha, [738](#)
- Filter BbT, [739](#)
- FIX4, [748](#), [756](#), [758](#), [760](#), [761](#), [762](#), [763](#), [764](#), [765](#), [766](#), [767](#), [768](#), [769](#), [770](#)
- Free Run, [774](#)

TETRA subsystem keys (*continued*)

Freq Dev, 752
 Gate Active Low High, 775
 Gated, 774
 Gaussian, 750
 Gray Coded QPSK, 753
 I/Q Scaling, 751
 IS-95, 750
 IS-95 Mod, 750
 IS-95 Mod w/EQ, 750
 IS-95 OQPSK, 753
 IS-95 QPSK, 753
 IS-95 w/EQ, 750
 MSK, 753
 Nyquist, 750
 Optimize FIR For EVM ACP, 747
 OQPSK, 753
 $\pi/4$ DQPSK, 753
 Patt Trig In 1, 776
 Patt Trig In 2, 776
 Phase Dev, 752
 Phase Polarity Normal Invert, 754
 PN11, 748, 756, 758, 760, 762, 764, 766, 767, 768, 769
 PN15, 748, 756, 758, 760, 762, 764, 766, 767, 768, 769
 PN20, 748, 756, 758, 760, 762, 764, 766, 767, 768, 769
 PN23, 748, 756, 758, 760, 762, 764, 766, 767, 768, 769
 PN9, 748, 756, 758, 760, 762, 764, 766, 767, 768, 769
 PN9 Mode Normal Quick, 740
 QPSK, 753
 Recall Secondary Frame State, 754
 Rectangle, 750
 Reset & Run, 774
 Restore TETRA Factory Default, 748
 Rise Delay, 744
 Rise Time, 745, 746
 Root Nyquist, 750
 Save Secondary Frame State, 755
 Scramble Off On, 741
 Scramble Seed, 741
 Secondary Frame Off On, 755

TETRA subsystem keys (*continued*)

Sine, 746
 Single, 774
 SSB, 759, 764
 STS, 759, 764
 Symbol Rate, 772
 Sync Out Offset, 771
 TETRA Off On, 777
 Timeslot Ampl Main Delta, 765
 Timeslot Off On, 766
 Trigger & Run, 774
 Trigger Key, 755, 775
 TS, 757, 762, 766, 767, 769
 UN3/4 GSM Gaussian, 750
 Up Control 1, 770
 Up Control 2, 770
 Up Custom, 770
 Up Normal, 770
 User File, 746, 748, 756, 758, 760, 762, 764, 766, 767, 768, 769
 User FIR, 750
 User FSK, 753
 User I/Q, 753
 TFCI Field Off On softkey, 321, 326, 329, 331
 TFCI Pat field, 794
 TFCI Pattern field, 842, 868
 TFCI State field, 843, 869
 Tfirst field, 787
 TGCFN field, 819, 910
 TGD field, 820, 911
 Tgl field, 787
 TGL1 field, 820, 911
 TGL2 field, 820, 912
 TGPL1 field, 821, 912
 TGPRC field, 913
 TGPS Inactive Active softkey, 914
 TGSN field, 822, 914
 Through softkey, 197, 199, 207, 212, 228, 233, 255, 259, 277, 279, 293, 294, 308, 310, 412, 418
 Time field, 450
 Time/Date softkey, 149, 159
 Timeslot Ampl Main Delta softkey
 See DECT subsystem keys
 See EDGE subsystem keys
 See NADC subsystem keys

Index

Timeslot Ampl Main Delta softkey (continued)
 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, [881](#)
Timeslot softkey
 See sense subsystem keys
Timeslot Type softkey, [736](#)
Timing Offset softkey, [882](#), [908](#), [917](#)
tOCNS Offset field, [801](#)
Toggle Marker 1 softkey, [286](#)
Toggle State softkey, [298](#), [300](#)
Total Bits field, [922](#)
Total Bits softkey, [404](#)
Total Block field, [924](#)
TotalPwr field, [836](#), [865](#)
TPC Pat Steps field, [843](#)
TPC Pat Trig Polarity Neg Pos softkey, [844](#)
TPC Pattern field, [844](#)
TPC Steps field, [795](#)
TPC UserFile Trig field, [845](#)
Tp-m field, [883](#)
Tp-p field, [884](#)
Traffic Bearer softkey, [529](#), [539](#)
Traffic Bearer with Z field softkey, [529](#), [539](#)
Traffic softkey, [218](#)
Transp Chan A softkey, [791](#)
Transp Chan B softkey, [791](#)
Transp Position Flexible Fixed softkey, [830](#)
Transport CH softkey, [803](#)
TrCH BER field, [850](#)
TrCh BlkSize 168 softkey, [880](#)
TrCh BlkSize 360 softkey, [880](#)
TrCH State Off On softkey, [935](#)
TrCHI State Off On softkey, [832](#)
Triangle softkey, [169](#), [175](#), [181](#), [187](#)
Trigger & Run softkey
 See CDMA ARB subsystem keys

Trigger & Run softkey (continued)
 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, [491](#)
Trigger In Polarity Neg Pos softkey, [162](#)
Trigger Key softkey
 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 list/sweep 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, [162](#)
trigger subsystem keys
 Bus, [163](#), [490](#)
 Ext, [163](#), [490](#)
 Free Run, [163](#), [490](#)
 Single Sweep, [161](#)
 Sweep Repeat Single Cont, [161](#)
 Trigger In Polarity Neg Pos, [162](#)
 Trigger Key, [163](#), [490](#)
 Trigger Out Polarity Neg Pos, [162](#)

Trigger Sync Reply (RPS7) softkey
 See wideband CDMA base band generator
 subsystem keys and fields

Truncated PN9 softkey, 411

TS softkey, 629, 757, 762, 766, 767, 769

TSC0 softkey, 583, 621, 627

TSC1 softkey, 583, 621, 627

TSC2 softkey, 583, 621, 627

TSC3 softkey, 583, 621, 627

TSC4 softkey, 583, 621, 627

TSC5 softkey, 583, 621, 627

TSC6 softkey, 583, 621, 627

TSC7, 621, 627

TSC7 softkey, 583, 621, 627

TTI field, 831, 886, 927, 935

TTI Frame Clock (RPS9) softkey
 See wideband CDMA base band generator
 subsystem keys and fields

Turbo Coding field, 443, 489

Turbo softkey, 827, 829, 920

Type softkey, 321, 329

U

UDI 64 kbps softkey, 893

UDI ISDN (25.101 v3.5) softkey, 792

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
 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, 577

unit subsystem keys
 dBm, 164

unit subsystem keys (*continued*)
 dBuV, 164
 dBuVemf, 164
 mV, 164
 mVemf, 164
 uV, 164
 uVemf, 164

Up Control 1 softkey, 770

Up Control 2 softkey, 770

Up Custom softkey, 663, 695, 770

Up Normal softkey, 770

Up TCH All softkey, 663, 695

Up TCH softkey, 663, 695

Up VOX softkey, 695

Up/Down softkey, 796, 843

Update Display Cycle End Cont softkey, 351

Update in Remote Off On softkey, 82

Uplink MCS-1 softkey, 621

Uplink MCS-5 softkey, 577

Uplink MCS-9 softkey, 577

Uplink Timing Advance softkey
 See sense subsystem keys

User File 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 TETRA subsystem keys
 See wideband CDMA base band generator
 subsystem keys and fields

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

Index

User FIR softkey (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

User Flatness softkey, [100](#), [117](#)

User 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

User I/Q 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

uV softkey, [164](#)

uVemf softkey, [164](#)

UW softkey, [716](#), [717](#), [734](#), [735](#)

UWCDMA softkey, [100](#)

V

View Next Error Message softkey, [150](#)

W

Walsh Code softkey, [239](#), [243](#)

Walsh field

See CDMA2000 BBG subsystem keys and fields

Waveform Length softkey, [202](#), [225](#)

Waveform Runtime Scaling softkey, [285](#)

waveform, creating a multitone, [292](#)

W-CDMA Off On softkey, [339](#), [935](#)

WCDMA softkey

See CDMA ARB subsystem keys

See CDMA2000 ARB subsystem keys

See Dmodulation subsystem keys

See wideband CDMA ARB subsystem keys

wideband CDMA ARB subsystem keys

1 DPCH, [312](#), [317](#)

2 Carriers, [313](#)

2.100 MHz, [310](#)

3 Carriers, [313](#)

3 DPCH, [312](#), [317](#)

4 Carriers, [313](#)

40.000 MHz, [308](#), [310](#)

APCO 25 C4FM, [306](#)

Apply Channel Setup, [320](#), [329](#)

ARB Reference Ext Int, [334](#)

ARB Sample Clock, [335](#)

Bus, [337](#)

Channel, [321](#), [329](#)

Chip Rate, [306](#)

Clear Header, [308](#)

Clip III To, [304](#), [314](#)

Clip IQI To, [304](#), [315](#)

Clip At PRE POST FIR Filter, [304](#)

Clip Type II+jQI To, [305](#), [315](#)

Clipping Type II+jQI III,IQI, [305](#), [315](#)

Continuous, [336](#)

Custom WCDMA State, [327](#)

DPCCCH, [327](#)

DPCCCH + 1 DPDCH, [327](#)

DPCCCH + 2 DPDCH, [327](#)

DPCCCH + 3 DPDCH, [327](#)

DPCCCH + 4 DPDCH, [327](#)

DPCCCH + 5 DPDCH, [327](#)

DPCH, [322](#)

Equal Energy per Symbol, [326](#)

Ext Delay Off On, [338](#)

Ext Delay Time, [337](#)

Ext Key, [337](#)

Ext Polarity Neg Pos, [338](#)

Filter Alpha, [307](#)

Filter BbT, [307](#)

First Spread Code, [321](#), [329](#)

Free Run, [335](#)

- wideband CDMA ARB subsystem keys (*continued*)
- Gain Unit dB Lin Index, 330
 - Gate Active Low High, 336
 - Gated, 336
 - Gaussian, 306
 - I/Q Mapping Norma Invert, 309
 - I/Q Mod Filter Manual Auto, 311
 - I/Q Output Filter Manual Auto, 309
 - Increment Scramble Code, 316
 - Increment Timing Offset, 319
 - IS-2000 SR3 DS, 306
 - IS-95, 306
 - IS-95 Mod, 306
 - IS-95 Mod w/EQ, 306
 - IS-95 w/EQ, 306
 - Left Alternate, 321
 - Link Down Up, 311
 - Marker 1, 331, 332
 - Marker 1 Polarity Neg Pos, 332
 - Marker 2, 331, 332
 - Marker 2 Polarity Neg Pos, 332
 - Marker 3, 331, 332
 - Marker 3 Polarity Neg Pos, 333
 - Marker 4, 331, 332
 - Marker 4 Polarity Neg Pos, 333
 - Modulator Atten Manual Auto, 310
 - None, 331, 332
 - Nyquist, 306
 - OCNS, 322
 - Optimize ACP ADJ ALT, 312, 326
 - Optimize FIR For EVM ACP, 307
 - Patt Trig In 1, 338
 - Patt Trig In 2, 338
 - PCCPCH + SCH, 312, 317
 - PCCPCH + SCH + 1 DPCH, 312, 317
 - PCCPCH + SCH + 3 DPCH, 312, 317
 - PICH, 322
 - Power, 329
 - PPCCPCH, 322, 323
 - PSCH, 322
 - Random, 321, 329
 - Rectangle, 306
 - Reference Freq, 333
 - Reset & Run, 335
 - Retrigger Mode Off On, 334
- wideband CDMA ARB subsystem keys (*continued*)
- Right Alternate, 321
 - Root Nyquist, 306
 - Save Setup To Header, 308
 - Scale to 0dB, 326
 - SCCPCH, 322, 323
 - Scramble Code, 321, 327, 329
 - Scramble Offset, 321, 329
 - Second DPDCH I Q, 327
 - Single, 336
 - SSCH, 322
 - Standard, 321
 - Store Custom W-CDMA State, 316, 319
 - Store To File, 328
 - Symbol Rate, 321, 329
 - Test Model 1 w/16 DPCH, 312, 317
 - Test Model 1 w/32 DPPCH, 312, 317
 - Test Model 1 w/64 DPCH, 312, 317
 - Test Model 2, 312, 317
 - Test Model 3 w/16 DPCH, 312, 317
 - Test Model 3 w/32 DPCH, 312, 317
 - Test Model 4, 312, 317
 - Test Model 5 w/2HSPDSCH, 312, 317
 - Test Model 5 w/4HSPDSCH, 312, 317
 - Test Model 5 w/8HSPDSCH, 312, 317
 - TFCI Field Off On, 321, 326, 329, 331
 - Through, 308, 310
 - Trigger & Run, 335
 - Trigger Key, 337
 - Type, 321, 329
 - UN3/4 GSM Gaussian, 306
 - User FIR, 306
 - WCDMA, 306
 - W-CDMA Off On, 339
- wideband CDMA base band generator subsystem
- keys and fields
 - # of Blocks, 830
 - 1/2 Conv, 827, 829, 920
 - 1/3 Conv, 827, 829, 920
 - 10 msec, 853
 - 10ms Frame Pulse (DRPS11), 810, 812, 813, 814
 - 10ms Frame Pulse (RPS6), 902, 903, 904, 905, 906, 907
 - 12.2 kbps (34.121 v3.8), 792
 - 144 kbps (34.121 v3.8), 792

Index

wideband CDMA base band generator subsystem

keys and fields (*continued*)

20 msec, [853](#)
2560 msec, [853](#)
2nd Scr Offset, [794](#), [801](#)
3.84MHz chip-clk (DRPS4), [810](#), [812](#), [813](#), [814](#)
384 kbps (34.121 v3.8), [792](#)
40 msec, [853](#)
64 kbps (34.121 v3.8), [792](#)
80 msec, [853](#)
80ms Frame Pulse (DRPS13), [810](#), [812](#), [813](#), [814](#)
80ms Frame Pulse (RPS20), [902](#), [903](#), [904](#), [905](#),
[906](#), [907](#)
A, [784](#)
ACS, [817](#)
Active, [822](#)
Actual BER, [930](#)
Actual BLER, [923](#), [931](#)
AICH, [887](#)
AICH Trigger Polarity Pos Neg, [861](#)
All Down, [796](#), [843](#)
All Up, [796](#), [843](#)
Alt power in, [900](#)
AMR 12.2 kbps, [792](#), [893](#)
APCO 25 C4FM, [796](#), [854](#)
Apply Channel Setup, [779](#), [833](#)
B, [784](#)
Base Delay Tp-a, [883](#)
BBG Chip Clock Ext Int, [779](#)
BBG Data Clock Ext In, [783](#)
BER, [923](#), [925](#), [931](#), [933](#)
Beta, [837](#), [846](#)
BLER, [924](#), [925](#), [932](#), [933](#)
Blk Set Size, [827](#)
Blk Size, [826](#), [919](#), [927](#)
Blocking, [817](#)
Burst gate in, [901](#)
C Power, [834](#)
C Power value, [862](#)
C/N value, [780](#), [833](#), [862](#)
CFN #0 Frame Pulse (RPS10), [896](#)
Chan Code, [789](#), [790](#), [799](#)
Channel Code, [805](#), [838](#), [847](#), [888](#)
Channel Code field, [804](#)
Channel State, [846](#), [853](#)

wideband CDMA base band generator subsystem

keys and fields (*continued*)

Channel State Off On, [783](#), [787](#), [788](#), [790](#), [796](#),
[799](#), [802](#), [805](#), [807](#), [815](#), [837](#), [865](#), [920](#), [927](#),
[928](#)
ChCode Ctl, [877](#)
ChCode Dat, [877](#)
Chip Clock (RPS1), [896](#), [902](#), [903](#), [904](#), [905](#), [906](#),
[907](#)
Chip Rate, [789](#), [837](#)
Comp Mode Start Trigger Polarity Neg Pos, [916](#)
Comp Mode Start Trigger Polarity Pos Neg, [824](#),
[825](#)
Comp Mode Stop Trigger Polarity Neg Pos, [917](#)
Comp Mode Stop Trigger Polarity Pos Neg, [824](#)
Compressed Mode Off On, [916](#)
Compressed Mode Start Trigger, [799](#), [823](#), [916](#)
Compressed Mode Stop Trigger, [824](#), [917](#)
CRC Size, [828](#), [921](#), [929](#)
Ctrl Beta, [865](#)
Ctrl Pwr, [867](#)
Data, [848](#)
Data Beta, [869](#)
Data field, [933](#)
Data Pwr, [871](#)
Data Rate, [800](#)
DCH1, [835](#)
DCH2, [835](#)
DCH3, [835](#)
DCH4, [835](#)
DCH5, [835](#)
DCH6, [835](#)
DL Reference 1.1, [914](#)
DL Reference 1.2, [914](#)
DL Reference 2.1, [914](#)
DL Reference 2.2, [914](#)
Down/Up, [796](#), [843](#)
DPCCH, [835](#), [857](#)
DPCCH Pilot data-clk (DRPS23), [810](#), [812](#), [813](#),
[814](#)
DPCCH Power, [840](#)
DPCCH Raw Data (RPS4), [896](#)
DPCCH Raw Data Clock (RPS5), [896](#)
DPCCH TFCI data-clk (DRPS22), [810](#), [812](#), [813](#),
[814](#)

- wideband CDMA base band generator subsystem
 keys and fields (*continued*)
 DPCCH TPC indicator (DRPS21), 810, 812, 813, 814
 DPCH + 1, 781, 782
 DPCH + 2, 781, 782
 DPCH 10ms Frame-Pulse (DRPS26), 810, 812, 813, 814
 DPCH Channel Balance, 789
 DPCH Compressed Frame Indicator (DRPS32), 810, 812, 813, 814
 DPCH data stream (DRPS24), 810, 812, 813, 814
 DPCH data-clk (0) (DRPS28), 810, 812, 813, 814
 DPCH Gap Indicator (DRPS33), 810, 812, 813, 814
 DPCH TimeSlot pulse (DRPS25), 810, 812, 813, 814
 DPDCH, 835
 DPDCH data-clk withDTX (DRPS20), 810, 812, 813, 814
 DPDCH data-clk WithOutDTX (DRPS30), 810, 812, 813, 814
 DPDCH Power, 849
 DPDCH Raw Data (RPS2), 896
 DPDCH Raw Data Clock (RPS3), 896
 Eb/No, 863
 Eb/No value (dB), 834
 Ec/No value, 780, 863
 Equal Powers, 803, 857
 Error BER, 930
 Error Bits, 922
 Error Blocks, 923
 Ext, 796
 Ext Clock Rate x1 x2 x4, 779
 FBI State, 840
 Filter Alpha, 797, 855
 Filter BbT, 798, 855
 FIX, 840
 FIX4, 791, 803, 804, 805, 806, 828, 829, 839, 848, 866, 868, 870, 925, 929
 Flat Noise BW, 836
 Frame Clock Polarity Neg Pos, 854
 Frame Sync Trigger Mode Single Cont, 909
 Gaussian, 796, 854
 Higher Layer, 910
- wideband CDMA base band generator subsystem
 keys and fields (*continued*)
 Infinity, 821, 913
 Init Power, 858
 Init Pwr, 875, 891
 Intermod, 817
 IS-95, 796, 854
 IS-95 Mod, 796, 854
 IS-95 Mod w/EQ, 796, 854
 IS-95 w/EQ, 854
 Left, 785
 Link Down Up, 832
 Max Input, 817
 Max Power, 858
 Max Pwr, 876, 891
 Message Data Raw Data (RPS11), 902, 903, 904, 905, 906, 907
 Message Part, 874
 Message Pulse (RPS22), 902, 903, 904, 905, 906, 907
 Message-Control Raw Data (RPS13), 903, 904, 905, 906, 907
 Message-Control Raw Data Clock (RPS12), 902, 903, 904, 905, 906, 907
 Min Power, 859
 Msg Ctrl, 864
 Msg Data, 864
 Msg Pwr, 874, 889
 N Power, 836, 864
 NONE, 920
 None, 827, 829, 925, 933
 NONE (RPS0), 896, 902, 903, 904, 905, 906, 907
 Normal, 785
 Num of Blk, 926, 934
 Num of Pre, 875, 890
 Number of AICH, 861
 Number of PRACH, 887, 890
 Number of PRACH 80ms, 874
 Number of Preamble, 890
 Nyquist, 796, 854
 Off, 887
 Omitted, 821, 912
 On, 887
 On/Off, 802, 879
 OpenLoop Ant1, 825

Index

wideband CDMA base band generator subsystem
 keys and fields (*continued*)
 OpenLoop Ant1 SCH TSTD OFF, 825
 OpenLoop Ant2, 825
 OpenLoop Ant2 SCH TSTD OFF, 825
 Optimize FIR For EVM ACP, 798, 856
 Paging Indicator, 806
 Pattern trigger in 1, 901
 Pattern trigger in 2, 901
 PCCPCH, 781, 782
 P-CCPCH data (DRPS39), 810, 812, 813, 814
 P-CCPCH data-clk (DRPS38), 810, 812, 813, 814
 Performance Req, 817
 Phase Polarity Normal Invert, 807
 Phase Polarity Normal Inverted, 833
 PI Bits, 806
 PICH, 781, 782
 PICH 10ms FramePulse (DRPS37), 810, 812, 813, 814
 PICH data (DRPS35), 810, 812, 813, 814
 PICH data-clk (DRPS34), 810, 812, 813, 814
 PICH TimeSlot Pulse (DRPS36), 810, 812, 813, 814
 Playback Ratio, 785
 PN15, 784, 791, 800, 803, 805, 838, 839, 842, 843, 848, 866, 868, 870
 PN9, 784, 791, 800, 803, 805, 828, 838, 839, 842, 843, 848, 866, 868, 870, 921, 929
 Power, 785, 788, 792, 800, 804, 807, 808
 Power Control Signal Polarity Neg Pos, 860
 Power Hold Off On, 857
 Power Mode Norm TPC, 861
 Pp-m, 876, 892
 PRACH, 857
 PRACH Mode Single Multi, 873
 PRACH Power Setup Mode Pp-m Total, 880
 PRACH Processing (RPS19), 902, 903, 904, 905, 906, 907
 PRACH Scrambling Code, 881
 PRACH Trigger, 885
 PRACH Trigger Polarity Neg Pos, 885
 PRACH Trigger Source Immedi Trigger, 886
 Pre Sig, 877
 Preamble, 864
 Preamble power average, 879

wideband CDMA base band generator subsystem
 keys and fields (*continued*)
 Preamble Pulse (RPS21), 902, 903, 904, 905, 906, 907
 Preamble Raw Data (RPS15), 902, 903, 904, 905, 906, 907
 Preamble Raw Data Clock (RPS16), 902, 903, 904, 905, 906, 907
 PSCH State, 808
 Puncture, 819, 926, 934
 PwrOffs, 818, 909
 RACH TrCH, 864
 Ramp Step, 876, 892
 Rate Match Attr, 831, 926, 934
 Rectangle, 796, 854
 Ref Data Rate, 834, 863
 Ref Sensitivity, 817
 Reset to Initial Power, 859
 Right, 785
 RMC 144 kbps (25.141 v3.9), 893
 RMC 384 kbps (25.141 v3.9), 893
 RMC 64 kbps (25.141 v3.9), 893
 RMC122 kbps (25.141 v3.9), 893
 Root Nyquist, 796, 854
 Scale to 0dB, 803, 857
 SCFN, 823, 915
 SCH slot-pulse (DRPS10), 810, 812, 813, 814
 Scrambling Code, 815, 816, 907
 SF/2, 910
 SF2, 819
 SFN reset-signal (DRPS5), 810, 812, 813, 814
 SFN RST Polarity, 908
 SFN-CFN Frame Offset, 856
 Signature, 893
 Slot Format, 786, 793, 841, 851, 868, 872
 Spurious Response, 817
 SSCH 2nd Scramble Group, 816
 SSCH Power, 816
 SSCH State, 817
 Start Access Slot Position in 80ms Period, 878
 Start Sub-Channel#, 882
 STD, 838
 Step Power, 860
 Sub Channel Timing (RPS17), 902, 903, 904, 905, 906, 907

- wideband CDMA base band generator subsystem
- keys and fields (*continued*)
 - Symbol Rate, 841, 849, 867, 871
 - Sync Source SFN FClk ESG, 909
 - tDPCH Offset, 795
 - TFCI Pat, 794
 - TFCI Pattern, 842, 868
 - TFCI State, 843, 869
 - Tfirst, 787
 - TGCFN, 819, 910
 - TGD, 820, 911
 - Tgl, 787
 - TGL1, 820, 911
 - TGL2, 820, 912
 - TGPL1, 821, 912
 - TGPL2, 912
 - TGPRC, 913
 - TGPS Inactive Active, 914
 - TGSN, 822, 914
 - Timeslot Offset, 881
 - Timing Offset, 882, 908, 917
 - tOCNS Offset, 801
 - Total Bits, 922
 - Total Blocks, 924
 - TotalPwr, 836, 865
 - TPC Pat Steps, 843
 - TPC Pat Trig Polarity Neg Pos, 844
 - TPC Pattern, 844
 - TPC Steps, 795
 - TPC UserFile Trig, 845
 - Tp-m, 883
 - Tp-p, 884
 - Transp Chan A, 791
 - Transp Chan B, 791
 - Transp Position Flexible Fixed, 830
 - Transport CH, 803
 - TrCH BER, 850
 - TrCh BlkSize 168, 880
 - TrCh BlkSize 360, 880
 - TrCH State Off On, 832, 935
 - Trigger Sync Reply (RPS7), 902, 903, 904, 905, 906, 907
 - TTI, 831, 886, 927, 935
 - TTI Frame Clock (RPS9), 896
 - Turbo, 827, 829, 920
- wideband CDMA base band generator subsystem
- keys and fields (*continued*)
 - UDI 64 kbps, 893
 - UDI ISDN (25.101 v3.5), 792
 - UN3/4 GSM Gaussian, 796
 - Up/Down, 796, 843
 - User File, 791, 796, 803, 805, 828, 838, 839, 842, 848, 866, 868, 870, 921, 929
 - User FIR, 796, 854
 - W-CDMA Off On, 935

