

SCPI Command Reference Volume 1

Agilent Technologies E4428C/38C ESG Signal Generators

This guide applies to the following signal generator models:

E4428C ESG Analog Signal Generator

E4438C ESG Vector Signal Generator

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

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



Agilent Technologies

Manufacturing Part Number: E4400-90506

Printed in USA

August 2005

© Copyright 2001–2005 Agilent Technologies, Inc.

Notice

The material contained in this document is provided “as is”, and is subject to being changed, without notice, in future editions.

Further, to the maximum extent permitted by applicable law, Agilent disclaims all warranties, either express or implied with regard to this manual and to any of the Agilent products to which it pertains, including but not limited to the implied warranties of merchantability and fitness for a particular purpose. Agilent shall not be liable for errors or for incidental or consequential damages in connection with the furnishing, use, or performance of this document or any of the Agilent products to which it pertains. Should Agilent have a written contract with the User and should any of the contract terms conflict with these terms, the contract terms shall control.

Questions or Comments about our Documentation?

We welcome any questions or comments you may have about our documentation. Please send us an E-mail at sources_manuals@am.exch.agilent.com.

SCPI Command Reference, Volume 1

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

Contents

:DM:IQADjustment:EXTErnal:COFFset	25
:DM:IQADjustment:EXTErnal:DIOFFset	25
:DM:IQADjustment:EXTErnal:DQOFFset	26
:DM:IQADjustment:EXTErnal:GAIN	26
:DM:IQADjustment:EXTErnal:IOFFset	26
:DM:IQADjustment:EXTErnal:IQATten	27
:DM:IQADjustment:EXTErnal:QOFFset	27
:DM:IQADjustment:GAIN	28
:DM:IQADjustment:IOFFset	28
:DM:IQADjustment:QOFFset	29
:DM:IQADjustment:QSKew	29
:DM:IQADjustment:SKEW	30
:DM:IQADjustment:SKEW:Path	31
:DM:IQADjustment[:STATE]	31
:DM:MODulation:FILTer	31
:DM:MODulation:FILTer:AUTO	32
:DM:MODulation:ATTen	32
:DM:MODulation:ATTen:AUTO	33
:DM:POLarity[:ALL]	33
:DM:SKEW:PATH	34
:DM:SKEW[:STATE]	34
:DM:SOURce	34
:DM:SRATio	35
:DM:STATE	36
Frequency Subsystem ([:SOURce])	37
:FREQuency:CHANnels:BAND	37
:FREQuency:CHANnels:NUMBer	39
:FREQuency:CHANnels[:STATE]	40
:FREQuency:FIXed	40
:FREQuency:MODE	41
:FREQuency:MULTiplier	41
:FREQuency:OFFSet	42
:FREQuency:OFFSet:STATE	42
:FREQuency:REFerence	42
:FREQuency:REFerence:STATE	43
:FREQuency:START	43
:FREQuency:STOP	44
:FREQuency:SYNThesis	44

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

Contents

:ALternate:TRIGger[:SOURce].	63
:ATTenuation.	64
:ATTenuation:AUTO	64
:MODE	65
:REFerence	65
:REFerence:STATe	66
:START	66
:STOP	67
[:LEVel][:IMMediate]:OFFSet	67
[:LEVel][:IMMediate][:AMPLitude]	68
[:LEVel][:IMMediate][:AMPLitude]:STEP	68
3. System Commands.	69
Calibration Subsystem (:CALibration).	70
:DCFM	70
:IQ	70
:IQ:DC	70
:IQ:DEFault	71
:IQ:FULL	71
:IQ:START.	72
:IQ:STOP	72
Communication Subsystem (:SYSTEM:COMMunicate)	73
:GPIB:ADDRess	73
:GTLocal	73
:LAN:CONFig	73
:LAN:GATEway	74
:LAN:HOSTname.	74
:LAN:IP	74
:LAN:SUBNet	75
:PMETer:ADDRess.	75
:PMETer:CHANnel	75
:PMETer:IDN	76
:PMETer:TIMEout	76
:SERial:BAUD	77
:SERial:ECHO	77
:SERial:RESet.	77
:SERial:TOUT	78
Diagnostic Subsystem (:DIAGnostic[:CPU]:INFORmation)	79

:BOARds	79
:CCOut:ATTenuator	79
:CCOut:PON	79
:CCOut:PROTection	79
:DISPlay:OTIME	80
:LICE:AUxiary	80
:LICE:WAVEform	81
:OPTions	81
:OPTions:DETail	81
:OTIME	82
:REVision	82
:SDATE	82
:WLICE[:VALue]	82
Display Subsystem (:DISPlay)	83
:ANNotation:AMPLitude:UNIT	83
:ANNotation:CLOCK:DATE:FORMat	83
:ANNotation:CLOCK[:STATE]	83
:BRIGHtness	84
:CAPTure	84
:CONTrast	84
:INVerse	85
:REMote	85
[:WINDow][:STATE]	85
IEEE 488.2 Common Commands	86
*CLS	86
*ESE	86
*ESE?	86
*ESR?	87
*IDN?	87
*OPC	87
*OPC?	88
*PSC	88
*PSC?	88
*RCL	88
*RST	89
*SAV	89
*SRE	89
*SRE?	90

Contents

*STB?	90
*TRG	90
*TST?	90
*WAI	91
Memory Subsystem (:MEMory)	92
:CATalog:BINary	92
:CATalog:BIT	92
:CATalog:CDMa	93
:CATalog:DMOD	93
:CATalog:DWCDma	94
:CATalog:FCDMa	94
:CATalog:FIR	95
:CATalog:FSK	95
:CATalog:IQ	96
:CATalog:LIST	96
:CATalog:MCDMa	97
:CATalog:MDMod	97
:CATalog:MDWCdma	98
:CATalog:MFCdma	98
:CATalog:MTONe	99
:CATalog:RCDMa	99
:CATalog:SEQ	100
:CATalog:SHAPE	100
:CATalog:STATe	101
:CATalog:UFLT	101
:CATalog:UWCDma	102
:CATalog[:ALL]	102
:COPY[:NAME]	103
:DATA	103
:DATA:APPend	104
:DATA:BIT	105
:DATA:FIR	106
:DATA:FSK	107
:DATA:IQ	108
:DATA:PRAM:FILE:BLOCK	110
:DATA:PRAM:FILE:LIST	111
:DATA:PRAM	112
:DATA:PRAM:BLOCK	112

:DATA:PRAM:LIST	112
:DATA:SHAPE	112
:DATA:SHAPE	113
:DATA:UNPRotected	114
:DELeTe:ALL	115
:DELeTe:BINary	116
:DELeTe:BIT	116
:DELeTe:CDMa	116
:DELeTe:DMOD	116
:DELeTe:DWCDma	116
:DELeTe:FCDMa	117
:DELeTe:FIR	117
:DELeTe:FSK	117
:DELeTe:IQ	117
:DELeTe:LIST	117
:DELeTe:MCDMa	118
:DELeTe:MMod	118
:DELeTe:MDWCdma	118
:DELeTe:MFCdma	118
:DELeTe:MTONE	118
:DELeTe:RCDMa	119
:DELeTe:SEQ	119
:DELeTe:SHAPE	119
:DELeTe:STATe	119
:DELeTe:UFLT	119
:DELeTe:UWCDma	120
:DELeTe[:NAME]	120
:FREE[:ALL]	120
:LOAD:LIST	120
:MOVE	121
:STATe:COMMENT	121
:STORe:LIST	121
Mass Memory Subsystem (:MMEMory)	122
:CATalog	122
:COPY	122
:DATA	123
:DELeTe:NVWFm	123
:DELeTe:WFM	123

Contents

:DELeTe:WFM1	123
:DELeTe[:NAME]	124
:HEADer:CLEAr	124
:HEADer:DESCRiption	124
:LOAD:LIST	125
:MOVE	125
:STORe:LIST	125
Output Subsystem (:OUTPut)	126
:BLANKing:AUTO	126
:BLANKing:STATe	126
:MODulation[:STATe]	127
[:STATe]	127
Route Subsystem (:ROUte:HARDware:DGENERator)	128
:INPut:BPOLarity	128
:INPut:CPOLarity	128
:INPut:DPOLarity	129
:INPut:SPOLarity	129
:IPOLarity:BGATe	129
:IPOLarity:CLOCK	130
:IPOLarity:DATA	130
:IPOLarity:SSYNc	130
:OPOLarity:CLOCK	131
:OPOLarity:DATA	131
:OPOLarity:SSYNc	132
:OUTPut:CPOLarity	132
:OUTPut:DCS[:STATe]	133
:OUTPut:DPOLarity	133
:OUTPut:SPOLarity	133
Status Subsystem (:STATus)	134
:OPERation:BASeband:CONDition	134
:OPERation:BASeband:ENABle	134
:OPERation:BASeband:NTRansition	135
:OPERation:BASeband:PTRansition	135
:OPERation:BASeband[:EVENT]	136
:OPERation:CONDition	136
:OPERation:ENABle	137
:OPERation:NTRansition	137
:OPERation:PTRansition	138

:OPERation[:EVENT]	138
:PRESet	138
:QUEStionable:BERT:CONDition	139
:QUEStionable:BERT:ENABle	139
:QUEStionable:BERT:NTRansition	140
:QUEStionable:BERT:PTRansition	140
:QUEStionable:BERT[:EVENT]	141
:QUEStionable:CALibration:CONDition	141
:QUEStionable:CALibration:ENABle	141
:QUEStionable:CALibration:NTRansition	142
:QUEStionable:CALibration:PTRansition	142
:QUEStionable:CALibration[:EVENT]	143
:QUEStionable:CONDition	143
:QUEStionable:ENABle	144
:QUEStionable:FREQuency:CONDition	144
:QUEStionable:FREQuency:ENABle	144
:QUEStionable:FREQuency:NTRansition	145
:QUEStionable:FREQuency:PTRansition	145
:QUEStionable:FREQuency[:EVENT]	145
:QUEStionable:MODulation:CONDition	146
:QUEStionable:MODulation:ENABle	146
:QUEStionable:MODulation:NTRansition	147
:QUEStionable:MODulation:PTRansition	147
:QUEStionable:MODulation[:EVENT]	147
:QUEStionable:NTRansition	148
:QUEStionable:POWer:CONDition	148
:QUEStionable:POWer:ENABle	149
:QUEStionable:POWer:NTRansition	149
:QUEStionable:POWer:PTRansition	149
:QUEStionable:POWer[:EVENT]	150
:QUEStionable:PTRansition	150
:QUEStionable[:EVENT]	151
System Subsystem (:SYSTem)	152
:CAPability	152
:DATE	152
:ERRor[:NEXT]	153
:ERRor:SCPI[:SYNTAX]	153
:FILEsystem:SAFEmode	153

Contents

:HELP:MODE	154
:IDN	154
:LANGUage	154
:PON:TYPE	155
:PRESet	156
:PRESet:ALL	156
:PRESet:LANGUage	156
:PRESet:PERSiStent	157
:PRESet:PN9	157
:PRESet:TYPE	157
:PRESet[:USER]:SAVE	158
:SECurity:DISPlay	158
:SECurity:ERASeall	159
:SECurity:LEVel	159
:SECurity:LEVel:STATe	160
:SECurity:OVERwrite	161
:SECurity:SANitize	161
:SSAVer:DELay	161
:SSAVer:MODE	162
:SSAVer:STATe	162
:TIME	163
:VERSiOn	163
Trigger Subsystem	164
:ABORt	164
:INITiate:CONTInuous[:ALL]	164
:INITiate[:IMMediate][:ALL]	165
:TRIGger:OUTPut:POLarity	165
:TRIGger[:SEQuence]:SLOPe	166
:TRIGger[:SEQuence]:SOURce	166
:TRIGger[:SEQuence][:IMMediate]	167
Unit Subsystem (:UNIT)	168
:POWer	168
4. Analog Commands	169
Amplitude Modulation Subsystem ([:SOURce])	170
:AM[1]2...	170
:AM:INTernal:FREQUency:STEP[:INCRement]	170
:AM:WIDeband:STATe	171

:AM[1]2:EXternal[1]2:COUPLing	171
:AM[1]2:INternal[1]:FREQuency	172
:AM[1]2:INternal[1]:FREQuency:ALternate	172
:AM[1]2:INternal[1]:FREQuency:ALternate:AMPLitude:PERCent	173
:AM[1]2:INternal[1]:FUNctIon:SHAPE	173
:AM[1]2:INternal[1]:SWEep:TIME	173
:AM[1]2:INternal[1]:SWEep:TRIGger	174
:AM[1]2:SOURce	174
:AM[1]2:STATe	175
:AM[1]2[:DEPTh]	175
:AM[1]2[:DEPTh]:TRACk	176
:AM[:DEPTh]:STEP[:INCRement]	176
Frequency Modulation Subsystem ([:SOURce])	177
:FM[1]2...	177
:FM:INternal:FREQuency:STEP[:INCRement]	178
:FM[1]2:EXternal[1]2:COUPLing	178
:FM[1]2:INternal[1]:FREQuency	179
:FM[1]2:INternal[1]:FREQuency:ALternate	179
:FM[1]2:INternal[1]:FREQuency:ALternate:AMPLitude:PERCent	180
:FM[1]2:INternal[1]:FUNctIon:SHAPE	180
:FM[1]2:INternal[1]:SWEep:TIME	181
:FM[1]2:INternal[1]:SWEep:TRIGger	181
:FM[1]2:SOURce	182
:FM[1]2:STATe	182
:FM[1]2[:DEViation]	183
:FM[1]2[:DEViation]:TRACk	183
Low Frequency Output Subsystem ([:SOURce]:LFOutput)	184
:AMPLitude	184
:FUNctIon[1]:FREQuency	184
:FUNctIon[1]:FREQuency:ALternate	185
:FUNctIon[1]:FREQuency:ALternate:AMPLitude:PERCent	185
:FUNctIon[1]:PERiod	186
:FUNctIon[1]:PWIDth	186
:FUNctIon[1]:SHAPE	187
:FUNctIon[1]:SWEep:TIME	187
:FUNctIon[1]:SWEep:TRIGger	187
:SOURce	188
:STATe	188

Contents

Phase Modulation Subsystem ([:SOURCE])	189
:PM[1]2	189
:PM:INTErnal:FREQuency:STEP[:INCRement]	190
:PM[1]2:BANDwidth BWIDth	190
:PM[1]2:EXTErnal[1]:COUPLing	191
:PM[1]2:INTErnal[1]:FREQuency	191
:PM[1]2:INTErnal[1]:FREQuency:ALTErnate	192
:PM[1]2:INTErnal[1]:FREQuency:ALTErnate:AMPLitude:PERCent	192
:PM[1]2:INTErnal[1]:FUNCTion:SHAPE	193
:PM[1]2:INTErnal[1]:SWEep:TIME	193
:PM[1]2:INTErnal[1]:SWEep:TRIGger	193
:PM[1]2:SOURce	194
:PM[1]2:STATe	194
:PM[1]2[:DEVIation]	195
:PM[1]2[:DEVIation]:TRACk	195
:PM[:DEVIation]:STEP[:INCRement]	196
Pulse Modulation Subsystem ([:SOURCE]:PULM)	197
:INTErnal[1]:FREQuency	197
:INTErnal[1]:FREQuency:STEP	197
:INTErnal[1]:FUNCTion:SHAPE	198
:INTErnal[1]:PERiod	198
:INTErnal[1]:PERiod:STEP[:INCRement]	198
:INTErnal[1]:PWIDth	199
:INTErnal[1]:PWIDth:STEP	199
:SOURce	200
:STATe	200
5. Component Test Digital Commands	201
All Subsystem–Option 001/601 or 002/602 ([:SOURCE])	202
:RADio:ALL:OFF	202
AWGN ARB Subsystem–Option 403 ([:SOURCE]:RADio:AWGN:ARB)	203
:BWIDth	203
:IQ:EXTErnal:FILTEr	203
:IQ:EXTErnal:FILTEr:AUTO	204
:HEADer:CLEar	204
:HEADer:SAVE	204
:IQ:MODulation:ATTen	205
:IQ:MODulation:ATTen:AUTO	205

:IQ:MODulation:FILTer	206
:IQ:MODulation:FILTer:AUTO	206
:MDEStination:AAMPlitude	207
:MDEStination:ALCHold	207
:MDEStination:PULSe	208
:MPOLarity:MARKer1 2 3 4	210
:LENgth	210
:REFeRence:EXTErnal:FREQuency	210
:REFeRence[:SOURce]	211
:SCLock:RATE	211
:SEED	212
[:STATE]	212
CDMA ARB Subsystem–Option 401 ([:SOURce]:RADio:CDMA:ARB)	213
:CLIPping:I	213
:CLIPping:POSition	213
:CLIPping:Q	213
:CLIPping:TYPE	214
:CLIPping[:IJQ]	214
:CRATe	214
:IQ:EXTErnal:FILTer	215
:IQ:EXTErnal:FILTer:AUTO	215
:FILTer	216
:FILTer:ALPHa	217
:FILTer:BBT	217
:FILTer:CHANnel	218
:HEADer:CLear	218
:HEADer:SAVE	218
:IQMap	219
:IQ:MODulation:ATTen	219
:IQ:MODulation:ATTen:AUTO	219
:IQ:MODulation:FILTer	220
:IQ:MODulation:FILTer:AUTO	220
:MDEStination:AAMPlitude	220
:MDEStination:ALCHold	221
:MDEStination:PULSe	222
:MPOLarity:MARKer1 2 3 4	224
:OSAMple	224
:REFeRence:EXTErnal:FREQuency	224

Contents

:REfERENCE[:SOURce]	225
:RETRigger	225
:SCLock:RATE	226
:SETup	226
:SETup:CHANnel	227
:SETup:MCARrier	228
:SETup:MCARrier:STORe	229
:SETup:MCARrier:TABLE	229
:SETup:STORe	230
:TRIGger:TYPE	231
:TRIGger:TYPE:CONTinuous[:TYPE]	232
:TRIGger:TYPE:GATE:ACTive	233
:TRIGger[:SOURce]	233
:TRIGger[:SOURce]:EXTernal:DELay	234
:TRIGger[:SOURce]:EXTernal:DELay:STATe	235
:TRIGger[:SOURce]:EXTernal:SLOPe	235
:TRIGger[:SOURce]:EXTernal[:SOURce]	236
:WLENgth	236
[:STATe]	237
CDMA2000 ARB Subsystem–Option 401 ([:SOURce]:RADio:CDMA2000:ARB)	238
:CLIPping:I	238
:CLIPping:POSition	238
:CLIPping:Q	238
:CLIPping:TYPE	239
:CLIPping[:IJQ]	239
:IQ:EXTernal:FILTer	239
:IQ:EXTernal:FILTer:AUTO	240
:FILTer	240
:FILTer:ALPHa	241
:FILTer:BBT	242
:FILTer:CHANnel	242
:HEADer:CLear	243
:HEADer:SAVE	243
:IQ:MODulation:ATTen	243
:IQ:MODulation:ATTen:AUTO	244
:IQ:MODulation:FILTer	244
:IQ:MODulation:FILTer:AUTO	244
:IQMap	245

:LINK	245
:LINK:FORWard:SETup	245
:LINK:FORWard:SETup:MCARrier	246
:LINK:FORWard:SETup:MCARrier:STORE	247
:LINK:FORWard:SETup:MCARrier:TABLE	247
:LINK:FORWard:SETup:MCARrier:TABLE:NCARriers	248
:LINK:FORWard:SETup:STORE	249
:LINK:FORWard:SETup:TABLE:APPLY	249
:LINK:FORWard:SETup:TABLE:CHANnel	250
:LINK:FORWard:SETup:TABLE:NCHannels	251
:LINK:FORWard:SETup:TABLE:PADJust	251
:LINK:REVerse:RCONfig	251
:LINK:REVerse:SETup	252
:LINK:REVerse:SETup:STORE	252
:LINK:REVerse:SETup:TABLE:APPLY	253
:LINK:REVerse:SETup:TABLE:CHANnel	253
:LINK:REVerse:SETup:TABLE:NCHannels	254
:LINK:REVerse:SETup:TABLE:PADJust	254
:MDEStination:AAMplitude	255
:MDEStination:ALCHold	255
:MDEStination:PULSe	256
:MPOLarity:MARKer1 2 3 4	258
:REFerence:EXTernal:FREQuency	258
:REFerence[:SOURce]	258
:RETRigger	259
:REVision	259
:SCLock:RATE	260
:SPReading:RATE	260
:SPReading:TYPE	261
:SPReading:TYPE:MCARrier:SPACing	261
:TRIGger:TYPE	261
:TRIGger:TYPE:CONTInuous[:TYPE]	263
:TRIGger:TYPE:GATE:ACTive	264
:TRIGger[:SOURce]	264
:TRIGger[:SOURce]:EXTernal:DELay	265
:TRIGger[:SOURce]:EXTernal:DELay:STATE	266
:TRIGger[:SOURce]:EXTernal:SLOPe	266
:TRIGger[:SOURce]:EXTernal[:SOURce]	267

Contents

[.STATE]	267
Dmodulation Subsystem–Option 001/601 or 002/602 ([.SOURCE]:RADio:DMODulation:ARB)	268
:IQ:EXternal:FILTer	268
:IQ:EXternal:FILTer:AUTO	268
:FILTer	269
:FILTer:ALPHa	270
:FILTer:BBT	270
:FILTer:CHANnel	271
:HEADer:CLEar	271
:HEADer:SAVE	271
	272
:IQ:MODulation:ATTen:AUTO	272
:IQ:MODulation:FILTer	273
:IQ:MODulation:FILTer:AUTO	273
:MDESTination:AAMPLitude	274
:MDESTination:ALCHold	274
:MDESTination:PULSe	275
:MODulation:FSK[:DEViation]	277
:MODulation[:TYPE]	277
:MPOLarity:MARKer1 2 3 4	278
:REFerence:EXternal:FREQuency	278
:REFerence[:SOURCE]	279
:RETRigger	279
:SCLock:RATE	280
:SETup	280
:SETup:MCARrier	281
:SETup:MCARrier:PHASe	281
:SETup:MCARrier:STORE	282
:SETup:MCARrier:TABLE	282
:SETup:MCARrier:TABLE:NCARriers	283
:SETup:STORE	283
:SRATe	284
:TRIGger:TYPE	285
:TRIGger:TYPE:CONTinuous[:TYPE]	286
:TRIGger:TYPE:GATE:ACTive	287
:TRIGger[:SOURCE]	288
:TRIGger[:SOURCE]:EXternal:DELay	289
:TRIGger[:SOURCE]:EXternal:DELay:STATe	289

:TRIGger[:SOURce]:EXTernal:SLOPe	290
:TRIGger[:SOURce]:EXTernal[:SOURce]	290
[:STATe]	291
Dual ARB Subsystem–Option 001/601 or 002/602 ([:SOURce]:RADio:ARB)	292
:CLIPping	292
:GENerate:SINE	292
:HEADer:CLEar	293
:HEADer:RMS	293
:HEADer:SAVE	295
:HCRest[:STATe]	295
:IQ:EXTernal:FILTer	296
:IQ:EXTernal:FILTer:AUTO	296
:IQ:MODulation:ATTen	296
:IQ:MODulation:ATTen:AUTO	297
:IQ:MODulation:FILTer	297
:IQ:MODulation:FILTer:AUTO	298
:MARKer:CLEar	298
:MARKer:CLEar:ALL	299
:MARKer:ROTate	300
:MARKer:[SET]	300
:MDESTination:AAMPLitude	303
:MDESTination:ALCHold	303
:MDESTination:PULSe	304
:MPOLarity:MARKer1 2 3 4	306
:NOISe:BFACTOR	306
:NOISe:CBWidth	307
:NOISe:CN	307
:NOISe[:STATe]	308
:REFerence:EXTernal:FREQuency	308
:REFerence[:SOURce]	309
:RETRigger	309
:RSCALing	310
:SCALing	310
:SCLock:RATE	311
:SEQuence	311
:TRIGger:TYPE	313
:TRIGger:TYPE:CONTinuous[:TYPE]	315
:TRIGger:TYPE:GATE:ACTive	315

Contents

:TRIGger:TYPE:SADVance[:TYPE]	316
:TRIGger:TYPE:SADVance[:TYPE]	316
:TRIGger[:SOURce]	318
:TRIGger[SOURce]:EXTErnal:DELay	319
:TRIGger[:SOURce]:EXTErnal:DELay:STATE	319
:TRIGger[:SOURce]:EXTErnal:SLOPe	320
:TRIGger[:SOURce]:EXTErnal[:SOURce]	320
:WAVEform	321
:Waveform:NHEAders	321
[:STATE]	322
Multitone Subsystem—Option 001/601 or 002/602 ([:SOURce]:RADio:MTONe:ARB)	323
Creating a Multitone Waveform	323
:HEADer:CLear	323
:HEADer:SAVE	323
:IQ:EXTErnal:FILTer	324
:IQ:EXTErnal:FILTer:AUTO	324
:IQ:MODulation:ATTen	325
:IQ:MODulation:ATTen:AUTO	325
:IQ:MODulation:FILTer	326
:IQ:MODulation:FILTer:AUTO	326
:MDEStination:AAMPLitude	326
:MDEStination:ALCHold	327
:MDEStination:PULSe	328
:MPOLarity:MARKer1 2 3 4	330
:REFerence:EXTErnal:FREQUency	330
:REFerence[:SOURce]	330
:ROW	331
:SCLock:RATE	332
:SETup	332
:SETup:STORe	332
:SETup:TABLE	333
:SETup:TABLE:FSPacing	333
:SETup:TABLE:NTONes	334
:SETup:TABLE:PHASe:INITialize	334
:SETup:TABLE:PHASe:INITialize:SEED	335
[:STATE]	335
Wideband CDMA ARB Subsystem—Option 400 ([:SOURce]:RADio:WCDMa:TGPP:ARB)	336
:CLIPping:I	336

:CLIPping:POSition	336
:CLIPping:Q	336
:CLIPping:TYPE	337
:CLIPping[:IJQ]	337
:CRATe	338
:FILTer	338
:FILTer:ALPHa	339
:FILTer:BBT	339
:FILTer:CHANnel	340
:HEADer:CLEar	340
:HEADer:SAVE	340
:IQ:EXTernal:FILTer	340
:IQ:EXTernal:FILTer:AUTO	341
:IQMap	341
:IQ:MODulation:ATTen	342
:IQ:MODulation:ATTen:AUTO	342
:IQ:MODulation:FILTer	342
:IQ:MODulation:FILTer:AUTO	343
:LINK	343
:LINK:DOWN:OACP	343
:LINK:DOWN:SETup	344
:LINK:DOWN:SETup:MCARrier	345
:LINK:DOWN:SETup:MCARrier:CLIPping:I	346
:LINK:DOWN:SETup:MCARrier:CLIPping:Q	347
:LINK:DOWN:SETup:MCARrier:CLIPping:TYPE	347
:LINK:DOWN:SETup:MCARrier:CLIPping[:IJQ]	347
:LINK:DOWN:SETup:MCARrier:SCODE:AINCrement	348
:LINK:DOWN:SETup:MCARrier:STORE	348
:LINK:DOWN:SETup:MCARrier:TABLE	349
:LINK:DOWN:SETup:MCARrier:TABLE:NCARriers	351
:LINK:DOWN:SETup:MCARrier:TOFFset:AINCrement	351
:LINK:DOWN:SETup:STORE	351
:LINK:DOWN:SETup:TABLE:APPLY	352
:LINK:DOWN:SETup:TABLE:CHANnel	352
:LINK:DOWN:SETup:TABLE:NCHannels?	357
:LINK:DOWN:SETup:TABLE:PADJust	357
:LINK:DOWN:TFCI	357
:LINK:UP:OACP	358

Contents

:LINK:UP:SCRAMBLE	358
:LINK:UP:SDPDch	358
:LINK:UP:SETup	359
:LINK:UP:SETup:STORe	360
:LINK:UP:SETup:TABLE:APPLy	360
:LINK:UP:SETup:TABLE:CHANnel	360
:LINK:UP:SETup:TABLE:GUNit	362
:LINK:UP:SETup:TABLE:NCHannel	362
:LINK:UP:TFCI	362
:MDEStination:AAMPLitude	363
:MDEStination:ALCHold	363
:MDEStination:PULSe	364
:MPOLarity:MARKer1 2 3 4	366
:REFerence:EXTernal:FREQuency	366
:REFerence[:SOURce]	366
:RETRigger	367
:REVision	367
:SCLock:RATE	368
:TRIGger:TYPE	368
:TRIGger:TYPE:CONTInuous[:TYPE]	370
:TRIGger:TYPE:GATE:ACTive	370
:TRIGger[:SOURce]	371
:TRIGger[:SOURce]:EXTernal:DELay	372
:TRIGger[:SOURce]:EXTernal:DELay:STATe	372
:TRIGger[:SOURce]:EXTernal:SLOPe	373
:TRIGger[:SOURce]:EXTernal[:SOURce]	373
[:STATe]	374

SCPI Command Reference, Volume 2

6. Digital Signal Interface Module Commands	375
Digital Subsystem—Option 003 and 004 ([:SOURce])	376
:DIGital:CLOCK:CPS 1 2 4	376
:DIGital:CLOCK:PHASe	376
:DIGital:CLOCK:POLarity	377
:DIGital:CLOCK:RATE	378
:DIGital:CLOCK:REFerence:FREQuency	378
:DIGital:CLOCK:SKEW	379
:DIGital:CLOCK:SOURCe	379
:DIGital:DATA:ALIGNment	380
:DIGital:DATA:BORDER	380
:DIGital:DATA:DIRection	381
:DIGital:DATA:IGain	381
:DIGital:DATA:INEGate	382
:DIGital:DATA:IOFFset	382
:DIGital:DATA:IQSWap	383
:DIGital:DATA:NFORmat	383
:DIGital:DATA:POLarity:FRAME	383
:DIGital:DATA:POLarity:IQ	384
:DIGital:DATA:QGain	384
:DIGital:DATA:QNEGate	385
:DIGital:DATA:QOFFset	386
:DIGital:DATA:ROTation	386
:DIGital:DATA:SCALing	387
:DIGital:DATA:SIZE	387
:DIGital:DATA:STYPE	388
:DIGital:DATA:TYPE	388
:DIGital:DIAGnostic:LOOPback	389
:DIGital:LOGic[:TYPE]	389
:DIGital:PCONfig	390
:DIGital:PRESet:PTHRough	391
:DIGital[:STATe]	391
7. Bit Error Rate Test (BERT) Commands	393
Calculate Subsystem—Option UN7 and 300 (:CALCulate:BERT)	394

Contents

:BTS:LOOPback:EDGE:ETCH:F43:COMParator:CRITeria:ERATe	394
:BTS:LOOPback:EDGE:ETCH:F43:COMParator:CRITeria[:SElect]	394
:BTS:LOOPback:EDGE:MCS5:COMParator:CRITeria:ERATe	395
:BTS:LOOPback:EDGE:MCS5:COMParator:CRITeria[:SElect]	395
:BTS:LOOPback:EDGE:MCS9:COMParator:CRITeria:ERATe	395
:BTS:LOOPback:EDGE:MCS9:COMParator:CRITeria[:SElect]	396
:BTS:LOOPback:EDGE:UNCoded:COMParator:CRITeria:ERATe	396
:BTS:LOOPback:EDGE:UNCoded:COMParator:CRITeria[:SElect]	397
:BTS:LOOPback:GSM:CS1:COMParator:CRITeria:ERATe	397
:BTS:LOOPback:GSM:CS1:COMParator:CRITeria[:SElect]	398
:BTS:LOOPback:GSM:CS4:COMParator:CRITeria:ERATe	398
:BTS:LOOPback:GSM:CS4:COMParator:CRITeria[:SElect]	398
:BTS:LOOPback:GSM:MCS1:COMParator:CRITeria:ERATe	399
:BTS:LOOPback:GSM:MCS1:COMParator:CRITeria[:SElect]	399
:BTS:LOOPback:GSM:COMParator:CRITeria:CIB	400
:BTS:LOOPback:GSM:COMParator:CRITeria:CII	400
:BTS:LOOPback:GSM:COMParator:CRITeria:FERasure	400
:BTS:LOOPback:GSM:COMParator:CRITeria[:SElect]	401
[:BAsEband]:COMParator:MODE	401
[:BAsEband]:COMParator:THReshold	402
[:BAsEband]:COMParator[:STATe]	402
[:BAsEband]:DISPlay:MODE:	403
[:BAsEband]:DISPlay:UPDate:	403
Data Subsystem–Option UN7 and 300 (:DATA)	404
:BERT:BTS:LOOPback:EDGE:ETCH:F43[:DATA]	404
:BERT:BTS:LOOPback:EDGE:MCS5[:DATA]	405
:BERT:BTS:LOOPback:EDGE:MCS9[:DATA]	406
:BERT:BTS:LOOPback:EDGE:UNCoded[:DATA]	406
:BERT:BTS:LOOPback:GSM[:DATA]	406
:BERT:BTS:LOOPback:GSM:CS1[:DATA]	408
:BERT:BTS:LOOPback:GSM:CS4[:DATA]	409
:BERT:BTS:LOOPback:GSM:MCS1[:DATA]	409
:BERT:AUXout	409
[:DATA]	411
Input Subsystem–Option UN7 (:INPut:BERT[: BAsEband])	412
:CGATe:DELay:CLOCK	412
:CGATe:DELay:MODE	412
:CGATe:DELay:TIME	413

:CGATe:DELAy[:STATe].	413
:CGATe:POLarity	414
:CGATe[:STATe].	414
:CLOCK:DELAy:RESolution	414
:CLOCK:DELAy:TIME.	415
:CLOCK:DELAy[:STATe].	415
:CLOCK:POLarity	416
:DATA:POLarity	416
:IMPedance	416
:THReshold	417
Measure Subsystem–Option 300 (:MEASure[:SCALar]:BERT:BTS:LOOPback)	418
:EDGE:MCS5[:SENSitivity]	418
:EDGE:MCS9[:SENSitivity]	418
:EDGE:UNCoded[:SENSitivity].	419
:GSM[:SENSitivity]	420
Sense Subsystem–Options UN7 and 300 ([:SOURce]:SENSe:BERT)	421
:BTS:LOOPback:EDGE:ETCH:F43:BLOCK:COUNt	421
:BTS:LOOPback:EDGE:ETCH:F43:CONTAin	421
:BTS:LOOPback:EDGE:ETCH:F43:STOP:CRITeria:EBLock	422
:BTS:LOOPback:EDGE:ETCH:F43:STOP:CRITeria[:SElect]	422
:BTS:LOOPback:EDGE:FTRigger:EXTernal:DELAy	423
:BTS:LOOPback:EDGE:FTRigger:EXTernal:POLarity	423
:BTS:LOOPback:EDGE:FTRigger[SElect]	424
:BTS:LOOPback:EDGE:MCS5:BLOCK:COUNt.	424
:BTS:LOOPback:EDGE:MCS5:CONTAin	425
:BTS:LOOPback:EDGE:MCS5:ESENSitivity	425
:BTS:LOOPback:EDGE:MCS5:HAMPLitude	425
:BTS:LOOPback:EDGE:MCS5:LAMPLitude.	426
:BTS:LOOPback:EDGE:MCS5:PAMPLitude	426
:BTS:LOOPback:EDGE:MCS5:SBLock:COUNt	426
:BTS:LOOPback:EDGE:MCS5:SBLock:INITial.	427
:BTS:LOOPback:EDGE:MCS5:STOP:CRITeria:EBLock.	427
:BTS:LOOPback:EDGE:MCS5:STOP:CRITeria[:SElect]	427
:BTS:LOOPback:EDGE:MCS9:BLOCK:COUNt.	428
:BTS:LOOPback:EDGE:MCS9:CONTAin	428
:BTS:LOOPback:EDGE:MCS9:ESENSitivity	428
:BTS:LOOPback:EDGE:MCS9:HAMPLitude	429
:BTS:LOOPback:EDGE:MCS9:LAMPLitude.	429

Contents

:BTS:LOOPback:EDGE:MCS9:PAMPlitude	430
:BTS:LOOPback:EDGE:MCS9:SBLock:COUNT	430
:BTS:LOOPback:EDGE:MCS9:SBLock:INITial	430
:BTS:LOOPback:EDGE:MCS9:STOP:CRITeria:EBLock	431
:BTS:LOOPback:EDGE:MCS9:STOP:CRITeria[:SElect]	431
:BTS:LOOPback:EDGE:MEASurement:STOP	431
:BTS:LOOPback:EDGE:MEASurement:TSLot	432
:BTS:LOOPback:EDGE:MEASurement[:MODE]	432
:BTS:LOOPback:EDGE:SINVert	433
:BTS:LOOPback:EDGE:SYNC:AGain	433
:BTS:LOOPback:EDGE:SYNC:RF	433
:BTS:LOOPback:EDGE:SYNC[:SOURce]	434
:BTS:LOOPback:EDGE:TRIGger[:SOURce]	434
:BTS:LOOPback:EDGE:ULINK:OFFSet	435
:BTS:LOOPback:EDGE:UNCoded:BIT:COUNT	435
:BTS:LOOPback:EDGE:UNCoded:ESENSitivity	435
:BTS:LOOPback:EDGE:UNCoded:HAMPLitude	436
:BTS:LOOPback:EDGE:UNCoded:LAMPLitude	436
:BTS:LOOPback:EDGE:UNCoded:PAMPLitude	437
:BTS:LOOPback:EDGE:UNCoded:SBIT:COUNT	437
:BTS:LOOPback:EDGE:UNCoded:SBIT:INITial	437
:BTS:LOOPback:EDGE:UNCoded:STOP:CRITeria:EBIT	438
:BTS:LOOPback:EDGE:UNCoded:STOP:CRITeria[:SElect]	438
:BTS:LOOPback:EDGE[:STATe]	438
:BTS:LOOPback:GSM:CS1:BLOCK:COUNT	439
:BTS:LOOPback:GSM:CS1:CONTain	439
:BTS:LOOPback:GSM:CS1:STOP:CRITeria:EBLock	440
:BTS:LOOPback:GSM:CS1:STOP:CRITeria[:SElect]	440
:BTS:LOOPback:GSM:CS4:BLOCK:COUNT	440
:BTS:LOOPback:GSM:CS4:CONTain	441
:BTS:LOOPback:GSM:CS4:STOP:CRITeria:EBLock	441
:BTS:LOOPback:GSM:CS4:STOP:CRITeria[:SElect]	442
:BTS:LOOPback:GSM:ESENSitivity	442
:BTS:LOOPback:GSM:FRAME:CIB	442
:BTS:LOOPback:GSM:FRAME:CII	442
:BTS:LOOPback:GSM:FRAME:COUNT	443
:BTS:LOOPback:GSM:HAMPLitude	443
:BTS:LOOPback:GSM:LAMPLitude	443

:BTS:LOOPback:GSM:MCS1:BLOCK:COUNT	444
:BTS:LOOPback:GSM:MCS1:CONTain	444
:BTS:LOOPback:GSM:MCS1:STOP:CRITeria:EBLock	444
:BTS:LOOPback:GSM:MCS1:STOP:CRITeria[:SElect]	445
:BTS:LOOPback:GSM:MEASurement:STOP	445
:BTS:LOOPback:GSM:MEASurement:TSLot	445
:BTS:LOOPback:GSM:MEASurement[:MODE]	446
:BTS:LOOPback:GSM:PAMplitude	446
:BTS:LOOPback:GSM:SFRame:COUNT	446
:BTS:LOOPback:GSM:SFRame:INITial	447
:BTS:LOOPback:GSM:SINVert	447
:BTS:LOOPback:GSM:STOP:CRITeria:CIB	447
:BTS:LOOPback:GSM:STOP:CRITeria:CII	448
:BTS:LOOPback:GSM:STOP:CRITeria:FERasure	448
:BTS:LOOPback:GSM:STOP:CRITeria[:SElect]	448
:BTS:LOOPback:GSM:SYNC:RF	449
:BTS:LOOPback:GSM:SYNC[:SOURce]	450
:BTS:LOOPback:GSM:TRIGger[:SOURce]	450
:BTS:LOOPback:GSM:ULINK:OFFSet	451
:BTS:LOOPback:GSM[:STATe]	451
[:BAsEband]:PRBS:FUNCTion:SPIGnore:DATA	451
[:BAsEband]:PRBS:FUNCTion:SPIGnore[:STATe]	452
[:BAsEband]:PRBS[:DATA]	452
[:BAsEband]:RSYNc:THReshold	452
[:BAsEband]:RSYNc[:STATe]	453
[:BAsEband]:STATe	453
[:BAsEband]:STOP:CRITeria:EBIT	453
[:BAsEband]:STOP:CRITeria[:SElect]	454
[:BAsEband]:TBITs	454
[:BAsEband]:TRIGger:BDELay	455
[:BAsEband]:TRIGger:BDELay:STATe	455
[:BAsEband]:TRIGger:COUNT	455
[:BAsEband]:TRIGger:POLarity	456
[:BAsEband]:TRIGger[:SOURce]	456
8. Receiver Test Digital Commands	457
All Subsystem–Option 001/601 or 002/602 ([:SOURce])	458
:RADio:ALL:OFF	458

Contents

AWGN Real-Time Subsystem–Option 403 ([:SOURCE]:RADio:AWGN:RT)	459
:BWIDth	459
[:STATe]	459
Bluetooth Subsystem–Option 406 ([:SOURCE]:RADio:BLUEtooth:ARB)	460
:AMADdr	460
:BDADdr.	460
:BURSt[:STATe].	460
:CGDelay	461
:DATA	461
:IQ:EXTernal:FILTer.	462
:IQ:EXTernal:FILTer:AUTO	462
:HEADer:CLEar	463
:HEADer:SAVE	463
:IMPairments	463
:IMPairments:AWGN	464
:IMPairments:AWGN:CNR	464
:IMPairments:AWGN:NSEed.	465
:IMPairments:DDEViation	465
:IMPairments:FDType	466
:IMPairments:FOFFset	466
:IMPairments:MINdex.	467
:IMPairments:STERror.	468
:IQ:MODulation:ATTen	468
:IQ:MODulation:ATTen:AUTO	469
:IQ:MODulation:FILTer	469
:IQ:MODulation:FILTer:AUTO	470
:MDEStination:AAMPplitude	470
:MDEStination:ALCHold.	470
:MDEStination:PULSe	471
:MPOLarity:MARKer1 2 3 4	471
:MPOLarity:MARKer1.	471
:MPOLarity:MARKer2.	472
:MPOLarity:MARKer3.	472
:MPOLarity:MARKer4.	472
:PACKet	472
:REFernce:EXTernal:FREQuency	473
:REFerence[:SOURCE]	473
:RSYMBOLs	474

:SCLock:RATE	474
[:STATe]	474
CDMA2000 BBG Subsystem–Option 401 ([:SOURce]:RADio:CDMA2000[:BBG])	475
:LMODe	475
[:FORWard]:BBCLock	476
[:FORWard]:CHIPrate	476
[:FORWard]:ESDelay	476
[:FORWard]:FILTer	477
[:FORWard]:FILTer:ALPHa	478
[:FORWard]:FILTer:BBT	478
[:FORWard]:FILTer:CHANnel	478
[:FORWard]:LCSTate	479
[:FORWard]:FFCH:DATA	479
[:FORWard]:FFCH:DATA:FIX4	480
[:FORWard]:FFCH:EBNO	480
[:FORWard]:FFCH:FOFFset	481
[:FORWard]:FFCH:LCMask	481
[:FORWard]:FFCH:LCMask:ESN	482
[:FORWard]:FFCH:LCMask:HEADer	482
[:FORWard]:FFCH:POWER	482
[:FORWard]:FFCH:PRAMp	483
[:FORWard]:FFCH:PRTIME	483
[:FORWard]:FFCH:QOF	483
[:FORWard]:FFCH:RATE	484
[:FORWard]:FFCH:RCONfig	484
[:FORWard]:FFCH:WALSh	484
[:FORWard]:FFCH[:STATe]	485
[:FORWard]:FPCH:DATA	485
[:FORWard]:FPCH:EBNO	485
[:FORWard]:FPCH:LCMask	486
[:FORWard]:FPCH:LCMask:F1	486
[:FORWard]:FPCH:LCMask:F2	486
[:FORWard]:FPCH:LCMask:F3	487
[:FORWard]:FPCH:MESSAge	487
[:FORWard]:FPCH:POWER	487
[:FORWard]:FPCH:RATE	488
[:FORWard]:FPCH:WALSh	488
[:FORWard]:FPCH[:STATe]	488

Contents

[:FORWard]:FPICh:ECNO	489
[:FORWard]:FPICh:POWEr	489
[:FORWard]:FPICh[:STATe].	490
[:FORWard]:FSCH[1]2:DATA.	490
[:FORWard]:FSCH[1]2:DATA:FIX4.	490
[:FORWard]:FSCH[1]2:EBNO	491
[:FORWard]:FSCH[1]2:FOFFset.	491
[:FORWard]:FSCH[1]2:LCMask.	492
[:FORWard]:FSCH[1]2:LCMask:ESN	492
[:FORWard]:FSCH[1]2:LCMask:HEADer	492
[:FORWard]:FSCH[1]2:POWEr.	493
[:FORWard]:FSCH[1]2:QOF.	493
[:FORWard]:FSCH[1]2:RATE.	493
[:FORWard]:FSCH[1]2:RCONfig	494
[:FORWard]:FSCH[1]2:TCODE	494
[:FORWard]:FSCH[1]2:WALSh	494
[:FORWard]:FSCH[1]2[:STATe]	495
[:FORWard]:FSYNc:CFRequency	495
[:FORWard]:FSYNc:DAYLt.	495
[:FORWard]:FSYNc:EBNO	496
[:FORWard]:FSYNc:ECFRequency	496
[:FORWard]:FSYNc:LPSec	497
[:FORWard]:FSYNc:LTMoff	497
[:FORWard]:FSYNc:MPREv	497
[:FORWard]:FSYNc:MSGType	498
[:FORWard]:FSYNc:NID	498
[:FORWard]:FSYNc:POWEr.	498
[:FORWard]:FSYNc:PRATe	499
[:FORWard]:FSYNc:PREV	499
[:FORWard]:FSYNc:RESErved	499
[:FORWard]:FSYNc:SID	500
[:FORWard]:FSYNc:STYPE.	500
[:FORWard]:FSYNc:SYSTime.	500
[:FORWard]:FSYNc:WALSh	501
[:FORWard]:FSYNc[:STATe].	501
[:FORWard]:NOISE:CN	501
[:FORWard]:NOISE[:STATe]	502
[:FORWard]:OCNS:EBNO	502

[:FORWard]:OCNS:POWer	503
[:FORWard]:OCNS:WALSh	504
[:FORWard]:OCNS[:STATe]	504
[:FORWard]:PADJust	504
[:FORWard]:POLarity	505
[:FORWard]:QPCH:CCI	505
[:FORWard]:QPCH:EBNO	505
[:FORWard]:QPCH:PI	506
[:FORWard]:QPCH:POWer	506
[:FORWard]:QPCH:RATE	507
[:FORWard]:QPCH:WALSh	507
[:FORWard]:QPCH[:STATe]	507
[:FORWard]:SRATe	507
:PNOFFset	508
:REVerse:BBCLock	508
:REVerse:CHIPrate	509
:REVerse:ESDdelay	509
:REVerse:FILTer	510
:REVerse:FILTer:ALPHa	511
:REVerse:FILTer:BBT	511
:REVerse:FILTer:CHANnel	512
:REVerse:LCMask	512
:REVerse:LCSTate	512
:REVerse:PADJust	513
:REVerse:POLarity[:ALL]	513
:REVerse:NOISe:CN	513
:REVerse:NOISe[:STATe]	514
:REVerse:RC12:ACCess:RACH:DATA	514
:REVerse:RC12:ACCess:RACH:DATA:FIX4	515
:REVerse:RC12:ACCess:RACH:EBNO	515
:REVerse:RC12:ACCess:RACH:FLENgth	516
:REVerse:RC12:ACCess:RACH:FOFFset	516
:REVerse:RC12:ACCess:RACH:POWer	516
:REVerse:RC12:ACCess:RACH:RCONfig	517
:REVerse:RC12:ACCess:RACH:RATE	517
:REVerse:RC12:ACCess:RACH[:STATe]	517
:REVerse:RC12:TRAFfic:RSCH:DATA	518
:REVerse:RC12:TRAFfic:RSCH:DATA:FIX4	518

Contents

:REVerse:RC12:TRAFfic:RSCH:FLENgth	518
:REVerse:RC12:TRAFfic:RSCH:FOFFset	519
:REVerse:RC12:TRAFfic:RSCH:POWer	519
:REVerse:RC12:TRAFfic:RSCH:RATE	519
:REVerse:RC12:TRAFfic:RSCH:RCONfig	520
:REVerse:RC12:TRAFfic:RSCH[:STATe]	520
:REVerse:RC34:CCONtrol:RCCCh:DATA	520
:REVerse:RC34:CCONtrol:RCCCh:DATA:FIX4	521
:REVerse:RC34:CCONtrol:RCCCh:EBNO	521
:REVerse:RC34:CCONtrol:RCCCh:FLENgth	522
:REVerse:RC34:CCONtrol:RCCCh:FOFFset	522
:REVerse:RC34:CCONtrol:RCCCh:POWer	522
:REVerse:RC34:CCONtrol:RCCCh:RCONfig	523
:REVerse:RC34:CCONtrol:RCCCh:RATE	523
:REVerse:RC34:CCONtrol:RCCCh:WALSh	523
:REVerse:RC34:CCONtrol:RCCCh[:STATe]	524
:REVerse:RC34:CCONtrol:RPICH:ECNO	524
:REVerse:RC34:CCONtrol:RPICH:GRATe	525
:REVerse:RC34:CCONtrol:RPICH:POWer	525
:REVerse:RC34:CCONtrol:RPICH:WALSh	525
:REVerse:RC34:CCONtrol:RPICH[:STATe]	526
:REVerse:RC34:EACCess:REACH:DATA	526
:REVerse:RC34:EACCess:REACH:DATA:FIX4	526
:REVerse:RC34:EACCess:REACH:EBNO	527
:REVerse:RC34:EACCess:REACH:FOFFset	527
:REVerse:RC34:EACCess:REACH:POWer	528
:REVerse:RC34:EACCess:REACH:RCONfig	528
:REVerse:RC34:EACCess:REACH:RATE	528
:REVerse:RC34:EACCess:REACH:WALSh	529
:REVerse:RC34:EACCess:REACH[:STATe]	529
:REVerse:RC34:EACCess:RPICH:ECNO	529
:REVerse:RC34:EACCess:RPICH:GRATe	530
:REVerse:RC34:EACCess:RPICH:POWer	530
:REVerse:RC34:EACCess:RPICH:WALSh	530
:REVerse:RC34:EACCess:RPICH[:STATe]	531
:REVerse:RC34:TRAFfic:RDCCh:DATA	531
:REVerse:RC34:TRAFfic:RDCCh:DATA:FIX4	531
:REVerse:RC34:TRAFfic:RDCCh:EBNO	532

:REVerse:RC34:TRAFfic:RDCCh:FLENgth	532
:REVerse:RC34:TRAFfic:RDCCh:FOFFset	532
:REVerse:RC34:TRAFfic:RDCCh:POWer	533
:REVerse:RC34:TRAFfic:RDCCh:RATE	533
:REVerse:RC34:TRAFfic:RDDCh:RCONfig	533
:REVerse:RC34:TRAFfic:RDCCh:WALSh	534
:REVerse:RC34:TRAFfic:RDCCh[:STATe]	534
:REVerse:RC34:TRAFfic:RFCH:DATA	534
:REVerse:RC34:TRAFfic:RFCH:DATA:FIX4	535
:REVerse:RC34:TRAFfic:RFCH:EBNO	535
:REVerse:RC34:TRAFfic:RFCH:FLENgth	536
:REVerse:RC34:TRAFfic:RFCH:FOFFset	536
:REVerse:RC34:TRAFfic:RFCH:POWer	536
:REVerse:RC34:TRAFfic:RFCH:RCONfig	537
:REVerse:RC34:TRAFfic:RFCH:RATE	537
:REVerse:RC34:TRAFfic:RFCH:WALSh	537
:REVerse:RC34:TRAFfic:RFCH[:STATe]	537
:REVerse:RC34:TRAFfic:RSCH[1]2:DATA	538
:REVerse:RC34:TRAFfic:RSCH[1]2:DATA:FIX4	538
:REVerse:RC34:TRAFfic:RSCH[1]2:DATA:EBNO	538
:REVerse:RC34:TRAFfic:RSCH[1]2:FLENgth	539
:REVerse:RC34:TRAFfic:RSCH[1]2:FOFFset	539
:REVerse:RC34:TRAFfic:RSCH[1]2:POWer	540
:REVerse:RC34:TRAFfic:RSCH[1]2:RCONfig	540
:REVerse:RC34:TRAFfic:RSCH[1]2:RATE	540
:REVerse:RC34:TRAFfic:RSCH[1]2:TCODE	541
:REVerse:RC34:TRAFfic:RSCH[1]2:WALSh	541
:REVerse:RC34:TRAFfic:RSCH[1]2[:STATe]	541
:REVerse:REFeRence:EXTeRnal:FREQuency	542
:REVerse:REFeRence[:SOURce]	542
:REVerse:TADVance	542
:REVerse:TEDGE	543
:REVerse:SRATE	543
[:STATe]	543
Custom Subsystem–Option 001/601or 002/602 ([:SOURce]:RADio:CUSTom)	544
:ALPha	544
:ASK	544
:BBCLock	545

Contents

:BBT	545
:BRATe	546
:BURSt:SHAPe:FALL:DELay	548
:BURSt:SHAPe:FALL:TIME	548
:BURSt:SHAPe:FDELay	549
:BURSt:SHAPe:FTIME	549
:BURSt:SHAPe:RDELay	550
:BURSt:SHAPe:RISE:DELay	550
:BURSt:SHAPe:RISE:TIME	551
:BURSt:SHAPe:RTIME	552
:BURSt:SHAPe[:TYPE]	552
:CHANnel	553
:DATA	553
:DATA:FIX4	554
:DATA:PRAM	554
:DENCode	555
:EDATa:DELay	555
:EDCLock	555
:EREFerence	556
:EREFerence:VALue	556
:FILTer	557
:IQ:SCALE	558
:MODulation:FSK[:DEViation]	559
:MODulation:MSK[:PHASe]	559
:MODulation:UFSK	560
:MODulation:UIQ	560
:MODulation[:TYPE]	560
:POLarity[:ALL]	561
:SRATe	561
:STANdard:SELEct	563
:TRIGger:TYPE	563
:TRIGger:TYPE:CONTinuous[:TYPE]	564
:TRIGger:TYPE:GATE:ACTive	564
:TRIGger[:SOURce]	565
:TRIGger[:SOURce]:EXTernal:DELay	566
:TRIGger[:SOURce]:EXTernal:DELay:STATe	566
:TRIGger[:SOURce]:EXTernal:SLOPe	567
:TRIGger[:SOURce]:EXTernal[:SOURce]	567

[:STATe]	568
DECT Subsystem–Option 402 ([:SOURce]:RADio:DECT)	569
:ALPha	569
:BBCLock	569
:BBT	570
:BRATe	570
:BURSt:PN9	571
:BURSt:SHAPe:FALL:DELay	572
:BURSt:SHAPe:FALL:TIME	572
:BURSt:SHAPe:FDELay	573
:BURSt:SHAPe:FTIME	573
:BURSt:SHAPe:RDELay	574
:BURSt:SHAPe:RISE:DELay	574
:BURSt:SHAPe:RISE:TIME	575
:BURSt:SHAPe:RTIME	576
:BURSt:SHAPe[:TYPE]	576
:BURSt[:STATe]	577
:CHANnel	577
:DATA	578
:DATA:FIX4	578
:DATA:PRAM	579
:DEFault	579
:EDATa:DELay	579
:EDCLock	580
:EREFerence	580
:EREFerence:VALue	581
:FILTer	581
:IQ:SCALE	582
:MODulation:FSK[:DEViation]	582
:MODulation:MSK[:PHASe]	583
:MODulation:UFSK	583
:MODulation:UIQ	584
:MODulation[:TYPE]	584
:POLarity[:ALL]	584
:PPart:SLOT0 [1] 2 3 4 5 6 7 8 9 10 11[:TYPE]	585
:PPart:SLOT0 [1] 2 3 4 5 6 7 8 9 10 11:CUSTom	585
:PPart:SLOT0 [1] 2 3 4 5 6 7 8 9 10 11:CUSTom:FIX4	586
:PPart:SLOT0 [1] 2 3 4 5 6 7 8 9 10 11:LCAPacity:A	586

Contents

:PPart:SLOT0[1]2 3 4 5 6 7 8 9 10 11:LCAPacity:P	587
:PPart:SLOT0[1]2 3 4 5 6 7 8 9 10 11:LCAPacity:S	587
:PPart:SLOT0[1]2 3 4 5 6 7 8 9 10 11:LCAPacity[:B]	588
:PPart:SLOT0[1]2 3 4 5 6 7 8 9 10 11:LCAPacity[:B]:FIX4	588
:PPart:SLOT0[1]2 3 4 5 6 7 8 9 10 11:LCAPacity:POWer	589
:PPart:SLOT0[1]2 3 4 5 6 7 8 9 10 11:STATe	589
:PPart:SLOT0[1]2 3 4 5 6 7 8 9 10 11:TRAFfic:A	589
:PPart:SLOT0[1]2 3 4 5 6 7 8 9 10 11:TRAFfic:P	590
:PPart:SLOT0[1]2 3 4 5 6 7 8 9 10 11:TRAFfic:S	590
:PPart:SLOT0[1]2 3 4 5 6 7 8 9 10 11:TRAFfic[:B]	591
:PPart:SLOT0[1]2 3 4 5 6 7 8 9 10 11:TRAFfic[:B]:FIX4	591
:PPart:SLOT0[1]2 3 4 5 6 7 8 9 10 11:ZLCapacity:A	592
:PPart:SLOT0[1]2 3 4 5 6 7 8 9 10 11:ZLCapacity:P	592
:PPart:SLOT0[1]2 3 4 5 6 7 8 9 10 11:ZLCapacity:A	592
:PPart:SLOT0[1]2 3 4 5 6 7 8 9 10 11:ZLCapacity[:B]	593
:PPart:SLOT0[1]2 3 4 5 6 7 8 9 10 11:ZLCapacity[:B]:FIX4	593
:PPart:SLOT0[1]2 3 4 5 6 7 8 9 10 11:ZTRaffic:A	594
:PPart:SLOT0[1]2 3 4 5 6 7 8 9 10 11:ZTRaffic:P	594
:PPart:SLOT0[1]2 3 4 5 6 7 8 9 10 11:ZTRaffic:S	594
:PPart:SLOT0[1]2 3 4 5 6 7 8 9 10 11:ZTRaffic[:B]	595
:PPart:SLOT0[1]2 3 4 5 6 7 8 9 10 11:ZTRaffic[:B]:FIX4	595
:RFPart:SLOT0[1]2 3 4 5 6 7 8 9 10 11[:TYPE]	596
:RFPart:SLOT0[1]2 3 4 5 6 7 8 9 10 11:CUSTom	596
:RFPart:SLOT0[1]2 3 4 5 6 7 8 9 10 11:CUSTom:FIX4	597
:RFPart:SLOT0[1]2 3 4 5 6 7 8 9 10 11:DUMM2:A	597
:RFPart:SLOT0[1]2 3 4 5 6 7 8 9 10 11:DUMM2:P	598
:RFPart:SLOT0[1]2 3 4 5 6 7 8 9 10 11:DUMM2:S	598
:RFPart:SLOT0[1]2 3 4 5 6 7 8 9 10 11:DUMM[1]:A	598
:RFPart:SLOT0[1]2 3 4 5 6 7 8 9 10 11:DUMM[1]:P	599
:RFPart:SLOT0[1]2 3 4 5 6 7 8 9 10 11:DUMM[1]:S	599
:RFPart:SLOT0[1]2 3 4 5 6 7 8 9 10 11:LCAPacity:A	599
:RFPart:SLOT0[1]2 3 4 5 6 7 8 9 10 11:LCAPacity:P	600
:RFPart:SLOT0[1]2 3 4 5 6 7 8 9 10 11:LCAPacity:S	600
:RFPart:SLOT0[1]2 3 4 5 6 7 8 9 10 11:LCAPacity[:B]	600
:RFPart:SLOT0[1]2 3 4 5 6 7 8 9 10 11:LCAPacity[:B]:FIX4	601
:RFPart:SLOT0[1]2 3 4 5 6 7 8 9 10 11:LCAPacity:POWer	601
:RFPart:SLOT0[1]2 3 4 5 6 7 8 9 10 11:STATe	602
:RFPart:SLOT0[1]2 3 4 5 6 7 8 9 10 11:TRAFfic:A	602

:RFPart:SLOT0[1] 2 3 4 5 6 7 8 9 10 11:TRAFfic:P	602
:RFPart:SLOT0[1] 2 3 4 5 6 7 8 9 10 11:TRAFfic:S	603
:RFPart:SLOT0[1] 2 3 4 5 6 7 8 9 10 11:TRAFfic[:B]	603
:RFPart:SLOT0[1] 2 3 4 5 6 7 8 9 10 11:TRAFfic[:B]:FIX4	604
:RFPart:SLOT0[1] 2 3 4 5 6 7 8 9 10 11:ZLCapacity:A	604
:RFPart:SLOT0[1] 2 3 4 5 6 7 8 9 10 11:ZLCapacity:P	604
:RFPart:SLOT0[1] 2 3 4 5 6 7 8 9 10 11:ZLCapacity:S	605
:RFPart:SLOT0[1] 2 3 4 5 6 7 8 9 10 11:ZLCapacity[:B]	605
:RFPart:SLOT0[1] 2 3 4 5 6 7 8 9 10 11:ZLCapacity[:B]:FIX4	606
:RFPart:SLOT0[1] 2 3 4 5 6 7 8 9 10 11:ZTRaffic:A	606
:RFPart:SLOT0[1] 2 3 4 5 6 7 8 9 10 11:ZTRaffic:P	606
:RFPart:SLOT0[1] 2 3 4 5 6 7 8 9 10 11:ZTRaffic:S	607
:RFPart:SLOT0[1] 2 3 4 5 6 7 8 9 10 11:ZTRaffic[:B]	607
:RFPart:SLOT0[1] 2 3 4 5 6 7 8 9 10 11:ZTRaffic[:B]:FIX4	608
:SECondary:RECall	608
:SECondary:SAVE	608
:SECondary:TRIGger[:SOURce]	609
:SECondary[:STATe]	609
:SOUT	610
:SOUT:OFFSet	610
:SOUT:SLOT	611
:SRATe	611
:TRIGger:TYPE	612
:TRIGger:TYPE:CONTInuous[:TYPE]	613
:TRIGger:TYPE:GATE:ACTive	614
:TRIGger[:SOURce]	614
:TRIGger[:SOURce]:EXTernal:DELay	615
:TRIGger[:SOURce]:EXTernal:SLOPe	616
:TRIGger[:SOURce]:EXTernal[:SOURce]	616
:TRIGger[:SOURce]:EXTernal:DELay:STATe	617
[:STATe]	617
EDGE Subsystem–Option 402 ([:SOURce]:RADio:EDGE)	618
:ALPHa	618
:BBCLock	618
:BBT	619
:BURSt:SHAPe:FALL:DELay	619
:BURSt:SHAPe:FDELay	620
:BURSt:SHAPe:FALL:TIME	621

Contents

:BURSt:SHAPE:FTIME	621
:BURSt:SHAPE:RDElay	622
:BURSt:SHAPE:RISE:DElay	623
:BURSt:SHAPE:RISE:TIME	623
:BURSt:SHAPE:RTIME	624
:BURSt:SHAPE[:TYPE]	625
:BURSt[:STATe]	625
:CHANnel	626
:DATA	626
:DATA:PRAM	627
:DATA:FIX4	627
:DEFault	628
:EDATa:DElay	628
:EDCLock	628
:EREFerence	629
:EREFerence:VALue	629
:FILTer	630
:IQ:SCALE	631
:MODulation:FSK[:DEViation]	631
:MODulation:MSK[:PHASe]	632
:MODulation:UFSK	632
:MODulation:UIQ	632
:MODulation[:TYPE]	633
:POLarity[:ALL]	633
:SECondary:RECall	634
:SECondary:SAVE	634
:SECondary:TRIGger[:SOURce]	634
:SECondary[:STATe]	635
:SLOT0[1]2 3 4 5 6 7:CUSTom	635
:SLOT0[1]2 3 4 5 6 7:CUSTom:FIX4	636
:SLOT0[1]2 3 4 5 6 7:CUSTom:GUARd	636
:SLOT0[1]2 3 4 5 6 7:GMSK:ENCryption	637
:SLOT0[1]2 3 4 5 6 7:GMSK:ENCryption:CS1:DATA	638
:SLOT0[1]2 3 4 5 6 7:GMSK:ENCryption:CS4:DATA	639
:SLOT0[1]2 3 4 5 6 7:GMSK:ENCryption:DLINK:MCS1:DATA	639
:SLOT0[1]2 3 4 5 6 7:GMSK:ENCryption:FIX4	639
:SLOT0[1]2 3 4 5 6 7:GMSK:ENCryption:TCH:FS:DATA	640
:SLOT0[1]2 3 4 5 6 7:GMSK:ENCryption:ULINK:MCS1:DATA	640

:SLOT0[1]2 3 4 5 6 7:GMSK:STEal	641
:SLOT0[1]2 3 4 5 6 7:GMSK:TSEquence	641
:SLOT0[1]2 3 4 5 6 7:MULTIslot	642
:SLOT0[1]2 3 4 5 6 7:NORMal:ENCRyption	642
:SLOT0:NORMal:ENCRyption:BCH:BCC	644
:SLOT0:NORMal:ENCRyption:BCH:CELLid	645
:SLOT0:NORMal:ENCRyption:BCH:LAC	645
:SLOT0:NORMal:ENCRyption:BCH:MCC	645
:SLOT0:NORMal:ENCRyption:BCH:MNC	646
:SLOT0:NORMal:ENCRyption:BCH:PLMN	646
:SLOT0[1]2 3 4 5 6 7:NORMal:ENCRyption:DLINK:MCS5:DATA	646
:SLOT0[1]2 3 4 5 6 7:NORMal:ENCRyption:DLINK:MCS9:DATA	647
:SLOT0[1]2 3 4 5 6 7:NORMal:ENCRyption:ETCH:F43:DATA	647
:SLOT0[1]2 3 4 5 6 7:NORMal:ENCRyption:FIX4	648
:SLOT0[1]2 3 4 5 6 7:NORMal:ENCRyption:ULINK:MCS5:DATA	648
:SLOT0[1]2 3 4 5 6 7:NORMal:ENCRyption:ULINK:MCS9:DATA	649
:SLOT0[1]2 3 4 5 6 7:NORMal:ENCRyption:UNCodeD	649
:SLOT0[1]2 3 4 5 6 7:NORMal:GUARd	650
:SLOT0[1]2 3 4 5 6 7:NORMal:T1	650
:SLOT0[1]2 3 4 5 6 7:NORMal:T2	651
:SLOT0[1]2 3 4 5 6 7:NORMal:TSEquence	651
:SLOT0[1]2 3 4 5 6 7:LCAPacity:POWer	651
:SLOT0[1]2 3 4 5 6 7:STATe	652
:SLOT0[1]2 3 4 5 6 7[:TYPE]	652
:SOUT:	653
:SOUT:OFFSet	653
:SOUT:SLOT	654
:SRATe	654
:TRIGger:TYPE	656
:TRIGger:TYPE:CONTInuous[:TYPE]	656
:TRIGger:TYPE:GATE:ACTive	657
:TRIGger[:SOURce]	658
:TRIGger[:SOURce]:EXTernal:DELay	659
:TRIGger[:SOURce]:EXTernal:DELay:FINe	659
:TRIGger[:SOURce]:EXTernal:DELay:STATe	660
:TRIGger[:SOURce]:EXTernal:SLOPe	660
:TRIGger[:SOURce]:EXTernal[:SOURce]	661
[:STATe]	661

SCPI Command Reference, Volume 3

9. Receiver Test Digital Commands (continued)	663
GPS Subsystem–Option 409	
([:SOURCE]:RADio[1] 2 3 4:GPS)	664
:DATA	664
:DMODE	664
:DSHift	665
:FILTer	665
:FILTer:ALPHa	666
:FILTer:BBT	667
:FILTer:CHANnel	667
:IQPHase	668
:PCODE	668
:RCODE	668
:REFClk	669
:REFFreq	669
:SATid	670
[:STATE]	670
GSM Subsystem–Option 402 ([:SOURCE]:RADio:GSM)	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	676
:BURSt:SHAPe:RDELay	676
:BURSt:SHAPe:RISE:DELay	677
:BURSt:SHAPe:RISE:TIME	678
:BURSt:SHAPe:RTIME	678
:BURSt:SHAPe[:TYPE]	679
:BURSt[:STATE]	679
:CHANnel	680
:DATA	680

:DATA:PRAM	681
:DATA:FIX4	681
:DEFault	681
:DENCode	682
EDATa:DELay	682
:EDCLock	682
:EREFerence	683
:EREFerence:VALue	683
:FILTer	684
:IQ:SCALE	685
:MODulation:FSK[:DEViation]	685
:MODulation:MSK[:PHASe]	686
:MODulation:UFSK	686
:MODulation:UIQ	686
:MODulation[:TYPE]	687
:POLarity[:ALL]	687
:SECondary:RECall	688
:SECondary:SAVE	688
:SECondary:TRIGger[:SOURce]	688
:SECondary[:STATe]	689
:SLOT0 [1] 2 3 4 5 6 7:ACCess:ENCRyption	689
:SLOT0 [1] 2 3 4 5 6 7:ACCess:ENCRyption:FIX4	689
:SLOT0 [1] 2 3 4 5 6 7:ACCess:ETAil	690
:SLOT0 [1] 2 3 4 5 6 7:ACCess:SSEQuence	690
:SLOT0 [1] 2 3 4 5 6 7:ACCess:CUSTom	690
:SLOT0 [1] 2 3 4 5 6 7:CUSTom:FIX4	691
:SLOT0 [1] 2 3 4 5 6 7:DUMMy:TSEQuence	691
:SLOT0 [1] 2 3 4 5 6 7:MULTIslot	691
SLOT0 [1] 2 3 4 5 6 7:NORMal:ENCRyption	692
:SLOT0:NORMal:ENCRyption:BCH1:BCC	694
:SLOT0:NORMal:ENCRyption:BCH1:CELLid	694
:SLOT0:NORMal:ENCRyption:BCH1:LAC	694
:SLOT0:NORMal:ENCRyption:BCH1:MCC	695
:SLOT0:NORMal:ENCRyption:BCH1:MNC	695
:SLOT0:NORMal:ENCRyption:BCH1:PLMN	695
:SLOT0 [1] 2 3 4 5 6 7:NORMal:ENCRyption:CS1:DATA	696
:SLOT0 [1] 2 3 4 5 6 7:NORMal:ENCRyption:CS4:DATA	696
:SLOT0 [1] 2 3 4 5 6 7:NORMal:ENCRyption:DLINK:MCS1:DATA	696

Contents

:SLOT0[1]2 3 4 5 6 7:NORMAl:ENCRyption:FIX4	697
:SLOT0[1]2 3 4 5 6 7:NORMAl:ENCRyption:TCH:FS:DATA	697
:SLOT0[1]2 3 4 5 6 7:NORMAl:ENCRyption:ULINK:MCS1:DATA	697
:SLOT0[1]2 3 4 5 6 7:NORMAl:STeal	698
:SLOT0[1]2 3 4 5 6 7:NORMAl:TSEquence	698
:SLOT0[1]2 3 4 5 6 7:POWer	699
:SLOT0[1]2 3 4 5 6 7:STATe	699
:SLOT0[1]2 3 4 5 6 7:SYNC:ENCRyption	699
:SLOT0[1]2 3 4 5 6 7:SYNC:ENCRyption:FIX4	700
:SLOT0[1]2 3 4 5 6 7:SYNC:TSEquence	700
:SLOT0[1]2 3 4 5 6 7[:TYPE]	700
:SOUT	701
:SOUT:OFFSet	701
:SOUT:SLOT	702
:SRATe	702
:TRIGger:EXTernal:DELay	703
:TRIGger:TYPE	704
:TRIGger:TYPE:CONTinuous[:TYPE]	704
:TRIGger:TYPE:GATE:ACTive	705
:TRIGger[:SOURce]	705
:TRIGger[:SOURce]:EXTernal:DELay	706
:TRIGger[:SOURce]:EXTernal:DELay:FINE	707
:TRIGger[:SOURce]:EXTernal:DELay:STATe	707
:TRIGger[:SOURce]:EXTernal:SLOPe	707
:TRIGger[:SOURce]:EXTernal[:SOURce]	708
[:STATe]	709
HSDPA over W-CDMA Subsystem–Option 418 ([:SOURce]:RADio:WCDMa:HSDPa[:BBG])	710
File Overview	710
Managing ESG Setting Conflicts and Error Messages	712
:DLINK:APPLy	712
:DLINK:AWGN:CN	713
:DLINK:AWGN[:STATe]	713
:DLINK:BBCLock[:SOURce]	713
:DLINK:CPICH:CCODE	714
:DLINK:CPICH:POWer	714
:DLINK:CPICH[:STATe]	714
:DLINK:DPCH:CCODE	714
:DLINK:DPCH:DATA	715

:DLINK:DPCH:DATA:FIX4	715
:DLINK:DPCH:DCH[1] 2 3 4 5 6:BSIZE.	716
:DLINK:DPCH:DCH[1] 2 3 4 5 6:CTYPe.	716
:DLINK:DPCH:DCH[1] 2 3 4 5 6:CRC	717
:DLINK:DPCH:DCH[1] 2 3 4 5 6:DATA.	717
:DLINK:DPCH:DCH[1] 2 3 4 5 6:DATA:FIX4.	717
:DLINK:DPCH:DCH[1] 2 3 4 5 6:NBLocks	718
:DLINK:DPCH:DCH[1] 2 3 4 5 6:RMATtribute	718
:DLINK:DPCH:DCH[1] 2 3 4 5 6:TTI.	719
:DLINK:DPCH:DCH2 3 4 5 6[:STATe]	719
:DLINK:DPCH:POWer	719
:DLINK:DPCH:SFORmat	720
:DLINK:DPCH:SSCOffset	720
:DLINK:DPCH:TFCI.	721
:DLINK:DPCH:TOFFset	721
:DLINK:DPCH:TPC:NSTeps	722
:DLINK:DPCH:TPC:PATtern.	722
:DLINK:DPCH:TRPosition	723
:DLINK:DPCH[:STATe]	723
:DLINK:FILTer	723
:DLINK:FILTer:ALPHa.	724
:DLINK:FILTer:BBT	724
:DLINK:FILTer:CHANnel.	725
:DLINK:HSBurst	725
:DLINK:HSDPa:AMC:CQIMapping:UECategory	726
:DLINK:HSDPa:AMC:CPATtern	726
:DLINK:HSDPa:FCONtrol	727
:DLINK:HSDPa:HARQ:APATtern	728
:DLINK:HSDPa:HARQ:MNHTrans	728
:DLINK:HSDPa:HARQ:RVSequence[1] 2 3 4 5 6 7 8.	729
:DLINK:HSDPa[1] 2 3 4:BSINfo	730
:DLINK:HSDPa[1] 2 3 4:HSPDSch:COFFset	730
:DLINK:HSDPa[1] 2 3 4:HSPDSch:DATA	730
:DLINK:HSDPa[1] 2 3 4:HSPDSch:DATA:FIX4	731
:DLINK:HSDPa:HSPDSch:DSCH:DATA	731
:DLINK:HSDPa:HSPDSch:DSCH:DATA:FIX4.	732
:DLINK:HSDPa:HSPDSch:DSCH:IRBSize	732
:DLINK:HSDPa:HSPDSch:NCODe	733

Contents

:DLINK:HSDPa[1] 2 3 4:HSPDsch:POWer	733
:DLINK:HSDPa[1] 2 3 4:HSPDsch:SFORmat	734
:DLINK:HSDPa[1] 2 3 4:HSPDsch[:STATe]	734
:DLINK:HSDPa[1] 2 3 4:HSSCch:CCODE	735
:DLINK:HSDPa[1] 2 3 4:HSSCch:DATA	735
:DLINK:HSDPa[1] 2 3 4:HSSCch:DATA:FIX4	736
:DLINK:HSDPa[1] 2 3 4:HSSCch:POWer	736
:DLINK:HSDPa[1] 2 3 4:ITTI	737
:DLINK:HSDPa[1] 2 3 4:ITTI:PATtern	737
:DLINK:HSDPa:NHPRocess	738
:DLINK:HSDPa[1] 2 3 4:RVParameter	738
:DLINK:HSDPa[1] 2 3 4:UEID	739
:DLINK:HSDPa[1] 2 3 4[:STATe]	739
:DLINK:OCNS[1] 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16:CCODE	740
:DLINK:OCNS[1] 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16:DATA	740
:DLINK:OCNS[1] 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16:POWer	741
:DLINK:OCNS[1] 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16:SSCOffset	741
:DLINK:OCNS[1] 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16:TOFFset	742
:DLINK:OCNS[1] 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16[:STATe]	742
:DLINK:PCCPch:BCH:DATA	742
:DLINK:PCCPch:BCH:DATA:FIX4	743
:DLINK:PCCPch:CCODE	743
:DLINK:PCCPch:POWer	744
:DLINK:PCCPch[:STATe]	744
:DLINK:PICH:CCODE	744
:DLINK:PICH:DATA	745
:DLINK:PICH:DATA:FIX4	745
:DLINK:PICH:POWer	746
:DLINK:PICH[:STATe]	746
:DLINK:POLarity	746
:DLINK:PSCH:POWer	747
:DLINK:PSCH[:STATe]	747
:DLINK:SCRamblecode	747
:DLINK:SSCH:POWer	748
:DLINK:SSCH[:STATe]	748
:DLINK:TXDiversity	748
:LINK	749
:ULINK:APPLY	749

:ULINK:AWGN:CN	749
:ULINK:AWGN[:STATe]	750
:ULINK:BBReference:EXTeRnal:MRATe	750
:ULINK:BBReference[:SOURce]	750
:ULINK:DPCCh:CCODE	751
:ULINK:DPCCh:DATA	751
:ULINK:DPCCh:DATA:FIX4	752
:ULINK:DPCCh:FBI:PATTeRn	752
:ULINK:DPCCh:FBI:PATTeRn:FIX	753
:ULINK:DPCCh:POWeR	753
:ULINK:DPCCh:SFORmat	754
:ULINK:DPCCh[:STATe]	754
:ULINK:DPCCh:TFCI	754
:ULINK:DPCCh:TPC:NSTePs	755
:ULINK:DPCCh:TPC:PATTeRn	755
:ULINK:DPDCh:CCODE	756
:ULINK:DPDCh:DATA	756
:ULINK:DPDCh:DATA:FIX4	756
:ULINK:DPDCh:DCH[1] 2 3 4 5 6:BSIZE	757
:ULINK:DPDCh:DCH[1] 2 3 4 5 6:CRC	757
:ULINK:DPDCh:DCH[1] 2 3 4 5 6:CTYPe	757
:ULINK:DPDCh:DCH[1] 2 3 4 5 6:DATA	758
:ULINK:DPDCh:DCH[1] 2 3 4 5 6:DATA:FIX4	758
:ULINK:DPDCh:DCH[1] 2 3 4 5 6:NBLocks	759
:ULINK:DPDCh:DCH[1] 2 3 4 5 6:RMATtribute	759
:ULINK:DPDCh:DCH[1] 2 3 4 5 6:TTI	760
:ULINK:DPDCh:DCH2 3 4 5 6[:STATe]	760
:ULINK:DPDCh:POWeR	761
:ULINK:DPDCh:SFORmat	761
:ULINK:DPDCh[:STATe]	761
:ULINK:FCLock:INTeRval	762
:ULINK:FCLock:POLarity	762
:ULINK:FILTeR	763
ULINK:FILTeR:ALPHa	763
:ULINK:FILTeR:BBT	764
:ULINK:FILTeR:CHANnel	764
:ULINK:FOFFset	765
:ULINK:HSDPcch:APATteRn	765

Contents

:ULINK:HSDPcch:APOWer	766
:ULINK:HSDPcch:CCODE	766
:ULINK:HSDPcch:CPATtern	766
:ULINK:HSDPcch:CPOWer	767
:ULINK:HSDPcch:NPOWer	767
:ULINK:HSDPcch:SFDelay	767
:ULINK:HSDPcch[:STATe]	768
:ULINK:POLarity	768
:ULINK:SCRamblecode	768
:ULINK:SDELaY.	769
:ULINK:SFNRst:POLarity	769
:ULINK:SYNC:MODE	770
:ULINK:SYNC[:SOURce]	770
:ULINK:TOFFset.	770
[:STATe]	771
NADC Subsystem–Option 402 ([:SOURce]:RADio[:NADC]).	772
:ALPha	772
:BBCLock	772
:BBT	773
:BRATe	773
:BURSt:PN9	774
:BURSt:SHAPE[:TYPE].	775
:BURSt:SHAPE:FALL:DELaY	775
:BURSt:SHAPE:FALL:TIME	776
:BURSt:SHAPE:FDELaY	776
:BURSt:SHAPE:FTIME	777
:BURSt:SHAPE:RDELaY	778
:BURSt:SHAPE:RISE:DELaY	778
:BURSt:SHAPE:RISE:TIME	779
:BURSt:SHAPE:RTIME	780
:BURSt[:STATe].	780
:BURSt:SHAPE[:TYPE].	781
:CHANnel	781
:DATA	782
:DATA:PRAM.	782
:DATA:FIX4	783
:DEFault	783
:EDATa:DELaY.	783

:EDCLock	784
:EREFerence	784
:EREFerence:VALue	785
:FILTer	785
:FRATe	786
:IQ:SCALE	786
:MODulation:FSK[:DEViation]	787
:MODulation:MSK[:PHASe]	787
:MODulation:UFSK	787
:MODulation:UIQ	788
:MODulation[:TYPE]	788
:REPeat	789
:POLarity[:ALL]	789
:SECOndary:RECall	789
:SECOndary:SAVE	790
:SECOndary:TRIGger[:SOURce]	790
:SECOndary[:STATe]	790
:SLOT[1] 2 3 4 5 6:DCUStom	791
:SLOT[1] 2 3 4 5 6:DCUStom:FIX4	791
:SLOT[1] 2 3 4 5 6:DTCHannel:CDLocator	792
:SLOT[1] 2 3 4 5 6:DTCHannel:CDVCcode	792
:SLOT[1] 2 3 4 5 6:DTCHannel:SACChannel	792
:SLOT[1] 2 3 4 5 6:DTCHannel:SWORd	793
:SLOT[1] 2 3 4 5 6:DTCHannel[:DATA]	793
:SLOT[1] 2 3 4 5 6:DTCHannel[:DATA]FIX4	794
:SLOT[1] 2 3 4 5 6:POWer	794
:SLOT[1] 2 3 4 5 6:STATe	794
:SLOT[1] 2 3 4 5 6:UCUStom	795
:SLOT[1] 2 3 4 5 6:UCUStom:FIX4	795
:SLOT[1] 2 3 4 5 6:UTCHannel:CDVCcode	795
:SLOT[1] 2 3 4 5 6:UTCHannel:SACChannel	796
:SLOT[1] 2 3 4 5 6:UTCHannel:SWORd	796
:SLOT[1] 2 3 4 5 6:UTCHannel[:DATA]	796
:SLOT[1] 2 3 4 5 6:UTCHannel[:DATA]:FIX4	797
:SLOT[1] 2 3 4 5 6[:TYPE]	797
:SOUT	798
:SOUT:OFFSet	798
:SOUT:SLOT	799

Contents

:SRATe	799
:TRIGger:TYPE	800
:TRIGger:TYPE:CONTInuous[:TYPE]	801
:TRIGger:TYPE:GATE:ACTive	802
:TRIGger[:SOURce]	802
:TRIGger[:SOURce]:EXTernal:DELay	803
:TRIGger[:SOURce]:EXTernal:DELay:STATe	804
:TRIGger[:SOURce]:EXTernal:SLOPe	804
:TRIGger[:SOURce]:EXTernal[:SOURce]	804
	805
PDC Subsystem–Option 402 ([:SOURce]:RADio:PDC)	806
:ALPha	806
:BBCLock	806
:BBT	807
:BRATe	807
:BURSt:PN9	808
:BURSt:SHAPe:FALL:DELay	809
:BURSt:SHAPe:FALL:TIME	809
:BURSt:SHAPe:FDELay	810
:BURSt:SHAPe:FTIME	811
:BURSt:SHAPe:RDELay	811
:BURSt:SHAPe:RISE:DELay	812
:BURSt:SHAPe:RISE:TIME	813
:BURSt:SHAPe:RTIME	813
:BURSt:SHAPe[:TYPE]	814
:BURSt[:STATe]	814
:CHANnel	815
:DATA	815
:DATA:PRAM	816
:DATA:FIX4	816
:DEFault	816
:EDATa:DELay	817
:EDCLock	817
:EREFerence	817
:EREFerence:VALue	818
:FILTer	818
:FRATe	819
:IQ:SCALe	819

:MODulation:FSK[:DEViation]	820
:MODulation:MSK[:PHASe]	820
:MODulation:UFSK	821
:MODulation:UIQ	821
:MODulation[:TYPE]	821
:POLarity[:ALL]	822
:SECondary:RECall	822
:SECondary:SAVE	822
:SECondary:TRIGger[:SOURce]	823
:SECondary[:STATE]	823
:SLOT0[1]2 3 4 5:DCUStom	824
:SLOT0[1]2 3 4 5:DCUSTom:FIX4	824
:SLOT0[1]2 3 4 5:DTCHannel:CCODE	824
:SLOT0[1]2 3 4 5:DTCHannel:SACChannel	825
:SLOT0[1]2 3 4 5:DTCHannel:SWORd	825
:SLOT0[1]2 3 4 5:DTCHannel[:TCHannel]	825
:SLOT0[1]2 3 4 5:DTCHannel[:TCHannel]:FIX4	826
:SLOT0[1]2 3 4:POWer	826
:SLOT0[1]2 3 4 5:STATe	827
:SLOT0[1]2 3 4 5:UCUStom	827
:SLOT0[1]2 3 4 5:UCUStom:FIX4	827
:SLOT0[1]2 3 4 5:UTCHannel:CCODE	828
:SLOT0[1]2 3 4 5:UTCHannel:SACChannel	828
:SLOT0[1]2 3 4 5:UTCHannel:SWORd	828
:SLOT0[1]2 3 4 5:UTCHannel[:TCHannel]	829
:SLOT0[1]2 3 4 5:UTCHannel[:TCHannel]:FIX4	829
:SLOT0[1]2 3 4 5:UVOX:CCODE	830
:SLOT0[1]2 3 4 5:UVOX:SACChannel	830
:SLOT0[1]2 3 4 5:UVOX:SWORd	830
:SLOT0[1]2 3 4 5[:TYPE]	831
:SOUT	831
:SOUT:OFFSet	831
:SOUT:SLOT	832
:SRATe	832
:TRIGger:TYPE	834
:TRIGger:TYPE:CONTinuous[:TYPE]	834
:TRIGger:TYPE:GATE:ACTive	835
:TRIGger[:SOURce]	835

Contents

:TRIGger[:SOURce]:EXTernal:DELay	836
:TRIGger[:SOURce]:EXTernal:DELay:STATe	837
:TRIGger[:SOURce]:EXTernal:SLOPe	837
:TRIGger[:SOURce]:EXTernal[:SOURce]	838
[:STATe]	838
PHS Subsystem–Option 402 ([:SOURce]:RADio:PHS)	839
:ALPha	839
:BBCLock	839
:BBT	840
:BRATe	840
:BURSt:PN9	841
:BURSt:SCRamble:SEED	842
:BURSt:SCRamble[:STATe]	842
:BURSt:SHAPe:FALL:DELay	843
:BURSt:SHAPe:FALL:TIME	843
:BURSt:SHAPe:FDELay	844
:BURSt:SHAPe:FTIME	845
:BURSt:SHAPe:RDELay	845
:BURSt:SHAPe:RISE:DELay	846
:BURSt:SHAPe:RISE:TIME	847
:BURSt:SHAPe:RTIME	847
:BURSt:SHAPe[:TYPE]	848
:BURSt[:STATe]	848
:CHANnel	849
:DATA	849
:DATA:PRAM	850
:DATA:FIX4	850
:DEFault	850
:DLINK:SLOT[1] 2 3 4:CUSTom	851
:DLINK:SLOT[1] 2 3 4:CUSTom:FIX4	851
:DLINK:SLOT[1] 2 3 4:POWer	851
:DLINK:SLOT[1] 2 3 4:SCHannel:CSID	852
:DLINK:SLOT[1] 2 3 4:SCHannel:IDLE	852
:DLINK:SLOT[1] 2 3 4:SCHannel:PSID	852
:DLINK:SLOT[1] 2 3 4:SCHannel:UWORD	853
:DLINK:SLOT[1] 2 3 4:STATe	853
:DLINK:SLOT[1] 2 3 4:TCHannel:SACChannel	853
:DLINK:SLOT[1] 2 3 4:TCHannel:UWORD	854

:DLINK:SLOT[1]2 3 4:TCHannel[:TCHannel]	854
:DLINK:SLOT[1]2 3 4:TCHannel[:TCHannel]:FIX4	854
:DLINK:SLOT[1]2 3 4[:TYPE]	855
:EDATa:DELay	855
:EDCLock	855
:EREFerence	856
:EREFerence:VALue	856
:FILTer	857
:IQ:SCALE	858
:MODulation:FSK[:DEViation]	858
:MODulation:MSK[:PHASe]	859
:MODulation:UFSK	859
:MODulation:UIQ	859
:MODulation[:TYPE]	860
:POLarity[:ALL]	860
:SECOndary:RECall	860
:SECOndary:SAVE	861
:SECOndary:TRIGger[:SOURce]	861
:SECOndary[:STATE]	861
:SOUT	862
:SOUT:OFFSet	862
:SOUT:SLOT	863
:SRATe	863
:TRIGger:TYPE	864
:TRIGger:TYPE:CONTinuous[:TYPE]	865
:TRIGger:TYPE:GATE:ACTive	866
:TRIGger[:SOURce]:EXTernal:DELay	866
:TRIGger[:SOURce]:EXTernal:DELay:STATe	867
:TRIGger[:SOURce]:EXTernal:SLOPe	867
:TRIGger[:SOURce]:EXTernal[:SOURce]	867
:TRIGger[:SOURce]	868
:ULINK:SLOT[1]2 3 4:CUSTom	869
:ULINK:SLOT[1]2 3 4:CUSTom:FIX4	870
:ULINK:SLOT[1]2 3 4:POWer	870
:ULINK:SLOT[1]2 3 4:SCHannel:CSID	870
:ULINK:SLOT[1]2 3 4:SCHannel:IDLE	871
:ULINK:SLOT[1]2 3 4:SCHannel:PSID	871
:ULINK:SLOT[1]2 3 4:SCHannel:UWORD	871

Contents

:ULINK:SLOT[1] 2 3 4:STATe	872
:ULINK:SLOT[1] 2 3 4:TCHannel:SACChannel	872
:ULINK:SLOT[1] 2 3 4:TCHannel:UWORD	872
:ULINK:SLOT[1] 2 3 4:TCHannel[:TCHannel]	873
:ULINK:SLOT[1] 2 3 4:TCHannel[:TCHannel:FIX4	873
:ULINK:SLOT[1] 2 3 4[:TYPE]	873
[:STATe]	874
TETRA Subsystem–Option 402 ([:SOURce]:RADio:TETRa)	875
:ALPha	875
:BBCLock	875
:BBT	876
:BRATe	876
:BURSt:PN9	877
:BURSt:SCRamble:SEED	878
:BURSt:SCRamble[:STATe]	878
:BURSt:SHAPe:FALL:DELay	878
:BURSt:SHAPe:FALL:TIME	879
:BURSt:SHAPe:FDELay	880
:BURSt:SHAPe:FTIME	880
:BURSt:SHAPe:RDELay	881
:BURSt:SHAPe:RISE:DELay	882
:BURSt:SHAPe:RISE:TIME	882
:BURSt:SHAPe:RTIME	883
:BURSt:SHAPe[:TYPE]	884
:BURSt[:STATe]	884
:CHANnel	885
:DATA	885
:DATA:PRAM	886
:DATA:FIX4	886
:DEFault	887
:EDATa:DELay	887
:EDCLock	887
:EREFerence	888
:EREFerence:VALue	888
:FILTer	889
:IQ:SCALE	890
:MODulation:FSK[:DEViation]	890
:MODulation:MSK[:PHASe]	891

:MODulation:UFSK	.891
:MODulation:UIQ	.891
:MODulation[:TYPE]	.892
:POLarity[:ALL]	.892
:SECondary:RECall	.893
:SECondary:SAVE	.893
:SECondary:TRIGger[:SOURce]	.893
:SECondary[:STATe]	.894
:SLOT[1] 2 3 4:DCCustom	.894
:SLOT[1] 2 3 4:DCCustom:FIX4	.894
:DCNormal:B1	.895
:DCNormal:B2	.895
:SLOT[1] 2 3 4:DCNormal:TSEQuence	.895
:SLOT[1] 2 3 4:DCNormal[:DATA]	.896
:SLOT[1] 2 3 4:DCNormal[:DATA]:FIX4	.896
:SLOT[1] 2 3 4:DcSync:B	.897
:SLOT[1] 2 3 4:DcSync:FCOR	.897
:SLOT[1] 2 3 4:DcSync:SSB	.897
:SLOT[1] 2 3 4:DcSync:STS	.898
:SLOT[1] 2 3 4:DcSync[:DATA]	.898
:SLOT[1] 2 3 4:DcSync[:DATA]:FIX4	.898
:SLOT[1] 2 3 4:DDCustom	.899
:SLOT[1] 2 3 4:DDCustom:FIX4	.899
:SLOT[1] 2 3 4:DDNormal:B1	.900
:SLOT[1] 2 3 4:DDNormal:B2	.900
:SLOT[1] 2 3 4:DDNormal:TSEQuence	.900
:SLOT[1] 2 3 4:DDNormal[:DATA]	.901
:SLOT[1] 2 3 4:DDNormal[:DATA]:FIX4	.901
:SLOT[1] 2 3 4:DDSync:B	.902
:SLOT[1] 2 3 4:DDSync:FCOR	.902
:SLOT[1] 2 3 4:DDSync:SSB	.902
:SLOT[1] 2 3 4:DDSync:STS	.903
:SLOT[1] 2 3 4:DDSync[:DATA]	.903
:SLOT[1] 2 3 4:DDSync[:DATA]:FIX4	.903
:SLOT[1] 2 3 4:POWer	.904
:SLOT[1] 2 3 4:STATe	.904
:SLOT[1] 2 3 4:UC1:TSEQuence	.904
:SLOT[1] 2 3 4:UC1[:DATA]	.905

Contents

:SLOT[1] 2 3 4:UC1[:DATA]:FIX4	905
:SLOT[1] 2 3 4:UC2:TSEQUence	905
:SLOT[1] 2 3 4:UC2[:DATA]	906
:SLOT[1] 2 3 4:UC2[:DATA]:FIX4	906
:SLOT[1] 2 3 4:UCUStom	906
:SLOT[1] 2 3 4:UCUStom:FIX4	907
:SLOT[1] 2 3 4:UNORmal:TSEQUence	907
:SLOT[1] 2 3 4:UNORmal[:DATA]	907
:SLOT[1] 2 3 4:UNORmal[:DATA]:FIX4	908
:SLOT[1] 2 3 4[:TYPE]	908
:SOUT	909
:SOUT:OFFSet	909
:SOUT:SLOT	910
:SRATe	910
:TRIGger:TYPE	912
:TRIGger:TYPE:CONTInuous[:TYPE]	912
:TRIGger:TYPE:GATE:ACTive	913
:TRIGger[:SOURce]	914
:TRIGger[:SOURce]:EXTernal:DELay	915
:TRIGger[:SOURce]:EXTernal:DELay:STATe	915
:TRIGger[:SOURce]:EXTernal:SLOPe	916
:TRIGger[:SOURce]:EXTernal[:SOURce]	916
[:STATe]	917
Wideband CDMA Base Band Generator Subsystem–Option 400 ([:SOURce]:RADio:WCDMa:TGPP[:BBG])	918
:BBCLock	918
:BBCLock:EXT:RATE	918
:DLINK:APPLY	919
:DLINK:AWGN:CN	919
:DLINK:AWGN:CPOWer	919
:DLINK:AWGN:ECNO	920
:DLINK:AWGN:ECRPower	920
:DLINK:AWGN:ECRef	920
:DLINK:AWGN:FNBW	921
:DLINK:AWGN:NPOWer	921
:DLINK:AWGN:TICPower	921
:DLINK:AWGN[:STATe]	922
:DLINK:BBCLock	922
:DLINK:CARB:CMODE:CCODE	922

:DLINK:CARB:CMODE:DATA	923
:DLINK:CARB:CMODE:FOFFset	923
:DLINK:CARB:CMODE:FSTRuct	923
:DLINK:CARB:CMODE:POWer	924
:DLINK:CARB:CMODE:PRATio	924
:DLINK:CARB:CMODE:SCTYpe	924
:DLINK:CARB:CMODE:SFORmat	925
:DLINK:CARB:CMODE:SSCodeos	925
:DLINK:CARB:CMODE:TFIRst	926
:DLINK:CARB:CMODE:TGL	926
:DLINK:CARB:CMODE[:STATe]	926
:DLINK:CPICH:CCODE	927
:DLINK:CPICH:POWer	927
:DLINK:CPICH[:STATe]	927
:DLINK:CRATe	928
:DLINK:DPCH[1]:BALance	928
:DLINK:DPCH[1]:BINitalize	928
:DLINK:DPCH[1]2:ALL[:STATe]	929
:DLINK:DPCH[1]2:CCODE	929
:DLINK:DPCH[1]2:DATA	929
:DLINK:DPCH[1]2:DATA:FIX4	930
:DLINK:DPCH[1]2:POWer	930
:DLINK:DPCH[1]2:RCSetup	931
:DLINK:DPCH[1]2:SLOTformat	932
:DLINK:DPCH[1]2:SRATe	932
:DLINK:DPCH[1]2:SSCodeos	932
:DLINK:DPCH[1]2:TFCI:PATTerM	933
:DLINK:DPCH[1]2:TOFFset	933
:DLINK:DPCH[1]2:TPC:NUMSteps	934
:DLINK:DPCH[1]2:TPC:PATTerM	934
:DLINK:DPCH[1]2[:STATe]	935
:DLINK:FILTer	935
:DLINK:FILTer:ALPHa	936
:DLINK:FILTer:BBT	936
:DLINK:FILTer:CHANnel	937
:DLINK:MSYNc	937
:DLINK:OCNS[1]2 3 4 5 6 7 8 9 10 11 12 13 14 15 16:ALL[:STATe]	937
:DLINK:OCNS[1]2 3 4 5 6 7 8 9 10 11 12 13 14 15 16:CCODE	938

Contents

:DLINK:OCNS[1] 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16:DATA	938
:DLINK:OCNS[1] 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16:POWer	938
:DLINK:OCNS[1] 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16:SRATe	939
:DLINK:OCNS[1] 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16:SSCodeos	939
:DLINK:OCNS[1] 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16:TOFFset	940
:DLINK:OCNS[1] 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16[:STATe]	940
:DLINK:OOSTest[:STATe]	940
:DLINK:OOSTest:DTXGate:POLarity	941
:DLINK:PADJust	941
:DLINK:PCCPch:BCHData	941
:DLINK:PCCPch:BCHData:FIX4	942
:DLINK:PCCPch:CCODE	942
:DLINK:PCCPch:POWer	942
:DLINK:PCCPch[:STATe]	943
:DLINK:PICH:CCODE	943
:DLINK:PICH:DATA	943
:DLINK:PICH:DATA:FIX4	944
:DLINK:PICH:PIBits	944
:DLINK:PICH:PINDicator	944
:DLINK:PICH:POWer	945
:DLINK:PICH[:STATe]	945
:DLINK:POLarity	945
:DLINK:PSCH:POWer	946
:DLINK:PSCH[:STATe]	946
:DLINK:RPANel:INPut:ALTPower	946
:DLINK:RPANel:INPut:BBGRef	947
:DLINK:RPANel:INPut:BGATe	947
:DLINK:RPANel:INPut:PTRigger1	947
:DLINK:RPANel:INPut:PTRigger2	948
:DLINK:RPANel:OUTPut:DCLock	948
:DLINK:RPANel:OUTPut:DOUT	950
:DLINK:RPANel:OUTPut:EVENT1	951
:DLINK:RPANel:OUTPut:EVENT2	951
:DLINK:RPANel:OUTPut:EVENT3	952
:DLINK:RPANel:OUTPut:EVENT4	952
:DLINK:RPANel:OUTPut:SSYNc	953
:DLINK:SCH[:STATe]	953
:DLINK:SCRamblecode	953

:DLINK:SDElay	954
:DLINK:SSCH:POWer	954
:DLINK:SSCH:SSGRoup	954
:DLINK:SSCH[::STATe].	955
:DLINK:TGAP:FSTRuct	955
:DLINK:TGAP:POFFset	955
:DLINK:TGAP:PSI[1]:CFN	956
:DLINK:TGAP:PSI[1]:CMMethod	956
:DLINK:TGAP:PSI[1]:D	957
:DLINK:TGAP:PSI[1]:L1	957
:DLINK:TGAP:PSI[1]:L2	957
:DLINK:TGAP:PSI[1]:PL1	958
:DLINK:TGAP:PSI[1]:PL2	958
:DLINK:TGAP:PSI[1]:PRC	958
:DLINK:TGAP:PSI[1]:PS	959
:DLINK:TGAP:PSI[1]:SN	959
:DLINK:TGAP:RPARameter	959
:DLINK:TGAP:SCFN	960
:DLINK:TGAP:STARt:TRIGger	960
:DLINK:TGAP:STARt:TRIGger:POLarity	960
:DLINK:TGAP:STOP:TRIGger	961
:DLINK:TGAP:STOP:TRIGger:POLarity	961
:DLINK:TGAP[::STATe]	961
:DLINK:TSETup	962
:DLINK:TXDV	963
:DLINK[:TGRoup [A] B]:DCH[1] 2 3 4 5 6:BLKSize	964
:DLINK[:TGRoup [A] B]:DCH[1] 2 3 4 5 6:BPFRame	965
:DLINK[:TGRoup [A] B]:DCH[1] 2 3 4 5 6:BRATe	965
:DLINK[:TGRoup [A] B]:DCH[1] 2 3 4 5 6:BSSize	965
DLINK[:TGRoup [A] B]:DCH[1] 2 3 4 5 6:CODE	966
:DLINK[:TGRoup [A] B]:DCH[1] 2 3 4 5 6:CRc	967
:DLINK[:TGRoup [A] B]:DCH[1] 2 3 4 5 6:DATA	967
:DLINK[:TGRoup [A] B]:DCH[1] 2 3 4 5 6:DATA:EINsert	968
:DLINK[:TGRoup [A] B]:DCH[1] 2 3 4 5 6:DATA:FIX4	968
:DLINK[:TGRoup [A] B]:DCH[1] 2 3 4 5 6:NBLocks	969
:DLINK[:TGRoup [A] B]:DCH[1] 2 3 4 5 6:POSITION	970
:DLINK[:TGRoup [A] B]:DCH[1] 2 3 4 5 6:PPERcentage	970
:DLINK[:TGRoup [A] B]:DCH[1] 2 3 4 5 6:RMATch	971

Contents

:DLINK[:TGRoup [A]B]:DCH[1] 2 3 4 5 6:TTI	971
:DLINK[:TGRoup [A]B]:DCH[1] 2 3 4 5 6[:STATe]	972
:LINK	972
:POLarity[:ALL]	972
:ULINK:APPLy	973
:ULINK:AWGN:CN	973
:ULINK:AWGN:CPOWer	974
:ULINK:AWGN:DRATe	974
:ULINK:AWGN:EBNO	974
:ULINK:AWGN:EBRef	975
:ULINK:AWGN:FNBW	975
:ULINK:AWGN:NPOWer	976
:ULINK:AWGN:TICPower	976
:ULINK:AWGN[:STATe]	976
:ULINK:CRATe	977
:ULINK:DPCCh:BETA	977
:ULINK:DPCCh:CCODe	978
:ULINK:DPCCh:DATA	978
:ULINK:DPCCh:DATA:FIX4	979
:ULINK:DPCCh:FBI:PATtern	979
:ULINK:DPCCh:FBI:PATtern:FIX	980
:ULINK:DPCCh:FBI[:STATe]	980
:ULINK:DPCCh:POWer	981
:ULINK:DPCCh:RATE	981
:ULINK:DPCCh:SLOTformat	981
:ULINK:DPCCh:TFCI:PATtern	982
:ULINK:DPCCh:TFCI:PATtern:FIX	982
:ULINK:DPCCh:TFCI[:STATe]	983
:ULINK:DPCCh:TPC:NSTeps	983
:ULINK:DPCCh:TPC:PATtern	984
:ULINK:DPCCh:TPC:PATtern:FIX4	985
:ULINK:DPCCh:TPC:PATtern:TRIGger:POLarity	985
:ULINK:DPCCh:TPC:PATtern:TRIGger[:STATe]	986
:ULINK:DPCCh:TPOWer	986
:ULINK:DPCCh[:STATe]	987
:ULINK:DPDCh:BETA	987
:ULINK:DPDCh:CCODe	988
:ULINK:DPDCh:DATA	989

:ULINK:DPDCh:DATA:FIX4	989
:ULINK:DPDCh:POWer	990
:ULINK:DPDCh:RATE	990
:ULINK:DPDCh:RBER	991
:ULINK:DPDCh:SLOTformat	992
:ULINK:DPDCh:TBER[:CLENgth]	993
:ULINK:DPDCh:TBER:ELENgth.	993
:ULINK:DPDCh:TPOWer	994
:ULINK:DPDCh[:STATe]	994
:ULINK:FCLock:INTerval	994
:ULINK:FCLock:POLarity	995
:ULINK:FILTer	995
:ULINK:FILTer:ALPHA	996
:ULINK:FILTer:BBT	997
:ULINK:FILTer:CHANnel.	997
:ULINK:FOFFset.	998
:ULINK:PADJust	998
:ULINK:PHYSical[1]:TYPE	998
:ULINK:PMODE:TPControl:HOLD	999
:ULINK:PMODE:TPControl:POWer:INITial	999
:ULINK:PMODE:TPControl:POWer:MAXimum	1000
:ULINK:PMODE:TPControl:POWer:MINimum.	1000
:ULINK:PMODE:TPControl:POWer:RESet	1001
:ULINK:PMODE:TPControl:POWer:STEP.	1001
:ULINK:PMODE:TPControl:TRIGger:POLarity	1002
:ULINK:PMODE[:SElect]	1002
:ULINK:PRACH:AICH:NUMBer	1002
:ULINK:PRACH:AICH:POLarity	1003
:ULINK:PRACH:AWGN:CN.	1003
:ULINK:PRACH:AWGN:CPOWer	1004
:ULINK:PRACH:AWGN:DRATe	1004
:ULINK:PRACH:AWGN:EBNO	1004
:ULINK:PRACH:AWGN:ECNO	1005
:ULINK:PRACH:AWGN:EREF.	1005
:ULINK:PRACH:AWGN:NPOWer	1006
:ULINK:PRACH:AWGN:TICPower	1006
:ULINK:PRACH:AWGN[:STATe].	1006
:ULINK:PRACH:MESSAge:CPART:BETA	1007

Contents

:ULINK:PRACH:MESSAge:CPARt:DATA	1007
:ULINK:PRACH:MESSAge:CPARt:DATA:FIX4	1008
:ULINK:PRACH:MESSAge:CPARt:POWer	1008
:ULINK:PRACH:MESSAge:CPARt:RATE	1009
:ULINK:PRACH:MESSAge:CPARt:SLOTformat	1009
:ULINK:PRACH:MESSAge:CPARt:TFCI:PATtern	1010
:ULINK:PRACH:MESSAge:CPARt:TFCI:PATtern:FIX	1010
:ULINK:PRACH:MESSAge:CPARt:TFCI[:STATe]	1011
:ULINK:PRACH:MESSAge:DPARt:BETA	1011
:ULINK:PRACH:MESSAge:DPARt:DATA	1012
:ULINK:PRACH:MESSAge:DPARt:DATA:FIX4	1012
:ULINK:PRACH:MESSAge:DPARt:POWer	1013
:ULINK:PRACH:MESSAge:DPARt:RATE	1014
:ULINK:PRACH:MESSAge:DPARt:SLOTformat	1015
:ULINK:PRACH:MODE[:SELEct]	1016
:ULINK:PRACH:MULTi:MESSAge:TPOWer	1016
:ULINK:PRACH:MULTi:MESSAge[:STATe]	1017
:ULINK:PRACH:MULTi:NUMBer	1017
:ULINK:PRACH:MULTi:PREAmble:NUMBer	1017
:ULINK:PRACH:MULTi:PREAmble:POWer:INITial	1018
:ULINK:PRACH:MULTi:PREAmble:POWer:MAX	1018
:ULINK:PRACH:MULTi:PREAmble:POWer:RSTep	1019
:ULINK:PRACH:MULTi:PREAmble:PPM	1019
:ULINK:PRACH:MULTi:UE[1] 2 3 4 5 6 7 8:MESSAge:CPARt:CCODE	1019
:ULINK:PRACH:MULTi:UE[1] 2 3 4 5 6 7 8:MESSAge:DPARt:CCODE	1020
:ULINK:PRACH:MULTi:UE[1] 2 3 4 5 6 7 8:PREAmble:SIGNature	1020
:ULINK:PRACH:MULTi:UE[1] 2 3 4 5 6 7 8:SPOStion[1] 2 3 4 5 6 7 8[:ASLot]	1021
:ULINK:PRACH:MULTi:UE[1] 2 3 4 5 6 7 8[:STATe]	1022
:ULINK:PRACH:PREAmble:POWer:AVERAge	1022
:ULINK:PRACH:PREAmble:POWer:MODE	1023
:ULINK:PRACH:RPARameter	1024
:ULINK:PRACH:SCRamblecode	1024
:ULINK:PRACH:SDELAy	1025
:ULINK:PRACH:SUBChanneL	1025
:ULINK:PRACH:TOFFset	1026
:ULINK:PRACH:TPA	1026
:ULINK:PRACH:TPM	1027
:ULINK:PRACH:TPOWer	1027

:ULINK:PRACH:TPP	1028
:ULINK:PRACH:TRIGGER	1028
:ULINK:PRACH:TRIGGER:POLARITY	1029
:ULINK:PRACH:TRIGGER:SOURCE	1029
:ULINK:PRACH:TTI	1030
:ULINK:PRACH[:SINGLE]:MESSAGE[:STATE]	1030
:ULINK:PRACH[:SINGLE]:NUMBER	1031
:ULINK:PRACH[:SINGLE]:MESSAGE:CPART:CCODE	1031
:ULINK:PRACH[:SINGLE]:MESSAGE:DPART:CCODE	1032
:ULINK:PRACH[:SINGLE]:MESSAGE:TPOWER	1033
:ULINK:PRACH[:SINGLE]:NUMBER	1033
:ULINK:PRACH[:SINGLE]:PREAMBLE:NUMBER	1034
:ULINK:PRACH[:SINGLE]:PREAMBLE:POWER:INITIAL	1034
:ULINK:PRACH[:SINGLE]:PREAMBLE:POWER:MAX	1034
:ULINK:PRACH[:SINGLE]:PREAMBLE:POWER:RSTEP	1035
:ULINK:PRACH[:SINGLE]:PREAMBLE:PPM	1036
:ULINK:PRACH[:SINGLE]:PREAMBLE:SIGNATURE	1036
:ULINK:RMCHANNEL	1037
:ULINK:RPANEL:DPCH:INPUT:ALTPower	1038
:ULINK:RPANEL:DPCH:INPUT:BBGRef	1038
:ULINK:RPANEL:DPCH:INPUT:BGATE	1038
:ULINK:RPANEL:DPCH:INPUT:PTRigger1	1039
:ULINK:RPANEL:DPCH:INPUT:PTRigger2	1039
:ULINK:RPANEL:DPCH:OUTPUT:DCLock	1039
:ULINK:RPANEL:DPCH:OUTPUT:DOUT	1041
:ULINK:RPANEL:DPCH:OUTPUT:EVENT1	1041
:ULINK:RPANEL:DPCH:OUTPUT:EVENT2	1042
:ULINK:RPANEL:DPCH:OUTPUT:EVENT3	1042
:ULINK:RPANEL:DPCH:OUTPUT:EVENT4	1043
:ULINK:RPANEL:DPCH:OUTPUT:SSYNc	1043
:ULINK:RPANEL:PRACH:INPUT:ALTPower	1044
:ULINK:RPANEL:PRACH:INPUT:BBGRef	1044
:ULINK:RPANEL:PRACH:INPUT:BGATE	1044
:ULINK:RPANEL:PRACH:INPUT:PTRigger1	1045
:ULINK:RPANEL:PRACH:INPUT:PTRigger2	1045
:ULINK:RPANEL:PRACH:OUTPUT:DCLock	1045
:ULINK:RPANEL:PRACH:OUTPUT:DOUT	1047
:ULINK:RPANEL:PRACH:OUTPUT:EVENT1	1048

Contents

:ULINK:RPANel:PRACH:OUTPut:EVENT2	1049
:ULINK:RPANel:PRACH:OUTPut:EVENT3	1049
:ULINK:RPANel:PRACH:OUTPut:EVENT4	1050
:ULINK:RPANel:PRACH:OUTPut:SSYNc	1051
:ULINK:SCRamblecode	1051
:ULINK:SDElay	1052
:ULINK:SFNRst:POLarity	1052
:ULINK:SYNC:MODE	1053
:ULINK:SYNC[:SOURce]	1053
:ULINK:TGAP:POFFset	1054
:ULINK:TGAP:PSI[1] 2 3 4 5 6:CFN	1054
:ULINK:TGAP:PSI[1]:CMMethod	1055
:ULINK:TGAP:PSI[1] 2 3 4 5 6:D	1055
:ULINK:TGAP:PSI[1] 2 3 4 5 6:L1	1056
:ULINK:TGAP:PSI[1] 2 3 4 5 6:L2	1056
:ULINK:TGAP:PSI[1] 2 3 4 5 6:PL1	1056
:ULINK:TGAP:PSI[1] 2 3 4 5 6:PL2	1057
:ULINK:TGAP:PSI[1] 2 3 4 5 6:POWer	1057
:ULINK:TGAP:PSI[1] 2 3 4 5 6:PRC	1057
:ULINK:TGAP:PSI[1] 2 3 4 5 6:PS	1058
:ULINK:TGAP:PSI[1] 2 3 4 5 6:SN	1058
:ULINK:TGAP:RPARameter	1058
:ULINK:TGAP:SCFN	1059
:ULINK:TGAP[:STATe]	1059
:ULINK:TGAP:STARt:TRIGger	1060
:ULINK:TGAP:STARt:TRIGger:POLarity	1060
:ULINK:TGAP:STOP:TRIGger	1060
:ULINK:TGAP:STOP:TRIGger:POLarity	1060
:ULINK:TOFFset	1061
:ULINK:TSTatus:COMPressed	1061
:ULINK:TSTatus:RACH	1061
:ULINK:TSTatus:RECeive	1062
:ULINK:TSTatus:SYNC	1062
:ULINK:[TGRoup[1]]:DCH[1] 2 3 3 5 6:BLKSize	1062
:ULINK[:TGRoup[1]]:DCH[1] 2 3 4 5 6:BPFRame	1063
:ULINK[:TGRoup[1]]:DCH[1] 2 3 4 5 6:BRATe	1063
:ULINK:[TGRoup[1]]:DCH[1] 2 3 3 5 6:CODE	1063
:ULINK:[TGRoup[1]]:DCH[1] 2 3 3 5 6:CRc	1064

:ULINK[:TGRoup[1]]:DCH[1] 2 3 3 5 6:DATA	1064
:ULINK[:TGRoup[1]]:DCH[1] 2 3 4 5 6:DATA:BER:ACTual	1065
:ULINK[:TGRoup[1]]:DCH[1] 2 3 4 5 6:DATA:BER:ERRor:BIT	1065
:ULINK[:TGRoup[1]]:DCH[1] 2 3 4 5 6:DATA:BER:TOTal:BIT	1065
:ULINK[:TGRoup[1]]:DCH[1] 2 3 4 5 6:DATA:BER[:VALue]	1066
:ULINK[:TGRoup[1]]:DCH[1] 2 3 4 5 6:DATA:BLER:ACTual	1066
:ULINK[:TGRoup[1] 2]:DCH[1] 2 3 4 5 6:DATA:BLER:ERRor:BLOCK	1066
:ULINK[:TGRoup[1] 2]:DCH[1] 2 3 4 5 6:DATA:BLER:TOTal:BLOCK	1067
:ULINK[:TGRoup[1]]:DCH[1] 2 3 4 5 6:DATA:BLER[:VALue]	1067
:ULINK[:TGRoup[1]]:DCH[1] 2 3 4 5 6:DATA:EINsert	1068
:ULINK[:TGRoup[1]]:DCH[1] 2 3 4 5 6:DATA:FIX4	1068
:ULINK[:TGRoup[1]]:DCH[1] 2 3 4 5 6:NBLock	1069
:ULINK[:TGRoup [1]]:DCH[1] 2 3 4 5 6:PPERcentage	1069
:ULINK[:TGRoup[1]]:DCH[1] 2 3 4 5 6:RMATch	1069
:ULINK[:TGRoup[1]]:DCH[1] 2 3 4 5 6:TTI	1070
:ULINK[:TGRoup[1]]:DCH[1] 2 3 4 5 6[:STATe]	1070
:ULINK[:TGRoup[1]]:RACH[1]:BLKSize	1071
:ULINK[:TGRoup [1]]:RACH[1]:BPF rame	1071
:ULINK[:TGRoup [1]]:RACH[1]:BRATe	1071
:ULINK[:TGRoup[1]]:RACH[1]:CODE	1071
:ULINK[:TGRoup[1]]:RACH[1]:CRC	1072
:ULINK[:TGRoup[1]]:RACH[1]:DATA	1072
:ULINK[:TGRoup[1]]:RACH[1]:DATA:BER:ACTual	1072
:ULINK[:TGRoup[1]]:RACH[1]:DATA:BER:ERRor:BIT	1073
:ULINK[:TGRoup[1]]:RACH[1]:DATA:BER:TOTal:BIT	1073
:ULINK[:TGRoup[1]]:RACH[1]:DATA:BER[:VALue]	1074
:ULINK[:TGRoup[1]]:RACH[1]:DATA:BLER:ACTual	1074
:ULINK[:TGRoup[1]]:RACH[1]:DATA:BLER:ERRor:BLOCK	1074
:ULINK[:TGRoup[1]]:RACH[1]:DATA:BLER:TOTal:BLOCK	1075
:ULINK[:TGRoup[1]]:RACH[1]:DATA:BLER[:VALue]	1075
:ULINK[:TGRoup[1]]:RACH[1]:DATA:EINsert	1076
:ULINK[:TGRoup[1]]:RACH[1]:DATA:FIX4	1076
:ULINK[:TGRoup[1]]:RACH[1]:NBLock	1077
:ULINK[:TGRoup [1]]:RACH[1]:PPERcentage	1077
:ULINK[:TGRoup[1]]:RACH[1]:RMATch	1077
:ULINK[:TGRoup[1]]:RACH[1]:TTI	1078
:ULINK[:TGRoup[1]]:RACH[1][:STATe]	1078
[:STATe]	1078

Contents

1 SCPI Basics

This chapter describes how SCPI information is organized and presented in this guide. An overview of the SCPI language is also provided. This Chapter contains the following major sections:

- [“Command Reference Information” on page 2](#)
- [“SCPI Basics” on page 3](#)

Command Reference Information

SCPI Command Listings

The Table of Contents lists the Standard Commands for Programmable Instruments (SCPI) without the parameters. The SCPI subsystem name will generally have the first part of the command in parenthesis that is repeated in all commands within the subsystem. The title(s) beneath the subsystem name is the remaining command syntax. The following example demonstrates this listing:

```
Communication Subsystem (:SYSTem:COMMunicate)
:PMETer:CHANnel
:SERial:ECHO
```

The following examples show the complete commands from the above Table of Contents listing:

```
:SYSTem:COMMunicate:PMETer:CHANnel
:SYSTem:COMMunicate:SERial:ECHO
```

Key and Data Field Cross Reference

The index is set up so applicable key and data field names can be cross-referenced to the appropriate SCPI command. There are two headings in the index where the key and data field names can be found:

- individual softkey, hardkey, or data field name
- subsystem name

Supported Field

Within each command section, the Supported heading describes which signal generator configurations are supported by the SCPI command. When “All Models” is shown next to this heading, all signal generator configurations are supported by the SCPI command. When “All with Option xxx” is shown next to this heading, only the stated option(s) is supported.

SCPI Basics

This section describes the general use of the SCPI language for the ESG. It is not intended to teach you everything about the SCPI language; the SCPI Consortium or IEEE can provide that level of detailed information. For a list of the specific commands available for the signal generator, refer to the table of contents.

For additional information, refer to the following publications:

- IEEE Standard 488.1-1987, IEEE Standard Digital Interface for Programmable Instrumentation. New York, NY, 1998.
- IEEE Standard 488.2-1992, IEEE Standard Codes, Formats, Protocols and Command Commands for Use with ANSI/IEEE Standard 488.1-1987. New York, NY, 1998.

Common Terms

The following terms are used throughout the remainder of this section:

Command	A command is an instruction in SCPI consisting of mnemonics (keywords), parameters (arguments), and punctuation. You combine commands to form messages that control instruments.
Controller	A controller is any device used to control the signal generator, for example a computer or another instrument.
Event Command	Some commands are events and cannot be queried. An event has no corresponding setting; it initiates an action at a particular time.
Program Message	A program message is a combination of one or more properly formatted commands. Program messages are sent by the controller to the signal generator.
Query	A query is a special type of command used to instruct the signal generator to make response data available to the controller. A query ends with a question mark. Generally you can query any command value that you set.
Response Message	A response message is a collection of data in specific SCPI formats sent from the signal generator to the controller. Response messages tell the controller about the internal state of the signal generator.

Command Syntax

A typical command is made up of keywords prefixed with colons (:). The keywords are followed by parameters. The following is an example syntax statement:

```
[ :SOURce ] :POWer [ :LEVel ] MAXimum | MINimum
```

In the example above, the [:LEVel] portion of the command immediately follows the :POWer portion with no separating space. The portion following the [:LEVel], MINimum | MAXimum, are the parameters (argument for the command statement). There is a separating space (white space) between the command and its parameter.

Additional conventions in syntax statements are shown in [Table 1-1](#) and [Table 1-2](#).

Table 1-1 Special Characters in Command Syntax

Characters	Meaning	Example
	A vertical stroke between keywords or parameters indicates alternative choices. For parameters, the effect of the command varies depending on the choice.	[:SOURce] :AM: MOD DEEP NORMAl DEEP or NORMAl are the choices.
[]	Square brackets indicate that the enclosed keywords or parameters are optional when composing the command. These implied keywords or parameters will be executed even if they are omitted.	[:SOURce] :FREQuency [:CW] ? SOURce and CW are optional items.
< >	Angle brackets around a word (or words) indicate they are not to be used literally in the command. They represent the needed item.	[:SOURce] :FREQuency : START <val><unit> In this command, the words <val> and <unit> should be replaced by the actual frequency and unit. :FREQuency : START 2.5GHZ
{ }	Braces indicate that parameters can optionally be used in the command once, several times, or not at all.	[:SOURce] :LIST : POWER <val> { , <val> } a single power listing: LIST : POWER 5 a series of power listings: LIST : POWER 5 , 10 , 15 , 20

Table 1-2 Command Syntax

Characters, Keywords, and Syntax	Example
Upper-case lettering indicates the minimum set of characters required to execute the command.	[:SOURce] :FREQuency [:CW] ? , FREQ is the minimum requirement.
Lower-case lettering indicates the portion of the command that is optional; it can either be included with the upper-case portion of the command or omitted. This is the flexible format principle called forgiving listening. Refer to “Command Parameters and Responses” on page 7 for more information.	:FREQuency Either :FREQ, :FREQuency, or :FREQUENCY is correct.
When a colon is placed between two command mnemonics, it moves the current path down one level in the command tree. Refer to “Command Tree” on page 6 more information on command paths.	:TRIGger :OUTPut :POLarity? TRIGger is the root level keyword for this command.
If a command requires more than one parameter, you must separate adjacent parameters using a comma. Parameters are not part of the command path, so commas do not affect the path level.	[:SOURce] :LIST: DWELl <val> { , <val> }
A semicolon separates two commands in the same program message without changing the current path.	:FREQ 2.5GHZ ; :POW 10DBM
White space characters, such as <tab> and <space>, are generally ignored as long as they do not occur within or between keywords. However, you must use white space to separate the command from the parameter, but this does not affect the current path.	:FREQ uency or :POWER :LEVel are not allowed. A <space> between :LEVel and 6.2 is mandatory . :POWER :LEVel 6.2

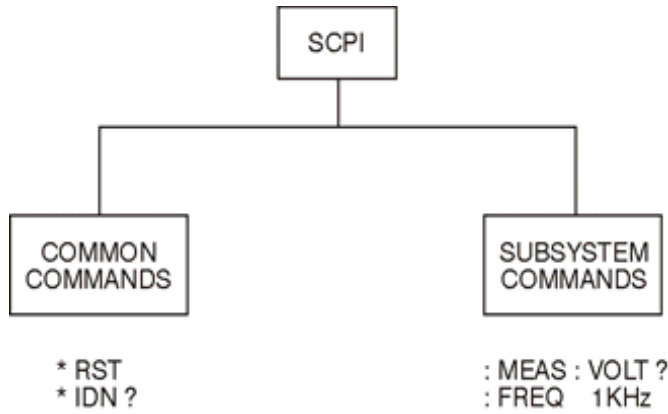
Command Types

Commands can be separated into two groups: common commands and subsystem commands. [Figure 1-1](#), shows the separation of the two command groups.

Common commands are used to manage macros, status registers, synchronization, and data storage and are defined by IEEE 488.2. They are easy to recognize because they all begin with an asterisk. For example *IDN?, *OPC, and *RST are common commands. Common commands are not part of any subsystem and the signal generator interprets them in the same way, regardless of the current path setting.

Subsystem commands are distinguished by the colon (:). The colon is used at the beginning of a command statement and between keywords, as in :FREQUency[:CW?]. Each command subsystem is a set of commands that roughly correspond to a functional block inside the signal generator. For example, the power subsystem (:POWer) contains commands for power generation, while the status subsystem (:STATus) contains commands for controlling status registers.

Figure 1-1 Command Types

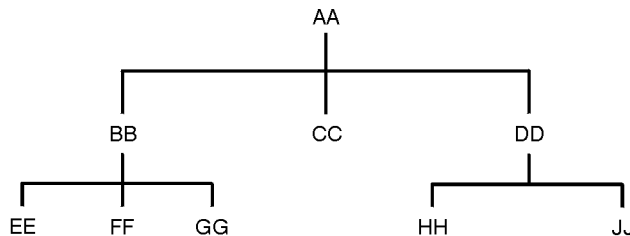


ck709a

Command Tree

Most programming tasks involve subsystem commands. SCPI uses a structure for subsystem commands similar to the file systems on most computers. In SCPI, this command structure is called a command tree and is shown in Figure 1-2.

Figure 1-2 Simplified Command Tree



ck710a

The command closest to the top is the root command, or simply “the root.” Notice that you must follow a particular path to reach lower level commands. In the following example, :POWer represents AA, :ALC

represents BB, :SOURCE represents GG. The complete command path is :POWER:ALC:SOURCE? (:AA:BB:GG).

Paths Through the Command Tree

To access commands from different paths in the command tree, you must understand how the signal generator interprets commands. The parser, a part of the signal generator firmware, decodes each message sent to the signal generator. The parser breaks up the message into component commands using a set of rules to determine the command tree path used. The parser keeps track of the current path (the level in the command tree) and where it expects to find the next command statement. This is important because the same keyword may appear in different paths. The particular path is determined by the keyword(s) in the command statement.

A message terminator, such as a <new line> character, sets the current path to the root. Many programming languages have output statements that automatically send message terminators.

NOTE The current path is set to the root after the line-power is cycled or when *RST is sent.

Command Parameters and Responses

SCPI defines different data formats for use in program and response messages. It does this to accommodate the principle of forgiving listening and precise talking. For more information on program data types refer to IEEE 488.2.

Forgiving listening means the command and parameter formats are flexible.

For example, with the :FREQUENCY:REFERENCE:STATE ON|OFF|1|0 command, the signal generator accepts :FREQUENCY:REFERENCE:STATE ON, :FREQUENCY:REFERENCE:STATE 1, :FREQ:REF:STAT ON, :FREQ:REF:STAT 1 to turn on the frequency reference mode.

Each parameter type has one or more corresponding response data types. A setting that you program using a numeric parameter returns either real or integer response data when queried. Response data (data returned to the controller) is more concise and restricted, and is called precise talking.

Precise talking means that the response format for a particular query is always the same.

For example, if you query the power state (:POWER:ALC:STATE?) when it is on, the response is always 1, regardless of whether you previously sent :POWER:ALC:STATE 1 or :POWER:ALC:STATE ON. [Table 1-3](#) shows the response for a given parameter type.

Table 1-3 Parameter and Response Types

Parameter Types	Response Data Types
Numeric	Real, Integer
Extended Numeric	Real, Integer
Discrete	Discrete
Boolean	Numeric Boolean
String	String

Numeric Parameters

Numeric parameters are used in both common and subsystem commands. They accept all commonly used decimal representations of numbers including optional signs, decimal points, and scientific notation.

If a signal generator setting is programmed with a numeric parameter which can only assume a finite value, it automatically rounds any entered parameter which is greater or less than the finite value. For example, if a signal generator has a programmable output impedance of 50 or 75 ohms, and you specified 76.1 for the output impedance, the value is rounded to 75. The following are examples of numeric parameters:

- 100 no decimal point required
- 100. fractional digits optional
- 1.23 leading signs allowed
- 4.56E<space>3 space allowed after the E in exponential
- 7.89E-001 use either E or e in exponential
- +256 leading + allowed
- .5 digits left of decimal point optional

Extended Numeric Parameters

Most subsystems use extended numeric parameters to specify physical quantities. Extended numeric parameters accept all numeric parameter values and other special values as well.

The following are examples of extended numeric parameters:

100	any simple numeric value
1.2GHZ	GHZ can be used for exponential (E009)
200MHZ	MHZ can be used for exponential (E006)
-100mV	negative 100 millivolts
10DEG	10 degrees

Extended numeric parameters also include the following special parameters:

DEFAult	resets the parameter to its default value
UP	increments the parameter
DOWN	decrements the parameter
MINimum	sets the parameter to the smallest possible value
MAXimum	sets the parameter to the largest possible value

Discrete Parameters

Discrete parameters use mnemonics to represent each valid setting. They have a long and a short form, just like command mnemonics. You can mix upper and lower case letters for discrete parameters.

The following examples of discrete parameters are used with the command
:TRIGger[:SEQUence]:SOURce BUS|IMMediate|EXTernal.

BUS	GPIB, LAN, or RS-232 triggering
IMMediate	immediate trigger (free run)
EXTernal	external triggering

Although discrete parameters look like command keywords, do not confuse the two. In particular, be sure to use colons and spaces properly. Use a colon to separate command mnemonics from each other and a space to separate parameters from command mnemonics.

The following are examples of discrete parameters in commands:

```
TRIGger:SOURce BUS
TRIGger:SOURce IMMediate
TRIGger:SOURce EXTernal
```

Boolean Parameters

Boolean parameters represent a single binary condition that is either true or false. The two-state boolean parameter has four arguments. The following list shows the arguments for the two-state boolean parameter:

ON	boolean true, upper/lower case allowed
OFF	boolean false, upper/lower case allowed
1	boolean true
0	boolean false

String Parameters

String parameters allow ASCII strings to be sent as parameters. Single or double quotes are used as delimiters.

The following are examples of string parameters:

```
'This is valid'  
"This is also valid"  
'SO IS THIS'
```

Real Response Data

Real response data represent decimal numbers in either fixed decimal or scientific notation. Most high-level programming languages that support signal generator input/output (I/O) handle either decimal or scientific notation transparently.

The following are examples of real response data:

```
+4.000000E+010, -9.990000E+002  
-9.990000E+002  
+4.000000000000000E+010  
+1  
0
```

Integer Response Data

Integer response data are decimal representations of integer values including optional signs. Most status register related queries return integer response data.

The following are examples of integer response data:

0	signs are optional
+100	leading + allowed
-100	leading – allowed
256	never any decimal point

Discrete Response Data

Discrete response data are similar to discrete parameters. The main difference is that discrete response data only returns the short form of a particular mnemonic, in all upper case letters.

The following are examples of discrete response data:

```

IMM
EXT
INT
NEG
  
```

Numeric Boolean Response Data

Boolean response data returns a binary numeric value of one or zero.

String Response Data

String response data are similar to string parameters. The main difference is that string response data returns double quotes, rather than single quotes. Embedded double quotes may be present in string response data. Embedded quotes appear as two adjacent double quotes with no characters between them.

The following are examples of string response data:

```

"This is a string"
"one double quote inside brackets: [""]"
>Hello!"
  
```

Program Messages

The following commands will be used to demonstrate the creation of program messages:

```
[ :SOURce ] :FREQuency :START          [ :SOURce ] :FREQuency :STOP  
[ :SOURce ] :FREQuency [ :CW ]         [ :SOURce ] :POWer [ :LEVel ] :OFFSet
```

Example 1

```
:FREQuency :START 500MHZ ; STOP 1000MHZ
```

This program message is correct and will not cause errors; `START` and `STOP` are at the same path level. It is equivalent to sending the following message:

```
FREQuency :START 500MHZ ; FREQuency :STOP 1000MHZ
```

Example 2

```
:POWer 10DBM ; :OFFSet 5DB
```

This program message will result in an error. The message makes use of the default `POWER [:LEVel]` node (root command). When using a default node, there is no change to the current path position. Since there is no command `OFFSet` at the root level, an error results.

The following example shows the correct syntax for this program message:

```
:POWer 10DBM ; :POWer :OFFSet 5DB
```

Example 3

```
:POWer :OFFSet 5DB ; POWer 10DBM
```

This program message results in a command error. The path is dropped one level at each colon. The first half of the message drops the command path to the lower level command `OFFSet`; `POWer` does not exist at this level.

The `POWER 10DBM` command is missing the leading colon and when sent, it causes confusion because the signal generator cannot find `POWER` at the `POWER :OFFSet` level. By adding the leading colon, the current path is reset to the root. The following shows the correct program message:

```
:POWer :OFFSet 5DB ; :POWer 10DBM
```

Example 4

```
FREQ 500MHZ ; POW 4DBM
```

In this example, the keyword short form is used. The program message is correct because it utilizes the default nodes of `:FREQ [:CW]` and `:POW [:LEVel]`. Since default nodes do not affect the current path, it is not necessary to use a leading colon before `FREQ` or `POW`.

File Name Variables

File name variables designate a data file and file path. File name variables are used in the SCPI command syntax whenever files are accessed. The name of the file is always required, but the file path can sometimes be optional or be designated using different formats. The following table shows these different file path formats:

Format	File Name Variable	Example
Format 1	"<file name>"	"Test_Data"
Format 2	"<file name@msus>"	"Test_Data@SEQ"
Format 3	"<msus:file name>"	"SEQ:Test_Data"
Format 4	"</user/directory/file name>"	"/USER/SEQ/Test_Data"

Formats 2–4 offer programming flexibility and are equivalent. Format 1 can only be used with SCPI commands that imply the path name as part of the command syntax. Typically, SCPI load commands that access user-data files do not need to have a file path designated.

See [Table 1-4 on page 14](#) for information on file types and directories.

NOTE The maximum length for a file name is 23 characters, excluding the file path.

Example Using Format 1

```
:CORR:FLAT:LOAD "FLAT_DATA"
```

The preceding example loads user-flatness data from a file called `FLAT_DATA` located in the `USERFLAT` directory. No file path is needed as the command syntax implies the directory where the file is located.

Example Using Format 2

```
:MEM:COPY "IQ_DATA@NVWFM", "Test_DATA@WFM1"
```

The preceding example copies a file named `IQ_DATA` located in the `WAVEFORM` directory to a file named `Test_DATA` in volatile waveform memory (WFM1).

Example Using Format 3

```
:MEM:COPY "NVWFM:IQ_DATA", "WFM1:Test_DATA"
```

The preceding example copies a file named `IQ_DATA` located in the `WAVEFORM` directory to a file named `Test_DATA` in volatile waveform memory (WFM1).

Example Using Format 4

```
:MEM:COPY "/USER/WAVEFORM/IQ_DATA", "/USER/BBG1/WAVEFORM/IQ_DATA"
```

The preceding example copies a file named IQ_DATA located in the WAVEFORM directory to a file named IQ_DATA in volatile waveform memory (WFM1).

The following examples show commands, with different formats, that can be used to download a waveform file named Test_Data into the signal generator’s volatile waveform memory (WFM1):

Command Syntax Format 3

```
:MEMory:DATA "WFM1:Test_Data", #ABC
```

Command Syntax Format 4

```
:MEMory:DATA "/USER/BBG1/WAVEFORM/Test_Data", #ABC
```

These commands are equivalent. The data block, #ABC, is described as follows:

- # This character indicates the beginning of the data block
- A Number of digits in the byte count B
- B Byte count in C
- C Waveform data

Refer to “:DATA” on page 103 and the *E4428C/38C ESG Signal Generators Programming Guide* for more information on data blocks and downloading waveform data.

File Types and Directory Structure

The signal generator uses a computer directory model structure for file storage. The top level directory is called the USER directory. All other directories are subdirectories located under the USER directory. Each subdirectory is dedicated to the type of data stored. For example, the FIR directory is used to store finite impulse filter (FIR) coefficient data whereas the MARKERS directory is used to store marker data.

The following table lists signal generator the subdirectories and file paths where file types are stored.

Table 1-4 File Types and Directory Structures

File System	File Type	File Path	MSUS Path
BINARY ^a	BIN	/USER/BIN	BINARY. ^b
BIT ^a	BIT	/USER/BIT	BIT:

Table 1-4 File Types and Directory Structures

File System	File Type	File Path	MSUS Path
CDMA ^{ab}	CDMA	/USER/CDMA	CDMA:
DMOD - ARB digital modulation file ^a	DMOD	/USER/DMOD	DMOD:
DWCDMA - ARB downlink W-CDMA file ^a	DWCD	/USER/DWCDMA	DWCDMA:
FCDMA - ARB forward link cdma2000 file ^a	FCDM	/USER/FCDMA	FCDMA:
FIR - finite impulse response filter file	FIR	/USER/FIR	FIR:
FSK - frequency shift keying modulation file ^a	FSK	/USER/FSK	FSK:
HDR1 - volatile arbitrary waveform header file ^a	HDR1	/USER/BBG1/HEADER	HDR1:
I/Q - modulation file ^a	IQ	/USER/IQ	IQ:
LIST - sweep list file	LIST	/USER/LIST	LIST:
MCDMA - ARB multicarrier CDMA file ^a	MCMD	/USER/MCDMA	MCDMA:
MDMOD - ARB multicarrier digital modulation file ^a	MDM	/USER/MDMOD	MDMOD:
MDWCDMA - ARB multicarrier downlink W-CDMA file ^a	MDWC	/USER/MDWCDMA	MDWCDMA:
MFCDMA - ARB multicarrier forward link cdma2000 file ^a	MFCD	/USER/MFCDMA	MFCDMA:
MKR1 - volatile arbitrary waveform marker file ^a	MKR1	/USER/BBG1/MARKERS	MKR1:
MTONE - ARB multitone file ^a	MTON	/USER/MTONE	MTONE:
NVHDR - non-volatile arbitrary waveform header file ^a	NVHDR	/USER/HEADER	NVHDR:
NVMKR - non-volatile arbitrary waveform marker file ^a	NVMKR	/USER/MARKERS	NVMKR:

Table 1-4 File Types and Directory Structures

File System	File Type	File Path	MSUS Path
NVWFM - non-volatile arbitrary waveform file ^a	NVWFM	/USER/WAVEFORM	NVWFM:
RCDMA - ARB reverse link cdma2000 file ^a	RCDM	/USER/RCDM	RCDM:
SEQ - ARB sequence file ^a	SEQ	/USER/SEQ	SEQ:
SHAPE - burst shape file ^a	SHAP	/USER/SHAPE	SHAPE:
STATE	STAT	/USER/STATE	STATE:
USERFLAT - user-flatness file	UFLT	/USER/USERFLAT	USERFLAT:
UWCDMA - ARB uplink W-CDMA file ^a	UWCD	/USER/UWCDMA	UWCDMA:
WFM1 - waveform file ^a	WFM1	/USER/BBG1/WAVEFORM	WFM1:

- a. This feature does not apply to the E4428C.
- b. This msus designator is optional.

MSUS (Mass Storage Unit Specifier) Variable

The variable "`<msus>`" enables a command to be file type specific when working with user files. Some commands use it as the only command parameter, while others can use it in conjunction with a file name when a command is not file type specific. When used with a file name, it is similar to Format 2 in the [“File Name Variables”](#) section on [page 13](#). The difference is the file type specifier (`msus`) occupies its own variable and is not part of the file name syntax.

The following examples illustrate the usage of the variable "`<msus>`" when it is the only command parameter:

Command Syntax with the msus variable

```
:MMEMory:CATalog? "<msus>"
```

Command Syntax with the file system

```
:MMEMory:CATalog? "LIST:"
```

The variable "`<msus>`" is replaced with "`LIST:`". When the command is executed, the output displays only the files from the List file system.

The following examples illustrate the usage of the variable "<file name>" with the variable "<msus>":

Command Syntax with the file name and msus variables

```
:MMEMory:DELEte[:NAME] "<file name>" , [ "<msus>" ]
```

Command Syntax with the file name and file system

```
:MMEMory:DELEte:NAME "LIST_1" , "LIST:"
```

The command from the above example cannot discern which file system LIST_1 belongs to without a file system specifier and will not work without it. When the command is properly executed, LIST_1 is deleted from the List file system.

The following example shows the same command, but using Format 2 from the [“File Name Variables”](#) section on [page 13](#):

```
:MMEMory:DELEte:NAME "LIST_1@LIST"
```

When a file name is a parameter for a command that is not file system specific, either format ("<file name>","<msus>" or "<file name@msus>") will work.

Refer to [Table 1-4 on page 14](#) for a listing of the file systems and types.

Quote Usage with SCPI Commands

As a general rule, programming languages require that SCPI commands be enclosed in double quotes as shown in the following example:

```
" :FM:EXTernal:IMPedance 600 "
```

However when a string is the parameter for a SCPI command, additional quotes or other delimiters may be required to identify the string. Your programming language may use two sets of double quotes, one set of single quotes, or back slashes with quotes to signify the string parameter. The following examples illustrate these different formats:

```
"MEMory:LOAD:LIST "myfile" " " used in BASIC programming languages
```

```
"MEMory:LOAD:LIST \"myfile\" \" \" used in C, C++, Java, and PERL
```

```
"MEMory:LOAD:LIST 'myfile' " accepted by most programming languages
```

Consult your programming language reference manual to determine the correct format.

Binary, Decimal, Hexadecimal, and Octal Formats

Command values may be entered using a binary, decimal, hexadecimal, or octal format. When the binary, hexadecimal, or octal format is used, their values must be preceded with the proper identifier. The decimal format (default format) requires no identifier and the signal generator assumes this format when a numeric value is entered without one. The following list shows the identifiers for the formats that require them:

- #B identifies the number as a binary numeric value (base-2).
- #H identifies the number as a hexadecimal alphanumeric value (base-16).
- #Q identifies the number as a octal alphanumeric value (base-8).

The following are examples of SCPI command values and identifiers for the decimal value 45:

#B101101	binary equivalent
#H2D	hexadecimal equivalent
#Q55	octal equivalent

The following example sets the RF output power to 10 dBm (or the equivalent value for the currently selected power unit, such as DEUV or DEUVEMF) using the hexadecimal value 000A:

```
:POW #H000A
```

A unit of measure, such as DBM or mV, will not work with the values when using a format other than decimal.

The following example sets the bluetooth board address to FFBF7 (hexadecimal):

```
:RADio:BLUEtooth:ARB:BDADdr #HFFBF7
```

2 Basic Function Commands

This chapter provides SCPI descriptions for subsystems dedicated to signal generator operations common to most ESG Signal Generators. This chapter contains the following major sections:

- “Correction Subsystem ([:SOURce]:CORRection)” on page 20
- “Digital Modulation Subsystem—E4438C ([:SOURce])” on page 22
- “Frequency Subsystem ([:SOURce])” on page 37
- “List/Sweep Subsystem ([:SOURce])” on page 48
- “Power Subsystem ([:SOURce]:POWer)” on page 57

Correction Subsystem ([:SOURce]:CORRection)

:FLATness:LOAD

Supported All Models

```
[ :SOURce ] :CORRection :FLATness :LOAD "<file name>"
```

This command loads a user-flatness correction file. The "<file name>" variable is the name of the file located in the Catalog of USERFLAT Files. The directory path is implied in the command and need not be specified in the variable name. For more information on file name syntax, refer to [“File Name Variables” on page 13](#).

Key Entry Load From Selected File

:FLATness:PAIR

Supported All Models

```
[ :SOURce ] :CORRection :FLATness :PAIR <freq.>[<freq suffix>],  
<corr.>[<corr suffix>]
```

This command sets a frequency and amplitude correction pair.

<corr.> This variable is the power correction.

Range	Frequency	Standard	Option UNB
	Option 501: 100kHz–1GHZ	–136 to 20DB	–136 to 25DB
	Option 502: 100kHz–2GHZ	–136 to 20DB	–136 to 25DB
	Option 503: 100kHz–3GHZ	–136 to 20DB	–136 to 25DB
	Option 504: 100kHz–4GHZ	–136 to 20DB	–136 to 25DB
	Option 506: 100kHz–6GHZ	–136 to 25DB	N/A

Key Entry Configure Cal Array

Remarks The maximum number of points that can be entered is 1601. Options 501, 502, and 504 are specific to the E4438C.

:FLATness:POINts

Supported All Models

```
[ :SOURce ] :CORRection :FLATness :POINts?
```

This query returns the number of points in the user-flatness correction file.

:FLATness:PRESet

Supported All Models

CAUTION The current correction data will be overwritten once this command is executed. Save the current data if needed. Refer to “:FLATness:STORE” on page 21 for storing user-flatness files.

[:SOURCE] :CORREction :FLATness :PRESet

This command presets the user-flatness correction to a factory-defined setting that consists of one point.

Key Entry Preset List

:FLATness:STORE

Supported All Models

[:SOURCE] :CORREction :FLATness :STORE "<file name>"

This command stores the current user-flatness correction data to a file named by the :CORREction:FLATness:STORE. The directory path is implied in the command and need not be specified in the "<file name>" variable.

Key Entry Store To File

Remarks For information on file name syntax, refer to “File Name Variables” on page 13.

[:STATE]

Supported All Models

[:SOURCE] :CORREction [:STATE] ON | OFF | 1 | 0

[:SOURCE] :CORREction [:STATE] ?

This command enables or disables the user-flatness corrections.

***RST** 0

Key Entry Flatness Off On

Digital Modulation Subsystem—E4438C (:SOURce)

:BURSt:SOURce

Supported E4438C

[:SOURce] :BURSt :SOURce EXT[1] | INT[1]

[:SOURce] :BURSt :SOURce?

This command selects either an internally generated or an externally supplied burst source.

***RST** EXT

Key Entry **Burst Envelope Int Ext Off**

Remarks The external burst source is applied to the EXT 1 INPUT connector.
The INT[1] choice will not work unless an internal burst source is active.

:BURSt:STATe

Supported E4438C

[:SOURce] :BURSt :STATe ON | OFF | 1 | 0

[:SOURce] :BURSt :STATe?

This command enables or disables the burst envelope function.

***RST** 0

Key Entry **Burst Envelope Int Ext Off**

:DM:EXTernal:ALC:BANDwidth | BWIDth

Supported All Models

NOTE Refer to the *Programming Compatibility Guide* for information on this command. This command was replaced by the “:ALC:BANDwidth|BWIDth” command shown on [page 57](#) and the “:ALC:BANDwidth” command on [page 58](#).

:DM:EXTernal:HCRest[:STATe]

Supported E4438C

```
[ :SOURce ] :DM:EXTernal:HCRest [ :STATe ] ON | OFF | 1 | 0  
[ :SOURce ] :DM:EXTernal:HCRest [ :STATe ] ?
```

This command changes the operating condition to accommodate I/Q inputs with a high crest factor.

ON(1) This choice turns high crest mode on for externally applied signals with high crest factors. High crest mode allows the signal generator to process these signals with less distortion. For crest factors higher than 4 dB, I/Q drive levels should be reduced by 1 dB for each dB above that level. In high crest mode, the maximum output level is reduced and power level accuracy is degraded.

OFF(0) This choice disables the high crest mode.

***RST** 0

Key Entry **High Crest Mode Off On**

:DM:EXTernal:FILTer

Supported E4438C

```
[ :SOURce ] :DM:EXTernal:FILTer 40e6 | THROugh  
[ :SOURce ] :DM:EXTernal:FILTer ?
```

This command selects the filter or through path for I/Q signals routed to the rear panel I and Q outputs. Selecting a filter using this command will automatically set “:DM:EXTernal:FILTer:AUTO” on [page 23](#) to OFF(0) mode.

40e6 This choice applies a 40 MHz baseband filter.

THROugh This choice bypasses filtering.

***RST** THR

Key Entry **40.000 MHz Through**

:DM:EXTernal:FILTer:AUTO

Supported E4438C

```
[ :SOURce ] :DM:EXTernal:FILTer:AUTO ON | OFF | 1 | 0  
[ :SOURce ] :DM:EXTernal:FILTer:AUTO ?
```

This command enables or disables the automatic selection of the filters for I/Q signals routed to the rear panel outputs.

Digital Modulation Subsystem—E4438C ([:SOURce])

ON(1)	This choice will automatically select a digital modulation filter optimized for the current signal generator settings.
OFF(0)	This choice disables the auto feature which lets you select a digital modulation filter or through path. Refer to “:DM:EXTernal:FILTer” on page 23 for selecting a filter or through path.
*RST	1
Key Entry	I/Q Output Filter Manual Auto

:DM:EXTernal:POLarity

Supported	E4438C
[:SOURce]:DM:EXTernal:POLarity NORMAL INVert	
[:SOURce]:DM:EXTernal:POLarity?	
This command sets the phase polarity for the I/Q signal.	
*RST	NORM
Key Entry	Int Phase Polarity Normal Invert
Remarks	This command is for backward compatibility with the appropriate ESG E44xxB.

:DM:EXTernal:SOURce

Supported	E4438C
[:SOURce]:DM:EXTernal:SOURce EXTernal INTernal BBG1 EXT600 OFF SUM	
[:SOURce]:DM:EXTernal:SOURce?	
This command selects the I/Q signal source that is routed to the rear panel I and Q output connectors.	
EXTernal	This choice routes a portion of the externally applied signals at the 50 ohm I and Q input connectors to the rear panel I and Q output connectors.
INTernal	This choice is for backward compatibility with the appropriate ESG E44xxB and performs the same function as the BBG1 selection.
BBG1	This choice routes a portion of the baseband generator I/Q signals to the rear panel I and Q connectors and requires Option 001/601 or 002/602.
EXT600	This choice routes a portion of the externally applied signals at the 600 ohm I and Q input connectors to the rear panel I and Q output connectors.
OFF	This choice disables the output to the rear panel I and Q output connectors.

SUM	This choice routes a portion of the summed I/Q signals from source one and two, to the rear panel I and Q output connectors. See “:DM:SRATio” on page 35 for setting the summing ratio of the I/Q signals between source one and two.
*RST	EXT
Key Entry	Ext 50 Ohm BBG1 Ext 600 Ohm Off Sum
Remarks	The output is the analog component of the I and Q signals. For selecting the I/Q source, refer to “:DM:SOURce” on page 34.

:DM:IQADjustment:EXTernal:COFFset

Supported	E4438C
	[:SOURce] :DM: IQADjustment :EXTernal :COFFset <val> [:SOURce] :DM: IQADjustment :EXTernal :COFFset?
	This command sets the common mode offset voltage for both the in-phase (I) and quadrature-phase (Q) signals going to the rear panel I and Q output connectors.
	The variable <val> is expressed in units of volts (mV–V).
*RST	+0.00000000E+000
Range	–3 to 3
Key Entry	Common Mode I/Q Offset
Remarks	This command is effective only if the state of the I/Q adjustment function is set to ON. Refer to “:DM:IQADjustment[:STATe]” on page 31.

:DM:IQADjustment:EXTernal:DIOFFset

Supported	E4438C
	[:SOURce] :DM: IQADjustment :EXTernal :DIOFFset <val> [:SOURce] :DM: IQADjustment :EXTernal :DIOFFset?
	This command sets the differential offset voltage for an in-phase (I) signal routed to the I output connectors.
	The variable <val> is expressed in units of volts (mV–V).
*RST	+0.00000000E+000
Range	–3 to 3
Key Entry	Diff. Mode I Offset

Remarks This command is effective only if the state of the I/Q adjustment function is set to ON. Refer to “:DM:IQADjustment[:STATe]” on page 31.

:DM:IQADjustment:EXTernal:DQOFFset

Supported E4438C

[:SOURce] :DM:IQADjustment:EXTernal:DQOFFset <val>

[:SOURce] :DM:IQADjustment:EXTernal:DQOFFset?

This command sets the differential offset voltage for a quadrature-phase (Q) signal routed to the Q output connectors.

***RST** +0.00000000E+000

Range -4 to 4

Key Entry **Diff. Mode Q Offset**

Remarks This command is effective only if the state of the I/Q adjustment function is set to ON. Refer to “:DM:IQADjustment[:STATe]” on page 31.

:DM:IQADjustment:EXTernal:GAIN

Supported E4438C

[:SOURce] :DM:IQADjustment:EXTernal:GAIN <val>

[:SOURce] :DM:IQADjustment:EXTernal:GAIN?

This command sets the I/Q gain ratio for signals routed to the rear panel I and Q output connectors.

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

***RST** +0.00000000E+000

Range -4 to 4

Key Entry **I/Q Out Gain Balance**

Remarks This command is effective only if the state of the I/Q adjustment function is set to ON. Refer to “:DM:IQADjustment[:STATe]” on page 31.

:DM:IQADjustment:EXTernal:IOFFset

Supported E4438C

[:SOURce] :DM:IQADjustment:EXTernal:IOFFset <val>

[:SOURce] :DM:IQADjustment:EXTernal:IOFFset?

This command sets the offset voltage for a signal applied to the 600 ohm I input connector.

The variable <val> is expressed in units of volts (mV–V).

***RST** +0.00000000E+000

Key Entry **Ext In 600 Ohm I Offset**

Range –5 to 5

Remarks This command is effective only if the state of the I/Q adjustment function is set to ON. Refer to “:DM:IQADjustment[:STATe]” on page 31.

:DM:IQADjustment:EXTernal:IQATten

Supported E4438C

[:SOURce] :DM:IQADjustment:EXTernal:IQATten <val>

[:SOURce] :DM:IQADjustment:EXTernal:IQATten?

This command sets the I/Q output attenuation level.

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

***RST** +6.00000000E+000

Range 0–40

Key Entry **I/Q Output Atten**

Remarks The value set by this command is active even if the I/Q adjustment function is off.

:DM:IQADjustment:EXTernal:QOFFset

Supported E4438C

[:SOURce] :DM:IQADjustment:EXTernal:QOFFset <val>

[:SOURce] :DM:IQADjustment:EXTernal:QOFFset?

This command sets the offset voltage for a signal applied to the 600 ohm Q input connector.

The variable <val> is expressed in units of volts (mV–V).

***RST** +0.00000000E+000

Range –5 to 5

Key Entry **Ext In 600 Ohm Q Offset**

Remarks This command is effective only if the state of the I/Q adjustment function is set to ON. Refer to “:DM:IQADjustment[:STATe]” on page 31.

:DM:IQADjustment:GAIN**Supported** E4438C

[:SOURce]:DM:IQADjustment:GAIN <val>

[:SOURce]:DM:IQADjustment:GAIN?

This command sets the gain for the I signal relative to the Q signal.

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

***RST** +0.00000000E+000**Range** -4 to 4**Key Entry** **I/Q Gain Balance Source 1**

Remarks This command is effective only if the state of the I/Q adjustment function is set to ON. Refer to “:DM:IQADjustment[:STATe]” on page 31.

:DM:IQADjustment:IOFFset**Supported** E4438C

[:SOURce]:DM:IQADjustment:IOFFset <val>

[:SOURce]:DM:IQADjustment:IOFFset?

This command adjusts the I channel offset value.

The variable <val> is expressed in units of percent with a minimum resolution of 0.025.

***RST** +0.00000000E+000**Range** -50.000 to 50.000**Key Entry** **I Offset**

Remarks When using this command to minimize the LO feedthrough signal, optimum performance is achieved when the command is sent after all other I/Q path commands are executed, such as those that change the internal phase polarity or adjust the modulator attenuator. If other adjustments are made after minimizing is performed, the LO feedthrough signal may increase.

This command is effective only if the state of the I/Q adjustment function is set to ON. Refer to “:DM:IQADjustment[:STATe]” on page 31.

:DM:IQADjustment:QOFFset

Supported E4438C

```
[ :SOURCE ] :DM:IQADjustment:QOFFset  
[ :SOURCE ] :DM:IQADjustment:QOFFset?
```

This command adjusts the Q channel offset value.

The variable <val> is expressed in units of percent with a minimum resolution of 0.025.

***RST** +0.00000000E+000

Range -50.000 to 50.000

Key Entry **Q Offset**

Remarks When using this command to minimize the LO feedthrough signal, optimum performance is achieved when the command is sent after all other I/Q path commands are executed, such as those that change the internal phase polarity or adjust the modulator attenuator. If other adjustments are made after minimizing is performed, the LO feedthrough signal may increase.

This command is effective only if the state of the I/Q adjustment function is set to ON. Refer to “:DM:IQADjustment[:STATe]” on page 31.

:DM:IQADjustment:QSKew

Supported E4438C

```
[ :SOURCE ] :DM:IQADjustment:QSKew <val>  
[ :SOURCE ] :DM:IQADjustment:QSKew?
```

This command adjusts the phase angle (quadrature skew) between the I and Q vectors by increasing or decreasing the Q phase angle.

The <val> variable is expressed in degrees with a minimum resolution of 0.1.

If the signal generator is operating at frequencies greater than 3.3 GHz, quadrature skew settings greater than ± 5 degrees will not be within specifications.

Positive skew increases the angle from 90 degrees while negative skew decreases the angle from 90 degrees. When the quadrature skew is zero, the phase angle between the I and Q vectors is 90 degrees.

This command is effective only if the state of the I/Q adjustment function is set to ON. Refer to “:DM:IQADjustment[:STATe]” on page 31.

Example

```
:DM:IQAD:QSK 4.5
```

The preceding example increases the phase angle by 4.5 degrees.

```
*RST +0.00000000E+000
```

Range -1E1 to +1E1

Key Entry **Quadrature Angle Adjustment**

:DM:IQADjustment:SKEW

Supported E4438C

```
[ :SOURce ] :DM:IQADjustment:SKEW[ :DELay ] <val>
```

```
[ :SOURce ] :DM:IQADjustment:SKEW?
```

This command changes the input skew which is a time delay difference between the I and Q signals. Equal and opposite skew is applied to both I and Q and affects the RF Output and I/Q output paths simultaneously. A positive value delays the I signal relative to the Q signal, and a negative value delays the Q signal relative to the I signal.

If the internal I/Q correction path is set to RF or BB the I/Q signals are already optimized and adjusting I/Q skew would add an impairment to the signals. If the internal I/Q correction path is set to Off, then adjusting the I/Q skew could improve the I/Q signals. The I/Q skew adjustment cannot be performed on the MSK, FSK, and C4FM constant envelope modulations.

I/Q skew adjustments are preserved when the instrument state is saved. I/Q skew adjustments are also preserved when instrument settings are changed. If the signal generator is calibrated, the skew adjustments are added to the calibration value used for the given signal generator state. If the signal generator is uncalibrated, the skew adjustments are re-applied directly.

Using I/Q skew while playing a user FIR file greater than 32 symbols will generate an error.

The variable <val> is expressed in seconds. Range limits are determined by the modulation configuration but is limited to a maximum of ± 2 seconds.

Example

```
:DM:IQAD:SKEW .5
```

The preceding example sets the time delay difference between the I and Q signals to 500 milliseconds.

```
*RST +0.00000000E+000
```

Key Entry **I/Q Timing Skew**

:DM:IQADjustment:SKEW:Path

Supported E4438C

```
[ :SOURce ] :DM:IQADjustment :SKEW:PATH RF BB
[ :SOURce ] :DM:IQADjustment :SKEW?
```

This command selects either the RF or BB (baseband) path as the path to which skew timing corrections will be applied. If there are no factory I/Q timing skew corrections data, then adjusting the I/Q timing skew for the selected path may improve the error vector magnitude (EVM) of the signal. Refer to the “[:DM:IQADjustment:SKEW](#)” on page 30 for more information.

If internal I/Q corrections are available for the RF or external I/Q output (BB) path then the I/Q signals are already optimized and adjusting I/Q skew for either path would add an impairment to the signal.

Example

```
:DM:IQAD:SKEW:PATH RF
```

The preceding example selects the RF path as the path to which skew timing adjustments will be made.

```
*RST                    +0.00000000E+000
```

Key Entry **I/Q Timing Skew Path**

:DM:IQADjustment[:STATe]

Supported E4438C

```
[ :SOURce ] :DM:IQADjustment [ :STATe ] ON | OFF | 1 | 0
[ :SOURce ] :DM:IQADjustment [ :STATe ] ?
```

This command enables or disables the I/Q adjustments.

Example

```
:DM:IQAD 1
```

The preceding example enables I/Q adjustments.

```
*RST                    0
```

Key Entry **I/Q Adjustments Off On**

:DM:MODulation:FILTer

Supported E4438C

```
[ :SOURce ] :DM:MODulation:FILTer 2.1e6 | 40e6 | THROUGH
[ :SOURce ] :DM:MODulation:FILTer?
```

Digital Modulation Subsystem—E4438C ([:SOURce])

This command enables you to select a filter or through path for I/Q signals modulated onto the RF carrier. Selecting a filter with this command automatically sets “:DM:MODulation:FILTer:AUTO” to OFF(0).

2.1E6 This choice applies a 2.1 MHz baseband filter to the I/Q signals.

40E6 This choice applies a 40 MHz baseband filter to the I/Q signals.

THRough This choice bypasses filtering.

*RST THR

Key Entry 2.100 MHz 40.000 MHz Through

:DM:MODulation:FILTer:AUTO

Supported E4438C

[:SOURce] :DM:MODulation:FILTer:AUTO ON|OFF|1|0

[:SOURce] :DM:MODulation:FILTer:AUTO?

This command enables or disables the automatic selection of the filters for I/Q signals modulated onto the RF carrier.

ON(1) This choice will automatically select a digital modulation filter.

OFF(0) This choice disables the auto feature which lets you select a digital modulation filter or through path. Refer to “:DM:MODulation:FILTer” on page 31 for selecting a filter or through path.

*RST 1

Key Entry I/Q Mod Filter Manual Auto

:DM:MODulation:ATTen

Supported E4438C

[:SOURce] :DM:MODulation:ATTen <val>

[:SOURce] :DM:MODulation:ATTen?

This command attenuates the I/Q signals being modulated through the signal generator RF path.

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

*RST +2.00000000E+000

Range 0–40

Key Entry Modulator Atten Manual Auto

:DM:MODulation:ATTen:AUTO

Supported E4438C

```
[ :SOURCE ] :DM:MODulation:ATTen:AUTO ON | OFF | 1 | 0  
[ :SOURCE ] :DM:MODulation:ATTen:AUTO?
```

This command enables or disables the I/Q attenuation auto mode.

ON (1) This choice enables the attenuation auto mode which optimizes the modulator attenuation for the current conditions.

OFF (0) This choice holds the attenuator at its current setting or at a selected value. Refer to “[:DM:MODulation:ATTen](#)” on page 32 for setting the attenuation value.

***RST** 1

Key Entry **Modulator Atten Manual Auto**

:DM:POLarity[:ALL]

Supported E4438C

```
[ :SOURCE ] :DM:POLarity[:ALL] NORMal | INVert  
[ :SOURCE ] :DM:POLarity?
```

This command sets the digital modulation phase polarity.

NORMal This choice selects normal phase polarity for the I and Q signals.

INVert This choice flips the I and Q signals by routing the I signal to the Q input of the I/Q modulator and the Q signal to the I input.

***RST** NORM

Key Entry **Int Phase Polarity Normal Invert**

:DM:SKEW:PATH**Supported** E4438C

[:SOURce]:DM:SKEW:PATH RF|BB

[:SOURce]:DM:SKEW:PATH?

This command selects the skew path.

RF When RF is selected, the skew is optimized for the I/Q signal applied to the RF Output. The BB output will be functional, but the I/Q timing skew applied will be optimized for the RF path. When using this choice, seven symbols of latency are added to the Arb based waveform. While in real-time mode, the maximum number of user symbols for the FIR is limited to 32.

BB When BB is selected, the skew is optimized for the I/Q signal outputs on the rear panel. The RF Output will be functional, but the I/Q timing skew applied will be optimized for the BB path. When using this choice, seven symbols of latency are added to the Arb based waveform. While in real-time mode, the maximum number of user symbols for the FIR is limited to 32.

RST** INT**Key Entry** **Int I/Q Skew Corrections RF BB Off*:DM:SKEW[:STATe]****Supported** E4438C

[:SOURce]:DM:SKEW[:STATe] ON|OFF|1|0

[:SOURce]:DM:SKEW[:STATe]?

This command enables or disables the I/Q timing skew correction function.

RST** 1**Key Entry** **Int I/Q Skew Corrections RF BB Off*:DM:SOURce****Supported** E4438C

[:SOURce]:DM:SOURce[1]|2 EXTERNAL|INTERNAL|BBG1|EXT600|OFF

[:SOURce]:DM:SOURce?

This command selects the I/Q modulator source.

EXTERNAL This choice selects a 50 ohm impedance for the I and Q input connectors and routes the applied signals to the I/Q modulator.

INTernal	This choice is for backward compatibility with the appropriate ESG E44xxB and performs the same function as the BBG1 selection.			
BBG1	This choice selects the baseband generator as the source for the I/Q modulator and requires Option 001/601 or 002/602.			
EXT600	This choice selects a 600 ohm impedance for the I and Q input connectors and routes the applied signals to the I/Q modulator.			
OFF	This choice disables the digital modulation source.			
*RST	EXT			
Key Entry	Ext 50 Ohm	BBG1	Ext 600 Ohm	Off

:DM:SRATio

Supported E4438C

```
[:SOURce]:DM:SRATio <val><unit>
[:SOURce]:DM:SRATio?
```

This command sets the power level difference (ratio) between the source one and source two signals when the two signals are summed together. A positive ratio value reduces the amplitude for source two, while a negative ratio value reduces the amplitude for source one.

The range for the summing ratio is dependent on the modulator attenuator (mod atten) setting for the signal generator that is summing the signals together. The minimum range is achieved when the modulator attenuator setting is zero and the maximum range is reached when the maximum attenuator value is used. The range can be calculated using the following formula:

$$\pm \text{Range} = 50 \text{ dB} + \text{Mod Atten}$$

***RST** +0.00000000E+000

Range *Min:* ± 50 dB *Max:* ± 90 dB

Key Entry **Summing Ratio (SRC1/SRC2) x.xx dB**

Remarks For real-time modulation format modulator attenuator settings, see [“:DM:MODulation:ATTen” on page 32](#) and [“:DM:MODulation:ATTen:AUTO” on page 33](#). For an Arb modulation format modulator attenuator setting, refer to the SCPI command subsystem for the Arb format being used and find the commands that contain the command mnemonics IQ:MODulation:ATTen.

:DM:STATe

Supported E4438C

[:SOURce] :DM:STATe ON | OFF | 1 | 0

[:SOURce] :DM:STATe?

This command enables or disables the I/Q modulator.

ON (1) This choice enables the internal I/Q modulator.

OFF (0) This choice disables the internal I/Q modulator. You can turn off the I/Q modulation with this choice even though a digital modulation format is enabled. With this configuration, the RF output signal will not be modulated, but the I/Q signals may be present at the rear panel I and Q outputs depending on the rear panel output selection.

***RST** 0

Key Entry I/Q Off On

Remarks The I/Q modulator is enabled whenever a digital format is turned on.

The I/Q annunciator will be shown on the signal generator display whenever the I/Q modulator is on.

Frequency Subsystem ([:SOURce])

:FREQuency:CHANnels:BAND

Supported All Models

```
[ :SOURce ] :FREQuency:CHANnels:BAND NBASe | NMOBile | BPGSm | MPGSm | BEGSm | MEGSm |
BRGSm | MRGSm | BDCS | MDCS | BPCS | MPCS | B450 | GM450 | B480 | M480 | B850 | M850 | B8 | M8 | B15
|M15 | B390 | B420 | B460 | B915 | M380 | M410 | M450 | M870 | PHS | DECT
[ :SOURce ] :FREQuency:CHANnels:BAND?
```

This command sets the frequency of the signal generator by specifying a frequency channel band.

NBASe	This choice selects Standard Base as the frequency band for NADC.
NMOBile	This choice selects Standard Mobile as the frequency band for NADC.
BPGSm	This choice selects P-Gsm 900 Base as the frequency band for GSM.
MPGSm	This choice selects P-Gsm 900 Mobile as the frequency band for GSM.
BEGSm	This choice selects E-Gsm 900 Base as the frequency band for GSM.
MEGSm	This choice selects E-Gsm 900 Mobile as the frequency band for GSM.
BRGSm	This choice selects R-Gsm 900 Base as the frequency band for GSM.
MRGSm	This choice selects R-Gsm 900 Mobile as the frequency band for GSM.
BDCS	This choice selects DCS 1800 Base as the frequency band for GSM.
MDCS	This choice selects DCS 1800 Mobile as the frequency band for GSM.
BPCS	This choice selects PCS 1900 Base as the frequency band for GSM.
MPCS	This choice selects PCS 1900 Mobile as the frequency band for GSM.
B450	This choice selects Gsm 450 Base as the frequency band for GSM.
GM450	This choice selects Gsm 450 Mobile as the frequency band for GSM.
B480	This choice selects Gsm 480 Base as the frequency band for GSM.
M480	This choice selects Gsm 480 Mobile as the frequency band for GSM.
B850	This choice selects Gsm 850 Base as the frequency band for GSM.
M850	This choice selects Gsm 850 Mobile as the frequency band for GSM.
B8	This choice selects 800MHz Base as the frequency band for PDC.

Basic Function Commands

Frequency Subsystem ([:SOURce])

M8	This choice selects 800MHz Mobile as the frequency band for PDC.
B15	This choice selects 1500MHz Base as the frequency band for PDC.
M15	This choice selects 1500MHz Mobile as the frequency band for PDC.
B390	This choice selects Base 390-400 as the frequency band for TETRA.
B420	This choice selects Base 420-430 as the frequency band for TETRA.
B460	This choice selects Base 460-470 as the frequency band for TETRA.
B915	This choice selects Base 915-921 as the frequency band for TETRA.
M380	This choice selects Mobile 380-390 as the frequency band for TETRA.
M410	This choice selects Mobile 410-420 as the frequency band for TETRA.
M450	This choice selects Mobile 450-460 as the frequency band for TETRA.
M870	This choice selects Mobile 870-876 as the frequency band for TETRA.
PHS	This choice selects Standard PHS as the frequency band.
DECT	This choice selects Standard DECT as the frequency band.

***RST**

BPGS

Key Entry

P-GSM Base	E-GSM Base	R-GSM Base	DCS Base
PCS Base	GSM 450 Base	GSM 480 Base	GSM 850 Base
NADC Base	800MHZ Base	1500MHZ Base	
Tetra Base 390/400	Tetra Base 420/430	Tetra Base 460/470	
Tetra Base 915/921	PHS Standard	DECT Standard	
P-GSM Mobile	E-GSM Mobile	R-GSM Mobile	DCS Mobile
PCS Mobile	GSM 450 Mobile	GSM 480 Mobile	GSM 850 Mobile
NADC Mobile	800MHZ Mobile	1500MHZ Mobile	
Tetra Mobile 380/390	Tetra Mobile 410/420	Tetra Mobile 450/460	
Tetra Mobile 870/876			

Remarks

The frequency channel state must be enabled for this command to work. Refer to “:FREQuency:CHANnels[:STATe]” on page 40.

:FREQuency:CHANnels:NUMBer

Supported All Models

[:SOURce] :FREQuency:CHANnels:NUMBer <number>

[:SOURce] :FREQuency:CHANnels:NUMBer?

This command sets the frequency of the signal generator by specifying a channel number of a given frequency band.

***RST** +1

Range	P-GSM Base/Mobile:	1–24
	E-GSM and R-GSM Base/Mobile:	1–1023
	DCS Base/Mobile:	512–885
	PCS Base/Mobile:	512–900
	GSM-450 Base/Mobile:	259–293
	GSM-480 Base/Mobile:	306–340
	GSM-850 Base/Mobile:	128–251
	NADC Base/Mobile:	1–1023
	800MHZ Base/Mobile:	0–640
	1500MHZ Base/Mobile:	0–960
	TETRA 380/390 Mobile:	3600–4000
	TETRA 390/4000 Base:	3600–4000
	TETRA 410/420 Mobile:	800–1200
	TETRA 420/430 Base:	800–1200
	TETRA 460/470: 2400 through 2800	2400–2800
	TETRA 870/876 Mobile:	600–640
	TETRA 915/921 Base:	600–940
	PHS Standard:	1–255
	DECT Standard:	0–9

Key Entry **Channel Number**

Remarks The frequency channel state must be enabled for this command to work. Refer to “:FREQuency:CHANnels[:STATe]” on page 40.

:FREQUENCY:CHANNELS[:STATE]

Supported All Models

[:SOURCE] :FREQUENCY:CHANNELS [:STATE] ON | OFF | 1 | 0

[:SOURCE] :FREQUENCY:CHANNELS [:STATE] ?

This command enables or disables the frequency channel and band selection to set the output frequency.

***RST** 0

Key Entry **Freq Channels Off On**

Remarks To set frequency channels band refer to “[:FREQUENCY:CHANNELS:BAND]” on page 37.

:FREQUENCY:FIXED

Supported All Models

[:SOURCE] :FREQUENCY:FIXED <val><unit>

[:SOURCE] :FREQUENCY:FIXED ?

This command sets the signal generator output frequency.

***RST** Option 501: +10000000000000E+09
Option 502: +20000000000000E+09
Option 503: +30000000000000E+09
Option 504: +40000000000000E+09
Option 506: +60000000000000E+09

Range Option 501: 100kHz–1GHZ
Option 502: 100kHz–2GHZ
Option 503: 100kHz–3GHZ
Option 504: 100kHz–4GHZ
Option 506: 100kHz–6GHZ

Remarks A frequency change may affect the current output power. Refer to “[:LEVEL][:IMMEDIATE][:AMPLITUDE]” on page 68 for the correct specified frequency and amplitude settings. To set the frequency mode refer to “:FREQUENCY:MODE” on page 41. Options 501, 502, and 504 are specific to the E4438C.

:FREQuency:MODE

Supported All Models

```
[ :SOURce ] :FREQuency:MODE CW | FIXEd | LIST
[ :SOURce ] :FREQuency:MODE?
```

This command sets the frequency mode of the signal generator to CW or swept.

CW and FIXEd These choices are synonymous with one another and stops a frequency sweep, allowing the ESG to operate at a set frequency. Refer to “:FREQuency[:CW]” on [page 45](#) for setting the frequency in the CW mode and to “:FREQuency:FIXEd” on [page 40](#) for setting the frequency in the FIXEd mode.

LIST This choice selects the swept frequency mode. If sweep triggering is set to immediate along with continuous sweep mode, executing the command starts the LIST or STEP frequency sweep.

NOTE To perform a frequency and amplitude sweep, you must also select LIST as the power mode. See “:MODE” on [page 65](#) for selecting the list mode for an amplitude sweep.

***RST** CW

Key Entry **Frequency Freq Off**

:FREQuency:MULTiplier

Supported All Models

```
[ :SOURce ] :FREQuency:MULTiplier <val>
[ :SOURce ] :FREQuency:MULTiplier?
```

This command sets the multiplier for the signal generator carrier frequency.

***RST** +1.00000000E+000

Range Negative Values: -100 to -.001 Positive Values: .001-1000

Key Entry **Freq Multiplier**

Remarks For any multiplier other than one, the MULT indicator is shown in the frequency area of the display.

:FREQuency:OFFSet

Supported All Models

```
[ :SOURce ]:FREQuency:OFFSet <val><unit>
```

```
[ :SOURce ]:FREQuency:OFFSet?
```

This command sets the frequency offset.

The query of this command returns a value equal to the original output frequency times the multiplier value, plus the frequency offset value.

***RST** +0.00000000000000E+00

Range -200GHZ to 200GHZ

Key Entry **Freq Offset**

Remarks When an offset has been entered, the OFFS indicator is turned on in the frequency area of the display.

The frequency offset state is turned on when any non-zero value is entered; entering zero will turn it off. Refer to “:FREQuency:OFFSet:STATe” for setting the offset state independent of entering offset values.

:FREQuency:OFFSet:STATe

Supported All Models

```
[ :SOURce ]:FREQuency:OFFSet:STATe ON|OFF|1|0
```

```
[ :SOURce ]:FREQuency:OFFSet:STATe?
```

This command enables or disables the offset frequency.

***RST** 0

Key Entry **Freq Offset**

Remarks Entering OFF (0) will set the frequency offset to 0 Hz.

:FREQuency:REFerence

Supported All Models

```
[ :SOURce ]:FREQuency:REFerence <val><unit>
```

```
[ :SOURce ]:FREQuency:REFerence?
```

This command sets the output reference frequency.

***RST** +0.00000000000000E+00

Range	Option 501: 0HZ–1GHZ Option 502: 0HZ–2GHZ Option 503: 0HZ–3GHZ Option 504: 0HZ–4GHZ Option 506: 0HZ–6GHZ
Key Entry	Freq Ref Set
Remarks	Options 501, 502, and 504 are specific to the E4438C.

:FREQuency:REFErence:STATe

Supported	All Models
	[:SOURce] :FREQuency:REFErence:STATe ON OFF 1 0 [:SOURce] :FREQuency:REFErence:STATe?
	This command enables or disables the frequency reference mode.
*RST	0
Key Entry	Freq Ref Off On
Remarks	When the frequency reference mode is on, subsequent frequency parameters are set relative to the reference value.

:FREQuency:START

Supported	All Models
	[:SOURce] :FREQuency:START <val><unit> [:SOURce] :FREQuency:START?
	This command sets the first frequency point in a step sweep.
*RST	Option 501: +10000000000000E+09 Option 502: +20000000000000E+09 Option 503: +30000000000000E+09 Option 504: +40000000000000E+09 Option 506: +60000000000000E+09
Range	Option 501: 100kHz–1GHZ Option 502: 100kHz–2GHZ Option 503: 100kHz–3GHZ Option 504: 100kHz–4GHZ

Basic Function Commands

Frequency Subsystem ([:SOURce])

	Option 506: 100kHz–6GHz
Key Entry	Freq Start
Remarks	Options 501, 502, and 504 are specific to the E4438C.

:FREQuency:STOP

Supported	All Models
	[:SOURce] :FREQuency:STOP <val><unit> [:SOURce] :FREQuency:STOP?
	This command sets the last frequency point in a step sweep.
*RST	Option 501: +10000000000000E+09 Option 502: +20000000000000E+09 Option 503: +30000000000000E+09 Option 504: +40000000000000E+09 Option 506: +60000000000000E+09
Range	Option 501: 100kHz–1GHz Option 502: 100kHz–2GHz Option 503: 100kHz–3GHz Option 504: 100kHz–4GHz Option 506: 100kHz–6GHz
Key Entry	Freq Stop
Remarks	Options 501, 502, and 504 are specific to the E4438C.

:FREQuency:SYNThesis

Supported	E4438C except with Option UNJ
	[:SOURce] :FREQuency:SYNThesis 1 2 [:SOURce] :FREQuency:SYNThesis?
	This command sets the phase-lock loop (PLL) bandwidth to optimize phase noise for offsets above and below 10 kHz.
1	This choice will select mode 1 which optimize phase noise at offsets below 10 kHz.
2	This choice will select mode 2 which optimizes phase noise at offsets above 10 kHz.

*RST	+1	
Key Entry	Mode 1 Optimize <10kHz Offset	Mode 2 Optimize >10kHz Offset
:FREQuency[:CW]		
Supported	All Models	
	[:SOURce]:FREQuency[:CW] <val><unit>	
	[:SOURce]:FREQuency[:CW]?	
	This command sets the signal generator output frequency for the CW frequency mode.	
*RST	Option 501: +10000000000000E+09	
	Option 502: +20000000000000E+09	
	Option 503: +30000000000000E+09	
	Option 504: +40000000000000E+09	
	Option 506: +60000000000000E+09	
Range	Option 501: 100kHz–1GHZ	
	Option 502: 100kHz–2GHZ	
	Option 503: 100kHz–3GHZ	
	Option 504: 100kHz–4GHZ	
	Option 506: 100kHz–6GHZ	
Key Entry	Frequency	
Remarks	To set the frequency mode to CW, refer to “:FREQuency:MODE” on page 41. Options 501, 502, and 504 are specific to the E4438C.	

:FREQuency[:CW][:STEP[:INCRement

Supported	All Models
	[:SOURce]:FREQuency[:CW]:STEP[:INCRement] <val><unit> UP DOWN
	[:SOURce]:FREQuency[:CW]:STEP[:INCRement]?
	This command sets the incremental step value for the frequency parameter, or increments or decrements the current RF frequency by the specified <val> parameter value.
<val>	The increment frequency value.
UP	Increases the current frequency setting by the value set with <val>. The front-panel up arrow key performs the same function.
DOWN	Decreases the current frequency setting by the value set with <val>. The front-panel down arrow key performs the same function.

Basic Function Commands

Frequency Subsystem ([:SOURce])

Range	.01 Hz–99 GHz
Key Entry	Incr Set
Remarks	The value set with this command is not affected by *RST or a power cycle.

:PHASe:REFerence

Supported All Models
[:SOURce]:PHASe:REFerence

This command sets the current output phase as a zero reference.

Key Entry	Phase Ref Set
Remarks	Subsequent phase adjustments are set relative to the new reference.

:PHASe[:ADJust]

Supported All Models
[:SOURce]:PHASe[:ADJust] <val><unit>
[:SOURce]:PHASe[:ADJust]?

This command adjusts the phase of the modulating signal.

The query will only return values in radians.

*RST	+0.00000000E+000	
Range	Radians: –3.14 to 3.14RAD	Degrees: –180 to 179DEG
Key Entry	Adjust Phase	

:ROSCillator:SOURce

Supported All Models
[:SOURce]:ROSCillator:SOURce?

This command queries the source of the reference oscillator. It returns either INT (internal) or EXT (external).

:ROSCillator:SOURce:AUTO

Supported All Models except signal generators with Option UNJ
[:SOURce]:ROSCillator:SOURce:AUTO ON|OFF|1|0
[:SOURce]:ROSCillator:SOURce:AUTO?

This command enables or disables the ability of the signal generator to automatically select between the internal and an external reference oscillator.

ON (1) This choice enables the signal generator to detect when a valid reference signal is present at the 10 MHz IN connector and automatically switches from internal to external frequency reference.

OFF (0) This choice selects the internal reference oscillator and disables the switching capability between the internal and an external frequency reference.

***RST** 1

Key Entry **Ref Oscillator Source Auto Off On**

List/Sweep Subsystem ([:SOURce])

A complete sweep setup requires commands from other subsystems. [Table 2-1](#) shows the function and location of these other commands.

Table 2-1 Location of Commands from the other Subsystems

Sweep Type	Function	Command Location	Key Entry under Sweep/List key
List and Step	Start/stop frequency sweep	“:FREQuency:MODE” on page 41	Freq Off
	Start/stop amplitude sweep	“:MODE” on page 65	Ampl Off
	Start/stop frequency and amplitude sweep ¹	“:MODE” on page 65 “:FREQuency:MODE” on page 41	Freq & Ampl Off
	Set up and control sweep triggering ²	“Trigger Subsystem” on page 164	See the “Trigger Subsystem”
List	Load a list sweep file	“:LOAD:LIST” on page 120 and page 125	Load From Selected File
	Store list sweep data to a file	“:STORE:LIST” on page 121 and page 125	Store To File
Step	Start frequency sweep	“:FREQuency:START” on page 43	Freq Start
	Store list sweep data to a file	“:STORE:LIST” on page 121 and page 125	Store To File
	Start amplitude sweep	“:START” on page 66	Ampl Start
	Stop amplitude sweep	“:STOP” on page 67	Ampl Stop

1. Execute both commands to start or stop a frequency and amplitude sweep.
2. For point to point triggering, see “:LIST:TRIGGer:SOURce” on page 53.

:LIST:DIRection

Supported All Models

[:SOURce] :LIST:DIRection UP | DOWN

[:SOURce] :LIST:DIRection?

This command sets the direction of a list or step sweep.

UP This choice enables a sweep in an ascending order:

- first to last point for a list sweep
- start to stop for a step sweep

DOWN This choice reverses the direction of the sweep.

***RST** UP

Key Entry Sweep Direction Down Up

:LIST:DWELl

Supported All Models

[:SOURce] :LIST:DWELl <val> { , <val> }

[:SOURce] :LIST:DWELl?

This command sets the dwell time for the current list sweep points.

The variable <val> is expressed in units of seconds with a 0.001 resolution.

NOTE The dwell time (<val>) does not begin until the signal generator has settled for the current frequency and/or amplitude change.

Range 0.001–60

Remarks Dwell time is used when IMMEDIATE is the trigger source. Refer to [“:LIST:TRIGger:SOURce” on page 53](#) for the trigger setting.

The dwell time is the amount of time the sweep is guaranteed to pause after setting the frequency and/or power for the current point.

The setting enabled by this command is not affected by signal generator power-on, preset, or *RST.

:LIST:DWELl:POINts

Supported All Models

[:SOURce] :LIST:DWELl :POINts?

This command queries the signal generator for the number of dwell points in the current list sweep file.

:LIST:DWELl:TYPE

Supported All Models

[:SOURce] :LIST:DWELl :TYPE LIST | STEP

[:SOURce] :LIST:DWELl :TYPE?

This command toggles the dwell time for the list sweep points between the values defined in the list sweep and the value for the step sweep.

LIST This choice selects the dwell times from the list sweep. Refer to [“:LIST:DWELl” on page 49](#) for setting the list dwell points.

STEP This choice selects the dwell time from the step sweep. Refer to [“:SWEep:DWELl” on page 55](#) for setting the step dwell.

***RST** LIST

Key Entry Dwell Type List Step

:LIST:FREQuency

Supported All Models

[:SOURce] :LIST:FREQuency <val>{ , <val> }

[:SOURce] :LIST:FREQuency?

This command sets the frequency values for the current list sweep points.

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

Range Option 501: 100E3–1E9

Option 502: 100E3–2E9

Option 503: 100E3–3E9

Option 504: 100E3–4E9

Option 506: 100E3–6E9

Remarks The setting enabled by this command is not affected by signal generator power-on, preset, or *RST. Options 501, 502, and 504 are specific to the E4438C. The maximum number of list sweep points is 1,601.

:LIST:FREQuency:POINts

Supported All Models

[:SOURCE] :LIST:FREQuency:POINts?

This command queries the current list sweep file for the number of frequency points.

:LIST:MANual

Supported All Models

[:SOURCE] :LIST:MANual <val>

[:SOURCE] :LIST:MANual?

This command sets a list or step sweep point as the current sweep point controlling the frequency and power output.

Range List Sweep: 1–1601 Step Sweep: 2-65535

Key Entry **Manual Point**

Remarks If list or step mode is controlling frequency or power, or both, then the indexed point in the respective list(s) will be used.

Entering a value with this command will have no effect, unless MANual is the selected mode. Refer to “[:LIST:MODE](#)” on page 52 for setting the proper mode.

If the point selected is beyond the length of the longest enabled list, then the point will be set to the maximum possible point, and an error will be generated.

:LIST:MODE

Supported All Models

```
[ :SOURce ] :LIST:MODE AUTO | MANua1
```

```
[ :SOURce ] :LIST:MODE?
```

This command sets the operating mode for the current list or step sweep.

AUTO This choice enables the selected sweep type to perform a sweep of all points.

MANua1 This choice enables you to select a single sweep point. The selected point controls the frequency and/or amplitude according to the sweep type. Refer to “:LIST:MANua1” on page 51 for selecting a sweep point.

***RST** AUTO

Key Entry Manual Mode Off On

:LIST:POWer

Supported All Models

```
[ :SOURce ] :LIST:POWer <val> { , <val> }
```

```
[ :SOURce ] :LIST:POWer?
```

This command sets the amplitude for the current list sweep points.

Range Refer to “[:LEVel][:IMMediate][:AMPLitude]” on page 68 for output power ranges.

Remarks The setting enabled by this command is not affected by signal generator power-on, preset, or *RST.

During an amplitude sweep operation, signal generators with Option UNB or Option 506 protect the step attenuator by automatically switching to attenuator hold (OFF) mode. The attenuator is locked at its current setting and the amplitude sweep range is limited to 40 dB.

The maximum number of list sweep points is 1,601.

:LIST:POWer:POINts

Supported All Models

```
[ :SOURce ] :LIST:POWer:POINts?
```

This command queries the number of power points in the current list sweep file.

:LIST:RETRace

Supported All Models

```
[ :SOURce ] :LIST:RETRace ON | OFF | 1 | 0
[ :SOURce ] :LIST:RETRace?
```

This command resets the single sweep to the first sweep point, or leaves it at the last sweep point upon completion of the sweep operation.

On (1) The sweep resets to the first sweep point.

Off (0) The sweep stays at the last sweep point.

***RST** 1

Key Entry **Sweep Retrace Off On**

:LIST:TRIGger:SOURce

Supported All Models

```
[ :SOURce ] :LIST:TRIGger:SOURce BUS | IMMEDIATE | EXTERNAL | KEY
[ :SOURce ] :LIST:TRIGger:SOURce?
```

This command sets the trigger source for a list or step sweep event.

To set the sweep trigger, see [“:TRIGger\[:SEQUENCE\]:SOURce” on page 166](#).

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

IMMEDIATE This choice enables immediate triggering of the sweep event.

EXTERNAL This choice enables the triggering of a sweep event by an externally applied signal at the TRIGGER IN connector.

KEY This choice enables triggering by pressing the front-panel **Trigger** hardkey.

Example

```
:LIST:TRIG:SOUR BUS
```

The preceding example sets the trigger source to the instrument BUS.

***RST** IMM

Key Entry **Bus Free Run Ext Trigger Key**

:LIST:TYPE

Supported All Models

[:SOURce] :LIST:TYPE LIST | STEP

[:SOURce] :LIST:TYPE?

This command toggles between the two types of sweep.

LIST This type of sweep has arbitrary frequencies and amplitudes.

STEP This type of sweep has equally spaced frequencies and amplitudes.

***RST** STEP

Key Entry Sweep Type List Step

:LIST:TYPE:LIST:INITialize:FSTep

Supported All Models

CAUTION The current list sweep data will be overwritten once this command is executed. If needed, save the current data. Refer to “:STORe:LIST” on page 121 for storing list sweep files.

[:SOURce] :LIST:TYPE:LIST:INITialize:FSTep

This command replaces the loaded list sweep data with the settings from the current step sweep data points.

Key Entry Load List From Step Sweep

Remarks You can have only one sweep list at a time.

The maximum number of list sweep points is 1,601. When copying the step sweep settings over to a list sweep, ensure that the number of points in the step sweep do not exceed the maximum list sweep points.

:LIST:TYPE:LIST:INITialize:PRESet

Supported All Models

CAUTION The current list sweep data will be overwritten once this command is executed. If needed, save the current data. Refer to “:STORE:LIST” on page 121 for storing list sweep files.

[:SOURCE] :LIST:TYPE:LIST:INITialize:PRESet

This command replaces the current list sweep data with a factory-defined file consisting of one point at a frequency, amplitude, and dwell time.

Key Entry Preset List

:SWEep:DWELl

Supported All Models

[:SOURCE] :SWEep:DWELl <val>

[:SOURCE] :SWEep:DWELl?

This command enables you to set the dwell time for a step sweep.

The variable <val> is expressed in units of seconds with a 0.001 resolution.

NOTE The dwell time (<val>) does not begin until the signal generator has settled for the current frequency and/or amplitude change.

***RST** +2.00000000E-003

Range 0.001-60

Key Entry Step Dwell

Remarks Dwell time is used when the trigger source is set to IMMEDIATE. Refer to “:LIST:TRIGger:SOURce” on page 53 for the trigger setting.

The dwell time is the amount of time the sweep is guaranteed to pause after setting the frequency and/or power for the current point.

:SWEep:POINts

Supported All Models

[:SOURce] :SWEep:POINts <val>

[:SOURce] :SWEep:POINts?

This command defines the number of step sweep points.

***RST** 2

Range 2–65535

Key Entry # Points

Power Subsystem (:SOURce):POWER

:ALC:BANDwidth | BWIDth

Supported All Models

```
[ :SOURce ] :POWer:ALC:BA NDwidth | BWIDth 100HZ | 1KHZ | 10KHZ
[ :SOURce ] :POWer:ALC:BA NDwidth | BWIDth?
```

This command sets the bandwidth of the automatic leveling control (ALC) loop. This is one of two commands that replace the :DM:EXTernal:ALC:BA NDwidth | BWIDth NORMal | NARRow command. The NARRow parameter in the old command corresponds to the 100HZ selection. The NORMal parameter in the old command corresponds to the ON parameter in the command “:ALC:BA NDwidth” on page 58.

- | | |
|-------|---|
| 100HZ | This choice selects a 100 Hz ALC bandwidth. This bandwidth has the longest settling time, but the least signal degradation and lowest error vector magnitude for digital signals. This is the auto selection for digital modulation. |
| 1KHZ | This choice selects a 1 kHz ALC bandwidth. This bandwidth is the auto selection for pulse modulation and AM modulation to a carrier frequency of 500 kHz. |
| 10KHZ | This choice selects a 10 kHz ALC bandwidth. This bandwidth has the fastest settling time, but the most signal degradation and highest error vector magnitude for digital signals. This is the auto selection for AM modulation above a 500 kHz carrier frequency and with FM/ΦM modulation. |

Example

```
:POW:ALC:BWID 1KHZ
```

The preceding example sets the ALC bandwidth to 1 kHz.

```
*RST                    10000
```

Key Entry **100 Hz 1kHz 10 kHz**

Remarks Use this command when the ALC is set to on. Refer to “:ALC[:STATe]” on page 61 for selecting the ALC on or off state. Refer to the *E4428C/38C ESG Signal Generators User’s Guide* for information on ALC bandwidth.

:ALC:BANDwidth**Supported** All Models

```
[:SOURce]:POWer:ALC:BANDwidth|BWIDth:AUTO ON|OFF|1|0
[:SOURce]:POWer:ALC:BANDwidth|BWIDth:AUTO?
```

This command turns the bandwidth (BW) auto state on or off.

The bandwidth auto function allows the signal generator to automatically select a bandwidth for the automatic leveling control (ALC) circuit. This is one of two commands that replace the `:DM:EXTeRnal:ALC:BANDwidth|BWIDth NORMAl|NARRow` command. The ON (1) selection in this command corresponds to the NORMAl parameter in the old command. The NARRow parameter in the old command corresponds to the 100HZ parameter used with the command `“:ALC:BANDwidth|BWIDth”` on page 57.

ON (1) This choice allows the signal generator to automatically select an ALC BW. The selection of the ALC BW depends on the signal generator modulation type as shown in the following table.

Modulation Type	Auto ALC Bandwidth Selection
Digital Modulation	100 Hz
Pulse Modulation	1 kHz
AM Modulation	10 kHz ¹ or 1 kHz
FM/ΦM Modulation	10 kHz

1. 10 kHz ALC bandwidth for carrier frequencies above 500 kHz

OFF (0) This choice disables automatic selection of the ALC BW, allowing you to select one of three ALC BWs: 100 Hz, 1 kHz, or 10 kHz. To select the desired ALC bandwidth, use the `“:ALC:BANDwidth|BWIDth”` command shown on page 57.

***RST** 1

Key Entry **Auto**

Remarks For more information on ALC bandwidth, refer to the *E4428C/38C ESG Signal Generators User’s Guide*.

:ALC:LEVEL

Supported All Models

```
[ :SOURCE ] :POWER:ALC:LEVEL <value>dB
[ :SOURCE ] :POWER:ALC:LEVEL?
```

This command sets the automatic leveling control (ALC) level. Use this command after setting the attenuation auto mode to On. Refer to “:ATTenuation:AUTO” on page 64 for setting the attenuation auto mode.

The ALC is used to maintain the signal generator’s output power level by compensating for power fluctuations due to drift, band changes, or load variations. After you set the ALC level, the signal generator’s output power is monitored and corrected so that the power level setting is maintained.

Example

```
:POW:ALC:LEV 10DB
```

The preceding example sets the ALC to 10 dB.

***RST** +1.00000000E+000

Range -20 to 20

Key Entry **Set ALC Level**

:ALC:SEARCH

Supported All Models

```
[ :SOURCE ] :POWER:ALC:SEARCH ON|OFF|1|0|ONCE
[ :SOURCE ] :POWER:ALC:SEARCH?
```

This command enables or disables the internal power search calibration. A power search is recommended for pulse-modulated signals with pulse widths less than one microsecond.

ON (1) This choice executes the power search automatically with each change in RF frequency or power.

OFF (0) This choice disables the automatic power search routine.

ONCE This choice executes a single power search of the current RF output signal.

***RST** 0

Key Entry **Power Search Manual Auto** **Do Power Search**

Remarks Use this command when the ALC state is set to OFF (0). Refer to “:ALC[:STATe]” on page 61 for setting the ALC state.

If ON was previously selected, executing ONCE will cause OFF to be the current selection after the power search is completed.

:ALC:SEARCh:REFeRence

Supported All Models

```
[ :SOURce ] :POWer :ALC :SEARCh :REFeRence FIXEd |MODuLated  
[ :SOURce ] :POWer :ALC :SEARCh :REFeRence ?
```

This command sets either fixed or modulated modes of power search.

FIXEd This choice uses a 0.5 volt reference.

MODuLated This choice uses the RMS value of the current I/Q modulation.

***RST** MOD

Key Entry **Power Search Reference Fixed Mod**

:ALC:SEARCh:SPAN:START

Supported All Models

```
[ :SOURce ] :POWer :ALC :SEARCh :SPAN :START  
[ :SOURce ] :POWer :ALC :SEARCh :SPAN :START ?
```

This command sets the start frequency for a span power search over a user specified range.

Key Entry **Start Frequency**

Remarks The start frequency has no default value. The start frequency value will be the last value set before powering off the instrument.

:ALC:SEARCh:SPAN:STOP:SPAN:STOP

Supported All Models

```
[ :SOURce ] :POWer :ALC :SEARCh :SPAN :STOP  
[ :SOURce ] :POWer :ALC :SEARCh :SPAN :STOP ?
```

This command sets the stop frequency for a span power search over a user specified range.

Key Entry **Stop Frequency**

Remarks The stop frequency has no default value. The stop frequency value will be the last value set before powering off the instrument.

:ALC:SEARCh:SPAN:TYPE

Supported All Models

```
[ :SOURce ] :POWer :ALC :SEARCh :SPAN :TYPE FULL | USER  
[ :SOURce ] :POWer :ALC :SEARCh :SPAN :TYPE ?
```

This command enables you to select the frequency range for a span power search. You can specify the range (USER) or you can select the full range (FULL) of the signal generator.

Key Entry Span Type User Full

:ALC:SEARCh:SPAN[:STATe]

Supported All Models

```
[ :SOURce ] :POWer :ALC :SEARCh :SPAN [ :STATe ] ON | OFF | 1 | 0  
[ :SOURce ] :POWer :ALC :SEARCh :SPAN [ :STATe ] ?
```

This command enables (1) or disables (0) the span mode, allowing you to perform power searches over a selected range of frequencies. The power search corrections are then stored and used whenever the signal generator is tuned within the selected range.

:ALC[:STATe]

Supported All Models

```
[ :SOURce ] :POWer :ALC [ :STATe ] ON | OFF | 1 | 0  
[ :SOURce ] :POWer :ALC [ :STATe ] ?
```

This command enables or disables the automatic leveling control (ALC) circuit.

***RST** 1

Key Entry ALC Off On

Remarks The purpose of the ALC circuit is to hold output power at a desired level by adjusting the signal generator's power circuits to compensate for power drift. Power drift occurs over time and changes in temperature. Refer to the *E4428C/38C ESG Signal Generators User's Guide* for more information on the ALC.

:ALternate:AMPLitude

Supported All Models except signal generators with Option UNB or 506.

```
[ :SOURce ] :POWer :ALternate :AMPLitude <val>
```

```
[ :SOURce ] :POWer :ALternate :AMPLitude?
```

This command sets the delta value for the alternate amplitude.

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

***RST** +0.00000000E+000

Range -156 to 156

Key Entry **Alt Amp Delta**

Remarks The actual RF output amplitude is equal to the Alternate Amplitude Delta value plus the RF output amplitude; this sum cannot exceed the minimum and maximum amplitude limits of the signal generator. For example, if the Alternate Amplitude Delta is set to -156 dB and the RF output amplitude is set to 20 dB, the sum is equal to -136 dB.

:ALternate:MANual

Supported All Models

```
[ :SOURce ] :POWer :ALternate :MANual MAIN | DELTa
```

```
[ :SOURce ] :POWer :ALternate :MANual?
```

This command toggles the alternate amplitude manual trigger source between main and alternate (delta).

MAIN The main power is present at the RF output.

DELTA The alternate power is present at the RF output.

***RST** MAIN

Key Entry **Manual Trigger Main Delta**

Remarks This command is effective only if MANual is the selection for the trigger source. Refer to “:ALternate:TRIGger[:SOURce]” on page 63 for more information.

:ALternate:STATe

Supported All Models

```
[ :SOURce ] :POWer:ALternate:STATe ON|OFF|1|0
[ :SOURce ] :POWer:ALternate:STATe?
```

This command enables or disables the alternate amplitude.

***RST** 0

Key Entry **Alt Ampl Off On**

:ALternate:TRIGger[:SOURce]

Supported All Models except with Option UNB or 506

```
[ :SOURce ] :POWer:ALternate:TRIGger [ :SOURce ] INTernal | EXTernal | MANual
[ :SOURce ] :POWer:ALternate:TRIGger [ :SOURce ]?
```

This command sets the trigger source for the alternate amplitude signal.

INTernal This choice is available only for an E4438C with Option 001/601 or 002/602. The baseband generator triggers each timeslot to output a power level set with either the user-selected main or alternate amplitude parameter.

Each timeslot is allowed to output power with a user-selected main or alternate amplitude. This choice requires the Option 001/601 or 002/602 baseband generator option.

This choice requires a baseband generator option. Each timeslot is allowed to output power with a user-selected main or alternate amplitude.

EXTernal This choice requires an external trigger to the TRIG IN rear panel connector to toggle the RF output power between main and alternate amplitudes.

MANual This choice enables the RF output power to be toggled between main and alternate amplitudes using the front-panel **Trigger** hardkey.

***RST** MAN

Key Entry **Int Ext Manual**

:ATTenuation**Supported** All Models

```
[ :SOURce ] :POWer :ATTenuation <val><unit>
[ :SOURce ] :POWer :ATTenuation?
```

This command sets the signal generator's attenuator level. Before setting the attenuator level, set the “:ATTenuation:AUTO” function to Off which will disable ALC control.

In normal operation the attenuator level is selected by the signal generator's automatic loop control (ALC) which maintains the output power by adjusting internal circuits to compensate for any power fluctuations due to drift, band changes, or load variations. In some applications, such as fast pulse modulation, the ALC may not respond quickly enough to compensate for the pulse rise times. In this case you can set the attenuator and override any ALC adjustments.

The output power is the ALC level minus the attenuator setting. The attenuator is set in increments of 5 dB.

Example

```
:POW:ATT 10DB
```

The preceding example sets the attenuator to 10 dB.

***RST** +115

Range 0 to 115 dB

Key Entry **Set Atten**

:ATTenuation:AUTO**Supported** All Models

```
[ :SOURce ] :POWer :ATTenuation :AUTO ON|OFF|1|0
[ :SOURce ] :POWer :ATTenuation :AUTO?
```

This command sets the state of the attenuator auto mode function.

ON (1) This selection allows the signal generator's automatic loop control (ALC) to adjust the attenuator so that a specified RF power level, at the ESG's RF output connector, is maintained.

OFF (0) This choice allows for a user-selected attenuator setting that is not affected by the signal generator's ALC circuitry.

The OFF (0) selection can be used to eliminate power discontinuity normally associated with attenuator switching during power adjustments.

***RST** 1

Key Entry	Atten Hold Off On
Remarks	During an amplitude sweep operation, signal generators with Option UNB or 506 protect the step attenuator from fast amplitude changes by automatically switching to attenuator auto Off mode. The attenuator is locked at its current setting and the amplitude sweep range is limited to 40 dB. Refer to the “:ALC:LEVel” on page 59 for more information.

:MODE

Supported	All Models
	[:SOURce] :POWer :MODE FIXed LIST [:SOURce] :POWer :MODE?
	This command sets the signal generator power mode to fixed or swept.
FIXed	This choice stops a power sweep, allowing the signal generator to operate at a fixed power level. Refer to “[:LEVel][:IMMediate][:AMPLitude]” on page 68 for setting the output power level.
LIST	This choice selects the swept power mode. If sweep triggering is set to immediate along with continuous sweep mode, executing the command starts the LIST or STEP power sweep.

NOTE To perform a frequency and amplitude sweep, you must also select LIST as the frequency mode. See “:FREQuency:MODE” on page 41 for selecting the list mode for a frequency sweep.

*RST	FIX
Key Entry	Amplitude Ampl Off

:REference

Supported	All Models
	[:SOURce] :POWer :REFErence <val><unit> [:SOURce] :POWer :REFErence?
	This command sets the power level for the signal generator RF output reference.
*RST	+0.00000000E+000
Range	-400 to 300DBM
Key Entry	Ampl Ref Set

Remarks The RF output power is referenced to the value entered in this command.

:REFEreNce:STATe

Supported All Models

```
[ :SOURce ] :POWer:REFEreNce:STATe ON|OFF|1|0
[ :SOURce ] :POWer:REFEreNce:STATe?
```

This command enables or disables the RF output reference.

ON(1) This choice will set the power reference state to ON. The unit displayed for commands, “:ANNotation:AMPLitude:UNIT” on page 83 and “:POWer” on page 168 will be expressed in DB.

OFF(0) This choice will set the power reference state to OFF.

***RST** 0

Key Entry **Ampl Ref Off On**

Remarks Once the reference state is ON, all subsequent output power settings are set relative to the reference value.

Amplitude offsets can be used with the amplitude reference mode.

:STARt

Supported All Models

```
[ :SOURce ] :POWer:STARt <val><unit>
[ :SOURce ] :POWer:STARt?
```

This command sets the first amplitude point in a step sweep.

***RST** -1.35000000E+002

Range Refer to “[:LEVel][:IMMediate][:AMPLitude]” on page 68 for the output power ranges.

Key Entry **Ampl Start**

Remarks During an amplitude sweep operation, signal generators with Option UNB or 506 protect the step attenuator by automatically switching to attenuator hold (ON) mode. The attenuator is locked at its current setting and the amplitude sweep range is limited to 40 dB.

:STOP

Supported All Models

[:SOURce] :POWer :STOP <val><unit>

[:SOURce] :POWer :STOP?

This command sets the last amplitude point in a step sweep.

***RST** -1.35000000E+002

Range Refer to “[:LEVel][:IMMediate][:AMPLitude]” on page 68 for the output power ranges.

Key Entry **Ampl Stop**

Remarks During an amplitude sweep operation, signal generators with Option UNB or 506 protect the step attenuator by automatically switching to attenuator hold (ON) mode. The attenuator is locked at its current setting and the amplitude sweep range is limited to 40 dB.

[:LEVel][:IMMediate]:OFFSet

Supported All Models

[:SOURce] :POWer [:LEVel] [:IMMediate] :OFFSet <val><unit>

[:SOURce] :POWer [:LEVel] [:IMMediate] :OFFSet?

This command sets the power offset value.

***RST** +0.00000000E+000

Range -200DB to 200DB

Key Entry **Ampl Offset**

Remarks This simulates a power level at a test point beyond the RF OUTPUT connector without changing the actual RF output power. The offset value only affects the displayed amplitude setting.

You can enter an amplitude offset any time in either normal operation or amplitude reference mode.

[:LEVel][:IMMediate][:AMPLitude]

Supported All Models

```
[ :SOURce ] :POWer [ :LEVel ] [ :IMMediate ] [ :AMPLitude ] <val><unit>
[ :SOURce ] :POWer [ :LEVel ] [ :IMMediate ] [ :AMPLitude ] ?
```

This command sets the RF output power.

***RST** -1.35000000E+002

Range	<i>Frequency</i>	<i>Standard</i>	<i>Option UNB</i>	<i>Option 506</i>
	250kHz–1GHZ	-136 to 13DBM	-136 to 17DBM	-136 to 14DBM
	> 1–3GHZ	-136 to 10DBM	-136 to 16DBM	-136 to 13DBM
	> 3–4GHZ	-136 to 7DBM	-136 to 13DBM	-136 to 10DBM
	> 4–6GHZ	N/A	N/A	-136 to 10DBM

Key Entry **Amplitude**

Remarks The ranges for this command are specified values from the data sheet.

[:LEVel][:IMMediate][:AMPLitude]:STEP

Supported All Models

```
[ :SOURce ] :POWer [ :LEVel ] [ :IMMediate ] [ :AMPLitude ] :STEP [ :INCRement ]
<val><unit> | UP | DOWN
[ :SOURce ] :POWer [ :LEVel ] [ :IMMediate ] [ :AMPLitude ] :STEP [ :INCRement ] ?
```

This command sets the incremental step value for the amplitude parameter, or increments or decrements the current RF output power level by the specified <val> value.

<val> The increment power value.

UP Increases the current output power by the amount set with <val>. The front-panel up arrow key performs the same function.

DOWN Decreases the current output power by the amount set with <val>. The front-panel down arrow key performs the same function.

Range .02–100dB

Key Entry **Incr Set**

Remarks The value set with this command is not affected by *RST or a power cycle.

3 System Commands

This chapter provides SCPI descriptions for subsystems dedicated to peripheral signal generator operations common to all ESG models. This chapter contains the following major sections:

- “Calibration Subsystem (:CALibration)” on page 70
- “Communication Subsystem (:SYSTem:COMMunicate)” on page 73
- “Diagnostic Subsystem (:DIAGnostic[:CPU]:INFORMation)” on page 79
- “Display Subsystem (:DISPlay)” on page 83
- “IEEE 488.2 Common Commands” on page 86
- “Memory Subsystem (:MEMory)” on page 92
- “Mass Memory Subsystem (:MMEMory)” on page 122
- “Output Subsystem (:OUTPut)” on page 126
- “Route Subsystem (:ROUte:HARDware:DGENerator)” on page 128
- “Status Subsystem (:STATus)” on page 134
- “System Subsystem (:SYSTem)” on page 152
- “Trigger Subsystem” on page 164
- “Unit Subsystem (:UNIT)” on page 168

Calibration Subsystem (:CALibration)

:DCFM

Supported All

:CALibration:DCFM

This command initiates a DCFM or DC Φ M calibration depending on the currently active modulation. This calibration eliminates any dc or modulation offset of the carrier signal.

NOTE If the calibration is performed with a dc signal applied, any deviation provided by the dc signal will be removed and the new zero reference point will be at the applied dc level. The calibration will have to be performed again when the dc signal is disconnected to reset the carrier signal to the correct zero reference.

Key Entry DCFM/DCFM Cal

Remarks Use this calibration for externally applied signals. While the calibration can also be performed for internally generated signals, dc offset is not a normal characteristic for them.

:IQ

Supported E4438C

:CALibration:IQ

This command initiates an I/Q calibration.

Key Entry Execute Cal

:IQ:DC

Supported E4438C

:CALibration:IQ:DC

This command performs a one to two second adjustment that is not traceable to a standard. However, it will minimize errors associated with offset voltages. This adjustment minimizes errors for the current signal generator setting and at a single frequency. The DC adjustment is volatile and must be repeated with each signal generator setting change. This command can be sent while the RF On/Off is set to Off and the adjustment will still be valid when the RF is enabled.

The I/Q DC adjustment is dependent upon a number of instrument settings. If any of the instrument settings change, the adjustment will become invalid. The dependent instrument settings are:

- RF frequency
- I/Q attenuation level
- Baseband generator settings
- I/Q polarity settings
- Baseband filter settings
- Path settings (Internal I/Q Mux Path 1 or Path 2)
- I/Q calibration (the I/Q DC calibration will be invalidated if any other I/Q calibration is executed or if the **Revert to Factory Default** key is pressed)
- Temperature (± 5 degrees)

The following instrument states will not invalidate the I/Q DC calibration:

- Power level changes
- I/Q Impairments

Key Entry **Execute Cal** (with **Calibration Type User Full** set to DC)

:IQ:DEfault

Supported E4438C

:CALibration:IQ:DEfault

This command will restore the original factory calibration data for the internal I/Q modulator.

Key Entry **Revert to Default Cal Settings**

:IQ:FULL

Supported E4438C

:CALibration:IQ:FULL

This command performs an adjustment to the I/Q offset, gain and quadrature for the full-frequency range (regardless of the start and stop frequency settings) and stores the results in the signal generator's firmware.

Key Entry **Execute Cal** (with **Calibration Type User Full** set to Full)

Remarks Start and stop frequencies will default to the full frequency range of the signal generator.

:IQ:START**Supported** E4438C

:CALibration:IQ:START <val><unit>

:CALibration:IQ:START?

This command sets the start frequency and automatically sets the calibration type to User for an I/Q calibration.

Range

Option 501: 100kHz–1GHz
 Option 502: 100kHz–2GHz
 Option 503: 100kHz–3GHz
 Option 504: 100kHz–4GHz
 Option 506: 100kHz–6GHz

Key Entry **Start Frequency**

Remarks The setting enabled by this command is not affected by signal generator power-on, preset, or *RST.

:IQ:STOP**Supported** E4438C

:CALibration:IQ:STOP <val><unit>

:CALibration:IQ:STOP?

This command sets the stop frequency and automatically sets the calibration type to User for an I/Q calibration.

Range

Option 501: 100kHz–1GHz
 Option 502: 100kHz–2GHz
 Option 503: 100kHz–3GHz
 Option 504: 100kHz–4GHz
 Option 506: 100kHz–6GHz

Key Entry **Stop Frequency**

Remarks The setting enabled by this command is not affected by signal generator power-on, preset, or *RST.

Communication Subsystem (:SYSTem:COMMunicate)

:GPIB:ADDRes

Supported All

```
:SYSTem:COMMunicate:GPIB:ADDRes <number>  
:SYSTem:COMMunicate:GPIB:ADDRes?
```

This command sets the signal generator's GPIB address.

Range 0–30

Key Entry GPIB Address

Remarks The setting enabled by this command is not affected by signal generator power-on, preset, or *RST.

:GTLocal

Supported All

```
:SYSTem:COMMunicate:GTLocal
```

This command sets the signal generator to local mode which enables front panel operation.

Key Entry Local

:LAN:CONFig

Supported All Models

```
:SYSTem:COMMunicate:LAN:CONFig DHCP|MANual  
:SYSTem:COMMunicate:LAN:CONFig?
```

This command sets the signal generator's internet protocol (IP) address.

MANual The user assigns an IP address to the signal generator.

DHCP The network assigns an IP address to the signal generator.

Example

```
:SYST:COMM:LAN:CONF DHCP
```

The preceding example sets up the signal generator LAN configuration to use a DHCP IP address.

Key Entry LAN Config

:LAN:GATEway

Supported All

```
:SYSTEM:COMMunicate:LAN:GATEway "<ipstring>"
```

```
:SYSTEM:COMMunicate:LAN:GATEway?
```

This command sets the gateway for local area network (LAN) access to the signal generator from outside the current sub-network.

Key Entry **Default Gateway**

Remarks Using an empty string restricts access to the signal generator to local hosts on the LAN.

:LAN:HOSTname

Supported All

```
:SYSTEM:COMMunicate:LAN:HOSTname "<string>"
```

```
:SYSTEM:COMMunicate:LAN:HOSTname?
```

This command sets the signal generator's local area network (LAN) connection hostname.

Key Entry **Hostname**

Remarks The setting enabled by this command is not affected by signal generator power-on, preset, or *RST.

:LAN:IP

Supported All

```
:SYSTEM:COMMunicate:LAN:IP "<ipstring>"
```

```
:SYSTEM:COMMunicate:LAN:IP?
```

This command sets the signal generator's local area network (LAN) internet protocol (IP) address for your IP network connection.

Key Entry **IP Address**

Remarks The setting enabled by this command is not affected by signal generator power-on, preset, or *RST.

:LAN:SUBNet

Supported All

```
:SYSTem:COMMunicate:LAN:SUBNet "<ipstring>"
```

```
:SYSTem:COMMunicate:LAN:SUBNet?
```

This command sets the signal generator's local area network (LAN) subnet mask address for your internet protocol (IP) network connection.

Key Entry Subnet Mask

Remarks The setting enabled by this command is not affected by signal generator power-on, preset, or *RST.

:PMETer:ADDRess

Supported All

```
:SYSTem:COMMunicate:PMETer:ADDRess <val>
```

```
:SYSTem:COMMunicate:PMETer:ADDRess?
```

This command sets the address for a power meter that is controlled by the signal generator.

Range 0–30

Key Entry Meter Address

Remarks The setting enabled by this command is not affected by signal generator power-on, preset, or *RST.

The power meter is controlled only through a GPIB cable.

Ensure that the power meter address is different from the signal generator address.

:PMETer:CHANnel

Supported All

```
:SYSTem:COMMunicate:PMETer:CHANnel A|B
```

```
:SYSTem:COMMunicate:PMETer:CHANnel?
```

This command sets the measurement channel on the power meter that is controlled by the signal generator.

Key Entry Meter Channel A B

Remarks A single-channel power meter uses channel A and selecting channel B will have no effect.

Communication Subsystem (:SYSTEM:COMMunicate)

The setting enabled by this command is not affected by signal generator power-on, preset, or *RST.

The power meter is controlled only through a GPIB cable.

:PMETer:IDN

Supported All

:SYSTEM:COMMunicate:PMETer:IDN E4418B|E4419B|E4416A|E4417A

:SYSTEM:COMMunicate:PMETer:IDN?

This command sets the model number of the power meter that is controlled by the signal generator.

Key Entry **Power Meter**

Remarks The setting enabled by this command is not affected by signal generator power-on, preset, or *RST.

The power meter is controlled only through a GPIB cable.

:PMETer:TIMEout

Supported All

:SYSTEM:COMMunicate:PMETer:TIMEout <num>[<time suffix>]

:SYSTEM:COMMunicate:PMETer:TIMEout?

This command sets the period of time which the signal generator will wait for a valid reading from the power meter.

The variable <num> has a resolution of 0.001.

Range 1mS–100S

Key Entry **Meter Timeout**

Remarks The setting enabled by this command is not affected by signal generator power-on, preset, or *RST.

The power meter is controlled only through a GPIB cable.

If a time-out occurs, the signal generator reports an error message.

:SERial:BAUD

Supported All

:SYSTem:COMMunicate:SERial:BAUD <number>

:SYSTem:COMMunicate:SERial:BAUD?

This command sets the baud rate for the rear panel RS-232 interface labeled RS-232.

Key Entry **RS-232 Baud Rate**

Remarks The setting enabled by this command is not affected by signal generator power-on, preset, or *RST.

:SERial:ECHO

Supported All

:SYSTem:COMMunicate:SERial:ECHO ON|OFF

:SYSTem:COMMunicate:SERial:ECHO?

This command enables or disables the RS-232 echo.

Key Entry **RS-232 ECHO Off On**

Remarks The setting enabled by this command is not affected by signal generator power-on, preset, or *RST.

:SERial:RESet

Supported All

:SYSTem:COMMunicate:SERial:RESet

This event command resets the RS-232 buffer and will discard any unprocessed SCPI input received by the RS-232 port.

Key Entry **Reset RS-232**

:SERial:TOUT

Supported All

:SYSTem:COMMunicate:SERial:TOUT <val>

:SYSTem:COMMunicate:SERial:TOUT?

This command sets the RS-232 serial port time-out value.

If further input is not received within the time-out period specified, while a SCPI command is being processed, the command is aborted and the input buffer is cleared.

The variable <val> is entered in units of seconds.

Range 1–25

Key Entry **RS-232 Timeout**

Remarks The setting enabled by this command is not affected by signal generator power-on, preset, or *RST.

Diagnostic Subsystem (:DIAGnostic[:CPU]:INFORMATION)

:BOARDs

Supported All

:DIAGnostic[:CPU]:INFORMATION:BOARDs?

This query returns a list of the installed boards in the signal generator. The information will be returned in the following format:

"<board name,part number,serial number,version number,status>"

This information format will repeat with as many iterations as the number of detected boards in the signal generator.

Key Entry **Installed Board Info**

:CCOunt:ATTenuator

Supported All

:DIAGnostic[:CPU]:INFORMATION:CCOunt:ATTenuator?

This query returns the cumulative number of times that the attenuator has been switched.

Key Entry **Diagnostic Info**

:CCOunt:PON

Supported All

:DIAGnostic[:CPU]:INFORMATION:CCOunt:PON?

This query returns the cumulative number of times the signal generator has been powered-on.

Key Entry **Diagnostic Info**

:CCOunt:PROTection

Supported All

:DIAGnostic[:CPU]:INFORMATION:CCOunt:PROTection?

This query returns the cumulative number of times the reverse power protection has been cycled.

Key Entry **Diagnostic Info**

:DISPlay:OTIME

Supported All Models

:DIAGnostic[:CPU]:INFORMATION:DISPlay:OTIME?

This query returns the cumulative number of hours the display has been on.

Key Entry **Diagnostic Info**

:LICense:AUXiliary

Supported E4438C with Option 001/600 or 002.602

:DIAGnostic[:CPU]:INFORMATION:LICense:AUXiliary?

This query returns a list of licenses for software applications associated with the signal generator that have the software license file installed on the PC, as opposed to a license key installed on the signal generator. However this query does not return demo licenses for Arb-based applications.

Key Entry **Auxiliary Software Options**

Remarks If you use the signal generator with a PC that has a copy of a software application for which a license shows with this query, the software automatically accesses and installs the license on the PC.

To access Arb-based demo software licenses, see “[:LICense:WAVEform](#)” . To view option numbers for software applications that use license keys, see “[:OPTions](#)” on page 81.

:LICense:WAVeform

Supported E4438C with Option 001/600 or 002/602

:DIAGnostic[:CPU]:INFORMATION:LICense:WAVeform?

This query returns a list of Arb-based licenses (including demo) for software applications associated with the signal generator that have the software license file installed on the PC, as opposed to a license key installed on the signal generator. These waveform licenses are created by the software application in a license file on the PC. Refer to “:WLICence[:VALue]” on page 82 for more information.

The response format is a series of comma-separated entries enclosed in quotation marks. The first field is the waveform type number and the second is a text description of the license.

Key Entry **Waveform Licenses**

Remarks If a license appears in this list, this means that you can transfer waveform files, created with the associated Arb-based software application to another signal generator if the other signal generator has the same license. For more information, refer to the command, “:LICense:AUXiliary” on page 80.

For a list of option numbers for software applications that use license keys, see “:OPTions”.

:OPTions

Supported All Models

:DIAGnostic[:CPU]:INFORMATION:OPTions?

This query returns a list of internally installed signal generator options.

Key Entry **Options Info**

:OPTions:DETail

Supported All Models

:DIAGnostic[:CPU]:INFORMATION:OPTions:DETail?

This query returns the options that are installed along with the option revision and DSP version if applicable.

Key Entry **Options Info**

Diagnostic Subsystem (:DIAGnostic[:CPU]:INFORMATION)

:OTIME

Supported All Models

:DIAGnostic[:CPU]:INFORMATION:OTIME?

This query returns the cumulative number of hours that the signal generator has been on.

Key Entry **Diagnostic Info**

:REVISION

Supported All Models

:DIAGnostic[:CPU]:INFORMATION:REVISION?

This query returns the CPU bootstrap read only memory (boot ROM) revision date. In addition, the query returns the revision, creation date, and creation time of the main firmware.

Key Entry **Diagnostic Info**

:SDATE

Supported All Models

:DIAGnostic[:CPU]:INFORMATION:SDATE?

This query returns the date and time of the main firmware.

Key Entry **Diagnostic Info**

:WLIcense[:VALue]

Supported E4438C with Option 001/601 or 002/602

:DIAGnostic[:CPU]:INFORMATION:WLIcense[:VALue]? <type_num>

This query returns the number of seconds remaining on the waveform license for the type of waveform designated by the <type_num> variable number. The type variable number is obtained using the “[:LICense:WAVEform](#)” command shown on [page 81](#). Zero is returned for non-existent and expired licenses. The value $2^{32} - 1$ (4,294,967,295) is returned for licenses that do not expire. Refer to the *E4428C/38C ESG Signal Generators Key and Data Field Reference* for information on the waveform licence.

Display Subsystem (:DISPlay)

:ANNotation:AMPLitude:UNIT

Supported All Models

```
:DISPlay:ANNotation:AMPLitude:UNIT DBM|DBUV|DBUVEFMF|V|VEMF|DB  
:DISPlay:ANNotation:AMPLitude:UNIT?
```

This command sets the displayed front panel amplitude units.

If the amplitude reference state is set to on, the query returns units expressed in DB. Setting any other unit will cause a setting conflict error stating that the amplitude reference state must be set to off. Refer to, “:REFerence:STATE” on page 66 for more information.

***RST** DBM

:ANNotation:CLOCK:DATE:FORMat

Supported All Models

```
:DISPlay:ANNotation:CLOCK:DATE:FORMat MDY|DMY  
:DISPlay:ANNotation:CLOCK:DATE:FORMat?
```

This command enables the selection of the date format. The choices are month-day-year (MDY) or day-month-year (DMY) format.

Remarks The setting enabled by this command is not affected by signal generator power-on, preset, or *RST.

:ANNotation:CLOCK[:STATe]

Supported All Models

```
:DISPlay:ANNotation:CLOCK[:STATe] ON|OFF|1|0  
:DISPlay:ANNotation:CLOCK[:STATe]?
```

This command enables or disables the digital clock view in the lower right side of the front panel display.

Remarks The setting enabled by this command is not affected by signal generator power-on, preset, or *RST.

:BRIGhtness

Supported All Models

:DISPlay:BRIGhtness <val>

:DISPlay:BRIGhtness?

This command sets the display brightness (intensity). The brightness can be set to the minimum level (0.02), maximum level (1), or in between by using fractional numeric values (0.03–0.99).

Range 0.02–1

Key Entry **Brightness**

Remarks The setting enabled by this command is not affected by signal generator power-on, preset, or *RST.

:CAPtUre

Supported All Models

:DISPlay:CAPtUre

This event command enables the user to capture the current display and store it in the signal generator's memory.

Remarks The display capture is stored as DISPLAY.BMP in the Binary file system. This file is overwritten with each subsequent display capture. The file can be down-loaded in the following manner:

1. Log on to the signal generator using ftp.
2. Change (cd) to the BIN directory.
3. Retrieve the file by using the get command.

:CONTRast

Supported All Models

:DISPlay:CONTRast <val>

:DISPlay:CONTRast?

This command sets the contrast of the LCD display. The contrast can be set to the maximum level (1), minimum level (0), or in between by using fractional numeric values (0.001–0.999).

Range 0–1

Key Entry Display contrast hardkeys are located below the display.

Remarks The setting enabled by this command is not affected by signal generator power-on, preset, or *RST.

:INVerse

Supported All Models

:DISPlay:INVerse ON|OFF|1|0

:DISPlay:INVerse?

This command sets the display of the source to inverse video mode.

Key Entry **Inverse Video Off On**

Remarks The setting enabled by this command is not affected by signal generator power-on, preset, or *RST.

:REMote

Supported All Models

:DISPlay:REMote ON|OFF|1|0

:DISPlay:REMote?

This command enables or disables the display updating when the signal generator is remotely controlled.

ON (1) This choice updates the signal generator display so you can see the settings as the commands are executed, however, this will degrade the signal generator speed.

OFF (0) This choice turns off the display updating while further optimizing the signal generator for speed.

Key Entry **Update in Remote Off On**

Remarks The setting enabled by this command is not affected by signal generator preset or *RST. However, cycling the signal generator power will reset it to zero.

[:WINDow][:STATe]

Supported All Models

:DISPlay[:WINDow][:STATe] ON|OFF|1|0

:DISPlay[:WINDow][:STATe]?

This command is used to either blank out (OFF or 0) the display screen or turn it on (ON or 1).

Remarks The setting enabled by this command is not affected by *RST. However, presetting the signal generator or cycling the power will turn the display on.

IEEE 488.2 Common Commands

*CLS

Supported All Models

*CLS

The Clear Status (CLS) command clears the Status Byte Register, the Data Questionable Event Register, the Standard Event Status Register, the Standard Operation Status Register and any other registers that are summarized in the status byte.

*ESE

Supported All Models

*ESE <data>

The Standard Event Status Enable (ESE) command sets the Standard Event Status Enable Register.

The variable <data> represents the sum of the bits that will be enabled.

Range 0–255

Remarks The setting enabled by this command is not affected by signal generator preset or *RST. However, cycling the signal generator power will reset this register to zero.

Refer to Chapter 3 of the *E4428C/38C ESG Signal Generators Programming Guide* for more information.

*ESE?

Supported All Models

*ESE?

The Standard Event Status Enable (ESE) query returns the value of the Standard Event Status Enable Register.

Remarks Refer to Chapter 3 of the *E4428C/38C ESG Signal Generators Programming Guide* for more information.

*ESR?

Supported All Models

CAUTION This is a destructive read. The data in the register is latched until it is queried. Once queried, the data is cleared.

*ESR?

The Standard Event Status Register (ESR) query returns the value of the Standard Event Status Register.

Remarks Refer to Chapter 3 of the *E4428C/38C ESG Signal Generators Programming Guide* for more information.

*IDN?

Supported All Models

*IDN?

The Identification (IDN) query outputs an identifying string. The response will show the following information:

<company name>, <model number>, <serial number>, <firmware revision>

Key Entry **Diagnostic Info**

Remarks The identification information can be modified. Refer to [“:IDN” on page 154](#) for more information.

*OPC

Supported All Models

*OPC

The Operation Complete (OPC) command sets bit 0 in the Standard Event Status Register when all pending operations have finished.

*OPC?

Supported All Models

*OPC?

The Operation Complete (OPC) query returns the ASCII character 1 in the Standard Event Status Register when all pending operations have finished.

*PSC

Supported

*PSC ON|OFF|1|0

The Power-On Status Clear (PSC) command controls the automatic power-on clearing of the Service Request Enable Register, the Standard Event Status Enable Register, and device-specific event enable registers.

ON (1) This choice enables the power-on clearing of the listed registers.

OFF (0) This choice disables the clearing of the listed registers and they retain their status when a power-on condition occurs.

Remarks The setting enabled by this command is not affected by signal generator power-on, preset, or *RST.

*PSC?

Supported All Models

*PSC?

The Power-On Status Clear (PSC) query returns the flag setting as enabled by the *PSC command.

*RCL

Supported All Models

*RCL <reg>, <seq>

The Recall (RCL) command recalls the state from the specified memory register <reg> of the specified sequence <seq>.

Range Registers: 0–99 Sequences: 0–9

Key Entry **RECALL Reg** **Select Seq:**

*RST

Supported All Models

*RST

The Reset (RST) command resets most signal generator functions to factory-defined conditions.

Remarks Each command shows the *RST value if the setting is affected.

*SAV

Supported All Models

*SAV <reg> , <seq>

The Save (SAV) command saves signal generator settings to the specified memory register <reg> of the specified sequence <seq>.

Range *Registers:* 0–99 *Sequences:* 0–9

Key Entry **Save Reg** **Save Seq[n] Reg[nn]**

Remarks The save function does not save all signal generator settings. Refer to the *E4428C/38C ESG Signal Generators User's Guide* for more information on the save function. Refer to “*RCL” on page 88 for information on recalling saved signal generator settings.

*SRE

Supported All Models

*SRE <data>

The Service Request Enable (SRE) command sets the value of the Service Request Enable Register.

The variable <data> is the decimal sum of the bits that will be enabled. Bit 6 (value 64) is ignored and cannot be set by this command.

Range 0–255

Remarks Refer to Chapter 3 of the *E4428C/38C ESG Signal Generators Programming Guide* for more information.

Entering values from 64 to 127 is equivalent to entering values from 0 to 63.

The setting enabled by this command is not affected by signal generator preset or *RST. However, cycling the signal generator power will reset it to zero.

***SRE?**

Supported All Models

*SRE?

The Service Request Enable (SRE) query returns the value of the Service Request Enable Register.

Range 0–63 or 128–191

Remarks Refer to Chapter 3 of the *E4428C/38C ESG Signal Generators Programming Guide* for more information.

***STB?**

Supported All Models

*STB?

The Read Status Bye (STB) query returns the value of the status byte including the master summary status (MSS) bit.

Range 0–255

Remarks Refer to Chapter 3 of the *E4428C/38C ESG Signal Generators Programming Guide* for more information.

***TRG**

Supported All Models

*TRG

The Trigger (TRG) command triggers the device if BUS is the selected trigger source, otherwise, *TRG is ignored.

***TST?**

Supported All Models

*TST?

The Self-Test (TST) query initiates the internal self-test and returns one of the following results:

0 This shows that all tests passed.

1 This shows that one or more tests failed.

Key Entry **Run Complete Self Test**

***WAI**

Supported All Models

*WAI

The Wait-to-Continue (WAI) command causes the signal generator to wait until all pending commands are completed, before executing any other commands.

Memory Subsystem (:MEMory)

:CATalog:BINary

Supported E4438C with Option 001/601 or 002/602

:MEMory:CATalog:BINary?

This command outputs a list of the binary files. The return data will be in the following form:

```
<mem used>,<mem free>{,"<file listing>"}
```

The signal generator will return the two memory usage parameters and as many file listings as there are files in the directory list. Each file listing parameter will be in the following form:

```
"<file name,file type,file size>"
```

Key Entry Binary

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

:CATalog:BIT

Supported E4438C with Option 001/601 or 002/602

:MEMory:CATalog:BIT?

This command outputs a list of the bit files. The return data will be in the following form:

```
<mem used>,<mem free>{,"<file listing>"}
```

The signal generator will return the two memory usage parameters and as many file listings as there are files in the directory list. Each file listing parameter will be in the following form:

```
"<file name,file type,file size>"
```

Key Entry Bit

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

:CATalog:CDMa

Supported E4438C with Option 401

:MEMory:CATalog:CDMa?

This command outputs a list of the arbitrary waveform CDMA files. The return data will be in the following form:

```
<mem used>,<mem free>{,"<file listing>"}
```

The signal generator will return the two memory usage parameters and as many file listings as there are files in the directory list. Each file listing parameter will be in the following form:

```
"<file name,file type,file size>"
```

Key Entry CDMA

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

:CATalog:DMOD

Supported E4438C with Option 001/601 or 002/602

:MEMory:CATalog:DMOD?

This command outputs a list of the arbitrary waveform digital modulation files. The return data will be in the following form:

```
<mem used>,<mem free>{,"<file listing>"}
```

The signal generator will return the two memory usage parameters and as many file listings as there are files in the directory list. Each file listing parameter will be in the following form:

```
"<file name,file type,file size>"
```

Key Entry DMOD

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

:CATalog:DWCDma

Supported E4438C with Option 400

:MEMory:CATalog:DWCDma?

This command outputs a list of the arbitrary waveform downlink W-CDMA files. The return data will be in the following form:

```
<mem used>,<mem free>{,"<file listing>"}
```

The signal generator will return the two memory usage parameters and as many file listings as there are files in the directory list. Each file listing parameter will be in the following form:

```
"<file name,file type,file size>"
```

Key Entry DWCDMA

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

:CATalog:FCDMa

Supported E4438C with Option 401

:MEMory:CATalog:FCDMa?

This command outputs a list of the arbitrary waveform forward link cdma2000 files. The return data will be in the following form:

```
<mem used>,<mem free>{,"<file listing>"}
```

The signal generator will return the two memory usage parameters and as many file listings as there are files in the directory list. Each file listing parameter will be in the following form:

```
"<file name,file type,file size>"
```

Key Entry FCDMA

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

:CATalog:FIR

Supported E4438C with Option 001/601 or 002/602

:MEMory:CATalog:FIR?

This command outputs a list of the finite impulse response filter files. The return data will be in the following form:

```
<mem used>,<mem free>{,"<file listing>"}
```

The signal generator will return the two memory usage parameters and as many file listings as there are files in the directory list. Each file listing parameter will be in the following form:

```
"<file name,file type,file size>"
```

Key Entry FIR

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

:CATalog:FSK

Supported E4438C with Option 001/601 or 002/602

:MEMory:CATalog:FSK?

This command outputs a list of the FSK files. The return data will be in the following form:

```
<mem used>,<mem free>{,"<file listing>"}
```

The signal generator will return the two memory usage parameters and as many file listings as there are files in the directory list. Each file listing parameter will be in the following form:

```
"<file name,file type,file size>"
```

Key Entry FIR

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

:CATalog:IQ

Supported E4438C with Option 001/601 or 002/602

:MEMory:CATalog:IQ?

This command outputs a list of the IQ files. The return data will be in the following form:

<mem used>,<mem free>{,"<file listing>"}

The signal generator will return the two memory usage parameters and as many file listings as there are files in the directory list. Each file listing parameter will be in the following form:

"<file name,file type,file size>"

Key Entry I/Q

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

:CATalog:LIST

Supported All Models

:MEMory:CATalog:LIST?

This command outputs a list of the list sweep files. The return data will be in the following form:

<mem used>,<mem free>{,"<file listing>"}

The signal generator will return the two memory usage parameters and as many file listings as there are files in the directory list. Each file listing parameter will be in the following form:

"<file name,file type,file size>"

Key Entry List

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

:CATalog:MCDMa

Supported E4438C with Option 401

:MEMory:CATalog:MCDMa?

This command outputs a list of the arbitrary waveform multicarrier IS-95 CDMA files. The return data will be in the following form:

```
<mem used>,<mem free>{,"<file listing>"}
```

The signal generator will return the two memory usage parameters and as many file listings as there are files in the directory list. Each file listing parameter will be in the following form:

```
"<file name,file type,file size>"
```

Key Entry MCDMA

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

:CATalog:MDMod

Supported E4438C with Option 001/601 or 002/602

:MEMory:CATalog:MDMod?

This command outputs a list of the arbitrary waveform multicarrier digital modulation files. The return data will be in the following form:

```
<mem used>,<mem free>{,"<file listing>"}
```

The signal generator will return the two memory usage parameters and as many file listings as there are files in the directory list. Each file listing parameter will be in the following form:

```
"<file name,file type,file size>"
```

Key Entry MDMOD

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

:CATalog:MDWCdma

Supported E4438C with Option 400

:MEMory:CATalog:MDWCdma?

This command outputs a list of the arbitrary waveform multicarrier downlink W-CDMA files. The return data will be in the following form:

```
<mem used>,<mem free>{,"<file listing>"}
```

The signal generator will return the two memory usage parameters and as many file listings as there are files in the directory list. Each file listing parameter will be in the following form:

```
"<file name,file type,file size>"
```

Key Entry MDWCdma

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

:CATalog:MFCdma

Supported E4438C with Option 401

:MEMory:CATalog:MFCdma?

This command outputs a list of the arbitrary waveform multicarrier forward link cdma2000 files. The return data will be in the following form:

```
<mem used>,<mem free>{,"<file listing>"}
```

The signal generator will return the two memory usage parameters and as many file listings as there are files in the directory list. Each file listing parameter will be in the following form:

```
"<file name,file type,file size>"
```

Key Entry MFCdma

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

:CATalog:MTONe

Supported E4438C with Option 001/601 or 002/602

:MEMory:CATalog:MTONe?

This command outputs a list of the arbitrary waveform multitone files. The return data will be in the following form:

```
<mem used>,<mem free>{,"<file listing>"}
```

The signal generator will return the two memory usage parameters and as many file listings as there are files in the directory list. Each file listing parameter will be in the following form:

```
"<file name,file type,file size>"
```

Key Entry MTONE

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

:CATalog:RCDMa

Supported E4438C with Option 401

:MEMory:CATalog:RCDMa?

This command outputs a list of the arbitrary waveform files for reverse link cdma2000. The return data will be in the following form:

```
<mem used>,<mem free>{,"<file listing>"}
```

The signal generator will return the two memory usage parameters and as many file listings as there are files in the directory list. Each file listing parameter will be in the following form:

```
"<file name,file type,file size>"
```

Key Entry RCDMA

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

:CATalog:SEQ

Supported E4438C with Option 001/601 or 002/602

:MEMory:CATalog:SEQ?

This command outputs a list of the arbitrary waveform sequence files. The return data will be in the following form:

```
<mem used>,<mem free>{,"<file listing>"}
```

The signal generator will return the two memory usage parameters and as many file listings as there are files in the directory list. Each file listing parameter will be in the following form:

```
"<file name,file type,file size>"
```

Key Entry SEQ

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

:CATalog:SHAPE

Supported E4438C with Option 001/601 or 002/602

:MEMory:CATalog:SHAPE?

This command outputs a list of the burst shape files. The return data will be in the following form:

```
<mem used>,<mem free>{,"<file listing>"}
```

The signal generator will return the two memory usage parameters and as many file listings as there are files in the directory list. Each file listing parameter will be in the following form:

```
"<file name,file type,file size>"
```

Key Entry SHAPE

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

:CATalog:STATe

Supported All Models

:MEMory:CATalog:STATe?

This command outputs a list of the state files. The return data will be in the following form:

```
<mem used>,<mem free>{,"<file listing>"}
```

The signal generator will return the two memory usage parameters and as many file listings as there are files in the directory list. Each file listing parameter will be in the following form:

```
"<file name,file type,file size>"
```

Key Entry State

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

:CATalog:UFLT

Supported All Models

:MEMory:CATalog:UFLT?

This command outputs a list of the user-flatness correction files. The return data will be in the following form:

```
<mem used>,<mem free>{,"<file listing>"}
```

The signal generator will return the two memory usage parameters and as many file listings as there are files in the directory list. Each file listing parameter will be in the following form:

```
"<file name,file type,file size>"
```

Key Entry User Flatness

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

:CATalog:UWCDma

Supported E4438C with Option 400

:MEMory:CATalog:UWCDma?

This command outputs a list of the arbitrary waveform uplink W-CDMA files. The return data will be in the following form:

```
<mem used>,<mem free>{,"<file listing>"}
```

The signal generator will return the two memory usage parameters and as many file listings as there are files in the directory list. Each file listing parameter will be in the following form:

```
"<file name,file type,file size>"
```

Key Entry UWCDMA

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

:CATalog[:ALL]

Supported All Models

:MEMory:CATalog[:ALL]?

This command outputs a list of all the files in the memory subsystem. However it does not include files stored on the Option 001/601 or 002/602 baseband generator. The return data will be in the following form:

```
<mem used>,<mem free>{,"<file listing>"}
```

The signal generator will return the two memory usage parameters and as many file listings as there are files in the memory subsystem. Each file listing parameter will be in the following form:

```
"<file name,file type,file size>"
```

Key Entry All

Remarks Refer to the [Table on page 14](#) for a listing of the file types and [“File Name Variables” on page 13](#) for information on the "<file name>" syntax.

:COPY[:NAME]

Supported All Models

```
:MEMory:COPY[:NAME] "<file name>","<file name>"
```

This command makes a duplicate of the requested file.

Key Entry Copy File

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

When copying a waveform file from volatile to non-volatile memory, the marker file and file header, associated with the waveform file, will automatically be copied at the same time.

:DATA

Supported E4438C with Option 001/601 or 002/602

```
:MEMory:DATA "<file_name>",<data_block>
```

```
:MEMory:DATA? "<file_name>"
```

This command loads waveform data into signal generator memory using the <data_block> parameter and saves the data to a file designated by the "<file_name>" variable. The query returns the file contents of the file as a datablock.

The waveform file must be located in volatile waveform memory (WFM1) before it can be played by the signal generator’s dual ARB player.

For downloads directly into volatile waveform memory use the path "WFM1:<file_name>". For downloads to non-volatile waveform memory, use the path "NVWFM:<file_name>".

"<file_name>" This variable names the destination file, including the directory path.

<data_block> This parameter represents the data and file length parameters. The data in the file is represented by the <data_block> variable.

Refer to the *E4428C/38C ESG Signal Generators Programming Guide* for more information on programming the status registers.

NOTE ARB waveform files created using the :DATA command cannot be retrieved or uploaded. Attempting to do so will cause the signal generator to display the message: ERROR:221, Access denied. To download ARB data to files for later retrieval, use the “:DATA:UNPRotected” command on [page 114](#).

Memory Subsystem (:MEMory)**Example**

```
:MEM:DATA "NVWFM:IQ_Data" ,#210Qaz37pY9oL
```

The preceding example downloads 10 bytes of data to a file, `IQ_Data.`, in the signal generator's non-volatile memory. The table shown below describes the command parameters.

- | | |
|-------------------|--|
| • "NVWFM:IQ_Data" | IQ_Data is the file name. The directory path is not needed. The path "/USER/WAVEFORM/" is implied. |
| • #210Qaz37pY9oL | Data block |
| # | This character indicates the beginning of the data block |
| 2 | Number of digits in the byte count |
| 10 | Byte count |
| Qaz37pY9oL | 10 bytes of data |

NOTE The data, `Qaz37pY9oL`, in the above command are not valid and are shown for example purposes only. Typically, ascii characters representing data are unprintable.

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

:DATA:APPend

Supported E4438C with Option 001/601 or 002/602

```
:MEMory:DATA:APPend "<file_name>" ,<data_block>
```

This commands appends data to an existing file stored in signal generator memory.

"<file_name>" This variable names the destination file and directory path.

<data_block> This parameter represents the data and file length parameters. The data in the file is represented by the <data_block> variable. The file length parameters are used by the signal generator for allocating memory.

Refer to the *E4428C/38C ESG Signal Generators Programming Guide* for more information on downloading and using files.

Example

```
:MEM:DATA:APPend "NVWFM:IQ_Data",#14Y9oL
```

The preceding example downloads and appends the data, Y9oL, to an existing file named IQ_Data stored in the signal generator’s non-volatile memory (NVWFM).

- "NVWFM:IQ_Data" IQ_Data the file name. The directory path is not needed. The path "/USER/WAVEFORM/" is implied.
- #14Y9oL Data block
 - # This character indicates the beginning of the data block
 - 1 Number of digits in the byte count
 - 4 Byte count
 - Y9oL 4 bytes of data

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

:DATA:BIT

Supported E4438C with Option 001/601 or 002/602

```
:MEMory:DATA:BIT "<file_name>",<bit_count>,<data_block>
:MEMory:DATA:BIT? "<file_name>"
```

This command loads bit data into signal generator memory using the <bit_count> and <data_block> parameters and saves the data to a file designated by the "<file_name>" variable. The query returns the bit count, file length information, and the data.

- "<file_name>" This variable names the destination file and the directory path.
- <bit_count> This number represents the number of bits in the data block.
- <data_block> This parameter represents the data and file length parameters. The data in the file is represented by the <data_block> variable. The file length parameters are used by the signal generator for allocating memory.

Refer to the *E4428C/38C ESG Signal Generators Programming Guide* for more information on downloading and using files.

Example

```
:MEM:DATA:BIT "Test_Data",16,#12Qz
```

The preceding example downloads bit data to the file, Test_Data. The table below describes the command parameters.

- "Test_Data" Test_Data is the file name. The directory path is not needed. The path "/USER/BIT/" is implied.
- 16 Number of bits in the data block
- #12Qz Data block
 - # This character indicates the beginning of the data block
 - 1 Number of digits in the byte count
 - 2 Byte count
 - Qz 16 bits of data (ascii representation of bit data)

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

:DATA:FIR

Supported E4438C with Option 001/601 or 002/602

```
:MEMory:DATA:FIR "<file_name>",osr,coefficient{,coefficient}
```

```
:MEMory:DATA:FIR? "<file_name>"
```

This command loads oversample ratio (OSR) and user-defined finite impulse response (FIR) coefficient data into a file in the signal generator’s non-volatile memory (NVWFM). The query returns the oversample ratio and coefficient data.

"<file_name>" This variable is the file name of the destination file. The directory path, /USER/FIR is not required as it is implied by the command.

osr The OSR is the number of filter taps per symbol.

coefficient This variable is the FIR coefficient. The maximum number of coefficients is 1024.

{,coefficient} This optional variable is used when you enter additional coefficients.

Refer to the *E4428C/38C ESG Signal Generators Programming Guide* for more information on downloading and using files.

Example

```
:MEM:DATA:FIR "FIR_1",4,0,0,0,0,0,0.000001,0.000012,0.000132,
0.001101,0.006743,0.030588,0.103676,0.265790,0.523849,0.809508,1,1,
0.809508,0.523849,0.265790,0.103676,0.030588,0.006743,0.001101,0.000132,
0.000012,0.000001,0,0,0,0,0
```

The preceding example downloads FIR coefficient and oversampling ratio data to the signal generator’s non-volatile memory in a file named FIR_1. Notice that the signal generator directory

path, /USER/FIR, is not needed as it is implied by the command. Refer to “File Name Variables” on page 13 for information on the file name syntax.

Range *osr*: 1–32
 coefficient: –1000 to 1000

Key Entry **Oversample Ratio**

:DATA:FSK

Supported E4438C with Option 001/601 or 002/602

```
:MEMory:DATA:FSK "<file_name>",<num_states>,<f0>,<f1>,...<f(n)>
[,<diff_state>,<num_diff_states>,<diff1>,...<diff(n)>]
:MEMory:DATA:FSK? "<file_name>"
```

This command loads custom frequency shift keying (FSK) data into a file in the signal generator’s non-volatile memory (NVWFM).

The query returns data in the following form:

```
<num_states>,<f0>,<f1>,...<f(n)>,<diff_state>,<num_diff_states>,<diff1>,...<diff(n)>
```

"<file_name>" This variable string identifies the name of the FSK file. The filename must be enclosed with quotation marks.

<num_states> This variable identifies the number of frequency states.

<f0> This variable identifies the value of the first frequency state.

<f1>,...<f(n)> This variable identifies the value of the second and subsequent frequency states with a frequency resolution of 0.1Hz.

<diff_state> This variable enables or disables differential encoding.

<num_diff_states> This variable identifies the number of differential states.

<diff0> This variable identifies the value of the first differential state.

<diff1>,...<diff(n)> This variable identifies the value of the second and subsequent differential states.

Refer to the *E4428C/38C ESG Signal Generators Programming Guide* for more information on downloading and using files.

Example

```
:MEM:DATA:FSK "4FSK",4,-2kHz,-1kHz,2kHz,1kHz,ON,2,1,0
```

The preceding example downloads a four-level FSK data to a file named 4FSK. There are four states (frequencies): -2kHz, -1kHz, 2kHz, 1kHz; differential encoding is toggled ON, and there are two differential states 1 and 0. The table shown below describes the command parameters.

- "4FSK" 4FSK is the FSK file name. The directory path is not needed. The path "/USER/FSK" is implied.
- 4 Number of states
- -2kHz First frequency state
- -1kHz Second frequency state
- 2kHz Third frequency state
- 1kHz Fourth frequency state
- ON Differential encoding is on
- 2 Number of differential states
- 1 Value of the first differential state.
- 0 Value of the second differential state.

Range *num_diff_states:* 0–256
 num_states: 2–16
 f0–f(n): -20MHZ to 20MHZ
 diff0–diff(n): -128 to 127

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

:DATA:IQ

Supported E4438C with Option 001/601 or 002/602

```
:MEMory:DATA:IQ "<file_name>",<offsetQ>,<num_states>,<i0>,<q0>,<i1>,<q1>,...<i(n)>,<q(n)>[,<diff_state>,<num_diff_states>,<diff0>,<diff1>,...<diff(n)>]
```

```
:MEMory:DATA:IQ? "<file_name>"
```

This command loads custom I/Q data into a file in the signal generator’s non-volatile waveform memory (NVWFM).

The query returns data in the following form:

<offsetQ>, <num_states>, <i0>, <q0>, <i1>, <q1>, ... <i(n)>, <q(n)>, <diff_state>
 , <num_diff_states>, <diff0>, <diff1>, ... <diff(n)>

"<file_name>" This variable string identifies the name of the I/Q file. The filename must be enclosed with quotation marks.

<offsetQ> This variable enables (1) or disables (0) the Q output delay by 1/2 symbol from the I output.

<num_states> This is the number of symbols.

<i0>...<i(n)> This is the I value of the first and subsequent I symbols.

<q0>...<q(n)> This is the Q value of the first and subsequent Q symbols.

<diff_state> This variable enables and disables differential encoding.

<num_diff_states> This variable identifies the number of differential states.

<diff0> This variable identifies the value of the first differential state.

<diff1, ... diff(n)> This variable identifies the value of the second and subsequent differential states.

Refer to the *E4428C/38C ESG Signal Generators Programming Guide* for more information on downloading and using files.

Example

```
:MEM:DATA:IQ "Test_BPSK",1,2,1,0,0,0
```

The preceding example loads and stores a two-symbol I/Q file named `Test_BPSK` that has a Q offset. The table shown below describes the command parameters.

- "Test_BPSK" `Test_BPSK` is the file name. The directory path is not needed. The path `"/USER/IQ"` is implied.
- 1 Q Offset. The Q output delay is enabled.
- 2 Number of symbols
- 1 Value of the first I symbol
- 0 Value of the first Q symbol.
- 0 Value of the second I symbol
- 0 Value of the second Q symbol

Memory Subsystem (:MEMory)

Range	<i>num_states</i> : 2–256 <i>i0–i(n)</i> : –1 to 1 <i>q0–q(n)</i> : –1 to 1 <i>num_diff_states</i> : 0–256 <i>diff0–diff(n)</i> : –128 to 127
Remarks	Refer to “ File Name Variables ” on page 13 for information on the file name syntax.

:DATA:PRAM:FILE:BLOCK

Supported E4438C with Option 001/601 or 002/602

```
:MEMory:DATA:PRAM:FILE:BLOCK "<file_name>", <data_block>
```

This command loads block-formatted data directly into pattern RAM volatile memory (WFM1). Pattern RAM memory describes how memory (WFM1) is used and is not a distinct piece of memory. A PRAM file is specified as an array of bytes.

"<file_name>" This variable names the destination file. No directory path name is needed.

<data_block> This parameter represents the data and file length parameters. The data in the file is represented by the <data_block> variable. The file length parameters are used by the signal generator for allocating memory.

Pattern Ram files are binary files downloaded directly into waveform memory as an array of bytes. Each byte specifies a data bit (LSB 0), a burst bit (BIT 2), and an Event 1 output bit (BIT 6). Refer to the *E4428C/38C ESG Signal Generators Programming Guide* for more information on pattern RAM downloading.

Example

```
:MEM:DATA:PRAM:FILE:BLOC "PRAM_Data", #14Yq8L
```

The preceding example downloads PRAM data to a file named PRAM_Data into the signal generator’s volatile memory (WFM1).

- "PRAM_Data" PRAM_Data is the file name. PRAM files are saved to the signal generator’s volatile memory (WFM1).
- #14Yq8L Data block
 - # This character indicates the beginning of the data block
 - 1 Number of digits in the byte count
 - 4 Byte count
 - Yq8L 4 bytes of data

NOTE The data, Yq8L, in the above command is not valid and is used for example purposes only. Typically, ASCII characters representing data are unprintable.

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

:DATA:PRAM:FILE:LIST

Supported E4438C with Option 001/601 or 002/602

MEMory:DATA:PRAM:FILE:LIST "<file_name>" , <uint8>[, <uint8> , <...>]

This command loads list-formatted data directly into pattern RAM volatile memory (WFM1). Pattern RAM memory describes how memory (WFM1) is used and is not a distinct piece of memory. A PRAM file is specified as an array of bytes.

NOTE This command should be preceded by a *WAI (Wait-to-Continue) command to ensure that all pending operations are completed, before loading the list.

"<file_name>" This variable names the destination file.

<uint8> This variable is any of the valid 8-bit, unsigned integer values between 0 and 255.

[, <uint8> , <...>] This variable identifies the value of the second and subsequent 8-bit unsigned integer variables.

Pattern Ram files are binary files downloaded directly into waveform memory as an array of bytes. Each byte specifies a data bit (LSB 0), a burst bit (BIT 2), and an Event 1 output bit (BIT 6). Refer to the *E4428C/38C ESG Signal Generators Programming Guide* for more information on pattern RAM downloading.

Example

```
:MEM:DATA:PRAM:LIST "Pram_Data" , 85,21,21,20,20,100
```

The preceding example downloads PRAM data, in list format, to a file named `Pram_Data` in the signal generator’s volatile memory (WFM1).

- "Pram_Data" Pram_Data is the file name. PRAM files are saved to the signal generator’s volatile memory (WFM1).
- 85 The first 8-bit integer value
- 21,21,20,20,100 Subsequent 8-bit integer values.

Memory Subsystem (:MEMory)

Range	0–255
Remarks	Refer to “File Name Variables” on page 13 for information on the file name syntax.

:DATA:PRAM

NOTE	Refer to the <i>E4428C/38C ESG Signal Generators Programming Compatibility Guide</i> for information on this command. This command is still valid for backward compatibility with earlier signal generator models.
-------------	--

:DATA:PRAM:BLOCK

NOTE	Refer to the <i>E4428C/38C ESG Signal Generators Programming Compatibility Guide</i> for information on this command. This command was replaced by “:DATA:PRAM:FILE:BLOCK” on page 110.
-------------	---

:DATA:PRAM:LIST

NOTE	Refer to the <i>E4428C/38C ESG Signal Generators Programming Compatibility Guide</i> for information on this command. This command has been replaced by “:DATA:PRAM:FILE:LIST” on page 111.
-------------	---

:DATA:SHAPE

Supported E4438C with Option 001/601 or 002/602

```
:MEMory:DATA:SHAPE "<filename>",<num_rise_points>,<rp0>,<rp1>,  
...<num_fall_points>,<fp0>,<fp1>,...<fp(n)>  
:MEMory:DATA:SHAPE? "<filename>"
```

This command creates a new burst shape file and stores it in the signal generator non-volatile memory.

"<filename>" This variable string identifies the name of the burst shape file.

num_rise_points This variable specifies how many rise points used in the command.

rp0,...rp(n) This variable defines each successive rise point, where 0 is no power and 1 is full power.

num_fall_points This variable specifies how many fall points used in the command.

fp0,...fp(n) This variable defines each successive fall point, where 0 is no power and 1 is full power.

Range num_rise_points: 2–256 num_fall_points: 2–256
 rp0–rp(n): 0.0–1.0 fp0–fp(n): 0.0–1.0

:DATA:SHAPE

Supported E4438C with Option 001/601 or 002/602

```
:MEMory:DATA:SHAPE
"<file_name>",<rise_pnts>,<rp0>,<rp1>,...<fall_points>,<fp0>,<fp1>,...<fp(n)>
:MEMory:DATA:SHAPE? "<file_name>"
```

This command loads a burst shape file into the signal generator's non-volatile memory (NVWFM).

"<file_name>" This variable names the destination file and directory path.

rise_pnts This variable indicates the number of rise points used to describe the burst shape rising slope.

rp0,...rp(n) This variable defines each successive rise point, where 0 is no power and 1 is full power.

fall_points This variable indicates the number of fall points used to describe the burst shape falling slope.

fp0,...fp(n) This variable defines each successive fall point, where 1 is full power and 0 is no power.

Refer the *E4428C/38C ESG Signal Generators Programming Guide* for more information on downloading and using files.

Example

```
:MEM:DATA:SHAP "Shape_File",6,0,0.2,0.4,0.6,0.8,1.0,2,0.5,0
```

The preceding example loads shape data to a file named `Shape_File` in the signal generator's non-volatile memory.

- "Shape_File" `Shape_File` is the shape data filename. The directory path is not needed. The path `"/USER/SHAPE/"` is implied.
- 6 Number of rise points describing the burst shape.
- 0,0.2,0.4,0.6,0.8,1.0 Rise point values.
- 2 Number of fall points describing the burst shape.
- 0.5,0 Fall point values.

Memory Subsystem (:MEMory)

Range	<i>num_rise_points:</i> 2–256
	<i>num_fall_points:</i> 2–256
	<i>rp0–rp(n):</i> 0.0–1.0
	<i>fp0–fp(n):</i> 0.0–1.0

:DATA:UNPRotected

Supported E4438C with Option 001/601 or 002/602

:MEMory:DATA:UNPRotected "<file_name>" ,<data_block>

This command allows you to download data and store it in a file on the signal generator with the ability to retrieve it. This command is intended for downloading waveform data; however you can use it to download other types of data.

NOTE If you do not use the *UNPRotected* command when downloading a waveform file, you will not be able to retrieve or upload the file. Attempting to do so will cause the signal generator to display the message: `ERROR:221, Access denied`.

"<file_name>" This variable names the destination file and directory path. The file type determines how you must format the "<file_name>" variable as described in the following list.

- **Binary file** The "<file_name>" variable requires only a file name. A file name without a file path is automatically stored in the Binary memory catalog. Refer to [“File Name Variables” on page 13](#) for information on the file name syntax.
- **Encrypted file** The "<file_name>" variable requires a path that includes the SECUREWAVE directory. The securewave directory path is SNVWFM: for non-volatile waveform memory and SWFM1: for volatile waveform memory.
- **All other file types** The "<file_name>" variable requires a path that includes the destination directory for the file type. Refer to the [Table on page 14](#), and [“File Name Variables” on page 13](#) for more information.

<data_block> This parameter represents the data and file length parameters. The data in the file is represented by the <data_block> variable.

Refer to the *E4428C/38C ESG Signal Generators Programming Guide* for more information on downloading and using files.

Example

```
:MEM:DATA:UNPR "NVWFM:Data_File",#18Qz37pY9o
```

The preceding example downloads waveform data to a file named Data_File in the signal generator's non-volatile securewave directory. The table shown below describes the command parameters.

- | | |
|---------------------|--|
| • "NVWFM:Data_File" | Data_File is the filename. The directory path is not needed. The path "/USER/SECUREWAVE" is implied. |
| • #18Qz37pY9o | Data block |
| # | This character indicates the beginning of the data block |
| 1 | Number of digits in the byte count |
| 8 | Byte count |
| Qz37pY9o | 8 bytes of data |

NOTE The data, Qz37pY9o, in the above command is not valid and is used for example purposes only. Typically, ascii characters representing data are unprintable.

:DElete:ALL

Supported All Models

CAUTION Using this command deletes all user files including binary, list, state, and flatness correction files, and any saved setups which use the front panel table editor. However, this does not include files stored on the Option 001/601 or 002/602 baseband generator. You cannot recover the files after executing this command.

```
:MEMory:DElete:ALL
```

This command clears the file system of all user files.

Key Entry **Delete All Files**

:DElete:BINary

Supported E4438C with Option 001/601 or 002/602

:MEMory:DELeTe:BINary

This command deletes all binary files.

Key Entry Delete All Binary Files

:DElete:BIT

Supported E4438C with Option 001/601 or 002/602

:MEMory:DELeTe:BIT

This command deletes all bit files.

Key Entry Delete All Bit Files

:DElete:CDMa

Supported E4438C with Option 401

:MEMory:DELeTe:CDMa

This command deletes all arbitrary waveform IS-95 CDMA files.

Key Entry Delete All ARB CDMA Files

:DElete:DMOD

Supported E4438C with Option 001/601 or 002/602

:MEMory:DELeTe:DMOD

This command deletes all arbitrary waveform digital modulation files.

Key Entry Delete All ARB DMOD Files

:DElete:DWCDma

Supported E4438C with Option 400

:MEMory:DELeTe:DWCDma

This command deletes all arbitrary waveform downlink W-CDMA files.

Key Entry Delete All ARB DWCDMA Files

:DElete:FCDMa

Supported E4438C with Option 401

:MEMory:DELeTe:FCDMa

This command deletes all arbitrary waveform forward link W-CDMA files.

Key Entry Delete All ARB FCDMA Files

:DElete:FIR

Supported E4438C with Option 001/601 or 002/602

:MEMory:DELeTe:FIR

This command deletes all finite impulse response filter files.

Key Entry Delete All FIR Files

:DElete:FSK

Supported E4438C with Option 001/601 or 002/602

:MEMory:DELeTe:FSK

This command deletes all FSK files.

Key Entry Delete All FSK Files

:DElete:IQ

Supported E4438C with Option 001/601 or 002/602

:MEMory:DELeTe:IQ

This command deletes all I/Q files.

Key Entry Delete All I/Q Files

:DElete:LIST

Supported All Models

:MEMory:DELeTe:LIST

This command deletes all List files.

Key Entry Delete All List Files

:DElete:MCDMa

Supported E4438C with Option 401

:MEMory:DElete:MCDMa

This command deletes all arbitrary waveform multicarrier IS-95 CDMA files.

Key Entry Delete All ARB MCDMA Files

:DElete:MDMod

Supported E4438C with Option 001/601 or 002/602

:MEMory:DElete:MDMod

This command deletes all arbitrary waveform multicarrier digital modulation files.

Key Entry Delete All ARB MDMOD Files

:DElete:MDWCdma

Supported E4438C with Option 400

:MEMory:DElete:MDWCdma

This command deletes all arbitrary waveform multicarrier downlink W-CDMA files.

Key Entry Delete All ARB MDWCdma Files

:DElete:MFCdma

Supported E4438C with Option 401

:MEMory:DElete:MFCdma

This command deletes all arbitrary waveform multicarrier forward link cdma2000 files.

Key Entry Delete All ARB MFCdma Files

:DElete:MTONE

Supported E4438C with Option 001/601 or 002/602

:MEMory:DElete:MTONE

This command deletes all arbitrary waveform multitone files.

Key Entry Delete All ARB MTONE Files

:DElete:RCDMa

Supported E4438C with Option 401

:MEMory:DELeTe:RCDMa

This command deletes all arbitrary waveform reverse link cdma2000 files.

Key Entry Delete All ARB RCDMA Files

:DElete:SEQ

Supported E4438C with Option 001/601 or 002/602

:MEMory:DELeTe:SEQ

This command deletes all sequence files.

Key Entry Delete All Sequence Files

:DElete:SHAPE

Supported E4438C with Option 001/601 or 002/602

:MEMory:DELeTe:SHAPE

This command deletes all burst shape files.

Key Entry Delete All Shape Files

:DElete:STATE

Supported All Models

:MEMory:DELeTe:STATE

This command deletes all state files.

Key Entry Delete All Models State Files

:DElete:UFLT

Supported All Models

:MEMory:DELeTe:UFLT

This command deletes all user-flatness correction files.

Key Entry Delete All UFLT Files

:DElete:UWCDma

Supported E4438C with Option 400

:MEMory:DElete:UWCDma

This command deletes all arbitrary waveform uplink W-CDMA files.

Key Entry Delete All ARB UWCDMA Files

:DElete[:NAME]

Supported All Models

:MEMory:DElete[:NAME] "<file name>"

This command clears the user file system of "<file name>".

Key Entry Delete File

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

When deleting a waveform (WFM1) file from memory, the marker file and file header, associated with the waveform file, will also be deleted.

:FREE[:ALL]

Supported All Models

:MEMory:FREE[:ALL]?

This command returns the number of bytes left in the user file system.

Key Entry All

:LOAD:LIST

Supported All Models

:MEMory:LOAD:LIST "<file name>"

This command loads a list sweep file.

Key Entry Load From Selected File

:MOVE

Supported All Models

```
:MEMory:MOVE "<src_file>" "<dest_file>"
```

This command renames the requested file in the memory catalog.

Key Entry **Rename File**

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

:STaTe:COMMeNt

Supported All Models

```
:MEMory:STaTe:COMMeNt <reg_num>,<seq_num>,"<comment>"
```

```
:MEMory:STaTe:COMMeNt? <reg_num>,<seq_num>
```

This command lets you to add a descriptive comment to the saved state <reg_num>,<seq_num>. Comments can be up to 55 characters long.

Key Entry **Add Comment To Seq[n] Reg[nn]**

:STORe:LIST

Supported All Models

```
:MEMory:STORe:LIST "<file name>"
```

This command stores the current list sweep data to a file.

Key Entry **Store To File**

Mass Memory Subsystem (:MMEMory)

:CATalog

Supported All Models

```
:MMEMory:CATalog? "<msus>"
```

This command outputs a list of the files from the specified file system.

The variable "<msus>" (mass storage unit specifier) represents "<file system>". The file systems and types are shown in [Table 1-4 on page 14](#).

The return data will be in the following form:

```
<mem used>,<mem free>{,"<file listing>"}
```

The signal generator will return the two memory usage parameters and as many file listings as there are files in the specified file system. Each file listing will be in the following format:

```
"<file name,file type,file size>"
```

Key Entry	Binary	List	State	User Flatness	FIR	Shape	Bit	FSK
	IQ	Seq	DMOD	MTONE	MDMOD	CDMA	MCDMA	FCDMA
	MFCDMA	RCDMA	WCDMA	FWCDMA	MFWCDMA	RWCDMA		
	DWCDMA	MDWCDMA	UWCDMA	WFM1	NVMKR	NVWFM		

Remarks Refer to “[MSUS \(Mass Storage Unit Specifier\) Variable](#)” on page 16 for information on the use of the "<msus>" variable.

:COPY

Supported All Models

```
:MMEMory:COPY "<file name>","<file name>"
```

This command makes a duplicate of the requested file.

Key Entry **Copy File**

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

When copying a waveform file from volatile to non-volatile memory, the marker file and file header, associated with the waveform file, will automatically be copied at the same time.

:DATA

Supported E4438C with Option 001/601 or 002/602

:MMEMory:DATA "<file name>", <datablock>

:MMEMory:DATA? "<file name>"

This command loads <datablock> into the memory location "<file name>".

The query returns the <datablock> associated with the "<file name>".

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

:DElete:NVWFm

Supported E4438C with Option 001/601 or 002/602

:MMEMory:DElete:NVWFm

This command clears the user file system of all non-volatile arbitrary waveform files.

Key Entry Delete All NVWFm Files

:DElete:WFM

Supported E4438C with Option 001/601 or 002/602

:MMEMory:DElete:WFM

This command clears the user file system of all arbitrary waveform files, which is the same function as performed by the command shown in [“:DElete:WFM1”](#).

Key Entry Delete All WFM1 Files

:DElete:WFM1

Supported E4438C with Option 001/601 or 002/602

:MMEMory:DElete:WFM1

This command clears the user file system of all arbitrary waveform files, which is the same function as performed by the command shown in [“:DElete:WFM1”](#).

Key Entry Delete All WFM1 Files

:DElete[:NAME]

Supported All

```
:MMEMory:DElete[:NAME] "<file name>", ["<msus>"]
```

This command clears the user file system of "<file name>" with the option of specifying the file system separately.

The variable "<msus>" (mass storage unit specifier) represents the file system. For a list of the file systems refer to the [Table on page 14](#).

Key Entry Delete File

Remarks If the optional variable "<msus>" is omitted, the file name needs to include the file system extension. Refer to [“File Name Variables” on page 13](#) and [“MSUS \(Mass Storage Unit Specifier\) Variable” on page 16](#) for information on the use of the file variables.

When deleting a waveform file from memory, the marker file and file header, associated with the waveform file, will also be deleted.

:HEADer:CLEar

Supported E4438C with Option 001/601 or 002/602

```
:MMEMory:HEADer:CLEar "<file name>"
```

This command sets the file header field settings to unspecified for the "<file name>" variable.

Key Entry Clear Header

Remarks This command does not require a personality modulation to be on. Refer to [“File Name Variables” on page 13](#) for information on the file name syntax.

:HEADer:DESCription

Supported E4438C with Option 001/601 or 002/602

```
:MMEMory:HEADer:DESCription "<file name>", "<description>"
```

```
:MMEMory:HEADer:DESCription? "<file name>"
```

This command inserts a description for the file header.

Key Entry Edit Description

Remarks The header description is limited to 32 characters. Refer to [“File Name Variables” on page 13](#) for information on the file name syntax.

:LOAD:LIST

Supported All

```
:MMEMory:LOAD:LIST "<file name>"
```

This command loads a List sweep file.

Key Entry Load From Selected File

:MOVE

Supported All

```
:MMEMory:MOVE "<src_file>", "<dest_file>"
```

This command renames the requested file in the memory catalog.

Key Entry Rename File

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

:STORe:LIST

Supported All

```
:MMEMory:STORe:LIST "<file name>"
```

This command stores the current list sweep data to a file.

Key Entry Store To File

Output Subsystem (:OUTPut)

:BLANKing:AUTO

Supported All

:OUTPut:BLANKing:AUTO ON|OFF|1|0

:OUTPut:BLANKing:AUTO?

This command turns the RF output on or off during frequency band changes. Frequency band changes can cause the signal generator's RF output to fluctuate. The output blanking function, when active, turns off the RF output until the frequency settles.

ON(1) The RF output turns off when crossing a frequency band.

OFF(0) The RF output stays on when crossing a frequency band.

*RST 1

Key Entry Output Blanking Off On Auto

Remarks Refer to the signal generator's data sheet for information on frequency switching speeds, settling times, and frequency band information.

:BLANKing:STATe

Supported All

:OUTPut:BLANKing:STATe ON|OFF|1|0

:OUTPut:BLANKing:STATe?

This command enables or disables the RF output blanking state.

ON(1) The RF output turns off during frequency changes.

OFF(0) The RF output stays on during frequency changes.

*RST 1

Remarks Refer to the signal generator's data sheet for information on frequency switching speeds, settling times, and frequency band information.

:MODulation[:STATe]

Supported All

:OUTPut:MODulation[:STATe] ON|OFF|1|0

:OUTPut:MODulation[:STATe]?

This command enables or disables the modulation of the RF output with the currently active modulation type(s).

***RST** 1

Key Entry **Mod On/Off**

Remarks Some modulation types can be simultaneously enabled such as pulse and AM.
An annunciator on the signal generator is always displayed to indicate whether modulation is switched on or off.

[:STATe]

Supported All

:OUTPut[:STATe] ON|OFF|1|0

:OUTPut[:STATe]?

This command enables or disables the RF output.

***RST** 0

Key Entry **RF On/Off**

Remarks Although you can configure and engage various modulations, no signal is available at the RF OUTPUT connector until this command is executed.
An annunciator is always displayed on the signal generator to indicate whether the RF output is switched on or off.

Route Subsystem (:ROUTE:HARDware:DGENERator)

:INPut:BPOLarity

Supported E4438C with Option 001/601 or 002/602

```
:ROUTE:HARDware:DGENERator:INPut:BPOLarity POSitive|NEGative
```

```
:ROUTE:HARDware:DGENERator:INPut:BPOLarity?
```

This command configures the polarity of the TTL input signal at the BURST GATE IN connector. POSitive refers to normal logic, while NEGative refers to inverted logic.

***RST** POS

Key Entry **Burst Gate In Polarity Neg Pos**

Remarks This command performs the same function as [“:IPOLarity:BGATE”](#) on page 129.

:INPut:CPOLarity

Supported E4438C with Option 001/601 or 002/602

```
:ROUTE:HARDware:DGENERator:INPut:CPOLarity POSitive|NEGative
```

```
:ROUTE:HARDware:DGENERator:INPut:CPOLarity?
```

This command configures the polarity of the TTL input signal at the DATA CLOCK connector. POSitive refers to normal logic, while NEGative refers to inverted logic.

***RST** POS

Key Entry **Data Clock Polarity Neg Pos**

Remarks This command performs the same function as [“:IPOLarity:CLOCK”](#) on page 130.

:INPut:DPOLarity

Supported E4438C with Option 001/601 or 002/602

:ROUTE:HARDware:DGENerator:INPut:DPOLarity POSitive|NEGative

:ROUTE:HARDware:DGENerator:INPut:DPOLarity?

This command configures the polarity of the TTL input signal at the DATA connector. POSitive refers to normal logic, while NEGative refers to inverted logic.

***RST** POS

Key Entry Data Polarity Neg Pos

Remarks This command performs the same function as “:IPOLarity:DATA” on page 130.

:INPut:SPOLarity

Supported E4438C with Option 001/601 or 002/602

:ROUTE:HARDware:DGENerator:INPut:SPOLarity POSitive|NEGative

:ROUTE:HARDware:DGENerator:INPut:SPOLarity?

This command configures the polarity of the TTL input signal at the SYMBOL SYNC connector. POSitive refers to normal logic, while NEGative refers to inverted logic.

***RST** POS

Key Entry Symbol Sync Polarity Neg Pos

Remarks This command performs the same function as “:IPOLarity:SSYNc” on page 130.

:IPOLarity:BGATe

Supported E4438C with Option 001/601 or 002/602

:ROUTE:HARDware:DGENerator:IPOLarity:BGATe POSitive|NEGative

:ROUTE:HARDware:DGENerator:IPOLarity:BGATe?

This command configures the polarity of the input signal at the BURST GATE IN connector. POSitive refers to normal logic, while NEGative refers to inverted logic.

***RST** POS

Key Entry Burst Gate In Polarity Neg Pos

Remarks This command performs the same function as “:INPut:BPOLarity” on page 128.

:IPOLarity:CLOCK

Supported E4438C with Option 001/601 or 002/602

:ROUTE:HARDware:DGENERator:IPOLarity:CLOCK POSitive|NEGative

:ROUTE:HARDware:DGENERator:IPOLarity:CLOCK?

This command configures the polarity of the TTL input signal at the DATA CLOCK connector. POSitive refers to normal logic, while NEGative refers to inverted logic.

***RST** POS

Key Entry **Data Clock Polarity Neg Pos**

Remarks This command performs the same function as [“:INPut:CPOLarity” on page 128](#).

:IPOLarity:DATA

Supported E4438C with Option 001/601 or 002/602

:ROUTE:HARDware:DGENERator:IPOLarity:DATA POSitive|NEGative

:ROUTE:HARDware:DGENERator:IPOLarity:DATA?

This command configures the polarity of the TTL input signal at the DATA connector. POSitive refers to normal logic, while NEGative refers the inverted logic.

***RST** POS

Key Entry **Data Polarity Neg Pos**

Remarks This command performs the same function as [“:INPut:DPOLarity” on page 129](#).

:IPOLarity:SSYNc

Supported E4438C with Option 001/601 or 002/602

:ROUTE:HARDware:DGENERator:IPOLarity:SSYNc POSitive|NEGative

:ROUTE:HARDware:DGENERator:IPOLarity:SSYNc?

This command configures the polarity of the TTL input signal at the SYMBOL SYNC connector. POSitive refers to normal logic, while NEGative refers to inverted logic.

***RST** POS

Key Entry **Symbol Sync Polarity Neg Pos**

Remarks This command performs the same function as [“:INPut:SPOLarity” on page 129](#).

:OPOLarity:CLOCK

Supported E4438C with Option 001/601 or 002/602

```
:ROUTE:HARDware:DGENERator:OPOLarity:CLOCK POSitive|NEGative
```

```
:ROUTE:HARDware:DGENERator:OPOLarity:CLOCK?
```

This command configures the polarity of the TTL output Data Clock Out signal at the DATA CLK OUT pin on the rear panel AUX I/O connector. POSitive refers to normal logic, while the NEGative refers to inverted logic.

***RST** POS

Key Entry **Data Clock Out Neg Pos**

Remarks This command performs the same function as [“:OUTPut:CPOlarity” on page 132.](#)

:OPOLarity:DATA

Supported E4438C with Option 001/601 or 002/602

```
:ROUTE:HARDware:DGENERator:OPOLarity:DATA POSitive|NEGative
```

```
:ROUTE:HARDware:DGENERator:OPOLarity:DATA?
```

This command configures the polarity of the TTL output DATA OUT signal at the DATA OUT pin on the rear panel AUX I/O connector. POSitive refers to normal logic, while NEGative refers to inverted logic.

***RST** POS

Key Entry **Data Out Polarity Neg Pos**

Remarks This command performs the same function as [“:OUTPut:DPOlarity” on page 133.](#)

:OPOLarity:SSYNc

Supported E4438C with Option 001/601 or 002/602

:ROUTE:HARDware:DGENERator:OPOLarity:SSYNc POSitive|NEGative

:ROUTE:HARDware:DGENERator:OPOLarity:SSYNc?

This command configures the polarity of the TTL output SYMBOL SYNC signal at the SYM SYNC OUT pin on the rear panel AUX I/O connector. POSitive refers to normal logic, while NEGative refers to inverted logic.

***RST** POS

Key Entry **Symbol Sync Out Polarity Neg Pos**

Remarks This command performs the same function as [“:OUTPut:SPOLarity” on page 133](#).

:OUTPut:CPOLarity

Supported E4438C with Option 001/601 or 002/602

:ROUTE:HARDware:DGENERator:OUTPut:CPOLarity POSitive|NEGative

:ROUTE:HARDware:DGENERator:OUTPut:CPOLarity?

This command configures the polarity of the TTL output DATA CLOCK OUT signal at the DATA CLK OUT pin on the rear panel AUX I/O connector. POSitive refers to normal logic, while NEGative refers to inverted logic.

***RST** POS

Key Entry **Data Clock Polarity Neg Pos**

Remarks This command performs the same function as [“:OPOLarity:CLOCK” on page 131](#).

:OUTPut:DCS[:STATe]

Supported E4438C with Option 001/601 or 002/602

:ROUTe:HARDware:DGENERator:OUTPut:DCS[:STATe] ON|OFF|1|0

:ROUTe:HARDware:DGENERator:OUTPut:DCS[:STATe]?

This command is used to enable or disable the output DATA OUT, DATA CLK OUT, and SYM SYNC OUT signals from the rear panel AUX I/O connector. Normally, these output signals should be enabled (On). However, disabling these outputs will decrease the spurs that are sometimes present when operating at high symbol rates.

***RST** 1

Key Entry DATA/CLK/SYNC Rear Outputs Off On

:OUTPut:DPOLarity

Supported E4438C with Option 001/601 or 002/602

:ROUTe:HARDware:DGENERator:OUTPut:DPOLarity POSitive|NEGative

:ROUTe:HARDware:DGENERator:OUTPut:DPOLarity?

This command configures the polarity of the TTL output signal at the DATA OUT connector. POSitive refers to normal logic, while NEGative refers to inverted logic.

***RST** POS

Key Entry Data Out Polarity Neg Pos

Remarks This command performs the same function as “:OPOLarity:DATA” on page 131.

:OUTPut:SPOLarity

Supported E4438C with Option 001/601 or 002/602

:ROUTe:HARDware:DGENERator:OUTPut:SPOLarity POSitive|NEGative

:ROUTe:HARDware:DGENERator:OUTPut:SPOLarity?

This command configures the polarity of the TTL input signal at the SYMBOL SYNC connector. POSitive refers to normal logic, while NEGative refers to inverted logic.

***RST** POS

Key Entry Symbol Sync Out Polarity Neg Pos

Status Subsystem (:STATus)

:OPERation:BASEband:CONDition

Supported E4438C with Option 001/601 or 002/602

:STATus:OPERation:BASEband:CONDition?

This query returns the decimal sum of the bits in the Baseband Operation Condition Register. For example, if the baseband is busy (bit 0), the value 1 is returned.

Range 0–32767

Remarks The data in this register is continuously updated and reflects the current conditions.

Refer to Chapter 3 of the *E4428C/38C ESG Signal Generators Programming Guide* for more information.

:OPERation:BASEband:ENABLE

Supported E4438C with Option 001/601 or 002/602

:STATus:OPERation:BASEband:ENABLE <val>

:STATus:OPERation:BASEband:ENABLE?

This command determines which bits in the Baseband Operation Event Register will set the Baseband is Busy bit (bit 10) in the Standard Operation Condition Register.

The variable <num> is the sum of the decimal values of the bits you want to enable.

Range 0–32767

Remarks Refer to Chapter 3 of the *E4428C/38C ESG Signal Generators Programming Guide* for more information.

:OPERation:BASEband:NTRansition

Supported E4438C with Option 001/601 or 002/602

:STATUS:OPERation:BASEband:NTRansition <val>

:STATUS:OPERation:BASEband:NTRansition?

This command determines which bits in the Baseband Operation Condition Register will set the corresponding bit in the Baseband Operation Event Register when that bit has a negative transition (1 to 0).

The variable <val> is the sum of the decimal values of the bits that you want to enable.

Range 0–32767

Remarks Refer to Chapter 3 of the *E4428C/38C ESG Signal Generators Programming Guide* for more information.

:OPERation:BASEband:PTRansition

Supported E4438C with Option 001/601 or 002/602

:STATUS:OPERation:BASEband:PTRansition <val>

:STATUS:OPERation:BASEband:PTRansition?

This command determines which bits in the Baseband Operation Condition Register will set the corresponding bit in the Baseband Operation Event Register when that bit has a positive transition (0 to 1).

The variable <val> is the sum of the decimal values of the bits that you want to enable.

Range 0–32767

Remarks Refer to Chapter 3 of the *E4428C/38C ESG Signal Generators Programming Guide* for more information.

:OPERation:BASEband[:EVENT]

Supported E4438C with Option 001/601 or 002/602

:STATus:OPERation:BASEband[:EVENT]?

CAUTION This is a destructive read. The data in the register is latched until it is queried. Once queried, the data is cleared.

This query returns the decimal sum of the bits in the Standard Operation Baseband Event Register.

Range 0–32767

Remarks The equivalent PTR and NTR filters must be set before the condition register can set the corresponding bit in the event register.

Refer to Chapter 3 of the *E4428C/38C ESG Signal Generators Programming Guide* for more information.

:OPERation:CONDition

Supported All

:STATus:OPERation:CONDition?

This query returns the decimal sum of the bits for the registers that are set to one and are part of the Standard Operation Status Group. For example, if a sweep is in progress (bit 3), the value 8 is returned.

Range 0–32767

Remarks The data in this register is continuously updated and reflects current conditions.

Refer to Chapter 3 of the *E4428C/38C ESG Signal Generators Programming Guide* for more information.

:OPERation:ENABLE

Supported All

:STATus:OPERation:ENABLE <val>

:STATus:OPERation:ENABLE?

This command determines which bits in the Standard Operation Event Register will set the Standard Operation Status Summary bit (bit 7) in the Status Byte Register.

The variable <val> is the sum of the decimal values of the bits that you want to enable.

Range 0–32767

Remarks Refer to Chapter 3 of the *E4428C/38C ESG Signal Generators Programming Guide* for more information.

:OPERation:NTRansition

Supported All

:STATus:OPERation:NTRansition <val>

:STATus:OPERation:NTRansition?

This command determines which bits in the Standard Operation Condition Register will set the corresponding bit in the Standard Operation Event Register when that bit has a negative transition (1 to 0).

The variable <val> is the sum of the decimal values of the bits that you want to enable.

Range 0–32767

Remarks Refer to Chapter 3 of the *E4428C/38C ESG Signal Generators Programming Guide* for more information.

:OPERation:PTRansition

Supported All

```
:STATus:OPERation:PTRansition <val>  
:STATus:OPERation:PTRansition?
```

This command determines which bits in the Standard Operation Condition Register will set the corresponding bit in the Standard Operation Event Register when that bit has a positive transition (0 to 1).

The variable <val> is the sum of the decimal values of the bits that you want to enable.

Range 0–32767

Remarks Refer to Chapter 3 of the *E4428C/38C ESG Signal Generators Programming Guide* for more information.

:OPERation[:EVENT]

Supported All

CAUTION This is a destructive read. The data in the register is latched until it is queried. Once queried, the data is cleared.

```
:STATus:OPERation[:EVENT]?
```

This query returns the decimal sum of the bits in the Standard Operation Event Register.

Range 0–32767

Remarks The equivalent PTR or NTR filters must be set before the condition register can set the corresponding bit in the event register.

Refer to Chapter 3 of the *E4428C/38C ESG Signal Generators Programming Guide* for more information.

:PRESet

Supported All

```
:STATus:PRESet
```

This command presets all transition filters, enable registers, and error/event queue enable registers.

Remarks Refer to Chapter 3 of the *E4428C/38C ESG Signal Generators Programming Guide* for more information.

:QUESTionable:BERT:CONDition

Supported E4438C with Option UN7, 300 or both

:STATus:QUESTionable:BERT:CONDition?

This query returns the decimal sum of the bits in the Data Questionable BERT Condition Register. For example, if no clock signal has been input for more than three seconds during the bit error rate measurement (bit 0), then a value of 1 is returned.

Range 0–32767

Remarks The data in this register is continuously updated and reflects the current conditions.

Refer to Chapter 3 of the *E4428C/38C ESG Signal Generators Programming Guide* for more information.

:QUESTionable:BERT:ENABLE

Supported E4438C with Option UN7, 300 or both

:STATus:QUESTionable:BERT:ENABLE <val>

:STATus:QUESTionable:BERT:ENABLE?

This command determines which bits in the Data Questionable BERT Event Register will set the Data Questionable BERT Summary bit (bit 12) in the Data Questionable Condition Register.

The variable <val> is the sum of the decimal values of the bits you want to enable.

Range 0–32767

Remarks Refer to Chapter 3 of the *E4428C/38C ESG Signal Generators Programming Guide* for more information.

:QUESTionable:BERT:NTRansition

Supported E4438C with Option UN7, 300 or both

:STATUS:QUESTionable:BERT:NTRansition <val>

:STATUS:QUESTionable:BERT:NTRansition?

This command determines which bits in the Data Questionable BERT Condition Register will set the corresponding bit in the Data Questionable BERT Event Register when that bit has a negative transition (1 to 0).

The variable <val> is the sum of the decimal values of the bits that you want to enable.

Range 0–32767

Remarks The data in this register is continuously updated and reflects the current conditions.

Refer to Chapter 3 of the *E4428C/38C ESG Signal Generators Programming Guide* for more information.

:QUESTionable:BERT:PTRansition

Supported E4438C with Option UN7, 300 or both

:STATUS:QUESTionable:BERT:PTRansition <val>

:STATUS:QUESTionable:BERT:PTRansition?

This command determines which bits in the Data Questionable BERT Condition Register will set the corresponding bit in the Data Questionable BERT Event Register when that bit has a positive transition (0 to 1).

The variable <val> is the sum of the decimal values of the bits that you want to enable.

Range 0–32767

Remarks Refer to Chapter 3 of the *E4428C/38C ESG Signal Generators Programming Guide* for more information.

:QUESTIONable:BERT[:EVENT]

Supported E4438C with Option UN7, 300 or both

CAUTION This is a destructive read. The data in the register is latched until it is queried. Once queried, the data is cleared.

`:STATUS:QUESTIONable:BERT[:EVENT]?`

This command returns the decimal value of the sum of the bits in the Data Questionable BERT Event Register.

Range 0–32767

Remarks Note that the register requires that the equivalent PTR or NTR filters be set before a condition register bit can set a bit in the Event register.

Refer to Chapter 3 of the *E4428C/38C ESG Signal Generators Programming Guide* for more information.

:QUESTIONable:CALibration:CONDition

Supported All

`:STATUS:QUESTIONable:CALibration:CONDition?`

This query returns the decimal sum of the bits in the Data Questionable Calibration Condition Register. For example, if the DCFM or DCΦM zero calibration fails (bit 0), a value of 1 is returned.

Range 0–32767

Remarks The data in this register is continuously updated and reflects the current conditions.

Refer to Chapter 3 of the *E4428C/38C ESG Signal Generators Programming Guide* for more information.

:QUESTIONable:CALibration:ENABLE

Supported All

`:STATUS:QUESTIONable:CALibration:ENABLE <val>`

`:STATUS:QUESTIONable:CALibration:ENABLE?`

This command determines which bits in the Data Questionable Calibration Event Register will set the calibration summary bit (bit 8) in the Data Questionable Condition Register.

Status Subsystem (:STATUS)

The variable <val> is the sum of the decimal values of the bits that you want to enable.

Range 0–32767

Remarks Refer to Chapter 3 of the *E4428C/38C ESG Signal Generators Programming Guide* for more information.

:QUESTIONable:CALibration:NTRansition

Supported All

```
:STATUS:QUESTIONable:CALibration:NTRansition <val>  
:STATUS:QUESTIONable:CALibration:NTRansition?
```

This command determines which bits in the Data Questionable Calibration Condition Register will set the corresponding bit in the Data Questionable Calibration Event Register when that bit has a negative transition (1 to 0).

The variable <val> is the sum of the decimal values of the bits that you want to enable.

Range 0–32767

Remarks Refer to Chapter 3 of the *E4428C/38C ESG Signal Generators Programming Guide* for more information.

:QUESTIONable:CALibration:PTRansition

Supported All

```
:STATUS:QUESTIONable:CALibration:PTRansition <val>  
:STATUS:QUESTIONable:CALibration:PTRansition?
```

This command determines which bits in the Data Questionable Calibration Condition Register will set the corresponding bit in the Data Questionable Calibration Event Register when that bit has a positive transition (0 to 1).

The variable <val> is the sum of the decimal values of the bits that you want to enable.

Range 0–32767

Remarks Refer to Chapter 3 of the *E4428C/38C ESG Signal Generators Programming Guide* for more information.

:QUESTIONable:CALibration[:EVENT]

Supported All

CAUTION This is a destructive read. The data in the register is latched until it is queried. Once queried, the data is cleared.

`:STATus:QUESTIONable:CALibration[:EVENT]?`

This command returns the decimal sum of the bits in the Data Questionable Calibration Event Register.

Range 0–32767

Remarks The equivalent PTR or NTR filters must be set before the condition register can set the corresponding bit in the event register.

Refer to Chapter 3 of the *E4428C/38C ESG Signal Generators Programming Guide* for more information.

:QUESTIONable:CONDition

Supported All

`:STATus:QUESTIONable:CONDition?`

This query returns the decimal sum of the bits in the Data Questionable Condition Register. For example, if the reference oscillator oven is cold (bit 4), a value of 16 is returned.

Range 0–32767

Remarks The data in this register is continuously updated and reflects current conditions.

Refer to Chapter 3 of the *E4428C/38C ESG Signal Generators Programming Guide* for more information.

:QUESTionable:ENABle**Supported** All

:STATus:QUESTionable:ENABle <val>

:STATus:QUESTionable:ENABle?

This command determines which bits in the Data Questionable Event Register will set the Data Questionable Status Group Summary bit (bit 3) in the Status Byte Register.

The variable <val> is the sum of the decimal values of the bits that you want to enable.

Range 0–32767

Remarks Refer to Chapter 3 of the *E4428C/38C ESG Signal Generators Programming Guide* for more information.

:QUESTionable:FREQuency:CONDition**Supported** All

:STATus:QUESTionable:FREQuency:CONDition?

This query returns the decimal sum of the bits in the Data Questionable Frequency Condition Register. For example, if the 1 GHz internal reference clock is unlocked (bit 2), a value of 4 is returned.

Range 0–32767

Remarks The data in this register is continuously updated and reflects current conditions.

Refer to Chapter 3 of the *E4428C/38C ESG Signal Generators Programming Guide* for more information.

:QUESTionable:FREQuency:ENABle**Supported** All

:STATus:QUESTionable:FREQuency:ENABle <val>

:STATus:QUESTionable:FREQuency:ENABle?

This command determines which bits in the Data Questionable Frequency Event Register will set the frequency summary bit (bit 5) in the Data Questionable Condition Register.

The variable <val> is the sum of the decimal values of the bits that you want to enable.

Range 0–32767

Remarks Refer to Chapter 3 of the *E4428C/38C ESG Signal Generators Programming Guide* for more information.

:QUESTionable:FREQuency:NTRansition

Supported All

```
:STATUS:QUESTionable:FREQuency:NTRansition <val>  
:STATUS:QUESTionable:FREQuency:NTRansition?
```

This command determines which bits in the Data Questionable Frequency Condition Register will set the corresponding bit in the Data Questionable Frequency Event Register when that bit has a negative transition (1 to 0).

The variable <val> is the sum of the decimal values of the bits that you want to enable.

Range 0–32767

Remarks Refer to Chapter 3 of the *E4428C/38C ESG Signal Generators Programming Guide* for more information.

:QUESTionable:FREQuency:PTRansition

Supported All

```
:STATUS:QUESTionable:FREQuency:PTRansition <val>  
:STATUS:QUESTionable:FREQuency:PTRansition?
```

This command determines which bits in the Data Questionable Frequency Condition Register will set the corresponding bit in the Data Questionable Frequency Event Register when that bit has a positive transition (0 to 1).

The variable <val> is the sum of the decimal values of the bits that you want to enable.

Range 0–32767

Remarks Refer to Chapter 3 of the *E4428C/38C ESG Signal Generators Programming Guide* for more information.

:QUESTionable:FREQuency[:EVENT]

Supported All

CAUTION This is a destructive read. The data in the register is latched until it is queried. Once queried, the data is cleared.

```
:STATUS:QUESTionable:FREQuency[:EVENT]?
```

This query returns the decimal sum of the bits in the Data Questionable Frequency Event Register.

Range 0–32767

Status Subsystem (:STATus)

Remarks The equivalent PTR or NTR filters must be set before the condition register can set the corresponding bit in the event register.

Refer to Chapter 3 of the *E4428C/38C ESG Signal Generators Programming Guide* for more information.

:QUESTionable:MODulation:CONDition

Supported All

:STATus:QUESTionable:MODulation:CONDition?

This command returns the decimal sum of the bits in the Data Questionable Modulation Condition Register. For example, if the modulation is uncalibrated (bit 4), a value of 16 is returned.

Range 0–32767

Remarks The data in this register is continuously updated and reflects current conditions.

Refer to Chapter 3 of the *E4428C/38C ESG Signal Generators Programming Guide* for more information.

:QUESTionable:MODulation:ENABLE

Supported All

:STATus:QUESTionable:MODulation:ENABLE <val>

:STATus:QUESTionable:MODulation:ENABLE?

This command determines which bits in the Data Questionable Modulation Event Register will set the modulation summary bit (bit 7) in the Data Questionable Condition Register.

The variable <val> is the sum of the decimal values of the bits that you want to enable.

Range 0–32767

Remarks Refer to Chapter 3 of the *E4428C/38C ESG Signal Generators Programming Guide* for more information.

:QUESTionable:MODulation:NTRansition

Supported All

```
:STATUS:QUESTionable:MODulation:NTRansition <val>
:STATUS:QUESTionable:MODulation:NTRansition?
```

This command determines which bits in the Data Questionable Modulation Condition Register will set the corresponding bit in the Data Questionable Modulation Event Register when that bit has a negative transition (1 to 0).

The variable <val> is the sum of the decimal values of the bits that you want to enable.

Range 0–32767

Remarks Refer to Chapter 3 of the *E4428C/38C ESG Signal Generators Programming Guide* for more information.

:QUESTionable:MODulation:PTRansition

Supported All

```
:STATUS:QUESTionable:MODulation:PTRansition <val>
:STATUS:QUESTionable:MODulation:PTRansition?
```

This command determines which bits in the Data Questionable Modulation Condition Register will set the corresponding bit in the Data Questionable Modulation Event Register when that bit has a positive transition (0 to 1).

The variable <val> is the sum of the decimal values of the bits that you want to enable.

Range 0–32767

Remarks Refer to Chapter 3 of the *E4428C/38C ESG Signal Generators Programming Guide* for more information.

:QUESTionable:MODulation[:EVENT]

Supported All

CAUTION This is a destructive read. The data in the register is latched until it is queried. Once queried, the data is cleared.

```
:STATUS:QUESTionable:MODulation[:EVENT]?
```

This query returns the decimal sum of the bits in the Data Questionable Modulation Event Register.

Range 0–32767

Status Subsystem (:STATus)

Remarks The equivalent PTR or NTR filters must be set before the condition register can set the corresponding bit in the event register.

Refer to Chapter 3 of the *E4428C/38C ESG Signal Generators Programming Guide* for more information.

:QUESTionable:NTRansition

Supported All

```
:STATus:QUESTionable:NTRansition <val>  
:STATus:QUESTionable:NTRansition?
```

This command determines which bits in the Data Questionable Condition Register will set the corresponding bit in the Data Questionable Event Register when that bit has a negative transition (1 to 0).

The variable <val> is the sum of the decimal values of the bits that you want to enable.

Range 0–32767

Remarks Refer to Chapter 3 of the *E4428C/38C ESG Signal Generators Programming Guide* for more information.

:QUESTionable:POWer:CONDition

Supported All

```
:STATus:QUESTionable:POWer:CONDition?
```

This query returns the decimal sum of the bits in the Data Questionable Power Condition Register. For example, if the RF output signal is unlevelled (bit 1), a value of 2 is returned.

Range 0–32767

Remarks The data in this register is continuously updated and reflects current conditions.

Refer to Chapter 3 of the *E4428C/38C ESG Signal Generators Programming Guide* for more information.

:QUESTionable:POWer:ENABle

Supported All

```
:STATus:QUESTionable:POWer:ENABle <val>  
:STATus:QUESTionable:POWer:ENABle?
```

This command determines which bits in the Data Questionable Power Event Register will set the power summary bit (bit 3) in the Data Questionable Condition Register.

The variable <val> is the sum of the decimal values of the bits that you want to enable.

Range 0–32767

Remarks Refer to Chapter 3 of the *E4428C/38C ESG Signal Generators Programming Guide* for more information.

:QUESTionable:POWer:NTRansition

Supported All

```
:STATus:QUESTionable:POWer:NTRansition <val>  
:STATus:QUESTionable:POWer:NTRansition?
```

This command determines which bits in the Data Questionable Power Condition Register will set the corresponding bit in the Data Questionable Power Event Register when that bit has a negative transition (1 to 0).

The variable <val> is the sum of the decimal values of the bits that you want to enable.

Range 0–32767

Remarks Refer to Chapter 3 of the *E4428C/38C ESG Signal Generators Programming Guide* for more information.

:QUESTionable:POWer:PTRansition

Supported All

```
:STATus:QUESTionable:POWer:PTRansition <val>  
:STATus:QUESTionable:POWer:PTRansition?
```

This command determines which bits in the Data Questionable Power Condition Register will set the corresponding bit in the Data Questionable Power Event Register when that bit has a positive transition (0 to 1).

The variable <val> is the sum of the decimal values of the bits that you want to enable.

Range 0–32767

Status Subsystem (:STATus)

Remarks Refer to Chapter 3 of the *E4428C/38C ESG Signal Generators Programming Guide* for more information.

:QUESTionable:POWer[:EVENT]

Supported All

CAUTION This is a destructive read. The data in the register is latched until it is queried. Once queried, the data is cleared.

`:STATus:QUESTionable:POWer[:EVENT]?`

This query returns the decimal sum of the bits in the Data Questionable Power Event Register.

Range 0–32767

Remarks The equivalent PTR or NTR filters must be set before the condition register can set the corresponding bit in the event register.

Refer to Chapter 3 of the *E4428C/38C ESG Signal Generators Programming Guide* for more information.

:QUESTionable:PTRansition

Supported All

`:STATus:QUESTionable:PTRansition <val>`

`:STATus:QUESTionable:PTRansition?`

This command determines which bits in the Data Questionable Condition Register will set the corresponding bit in the Data Questionable Event Register when that bit has a positive transition (0 to 1).

The variable <val> is the sum of the decimal values of the bits that you want to enable.

Range 0–32767

Remarks Refer to Chapter 3 of the *E4428C/38C ESG Signal Generators Programming Guide* for more information.

:QUEStionable[:EVENT]

Supported All

CAUTION This is a destructive read. The data in the register is latched until it is queried. Once queried, the data is cleared.

:STATus:QUEStionable[:EVENT]?

This query returns the decimal sum of the bits in the Data Questionable Event Register.

Range 0–32767

Remarks The equivalent PTR or NTR filters must be set before the condition register can set the corresponding bit in the event register.

Refer to Chapter 3 of the *E4428C/38C ESG Signal Generators Programming Guide* for more information.

System Subsystem (:SYSTem)

:CAPability

Supported All

:SYSTem:CAPability?

This query returns the signal generator's capabilities and outputs the appropriate specifiers:

```
(RFSOURCE WITH( (AM|FM|PULM|PM|LFO)&(FSSWEEP|FLIST)&(PSSWEEP|PLIST)
&TRIGGER&REFERENCE))
```

This is a list of the SCPI-defined basic functionality of the signal generator and the additional capabilities it has in parallel (a&b) and singularly (a|b).

:DATE

Supported All

:SYSTem:DATE <year>, <month>, <day>

:SYSTem:DATE?

This command sets the date as shown in the lower right area of the signal generator display.

<year> This variable requires a four digit integer.

The query returns the date in the following format:

```
<+year>, <+month>, <+day>
```

Range <month>: 1–12 <day>: 1–31

Key Entry **Time/Date**

:ERRor[:NEXT]

Supported All

:SYSTem:ERRor[:NEXT]?

This query returns the most recent error message from the signal generator error queue. If there are no error messages, the query returns the following output:

```
+0, "No error"
```

When there is more than one error message, the query will need to be sent for each message.

Key Entry **Error Info** **View Next Error Message**

Remarks The ESG deletes the error messages after viewing the last message.

:ERRor:SCPI[:SYNTax]

Supported All

:SYSTem:ERRor:SCPI[:SYNTax] ON|OFF|1|0

:SYSTem:ERRor:SCPI[:SYNTax]?

This command enables or disables the reporting of SCPI syntax errors to the error queue.

***RST** 1

:FILEsystem:SAFEmode

Supported All

:SYSTem:FILEsystem:SAFEmode ON|OFF|1|0

:SYSTem:FILEsystem:SAFEmode?

This command selects the safe mode for file handling. When safe mode is set to OFF, volatile waveform files can be edited and saved while the signal generator plays the file without signal interruption. However, it is possible with complex waveforms, for corruption of memory to occur which will be reported as an error on the front-panel display and require a reboot of the signal generator to resolve.

Example

```
:SYST:FILE:SAVE ON
```

The preceding example enables the safe mode setting and waveform files cannot be edited without signal disruption while the signal generator plays them.

***RST** On

:HELP:MODE

Supported All

:SYSTem:HELP:MODE SINGLE|CONTInuous

:SYSTem:HELP:MODE?

This command sets the help function mode of the signal generator.

SINGLE Help is provided only for the next key that you press.

CONTInuous Help is provided for each key you press. In addition, the function of the key is executed.

When the help dialog box is displayed, pressing the **Help** hardkey in either mode will turn help off.

Key Entry **Help Mode Single Cont**

Remarks The setting enabled by this command is not affected by signal generator power-on, preset, or *RST.

:IDN

Supported All

:SYSTem:IDN "string"

This command modifies the identification string that the *IDN? query returns. Sending an empty string returns the query output of *IDN? to its factory shipped setting. The maximum string length is 72 characters.

Remarks Modification of the *IDN? query output enables the signal generator to identify itself as another signal generator when used as a replacement.

The display diagnostic information, shown by pressing the **Diagnostic Info** softkey, is not affected by this command.

:LANGuage

Supported All

:SYSTem:LANGuage "SCPI"|"COMP"|"NADC"|"PDC"|"PHS"|"8648"

:SYSTem:LANGuage?

This command sets the remote language for the signal generator.

SCPI This choice provides compatibility for SCPI commands.

COMP This choice provides compatibility for the 8656B, 8657A/B signal generator which is supported by using the GPIB interface.

NADC	This choice provides compatibility for the 8657D NADC personality which is supported only through a GPIB interface (E4438C only).
PDC	This choice provides compatibility for the 8657D PDC personality which is supported only through a GPIB interface (E4438C only).
PHS	This choice provides compatibility for the 8657J PHS personality which is supported only through a GPIB interface (E4438C only).
8648	This choice provides compatibility for the 8648A/B/C/D signal generator which is supported only through a GPIB interface.
Key Entry	SCPI 8656B,8657A/B 8657D NADC 8657D PDC 8657J PHS 8648A/B/C/D
Remarks	The setting enabled by this command is not affected by signal generator power-on, preset, or *RST. For more information on supported SCPI commands and programming codes, refer to the <i>Programming Compatibility Guide</i> .

:PON:TYPE

Supported All

:SYSTem: PON:TYPE PRESet | LAST
:SYSTem: PON:TYPE?

This command sets the defined conditions for the signal generator at power on.

PRESet	This choice sets the conditions to factory- or user-defined as determined by the choice for the preset type. Refer to “:PRESet:TYPE” on page 157 for selecting the type of preset.
LAST	This choice retains the settings at the time the signal generator was last powered down.

NOTE When LAST is selected, no signal generator interaction can occur for at least 3 seconds prior to cycling the power for the current settings to be saved.

Key Entry **Power On Last Preset**

Remarks The setting enabled by this command is not affected by signal generator power-on, preset, or *RST.

:PRESet**Supported** All

SYSTem:PRESet

This command returns the signal generator to a set of defined conditions. It is equivalent to pressing the front panel **Preset** hardkey.

Key Entry **Preset**

Remarks The defined conditions are either factory- or user-defined. Refer to “:PRESet:TYPE” on page 157 for selecting the type of defined conditions.

:PRESet:ALL**Supported** All

:SYSTem:PRESet:ALL

This command sets all states of the signal generator back to their factory default settings, including states that are not normally affected by signal generator power-on, preset, or *RST.

:PRESet:LANGUage**Supported** All

```
:SYSTem:PRESet:LANGUage "SCPI" | "COMP" | "NADC" | "PDC" | "PHS" | "8648"
:SYSTem:PRESet:LANGUage?
```

This command sets the remote language that is available when the signal generator is preset.

SCPI	This choice provides compatibility for SCPI commands.
COMP	This choice provides compatibility for the 8656B, 8657A/B signal generator which is supported by using the GPIB interface.
NADC	This choice provides compatibility for the 8657D NADC personality which is supported only through a GPIB interface (E4438C only).
PDC	This choice provides compatibility for the 8657D PDC personality which is supported only through a GPIB interface (E4438C only).
PHS	This choice provides compatibility for the 8657J PHS personality which is supported only through a GPIB interface (E4438C only).
8648	This choice provides compatibility for the 8648A/B/C/D signal generator which is supported only through a GPIB interface.

*RST	"SCPI"				
Key Entry	SCPI	8656B,8657A/B	8657D NADC	8657D PDC	8657J PHS
	8648A/B/C/D				

:PRESet:PERSistent

Supported All
:SYSTem:PRESet:PERSistent

This command sets the states that are not affected by signal generator power-on, preset, or *RST to their factory default settings.

Key Entry **Restore Sys Defaults**

:PRESet:PN9

Supported E4438C Option with Option 001/601 or 002/602
:SYSTem:PRESet:PN9 NORMal|QUICK
:SYSTem:PRESet:PN9?

This command sets the preset length of the PN9 sequence for personalities that require software PRBS generation.

NORMAL This choice produces a maximal length PN9 sequence.
QUICK This choice produces a truncated (216 bits) PN9 sequence.
***RST** NORM

Key Entry **PN9 Mode Preset**

:PRESet:TYPE

Supported All
:SYSTem:PRESet:TYPE NORMal|USER
:SYSTem:PRESet:TYPE?

This command toggles the preset state between factory- and user-defined conditions.

Key Entry **Preset Normal User**

Remarks Refer to **“:PRESet[:USER]:SAVE”** for saving the USER choice preset settings.
The setting enabled by this command is not affected by signal generator power-on, preset, or *RST.

:PRESet[:USER]:SAVE**Supported** All

:SYSTem:PRESet[:USER]:SAVE

This command saves your user-defined preset conditions to a state file.

Key Entry Save User Preset

Remarks Only one user-defined preset file can be saved. Subsequent saved user-defined preset files will overwrite the previously saved file.

:SECurity:DISPlay**Supported** All Models

```
:SYSTem:SECurity:DISPlay ON|OFF|1|0
:SYSTem:SECurity:DISPlay?
```

This command enables or disables the secure display mode.

On(1) This selection turns the signal generator display back on, showing the current settings. Cycling the signal generator power also restores the display, however the current settings may change depending on the power-on configuration choice. See “:PON:TYPE” on page 155 for information on the power-on choices available.

OFF(0) This selection blanks the signal generator’s display, hiding the settings and disabling the front panel keys. While in this mode, the display shows
*** SECURE DISPLAY ACTIVATED ***.

For more information about security functions, refer to the *E4428C/38C ESG Signal Generators User’s Guide*.

Example

:SYST:SEC:DISP OFF

The preceding example enables the secure display mode.

***RST** 1**Range** N/A**Key Entry** Activate Security Display

:SECurity:ERASeall

Supported All Models

:SYSTEM:SECurity:ERASall

This command removes all user files, flatness correction files, and baseband generator files. In addition, all table editor files are returned to their original factory values.

This command differs from the :DELeTe:ALL command, which does not reset table editors to factory values. For more information about security functions, refer to the *E4428C/38C ESG Signal Generators User's Guide*.

Key Entry Erase All

:SECurity:LEVel

Supported All Models

:SYSTEM:SECurity:LEVel NONE|ERASe|OVERwrite|SANitize
:SYSTEM:SECurity:LEVel?

This command selects the security level operation for the signal generator.

NONE	This selection causes the signal generator to reset to factory default settings.
ERASe	This selection removes all user files, table editor files, flatness correction files, and baseband generator files.
OVERwrite	This selection removes all user files, table editor files, flatness correction files, and baseband generator files. The memory is then overwritten with random data.
SRAM	All addressable locations will be overwritten with random characters.
Hard Disk	All addressable locations will be overwritten with random characters.
Flash Memory	The flash blocks will be erased.
SANitize	This selection removes all user files, table editor files, flatness correction files, and baseband generator files using the same techniques as the OVERwrite selection for SRAM and flash memory. For the hard disk, the signal generator overwrites all addressable locations with a single character, its complement, and then with a random character.

Once you select the security level, you must execute the command from “:SECurity:LEVel:STATe” to arm the security level.

NOTE Once you select a security level and arm it, you cannot change the level.

For other cleaning and security operation descriptions, see “:SECurity:ERASeall” on page 159, “:SECurity:OVERwrite” on page 161, and “:SECurity:SANitize” on page 161. For more information about security functions, refer to the *E4428C/38C ESG Signal Generators User’s Guide*.

Example

```
:SYST:SEC:LEV NONE
```

The preceding example sets the secure mode so it resets the signal generator to factory settings after completing the security operation.

Key Entry **None** **Erase** **Overwrite** **Sanitize**

:SECurity:LEVel:STATe

Supported All Models

CAUTION Ensure that you select the security level prior to executing this command with the ON (1) selection. Once you enable the state, you cannot reduce the security level.

```
:SYSTem:SECurity:LEVel:STATe ON|OFF|1|0
:SYSTem:SECurity:LEVel:STATe?
```

This command arms and executes the current security level parameter.

On (1) This selection arms and prevents any changes to the current security level. Refer to “:SECurity:LEVel” on page 159 for setting the security level.

OFF (0) This selection performs the actions required for the current security level setting. Cycling the signal generator power also performs the same function.

For more information about security functions, refer to the *E4428C/38C ESG Signal Generators User’s Guide*.

Example

```
:SYST:SEC:LEV:STAT ON
```

The preceding example arms the secure mode selected with the SYSTem:SECurity:LEVel command.

Key Entry **Enter Secure Mode**

:SECurity:OVERwrite

Supported All Models

:SYSTem:SECurity:OVERwrite

This command removes all user files, table editor files values, flatness correction files, and baseband generator files. The memory is then overwritten with random data as described below. For more information about security functions, refer to the *E4428C/38C ESG Signal Generators User's Guide*.

SRAM All addressable locations will be overwritten with random characters.

HARD DISK All addressable locations will be overwritten with random characters.

FLASH MEMORY The flash blocks will be erased.

Key Entry Erase and Overwrite All

:SECurity:SANitize

Supported All Models

:SYSTem:SECurity:SANitize

This command removes all user files, table editor files values, flatness correction files, and baseband generator files. The memory is then overwritten with a sequence of data as described below. For more information about security functions, refer to the *E4428C/38C ESG Signal Generators User's Guide*.

SRAM All addressable locations will be overwritten with random characters.

HARD DISK All addressable locations will be overwritten with a single character and then a random character.

FLASH MEMORY The flash blocks will be erased.

Key Entry Erase and Sanitize All

:SSAVer:DELay

Supported All

:SYSTem:SSAVer:DELay <val>

:SYSTem:SSAVer:DELay?

This command sets the amount of time before the display light or display light and text is switched off. This will occur if there is no input via the front panel during the delay period.

The variable <val> is a whole number measured in hours.

Range 1–12

Key Entry **Screen Saver Delay:**

Remarks The setting enabled by this command is not affected by signal generator power-on, preset, or *RST.

Refer to “:SSAVer:MODE” on page 162 for selecting the screen saver mode.

:SSAVer:MODE

Supported All

:SYSTem:SSAVer:MODE LIGHT | TEXT

:SYSTem:SSAVer:MODE?

This command toggles the screen saver mode between light only or light and text.

LIGHT This choice enables only the light to turn off during the screen saver operation while leaving the text visible on the darkened screen.

TEXT This choice enables both the display light and text to turn off during the screen saver operation.

Key Entry **Screen Saver Mode**

Remarks The setting enabled by this command is not affected by signal generator power-on, preset, or *RST.

:SSAVer:STAtE

Supported All

:SYSTem:SSAVer:STAtE ON | OFF | 1 | 0

:SYSTem:SSAVer:STAtE?

This command enables or disables the display screen saver.

Key Entry **Screen Saver Off On**

Remarks The setting enabled by this command is not affected by signal generator power-on, preset, or *RST.

:TIME

Supported All

:SYSTem:TIME <hour>, <minute>, <second>

:SYSTem:TIME?

This command sets the time displayed in the lower right area of the signal generator's display.

Range <hour>: 0–23 <minute>: 0–59 <second>: 0–59

Key Entry Time/Date

:VERSion

Supported All

:SYSTem:VERSion?

This command returns the SCPI version number with which the signal generator complies.

Trigger Subsystem

:ABORt

Supported All

:ABORt

This command causes the List or Step sweep in progress to abort. If INIT:CONT[:ALL] is set to ON, the sweep will immediately re-initiate. The pending operation flag affecting *OPC, *OPC?, and *WAI will undergo a transition once the sweep has been reset.

:INITiate:CONTinuous[:ALL]

Supported All

:INITiate:CONTinuous[:ALL] ON|OFF|1|0

:INITiate:CONTinuous[:ALL]?

This command selects either a continuous or single list or step sweep. Execution of this command does not affect a sweep in progress.

ON (1) This choice selects continuous sweep where, after the completion of the previous sweep, the current sweep will restart automatically or wait until the appropriate trigger source is received.

OFF (0) This choice selects a single sweep. Refer to “:INITiate:IMMEDIATE[:ALL]” on [page 165](#) for single sweep triggering information.

*RST 0

Key Entry Sweep Repeat Single Cont

Remarks Execution of this command will not affect a sweep in progress.

:INITiate[:IMMediate][:ALL]

Supported All

```
:INITiate[:IMMediate][:ALL]
```

This command either sets or sets and starts a single List or Step sweep, depending on the trigger type. The command performs the following:

- arms a single sweep when BUS, EXTERNAL, or KEY is the trigger source selection
- arms and starts a single sweep when IMMEDIATE is the trigger source selection

This command is ignored if a sweep is in progress. See “:INITiate:CONTinuous[:ALL]” on page 164 for setting continuous or single sweep. See “:TRIGger[:SEQuence]:SOURce” on page 166 to select the trigger source.

In some atypical cases, the :INIT command could be ignored if it immediately follows an *OPC? command. If the :INIT command is ignored, then use a 10ms sleep function before sending the command.

Key Entry **Single Sweep**

:TRIGger:OUTPut:POLarity

Supported All

```
:TRIGger:OUTPut:POLarity POSitive|NEGative
```

```
:TRIGger:OUTPut:POLarity?
```

Sets the TTL signal level present at the TRIGGER OUT connector to either high (5 vdc) or low (0 vdc). The trigger out is asserted after the frequency and/or power is set while the sweep is waiting for its step trigger. In addition, the swept-sine sends a pulse to the TRIGGER OUT at the beginning of each sweep.

Example

```
:TRIG:OUTP:POL NEG
```

The preceding example enables the continuous mode as the sweep type.

***RST** POS

Key Entry **Trigger Out Polarity Neg Pos**

:TRIGger[:SEQuence]:SLOPe

Supported All

:TRIGger[:SEQuence]:SLOPe POSitive|NEGative

:TRIGger[:SEQuence]:SLOPe?

This command sets the polarity of the ramp or sawtooth waveform slope present at the TRIG IN connector that will trigger a list or step sweep.

***RST** POS

Key Entry **Trigger In Polarity Neg Pos**

:TRIGger[:SEQuence]:SOURce

Supported All

:TRIGger[:SEQuence]:SOURce BUS|IMMediate|EXTernal|KEY

:TRIGger[:SEQuence]:SOURce?

This command sets the sweep trigger source for a list or step sweep.

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

IMMediate This choice enables immediate triggering of the sweep event.

EXTernal This choice enables the triggering of a sweep event by an externally applied signal at the TRIG IN connector.

KEY This choice enables triggering through front panel interaction by pressing the **Trigger** hardkey.

***RST** IMM

Remarks The wait for the BUS, EXTernal, or KEY trigger can be bypassed by sending the :TRIGger[:SEQuence][:IMMediate] command.

Example

```
:TRIG:SOUR BUS
```

The preceding example sets the sweep trigger source to BUS.

***RST** IMM

Key Entry **Bus Free Run Ext Trigger Key**

:TRIGger[:SEQuence][:IMMediate]

Supported All Models

`:TRIGger[:SEQuence][:IMMediate]`

This event command causes an armed List or Step sweep to immediately start without the selected trigger occurring.

In some atypical cases, the `:TRIG` command could be ignored if it immediately follows an `*OPC?` command. If the `:TRIG` command is ignored, then use a 10ms sleep function before sending the command.

Unit Subsystem (:UNIT)

:POWer

Supported All

```
:UNIT:POWer DBM|DBuV|DBuVemf|V|Vemf|DB  
:UNIT:POWer?
```

This command terminates an amplitude value in the selected unit of measure.

If the amplitude reference state is set to on, the query returns units expressed in DB and the DB choice will be displayed. Setting any other unit will cause a setting conflict error stating that the amplitude reference state must be set to off. Refer to, “[:REFerence:STATe](#)” on page 66 for more information.

***RST** DBM

Key Entry dBm dBuV dBuVemf mV uV mVemf uVemf DB

Remarks All power values in this chapter are shown with DBM as the unit of measure. If a different unit of measure is selected, replace DBM with the newly selected unit whenever it is indicated for the value.

4 Analog Commands

This chapter provides SCPI descriptions for subsystems dedicated to analog commands common to all ESG signal generator models. This chapter contains the following major sections:

- “Amplitude Modulation Subsystem ([:SOURce])” on page 170
- “Frequency Modulation Subsystem ([:SOURce])” on page 177
- “Low Frequency Output Subsystem ([:SOURce]:LFOOutput)” on page 184
- “Phase Modulation Subsystem ([:SOURce])” on page 189
- “Pulse Modulation Subsystem ([:SOURce]:PULM)” on page 197

Amplitude Modulation Subsystem ([:SOURce])

:AM[1]|2...

Supported All Models

[:SOURce] :AM[1] | 2 . . .

This prefix enables the selection of the AM path and is part of most SCPI commands associated with this subsystem. The two paths are equivalent to the **AM Path 1 2** softkey.

AM[1] **AM Path 1 2** with 1 selected

AM2 **AM Path 1 2** with 2 selected

When just AM is shown in a command, this means the command applies globally to both paths.

Each path is set up separately. When a SCPI command uses AM[1], only path one is affected. Consequently, when AM2 is selected, only path two is set up. However, the depth of the signals for the two paths can be coupled.

Depth coupling links the depth value of AM[1] to AM2. Changing the deviation value for one path will change it for the other path.

These two paths can be on at the same time provided the following conditions have been met:

- DUALsine or SWEPTSine is not the selection for the waveform type
- each path uses a different source (Internal 1, Ext1, or Ext2)

:AM:INTernal:FREQuency:STEP[:INCRement]

Supported All Models

[:SOURce] :AM: INTernal : FREQuency : STEP[: INCRement] <num>

[:SOURce] :AM: INTernal : FREQuency : STEP[: INCRement] ?

This command sets the step increment for the amplitude modulation internal frequency.

The variable <num> is expressed in units of Hertz.

Range 0.5–1E6

Key Entry **Incr Set**

Remarks The value set by this command is used with the UP and DOWN choices for the AM frequency setting. Refer to “:AM[1]|2:INTERNAL[1]:FREQUENCY” on page 172 for more information.

 The setting enabled by this command is not affected by signal generator power-on, preset, or *RST.

:AM:WIDeband:STATe

Supported All Models

[:SOURce] :AM:WIDeband:STATe ON|OFF|1|0

[:SOURce] :AM:WIDeband:STATe?

This command enables or disables the wideband amplitude modulation for the selected path.

***RST** 0

Key Entry **AM Off On**

Remarks The RF carrier is modulated when the modulation state of the signal generator is set to ON, see “:MODulation[:STATe]” on page 127 for more information.

 Whenever amplitude modulation is enabled, the AM annunciator is turned on in the display

:AM[1]|2:EXTeRnal[1]|2:COUPling

Supported All Models

[:SOURce] :AM[1]|2:EXTeRnal[1]|2:COUPling AC|DC

[:SOURce] :AM[1]|2:EXTeRnal[1]|2:COUPling?

This command sets the coupling for the amplitude modulation source through the selected external input connector.

AC This choice will only pass ac signal components.

DC This choice will pass both ac and dc signal components.

***RST** DC

Key Entry **Ext Coupling DC AC**

Remarks The command does not change the currently active source or switch the current modulation on or off. The modulating signal may be the sum of several signals, either internal or external sources.

Amplitude Modulation Subsystem ([:SOURce])**:AM[1]|2:INTernal[1]:FREQuency****Supported** All Models

```
[ :SOURce ] :AM[ 1 ] | 2 :INTernal[ 1 ] :FREQuency <val><unit> | UP | DOWN
[ :SOURce ] :AM[ 1 ] | 2 :INTernal[ 1 ] :FREQuency?
```

This command sets the internal amplitude modulation rate for the following applications:

- the first tone of a dual-sine waveform
- the start frequency for a swept-sine waveform
- the frequency rate for all other waveforms

***RST** +4.00000000E+002

Range Dual Sine, Swept-Sine & Sine: 0.1HZ–100kHZ
All Other Waveforms: 0.1HZ–20kHZ

Key Entry **AM Tone 1 Rate** **AM Start Rate** **AM Rate**

:AM[1]|2:INTernal[1]:FREQuency:ALternate**Supported** All Models

```
[ :SOURce ] :AM[ 1 ] | 2 :INTernal[ 1 ] :FREQuency:ALternate <val><unit>
[ :SOURce ] :AM[ 1 ] | 2 :INTernal[ 1 ] :FREQuency:ALternate?
```

This command sets the frequency for the alternate signal.

***RST** +4.00000000E+002

Range Dual-Sine: 0.1HZ–100kHZ Swept-Sine: 0.1HZ–100kHZ

Key Entry **AM Tone 2 Rate** **AM Stop Rate**

Remarks The alternate signal frequency is the second tone of a dual-sine or the stop frequency of a swept-sine waveform.

Refer to “:AM[1]2:INTernal[1]:FUNction:SHAPE” on page 173 for the waveform selection.

:AM[1]|2:INteRnal[1]:FREQuency:ALteRnate:AMPLitude:PERCent

Supported All Models

```
[ :SOURce ] :AM[1] | 2 :INteRnal[1] :FREQuency:ALteRnate:AMPLitude:
PERCent <val><unit>
[ :SOURce ] :AM[1] | 2 :INteRnal[1] :FREQuency:ALteRnate:AMPLitude:PERCent?
```

This command sets the amplitude of the second tone for a dual-sine waveform as a percentage of the total amplitude. For example, if the second tone makes up 30% of the total amplitude, then the first tone is 70% of the total amplitude.

***RST** +5.00000000E+001

Range 0–100PCT

Key Entry **AM Tone 2 Ampl Percent Of Peak**

Remarks Refer to “:AM[1]2:INteRnal[1]:FUNctIon:SHAPE” on page 173 for the waveform selection.

:AM[1]|2:INteRnal[1]:FUNctIon:SHAPE

Supported All Models

```
[ :SOURce ] :AM[1] | 2 :INteRnal[1] :FUNctIon:SHAPE SINE|TRIangle|SQUare|RAMP|
NOISe|DUALsine|SWEPTsine
[ :SOURce ] :AM[1] | 2 :INteRnal[1] :FUNctIon:SHAPE?
```

This command sets the AM waveform type.

***RST** SINE

Key Entry **Sine Triangle Square Ramp Noise Dual-Sine Swept-Sine**

:AM[1]|2:INteRnal[1]:SWEep:TIME

Supported All Models

```
[ :SOURce ] :AM[1] | 2 :INteRnal[1] :SWEep:TIME <val><unit>
[ :SOURce ] :AM[1] | 2 :INteRnal[1] :SWEep:TIME?
```

This command sets the sweep rate for the amplitude-modulated, swept-sine waveform.

***RST** +1.00000000E–001

Range 1mS–65.535S

Key Entry **AM Sweep Time**

:AM[1]|2:INTernal[1]:SWEep:TRIGger**Supported** All Models

```
[ :SOURce ] :AM[ 1 ] | 2 :INTernal [ 1 ] :SWEep :TRIGger BUS | IMMEDIATE | EXTernal | KEY
[ :SOURce ] :AM[ 1 ] | 2 :INTernal [ 1 ] :SWEep :TRIGger ?
```

This command sets the trigger source for the amplitude modulated swept-sine waveform.

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

IMMEDIATE This choice enables immediate triggering of the sweep event.

EXTernal This choice enables the triggering of a sweep event by an externally applied signal at the TRIG IN connector.

KEY This choice enables triggering through front panel interaction by pressing the **Trigger** hardkey.

***RST** IMM

Key Entry **Bus** **Free Run** **Ext** **Trigger Key**

Remarks Refer to “:AM[1]|2:INTernal[1]:FUNCTION:SHAPE” on page 173 for the waveform selection.

:AM[1]|2:SOURce**Supported** All Models

```
[ :SOURce ] :AM[ 1 ] | 2 :SOURce INT[ 1 ] | EXT[ 1 ] | EXT2
[ :SOURce ] :AM[ 1 ] | 2 :SOURce ?
```

This command sets the source to generate the amplitude modulation.

INT This choice selects the internal source to provide an ac-coupled signal.

EXT This choice selects the EXT 1 INPUT or the EXT 2 INPUT connector to provide an externally applied signal that can be ac- or dc-coupled.

***RST** INT

Key Entry **Internal** **Ext1** **Ext2**

Remarks A 1.0 V_p input is required for calibrated AM depth settings.

The externally applied, ac-coupled input signal is tested for a voltage level and a display annunciator will report a high or low condition if that voltage is > ±3% of 1 V_p.

:AM[1]|2:STATe

Supported All Models

[:SOURce] :AM[1] | 2 :STATe ON | OFF | 1 | 0

[:SOURce] :AM[1] | 2 :STATe?

This command enables or disables the amplitude modulation for the selected path.

***RST** 0

Key Entry **AM Off On**

Remarks The RF carrier is modulated when you have set the signal generator's modulation state to ON, see “:MODulation[:STATe]” on page 127 for more information.

Whenever amplitude modulation is enabled, the AM annunciator is turned on in the display.

The two paths for amplitude modulation can be simultaneously enabled. Refer to “:AM[1]2...” on page 170 for more information.

:AM[1]|2[:DEPTH]

Supported All Models

[:SOURce] :AM[1] | 2 [:DEPT h] [:LINear] <val><unit> | UP | DOWN

[:SOURce] :AM[1] | 2 [:DEPT h] [:LINear]?

This commands sets the amplitude modulation depth in percent.

***RST** +1.00000000E-001

Range 0.00–100PCT

Key Entry **AM Depth**

Remarks The value of AM depth applies only to whichever AM path configuration (AM[1]2) you have currently selected. AM Depth is fixed for wideband AM.

When the depth values are coupled, a change made to one path is applied to both. Refer to “:AM[1]2[:DEPTH]:TRACK” on page 176 for AM depth value coupling.

Refer to “:AM[:DEPTH]:STEP[:INCRement]” on page 176 for setting the value associated with UP and DOWN choices.

:AM[1] | 2[:DEPTh]:TRACK**Supported** All Models

[:SOURce]:AM[1] | 2[:DEPTh][:LINear]:TRACK ON|OFF|1|0

[:SOURce]:AM[1] | 2[:DEPTh][LINear]:TRACK?

This command enables or disables the coupling of the AM depth values between the paths (AM[1] and AM2).

ON (1) This choice will link the depth value of AM[1] with AM2; AM2 will assume the AM[1] depth value. For example, if AM[1] depth is set to 15% and AM2 is set to 11%, enabling the depth tracking will cause the AM2 depth value to change to 15%. This applies regardless of the path (AM[1] or AM2) selected in this command

OFF (0) This choice disables the coupling and both paths will have independent depth values.

RST** 0**Key Entry** **AM Depth Couple Off On*Remarks** When the depth values are coupled, a change made to one path is applied both.**:AM[:DEPTh]:STEP[:INCRement]****Supported** All Models

[:SOURce]:AM[:DEPTh]:STEP[:INCRement] <val><unit>

[:SOURce]:AM[:DEPTh]:STEP[:INCRement]?

This command sets the AM depth step increment.

Range 0.1–100PCT**Key Entry** **Incr Set**

Remarks The value set by this command is used with the UP and DOWN choices for the AM depth setting. Refer to “:AM[1]2[:DEPTh]” on page 175 for more information.

The setting enabled by this command is not affected by signal generator power-on, preset, or *RST.

Frequency Modulation Subsystem ([:SOURce])

:FM[1] | 2...

Supported All Models

[[:SOURce]:FM[1] | 2...]

This prefix enables the selection of the FM path and is part of most SCPI commands associated with this subsystem. The two paths are equivalent to the **FM Path 1 2** softkey.

FM[1] **FM Path 1 2** with 1 selected

FM2 **FM Path 1 2** with 2 selected

When just FM is shown in a command, this means the command applies globally to both paths.

Each path is set up separately. When a SCPI command uses FM[1], only path one is affected. Consequently, when FM2 is selected, only path two is set up. However, the deviation of the signals for the two paths can be coupled.

Deviation coupling links the deviation value of FM[1] to FM2. Changing the deviation value for one path will change it for the other path.

These two paths can be on at the same time provided the following conditions have been met:

- DUALsine or SWEPTSine is not the selection for the waveform type
- each path uses a different source (Internal 1, Ext1, or Ext2)
- FM2 must be set to a deviation less than FM[1]

:FM:INTernal:FREQuency:STEP[:INCRement]**Supported** All Models

[:SOURce]:FM:INTernal:FREQuency:STEP[:INCRement] <num>

[:SOURce]:FM:INTernal:FREQuency:STEP[:INCRement]?

This command sets the step increment for the internal frequency modulation.

The variable <num> sets the entered value in units of Hertz.

***RST** +5.00000000E+002**Range** 0.5–1E6**Key Entry** **Incr Set**

Remarks The value set by this command is used with the UP and DOWN choices for the FM frequency setting. Refer to “:FM[1]2:INTernal[1]:FREQuency” on page 179 for more information.

The setting enabled by this command is not affected by signal generator power-on, preset, or *RST.

:FM[1]|2:EXTernal[1]|2:COUPLing**Supported** All Models

[:SOURce]:FM[1]|2:EXTernal[1]|2:COUPLing AC|DC

[:SOURce]:FM[1]|2:EXTernal[1]|2:COUPLing?

This command sets the coupling for the frequency modulation source through the selected external input connector.

AC This choice will only pass ac signal components.

DC This choice will pass both ac and dc signal components.

***RST** DC**Key Entry** **Ext Coupling DC AC**

Remarks The command does not change the currently active source or switch the current modulation on or off. The modulating signal may be the sum of several signals, either internal or external sources.

:FM[1] | 2:INTErnal[1]:FREQuency

Supported All Models

[:SOURce] :FM[1] | 2 :INTErnal [1] :FREQuency <val><unit> | UP | DOWN

[:SOURce] :FM[1] | 2 :INTErnal [1] :FREQuency?

This command sets the internal frequency modulation rate for the following applications:

- the first tone of a dual-sine waveform
- the start frequency for a swept-sine waveform
- the frequency rate for all other waveforms

***RST** +4.00000000E+002

Range Dual-Sine: 0.1HZ–100KHZ Swept-Sine: 0.1HZ–100KHZ
 All Other Waveforms: 0.1HZ–20KHZ

Key Entry **FM Tone 1 Rate** **FM Start Rate** **FM Rate**

:FM[1] | 2:INTErnal[1]:FREQuency:ALTErnate

Supported All Models

[:SOURce] :FM[1] | 2 :INTErnal [1] :FREQuency:ALTErnate <val><unit>

[:SOURce] :FM[1] | 2 :INTErnal [1] :FREQuency:ALTErnate?

This command sets the frequency for the alternate signal.

***RST** +4.00000000E+002

Range Dual-Sine: 0.5HZ–1MHZ Swept-Sine: 1HZ–1MHZ

Key Entry **FM Tone 2 Rate** **FM Stop Rate**

Remarks The alternate signal frequency is the second tone of a dual-sine or the stop frequency of a swept-sine waveform.

Refer to “:FM[1]2:INTErnal[1]:FUNCTion:SHAPE” on page 180 for the waveform selection.

:FM[1] | 2:INTernal[1]:FREQuency:ALternate:AMPLitude:PERCent**Supported** All Models[:SOURce]:FM[1] | 2:INTernal[1]:FREQuency:ALternate:AMPLitude:
PERCent <val><unit>

[:SOURce]:FM[1] | 2:INTernal[1]:FREQuency:ALternate:AMPLitude:PERCent?

This command sets the amplitude of the second tone for a dual-sine waveform as a percentage of the total amplitude. For example, if the second tone makes up 30% of the total amplitude, then the first tone is 70% of the total amplitude.

RST** +1.00000000E+002**Range** 0–100PCT**Key Entry** **FM Tone 2 Ampl Percent Of Peak*Remarks** Refer to “:FM[1]2:INTernal[1]:FUNction:SHAPE” for the waveform selection.**:FM[1] | 2:INTernal[1]:FUNction:SHAPE****Supported** All Models[:SOURce]:FM[1] | 2:INTernal[1]:FUNction:SHAPE SINE|TRIangle|SQUare|RAMP|
NOISe|DUALsine|SWEPTsine

[:SOURce]:FM[1] | 2:INTernal[1]:FUNction:SHAPE?

This command sets the FM waveform type.

RST** SINE**Key Entry** **Sine Triangle Square Ramp Noise Dual-Sine Swept-Sine*Remarks** The waveform selection is only valid when INT[1] is the source selection. Refer to “:FM[1]2:SOURce” on page 182 for type source selection.

:FM[1] | 2:INteRnal[1]:SWEep:TIME

Supported All Models

[:SOURce] :FM[1] | 2 : INteRnal [1] : SWEep : TIME <val><unit>

[:SOURce] :FM[1] | 2 : INteRnal [1] : SWEep : TIME?

This command sets the sweep time for the swept-sine waveform.

***RST** +1.00000000E-001

Range 1.0mS-65.535S

Key Entry **FM Sweep Time**

Remarks Refer to “:FM[1]2:INteRnal[1]:FUNctIon:SHApe” on page 180 for the waveform selection.

:FM[1] | 2:INteRnal[1]:SWEep:TRIGger

Supported All Models

[:SOURce] :FM[1] | 2 : INteRnal [1] : SWEep : TRIGger BUS | IMMEDIATE | EXteRnal | KEY

[:SOURce] :FM[1] | 2 : INteRnal [1] : SWEep : TRIGger?

This command sets the trigger source for the frequency modulated swept-sine waveform.

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

IMMEDIATE This choice enables immediate triggering of the sweep event.

EXteRnal This choice enables the triggering of a sweep event by an externally applied signal at the TRIG IN connector.

KEY This choice enables triggering through front panel interaction by pressing the **Trigger** hardkey.

***RST** IMM

Key Entry **Bus Free Run Ext Trigger Key**

Remarks Refer to “:FM[1]2:INteRnal[1]:FUNctIon:SHApe” on page 180 for the waveform selection.

Frequency Modulation Subsystem ([:SOURce])

:FM[1] | 2:SOURce**Supported** All Models

[:SOURce]:FM[1] | 2:SOURce INT[1] | EXT1 | EXT2

[:SOURce]:FM[1] | 2:SOURce?

This command sets the source to generate the frequency modulation.

INT This choice selects the internal source to provide an ac-coupled signal.

EXT This choice selects the EXT 1 INPUT or the EXT 2 INPUT connector to provide an externally applied signal that can be ac- or dc-coupled.

***RST** INT

Key Entry **Internal Ext1 Ext2**

Remarks The externally applied, ac-coupled input signal is tested for a voltage level and a display annunciator will report a high or low condition if that voltage is $> \pm 3\%$ of $1 V_p$.

:FM[1] | 2:STATe**Supported** All Models

[:SOURce]:FM[1] | 2:STATe ON | OFF | 1 | 0

[:SOURce]:FM[1] | 2:STATe?

This command enables or disables the frequency modulation for the selected path.

***RST** 0

Key Entry **FM Off On**

Remarks The RF carrier is modulated when you set the signal generator's modulation state to ON, see “[:MODulation[:STATe]]” on page 127 for more information.

Whenever frequency modulation is enabled, the FM annunciator is turned on in the display.

The two paths for frequency modulation can be simultaneously enabled. Refer to “[:FM[1]2...]” on page 177 for more information.

:FM[1] | 2[:DEVIation]

Supported All Models

[:SOURce] :FM[1] | 2 [:DEVIation] <val><unit>

[:SOURce] :FM[1] | 2 [:DEVIation] ?

This command sets the frequency modulation deviation.

***RST** +1.00000000E+003

Range	<i>Frequency</i>	<i>Deviation</i>	Deviation Option UNJ
	250kHz–249.999MHZ	0–8MHZ	0–1MHZ
	> 249.999–500MHZ	0–4MHZ	0–500kHz
	> 500MHZ–1GHZ	0–8MHZ	0–1MHZ
	> 1–2GHZ	0–16MHZ	0–2MHZ
	> 2–4GHZ	0–32MHZ	0–4MHZ
	> 4–6GHZ	0–8MHZ	0–8MHZ

Key Entry **FM DEV**

Remarks If deviation tracking is ON, a change to the deviation value on one path will apply to both. Refer to “[:FM\[1\]|2\[:DEVIation\]:TRACK](#)” on page 183 for more information and setting the deviation tracking.

:FM[1] | 2[:DEVIation]:TRACK

Supported All Models

[:SOURce] :FM[1] | 2 [:DEVIation] :TRACk ON|OFF|1|0

[:SOURce] :FM[1] | 2 [:DEVIation] :TRACk ?

This command enables or disables the deviation coupling between the paths (FM[1] and FM2).

ON (1) This choice will link the deviation value of FM[1] with FM2; FM2 will assume the FM[1] deviation value. For example, if FM[1] deviation is set to 500 Hz and FM2 is set to 2 kHz, enabling the deviation tracking will cause the FM2 deviation value to change to 500 Hz. This applies regardless of the path (FM[1] or FM2) selected in this command

OFF (0) This choice disables the coupling and both paths will have independent deviation values.

***RST** 0

Key Entry **FM Dev Couple Off On**

Remarks This command uses exact match tracking, not offset tracking.

Low Frequency Output Subsystem ([:SOURce]:LFOutput)

:AMPLitude

Supported All Models

[:SOURce] :LFOutput :AMPLitude <val><unit>

[:SOURce] :LFOutput :AMPLitude?

This command sets the amplitude for the signal at the LF OUTPUT connector.

***RST** 0.00

Range 0.000VP–5.0VP

Key Entry **LF Out Amplitude**

:FUNction[1]:FREQuency

Supported All Models

[:SOURce] :LFOutput :FUNction[1] :FREQuency <val><unit>

[:SOURce] :LFOutput :FUNction[1] :FREQuency?

This command sets the internal modulation frequency for the following applications:

- the first tone of a dual-sine waveform
- the start frequency for a swept-sine waveform
- the frequency rate for all other waveforms

***RST** +4.00000000E+002

Range Sine: 0.1HZ–100KHZ Dual-Sine: 0.1HZ–100KHZ
Swept-Sine: 0.1HZ–100KHZ
All Other Waveforms: 0.1HZ–20KHZ

Key Entry **LF Out Tone 1 Freq** **LF Out Start Freq** **LF Out Freq**

Remarks Refer to “:FUNction[1]:SHAPE” on page 187 for selecting the waveform type.

:FUNCTION[1]:FREQUENCY:ALTERNATE**Supported** All Models

[:SOURce]:LFOutput:FUNCTION[1]:FREQUENCY:ALTERNATE <val><unit>

[:SOURce]:LFOutput:FUNCTION[1]:FREQUENCY:ALTERNATE?

This command sets the frequency for the alternate LF output signal.

RST** +4.00000000E+002**Range** Dual-Sine: 0.1HZ–100KHZ Swept-Sine: 0.1HZ–100KHZ**Key Entry** **LF Out Tone 2 Freq** **LF Out Stop Freq*Remarks** The alternate frequency is the second tone of a dual-sine or the stop frequency of a swept-sine waveform.

Refer to “:FUNCTION[1]:SHAPE” on page 187 for selecting the waveform type.

:FUNCTION[1]:FREQUENCY:ALTERNATE:AMPLITUDE:PERCENT**Supported** All Models

[:SOURce]:LFOutput:FUNCTION[1]:FREQUENCY:ALTERNATE:AMPLITUDE:

PERCENT <val><unit>

[:SOURce]:LFOutput:FUNCTION[1]:FREQUENCY:ALTERNATE:AMPLITUDE:PERCENT?

This command sets the amplitude of the second tone for a dual-sine waveform as a percentage of the total LF output amplitude. For example, if the second tone makes up 30% of the total amplitude, then the first tone is 70% of the total amplitude.

RST** +5.00000000E+001**Range** 0–100PCT**Key Entry** **LF Out Tone 2 Ampl % of Peak*Remarks** Refer to “:FUNCTION[1]:SHAPE” on page 187 for selecting the waveform type.

:FUNction[1]:PERiod**Supported** All Models

[:SOURce]:LFOutput:FUNction[1]:PERiod <val><unit>

[:SOURce]:LFOutput:FUNction[1]:PERiod?

This command sets the pulse period of the internally generated pulsed low frequency waveform.

RST** +1.60000000E-005**Range** 16uS-30S**Key Entry** **LF Out Period*:FUNction[1]:PWIDth****Supported** All Models

[:SOURce]:LFOutput:FUNction[1]:PWIDth <val><unit>

[:SOURce]:LFOutput:FUNction[1]:PWIDth?

This command sets the pulse width of the internally-generated pulsed low frequency waveform.

The upper limit range value is restricted by the current value of the pulse period. For example, if the pulse period value is set to 16 μ S, the pulse width is limited to a maximum range value of 16 μ S.

RST** +8.00000000E-006**Range** 8uS-30S**Key Entry** **LF Out Width*Remarks** To change the pulse period value, refer to “:FUNction[1]:PERiod” on page 186.

:FUNCTION[1]:SHAPE**Supported** All Models[:SOURce]:LFOutput:FUNCTION[1]:SHAPE SINE|DUALsine|SWEptsine|TRIangle|
SQUare|RAMP|PULSe|NOISe|DC

[:SOURce]:LFOutput:FUNCTION[1]:SHAPE?

This command sets the waveform type for the generated signal at the LF output.

***RST** SINE**Key Entry** **Sine** **Dual-Sine** **Swept-Sine** **Triangle** **Square** **Ramp** **Pulse**
Noise **DC****Remarks** Function Generator must be the source selection to support DUALsine or the SWEptsine waveform. Refer to “:SOURce” on page 188.**:FUNCTION[1]:SWEep:TIME****Supported** All Models

[:SOURce]:LFOutput:FUNCTION[1]:SWEep:TIME <val><unit>

[:SOURce]:LFOutput:FUNCTION[1]:SWEep:TIME?

This command sets the sweep time for an internally generated swept-sine signal at the LF output.

RST** +1.00000000E-001**Range** 1mS-65.535S**Key Entry** **LF Out Sweep Time*:FUNCTION[1]:SWEep:TRIGger****Supported** All Models

[:SOURce]:LFOutput:FUNCTION[1]:SWEep:TRIGger BUS|IMMEDIATE|EXTernal|KEY

[:SOURce]:LFOutput:FUNCTION[1]:SWEep:TRIGger?

This command sets the trigger source for the internally generated swept-sine waveform signal at the LF output.

BUS This choice enables GPIB triggering using the *TRG or GET command or LAN and RS-232 triggering using the *TRG command.**IMMEDIATE** This choice enables immediate triggering of the sweep event.**EXTernal** This choice enables the triggering of a sweep event by an externally applied signal at the TRIG IN connector.

Analog Commands

Low Frequency Output Subsystem ([:SOURce]:LFOutput)

KEY	This choice enables triggering through front panel interaction by pressing the Trigger hardkey.
*RST	IMM
Key Entry	Bus Free Run Ext Trigger Key
Remarks	Refer to “:FUNCTION[1]:SHAPE” on page 187 for selecting the waveform type.

:SOURce

Supported All Models

```
[ :SOURce ] :LFOutput :SOURce INT[1] | FUNCTION  
[ :SOURce ] :LFOutput :SOURce ?
```

This command sets the low frequency source for the LF output.

INT[1] This choice enables you to output a signal where the frequency and shape of the signal is set by the internal source as it is being used by a modulation. For example, if the internal source is currently assigned to an AM path configuration and AM is turned on, the signal output at the LF OUTPUT connector will have the frequency and shape of the amplitude modulating signal.

FUNCTION This choice enables the selection of an internal function generator.

***RST** FUNC

Key Entry **Internal Monitor** **Function Generator**

:STATe

Supported All Models

```
[ :SOURce ] :LFOutput :STATe ON | OFF | 1 | 0  
[ :SOURce ] :LFOutput :STATe ?
```

This command enables or disables the low frequency output.

***RST** 0

Key Entry **LF Out Off On**

Phase Modulation Subsystem ([:SOURce])

:PM[1]|2...

Supported All Models

[[:SOURce]:PM[1]|2...]

This prefix enables the selection of the Φ M path and is part of most SCPI commands associated with this subsystem. The two paths are equivalent to the **Φ M Path 1 2** softkey.

PM[1] **Φ M Path 1 2** with 1 selected

PM2 **Φ M Path 1 2** with 2 selected

When just PM is shown in a command, this means the command applies globally to both paths.

Each path is set up separately. When a SCPI command uses PM[1], only path one is affected. Consequently, when PM2 is selected, only path two is set up. However, the deviation of the signals for the two paths can be coupled.

Deviation coupling links the deviation value of PM[1] to PM2. Changing the deviation value for one path will change it for the other path.

These two paths can be on at the same time provided the following conditions have been met:

- DUALsine or SWEPTsine is not the selection for the waveform type
- each path uses a different source (Internal 1, Ext1, or Ext2)
- PM2 must be set to a deviation less than or equal to PM[1]

Phase Modulation Subsystem (:SOURce)**:PM:INTernal:FREQuency:STEP[:INCRement]****Supported** All Models

[:SOURce]:PM:INTernal:FREQuency:STEP[:INCRement] <num>

[:SOURce]:PM:INTernal:FREQuency:STEP[:INCRement]?

This command sets the step increment of the phase modulation internal frequency.

The variable <num> sets the entered value in units of Hertz.

Range 0.5–1E6**Key Entry** **Incr Set**

Remarks The value set by this command is used with the UP and DOWN choices for the FM frequency command. Refer to “:PM[1]2:INTernal[1]:FREQuency” on [page 191](#) for more information.

The setting enabled by this command is not affected by signal generator power-on, preset, or *RST.

:PM[1]|2:BANDwidth|BWIDth**Supported** All Models

[:SOURce]:PM[1]|2:BANDwidth|BWIDth NORMal|HIGH

[:SOURce]:PM[1]|2:BANDwidth|BWIDth?

This command toggles between normal phase modulation and high bandwidth phase modulation mode.

***RST** NORM**Key Entry** **FM ΦM Normal High BW**

:PM[1] | 2:EXtErnal[1]:COUPling

Supported All Models

```
[ :SOURce ] :PM[1] | 2:EXtErnal[1]:COUPling AC | DC
[ :SOURce ] :PM[1] | 2:EXtErnal[1]:COUPling?
```

This command sets the coupling for the phase modulation source through the selected external input connector.

AC This choice will only pass ac signal components.
 DC This choice will pass both ac and dc signal components.
 *RST DC

Key Entry **Ext Coupling DC AC**

Remarks This command does not change the currently active source or switch the current modulation on or off. The modulating signal may be the sum of several signals, either internal or external sources.

:PM[1] | 2:INtErnal[1]:FREQuency

Supported All Models

```
[ :SOURce ] :PM[1] | 2:INtErnal[1]:FREQuency <val><unit> | UP | DOWN
[ :SOURce ] :PM[1] | 2:INtErnal[1]:FREQuency?
```

This command sets the internal modulation frequency rate for the following applications:

- the first tone of a dual-sine waveform
- the start frequency for a swept-sine waveform
- the frequency rate for all other waveforms

*RST +4.00000000E+002

Range Dual-Sine: 0.1HZ–100KHZ Swept-Sine: 0.1HZ–100KHZ
 All Other Waveforms: 0.1HZ–20KHZ

Key Entry **ΦMTone 1 Rate ΦM Start Rate ΦM Rate**

Remarks Refer to [“:FUNCTION\[1\]:SHAPE” on page 187](#) for selecting the waveform type.

:PM[1]|2:INTERNAL[1]:FREQUENCY:ALTERNATE**Supported** All Models

[:SOURce]:PM[1]|2:INTERNAL[1]:FREQUENCY:ALTERNATE <val><unit>

[:SOURce]:PM[1]|2:INTERNAL[1]:FREQUENCY:ALTERNATE?

This command sets the frequency for the alternate signal.

RST** +4.00000000E+002**Range** Dual-Sine: 0.1HZ–100KHZ Swept-Sine: 0.1HZ–100KHZ**Key Entry** **ΦM Stop Rate** **ΦM Tone 2 Rate*Remarks** The alternate frequency is the second tone of a dual-sine or the stop frequency of a swept-sine waveform.

Refer to “:PM[1]2:INTERNAL[1]:FUNCTION:SHAPE” on page 193 for the waveform selection.

:PM[1]|2:INTERNAL[1]:FREQUENCY:ALTERNATE:AMPLITUDE:PERCENT**Supported** All Models

[:SOURce]:PM[1]|2:INTERNAL[1]:FREQUENCY:ALTERNATE:AMPLITUDE:

PERCENT <val><unit>

[:SOURce]:PM[1]|2:INTERNAL[1]:FREQUENCY:ALTERNATE:AMPLITUDE:PERCENT?

This command sets the amplitude of the second tone for the dual-sine waveform as a percentage of the total amplitude. For example, if the second tone makes up 30% of the total amplitude, then the first tone is 70% of the total amplitude.

RST** +5.00000000E+001**Range** 0–100PCT**Key Entry** **ΦM Tone 2 Ampl Percent of Peak*Remarks** Refer to “:PM[1]2:INTERNAL[1]:FUNCTION:SHAPE” on page 193 for the waveform selection.

:PM[1]|2:INTErnal[1]:FUNCTion:SHAPE

Supported All Models

```
[ :SOURCE ] :PM[1] | 2:INTErnal[1] :FUNCTion:SHAPE SINE | TRIangle | SQUare | RAMP |
NOISe | DUALsine | SWEPTsine
```

```
[ :SOURCE ] :PM[1] | 2:INTErnal[1] :FUNCTion:SHAPE?
```

This command sets the phase modulation waveform type.

***RST** SINE

Key Entry Sine Triangle Square Ramp Noise Dual-Sine Swept-Sine

Remarks The INTErnal1 source selection does not support the DUALsine and SWEPTsine waveform choices.

:PM[1]|2:INTErnal[1]:SWEep:TIME

Supported All Models

```
[ :SOURCE ] :PM[1] | 2:INTErnal[1] :SWEep:TIME <val><unit>
```

```
[ :SOURCE ] :PM[1] | 2:INTErnal[1] :SWEep:TIME?
```

This command sets the sweep time for a phase-modulated, swept-sine waveform.

***RST** +1.00000000E-001

Range 1.0mS-65.535S

Key Entry Φ M Sweep Time

Remarks Refer to “:PM[1]2:INTErnal[1]:FUNCTion:SHAPE” for the waveform selection.

:PM[1]|2:INTErnal[1]:SWEep:TRIGger

Supported All Models

```
[ :SOURCE ] :PM[1] | 2:INTErnal[1] :SWEep:TRIGger BUS | IMMEDIATE | EXTERNAL | KEY
```

```
[ :SOURCE ] :PM[1] | 2:INTErnal[1] :SWEep:TRIGger?
```

This command sets the trigger source for the phase-modulated, swept-sine waveform.

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

IMMEDIATE This choice enables immediate triggering of the sweep event.

EXTERNAL This choice enables the triggering of a sweep event by an externally applied signal at the TRIG IN connector.

Phase Modulation Subsystem ([:SOURce])

KEY	This choice enables triggering through front panel interaction by pressing the Trigger hardkey.
*RST	IMM
Key Entry	Bus Free Run Ext Trigger Key
Remarks	Refer to “:PM[1]2:INTernal[1]:FUNCTion:SHAPE” on page 193 for the waveform selection.

:PM[1] | 2:SOURce

Supported	All Models
	[:SOURce] :PM[1] 2 :SOURce INT[1] EXT1 EXT2 [:SOURce] :PM[1] 2 :SOURce?
	This command sets the source to generate the phase modulation.
INT	This choice selects internal source 1 to provide an ac-coupled signal.
EXT	This choice selects the EXT 1 INPUT or the EXT 2 INPUT connector to provide an externally applied signal that can be ac- or dc-coupled.
*RST	INT
Key Entry	Internal 1 Ext1 Ext2
Remarks	The externally applied, ac-coupled input signal is tested for a voltage level and a display annunciator will report a high or low condition if that voltage is $> \pm 3\%$ of $1 V_p$.

:PM[1] | 2:STATe

Supported	All Models
	[:SOURce] :PM[1] 2 :STATe ON OFF 1 0 [:SOURce] :PM[1] 2 :STATe?
	This command enables or disables the phase modulation for the selected path.
*RST	0
Key Entry	ΦM Off On
Remarks	The RF carrier is modulated when you set the signal generator’s modulation state to ON, see “:MODulation[:STATe]” on page 127 for more information. Whenever phase modulation is enabled, the ΦM annunciator is turned on in the display

The two paths for phase modulation can be simultaneously enabled. Refer to “:PM[1]2...” on page 189 for more information.

:PM[1] | 2[:DEVIation]

Supported All Models

```
[ :SOURce ] :PM[ 1 ] | 2 [ :DEVIation ] <val><unit> | UP | DOWN
[ :SOURce ] :PM[ 1 ] | 2 [ :DEVIation ] ?
```

This command sets the deviation of the phase modulation.

The variable <unit> will accept RAD (radians), PIRAD (pi-radians), and DEG (degrees); however, the query will only return values in radians.

***RST** +0.00000000E+000

Range	<i>Frequency</i>	<i>Normal Bandwidth</i>	<i>High Bandwidth</i>
	250kHz–249.999MHz	0–10RAD	0–1RAD
	> 249.999–500MHz	0–5RAD	0–0.5RAD
	> 500MHz–1GHz	0–10RAD	0–1RAD
	> 1–2GHz	0–20RAD	0–2RAD
	> 2–4GHz	0–40RAD	0–4RAD
	> 4–6GHz	0–80RAD	0–8RAD

Key Entry Φ M Dev

Remarks If deviation tracking is active, a change to the deviation value on one path will apply to both.

Refer to “:PM[:DEVIation]:STEP[:INCRement]” on page 196 for setting the value associated with the UP and DOWN choices.

:PM[1] | 2[:DEVIation]:TRACk

Supported All Models

```
[ :SOURce ] :PM[ 1 ] | 2 [ :DEVIation ] :TRACk ON | OFF | 1 | 0
[ :SOURce ] :PM[ 1 ] | 2 [ :DEVIation ] :TRACk ?
```

This command enables or disables the deviation coupling between the paths (PM[1] and PM2).

ON (1) This choice will link the deviation value of PM[1] with PM2; PM2 will assume the PM[1] deviation value. For example, if PM[1] deviation is set to 500 Hz and

Phase Modulation Subsystem (:SOURce)

	PM2 is set to 2 kHz, enabling the deviation tracking will cause the PM2 deviation value to change to 500 Hz. This applies regardless of the path (PM[1] or PM2) selected in this command.
OFF (0)	This choice disables the coupling and both paths will have independent deviation values.
*RST	0
Key Entry	ΦM Dev Couple Off On
Remarks	This command uses exact match tracking, not offset tracking.

:PM[:DEVIation]:STEP[:INCRement]

Supported All Models

```
[ :SOURce ] :PM [ :DEVIation ] :STEP [ :INCRement ] <val><unit>
[ :SOURce ] :PM [ :DEVIation ] :STEP [ :INCRement ] ?
```

This command sets the phase modulation deviation step increment.

Range 0.001–1E3RAD

Key Entry **Incr Set**

Remarks The value set by this command is used with the UP and DOWN choices for the FM deviation command. Refer to “:PM[1]2[:DEVIation]” on page 195 for more information.

The setting enabled by this command is not affected by signal generator power-on, preset, or *RST.

Pulse Modulation Subsystem ([:SOURce]:PULM)

:INTErnal[1]:FREQUency

Supported All Models

```
[ :SOURce ] :PULM :INTErnal [ 1 ] :FREQUency <val><unit> |UP|DOWN
[ :SOURce ] :PULM :INTErnal [ 1 ] :FREQUency?
```

This command sets the rate of the internal square wave pulse modulation source.

***RST** +4.00000000E+002

Range 0.1HZ–20.0kHz

Key Entry **Pulse Rate**

Remarks This command is used when SQUare is the current pulse modulation type. Refer to “[:SOURce]” on page 200 for the pulse modulation type selection.

:INTErnal[1]:FREQUency:STEP

Supported All Models

```
[ :SOURce ] :PULM :INTErnal [ 1 ] :FREQUency :STEP [ :INCREment ] <frequency>MIN|MAX
[ :SOURce ] :PULM :INTErnal [ 1 ] :FREQUency :STEP [ INCREment ]?
```

This command sets the step value for the internally-generated square wave pulse rate.

This command is used when SQUare is the pulse modulation type. Refer to “[:SOURce]” on page 200 for the pulse modulation type selection. The step value, set with this command, is used with the UP and DOWN choices in the :INTErnal[1]:FREQUency command.

The step value set with this command is not affected by a power-on, preset, or *RST command.

Example

```
:PULM:INT:FREQ:STEP MIN
```

The preceding example sets the step value for the square wave pulse rate to 0.1 Hz, the minimum rate.

Range 0.1HZ–20kHz

:INteRnal[1]:FUNctIon:SHApe**Supported** All Models

[:SOURce]:PULM:INteRnal[1]:FUNctIon:SHApe PULSe|SQUare

[:SOURce]:PULM:INteRnal[1]:FUNctIon:SHApe?

This command sets the internal pulse modulation waveform type.

RST** PULS**Key Entry** Internal Square Internal Pulse**:INteRnal[1]:PERiod*Supported** All Models

[:SOURce]:PULM:INteRnal[1]:PERiod <val><unit>|UP|DOWN

[:SOURce]:PULM:INteRnal[1]:PERiod?

This command sets the period for the internally generated pulse modulation source.

RST** +8.00000000E-005**Range** 8uS–30S**Key Entry** Pulse Period**Remarks** If the entered value for the pulse period is equal to or less than the value for the pulse width, the pulse width changes to a value that is equal to the pulse period.Refer to “[:INteRnal\[1\]:PERiod:STEP\[:INCRement\]](#)” on page 198 for setting the value associated with the UP and DOWN choices.**:INteRnal[1]:PERiod:STEP[:INCRement]*Supported** All Models

[:SOURce]:PULM:INteRnal[1]:PERiod:STEP[:INCRement] <val><unit>|UP|DOWN

[:SOURce]:PULM:INteRnal[1]:PERiod:STEP[:INCRement]?

This command sets the period time step increment for the internally-generated pulse modulation source.

***RST** +1.00000000E-006**Range** 4uS–30S**Key Entry** Incr Set

Remarks The value set by this command is used with the UP and DOWN choices for the pulse period command. Refer to “:INTernal[1]:PERiod” on page 198 for more information.

:INTernal[1]:PWIDth

Supported All Models

```
[ :SOURce ] :PULM :INTernal [ 1 ] :PWIDth <val><unit> |UP|DOWN
[ :SOURce ] :PULM :INTernal [ 1 ] :PWIDth?
```

This command sets the pulse width for the internally generated pulse modulation source.

NOTE A power search is recommended for signals with pulse widths less than one microsecond. Refer to “:ALC:SEARCh” on page 59.

***RST** +4.00000000E-005

Range 4uS–30S

Key Entry **Pulse Width**

Remarks If the entered value for the pulse width is equal to or greater than the value for the pulse period, the pulse width will change to a value that is equal to the pulse period.

Refer to “:INTernal[1]:PWIDth:STEP” on page 199 for setting the value associated with the UP and DOWN choices.

:INTernal[1]:PWIDth:STEP

Supported All Models

```
[ :SOURce ] :PULM :INTernal [ 1 ] :PWIDth :STEP <num>[<time suffix>]
[ :SOURce ] :PULM :INTernal [ 1 ] :PWIDth :STEP?
```

This command sets the step increment for the pulse width.

The optional variable [<time suffix>] accepts nS (nano-seconds) to S (seconds).

***RST** +1.00000000E-006

Range 4uS–30S

Remarks The value set by this command is used by the UP and DOWN choices for the pulse width command. Refer to “:INTernal[1]:PWIDth” on page 199 for more information.

Pulse Modulation Subsystem ([:SOURce]:PULM)

:SOURce

Supported All Models

[:SOURce] :PULM :SOURce INT | EXT [1] | EXT2

[:SOURce] :PULM :SOURce?

This command sets the source that will generate the pulse modulation.

***RST** INT

Key Entry Internal Square Internal Pulse Ext1 DC-Coupled Ext2 DC-Coupled

:STATe

Supported All Models

[:SOURce] :PULM :STATe ON | OFF | 1 | 0

[:SOURce] :PULM :STATe?

This command enables or disables the operating state of the pulse modulation source.

***RST** 0

Key Entry Pulse Off On

Remarks When pulse modulation is enabled, the PULSE annunciator is shown in the display

5 Component Test Digital Commands

This chapter provides SCPI descriptions for commands dedicated to digital component testing using the E4438C ESG Vector Signal Generator. This chapter contains the following major sections:

- “All Subsystem–Option 001/601 or 002/602 ([:SOURce])” on page 202
- “AWGN ARB Subsystem–Option 403 ([:SOURce]:RADio:AWGN:ARB)” on page 203
- “CDMA ARB Subsystem–Option 401 ([:SOURce]:RADio:CDMA:ARB)” on page 213
- “CDMA2000 ARB Subsystem–Option 401 ([:SOURce]:RADio:CDMA2000:ARB)” on page 238
- “Dmodulation Subsystem–Option 001/601 or 002/602 ([:SOURce]:RADio:DMODulation:ARB)” on page 268
- “Dual ARB Subsystem–Option 001/601 or 002/602 ([:SOURce]:RADio:ARB)” on page 292
- “Multitone Subsystem–Option 001/601 or 002/602 ([:SOURce]:RADio:MTONe:ARB)” on page 323
- “Wideband CDMA ARB Subsystem–Option 400 ([:SOURce]:RADio:WCDMa:TGPP:ARB)” on page 336

All Subsystem–Option 001/601 or 002/602 ([:SOURce])

:RADio:ALL:OFF

Supported E4438C with Option 001/601 or 002/602

[:SOURce] :RADio :ALL :OFF

This command disables the digital modulation formats.

Remarks This command does not affect analog modulation.

AWGN ARB Subsystem—Option 403 ([:SOURce]:RADio:AWGN:ARB)

:BWIDth

Supported E4438C with Option 403

[:SOURce] :RADio :AWGN :ARB :BWIDth <val>

[:SOURce] :RADio :AWGN :ARB :BWIDth?

This command adjusts the bandwidth of the AWGN waveform.

The variable <val> is expressed in units of Hertz (Hz–MHz).

***RST** +1.00000000E+006

Range 5E4–1.5E7

Key Entry **Bandwidth**

:IQ:EXTernal:FILTer

Supported E4438C with Option 403

[:SOURce] :RADio :AWGN :ARB :IQ :EXTernal :FILTer 40e6 |THRough

[:SOURce] :RADio :AWGN :ARB :IQ :EXTernal :FILTer?

This command selects the filter or through path for I/Q signals routed to the rear panel I and Q outputs. Selecting a filter setting with this command will automatically set the “:IQ:EXTernal:FILTer:AUTO” on page 204 command to Off mode.

40e6 This choice applies a 40 MHz baseband filter.

THRough This choice bypasses filtering.

***RST** THR

Key Entry **40.000 MHz** **Through**

:IQ:EXternal:FILTer:AUTO

Supported E4438C with Option 403

[:SOURce] :RADio:AWGN:ARB: IQ: EXTernal: FILTer: AUTO ON | OFF | 1 | 0

[:SOURce] :RADio:AWGN:ARB: IQ: EXTernal: FILTer: AUTO?

This command enables or disables the automatic selection of the filters for I/Q signals routed to the rear panel I/Q outputs.

ON(1) This choice will automatically select a digital modulation filter optimized for the current signal generator settings.

OFF(0) This choice disables the auto feature which lets you select a digital modulation filter or through path. Refer to “[:IQ:EXternal:FILTer](#)” on page 203 for selecting a filter or through path.

*RST ON

Key Entry I/Q Output Filter Manual Auto

:HEADer:CLEar

Supported E4438C with Option 403

[:SOURce] :RADio:AWGN:ARB: HEADer: CLEar

This command clears the header information from the file header used by this modulation format.

Key Entry Clear Header

Remarks The **AWGN Off On** softkey must be set to On for this command to function.

:HEADer:SAVE

Supported E4438C with Option 403

[:SOURce] :RADio:AWGN:ARB: HEADer: SAVE

This command saves the header information to the file header used by this modulation format.

Key Entry Save Setup To Header

Remarks The **AWGN Off On** softkey must be set to On for this command to function.

:IQ:MODulation:ATTen

Supported E4438C with Option 403

[:SOURce] :RADio :AWGN :ARB :IQ :MODulation :ATTen <val>

[:SOURce] :RADio :AWGN :ARB :IQ :MODulation :ATTen?

This command attenuates the I/Q signals being modulated through the signal generator RF path.

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

***RST** +2.00000000E+000

Range 0–40

Key Entry **Modulator Atten Manual Auto**

:IQ:MODulation:ATTen:AUTO

Supported E4438C with Option 403

[:SOURce] :RADio :AWGN :ARB :IQ :MODulation :ATTen :AUTO ON | OFF | 1 | 0

[:SOURce] :RADio :AWGN :ARB :IQ :MODulation :ATTen :AUTO?

This command enables or disables the I/Q attenuation auto mode.

ON (1) This choice enables the attenuation auto mode which optimizes the modulator attenuation for the current conditions.

OFF (0) This choice holds the attenuator at its current setting or at a selected value. Refer to “[:IQ:MODulation:ATTen](#)” on page 205 for setting the attenuation value.

***RST** 1

Key Entry **Modulator Atten Manual Auto**

:IQ:MODulation:FILTer**Supported** E4438C with Option 403

```
[ :SOURce ] :RADio:AWGN:ARB:IQ:MODulation:FILTer 2.1e6|40e6|THROUGH
[ :SOURce ] :RADio:AWGN:ARB:IQ:MODulation:FILTer?
```

This command enables you to select a filter or through path for I/Q signals modulated onto the RF carrier. Selecting a filter with this command will automatically set “:IQ:MODulation:ATTen:AUTO” on page 205 to Off(0) mode.

2.1E6 This choice applies a 2.1 MHz baseband filter to the I/Q signals.

40E6 This choice applies a 40 MHz baseband filter to the I/Q signals.

THROUGH This choice bypasses filtering.

***RST** THR

Key Entry 2.100 MHz 40.000 MHz Through

:IQ:MODulation:FILTer:AUTO**Supported** E4438C with Option 403

```
[ :SOURce ] :RADio:AWGN:ARB:IQ:MODulation:FILTer:AUTO ON|OFF|1|0
[ :SOURce ] :RADio:AWGN:ARB:IQ:MODulation:FILTer:AUTO?
```

This command enables or disables the automatic selection of the filters for I/Q signals modulated onto the RF carrier.

ON(1) This choice will automatically select a digital modulation filter.

OFF(0) This choice disables the auto feature which lets you select a digital modulation filter or through path. Refer to “:IQ:MODulation:FILTer” on page 297 for selecting a filter or through path.

***RST** 1

Key Entry I/Q Mod Filter Manual Auto

:MDEStination:AAMPlitude

Supported E4438C with Option 403

```
[ :SOURce ]:RADio:AWGN:ARB:MDEStination:AAMPlitude NONE | M1 | M2 | M3 | M4  
[ :SOURce ]:RADio:AWGN:ARB:MDEStination:AAMPlitude?
```

This command routes the selected marker to the Alternate Amplitude function. The `NONE` parameter clears the marker for the Alternate Amplitude function.

***RST** NONE

Key Entry **None** **Marker 1** **Marker 2** **Marker 3** **Marker 4**

:MDEStination:ALCHold

Supported E4438C with Option 403

CAUTION Incorrect automatic level control (ALC) sampling can create a sudden unlevelled condition that may create a spike in the RF output potentially damaging a DUT or connected instrument. Ensure that you set markers to let the ALC sample over an amplitude that accounts for the high power levels within the signal.

```
[ :SOURce ]:RADio:AWGN:ARB:MDEStination:ALCHold NONE | M1 | M2 | M3 | M4  
[ :SOURce ]:RADio:AWGN:ARB:MDEStination:ALCHold?
```

This command enables or disables the marker ALC hold function for the selected marker. For setting markers, see “[:MARKer:\[SET\]](#)” on page 300.

Use the ALC hold function when you have a waveform signal that has idle periods, or when the increased dynamic range encountered with RF blanking is not desired. The ALC leveling circuitry responds to the marker signal during the marker pulse (marker signal high), averaging the modulated signal level during this period.

The ALC hold function operates during the low periods of the marker signal. The marker polarity determines when the marker signal is high. For a positive polarity, this is during the marker points. For a negative polarity, this is when there are no marker points. For setting a marker’s polarity, see “[:MPOLarity:MARKer1|2|3|4](#)” on page 366.

NOTE Do not use the ALC hold for more than 100 ms, because it can affect the waveform’s output amplitude.

The marker signal has a minimum of a two-sample delay in its response relative to the waveform signal response. To compensate for the marker signal delay, offset marker points from the waveform sample point at which you want the ALC sampling to begin.

The ALC hold setting is part of the file header information, so saving the setting to the file header saves the current marker routing for the waveform file.

NOTE A waveform file that has unspecified settings in the file header uses the previous waveform’s routing settings.

For more information on the marker ALC hold function, see the *E4428C/38C ESG Signal Generators User’s Guide*. For setting the marker points, see “:MARKer:[SET]” on page 300.

NONE This terminates the marker ALC hold function.

M1–M4 These are the marker choices. The ALC hold feature uses only one marker at a time.

***RST** NONE

Example

```
:RAD:AWGB:ARB:MDES:ALCH M1
```

The preceding example routes marker 1 to the ALC Hold function.

Key Entry	None	Marker 1	Marker 2	Marker 3	Marker 4
Remarks	N/A				

:MDEStination:PULSe

Supported E4438C with Option 403

CAUTION The pulse function incorporates ALC hold. Incorrect automatic level control (ALC) sampling can create a sudden unlevelled condition that may create a spike in the RF output potentially damaging a DUT or connected instrument. Ensure that you set markers to let the ALC sample over an amplitude that accounts for the high power levels within the signal.

```
[ :SOURce ] :RADio :ARB :MDEStination :PULSe NONE | M1 | M2 | M3 | M4
[ :SOURce ] :RADio :ARB :MDEStination :PULSe?
```

This command enables or disables the marker pulse/RF blanking function for the selected marker.

This function automatically uses the ALC hold function, so there is no need to select both the ALC hold and the pulse/RF blanking for the same marker.

NOTE Do not use ALC hold for more than 100 ms, because it can affect the waveform’s output amplitude.

The signal generator blanks the RF output when the marker signal goes low. The marker polarity determines when the marker signal is low. For a positive polarity, this is during the marker points. For a negative polarity, this is when there are no marker points. For setting a marker’s polarity, see “:MPOLarity:MARKer1|2|3|4” on page 330.

NOTE Set marker points prior to using this function. Enabling this function without setting marker points may create a continuous low or high marker signal, depending on the marker polarity. This causes either no RF output or a continuous RF output. See “:MARKer:[SET]” on page 300 for setting the marker points.

The marker signal has a minimum of a two-sample delay in its response relative to the waveform signal response. To compensate for the marker signal delay, offset marker points from the waveform sample point at which you want the RF blanking to begin. The RF blanking setting is part of the file header information, so saving the setting to the file header saves the current marker routing for the waveform file.

NOTE A waveform file that has unspecified settings in the file header uses the previous waveform’s routing settings. This could create the situation where there is no RF output signal, because the previous waveform used RF blanking.

For more information on the marker RF blanking function, see the *E4428C/38C ESG Signal Generators User’s Guide*.

NONE This terminates the marker RF blanking/pulse function.

M1–M4 These are the marker choices. The RF blanking/pulse feature uses only one marker at a time.

Example

```
:RAD:ARB:MDES:PULS M2
```

The preceding example routes marker 2 to Pulse/RF Blanking.

```
*RST NONE
```

Key Entry	None	Marker 1	Marker 2	Marker 3	Marker 4
------------------	-------------	-----------------	-----------------	-----------------	-----------------

:MPOLarity:MARKer1 | 2 | 3 | 4

Supported E4438C with Option 403

```
[ :SOURce ] :RADio:AWGN:ARB:MPOLarity:MARKer1 | 2 | 3 | 4 NEGative | POSitive
[ :SOURce ] :RADio:AWGN:ARB:MPOLarity:MARKer1 | 2 | 3 | 4 ?
```

This command sets the polarity for the selected marker. For a positive marker polarity, the marker signal is high during the marker points. For a negative marker polarity, the marker signal is high during the period of no marker points.

***RST** POS

Key Entry **Marker 1 Polarity Neg Pos Marker 2 Polarity Neg Pos Marker 3 Polarity Neg Pos**
Marker 4 Polarity Neg Pos

:LENGth

Supported E4438C with Option 403

```
[ :SOURce ] :RADio:AWGN:ARB:LENGth 1048576 | 524288 | 262144 | 131072 | 65536 |
32768 | 16384
[ :SOURce ] :RADio:AWGN:ARB:LENGth ?
```

This command specifies the length (number of points) of the AWGN waveform.

***RST** +524288

Key Entry **1048576 524288 262144 131072 65536 32768 16384**

Remarks A longer waveform yields a statistically more correct waveform.

:REFerence:EXTernal:FREQuency

Supported E4438C with Option 403

```
[ :SOURce ] :RADio:AWGN:ARB:REFerence:EXTernal:FREQuency <val>
[ :SOURce ] :RADio:AWGN:ARB:REFerence:EXTernal:FREQuency ?
```

This command allows you to enter the frequency of the applied external reference.

The variable <val> is expressed in units of hertz (Hz–MHz).

***RST** +1.00000000E+007

Range 2.5E5–1E8

Key Entry **Reference Freq**

Remarks The value specified by this command is effective only when you are using an external ARB reference applied to the BASEBAND GEN REF IN rear panel connector.

To specify external as the ARB reference source type, refer to “:REFerence[:SOURce]” on page 279.

:REFerence[:SOURce]

Supported E4438C with Option 403

```
[ :SOURce ] :RADio:AWGN:ARB:REFerence[ :SOURce ] INTernal | EXTernal  
[ :SOURce ] :RADio:AWGN:ARB:REFerence[ :SOURce ] ?
```

This command selects either an internal or external reference for the waveform clock.

***RST** INT

Key Entry **ARB Reference Ext Int**

Remarks If the EXTernal choice is selected, the external frequency *value must* be entered and the signal must be applied to the BASEBAND GEN REF IN rear panel connector.

Refer to “:REFerence:EXTernal:FREQuency” on page 278 to enter the external reference frequency.

:SCLock:RATE

Supported E4438C with Option 403

```
[ :SOURce ] :RADio:AWGN:ARB:SCLock:RATE <val>  
[ :SOURce ] :RADio:AWGN:ARB:SCLock:RATE ?
```

This command sets the sample clock rate for the AWGN modulation format.

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

***RST** +1.00000000E+008

Range 1–1E8

Key Entry **ARB Sample Clock**

Remarks The modulation format should be active before executing this command. If this command is executed before the modulation format is active, the entered value will be overridden by a calculated factory default value. Refer to “[:STATE]” on page 212 to activate the modulation format.

:SEED

Supported E4438C with Option 403

[:SOURce] :RADio :AWGN :ARB :SEED FIXed | RANDom

[:SOURce] :RADio :AWGN :ARB :SEED?

This command toggles the AWGN waveform noise seed value type.

FIXed This choice selects a fixed noise seed value.

RANDom This choice selects a randomly generated noise seed value.

***RST** FIX

Key Entry Noise Seed Fixed Random

[:STATe]

Supported E4438C with Option 403

[:SOURce] :RADio :AWGN :ARB [:STATe] ON | OFF | 1 | 0

[:SOURce] :RADio :AWGN :ARB [:STATe]?

This command enables or disables the AWGN generator function.

***RST** 0

Key Entry Arb AWGN Off On

CDMA ARB Subsystem—Option 401 ([:SOURce]:RADio:CDMA:ARB)

:CLIPping:I

Supported E4438C with Option 401

[:SOURce]:RADio:CDMA:ARB:CLIPping:I <val>

[:SOURce]:RADio:CDMA:ARB:CLIPping:I?

This command clips (limits) the modulation level of the waveform's I component to a percentage of full scale.

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

***RST** +1.00000000E+002

Range 10–100

Key Entry **Clip |I| To**

:CLIPping:POSition

Supported E4438C with Option 401

[:SOURce]:RADio:CDMA:ARB:CLIPping:POSition PRE|POST

[:SOURce]:RADio:CDMA:ARB:CLIPping:POSition?

This command specifies whether a waveform is clipped before (PRE) or after (POST) FIR filtering.

***RST** PRE

Key Entry **Clip At PRE POST FIR Filter**

:CLIPping:Q

Supported E4438C with Option 401

[:SOURce]:RADio:CDMA:ARB:CLIPping:Q <val>

[:SOURce]:RADio:CDMA:ARB:CLIPping:Q?

This command clips (limits) the modulation level of the waveform's Q component to a percentage of full scale.

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

***RST** +1.00000000E+002

Range 10–100
Key Entry **Clip |Q| To**

:CLIPping:TYPE

Supported E4438C with Option 401

```
[ :SOURCE ] :RADio:CDMA:ARB:CLIPping:TYPE IJQ|IORQ
[ :SOURCE ] :RADio:CDMA:ARB:CLIPping:TYPE?
```

This command selects either IJQ or IORQ as the clipping type.

IJQ The combined I and Q waveform will be clipped (*circular clipping*).

IORQ The I and Q components of the waveform are clipped independently (*rectangular clipping*). I and Q can be clipped to different levels using this mode.

***RST** IJQ

Key Entry **Clipping Type |I+jQ| |I|,|Q|**

:CLIPping[:IJQ]

Supported E4438C with Option 401

```
[ :SOURCE ] :RADio:CDMA:ARB:CLIPping[:IJQ] <val>
[ :SOURCE ] :RADio:CDMA:ARB:CLIPping[:IJQ]?
```

This command clips (limits) the modulation level of the combined I and Q waveform to a percentage of full scale.

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

***RST** +1.00000000E+002

Range 10–100

Key Entry **Clip |I+jQ| To**

:CRATe

Supported E4438C with Option 401

```
[ :SOURCE ] :RADio:CDMA:ARB:CRATe <val>
[ :SOURCE ] :RADio:CDMA:ARB:CRATe?
```

This command sets the chip rate value.

The variable <val> is expressed as chips per second (cps–Mcps).

***RST** +1.22880000E+006
Range 10–8E6
Key Entry **Chip Rate**

:IQ:EXTernal:FILTer

Supported E4438C with Option 401
[:SOURce]:RADio:CDMA:ARB:IQ:EXTernal:FILTer 40e6|THRough
[:SOURce]:RADio:CDMA:ARB:IQ:EXTernal:FILTer?

This command selects the filter or through path for I/Q signals routed to the rear panel I and Q outputs. Selecting a filter using this command will automatically set “:IQ:EXTernal:FILTer:AUTO” on [page 215](#) to OFF(0) mode.

40e6 This choice applies a 40 MHz baseband filter.

THRough This choice bypasses filtering.

***RST** THR

Key Entry **40.000 MHz Through**

:IQ:EXTernal:FILTer:AUTO

Supported E4438C with Option 401
[:SOURce]:RADio:CDMA:ARB:IQ:EXTernal:FILTer:AUTO ON|OFF|1|0
[:SOURce]:RADio:CDMA:ARB:IQ:EXTernal:FILTer:AUTO?

This command enables or disables the automatic selection of the filters for I/Q signals routed to the rear panel I/Q outputs.

ON(1) This choice will automatically select a digital modulation filter optimized for the current signal generator settings.

OFF(0) This choice disables the auto feature which lets you select a digital modulation filter or through path. Refer to “:IQ:EXTernal:FILTer” on [page 215](#) for selecting a filter or through path.

***RST** 1

Key Entry **I/Q Output Filter Manual Auto**

:FILTer

Supported E4438C with Option 401

```
[ :SOURCE ]:RADIO:CDMA:ARB:FILTer RNYQuist|NYQuist|GAUSSian|RECTangle|
IS95|IS95_EQ|IS95_MOD|IS95_MOD_EQ|WCDMA|AC4Fm|IS2000SR3DS|UGGaussian|
"<user FIR>"
[ :SOURCE ]:RADIO:CDMA:ARB: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.
- WCDMa This choice selects a 0.22 Nyquist filter optimized for ACP.
- AC4Fm This choice selects a predefined Association of Public Safety Communications Officials (APCO) specified compatible 4-level frequency modulation (C4FM) filter.
- IS2000SR3DS This choice selects an IS-2000 standard, spread rate 3 direct spread 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 FIR filter file that you have stored in memory. The variable needs no directory path indicating the location of the file, such as FIR: or /USER/FIR. The command assumes the FIR directory. Refer to [“File Name Variables” on page 13](#) for more information on file names.

***RST** IS95_MOD_EQ

Key Entry	Root Nyquist	Nyquist	Gaussian	Rectangle	IS-95	IS-95 w/EQ
	IS-95 Mod	IS-95 Mod w/EQ	WCDMA	APCO 25 C4FM	IS-2000 SR3 DS	
	UN3/4 GSM Gaussian	User FIR				

:FILTER:ALPHA

Supported E4438C with Option 401

```
[ :SOURCE ] :RADIo:CDMA:ARB:FILTer:ALPHA <val>
```

```
[ :SOURCE ] :RADIo:CDMA:ARB:FILTer: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 216.

:FILTER:BBT

Supported E4438C with Option 401

```
[ :SOURCE ] :RADIo:CDMA:ARB:FILTer:BBT <val>
```

```
[ :SOURCE ] :RADIo:CDMA:ARB:FILTer:BBT?
```

This command changes the bandwidth-multiplied-by-bit-time (BbT) filter parameter.

The filter BbT 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 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 216.

:FILTer:CHANnel

Supported E4438C with Option 401

[:SOURCE] :RADio:CDMA:ARB:FILTer:CHANnel EVM|ACP

[:SOURCE] :RADio:CDMA:ARB: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 216.

:HEADer:CLEAr

Supported E4438C with Option 401

[:SOURCE] :RADio:CDMA:ARB:HEADer:CLEAr

This command clears the header information from the file header used by this modulation format.

Key Entry **Clear Header**

Remarks The **CDMA Off On** softkey must be set to On for this command to function.

:HEADer:SAVE

Supported E4438C with Option 401

[:SOURCE] :RADio:CDMA:ARB:HEADer:SAVE

This command saves the header information to the file header used by this modulation format.

Key Entry **Save Setup To Header**

Remarks The **CDMA Off On** softkey must be set to On for this command to function.

:IQMap

Supported E4438C with Option 401

```
[ :SOURCE ]:RADio:CDMA:ARB:IQMap NORMAL | INVerted
[ :SOURCE ]:RADio:CDMA:ARB:IQMap?
```

This command selects whether the Q output will be normal or inverted.

NORMAL This choice selects normal polarity.

INVerted This choice inverts the internal Q signal.

***RST** NORM

Key Entry **I/Q Mapping Normal Invert**

Remarks Inverting the Q output inverts the RF spectrum after the modulation.

:IQ:MODulation:ATTen

Supported E4438C with Option 401

```
[ :SOURCE ]:RADio:CDMA:ARB:IQ:MODulation:ATTen <val>
[ :SOURCE ]:RADio:CDMA:ARB:IQ:MODulation:ATTen?
```

This command attenuates the I/Q signals being modulated through the signal generator RF path.

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

***RST** +2.00000000E+000

Range 0–40

Key Entry **Modulator Atten Manual Auto**

:IQ:MODulation:ATTen:AUTO

Supported E4438C with Option 401

```
[ :SOURCE ]:RADio:CDMA:ARB:IQ:MODulation:ATTen:AUTO ON | OFF | 1 | 0
[ :SOURCE ]:RADio:CDMA:ARB:IQ:MODulation:ATTen:AUTO?
```

This command enables or disables the I/Q attenuation auto mode.

ON (1) This choice enables the attenuation auto mode which optimizes the modulator attenuation for the current conditions.

OFF (0) This choice holds the attenuator at its current setting or at a selected value. Refer to “[:IQ:MODulation:ATTen](#)” on page 219 for setting the attenuation value.

***RST** 1

Key Entry **Modulator Atten Manual Auto**

:IQ:MODulation:FILTer

Supported E4438C with Option 401

```
[ :SOURce ]:RADio:CDMA:ARB:IQ:MODulation:FILTer 2.1e6|40e6|THROUGH
[:SOURce]:RADio:CDMA:ARB:IQ:MODulation:FILTer?
```

This command enables you to select a filter or through path for I/Q signals modulated onto the RF carrier. Selecting a filter using this command will automatically set “[:IQ:MODulation:ATTen:AUTO](#)” on [page 219](#) to OFF(0) mode.

2.1E6 This choice applies a 2.1 MHz baseband filter to the I/Q signals.

40E6 This choice applies a 40 MHz baseband filter to the I/Q signals.

THROUGH This choice bypasses filtering.

***RST** THR

Key Entry **2.100 MHz 40.000 MHz Through**

:IQ:MODulation:FILTer:AUTO

Supported E4438C with Option 401

```
[ :SOURce ]:RADio:CDMA:ARB:IQ:MODulation:FILTer:AUTO ON|OFF|1|0
[:SOURce]:RADio:CDMA:ARB:IQ:MODulation:FILTer:AUTO?
```

This command enables or disables the automatic selection of the filters for I/Q signals modulated onto the RF carrier.

ON(1) This choice will automatically select a digital modulation filter.

OFF(0) This choice disables the auto feature which lets you select a digital modulation filter or through path. Refer to “[:IQ:MODulation:FILTer](#)” on [page 297](#) for selecting a filter or through path.

***RST** 1

Key Entry **I/Q Mod Filter Manual Auto**

:MDESTination:AAMPLitude

Supported E4438C with Option 401

```
[ :SOURce ]:RADio:CDMA:ARB:MDESTination:AAMPLitude NONE|M1|M2|M3|M4
[:SOURce]:RADio:CDMA:ARB:MDESTination:AAMPLitude?
```

This command routes the selected marker to the Alternate Amplitude function. The NONE parameter clears the marker for the Alternate Amplitude function.

*RST	NONE				
Key Entry	None	Marker 1	Marker 2	Marker 3	Marker 4

:MDEStination:ALCHold

Supported E4438C with Option 401

CAUTION Incorrect automatic level control (ALC) sampling can create a sudden unlevelled condition that may create a spike in the RF output potentially damaging a DUT or connected instrument. Ensure that you set markers to let the ALC sample over an amplitude that accounts for the high power levels within the signal.

```
[ :SOURce ] :RADio :CDMA :ARB :MDEStination :ALCHold NONE | M1 | M2 | M3 | M4
[ :SOURce ] :RADio :CDMA :ARB :MDEStination :ALCHold?
```

This command enables or disables the marker ALC hold function for the selected marker. For setting markers, see “:MARKer:[SET]” on page 300.

Use the ALC hold function when you have a waveform signal that has idle periods, or when the increased dynamic range encountered with RF blanking is not desired. The ALC leveling circuitry responds to the marker signal during the marker pulse (marker signal high), averaging the modulated signal level during this period.

The ALC hold function operates during the low periods of the marker signal. The marker polarity determines when the marker signal is high. For a positive polarity, this is during the marker points. For a negative polarity, this is when there are no marker points. For setting a marker’s polarity, see “:MPOLarity:MARKer1|2|3|4” on page 224.

NOTE Do not use the ALC hold for more than 100 ms, because it can affect the waveform’s output amplitude.

The marker signal has a minimum of a two-sample delay in its response relative to the waveform signal response. To compensate for the marker signal delay, offset marker points from the waveform sample point at which you want the ALC sampling to begin.

The ALC hold setting is part of the file header information, so saving the setting to the file header saves the current marker routing for the waveform file.

NOTE A waveform file that has unspecified settings in the file header uses the previous waveform’s routing settings.

For more information on the marker ALC hold function, see the *E4428C/38C ESG Signal Generators User’s Guide*. For setting the marker points, see “[:MARKer:[SET]]” on page 300.

NONE This terminates the marker ALC hold function.

M1–M4 These are the marker choices. The ALC hold feature uses only one marker at a time.

***RST** NONE

Example

```
:RAD:AWGB:ARB:MDES:ALCH M1
```

The preceding example routes marker 1 to the ALC Hold function.

Key Entry	None	Marker 1	Marker 2	Marker 3	Marker 4
Remarks	N/A				

:MDEStination:PULSe

Supported E4438C with Option 401

CAUTION The pulse function incorporates ALC hold. Incorrect automatic level control (ALC) sampling can create a sudden unlevelled condition that may create a spike in the RF output potentially damaging a DUT or connected instrument. Ensure that you set markers to let the ALC sample over an amplitude that accounts for the high power levels within the signal.

```
[ :SOURce ] :RADio :ARB :MDEStination :PULSe NONE | M1 | M2 | M3 | M4
[ :SOURce ] :RADio :ARB :MDEStination :PULSe?
```

This command enables or disables the marker pulse/RF blanking function for the selected marker.

This function automatically uses the ALC hold function, so there is no need to select both the ALC hold and the pulse/RF blanking for the same marker.

NOTE Do not use ALC hold for more than 100 ms, because it can affect the waveform’s output amplitude.

The signal generator blanks the RF output when the marker signal goes low. The marker polarity determines when the marker signal is low. For a positive polarity, this is during the marker points. For a negative polarity, this is when there are no marker points. For setting a marker's polarity, see “:MPOLarity:MARKer1|2|3|4” on page 224.

NOTE Set marker points prior to using this function. Enabling this function without setting marker points may create a continuous low or high marker signal, depending on the marker polarity. This causes either no RF output or a continuous RF output. See “:MARKer:[SET]” on page 300 for setting the marker points.

The marker signal has a minimum of a two-sample delay in its response relative to the waveform signal response. To compensate for the marker signal delay, offset marker points from the waveform sample point at which you want the RF blanking to begin. The RF blanking setting is part of the file header information, so saving the setting to the file header saves the current marker routing for the waveform file.

NOTE A waveform file that has unspecified settings in the file header uses the previous waveform's routing settings. This could create the situation where there is no RF output signal, because the previous waveform used RF blanking.

For more information on the marker RF blanking function, see the *E4428C/38C ESG Signal Generators User's Guide*.

- NONE This terminates the marker RF blanking/pulse function.
- M1–M4 These are the marker choices. The RF blanking/pulse feature uses only one marker at a time.

Example

```
:RAD:ARB:MDES:PULS M2
```

The preceding example routes marker 2 to Pulse/RF Blanking.

```
*RST NONE
```

Key Entry	None	Marker 1	Marker 2	Marker 3	Marker 4
------------------	-------------	-----------------	-----------------	-----------------	-----------------

:MPOLarity:MARKer1 | 2 | 3 | 4**Supported** E4438C with Option 401

```
[ :SOURCE ] :RADio:CDMA:ARB:MPOLarity:MARKer1 | 2 | 3 | 4 NEGative | POSitive
[ :SOURCE ] :RADio:CDMA:ARB:MPOLarity:MARKer1 | 2 | 3 | 4?
```

This command sets the polarity for the selected marker. For a positive marker polarity, the marker signal is high during the marker points. For a negative marker polarity, the marker signal is high during the period of no marker points.

***RST** POS

Key Entry **Marker 1 Polarity Neg Pos Marker 2 Polarity Neg Pos Marker 3 Polarity Neg Pos**
Marker 4 Polarity Neg Pos

:OSAMple**Supported** E4438C with Option 401

```
[ :SOURCE ] :RADio:CDMA:ARB:OSAMple <val>
[ :SOURCE ] :RADio:CDMA:ARB:OSAMple?
```

This command sets the oversampling ratio (number of filter taps per symbol) for CDMA modulation.

***RST** +5**Range** 2–8**Key Entry** **Oversample Ratio**

Remarks The upper limit of the oversample ratio is adjusted based on the waveform length and chip rate.

Using larger oversample ratios result in more completely filtered images, but this action also uses up more waveform memory.

The maximum oversample ratio is the smaller of 8, 40 Mcps/Chip Rate, or 32/Waveform Length (number of CDMA short codes).

:REFerence:EXTernal:FREQuency**Supported** E4438C with Option 401

```
[ :SOURCE ] :RADio:CDMA:ARB:REFerence:EXTernal:FREQuency <val>
[ :SOURCE ] :RADio:CDMA:ARB:REFerence:EXTernal:FREQuency?
```

This command allows you to enter the frequency of the applied external reference.

The variable <val> is expressed in units of Hertz (Hz–MHz).

***RST** +1.00000000E+007

Range 2.5E5–1E8

Key Entry **Reference Freq**

Remarks The value specified by this command is effective only when you are using an external ARB reference applied to the BASEBAND GEN REF IN rear panel connector.

To specify external as the ARB reference source type, refer to “:REFerence[:SOURce]” on page 225.

:REFerence[:SOURce]

Supported E4438C with Option 401

[:SOURce] :RADio:CDMA:ARB:REFerence[:SOURce] INTernal | EXTernal
 [:SOURce] :RADio:CDMA:ARB:REFerence[:SOURce]?

This command selects either an internal or external reference for the waveform clock.

***RST** INT

Key Entry **ARB Reference Ext Int**

Remarks If the EXTernal choice is selected, the external frequency value *must* be entered and the signal must be applied to the BASEBAND GEN REF IN rear panel connector.

Refer to “:REFerence:EXTernal:FREQuency” on page 224 to enter the external reference frequency.

:RETRigger

Supported E4438C with Option 401

[:SOURce] :RADio:CDMA:ARB:RETRigger ON | OFF | IMMEDIATE
 [:SOURce] :RADio:CDMA:ARB:RETRigger?

This command enables or disables the ARB retriggering mode; the retrigger mode controls how the retriggering function performs while a waveform is playing.

ON(1) This choice specifies that if a trigger occurs while a waveform is playing, the waveform will retrigger at the end of the current waveform sequence and play once more.

OFF(0) This choice specifies that if a trigger occurs while a waveform is playing, the trigger will be ignored.

CDMA ARB Subsystem—Option 401 ([:SOURce]:RADio:CDMA:ARB)

IMMEDIATE This choice specifies that if a trigger occurs while a waveform is playing, the waveform will reset and replay from the start immediately upon receiving a trigger.

***RST** ON

Key Entry **On Off Immediate**

:SCLock:RATE

Supported E4438C with Option 401

[:SOURce]:RADio:CDMA:ARB:SCLock:RATE <val>

[:SOURce]:RADio:CDMA:ARB:SCLock:RATE?

This command sets the sample clock rate for the CDMA modulation format.

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

***RST** +1.00000000E+008

Range 1–1E8

Key Entry **ARB Sample Clock**

Remarks The modulation format should be active before executing this command. If this command is executed before the modulation format is active, the entered value will be overridden by a calculated factory default value. Refer to “[:STATe]” on [page 237](#) to activate the modulation format.

:SETup

Supported E4438C with Option 401

[:SOURce]:RADio:CDMA:ARB:SETup FWD9 | FWD32 | FWD64 | PILot | REVerse | MCARrier |
" <file name> "

[:SOURce]:RADio:CDMA:ARB:SETup?

This command selects a pre-defined CDMA channel setup or multicarrier, and turns multicarrier off or on (see the MCARrier choice description).

FWD9 This CDMA setup consists of 9 forward channels (pilot, paging, sync, and 6 traffic channels) at IS-97-defined power levels.

FWD32 This CDMA setup consists of 32 forward channels (pilot, paging, sync, and 29 traffic channels) at IS-97-defined power levels.

FWD64 This CDMA setup consists of 64 forward channels (pilot, 7 paging, sync, and 55 traffic channels) at IS-97-defined power levels.

PILot This choice selects single pilot channel.

REVerse	A single reverse link traffic channel.
MCARrier	This choice selects multicarrier and turns it on. Selecting any other setup such as FWD9 or FWD64 turns multicarrier off. To select the multicarrier setup, see “:SETup:MCARrier” on page 228.
*RST	FWD9
Key Entry	9 Ch Fwd 32 Ch Fwd 64 Ch Fwd Pilot Reverse Multicarrier Off On Multicarrier Off On Custom CDMA State
Remarks	Refer to “File Name Variables” on page 13 for information on the file name syntax.

:SETup:CHANnel

Supported E4438C with Option 401

```
[ :SOURce ] :RADio :CDMA :ARB :SETup :CHANnel IS97 | EQUal | SCALe | NONE { , PILOt |
SYNC | PAGing | TRAFFic , <walsh_value> , <power_value> , <pn_offset> , RANDom |
<data_value> }
```

```
[ :SOURce ] :RADio :CDMA :ARB :SETup :CHANnel ?
```

This command defines the channel parameters of the CDMA signal. This allows for customizing of the channel type, the channel parameters, and the data value.

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

IS97	This choice sets the channel power levels to IS-97-defined power levels.
EQUAL	This choice sets the channel power levels so that all channels are of equal power and the total power equals 0 dBm.
SCALe	This choice scales all of the current channel powers so that the total power equals 0 dB while keeping the previous power ratios between the individual channels.
NONE	This choice bypasses the power level setting.
PILOt	This choice selects a single traffic channel.
SYNC	This choice selects a sync channel.
PAGing	This choice selects a paging channel.
TRAFFic	This choice selects a traffic channel.
RANDom	This choice selects a randomly generated data value.

CDMA ARB Subsystem—Option 401 ([:SOURCE]:RADIO:CDMA:ARB)

The channel type, walsh code, power, PN offset, and data values are returned when a query is initiated. The output format is as follows:

<channel_type> , <walsh_value> , <power> , <pn_offset> , <data_value>

*RST	Channel #	Channel Type	Walsh Code	Power	PN Offset	Data
	1	PIL	+0	-7.0000000E+000	+0	+0
	2	PAG	+1	-7.26000023E+000	+0	RAND
	3	TRAF	+8	-1.02600002E+001	+0	RAND
	4	TRAF	+9	-1.02600002E+001	+0	RAND
	5	TRAF	+10	-1.02600002E+001	+0	RAND
	6	TRAF	+11	-1.02600002E+001	+0	RAND
	7	TRAF	+12	-1.02600002E+001	+0	RAND
	8	TRAF	+13	-1.02600002E+001	+0	RAND
	9	SYNC	+32	-1.02600002E+001	+0	RAND

Range <power_value>: -40 to 0 <walsh_value>: 0-63 <pn_offset>: 0-511

Key Entry **IS-97 Levels** **Equal Powers** **Scale to 0dB** **Sync** **Pilot** **Paging** **Traffic**

:SETup:MCARrier

Supported E4438C with Option 401

```
[:SOURCE]:RADIO:CDMA:ARB:SETup:MCARrier CAR3|CAR4| "<file name>"
[:SOURCE]:RADIO:CDMA:ARB:SETup:MCARrier?
```

This command selects a pre-defined or user-defined multicarrier CDMA setup.

CAR3 This choice selects three 9 channel forward carriers with a power level of 0.00 dB, the first with a -1.25 MHz frequency offset, the second with no frequency offset, and the third with +1.25 MHz frequency offset.

CAR4 This choice selects four 9 channel forward carriers with a power level of 0.00 dB, the first with a -1.875 MHz frequency offset, the second with a -625 kHz frequency offset, the third with +625 kHz frequency offset, and the fourth with a +1.875 MHz frequency offset.

"<file name>" This choice selects a file consisting of the user-defined number of channel forward carriers, power levels, and frequency offsets.

***RST** CAR3

Key Entry **3 Carriers** **4 Carriers** **Custom CDMA Multicarrier**

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

:SETup:MCARrier:STORe

Supported E4438C with Option 401

```
[ :SOURce ]:RADio:CDMA:ARB:SETup:MCARrier:STORe "<file name>"
```

This command stores the current multicarrier setup information.

The stored file contains information including the digital modulation format, number of carriers, frequency spacing, and power settings for the multicarrier setup.

Key Entry **Store Custom Multicarrier**

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

:SETup:MCARrier:TABLE

Supported E4438C with Option 401

```
[ :SOURce ]:RADio:CDMA:ARB:SETup:MCARrier:TABLE { FWD9 | FWD32 | FWD64 | PILot |  
CUSTom, "<file name>" | " ", <freq_offset>, <power> }  
[ :SOURce ]:RADio:CDMA:ARB:SETup:MCARrier:TABLE?
```

This command defines the multicarrier CDMA waveform.

The variable <freq_offset> is expressed in units of Hertz (kHz to MHz).

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

The carrier type, carrier name, frequency offset, and power level are returned when a query is initiated. The output format is as follows:

```
<carrier type>, <carrier_name>, <freq_offset>, <power>
```

FWD9 This CDMA setup consists of 9 forward channels (pilot, paging, sync, and 6 traffic channels) at IS-97-defined power levels.

FWD32 This CDMA setup consists of 32 forward channels (pilot, paging, sync, and 29 traffic channels) at IS-97-defined power levels.

FWD64 This CDMA setup consists of 64 forward channels (pilot, 7 paging, sync, and 55 traffic channels) at IS-97-defined power levels.

PILot This choice selects single pilot channel.

CUSTom, "<file name>" This choice selects a custom user-defined CDMA setup.

" " A null string, entered for any non-custom carrier.

CDMA ARB Subsystem—Option 401 ([:SOURCE]:RADio:CDMA:ARB)

*RST	carrier type: FWD9 <freq_offset>: +1.25000000E+006 <power>: +0.00000000E+000
Range	<freq_offset>: -7.5E6 to 7.5E6 <power>: -40 to 0
Key Entry	9 Ch Fwd 32 Ch Fwd 64 Ch Fwd Pilot Custom CDMA State
Remarks	Refer to “File Name Variables” on page 13 for information on the file name syntax. To store a multicarrier setup refer to “:SETup:MCARrier:STORE” on page 229 The file name specified must be a single carrier CDMA file.

:SETup:STORE

Supported E4438C with Option 401

```
[ :SOURCE ]:RADio:CDMA:ARB:SETup:STORE "<file name>"
```

This command stores the current custom CDMA state, using a designated file name, to the signal generator non-volatile memory.

Along with the contents of the CDMA channel table editor (channel types, Walsh code, power levels, PN offset, and data), this command stores the following information to the signal generator non-volatile memory:

- FIR filter
- FIR filter file name
- FIR filter alpha
- FIR filter BbT
- FIR filter channel (EVM or ACP)
- chip rate
- waveform length
- oversample ratio
- ARB reference clock source (internal or external)
- ARB reference clock frequency

Key Entry **Store Custom CDMA State**

Remarks Recall the stored file by executing the following command:

```
[ :SOURCE ]:RADio:CDMA:ARB:SETup: "<file name>"
```

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

:TRIGger:TYPE

Supported E4438C with Option 401

```
[ :SOURCE ]:RADio:CDMA:ARB:TRIGger:TYPE CONTInuous | SINGle | GATE  
[ :SOURCE ]:RADio:CDMA:ARB:TRIGger:TYPE?
```

This command sets the trigger mode (type) that controls the waveform’s playback.

Triggers control the playback by telling the ESG when to play the modulating signal (waveform). Depending on the trigger settings for the ESG, the waveform playback can occur once, continuously, or the ESG may start and stop playing the waveform repeatedly (GATE mode).

A trigger signal comprises both positive and negative signal transitions (states), which are also called high and low periods. You can configure the ESG to trigger on either state of the trigger signal. It is common to have multiple triggers, also referred to as trigger occurrences or events, occur when the signal generator requires only a single trigger. In this situation, the ESG recognizes the first trigger and ignores the rest.

When you select a trigger mode, you may lose the signal (carrier plus modulating) from the RF output until you trigger the waveform. This is because the ESG sets the I and Q signals to zero volts prior to the first trigger event, which suppresses the carrier. After the first trigger event, the waveform’s final I and Q levels determine whether you will see the carrier signal or not (zero = no carrier, other values = carrier visible). At the end of most files, the final I and Q points are set to a value other than zero.

There are four parts to configuring the trigger:

- Choosing the trigger type, which controls the waveform’s transmission.
- Setting the waveform’s response to triggers:
 - CONTInuous, see “:TRIGger:TYPE:CONTInuous[:TYPE]” on page 232
 - SINGle, see “:RETRigger” on page 225
 - GATE, selecting the mode also sets the response
- Selecting the trigger source (see “:TRIGger[:SOURCE]” on page 233), which determines how the ESG receives its trigger signal, internally or externally. The GATE choice requires an external trigger.
- Setting the trigger polarity when using an external source:
 - CONTInuous and SINGle see “:TRIGger[:SOURCE]:EXTErnal:SLOPe” on page 235
 - GATE, see “:TRIGger:TYPE:GATE:ACTive” on page 233

For more information on triggering, see the *E4428C/38C ESG Signal Generators User’s Guide*.

The following list describes the trigger type command choices:

CONTInuous Upon triggering, the waveform repeats continuously.

CDMA ARB Subsystem—Option 401 ([:SOURCE]:RADio:CDMA:ARB)

SINGLE	Upon triggering, the waveform segment or sequence plays once.
GATE	An external trigger signal repeatedly starts and stops the waveform’s playback (transmission). The time duration for playback depends on the duty period of the trigger signal and the gate polarity selection (see “:TRIGger:TYPE:GATE:ACTive” on page 233). The waveform plays during the inactive state and stops during the active polarity selection state. The active state can be set high or low. The gate mode works only with an external trigger source.

NOTE The ARB gating behavior described above is opposite to the gating behavior for real-time custom mode.

*RST	CONT		
Key Entry	Continuous	Single	Gated

:TRIGger:TYPE:CONTInuous[:TYPE]

Supported E4438C with Option 401

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

This commands selects the waveform’s response to a trigger signal while using the continuous trigger mode.

For more information on triggering and to select the continuous trigger mode, see [“:TRIGger:TYPE” on page 231](#).

The following list describes the waveform’s response to each of the command choices:

FREE	Turning the ARB format on immediately triggers the waveform. The waveform repeats until you turn the format off, select another trigger, or choose another waveform file.
TRIGger	The waveform waits for a trigger before play begins. When the waveform receives the trigger, it plays continuously until you turn the format off, select another trigger, or choose another waveform file.
RESet	The waveform waits for a trigger before play begins. When the waveform receives the trigger, it plays continuously. Subsequent triggers reset the waveform to the beginning. For a waveform sequence, this means to the beginning of the first segment in the sequence.

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

:TRIGger:TYPE:GATE:ACTive

Supported E4438C with Option 401

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

This command selects the active state (gate polarity) of the gate while using the gating trigger mode.

The LOW and HIGH selections correspond to the low and high states of an external trigger signal. For example, when you select HIGH, the active state occurs during the high of the trigger signal. When the active state occurs, the ESG stops the waveform playback at the last played sample point, then restarts the playback at the next sample point when the inactive state occurs. For more information on triggering and to select gating as the trigger mode, see “:TRIGger:TYPE” on page 231.

The following list describes the ESG’s gating behavior for the polarity selections:

- | | |
|------|--|
| LOW | The waveform playback stops when the trigger signal goes low (active state) and restarts when the trigger signal goes high (inactive state). |
| HIGH | The waveform playback stops when the trigger signal goes high (active state) and restarts when the trigger signal goes low (inactive state). |

*RST	HIGH
Key Entry	Gate Active Low High

:TRIGger[:SOURce]

Supported E4438C with Option 401

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

This command sets the trigger source.

For more information on triggering, see “:TRIGger:TYPE” on page 231. The following list describes the command choices:

- | | |
|-----|--|
| KEY | This choice enables manual triggering by pressing the front-panel Trigger hardkey. |
| EXT | An externally applied signal triggers the waveform. This is the only choice that works with gating. The following conditions affect an external trigger: |

CDMA ARB Subsystem—Option 401 ([:SOURCE]:RADio:CDMA:ARB)

- The input connector selected for the trigger signal. You have a choice between the rear-panel PATTERN TRIG IN connector or the PATT TRIG IN 2 pin on the rear-panel AUXILIARY I/O connector. To make the connector selection, see “:TRIGger[:SOURCE]:EXTErnal[:SOURCE]” on page 236.

For more information on the connectors and on connecting the cables, see the *E4428C/38C ESG Signal Generators User’s Guide*.

- The trigger signal polarity:
 - gating mode, see “:TRIGger:TYPE:GATE:ACTive” on page 233
 - continuous and single modes, see “:TRIGger[:SOURCE]:EXTErnal:SLOPe” on page 235
- The time delay between when the ESG receives a trigger and when the waveform responds to the trigger. There are two parts to setting the delay:
 - setting the amount of delay, see “:TRIGger[:SOURCE]:EXTErnal:DELay” on page 234
 - turning the delay on, see “:TRIGger[:SOURCE]:EXTErnal:DELay:STATe” on page 235

BUS This choice enables triggering over the GPIB or LAN using the *TRG or GET commands or the AUXILIARY INTERFACE (RS-232) using the *TRG command.

***RST** KEY

Key Entry	Trigger Key	Ext	Bus
-----------	-------------	-----	-----

:TRIGger[:SOURCE]:EXTErnal:DELay

Supported E4438C with Option 401

```
[ :SOURCE ] :RADio:CDMA:ARB:TRIGger [ :SOURCE ] :EXTErnal:DELay <val>
[ :SOURCE ] :RADio:CDMA:ARB:TRIGger [ :SOURCE ] :EXTErnal:DELay?
```

This command sets the amount of time to delay the ESG’s response to an external trigger.

The delay is a path (time) delay between when the ESG receives the trigger and when it responds to the trigger. For example, configuring a trigger delay of two seconds, causes the ESG to wait two seconds after receipt of the trigger before the ESG plays the waveform.

The delay does not occur until you turn it on (see “:TRIGger[:SOURCE]:EXTErnal:DELay:STATe” on page 235). You can set the delay value either before or after turning it on.

For more information on configuring an external trigger source and to select external as the trigger source, see “:TRIGger[:SOURCE]” on page 233.

The unit of measurement for the variable <val> is in seconds (nsec–sec).

***RST** +1.00000000E-003
Range 1E-8 to 4E1
Key Entry **Ext Delay Time**

:TRIGger[:SOURCE]:EXTErnal:DELAy:STATe

Supported E4438C with Option 401

```
[ :SOURCE ] : RADio : CDMA : ARB : TRIGger [ :SOURCE ] : EXTErnal : DELAy : STATe ON | OFF |  
1 | 0  
[ :SOURCE ] : RADio : CDMA : ARB : TRIGger [ :SOURCE ] : EXTErnal : DELAy : STATe?
```

This command enables or disables the operating state of the external trigger delay function.

For setting the delay time, see “:TRIGger[:SOURCE]:EXTErnal:DELAy” on page 234, and for more information on configuring an external source, see “:TRIGger[:SOURCE]” on page 233.

***RST** 0
Key Entry **Ext Delay Off On**

:TRIGger[:SOURCE]:EXTErnal:SLOPe

Supported E4438C with Option 401

```
[ :SOURCE ] : RADio : CDMA : ARB : TRIGger [ :SOURCE ] : EXTErnal : SLOPe POSitive |  
NEGative  
[ :SOURCE ] : RADio : CDMA : ARB : TRIGger [ :SOURCE ] : EXTErnal : SLOPe?
```

This command sets the polarity for an external trigger signal while using the continuous, single triggering mode. To set the polarity for gating, see “:TRIGger:TYPE:GATE:ACTive” on page 233.

The POSitive and NEGative selections correspond to the high (positive) and low (negative) states of the external trigger signal. For example, when you select POSitive, the waveform responds (plays) during the high state of the trigger signal. When the ESG receives multiple trigger occurrences when only one is required, the signal generator uses the first trigger and ignores the rest.

For more information on configuring an external trigger source and to select external as the trigger source, see “:TRIGger[:SOURCE]” on page 233.

***RST** NEG
Key Entry **Ext Polarity Neg Pos**

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

Supported E4438C with Option 401

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

This command selects which PATTERN TRIG IN connection the ESG uses to accept an externally applied trigger signal when external is the trigger source selection.

For more information on configuring an external trigger source and to select external as the trigger source, see “:TRIGger[:SOURCE]” on page 233. For more information on the rear-panel connectors, see the *E4428C/38C ESG Signal Generators User’s Guide*.

The following list describes the command choices:

EPT1	This choice is synonymous with EPTRIGGER1 and selects the PATTERN TRIG IN rear-panel connector.
EPT2	This choice is synonymous with EPTRIGGER2 and selects the PATT TRIG IN 2 pin on the rear-panel AUXILIARY I/O connector.
EPTRIGGER1	This choice is synonymous with EPT1 and selects the PATTERN TRIG IN rear-panel connector.
EPTRIGGER2	This choice is synonymous with EPT2 and selects the PATT TRIG IN 2 pin on the rear-panel AUXILIARY I/O connector.
*RST	EPT1
Key Entry	Patt Trig In 1 Patt Trig In 2

:WLENgth

Supported E4438C with Option 401

```
[ :SOURCE ] :RADio:CDMA:ARB:WLENgth <val>
[ :SOURCE ] :RADio:CDMA:ARB:WLENgth?
```

This command specifies the waveform length (in short codes).

***RST** +1

Range 1–6

Key Entry **Waveform Length**

Remarks The upper limit is adjusted based on the oversample ratio to fit the signal within the available memory.

The maximum waveform length is 32/oversample ratio.

[:STATe]

Supported E4438C with Option 401

[:SOURCE]:RADIO:CDMA:ARB[:STATe] ON|OFF|1|0

[:SOURCE]:RADIO:CDMA:ARB[:STATe]?

This command enables or disables the CDMA modulation format.

Executing the command [:SOURCE]:RADIO:CDMA:ARB[:STATe] ON sets up the internal hardware to generate the currently selected CDMA signal selection. This also activates the I/Q state and sets the I/Q source to internal.

ON (1) This choice sets up the internal hardware to generate the currently selected CDMA signal selection. This also activates the I/Q state and sets the I/Q source to internal.

OFF (0) This choice disables the CDMA modulation format.

*RST 0

Key Entry CDMA Off On

Remarks The enabled modulation is not present on RF carrier until you have activated the modulation by executing the command :OUTPut:MODulation[:STATe] ON.

Overriding the I/Q state and I/Q source functions can be achieved by using the I/Q menu.

CDMA2000 ARB Subsystem—Option 401 ([:SOURce]:RADio:CDMA2000:ARB)

:CLIPping:I

Supported E4438C with Option 401

[:SOURce] :RADio:CDMA2000:ARB:CLIPping:I <val>

[:SOURce] :RADio:CDMA2000:ARB:CLIPping:I?

This command clips (limits) the modulation level of the waveform's I component to a percentage of full scale.

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

***RST** +1.00000000E+002

Range 10–100

Key Entry **Clip |I| To**

:CLIPping:POSition

Supported E4438C with Option 401

[:SOURce] :RADio:CDMA2000:ARB:CLIPping:POSition PRE|POST

[:SOURce] :RADio:CDMA2000:ARB:CLIPping:POSition?

This command specifies whether a waveform is clipped before (PRE) or after (POST) FIR filtering.

***RST** PRE

Key Entry **Clip At PRE POST FIR Filter**

:CLIPping:Q

Supported E4438C with Option 401

[:SOURce] :RADio:CDMA2000:ARB:CLIPping:Q <val>

[:SOURce] :RADio:CDMA2000:ARB:CLIPping:Q?

This command clips (limits) the modulation level of the waveform's Q component to a percentage of full scale.

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

***RST** +1.00000000E+002

Range 10–100

Key Entry **Clip |Q| To**

:CLIPping:TYPE

Supported E4438C with Option 401

```
[ :SOURce ]:RADio:CDMA2000:ARB:CLIPping:TYPE IJQ | IORQ  
[ :SOURce ]:RADio:CDMA2000:ARB:CLIPping:TYPE?
```

This command selects either IJQ or IORQ as the clipping type.

IJQ This choice clips (circular clipping) the combined I and Q waveform.

IORQ This choice independently clips (rectangular clipping) I and Q components of the waveform. I and Q can be clipped to different levels using this mode.

***RST** IORQ

Key Entry **Clipping Type** |I+jQ| |I|,|Q|

:CLIPping[:IJQ]

Supported E4438C with Option 401

```
[ :SOURce ]:RADio:CDMA2000:ARB:CLIPping[: IJQ] <val>  
[ :SOURce ]:RADio:CDMA2000:ARB:CLIPping[: IJQ]?
```

This command clips (limits) the modulation level of the combined I and Q waveform to a percentage of full scale.

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

***RST** +1.00000000E+002

Range 10–100

Key Entry **Clip** |I+jQ| **To**

:IQ:EXTernal:FILTer

Supported E4438C with Option 401

```
[ :SOURce ]:RADio:CDMA2000:ARB:IQ:EXTernal:FILTer 40e6 | THROugh  
[ :SOURce ]:RADio:CDMA2000:ARB:IQ:EXTernal:FILTer?
```

This command selects the filter or through path for I/Q signals routed to the rear panel I and Q outputs. Selecting a filter using this command will automatically set “:IQ:EXTernal:FILTer:AUTO” on [page 240](#) to OFF(0) mode.

40e6 This choice applies a 40 MHz baseband filter.

THROugh This choice bypasses filtering.

***RST** THR
Key Entry 40.000 MHz Through

:IQ:EXtErnal:FILTer:AUTO

Supported E4438C with Option 401

```
[ :SOURce ] :RADio :ARB :IQ :EXtErnal :FILTer :AUTO ON | OFF | 1 | 0
[ :SOURce ] :RADio :ARB :IQ :EXtErnal :FILTer :AUTO ?
```

This command enables or disables the automatic selection of the filters for I/Q signals routed to the rear panel I/Q outputs.

ON(1) This choice will automatically select a digital modulation filter optimized for the current signal generator settings.

OFF(0) This choice disables the auto feature which lets you select a digital modulation filter or through path. Refer to “:IQ:EXtErnal:FILTer” on page 239 for selecting a filter or through path.

***RST** 1

Key Entry I/Q Output Filter Manual Auto

:FILTer

Supported E4438C with Option 401

```
[ :SOURce ] :RADio :CDMA2000 :ARB :FILTer RNYQuist | NYQuist | GAUSSian | RECTangle |
IS95 | IS95_EQ | IS95_MOD | IS95_MOD_EQ | AC4Fm | WCDMA | IS2000SR3DS | UGGaussian |
" <user FIR > "
[ :SOURce ] :RADio :CDMA2000 :ARB :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.

WCDMa	This choice selects a 0.22 Nyquist filter optimized for ACP.																		
AC4Fm	This choice selects the Association of Public Safety Communications Officials (APCO) specified compatible 4-level frequency modulation (C4FM) filter.																		
IS2000SR3DS	This choice selects an IS-2000 standard, spread rate 3 direct spread 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 FIR filter file that you have stored in memory. The variable needs no directory path indicating the location of the file, such as FIR: or /USER/FIR. The command assumes the FIR directory. Refer to “ File Name Variables ” on page 13 for more information on file names.																		
*RST	IS95_MOD_EQ																		
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>WCDMA</td> <td></td> <td></td> </tr> <tr> <td>UN3/4 GSM Gaussian</td> <td>IS-2000 SR3 DS</td> <td>User FIR</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	APCO 25 C4FM	WCDMA			UN3/4 GSM Gaussian	IS-2000 SR3 DS	User FIR			
Root Nyquist	Nyquist	Gaussian	Rectangle	IS-95	IS-95 w/EQ														
IS-95 Mod	IS-95 Mod w/EQ	APCO 25 C4FM	WCDMA																
UN3/4 GSM Gaussian	IS-2000 SR3 DS	User FIR																	

:FILTer:ALPHa

Supported E4438C with Option 401

```
[ :SOURce ] :RADio :CDMA2000 :ARB :FILTer :ALPHa <val>
[ :SOURce ] :RADio :CDMA2000 :ARB :FILTer :ALPHa ?
```

This command changes the Nyquist or root Nyquist filter 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 240.

:FILTER:BBT

Supported E4438C with Option 401

```
[ :SOURCE ] : RADIO : CDMA2000 : ARB : FILTER : BBT <val>
```

```
[ :SOURCE ] : RADIO : CDMA2000 : ARB : FILTER : BBT ?
```

This command changes the bandwidth-multiplied-by-bit-time (BbT) filter parameter.

The filter BbT 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 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 240.

:FILTER:CHANnel

Supported E4438C with Option 401

```
[ :SOURCE ] : RADIO : CDMA2000 : ARB : FILTER : CHANnel EVM | ACP
```

```
[ :SOURCE ] : RADIO : CDMA2000 : ARB : 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 240.

:HEADer:CLEar

Supported E4438C with Option 401

[:SOURCE] :RADIO:CDMA2000:ARB:HEADer:CLEar

This command clears the header information from the file header used by this modulation format.

Key Entry **Clear Header**

Remarks The **CDMA2000 Off On** softkey must be set to On for this command to function.

:HEADer:SAVE

Supported E4438C with Option 401

[:SOURCE] :RADIO:CDMA2000:ARB:HEADer:SAVE

This command saves the header information to the file header used by this modulation format.

Key Entry **Save Setup To Header**

Remarks The **CDMA2000 Off On** softkey must be set to On for this command to function.

:IQ:MODulation:ATTen

Supported E4438C with Option 401

[:SOURCE] :RADIO:CDMA2000:ARB:IQ:MODulation:ATTen <val>

[:SOURCE] :RADIO:CDMA2000:ARB:IQ:MODulation:ATTen?

This command attenuates the I/Q signals being modulated through the signal generator RF path.

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

***RST** +2.00000000E+000

Range 0–40

Key Entry **Modulator Atten Manual Auto**

:IQ:MODulation:ATTen:AUTO**Supported** E4438C with Option 401

```
[ :SOURce ]:RADio:CDMA2000:ARB:IQ:MODualtion:ATTen:AUTO ON|OFF|1|0
[ :SOURce ]:RADio:CDMA2000:ARB:IQ:MODulation:ATTen:AUTO?
```

This command enables or disables the I/Q attenuation auto mode.

ON (1) This choice enables the attenuation auto mode which optimizes the modulator attenuation for the current conditions.

OFF (0) This choice holds the attenuator at its current setting or at a selected value. Refer to “:IQ:MODulation:ATTen” on page 243 for setting the attenuation value.

*RST 1

Key Entry Modulator Atten Manual Auto

:IQ:MODulation:FILTer**Supported** E4438C with Option 401

```
[ :SOURce ]:RADio:CDMA2000:ARB:IQ:MODulation:FILTer 2.1e6|40e6|THROUGH
[ :SOURce ]:RADio:CDMA2000:ARB:IQ:MODulation:FILTer?
```

This command enables you to select a filter or through path for I/Q signals modulated onto the RF carrier. Selecting a filter using this command will automatically set “:IQ:MODulation:FILTer:AUTO” on page 244 to OFF(0) mode.

2.1E6 This choice applies a 2.1 MHz baseband filter to the I/Q signals.

40E6 This choice applies a 40 MHz baseband filter to the I/Q signals.

THROUGH This choice bypasses filtering.

*RST THR

Key Entry 2.100 MHz 40.000 MHz Through

:IQ:MODulation:FILTer:AUTO**Supported** E4438C with Option 401

```
[ :SOURce ]:RADio:CDMA2000:ARB:IQ:MODulation:FILTer:AUTO ON|OFF|1|0
[ :SOURce ]:RADio:CDMA2000:ARB:IQ:MODulation:FILTer:AUTO?
```

This command enables or disables the automatic selection of the filters for I/Q signals modulated onto the RF carrier.

ON(1) This choice will automatically select a digital modulation filter.

OFF(0) This choice disables the auto feature which lets you select a digital modulation filter or through path. Refer to “:IQ:MODulation:FILTer” on page 244 for selecting a filter or through path.

*RST 1

Key Entry I/Q Mod Filter Manual Auto

:IQMap

Supported E4438C with Option 401

```
[ :SOURce ]:RADio:CDMA2000:ARB:IQMap NORMal | INVerted
[ :SOURce ]:RADio:CDMA2000:ARB:IQMap?
```

This command selects whether the Q output will be normal or inverted.

NORMal This choice selects normal polarity.

INVerted This choice inverts the internal Q signal.

*RST NORM

Key Entry I/Q Mapping Normal Invert

Remarks Inverting the Q output inverts the RF spectrum after the modulation.

:LINK

Supported E4438C with Option 401

```
[ :SOURce ]:RADio:CDMA2000:ARB:LINK FORWard | REVerse
[ :SOURce ]:RADio:CDMA2000:ARB:LINK?
```

This command selects the CDMA2000 forward or reverse link channel setup.

FORW This choice selects a basestation to mobile configuration.

REV This choice selects a mobile to basestation configuration.

*RST FORW

Key Entry Link Forward Reverse

:LINK:FORWard:SETup

Supported E4438C with Option 401

```
[ :SOURce ]:RADio:CDMA2000:ARB:LINK:FORWard:SETup S1Pilot | S3DPilot |
S3MPilot | S19Chan | S3D9chan | S3M9chan | MCArrier | "<file name>"
[ :SOURce ]:RADio:CDMA2000:ARB:LINK:FORWard:SETup?
```

CDMA2000 ARB Subsystem—Option 401 ([:SOURCE]:RADio:CDMA2000:ARB)

This command selects a previously defined channel configuration for the CDMA2000 forward link or multicarrier, and turns multicarrier off or on (see the MCARrier choice description).

S1Pilot	This choice selects a spread rate 1, pilot-channel setup.										
S3DPilot	This choice selects a spread rate 3, direct spread, pilot-channel setup.										
S3MPilot	This choice selects a spread rate 3, multicarrier spread, pilot-channel setup.										
S19Chan	This choice selects a spread rate 1, 9-channel setup.										
S3D9Chan	This choice selects a spread rate 3, direct spread, 9-channel setup.										
S3M9Chan	This choice selects a spread rate 3, multicarrier spread, 9-channel setup.										
MCARrier	This choice selects multicarrier and turns it on. Selecting any other setup such as S1Pilot or S3D9Chan turns multicarrier off. To select the multicarrier setup, see “:LINK:FORWARD:SETup:MCARrier” .										
*RST	S19C										
Key Entry	<table border="0"> <tr> <td>Pilot</td> <td>9 Channel</td> <td>Spread Rate 1</td> <td>Spread Rate 3</td> <td>Multicarrier Off On</td> </tr> <tr> <td>Spreading Type</td> <td>Direct</td> <td>Mcarrier</td> <td>Custom</td> <td>CDMA2000 Carrier</td> </tr> </table>	Pilot	9 Channel	Spread Rate 1	Spread Rate 3	Multicarrier Off On	Spreading Type	Direct	Mcarrier	Custom	CDMA2000 Carrier
Pilot	9 Channel	Spread Rate 1	Spread Rate 3	Multicarrier Off On							
Spreading Type	Direct	Mcarrier	Custom	CDMA2000 Carrier							
Remarks	Refer to “File Name Variables” on page 13 for information on the file name syntax.										

:LINK:FORWARD:SETup:MCARrier

Supported E4438C with Option 401

```
[ :SOURCE ] :RADio :CDMA2000 :ARB :LINK :FORWARD :SETup :MCARrier CAR2 | CAR3 | CAR4 |
"<file name>"
[ :SOURCE ] :RADio :CDMA2000 :ARB :LINK :FORWARD :SETup :MCARrier?
```

This command defines the type of multicarrier CDMA2000 setup.

CAR2	<p>This choice specifies the following standard 2-carrier setup:</p> <p>Carrier 1: spread rate 3, direct spread, 9 channel; -2.5 MHz frequency offset; 0 dB power</p> <p>Carrier 2: spread rate 3, direct spread, 9 channel; 2.5 MHz frequency offset; 0 dB power</p>
CAR3	<p>This choice specifies the following standard 3-carrier setup:</p> <p>Carrier 1: spread rate 1, 9 channel; -1.25 MHz frequency offset; 0 dB power</p> <p>Carrier 2: spread rate 1, 9 channel; 0 kHz frequency offset; 0 dB power</p> <p>Carrier 3: spread rate 1, 9 channel; 1.25 MHz frequency offset; 0 dB power</p>

CAR4	This choice specifies the following standard 2-carrier setup: Carrier 1: spread rate 1, 9 channel; -1.875 MHz frequency offset; 0 dB power Carrier 2: spread rate 1, 9 channel; -625 kHz frequency offset; 0 dB power Carrier 3: spread rate 1, 9 channel; 625 kHz frequency offset; 0 dB power Carrier 4: spread rate 1, 9 channel; 1.875 MHz frequency offset; 0 dB power
*RST	CAR2
Key Entry	2 SR3 Carriers 3 Carriers 4 Carriers Custom CDMA2000 Multicarrier
Remarks	Refer to “File Name Variables” on page 13 for information on the file name syntax.

:LINK:FORWARD:SETup:MCARrier:STORe

Supported E4438C with Option 401

```
[ :SOURce ]:RADio:CDMA2000:ARB:LINK:FORWARD:SETup:MCARrier:
STORe "<file name>"
```

This command stores the current multicarrier setup information.

The stored file contains information including the digital modulation format, number of carriers, frequency spacing, and power settings for the multicarrier setup.

Key Entry Store Custom Multicarrier

Remarks Recall stored files from memory by executing the following command:

```
[ :SOURce ]:RADio:CDMA2000:ARB:LINK:FORWARD:SETup:
MCARrier "<file name>"
```

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

:LINK:FORWARD:SETup:MCARrier:TABLE

Supported E4438C with Option 401

```
[ :SOURce ]:RADio:CDMA2000:ARB:LINK:FORWARD:SETup:MCARrier:TABLE INIT |
APPend |<chan_num>, S1Pilot | S3DPilot | S3MPilot | S19Chan | S3D9chan | S3M9chan |
"<file name>", <freq_offset>, <power>
[ :SOURce ]:RADio:CDMA2000:ARB:LINK:FORWARD:SETup:MCARrier:
TABLE? <chan_num>
```

This command defines the multicarrier CDMA2000 waveform.

CDMA2000 ARB Subsystem—Option 401 ([:SOURce]:RADio:CDMA2000:ARB)

The variable <freq_offset> is expressed in units of Hertz (MHz).

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

Channel type, frequency offset, and power level are returned when a query is initiated. The output format is as follows:

<channel type> , <freq_offset> , <power>

INIT	This choice clears the current information and creates a new one-row table, allowing for further definition using additional parameters.				
APPend	This choice adds rows to an existing table. The maximum number of rows for one table is 25.				
S1Pilot	This choice sets a single SR1 Pilot forward channel.				
S3DPilot	This choice sets a single direct spread pilot forward channel.				
S3MPilot	This choice sets a single SR3 multicarrier spread pilot forward channel.				
S19Chan	This choice sets a SR1 9 forward channel.				
S3D9chan	This choice sets a SR3 direct spread forward channel.				
S3M9chan	This choice sets a SR3 multicarrier spread 9 forward channel.				
*RST	channel type: S3D9CHAN	<freq_offset>: -2.50000000E+006	<power>: +0.00000000E+000		
Range	<freq_offset>: -15E6 to 15E6		<power>: -40 to 0		
Key Entry	Select File	Insert Row	SR1 Pilot	SR3 Direct Pilot	SR3 Mcarrier Pilot
	SR3 Mcarrier Pilot	SR1 9 Channel	SR3 Direct 9 Channel		
	SR3 Mcarrier 9 Channel		Custom CDMA2000 Carrier		
Field Entry	Freq Offset		Power		
Remarks	Refer to “File Name Variables” on page 13 for information on the file name syntax.				

:LINK:FORWARD:SETup:MCARrier:TABLE:NCARriers

Supported E4438C with Option 401

[:SOURce] :RADio:CDMA2000:ARB:LINK:FORWARD:SETup:MCARrier:TABLE:NCARriers?

This command queries the number of carriers specified for the multicarrier CDMA2000 waveform.

***RST** +2

:LINK:FORWARD:SETup:STORe

Supported E4438C with Option 401

```
[ :SOURCE ]:RADio:CDMA2000:ARB:LINK:FORWARD:SETup:STORe "<file name>"
```

This command stores the current custom CDMA2000 state, using a designated file name, to the signal generator memory.

Along with the contents of the CDMA2000 channel table editor (channel types, Walsh code, power levels, PN offset, and data), this command stores the following information to the signal generator memory:

- FIR filter
- FIR filter file name
- FIR filter alpha
- FIR filter BbT
- FIR filter channel (EVM or ACP)
- I/Q mapping
- link
- spread type
- spread rate
- ARB reference clock source (internal or external)
- ARB reference clock frequency
- clipping
- multicarrier spacing
- radio configuration

Key Entry **Store Custom CDMA State**

Remarks Recall this stored file by executing the following command:

```
[ :SOURCE ]:RADio:CDMA2000:ARB:LINK:FORWARD:  
SETup "<file name>"
```

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

:LINK:FORWARD:SETup:TABLE:APPLy

Supported E4438C with Option 401

```
[ :SOURCE ]:RADio:CDMA2000:ARB:LINK:FORWARD:SETup:TABLE:APPLy
```

This command generates a CDMA2000 signal based on the current values in the CDMA2000 channel setup table editor.

Key Entry Apply Channel Setup

:LINK:FORWARD:SETup:TABLE:CHANnel

Supported E4438C with Option 401

```
[ :SOURCE ] :RADio :CDMA2000 :ARB :LINK :FORWARD :SETup :TABLE :CHANnel INIT |
APPend | <chan_num> , <chan_type> , <config> , <data_rate> , <walsh> , <power> ,
<pn_offset> , RANDom | <data_val>
[ :SOURCE ] :RADio :CDMA2000 :ARB :LINK :FORWARD :SETup :TABLE :
CHANnel? <chan_num>
```

This command defines the channel parameters of the CDMA2000 signal.

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

The variable <data_rate> is expressed in units bits per second (bps).

The channel type, configuration type, data rate, walsh code, power, pn offset, and data value are returned when a query is initiated. The output format is as follows:

```
<chan_type>,<config>,<data_rate>,<walsh>,<power>,<pn_offset>,<data_val>
```

INIT This choice clears the current information and creates a new one-row table, allowing for further definition using additional parameters.

APPend This choice adds rows to an existing table.

RANDom This choice selects a randomly generated data value.

<data_val> This variable specifies a specific data value.

***RST** channel type: PIL <config>: +3 <data_rate>: +3.84000000E+004
<walsh>: +0 <power>: -7.00000000E+000 <pn_offset>: +0
<data_val>: 0

Range <data_rate>: 1500–307200 <walsh>: 0–63 <power>: –40 to 0
<pn_offset>: 0–511 <data_val>: 0000000–11111111

Key Entry **Edit Channel Setup** **Insert Row** **Config** **Rate**
Walsh Code **PN Offset**

Remarks Queries initiated for this command must be followed by a specific channel number.

The above *RST value represents a query of channel one.

:LINK:FORWARD:SETup:TABLE:NCHannels

Supported E4438C with Option 401

[[:SOURce]:RADio:CDMA2000:ARB:LINK:FORWARD:SETup:TABLE:NCHannels?

This command queries the number of channels specified for the CDMA2000 link setup.

***RST** +9

:LINK:FORWARD:SETup:TABLE:PADJust

Supported E4438C with Option 401

[[:SOURce]:RADio:CDMA2000:ARB:LINK:FORWARD:SETup:TABLE:PADJust EQUAL | SCALE

This command sets the code domain power (the relative power in each of the channels).

EQUAL Sets all channels to equal power, and the total power to 0 dB.

SCALE Scales all of the current channel powers so that the total power equals 0 dB, keeping the previous power ratios between the individual channels.

Key Entry **Equal Powers** **Scale To 0dB**

:LINK:REVERSE:RCONfig

Supported E4438C with Option 401

[[:SOURce]:RADio:CDMA2000:ARB:LINK:REVERSE:RCONfig <val>

[[:SOURce]:RADio:CDMA2000:ARB:LINK:REVERSE:RCONfig?

This command sets the radio configuration for all reverse link channels.

***RST** +1

Range 1–4

Key Entry **Radio Config**

Remarks Changing the radio configuration results in changes to the channel data rate.

:LINK:REVerse:SETup**Supported** E4438C with Option 401

```
[ :SOURCE ]:RADio:CDMA2000:ARB:LINK:REVerse:SETup S1Pilot|S3Pilot|
S15Chan|S35Chan|S18Chan| "<file name>"
[ :SOURCE ]:RADio:CDMA2000:ARB:LINK:REVerse:SETup?
```

This command selects a previously defined channel configuration for the CDMA2000 reverse link.

S1Pilot This choice selects a spread rate 1, pilot-channel setup.

S3Pilot This choice selects a spread rate 3, pilot-channel setup.

S15Chan This choice selects a spread rate 1, 5-channel setup.

S35Chan This choice selects a spread rate 3, 5-channel setup.

S18Chan This choice selects a spread rate 1, 8-channel setup.

***RST** S15Chan

Key Entry	Pilot	5 Channel	8 Channel	Custom CDMA2000 State
	Spread Rate 1		Spread Rate 3	

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

:LINK:REVerse:SETup:STORE**Supported** E4438C with Option 401

```
[ :SOURCE ]:RADio:CDMA2000:ARB:LINK:REVerse:SETup:STORE "<file name>"
```

This command stores the current custom CDMA2000 state, using a designated file name, to the signal generator memory.

Along with the contents of the CDMA2000 channel table editor (channel types, Walsh code, power levels, PN offset, and data), this command stores the following information to the signal generator memory:

- FIR filter
- FIR filter file name
- FIR filter alpha
- FIR filter BbT
- FIR filter channel (EVM or ACP)
- I/Q mapping
- link
- spread type

spread rate
 ARB reference clock source (internal or external)
 ARB reference clock frequency
 clipping
 multicarrier spacing
 radio configuration

Key Entry **Store Custom CDMA State**

Remarks Recall this stored file by executing the following command:

```
[ :SOURce ] :RADio:CDMA2000:ARB:LINK:REVerse:
SETUp "<file name>"
```

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

:LINK:REVerse:SETup:TABLE:APPLY

Supported E4438C with Option 401

```
[ :SOURce ] :RADio:CDMA2000:ARB:LINK:REVerse:SETup:TABLE:APPLY
```

This command generates a CDMA2000 signal based on the current values in the CDMA2000 channel setup table editor.

Key Entry **Apply Channel Setup**

:LINK:REVerse:SETup:TABLE:CHANnel

Supported E4438C with Option 401

```
[ :SOURce ] :RADio:CDMA2000:ARB:LINK:REVerse:SETup:TABLE:CHANnel INIT |
APPend | <chan_num>, <chan_type>, <data_rate>, <power>, RANDOM | <data_val>
[ :SOURce ] :RADio:CDMA2000:ARB:LINK:REVerse:SETup:TABLE:
CHANnel? <chan_num>
```

This command defines the channel parameters for the CDMA2000 signal.

The channel number, configuration type, data rate, walsh code, power, pn offset, and data value are returned when a query is initiated. The output format is as follows:

```
<chan_type>,<data_rate>,<power>,<data_val>
```

The variable <data_rate> is expressed as bits per second (bps).

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

INIT This choice clears the current information and creates a new one-row table, allowing for further definition using additional parameters.

CDMA2000 ARB Subsystem—Option 401 ([:SOURce]:RADio:CDMA2000:ARB)

APPend	This choice adds rows to an existing table. The maximum number of channels in a table is eight.
RANDom	This choice selects a randomly generated data value.
<data_val>	This variable customizes a specific data value.
*RST	<i>channel type</i> : PIL <i><data_rate></i> : +3.84000000E+004 <i><power></i> : -7.00000000E+000 <i><pn_offset></i> : +0 <i><data_val></i> : 0
Range	<i><data_rate></i> : 1500–9600 <i><power></i> : –40 to 0 <i><data_val></i> : 0000000–11111111
Key Entry	Edit Channel Setup Insert Row Config Rate Walsh Code PN Offset
Remarks	Queries initiated for this command must be followed by a specific channel number. The above *RST value represents a query of channel one.

:LINK:REVerse:SEtUp:TABLE:NCHannels

Supported	E4438C with Option 401
	[:SOURce] :RADio:CDMA2000:ARB:LINK:REVerse:SEtUp:TABLE:NCHannels?
	This command query returns the number of channels for the CDMA2000 link reverse setup.
*RST	+5

:LINK:REVerse:SEtUp:TABLE:PADJust

Supported	E4438C with Option 401
	[:SOURce] :RADio:CDMA2000:ARB:LINK:REVerse:SEtUp:TABLE:PADJust EQUal SCALE
	This command customizes the code domain power (the relative power in each of the channels).
EQUal	This choice changes all channels to equal power, and the total power to 0 dB.
SCALE	This choice scales all of the current channel powers so that the total power equals 0 dB, keeping the previous power ratios between the individual channels.
Key Entry	Equal Powers Scale To 0dB

:MDEStination:AAMPlitude

Supported E4438C with Option 401

```
[ :SOURce ]:RADio:CDMA2000:ARB:MDEStination:AAMPlitude NONE |M1 |M2 |M3 |M4  
[ :SOURce ]:RADio:CDMA2000:ARB:MDEStination:AAMPlitude?
```

This command routes the selected marker to the Alternate Amplitude function. The NONE parameter clears the marker for the Alternate Amplitude function.

***RST** NONE

Key Entry **None** **Marker 1** **Marker 2** **Marker 3** **Marker 4**

:MDEStination:ALCHold

Supported E4438C with Option 401

CAUTION Incorrect automatic level control (ALC) sampling can create a sudden unlevelled condition that may create a spike in the RF output potentially damaging a DUT or connected instrument. Ensure that you set markers to let the ALC sample over an amplitude that accounts for the high power levels within the signal.

```
[ :SOURce ]:RADio:CDMA2000:ARB:MDEStination:ALCHold NONE |M1 |M2 |M3 |M4  
[ :SOURce ]:RADio:CDMA2000:ARB:MDEStination:ALCHold?
```

This command enables or disables the marker ALC hold function for the selected marker. For setting markers, see “:MARKer:[SET]” on page 300.

Use the ALC hold function when you have a waveform signal that incorporates idle periods, or when the increased dynamic range encountered with RF blanking is not desired. The ALC leveling circuitry responds to the marker signal during the marker pulse (marker signal high), averaging the modulated signal level during this period.

The ALC hold function operates during the low periods of the marker signal. The marker polarity determines when the marker signal is high. For a positive polarity, this is during the marker points. For a negative polarity, this is when there are no marker points. For setting a marker’s polarity, see “:MPOLarity:MARKer1|2|3|4” on page 258.

NOTE Do not use the ALC hold for more than 100 ms, because it can affect the waveform’s output amplitude.

The marker signal has a minimum of a two-sample delay in its response relative to the waveform signal response. To compensate for the marker signal delay, offset marker points from the waveform sample point at which you want the ALC sampling to begin.

The ALC hold setting is part of the file header information, so saving the setting to the file header saves the current marker routing for the waveform file.

NOTE A waveform file that has unspecified settings in the file header uses the previous waveform’s routing settings.

For more information on the marker ALC hold function, see the *E4428C/38C ESG Signal Generators User’s Guide*. For setting the marker points, see “:MARKer:[SET]” on page 300.

- NONE This terminates the marker ALC hold function.
- M1–M4 These are the marker choices. The ALC hold feature uses only one marker at a time.
- *RST NONE

Example

```
:RAD:AWGB:ARB:MDES:ALCH M1
```

The preceding example routes marker 1 to the ALC Hold function.

Key Entry **None** **Marker 1** **Marker 2** **Marker 3** **Marker 4**

Remarks N/A

:MDEStination:PULSe

Supported E4438C with Option 401

CAUTION The pulse function incorporates ALC hold. Incorrect automatic level control (ALC) sampling can create a sudden unlevelled condition that may create a spike in the RF output potentially damaging a DUT or connected instrument. Ensure that you set markers to let the ALC sample over an amplitude that accounts for the high power levels within the signal.

```
[ :SOURce ] :RADio:CDMA2000:ARB:MDEStination:PULSe NONE | M1 | M2 | M3 | M4
[ :SOURce ] :RADio:CDMA2000:ARB:MDEStination:PULSe?
```

This command enables or disables the marker pulse/RF blanking function for the selected marker.

This function automatically uses the ALC hold function, so there is no need to select both the ALC hold and pulse/RF blanking functions for the same marker.

NOTE Do not use ALC hold for more than 100 ms, because it can affect the waveform’s output amplitude.

The signal generator blanks the RF output when the marker signal goes low. The marker polarity determines when the marker signal is low. For a positive polarity, this is during the marker points. For a negative polarity, this is when there are no marker points. For setting a marker’s polarity, see “:MPOLarity:MARKer1|2|3|4” on page 258.

NOTE Set marker points prior to using this function. Enabling this function without setting marker points may create a continuous low or high marker signal, depending on the marker polarity. This causes either no RF output or a continuous RF output. See “:MARKer:[SET]” on page 300 for setting the marker points.

The marker signal has a minimum of a two-sample delay in its response relative to the waveform signal response. To compensate for the marker signal delay, offset marker points from the waveform sample point at which you want the RF blanking to begin. The RF blanking setting is part of the file header information, so saving the setting to the file header saves the current marker routing for the waveform file.

NOTE A waveform file that has unspecified settings in the file header uses the previous waveform’s routing settings. This could create the situation where there is no RF output signal, because the previous waveform used RF blanking.

For more information on the marker RF blanking function, see the *E4428C/38C ESG Signal Generators User’s Guide*.

NONE This terminates the marker RF blanking/pulse function.

M1–M4 These are the marker choices. The RF blanking/pulse feature uses only one marker at a time.

Example

```
:RAD:ARB:MDES:PULS M2
```

The preceding example routes marker 2 to Pulse/RF Blanking.

```
*RST NONE
```

Key Entry	None	Marker 1	Marker 2	Marker 3	Marker 4
------------------	-------------	-----------------	-----------------	-----------------	-----------------

:MPOLarity:MARKer1 | 2 | 3 | 4**Supported** E4438C with Option 401

```
[ :SOURCE ] :RADio:CDMA2000:ARB:MPOLarity:MARKer1 | 2 | 3 | 4 NEGative | POSitive
[ :SOURCE ] :RADio:CDMA2000:ARB:MPOLarity:MARKer1 | 2 | 3 | 4?
```

This command sets the polarity for the selected marker. For a positive marker polarity, the marker signal is high during the marker points. For a negative marker polarity, the marker signal is high during the period of no marker points.

***RST** POS

Key Entry **Marker 1 Polarity Neg Pos Marker 2 Polarity Neg Pos Marker 3 Polarity Neg Pos**
Marker 4 Polarity Neg Pos

:REFerence:EXTernal:FREQuency**Supported** E4438C with Option 401

```
[ :SOURCE ] :RADio:CDMA2000:ARB:REFerence:EXTernal:FREQuency <val>
[ :SOURCE ] :RADio:CDMA2000:ARB:REFerence:EXTernal:FREQuency?
```

This command allows you to enter the frequency of the applied external reference.

The variable <val> is expressed in units of Hertz (KHz–MHz).

***RST** +1.00000000E+007**Range** 2.5E5–1E8**Key Entry** **Reference Freq**

Remarks The value specified by this command is effective only when you are using an external ARB reference applied to the BASEBAND GEN REF IN rear panel connector.

To specify external as the ARB reference source type, refer to
[“:REFerence\[:SOURCE\]” on page 258.](#)

:REFerence[:SOURCE]**Supported** E4438C with Option 401

```
[ :SOURCE ] :RADio:CDMA2000:ARB:REFerence[ :SOURCE ] INTernal | EXTernal
[ :SOURCE ] :RADio:CDMA2000:ARB:REFerence[ :SOURCE ]?
```

This command selects either an internal or external reference for the waveform clock.

***RST** INT

Key Entry	ARB Reference Ext Int
Remarks	<p>If the EXTERNAL choice is selected, the external frequency value <i>must</i> be entered and the signal must be applied to the BASEBAND GEN REF IN rear panel connector.</p> <p>Refer to “:REFERENCE:EXTERNAL:FREQUENCY” on page 258 to enter the external reference frequency.</p>

:RETRigger

Supported E4438C with Option 401

```
[ :SOURCE ] :RADio:CDMA:ARB:RETRigger ON|OFF|IMMEDIATE
[ :SOURCE ] :RADio:CDMA:ARB:RETRigger?
```

This command enables or disables the ARB retriggering mode; the retrigger mode controls how the retriggering function performs while a waveform is playing.

ON (1) This choice specifies that if a trigger occurs while a waveform is playing, the waveform will retrigger at the end of the current waveform sequence and play once more.

OFF (0) This choice specifies that if a trigger occurs while a waveform is playing, the trigger will be ignored.

IMMEDIATE This choice specifies that if a trigger occurs while a waveform is playing, the waveform will reset and replay from the start immediately upon receiving a trigger.

***RST** ON

Key Entry **On Off Immediate**

:REVISION

Supported E4438C with Option 401

```
[ :SOURCE ] :RADio:CDMA2000:ARB:REVISION?
```

This command queries the revision number of the current CDMA2000 format.

***RST** 8

:SCLock:RATE

Supported E4438C with Option 401

```
[ :SOURce ]:RADio:CDMA2000:ARB:SCLock:RATE <val>
```

```
[ :SOURce ]:RADio:CDMA2000:ARB:SCLock:RATE?
```

This command sets the sample clock rate for the CDMA2000 modulation format.

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

***RST** +1.00000000E+008

Range 1–1E8

Key Entry **ARB Sample Clock**

Remarks The modulation format should be active before executing this command. If this command is executed before the modulation format is active, the entered value will be overridden by a calculated factory default value. Refer to “[:STaTe]” on [page 267](#) to activate the modulation format.

:SPReading:RATE

Supported E4438C with Option 401

```
[ :SOURce ]:RADio:CDMA2000:ARB:SPReading:RATE 1 | 3
```

```
[ :SOURce ]:RADio:CDMA2000:ARB:SPReading:RATE?
```

This command opens a submenu that provides the available spread rate choices for the CDMA2000 waveform.

***RST** +1

Key Entry **Spread Rate 1** **Spread Rate 3**

Remarks The spread rate multiplied by 1.2288 MHz is equal to the chip rate. For example, spread rate 3 equals a 3.6864 Mcps chip rate.

Higher data rates can be achieved using spread rate 3, though offset by greater bandwidth/spectrum usage.

Changing the spread rate to either 1 or 3 will also change the initial setup menu, resulting in a configuration that is specific to the current spread rate.

:SPReading:TYPE

Supported E4438C with Option 401

```
[ :SOURce ]:RADio:CDMA2000:ARB:SPReading:TYPE DIRect |MCArrier  
[ :SOURce ]:RADio:CDMA2000:ARB:SPReading:TYPE?
```

This command selects the spreading type for a CDMA2000 waveform.

***RST** DIR

Key Entry **Spreading Type Direct Mcarrier**

Remarks Multicarrier is not available in the reverse link setup.

Note that changing the spreading type will result in the setup changing to a setup for the current spreading type.

:SPReading:TYPE:MCARrier:SPACing

Supported E4438C with Option 401

```
[ :SOURce ]:RADio:CDMA2000:ARB:SPReading:TYPE:MCARrier:SPACing 1.23MHz |  
1.25MHz  
[ :SOURce ]:RADio:CDMA2000:ARB:SPReading:TYPE:MCARrier:SPACing?
```

This command selects the multicarrier frequency spacing.

***RST** +1.25000000E+006

Key Entry **1.23 MHz 1.25 MHz**

Remarks Cellular band uses 1.23 MHz and PCS band uses 1.25 MHz.

:TRIGger:TYPE

Supported E4438C with Option 401

```
[ :SOURce ]:RADio:CDMA2000:ARB:TRIGger:TYPE CONTinuous |SINGle |GATE  
[ :SOURce ]:RADio:CDMA2000:ARB:TRIGger:TYPE?
```

:TRIGger:TYPE

Supported E4438C with Option 401

```
[ :SOURce ]:RADio:CDMA:ARB:TRIGger:TYPE CONTinuous |SINGle |GATE  
[ :SOURce ]:RADio:CDMA:ARB:TRIGger:TYPE?
```

This command sets the trigger mode (type) that controls the waveform's playback.

Triggers control the playback by telling the ESG when to play the modulating signal (waveform). Depending on the trigger settings for the ESG, the waveform playback can occur once, continuously, or the ESG may start and stop playing the waveform repeatedly (GATE mode).

A trigger signal comprises both positive and negative signal transitions (states), which are also called high and low periods. You can configure the ESG to trigger on either state of the trigger signal. It is common to have multiple triggers, also referred to as trigger occurrences or events, occur when the signal generator requires only a single trigger. In this situation, the ESG recognizes the first trigger and ignores the rest.

When you select a trigger mode, you may lose the signal (carrier plus modulating) from the RF output until you trigger the waveform. This is because the ESG sets the I and Q signals to zero volts prior to the first trigger event, which suppresses the carrier. After the first trigger event, the waveform's final I and Q levels determine whether you will see the carrier signal or not (zero = no carrier, other values = carrier visible). At the end of most files, the final I and Q points are set to a value other than zero.

There are four parts to configuring the trigger:

- Choosing the trigger type, which controls the waveform's transmission.
- Setting the waveform's response to triggers:
 - CONTInuous, see “:TRIGger:TYPE:CONTInuous[:TYPE]” on page 263
 - SINGle, see “:RETRigger” on page 259
 - GATE, selecting the mode also sets the response
- Selecting the trigger source (see “:TRIGger[:SOURce]” on page 264), which determines how the ESG receives its trigger signal, internally or externally. The GATE choice requires an external trigger.
- Setting the trigger polarity when using an external source:
 - CONTInuous and SINGle see “:TRIGger[:SOURce]:EXTernal:SLOPe” on page 266
 - GATE, see “:TRIGger:TYPE:GATE:ACTive” on page 264

For more information on triggering, see the *E4428C/38C ESG Signal Generators User's Guide*.

The following list describes the trigger type command choices:

CONTInuous	Upon triggering, the waveform repeats continuously.
SINGle	Upon triggering, the waveform segment or sequence plays once.

GATE An external trigger signal repeatedly starts and stops the waveform’s playback (transmission). The time duration for playback depends on the duty period of the trigger signal and the gate polarity selection (see “:TRIGger:TYPE:GATE:ACTive” on page 264). The waveform plays during the inactive state and stops during the active polarity selection state. The active state can be set high or low. The gate mode works only with an external trigger source.

NOTE The ARB gating behavior described above is opposite to the gating behavior for real-time custom mode.

***RST** CONT
Key Entry Continuous Single Gated

:TRIGger:TYPE:CONTInuous[:TYPE]

Supported E4438C with Option 401

```
[ :SOURce ] :RADio:CDMA2000:ARB:TRIGger:TYPE:CONTInuous [ :TYPE ] FREE |
TRIGger | RESet
[ :SOURce ] :RADio:CDMA2000:ARB:TRIGger:TYPE:CONTInuous [ :TYPE ] ?
```

This commands selects the waveform’s response to a trigger signal while using the continuous trigger mode.

For more information on triggering and to select the continuous trigger mode, see “:TRIGger:TYPE” on page 261.

The following list describes the waveform’s response to each of the command choices:

FREE	Turning the ARB format on immediately triggers the waveform. The waveform repeats until you turn the format off, select another trigger, or choose another waveform file.
TRIGger	The waveform waits for a trigger before play begins. When the waveform receives the trigger, it plays continuously until you turn the format off, select another trigger, or choose another waveform file.
RESet	The waveform waits for a trigger before play begins. When the waveform receives the trigger, it plays continuously. Subsequent triggers reset the waveform to the beginning. For a waveform sequence, this means to the beginning of the first segment in the sequence.
*RST	FREE
Key Entry	Free Run Trigger & Run Reset & Run

:TRIGger:TYPE:GATE:ACTive

Supported E4438C with Option 401

```
[ :SOURCE ] :RADio:CDMA2000:ARB:TRIGger:TYPE:GATE:ACTive LOW|HIGH
[ :SOURCE ] :RADio:CDMA2000:ARB:TRIGger:TYPE:GATE:ACTive?
```

This command selects the active state (gate polarity) of the gate while using the gating trigger mode.

The LOW and HIGH selections correspond to the low and high states of an external trigger signal. For example, when you select HIGH, the active state occurs during the high of the trigger signal. When the active state occurs, the ESG stops the waveform playback at the last played sample point, then restarts the playback at the next sample point when the inactive state occurs. For more information on triggering and to select gating as the trigger mode, see “:TRIGger:TYPE” on page 261.

The following list describes the ESG’s gating behavior for the polarity selections:

LOW The waveform playback stops when the trigger signal goes low (active state) and restarts when the trigger signal goes high (inactive state).

HIGH The waveform playback stops when the trigger signal goes high (active state) and restarts when the trigger signal goes low (inactive state).

*RST HIGH

Key Entry Gate Active Low High

:TRIGger[:SOURCE]

Supported E4438C with Option 401

```
[ :SOURCE ] :RADio:CDMA2000:ARB:TRIGger [ :SOURCE ] KEY|EXT|BUS
[ :SOURCE ] :RADio:CDMA2000:ARB:TRIGger [ :SOURCE ] ?
```

This command sets the trigger source.

For more information on triggering, see “:TRIGger:TYPE” on page 261. The following list describes the command choices:

KEY This choice enables manual triggering by pressing the front-panel **Trigger** hardkey.

EXT An externally applied signal triggers the waveform. This is the only choice that works with gating. The following conditions affect an external trigger:

- The input connector selected for the trigger signal. You have a choice between the rear-panel PATTERN TRIG IN connector or the PATT TRIG IN 2 pin on the rear-panel AUXILIARY I/O connector. To make the connector selection, see “:TRIGger[:SOURCE]:EXTernal[:SOURCE]” on page 267.

For more information on the connectors and on connecting the cables, see the *E4428C/38C ESG Signal Generators User's Guide*.

- The trigger signal polarity:
 - gating mode, see “:TRIGger:TYPE:GATE:ACTive” on page 264
 - continuous and single modes, see “:TRIGger[:SOURce]:EXTernal:SLOPe” on page 266
- The time delay between when the ESG receives a trigger and when the waveform responds to the trigger. There are two parts to setting the delay:
 - setting the amount of delay, see “:TRIGger[:SOURce]:EXTernal:DELay” on page 265
 - turning the delay on, see “:TRIGger[:SOURce]:EXTernal:DELay:STATe” on page 266

BUS This choice enables triggering over the GPIB or LAN using the *TRG or GET commands or the AUXILIARY INTERFACE (RS-232) using the *TRG command.

***RST** EXT

Key Entry	Trigger Key	Ext	Bus
-----------	-------------	-----	-----

:TRIGger[:SOURce]:EXTernal:DELay

Supported E4438C with Option 401

```
[ :SOURce ] :RADio:CDMA2000:ARB:TRIGger [ :SOURce ] :EXTernal:DELay <val>
[ :SOURce ] :RADio:CDMA2000:ARB:TRIGger [ :SOURce ] :EXTernal:DELay?
```

This command sets the amount of time to delay the ESG's response to an external trigger.

The delay is a path (time) delay between when the ESG receives the trigger and when it responds to the trigger. For example, configuring a trigger delay of two seconds, causes the ESG to wait two seconds after receipt of the trigger before the ESG plays the waveform.

The delay does not occur until you turn it on (see “:TRIGger[:SOURce]:EXTernal:DELay:STATe” on page 266). You can set the delay value either before or after turning it on.

For more information on configuring an external trigger source and to select external as the trigger source, see “:TRIGger[:SOURce]” on page 264.

The unit of measurement for the variable <val> is in seconds (nsec–sec).

***RST** +1.00000000E-003

Range 1E–8 to 4E1

Key Entry Ext Delay Time

:TRIGger[:SOURCE]:EXTErnal:DELAy:STATe

Supported E4438C with Option 401

```
[ :SOURCE ] :RADio:CDMA2000:ARB:TRIGger [ :SOURCE ] :EXTErnal:DELAy:STATe ON | OFF | 1 | 0
```

```
[ :SOURCE ] :RADio:CDMA2000:ARB:TRIGger [ :SOURCE ] :EXTErnal:DELAy:STATe?
```

This command enables or disables the operating state of the external trigger delay function.

For setting the delay time, see “:TRIGger[:SOURCE]:EXTErnal:DELAy” on page 265, and for more information on configuring an external source, see “:TRIGger[:SOURCE]” on page 264.

***RST** 0

Key Entry Ext Delay Off On

:TRIGger[:SOURCE]:EXTErnal:SLOPe

Supported E4438C with Option 401

```
[ :SOURCE ] :RADio:CDMA2000:ARB:TRIGger [ :SOURCE ] :EXTErnal:SLOPe POSitive | NEGative
```

```
[ :SOURCE ] :RADio:CDMA2000:ARB:TRIGger [ :SOURCE ] :EXTErnal:SLOPe?
```

This command sets the polarity for an external trigger signal while using the continuous, single triggering mode. To set the polarity for gating, see “:TRIGger:TYPE:GATE:ACTive” on page 264.

The POSitive and NEGative selections correspond to the high (positive) and low (negative) states of the external trigger signal. For example, when you select POSitive, the waveform responds (plays) during the high state of the trigger signal. When the ESG receives multiple trigger occurrences when only one is required, the signal generator uses the first trigger and ignores the rest.

For more information on configuring an external trigger source and to select external as the trigger source, see “:TRIGger[:SOURCE]” on page 264.

***RST** NEG

Key Entry Ext Polarity Neg Pos

:TRIGger[:SOURCE]:EXTernal[:SOURCE]**Supported** E4438C with Option 401

```
[:SOURCE]:RADIO:CDMA2000:ARB:TRIGger[:SOURCE]:EXTernal[:SOURCE] EPT1 |
EPT2 | EPTRIGGER1 | EPTRIGGER2
[:SOURCE]:RADIO:CDMA2000:ARB:TRIGger[:SOURCE]:EXTernal[:SOURCE]?
```

This command selects which PATTERN TRIG IN connection the ESG uses to accept an externally applied trigger signal when external is the trigger source selection.

For more information on configuring an external trigger source and to select external as the trigger source, see “:TRIGger[:SOURCE]” on page 264. For more information on the rear-panel connectors, see the *E4428C/38C ESG Signal Generators User’s Guide*.

The following list describes the command choices:

EPT1	This choice is synonymous with EPTRIGGER1 and selects the PATTERN TRIG IN rear-panel connector.
EPT2	This choice is synonymous with EPTRIGGER2 and selects the PATT TRIG IN 2 pin on the rear-panel AUXILIARY I/O connector.
EPTRIGGER1	This choice is synonymous with EPT1 and selects the PATTERN TRIG IN rear-panel connector.
EPTRIGGER2	This choice is synonymous with EPT2 and selects the PATT TRIG IN 2 pin on the rear-panel AUXILIARY I/O connector.
*RST	EPT1
Key Entry	Patt Trig In 1 Patt Trig In 2

[:STAtE]**Supported** E4438C with Option 401

```
[:SOURCE]:RADIO:CDMA2000:ARB[:STAtE] ON|OFF|1|0
[:SOURCE]:RADIO:CDMA2000:ARB[:STAtE]?
```

This command enables or disables the CDMA2000 modulation format.

ON (1)	This choice enables the CDMA2000 modulation capability and sets up the internal hardware to generate the currently selected CDMA2000 signal selection. This choice also activates the I/Q state and sets the I/Q source to internal.
OFF (0)	This choice disables the CDMA2000 baseband signal capability.
*RST	0
Key Entry	CDMA2000 Off On

Dmodulation Subsystem—Option 001/601 or 002/602 ([:SOURce]:RADio:DMODulation:ARB)

:IQ:EXTernal:FILTer

Supported E4438C with Option 001/601 or 002/602

```
[ :SOURce ] :RADio:DMODulation:ARB:IQ:EXTernal:FILTer 40e6 |THRough
```

```
[ :SOURce ] :RADio:DMODulation:ARB:IQ:EXTernal:FILTer?
```

This command selects the filter or through path for I/Q signals routed to the rear panel I and Q outputs. Selecting a filter using this command will automatically set “:IQ:EXTernal:FILTer:AUTO” on [page 268](#) to OFF(0) mode.

40e6 This choice applies a 40 MHz baseband filter.

THRough This choice bypasses filtering.

*RST THR

Key Entry 40.000 MHz Through

:IQ:EXTernal:FILTer:AUTO

Supported E4438C with Option 001/601 or 002/602

```
[ :SOURce ] :RADio:DMODulation:ARB:IQ:EXTernal:FILTer:AUTO ON | OFF | 1 | 0
```

```
[ :SOURce ] :RADio:DMODulation:ARB:IQ:EXTernal:FILTer:AUTO?
```

This command enables or disables the automatic selection of the filters for I/Q signals routed to the rear panel I/Q outputs.

ON(1) This choice will automatically select a digital modulation filter optimized for the current signal generator settings.

OFF(0) This choice disables the auto feature which lets you select a digital modulation filter or through path. Refer to “:IQ:EXTernal:FILTer” on [page 268](#) for selecting a filter or through path.

*RST 1

Key Entry I/Q Output Filter Manual Auto

:FILTer

Supported E4438C with Option 001/601 or 002/602

```
[ :SOURCE ]:RADio:DMODulation:ARB:FILTer RNYQuist | NYQuist | GAUSSian |
RECTangle | IS95 | IS95_EQ | IS95_MOD | IS95_MOD_EQ | WCDMa | AC4Fm | IS2000SR3DS |
UGGaussian | "<user FIR>"
[:SOURCE]:RADio:DMODulation:ARB:FILTer?
```

This command specifies 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.
WCDMa	This choice selects a 0.22 Nyquist filter optimized for ACP.
AC4Fm	This choice selects a predefined Association of Public Safety Communications Officials (APCO) specified compatible 4-level frequency modulation (C4FM) filter.
IS2000SR3DS	This choice selects an IS-2000 standard, spread rate 3 direct spread 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 FIR filter file that you have stored in memory. The variable needs no directory path indicating the location of the file, such as FIR: or /USER/FIR. The command assumes the FIR directory. Refer to “File Name Variables” on page 13 for more information on file names.

***RST** RNYQ

Key Entry	Root Nyquist	Nyquist	Gaussian	Rectangle	IS-95	IS-95 w/EQ
	IS-95 Mod	IS-95 Mod w/EQ	WCDMA	IS-2000 SR3 DS	APCO 25 C4FM	
	UN3/4 GSM Gaussian	User FIR				

:FILTer:ALPHa

Supported E4438C with Option 001/601 or 002/602

```
[ :SOURCE ]:RADio:DMODulation:ARB:FILTer:ALPHa <val>
```

```
[ :SOURCE ]:RADio:DMODulation:ARB:FILTer:ALPHa?
```

This command changes the Nyquist or root Nyquist filter 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** +3.50000000E–001

Range 0.000–1.000

Key Entry **Filter Alpha**

Remarks To change the current filter type, refer to “:FILTer” on page 269.

:FILTer:BBT

Supported E4438C with Option 001/601 or 002/602

```
[ :SOURCE ]:RADio:DMODulation:ARB:FILTer:BBT <val>
```

```
[ :SOURCE ]:RADio:DMODulation:ARB:FILTer:BBT?
```

This command changes the bandwidth-multiplied-by-bit-time (BbT) filter parameter.

The filter BbT 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 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 269.

:FILTer:CHANnel

Supported E4438C with Option 001/601 or 002/602

```
[ :SOURce ] :RADio :DMODulation :ARB :FILTer :CHANnel EVM | ACP
[ :SOURce ] :RADio :DMODulation :ARB :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 269.

:HEADer:CLEar

Supported E4438C with Option 001/601 or 002/602

```
[ :SOURce ] :RADio :DMODulation :ARB :HEADer :CLEar
```

This command clears the header information from the file header used by this modulation format.

Key Entry **Clear Header**

Remarks The **Digital Modulation Off On** softkey must be set to On for this command to function.

:HEADer:SAVE

Supported E4438C with Option 001/601 or 002/602

```
[ :SOURce ] :RADio :DMODulation :ARB :HEADer :SAVE
```

This command saves the header information to the file header used by this modulation format.

Key Entry **Save Setup To Header**

Remarks The **Digital Modulation Off On** softkey must be set to On for this command to function.

:IQ:MODulation:ATTen

Supported E4438C with Option 001/601 or 002/602

```
[ :SOURCE ]:RADio:DMODulation:ARB:IQ:MODulation:ATTen <val>
```

```
[ :SOURCE ]:RADio:DMODulation:ARB:IQ:MODulation:ATTen?
```

This command sets the attenuation level of the I/Q signals being modulated through the signal generator RF path.

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

***RST** +2.00000000E+000

Range 0–40

Key Entry **Modulator Atten Manual Auto**

:IQ:MODulation:ATTen:AUTO

Supported E4438C with Option 001/601 or 002/602

```
[ :SOURCE ]:RADio:DMODulation:ARB:IQ:MODulation:ATTen:AUTO ON|OFF|1|0
```

```
[ :SOURCE ]:RADio:DMODulation:ARB:IQ:MODulation:ATTen:AUTO?
```

This command enables or disables the I/Q attenuation auto mode.

ON (1) This choice enables the attenuation auto mode which optimizes the modulator attenuation for the current conditions.

OFF (0) This choice holds the attenuator at its current setting or at a selected value. Refer to [“” on page 272](#) for setting the attenuation value.

***RST** 1

Key Entry **Modulator Atten Manual Auto**

:IQ:MODulation:FILTer

Supported E4438C with Option 001/601 or 002/602

```
[ :SOURce ] :RADio :DMODulation :ARB :IQ :MODulation :FILTer 2.1e6 | 40e6 | THROugh
[ :SOURce ] :RADio :DMODulation :ARB :IQ :MODulation :FILTer ?
```

This command enables you to select a filter or through path for I/Q signals modulated onto the RF carrier. Selecting a filter using this command will automatically set “:IQ:MODulation:FILTer:AUTO” on page 273 to OFF(0) mode.

2.1E6 This choice applies a 2.1 MHz baseband filter to the I/Q signals.

40E6 This choice applies a 40 MHz baseband filter to the I/Q signals.

THROugh This choice bypasses filtering.

***RST** THR

Key Entry 2.100 MHz 40.000 MHz Through

:IQ:MODulation:FILTer:AUTO

Supported E4438C with Option 001/601 or 002/602

```
[ :SOURce ] :RADio :DMODulation :ARB :IQ :MODulation :FILTer :AUTO ON | OFF | 1 | 0
[ :SOURce ] :RADio :DMODulation :ARB :IQ :MODulation :FILTer :AUTO ?
```

This command enables or disables the automatic selection of the filters for I/Q signals modulated onto the RF carrier.

ON(1) This choice will automatically select a digital modulation filter.

OFF(0) This choice disables the auto feature which lets you select a digital modulation filter or through path. Refer to “:IQ:MODulation:FILTer” on page 273 for selecting a filter or through path.

***RST** 1

Key Entry I/Q Mod Filter Manual Auto

:MDEStination:AAMPLitude

Supported E4438C with Option 001/601 or 002/602

```
[ :SOURCE ]:RADio:DMODulation:ARB:MDEStination:AAMPLitude NONE | M1 | M2 | M3 | M4
[ :SOURCE ]:RADio:DMODulation:ARB:MDEStination:AAMPLitude?
```

This command routes the selected marker to the Alternate Amplitude function. The `NONE` parameter clears the marker for the Alternate Amplitude function.

***RST** NONE

Key Entry **None** **Marker 1** **Marker 2** **Marker 3** **Marker 4**

:MDEStination:ALCHold

Supported E4438C with Option 403

CAUTION Incorrect automatic level control (ALC) sampling can create a sudden unlevelled condition that may create a spike in the RF output potentially damaging a DUT or connected instrument. Ensure that you set markers to let the ALC sample over an amplitude that accounts for the high power levels within the signal.

```
[ :SOURCE ]:RADio:DMODulation:ARB:MDEStination:ALCHold NONE | M1 | M2 | M3 | M4
[ :SOURCE ]:RADio:DMODulation:ARB:MDEStination:ALCHold?
```

This command enables or disables the marker ALC hold function for the selected marker. For setting markers, see “[:MARKer:SET]” on page 300.

Use the ALC hold function when you have a waveform signal that incorporates idle periods, or when the increased dynamic range encountered with RF blanking is not desired. The ALC leveling circuitry responds to the marker signal during the marker pulse (marker signal high), averaging the modulated signal level during this period.

The ALC hold function operates during the low periods of the marker signal. The marker polarity determines when the marker signal is high. For a positive polarity, this is during the marker points. For a negative polarity, this is when there are no marker points. For setting a marker’s polarity, see “[:MPOlarity:MARKer1|2|3|4]” on page 278.

NOTE Do not use the ALC hold for more than 100 ms, because it can affect the waveform’s output amplitude.

The marker signal has a minimum of a two-sample delay in its response relative to the waveform signal response. To compensate for the marker signal delay, offset marker points from the waveform sample point at which you want the ALC sampling to begin.

The ALC hold setting is part of the file header information, so saving the setting to the file header saves the current marker routing for the waveform file.

NOTE A waveform file that has unspecified settings in the file header uses the previous waveform's routing settings.

For more information on the marker ALC hold function, see the *E4428C/38C ESG Signal Generators User's Guide*. For setting the marker points, see “:MARKer:[SET]” on page 300.

NONE This terminates the marker ALC hold function.

M1–M4 These are the marker choices. The ALC hold feature uses only one marker at a time.

*RST NONE

Example

```
:RAD:AWGB:ARB:MDES:ALCH M1
```

The preceding example routes marker 1 to the ALC Hold function.

Key Entry **None** **Marker 1** **Marker 2** **Marker 3** **Marker 4**

Remarks N/A

:MDESTination:PULSe

Supported E4438C with Option 001/601 or 002/602

CAUTION The pulse function incorporates ALC hold. Incorrect automatic level control (ALC) sampling can create a sudden unlevelled condition that may create a spike in the RF output potentially damaging a DUT or connected instrument. Ensure that you set markers to let the ALC sample over an amplitude that accounts for the high power levels within the signal.

```
[ :SOURCE ]:RADio:DMODulation:ARB:MDESTination:PULSe NONE | M1 | M2 | M3 | M4
[ :SOURCE ]:RADio:DMODulation:ARB:MDESTination:PULSe?
```

This command enables or disables the marker pulse/RF blanking function for the selected marker.

This function automatically uses the ALC hold function, so there is no need to select both the ALC hold and pulse/RF blanking functions for the same marker.

NOTE Do not use ALC hold for more than 100 ms, because it can affect the waveform’s output amplitude.

The signal generator blanks the RF output when the marker signal goes low. The marker polarity determines when the marker signal is low. For a positive polarity, this is during the marker points. For a negative polarity, this is when there are no marker points. For setting a marker’s polarity, see “:MPOLarity:MARKer1|2|3|4” on page 278.

NOTE Set marker points prior to using this function. Enabling this function without setting marker points may create a continuous low or high marker signal, depending on the marker polarity. This causes either no RF output or a continuous RF output. See “:MARKer:[SET]” on page 300 for setting the marker points.

The marker signal has a minimum of a two-sample delay in its response relative to the waveform signal response. To compensate for the marker signal delay, offset marker points from the waveform sample point at which you want the RF blanking to begin. The RF blanking setting is part of the file header information, so saving the setting to the file header saves the current marker routing for the waveform file.

NOTE A waveform file that has unspecified settings in the file header uses the previous waveform’s routing settings. This could create the situation where there is no RF output signal, because the previous waveform used RF blanking.

For more information on the marker RF blanking function, see the *E4428C/38C ESG Signal Generators User’s Guide*.

NONE This terminates the marker RF blanking/pulse function.

M1–M4 These are the marker choices. The RF blanking/pulse feature uses only one marker at a time.

Example

```
:RAD:ARB:MDES:PULS M2
```

The preceding example routes marker 2 to Pulse/RF Blanking.

```
*RST NONE
```

Key Entry	None	Marker 1	Marker 2	Marker 3	Marker 4
-----------	------	----------	----------	----------	----------

:MODulation:FSK[:DEVIation]

Supported E4438C with Option 001/601 or 002/602

```
[ :SOURce ] :RADio :DMODulation :ARB :MODulation :FSK [ :DEVIation ] <val>
[ :SOURce ] :RADio :DMODulation :ARB :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 ten, 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 277.

Refer to “:SRATe” on page 284 for a list of the minimum and maximum symbol rate values.

To set an asymmetric FSK deviation value, refer to the *E4428C/38C ESG Signal Generators User’s Guide* for more information.

:MODulation[:TYPE]

Supported E4438C with Option 001/601 or 002/602

```
[ :SOURce ] :RADio :DMODulation :ARB :MODulation [ :TYPE ] BPSK | QPSK | IS95QPSK |
GRAYQPSK | OQPSK | IS95OQPSK | P4DQPSK | PSK8 | PSK16 | D8PSK | EDGE | MSK | FSK2 | FSK4 |
FSK8 | FSK16 | C4FM | QAM4 | QAM16 | QAM32 | QAM64 | QAM128 | QAM256
[ :SOURce ] :RADio :DMODulation :ARB :MODulation [ :TYPE ] ?
```

This command sets the modulation type for the digital modulation personality.

***RST** P4DQPSK

Key Entry	BPSK	QPSK	IS-95 QPSK	Gray Coded QPSK	OQPSK			
	IS-95 OQPSK	$\pi/4$ DQPSK	8PSK	16PSK	D8PSK	EDGE	MSK	
	2-Lvl FSK	4-Lvl FSK	8-Lvl FSK	16-Lvl FSK	C4FM	4QAM	16QAM	
	32QAM	64QAM	128QAM	256QAM				

:MPOLarity:MARKer1 | 2 | 3 | 4**Supported** E4438C with Option 401

[:SOURce]:RADio:DMODulation:ARB:MPOLarity:MARKer1 | 2 | 3 | 4 NEGative | POSitive

[:SOURce]:RADio:DMODulation:ARB:MPOLarity:MARKer1 | 2 | 3 | 4?

This command sets the polarity for the selected marker. For a positive marker polarity, the marker signal is high during the marker points. For a negative marker polarity, the marker signal is high during the period of no marker points.

***RST** POS

Key Entry **Marker 1 Polarity Neg Pos Marker 2 Polarity Neg Pos Marker 3 Polarity Neg Pos**
Marker 4 Polarity Neg Pos

:REFerence:EXTernal:FREQuency**Supported** E4438C with Option 001/601 or 002/602

[:SOURce]:RADio:DMODulation:ARB:REFerence:EXTernal:FREQuency <val>

[:SOURce]:RADio:DMODulation:ARB:REFerence:EXTernal:FREQuency?

This command conveys the expected reference frequency value of an externally applied reference the signal generator.

The variable <val> is expressed in units of Hertz (Hz–MHz).

***RST** +1.00000000E+007**Range** 2.5E5–1E8**Key Entry** **Reference Freq**

Remarks The value specified by this command is effective only when you are using an external ARB reference applied to the BASEBAND GEN REF IN rear panel connector.

To specify external as the ARB reference source type, refer to “:REFerence[:SOURce]” on page 279.

:REFerence[:SOURCE]

Supported E4438C with Option 001/601 or 002/602

```
[ :SOURCE ] :RADio:DMODulation:ARB:REFerence[ :SOURCE ] INTernal | EXTernal
[ :SOURCE ] :RADio:DMODulation:ARB:REFerence[ :SOURCE ] ?
```

This command selects either an internal or external reference for the waveform clock.

***RST** INT

Key Entry **ARB Reference Ext Int**

Remarks If the EXTernal choice is selected, the external frequency value *must* be entered and the signal must be applied to the BASEBAND GEN REF IN rear panel connector.

Refer to “:REFerence:EXTernal:FREQuency” on page 278 to enter the external reference frequency.

:RETRigger

Supported E4438C with Option 001/601 or 002/602

```
[ :SOURCE ] :RADio:DMODulation:ARB:RETRigger ON | OFF | IMMEDIATE
[ :SOURCE ] :RADio:DMODulation:ARB:RETRigger ?
```

This command enables or disables the ARB retriggering mode; the retrigger mode controls how the retriggering function performs while a waveform is playing.

ON (1) This choice specifies that if a trigger occurs while a waveform is playing, the waveform will retrigger at the end of the current waveform sequence and play once more.

OFF (0) This choice specifies that if a trigger occurs while a waveform is playing, the trigger will be ignored.

IMMEDIATE This choice specifies that if a trigger occurs while a waveform is playing, the waveform will reset and replay from the start immediately upon receiving a trigger.

***RST** ON

Key Entry **On Off Immediate**

:SCLock:RATE

Supported E4438C with Option 001/601 or 002/602

[:SOURce] :RADio :DMODulation :ARB :SCLock :RATE <val>

[:SOURce] :RADio :DMODulation :ARB :SCLock :RATE?

This command sets the sample clock rate.

The variable <val> is expressed in units of Hertz (Hz – MHz)

***RST** +1.00000000E+008

Range 1–1E8

Key Entry **ARB Sample Clock**

Remarks The modulation format should be active before executing this command. If this command is executed before the modulation format is active, the entered value will be overridden by a calculated factory default value. Refer to “[:STATe]” on [page 291](#) to activate the modulation format.

:SETup

Supported E4438C with Option 001/601 or 002/602

[:SOURce] :RADio :DMODulation :ARB :SETup GSM | NADC | PDC | PHS | DECT | AC4Fm |

ACQPsk | CDPD | PWT | EDGE | TETRA | MCARrier | "<file name>"

[:SOURce] :RADio :DMODulation :ARB :SETup?

This command selects the digital modulation format type or multicarrier, and turns multicarrier off or on (see the MCARrier choice description).

The *MCARrier* choice selects multicarrier and turns it on. Selecting any other setup such as GSM or CDPD turns multicarrier off. To select the multicarrier setup, see “[:SETup:MCARrier]” .

***RST** NADC

Key Entry	GSM	NADC	PDC	PHS	DECT	APCO 25 w/C4FM	APCO w/CQPSK
	CDPD	PWT	EDGE	TETRA	Multicarrier Off On	Select File	

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

:SETup:MCARrier

Supported E4438C with Option 001/601 or 002/602

```
[ :SOURCE ]:RADio:DMODulation:ARB:SETup:MCARrier GSM|NADC|PDC|PHS|DECT|
AC4Fm|ACQPsk|CDPD|PWT|EDGE|TETRA,<num carriers>,<freq spacing>)|
"<file name>"
[:SOURCE]:RADio:DMODulation:ARB:SETup:MCARrier?
```

This command builds a table with the specified number of carriers and frequency spacing or retrieves the setup stored in the specified user file.

The carrier type, number of carriers, and frequency spacing value are returned when a query is initiated. The output format is as follows:

```
<carrier type>,<num carriers>,<freq spacing>
```

If a specific file is loaded and then queried, only the file name is returned.

The variable <freq spacing> is expressed in units of Hertz (kHz–MHz).

```
*RST          Carrier: NADC    <num carriers>: 2
              <freq spacing>: +1.0000000000000E+06
```

```
Range          <num carriers>: 2–100
              <freq spacing>: 2 ÷ (<num carriers> – 1) × 80 MHz
```

```
Key Entry      GSM   NADC   PDC   PHS   DECT   APCO 25 w/C4FM   APCO w/CQPSK
CDPD   PWT   EDGE   TETRA   # of Carriers   Freq Spacing
Custom Digital Mod State
```

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

To store a multicarrier setup refer to [“:SETup:MCARrier:STORe” on page 282](#).

:SETup:MCARrier:PHASe

Supported E4438C with Option 001/601 or 002/602

```
[ :SOURCE ]:RADio:DMODulation:ARB:SETup:MCARrier:PHASe FIXed|RANDOM
[:SOURCE]:RADio:DMODulation:ARB:SETup:MCARrier:PHASe?
```

This command toggles the phase settings for multicarrier digital modulation.

FIXed This choice sets the phase of all carriers to 0.

RANDom This choice sets random phase values for all of the carriers.

***RST** FIX

Key Entry **Carrier Phases Fixed Random**

:SETup:MCARrier:STORE

Supported E4438C with Option 001/601 or 002/602

```
[ :SOURCE ]:RADio:DMODulation:ARB:SETup:MCARrier:STORE "<file name>"
```

This command stores the current multicarrier setup information.

The stored file contains information that includes the digital modulation format, number of carriers, frequency spacing, and power settings for the multicarrier setup.

Key Entry **Load/Store**

Remarks The setting enabled by this command is not affected by signal generator power-on, preset, or *RST.

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

:SETup:MCARrier:TABLE

Supported E4438C with Option 001/601 or 002/602

```
[ :SOURCE ]:RADio:DMODulation:ARB:SETup:MCARrier:TABLE INIT|APPend|
<carrier_num>, GSM|NADC|PDC|PHS|DECT|AC4Fm|ACQpsk|CDPD|PWT|EDGE|TETRA|
"<file name>",<freq_offset>,<power>
[ :SOURCE ]:RADio:DMODulation:ARB:SETup:MCARrier:TABLE? <carrier_num>
```

This command modifies the parameters of one of the available multicarrier digital modulation formats.

The variable <freq_offset> is expressed in units of Hertz (kHz–MHz).

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

INIT This choice clears the current information and creates a new one-row table, allowing for further definition using additional parameters.

APPend This choice adds rows to an existing table.

<carrier_num> This variable specifies the number of the carriers in the multicarrier table that will be modified.

The value of the variable <carrier_num> must be specified prior to selecting the digital modulation format.

Dmodulation Subsystem—Option 001/601 or 002/602 ([:SOURCE]:RADio:DMODulation:ARB)

Carrier type, frequency offset, and power level are returned when a query is initiated. The output format is as follows:

<carrier type> , <freq_offset> , <power>

***RST** carrier type: NADC <freq_offset>: -5.00000000E+004
 <power>: +0.00000000E+000

Range <freq_offset>: -1E5 to 1E6 <power>: -40 to 0

Key Entry **Initialize Table Insert Row GSM NADC PDC PHS DECT**
APCO 25 w/C4FM APCO w/CQPSK CDPD PWT EDGE TETRA
Custom Digital Mod State

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

To store a multicarrier setup refer to “[:SETup:MCARrier:STORE](#)” on page 282.

:SETup:MCARrier:TABLE:NCARriers

Supported E4438C with Option 001/601 or 002/602

[:SOURCE] :RADio:DMODulation:ARB:SETup:MCARrier:TABLE:NCARriers?

This query returns the number of carriers in the current multicarrier setup.

***RST** +2

Range 1–100

Key Entry **# of Carriers**

:SETup:STORE

Supported E4438C with Option 001/601 or 002/602

[:SOURCE] :RADio:DMODulation:ARB:SETup:STORE "<file name>"

This command stores the current custom digital modulation state.

The saved file contains information that includes the modulation type, filter and symbol rate for the custom modulation setup.

Key Entry **Store Custom Dig Mod State**

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

:SRATe

Supported E4438C with Option 001/601 or 002/602

[:SOURCE]:RADio:DMODulation:ARB:SRATe <val>

[:SOURCE]:RADio:DMODulation:ARB:SRATe?

This command sets the transmission symbol rate.

The variable <val> is expressed in units of symbols per second (sps–Mps) and the maximum range value is dependent upon the modulation type, and filter.

***RST** +2.43000000E+004

Range

<i>Modulation Type</i>	<i>Bits per Symbol</i>	<i>Internal Data</i>
BPSK	1	1sps–50 Mps
FSK2		
MSK		
C4FM	2	1sps–50 Mps
FSK4		
OQPSK		
OQPSK195		
P4QPPSK		
QAM4		
QPSK		
QPSKIS95		
QPSKISAT		
D8PSK		
EDGE		
FSK8		
PSK8		
FSK16	4	1sps–25 Mps
PSK16		
QAM16		
QAM32	5	1sps–20 Mps
QAM64	6	1sps–16.67 Mps
QAM256	8	1sps–12.50 Mps

Key Entry **Symbol Rate**

Remarks When user-defined filters are selected using the command in section “:FILTer” on page 269, 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 Mps

- 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.

To change the modulation type, refer to “:MODulation[:TYPE]” on page 277.

:TRIGger:TYPE

Supported E4438C with Option 001/601 or 002/602

```
[ :SOURce ] :RADio:DMODulation:ARB:TRIGger:TYPE CONTInuous | SINGle | GATE
[ :SOURce ] :RADio:DMODulation:ARB:TRIGger:TYPE?
```

This command sets the trigger mode (type) that controls the waveform’s playback.

Triggers control the playback by telling the ESG when to play the modulating signal (waveform). Depending on the trigger settings for the ESG, the waveform playback can occur once, continuously, or the ESG may start and stop playing the waveform repeatedly (GATE mode).

A trigger signal comprises both positive and negative signal transitions (states), which are also called high and low periods. You can configure the ESG to trigger on either state of the trigger signal. It is common to have multiple triggers, also referred to as trigger occurrences or events, occur when the signal generator requires only a single trigger. In this situation, the ESG recognizes the first trigger and ignores the rest.

When you select a trigger mode, you may lose the signal (carrier plus modulating) from the RF output until you trigger the waveform. This is because the ESG sets the I and Q signals to zero volts prior to the first trigger event, which suppresses the carrier. After the first trigger event, the waveform’s final I and Q levels determine whether you will see the carrier signal or not (zero = no carrier, other values = carrier visible). At the end of most files, the final I and Q points are set to a value other than zero.

There are four parts to configuring the trigger:

- Choosing the trigger type, which controls the waveform’s transmission.
- Setting the waveform’s response to triggers:
 - CONTInuous, see “:TRIGger:TYPE:CONTInuous[:TYPE]” on page 286
 - SINGle, see “:RETRigger” on page 279
 - GATE, selecting the mode also sets the response

Dmodulation Subsystem—Option 001/601 or 002/602 (:SOURce]:RADio:DMODulation:ARB)

- Selecting the trigger source (see “:TRIGger[:SOURce]” on page 288), which determines how the ESG receives its trigger signal, internally or externally. The GATE choice requires an external trigger.
- Setting the trigger polarity when using an external source:
 - CONTInuous and SINGle see “:TRIGger[:SOURce]:EXTErnal:SLOPe” on page 290
 - GATE, see “:TRIGger:TYPE:GATE:ACTIve” on page 287

For more information on triggering, see the *E4428C/38C ESG Signal Generators User’s Guide*.

The following list describes the trigger type command choices:

CONTInuous	Upon triggering, the waveform repeats continuously.
SINGle	Upon triggering, the waveform segment or sequence plays once.
GATE	An external trigger signal repeatedly starts and stops the waveform’s playback (transmission). The time duration for playback depends on the duty period of the trigger signal and the gate polarity selection (see “:TRIGger:TYPE:GATE:ACTIve” on page 287). The waveform plays during the inactive state and stops during the active polarity selection state. The active state can be set high or low. The gate mode works only with an external trigger source.

NOTE The ARB gating behavior described above is opposite to the gating behavior for real-time custom mode.

*RST	CONT		
Key Entry	Continuous	Single	Gated

:TRIGger:TYPE:CONTInuous[:TYPE]

Supported E4438C with Option 001/601 or 002/602

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

This commands selects the waveform’s response to a trigger signal while using the continuous trigger mode.

For more information on triggering and to select the continuous trigger mode, see “:TRIGger:TYPE” on page 285.

The following list describes the waveform's response to each of the command choices:

FREE	Turning the ARB format on immediately triggers the waveform. The waveform repeats until you turn the format off, select another trigger, or choose another waveform file.
TRIGger	The waveform waits for a trigger before play begins. When the waveform receives the trigger, it plays continuously until you turn the format off, select another trigger, or choose another waveform file.
RESet	The waveform waits for a trigger before play begins. When the waveform receives the trigger, it plays continuously. Subsequent triggers reset the waveform to the beginning. For a waveform sequence, this means to the beginning of the first segment in the sequence.
*RST	FREE
Key Entry	Free Run Trigger & Run Reset & Run

:TRIGger:TYPE:GATE:ACTive

Supported E4438C with Option 001/601 or 002/602

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

This command selects the active state (gate polarity) of the gate while using the gating trigger mode.

The LOW and HIGH selections correspond to the low and high states of an external trigger signal. For example, when you select HIGH, the active state occurs during the high of the trigger signal. When the active state occurs, the ESG stops the waveform playback at the last played sample point, then restarts the playback at the next sample point when the inactive state occurs. For more information on triggering and to select gating as the trigger mode, see “:TRIGger:TYPE” on page 285.

The following list describes the ESG's gating behavior for the polarity selections:

LOW	The waveform playback stops when the trigger signal goes low (active state) and restarts when the trigger signal goes high (inactive state).
HIGH	The waveform playback stops when the trigger signal goes high (active state) and restarts when the trigger signal goes low (inactive state).
*RST	HIGH
Key Entry	Gate Active Low High

:TRIGger[:SOURCE]

Supported E4438C with Option 001/601 or 002/602

[[:SOURCE]:RADio:DMODulation:ARB:TRIGger[:SOURCE] KEY|EXT|BUS

[[:SOURCE]:RADio:DMODulation:ARB:TRIGger[:SOURCE]?

This command sets the trigger source.

For more information on triggering, see “:TRIGger:TYPE” on page 285. The following list describes the command choices:

KEY This choice enables manual triggering by pressing the front-panel **Trigger** hardkey.

EXT An externally applied signal triggers the waveform. This is the only choice that works with gating. The following conditions affect an external trigger:

- The input connector selected for the trigger signal. You have a choice between the rear-panel PATTERN TRIG IN connector or the PATT TRIG IN 2 pin on the rear-panel AUXILIARY I/O connector. To make the connector selection, see “:TRIGger[:SOURCE]:EXTernal[:SOURCE]” on page 290.

For more information on the connectors and on connecting the cables, see the *E4428C/38C ESG Signal Generators User’s Guide*.

- The trigger signal polarity:
 - gating mode, see “:TRIGger:TYPE:GATE:ACTive” on page 287
 - continuous and single modes, see “:TRIGger[:SOURCE]:EXTernal:SLOPe” on page 290
- The time delay between when the ESG receives a trigger and when the waveform responds to the trigger. There are two parts to setting the delay:
 - setting the amount of delay, see “:TRIGger[:SOURCE]:EXTernal:DELay” on page 289
 - turning the delay on, see “:TRIGger[:SOURCE]:EXTernal:DELay:STATe” on page 289

BUS This choice enables triggering over the GPIB or LAN using the *TRG or GET commands or the AUXILIARY INTERFACE (RS-232) using the *TRG command.

***RST** EXT

Key Entry **Trigger Key** **Ext** **Bus**

:TRIGger[:SOURCE]:EXTErnal:DELay

Supported E4438C with Option 001/601 or 002/602

```
[ :SOURCE ] :RADio:DMODulation:ARB:TRIGger [ :SOURCE ] :EXTErnal:DELay <val>
[ :SOURCE ] :RADio:DMODulation:ARB:TRIGger [ :SOURCE ] :EXTErnal:DELay?
```

This command sets the amount of time to delay the ESG's response to an external trigger.

The delay is a path (time) delay between when the ESG receives the trigger and when it responds to the trigger. For example, configuring a trigger delay of two seconds, causes the ESG to wait two seconds after receipt of the trigger before the ESG plays the waveform.

The delay does not occur until you turn it on (see “:TRIGger[:SOURCE]:EXTErnal:DELay:STATE” on page 289). You can set the delay value either before or after turning it on.

For more information on configuring an external trigger source and to select external as the trigger source, see “:TRIGger[:SOURCE]” on page 288.

The unit of measurement for the variable <val> is in seconds (nsec–sec).

***RST** +1.00000000E-003

Range 1E-8 to 4E1

Key Entry Ext Delay Time

:TRIGger[:SOURCE]:EXTErnal:DELay:STATE

Supported E4438C with Option 001/601 or 002/602

```
[ :SOURCE ] :RADio:DMODulation:ARB:TRIGger [ :SOURCE ] :EXTErnal:DELay:
STATE ON|OFF|1|0
[ :SOURCE ] :RADio:DMODulation:ARB:TRIGger [ :SOURCE ] :EXTErnal:DELay:STATE?
```

This command enables or disables the external trigger delay function.

For setting the delay time, see “:TRIGger[:SOURCE]:EXTErnal:DELay” on page 289, and for more information on configuring an external source, see “:TRIGger[:SOURCE]” on page 288.

***RST** 0

Key Entry Ext Delay Off On

:TRIGger[:SOURce]:EXtErnal:SLOPe

Supported E4438C with Option 001/601 or 002/602

```
[ :SOURce ] :RADio:DMODulation:ARB:TRIGger [ :SOURce ] :EXtErnal :
SLOPe POSitive|NEGative
[ :SOURce ] :RADio:DMODulation:ARB:TRIGger [ :SOURce ] :EXtErnal :SLOPe?
```

This command sets the polarity for an external trigger signal while using the continuous, single triggering mode. To set the polarity for gating, see “**:TRIGger:TYPE:GATE:ACTive**” on page 287.

The POSitive and NEGative selections correspond to the high (positive) and low (negative) states of the external trigger signal. For example, when you select POSitive, the waveform responds (plays) during the high state of the trigger signal. When the ESG receives multiple trigger occurrences when only one is required, the signal generator uses the first trigger and ignores the rest.

For more information on configuring an external trigger source and to select external as the trigger source, see “**:TRIGger[:SOURce]**” on page 288.

***RST** NEG

Key Entry Ext Polarity Neg Pos

:TRIGger[:SOURce]:EXtErnal[:SOURce]

Supported E4438C with Option 001/601 or 002/602

```
[ :SOURce ] :RADio:DMODulation:ARB:TRIGger [ :SOURce ] :
EXtErnal [ :SOURce ] EPT1|EPT2|EPTRIGGER1|EPTRIGGER2
[ :SOURce ] :RADio:DMODulation:ARB:TRIGger [ :SOURce ] :EXtErnal [ :SOURce ] ?
```

This command selects which PATTERN TRIG IN connection the ESG uses to accept an externally applied trigger signal when external is the trigger source selection.

For more information on configuring an external trigger source and to select external as the trigger source, see “**:TRIGger[:SOURce]**” on page 288. For more information on the rear-panel connectors, see the *E4428C/38C ESG Signal Generators User’s Guide*.

The following list describes the command choices:

- EPT1 This choice is synonymous with EPTRIGGER1 and selects the PATTERN TRIG IN rear-panel connector.
- EPT2 This choice is synonymous with EPTRIGGER2 and selects the PATT TRIG IN 2 pin on the rear-panel AUXILIARY I/O connector.
- EPTRIGGER1 This choice is synonymous with EPT1 and selects the PATTERN TRIG IN rear-panel connector.

Dmodulation Subsystem—Option 001/601 or 002/602 ([:SOURCE]:RADio:DMODulation:ARB)

EPTRIGGER2 This choice is synonymous with EPT2 and selects the PATT TRIG IN 2 pin on the rear-panel AUXILIARY I/O connector.

***RST** EPT1

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

[:STATE]

Supported E4438C with Option 001/601 or 002/602

[:SOURCE] :RADio :DMODulation :ARB [:STATE] ON | OFF | 1 | 0
[:SOURCE] :RADio :DMODulation :ARB [:STATE] ?

This command enables or disables the digital modulation capability.

ON (1) This choice sets up the internal hardware to generate the currently selected digital modulation format signal selection.

OFF (0) This choice disables the digital modulation capability.

***RST** 0

Key Entry **Digital Modulation Off On**

Remarks When ON is selected, the I/Q state is activated and the I/Q source is set to internal.

Dual ARB Subsystem—Option 001/601 or 002/602 ([:SOURce]:RADio:ARB)

:CLIPping

Supported E4438C with Option 001/601 or 002/602

```
[:SOURce]:RADio:ARB:CLIPping "<file name>", IJQ| IORQ, <val>[, <val>]
```

This command sets the clipping level of the selected waveform segment to a percentage of its highest peak.

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

IJQ This choice clips the composite I/Q waveform.

IORQ This choice clips I and Q separately. When this choice is enabled, percentage values for both I and Q must be specified.

***RST** IJQ <val>: +100

Range <val>: 10–100 (0.1% resolution)

Key Entry **Clipping Type** |I+jQ| |I|,|Q|

Remarks A value of 100 percent equates to no clipping.

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

:GENerate:SINE

Supported E4438C with Option 001/ 601 or 002/602

```
[:SOURce]:RADio:ARB:GENerate:SINE [ "<file_name>" ][, <osr>], [<scale>],  
[ I | Q | IQ ]
```

This command creates a sine wave waveform file and saves it in the signal generator’s volatile waveform memory (WFM1).

"<file_name>" This variable names the file used to save the generated sine wave data.

<osr> This variable sets the oversample ratio, which must be an even number and ≥ 4 . The <osr> variable is expressed in samples. If the oversample ratio is < 60 (the minimum number of samples or I/Q points required for a waveform), multiple waveform periods are generated to create a waveform file with ≥ 60 samples. The number of periods created is $60 \div \text{<osr>}$ (quotient will round up to an integer value). A waveform with an oversample ratio ≥ 60 has one period.

<scale>	This variable sets the scale factor for the waveform. The scale factor is a real number from zero to one.
I Q IQ	Selects I, Q, or I and Q paths for the waveform data. Sinewave data is generated and applied to the I path if the I path is selected; Q data are set to zeros. Sine data is generated and applied to the Q path if the Q path is selected; I data are set to zeros. If the I and Q paths are selected, sinewave data are applied to the I and Q paths.

Example

```
:RAD:ARB:GEN:SINE "Sine_Wave",60,.5,IQ
```

The preceding example generates an I/Q sine wave and saves the data to a file named Sine_Wave. The oversampling ratio is 60, the scaling is set for 50%, and the data is applied to both the I and Q paths.

The signal generator's baseband option and available baseband memory determine the maximum number of samples for the waveform.

Range	<i>OSR Option 001/601:</i> 4E0 – 8E6
	<i>OSR Option 002/602:</i> 4E0 – 32E6
	<i>Scale:</i> 0–1

:HEADer:CLEar

Supported E4438C with Option 001/601 or 002/602

```
[ :SOURce ] :RADio :ARB :HEADer :CLEar
```

This command clears the header information from the file header used by this modulation format.

Key Entry **Clear Header**

Remarks The **ARB Off On** softkey must be set to On for this command to function.

:HEADer:RMS

Supported E4438C with Option 001/601 or 002/602

```
[ :SOURce ] :RADio :ARB :HEADer :RMS "<file_name>", <val> | UNSPECIFIED
[ :SOURce ] :RADio :ARB :HEADer :RMS? "<file_name>"
```

This command sets the file header RMS value for the selected waveform file. The ESG uses the RMS value with the dual ARB's real-time noise function.

The signal generator reads the RMS value from the file header when real-time noise is enabled and the dual ARB turned on.

When the waveform file is saved from volatile waveform memory (WFM1) to non-volatile waveform memory (NVWFM), the RMS value, auto-calculated or user-defined, is also saved.

"<file_name>" This variable names the waveform file to which the RMS value will be applied. The file name variable can designate a file in the WFM1, NVWFM, or SEQ directories. For information on the file name syntax, refer to [“File Name Variables” on page 13](#).

<val> This variable is the user-measured RMS value for the specified waveform. The following figure shows the RMS calculation.

$$\sqrt{\sum_{n=1}^N (i_n^2 + q_n^2) \times \frac{1}{N}}$$

N = # of Samples

UNSpecified Using this variable in the command clears the RMS value and sets it to unspecified. An unspecified RMS value causes the signal generator to calculate the value when real-time noise is applied to the waveform during play back by the dual ARB player. The RMS calculation includes rise times and does not include consecutive zero level samples. DC offsets and noise are also included in the RMS measurement. Because the signal generator calculation uses so many parameters, you may achieve better results calculating your own RMS value.

Examples

```
[:SOURCE]:RADio:ARB:HEADER:RMS "WFM1:Sine_Wave",.835
```

The first example shows a user-measured RMS value for the Sine_Wave waveform file in the waveform’s file header.

```
:RAD:ARB:HEADER:RMS "WFM1:Sine_Wave",UNSP
```

In the second example, the signal generator calculates the RMS value.

The RMS value is expressed in volts.

Range 0 – 1.414213562373095

:HEADer:SAVE

Supported E4438C with Option 001/601 or 002/602

[:SOURCE] :RADio :ARB :HEADer :SAVE

This command saves the header information to the file header used by this modulation format.

Key Entry **Save Setup To Header**

Remarks The **ARB Off On** softkey must be set to On for this command to function.

:HCRest[:STATe]

Supported E4438C with Option 001/601 or 002/602

[:SOURCE] :RADio :ARB :HCRest [:STATe] ON | OFF | 1 | 0

[:SOURCE] :RADio :ARB :HCRest [:STATe] ?

This command enables or disables the operating state of the high crest mode.

ON(1) This choice turns high crest mode on for arbitrary I/Q waveforms with high crest factors (such as downloaded Signal Studio for 802.11 signals). High crest mode reduces the ALC vernier level by 7.5 dB, allowing the signal generator to process these signals with less distortion and improved EVM. For crest factors higher than 4 dB, I/Q drive levels should be reduced by 1 dB for each dB above that level. In high crest mode, the maximum output level is reduced and power level accuracy is degraded.

OFF(0) This choice disables the high crest mode.

***RST** 0

Key Entry **High Crest Mode Off On**

Remarks The high crest mode is automatically turned on by some Signal Studio applications. You can manually override this automatic selection at any time.

:IQ:EXTeRnal:FiLTeR

Supported E4438C with Option 001/601 or 002/602

```
[ :SOURce ] :RADio :ARB :IQ :EXTeRnal :FiLTeR 40e6 | THROUGH
```

```
[ :SOURce ] :RADio :ARB :IQ :EXTeRnal :FiLTeR ?
```

This command selects the filter or through path for I/Q signals routed to the rear panel I and Q outputs. The filter has not effect on the modulated RF signal. Selecting a filter using this command will automatically set “:IQ:EXTeRnal:FiLTeR:AUTO” on page 296 to OFF(0) mode.

40e6 This choice applies a 40 MHz baseband filter.

THROUGH This choice bypasses filtering.

***RST** THR

Key Entry 40.000 MHz Through

:IQ:EXTeRnal:FiLTeR:AUTO

Supported E4438C with Option 001/601 or 002/602

```
[ :SOURce ] :RADio :ARB :IQ :EXTeRnal :FiLTeR :AUTO ON | OFF | 1 | 0
```

```
[ :SOURce ] :RADio :ARB :IQ :EXTeRnal :FiLTeR :AUTO ?
```

This command enables or disables the automatic selection of the filters for I/Q signals routed to the rear panel I/Q outputs.

ON(1) This choice will automatically select a digital modulation filter optimized for the current signal generator settings.

OFF(0) This choice disables the auto feature which lets you select a digital modulation filter or through path. Refer to “:IQ:EXTeRnal:FiLTeR” on page 296 for selecting a filter or through path.

***RST** 1

Key Entry I/Q Output Filter Manual Auto

:IQ:MODulation:ATTeN

Supported E4438C with Option 001/601 or 002/602

```
[ :SOURce ] :RADio :ARB :IQ :MODulation :ATTeN <val>
```

```
[ :SOURce ] :RADio :ARB :IQ :MODulation :ATTeN ?
```

This command sets the attenuation level of the I/Q signals being modulated through the signal generator RF path.

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

***RST** +2.00000000E+000
Range 0–40
Key Entry **Modulator Atten Manual Auto**

:IQ:MODulation:ATTen:AUTO

Supported E4438C with Option 001/601 or 002/602

```
[ :SOURce ] :RADio:ARB:IQ:MODulation:ATTen:AUTO ON | OFF | 1 | 0
[ :SOURce ] :RADio:ARB:IQ:MODulation:ATTen:AUTO?
```

This command enables or disables the I/Q attenuation auto mode.

ON (1) This choice enables the attenuation auto mode which optimizes the modulator attenuation for the current conditions.

OFF (0) This choice holds the attenuator at its current setting or at a selected value. Refer to “[:IQ:MODulation:ATTen](#)” on page 296 for setting the attenuation value.

***RST** 1
Key Entry **Modulator Atten Manual Auto**

:IQ:MODulation:FILTer

Supported E4438C with Option 001/601 or 002/602

```
[ :SOURce ] :RADio:ARB:IQ:MODulation:FILTer 2.1e6 | 40e6 | THROugh
[ :SOURce ] :RADio:ARB:IQ:MODulation:FILTer?
```

This command enables you to select a filter or through path for I/Q signals modulated onto the RF carrier. This filter has no effect on the I/Q signal out the rear panel. Selecting a filter using this command will automatically set “[:IQ:MODulation:FILTer:AUTO](#)” on page 298 to OFF(0) mode.

2.1E6 This choice applies a 2.1 MHz baseband filter to the I/Q signals.

40E6 This choice applies a 40 MHz baseband filter to the I/Q signals.

THROugh This choice bypasses filtering.

***RST** THR
Key Entry **2.100 MHz 40.000 MHz Through**

:IQ:MODulation:FILTer:AUTO

Supported E4438C with Option 001/601 or 002/602

```
[ :SOURce ]:RADio:ARB:IQ:MODulation:FILTer:AUTO ON|OFF|1|0
```

```
[ :SOURce ]:RADio:ARB:IQ:MODulation:FILTer:AUTO?
```

This command enables or disables the automatic selection of the filters for I/Q signals modulated onto the RF carrier.

ON(1) This choice will automatically select a digital modulation filter.

OFF(0) This choice disables the auto feature which lets you select a digital modulation filter or through path. Refer to “[:IQ:MODulation:FILTer](#)” on page 297 for selecting a filter or through path.

*RST 1

Key Entry I/Q Mod Filter Manual Auto

:MARKer:CLEar

Supported E4438C with Option 001/601 or 002/602

```
[ :SOURce ]:RADio:ARB:MARKer:CLEar "<file_name>",<marker>,<first_point>,<last_point>
```

This command clears a single marker point or a range of marker points on a waveform segment for the selected marker (1–4). The dual ARB player and all of the ARB modulation formats use this command.

"<file_name>" This variable specifies the name of the waveform file in volatile waveform memory (WFM1). Use the AUTOGEN_WAVEFORM file when clearing marker points for an active ARB format. The ESG automatically creates a file, using current settings, and names it AUTOGEN_WAVEFORM whenever an ARB format is turned on (except dual ARB); the same file name is used for all ARB formats. When all ARB formats are off, this file is still in waveform memory (WFM1) and available for use by the dual ARB player. For information on the file name syntax, see “[File Name Variables](#)” on page 13.

<marker> This variable selects the marker number; an integer value from one to four.

<first_point> This variable defines the first point in a range of points. The number must be greater than or equal to one, and less than or equal to the total number of waveform points.

If you enter a value for either the first marker point or the last marker point that would make the first marker point occur after the last, the last marker point automatically adjusts to match the first marker point.

<last_point> This variable defines the last point in a range of points. The number must be greater than or equal to the first point, and less than or equal to the total number of waveform points.

To clear a single marker point, use the same marker point for the first and last point variables. For more information on markers and ARB files, refer to the *E4428C/38C ESG Signal Generators User's Guide*.

Example

```
:RAD:ARB:MARK:CLE "Test_Data",1,1,300
```

The preceding example clears marker 1 from the first point through the 300th point in the Test_Data file.

Range <marker>: 1–4
 <first_Point>: 1–number of waveform points
 <last_point>: <first_Point>–number of waveform points

Key Entry **Set Marker Off Range Of Points** **Marker 1 2 3 4** **First Mkr Point** **Last Mkr Point**

:MARKer:CLEar:ALL

Supported E4438C with Option 001/601 or 002/602

```
[ :SOURCE ]:RADIO:ARB:MARKer:CLEar:ALL "<file_name>" ,<marker>
```

This command clears all marker points on a waveform segment for the selected marker (1–4). The dual ARB player and all of the ARB formats use this command. With all marker points cleared, the event output signal level is set low.

"<file_name>" This variable specifies the name of the waveform file in volatile waveform memory (WFM1). Use the AUTOGEN_WAVEFORM file when clearing all marker points for the currently active ARB format. The ESG automatically creates a file, using current settings, and names it AUTOGEN_WAVEFORM whenever an ARB format is turned on (except dual ARB); the same file name is used for all ARB formats. When all ARB formats are off, this file is still in waveform memory (WFM1) and available for use by the dual ARB player. For information on the file name syntax, see [“File Name Variables” on page 13](#).

<marker> This variable selects the marker number; an integer value from one to four.

Example

```
:RAD:ARB:MARK:CLE:ALL "Test_Data",1
```

The preceding example clears marker 1 from the all waveform points in the Test_Data file.

Range 1–4
Key Entry **Marker 1 2 3 4** **Set Marker Off All Points**

:MARKer:ROTate

Supported E4438C with Option 001/601 or 002/602

```
[ :SOURCE ]:RADio:ARB:MARKer:ROTate "<file_name>", <rotate_count>
```

This command shifts the marker points for all markers in a waveform segment earlier or later by the value of the <rotate_count> variable. The dual ARB player and all of the ARB formats use this command.

You can use a positive or negative value. When a marker point is close to the end of the waveform and the <rotate_count> value is greater than the number of remaining marker points, but less than the total number of marker points, the marker points that would move beyond the end of the waveform wrap to the beginning of the waveform. For example, if a marker point resides at sample point 195 out of 200, and the <rotate_count> value is twenty-five, the marker point wraps to the beginning of the waveform and continues out to the twentieth waveform point.

To set the marker points in a waveform, refer to “:MARKer:[SET]” on page 300.

"<file_name>" This variable specifies the name of the waveform file in volatile waveform memory (WFM1). Use the AUTOGEN_WAVEFORM file when rotating marker points for the currently active ARB format and then save the file using a different file name. The ESG automatically creates a file, using current settings, and names it AUTOGEN_WAVEFORM whenever an ARB format is turned on (except dual ARB); the same file name is used for all ARB formats. When all ARB formats are off, this file is still in waveform memory (WFM1) and available for use by the dual ARB player. For information on the file name syntax, see “File Name Variables” on page 13.

Example

```
:RAD:ARB:MARK:ROT "Test_Data", 100
```

The preceding example shifts all markers set in the Test_Data file 100 points later. If the first set point in the file is at 50, then after sending this command, the first set point will be 150 (assuming the Test_Data file has at least 150 points) and no later set points wrapped around to the beginning of the file.

Range $-(n - 1)$ to $(n - 1)$
 n = number of points in the waveform

:MARKer:[SET]

Supported E4438C with Option 001/601 or 002/602

```
[ :SOURCE ]:RADio:ARB:MARKer:[SET] "<file_name>", <marker>, <first_point>, <last_point>, <skip_count>
```

This command sets a single marker point or a range of marker points on a waveform segment for the selected marker (1–4). The dual ARB player and all of the ARB formats use this command.

The ESG provides four independent markers. Each marker routes an output signal to the rear-panel event connector number (BNC—EVENT 1 and EVENT 2 or AUXILIARY I/O—EVENT 3 and EVENT 4) that corresponds to the marker number. A marker consists of marker points placed at defined sample points in a waveform segment. This means that a marker point cannot be less than one or greater than the last sample point in the waveform. Marker points are cumulative, so multiple command executions with different range values, without first clearing the existing points, places additional marker points on the waveform. Because of this cumulative behavior, it is a good practice to clear existing marker points prior to setting new points. This will eliminate unexpected marker pulses. Refer to “:MARKer:CLEar” on page 298 and “:MARKer:CLEar:ALL” on page 299 for information on clearing marker points.

For waveforms generated on the signal generator (baseband generator), the ESG automatically places a marker point at the first waveform sample for markers one and two.

NOTE You can set markers for either positive or negative polarity. The following discussions for this command assume positive marker polarity. When using negative marker polarity, the marker pulses occur during the periods of no marker points.

There are three ways to place marker points using this command:

- consecutive marker points over a range that collectively create a single marker pulse that spans the range
- equally spaced marker points over a range, so that a marker pulse occurs at each sample point that coincides with a marker point (Using this method, you can configure a clock signal by setting the <skip_count> variable to one.)
- a single marker point placed at a specific sample point in the waveform, which outputs a single pulse relative to the marker point location (To configure a single marker point, set the first and last points to the same number.)

For more information on markers, refer to the *E4428C/38C ESG Signal Generators User's Guide*.

The following list describes the command variables:

"<file_name>" This variable specifies the name of the waveform file in volatile waveform memory (WFM1). Use the AUTOGEN_WAVEFORM file when setting marker points for the currently active ARB format and then save the file using a different file name. The ESG automatically creates a file, using current settings, and names it AUTOGEN_WAVEFORM whenever an ARB format is turned on (except dual ARB); the same file name is used for all ARB formats. When all ARB formats are off, this file is still in waveform memory (WFM1) and available for use by the

dual ARB player. For information on the file name syntax, see “File Name Variables” on page 13.

- <marker> This variable selects the marker number; an integer value from one to four.
- <first_point> This variable defines the first point in the range over which the marker is placed. This number must be greater than or equal to one, and less than or equal to the total number of waveform points.

If you enter a value for either the first marker point or the last marker point that would make the first marker point occur after the last, the last marker point is automatically adjusted to match the first marker point.
- <last_point> This variable defines the last point in the range over which the marker will be placed. This value must be greater than or equal to the first point, and less than or equal to the total number of waveform points.
- <skip_count> This variable defines the marker point pattern across the range. A zero value means the marker points occur consecutively across the range. A value greater than zero creates a repeating marker point pattern across the range, where the gap between the marker points is equal to the <skip_count> value. The gaps begin after the first marker point. Each marker point in the pattern, which is only one point wide, produces a marker pulse.

Example

```
:RAD:ARB:MARK "Test_Data",1,40,100,2
```

The preceding example sets marker 1 on the first point, 40, the last point, 100, and every third point (skip 2) between 40 and 100 (assuming the Test_Data file has at least 100 points).

Range

- <marker>: 1–4
- <first_Point>: 1–number of waveform points
- <last_point>: <first_Point>–number of waveform points
- <skip_count>: 0–number of points in the range

Key Entry

Set Marker on Range Of Points **Marker 1 2 3 4** **First Mkr Point** **Last Mkr Point**
Skipped Points **Apply to Waveform**

:MDESTination:AAMPLitude

Supported E4438C with Option 001/601 or 002/602

```
[ :SOURCE ]:RADio:ARB:MDESTination:AAMPLitude NONE | M1 | M2 | M3 | M4  
[ :SOURCE ]:RADio:ARB:MDESTination:AAMPLitude?
```

This command routes the selected marker to the Alternate Amplitude function. The `NONE` parameter clears the marker for the Alternate Amplitude function.

***RST** NONE

Key Entry **None** **Marker 1** **Marker 2** **Marker 3** **Marker 4**

:MDESTination:ALCHold

Supported E4438C with Option 001/601 or 002/602

CAUTION Incorrect automatic level control (ALC) sampling can create a sudden unlevelled condition that may create a spike in the RF output potentially damaging a DUT or connected instrument. Ensure that you set markers to let the ALC sample over an amplitude that accounts for the high power levels within the signal.

```
[ :SOURCE ]:RADio:ARB:MDESTination:ALCHold NONE | M1 | M2 | M3 | M4  
[ :SOURCE ]:RADio:ARB:MDESTination:ALCHold?
```

This command enables or disables the marker ALC hold function for the selected marker. For setting markers, see “[:MARKer:SET]” on page 300.

Use the ALC hold function when you have a waveform signal that incorporates idle periods, or when the increased dynamic range encountered with RF blanking is not desired. The ALC leveling circuitry responds to the marker signal during the marker pulse (marker signal high), averaging the modulated signal level during this period.

The ALC hold function operates during the low periods of the marker signal. The marker polarity determines when the marker signal is high. For a positive polarity, this is during the marker points. For a negative polarity, this is when there are no marker points. For setting a marker’s polarity, see “[:MPOlarity:MARKer1|2|3|4]” on page 306.

NOTE Do not use the ALC hold for more than 100 ms, because it can affect the waveform’s output amplitude.

The marker signal has a minimum of a two-sample delay in its response relative to the waveform signal response. To compensate for the marker signal delay, offset marker points from the waveform sample point at which you want the ALC sampling to begin.

The ALC hold setting is part of the file header information, so saving the setting to the file header saves the current marker routing for the waveform file.

NOTE A waveform file that has unspecified settings in the file header uses the previous waveform’s routing settings.

For more information on the marker ALC hold function, see the *E4428C/38C ESG Signal Generators User’s Guide*. For setting the marker points, see “:MARKer:[SET]” on page 300.

NONE This terminates the marker ALC hold function.

M1–M4 These are the marker choices. The ALC hold feature uses only one marker at a time.

*RST NONE

Example

:RAD:ARB:MDES:ALCH M1

The preceding example routes marker 1 to the ALC Hold function.

Key Entry	None	Marker 1	Marker 2	Marker 3	Marker 4
Remarks	N/A				

:MDEStination:PULSe

Supported E4438C with Option 001/601 or 002/602

CAUTION The pulse function incorporates ALC hold. Incorrect automatic level control (ALC) sampling can create a sudden unlevelled condition that may create a spike in the RF output potentially damaging a DUT or connected instrument. Ensure that you set markers to let the ALC sample over an amplitude that accounts for the high power levels within the signal.

[:SOURce] :RADio:ARB:MDEStination:PULSe NONE | M1 | M2 | M3 | M4
 [:SOURce] :RADio:ARB:MDEStination:PULSe?

This command enables or disables the marker pulse/RF blanking function for the selected marker.

This function automatically uses the ALC hold function, so there is no need to select both the ALC hold and pulse/RF blanking functions for the same marker.

NOTE Do not use ALC hold for more than 100 ms, because it can affect the waveform’s output amplitude.

The signal generator blanks the RF output when the marker signal goes low. The marker polarity determines when the marker signal is low. For a positive polarity, this is during the marker points. For a negative polarity, this is when there are no marker points. For setting a marker’s polarity, see “:MPOLarity:MARKer1|2|3|4” on page 306.

NOTE Set marker points prior to using this function. Enabling this function without setting marker points may create a continuous low or high marker signal, depending on the marker polarity. This causes either no RF output or a continuous RF output. See “:MARKer:[SET]” on page 300 for setting the marker points.

The marker signal has a minimum of a two-sample delay in its response relative to the waveform signal response. To compensate for the marker signal delay, offset marker points from the waveform sample point at which you want the RF blanking to begin. The RF blanking setting is part of the file header information, so saving the setting to the file header saves the current marker routing for the waveform file.

NOTE A waveform file that has unspecified settings in the file header uses the previous waveform’s routing settings. This could create the situation where there is no RF output signal, because the previous waveform used RF blanking.

For more information on the marker RF blanking function, see the *E4428C/38C ESG Signal Generators User’s Guide*.

- NONE This terminates the marker RF blanking/pulse function.
- M1–M4 These are the marker choices. The RF blanking/pulse feature uses only one marker at a time.

Example

```
:RAD:ARB:MDES:PULS M2
```

The preceding example routes marker 2 to Pulse/RF Blanking.

```
*RST NONE
```

Key Entry	None	Marker 1	Marker 2	Marker 3	Marker 4
------------------	-------------	-----------------	-----------------	-----------------	-----------------

:MPOLarity:MARKer1 | 2 | 3 | 4

Supported E4438C with Option 001/601 or 002/602

```
[ :SOURce ] :RADio :ARB :MPOLarity :MARKer1 | 2 | 3 | 4 NEGative | POSitive
[ :SOURce ] :RADio :ARB :MPOLarity :MARKer1 | 2 | 3 | 4 ?
```

This command sets the polarity for the selected marker. For a positive marker polarity, the marker signal is high during the marker points. For a negative marker polarity, the marker signal is high during the period of no marker points.

Example

```
:RAD :ARB :MPOL :MARK3 NEG
```

The preceding example sets the polarity for marker 3 to negative.

***RST** POS

Key Entry	Marker 1 Polarity Neg Pos	Marker 2 Polarity Neg Pos	Marker 3 Polarity Neg Pos
	Marker 4 Polarity Neg Pos		

:NOISe:BFACtor

Supported E4438C with Option 403

```
[ :SOURce ] :RADio :ARB :NOISe :BFACtor 1 | 2
[ :SOURce ] :RADio :ARB :NOISe :BFACtor ?
```

This command sets the flat noise bandwidth for the real-time noise applied to the waveform.

- | | |
|---|--|
| 1 | This sets the noise bandwidth to at least 0.8 times the sample rate. |
| 2 | This sets the noise bandwidth to at least 1.6 times the sample rate, with a maximum bandwidth of 80 MHz. |

NOTE

For the bandwidth factor of 2, 50 MHz is the maximum sample rate. If 2 is the current selection, you cannot set the sample rate above 50 MHz, and if the sample rate is above 50 MHz, you cannot select 2. See “:SCLock:RATE” on page 311 for setting the sample rate.

The flat noise bandwidth increases with any oversampling by a factor equal to the oversampling amount.

Example

```
:RAD:ARB:NOIS:BFAC 2
```

The preceding example sets the bandwidth factor to 2 and increases the flat noise bandwidth by at least 1.6 times the ARB sample clock rate.

```
*RST +1
```

Key Entry **Noise Bandwidth Factor**

:NOIS:CBWidth

Supported E4438C with Option 403

```
[ :SOURCE ]:RADio:ARB:NOIS:CBWidth <val><unit>  
[ :SOURCE ]:RADio:ARB:NOIS:CBWidth?
```

This command selects the carrier bandwidth over which the additive white gaussian noise (AWGN) is applied. The noise power will be integrated over the selected bandwidth for the purposes of calculating carrier to noise ratio (C/N). The carrier bandwidth is limited to the ARB sample rate, but cannot exceed 80 MHz. For more information, refer to “:NOIS[:STATe]” and “:NOIS:BFACtor”.

```
*RST +1.00000000E+000
```

Range 1HZ–80 MHZ

Key Entry **Carrier Bandwidth**

:NOIS:CN

Supported E4438C with Option 403

```
[ :SOURCE ]:RADio:ARB:NOIS:CN <val><unit>  
[ :SOURCE ]:RADio:ARB:NOIS:CN?
```

This command sets the carrier to noise ratio (C/N) in dB. The carrier power is defined as the total modulated signal power without noise power added. The noise power is applied over the specified bandwidth of the carrier signal. For more information, refer to “:NOIS:CBWidth” on page 307.

Example

```
:RAD:ARB:NOIS:CN 50DB
```

The preceding example sets the carrier to noise ratio to 50 dB.

```
*RST +0.00000000E+000
```

Range –100 to 100DB

Key Entry **Carrier to Noise Ratio**

:NOISe[:STATe]

Supported E4438C with Option 403

```
[ :SOURce ]:RADio:ARB:NOISe[ :STATe] ON|OFF|1|0
[ :SOURce ]:RADio:ARB:NOISe[ :STATe]?
```

This command enables or disables adding real-time additive white gaussian noise (AWGN) to the carrier modulated by the waveform being played by the dual ARB waveform player. The noise bandwidth will be at least 0.8 times the sample rate, or 1.6 times the sample rate depending on the bandwidth factor. For information on the bandwidth factor, refer to “:NOISe:BFACtor”.

When the bandwidth factor is 2 and the sample rate is greater than 50 megasamples per/second, noise cannot be enabled. Maximum bandwidth cannot exceed 80 MHz. Any oversampling in the waveform increases the noise bandwidth by a factor equal to the oversampling.

Example

```
:RAD:ARB:NOIS ON
```

The preceding example applies real-time AWGN to the carrier.

***RST** 0

Key Entry Real-time Noise Off On

:REFerence:EXTernal:FREQuency

Supported E4438C with Option 001/601 or 002/602

```
[ :SOURce ]:RADio:ARB:REFerence:EXTernal:FREQuency <value>
[ :SOURce ]:RADio:ARB:REFerence:EXTernal:FREQuency?
```

This command enters the frequency of the applied external reference.

The variable <val> is expressed in units of Hertz (Hz–MHz).

***RST** +1.00000000E+007

Range 2.5E5–1E8

Key Entry Reference Freq

Remarks The value specified by this command is effective only when you are using an external ARB reference applied to the BASEBAND GEN REF IN rear panel connector.

To specify external as the ARB reference source type, refer to “:REFerence[:SOURce]” on page 309.

:REference[:SOURCE]

Supported E4438C with Option 001/601 or 002/602

```
[ :SOURCE ]:RADio:ARB:REference[ :SOURCE ] INTernal | EXTernal
[ :SOURCE ]:RADio:ARB:REference[ :SOURCE ]?
```

This command selects either an internal or external reference for the waveform clock.

***RST** INT

Key Entry **ARB Reference Ext Int**

Remarks If the EXTernal choice is selected, the external frequency value *must* be entered and the signal must be applied to the BASEBAND GEN REF IN rear panel connector.

Refer to “[:REference:EXTernal:FREQUENCY](#)” on page 308 to enter the external reference frequency.

:RETRigger

Supported E4438C with Option 001/601 or 002/602

```
[ :SOURCE ]:RADio:ARB:RETRigger ON | OFF | 1 | 0 | IMMEDIATE
[ :SOURCE ]:RADio:ARB:RETRigger?
```

This command enables or disables the ARB retriggering mode; the retrigger mode controls how the retriggering function performs while a waveform is playing.

ON (1) This choice specifies that if a trigger occurs while a waveform is playing, the waveform will retrigger at the end of the current waveform sequence and play once more.

OFF (0) This choice specifies that if a trigger occurs while a waveform is playing, the trigger will be ignored.

IMMEDIATE This choice specifies that if a trigger occurs while a waveform is playing, the waveform will reset and replay from the start immediately upon receiving a trigger.

***RST** ON

Key Entry **On Off Immediate**

:RSCALing

Supported E4438C with Option 001/601 or 002/602

```
[ :SOURCE ]:RADio:ARB:RSCALing <val>
```

```
[ :SOURCE ]:RADio:ARB:RSCALing?
```

This command adjusts the scaling value that is applied to a waveform while it is playing. The variable <val> is expressed as a percentage. Runtime scaling does not alter the waveform data file. For more information about runtime scaling, refer to the *E4428C/38C ESG Signal Generators User's Guide*.

Example

```
:RAD:ARB:RSC 50
```

The preceding example applies a 50% scaling factor to the selected waveform.

***RST** +7.00000000E+001

Range 1–100

Key Entry **Waveform Runtime Scaling**

Remarks Runtime scaling does not alter the waveform data file.

:SCALing

Supported E84438C with Option 001/601 or 002/602

```
[ :SOURCE ]:RADio:ARB:SCALing "<file_name>" , <val>
```

This command scales the designated "<file_name>" waveform file while it is being played by the dual ARB player. The variable <val> is expressed as a percentage, 1–100%. For information on file name syntax, see [“File Name Variables” on page 13](#).

Scaling is additive and permanent. You cannot scale up. If you scale a waveform file by 60% and then scale it again to 80% you will scale down the 60% waveform file. For more information about waveform file scaling, refer to the *E4428C/38C ESG Signal Generators User's Guide*.

Example

```
:RAD:ARB:SCAL "Test_Data", 50
```

The preceding example applies a 50% scaling factor to the Test_Data waveform file.

Range 1–100

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

Key Entry	Scaling	Scale Waveform Data
Remarks	Refer to “File Name Variables” on page 13 for information on the file name syntax.	

:SCLock:RATE

Supported E4438C with Option 001/601 or 002/602

```
[ :SOURce ] :RADio:ARB:SCLock:RATE <val>
```

```
[ :SOURce ] :RADio:ARB:SCLock:RATE?
```

This command sets the sample clock rate for the dual ARB format.

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

***RST** +1.00000000E+008

Range 1–1E8

Key Entry **ARB Sample Clock**

:SEQuence

Supported All with Option 001/601 or 002/602

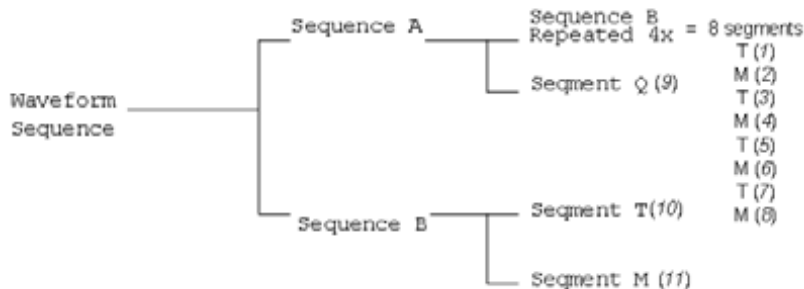
```
[ :SOURce ] :RADio:ARB:SEQuence
```

```
"<file_name>", "<waveform1>", <reps>, NONE | M1 | M2 | M3 | M4 | M1M2 | M1M3 | M1M4 | M2M3 | M2M4 | M3M4 | M1M2M3 | M1M2M4 | M1M3M4 | M2M3M4 | ALL, { "<waveform2>", <reps>, NONE | M1 | M2 | M3 | M4 | M1M2 | M1M3 | M1M4 | M2M3 | M2M4 | M3M4 | M1M2M3 | M1M2M4 | M1M3M4 | M2M3M4 | ALL }
```

```
[ :SOURce ] :RADio:ARB:SEQuence? "<file_name>"
```

This command creates a waveform sequence. A waveform sequence is made up of segments and other sequences. Any number of segments, up to a segment count limit of 32768, can be used to create a sequence. The count limit is determined by the number of segments in the waveform sequence. Repeated segments are included in the count limit.

For example, using the figure below, suppose a waveform is created using two sequences: Sequence_A and Sequence_B. Sequence_A consists of Sequence_B and Segment_Q with Sequence_B repeated four times. The total segment count for this waveform sequence would be eleven.



The query returns the contents and segment settings of the waveform sequence file

The segments and sequences play in the same order as placed into the waveform sequence by the command. Once you create the file, you cannot edit the segment settings or add further waveform segments unless you use the signal generator's front panel. Using the same waveform sequence name overwrites the existing file with that name. To use a segment's marker settings, you must enable the segment's markers within the segment or within the waveform sequence. A sequence is stored in the catalog of SEQ files USER/SEQ or SEQ: directory.

When you create a waveform sequence, the ESG also creates a file header for the sequence. This file header takes priority over segment or nested sequence file headers. Refer to the *E4428C/38C ESG Signal Generators User's Guide* for more information on file headers. To save the file header, see [":HEADer:SAVE" on page 295](#).

- "<file_name>" This variable names the waveform *sequence* file. For information on the file name syntax, see ["File Name Variables" on page 13](#).
- "<waveform1>" This variable specifies the name of an existing waveform *segment* or sequence file. A waveform segment or the waveform segments in a specified sequence must reside in volatile memory, WFM1, before it can be played by the dual ARB player. For information on the file name syntax, see ["File Name Variables" on page 13](#), and for more information on waveform segments, see the *E4428C/38C ESG Signal Generators User's Guide*.
- "<waveform2>" This variable specifies the name of a second existing waveform *segment* or sequence file. The same conditions required for waveform1 apply for this segment or sequence. Additional segments and other sequences can be inserted into the file.
- <reps> This variable sets the number of times a segment or sequence plays (repeats) before the next segment or sequence plays.

NONE	This choice disables all four markers for the waveform. Disabling markers means that the waveform sequence ignores the segment's or sequence's marker settings.
M1, M2, M3, M4	These choices, either individually or a combination of them, enable the markers for the waveform segment or sequence. Markers not specified are ignored for that segment or sequence.
ALL	This choice enables all four markers in the waveform segment or sequence.

Example

```
:RAD:ARB:SEQ "SEQ:Test_Data","WFM1:ramp_test_wfm",25,M1M4,
"WFM1:sine_test_wfm",100,ALL
```

NOTE A carriage return or line feed is never included in a SCPI command. The example above contains a carriage return so that the text will fit on the page.

The preceding example creates a waveform sequence file named Test_Data. This file consists of the factory-supplied waveform segments, ramp_test_wfm and sine_test_wfm. The waveform is stored in the signal generator's SEQ: directory.

- The first segment, ramp_test_wfm, has 25 repetitions with markers 1 and 4 enabled.
- The second segment, sine_test_wfm, has 100 repetitions with all four markers enabled.

Range <reps>: 1–65535

Key Entry **Build New Waveform Sequence** **Name and Store** **Insert Waveform**
Edit Repetitions **Toggle Marker 1** **Toggle Marker 2** **Toggle Marker 3**
Toggle Marker 4

:TRIGger:TYPE

Supported E4438C with Option 001/601 or 002/602

```
[ :SOURce ] :RADio :ARB :TRIGger :TYPE CONTInuous | SINGle | GATE | SADVance
[ :SOURce ] :RADio :ARB :TRIGger :TYPE?
```

This command sets the trigger mode (type) that controls the waveform's playback.

Triggers control the playback by telling the ESG when to play the modulating signal (waveform). Depending on the trigger settings for the ESG, the waveform playback can occur once, continuously, or the ESG may start and stop playing the waveform repeatedly (GATE mode).

A trigger signal comprises both positive and negative signal transitions (states), which are also called high and low periods. You can configure the ESG to trigger on either state of the trigger signal. It is common to have multiple triggers, also referred to as trigger occurrences or events, occur when the

signal generator requires only a single trigger. In this situation, the ESG recognizes the first trigger and ignores the rest.

When you select a trigger mode, you may lose the signal (carrier plus modulating) from the RF output until you trigger the waveform. This is because the ESG sets the I and Q signals to zero volts prior to the first trigger event, which suppresses the carrier. After the first trigger event, the waveform's final I and Q levels determine whether you will see the carrier signal or not (zero = no carrier, other values = carrier visible). At the end of most files, the final I and Q points are set to a value other than zero.

There are four parts to configuring the trigger:

- Choosing the trigger type, which controls the waveform's transmission.
- Setting the waveform's response to triggers:
 - CONTInuous, see [“\[:TRIGger:TYPE:CONTInuous\[:TYPE\]\]” on page 315](#)
 - SINGle, see [“:RETRigger” on page 309](#)
 - GATE, selecting the mode also sets the response
- Selecting the trigger source (see [“\[:TRIGger\[:SOURce\]\]” on page 318](#)), which determines how the ESG receives its trigger signal, internally or externally. The GATE choice requires an external trigger.
- Setting the trigger polarity when using an external source:
 - CONTInuous and SINGle see [“\[:TRIGger\[:SOURce\]:EXTernal:SLOPe” on page 320](#)
 - GATE, see [“\[:TRIGger:TYPE:GATE:ACTive” on page 315](#)

For more information on triggering, see the *E4428C/38C ESG Signal Generators User's Guide*.

The following list describes the trigger type command choices:

CONTInuous	Upon triggering, the waveform repeats continuously.
SINGle	Upon triggering, the waveform segment or sequence plays once.
GATE	An external trigger signal repeatedly starts and stops the waveform's playback (transmission). The time duration for playback depends on the duty period of the trigger signal and the gate polarity selection (see “[:TRIGger:TYPE:GATE:ACTive” on page 315). The waveform plays during the inactive state and stops during the active polarity selection state. The active state can be set high or low. The gate mode works only with an external trigger source.

NOTE The ARB gating behavior described above is opposite to the gating behavior for real-time custom mode.

*RST	CONT			
Key Entry	Continuous	Single	Gate	Segment Advance

:TRIGger:TYPE:CONTInuous[:TYPE]

Supported E4438C with Option 001/601 or 002/602

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

This command selects the waveform's response to a trigger signal while using the continuous trigger mode.

For more information on triggering and to select the continuous trigger mode, see [“:TRIGger:TYPE” on page 313](#).

The following list describes the waveform's response to each of the command choices:

FREE	Turning the ARB format on immediately triggers the waveform. The waveform repeats until you turn the format off, select another trigger, or choose another waveform file.
TRIGger	The waveform waits for a trigger before play begins. When the waveform receives the trigger, it plays continuously until you turn the format off, select another trigger, or choose another waveform file.
RESet	The waveform waits for a trigger before play begins. When the waveform receives the trigger, it plays continuously. Subsequent triggers reset the waveform to the beginning. For a waveform sequence, this means to the beginning of the first segment in the sequence.
*RST	FREE
Key Entry	Free Run Trigger & Run Reset & Run

:TRIGger:TYPE:GATE:ACTive

Supported E4438C with Option 001/601 or 002/602

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

This command selects the active state (gate polarity) of the gate while using the gating trigger mode.

The LOW and HIGH selections correspond to the low and high states of an external trigger signal. For example, when you select HIGH, the active state occurs during the high of the trigger signal. When the active state occurs, the ESG stops the waveform playback at the last played sample point, then restarts the playback at the next sample point when the inactive state occurs. For more information on triggering and to select gating as the trigger mode, see [“:TRIGger:TYPE” on page 313](#).

The following list describes the ESG's gating behavior for the polarity selections:

LOW	The waveform playback stops when the trigger signal goes low (active state) and restarts when the trigger signal goes high (inactive state).
HIGH	The waveform playback stops when the trigger signal goes high (active state) and restarts when the trigger signal goes low (inactive state).
*RST	HIGH
Key Entry	Gate Active Low High

:TRIGger:TYPE:SADVance[:TYPE]

Supported E4438C with Option 001/601 or 002/602

```
[ :SOURce ] :RADio:ARB:TRIGger:TYPE:SADVance[ :TYPE ] SINGLE | CONTinuous
[ :SOURce ] :RADio:ARB:TRIGger:TYPE:SADVance[ :TYPE ] ?
```

This command customizes the segment advance trigger type setting.

SINGLE	This choice will play the next segment in the sequence only once.
CONTinuous	This choice will instruct the sequencer to continually play the next segments in the waveform sequence in a continuous pattern.
*RST	CONT
Key Entry	Single Continuous
Remarks	This command is valid when SADVance has been selected as the trigger type.

To select SADVance as the trigger type, refer to “:TRIGger:TYPE” on page 313.

:TRIGger:TYPE:SADVance[:TYPE]

Supported E4438C with Option 001/601 or 002/602

```
[ :SOURce ] :RADio:ARB:TRIGger:TYPE:SADVance[ :TYPE ] SINGLE | CONTinuous
[ :SOURce ] :RADio:ARB:TRIGger:TYPE:SADVance[ :TYPE ] ?
```

This command selects the waveform's response to a trigger signal while using the segment advance (SADVance) trigger mode.

When the ESG receives multiple trigger occurrences when only one is required, the signal generator uses the first trigger and ignores the rest. For more information on triggering and to select segment advance as the trigger mode, see “:TRIGger:TYPE” on page 313.

The following list describes the waveform’s response to each of the command choices:

- | | |
|------------|--|
| SINGle | <p>Each segment in the sequence requires a trigger to play, and a segment plays only once, ignoring a segment’s repetition value (see “:SEQuence” on page 311 for repetition information). The following list describes a sequence’s playback behavior with this choice:</p> <ul style="list-style-type: none">• After receiving the first trigger, the first segment plays to completion.• When the waveform receives a trigger after a segment completes, the sequence advances to the next segment and plays that segment to completion.• When the waveform receives a trigger during play, the current segment plays to completion. Then the sequence advances to the next segment, and it plays to completion.• When the waveform receives a trigger either during or after the last segment in a sequence plays, the sequence resets and the first segment plays to completion. |
| CONTInuous | <p>Each segment in the sequence requires a trigger to play. After receiving a trigger, a segment plays continuously until the waveform receives another trigger. The following list describes a sequence’s playback behavior with this choice:</p> <ul style="list-style-type: none">• After receiving the first trigger, the first segment plays continuously.• A trigger during the current segment play causes the segment to play to the end of the segment file, then the sequence advances to the next segment, which plays continuously.• When last segment in the sequence receives a trigger, the sequence resets and the first segment plays continuously. |

Example

```
:RAD:ARB:TRIG:TYPE:SADV CONT
```

The preceding example selects the continuous segment advance mode.

*RST	CONT
Key Entry	Single Continuous

:TRIGger[:SOURce]

Supported E4438C with Option 001/601 or 002/602

[[:SOURce]:RADio:ARB:TRIGger[:SOURce] KEY|EXT|BUS

[[:SOURce]:RADio:ARB:TRIGger[:SOURce]?

This command sets the trigger source.

For more information on triggering, see “:TRIGger:TYPE” on page 313. The following list describes the command choices:

KEY This choice enables manual triggering by pressing the front-panel **Trigger** hardkey.

EXT An externally applied signal triggers the waveform. This is the only choice that works with gating. The following conditions affect an external trigger:

- The input connector selected for the trigger signal. You have a choice between the rear-panel PATTERN TRIG IN connector or the PATT TRIG IN 2 pin on the rear-panel AUXILIARY I/O connector. To make the connector selection, see “:TRIGger[:SOURce]:EXTErnal[:SOURce]” on page 320.

For more information on the connectors and on connecting the cables, see the *E4428C/38C ESG Signal Generators User’s Guide*.

- The trigger signal polarity:
 - gating mode, see “:TRIGger:TYPE:GATE:ACTive” on page 315
 - continuous and single modes, see “:TRIGger[:SOURce]:EXTErnal:SLOPe” on page 320
- The time delay between when the ESG receives a trigger and when the waveform responds to the trigger. There are two parts to setting the delay:
 - setting the amount of delay, see “:TRIGger[SOURce]:EXTErnal:DELAy” on page 319
 - turning the delay on, see “:TRIGger[:SOURce]:EXTErnal:DELAy:STATe” on page 319

BUS This choice enables triggering over the GPIB or LAN using the *TRG or GET commands or the AUXILIARY INTERFACE (RS-232) using the *TRG command.

***RST** EXT

Key Entry **Trigger Key** **Ext** **Bus**

:TRIGger[SOURCE]:EXTErnal:DELay

Supported E4438C with Option 001/601 or 002/602

```
[ :SOURCE ] : RADio : ARB : TRIGger [ :SOURCE ] : EXTErnal : DELay <val>  
[ :SOURCE ] : RADio : ARB : TRIGger [ :SOURCE ] : EXTErnal : DELay?
```

This command sets the amount of time to delay the ESG's response to an external trigger.

The delay is a path (time) delay between when the ESG receives the trigger and when it responds to the trigger. For example, configuring a trigger delay of two seconds, causes the ESG to wait two seconds after receipt of the trigger before the ESG plays the waveform.

The delay does not occur until you turn it on (see “:TRIGger[:SOURCE]:EXTErnal:DELay:STATe” on page 319). You can set the delay value either before or after turning it on.

For more information on configuring an external trigger source and to select external as the trigger source, see “:TRIGger[:SOURCE]” on page 318.

The unit of measurement for the variable <val> is in seconds (nsec–sec).

***RST** +1.00000000E-003

Range 1E-8 to 4E1

Key Entry Ext Delay Time

:TRIGger[:SOURCE]:EXTErnal:DELay:STATe

Supported E4438C with Option 001/601 or 002/602

```
[ :SOURCE ] : RADio : ARB : TRIGger [ :SOURCE ] : EXTErnal : DELay : STATe ON | OFF | 1 | 0  
[ :SOURCE ] : RADio : ARB : TRIGger [ :SOURCE ] : EXTErnal : DELay : STATe?
```

This command enables or disables the operating state of the external trigger delay function.

For setting the delay time, see “:TRIGger[SOURCE]:EXTErnal:DELay” on page 319, and for more information on configuring an external source, see “:TRIGger[:SOURCE]” on page 318.

***RST** 0

Key Entry Ext Delay Off On

:TRIGger[:SOURCE]:EXtErnal:SLOPe

Supported E4438C with Option 001/601 or 002/602

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

This command sets the polarity for an external trigger signal while using the continuous, single triggering mode. To set the polarity for gating, see “[:TRIGger:TYPE:GATE:ACTive](#)” on page 315.

The POSitive and NEGative selections correspond to the high (positive) and low (negative) states of the external trigger signal. For example, when you select POSitive, the waveform responds (plays) during the high state of the trigger signal. When the ESG receives multiple trigger occurrences when only one is required, the signal generator uses the first trigger and ignores the rest.

For more information on configuring an external trigger source and to select external as the trigger source, see “[:TRIGger\[:SOURCE\]](#)” on page 318.

***RST** NEG

Key Entry Ext Polarity Neg Pos

:TRIGger[:SOURCE]:EXtErnal[:SOURCE]

Supported E4438C with Option 001/601 or 002/602

```
[ :SOURCE ] :RADio:ARB:TRIGger [ :SOURCE ] :EXtErnal [ :SOURCE ] EPT1 | EPT2 |
EPTRIGGER1 | EPTRIGGER2
[ :SOURCE ] :RADio:ARB:TRIGger [ :SOURCE ] :EXtErnal [ :SOURCE ]?
```

This command selects which PATTERN TRIG IN connection the ESG uses to accept an externally applied trigger signal when external is the trigger source selection.

For more information on configuring an external trigger source and to select external as the trigger source, see “[:TRIGger\[:SOURCE\]](#)” on page 318. For more information on the rear-panel connectors, see the *E4428C/38C ESG Signal Generators User’s Guide*.

The following list describes the command choices:

EPT1	This choice is synonymous with EPTRIGGER1 and selects the PATTERN TRIG IN rear-panel connector.
EPT2	This choice is synonymous with EPTRIGGER2 and selects the PATT TRIG IN 2 pin on the rear-panel AUXILIARY I/O connector.
EPTRIGGER1	This choice is synonymous with EPT1 and selects the PATTERN TRIG IN rear-panel connector.
EPTRIGGER2	This choice is synonymous with EPT2 and selects the PATT TRIG IN 2 pin on the rear-panel AUXILIARY I/O connector.

*RST	EPT1	
Key Entry	Patt Trig In 1	Patt Trig In 2

:WAVeform

Supported E4438C with Option 001/601 or 002/602

```
[ :SOURCE ]:RADio:ARB:WAVeform "WFM1:file_name" | "SEQ:file_name"  

[:SOURCE]:RADio:ARB:WAVeform?
```

This command selects a waveform file or sequence, for the dual ARB player to play. The file must be present in volatile memory, WFM1, or in the SEQ directory. If a file is in non-volatile memory (NVWFM), use the command **“:COPY[:NAME]”** on page 103 to copy the file to WFM1.

"WFM1:file_name" This variable names a waveform file residing in volatile memory (WFM1:). For information on the file name syntax, see **“File Name Variables”** on page 13.

"SEQ:file_name" This variable names a sequence file residing in the catalog of sequence files. For more information on the file name syntax, see **“File Name Variables”** on page 13.

Example

```
:RAD:ARB:WAV "WFM1:Test_Data"
```

The preceding example selects the file Test_Data from the list of files in volatile waveform memory, WFM1, and applies its file header settings.

Key Entry	Select Waveform
------------------	------------------------

:Waveform:NHEAders

Supported E4438C with Option 001/601 or 002/602

```
[ :SOURCE ]:RADio:ARB:WAVeform:NHEAders "WFM1:file_name" | "SEQ:filename"  

[:SOURCE]:RADio:ARB:WAVeform:NHEAders?
```

This command, for the dual ARB mode, allows for a fast selection of a segment or sequence waveform file. No header information or settings are applied to the segment or sequence waveform file when this command is used. This will improve the access or loading speed of the waveform file to approximately 100 mS for a single segment. The file must be in volatile waveform memory (WFM1), or in the SEQ directory. If a file is in non-volatile waveform memory (NVWFM), use the command **“:COPY[:NAME]”** on page 103 to copy files to WFM1.

"WFM1:file_name" This variable names a waveform file residing in volatile memory:WFM1. For information on the file name syntax, see **“File Name Variables”** on page 13.

"SEQ:filename" This variable names a sequence file residing in the catalog of sequence files. For more information on the file name syntax, see **“File Name Variables”** on page 13.

Example

```
:RAD:ARB:WAV:NHEA "Test_Data"
```

The preceding example selects the file Test_Data, without applying header settings.

[:STATe]

Supported E4438C with Option 001/601 or 002/602

```
[ :SOURce ] :RADio :ARB [ :STATe ] ON | OFF | 1 | 0
```

```
[ :SOURce ] :RADio :ARB [ :STATe ] ?
```

This command enables or disables the arbitrary waveform generator function.

***RST** 0

Key Entry ARB Off On

Multitone Subsystem—Option 001/601 or 002/602 ([:SOURce]:RADio:MTONe:ARB)

Creating a Multitone Waveform

Use the following steps to create a multitone waveform:

1. Initialize the phase for the multitone waveform. Refer to “:SETup:TABLE:PHASe:INITialize” on page 334.
2. Assign the frequency spacing between the tones. Refer to “:SETup:TABLE:FSPacing” on page 333.
3. Define the number of tones within the waveform. Refer to “:SETup:TABLE:NTONes” on page 334.
4. Modify the power level, phase, and state of any individual tones. Refer to “:ROW” on page 331.

:HEADer:CLEAr

Supported E4438C with Option 001/601 or 002/602

[:SOURce] :RADio :MTONe :ARB :HEADer :CLEAr

This command clears the header information from the file header used by this modulation format.

Key Entry Clear Header

Remarks The **Multitone Off On** softkey must be set to On for this command to function.

:HEADer:SAVE

Supported E4438C with Option 001/601 or 002/602

[:SOURce] :RADio :MTONe :ARB :HEADer :SAVE

This command saves the header information to the file header used by this modulation format.

Key Entry Save Setup To Header

Remarks The **Multitone Off On** softkey must be set to On for this command to function.

:IQ:EXTeRnal:FiLTeR

Supported E4438C with Option 001/601 or 002/602

```
[ :SOURce ] :RADio:MTONE:ARB:IQ:EXTeRnal:FiLTeR 40e6 | THRough
```

```
[ :SOURce ] :RADio:MTONE:ARB:IQ:EXTeRnal:FiLTeR?
```

This command selects the filter or through path for I/Q signals routed to the rear panel I and Q outputs. Selecting a filter using this command will automatically set “:IQ:EXTeRnal:FiLTeR:AUTO” on [page 324](#) to OFF(0) mode.

40e6 This choice applies a 40 MHz baseband filter.

THRough This choice bypasses filtering.

***RST** THR

Key Entry 40.000 MHz Through

:IQ:EXTeRnal:FiLTeR:AUTO

Supported E4438C with Option 001/601 or 002/602

```
[ :SOURce ] :RADio:MTONE:ARB:IQ:EXTeRnal:FiLTeR:AUTO ON | OFF | 1 | 0
```

```
[ :SOURce ] :RADio:MTONE:ARB:IQ:EXTeRnal:FiLTeR:AUTO?
```

This command enables or disables the automatic selection of the filters for I/Q signals routed to the rear panel I/Q outputs.

ON(1) This choice will automatically select a digital modulation filter optimized for the current signal generator settings.

OFF(0) This choice disables the auto feature which lets you select a digital modulation filter or through path. Refer to “:IQ:EXTeRnal:FiLTeR” on [page 324](#) for selecting a filter or through path.

***RST** 1

Key Entry I/Q Output Filter Manual Auto

:IQ:MODulation:ATTen

Supported E4438C with Option 001/601 or 002/602

[:SOURCE] :RADio:MTONE:ARB:IQ:MODulation:ATTen <val>

[:SOURCE] :RADio:MTONE:ARB:IQ:MODulation:ATTen?

This command attenuates the I/Q signals being modulated through the signal generator RF path.

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

***RST** +2.00000000E+000

Range 0–40

Key Entry **Modulator Atten Manual Auto**

:IQ:MODulation:ATTen:AUTO

Supported E4438C with Option 001/601 or 002/602

[:SOURCE] :RADio:MTONE:ARB:IQ:MODulation:ATTen:AUTO ON|OFF|1|0

[:SOURCE] :RADio:MTONE:ARB:IQ:MODulation:ATTen:AUTO?

This command enables or disables the I/Q attenuation auto mode.

ON (1) This choice enables the attenuation auto mode which optimizes the modulator attenuation for the current conditions.

OFF (0) This choice holds the attenuator at its current setting or at a selected value. Refer to “:IQ:MODulation:ATTen” on page 325 for setting the attenuation value.

***RST** 1

Key Entry **Modulator Atten Manual Auto**

:IQ:MODulation:FILTer

Supported E4438C with Option 001/601 or 002/602

```
[ :SOURCE ]:RADio:MTONE:ARB:IQ:MODulation:FILTer 2.1e6 | 40e6 | THROugh
[ :SOURCE ]:RADio:MTONE:ARB:IQ:MODulation:FILTer?
```

This command enables you to select a filter or through path for I/Q signals modulated onto the RF carrier. Selecting a filter using this command will automatically set “:IQ:MODulation:FILTer:AUTO” on page 326 to OFF(0) mode.

2.1E6 This choice applies a 2.1 MHz baseband filter to the I/Q signals.

40E6 This choice applies a 40 MHz baseband filter to the I/Q signals.

THROugh This choice bypasses filtering.

***RST** THR

Key Entry 2.100 MHz 40.000 MHz Through

:IQ:MODulation:FILTer:AUTO

Supported E4438C with Option 001/601 or 002/602

```
[ :SOURCE ]:RADio:MTONE:ARB:IQ:MODulation:FILTer:AUTO ON | OFF | 1 | 0
[ :SOURCE ]:RADio:MTONE:ARB:IQ:MODulation:FILTer:AUTO?
```

This command enables or disables the automatic selection of the filters for I/Q signals modulated onto the RF carrier.

ON(1) This choice will automatically select a digital modulation filter.

OFF(0) This choice disables the auto feature which lets you select a digital modulation filter or through path. Refer to “:IQ:MODulation:FILTer” on page 326 for selecting a filter or through path.

***RST** 1

Key Entry I/Q Mod Filter Manual Auto

:MDEStination:AAMPlitude

Supported E4438C with Option 001/601 or 002/602

```
[ :SOURCE ]:RADio:MTONE:ARB:MDEStination:AAMPlitude NONE | M1 | M2 | M3 | M4
[ :SOURCE ]:RADio:MTONE:ARB:MDEStination:AAMPlitude?
```

This command routes the selected marker to the Alternate Amplitude function. The NONE parameter clears the marker for the Alternate Amplitude function.

*RST	NONE				
Key Entry	None	Marker 1	Marker 2	Marker 3	Marker 4

:MDEStination:ALCHold

Supported E4438C with Option 001/601 or 002/602

CAUTION Incorrect automatic level control (ALC) sampling can create a sudden unlevelled condition that may create a spike in the RF output potentially damaging a DUT or connected instrument. Ensure that you set markers to let the ALC sample over an amplitude that accounts for the high power levels within the signal.

```
[ :SOURce ] :RADio:MTONE:ARB:MDEStination:ALCHold NONE | M1 | M2 | M3 | M4
[ :SOURce ] :RADio:MTONE:ARB:MDEStination:ALCHold?
```

This command enables or disables the marker ALC hold function for the selected marker. For setting markers, see “:MARKer:[SET]” on page 300.

Use the ALC hold function when you have a waveform signal that incorporates idle periods, or when the increased dynamic range encountered with RF blanking is not desired. The ALC leveling circuitry responds to the marker signal during the marker pulse (marker signal high), averaging the modulated signal level during this period.

The ALC hold function operates during the low periods of the marker signal. The marker polarity determines when the marker signal is high. For a positive polarity, this is during the marker points. For a negative polarity, this is when there are no marker points. For setting a marker’s polarity, see “:MPOLarity:MARKer1|2|3|4” on page 330.

NOTE Do not use the ALC hold for more than 100 ms, because it can affect the waveform’s output amplitude.

The marker signal has a minimum of a two-sample delay in its response relative to the waveform signal response. To compensate for the marker signal delay, offset marker points from the waveform sample point at which you want the ALC sampling to begin.

The ALC hold setting is part of the file header information, so saving the setting to the file header saves the current marker routing for the waveform file.

NOTE A waveform file that has unspecified settings in the file header uses the previous waveform’s routing settings.

For more information on the marker ALC hold function, see the *E4428C/38C ESG Signal Generators User's Guide*. For setting the marker points, see “:MARKer:[SET]” on page 300.

NONE	This terminates the marker ALC hold function.
M1–M4	These are the marker choices. The ALC hold feature uses only one marker at a time.
*RST	NONE

Example

```
:RAD:AWGB:ARB:MDES:ALCH M1
```

The preceding example routes marker 1 to the ALC Hold function.

Key Entry	None	Marker 1	Marker 2	Marker 3	Marker 4
Remarks	N/A				

:MDEStination:PULSe

Supported E4438C with Option 001/601 or 002/602

CAUTION The pulse function incorporates ALC hold. Incorrect automatic level control (ALC) sampling can create a sudden unlevelled condition that may create a spike in the RF output potentially damaging a DUT or connected instrument. Ensure that you set markers to let the ALC sample over an amplitude that accounts for the high power levels within the signal.

```
[ :SOURCE ] :RADio:MTONe:ARB:MDEStination:PULSe NONE | M1 | M2 | M3 | M4
[ :SOURCE ] :RADio:MTONe:ARB:MDEStination:PULSe?
```

This command enables or disables the marker pulse/RF blanking function for the selected marker.

This function automatically incorporates the ALC hold function, so there is no need to select both the ALC hold and pulse/RF blanking functions for the same marker.

NOTE Do not use ALC hold for more than 100 ms, because it can affect the waveform's output amplitude.

The signal generator blanks the RF output when the marker signal goes low. The marker polarity determines when the marker signal is low. For a positive polarity, this is during the marker points. For a negative polarity, this is when there are no marker points. For setting a marker's polarity, see “:MPOLarity:MARKer1|2|3|4” on page 330.

NOTE Set marker points prior to using this function. Enabling this function without setting marker points may create a continuous low or high marker signal, depending on the marker polarity. This causes either no RF output or a continuous RF output. See “:MARKer:[SET]” on page 300 for setting the marker points.

The marker signal has a minimum of a two-sample delay in its response relative to the waveform signal response. To compensate for the marker signal delay, offset marker points from the waveform sample point at which you want the RF blanking to begin. The RF blanking setting is part of the file header information, so saving the setting to the file header saves the current marker routing for the waveform file.

NOTE A waveform file that has unspecified settings in the file header uses the previous waveform’s routing settings. This could create the situation where there is no RF output signal, because the previous waveform used RF blanking.

For more information on the marker RF blanking function, see the *E4428C/38C ESG Signal Generators User’s Guide*.

NONE This terminates the marker RF blanking/pulse function.

M1–M4 These are the marker choices. The RF blanking/pulse feature uses only one marker at a time.

Example

```
:RAD:ARB:MDES:PULS M2
```

The preceding example routes marker 2 to Pulse/RF Blanking.

```
*RST NONE
```

Key Entry	None	Marker 1	Marker 2	Marker 3	Marker 4
------------------	-------------	-----------------	-----------------	-----------------	-----------------

:MPOLarity:MARKer1 | 2 | 3 | 4**Supported** E4438C with Option 001/601 or 002/602

[:SOURCE]:RADio:MTONE:ARB:MPOLarity:MARKer1 | 2 | 3 | 4 NEGative | POSitive

[:SOURCE]:RADio:MTONE:ARB:MPOLarity:MARKer1 | 2 | 3 | 4?

This command sets the polarity for the selected marker. For a positive marker polarity, the marker signal is high during the marker points. For a negative marker polarity, the marker signal is high during the period of no marker points.

***RST** POS

Key Entry **Marker 1 Polarity Neg Pos Marker 2 Polarity Neg Pos Marker 3 Polarity Neg Pos**
Marker 4 Polarity Neg Pos

:REFerence:EXTernal:FREQuency**Supported** E4438C with Option 001/601 or 002/602

[:SOURCE]:RADio:MTONE:ARB:REFerence:EXTernal:FREQuency <val>

[:SOURCE]:RADio:MTONE:ARB:REFerence:EXTernal:FREQuency?

This command allows you to enter the frequency of the applied external reference.

The variable <val> is expressed in units of Hertz (Hz–MHz).

***RST** +1.00000000E+007**Range** 2.5E5–1E8**Key Entry** **Reference Freq**

Remarks The value specified by this command is effective only when you are using an external ARB reference applied to the BASEBAND GEN REF IN rear panel connector.

To specify external as the ARB reference source type, refer to
[“:REFerence\[:SOURCE\]” on page 330.](#)

:REFerence[:SOURCE]**Supported** E4438C with Option 001/601 or 002/602

[:SOURCE]:RADio:MTONE:ARB:REFerence[:SOURCE] INTernal | EXTernal

[:SOURCE]:RADio:MTONE:ARB:REFerence[:SOURCE]?

This command selects either an internal or external reference for the waveform clock.

Multitone Subsystem—Option 001/601 or 002/602 ([:SOURCE]:RADio:MTONE:ARB)

*RST	INT
Key Entry	ARB Reference Ext Int
Remarks	<p>If the EXTERNAL choice is selected, the external frequency <i>value must</i> be entered and the signal must be applied to the BASEBAND GEN REF IN rear panel connector.</p> <p>Refer to “:REFERENCE:EXTERNAL:FREQUENCY” on page 330 to enter the external reference frequency.</p>

:ROW

Supported	E4438C with Option 001/601 or 002/602
	<pre>[:SOURCE] :RADio:MTONE:ARB:SETup:TABLE:ROW <row_number> , <power> , <phase> , <state> [:SOURCE] :RADio:MTONE:ARB:SETup:TABLE:ROW? <row_number></pre>
	This command modifies the indicated tone (row) of the multitone waveform.
<row_number>	The number of rows for this variable are determined by the :SETup:TABLE command.
	The variable <power> is expressed in units of decibels (dB).
	The variable <phase> is expressed in units of degrees (deg).
	Frequency offset, power, phase, and state value are returned when a query is initiated. The output format is as follows:
	<frequency offset> , <power> , <phase> , <state>
*RST	<i>frequency offset</i> : -3.5000000E+004 <power>: +0.0000000E+000 <phase>: +0.0000000E+000 <state>: 1
Range	<i>frequency offset</i> : -4E7 to 4E7 <power>: -80 to 0 <phase>: 0-359 <state>: 1
Key Entry	Goto Row Toggle State
Remarks	<p>Refer to “:SETup:TABLE” on page 333 for information on how to change the number of rows.</p> <p>This command is the final step in creating a multitone waveform. Refer to “Creating a Multitone Waveform” on page 323 for all four steps.</p>

:SCLock:RATE

Supported E4438C with Option 001/601 or 002/602

```
[ :SOURce ] :RADio :MTONE :ARB :SCLock :RATE <val>
```

```
[ :SOURce ] :RADio :MTONE :ARB :SCLock :RATE?
```

This command sets the sample clock rate for the Multitone modulation format.

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

***RST** +1.00000000E+008

Range 1–1E8

Key Entry **ARB Sample Clock**

Remarks The modulation format should be active before executing this command. If this command is executed before the modulation format is active, the entered value will be overridden by a calculated factory default value. Refer to “[:STATe]” on [page 335](#) to activate the modulation format.

:SETup

Supported E4438C with Option 001/601 or 002/602

```
[ :SOURce ] :RADio :MTONE :ARB :SETup "<file name>"
```

```
[ :SOURce ] :RADio :MTONE :ARB :SETup?
```

This command retrieves a multitone waveform file.

Key Entry Load From Selected File

Remarks The name of a multitone waveform file is stored in the signal generator file system of MTONE files. This information is held in memory until you send the command that turns the waveform on.

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

:SETup:STORe

Supported E4438C with Option 001/601 or 002/602

```
[ :SOURce ] :RADio :MTONE :ARB :SETup :STORe "<file name>"
```

This command stores the current multitone waveform setup in the signal generator file system of MTONE files.

Key Entry **Store To File**

:SETup:TABLE

Supported E4438C with Option 001/601 or 002/602

```
[ :SOURce ]:RADio:MTONE:ARB:SETup:TABLE <freq_spacing> ,
<num_tones> , { <phase> , <state> }
[ :SOURce ]:RADio:MTONE:ARB:SETup:TABLE?
```

This command creates and configures a multitone waveform.

The frequency offset, power, phase, and state value are returned when a query is initiated. The output format is as follows:

```
<frequency_offset> , <power> , <phase> , <state>
```

The variable <freq_spacing> is expressed in units of Hertz (Hz–MHz).

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

*RST	Tone	<frequency offset>	<power>	<phase>	<state>
	Tone 1	-35000	+0.00000000E+000	+0	+1
	Tone 2	-25000	+0.00000000E+000	+0	+1
	Tone 3	-15000	+0.00000000E+000	+0	+1
	Tone 4	-5000	+0.00000000E+000	+0	+1
	Tone 5	+5000	+0.00000000E+000	+0	+1
	Tone 6	+15000	+0.00000000E+000	+0	+1
	Tone 7	+25000	+0.00000000E+000	+0	+1
	Tone 8	+35000	+0.00000000E+000	+0	+1

Range <freq_spacing> (2 tones): 1E4–8E7 <num_tones>: 2–64
 <freq_spacing> (>2 tones): 1E4 to (80 MHz ÷ (num_tones – 1))
 <phase>: 0–359

Key Entry **Freq Spacing** **Number Of Tones** **Toggle State**

Remarks To set the frequency spacing, refer to “:SETup:TABLE:FSPacing” on page 333.

:SETup:TABLE:FSPacing

Supported E4438C with Option 001/601 or 002/602

```
[ :SOURce ]:RADio:MTONE:ARB:SETup:TABLE:FSPacing <freq_spacing>
[ :SOURce ]:RADio:MTONE:ARB:SETup:TABLE:FSPacing?
```

This command sets the frequency spacing between the tones.

The variable <freq_spacing> is expressed in units of Hertz (Hz–MHz).

*RST +1.00000000E+004

Multitone Subsystem—Option 001/601 or 002/602 ([:SOURce]:RADio:MTONe:ARB)

Range	$\langle freq_spacing \rangle$ (2 tones): 1E4–8E7 $\langle freq_spacing \rangle$ (>2 tones): 1E4 to (80 MHz \div (num_tones – 1))
Key Entry	Freq Spacing
Remarks	To set frequency spacing and additional parameters required to create or configure a multitone waveform, refer to “:SETup:TABLE” on page 333. This command is the second step in creating a multitone waveform. Refer to “Creating a Multitone Waveform” on page 323 for all four steps.

:SETup:TABLE:NTONes

Supported	E4438C with Option 001/601 or 002/602
	[:SOURce] :RADio:MTONE:ARB:SETup:TABLE:NTONes $\langle num_tones \rangle$ [:SOURce] :RADio:MTONE:ARB:SETup:TABLE:NTONes?
	This command defines the number of tones in the multitone waveform.
*RST	+8
Range	2–64
Key Entry	Number Of Tones
Remarks	To specify the number of tones and additional parameters required to create or configure a multitone waveform, refer to “:SETup:TABLE” on page 333. This command is the third step in creating a multitone waveform. Refer to “Creating a Multitone Waveform” on page 323 for all four steps.

:SETup:TABLE:PHASe:INITialize

Supported	E4438C with Option 001/601 or 002/602
	[:SOURce] :RADio:MTONE:ARB:SETup:TABLE:PHASe:INITialize FIXed RANDom [:SOURce] :RADio:MTONE:ARB:SETup:TABLE:PHASe:INITialize?
	This command initializes the phase in the multitone waveform table.
FIXed	This choice sets the phase of all tones to the fixed value of 0 degrees.
RANDom	This choice sets the phase of all tones to random values based on the setting on the random seed generator.
*RST	FIX
Key Entry	Initialize Phase Fixed Random

- Remarks** To change the random number generator seed value, refer to “:SETup:TABLE:PHASe:INITialize:SEED” on page 335.
- This command is the first step in creating a multitone waveform. Refer to “Creating a Multitone Waveform” on page 323 for all four steps.

:SETup:TABLE:PHASe:INITialize:SEED

Supported E4438C with Option 001/601 or 002/602

```
[ :SOURCE ] :RADio:MTONE:ARB:SETup:TABLE:PHASe:INITialize:SEED FIXed | RANDom
[ :SOURCE ] :RADio:MTONE:ARB:SETup:TABLE:PHASe:INITialize:SEED?
```

This command initializes the random number generator seed that is used to generate the random phase values for the multitone waveform.

FIXed This choice sets the random number generator seed to a fixed value.

RANDom This choice sets the random number generator seed to a random value. This changes the phase value after each initialization of the phase.

***RST** FIX

Key Entry **Random Seed Fixed Random**

[:STATe]

Supported E4438C with Option 001/601 or 002/602

```
[ :SOURCE ] :RADio:MTONE:ARB[:STATe] ON | OFF | 1 | 0
[ :SOURCE ] :RADio:MTONE:ARB[:STATe]?
```

This command enables or disables the multitone waveform generator function.

***RST** 0

Key Entry **Multitone Off On**

Wideband CDMA ARB Subsystem–Option 400 ([:SOURce]:RADio:WCDMa:TGPP:ARB)

:CLIPping:I

Supported E4438C with Option 400

```
[ :SOURce ]:RADio:WCDMa:TGPP:ARB:CLIPping:I <val>
```

```
[ :SOURce ]:RADio:WCDMa:TGPP:ARB:CLIPping:I?
```

This command limits the modulation level of the waveform's I component to a percentage of full scale.

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

***RST** +1.00000000E+002

Range 10–100

Key Entry **Clip |I| To**

:CLIPping:POSition

Supported E4438C with Option 400

```
[ :SOURce ]:RADio:WCDMa:TGPP:ARB:CLIPping:POSition PRE|POST
```

```
[ :SOURce ]:RADio:WCDMa:TGPP:ARB:CLIPping:POSition?
```

This command specifies whether a waveform is clipped before (PRE) or after (POST) FIR filtering.

***RST** PRE

Key Entry **Clip At PRE POST FIR Filter**

:CLIPping:Q

Supported E4438C with Option 400

```
[ :SOURce ]:RADio:WCDMa:TGPP:ARB:CLIPping:Q <val>
```

```
[ :SOURce ]:RADio:WCDMa:TGPP:ARB:CLIPping:Q?
```

This command limits the modulation level of the waveform's Q component to a percentage of full scale.

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

***RST** +1.00000000E+002

Range 10–100

Key Entry **Clip |Q| To**

:CLIPping:TYPE

Supported E4438C with Option 400

[:SOURCE] :RADIO:WCDMA:TGPP:ARB:CLIPping:TYPE IJQ | IORQ

[:SOURCE] :RADIO:WCDMA:TGPP:ARB:CLIPping:TYPE?

This command selects either IJQ or IORQ as the clipping type.

IJQ The combined I and Q waveform will be clipped (*circular* clipping).

IORQ The I and Q components of the waveform are clipped independently (*rectangular* clipping). I and Q can be clipped to different levels using this mode.

***RST** IJQ

Key Entry **Clipping Type |I+jQ| |I|,|Q|**

:CLIPping[:IJQ]

Supported E4438C with Option 400

[:SOURCE] :RADIO:WCDMA:TGPP:ARB:CLIPping[:IJQ] <val>

[:SOURCE] :RADIO:WCDMA:TGPP:ARB:CLIPping[:IJQ]?

This command clips (limits) the modulation level of the combined I and Q waveform to a percentage of full scale.

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

***RST** +1.00000000E+002

Range 10–100

Key Entry **Clip |I+jQ| To**

:CRATe

Supported E4438C with Option 400

```
[ :SOURce ] :RADio :WCDMa :TGPP :ARB :CRATe <val>
```

```
[ :SOURce ] :RADio :WCDMa :TGPP :ARB :CRATe?
```

This command sets the chip rate value.

***RST** +3.84000000E+006

Range 3456000–4224000

Key Entry **Chip Rate**

:FILTer

Supported E4438C with Option 400

```
[ :SOURce ] :RADio :WCDMa :TGPP :ARB :FILTer RNYQuist | NYQuist | GAUSSian |  
RECTangle | WCDMA | AC4Fm | IS2000SR3DS | UGGaussian | "<user FIR>"
```

```
[ :SOURce ] :RADio :WCDMa :TGPP :ARB :FILTer?
```

This command selects the pre-modulation filter type.

WCDMA This choice selects a 0.22 Nyquist filter optimized for ACP.

AC4Fm This choice selects a predefined Association of Public Safety Communications Officials (APCO) specified compatible 4-level frequency modulation (C4FM) filter.

IS2000SR3DS This choice selects an IS-2000 standard, spread rate 3 direct spread 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 FIR filter file that you have stored in memory. The variable needs no directory path indicating the location of the file, such as FIR: or /USER/FIR. The command assumes the FIR directory. Refer to [“File Name Variables” on page 13](#) for more information on file names.

***RST** NYQ

Key Entry	Root Nyquist	Nyquist	Gaussian	Rectangle	WCDMA
	APCO 25 C4FM	IS-95	UN3/4 GSM Gaussian	IS-2000 SR3 DS	
	User FIR				

:FILTER:ALPHA

Supported E4438C with Option 400

```
[ :SOURCE ] :RADIO:WCDMA:TGPP:ARB:FILTER:ALPHA <val>
```

```
[ :SOURCE ] :RADIO:WCDMA:TGPP:ARB:FILTER:ALPHA?
```

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

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** +2.20000000E-001

Range 0.000–1.000

Key Entry **Filter Alpha**

Remarks To change the current filter type, refer to “:FILTER” on page 338.

:FILTER:BBT

Supported E4438C with Option 400

```
[ :SOURCE ] :RADIO:WCDMA:TGPP:ARB:FILTER:BBT <val>
```

```
[ :SOURCE ] :RADIO:WCDMA:TGPP:ARB:FILTER:BBT?
```

This command changes the bandwidth-multiplied-by-bit-time (BbT) filter parameter.

The filter BbT 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 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 338.

:FILTer:CHANnel

Supported E4438C with Option 400

```
[ :SOURCE ] :RADio:WCDMa:TGPP:ARB:FILTer:CHANnel EVM|ACP
[ :SOURCE ] :RADio:WCDMa:TGPP:ARB: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** ACP

Key Entry **Optimize FIR For EVM ACP**

Remarks To change the current filter type, refer to “:FILTer” on page 338.

:HEADer:CLEAr

Supported E4438C with Option 400

```
[ :SOURCE ] :RADio:WCDMa:TGPP:ARB:HEADer:CLEAr
```

This command clears the header information from the file header used by this modulation format.

Key Entry **Clear Header**

Remarks The **W-CDMA Off On** softkey must be set to On for this command to function.

:HEADer:SAVE

Supported E4438C with Option 400

```
[ :SOURCE ] :RADio:WCDMa:TGPP:ARB:HEADer:SAVE
```

This command saves the header information to the file header used by this modulation format.

Key Entry **Save Setup To Header**

Remarks The **W-CDMA Off On** softkey must be set to On for this command to function.

:IQ:EXTErnal:FILTer

Supported E4438C with Option 400

```
[ :SOURCE ] :RADio:WCDMa:TGPP:ARB:IQ:EXTErnal:FILTer 40e6|THROUGH
[ :SOURCE ] :RADio:WCDMa:TGPP:ARB:IQ:EXTErnal:FILTer?
```

Wideband CDMA ARB Subsystem–Option 400 ([:SOURCE]:RADIO:WCDMA:TGPP:ARB)

This command selects the filter or through path for I/Q signals routed to the rear panel I and Q outputs. Selecting a filter using this command will automatically set “:IQ:EXTERNAL:FILTER:AUTO” on [page 341](#) to OFF(0) mode.

40e6 This choice applies a 40 MHz baseband filter.

THRough This choice bypasses filtering.

*RST THR

Key Entry 40.000 MHz Through

:IQ:EXTERNAL:FILTER:AUTO

Supported E4438C with Option 400

```
[ :SOURCE ] :RADIO:WCDMA:TGPP:ARB:IQ:EXTERNAL:FILTER:AUTO ON|OFF|1|0
[ :SOURCE ] :RADIO:WCDMA:TGPP:ARB:IQ:EXTERNAL:FILTER:AUTO?
```

This command enables or disables the automatic selection of the filters for I/Q signals routed to the rear panel I/Q outputs.

ON(1) This choice will automatically select a digital modulation filter optimized for the current signal generator settings.

OFF(0) This choice disables the auto feature which lets you select a digital modulation filter or through path. Refer to “:IQ:EXTERNAL:FILTER” on [page 340](#) for selecting a filter or through path.

*RST 1

Key Entry I/Q Output Filter Manual Auto

:IQMap

Supported E4438C with Option 400

```
[ :SOURCE ] :RADIO:WCDMA:TGPP:ARB:IQMap NORMAL|INVERT
[ :SOURCE ] :RADIO:WCDMA:TGPP:ARB:IQMap?
```

This command selects whether or not the I/Q outputs will be inverted.

NORMAL This choice selects normal polarity.

INVERTed This choice inverts the internal Q signal.

*RST NORM

Key Entry I/Q Mapping Normal Invert

:IQ:MODulation:ATTen

Supported E4438C with Option 400

```
[ :SOURce ]:RADio:WCDMa:TGPP:ARB:IQ:MODulation:ATTen <val>
```

```
[ :SOURce ]:RADio:WCDMa:TGPP:ARB:IQ:MODulation:ATTen?
```

This command attenuates the I/Q signals being modulated through the signal generator RF path.

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

***RST** +2.00000000E+00

Range 0–40

Key Entry **Modulator Atten Manual Auto**

:IQ:MODulation:ATTen:AUTO

Supported E4438C with Option 400

```
[ :SOURce ]:RADio:WCDMa:TGPP:ARB:IQ:MODulation:ATTen:AUTO ON|OFF|1|0
```

```
[ :SOURce ]:RADio:WCDMa:TGPP:ARB:IQ:MODulation:ATTen:AUTO?
```

This command enables or disables the I/Q attenuation auto mode.

ON (1) This choice enables the attenuation auto mode which optimizes the modulator attenuation for the current conditions.

OFF (0) This choice holds the attenuator at its current setting or at a selected value. Refer to “:IQ:MODulation:ATTen” on page 342 for setting the attenuation value.

***RST** 1

Key Entry **Modulator Atten Manual Auto**

:IQ:MODulation:FILTer

Supported E4438C with Option 400

```
[ :SOURce ]:RADio:WCDMa:TGPP:ARB:IQ:MODulation:FILTer 2.1e6|40e6|THROUGH
```

```
[ :SOURce ]:RADio:WCDMa:TGPP:ARB:IQ:MODulation:FILTer?
```

This command enables you to select a filter or through path for I/Q signals modulated onto the RF carrier. Selecting a filter using this command will automatically set “:IQ:MODulation:FILTer:AUTO” on page 343 to OFF(0) mode.

2.1E6 This choice applies a 2.1 MHz baseband filter to the I/Q signals.

40E6 This choice applies a 40 MHz baseband filter to the I/Q signals.

THRough	This choice bypasses filtering.		
*RST	THR		
Key Entry	2.100 MHz	40.000 MHz	Through

:IQ:MODulation:FILTer:AUTO

Supported E4438C with Option 400

```
[ :SOURCE ] :RADIo:WCDMa:TGPP:ARB:IQ:MODulation:FILTer:AUTO ON|OFF|1|0
[ :SOURCE ] :RADIo:WCDMa:TGPP:ARB:IQ:MODulation:FILTer:AUTO?
```

This command enables or disables the automatic selection of the filters for I/Q signals modulated onto the RF carrier.

ON(1) This choice will automatically select a digital modulation filter.

OFF(0) This choice disables the auto feature which lets you select a digital modulation filter or through path. Refer to “:IQ:MODulation:FILTer” on page 342 for selecting a filter or through path.

*RST 1

Key Entry I/Q Mod Filter Manual Auto

:LINK

Supported E4438C with Option 400

```
[ :SOURCE ] :RADIo:WCDMa:TGPP:ARB:LINK DOWN|UP
[ :SOURCE ] :RADIo:WCDMa:TGPP:ARB:LINK?
```

This command selects either a downlink or uplink channel configuration.

*RST DOWN

Key Entry Link Down Up

:LINK:DOWN:OACP

Supported E4438C with Option 400

```
[ :SOURCE ] :RADIo:WCDMa:TGPP:ARB:LINK:DOWN:OACP ADJ|ALT
[ :SOURCE ] :RADIo:WCDMa:TGPP:ARB:LINK:DOWN:OACP?
```

This command selects the channel power optimization type for any downlink channel W-CDMA setup.

ADJ This choice optimizes for adjacent channel power.

Wideband CDMA ARB Subsystem—Option 400 ([:SOURCE]:RADio:WCDMa:TGPP:ARB)

ALT	This choice optimizes for alternate channel power.
*RST	ADJ
Key Entry	Optimize ACP ADJ ALT
Remarks	This command is operational for any downlink channel W-CDMA setup. To change the current W-CDMA setup information, refer to “:LINK:DOWN:SETup” on page 344.

:LINK:DOWN:SETup

Supported E4438C with Option 400

```
[ :SOURCE ] :RADio:WCDMa:TGPP:ARB:LINK:DOWN:SETup DPCH1 | DPCH3 | PPSCH |
PPDPCH1 | PPDPCH3 | TM1D16 | TM1D32 | TM1D64 | TM2 | TM3D16 | TM3D32 | TM4 | TM5H2 | TM5H4 |
TM5H8 | MCArrier | "<file name>"
[ :SOURCE ] :RADio:WCDMa:TGPP:ARB:LINK:DOWN:SETup?
```

This command selects a predefined channel setup or multicarrier, and turns multicarrier off or on (see the MCArrier choice description).

DPCH1	This choice selects 1 dedicated physical channel.
DPCH3	This choice selects 3 dedicated physical channels.
PPSCH	This choice selects a primary command control physical channel (PCCPCH) with a synchronization channel (SCH).
PPDPCH1	This choice selects a primary command control physical channel (PCCPCH) with a dedicated physical channel (DPCH).
PPDPCH3	This choice selects a primary command control physical channel (PCCPCH) with 3 dedicated physical channels.
TM1D16	This choice selects a Test Model 1 with 16 dedicated physical channels.
TM1D32	This choice selects a Test Model 1 with 32 dedicated physical channels.
TM1D64	This choice selects a Test Model 1 with 64 dedicated physical channels.
TM2	This choice selects a Test Model 2 downlink W-CDMA setup.
TM3D16	This choice selects a Test Model 3 with 16 dedicated physical channels.
TM3D32	This choice selects a Test Model 3 with 32 dedicated physical channels.
TM4	This choice selects a Test Model 4 downlink W-CDMA setup.
TM5H2	This choice selects a Test Model 5 with 6 DPCH and 2 HS-PDSCH (high speed physical shared channel) channels downlink W-CDMA setup.

Wideband CDMA ARB Subsystem—Option 400 ([:SOURCE]:RADIO:WCDMA:TGPP:ARB)

TM5H4	This choice selects a Test Model 5 with 14 DPCH and 4 HS-PDSCH (high speed-physical downlink shared channel) channels downlink W-CDMA setup.																								
TM5H8	This choice selects a Test Model 5 with 30 DPCH and 8 HS-PDSCH (high speed physical shared channel) channels downlink WCDMA setup.																								
MCARrier	This choice selects multicarrier and turns it on. Selecting any other setup such as DPCH1 or TM1D16 turns multicarrier off. To select the multicarrier setup, see “:LINK:DOWN:SETup:MCARrier”.																								
"<file name>"	This choice selects a user-defined channel setup file. Refer to “File Name Variables” on page 13 for information on the file name syntax.																								
*RST	DPCH1																								
Key Entry	<table> <tr> <td>1 DPCH</td> <td>3DPCH</td> <td>PCCPCH + SCH</td> <td>PCCPCH + SCH + 1 DPCH</td> </tr> <tr> <td>PCCPCH + SCH + 3 DPCH</td> <td colspan="3">Test Model 1 w/ 16 DPCH</td> </tr> <tr> <td>Test Model 1 w/ 32 DPCH</td> <td>Test Model 1 w/ 64 DPCH</td> <td colspan="2">Test Model 2</td> </tr> <tr> <td>Test Model 3 w/ 16 DPCH</td> <td>Test Model 3 w/ 32 DPCH</td> <td colspan="2">Test Model 4</td> </tr> <tr> <td>Test Model 5 w/2HSPDSCH</td> <td colspan="3">Test Model 5 w/4HSPDSCH</td> </tr> <tr> <td>Test Model 5 w/ 8HSPDPCH</td> <td>Multicarrier Off On</td> <td colspan="2">Custom W-CDMA State</td> </tr> </table>	1 DPCH	3DPCH	PCCPCH + SCH	PCCPCH + SCH + 1 DPCH	PCCPCH + SCH + 3 DPCH	Test Model 1 w/ 16 DPCH			Test Model 1 w/ 32 DPCH	Test Model 1 w/ 64 DPCH	Test Model 2		Test Model 3 w/ 16 DPCH	Test Model 3 w/ 32 DPCH	Test Model 4		Test Model 5 w/2HSPDSCH	Test Model 5 w/4HSPDSCH			Test Model 5 w/ 8HSPDPCH	Multicarrier Off On	Custom W-CDMA State	
1 DPCH	3DPCH	PCCPCH + SCH	PCCPCH + SCH + 1 DPCH																						
PCCPCH + SCH + 3 DPCH	Test Model 1 w/ 16 DPCH																								
Test Model 1 w/ 32 DPCH	Test Model 1 w/ 64 DPCH	Test Model 2																							
Test Model 3 w/ 16 DPCH	Test Model 3 w/ 32 DPCH	Test Model 4																							
Test Model 5 w/2HSPDSCH	Test Model 5 w/4HSPDSCH																								
Test Model 5 w/ 8HSPDPCH	Multicarrier Off On	Custom W-CDMA State																							

:LINK:DOWN:SETup:MCARrier

Supported E4438C with Option 400

```
[ :SOURCE ] :RADIO :WCDMA :TGPP :ARB :LINK :DOWN :SETup :MCARrier CAR2 | CAR3 | CAR4 |
CAR4TM1D64 | "<file name>"
```

```
[ :SOURCE ] :RADIO :WCDMA :TGPP :ARB :LINK :DOWN :SETup :MCARrier?
```

This command defines the type of multicarrier W-CDMA setup.

CAR2 a standard 2-carrier setup with the following settings:

Carrier 1: PCCPCH + SCH, -7.5 MHz frequency offset, 0 dB power

Carrier 2: PCCPCH + SCH, 7.5 MHz frequency offset, 0 dB power

CAR3 a standard 3-carrier setup with the following settings:

Carrier 1: PCCPCH + SCH, -5 MHz frequency offset, 0 dB power

Carrier 2: PCCPCH + SCH, 0 kHz frequency offset, 0 dB power

Carrier 3: PCCPCH + SCH, 5 MHz frequency offset, 0 dB power

CAR4	a standard 4-carrier setup with the following settings: Carrier 1: PCCPCH + SCH, -7.5 MHz frequency offset, 0 dB power Carrier 2: PCCPCH + SCH, -2.5 MHz frequency offset, 0 dB power Carrier 3: PCCPCH + SCH, 2.5 MHz frequency offset, 0 dB power Carrier 4: PCCPCH + SCH, 7.5 MHz frequency offset, 0 dB power
CAR4TM1D64	a standard 4-carrier test model 1 with 64 dedicated physical channels setup with the following settings: Carrier 1: Test Model 1 w/64 DPCH, -7.5 MHz frequency offset, 0 dB power Carrier 2: Test Model 1 w/64 DPCH, -2.5 MHz frequency offset, 0 dB power Carrier 3: Test Model 1 w/64 DPCH, 2.5 MHz frequency offset, 0 dB power Carrier 4: Test Model 1 w/64 DPCH, 7.5 MHz frequency offset, 0 dB power
*RST	CAR2
Key Entry	2 Carriers 3 Carriers 4 Carriers
Remarks	Refer to “ File Name Variables ” on page 13 for information on the file name syntax.

:LINK:DOWN:SETup:MCARrier:CLIPping:I

Supported E4438C with Option 400

```
[ :SOURce ] :RADio:WCDMa:TGPP:ARB:LINK:DOWN:SETup:MCARrier:CLIPping:I <val>
```

```
[ :SOURce ] :RADio:WCDMa:TGPP:ARB:LINK:DOWN:SETup:MCARrier:CLIPping:I?
```

This command limits the modulation level of the waveform’s I component to a percentage of full scale.

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

***RST** +1.00000000E+002

Range 10–100

Key Entry **Clip |I| To**

:LINK:DOWN:SETup:MCARrier:CLIPping:Q

Supported E4438C with Option 400

```
[ :SOURCE ] :RADio:WCDMa:TGPP:ARB:LINK:DOWN:SETup:MCARrier:CLIPping:Q <val>  
[ :SOURCE ] :RADio:WCDMa:TGPP:ARB:LINK:DOWN:SETup:MCARrier:CLIPping:Q?
```

This command limits the modulation level of the waveform's Q component to a percentage of full scale.

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

***RST** +1.00000000E+002

Range 10–100

Key Entry **Clip | Q | To**

:LINK:DOWN:SETup:MCARrier:CLIPping:TYPE

Supported E4438C with Option 400

```
[ :SOURCE ] :RADio:WCDMa:TGPP:ARB:LINK:DOWN:SETup:MCARrier:CLIPping:  
TYPE IJQ | IORQ  
[ :SOURCE ] :RADio:WCDMa:TGPP:ARB:LINK:DOWN:SETup:MCARrier:CLIPping:TYPE?
```

This command selects either IJQ or IORQ as the clipping type.

IJQ The combined I and Q waveform will be clipped (*circular clipping*).

IORQ The I and Q components of the waveform are clipped independently (*rectangular clipping*). I and Q can be clipped to different levels using this mode.

***RST** IJQ

Key Entry **Clipping Type | I+jQ | | I |, | Q |**

:LINK:DOWN:SETup:MCARrier:CLIPping[:IJQ]

Supported E4438C with Option 400

```
[ :SOURCE ] :RADio:WCDMa:TGPP:ARB:LINK:DOWN:SETup:MCARrier:  
CLIPping[:IJQ] <val>  
[ :SOURCE ] :RADio:WCDMa:TGPP:ARB:LINK:DOWN:SETup:MCARrier:CLIPping[:IJQ]?
```

This command clips (limits) the modulation level of the combined I and Q waveform to a percentage of full scale.

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

***RST** +1.00000000E+002

Range	10–100
Key Entry	Clip I+jQ To

:LINK:DOWN:SETup:MCARrier:SCODE:AINCrement

Supported E4438C with Option 400

```
[ :SOURce ] :RADio:WCDMa:TGPP:ARB:LINK:DOWN:SETup:MCARrier:SCODE:AINCrement
```

This command will sort carriers by frequency offset and auto-increment scramble codes starting from the current scramble code value for the lowest frequency carrier.

Key Entry **Increment Scramble Code**

Remarks If the lowest frequency carrier has a scramble code value of N/A, the auto-increment value will start at 0.

:LINK:DOWN:SETup:MCARrier:STORE

Supported E4438C with Option 400

```
[ :SOURce ] :RADio:WCDMa:TGPP:ARB:LINK:DOWN:SETup:MCARrier:STORE "<file name>"
```

This command stores the current multicarrier setup information.

The stored file contains information including the digital modulation format, number of carriers, frequency spacing, and power settings for the multicarrier setup.

Key Entry **Store Custom Multicarrier**

Remarks User defined files created using firmware prior to C.02.40 did not save the setting for Increment Scramble Code, Increment Timing Offset, and Clipping Type settings. When loading user defined files created with firmware prior to C.02.40, Increment Scramble Code and Increment Timing Offset will default to Off and the Clipping Type settings will default to 100%. Firmware C.02.40 will save the Increment Scramble Code, Increment Timing Offset and Clipping Type settings.

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

:LINK:DOWN:SETup:MCARrier:TABLE

Supported E4438C with Option 400

```
[ :SOURCE]:RADIO:WCDMA:TGPP:ARB:LINK:DOWN:SETup:MCARrier:TABLE INIT |
APPend | <carrier_num>, DPCH1 | DPCH3 | PPSCH | PDPCH1 | PDPCH3 | TM1D16 | TM1D32 |
TM1D64 | TM2 | TM3D16 | TM3D32 | TM4 | TM5H2 | TM5H4 | TM5H8 | "<filename>", <freq_offset
>, <power>[, <scramble code>, <timing offset>, <initial phase>,
<pre-FIR circular clipping>[<clipping units {pct}|dB|],
<post-FIR circularclipping>[<clipping units {pct}|dB|]]
[:SOURCE]:RADIO:WCDMA:TGPP:ARB:LINK:DOWN:SETup:MCARrier:
TABLE? <carrier_num>
```

This command defines the multicarrier format and waveform.

Use INIT to clear the table and define the parameters for the first carrier; use APPend to add new channels. To edit an existing carrier, use its carrier number (<carrier_num>).

The variable <freq_offset> is expressed in units of Hertz (kHz–MHz).

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

The carrier type, frequency offset, and power level are returned when a query is initiated. The output format is as follows:

```
<carrier type>, <freq_offset>, <power>
```

INIT	This choice clears the current information and creates a new one-row table, allowing for further definition using additional parameters.
APPend	This choice adds rows to an existing table. The maximum number of rows for one table is 16.
DPCH1	This choice selects 1 dedicated physical channel.
DPCH3	This choice selects 3 dedicated physical channels.
PPSCH	This choice selects a primary command control physical channel (PCCPCH) with a synchronization channel (SCH).
PPDPCH1	This choice selects a primary command control physical channel (PCCPCH) with a dedicated physical channel (DPCH).
PPDPCH3	This choice selects a primary command control physical channel (PCCPCH) with 3 dedicated physical channels.
TM1D16	This choice selects a test model 1 with 16 dedicated physical channels.
TM1D32	This choice selects a test model 1 with 32 dedicated physical channels.
TM1D64	This choice selects a test model 1 with 64 dedicated physical channels.

Wideband CDMA ARB Subsystem—Option 400 ([:SOURce]:RADio:WCDMa:TGPP:ARB)

TM2	This choice selects a test model 2.
TM3D16	This choice selects a test model 3 with 16 dedicated physical channels.
TM3D32	This choice selects a test model 3 with 32 dedicated physical channels.
TM4	This choice selects a test model 4.
TM5H2	This choice selects a Test Model 5 with 6 DPCH and 2 HS-PDSCH (high speed physical shared channel) channels downlink W-CDMA setup.
TM5H4	This choice selects a Test Model 5 with 14 DPCH and 4 HS-PDSCH (high speed-physical downlink shared channel) channels downlink W-CDMA setup.
TM5H8	This choice selects a Test Model 5 with 30 DPCH and 8 HS-PDSCH (high speed physical shared channel) channels downlink W-CDMA setup.
<scramble code>	This variable sets the scramble code value.
<timing offset>	This variable sets the timing offset value.
<initial phase>	This variable sets the initial phase value. The units are not specified but the value represents degrees.
<clipping>	This variable sets the clipping value. If the units are not specified, the value will default to percent.
<carrier_num>	This variable specifies the number of multicarriers.
*RST	<i>carrier type</i> : PPSCH <i><freq_offset></i> : +7.50000000E+006 <i><power></i> : +0.00000000E+000
Range	<i><freq_offset></i> : -37.5E6 to 37.5E6 <i><power></i> : -40 to 0 <i>scramble code</i> : 0-511 <i>timing offset</i> : 0-149 <i>initial phase</i> : 0-359 <i>clipping(in units of percent)</i> : 0.0-100.0 or 0.0 to -20.0 (if units are dB)
Key Entry	1 DPCH 3 DPCH PCCPCH + SCH PCCPCH + SCH + 1 DPCH PCCPCH + SCH + 3 DPCH Test Model 1 w/ 16 DPCH Test Model 1 w/ 32 DPCH Test Model 1 w/ 64 DPCH Test Model 2 Test Model 3 w/ 16 DPCH Test Model 3 w/ 32 DPCH Test Model 4 Test Model 5 w/2HSPDSCH Test Model 5 w/4HSPDSCH Test Model 5 w/8HSPDSCH
Remarks	Refer to “ File Name Variables ” on page 13 for information on the file name syntax. 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 “ :LINK:DOWN:SETup:TABLE:APPLY ” on page 352.

:LINK:DOWN:SETup:MCARrier:TABLE:NCARriers**Supported** E4438C with Option 400

[:SOURCE]:RADIO:WCDMA:TGPP:ARB:LINK:DOWN:SETup:MCARrier:TABLE:NCARriers?

This command queries the number of carriers specified for the W-CDMA multicarrier waveform.

RST** +2**:LINK:DOWN:SETup:MCARrier:TOFFset:AINCrement*Supported** E4438C with Option 400

[:SOURCE]:RADIO:WCDMA:TGPP:ARB:LINK:DOWN:SETup:MCARrier:TOFFset:AINCrement

This command will sort carriers by frequency offset and auto-increment timing offsets. The new values will start with the current timing offset for the lowest frequency carrier and increment by one for each subsequent carrier.

Key Entry Increment Timing Offset**:LINK:DOWN:SETup:STORe****Supported** E4438C with Option 400

[:SOURCE]:RADIO:WCDMA:TGPP:ARB:LINK:DOWN:SETup:STORe "<file name>"

This command stores the current downlink setup information into the memory catalog with the entered file name.

Along with the contents of the W-CDMA channel table editor (channel types, Walsh code, power levels, PN offset, and data), this command stores the following information to the signal generator memory:

- FIR filter
- FIR filter file name
- FIR filter alpha
- FIR filter BbT
- FIR filter channel (EVM or ACP)
- I/Q mapping
- increment scramble code
- increment timing offset
- link
- spread type
- spread rate
- ARB reference clock source (internal or external)

Wideband CDMA ARB Subsystem—Option 400 ([:SOURCE]:RADio:WCDMa:TGPP:ARB)

ARB reference clock frequency
clipping
multicarrier spacing
radio configuration

Key Entry **Store Custom W-CDMA State**

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

:LINK:DOWN:SETup:TABLE:APPLY

Supported E4438C with Option 400

[:SOURCE] :RADio:WCDMa:TGPP:ARB:LINK:DOWN:SETup:TABLE:APPLY

This command generates a W-CDMA signal based on the current values in the W-CDMA channel setup table editor.

Key Entry **Apply Channel Setup**

:LINK:DOWN:SETup:TABLE:CHANnel

Supported E4438C with Option 400

```
[ :SOURCE ] :RADio:WCDMa:TGPP:ARB:LINK:DOWN:SETup:TABLE:CHANnel INIT |
APPend | <chan_num> , <chan_type> , <symbol_rate> , <spread_code> , <power> ,
<timing_offset> , <TFCI> , <TPC> , <scramble_code> , STANDard | RALTErnate |
LALTErnate , <scramble_offset> , RANDom | PN9 | PINDicator |
<data_val> , <TFCI_power> , <TPC_power> , <pilot_power> , <pilot_bits>
[ :SOURCE ] :RADio:WCDMa:TGPP:ARB:LINK:DOWN:SETup:TABLE:CHANnel? <chan_num>
```

This command sets up the W-CDMA downlink channel type parameters.

Use INIT to clear the table editor and define the parameters for the first channel; use APPend to add new channels. To edit an existing channel, use its channel number <chan_num>.

The <power>, <TFCI_power>, <TPC_power>, and <pilot_power> variables are expressed in units of decibels (dB).

The channel type, symbol rate, spread code, power, timing offset, TFCI value, TPC value, scramble code, scramble type, scramble offset, data type, TFCI power, TPC power, pilot power, and the number of pilot bits are returned when a query is initiated. The output format is as follows:

```
<chan_type> , <symbol_rate> , <spread_code> , <power> , <tDPCH_offset> , <TFCI> ,
<TPC> , <scramble_code> , <scramble_type> , <scramble_code> , <scramble_offset> ,
<data_type> , <TFCI_power> , <TPC_power> , <pilot_power> , <pilot_bits>
```


INIT	This choice clears the current information and creates a new one-row table, allowing for further definition using additional parameters.
APPend	This choice adds a row to an existing table.
<chan_num>	This variable sets the physical channel number.
<chan_type>	This variable sets the channel type.
<timing_offset>	This variable sets the symbol offset.
<TFCI>	This variable sets the transport format combination indicator.
<TPC>	This variable sets the transmit power control.
STANdard	This choice sets the scramble type to standard.
RALternate	This choice sets the scramble type to right alternate.
LALternate	This choice sets the scramble type to left alternate.
RANDom	This choice sets a randomly generated pseudo-random sequence pattern as output data.
PN9	This choice sets an internally generated 9-bit pseudo-random sequence pattern as output data.
PINDicator	This choice sets the paging indicator channel (PICH).
<data_val>	This variable sets the data value.
<TFCI_power>	This variable sets the transport format combination indicator power offset.
<TPC_power>	This variable sets the transport power control power offset.
<pilot_power>	This variable sets the pilot power offset.
<pilot_bits>	This variable sets the number of pilot bits that will be in the dedicated physical channel (DPCH).

Table 5-1 Variables and Channel Types

	SSCH	CPICH	PCCPCH	SCCPCH	PICH	DPCH	OCNS	PSCH
Channel number	X	X	X	X	X	X	X	X
Symbol rate	N/A	N/A	N/A	X	N/A	X	X	N/A
Spread code	N/A	X	X	X	X	X	X	N/A
Power	X	X	X	X	X	X	X	X

Table 5-1 Variables and Channel Types

	SSCH	CPICH	PCCPCH	SCCPCH	PICH	DPCH	OCNS	PSCH
Symbol offset	N/A	N/A	N/A	N/A	X	X	N/A	N/A
TFCI	N/A	N/A	N/A	X	N/A	X	N/A	N/A
TPC	N/A	N/A	N/A	N/A	N/A	X	N/A	N/A
Scramble code	X	X	X	X	X	X	X	N/A
Standard	X	X	X	N/A	X	X	X	N/A
Right alternate	X	X	X	N/A	X	X	X	N/A
Left alternate	X	X	X	N/A	X	X	X	N/A
Scramble offset	X	X	X	X	X	X	X	N/A
Random	N/A	N/A	X	X	X	X	X	N/A
PN9	N/A	N/A	X	X	X	X	X	N/A
Paging Indicator	N/A	N/A	N/A	N/A	X	N/A	N/A	N/A
Data value	N/A	N/A	X	N/A	X	X	X	N/A
TFCI power	N/A	N/A	N/A	N/A	X	N/A	N/A	N/A
Pilot power offset	N/A	N/A	N/A	N/A	X	N/A	N/A	N/A
Pilot bits	N/A	N/A	N/A	X	X	N/A	N/A	N/A

Table 5-2 Variables and Channel Types

	HSPDSCH	HSSCCH
Channel number	X	X
Symbol rate	N/A (fixed to 30ksps)	N/A (fixed to 240ksps)
Spread code	X	X
Power	X	X

Table 5-2 **Variables and Channel Types**

	HSPDSCH	HSSCCH
Symbol offset	X	X
TFCI	N/A	N/A
TPC	N/A	N/A
Scramble code	X	X
Standard	X	X
Right alternate	X	X
Left alternate	X	X
Scramble offset	X	X
Random	X	X
PN9	X	X
Paging Indicator	N/A	N/A
Data value	X	X
TFCI power	N/A	N/A
Pilot power offset	N/A	N/A
Pilot bits	N/A	N/A

***RST** <chan_type>: DPCH <symbol_rate>: +3.00000000E+004
 <spread_code>: +8 <scramble_offset>: +0.00000000E+000
 power: +0.00000000E+000 <tDPCH_offset>: +0 <TFCI>: +0
 <TPC>: #H5555 <scramble_code>: +0 scramble type: STAN
 <TFCI_power>: +0.00000000E+000
 <TPC_power>: +0.00000000E+000 <pilot_power>: +0.00000000E+000
 <pilot_bits>: +4

Wideband CDMA ARB Subsystem—Option 400 ([:SOURce]:RADio:WCDMa:TGPP:ARB)

Range <chan_type>: PSCH SSCH CPICH PCCPch SCCPch
 DPCH PICH OCNS HSSCch HSPDsch
 <power>: -40 to 0 <tDPCH_offset>: 0-149 <TFCI>: 0-1023
 <TPC>: 0000-7FFF <scramble_code>: 0-511
 <scramble_offset>: 0-15 <data_val>: 00000000-11111111
 <TFCL_power>: -20 to 20 <TPC_power>: -20 to 20
 <pilot_power>: 0000-7FFF <pilot_bits>: 0-511

SCCPCH Channel

<symbol_rate>	<spread_code>	*<pilot_bits>
15 ksps	0-256	0,8
30 ksps	0-128	0,8
60 ksps	0-64	0,8
120 ksps	0-32	0,8
240 ksps	0-16	0,16
480 ksps	0-8	0,16
960 ksps	0-4	0,16

All Other Channels

<symbol_rate>	<spread_code>	<pilot_bits>
7.5 ksps	0-511	4
15 ksps	0-255	2,4,8
30 ksps	0-127	4,8
60 ksps	0-63	8
120 ksps	0-31	8
240 ksps	0-15	16
480 ksps	0-7	16
960 ksps	0-3	16

Key Entry

Channel	Type	Symbol Rate	First Spread Code	Power			
Spread Code		TFCI Field Off On	Scramble Code	Scramble Offset			
Random	PN9	Standard	Left Alternate	Right Alternate			
PCCPCH	SCCPCH	PSCH	SSCH	CPICH	DPCH	PICH	OCNS
HSPDsch	HSSCCH						

Field Entry

Spread Code	Power	Timing Offset	TFCI	Scramble Code
TFCI Power	TPC Power	Pilot Power	Pilot Bits	Data
Scramble Type	Scramble Offset			

Remarks For additional information, refer to the 3GPP TS 25.211 (V 3.7) standard.

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 “:LINK:DOWN:SETup:TABLE:APPLY” on page 352.

:LINK:DOWN:SETup:TABLE:NCHannels?

Supported E4438C with Option 400

[:SOURCE] :RADIO:WCDMA:TGPP:ARB:LINK:DOWN:SETup:TABLE:NCHannel?

This command queries the number of channels being used for the carrier.

***RST** 1

:LINK:DOWN:SETup:TABLE:PADJust

Supported E4438C with Option 400

[:SOURCE] :RADIO:WCDMA:TGPP:ARB:LINK:DOWN:SETup:TABLE:PADJust EQUAL|SCALE

This command sets the code domain power.

EQUAL This choice will adjust all channel powers to have equal energy per symbol, referenced to 7.5 kbps and increasing by 3 dB for each doubling of the symbol rate.

SCALE This choice will scale the channel power levels so that the sum of the powers are equal to 0 dB.

Key Entry **Equal Energy per Symbol** **Scale To 0dB**

Remarks This command is available in downlink only.

:LINK:DOWN:TFCI

Supported E4438C with Option 400

[:SOURCE] :RADIO:WCDMA:TGPP:ARB:LINK:DOWN:TFCI ON|OFF|1|0

[:SOURCE] :RADIO:WCDMA:TGPP:ARB:LINK:DOWN:TFCI?

This command enables or disables the transport format combination indicator (TFCI) field for all channels.

***RST** 1

Key Entry **TCFI Field Off On**

:LINK:UP:OACP**Supported** E4438C with Option 400[:SOURce]:RADio:WCDMa:TGPP:ARB:LINK:UP:OACP ADJ|ALT
[:SOURce]:RADio:WCDMa:TGPP:ARB:LINK:UP:OACP?

This command selects the channel power optimization type for any uplink channel W-CDMA setup.

ADJ This choice optimizes for adjacent channel power.

ALT This choice optimizes for alternate channel power.

RST** ADJ**Key Entry** **Optimize ACP ADJ ALT*Remarks** This command is only operational for any uplink channel W-CDMA setup.

To change the current W-CDMA setup information, refer to “:LINK:UP:SETup” on page 359.

:LINK:UP:SCRAMBLE**Supported** E4438C with Option 400[:SOURce]:RADio:WCDMa:TGPP:ARB:LINK:UP:SCRAMBLE <val>
[:SOURce]:RADio:WCDMa:TGPP:ARB:LINK:UP:SCRAMBLE?

This command sets the scramble code for the uplink.

RST** #H000000**Range** #H0–FFFFFFF**Key Entry** **Scramble Code*:LINK:UP:SDPDch****Supported** E4438C with Option 400[:SOURce]:RADio:WCDMa:TGPP:ARB:LINK:UP:SDPDch I|Q
[:SOURce]:RADio:WCDMa:TGPP:ARB:LINK:UP:SDPDch?

This command selects whether the second dedicated physical data channel (SDPDCH) will be put onto I or Q.

***RST** Q**Key Entry** **Second DPDCH I Q**

:LINK:UP:SETup

Supported E4438C with Option 400

```
[ :SOURCE ] :RADIO:WCDMA:TGPP:ARB:LINK:UP:SETup DPCCH|DDPDCH1|DDPDCH2|
DDPDCH3|DDPDCH4|DDPDCH5| " <file name> "
[ :SOURCE ] :RADIO:WCDMA:TGPP:ARB:LINK:UP:SETup?
```

This command selects a dedicated physical control channel (DPCCH) for uplink with the option to add one or more dedicated physical data channel (DPDCH) or a previously stored setup.

DPCCH	This choice selects 1 dedicated physical control channel.
DDPDCH1	This choice selects 1 dedicated physical control channel and 1 dedicated physical data channel.
DDPDCH2	This choice selects 1 dedicated physical control channel and 2 dedicated physical data channel.
DDPDCH3	This choice selects 1 dedicated physical control channel and 3 dedicated physical data channel.
DDPDCH4	This choice selects 1 dedicated physical control channel and 4 dedicated physical data channel.
DDPDCH5	This choice selects 1 dedicated physical control channel and 5 dedicated physical data channel.

***RST** DPCCH

Key Entry	DPCCH	DPCCH + 1 DPDCH	DPCCH + 2 DPDCH	DPCCH + 3 DPDCH
	DPCCH + 4 DPDCH	DPCCH + 5 DPDCH	Custom WCDMA State	

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

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 [“:LINK:UP:SETup:TABLE:APPLY” on page 360](#).

:LINK:UP:SETup:STORe

Supported E4438C with Option 400

```
[ :SOURCE ] :RADio:WCDMa:TGPP:ARB:LINK:UP:SETup:STORe "<file name>"
```

This command stores the current state into a designated file name.

Key Entry **Store To File**

Remarks You can recall a saved state from signal generator memory (non-volatile) by executing the following commands (using a designated file name):

For downlink, refer to “:LINK:DOWN:SETup” on page 344.

For uplink, refer to “:LINK:UP:SETup” on page 359.

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

:LINK:UP:SETup:TABLE:APPLy

Supported E4438C with Option 400

```
[ :SOURCE ] :RADio:WCDMa:TGPP:ARB:LINK:UP:SETup:TABLE:APPLy
```

This command applies the signal based on the current values in the W-CDMA channel setup table editor.

Key Entry **Apply Channel Setup**

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

:LINK:UP:SETup:TABLE:CHANnel

Supported E4438C with Option 400

```
[ :SOURCE ] :RADio:WCDMa:TGPP:ARB:LINK:UP:SETup:TABLE:CHANnel
INIT|APPend|<chan_num>,<chan_type>,<symbol_rate>,<spread_code>,<power>,<TF
CI>,<TCP>,<RANDOM>|<data_val>,<fbi_bits_count>,<fbi_bits_value>
[ :SOURCE ] :RADio:WCDMa:TGPP:ARB:LINK:UP:SETup:TABLE:CHANnel? <chan_num>
```

This command defines the channel parameters of the signal.

Use INIT to clear the table editor and define the parameters for the first channel; use APPend to add new channels. To edit an existing channel, use its channel number <chan_num>.

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

The channel type, symbol rate, spread code, power, TFCI value, TPC value, data value, FBI bit count, and FBI bit value are returned when a query is initiated. The output format is as follows:

```
<chan_type>, <symbol_rate>, <spread_code>, <power>, <TFCI>, <TCP>, <data_val>,
<fbi_bits_count>, <fbi_bits_value>
```

INIT This choice clears the current information and creates a new one-row table, allowing for further definition using additional parameters.

APPend This choice adds a row to an existing table.

RANDom This choice selects random data format for the digital modulation signal.

<fbi_bits_count> This variable sets the number of feedback information (FBI) bits.

<fbi_bits_value> This variable sets the value of the FBI bits.

```
*RST      <chan_type>: DPCH      <symbol_rate>: +1.50000000E+
          <spread_code>: +0      <power>: +0.00000000E+000      <TFCI>: +0
          <TPC>: #H5555      <data_val>: RAND      <FBI Bits Count: +0
          <FBI Bit Count: +0
```

```
Range   <power>: -40 to 0      <data_val>: 00000000-11111111
          <fbi_bits_count>: 0-2      <fbi_bits_value>: 0-3
```

<symbol_rate>	<spread_rate>
7.5 ksps	0-511
15 ksps	0-255
30 ksps	0-127
60 ksps	0-63
120 ksps	0-31
240 ksps	0-15
480 ksps	0-7
960 ksps	0-3

Key Entry	Channel	Type	Symbol Rate	First Spread Code	Power
	Spread Code		TFCI Field Off On	Scramble Code	Scramble Offset
	Random				

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 [“:LINK:UP:SETup:TABLE:APPLY”](#) on page 360.

:LINK:UP:SETup:TABLE:GUNit**Supported** E4438C with Option 400

```
[ :SOURce ] :RADio:WCDMa:TGPP:ARB:LINK:UP:SETup:TABLE:GUNit DB|LINear|INDex
[ :SOURce ] :RADio:WCDMa:TGPP:ARB:LINK:UP:SETup:TABLE:GUNit?
```

This command selects the uplink power measurement units.

DB The power is set in decibels-exponential.

LINear The power is set to increase linearly.

INDex The power is set at an index level - steps.

***RST** DB

Key Entry **Gain Unit dB Lin Index**

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 “:LINK:UP:SETup:TABLE:APPLY” on page 360.

:LINK:UP:SETup:TABLE:NCHannel**Supported** E4438C with Option 400

```
[ :SOURce ] :RADio:WCDMa:TGPP:ARB:LINK:UP:SETup:TABLE:NCHannels?
```

This command queries the setup table for the number of uplink channels.

***RST** 1

:LINK:UP:TFCI**Supported** E4438C with Option 400

```
[ :SOURce ] :RADio:WCDMa:TGPP:ARB:LINK:UP:TFCI ON|OFF|1|0
[ :SOURce ] :RADio:WCDMa:TGPP:ARB:LINK:UP:TFCI?
```

This command enables or disables the transport format combination indicator (TFCI) field for all channels in the table.

***RST** 1

Key Entry **TFCI Field Off On**

:MDEStination:AAMPlitude**Supported** E4438C with Option 400

```
[ :SOURCE ] :RADio:WCDMa:TGPP:ARB:MDEStination:AAMPlitude NONE | M1 | M2 | M3 | M4
[ :SOURCE ] :RADio:WCDMa:TGPP:ARB:MDEStination:AAMPlitude?
```

This command routes the selected marker to the Alternate Amplitude function. The `NONE` parameter clears the marker to the Alternate Amplitude function.

RST** NONE**Key Entry** **None** **Marker 1** **Marker 2** **Marker 3** **Marker 4*:MDEStination:ALCHold****Supported** E4438C with Option 400

CAUTION Incorrect automatic level control (ALC) sampling can create a sudden unlevelled condition that may create a spike in the RF output potentially damaging a DUT or connected instrument. Ensure that you set markers to let the ALC sample over an amplitude that accounts for the high power levels within the signal.

```
[ :SOURCE ] :RADio:WCDMa:TGPP:ARB:MDEStination:ALCHold NONE | M1 | M2 | M3 | M4
[ :SOURCE ] :RADio:WCDMa:TGPP:ARB:MDEStination:ALCHold?
```

This command enables or disables the marker ALC hold function for the selected marker. For setting markers, see “[:MARKer:\[SET\]](#)” on page 300.

Use the ALC hold function when you have a waveform signal that incorporates idle periods, or when the increased dynamic range encountered with RF blanking is not desired. The ALC leveling circuitry responds to the marker signal during the marker pulse (marker signal high), averaging the modulated signal level during this period.

The ALC hold function operates during the low periods of the marker signal. The marker polarity determines when the marker signal is high. For a positive polarity, this is during the marker points. For a negative polarity, this is when there are no marker points. For setting a marker’s polarity, see “[:MPOlarity:MARKer1|2|3|4](#)” on page 366.

NOTE Do not use the ALC hold for more than 100 ms, because it can affect the waveform’s output amplitude.

The marker signal has a minimum of a two-sample delay in its response relative to the waveform signal response. To compensate for the marker signal delay, offset marker points from the waveform sample point at which you want the ALC sampling to begin.

The ALC hold setting is part of the file header information, so saving the setting to the file header saves the current marker routing for the waveform file.

NOTE A waveform file that has unspecified settings in the file header uses the previous waveform’s routing settings.

For more information on the marker ALC hold function, see the *E4428C/38C ESG Signal Generators User’s Guide*. For setting the marker points, see “:MARKer:[SET]” on page 300.

NONE This terminates the marker ALC hold function.

M1–M4 These are the marker choices. The ALC hold feature uses only one marker at a time.

***RST** NONE

Example

```
:RAD:AWGB:ARB:MDES:ALCH M1
```

The preceding example routes marker 1 to the ALC Hold function.

Key Entry	None	Marker 1	Marker 2	Marker 3	Marker 4
Remarks	N/A				

:MDEStination:PULSe

Supported E4438C with Option 400

CAUTION The pulse function uses the ALC hold. Incorrect automatic level control (ALC) sampling can create a sudden unlevelled condition that may create a spike in the RF output potentially damaging a DUT or connected instrument. Ensure that you set markers to let the ALC sample over an amplitude that accounts for the high power levels within the signal.

```
[ :SOURce ] :RADio:WCDMa:TGPP:ARB:MDEStination:PULSe NONE | M1 | M2 | M3 | M4
[ :SOURce ] :RADio:WCDMa:TGPP:ARB:MDEStination:PULSe?
```

This command enables or disables the marker pulse/RF blanking function for the selected marker.

This function automatically uses the ALC hold function, so there is no need to select both the ALC hold and the pulse/RF blanking for the same marker.

NOTE Do not use ALC hold for more than 100 ms, because it can affect the waveform’s output amplitude.

The signal generator blanks the RF output when the marker signal goes low. The marker polarity determines when the marker signal is low. For a positive polarity, this is during the marker points. For a negative polarity, this is when there are no marker points. For setting a marker’s polarity, see “:MPOLarity:MARKer1|2|3|4” on page 366.

NOTE Set marker points prior to using this function. Enabling this function without setting marker points may create a continuous low or high marker signal, depending on the marker polarity. This causes either no RF output or a continuous RF output. See “:MARKer:[SET]” on page 300 for setting the marker points.

The marker signal has a minimum of a two-sample delay in its response relative to the waveform signal response. To compensate for the marker signal delay, offset marker points from the waveform sample point at which you want the RF blanking to begin. The RF blanking setting is part of the file header information, so saving the setting to the file header saves the current marker routing for the waveform file.

NOTE A waveform file that has unspecified settings in the file header uses the previous waveform’s routing settings. This could create the situation where there is no RF output signal, because the previous waveform used RF blanking.

For more information on the marker RF blanking function, see the *E4428C/38C ESG Signal Generators User’s Guide*.

NONE This terminates the marker RF blanking/pulse function.

M1–M4 These are the marker choices. The RF blanking/pulse feature uses only one marker at a time.

Example

```
:RAD:ARB:MDES:PULS M2
```

The preceding example routes marker 2 to Pulse/RF Blanking.

```
*RST NONE
```

Key Entry	None	Marker 1	Marker 2	Marker 3	Marker 4
-----------	------	----------	----------	----------	----------

:MPOLarity:MARKer1 | 2 | 3 | 4

Supported E4438C with Option 400

```
[ :SOURce ] :RADio:WCDMa:TGPP:ARB:MPOLarity:MARKer1 | 2 | 3 | 4 NEGative | POSitive
[ :SOURce ] :RADio:WCDMa:TGPP:ARB:MPOLarity:MARKer1 | 2 | 3 | 4?
```

This command sets the polarity for the selected marker. For a positive marker polarity, the marker signal is high during the marker points. For a negative marker polarity, the marker signal is high during the period of no marker points.

***RST** POS

Key Entry **Marker 1 Polarity Neg Pos** **Marker 2 Polarity Neg Pos** **Marker 3 Polarity Neg Pos**
Marker 4 Polarity Neg Pos

:REFerence:EXTernal:FREQuency

Supported E4438C with Option 400

```
[ :SOURce ] :RADio:WCDMa:TGPP:ARB:REFerence:EXTernal:FREQuency <val>
[ :SOURce ] :RADio:WCDMa:TGPP:ARB:REFerence:EXTernal:FREQuency?
```

This command sets the external reference frequency.

The variable <val> is expressed in hertz (Hz).

***RST** +1.00000000E+007

Range 2.5E5–1E8

Remarks The value specified by this command is effective only when you are using an external ARB reference applied to the BASEBAND GEN REF IN rear panel connector.

To specify external as the ARB reference source type, refer to
[“:REFerence\[:SOURce\]” on page 366.](#)

:REFerence[:SOURce]

Supported E4438C with Option 400

```
[ :SOURce ] :RADio:WCDMa:TGPP:ARB:REFerence[ :SOURce ] INTernal | EXTernal
[ :SOURce ] :RADio:WCDMa:TGPP:ARB:REFerence[ :SOURce ]?
```

This command selects either an internal or external reference for the waveform clock.

***RST** 0

Key Entry	ARB Reference Ext Int
Remarks	<p>If the EXTERNAL choice is selected, the external frequency value <i>must</i> be entered and the signal must be applied to the BASEBAND GEN REF IN rear panel connector.</p> <p>Refer to “:REFerence:EXTERNAL:FREQUENCY” on page 366 to enter the external reference frequency.</p>

:RETRigger

Supported E4438C with Option 400

```
[ :SOURCE ] :RADio:WCDMa:TGPP:ARB:RETRigger ON | OFF | IMMEDIATE
[ :SOURCE ] :RADio:WCDMa:TGPP:ARB:RETRigger?
```

This command sets the retrigger mode.

ON	This choice specifies that if a trigger occurs while a waveform is initiated, the waveform will retrigger at the end of the previous waveform sequence and play once more.
OFF	This choice specifies that if a trigger occurs while a waveform is initiated, the action will be ignored.
IMMEDIATE	This choice specifies that if a trigger occurs while a waveform is playing, the waveform will reset and replay from the start immediately upon receiving a trigger.
*RST	0

Key Entry **Retrigger Mode Off On**

:REVISION

Supported E4438C with Option 400

```
[ :SOURCE ] :RADio:WCDMa:TGPP:ARB:REVISION?
```

This command checks the 3GPP supported standard for the arbitrary waveform generator firmware.

:SCLock:RATE

Supported E4438C with Option 400

```
[ :SOURce ] :RADio:WCDMa:TGPP:ARB:SCLock:RATE <val>
```

```
[ :SOURce ] :RADio:WCDMa:TGPP:ARB:SCLock:RATE?
```

This command sets the sample clock rate for the W-CDMA modulation format.

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

***RST** +1.00000000E+008

Range 1–1E8

Key Entry **ARB Sample Clock**

Remarks The modulation format should be active before executing this command. If this command is executed before the modulation format is active, the entered value will be overridden by a calculated factory default value. Refer to “[:STATe]” on [page 374](#) to activate the modulation format.

:TRIGger:TYPE

Supported E4438C with Option 400

```
[ :SOURce ] :RADio:WCDMa:TGPP:ARB:TRIGger:TYPE CONTinuous | SINGLE | GATE
```

```
[ :SOURce ] :RADio:WCDMa:TGPP:ARB:TRIGger:TYPE?
```

This command sets the trigger mode (type) that controls the waveform’s playback.

Triggers control the playback by telling the ESG when to play the modulating signal (waveform).

Depending on the trigger settings for the ESG, the waveform playback can occur once, continuously, or the ESG may start and stop playing the waveform repeatedly (GATE mode).

A trigger signal comprises both positive and negative signal transitions (states), which are also called high and low periods. You can configure the ESG to trigger on either state of the trigger signal. It is common to have multiple triggers, also referred to as trigger occurrences or events, occur when the signal generator requires only a single trigger. In this situation, the ESG recognizes the first trigger and ignores the rest.

When you select a trigger mode, you may lose the signal (carrier plus modulating) from the RF output until you trigger the waveform. This is because the ESG sets the I and Q signals to zero volts prior to the first trigger event, which suppresses the carrier. After the first trigger event, the waveform’s final I and Q levels determine whether you will see the carrier signal or not (zero = no carrier, other values = carrier visible). At the end of most files, the final I and Q points are set to a value other than zero.

There are four parts to configuring the trigger:

- Choosing the trigger type, which controls the waveform’s transmission.
- Setting the waveform’s response to triggers:
 - CONTInuous, see “:TRIGger:TYPE:CONTInuous[:TYPE]” on page 370
 - SINGle, see “:RETRigger” on page 367
 - GATE, selecting the mode also sets the response
- Selecting the trigger source (see “:TRIGger[:SOURCE]” on page 371), which determines how the ESG receives its trigger signal, internally or externally. The GATE choice requires an external trigger.
- Setting the trigger polarity when using an external source:
 - CONTInuous and SINGle see “:TRIGger[:SOURCE]:EXTernal:SLOPe” on page 373
 - GATE, see “:TRIGger:TYPE:GATE:ACTive” on page 370

For more information on triggering, see the *E4428C/38C ESG Signal Generators User’s Guide*.

The following list describes the trigger type command choices:

CONTInuous	Upon triggering, the waveform repeats continuously.
SINGle	Upon triggering, the waveform segment or sequence plays once.
GATE	An external trigger signal repeatedly starts and stops the waveform’s playback (transmission). The time duration for playback depends on the duty period of the trigger signal and the gate polarity selection (see “:TRIGger:TYPE:GATE:ACTive” on page 370). The waveform plays during the inactive state and stops during the active polarity selection state. The active state can be set high or low. The gate mode works only with an external trigger source.

NOTE The ARB gating behavior described above is opposite to the gating behavior for real-time custom mode.

*RST	CONT		
Key Entry	Continuous	Single	Gated

:TRIGger:TYPE:CONTInuous[:TYPE]

Supported E4438C with Option 400

```
[ :SOURCE ] :RADio:WCDMa:TGPP:ARB:TRIGger:CONTInuous[ :TYPE ] FREE |
TRIGger | RESet
[ :SOURCE ] :RADio:WCDMa:TGPP:ARB:TRIGger:CONTInuous[ :TYPE ] ?
```

This command selects the waveform's response to a trigger signal while using the continuous trigger mode.

For more information on triggering and to select the continuous trigger mode, see [“:TRIGger:TYPE” on page 368](#).

The following list describes the waveform's response to each of the command choices:

FREE	Turning the ARB format on immediately triggers the waveform. The waveform repeats until you turn the format off, select another trigger, or choose another waveform file.
TRIGger	The waveform waits for a trigger before play begins. When the waveform receives the trigger, it plays continuously until you turn the format off, select another trigger, or choose another waveform file.
RESet	The waveform waits for a trigger before play begins. When the waveform receives the trigger, it plays continuously. Subsequent triggers reset the waveform to the beginning. For a waveform sequence, this means to the beginning of the first segment in the sequence.
*RST	FREE
Key Entry	Free Run Trigger & Run Reset & Run

:TRIGger:TYPE:GATE:ACTive

Supported E4438C with Option 400

```
[ :SOURCE ] :RADio:WCDMa:TGPP:ARB:TRIGger:TYPE:GATE:ACTive LOW | HIGH
[ :SOURCE ] :RADio:WCDMa:TGPP:ARB:TRIGger:TYPE:GATE:ACTive ?
```

This command selects the active state (gate polarity) of the gate while using the gating trigger mode.

The LOW and HIGH selections correspond to the low and high states of an external trigger signal. For example, when you select HIGH, the active state occurs during the high of the trigger signal. When the active state occurs, the ESG stops the waveform playback at the last played sample point, then restarts the playback at the next sample point when the inactive state occurs. For more information on triggering and to select gating as the trigger mode, see [“:TRIGger:TYPE” on page 368](#).

The following list describes the ESG's gating behavior for the polarity selections:

LOW	The waveform playback stops when the trigger signal goes low (active state) and restarts when the trigger signal goes high (inactive state).
HIGH	The waveform playback stops when the trigger signal goes high (active state) and restarts when the trigger signal goes low (inactive state).
*RST	HIGH
Key Entry	Gate Active Low High

:TRIGger[:SOURCE]

Supported E4438C with Option 400

```
[ :SOURCE ] :RADio:WCDMA:TGPP:ARB:TRIGger[ :SOURCE ] KEY|EXT|BUS
[ :SOURCE ] :RADio:WCDMA:TGPP:ARB:TRIGger[ :SOURCE ]?
```

This command sets the trigger source.

For more information on triggering, see “[:TRIGger:TYPE](#)” on page 368. The following list describes the command choices:

KEY	This choice enables manual triggering by pressing the front-panel Trigger hardkey.
EXT	An externally applied signal triggers the waveform. This is the only choice that works with gating. The following conditions affect an external trigger:

- The input connector selected for the trigger signal. You have a choice between the rear-panel PATTERN TRIG IN connector or the PATT TRIG IN 2 pin on the rear-panel AUXILIARY I/O connector. To make the connector selection, see “[:TRIGger\[:SOURCE\]:EXTErnal\[:SOURCE\]](#)” on page 373.

For more information on the connectors and on connecting the cables, see the *E4428C/38C ESG Signal Generators User’s Guide*.

- The trigger signal polarity:
 - gating mode, see “[:TRIGger:TYPE:GATE:ACTive](#)” on page 370
 - continuous and single modes, see “[:TRIGger\[:SOURCE\]:EXTErnal:SLOPe](#)” on page 373
- The time delay between when the ESG receives a trigger and when the waveform responds to the trigger. There are two parts to setting the delay:
 - setting the amount of delay, see “[:TRIGger\[:SOURCE\]:EXTErnal:DELAy](#)” on page 372
 - turning the delay on, see “[:TRIGger\[:SOURCE\]:EXTErnal:DELAy:STATe](#)” on page 372

Wideband CDMA ARB Subsystem—Option 400 ([:SOURce]:RADio:WCDMa:TGPP:ARB)

BUS This choice enables triggering over the GPIB or LAN using the *TRG or GET commands or the AUXILIARY INTERFACE (RS-232) using the *TRG command.

Key Entry **Trigger Key** **Bus** **Ext**

:TRIGger[:SOURce]:EXTernal:DELay

Supported E4438C with Option 400

```
[ :SOURce ] :RADio:WCDMa:TGPP:ARB:TRIGger [ :SOURce ] :EXTernal:DELay <val>
[ :SOURce ] :RADio:WCDMa:TGPP:ARB:TRIGger [ :SOURce ] :EXTernal:DELay?
```

This command sets the amount of time to delay the ESG's response to an external trigger.

The delay is a path (time) delay between when the ESG receives the trigger and when it responds to the trigger. For example, configuring a trigger delay of two seconds, causes the ESG to wait two seconds after receipt of the trigger before the ESG plays the waveform.

The delay does not occur until you turn it on (see “[:TRIGger\[:SOURce\]:EXTernal:DELay:STATe](#)” on [page 372](#)). You can set the delay value either before or after turning it on.

For more information on configuring an external trigger source and to select external as the trigger source, see “[:TRIGger\[:SOURce\]](#)” on [page 371](#).

The unit of measurement for the variable <val> is in seconds (nsec–sec).

***RST** +1.00000000E–003

Range 1E–8 to 4E1

Key Entry **Ext Delay Time**

Remarks This command is effective only if an external trigger is selected as the trigger source. Refer to “[:TRIGger\[:SOURce\]](#)” on [page 371](#).

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

Supported E4438C with Option 400

```
[ :SOURce ] :RADio:WCDMa:TGPP:ARB:TRIGger [ :SOURce ] :EXTernal:DELay:
STATe ON|OFF|1|0
[ :SOURce ] :RADio:WCDMa:TGPP:ARB:TRIGger [ :SOURce ] :EXTernal:DELay:STATe?
```

This command enables or disables the arbitrary waveform generator's external trigger delay.

For setting the delay time, see “:TRIGger[:SOURCE]:EXternal:DELay” on page 372, and for more information on configuring an external source, see “:TRIGger[:SOURCE]” on page 371.

*RST 0

Key Entry Ext Delay Off On

:TRIGger[:SOURCE]:EXternal:SLOPe

Supported E4438C with Option 400

```
[ :SOURCE ] :RADio:WCDMa:TGPP:ARB:TRIGger[ :SOURCE ] :EXternal:
SLOPe POSitive|NEGative
```

```
[ :SOURCE ] :RADio:WCDMa:TGPP:ARB:TRIGger[ :SOURCE ] :EXternal:SLOPe?
```

This command sets the polarity for an external trigger signal while using the continuous, single triggering mode. To set the polarity for gating, see “:TRIGger:TYPE:GATE:ACTive” on page 370.

The POSitive and NEGative selections correspond to the high (positive) and low (negative) states of the external trigger signal. For example, when you select POSitive, the waveform responds (plays) during the high state of the trigger signal. When the ESG receives multiple trigger occurrences when only one is required, the signal generator uses the first trigger and ignores the rest.

For more information on configuring an external trigger source and to select external as the trigger source, see “:TRIGger[:SOURCE]” on page 371.

*RST NEG

Key Entry Ext Polarity Neg Pos

:TRIGger[:SOURCE]:EXternal[:SOURCE]

Supported E4438C with Option 400

```
[ :SOURCE ] :RADio:WCDMa:TGPP:ARB:TRIGger[ :SOURCE ] :EXternal
```

```
[ :SOURCE ] EPT1|EPT2|EPTRIGGER1|EPTRIGGER2
```

```
[ :SOURCE ] :RADio:WCDMa:TGPP:ARB:TRIGger[ :SOURCE ] :EXternal[ :SOURCE ]?
```

This command selects which PATTERN TRIG IN connection the ESG uses to accept an externally applied trigger signal when external is the trigger source selection.

For more information on configuring an external trigger source and to select external as the trigger source, see “:TRIGger[:SOURCE]” on page 371. For more information on the rear-panel connectors, see the *E4428C/38C ESG Signal Generators User’s Guide*.

The following list describes the command choices:

EPT1 This choice is synonymous with EPTRIGGER1 and selects the PATTERN TRIG IN rear-panel connector.

Wideband CDMA ARB Subsystem—Option 400 ([:SOURce]:RADio:WCDMa:TGPP:ARB)

EPT2	This choice is synonymous with EPTRIGGER2 and selects the PATT TRIG IN 2 pin on the rear-panel AUXILIARY I/O connector.			
EPTRIGGER1	This choice is synonymous with EPT1 and selects the PATTERN TRIG IN rear-panel connector.			
EPTRIGGER2	This choice is synonymous with EPT2 and selects the PATT TRIG IN 2 pin on the rear-panel AUXILIARY I/O connector.			
*RST	EPT1			
Choices	EPT1	EPT2	EPTRIGGER1	EPTRIGGER2

[:STATe]

Supported E4438C with Option 400

[:SOURce] :RADio :WCDMa :TGPP :ARB [:STATe] ON | OFF | 1 | 0

[:SOURce] :RADio :WCDMa :TGPP :ARB [:STATe] ?

This command enables or disables the W-CDMA modulation format.

ON (1) This choice enables the W-CDMA modulation capability and sets up the internal hardware to generate the currently selected W-CDMA signal selection.

OFF (0) This choice disables the W-CDMA baseband signal capability.

*RST 0

Key Entry **W-CDMA Off On**

Remarks This choice also activates the I/Q state and sets the I/Q source to internal.

Symbols

of Blocks field, 969
 # of Carriers softkey, 281, 283
 # Points softkey, 56
 # Skipped Points softkey, 300
 ΦM Dev, 195
 ΦM Dev Couple Off On, 195
 FM ΦM Normal High BW, 190
 ΦM Off On, 194
 ΦM Path 1 2, 189
 ΦM Stop Rate, 192
 ΦM Sweep Time, 193
 ΦM Tone 2 Ampl Percent of Peak, 192

Numerics

0.7V,1.4V,1.65V,2.5V softkey, 417
 1 DPCH softkey, 344, 349
 1.23 MHz softkey, 261
 1.25 MHz softkey, 261
 1/2 Conv softkey, 966, 968, 1063
 1/3 Conv softkey, 966, 968, 1063
 10 msec softkey, 994
 1048576 softkey, 210
 10ms Frame Pulse (DRPS11) softkey, 948, 950, 951, 952, 953
 10ms Frame Pulse (RPS6) softkey
 See wideband CDMA base band generator
 subsystem keys and fields
 12.2 kbps (34.121) softkey, 931
 128QAM softkey
 See custom subsystem keys
 See DECT subsystem keys
 See Dmodulation subsystem keys
 See EDGE subsystem keys
 See GSM subsystem keys
 See NADC subsystem keys
 See PDC subsystem keys
 See PHS subsystem keys
 See TETRA subsystem keys
 131072 softkey, 210
 144 kbps (34.121) softkey, 931
 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, 210
 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, 345
 2 SR3 Carriers softkey, 246
 2.100 MHz softkey, 31, 206, 220, 244, 273, 297, 326, 342, 469
 20 msec softkey, 994
 2560 msec softkey, 994
 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

Index

- See* TETRA subsystem keys
- 262144 softkey, [210](#)
- 2-Lvl FSK softkey
 - See* custom subsystem keys
 - See* DECT subsystem keys
 - See* Dmodulation subsystem keys
 - See* EDGE subsystem keys
 - See* GSM subsystem keys
 - See* NADC subsystem keys
 - See* PDC subsystem keys
 - See* PHS subsystem keys
 - See* TETRA subsystem keys
- 2nd Scr Offset field, [932](#), [939](#)
- 3 Carriers softkey, [228](#), [246](#), [345](#)
- 3 DPCH softkey, [344](#), [349](#)
- 3.84MHz chip-clk (DRPS4) softkey, [948](#), [950](#), [951](#), [952](#), [953](#)
- 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, [226](#), [229](#)
- 32768 softkey, [210](#)
- 32QAM softkey
 - See* custom subsystem keys
 - See* DECT subsystem keys
 - See* Dmodulation subsystem keys
 - See* EDGE subsystem keys
 - See* GSM subsystem keys
 - See* NADC subsystem keys
 - See* PDC subsystem keys
 - See* PHS subsystem keys
 - See* TETRA subsystem keys
- 384 kbps (34.121) softkey, [931](#)
- 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, [228](#), [246](#), [345](#)
- 40 msec softkey, [994](#)
- 40.000 MHz softkey, [31](#), [203](#), [206](#), [215](#), [220](#), [239](#), [244](#), [268](#), [273](#), [296](#), [297](#), [324](#), [326](#), [340](#), [342](#), [462](#), [469](#)
- 4-Lvl FSK softkey
 - See* custom subsystem keys
 - See* DECT subsystem keys
 - See* Dmodulation subsystem keys
 - See* EDGE subsystem keys
 - See* GSM subsystem keys
 - See* NADC subsystem keys
 - See* PDC subsystem keys
 - See* PHS subsystem keys
 - See* TETRA subsystem keys
- 4QAM softkey
 - See* custom subsystem keys
 - See* DECT subsystem keys
 - See* Dmodulation subsystem keys
 - See* EDGE subsystem keys
 - See* GSM subsystem keys
 - See* NADC subsystem keys
 - See* PDC subsystem keys
 - See* PHS subsystem keys
 - See* TETRA subsystem keys
- 5 Channel softkey, [252](#)
- 524288 softkeys, [210](#)
- 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, [226](#), [229](#)
- 64 kbps (34.121) softkey, [931](#)
- 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, [210](#)
 8 1's & 8 0's softkey
 See custom subsystem keys
 See DECT subsystem keys
 See EDGE subsystem keys
 See GSM subsystem keys
 See NADC subsystem keys
 See PDC subsystem keys
 See PHS subsystem keys
 See TETRA subsystem keys
 8 Bit Pattern softkey, [461](#)
 8 Channel softkey, [252](#)
 80 msec softkey, [994](#)
 80ms Frame Pulse (DRPS13) softkey, [948](#), [950](#),
 [951](#), [952](#), [953](#)
 80ms Frame Pulse (RPS20) softkey
 See wideband CDMA base band generator
 subsystem keys and fields
 8648A/B/C/D softkey, [154](#), [156](#)
 8656B,8657A/B softkey, [154](#), [156](#)
 8657D NADC softkey, [154](#), [156](#)
 8657D PDC softkey, [154](#), [156](#)
 8657J PHS softkey, [154](#), [156](#)
 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, [226](#), [229](#)
 9 Channel softkey, [245](#)

A

A field softkey
 See DECT subsystem keys
 A softkey, [923](#)
 abort list/step sweep, [164](#)
 Access denied, [114](#)
 Access softkey, [700](#)
 ACS softkey, [962](#)
 Activate Secure Display softkey, [158](#)
 Active softkey, [959](#)
 Actual BER softkey, [1072](#)
 Actual BLER field, [1066](#), [1074](#)
 Add Comment To Seq[n] Reg[nn] softkey, [121](#)
 Adjust Gain softkey, [433](#)
 Adjust Phase softkey, [46](#)
 AICH softkey, [1030](#)
 AICH Trigger Polarity Pos Neg softkey, [1003](#)
 ALC
 BW
 100 Hz, 1 kHz, 10 kHz, [57](#)
 Auto, [57](#), [58](#)
 Off,On, [57](#), [58](#)
 ALC BW Normal Narrow, [22](#)
 ALC BW Setting
 Auto, [57](#), [58](#)
 alc hold markers
 awgn subsystem, [207](#)
 cdma subsystem, [221](#)
 cdma2000 arb subsystem, [255](#)
 dmodulation subsystem, [274](#)
 dual arb subsystem, [303](#)
 multitone subsystem, [327](#), [328](#)
 wideband CDMA ARB subsystem, [363](#)
 wideband CDMA ARB subsystem, [363](#)
 ALC level, [59](#)
 ALC Off On softkey, [61](#)
 All Down softkey, [934](#), [984](#)
 All softkey, [102](#), [120](#)
 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

Index

- See* TETRA subsystem keys
- All Up softkey, [934](#), [984](#)
- Alt Amp Delta softkey, [62](#)
- Alt Ampl Off On softkey, [63](#)
- Alt power in field, [1044](#)
- alternate amplitude markers
 - awgn arb subsystem, [207](#)
 - cdma subsystem, [220](#)
 - cdma2000 arb subsystem, [255](#)
 - dmodulation subsystem, [274](#)
 - dual arb subsystem, [303](#)
 - multitone arb subsystem, [326](#)
 - multitone subsystem, [326](#)
 - wideband CDMA ARB subsystem, [363](#)
- AM softkeys
 - AM Depth, [175](#)
 - AM Depth Couple Off On, [176](#)
 - AM Off On, [175](#)
 - AM Off On softkey, [171](#)
 - AM Path 1 2, [170](#)
 - AM Stop Rate, [172](#)
 - AM Sweep Rate, [173](#)
 - AM Tone 2 Ampl Percent Of Peak, [173](#)
 - AM Tone 2 Rate, [172](#)
- AM wideband, [171](#)
- AM_ADDR softkey, [460](#)
- Ampl softkeys
 - Ampl, [48](#), [65](#)
 - Ampl Offset, [67](#)
 - Ampl Ref Off On, [66](#)
 - Ampl Ref Set, [65](#)
 - Ampl Start, [48](#), [66](#)
 - Ampl Stop, [48](#), [67](#)
- Amplitude hardkey, [65](#), [68](#)
- amplitude modulation subsystem keys
 - AM Depth, [175](#)
 - AM Depth Couple Off On, [176](#)
 - AM Off On, [171](#), [175](#)
 - AM Path 1 2, [170](#)
 - AM Stop Rate, [172](#)
 - AM Sweep Rate, [173](#)
 - AM Tone 2 Ampl Percent Of Peak, [173](#)
 - AM Tone 2 Rate, [172](#)
 - Bus, [174](#)
 - Dual-Sine, [173](#)
 - Ext, [174](#)
 - Ext Coupling DC AC, [171](#)
 - Ext1, [174](#)
 - Ext2, [174](#)
 - Free Run softkey, [174](#)
 - Incr Set, [170](#), [176](#)
 - Internal, [174](#)
 - Noise, [173](#)
 - Ramp, [173](#)
 - Sine, [173](#)
 - Square, [173](#)
 - Swept-Sine, [173](#)
 - Triangle, [173](#)
 - Trigger Key, [174](#)
- amplitude step, [68](#)
- AMR 12.2 kbps softkey, [931](#), [1037](#)
- 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, [280](#), [281](#), [282](#)
- APCO 25 w/C4QPSK softkey, [280](#), [281](#), [282](#)
- APCO 25 w/CQPSK softkey, [563](#)
- Apply Channel Setup softkey, [249](#), [253](#), [352](#), [360](#), [919](#), [973](#)
- Apply to Waveform softkey, [298](#), [300](#)
- Arb AWGN Off On softkey, [212](#)
- ARB Off On softkey, [322](#)
- 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, [211](#), [226](#), [260](#), [280](#),
 [311](#), [332](#), [368](#), [474](#)
 arbitrary waveform
 runtime scaling, [310](#)
 scaling files, [310](#)
 Atten Hold Off On softkey, [64](#)
 Auto softkey, [57](#), [58](#)
 automatic leveling control, [61](#)
 Aux I/O Trigger Polarity Pos Neg softkey, [456](#)
 Aux softkey
 See sense subsystem keys
 Auxiliary Software Options softkey, [80](#)
 AWGN Off On softkey, [464](#)
 AWGN subsystem keys
 1048576, [210](#)
 131072, [210](#)
 16384, [210](#)
 2.100 MHz, [206](#)
 262144, [210](#)
 32768, [210](#)
 40.000 MHz, [203](#), [206](#)
 524288, [210](#)
 65536, [210](#)
 Arb AWGN Off On, [212](#)
 ARB Reference Ext Int, [211](#)
 ARB Sample Clock, [211](#)
 Bandwidth, [203](#)
 Clear Header, [204](#)
 I/Q Mod Filter Manual Auto, [206](#)
 I/Q Output Filter Manual Auto, [204](#)
 Marker 1, [207](#), [208](#)
 Marker 1 Polarity Neg Pos, [210](#)
 Marker 2, [207](#), [208](#)
 Marker 2 Polarity Neg Pos, [210](#)
 Marker 3, [207](#), [208](#)
 Marker 3 Polarity Neg Pos, [210](#)
 Marker 4, [207](#), [208](#)
 Marker 4 Polarity Neg Pos, [210](#)
 Modulator Atten Manual Auto, [205](#)
 Noise Seed Fixed Random, [212](#)

None, [207](#), [208](#)
 Reference Freq, [210](#)
 Save Setup To Header, [204](#)
 Through, [203](#), [206](#)
 Waveform Length, [210](#)

B

B softkey, [897](#), [902](#), [923](#)
 B1 softkey, [895](#), [900](#)
 B2 softkey, [895](#), [900](#)
 Bandwidth softkey, [203](#), [459](#)
 Base Delay Tp-a softkey, [1026](#)
 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, [476](#)
 BBG Ref Ext Int softkey
 See custom subsystem keys
 See DECT subsystem keys
 See EDGE subsystem keys
 See GSM subsystem keys
 See NADC subsystem keys
 See PDC subsystem keys
 See PHS subsystem keys
 See TETRA subsystem keys
 BBG1 softkey, [24](#), [34](#)
 BD_ADDR softkey, [460](#)
 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
 See TETRA subsystem keys
 Begin Frame softkey
 See DECT subsystem keys
 See EDGE subsystem keys

Index

- 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, [403](#)
- BER field, [1066](#), [1074](#)
- BER Mode Off On softkey
 - See* sense subsystem keys
- BER softkey, [1068](#), [1076](#)
- BERT Off On softkey, [453](#)
- BERT Resync Off On softkey, [453](#)
- Beta field, [977](#), [987](#)
- Binary softkey, [92](#), [122](#)
- binary values, [18](#)
- Bit Count softkey
 - See* sense subsystem keys
- Bit Delay Off On softkey, [455](#)
- Bit Order softkey, [380](#)
- Bit Rate field
 - See* CDMA2000 BBG subsystem keys and fields
- Bit softkey, [92](#)
- BLER field, [1067](#), [1075](#)
- BLER softkey, [1068](#), [1076](#)
- Blk Set Size field, [965](#)
- Blk Size field, [964](#), [1062](#), [1071](#)
- Block Count softkey
 - See* calculate subsystem keys
 - See* sense subsystem keys
- Block Erasure softkey
 - See* sense subsystem keys
- Blocking softkey, [962](#)
- Bluetooth Off On softkey, [474](#)
- Bluetooth softkey, [563](#)
- bluetooth subsystem keys
 - 2.100 MHz, [469](#)
 - 40.000 MHz, [462](#), [469](#)
 - 8 Bit Pattern, [461](#)
 - AM_ADDR, [460](#)
 - ARB Reference Ext Int, [473](#)
 - ARB Sample Clock, [474](#)
 - AWGN Off On, [464](#)
 - BD_ADDR, [460](#)
 - Bluetooth Off On, [474](#)
 - Burst Off On, [460](#)
 - Burst Power Ramp, [474](#)
 - C/N[1 MHz], [464](#)
 - Clear Header, [463](#)
 - Clock/Gate Delay, [461](#)
 - Continuous PN9, [461](#)
 - Drift Deviation, [465](#)
 - Freq Drift Type Linear Sine, [466](#)
 - Freq Offset, [466](#)
 - I/Q Mod Filter Manual Auto, [470](#)
 - I/Q Output Filter Manual Auto, [462](#)
 - Impairments Off On, [463](#)
 - Marker 1, [470](#), [471](#)
 - Marker 1 Polarity Neg Pos, [471](#)
 - Marker 2, [470](#), [471](#)
 - Marker 2 Polarity Neg Pos, [472](#)
 - Marker 3, [470](#), [471](#)
 - Marker 3 Polarity Neg Pos, [472](#)
 - Marker 4, [470](#), [471](#)
 - Marker 4 Polarity Neg Pos, [472](#)
 - Mod Index, [467](#)
 - Modulator Atten Manual Auto, [468](#), [469](#)
 - Noise Seed, [465](#)
 - None, [470](#), [471](#)
 - Packet (DH1), [472](#)
 - Reference Freq, [473](#)
 - Save Setup To Header, [463](#)
 - Symbol Timing Err, [468](#)
 - Through, [462](#), [469](#)
 - Truncated PN9, [461](#)
- boolean SCPI parameters, [10](#)
- boolean, numeric response data, [11](#)
- BPSK softkey
 - See* custom subsystem keys
 - See* DECT subsystem keys
 - See* Dmodulation subsystem keys
 - See* EDGE subsystem keys
 - See* GSM subsystem keys

- See* NADC subsystem keys
 - See* PDC subsystem keys
 - See* PHS subsystem keys
 - See* TETRA subsystem keys
 - Brightness softkey, 84
 - Build New Waveform Sequence softkey, 311
 - burst
 - shape, 113
 - Burst Envelope Int Ext Off softkey, 22
 - Burst gate in field, 1044
 - Burst Gate In Polarity Neg Pos softkey, 128, 129
 - Burst Off On softkey, 460
 - Burst Power Ramp softkey, 474
 - Bus softkey
 - list trigger source, 53
 - See* amplitude modulation subsystem keys
 - See* CDMA ARB subsystem keys
 - See* CDMA2000 ARB subsystem keys
 - See* DECT subsystem keys
 - See* Dmodulation subsystem keys
 - See* dual ARB subsystem keys
 - See* EDGE subsystem keys
 - See* frequency modulation subsystem keys
 - See* GSM subsystem keys
 - See* low frequency output subsystem keys
 - See* NADC subsystem keys
 - See* PDC subsystem keys
 - See* phase modulation subsystem keys
 - See* PHS subsystem keys
 - See* sense subsystem keys
 - See* TETRA subsystem keys
 - See* trigger subsystem keys
 - See* wideband CDMA ARB subsystem keys
- C**
- C Power field, 974, 1004
 - C/N softkey, 501, 513
 - C/N value field, 919, 973, 1003
 - C/N[1 MHz] softkey, 464
 - C4FM softkey, 860
 - calculate subsystem keys
 - BER Display % Exp, 403
 - Block Count, 421
 - Class II RBER, 400, 401
 - Class 1b RBER, 400, 401
 - Cycle End, 401
 - Error Rate, 394, 395, 396, 397, 398, 399
 - Exceeds Any Limit, 401
 - Fail Hold, 401
 - Frame Erasure, 400, 401
 - No Limits, 395, 398, 399, 401
 - Pass/Fail Limits, 402
 - Pass/Fail Off On, 402
 - Update Display Cycle End Cont, 403
 - calibration subsystem keys
 - DCFM/DCΦM Cal, 70
 - Execute Cal, 70, 71
 - I/Q Calibration, 70
 - Revert to Default Cal Settings, 71
 - Start Frequency, 72
 - Stop Frequency, 72
 - Carrier Bandwidth softkey, 307
 - Carrier Phases Fixed Random softkey, 281
 - Carrier to Noise Ratio softkey, 307
 - CC softkey, 824, 828, 830
 - CDL softkey, 792
 - CDMA ARB subsystem keys
 - 2.100 MHz, 220
 - 3 Carriers, 228
 - 32 Ch Fwd, 226, 229
 - 4 Carriers, 228
 - 40.000 MHz, 215, 220
 - 64 Ch Fwd, 226, 229
 - 9 Ch Fwd, 226, 229
 - APCO 25 C4FM, 216
 - ARB Reference Ext Int, 225
 - ARB Sample Clock, 226
 - Bus, 233
 - CDMA Off On, 237
 - Chip Rate, 214
 - Clear Header, 218
 - Clip |I+jQ| To, 214
 - Clip |I| To, 213
 - Clip |Q| To, 213
 - Clip At PRE POST FIR Filter, 213
 - Clipping Type |I+jQ| |I|,|Q|, 214
 - Continuous, 231, 261
 - CPICH, 353
 - Custom CDMA Multicarrier, 228
 - Custom CDMA State, 226, 229

Index

Equal Powers, 227
Ext, 233
Ext Delay Off On, 235
Ext Delay Time, 234
Ext Polarity Neg Pos, 235
Filter Alpha, 217
Filter BbT, 217
Free Run, 232
Gate Active Low High, 233
Gated, 231, 261
Gaussian, 216
I/Q Mapping Normal Invert, 219
I/Q Mod Filter Manual Auto, 220
I/Q Output Filter Manual Auto, 215
Immediate, 225
IS-2000 SR3 DS, 216
IS-95, 216
IS-95 Mod, 216
IS-95 Mod w/EQ, 216
IS-95 w/EQ, 216
IS-97 Levels, 227
Marker 1, 220, 221, 222
Marker 1 Polarity Neg Pos, 224
Marker 2, 220, 221, 222
Marker 2 Polarity Neg Pos, 224
Marker 3, 220, 221, 222
Marker 3 Polarity Neg Pos, 224
Marker 4, 220, 221, 222
Marker 4 Polarity Neg Pos, 224
Modulator Atten Manual Auto, 219
Multicarrier Off On, 226
None, 220, 221, 222
Nyquist, 216
Off, 225
On, 225
Optimize FIR For EVM ACP, 218
Oversample Ratio, 224
Paging, 227
Patt Trig In 1, 236
Patt Trig In 2, 236
Pilot, 226, 227, 229
Rectangle, 216
Reference Freq, 224
Reset & Run, 232
Reverse, 226
Root Nyquist, 216
Save Setup To Header, 218
Scale to 0dB, 227
Single, 231, 261
Store Custom CDMA State, 230
Store Custom Multicarrier, 229
Sync, 227
Through, 215, 220
Traffic, 227
Trigger & Run, 232
Trigger Key, 233
UN3/4 GSM Gaussian, 216
User FIR, 216
Waveform Length, 236
WCDMA, 216
CDMA Freq field, 495
CDMA Off On softkey, 237
CDMA softkey, 93
CDMA2000 ARB subsystem keys
 1.23 MHz, 261
 1.25 MHz, 261
 2 SR3 Carriers, 246
 2.100 MHz, 244
 3 Carriers, 246
 4 Carriers, 246
 40.000 MHz, 239, 244
 5 Channel, 252
 8 Channel, 252
 9 Channel, 245
 APCO 25 C4FM, 240
 Apply Channel Setup, 249, 253
 ARB Reference Ext Int, 258
 ARB Sample Clock, 260
 Bus, 264
 CDMA2000 Off On, 267
 Clear Header, 243
 Clip $|I+jQ|$ To, 239
 Clip $|I|$ To, 238
 Clip $|Q|$ To, 238
 Clip At PRE POST FIR Filter, 238
 Clipping Type $|I+jQ| |I|,|Q|$, 239
 Config, 250, 253
 Continuous, 261
 Custom CDMA2000 Carrier, 245, 247
 Custom CDMA2000 Multicarrier, 246

- Custom CDMA2000 State, 252
- Edit Channel Setup, 250, 253
- Equal Powers, 251, 254
- Ext, 264
- Ext Delay Off On, 266
- Ext Delay Time, 265
- Ext Polarity Neg Pos, 266
- Filter Alpha, 241
- Filter BbT, 242
- Free Run, 263
- Gate Active Low High, 264
- Gated, 261
- Gaussian, 240
- I/Q Mapping Normal Invert, 245
- I/Q Mod Filter Manual Auto, 244
- I/Q Output Filter Manual Auto, 240
- Immediate, 259
- Insert Row, 250, 253
- IS-2000 SR3 DS, 240
- IS-95, 240
- IS-95 Mod, 240
- IS-95 Mod w/EQ, 240
- IS-95 w/EQ, 240
- Link Forward Reverse, 245
- Marker 1, 255, 256
- Marker 1 Polarity Neg Pos, 258
- Marker 2, 255, 256
- Marker 2 Polarity Neg Pos, 258
- Marker 3, 255, 256
- Marker 3 Polarity Neg Pos, 258
- Marker 4, 255, 256
- Marker 4 Polarity Neg Pos, 258
- Modulator Atten Manual Auto, 243, 244
- Multicarrier Off On, 245
- None, 255, 256
- Nyquist, 240
- Off, 259
- On, 259
- Optimize FIR For EVM ACP, 242
- Patt Trig In 1, 267
- Patt Trig In 2, 267
- Pilot, 245, 252
- PN Offset, 250, 253
- Radio Config, 251
- Rate, 250, 253
- Rectangle, 240
- Reference Freq, 258
- Reset & Run, 263
- Root Nyquist, 240
- Save Setup To Header, 243
- Scale to 0dB, 251, 254
- Single, 261
- Spread Rate 1, 245, 252, 260
- Spread Rate 3, 245, 252, 260
- Spreading Type Direct Mcarrier, 245, 261
- SR1 9 Channel, 247
- SR1 Pilot, 247
- SR3 Direct 9 Channel, 247
- SR3 Direct Pilot, 247
- SR3 Mcarrier 9 Channel, 247
- SR3 MCarrier Pilot, 247
- Store Custom CDMA State, 249, 252
- Store Custom Multicarrier, 247
- Through, 239, 244
- Trigger & Run, 263
- Trigger Key, 264
- UN3/4 GSM Gaussian, 240
- User FIR, 240
- Walsh Code, 250, 253
- WCDMA, 240
- CDMA2000 BBG subsystem keys and fields
 - APCO 25 C4FM, 477, 510
 - BBG Data Clock, 476
 - Bit Rate, 484, 488, 493, 507, 517, 519, 523, 528, 533, 537, 540
 - C/N, 501, 513
 - CDMA Freq, 495
 - CDMA2000 Off On, 543
 - Change, 505
 - Chip Rate, 476, 509
 - DAYLT, 495
 - EbNo, 480, 485, 491, 496, 502, 505, 515, 521, 523, 527, 532, 535, 538
 - EcNo, 489, 524, 529
 - Equal Powers, 504, 513
 - Even Second Delay, 476, 509
 - Ext, 479, 490, 518
 - Ext CDMA Freq, 496
 - External, 508
 - Falling, 543

Index

- Field 1, 486
- Field 2, 486
- Field 3, 487
- Filter Alpha, 478, 511
- Filter BbT, 478, 481, 511
- FIX4, 479, 480, 490, 514, 515, 518, 520, 521, 526, 531, 535, 538
- Frame Length, 516, 518, 522, 532, 536, 539
- Frame Offset, 491, 516, 519, 522, 527, 532, 536, 539
- FSYNCH Type, 500
- Full, 525, 530
- Gaussian, 477, 510
- Half, 525, 530
- Header, 482, 492
- Internal, 508
- Inverted, 513
- IS-95, 477, 510
- IS-95 MOD, 510
- IS-95 Mod, 477
- IS-95 MOD w/EQ, 510
- IS-95 Mod w/EQ, 477
- IS-95 w/EQ, 477, 510
- Leap Seconds, 497
- Link Forward Reverse, 475
- Long Code Mask, 512
- Long Code State, 479, 512
- LTM OFF, 497
- Message Type, 498
- Network ID, 498
- Noise Off On, 502, 514
- Normal, 513
- Nyquist, 477, 510
- Optimize FIR For EVM ACP, 478, 512
- P Rev, 499
- P Rev Min, 497
- Paging Indicator, 506
- Permuted ESN, 482, 492
- Phase Polarity, 505
- PN Offset, 508
- PN15, 479, 490, 514, 518, 520, 526, 531, 534, 538
- PN9, 479, 490, 514, 518, 520, 526, 531, 534, 538
- Power, 482, 487, 489, 493, 498, 503, 506, 516, 519, 522, 525, 528, 530, 533, 536, 540
- PRAT, 499
- QOF, 483, 493
- Quarter, 525, 530
- Radio Config, 484, 494, 517, 520, 528, 533, 537, 540
- RadioConfig 1/2 Access, 475
- RadioConfig 1/2 Traffic, 475
- RadioConfig 3/4 Common Control, 475
- RadioConfig 3/4 Enhanced Access, 475
- RadioConfig 3/4 Traffic, 475
- Ramp, 483
- Ramp Time, 483
- Rectangle, 477, 510
- Reserved, 499
- Rising, 543
- Root Nyquist, 477, 510
- Scale to 0dB, 504, 513
- Spread Rate, 507
- State, 488, 490, 495, 501, 504, 507, 517, 520, 524, 526, 529, 531, 534, 537, 541
- State field, 485
- System ID, 500
- Time, 500
- Trigger Advance, 542
- Turbo Coding, 494, 541
- UN3/4 GSM Gaussian, 477, 510
- User File, 479, 485, 490, 514, 518, 520, 526, 531, 534, 538
- User FIR, 477, 510
- Walsh, 488, 494, 501, 504, 507, 523, 525, 529, 530, 534, 537, 541
- Walsh field, 484
- CDMA2000 Off On softkey, 267, 543
- CDPD softkey, 280, 281, 282, 563
- CDVCC softkey, 792, 795
- CFN #0 Frame Pulse (RPS10) softkey
 - See* wideband CDMA base band generator subsystem keys and fields
- Chan Code field, 929, 938
- Chan Code softkey, 928
- Change field, 505
- Channel Code field, 988, 1031
 - See* wideband CDMA base band generator subsystem keys and fields
- Channel Number softkey, 39
- Channel softkey, 352, 360

- Channel State field, 987, 994
- Channel State Off On softkey, 1006
 - See wideband CDMA base band generator subsystem keys and fields
- ChCode Ctl field, 1019
- ChCode Dat field, 1020
- Chip Clock (RPS1) softkey
 - See wideband CDMA base band generator subsystem keys and fields
- Chip Rate field, 476, 509, 928, 977
- Chip Rate softkey, 214, 338
- Class Ib Bit Error softkey, 447, 448
- Class II Bit Error softkey, 448
- Class II RBER softkey, 400, 401
- Class Ib RBER softkey, 400, 401
- Clear Header softkey, 204, 218, 243, 271, 293, 323, 340, 463
- clearing markers, 298
- Clip |I+jQ| To softkey, 214, 239
- Clip |I| To softkey, 213, 238, 336, 346
- Clip |Q| To softkey, 213, 238, 336, 347
- Clip At PRE POST FIR Filter, 213
- Clip At PRE POST FIR Filter softkey, 238, 336
- Clip Type |I+jQ| To softkey, 337, 347
- Clipping Type |I+jQ| |I|,|Q| softkey, 214, 239, 292, 337, 347
- Clock Delay Off On softkey, 415
- Clock Per Sample softkey, 376
- Clock Phase softkey, 376
- Clock Polarity Neg Pos softkey, 416
- Clock Polarity softkey, 377
- Clock Rate softkey, 378
- Clock Skew softkey, 379
- Clock Source softkey, 379
- Clock Time Delay softkey, 415
- Clock/Gate Delay softkey, 461
- command tree, SCPI, 6, 7
- Common Mode I/Q Offset softkey, 25
- communication subsystem keys
 - Default Gateway, 74
 - GPIB Address, 73
 - Hostname, 74
 - IP Address, 74
 - LAN Config, 73
 - Meter Address, 75
 - Meter Channel A B, 75
 - Meter Timeout, 76
 - Power Meter, 76
 - Reset RS-232, 77
 - RS-232 Baud Rate, 77
 - RS-232 ECHO Off On, 77
 - RS-232 Timeout, 78
 - Subnet Mask, 75
- Comp Mode Start Trigger Polarity Neg Pos softkey, 1060
- Comp Mode Start Trigger Polarity Pos Neg softkey, 960, 961
- Comp Mode Stop Trigger Polarity Neg Pos softkey, 1060
- Comp Mode Stop Trigger Polarity Pos Neg softkey, 961
- Compressed Frame (RPS8) softkey
 - See wideband CDMA base band generator subsystem keys and fields
- Compressed Mode Off On softkey, 1059
- Compressed Mode Start Trigger softkey, 937, 960, 1060
- Compressed Mode Stop Trigger softkey, 961, 1060
- Config softkey, 250, 253
- Configure Cal Array softkey, 20
- continuous
 - segment advance, 316
- Continuous PN9 softkey, 461
- Continuous softkey
 - dual ARB subsystem keys, 316
 - 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, 103, 112, 122
- correction subsystem keys

Index

Configure Cal Array, 20
Flatness Off On, 21
Load From Selected File, 20
Preset List, 21
Store To File, 21
CPICH softkey, 353
CRC Size field, 967, 1064, 1072
creating a waveform
 sequence, dual ARB, 311
creating a waveform, multitone, 323
CS-1 softkey, 637, 638, 692
CS-4 softkey, 637, 639, 696
CSID softkey, 852, 870
Ctrl Beta field, 1007
Ctrl Pwr field, 1008
Custom CDMA Multicarrier softkey, 228
Custom CDMA State softkey, 226, 229
Custom CDMA2000 Carrier softkey, 245, 247
Custom CDMA2000 Multicarrier softkey, 246
Custom CDMA2000 State softkey, 252
Custom Digital Mod State softkey, 281, 282
Custom Off On softkey, 568
Custom softkey, 585, 596, 652, 700, 855
custom subsystem keys
 128QAM, 560
 16 1's & 16 0's, 553
 16PSK, 560
 16QAM, 560
 256QAM, 560
 2-Lvl FSK, 560
 32 1's & 32 0's, 553
 32QAM, 560
 4 1's & 4 0's, 553
 4-Lvl FSK, 560
 4QAM, 560
 64 1's & 64 0's, 553
 64QAM, 560
 8 1's & 8 0's, 553
 8PSK, 560
 APCO 25 C4FM, 557
 APCO 25 w/CQPSK, 563
 BBG Data Clock Ext Int, 545
 BBG Ref Ext Int, 556
 Bit Rate, 546
 Bluetooth, 563
 BPSK, 560
 Bus, 565
 CDPD, 563
 Continuous, 563
 Custom Off On, 568
 D8PSK, 560
 Diff Data Encode Off On, 555
 Ext, 553, 565
 Ext BBG Ref Freq, 556
 Ext Data Clock Normal Symbol, 555
 Ext Delay Bits, 566
 Ext Delay Off On, 566
 Ext Polarity Neg Pos, 567
 Fall Delay, 548, 549
 Fall Time, 548, 549
 Filter Alpha, 544
 Filter BbT, 545
 FIX4, 553, 554
 Free Run, 564
 Freq Dev, 559
 Gate Active Low High, 564
 Gated, 563
 Gaussian, 557
 Gray Coded QPSK, 560
 I/Q Scaling, 558
 IS-95, 557
 IS-95 Mod, 557
 IS-95 Mod w/EQ, 557
 IS-95 OQPSK, 560
 IS-95 QPSK, 560
 IS-95 w/EQ, 557
 MSK, 560
 None, 563
 Nyquist, 557
 Optimize FIR For EVM ACP, 553
 OQPSK, 560
 $\pi/4$ DQPSK, 560
 Patt Trig In 1, 567
 Patt Trig In 2, 567
 Phase Dev, 559
 Phase Polarity Normal Invert, 561
 PN11, 553
 PN15, 553
 PN20, 553
 PN23, 553

- PN9, 553
 PRAM Files, 554
 QPSK, 560
 Rectangle, 557
 Reset & Run, 564
 Rise Delay, 550
 Rise Time, 551, 552
 Root Nyquist, 557
 Single, 563
 Symbol Rate, 561
 Trigger & Run, 564
 Trigger Key, 565
 UN3/4 GSM Gaussian, 557
 User File, 553
 User FIR, 557
 User FSK, 560
 User I/Q, 560
 Custom TS softkey, 641, 651, 691, 698
 Custom WCDMA State softkey, 359
 Cycle Count softkey, 455
 Cycle End softkey, 401
- D**
- D8PSK softkey
 See custom subsystem keys
 See DECT subsystem keys
 See Dmodulation subsystem keys
 See EDGE subsystem keys
 See GSM subsystem keys
 See NADC subsystem keys
 See PDC subsystem keys
 See PHS subsystem keys
 See TETRA subsystem keys
 data
 memory subsystem, 103
 data append
 memory subsystem, 104
 Data Beta field, 1011
 data bit, 105
 data block, 112
 Data Clock Out Neg Pos softkey, 131
 Data Clock Polarity Neg Pos softkey, 128, 130, 132
 Data field, 989, 1076
 data files, 103
 data FSK, 107
 data IQ, 108
 Data Mode Raw Enc TLM softkey, 664, 665
 Data Out Polarity Neg Pos softkey, 131, 133
 Data Polarity Neg Pos softkey, 129, 130, 416
 Data Pwr field, 1013
 Data Rate field, 939
 data subsystem keys
 Error Out, 409
 PN9, 409
 Reference Out, 409
 Data Type softkey, 388
 DATA/CLK/SYNC Rear Outputs Off On softkey, 133
 DAYLT field, 495
 dBm softkey, 168
 dBuV softkey, 168
 dBuVemf softkey, 168
 DC softkey, 187
 DCFM/DCΦM Cal softkey, 70
 DCH1 softkey, 975
 DCH2 softkey, 975
 DCH3 softkey, 975
 DCH4 softkey, 975
 DCH5 softkey, 975
 DCH6 softkey, 975
 decimal values, 18
 Dect Off On softkey, 617
 DECT softkey, 280, 281, 282
 DECT subsystem keys
 128QAM, 584
 16 1's & 16 0's, 578, 585, 588, 591, 593, 595, 596, 600, 603, 605, 607
 16-Lvl FSK, 578
 16PSK, 584
 16QAM, 584
 256QAM, 584
 2-Lvl FSK, 584
 32 1's & 32 0's, 578, 585, 588, 591, 593, 595, 596, 600, 603, 605, 607
 32QAM, 584
 4 1's & 4 0's, 578, 585, 588, 591, 593, 595, 596, 600, 603, 605, 607
 4-Lvl FSK, 584
 4QAM, 584

Index

- 64 1's & 64 0's, 578, 585, 588, 591, 593, 595, 596, 600, 603, 605, 607
- 64QAM, 584
- 8 1's & 8 0's, 578, 585, 588, 591, 593, 595, 596, 600, 603, 605, 607
- 8-Lvl FSK, 578
- 8PSK, 584
- A field, 586, 589, 592, 594, 597, 598, 599, 602, 604, 606
- All Timeslots, 610
- APCO 25 C4FM, 581
- BBG Data Clock Ext Int, 569
- BBG Ref Ext Int, 580
- Begin Frame, 610
- Begin Timeslot #, 610, 611
- Bit Rate, 570
- BPSK, 584
- Bus, 609, 614
- Continuous, 612
- Custom, 585, 596
- D8PSK, 584
- Data Format Pattern Framed, 577
- Dect Off On, 617
- DM0, 585, 588, 591, 593, 595, 596, 600, 603, 605, 607
- DM1, 585, 588, 591, 593, 595, 596, 600, 603, 605, 607
- Dummy Bearer 1, 596
- Dummy Bearer 2, 596
- Ext, 578, 585, 588, 591, 593, 595, 596, 600, 603, 605, 607, 609, 614
- Ext Data Clock Normal Symbol, 580
- Ext Delay Bits, 615
- Ext Delay Off On, 617
- Ext Polarity Neg Pos, 616
- FACC, 585, 588, 591, 593, 595, 596, 600, 603, 605, 607
- Fall Delay, 572, 573
- Fall Time, 572, 573
- FDEV1_FS, 585, 588, 591, 593, 595, 596, 600, 603, 605, 607
- FDEV1_HS, 585, 588, 591, 593, 595, 596, 600, 603, 605, 607
- FDEV2_FS, 585, 588, 591, 593, 595, 596, 600, 603, 605, 607
- Filter Alpha, 569
- Filter BbT, 570
- FIX4, 578, 585, 586, 588, 591, 593, 595, 596, 597, 600, 601, 603, 604, 605, 606, 607, 608
- Free Run, 613
- Freq Dev, 582
- Gate Active Low High, 614
- Gated, 612
- Gaussian, 581
- Gray Coded QPSK, 584
- I/Q Scaling, 582
- IS-95, 581
- IS-95 Mod, 581
- IS-95 Mod w/EQ, 581
- IS-95 OQPSK, 584
- IS-95 QPSK, 584
- IS-95 w/EQ, 581
- Low Capacity, 585, 596
- Low Capacity with Z field, 585, 596
- MSK, 584
- Nyquist, 581
- Optimize FIR For EVM ACP, 577
- OQPSK, 584
- P, 587, 590, 592, 594, 598, 599, 600, 602, 604, 606
- $\pi/4$ DQPSK, 584
- Patt Trig In 1, 616
- Patt Trig In 2, 616
- Phase Dev, 583
- Phase Polarity Normal Invert, 584
- PN11, 578, 585, 588, 591, 593, 595, 596, 603, 605, 607
- PN15, 578, 585, 588, 591, 593, 595, 596, 600, 603, 605, 607
- PN20, 578, 585, 588, 591, 593, 595, 596, 603, 605, 607
- PN23, 578, 585, 588, 591, 593, 595, 596, 603, 605, 607
- PN9, 578, 585, 588, 591, 593, 595, 596, 600, 603, 605, 607
- PN9 Mode Normal Quick, 571
- QPSK, 584
- Recall Secondary Frame State, 608
- Rectangle, 581
- Reset & Run, 613
- Restore DECT Factory Default, 579

- Rise Delay, 574
- Rise Time, 575, 576
- Root Nyquist, 581
- S, 587, 590, 592, 594, 598, 599, 600, 603, 605, 607
- Save Secondary Frame State, 608
- Secondary Frame Off On, 609
- Sine, 552, 576
- Single, 612
- Sync Out Offset, 610
- Timeslot Ampl Main Delta, 589, 601
- Timeslot Off On, 589, 602
- Traffic Bearer, 585, 596
- Traffic Bearer with Z field, 585, 596
- Trigger & Run, 613
- Trigger Key, 609, 614
- UN3/4 GSM Gaussian, 581
- User File, 552, 576, 578, 585, 588, 591, 593, 595, 596, 600, 603, 605, 607
- User FIR, 581
- User FSK, 583, 584
- User I/Q, 584
- dect subsystem keys
 - PRAM File, 579
- DECTsubsystem keys
 - Symbol Rate, 611
- Default Gateway softkey, 74
- Delay Bits softkey, 455
- Delete All NVWFM Files softkey, 123
- Delete All WFM Files softkey, 123
- Delete All WFM1 Files softkey, 123
- Delete File softkey, 124
- Delete softkeys
 - Delete All ARB CDMA Files, 116
 - Delete All ARB DMOD Files, 116
 - Delete All ARB DWCDMA Files, 116
 - Delete All ARB FCDMA Files, 117
 - Delete All ARB MCDMA Files, 118
 - Delete All ARB MDMOD Files, 118
 - Delete All ARB MDWCDMA Files, 118
 - Delete All ARB MFCDMA Files, 118
 - Delete All ARB MTONE Files, 118
 - Delete All ARB RCDMA Files, 119
 - Delete All ARB UWCDMA Files, 120
 - Delete All Binary Files, 116
 - Delete All Bit Files, 116
 - Delete All Files, 115
 - Delete All FIR Files, 117
 - Delete All FSK Files, 117
 - Delete All I/Q Files, 117
 - Delete All List Files, 117
 - Delete All SEQ Files, 119
 - Delete All SHAPE Files, 119
 - Delete All State Files, 119
 - Delete All UFLT Files, 119
 - Delete File, 120
- DHCP, 73
- Diagnostic Info softkey, 79, 80, 82, 87
- diagnostic subsystem keys
 - Auxiliary Software Options, 80
 - Diagnostic Info, 79, 80, 82
 - Installed Board Info, 79
 - Options Info, 81
- diagnostic subsystem softkeys
 - Waveform Licenses, 81, 82
- Diff Data Encode Off On softkey, 555, 682
- Diff. Mode I Offset softkey, 25
- Diff. Mode Q Offset softkey, 26
- Digital Modulation Off On softkey, 291
- digital modulation subsystem keys
 - 2.100 MHz, 31
 - 40.000 MHz, 31
 - ALC BW Normal Narrow, 22
 - BBG1, 24, 34
 - Burst Envelope Int Ext Off, 22
 - Common Mode I/Q Offset, 25
 - Diff. Mode I Offset, 25
 - Diff. Mode Q Offset, 26
 - Ext 50 Ohm, 24, 34
 - Ext 600 Ohm, 24, 34
 - Ext In 600 Ohm I Offset, 26
 - Ext In 600 Ohm Q Offset, 27
 - High Crest Mode Off On, 23
 - I Offset, 28
 - I/Q Adjustments Off On, 31
 - I/Q Gain Balance Source 1, 28
 - I/Q Mod Filter Manual Auto, 32
 - I/Q Off On, 36
 - I/Q Out Gain Balance, 26
 - I/Q Output Atten, 27
 - I/Q Timing Skew, 30

Index

- I/Q Timing Skew Path softkey, 31
- Int I/Q Skew Corrections RF BB Off, 34
- Int Phase Polarity Normal Invert, 24, 33
- Modulator Atten Manual Auto, 32, 33
- Off, 24, 34
- Q Offset, 29
- Quadrature Skew, 29
- Sum, 24
- Summing Ratio (SRC1/SRC2) x.xx dB, 35
- Through, 31
- digital signal interface module, 376
- digital subsystem softkeys, 383
 - Bit Order, 380
 - Clock Per Sample, 376
 - Clock Phase, 376
 - Clock Polarity, 377
 - Clock Rate, 378
 - Clock Skew, 379
 - Clock Source, 379
 - Data Type, 388
 - Direction, 381
 - Frame Polarity, 383
 - I Gain, 381
 - I Offset, 382
 - IQ Polarity, 384
 - Logic Type, 389
 - Loop Back Test Type, 389
 - N5102A Off On, 391
 - Negate I, 382
 - Negate Q, 385
 - Pass Through Preset, 391
 - Port Config, 390
 - Q Gain, 384
 - Q Offset, 386
 - Reference Frequency, 378
 - Rotation, 386
 - Scaling, 387
 - Signal Type, 388
 - Swap IQ, 383
 - Word Alignment, 380
 - Word Size, 387
- Direction softkey, 381
- discrete response data, 11
- discrete SCPI parameters, 9
- display
 - secure mode, 158
- display contrast hardkeys, 84
- display subsystem keys
 - Brightness, 84
 - display contrast, 84
 - Inverse Video Off On, 85
 - Update in Remote Off On, 85
- DL Reference 1.1 softkey, 1058
 - wideband CDMA base band generator subsystem softkeys
 - DL Reference 1.1, 959
- DL Reference 1.2 softkey, 1058
 - wideband CDMA base band generator subsystem softkeys
 - DL Reference 1.2, 959
- DL Reference 2.1 softkey, 1058
 - wideband CDMA base band generator subsystem softkeys
 - DL Reference 2.1, 959
- DL Reference 2.2 softkey, 1058
 - wideband CDMA base band generator subsystem softkeys
 - DL Reference 2.2, 959
- DM0 softkey
 - See* DECT subsystem keys
- DM1 softkey
 - See* DECT subsystem keys
- DMOD softkey, 93
- Dmodulation subsystem keys
 - # of Carriers, 281, 283
 - 128QAM, 277
 - 16PSK, 277
 - 16QAM, 277
 - 2.100 MHz, 273
 - 256QAM, 277
 - 2-Lvl FSK, 277
 - 32QAM, 277
 - 40.000 MHz, 268, 273
 - 4-Lvl FSK, 277
 - 4QAM, 277
 - 64QAM, 277
 - 8PSK, 277
 - APCO 25 C4FM, 269
 - APCO 25 w/C4FM, 280, 281, 282
 - APCO 25 w/C4QPSK, 280, 281, 282

- ARB Reference Ext Int, [279](#)
- ARB Sample Clock, [280](#)
- BPSK, [277](#)
- Bus, [288](#)
- Carrier Phases Fixed Random, [281](#)
- CDPD, [280](#), [281](#), [282](#)
- Clear Header, [271](#)
- Continuous, [285](#)
- Custom Digital Mod State, [281](#), [282](#)
- D8PSK, [277](#)
- DECT, [280](#), [281](#), [282](#)
- Digital Modulation Off On, [291](#)
- EDGE, [280](#), [281](#), [282](#)
- Ext, [288](#)
- Ext Delay Off On, [289](#)
- Ext Delay Time, [289](#)
- Ext Polarity Neg Pos, [290](#)
- Filter Alpha, [270](#)
- Filter BbT, [270](#)
- Free Run, [286](#)
- Freq Dev, [277](#)
- Freq Spacing, [281](#)
- Gate Active Low High, [287](#)
- Gated, [285](#)
- Gaussian, [269](#)
- Gray Coded QPSK, [277](#)
- GSM, [280](#), [281](#), [282](#)
- I/Q Mod Filter Manual Auto, [273](#)
- I/Q Output Filter Manual Auto, [268](#)
- Immediate, [279](#)
- Initialize Table, [282](#)
- Insert Row, [247](#), [282](#)
- IS-2000 SR3 DS, [269](#)
- IS-95, [269](#)
- IS-95 Mod, [269](#)
- IS-95 Mod w/EQ, [269](#)
- IS-95 OQPSK, [277](#)
- IS-95 QPSK, [277](#)
- IS-95 w/EQ, [269](#)
- Load/Store, [282](#)
- Marker 1, [274](#), [275](#)
- Marker 1 Polarity Neg Pos, [278](#)
- Marker 2, [274](#), [275](#)
- Marker 2 Polarity Neg Pos, [278](#)
- Marker 3, [274](#), [275](#)
- Marker 3 Polarity Neg Pos, [278](#)
- Marker 4, [274](#), [275](#)
- Marker 4 Polarity Neg Pos, [278](#)
- Modulator Atten Manual Auto, [272](#)
- MSK, [277](#)
- Multicarrier Off On, [280](#)
- NADC, [280](#), [281](#), [282](#)
- None, [274](#), [275](#)
- Nyquist, [269](#)
- Off, [279](#)
- On, [279](#)
- Optimize FIR For EVM ACP, [271](#)
- OQPSK, [277](#)
- $\pi/4$ DQPSK, [277](#)
- Patt Trig In 1, [290](#)
- Patt Trig In 2, [290](#)
- PDC, [280](#), [281](#), [282](#)
- PHS, [280](#), [281](#), [282](#)
- PWT, [280](#), [281](#), [282](#)
- QPSK, [277](#)
- Rectangle, [269](#)
- Reference Freq, [210](#), [278](#)
- Reset & Run, [286](#)
- Root Nyquist, [269](#)
- Save Setup To Header, [271](#)
- Select File, [247](#), [280](#)
- Single, [285](#)
- Store Custom Dig Mod State, [283](#)
- Symbol Rate, [284](#)
- TETRA, [280](#), [281](#), [282](#)
- Through, [268](#), [273](#)
- Trigger & Run, [286](#)
- Trigger Key, [288](#)
- UN3/4 GSM Gaussian, [269](#)
- User FIR, [269](#)
- WCDMA, [269](#)
- Dn Custom Cont softkey, [908](#)
- Dn Normal Cont softkey, [908](#)
- Dn Normal Disc softkey, [908](#)
- Dn Sync Cont softkey, [908](#)
- Dn Sync Disc softkey, [908](#)
- Do Power Search softkey, [59](#), [60](#), [61](#)
- Doppler Shift softkey, [665](#)
- Down Custom softkey, [797](#), [831](#)
- Down TCH All softkey, [797](#), [831](#)

Index

- Down TCH softkey, [797](#), [831](#)
- Down/Up softkey, [934](#), [984](#)
- Downlink MCS-1 softkey, [637](#), [639](#), [692](#)
- Downlink MCS-5 softkey, [642](#)
- Downlink MCS-9 softkey, [642](#)
- downloading files, [114](#)
- DPCCH + 1 DPDCH softkey, [359](#)
- DPCCH + 2 DPDCH softkey, [359](#)
- DPCCH + 3 DPCCH softkey, [359](#)
- DPCCH + 4 DPDCH softkey, [359](#)
- DPCCH + 5 DPDCH softkey, [359](#)
- DPCCH Pilot data-clk (DRPS23) softkey, [948](#), [950](#), [951](#), [952](#), [953](#)
- DPCCH Power field, [981](#)
- 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, [359](#), [975](#), [998](#)
- DPCCH TFC I data-clk (DRPS22) softkey, [948](#), [950](#), [951](#), [952](#), [953](#)
- DPCCH TPC indicator (DRPS21) softkey, [948](#), [950](#), [951](#), [952](#), [953](#)
- DPCH + 1 softkey, [920](#), [921](#)
- DPCH + 2 softkey, [920](#), [921](#)
- DPCH Channel Balance softkey, [928](#)
- DPCH Compressed Frame Indicator (DRPS32) softkey, [948](#), [950](#), [951](#), [952](#), [953](#)
- DPCH data stream (DRPS24) softkey, [948](#), [950](#), [951](#), [952](#), [953](#)
- DPCH data-clk (0) (DRPS28) softkey, [948](#), [950](#), [951](#), [952](#), [953](#)
- DPCH Gap Indicator (DRPS33) softkey, [948](#), [950](#), [951](#), [952](#), [953](#)
- DPCH softkey, [353](#)
- DPCH TimeSlot pulse (DRPS25) softkey, [948](#), [950](#), [951](#), [952](#), [953](#)
- DPCH10ms Frame-Pulse (DRPS26) softkey, [948](#), [950](#), [951](#), [952](#), [953](#)
- DPDCH data-clk withDTX (DRPS20) softkey, [948](#), [950](#), [951](#), [952](#), [953](#)
- DPDCH data-clk WithOutDTX (DRPS30) softkey, [948](#), [950](#), [951](#), [952](#), [953](#)
- DPDCH Power field, [990](#)
- 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, [975](#)
- Drift Deviation softkey, [465](#)
- dual ARB subsystem
 - generate sine, [292](#)
 - markers, *See* markers
 - runtime scaling, [310](#)
 - scaling waveform files, [310](#)
 - Through, [296](#)
- dual ARB subsystem keys
 - # Skipped Points, [300](#)
 - 2.100 MHz, [297](#)
 - 40.000 MHz, [296](#), [297](#)
 - Apply to Waveform, [298](#), [300](#)
 - ARB Off On, [322](#)
 - ARB Reference Ext Int, [23](#), [309](#)
 - ARB Sample Clock, [311](#)
 - Build New Waveform Sequence, [311](#)
 - Bus, [318](#)
 - Carrier Bandwidth, [307](#)
 - Carrier to Noise Ratio, [307](#)
 - Clear Header, [293](#)
 - Clipping Type $|I+jQ|$ $|I|,|Q|$, [292](#)
 - Continuous, [316](#)
 - Edit Repetitions, [311](#)
 - Ext, [318](#)
 - Ext Delay Off On, [319](#)
 - Ext Delay Time, [319](#)
 - Ext Polarity Neg Pos, [320](#)
 - First Mkr Point, [298](#), [300](#)
 - Free Run, [315](#)
 - Gate Active Low High, [315](#)
 - Gated, [313](#)
 - Header RMS, [293](#)
 - I/Q Mod Filter Manual Auto, [298](#)
 - I/Q Output Filter Manual Auto, [295](#), [296](#)
 - Immediate, [309](#)
 - Insert Waveform, [311](#)
 - Last Mkr Point, [298](#), [300](#)

- Marker 1, 303
- Marker 1 2 3 4, 298
- Marker 2, 303
- Marker 3, 303
- Marker 4, 303
- Marker Polarity Neg Pos, 306, 330, 366, 471
- Markers, 300, 304
- Modulator Atten Manual Auto, 296, 297
- Name and Store, 311
- Noise Bandwidth Factor, 306
- None, 303, 304
- Off, 309
- On, 309
- Patt Trig In 1, 320
- Patt Trig In 2, 320
- Real-time Noise Off On, 308
- Reference Freq, 308
- Reset & Run, 315
- Save Setup To Header, 295
- Scale Waveform Data, 310
- Scaling, 310
- Segment Advance, 313
- Select Waveform, 321
- Set Marker Off All Points, 299
- Set Marker Off Range Of Points, 298
- Set Marker On Range Of Points, 300
- Single, 313, 316
- Through, 296, 297
- Toggle Marker 1 2 3 4, 311
- Trigger & Run, 315
- Trigger Key, 318
- Waveform Runtime Scaling, 310
- Dual-Sine softkey, 173, 180, 187, 193
- Dummy Bearer 1 softkey, 596
- Dummy Bearer 2 softkey, 596
- Dummy softkey, 700
- DWCDMA softkey, 94
- Dwell Type List Step softkey, 50
- E**
- Eb/No field, 1004
- Eb/No value (dB) field, 974
- EbNo field, 502
 - See CDMA2000 BBG subsystem keys and fields
- Ec/No value field, 920, 1005
- EcNo field, 489, 524, 529
- EDGE BERT Off On softkey, 438
- EDGE Off On softkey, 661
- EDGE softkey, 280, 281, 282, 630
- EDGE subsystem keys
 - 128QAM, 633
 - 16 1's & 16 0's, 626, 635, 637, 642
 - 16PSK, 633
 - 16QAM, 633
 - 256QAM, 633
 - 2-Lvl FSK, 633
 - 32 1's & 32 0's, 626, 635, 637, 642
 - 32QAM, 633
 - 4 1's & 4 0's, 626, 635, 637, 642
 - 4-Lvl FSK, 633
 - 4QAM, 633
 - 64 1's & 64 0's, 626, 635, 637, 642
 - 64QAM, 633
 - 8 1's & 8 0's, 626, 635, 637, 642
 - 8PSK, 633
 - All Timeslots, 653
 - APCO 25 C4FM, 630
 - BBG Ref Ext Int, 629
 - Begin Frame, 653
 - Begin Timeslot #, 653, 654
 - BPSK, 633
 - Bus, 634, 658
 - Continuous, 656
 - CS-1, 637, 638
 - CS-4, 637, 639
 - Custom, 652
 - Custom TS, 641, 651
 - D8PSK, 633
 - Data Format Pattern Framed, 625
 - Downlink MCS-1, 637, 639
 - Downlink MCS-5, 642
 - Downlink MCS-9, 642
 - EDGE, 630
 - EDGE Off On, 661
 - E-TCH/F43.2, 642
 - Ext, 626, 634, 635, 642, 658
 - Ext BBG Ref Freq, 629
 - Ext Data Clock Ext Int, 618
 - Ext Data Clock Normal Symbol, 628
 - Ext Delay Bits, 659

Index

- Ext Delay Off On, 660
- Ext Polarity Neg Pos, 660
- Fall Delay, 619, 620
- Fall Time, 621
- Filter Alpha, 618
- Filter BbT, 619
- FIX4, 626, 627, 635, 636, 637, 639, 642, 648
- Free Run, 656
- Freq Dev, 631
- G, 636, 650
- Gate Active Low High, 657
- Gated, 656
- Gaussian, 630
- GMSK, 652
- Gray Coded QPSK, 633
- I/Q Scaling, 631
- IS-95, 630
- IS-95 Mod, 630
- IS-95 Mod w/EQ, 630
- IS-95 OQPSK, 633
- IS-95 QPSK, 633
- IS-95 w/EQ, 630
- MSK, 633
- Multislot Off On, 642
- Normal, 652
- Normal All, 652
- Nyquist, 630
- Optimize FIR For EVM ACP, 626
- OQPSK, 633
- $\pi/4$ DQPSK, 633
- Patt Trig In 1, 661
- Patt Trig In 2, 661
- Phase Dev, 632
- Phase Polarity Normal Invert, 633
- PN11, 626, 635, 642
- PN15, 626, 635, 637, 638, 639, 640, 642, 646, 647, 648, 649
- PN20, 626, 635, 642
- PN23, 626, 635, 642
- PN9, 626, 635, 637, 638, 639, 640, 642, 646, 647, 648, 649
- QPSK, 633
- Recall Secondary Frame State, 634
- Rectangle, 630
- Reset & Run, 656
- Restore EDGE Factory Default, 628
- Rise Delay, 622, 623
- Rise Time, 623, 624
- Root Nyquist, 630
- S, 641
- Save Secondary Frame State, 634
- Secondary Frame Off On, 635
- Sine, 625
- Single, 656
- Symbol Rate, 654
- Sync Out Offset, 653
- T1, 650
- T2, 651
- TCH/FS, 637, 640
- Timeslot Ampl Main Delta, 651
- Timeslot Off On, 652
- Trigger & Run, 656
- Trigger Key, 634, 658
- TSC0, 641, 651
- TSC1, 641, 651
- TSC2, 641, 651
- TSC3, 641, 651
- TSC4, 641, 651
- TSC5, 641, 651
- TSC6, 641, 651
- TSC7, 641, 651
- UN3/4 GSM Gaussian, 630
- Uncoded, 642
- Uplink MCS-1, 637, 640
- Uplink MCS-5, 642
- Uplink MCS-9, 642
- User File, 625, 626, 635, 637, 642
- User FIR, 630
- User FSK, 632, 633
- User I/Q, 632, 633
- edge subsystem keys
 - PRAM File, 627
- Edit Channel Setup softkey, 250, 253
- Edit Repetitions softkey, 311
- Enter Secure Mode softkey, 160
- Equal Energy per Symbol softkey, 357
- Equal Powers softkey
 - See CDMA ARB subsystem keys
 - See CDMA2000 ARB subsystem keys
 - See CDMA2000 BBG subsystem keys and fields

- See* wideband CDMA base band generator subsystem keys and fields
- Erase All softkey, [159](#)
- Erase and Overwrite All softkey, [161](#)
- Erase and Sanitize All softkey, [161](#)
- Erase softkey, [159](#)
- ERROR
 - [221](#), [114](#)
- Error BER softkey, [1073](#)
- Error Bits softkey, [1065](#)
- Error Blocks field, [1066](#)
- Error Count softkey, [438](#)
 - See* sense subsystem keys
- Error Info softkey, [153](#)
- error messages, resolving, [712](#)
- Error Out softkey, [409](#)
- Error Rate softkey
 - See* calculate subsystem keys
 - See* calculate subsystem keys
- ESG file overview, [710](#)
- ET softkey, [690](#)
- E-TCH/F43.2 softkey, [642](#)
- Even Second Delay field, [476](#), [509](#)
- Exceeds Any Limit softkey, [401](#)
- Exceeds Any Thresholds softkey
 - See* sense subsystem keys
- Execute Cal softkey, [70](#), [71](#)
- Ext 50 Ohm softkey, [24](#), [34](#)
- Ext 600 Ohm softkey, [24](#), [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, [496](#)
- Ext Clock Rate x1 x2 x4 softkey, [918](#)
- 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
- 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, [234](#), [265](#), [289](#), [319](#), [372](#)
- Ext Frame Trigger Delay softkey, [423](#)
- Ext In 600 Ohm I Offset softkey, [26](#)
- Ext In 600 Ohm Q Offset softkey, [27](#)
- Ext Polarity Neg Pos softkey
 - See* CDMA ARB subsystem keys
 - See* CDMA2000 ARB subsystem keys
 - See* custom subsystem keys
 - See* DECT subsystem keys
 - See* Dmodulation subsystem keys
 - See* dual ARB subsystem keys
 - See* EDGE subsystem keys
 - See* GSM subsystem keys
 - See* NADC subsystem keys
 - See* PDC subsystem keys
 - See* PHS subsystem keys

Index

- See* TETRA subsystem keys
 - See* wideband CDMA ARB subsystem keys
 - Ext softkey
 - List/Sweep subsystem, [53](#)
 - 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* 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, [171](#), [178](#), [191](#)
 - Ext Detector, [62](#)
 - Ext Pulse, [200](#)
 - Ext1, [174](#), [182](#), [194](#)
 - Ext2, [174](#), [182](#), [194](#)
 - extended numeric SCPI parameter, [8](#)
 - External Frame Trigger Polarity Neg Pos softkey, [423](#)
 - External softkey, [508](#)
 - F**
 - FACC softkey
 - See* DECT subsystem keys
 - Fail Hold softkey, [401](#)
 - Fall Delay softkey
 - See* custom subsystem keys
 - See* DECT subsystem keys
 - See* EDGE subsystem keys
 - See* GSM subsystem keys
 - See* NADC 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, [543](#)
 - FBI State field, [980](#)
 - FCDMA softkey, [94](#)
 - FCOR softkey, [897](#), [902](#)
 - FCorr softkey, [700](#)
 - FDEV1_FS softkey
 - See* DECT subsystem keys
 - FDEV1_HS softkey
 - See* DECT subsystem keys
 - FDEV2_FS softkey
 - See* DECT subsystem keys
 - Field 1 field, [486](#)
 - Field 2 field, [486](#)
 - Field 3 field, [487](#)
 - file
 - names, [103](#)
 - retrieval, [114](#)
 - systems, [14](#)
 - types, [14](#)
 - file overview, HDSOA, [710](#)
 - Filter Alpha softkey, [996](#)
 - See* CDMA ARB subsystem keys
 - See* CDMA2000 ARB subsystem keys
 - See* CDMA2000 BBG subsystem keys and fields
 - See* custom subsystem keys
 - See* DECT subsystem keys
 - See* Dmodulation subsystem keys
 - See* EDGE subsystem keys
 - See* GPS subsystem keys
 - See* GSM subsystem keys
 - See* NADC subsystem keys

- See* PDC subsystem keys
- See* PHS subsystem keys
- See* TETRA subsystem keys
- See* wideband CDMA ARB subsystem keys
- See* wideband CDMA base band generator subsystem keys and fields
- Filter BbT softkey, [997](#)
 - See* CDMA ARB subsystem keys
 - See* CDMA2000 ARB subsystem keys
 - See* CDMA2000 BBG subsystem keys and fields
 - See* custom subsystem keys
 - See* DECT subsystem keys
 - See* Dmodulation subsystem keys
 - See* EDGE subsystem keys
 - See* GPS subsystem keys
 - See* GSM subsystem keys
 - See* NADC subsystem keys
 - See* PDC subsystem keys
 - See* PHS subsystem keys
 - See* TETRA subsystem keys
 - See* wideband CDMA ARB subsystem keys
 - See* wideband CDMA base band generator subsystem keys and fields
- FIR data, [106](#)
- FIR softkey, [95](#)
- First Mkr Point softkey, [298](#), [300](#)
- First Spread Code softkey, [352](#), [360](#)
- FIX softkey, [980](#)
- FIX4 softkey, [639](#), [979](#), [1008](#), [1012](#)
 - See* CDMA2000 BBG subsystem keys and fields
 - See* custom subsystem keys
 - See* DECT subsystem keys
 - See* EDGE subsystem keys
 - See* GPS subsystem keys
 - See* GSM subsystem keys
 - See* NADC subsystem keys
 - See* PDC subsystem keys
 - See* PHS subsystem keys
 - See* TETRA subsystem keys
 - See* wideband CDMA baseband generator subsystem keys and fields
- Flat Noise BW field, [975](#)
- Flatness Off On softkey, [21](#)
- FM softkeys
 - FM Dev, [183](#)
 - FM Dev Couple Off On, [183](#)
 - FM Off On, [182](#)
 - FM Path 1 2, [177](#)
 - FM Stop Rate, [179](#)
 - FM Sweep Rate, [181](#)
 - FM Tone 2 Amp Percent of Peak, [180](#)
 - FM Tone 2 Rate, [179](#)
- forgiving listening and precise talking, [7](#)
- Frame Clock Polarity Neg Pos softkey, [995](#)
- Frame Count softkey
 - See* sense subsystem keys
- Frame Erasure softkey, [448](#)
 - 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, [532](#)
- Frame Polarity softkey, [383](#)
- Frame Repeat Single Cont softkey, [789](#)
- Frame Struct field, [955](#)
- Frame Sync Trigger Mode Single Cont softkey, [1053](#)
- Frame Trigger Source Int Ext softkey, [424](#)
- Free Run softkey
 - list trigger source, [53](#)
 - See* amplitude modulation subsystem keys
 - See* CDMA ARB subsystem keys
 - See* CDMA2000 ARB subsystem keys
 - See* custom subsystem keys
 - See* DECT subsystem keys
 - See* Dmodulation subsystem keys
 - See* dual ARB subsystem keys
 - See* EDGE subsystem keys
 - See* frequency modulation subsystem keys
 - See* GSM subsystem keys
 - See* low frequency output subsystem keys
 - See* NADC subsystem keys
 - See* PDC subsystem keys
 - See* phase modulation subsystem keys
 - See* PHS subsystem keys
 - See* TETRA subsystem keys
 - See* trigger subsystem keys
 - See* wideband CDMA ARB subsystem keys
- Freq Dev softkey

Index

- See* custom subsystem keys
 - See* DECT subsystem keys
 - See* Dmodulation subsystem keys
 - See* EDGE subsystem keys
 - See* GSM subsystem keys
 - See* NADC subsystem keys
 - See* PDC subsystem keys
 - See* TETRA subsystem keys
 - Freq softkeys
 - Freq, [41, 48](#)
 - Freq & Ampl, [48](#)
 - Freq Channels Off On, [40](#)
 - Freq Drift Type Linear Sine, [466](#)
 - Freq Multiplier, [41](#)
 - Freq Offset, [42, 466](#)
 - Freq Ref Off On, [43](#)
 - Freq Ref Set, [42](#)
 - Freq Spacing, [281, 333](#)
 - Freq Start, [43, 48](#)
 - Freq Stop, [44, 48](#)
 - Frequency hardkey, [37, 40, 41, 44, 45](#)
 - frequency modulation subsystem keys
 - Bus, [181](#)
 - Dual-Sine, [180](#)
 - Ext, [181](#)
 - Ext Coupling DC AC, [178](#)
 - Ext1, [182](#)
 - Ext2, [182](#)
 - FM Dev, [183](#)
 - FM Dev Couple Off On, [183](#)
 - FM Off On, [182](#)
 - FM Path 1 2, [177](#)
 - FM Stop Rate, [179](#)
 - FM Sweep Rate, [181](#)
 - FM Tone 2 Amp Percent of Peak, [180](#)
 - FM Tone 2 Rate, [179](#)
 - Free Run, [181](#)
 - Incr Set, [178](#)
 - Internal 1, [182](#)
 - Internal 2, [182](#)
 - Noise, [180](#)
 - Ramp, [180](#)
 - Sine, [180](#)
 - Square, [180](#)
 - Swept-Sine, [180](#)
 - Triangle, [180](#)
 - Trigger Key, [181](#)
 - frequency subsystem keys
 - Adjust Phase, [46](#)
 - Channel Number, [39](#)
 - Freq, [41, 48](#)
 - Freq Channels Off On, [40](#)
 - Freq Multiplier, [41](#)
 - Freq Offset, [42](#)
 - Freq Ref Off On, [43](#)
 - Freq Ref Set, [42](#)
 - Freq Start, [43, 48](#)
 - Freq Stop, [44, 48](#)
 - Frequency, [37, 40, 41, 44, 45](#)
 - Off, [41, 48](#)
 - Phase Ref Set, [46](#)
 - Ref Oscillator Source Auto Off On, [46](#)
 - FSK softkey, [95](#)
 - FSYNCH Type field, [500](#)
 - Full softkey, [525, 530](#)
 - Function Generator softkey, [188](#)
- ## G
- G softkey, [636, 650](#)
 - Gain Unit dB Lin Index softkey, [362](#)
 - 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, [412](#)
 - Gate Delay Off On softkey, [413](#)
 - Gate Mode Time Clk softkey, [412](#)
 - Gate Off On softkey, [414](#)
 - Gate Polarity Neg Pos softkey, [414](#)
 - Gate Time Delay softkey, [413](#)

- Gated softkey
 - See* CDMA ARB subsystem keys
 - See* CDMA2000 ARB subsystem keys
 - See* custom subsystem keys
 - See* DECT subsystem keys
 - See* Dmodulation subsystem keys
 - See* dual ARB subsystem keys
 - See* EDGE subsystem keys
 - See* GSM subsystem keys
 - See* NADC subsystem keys
 - See* PDC subsystem keys
 - See* PHS subsystem keys
 - See* TETRA subsystem keys
 - See* wideband CDMA ARB subsystem keys
- Gaussian softkey
 - See* CDMA ARB subsystem keys
 - See* CDMA2000 ARB subsystem keys
 - See* CDMA2000 BBG subsystem keys and fields
 - See* custom subsystem keys
 - See* DECT subsystem keys
 - See* Dmodulation subsystem keys
 - See* EDGE subsystem keys
 - See* GPS subsystem keys
 - See* GSM subsystem keys
 - See* NADC subsystem keys
 - See* PDC subsystem keys
 - See* PHS subsystem keys
 - See* TETRA subsystem keys
 - See* wideband CDMA ARB subsystem keys
 - See* wideband CDMA base band generator subsystem keys and fields
- generate sine, [292](#)
- GMSK softkey, [652](#)
- Goto Row softkey, [331](#)
- GPIB Address softkey, [73](#)
- GPS Ref (f0) softkey, [669](#)
- GPS Ref Clk Ext Int softkey, [669](#)
- GPS subsystem
 - Data Mode Raw Enc TLM, [665](#)
- GPS subsystem keys
 - APCO 25 C4FM, [665](#)
 - Data Mode Raw Enc TLM, [664](#)
 - Doppler Shift, [665](#)
 - Filter Alpha, [666](#)
 - Filter BbT, [667](#)
 - FIX4, [664](#)
 - Gaussian, [665](#)
 - GPS Ref (f0), [669](#)
 - GPS Ref Clk Ext Int, [669](#)
 - IQ Phase Normal Invert, [668](#)
 - IS-95, [665](#)
 - IS-95 Mod, [665](#)
 - IS-95 Mod w/EQ, [665](#)
 - IS-95 w/EQ, [665](#)
 - Nyquist, [665](#)
 - Optimize FIR For EVM ACP, [667](#)
 - P Code Pwr, [668](#)
 - PN15, [664](#)
 - PN9, [664](#)
 - Ranging Code C/A P C/A+P, [668](#)
 - Real-time GPS Off On, [670](#)
 - Rectangle, [665](#)
 - Root Nyquist, [665](#)
 - Satellite ID, [670](#)
 - UN3/4 GSM Gaussian, [665](#)
 - User File, [664](#)
 - User FIR, [665](#)
- 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, [451](#)
- GSM Off On softkey, [709](#)
- GSM softkey, [280](#), [281](#), [282](#)
- GSM subsystem keys
 - 128QAM, [687](#)
 - 16 1's & 16 0's, [680](#), [689](#), [690](#), [692](#), [699](#)
 - 16PSK, [687](#)
 - 16QAM, [687](#)
 - 256QAM, [687](#)
 - 2-Lvl FSK, [687](#)
 - 32 1's & 32 0's, [680](#), [689](#), [690](#), [692](#), [699](#)
 - 32QAM, [687](#)
 - 4 1's & 4 0's, [680](#), [689](#), [690](#), [692](#), [699](#)

Index

4-Lvl FSK, 687
4QAM, 687
64 1's & 64 0's, 680, 689, 690, 692, 699
64QAM, 687
8 1's & 8 0's, 680, 689, 690, 692, 699
8PSK, 687
Access, 700
All Timeslots, 701
APCO 25 C4FM, 684
BBG Data Clock Ext Int, 671
BBG Ref Ext Int, 683
Begin Frame, 701
Begin Timeslot #, 701, 702
Bit Rate, 672
BPSK, 687
Bus, 688, 705
Continuous, 704
CS-1, 692
CS-4, 696
Custom, 700
Custom TS, 691, 698
D8PSK, 687
Data Format Pattern Framed, 679
Diff Data Encode Off On, 682
Downlink MCS-1, 692
Dummy, 700
ET, 690
Ext, 680, 688, 689, 690, 699, 705
Ext BBG Ref Freq, 581, 683
Ext Data Clock Normal Symbol, 682
Ext Delay Bits, 706
Ext Delay Off On, 707
Ext Polarity Neg Pos, 707
Fall Delay, 674, 675
Fall Time, 674, 676
FCorr, 700
Filter Alpha, 671
Filter BbT, 672
FIX4, 680, 681, 689, 690, 691, 692, 697, 699, 700
Free Run, 704
Freq Dev, 685
Gate Active Low High, 705
Gated, 704
Gaussian, 684
Gray Coded QPSK, 687
GSM Off On, 709
I/Q Scaling, 685
IS-95, 684
IS-95 Mod, 684
IS-95 Mod w/EQ, 684
IS-95 OQPSK, 687
IS-95 QPSK, 687
IS-95 w/EQ, 684
MSK, 687
Multislot Off On, 691
Normal, 700
Normal All, 700
Nyquist, 684
Optimize FIR For EVM ACP, 680
OQPSK, 687
 $\pi/4$ DQPSK, 687
Patt Trig In 1, 708
Patt Trig In 2, 708
Phase Dev, 686
Phase Polarity Normal Invert, 687
PN11, 680, 699
PN15, 680, 689, 690, 692, 696, 697, 699
PN20, 680, 699
PN23, 680, 699
PN9, 680, 689, 690, 692, 696, 697, 699
PN9 Mode Normal Quick, 673
QPSK, 687
Recall Secondary Frame State, 688
Rectangle, 684
Reset & Run, 704
Restore Factory Default, 681
Rise Delay, 676, 677
Rise Time, 678
Root Nyquist, 684
S, 698
Save Secondary Frame State, 688
Secondary Frame Off On, 689
Sine, 679
Single, 704
SS, 690
Symbol Rate, 702
Sync, 700
Sync Out Offset, 701
TCH/FS, 692
Timeslot Ampl Main Delta, 699

- Timeslot Off On, 699
 - Trigger & Run, 704
 - Trigger Key, 688, 705
 - TS, 700
 - TSC0, 691, 698
 - TSC1, 691, 698
 - TSC2, 691, 698
 - TSC3, 691, 698
 - TSC4, 691, 698
 - TSC5, 691, 698
 - TSC6, 691, 698
 - TSC7, 691, 698
 - UN3/4 GSM Gaussian, 684
 - Uplink MCS-1, 692
 - User File, 679, 680, 689, 690, 692, 699
 - User FIR, 684
 - User FSK, 686, 687
 - User I/Q, 686, 687
 - gsm subsystem keys
 - PRAM Files, 681
- H**
- Half softkey, 525, 530
 - Header field, 482, 492
 - Help Mode Single Cont softkey, 154
 - hexadecimal values, 18
 - High Amplitude softkey
 - See sense subsystem keys
 - High Crest Mode Off On softkey, 23
 - Higher Layer softkey, 1055
 - Hostname softkey, 74
 - HSDPA file overview, 710
 - HSDPA over W-CDMA SCPI commands, 710
 - HSDPA user files, 710
- I**
- I Gain softkey, 381
 - I Offset softkey, 28, 382
 - I/Q Adjustments Off On softkey, 31
 - I/Q Calibration softkey, 70
 - I/Q Gain Balance Source 1 softkey, 28
 - I/Q Mapping Normal Invert softkey, 219, 245, 341
 - I/Q Mod Filter Manual Auto softkey, 32, 206, 220, 244, 273, 298, 326, 343, 470
 - I/Q Off On softkey, 36
 - I/Q Out Gain Balance softkey, 26
 - I/Q Output Atten softkey, 27
 - I/Q Output Filter Manual Auto softkey, 204, 215, 240, 268, 295, 296, 324, 341, 462
 - I/Q Scaling softkey
 - See custom subsystem keys
 - See DECT subsystem keys
 - See EDGE subsystem keys
 - See GSM subsystem keys
 - See NADC subsystem keys
 - See PDC subsystem keys
 - See PHS subsystem keys
 - See TETRA subsystem keys
 - I/Q softkey, 96
 - I/Q Timing Skew Path, 31
 - I/Q timing Skew softkey, 30
 - IDLE softkey, 852, 871
 - IEEE 488.2 common command keys
 - Diagnostic Info, 87
 - RECALL Reg, 88
 - Run Complete Self Test, 90
 - Save Reg, 89
 - Save Seq[n] Reg[nn], 89
 - Select Seq, 88
 - Immediate softkey, 225, 259, 279, 309
 - See sense subsystem keys
 - Impairments Off On softkey, 463
 - Impedance 75 Ohm High softkey, 416
 - Incr Set hardkey, 68
 - See amplitude modulation subsystem keys
 - See frequency modulation subsystem keys
 - See phase modulation subsystem keys
 - Increment Scramble Code softkey, 348
 - Increment Timing Offset softkey, 351
 - Infinity softkey, 958, 1057
 - Init Power field, 999
 - Init Pwr field, 1018, 1034
 - Initial Bit Count softkey, 437
 - Initial Block Count softkey, 427, 430
 - Initial Frame Count softkey, 447
 - Initialize Phase Fixed Random softkey, 334
 - Initialize Table softkey, 282
 - input subsystem keys
 - 0.7V, 417

Index

- 1.4V, [417](#)
- 1.6V, [417](#)
- 2.5V, [417](#)
- Clock Delay Off On, [415](#)
- Clock Polarity Neg Pos, [416](#)
- Clock Time Delay, [415](#)
- Data Polarity Neg Pos, [416](#)
- Gate Clk Delay, [412](#)
- Gate Delay Off On, [413](#)
- Gate Mode Time Clk, [412](#)
- Gate Off On, [414](#)
- Gate Polarity Neg Pos, [414](#)
- Gate Time Delay, [413](#)
- Impedance 75 Ohm High, [416](#)
- Resolution, [414](#)
- Insert Row softkey, [247](#), [250](#), [253](#), [282](#)
- Insert Waveform softkey, [311](#)
- Installed Board Info softkey, [79](#)
- Int I/Q Skew Corrections RF BB Off softkey, [34](#)
- Int softkeys
 - Int Doublet, [200](#)
 - Int Free-Run, [200](#)
 - Int Gated, [200](#)
 - Int Phase Polarity Normal Invert, [24](#), [33](#)
 - Int Triggered, [200](#)
- integer response data, [11](#)
- Intermod softkey, [962](#)
- Internal softkeys
 - Internal, [62](#), [174](#), [508](#)
 - Internal 1, [182](#), [194](#)
 - Internal 2, [182](#), [194](#)
 - Internal Monitor, [188](#)
 - Internal Square, [200](#)
- Inverse Video Off On softkey, [85](#)
- Inverted softkey, [513](#)
- IP address, [73](#)
- IP Address softkey, [74](#)
- IQ Phase Normal Invert softkey, [668](#)
- IQ Polarity softkey, [384](#)
- IS-2000 SR3 DS softkey
 - See* CDMA ARB subsystem keys
 - See* CDMA2000 ARB subsystem keys
 - See* Dmodulation subsystem keys
 - See* wideband CDMA ARB subsystem keys
- IS-95 Mod softkey
 - See* CDMA ARB subsystem keys
 - See* CDMA2000 ARB subsystem keys
 - See* CDMA2000 BBG subsystem keys and fields
 - See* custom subsystem keys
 - See* DECT subsystem keys
 - See* Dmodulation subsystem keys
 - See* EDGE subsystem keys
 - See* GPS subsystem keys
 - See* GSM subsystem keys
 - See* NADC subsystem keys
 - See* PDC subsystem keys
 - See* PHS subsystem keys
 - See* TETRA subsystem keys
 - See* wideband CDMA ARB subsystem keys
 - See* wideband CDMA base band subsystem keys and fields
- IS-95 Mod w/EQ softkey
 - See* CDMA ARB subsystem keys
 - See* CDMA2000 ARB subsystem keys
 - See* CDMA2000 BBG subsystem keys and fields
 - See* custom subsystem keys
 - See* DECT subsystem keys
 - See* Dmodulation subsystem keys
 - See* EDGE subsystem keys
 - See* GPS subsystem keys
 - See* GSM subsystem keys
 - See* NADC subsystem keys
 - See* PDC subsystem keys
 - See* PHS subsystem keys
 - See* TETRA subsystem keys
 - See* wideband CDMA ARB subsystem keys
 - See* wideband CDMA base band generator subsystem keys and fields
- IS-95 OQPSK softkey
 - See* custom subsystem keys
 - See* DECT subsystem keys
 - See* Dmodulation subsystem keys
 - See* EDGE subsystem keys
 - See* GSM subsystem keys
 - See* NADC subsystem keys
 - See* PDC subsystem keys
 - See* PHS subsystem keys
 - See* TETRA subsystem keys
- IS-95 QPSK softkey
 - See* custom subsystem keys

See DECT subsystem keys
 See Dmodulation subsystem keys
 See EDGE subsystem keys
 See GSM subsystem keys
 See NADC subsystem keys
 See PDC subsystem keys
 See PHS subsystem keys
 See TETRA subsystem keys
 IS-95 softkey
 See CDMA ARB subsystem keys
 See CDMA2000 ARB subsystem keys
 See CDMA2000 BBG subsystem keys and fields
 See custom subsystem keys
 See DECT subsystem keys
 See Dmodulation subsystem keys
 See EDGE subsystem keys
 See GPS subsystem keys
 See GSM subsystem keys
 See NADC subsystem keys
 See PDC subsystem keys
 See PHS subsystem keys
 See TETRA subsystem keys
 See wideband CDMA ARB subsystem keys
 See wideband CDMA base band generator
 subsystem keys and fields
 IS-95 w/EQ softkey
 See CDMA ARB subsystem keys
 See CDMA2000 ARB subsystem keys
 See CDMA2000 BBG subsystem keys and fields
 See custom subsystem keys
 See DECT subsystem keys
 See Dmodulation subsystem keys
 See EDGE subsystem keys
 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, [227](#)

J

[jy](#), [833](#)

L

LAN Config softkey, [73](#)
 Last Mkr Point softkey, [298](#), [300](#)
 Leap Seconds field, [497](#)
 Left Alternate softkey, [352](#)
 Left softkey, [924](#)
 LF Out softkeys
 LF Out Amplitude, [184](#)
 LF Out Off On, [188](#)
 LF Out Stop Freq, [184](#), [185](#), [191](#)
 LF Out Sweep Rate, [186](#)
 LF Out Sweep Time, [187](#)
 LF Out Tone 2 Ampl % of Peak, [185](#)
 LF Out Tone 2 Freq, [184](#), [185](#), [191](#)
 Link Down Up softkey, [343](#), [972](#)
 Link Forward Reverse softkey, [245](#), [475](#)
 list data, [112](#)
 List softkey, [96](#), [122](#)
 list/sweep subsystem keys
 # Points, [56](#)
 Ampl, [48](#), [65](#)
 Ampl Start, [48](#), [66](#)
 Ampl Stop, [48](#), [67](#)
 Dwell Type List Step, [50](#)
 Freq, [41](#), [48](#)
 Freq & Ampl, [48](#)
 Freq Start, [43](#), [48](#)
 Freq Stop, [44](#), [48](#)
 Load List From Step Sweep, [54](#)
 Manual Mode Off On, [52](#)
 Manual Point, [51](#)
 Off, [41](#), [48](#), [65](#)
 Preset List, [55](#)
 Step Dwell, [55](#)
 Sweep Direction Down Up, [49](#)
 Sweep Retrace Off On, [53](#)
 Sweep Type List Step, [54](#)
 Load From Selected File softkey, [20](#), [120](#), [125](#), [332](#)
 Load List From Step Sweep softkey, [54](#)
 Load/Store softkey, [282](#)
 Logic Type softkey, [389](#)
 Long Code Mask field, [512](#)
 Long Code State field, [479](#), [512](#)
 Loop Back Test Type softkey, [389](#)
 Low Amplitude softkey, [426](#), [429](#)

Index

- See* sense subsystem keys
- Low Capacity softkey, [585](#), [596](#)
- Low Capacity with Z field softkey, [585](#), [596](#)
- low frequency output subsystem keys
- Bus, [187](#)
 - DC, [187](#)
 - Dual-Sine, [187](#)
 - Ext, [187](#)
 - Free Run, [187](#)
 - Function Generator, [188](#)
 - Internal Monitor, [188](#)
 - LF Out Amplitude, [184](#)
 - LF Out Off On, [188](#)
 - LF Out Stop Freq, [184](#), [185](#), [191](#)
 - LF Out Sweep Rate, [186](#)
 - LF Out Sweep Time, [187](#)
 - LF Out Tone 2 Ampl % of Peak, [185](#)
 - LF Out Tone 2 Freq, [184](#), [185](#), [191](#)
 - Noise, [187](#)
 - Ramp, [187](#)
 - Sine, [187](#)
 - Square, [187](#)
 - Swept-Sine, [187](#)
 - Triangle, [187](#)
 - Trigger Key, [187](#)
- LTM OFF field, [497](#)
- M**
- Manual Mode Off On softkey, [52](#)
- Manual Point softkey, [51](#)
- Marker 1 2 3 4 softkey, [300](#)
- Marker 1 Polarity Neg Pos softkey, [210](#), [224](#), [258](#), [278](#), [471](#)
- dual ARB subsystem, [306](#), [330](#), [471](#)
 - wideband CDMA ARB subsystem, [366](#)
- Marker 1 softkey, [207](#), [208](#), [220](#), [221](#), [222](#), [255](#), [256](#), [274](#), [275](#), [303](#), [326](#), [327](#), [328](#), [363](#), [364](#), [470](#), [471](#)
- dual ARB subsystem, [304](#)
- Marker 2 Polarity Neg Pos softkey, [210](#), [224](#), [258](#), [278](#), [472](#)
- dual ARB subsystem, [306](#), [330](#), [366](#), [471](#)
- Marker 2 softkey, [207](#), [208](#), [220](#), [221](#), [222](#), [255](#), [256](#), [274](#), [275](#), [303](#), [326](#), [327](#), [328](#), [363](#), [364](#), [470](#), [471](#)
- dual ARB subsystem, [304](#)
- Marker 3 Polarity Neg Pos softkey, [210](#), [224](#), [258](#), [278](#), [472](#)
- dual ARB subsystem, [306](#), [330](#), [471](#)
 - wideband CDMA ARB subsystem, [366](#)
- Marker 3 softkey, [207](#), [208](#), [220](#), [221](#), [222](#), [255](#), [256](#), [274](#), [275](#), [303](#), [326](#), [327](#), [328](#), [363](#), [364](#), [470](#), [471](#)
- dual ARB subsystem, [304](#)
- Marker 4 Polarity Neg Pos softkey, [210](#), [224](#), [258](#), [278](#), [472](#)
- dual ARB subsystem, [306](#), [330](#), [471](#)
 - wideband CDMA ARB subsystem, [366](#)
- Marker 4 softkey, [207](#), [208](#), [220](#), [221](#), [222](#), [255](#), [256](#), [274](#), [275](#), [303](#), [326](#), [327](#), [328](#), [363](#), [364](#), [470](#), [471](#)
- dual ARB subsystem, [304](#)
- marker polarity, [210](#)
- Marker softkey, [298](#)
- Markers, [298](#)
- markers
- alc hold
 - AWGN subsystem, [207](#)
 - CDMA ARB subsystem, [221](#)
 - CDMA2000 ARB subsystem, [255](#)
 - Dmodulation subsystem, [274](#)
 - dual ARB subsystem, [303](#)
 - multitone subsystem, [327](#), [328](#)
 - wideband CDMA ARB subsystem, [363](#)
 - alternate amplitude
 - AWGN subsystem, [207](#)
 - CDMA ARB subsystem, [220](#)
 - CDMA2000 ARB subsystem, [255](#)
 - Dmodulation subsystem, [274](#)
 - dual ARB subsystem, [303](#)
 - multitone subsystem, [326](#)
 - wideband CDMA ARB subsystem, [363](#)
 - clearing, [298](#)
 - marker polarity
 - CDMA ARB subsystem, [224](#)
 - CDMA2000 ARB subsystem, [258](#)
 - Dmodulation subsystem, [278](#)
 - dual ARB subsystem, [306](#), [471](#)
 - multitone subsystem, [330](#)
 - wideband CDMA ARB subsystem, [366](#)
 - polarity
 - AWGN subsystem, [210](#)
 - RF blanking/pulse

- AWGN subsystem, 208
- CDMA ARB subsystem, 222
- CDMA2000 ARB subsystem, 256
- Demodulation subsystem, 275
- dual ARB subsystem, 304
- wideband CDMA ARB subsystem, 364
- setting, 300
- shifting points, 300
- mass memory subsystem keys
 - Binary, 122
 - Copy File, 122
 - Delete All NVWFM Files, 123
 - Delete All WFM Files, 123
 - Delete All WFM1 Files, 123
 - Delete File, 124
 - List, 122
 - Load From Selected File, 125
 - Rename File, 125
 - State, 122
 - Store To File, 125
 - User Flatness, 122
- Max Input softkey, 962
- Max Power field, 1000
- Max Pwr field, 1018, 1034
- MCDMA softkey, 97
- MDMOD softkey, 97
- MDWCDMA softkey, 98
- Measurement Mode BER% Search softkey, 446
- Measurement Mode BLER% Search softkey, 432
- memory subsystem, 105, 107, 108
- memory subsystem keys, 111, 113
 - Add Comment To Seq[n] Reg[nn], 121
 - All, 102, 120
 - Binary, 92
 - Bit, 92
 - CDMA, 93
 - Copy File, 103, 112
 - Data PRAM, 110
 - Delete All ARB CDMA Files, 116
 - Delete All ARB DMOD Files, 116
 - Delete All ARB DWCDMA Files, 116
 - Delete All ARB FCDMA Files, 117
 - Delete All ARB MCDMA Files, 118
 - Delete All ARB MDWCDMA Files, 118
 - Delete All ARB MTONE Files, 118
 - Delete All ARB RCDMA Files, 119
 - Delete All ARB UWCDMA Files, 120
 - Delete All Binary Files, 116
 - Delete All Bit Files, 116
 - Delete All Files, 115
 - Delete All FIR Files, 117
 - Delete All FSK Files, 117
 - Delete All I/Q Files, 117
 - Delete All List Files, 117
 - Delete All MDMOD Files, 118
 - Delete All MFCDMA Files, 118
 - Delete All SEQ Files, 119
 - Delete All SHAPE Files, 119
 - Delete All State Files, 119
 - Delete All UFLT Files, 119
 - Delete File, 120
 - DMOD, 93
 - DWCDMA, 94
 - FCDMA, 94
 - FIR, 95
 - FSK, 95
 - I/Q, 96
 - List, 96
 - Load From Selected File, 120
 - MCDMA, 97
 - MDMOD, 97
 - MDWCDMA, 98
 - MFCDMA, 98
 - MTONE, 99
 - Oversample Ratio, 106
 - RCDMA, 99
 - Rename File, 121
 - SEQ, 100
 - SHAPE, 100
 - State, 101
 - Store To File, 121
 - User Flatness, 101
 - UWCDMA, 102
- Message Data Raw Data (RPS11) softkey
 - See* wideband CDMA base band generator subsystem keys and fields
- Message Part field, 1017
- Message Pulse (RPS22) softkey
 - See* wideband CDMA base band generator subsystem keys and fields

Index

- Message Type field, 498
 - Message-Control Raw Data Clock (RPS12) softkey
 - See wideband CDMA base band generator
 - subsystem keys and fields
 - Meter Address softkeys, 75
 - Meter Channel A B softkey, 75
 - Meter Timeout softkey, 76
 - MFCDMA softkey, 98
 - Min Power field, 1000
 - Mod Index softkey, 467
 - Mod On/Off hardkey, 127
 - Modulator Atten Manual Auto softkey, 32, 33, 205, 219, 243, 244, 272, 296, 297, 325, 342, 468, 469
 - Msg Ctrl softkey, 1005
 - Msg Data softkey, 1005
 - Msg Pwr field, 1016, 1033
 - MSK softkey
 - See custom subsystem keys
 - See DECT subsystem keys
 - See Dmodulation subsystem keys
 - See EDGE subsystem keys
 - See GSM subsystem keys
 - See NADC subsystem keys
 - See PDC subsystem keys
 - See PHS subsystem keys
 - See TETRA subsystem keys
 - MTONE softkey, 99
 - multicarrier, 344
 - Multicarrier Off On softkey, 226, 245, 280
 - Multicarrier softkey, 344
 - Multislot Off On softkey, 642, 691
 - Multitone Off On softkey, 335
 - multitone subsystem keys
 - 2.100 MHz, 326
 - 40.000 MHz, 324, 326
 - ARB Reference Ext Int, 330
 - ARB Sample Clock, 332
 - Clear Header, 323
 - Freq Spacing, 333
 - Goto Row, 331
 - I/Q Mod Filter Manual Auto, 326
 - I/Q Output Filter Manual Auto, 324
 - Initialize Phase Fixed Random, 334
 - Load From Selected File, 332
 - Marker 1, 326, 327, 328
 - Marker 2, 326, 327, 328
 - Marker 3, 326, 327, 328
 - Marker 4, 326, 327, 328
 - Modulator Atten Manual Auto, 325
 - Multitone Off On, 335
 - None, 326, 327, 328
 - Number Of Tones, 333, 334
 - Random Seed Fixed Random, 335
 - Reference Freq, 330
 - Save Setup To Header, 323
 - Store To File, 332
 - Through, 324, 326
 - Toggle State, 331, 333
 - mV softkey, 168
 - mVemf softkey, 168
- ## N
- N Power field, 976, 1006
 - N5102A, 376
 - See digital subsystem
 - N5102A Off On softkey, 391
 - NADC Off On softkey, 805
 - NADC softkey, 280, 281, 282
 - NADC subsystem keys
 - 128QAM, 788
 - 16 1's & 16 0's, 782, 791, 793, 795, 796
 - 16PSK, 788
 - 16QAM, 788
 - 256QAM, 788
 - 2-Lvl FSK, 788
 - 32 1's & 32 0's, 782, 791, 793, 795, 796
 - 32QAM, 788
 - 4 1's & 4 0's, 782, 791, 793, 795, 796
 - 4-Lvl FSK, 788
 - 4QAM, 788
 - 64 1's & 64 0's, 782, 791, 793, 795, 796
 - 64QAM, 788
 - 8 1's & 8 0's, 782, 791, 793, 795, 796
 - 8PSK, 788
 - All Timeslots, 798
 - APCO 25 C4FM, 785
 - BBG Data Clock Ext Int, 772
 - BBG Ref Ext Int, 784
 - Begin Frame, 798
 - Begin Timeslot #, 798, 799

- Bit Rate, 773
- BPSK, 788
- Bus, 790, 802
- CDL, 792
- CDVCC, 792, 795
- Continuous, 800
- D8PSK, 788
- Data Format Pattern Framed, 780
- Down Custom, 797
- Down TCH, 797
- Down TCH All, 797
- Ext, 782, 790, 791, 793, 795, 796, 802
- Ext BBG Ref Freq, 785
- Ext Data Clock Normal Symbol, 784
- Ext Delay Bits, 803
- Ext Delay Off On, 804
- Ext Polarity Neg Pos, 804
- Fall Delay, 775, 776
- Fall Time, 776, 777
- Filter Alpha, 772
- Filter BbT, 773
- FIX4, 782, 783, 791, 793, 794, 795, 796, 797
- Frame Repeat Single Cont, 789
- Free Run, 801
- Freq Dev, 787
- Gate Active Low High, 802
- Gated, 800
- Gaussian, 785
- Gray Coded QPSK, 788
- I/Q Scaling, 786
- IS-95, 785
- IS-95 Mod, 785
- IS-95 Mod w/EQ, 785
- IS-95 OQPSK, 788
- IS-95 QPSK, 788
- IS-95 w/EQ, 785
- MSK, 788
- NADC Off On, 805
- Nyquist, 785
- Optimize FIR For EVM ACP, 781
- OQPSK, 788
- $\pi/4$ DQPSK, 788
- Patt Trig In 1, 804
- Patt Trig In 2, 804
- Phase Dev, 787
- PN11, 782, 791, 793, 795, 796
- PN15, 782, 791, 793, 795, 796
- PN20, 782, 791, 793, 795, 796
- PN23, 782, 791, 793, 795, 796
- PN9, 782, 791, 793, 795, 796
- PN9 Mode Normal Quick, 774
- Polarity Normal Invert, 789
- QPSK, 788
- Rate Full Half, 786
- Recall Secondary Frame State, 789
- Rectangle, 785
- Reset & Run, 801
- Restore NADC Factory Default, 783
- Rise Delay, 778
- Rise Time, 779, 780
- Root Nyquist, 785
- SACCH, 792, 796
- Save Secondary Frame State, 790
- Secondary Frame Off On, 790
- Sine, 775, 781
- Single, 800
- Symbol Rate, 799
- SYNC, 793, 796
- Sync Out Offset, 798
- Timeslot Ampl Main Delta, 794
- Timeslot Off On, 794
- Trigger & Run, 801
- Trigger Key, 790, 802
- UN3/4 GSM Gaussian, 785
- Up Custom, 797
- Up TCH, 797
- Up TCH All, 797
- User File, 775, 781, 782, 791, 793, 795, 796
- User FIR, 785
- User FSK, 787, 788
- User I/Q, 788
- nadc subsystem keys
 - PRAM Files, 782
- Name and Store softkey, 311
- Negate I softkey, 382
- Negate Q softkey, 385
- Network ID field, 498
- No Limits softkey
 - See* calculate subsystem keys
- No Thresholds softkey

Index

See sense subsystem keys
Noise Bandwidth Factor softkey, [306](#)
Noise Off On softkey, [502](#), [514](#)
Noise Seed Fixed Random softkey, [212](#)
Noise Seed softkey, [465](#)
Noise softkey, [173](#), [180](#), [187](#), [193](#)
NONE (RPS0) softkey
See wideband CDMA base band generator
 subsystem keys and fields
NONE softkey, [1063](#)
None softkey, [159](#), [207](#), [208](#), [220](#), [221](#), [222](#), [255](#),
[256](#), [274](#), [275](#), [303](#), [304](#), [326](#), [327](#), [328](#), [363](#),
[364](#), [470](#), [471](#), [563](#), [966](#), [968](#), [1068](#), [1076](#)
Normal All softkey, [652](#), [700](#)
Normal softkey, [513](#), [652](#), [700](#), [924](#)
Num of Blk field, [1069](#), [1077](#)
Num of Pre field, [1017](#), [1034](#)
Number of AICH field, [1002](#)
Number of PRACH 80ms field, [1017](#)
Number of PRACH field, [1031](#), [1033](#)
Number of Preamble field, [1034](#)
Number Of Tones softkey, [333](#), [334](#)
numeric boolean response data, [11](#)
Numeric Format, [383](#)
Numeric Format softkey, [383](#)
numeric SCPI parameter, [8](#)
numeric, extended SCPI parameter, [8](#)
Nyquist softkey
See CDMA ARB subsystem keys
See CDMA2000 ARB subsystem keys
See CDMA2000 BBG subsystem keys and fields
See custom subsystem keys
See DECT subsystem keys
See Dmodulation subsystem keys
See EDGE subsystem keys
See GPS subsystem keys
See GSM subsystem keys
See NADC subsystem keys
See PDC subsystem keys
See PHS subsystem keys
See TETRA subsystem keys
See wideband CDMA ARB subsystem keys
See wideband CDMA base band generator
 subsystem keys and fields

0

OCNS softkey, [353](#)
octal values, [18](#)
Off softkey, [24](#), [34](#), [41](#), [48](#), [65](#), [225](#), [259](#), [279](#), [309](#),
[1030](#)
Omitted softkey, [958](#), [1057](#)
On softkey, [225](#), [259](#), [279](#), [309](#), [1030](#)
On/Off field, [940](#), [1022](#)
OpenLoop Ant1 SCH TSTD OFF softkey, [963](#)
OpenLoop Ant1 softkey, [963](#)
OpenLoop Ant2 SCH TSTD OFF softkey, [963](#)
OpenLoop Ant2 softkey, [963](#)
Optimize ACP ADJ ALT softkey, [343](#), [358](#)
Optimize FIR For EVM ACP softkey, [997](#)
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, [202](#), [458](#)
 custom subsystem, [544](#)
 Dmodulation subsystem, [268](#)
 dual ARB subsystem, [292](#)
 multitone subsystem, [323](#)
 400
 wideband CDMA ARB subsystem, [336](#)
 wideband CDMA base band generator
 subsystem, [918](#)
 401
 CDMA ARB subsystem, [213](#)
 CDMA2000 ARB subsystem, [238](#)
 CDMA2000 BBG subsystem, [475](#)

- 402
 DECT subsystem, [569](#)
 EDGE subsystem, [618](#)
 GSM subsystem, [671](#)
 NADC subsystem, [772](#)
 PDC subsystem, [806](#)
 PHS subsystem, [839](#)
 TETRA subsystem, [875](#)
- 403
 AWGN real-time subsystem, [459](#)
 AWGN subsystem, [203](#)
- 406
 bluetooth subsystem, [460](#)
- 409
 GPS subsystem, [664](#)
- UN7/300
 calculate subsystem, [394](#)
 data subsystem, [404](#)
 input subsystem, [412](#), [418](#)
 sense subsystem, [421](#)
- Options Info softkey, [81](#)
- 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, [126](#)
- output subsystem keys
 Mod On/Off, [127](#)
 Output Blanking Off On Auto, [126](#)
 RF On/Off, [127](#)
- Oversample Ratio softkey, [106](#), [224](#)
- Overwrite softkey, [159](#)
- P**
- P Code Pwr softkey, [668](#)
- P Rev field, [499](#)
- P Rev Min field, [497](#)
- P softkey, [587](#)
- $\pi/4$ 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, [472](#)
- Paging Indicator field, [506](#), [944](#)
- Paging softkey, [227](#)
- parameter types. *See* SCPI commands parameter types
- Pass Amplitude softkey, [426](#), [430](#)
See sense subsystem keys
- Pass Through Preset softkey, [391](#)
- Pass/Fail Limits softkey, [402](#)
- Pass/Fail Off On softkey, [402](#)
- paths, SCPI command tree, [7](#)
- Patt Trig In 1 softkey
See CDMA ARB subsystem keys
See CDMA2000 ARB subsystem keys
See custom subsystem keys
See DECT subsystem keys
See Dmodulation subsystem keys
See dual ARB subsystem keys
See EDGE subsystem keys
See GSM subsystem keys
See NADC subsystem keys
See PDC subsystem keys
See PHS subsystem keys
See TETRA subsystem keys
See wideband CDMA ARB subsystem keys
 subsystem keys
- Patt Trig In 2 softkey
See CDMA ARB subsystem keys
See CDMA2000 ARB subsystem keys
See custom subsystem keys
See DECT subsystem keys
See Dmodulation subsystem keys
See dual ARB subsystem keys
See EDGE subsystem keys
See GSM subsystem keys
See NADC subsystem keys

Index

- See* PDC subsystem keys
- See* PHS subsystem keys
- See* TETRA subsystem keys
- See* wideband CDMA ARB subsystem keys
 - subsystem keys
- Pattern trigger in 1 field, 1045
- Pattern trigger in 2 field, 1045
- PCCPCH + SCH + 3 DPCH softkey, 344, 349
- PCCPCH + SCH +1 DPCH softkey, 344, 349
- PCCPCH + SCH softkey, 344, 349
- P-CCPCH data (DRPS39) softkey, 948, 950, 951, 952, 953
- P-CCPCH data-clk (DRPS38) softkey, 948, 950, 951, 952, 953
- PCCPCH softkey, 920, 921
- PDC Off On softkey, 838
- PDC softkey, 280, 281, 282
- PDC subsystem keys
 - 128QAM, 821
 - 16 1's & 16 0's, 815, 824, 825, 827, 829
 - 16PSK, 821
 - 16QAM, 821
 - 256QAM, 821
 - 2-Lvl FSK, 821
 - 32 1's & 32 0's, 815, 824, 825, 827, 829
 - 32QAM, 821
 - 4 1's & 4 0's, 815, 824, 825, 827, 829
 - 4-Lvl FSK, 821
 - 4QAM, 821
 - 64 1's & 64 0's, 815, 824, 825, 827, 829
 - 64QAM, 821
 - 8 1's & 8 0's, 815, 824, 825, 827, 829
 - 8PSK, 821
 - All Timeslots, 831
 - APCO 25 C4FM, 818
 - BBG Ref Ext Int, 817
 - Begin Frame, 831
 - Begin Timeslot #, 831, 832
 - Bit Rate, 807
 - BPSK, 821
 - Bus, 823, 835
 - CC, 824, 828, 830
 - Continuous, 834
 - D8PSK, 821
 - Data Format Pattern Framed, 814
 - Down Custom, 831
 - Down TCH, 831
 - Down TCH All, 831
 - Ext, 815, 823, 824, 825, 827, 829, 835
 - Ext BBG Ref Freq, 818
 - Ext Data Clock Ext Int, 806
 - Ext Data Clock Normal Symbol, 817
 - Ext Delay Bits, 836
 - Ext Delay Off On, 837
 - Ext Polarity Neg Pos, 837
 - Fall Delay, 809, 810
 - Fall Time, 809, 811
 - Filter Alpha, 806
 - Filter BbT, 807
 - FIX4, 815, 816, 824, 825, 826, 827, 829
 - Free Run, 834
 - Freq Dev, 820
 - Gate Active Low High, 835
 - Gated, 834
 - Gaussian, 818
 - Gray Coded QPSK, 821
 - I/Q Scaling, 819
 - IS-95, 818
 - IS-95 Mod, 818
 - IS-95 Mod w/EQ, 818
 - IS-95 OQPSK, 821
 - IS-95 QPSK, 821
 - IS-95 w/EQ, 818
 - MSK, 821
 - Nyquist, 818
 - Optimize FIR For EVM ACP, 815
 - OQPSK, 821
 - $\pi/4$ DQPSK, 821
 - Patt Trig In 1, 838
 - Patt Trig In 2, 838
 - PDC Off On, 838
 - Phase Dev, 820
 - Phase Polarity Normal Invert, 822
 - PN11, 815, 825, 827, 829
 - PN15, 815, 824, 825, 827, 829
 - PN20, 815, 825, 827, 829
 - PN23, 815, 825, 827, 829
 - PN9, 815, 824, 825, 827, 829
 - PN9 Mode Normal Quick, 808
 - QPSK, 821

- Rate Full Half, [819](#)
- Recall Secondary Frame State, [822](#)
- Rectangle, [818](#)
- Reset & Run, [834](#)
- Restore PDC Factory Default, [816](#)
- Rise Delay, [811](#), [812](#)
- Rise Time, [813](#)
- Root Nyquist, [818](#)
- SACCH, [825](#), [828](#), [830](#)
- Save Secondary Frame State, [822](#)
- Secondary Frame Off On, [823](#)
- Sine, [814](#)
- Single, [834](#)
- SW, [825](#), [828](#), [830](#)
- Symbol Rate, [832](#)
- Sync Out Offset, [831](#)
- Timeslot Ampl Main Delta, [826](#)
- Timeslot Off On, [827](#)
- Trigger & Run, [834](#)
- Trigger Key, [823](#), [835](#)
- UN3/4 GSM Gaussian, [818](#)
- Up Custom, [831](#)
- Up TCH, [831](#)
- Up TCH All, [831](#)
- Up VOX, [831](#)
- User File, [814](#), [815](#), [824](#), [825](#), [827](#), [829](#)
- User FIR, [818](#)
- User FSK, [821](#)
- User I/Q, [821](#)
- pdcc subsystem keys
 - PRAM Files, [816](#)
- Performance Req softkey, [962](#)
- Permuted ESN field, [482](#), [492](#)
- Phase Dev softkey
 - See* custom subsystem keys
 - See* DECT subsystem keys
 - See* EDGE subsystem keys
 - See* GSM subsystem keys
 - See* NADC subsystem keys
 - See* PDC subsystem keys
 - See* PHS subsystem keys
 - See* TETRA subsystem keys
- phase modulation subsystem keys
 - Φ M Sweep Time softkey, [193](#)
 - FM Φ M Normal High BW softkey, [190](#)
 - Φ M Dev Couple Off On, [195](#)
 - Φ M Dev softkey, [195](#)
 - Φ M Off On softkey, [194](#)
 - Φ M Path 1 2, [189](#)
 - Φ M Tone 2 Ampl Percent of Peak, [192](#)
 - Φ M Tone 2 Rate, [192](#)
 - Bus, [193](#)
 - Dual-Sine, [193](#)
 - Ext, [193](#)
 - Ext Coupling DC AC, [191](#)
 - Ext1, [194](#)
 - Ext2, [194](#)
 - Free Run, [193](#)
 - Incr Set, [190](#), [196](#)
 - Internal 1, [194](#)
 - Internal 2, [194](#)
 - Noise, [193](#)
 - Ramp, [193](#)
 - Sine, [193](#)
 - Square, [193](#)
 - Swept-Sine, [193](#)
 - Triangle, [193](#)
 - Trigger Key, [193](#)
- Phase Polarity field, [505](#)
- Phase Polarity Normal Invert softkey
 - See* custom subsystem keys
 - See* DECT subsystem keys
 - See* EDGE subsystem keys
 - See* GSM subsystem keys
 - See* PDC subsystem keys
 - See* PHS subsystem keys
 - See* TETRA subsystem keys
 - See* wideband CDMA base band generator subsystem keys and fields
- Phase Polarity Normal Inverted softkey, [972](#)
- Phase Ref Set softkey, [46](#)
- PHS Off On softkey, [874](#)
- PHS softkey, [280](#), [281](#), [282](#)
- PHS subsystem keys
 - 128QAM, [860](#)
 - 16 1's & 16 0's, [849](#), [851](#), [854](#), [869](#), [873](#)
 - 16-Lvl FSK, [860](#)
 - 16PSK, [860](#)
 - 16QAM, [860](#)
 - 256QAM, [860](#)

Index

2-Lvl FSK, 860
32 1's & 32 0's, 849, 851, 854, 869, 873
32QAM, 860
4 1's & 4 0's, 849, 851, 854, 869, 873
4-Lvl FSK, 860
4QAM, 860
64 1's & 64 0's, 849, 851, 854, 869, 873
64QAM, 860
8 1's & 8 0's, 849, 851, 854, 869, 873
8-Lvl FSK, 860
8PSK, 860
All Timeslots, 862
APCO 25 C4FM, 857
BBG Data Clock Ext Int, 839
BBG Ref Ext Int, 856
Begin Frame, 862
Begin Timeslot #, 862, 863
Bit Rate, 840
BPSK, 860
Bus, 861, 868
C4FM, 860
Continuous, 864
CSID, 852, 870
Custom, 855
D8PSK, 860
Data Format Pattern Framed, 848
Ext, 849, 851, 854, 861, 868, 869, 873
Ext BBG Ref Freq, 856
Ext Data Clock Normal Symbol, 855
Ext Delay Bits, 866
Ext Delay Off On, 867
Ext Polarity Neg Pos, 867
Fall Delay, 843, 844
Fall Time, 843, 845
Filter Alpha, 839
Filter BbT, 840
FIX4, 849, 850, 851, 854, 869, 870, 873
Free Run, 865
Gate Active Low High, 866
Gated, 864
Gaussian, 857
Gray Coded QPSK, 860
I/Q Scaling, 858
IDLE, 852, 871
IS-95, 857
IS-95 Mod, 857
IS-95 Mod w/EQ, 857
IS-95 OQPSK, 860
IS-95 QPSK, 860
IS-95 w/EQ, 857
MSK, 860
Nyquist, 857
Optimize FIR For EVM ACP, 849
OQPSK, 860
 $\pi/4$ DQPSK, 860
Patt Trig In 1, 867
Patt Trig In 2, 867
Phase Dev, 858, 859
Phase Polarity Normal Invert, 860
PHS Off On, 874
PN11, 849, 851, 854, 869, 873
PN15, 849, 851, 854, 869, 873
PN20, 849, 851, 854, 869, 873
PN23, 849, 851, 854, 869, 873
PN9, 849, 851, 854, 869, 873
PN9 Mode Normal Quick, 841
PSID, 852, 871
QPSK, 860
Recall Secondary Frame State, 860
Rectangle, 857
Reset & Run, 865
Restore PHS Factory Default, 850
Rise Delay, 845, 846
Rise Time, 847
Root Nyquist, 857
SA, 853, 872
Save Secondary Frame State, 861
Scramble Off On, 842
Scramble Seed, 842
Secondary Frame Off On, 861
Sine, 848
Single, 864
Symbol Rate, 863
SYNC, 855
Sync Out Offset, 862
TCH, 855
TCH All, 855
Timeslot Ampl Main Delta, 851, 870
Timeslot Off On, 853, 872
Timeslot Type, 873

- Trigger & Run, 865
- Trigger Key, 861, 868
- UN3/4 GSM Gaussian, 857
- User File, 848, 849, 851, 854, 869, 873
- User FIR, 857
- User FSK, 859, 860
- User I/Q, 859, 860
- UW, 853, 854, 871, 872
- phs subsystem keys
 - PRAM Files, 850
- PI Bits field, 944
- PICH 10ms FramePulse (DRPS37) softkey, 948, 950, 951, 952, 953
- PICH data (DRPS35) softkey, 948, 950, 951, 952, 953
- PICH data-clk (DRPS34) softkey, 948, 950, 951, 952, 953
- PICH softkey, 353, 920, 921
- PICH TimeSlot Pulse (DRPS36) softkey, 948, 950, 951, 952, 953
- Pilot softkey, 226, 227, 229, 245, 252
- Playback Ratio field, 924
- PN Offset field, 508
- PN Offset softkey, 250, 253
- 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, 157
- PN9 softkey
 - See CDMA2000 BBG subsystem keys and fields
 - See custom subsystem keys
 - See data subsystem keys
 - See DECT subsystem keys
 - See EDGE subsystem keys
 - See GPS subsystem keys
 - See GSM subsystem keys
 - See NADC subsystem keys
 - See PDC subsystem keys
 - See PHS subsystem keys
 - See sense subsystem keys
 - See TETRA subsystem keys

Index

- See* wideband CDMA base band generator
 - subsystem keys and fields
- polarity
 - awgn subsystem, 210
 - markers
 - cdma arb subsystem, 224
 - cdma2000 arb subsystem, 258
 - dmodulation subsystem, 278
 - dual ARB subsystem, 306, 471
 - multitone subsystem, 330
 - wideband CDMA ARB subsystem, 366
 - polarity markers
 - awgn subsystem, 210
- Polarity Normal Invert softkey, 789
- Port Config softkey, 390
- Power Control Signal Polarity Neg Pos softkey, 1002
- Power field
 - See* CDMA2000 BBG subsystem keys and fields
 - See* wideband CDMA baseband generator
 - subsystem keys and fields
- Power Hold Off On softkey, 999
- Power Meter softkey, 76
- Power Mode Norm TPC softkey, 1002
- Power On Last Preset softkey, 155
- Power Search Manual Auto softkey, 59, 60, 61
- Power softkey, 360
- power subsystem keys
 - ALC Off On, 61
 - Alt Amp Delta, 62
 - Alt Ampl Off On, 63
 - Ampl, 48, 65
 - Ampl Offset, 67
 - Ampl Ref Off On, 66
 - Ampl Ref Set, 65
 - Ampl Start, 48, 66
 - Ampl Stop, 48, 67
 - Amplitude, 65, 68
 - Atten Hold Off On, 64
 - Auto, 57, 58
 - Do Power Search, 59, 60, 61
 - Ext Detector, 62
 - Internal, 62
 - Off, 48, 65
 - Power Search Manual Auto, 59, 60, 61
 - Set ALC Level, 59
 - Set Atten, 64
 - Source Module, 62
 - step, 68
 - PPCCPCH softkey, 353, 354
 - Pp-m field, 1019, 1036
 - PRACH Mode Single Multi softkey, 1016
 - PRACH Power Setup Mode Pp-m Total softkey, 1023
 - PRACH Processing (RPS19) softkey
 - See* wideband CDMA base band generator
 - subsystem keys and fields
 - PRACH Scrambling Code field, 1024
 - PRACH softkey, 998
 - PRACH Trigger Polarity Neg Pos softkey, 1029
 - PRACH Trigger softkey, 1028
 - PRACH Trigger Source Immedi Trigger softkey, 1029
- PRAM
 - downloads, 110
 - list, 111
- PRAM DATA BLOCK, 112
- pram files
 - CUSTOM subsystem keys, 554
 - DECTsubsystem keys, 579
 - EDGE subsystem keys, 627
 - GSM subsystem keys, 681
 - NADC subsystem keys, 782
 - PDC subsystem keys, 816
 - PHS subsystem keys, 850
 - TETRA subsystem keys, 886
- PRAM LIST, 112
- PRAM?, 112
- PRAT field, 499
- Pre Sig field, 1020
- Preamble power average field, 1022
- 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, 1005
 precise talking and forgiving listening, 7
 Preset hardkey, 156
 Preset List softkey, 21, 55
 Preset Normal User softkey, 157
 PSCH softkey, 353
 PSCH State field, 946
 PSID softkey, 852, 871
 pulse modulation subsystem keys
 Ext Pulse, 200
 Int Doublet, 200
 Int Free-Run, 200
 Int Gated, 200
 Int Triggered, 200
 Internal Square, 200
 Pulse Off On, 200
 Pulse Period, 198
 Pulse Rate, 197
 Pulse Width, 199
 Pulse softkeys
 Pulse Off On, 200
 Pulse Period, 198
 Pulse Rate, 197
 Pulse Width, 199
 Pulse/RF blanking, 304
 pulse/RF blanking markers
 awgn subsystem, 208
 cdma arb subsystem, 222
 cdma2000 arb, 256
 dmodulation, 275
 dual ARB subsystem, 304
 wideband cdma arb, 364
 Puncture fields, 1069, 1077
 Puncture softkey, 956
 PwrOffs field, 955, 1054
 PWT softkey, 280, 281, 282

Q

Q Gain softkey, 384
 Q Offset softkey, 29, 386
 QOF field, 483, 493
 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, 29
 Quarter softkey, 525, 530
 quotes, SCPI command use of, 17

R

RACH TrCH softkey, 1005
 Radio Config field
 See CDMA2000 BBG subsystem keys and fields
 Radio Config softkey, 251
 RadioConfig 1/2 Access softkey, 475
 RadioConfig 1/2 Traffic softkey, 475
 RadioConfig 3/4 Common Control softkey, 475
 RadioConfig 3/4 Enhanced Access softkey, 475
 RadioConfig 3/4 Traffic softkey, 475
 Ramp field, 483
 Ramp softkey, 173, 180, 187, 193
 Ramp Step field, 1019, 1035
 Ramp Time field, 483
 Random Seed Fixed Random softkey, 335
 Random softkey, 352, 360
 Ranging Code C/A P C/A+P softkey, 668
 Rate Full Half softkey, 786, 819
 Rate Match Attr field, 971, 1069, 1077
 Rate softkey, 250, 253
 RCDMA softkey, 99
 real response data, 10
 Real-time AWGN Off On softkey, 459
 real-time AWGN subsystem keys
 Bandwidth, 459
 Real-time AWGN Off On, 459
 Real-time GPS Off On softkey, 670
 Real-time Noise softkey, 308
 RECALL Reg softkey, 88
 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

Index

- 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, [974](#), [1004](#)
 - Ref Oscillator Source Auto Off On softkey, [46](#)
 - Ref Sensitivity softkey, [962](#)
 - Reference Freq softkey, [473](#)
 - See* AWGN subsystem keys
 - See* bluetooth subsystem keys
 - See* CDMA ARB subsystem keys
 - See* CDMA2000 ARB subsystem keys
 - See* Dmodulation subsystem keys
 - See* dual ARB subsystem keys
 - See* multitone subsystem keys
 - See* wideband CDMA ARB subsystem keys
 - Reference Frequency softkey, [378](#)
 - Reference Out softkey, [409](#)
 - Rename File, [121](#)
 - Rename File softkey, [125](#)
 - Reserved field, [499](#)
 - 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* 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, [77](#)
 - Reset to Initial Power softkey, [1001](#)
 - Resolution softkey, [414](#)
 - resolving error messages/setting conflicts, [712](#)
 - response data types. *See* SCPI commands response types
 - Restore DECT Factory Default softkey, [579](#)
 - Restore EDGE Factory Default softkey, [628](#)
 - Restore Factory Default softkey, [681](#)
 - Restore NADC Factory Default softkey, [783](#)
 - Restore PDC Factory Default softkey, [816](#)
 - Restore PHS Factory Default softkey, [850](#)
 - Restore Sys Defaults softkey, [157](#)
 - Restore TETRA Factory Default softkey, [887](#)
 - Resync Limits softkey, [452](#)
 - Retrigger Mode Off On softkey, [367](#)
 - Reverse softkey, [226](#)
 - Revert to Default Cal Settings softkey, [71](#)
 - rf blanking, [304](#)
 - RF blanking/pulse markers
 - awgn subsystem, [208](#)
 - cdma arb subsystem, [222](#)
 - cdma2000 arb subsystem, [256](#)
 - dmodulation subsystem, [275](#)
 - dual ARB subsystem, [304](#)
 - wideband cdma arb subsystem, [364](#)
 - RF On/Off hardkey, [127](#)
 - Right Alternate softkey, [352](#)
 - Right softkey, [924](#)
 - Rise Delay softkey
 - See* custom subsystem keys
 - See* DECT subsystem keys
 - See* EDGE subsystem keys
 - See* GSM subsystem keys
 - See* NADC subsystem keys
 - See* PDC subsystem keys
 - See* PHS subsystem keys
 - See* TETRA subsystem keys
 - Rise Time softkey
 - See* custom subsystem keys

- See* DECT subsystem keys
 - See* EDGE subsystem keys
 - See* GSM subsystem keys
 - See* NADC subsystem keys
 - See* PDC subsystem keys
 - See* PHS subsystem keys
 - See* TETRA subsystem keys
 - Rising softkey, [543](#)
 - RMC 144 kbps (25.141) softkey, [1037](#)
 - RMC 384 kbps (25.141) softkey, [1037](#)
 - RMC 64 kbps (25.141) softkey, [1037](#)
 - RMC122 kbps (25.141) softkey, [1037](#)
 - RMS header info, [293](#)
 - Root Nyquist softkey
 - See* CDMA ARB subsystem keys
 - See* CDMA2000 ARB subsystem keys
 - See* CDMA2000 BBG subsystem keys and fields
 - See* custom subsystem keys
 - See* DECT subsystem keys
 - See* Dmodulation subsystem keys
 - See* EDGE subsystem keys
 - See* GPS subsystem keys
 - See* GSM subsystem keys
 - See* NADC subsystem keys
 - See* PDC subsystem keys
 - See* PHS subsystem keys
 - See* TETRA subsystem keys
 - See* wideband CDMA ARB subsystem keys
 - See* wideband CDMA base band generator subsystem keys and fields
 - rotate markers, [300](#)
 - Rotation softkey, [386](#)
 - route subsystem keys
 - Burst Gate In Polarity Neg Pos, [128](#), [129](#)
 - Data Clock Out Neg Pos, [131](#)
 - Data Clock Polarity Neg Pos, [128](#), [130](#), [132](#)
 - Data Out Polarity Neg Pos, [131](#), [133](#)
 - Data Polarity Neg Pos, [129](#), [130](#)
 - DATA/CLK/SYNC Rear Outputs Off On, [133](#)
 - Symbol Sync Out Polarity Neg Pos, [132](#), [133](#)
 - Symbol Sync Polarity Neg Pos, [129](#), [130](#)
 - RS-232 Baud Rate softkey, [77](#)
 - RS-232 ECHO Off On softkeys, [77](#)
 - RS-232 Timeout softkeys, [78](#)
 - Run Complete Self Test softkey, [90](#)
 - runtime scaling, [310](#)
- ## S
- S softkey, [641](#), [698](#)
 - See* DECT subsystem keys
 - SA softkey, [853](#), [872](#)
 - SACCH softkey, [792](#), [796](#), [825](#), [828](#), [830](#)
 - Sanitize softkey, [159](#)
 - Satellite ID softkey, [670](#)
 - Save Reg softkey, [89](#)
 - 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, [89](#)
 - Save Setup To Header softkey, [204](#), [218](#), [243](#), [271](#), [295](#), [323](#), [340](#), [463](#)
 - Save User Preset softkey, [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
 - Scale Waveform Data softkey, [310](#)
 - scaling
 - during playback, [310](#)
 - waveform files, [310](#)
 - Scaling softkey, [310](#), [387](#)
 - SCCPCH softkey, [353](#), [354](#)
 - SCFN field, [960](#), [1059](#)
 - SCH slot-pulse (DRPS10) softkey, [948](#), [950](#), [951](#), [952](#), [953](#)
 - SCPI
 - errors, [153](#)
 - SCPI command subsystems
 - all, [458](#)
 - amplitude modulation, [170](#)
 - AWGN, [203](#)
 - AWGN real-time, [459](#)

Index

- bluetooth, 460
- calculate, 394
- calibration, 70
- CDMA ARB, 213
- CDMA2000 ARB, 238
- CDMA2000 BBG, 475
- communication, 73
- correction, 20
- custom, 544
- data, 404
- DECT, 569
- diagnostic, 79
- digital, 376
- digital modulation, 22
- display, 83
- Dmodulation, 268
- Dual ARB, 292
- E4438C, 202
- EDGE, 618
- frequency, 37
- frequency modulation, 177
- GPS subsystem, 664
- GSM, 671
- HSDPA over W-CDMA, 710
- IEEE 488.2 common commands, 86
- input, 412, 418
- list/sweep, 48
- low frequency output, 184
- mass memory, 122
- memory, 92
- multitone, 323
- N5102A, 376
- NADC, 772
- output, 126
- PDC, 806
- phase modulation, 189
- PHS, 839
- power, 57
- pulse modulation, 197
- route, 128
- sense, 421
- status, 134
- system, 152
- TETRA, 875
- trigger, 164
- unit, 168
- wideband CDMA ARB, 336
- wideband CDMA base band generator, 918
- SCPI commands
 - command tree paths, 7
 - parameter and response types, 7
 - parameter types
 - boolean, 10
 - discrete, 9
 - extended numeric, 8
 - numeric, 8
 - string, 10
 - response data types
 - discrete, 11
 - integer, 11
 - numeric boolean, 11
 - real, 10
 - string, 11
 - root command, 6
- SCPI softkey, 154, 156
- Scramble Code softkey, 352, 358, 360
- Scramble Off On softkey, 842, 878
- Scramble Offset softkey, 352, 360
- Scramble Seed softkey, 842, 878
- Scrambling Code field, 953, 954, 1051
- Screen Saver Delay
 - 1 hr softkey, 161
- Screen Saver Mode softkeys, 162
- Screen Saver Off On softkeys, 162
- Second DPDCH I Q softkey, 358
- Secondary Frame Off On softkey
 - See* DECT subsystem keys
 - See* EDGE subsystem keys
 - See* GSM subsystem keys
 - See* NADC subsystem keys
 - See* PDC subsystem keys
 - See* PHS subsystem keys
 - See* TETRA subsystem keys
- secure wave directory, 114
- security functions
 - erase, 159
 - none, 159
 - overwrite, 159, 161
 - sanitize, 159, 161
 - secure display, 158

- secure mode, 160
- segment advance
 - trigger response, 316
- Segment Advance softkey, 313
- Select File softkey, 247, 280
- Select Seq softkey, 88
- Select Waveform softkey, 321
- sense subsystem keys
 - Adjust Gain, 433
 - Aux, 434, 450, 456
 - Aux I/O Trigger Polarity Pos Neg, 456
 - BER Mode Off On, 421, 425, 444
 - BERT Off On, 453
 - BERT Resync Off On, 453
 - Bit Count, 435, 437
 - Bit Delay Off On, 455
 - Block Count, 424, 426, 428, 440, 444
 - Block Erasure, 422, 427, 440, 441, 442, 444, 445
 - Bus, 434, 450, 456
 - Class Ib Bit Error, 447, 448
 - Class II Bit Error, 448
 - Cycle Count, 455
 - Delay Bits, 455
 - EDGE BERT Off On, 438
 - Error Count, 438, 453
 - Exceeds Any Thresholds, 448
 - Ext, 434, 450, 456
 - Ext Frame Trigger Delay, 423
 - External Frame Polarity Net Pos, 423
 - Frame Count, 443, 446
 - Frame Erasure, 448
 - Frame Trigger Source Int Ext, 424
 - GSM BERT Off On, 451
 - High Amplitude, 425, 429, 436
 - Immediate, 434, 450, 456
 - Initial Bit Count, 437
 - Initial Block Count, 427, 430
 - Initial Frame Count, 447
 - Low Amplitude, 426, 429, 436, 443
 - Measurement Mode BER% Search, 446
 - Measurement Mode BLER% Search, 432
 - No Thresholds, 422, 427, 442, 445, 448, 454
 - Pass Amplitude, 426, 430, 437
 - PN11, 452
 - PN15, 452
 - PN20, 452
 - PN23, 452
 - PN9, 452
 - Resync Limits, 452
 - Spcl Pattern 0's 1's, 451
 - Spcl Pattern Ignore Off On, 452
 - Spectrum Invert Off On, 433, 447
 - Stop Measurement, 431, 445
 - Sync Source BCH PDCH, 434
 - Sync Source BCH TCH, 450
 - Synchronize to BCH/PDCH, 433
 - Synchronize to BCH/TCH, 449
 - Target BER %, 425, 428
 - Timeslot, 432, 445
 - Total Bits, 454
 - Trigger Key, 434, 450, 456
 - Uplink Timing Advance, 435, 451
- SEQ softkey, 100
- sequence, creating, 311
- Set ALC Level softkey, 59
- Set Atten softkey, 64
- Set Marker Off All Points softkey, 299
- Set Marker Off Range Of Points softkey, 298
- Set Marker On Range Of Points softkey, 300
- setting conflicts, resolving, 712
- setting markers, 300
- setup sweep, 48
- SF/2 softkey, 1055
- SF2 softkey, 956
- SFN reset-signal (DRPS5) softkey, 948, 950, 951, 952, 953
- SFN RST Polarity softkey, 1052
- SFN-CFN Frame Offset softkey, 998
- SHAPE softkey, 100
- shift markers, 300
- Signal Type softkey, 388
- Signature field, 1036
- 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

Index

- See* PDC subsystem keys
- See* phase modulation subsystem keys
- See* PHS subsystem keys
- See* TETRA subsystem keys
- single
 - segment advance, [316](#)
- Single softkey
 - dual ARB subsystem keys, [316](#)
 - See* CDMA ARB subsystem keys
 - See* CDMA2000 ARB subsystem keys
 - See* custom subsystem keys
 - See* DECT subsystem keys
 - See* Dmodulation subsystem keys
 - See* dual ARB subsystem keys
 - See* EDGE subsystem keys
 - See* GSM subsystem keys
 - See* NADC subsystem keys
 - See* PDC subsystem keys
 - See* PHS subsystem keys
 - See* TETRA subsystem keys
 - See* wideband CDMA ARB subsystem keys
- Single Sweep softkey, [165](#)
- skew, [30](#), [31](#)
- skew, I/Q
 - adjustment, [29](#)
- Slot Format field, [925](#), [932](#), [981](#), [992](#), [1009](#), [1015](#)
- softkey, [121](#)
- software options, [80](#)
- Source Module softkey, [62](#)
- Spcl Pattern 0's 1's softkey, [451](#)
- Spcl Pattern Ignore Off On softkey, [452](#)
- Spectrum Invert Off On softkey
 - See* sense subsystem keys
- Spread Rate 1 softkey, [245](#), [252](#), [260](#)
- Spread Rate 3, [252](#)
- Spread Rate 3 softkey, [245](#), [260](#)
- Spread Rate field, [507](#)
- Spreading Type Direct Mcarrier, [245](#)
- Spreading Type Direct Mcarrier softkey, [261](#)
- Spurious Response softkey, [962](#)
- Square softkey, [173](#), [180](#), [187](#), [193](#)
- square wave pulse rate
 - internally generated, [197](#)
- SR1 9 Channel softkey, [247](#)
- SR1 Pilot softkey, [247](#)
- SR3 Direct 9 Channel softkey, [247](#)
- SR3 Direct Pilot softkey, [247](#)
- SR3 Mcarrier 9 Channel softkey, [247](#)
- SR3 MCarrier Pilot softkey, [247](#)
- SS softkey, [690](#)
- SSB softkey, [897](#), [902](#)
- SSCH 2nd Scramble Group field, [954](#)
- SSCH Power field, [954](#)
- SSCH softkey, [353](#)
- SSCH State field, [955](#)
- Standard softkey, [352](#)
- Start Access Slot Position in 80ms Period field, [1021](#)
- Start Frequency softkey, [72](#)
- Start Sub-Channel# field, [1025](#)
- State field
 - See* CDMA2000 BBG subsystem keys and fields
- State softkey, [101](#), [122](#)
- STD softkey, [978](#)
- Step Dwell softkey, [55](#)
- Step Power field, [1001](#)
- Stop Frequency softkey, [72](#)
- Stop Measurement softkey
 - See* sense subsystem keys
- Store Custom CDMA State softkey, [230](#), [249](#), [252](#)
- Store Custom Dig Mod State softkey, [283](#)
- Store Custom Multicarrier softkey, [229](#), [247](#)
- Store Custom W-CDMA State softkey, [348](#), [351](#)
- Store To File softkey, [21](#), [121](#), [125](#), [332](#), [360](#)
- string response data, [11](#)
- string SCPI parameter, [10](#)
- strings, quote usage, [17](#)
- STS softkey, [898](#), [903](#)
- Sub Channel Timing (RPS17) softkey
 - See* wideband CDMA base band generator subsystem keys and fields
- Subnet Mask softkey, [75](#)
- subsystems, SCPI commands
 - See* SCPI command subsystems
- Sum softkey, [24](#)
- Summing Ratio (SRC1/SRC2) x.xx dB softkey, [35](#)
- SW softkey, [825](#), [828](#), [830](#)
- Swap IQ softkey, [383](#)
- Sweep Direction Down Up softkey, [49](#)
- Sweep Repeat Single Cont softkey, [164](#)

Sweep Retrace Off On softkey, [53](#)
 sweep setup, [48](#)
 Sweep Type List Step softkey, [54](#)
 sweep/list subsystem keys
 Load From Selected File
 Store to File, [48](#)
 Swept-Sine softkey, [173](#), [180](#), [187](#), [193](#)
 Symbol Out Polarity Neg Pos softkey, [132](#)
 Symbol Rate field, [981](#), [990](#), [1014](#)
 Symbol Rate softkey, [284](#), [352](#), [360](#), [654](#), [1009](#)
 Symbol Sync Out Polarity Neg Pos softkey, [133](#)
 Symbol Sync Polarity Neg Pos softkey, [129](#), [130](#)
 Symbol Timing Err softkey, [468](#)
 Sync Out Offset softkey, [610](#), [653](#), [701](#), [798](#), [831](#),
 [862](#), [909](#)
 SYNC softkey, [793](#), [796](#), [855](#)
 Sync softkey, [227](#), [700](#)
 Sync Source BCH PDCH softkey, [434](#)
 Sync Source BCH TCH softkey, [450](#)
 Sync Source SFN FCk ESG softkey, [1053](#)
 Synchronize to BCH/PDCH softkey, [433](#)
 Synchronize to BCH/TCH softkey, [449](#)
 System ID field, [500](#)
 system subsystem keys
 8648A/B/C/D, [154](#), [156](#)
 8656B,8657A/B, [154](#), [156](#)
 8657D NADC, [154](#), [156](#)
 8657D PDC, [154](#), [156](#)
 8657J PHS, [154](#), [156](#)
 Activate Secure Display, [158](#)
 Enter Secure Mode, [160](#)
 erase, [159](#)
 Erase All, [159](#)
 Erase and Overwrite All, [161](#)
 Erase and Sanitize All, [161](#)
 Error Info, [153](#)
 Help Mode Single Cont, [154](#)
 none, [159](#)
 overwrite, [159](#)
 PN9 Mode Preset, [157](#)
 Power On Last Preset, [155](#)
 Preset, [156](#)
 Preset Normal User, [157](#)
 Restore Sys Defaults, [157](#)
 sanitize, [159](#)

Save User Preset, [158](#)
 SCPI, [154](#), [156](#)
 Screen Saver Delay
 1 hr, [161](#)
 Screen Saver Mode, [162](#)
 Screen Saver Off On, [162](#)
 Time/Date, [152](#), [163](#)
 View Next Error Message, [153](#)

T

T1 softkey, [650](#)
 T2 softkey, [651](#)
 Target BER % softkey
 See sense subsystem keys
 TCH All softkey, [855](#)
 TCH softkey, [855](#)
 TCH/FS softkey, [637](#), [640](#), [692](#)
 tDPCH Offset field, [933](#)
 Test Model 1 w/16 DPCH softkey, [344](#), [349](#)
 Test Model 1 w/32 DPCH softkey, [344](#), [349](#)
 Test Model 1 w/64 DPCH softkey, [344](#), [349](#)
 Test Model 2 softkey, [344](#), [349](#)
 Test Model 3 w/16 DPCH softkey, [344](#), [349](#)
 Test Model 3 w/32 DPCH softkey, [344](#), [349](#)
 Test Model 4 softkey, [344](#), [349](#)
 Test Model 5 w/2HSPDSCH softkey, [344](#), [349](#)
 Test Model 5 w/4HSPDSCH softkey, [344](#), [349](#)
 Test Model 5 w/8HSPDSCH softkey, [344](#), [349](#)
 TETRA Off On softkey, [917](#)
 TETRA softkey, [280](#), [281](#), [282](#)
 TETRA subsystem keys
 128QAM, [892](#)
 16 1's & 16 0's, [885](#), [894](#), [896](#), [898](#), [899](#), [901](#), [903](#),
 [905](#), [906](#), [907](#)
 16PSK, [892](#)
 16QAM, [892](#)
 256QAM, [892](#)
 2-Lvl FSK, [892](#)
 32 1's & 32 0's, [885](#), [894](#), [896](#), [898](#), [899](#), [901](#), [903](#),
 [905](#), [906](#), [907](#)
 32QAM, [892](#)
 4 1's & 4 0's, [885](#), [894](#), [896](#), [898](#), [899](#), [901](#), [903](#),
 [905](#), [906](#), [907](#)
 4-Lvl FSK, [892](#)
 4QAM, [892](#)

Index

- 64 1's & 64 0's, 885, 894, 896, 898, 899, 901, 903, 905, 906, 907
- 64QAM, 892
- 8 1's & 8 0's, 885, 894, 896, 898, 899, 901, 903, 905, 906, 907
- 8PSK, 892
- All Timeslots, 909
- APCO 25 C4FM, 889
- B, 897, 902
- B1, 895, 900
- B2, 895, 900
- BBG Data Clock Ext Int, 875
- BBG Ref Ext Int, 888
- Begin Frame, 909
- Begin Timeslot #, 909, 910
- Bit Rate, 876
- BPSK, 892
- Bus, 893, 914
- Continuous, 912
- D8PSK, 892
- Data Format Pattern Framed, 884
- Dn Custom Cont, 908
- Dn Normal Cont, 908
- Dn Normal Disc, 908
- Dn Sync Cont, 908
- Dn Sync Disc, 908
- Ext, 885, 893, 894, 896, 898, 899, 901, 903, 905, 906, 907, 914
- Ext BBG Ref Freq, 888
- Ext Data Clock Normal Symbol, 887
- Ext Delay Bits, 915
- Ext Delay Off On, 915
- Ext Polarity Neg Pos, 916
- Fall Delay, 878, 880
- Fall Time, 879, 880
- FCOR, 897, 902
- Filter Alpha, 875
- Filter BbT, 876
- FIX4, 885, 886, 894, 896, 898, 899, 901, 903, 905, 906, 907, 908
- Free Run, 912
- Freq Dev, 890
- Gate Active Low High, 913
- Gated, 912
- Gaussian, 889
- Gray Coded QPSK, 892
- I/Q Scaling, 890
- IS-95, 889
- IS-95 Mod, 889
- IS-95 Mod w/EQ, 889
- IS-95 OQPSK, 892
- IS-95 QPSK, 892
- IS-95 w/EQ, 889
- MSK, 892
- Nyquist, 889
- Optimize FIR For EVM ACP, 885
- OQPSK, 892
- $\pi/4$ DQPSK, 892
- Patt Trig In 1, 916
- Patt Trig In 2, 916
- Phase Dev, 891
- Phase Polarity Normal Invert, 892
- PN11, 885, 894, 896, 898, 899, 901, 903, 905, 906, 907
- PN15, 885, 894, 896, 898, 899, 901, 903, 905, 906, 907
- PN20, 885, 894, 896, 898, 899, 901, 903, 905, 906, 907
- PN23, 885, 894, 896, 898, 899, 901, 903, 905, 906, 907
- PN9, 885, 894, 896, 898, 899, 901, 903, 905, 906, 907
- PN9 Mode Normal Quick, 877
- QPSK, 892
- Recall Secondary Frame State, 893
- Rectangle, 889
- Reset & Run, 912
- Restore TETRA Factory Default, 887
- Rise Delay, 881, 882
- Rise Time, 882, 883
- Root Nyquist, 889
- Save Secondary Frame State, 893
- Scramble Off On, 878
- Scramble Seed, 878
- Secondary Frame Off On, 894
- Sine, 884
- Single, 912
- SSB, 897, 902
- STS, 898, 903
- Symbol Rate, 910

- Sync Out Offset, 909
- TETRA Off On, 917
- Timeslot Ampl Main Delta, 904
- Timeslot Off On, 904
- Trigger & Run, 912
- Trigger Key, 893, 914
- TS, 895, 900, 904, 905, 907
- UN3/4 GSM Gaussian, 889
- Up Control 1, 908
- Up Control 2, 908
- Up Custom, 908
- Up Normal, 908
- User File, 884, 885, 894, 896, 898, 899, 901, 903, 905, 906, 907
- User FIR, 889
- User FSK, 891, 892
- User I/Q, 891, 892
- tetra subsystem keys
 - PRAM Files, 886
- TFCI Field Off On softkey, 352, 357, 360, 362
- TFCI Pat field, 933
- TFCI Pattern field, 982, 1010
- TFCI State field, 983, 1011
- Tfirst field, 926
- TGCFN field, 956, 1054
- TGD field, 957, 1055
- Tgl field, 926
- TGL1 field, 957, 1056
- TGL2 field, 957, 1056, 1057
- TGPL1 field, 958, 1056
- TGPRC field, 1057
- TGPS Inactive Active softkey, 1058
- TGSN field, 959, 1058
- Through softkey, 31, 203, 206, 215, 220, 239, 244, 268, 273, 296, 297, 324, 326, 340, 342, 462, 469
- Time field, 500
- Time/Date softkey, 152, 163
- Timeslot Ampl Main Delta softkey
 - See* DECT subsystem keys
 - See* EDGE subsystem keys
 - See* NADC subsystem keys
 - See* PDC subsystem keys
 - See* PHS subsystem keys
 - See* TETRA subsystem keys
- Timeslot Off On softkey
 - See* DECT subsystem keys
 - See* EDGE subsystem keys
 - See* GSM subsystem keys
 - See* NADC subsystem keys
 - See* PHS subsystem keys
 - See* TETRA subsystem keys
- Timeslot Offset softkey, 1025
- Timeslot softkey
 - See* sense subsystem keys
- Timeslot Type softkey, 873
- Timing Offset softkey, 1026, 1052, 1061
- tOCNS Offset field, 940
- Toggle Marker 1 2 3 4 softkey, 311
- Toggle State softkey, 331, 333
- Total Bits field, 1065
- Total Bits softkey, 454
- Total Block field, 1067
- TotalPwr field, 976, 1006
- TPC Pat Steps field, 983
- TPC Pat Trig Polarity Neg Pos softkey, 985
- TPC Pattern field, 985
- TPC Steps field, 934
- TPC UserFile Trig field, 986
- Tp-m field, 1027
- Tp-p field, 1028
- Traffic Bearer softkey, 585, 596
- Traffic Bearer with Z field softkey, 585, 596
- Traffic softkey, 227
- Transp Chan A softkey, 929
- Transp Chan B softkey, 929
- Transp Position Flexible Fixed softkey, 970
- Transport CH softkey, 941
- TrCH BER field, 991
- TrCh BlkSize 168 softkey, 1024
- TrCh BlkSize 360 softkey, 1024
- TrCH State Off On softkey, 1078
- TrCHI State Off On softkey, 972
- Triangle softkey, 173, 180, 187, 193
- Trigger & Run softkey
 - See* CDMA ARB subsystem keys
 - See* CDMA2000 ARB subsystem keys
 - See* custom subsystem keys
 - See* DECT subsystem keys
 - See* Dmodulation subsystem keys
 - See* dual ARB subsystem keys

Index

- 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, [542](#)
 - Trigger In Polarity Neg Pos softkey, [166](#)
 - Trigger Key softkey
 - list/sweep subsystem, [53](#)
 - See* amplitude modulation subsystem keys
 - See* CDMA ARB subsystem keys
 - See* CDMA2000 ARB subsystem keys
 - See* DECT subsystem keys
 - See* Dmodulation subsystem keys
 - See* dual ARB subsystem keys
 - See* EDGE subsystem keys
 - See* frequency modulation subsystem keys
 - See* GSM subsystem keys
 - See* low frequency output subsystem keys
 - See* NADC subsystem keys
 - See* PDC subsystem keys
 - See* phase modulation subsystem keys
 - See* PHS subsystem keys
 - See* sense subsystem keys
 - See* TETRA subsystem keys
 - See* trigger subsystem keys
 - See* wideband CDMA ARB subsystem keys
 - Trigger Out Polarity Neg Pos softkey, [165](#)
 - trigger source, list sweep, [53](#)
 - trigger subsystem keys
 - Bus, [166](#), [542](#)
 - Ext, [166](#), [542](#)
 - Free Run, [166](#), [542](#)
 - Single Sweep, [165](#)
 - Sweep Repeat Single Cont, [164](#)
 - Trigger In Polarity Neg Pos, [166](#)
 - Trigger Key, [166](#), [542](#)
 - Trigger Out Polarity Neg Pos, [165](#)
 - Trigger Sync Reply (RPS7) softkey
 - See* wideband CDMA base band generator subsystem keys and fields
 - triggers
 - response selection
 - segment advance mode, dual ARB, [316](#)
 - Truncated PN9 softkey, [461](#)
 - TS softkey, [700](#), [895](#), [900](#), [904](#), [905](#), [907](#)
 - TSC0 softkey, [641](#), [651](#), [691](#), [698](#)
 - TSC1 softkey, [641](#), [651](#), [691](#), [698](#)
 - TSC2 softkey, [641](#), [651](#), [691](#), [698](#)
 - TSC3 softkey, [641](#), [651](#), [691](#), [698](#)
 - TSC4 softkey, [641](#), [651](#), [691](#), [698](#)
 - TSC5 softkey, [641](#), [651](#), [691](#), [698](#)
 - TSC6 softkey, [641](#), [651](#), [691](#), [698](#)
 - TSC7, [641](#), [691](#), [698](#)
 - TSC7 softkey, [641](#), [651](#), [691](#), [698](#)
 - TTI field, [971](#), [1030](#), [1070](#), [1078](#)
 - TTI Frame Clock (RPS9) softkey
 - See* wideband CDMA base band generator subsystem keys and fields
 - Turbo Coding field, [494](#), [541](#)
 - Turbo softkey, [966](#), [968](#), [1063](#)
 - Type softkey, [352](#), [360](#)
- ## U
- UDI 64 kbps softkey, [1037](#)
 - UDI ISDN (25.101) softkey, [931](#)
 - 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, [642](#)
 - unit subsystem keys
 - dBm, [168](#)
 - dBuV, [168](#)
 - dBuVemf, [168](#)

- mV, 168
 - mVemf, 168
 - uV, 168
 - uVemf, 168
 - unprotected
 - memory subsystem, 114
 - unspecified RMS, 293
 - Up Control 1 softkey, 908
 - Up Control 2 softkey, 908
 - Up Custom softkey, 797, 831, 908
 - Up Normal softkey, 908
 - Up TCH All softkey, 797, 831
 - Up TCH softkey, 797, 831
 - Up VOX softkey, 831
 - Up/Down softkey, 934, 984
 - Update Display Cycle End Cont softkey, 403
 - Update in Remote Off On softkey, 85
 - Uplink MCS-1 softkey, 637, 640, 692
 - Uplink MCS-5 softkey, 642
 - Uplink MCS-9 softkey, 642
 - Uplink Timing Advance softkey
 - See sense subsystem keys
 - uploading files, 114
 - 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 files, HSDPA, 710
 - User FIR softkey
 - See CDMA ARB subsystem keys
 - See CDMA2000 ARB subsystem keys
 - See CDMA2000 BBG subsystem keys and fields
 - See custom subsystem keys
 - See DECT subsystem keys
 - See Dmodulation subsystem keys
 - See EDGE subsystem keys
 - See GPS subsystem keys
 - See GSM subsystem keys
 - See NADC subsystem keys
 - See PDC subsystem keys
 - See PHS subsystem keys
 - See TETRA subsystem keys
 - See wideband CDMA ARB subsystem keys
 - See wideband CDMA base band generator subsystem keys and fields
 - User Flatness softkey, 101, 122
 - User FSK softkey
 - See custom subsystem keys
 - See DECT subsystem keys
 - See EDGE subsystem keys
 - See GSM subsystem keys
 - See NADC subsystem keys
 - See PDC subsystem keys
 - See PHS subsystem keys
 - See TETRA subsystem keys
 - User I/Q softkey
 - See custom subsystem keys
 - See DECT subsystem keys
 - See EDGE subsystem keys
 - See GSM subsystem keys
 - See NADC subsystem keys
 - See PDC subsystem keys
 - See PHS subsystem keys
 - See TETRA subsystem keys
 - uV softkey, 168
 - uVemf softkey, 168
 - UW softkey, 853, 854, 871, 872
 - UWCDMA softkey, 102
- ## V
- View Next Error Message softkey, 153
- ## W
- Walsh Code softkey, 250, 253
 - Walsh field
 - See CDMA2000 BBG subsystem keys and fields
 - waveform
 - sequence, dual ARB, 311
 - Waveform Length softkey, 210, 236
 - waveform license time remaining, 82

Index

- Waveform Licenses softkey, [81](#), [82](#)
- Waveform Runtime Scaling softkey, [310](#)
- waveform scaling
 - during playback, [310](#)
 - files, [310](#)
- waveform, creating a multitone, [323](#)
- W-CDMA Off On softkey, [374](#), [1078](#)
- WCDMA softkey
 - See* CDMA ARB subsystem keys
 - See* CDMA2000 ARB subsystem keys
 - See* Dmodulation subsystem keys
 - See* wideband CDMA ARB subsystem keys
- wideband AM, [171](#)
- wideband CDMA ARB subsystem keys
 - 1 DPCH, [344](#), [349](#)
 - 2 Carriers, [345](#)
 - 2.100 MHz, [342](#)
 - 3 Carriers, [345](#)
 - 3 DPCH, [344](#), [349](#)
 - 4 Carriers, [345](#)
 - 40.000 MHz, [340](#), [342](#)
 - APCO 25 C4FM, [338](#)
 - Apply Channel Setup, [352](#), [360](#)
 - ARB Reference Ext Int, [366](#)
 - ARB Sample Clock, [368](#)
 - Bus, [371](#)
 - Channel, [352](#), [360](#)
 - Chip Rate, [338](#)
 - Clear Header, [340](#)
 - Clip |I| To, [336](#), [346](#)
 - Clip |Q| To, [336](#), [347](#)
 - Clip At PRE POST FIR Filter, [336](#)
 - Clip Type |I+jQ| To, [337](#), [347](#)
 - Clipping Type |I+jQ| |I|,|Q|, [337](#), [347](#)
 - Continuous, [368](#)
 - Custom WCDMA State, [359](#)
 - DPCCH, [359](#)
 - DPCCH + 1 DPDCH, [359](#)
 - DPCCH + 2 DPDCH, [359](#)
 - DPCCH + 3 DPDCH, [359](#)
 - DPCCH + 4 DPDCH, [359](#)
 - DPCCH + 5 DPDCH, [359](#)
 - DPCH, [353](#)
 - Equal Energy per Symbol, [357](#)
 - Ext Delay Off On, [372](#)
 - Ext Delay Time, [372](#)
 - Ext Key, [371](#)
 - Ext Polarity Neg Pos, [373](#)
 - Filter Alpha, [339](#)
 - Filter BbT, [339](#)
 - First Spread Code, [352](#), [360](#)
 - Free Run, [370](#)
 - Gain Unit dB Lin Index, [362](#)
 - Gate Active Low High, [370](#)
 - Gated, [368](#)
 - Gaussian, [338](#)
 - I/Q Mapping Norma Invert, [341](#)
 - I/Q Mod Filter Manual Auto, [343](#)
 - I/Q Output Filter Manual Auto, [341](#)
 - Increment Scramble Code, [348](#)
 - Increment Timing Offset, [351](#)
 - IS-2000 SR3 DS, [338](#)
 - IS-95, [338](#)
 - IS-95 Mod, [338](#)
 - IS-95 Mod w/EQ, [338](#)
 - IS-95 w/EQ, [338](#)
 - Left Alternate, [352](#)
 - Link Down Up, [343](#)
 - Marker 1, [363](#), [364](#)
 - Marker 2, [363](#), [364](#)
 - Marker 3, [363](#), [364](#)
 - Marker 4, [363](#), [364](#)
 - Marker Polarity Neg Pos, [366](#)
 - Modulator Atten Manual Auto, [342](#)
 - None, [363](#), [364](#)
 - Nyquist, [338](#)
 - OCNS, [353](#)
 - Optimize ACP ADJ ALT, [343](#), [358](#)
 - Optimize FIR For EVM ACP, [340](#)
 - Patt Trig In 1, [373](#)
 - Patt Trig In 2, [373](#)
 - PCCPCH + SCH, [344](#), [349](#)
 - PCCPCH + SCH + 1 DPCH, [344](#), [349](#)
 - PCCPCH + SCH + 3 DPCH, [344](#), [349](#)
 - PICH, [353](#)
 - Power, [360](#)
 - PPCCPCH, [353](#), [354](#)
 - PSCH, [353](#)
 - Random, [352](#), [360](#)
 - Rectangle, [338](#)

- Reference Freq, [366](#)
- Reset & Run, [370](#)
- Retrigger Mode Off On, [367](#)
- Right Alternate, [352](#)
- Root Nyquist, [338](#)
- Save Setup To Header, [340](#)
- Scale to 0dB, [357](#)
- SCCPCH, [353](#), [354](#)
- Scramble Code, [352](#), [358](#), [360](#)
- Scramble Offset, [352](#), [360](#)
- Second DPDCH I Q, [358](#)
- Single, [368](#)
- SSCH, [353](#)
- Standard, [352](#)
- Store Custom W-CDMA State, [348](#), [351](#)
- Store To File, [360](#)
- Symbol Rate, [352](#), [360](#)
- Test Model 1 w/16 DPCH, [344](#), [349](#)
- Test Model 1 w/32 DPPCH, [344](#), [349](#)
- Test Model 1 w/64 DPCH, [344](#), [349](#)
- Test Model 2, [344](#), [349](#)
- Test Model 3 w/16 DPCH, [344](#), [349](#)
- Test Model 3 w/32 DPCH, [344](#), [349](#)
- Test Model 4, [344](#), [349](#)
- Test Model 5 w/2HSPDSCH, [344](#), [349](#)
- Test Model 5 w/4HSPDSCH, [344](#), [349](#)
- Test Model 5 w/8HSPDSCH, [344](#), [349](#)
- TFCI Field Off On, [352](#), [357](#), [360](#), [362](#)
- Through, [340](#), [342](#)
- Trigger & Run, [370](#)
- Trigger Key, [371](#)
- Type, [352](#), [360](#)
- UN3/4 GSM Gaussian, [338](#)
- User FIR, [338](#)
- WCDMA, [338](#)
- W-CDMA Off On, [374](#)
- wideband CDMA base band generator subsystem
 - keys and fields
 - # of Blocks, [969](#)
 - 1/2 Conv, [966](#), [968](#), [1063](#)
 - 1/3 Conv, [966](#), [968](#), [1063](#)
 - 10 msec, [994](#)
 - 10ms Frame Pulse (DRPS11), [948](#), [950](#), [951](#), [952](#), [953](#)
 - 10ms Frame Pulse (RPS6), [1045](#), [1047](#), [1048](#), [1049](#), [1050](#), [1051](#)
 - 12.2 kbps (34.121), [931](#)
 - 144 kbps (34.121), [931](#)
 - 20 msec, [994](#)
 - 2560 msec, [994](#)
 - 2nd Scr Offset, [932](#), [939](#)
 - 3.84MHz chip-clk (DRPS4), [948](#), [950](#), [951](#), [952](#), [953](#)
 - 384 kbps (34.121), [931](#)
 - 40 msec, [994](#)
 - 64 kbps (34.121), [931](#)
 - 80 msec, [994](#)
 - 80ms Frame Pulse (DRPS13), [948](#), [950](#), [951](#), [952](#), [953](#)
 - 80ms Frame Pulse (RPS20), [1045](#), [1047](#), [1048](#), [1049](#), [1050](#), [1051](#)
 - A, [923](#)
 - ACS, [962](#)
 - Active, [959](#)
 - Actual BER, [1072](#)
 - Actual BLER, [1066](#), [1074](#)
 - AICH, [1030](#)
 - AICH Trigger Polarity Pos Neg, [1003](#)
 - All Down, [934](#), [984](#)
 - All Up, [934](#), [984](#)
 - Alt power in, [1044](#)
 - AMR 12.2 kbps, [931](#), [1037](#)
 - APCO 25 C4FM, [935](#), [995](#)
 - Apply Channel Setup, [919](#), [973](#)
 - B, [923](#)
 - Base Delay Tp-a, [1026](#)
 - BBG Chip Clock Ext Int, [918](#)
 - BBG Data Clock Ext In, [922](#)
 - BER, [1066](#), [1068](#), [1074](#), [1076](#)
 - Beta, [977](#), [987](#)
 - BLER, [1067](#), [1068](#), [1075](#), [1076](#)
 - Blk Set Size, [965](#)
 - Blk Size, [964](#), [1062](#), [1071](#)
 - Blocking, [962](#)
 - Burst gate in, [1044](#)
 - C Power, [974](#)
 - C Power value, [1004](#)
 - C/N value, [919](#), [973](#), [1003](#)
 - CFN #0 Frame Pulse (RPS10), [1039](#)

Index

- Chan Code, [928](#), [929](#), [938](#)
- Channel Code, [943](#), [978](#), [988](#), [1031](#), [1032](#)
- Channel Code field, [942](#)
- Channel State, [987](#), [994](#)
- Channel State Off On, [922](#), [926](#), [927](#), [929](#), [935](#),
[937](#), [940](#), [941](#), [943](#), [945](#), [953](#), [976](#), [1006](#), [1063](#),
[1070](#), [1071](#)
- ChCode Ctl, [1019](#)
- ChCode Dat, [1020](#)
- Chip Clock (RPS1), [1039](#), [1045](#), [1047](#), [1048](#),
[1049](#), [1050](#), [1051](#)
- Chip Rate, [928](#), [977](#)
- Comp Mode Start Trigger Polarity Neg Pos, [1060](#)
- Comp Mode Start Trigger Polarity Pos Neg, [960](#),
[961](#)
- Comp Mode Stop Trigger Polarity Neg Pos, [1060](#)
- Comp Mode Stop Trigger Polarity Pos Neg, [961](#)
- Compressed Mode Off On, [1059](#)
- Compressed Mode Start Trigger, [937](#), [960](#), [1060](#)
- Compressed Mode Stop Trigger, [961](#), [1060](#)
- CRC Size, [967](#), [1064](#), [1072](#)
- Ctrl Beta, [1007](#)
- Ctrl Pwr, [1008](#)
- Data, [989](#)
- Data Beta, [1011](#)
- Data field, [1076](#)
- Data Pwr, [1013](#)
- Data Rate, [939](#)
- DCH1, [975](#)
- DCH2, [975](#)
- DCH3, [975](#)
- DCH4, [975](#)
- DCH5, [975](#)
- DCH6, [975](#)
- DL Reference 1.1, [1058](#)
- DL Reference 1.2, [1058](#)
- DL Reference 2.1, [1058](#)
- DL Reference 2.2, [1058](#)
- Down/Up, [934](#), [984](#)
- DPCCH, [975](#), [998](#)
- DPCCH Pilot data-clk (DRPS23), [948](#), [950](#), [951](#),
[952](#), [953](#)
- DPCCH Power, [981](#)
- DPCCH Raw Data (RPS4), [1039](#)
- DPCCH Raw Data Clock (RPS5), [1039](#)
- DPCCH TFCI data-clk (DRPS22), [948](#), [950](#), [951](#),
[952](#), [953](#)
- DPCCH TPC indicator (DRPS21), [948](#), [950](#), [951](#),
[952](#), [953](#)
- DPCH + 1, [920](#), [921](#)
- DPCH + 2, [920](#), [921](#)
- DPCH 10ms Frame-Pulse (DRPS26), [948](#), [950](#),
[951](#), [952](#), [953](#)
- DPCH Channel Balance, [928](#)
- DPCH Compressed Frame Indicator (DRPS32),
[948](#), [950](#), [951](#), [952](#), [953](#)
- DPCH data stream (DRPS24), [948](#), [950](#), [951](#), [952](#),
[953](#)
- DPCH data-clk (0) (DRPS28), [948](#), [950](#), [951](#), [952](#),
[953](#)
- DPCH Gap Indicator (DRPS33), [948](#), [950](#), [951](#),
[952](#), [953](#)
- DPCH TimeSlot pulse (DRPS25), [948](#), [950](#), [951](#),
[952](#), [953](#)
- DPDCH, [975](#)
- DPDCH data-clk withDTX (DRPS20), [948](#), [950](#),
[951](#), [952](#), [953](#)
- DPDCH data-clk WithOutDTX (DRPS30), [948](#),
[950](#), [951](#), [952](#), [953](#)
- DPDCH Power, [990](#)
- DPDCH Raw Data (RPS2), [1039](#)
- DPDCH Raw Data Clock (RPS3), [1039](#)
- Eb/No, [1004](#)
- Eb/No value (dB), [974](#)
- Ec/No value, [920](#), [1005](#)
- Equal Powers, [941](#), [998](#)
- Error BER, [1073](#)
- Error Bits, [1065](#)
- Error Blocks, [1066](#)
- Ext, [934](#)
- Ext Clock Rate x1 x2 x4, [918](#)
- FBI State, [980](#)
- Filter Alpha, [936](#), [996](#)
- Filter BbT, [936](#), [997](#)
- FIX, [980](#)
- FIX4, [930](#), [941](#), [942](#), [943](#), [944](#), [967](#), [968](#), [979](#), [989](#),
[1007](#), [1008](#), [1010](#), [1012](#), [1068](#), [1072](#)
- Flat Noise BW, [975](#)
- Frame Clock Polarity Neg Pos, [995](#)
- Frame Struct, [955](#)

- Frame Sync Trigger Mode Single Cont, 1053
- Gaussian, 935, 995
- Higher Layer, 1055
- Infinity, 958, 1057
- Init Power, 999
- Init Pwr, 1018, 1034
- Intermod, 962
- IS-95, 935, 995
- IS-95 Mod, 935, 995
- IS-95 Mod w/EQ, 935, 995
- IS-95 w/EQ, 995
- Left, 924
- Link Down Up, 972
- Max Input, 962
- Max Power, 1000
- Max Pwr, 1018, 1034
- Message Data Raw Data (RPS11), 1045, 1047, 1048, 1049, 1050, 1051
- Message Part, 1017
- Message Pulse (RPS22), 1045, 1047, 1048, 1049, 1050, 1051
- Message-Control Raw Data (RPS13), 1047, 1048, 1049, 1050, 1051
- Message-Control Raw Data Clock (RPS12), 1045, 1047, 1048, 1049, 1050, 1051
- Min Power, 1000
- Msg Ctrl, 1005
- Msg Data, 1005
- Msg Pwr, 1016, 1033
- N Power, 976, 1006
- NONE, 1063
- None, 966, 968, 1068, 1076
- NONE (RPS0), 1039, 1045, 1047, 1048, 1049, 1050, 1051
- Normal, 924
- Num of Blk, 1069, 1077
- Num of Pre, 1017, 1034
- Number of AICH, 1002
- Number of PRACH, 1031, 1033
- Number of PRACH 80ms, 1017
- Number of Preamble, 1034
- Nyquist, 935, 995
- Off, 1030
- Omitted, 958, 1057
- On, 1030
- On/Off, 940, 1022
- OpenLoop Ant1, 963
- OpenLoop Ant1 SCH TSTD OFF, 963
- OpenLoop Ant2, 963
- OpenLoop Ant2 SCH TSTD OFF, 963
- Optimize FIR For EVM ACP, 937, 997
- Paging Indicator, 944
- Pattern trigger in 1, 1045
- Pattern trigger in 2, 1045
- PCCPCH, 920, 921
- P-CCPCH data (DRPS39), 948, 950, 951, 952, 953
- P-CCPCH data-clk (DRPS38), 948, 950, 951, 952, 953
- Performance Req, 962
- Phase Polarity Normal Invert, 945
- Phase Polarity Normal Inverted, 972
- PI Bits, 944
- PICH, 920, 921
- PICH 10ms FramePulse (DRPS37), 948, 950, 951, 952, 953
- PICH data (DRPS35), 948, 950, 951, 952, 953
- PICH data-clk (DRPS34), 948, 950, 951, 952, 953
- PICH TimeSlot Pulse (DRPS36), 948, 950, 951, 952, 953
- Playback Ratio, 924
- PN15, 923, 929, 938, 941, 943, 978, 979, 982, 984, 989, 1007, 1010, 1012
- PN9, 923, 929, 938, 941, 943, 967, 978, 979, 982, 984, 989, 1007, 1010, 1012, 1064, 1072
- Power, 924, 927, 930, 938, 942, 945, 946
- Power Control Signal Polarity Neg Pos, 1002
- Power Hold Off On, 999
- Power Mode Norm TPC, 1002
- Pp-m, 1019, 1036
- PRACH, 998
- PRACH Mode Single Multi, 1016
- PRACH Power Setup Mode Pp-m Total, 1023
- PRACH Processing (RPS19), 1045, 1047, 1048, 1049, 1050, 1051
- PRACH Scrambling Code, 1024
- PRACH Trigger, 1028
- PRACH Trigger Polarity Neg Pos, 1029
- PRACH Trigger Source Immedi Trigger, 1029
- Pre Sig, 1020

Index

- Preamble, 1005
- Preamble power average, 1022
- Preamble Pulse (RPS21), 1045, 1047, 1048, 1049, 1050, 1051
- Preamble Raw Data (RPS15), 1045, 1047, 1048, 1049, 1050, 1051
- Preamble Raw Data Clock (RPS16), 1045, 1047, 1048, 1049, 1050, 1051
- PSCH State, 946
- Puncture, 956, 1069, 1077
- PwrOffs, 955, 1054
- RACH TrCH, 1005
- Ramp Step, 1019, 1035
- Rate Match Attr, 971, 1069, 1077
- Rectangle, 935, 995
- Ref Data Rate, 974, 1004
- Ref Sensitivity, 962
- Reset to Initial Power, 1001
- Right, 924
- RMC 144 kbps (25.141), 1037
- RMC 384 kbps (25.141), 1037
- RMC 64 kbps (25.141), 1037
- RMC122 kbps (25.141), 1037
- Root Nyquist, 935, 995
- Scale to 0dB, 941, 998
- SCFN, 960, 1059
- SCH slot-pulse (DRPS10), 948, 950, 951, 952, 953
- Scrambling Code, 953, 954, 1051
- SF/2, 1055
- SF2, 956
- SFN reset-signal (DRPS5), 948, 950, 951, 952, 953
- SFN RST Polarity, 1052
- SFN-CFN Frame Offset, 998
- Signature, 1036
- Slot Format, 925, 932, 981, 992, 1009, 1015
- Spurious Response, 962
- SSCH 2nd Scramble Group, 954
- SSCH Power, 954
- SSCH State, 955
- Start Access Slot Position in 80ms Period, 1021
- Start Sub-Channel#, 1025
- STD, 978
- Step Power, 1001
- Sub Channel Timing (RPS17), 1045, 1047, 1048, 1049, 1050, 1051
- Symbol Rate, 981, 990, 1009, 1014
- Sync Source SFN FCIk ESG, 1053
- tDPCH Offset, 933
- TFCI Pat, 933
- TFCI Pattern, 982, 1010
- TFCI State, 983, 1011
- Tfirst, 926
- TGCFN, 956, 1054
- TGD, 957, 1055
- Tgl, 926
- TGL1, 957, 1056
- TGL2, 957, 1056
- TGPL1, 958, 1056
- TGPL2, 1057
- TGPRC, 1057
- TGPS Inactive Active, 1058
- TGSN, 959, 1058
- Timeslot Offset, 1025
- Timing Offset, 1026, 1052, 1061
- tOCNS Offset, 940
- Total Bits, 1065
- Total Blocks, 1067
- TotalPwr, 976, 1006
- TPC Pat Steps, 983
- TPC Pat Trig Polarity Neg Pos, 985
- TPC Pattern, 985
- TPC Steps, 934
- TPC UserFile Trig, 986
- Tp-m, 1027
- Tp-p, 1028
- Transp Chan A, 929
- Transp Chan B, 929
- Transp Position Flexible Fixed, 970
- Transport CH, 941
- TrCH BER, 991
- TrCh BlkSize 168, 1024
- TrCh BlkSize 360, 1024
- TrCH State Off On, 972, 1078
- Trigger Sync Reply (RPS7), 1045, 1047, 1048, 1049, 1050, 1051
- TTI, 971, 1030, 1070, 1078
- TTI Frame Clock (RPS9), 1039
- Turbo, 966, 968, 1063

UDI 64 kbps, [1037](#)
UDI ISDN (25.101), [931](#)
UN3/4 GSM Gaussian, [935](#)
Up/Down, [934](#), [984](#)
User File, [929](#), [934](#), [941](#), [943](#), [967](#), [978](#), [979](#), [982](#),
[989](#), [1007](#), [1010](#), [1012](#), [1064](#), [1072](#)
User FIR, [935](#), [995](#)
W-CDMA Off On, [1078](#)
Word Alignment softkey, [380](#)
Word Size softkey, [387](#)

