

SCPI Command Reference, Volume 1

Agilent Technologies ESG Vector Signal Generator

This guide applies to the signal generator models listed below. 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 this page) with the latest revision, which can be downloaded from the website shown below.

E4438C Vector Signal Generator

www.agilent.com/find/signalgenerators



Agilent Technologies

Part Number: E4400-90506

Printed in USA

January 2003

© Copyright 2001-2003 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

| | |
|---|-----------|
| 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 | 6 |
| Command Tree | 7 |
| Command Parameters and Responses | 8 |
| Program Messages | 13 |
| File Name Variables | 14 |
| MSUS (Mass Storage Unit Specifier) Variable | 15 |
| Quote Usage with SCPI Commands | 16 |
| Binary, Decimal, Hexadecimal, and Octal Formats | 17 |
| | |
| Basic Function Commands | 19 |
| Correction Subsystem ([:SOURce]:CORRection) | 20 |
| :FLATness:LOAD | 20 |
| :FLATness:PAIR | 20 |
| :FLATness:POINTs | 21 |
| :FLATness:PRESet | 21 |
| :FLATness:STORE | 21 |
| [:STATe] | 22 |
| Digital Modulation Subsystem ([:SOURce]) | 23 |
| :BURSt:SOURce | 23 |
| :BURSt:STATe | 23 |
| :DM:EXTErnal:ALC:BANDwidth BWIDth | 23 |
| :DM:EXTErnal:HICRest[:STATe] | 24 |
| :DM:EXTErnal:FILTer | 24 |
| :DM:EXTErnal:FILTer:AUTO | 25 |
| :DM:EXTErnal:POLarity | 25 |
| :DM:EXTErnal:SOURce | 25 |
| :DM:IQADjustment:EXTErnal:COFFset | 26 |
| :DM:IQADjustment:EXTErnal:DIOFFset | 27 |

Contents

| | |
|---|----|
| :DM:IQADjustment:EXTErnal:DQOFFset | 27 |
| :DM:IQADjustment:EXTErnal:GAIN | 28 |
| :DM:IQADjustment:EXTErnal:IOFFset | 28 |
| :DM:IQADjustment:EXTErnal:IQATten | 29 |
| :DM:IQADjustment:EXTErnal:QOFFset | 29 |
| :DM:IQADjustment:GAIN | 29 |
| :DM:IQADjustment:IOFFset | 30 |
| :DM:IQADjustment:QOFFset | 30 |
| :DM:IQADjustment:QSKew | 31 |
| :DM:IQADjustment:SKEW | 32 |
| :DM:IQADjustment[:STATE] | 32 |
| :DM:MODulation:FILTer | 33 |
| :DM:MODulation:FILTer:AUTO | 33 |
| :DM:MODulation:ATTen | 34 |
| :DM:MODulation:ATTen:AUTO | 34 |
| :DM:MODulation:ATTen:EXTErnal | 34 |
| :DM:MODulation:ATTen:EXTErnal:LEVel | 35 |
| :DM:MODulation:ATTen:EXTErnal:LEVel:MEASurement | 35 |
| :DM:MODulation:ATTen:OPTimize:BANDwidth | 36 |
| :DM:POLarity[:ALL] | 36 |
| :DM:SKEW:PATH | 37 |
| :DM:SKEW[:STATE] | 37 |
| :DM:SOURce | 38 |
| :DM:STATE | 38 |
| Frequency Subsystem ([:SOURce]) | 40 |
| :FREQuency:CHANnels:BAND | 40 |
| :FREQuency:CHANnels:NUMBer | 42 |
| :FREQuency:CHANnels[:STATE] | 43 |
| :FREQuency:FIXed | 43 |
| :FREQuency:MODE | 44 |
| :FREQuency:MULTiplier | 44 |
| :FREQuency:OFFSet | 45 |
| :FREQuency:OFFSet:STATE | 45 |
| :FREQuency:REFerence | 45 |
| :FREQuency:REFerence:STATE | 46 |
| :FREQuency:STARt | 46 |
| :FREQuency:STOP | 47 |
| :FREQuency:SYNThesis | 47 |

| | |
|-----------------------------------|----|
| :FREQuency[:CW] | 48 |
| :PHASe:REFeRence | 48 |
| :PHASe[:ADJust] | 49 |
| :ROSCillator:SOURce | 49 |
| :ROSCillator:SOURce:AUTO | 49 |
| List/Sweep Subsystem ([:SOURce]) | 51 |
| :LIST:DIRection | 51 |
| :LIST:DWELl | 51 |
| :LIST:DWELl:POINts | 52 |
| :LIST:DWELl:TYPE | 52 |
| :LIST:FREQuency | 53 |
| :LIST:FREQuency:POINts | 53 |
| :LIST:MANual | 53 |
| :LIST:MODE | 54 |
| :LIST:POWer | 54 |
| :LIST:POWer:POINts | 55 |
| :LIST:TRIGger:SOURce | 55 |
| :LIST:TYPE | 56 |
| :LIST:TYPE:LIST:INITialize:FSTep | 56 |
| :LIST:TYPE:LIST:INITialize:PRESet | 57 |
| :SWEep:DWELl | 57 |
| :SWEep:POINts | 58 |
| Power Subsystem ([:SOURce]:POWer) | 59 |
| :ALC:BAWdwidth | 59 |
| :ALC:SEARCh | 59 |
| :ALC:SEARCh:REFeRence | 60 |
| :ALC[:STATe] | 60 |
| :ALternate:AMPLitude | 60 |
| :ALternate:MANual | 61 |
| :ALternate:STATe | 61 |
| :ALternate:TRIGger[:SOURce] | 62 |
| :ATTenuation:AUTO | 62 |
| :MODE | 63 |
| :REFeRence | 63 |
| :REFeRence:STATe | 63 |
| :STARt | 64 |
| :STOP | 64 |
| [:LEVel][:IMMediate]:OFFSet | 65 |

Contents

| | |
|---|----|
| [:LEVel][:IMMediate][:AMPLitude] | 65 |
| Pulse Subsystem ([:SOURce]:PULSe) | 66 |
| :FREQUency:STEP | 66 |

System Commands 67

| | |
|--|----|
| Calibration Subsystem (:CALibration) | 68 |
| :DCFM | 68 |
| :IQ | 68 |
| :IQ:DEFault | 69 |
| :IQ:FULL | 69 |
| :IQ:DC | 69 |
| :IQ:START | 70 |
| :IQ:STOP | 71 |
| Communication Subsystem (:SYSTem:COMMunicate) | 72 |
| :GPIB:ADDRess | 72 |
| :LAN:GATEway | 72 |
| :LAN:HOSTname | 73 |
| :LAN:IP | 73 |
| :LAN:SUBNet | 73 |
| :PMETer:ADDRess | 74 |
| :PMETer:CHANnel | 74 |
| :PMETer:IDN | 75 |
| :PMETer:TIMEout | 75 |
| :SERial:BAUD | 76 |
| :SERial:ECHO | 76 |
| :SERial:RESet | 76 |
| :SERial:TOUT | 77 |
| Diagnostic Subsystem (:DIAGnostic[:CPU]:INFORmation) | 78 |
| :BOARDs | 78 |
| :CCOunt:ATTenuator | 78 |
| :CCOunt:PON | 79 |
| :CCOunt:PROTection | 79 |
| :DISPlay:OTIME | 79 |
| :OPTions | 80 |
| :OPTions:DETail | 80 |
| :OTIME | 80 |
| :REVision | 81 |
| :SDATE | 81 |

| | |
|-------------------------------------|----|
| Display Subsystem (:DISPlay) | 82 |
| :ANNotation:AMPLitude:UNIT | 82 |
| :ANNotation:CLOCK:DATE:FORMat | 82 |
| :ANNotation:CLOCK[:STATe] | 83 |
| :BRIGhtness | 83 |
| :CAPTure | 83 |
| :CONTrast | 84 |
| :INVerse | 84 |
| :REMote | 85 |
| [:WINDow][:STATe] | 85 |
| IEEE 488.2 Common Commands | 86 |
| *CLS | 86 |
| *ESE | 86 |
| *ESE? | 87 |
| *ESR? | 87 |
| *IDN? | 87 |
| *OPC | 88 |
| *OPC? | 88 |
| *PSC | 88 |
| *PSC? | 89 |
| *RCL | 89 |
| *RST | 90 |
| *SAV | 90 |
| *SRE | 90 |
| *SRE? | 91 |
| *STB? | 91 |
| *TRG | 91 |
| *TST? | 92 |
| *WAI | 92 |
| Memory Subsystem (:MEMory) | 93 |
| :CATalog:BINary | 93 |
| :CATalog:BIT | 93 |
| :CATalog:CDMa | 94 |
| :CATalog:DMOD | 94 |
| :CATalog:DWCDma | 95 |
| :CATalog:FCDMa | 95 |
| :CATalog:FIR | 96 |
| :CATalog:FSK | 96 |

Contents

| | |
|---------------------------------|-----|
| :CATalog:IQ | 97 |
| :CATalog:LIST | 97 |
| :CATalog:MCDMa | 98 |
| :CATalog:MDMod | 98 |
| :CATalog:MDWCdma | 99 |
| :CATalog:MFCdma | 99 |
| :CATalog:MTONE | 100 |
| :CATalog:RCDMa | 100 |
| :CATalog:SEQ | 101 |
| :CATalog:SHAPE | 101 |
| :CATalog:STATE | 102 |
| :CATalog:UFLT | 103 |
| :CATalog:UWCDma | 103 |
| :CATalog[:ALL] | 104 |
| :COPY[:NAME] | 104 |
| :DATA | 105 |
| :DATA:BIT | 105 |
| :DATA:FIR | 106 |
| :DATA:FSK | 107 |
| :DATA:IQ | 108 |
| :DATA:PRAM[1] 2 3 4 | 109 |
| :DATA:PRAM[1] 2 3 4:BLOCK | 109 |
| :DATA:PRAM[1] 2 3 4:LIST | 110 |
| :DATA:SHAPE | 110 |
| :DELete:ALL | 111 |
| :DELete:BINary | 111 |
| :DELete:BIT | 112 |
| :DELete:CDMa | 112 |
| :DELete:DMOD | 112 |
| :DELete:DWCDma | 113 |
| :DELete:FCDMa | 113 |
| :DELete:FIR | 113 |
| :DELete:FSK | 114 |
| :DELete:IQ | 114 |
| :DELete:LIST | 114 |
| :DELete:MCDMa | 115 |
| :DELete:MDMod | 115 |
| :DELete:MDWCdma | 115 |

| | |
|--|-----|
| :DELeTe:MFCdma | 116 |
| :DELeTe:MTONe | 116 |
| :DELeTe:RCDMa | 116 |
| :DELeTe:SEQ | 117 |
| :DELeTe:SHAPE | 117 |
| :DELeTe:STATe | 117 |
| :DELeTe:UFLT | 118 |
| :DELeTe:UWCDma | 118 |
| :DELeTe[:NAME] | 118 |
| :FREE[:ALL] | 119 |
| :LOAD:LIST | 119 |
| :MOVE | 119 |
| :STATe:COMMeNT | 120 |
| :STORe:LIST | 120 |
| Mass Memory Subsystem (:MMEMory) | 121 |
| :CATalog | 121 |
| :COPY | 123 |
| :DATA | 123 |
| :DELeTe:NVWFm | 123 |
| :DELeTe:WFM | 124 |
| :DELeTe:WFM1 | 124 |
| :DELeTe[:NAME] | 124 |
| :HEADer:CLEAr | 125 |
| :HEADer:DESCription | 125 |
| :LOAD:LIST | 125 |
| :MOVE | 126 |
| :STORe:LIST | 126 |
| Output Subsystem (:OUTPut) | 127 |
| :BLANking:AUTO | 127 |
| :BLANking:STATe | 127 |
| :MODulation[:STATe] | 127 |
| [:STATe] | 128 |
| Route Subsystem (:ROUte:HARDware:DGENerator) | 129 |
| :INPut:BPOLarity | 129 |
| :INPut:CPOLarity | 129 |
| :INPut:DPOLarity | 129 |
| :INPut:SPOLarity | 130 |
| :INPut:TPOLarity | 130 |

Contents

| | |
|---------------------------------------|-----|
| :IPOLarity:BGATe | 131 |
| :IPOLarity:CLOCK | 131 |
| :IPOLarity:DATA | 131 |
| :IPOLarity:SSYNc | 132 |
| :IPOLarity:TRIGger | 132 |
| :OPOLarity:CLOCK | 132 |
| :OPOLarity:DATA | 133 |
| :OPOLarity:EVENT[1] 2 3 4 | 133 |
| :OPOLarity:SSYNc | 134 |
| :OUTPut:CPOLarity | 134 |
| :OUTPut:DCS[:STATe] | 134 |
| :OUTPut:DPOLarity | 135 |
| :OUTPut:EPOL[1] 2 3 4 | 135 |
| :OUTPut:SPOLarity | 136 |
| Status Subsystem (:STATus) | 137 |
| :OPERation:BASEband:CONDition | 137 |
| :OPERation:BASEband:ENABLE | 137 |
| :OPERation:BASEband:NTRansition | 138 |
| :OPERation:BASEband:PTRansition | 138 |
| :OPERation:BASEband[:EVENT] | 139 |
| :OPERation:CONDition | 139 |
| :OPERation:ENABLE | 140 |
| :OPERation:NTRansition | 140 |
| :OPERation:PTRansition | 140 |
| :OPERation[:EVENT] | 141 |
| :PRESet | 141 |
| :QUESTionable:BERT:CONDition | 142 |
| :QUESTionable:BERT:ENABLE | 142 |
| :QUESTionable:BERT:NTRansition | 143 |
| :QUESTionable:BERT:PTRansition | 143 |
| :QUESTionable:BERT[:EVENT] | 144 |
| :QUESTionable:CALibration:CONDition | 144 |
| :QUESTionable:CALibration:ENABLE | 145 |
| :QUESTionable:CALibration:NTRansition | 145 |
| :QUESTionable:CALibration:PTRansition | 145 |
| :QUESTionable:CALibration[:EVENT] | 146 |
| :QUESTionable:CONDition | 146 |
| :QUESTionable:ENABLE | 147 |

| | |
|--------------------------------------|-----|
| :QUESTionable:FREQuency:CONDition | 147 |
| :QUESTionable:FREQuency:ENABle | 148 |
| :QUESTionable:FREQuency:NTRansition | 148 |
| :QUESTionable:FREQuency:PTRansition | 148 |
| :QUESTionable:FREQuency[:EVENT] | 149 |
| :QUESTionable:MODulation:CONDition | 149 |
| :QUESTionable:MODulation:ENABle | 150 |
| :QUESTionable:MODulation:NTRansition | 150 |
| :QUESTionable:MODulation:PTRansition | 151 |
| :QUESTionable:MODulation[:EVENT] | 151 |
| :QUESTionable:NTRansition | 152 |
| :QUESTionable:POWEr:CONDition | 152 |
| :QUESTionable:POWEr:ENABle | 152 |
| :QUESTionable:POWEr:NTRansition | 153 |
| :QUESTionable:POWEr:PTRansition | 153 |
| :QUESTionable:POWEr[:EVENT] | 154 |
| :QUESTionable:PTRansition | 154 |
| :QUESTionable[:EVENT] | 155 |
| System Subsystem (:SYSTem) | 156 |
| :CAPability | 156 |
| :DATE | 156 |
| :ERRor[:NEXT] | 157 |
| :ERRor:SCPI[:SYNTax] | 157 |
| :HELP:MODE | 157 |
| :IDN | 158 |
| :LANGuage | 158 |
| :PON:TYPE | 159 |
| :PRESet | 160 |
| :PRESet:ALL | 160 |
| :PRESet:LANGuage | 160 |
| :PRESet:PERsistent | 161 |
| :PRESet:PN9 | 161 |
| :PRESet:TYPE | 162 |
| :PRESet[:USER]:SAVE | 162 |
| :SSAVer:DELay | 163 |
| :SSAVer:MODE | 163 |
| :SSAVer:STATe | 164 |
| :TIME | 164 |

Contents

| | |
|---------------------------------|-----|
| :VERsion | 164 |
| Trigger Subsystem | 165 |
| :ABORt. | 165 |
| :INITiate:CONTInuous[:ALL] | 165 |
| :INITiate[:IMMEDIATE][:ALL] | 166 |
| :TRIGger:OUTPut:POLarity | 166 |
| :TRIGger[:SEQuence]:SLOPe. | 167 |
| :TRIGger[:SEQuence]:SOURce | 167 |
| :TRIGger[:SEQuence][:IMMEDIATE] | 168 |
| Unit Subsystem (:UNIT) | 169 |
| :POWer. | 169 |

Analog Commands. 171

| | |
|---|-----|
| Amplitude Modulation Subsystem ([:SOURce]) | 172 |
| :AM[1] 2..... | 172 |
| :AM:INTernal:FREQuency:STEP[:INCReMENT] | 172 |
| :AM:WIDeband:STATe | 173 |
| :AM[1] 2:EXTernal[1] 2:COUPLing | 173 |
| :AM[1] 2:INTernal[1]:FREQuency | 174 |
| :AM[1] 2:INTernal[1]:FREQuency:ALTErnatE | 174 |
| :AM[1] 2:INTernal[1]:FREQuency:ALTErnatE:AMPLitude:PERCent. | 175 |
| :AM[1] 2:INTernal[1]:FUNCTion:SHAPE | 175 |
| :AM[1] 2:INTernal[1]:SWEep:TIME | 175 |
| :AM[1] 2:INTernal[1]:SWEep:TRIGger. | 176 |
| :AM[1] 2:SOURce | 176 |
| :AM[1] 2:STATe | 177 |
| :AM[1] 2[:DEPTh] | 177 |
| :AM[1] 2[:DEPTh]:TRACk. | 178 |
| :AM[:DEPTh]:STEP[:INCReMENT] | 178 |
| Frequency Modulation Subsystem ([:SOURce]) | 180 |
| :FM[1] 2..... | 180 |
| :FM:INTernal:FREQuency:STEP[:INCReMENT] | 180 |
| :FM[1] 2:EXTernal[1] 2:COUPLing | 181 |
| :FM[1] 2:INTernal[1]:FREQuency. | 181 |
| :FM[1] 2:INTernal[1]:FREQuency:ALTErnatE | 182 |
| :FM[1] 2:INTernal[1]:FREQuency:ALTErnatE:AMPLitude:PERCent. | 182 |
| :FM[1] 2:INTernal[1]:FUNCTion:SHAPE | 183 |
| :FM[1] 2:INTernal[1]:SWEep:TIME | 183 |

| | |
|--|-----|
| :FM[1] 2:INTERNAL[1]:SWEep:TRIGger | 183 |
| :FM[1] 2:SOURce | 184 |
| :FM[1] 2:STATe | 184 |
| :FM[1] 2[:DEVIation] | 185 |
| :FM[1] 2[:DEVIation]:TRACk | 185 |
| Low Frequency Output Subsystem ([:SOURce]:LFOutput) | 187 |
| :AMPLitude | 187 |
| :FUNCTion[1]:FREQuency | 187 |
| :FUNCTion[1]:FREQuency:ALTErnate | 188 |
| :FUNCTion[1]:FREQuency:ALTErnate:AMPLitude:PERCent | 188 |
| :FUNCTion[1]:PERiod | 189 |
| :FUNCTion[1]:PWIDth | 189 |
| :FUNCTion[1]:SHAPE | 190 |
| :FUNCTion[1]:SWEep:TIME | 190 |
| :FUNCTion[1]:SWEep:TRIGger | 190 |
| :SOURce | 191 |
| :STATe | 191 |
| Phase Modulation Subsystem ([:SOURce]) | 193 |
| :PM[1] 2.... | 193 |
| :PM:INTERNAL:FREQuency:STEP[:INCRement] | 193 |
| :PM[1] 2:BANDwidth BWIDth | 194 |
| :PM[1] 2:EXTErnal[1]:COUPLing | 194 |
| :PM[1] 2:INTERNAL[1]:FREQuency | 195 |
| :PM[1] 2:INTERNAL[1]:FREQuency:ALTErnate | 195 |
| :PM[1] 2:INTERNAL[1]:FREQuency:ALTErnate:AMPLitude:PERCent | 196 |
| :PM[1] 2:INTERNAL[1]:FUNCTion:SHAPE | 196 |
| :PM[1] 2:INTERNAL[1]:SWEep:TIME | 196 |
| :PM[1] 2:INTERNAL[1]:SWEep:TRIGger | 197 |
| :PM[1] 2:SOURce | 197 |
| :PM[1] 2:STATe | 198 |
| :PM[1] 2[:DEVIation] | 198 |
| :PM[1] 2[:DEVIation]:TRACk | 199 |
| :PM[:DEVIation]:STEP[:INCRement] | 199 |
| Pulse Modulation Subsystem ([:SOURce]:PULM) | 201 |
| :INTERNAL[1]:FREQuency | 201 |
| :INTERNAL[1]:FUNCTion:SHAPE | 201 |
| :INTERNAL[1]:PERiod | 201 |
| :INTERNAL[1]:PERiod:STEP[:INCRement] | 202 |

Contents

| | |
|--------------------------|-----|
| :INternal[1]:PWIDth | 202 |
| :INternal[1]:PWIDth:STEP | 203 |
| :SOURce | 203 |
| :STATe | 204 |

Component Test Digital Commands **205**

| | |
|--|-----|
| All Subsystem–Option 001 or 002 ([:SOURce]) | 206 |
| :RADio:ALL:OFF | 206 |
| AWGN ARB Subsystem–Option 403 ([:SOURce]:RADio:AWGN:ARB) | 207 |
| :BWIDth | 207 |
| :IQ:EXternal:FILTer | 207 |
| :IQ:EXternal:FILTer:AUTO | 208 |
| :HEADer:CLEar | 208 |
| :HEADer:SAVE | 208 |
| :IQ:MODulation:ATTen | 209 |
| :IQ:MODulation:ATTen:AUTO | 209 |
| :IQ:MODulation:FILTer | 210 |
| :IQ:MODulation:FILTer:AUTO | 210 |
| :MDEStination:PULSe | 211 |
| :MDEStination:AAMPLitude | 211 |
| :MDEStination:ALCHold | 211 |
| :MPOLarity:MARKer1 | 212 |
| :MPOLarity:MARKer2 | 212 |
| :MPOLarity:MARKer3 | 212 |
| :MPOLarity:MARKer4 | 213 |
| :LENgth | 213 |
| :REFerence:EXternal:FREQuency | 213 |
| :REFerence[:SOURce] | 214 |
| :SCLock:RATE | 214 |
| :SEED | 215 |
| [:STATe] | 215 |
| CDMA ARB Subsystem–Option 401 ([:SOURce]:RADio:CDMA:ARB) | 216 |
| :CLIPping:I | 216 |
| :CLIPping:POSition | 216 |
| :CLIPping:Q | 217 |
| :CLIPping:TYPE | 217 |
| :CLIPping[:IJQ] | 217 |
| :CRATe | 218 |

| | |
|--|-----|
| :IQ:EXtErnal:FILTer | 218 |
| :IQ:EXtErnal:FILTer:AUTO | 219 |
| :FILTer | 219 |
| :FILTer:ALPHa | 220 |
| :FILTer:BBT | 221 |
| :FILTer:CHANnel | 221 |
| :HEADer:CLEar | 221 |
| :HEADer:SAVE | 222 |
| :IQMap | 222 |
| :IQ:MODulation:ATTen | 222 |
| :IQ:MODulation:ATTen:AUTO | 223 |
| :IQ:MODulation:FILTer | 223 |
| :IQ:MODulation:FILTer:AUTO | 224 |
| :MDEStination:PULSe | 224 |
| :MDEStination:AAMPLitude | 225 |
| :MDEStination:ALCHold | 225 |
| :MPOLarity:MARKer1 | 225 |
| :MPOLarity:MARKer2 | 226 |
| :MPOLarity:MARKer3 | 226 |
| :MPOLarity:MARKer4 | 226 |
| :OSAMple | 227 |
| :REFErence:EXtErnal:FREQuency | 227 |
| :REFErence[:SOURce] | 228 |
| :RETRigger | 228 |
| :SCLock:RATE | 229 |
| :SETup | 229 |
| :SETup:CHANnel | 230 |
| :SETup:MCARrier | 231 |
| :SETup:MCARrier:STORE | 232 |
| :SETup:MCARrier:TABLE | 232 |
| :SETup:STORE | 233 |
| :TRIGger:TYPE | 234 |
| :TRIGger:TYPE:CONTInuous[:TYPE] | 234 |
| :TRIGger:TYPE:GATE:ACTive | 235 |
| :TRIGger[:SOURce] | 235 |
| :TRIGger[:SOURce]:EXtErnal[:SOURce] | 236 |
| :TRIGger[:SOURce]:EXtErnal:DELay | 237 |
| :TRIGger[:SOURce]:EXtErnal:DELay:STATe | 237 |

Contents

| | |
|--|-----|
| :TRIGger[:SOURce]:EXTernal:SLOPe | 237 |
| :WLENgth | 238 |
| [:STATe] | 238 |
| CDMA2000 ARB Subsystem–Option 401 ([:SOURce]:RADio:CDMA2000:ARB) | 240 |
| :CLIPping:I | 240 |
| :CLIPping:POSition | 240 |
| :CLIPping:Q | 241 |
| :CLIPping:TYPE | 241 |
| :CLIPping[:IJQ] | 241 |
| :IQ:EXTernal:FILTer | 242 |
| :IQ:EXTernal:FILTer:AUTO | 242 |
| :FILTer | 243 |
| :FILTer:ALPHa | 244 |
| :FILTer:BBT | 244 |
| :FILTer:CHANnel | 245 |
| :HEADer:CLEar | 245 |
| :HEADer:SAVE | 245 |
| :IQ:MODulation:ATTen | 246 |
| :IQ:MODulation:ATTen:AUTO | 246 |
| :IQ:MODulation:FILTer | 246 |
| :IQ:MODulation:FILTer:AUTO | 247 |
| :IQMap | 247 |
| :LINK | 248 |
| :LINK:FORWard:SETup | 248 |
| :LINK:FORWard:SETup:MCARrier | 249 |
| :LINK:FORWard:SETup:MCARrier:STORE | 250 |
| :LINK:FORWard:SETup:MCARrier:TABLE | 250 |
| :LINK:FORWard:SETup:MCARrier:TABLE:NCARriers | 251 |
| :LINK:FORWard:SETup:STORE | 252 |
| :LINK:FORWard:SETup:TABLE:APPLY | 253 |
| :LINK:FORWard:SETup:TABLE:CHANnel | 253 |
| :LINK:FORWard:SETup:TABLE:NCHannels | 254 |
| :LINK:FORWard:SETup:TABLE:PADJust | 254 |
| :LINK:REVerse:RCONfig | 255 |
| :LINK:REVerse:SETup | 255 |
| :LINK:REVerse:SETup:STORE | 256 |
| :LINK:REVerse:SETup:TABLE:APPLY | 257 |
| :LINK:REVerse:SETup:TABLE:CHANnel | 257 |

| | |
|---|-----|
| :LINK:REVerse:SETup:TABLE:NCHannels | 258 |
| :LINK:REVerse:SETup:TABLE:PADJust | 258 |
| :MDEStination:PULSe | 259 |
| :MDEStination:AAMPLitude | 259 |
| :MDEStination:ALCHold | 259 |
| :MPOLarity:MARKer1 | 260 |
| :MPOLarity:MARKer2 | 260 |
| :MPOLarity:MARKer3 | 260 |
| :MPOLarity:MARKer4 | 261 |
| :REFerence:EXTernal:FREQuency | 261 |
| :REFerence[:SOURce] | 261 |
| :RETRigger | 262 |
| :REVISION | 262 |
| :SCLock:RATE | 263 |
| :SPReading:RATE | 263 |
| :SPReading:TYPE | 264 |
| :SPReading:TYPE:MCARrier:SPACing | 264 |
| :TRIGger:TYPE | 264 |
| :TRIGger:TYPE:CONTInuous[:TYPE] | 265 |
| :TRIGger:TYPE:GATE:ACTive | 265 |
| :TRIGger[:SOURce] | 266 |
| :TRIGger[:SOURce]:EXTernal[:SOURce] | 266 |
| :TRIGger[:SOURce]:EXTernal:DELAy | 267 |
| :TRIGger[:SOURce]:EXTernal:DELAy:STATE | 267 |
| :TRIGger[:SOURce]:EXTernal:SLOPe | 268 |
| [:STATE] | 268 |
| Dmodulation Subsystem—Option 001 or 002 (:SOURce):RADio:DMODulation:ARB | 269 |
| :IQ:EXTernal:FILTer | 269 |
| :IQ:EXTernal:FILTer:AUTO | 269 |
| :FILTer | 270 |
| :FILTer:ALPHA | 271 |
| :FILTer:BBT | 271 |
| :FILTer:CHANnel | 272 |
| :HEADer:CLEAr | 272 |
| :HEADer:SAVE | 272 |
| :IQ:MODulation:ATTen | 273 |
| :IQ:MODulation:ATTen:AUTO | 273 |
| :IQ:MODulation:FILTer | 273 |

Contents

| | |
|--|-----|
| :IQ:MODulation:FILTer:AUTO | 274 |
| :MDEStination:PULSe | 274 |
| :MDEStination:AAMPLitude | 275 |
| :MDEStination:ALCHold | 275 |
| :MODulation:FSK[:DEVIation] | 275 |
| :MODulation[:TYPE] | 276 |
| :MPOLarity:MARKer1 | 276 |
| :MPOLarity:MARKer2 | 277 |
| :MPOLarity:MARKer3 | 277 |
| :MPOLarity:MARKer4 | 277 |
| :REFerence:EXTernal:FREQuency | 278 |
| :REFerence[:SOURce] | 278 |
| :RETRigger | 279 |
| :SCLock:RATE | 279 |
| :SETup | 280 |
| :SETup:MCARrier | 280 |
| :SETup:MCARrier:PHASe | 281 |
| :SETup:MCARrier:STORE | 281 |
| :SETup:MCARrier:TABLE | 282 |
| :SETup:MCARrier:TABLE:NCARriers | 283 |
| :SETup:STORE | 283 |
| :SRATE | 283 |
| :TRIGger:TYPE | 285 |
| :TRIGger:TYPE:CONTInuous[:TYPE] | 285 |
| :TYPE:GATE:ACTive | 286 |
| :TRIGger[:SOURce] | 286 |
| :TRIGger[:SOURce]:EXTernal:DELAy | 287 |
| :TRIGger[:SOURce]:EXTernal:DELAy:STATe | 287 |
| :TRIGger[:SOURce]:EXTernal:SLOPe | 288 |
| :TRIGger[:SOURce]:EXTernal[:SOURce] | 288 |
| [:STATe] | 289 |
| Dual ARB Subsystem—Option 001 or 002 ([:SOURce]:RADio:ARB) | 290 |
| :CLIPping | 290 |
| :IQ:EXTernal:FILTer | 290 |
| :GENerate:SINE | 291 |
| :HEADer:CLEAr | 291 |
| :HEADer:SAVE | 292 |
| :IQ:EXTernal:FILTer:AUTO | 292 |

| | |
|---|-----|
| :IQ:MODulation:ATTen | 293 |
| :IQ:MODulation:ATTen:AUTO | 293 |
| :IQ:MODulation:FILTer | 293 |
| :IQ:MODulation:FILTer:AUTO | 294 |
| :MARKer:CLEar | 294 |
| :MARKer:CLEar:ALL | 295 |
| :MARKer:ROtate | 295 |
| :MARKer:[SET] | 296 |
| :MDEStination:PULSe | 297 |
| :MDEStination:AAMPliTude | 297 |
| :MDEStination:ALCHold | 297 |
| :MPOLarity:MARKer1 | 298 |
| :MPOLarity:MARKer2 | 298 |
| :MPOLarity:MARKer3 | 298 |
| :MPOLarity:MARKer4 | 299 |
| :REFErence:EXTErnal:FREQuency | 299 |
| :REFErence[:SOURce] | 299 |
| :RETRigger | 300 |
| :RSCAling | 300 |
| :SCAling | 301 |
| :SCLock:RATE | 301 |
| :SEQuence | 301 |
| :TRIGger:TYPE | 302 |
| :TRIGger:TYPE:CONTInuous[:TYPE] | 303 |
| :TRIGger:TYPE:GATE:ACTive | 303 |
| :TRIGger:TYPE:SADVance[:TYPE] | 304 |
| :TRIGger[:SOURce] | 304 |
| :TRIGger[:SOURce]:EXTErnal[:SOURce] | 305 |
| :TRIGger[SOURce]:EXTErnal:DELay | 305 |
| :TRIGger[:SOURce]:EXTErnal:DELay:STATe | 306 |
| :TRIGger[:SOURce]:EXTErnal:SLOPe | 306 |
| :WAVEform | 306 |
| [:STATe] | 307 |
| Multitone Subsystem—Option 001 or 002 ([:SOURce]:RADio:MTONe:ARB) | 308 |
| Creating a Multitone Waveform | 308 |
| :IQ:EXTErnal:FILTer | 308 |
| :IQ:EXTErnal:FILTer:AUTO | 309 |
| :HEADer:CLEar | 309 |

Contents

| | |
|--|-----|
| :HEADer:SAVE | 309 |
| :IQ:MODulation:ATTen | 310 |
| :IQ:MODulation:ATTen:AUTO | 310 |
| :IQ:MODulation:FILTer | 311 |
| :IQ:MODulation:FILTer:AUTO | 311 |
| :MDEStination:PULSe | 312 |
| :MDEStination:AAMPLitude | 312 |
| :MDEStination:ALCHold | 312 |
| :MPOLarity:MARKer1 | 313 |
| :MPOLarity:MARKer2 | 313 |
| :MPOLarity:MARKer3 | 313 |
| :MPOLarity:MARKer4 | 314 |
| :REFeRence:EXTeRnal:FREQuency | 314 |
| :REFeRence[:SOURce] | 314 |
| :ROW | 315 |
| :SCLock:RATE | 316 |
| :SETup | 316 |
| :SETup:STORe | 317 |
| :SETup:TABLE | 317 |
| :SETup:TABLE:FSPacing | 318 |
| :SETup:TABLE:NTONes | 318 |
| :SETup:TABLE:PHASe:INITialize | 319 |
| :SETup:TABLE:PHASe:INITialize:SEED | 319 |
| [:STATe] | 320 |
| Wideband CDMA ARB Subsystem—Option 400 ([:SOURce]:RADio:WCDMA:TGPP:ARB) | 321 |
| :CLIPping:I | 321 |
| :CLIPping:POSition | 321 |
| :CLIPping:Q | 322 |
| :CLIPping:TYPE | 322 |
| :CLIPping[:IJQ] | 322 |
| :CRATe | 323 |
| :FILTer | 323 |
| :FILTer:ALPHA | 324 |
| :FILTer:BBT | 324 |
| :FILTer:CHANnel | 325 |
| :HEADer:CLEAr | 325 |
| :HEADer:SAVE | 325 |
| :IQ:EXTeRnal:FILTer | 326 |

| | |
|--|-----|
| :IQ:EXtErnal:FILTer:AUTO | 326 |
| :IQMap | 327 |
| :IQ:MODulation:ATTen | 327 |
| :IQ:MODulation:ATTen:AUTO | 327 |
| :IQ:MODulation:FILTer | 328 |
| :IQ:MODulation:FILTer:AUTO | 328 |
| :LINK | 329 |
| :LINK:DOWN:OACP | 329 |
| :LINK:DOWN:SETup | 330 |
| :LINK:DOWN:SETup:MCARrier | 331 |
| :LINK:DOWN:SETup:MCARrier:CLIPping:I | 332 |
| :LINK:DOWN:SETup:MCARrier:CLIPping:Q | 332 |
| :LINK:DOWN:SETup:MCARrier:CLIPping:TYPE | 333 |
| :LINK:DOWN:SETup:MCARrier:CLIPping[:IJQ] | 333 |
| :LINK:DOWN:SETup:MCARrier:SCODE:AINCrement | 334 |
| :LINK:DOWN:SETup:MCARrier:STORE | 334 |
| :LINK:DOWN:SETup:MCARrier:TABLE | 335 |
| :LINK:DOWN:SETup:MCARrier:TABLE:NCARriers | 337 |
| :LINK:DOWN:SETup:MCARrier:TOFFset:AINCrement | 337 |
| :LINK:DOWN:SETup:STORE | 337 |
| :LINK:DOWN:SETup:TABLE:APPLY | 338 |
| :LINK:DOWN:SETup:TABLE:CHANnel | 339 |
| :LINK:DOWN:SETup:TABLE:NCHANnels? | 343 |
| :LINK:DOWN:SETup:TABLE:PADJust | 343 |
| :LINK:DOWN:TFCI | 344 |
| :LINK:UP:OACP | 344 |
| :LINK:UP:SCRAMBLE | 345 |
| :LINK:UP:SDPDch | 345 |
| :LINK:UP:SETup | 345 |
| :LINK:UP:SETup:STORE | 346 |
| :LINK:UP:SETup:TABLE:APPLY | 347 |
| :LINK:UP:SETup:TABLE:CHANnel | 347 |
| :LINK:UP:SETup:TABLE:GUNit | 348 |
| :LINK:UP:SETup:TABLE:NCHANnel | 349 |
| :LINK:UP:TFCI | 349 |
| :MDEStination:PULSe | 349 |
| :MDEStination:AAMPplitude | 350 |
| :MDEStination:ALCHold | 350 |

Contents

| | |
|--|------------|
| :MPOLarity:MARKer1 | 350 |
| :MPOLarity:MARKer2 | 351 |
| :MPOLarity:MARKer3 | 351 |
| :MPOLarity:MARKer4 | 351 |
| :REFeRence:EXTeRnal:FREQuency | 352 |
| :REFeRence[:SOURce] | 352 |
| :RETRigger | 353 |
| :REVision | 353 |
| :SCLock:RATE | 353 |
| :TRIGger:TYPE:CONTInuous[:TYPE] | 354 |
| :TRIGger:TYPE | 355 |
| :TRIGger:TYPE:GATE:ACTive | 355 |
| :TRIGger[:SOURce] | 356 |
| :TRIGger[:SOURce]:EXTeRnal:DELay | 356 |
| :TRIGger[:SOURce]:EXTeRnal:DELay:STATe | 357 |
| :TRIGger[:SOURce]:EXTeRnal:SLOPe | 357 |
| :TRIGger[:SOURce]:EXTeRnal[:SOURce] | 357 |
| [:STATe] | 358 |
| Bit Error Rate Test (BERT) Commands | 359 |
| Calculate Subsystem—Option UN7 and 300 (:CALCulate:BERT) | 360 |
| :BTS:LOOPback:EDGE:ETCH:F43:COMPARator:CRITeria:ERATe | 360 |
| :BTS:LOOPback:EDGE:ETCH:F43:COMPARator:CRITeria[:SElect] | 360 |
| :BTS:LOOPback:EDGE:MCS5:COMPARator:CRITeria:ERATe | 361 |
| :BTS:LOOPback:EDGE:MCS5:COMPARator:CRITeria[:SElect] | 361 |
| :BTS:LOOPback:EDGE:MCS9:COMPARator:CRITeria:ERATe | 361 |
| :BTS:LOOPback:EDGE:MCS9:COMPARator:CRITeria[:SElect] | 362 |
| :BTS:LOOPback:EDGE:UNCoded:COMPARator:CRITeria:ERATe | 362 |
| :BTS:LOOPback:EDGE:UNCoded:COMPARator:CRITeria[:SElect] | 363 |
| :BTS:LOOPback:GSM:CS1:COMPARator:CRITeria:ERATe | 363 |
| :BTS:LOOPback:GSM:CS1:COMPARator:CRITeria[:SElect] | 364 |
| :BTS:LOOPback:GSM:CS4:COMPARator:CRITeria:ERATe | 364 |
| :BTS:LOOPback:GSM:CS4:COMPARator:CRITeria[:SElect] | 365 |
| :BTS:LOOPback:GSM:MCS1:COMPARator:CRITeria:ERATe | 365 |
| :BTS:LOOPback:GSM:MCS1:COMPARator:CRITeria[:SElect] | 366 |
| :BTS:LOOPback:GSM:COMPARator:CRITeria:CIB | 366 |
| :BTS:LOOPback:GSM:COMPARator:CRITeria:CII | 366 |
| :BTS:LOOPback:GSM:COMPARator:CRITeria:FERasure | 367 |

| | |
|--|-----|
| :BTS:LOOPback:GSM:COMParator:CRITeria[:SElect] | 367 |
| [:BAsEband]:COMParator:MODE | 368 |
| [:BAsEband]:COMParator:THReshold | 368 |
| [:BAsEband]:COMParator[:STATe] | 369 |
| [:BAsEband]:DISPlay:MODE: | 369 |
| [:BAsEband]:DISPlay:UPDate: | 370 |
| Data Subsystem—Option UN7 and 300 (:DATA) | 371 |
| :BERT:BTS:LOOPback:EDGE:ETCH:F43[:DATA] | 371 |
| :BERT:BTS:LOOPback:EDGE:MCS5[:DATA] | 372 |
| :BERT:BTS:LOOPback:EDGE:MCS9[:DATA] | 373 |
| :BERT:BTS:LOOPback:EDGE:UNCoded[:DATA] | 373 |
| :BERT:BTS:LOOPback:GSM[:DATA] | 374 |
| :BERT:BTS:LOOPback:GSM:CS1[:DATA] | 376 |
| :BERT:BTS:LOOPback:GSM:CS4[:DATA] | 376 |
| :BERT:BTS:LOOPback:GSM:MCS1[:DATA] | 377 |
| :BERT:AUXout | 378 |
| [:DATA] | 379 |
| Input Subsystem—Option UN7 (:INPut:BERT[: BAsEband]) | 381 |
| :CGATe:DELay:CLOCK | 381 |
| :CGATe:DELay:MODE | 381 |
| :CGATe:DELay:TIME | 382 |
| :CGATe:DELay[:STATe] | 382 |
| :CGATe:POLarity | 383 |
| :CGATe[:STATe] | 383 |
| :CLOCK:DELay:RESolution | 383 |
| :CLOCK:DELay:TIME | 384 |
| :CLOCK:DELay[:STATe] | 384 |
| :CLOCK:POLarity | 385 |
| :DATA:POLarity | 385 |
| :IMPedance | 386 |
| :THReshold | 386 |
| Measure Subsystem—Option 300 (:MEASure[:SCALar]:BERT:BTS:LOOPback) | 387 |
| :EDGE:MCS5[:SENSitivity] | 387 |
| :EDGE:MCS9[:SENSitivity] | 388 |
| :EDGE:UNCoded[:SENSitivity] | 388 |
| :GSM[:SENSitivity] | 389 |
| Sense Subsystem—Options UN7 and 300 ([:SOURce]:SENSe:BERT) | 391 |
| :BTS:LOOPback:EDGE:ETCH:F43:BLOCK:COUNt | 391 |

Contents

| | |
|---|-----|
| :BTS:LOOPback:EDGE:ETCH:F43:CONTain | 391 |
| :BTS:LOOPback:EDGE:ETCH:F43:STOP:CRITeria:EBLock | 392 |
| :BTS:LOOPback:EDGE:ETCH:F43:STOP:CRITeria[:SElect]. | 392 |
| :BTS:LOOPback:EDGE:FTRigger:EXTernal:DELay | 392 |
| :BTS:LOOPback:EDGE:FTRigger:EXTernal:POLarity | 393 |
| :BTS:LOOPback:EDGE:FTRigger[SElect] | 393 |
| :BTS:LOOPback:EDGE:MCS5:BLOCK:COUNT | 394 |
| :BTS:LOOPback:EDGE:MCS5:CONTain | 394 |
| :BTS:LOOPback:EDGE:MCS5:ESENSitivity | 394 |
| :BTS:LOOPback:EDGE:MCS5:HAMPLitude | 395 |
| :BTS:LOOPback:EDGE:MCS5:LAMPLitude | 395 |
| :BTS:LOOPback:EDGE:MCS5:PAMPLitude | 396 |
| :BTS:LOOPback:EDGE:MCS5:SBLock:COUNT | 396 |
| :BTS:LOOPback:EDGE:MCS5:SBLock:INITial | 396 |
| :BTS:LOOPback:EDGE:MCS5:STOP:CRITeria:EBLock | 397 |
| :BTS:LOOPback:EDGE:MCS5:STOP:CRITeria[:SElect]. | 397 |
| :BTS:LOOPback:EDGE:MCS9:BLOCK:COUNT | 398 |
| :BTS:LOOPback:EDGE:MCS9:CONTain | 398 |
| :BTS:LOOPback:EDGE:MCS9:ESENSitivity | 398 |
| :BTS:LOOPback:EDGE:MCS9:HAMPLitude | 399 |
| :BTS:LOOPback:EDGE:MCS9:LAMPLitude | 399 |
| :BTS:LOOPback:EDGE:MCS9:PAMPLitude | 400 |
| :BTS:LOOPback:EDGE:MCS9:SBLock:COUNT | 400 |
| :BTS:LOOPback:EDGE:MCS9:SBLock:INITial | 400 |
| :BTS:LOOPback:EDGE:MCS9:STOP:CRITeria:EBLock | 401 |
| :BTS:LOOPback:EDGE:MCS9:STOP:CRITeria[:SElect]. | 401 |
| :BTS:LOOPback:EDGE:MEASurement:STOP | 402 |
| :BTS:LOOPback:EDGE:MEASurement:TSLot | 402 |
| :BTS:LOOPback:EDGE:MEASurement[:MODE] | 403 |
| :BTS:LOOPback:EDGE:SINVert | 403 |
| :BTS:LOOPback:EDGE:SYNC:AGain | 403 |
| :BTS:LOOPback:EDGE:SYNC:RF | 404 |
| :BTS:LOOPback:EDGE:SYNC[:SOURce] | 404 |
| :BTS:LOOPback:EDGE:TRIGger[:SOURce] | 405 |
| :BTS:LOOPback:EDGE:ULINK:OFFSet | 405 |
| :BTS:LOOPback:EDGE:UNCoded:BIT:COUNT | 406 |
| :BTS:LOOPback:EDGE:UNCoded:ESENSitivity | 406 |
| :BTS:LOOPback:EDGE:UNCoded:HAMPLitude | 406 |

| | |
|---|-----|
| :BTS:LOOPback:EDGE:UNCoded:LAMplitude | 407 |
| :BTS:LOOPback:EDGE:UNCoded:PAMplitude | 407 |
| :BTS:LOOPback:EDGE:UNCoded:SBIT:COUNT | 408 |
| :BTS:LOOPback:EDGE:UNCoded:SBIT:INITial | 408 |
| :BTS:LOOPback:EDGE:UNCoded:STOP:CRITeria:EBIT | 408 |
| :BTS:LOOPback:EDGE:UNCoded:STOP:CRITeria[:SElect] | 409 |
| :BTS:LOOPback:EDGE[:STATe] | 409 |
| :BTS:LOOPback:GSM:CS1:BLOCK:COUNT | 410 |
| :BTS:LOOPback:GSM:CS1:CONTain | 410 |
| :BTS:LOOPback:GSM:CS1:STOP:CRITeria:EBLock | 410 |
| :BTS:LOOPback:GSM:CS1:STOP:CRITeria[:SElect] | 411 |
| :BTS:LOOPback:GSM:CS4:BLOCK:COUNT | 411 |
| :BTS:LOOPback:GSM:CS4:CONTain | 411 |
| :BTS:LOOPback:GSM:CS4:STOP:CRITeria:EBLock | 412 |
| :BTS:LOOPback:GSM:CS4:STOP:CRITeria[:SElect] | 412 |
| :BTS:LOOPback:GSM:ESENSitivity | 413 |
| :BTS:LOOPback:GSM:FRAME:CIB | 413 |
| :BTS:LOOPback:GSM:FRAME:CII | 413 |
| :BTS:LOOPback:GSM:FRAME:COUNT | 414 |
| :BTS:LOOPback:GSM:HAMPLitude | 414 |
| :BTS:LOOPback:GSM:LAMPLitude | 414 |
| :BTS:LOOPback:GSM:MCS1:BLOCK:COUNT | 415 |
| :BTS:LOOPback:GSM:MCS1:CONTain | 415 |
| :BTS:LOOPback:GSM:MCS1:STOP:CRITeria:EBLock | 416 |
| :BTS:LOOPback:GSM:MCS1:STOP:CRITeria[:SElect] | 416 |
| :BTS:LOOPback:GSM:MEASurement:STOP | 416 |
| :BTS:LOOPback:GSM:MEASurement:TSLot | 417 |
| :BTS:LOOPback:GSM:MEASurement[:MODE] | 417 |
| :BTS:LOOPback:GSM:PAMPLitude | 418 |
| :BTS:LOOPback:GSM:SFRame:COUNT | 418 |
| :BTS:LOOPback:GSM:SFRame:INITial | 418 |
| :BTS:LOOPback:GSM:SINVert | 419 |
| :BTS:LOOPback:GSM:STOP:CRITeria:CIB | 419 |
| :BTS:LOOPback:GSM:STOP:CRITeria:CII | 420 |
| :BTS:LOOPback:GSM:STOP:CRITeria:FERasure | 420 |
| :BTS:LOOPback:GSM:STOP:CRITeria[:SElect] | 420 |
| :BTS:LOOPback:GSM:SYNC:RF | 421 |
| :BTS:LOOPback:GSM:SYNC[:SOURce] | 422 |

Contents

| | |
|--|------------|
| :BTS:LOOPback:GSM:TRIGger[:SOURce] | 422 |
| :BTS:LOOPback:GSM:ULINk:OFFSet | 423 |
| :BTS:LOOPback:GSM[:STATe] | 423 |
| [:BAsEband]:PRBS:FUNcTion:SPIGnore:DATA | 424 |
| [:BAsEband]:PRBS:FUNcTion:SPIGnore[:STATe] | 424 |
| [:BAsEband]:PRBS[:DATA] | 425 |
| [:BAsEband]:RSYNc:THReshold | 425 |
| [:BAsEband]:RSYNc[:STATe] | 425 |
| [:BAsEband]:STATe | 426 |
| [:BAsEband]:STOP:CRITeria:EBIT | 426 |
| [:BAsEband]:STOP:CRITeria[:SElect] | 427 |
| [:BAsEband]:TBITs | 427 |
| [:BAsEband]:TRIGger:BDElay | 427 |
| [:BAsEband]:TRIGger:BDElay:STATe | 428 |
| [:BAsEband]:TRIGger:COUNt | 428 |
| [:BAsEband]:TRIGger:POLarity | 429 |
| [:BAsEband]:TRIGger[:SOURce] | 429 |
| Receiver Test Digital Commands | 431 |
| All Subsystem–Option 001 or 002 ([:SOURce]) | 432 |
| :RADio:ALL:OFF | 432 |
| AWGN Real-Time Subsystem–Option 403 ([:SOURce]:RADio:AWGN:RT) | 433 |
| :BWIDth | 433 |
| [:STATe] | 433 |
| Bluetooth Subsystem–Option 406 ([:SOURce]:RADio:BLUETOOTH:ARB) | 434 |
| :AMADdr | 434 |
| :BDADdr | 434 |
| :BURSt[:STATe] | 435 |
| :CGDelay | 435 |
| :DATA | 436 |
| :IQ:EXtErnal:FiLTer | 436 |
| :IQ:EXtErnal:FiLTer:AUTO | 437 |
| :HEADer:CLear | 437 |
| :HEADer:SAVE | 437 |
| :IMPairments | 438 |
| :IMPairments:AWGN | 438 |
| :IMPairments:AWGN:CNR | 438 |
| :IMPairments:AWGN:NSEed | 439 |

| | |
|--|-----|
| :IMPairments:DDEVIation | 439 |
| :IMPairments:FDType | 440 |
| :IMPairments:FOFFset | 441 |
| :IMPairments:MINdex | 441 |
| :IMPairments:STERror | 442 |
| :IQ:MODulation:ATTen | 442 |
| :IQ:MODulation:ATTen:AUTO | 443 |
| :IQ:MODulation:FILTer | 443 |
| :IQ:MODulation:FILTer:AUTO | 444 |
| :MDEStination:PULSe | 444 |
| :MDEStination:AAMPLitude | 444 |
| :MDEStination:ALCHold | 445 |
| :MPOLarity:MARKer1 | 445 |
| :MPOLarity:MARKer2 | 445 |
| :MPOLarity:MARKer3 | 446 |
| :MPOLarity:MARKer4 | 446 |
| :PACKet | 446 |
| :REFerence:EXTernal:FREQuency | 447 |
| :REFerence[:SOURce] | 447 |
| :RSYMBOLs | 448 |
| :SCLock:RATE | 448 |
| [:STATE]. | 448 |
| CDMA2000 BBG Subsystem–Option 401 ([:SOURce]:RADio:CDMA2000[:BBG]) | 450 |
| :LMODE | 450 |
| [:FORWard]:BBCLOCK | 450 |
| [:FORWard]:CHIPrate | 451 |
| [:FORWard]:ESDelay | 451 |
| [:FORWard]:FILTer | 452 |
| [:FORWard]:FILTer:ALPHa | 453 |
| [:FORWard]:FILTer:BBT | 453 |
| [:FORWard]:FILTer:CHANnel | 454 |
| [:FORWard]:LCState | 454 |
| [:FORWard]:FFCH:DATA | 454 |
| [:FORWard]:FFCH:DATA:FIX4 | 455 |
| [:FORWard]:FFCH:EBNO | 455 |
| [:FORWard]:FFCH:FOFFset | 456 |
| [:FORWard]:FFCH:LCMask | 457 |
| [:FORWard]:FFCH:LCMask:ESN | 457 |

Contents

| | |
|-------------------------------------|-----|
| [FORWARD]:FFCH:LCMask:HEADER | 458 |
| [FORWARD]:FFCH:POWER | 458 |
| [FORWARD]:FFCH:PRAMP | 458 |
| [FORWARD]:FFCH:PRTime | 459 |
| [FORWARD]:FFCH:QOF | 459 |
| [FORWARD]:FFCH:RATE | 460 |
| [FORWARD]:FFCH:RCONfig | 460 |
| [FORWARD]:FFCH:WALSh | 460 |
| [FORWARD]:FFCH[:STATe] | 461 |
| [FORWARD]:FPCH:DATA | 461 |
| [FORWARD]:FPCH:EBNO | 461 |
| [FORWARD]:FPCH:LCMask | 462 |
| [FORWARD]:FPCH:LCMask:F1 | 462 |
| [FORWARD]:FPCH:LCMask:F2 | 463 |
| [FORWARD]:FPCH:LCMask:F3 | 463 |
| [FORWARD]:FPCH:MESSAge | 463 |
| [FORWARD]:FPCH:POWER | 464 |
| [FORWARD]:FPCH:RATE | 464 |
| [FORWARD]:FPCH:WALSh | 464 |
| [FORWARD]:FPCH[:STATe] | 465 |
| [FORWARD]:FPICH:ECNO | 465 |
| [FORWARD]:FPICH:POWER | 466 |
| [FORWARD]:FPICH[:STATe] | 466 |
| [FORWARD]:FSCH[1] 2:DATA | 466 |
| [FORWARD]:FSCH[1] 2:DATA:FIX4 | 467 |
| [FORWARD]:FSCH[1] 2:EBNO | 467 |
| [FORWARD]:FSCH[1] 2:FOFFset | 468 |
| [FORWARD]:FSCH[1] 2:LCMask | 468 |
| [FORWARD]:FSCH[1] 2:LCMask:ESN | 468 |
| [FORWARD]:FSCH[1] 2:LCMask:HEADER | 469 |
| [FORWARD]:FSCH[1] 2:POWER | 469 |
| [FORWARD]:FSCH[1] 2:QOF | 469 |
| [FORWARD]:FSCH[1] 2:RATE | 470 |
| [FORWARD]:FSCH[1] 2:RCONfig | 470 |
| [FORWARD]:FSCH[1] 2:TCODE | 471 |
| [FORWARD]:FSCH[1] 2:WALSh | 471 |
| [FORWARD]:FSCH[1] 2[:STATe] | 472 |
| [FORWARD]:FSYNch:CFRequency | 472 |

| | |
|------------------------------|-----|
| [FORWARD]:FSYNch:DAYLt | 472 |
| [FORWARD]:FSYNch:EBNO | 473 |
| [FORWARD]:FSYNch:ECFRequency | 473 |
| [FORWARD]:FSYNch:LPSec. | 474 |
| [FORWARD]:FSYNch:LTMoff | 474 |
| [FORWARD]:FSYNch:MPREv | 474 |
| [FORWARD]:FSYNch:MSGType | 475 |
| [FORWARD]:FSYNch:NID | 475 |
| [FORWARD]:FSYNch:POWer | 475 |
| [FORWARD]:FSYNch:PRATe | 476 |
| [FORWARD]:FSYNch:PREV | 476 |
| [FORWARD]:FSYNch:RESErved | 476 |
| [FORWARD]:FSYNch:SID. | 477 |
| [FORWARD]:FSYNch:STYPe | 477 |
| [FORWARD]:FSYNch:SYSTime | 478 |
| [FORWARD]:FSYNch:WALSh | 478 |
| [FORWARD]:FSYNch[:STATe] | 478 |
| [FORWARD]:NOISe:CN | 479 |
| [FORWARD]:NOISe[:STATe] | 479 |
| [FORWARD]:OCNS:POWer | 480 |
| [FORWARD]:OCNS:WALSh | 480 |
| [FORWARD]:OCNS[:STATe] | 480 |
| [FORWARD]:PADJust | 481 |
| [FORWARD]:POLarity | 481 |
| [FORWARD]:QPCH:CCI | 481 |
| [FORWARD]:QPCH:EBNO | 482 |
| [FORWARD]:QPCH:PI | 482 |
| [FORWARD]:QPCH:POWer | 483 |
| [FORWARD]:QPCH:RATE | 483 |
| [FORWARD]:QPCH:WALSh | 484 |
| [FORWARD]:QPCH[:STATe] | 484 |
| [FORWARD]:SRATe | 484 |
| :PNOFfset | 485 |
| :REVerse:BBCLock | 485 |
| :REVerse:CHIPrate | 485 |
| :REVerse:ESDelay | 486 |
| :REVerse:FILTer | 486 |
| :REVerse:FILTer:ALPHa | 487 |

Contents

| | |
|--|-----|
| :REVerse:FILTer:BBT | 488 |
| :REVerse:FILTer:CHANnel | 488 |
| :REVerse:LCMask | 489 |
| :REVerse:LCState. | 489 |
| :REVerse:PADJust. | 489 |
| :REVerse:POLarity[:ALL]. | 490 |
| :REVerse:NOISe:CN | 490 |
| :REVerse:NOISe[:STATe] | 491 |
| :REVerse:RC12:ACCess:RACH:DATA | 491 |
| :REVerse:RC12:ACCess:RACH:DATA:FIX4 | 492 |
| :REVerse:RC12:ACCess:RACH:EBNO | 492 |
| :REVerse:RC12:ACCess:RACH:FLENgth | 493 |
| :REVerse:RC12:ACCess:RACH:FOFFset. | 493 |
| :REVerse:RC12:ACCess:RACH:POWer | 493 |
| :REVerse:RC12:ACCess:RACH:RCONfig | 494 |
| :REVerse:RC12:ACCess:RACH:RATE | 494 |
| :REVerse:RC12:ACCess:RACH[:STATe] | 494 |
| :REVerse:RC12:TRAFfic:RSCH:DATA | 495 |
| :REVerse:RC12:TRAFfic:RSCH:DATA:FIX4. | 495 |
| :REVerse:RC12:TRAFfic:RSCH:FLENgth. | 495 |
| :REVerse:RC12:TRAFfic:RSCH:FOFFset | 496 |
| :REVerse:RC12:TRAFfic:RSCH:POWer. | 496 |
| :REVerse:RC12:TRAFfic:RSCH:RATE. | 496 |
| :REVerse:RC12:TRAFfic:RSCH:RCONfig | 497 |
| :REVerse:RC12:TRAFfic:RSCH[:STATe] | 497 |
| :REVerse:RC34:CCONtrol:RCCCh:DATA | 497 |
| :REVerse:RC34:CCONtrol:RCCCh:DATA:FIX4 | 498 |
| :REVerse:RC34:CCONtrol:RCCCh:EBNO. | 498 |
| :REVerse:RC34:CCONtrol:RCCCh:FLENgth | 499 |
| :REVerse:RC34:CCONtrol:RCCCh:FOFFset. | 499 |
| :REVerse:RC34:CCONtrol:RCCCh:POWer | 499 |
| :REVerse:RC34:CCONtrol:RCCCh:RCONfig. | 500 |
| :REVerse:RC34:CCONtrol:RCCCh:RATE | 500 |
| :REVerse:RC34:CCONtrol:RCCCh:WALSh. | 500 |
| :REVerse:RC34:CCONtrol:RCCCh[:STATe] | 501 |
| :REVerse:RC34:CCONtrol:RPICCh:ECNO | 501 |
| :REVerse:RC34:CCONtrol:RPICCh:GRATe | 502 |
| :REVerse:RC34:CCONtrol:RPICCh:POWer. | 502 |

| | |
|---|-----|
| :REVerse:RC34:CCONtrol:RPICH:WALSh | 502 |
| :REVerse:RC34:CCONtrol:RPICH[:STATE] | 503 |
| :REVerse:RC34:EACCess:REACH:DATA | 503 |
| :REVerse:RC34:EACCess:REACH:DATA:FIX4 | 503 |
| :REVerse:RC34:EACCess:REACH:EBNO | 504 |
| :REVerse:RC34:EACCess:REACH:FOFFset | 504 |
| :REVerse:RC34:EACCess:REACH:POWer | 505 |
| :REVerse:RC34:EACCess:REACH:RCONfig | 505 |
| :REVerse:RC34:EACCess:REACH:RATE | 505 |
| :REVerse:RC34:EACCess:REACH:WALSh | 506 |
| :REVerse:RC34:EACCess:REACH[:STATE] | 506 |
| :REVerse:RC34:EACCess:RPICH:ECNO | 506 |
| :REVerse:RC34:EACCess:RPICH:GRATE | 507 |
| :REVerse:RC34:EACCess:RPICH:POWer | 507 |
| :REVerse:RC34:EACCess:RPICH:WALSh | 508 |
| :REVerse:RC34:EACCess:RPICH[:STATE] | 508 |
| :REVerse:RC34:TRAFfic:RDCCh:DATA | 508 |
| :REVerse:RC34:TRAFfic:RDCCh:DATA:FIX4 | 509 |
| :REVerse:RC34:TRAFfic:RDCCh:EBNO | 509 |
| :REVerse:RC34:TRAFfic:RDCCh:FLENgth | 510 |
| :REVerse:RC34:TRAFfic:RDCCh:FOFFset | 510 |
| :REVerse:RC34:TRAFfic:RDCCh:POWer | 510 |
| :REVerse:RC34:TRAFfic:RDCCh:RATE | 511 |
| :REVerse:RC34:TRAFfic:RDDCh:RCONfig | 511 |
| :REVerse:RC34:TRAFfic:RDCCh:WALSh | 511 |
| :REVerse:RC34:TRAFfic:RDCCh[:STATE] | 512 |
| :REVerse:RC34:TRAFfic:RFCH:DATA | 512 |
| :REVerse:RC34:TRAFfic:RFCH:DATA:FIX4 | 512 |
| :REVerse:RC34:TRAFfic:RFCH:EBNO | 513 |
| :REVerse:RC34:TRAFfic:RFCH:FLENgth | 513 |
| :REVerse:RC34:TRAFfic:RFCH:FOFFset | 514 |
| :REVerse:RC34:TRAFfic:RFCH:POWer | 514 |
| :REVerse:RC34:TRAFfic:RFCH:RCONfig | 514 |
| :REVerse:RC34:TRAFfic:RFCH:RATE | 515 |
| :REVerse:RC34:TRAFfic:RFCH:WALSh | 515 |
| :REVerse:RC34:TRAFfic:RFCH[:STATE] | 515 |
| :REVerse:RC34:TRAFfic:RSCH[1] 2:DATA | 516 |
| :REVerse:RC34:TRAFfic:RSCH[1] 2:DATA:FIX4 | 516 |

Contents

| | |
|---|-----|
| :REVerse:RC34:TRAFfic:RSCH[1] 2:DATA:EBNO | 516 |
| :REVerse:RC34:TRAFfic:RSCH[1] 2:FLENgth | 517 |
| :REVerse:RC34:TRAFfic:RSCH[1] 2:FOFFset | 517 |
| :REVerse:RC34:TRAFfic:RSCH[1] 2:POWer | 518 |
| :REVerse:RC34:TRAFfic:RSCH[1] 2:RCONfig. | 518 |
| :REVerse:RC34:TRAFfic:RSCH[1] 2:RATE | 519 |
| :REVerse:RC34:TRAFfic:RSCH[1] 2:TCODE | 519 |
| :REVerse:RC34:TRAFfic:RSCH[1] 2:WALSh | 519 |
| :REVerse:RC34:TRAFfic:RSCH[1] 2[:STATe]. | 520 |
| :REVerse:REFEreNce:EXTErNal:FREQUency. | 520 |
| :REVerse:REFEreNce[:SOURce] | 521 |
| :REVerse:TADVance | 521 |
| :REVerse:TEDGE | 521 |
| :REVerse:SRATE | 522 |
| [:STATe]. | 522 |
| Custom Subsystem—Option 001 or 002 ([:SOURce]:RADio:CUSTom) | 523 |
| :ALPha | 523 |
| :BBCLock | 523 |
| :BBT | 524 |
| :BRATE | 524 |
| :BURSt:SHAPe:FALL:DELay. | 526 |
| :BURSt:SHAPe:FALL:TIME. | 526 |
| :BURSt:SHAPe:FDELay. | 527 |
| :BURSt:SHAPe:FTIME | 527 |
| :BURSt:SHAPe:RDELay. | 528 |
| :BURSt:SHAPe:RISE:DELay | 528 |
| :BURSt:SHAPe:RISE:TIME | 529 |
| :BURSt:SHAPe:RTIME | 529 |
| :BURSt:SHAPe[:TYPE]. | 530 |
| :CHANnel | 530 |
| :DATA | 531 |
| :DATA:FIX4 | 531 |
| :DENCode | 531 |
| :EDATa:DELay | 532 |
| :EDCLock | 532 |
| :EREFEreNce | 533 |
| :EREFEreNce:VALue | 533 |
| :FILTer | 534 |

| | |
|--|-----|
| :IQ:SCALE | 535 |
| :MODulation:FSK[:DEViation] | 535 |
| :MODulation:MSK[:PHASe] | 536 |
| :MODulation:UFSK | 536 |
| :MODulation:UIQ | 537 |
| :MODulation[:TYPE] | 537 |
| :POLarity[:ALL] | 538 |
| :SRATe | 538 |
| :STANdard:SELect | 540 |
| :TRIGger:TYPE | 540 |
| :TRIGger:TYPE:CONTInuous[:TYPE] | 541 |
| :TRIGger:TYPE:GATE:ACTive | 541 |
| :TRIGger[:SOURce] | 542 |
| :TRIGger[:SOURce]:EXTernal[:SOURce] | 542 |
| :TRIGger[:SOURce]:EXTernal:DELay | 543 |
| :TRIGger[:SOURce]:EXTernal:DELay:STATe | 543 |
| :TRIGger[:SOURce]:EXTernal:SLOPe | 544 |
| [:STATe] | 544 |

SCPI Command Reference, Volume 2

| | |
|---|------------|
| Receiver Test Digital Commands (continued) | 545 |
| DECT Subsystem–Option 402 ([:SOURce]:RADio:DECT) | 546 |
| :ALPha | 546 |
| :BBCLock | 546 |
| :BBT | 547 |
| :BRATe | 547 |
| :BURSt:PN9 | 548 |
| :BURSt:SHAPE:FALL:DELay | 549 |
| :BURSt:SHAPE:FALL:TIME | 549 |
| :BURSt:SHAPE:FDELay | 550 |
| :BURSt:SHAPE:FTIME | 550 |
| :BURSt:SHAPE:RDELay | 551 |
| :BURSt:SHAPE:RISE:DELay | 552 |
| :BURSt:SHAPE:RISE:TIME | 552 |
| :BURSt:SHAPE:RTIME | 553 |
| :BURSt:SHAPE[:TYPE] | 553 |
| :BURSt[:STATe] | 554 |

Contents

| | |
|--|-----|
| :CHANnel | 554 |
| :DATA | 555 |
| :DATA:FIX4..... | 555 |
| :DEFault | 556 |
| :EDATa:DELay | 556 |
| :EDCLock..... | 556 |
| :EREFerence | 557 |
| :EREFerence:VALue | 557 |
| :FILTer | 558 |
| :IQ:SCALE | 559 |
| :MODulation:FSK[:DEViation] | 559 |
| :MODulation:MSK[:PHASe]..... | 560 |
| :MODulation:UFSK | 560 |
| :MODulation:UIQ | 561 |
| :MODulation[:TYPE]..... | 561 |
| :POLarity[:ALL] | 562 |
| :PPart:SLOT0 [1] 2 3 4[:TYPE] | 562 |
| :PPart:SLOT0 [1] 2 3 4 5 6 7 8 9 10 11:CUSTom | 562 |
| :PPart:SLOT0 [1] 2 3 4 5 6 7 8 9 10 11:CUSTom:FIX4 | 563 |
| :PPart:SLOT0 [1] 2 3 4 5 6 7 8 9 10 11:LCAPacity:A | 563 |
| :PPart:SLOT0 [1] 2 3 4 5 6 7 8 9 10 11:LCAPacity:P | 564 |
| :PPart:SLOT0 [1] 2 3 4 5 6 7 8 9 10 11:LCAPacity:S | 564 |
| :PPart:SLOT0 [1] 2 3 4 5 6 7 8 9 10 11:LCAPacity[:B]..... | 565 |
| :PPart:SLOT0 [1] 2 3 4 5 6 7 8 9 10 11:LCAPacity[:B]:FIX4 | 565 |
| :PPart:SLOT0 [1] 2 3 4 5 6 7 8 9 10 11:LCAPacity:POWer | 566 |
| :PPart:SLOT0 [1] 2 3 4 5 6 7 8 9 10 11:STATe | 566 |
| :PPart:SLOT0 [1] 2 3 4 5 6 7 8 9 10 11:TRAFfic:A | 566 |
| :PPart:SLOT0 [1] 2 3 4 5 6 7 8 9 10 11:TRAFfic:P | 567 |
| :PPart:SLOT0 [1] 2 3 4 5 6 7 8 9 10 11:TRAFfic:S | 567 |
| :PPart:SLOT0 [1] 2 3 4 5 6 7 8 9 10 11:TRAFfic[:B]..... | 568 |
| :PPart:SLOT0 [1] 2 3 4 5 6 7 8 9 10 11:TRAFfic[:B]:FIX4 | 568 |
| :PPart:SLOT0 [1] 2 3 4 5 6 7 8 9 10 11:ZLCapacity:A | 569 |
| :PPart:SLOT0 [1] 2 3 4 5 6 7 8 9 10 11:ZLCapacity:P | 569 |
| :PPart:SLOT0 [1] 2 3 4 5 6 7 8 9 10 11:ZLCapacity:A | 569 |
| :PPart:SLOT0 [1] 2 3 4 5 6 7 8 9 10 11:ZLCapacity[:B]..... | 570 |
| :PPart:SLOT0 [1] 2 3 4 5 6 7 8 9 10 11:ZLCapacity[:B]:FIX4 | 570 |
| :PPart:SLOT0 [1] 2 3 4 5 6 7 8 9 10 11:ZTRaffic:A..... | 571 |
| :PPart:SLOT0 [1] 2 3 4 5 6 7 8 9 10 11:ZTRaffic:P..... | 571 |

Contents

| | |
|---|-----|
| :PPart:SLOT0 [1] 2 3 4 5 6 7 8 9 10 11:ZTRaffic:S | 572 |
| :PPart:SLOT0 [1] 2 3 4 5 6 7 8 9 10 11:ZTRaffic[:B] | 572 |
| :PPart:SLOT0 [1] 2 3 4 5 6 7 8 9 10 11:ZTRaffic[:B]:FIX4 | 573 |
| :RFPart:SLOT0 [1] 2 3 4[:TYPE] | 573 |
| :RFPart:SLOT0 [1] 2 3 4 5 6 7 8 9 10 11:CUSTom | 574 |
| :RFPart:SLOT0 [1] 2 3 4 5 6 7 8 9 10 11:CUSTom:FIX4 | 574 |
| :RFPart:SLOT0 [1] 2 3 4 5 6 7 8 9 10 11:DUMM2:A | 575 |
| :RFPart:SLOT0 [1] 2 3 4 5 6 7 8 9 10 11:DUMM2:P | 575 |
| :RFPart:SLOT0 [1] 2 3 4 5 6 7 8 9 10 11:DUMM2:S | 575 |
| :RFPart:SLOT0 [1] 2 3 4 5 6 7 8 9 10 11:DUMM[1]:A | 576 |
| :RFPart:SLOT0 [1] 2 3 4 5 6 7 8 9 10 11:DUMM[1]:P | 576 |
| :RFPart:SLOT0 [1] 2 3 4 5 6 7 8 9 10 11:DUMM[1]:S | 577 |
| :RFPart:SLOT0 [1] 2 3 4 5 6 7 8 9 10 11:LCAPacity:A | 577 |
| :RFPart:SLOT0 [1] 2 3 4 5 6 7 8 9 10 11:LCAPacity:P | 577 |
| :RFPart:SLOT0 [1] 2 3 4 5 6 7 8 9 10 11:LCAPacity:S | 578 |
| :RFPart:SLOT0 [1] 2 3 4 5 6 7 8 9 10 11:LCAPacity[:B] | 578 |
| :RFPart:SLOT0 [1] 2 3 4 5 6 7 8 9 10 11:LCAPacity[:B]:FIX4 | 579 |
| :RFPart:SLOT0 [1] 2 3 4 5 6 7 8 9 10 11:LCAPacity:POWer | 579 |
| :RFPart:SLOT0 [1] 2 3 4 5 6 7 8 9 10 11:STATe | 579 |
| :RFPart:SLOT0 [1] 2 3 4 5 6 7 8 9 10 11:TRAFfic:A | 580 |
| :RFPart:SLOT0 [1] 2 3 4 5 6 7 8 9 10 11:TRAFfic:P | 580 |
| :RFPart:SLOT0 [1] 2 3 4 5 6 7 8 9 10 11:TRAFfic:S | 581 |
| :RFPart:SLOT0 [1] 2 3 4 5 6 7 8 9 10 11:TRAFfic[:B] | 581 |
| :RFPart:SLOT0 [1] 2 3 4 5 6 7 8 9 10 11:TRAFfic[:B]:FIX4 | 582 |
| :RFPart:SLOT0 [1] 2 3 4 5 6 7 8 9 10 11:ZLCapacity:A | 582 |
| :RFPart:SLOT0 [1] 2 3 4 5 6 7 8 9 10 11:ZLCapacity:P | 583 |
| :RFPart:SLOT0 [1] 2 3 4 5 6 7 8 9 10 11:ZLCapacity:S | 583 |
| :RFPart:SLOT0 [1] 2 3 4 5 6 7 8 9 10 11:ZLCapacity[:B] | 584 |
| :RFPart:SLOT0 [1] 2 3 4 5 6 7 8 9 10 11:ZLCapacity[:B]:FIX4 | 584 |
| :RFPart:SLOT0 [1] 2 3 4 5 6 7 8 9 10 11:ZTRaffic:A | 585 |
| :RFPart:SLOT0 [1] 2 3 4 5 6 7 8 9 10 11:ZTRaffic:P | 585 |
| :RFPart:SLOT0 [1] 2 3 4 5 6 7 8 9 10 11:ZTRaffic:S | 585 |
| :RFPart:SLOT0 [1] 2 3 4 5 6 7 8 9 10 11:ZTRaffic[:B] | 586 |
| :RFPart:SLOT0 [1] 2 3 4 5 6 7 8 9 10 11:ZTRaffic[:B]:FIX4 | 586 |
| :SECondary:RECall | 587 |
| :SECondary:SAVE | 587 |
| :SECondary:TRIGger[:SOURce] | 587 |
| :SECondary[:STATe] | 588 |

Contents

| | |
|--|-----|
| :SOUT | 588 |
| :SOUT:OFFSet | 589 |
| :SOUT:SLOT | 589 |
| :SRATe | 590 |
| :TRIGger:TYPE | 591 |
| :TRIGger:TYPE:CONTInuous[:TYPE] | 592 |
| :TRIGger:TYPE:GATE:ACTive | 592 |
| :TRIGger[:SOURce] | 593 |
| :TRIGger[:SOURce]:EXTernal[:SOURce] | 593 |
| :TRIGger[:SOURce]:EXTernal:DELay | 594 |
| :TRIGger[:SOURce]:EXTernal:SLOPe | 594 |
| :TRIGger[:SOURce]:EXTernal:DELay:STATe | 595 |
| [:STATe] | 595 |
| EDGE Subsystem–Option 402 ([:SOURce]:RADio:EDGE) | 596 |
| :ALPHa | 596 |
| :BBCLock | 596 |
| :BBT | 597 |
| :BURSt:SHAPE:FALL:DELay | 597 |
| :BURSt:SHAPE:FDELay | 598 |
| :BURSt:SHAPE:FALL:TIME | 598 |
| :BURSt:SHAPE:FTIME | 599 |
| :BURSt:SHAPE:RDELay | 600 |
| :BURSt:SHAPE:RISE:DELay | 600 |
| :BURSt:SHAPE:RISE:TIME | 601 |
| :BURSt:SHAPE:RTIME | 602 |
| :BURSt:SHAPE[:TYPE] | 602 |
| :BURSt[:STATe] | 603 |
| :CHANnel | 603 |
| :DATA | 604 |
| :DATA:FIX4 | 604 |
| :DEFault | 604 |
| :EDATa:DELay | 605 |
| :EDCLock | 605 |
| :EREFerence | 606 |
| :EREFerence:VALue | 606 |
| :FILTer | 607 |
| :IQ:SCALE | 608 |
| :MODulation:FSK[:DEViation] | 608 |

| | |
|--|-----|
| :MODulation:MSK[:PHASe] | 609 |
| :MODulation:UFSK | 609 |
| :MODulation:UIQ | 610 |
| :MODulation[:TYPE] | 610 |
| :POLarity[:ALL] | 611 |
| :SECondary:RECall | 611 |
| :SECondary:SAVE | 611 |
| :SECondary:TRIGger[:SOURce] | 612 |
| :SECondary[:STATe] | 612 |
| :SLOT0 [1] 2 3 4 5 6 7:CUSTom. | 613 |
| :SLOT0 [1] 2 3 4 5 6 7:CUSTom:FIX4 | 613 |
| :SLOT0 [1] 2 3 4 5 6 7:CUSTom:GUARd. | 614 |
| :SLOT0 [1] 2 3 4 5 6 7:NORMal:ENCRyption | 614 |
| :SLOT0 [1] 2 3 4 5 6 7:NORMal:ENCRyption:DLINK:MCS5:DATA | 615 |
| :SLOT0 [1] 2 3 4 5 6 7:NORMal:ENCRyption:DLINK:MCS9:DATA | 615 |
| :SLOT0 [1] 2 3 4 5 6 7:NORMal:ENCRyption:ETCH:F43:DATA | 616 |
| :SLOT0 [1] 2 3 4 5 6 7:NORMal:ENCRyption:FIX4 | 616 |
| :SLOT0 [1] 2 3 4 5 6 7:NORMal:ENCRyption:ULINK:MCS5:DATA | 617 |
| :SLOT0 [1] 2 3 4 5 6 7:NORMal:ENCRyption:ULINK:MCS9:DATA | 617 |
| :SLOT0 [1] 2 3 4 5 6 7:NORMal:ENCRyption:UNCoded | 618 |
| :SLOT0 [1] 2 3 4 5 6 7:NORMal:GUARd. | 618 |
| :SLOT0 [1] 2 3 4 5 6 7:NORMal:T1 | 619 |
| :SLOT0 [1] 2 3 4 5 6 7:NORMal:T2 | 619 |
| :SLOT0 [1] 2 3 4 5 6 7:NORMal:TSEQuence | 619 |
| :SLOT0 [1] 2 3 4 5 6 7:LCAPacity:POWer. | 620 |
| :SLOT0 [1] 2 3 4 5 6 7:STATe | 620 |
| :SLOT0 [1] 2 3 4 5 6 7[:TYPE] | 620 |
| :SOUT: | 621 |
| :SOUT:OFFSet | 621 |
| :SOUT:SLOT | 622 |
| :SRATe. | 622 |
| :TRIGger:TYPE. | 624 |
| :TRIGger:TYPE:CONTInuous[:TYPE] | 624 |
| :TRIGger:TYPE:GATE:ACTive | 625 |
| :TRIGger[:SOURce] | 625 |
| :TRIGger[:SOURce]:EXTernal[:SOURce] | 626 |
| :TRIGger[:SOURce]:EXTernal:DELay | 627 |
| :TRIGger[:SOURce]:EXTernal:DELay:STATe | 627 |

Contents

| | |
|--|-----|
| :TRIGger[:SOURce]:EXTernal:SLOPe | 627 |
| [:STATe] | 628 |
| GPS Subsystem–Option409 | |
| ([:SOURce]:RADio[1] 2 3 4:GPS) | 629 |
| :DATA | 629 |
| :DMODE | 629 |
| :DSHift | 630 |
| :FILTer | 630 |
| :FILTer:ALPHa | 631 |
| :FILTer:BBT | 632 |
| :FILTer:CHANnel | 632 |
| :IQPHase | 632 |
| :PCODE | 633 |
| :RCODE | 633 |
| :REFClk | 634 |
| :REFFreq | 634 |
| :SATid | 635 |
| [:STATe] | 635 |
| GSM Subsystem–Option 402 ([:SOURce]:RADio:GSM) | 636 |
| :ALPha | 636 |
| :BBCLock | 636 |
| :BBT | 637 |
| :BRATe | 637 |
| :BURSt:PN9 | 639 |
| :BURSt:SHAPE:FALL:DELay | 639 |
| :BURSt:SHAPE:FALL:TIME | 640 |
| :BURSt:SHAPE:FDELay | 640 |
| :BURSt:SHAPE:FTIME | 641 |
| :BURSt:SHAPE:RDELay | 642 |
| :BURSt:SHAPE:RISE:DELay | 642 |
| :BURSt:SHAPE:RISE:TIME | 643 |
| :BURSt:SHAPE:RTIME | 643 |
| :BURSt:SHAPE[:TYPE] | 644 |
| :BURSt[:STATe] | 645 |
| :CHANnel | 645 |
| :DATA | 646 |
| :DATA:FIX4 | 646 |
| :DEFault | 646 |
| :DENCode | 647 |

| | |
|--|-----|
| :EDATa:DELay | 647 |
| :EDCLock | 648 |
| :EREFerence | 648 |
| :EREFerence:VALue | 649 |
| :FILTer | 649 |
| :IQ:SCALE | 650 |
| :MODulation:FSK[:DEViation] | 650 |
| :MODulation:MSK[:PHASe] | 651 |
| :MODulation:UFSK | 651 |
| :MODulation:UIQ | 652 |
| :MODulation[:TYPE] | 652 |
| :POLarity[:ALL] | 653 |
| :SECondary:RECall | 653 |
| :SECondary:SAVE | 654 |
| :SECondary:TRIGger[:SOURce] | 654 |
| :SECondary[:STATe] | 655 |
| :SLOT0 [1] 2 3 4 5 6 7:ACCess:ENCRyption | 655 |
| :SLOT0 [1] 2 3 4 5 6 7:ACCess:ENCRyption:FIX4 | 655 |
| :SLOT0 [1] 2 3 4 5 6 7:ACCess:ETAil | 656 |
| :SLOT0 [1] 2 3 4 5 6 7:ACCess:SSEQuence | 656 |
| :SLOT0 [1] 2 3 4 5 6 7:ACCess:CUSTom | 657 |
| :SLOT0 [1] 2 3 4 5 6 7:CUSTom:FIX4 | 657 |
| :SLOT0 [1] 2 3 4 5 6 7:DUMMy:TSEQuence | 657 |
| :SLOT0 [1] 2 3 4 5 6 7:NORMal:ENCRyption | 658 |
| :SLOT0 [1] 2 3 4 5 6 7:NORMal:ENCRyption:CS1:DATA | 658 |
| :SLOT0 [1] 2 3 4 5 6 7:NORMal:ENCRyption:DLINK:MCS1:DATA | 659 |
| :SLOT0 [1] 2 3 4 5 6 7:NORMal:ENCRyption:FIX4 | 659 |
| :SLOT0 [1] 2 3 4 5 6 7:NORMal:ENCRyption:TCH:FS:DATA | 659 |
| :SLOT0 [1] 2 3 4 5 6 7:NORMal:ENCRyption:ULINK:MCS1:DATA | 660 |
| :SLOT0 [1] 2 3 4 5 6 7:NORMal:STeal | 660 |
| :SLOT0 [1] 2 3 4 5 6 7:NORMal:TSEQuence | 660 |
| :SLOT0 [1] 2 3 4 5 6 7:POWER | 661 |
| :SLOT0 [1] 2 3 4 5 6 7:STATe | 661 |
| :SLOT0 [1] 2 3 4 5 6 7:SYNC:ENCRyption | 662 |
| :SLOT0 [1] 2 3 4 5 6 7:SYNC:ENCRyption:FIX4 | 662 |
| :SLOT0 [1] 2 3 4 5 6 7:SYNC:TSEQuence | 662 |
| :SLOT0 [1] 2 3 4 5 6 7[:TYPE] | 663 |
| :SOUT | 663 |

Contents

| | |
|--|-----|
| :SOUT:OFFSet | 664 |
| :SOUT:SLOT | 664 |
| :SRATe | 665 |
| :TRIGger:TYPE | 666 |
| :TRIGger:TYPE:CONTInuous[:TYPE] | 667 |
| :TRIGger:TYPE:GATE:ACTive | 667 |
| :TRIGger[:SOURce] | 668 |
| :TRIGger[:SOURce]:EXTernal[:SOURce] | 668 |
| :TRIGger[:SOURce]:EXTernal:DELay | 669 |
| :TRIGger[:SOURce]:EXTernal:SLOPe | 669 |
| :TRIGger[:SOURce]:EXTernal:DELay:STATe | 670 |
| [:STATe] | 670 |
| NADC Subsystem–Option 402 ([:SOURce]:RADio[:NADC]) | 671 |
| :ALPha | 671 |
| :BBCLock | 671 |
| :BBT | 672 |
| :BRATe | 672 |
| :BURSt:PN9 | 674 |
| :BURSt:SHAPE[:TYPE] | 674 |
| :BURSt:SHAPE:FALL:DELay | 674 |
| :BURSt:SHAPE:FALL:TIME | 675 |
| :BURSt:SHAPE:FDELay | 676 |
| :BURSt:SHAPE:FTIME | 676 |
| :BURSt:SHAPE:RDELay | 677 |
| :BURSt:SHAPE:RISE:DELay | 678 |
| :BURSt:SHAPE:RISE:TIME | 678 |
| :BURSt:SHAPE:RTIME | 679 |
| :BURSt[:STATe] | 679 |
| :BURSt:SHAPE[:TYPE] | 680 |
| :CHANnel | 680 |
| :DATA | 681 |
| :DATA:FIX4 | 681 |
| :DEFault | 682 |
| :EDATa:DELay | 682 |
| :EDCLock | 682 |
| :EREFerence | 683 |
| :EREFerence:VALue | 683 |
| :FILTer | 684 |

| | |
|---|-----|
| :FRATe. | 685 |
| :IQ:SCALE | 685 |
| :MODulation:FSK[:DEViation] | 686 |
| :MODulation:MSK[:PHASe] | 686 |
| :MODulation:UFSK | 687 |
| :MODulation:UIQ. | 687 |
| :MODulation[:TYPE] | 688 |
| :REPeat | 688 |
| :POLarity[:ALL] | 688 |
| :SECondary:RECall | 689 |
| :SECondary:SAVE | 689 |
| :SECondary:TRIGger[:SOURce] | 690 |
| :SECondary[:STATe] | 690 |
| :SLOT[1] 2 3 4 5 6:DCUStom. | 691 |
| :SLOT[1] 2 3 4 5 6:DCUStom:FIX4 | 691 |
| :SLOT[1] 2 3 4 5 6:DTCHannel:CDLocator. | 691 |
| :SLOT[1] 2 3 4 5 6:DTCHannel:CDVCcode | 692 |
| :SLOT[1] 2 3 4 5 6:DTCHannel:SACChannel. | 692 |
| :SLOT[1] 2 3 4 5 6:DTCHannel:SWORd | 693 |
| :SLOT[1] 2 3 4 5 6:DTCHannel[:DATA] | 693 |
| :SLOT[1] 2 3 4 5 6:DTCHannel[:DATA]FIX4 | 693 |
| :SLOT[1] 2 3 4 5 6:POWEr | 694 |
| :SLOT[1] 2 3 4 5 6:STATe. | 694 |
| :SLOT[1] 2 3 4 5 6:UCUStom. | 695 |
| :SLOT[1] 2 3 4 5 6:UCUStom:FIX4 | 695 |
| :SLOT[1] 2 3 4 5 6:UTCHannel:CDVCcode | 695 |
| :SLOT[1] 2 3 4 5 6:UTCHannel:SACChannel. | 696 |
| :SLOT[1] 2 3 4 5 6:UTCHannel:SWORd | 696 |
| :SLOT[1] 2 3 4 5 6:UTCHannel[:DATA] | 697 |
| :SLOT[1] 2 3 4 5 6:UTCHannel[:DATA]FIX4. | 697 |
| :SLOT[1] 2 3 4 5 6[:TYPE] | 698 |
| :SOUT | 698 |
| :SOUT:OFFSet | 698 |
| :SOUT:SLOT. | 699 |
| :SRATe. | 699 |
| :TRIGger[:SOURce] | 701 |
| :TRIGger:TYPE. | 701 |
| :TRIGger:TYPE:CONTInuous[:TYPE] | 702 |

Contents

| | |
|--|-----|
| :TRIGger:TYPE:GATE:ACTive | 702 |
| :TRIGger[:SOURce]:EXTernal[:SOURce] | 703 |
| :TRIGger[:SOURce]:EXTernal:DELay | 704 |
| :TRIGger[:SOURce]:EXTernal:DELay:STATe | 704 |
| :TRIGger[:SOURce]:EXTernal:SLOPe | 704 |
| [:STATe] | 705 |
| PDC Subsystem–Option 402 ([:SOURce]:RADio:PDC) | 706 |
| :ALPha | 706 |
| :BBCLock | 706 |
| :BBT | 707 |
| :BRATe | 707 |
| :BURSt:PN9 | 708 |
| :BURSt:SHAPE:FALL:DELay | 709 |
| :BURSt:SHAPE:FALL:TIME | 709 |
| :BURSt:SHAPE:FDELay | 710 |
| :BURSt:SHAPE:FTIME | 711 |
| :BURSt:SHAPE:RDELay | 711 |
| :BURSt:SHAPE:RISE:DELay | 712 |
| :BURSt:SHAPE:RISE:TIME | 713 |
| :BURSt:SHAPE:RTIME | 713 |
| :BURSt:SHAPE[:TYPE] | 714 |
| :BURSt[:STATe] | 714 |
| :CHANnel | 715 |
| :DATA | 715 |
| :DATA:FIX4 | 716 |
| :DEFault | 716 |
| :EDATa:DELay | 716 |
| :EDCLock | 717 |
| :EREference | 717 |
| :EREference:VALue | 718 |
| :FILTer | 718 |
| :FRATe | 719 |
| :IQ:SCALE | 720 |
| :MODulation:FSK[:DEVIation] | 720 |
| :MODulation:MSK[:PHASe] | 721 |
| :MODulation:UFSK | 721 |
| :MODulation:UIQ | 722 |
| :MODulation[:TYPE] | 722 |

| | |
|--|-----|
| :POLarity[:ALL] | 723 |
| :SECondary:RECall | 723 |
| :SECondary:SAVE | 723 |
| :SECondary:TRIGger[:SOURce] | 724 |
| :SECondary[:STATe] | 724 |
| :SLOT0 [1] 2 3 4 5:DCUStom | 725 |
| :SLOT0 [1] 2 3 4 5:DCUSTom:FIX4 | 725 |
| :SLOT0 [1] 2 3 4 5:DTCHannel:CCODE | 726 |
| :SLOT0 [1] 2 3 4 5:DTCHannel:SACChannel | 726 |
| :SLOT0 [1] 2 3 4 5:DTCHannel:SWORd | 726 |
| :SLOT0 [1] 2 3 4 5:DTCHannel[:TCHannel] | 727 |
| :SLOT0 [1] 2 3 4 5:DTCHannel[:TCHannel]:FIX4 | 727 |
| :SLOT0 [1] 2 3 4:POWer | 728 |
| :SLOT0 [1] 2 3 4 5:STATe | 728 |
| :SLOT0 [1] 2 3 4 5:UCUStom | 728 |
| :SLOT0 [1] 2 3 4 5:UCUStom:FIX4 | 729 |
| :SLOT0 [1] 2 3 4 5:UTCHannel:CCODE | 729 |
| :SLOT0 [1] 2 3 4 5:UTCHannel:SACChannel | 729 |
| :SLOT0 [1] 2 3 4 5:UTCHannel:SWORd | 730 |
| :SLOT0 [1] 2 3 4 5:UTCHannel[:TCHannel] | 730 |
| :SLOT0 [1] 2 3 4 5:UTCHannel[:TCHannel]:FIX4 | 731 |
| :SLOT0 [1] 2 3 4 5:UVOX:CCODE | 731 |
| :SLOT0 [1] 2 3 4 5:UVOX:SACChannel | 731 |
| :SLOT0 [1] 2 3 4 5:UVOX:SWORd | 732 |
| :SLOT0 [1] 2 3 4 5[:TYPE] | 732 |
| :SOUT | 733 |
| :SOUT:OFFSet | 733 |
| :SOUT:SLOT | 734 |
| :SRATe | 734 |
| :TRIGger:TYPE | 736 |
| :TRIGger:TYPE:CONTInuous[:TYPE] | 736 |
| :TRIGger:TYPE:GATE:ACTive | 737 |
| :TRIGger[:SOURce] | 737 |
| :TRIGger[:SOURce]:EXTernal[:SOURce] | 738 |
| :TRIGger[:SOURce]:EXTernal:DELay | 738 |
| :TRIGger[:SOURce]:EXTernal:DELay:STATe | 739 |
| :TRIGger[:SOURce]:EXTernal:SLOPe | 739 |
| [:STATe] | 739 |

Contents

| | |
|---|-----|
| PHS Subsystem–Option 402 ([:SOURce]:RADio:PHS) | 741 |
| :ALPha | 741 |
| :BBCLock | 741 |
| :BBT | 742 |
| :BRATe | 742 |
| :BURSt:PN9 | 743 |
| :BURSt:SCRamble:SEED | 744 |
| :BURSt:SCRamble[:STATe] | 744 |
| :BURSt:SHAPE:FALL:DELay | 745 |
| :BURSt:SHAPE:FALL:TIME | 745 |
| :BURSt:SHAPE:FDELay | 746 |
| :BURSt:SHAPE:FTIME | 746 |
| :BURSt:SHAPE:RDELay | 747 |
| :BURSt:SHAPE:RISE:DELay | 748 |
| :BURSt:SHAPE:RISE:TIME | 748 |
| :BURSt:SHAPE:RTIME | 749 |
| :BURSt:SHAPE[:TYPE] | 749 |
| :BURSt[:STATe] | 750 |
| :CHANnel | 750 |
| :DATA | 751 |
| :DATA:FIX4 | 751 |
| :DEFault | 752 |
| :DLINK:SLOT[1] 2 3 4:CUSTom | 752 |
| :DLINK:SLOT[1] 2 3 4:CUSTom:FIX4 | 752 |
| :DLINK:SLOT[1] 2 3 4:POWer | 753 |
| :DLINK:SLOT[1] 2 3 4:SCHannel:CSID | 753 |
| :DLINK:SLOT[1] 2 3 4:SCHannel:IDLE | 754 |
| :DLINK:SLOT[1] 2 3 4:SCHannel:PSID | 754 |
| :DLINK:SLOT[1] 2 3 4:SCHannel:UWORD | 754 |
| :DLINK:SLOT[1] 2 3 4:STATe | 755 |
| :DLINK:SLOT[1] 2 3 4:TCHannel:SACChannel | 755 |
| :DLINK:SLOT[1] 2 3 4:TCHannel:UWORD | 756 |
| :DLINK:SLOT[1] 2 3 4:TCHannel[:TCHannel] | 756 |
| :DLINK:SLOT[1] 2 3 4:TCHannel[:TCHannel]:FIX4 | 756 |
| :DLINK:SLOT[1] 2 3 4[:TYPE] | 757 |
| :EDATa:DELay | 757 |
| :EDCLock | 758 |
| :EREFerence | 758 |

| | |
|--|-----|
| :EREFerence:VALue | 759 |
| :FILTer | 759 |
| :IQ:SCALe | 760 |
| :MODulation:FSK[:DEViation] | 760 |
| :MODulation:MSK[:PHASe] | 761 |
| :MODulation:UFSK | 761 |
| :MODulation:UIQ | 762 |
| :MODulation[:TYPE] | 762 |
| :POLarity[:ALL] | 763 |
| :SECondary:RECall | 763 |
| :SECondary:SAVE | 764 |
| :SECondary:TRIGger[:SOURce] | 764 |
| :SECondary[:STATe] | 765 |
| :SOUT | 765 |
| :SOUT:OFFSet | 766 |
| :SOUT:SLOT | 766 |
| :SRATe | 767 |
| :TRIGger:TYPE | 768 |
| :TRIGger:TYPE:CONTinuous[:TYPE] | 769 |
| :TRIGger:TYPE:GATE:ACTive | 769 |
| :TRIGger[:SOURce] | 770 |
| :TRIGger[:SOURce]:EXTernal[:SOURce] | 770 |
| :TRIGger[:SOURce]:EXTernal:DELay | 771 |
| :TRIGger[:SOURce]:EXTernal:DELay:STATe | 771 |
| :TRIGger[:SOURce]:EXTernal:SLOPe | 772 |
| :ULINK:SLOT[1] 2 3 4:CUSTom | 772 |
| :ULINK:SLOT[1] 2 3 4:CUSTom:FIX4 | 772 |
| :ULINK:SLOT[1] 2 3 4:POWer | 773 |
| :ULINK:SLOT[1] 2 3 4:SCHannel:CSID | 773 |
| :ULINK:SLOT[1] 2 3 4:SCHannel:IDLE | 774 |
| :ULINK:SLOT[1] 2 3 4:SCHannel:PSID | 774 |
| :ULINK:SLOT[1] 2 3 4:SCHannel:UWORD | 774 |
| :ULINK:SLOT[1] 2 3 4:STATe | 775 |
| :ULINK:SLOT[1] 2 3 4:TCHannel:SACChannel | 775 |
| :ULINK:SLOT[1] 2 3 4:TCHannel:UWORD | 776 |
| :ULINK:SLOT[1] 2 3 4:TCHannel[:TCHannel] | 776 |
| :ULINK:SLOT[1] 2 3 4:TCHannel[:TCHannel:FIX4 | 776 |
| :ULINK:SLOT[1] 2 3 4[:TYPE] | 777 |

Contents

| | |
|--|-----|
| [:STATe] | 777 |
| TETRA Subsystem–Option 402 ([:SOURce]:RADio:TETRa) | 778 |
| :ALPha | 778 |
| :BBCLock | 778 |
| :BBT | 779 |
| :BRATe | 779 |
| :BURSt:PN9 | 780 |
| :BURSt:SCRamble:SEED | 781 |
| :BURSt:SCRamble[:STATe] | 781 |
| :BURSt:SHAPE:FALL:DELay | 782 |
| :BURSt:SHAPE:FALL:TIME | 782 |
| :BURSt:SHAPE:FDELay | 783 |
| :BURSt:SHAPE:FTIME | 783 |
| :BURSt:SHAPE:RDELay | 784 |
| :BURSt:SHAPE:RISE:DELay | 785 |
| :BURSt:SHAPE:RISE:TIME | 785 |
| :BURSt:SHAPE:RTIME | 786 |
| :BURSt:SHAPE[:TYPE] | 787 |
| :BURSt[:STATe] | 787 |
| :CHANnel | 788 |
| :DATA | 788 |
| :DATA:FIX4 | 788 |
| :DEFault | 789 |
| :EDATa:DELay | 789 |
| :EDCLock | 790 |
| :EREFerence | 790 |
| :EREFerence:VALue | 791 |
| :FILTer | 791 |
| :IQ:SCALE | 792 |
| :MODulation:FSK[:DEViation] | 792 |
| :MODulation:MSK[:PHASe] | 793 |
| :MODulation:UFSK | 793 |
| :MODulation:UIQ | 794 |
| :MODulation[:TYPE] | 794 |
| :POLarity[:ALL] | 795 |
| :SECondary:RECall | 795 |
| :SECondary:SAVE | 796 |
| :SECondary:TRIGger[:SOURce] | 796 |

| | |
|---|-----|
| :SECondary[:STATe] | 797 |
| :SLOT[1] 2 3 4:DCCustom | 797 |
| :SLOT[1] 2 3 4:DCCustom:FIX4 | 797 |
| :DCNormal:B1 | 798 |
| :DCNormal:B2 | 798 |
| :SLOT[1] 2 3 4:DCNormal:TSEQuence | 799 |
| :SLOT[1] 2 3 4:DCNormal[:DATA] | 799 |
| :SLOT[1] 2 3 4:DCNormal[:DATA]:FIX4 | 799 |
| :SLOT[1] 2 3 4:DCSync:B | 800 |
| :SLOT[1] 2 3 4:DCSync:FCOR | 800 |
| :SLOT[1] 2 3 4:DCSync:SSB | 801 |
| :SLOT[1] 2 3 4:DCSync:STS | 801 |
| :SLOT[1] 2 3 4:DCSync[:DATA] | 801 |
| :SLOT[1] 2 3 4:DCSync[:DATA]:FIX4 | 802 |
| :SLOT[1] 2 3 4:DDCustom | 802 |
| :SLOT[1] 2 3 4:DDCustom:FIX4 | 803 |
| :SLOT[1] 2 3 4:DDNormal:B1 | 803 |
| :SLOT[1] 2 3 4:DDNormal:B2 | 803 |
| :SLOT[1] 2 3 4:DDNormal:TSEQuence | 804 |
| :SLOT[1] 2 3 4:DDNormal[:DATA] | 804 |
| :SLOT[1] 2 3 4:DDNormal[:DATA]:FIX4 | 805 |
| :SLOT[1] 2 3 4:DDSync:B | 805 |
| :SLOT[1] 2 3 4:DDSync:FCOR | 805 |
| :SLOT[1] 2 3 4:DDSync:SSB | 806 |
| :SLOT[1] 2 3 4:DDSync:STS | 806 |
| :SLOT[1] 2 3 4:DDSync[:DATA] | 806 |
| :SLOT[1] 2 3 4:DDSync[:DATA]:FIX4 | 807 |
| :SLOT[1] 2 3 4:POWEr | 807 |
| :SLOT[1] 2 3 4:STATe | 808 |
| :SLOT[1] 2 3 4:UC1:TSEQuence | 808 |
| :SLOT[1] 2 3 4:UC1[:DATA] | 808 |
| :SLOT[1] 2 3 4:UC1[:DATA]:FIX4 | 809 |
| :SLOT[1] 2 3 4:UC2:TSEQuence | 809 |
| :SLOT[1] 2 3 4:UC2[:DATA] | 809 |
| :SLOT[1] 2 3 4:UC2[:DATA]:FIX4 | 810 |
| :SLOT[1] 2 3 4:UCUStom | 810 |
| :SLOT[1] 2 3 4:UCUStom:FIX4 | 811 |
| :SLOT[1] 2 3 4:UNORmal:TSEQuence | 811 |

Contents

| | |
|--|-----|
| :SLOT[1] 2 3 4:UNORmal[:DATA] | 811 |
| :SLOT[1] 2 3 4:UNORmal[:DATA]:FIX4 | 812 |
| :SLOT[1] 2 3 4[:TYPE] | 812 |
| :SOUT | 813 |
| :SOUT:OFFSet | 814 |
| :SOUT:SLOT | 814 |
| :SRATe | 815 |
| :TRIGger:TYPE | 816 |
| :TRIGger:TYPE:CONTInuous[:TYPE] | 817 |
| :TRIGger:TYPE:GATE:ACTive | 817 |
| :TRIGger[:SOURce] | 818 |
| :TRIGger[:SOURce]:EXTernal[:SOURce] | 818 |
| :TRIGger[:SOURce]:EXTernal:DELay | 819 |
| :TRIGger[:SOURce]:EXTernal:DELay:STATe | 819 |
| :TRIGger[:SOURce]:EXTernal:SLOPe | 820 |
| [:STATe] | 820 |
| Wideband CDMA Base Band Generator Subsystem–Option 400 | |
| ([:SOURce]:RADio:WCDMA:TGPP[:BBG]) | 821 |
| :BBCLock | 821 |
| :BBCLock:EXT:RATE | 821 |
| :DLINK:APPLY | 822 |
| :DLINK:AWGN:CN | 822 |
| :DLINK:AWGN:CPower | 822 |
| :DLINK:AWGN:ECNO | 823 |
| :DLINK:AWGN:ECRPower | 823 |
| :DLINK:AWGN:ECRef | 823 |
| :DLINK:AWGN:FNBW | 824 |
| :DLINK:AWGN:NPowEr | 824 |
| :DLINK:AWGN:TTLPower | 825 |
| :DLINK:AWGN[:STATe] | 825 |
| :DLINK:BBCLock | 825 |
| :DLINK:CARB:CMODE:CCODE | 826 |
| :DLINK:CARB:CMODE:DATA | 826 |
| :DLINK:CARB:CMODE:FOFFset | 826 |
| :DLINK:CARB:CMODE:FSTRuct | 827 |
| :DLINK:CARB:CMODE:POWer | 827 |
| :DLINK:CARB:CMODE:PRATio | 827 |
| :DLINK:CARB:CMODE:SCTYpe | 828 |
| :DLINK:CARB:CMODE:SFORmat | 828 |

| | |
|---|-----|
| :DLINK:CARB:CMODE:SSCodeos | 829 |
| :DLINK:CARB:CMODE:TFIRst | 829 |
| :DLINK:CARB:CMODE:TGL | 829 |
| :DLINK:CARB:CMODE[:STATe] | 830 |
| :DLINK:CPICH:CCODE | 830 |
| :DLINK:CPICH:POWer | 830 |
| :DLINK:CPICH[:STATe] | 831 |
| :DLINK:CRATe | 831 |
| :DLINK:DPCH[1]:BALance | 831 |
| :DLINK:DPCH[1]:BINitalize | 832 |
| :DLINK:DPCH[1] 2:ALL[:STATe] | 832 |
| :DLINK:DPCH[1] 2:CCODE | 833 |
| :DLINK:DPCH[1] 2:DATA | 833 |
| :DLINK:DPCH[1] 2:DATA:FIX4 | 834 |
| :DLINK:DPCH[1] 2:POWer | 834 |
| :DLINK:DPCH[1] 2:RCSetup | 835 |
| :DLINK:DPCH[1] 2:SLOTformat | 836 |
| :DLINK:DPCH[1] 2:SRATe | 836 |
| :DLINK:DPCH[1] 2:SSCodeos | 837 |
| :DLINK:DPCH[1] 2:TFCI:PATtern | 837 |
| :DLINK:DPCH[1] 2:TOFFset | 838 |
| :DLINK:DPCH[1] 2:TPC:NUMSteps | 838 |
| :DLINK:DPCH[1] 2:TPC:PATtern | 839 |
| :DLINK:DPCH[1] 2[:STATe] | 839 |
| :DLINK:FILTer | 840 |
| :DLINK:FILTer:ALPHa | 841 |
| :DLINK:FILTer:BBT | 841 |
| :DLINK:FILTer:CHANnel | 841 |
| :DLINK:OCNS[1] 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16: ALL[:STATe] | 842 |
| :DLINK:OCNS[1] 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16:CCODE | 842 |
| :DLINK:OCNS[1] 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16:DATA | 843 |
| :DLINK:OCNS[1] 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16:POWer | 843 |
| :DLINK:OCNS[1] 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16:SRATe | 844 |
| :DLINK:OCNS[1] 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16:SSCodeos | 844 |
| :DLINK:OCNS[1] 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16:TOFFset | 845 |
| :DLINK:OCNS[1] 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16[:STATe] | 845 |
| :DLINK:PADJust | 845 |
| :DLINK:PCCPch:BCHData | 846 |

Contents

| | |
|---|-----|
| :DLINK:PCCPch:BCHData:FIX4 | 846 |
| :DLINK:PCCPch:CCODE | 847 |
| :DLINK:PCCPch:POWER | 847 |
| :DLINK:PCCPch[:STATe] | 848 |
| :DLINK:PICH:CCODE | 848 |
| :DLINK:PICH:DATA | 848 |
| :DLINK:PICH:DATA:FIX4 | 849 |
| :DLINK:PICH:PIBits | 849 |
| :DLINK:PICH:PINDicator | 850 |
| :DLINK:PICH:POWER | 850 |
| :DLINK:PICH[:STATe] | 850 |
| :DLINK:POLarity | 851 |
| :DLINK:PSCH:POWER | 851 |
| :DLINK:PSCH[:STATe] | 851 |
| :DLINK:SCH[:STATe] | 852 |
| :DLINK:SCRamblecode | 852 |
| :DLINK:SDELay | 852 |
| :DLINK:SSCH:POWER | 853 |
| :DLINK:SSCH:SSGRoup | 853 |
| :DLINK:SSCH[:STATe] | 854 |
| :DLINK:TSTatus:COMPressed | 854 |
| :DLINK:TSETup | 854 |
| :DLINK[:TGRoup [A] B]:DCH[1] 2 3 4 5 6:BLKSize | 855 |
| :DLINK[:TGRoup [A] B]:DCH[1] 2 3 4 5 6:BPFFrame | 856 |
| :DLINK[:TGRoup [A] B]:DCH[1] 2 3 4 5 6:BRATe | 856 |
| :DLINK[:TGRoup [A] B]:DCH[1] 2 3 4 5 6:BSSize | 857 |
| :DLINK[:TGRoup [A] B]:DCH[1] 2 3 4 5 6:CODE | 857 |
| :DLINK[:TGRoup [A] B]:DCH[1] 2 3 4 5 6:CRC | 858 |
| :DLINK[:TGRoup [A] B]:DCH[1] 2 3 4 5 6:DATA | 858 |
| :DLINK[:TGRoup [A] B]:DCH[1] 2 3 4 5 6:DATA:BER:ACTual | 859 |
| :DLINK[:TGRoup [A] B]:DCH[1] 2 3 4 5 6:DATA:BER:ERRor:BIT | 859 |
| :DLINK[:TGRoup [A] B]:DCH[1] 2 3 4 5 6:DATA:BER:TOTAL:BIT | 859 |
| :DLINK[:TGRoup [A] B]:DCH[1] 2 3 4 5 6:DATA:BER[:VALue] | 860 |
| :DLINK[:TGRoup [A] B]:DCH[1] 2 3 4 5 6:DATA:BLER:ACTual | 860 |
| :DLINK[:TGRoup[A] B]:DCH[1] 2 3 4 5 6:DATA:BLER:ERRor: BLOCK | 861 |
| :DLINK[:TGRoup[A] B]:DCH[1] 2 3 4 5 6:DATA:BLER:TOTAL: BLOCK | 861 |
| :DLINK[:TGRoup [A] B]:DCH[1] 2 3 4 5 6:DATA:BLER[:VALue] | 861 |

Contents

| | |
|---|-----|
| :DLINK[:TGRoup [A] B]:DCH[1] 2 3 4 5 6:DATA:EINSErt | 862 |
| :DLINK[:TGRoup [A] B]:DCH[1] 2 3 4 5 6:DATA:FIX4 | 862 |
| :DLINK[:TGRoup [A] B]:DCH[1] 2 3 4 5 6:MNBLocks | 863 |
| :DLINK[:TGRoup [A] B]:DCH[1] 2 3 4 5 6:MBSize | 863 |
| :DLINK[:TGRoup [A] B]:DCH[1] 2 3 4 5 6:NBLocks | 864 |
| :DLINK[:TGRoup [A] B]:DCH[1] 2 3 4 5 6:POSition | 864 |
| :DLINK[:TGRoup [A] B]:DCH[1] 2 3 4 5 6:PPERcentage | 865 |
| :DLINK[:TGRoup [A] B]:DCH[1] 2 3 4 5 6:RMATCh | 865 |
| :DLINK[:TGRoup [A] B]:DCH[1] 2 3 4 5 6:TTI | 866 |
| :DLINK[:TGRoup [A] B]:DCH[1] 2 3 4 5 6[:STATe] | 866 |
| :LINK | 867 |
| :POLarity[:ALL] | 867 |
| :ULINK:APPLY | 867 |
| :ULINK:AWGN:CN | 868 |
| :ULINK:AWGN:CPOWER | 868 |
| :ULINK:AWGN:DRATE. | 869 |
| :ULINK:AWGN:EBNO | 869 |
| :ULINK:AWGN:EBRef | 869 |
| :ULINK:AWGN:FNBW | 870 |
| :ULINK:AWGN:NPOWER | 870 |
| :ULINK:AWGN:TICPower | 871 |
| :ULINK:AWGN[:STATe] | 871 |
| :ULINK:CRATE | 872 |
| :ULINK:DPCCh:BETA | 872 |
| :ULINK:DPCCh:CCODE. | 873 |
| :ULINK:DPCCh:DATA | 873 |
| :ULINK:DPCCh:DATA:FIX4 | 874 |
| :ULINK:DPCCh:FBI:PATtern | 874 |
| :ULINK:DPCCh:FBI:PATtern:FIX | 875 |
| :ULINK:DPCCh:FBI[:STATe] | 875 |
| :ULINK:DPCCh:POWER | 876 |
| :ULINK:DPCCh:RATE | 876 |
| :ULINK:DPCCh:SLOTformat. | 876 |
| :ULINK:DPCCh:TFCI:PATtern. | 877 |
| :ULINK:DPCCh:TFCI:PATtern:FIX | 877 |
| :ULINK:DPCCh:TFCI[:STATe] | 878 |
| :ULINK:DPCCh:TPC:NSTeps | 878 |
| :ULINK:DPCCh:TPC:PATtern | 879 |

Contents

| | |
|---|-----|
| :ULINK:DPCCh:TPC:PATtern:FIX4 | 879 |
| :ULINK:DPCCh:TPC:PATtern:TRIGger:POLarity | 880 |
| :ULINK:DPCCh:TPC:PATtern:TRIGger[:STATe]. | 880 |
| :ULINK:DPCCh:TPOWer | 881 |
| :ULINK:DPCCh[:STATe]. | 881 |
| :ULINK:DPDCh:BETA | 882 |
| :ULINK:DPDCh:CCODE | 882 |
| :ULINK:DPDCh:DATA | 883 |
| :ULINK:DPDCh:DATA:FIX4 | 884 |
| :ULINK:DPDCh:POWer | 884 |
| :ULINK:DPDCh:RATE | 885 |
| :ULINK:DPDCh:RBER | 886 |
| :ULINK:DPDCh:SLOTformat. | 886 |
| :ULINK:DPDCh:TBER[:CLENgth] | 887 |
| :ULINK:DPDCh:TBER:ELENgth. | 888 |
| :ULINK:DPDCh:TPOWer | 888 |
| :ULINK:DPDCh[:STATe]. | 889 |
| :ULINK:FCLock:INTErval. | 889 |
| :ULINK:FCLock:POLarity | 889 |
| :ULINK:FILTer | 890 |
| :ULINK:FILTer:ALPHa. | 891 |
| :ULINK:FILTer:BBT | 891 |
| :ULINK:FILTer:CHANnel. | 892 |
| :ULINK:FOFFset | 892 |
| :ULINK:PADJust | 893 |
| :ULINK:PHYSical[1]:TYPE | 893 |
| :ULINK:PMODE:TPControl:HOLD | 893 |
| :ULINK:PMODE:TPControl:POWer:INITial | 894 |
| :ULINK:PMODE:TPControl:POWer:MAXimum | 894 |
| :ULINK:PMODE:TPControl:POWer:MINimum. | 895 |
| :ULINK:PMODE:TPControl:POWer:RESet | 896 |
| :ULINK:PMODE:TPControl:POWer:STEP. | 896 |
| :ULINK:PMODE:TPControl:TRIGger:POLarity | 897 |
| :ULINK:PMODE[:SElect] | 897 |
| :ULINK:PRACH:AICH:NUMBer. | 897 |
| :ULINK:PRACH:AICH:POLarity | 898 |
| :ULINK:PRACH:AWGN:CN | 898 |
| :ULINK:PRACH:AWGN:CPOWer | 899 |

| | |
|--|-----|
| :ULINK:PRACH:AWGN:EBNO | 899 |
| :ULINK:PRACH:AWGN:ECNO | 900 |
| :ULINK:PRACH:AWGN:EREF | 900 |
| :ULINK:PRACH:AWGN:NPOWer | 901 |
| :ULINK:PRACH:AWGN:TICPower | 901 |
| :ULINK:PRACH:AWGN[:STATe] | 901 |
| :ULINK:PRACH:MESSAge:CPARt:BETA | 902 |
| :ULINK:PRACH:MESSAge:CPARt:DATA | 902 |
| :ULINK:PRACH:MESSAge:CPARt:DATA:FIX4 | 903 |
| :ULINK:PRACH:MESSAge:CPARt:POWer | 903 |
| :ULINK:PRACH:MESSAge:CPARt:RATE | 904 |
| :ULINK:PRACH:MESSAge:CPARt:SLOTformat | 904 |
| :ULINK:PRACH:MESSAge:CPARt:TFCI:PATtern | 905 |
| :ULINK:PRACH:MESSAge:CPARt:TFCI:PATtern:FIX | 905 |
| :ULINK:PRACH:MESSAge:CPARt:TFCI[:STATe] | 906 |
| :ULINK:PRACH:MESSAge:DPARt:BETA | 906 |
| :ULINK:PRACH:MESSAge:DPARt:DATA | 907 |
| :ULINK:PRACH:MESSAge:DPARt:DATA:FIX4 | 907 |
| :ULINK:PRACH:MESSAge:DPARt:POWer | 908 |
| :ULINK:PRACH:MESSAge:DPARt:RATE | 908 |
| :ULINK:PRACH:MESSAge:DPARt:SLOTformat | 909 |
| :ULINK:PRACH:MODE[:SElect] | 910 |
| :ULINK:PRACH:MULTi:MESSAge:TPOWer | 911 |
| :ULINK:PRACH:MULTi:MESSAge[:STATe] | 911 |
| :ULINK:PRACH:MULTi:NUMBer | 912 |
| :ULINK:PRACH:MULTi:PREAmble:NUMBer | 912 |
| :ULINK:PRACH:MULTi:PREAmble:POWer:INITial | 912 |
| :ULINK:PRACH:MULTi:PREAmble:POWer:MAX | 913 |
| :ULINK:PRACH:MULTi:PREAmble:POWer:RSTep | 913 |
| :ULINK:PRACH:MULTi:PREAmble:PPM | 914 |
| :ULINK:PRACH:MULTi:UE[1] 2 3 4 5 6 7 8:MESSAge:CPARt: CCODE | 914 |
| :ULINK:PRACH:MULTi:UE[1] 2 3 4 5 6 7 8:MESSAge:DPARt: CCODE | 914 |
| :ULINK:PRACH:MULTi:UE[1] 2 3 4 5 6 7 8:PREAmble:SIGNature | 915 |
| :ULINK:PRACH:MULTi:UE[1] 2 3 4 5 6 7 8:SPOStion[1] 2 3 4 5 6 7 8[:ASL ot] | 916 |
| :ULINK:PRACH:MULTi:UE[1] 2 3 4 5 6 7 8[:STATe] | 917 |
| :ULINK:PRACH:PREAmble:POWer:AVErAge | 917 |

Contents

| | |
|--|-----|
| :ULINK:PRACH:PREamble:POWER:MODE | 918 |
| :ULINK:PRACH:RPARAmeter | 918 |
| :ULINK:PRACH:SCRamblecode | 919 |
| :ULINK:PRACH:SDELAy | 919 |
| :ULINK:PRACH:SUBChannel | 920 |
| :ULINK:PRACH:TOFFset | 920 |
| :ULINK:PRACH:TPA | 921 |
| :ULINK:PRACH:TPM | 922 |
| :ULINK:PRACH:TPOWer | 922 |
| :ULINK:PRACH:TPP | 923 |
| :ULINK:PRACH:TRIGger | 923 |
| :ULINK:PRACH:TRIGger:POLarity | 924 |
| :ULINK:PRACH:TRIGger:SOURce | 924 |
| :ULINK:PRACH:TTI | 925 |
| :ULINK:PRACH[:SINGLE]:MESSAge[:STATe] | 925 |
| :ULINK:PRACH[:SINGLE]:NUMBER | 926 |
| :ULINK:PRACH[:SINGLE]:MESSAge:CPARt:CCODE | 926 |
| :ULINK:PRACH[:SINGLE]:MESSAge:DPARt:CCODE | 927 |
| :ULINK:PRACH[:SINGLE]:MESSAge:TPOWer | 928 |
| :ULINK:PRACH[:SINGLE]:NUMBER | 928 |
| :ULINK:PRACH[:SINGLE]:PREamble:NUMBER | 929 |
| :ULINK:PRACH[:SINGLE]:PREamble:POWer:INITIAL | 929 |
| :ULINK:PRACH[:SINGLE]:PREamble:POWer:MAX | 930 |
| :ULINK:PRACH[:SINGLE]:PREamble:POWer:RSTep | 930 |
| :ULINK:PRACH[:SINGLE]:PREamble:PPM | 931 |
| :ULINK:PRACH[:SINGLE]:PREamble:SIGNature | 931 |
| :ULINK:RMCHannel | 932 |
| :ULINK:RPANel:DPCH:INPut:ALTPower | 933 |
| :ULINK:RPANel:DPCH:INPut:BBGRef | 933 |
| :ULINK:RPANel:DPCH:INPut:BGATE | 933 |
| :ULINK:RPANel:DPCH:INPut:PTRigger1 | 934 |
| :ULINK:RPANel:DPCH:INPut:PTRigger2 | 934 |
| :ULINK:RPANel:DPCH:OUTPut:DCLock | 935 |
| :ULINK:RPANel:DPCH:OUTPut:DOUT | 936 |
| :ULINK:RPANel:DPCH:OUTPut:EVENT1 | 936 |
| :ULINK:RPANel:DPCH:OUTPut:EVENT2 | 937 |
| :ULINK:RPANel:DPCH:OUTPut:EVENT3 | 937 |
| :ULINK:RPANel:DPCH:OUTPut:EVENT4 | 938 |

| | |
|-------------------------------------|-----|
| :ULINK:RPANel:DPCH:OUTPut:SSYNc | 938 |
| :ULINK:RPANel:PRACH:INPut:ALTPower | 939 |
| :ULINK:RPANel:PRACH:INPut:BBGRef | 939 |
| :ULINK:RPANel:PRACH:INPut:BGATe | 940 |
| :ULINK:RPANel:PRACH:INPut:PTRigger1 | 940 |
| :ULINK:RPANel:PRACH:INPut:PTRigger2 | 940 |
| :ULINK:RPANel:PRACH:OUTPut:DCLock | 941 |
| :ULINK:RPANel:PRACH:OUTPut:DOUT | 943 |
| :ULINK:RPANel:PRACH:OUTPut:EVENT1 | 945 |
| :ULINK:RPANel:PRACH:OUTPut:EVENT2 | 947 |
| :ULINK:RPANel:PRACH:OUTPut:EVENT3 | 949 |
| :ULINK:RPANel:PRACH:OUTPut:EVENT4 | 951 |
| :ULINK:RPANel:PRACH:OUTPut:SSYNc | 953 |
| :ULINK:SCRamblecode | 955 |
| :ULINK:SDELay | 955 |
| :ULINK:SFNRst:POLarity | 955 |
| :ULINK:SYNC:MODE | 956 |
| :ULINK:SYNC[:SOURce] | 956 |
| :ULINK:TGAP:POFFset | 957 |
| :ULINK:TGAP:PSI[1]:CFN | 957 |
| :ULINK:TGAP:PSI[1]:CMMethod | 958 |
| :ULINK:TGAP:PSI[1]:POWER | 958 |
| :ULINK:TGAP:PSI[1]:D | 959 |
| :ULINK:TGAP:PSI[1]:L1 | 959 |
| :ULINK:TGAP:PSI[1]:L2 | 960 |
| :ULINK:TGAP:PSI[1]:PL1 | 960 |
| :ULINK:TGAP:PSI[1]:PL2 | 960 |
| :ULINK:TGAP:PSI[1]:PRC | 961 |
| :ULINK:TGAP:PSI[1]:PS | 961 |
| :ULINK:TGAP:PSI[1]:SN | 962 |
| :ULINK:TGAP:RPARameter | 962 |
| :ULINK:TGAP:SCFN | 963 |
| :ULINK:TGAP:STARt:TRIGger | 963 |
| :ULINK:TGAP:STARt:TRIGger:POLarity | 964 |
| :ULINK:TGAP:STOP:TRIGger | 964 |
| :ULINK:TGAP:STOP:TRIGger:POLarity | 964 |
| :ULINK:TOFFset | 965 |
| :ULINK:TStatus:COMPRESSED | 965 |

Contents

| | |
|---|-----|
| :ULINK:TStatus:RACH | 966 |
| :ULINK:TStatus:RECeive | 966 |
| :ULINK:TStatus:SYNC | 966 |
| :ULINK[:TGRoup[1]]:DCH[1] 2 3 3 5 6:BLKSize | 967 |
| :ULINK[:TGRoup[1]]:DCH[1] 2 3 4 5 6:BPFRame | 967 |
| :ULINK[:TGRoup[1]]:DCH[1] 2 3 4 5 6:BRATe | 968 |
| :ULINK[:TGRoup[1]]:DCH[1] 2 3 3 5 6:CODE | 968 |
| :ULINK[:TGRoup[1]]:DCH[1] 2 3 3 5 6:CRC | 969 |
| :ULINK[:TGRoup[1]]:DCH[1] 2 3 3 5 6:DATA | 969 |
| :ULINK[:TGRoup[1]]:DCH[1] 2 3 4 5 6:DATA:BER:ACTual | 970 |
| :ULINK[:TGRoup[1]]:DCH[1] 2 3 4 5 6:DATA:BER:ERRor:BIT | 970 |
| :ULINK[:TGRoup[1]]:DCH[1] 2 3 4 5 6:DATA:BER:TOTal:BIT | 970 |
| :ULINK[:TGRoup[1]]:DCH[1] 2 3 4 5 6:DATA:BER[:VALue] | 971 |
| :ULINK[:TGRoup[1]]:DCH[1] 2 3 4 5 6:DATA:BLER:ACTual | 971 |
| :ULINK[:TGRoup[1] 2]:DCH[1] 2 3 4 5 6:DATA:BLER:ERRor:BLOCK | 972 |
| :ULINK[:TGRoup[1] 2]:DCH[1] 2 3 4 5 6:DATA:BLER:TOTal:BLOCK | 972 |
| :ULINK[:TGRoup[1]]:DCH[1] 2 3 4 5 6:DATA:BLER[:VALue] | 972 |
| :ULINK[:TGRoup[1]]:DCH[1] 2 3 4 5 6:DATA:EINSert | 973 |
| :ULINK[:TGRoup[1]]:DCH[1] 2 3 4 5 6:DATA:FIX4 | 973 |
| :ULINK[:TGRoup[1]]:DCH[1] 2 3 4 5 6:NBLock | 974 |
| :ULINK[:TGRoup [1]]:DCH[1] 2 3 4 5 6:PPERcentage | 974 |
| :ULINK[:TGRoup[1]]:DCH[1] 2 3 4 5 6:RMATch | 975 |
| :ULINK[:TGRoup[1]]:DCH[1] 2 3 4 5 6:TTI | 975 |
| :ULINK[:TGRoup[1]]:DCH[1] 2 3 4 5 6[:STATe] | 976 |
| :ULINK[:TGRoup[1]]:RACH[1]:BLKSize | 976 |
| :ULINK[:TGRoup [1]]:RACH[1]:BPFRame | 976 |
| :ULINK[:TGRoup [1]]:RACH[1]:BRATe | 977 |
| :ULINK[:TGRoup[1]]:RACH[1]:CODE | 977 |
| :ULINK[:TGRoup[1]]:RACH[1]:CRC | 977 |
| :ULINK[:TGRoup[1]]:RACH[1]:DATA | 978 |
| :ULINK[:TGRoup[1]]:RACH[1]:DATA:BER:ACTual | 978 |
| :ULINK[:TGRoup[1]]:RACH[1]:DATA:BER:ERRor:BIT | 979 |
| :ULINK[:TGRoup[1]]:RACH[1]:DATA:BER:TOTal:BIT | 979 |
| :ULINK[:TGRoup[1]]:RACH[1]:DATA:BER[:VALue] | 979 |
| :ULINK[:TGRoup[1]]:RACH[1]:DATA:BLER:ACTual | 980 |
| :ULINK[:TGRoup[1]]:RACH[1]:DATA:BLER:ERRor:BLOCK | 980 |
| :ULINK[:TGRoup[1]]:RACH[1]:DATA:BLER:TOTal:BLOCK | 981 |
| :ULINK[:TGRoup[1]]:RACH[1]:DATA:BLER[:VALue] | 981 |

Contents

| | |
|---|-----|
| :ULINK[:TGRoup[1]]:RACH[1]:DATA:EINSert | 982 |
| :ULINK[:TGRoup[1]]:RACH[1]:DATA:FIX4 | 982 |
| :ULINK[:TGRoup[1]]:RACH[1]:NBLOCK | 983 |
| :ULINK[:TGRoup [1]]:RACH[1]:PPERcentage | 983 |
| :ULINK[:TGRoup[1]]:RACH[1]:RMArch. | 983 |
| :ULINK[:TGRoup[1]]:RACH[1]:TTI | 984 |
| :ULINK[:TGRoup[1]]:RACH[1][:STATE] | 984 |
| [:STATE] | 985 |

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” 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 NORMa1 DEEP or NORMa1 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 8 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 7 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 |

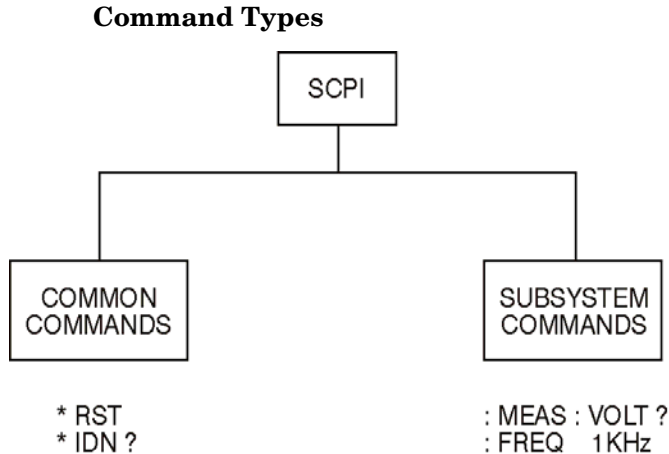
Command Types

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

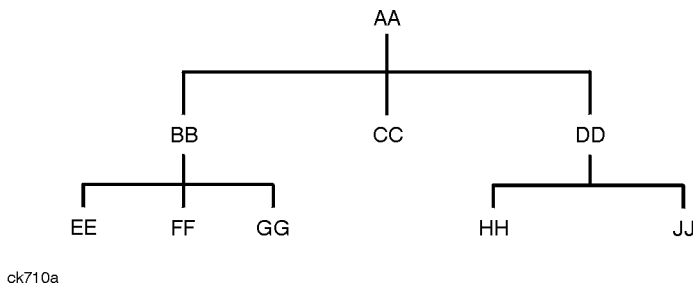


ck709e

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**



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 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, such as "<file name>", represent three formats, "<file name>", "<file name@file type>", and "</user/file type/file name>". The following shows the file name syntax for the three formats, but uses "FLATCAL" as the file name in place of the variable "<file name>":

| | |
|----------|--------------------------|
| Format 1 | "FLATCAL" |
| Format 2 | "FLATCAL@USERFLAT" |
| Format 3 | "/USER/USERFLAT/FLATCAL" |

Format 2 uses the file type extension (@USERFLAT) as part of the file name syntax. Format 3 uses the directory path which includes the file name and file type. Use Formats 2 and 3 when the command does not specify the file type. This generally occurs in the Memory (:MEMory) or Mass Memory (:MMEMory) subsystems.

The following examples demonstrate a command where Format 1 applies:

Command Syntax with the file name variable

```
:MEMory:STORe:LIST "<file name>"
```

Command Syntax with the file name

```
:MEMory:STORe:LIST "SWEEP_1"
```

This command has :LIST in the command syntax. This denotes that "SWEEP_1" will be saved in the :List file type location as a list type file.

The following examples demonstrate a command where Format 2 applies:

Command Syntax with the file name variable

```
:MMEMory:COpy "<file name>","<file name>"
```

Command Syntax with the file name

```
:MMEMory:COpy "FLATCAL@USERFLAT","FLAT_2CAL@USERFLAT"
```

This command cannot distinguish which file type "FLATCAL" belongs to without the file type extension (@USERFLAT). If this command were executed without the extension, the command would assume the file type was Binary.

The following examples demonstrate a command where format 3 applies:

Command Syntax with the file name variable

```
:MMEMory:DATA "/USER/BBG1/WAVEFORM/<file name>",#ABC
```

Command Syntax with the file name

```
:MMEMory:DATA "/USER/BBG1/WAVEFORM/FLATCAL",#ABC
```

This command gives the directory path name where the file "FLATCAL" is stored.

- A the number of decimal digits to follow in B.
- B a decimal number specifying the number of data bytes in C.
- C the binary waveform data.

Refer to [Table 3-1 on page 121](#) for a listing of the file systems and types. The entries under file type are used in the directory path.

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 14](#). 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 14](#):

```
: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@file system>](#)") will work.

Refer to [Table 1-1 on page 4](#) 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 DBUV or DBUVEMF) 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 all ESG Vector Signal Generators. This chapter contains the following major sections:

- “Correction Subsystem ([:SOURce]:CORRection)” on page 20
- “Digital Modulation Subsystem ([:SOURce])” on page 23
- “Frequency Subsystem ([:SOURce])” on page 40
- “List/Sweep Subsystem ([:SOURce])” on page 51
- “Power Subsystem ([:SOURce]:POWer)” on page 59
- “Pulse Subsystem ([:SOURce]:PULSe)” on page 66

Correction Subsystem ([:SOURce]:CORRection)

:FLATness:LOAD

Supported All

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

This command loads a user-flatness correction file.

***RST** N/A

Range N/A

Key Entry Load From Selected File

Remarks N/A

:FLATness:PAIR

Supported All

```
[ :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.

***RST** N/A

| Range | <i>Frequency</i> | <i>Standard</i> | <i>Option UNB</i> |
|--------------|--------------------------------|-----------------|-------------------|
| | <i>Option 501:</i> 100kHz–1GHz | –136 to 20DB | –136 to 25DB |
| | <i>Option 502:</i> 100kHz–2GHz | –136 to 20DB | –136 to 25DB |
| | <i>Option 503:</i> 100kHz–3GHz | –136 to 20DB | –136 to 25DB |
| | <i>Option 504:</i> 100kHz–4GHz | –136 to 20DB | –136 to 25DB |
| | <i>Option 506:</i> 100kHz–6GHz | –136 to 25DB | N/A |

Key Entry Configure Cal Array

Remarks The maximum number of points that can be entered is 1601.

:FLATness:POINTs

Supported All

```
[ :SOURCE ] :CORREction :FLATness :POINTs ?
```

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

***RST** N/A

Range N/A

Key Entry N/A

Remarks N/A

:FLATness:PRESet

Supported All

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.

***RST** N/A

Range N/A

Key Entry Preset List

Remarks N/A

:FLATness:STORE

Supported All

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

This command stores the current user-flatness correction data to a file.

***RST** N/A

Range N/A

Correction Subsystem ([:SOURCE]:CORRection)

Key Entry **Store To File**

Remarks For information on file name syntax, refer to [“File Name Variables” on page 14.](#)

[[:STATE]

Supported All

`[[: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**

Remarks N/A

Digital Modulation Subsystem ([:SOURce])

:BURSt:SOURce

Supported All

```
[ :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 INTernal[1] choice will not work unless an internal burst source is active.

:BURSt:STATe

Supported All

```
[ :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

Remarks N/A

:DM:EXTeRnal:ALC:BA NDwidth | BWIDth

Supported All

```
[ :SOURce ] :DM :EXTeRnal :ALC :BA NDwidth | BWIDth NORMAl | NARRow  
[ :SOURce ] :DM :EXTeRnal :ALC :BA NDwidth | BWIDth ?
```

This command sets the bandwidth of the automatic leveling control (ALC) loop.

NORMAl This choice enables the signal generator to automatically select the ALC

| | |
|------------------|---|
| | bandwidth for the current test conditions. |
| NARRow | This choice sets the narrowest possible ALC bandwidth and is useful when an external I/Q source is connected. |
| *RST | NORM |
| Key Entry | ALC BW Normal Narrow |
| Remarks | N/A |

:DM:EXTErnal:HICRest[:STATe]

Supported All

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

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

| | |
|------------------|--|
| *RST | 0 |
| Key Entry | High Crest Mode Off On |
| Remarks | For crest factors greater than 4 dB, the I/Q drive levels should be reduced 1 dB per each dB above that level. |

:DM:EXTErnal:FILTer

Supported All with Option 001 or 002

```
[ :SOURce ] :RADio:DM:EXTErnal:FILTer 40e6 | THROugh
[ :SOURce ] :RADio: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 25 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 |
| Remarks | N/A |

:DM:EXTeRnal:FiLTeR:AUTO

Supported All with Option 001 or 002

```
[ :SOURce ] :RADio:DM:EXTeRnal:FiLTeR:AUTO ON|OFF|1|0  
[ :SOURce ] :RADio: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.

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 24](#) for selecting a filter or through path.

***RST** 1

Key Entry I/Q Output Filter Manual Auto

Remarks N/A

:DM:EXTeRnal:POLarity

Supported All

```
[ :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 All

```
[ :SOURce ] :DM:EXTeRnal:SOURce EXTeRnal|INTeRnal|BBG1|EXT600|OFF  
[ :SOURce ] :DM:EXTeRnal:SOURce?
```

This command selects the I/Q signal source that is routed to the rear panel I and Q output connectors.

Digital Modulation Subsystem ([:SOURce])

| | |
|------------------|---|
| 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 or 002. |
| 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. |
| *RST | EXT |
| Key Entry | Ext 50 Ohm BBG1 Ext 600 Ohm Off |
| 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 38. |

:DM:IQADjustment:EXTernal:COFFset

Supported All

```
[ :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 32. |

:DM:IQADjustment:EXTernal:DIOffset

Supported All

```
[ :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 32](#).

:DM:IQADjustment:EXTernal:DQOffset

Supported All

```
[ :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 32](#).

:DM:IQADjustment:EXTernal:GAIN**Supported** All

[: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 32](#).

:DM:IQADjustment:EXTernal:IOFFset**Supported** All

[: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**Range** -5 to 5**Key Entry** Ext In 600 Ohm 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 32](#).

:DM:IQADjustment:EXTernal:IQATten

Supported All

```
[ :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 All

```
[ :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 32](#).

:DM:IQADjustment:GAIN

Supported All

```
[ :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 32.

:DM:IQADjustment:IOFFset

Supported All

[: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 32.

:DM:IQADjustment:QOFFset

Supported All

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

[: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 32](#).

:DM:IQADjustment:QSKew

Supported All

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

[:SOURce] :DM:IQADjustment:QSKew?

This command adjusts the phase angle between the I and Q vectors.

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

***RST** +0.00000000E+000

Range -10.0 to 10.0

Key Entry **Quadrature Skew**

Remarks 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 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 32](#).

:DM:IQADjustment:SKEW**Supported** All

```
[ :SOURce ]:DM:IQADjustment:SKEW <val><unit>
[ :SOURce ]:DM:IQADjustment:SKEW?
```

This command changes the input skew to the I and Q paths. Equal and opposite skew is applied to both paths (RF Output path 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 adjustment 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 re applied directly.

The variable <val> is expressed in units of pico seconds or nano seconds.

***RST** +0.00000000E+000

Range -5.0 to 5.0

Key Entry I/Q Skew

Remarks N/A

:DM:IQADjustment[:STATe]**Supported** All

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

This command enables or disables the I/Q adjustments.

***RST** 0

Key Entry I/Q Adjustments Off On

Remarks N/A

:DM:MODulation:FILTer

Supported All with Option 001 or 002

```
[ :SOURce ] :RADio:DM:MODulation:FILTer 2.1e6 | 40e6 | THROugh
[ :SOURce ] :RADio:DM: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 “:DM:MODulation:FILTer:AUTO” on page 33 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**

Remarks N/A

:DM:MODulation:FILTer:AUTO

Supported All with Option 001 or 002

```
[ :SOURce ] :RADio:DM:MODulation:FILTer:AUTO ON | OFF | 1 | 0
[ :SOURce ] :RADio: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 33 for selecting a filter or through path.

***RST** 1

Key Entry **I/Q Mod Filter Manual Auto**

Remarks N/A

:DM:MODulation:ATTen

Supported All with Option 001 or 002

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

```
[ :SOURce ]:RADio: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

Remarks N/A

:DM:MODulation:ATTen:AUTO

Supported All with Option 001 or 002

```
[ :SOURce ]:RADio:DM:MODulation:ATTen:AUTO ON|OFF|1|0
```

```
[ :SOURce ]:RADio: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 34 for setting the attenuation value.

***RST** 1

Key Entry Modulator Atten Manual Auto

Remarks N/A

:DM:MODulation:ATTen:EXTernal

Supported All with Option 001 or 002

```
[ :SOURce ]:RADio:DM:MODulation:ATTen:EXTernal DEFault|MANual|MEASure
```

```
[ :SOURce ]:RADio:DM:MODulation:ATTen:EXTernal?
```

This command selects the method for setting the external I/Q input level for automatic

attenuation.

| | |
|------------------|---|
| DEFault | This choice sets the external I/Q input level to the default value of 500.0 mV rms. |
| MANual | This choice is used to manually set the external I/Q input level. After selecting this parameter, refer to “:DM:MODulation:ATTen:EXTernal:LEVel” on page 35 to set the voltage level for automatic attenuation. |
| MEASure | This choice is used to measure the voltage level at the external I/Q inputs. The measurement will be used as the input level setting. Refer to “:DM:MODulation:ATTen:EXTernal:LEVel:MEASurement” on page 35 to perform the measurement. |
| *RST | DEF |
| Key Entry | Ext Input Level 500 mV rms Default Man Meas |
| Remarks | This command is inactive until an external triggering source is selected. |

:DM:MODulation:ATTen:EXTernal:LEVel

Supported All with Option 001 or 002

```
[ :SOURCE ] :RADio:DM:MODulation:ATTen:EXTernal:LEVel <val>
[ :SOURCE ] :RADio:DM:MODulation:ATTen:EXTernal:LEVel?
```

This command manually sets the external I/Q input level for automatic attenuation.

The variable <val> is expressed in units of volts root-mean-square (V rms).

***RST** +5.00000000E-001

Range 5E-1 to 1E0

Key Entry **Ext Input Level 500 mV rms Default Man Meas**

Remarks N/A

:DM:MODulation:ATTen:EXTernal:LEVel:MEASurement

Supported All with Option 001 or 002

```
[ :SOURCE ] :RADio:DM:MODulation:ATTen:EXTernal:LEVel:MEASurement
```

This command measures the voltage level at the external I/Q inputs. The measurement will be used as the input level setting for automatic attenuation.

Digital Modulation Subsystem ([:SOURce])

| | |
|------------------|--|
| *RST | N/A |
| Key Entry | Ext Input Level 500 mV rms Default Man Meas |
| Remarks | N/A |

:DM:MODulation:ATTen:OPTimize:BANDwidth

Supported All with Option 001 or 002

```
[ :SOURce]:RADio:DM:MODulation:ATTen:OPTimize:BANDwidth <val>
[:SOURce]:RADio:DM:MODulation:ATTen:OPTimize:BANDwidth?
```

This command sets the expected bandwidth of the external I/Q signal. The I/Q modulator attenuator will use this bandwidth setting to optimize the attenuation level.

The variable <val> is expressed in units of samples per second (sps).

| | |
|------------------|--|
| *RST | +1.00000000E+008 |
| Range | 1E-3 to 100E6 |
| Key Entry | Optimize for 1.00000000Msps Bandwidth |
| Remarks | N/A |

:DM:POLarity[:ALL]

Supported All

```
[ :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 |
| Remarks | N/A |

:DM:SKEW:PATH

Supported All

```
[ :SOURce ] :DM:SKEW:PATH RF | BB | OFF
[ :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 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 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. |
| OFF | When Off is selected, the factory I/Q skew correction is turned off. Using the signal generator in this mode does not add any latency symbols. This setting allows the instrument to operate in a mode prior to the installation of firmware C.03.10. |

***RST** INT

Key Entry Int I/Q Skew Corrections RF BB Off

Remarks N/A

:DM:SKEW[:STATe]

Supported All

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

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

***RST** 1

Key Entry Int I/Q Skew Corrections RF BB Off

Remarks N/A

:DM:SOURce

Supported All

```
[ :SOURce ] :DM :SOURce 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 or 002. |
| 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 |
| Remarks | N/A |

:DM:STATe

Supported All

```
[ :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

```
[ :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.

| | |
|------|---|
| 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**

Key Entry

BPGS

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 43.

:FREQuency:CHANnels:NUMBer**Supported** All

[: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 | <i>P-GSM Base / Mobile:</i> | 1–24 |
| | <i>E-GSM and R-GSM Base / Mobile:</i> | 1–1023 |
| | <i>DCS Base / Mobile:</i> | 512–885 |
| | <i>PCS Base / Mobile:</i> | 512–900 |
| | <i>GSM-450 Base / Mobile:</i> | 259–293 |
| | <i>GSM-480 Base / Mobile:</i> | 306–340 |
| | <i>GSM-850 Base / Mobile:</i> | 128–251 |
| | <i>NADC Base / Mobile:</i> | 1–1023 |
| | <i>800MHZ Base / Mobile:</i> | 0–640 |
| | <i>1500MHZ Base / Mobile:</i> | 0–960 |
| | <i>TETRA 380 / 390 Mobile:</i> | 3600–4000 |
| | <i>TETRA 390 / 4000 Base:</i> | 3600–4000 |
| | <i>TETRA 410 / 420 Mobile:</i> | 800–1200 |
| | <i>TETRA 420 / 430 Base:</i> | 800–1200 |
| | <i>TETRA 460 / 470: 2400 through 2800</i> | 2400–2800 |
| | <i>TETRA 870 / 876 Mobile:</i> | 600–640 |
| | <i>TETRA 915 / 921 Base:</i> | 600–940 |
| | <i>PHS Standard:</i> | 1–255 |
| | <i>DECT Standard:</i> | 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 43.

:FREQuency:CHANnels[:STATe]

Supported All

```
[ :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 40.](#)

:FREQuency:FIXed

Supported All

```
[ :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

Key Entry N/A

Remarks A frequency change may affect the current output power. Refer to
[“\[:LEVel\]\[:IMMediate\]\[:AMPLitude\]” on page 65](#) for the correct
 specified frequency and amplitude settings. To set the frequency mode
 refer to [“:FREQuency:MODE” on page 44.](#)

:FREQuency:MODE**Supported** All

[:SOURce]:FREQuency:MODE CW|FIXed|LIST

[:SOURce]:FREQuency:MODE?

This command sets the frequency mode of the signal generator.

| | |
|------------------|---|
| CW and FIXed | These choices are synonymous with one another and they let the signal generator operate at a fixed frequency. Refer to “:FREQuency[:CW]” on page 48 for setting the frequency in the CW frequency mode. Refer to “:FREQuency:FIXed” on page 43 for setting the frequency in the fixed frequency mode. |
| LIST | This choice lets the currently selected sweep (LIST or STEP) frequency settings control the output frequency. Refer to “:LIST:TYPE” on page 56 for setting the sweep type. |
| *RST | CW |
| Key Entry | N/A |
| Remarks | N/A |

:FREQuency:MULTiplier**Supported** All

[:SOURce]:FREQuency:MULTiplier <val>

[:SOURce]:FREQuency:MULTiplier?

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

| | |
|------------------|--|
| *RST | +1.00000000E+000 |
| Range | <i>Negative Values:</i> -100 to -.001 <i>Positive Values:</i> .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

```
[ :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

```
[ :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

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

This command sets the output reference frequency.

Frequency Subsystem ([:SOURce])

***RST** +0.0000000000000E+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 N/A

:FREQuency:REFeRence:STATe

Supported All

[: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

[:SOURce] :FREQuency:STARt <val><unit>
 [:SOURce] :FREQuency:STARt?

This command sets the frequency start point for a step sweep.

***RST** *Option 501: +1000000000000E+09*
Option 502: +2000000000000E+09
Option 503: +3000000000000E+09
Option 504: +4000000000000E+09
Option 506: +6000000000000E+09

Range *Option 501: 100kHz–1GHZ*
Option 502: 100kHz–2GHZ

| | |
|------------------|--------------------------------|
| | <i>Option 503: 100kHz–3GHz</i> |
| | <i>Option 504: 100kHz–4GHz</i> |
| | <i>Option 506: 100kHz–6GHz</i> |
| Key Entry | Freq Start |
| Remarks | N/A |

:FREQuency:STOP

Supported All

```
[ :SOURce ]:FREQuency:STOP <val><unit>
[ :SOURce ]:FREQuency:STOP?
```

This command sets the frequency stop point for a step sweep.

| | |
|-------------|--|
| *RST | <i>Option 501: +10000000000000E+09</i> |
| | <i>Option 502: +20000000000000E+09</i> |
| | <i>Option 503: +30000000000000E+09</i> |
| | <i>Option 504: +40000000000000E+09</i> |
| | <i>Option 506: +60000000000000E+09</i> |

| | |
|--------------|--------------------------------|
| Range | <i>Option 501: 100kHz–1GHz</i> |
| | <i>Option 502: 100kHz–2GHz</i> |
| | <i>Option 503: 100kHz–3GHz</i> |
| | <i>Option 504: 100kHz–4GHz</i> |
| | <i>Option 506: 100kHz–6GHz</i> |

| | |
|------------------|------------------|
| Key Entry | Freq Stop |
| Remarks | N/A |

:FREQuency:SYNThesis

Supported All except 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.

Frequency Subsystem ([:SOURce])

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 |
| Remarks | N/A |

:FREQuency[:CW]

Supported All

[:SOURce] :FREQuency [:CW] <val><unit>

[:SOURce] :FREQuency [:CW] ?

This command sets the signal generator output frequency for the CW frequency mode.

| | |
|------------------|--|
| *RST | <i>Option 501: +10000000000000E+09</i> <i>Option 502: +20000000000000E+09</i> <i>Option 503: +30000000000000E+09</i> <i>Option 504: +40000000000000E+09</i> <i>Option 506: +60000000000000E+09</i> |
| Range | <i>Option 501: 100kHz–1GHZ</i> <i>Option 502: 100kHz–2GHZ</i> <i>Option 503: 100kHz–3GHZ</i> <i>Option 504: 100kHz–4GHZ</i> <i>Option 506: 100kHz–6GHZ</i> |
| Key Entry | Frequency |
| Remarks | To set the frequency mode to CW, refer to “:FREQuency:MODE” on page 44. |

:PHASe:REFEreence

Supported All

[:SOURce] :PHASe :REFEreence

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

| | |
|------------------|----------------------|
| *RST | N/A |
| Range | N/A |
| Key Entry | Phase Ref Set |

Remarks Subsequent phase adjustments are set relative to the new reference.

:PHASe[:ADJust]

Supported All

```
[ :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

Remarks N/A

:ROSCillator:SOURce

Supported All

```
[ :SOURce ] : ROSCillator : SOURce ?
```

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

***RST** N/A

Range N/A

Key Entry N/A

Remarks N/A

:ROSCillator:SOURce:AUTO

Supported All 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

Frequency Subsystem ([:SOURce])

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

Remarks N/A

List/Sweep Subsystem ([:SOURce])

:LIST:DIRection

Supported All

[: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

Remarks N/A

:LIST:DWELl

Supported All

[: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.

***RST** N/A

Range 0.001–60

Key Entry N/A

| | |
|----------------|---|
| Remarks | Dwell time is used when IMMEDIATE is the trigger source. Refer to “:LIST:TRIGGER:SOURce” on page 55 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

[:SOURce] :LIST:DWELL:POINTS?

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

***RST** N/A

Range N/A

Key Entry N/A

Remarks N/A

:LIST:DWELL:TYPE

Supported All

[: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 51 for setting the list dwell points.

STEP This choice selects the dwell time from the step sweep. Refer to “:SWEep:DWELL” on page 57 for setting the step dwell.

***RST** LIST

Key Entry Dwell Type List Step

Remarks N/A

:LIST:FREQuency

Supported All

[: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.

***RST** N/A

Range *Option 501:* 100E3–1E9
Option 502: 100E3–2E9
Option 503: 100E3–3E9
Option 504: 100E3–4E9
Option 506: 100E3–6E9

Key Entry N/A

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

:LIST:FREQuency:POINts

Supported All

[:SOURce] :LIST:FREQuency:POINts?

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

***RST** N/A

Range N/A

Key Entry N/A

Remarks N/A

:LIST:MANual

Supported All

[: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.

***RST** N/A

Range 1–1601

Key Entry **Manual Point**

Remarks If list or step mode is controlling frequency and/or power, 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 54 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

[:SOURce] :LIST:MODE AUTO|MANual

[: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.

MANual This choice enables you to select a sweep point which controls the frequency and/or amplitude according to the sweep type. Refer to “:LIST:MANual” on page 53 for selecting a sweep point

***RST** AUTO

Key Entry **Manual Mode Off On**

Remarks N/A

:LIST:POWer

Supported All

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

[:SOURce] :LIST:POWer?

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

| | |
|------------------|---|
| *RST | N/A |
| Range | Refer to “[:LEVel][:IMMediate][:AMPLitude]” on page 65 for output power ranges. |
| Key Entry | N/A |
| 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 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. |

:LIST:POWer:POINts

Supported All

[:SOURce] :LIST:POWer:POINts?

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

***RST** N/A

Range N/A

Key Entry N/A

Remarks N/A

:LIST:TRIGger:SOURce

Supported All

[:SOURce] :LIST:TRIGger:SOURce BUS | IMMediate | EXTernal | KEY

[:SOURce] :LIST:TRIGger:SOURce?

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

| | |
|------------------|--|
| 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 | N/A |

:LIST:TYPE

Supported All

[:SOURce] :LIST:TYPE LIST | STEP

[:SOURce] :LIST:TYPE?

This command toggles between the two types of sweep.

| | |
|------------------|----------------------|
| *RST | STEP |
| Key Entry | Sweep Type List Step |
| Remarks | N/A |

:LIST:TYPE:LIST:INITialize:FSTep

Supported All

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 120](#) 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.

| | |
|------------------|---|
| *RST | N/A |
| Range | N/A |
| Key Entry | Load List From Step Sweep |
| Remarks | You can have only one sweep list at a time. |

:LIST:TYPE:LIST:INITialize:PRESet

Supported All

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 120](#) 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.

***RST** N/A
Range N/A
Key Entry Preset List
Remarks N/A

:SWEep:DWELl

Supported All

[[: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 55](#) 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

[:SOURce] :SWEep:POINTs <val>

[:SOURce] :SWEep:POINTs?

This command enables you to define the number of points in a step sweep.

***RST** 2

Range 2–1601

Key Entry # Points

Remarks N/A

Power Subsystem ([:SOURce]:POWER)

:ALC:BANDwidth

Supported All

```
[ :SOURce ] :POWER :ALC :BANDwidth | BWIDth NORMal | NARRow
[ :SOURce ] :POWER :ALC :BANDwidth | BWIDth ?
```

This command sets the bandwidth of the automatic leveling control (ALC) loop.

- | | |
|--------|---|
| NORMal | This choice enables the signal generator to automatically select the ALC bandwidth for the current test conditions. |
| NARRow | This choice sets the narrowest possible ALC bandwidth and is useful when an external I/Q source is connected. |

***RST** NORM

Key Entry **ALC BW Normal Narrow**

Remarks The bandwidth choices for this command are not effective if an internal I/Q source is being used.

:ALC:SEARCh

Supported All

```
[ :SOURce ] :POWER :ALC :SEARCh ON | OFF | 1 | 0 | ONCE
[ :SOURce ] :POWER :ALC :SEARCh ?
```

This command enables or disables the internal power search calibration.

- | | |
|---------|--|
| 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 60](#) 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

```
[ :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

Remarks N/A

:ALC[:STATe]

Supported All

```
[ :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 the desired level in spite of drift due to temperature and time.

:ALTErnate:AMPLitude

Supported All 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 | | | | |
| | [:SOURce] :POWer :ALternal :MANual MAIN DELTa [:SOURce] :POWer :ALternal :MANual ? | | | | |
| | This command toggles the alternate amplitude manual trigger source between main and alternate (delta). | | | | |
| | <table border="0"> <tr> <td style="padding-right: 20px;">MAIN</td> <td>The main power is present at the RF output.</td> </tr> <tr> <td>DELTA</td> <td>The alternate power is present at the RF output.</td> </tr> </table> | MAIN | The main power is present at the RF output. | DELTA | The alternate power is present at the RF output. |
| 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 trigger source. Refer to “:ALternate:TRIGger[:SOURce]” on page 62 for more information. | | | | |

:ALternate:STATe

| | |
|------------------|---|
| Supported | All |
| | [: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 |
| Remarks | N/A |

:ALternate:TRIGger[:SOURce]

Supported All

```
[ :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 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.

***RST** MAN

Key Entry Int Ext Manual

Remarks N/A

:ATTenuation:AUTO

Supported All

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

This command sets the state of the attenuator hold function.

ON (1) This choice enables the attenuator to operate normally.

OFF (0) This choice holds the attenuator at its current setting or at a selected value that will not change during power adjustments.

***RST** 1

Key Entry Atten Hold Off On

Remarks The OFF (0) choice eliminates the power discontinuity normally associated with the attenuator switching during power adjustments.

During an amplitude sweep operation, signal generators with Option UNB 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.

:MODE

Supported All

```
[ :SOURce ] :POWER:MODE FIXed|LIST
[ :SOURce ] :POWER:MODE?
```

This command sets the signal generator RF output power operating mode.

***RST** FIX

Key Entry Amplitude

Remarks N/A

:REFErrence

Supported All

```
[ :SOURce ] :POWER:REFErrence <val><unit>
[ :SOURce ] :POWER:REFErrence?
```

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.

:REFErrence:STATe

Supported All

```
[ :SOURce ] :POWER:REFErrence:STATe ON|OFF|1|0
[ :SOURce ] :POWER:REFErrence: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 82 and “:POWER” on page 169 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 |
| | <code>[:SOURce]:POWer:STARt <val><unit></code> <code>[:SOURce]:POWer:STARt?</code> |
| | This command sets the amplitude of the first point in a step sweep. |
| *RST | -1.35000000E+002 |
| Range | Refer to “[:LEVel][:IMMediate][:AMPLitude]” on page 65 for the output power ranges. |
| Key Entry | Ampl Start |
| Remarks | During an amplitude sweep operation, signal generators with Option UNB 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 |
| | <code>[:SOURce]:POWer:STOP <val><unit></code> <code>[:SOURce]:POWer:STOP?</code> |
| | This command sets the amplitude of the last point in a step sweep. |
| *RST | -1.35000000E+002 |
| Range | Refer to “[:LEVel][:IMMediate][:AMPLitude]” on page 65 for the output power ranges. |
| Key Entry | Ampl Stop |
| Remarks | During an amplitude sweep operation, signal generators with Option UNB 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

```
[: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

```
[: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.

Pulse Subsystem ([:SOURce]:PULSe)

:FREQuency:STEP

Supported All

[:SOURce] :PULSe :FREQuency :STEP freq

[:SOURce] :PULSe :FREQuency :STEP?

This command sets the step increment for the pulse frequency.

***RST** +1.00000000E+005

Range 0–100

Key Entry N/A

Remarks N/A

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 68
- “Communication Subsystem (:SYSTem:COMMunicate)” on page 72
- “Diagnostic Subsystem (:DIAGnostic[:CPU]:INFORmation)” on page 78
- “Display Subsystem (:DISPlay)” on page 82
- “IEEE 488.2 Common Commands” on page 86
- “Memory Subsystem (:MEMory)” on page 93
- “Mass Memory Subsystem (:MMEMory)” on page 121
- “Output Subsystem (:OUTPut)” on page 127
- “Route Subsystem (:ROUte:HARDware:DGENERator)” on page 129
- “Status Subsystem (:STATus)” on page 137
- “System Subsystem (:SYSTem)” on page 156
- “Trigger Subsystem” on page 165
- “Unit Subsystem (:UNIT)” on page 169

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.

***RST** N/A

Range N/A

Key Entry DCFM/DC Φ M 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 All

:CALibration:IQ

This command initiates an I/Q calibration.

***RST** N/A

Range N/A

Key Entry Execute Cal

Remarks N/A

:IQ:DEFault

Supported All

:CALibration:IQ:DEFault

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

***RST** N/A

Range N/A

Key Entry Revert to Default Cal Settings

Remarks N/A

:IQ:FULL

Supported All

:CALibration:IQ:FULL

This command sets and performs a full-frequency range (regardless of the start and stop frequency settings) I/Q calibration and stores the results in the signal generator's firmware.

***RST** N/A

Range N/A

Key Entry Execute Cal

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

:IQ:DC

Supported All

:CALibration:IQ:DC

This command performs a one to two second calibration that is not traceable to a standard. However, it will remove errors associated with offset voltages. The DC calibration removes errors for the current signal generator setting and at a single frequency. The DC calibration is volatile and must be repeated with each signal generator setting change.

The I/Q DC calibration is dependent upon a number of instrument settings. If any of the

Calibration Subsystem (:CALibration)

instrument settings change, the calibration 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

| | |
|------------------|--------------------|
| *RST | N/A |
| Key Entry | Execute Cal |
| Remarks | N/A |

:IQ:STARt

Supported All

: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.

| | |
|--------------|--|
| *RST | N/A |
| Range | <i>Option 501: 100kHz–1GHz</i> <i>Option 502: 100kHz–2GHz</i> <i>Option 503: 100kHz–3GHz</i> <i>Option 504: 100kHz–4GHz</i> <i>Option 506: 100kHz–6GHz</i> |

| | |
|------------------|--|
| 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 | All |
|------------------|-----|

```
: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.

| | |
|-------------|-----|
| *RST | N/A |
|-------------|-----|

| | |
|--------------|--|
| Range | <i>Option 501: 100kHz–1GHz</i> <i>Option 502: 100kHz–2GHz</i> <i>Option 503: 100kHz–3GHz</i> <i>Option 504: 100kHz–4GHz</i> <i>Option 506: 100kHz–6GHz</i> |
|--------------|--|

| | |
|------------------|-----------------------|
| 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:ADDRess

Supported All

:SYSTEM:COMMunicate:GPIB:ADDRess <number>

:SYSTEM:COMMunicate:GPIB:ADDRess?

This command sets the signal generator's GPIB address.

***RST** N/A

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.

: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.

***RST** N/A

Range N/A

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.

***RST** N/A

Range N/A

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.

***RST** N/A

Range N/A

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.

***RST** N/A

| | |
|------------------|--|
| Range | N/A |
| 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 :SYSTem:COMMunicate:PMETer:ADDRess? | |
| This command sets the address for a power meter that is controlled by the signal generator. | |
| *RST | N/A |
| 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. | |
| *RST | N/A |
| Key Entry | Meter Channel A B |
| Remarks | A single-channel power meter uses channel A and selecting channel B will have no effect. 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.

***RST** N/A

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.

***RST** N/A

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.

***RST** N/A

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.

***RST** N/A

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.

***RST** N/A

Range N/A

Key Entry Reset RS-232

Remarks N/A

: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.

***RST** N/A

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.

***RST** N/A

Range N/A

Key Entry **Installed Board Info**

Remarks N/A

:CCOUNT:ATTENUATOR

Supported All

:DIAGnostic[:CPU]:INFORMATION:CCOUNT:ATTENUATOR?

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

***RST** N/A

Range N/A

Key Entry **Diagnostic Info**

Remarks N/A

:CCOunt:PON

Supported All

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

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

***RST** N/A

Range N/A

Key Entry **Diagnostic Info**

Remarks N/A

:CCOunt:PROtection

Supported All

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

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

***RST** N/A

Range N/A

Key Entry **Diagnostic Info**

Remarks N/A

:DISPlay:OTIME

Supported All

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

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

***RST** N/A

Range N/A

Key Entry **Diagnostic Info**

Remarks N/A

:OPTions

Supported All

:DIAGnostic[:CPU]:INFORMATION:OPTions?

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

***RST** N/A

Range N/A

Key Entry Options Info

Remarks N/A

:OPTions:DETail

Supported All

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

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

***RST** N/A

Range N/A

Key Entry Options Info

Remarks N/A

:OTIME

Supported All

:DIAGnostic[:CPU]:INFORMATION:OTIME?

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

***RST** N/A

Range N/A

Key Entry Diagnostic Info

Remarks N/A

:REVISION

Supported All

: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.

***RST** N/A

Range N/A

Key Entry Diagnostic Info

Remarks N/A

:SDATE

Supported All

:DIAGnostic[:CPU]:INFORMATION:SDATE?

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

***RST** N/A

Range N/A

Key Entry Diagnostic Info

Remarks N/A

Display Subsystem (:DISPlay)

:ANNotation:AMPLitude:UNIT

Supported All

```
:DISPlay:ANNotation:AMPLitude:UNIT DBM|DBUV|DBUVEMF|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 63 for more information.

***RST** DBM

Key Entry N/A

Remarks N/A

:ANNotation:CLOCK:DATE:FORMat

Supported All

```
: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.

***RST** N/A

Key Entry N/A

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

:ANNotation:CLOCK[:STATe]

Supported All

```
: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.

***RST** N/A

Key Entry N/A

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

:BRIGhtness

Supported All

```
:DISPlay:BRIGhtness <value>  
: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).

***RST** N/A

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

```
:DISPlay:CAPTure
```

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

***RST** N/A

Range N/A

| | |
|------------------|--|
| Key Entry | N/A |
| 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: <ol style="list-style-type: none">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 |
| | :DISPlay:CONTrast <value> :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). |
| *RST | N/A |
| 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 |
| | :DISPlay:INVerse ON OFF 1 0 :DISPlay:INVerse? |
| | This command sets the display of the source to inverse video mode. |
| *RST | N/A |
| 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

: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.

***RST** N/A

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

: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).

***RST** N/A

Key Entry N/A

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

*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.

***RST** N/A

Range N/A

Key Entry N/A

Remarks N/A

*ESE

Supported All

*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.

***RST** N/A

Range 0–255

Key Entry N/A

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 *Programming Guide* for more information.

*ESE?

Supported All

*ESE?

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

***RST** N/A

Range N/A

Key Entry N/A

Remarks Refer to chapter 3 of the *Programming Guide* for more information.

*ESR?

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.

*ESR?

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

***RST** N/A

Range N/A

Key Entry N/A

Remarks Refer to chapter 3 of the *Programming Guide* for more information.

*IDN?

Supported All

*IDN?

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

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

***RST** N/A

| | |
|------------------|---|
| Range | N/A |
| Key Entry | Diagnostic Info |
| Remarks | The identification information can be modified. Refer to “:IDN” on page 158 for more information. |

***OPC**

Supported All

*OPC

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

***RST** N/A

Range N/A

Key Entry N/A

Remarks N/A

***OPC?**

Supported All

*OPC?

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

***RST** N/A

Range N/A

Key Entry N/A

Remarks N/A

***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.

***RST** N/A

Key Entry N/A

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

*PSC?

Supported All

*PSC?

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

***RST** N/A

Range N/A

Key Entry N/A

Remarks N/A

*RCL

Supported All

*RCL <reg>, <seq>

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

***RST** N/A

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

Key Entry **RECALL Reg Select Seq:**

Remarks N/A

RST*Supported** All***RST**

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

RST** N/A**Range** N/A**Key Entry** N/A**Remarks** Each command shows the *RST value if the setting is affected.SAV****Supported** All***SAV** <reg>, <seq>

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

RST** N/A**Range** *Registers: 0–99 Sequences: 0–9Key Entry** **Save Reg Save Seq[n] Reg[nn]****Remarks** N/A***SRE****Supported** All***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.

***RST** N/A**Range** 0–255**Key Entry** N/A

Remarks Refer to chapter 3 of the *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

*SRE?

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

***RST** N/A

Range 0–63 or 128–191

Key Entry N/A

Remarks Refer to chapter 3 of the *Programming Guide* for more information.

*STB?

Supported All

*STB?

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

***RST** N/A

Range 0–255

Key Entry N/A

Remarks Refer to chapter 3 of the *Programming Guide* for more information.

*TRG

Supported All

*TRG

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

otherwise, *TRG is ignored.

***RST** N/A

Range N/A

Key Entry N/A

Remarks N/A

*TST?

Supported All

*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.

***RST** N/A

Range N/A

Key Entry **Run Complete Self Test**

Remarks N/A

*WAI

Supported All

*WAI

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

***RST** N/A

Range N/A

Key Entry N/A

Remarks N/A

Memory Subsystem (:MEMory)

:CATalog:BINary

Supported All

: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>"
```

***RST** N/A

Range N/A

Key Entry Binary

Remarks Refer to [“File Name Variables” on page 14](#) for information on the file name syntax.

:CATalog:BIT

Supported All

: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>"
```

***RST** N/A

Memory Subsystem (:MEMory)

| | |
|------------------|--|
| Range | N/A |
| Key Entry | Bit |
| Remarks | Refer to “ File Name Variables ” on page 14 for information on the file name syntax. |

:CATalog:CDMa

Supported All 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>"
```

***RST** N/A

Range N/A

Key Entry **CDMA**

Remarks Refer to “[File Name Variables](#)” on page 14 for information on the file name syntax.

:CATalog:DMOD

Supported All with Option 001 or 002

: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>"
```

| | |
|------------------|--|
| *RST | N/A |
| Range | N/A |
| Key Entry | DMOD |
| Remarks | Refer to “File Name Variables” on page 14 for information on the file name syntax. |

:CATalog:DWCDma

Supported All 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>"
```

| | |
|------------------|--|
| *RST | N/A |
| Range | N/A |
| Key Entry | DWCDMA |
| Remarks | Refer to “File Name Variables” on page 14 for information on the file name syntax. |

:CATalog:FCDMa

Supported All 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:

Memory Subsystem (:MEMory)

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

***RST** N/A

Range N/A

Key Entry FCDMA

Remarks Refer to [“File Name Variables” on page 14](#) for information on the file name syntax.

:CATalog:FIR

Supported All

: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>"

***RST** N/A

Range N/A

Key Entry FIR

Remarks Refer to [“File Name Variables” on page 14](#) for information on the file name syntax.

:CATalog:FSK

Supported All with Option 402

: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>"
```

***RST** N/A

Range N/A

Key Entry FSK

Remarks Refer to [“File Name Variables” on page 14](#) for information on the file name syntax.

:CATalog:IQ

Supported All

```
: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>"
```

***RST** N/A

Range N/A

Key Entry I/Q

Remarks Refer to [“File Name Variables” on page 14](#) for information on the file name syntax.

:CATalog:LIST

Supported All

```
: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

Memory Subsystem (:MEMory)

following form:

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

***RST** N/A

Range N/A

Key Entry List

Remarks Refer to [“File Name Variables” on page 14](#) for information on the file name syntax.

:CATalog:MCDMa

Supported All 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>"
```

***RST** N/A

Range N/A

Key Entry MCDMA

Remarks Refer to [“File Name Variables” on page 14](#) for information on the file name syntax.

:CATalog:MDMod

Supported All with Option 001 or 002

```
: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>"
```

***RST** N/A

Range N/A

Key Entry MDMOD

Remarks Refer to [“File Name Variables” on page 14](#) for information on the file name syntax.

:CATalog:MDWCdma

Supported All 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>"
```

***RST** N/A

Range N/A

Key Entry MDWCdma

Remarks Refer to [“File Name Variables” on page 14](#) for information on the file name syntax.

:CATalog:MFCdma

Supported All 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>"}
```

Memory Subsystem (:MEMory)

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>"

***RST** N/A

Range N/A

Key Entry **MFCDMA**

Remarks Refer to [“File Name Variables” on page 14](#) for information on the file name syntax.

:CATalog:MTONE

Supported All with Option 001 or 002

: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>"

***RST** N/A

Range N/A

Key Entry **MTONE**

Remarks Refer to [“File Name Variables” on page 14](#) for information on the file name syntax.

:CATalog:RCDMa

Supported All 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>"
```

***RST** N/A

Range N/A

Key Entry RCDMA

Remarks Refer to [“File Name Variables” on page 14](#) for information on the file name syntax.

:CATalog:SEQ

Supported All with Option 001 or 002

```
: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>"
```

***RST** N/A

Range N/A

Key Entry SEQ

Remarks Refer to [“File Name Variables” on page 14](#) for information on the file name syntax.

:CATalog:SHAPE

Supported All with Option 402

```
:MEMory:CATalog:SHAPE?
```

This command outputs a list of the burst shape files. The return data will be in the

Memory Subsystem (:MEMory)

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>"
```

***RST** N/A

Range N/A

Key Entry **SHAPE**

Remarks Refer to [“File Name Variables” on page 14](#) for information on the file name syntax.

:CATalog:STATe

Supported All

```
: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>"
```

***RST** N/A

Range N/A

Key Entry **State**

Remarks Refer to [“File Name Variables” on page 14](#) for information on the file name syntax.

:CATalog:UFLT

Supported All

: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>"
```

***RST** N/A

Range N/A

Key Entry **User Flatness**

Remarks Refer to [“File Name Variables” on page 14](#) for information on the file name syntax.

:CATalog:UWCDma

Supported All 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>"
```

***RST** N/A

Range N/A

Key Entry **UWCDMA**

Remarks Refer to [“File Name Variables” on page 14](#) for information on the file name syntax.

:CATalog[:ALL]

Supported All

: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 or 002 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>"
```

***RST** N/A

Range N/A

Key Entry All

Remarks Refer to [Table 3-1 on page 121](#) for a listing of the file types and [“File Name Variables” on page 14](#) for information on the "<file name>" syntax.

:COPY[:NAME]

Supported All

:MEMory:COPY[:NAME] "<file name>","<file name>"

This command makes a duplicate of the requested file.

***RST** N/A

Range N/A

Key Entry Copy File

Remarks Refer to [“File Name Variables” on page 14](#) for information on the file name syntax.

When copying a waveform file from volatile to non-volatile memory, the marker and header files associated with the waveform file will automatically be copied at the same time.

:DATA

Supported All

:MEMory:DATA "<file name>",<datablock>

:MEMory:DATA? "<file name>"

This command creates a user data file and stores it in the signal generator non-volatile binary memory catalog.

<file name> This variable represents the user file stored in the signal generator non-volatile memory.

<datablock> This variable represents the block-formatted data.

Example:

:MEMory:DATA "userfile", #1912S407897

userfile This is the user file as it appears in the signal generator.

1 This variable defines the number of decimal digits to follow.

9 This variable defines how many bytes of data are to follow.

12S407897 This is the ASCII representation of the data that is downloaded to the signal generator.

***RST** N/A

Range N/A

Key Entry N/A

Remarks Refer to [“File Name Variables” on page 14](#) for information on the file name syntax.

:DATA:BIT

Supported All

:MEMory:DATA:BIT "<file name>",<bit_count>,<datablock>

:MEMory:DATA:BIT? "<file name>"

This command creates a bit file and stores it in the signal generator non-volatile memory.

"<file name>" This variable represents the user file name as it will appear in the signal generator memory.

Memory Subsystem (:MEMory)

- <bit_count> This variable represents the number of significant bits in the data block.
- <datablock> This variable represents the block-formatted data.

Example:

```
:MEMory:DATA:BIT "userfile1", 16, #12Qz
```

- "userfile1" This is the name of the user file as it appears in the signal generator.
- 16 This variable defines the actual number of data bits contained in the datablock.
- 1 This variable defines the number of decimal digits to follow.
- 2 This variable defines how many bytes of data are to follow.
- Qz This variable defines the ASCII representation of the 16 bits of data that are downloaded to the signal generator.

***RST** N/A

Range N/A

Key Entry N/A

Remarks Refer to [“File Name Variables” on page 14](#) for information on the file name syntax.

:DATA:FIR

Supported All

```
:MEMory:DATA:FIR "<file name>",osr,coefficient{,coefficient}
```

```
:MEMory:DATA:FIR? "<file name>"
```

This command creates a user-defined finite impulse response (FIR) file and stores it in the signal generator non-volatile memory.

osr The oversample ratio (osr) is the number of filter taps per symbol.

coefficient This variable is the FIR coefficient. The maximum total number of coefficients is 1024.

{,coefficient} This optional variable is used when you enter additional coefficients.

***RST** N/A

Range *osr*: 1–32

| | |
|------------------|--|
| | <i>coefficient</i> : -1000 to 1000 |
| Key Entry | Oversample Ratio |
| Remarks | Refer to “ File Name Variables ” on page 14 for information on the file name syntax. |

:DATA:FSK

Supported All with Option 001 or 002

```
: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 creates a custom FSK file and stores it in the signal generator non-volatile memory.

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. |
| <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. |

The following example creates and stores a four-level FSK file named 4FSK that has four states (frequencies): -2kHz, -1kHz, 2kHz, 1kHz; differential encoding is toggled ON, and there are two differential states 1 and 0.

```
:MEM:DATA:FSK "4FSK",4,-2kHz,-1kHz,2kHz,1kHz,ON,2,1,0
```

***RST** N/A

| | |
|------------------|--|
| Range | <i>num_diff_states</i> : 0–256 <i>num_states</i> : 2–16 <i>f0–f(n)</i> : –20MHZ to 20MHZ <i>diff0–diff(n)</i> : –128 to 127 |
| Key Entry | N/A |
| Remarks | N/A |

:DATA:IQ**Supported** All

```
: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 creates a custom I/Q file and stores it in the signal generator non-volatile memory.

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. |
| <offsetQ> | This variable enables or disables the Q output delay by 1/2 symbol from the I output. |
| <num_states> | This variable identifies the number of symbols. |
| <i0>...<i(n)> | This variable identifies the I value of the first and subsequent I symbols. |
| <q0>...<q(n)> | This variable identifies 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.

The following example creates and stores a two-symbol I/Q file named testBPSK that has the Q offset.

```
:MEM:DATA:IQ "testBPSK",1,2,1,0,0,0
```

| | |
|------------------|---|
| *RST | N/A |
| 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 |
| Key Entry | N/A |
| Remarks | N/A |

:DATA:PRAM[1]|2|3|4

Supported All

```
:MEMory:DATA:PRAM[1]|2|3|4?
```

This query determines whether there is a user-defined pattern in the pattern RAM (PRAM).

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

:DATA:PRAM[1]|2|3|4:BLOCK

Supported All

```
:MEMory:DATA:PRAM[1]|2|3|4:BLOCK <datablock>
```

This command downloads the block-formatted data directly into pattern RAM.

| | |
|--------------|-----|
| *RST | N/A |
| Range | N/A |

Memory Subsystem (:MEMory)

Key Entry N/A

Remarks N/A

:DATA:PRAM[1]|2|3|4:LIST

Supported All

:MEMory:DATA:PRAM[1]|2|3|4:LIST <uint8>[,<uint8>,<...>]

This command downloads the list-formatted data directly into pattern RAM.

<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.

***RST** N/A

Range 0–255

Key Entry N/A

Remarks N/A

:DATA:SHAPE

Supported All with Option 402

: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.

"<file name>" 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. |
| *RST | N/A |
| 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 |
| Key Entry | N/A |
| Remarks | N/A |

:DElete:ALL

Supported All

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 or 002 baseband generator. You cannot recover the files after executing this command.

:MEMory:DElete:ALL

This command clears the file system of all user files.

| | |
|------------------|-------------------------|
| *RST | N/A |
| Range | N/A |
| Key Entry | Delete All Files |
| Remarks | N/A |

:DElete:BINary

Supported All

:MEMory:DElete:BINary

This command deletes all binary files.

| | |
|-------------|-----|
| *RST | N/A |
|-------------|-----|

Memory Subsystem (:MEMory)

| | |
|------------------|--------------------------------|
| Range | N/A |
| Key Entry | Delete All Binary Files |
| Remarks | N/A |

:DElete:BIT

| | |
|--------------------|-----|
| Supported | All |
| :MEMory:DElete:BIT | |

This command deletes all bit files.

| | |
|------------------|-----------------------------|
| *RST | N/A |
| Range | N/A |
| Key Entry | Delete All Bit Files |
| Remarks | N/A |

:DElete:CDMa

| | |
|---------------------|---------------------|
| Supported | All with Option 401 |
| :MEMory:DElete:CDMa | |

This command deletes all arbitrary waveform IS-95 CDMA files.

| | |
|------------------|----------------------------------|
| *RST | N/A |
| Range | N/A |
| Key Entry | Delete All ARB CDMA Files |
| Remarks | N/A |

:DElete:DMOD

| | |
|---------------------|----------------------------|
| Supported | All with Option 001 or 002 |
| :MEMory:DElete:DMOD | |

This command deletes all arbitrary waveform digital modulation files.

| | |
|------------------|----------------------------------|
| *RST | N/A |
| Range | N/A |
| Key Entry | Delete All ARB DMOD Files |

Remarks N/A

:DELeTe:DWCDma

Supported All with Option 400

:MEMory:DELeTe:DWCDma

This command deletes all arbitrary waveform downlink W-CDMA files.

***RST** N/A

Range N/A

Key Entry Delete All ARB DWCDMA Files

Remarks N/A

:DELeTe:FCDMa

Supported All with Option 401

:MEMory:DELeTe:FCDMa

This command deletes all arbitrary waveform forward link W-CDMA files.

***RST** N/A

Range N/A

Key Entry Delete All ARB FCDMA Files

Remarks N/A

:DELeTe:FIR

Supported All

:MEMory:DELeTe:FIR

This command deletes all finite impulse response filter files.

***RST** N/A

Range N/A

Key Entry Delete All FIR Files

Remarks N/A

:DElete:FSK

Supported All with Option 001 or 002

:MEMory:DElete:FSK

This command deletes all FSK files.

***RST** N/A

Range N/A

Key Entry Delete All FSK Files

Remarks N/A

:DElete:IQ

Supported All

:MEMory:DElete:IQ

This command deletes all I/Q files.

***RST** N/A

Range N/A

Key Entry Delete All I/Q Files

Remarks N/A

:DElete:LIST

Supported All

:MEMory:DElete:LIST

This command deletes all List files.

***RST** N/A

Range N/A

Key Entry Delete All List Files

Remarks N/A

:DELeTe:MCDMa

Supported All with Option 401

:MEMory:DELeTe:MCDMa

This command deletes all arbitrary waveform multicarrier IS-95 CDMA files.

***RST** N/A

Range N/A

Key Entry Delete All ARB MCDMA Files

Remarks N/A

:DELeTe:MDMod

Supported All with Option 001 or 002

:MEMory:DELeTe:MDMod

This command deletes all arbitrary waveform multicarrier digital modulation files.

***RST** N/A

Range N/A

Key Entry Delete All ARB MDMOD Files

Remarks N/A

:DELeTe:MDWCdma

Supported All with Option 400

:MEMory:DELeTe:MDWCdma

This command deletes all arbitrary waveform multicarrier downlink W-CDMA files.

***RST** N/A

Range N/A

Key Entry Delete All ARB MDWCdma Files

Remarks N/A

:DElete:MFCdma

Supported All with Option 401

:MEMory:DElete:MFCdma

This command deletes all arbitrary waveform multicarrier forward link cdma2000 files.

***RST** N/A

Range N/A

Key Entry Delete All ARB MFCDMA Files

Remarks N/A

:DElete:MTONE

Supported All with Option 001 or 002

:MEMory:DElete:MTONE

This command deletes all arbitrary waveform multitone files.

***RST** N/A

Range N/A

Key Entry Delete All ARB MTONE Files

Remarks N/A

:DElete:RCDMa

Supported All with Option 401

:MEMory:DElete:RCDMa

This command deletes all arbitrary waveform reverse link cdma2000 files.

***RST** N/A

Range N/A

Key Entry Delete All ARB RCDMA Files

Remarks N/A

:DELeTe:SEQ

Supported All with Option 001 or 002

:MEMory:DELeTe:SEQ

This command deletes all sequence files.

***RST** N/A

Range N/A

Key Entry Delete All Sequence Files

Remarks N/A

:DELeTe:SHAPE

Supported All with Option 402

:MEMory:DELeTe:SHAPE

This command deletes all burst shape files.

***RST** N/A

Range N/A

Key Entry Delete All Shape Files

Remarks N/A

:DELeTe:STATE

Supported All

:MEMory:DELeTe:STATE

This command deletes all state files.

***RST** N/A

Range N/A

Key Entry Delete All State Files

Remarks N/A

:DElete:UFLT

Supported All

:MEMory:DElete:UFLT

This command deletes all user-flatness correction files.

***RST** N/A

Range N/A

Key Entry Delete All UFLT Files

Remarks N/A

:DElete:UWCDma

Supported All with Option 400

:MEMory:DElete:UWCDma

This command deletes all arbitrary waveform uplink W-CDMA files.

***RST** N/A

Range N/A

Key Entry Delete All ARB UWCDMA Files

Remarks N/A

:DElete[:NAME]

Supported All

:MEMory:DElete[:NAME] "<file name>"

This command clears the user file system of "<file name>".

***RST** N/A

Range N/A

Key Entry Delete File

Remarks Refer to [“File Name Variables” on page 14](#) for information on the file name syntax.

When deleting a waveform (WFM1) file from memory, the marker and headers file associated with the waveform file will also be deleted.

:FREE[:ALL]

Supported All

:MEMory:FREE[:ALL]?

This command returns the number of bytes left in the user file system.

***RST** N/A

Range N/A

Key Entry All

Remarks N/A

:LOAD:LIST

Supported All

:MEMory:LOAD:LIST "<file name>"

This command loads a list sweep file.

***RST** N/A

Range N/A

Key Entry Load From Selected File

Remarks N/A

:MOVE

Supported All

:MEMory:MOVE "<src_file>","<dest_file>"

This command renames the requested file in the memory catalog.

***RST** N/A

Range N/A

Key Entry Rename File

Remarks Refer to [“File Name Variables” on page 14](#) for information on the file name syntax.

:STATe:COMMeNt**Supported** All`: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.

RST** N/A**Range** N/A**Key Entry** Add Comment To Seq[n] Reg[nn]**Remarks** N/A**:STORe:LIST*Supported** All`:MEMory:STORe:LIST "<file name>"`

This command stores the current list sweep data to a file.

***RST** N/A**Range** N/A**Key Entry** Store To File**Remarks** N/A

Mass Memory Subsystem (:MMEMory)

:CATalog

Supported All

: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 3-1](#).

Table 3-1

| File System | File Type |
|--|-----------|
| BINARY | BIN |
| BIT | BIT |
| CDMA | CDMA |
| DMOD - ARB digital modulation file | DMOD |
| DWCDMA - ARB downlink W-CDMA file | DWCD |
| FCDMA - ARB forward link cdma2000 file | FCDM |
| FIR - finite impulse response filter file | FIR |
| FSK - frequency shift keying modulation file | FSK |
| I/Q - modulation file | IQ |
| LIST - sweep list file | LIST |
| MCDMA - ARB multicarrier CDMA file | MCDM |
| MDMOD - ARB multicarrier digital modulation file | MDM |
| MDWCDMA - ARB multicarrier downlink W-CDMA file | MDWC |
| MFCDMA - ARB multicarrier forward link cdma2000 file | MFCD |
| MTONE - ARB multitone file | MTON |
| NVMKR - non-volatile arbitrary waveform marker file | NVMKR |

Table 3-1

| File System | File Type |
|--|-----------|
| NVWFM - non-volatile arbitrary waveform file | NVWFM |
| RCDMA - ARB reverse link cdma2000 file | RCDM |
| SEQ - ARB sequence file | SEQ |
| SHAPE - burst shape file | SHAP |
| STATE | STAT |
| USERFLAT - user-flatness file | UFLT |
| UWCDMA - ARB uplink W-CDMA file | UWCD |
| WFM1 - waveform file | WFM1 |

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>"
```

| | |
|------------------|---|
| *RST | N/A |
| 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 15 for information on the use of the "<msus>" variable. |

:COPY

Supported All

:MMEMory:COPY "<file name>","<file name>"

This command makes a duplicate of the requested file.

***RST** N/A

Key Entry Copy File

Remarks Refer to [“File Name Variables” on page 14](#) for information on the file name syntax.

When copying a waveform file from volatile to non-volatile memory, the marker and header files associated with the waveform file will automatically be copied at the same time.

:DATA

Supported All

: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>".

***RST** N/A

Key Entry N/A

Remarks Refer to [“File Name Variables” on page 14](#) for information on the file name syntax.

:DELEte:NVWFm

Supported All with Option 001 or 002

:MMEMory:DELEte:NVWFm

This command clears the user file system of all non-volatile arbitrary waveform files.

***RST** N/A

Key Entry Delete All NVWFM Files

Remarks N/A

:DELete:WFM

Supported All with Option 001 or 002

:MMEMory:DELete:WFM

This command clears the user file system of all arbitrary waveform files.

***RST** N/A

Key Entry Delete All WFM1 Files

Remarks N/A

:DELete:WFM1

Supported All with Option 001 or 002

:MMEMory:DELete:WFM1

This command clears the user file system of all arbitrary waveform files.

***RST** N/A

Key Entry Delete All WFM1 Files

Remarks N/A

: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 "<file system>:". For a list of the file systems refer to [Table 3-1 on page 121](#).

***RST** N/A

Range N/A

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 14](#) and [“MSUS \(Mass Storage Unit Specifier\) Variable” on page 15](#) for information on the use of the file variables.

When deleting a waveform file from memory, the marker and headers file associated with the waveform file will also be deleted.

:HEADer:CLEar

Supported All

`:MMEMory:HEADer:CLEar "<file name>"`

This command deletes the header file for the waveform file named.

***RST** N/A

Key Entry Clear Header

Remarks This command does not require a personality modulation to be on.

:HEADer:DESCRiption

Supported All

`:MMEMory:HEADer:DESCRiption "<file name>","<description>"`

`:MMEMory:HEADer:DESCRiption? "<file name>"`

This command inserts a description for the header file named.

***RST** N/A

Key Entry Edit Description

Remarks The header description is limited to 32 characters.

:LOAD:LIST

Supported All

`:MMEMory:LOAD:LIST "<file name>"`

This command loads a List sweep file.

***RST** N/A

Key Entry Load From Selected File

Remarks N/A

:MOVE

Supported All

`:MMEMory:MOVE "<src_file>", "<dest_file>"`

This command renames the requested file in the memory catalog.

***RST** N/A

Key Entry **Rename File**

Remarks Refer to [“File Name Variables” on page 14](#) 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.

***RST** N/A

Key Entry **Store To File**

Remarks N/A

Output Subsystem (:OUTPut)

:BLANking:AUTO

Supported All

```
:OUTPut:BLANking:AUTO ON|OFF|1|0
```

```
:OUTPut:BLANking:AUTO?
```

This command enables or disables the RF output blanking during frequency changes.

ON This choice causes the RF to always blank.

OFF This choice causes the RF to not blank.

***RST** 1

Key Entry Output Blanking Off On Auto

Remarks N/A

:BLANking:STATe

Supported All

```
:OUTPut:BLANking:STATe ON|OFF|1|0
```

```
:OUTPut:BLANking:STATe?
```

This command enables or disables the RF output blanking state.

***RST** 1

Key Entry N/A

Remarks N/A

: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).

System Commands
Output Subsystem (:OUTPut)

| | |
|------------------|--|
| *RST | 1 |
| Key Entry | Mod On/Off |
| Remarks | Most modulation types can be simultaneously enabled except FM with Φ M. 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 All

```
: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 131.](#)

:INPut:CPOLarity

Supported All

```
: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 131.](#)

:INPut:DPOLarity

Supported All

```
: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 “:IPOPolarity:DATA” on [page 131](#).

:INPut:SPOLarity

Supported All

: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 “:IPOPolarity:SSYNc” on [page 132](#).

:INPut:TPOLarity

Supported All

:ROUTE:HARDware:DGENERator:INPut:TPOLarity POSitive|NEGative

:ROUTE:HARDware:DGENERator:INPut:TPOLarity?

This command configures the polarity of the of the input TTL signal at the PATT TRIG IN connector. POSitive refers to normal logic while NEGative refers to inverted logic.

***RST** POS

Key Entry **Pattern Trig In Polarity Neg Pos**

Remarks This command performs the same function as “:IPOPolarity:TRIGger” on [page 132](#).

:IPOLarity:BGATe**Supported** All

: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 129](#).

:IPOLarity:CLOCK**Supported** All

: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 129](#).

:IPOLarity:DATA**Supported** All

: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 All

```
: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 130](#).

:IPOLarity:TRIGger

Supported All

```
:ROUTE:HARDware:DGENERator:IPOLarity:TRIGger POSitive|NEGative
:ROUTE:HARDware:DGENERator:IPOLarity:TRIGger?
```

This command configures the polarity of the TTL signal at the PATT TRIG IN connector that triggers an event. POSitive refers to normal logic, while NEGative refers to inverted logic.

***RST** POS

Key Entry Pattern Trig In Polarity Neg Pos

Remarks This command performs the same function as “:INPut:TPOLarity” on [page 130](#).

:OPOLarity:CLOCK

Supported All

```
: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 134. |

:OPOLarity:DATA

Supported All

```
: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 135. |

:OPOLarity:EVENT[1]|2|3|4

Supported All

```
:ROUTE:HARDware:DGENERator:OPOLarity:EVENT[1]|2|3|4 POSitive|NEGative
:ROUTE:HARDware:DGENERator:OPOLarity:EVENT[1]|2|3|4?
```

This command configures the polarity of the TTL output signal at the EVENT 1 or EVENT 2 connector. POSitive refers to normal logic, while NEGative refers to inverted logic.

| | |
|------------------|---|
| *RST | POS |
| Key Entry | Event 1 Polarity Neg Pos Event 2 Polarity Neg Pos |
| Remarks | This command performs the same function as “:OUTPut:EPOL[1] 2 3 4” on page 135. |

:OPOLarity:SSYNc**Supported** All

```
: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 136.

:OUTPut:CPOLarity**Supported** All

```
: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 132.

:OUTPut:DCS[:STATe]**Supported** All

```
: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
Remarks N/A

:OUTPut:DPOLarity

Supported All

: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 133](#).

:OUTPut:EPOL[1]|2|3|4

Supported All

:ROUTE:HARDware:DGENERator:OUTPut:EPOL[1]|2|3|4 POSitive|NEGative
:ROUTE:HARDware:DGENERator:OUTPut:EPOL[1]|2|3|4?

This command configures the polarity of the TTL output signal at the EVENT1 or EVENT 2 connector. POSitive refers to normal logic, while NEGative refers to inverted logic.

***RST** POS
Key Entry Event 1 Polarity Neg Pos
Event 2 Polarity Neg Pos
Remarks This command performs the same function as “:OPOLarity:EVENTt[1]|2|3|4” on [page 133](#).

:OUTPut:SPOLarity

Supported All

: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**

Remarks N/A

Status Subsystem (:STATUS)

:OPERation:BASEband:CONDition

Supported All with Option 001 or 002

: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.

***RST** N/A

Range 0–32767

Key Entry N/A

Remarks The data in this register is continuously updated and reflects the current conditions.

Refer to chapter 3 of the *Programming Guide* for more information.

:OPERation:BASEband:ENABLE

Supported All with Option 001 or 002

: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.

***RST** N/A

Range 0–32767

Key Entry N/A

Remarks Refer to chapter 3 of the *Programming Guide* for more information.

:OPERation:BASEband:NTRansition

Supported All with Option 001 or 002

```
: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.

***RST** N/A

Range 0–32767

Key Entry N/A

Remarks Refer to chapter 3 of the *Programming Guide* for more information.

:OPERation:BASEband:PTRansition

Supported All with Option 001 or 002

```
: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.

***RST** N/A

Range 0–32767

Key Entry N/A

Remarks Refer to chapter 3 of the *Programming Guide* for more information.

:OPERation:BASEband[:EVENT]

Supported All with Option 001 or 002

: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.

***RST** N/A

Range 0–32767

Key Entry N/A

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 *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.

***RST** N/A

Range 0–32767

Key Entry N/A

Remarks The data in this register is continuously updated and reflects current conditions.

Refer to chapter 3 of the *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.

***RST** N/A

Range 0–32767

Key Entry N/A

Remarks Refer to chapter 3 of the *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.

***RST** N/A

Range 0–32767

Key Entry N/A

Remarks Refer to chapter 3 of the *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.

| | |
|------------------|--|
| *RST | N/A |
| Range | 0–32767 |
| Key Entry | N/A |
| Remarks | Refer to chapter 3 of the <i>Programming Guide</i> 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.

| | |
|------------------|--|
| *RST | N/A |
| Range | 0–32767 |
| Key Entry | N/A |
| 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 <i>Programming Guide</i> for more information. |

:PRESet

Supported All

:STATUS:PRESet

This command presets all transition filters, enable registers, and error/event queue enable registers.

| | |
|--------------|-----|
| *RST | N/A |
| Range | N/A |

| | |
|------------------|--|
| Key Entry | N/A |
| Remarks | Refer to chapter 3 of the <i>Programming Guide</i> for more information. |

:QUESTIONable:BERT:CONDition

Supported All with Option UN7

`: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.

***RST** N/A

Range 0–32767

Key Entry N/A

Remarks The data in this register is continuously updated and reflects the current conditions.
Refer to chapter 3 of the *Programming Guide* for more information.

:QUESTIONable:BERT:ENABLE

Supported All with Option UN7

`: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.

***RST** N/A

Range 0–32767

Key Entry N/A

Remarks Refer to chapter 3 of the *Programming Guide* for more information.

:QUEStionable:BERT:NTRansition

Supported All with Option UN7

```
: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.

***RST** N/A

Range 0–32767

Key Entry N/A

Remarks The data in this register is continuously updated and reflects the current conditions.

Refer to chapter 3 of the *Programming Guide* for more information.

:QUEStionable:BERT:PTRansition

Supported All with Option UN7

```
: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.

***RST** N/A

Range 0–32767

Key Entry N/A

Remarks Refer to chapter 3 of the *Programming Guide* for more information.

:QUESTIONable:BERT[:EVENT]

Supported All with Option UN7

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.

***RST** N/A

Range 0–32767

Key Entry N/A

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 *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.

***RST** N/A

Range 0–32767

Key Entry N/A

Remarks The data in this register is continuously updated and reflects the current conditions.

Refer to chapter 3 of the *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.

The variable <val> is the sum of the decimal values of the bits that you want to enable.

***RST** N/A

Range 0–32767

Key Entry N/A

Remarks Refer to chapter 3 of the *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.

***RST** N/A

Range 0–32767

Key Entry N/A

Remarks Refer to chapter 3 of the *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.

| | |
|------------------|--|
| *RST | N/A |
| Range | 0–32767 |
| Key Entry | N/A |
| Remarks | Refer to chapter 3 of the <i>Programming Guide</i> 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.

| | |
|------------------|--|
| *RST | N/A |
| Range | 0–32767 |
| Key Entry | N/A |
| 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 <i>Programming Guide</i> 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.

| | |
|-------------|-----|
| *RST | N/A |
|-------------|-----|

| | |
|------------------|--|
| Range | 0–32767 |
| Key Entry | N/A |
| Remarks | The data in this register is continuously updated and reflects current conditions. Refer to chapter 3 of the <i>Programming Guide</i> 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.

| | |
|------------------|--|
| *RST | N/A |
| Range | 0–32767 |
| Key Entry | N/A |
| Remarks | Refer to chapter 3 of the <i>Programming Guide</i> 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.

| | |
|------------------|--|
| *RST | N/A |
| Range | 0–32767 |
| Key Entry | N/A |
| Remarks | The data in this register is continuously updated and reflects current conditions. Refer to chapter 3 of the <i>Programming Guide</i> 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.

***RST** N/A

Range 0–32767

Key Entry N/A

Remarks Refer to chapter 3 of the *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.

***RST** N/A

Range 0–32767

Key Entry N/A

Remarks Refer to chapter 3 of the *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.

***RST** N/A

Range 0–32767

Key Entry N/A

Remarks Refer to chapter 3 of the *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.

***RST** N/A

Range 0–32767

Key Entry N/A

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 *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.

***RST** N/A

| | |
|------------------|--|
| Range | 0–32767 |
| Key Entry | N/A |
| Remarks | The data in this register is continuously updated and reflects current conditions. Refer to chapter 3 of the <i>Programming Guide</i> for more information. |

:QUESTIONable:MODulation:ENABLE

| | |
|---|-----|
| Supported | All |
| <code>:STATUS:QUESTIONable:MODulation:ENABLE <val></code> | |
| <code>:STATUS:QUESTIONable:MODulation:ENABLE?</code> | |

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.

| | |
|------------------|--|
| *RST | N/A |
| Range | 0–32767 |
| Key Entry | N/A |
| Remarks | Refer to chapter 3 of the <i>Programming Guide</i> for more information. |

:QUESTIONable:MODulation:NTRansition

| | |
|--|-----|
| Supported | All |
| <code>:STATUS:QUESTIONable:MODulation:NTRansition <val></code> | |
| <code>:STATUS:QUESTIONable:MODulation:NTRansition?</code> | |

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.

| | |
|------------------|--|
| *RST | N/A |
| Range | 0–32767 |
| Key Entry | N/A |
| Remarks | Refer to chapter 3 of the <i>Programming Guide</i> 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.

***RST** N/A

Range 0–32767

Key Entry N/A

Remarks Refer to chapter 3 of the *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.

***RST** N/A

Range 0–32767

Key Entry N/A

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 *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.

***RST** N/A

Range 0–32767

Key Entry N/A

Remarks Refer to chapter 3 of the *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.

***RST** N/A

Range 0–32767

Key Entry N/A

Remarks The data in this register is continuously updated and reflects current conditions.

Refer to chapter 3 of the *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.

***RST** N/A

Range 0–32767

Key Entry N/A

Remarks Refer to chapter 3 of the *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.

***RST** N/A

Range 0–32767

Key Entry N/A

Remarks Refer to chapter 3 of the *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.

***RST** N/A

Range 0–32767

Key Entry N/A

Remarks Refer to chapter 3 of the *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.

***RST** N/A

Range 0–32767

Key Entry N/A

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 *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.

***RST** N/A

Range 0–32767

Key Entry N/A

Remarks Refer to chapter 3 of the *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.

***RST** N/A

Range 0–32767

Key Entry N/A

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 *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).

| | |
|------------------|-----|
| *RST | N/A |
| Range | N/A |
| Key Entry | N/A |
| Remarks | N/A |

: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>

| | |
|------------------|---------------------------|
| *RST | N/A |
| Range | <month>: 1–12 <day>: 1–31 |
| Key Entry | Time/Date |
| Remarks | N/A |

: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.

***RST** N/A

Range N/A

Key Entry **Error Info** **View Next Error Message**

Remarks The error messages are erased after being queried.

: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

Key Entry N/A

Remarks N/A

: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

System Subsystem (:SYSTEM)

key is executed.

When the help dialog box is displayed, pressing the **Help** hardkey in either mode will turn help off.

***RST** N/A

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.

***RST** N/A

Key Entry N/A

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.

PDC This choice provides compatibility for the 8657D PDC personality which is supported only through a GPIB interface.

| | |
|------------------|--|
| PHS | This choice provides compatibility for the 8657J PHS personality which is supported only through a GPIB interface. |
| 8648 | This choice provides compatibility for the 8648A/B/C/D signal generator which is supported only through a GPIB interface. |
| *RST | N/A |
| 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 162 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.

***RST** N/A

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.

***RST** N/A

Range N/A

Key Entry **Preset**

Remarks The defined conditions are either factory- or user-defined. Refer to [“:PRESet:TYPE” on page 162](#) 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.

***RST** N/A

Range N/A

Key Entry N/A

Remarks N/A

: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. | | | | |
| PDC | This choice provides compatibility for the 8657D PDC personality which is supported only through a GPIB interface. | | | | |
| PHS | This choice provides compatibility for the 8657J PHS personality which is supported only through a GPIB interface. | | | | |
| 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 | | | | |
| Remarks | N/A | | | | |

: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.

***RST** N/A
Range N/A
Key Entry Restore Sys Defaults
Remarks N/A

:PRESet:PN9

Supported All
: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.

System Subsystem (:SYSTEM)

| | |
|------------------|---|
| QUICK | This choice produces a truncated (216 bits) PN9 sequence. |
| *RST | NORM |
| Key Entry | PN9 Mode Preset |
| Remarks | N/A |

:PRESet:TYPE

| | |
|---------------------------------|-----|
| Supported | All |
| :SYSTem:PRESet:TYPE NORMal USER | |
| :SYSTem:PRESet:TYPE? | |

This command toggles the preset state between factory- and user-defined conditions.

| | |
|------------------|--|
| *RST | N/A |
| 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.

| | |
|------------------|--|
| *RST | N/A |
| Range | N/A |
| 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. |

: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.

***RST** N/A

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 163 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.

***RST** N/A

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.

***RST** N/A

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.

***RST** N/A

Range <hour>: 0–23 <minute>: 0–59 <second>: 0–59

Key Entry Time/Date

Remarks N/A

:VERSion

Supported All

:SYSTem:VERSion?

This command returns the SCPI version number with which the signal generator complies.

***RST** N/A

Range N/A

Key Entry N/A

Remarks N/A

Trigger Subsystem

:ABORt

Supported All

:ABORt

This command causes the list or step sweep in progress to abort.

***RST** N/A

Range N/A

Key Entry N/A

Remarks 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.

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 166 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 arms or arms 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

***RST** N/A

Range N/A

Key Entry **Single Sweep**

Remarks This command is ignored if a sweep is in progress.

Refer to “[:INITiate:CONTInuous\[:ALL\]](#)” on page 165 for setting continuous or single sweep.

Refer to “[:TRIGger\[:SEQuence\]:SOURce](#)” on page 167 to select the trigger source.

:TRIGger:OUTPut:POLarity

Supported All

:TRIGger:OUTPut:POLarity POSitive|NEGative

:TRIGger:OUTPut:POLarity?

This command sets the polarity of the TTL signal present at the TRIG OUT connector.

***RST** POS

Key Entry **Trigger Out Polarity Neg Pos**

Remarks 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 TRIG OUT at the beginning of each sweep.

: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

Remarks N/A

: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

Key Entry Bus Free Run Ext Trigger Key

Remarks The wait for the BUS, EXTernal, or KEY trigger can be bypassed by sending the :TRIGger[:SEQuence][:IMMediate] command.

:TRIGger[:SEQuence][:IMMediate]

Supported All

`:TRIGger[:SEQuence][:IMMediate]`

This event command causes an armed list or step sweep to immediately start without the selected trigger occurring.

***RST** N/A

Range N/A

Key Entry N/A

Remarks N/A

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 63](#) 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.

System Commands
Unit Subsystem (:UNIT)

4 Analog Commands

This chapter provides SCPI descriptions for subsystems dedicated to analog commands for the ESG Vector Signal Generator. This chapter contains the following major sections:

- “Amplitude Modulation Subsystem ([:SOURce])” on page 172
- “Frequency Modulation Subsystem ([:SOURce])” on page 180
- “Low Frequency Output Subsystem ([:SOURce]:LFOutput)” on page 187
- “Phase Modulation Subsystem ([:SOURce])” on page 193
- “Pulse Modulation Subsystem ([:SOURce]:PULM)” on page 201

Amplitude Modulation Subsystem ([:SOURce])

:AM[1]|2...

Supported All

[: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

[: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.

***RST** N/A

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 174](#) 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

```
[ :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

The two paths for amplitude modulation can be simultaneously enabled. Refer to [“:AM\[1\]|2...” on page 172](#) for more information.

:AM[1]|2:EXTernal[1]|2:COUPLing

Supported All

```
[ :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.

:AM[1]|2:INTernal[1]:FREQuency

Supported All

```
[ :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**

Remarks N/A

:AM[1]|2:INTernal[1]:FREQuency:ALTErnate

Supported All

```
[ :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 175 for the waveform selection.

:AM[1]|2:INTernal[1]:FREQuency:ALTErnate:AMPLitude:PERCent

Supported All

```
[ :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 175 for the waveform selection.

:AM[1]|2:INTernal[1]:FUNCTion:SHAPE

Supported All

```
[ :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

Remarks N/A

:AM[1]|2:INTernal[1]:SWEep:TIME

Supported All

```
[ :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 |
| Remarks | N/A |

:AM[1] | 2:INTernal[1]:SWEep:TRIGger

Supported All

```
[ :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 175 for the waveform selection. |

:AM[1] | 2:SOURce

Supported All

```
[ :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

```
[ :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 172 for more information.

:AM[1] | 2[:DEPTh]

Supported All

```
[ :SOURce ] :AM[ 1 ] | 2 [ :DEPTh ] <val><unit> | UP | DOWN
[ :SOURce ] :AM[ 1 ] | 2 [ :DEPTh ]?
```

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.

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 178 for

AM depth value coupling.

Refer to “[:AM\[:DEPTh\]:STEP\[:INCRement\]](#)” on page 178 for setting the value associated with UP and DOWN choices.

:AM[1] | 2[:DEPTh]:TRACk

Supported All

```
[ :SOURce ] :AM[ 1 ] | 2 [ :DEPTh ] :TRACk ON | OFF | 1 | 0
```

```
[ :SOURce ] :AM[ 1 ] | 2 [ :DEPTh ] :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

```
[ :SOURce ] :AM [ :DEPTh ] :STEP [ :INCRement ] <val><unit>
```

```
[ :SOURce ] :AM [ :DEPTh ] :STEP [ :INCRement ] ?
```

This command sets the AM depth step increment.

***RST** N/A

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 177 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

[: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

[: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 181 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

```
[: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

```
[: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

Frequency Modulation Subsystem ([:SOURce])

| | |
|------------------|--|
| *RST | +4.00000000E+002 |
| Range | <i>Dual-Sine</i> : 0.1HZ–100KHZ <i>Swept-Sine</i> : 0.1HZ–100KHZ <i>All Other Waveforms</i> : 0.1HZ–20KHZ |
| Key Entry | FM Tone 1 Rate FM Start Rate FM Rate |
| Remarks | N/A |

:FM[1]|2:INTernal[1]:FREQuency:ALternate

Supported All

```
[ :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 | <i>Dual-Sine</i> : 0.5HZ–1MHZ <i>Swept-Sine</i> : 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 183 for the waveform selection. |

:FM[1]|2:INTernal[1]:FREQuency:ALternate:AMPLitude:PERCent

Supported All

```
[ :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

```
[ :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 184 for type source selection.

:FM[1]|2:INTernal[1]:SWEep:TIME

Supported All

```
[ :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 183 for the waveform selection.

:FM[1]|2:INTernal[1]:SWEep:TRIGger

Supported All

```
[ :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.

Frequency Modulation Subsystem ([:SOURce])

| | |
|------------------|---|
| 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 183 for the waveform selection. |

:FM[1]|2:SOURce

| | |
|------------------|---|
| Supported | All |
| | <code>[:SOURce]:FM[1] 2:SOURce INT[1] EXT1 EXT2</code> <code>[:SOURce]:FM[1] 2:SOURce?</code> |
| | 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 |
| | <code>[:SOURce]:FM[1] 2:STATe ON OFF 1 0</code> <code>[:SOURce]:FM[1] 2:STATe?</code> |
| | 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 180 for more information.

:FM[1] | 2[:DEVIation]

Supported All

```
[ :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> | <i>Deviation Option UNJ</i> |
|--------------|-------------------|------------------|-----------------------------|
| | 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 185 for more information and setting the deviation tracking.

:FM[1] | 2[:DEVIation]:TRACk

Supported All

```
[ :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

Frequency Modulation Subsystem ([:SOURce])

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

```
[: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

Remarks N/A

:FUNction[1]:FREQuency

Supported All

```
[: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 190 for selecting the waveform type.

:FUNction[1]:FREQuency:ALternate**Supported** All

[: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 190 for selecting the waveform type.

:FUNction[1]:FREQuency:ALternate:AMPLitude:PERCent**Supported** All

[: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 190 for selecting the waveform type.

:FUNction[1]:PERiod

Supported All

[: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

Remarks N/A

:FUNction[1]:PWIDth

Supported All

[: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 189](#).

:FUNCTION[1]:SHAPE**Supported** All

[: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 191.**:FUNCTION[1]:SWEep:TIME****Supported** All

[: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**Remarks** N/A**:FUNCTION[1]:SWEep:TRIGger*Supported** All

[: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. |
| 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 190 for selecting the waveform type. |

:SOURce

Supported All

```
[ :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 |
| Remarks | N/A |

:STATe

Supported All

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

This command enables or disables the low frequency output.

***RST** 0

Analog Commands

Low Frequency Output Subsystem ([:SOURce]:LFOutput)

Key Entry LF Out Off On

Remarks N/A

Phase Modulation Subsystem ([:SOURce])

:PM[1]|2...

Supported All

[: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]

:PM:INTernal:FREQuency:STEP[:INCRement]

Supported All

[: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.

*RST N/A

Phase Modulation Subsystem ([:SOURce])

| | |
|------------------|--|
| 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 Φ M frequency command. Refer to “:PM[1] 2:INTernal[1]:FREQuency” on page 195 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 |
| | [: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 |
| Remarks | N/A |

:PM[1] | 2:EXTernal[1]:COUPLing

| | |
|------------------|---|
| Supported | All |
| | [: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

```
[ :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 Φ M Tone 1 Rate Φ M Start Rate Φ M Rate

Remarks Refer to “:FUNCTion[1]:SHAPE” on page 190 for selecting the waveform type.

:PM[1] | 2:INTernal[1]:FREQuency:ALTErnate

Supported All

```
[ :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 Φ M Stop Rate Φ M 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 196 for the waveform selection.

:PM[1] | 2:INTernal[1]:FREQuency:ALTErnate:AMPLitude:PERCent**Supported** All

```
[: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** Φ M Tone 2 Ampl Percent of Peak**Remarks** Refer to “:PM[1] | 2:INTernal[1]:FUNCTion:SHAPE” on page 196 for the waveform selection.**:PM[1] | 2:INTernal[1]:FUNCTion:SHAPE*Supported** All

```
[: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

```
[: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

```
[ :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. |
| 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 196 for the waveform selection.

:PM[1]|2:SOURce

Supported All

```
[ :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

```
[ :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 193 for more information.

:PM[1] | 2[:DEViation]

Supported All

```
[ :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 199 for setting the value associated with the UP and DOWN choices. | | |

:PM[1] | 2[:DEVIation]:TRACk

Supported All

```
[: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 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 Φ M Dev Couple Off On

Remarks This command uses exact match tracking, not offset tracking.

:PM[:DEVIation]:STEP[:INCRement]

Supported All

```
[:SOURce]:PM[:DEVIation]:STEP[:INCRement] <val><unit>
[:SOURce]:PM[:DEVIation]:STEP[:INCRement]?
```

This command sets the phase modulation deviation step increment.

***RST** N/A

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 Φ M deviation command. Refer to “:PM[1] | 2[:DEViation]” on [page 198](#) 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

```
[ :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 203 for the pulse modulation type selection.

:INTernal[1]:FUNCTion:SHAPE

Supported All

```
[ :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

Remarks N/A

:INTernal[1]:PERiod

Supported All

```
[ :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.

Pulse Modulation Subsystem ([:SOURce]:PULM)

| | |
|------------------|---|
| *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 202 for setting the value associated with the UP and DOWN choices. |

:INTernal[1]:PERiod:STEP[:INCRement]

| | |
|---|---|
| Supported | All |
| [: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 201 for more information. |

:INTernal[1]:PWIDth

| | |
|--|--------------------|
| Supported | All |
| [: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. | |
| *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 203 for setting the value associated with the UP and DOWN choices.

:INTernal[1]:PWIDth:STEP

Supported All

```
[ :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

Key Entry N/A

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 202 for more information.

:SOURce

Supported All

```
[ :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

Remarks N/A

:STATe

Supported All

[: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 subsystems dedicated to digital component testing for the ESG Vector Signal Generator. This chapter contains the following major sections:

- “All Subsystem–Option 001 or 002 ([:SOURce])” on page 206
- “AWGN ARB Subsystem–Option 403 ([:SOURce]:RADio:AWGN:ARB)” on page 207
- “CDMA ARB Subsystem–Option 401 ([:SOURce]:RADio:CDMA:ARB)” on page 216
- “CDMA2000 ARB Subsystem–Option 401 ([:SOURce]:RADio:CDMA2000:ARB)” on page 240
- “Dmodulation Subsystem–Option 001 or 002 ([:SOURce]:RADio:DMODulation:ARB)” on page 269
- “Dual ARB Subsystem–Option 001 or 002 ([:SOURce]:RADio:ARB)” on page 290
- “Multitone Subsystem–Option 001 or 002 ([:SOURce]:RADio:MTONe:ARB)” on page 308
- “Wideband CDMA ARB Subsystem–Option 400 ([:SOURce]:RADio:WCDMa:TGPP:ARB)” on page 321

All Subsystem–Option 001 or 002 ([:SOURce])

:RADio:ALL:OFF

Supported All with Option 001 or 002

[:SOURce]:RADio:ALL:OFF

This command disables all digital modulation personalities on a particular baseband.

***RST** N/A

Range N/A

Key Entry N/A

Remarks This command does not affect analog modulation.

AWGN ARB Subsystem–Option 403 ([:SOURce]:RADio:AWGN:ARB)

:BWIDth

Supported All 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

Remarks N/A

:IQ:EXtErnal:FiLTer

Supported All 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 208 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

Remarks N/A

:IQ:EXTeRnal:FILTer:AUTO

Supported All 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 207](#) for selecting a filter or through path.

***RST** ON

Key Entry I/Q Output Filter Manual Auto

Remarks N/A

:HEADer:CLEar

Supported All with Option 403

```
[ :SOURce ] :RADio :AWGN :ARB :HEADer :CLEar
```

This command clears the header information from the header file used by this modulation format.

***RST** N/A

Key Entry Clear Header

Remarks The **AWGN Off On** softkey must be set to On for this command to function.

:HEADer:SAVE

Supported All with Option 403

```
[ :SOURce ] :RADio :AWGN :ARB :HEADer :SAVE
```

This command saves the header information to the header file used by this modulation format.

***RST** N/A

| | |
|------------------|--|
| 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 All 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 |
| Remarks | N/A |

:IQ:MODulation:ATTen:AUTO

Supported All 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 209 for setting the attenuation value.

| | |
|------------------|------------------------------------|
| *RST | 1 |
| Key Entry | Modulator Atten Manual Auto |
| Remarks | N/A |

:IQ:MODulation:FILTer

Supported All with Option 403

```
[ :SOURce ] :RADio:AWGN:ARB:IQ:MODulation:FILTer 2.1e6 | 40e6 | THRUgh
[ :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 209 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.

THRUgh This choice bypasses filtering.

***RST** THR

Key Entry 2.100 MHz 40.000 MHz Through

Remarks N/A

:IQ:MODulation:FILTer:AUTO

Supported All 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 293 for selecting a filter or through path.

***RST** 1

Key Entry I/Q Mod Filter Manual Auto

Remarks N/A

:MDEStination:PULSe

Supported All with Option 403

```
[ :SOURce ] :RADio:AWGN:ARB:MDEStination:PULSe NONE | M1 | M2 | M3 | M4  
[ :SOURce ] :RADio:AWGN:ARB:MDEStination:PULSe?
```

This command routes the selected marker to the Pulse/RF Blanking function. The NONE parameter clears the marker for the Pulse/RF Blanking functions.

***RST** NONE

Key Entry None Marker 1 Marker 2 Marker 3 Marker 4

Remarks N/A

:MDEStination:AAMPLitude

Supported All 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

Remarks N/A

:MDEStination:ALCHold

Supported All with Option 403

```
[ :SOURce ] :RADio:AWGN:ARB:MDEStination:ALCHold NONE | M1 | M2 | M3 | M4  
[ :SOURce ] :RADio:AWGN:ARB:MDEStination:ALCHold?
```

This command routes the selected marker to the ALC Hold function. The NONE parameter clears the marker for the ALC Hold function.

***RST** NONE

Key Entry None Marker 1 Marker 2 Marker 3 Marker 4

Remarks N/A

:MPOLarity:MARKer1

Supported All with Option 403

```
[ :SOURce]:RADio:AWGN:ARB:MPOLarity:MARKer1 NEGative|POSitive  
[:SOURce]:RADio:AWGN:ARB:MPOLarity:MARKer1?
```

This command sets the polarity for marker 1.

***RST** POS

Key Entry Marker 1 Polarity Neg Pos

Remarks N/A

:MPOLarity:MARKer2

Supported All with Option 403

```
[ :SOURce]:RADio:AWGN:ARB:MPOLarity:MARKer2 NEGative|POSitive  
[:SOURce]:RADio:AWGN:ARB:MPOLarity:MARKer2?
```

This command sets the polarity for marker 2.

***RST** POS

Key Entry Marker 2 Polarity Neg Pos

Remarks N/A

:MPOLarity:MARKer3

Supported All with Option 403

```
[ :SOURce]:RADio:AWGN:ARB:MPOLarity:MARKer3 NEGative|POSitive  
[:SOURce]:RADio:AWGN:ARB:MPOLarity:MARKer3?
```

This command sets the polarity for marker 3.

***RST** POS

Key Entry Marker 3 Polarity Neg Pos

Remarks N/A

:MPOLarity:MARKer4

Supported All with Option 403

```
[:SOURCE]:RADio:AWGN:ARB:MPOLarity:MARKer4 NEGative|POSitive  
[:SOURCE]:RADio:AWGN:ARB:MPOLarity:MARKer4?
```

This command sets the polarity for marker 4.

***RST** POS

Key Entry Marker 4 Polarity Neg Pos

Remarks N/A

:LENGth

Supported All 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 All 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 278.

:REFEreNce[:SOURce]

Supported All 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 All 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 215 to activate the modulation format.

:SEED

Supported All 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

Remarks N/A

[:STATE]

Supported All 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

Remarks N/A

CDMA ARB Subsystem–Option 401 ([:SOURce]:RADio:CDMA:ARB)

:CLIPping:I

Supported All 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 ||| To

Remarks N/A

:CLIPping:POSition

Supported All 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

Remarks N/A

:CLIPping:Q

Supported All 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**

Remarks N/A

:CLIPping:TYPE

Supported All 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** ||+jQ| ||,|Q|

Remarks N/A.

:CLIPping[:IJQ]

Supported All 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
Remarks N/A

:CRATe

Supported All 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**
Remarks N/A

:IQ:EXTeRnal:FILTer

Supported All 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 219 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**
Remarks N/A

:IQ:EXTeRnal:FiLTeR:AUTO

Supported All 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 218](#) for selecting a filter or through path.

***RST** 1

Key Entry I/Q Output Filter Manual Auto

Remarks N/A

:FiLTeR

Supported All 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.

CDMA ARB Subsystem—Option 401 ([:SOURce]:RADio:CDMA:ARB)

| | |
|------------------|---|
| 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 filter file that you have stored into memory. |
| *RST | GUAS |
| 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 |
| Remarks | Refer to “File Name Variables” on page 14 for information on the file name syntax. |

:FILTer:ALPHA

Supported All 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 219](#).

:FILTER:BBT

Supported All 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 219.

:FILTER:CHANnel

Supported All 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 219.

:HEADER:CLEAR

Supported All with Option 401

```
[ :SOURCE ] : RADIO : CDMA : ARB : HEADER : CLEAR
```

This command clears the header information from the header file used by this modulation format.

| | |
|------------------|--|
| *RST | N/A |
| Key Entry | Clear Header |
| Remarks | The CDMA Off On softkey must be set to On for this command to function. |

:HEADer:SAVE

Supported All with Option 401

[:SOURce] :RADio :CDMA :ARB :HEADer :SAVE

This command saves the header information to the header file used by this modulation format.

| | |
|------------------|--|
| *RST | N/A |
| Key Entry | Save Setup To Header |
| Remarks | The CDMA Off On softkey must be set to On for this command to function. |

:IQMap

Supported All 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 All 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 |
| Remarks | N/A |

:IQ:MODulation:ATTen:AUTO

Supported All 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 222 for setting the attenuation value.

| | |
|------------------|------------------------------------|
| *RST | 1 |
| Key Entry | Modulator Atten Manual Auto |
| Remarks | N/A |

:IQ:MODulation:FILTer

Supported All 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 223 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 |
| Remarks | N/A |

:IQ:MODulation:FILTer:AUTO

Supported All 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 293](#) for selecting a filter or through path.

| | |
|------------------|----------------------------|
| *RST | 1 |
| Key Entry | I/Q Mod Filter Manual Auto |
| Remarks | N/A |

:MDEStination:PULSe

Supported All with Option 401

```
[ :SOURce ]:RADio:CDMA:ARB:MDEStination:PULSe NONE|M1|M2|M3|M4
[:SOURce]:RADio:CDMA:ARB:MDEStination:PULSe?
```

This command routes the selected marker to the Pulse/RF Blanking function. The NONE parameter clears the marker for the Pulse/RF Blanking functions.

| | |
|------------------|--|
| *RST | NONE |
| Key Entry | None Marker 1 Marker 2 Marker 3 Marker 4 |
| Remarks | N/A |

:MDESTINATION:AAMPLITUDE

Supported All 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

Remarks N/A

:MDESTINATION:ALCHOLD

Supported All with Option 401

```
[:SOURCE]:RADIO:CDMA:ARB:MDESTINATION:ALCHOLD NONE | M1 | M2 | M3 | M4
[:SOURCE]:RADIO:CDMA:ARB:MDESTINATION:ALCHOLD?
```

This command routes the selected marker to the ALC Hold function. The NONE parameter clears the marker for the ALC Hold function.

***RST** NONE

Key Entry None Marker 1 Marker 2 Marker 3 Marker 4

Remarks N/A

:MPOLARITY:MARKER1

Supported All with Option 401

```
[:SOURCE]:RADIO:CDMA:ARB:MPOLARITY:MARKER1 NEGATIVE | POSITIVE
[:SOURCE]:RADIO:CDMA:ARB:MPOLARITY:MARKER1?
```

This command sets the polarity for marker 1.

***RST** POS

Key Entry Marker 1 Polarity Neg Pos

Remarks N/A

:MPOLarity:MARKer2

Supported All with Option 401

```
[ :SOURce ]:RADio:CDMA:ARB:MPOLarity:MARKer2 NEGative|POSitive  
[ :SOURce ]:RADio:CDMA:ARB:MPOLarity:MARKer2?
```

This command sets the polarity for marker 2.

***RST** POS

Key Entry Marker 2 Polarity Neg Pos

Remarks N/A

:MPOLarity:MARKer3

Supported All with Option 401

```
[ :SOURce ]:RADio:CDMA:ARB:MPOLarity:MARKer3 NEGative|POSitive  
[ :SOURce ]:RADio:CDMA:ARB:MPOLarity:MARKer3?
```

This command sets the polarity for marker 3.

***RST** POS

Key Entry Marker 3 Polarity Neg Pos

Remarks N/A

:MPOLarity:MARKer4

Supported All with Option 401

```
[ :SOURce ]:RADio:CDMA:ARB:MPOLarity:MARKer4 NEGative|POSitive  
[ :SOURce ]:RADio:CDMA:ARB:MPOLarity:MARKer4?
```

This command sets the polarity for marker 4.

***RST** POS

Key Entry Marker 4 Polarity Neg Pos

Remarks N/A

:OSAMple

Supported All 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 All 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 228.

:REFerence[:SOURce]

Supported All 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 227 to enter the external reference frequency.

:RETRigger

Supported All 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

Remarks N/A

:SCLock:RATE

Supported All 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 238 to activate the modulation format.

:SETup

Supported All 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.

- | | |
|----------|--|
| 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 activates Multicarrier mode (3 carrier setup) and deactivates any other mode that was previously selected. To change multicarrier setup, refer to “:SETup:MCArrier” on page 231. |

CDMA ARB Subsystem—Option 401 ([:SOURce]:RADio:CDMA:ARB)

| | |
|------------------|---|
| *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 14 for information on the file name syntax. |

:SETup:CHANnel

Supported All 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.

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 | <i>Channel #</i> | <i>Channel Type</i> | <i>Walsh Code</i> | <i>Power</i> | <i>PN Offset</i> | <i>Data</i> |
|-------------|------------------|---------------------|-------------------|------------------|------------------|-------------|
| | 1 | PIL | +0 | -7.00000000E+000 | +0 | +0 |

| *RST | <i>Channel #</i> | <i>Channel Type</i> | <i>Walsh Code</i> | <i>Power</i> | <i>PN Offset</i> | <i>Data</i> |
|------------------|--|---------------------|---------------------|------------------|------------------|-----------------------|
| | 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 | <i><power_value></i> : -40 to 0 <i><walsh_value></i> : 0–63 <i><pn_offset></i> : 0–511 | | | | | |
| Key Entry | IS-97 Levels | Equal Powers | Scale to 0dB | Sync | Pilot | Paging Traffic |
| Remarks | N/A | | | | | |

:SETup:MCARrier

Supported All 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 type of multicarrier CDMA setup required for your application.

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.

***RST** CAR3

Key Entry **3 Carriers** **4 Carriers** **Custom CDMA Multicarrier**

Remarks Refer to [“File Name Variables” on page 14](#) for information on the file name syntax.

:SETup:MCARrier:STORe**Supported** All 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.

RST** N/A**Range** N/A**Key Entry** **Store Custom Multicarrier*Remarks** Refer to “[File Name Variables](#)” on page 14 for information on the file name syntax.**:SETup:MCARrier:TABLE****Supported** All 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. |

| | |
|------------------|--|
| " " | A null string, entered for any non-custom carrier. |
| *RST | <i>carrier type</i> : FWD9 < <i>freq_offset</i> >: +1.25000000E+006 < <i>power</i> >: +0.00000000E+000 |
| Range | < <i>freq_offset</i> >: -7.5E6 to 7.5E6 < <i>power</i> >: -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 14 for information on the file name syntax. To store a multicarrier setup refer to “ :SETup:MCARrier:STORe ” on page 232 The file name specified must be a single carrier CDMA file. |

:SETup:STORe

Supported All 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

***RST** N/A

Range N/A

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 14 for information on the file

name syntax.

:TRIGger:TYPE

Supported All with Option 401

```
[ :SOURce ] :RADio:CDMA:ARB:TRIGger:TYPE CONTInuous |SINGLE |GATE
[ :SOURce ] :RADio:CDMA:ARB:TRIGger:TYPE?
```

This command sets the trigger type.

- CONTInuous** The waveform repeats continuously; the waveform restarts every time the previous playback is completed. To customize continuous triggering, refer to “:TRIGger:TYPE:CONTInuous[:TYPE]” on page 234.
- SINGLE** The waveform segment or sequence plays once for every trigger received.
- GATE** An external trigger signal interrupts the playback while the gating signal is in the inactive state. Playback resumes when the external control signal returns to the active state. The active state can be set high or low.

***RST** CONT

Key Entry Continuous Single Gated

Remarks To change the polarity of the gated trigger, refer to “:TRIGger:TYPE:GATE:ACTive” on page 235.

:TRIGger:TYPE:CONTInuous[:TYPE]

Supported All with Option 401

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

This command customizes the continuous trigger selection.

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

***RST** FREE

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

Remarks To select CONTinuous as the trigger type, refer to “:TRIGger:TYPE” on page 234.

:TRIGger:TYPE:GATE:ACTive

Supported All with Option 401

[:SOURCE]:RADio:CDMA:ARB:TRIGger:TYPE:GATE:ACTive LOW|HIGH
 [:SOURCE]:RADio:CDMA:ARB:TRIGger:TYPE:GATE:ACTive?

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

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

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

***RST** HIGH

Key Entry **Gate Active Low High**

Remarks To select GATE as the ARB trigger type, refer to “:TRIGger:TYPE” on page 234.

:TRIGger[:SOURCE]

Supported All with Option 401

[:SOURCE]:RADio:CDMA:ARB:TRIGger[:SOURCE] KEY|EXT|BUS
 [:SOURCE]:RADio:CDMA:ARB:TRIGger[:SOURCE]?

This command sets the trigger source.

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

EXT This choice enables triggering using an externally applied signal at the PATT TRIG IN rear panel connector or the PATT TRIG IN 2 pin on the rear panel AUX I/O connector. To select the appropriate connector, refer to “:TRIGger[:SOURCE]:EXTernal[:SOURCE]” on page 236.

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

| | |
|------------------|-------------------------|
| *RST | KEY |
| Key Entry | Trigger Key Ext Bus |
| Remarks | N/A |

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

Supported All with Option 401

```
[ :SOURce ] : RADio : CDMA : ARB : TRIGger [ :SOURce ] : EXTernal [ :SOURce ] EPT1 | EPT2 |
EPTRIGGER1 | EPTRIGGER2
[ :SOURce ] : RADio : CDMA : ARB : TRIGger [ :SOURce ] : EXTernal [ :SOURce ] ?
```

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

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

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

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

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

***RST** EPT1

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

Remarks This command is effective only if an external trigger is selected as the trigger source. Refer to “[:TRIGger\[:SOURce\]](#)” on page 235.

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

:TRIGger[:SOURce]:EXTernal:DELay

Supported All with Option 401

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

This command specifies the time (seconds) for the external trigger delay.

The variable <val> is expressed as seconds (μ sec–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 235.

:TRIGger[:SOURce]:EXTernal:DELay:STATE

Supported All 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.

***RST** 0

Key Entry Ext Delay Off On

Remarks This command is effective only if an external trigger is selected as the trigger source. Refer to “:TRIGger[:SOURce]” on page 235.

:TRIGger[:SOURce]:EXTernal:SLOPe

Supported All 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 of the external trigger.

***RST** NEG

| | |
|------------------|--|
| Key Entry | Ext Polarity Neg Pos |
| Remarks | This command is effective only if an external trigger is selected as the trigger source. Refer to “:TRIGger[:SOURce]” on page 235. |

:WLENgth

Supported All 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 All 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 All 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 ||| To

Remarks N/A

:CLIPping:POSition

Supported All 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

Remarks N/A

:CLIPping:Q

Supported All 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

Remarks N/A

:CLIPping:TYPE

Supported All 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 ||+jQ| ||,|Q|

Remarks N/A

:CLIPping[:IJQ]

Supported All 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
Remarks N/A

:IQ:EXTeRnal:FiLTeR

Supported All 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 242 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
Remarks N/A

:IQ:EXTeRnal:FiLTeR:AUTO

Supported All 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 242 for selecting a filter or through path.

***RST** 1
Key Entry I/Q Output Filter Manual Auto

Remarks N/A

:FILTER

Supported All 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 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 filter file that you have stored into memory. |

***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 APCO 25 C4FM WCDMA

UN3/4 GSM Gaussian IS-2000 SR3 DS User FIR

Remarks Refer to “File Name Variables” on page 14 for information on the file name syntax.

:FILTer:ALPHa

Supported All 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 243.

:FILTer:BBT

Supported All 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 243.

:FILTER:CHANnel

Supported All 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 243.

:HEADer:CLEar

Supported All with Option 401

```
[ :SOURCE ] : RADIO : CDMA2000 : ARB : HEADer : CLEar
```

This command clears the header information from the header file used by this modulation format.

***RST** N/A

Key Entry Clear Header

Remarks The **CDMA2000 Off On** softkey must be set to On for this command to function.

:HEADer:SAVE

Supported All with Option 401

```
[ :SOURCE ] : RADIO : CDMA2000 : ARB : HEADer : SAVE
```

This command saves the header information to the header file used by this modulation format.

***RST** N/A

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 All 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
Remarks N/A

:IQ:MODulation:ATTen:AUTO

Supported All with Option 401

```
[:SOURce]:RADio:CDMA2000:ARB:IQ:MODulation: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 246 for setting the attenuation value.

***RST** 1
Key Entry Modulator Atten Manual Auto
Remarks N/A

:IQ:MODulation:FILTer

Supported All 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 247 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 |
| Remarks | N/A |

:IQ:MODulation:FILTer:AUTO

Supported All 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 293 for selecting a filter or through path. |
| *RST | 1 |
| Key Entry | I/Q Mod Filter Manual Auto |
| Remarks | N/A |

:IQMap

Supported All 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 All 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**

Remarks N/A

:LINK:FORWard:SETup

Supported All 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?
```

This command selects a previously defined channel configuration for the CDMA2000 forward link.

- 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 enables the multicarrier mode. To set the CDMA2000 multicarrier type, refer to “:LINK:FORWard:SETup:MCARrier” on [page 249](#).

| | |
|------------------|---|
| *RST | S19C |
| Key Entry | 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 14 for information on the file name syntax. |

:LINK:FORWARD:SETup:MCARrier

Supported All 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 | This choice specifies the following standard 2-carrier setup: <i>Carrier 1:</i> spread rate 3, direct spread, 9 channel; -2.5 MHz frequency offset; 0 dB power <i>Carrier 2:</i> spread rate 3, direct spread, 9 channel; 2.5 MHz frequency offset; 0 dB power |
| CAR3 | This choice specifies the following standard 3-carrier setup: <i>Carrier 1:</i> spread rate 1, 9 channel; -1.25 MHz frequency offset; 0 dB power <i>Carrier 2:</i> spread rate 1, 9 channel; 0 kHz frequency offset; 0 dB power <i>Carrier 3:</i> spread rate 1, 9 channel; 1.25 MHz frequency offset; 0 dB power |
| CAR4 | This choice specifies the following standard 2-carrier setup: <i>Carrier 1:</i> spread rate 1, 9 channel; -1.875 MHz frequency offset; 0 dB power <i>Carrier 2:</i> spread rate 1, 9 channel; -625 kHz frequency offset; 0 dB power <i>Carrier 3:</i> spread rate 1, 9 channel; 625 kHz frequency offset; 0 dB power <i>Carrier 4:</i> 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 14 for information on the file name syntax. |

:LINK:FORWARD:SETup:MCARrier:STORE

Supported All 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.

| | |
|------------------|---|
| *RST | N/A |
| Range | N/A |
| 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 14 for information on the file name syntax. |

:LINK:FORWARD:SETup:MCARrier:TABLE

Supported All 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.

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 | <i>channel type:</i> S3D9CHAN <i><freq_offset>:</i> -2.50000000E+006 <i><power>:</i> +0.00000000E+000 |
| Range | <i><freq_offset>:</i> -15E6 to 15E6 <i><power>:</i> -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 14 for information on the file name syntax. |

:LINK:FORWARD:SETup:MCARrier:TABLE:NCARriers

Supported All 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

Range N/A

Key Entry N/A

Remarks N/A

:LINK:FORWARD:SETup:STORE

Supported All 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

***RST** N/A

Range N/A

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 14](#) for information on the file name syntax.

:LINK:FORWARD:SETup:TABLE:APPLy

Supported All 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.

***RST** N/A

Range N/A

Key Entry Apply Channel Setup

Remarks N/A

:LINK:FORWARD:SETup:TABLE:CHANnel

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

:LINK:FORWARD:SETup:TABLE:PADJust

| | |
|------------------|--|
| Supported | All 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. |
| *RST | N/A |
| Key Entry | Equal Powers Scale To 0dB |
| Remarks | N/A |

:LINK:REVerse:RCONfig

Supported All 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 All 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 14 for information on the file name syntax.

:LINK:REVerse:SETup:STORE

Supported All 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

***RST** N/A

Range N/A

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 14](#) for information on the file name syntax.

:LINK:REVERSE:SETup:TABLE:APPLy

Supported All 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.

***RST** N/A

Range N/A

Key Entry **Apply Channel Setup**

Remarks N/A

:LINK:REVERSE:SETup:TABLE:CHANnel

Supported All 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.

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** *channel type:* PIL *<data_rate>:* +3.84000000E+004
<power>: -7.00000000E+000 *<pn_offset>:* +0 *<data_val>:* 0

Range *<data_rate>:* 1500–9600 *<power>:* –40 to 0

| | |
|------------------|--|
| | <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:REVerse:SETup:TABLE:NCHannels

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

:LINK:REVerse:SETup:TABLE:PADJust

| | |
|------------------|--|
| Supported | All 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. |
| *RST | N/A |
| Key Entry | Equal Powers Scale To 0dB |
| Remarks | N/A |

:MDEStination:PULSe

Supported All with Option 401

```
[:SOURce]:RADio:CDMA2000:ARB:MDEStination:PULSe NONE|M1|M2|M3|M4
[:SOURce]:RADio:CDMA2000:ARB:MDEStination:PULSe?
```

This command routes the selected marker to the Pulse/RF Blanking function. The NONE parameter clears the marker for the Pulse/RF Blanking function.

***RST** NONE

Key Entry **None** **Marker 1** **Marker 2** **Marker 3** **Marker 4**

Remarks N/A

:MDEStination:AAMPlitude

Supported All 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**

Remarks N/A

:MDEStination:ALCHold

Supported All with Option 401

```
[:SOURce]:RADio:CDMA2000:ARB:MDEStination:ALCHold NONE|M1|M2|M3|M4
[:SOURce]:RADio:CDMA2000:ARB:MDEStination:ALCHold?
```

This command routes the selected marker to the ALC Hold function. The NONE parameter clears the marker for the ALC Hold function.

***RST** NONE

Key Entry

Remarks N/A

:MPOLarity:MARKer1

Supported All with Option 401

```
[ :SOURce]:RADio:CDMA2000:ARB:MPOLarity:MARKer1 NEGative|POSitive  
[:SOURce]:RADio:CDMA2000:ARB:MPOLarity:MARKer1?
```

This command sets the polarity for marker 1.

***RST** POS

Key Entry Marker 1 Polarity Neg Pos

Remarks N/A

:MPOLarity:MARKer2

Supported All with Option 401

```
[ :SOURce]:RADio:CDMA2000:ARB:MPOLarity:MARKer2 NEGative|POSitive  
[:SOURce]:RADio:CDMA2000:ARB:MPOLarity:MARKer2?
```

This command sets the polarity for marker 2.

***RST** POS

Key Entry Marker 2 Polarity Neg Pos

Remarks N/A

:MPOLarity:MARKer3

Supported All with Option 401

```
[ :SOURce]:RADio:CDMA2000:ARB:MPOLarity:MARKer3 NEGative|POSitive  
[:SOURce]:RADio:CDMA2000:ARB:MPOLarity:MARKer3?
```

This command sets the polarity for marker 3.

***RST** POS

Key Entry Marker 3 Polarity Neg Pos

Remarks N/A

:MPOLarity:MARKer4

Supported All with Option 401

```
[ :SOURCE]:RADio:CDMA2000:ARB:MPOLarity:MARKer4 NEGative|POSitive  
[:SOURCE]:RADio:CDMA2000:ARB:MPOLarity:MARKer4?
```

This command sets the polarity for marker 4.

***RST** POS

Key Entry Marker 4 Polarity Neg Pos

Remarks N/A

:REFerence:EXTernal:FREQuency

Supported All 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 261.

:REFerence[:SOURCE]

Supported All 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 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 261 to enter the external reference frequency.

:RETRigger

Supported All 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

Remarks N/A

:REVISION

Supported All with Option 401

```
[ :SOURce]:RADio:CDMA2000:ARB:REVISION?
```

This command queries the revision number of the current CDMA2000 format.

***RST** 8

Range N/A

Key Entry N/A

Remarks N/A

:SCLock:RATE

Supported All 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 268 to activate the modulation format.

:SPReading:RATE

Supported All 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 All 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 All 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 All with Option 401

```
[ :SOURce ]:RADio:CDMA2000:ARB:TRIGger:TYPE CONTInuous |SINGLe |GATE
[ :SOURce ]:RADio:CDMA2000:ARB:TRIGger:TYPE?
```

Execute this command to set the trigger type.

CONTInuous The waveform repeats continuously; the waveform restarts every time the previous playback is completed. To customize continuous triggering, refer to “:TRIGger:TYPE:CONTInuous[:TYPE]” on page 265.

SINGLe The waveform segment or sequence plays once for every trigger received.

GATE An external trigger signal interrupts the playback while the gating

signal is in the inactive state. Playback resumes when the external control signal returns to the active state. The active state can be set high or low.

| | |
|------------------|--|
| *RST | CONT |
| Key Entry | Continuous Single Gated |
| Remarks | To change the polarity of the gated trigger, refer to “:TRIGger:TYPE:GATE:ACTive” on page 265. |

:TRIGger:TYPE:CONTInuous[:TYPE]

Supported All with Option 401

```
[ :SOURCE]:RADio:CDMA2000:ARB:TRIGger:TYPE:CONTInuous[:TYPE] FREE |
TRIGger|RESet
[:SOURCE]:RADio:CDMA2000:ARB:TRIGger:TYPE:CONTInuous[:TYPE]?
```

This command customizes the continuous trigger selection.

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

| | |
|------------------|---|
| *RST | FREE |
| Key Entry | Free Run Trigger & Run Reset & Run |
| Remarks | To select CONTInuous as the trigger type, refer to “:TRIGger:TYPE” on page 264. |

:TRIGger:TYPE:GATE:ACTive

Supported All with Option 401

```
[ :SOURCE]:RADio:CDMA2000:ARB:TRIGger:TYPE:GATE:ACTive LOW|HIGH
[:SOURCE]:RADio:CDMA2000:ARB:TRIGger:TYPE:GATE:ACTive?
```

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

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

| | |
|------------------|--|
| HIGH | The sequence runs while the selected external control gating signal is high and restarts when the gate returns to the low level. |
| *RST | HIGH |
| Key Entry | Gate Active Low High |
| Remarks | Refer to “:TRIGger:TYPE” on page 264 to select GATE as the trigger. |

:TRIGger[:SOURce]

Supported All with Option 401

```
[ :SOURce]:RADio:CDMA2000:ARB:TRIGger[:SOURce] KEY|EXT|BUS
[:SOURce]:RADio:CDMA2000:ARB:TRIGger[:SOURce]?
```

This command changes the characteristics of the trigger source.

| | |
|------------------|--|
| KEY | This choice enables triggering by pressing the front panel Trigger hardkey. |
| EXT | This choice enables triggering using an externally applied signal at the PATT TRIG IN rear panel connector or the PATT TRIG IN 2 pin on the rear panel AUX I/O connector. To select the appropriate connector, refer to “:TRIGger[:SOURce]:EXTernal[:SOURce]” on page 266. |
| BUS | This choice enables GPIB triggering using the *TRG or GET command or LAN and RS-232 triggering using the *TRG command. |
| *RST | EXT |
| Key Entry | Trigger Key Ext Bus |
| Remarks | N/A |

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

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

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

| | |
|-------------------|---|
| EPT2 | This choice is synonymous with EPTRIGGER2 and selects the PATT TRIG IN 2 pin on the rear panel AUX I/O connector for the external signal connection. |
| EPTRIGGER1 | This choice is synonymous with EPT1 and selects the PATT TRIG IN rear panel connector for the external signal connection. |
| EPTRIGGER2 | This choice is synonymous with EPT2 and selects the PATT TRIG IN 2 pin on the rear panel AUX I/O connector for the external signal connection. |
| *RST | EPT1 |
| Key Entry | Patt Trig In 1 Patt Trig In 2 |
| Remarks | This command is effective only if an external trigger is selected as the trigger source. Refer to “:TRIGger[:SOURCE]” on page 266. For more information about the rear panel AUX I/O connector pin configuration, refer to the <i>User’s Guide</i> . |

:TRIGger[:SOURCE]:EXTernal:DELay

Supported All with Option 401

```
[ :SOURCE]:RADio:CDMA2000:ARB:TRIGger[:SOURCE]:EXTernal:DELay <val>
[:SOURCE]:RADio:CDMA2000:ARB:TRIGger[:SOURCE]:EXTernal:DELay?
```

This command specifies the time (seconds) for the external trigger delay.

The variable <val> is expressed as seconds (μ sec–Msec).

***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 266.

:TRIGger[:SOURCE]:EXTernal:DELay:STATE

Supported All 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.

***RST** 0

Key Entry Ext Delay Off On

Remarks This command is effective only if an external trigger is selected as the trigger source. Refer to “:TRIGger[:SOURce]” on page 266.

:TRIGger[:SOURce]:EXTernal:SLOPe

Supported All 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 of the external trigger.

***RST** NEG

Key Entry Ext Polarity Neg Pos

Remarks This command is effective only if an external trigger is selected as the trigger source. Refer to “:TRIGger[:SOURce]” on page 266.

[:STATe]

Supported All 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

Remarks N/A

Dmodulation Subsystem–Option 001 or 002 ([:SOURce]:RADio:DMODulation:ARB)

:IQ:EXTErnal:FILTer

Supported All with Option 001 or 002

```
[ :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 269 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

Remarks N/A

:IQ:EXTErnal:FILTer:AUTO

Supported All with Option 001 or 002

```
[ :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 269 for selecting a filter or through path.

***RST** 1

Key Entry I/Q Output Filter Manual Auto

Remarks N/A

:FILTer

Supported All with Option 001 or 002

```
[: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 filter file that you have stored into memory.

***RST** RNYQuist

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

Remarks Refer to “File Name Variables” on page 14 for information on the file

name syntax.

:FILTER:ALPHA

Supported All with Option 001 or 002

```
[ :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 270.

:FILTER:BBT

Supported All with Option 001 or 002

```
[ :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 270.

:FILTer:CHANnel

Supported All with Option 001 or 002

```
[ :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 270.

:HEADer:CLEar

Supported All with Option 001 or 002

```
[ :SOURCE ]:RADio:DMODulation:ARB:HEADer:CLEar
```

This command clears the header information from the header file used by this modulation format.

***RST** N/A

Key Entry **Clear Header**

Remarks The **Digital Modulation Off On** softkey must be set to On for this command to function.

:HEADer:SAVE

Supported All with Option 001 or 002

```
[ :SOURCE ]:RADio:DMODulation:ARB:HEADer:SAVE
```

This command saves the header information to the header file used by this modulation format.

***RST** N/A

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** All with Option 001 or 002

[: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**Remarks** N/A**:IQ:MODulation:ATTen:AUTO*Supported** All with Option 001 or 002

[: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 “[:IQ:MODulation:ATTen](#)” on page 273 for setting the attenuation value.

RST** 1**Key Entry** Modulator Atten Manual Auto**Remarks** N/A**:IQ:MODulation:FILTer*Supported** All with Option 001 or 002

[: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

Dmodulation Subsystem—Option 001 or 002 (:SOURce):RADio:DMODulation:ARB)

onto the RF carrier. Selecting a filter using this command will automatically set “:IQ:MODulation:FILTer:AUTO” on page 274 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 |
| Remarks | N/A |

:IQ:MODulation:FILTer:AUTO

Supported All with Option 001 or 002

```
[ :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 293 for selecting a filter or through path. |
| *RST | 1 |
| Key Entry | I/Q Mod Filter Manual Auto |
| Remarks | N/A |

:MDESTination:PULSe

Supported All with Option 001 or 002

```
[ :SOURce]:RADio:DMODulation:ARB:MDESTination:PULSe NONE|M1|M2|M3|M4
[:SOURce]:RADio:DMODulation:ARB:MDESTination:PULSe?
```

This command routes the selected marker to the Pulse/RF Blanking function. The NONE parameter clears the marker for the Pulse/RF Blanking function.

| | |
|------------------|---|
| *RST | NONE |
| Key Entry | None Marker 1 Marker 2 Marker 3 Marker 4 |

Remarks N/A

:MDEStination:AAMPlitude

Supported All with Option 001 or 002

```
[ :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

Remarks N/A

:MDEStination:ALCHold

Supported All with Option 001 or 002

```
[ :SOURCE]:RADio:DMODulation:ARB:MDEStination:ALCHold NONE|M1|M2|M3|M4
[:SOURCE]:RADio:DMODulation:ARB:MDEStination:ALCHold?
```

This command routes the selected marker to the ALC Hold function. The NONE parameter clears the marker for the ALC Hold function.

***RST** NONE

Key Entry None Marker 1 Marker 2 Marker 3 Marker 4

Remarks N/A

:MODulation:FSK[:DEVIation]

Supported All with Option 001 or 002

```
[ :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 276. Refer to “:SRATE” on page 283 for a list of the minimum and maximum symbol rate values. To set an asymmetric FSK deviation value, refer to the <i>User’s Guide for more information</i> . |

:MODulation[:TYPE]

Supported All with Option 001 or 002

```
[ :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|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 256QAM User I/Q User FSK |
| Remarks | N/A |

:MPOlarity:MARKer1

Supported All with Option 001 or 002

```
[ :SOURce]:RADio:DMODulation:ARB:MPOlarity:MARKer1 NEGative|POSitive
[:SOURce]:RADio:DMODulation:ARB:MPOlarity:MARKer1?
```

This command sets the polarity for marker 1.

| | |
|------------------|----------------------------------|
| *RST | POS |
| Key Entry | Marker 1 Polarity Neg Pos |
| Remarks | N/A |

:MPOLarity:MARKer2

Supported All with Option 001 or 002

```
[ :SOURCE]:RADio:DMODulation:ARB:MPOLarity:MARKer2 NEGative|POSitive  
[:SOURCE]:RADio:DMODulation:ARB:MPOLarity:MARKer2?
```

This command sets the polarity for marker 2.

***RST** POS

Key Entry Marker 2 Polarity Neg Pos

Remarks N/A

:MPOLarity:MARKer3

Supported All with Option 001 or 002

```
[ :SOURCE]:RADio:DMODulation:ARB:MPOLarity:MARKer3 NEGative|POSitive  
[:SOURCE]:RADio:DMODulation:ARB:MPOLarity:MARKer3?
```

This command sets the polarity for marker 3.

***RST** POS

Key Entry Marker 3 Polarity Neg Pos

Remarks N/A

:MPOLarity:MARKer4

Supported All with Option 001 or 002

```
[ :SOURCE]:RADio:DMODulation:ARB:MPOLarity:MARKer4 NEGative|POSitive  
[:SOURCE]:RADio:DMODulation:ARB:MPOLarity:MARKer4?
```

This command sets the polarity for marker 4.

***RST** POS

Key Entry Marker 4 Polarity Neg Pos

Remarks N/A

:REFerence:EXTernal:FREQuency

Supported All with Option 001 or 002

```
[ :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 278.

:REFerence[:SOURce]

Supported All with Option 001 or 002

```
[ :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** All with Option 001 or 002

```
[: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**Remarks** N/A**:SCLock:RATE*Supported** All with Option 001 or 002

```
[: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 289 to activate the modulation format.

:SETup

Supported All with Option 001 or 002

```
[: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.

***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 14 for information on the file name syntax.

:SETup:MCARrier

Supported All with Option 001 or 002

```
[: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 14 for information on the file name syntax.

The file specified must be a single carrier CDMA file. To store a multicarrier setup refer to “[:SETup:MCARrier:STORE](#)” on page 232.

:SETup:MCARrier:PHASe

Supported All with Option 001 or 002

```
[ :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

Remarks N/A

:SETup:MCARrier:STORE

Supported All with Option 001 or 002

```
[ :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.

***RST** N/A

Range N/A

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 14 for information on the file name syntax.

:SETup:MCARrier:TABLE

Supported All with Option 001 or 002

```
[: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.

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 14 for information on the file name syntax.

The file specified must be a single carrier CDMA file. To store a multicarrier setup refer to “:SETup:MCARrier:STORE” on page 232.

:SETup:MCARrier:TABLE:NCARriers**Supported** All with Option 001 or 002

[: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**Remarks** N/A**:SETup:STORe*Supported** All with Option 001 or 002

[: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.

RST** N/A**Range** N/A**Key Entry** Store Custom Dig Mod State**Remarks** Refer to [“File Name Variables” on page 14](#) for information on the file name syntax.**:SRATe*Supported** All with Option 001 or 002

[: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 bits per second (bps–Mbps) and the maximum range value is dependent upon the source of data (internal or external), the modulation type, and filter.

***RST** +2.43000000E+004

Range

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

Key Entry

Symbol Rate

Remarks

When user-defined filters are selected using the command in section “:FILTer” on page 270, the upper bit rate will be restricted in line with the following symbol rate restriction:

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

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

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

This will impact the relative timing of the modulated data, as well as the actual filter response.

To change the modulation type, refer to “:MODulation[:TYPE]” on page 276.

:TRIGger:TYPE

Supported All with Option 001 or 002

```
[ :SOURce ] :RADIO:DMODulation:ARB:TRIGger:TYPE CONTinuous | SINGle | GATE
[ :SOURce ] :RADIO:DMODulation:ARB:TRIGger:TYPE?
```

This command sets the trigger type.

CONTinuous The waveform repeats continuously; the sequence restarts every time the previous playback is completed. To customize continuous triggering, refer to “:TRIGger:TYPE:CONTinuous[:TYPE]” on page 285.

SINGle The waveform segment or sequence plays once for every trigger received.

GATE An external trigger signal interrupts the playback while the gating signal is in the inactive state. Playback resumes when the external control signal returns to the active state. The active state can be set high or low.

***RST** CONT

Key Entry Continuous Single Gated

Remarks To change the polarity of the gated trigger, refer to “:TYPE:GATE:ACTive” on page 286.

:TRIGger:TYPE:CONTinuous[:TYPE]

Supported All with Option 001 or 002

```
[ :SOURce ] :RADIO:DMODulation:ARB:TRIGger:TYPE:CONTinuous [ :TYPE ] FREE |
TRIGger | RESet
[ :SOURce ] :RADIO:DMODulation:ARB:TRIGger:TYPE:CONTinuous [ :TYPE ]?
```

This command customizes the continuous trigger selection.

FREE This choice immediately transmits a waveform that is continuously repeated.

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

RESet This choice immediately restarts a continuously repeated waveform upon receiving a trigger.

| | |
|------------------|---|
| *RST | FREE |
| Key Entry | Free Run Trigger & Run Reset & Run |
| Remarks | To select CONTinuous as the trigger type, refer to “:TRIGger:TYPE” on page 285. |

:TYPE:GATE:ACTive

Supported All with Option 001 or 002

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

This command sets the arb trigger gate polarity; GATE must first be selected as the trigger type.

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

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

| | |
|------------------|---|
| *RST | HIGH |
| Key Entry | Gate Active Low High |
| Remarks | To select a GATE as the trigger type, refer to “:TRIGger:TYPE” on page 285. |

:TRIGger[:SOURce]

Supported All with Option 001 or 002

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

This command sets the trigger source.

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

EXT This choice enables triggering using an externally applied signal at the PATT TRIG IN rear panel connector or the PATT TRIG IN 2 pin on the rear panel AUX I/O connector. To select the appropriate connector, refer to “:TRIGger[:SOURce]:EXTernal[:SOURce]” on page 288.

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

| | | | |
|------------------|--------------------|------------|------------|
| *RST | EXT | | |
| Key Entry | Trigger Key | Ext | Bus |
| Remarks | N/A | | |

:TRIGger[:SOURce]:EXTernal:DELay

Supported All with Option 001 or 002

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

This command sets the time for the external trigger delay.

The variable <val> is expressed as seconds (μsec –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 286.

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

Supported All with Option 001 or 002

```
[ :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.

***RST** 0

Key Entry **Ext Delay Off On**

Remarks This command is effective only if an external trigger is selected as the trigger source. Refer to “:TRIGger[:SOURce]” on page 286.

:TRIGger[:SOURce]:EXTernal:SLOPe

Supported All with Option 001 or 002

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

This command sets the polarity for the external trigger.

***RST** NEG

Key Entry Ext Polarity Neg Pos

Remarks This command is effective only if an external trigger is selected as the trigger source. Refer to “:TRIGger[:SOURce]” on page 286.

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

Supported All with Option 001 or 002

```
[ :SOURce ] :RADio:DMODulation:ARB:TRIGger [ :SOURce ] :
EXTernal [ :SOURce ] EPT1 | EPT2 | EPTRIGGER1 | EPTRIGGER2
[ :SOURce ] :RADio:DMODulation:ARB:TRIGger [ :SOURce ] :EXTernal [ :SOURce ] ?
```

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

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

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

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

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

***RST** EPT1

Key Entry Patt Trig In 1 Patt Trig In 2

Remarks This command is effective only if an external trigger is selected as the trigger source. Refer to “:TRIGger[:SOURce]” on page 286.

For more information about the rear panel AUX I/O connector pin

configuration, refer to the *User's Guide*.

[:STATe]

Supported All with Option 001 or 002

```
[: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 or 002 ([:SOURce]:RADio:ARB)

:CLIPping

Supported All with Option 001 or 002

```
[: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 14](#) for information on the file name syntax.

:IQ:EXTeRnal:FILTer

Supported All with Option 001 or 002

```
[: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 292](#) 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 |
| Remarks | N/A |

:GENErate:SINE

Supported All with Option 001 or 002

```
[ :SOURce ] :RADio :ARB :GENErate :SINE [ "<filename>" ] [ , <osr> ] [ , <scale> ]
[ , I | Q | IQ ]
```

This command creates a file (using a specific file name) and stores a generated sine wave.

<osr> This variable sets the oversample ratio, which must be a value that is ≥ 4 . If the specified over sample ratio is < 60 (the minimum number of samples), multiple periods are generated to create a waveform with at least 60 samples. The number of periods that will be created is $60 \div \text{<osr>}$ (quotient will round off to a whole number). A waveform with an oversample ratio ≥ 60 has one period.

The maximum value for the range below is determined by the option and available baseband memory.

| | |
|--------------|---|
| *RST | N/A |
| Range | <i><osr> Option 001:</i> 4–8Msamples <i>Option 002:</i> 4–32Msamples |

Key Entry N/A

Remarks Executing this command without the "<file name>" variable will generate a factory default SINE_TEST_WFM file.

When using the variable "<file name>" for this command, the "@" or ":" character is not allowed.

The file is always generated as "WFM#: <file name>", where "#" is replaced by the baseband generator number.

:HEADer:CLEAr

Supported All with Option 001 or 002

```
[ :SOURce ] :RADio :ARB :HEADer :CLEAr
```

This command clears the header information from the header file used by this

modulation format.

***RST** N/A

Key Entry Clear Header

Remarks The **ARB Off On** softkey must be set to On for this command to function.

:HEADer:SAVE

Supported All with Option 001 or 002

[:SOURce] :RADio :ARB :HEADer :SAVE

This command saves the header information to the header file used by this modulation format.

***RST** N/A

Key Entry Save Setup To Header

Remarks The **ARB Off On** softkey must be set to On for this command to function.

:IQ:EXTeRnal:FILTeR:AUTO

Supported All with Option 001 or 002

[: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 290](#) for selecting a filter or through path.

***RST** 1

Key Entry I/Q Output Filter Manual Auto

Remarks N/A

:IQ:MODulation:ATTen

Supported All with Option 001 or 002

```
[ :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

Remarks N/A

:IQ:MODulation:ATTen:AUTO

Supported All with Option 001 or 002

```
[ :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 293 for setting the attenuation value.

***RST** 1

Key Entry Modulator Atten Manual Auto

Remarks N/A

:IQ:MODulation:FILTer

Supported All with Option 001 or 002

```
[ :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

Dual ARB Subsystem—Option 001 or 002 ([:SOURce]:RADio:ARB)

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 294 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 |
| Remarks | N/A |

:IQ:MODulation:FILTer:AUTO

Supported All with Option 001 or 002

```
[ :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 293 for selecting a filter or through path. |

| | |
|------------------|-----------------------------------|
| *RST | 1 |
| Key Entry | I/Q Mod Filter Manual Auto |
| Remarks | N/A |

:MARKer:CLEar

Supported All with Option 001 or 002

```
[ :SOURce]:RADio:ARB:MARKer:CLEar "<filename>",<mkr1|2|3|4>,<first_point>,<last_point>
```

This command clears markers from a waveform segment.

- "<file name>" This variable specifies the name of the waveform segment file.
- <mkr1|2|3|4> This variable designates which marker is to be cleared (1, 2, 3, or 4).

| | |
|------------------|---|
| <first_point> | This variable defines the first point in a range of points (must be ≥ 1 , and \leq the total number of waveform points). |
| <last_point> | This variable defines the last point in a range of points (must be ≥ 1 , and \leq the total number of waveform points). |
| *RST | N/A |
| Range | <first_Point>: 1–# of waveform points <last_point>: 1–# of waveform points |
| Key Entry | Marker 1 2 3 4 First Mkr Point Last Mkr Point |
| Remarks | Refer to “ File Name Variables ” on page 14 for information on the file name syntax. |

:MARKer:CLEar:ALL

Supported All with Option 001 or 002

[:SOURce] :RADio :ARB :MARKer :CLEar :ALL "<file name>" , <mkr1 | 2 | 3 | 4>

This command clears all markers from a waveform segment simultaneously.

"<file name>" This variable specifies the name of the waveform segment file.

<mkr1 | 2 | 3 | 4> This variable designates which marker is to be cleared (1, 2, 3, or 4).

***RST** N/A

Range N/A

Key Entry **Set Marker Off All Points**

Remarks Refer to “[File Name Variables](#)” on page 14 for information on the file name syntax.

:MARKer:ROtate

Supported All with Option 001 or 002

[:SOURce] :RADio :ARB :MARKer :ROtate "<file name>" , <rotate_count>

This command shifts the marker bits in a waveform segment.

***RST** N/A

Range <rotate_count>: number of points in the waveform – 1

Key Entry N/A

Remarks To define the maximum allowable points in a waveform, refer to “:MARKer:[SET]” on page 296.

Refer to “File Name Variables” on page 14 for information on the file name syntax.

:MARKer:[SET]

Supported All with Option 001 or 002

```
[ :SOURce]:RADio:ARB:MARKer:[SET] "<filename>", <mkr1|2|3|4>, <first_point>, <last_point>, <skip_count>
```

This command defines a marker over a range of points on a waveform segment.

- "<file name>" This choice specifies the name of the waveform segment file.
- <mkr1|2|3|4> This variable designates which marker is to be set (1, 2, 3, or 4).
- <first_point> This variable defines the first point in the range over which the marker will be placed. This number must greater than or equal to 1, 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 1, and less than or equal to the total number of waveform points.
- <skip_count> This variable creates a repeating pattern of markers.
Defining a skip count causes the marker to appear on the first point in the defined range, disappear over the number of points defined as the skip count, then reappear for one point. The pattern repeats until the end of the defined range. This enables you to set repetitively spaced markers. For example, a skip of 2 produces two points between each marker across the defined range.

***RST** N/A

Range <first_Point>: 1–# of waveform points
<last_point>: 1–# of waveform points <skip_count>: 0–65535

Key Entry Marker 1 2 3 4 First Mkr Point Last Mkr Point # Skipped Points

Remarks Refer to “File Name Variables” on page 14 for information on the file

name syntax.

:MDEStination:PULSe

Supported All with Option 001 or 002

```
[ :SOURce]:RADio:ARB:MDEStination:PULSe NONE|M1|M2|M3|M4  
[:SOURce]:RADio:ARB:MDEStination:PULSe?
```

This command routes the selected marker to the Pulse/RF Blanking function. The `NONE` parameter clears the marker for the Pulse/RF Blanking function.

***RST** NONE

Key Entry None Marker 1 Marker 2 Marker 3 Marker 4

Remarks N/A

:MDEStination:AAMPlitude

Supported All with Option 001 or 002

```
[ :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

Remarks N/A

:MDEStination:ALCHold

Supported All with Option 001 or 002

```
[ :SOURce]:RADio:ARB:MDEStination:ALCHold NONE|M1|M2|M3|M4  
[:SOURce]:RADio:ARB:MDEStination:ALCHold?
```

This command routes the selected marker to the ALC Hold function. The `NONE` parameter clears the marker for the ALC Hold function.

***RST** NONE

Key Entry None Marker 1 Marker 2 Marker 3 Marker 4

Remarks N/A

:MPOLarity:MARKer1

Supported All with Option 001 or 002

```
[ :SOURce ] :RADio :ARB :MPOLarity :MARKer1 NEGative | POSitive  
[ :SOURce ] :RADio :ARB :MPOLarity :MARKer1 ?
```

This command sets the polarity for marker 1.

***RST** POS

Key Entry Marker 1 Polarity Neg Pos

Remarks N/A

:MPOLarity:MARKer2

Supported All with Option 001 or 002

```
[ :SOURce ] :RADio :ARB :MPOLarity :MARKer2 NEGative | POSitive  
[ :SOURce ] :RADio :ARB :MPOLarity :MARKer2 ?
```

This command sets the polarity for marker 2.

***RST** POS

Key Entry Marker 2 Polarity Neg Pos

Remarks N/A

:MPOLarity:MARKer3

Supported All with Option 001 or 002

```
[ :SOURce ] :RADio :ARB :MPOLarity :MARKer3 NEGative | POSitive  
[ :SOURce ] :RADio :ARB :MPOLarity :MARKer3 ?
```

This command sets the polarity for marker 3.

***RST** POS

Key Entry Marker 3 Polarity Neg Pos

Remarks N/A

:MPOLaRity:MARKer4

Supported All with Option 001 or 002

```
[ :SOURCE]:RADio:ARB:MPOLaRity:MARKer4 NEGative|POSitive  
[:SOURCE]:RADio:ARB:MPOLaRity:MARKer4?
```

This command sets the polarity for marker 4.

***RST** POS

Key Entry Marker 4 Polarity Neg Pos

Remarks N/A

:REFerence:EXTeRnal:FREQuency

Supported All with Option 001 or 002

```
[ :SOURCE]:RADio:ARB:REFerence:EXTeRnal:FREQuency <val>  
[:SOURCE]:RADio: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 299.

:REFerence[:SOURCE]

Supported All with Option 001 or 002

```
[ :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 299 to enter the external reference frequency.

:RETRigger

Supported All with Option 001 or 002

```
[:SOURce]:RADio:ARB:RETRigger ON|OFF|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

Remarks N/A

:RSCAling

Supported All with Option 001 or 002

```
[: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 in units of percent.

***RST** +7.00000000E+001

Range 1–100

Key Entry Waveform Runtime Scaling

Remarks Runtime scaling does not alter the waveform data file.

:SCALing

Supported All with Option 001 or 002

```
[:SOURce]:RADio:ARB:SCALing "<file name>",<val>
```

This command sets the scaling value of the selected waveform segment.

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

***RST** N/A

Range <val>: 1–100

Key Entry **Scaling**

Remarks Refer to “File Name Variables” on page 14 for information on the file name syntax.

:SCLock:RATE

Supported All with Option 001 or 002

```
[: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**

Remarks N/A

:SEQuence

Supported All with Option 001 or 002

```
[:SOURce]:RADio:ARB:SEQuence "<file name>",<waveform>",<reps>,  
<mkr1(1|0)>,<mkr2(1|0)>,{ "<waveform>",<reps>,<mkr1(1|0)>,<mkr2(1|0)> }  
[:SOURce]:RADio:ARB:SEQuence? "<file name>"
```

This command creates or defines a waveform sequence. The waveform file consists of the subsequent waveform segment files (combined in the same order in which the variables

are listed above).

| | |
|------------------|--|
| "<file name>" | This variable specifies the name of the waveform sequence file. |
| "<waveform>" | This variable specifies the exact name of the waveform file. |
| <reps> | This variable edits the number times the waveform should repeat. |
| <mkr1(1 0)> | This variable toggles marker 1 on (1) or off (0). |
| <mk2(1 0)> | This variable toggles marker 2 on (1) or off (0). |
| *RST | N/A |
| Range | <reps>: 1–65535 |
| Key Entry | Build New Waveform Sequence Edit Selected Waveform Sequence Toggle Marker 1 Toggle Marker 2 Edit Repetitions |
| Remarks | Refer to “ File Name Variables ” on page 14 for information on the file name syntax. compilations. |

:TRIGger:TYPE

Supported All with Option 001 or 002

[:SOURce] :RADio:ARB:TRIGger:TYPE CONTInuous | SINGle | GATE | SADVance
[:SOURce] :RADio:ARB:TRIGger:TYPE?

This command sets the trigger type.

| | |
|------------------|--|
| CONTInuous | The waveform repeats continuously; the sequence restarts every time the previous playback is completed. |
| SINGle | The waveform segment or sequence plays once for every trigger received. |
| GATE | An external trigger signal interrupts the playback while the gating signal is in the inactive state. Playback resumes when the external control signal returns to the active state. The active state can be set high or low. |
| SADVance | The selected trigger controls the advance to the next segment in the sequence. To customize segment advance, refer to “ :TRIGger:TYPE:SADVance[:TYPE] ” on page 304. |
| *RST | CONT |
| Key Entry | Continuous Single Gate Segment Advance |
| Remarks | The SADvance choice can only be activated when a waveform sequence is active. |

:TRIGger:TYPE:CONTinuous[:TYPE]

Supported All with Option 001 or 002

```
[ :SOURce ] :RADio:ARB:TRIGger:TYPE:CONTinuous [ :TYPE ] FREE | TRIGger | RESet  
[ :SOURce ] :RADio:ARB:TRIGger:TYPE:CONTinuous [ :TYPE ] ?
```

This command customizes the continuous trigger selection.

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

***RST** FREE

Key Entry Free Run Trigger & Run Reset & Run

Remarks To select CONTinuous as the trigger type, refer to “:TRIGger:TYPE” on [page 302](#).

:TRIGger:TYPE:GATE:ACTive

Supported All with Option 001 or 002

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

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

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

***RST** HIGH

Key Entry Gate Active Low High

Remarks To select GATE as the trigger type, refer to “:TRIGger:TYPE” on [page 302](#).

:TRIGger:TYPE:SADVance[:TYPE]

Supported All with Option 001 or 002

```
[ :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 302.

:TRIGger[:SOURce]

Supported All with Option 001 or 002

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

This command sets the trigger source.

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

EXT This choice enables triggering using an externally applied signal at the PATT TRIG IN rear panel connector or the PATT TRIG IN 2 pin on the rear panel AUX I/O connector. To select the appropriate connector, refer to “:TRIGger[:SOURce]:EXTernal[:SOURce]” on page 305.

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

***RST** EXT

Key Entry **Trigger Key** **Ext** **Bus**

Remarks N/A

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

Supported All with Option 001 or 002

```
[ :SOURce ] :RADio:ARB:TRIGger [ :SOURce ] :EXTernal [ :SOURce ] EPT1 | EPT2 |  
EPTRIGGER1 | EPTRIGGER2  
[ :SOURce ] :RADio:ARB:TRIGger [ :SOURce ] :EXTernal [ :SOURce ] ?
```

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

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

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

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

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

***RST** EPT1

Key Entry Patt Trig In 1 Patt Trig In 2

Remarks This command is effective only if an external trigger is selected as the trigger source. Refer to “[:TRIGger\[:SOURce\]](#)” on page 304.

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

:TRIGger[SOURce]:EXTernal:DELay

Supported All with Option 001 or 002

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

This command specifies the value for the external trigger delay.

The variable <val> is expressed as seconds (μsec –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 304. |

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

Supported All with Option 001 or 002

```
[ :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.

***RST** 0

Key Entry **Ext Delay Off On**

Remarks This command is effective only if an external trigger is selected as the trigger source. Refer to “:TRIGger[:SOURce]” on page 304.

:TRIGger[:SOURce]:EXTernal:SLOPe

Supported All with Option 001 or 002

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

This command sets the polarity of the external trigger.

***RST** NEG

Key Entry **Ext Polarity Neg Pos**

Remarks This command is effective only if an external trigger is selected as the trigger source. Refer to “:TRIGger[:SOURce]” on page 304.

:WAVEform

Supported All with Option 001 or 002

```
[ :SOURce ]:RADio:ARB:WAVEform "WFM1|SEQ:<file_name>"
[ :SOURce ]:RADio:ARB:WAVEform?
```

This command selects the waveform type and file to be played by the dual arbitrary waveform generator.

WFM1 This choice selects a single waveform segment.

| | |
|------------------|---|
| SEQ | This choice selects a sequence of segments. The appropriate file name of the sequence replaces the <file name> variable. |
| *RST | N/A |
| Key Entry | Select Waveform |
| Remarks | N/A |

[:STATe]

Supported All with Option 001 or 002

[: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 |
| Remarks | N/A |

Multitone Subsystem–Option 001 or 002 ([: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 319.
2. Assign the frequency spacing between the tones. Refer to “:SETup:TABLE:FSPacing” on page 318.
3. Define the number of tones within the waveform. Refer to “:SETup:TABLE:NTONes” on page 318.
4. Modify the power level, phase, and state of any individual tones. Refer to “:ROW” on page 315.

:IQ:EXTErnal:FILTEr

Supported All with Option 001 or 002

```
[ :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 309 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

Remarks N/A

:IQ:EXTeRnal:FILTer:AUTO

Supported All with Option 001 or 002

```
[ :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 308](#) for selecting a filter or through path.

***RST** 1

Key Entry I/Q Output Filter Manual Auto

Remarks N/A

:HEADer:CLEar

Supported All with Option 001 or 002

```
[ :SOURCE ] :RADio:MTONE:ARB:HEADer:CLEar
```

This command clears the header information from the header file used by this modulation format.

***RST** N/A

Key Entry Clear Header

Remarks The **Multitone Off On** softkey must be set to On for this command to function.

:HEADer:SAVE

Supported All with Option 001 or 002

```
[ :SOURCE ] :RADio:MTONE:ARB:HEADer:SAVE
```

This command saves the header information to the header file used by this modulation format.

***RST** N/A

Multitone Subsystem—Option 001 or 002 ([:SOURce]:RADio:MTONE:ARB)

| | |
|------------------|---|
| Key Entry | Save Setup To Header |
| Remarks | The Multitone Off On softkey must be set to On for this command to function. |

:IQ:MODulation:ATTen

Supported All with Option 001 or 002

```
[ :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 |
| Remarks | N/A |

:IQ:MODulation:ATTen:AUTO

Supported All with Option 001 or 002

```
[ :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 310](#) for setting the attenuation value.

| | |
|------------------|------------------------------------|
| *RST | 1 |
| Key Entry | Modulator Atten Manual Auto |
| Remarks | N/A |

:IQ:MODulation:FILTer

Supported All with Option 001 or 002

```
[ :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 311](#) 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

Remarks N/A

:IQ:MODulation:FILTer:AUTO

Supported All with Option 001 or 002

```
[ :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 293](#) for selecting a filter or through path.

***RST** 1

Key Entry I/Q Mod Filter Manual Auto

Remarks N/A

:MDEStination:PULSe**Supported** All with Option 001 or 002[:SOURce]:RADio:MTONE:ARB:MDEStination:PULSe NONE|M1|M2|M3|M4
[:SOURce]:RADio:MTONE:ARB:MDEStination:PULSe?

This command routes the selected marker to the Pulse/RF Blanking function. The NONE parameter clears the marker for the Pulse/RF Blanking function.

RST** NONE**Key Entry** None Marker 1 Marker 2 Marker 3 Marker 4**Remarks** N/A**:MDEStination:AAMPlitude*Supported** All with Option 001 or 002[: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**Remarks** N/A**:MDEStination:ALCHold*Supported** All with Option 001 or 002[:SOURce]:RADio:MTONE:ARB:MDEStination:ALCHold NONE|M1|M2|M3|M4
[:SOURce]:RADio:MTONE:ARB:MDEStination:ALCHold?

This command routes the selected marker to the ALC Hold function. The NONE parameter clears the marker for the ALC Hold function.

***RST** NONE**Key Entry** None Marker 1 Marker 2 Marker 3 Marker 4**Remarks** N/A

:MPOLarity:MARKer1

Supported All with Option 001 or 002

```
[ :SOURCE]:RADio:MTONE:ARB:MPOLarity:MARKer1 NEGative|POSitive  
[:SOURCE]:RADio:MTONE:ARB:MPOLarity:MARKer1?
```

This command sets the polarity for marker 1.

***RST** POS

Key Entry Marker 1 Polarity Neg Pos

Remarks N/A

:MPOLarity:MARKer2

Supported All with Option 001 or 002

```
[ :SOURCE]:RADio:MTONE:ARB:MPOLarity:MARKer2 NEGative|POSitive  
[:SOURCE]:RADio:MTONE:ARB:MPOLarity:MARKer2?
```

This command sets the polarity for marker 2.

***RST** POS

Key Entry Marker 2 Polarity Neg Pos

Remarks N/A

:MPOLarity:MARKer3

Supported All with Option 001 or 002

```
[ :SOURCE]:RADio:MTONE:ARB:MPOLarity:MARKer3 NEGative|POSitive  
[:SOURCE]:RADio:MTONE:ARB:MPOLarity:MARKer3?
```

This command sets the polarity for marker 3.

***RST** POS

Key Entry Marker 3 Polarity Neg Pos

Remarks N/A

:MPOLarity:MARKer4

Supported All with Option 001 or 002

```
[ :SOURce ]:RADio:MTONE:ARB:MPOLarity:MARKer4 NEGative|POSitive
[ :SOURce ]:RADio:MTONE:ARB:MPOLarity:MARKer4?
```

This command sets the polarity for marker 4.

***RST** POS

Key Entry Marker 4 Polarity Neg Pos

Remarks N/A

:REFerence:EXTernal:FREQuency

Supported All with Option 001 or 002

```
[ :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 314.

:REFerence[:SOURce]

Supported All with Option 001 or 002

```
[ :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.

***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 314 to enter the external reference frequency.

:ROW

Supported All with Option 001 or 002

```
[ :SOURCE ]:RADio:MTONE:ARB:SETup:TABLE:ROW <row_number> , <power> ,
<phase> , <state>
```

```
[ :SOURCE ]:RADio:MTONE:ARB:SETup:TABLE:ROW? <row_number>
```

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      frequency offset: -3.50000000E+004  <power>: +0.00000000E+000
          <phase>: +0.00000000E+000  <state>: 1
```

```
Range     frequency offset: -4E7 to 4E7  <power>: -80 to 0  <phase>: 0-359
          <state>: 1
```

Key Entry **Goto Row** **Toggle State**

Remarks Refer to “[:SETup:TABLE](#)” on page 317 for information on how to change the number of rows.

This command is the final step in creating a multitone waveform. Refer to “[Creating a Multitone Waveform](#)” on page 308 for all four steps.

:SCLock:RATE

Supported All with Option 001 or 002

```
[ :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 320 to activate the modulation format.

:SETup

Supported All with Option 001 or 002

```
[ :SOURce ] :RADio:MTONE:ARB:SETup "<file name>"
```

```
[ :SOURce ] :RADio:MTONE:ARB:SETup?
```

This command retrieves a multitone waveform file.

***RST** N/A

Range N/A

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 14 for information on the file name syntax.

:SETup:STORe

Supported All with Option 001 or 002

```
[: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.

***RST** N/A

Range N/A

Key Entry **Store To File**

Remarks N/A

:SETup:TABLE

Supported All with Option 001 or 002

```
[: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 | <i>Tone</i> | <i><frequency offset></i> | <i><power></i> | <i><phase></i> | <i><state></i> |
|-------------|-------------|---------------------------------|----------------------|----------------------|----------------------|
| | 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

Multitone Subsystem—Option 001 or 002 ([:SOURce]:RADio:MTONE:ARB)

<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 318.

:SETup:TABLE:FSPacing

Supported All with Option 001 or 002

[: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

Range *<freq_spacing>* (2 tones): 1E4–8E7

<freq_spacing> (>2 tones): 1E4 to (80 MHz ÷ (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 317.

This command is the second step in creating a multitone waveform. Refer to “Creating a Multitone Waveform” on page 308 for all four steps.

:SETup:TABLE:NTONes

Supported All with Option 001 or 002

[:SOURce] :RADio:MTONE:ARB:SETup:TABLE:NTONes <num_tones>

[: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 317.

This command is the third step in creating a multitone waveform. Refer to “Creating a Multitone Waveform” on page 308 for all four steps.

:SETup:TABLE:PHASe:INITialize

Supported All with Option 001 or 002

```
[ :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 319.

This command is the first step in creating a multitone waveform. Refer to “Creating a Multitone Waveform” on page 308 for all four steps.

:SETup:TABLE:PHASe:INITialize:SEED

Supported All with Option 001 or 002

```
[ :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

Multitone Subsystem—Option 001 or 002 ([:SOURce]:RADio:MTONE:ARB)

Key Entry Random Seed Fixed Random

Remarks N/A

[[:STATe]]

Supported All with Option 001 or 002

[: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

Remarks N/A

Wideband CDMA ARB Subsystem–Option 400 ([:SOURce]:RADio:WCDMa:TGPP:ARB)

:CLIPping:I

Supported All 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 III To

Remarks N/A

:CLIPping:POSition

Supported All 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

Remarks N/A

:CLIPping:Q**Supported** All 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*Remarks** N/A**:CLIPping:TYPE****Supported** All 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|*Remarks** N/A**:CLIPping[:IJQ]****Supported** All 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 |
| Remarks | N/A |

:CRATe

Supported All 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 |
| Remarks | N/A |

:FILTER

Supported All with Option 400

```
[ :SOURCE ] : RADIO : WCDMA : TGPP : ARB : FILTER RNYQuist | NYQuist | GAUSSian |
RECTangle | WCDMA | AC4Fm | IS2000SRDS | 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 filter file that you have stored into memory.

| | |
|------------------|---|
| *RST | WCDMA |
| Key Entry | Root Nyquist Nyquist Gaussian Rectangle WCDMA APCO 25 C4FM IS-95 UN3/4 GSM Gaussian IS-2000 SR3 DS User FIR |
| Remarks | Refer to “File Name Variables” on page 14 for information on the file name syntax. |

:FILTer:ALPHa

Supported All 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 323. |

:FILTer:BBT

Supported All 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 323.

:FILTER:CHANNEL

Supported All 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 323.

:HEADER:CLEAR

Supported All with Option 400

```
[ :SOURCE ] : RADIO : WCDMA : TGPP : ARB : HEADER : CLEAR
```

This command clears the header information from the header file used by this modulation format.

***RST** N/A

Key Entry Clear Header

Remarks The **W-CDMA Off On** softkey must be set to On for this command to function.

:HEADER:SAVE

Supported All with Option 400

```
[ :SOURCE ] : RADIO : WCDMA : TGPP : ARB : HEADER : SAVE
```

This command saves the header information to the header file used by this modulation format.

***RST** N/A

| | |
|------------------|--|
| 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 All with Option 400

```
[ :SOURce]:RADio:WCDMa:TGPP:ARB:IQ:EXTErnal:FILTer 40e6|THROUGH
[:SOURce]:RADio:WCDMa:TGPP: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 326 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

Remarks N/A

:IQ:EXTErnal:FILTer:AUTO

Supported All 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 326 for selecting a filter or through path.

***RST** 1

Key Entry I/Q Output Filter Manual Auto

Remarks N/A

:IQMap**Supported** All 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**Remarks** N/A**:IQ:MODulation:ATTen*Supported** All 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**Remarks** N/A**:IQ:MODulation:ATTen:AUTO*Supported** All 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 327 for setting the attenuation value.

*RST 1

Key Entry Modulator Atten Manual Auto

Remarks N/A

:IQ:MODulation:FILTer

Supported All 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 328 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

Remarks N/A

:IQ:MODulation:FILTer:AUTO

Supported All 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 293 for selecting a filter or through path.

*RST 1

Key Entry I/Q Mod Filter Manual Auto

Remarks N/A

:LINK

Supported All 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

Remarks N/A

:LINK:DOWN:OACP

Supported All 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.

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 330.](#)

:LINK:DOWN:SETup

Supported All 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 defines the multicarrier waveform.

| | |
|---------|--|
| 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. |
| 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. |

| | |
|------------------|--|
| *RST | DPCH1 |
| 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 14 for information on the file name syntax. |

:LINK:DOWN:SETup:MCARrier

Supported All 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: |

Wideband CDMA ARB Subsystem—Option 400 ([:SOURCE]:RADio:WCDMa:TGPP:ARB)

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 14 for information on the file name syntax.

:LINK:DOWN:SETup:MCARrier:CLIPping:I

Supported All 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 III To

Remarks N/A

:LINK:DOWN:SETup:MCARrier:CLIPping:Q

Supported All 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**
Remarks N/A

:LINK:DOWN:SETup:MCARrier:CLIPping:TYPE

Supported All 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|**
Remarks N/A

:LINK:DOWN:SETup:MCARrier:CLIPping[:IJQ]

Supported All 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**
Remarks N/A

:LINK:DOWN:SETup:MCARrier:SCODE:AINCrement

Supported All 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.

***RST** N/A

Range N/A

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 All 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.

***RST** N/A

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 14](#) for information on the file name syntax.

:LINK:DOWN:SETup:MCARrier:TABLE**Supported** All 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. |

| | |
|------------------|--|
| 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 14 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 338.

:LINK:DOWN:SETup:MCARrier:TABLE:NCARriers

Supported All 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

Choices N/A

Key Entry N/A

Remarks N/A

:LINK:DOWN:SETup:MCARrier:TOFFset:AINCrement

Supported All 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.

***RST** N/A

Range N/A

Key Entry Increment Timing Offset

Remarks N/A

:LINK:DOWN:SETup:STORE

Supported All 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.

Wideband CDMA ARB Subsystem—Option 400 ([:SOURCE]:RADIO:WCDMA:TGPP:ARB)

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)
- ARB reference clock frequency
- clipping
- multicarrier spacing
- radio configuration

***RST** N/A

Range N/A

Key Entry **Store Custom W-CDMA State**

Remarks Refer to “[File Name Variables](#)” on page 14 for information on the file name syntax.

:LINK:DOWN:SETup:TABLE:APPLy

Supported All 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.

***RST** N/A

Choices N/A

Key Entry **Apply Channel Setup**

Remarks N/A

:LINK:DOWN:SETup:TABLE:CHANnel**Supported** All 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>, <TFCl>, <TPC>, <scramble_code>, STANdard | RALternate |
LALternate, <scramble_offset>, RANDom | PN9 | PINDicator |
<data_val>, <TFCl_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>, <TFCl_power>, <TPC_power>, and <pilot_power> variables are expressed in units of decibels (dB).

The channel type, symbol rate, spread code, power, timing offset, TFCl value, TPC value, scramble code, scramble type, scramble offset, data type, TFCl 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>, <TFCl>,
<TPC>, <scramble_code>, <scramble_type>, <scramble_code>, <scramble_offset>,
<data_type>, <TFCl_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. |
| <TFCl> | 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 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 |
| 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 |

Table 1 **Variables and Channel Types**

| | SSCH | CPICH | PCCPCH | SCCPCH | PICH | DPCH | OCNS | PSCH |
|--------------------|-------------|--------------|---------------|---------------|-------------|-------------|-------------|-------------|
| 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 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 |
| 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 |

Table 2 Variables and Channel Types

| | HSPDSCH | HSSCCH |
|------------|---------|--------|
| 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

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
<TFCI_power>: -20 to 20 *<TPC_power>*: -20 to 20
<pilot_power>: 0000-7FFF *<pilot_bits>*: 0-511

SCCPCH Channel

| <i><symbol_rate></i> | <i><spread_code></i> | * <i><pilot_bits></i> |
|----------------------------|----------------------------|-----------------------------|
| 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

| <i><symbol_rate></i> | <i><spread_code></i> | <i><pilot_bits></i> |
|----------------------------|----------------------------|---------------------------|
| 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 338. |

:LINK:DOWN:SETup:TABLE:NChannels?

| | |
|------------------|---|
| Supported | All 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 |
| Key Entry | N/A |
| Remarks | N/A |

:LINK:DOWN:SETup:TABLE:PADJust

| | |
|------------------|--|
| Supported | All 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 ksp/s 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. |

| | |
|------------------|--|
| *RST | N/A |
| Key Entry | Equal Energy per Symbol Scale To 0dB |
| Remarks | This command is available in downlink only. |

:LINK:DOWN:TFCI

Supported All 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 |
| Remarks | N/A |

:LINK:UP:OACP

Supported All 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 345 . |

:LINK:UP:SCRAMBLE

Supported All 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–FFFFFF

Key Entry Scramble Code

Remarks N/A

:LINK:UP:SDPDch

Supported All 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

Remarks N/A

:LINK:UP:SETup

Supported All 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 14 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 347. |

:LINK:UP:SETup:STORe

Supported All 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.

***RST** N/A

Range N/A

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 330.

For uplink, refer to “[:LINK:UP:SETup](#)” on page 345.

Refer to “[File Name Variables](#)” on page 14 for information on the file name syntax.

:LINK:UP:SETup:TABLE:APPLy**Supported** All 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.

RST** N/A**Range** N/A**Key Entry** **Apply Channel Setup*Remarks** Refer to “[File Name Variables](#)” on page 14 for information on the file name syntax.**:LINK:UP:SETup:TABLE:CHANnel****Supported** All with Option 400

```
[:SOURce]:RADio:WCDMa:TGPP:ARB:LINK:UP:SETup:TABLE:CHANnel
INIT|APPend|<chan_num>,<chan_type>,<symbol_rate>,<spread_code>,
<power>,<TFCI>,<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 <TFCl>: +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 TFCl 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 347.

:LINK:UP:SETup:TABLE:GUNit

Supported All 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 347. |

:LINK:UP:SETup:TABLE:NCHannel

Supported All 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

Key Entry N/A

Remarks N/A

:LINK:UP:TFCI

Supported All 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 TCFI Field Off On

Remarks N/A

:MDESTination:PULSE

Supported All with Option 400

```
[ :SOURCE ] : RADIO : WCDMA : TGPP : ARB : MDESTination : PULSE NONE | M1 | M2 | M3 | M4
```

```
[ :SOURCE ] : RADIO : WCDMA : TGPP : ARB : MDESTination : PULSE ?
```

This command routes the selected marker to the Pulse/RF Blanking function. The NONE parameter clears the marker for the Pulse/RF Blanking function.

***RST** NONE

Key Entry None Marker 1 Marker 2 Marker 3 Marker 4

Remarks N/A

:MDESTINATION:AAMPLITUDE

Supported All 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

Remarks N/A

:MDESTINATION:ALCHOLD

Supported All with Option 400

```
[:SOURCE]:RADIO:WCDMA:TGPP:ARB:MDESTINATION:ALCHOLD NONE|M1|M2|M3|M4
[:SOURCE]:RADIO:WCDMA:TGPP:ARB:MDESTINATION:ALCHOLD?
```

This command routes the selected marker to the ALC Hold function. The NONE parameter clears the marker for the ALC Hold function.

***RST** NONE

Key Entry None Marker 1 Marker 2 Marker 3 Marker 4

Remarks N/A

:MPOLARITY:MARKER1

Supported All with Option 400

```
[:SOURCE]:RADIO:WCDMA:TGPP:ARB:MPOLARITY:MARKER1 NEGATIVE|POSITIVE
[:SOURCE]:RADIO:WCDMA:TGPP:ARB:MPOLARITY:MARKER1?
```

This command sets the polarity for marker 1.

***RST** POS

Key Entry Marker 1 Polarity Neg Pos

Remarks N/A

:MPOLarity:MARKer2

Supported All with Option 400

```
[ :SOURCE]:RADIO:WCDMA:TGPP:ARB:MPOLarity:MARKer2 NEGative|POSitive  
[:SOURCE]:RADIO:WCDMA:TGPP:ARB:MPOLarity:MARKer2?
```

This command sets the polarity for marker 2.

***RST** POS

Key Entry Marker 2 Polarity Neg Pos

Remarks N/A

:MPOLarity:MARKer3

Supported All with Option 400

```
[ :SOURCE]:RADIO:WCDMA:TGPP:ARB:MPOLarity:MARKer3 NEGative|POSitive  
[:SOURCE]:RADIO:WCDMA:TGPP:ARB:MPOLarity:MARKer3?
```

This command sets the polarity for marker 3.

***RST** POS

Key Entry Marker 3 Polarity Neg Pos

Remarks N/A

:MPOLarity:MARKer4

Supported All with Option 400

```
[ :SOURCE]:RADIO:WCDMA:TGPP:ARB:MPOLarity:MARKer4 NEGative|POSitive  
[:SOURCE]:RADIO:WCDMA:TGPP:ARB:MPOLarity:MARKer4?
```

This command sets the polarity for marker 4.

***RST** POS

Key Entry Marker 4 Polarity Neg Pos

Remarks N/A

:REFERENCE:EXTERNAL:FREQUENCY

Supported All 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

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 352.

:REFERENCE[:SOURCE]

Supported All 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 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[:SOURCE]” on page 352 to enter the external reference frequency.

:RETRigger**Supported** All 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**Remarks** N/A**:REVISION*Supported** All with Option 400

```
[:SOURCE]:RADIO:WCDMA:TGPP:ARB:REVISION?
```

This command checks the version for the arbitrary waveform generator firmware.

RST** 3GPP 06-2001**Key Entry** N/A**Remarks** N/A**:SCLock:RATE*Supported** All 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 358 to activate the modulation format. |

:TRIGger:TYPE:CONTInuous[:TYPE]

Supported All with Option 400

```
[ :SOURCE ] : RADIO : WCDMA : TGPP : ARB : TRIGger : CONTInuous [ : TYPE ] FREE |
TRIGger | RESet
[ : SOURCE ] : RADIO : WCDMA : TGPP : ARB : TRIGger : CONTInuous [ : TYPE ] ?
```

This command sets the trigger type.

| | |
|------------------|---|
| FREE | This choice immediately transmits a waveform that is continuously repeated. |
| TRIGger | This choice causes the waveform to wait for a trigger. Once a trigger is received, the transmission of a continuously repeated waveform begins. |
| RESet | This choice immediately restarts a continuously repeated waveform upon receiving a trigger. |
| *RST | FREE |
| Key Entry | Free Run Trigger & Run Reset & Run |
| Remarks | To select CONTInuous as the trigger type, refer to “[:TRIGger:TYPE]” on page 355. |

:TRIGger:TYPE**Supported** All with Option 400

```
[:SOURce]:RADio:WCDMa:TGPP:ARB:TRIGger:TYPE CONTInuous|SINGLE|GATE
[:SOURce]:RADio:WCDMa:TGPP:ARB:TRIGger:TYPE?
```

This command sets the arbitrary waveform trigger type.

CONTInuous The waveform repeats continuously; the sequence restarts every time the previous playback is completed. To customize continuous triggering, refer to “[:TRIGger:TYPE:CONTInuous\[:TYPE\]](#)” on page 354.

SINGLE The waveform segment or sequence plays once for every trigger received.

GATE An external trigger signal interrupts a segment’s playback. The active level can be set high or low when the external signal returns to the active state of the playback.

To change the polarity of the gated trigger, refer to “[:TRIGger:TYPE:GATE:ACTive](#)” on page 355.

RST** CONT**Key Entry** Continuous Single Gated**Remarks** N/A**:TRIGger:TYPE:GATE:ACTive*Supported** All 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 sets the arb trigger gate polarity; GATE must first be selected as the trigger type.

LOW This choice outputs a trigger signal when the signal level at the PATT TRIG IN rear panel connector is in a low state.

HIGH This choice outputs a trigger signal when the signal level at the PATT TRIG IN rear panel connector is in a high state.

***RST** HIGH**Key Entry** Gate Active Low High**Remarks** To select a GATE as the trigger type, refer to “[:TRIGger:TYPE](#)” on page 355.

:TRIGger[:SOURce]

Supported All 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.

- KEY** This choice enables triggering by pressing the front panel **Trigger** hardkey.
- EXT** This choice enables triggering using an externally applied signal at the PATT TRIG IN rear panel connector or the PATT TRIG IN 2 pin on the rear panel AUX I/O connector. To select the appropriate connector, refer to “:TRIGger[:SOURce]:EXTernal[:SOURce]” on page 357.
- BUS** This choice enables GPIB triggering using the *TRG or GET command or LAN and RS-232 triggering using the *TRG command.

Key Entry Trigger Key Bus Ext

Remarks N/A

:TRIGger[:SOURce]:EXTernal:DELay

Supported All 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 arbitrary waveform generator’s external trigger delay.

The variable <val> is expressed in units of seconds (µsec–ksec).

***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 356.

:TRIGger[:SOURce]:EXTernal:DELay:STATE**Supported** All 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.

***RST** 0**Key Entry** Ext Delay Off On

Remarks This command is effective only if an external trigger is selected as the trigger source. Refer to “:TRIGger[:SOURce]” on page 356.

:TRIGger[:SOURce]:EXTernal:SLOPe**Supported** All 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 the external trigger.

***RST** NEG**Key Entry** Ext Polarity Neg Pos

Remarks This command is effective only if an external trigger is selected as the trigger source. Refer to “:TRIGger[:SOURce]” on page 356.

:TRIGger[:SOURce]:EXTernal[:SOURce]**Supported** All 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 specifies which PATT TRIG IN connection, rear panel connector or AUX I/O connector, will be used to accept an externally applied trigger signal.

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

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 AUX I/O connector for the external signal connection. |
| EPTRIGGER1 | This choice is synonymous with EPT1 and selects the PATT TRIG IN rear panel connector for the external signal connection. |
| EPTRIGGER2 | This choice is synonymous with EPT2 and selects the PATT TRIG IN 2 pin on the rear panel AUX I/O connector for the external signal connection. |
| *RST | EPT1 |
| Choices | EPT1 EPT2 EPTRIGGER1 EPTRIGGER2 |
| Remarks | This command is effective only if an external trigger is selected as the trigger source. Refer to “:TRIGger[:SOURce]” on page 356. For more information about the rear panel AUX I/O connector pin configuration, refer to the <i>User’s Guide</i> . |

[:STATe]

Supported All 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. |

6 Bit Error Rate Test (BERT) Commands

This chapter provides SCPI description for subsystems dedicated to BERT testing for the ESG Vector Signal Generator. This chapter contains the following sections:

- “Calculate Subsystem–Option UN7 and 300 (:CALCulate:BERT)” on page 360
- “Data Subsystem–Option UN7 and 300 (:DATA)” on page 371
- “Input Subsystem–Option UN7 (:INPut:BERT[: BASEband])” on page 381
- “Measure Subsystem–Option 300 (:MEASure[:SCALar]:BERT:BTS:LOOPback)” on page 387
- “Sense Subsystem–Options UN7 and 300 ([:SOURce]:SENSe:BERT)” on page 391

Calculate Subsystem–Option UN7 and 300 (:CALCulate:BERT)

:BTS:LOOPback:EDGE:ETCH:F43:COMParator:CRITeria:ERATe

Supported All with Option 300

```
:CALCulate:BERT:BTS:LOOPback:EDGE:ETCH:F43:COMParator:CRITeria:  
ERATe <val>  
:CALCulate:BERT:BTS:LOOPback:EDGE:ETCH:F43:COMParator:CRITeria:ERATe?
```

This command sets the error rate pass/fail threshold value.

The variable <val> is a decimal notation representing a percentage value.

***RST** +1.00000000E-001

Range 0.0–1.0

Key Entry Error Rate

Remarks N/A

:BTS:LOOPback:EDGE:ETCH:F43:COMParator:CRITeria[:SElect]

Supported All with Option 300

```
:CALCulate:BERT:BTS:LOOPback:EDGE:ETCH:F43:COMParator:  
CRITeria[:SElect] ERATe|NOLimit  
:CALCulate:BERT:BTS:LOOPback:EDGE:ETCH:F43:COMParator:CRITeria[:SElect]?
```

This command determines which of the following pass/fail limit (comparator) criteria is applied to the measurement.

ERATe This choice reports, on the front panel display of the signal generator, the pass or fail status compared to the specified threshold for the error rate.

NOLimit This choice disables the pass/fail indication.

***RST** NOLimit

Key Entry Error Rate No Limits

Remarks N/A

:BTS:LOOPback:EDGE:MCS5:COMParator:CRITeria:ERATe

Supported All with Option 300

```
:CALCulate:BERT:BTS:LOOPback:EDGE:MCS5:COMParator:CRITeria:ERATe <val>  
:CALCulate:BERT:BTS:LOOPback:EDGE:MCS5:COMParator:CRITeria:ERATe?
```

This command sets the error rate pass/fail threshold value.

The variable <val> is a decimal notation representing a percentage value.

***RST** +1.00000000E-001

Range 0.0–1.0

Key Entry Error Rate

Remarks N/A

:BTS:LOOPback:EDGE:MCS5:COMParator:CRITeria[:SELEct]

Supported All with Option 300

```
:CALCulate:BERT:BTS:LOOPback:EDGE:MCS5:COMParator:  
CRITeria[:SELEct] ERATe|NOLimit  
:CALCulate:BERT:BTS:LOOPback:EDGE:MCS5:COMParator:CRITeria[:SELEct]?
```

This command determines which of the following pass/fail limit (comparator) criteria is applied to the measurement.

ERATe This choice reports, on the front panel display of the signal generator, the pass or fail status compared to the specified threshold for the error rate.

NOLimit This choice disables the pass/fail indication.

***RST** NOLimit

Key Entry Error Rate No Limits

Remarks N/A

:BTS:LOOPback:EDGE:MCS9:COMParator:CRITeria:ERATe

Supported All with Option 300

```
:CALCulate:BERT:BTS:LOOPback:EDGE:MCS9:COMParator:CRITeria:ERATe <val>  
:CALCulate:BERT:BTS:LOOPback:EDGE:MCS9:COMParator:CRITeria:ERATe?
```

This command sets the error rate pass/fail threshold value.

Calculate Subsystem–Option UN7 and 300 (:CALCulate:BERT)

The variable <val> is a decimal notation representing a percentage value.

***RST** +1.00000000E-001

Range 0.0–1.0

Key Entry Error Rate

Remarks N/A

:BTS:LOOPback:EDGE:MCS9:COMParator:CRITeria[:SElect]

Supported All with Option 300

:CALCulate:BERT:BTS:LOOPback:EDGE:MCS9:COMParator:

CRITeria[:SElect] ERATe|NOLimit

:CALCulate:BERT:BTS:LOOPback:EDGE:MCS9:COMParator:CRITeria[:SElect]?

This command determines which of the following pass/fail limit (comparator) criteria is applied to the measurement.

ERATe This choice reports, on the front panel display of the signal generator, the pass or fail status compared to the specified threshold for the error rate.

NOLimit This choice disables the pass/fail indication.

***RST** NOLimit

Key Entry Error Rate No Limits

Remarks N/A

:BTS:LOOPback:EDGE:UNCoded:COMParator:CRITeria:ERATe

Supported All with Option 300

:CALCulate:BERT:BTS:LOOPback:EDGE:UNCoded:COMParator:CRITeria:

ERATe <val>

:CALCulate:BERT:BTS:LOOPback:EDGE:UNCoded:COMParator:CRITeria:ERATe?

This command sets the error rate pass/fail threshold value.

The variable <val> is a decimal notation representing a percentage value.

***RST** +2.00000000E-002

Range 0.0–1.0

Key Entry Error Rate

Remarks N/A

:BTS:LOOPback:EDGE:UNCoded:COMParator:CRITeria[:SElect]

Supported All with Option 300

```
:CALCulate:BERT:BTS:LOOPback:EDGE:UNCoded:COMParator:  
CRITeria[:SElect] ERATE|NOLimit  
:CALCulate:BERT:BTS:LOOPback:EDGE:UNCoded:COMParator:CRITeria[:SElect]?
```

This command determines which of the following pass/fail limit (comparator) criteria is applied to the measurement.

ERATE This choice reports, on the front panel display of the signal generator, the pass or fail status compared to the specified threshold for the error rate.

NOLimit This choice disables the pass/fail indication.

***RST** NOLimit

Key Entry **Error Rate** **No Limits**

Remarks N/A

:BTS:LOOPback:GSM:CS1:COMParator:CRITeria:ERATe

Supported All with Option 300

```
:CALCulate:BERT:BTS:LOOPback:GSM:CS1:COMParator:CRITeria:  
ERATe <val>  
:CALCulate:BERT:BTS:LOOPback:GSM:CS1:COMParator:CRITeria:ERATe?
```

This command sets the error rate pass/fail threshold value.

The variable <val> is a decimal notation representing a percentage value.

***RST** +1.00000000E-001

Range 0.0–1.0

Key Entry **Error Rate**

Remarks N/A

:BTS:LOOPback:GSM:CS1:COMParator:CRITeria[:SElect]

Supported All with Option 300

```
:CALCulate:BERT:BTS:LOOPback:GSM:CS1:COMParator:
CRITeria[:SElect] ERATe|NOLimit
:CALCulate:BERT:BTS:LOOPback:GSM:CS1:COMParator:CRITeria[:SElect]?
```

This command determines which of the following pass/fail limit (comparator) criteria is applied to the measurement.

ERATE This choice reports, on the front panel display of the signal generator, the pass or fail status compared to the specified threshold for the error rate.

NOLimit This choice disables the pass/fail indication.

***RST** NOLimit

Key Entry Error Rate No Limits

Remarks N/A

:BTS:LOOPback:GSM:CS4:COMParator:CRITeria:ERATe

Supported All with Option 300

```
:CALCulate:BERT:BTS:LOOPback:GSM:CS4:COMParator:CRITeria:
ERATe <val>
:CALCulate:BERT:BTS:LOOPback:GSM:CS4:COMParator:CRITeria:ERATe?
```

This command sets the error rate pass/fail threshold value.

The variable <val> is a decimal notation representing a percentage value.

***RST** +1.00000000E-001

Range 0.0–1.0

Key Entry Error Rate

Remarks N/A

:BTS:LOOPback:GSM:CS4:COMParator:CRITeria[:SElect]

Supported All with Option 300

```
:CALCulate:BERT:BTS:LOOPback:GSM:CS4:COMParator:  
CRITeria[:SElect] ERATe|NOLimit  
:CALCulate:BERT:BTS:LOOPback:GSM:CS4:COMParator:CRITeria[:SElect]?
```

This command determines which of the following pass/fail limit (comparator) criteria is applied to the measurement.

ERATE This choice reports, on the front panel display of the signal generator, the pass or fail status compared to the specified threshold for the error rate.

NOLimit This choice disables the pass/fail indication.

***RST** NOLimit

Key Entry **Error Rate** **No Limits**

Remarks N/A

:BTS:LOOPback:GSM:MCS1:COMParator:CRITeria:ERATe

Supported All with Option 300

```
:CALCulate:BERT:BTS:LOOPback:GSM:MCS1:COMParator:CRITeria:  
ERATe <val>  
:CALCulate:BERT:BTS:LOOPback:GSM:MCS1:COMParator:CRITeria:ERATe?
```

This command sets the error rate pass/fail threshold value.

The variable <val> is a decimal notation representing a percentage value.

***RST** +1.00000000E-001

Range 0.0–1.0

Key Entry **Error Rate**

Remarks N/A

:BTS:LOOPback:GSM:MCS1:COMParator:CRITeria[:SElect]

Supported All with Option 300

```
:CALCulate:BERT:BTS:LOOPback:GSM:MCS1:COMParator:
CRITeria[:SElect] ERATe|NOLimit
:CALCulate:BERT:BTS:LOOPback:GSM:MCS1:COMParator:CRITeria[:SElect]?
```

This command determines which of the following pass/fail limit (comparator) criteria is applied to the measurement.

ERATE This choice reports, on the front panel display of the signal generator, the pass or fail status compared to the specified threshold for the error rate.

NOLimit This choice disables the pass/fail indication.

***RST** ERAT

Key Entry Error Rate No Limits

Remarks N/A

:BTS:LOOPback:GSM:COMParator:CRITeria:CIB

Supported All with Option 300

```
:CALCulate:BERT:BTS:LOOPback:GSM:COMParator:CRITeria:CIB <val>
:CALCulate:BERT:BTS:LOOPback:GSM:COMParator:CRITeria:CIB?
```

This command sets the Class II residual bit error rate pass/fail threshold value.

The variable <val> is a decimal notation representing a percentage value.

***RST** +4.00000000E-003

Range 0.0–1.0

Key Entry Class Ib RBER

Remarks N/A

:BTS:LOOPback:GSM:COMParator:CRITeria:CII

Supported All with Option 300

```
:CALCulate:BERT:BTS:LOOPback:GSM:COMParator:CRITeria:CII <val>
:CALCulate:BERT:BTS:LOOPback:GSM:COMParator:CRITeria:CII?
```

This command sets the Class Ib residual bit error rate pass/fail threshold value.

The variable <val> is a decimal notation representing a percentage value.

***RST** +2.00000000E-002
Range 0.0–1.0
Key Entry Class II RBER
Remarks N/A

:BTS:LOOPback:GSM:COMParator:CRITeria:FERasure

Supported All with Option 300

:CALCulate:BERT:BTS:LOOPback:GSM:COMParator:CRITeria:FERasure <val>
:CALCulate:BERT:BTS:LOOPback:GSM:COMParator:CRITeria:FERasure?

This command sets the frame erasure rate pass/fail threshold value.

The variable <val> is a decimal notation representing a percentage value.

***RST** +1.00000000E-003
Range 0.0–1.0
Key Entry Frame Erasure
Remarks N/A

:BTS:LOOPback:GSM:COMParator:CRITeria[:SElect]

Supported All with Option 300

:CALCulate:BERT:BTS:LOOPback:GSM:COMParator:CRITeria[:SElect] FERasure |
CLIB|CLII|ANY|NOLimit
:CALCulate:BERT:BTS:LOOPback:GSM:COMParator:CRITeria[:SElect]?

This command determines which of the following pass/fail limit (comparator) criteria is applied to the measurement.

- FERasure This choice reports, on the front panel display of the signal generator, the pass or fail status compared to the specified threshold for frame erasure ratio.
- CLIB This choice reports, on the front panel display of the signal generator, the pass or fail status compared to the specified threshold for the number of Class Ib errors detected in the measurement.
- CLII This choice reports, on the front panel display of the signal generator, the pass or fail status compared to the specified threshold for the number of

Calculate Subsystem–Option UN7 and 300 (:CALCulate:BERT)

| | |
|------------------|--|
| | Class II errors detected in the measurement. |
| ANY | This choice reports, on the front panel display of the signal generator, the pass or fail status compared to all of the specified comparator criteria. |
| NOLimit | This choice disables the pass/fail indication. |
| *RST | NOLimit |
| Key Entry | Frame Erasure Class I_b RBER Class II RBER Exceeds Any Limit |
| | No Limits |
| Remarks | N/A |

[:BASEband] :COMParator :MODE

Supported All with Option UN7

```
:CALCulate:BERT[ :BASEband ] :COMParator:MODE CEND|FHOLD
:CALCulate:BERT[ :BASEband ] :COMParator:MODE?
```

This command selects the pass/fail judgement mode of the comparator function.

- CEND This choice selects the cycle end mode and each BER measurement result is compared with the limit value to make a pass/fail assessment at the end of a cycle.
- FHOLD This choice selects the fail hold mode and only one fail judgement is allowed during that BER measurement loop. Any failed judgement after the first failure is ignored.

*RST CEND

Key Entry **Cycle End Fail Hold**

Remarks For automated tests, the results of this command can be accessed from the rear panel BER TEST OUT pin on the AUX I/O connector. For more information about the rear panel AUX I/O connector pin configuration, refer to the *User's Guide*.

[:BASEband] :COMParator :THReshold

Supported All with Option UN7

```
:CALCulate:BERT[ :BASEband ] :COMParator:THReshold <val>
:CALCulate:BERT[ :BASEband ] :COMParator:THReshold?
```

This command specifies the threshold value for the pass/fail judgement function.

The variable <val> is a decimal notation representing a percentage value.

| | |
|------------------|--|
| *RST | +1.00000000E-002 |
| Range | 0.0000001–1.00 |
| Key Entry | Pass/Fail Limits |
| Remarks | This command is valid only while the BER pass/fail command is active. Refer to “[:BASEband]:COMParator[:STATe]” on page 369. |

[:BASEband]:COMParator[:STATe]

| | |
|------------------|--|
| Supported | All with Option UN7 |
| | :CALCulate:BERT[:BASEband]:COMParator[:STATe] ON OFF 1 0 |
| | :CALCulate:BERT[:BASEband]:COMParator[:STATe]? |
| | This command enables or disables the pass/fail judgement function. |

| | |
|------------------|-------------------------|
| *RST | 0 |
| Key Entry | Pass/Fail Off On |
| Remarks | N/A |

[:BASEband]:DISPlay:MODE:

| | |
|------------------|---|
| Supported | All with Option UN7 |
| | :CALCulate:BERT[:BASEband]:DISPlay:MODE PERCent SCIentific |
| | :CALCulate:BERT[:BASEband]:DISPlay:MODE? |
| | This command selects the display mode for the bit error rate (BER) measurement. |
| PERCent | This choice reports measurement results as a percentage. |
| SCIentific | This choice reports measurement results in scientific notation. |
| *RST | PERC |
| Key Entry | BER Display % Exp |
| Remarks | N/A |

[[:BASEband]:DISPlay:UPDate:

Supported All with Option UN7

:CALCulate:BERT[:BASEband]:DISPlay:UPDate CEND|CONT

:CALCulate:BERT[:BASEband]:DISPlay:UPDate?

This command selects the display update mode during bit error rate (BER) measurements.

CEND This choice selects the cycle end mode and the previous BER measurement result is displayed during the current measurement cycle.

CONT This choice selects the continuous mode and the display shows the real-time intermediate results during that BER measurement cycle.

***RST** CONT

Key Entry Update Display Cycle End Cont

Remarks N/A

Data Subsystem–Option UN7 and 300 (:DATA)

:BERT:BTS:LOOPback:EDGE:ETCH:F43[:DATA]

Supported All with Option 300

```
:DATA:BERT:BTS:LOOPback:EDGE:ETCH:F43[:DATA]? IEC|IEBC|DEFC|BCO|IER|IABer|ALL|TEC|TEBC|TDEFc|TBCO|TER|TABer|TALL|JUDGe|STOP|SCAuse
```

This data query returns the measurement result value for each variable.

IEC|IEBC|DEFC|BCO|IER|IABer are intermediate values, so during the measurement, these variables are updated as well as the display information.

At the end of the measurement, the final values are stored to: TEC|TEBC|TDEFc|TBCO|TER|TABer variables. These variables and JUDGe|STOP|SCAuse are not updated until the next BER measurement is completed.

- | | |
|-------|---|
| IEC | This choice provides the intermediate error count with the following range: <Integer> 0 to 1500000. |
| IEBC | This choice provides the intermediate non-erased bit error blocks with the following range: <Integer> 0 to 1500000. |
| DEFC | This choice provides the intermediate downlink error frame count with the following range: <Integer> 0 to 750000. |
| BCO | This choice provides the intermediate block or bit count with the following range: <Integer> 0 to 1500000 (block). |
| IER | This choice provides the intermediate error ratio with the following range: <Real> 0 to 1 (0 to 100%). |
| IABer | This choice provides the intermediate average BER within blocks that have errors. The range is as follows: <Real> 0 to 1. |
| ALL | This choice returns all intermediate values (IEC, IEBC, DEFC, BCO, IER, and IABer) at the same time. |
| TEC | This choice provides the total error count with the following range: <Integer> 0 to 1500000 (block). |
| TEBC | This choice provides the total non-erased bit error blocks count with the following range: <Integer> 0 to 1500000. |
| TDEFc | This choice provides the total downlink error frame count with the following range: <Integer> 0 to 65535. |

Data Subsystem–Option UN7 and 300 (:DATA)

| | |
|------------------|---|
| TBCO | This choice provides the total block count with the following range: <Integer> 0 to 1500000 (block). |
| TER | This choice provides the total error ratio with the following range: <Real> 0 to 1 (0 to 100%). |
| TABer | This choice provides the total average BER within blocks that have errors. The range is as follows: <Real> 0 to 1. |
| TALL | This choice returns all total values (TEC, TEBC, TDEFc, TBCO, TER, TABer, JUDGE, STOP, and SCAuse) at the same time. If accidental TCH synchronization loss caused the measurement to stop, TSLoss is returned. |
| JUDGE | This choice provides the pass or fail string. If pass/fail criteria is NOLimit, NONE is returned. |
| STOP | This choice checks to see if the stop threshold is met and returns one of the following values: <Enumerated set> TRUE FALSE. When threshold to stop criteria is NONE, FALSE is returned. |
| SCAuse | This choice provides the stop cause by returning one of the following values: <Enumerated set> NONE Ebit EBlock TSL. If accidental TCH synchronization loss caused the measurement to stop, TSL is returned. |
| *RST | N/A |
| Range | N/A |
| Key Entry | N/A |
| Remarks | N/A |

:BERT:BTS:LOOPback:EDGE:MCS5[:DATA]

Supported All with Option 300

:DATA:BERT:BTS:LOOPback:EDGE:MCS5[:DATA]? IEC|IEBC|DEFc|BCO|IER|IABer|ALL|TEC|TEBC|TDEFc|TBCO|TER|TABer|TALL|JUDGE|STOP|SCAuse

This data query returns the measurement result value for each variable.

IEC|IEBC|DEFc|BCO|IER|IABer are intermediate values, so during the measurement, these variables are updated as well as the display information. ALL returns all intermediate values at the same time.

At the end of the measurement, the final values are stored to:

TEC|TEBC|TDEFc|TBCO|TER|TABer variables. These variables and

JUDGE|STOP|SCAUSE are not updated until the next BER measurement is completed.

For more information on the parameters, refer to [page 371](#).

| | |
|------------------|-----|
| *RST | N/A |
| Range | N/A |
| Key Entry | N/A |
| Remarks | N/A |

:BERT:BTS:LOOPback:EDGE:MCS9[:DATA]

Supported All with Option 300

:DATA:BERT:BTS:LOOPback:EDGE:MCS9[:DATA]? IEC|IEBC|DEFC|BCO|IER|IABer|ALL|TEC|TEBC|TDEFc|TBCO|TER|TABer|TALL|JUDGE|STOP|SCAUSE

This data query returns the measurement result value for each variable.

IEC|IEBC|DEFC|BCO|IER|IABer are intermediate values, so during the measurement, these variables are updated as well as the display information. ALL returns all intermediate values at the same time.

At the end of the measurement, the final values are stored to: TEC|TEBC|TDEFc|TBCO|TER|TABer variables. These variables and JUDGE|STOP|SCAUSE are not updated until the next BER measurement is completed.

For more information on the parameters, refer to [page 371](#).

| | |
|------------------|-----|
| *RST | N/A |
| Range | N/A |
| Key Entry | N/A |
| Remarks | N/A |

:BERT:BTS:LOOPback:EDGE:UNCoded[:DATA]

Supported All with Option 300

:DATA:BERT:BTS:LOOPback:EDGE:UNCoded[:DATA]? IEC|IEBC|DEFC|BCO|IER|IABer|ALL|TEC|TEBC|TDEFc|TBCO|TER|TABer|TALL|JUDGE|STOP|SCAUSE

This data query returns the measurement result value for each variable.

IEC|IEBC|DEFC|BCO|IER|IABer are intermediate values, so during the measurement, these variables are updated as well as the display information. ALL

returns all intermediate values at the same time.

At the end of the measurement, the final values are stored to: TEC | TEBC | TDEFc | TBCO | TER | TABer variables. These variables and JUDGE | STOP | SCAuse are not updated until the next BER measurement is completed.

For more information on the parameters, refer to [page 371](#).

| | |
|------------------|-----|
| *RST | N/A |
| Range | N/A |
| Key Entry | N/A |
| Remarks | N/A |

:BERT:BTS:LOOPback:GSM[:DATA]

Supported All with Option 300

:DATA:BERT:BTS:LOOPback:GSM[:DATA]? IBC | IIC | FEC | DFEC | FRC |
 IBBer | ALL | TEC | TEBC | TDEFc | TBCO | TER | TABer | TALL | JUDGE | STOP | SCAuse

This data query returns the measurement result value for each variable.

IBC | IIC | FEC | DFEC | FRC | IBBer | IIBer | FER are intermediate values, so during the measurement, these variables are updated as well as the display information. ALL returns intermediate values at the same time.

At the end of the measurement, the final values are stored to: TIBC | TIIC | TFEC | TDEFc | TFRC | TIBBer | TIIBer | TFER variables. These variables and JUDGE | JCAuse | STOP | SCAuse are not updated until the next BER measurement is completed. TALL returns all of the total values at the same time.

| | |
|-------|--|
| IBC | This choice provides the intermediate class Ib error count with the following range: <Integer> 0 to 792000000. |
| IIC | This choice provides the intermediate class II error count with the following range: <Integer> 0 to 468000000. |
| FEC | This choice provides the intermediate frame erasure count with the following range: <Integer> 0 to 6000000. |
| DFEC | This choice provides the intermediate downlink error frame count with the following range: <Integer> 0 to 65535. |
| FRC | This choice provides the intermediate frame count with the following range: <Integer> 0 to 6000000. |
| IBBer | This choice provides the intermediate class Ib error ratio with the |

| | |
|--------|---|
| | following range: <Real> 0 to 1 (0 to 100%). |
| IIBer | This choice provides the intermediate class II error ratio with the following range: <Real> 0 to 1 (0 to 100%). |
| FER | This choice provides the intermediate frame erasure ratio with the following range: <Real> 0 to 1 (0 to 100%). |
| ALL | This choice provides all intermediate values (IBC, IIC, FEC, DEFC, FRC, IBBer, IIBer, FER) at the same time. |
| TIBC | This choice provides the total class Ib bit error count with the following range: <Integer> 0 to 792000000. |
| TIIC | This choice provides the total class II bit error count with the following range: <Integer> 0 to 468000000. |
| TFEC | This choice provides the total frame erasure count with the following range: <Integer> 0 to 6000000. |
| TDEFc | This choice provides the total downlink error frame count with the following range: <Integer> 0 to 65535. |
| TFRC | This choice provides the total frame count with the following range: <Integer> 0 to 6000000. |
| TIBBer | This choice provides the total class Ib error ratio with the following range: <Real> 0 to 1 (0 to 100%). |
| TIIBer | This choice provides the total class II error ratio with the following range: <Real> 0 to 1 (0 to 100%). |
| TFER | This choice provides the total frame erasure ratio with the following range: <Real> 0 to 1 (0 to 100%). |
| TALL | This choice returns all total values (TIBC TIIC TFEC TDEFc TFRC TIBBer TIIBer TFER JUDGE JCAuse STOP SCAuse) at the same time. If accidental TCH synchronization loss caused the measurement to stop, TSLoss is returned. |
| JUDGE | This choice provides the comparator result (TEST OUT) with the following values: <Enumerated set> FAIL PASS NONE. If pass/fail criteria is NOLimit, NONE is returned |
| JCAuse | This choice provides which limit was met to cause the comparator result by returning one of the following values: <Enumerated set> NOLimit FER CIB CII |
| STOP | This choice checks to see if the stop threshold is met and returns one of the following values: <Enumerated set> TRUE FALSE. When threshold |

| | |
|-----------|---|
| | to stop criteria is NONE, FALSE is returned. |
| SCAuse | This choice provides the stop cause by returning one of the following values: <Enumerated set> NONE FE CIB CII TSLoss. If accidental TCH synchronization loss caused the measurement to stop, TSLoss is returned. |
| *RST | N/A |
| Range | N/A |
| Key Entry | N/A |
| Remarks | N/A |

:BERT:BTS:LOOPback:GSM:CS1[:DATA]

Supported All with Option 300

:DATA:BERT:BTS:LOOPback:GSM:CS1[:DATA]? IEC|IEBC|DEFc|BCO|IER|IABer|ALL|TEC|TEBC|TDEFc|TBCO|TER|TABer|TALL|JUDGe|STOP|SCAuse

This data query returns the measurement result value for each variable.

IEC|IEBC|DEFc|BCO|IER|IABer are intermediate values, so during the measurement, these variables are updated as well as the display information. ALL returns all intermediate values at the same time.

At the end of the measurement, the final values are stored to: TEC|TEBC|TDEFc|TBCO|TER|TABer variables. These variables and JUDGe|STOP|SCAuse are not updated until the next BER measurement is completed.

For more information on the parameters, refer to [page 371](#).

| | |
|-----------|-----|
| *RST | N/A |
| Range | N/A |
| Key Entry | N/A |
| Remarks | N/A |

:BERT:BTS:LOOPback:GSM:CS4[:DATA]

Supported All with Option 300

:DATA:BERT:BTS:LOOPback:GSM:CS4[:DATA]? IEC|IEBC|DEFc|BCO|IER|IABer|ALL|TEC|TEBC|TDEFc|TBCO|TER|TABer|TALL|JUDGe|STOP|SCAuse

This data query returns the measurement result value for each variable.

IEC | IEBC | DEFC | BCO | IER | IABer are intermediate values, so during the measurement, these variables are updated as well as the display information. ALL returns all intermediate values at the same time.

At the end of the measurement, the final values are stored to: TEC | TEBC | TDEFc | TBCO | TER | TABer variables. These variables and JUDGE | STOP | SCAuse are not updated until the next BER measurement is completed.

For more information on the parameters, refer to [page 371](#).

| | |
|------------------|-----|
| *RST | N/A |
| Range | N/A |
| Key Entry | N/A |
| Remarks | N/A |

:BERT:BTS:LOOPback:GSM:MCS1[:DATA]

Supported All with Option 300

:DATA:BERT:BTS:LOOPback:GSM:MCS1[:DATA]? IEC | IEBC | DEFC | BCO | IER | IABer | ALL | TEC | TEBC | TDEFc | TBCO | TER | TABer | TALL | JUDGE | STOP | SCAuse

This data query returns the measurement result value for each variable.

IEC | IEBC | DEFC | BCO | IER | IABer are intermediate values, so during the measurement, these variables are updated as well as the display information. ALL returns all intermediate values at the same time.

At the end of the measurement, the final values are stored to: TEC | TEBC | TDEFc | TBCO | TER | TABer variables. These variables and JUDGE | STOP | SCAuse are not updated until the next BER measurement is completed.

For more information on the parameters, refer to [page 371](#).

| | |
|------------------|-----|
| *RST | N/A |
| Range | N/A |
| Key Entry | N/A |
| Remarks | N/A |

:BERT:AUXout

Supported All with Option UN7

```
:DATA:BERT[:BASeband]:AUXout ERRor|REFerence|PN9
:DATA:BERT[:BASeband]:AUXout?
```

This command selects a pre-defined output signal configuration for pins on the AUX I/O rear panel connector. Refer to [Table 1](#) for the output pin configuration and signal type.

- ERRor This choice selects the bit error rate (BER) information output.
- REFerence This choice selects the reference information output.
- PN9 This choice selects a pseudo-random data output.

Table 1 AUX I/O pin configurations

| Pin# | ERRor | REFerence | PN9 |
|------|---------------|----------------|---------------|
| 1 | BER Meas End | BER Data Out | PN9 Data |
| 4 | BER Sync Loss | Sync Start | No signal |
| 20 | BER Test Out | BER Clock Out | PN9 Clock |
| 21 | BER Error Out | BER Error Out | BER Error Out |
| 22 | BER No Data | Reference Data | No signal |

- BER Meas End A signal at this pin indicates the status of the bit error rate (BER) measurements. BER measurements are being executed when the signal is high.
- BER Sync loss A low signal at this pin indicates that the synchronization is lost. This signal is valid only when the signal at the BER Meas End pin is high.
- BER Test Out A signal at this pin indicates the test result of the bit error rate measurements. The result is guaranteed at the falling edge of the BER Meas End signal. The result is pass when the signal is low; the result is fail when the signal is high. The signal is also high when the pass/fail judgment is set to off.
- BER Error Out A signal at this pin indicates the number of the error bits. The output is normally low. One pulse signal (pulse width matches the input clock) indicates one error bit. Pulses for the error bits of one measurement cycle are not synchronized with the rear panel

| | |
|------------------|---|
| | connector BER CLK IN signal and are output when the BER Meas End signal is high. |
| BER No Data | A low signal at this pin indicates the no data status. The no data status is reported when there has been no clock inputs for more than 3 seconds or there has been no data change for more than 200 bits. This signal is valid only when the signal of the BER Meas End output signal is high. |
| BER Clock Out | The BER Clock Out signal monitors the rear panel BER CLK IN signal after polarity control, delay control, and gate control (if applicable) have taken place. |
| BER Data Out | This is a data stream for the bit error rate measurements. The clock signal is used to trigger the reading of the data. |
| Sync Start | This signal indicates the timing when the PN generator starts to generate a PN sequence. This signal can also indicate if the hardware is triggering a PN synchronization or making a measurement when the signal is high. |
| PN9 Clock | This signal is the clock signal for the PN9 Data. The falling edge of the PN9 Clock indicates the center of PN9 Data. The PN9 Clock rate is 37.5Mbits per second. |
| PN9 Data | This signal is PN9 data for the self-loopback test. |
| Reference Data | This signal uses the pseudo-random bit stream as the reference signal. |
| *RST | ERRor |
| Key Entry | Error Out Reference Out PN9 Out |
| Remarks | N/A |

[:DATA]

Supported All with Option UN7

:DATA [:DATA] ? BEC | BITC | BER | ALL | TBEC | TBIT | TBER | JUDGE

This query returns the data measurement for the selected variable.

| | |
|------|---|
| BEC | This choice provides the intermediate bit error count result. |
| BITC | This choice provides the intermediate bit count result. |
| BER | This choice provides the intermediate bit error rate result. |

| | |
|------------------|---|
| ALL | This choice provides the values of the bit error count, bit error rate, and bit count in the following format: <bit count>, <error count>, <bit error rate> |
| TBEC | This choice provides the total bit error count at the end of each cycle. |
| TBIT | This choice provides the total bit count at the end of each cycle. |
| TBER | This choice provides the total bit error rate at the end of each cycle. |
| JUDGe | This choice provides the pass or fail string. |
| *RST | N/A |
| Range | N/A |
| Key Entry | N/A |
| Remarks | N/A |

Input Subsystem–Option UN7 (:INPut:BERT[: BASEband])

:CGATe:DELay:CLOCK

Supported All with Option UN7

```
:INPut:BERT[:BASEband]:CGATe:DELay:CLOCK <val>  
:INPut:BERT[:BASEband]:CGATe:DELay:CLOCK?
```

This command sets the number of delay bits for the signal applied to the BER GATE IN rear panel connector.

One bit corresponds with one bit of delay for the input clock.

***RST** 1

Range 1–16384

Key Entry Gate Clk Delay

Remarks The gate delay mode must be set to CLOCK for this command to work. Refer to “:CGATe:DELay:MODE”. Also, the gate and gate delay must be enabled for this command to work. Refer to “:CGATe[:STATE]” on page 383 and “:CGATe:DELay[:STATE]” on page 382.

:CGATe:DELay:MODE

Supported All with Option UN7

```
:INPut:BERT[:BASEband]:CGATe:DELay:MODE TIME|CLOCK  
:INPut:BERT[:BASEband]:CGATe:DELay:MODE:?
```

This command selects the operating mode of the gate delay.

TIME This choice selects the time mode which makes it possible to set the gate time delay in absolute time and the resolution.

CLOCK This choice selects the clock mode which enables you to set the gate delay by a set number of bits.

***RST** TIME

Key Entry Gate Mode Time Clk

Remarks The gate state and gate delay state must be enabled for this command to work. Refer to “:CGATe[:STATE]” on page 383 and

[“:CGATe:DELay\[:STATe\]” on page 382.](#)

:CGATe:DELay:TIME

Supported All with Option UN7

```
:INPut:BERT[:BASEband]:CGATe:DELay:TIME <val><unit>
:INPut:BERT[:BASEband]:CGATe:DELay:TIME?
```

This command sets the delay time of the gate signal. The gate delay time must be the multiple of the minimum resolution value and if not, the delay resolution is automatically rounded to the nearest multiplied value of the gate time delay value.

The variable <val> is expressed in units of seconds (s), milliseconds (ms), microseconds (μs), and nanoseconds (ns).

***RST** +2.67000000E-008

Range 2.67 ns–1.0 s

Key Entry Gate Time Delay

Remarks Gate Delay Off On must be set to On and Gate Mode Time Clk set to Time for this command to work. Refer to [“:CGATe:DELay\[:STATe\]” on page 382](#) and [“:CGATe:DELay:MODE” on page 381](#).

To set the resolution, refer to [“:CLOCK:DELay:RESolution” on page 383](#).

:CGATe:DELay[:STATe]

Supported All with Option UN7

```
:INPut:BERT[:BASEband]:CGATe:DELay[:STATe] ON|OFF|1|0
:INPut:BERT[:BASEband]:CGATe:DELay[:STATe]?
```

This command enables or disables the operating state of the gate delay.

ON This choice enables the gate delay adjustment function.

OFF This choice disables the gate delay adjustment function.

***RST** 0

Key Entry Gate Delay Off On

Remarks The gate must be enabled for this command to work. To enable the gate, refer to [“:CGATe\[:STATe\]” on page 383](#).

:CGATe:POLarity

Supported All with Option UN7

```
:INPut:BERT[:BASEband]:CGATe:POLarity POSitive|NEGative  
:INPut:BERT[:BASEband]:CGATe:POLarity?
```

This command sets the input polarity of the gate signal supplied to the BER GATE IN rear panel connector.

POS With this choice, the signal is valid when the gate signal is high.

NEG With this choice, the signal is valid when the gate signal is low.

***RST** POS

Key Entry Gate Polarity Neg Pos

Remarks N/A

:CGATe[:STATe]

Supported All with Option UN7

```
:INPut:BERT[:BASEband]:CGATe[:STATe] ON|OFF|1|0  
:INPut:BERT[:BASEband]:CGATe[:STATe]?
```

This command sets the operating state of the clock gate function.

ON This choice enables the clock gate function.

OFF This choice disables the clock gate function.

***RST** 0

Key Entry Gate Off On

Remarks N/A

:CLOCK:DELAy:RESolution

Supported All with Option UN7

```
:INPut:BERT[:BASEband]:CLOCK:DELAy:RESolution <val><unit>  
:INPut:BERT[:BASEband]:CLOCK:DELAy:RESolution?
```

This command sets the resolution of the clock delay. The minimum resolution is 13.3 ns and it corresponds to 1/75 MHz. The 75 MHz is the sampling clock for the BERT board. The input value must be a multiple of the minimum resolution. If the set value is not a multiple value, the delay resolution is automatically rounded to the nearest multiple

value with reference to the set value.

***RST** +1.33000000E-008

Range 13.3ns–80μs

Key Entry Resolution

Remarks The clock delay or the gate delay must be enabled for this command to work. Refer to “:CLOCK:DELAy[:STATe]” on page 384 and “:CGATE:DELAy[:STATe]” on page 382. A change in the resolution value can affect both the clock and the gate delay time automatically.

:CLOCK:DELAy:TIME

Supported All with Option UN7

:INPut:BERT[:BASEband]:CLOCK:DELAy:TIME <val><unit>

:INPut:BERT[:BASEband]:CLOCK:DELAy:TIME?

This command sets the clock signal delay time.

The variable <val> is expressed in units of seconds (s), milliseconds (ms), microseconds (μs), and nanoseconds (ns).

***RST** +2.67000000E-008

Range 26.7ns–999.9967600ms

Key Entry Clock Time Delay

Remarks The clock delay must be enabled for this command to work. Refer to “:CLOCK:DELAy[:STATe]” on page 384.

:CLOCK:DELAy[:STATe]

Supported All with Option UN7

:INPut:BERT[:BASEband]:CLOCK:DELAy[:STATe] ON|OFF|1|0

:INPut:BERT[:BASEband]:CLOCK:DELAy[:STATe]?

This command sets the operating state of the clock delay function.

ON This choice enables the clock delay adjustment.

OFF This choice disables the clock delay adjustment.

***RST** 0

Key Entry Clock Delay Off On

Remarks N/A

:CLOCK:POLarity

Supported All with Option UN7

:INPut:BERT[:BASEband]:CLOCK:POLarity POSitive|NEGative
:INPut:BERT[:BASEband]:CLOCK:POLarity?

This command sets the input polarity of the clock signal supplied to the BER CLK IN rear panel connector.

POS With this choice, the signal is valid when the clock signal is high.

NEG With this choice, the signal is valid when the clock signal is low.

***RST** POS

Key Entry **Clock Polarity Neg Pos**

Remarks N/A

:DATA:POLarity

Supported All with Option UN7

:INPut:BERT[:BASEband]:DATA:POLarity POSitive|NEGative
:INPut:BERT[:BASEband]:DATA:POLarity?

This command sets the input polarity of the data signal supplied to the BER DATA IN rear panel connector.

POS With this choice, the signal is valid when the data signal is high.

NEG With this choice, the signal is valid when the data signal is low.

***RST** POS

Key Entry **Data Polarity Neg Pos**

Remarks N/A

:IMPedance

Supported All with Option UN7

:INPut:BERT[:BASEband]:IMPedance OHM_75|HIGH

:INPut:BERT[:BASEband]:IMPedance?

This command sets the input termination mode of the BER CLK IN, BER DATA IN, and BER GATE IN rear panel connectors.

***RST** HIGH

Key Entry Impedance 75 Ohm High

Remarks N/A

:THReshold

Supported All with Option UN7

:INPut:BERT[:BASEband]:THReshold V0_7|V1_4|V1_65|V2_5

:INPut:BERT[:BASEband]:THReshold?

This command sets the threshold voltage level of the BER CLK IN, BER DATA IN, and BER GATE IN rear panel connectors.

V0_7 This choice selects 0.7 volts (normal TTL) as the turn-on voltage for the input signal.

V1_4 This choice selects 1.4 volts (Schmit TTL) as the turn-on voltage for the input signal.

V1_65 This choice selects 1.65 volts (CMOS 3.3 volts is the maximum operating range) as the turn-on voltage for the input signal.

V2_5 This choice selects 2.5 volts (CMOS 5 volts is the maximum operating range) as the turn-on voltage for the input signal.

***RST** V1_4

Key Entry 0.7V 1.4V 1.65V 2.5V

Remarks N/A

Measure Subsystem–Option 300 (:MEASure[:SCALar]:BERT:BTS:LOOPback)

:EDGE:MCS5[:SENSitivity]

Supported All with Option 300

```
:MEASure[:SCALAR]:BERT:BTS:LOOPback:EDGE:MCS5[:SENSitivity]?  
<high amplitude><unit>,<low amplitude><unit>,<pass amplitude><unit>,  
<error sensitivity limit>,<block count>,<initial block count>
```

This query returns either PASS or FAIL and the result for the measured sensitivity level. When this command is executed before the signal generator is synchronized with the BTS, the message “Fail, -999.00” is displayed.

There are two other status errors that may be returned; SERR or DERR.

| | |
|------|---|
| SERR | This indicates that RF synchronization is lost during search and the search is aborted. |
| DERR | This indicates that a downlink error occurred during search and the search is aborted. |

When these errors are returned, the sensitivity search returns a value of -1.0.

This command can be used in both the BER% measurement or the sensitivity search mode. After this command is executed, the measurement mode is in the sensitivity search mode.

***RST** N/A

Range N/A

Key Entry N/A

Remarks The trigger source must be set to IMMEDIATE to execute this command. If the trigger source selection is BUS, error “-214 Trigger deadlock” is generated and no data is returned.

:EDGE:MCS9[:SENSitivity]

Supported All with Option 300

```
:MEASure[:SCALAR]:BERT:BTS:LOOPback:EDGE:MCS9[:SENSitivity]?  
<high amplitude><unit>,<low amplitude><unit>,<pass amplitude><unit>,  
<error sensitivity limit>,<block count>,<initial block count>
```

This query returns either PASS or FAIL and the result for the measured sensitivity level. When this command is executed before the signal generator is synchronized with the BTS, the message “Fail, -999.00” is displayed.

There are two other status errors that may be returned; SERR or DERR.

- | | |
|------|---|
| SERR | This indicates that RF synchronization is lost during search and the search is aborted. |
| DERR | This indicates that a downlink error occurred during search and the search is aborted. |

When these errors are returned, the sensitivity search returns a value of -1.0.

This command can be used in both the BER% measurement or the sensitivity search mode. After this command is executed, the measurement mode is in the sensitivity search mode.

***RST** N/A

Range N/A

Key Entry N/A

Remarks The trigger source must be set to IMMEDIATE to execute this command. If the trigger source selection is BUS, error “-214 Trigger deadlock” is generated and no data is returned.

:EDGE:UNCoded[:SENSitivity]

Supported All with Option 300

```
:MEASure[:SCALAR]:BERT:BTS:LOOPback:EDGE:UNCoded[:SENSitivity]?  
<high amplitude><unit>,<low amplitude><unit>,<pass amplitude><unit>,  
<error sensitivity limit>,<block count>,<initial block count>
```

This query returns either PASS or FAIL and the result for the measured sensitivity level. When this command is executed before the signal generator is synchronized with the BTS, the message “Fail, -999.00” is displayed.

There are two other status errors that may be returned; SERR or DERR.

Measure Subsystem—Option 300 (:MEASure[:SCALar]:BERT:BTS:LOOPback)

| | |
|------|---|
| SERR | This indicates that RF synchronization is lost during search and the search is aborted. |
| DERR | This indicates that a downlink error occurred during search and the search is aborted. |

When these errors are returned, the sensitivity search returns a value of -1.0 .

This command can be used in both the BER% measurement or the sensitivity search mode. After this command is executed, the measurement mode is in the sensitivity search mode.

| | |
|------------------|--|
| *RST | N/A |
| Range | N/A |
| Key Entry | N/A |
| Remarks | The trigger source must be set to IMMEDIATE to execute this command. If the trigger source selection is BUS, error “-214 Trigger deadlock” is generated and no data is returned. |

:GSM[:SENSitivity]

Supported All with Option 300

```
:MEASure[:SCALAR]:BERT:BTS:LOOPback:GSM[:SENSitivity]?
<high amplitude><unit>,<low amplitude><unit>,<pass amplitude><unit>,<error sensitivity limit>,<block count>,<initial block count>
```

This query returns either PASS or FAIL and the result for the measured sensitivity level. When this command is executed before the signal generator is synchronized with the BTS, the message “Fail, -999.00 ” is displayed.

There are two other status errors that may be returned; SERR or DERR.

| | |
|------|---|
| SERR | This indicates that RF synchronization is lost during search and the search is aborted. |
| DERR | This indicates that a downlink error occurred during search and the search is aborted. |

When these errors are returned, the sensitivity search returns a value of -1.0 .

This command can be used in both the BER% measurement or the sensitivity search mode. After this command is executed, the measurement mode is in the sensitivity search mode.

| | |
|-------------|-----|
| *RST | N/A |
|-------------|-----|

Bit Error Rate Test (BERT) Commands

Measure Subsystem–Option 300 (:MEASure[:SCALar]:BERT:BTS:LOOPback)

Range N/A

Key Entry N/A

Remarks The trigger source must be set to IMMEDIATE to execute this command. If the trigger source selection is BUS, error “-214 Trigger deadlock” is generated and no data is returned.

Sense Subsystem–Options UN7 and 300 ([:SOURCE]:SENSE:BERT)

:BTS:LOOPback:EDGE:ETCH:F43:BLOCK:COUNT

Supported All with Option 300

```
:SENSE:BERT:BTS:LOOPback:EDGE:ETCH:F43:BLOCK:COUNT <val>  
:SENSE:BERT:BTS:LOOPback:EDGE:ETCH:F43:BLOCK:COUNT?
```

This command specifies the total number of blocks to be measured.

***RST** +600

Range 1–1500000

Key Entry **Block Count**

Remarks N/A

:BTS:LOOPback:EDGE:ETCH:F43:CONTain

Supported All with Option 300

```
:SENSE:BERT:BTS:LOOPback:EDGE:ETCH:F43:CONTain ON|OFF|1|0  
:SENSE:BERT:BTS:LOOPback:EDGE:ETCH:F43:CONTain?
```

This command enables or disables the BER measurement for ETCH/F43 channels in addition to the BLER measurement.

ON With this choice, data bits of the specified number of blocks are measured.

OFF This choice disables the measurement.

***RST** 1

Key Entry **BER Mode Off On**

Remarks N/A

:BTS:LOOPback:EDGE:ETCH:F43:STOP:CRITeria:EBLock**Supported** All with Option 300

:SENSE:BERT:BTS:LOOPback:EDGE:ETCH:F43:STOP:CRITeria:EBLock <val>

:SENSE:BERT:BTS:LOOPback:EDGE:ETCH:F43:STOP:CRITeria:EBLock?

This command specifies the number of erased blocks that contain bit errors for the threshold limit to stop the measurement.

RST** +60**Range** 0–1500000**Key Entry** **Block Erasure*Remarks** N/A**:BTS:LOOPback:EDGE:ETCH:F43:STOP:CRITeria[:SELEct]****Supported** All with Option 300

:SENSE:BERT:BTS:LOOPback:EDGE:ETCH:F43:STOP:CRITeria[:SELEct] EBlock|

NONE

:SENSE:BERT:BTS:LOOPback:EDGE:ETCH:F43:STOP:CRITeria[:SELEct]?

This command determines which of the following threshold criteria is used to prematurely stop the measurement prior to the normal measurement end. In each case, the measurement will terminate no later than 200 ms after the threshold is exceeded.

EBlock This choice enables you to specify the number of erased blocks.

NONE This choice disables the stop measurement threshold criteria function.

RST** NONE**Key Entry** **Block Erasure No Thresholds*Remarks** N/A**:BTS:LOOPback:EDGE:FTRigger:EXTernal:DELay****Supported** All with Option 300

:SENSE:BERT:BTS:LOOPback:EDGE:FTRigger:EXTernal:DELay <val>

:SENSE:BERT:BTS:LOOPback:EDGE:FTRigger:EXTernal:DELay?

This command specifies the delay time of the external frame trigger. This delay is the offset from the beginning of timeslot 0.

The variable <val> is expressed in symbols with a resolution of 0.25.

| | |
|------------------|---|
| *RST | +0.00000000E+000 |
| Range | -1250 to 1250 |
| Key Entry | Ext Frame Trigger Delay |
| Remarks | Refer to the <i>User's Guide</i> for information on how to calculate the delay value. |

:BTS:LOOPback:EDGE:FTRigger:EXTErnal:POLarity

Supported All with Option 300

```
:SENSe:BERT:BTS:LOOPback:EDGE:FTRigger:EXTErnal:POLarity POSitive|
NEGative
[:SENSe:BERT:BTS:LOOPback:EDGE:FTRigger:EXTErnal:POLarity?
```

This command specifies the external frame trigger polarity.

| | |
|------------------|--|
| POS | This selects the reference edge to be the rising edge of the pulse. |
| NEG | This selects the reference edge to be the falling edge of the pulse. |
| *RST | POS |
| Key Entry | External Frame Trigger Polarity Neg Pos |
| Remarks | N/A |

:BTS:LOOPback:EDGE:FTRigger[SELEct]

Supported All with Option 300

```
:SENSe:BERT:BTS:LOOPback:EDGE:FTRigger[:SELEct] INTernAl|EXTernAl
[:SENSe:BERT:BTS:LOOPback:EDGE:FTRigger[:SELEct]?
```

This command specifies the frame trigger source to be used by the baseband generator.

| | |
|------------------|---|
| INTernAl | This choice enables internal triggering. |
| EXTernAl | This choice enables the triggering by an externally applied signal at the rear panel connector. |
| *RST | INT |
| Key Entry | Frame Trigger Source Int Ext |
| Remarks | To enable this command, the frame trigger synchronization source must be PDCH. Refer to “:BTS:LOOPback:EDGE:SYNC[:SOURce]” on |

page 404.

:BTS:LOOPback:EDGE:MCS5:BLOCK:COUNT**Supported** All with Option 300

:SENSe:BERT:BTS:LOOPback:EDGE:MCS5:BLOCK:COUNT <value>

:SENSe:BERT:BTS:LOOPback:EDGE:MCS5:BLOCK:COUNT?

This command specifies the total number of blocks to be measured.

RST** +600**Range** 1–1500000**Key Entry** **Block Count*Remarks** N/A**:BTS:LOOPback:EDGE:MCS5:CONTain****Supported** All with Option 300

:SENSe:BERT:BTS:LOOPback:EDGE:MCS5:CONTain ON|OFF|1|0

:SENSe:BERT:BTS:LOOPback:EDGE:MCS5:CONTain?

This command enables or disables the BER measurement for MCS-5 channels in addition to the BLER measurement.

ON With this choice, data bits of the specified number of blocks are measured.

OFF This choice disables the measurement.

RST** 1**Key Entry** **BER Mode Off On*Remarks** N/A**:BTS:LOOPback:EDGE:MCS5:ESENsitivity****Supported** All with Option 300

:SENSe:BERT:BTS:LOOPback:EDGE:MCS5:ESENsitivity <val>

:SENSe:BERT:BTS:LOOPback:EDGE:MCS5:ESENsitivity?

This command specifies the target error rate when performing a sensitivity search.

The variable <val> is a decimal notation representing a percentage value.

***RST** +1.00000000E-001
Range 1E-6 to 1
Key Entry Target BER %
Remarks N/A

:BTS:LOOPback:EDGE:MCS5:HAMplitude

Supported All with Option 300

:SENSE:BERT:BTS:LOOPback:EDGE:MCS5:HAMplitude <val>
:SENSE:BERT:BTS:LOOPback:EDGE:MCS5:HAMplitude?

This command specifies the maximum amplitude level for performing a sensitivity search. The high amplitude value can not be lower than the low amplitude value.

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

***RST** -9.00000000E+001
Range -136 to 20
Key Entry High Amplitude
Remarks N/A

:BTS:LOOPback:EDGE:MCS5:LAMplitude

Supported All with Option 300

:SENSE:BERT:BTS:LOOPback:EDGE:MCS5:LAMplitude <val>
:SENSE:BERT:BTS:LOOPback:EDGE:MCS5:LAMplitude?

This command specifies the minimum amplitude level for performing a sensitivity search. The low amplitude value can not be higher than the high amplitude value.

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

***RST** -1.10000000E+002
Range -136.0 to 20
Key Entry Low Amplitude
Remarks N/A

:BTS:LOOPback:EDGE:MCS5:PAMplitude**Supported** All with Option 300

:SENSe:BERT:BTS:LOOPback:EDGE:MCS5:PAMplitude <val>

:SENSe:BERT:BTS:LOOPback:EDGE:MCS5:PAMplitude?

This command specifies the threshold amplitude for pass/fail comparator results when performing a sensitivity search.

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

RST** -1.01000000E+002**Range** -136.0 to 20**Key Entry** Pass Amplitude**Remarks** N/A**:BTS:LOOPback:EDGE:MCS5:SBLock:COUNT*Supported** All with Option 300

:SENSe:BERT:BTS:LOOPback:EDGE:MCS5:SBLock:COUNT <val>

:SENSe:BERT:BTS:LOOPback:EDGE:MCS5:SBLock:COUNT?

This command specifies the total number of blocks for each measurement during the sensitivity search.

RST** +1200**Range** 1–1500000**Key Entry** Block Count**Remarks** N/A**:BTS:LOOPback:EDGE:MCS5:SBLock:INITIAL*Supported** All with Option 300

:SENSe:BERT:BTS:LOOPback:EDGE:MCS5:SBLock:INITIAL <val>

:SENSe:BERT:BTS:LOOPback:EDGE:MCS5:SBLock:INITIAL?

This command specifies the total number of blocks to be measured at the beginning of each measurement during the sensitivity search.

***RST** +600**Range** 1–1500000

Key Entry **Initial Block Count**

Remarks N/A

:BTS:LOOPback:EDGE:MCS5:STOP:CRITeria:EBLock

Supported All with Option 300

```
:SENSE:BERT:BTS:LOOPback:EDGE:MCS5:STOP:CRITeria:EBLock <val>
:SENSE:BERT:BTS:LOOPback:EDGE:MCS5:STOP:CRITeria:EBLock?
```

This command specifies the number of erased blocks that contain bit errors for the threshold limit to stop the measurement.

***RST** +60

Range 0–1500000

Key Entry **Block Erasure**

Remarks N/A

:BTS:LOOPback:EDGE:MCS5:STOP:CRITeria[:SElect]

Supported All with Option 300

```
:SENSE:BERT:BTS:LOOPback:EDGE:MCS5:STOP:CRITeria[:SElect] EBlock|NONE
:SENSE:BERT:BTS:LOOPback:EDGE:MCS5:STOP:CRITeria[:SElect]?
```

This command determines which of the following threshold criteria is used to prematurely stop the measurement prior to the normal measurement end. In each case, the measurement will terminate no later than 200 ms after the threshold is exceeded.

EBlock This choice enables you to specify the number of erased blocks or bit errors.

NONE This choice disables the stop measurement threshold criteria function.

***RST** NONE

Key Entry **Block Erasure No Thresholds**

Remarks N/A

:BTS:LOOPback:EDGE:MCS9:BLOCK:COUNT

Supported All with Option 300

:SENSe:BERT:BTS:LOOPback:EDGE:MCS9:BLOCK:COUNT <val>

:SENSe:BERT:BTS:LOOPback:EDGE:MCS9:BLOCK:COUNT?

This command specifies the total number of blocks to be measured.

Only even values can be entered. If odd numbers are entered, the value increments by one to make it an even value.

***RST** +600

Range 2–1500000

Key Entry **Block Count**

Remarks N/A

:BTS:LOOPback:EDGE:MCS9:CONTain

Supported All with Option 300

:SENSe:BERT:BTS:LOOPback:EDGE:MCS9:CONTain ON|OFF|1|0

:SENSe:BERT:BTS:LOOPback:EDGE:MCS9:CONTain?

This command enables or disables the BER measurement for MCS-9 channels in addition to the BLER measurement.

ON With this choice, data bits of the specified number of blocks are measured.

OFF This choice disables the measurement.

***RST** 1

Key Entry **BER Mode Off On**

Remarks N/A

:BTS:LOOPback:EDGE:MCS9:ESENSitivity

Supported All with Option 300

:SENSe:BERT:BTS:LOOPback:EDGE:MCS9:ESENSitivity <val>

:SENSe:BERT:BTS:LOOPback:EDGE:MCS9:ESENSitivity?

The variable <val> is a decimal notation representing a percentage value.

***RST** +1.00000000E-001

| | |
|------------------|--------------|
| Range | 1E-6 to 1 |
| Key Entry | Target BER % |
| Remarks | N/A |

:BTS:LOOPback:EDGE:MCS9:HAMplitude

Supported All with Option 300

```
:SENSe:BERT:BTS:LOOPback:EDGE:MCS9:HAMplitude <val>  
:SENSe:BERT:BTS:LOOPback:EDGE:MCS9:HAMplitude?
```

This command specifies the maximum amplitude level for performing a sensitivity search. The high amplitude value can not be lower than the low amplitude value.

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

***RST** -8.00000000E+001

Range -136.0 to 20

Key Entry High Amplitude

Remarks N/A

:BTS:LOOPback:EDGE:MCS9:LAMplitude

Supported All with Option 300

```
:SENSe:BERT:BTS:LOOPback:EDGE:MCS9:LAMplitude <val>  
:SENSe:BERT:BTS:LOOPback:EDGE:MCS9:LAMplitude?
```

This command specifies the minimum amplitude level for performing a sensitivity search. The low amplitude value can not be higher than the high amplitude value.

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

***RST** -1.00000000E+002

Range -136.0 to 20

Key Entry Low Amplitude

Remarks N/A

:BTS:LOOPback:EDGE:MCS9:PAMplitude**Supported** All with Option 300

:SENSe:BERT:BTS:LOOPback:EDGE:MCS9:PAMplitude <val>

:SENSe:BERT:BTS:LOOPback:EDGE:MCS9:PAMplitude?

This command specifies the threshold amplitude for pass/fail comparator results when performing a sensitivity search.

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

RST** -9.15000000E+001**Range** -136.0 to 20**Key Entry** Pass Amplitude**Remarks** N/A**:BTS:LOOPback:EDGE:MCS9:SBLock:COUNT*Supported** All with Option 300

:SENSe:BERT:BTS:LOOPback:EDGE:MCS9:SBLock:COUNT <val>

:SENSe:BERT:BTS:LOOPback:EDGE:MCS9:SBLock:COUNT?

This command specifies the total number of blocks to be measured at each measurement during the sensitivity search.

Only even values can be entered. If odd numbers are entered, the value increments by one to make it an even value.

RST** +1200**Range** 2–1500000**Key Entry** Block Count**Remarks** N/A**:BTS:LOOPback:EDGE:MCS9:SBLock:INITIAL*Supported** All with Option 300

:SENSe:BERT:BTS:LOOPback:EDGE:MCS9:SBLock:INITIAL <val>

:SENSe:BERT:BTS:LOOPback:EDGE:MCS9:SBLock:INITIAL?

This command specifies the total number of blocks to be measured at the beginning of each measurement during the sensitivity search.

Only even values can be entered. If odd numbers are entered, the value increments by one to make it an even value.

***RST** +600
Range 2–1500000
Key Entry Initial Block Count
Remarks N/A

:BTS:LOOPback:EDGE:MCS9:STOP:CRITeria:EBLock

Supported All with Option 300

```
:SENSe:BERT:BTS:LOOPback:EDGE:MCS9:STOP:CRITeria:EBLock <val>
:SENSe:BERT:BTS:LOOPback:EDGE:MCS9:STOP:CRITeria:EBLock?
```

This command specifies the number of erased blocks that contain bit errors for the threshold limit to stop the measurement.

***RST** +60
Range 0–1500000
Key Entry Block Erasure
Remarks N/A

:BTS:LOOPback:EDGE:MCS9:STOP:CRITeria[:SElect]

Supported All with Option 300

```
:SENSe:BERT:BTS:LOOPback:EDGE:MCS9:STOP:CRITeria[:SElect] EBlock|NONE
:SENSe:BERT:BTS:LOOPback:EDGE:MCS9:STOP:CRITeria[:SElect]?
```

This command determines which of the following threshold criteria is used to prematurely stop the measurement prior to the normal measurement end. In each case, the measurement will terminate no later than 200 ms after the threshold is exceeded.

EBLock This choice enables you to specify the number of non-erased blocks that contain bit errors.

NONE This choice disables the stop measurement threshold criteria function.

***RST** NONE
Key Entry Block Erasure No Thresholds
Remarks N/A

:BTS:LOOPback:EDGE:MEASurement:STOP

Supported All with Option 300

:SENSe:BERT:BTS:LOOPback:EDGE:MEASurement:STOP

This command immediately stops any current measurement and releases the PRBS synchronization. After the synchronization is released, a new PRBS synchronization is attempted.

***RST** N/A

Range N/A

Key Entry Stop Measurement

Remarks N/A

:BTS:LOOPback:EDGE:MEASurement:TSLot

Supported All with Option 300

:SENSe:BERT:BTS:LOOPback:EDGE:MEASurement:TSLot 0|1|2|3|4|5|6|7

:SENSe:BERT:BTS:LOOPback:EDGE:MEASurement:TSLot?

This command specifies the timeslot number in which the measurement is to be performed.

The following EDGE timeslot configuration conditions will generate error message “-221 Settings Conflict”:

- If the specified timeslot does not have one of the BLER/BER measurable channel types, which are uncoded, E-TCH/43.2NT, MCS-9, and MCS-5.
- If the specified timeslot type is not set to “NORMal.”

***RST** +0

Key Entry Timeslot

Remarks This command couples the selected timeslot number with the EDGE configuration.

Changing the timeslot configuration with EDGE on will not generate an error message if EDGE BERT is off and the timeslot is off.

:BTS:LOOPback:EDGE:MEASurement[:MODE]

Supported All with Option 300

```
:SENSe:BERT:BTS:LOOPback:EDGE:MEASurement[:MODE] BLER|SSEarch  
:SENSe:BERT:BTS:LOOPback:EDGE:MEASurement[:MODE]?
```

This command specifies the measurement mode.

BLER This choice specifies BLER% as the measurement mode.

SSEarch This choice specifies sensitivity search as the measurement mode.

***RST** BLER

Key Entry **Measurement Mode BLER% Search**

Remarks If the BLER% measurement is already running, this command will abort the BLER% measurement.

:BTS:LOOPback:EDGE:SINVert

Supported All with Option 300

```
:SENSe:BERT:BTS:LOOPback:EDGE:SINVert ON|OFF|1|0  
:SENSe:BERT:BTS:LOOPback:EDGE:SINVert?
```

This command sets the operating state of the spectrum inverting function.

ON This choice specifies that the EDGE demodulator invert the spectrum of the received RF signal.

OFF This choice leaves the spectrum of the received RF signal unaffected.

***RST** 1

Key Entry **Spectrum Invert Off On**

Remarks N/A

:BTS:LOOPback:EDGE:SYNC:AGain

Supported All with Option 300

```
:SENSe:BERT:BTS:LOOPback:EDGE:SYNC:AGain
```

This command adjusts the input signal level of the internal demodulator. Use this adjustment when switching from BCH synchronization to PDCH synchronization.

***RST** N/A

| | |
|------------------|--|
| Range | N/A |
| Key Entry | Adjust Gain |
| Remarks | This command is ignored unless the status displays "Waiting for PDCH." |

:BTS:LOOPback:EDGE:SYNC:RF

| | |
|---------------------------------------|---------------------|
| Supported | All with Option 300 |
| :SENSe:BERT:BTS:LOOPback:EDGE:SYNC:RF | |

This command releases the current synchronization with the BTS and immediately starts to try to synchronize to either a BCH or PDCH signal as selected with the SYNC[:SOURce] command. This command will also stop the current measurement.

| | |
|------------------|--------------------------------|
| *RST | N/A |
| Range | N/A |
| Key Entry | Synchronize to BCH/PDCH |
| Remarks | N/A |

:BTS:LOOPback:EDGE:SYNC[:SOURce]

| | |
|--|---------------------|
| Supported | All with Option 300 |
| :SENSe:BERT:BTS:LOOPback:EDGE:SYNC[:SOURce] BCH PDCH | |
| :SENSe:BERT:BTS:LOOPback:EDGE:SYNC[:SOURce]? | |

This command specifies the synchronization source from the BTS under test.

| | |
|------------------|--|
| BCH | This choice specifies the traffic channel as the synchronization source. |
| PDCH | This choice specifies the packet data channel as the synchronization source. |
| *RST | BCH |
| Key Entry | Sync Source BCH PDCH |
| Remarks | N/A |

:BTS:LOOPback:EDGE:TRIGger[:SOURce]

Supported All with Option 300

```
:SENSe:BERT:BTS:LOOPback:EDGE:TRIGger[:SOURce] IMMEDIATE|KEY|EXT|BUS
:SENSe:BERT:BTS:LOOPback:EDGE:TRIGger[:SOURce]?
```

This command determines the trigger source for the EDGE loopback bit error rate measurement.

- IMMEDIATE This choice begins the measurement directly after synchronization has been achieved.
- KEY This choice begins the measurement when the front panel **Trigger** key is pressed, provided that synchronization has been achieved. If synchronization has not occurred, the trigger is ignored.
- EXT This choice begins the measurement as soon as a trigger signal is applied to the rear panel connector provided that synchronization has been achieved. If synchronization has not occurred, the trigger is ignored.
- BUS This choice enables GPIB triggering using the *TRG or GET command or LAN and RS-232 triggering using the *TRG command.

***RST** KEY

Key Entry Immediate Trigger Key Ext Bus

Remarks An inherent variable delay will always exist when starting a measurement because the measurement must await the start of the next speech frame after the trigger. The delay can vary between 0 and 23 ms (5 frames) depending on where the trigger falls within the TDMA multiframe.

A trigger is ignored unless the EDGE loopback operating state is turned on.

:BTS:LOOPback:EDGE:ULINK:OFFSet

Supported All with Option 300

```
:SENSe:BERT:BTS:LOOPback:EDGE:ULINK:OFFSet <val>
:SENSe:BERT:BTS:LOOPback:EDGE:ULINK:OFFSet?
```

This command specifies, in symbols, the amount of compensation for the insertion of equipment such as fading simulators into the uplink RF path.

***RST** +0

Range -500 to 10000
Key Entry **Uplink Timing Advance**
Remarks N/A

:BTS:LOOPback:EDGE:UNCoded:BIT:COUNT

Supported All with Option 300
:SENSe:BERT:BTS:LOOPback:EDGE:UNCoded:BIT:COUNT <value>
:SENSe:BERT:BTS:LOOPback:EDGE:UNCoded:BIT:COUNT?

This command specifies the total number of bits to be measured for the uncoded channel.

***RST** +139200
Range 1392–2147483647
Key Entry **Bit Count**
Remarks N/A

:BTS:LOOPback:EDGE:UNCoded:ESENsitivity

Supported All with Option 300
:SENSe:BERT:BTS:LOOPback:EDGE:UNCoded:ESENsitivity <val>
:SENSe:BERT:BTS:LOOPback:EDGE:UNCoded:ESENsitivity?

This command specifies the target error rate when performing a sensitivity search.

***RST** +2.00000000E-002
Range 1E–6 to 1
Key Entry **Target BER %**
Remarks N/A

:BTS:LOOPback:EDGE:UNCoded:HAMPLitude

Supported All with Option 300
:SENSe:BERT:BTS:LOOPback:EDGE:UNCoded:HAMPLitude <val>
:SENSe:BERT:BTS:LOOPback:EDGE:UNCoded:HAMPLitude?

This command specifies the maximum amplitude level for performing a sensitivity search. The high amplitude value can not be lower than the low amplitude value.

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

***RST** -8.50000000E+001
Range -136.0 to 20
Key Entry **High Amplitude**
Remarks N/A

:BTS:LOOPback:EDGE:UNCoded:LAMPLitude

Supported All with Option 300

:SENSE:BERT:BTS:LOOPback:EDGE:UNCoded:LAMPLitude <val>
:SENSE:BERT:BTS:LOOPback:EDGE:UNCoded:LAMPLitude?

This command specifies the minimum amplitude level for performing a sensitivity search. The low amplitude value can not be higher than the high amplitude value.

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

***RST** -1.05000000E+002
Range -136.0 to 20
Key Entry **Low Amplitude**
Remarks N/A

:BTS:LOOPback:EDGE:UNCoded:PAMPLitude

Supported All with Option 300

:SENSE:BERT:BTS:LOOPback:EDGE:UNCoded:PAMPLitude <val>
:SENSE:BERT:BTS:LOOPback:EDGE:UNCoded:PAMPLitude?

This command specifies the threshold amplitude for pass/fail comparator results when performing a sensitivity search.

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

***RST** -9.50000000E+001
Range -136.0 to 20
Key Entry **Pass Amplitude**
Remarks N/A

:BTS:LOOPback:EDGE:UNCoded:SBIT:COUNT**Supported** All with Option 300

:SENSE:BERT:BTS:LOOPback:EDGE:UNCoded:SBIT:COUNT <val>

:SENSE:BERT:BTS:LOOPback:EDGE:UNCoded:SBIT:COUNT?

This command specifies the total number of bits to be measured during a sensitivity search for the uncoded channel.

RST** +139200**Range** 1392–2147483647**Key Entry** Bit Count**Remarks** N/A**:BTS:LOOPback:EDGE:UNCoded:SBIT:INITial*Supported** All with Option 300

:SENSE:BERT:BTS:LOOPback:EDGE:UNCoded:SBIT:INITial <val>

:SENSE:BERT:BTS:LOOPback:EDGE:UNCoded:SBIT:INITial?

This command specifies the total number of bits to be measured at the beginning of the sensitivity search for the uncoded channel.

RST** +13920**Range** 1392–2147483647**Key Entry** Initial Bit Count**Remarks** N/A**:BTS:LOOPback:EDGE:UNCoded:STOP:CRITeria:EBIT*Supported** All with Option 300

:SENSE:BERT:BTS:LOOPback:EDGE:UNCoded:STOP:CRITeria:EBIT <val>

:SENSE:BERT:BTS:LOOPback:EDGE:UNCoded:STOP:CRITeria:EBIT?

This command specifies the number of block erasures or bit errors, depending on the measurement channel type, for the threshold limit to stop the measurement.

***RST** +2784**Range** 0–2147483647**Key Entry** Error Count

Remarks N/A

:BTS:LOOPback:EDGE:UNCoded:STOP:CRITeria[:SElect]

Supported All with Option 300

```
:SENSe:BERT:BTS:LOOPback:EDGE:UNCoded:STOP:CRITeria[:SElect] EBIT|NONE
:SENSe:BERT:BTS:LOOPback:EDGE:UNCoded:STOP:CRITeria[:SElect]?
```

This command determines which of the following threshold criteria is used to prematurely stop the measurement prior to the normal measurement end. In each case, the measurement will terminate no later than 200 ms after the threshold is exceeded.

EBIT This choice enables you to specify the number of bit errors.

NONE This choice disables the stop measurement threshold criteria function.

***RST** NONE

Key Entry **Error Count No Thresholds**

Remarks N/A

:BTS:LOOPback:EDGE[:STATe]

Supported All with Option 300

```
:SENSe:BERT:BTS:LOOPback:EDGE[:STATe] ON|OFF|1|0
:SENSe:BERT:BTS:LOOPback:EDGE[:STATe]?
```

This command sets the operating state of the EDGE loopback bit error rate (BER) function.

ON This choice enables the EDGE loopback BER function.

OFF This choice disables the EDGE loopback BER function.

***RST** 0

Key Entry **EDGE BERT Off On**

Remarks Although you can configure the measurement parameters while the operating state is off, any command triggers sent will be ignored until the operating state is turned on.

:BTS:LOOPback:GSM:CS1:BLOCK:COUNT

Supported All with Option 300

:SENSe:BERT:BTS:LOOPback:GSM:CS1:BLOCK:COUNT <val>

:SENSe:BERT:BTS:LOOPback:GSM:CS1:BLOCK:COUNT?

This command specifies the total number of blocks to be measured.

***RST** +600

Range 1–1500000

Key Entry **Block Count**

Remarks N/A

:BTS:LOOPback:GSM:CS1:CONTain

Supported All with Option 300

:SENSe:BERT:BTS:LOOPback:GSM:CS1:CONTain ON|OFF|1|0

:SENSe:BERT:BTS:LOOPback:GSM:CS1:CONTain?

This command enables or disables the BER measurement for CS-1 channels in addition to the BLER measurement.

ON With this choice, data bits of the specified number of blocks are measured.

OFF This choice disables the BER measurement.

***RST** 1

Key Entry **BER Mode Off On**

Remarks N/A

:BTS:LOOPback:GSM:CS1:STOP:CRITeria:EBLock

Supported All with Option 300

:SENSe:BERT:BTS:LOOPback:GSM:CS1:STOP:CRITeria:EBLock <val>

:SENSe:BERT:BTS:LOOPback:GSM:CS1:STOP:CRITeria:EBLock?

This command specifies the number of erased blocks that contain bit errors for the threshold limit to stop the measurement.

***RST** +60

Range 0–1500000

Key Entry **Block Erasure**

Remarks N/A

:BTS:LOOPback:GSM:CS1:STOP:CRITeria[:SElect]

Supported All with Option 300

```
:SENSe:BERT:BTS:LOOPback:GSM:CS1:STOP:CRITeria[:SElect] EBlock|NONE
:SENSe:BERT:BTS:LOOPback:GSM:CS1:STOP:CRITeria[:SElect]?
```

This command determines which of the following threshold criteria is used to prematurely stop the measurement prior to the normal measurement end. In each case, the measurement will terminate no later than 200 ms after the threshold is exceeded.

EBlock This choice enables you to specify the number of erased blocks.

NONE This choice disables the stop measurement threshold criteria function.

***RST** NONE

Key Entry **Block Erasure** **No Thresholds**

Remarks N/A

:BTS:LOOPback:GSM:CS4:BLOCK:COUNT

Supported All with Option 300

```
:SENSe:BERT:BTS:LOOPback:GSM:CS4:BLOCK:COUNT <value>
:SENSe:BERT:BTS:LOOPback:GSM:CS4:BLOCK:COUNT?
```

This command specifies the total number of blocks to be measured.

***RST** +600

Range 1 to 1500000

Key Entry **Block Count**

Remarks N/A

:BTS:LOOPback:GSM:CS4:CONTain

Supported All with Option 300

```
:SENSe:BERT:BTS:LOOPback:GSM:CS4:CONTain ON|OFF|1|0
:SENSe:BERT:BTS:LOOPback:GSM:CS4:CONTain?
```

This command enables or disables the BER measurement for CS-4 channels in addition

to the BLER measurement.

| | |
|------------------|---|
| ON | With this choice, data bits of the specified number of blocks are measured. |
| OFF | This choice disables the BER measurement. |
| *RST | 1 |
| Key Entry | BER Mode Off On |
| Remarks | N/A |

:BTS:LOOPback:GSM:CS4:STOP:CRITeria:EBLock

Supported All with Option 300

```
:SENSe:BERT:BTS:LOOPback:GSM:CS4:STOP:CRITeria:EBLock <val>
:SENSe:BERT:BTS:LOOPback:GSM:CS4:STOP:CRITeria:EBLock?
```

This command specifies the threshold limit to stop the measurement which is the number of erased blocks that contain bit errors.

| | |
|------------------|----------------------|
| *RST | +60 |
| Range | 0–1500000 |
| Key Entry | Block Erasure |
| Remarks | N/A |

:BTS:LOOPback:GSM:CS4:STOP:CRITeria[:SElect]

Supported All with Option 300

```
:SENSe:BERT:BTS:LOOPback:GSM:CS4:STOP:CRITeria[:SElect] EBLock|NONE
:SENSe:BERT:BTS:LOOPback:GSM:CS4:STOP:CRITeria[:SElect]?
```

This command determines which of the following threshold criteria is used to prematurely stop the measurement prior to the normal measurement end. In each case, the measurement will terminate no later than 200 ms after the threshold is exceeded.

| | |
|------------------|--|
| EBLock | This choice enables you to specify the number of erased blocks. |
| NONE | This choice disables the stop measurement threshold criteria function. |
| *RST | NONE |
| Key Entry | Block Erasure No Thresholds |
| Remarks | N/A |

:BTS:LOOPback:GSM:ESENSitivity

Supported All with Option 300

```
:SENSe:BERT:BTS:LOOPback:GSM:ESENSitivity <val>  
:SENSe:BERT:BTS:LOOPback:GSM:ESENSitivity?
```

This command specifies the target error rate when performing a sensitivity search.

***RST** +2.00000000E-002

Range 1E-6 to 1

Key Entry Target BER%

Remarks N/A

:BTS:LOOPback:GSM:FRAMe:CIB

Supported All with Option 300

```
:SENSe:BERT:BTS:LOOPback:GSM:FRAMe:CIB?
```

This query returns the total number of Class Ib bits to be measured which are calculated from the total number of frames specified to be measured.

***RST** N/A

Range N/A

Key Entry N/A

Remarks N/A

:BTS:LOOPback:GSM:FRAMe:CII

Supported All with Option 300

```
:SENSe:BERT:BTS:LOOPback:GSM:FRAMe:CII?
```

This query returns the total number of Class II bits to be measured which are calculated from the total number of frames specified to be measured.

***RST** N/A

Range N/A

Key Entry N/A

Remarks N/A

:BTS:LOOPback:GSM:FRAMe:COUNT

Supported All with Option 300

:SENSe:BERT:BTS:LOOPback:GSM:FRAMe:COUNT <val>

:SENSe:BERT:BTS:LOOPback:GSM:FRAMe:COUNT?

This command determines the length of the measurement specified by the total number of frames included in one measurement.

***RST** +100

Range 1–6000000

Key Entry Frame Count

Remarks N/A

:BTS:LOOPback:GSM:HAMPlitude

Supported All with Option 300

:SENSe:BERT:BTS:LOOPback:GSM:HAMPlitude <val>

:SENSe:BERT:BTS:LOOPback:GSM:HAMPlitude?

This command specifies the maximum amplitude level for performing a sensitivity search.

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

***RST** –9.00000000E+001

Range –136.0 to 20

Key Entry High Amplitude

Remarks N/A

:BTS:LOOPback:GSM:LAMPlitude

Supported All with Option 300

:SENSe:BERT:BTS:LOOPback:GSM:LAMPlitude <val>

:SENSe:BERT:BTS:LOOPback:GSM:LAMPlitude?

This command specifies the minimum amplitude level for performing a sensitivity search.

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

***RST** –1.15000000E+002

Range –136.0 to 20
Key Entry **Low Amplitude**
Remarks N/A

:BTS:LOOPback:GSM:MCS1:BLOCK:COUNT

Supported All with Option 300
:SENSE:BERT:BTS:LOOPback:GSM:MCS1:BLOCK:COUNT <val>
:SENSE:BERT:BTS:LOOPback:GSM:MCS1:BLOCK:COUNT?

This command specifies the total number of blocks to be measured.

***RST** +600
Range 1–1500000
Key Entry **Block Count**
Remarks N/A

:BTS:LOOPback:GSM:MCS1:CONTain

Supported All with Option 300
:SENSE:BERT:BTS:LOOPback:GSM:MCS1:CONTain ON|OFF|1|0
:SENSE:BERT:BTS:LOOPback:GSM:MCS1:CONTain?

This command enables or disables the BER measurement for MCS-1 channels in addition to the BLER measurement.

ON With this choice, data bits of the specified number of blocks are measured.

OFF This choice disables the BER measurement.

***RST** 1
Key Entry **BER Mode Off On**
Remarks N/A

:BTS:LOOPback:GSM:MCS1:STOP:CRITeria:EBLock

Supported All with Option 300

```
:SENSe:BERT:BTS:LOOPback:GSM:MCS1:STOP:CRITeria:EBLock <val>
:SENSe:BERT:BTS:LOOPback:GSM:MCS1:STOP:CRITeria:EBLock?
```

This command specifies the number of erased blocks that contain bit errors for the threshold limit to stop the measurement.

***RST** +60

Range 0–1500000

Key Entry Block Erasure

Remarks N/A

:BTS:LOOPback:GSM:MCS1:STOP:CRITeria[:SElect]

Supported All with Option 300

```
:SENSe:BERT:BTS:LOOPback:GSM:MCS1:STOP:CRITeria[:SElect] EBlock|NONE
:SENSe:BERT:BTS:LOOPback:GSM:MCS1:STOP:CRITeria[:SElect]?
```

This command determines which of the following threshold criteria is used to prematurely stop the measurement prior to the normal measurement end. In each case, the measurement will terminate no later than 200 ms after the threshold is exceeded.

- EBlock This choice enables you to specify the number of erased blocks.
- NONE This choice disables the stop measurement threshold criteria function.

***RST** NONE

Key Entry Block Erasure No Thresholds

Remarks N/A

:BTS:LOOPback:GSM:MEASurement:STOP

Supported All with Option 300

```
:SENSe:BERT:BTS:LOOPback:GSM:MEASurement:STOP
```

This command stops any current measurement and releases the current PRBS synchronization. After the synchronization is released, a new PRBS synchronization is attempted.

***RST** N/A

| | |
|------------------|-------------------------|
| Range | N/A |
| Key Entry | Stop Measurement |
| Remarks | N/A |

:BTS:LOOPback:GSM:MEASurement:TSLot

Supported All with Option 300

```
:SENSe:BERT:BTS:LOOPback:GSM:MEASurement:TSLot 0|1|2|3|4|5|6|7
:SENSe:BERT:BTS:LOOPback:GSM:MEASurement:TSLot?
```

This command specifies the timeslot number in which the measurement is to be performed. This command couples the selected timeslot number with the GSM configuration.

The following GSM timeslot configuration conditions will generate error message “-221 Settings Conflict”:

- If the specified timeslot E field fails to designate either MPN9 or MPN15.
- If the specified timeslot is not set to “Normal.”

***RST** +0

Key Entry Timeslot

Remarks Changing the timeslot configuration with GSM on will not generate error messages if GSM BERT is off and the timeslot is off.

:BTS:LOOPback:GSM:MEASurement[:MODE]

Supported All with Option 300

```
:SENSe:BERT:BTS:LOOPback:GSM:MEASurement[:MODE] BER|SSEarch
:SENSe:BERT:BTS:LOOPback:GSM:MEASurement[:MODE]?
```

This command specifies the measurement mode.

BER This choice specifies BER% as the measurement mode.

SSEarch This choice specifies sensitivity search as the measurement mode.

***RST** BER

Key Entry Measurement Mode BER% Search

Remarks If the BER% measurement is already running, this command will abort the BER% measurement.

:BTS:LOOPback:GSM:PAMPlitude**Supported** All with Option 300

:SENSe:BERT:BTS:LOOPback:GSM:PAMPlitude <val>

:SENSe:BERT:BTS:LOOPback:GSM:PAMPlitude?

This command specifies the threshold amplitude for pass/fail comparator results when performing a sensitivity search.

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

RST** -1.04000000E+002**Range** -136.0 to 20**Key Entry** Pass Amplitude**Remarks** N/A**:BTS:LOOPback:GSM:SFRame:COUNT*Supported** All with Option 300

:SENSe:BERT:BTS:LOOPback:GSM:SFRame:COUNT <val>

:SENSe:BERT:BTS:LOOPback:GSM:SFRame:COUNT?

This command specifies the total number of frames to be measured for the final measurements during the sensitivity search.

RST** +100**Range** 1–6000000**Key Entry** Frame Count**Remarks** N/A**:BTS:LOOPback:GSM:SFRame:INITial*Supported** All with Option 300

:SENSe:BERT:BTS:LOOPback:GSM:SFRame:INITial <val>

:SENSe:BERT:BTS:LOOPback:GSM:SFRame:INITial?

This command specifies the number of frames to be measured while sensitivity search is running rough searching to gain search speed. It is the first phase of sensitivity search.

***RST** +26**Range** 1–6000000

| | |
|------------------|----------------------------|
| Key Entry | Initial Frame Count |
| Remarks | N/A |

:BTS:LOOPback:GSM:SINVert

Supported All with Option 300

```
:SENSE:BERT:BTS:LOOPback:GSM:SINVert ON|OFF|1|0  
:SENSE:BERT:BTS:LOOPback:GSM:SINVert?
```

This command sets the operating state of the spectrum inverting function.

ON This choice specifies that the GSM demodulator invert the spectrum of the received RF signal.

OFF This choice leaves the spectrum of the received RF signal unaffected.

***RST** 1

Key Entry **Spectrum Invert Off On**

Remarks N/A

:BTS:LOOPback:GSM:STOP:CRITeria:CIB

Supported All with Option 300

```
:SENSE:BERT:BTS:LOOPback:GSM:STOP:CRITeria:CIB <val>  
:SENSE:BERT:BTS:LOOPback:GSM:STOP:CRITeria:CIB?
```

This command specifies the threshold number of Class Ib errors to stop the measurement.

***RST** 300

Range 0–1000000

Key Entry **Class Ib Bit Error**

Remarks Refer to “[:BTS:LOOPback:GSM:STOP:CRITeria\[:SElect\]](#)” on page 420 for information on the use of the file variables.

:BTS:LOOPback:GSM:STOP:CRITeria:CII**Supported** All with Option 300

:SENSe:BERT:BTS:LOOPback:GSM:STOP:CRITeria:CII <val>

:SENSe:BERT:BTS:LOOPback:GSM:STOP:CRITeria:CII?

This command specifies the threshold number of Class II errors to stop the measurement.

***RST** 300**Range** 0–1000000**Key Entry** **Class II Bit Error**

Remarks Refer to “:BTS:LOOPback:GSM:STOP:CRITeria[:SElect]” on page 420 for information on the use of the file variables.

:BTS:LOOPback:GSM:STOP:CRITeria:FERasure**Supported** All with Option 300

:SENSe:BERT:BTS:LOOPback:GSM:STOP:CRITeria:FERasure <val>

:SENSe:BERT:BTS:LOOPback:GSM:STOP:CRITeria:FERasure?

This command specifies the threshold number of erased frames to stop the measurement.

***RST** 120**Range** 0–1000000**Key Entry** **Frame Erasure**

Remarks Refer to “:BTS:LOOPback:GSM:STOP:CRITeria[:SElect]” for information on the use of the file variables.

:BTS:LOOPback:GSM:STOP:CRITeria[:SElect]**Supported** All with Option 300

:SENSe:BERT:BTS:LOOPback:GSM:STOP:CRITeria[:SElect] FERasure|CIB|CII|ANY|NONE

:SENSe:BERT:BTS:LOOPback:GSM:STOP:CRITeria[:SElect]?

This command sets the threshold criteria used to prematurely stop the measurement prior to the normal measurement end. In each case, the measurement will terminate no

later than 200 ms after the threshold is exceeded.

| | |
|------------------|---|
| FERasure | This selection ends the measurement when the number of erased frames exceeds the specified threshold. |
| CIB | This selection ends the measurement when the number of Class Ib errors detected exceeds the specified threshold. |
| CII | This selection ends the measurement when the number of Class II errors detected exceeds the specified threshold. |
| ANY | This selection ends the measurement when any of the above stop measurement threshold criteria is exceeded. |
| NONE | This selection disables the stop measurement threshold criteria function, so that the measurement runs for the specified number of speech frames. |
| *RST | NONE |
| Key Entry | Frame Erasure Class Ib Bit Error Class II Bit Error Exceeds Any Thresholds No Thresholds |
| Remarks | N/A |

:BTS:LOOPback:GSM:SYNC:RF

Supported All with Option 300

:SENSe:BERT:BTS:LOOPback:GSM:SYNC:RF

This command releases the current synchronization with the BTS and immediately starts to try to synchronize to either a BCH or TCH signal as selected with the SYNC[:SOURCE] command. This command will also stop the current measurement.

***RST** N/A

Range N/A

Key Entry **Synchronize to BCH/TCH**

Remarks The test equipment can use a BCH signal from the BTS to determine the required transmit timeslot, frame and multiframe timing. The BCH signal is always transmitted in timeslot 0 and contains multiframe information. Use BCH when a BCH subset is present which contains SCH bursts with a properly coded T2 parameter.

Use TCH when providing a TCH/FS training sequence from the BTS. However, only one timeslot from the BTS can be active at a time and

you must specify to the receiver which timeslot is being received since it has no absolute reference (unlike a BCH signal, which is always transmitted in timeslot 0).

:BTS:LOOPback:GSM:SYNC[:SOURce]

Supported All with Option 300

```
:SENSe:BERT:BTS:LOOPback:GSM:SYNC[:SOURce] BCH|TCH
:SENSe:BERT:BTS:LOOPback:GSM:SYNC[:SOURce]?
```

This command specifies the synchronization source from the BTS under test.

| | |
|------------------|--|
| BCH | This choice specifies the broadcast channel as the synchronization source. |
| TCH | This choice specifies the traffic channel as the synchronization source. |
| *RST | BCH |
| Key Entry | Sync Source BCH TCH |
| Remarks | N/A |

:BTS:LOOPback:GSM:TRIGger[:SOURce]

Supported All with Option 300

```
:SENSe:BERT:BTS:LOOPback:GSM:TRIGger[:SOURce] IMMEDIATE|KEY|EXT|BUS
:SENSe:BERT:BTS:LOOPback:GSM:TRIGger[:SOURce]?
```

This command determines the trigger source for the GSM loopback bit error rate measurement.

| | |
|-----------|---|
| IMMEDIATE | This choice begins the measurement directly after synchronization has been achieved. |
| KEY | This choice begins the measurement when the front panel Trigger key is pressed, provided that synchronization has been achieved. If synchronization has not occurred, the trigger is ignored. |
| EXT | This choice begins the measurement as soon as a trigger signal is applied to the rear panel connector provided that synchronization has been achieved. If synchronization has not occurred, the trigger is ignored. |
| BUS | This choice enables GPIB triggering using the *TRG or GET command or LAN and RS-232 triggering using the *TRG command. |

| | |
|------------------|--|
| *RST | KEY |
| Key Entry | Immediate Trigger Key Ext Bus Aux |
| Remarks | An inherent variable delay will always exist when starting a measurement because the measurement must await the start of the next speech frame after the trigger. The delay can vary between 0 and 23 ms (5 frames) depending on where the trigger falls within the TDMA multiframe. A trigger is ignored unless the GSM loopback operating state is turned on. |

:BTS:LOOPback:GSM:ULINK:OFFSet

| | |
|------------------|---|
| Supported | All with Option 300 |
| | :SENSe:BERT:BTS:LOOPback:GSM:ULINK:OFFSet <value> |
| | :SENSe:BERT:BTS:LOOPback:GSM:ULINK:OFFSet? |

This command specifies the amount of compensation for the insertion of equipment such as fading simulators into the uplink RF path.

| | |
|------------------|-----------------------|
| *RST | +0 |
| Range | –500 to 10000 |
| Key Entry | Uplink Timing Advance |
| Remarks | N/A |

:BTS:LOOPback:GSM[:STATe]

| | |
|------------------|---|
| Supported | All with Option 300 |
| | :SENSe:BERT:BTS:LOOPback:GSM[:STATe] ON OFF 1 0 |
| | :SENSe:BERT:BTS:LOOPback:GSM[:STATe]? |

This command turns on and off the operating state of the GSM loopback bit error rate function. Although you can configure the measurement parameters while the operating state is off, any command triggers sent will be ignored until the operating state is turned on.

| | |
|------------------|-----------------|
| *RST | 0 |
| Key Entry | GSM BERT Off On |
| Remarks | N/A |

[:BASEband]:PRBS:FUNCtion:SPIgnore:DATA**Supported** All with Option UN7

:SENSE:BERT[:BASEband]:PRBS:FUNCtion:SPIgnore:DATA ALL_0|ALL_1

:SENSE:BERT[:BASEband]:PRBS:FUNCtion:SPIgnore:DATA?

This command selects the bit parameter of the special pattern ignore function.

ALL_0 This choice ignores more than 80 bits of 0's when they are detected.

ALL_1 This choice ignores more than 80 bits of 1's when they are detected.

RST** ALL_0**Key Entry** Spcl Pattern 0's 1's**Remarks** This command is valid only when the special pattern ignore function is on. Refer to “[:BASEband]:PRBS:FUNCtion:SPIgnore[:STATE]” on page 424.**[:BASEband]:PRBS:FUNCtion:SPIgnore[:STATE]*Supported** All with Option UN7

:SENSE:BERT[:BASEband]:PRBS:FUNCtion:SPIgnore[:STATE] ON|OFF|1|0

:SENSE:BERT[:BASEband]:PRBS:FUNCtion:SPIgnore[:STATE]?

This command enables or disables the special pattern ignore function.

ON This choice detects more than 80 bits of 0's or 1's in the incoming bit stream and ignores these bits when making BER measurements. To select 0's or 1's refer to “[:BASEband]:PRBS:FUNCtion:SPIgnore:DATA” on page 424

OFF This choice disables the detect mode for the BER measurement.

***RST** 0**Key Entry** Spcl Pattern Ignore Off On**Remarks** N/A

[:BASEband]:PRBS[:DATA]

Supported All with Option 300

```
:SENSE:BERT[:BASEband]:PRBS[:DATA] PN9|PN11|PN15|PN20|PN23  
:SENSE:BERT[:BASEband]:PRBS[:DATA]?
```

This command selects the incoming data pattern for making BER measurements.

PN9–PN23 These choices select an internally generated pseudo-random pattern for BER measurements.

***RST** PN9

Key Entry PN9 PN11 PN15 PN20 PN23

Remarks N/A

[:BASEband]:RSYNc:THReshold

Supported All with Option UN7

```
:SENSE:BERT[:BASEband]:RSYNc:THReshold <val>  
:SENSE:BERT[:BASEband]:RSYNc:THReshold?
```

This command specifies the threshold level for the resynchronizing function.

***RST** 0.40

Range 0.05–0.40

Key Entry Resync Limits

Remarks This command is valid only when the BERT resynchronizing function is on. Refer to “[:BASEband]:RSYNc[:STATe]” on page 425.

[:BASEband]:RSYNc[:STATe]

Supported All with Option UN7

```
:SENSE:BERT[:BASEband]:RSYNc[:STATe] ON|OFF|1|0  
:SENSE:BERT[:BASEband]:RSYNc[:STATe]?
```

This command sets the operating state of the resynchronization function.

ON This choice enables the resynchronization function.

OFF This choice disables the resynchronization function.

***RST** 1

Key Entry **BERT Resync Off On**
Remarks N/A

[:BASEband]:STATE

Supported All with Option UN7

```
:SENSe:BERT[:BASEband]:STATE ON|OFF|1|0
:SENSe:BERT[:BASEband]:STATE?
```

This command sets the operating state of the bit error rate test (BERT) measurement.

ON This choice enables the BERT measurement.
OFF This choice disables the BERT measurement.

***RST** 0

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

[:BASEband]:STOP:CRITeria:EBIT

Supported All with Option UN7

```
:SENSe:BERT[:BASEband]:STOP:CRITeria:EBIT <val>
:SENSe:BERT[:BASEband]:STOP:CRITeria:EBIT?
```

This command specifies the threshold limit to stop the measurement.

***RST** 100

Range 0–1000000000

Key Entry **Error Count**

Remarks When the stop mode criteria is set to EBIT, the signal generator monitors the error bits and when it exceeds the set value, the signal generator stops the current BER measurement and waits for the next trigger.

EBIT must be the selection for this command to work. To select EBIT refer to “[:BASEband]:STOP:CRITeria[:SElect]”.

[:BASEband]:STOP:CRITeria[:SElect]

Supported All with Option UN7

```
:SENSe:BERT[:BASEband]:STOP:CRITeria[:SElect] EBIT|NONE  
:SENSe:BERT[:BASEband]:STOP:CRITeria[:SElect]?
```

This command determines which threshold criteria is used to prematurely stop the measurement.

EBIT This choice enables a specified number of bit errors to prematurely stop the measurement.

NONE This choice disables the stop measurement threshold criteria function.

***RST** NONE

Key Entry **Error Count** **No Thresholds**

Remarks The measurement will terminate no later than 200 ms after the threshold is exceeded.

[:BASEband]:TBITs

Supported All with Option UN7

```
:SENSe:BERT[:BASEband]:TBITs <val>  
:SENSe:BERT[:BASEband]:TBITs?
```

This command specifies the total bit count to be measured in one measurement cycle.

***RST** +10000

Range 100–4294967295

Key Entry **Total Bits**

Remarks N/A

[:BASEband]:TRIGger:BDELay

Supported All with Option UN7

```
:SENSe:BERT[:BASEband]:TRIGger:BDELay <val>  
:SENSe:BERT[:BASEband]:TRIGger:BDELay?
```

This command specifies the number of bits to delay the trigger signal.

***RST** 0

Range 0–65535

| | |
|------------------|--|
| Key Entry | Delay Bits |
| Remarks | This command is valid only when the trigger bit delay function is on. Refer to “[:BASEband]:TRIGger:BDELay:STATE”. |

[:BASEband]:TRIGger:BDELay:STATE

Supported All with Option UN7

```
:SENSe:BERT[:BASEband]:TRIGger:BDELay:STATE ON|OFF|1|0
:SENSe:BERT[:BASEband]:TRIGger:BDELay:STATE?
```

This command sets the operating state of the trigger delay function.

| | |
|-----|--|
| ON | This choice enables the trigger delay function. |
| OFF | This choice disables the trigger delay function. |

***RST** 0

Key Entry **Bit Delay Off On**

Remarks This command needs to be set to ON before the number of bits for the trigger delay can be set. Refer to “[:BASEband]:TRIGger:BDELay”.

[:BASEband]:TRIGger:COUNT

Supported All with Option UN7

```
:SENSe:BERT[:BASEband]:TRIGger:COUNT <val>
:SENSe:BERT[:BASEband]:TRIGger:COUNT?
```

This command sets the number of times the bit error rate test (BERT) measurements will repeat.

***RST** 1

Range 0–65535

Key Entry **Cycle Count**

Remarks With 0 set, the BER measurements are repeated until you set the BERT operating state is set to off. Refer to “[:BASEband]:STATE” on [page 426](#).

[:BASEband]:TRIGger:POLarity

Supported All with Option UN7

```
:SENSE:BERT[:BASEband]:TRIGger:POLarity POSitive|NEGative  
:SENSE:BERT[:BASEband]:TRIGger:POLarity?
```

This command selects the polarity of the trigger signal.

POSitive This choice triggers on the rising edge of the input data signal.

NEGative This choice triggers on the falling edge of the input data signal.

***RST** POS

Key Entry Aux I/O Trigger Polarity Pos Neg

Remarks This command is valid only when the trigger source AUX is selected. Refer to “[:BASEband]:TRIGger[:SOURCE]” on page 429.

[:BASEband]:TRIGger[:SOURCE]

Supported All with Option UN7

```
:SENSE:BERT[:BASEband]:TRIGger[:SOURCE] IMMEDIATE|KEY|EXT|BUS|AUX  
:SENSE:BERT[:BASEband]:TRIGger[:SOURCE]?
```

This command selects the triggering type for starting the bit error rate test (BERT) measurements.

IMMEDIATE This choice begins the measurement directly after synchronization has been achieved.

KEY This choice begins the measurement when the front panel **Trigger** key is pressed, provided that synchronization has been achieved. If synchronization has not occurred, the trigger is ignored.

EXT This choice begins the measurement as soon as a trigger signal is applied to the rear panel connector provided that synchronization has been achieved. If synchronization has not occurred, the trigger is ignored.

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

AUX This choice triggers an event using the rear panel AUX I/O connector pin #22. Refer to the *User's Guide*.

Bit Error Rate Test (BERT) Commands

Sense Subsystem—Options UN7 and 300 ([:SOURce]:SENSe:BERT)

| | | | | | | |
|------------------|-----------|-------------|-----|-----|---------|--|
| *RST | KEY | | | | | |
| Key Entry | Immediate | Trigger Key | Ext | Bus | Aux I/O | |
| Remarks | N/A | | | | | |

7 Receiver Test Digital Commands

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

- “All Subsystem–Option 001 or 002 ([:SOURce])” on page 432
- “AWGN Real-Time Subsystem–Option 403 ([:SOURce]:RADio:AWGN:RT)” on page 433
- “Bluetooth Subsystem–Option 406 ([:SOURce]:RADio:BLUEtooth:ARB)” on page 434
- “CDMA2000 BBG Subsystem–Option 401 ([:SOURce]:RADio:CDMA2000[:BBG])” on page 450
- “Custom Subsystem–Option 001 or 002 ([:SOURce]:RADio:CUSTom)” on page 523

All Subsystem–Option 001 or 002 ([:SOURce])

:RADio:ALL:OFF

Supported All with Option 001 or 002

[:SOURce]:RADio:ALL:OFF

This command disables all digital modulation personalities on a particular baseband.

***RST** N/A

Range N/A

Key Entry N/A

Remarks This command does not affect analog modulation.

AWGN Real-Time Subsystem–Option 403 ([:SOURce]:RADio:AWGN:RT)

:BWIDth

Supported All with Option 403

```
[ :SOURce]:RADio:AWGN:RT:BWIDth <val>  
[:SOURce]:RADio:AWGN:RT:BWIDth?
```

This command adjusts the real-time AWGN bandwidth value.

The variable <val> is expressed in units of Hertz (Hz–MHz).

***RST** +1.00000000E+006

Range 5E4–8E7

Key Entry Bandwidth

Remarks N/A

[:STATe]

Supported All with Option 403

```
[ :SOURce]:RADio:AWGN:RT[:STATe] ON|OFF|1|0  
[:SOURce]:RADio:AWGN:RT[:STATe]?
```

This command enables or disables the operating state of real-time AWGN.

***RST** 0

Key Entry Real-time AWGN Off On

Remarks N/A

Bluetooth Subsystem–Option 406 ([:SOURCE]:RADio:BLUEtooth:ARB)

:AMADdr

Supported All with Option 406

```
[ :SOURCE]:RADio:BLUEtooth:ARB:AMADdr <val>
[:SOURCE]:RADio:BLUEtooth:ARB:AMADdr?
```

This command sets the 3-bit active member address (AM_ADDR).

***RST** +1

Range 0–7

Key Entry AM_ADDR

Remarks In a piconet, one or more slaves are connected to a single master; a temporary 3-bit address (AM_ADDR) is used to identify each active slave.

:BDADdr

Supported All with Option 406

```
[ :SOURCE]:RADio:BLUEtooth:ARB:BDADdr <val>
[:SOURCE]:RADio:BLUEtooth:ARB:BDADdr?
```

This command sets the unique hexadecimal Bluetooth device address (BD_ADDR) with up to 48 bits.

***RST** #H0000000000008

Range #H0–#HFFFFFFFFFFFFFFF

Key Entry BD_ADDR

Remarks The address is derived from the IEEE802 standard.

:BURSt[:STATe]

Supported All with Option 406

```
[ :SOURCE ]:RADio:BLUEtooth:ARB:BURSt[:STATe] ON|OFF|1|0
[ :SOURCE ]:RADio:BLUEtooth:ARB:BURSt[:STATe]?
```

This command enables or disables the burst function.

ON(1) This choice will ramp up the signal power prior to transmitting the packet and ramp it down after the end of the packet transmission.

OFF(0) This choice provides a linked series of packet transmissions with no power ramping.

***RST** 1

Key Entry Burst Off On

Remarks N/A

:CGDelay

Supported All with Option 406

```
[ :SOURCE ]:RADio:BLUEtooth:ARB:CGDelay <val>
[ :SOURCE ]:RADio:BLUEtooth:ARB:CGDelay?
```

This command sets the number of symbols to shift the output symbol clock (EVENT 1 rear panel connector) and gate (EVENT 2 rear panel connector) signals relative to the Bluetooth signal. The shifting of these signals is used to compensate for any packet delay through the DUT during BER tests.

***RST** +0.00000000E+000

Range 0.0–24999.9

Key Entry Clock/Gate Delay

Remarks This command is only effective with a continuous PN9 (CPN9) payload data and is intended for bit error rate testing (BERT, Option UN7). Refer to “:DATA” on page 436 for selecting the CPN9 data choice.

When the clock and gate delay is set to zero (0), the rising edge of the symbol clock lines up with the middle of each symbol and the gate is high during the user payload field (PN9 data).

:DATA**Supported** All with Option 406

[:SOURCE]:RADIO:BLUETOOTH:ARB:DATA TPN9|CPN9|<val>

[:SOURCE]:RADIO:BLUETOOTH:ARB:DATA?

This command sets the user payload data type; user payload data is the voice or data information (less the payload header) that is carried in a packet.

- TPN9** This choice places a truncated PN9 sequence consisting of 216 bits into a single packet.
- CPN9** This choice places 8 continuous PN9 sequences into 19 packets, followed by one packet with no user payload. This ensures that the SEQN bit is properly alternated which is a requirement to filter out packet re-transmission at the destination.
- <val>** This variable lets you set your own 8 bit data pattern for a single packet. A change in the user payload data type resets the eight bit pattern to a value of 00000000.

RST** TPN9**Range** <val>: #B0–#B11111111 or 0–255**Key Entry** **Truncated PN9** **Continuous PN9** **8 Bit Pattern*Remarks** The PN9 sequence (511 bits) is standard based. The sequence begins with the first one of nine consecutive ones.**:IQ:EXTERNAL:FILTER****Supported** All with Option 406

[:SOURCE]:RADIO:BLUETOOTH:ARB:IQ:EXTERNAL:FILTER 40e6|THROUGH

[:SOURCE]:RADIO:BLUETOOTH: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 with this command will automatically set “:IQ:EXTERNAL:FILTER:AUTO” on page 437 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**

Remarks N/A

:IQ:EXTErnal:FILTEr:AUTO

Supported All with Option 406

```
[ :SOURCE ] : RADio : BLUetooth : ARB : IQ : EXTErnal : FILTEr : AUTO ON | OFF | 1 | 0  
[ :SOURCE ] : RADio : BLUetooth : 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 436](#) for selecting a filter or through path.

***RST** 1

Key Entry I/Q Output Filter Manual Auto

Remarks N/A

:HEADer:CLEAr

Supported All with Option 406

```
[ :SOURCE ] : RADio : BLUetooth : ARB : HEADer : CLEAr
```

This command clears the header information from the header file used by this format.

***RST** N/A

Key Entry Clear Header

Remarks The **Bluetooth Off On** softkey must be set to On for this command to function.

:HEADer:SAVE

Supported All with Option 406

```
[ :SOURCE ] : RADio : BLUetooth : ARB : HEADer : SAVE
```

This command saves the header information to the header file used by this format.

***RST** N/A

Bluetooth Subsystem—Option 406 ([:SOURce]:RADio:BLUetooth:ARB)**Key Entry** **Save Setup To Header****Remarks** The **Bluetooth Off On** must be set to On for this command to function.**:IMPairments****Supported** All with Option 406

```
[:SOURce]:RADio:BLUetooth:ARB:IMPairments ON|OFF|1|0
[:SOURce]:RADio:BLUetooth:ARB:IMPairments?
```

This command enables or disables the Bluetooth signal impairment function.

ON(1) This choice enables the current impairment settings.

OFF(0) This choice disables the impairments.

RST** 0**Key Entry** **Impairments Off On*Remarks** N/A**:IMPairments:AWGN****Supported** All with Option 406

```
[:SOURce]:RADio:BLUetooth:ARB:IMPairments:AWGN ON|OFF|1|0
[:SOURce]:RADio:BLUetooth:ARB:IMPairments:AWGN?
```

This choice enables or disables the additive white gaussian noise (AWGN) impairment.

RST** 0**Key Entry** **AWGN Off On*Remarks** The AWGN impairment is not added to the signal until the Bluetooth signal impairment function is enabled. Refer to “**:IMPairments**” for enabling the impairments.**:IMPairments:AWGN:CNR****Supported** All with Option 406

```
[:SOURce]:RADio:BLUetooth:ARB:IMPairments:AWGN:CNR <val>
[:SOURce]:RADio:BLUetooth:ARB:IMPairments:AWGN:CNR?
```

This command sets the carrier to noise ratio expressed in a 1 MHz bandwidth for the additive white gaussian noise (AWGN) impairment.

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

| | |
|------------------|--|
| *RST | +21 |
| Range | 10–40 |
| Key Entry | C/N[1MHz] |
| Remarks | The value set by this command does not affect the Bluetooth signal until both the AWGN impairment and the Bluetooth signal impairment function are enabled. Refer to “:IMPairments:AWGN” on page 438 for more information. |

:IMPairments:AWGN:NSEed

Supported All with Option 406

```
[ :SOURCE]:RADio:BLUEtooth:ARB:IMPairments:AWGN:NSEed <val>  
[:SOURCE]:RADio:BLUEtooth:ARB:IMPairments:AWGN:NSEed?
```

This command sets the noise seed value for the additive white gaussian noise (AWGN) impairment.

| | |
|------------------|---|
| *RST | +1 |
| Range | 1–65535 |
| Key Entry | Noise Seed |
| Remarks | A change in the seed value changes the noise pattern. The value set by this command does not affect the Bluetooth signal until both the AWGN impairment and the Bluetooth signal impairment function are enabled. Refer to “:IMPairments:AWGN” on page 438 for more information. |

:IMPairments:DDEViation

Supported All with Option 406

```
[ :SOURCE]:RADio:BLUEtooth:ARB:IMPairments:DDEViation <val>  
[:SOURCE]:RADio:BLUEtooth:ARB:IMPairments:DDEViation?
```

This command sets the maximum linear or sinusoidal carrier frequency drift deviation during the Bluetooth packet transmission.

The variable <val> is expressed in units of kilohertz (–kHz to kHz) with a minimum resolution of 1 kHz.

| | |
|------------------|--|
| *RST | +0.00000000E+000 |
| Range | -1E5 to -1E3, 0, 1E3 to 1E5 |
| Key Entry | Drift Deviation |
| Remarks | Refer to “:IMPairments:FDType” on page 440 for selecting either a linear or sinusoidal frequency drift. The value set by this command does not affect the Bluetooth signal until the Bluetooth signal impairment function is enabled. Refer to “:IMPairments” on page 438 for more information. |

:IMPairments:FDType

Supported All with Option 406

```
[ :SOURce]:RADio:BLUetooth:ARB:IMPairments:FDType LINear|SINE
[:SOURce]:RADio:BLUetooth:ARB:IMPairments:FDType?
```

This command sets the carrier frequency drift impairment type that will occur during the length of the Bluetooth packet transmission.

LINear This choice enables the carrier frequency to drift linearly from the signal generator carrier frequency setting to the value entered for the frequency drift.

SINE This choice enables the carrier frequency to drift sinusoidally above and below the signal generator carrier frequency setting. For example, if the carrier signal generator setting is 2.4 GHz and the drift value was 100 kHz, the carrier frequency would sinusoidally drift to 2.4001 GHz, back to 2.4 GHz and continue drifting to frequency values less than 2.4 GHz until the packet transmission ends. With a negative drift value, the carrier frequency deviation would begin drifting toward 2.3999 GHz at the beginning of the drift cycle.

***RST** SINE

Key Entry **Freq Drift Type Linear Sine**

Remarks To set a drift value, refer to “:IMPairments:DDEViation” on page 439.

The value set by this command does not affect the Bluetooth signal until the Bluetooth signal impairment function is enabled. Refer to “:IMPairments” on page 438 for more information.

The carrier frequency value on the signal generator display does not change during the drift impairment.

:IMPairments:FOFFset

Supported All with Option 406

```
[ :SOURCE]:RADio:BLUetooth:ARB:IMPairments:FOFFset <val>  
[:SOURCE]:RADio:BLUetooth:ARB:IMPairments:FOFFset?
```

This command sets a carrier frequency offset impairment value as part of a Bluetooth setup.

The variable <val> is expressed in units of kilohertz (–kHz to kHz) with a minimum resolution of 1 kHz.

***RST** +0.00000000E+000

Range –1E5 to –1E3, 0, 1E3 to 1E5

Key Entry Freq Offset

Remarks The value set by this command does not affect the Bluetooth signal until the Bluetooth signal impairment function is enabled. Refer to [“:IMPairments” on page 438](#) for more information.

The carrier frequency value on the signal generator display does not change during the offset impairment.

:IMPairments:MINdex

Supported All with Option 406

```
[ :SOURCE]:RADio:BLUetooth:ARB:IMPairments:MINdex <val>  
[:SOURCE]:RADio:BLUetooth:ARB:IMPairments:MINdex?
```

This command sets the modulation index impairment value for the Bluetooth waveform.

***RST** +3.15000000E–001

Range 2.5E–1 to 4E–1

Key Entry Mod Index

Remarks The value set by this command does not affect the Bluetooth signal until the Bluetooth signal impairment function is enabled. Refer to [“:IMPairments” on page 438](#) for more information.

Only the peak-to-peak frequency deviation is changed by this command; the bit rate (1 MHz) remains constant. The modulation

index is derived from the following formula:

$$\text{Mod Index} = \frac{\text{Peak-to-Peak Frequency Deviation}}{\text{Bit Rate}}$$

:IMPairments:STERror

Supported All with Option 406

```
[ :SOURce ]:RADio:BLUetooth:ARB:IMPairments:STERror <val>
[ :SOURce ]:RADio:BLUetooth:ARB:IMPairments:STERror?
```

This command sets the symbol timing error impairment value for the Bluetooth waveform.

The variable <val> is expressed in units of parts per million (ppm) and in units of hertz (Hz). A 20 ppm timing error corresponds to a 20 Hz shift in the symbol rate. The range value indicated below applies to both units of measurement.

***RST** +0

Range -50 to 50

Key Entry Symbol Timing Err

Remarks The value set by this command does not affect the Bluetooth signal until the Bluetooth signal impairment function is enabled. Refer to “:IMPairments” on page 438 for more information.

:IQ:MODulation:ATTen

Supported All with Option 406

```
[ :SOURce ]:RADio:BLUetooth:ARB:IQ:MODulation:ATTen <val>
[ :SOURce ]:RADio:BLUetooth: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).

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 442 for setting the attenuation value.

***RST** +2.00000000E+000

Range 0–40
Key Entry **Modulator Atten Manual Auto**
Remarks N/A

:IQ:MODulation:ATTen:AUTO

Supported All with Option 406

```
[:SOURce]:RADio:BLUetooth:ARB:IQ:MODulation:ATTen:AUTO ON|OFF|1|0
[:SOURce]:RADio:BLUetooth:ARB:IQ:MODulation:ATTen:AUTO?
```

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

***RST** 1
Key Entry **Modulator Atten Manual Auto**
Remarks N/A

:IQ:MODulation:FILTer

Supported All with Option 406

```
[:SOURce]:RADio:BLUetooth:ARB:IQ:MODulation:FILTer 2.1e6|40e6|THROUGH
[:SOURce]:RADio:BLUetooth: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 set “:IQ:MODulation:ATTen:AUTO” on page 443 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**
Remarks N/A

:IQ:MODulation:FILTer:AUTO**Supported** All with Option 406

```
[:SOURCE]:RADio:BLUetooth:ARB:IQ:MODulation:FILTer:AUTO ON|OFF|1|0
[:SOURCE]:RADio:BLUetooth: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 443](#) for selecting a filter or through path.

RST** 1**Key Entry** I/Q Mod Filter Manual Auto**Remarks** N/A**:MDEStination:PULSe*Supported** All with Option 406

```
[:SOURCE]:RADio:BLUetooth:ARB:MDEStination:PULSe NONE|M1|M2|M3|M4
[:SOURCE]:RADio:BLUetooth:ARB:MDEStination:PULSe?
```

This command routes the selected marker to the Pulse/RF Blanking function. The NONE parameter clears the marker for the Pulse/RF Blanking function.

RST** NONE**Key Entry** None Marker 1 Marker 2 Marker 3 Marker 4**Remarks** N/A**:MDEStination:AAMPlitude*Supported** All with Option 406

```
[:SOURCE]:RADio:BLUetooth:ARB:MDEStination:AAMPlitude NONE|M1|M2|M3|M4
[:SOURCE]:RADio:BLUetooth: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 |
| Remarks | N/A |

:MDEStination:ALCHold

Supported All with Option 406

```
[ :SOURCE]:RADio:BLUEtooth:ARB:MDEStination:ALCHold NONE |M1 |M2 |M3 |M4  
[:SOURCE]:RADio:BLUEtooth:ARB:MDEStination:ALCHold?
```

This command routes the selected marker to the ALC Hold function. The NONE parameter clears the marker for the ALC Hold function.

| | |
|------------------|--|
| *RST | NONE |
| Key Entry | None Marker 1 Marker 2 Marker 3 Marker 4 |
| Remarks | N/A |

:MPOLarity:MARKer1

Supported All with Option 406

```
[ :SOURCE]:RADio:BLUEtooth:ARB:MPOLarity:MARKer1 NEGative |POSitive  
[:SOURCE]:RADio:BLUEtooth:ARB:MPOLarity:MARKer1?
```

This command sets the polarity for marker 1.

| | |
|------------------|---------------------------|
| *RST | POS |
| Key Entry | Marker 1 Polarity Neg Pos |
| Remarks | N/A |

:MPOLarity:MARKer2

Supported All with Option 406

```
[ :SOURCE]:RADio:BLUEtooth:ARB:MPOLarity:MARKer2 NEGative |POSitive  
[:SOURCE]:RADio:BLUEtooth:ARB:MPOLarity:MARKer2?
```

This command sets the polarity for marker 2.

| | |
|------------------|---------------------------|
| *RST | POS |
| Key Entry | Marker 2 Polarity Neg Pos |
| Remarks | N/A |

:MPOlarity:MARKer3**Supported** All with Option 406

```
[:SOURCE]:RADIO:BLUETOOTH:ARB:MPOlarity:MARKer3 NEGative|POSitive
[:SOURCE]:RADIO:BLUETOOTH:ARB:MPOlarity:MARKer3?
```

This command sets the polarity for marker 3.

RST** POS**Key Entry** Marker 3 Polarity Neg Pos**Remarks** N/A**:MPOlarity:MARKer4*Supported** All with Option 406

```
[:SOURCE]:RADIO:BLUETOOTH:ARB:MPOlarity:MARKer4 NEGative|POSitive
[:SOURCE]:RADIO:BLUETOOTH:ARB:MPOlarity:MARKer4?
```

This command sets the polarity for marker 4.

RST** POS**Key Entry** Marker 4 Polarity Neg Pos**Remarks** N/A**:PACKet*Supported** All with Option 406

```
[:SOURCE]:RADIO:BLUETOOTH:ARB:PACKet DH1
[:SOURCE]:RADIO:BLUETOOTH:ARB:PACKet?
```

This command selects a DH1 packet.

***RST** DH1**Choices** DH1**Key Entry** Packet (DH1)**Remarks** A DH1 packet covers a single timeslot.

:REFernce:EXTernal:FREQuency

Supported All with Option 406

```
[ :SOURCE]:RADio:BLUetooth:ARB:REFernce:EXTernal:FREQuency <val>  
[:SOURCE]:RADio:BLUetooth:ARB:REFernce:EXTernal:FREQuency?
```

This command sets the lock frequency of the internal ARB waveform clock to match the externally applied ARB waveform clock reference at the BASEBAND GEN REF IN connector.

The variable <val> is expressed in units of hertz (Hz–MHz).

***RST** +1.00000000+007

Range 2.5E5–1E8

Key Entry Reference Freq

Remarks Use this command when EXTERNAL is the ARB waveform clock reference source. Refer to “:REFernce[:SOURCE]” on page 447 for selecting either the internal or an external source.

:REFernce[:SOURCE]

Supported All with Option 406

```
[ :SOURCE]:RADio:BLUetooth:ARB:REFernce[:SOURCE] INTernal|EXTernal  
[:SOURCE]:RADio:BLUetooth:ARB:REFernce[:SOURCE]?
```

This command selects either an internal or external reference for the ARB waveform clock.

***RST** INT

Key Entry ARB Reference Ext Int

Remarks If the EXTERNAL choice is selected, the frequency of the external reference must be entered into the signal generator and the signal must be applied to the BASEBAND GEN REF IN connector. Refer to “:REFernce:EXTernal:FREQuency” on page 447 for entering the frequency value.

:RSYMBOLS**Supported** All with Option 406

```
[:SOURCE]:RADio:BLUetooth:ARB:RSYMBOLS <val>
[:SOURCE]:RADio:BLUetooth:ARB:RSYMBOLS?
```

This command controls how long it takes the RF burst to ramp up at the beginning of the packet transmission and down at the end.

The variable <val> is expressed in symbols (1 symbol interval equals 1 μ s).

***RST** +6

Range 1–10

Key Entry **Burst Power Ramp**

Remarks N/A

:SCLock:RATE**Supported** All with Option 406

```
[:SOURCE]:RADio:BLUetooth:ARB:SCLock:RATE <val>
[:SOURCE]:RADio:BLUetooth:ARB:SCLock:RATE?
```

This command sets the sample clock rate for the Bluetooth modulation format.

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

***RST** +1.00000000E+008

Range 1–1E8

Key Entry **ARB Sample Clock**

Remarks N/A

[:STATe]**Supported** All with Option 406

```
[:SOURCE]:RADio:BLUetooth:ARB[:STATe] ON|OFF|1|0
[:SOURCE]:RADio:BLUetooth:ARB[:STATe]?
```

This command enables or disables the Bluetooth waveform generator.

***RST** 0

Key Entry **Bluetooth Off On**

Remarks N/A

CDMA2000 BBG Subsystem–Option 401 ([:SOURce]:RADio:CDMA2000[:BBG])

:LMODe

Supported All with Option 401

```
[:SOURce]:RADio:CDMA2000[:BBG]:LMODe FORWard|RT12|RA12|RT34|RE34|RC34
[:SOURce]:RADio:CDMA2000[:BBG]:LMODe?
```

This command selects either forward or reverse link Real Time CDMA2000.

FORWard This choice selects the forward link mode.

RT12 This choice selects the reverse traffic channel for radio configurations one and two.

RA12 This choice selects the reverse access channel for radio configurations one and two.

RT34 This choice selects the reverse traffic channel for radio configurations three and four.

RE34 This choice selects the reverse enhanced access channel for radio configurations three and four.

RC34 This choice selects the reverse common control channel for radio configurations three and four.

***RST** FORW

Key Entry **Link Forward Reverse RadioConfig 1/2 Traffic RadioConfig 1/2 Access**
RadioConfig 3/4 Traffic RadioConfig 3/4 Enhanced Access
RadioConfig 3/4 Common Control

Remarks N/A

[:FORWard]:BBCLock

Supported All with Option 401

```
[:SOURce]:RADio:CDMA2000[:BBG][:FORWard]:BBCLock INT[1]|EXT[1]
[:SOURce]:RADio:CDMA2000[:BBG][:FORWard]:BBCLock?
```

This command selects the baseband data clock source for the forward link.

| | |
|--------------------|---|
| *RST | INT |
| Field Entry | BBG Data Clock |
| Remarks | If the EXT choice is selected, the external frequency must be entered and the signal must be applied to the BASEBAND GEN REF IN rear panel connector. |

[:FORWARD]:CHIPrate

Supported All with Option 401

```
[:SOURCE]:RADio:CDMA2000[:BBG][:FORWARD]:CHIPrate <val>
[:SOURCE]:RADio:CDMA2000[:BBG][:FORWARD]:CHIPrate?
```

This command adjusts the chip rate value.

The variable <val> is expressed in units of chips per second (cps–Mcps).

***RST** +1.22880000E+006

Range 1E3–1.3E6

Field Entry Chip Rate

Remarks The default value (1.228800 Mcps) is in accordance with the IS-2000 specification.

[:FORWARD]:ESDelay

Supported All with Option 401

```
[:SOURCE]:RADio:CDMA2000[:BBG][:FORWARD]:ESDelay <val>
[:SOURCE]:RADio:CDMA2000[:BBG][:FORWARD]:ESDelay?
```

This command modifies the even second clock pulse.

***RST** +2.00000000E+001

Range 0.5–128.0

Field Entry Even Second Delay

Remarks The even second clock pulse sets the delay to align the RF with the trigger.

When the noise function is set to ON, this value will increase. Refer to “[:FORWARD]:NOISe[:STATe]” on page 479 for more information.

[[:FORWARD]:FILTER**Supported** All with Option 401

```
[:SOURce]:RADio:CDMA2000[:BBG][[:FORWARD]:FILTer RNYQuist|NYQuist|
GAUSSian|RECTangle|IS95|IS95_EQ|IS95_MOD|IS95_MOD_EQ|AC4Fm|UGGaussian|
"<user FIR>"|
[:SOURce]:RADio:CDMA2000[:BBG][[:FORWARD]:FILTer?
```

This command specifies the filter type.

| | |
|------------------|--|
| IS95 | This choice selects a filter that meets the criteria of the IS-95 standard. |
| IS95_EQ | This choice selects a filter which is a combination of the IS-95 filter (above) and the equalizer filter described in the IS-95 standard. This filter is only used for IS-95 baseband filtering. |
| IS95_MOD | This choice selects a filter that meets the criteria of the IS-95 error function (for improved adjacent channel performance) with lower passband rejection than the filter specified in the IS-95 standard. |
| IS95_MOD_EQ | This choice selects a filter which is a combination of the equalizer filter described in the IS-95 standard and a filter that meets the criteria of the IS-95 error function (for improved adjacent channel performance), with lower passband rejection. |
| AC4Fm | This choice selects a predefined Association of Public Safety Communications Officials (APCO) specified compatible 4-level frequency modulation (C4FM) filter. |
| UGGaussian | This choice selects a backwards compatible GSM Gaussian filter (Gaussian filter with a fixed BbT value of 0.300) for the ESG E44xxB Option UN3 or UN4. |
| "<user FIR>" | This variable is any filter file that you have stored into memory. |
| *RST | IS95_EQ |
| Key Entry | Root Nyquist Nyquist Gaussian Rectangle IS-95 IS-95 w/EQ IS-95 Mod IS-95 MOD w/EQ APCO 25 C4FM UN3/4 GSM Gaussian User FIR |
| Remarks | Refer to “File Name Variables” on page 14 for information on the file name syntax. |

[:FORWARD]:FILTER:ALPHA**Supported** All with Option 401

```
[:SOURCE]:RADio:CDMA2000[:BBG][:FORWARD]:FILTer:ALPHA <val>
[:SOURCE]:RADio:CDMA2000[:BBG][:FORWARD]: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** +2.20000000E-001**Range** 0.000–1.000**Key Entry** Filter Alpha**Remarks** To change the current filter type, refer to “[:FORWARD]:FILTer” on [page 452](#).**[:FORWARD]:FILTER:BBT*Supported** All with Option 401

```
[:SOURCE]:RADio:CDMA2000[:BBG][:FORWARD]:FILTer:BBT <val>
[:SOURCE]:RADio:CDMA2000[:BBG][:FORWARD]:FILTer:BBT?
```

This command changes the bandwidth-multiplied-by-bit-time filter value.

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 “[:FORWARD]:FILTer” on [page 452](#).

[:FORWARD]:FILTER:CHANnel**Supported** All with Option 401

```
[:SOURCE]:RADio:CDMA2000[:BBG][:FORWARD]:FILTER:CHANnel EVM|ACP
[:SOURCE]:RADio:CDMA2000[:BBG][:FORWARD]: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 “[:FORWARD]:FILTER” on [page 452](#).

[:FORWARD]:LCState**Supported** All with Option 401

```
[:SOURCE]:RADio:CDMA2000[:BBG][:FORWARD]:LCState <val>
[:SOURCE]:RADio:CDMA2000[:BBG][:FORWARD]:LCState?
```

This command sets the long code seed used to generate the long code for the forward link.

***RST** #H0000000000

Range #H0–#H3FFFFFFFF

Field Entry Long Code State

Remarks The storage register for the long code state allows a 42-bit binary number to be entered.

[:FORWARD]:FFCH:DATA**Supported** All with Option 401

```
[:SOURCE]:RADio:CDMA2000[:BBG][:FORWARD]:FFCH:DATA PN9|PN15|FIX4|
"<file name>"|EXT
[:SOURCE]:RADio:CDMA2000[:BBG][:FORWARD]:FFCH:DATA?
```

This command configures the data field for the forward fundamental channel.

| | |
|------------------|--|
| *RST | PN9 |
| Key Entry | PN9 PN15 FIX4 User File Ext |
| Remarks | Refer to “ File Name Variables ” on page 14 for information on the file name syntax. |

[:FORWARD]:FFCH:DATA:FIX4

Supported All with Option 401

```
[:SOURCE]:RADio:CDMA2000[:BBG][:FORWARD]:FFCH:DATA:FIX4 <val>
[:SOURCE]:RADio:CDMA2000[:BBG][:FORWARD]:FFCH:DATA:FIX4?
```

This command selects a fixed 4-bit data pattern to be repeated as necessary to fill the selected data area.

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

[:FORWARD]:FFCH:EBNO

Supported All with Option 401

```
[:SOURCE]:RADio:CDMA2000[:BBG][:FORWARD]:FFCH:EBNO <val>
[:SOURCE]:RADio:CDMA2000[:BBG][:FORWARD]:FFCH:EBNO?
```

This command sets the ratio of energy per bit to noise power spectral density (expressed in dB) for the forward fundamental channel.

| | |
|-------------|------------------|
| *RST | +0.00000000E+000 |
|-------------|------------------|

CDMA2000 BBG Subsystem–Option 401 ([:SOURce]:RADio:CDMA2000[:BBG])

Range

$$\min \text{EbNo: } 10\log_{10} \left[\frac{\text{Chip Rate}}{1000(\text{Bit Rate})} \right] + \text{Normalized Power} + \text{RCFactor}$$

$$\max \text{EbNo: } 10\log_{10} \left[\frac{1000(\text{Chip Rate})}{\text{Bit Rate}} \right] + \text{Normalized Power} + \text{RCFactor}$$

Normalized Power is the channel amplitude after adjusting the code power to 0 dB. Refer to “[:FORWard]:PADJust” on page 481 for adjusting the code domain power.

RCFactor is dependent on the selected radio configuration. The following table shows the RCFactor by radio configuration.

| RC | RCFactor |
|------|---|
| 1 | $10\log_{10} \left[\frac{1}{2} \left(\frac{11}{11 + \frac{9600}{\text{Bit Rate}}} \right) \right]$ |
| 2 | $10\log_{10} \left[\frac{1}{2} \left(\frac{23}{23 + \frac{14400}{\text{Bit Rate}}} \right) \right]$ |
| 3, 4 | $10\log_{10} \left[\frac{11}{11 + \frac{9600}{\text{Bit Rate}}} \right]$ |
| 5 | $10\log_{10} \left[\frac{11}{11 + \frac{14400}{\text{Bit Rate}}} \right]$ |

Field Entry EbNo

Remarks Changes to the EbNo values also change the EcNo values for all other channels in the current link (forward or reverse).

Queries of this command are only valid for the current operating state.

[:FORWard]:FFCH:FOFFset

Supported All with Option 401

```
[:SOURce]:RADio:CDMA2000[:BBG][:FORWard]:FFCH:FOFFset <val>
[:SOURce]:RADio:CDMA2000[:BBG][:FORWard]:FFCH:FOFFset?
```

This command sets the frame offset value for the forward fundamental channel.

***RST** +0

| | |
|--------------------|--|
| Range | 0–15 |
| Field Entry | Frame Offset |
| Remarks | Changing this value also changes the frame offset value for the forward supplemental channels (FSCH1 and FSCH2). |

[:FORWARD]:FFCH:LCMask

Supported All with Option 401

```
[:SOURCE]:RADIO:CDMA2000[:BBG][:FORWARD]:FFCH:LCMask?
```

This command outputs the contents of the long code mask field for the forward fundamental channel.

***RST** #H31800000000

Range N/A

Key Entry N/A

Remarks This value is shared by the forward supplemental channels (FSCH1 and FSCH2).

[:FORWARD]:FFCH:LCMask:ESN

Supported All with Option 401

```
[:SOURCE]:RADIO:CDMA2000[:BBG][:FORWARD]:FFCH:LCMask:ESN <val>
[:SOURCE]:RADIO:CDMA2000[:BBG][:FORWARD]:FFCH:LCMask:ESN?
```

This command sets the permuted electronic serial number (ESN) for the long code mask, which is used to identify a particular mobile.

***RST** #H00000000

Range #H0–#HFFFFFFF

Field Entry Permuted ESN

Remarks Changing this value also changes the permuted ESN for the long code mask in the forward supplemental channels (FSCH1 and FSCH2).

[:FORWARD]:FFCH:LCMask:HEADer**Supported** All with Option 401

```
[:SOURCE]:RADIO:CDMA2000[:BBG][:FORWARD]:FFCH:LCMask:HEADer <val>
[:SOURCE]:RADIO:CDMA2000[:BBG][:FORWARD]:FFCH:LCMask:HEADer?
```

This command sets the header for the long code mask, which is used to identify a particular mobile.

RST** #H318**Range** 000–3FF**Field Entry** Header**Remarks** Changing this value also changes the header for the long code mask in the forward supplemental channels (FSCH1 and FSCH2).**[:FORWARD]:FFCH:POWER*Supported** All with Option 401

```
[:SOURCE]:RADIO:CDMA2000[:BBG][:FORWARD]:FFCH:POWER <val>
[:SOURCE]:RADIO:CDMA2000[:BBG][:FORWARD]:FFCH:POWER?
```

This command sets the power for the forward fundamental channel.

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

RST** +0.00000000E+000**Range** –40 to 0**Field Entry** Power**Remarks** N/A**[:FORWARD]:FFCH:PRAMP*Supported** All with Option 401

```
[:SOURCE]:RADIO:CDMA2000[:BBG][:FORWARD]:FFCH:PRAMP ON|OFF|1|0
[:SOURCE]:RADIO:CDMA2000[:BBG][:FORWARD]:FFCH:PRAMP?
```

This command sets the power puncturing operating state for the forward fundamental channel.

***RST** 1**Field Entry** Ramp

Remarks N/A

[:FORWARD]:FFCH:PRTIME

Supported All with Option 401

```
[:SOURCE]:RADIO:CDMA2000[:BBG][:FORWARD]:FFCH:PRTIME <val>
[:SOURCE]:RADIO:CDMA2000[:BBG][:FORWARD]:FFCH:PRTIME?
```

This command sets the power ramp time indicator values for the forward fundamental channel.

Power frame indicators are used to command the mobile (increasing or decreasing power). For example, if 4 is the selected value, it will cause the mobile to respond with 4 sequential power increases, then 4 power decreases. This pattern will continue indefinitely.

The variable <val> is expressed in

***RST** +1
Range 1–80
Field Entry Ramp Time
Remarks N/A

[:FORWARD]:FFCH:QOF

Supported All with Option 401

```
[:SOURCE]:RADIO:CDMA2000[:BBG][:FORWARD]:FFCH:QOF <val>
[:SOURCE]:RADIO:CDMA2000[:BBG][:FORWARD]:FFCH:QOF?
```

This command sets the quasi-orthogonal function channel value.

***RST** +0
Range 0–3
Field Entry QOF
Remarks N/A

[:FORWARD]:FFCH:RATE**Supported** All with Option 401

```
[:SOURCE]:RADIO:CDMA2000[:BBG][:FORWARD]:FFCH:RATE 1.2kbps|1.5kbps|
1.8kbps|2.4kbps|2.7kbps|3.6kbps|4.8kbps|7.2kbps|9.6kbps|14.4kbps
[:SOURCE]:RADIO:CDMA2000[:BBG][:FORWARD]:FFCH:RATE?
```

This command sets the data rate for the forward paging channel.

The variable <val> is expressed in units of bits per second (bps–Mbps).

RST** +9.60000000E+003**Range** 1.2E3–1.44E4**Field Entry** Bit Rate**Remarks** N/A**[:FORWARD]:FFCH:RCONfig*Supported** All with Option 401

```
[:SOURCE]:RADIO:CDMA2000[:BBG][:FORWARD]:FFCH:RCONfig <val>
[:SOURCE]:RADIO:CDMA2000[:BBG][:FORWARD]:FFCH:RCONfig?
```

This command sets the radio configuration value for the forward fundamental channel.

RST** +3**Range** 1–5**Field Entry** Radio Config**Remarks** N/A**[:FORWARD]:FFCH:WALSh*Supported** All with Option 401

```
[:SOURCE]:RADIO:CDMA2000[:BBG][:FORWARD]:FFCH:WALSh <val>
[:SOURCE]:RADIO:CDMA2000[:BBG][:FORWARD]:FFCH:WALSh?
```

Execute this command to set the Walsh code for the forward fundamental channel.

***RST** +10**Range** RC1,2,3, & 5: 0–63 RC4: 0–127**Field Entry** Walsh

Remarks N/A

[:FORWARD]:FFCH[:STATE]

Supported All with Option 401

```
[:SOURCE]:RADIO:CDMA2000[:BBG][:FORWARD]:FFCH[:STATE] ON|OFF|1|0
[:SOURCE]:RADIO:CDMA2000[:BBG][:FORWARD]:FFCH[:STATE]?
```

This command enables or disables the operating state of the forward fundamental channel.

***RST** 0

Field Entry State

Remarks N/A

[:FORWARD]:FPCH:DATA

Supported All with Option 401

```
[:SOURCE]:RADIO:CDMA2000[:BBG][:FORWARD]:FPCH:DATA DEFAULT|"<file name>"
[:SOURCE]:RADIO:CDMA2000[:BBG][:FORWARD]:FPCH:DATA?
```

This command configures the data field for the forward paging channel.

***RST** DEFAULT

Key Entry **Default** **User File**

Remarks A user-defined file can have a maximum length of 512 bytes.

Refer to “[File Name Variables](#)” on page 14 for information on the file name syntax.

[:FORWARD]:FPCH:EBNO

Supported All with Option 401

```
[:SOURCE]:RADIO:CDMA2000[:BBG][:FORWARD]:FPCH:EBNO <val>
[:SOURCE]:RADIO:CDMA2000[:BBG][:FORWARD]:FPCH:EBNO?
```

This command sets the ratio of energy per bit to noise power spectral density (expressed in dB) for the forward paging channel.

***RST** +0.00000000E+000

Range $min EbNo: 10 \log_{10} \left[\frac{\text{Chip Rate}}{1000(\text{Bit Rate})} \right] + \text{Normalized Power}$

$$\max EbNo: 10\log_{10} \left[\frac{1000(\text{Chip Rate})}{\text{Bit Rate}} \right] + \text{Normalized Power}$$

Normalized Power is the channel amplitude after adjusting the code power to 0 dB. Refer to “[:FORWard]:PADJust” on page 481 for adjusting the code domain power.

Field Entry

EbNo

Remarks

Changes to the EbNo values also change the EcNo values for all other channels in the current link (forward or reverse).

Queries of this command are only valid for the current operating state.

[:FORWard]:FPCH:LCMask

Supported All with Option 401

```
[:SOURce]:RADio:CDMA2000[:BBG][:FORWard]:FPCH:LCMask?
```

This command outputs the contents of the long code mask field for the forward paging channel.

***RST** +0.00000000E+000

Range N/A

Key Entry N/A

Remarks N/A

[:FORWard]:FPCH:LCMask:F1

Supported All with Option 401

```
[:SOURce]:RADio:CDMA2000[:BBG][:FORWard]:FPCH:LCMask:F1 <val>
```

```
[:SOURce]:RADio:CDMA2000[:BBG][:FORWard]:FPCH:LCMask:F1?
```

This command sets the value of field one for the forward paging channel long code mask.

***RST** #H18CD

Range #H0–#H1FFF

Field Entry Field 1

Remarks N/A

[:FORWARD]:FPCH:LCMask:F2

Supported All with Option 401

```
[:SOURCE]:RADio:CDMA2000[:BBG][:FORWARD]:FPCH:LCMask:F2 <val>  
[:SOURCE]:RADio:CDMA2000[:BBG][:FORWARD]:FPCH:LCMask:F2?
```

This command sets the value of field two for the forward paging channel long code mask.

***RST** #H00

Range #H00–#H1F

Field Entry Field 2

Remarks N/A

[:FORWARD]:FPCH:LCMask:F3

Supported All with Option 401

```
[:SOURCE]:RADio:CDMA2000[:BBG][:FORWARD]:FPCH:LCMask:F3 <val>  
[:SOURCE]:RADio:CDMA2000[:BBG][:FORWARD]:FPCH:LCMask:F3?
```

This command sets the value of field three for the forward paging channel long code mask.

***RST** #H000

Range #H0–#H1FFF

Field Entry Field 3

Remarks N/A

[:FORWARD]:FPCH:MESSAge

Supported All with Option 401

```
[:SOURCE]:RADio:CDMA2000[:BBG][:FORWARD]:FPCH:MESSAge <bit_count>,  
<datablock>
```

This command sends a bit count and a data block (to queue up messaging), generated as a one-time paging message (asynchronous paging message), to the paging channel.

After a one-time paging message is generated, the signal generator reverts to synchronous paging file messages.

***RST** N/A

Range N/A

Key Entry N/A

Remarks N/A

[:FORWARD]:FPCH:POWER

Supported All with Option 401

```
[:SOURce]:RADio:CDMA2000[:BBG][:FORWARD]:FPCH:POWER <val>
[:SOURce]:RADio:CDMA2000[:BBG][:FORWARD]:FPCH:POWER?
```

Execute this command to set the power for the forward paging channel.

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

***RST** +0.00000000E+000

Range -40 to 0

Field Entry Power

Remarks N/A

[:FORWARD]:FPCH:RATE

Supported All with Option 401

```
[:SOURce]:RADio:CDMA2000[:BBG][:FORWARD]:FPCH:RATE 4.8kbps|9.6kbps
[:SOURce]:RADio:CDMA2000[:BBG][:FORWARD]:FPCH:RATE?
```

This command sets the data rate for the forward paging channel.

The variable <val> is expressed in units of bits per second (bps–Mbps).

***RST** +9.60000000E+003

Field Entry Bit Rate

Remarks N/A

[:FORWARD]:FPCH:WALSh

Supported All with Option 401

```
[:SOURce]:RADio:CDMA2000[:BBG][:FORWARD]:FPCH:WALSh <val>
[:SOURce]:RADio:CDMA2000[:BBG][:FORWARD]:FPCH:WALSh?
```

This command sets the Walsh code for the forward paging channel.

***RST** +1

| | |
|--------------------|-------|
| Range | 0–63 |
| Field Entry | Walsh |
| Remarks | N/A |

[:FORWARD]:FPCH[:STATE]

Supported All with Option 401

```
[:SOURCE]:RADIO:CDMA2000[:BBG][:FORWARD]:FPCH[:STATE] ON|OFF|1|0
[:SOURCE]:RADIO:CDMA2000[:BBG][:FORWARD]:FPCH[:STATE]?
```

Execute this command to set the operating state for the forward paging channel.

| | |
|--------------------|-------|
| *RST | 0 |
| Field Entry | State |
| Remarks | N/A |

[:FORWARD]:FPICH:ECNO

Supported All with Option 401

```
[:SOURCE]:RADIO:CDMA2000[:BBG][:FORWARD]:FPICH:ECNO <val>
[:SOURCE]:RADIO:CDMA2000[:BBG][:FORWARD]:FPICH:ECNO?
```

This command sets the ratio of energy per chip to the noise power spectral density (expressed in dB) for the forward pilot channel.

***RST** +0.00000000E+000

Range *min EcNo*: -30 + Normalized Power
max EcNo: 30 + Normalized Power

Normalized Power is the channel amplitude after adjusting the code power to 0 dB. Refer to “[:FORWARD]:PADJUST” on page 481 for adjusting the code domain power.

Field Entry EcNo

Remarks Changes to the EcNo values also change the EbNo values for all other channels in the current link (forward or reverse).

Queries of this command are only valid for the current operating state.

[[:FORWARD]:FPICH:POWER]**Supported** All with Option 401

```
[:SOURce]:RADio:CDMA2000[:BBG][:FORWARD]:FPICH:POWER <val>
[:SOURce]:RADio:CDMA2000[:BBG][:FORWARD]:FPICH:POWER?
```

This command sets the power for the forward pilot channel.

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

RST** +0.00000000E+000**Range** -40 to 0**Field Entry** Power**Remarks** N/A**[[:FORWARD]:FPICH[:STATE]]*Supported** All with Option 401

```
[:SOURce]:RADio:CDMA2000[:BBG][:FORWARD]:FPICH[:STATE] ON|OFF|1|0
[:SOURce]:RADio:CDMA2000[:BBG][:FORWARD]:FPICH[:STATE]?
```

This command enables or disables the operating state of the forward pilot channel.

RST** 1**Field Entry** State**Remarks** N/A**[[:FORWARD]:FSCH[1]|2:DATA]*Supported** All with Option 401

```
[:SOURce]:RADio:CDMA2000[:BBG][:FORWARD]:FSCH[1]|2:DATA PN9|PN15|FIX4|
"<file name>"|EXT
[:SOURce]:RADio:CDMA2000[:BBG][:FORWARD]:FSCH[1]|2:DATA?
```

This command configures the data field for the forward supplemental traffic channels.

***RST** PN9**Key Entry** PN9 PN15 FIX4 User File EXT**Remarks** N/A

[:FORWARD]:FSCH[1] | 2:DATA:FIX4

Supported All with Option 401

```
[:SOURCE]:RADio:CDMA2000[:BBG][:FORWARD]:FSCH[1] | 2:DATA:FIX4 <val>
[:SOURCE]:RADio:CDMA2000[:BBG][:FORWARD]:FSCH[1] | 2:DATA:FIX4?
```

This command selects a fixed 4-bit data pattern that repeats as necessary to fill the selected data area.

***RST** #B0000

Range #B0000–#B1111 or 0–15

Key Entry **FIX4**

Remarks N/A

[:FORWARD]:FSCH[1] | 2:EBNO

Supported All with Option 401

```
[:SOURCE]:RADio:CDMA2000[:BBG][:FORWARD]:FSCH[1] | 2:EBNO <val>
[:SOURCE]:RADio:CDMA2000[:BBG][:FORWARD]:FSCH[1] | 2:EBNO?
```

This command sets the ratio of energy per bit to noise power spectral density (expressed in dB) for the reverse access channel.

***RST** +0.00000000E+000

Range

$$\text{min EbNo: } 10 \log_{10} \left[\frac{\text{Chip Rate}}{1000(\text{Bit Rate})} \right] + \text{Normalized Power}$$

$$\text{max EbNo: } 10 \log_{10} \left[\frac{1000(\text{Chip Rate})}{\text{Bit Rate}} \right] + \text{Normalized Power}$$

Normalized Power is the channel amplitude after adjusting the code power to 0 dB. Refer to “[:FORWARD]:PADJust” on page 481 for adjusting the code domain power.

Field Entry EbNo

Remarks Changes to the EbNo values also change the EcNo values for all other channels in the current link (forward or reverse).

Queries of this command are only valid for the current operating state.

[[:FORWARD]:FSCH[1]|2:FOFFset**Supported** All with Option 401

```
[:SOURce]:RADio:CDMA2000[:BBG][:FORWARD]:FSCH[1]|2:FOFFset <val>
[:SOURce]:RADio:CDMA2000[:BBG][:FORWARD]:FSCH[1]|2:FOFFset?
```

This command sets the frame offset value for the forward supplemental traffic channels.

RST** +0**Range** 0–15**Field Entry** Frame Offset**Remarks** Changing this value also changes the frame offset value for the forward fundamental channel (FFCH).**[[:FORWARD]:FSCH[1]|2:LCMask*Supported** All with Option 401

```
[:SOURce]:RADio:CDMA2000[:BBG][:FORWARD]:FSCH[1]|2:LCMask?
```

This query outputs the contents of the long code mask field for the forward supplemental traffic channels.

RST** 0**Range** N/A**Key Entry** N/A**Remarks** This value is shared with the forward fundamental channel (FFCH).**[[:FORWARD]:FSCH[1]|2:LCMask:ESN*Supported** All with Option 401

```
[:SOURce]:RADio:CDMA2000[:BBG][:FORWARD]:FSCH[1]|2:LCMask:ESN <val>
[:SOURce]:RADio:CDMA2000[:BBG][:FORWARD]:FSCH[1]|2:LCMask:ESN?
```

This command defines the permuted electronic serial number (ESN) for the long code mask, which is used to identify a particular mobile.

***RST** #H00000000**Range** #H0–#HFFFFFFF**Field Entry** Permuted ESN

Remarks Changing this value also changes the permuted ESN for the long code mask in the forward fundamental channel (FFCH).

[:FORWARD]:FSCH[1] | 2:LCMask:HEADer

Supported All with Option 401

```
[:SOURCE]:RADio:CDMA2000[:BBG][:FORWARD]:FSCH[1] | 2:LCMask:HEADer <val>
[:SOURCE]:RADio:CDMA2000[:BBG][:FORWARD]:FSCH[1] | 2:LCMask:HEADer?
```

This command sets the header for the long code mask, which is used to identify a particular mobile.

***RST** #H318

Range 000–3FF

Field Entry Header

Remarks Changing this value also changes the header for the long code mask in the forward fundamental channel (FFCH).

[:FORWARD]:FSCH[1] | 2:POWER

Supported All with Option 401

```
[:SOURCE]:RADio:CDMA2000[:BBG][:FORWARD]:FSCH[1] | 2:POWER <val>
[:SOURCE]:RADio:CDMA2000[:BBG][:FORWARD]:FSCH[1] | 2:POWER?
```

This command sets the power for the forward supplemental traffic channels.

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

***RST** +0.00000000E+000

Range –40 to 0

Field Entry Power

Remarks N/A

[:FORWARD]:FSCH[1] | 2:QOF

Supported All with Option 401

```
[:SOURCE]:RADio:CDMA2000[:BBG][:FORWARD]:FSCH[1] | 2:QOF <val>
[:SOURCE]:RADio:CDMA2000[:BBG][:FORWARD]:FSCH[1] | 2:QOF?
```

This command sets the quasi-orthogonal function value for the forward supplemental

traffic channels.

***RST** +0
Range 0–3
Field Entry QOF
Remarks N/A

[:FORWard]:FSCH[1]|2:RATE

Supported All with Option 401

```
[:SOURce]:RADio:CDMA2000[:BBG][:FORWard]:FSCH[1]|2:RATE 19.2kbps |
28.8kbps | 38.4kbps | 57.6kbps | 76.8kbps | 115.2kbps | 153.6kbps | 230.4kbps |
307.2kbps
[:SOURce]:RADio:CDMA2000[:BBG][:FORWard]:FSCH[1]|2:RATE?
```

This command sets the data rate for the forward supplemental traffic channels.

***RST** +1.92000000E+004
Field Entry Bit Rate
Remarks Values preceded by an asterisk indicate data rate values that are eligible for turbo coding.

[:FORWard]:FSCH[1]|2:RCONfig

Supported All with Option 401

```
[:SOURce]:RADio:CDMA2000[:BBG][:FORWard]:FSCH[1]|2:RCONfig 3|4|5
[:SOURce]:RADio:CDMA2000[:BBG][:FORWard]:FSCH[1]|2:RCONfig?
```

This command sets the radio configuration value for the forward supplemental channels.

***RST** +3
Field Entry Radio Config
Remarks N/A

[[:FORWARD]:FSCH[1]|2:TCODE**Supported** All with Option 401

```
[:SOURCE]:RADIO:CDMA2000[:BBG][:FORWARD]:FSCH[1]|2:TCODE ON|OFF|1|0
[:SOURCE]:RADIO:CDMA2000[:BBG][:FORWARD]:FSCH[1]|2:TCODE?
```

This command enables or disables the turbo coding operating state for the forward supplemental traffic channels.

***RST** 0**Field Entry** Turbo Coding**Remarks** Turbo coding is available for all data rates, excluding the following radio configurations (highest data rate of each radio configuration):

RC3: 153.6
 RC4: 307.2
 RC5: 230.4

To change the data rate for the forward supplemental traffic channel, refer to “[[:FORWARD]:FSCH[1]|2:RATE” on page 470.

[[:FORWARD]:FSCH[1]|2:WALSh**Supported** All with Option 401

```
[:SOURCE]:RADIO:CDMA2000[:BBG][:FORWARD]:FSCH[1]|2:WALSh <val>
[:SOURCE]:RADIO:CDMA2000[:BBG][:FORWARD]:FSCH[1]|2:WALSh?
```

This command sets the Walsh code for the forward supplemental traffic channels.

***RST** *FSCH1*: 12 *FSCH2*: 14

| Range | <i>RC3</i> | <i>RC4</i> | <i>RC5</i> |
|--------------|-----------------------------|-----------------------------|-----------------------------|
| | <i>Data Rate=19.2: 0–31</i> | <i>Data Rate=19.2: 0–63</i> | <i>Data Rate=28.8: 0–31</i> |
| | <i>Data Rate=38.4: 0–15</i> | <i>Data Rate=38.4: 0–31</i> | <i>Data Rate=57.6: 0–15</i> |
| | <i>Data Rate=76.8: 0–7</i> | <i>Data Rate=76.8: 0–15</i> | <i>Data Rate=115.2: 0–7</i> |
| | <i>Data Rate=307.2: 0–3</i> | <i>Data Rate=153.6: 0–7</i> | <i>Data Rate=230.4: 0–3</i> |
| | | <i>Data Rate=307.2: 0–3</i> | |

Field Entry Walsh**Remarks** N/A

[[:FORWARD]:FSCH[1] | 2[:STATe]**Supported** All with Option 401

```
[:SOURce]:RADio:CDMA2000[:BBG][[:FORWARD]:FSCH[1] | 2[:STATe] ON|OFF|1|0
[:SOURce]:RADio:CDMA2000[:BBG][[:FORWARD]:FSCH[1] | 2[:STATe]?
```

This command enables or disables the operating state of the forward supplemental traffic channel.

RST** 0**Field Entry** State**Remarks** N/A**[[:FORWARD]:FSYNch:CFRequency*Supported** All with Option 401

```
[:SOURce]:RADio:CDMA2000[:BBG][[:FORWARD]:FSYNch:CFRequency <val>
[:SOURce]:RADio:CDMA2000[:BBG][[:FORWARD]:FSYNch:CFRequency?
```

This command directs the mobile station to a CDMA channel having a primary paging channel.

RST** +50**Range** 0–2047**Field Entry** CDMA Freq**Remarks** N/A**[[:FORWARD]:FSYNch:DAYLt*Supported** All with Option 401

```
[:SOURce]:RADio:CDMA2000[:BBG][[:FORWARD]:FSYNch:DAYLt 1|0
[:SOURce]:RADio:CDMA2000[:BBG][[:FORWARD]:FSYNch:DAYLt?
```

This command sets the daylight savings time offset for the forward synchronization channel, where 1 = on and 0 = off.

***RST** +0**Field Entry** DAYLT**Remarks** N/A

[:FORWARD]:FSYNch:EBNO**Supported** All with Option 401

```
[:SOURCE]:RADio:CDMA2000[:BBG][:FORWARD]:FSYNch:EBNO <val>
[:SOURCE]:RADio:CDMA2000[:BBG][:FORWARD]:FSYNch:EBNO?
```

This command sets the ratio of energy per bit to noise power spectral density (expressed in dB) for the quick paging channel.

***RST** +0.00000000E+000

Range

$$\min EbNo: 10\log_{10} \left[\frac{\text{Chip Rate}}{1000(\text{Bit Rate})} \right] + \text{Normalized Power}$$

$$\max EbNo: 10\log_{10} \left[\frac{1000(\text{Chip Rate})}{\text{Bit Rate}} \right] + \text{Normalized Power}$$

Normalized Power is the channel amplitude after adjusting the code power to 0 dB. Refer to “[:FORWARD]:PADJust” on page 481 for adjusting the code domain power.

Field Entry EbNo

Remarks Changes to the EbNo values also change the EcNo values for all other channels in the current link (forward or reverse).

Queries of this command are only valid for the current operating state.

[:FORWARD]:FSYNch:ECFRequency**Supported** All with Option 401

```
[:SOURCE]:RADio:CDMA2000[:BBG][:FORWARD]:FSYNch:ECFRequency <val>
[:SOURCE]:RADio:CDMA2000[:BBG][:FORWARD]:FSYNch:ECFRequency?
```

This command direct the mobile station to a CDMA channel having a primary paging channel. The mobile tunes to the Ext CDMA Freq field when it has a protocol revision level of 6 or greater, and it supports either the quick paging channel or radio configurations greater than 2. Otherwise, the mobile tunes to the CDMA Freq field for the CDMA channel.

This command sets the extended CDMA frequency for the forward synchronization channel.

***RST** +0**Range** 0–2047**Field Entry** Ext CDMA Freq

Remarks N/A

[:FORWARD]:FSYNch:LPSec

Supported All with Option 401

```
[:SOURCE]:RADIO:CDMA2000[:BBG][:FORWARD]:FSYNch:LPSec <val>
[:SOURCE]:RADIO:CDMA2000[:BBG][:FORWARD]:FSYNch:LPSec?
```

This command sets the leap seconds value for the forward synchronization channel.

***RST** +0

Range 0–255

Field Entry Leap Seconds

Remarks N/A

[:FORWARD]:FSYNch:LTMoff

Supported All with Option 401

```
[:SOURCE]:RADIO:CDMA2000[:BBG][:FORWARD]:FSYNch:LTMoff <val>
[:SOURCE]:RADIO:CDMA2000[:BBG][:FORWARD]:FSYNch:LTMoff?
```

This command sets the current local time offset from the basestation for the forward synchronization channel, where 1= 30 minutes, 2= 60 minutes, 3= 90 minutes, and so on.

***RST** +0

Range 0–63

Field Entry LTM OFF

Remarks N/A

[:FORWARD]:FSYNch:MPREv

Supported All with Option 401

```
[:SOURCE]:RADIO:CDMA2000[:BBG][:FORWARD]:FSYNch:MPREv <val>
[:SOURCE]:RADIO:CDMA2000[:BBG][:FORWARD]:FSYNch:MPREv?
```

This command sets the minimum protocol revision level for the forward synchronization channel.

***RST** +1

Range 0–255

Field Entry P Rev Min

Remarks N/A

[:FORWARD]:FSYNch:MSGType

Supported All with Option 401

```
[:SOURCE]:RADio:CDMA2000[:BBG][:FORWARD]:FSYNch:MSGType <val>  
[:SOURCE]:RADio:CDMA2000[:BBG][:FORWARD]:FSYNch:MSGType?
```

This command sets the message type value for the forward synchronization channel.

***RST** +1

Range 0–255

Field Entry Message Type

Remarks N/A

[:FORWARD]:FSYNch:NID

Supported All with Option 401

```
[:SOURCE]:RADio:CDMA2000[:BBG][:FORWARD]:FSYNch:NID <val>  
[:SOURCE]:RADio:CDMA2000[:BBG][:FORWARD]:FSYNch:NID?
```

This command sets the network identification value for the forward synchronization channel.

***RST** +1

Range 0–65535

Key Entry Network ID

Remarks N/A

[:FORWARD]:FSYNch:POWER

Supported All with Option 401

```
[:SOURCE]:RADio:CDMA2000[:BBG][:FORWARD]:FSYNch:POWER <val>  
[:SOURCE]:RADio:CDMA2000[:BBG][:FORWARD]:FSYNch:POWER?
```

This command sets the power for the forward synchronization channel.

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

CDMA2000 BBG Subsystem–Option 401 ([:SOURce]:RADio:CDMA2000[:BBG])

***RST** +0.00000000E+000
Range -40 to 0
Field Entry Power
Remarks N/A

[:FORWard]:FSYNch:PRATe

Supported All with Option 401

```
[:SOURce]:RADio:CDMA2000[:BBG][:FORWard]:FSYNch:PRATe <val>
[:SOURce]:RADio:CDMA2000[:BBG][:FORWard]:FSYNch:PRATe?
```

This command sets the base station paging rate for the forward supplemental channel.

***RST** +0
Range 0–3
Field Entry PRAT
Remarks N/A

[:FORWard]:FSYNch:PREV

Supported All with Option 401

```
[:SOURce]:RADio:CDMA2000[:BBG][:FORWard]:FSYNch:PREV <val>
[:SOURce]:RADio:CDMA2000[:BBG][:FORWard]:FSYNch:PREV?
```

This command sets the protocol revision level for the forward synchronization channel.

***RST** +1
Range 0–255
Field Entry P Rev
Remarks N/A

[:FORWard]:FSYNch:RESERved

Supported All with Option 401

```
[:SOURce]:RADio:CDMA2000[:BBG][:FORWard]:FSYNch:RESERved <val>
[:SOURce]:RADio:CDMA2000[:BBG][:FORWard]:FSYNch:RESERved?
```

This command sets the reserved field value for the forward synchronization channel.

***RST** +0
Range 0–7
Key Entry **Reserved**
Remarks Currently, base stations and mobiles ignore reserved bits, so the reserved field should be set to “0” with the query returning the same value.

[:FORWARD]:FSYNch:SID

Supported All with Option 401

```
[:SOURCE]:RADio:CDMA2000[:BBG][:FORWARD]:FSYNch:SID <val>
[:SOURCE]:RADio:CDMA2000[:BBG][:FORWARD]:FSYNch:SID?
```

This command sets the system identification for the forward synchronization channel.

***RST** +7
Range 0–32767
Field Entry System ID
Remarks N/A

[:FORWARD]:FSYNch:STYPe

Supported All with Option 401

```
[:SOURCE]:RADio:CDMA2000[:BBG][:FORWARD]:FSYNch:STYPe IS95|JSTD8|IS2000
[:SOURCE]:RADio:CDMA2000[:BBG][:FORWARD]:FSYNch:STYPe?
```

This command selects the forward synchronization channel type.

- IS95 This choice selects a channel type that is compatible with the IS95 CDMA standard.
- JSTD8 This choice selects a channel type that is compatible with PCS CDMA standard personal station requirements for 1.9 to 2.0 GHz.
- IS2000 This choice selects a channel type that is compatible with the IS2000 CDMA standard.

***RST** JSTD8
Key Entry **IS95 JSTD8 IS2000**
Remarks N/A

[:FORWARD]:FSYNch:SYSTime**Supported** All with Option 401

```
[:SOURCE]:RADIO:CDMA2000[:BBG][:FORWARD]:FSYNch:SYSTime <val>
[:SOURCE]:RADIO:CDMA2000[:BBG][:FORWARD]:FSYNch:SYSTime?
```

This command sets the system time value for the forward synchronization channel.

RST** #H000000000**Range** #H0–#HFFFFFFFFF**Field Entry** Time**Remarks** N/A**[:FORWARD]:FSYNch:WALSh*Supported** All with Option 401

```
[:SOURCE]:RADIO:CDMA2000[:BBG][:FORWARD]:FSYNch:WALSh <val>
[:SOURCE]:RADIO:CDMA2000[:BBG][:FORWARD]:FSYNch:WALSh?
```

This command sets the Walsh code for the forward synchronization channel.

RST** +32**Range** 0–63**Field Entry** Walsh**Remarks** N/A**[:FORWARD]:FSYNch[:STATE]*Supported** All with Option 401

```
[:SOURCE]:RADIO:CDMA2000[:BBG][:FORWARD]:FSYNch[:STATE] ON|OFF|1|0
[:SOURCE]:RADIO:CDMA2000[:BBG][:FORWARD]:FSYNch[:STATE]?
```

This command enables or disables the operating state for the forward synchronization channel.

***RST** 0**Field Entry** State**Remarks** N/A

[:FORWard]:NOISe:CN

Supported All with Option 401

```
[:SOURce]:RADio:CDMA2000[:BBG][:FORWard]:NOISe:CN <val>
[:SOURce]:RADio:CDMA2000[:BBG][:FORWard]:NOISe:CN?
```

This command sets the carrier to noise ratio for the forward link.

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

***RST** +0.00000000E+000

Range -30 to 30

Key Entry **C/N**

Remarks The carrier to noise ratio is the ratio of the carrier power to in-channel noise power.

A change to the carrier to noise ratio will change all EbNo/EcNo field values.

[:FORWard]:NOISe[:STATe]

Supported All with Option 401

```
[:SOURce]:RADio:CDMA2000[:BBG][:FORWard]:NOISe[:STATe] ON|OFF|1|0
[:SOURce]:RADio:CDMA2000[:BBG][:FORWard]:NOISe[:STATe]?
```

This command enables or disables the noise function for the CDMA2000 baseband forward link.

NOTE When this command is enabled, an immediate increase in the Even Second Delay value will occur. The Even Second Delay value will increase by an increment of 11.5 chips. The chip increase will be seen in the appropriate fields on the display.

Changes to Even Second Delay and Trigger Advance will not affect synchronization; automatic compensation is performed internally.

***RST** 0

Key Entry **Noise Off On**

Remarks Both the carrier and noise power value will be adjusted to match the specified carrier to noise ratio. Refer to “[:FORWard]:NOISe:CN” on [page 479](#) to change the carrier to noise ratio.

The noise function can only be turned on with Option 403 installed.

[:FORWard]:OCNS:POWer

Supported All with Option 401

```
[:SOURce]:RADio:CDMA2000[:BBG][:FORWard]:OCNS:POWer <val>
[:SOURce]:RADio:CDMA2000[:BBG][:FORWard]:OCNS:POWer?
```

This command sets the power level for the orthogonal channel noise simulator.

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

***RST** +0.00000000E+000

Range -40 to 0

Field Entry Power

Remarks N/A

[:FORWard]:OCNS:WALSh

Supported All with Option 401

```
[:SOURce]:RADio:CDMA2000[:BBG][:FORWard]:OCNS:WALSh <val>
[:SOURce]:RADio:CDMA2000[:BBG][:FORWard]:OCNS:WALSh?
```

This command sets the Walsh code for the orthogonal channel noise simulator.

***RST** +61

Range 0–63

Field Entry Walsh

Remarks N/A

[:FORWard]:OCNS[:STATe]

Supported All with Option 401

```
[:SOURce]:RADio:CDMA2000[:BBG][:FORWard]:OCNS[:STATe] ON|OFF|1|0
[:SOURce]:RADio:CDMA2000[:BBG][:FORWard]:OCNS[:STATe]?
```

This command sets the power for the orthogonal channel noise simulator.

***RST** 0

Field Entry State

Remarks N/A

[:FORWARD]:PADJUST

Supported All with Option 401

```
[:SOURCE]:RADIO:CDMA2000[:BBG][:FORWARD]: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.

***RST** N/A

Key Entry **Equal Powers** **Scale To 0dB**

Remarks N/A

[:FORWARD]:POLARITY

Supported All with Option 401

```
[:SOURCE]:RADIO:CDMA2000[:BBG][:FORWARD]:POLARITY NORMAL|INVERTED  
[:SOURCE]:RADIO:CDMA2000[:BBG][:FORWARD]:POLARITY?
```

This command sets the rotation direction for the phase modulation vector.

NORMAL This choice selects normal phase polarity.

INVERTED This choice inverts the internal Q signal.

***RST** **NORM**

Field Entry Phase Polarity

Remarks N/A

[:FORWARD]:QPCH:CCI

Supported All with Option 401

```
[:SOURCE]:RADIO:CDMA2000[:BBG][:FORWARD]:QPCH:CCI <val>  
[:SOURCE]:RADIO:CDMA2000[:BBG][:FORWARD]:QPCH:CCI?
```

This command selects the configuration change indicator for the quick paging channel.

***RST** +3

| | |
|--------------------|--------|
| Range | 0–3 |
| Field Entry | Change |
| Remarks | N/A |

[:FORWard]:QPCH:EBNO

Supported All with Option 401

```
[:SOURce]:RADio:CDMA2000[:BBG][:FORWard]:QPCH:EBNO <val>
[:SOURce]:RADio:CDMA2000[:BBG][:FORWard]:QPCH:EBNO?
```

This command sets the ratio of energy per bit to noise power spectral density (expressed in dB) for the quick paging channel.

***RST** +0.00000000E+000

Range

$$\min EbNo: 10\log_{10} \left[\frac{\text{Chip Rate}}{1000(\text{Bit Rate})} \right] + \text{Normalized Power}$$

$$\max EbNo: 10\log_{10} \left[\frac{1000(\text{Chip Rate})}{\text{Bit Rate}} \right] + \text{Normalized Power}$$

Normalized Power is the channel amplitude after adjusting the code power to 0 dB. Refer to “[:FORWard]:PADJust” on page 481 for adjusting the code domain power.

Field Entry EbNo

Remarks Changes to the EbNo values also change the EcNo values for all other channels in the current link (forward or reverse).

Queries of this command are only valid for the current operating state.

[:FORWard]:QPCH:PI

Supported All with Option 401

```
[:SOURce]:RADio:CDMA2000[:BBG][:FORWard]:QPCH:PI <val>
[:SOURce]:RADio:CDMA2000[:BBG][:FORWard]:QPCH:PI?
```

This command selects the paging slots for the quick paging channel.

***RST** +0

Field Entry Paging Indicator

Remarks When the bit rate is 2400, a value of 191 turns all paging slots on.
When the bit rate is 4800, a value of 383 turns all paging slots on.

When the bit rate is either 2400 or 4800, a value of –1 turns all paging

slots off.

To change the bit rate value, refer to “[:FORWARD]:QPCH:RATE” on page 483.

[:FORWARD]:QPCH:POWER

Supported All with Option 401

```
[:SOURCE]:RADIO:CDMA2000[:BBG][:FORWARD]:QPCH:POWER <val>  
[:SOURCE]:RADIO:CDMA2000[:BBG][:FORWARD]:QPCH:POWER?
```

This command sets the power value for the quick paging channel.

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

***RST** +0.00000000E+000

Range –40 to 0

Field Entry Power

Remarks N/A

[:FORWARD]:QPCH:RATE

Supported All with Option 401

```
[:SOURCE]:RADIO:CDMA2000[:BBG][:FORWARD]:QPCH:RATE 2.4kbps|4.8kbps  
[:SOURCE]:RADIO:CDMA2000[:BBG][:FORWARD]:QPCH:RATE?
```

This command sets the bit rate for the quick paging channel.

***RST** +4.80000000E+003

Field Entry Bit Rate

Remarks N/A

[[:FORWARD]:QPCH:WALSh]**Supported** All with Option 401

[:SOURCE]:RADio:CDMA2000[:BBG][[:FORWARD]:QPCH:WALSh <val>

[:SOURCE]:RADio:CDMA2000[:BBG][[:FORWARD]:QPCH:WALSh?

This command sets the Walsh code for the quick paging channel.

RST** +80**Range** 0–127**Field Entry** Walsh**Remarks** N/A**[[:FORWARD]:QPCH[:STATE]]*Supported** All with Option 401

[:SOURCE]:RADio:CDMA2000[:BBG][[:FORWARD]:QPCH[:STATE] ON|OFF|1|0

[:SOURCE]:RADio:CDMA2000[:BBG][[:FORWARD]:QPCH[:STATE]?

This command enables or disables the operating state of the quick paging channel.

RST** 0**Field Entry** State**Remarks** N/A**[[:FORWARD]:SRATE]*Supported** All with Option 401

[:SOURCE]:RADio:CDMA2000[:BBG][[:FORWARD]:SRATE?

This command returns the value of the current spreading rate.

***RST** +1**Range** N/A**Key Entry** N/A**Remarks** N/A

:PNOffset

Supported All with Option 401

```
[:SOURCE]:RADio:CDMA2000[:BBG]:PNOffset <val>  
[:SOURCE]:RADio:CDMA2000[:BBG]:PNOffset?
```

This command sets the current pseudorandom number (PN) offset value.

***RST** +1

Range 0–511

Field Entry PN Offset

Remarks The PN offset value is the time offset in the short code assigned to each basestation, allotting a unique identity for each.

:REVerse:BBCLock

Supported All with Option 401

```
[:SOURCE]:RADio:CDMA2000[:BBG]:REVerse:BBClock INT[1]|EXT[1]  
[:SOURCE]:RADio:CDMA2000[:BBG]:REVerse:BBClock?
```

This command selects the data clock source.

***RST** INT

Key Entry Internal External

Remarks If the EXT choice is selected, the REFERENCE selection will automatically be set to internal. The external data clock source must be connected to the DATA CLOCK front panel BNC input connector, and its frequency must match the specified chip rate.

:REVerse:CHIPrate

Supported All with Option 401

```
[:SOURCE]:RADio:CDMA2000[:BBG]:REVerse:CHIPrate <val>  
[:SOURCE]:RADio:CDMA2000[:BBG]:REVerse:CHIPrate?
```

Execute this command to adjust the chip rate.

The variable <val> is expressed in units of chips per second (cps–Mcps).

***RST** +1.22880000E+006

Range 1E3–1.3E6

| | |
|--------------------|--|
| Field Entry | Chip Rate |
| Remarks | The default value (1.228800 Mcps) is in accordance with the IS-2000 specification. |

:REVerse:ESDelay

Supported All with Option 401

```
[:SOURce]:RADio:CDMA2000[:BBG]:REVerse:ESDelay <val>
[:SOURce]:RADio:CDMA2000[:BBG]:REVerse:ESDelay?
```

This command modifies the even second clock pulse.

***RST** +2.75000000E+001

Range 0.5–128.0

Field Entry Even Second Delay

Remarks The even second clock pulse sets the delay to align the RF with the trigger.

When the noise function is set to ON, this value will increase. Refer to [“:REVerse:NOISe\[:STATe\]” on page 491](#) for more information.

:REVerse:FILTer

Supported All with Option 401

```
[:SOURce]:RADio:CDMA2000[:BBG]:REVerse:FILTer RNYQuist|NYQuist|GAUSSian|
RECTangle|IS95|IS95_EQ|IS95_MOD|IS95_MOD_EQ|AC4Fm|UGGaussian|
"<user FIR>"
[:SOURce]:RADio:CDMA2000[:BBG]:REVerse:FILTer?
```

This command specifies the filter type for the reverse link.

| | |
|-------------|---|
| IS95 | This choice selects a filter that meets the criteria of the IS-95 standard. |
| IS95_EQ | This choice selects a filter which is a combination of the IS-95 filter (above) and the equalizer filter described in the IS-95 standard. This filter is only used for IS-95 baseband filtering. |
| IS95_MOD | This choice selects a filter that meets the criteria of the IS-95 error function (for improved adjacent channel performance) with lower passband rejection than the filter specified in the IS-95 standard. |
| IS95_MOD_EQ | This choice selects a filter which is a combination of the equalizer |

| | |
|------------------|---|
| | filter described in the IS-95 standard and a filter that meets the criteria of the IS-95 error function (for improved adjacent channel performance), with lower passband rejection. |
| AC4Fm | This choice selects a predefined Association of Public Safety Communications Officials (APCO) specified compatible 4-level frequency modulation (C4FM) filter. |
| UGGaussian | This choice selects a backwards compatible GSM Gaussian filter (Gaussian filter with a fixed BbT value of 0.300) for the ESG E44xxB Option UN3 or UN4. |
| "<user FIR>" | This variable is any filter file that you have stored into memory. |
| *RST | IS95 |
| Key Entry | Root Nyquist Nyquist Gaussian Rectangle IS-95 IS-95 w/EQ IS-95 Mod IS-95 MOD w/EQ APCO 25 C4FM UN3/4 GSM Gaussian User FIR |
| Remarks | Refer to “File Name Variables” on page 14 for information on the file name syntax. |

:REVerse:FILTer:ALPHA

Supported All with Option 401

```
[ :SOURCE ] : RADio : CDMA2000 [ :BBG ] : REVerse : FILTer : ALPHa <val>
[ :SOURCE ] : RADio : CDMA2000 [ :BBG ] : REVerse : FILTer : ALPHa ?
```

This command changes the alpha value on 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 This command is effective only after choosing the root Nyquist or Nyquist filter. It does not effect other types of filters.

To change the current filter type, refer to [“:REVerse:FILTer” on page 486](#).

:REVerse:FILTer:BBT**Supported** All with Option 401

```
[:SOURce]:RADio:CDMA2000[:BBG]:REVerse:FILTer:BBT <val>
[:SOURce]:RADio:CDMA2000[:BBG]:REVerse:FILTer:BBT?
```

This command changes the bandwidth-multiplied-by-bit-time filter value.

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** 0.500–1.000**Key Entry** Filter BbT**Remarks** This command is effective only after choosing the Gaussian filter. It does not effect other types of filters.

To change the current filter type, refer to [“:REVerse:FILTer” on page 486](#).

:REVerse:FILTer:CHANnel**Supported** All with Option 401

```
[:SOURce]:RADio:CDMA2000[:BBG]:REVerse:FILTer:CHANnel EVM|ACP
[:SOURce]:RADio:CDMA2000[:BBG]:REVerse: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 [“:REVerse:FILTer” on page 486](#).

:REVerse:LCMask

Supported All with Option 401

```
[:SOURCE]:RADio:CDMA2000[:BBG]:REVerse:LCMask <val>  
[:SOURCE]:RADio:CDMA2000[:BBG]:REVerse:LCMask?
```

This command specifies a unique serial number code to identify a mobile station.

***RST** #H00000000000

Range #H0–#H3FFFFFFFFF

Field Entry Long Code Mask

Remarks N/A

:REVerse:LCState

Supported All with Option 401

```
[:SOURCE]:RADio:CDMA2000[:BBG]:REVerse:LCState <val>  
[:SOURCE]:RADio:CDMA2000[:BBG]:REVerse:LCState?
```

This command sets a unique code to address a mobile station.

***RST** #H00000000000

Range #H0–#H3FFFFFFFFF

Field Entry Long Code State

Remarks The storage register for the long code state allows a 42-bit binary number to be entered.

:REVerse:PADJust

Supported All with Option 401

```
[:SOURCE]:RADio:CDMA2000[:BBG]:REVerse:PADJust EQUAL|SCALE
```

Execute this command to set the code domain power.

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.

***RST** N/A

Key Entry Equal Powers Scale To 0dB

Remarks N/A

:REVerse:POLarity[:ALL]

Supported All with Option 401

```
[ :SOURce ] :RADio :CDMA2000 [ :BBG ] :REVerse :POLarity [ :ALL ] NORMAL | INVerted
[ :SOURce ] :RADio :CDMA2000 [ :BBG ] :REVerse :POLarity [ :ALL ] ?
```

This command sets the phase polarity to either normal or inverted.

NORMAL This choice selects normal phase polarity.

INVerted This choice inverts the internal Q signal.

***RST** NORM

Key Entry Normal Inverted

Remarks N/A

:REVerse:NOISe:CN

Supported All with Option 401

```
[ :SOURce ] :RADio :CDMA2000 [ :BBG ] :REVerse :NOISe :CN <val>
[ :SOURce ] :RADio :CDMA2000 [ :BBG ] :REVerse :NOISe :CN ?
```

This command sets the carrier to noise ratio for the reverse link.

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

***RST** +0.00000000E+000

Range -30 to 30

Key Entry C/N

Remarks The carrier to noise ratio is the ratio of the carrier power to in-channel noise power, expressed in decibels (dB).

A change to the carrier to noise ratio will only align the EbNo/EcNo field values in the active operating mode.

:REVerse:NOISe[:STATe]

Supported All with Option 401

```
[:SOURce]:RADio:CDMA2000[:BBG]:REVerse:NOISe[:STATe] ON|OFF|1|0
[:SOURce]:RADio:CDMA2000[:BBG]:REVerse:NOISe[:STATe]?
```

This command enables or disables the noise function for the baseband reverse link.

NOTE When this command is enabled, an immediate increase in the Even Second Delay and Trigger Advance values will occur. The Even Second Delay value will increase by an increment of 11.5 chips and the Trigger Advance value will increase by an increment of 12 chips. The chip increase will be seen in the appropriate field on the display.

Changes to Even Second Delay and Trigger Advance will not affect synchronization; automatic compensation is performed internally.

***RST** 0

Key Entry Noise Off On

Remarks Both the carrier and noise power value will be adjusted to match the specified carrier to noise ratio. Refer to “[:REVerse:NOISe:CN](#)” on [page 490](#) to change the carrier to noise ratio.

The noise function can only be turned on with Option 403 installed.

:REVerse:RC12:ACCess:RACH:DATA

Supported All with Option 401

```
[:SOURce]:RADio:CDMA2000[:BBG]:REVerse:RC12:ACCess:RACH:DATA PN9|PN15|
FIX4|"<file name>"
[:SOURce]:RADio:CDMA2000[:BBG]:REVerse:RC12:ACCess:RACH:DATA?
```

Execute this command to configure the data field for the reverse access channel.

***RST** PN9

Key Entry **PN9** **PN15** **FIX4** **User File**

Remarks Refer to “[File Name Variables](#)” on [page 14](#) for information on the file name syntax.

:REVerse:RC12:ACCess:RACH:DATA:FIX4**Supported** All with Option 401

```
[:SOURce]:RADio:CDMA2000[:BBG]:REVerse:RC12:ACCess:RACH:DATA:FIX4 <val>
[:SOURce]:RADio:CDMA2000[:BBG]:REVerse:RC12:ACCess:RACH:DATA:FIX4?
```

This command selects a fixed 4-bit data pattern to be repeated as necessary to fill the selected data area.

RST** #B0000**Range** #B0000–#B1111 or 0–15**Key Entry** **FIX4*Remarks** N/A**:REVerse:RC12:ACCess:RACH:EBNO****Supported** All with Option 401

```
[:SOURce]:RADio:CDMA2000[:BBG]:REVerse:RC12:ACCess:RACH:EBNO <val>
[:SOURce]:RADio:CDMA2000[:BBG]:REVerse:RC12:ACCess:RACH:EBNO?
```

This command sets the ratio of energy per bit to noise power spectral density (expressed in dB) for the reverse access channel.

***RST** +0.00000000E+000

Range

$$\min EbNo: 10\log_{10} \left[\frac{\text{Chip Rate}}{1000(\text{Bit Rate})} \right] + \text{Normalized Power}$$

$$\max EbNo: 10\log_{10} \left[\frac{1000(\text{Chip Rate})}{\text{Bit Rate}} \right] + \text{Normalized Power}$$

Normalized Power is the channel amplitude after adjusting the code power to 0 dB. Refer to “[:REVerse:PADJust](#)” on page 489 for adjusting the code domain power.

Field Entry EbNo**Remarks** Changes to the EbNo values also change the EcNo values for all other channels in the current link (forward or reverse).

Queries of this command are only valid for the current operating state.

:REVERSE:RC12:ACCESS:RACH:FLENGTH**Supported** All with Option 401

[:SOURCE]:RADIO:CDMA2000[:BBG]:REVERSE:RC12:ACCESS:RACH:FLENGTH?

This command queries the frame length for the reverse access channel.

The frame length is expressed as seconds (ms).

RST** +20**Range** N/A**Field Entry** Frame Length**Remarks** N/A**:REVERSE:RC12:ACCESS:RACH:FOFFSET*Supported** All with Option 401[:SOURCE]:RADIO:CDMA2000[:BBG]:REVERSE:RC12:ACCESS:RACH:FOFFSET <val>
[:SOURCE]:RADIO:CDMA2000[:BBG]:REVERSE:RC12:ACCESS:RACH:FOFFSET?

This command sets the frame offset value for the reverse access channel.

RST** +0**Range** 0–15**Field Entry** Frame Offset**Remarks** N/A**:REVERSE:RC12:ACCESS:RACH:POWER*Supported** All with Option 401[:SOURCE]:RADIO:CDMA2000[:BBG]:REVERSE:RC12:ACCESS:RACH:POWER <val>
[:SOURCE]:RADIO:CDMA2000[:BBG]:REVERSE:RC12:ACCESS:RACH:POWER?

This command sets the power for the reverse access channel.

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

***RST** +0.00000000E+000**Range** –40 to 0

Field Entry Power

Remarks N/A

:REVerse:RC12:ACCess:RACH:RCONfig

Supported All with Option 401

```
[:SOURce]:RADio:CDMA2000[:BBG]:REVerse:RC12:ACCess:RACH:RCONfig 1|2
[:SOURce]:RADio:CDMA2000[:BBG]:REVerse:RC12:ACCess:RACH:RCONfig?
```

This command select the radio configuration value for the reverse access channel.

***RST** +1

Field Entry Radio Config

Remarks N/A

:REVerse:RC12:ACCess:RACH:RATE

Supported All with Option 401

```
[:SOURce]:RADio:CDMA2000[:BBG]:REVerse:RC12:ACCess:RACH:RATE?
```

This command queries the data rate for the reverse access channel.

***RST** +4.80000000E+003

Range N/A

Field Entry Bit Rate

Remarks N/A

:REVerse:RC12:ACCess:RACH[:STATe]

Supported All with Option 401

```
[:SOURce]:RADio:CDMA2000[:BBG]:REVerse:RC12:ACCess:RACH[:STATe] ON|OFF|
1|0
[:SOURce]:RADio:CDMA2000[:BBG]:REVerse:RC12:ACCess:RACH[:STATe]?
```

This command enables or disables the operating state for the reverse access channel.

***RST** +1

Field Entry State

Remarks N/A

:REVERSE:RC12:TRAFFIC:RSCH:DATA

Supported All with Option 401

```
[ :SOURCE ] : RADIO : CDMA2000 [ :BBG ] : REVERSE : RC12 : TRAFFIC : RSCH : DATA PN9 | PN15 |  
FIX4 | "<file name>"  
[ :SOURCE ] : RADIO : CDMA2000 [ :BBG ] : REVERSE : RC12 : TRAFFIC : RSCH : DATA ?
```

This command configures the data field for the reverse supplemental traffic channel.

***RST** PN9

Key Entry PN9 PN15 FIX4 User File

Remarks Refer to “File Name Variables” on page 14 for information on the file name syntax.

:REVERSE:RC12:TRAFFIC:RSCH:DATA:FIX4

Supported All with Option 401

```
[ :SOURCE ] : RADIO : CDMA2000 [ :BBG ] : REVERSE : RC12 : TRAFFIC : RSCH : DATA : FIX4 <val>  
[ :SOURCE ] : RADIO : CDMA2000 [ :BBG ] : REVERSE : RC12 : TRAFFIC : RSCH : DATA : FIX4 ?
```

This command sets a fixed 4-bit data pattern that repeats as necessary to fill the selected data area.

***RST** #B0000

Range #B0000–#B1111 or 0–15

Key Entry FIX4

Remarks N/A

:REVERSE:RC12:TRAFFIC:RSCH:FLENgth

Supported All with Option 401

```
[ :SOURCE ] : RADIO : CDMA2000 [ :BBG ] : REVERSE : RC12 : TRAFFIC : RSCH : FLENgth ?
```

This command queries the frame length value for the reverse supplemental traffic channel.

***RST** +20

Range N/A

Field Entry N/A

Remarks N/A

:REVERSE:RC12:TRAFFIC:RSCH:FOFFSET**Supported** All with Option 401

```
[:SOURCE]:RADIO:CDMA2000[:BBG]:REVERSE:RC12:TRAFFIC:RSCH:FOFFSET <val>
[:SOURCE]:RADIO:CDMA2000[:BBG]:REVERSE:RC12:TRAFFIC:RSCH:FOFFSET?
```

This command sets the frame offset value for the reverse supplemental traffic channel.

RST** +0**Range** 0–15**Field Entry** Frame Offset**Remarks** N/A**:REVERSE:RC12:TRAFFIC:RSCH:POWER*Supported** All with Option 401

```
[:SOURCE]:RADIO:CDMA2000[:BBG]:REVERSE:RC12:TRAFFIC:RSCH:POWER <val>
[:SOURCE]:RADIO:CDMA2000[:BBG]:REVERSE:RC12:TRAFFIC:RSCH:POWER?
```

This command sets the power for the reverse supplemental traffic channel.

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

RST** +0.00000000E+000**Range** –40 to 0**Field Entry** Power**Remarks** N/A**:REVERSE:RC12:TRAFFIC:RSCH:RATE*Supported** All with Option 401

```
[:SOURCE]:RADIO:CDMA2000[:BBG]:REVERSE:RC12:TRAFFIC:RSCH:RATE 1.2kbps |
1.8kbps | 2.4kbps | 3.6kbps | 4.8kbps | 7.2kbps | 9.6kbps | 14.4kbps
[:SOURCE]:RADIO:CDMA2000[:BBG]:REVERSE:RC12:TRAFFIC:RSCH:RATE?
```

This command sets the data rate for the reverse supplemental traffic channel.

***RST** +9.60000000E+003**Field Entry** Bit Rate**Remarks** N/A

:REVERSE:RC12:TRAFFIC:RSCH:RCONFIG**Supported** All with Option 401

```
[:SOURCE]:RADIO:CDMA2000[:BBG]:REVERSE:RC12:TRAFFIC:RSCH:RCONFIG 1|2
[:SOURCE]:RADIO:CDMA2000[:BBG]:REVERSE:RC12:TRAFFIC:RSCH:RCONFIG?
```

This command sets the data rate for the reverse supplemental traffic channel.

RST** +1**Field Entry** Radio Config**Remarks** N/A**:REVERSE:RC12:TRAFFIC:RSCH[:STATE]*Supported** All with Option 401

```
[:SOURCE]:RADIO:CDMA2000[:BBG]:REVERSE:RC12:TRAFFIC:RSCH[:STATE] ON|OFF|
1|0
[:SOURCE]:RADIO:CDMA2000[:BBG]:REVERSE:RC12:TRAFFIC:RSCH[:STATE]?
```

This command sets the operating state for the reverse supplemental traffic channel.

RST** 0**Field Entry** State**Remarks** N/A**:REVERSE:RC34:CCONTROL:RCCCh:DATA*Supported** All with Option 401

```
[:SOURCE]:RADIO:CDMA2000[:BBG]:REVERSE:RC34:CCONTROL:RCCCh:DATA PN9|
PN15|FIX4| "<file name>"
[:SOURCE]:RADIO:CDMA2000[:BBG]:REVERSE:RC34:CCONTROL:RCCCh:DATA?
```

This command configures the data field for the reverse common control channel.

***RST** PN9**Key Entry** PN9 PN15 FIX4 User File**Remarks** Refer to [“File Name Variables” on page 14](#) for information on the file name syntax.

:REVerse:RC34:CCONtrol:RCCCh:DATA:FIX4**Supported** All with Option 401

[:SOURce]:RADio:CDMA2000[:BBG]:REVerse:RC34:CCONtrol:RCCCh:DATA:FIX4 <val>

[:SOURce]:RADio:CDMA2000[:BBG]:REVerse:RC34:CCONtrol:RCCCh:DATA:FIX4?

This command selects a fixed 4-bit data pattern to be repeated as necessary to fill the selected data area.

RST** #B0000**Range** #B0000–#B1111 or 0–15**Key Entry** FIX4**Remarks** N/A**:REVerse:RC34:CCONtrol:RCCCh:EBNO*Supported** All with Option 401

[:SOURce]:RADio:CDMA2000[:BBG]:REVerse:RC34:CCONtrol:RCCCh:EBNO <val>

[:SOURce]:RADio:CDMA2000[:BBG]:REVerse:RC34:CCONtrol:RCCCh:EBNO?

This command sets the ratio of energy per bit to noise power spectral density (expressed in dB) for the reverse common control channel.

***RST** +0.00000000E+000**Range** $\min EbNo: 10\log_{10} \left[\frac{\text{Chip Rate}}{1000(\text{Bit Rate})} \right] + \text{Normalized Power}$ $\max EbNo: 10\log_{10} \left[\frac{1000(\text{Chip Rate})}{\text{Bit Rate}} \right] + \text{Normalized Power}$

Normalized Power is the channel amplitude after adjusting the code power to 0 dB. Refer to “:REVerse:PADJust” on page 489 for adjusting the code domain power.

Field Entry EbNo**Remarks** Changes to the EbNo values also change the EcNo values for all other channels in the current link (forward or reverse).

Queries of this command are only valid for the current operating state.

:REVERSE:RC34:CCONTROL:RCCCh:FLENGth

Supported All with Option 401

```
[ :SOURCE]:RADIO:CDMA2000[:BBG]:REVERSE:RC34:CCONTROL:RCCCh:FLENGth 5|10|20
```

```
[ :SOURCE]:RADIO:CDMA2000[:BBG]:REVERSE:RC34:CCONTROL:RCCCh:FLENGth?
```

This command sets the frame length value for the reverse common control channel.

The frame length is expressed as seconds (ms).

***RST** +20

Field Entry Frame Length

Remarks N/A

:REVERSE:RC34:CCONTROL:RCCCh:FOFFset

Supported All with Option 401

```
[ :SOURCE]:RADIO:CDMA2000[:BBG]:REVERSE:RC34:CCONTROL:RCCCh:FOFFset <val>
```

```
[ :SOURCE]:RADIO:CDMA2000[:BBG]:REVERSE:RC34:CCONTROL:RCCCh:FOFFset?
```

This command sets the frame offset value for the reverse common control channel.

The frame offset value is expressed as seconds (ms).

***RST** +0

Range *Frame Length=5:* 0–3

Frame Length=10: 0–7

Frame Length=20: 0–20

Field Entry Frame Offset

Remarks N/A

:REVERSE:RC34:CCONTROL:RCCCh:POWER

Supported All with Option 401

```
[ :SOURCE]:RADIO:CDMA2000[:BBG]:REVERSE:RC34:CCONTROL:RCCCh:POWER <val>
```

```
[ :SOURCE]:RADIO:CDMA2000[:BBG]:REVERSE:RC34:CCONTROL:RCCCh:POWER?
```

This command sets the power for the reverse common control channel.

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

***RST** +0.00000000E+000
Range -40 to 0
Field Entry Power
Remarks N/A

:REVerse:RC34:CCONtrol:RCCCh:RCONfig

Supported All with Option 401

```
[ :SOURce]:RADio:CDMA2000[:BBG]:REVerse:RC34:CCONtrol:RCCCh:RCONfig 3|4
[:SOURce]:RADio:CDMA2000[:BBG]:REVerse:RC34:CCONtrol:RCCCh:RCONfig?
```

This command selects the radio configuration value for the reverse common control channel.

***RST** +3
Field Entry Radio Config
Remarks N/A

:REVerse:RC34:CCONtrol:RCCCh:RATE

Supported All with Option 401

```
[ :SOURce]:RADio:CDMA2000[:BBG]:REVerse:RC34:CCONtrol:RCCCh:RATE 9.6kbps|
19.2kbps|38.4kbps
[:SOURce]:RADio:CDMA2000[:BBG]:REVerse:RC34:CCONtrol:RCCCh:RATE?
```

This command adjusts the data rate value for the reverse common control channel.

***RST** +9.60000000E+003
Field Entry Bit Rate
Remarks N/A

:REVerse:RC34:CCONtrol:RCCCh:WALSh

Supported All with Option 401

```
[ :SOURce]:RADio:CDMA2000[:BBG]:REVerse:RC34:CCONtrol:RCCCh:WALSh?
```

This command queries the Walsh code for the reverse common control channel.

***RST** +2

Range N/A
Field Entry Walsh
Remarks N/A

:REVerse:RC34:CCONtrol:RCCCh[:STATe]

Supported All with Option 401

```
[:SOURCE]:RADio:CDMA2000[:BBG]:REVerse:RC34:CCONtrol:RCCCh[:STATe] ON|
OFF|1|0
[:SOURCE]:RADio:CDMA2000[:BBG]:REVerse:RC34:CCONtrol:RCCCh[:STATe]?
```

This command sets the operating state for the reverse common control channel.

***RST** 0
Field Entry State
Remarks N/A

:REVerse:RC34:CCONtrol:RPICh:ECNO

Supported All with Option 401

```
[:SOURCE]:RADio:CDMA2000[:BBG]:REVerse:RC34:CCONtrol:RPICh:ECNO <val>
[:SOURCE]:RADio:CDMA2000[:BBG]:REVerse:RC34:CCONtrol:RPICh:ECNO?
```

This command sets the ratio of energy per chip to the noise power spectral density (expressed in dB) for the reverse common control pilot channel.

***RST** +0.00000000E+000

Range *min EcNo*: -30 + Normalized Power
max EcNo: 30 + Normalized Power

Normalized Power is the channel amplitude after adjusting the code power to 0 dB. Refer to “:REVerse:PADJust” on page 489 for adjusting the code domain power.

Field Entry EcNo

Remarks Changes to the EcNo values also change the EbNo values for all other channels in the current link (forward or reverse).

Queries of this command are only valid for the current operating state.

:REVerse:RC34:CCONtrol:RPICh:GRATe**Supported** All with Option 401

```
[:SOURce]:RADio:CDMA2000[:BBG]:REVerse:RC34:CCONtrol:RPICh:GRATe FULL|
HALF|QUARter
[:SOURce]:RADio:CDMA2000[:BBG]:REVerse:RC34:CCONtrol:RPICh:GRATe?
```

This command configures the gating data field for the reverse common control pilot channel.

FULL This choice transmits all sixteen power control bits.

HALF This choice transmits eight power control bits.

QUARter This choice transmits four power control bits.

RST** FULL**Key Entry** Full Half Quarter**Remarks** N/A**:REVerse:RC34:CCONtrol:RPICh:POWer*Supported** All with Option 401

```
[:SOURce]:RADio:CDMA2000[:BBG]:REVerse:RC34:CCONtrol:RPICh:POWer <val>
[:SOURce]:RADio:CDMA2000[:BBG]:REVerse:RC34:CCONtrol:RPICh:POWer?
```

This command sets the power for the reverse common control pilot channel.

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

RST** +0.00000000E+000**Range** -40 to 0**Field Entry** Power**Remarks** N/A**:REVerse:RC34:CCONtrol:RPICh:WALSh*Supported** All with Option 401

```
[:SOURce]:RADio:CDMA2000[:BBG]:REVerse:RC34:CCONtrol:RPICh:WALSh?
```

This command queries the Walsh code for the reverse common control pilot channel.

***RST** +0

Range N/A
Field Entry Walsh
Remarks N/A

:REVERSE:RC34:CControl:RPICh[:STATE]

Supported All with Option 401

```
[:SOURCE]:RADIO:CDMA2000[:BBG]:REVERSE:RC34:CControl:RPICh[:STATE] ON|  
OFF|1|0  
[:SOURCE]:RADIO:CDMA2000[:BBG]:REVERSE:RC34:CControl:RPICh[:STATE]?
```

This command sets the operating state for the reverse common control pilot channel.

***RST** 1
Field Entry State
Remarks N/A

:REVERSE:RC34:EACcESS:REACH:DATA

Supported All with Option 401

```
[:SOURCE]:RADIO:CDMA2000[:BBG]:REVERSE:RC34:EACcESS:REACH:DATA PN9|PN15|  
FIX4|"<file name>"  
[:SOURCE]:RADIO:CDMA2000[:BBG]:REVERSE:RC34:EACcESS:REACH:DATA?
```

This command configures the data field for the reverse enhanced access channel.

***RST** PN9
Key Entry **PN9 PN15 FIX4 User File**
Remarks Refer to “[File Name Variables](#)” on page 14 for information on the file name syntax.

:REVERSE:RC34:EACcESS:REACH:DATA:FIX4

Supported All with Option 401

```
[:SOURCE]:RADIO:CDMA2000[:BBG]:REVERSE:RC34:EACcESS:REACH:DATA:  
FIX4 <val>  
[:SOURCE]:RADIO:CDMA2000[:BBG]:REVERSE:RC34:EACcESS:REACH:DATA:FIX4?
```

This command selects a fixed 4-bit data pattern to be repeated as necessary to fill the selected data area.

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

:REVerse:RC34:EACCess:REACH:EBNO

Supported All with Option 401

```
[ :SOURce]:RADio:CDMA2000[:BBG]:REVerse:RC34:EACCess:REACH:EBNO <val>
[:SOURce]:RADio:CDMA2000[:BBG]:REVerse:RC34:EACCess:REACH:EBNO?
```

This command sets the ratio of energy per bit to noise power spectral density (expressed in dB) for the reverse enhanced access channel.

| | |
|--------------|---|
| *RST | +0.00000000E+000 |
| Range | $\min EbNo: 10\log_{10} \left[\frac{\text{Chip Rate}}{1000(\text{Bit Rate})} \right] + \text{Normalized Power}$ $\max EbNo: 10\log_{10} \left[\frac{1000(\text{Chip Rate})}{\text{Bit Rate}} \right] + \text{Normalized Power}$ |

Normalized Power is the channel amplitude after adjusting the code power to 0 dB. Refer to “:REVerse:PADJust” on page 489 for adjusting the code domain power.

| | |
|--------------------|---|
| Field Entry | EbNo |
| Remarks | <p>Changes to the EbNo values also change the EcNo values for all other channels in the current link (forward or reverse).</p> <p>Queries of this command are only valid for the current operating state.</p> |

:REVerse:RC34:EACCess:REACH:FOFFset

Supported All with Option 401

```
[ :SOURce]:RADio:CDMA2000[:BBG]:REVerse:RC34:EACCess:REACH:FOFFset <val>
[:SOURce]:RADio:CDMA2000[:BBG]:REVerse:RC34:EACCess:REACH:FOFFset?
```

This command sets the frame offset value for the reverse enhanced access channel.

| | |
|--------------|---|
| *RST | +0 |
| Range | $\text{Frame Length}=5: 0-3 \quad \text{Frame Length}=10: 0-7$ $\text{Frame Length}=20: 0-15$ |

Field Entry Frame Offset
Remarks N/A

:REVERSE:RC34:EACCESS:REACH:POWER

Supported All with Option 401

```
[:SOURCE]:RADIO:CDMA2000[:BBG]:REVERSE:RC34:EACCESS:REACH:POWER <val>  
[:SOURCE]:RADIO:CDMA2000[:BBG]:REVERSE:RC34:EACCESS:REACH:POWER?
```

This command sets the power level for the reverse enhanced access channel.

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

***RST** +0.00000000E+000

Range -40 to 0

Field Entry Power

Remarks N/A

:REVERSE:RC34:EACCESS:REACH:RCONFIG

Supported All with Option 401

```
[:SOURCE]:RADIO:CDMA2000[:BBG]:REVERSE:RC34:EACCESS:REACH:RCONFIG 3|4  
[:SOURCE]:RADIO:CDMA2000[:BBG]:REVERSE:RC34:EACCESS:REACH:RCONFIG?
```

This command sets the radio configuration for the reverse enhanced access channel.

***RST** +3

Field Entry Radio Config

Remarks N/A

:REVERSE:RC34:EACCESS:REACH:RATE

Supported All with Option 401

```
[:SOURCE]:RADIO:CDMA2000[:BBG]:REVERSE:RC34:EACCESS:REACH:RATE 9.6kbps |  
19.2kbps | 38.4kbps  
[:SOURCE]:RADIO:CDMA2000[:BBG]:REVERSE:RC34:EACCESS:REACH:RATE?
```

This command adjusts the data rate value for the reverse enhanced access channel.

***RST** +9.60000000E+003

Field Entry Bit Rate

Remarks N/A

:REVerse:RC34:EACCess:REACH:WALSh

Supported All with Option 401

```
[:SOURce]:RADio:CDMA2000[:BBG]:REVerse:RC34:EACCess:REACH:WALSh?
```

This command queries the Walsh code for the reverse enhanced access channel.

***RST** +2

Range N/A

Field Entry Walsh

Remarks N/A

:REVerse:RC34:EACCess:REACH[:STATE]

Supported All with Option 401

```
[:SOURce]:RADio:CDMA2000[:BBG]:REVerse:RC34:EACCess:REACH[:STATE] ON|OFF|1|0
```

```
[:SOURce]:RADio:CDMA2000[:BBG]:REVerse:RC34:EACCess:REACH[:STATE]?
```

This command sets the operating state for the reverse enhanced access channel.

***RST** 0

Field Entry State

Remarks N/A

:REVerse:RC34:EACCess:RPICH:ECNO

Supported All with Option 401

```
[:SOURce]:RADio:CDMA2000[:BBG]:REVerse:RC34:EACCess:RPICH:ECNO <val>
```

```
[:SOURce]:RADio:CDMA2000[:BBG]:REVerse:RC34:EACCess:RPICH:ECNO?
```

This command sets the ratio of energy per chip to the noise power spectral density (expressed in dB) for the reverse enhanced access pilot channel.

***RST** +0.00000000E+000

Range *min EcNo*: -30 + Normalized Power

max EcNo: 30 + Normalized Power

Normalized Power is the channel amplitude after adjusting the code power to 0 dB. Refer to “:REVerse:PADJust” on page 489 for adjusting the code domain power.

| | |
|--------------------|--|
| Field Entry | EcNo |
| Remarks | Changes to the EcNo values also change the EbNo values for all other channels in the current link (forward or reverse). Queries of this command are only valid for the current operating state. |

:REVerse:RC34:EACCEss:RPICh:GRATe

Supported All with Option 401

```
[ :SOURCE]:RADio:CDMA2000[:BBG]:REVerse:RC34:EACCEss:RPICh:GRATe FULL|
HALF|QUARter
[:SOURCE]:RADio:CDMA2000[:BBG]:REVerse:RC34:EACCEss:RPICh:GRATe?
```

This command configures the gating data field for the reverse enhanced access pilot channel.

FULL This choice transmits all sixteen power control bits.

HALF This choice transmits eight power control bits.

QUARter This choice transmits four power control bits.

***RST** FULL

Key Entry Full Half Quarter

Remarks N/A

:REVerse:RC34:EACCEss:RPICh:POWER

Supported All with Option 401

```
[ :SOURCE]:RADio:CDMA2000[:BBG]:REVerse:RC34:EACCEss:RPICh:POWER <val>
[:SOURCE]:RADio:CDMA2000[:BBG]:REVerse:RC34:EACCEss:RPICh:POWER?
```

This command sets the power for the reverse enhanced access pilot channel.

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

***RST** +0.00000000E+000

Range -40 to 0

Field Entry Power

Remarks N/A

:REVerse:RC34:EACCess:RPICh:WALSh

Supported All with Option 401

```
[:SOURce]:RADio:CDMA2000[:BBG]:REVerse:RC34:EACCess:RPICh:WALSh?
```

This command queries the Walsh code for the reverse enhanced access pilot channel.

***RST** +0

Range N/A

Field Entry Walsh

Remarks N/A

:REVerse:RC34:EACCess:RPICh[:STATe]

Supported All with Option 401

```
[:SOURce]:RADio:CDMA2000[:BBG]:REVerse:RC34:EACCess:RPICh[:STATe] ON|OFF|1|0
```

```
[:SOURce]:RADio:CDMA2000[:BBG]:REVerse:RC34:EACCess:RPICh[:STATe]?
```

This command sets the operating state for the reverse enhanced access pilot channel.

***RST** 1

Field Entry State

Remarks N/A

:REVerse:RC34:TRAFfic:RDCCh:DATA

Supported All with Option 401

```
[:SOURce]:RADio:CDMA2000[:BBG]:REVerse:RC34:TRAFfic:RDCCh:DATA PN9|PN15|FIX4|"<file name>"
```

```
[:SOURce]:RADio:CDMA2000[:BBG]:REVerse:RC34:TRAFfic:RDCCh:DATA?
```

This command configures the data field for the reverse traffic dedicated control channel.

***RST** PN9

Key Entry **PN9** **PN15** **FIX4** **User File**

Remarks Refer to “File Name Variables” on page 14 for information on the file name syntax.

:REVerse:RC34:TRAFfic:RDCCh:DATA:FIX4

Supported All with Option 401

```
[:SOURCE]:RADio:CDMA2000[:BBG]:REVerse:RC34:TRAFfic:RDCCh:DATA:
FIX4 <val>
```

```
[:SOURCE]:RADio:CDMA2000[:BBG]:REVerse:RC34:TRAFfic:RDCCh:DATA:FIX4?
```

This command selects a fixed 4-bit data pattern to be repeated as necessary to fill the selected data area.

***RST** #B0000

Range #B0000–#B1111 or 0–15

Key Entry **FIX4**

Remarks N/A

:REVerse:RC34:TRAFfic:RDCCh:EBNO

Supported All with Option 401

```
[:SOURCE]:RADio:CDMA2000[:BBG]:REVerse:RC34:TRAFfic:RDCCh:EBNO <val>
[:SOURCE]:RADio:CDMA2000[:BBG]:REVerse:RC34:TRAFfic:RDCCh:EBNO?
```

This command sets the ratio of energy per bit, per the noise power spectral density (expressed in dB) for the reverse traffic dedicated control channel.

***RST** +0.00000000E+000

Range min EbNo: $10\log_{10}\left[\frac{\text{Chip Rate}}{1000(\text{Bit Rate})}\right] + \text{Normalized Power}$

max EbNo: $10\log_{10}\left[\frac{1000(\text{Chip Rate})}{\text{Bit Rate}}\right] + \text{Normalized Power}$

Normalized Power is the channel amplitude after adjusting the code power to 0 dB. Refer to “:REVerse:PADJust” on page 489 for adjusting the code domain power.

Field Entry EbNo

Remarks Changes to the EbNo values also change the EcNo values for all other channels in the current link (forward or reverse).

Queries of this command are only valid for the current operating state.

:REVerse:RC34:TRAFfic:RDCCh:FLENgth**Supported** All with Option 401

```
[:SOURce]:RADio:CDMA2000[:BBG]:REVerse:RC34:TRAFfic:RDCCh:FLENgth 5|20
[:SOURce]:RADio:CDMA2000[:BBG]:REVerse:RC34:TRAFfic:RDCCh:FLENgth?
```

This command sets the frame length value for the reverse traffic dedicated control channel.

The frame length is expressed as seconds (ms).

RST** +20**Field Entry** Frame Length**Remarks** N/A**:REVerse:RC34:TRAFfic:RDCCh:FOFFset*Supported** All with Option 401

```
[:SOURce]:RADio:CDMA2000[:BBG]:REVerse:RC34:TRAFfic:RDCCh:FOFFset <val>
[:SOURce]:RADio:CDMA2000[:BBG]:REVerse:RC34:TRAFfic:RDCCh:FOFFset?
```

This command sets the frame offset value for the reverse traffic dedicated control channel.

RST** +0**Range** *Frame Length=5:* 0–3 *Frame Length=20:* 0–7**Field Entry** Frame Offset**Remarks** N/A**:REVerse:RC34:TRAFfic:RDCCh:POWer*Supported** All with Option 401

```
[:SOURce]:RADio:CDMA2000[:BBG]:REVerse:RC34:TRAFfic:RDCCh:POWer <val>
[:SOURce]:RADio:CDMA2000[:BBG]:REVerse:RC34:TRAFfic:RDCCh:POWer?
```

This command sets the power for the reverse traffic dedicated control channel.

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

***RST** +0**Range** –40 to 0

Field Entry Power

Remarks N/A

:REVerse:RC34:TRAFfic:RDCCh:RATE

Supported All with Option 401

[:SOURce] :RADio :CDMA2000 [:BBG] :REVerse :RC34 :TRAFfic :RDCCh :RATE ?

This command queries the data rate for the reverse traffic dedicated control channel.

***RST** *Frame Length=5:* RC3/4= +9.60000000E+003

Frame Length=10: RC3= +9.60000000E+003

Frame Length=20: RC3= +1.44000000E+004

Range N/A

Field Entry Bit Rate

Remarks N/A

:REVerse:RC34:TRAFfic:RDDCh:RCONfig

Supported All with Option 401

[:SOURce] :RADio :CDMA2000 [:BBG] :REVerse :RC34 :TRAFfic :RDDCh :RCONfig 3 | 4

[:SOURce] :RADio :CDMA2000 [:BBG] :REVerse :RC34 :TRAFfic :RDDCh :RCONfig ?

This command selects the radio configuration value for the reverse traffic dedicated control channel.

***RST** +3

Field Entry Radio Config

Remarks N/A

:REVerse:RC34:TRAFfic:RDCCh:WALSh

Supported All with Option 401

[:SOURce] :RADio :CDMA2000 [:BBG] :REVerse :RC34 :TRAFfic :RDCCh :WALSh ?

This command queries the Walsh code for the reverse traffic dedicated control channel.

***RST** +8

Range 0–15

Field Entry Walsh

Remarks N/A

:REVerse:RC34:TRAFfic:RDCCh[:STATE]

Supported All with Option 401

```
[:SOURce]:RADio:CDMA2000[:BBG]:REVerse:RC34:TRAFfic:RDCCh[:STATE] ON|OFF|1|0
```

```
[:SOURce]:RADio:CDMA2000[:BBG]:REVerse:RC34:TRAFfic:RDCCh[:STATE]?
```

This command sets the operating state for the reverse traffic dedicated control channel.

***RST** 0

Field Entry State

Remarks N/A

:REVerse:RC34:TRAFfic:RFCH:DATA

Supported All with Option 401

```
[:SOURce]:RADio:CDMA2000[:BBG]:REVerse:RC34:TRAFfic:RFCH:DATA PN9|PN15|FIX4|"<file name>"
```

```
[:SOURce]:RADio:CDMA2000[:BBG]:REVerse:RC34:TRAFfic:RFCH:DATA?
```

This command configures the data field for the reverse fundamental traffic channel.

***RST** PN9

Key Entry **PN9** **PN15** **FIX4** **User File**

Remarks Refer to “[File Name Variables](#)” on page 14 for information on the file name syntax.

:REVerse:RC34:TRAFfic:RFCH:DATA:FIX4

Supported All with Option 401

```
[:SOURce]:RADio:CDMA2000[:BBG]:REVerse:RC34:TRAFfic:RFCH:DATA:FIX4 <val>
```

```
[:SOURce]:RADio:CDMA2000[:BBG]:REVerse:RC34:TRAFfic:RFCH:DATA:FIX4?
```

This command selects a fixed 4-bit data pattern to be repeated as necessary to fill the selected data area.

***RST** #B0000

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

:REVerse:RC34:TRAFfic:RFCH:EBNO

Supported All with Option 401

[:SOURce]:RADio:CDMA2000[:BBG]:REVerse:RC34:TRAFfic:RFCH:EBNO <val>
 [:SOURce]:RADio:CDMA2000[:BBG]:REVerse:RC34:TRAFfic:RFCH:EBNO?

This command sets the ratio of energy per bit, per the noise power spectral density (expressed in dB) for the reverse fundamental traffic channel.

***RST** +0.00000000E+000

Range $\min EbNo: 10\log_{10} \left[\frac{\text{Chip Rate}}{1000(\text{Bit Rate})} \right] + \text{Normalized Power}$
 $\max EbNo: 10\log_{10} \left[\frac{1000(\text{Chip Rate})}{\text{Bit Rate}} \right] + \text{Normalized Power}$

Normalized Power is the channel amplitude after adjusting the code power to 0 dB. Refer to “:REVerse:PADJust” on page 489 for adjusting the code domain power.

Field Entry EbNo

Remarks Changes to the EbNo values also change the EcNo values for all other channels in the current link (forward or reverse).
 Queries of this command are only valid for the current operating state.

:REVerse:RC34:TRAFfic:RFCH:FLENgth

Supported All with Option 401

[:SOURce]:RADio:CDMA2000[:BBG]:REVerse:RC34:TRAFfic:RFCH:FLENgth 5|20
 [:SOURce]:RADio:CDMA2000[:BBG]:REVerse:RC34:TRAFfic:RFCH:FLENgth?

This command sets the frame length value for the reverse fundamental traffic channel. The frame length is expressed as seconds (ms).

***RST** +20

Field Entry Frame Length

Remarks N/A

:REVerse:RC34:TRAFfic:RFCH:FOFFset

Supported All with Option 401

```
[:SOURce]:RADio:CDMA2000[:BBG]:REVerse:RC34:TRAFfic:RFCH:FOFFset <val>
[:SOURce]:RADio:CDMA2000[:BBG]:REVerse:RC34:TRAFfic:RFCH:FOFFset?
```

This command sets the frame offset value for the reverse fundamental traffic channel.

***RST** +0

Range *Frame Length=5:* 0–3
 Frame Length=20: 0–15

Field Entry Frame Offset

Remarks N/A

:REVerse:RC34:TRAFfic:RFCH:POWer

Supported All with Option 401

```
[:SOURce]:RADio:CDMA2000[:BBG]:REVerse:RC34:TRAFfic:RFCH:POWer <val>
[:SOURce]:RADio:CDMA2000[:BBG]:REVerse:RC34:TRAFfic:RFCH:POWer?
```

This command sets the power for the reverse fundamental traffic channel.

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

***RST** +0.00000000E+000

Range –40 to 0

Field Entry Power

Remarks N/A

:REVerse:RC34:TRAFfic:RFCH:RCONfig

Supported All with Option 401

```
[:SOURce]:RADio:CDMA2000[:BBG]:REVerse:RC34:TRAFfic:RFCH:RCONfig 3|4
[:SOURce]:RADio:CDMA2000[:BBG]:REVerse:RC34:TRAFfic:RFCH:RCONfig?
```

This command sets the radio configuration value for the reverse fundamental traffic channel.

***RST** +3
Field Entry Radio Config
Remarks N/A

:REVerse:RC34:TRAFfic:RFCH:RATE

Supported All with Option 401

```
[:SOURCE]:RADio:CDMA2000[:BBG]:REVerse:RC34:TRAFfic:RFCH:RATE 1.2kbps |  
1.5kbps | 1.8kbps | 2.7kbps | 3.6kbps | 4.8kbps | 7.2kbps | 9.6kbps | 14.4kbps  
[:SOURCE]:RADio:CDMA2000[:BBG]:REVerse:RC34:TRAFfic:RFCH:RATE?
```

This command sets the data rate value for the reverse fundamental traffic channel.

***RST** +9.60000000E+003
Field Entry Bit Rate
Remarks N/A

:REVerse:RC34:TRAFfic:RFCH:WALSh

Supported All with Option 401

```
[:SOURCE]:RADio:CDMA2000[:BBG]:REVerse:RC34:TRAFfic:RFCH:WALSh?
```

This command queries the Walsh code for the reverse fundamental traffic channel.

***RST** +4
Range N/A
Field Entry Walsh
Remarks N/A

:REVerse:RC34:TRAFfic:RFCH[:STATe]

Supported All with Option 401

```
[:SOURCE]:RADio:CDMA2000[:BBG]:REVerse:RC34:TRAFfic:RFCH[:STATe] ON | OFF |  
1 | 0  
[:SOURCE]:RADio:CDMA2000[:BBG]:REVerse:RC34:TRAFfic:RFCH[:STATe]?
```

This command sets the operating state for the reverse fundamental traffic channel.

***RST** 0

Field Entry State

Remarks N/A

:REVerse:RC34:TRAFfic:RSCH[1]|2:DATA

Supported All with Option 401

```
[ :SOURce]:RADio:CDMA2000[:BBG]:REVerse:RC34:TRAFfic:RSCH[1]|2:DATA PN9|
PN15|FIX4| "<file name>"
```

```
[ :SOURce]:RADio:CDMA2000[:BBG]:REVerse:RC34:TRAFfic:RSCH[1]|2:DATA?
```

This command configures the data field for the reverse supplemental channels.

***RST** PN9

Key Entry **PN9 PN15 FIX4 User File**

Remarks Refer to “[File Name Variables](#)” on page 14 for information on the file name syntax.

:REVerse:RC34:TRAFfic:RSCH[1]|2:DATA:FIX4

Supported All with Option 401

```
[ :SOURce]:RADio:CDMA2000[:BBG]:REVerse:RC34:TRAFfic:RSCH[1]|2:DATA:
FIX4 <val>
```

```
[ :SOURce]:RADio:CDMA2000[:BBG]:REVerse:RC34:TRAFfic:RSCH[1]|2:DATA:FIX4?
```

This command sets a fixed 4-bit data pattern that repeats as necessary to fill the selected data area.

***RST** #B0000

Range #B0000–#B1111 or 0–15

Key Entry **FIX4**

Remarks N/A

:REVerse:RC34:TRAFfic:RSCH[1]|2:DATA:EBNO

Supported All with Option 401

```
[ :SOURce]:RADio:CDMA2000[:BBG]:REVerse:RC34:TRAFfic:RSCH[1]|2:EBNO <val>
```

```
[ :SOURce]:RADio:CDMA2000[:BBG]:REVerse:RC34:TRAFfic:RSCH[1]|2:EBNO?
```

This command sets the ratio of energy per bit to noise power spectral density (expressed in dB) for the reverse supplemental traffic channels.

| | |
|--------------|---|
| *RST | +0.00000000E+000 |
| Range | $\min EbNo: 10\log_{10} \left[\frac{\text{Chip Rate}}{1000(\text{Bit Rate})} \right] + \text{Normalized Power}$ $\max EbNo: 10\log_{10} \left[\frac{1000(\text{Chip Rate})}{\text{Bit Rate}} \right] + \text{Normalized Power}$ |

Normalized Power is the channel amplitude after adjusting the code power to 0 dB. Refer to “:REVerse:PADJust” on page 489 for adjusting the code domain power.

| | |
|--------------------|---|
| Field Entry | EbNo |
| Remarks | <p>Changes to the EbNo values also change the EcNo values for all other channels in the current link (forward or reverse).</p> <p>Queries of this command are only valid for the current operating state.</p> |

:REVerse:RC34:TRAFfic:RSCH[1] | 2:FLENgth

Supported All with Option 401

```
[:SOURCE]:RADio:CDMA2000[:BBG]:REVerse:RC34:TRAFfic:RSCH[1] | 2:
FLENgth 20 | 40 | 80
[:SOURCE]:RADio:CDMA2000[:BBG]:REVerse:RC34:TRAFfic:RSCH[1] | 2:FLENgth?
```

This command sets the frame length value for the reverse supplemental channels.

| | |
|--------------------|--------------|
| *RST | +20 |
| Field Entry | Frame Length |
| Remarks | N/A |

:REVerse:RC34:TRAFfic:RSCH[1] | 2:FOFFset

Supported All with Option 401

```
[:SOURCE]:RADio:CDMA2000[:BBG]:REVerse:RC34:TRAFfic:RSCH[1] | 2:
FOFFset <val>
[:SOURCE]:RADio:CDMA2000[:BBG]:REVerse:RC34:TRAFfic:RSCH[1] | 2:FOFFset?
```

This command sets the frame offset value for the reverse supplemental channels.

| | |
|--------------|--|
| *RST | +0 |
| Range | 0–63 |
| Range | Frame Length=20: 0–15 Frame Length=40: 0–31 |

| | |
|--------------------|------------------------------|
| | <i>Frame Length=80: 0–63</i> |
| Field Entry | Frame Offset |
| Remarks | N/A |

:REVerse:RC34:TRAFfic:RSCH[1] | 2:POWer

Supported All with Option 401

```
[ :SOURce]:RADio:CDMA2000[:BBG]:REVerse:RC34:TRAFfic:RSCH[1] | 2:POWer <val>
```

```
[ :SOURce]:RADio:CDMA2000[:BBG]:REVerse:RC34:TRAFfic:RSCH[1] | 2:POWer?
```

This command sets the power level for the reverse supplemental channels.

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

***RST** +0.00000000E+000

Range -40 to 0

Field Entry Power

Remarks N/A

:REVerse:RC34:TRAFfic:RSCH[1] | 2:RCONfig

Supported All with Option 401

```
[ :SOURce]:RADio:CDMA2000[:BBG]:REVerse:RC34:TRAFfic:RSCH[1] | 2:RCONfig 3 | 4
```

```
[ :SOURce]:RADio:CDMA2000[:BBG]:REVerse:RC34:TRAFfic:RSCH[1] | 2:RCONfig?
```

This command selects the radio configuration value for the reverse supplemental channels.

***RST** +3

Field Entry Radio Config

Remarks N/A

:REVerse:RC34:TRAFfic:RSCH[1]|2:RATE**Supported** All with Option 401

```
[:SOURCE]:RADio:CDMA2000[:BBG]:REVerse:RC34:TRAFfic:RSCH[1]|2:
RATE 1.2ksbps|1.350kbps|1.5kbps|1.8kbps|2.4kbps|2.7kbps|3.6kbps|4.8kbps|
7.2kbps|9.6kbps|14.4kbps
[:SOURCE]:RADio:CDMA2000[:BBG]:REVerse:RC34:TRAFfic:RSCH[1]|2:RATE?
```

Execute this command to set the data rate for the reverse supplemental channels.

***RST** +9.60000000E+003**Field Entry** Bit Rate**Remarks** To change the frame length value, refer to
“:REVerse:RC34:TRAFfic:RSCH[1]|2:FLENgth” on page 517**:REVerse:RC34:TRAFfic:RSCH[1]|2:TCODE****Supported** All with Option 401

```
[:SOURCE]:RADio:CDMA2000[:BBG]:REVerse:RC34:TRAFfic:RSCH[1]|2:TCODE ON|
OFF|1|0
[:SOURCE]:RADio:CDMA2000[:BBG]:REVerse:RC34:TRAFfic:RSCH[1]|2:TCODE?
```

This command enables or disables the operating state of the turbo coding function for the reverse supplemental channels.

RST** 0**Field Entry** Turbo Coding**Remarks** To ensure that this function is being executed with the correct data rate, refer to “:REVerse:RC34:TRAFfic:RSCH[1]|2:RATE” on page 519.**:REVerse:RC34:TRAFfic:RSCH[1]|2:WALSh*Supported** All with Option 401

```
[:SOURCE]:RADio:CDMA2000[:BBG]:REVerse:RC34:TRAFfic:RSCH1:WALSh <1|2>
[:SOURCE]:RADio:CDMA2000[:BBG]:REVerse:RC34:TRAFfic:RSCH2:WALSh <2|6>
[:SOURCE]:RADio:CDMA2000[:BBG]:REVerse:RC34:TRAFfic:RSCH[1]|2:WALSh?
```

This command sets the Walsh code value for the reverse supplemental channels.

RST** *Channel 1: +1 Channel 2: +2Field Entry** Walsh

Remarks N/A

:REVerse:RC34:TRAFfic:RSCH[1]|2[:STATe]

Supported All with Option 401

```
[ :SOURce ] :RADio:CDMA2000 [ :BBG ] :REVerse:RC34:TRAFfic:RSCH [ 1 ] |
2 [ :STATe ] ON | OFF | 1 | 0
[ :SOURce ] :RADio:CDMA2000 [ :BBG ] :REVerse:RC34:TRAFfic:RSCH [ 1 ] | 2 [ :STATe ] ?
```

This command enables or disables the operating state of the reverse supplemental channels.

***RST** 0

Field Entry State

Remarks N/A

:REVerse:REFErence:EXTErnal:FREQuency

Supported All with Option 401

```
[ :SOURce ] :RADio:CDMA2000 [ :BBG ] :REVerse:REFErence:EXTErnal:
FREQuency <val><unit>
[ :SOURce ] :RADio:CDMA2000 [ :BBG ] :REVerse:REFErence:EXTErnal:FREQuency?
```

This command sets the expected frequency of the external reference signal.

***RST** +1.96608000E+007

Range 1–100 MHz

Field Entry Ext BBG Ref Freq

Remarks This setting must match the frequency of the signal that is supplied to the BASEBAND GEN REF IN rear panel BNC connector.

:REVerse:REFerence[:SOURce]**Supported** All with Option 401[:SOURCE]:RADio:CDMA2000[:BBG]:REVerse:REFerence[:SOURce] INTernal |
EXTernal

[:SOURCE]:RADio:CDMA2000[:BBG]:REVerse:REFerence[:SOURce]?

This command selects the reference clock source.

EXTernal This choice sets the instrument to use an external reference signal. The external reference frequency must be entered and the signal must be applied to the BASEBAND GEN REF IN rear panel connector.

INTernal This choice sets the instrument to use the internal reference.

RST** INT**Field Entry** BBG Reference**Remarks** If the EXT choice is selected, the BBCLock selection will automatically be set to internal.**:REVerse:TADVance*Supported** All with Option 401

[:SOURCE]:RADio:CDMA2000[:BBG]:REVerse:TADVance <val>

[:SOURCE]:RADio:CDMA2000[:BBG]:REVerse:TADVance?

This command selects the number of chips to advance the trigger time slot for the reverse link.

RST** +28**Range** 0–2457599**Field Entry** Trigger Advance**Remarks** When the noise function is set to ON, this value will increase. Refer to “:REVerse:NOISe[:STATe]” on page 491 for more information.**:REVerse:TEDGE*Supported** All with Option 401

[:SOURCE]:RADio:CDMA2000[:BBG]:REVerse:TEDGE RISing|FALLing

[:SOURCE]:RADio:CDMA2000[:BBG]:REVerse:TEDGE?

This command selects a falling or rising trigger edge state for the reverse link.

CDMA2000 BBG Subsystem–Option 401 ([:SOURce]:RADio:CDMA2000[:BBG])

| | | |
|------------------|---|----------------|
| RISing | This choice selects a trigger on the rising edge of the signal applied to the PATT TRIG IN rear panel connector. | |
| FALLing | This choice selects a trigger on the falling edge of the signal applied to the PATT TRIG IN rear panel connector. | |
| *RST | FALL | |
| Key Entry | Rising | Falling |
| Remarks | N/A | |

:REVerse:SRATe

Supported All with Option 401

[:SOURce] :RADio :CDMA2000 [:BBG] :REVerse :SRATe ?

This command returns the value of the current spreading rate for the reverse channel.

| | |
|------------------|-----|
| *RST | +1 |
| Range | N/A |
| Key Entry | N/A |
| Remarks | N/A |

[:STATe]

Supported All with Option 401

[:SOURce] :RADio :CDMA2000 [:BBG] [:STATe] ON | OFF | 1 | 0

[:SOURce] :RADio :CDMA2000 [:BBG] [:STATe] ?

This command enables or disables the CDMA2000 baseband generator modulation format.

| | |
|------------------|------------------------|
| *RST | 0 |
| Key Entry | CDMA2000 Off On |
| Remarks | N/A |

Custom Subsystem–Option 001 or 002 ([:SOURCE]:RADio:CUSTom)

:ALPha

Supported All with Option 001 or 002

```
[:SOURCE]:RADio:CUSTom:ALPha <val>  
[:SOURCE]:RADio:CUSTom:ALPha?
```

This command changes the Nyquist or root Nyquist filter’s alpha value.

The filter alpha value can be set to a minimum level (0), a maximum level (1), or in between by using fractional numeric values (0.001–0.999).

***RST** +3.50000000E–001

Range 0.000–1.000

Key Entry Filter Alpha

Remarks To change the current filter type, refer to “:FILTer” on page 534.

:BBCLock

Supported All with Option 001 or 002

```
[:SOURCE]:RADio:CUSTom:BBCLock INT[1]|EXT[1]  
[:SOURCE]:RADio:CUSTom:BBCLock?
```

This command toggles the data (bit) clock input to the baseband generator board to either internal or external. This command is independent in each mode and works for both non-burst (continuous) and burst modes. This allows for a matrix of selections between burst/non-burst, internal/external data generation, internal/external data clock, and external bit/symbol data clock.

INT[1] This choice selects the signal generator internal data clock.

EXT[1] This choice selects an external data clock input.

***RST** INT

Key Entry BBG Data Clock Ext Int

Remarks A data clock or continuous symbol sync input must be supplied when external mode is used.

This will be ignored if the external reference is set to EXTERNAL. To change the external reference type, refer to “:EREFerence” on page 533.

:BBT

Supported All with Option 001 or 002

```
[ :SOURce ] :RADio :CUSTom :BBT <val>
[ :SOURce ] :RADio :CUSTom :BBT?
```

This command changes the bandwidth-multiplied-by-bit-time (BbT) filter parameter.

The filter BbT value can be set to the maximum level (1) or in between the minimum level (0.100) and maximum level by using fractional numeric values (0.101–0.999).

***RST** +5.00000000E–001

Range 0.100–1.000

Key Entry Filter BbT

Remarks This command is effective only after choosing a Gaussian filter. It does not have an effect on other types of filters.

To change the current filter type, refer to “:FILTer” on page 534.

:BRATe

Supported All with Option 001 or 002

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

This command sets the bit rate.

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

***RST** +4.86000000E+004

Range

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

Range

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

Field Entry

SymRate

Remarks

When user-defined filters are selected using the command in section [“:FILTer” on page 534](#), the upper bit rate will be restricted in line with the following symbol rate restriction:

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

When internal FIR filters are used, the limits of the above table always apply. For higher symbol rates, the FIR filter length will be truncated and will impact the relative timing of the modulated data, as well as the actual filter response (see [“:SRATe” on page 538](#)).

A change in the bit rate value will affect the symbol rate value; refer to [“:SRATe” on page 538](#) for a list of the minimum and maximum symbol rate values.

To change the modulation type, refer to [“:MODulation\[:TYPE\]” on page 537](#).

:BURSt:SHAPe:FALL:DELay

Supported All with Option 001 or 002

```
[ :SOURce ] :RADio :CUSTom :BURSt :SHAPe :FALL :DELay <val>
```

```
[ :SOURce ] :RADio :CUSTom :BURSt :SHAPe :FALL :DELay?
```

This command sets the burst shape fall delay.

The variable <val> is expressed in bits.

***RST** +0.00000000E+000

Range -22.3750 to 99

Key Entry Fall Delay

Remarks To change the modulation type, refer to “:MODulation[:TYPE]” on page 537. Refer to “:SRATE” on page 538 for a list of the minimum and maximum symbol rate values.

“:BURSt:SHAPe:FDELay” on page 527 performs the same function; in compliance with the SCPI standard, both commands are listed.

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

:BURSt:SHAPe:FALL:TIME

Supported All with Option 001 or 002

```
[ :SOURce ] :RADio :CUSTom :BURSt :SHAPe :FALL :TIME <val>
```

```
[ :SOURce ] :RADio :CUSTom :BURSt :SHAPe :FALL :TIME?
```

This command sets the burst shape fall time.

The variable <val> is expressed in bits.

***RST** +1.00000000E+001

Range 0.1250–255.8750

Key Entry Fall Time

Remarks To change the modulation type, refer to “:MODulation[:TYPE]” on page 537. Refer to “:SRATE” on page 538 for a list of the minimum and maximum symbol rate values.

“:BURSt:SHAPe:FTIME” on page 527 performs the same function; in compliance with the SCPI standard, both commands are listed.

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

:BURSt:SHAPe:FDELaY

Supported All with Option 001 or 002

```
[ :SOURce ]:RADio:CUSTom:BURSt:SHAPe:FDELaY <val>  
[ :SOURce ]:RADio:CUSTom:BURSt:SHAPe:FDELaY?
```

This command sets the burst shape fall delay.

The variable <val> is expressed in bits.

***RST** +0.00000000E+000

Range -22.3750 to 99

Key Entry Fall Delay

Remarks To change the modulation type, refer to “:MODulation[:TYPE]” on page 537. Refer to “:SRATE” on page 538 for a list of the minimum and maximum symbol rate values.

“:BURSt:SHAPe:FALL:DELaY” on page 526 performs the same function; in compliance with the SCPI standard, both commands are listed.

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

:BURSt:SHAPe:FTIME

Supported All with Option 001 or 002

```
[ :SOURce ]:RADio:CUSTom:BURSt:SHAPe:FTIME <val>  
[ :SOURce ]:RADio:CUSTom:BURSt:SHAPe:FTIME?
```

This command sets the burst shape fall time.

The variable <val> is expressed in bits.

***RST** +0.00000000E+000

Range 0.1250–255.8750

Key Entry Fall Time

Remarks To change the modulation type, refer to “:MODulation[:TYPE]” on page 537. Refer to “:SRATE” on page 538 for a list of the minimum and maximum symbol rate values.

“:BURSt:SHAPe:FALL:TIME” on page 526 performs the same function; in compliance with the SCPI standard, both commands are

listed.

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

:BURSt:SHAPe:RDELay

Supported All with Option 001 or 002

```
[ :SOURce ] :RADio :CUSTom :BURSt :SHAPe :RDELay <val>  
[ :SOURce ] :RADio :CUSTom :BURSt :SHAPe :RDELay ?
```

This command sets the burst shape rise delay.

The variable <val> is expressed in bits.

***RST** +0.00000000E+000

Range -17.3750 to 99

Key Entry Rise Delay

Remarks To change the modulation type, refer to “:MODulation[:TYPE]” on page 537. Refer to “:SRATE” on page 538 for a list of the minimum and maximum symbol rate values.
“:BURSt:SHAPe:RISE:DELay” on page 528 performs the same function; in compliance with the SCPI standard, both commands are listed.

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

:BURSt:SHAPe:RISE:DELay

Supported All with Option 001 or 002

```
[ :SOURce ] :RADio :CUSTom :BURSt :SHAPe :RISE :DELay <val>  
[ :SOURce ] :RADio :CUSTom :BURSt :SHAPe :RISE :DELay ?
```

This command sets the burst shape rise delay.

The variable <val> is expressed in bits.

***RST** +0.00000000E+000

Range -17.3750 to 99

Key Entry Rise Delay

Remarks To change the modulation type, refer to “:MODulation[:TYPE]” on page 537. Refer to “:SRATE” on page 538 for a list of the minimum and

maximum symbol rate values.

“:BURSt:SHAPe:RDElay” on page 528 performs the same function; in compliance with the SCPI standard, both commands are listed.

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

:BURSt:SHAPe:RISE:TIME

Supported All with Option 001 or 002

[:SOURce] :RADio :CUSTom :BURSt :SHAPe :RISE :TIME <val>

[:SOURce] :RADio :CUSTom :BURSt :SHAPe :RISE :TIME ?

This command sets the burst shape rise time.

The variable <val> is expressed in bits.

***RST** +1.00000000E+001

Range 0.1250–121.5000

Key Entry Rise Time

Remarks To change the modulation type, refer to “:MODulation[:TYPE]” on page 537. Refer to “:SRATE” on page 538 for a list of the minimum and maximum symbol rate values.

“:BURSt:SHAPe:RTIME” on page 529 performs the same function; in compliance with the SCPI standard, both commands are listed.

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

:BURSt:SHAPe:RTIME

Supported All with Option 001 or 002

[:SOURce] :RADio :CUSTom :BURSt :SHAPe :RTIME <val>

[:SOURce] :RADio :CUSTom :BURSt :SHAPe :RTIME ?

This command sets the burst shape rise time.

The variable <val> is expressed in bits.

***RST** +1.00000000E+001

Range 0.1250–121.5000

Key Entry Rise Time

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

page 537. Refer to “:SRATe” on page 538 for a list of the minimum and maximum symbol rate values.

“:BURSt:SHAPE:RISE:TIME” on page 529 performs the same function; in compliance with the SCPI standard, both commands are listed.

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

:BURSt:SHAPE[:TYPE]

Supported All with Option 001 or 002

```
[:SOURce]:RADio:CUSTom:BURSt:SHAPE[:TYPE] SINE|"<file name>"
[:SOURce]:RADio:CUSTom:BURSt:SHAPE[:TYPE]?
```

This command specifies the burst shape ("<file name>").

SINE This choice selects a state that is defined by the burst rise and fall *RST values, as the default burst shape type.

"<file name>" This choice selects a user designated file from signal generator memory (non-volatile).

***RST** SINE

Key Entry Sine User File

Remarks N/A

:CHANnel

Supported All with Option 001 or 002

```
[:SOURce]:RADio:CUSTom:CHANnel EVM|ACP
[:SOURce]:RADio:CUSTom: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 534.

:DATA

Supported All with Option 001 or 002

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

This command sets the data pattern for unframed transmission.

***RST** PN23

| | | | | | | | | |
|------------------|--------------------------|--------------------------|----------------------------|----------------------------|----------------------------|-------------|------------------|------------|
| Key Entry | PN9 | PN11 | PN15 | PN20 | PN23 | FIX4 | User File | Ext |
| | 4 1's & 4 0's | 8 1's & 8 0's | 16 1's & 16 0's | 32 1's & 32 0's | 64 1's & 64 0's | | | |

Remarks Refer to [“File Name Variables” on page 14](#) for information on the file name syntax.

:DATA:FIX4

Supported All with Option 001 or 002

```
[ :SOURCE]:RADio:CUSTom:DATA:FIX4 <val>
[:SOURCE]:RADio:CUSTom:DATA:FIX4?
```

This command sets the binary, 4-bit repeating sequence data pattern for unframed transmission according to the modulation type, symbol rate, filter, and burst shape selected for the custom modulation format.

***RST** #B0000

Range #B0000–#B1111 or 0–15

Key Entry **FIX4**

Remarks FIX4 must be already be defined as the data type.

:DENCode

Supported All with Option 001 or 002

```
[ :SOURCE]:RADio:CUSTom:DENCode ON|OFF|1|0
[:SOURCE]:RADio:CUSTom:DENCode?
```

This command enables or disables the differential data encoding function.

***RST** 0

Key Entry **Diff Data Encode Off On**

Remarks Executing this command encodes the data bits prior to modulation; each modulated bit is 1 if the data bit is different from the previous one, or 0 if the data bit is the same as the previous one.

:EDATa:DELay

Supported All with Option 001 or 002

[:SOURce] :RADio :CUSTom :EDATa :DELay ?

This query returns the amount of delay (in symbols) from the external data input to the beginning of the symbol on the I OUT and Q OUT rear panel connectors and the front panel RF OUTPUT connector.

***RST** N/A

Range N/A

Key Entry N/A

Remarks When the format is turned off, the delay value is unchanged; the query will return the same delay value if the format is on or off.

:EDCLock

Supported All with Option 001 or 002

[:SOURce] :RADio :CUSTom :EDCLock SYMBol | NORMal

[:SOURce] :RADio :CUSTom :EDCLock ?

This command sets the external data clock use.

SYMBOL This choice specifies that a continuous symbol clock signal must be provided to the SYMBOL SYNC input connector.

NORMAL This choice specifies that the DATA CLOCK input connector requires a bit clock. The SYMBOL SYNC input connector requires a (one-shot or continuous) symbol sync signal.

***RST** NORM

Key Entry **Ext Data Clock Normal Symbol**

Remarks Both choices have no effect in internal clock mode. Refer to [“:BBCLock” on page 523](#) to select EXT as the data clock type.

:EREFERENCE

Supported All with Option 001 or 002

```
[ :SOURCE ] :RADIO :CUSTOM :EREFERENCE INTERNAL | EXTERNAL  
[ :SOURCE ] :RADIO :CUSTOM :EREFERENCE ?
```

This command selects either an internal or external bit-clock reference for the data generator.

***RST** INT

Key Entry **BBG Ref Ext Int**

Remarks If the EXTERNAL choice is selected, the external frequency value must be applied to the BASEBAND GEN REF IN rear panel connector.

Refer to “:EREFERENCE:VALUE” on page 533 to enter the external reference frequency.

:EREFERENCE:VALUE

Supported All with Option 001 or 002

```
[ :SOURCE ] :RADIO :CUSTOM :EREFERENCE :VALUE <val>  
[ :SOURCE ] :RADIO :CUSTOM :EREFERENCE :VALUE ?
```

This command conveys the expected reference frequency value of an externally applied reference to the signal generator.

The variable <val> is expressed in units of Hertz (Hz–MHz).

***RST** +1.30000000E+007

Range 2.5E5–1E8

Key Entry **Ext BBG Ref Freq**

Remarks The value specified by this command is effective only when you are using an external ARB reference applied to the BASEBAND GEN REF IN rear panel connector.

Refer to “:EREFERENCE” on page 533 to select EXTERNAL as the reference for the bit clock reference of the data generator.

:FILTer**Supported** All with Option 001 or 002

```
[:SOURce]:RADio:CUSTom:FILTer RNYQuist|NYQuist|GAUSSian|RECTangle|IS95|
IS95_EQ|IS95_MOD|IS95_MOD_EQ|AC4Fm|UGGaussian|"<user FIR>"
[:SOURce]:RADio:CUSTom:FILTer?
```

This command selects the pre-modulation filter type.

| | |
|------------------|--|
| IS95 | This choice selects a filter that meets the criteria of the IS-95 standard. |
| IS95_EQ | This choice selects a filter which is a combination of the IS-95 filter (above) and the equalizer filter described in the IS-95 standard. This filter is only used for IS-95 baseband filtering. |
| IS95_MOD | This choice selects a filter that meets the criteria of the IS-95 error function (for improved adjacent channel performance) with lower passband rejection than the filter specified in the IS-95 standard. |
| IS95_MOD_EQ | This choice selects a filter which is a combination of the equalizer filter described in the IS-95 standard and a filter that meets the criteria of the IS-95 error function (for improved adjacent channel performance), with lower passband rejection. |
| AC4Fm | This choice selects a predefined Association of Public Safety Communications Officials (APCO) specified compatible 4-level frequency modulation (C4FM) filter. |
| UGGaussian | This choice selects a backwards compatible GSM Gaussian filter (Gaussian filter with a fixed BbT value of 0.300) for the ESG E44xxB Option UN3 or UN4. |
| "<user FIR>" | This variable is any filter file that you have stored into memory. |
| *RST | RNYQ |
| Key Entry | Root Nyquist Nyquist Gaussian Rectangle IS-95 IS-95 w/EQ IS-95 Mod IS-95 Mod w/EQ APCO 25 C4FM UN3/4 GSM Gaussian User FIR |
| Remarks | Refer to “File Name Variables” on page 14 for information on the file name syntax. |

:IQ:SCALE

Supported All with Option 001 or 002

[:SOURCE] :RADio:CUSTom:IQ:SCALE <val>

[:SOURCE] :RADio:CUSTom:IQ:SCALE?

This command sets the amplitude of the I/Q outputs for better adjacent channel power (ACP); lower scaling values equate to better ACP.

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

***RST** +70

Range 1–200

Key Entry I/Q Scaling

Remarks This command has no effect with MSK or FSK modulation.

:MODulation:FSK[:DEViation]

Supported All with Option 001 or 002

[:SOURCE] :RADio:CUSTom:MODulation:FSK[:DEViation] <val>

[:SOURCE] :RADio:CUSTom:MODulation:FSK[:DEViation]?

This command sets the symmetric FSK frequency deviation value.

The variable <val> is expressed in units of Hertz and the maximum range value equals the current symbol rate value multiplied by four, limited to 20 MHz.

***RST** +4.00000000E+002

Range 0–2E7

Key Entry Freq Dev

Remarks To change the modulation type, refer to “:MODulation[:TYPE]” on [page 537](#).

Refer to “:SRATe” on [page 538](#) for a list of the minimum and maximum symbol rate values.

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

:MODulation:MSK[:PHASe]

Supported All with Option 001 or 002

```
[ :SOURce ] :RADio :CUSTom :MODulation :MSK [ :PHASe ] <val>  
[ :SOURce ] :RADio :CUSTom :MODulation :MSK [ :PHASe ] ?
```

This command sets the MSK phase deviation value.

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

***RST** +9.00000000E+001

Range 0–100

Key Entry Phase Dev

Remarks N/A

:MODulation:UFSK

Supported All with Option 001 or 002

```
[ :SOURce ] :RADio :CUSTom :MODulation :UFSK "<file name>"  
[ :SOURce ] :RADio :CUSTom :MODulation :UFSK ?
```

This command selects a user-defined FSK file from the signal generator memory.

***RST** N/A

Range N/A

Key Entry User FSK

Remarks The user-defined FSK file is held in signal generator memory until the command that selects user FSK as the modulation type is sent. Refer to “:MODulation[:TYPE]” on page 537 to change the current modulation type.

Refer to “File Name Variables” on page 14 for information on the file name syntax.

:MODulation:UIQ

Supported All with Option 001 or 002

```
[:SOURCE]:RADio:CUSTom:MODulation:UIQ "<file name>"
```

```
[:SOURCE]:RADio:CUSTom:MODulation:UIQ?
```

This command selects a user-defined I/Q file from the signal generator memory.

***RST** N/A

Range N/A

Key Entry **User I/Q**

Remarks The user-defined I/Q file is held in signal generator memory until the command that selects user I/Q as the modulation type is sent. Refer to [“:MODulation\[:TYPE\]” on page 537](#) to change the current modulation type.

Refer to [“File Name Variables” on page 14](#) for information on the file name syntax.

:MODulation[:TYPE]

Supported All with Option 001 or 002

```
[:SOURCE]:RADio:CUSTom:MODulation[:TYPE] BPSK|QPSK|IS95QPSK|GRAYQPSK|
OQPSK|IS95OQPSK|P4DQPSK|PSK8|PSK16|D8PSK|MSK|FSK2|FSK4|FSK8|FSK16|C4FM|
QAM4|QAM16|QAM32|QAM64|QAM256|UIQ|UFSK
[:SOURCE]:RADio:CUSTom:MODulation[:TYPE]?
```

This command sets the modulation type for the Custom personality.

***RST** P4DQPSK

Key Entry **BPSK QPSK IS-95 QPSK Gray Coded QPSK OQPSK**
IS-95 OQPSK $\pi/4$ DQPSK 8PSK 16PSK D8PSK MSK 2-Lvl FSK
4-Lvl FSK 8-Lvl FSK 16-Lvl FSK C4FM 4QAM 16QAM 32QAM
64QAM 256QAM User I/Q User FSK

Remarks N/A

:POLarity[:ALL]**Supported** All with Option 001 or 002

[:SOURce]:RADio:CUSTom:POLarity[:ALL] NORMal|INVerted

[:SOURce]:RADio:CUSTom:POLarity[:ALL]?

This command sets the rotation direction of the phase modulation vector.

NORMal This choice selects normal phase polarity.

INVerted This choice inverts the internal Q signal.

RST** NORM**Key Entry** Phase Polarity Normal Invert**Remarks** N/A**:SRATe*Supported** All with Option 001 or 002

[:SOURce]:RADio:CUSTom:SRATe <val>

[:SOURce]:RADio:CUSTom:SRATe?

This command sets the transmission symbol rate.

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

***RST** +2.43000000E+004**Range**

| <i>Modulation Type</i> | <i>Bits per Symbol</i> | <i>Internal Data</i> | <i>External Serial Data</i> | | | |
|------------------------|------------------------|----------------------|-----------------------------|---|-----------|-----------|
| BPSK | 1 | 1–50 Msps | 1–50 Msps | | | |
| FSK2 | | | | | | |
| MSK | | | | | | |
| C4FM | 2 | 1–50 Msps | 1–25 Msps | | | |
| FSK4 | | | | | | |
| OQPSK | | | | | | |
| OQPSK195 | | | | | | |
| P4QPPSK | | | | | | |
| QAM4 | | | | | | |
| QPSK | | | | | | |
| QPSKIS95 | | | | | | |
| QPSKISAT | | | | 2 | 1–50 Msps | 1–25 Msps |

Range

| <i>Modulation Type</i> | <i>Bits per Symbol</i> | <i>Internal Data</i> | <i>External Serial Data</i> |
|------------------------|------------------------|----------------------|-----------------------------|
| D8PSK | 3 | 1–50 Msps | 1–16.67 Msps |
| EDGE | | | |
| FSK8 | | | |
| PSK8 | | | |
| FSK16 | 4 | 1–50 Msps | 1–12.5 Msps |
| PSK16 | | | |
| QAM16 | | | |
| QAM32 | 5 | 1–50 Msps | 1–10 Msps |
| QAM64 | 6 | 1–50 Msps | 1–8.33 Msps |
| QAM256 | 8 | 1–50 Msps | 1–6.25 Msps |

Key Entry

Symbol Rate

Remarks

When user-defined filters are selected using the command in section “:FILTer” on page 534, the upper bit rate will be restricted in line with the following symbol rate restriction:

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

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

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

This will impact the relative timing of the modulated data, as well as the actual filter response (see “:BRATe” on page 524).

A change in the symbol rate value will affect the bit rate value; refer to “:BRATe” on page 524 for a list of the minimum and maximum symbol rate values.

To change the modulation type, refer to “:MODulation[:TYPE]” on page 537.

:STANdard:SElect

Supported All with Option 001 or 002

```
[ :SOURce ] :RADio :CUSTom :STANdard :SElect NONE | AC4Fm | ACQPsk | BLUEtooth | CDPD
[ :SOURce ] :RADio :CUSTom :STANdard :SElect ?
```

This command selects a predefined setup for Custom (with the appropriate defaults) and/or clears the selection.

| | |
|-----------|---|
| NONE | This choice clears the current predefined Custom format. |
| AC4Fm | This choice sets up an Association of Public Safety Communications Officials (APCO) compliant, compatible 4-level frequency modulation (C4FM) format. |
| ACQPsk | This choice sets up an Association of Public Safety Communications Officials (APCO) compliant, compatible quadrature phase shift keying (CQPSK) format. |
| BLUEtooth | This choice sets up a Bluetooth (2-level frequency shift keying) format. |
| CDPD | This choice sets up a minimum shift keying Cellular Digital Packet Data (CDPD) format. |

***RST** NONE

Key Entry None APCO 25w/C4FM APCO 25 w/CQPSK Bluetooth CDPD

Remarks N/A

:TRIGger:TYPE

Supported All with Option 001 or 002

```
[ :SOURce ] :RADio :CUSTom :TRIGger :TYPE CONTInuous | SINGLE | GATE
[ :SOURce ] :RADio :CUSTom :TRIGger :TYPE ?
```

This command sets the trigger type.

| | |
|------------|---|
| CONTInuous | The framed data sequence repeats continuously; the sequence restarts every time the previous playback is completed. To customize continuous triggering, refer to “:TRIGger:TYPE:CONTInuous[:TYPE]” on page 541. |
| SINGLE | The framed data sequence plays once for every trigger received. |
| GATE | An external trigger signal interrupts the playback while the gating signal is in the inactive state. Playback resumes when the external control signal returns to the active state. The active state can be set to high or low. |

***RST** CONT
Key Entry **Continuous** **Single** **Gated**
Remarks N/A

:TRIGger:TYPE:CONTInuous[:TYPE]

Supported All with Option 001 or 002

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

This command customizes the continuous trigger selection.

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

***RST** FREE
Key Entry **Free Run** **Trigger & Run** **Reset & Run**
Remarks To select CONTInuous as the trigger type, refer to “:TRIGger:TYPE” on [page 540](#).

:TRIGger:TYPE:GATE:ACTive

Supported All with Option 001 or 002

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

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

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

***RST** HIGH

| | |
|------------------|---|
| Key Entry | Gate Active Low High |
| Remarks | To select GATE as the ARB trigger type, refer to “:TRIGger:TYPE” on page 540. |

:TRIGger[:SOURce]

Supported All with Option 001 or 002

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

This command sets the trigger source.

- KEY** This choice enables triggering by pressing the front panel **Trigger** hardkey.
- EXT** This choice enables triggering using an externally applied signal at the PATT TRIG IN rear panel connector or the PATT TRIG IN 2 pin on the rear panel AUX I/O connector. To select the appropriate connector, refer to “:TRIGger[:SOURce]:EXTernal[:SOURce]” on page 542.
- BUS** This choice enables GPIB triggering using the *TRG or GET command or LAN and RS-232 triggering using the *TRG command.

***RST** KEY

Key Entry Trigger Key Ext Bus

Remarks N/A

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

Supported All with Option 001 or 002

```
[ :SOURce]:RADio:CUSTom:TRIGger[ :SOURce]:EXTernal[ :SOURce] EPT1|EPT2|
EPTRIGGER1|EPTRIGGER2
[:SOURce]:RADio:CUSTom:TRIGger[ :SOURce]:EXTernal[ :SOURce]?
```

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

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

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

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

rear panel connector for the external signal connection.

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

***RST** EPT1

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

Remarks This command is effective only if an external trigger is selected as the trigger source. Refer to “:TRIGger[:SOURce]” on page 542.

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

:TRIGger[:SOURce]:EXTernal:DELay

Supported All with Option 001 or 002

```
[ :SOURce]:RADIo:CUSTom:TRIGger[:SOURce]:EXTernal:DELay <val>
[:SOURce]:RADIo:CUSTom:TRIGger[:SOURce]:EXTernal:DELay?
```

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

The variable <val> is expressed in bits.

***RST** +0

Range 0–1048576

Key Entry **Ext Delay Bits**

Remarks This command is effective only if an external trigger is selected as the trigger source. Refer to “:TRIGger[:SOURce]” on page 542.

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

Supported All with Option 001 or 002

```
[ :SOURce]:RADIo:CUSTom:TRIGger[:SOURce]:EXTernal:DELay:STATe ON|OFF|1|0
[:SOURce]:RADIo:CUSTom:TRIGger[:SOURce]:EXTernal:DELay:STATe?
```

This command enables or disables the operating state of the external trigger delay function.

***RST** 0

Key Entry **Ext Delay Off On**

Remarks This command is effective only if an external trigger is selected as the

trigger source. Refer to “:TRIGger[:SOURce]” on page 542.

:TRIGger[:SOURce]:EXTernal:SLOPe

Supported All with Option 001 or 002

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

This command sets the polarity of the external trigger.

***RST** NEG

Key Entry Ext Polarity Neg Pos

Remarks This command is effective only if an external trigger is selected as the trigger source. Refer to “:TRIGger[:SOURce]” on page 542.

[:STATe]

Supported All with Option 001 or 002

```
[ :SOURce ] :RADio :CUSTom [ :STATe ] ON | OFF | 1 | 0
[ :SOURce ] :RADio :CUSTom [ :STATe ] ?
```

This command enables or disables the Custom modulation.

***RST** 0

Key Entry Custom Off On

Remarks Although the Custom modulation is enabled with this command, the RF carrier is not modulated unless you also activate the front panel **Mod On/Off** hardkey.

Symbols

of Blocks field, 864
 # of Carriers softkey, 280, 283
 # Points softkey, 58
 # Skipped Points softkey, 296
 ΦM Dev, 198
 ΦM Dev Couple Off On, 199
 FM ΦM Normal High BW, 194
 ΦM Off On, 198
 ΦM Path 1 2, 193
 ΦM Stop Rate, 195
 ΦM Sweep Time, 196
 ΦM Tone 2 Ampl Percent of Peak, 196

Numerics

0.7V,1.4V,1.65V,2.5V softkey, 386
 1 DPCH softkey, 330, 335
 1.23 MHz softkey, 264
 1.25 MHz softkey, 264
 1/2 Conv softkey, 857, 862, 968
 1/3 Conv softkey, 857, 862, 968
 10 msec softkey, 889
 1048576 softkey, 213
 10ms Frame Pulse (RPS6) softkey
 See wideband CDMA base band generator
 subsystem keys and fields
 12.2 kbps (34.121 v3.8) softkey, 835
 131072 softkey, 213
 144 kbps (34.121 v3.8) softkey, 835
 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, 213
 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

16PSK softkey (continued)
 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, 331
 2 SR3 Carriers softkey, 249
 2.100 MHz softkey, 210, 223, 246, 273, 293,
 311, 328, 443
 20 msec softkey, 889
 2560 msec softkey, 889
 256QAM softkey
 See custom subsystem keys
 See DECT subsystem keys
 See Dmodulation subsystem keys
 See EDGE subsystem keys
 See GSM subsystem keys
 See NADC subsystem keys
 See PDC subsystem keys
 See PHS subsystem keys
 See TETRA subsystem keys
 262144 softkey, 213
 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, 837, 844
 3 Carriers softkey, 231, 249, 331
 3 DPCH softkey, 330, 335
 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

Index

32 1's & 32 0's softkey (continued)

See TETRA subsystem keys

32 Ch Fwd softkey, [229](#), [232](#)

32768 softkey, [213](#)

32QAM softkey

See custom subsystem keys

See DECT subsystem keys

See Dmodulation subsystem keys

See EDGE subsystem keys

See GSM subsystem keys

See NADC subsystem keys

See PDC subsystem keys

See PHS subsystem keys

See TETRA subsystem keys

384 kbps (34.121 v3.8) softkey, [835](#)

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, [231](#), [249](#), [331](#)

40 msec softkey, [889](#)

40.000 MHz softkey, [207](#), [210](#), [218](#), [223](#), [242](#),
[246](#), [269](#), [273](#), [290](#), [293](#), [308](#), [311](#), [326](#), [328](#),
[436](#), [443](#)

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, [255](#)

524288 softkeys, [213](#)

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, [229](#), [232](#)

64 kbps (34.121 v3.8) softkey, [835](#)

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, [213](#)

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, [436](#)

8 Channel softkey, [255](#)

80 msec softkey, [889](#)

80ms Frame Pulse (RPS20) softkey

See wideband CDMA base band generator
subsystem keys and fields

8648A/B/C/D softkey, [158](#), [160](#)

8656B,8657A/B softkey, [158](#), [160](#)

8657D NADC softkey, [158](#), [160](#)

8657D PDC softkey, [158](#), [160](#)

8657J PHS softkey, [158](#), [160](#)

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

8PSK softkey (continued)
See EDGE subsystem keys
See GSM subsystem keys
See NADC subsystem keys
See PDC subsystem keys
See PHS subsystem keys
See TETRA subsystem keys
9 Ch Fwd softkey, 229, 232
9 Channel softkey, 248

A

A field softkey
See DECT subsystem keys
A softkey, 827
Access softkey, 663
ACS softkey, 854
Actual BER softkey, 978
Actual BLER field, 971, 980
Add Comment To Seq[n] Reg[mn] softkey, 120
Adjust Gain softkey, 403
Adjust Phase softkey, 49
AICH softkey, 925
AICH Trigger Polarity Pos Neg softkey, 898
ALC BW Normal Narrow, 59
ALC BW Normal Narrow softkey, 23
ALC Off On softkey, 60
All Down softkey, 839, 879
All softkey, 104, 119
All Timeslots softkey
See DECT subsystem keys
See EDGE subsystem keys
See GSM subsystem keys
See NADC subsystem keys
See PDC subsystem keys
See PHS subsystem keys
See TETRA subsystem keys
All Up softkey, 839, 879
Alt Amp Delta softkey, 60
Alt Ampl Off On softkey, 61
Alt power in field, 939
AM softkeys
AM Depth, 177
AM Depth Couple Off On, 178
AM Off On, 177
AM Off On softkey, 173
AM Path 1 2, 172
AM Stop Rate, 174
AM Sweep Rate, 175
AM Tone 2 Ampl Percent Of Peak, 175
AM Tone 2 Rate, 174
AM_ADDR softkey, 434
Ampl softkeys
Ampl, 63
Ampl Offset, 65
Ampl Ref Off On, 63
Ampl Ref Set, 63
Ampl Start, 64
Ampl Stop, 64
Amplitude hardkey, 63, 65
amplitude modulation subsystem keys
AM Depth, 177
AM Depth Couple Off On, 178
AM Off On, 173, 177
AM Path 1 2, 172
AM Stop Rate, 174
AM Sweep Rate, 175
AM Tone 2 Ampl Percent Of Peak, 175
AM Tone 2 Rate, 174
Bus, 176
Dual-Sine, 175
Ext, 176
Ext Coupling DC AC, 173
Ext1, 176
Ext2, 176
Free Run softkey, 176
Incr Set, 172, 178
Internal, 176
Noise, 175
Ramp, 175
Sine, 175
Square, 175
Swept-Sine, 175
Triangle, 175
Trigger Key, 176
AMR 12.2 kbps softkey, 835, 932
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

Index

APCO 25 C4FM softkey (continued)

See wideband CDMA ARB subsystem keys
See wideband CDMA base band generator subsystem keys and fields

APCO 25 w/C4FM softkey, [280](#), [282](#)

APCO 25 w/C4QPSK softkey, [280](#), [282](#)

APCO 25 w/CQPSK softkey, [540](#)

Apply Channel Setup softkey, [253](#), [257](#), [338](#), [347](#), [822](#), [867](#)

Arb AWGN Off On softkey, [215](#)

ARB Off On softkey, [307](#)

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, [214](#), [229](#), [263](#), [279](#), [301](#), [316](#), [353](#), [448](#)

Atten Hold Off On softkey, [62](#)

automatic leveling control, [60](#)

Aux I/O Trigger Polarity Pos Neg softkey, [429](#)

Aux softkey

See sense subsystem keys

AWGN Off On softkey, [438](#)

AWGN subsystem keys

[1048576](#), [213](#)

[131072](#), [213](#)

[16384](#), [213](#)

[2.100 MHz](#), [210](#)

[262144](#), [213](#)

[32768](#), [213](#)

[40.000 MHz](#), [207](#), [210](#)

[524288](#), [213](#)

[65536](#), [213](#)

Arb AWGN Off On, [215](#)

ARB Reference Ext Int, [214](#)

ARB Sample Clock, [214](#)

Bandwidth, [207](#)

Clear Header, [208](#)

I/Q Mod Filter Manual Auto, [210](#)

I/Q Output Filter Manual Auto, [208](#)

Marker 1, [211](#)

Marker 1 Polarity Neg Pos, [212](#)

Marker 2, [211](#)

Marker 2 Polarity Neg Pos, [212](#)

Marker 3, [211](#)

AWGN subsystem keys (continued)

Marker 3 Polarity Neg Pos, [212](#)

Marker 4, [211](#)

Marker 4 Polarity Neg Pos, [213](#)

Modulator Atten Manual Auto, [209](#)

Noise Seed Fixed Random, [215](#)

None, [211](#)

Reference Freq, [213](#)

Save Setup To Header, [208](#)

Through, [207](#), [210](#)

Waveform Length, [213](#)

B

B softkey, [800](#), [805](#), [827](#)

B1 softkey, [798](#), [803](#)

B2 softkey, [798](#), [803](#)

Bandwidth softkey, [207](#), [433](#)

Base Delay Tp-a softkey, [921](#)

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, [450](#)

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, [25](#), [38](#)

BD_ADDR softkey, [434](#)

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

- Begin Frame softkey (continued)*
 - See EDGE subsystem keys
 - See GSM subsystem keys
 - See NADC subsystem keys
 - See PDC subsystem keys
 - See PHS subsystem keys
 - See TETRA subsystem keys
- 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, 369
- BER field, 860, 971, 979
- BER Mode Off On softkey
 - See sense subsystem keys
- BER softkey, 973, 982
- BERT Off On softkey, 426
- BERT Resync Off On softkey, 425
- Beta field, 872, 882
- Binary softkey, 93, 121
- binary values, 17
- Bit Count softkey
 - See sense subsystem keys
- Bit Delay Off On softkey, 428
- Bit Rate field
 - See CDMA2000 BBG subsystem keys and fields
- Bit softkey, 93
- BLER field, 972, 981
- BLER softkey, 973, 982
- Blk Set Size field, 857
- Blk Size field, 855, 967, 976
- Block Count softkey
 - See calculate subsystem keys
 - See sense subsystem keys
- Block Erasure softkey
 - See sense subsystem keys
- Blocking softkey, 854
- Bluetooth Off On softkey, 448
- Bluetooth softkey, 540
- bluetooth subsystem keys
 - 2.100 MHz, 443
 - 40.000 MHz, 436, 443
 - 8 Bit Pattern, 436
 - AM_ADDR, 434
 - ARB Reference Ext Int, 447
 - ARB Sample Clock, 448
 - bluetooth subsystem keys (*continued*)
 - AWGN Off On, 438
 - BD_ADDR, 434
 - Bluetooth Off On, 448
 - Burst Off On, 435
 - Burst Power Ramp, 448
 - C/N[1 MHz], 438
 - Clear Header, 437
 - Clock/Gate Delay, 435
 - Continuous PN9, 436
 - Drift Deviation, 439
 - Freq Drift Type Linear Sine, 440
 - Freq Offset, 441
 - I/Q Mod Filter Manual Auto, 444
 - I/Q Output Filter Manual Auto, 437
 - Impairments Off On, 438
 - Marker 1, 444, 445
 - Marker 1 Polarity Neg Pos, 445
 - Marker 2, 444, 445
 - Marker 2 Polarity Neg Pos, 445
 - Marker 3, 444, 445
 - Marker 3 Polarity Neg Pos, 446
 - Marker 4, 444, 445
 - Marker 4 Polarity Neg Pos, 446
 - Mod Index, 441
 - Modulator Atten Manual Auto, 442, 443
 - Noise Seed, 439
 - None, 444, 445
 - Packet (DH1), 446
 - Reference Freq, 447
 - Save Setup To Header, 437
 - Symbol Timing Err, 442
 - Through, 436, 443
 - Truncated PN9, 436
- boolean SCPI parameters, 10
- boolean, numeric response data, 12
- BPSK softkey
 - See custom subsystem keys
 - See DECT subsystem keys
 - See Dmodulation subsystem keys
 - See EDGE subsystem keys
 - See GSM subsystem keys
 - See NADC subsystem keys
 - See PDC subsystem keys
 - See PHS subsystem keys
 - See TETRA subsystem keys
- Brightness softkey, 83
- Build New Waveform Sequence softkey, 301
- Burst Envelope Int Ext Off softkey, 23

Index

Burst gate in field, [940](#)
Burst Gate In Polarity Neg Pos softkey, [129](#),
[131](#)
Burst Off On softkey, [435](#)
Burst Power Ramp softkey, [448](#)
Bus softkey
 See amplitude modulation subsystem keys
 See CDMA ARB subsystem keys
 See CDMA2000 ARB subsystem keys
 See DECT subsystem keys
 See Dmodulation subsystem keys
 See dual ARB subsystem keys
 See EDGE subsystem keys
 See frequency modulation subsystem keys
 See GSM subsystem keys
 See list/sweep subsystem keys
 See low frequency output subsystem keys
 See NADC subsystem keys
 See PDC subsystem keys
 See phase modulation subsystem keys
 See PHS subsystem keys
 See sense subsystem keys
 See TETRA subsystem keys
 See trigger subsystem keys
 See wideband CDMA ARB subsystem keys

C

C Power field, [868](#), [899](#)
C/N softkey, [479](#), [490](#)
C/N value field, [822](#), [868](#), [898](#)
C/N[1 MHz] softkey, [438](#)
C4FM softkey, [762](#)
calculate subsystem keys
 BER Display % Exp, [369](#)
 Block Count, [391](#)
 Class II RBER, [366](#), [367](#)
 Class 1b RBER, [366](#), [367](#)
 Cycle End, [368](#)
 Error Rate, [360](#), [361](#), [362](#), [363](#), [364](#), [365](#), [366](#)
 Exceeds Any Limit, [367](#)
 Fail Hold, [368](#)
 Frame Erasure, [367](#)
 No Limits, [361](#), [365](#), [366](#), [367](#)
 Pass/Fail Limits, [368](#)
 Pass/Fail Off On, [369](#)
 Update Display Cycle End Cont, [370](#)
calibration subsystem keys
 DCFM/DCΦM Cal, [68](#)
 Execute Cal, [69](#)
 I/Q Calibration, [68](#)

calibration subsystem keys (*continued*)
 Revert to Default Cal Settings, [69](#)
 Start Frequency, [70](#)
 Stop Frequency, [71](#)
Carrier Phases Fixed Random softkey, [281](#)
CC softkey, [726](#), [729](#), [731](#)
CDL softkey, [691](#)
CDMA ARB subsystem keys
 2.100 MHz, [223](#)
 3 Carriers, [231](#)
 32 Ch Fwd, [229](#), [232](#)
 4 Carriers, [231](#)
 40.000 MHz, [218](#), [223](#)
 64 Ch Fwd, [229](#), [232](#)
 9 Ch Fwd, [229](#), [232](#)
 APCO 25 C4FM, [219](#)
 ARB Reference Ext Int, [228](#)
 ARB Sample Clock, [229](#)
 Bus, [235](#)
 CDMA Off On, [238](#)
 Chip Rate, [218](#)
 Clear Header, [221](#)
 Clip |I+jQ| To, [217](#)
 Clip |I| To, [216](#)
 Clip |Q| To, [217](#)
 Clip At PRE POST FIR Filter, [216](#)
 Clipping Type |I+jQ| |I|,|Q|, [217](#)
 Continuous, [234](#)
 CPICH, [340](#)
 Custom CDMA Multicarrier, [231](#)
 Custom CDMA State, [229](#), [232](#)
 Equal Powers, [230](#)
 Ext, [235](#)
 Ext Delay Off On, [237](#)
 Ext Delay Time, [237](#)
 Ext Polarity Neg Pos, [237](#)
 Filter Alpha, [220](#)
 Filter BbT, [221](#)
 Free Run, [234](#)
 Gate Active Low High, [235](#)
 Gated, [234](#)
 Gaussian, [219](#)
 I/Q Mapping Normal Invert, [222](#)
 I/Q Mod Filter Manual Auto, [224](#)
 I/Q Output Filter Manual Auto, [219](#)
 Immediate, [228](#)
 IS-2000 SR3 DS, [219](#)
 IS-95, [219](#)
 IS-95 Mod, [219](#)

- CDMA ARB subsystem keys (*continued*)
 - IS-95 Mod w/EQ, 219
 - IS-95 w/EQ, 219
 - IS-97 Levels, 230
 - Marker 1, 224, 225
 - Marker 1 Polarity Neg Pos, 225
 - Marker 2, 224, 225
 - Marker 2 Polarity Neg Pos, 226
 - Marker 3, 224, 225
 - Marker 3 Polarity Neg Pos, 226
 - Marker 4, 224, 225
 - Marker 4 Polarity Neg Pos, 226
 - Modulator Atten Manual Auto, 222, 223
 - Multicarrier Off On, 229
 - None, 224, 225
 - Nyquist, 219
 - Off, 228
 - On, 228
 - Optimize FIR For EVM ACP, 221
 - Oversample Ratio, 227
 - Paging, 230
 - Patt Trig In 1, 236
 - Patt Trig In 2, 236
 - Pilot, 229, 230, 232
 - Rectangle, 219
 - Reference Freq, 227
 - Reset & Run, 234
 - Reverse, 229
 - Root Nyquist, 219
 - Save Setup To Header, 222
 - Scale to 0dB, 230
 - Single, 234
 - Store Custom CDMA State, 233
 - Store Custom Multicarrier, 232
 - Sync, 230
 - Through, 218, 223
 - Traffic, 230
 - Trigger & Run, 234
 - Trigger Key, 235
 - UN3/4 GSM Gaussian, 219
 - User FIR, 219
 - Waveform Length, 238
 - WCDMA, 219
- CDMA Freq field, 472
- CDMA Off On softkey, 238
- CDMA softkey, 94
- CDMA2000 ARB subsystem keys
 - 1.23 MHz, 264
 - 1.25 MHz, 264
- CDMA2000 ARB subsystem keys (*continued*)
 - 2 SR3 Carriers, 249
 - 2.100 MHz, 246
 - 3 Carriers, 249
 - 4 Carriers, 249
 - 40.000 MHz, 242, 246
 - 5 Channel, 255
 - 8 Channel, 255
 - 9 Channel, 248
 - APCO 25 C4FM, 243
 - Apply Channel Setup, 253, 257
 - ARB Reference Ext Int, 261
 - ARB Sample Clock, 263
 - Bus, 266
 - CDMA2000 Off On, 268
 - Clear Header, 245
 - Clip |I+jQ| To, 241
 - Clip |I| To, 240
 - Clip |Q| To, 241
 - Clip At PRE POST FIR Filter, 240
 - Clipping Type |I+jQ| |I|, |Q|, 241
 - Config, 253, 257
 - Continuous, 264
 - Custom CDMA2000 Carrier, 248, 250
 - Custom CDMA2000 Multicarrier, 249
 - Custom CDMA2000 State, 255
 - Edit Channel Setup, 253, 257
 - Equal Powers, 254, 258
 - Ext, 266
 - Ext Delay Off On, 267
 - Ext Delay Time, 267
 - Ext Polarity Neg Pos, 268
 - Filter Alpha, 244
 - Filter BbT, 244
 - Free Run, 265
 - Gate Active Low High, 265
 - Gated, 264
 - Gaussian, 243
 - I/Q Mapping Normal Invert, 247
 - I/Q Mod Filter Manual Auto, 247
 - I/Q Output Filter Manual Auto, 242
 - Immediate, 262
 - Insert Row, 253, 257
 - IS-2000 SR3 DS, 243
 - IS-95, 243
 - IS-95 Mod, 243
 - IS-95 Mod w/EQ, 243
 - IS-95 w/EQ, 243
 - Link Forward Reverse, 248

Index

CDMA2000 ARB subsystem keys (*continued*)

Marker 1, [259](#)
Marker 1 Polarity Neg Pos, [260](#)
Marker 2, [259](#)
Marker 2 Polarity Neg Pos, [260](#)
Marker 3, [259](#)
Marker 3 Polarity Neg Pos, [260](#)
Marker 4, [259](#)
Marker 4 Polarity Neg Pos, [261](#)
Modulator Atten Manual Auto, [246](#)
Multicarrier Off On, [248](#)
None, [259](#)
Nyquist, [243](#)
Off, [262](#)
On, [262](#)
Optimize FIR For EVM ACP, [245](#)
Patt Trig In 1, [266](#)
Patt Trig In 2, [266](#)
Pilot, [248](#), [255](#)
PN Offset, [253](#), [257](#)
Radio Config, [255](#)
Rate, [253](#), [257](#)
Rectangle, [243](#)
Reference Freq, [261](#)
Reset & Run, [265](#)
Root Nyquist, [243](#)
Save Setup To Header, [245](#)
Scale to OdB, [254](#), [258](#)
Single, [264](#)
Spread Rate 1, [248](#), [255](#), [263](#)
Spread Rate 3, [248](#), [255](#), [263](#)
Spreading Type Direct Mcarrier, [248](#), [264](#)
SR1 9 Channel, [250](#)
SR1 Pilot, [250](#)
SR3 Direct 9 Channel, [250](#)
SR3 Direct Pilot, [250](#)
SR3 Mcarrier 9 Channel, [250](#)
SR3 MCarrier Pilot, [250](#)
Store Custom CDMA State, [252](#), [256](#)
Store Custom Multicarrier, [250](#)
Through, [242](#), [246](#)
Trigger & Run, [265](#)
Trigger Key, [266](#)
UN3/4 GSM Gaussian, [243](#)
User FIR, [243](#)
Walsh Code, [253](#), [257](#)
WCDMA, [243](#)

CDMA2000 BBG subsystem keys and fields

APCO 25 C4FM, [452](#), [486](#)

CDMA2000 BBG subsystem keys and fields (*continued*)

BBG Data Clock, [450](#)
Bit Rate, [460](#), [464](#), [470](#), [483](#), [494](#), [496](#), [500](#),
[505](#), [511](#), [515](#), [519](#)
C/N, [479](#), [490](#)
CDMA Freq, [472](#)
CDMA2000 Off On, [522](#)
Change, [481](#)
Chip Rate, [451](#), [485](#)
DAYLT, [472](#)
EbNo, [455](#), [461](#), [467](#), [473](#), [482](#), [492](#), [498](#), [500](#),
[504](#), [509](#), [513](#), [516](#)
EcNo, [465](#), [501](#), [506](#)
Equal Powers, [481](#), [489](#)
Even Second Delay, [451](#), [486](#)
Ext, [454](#), [466](#), [495](#)
Ext CDMA Freq, [473](#)
External, [485](#)
Falling, [521](#)
Field 1, [462](#)
Field 2, [463](#)
Field 3, [463](#)
Filter Alpha, [453](#), [487](#)
Filter BbT, [453](#), [456](#), [488](#)
FIX4, [454](#), [455](#), [466](#), [467](#), [491](#), [492](#), [495](#), [497](#),
[498](#), [503](#), [508](#), [509](#), [512](#), [516](#)
Frame Length, [493](#), [495](#), [499](#), [510](#), [513](#), [517](#)
Frame Offset, [468](#), [493](#), [496](#), [499](#), [504](#), [510](#),
[514](#), [517](#)
FSYNCH Type, [477](#)
Full, [502](#), [507](#)
Gaussian, [452](#), [486](#)
Half, [502](#), [507](#)
Header, [458](#), [469](#)
Internal, [485](#)
Inverted, [490](#)
IS-95, [452](#), [486](#)
IS-95 MOD, [486](#)
IS-95 Mod, [452](#)
IS-95 MOD w/EQ, [486](#)
IS-95 Mod w/EQ, [452](#)
IS-95 w/EQ, [452](#), [486](#)
Leap Seconds, [474](#)
Link Forward Reverse, [450](#)
Long Code Mask, [489](#)
Long Code State, [454](#), [489](#)
LTM OFF, [474](#)
Message Type, [475](#)

- CDMA2000 BBG subsystem keys and fields
(*continued*)
- Network ID, 475
 - Noise Off On, 479, 491
 - Normal, 490
 - Nyquist, 452, 486
 - Optimize FIR For EVM ACP, 454, 488
 - P Rev, 476
 - P Rev Min, 474
 - Paging Indicator, 482
 - Permuted ESN, 457, 468
 - Phase Polarity, 481
 - PN Offset, 485
 - PN15, 454, 466, 491, 495, 497, 503, 508, 512, 516
 - PN9, 454, 466, 491, 495, 497, 503, 508, 512, 516
 - Power, 458, 464, 466, 469, 475, 480, 483, 493, 496, 499, 502, 505, 507, 510, 514, 518
 - PRAT, 476
 - QOF, 459, 469
 - Quarter, 502, 507
 - Radio Config, 460, 470, 494, 497, 505, 511, 514, 518
 - RadioConfig 1/2 Access, 450
 - RadioConfig 1/2 Traffic, 450
 - RadioConfig 3/4 Common Control, 450
 - RadioConfig 3/4 Enhanced Access, 450
 - RadioConfig 3/4 Traffic, 450
 - Ramp, 458
 - Ramp Time, 459
 - Rectangle, 452, 486
 - Reserved, 476
 - Rising, 521
 - Root Nyquist, 452, 486
 - Scale to 0dB, 481, 489
 - Spread Rate, 484
 - State, 465, 466, 472, 478, 480, 484, 494, 497, 501, 503, 506, 508, 512, 515, 520
 - State field, 461
 - System ID, 477
 - Time, 478
 - Trigger Advance, 521
 - Turbo Coding, 471, 519
 - UN3/4 GSM Gaussian, 452, 486
 - User File, 454, 461, 466, 491, 495, 497, 503, 508, 512, 516
 - User FIR, 452, 486
- CDMA2000 BBG subsystem keys and fields
(*continued*)
- Walsh, 464, 471, 478, 480, 484, 500, 502, 506, 508, 511, 515, 519
 - Walsh field, 460
 - CDMA2000 Off On softkey, 268, 522
 - CDPD softkey, 280, 282, 540
 - CDVCC softkey, 692, 695
 - CFN #0 Frame Pulse (RPS10) softkey
See wideband CDMA base band generator subsystem keys and fields
 - Chan Code field, 833, 842
 - Chan Code softkey, 832
 - Change field, 481
 - Channel Code field, 882, 926
See wideband CDMA base band generator subsystem keys and fields
 - Channel softkey, 339, 347
 - Channel State field, 881, 889
 - Channel State Off On softkey, 901
See wideband CDMA base band generator subsystem keys and fields
 - ChCode Ctl field, 914
 - ChCode Dat field, 914
 - Chip Clock (RPS1) softkey
See wideband CDMA base band generator subsystem keys and fields
 - Chip Rate field, 451, 485, 831, 872
 - Chip Rate softkey, 218, 323
 - Class Ib Bit Error softkey, 419, 420
 - Class II Bit Error softkey, 420
 - Class II RBER softkey, 366, 367
 - Class Ib RBER softkey, 366, 367
 - Clear Header softkey, 208, 221, 245, 272, 291, 309, 325, 437
 - Clip |I+jQ| To softkey, 217, 241
 - Clip |I| To softkey, 216, 240, 321, 332
 - Clip |Q| To softkey, 217, 241, 322, 332
 - Clip At PRE POST FIR Filter, 216
 - Clip At PRE POST FIR Filter softkey, 240, 321
 - Clip Type |I+jQ| To softkey, 322, 333
 - Clipping Type |I+jQ| |I|, |Q| softkey, 217, 241, 290, 322, 333
 - Clock Delay Off On softkey, 384
 - Clock Polarity Neg Pos softkey, 385
 - Clock Time Delay softkey, 384
 - Clock/Gate Delay softkey, 435
 - command tree, SCPI, 7
 - Common Mode I/Q Offset softkey, 26
 - communication subsystem keys
Default Gateway, 72

Index

communication subsystem keys (*continued*)
 GPIB Address, 72
 Hostname, 73
 IP Address, 73
 Meter Address, 74
 Meter Channel A B, 74
 Meter Timeout, 75
 Power Meter, 75
 Reset RS-232, 76
 RS-232 Baud Rate, 76
 RS-232 ECHO Off On, 76
 RS-232 Timeout, 77
 Subnet Mask, 73
Comp Mode Start Trigger Polarity Neg Pos softkey, 964
Comp Mode Stop Trigger Polarity Neg Pos softkey, 964
Compressed Frame (RPS8) softkey
 See wideband CDMA base band generator subsystem keys and fields
Compressed Mode Start Trigger softkey, 963
Compressed Mode Stop Trigger softkey, 964
Config softkey, 253, 257
Configure Cal Array softkey, 20
Continuous PN9 softkey, 436
Continuous softkey
 See CDMA ARB subsystem keys
 See CDMA2000 ARB subsystem keys
 See custom subsystem keys
 See DECT subsystem keys
 See Dmodulation subsystem keys
 See dual ARB subsystem keys
 See EDGE subsystem keys
 See GSM subsystem keys
 See NADC subsystem keys
 See PDC subsystem keys
 See PHS subsystem keys
 See TETRA subsystem keys
 See wideband CDMA ARB subsystem keys
Copy File softkey, 104, 109, 110, 123
correction subsystem keys
 Configure Cal Array, 20
 Flatness Off On, 22
 Load From Selected File, 20
 Preset List, 21
 Store To File, 21
CPICH softkey, 340
CRC Size field, 858, 969, 977
creating a waveform, multitone, 308
CS-1 softkey, 658

CSID softkey, 753, 773
Ctrl Beta field, 902
Ctrl Pwr field, 903
Custom CDMA Multicarrier softkey, 231
Custom CDMA State softkey, 229, 232
Custom CDMA2000 Carrier softkey, 248, 250
Custom CDMA2000 Multicarrier softkey, 249
Custom CDMA2000 State softkey, 255
Custom Digital Mod State softkey, 280, 282
Custom Off On softkey, 544
Custom softkey, 562, 573, 620, 663, 757
custom subsystem keys
 16 1's & 16 0's, 531
 16PSK, 537
 16QAM, 537
 256QAM, 537
 2-Lvl FSK, 537
 32 1's & 32 0's, 531
 32QAM, 537
 4 1's & 4 0's, 531
 4-Lvl FSK, 537
 4QAM, 537
 64 1's & 64 0's, 531
 64QAM, 537
 8 1's & 8 0's, 531
 8PSK, 537
 APCO 25 C4FM, 534
 APCO 25 w/CQPSK, 540
 BBG Data Clock Ext Int, 523
 BBG Ref Ext Int, 533
 Bluetooth, 540
 BPSK, 537
 Bus, 542
 CDPD, 540
 Continuous, 540
 Custom Off On, 544
 D8PSK, 537
 Diff Data Encode Off On, 531
 Ext, 531, 542
 Ext BBG Ref Freq, 533
 Ext Data Clock Normal Symbol, 532
 Ext Delay Bits, 543
 Ext Delay Off On, 543
 Ext Polarity Neg Pos, 544
 Fall Delay, 526, 527
 Fall Time, 526, 527
 Filter Alpha, 523
 Filter BbT, 524
 FIX4, 531
 Free Run, 541

custom subsystem keys (*continued*)
 Freq Dev, 535
 Gate Active Low High, 541
 Gated, 540
 Gaussian, 534
 Gray Coded QPSK, 537
 I/Q Scaling, 535
 IS-95, 534
 IS-95 Mod, 534
 IS-95 Mod w/EQ, 534
 IS-95 OQPSK, 537
 IS-95 QPSK, 537
 IS-95 w/EQ, 534
 MSK, 537
 None, 540
 Nyquist, 534
 Optimize FIR For EVM ACP, 530
 OQPSK, 537
 $\pi/4$ DQPSK, 537
 Patt Trig In 1, 542
 Patt Trig In 2, 542
 Phase Dev, 536
 Phase Polarity Normal Invert, 538
 PN11, 531
 PN15, 531
 PN20, 531
 PN23, 531
 PN9, 531
 QPSK, 537
 Rectangle, 534
 Reset & Run, 541
 Rise Delay, 528
 Rise Time, 529
 Root Nyquist, 534
 Single, 540
 Symbol Rate, 538
 Trigger & Run, 541
 Trigger Key, 542
 UN3/4 GSM Gaussian, 534
 User File, 531
 User FIR, 534
 User FSK, 536, 537
 User I/Q, 537
 Custom TS softkey, 619, 657, 660
 Custom WCDMA State softkey, 345
 Cycle Count softkey, 428
 Cycle End softkey, 368

D

D8PSK softkey
 See custom subsystem keys
 See DECT subsystem keys
 See Dmodulation subsystem keys
 See EDGE subsystem keys
 See GSM subsystem keys
 See NADC subsystem keys
 See PDC subsystem keys
 See PHS subsystem keys
 See TETRA subsystem keys
 Data Beta field, 906
 Data Clock Out Neg Pos softkey, 132
 Data Clock Polarity Neg Pos softkey, 129, 131, 134
 Data field, 884, 982
 Data Mode Raw Enc TLM softkey, 629
 Data Out Polarity Neg Pos softkey, 133, 135
 Data Polarity Neg Pos softkey, 129, 131, 385
 Data Pwr field, 908
 Data Rate field, 844
 data subsystem keys
 Error Out, 378
 PN9, 378
 Reference Out, 378
 DATA/CLK/SYNC Rear Outputs Off On softkey, 134
 DAYLT field, 472
 dBm softkey, 169
 dBuV softkey, 169
 dBuVemf softkey, 169
 DC softkey, 190
 DCFM/DC Φ M Cal softkey, 68
 DCH1 softkey, 869
 DCH2 softkey, 869
 DCH3 softkey, 869
 DCH4 softkey, 869
 DCH5 softkey, 869
 DCH6 softkey, 869
 decimal values, 17
 Dect Off On softkey, 595
 DECT softkey, 280, 282
 DECT subsystem keys
 16 1's & 16 0's, 555, 562, 565, 568, 570, 572, 574, 578, 581, 584, 586
 16-Lvl FSK, 555
 16PSK, 561
 16QAM, 561
 256QAM, 561
 2-Lvl FSK, 561

Index

DECT subsystem keys (*continued*)

32 1's & 32 0's, 555, 562, 565, 568, 570, 572, 574, 578, 581, 584, 586
32QAM, 561
4 1's & 4 0's, 555, 562, 565, 568, 570, 572, 574, 578, 581, 584, 586
4-Lvl FSK, 561
4QAM, 561
64 1's & 64 0's, 555, 562, 565, 568, 570, 572, 574, 578, 581, 584, 586
64QAM, 561
8 1's & 8 0's, 555, 562, 565, 568, 570, 572, 574, 578, 581, 584, 586
8-Lvl FSK, 555
8PSK, 561
A field, 563, 566, 569, 571, 575, 576, 577, 580, 582, 585
All Timeslots, 588
APCO 25 C4FM, 558
BBG Data Clock Ext Int, 546
BBG Ref Ext Int, 557
Begin Frame, 588
Begin Timeslot #, 588, 589
BPSK, 561
Bus, 587, 593
Continuous, 591
Custom, 562, 573
D8PSK, 561
Data Format Pattern Framed, 554
Dect Off On, 595
DM0, 562, 565, 568, 570, 572, 574, 578, 581, 584, 586
DM1, 562, 565, 568, 570, 572, 574, 578, 581, 584, 586
Dummy Bearer 1, 573
Dummy Bearer 2, 573
Ext, 555, 562, 565, 568, 570, 572, 574, 578, 581, 584, 586, 587, 593
Ext Data Clock Normal Symbol, 556
Ext Delay Bits, 594
Ext Delay Off On, 595
Ext Polarity Neg Pos, 594
FACC, 562, 565, 568, 570, 572, 574, 578, 581, 584, 586
Fall Delay, 549, 550
Fall Time, 549, 550
FDEV1_FS, 562, 565, 568, 570, 572, 574, 578, 581, 584, 586

DECT subsystem keys (*continued*)

FDEV1_HS, 562, 565, 568, 570, 572, 574, 578, 581, 584, 586
FDEV2_FS, 562, 565, 568, 570, 572, 574, 578, 581, 584, 586
Filter Alpha, 546
Filter BbT, 547
FIX4, 555, 562, 563, 565, 568, 570, 572, 573, 574, 578, 579, 581, 582, 584, 586
Free Run, 592
Freq Dev, 559
Gate Active Low High, 592
Gated, 591
Gaussian, 558
Gray Coded QPSK, 561
I/Q Scaling, 559
IS-95, 558
IS-95 Mod, 558
IS-95 Mod w/EQ, 558
IS-95 OQPSK, 561
IS-95 QPSK, 561
IS-95 w/EQ, 558
Low Capacity, 562, 573
Low Capacity with Z field, 562, 573
MSK, 561
Nyquist, 558
Optimize FIR For EVM ACP, 554
OQPSK, 561
P, 564, 567, 569, 571, 575, 576, 577, 580, 583, 585
 $\pi/4$ DQPSK, 561
Patt Trig In 1, 593
Patt Trig In 2, 593
Phase Dev, 560
Phase Polarity Normal Invert, 562
PN11, 555, 562, 565, 568, 570, 572, 574, 581, 584, 586
PN15, 555, 562, 565, 568, 570, 572, 574, 578, 581, 584, 586
PN20, 555, 562, 565, 568, 570, 572, 574, 581, 584, 586
PN23, 555, 562, 565, 568, 570, 572, 574, 581, 584, 586
PN9, 555, 562, 565, 568, 570, 572, 574, 578, 581, 584, 586
PN9 Mode Normal Quick, 548
QPSK, 561
Recall Secondary Frame State, 587
Rectangle, 558

- DECT subsystem keys (*continued*)
 - Reset & Run, 592
 - Restore DECT Factory Default, 556
 - Rise Delay, 551, 552
 - Rise Time, 552, 553
 - Root Nyquist, 558
 - S, 564, 567, 569, 572, 575, 577, 578, 581, 583, 585
 - Save Secondary Frame State, 587
 - Secondary Frame Off On, 588
 - Sine, 530, 553
 - Single, 591
 - Symbol Rate, 590
 - Sync Out Offset, 589
 - Timeslot Ampl Main Delta, 566, 579
 - Timeslot Off On, 566, 579
 - Traffic Bearer, 562, 573
 - Traffic Bearer with Z field, 562, 573
 - Trigger & Run, 592
 - Trigger Key, 587, 593
 - UN3/4 GSM Gaussian, 558
 - User File, 530, 553, 555, 562, 565, 568, 570, 572, 574, 578, 581, 584, 586
 - User FIR, 558
 - User FSK, 560, 561
 - User I/Q, 561
- Default Gateway softkey, 72
- Delay Bits softkey, 427
- Delete All NVWFM Files softkey, 123
- Delete All WFM Files softkey, 124
- Delete All WFM1 Files softkey, 124
- Delete File softkey, 124
- Delete softkeys
 - Delete All ARB CDMA Files, 112
 - Delete All ARB DMOD Files, 112
 - Delete All ARB DWCDMA Files, 113
 - Delete All ARB FCDMA Files, 113
 - Delete All ARB MCDMA Files, 115
 - Delete All ARB MDMOD Files, 115
 - Delete All ARB MDWCDMA Files, 115
 - Delete All ARB MFCDMA Files, 116
 - Delete All ARB MTONE Files, 116
 - Delete All ARB RCDMA Files, 116
 - Delete All ARB UWCDMA Files, 118
 - Delete All Binary Files, 111
 - Delete All Bit Files, 112
 - Delete All Files, 111
 - Delete All FIR Files, 113
 - Delete All FSK Files, 114
- Delete softkeys (*continued*)
 - Delete All I/Q Files, 114
 - Delete All List Files, 114
 - Delete All SEQ Files, 117
 - Delete All SHAPE Files, 117
 - Delete All State Files, 117
 - Delete All UFLT Files, 118
 - Delete File, 118
- Diagnostic Info softkey, 78, 79, 80, 81, 87
- diagnostic subsystem keys
 - Diagnostic Info, 78, 79, 80, 81
 - Installed Board Info, 78
 - Options Info, 80
- Diff Data Encode Off On softkey, 531, 647
- Diff. Mode I Offset softkey, 27
- Diff. Mode Q Offset softkey, 27
- Digital Modulation Off On softkey, 289
- digital modulation subsystem keys
 - ALC BW Normal Narrow, 23
 - BBG1, 25, 38
 - Burst Envelope Int Ext Off, 23
 - Common Mode I/Q Offset, 26
 - Diff. Mode I Offset, 27
 - Diff. Mode Q Offset, 27
 - Ext 50 Ohm, 25, 38
 - Ext 600 Ohm, 25, 38
 - Ext In 600 Ohm I Offset, 28
 - Ext In 600 Ohm Q Offset, 29
 - High Crest Mode Off On, 24
 - I Offset, 30
 - I/Q Adjustments Off On, 32
 - I/Q Gain Balance Source 1, 29
 - I/Q Off On, 38
 - I/Q Out Gain Balance, 28
 - I/Q Output Atten, 29
 - I/Q Skew, 32
 - Int I/Q Skew Corrections Off Int Ext, 37
 - Int Phase Polarity Normal Invert, 25, 36
 - Off, 25, 38
 - Q Offset, 30
 - Quadrature Skew, 31
- discrete response data, 12
- discrete SCPI parameters, 10
- display contrast hardkeys, 84
- display subsystem keys
 - Brightness, 83
 - display contrast, 84
 - Inverse Video Off On, 84
 - Update in Remote Off On, 85
- DL Reference 1.1 softkey, 962

Index

- DL Reference 1.2 softkey, [962](#)
- DL Reference 2.1 softkey, [962](#)
- DL Reference 2.2 softkey, [962](#)
- DM0 softkey
 - See DECT subsystem keys
- DM1 softkey
 - See DECT subsystem keys
- DMOD softkey, [94](#)
- Dmodulation subsystem keys
 - # of Carriers, [280](#), [283](#)
 - 16PSK, [276](#)
 - 16QAM, [276](#)
 - 2.100 MHz, [273](#)
 - 256QAM, [276](#)
 - 2-Lvl FSK, [276](#)
 - 32QAM, [276](#)
 - 40.000 MHz, [269](#), [273](#)
 - 4-Lvl FSK, [276](#)
 - 4QAM, [276](#)
 - 64QAM, [276](#)
 - 8PSK, [276](#)
 - APCO 25 C4FM, [270](#)
 - APCO 25 w/C4FM, [280](#), [282](#)
 - APCO 25 w/C4QPSK, [280](#), [282](#)
 - ARB Reference Ext Int, [278](#)
 - ARB Sample Clock, [279](#)
 - BPSK, [276](#)
 - Bus, [286](#)
 - Carrier Phases Fixed Random, [281](#)
 - CDPD, [280](#), [282](#)
 - Clear Header, [272](#)
 - Continuous, [285](#)
 - Custom Digital Mod State, [280](#), [282](#)
 - D8PSK, [276](#)
 - DECT, [280](#), [282](#)
 - Digital Modulation Off On, [289](#)
 - EDGE, [280](#), [282](#)
 - Ext, [286](#)
 - Ext Delay Off On, [287](#)
 - Ext Delay Time, [287](#)
 - Ext Polarity Neg Pos, [288](#)
 - Filter Alpha, [271](#)
 - Filter BbT, [271](#)
 - Free Run, [285](#)
 - Freq Dev, [275](#)
 - Freq Spacing, [280](#)
 - Gate Active Low High, [286](#)
 - Gated, [285](#)
 - Gaussian, [270](#)
 - Dmodulation subsystem keys (*continued*)
 - Gray Coded QPSK, [276](#)
 - GSM, [280](#), [282](#)
 - I/Q Mod Filter Manual Auto, [274](#)
 - I/Q Output Filter Manual Auto, [269](#)
 - Immediate, [279](#)
 - Initialize Table, [282](#)
 - Insert Row, [250](#), [282](#)
 - IS-2000 SR3 DS, [270](#)
 - IS-95, [270](#)
 - IS-95 Mod, [270](#)
 - IS-95 Mod w/EQ, [270](#)
 - IS-95 OQPSK, [276](#)
 - IS-95 QPSK, [276](#)
 - IS-95 w/EQ, [270](#)
 - Load/Store, [281](#)
 - Marker 1, [274](#), [275](#)
 - Marker 1 Polarity Neg Pos, [276](#)
 - Marker 2, [274](#), [275](#)
 - Marker 2 Polarity Neg Pos, [277](#)
 - Marker 3, [274](#), [275](#)
 - Marker 3 Polarity Neg Pos, [277](#)
 - Marker 4, [274](#), [275](#)
 - Marker 4 Polarity Neg Pos, [277](#)
 - Modulator Atten Manual Auto, [273](#)
 - MSK, [276](#)
 - Multicarrier Off On, [280](#)
 - NADC, [280](#), [282](#)
 - None, [274](#), [275](#)
 - Nyquist, [270](#)
 - Off, [279](#)
 - On, [279](#)
 - Optimize FIR For EVM ACP, [272](#)
 - OQPSK, [276](#)
 - $\pi/4$ DQPSK, [276](#)
 - Patt Trig In 1, [288](#)
 - Patt Trig In 2, [288](#)
 - PDC, [280](#), [282](#)
 - PHS, [280](#), [282](#)
 - PWT, [280](#), [282](#)
 - QPSK, [276](#)
 - Rectangle, [270](#)
 - Reference Freq, [213](#), [278](#)
 - Reset & Run, [285](#)
 - Root Nyquist, [270](#)
 - Save Setup To Header, [272](#)
 - Select File, [250](#), [280](#)
 - Single, [285](#)
 - Store Custom Dig Mod State, [283](#)

- Dmodulation subsystem keys (*continued*)
- Symbol Rate, 283
 - TETRA, 280, 282
 - Through, 269, 273
 - Trigger & Run, 285
 - Trigger Key, 286
 - UN3/4 GSM Gaussian, 270
 - User FIR, 270
 - User FSK, 276
 - User I/Q, 276
 - WCDMA, 270
- Dn Custom Cont softkey, 812
- Dn Normal Cont softkey, 812
- Dn Normal Disc softkey, 812
- Dn Sync Cont softkey, 812
- Dn Sync Disc softkey, 812
- Do Power Search softkey, 59, 60
- Doppler Shift softkey, 630
- Down Custom softkey, 698, 732
- Down TCH All softkey, 698, 732
- Down TCH softkey, 698, 732
- Down/Up softkey, 839, 879
- Downlink MCS-1 softkey, 658
- Downlink MCS-5 softkey, 614
- Downlink MCS-9 softkey, 614
- DPCCH + 1 DPDCH softkey, 345
- DPCCH + 2 DPDCH softkey, 345
- DPCCH + 3 DPCCH softkey, 345
- DPCCH + 4 DPDCH softkey, 345
- DPCCH + 5 DPDCH softkey, 345
- DPCCH Power field, 876
- 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, 345, 869, 893
- DPCH + 1 softkey, 823, 824
- DPCH + 2 softkey, 823, 824
- DPCH Channel Balance softkey, 831
- DPCH softkey, 340
- DPDCH Power field, 884
- 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, 869
- Drift Deviation softkey, 439
- dual ARB subsystem
- Through, 290
- dual ARB subsystem keys
- # Skipped Points, 296
 - 2.100 MHz, 293
 - 40.000 MHz, 290, 293
 - ARB Off On, 307
 - ARB Reference Ext Int, 24, 25, 33, 34, 35, 36, 299
 - ARB Sample Clock, 301
 - Build New Waveform Sequence, 301
 - Bus, 304
 - Clear Header, 291
 - Clipping Type |I+jQ| |I|,|Q|, 290
 - Continuous, 304
 - Edit Repetitions, 301
 - Edit Selected Waveform Sequence, 301
 - Ext, 304
 - Ext Delay Off On, 306
 - Ext Delay Time, 305
 - Ext Polarity Neg Pos, 306
 - First Mkr Point, 294, 296
 - Free Run, 303
 - Gate, 302
 - Gate Active Low High, 303
 - I/Q Mod Filter Manual Auto, 294
 - I/Q Output Filter Manual Auto, 292
 - Immediate, 300
 - Last Mkr Point, 294, 296
 - Marker 1, 297
 - Marker 1 2, 294, 296
 - Marker 1 Polarity Neg Pos, 298
 - Marker 2, 297
 - Marker 2 Polarity Neg Pos, 298
 - Marker 3, 297
 - Marker 3 Polarity Neg Pos, 298
 - Marker 4, 297
 - Marker 4 Polarity Neg Pos, 299
 - Modulator Atten Manual Auto, 293
 - None, 297
 - Off, 300
 - On, 300
 - Patt Trig In 1, 305
 - Patt Trig In 2, 305
 - Reference Freq, 299
 - Reset & Run, 303
 - Save Setup To Header, 292
 - Scaling, 301
 - Segment Advance, 302

Index

dual ARB subsystem keys (*continued*)

- Select Waveform, 306
 - Set Marker Off All Points, 295
 - Single, 302, 304
 - Through, 290, 293
 - Toggle Marker 1, 301
 - Trigger & Run, 303
 - Trigger Key, 304
 - Waveform Runtime Scaling, 300
- Dual-Sine softkey, 175, 183, 190, 196
- Dummy Bearer 1 softkey, 573
- Dummy Bearer 2 softkey, 573
- Dummy softkey, 663
- DWCDMA softkey, 95
- Dwell Type List Step softkey, 52

E

- Eb/No field, 899
- Eb/No value (dB) field, 869
- EbNo field
- See CDMA2000 BBG subsystem keys and fields
- Ec/No value field, 823, 900
- EcNo field, 465, 501, 506
- EDGE BERT Off On softkey, 409
- EDGE Off On softkey, 628
- EDGE softkey, 280, 282, 607
- EDGE subsystem keys
- 16 1's & 16 0's, 604, 613, 614
 - 16PSK, 610
 - 16QAM, 610
 - 256QAM, 610
 - 2-Lvl FSK, 610
 - 32 1's & 32 0's, 604, 613, 614
 - 32QAM, 610
 - 4 1's & 4 0's, 604, 613, 614
 - 4-Lvl FSK, 610
 - 4QAM, 610
 - 64 1's & 64 0's, 604, 613, 614
 - 64QAM, 610
 - 8 1's & 8 0's, 604, 613, 614
 - 8PSK, 610
 - All Timeslots, 621
 - APCO 25 C4FM, 607
 - BBG Ref Ext Int, 606
 - Begin Frame, 621
 - Begin Timeslot #, 621, 622
 - BPSK, 610
 - Bus, 612, 625
 - Continuous, 624

EDGE subsystem keys (*continued*)

- Custom, 620
- Custom TS, 619
- D8PSK, 610
- Data Format Pattern Framed, 603
- Downlink MCS-5, 614
- Downlink MCS-9, 614
- EDGE, 607
- EDGE Off On, 628
- E-TCH/F43.2, 614
- Ext, 604, 612, 613, 614, 625
- Ext BBG Ref Freq, 606
- Ext Data Clock Ext Int, 596
- Ext Data Clock Normal Symbol, 605
- Ext Delay Bits, 627
- Ext Delay Off On, 627
- Ext Polarity Neg Pos, 627
- Fall Delay, 597, 598
- Fall Time, 598, 599
- Filter Alpha, 596
- Filter BbT, 597
- FIX4, 604, 613, 614, 616
- Free Run, 624
- Freq Dev, 608
- G, 614, 618
- Gate Active Low High, 625
- Gated, 624
- Gaussian, 607
- Gray Coded QPSK, 610
- I/Q Scaling, 608
- IS-95, 607
- IS-95 Mod, 607
- IS-95 Mod w/EQ, 607
- IS-95 OQPSK, 610
- IS-95 QPSK, 610
- IS-95 w/EQ, 607
- MSK, 610
- Normal, 620
- Normal All, 620
- Nyquist, 607
- Optimize FIR For EVM ACP, 603
- OQPSK, 610
- $\pi/4$ DQPSK, 610
- Patt Trig In 1, 626
- Patt Trig In 2, 626
- Phase Dev, 609
- Phase Polarity Normal Invert, 611
- PN11, 604, 613, 614
- PN15, 604, 613, 614, 615, 616, 617, 618

- EDGE subsystem keys (*continued*)
 - PN20, 604, 613, 614
 - PN23, 604, 613, 614
 - PN9, 604, 613, 614, 615, 616, 617, 618
 - QPSK, 610
 - Recall Secondary Frame State, 611
 - Rectangle, 607
 - Reset & Run, 624
 - Restore EDGE Factory Default, 604
 - Rise Delay, 600
 - Rise Time, 601, 602
 - Root Nyquist, 607
 - Save Secondary Frame State, 611
 - Secondary Frame Off On, 612
 - Sine, 602
 - Single, 624
 - Symbol Rate, 622
 - Sync Out Offset, 621
 - T1, 619
 - T2, 619
 - Timeslot Ampl Main Delta, 620
 - Timeslot Off On, 620
 - Trigger & Run, 624
 - Trigger Key, 612, 625
 - TSC0, 619
 - TSC1, 619
 - TSC2, 619
 - TSC3, 619
 - TSC4, 619
 - TSC5, 619
 - TSC6, 619
 - TSC7, 619
 - UN3/4 GSM Gaussian, 607
 - Uncoded, 614
 - Uplink MCS-5, 614
 - Uplink MCS-9, 614
 - User File, 602, 604, 613, 614
 - User FIR, 607
 - User FSK, 609, 610
 - User I/Q, 610
- Edit Channel Setup softkey, 253, 257
- Edit Repetitions softkey, 301
- Edit Selected Waveform Sequence softkey, 301
- Equal Energy per Symbol softkey, 343
- Equal Powers softkey
 - See* CDMA ARB subsystem keys
 - See* CDMA2000 ARB subsystem keys
- Equal Powers softkey (continued)*
 - See* CDMA2000 BBG subsystem keys and fields
 - See* wideband CDMA base band generator subsystem keys and fields
- Error BER softkey, 979
- Error Bits field, 859
- Error Bits softkey, 970
- Error Blocks field, 861, 972
- Error Count softkey, 409
 - See* sense subsystem keys
- Error Info softkey, 157
- Error Out softkey, 378
- Error Rate softkey
 - See* calculate subsystem keys
 - See calculate* subsystem keys
- ET softkey, 656
- E-TCH/F43.2 softkey, 614
- Even Second Delay field, 451, 486
- Event 1 Polarity Neg Pos softkey, 133, 135
- Event 2 Polarity Neg Pos softkey, 133, 135
- Exceeds Any Limit softkey, 367
- Exceeds Any Thresholds softkey
 - See* sense subsystem keys
- Execute Cal softkey, 69
- Ext 50 Ohm softkey, 25, 38
- Ext 600 Ohm softkey, 25, 38
- 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, 473
- Ext Clock Rate x1 x2 x4 softkey, 821
- Ext Data Clock Ext Int softkey
 - See* EDGE subsystem keys
 - See* PDC subsystem keys
- Ext Data Clock Normal Symbol softkey
 - See* custom subsystem keys
 - See* DECT subsystem keys
 - See* EDGE subsystem keys
 - See* GSM subsystem keys
 - See* NADC subsystem keys
 - See* PDC subsystem keys
 - See* PHS subsystem keys
 - See* TETRA subsystem keys
- Ext Delay Bits softkey
 - See* custom subsystem keys

Index

Ext Delay Bits softkey (continued)

- See* DECT subsystem keys
- See* EDGE subsystem keys
- See* GSM subsystem keys
- See* NADC subsystem keys
- See* PDC subsystem keys
- See* PHS subsystem keys
- See* TETRA subsystem keys

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, [237](#), [267](#), [287](#), [305](#), [356](#)

Ext Frame Trigger Delay softkey, [392](#)

Ext In 600 Ohm I Offset softkey, [28](#)

Ext In 600 Ohm Q Offset softkey, [29](#)

Ext Polarity Neg Pos softkey

- See* CDMA ARB subsystem keys
- See* CDMA2000 ARB subsystem keys
- See* custom subsystem keys
- See* DECT subsystem keys
- See* Dmodulation subsystem keys
- See* dual ARB subsystem keys
- See* EDGE subsystem keys
- See* GSM subsystem keys
- See* NADC subsystem keys
- See* PDC subsystem keys
- See* PHS subsystem keys
- See* TETRA subsystem keys
- See* wideband CDMA ARB subsystem keys

Ext softkey

- 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

Ext softkey (continued)

- See* dual ARB subsystem keys
- See* EDGE subsystem keys
- See* frequency modulation subsystem keys
- See* GSM subsystem keys
- See* list/sweep subsystem keys
- See* low frequency output subsystem keys
- See* NADC subsystem keys
- See* PDC subsystem keys
- See* phase modulation subsystem keys
- See* PHS subsystem keys
- See* sense subsystem keys
- See* TETRA subsystem keys
- See* trigger subsystem keys
- See* wideband CDMA ARB subsystem keys
- See* wideband CDMA base band generator subsystem keys and fields

Ext softkeys

Ext Coupling DC AC, [173](#), [181](#), [194](#)

Ext Detector, [61](#)

Ext Pulse, [203](#)

Ext1, [176](#), [184](#), [197](#)

Ext2, [176](#), [184](#), [197](#)

extended numeric SCPI parameter, [9](#)

External Frame Trigger Polarity Neg Pos softkey, [393](#)

External softkey, [485](#)

F

FACC softkey

- See* DECT subsystem keys

Fail Hold softkey, [368](#)

Fall Delay softkey

- See* custom subsystem keys
- See* DECT subsystem keys
- See* EDGE subsystem keys
- See* GSM subsystem keys
- See* NADC subsystem keys
- See* PDC subsystem keys
- See* PHS subsystem keys
- See* TETRA subsystem keys

Fall Time softkey

- See* custom subsystem keys
- See* DECT subsystem keys
- See* EDGE subsystem keys
- See* GSM subsystem keys
- See* NADC subsystem keys
- See* PDC subsystem keys
- See* PHS subsystem keys

Fall Time softkey (continued)

See TETRA subsystem keys

Falling softkey, [521](#)

FBI State field, [875](#)

FCDMA softkey, [95](#)

FCOR softkey, [800](#), [805](#)

FCorr softkey, [663](#)

FDEV1_FS softkey

See DECT subsystem keys

FDEV1_HS softkey

See DECT subsystem keys

FDEV2_FS softkey

See DECT subsystem keys

Field 1 field, [462](#)

Field 2 field, [463](#)

Field 3 field, [463](#)

file

systems, [121](#)

types, [121](#)

Filter Alpha softkey, [891](#)

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, [891](#)

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

Filter BbT softkey, 891 (continued)

See PHS subsystem keys

See TETRA subsystem keys

See wideband CDMA ARB subsystem keys

See wideband CDMA base band generator subsystem keys and fields

FIR softkey, [96](#)

First Mkr Point softkey, [294](#), [296](#)

First Spread Code softkey, [339](#), [347](#)

FIX softkey, [875](#)

FIX4 softkey, [874](#), [903](#), [907](#)

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, [870](#)

Flatness Off On softkey, [22](#)

FM softkeys

FM Dev, [185](#)

FM Dev Couple Off On, [185](#)

FM Off On, [184](#)

FM Path 1 2, [180](#)

FM Stop Rate, [182](#)

FM Sweep Rate, [183](#)

FM Tone 2 Amp Percent of Peak, [182](#)

FM Tone 2 Rate, [182](#)

forgiving listening and precise talking, [8](#)

Frame Clock Polarity Neg Pos softkey, [889](#)

Frame Count softkey

See sense subsystem keys

Frame Erasure softkey, [420](#)

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, [510](#)

Frame Repeat Single Cont softkey, [688](#)

Index

- Frame Sync Trigger Mode Single Cont softkey, [956](#)
 - Frame Trigger Source Int Ext softkey, [393](#)
 - Free Run softkey
 - See amplitude modulation subsystem keys
 - See CDMA ARB subsystem keys
 - See CDMA2000 ARB subsystem keys
 - See custom subsystem keys
 - See DECT subsystem keys
 - See Dmodulation subsystem keys
 - See dual ARB subsystem keys
 - See EDGE subsystem keys
 - See frequency modulation subsystem keys
 - See GSM subsystem keys
 - See list/sweep subsystem keys
 - See low frequency output subsystem keys
 - See NADC subsystem keys
 - See PDC subsystem keys
 - See phase modulation subsystem keys
 - See PHS subsystem keys
 - See TETRA subsystem keys
 - See trigger subsystem keys
 - See wideband CDMA ARB subsystem keys
 - Freq Dev softkey
 - See custom subsystem keys
 - See DECT subsystem keys
 - See Dmodulation subsystem keys
 - See EDGE subsystem keys
 - See GSM subsystem keys
 - See NADC subsystem keys
 - See PDC subsystem keys
 - See TETRA subsystem keys
 - Freq Drift Type Linear Sine softkey, [440](#)
 - Freq Offset softkey, [441](#)
 - Freq softkeys
 - Freq, [44](#)
 - Freq Multiplier, [44](#)
 - Freq Offset, [43](#), [45](#)
 - Freq Ref Off On, [46](#)
 - Freq Ref Set, [45](#)
 - Freq Start, [46](#), [47](#)
 - Freq Spacing softkey, [280](#), [317](#), [318](#)
 - Frequency hardkey, [40](#), [42](#), [43](#), [44](#), [47](#), [48](#)
 - frequency modulation subsystem keys
 - Bus, [183](#)
 - Dual-Sine, [183](#)
 - Ext, [183](#)
 - Ext Coupling DC AC, [181](#)
 - Ext1, [184](#)
 - Ext2, [184](#)
 - frequency modulation subsystem keys
 - (continued)
 - FM Dev, [185](#)
 - FM Dev Couple Off On, [185](#)
 - FM Off On, [184](#)
 - FM Path 1 2, [180](#)
 - FM Stop Rate, [182](#)
 - FM Sweep Rate, [183](#)
 - FM Tone 2 Amp Percent of Peak, [182](#)
 - FM Tone 2 Rate, [182](#)
 - Free Run, [183](#)
 - Incr Set, [180](#)
 - Internal 1, [184](#)
 - Internal 2, [184](#)
 - Noise, [183](#)
 - Ramp, [183](#)
 - Sine, [183](#)
 - Square, [183](#)
 - Swept-Sine, [183](#)
 - Triangle, [183](#)
 - Trigger Key, [183](#)
 - frequency subsystem keys
 - Adjust Phase, [49](#)
 - Freq, [44](#)
 - Freq Multiplier, [44](#)
 - Freq Offset, [43](#), [45](#)
 - Freq Ref Off On, [46](#)
 - Freq Ref Set, [45](#)
 - Freq Start, [46](#), [47](#)
 - Frequency, [40](#), [42](#), [43](#), [44](#), [47](#), [48](#)
 - Phase Ref Set, [48](#)
 - Ref Oscillator Source Auto Off On, [49](#)
 - FSK softkey, [96](#)
 - FSYNCH Type field, [477](#)
 - Full softkey, [502](#), [507](#)
 - Function Generator softkey, [191](#)
- ## G
- G softkey, [614](#), [618](#)
 - Gain Unit dB Lin Index softkey, [348](#)
 - 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

- Gate Active Low High softkey (continued)*
 - 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, 381
- Gate Delay Off On softkey, 382
- Gate Mode Time Clk softkey, 381
- Gate Off On softkey, 383
- Gate Polarity Neg Pos softkey, 383
- Gate softkey, 302
- Gate Time Delay softkey, 382
- Gated softkey
 - See CDMA ARB subsystem keys
 - See CDMA2000 ARB subsystem keys
 - See custom subsystem keys
 - See DECT subsystem keys
 - See Dmodulation subsystem keys
 - See EDGE subsystem keys
 - See GSM subsystem keys
 - See NADC subsystem keys
 - See PDC subsystem keys
 - See PHS subsystem keys
 - See TETRA subsystem keys
 - See wideband CDMA ARB subsystem keys
- Gaussian softkey
 - See CDMA ARB subsystem keys
 - See CDMA2000 ARB subsystem keys
 - See CDMA2000 BBG subsystem keys and fields
 - See custom subsystem keys
 - See DECT subsystem keys
 - See Dmodulation subsystem keys
 - See EDGE subsystem keys
 - See GPS subsystem keys
 - See GSM subsystem keys
 - See NADC subsystem keys
 - See PDC subsystem keys
 - See PHS subsystem keys
 - See TETRA subsystem keys
 - See wideband CDMA ARB subsystem keys
 - See wideband CDMA base band generator subsystem keys and fields
- Goto Row softkey, 315
- GPIB Address softkey, 72
- GPS Ref (f0) softkey, 634
- GPS Ref Clk Ext Int softkey, 634
- GPS subsystem
 - Data Mode Raw Enc TLM, 629
 - GPS subsystem keys
 - APCO 25 C4FM, 630
 - Data Mode Raw Enc TLM, 629
 - Doppler Shift, 630
 - Filter Alpha, 631
 - Filter BbT, 632
 - FIX4, 629
 - Gaussian, 630
 - GPS Ref (f0), 634
 - GPS Ref Clk Ext Int, 634
 - IQ Phase Normal Invert, 632
 - IS-95, 630
 - IS-95 Mod, 630
 - IS-95 Mod w/EQ, 630
 - IS-95 w/EQ, 630
 - Nyquist, 630
 - Optimize FIR For EVM ACP, 632
 - P Code Pwr, 633
 - PN15, 629
 - PN9, 629
 - Ranging Code C/A P C/A+P, 633
 - Real-time GPS Off On, 635
 - Rectangle, 630
 - Root Nyquist, 630
 - Satellite ID, 635
 - UN3/4 GSM Gaussian, 630
 - User File, 629
 - User FIR, 630
- 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, 423
- GSM Off On softkey, 670
- GSM softkey, 280, 282
- GSM subsystem keys
 - 16 1's & 16 0's, 646, 655, 657, 658, 662
 - 16PSK, 652
 - 16QAM, 652
 - 256QAM, 652
 - 2-Lvl FSK, 652
 - 32 1's & 32 0's, 646, 655, 657, 658, 662
 - 32QAM, 652

Index

GSM subsystem keys (*continued*)

4 1's & 4 0's, [646](#), [655](#), [657](#), [658](#), [662](#)
4-Lvl FSK, [652](#)
4QAM, [652](#)
64 1's & 64 0's, [646](#), [655](#), [657](#), [658](#), [662](#)
64QAM, [652](#)
8 1's & 8 0's, [646](#), [655](#), [657](#), [658](#), [662](#)
8PSK, [652](#)
Access, [663](#)
All Timeslots, [663](#)
APCO 25 C4FM, [649](#)
BBG Data Clock Ext Int, [636](#)
BBG Ref Ext Int, [648](#)
Begin Frame, [663](#)
Begin Timeslot #, [663](#), [664](#)
BPSK, [652](#)
Bus, [654](#), [668](#)
Continuous, [666](#)
CS-1, [658](#)
Custom, [663](#)
Custom TS, [657](#), [660](#)
D8PSK, [652](#)
Data Format Pattern Framed, [645](#)
Diff Data Encode Off On, [647](#)
Downlink MCS-1, [658](#)
Dummy, [663](#)
ET, [656](#)
Ext, [646](#), [654](#), [655](#), [657](#), [658](#), [662](#), [668](#)
Ext BBG Ref Freq, [557](#), [649](#)
Ext Data Clock Normal Symbol, [648](#)
Ext Delay Bits, [669](#)
Ext Delay Off On, [670](#)
Ext Polarity Neg Pos, [669](#)
Fall Delay, [639](#), [640](#)
Fall Time, [640](#), [641](#)
FCorr, [663](#)
Filter Alpha, [636](#)
Filter BbT, [637](#)
FIX4, [646](#), [655](#), [657](#), [658](#), [659](#), [662](#)
Free Run, [667](#)
Freq Dev, [650](#)
Gate Active Low High, [667](#)
Gated, [666](#)
Gaussian, [649](#)
Gray Coded QPSK, [652](#)
GSM Off On, [670](#)
I/Q Scaling, [650](#)
IS-95, [649](#)
IS-95 Mod, [649](#)

GSM subsystem keys (*continued*)

IS-95 Mod w/EQ, [649](#)
IS-95 OQPSK, [652](#)
IS-95 QPSK, [652](#)
IS-95 w/EQ, [649](#)
MSK, [652](#)
Normal, [663](#)
Normal All, [663](#)
Nyquist, [649](#)
Optimize FIR For EVM ACP, [645](#)
OQPSK, [652](#)
 $\pi/4$ DQPSK, [652](#)
Patt Trig In 1, [668](#)
Patt Trig In 2, [668](#)
Phase Dev, [651](#)
Phase Polarity Normal Invert, [653](#)
PN11, [646](#), [662](#)
PN15, [646](#), [655](#), [657](#), [658](#), [659](#), [660](#), [662](#)
PN20, [646](#), [662](#)
PN23, [646](#), [662](#)
PN9, [646](#), [655](#), [657](#), [658](#), [659](#), [660](#), [662](#)
PN9 Mode Normal Quick, [639](#)
QPSK, [652](#)
Recall Secondary Frame State, [653](#)
Rectangle, [649](#)
Reset & Run, [667](#)
Restore Factory Default, [646](#)
Rise Delay, [642](#)
Rise Time, [643](#)
Root Nyquist, [649](#)
S, [660](#)
Save Secondary Frame State, [654](#)
Secondary Frame Off On, [655](#)
Sine, [644](#)
Single, [666](#)
SS, [656](#)
Symbol Rate, [665](#)
Sync, [663](#)
Sync Out Offset, [664](#)
TCH/FS, [658](#)
Timeslot Ampl Main Delta, [661](#)
Timeslot Off On, [661](#)
Trigger & Run, [667](#)
Trigger Key, [654](#), [668](#)
TS, [662](#)
TSC0, [657](#), [660](#)
TSC1, [657](#), [660](#)
TSC2, [657](#), [660](#)
TSC3, [657](#), [660](#)

GSM subsystem keys (*continued*)

TSC4, 657, 660
 TSC5, 657, 660
 TSC6, 657, 660
 TSC7, 657, 660
 UN3/4 GSM Gaussian, 649
 Uplink MCS-1, 658
 User File, 644, 646, 655, 657, 658, 662
 User FIR, 649
 User FSK, 651, 652
 User I/Q, 652

H

Half softkey, 502, 507
 Header field, 458, 469
 Help Mode Single Cont softkey, 157, 158
 hexadecimal values, 17
 High Amplitude softkey
 See sense subsystem keys
 High Crest Mode Off On softkey, 24
 Higher Layer softkey, 958
 Hostname softkey, 73

I

I Offset softkey, 30
 I/Q Adjustments Off On softkey, 32
 I/Q Calibration softkey, 68
 I/Q Gain Balance Source 1 softkey, 29
 I/Q Mapping Normal Invert softkey, 222, 247, 327
 I/Q Mod Filter Manual Auto softkey, 210, 224, 247, 274, 294, 311, 328, 444
 I/Q Off On softkey, 38
 I/Q Out Gain Balance softkey, 28
 I/Q Output Atten softkey, 29
 I/Q Output Filter Manual Auto softkey, 208, 219, 242, 269, 292, 309, 326, 437
 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 Skew softkey, 32
 I/Q softkey, 97
 IDLE softkey, 754, 774

IEEE 488.2 common command keys

Diagnostic Info, 87
 RECALL Reg, 89
 Run Complete Self Test, 92
 Save Reg, 90
 Save Seq[n] Reg[nn], 90
 Select Seq, 89
 Immediate softkey, 228, 262, 279, 300
 See sense subsystem keys
 Impairments Off On softkey, 438
 Impedance 75 Ohm High softkey, 386
 Incr Set hardkey
 See amplitude modulation subsystem keys
 See frequency modulation subsystem keys
 See phase modulation subsystem keys
 Increment Scramble Code softkey, 334
 Increment Timing Offset softkey, 337
 Infinity softkey, 961
 Init Power field, 894
 Init Pwr field, 912, 929
 Initial Bit Count softkey, 408
 Initial Block Count softkey, 396, 400
 Initial Frame Count softkey, 418
 Initialize Phase Fixed Random softkey, 319
 Initialize Table softkey, 282
 input subsystem keys
 0.7V, 386
 1.4V, 386
 1.6V, 386
 2.5V, 386
 Clock Delay Off On, 384
 Clock Polarity Neg Pos, 385
 Clock Time Delay, 384
 Data Polarity Neg Pos, 385
 Gate Clk Delay, 381
 Gate Delay Off On, 382
 Gate Mode Time Clk, 381
 Gate Off On, 383
 Gate Polarity Neg Pos, 383
 Gate Time Delay, 382
 Impedance 75 Ohm High, 386
 Resolution, 383
 Insert Row softkey, 250, 253, 257, 282
 Installed Board Info softkey, 78
 Int I/Q Skew Corrections Off Int Ext softkey, 37
 Int softkeys
 Int Doublet, 203
 Int Free-Run, 203
 Int Gated, 203
 Int Phase Polarity Normal Invert, 25, 36

Index

Int softkeys (*continued*)

Int Triggered, 203

integer response data, 11

Intermod softkey, 854

Internal softkeys

Internal, 61, 176, 485

Internal 1, 184, 197

Internal 2, 184, 197

Internal Monitor, 191

Internal Square, 203

Inverse Video Off On softkey, 84

Inverted softkey, 490

IP Address softkey, 73

IQ Phase Normal Invert softkey, 632

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

IS-95 Mod w /EQ softkey (*continued*)

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

IS-95 w/EQ softkey (continued)

- 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, 230

L

- Last Mkr Point softkey, 294, 296
- Leap Seconds field, 474
- Left Alternate softkey, 339
- Left softkey, 828
- LF Out softkeys
 - LF Out Amplitude, 187
 - LF Out Off On, 191
 - LF Out Stop Freq, 187, 188, 195
 - LF Out Sweep Rate, 189
 - LF Out Sweep Time, 190
 - LF Out Tone 2 Ampl % of Peak, 188
 - LF Out Tone 2 Freq, 187, 188, 195
- Link Down Up softkey, 329, 867
- Link Forward Reverse softkey, 248, 450
- List softkey, 97, 121
- list/sweep subsystem keys
 - # Points, 58
 - Bus, 55
 - Dwell Type List Step, 52
 - Ext, 55
 - Free Run softkey, 55
 - Load List From Step Sweep, 56
 - Manual Mode Off On, 54
 - Manual Point, 53
 - Preset List, 57
 - Step Dwell, 57
 - Sweep Direction Down Up, 51
 - Sweep Type List Step, 56
 - Trigger Key, 55
- Load From Selected File softkey, 20, 119, 125, 316
- Load List From Step Sweep softkey, 56
- Load/Store softkey, 281
- Long Code Mask field, 489
- Long Code State field, 454, 489

Low Amplitude softkey, 395, 399

- See sense subsystem keys

Low Capacity softkey, 562, 573

Low Capacity with Z field softkey, 562, 573

low frequency output subsystem keys

- Bus, 190
- DC, 190
- Dual-Sine, 190
- Ext, 190
- Free Run, 190
- Function Generator, 191
- Internal Monitor, 191
- LF Out Amplitude, 187
- LF Out Off On, 191
- LF Out Stop Freq, 187, 188, 195
- LF Out Sweep Rate, 189
- LF Out Sweep Time, 190
- LF Out Tone 2 Ampl % of Peak, 188
- LF Out Tone 2 Freq, 187, 188, 195
- Noise, 190
- Ramp, 190
- Sine, 190
- Square, 190
- Swept-Sine, 190
- Triangle, 190
- Trigger Key, 190

LTM OFF field, 474

M

- Manual Mode Off On softkey, 54
- Manual Point softkey, 53
- Marker 1 2 softkey, 294, 296
- Marker 1 Polarity Neg Pos softkey, 212, 225, 260, 276, 298, 313, 350, 445
- Marker 1 softkey, 211, 224, 225, 259, 274, 275, 297, 312, 349, 350, 444, 445
- Marker 2 Polarity Neg Pos softkey, 212, 226, 260, 277, 298, 313, 351, 445
- Marker 2 softkey, 211, 224, 225, 259, 274, 275, 297, 312, 349, 350, 444, 445
- Marker 3 Polarity Neg Pos softkey, 212, 226, 260, 277, 298, 313, 351, 446
- Marker 3 softkey, 211, 224, 225, 259, 274, 275, 297, 312, 349, 350, 444, 445
- Marker 4 Polarity Neg Pos softkey, 213, 226, 261, 277, 299, 314, 351, 446
- Marker 4 softkey, 211, 224, 225, 259, 274, 275, 297, 312, 349, 350, 444, 445
- mass memory subsystem keys
 - Binary, 121
 - Copy File, 123

Index

mass memory subsystem keys (*continued*)

- Delete All NVWFM Files, 123
- Delete All WFM Files, 124
- Delete All WFM1 Files, 124
- Delete File, 124
- List, 121
- Load From Selected File, 125
- Rename File, 126
- State, 121
- Store To File, 126
- User Flatness, 121

Max BlksSize field, 863

Max Input softkey, 854

Max NumOfBlks field, 863

Max Power field, 894

Max Pwr field, 913, 930

MCDMA softkey, 98

MDMOD softkey, 98

MDWCDMA softkey, 99

Measurement Mode BER% Search softkey, 417

Measurement Mode BLER% Search softkey, 403

memory subsystem keys

- Add Comment To Seq[n] Reg[nn], 120
- All, 104, 119
- Binary, 93
- Bit, 93
- CDMA, 94
- Copy File, 104, 109, 110
- Delete All ARB CDMA Files, 112
- Delete All ARB DMOD Files, 112
- Delete All ARB DWCDMA Files, 113
- Delete All ARB FCDMA Files, 113
- Delete All ARB MCDMA Files, 115
- Delete All ARB MDWCDMA Files, 115
- Delete All ARB MTONE Files, 116
- Delete All ARB RCDMA Files, 116
- Delete All ARB UWCDMA Files, 118
- Delete All Binary Files, 111
- Delete All Bit Files, 112
- Delete All Files, 111
- Delete All FIR Files, 113
- Delete All FSK Files, 114
- Delete All I/Q Files, 114
- Delete All List Files, 114
- Delete All MDMOD Files, 115
- Delete All MFCDMA Files, 116
- Delete All SEQ Files, 117
- Delete All SHAPE Files, 117

memory subsystem keys (*continued*)

- Delete All State Files, 117
- Delete All UFLT Files, 118
- Delete File, 118
- DMOD, 94
- DWCDMA, 95
- FCDMA, 95
- FIR, 96
- FSK, 96
- I/Q, 97
- List, 97
- Load From Selected File, 119
- MCDMA, 98
- MDMOD, 98
- MDWCDMA, 99
- MFCDMA, 99
- MTONE, 100
- Oversample Ratio, 106
- RCDMA, 100
- Rename File, 119
- SEQ, 101
- SHAPE, 101
- State, 102
- Store To File, 120
- User Flatness, 103
- UWCDMA, 103

Message Data Raw Data (RPS11) softkey

- See wideband CDMA base band generator subsystem keys and fields

Message Part field, 911

Message Pulse (RPS22) softkey

- See wideband CDMA base band generator subsystem keys and fields

Message Type field, 475

Message-Control Raw Data Clock (RPS12) softkey

- See wideband CDMA base band generator subsystem keys and fields

Meter Address softkeys, 74

Meter Channel A B softkey, 74

Meter Timeout softkey, 75

MFCDMA softkey, 99

Min Power field, 895

Mod Index softkey, 441

Mod On/Off hardkey, 127

Modulator Atten Manual Auto softkey, 209, 222, 223, 246, 273, 293, 310, 327, 442, 443

Msg Ctrl softkey, 900

Msg Data softkey, 900

Msg Pwr field, 911, 928

- 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, 100
- Multicarrier Off On softkey, 229, 248, 280
- Multitone Off On softkey, 320
- multitone subsystem keys
 2.100 MHz, 311
 40.000 MHz, 308, 311
 ARB Reference Ext Int, 314
 ARB Sample Clock, 316
 Clear Header, 309
 Freq Spacing, 317, 318
 Goto Row, 315
 I/Q Mod Filter Manual Auto, 311
 I/Q Output Filter Manual Auto, 309
 Initialize Phase Fixed Random, 319
 Load From Selected File, 316
 Marker 1, 312
 Marker 1 Polarity Neg Pos, 313
 Marker 2, 312
 Marker 2 Polarity Neg Pos, 313
 Marker 3, 312
 Marker 3 Polarity Neg Pos, 313
 Marker 4, 312
 Marker 4 Polarity Neg Pos, 314
 Modulator Atten Manual Auto, 310
 Multitone Off On, 320
 None, 312
 Number Of Tones, 317, 318
 Random Seed Fixed Random, 319
 Reference Freq, 314
 Save Setup To Header, 309
 Store To File, 317
 Through, 308, 311
 Toggle State, 315, 317
- mV softkey, 169
- mVemf softkey, 169
- N**
- N Power field, 870, 901
- NADC Off On softkey, 705
- NADC softkey, 280, 282
- NADC subsystem keys
 16 1's & 16 0's, 681, 691, 693, 695, 697
 16PSK, 688
 16QAM, 688
 256QAM, 688
 2-Lvl FSK, 688
 32 1's & 32 0's, 681, 691, 693, 695, 697
 32QAM, 688
 4 1's & 4 0's, 681, 691, 693, 695, 697
 4-Lvl FSK, 688
 4QAM, 688
 64 1's & 64 0's, 681, 691, 693, 695, 697
 64QAM, 688
 8 1's & 8 0's, 681, 691, 693, 695, 697
 8PSK, 688
 All Timeslots, 698
 APCO 25 C4FM, 684
 BBG Data Clock Ext Int, 671
 BBG Ref Ext Int, 683
 Begin Frame, 698
 Begin Timeslot #, 698, 699
 BPSK, 688
 Bus, 690, 701
 CDL, 691
 CDVCC, 692, 695
 Continuous, 701
 D8PSK, 688
 Data Format Pattern Framed, 679
 Down Custom, 698
 Down TCH, 698
 Down TCH All, 698
 Ext, 681, 690, 691, 693, 695, 697, 701
 Ext BBG Ref Freq, 683
 Ext Data Clock Normal Symbol, 682
 Ext Delay Bits, 704
 Ext Delay Off On, 704
 Ext Polarity Neg Pos, 704
 Fall Delay, 674, 676
 Fall Time, 675, 676
 Filter Alpha, 671
 Filter BbT, 672
 FIX4, 681, 691, 693, 695, 697
 Frame Repeat Single Cont, 688
 Free Run, 702
 Freq Dev, 686
 Gate Active Low High, 702
 Gated, 701
 Gaussian, 684

Index

NADC subsystem keys (*continued*)

Gray Coded QPSK, 688
I/Q Scaling, 685
IS-95, 684
IS-95 Mod, 684
IS-95 Mod w/EQ, 684
IS-95 OQPSK, 688
IS-95 QPSK, 688
IS-95 w/EQ, 684
MSK, 688
NADC Off On, 705
Nyquist, 684
Optimize FIR For EVM ACP, 680
OQPSK, 688
 $\pi/4$ DQPSK, 688
Patt Trig In 1, 703
Patt Trig In 2, 703
Phase Dev, 686
PN11, 681, 691, 693, 695, 697
PN15, 681, 691, 693, 695, 697
PN20, 681, 691, 693, 695, 697
PN23, 681, 691, 693, 695, 697
PN9, 681, 691, 693, 695, 697
PN9 Mode Normal Quick, 674
Polarity Normal Invert, 688
QPSK, 688
Rate Full Half, 685
Recall Secondary Frame State, 689
Rectangle, 684
Reset & Run, 702
Restore NADC Factory Default, 682
Rise Delay, 677, 678
Rise Time, 678, 679
Root Nyquist, 684
SACCH, 692, 696
Save Secondary Frame State, 689
Secondary Frame Off On, 690
Sine, 674, 680
Single, 701
Symbol Rate, 699
SYNC, 693, 696
Sync Out Offset, 698
Timeslot Ampl Main Delta, 694
Timeslot Off On, 694
Trigger & Run, 702
Trigger Key, 690, 701
UN3/4 GSM Gaussian, 684
Up Custom, 698
Up TCH, 698

NADC subsystem keys (*continued*)

Up TCH All, 698
User File, 674, 680, 681, 691, 693, 695, 697
User FIR, 684
User FSK, 687, 688
User I/Q, 687, 688
Network ID field, 475
No Limits softkey
 See calculate subsystem keys
No Thresholds softkey
 See sense subsystem keys
Noise Off On softkey, 479, 491
Noise Seed Fixed Random softkey, 215
Noise Seed softkey, 439
Noise softkey, 175, 183, 190, 196
NONE (RPS0) softkey
 See wideband CDMA base band generator
 subsystem keys and fields
NONE softkey, 968
None softkey, 211, 224, 225, 259, 274, 275,
 297, 312, 349, 350, 444, 445, 540, 857, 862,
 973, 982
Normal All softkey, 620, 663
Normal softkey, 490, 620, 663, 828
Num of Blk field, 974, 983
Num of Pre field, 912, 929
Number of AICH field, 897
Number of PRACH 80ms field, 912
Number of PRACH field, 926, 928
Number of Preamble field, 929
Number Of Tones softkey, 317, 318
numeric boolean response data, 12
numeric SCPI parameter, 8
numeric, extended SCPI parameter, 9
Nyquist softkey
 See CDMA ARB subsystem keys
 See CDMA2000 ARB subsystem keys
 See CDMA2000 BBG subsystem keys and
 fields
 See custom subsystem keys
 See DECT subsystem keys
 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

Nyquist softkey (continued)

See wideband CDMA base band generator
subsystem keys and fields

O

OCNS softkey, 340

octal values, 17

Off softkey, 25, 38, 228, 262, 279, 300, 925

Omitted softkey, 960

On softkey, 228, 262, 279, 300, 925

On/Off field, 845, 917

Optimize ACP ADJ ALT softkey, 329, 344

Optimize FIR For EVM ACP softkey, 892

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, 206, 432

custom subsystem, 523

Dmodulation subsystem, 269

dual ARB subsystem, 290

multitone subsystem, 308

400

wideband CDMA ARB subsystem, 321

wideband CDMA base band generator
subsystem, 821

401

CDMA ARB subsystem, 216

CDMA2000 ARB subsystem, 240

CDMA2000 BBG subsystem, 450

402

DECT subsystem, 546

EDGE subsystem, 596

GSM subsystem, 636

options (*continued*)

402

NADC subsystem, 671

PDC subsystem, 706

PHS subsystem, 741

TETRA subsystem, 778

403

AWGN real-time subsystem, 433

AWGN subsystem, 207

406

bluetooth subsystem, 434

409

GPS subsystem, 629

UN7/300

calculate subsystem, 360

data subsystem, 371

input subsystem, 381, 387

sense subsystem, 391

Options Info softkey, 80

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, 127

output subsystem keys

Mod On/Off, 127

Output Blanking Off On Auto, 127

RF On/Off, 128

Oversample Ratio softkey, 106, 227

P

P Code Pwr softkey, 633

P Rev field, 476

P Rev Min field, 474

P softkey, 564

$\pi/4$ 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

Index

p/4 DQPSK softkey (continued)

See PHS subsystem keys

See TETRA subsystem keys

Packet (DH1) softkey, [446](#)

Paging Indicator field, [482](#), [850](#)

Paging softkey, [230](#)

parameter types. *See* SCPI commands

parameter types

Pass Amplitude softkey, [396](#), [400](#)

See sense subsystem keys

Pass/Fail Limits softkey, [368](#)

Pass/Fail Off On softkey, [369](#)

paths, SCPI command tree, [7](#)

Patt Trig In 1 softkey

See CDMA ARB subsystem keys

See CDMA2000 ARB subsystem keys

See custom subsystem keys

See DECT subsystem keys

See Dmodulation subsystem keys

See dual ARB subsystem keys

See EDGE subsystem keys

See GSM subsystem keys

See NADC subsystem keys

See PDC subsystem keys

See PHS subsystem keys

See TETRA subsystem keys

See wideband CDMA ARB subsystem keys
subsystem keys

Patt Trig In 2 softkey

See CDMA ARB subsystem keys

See CDMA2000 ARB subsystem keys

See custom subsystem keys

See DECT subsystem keys

See Dmodulation subsystem keys

See dual ARB subsystem keys

See EDGE subsystem keys

See GSM subsystem keys

See NADC subsystem keys

See PDC subsystem keys

See PHS subsystem keys

See TETRA subsystem keys

See wideband CDMA ARB subsystem keys
subsystem keys

Pattern Trig In Polarity Neg Pos softkey, [130](#),
[132](#)

Pattern trigger in 1 field, [940](#)

Pattern trigger in 2 field, [940](#)

PCCPCH + SCH + 3 DPCH softkey, [330](#), [335](#)

PCCPCH + SCH +1 DPCH softkey, [330](#), [335](#)

PCCPCH + SCH softkey, [330](#), [335](#)

PCCPCH softkey, [823](#), [824](#)

PDC Off On softkey, [739](#)

PDC softkey, [280](#), [282](#)

PDC subsystem keys

16 1's & 16 0's, [715](#), [725](#), [727](#), [728](#), [730](#)

16PSK, [722](#)

16QAM, [722](#)

256QAM, [722](#)

2-Lvl FSK, [722](#)

32 1's & 32 0's, [715](#), [725](#), [727](#), [728](#), [730](#)

32QAM, [722](#)

4 1's & 4 0's, [715](#), [725](#), [727](#), [728](#), [730](#)

4-Lvl FSK, [722](#)

4QAM, [722](#)

64 1's & 64 0's, [715](#), [725](#), [727](#), [728](#), [730](#)

64QAM, [722](#)

8 1's & 8 0's, [715](#), [725](#), [727](#), [728](#), [730](#)

8PSK, [722](#)

All Timeslots, [733](#)

APCO 25 C4FM, [718](#)

BBG Ref Ext Int, [717](#)

Begin Frame, [733](#)

Begin Timeslot #, [733](#), [734](#)

BPSK, [722](#)

Bus, [724](#), [737](#)

CC, [726](#), [729](#), [731](#)

Continuous, [736](#)

D8PSK, [722](#)

Data Format Pattern Framed, [714](#)

Down Custom, [732](#)

Down TCH, [732](#)

Down TCH All, [732](#)

Ext, [715](#), [724](#), [725](#), [727](#), [728](#), [730](#), [737](#)

Ext BBG Ref Freq, [718](#)

Ext Data Clock Ext Int, [706](#)

Ext Data Clock Normal Symbol, [717](#)

Ext Delay Bits, [738](#)

Ext Delay Off On, [739](#)

Ext Polarity Neg Pos, [739](#)

Fall Delay, [709](#), [710](#)

Fall Time, [709](#), [711](#)

Filter Alpha, [706](#)

Filter BbT, [707](#)

FIX4, [715](#), [716](#), [725](#), [727](#), [728](#), [729](#), [730](#), [731](#)

Free Run, [736](#)

Freq Dev, [720](#)

Gate Active Low High, [737](#)

Gated, [736](#)

Gaussian, [718](#)

PDC subsystem keys (*continued*)

Gray Coded QPSK, 722
I/Q Scaling, 720
IS-95, 718
IS-95 Mod, 718
IS-95 Mod w/EQ, 718
IS-95 OQPSK, 722
IS-95 QPSK, 722
IS-95 w/EQ, 718
MSK, 722
Nyquist, 718
Optimize FIR For EVM ACP, 715
OQPSK, 722
 $\pi/4$ DQPSK, 722
Patt Trig In 1, 738
Patt Trig In 2, 738
PDC Off On, 739
Phase Dev, 721
Phase Polarity Normal Invert, 723
PN11, 715, 727, 728, 730
PN15, 715, 725, 727, 728, 730
PN20, 715, 727, 728, 730
PN23, 715, 727, 728, 730
PN9, 715, 725, 727, 728, 730
PN9 Mode Normal Quick, 708
QPSK, 722
Rate Full Half, 719
Recall Secondary Frame State, 723
Rectangle, 718
Reset & Run, 736
Restore PDC Factory Default, 716
Rise Delay, 711, 712
Rise Time, 713
Root Nyquist, 718
SACCH, 726, 729, 731
Save Secondary Frame State, 723
Secondary Frame Off On, 724
Sine, 714
Single, 736
SW, 726, 730, 732
Symbol Rate, 734
Sync Out Offset, 733
Timeslot Ampl Main Delta, 728
Timeslot Off On, 728
Trigger & Run, 736
Trigger Key, 724, 737
UN3/4 GSM Gaussian, 718
Up Custom, 732
Up TCH, 732

PDC subsystem keys (*continued*)

Up TCH All, 732
Up VOX, 732
User File, 714, 715, 725, 727, 728, 730
User FIR, 718
User FSK, 721, 722
User I/Q, 722
Performance Req softkey, 854
Permuted ESN field, 457, 468
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, 196
 FM Φ M Normal High BW softkey, 194
 Φ M Dev Couple Off On, 199
 Φ M Dev softkey, 198
 Φ M Off On softkey, 198
 Φ M Path 1 2, 193
 Φ M Tone 2 Ampl Percent of Peak, 196
 Φ M Tone 2 Rate, 195
 Bus, 197
 Dual-Sine, 196
 Ext, 197
 Ext Coupling DC AC, 194
 Ext1, 197
 Ext2, 197
 Free Run, 197
 Incr Set, 193, 199
 Internal 1, 197
 Internal 2, 197
 Noise, 196
 Ramp, 196
 Sine, 196
 Square, 196
 Swept-Sine, 196
 Triangle, 196
 Trigger Key, 197
Phase Polarity field, 481
Phase Polarity Normal Invert softkey
 See custom subsystem keys
 See DECT subsystem keys
 See EDGE subsystem keys

Index

Phase Polarity Normal Invert softkey
(continued)

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, 867

Phase Ref Set softkey, 48

PHS Off On softkey, 777

PHS softkey, 280, 282

PHS subsystem keys

16 1's & 16 0's, 751, 752, 756, 772, 776

16-Lvl FSK, 762

16PSK, 762

16QAM, 762

256QAM, 762

2-Lvl FSK, 762

32 1's & 32 0's, 751, 752, 756, 772, 776

32QAM, 762

4 1's & 4 0's, 751, 752, 756, 772, 776

4-Lvl FSK, 762

4QAM, 762

64 1's & 64 0's, 751, 752, 756, 772, 776

64QAM, 762

8 1's & 8 0's, 751, 752, 756, 772, 776

8-Lvl FSK, 762

8PSK, 762

All Timeslots, 765

APCO 25 C4FM, 759

BBG Data Clock Ext Int, 741

BBG Ref Ext Int, 758

Begin Frame, 765

Begin Timeslot #, 765, 766

BPSK, 762

Bus, 764, 770

C4FM, 762

Continuous, 768

CSID, 753, 773

Custom, 757

D8PSK, 762

Data Format Pattern Framed, 750

Ext, 751, 752, 756, 764, 770, 772, 776

Ext BBG Ref Freq, 759

Ext Data Clock Normal Symbol, 758

Ext Delay Bits, 771

Ext Delay Off On, 771

Ext Polarity Neg Pos, 772

PHS subsystem keys (continued)

Fall Delay, 745, 746

Fall Time, 745, 746

Filter Alpha, 741

Filter BbT, 742

FIX4, 751, 752, 756, 772, 776

Free Run, 769

Gate Active Low High, 769

Gated, 768

Gaussian, 759

Gray Coded QPSK, 762

I/Q Scaling, 760

IDLE, 754, 774

IS-95, 759

IS-95 Mod, 759

IS-95 Mod w/EQ, 759

IS-95 OQPSK, 762

IS-95 QPSK, 762

IS-95 w/EQ, 759

MSK, 762

Nyquist, 759

Optimize FIR For EVM ACP, 750

OQPSK, 762

$\pi/4$ DQPSK, 762

Patt Trig In 1, 770

Patt Trig In 2, 770

Phase Dev, 760, 761

Phase Polarity Normal Invert, 763

PHS Off On, 777

PN11, 751, 752, 756, 772, 776

PN15, 751, 752, 756, 772, 776

PN20, 751, 752, 756, 772, 776

PN23, 751, 752, 756, 772, 776

PN9, 751, 752, 756, 772, 776

PN9 Mode Normal Quick, 743

PSID, 754, 774

QPSK, 762

Recall Secondary Frame State, 763

Rectangle, 759

Reset & Run, 769

Restore PHS Factory Default, 752

Rise Delay, 747, 748

Rise Time, 748, 749

Root Nyquist, 759

SA, 755, 775

Save Secondary Frame State, 764

Scramble Off On, 744

Scramble Seed, 744

Secondary Frame Off On, 765

- PHS subsystem keys (*continued*)
Sine, 749
Single, 768
Symbol Rate, 767
SYNC, 757
Sync Out Offset, 766
TCH, 757
TCH All, 757
Timeslot Ampl Main Delta, 753, 773
Timeslot Off On, 755, 775
Timeslot Type, 777
Trigger & Run, 769
Trigger Key, 764, 770
UN3/4 GSM Gaussian, 759
User File, 749, 751, 752, 756, 772, 776
User FIR, 759
User FSK, 761, 762
User I/Q, 762
UW, 754, 756, 774, 776
PI Bits field, 849
PICH softkey, 340, 823, 824
Pilot softkey, 229, 230, 232, 248, 255
Playback Ratio field, 827
PN Offset field, 485
PN Offset softkey, 253, 257
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, 161
PN9 softkey
 See CDMA2000 BBG subsystem keys and fields
 See custom subsystem keys
 See data subsystem keys
 See DECT subsystem keys
 See EDGE subsystem keys
 See GPS subsystem keys
 See GSM subsystem keys
 See NADC subsystem keys
 See PDC subsystem keys
 See PHS subsystem keys
 See sense subsystem keys
 See TETRA subsystem keys
 See wideband CDMA base band generator subsystem keys and fields
Polarity Normal Invert softkey, 688
Power Control Signal Polarity Neg Pos softkey, 897
Power field
 See CDMA2000 BBG subsystem keys and fields

Index

Power field (continued)

See wideband CDMA baseband generator
subsystem keys and fields

Power Hold Off On softkey, 893

Power Meter softkey, 75

Power Mode Norm TPC softkey, 897

Power On Last Preset softkey, 159

Power Search Manual Auto softkey, 59, 60

Power softkey, 347

power subsystem keys

ALC BW Normal Narrow, 59

ALC Off On, 60

Alt Amp Delta, 60

Alt Ampl Off On, 61

Ampl, 63

Ampl Offset, 65

Ampl Ref Off On, 63

Ampl Ref Set, 63

Ampl Start, 64

Ampl Stop, 64

Amplitude, 63, 65

Atten Hold Off On, 62

Do Power Search, 59, 60

Ext Detector, 61

Internal, 61

Power Search Manual Auto, 59, 60

Source Module, 61

PPCCPCH softkey, 340, 341

Pp-m field, 914, 931

PRACH Mode Single Multi softkey, 910

PRACH Power Setup Mode Pp-m Total
softkey, 918

PRACH Processing (RPS19) softkey

See wideband CDMA base band generator
subsystem keys and fields

PRACH Scrambling Code field, 919

PRACH softkey, 893

PRACH Trigger Polarity Neg Pos softkey, 924

PRACH Trigger softkey, 923

PRACH Trigger Source Immedi Trigger
softkey, 924

PRAT field, 476

Pre Sig field, 915

Preamble power average field, 917

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, 900

precise talking and forgiving listening, 8

Preset hardkey, 160

Preset List softkey, 21, 57

Preset Normal User softkey, 162

PSCH softkey, 340

PSCH State field, 851

PSID softkey, 754, 774

pulse modulation subsystem keys

Ext Pulse, 203

Int Doublet, 203

Int Free-Run, 203

Int Gated, 203

Int Triggered, 203

Internal Square, 203

Pulse Delay, 66

Pulse Off On, 204

Pulse Period, 201

Pulse Rate, 201

Pulse Width, 202

Pulse softkeys

Pulse Delay, 66

Pulse Off On, 204

Pulse Period, 201

Pulse Rate, 201

Pulse Width, 202

Puncture fields, 974, 983

PwrOffs field, 957

PWT softkey, 280, 282

Q

Q Offset softkey, 30

QOF field, 459, 469

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, 31

Quarter softkey, 502, 507

quotes, SCPI command use of, 16

R

- RACH TrCH softkey, [900](#)
- Radio Config field
 - See CDMA2000 BBG subsystem keys and fields
- Radio Config softkey, [255](#)
- RadioConfig 1/2 Access softkey, [450](#)
- RadioConfig 1/2 Traffic softkey, [450](#)
- RadioConfig 3/4 Common Control softkey, [450](#)
- RadioConfig 3/4 Enhanced Access softkey, [450](#)
- RadioConfig 3/4 Traffic softkey, [450](#)
- Ramp field, [458](#)
- Ramp softkey, [175](#), [183](#), [190](#), [196](#)
- Ramp Step field, [913](#), [930](#)
- Ramp Time field, [459](#)
- Random Seed Fixed Random softkey, [319](#)
- Random softkey, [339](#), [347](#)
- Ranging Code C/A P C/A+P softkey, [633](#)
- Rate Full Half softkey, [685](#), [719](#)
- Rate Match Attr field, [865](#), [975](#), [983](#)
- Rate softkey, [253](#), [257](#)
- RCDMA softkey, [100](#)
- real response data, [11](#)
- Real-time AWGN Off On softkey, [433](#)
- real-time AWGN subsystem keys
 - Bandwidth, [433](#)
 - Real-time AWGN Off On, [433](#)
- Real-time GPS Off On softkey, [635](#)
- RECALL Reg softkey, [89](#)
- Recall Secondary Frame State softkey
 - See DECT subsystem keys
 - See EDGE subsystem keys
 - See GSM subsystem keys
 - See NADC subsystem keys
 - See PDC subsystem keys
 - See PHS subsystem keys
 - See TETRA subsystem keys
- Rectangle softkey
 - See CDMA ARB subsystem keys
 - See CDMA2000 ARB subsystem keys
 - See CDMA2000 BBG subsystem keys and fields
 - See custom subsystem keys
 - See DECT subsystem keys
 - See Dmodulation subsystem keys
 - See EDGE subsystem keys
 - See GPS subsystem keys
 - See GSM subsystem keys
 - See NADC subsystem keys
- Rectangle softkey (continued)
 - See PDC subsystem keys
 - See PHS subsystem keys
 - See TETRA subsystem keys
 - See wideband CDMA ARB subsystem keys
 - See wideband CDMA base band generator subsystem keys and fields
- Ref Data Rate field, [869](#)
- Ref Oscillator Source Auto Off On softkey, [49](#)
- Ref Sensitivity softkey, [854](#)
- Reference Freq softkey, [447](#)
 - 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 Out softkey, [378](#)
- Rename File, [119](#)
- Rename File softkey, [126](#)
- Reserved field, [476](#)
- Reset & Run softkey
 - See CDMA ARB subsystem keys
 - See CDMA2000 ARB subsystem keys
 - See custom subsystem keys
 - See DECT subsystem keys
 - See Dmodulation subsystem keys
 - See dual ARB subsystem keys
 - See EDGE subsystem keys
 - See GSM subsystem keys
 - See NADC subsystem keys
 - See PDC subsystem keys
 - See PHS subsystem keys
 - See TETRA subsystem keys
 - See wideband CDMA ARB subsystem keys
- Reset RS-232 softkey, [76](#)
- Reset to Initial Power softkey, [896](#)
- Resolution softkey, [383](#)
- response data types. See SCPI commands response types
- Restore DECT Factory Default softkey, [556](#)
- Restore EDGE Factory Default softkey, [604](#)
- Restore Factory Default softkey, [646](#)
- Restore NADC Factory Default softkey, [682](#)
- Restore PDC Factory Default softkey, [716](#)
- Restore PHS Factory Default softkey, [752](#)
- Restore Sys Defaults softkey, [161](#)
- Restore TETRA Factory Default softkey, [789](#)
- Resync Limits softkey, [425](#)

Index

- Retrigger Mode Off On softkey, [353](#)
 - Reverse softkey, [229](#)
 - Revert to Default Cal Settings softkey, [69](#)
 - RF On/Off hardkey, [128](#)
 - Right Alternate softkey, [339](#)
 - Right softkey, [828](#)
 - 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, [521](#)
 - RMC 144 kbps (25.141 v3.9) softkey, [932](#)
 - RMC 384 kbps (25.141 v3.9) softkey, [932](#)
 - RMC 64 kbps (25.141 v3.9) softkey, [932](#)
 - RMC122 kbps (25.141 v3.9) softkey, [932](#)
 - Root Nyquist softkey
 - See CDMA ARB subsystem keys
 - See CDMA2000 ARB subsystem keys
 - See CDMA2000 BBG subsystem keys and fields
 - See custom subsystem keys
 - See DECT subsystem keys
 - See Dmodulation subsystem keys
 - See EDGE subsystem keys
 - See GPS subsystem keys
 - See GSM subsystem keys
 - See NADC subsystem keys
 - See PDC subsystem keys
 - See PHS subsystem keys
 - See TETRA subsystem keys
 - See wideband CDMA ARB subsystem keys
 - See wideband CDMA base band generator subsystem keys and fields
 - route subsystem keys
 - Burst Gate In Polarity Neg Pos, [129](#), [131](#)
 - Data Clock Out Neg Pos, [132](#)
 - route subsystem keys (*continued*)
 - Data Clock Polarity Neg Pos, [129](#), [131](#), [134](#)
 - Data Out Polarity Neg Pos, [133](#), [135](#)
 - Data Polarity Neg Pos, [129](#), [131](#)
 - DATA/CLK/SYNC Rear Outputs Off On, [134](#)
 - Event 1 Polarity Neg Pos, [133](#), [135](#)
 - Event 2 Polarity Neg Pos, [133](#), [135](#)
 - Pattern Trig In Polarity Neg Pos, [132](#)
 - Pattern Trig Polarity Neg Pos, [130](#)
 - Symbol Sync Out Polarity Neg Pos, [134](#), [136](#)
 - Symbol Sync Polarity Neg Pos, [130](#), [132](#)
 - RS-232 Baud Rate softkey, [76](#)
 - RS-232 ECHO Off On softkeys, [76](#)
 - RS-232 Timeout softkeys, [77](#)
 - Run Complete Self Test softkey, [92](#)
- ## S
- S softkey, [660](#)
 - See DECT subsystem keys
 - SA softkey, [755](#), [775](#)
 - SACCH softkey, [692](#), [696](#), [726](#), [729](#), [731](#)
 - Satellite ID softkey, [635](#)
 - Save Reg softkey, [90](#)
 - 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, [90](#)
 - Save Setup To Header softkey, [208](#), [222](#), [245](#), [272](#), [292](#), [309](#), [325](#), [437](#)
 - Save User Preset softkey, [162](#)
 - Scale to 0dB softkey
 - See CDMA ARB subsystem keys
 - See CDMA2000 ARB subsystem keys
 - See CDMA2000 BBG subsystem keys and fields
 - See wideband CDMA ARB subsystem keys
 - See wideband CDMA base band generator subsystem keys and fields
 - Scaling softkey, [301](#)
 - SCCPCH softkey, [340](#), [341](#)
 - SCFN field, [963](#)
 - SCPI command subsystems
 - all, [206](#), [432](#)
 - amplitude modulation, [172](#)

SCPI command subsystems (*continued*)

- AWGN, 207
- AWGN real-time, 433
- bluetooth, 434
- calculate, 360
- calibration, 68
- CDMA ARB, 216
- CDMA2000 ARB, 240
- CDMA2000 BBG, 450
- communication, 72
- correction, 20
- custom, 523
- data, 371
- DECT, 546
- diagnostic, 78
- digital modulation, 23
- display, 82
- Dmodulation, 269
- Dual ARB, 290
- EDGE, 596
- frequency, 40
- frequency modulation, 180
- GPS subsystem, 629
- GSM, 636
- IEEE 488.2 common commands, 86
- input, 381, 387
- list/sweep, 51
- low frequency output, 187
- mass memory, 121
- memory, 93
- multitone, 308
- NADC, 671
- output, 127
- PDC, 706
- phase modulation, 193
- PHS, 741
- power, 59
- pulse, 66
- pulse modulation, 201
- route, 129
- sense, 391
- status, 137
- system, 156
- TETRA, 778
- trigger, 165
- unit, 169
- wideband CDMA ARB, 321
- wideband CDMA base band generator, 821

SCPI commands

- command tree paths, 7
- parameter and response types, 8
- parameter types
 - boolean, 10
 - discrete, 10
 - extended numeric, 9
 - numeric, 8
 - string, 11
- response data types
 - discrete, 12
 - integer, 11
 - numeric boolean, 12
 - real, 11
 - string, 12
- root command, 7

SCPI softkey, 158, 160

Scramble Code softkey, 339, 345, 347

Scramble Off On softkey, 744, 781

Scramble Offset softkey, 339, 347

Scramble Seed softkey, 744, 781

Scrambling Code field, 852, 955

Screen Saver Delay

- 1 hr softkey, 163

Screen Saver Mode softkeys, 163

Screen Saver Off On softkeys, 164

Second DPDCH I Q softkey, 345

Secondary Frame Off On softkey

- See* DECT subsystem keys
- See* EDGE subsystem keys
- See* GSM subsystem keys
- See* NADC subsystem keys
- See* PDC subsystem keys
- See* PHS subsystem keys
- See* TETRA subsystem keys

Segment Advance softkey, 302

Select File softkey, 250, 280

Select Seq softkey, 89

Select Waveform softkey, 306

sense subsystem keys

- Adjust Gain, 403
- Aux, 405, 422, 429
- Aux I/O Trigger Polarity Pos Neg, 429
- BER Mode Off On, 391, 394, 415
- BERT Off On, 426
- BERT Resync Off On, 425
- Bit Count, 406, 408
- Bit Delay Off On, 428
- Block Count, 394, 396, 398, 411, 415
- Block Erasure, 392, 397, 410, 411, 412, 416

Index

sense subsystem keys (*continued*)

Bus, 405, 422, 429
Class Ib Bit Error, 419, 420
Class II Bit Error, 420
Cycle Count, 428
Delay Bits, 427
EDGE BERT Off On, 409
Error Count, 408, 409, 426
Exceeds Any Thresholds, 420
Ext, 405, 422, 429
Ext Frame Trigger Delay, 392
External Frame Polarity Net Pos, 393
Frame Count, 414, 418
Frame Erasure, 420
Frame Trigger Source Int Ext, 393
GSM BERT Off On, 423
High Amplitude, 395, 399, 406
Immediate, 405, 422, 429
Initial Bit Count, 408
Initial Block Count, 396, 400
Initial Frame Count, 418
Low Amplitude, 395, 399, 407, 414
Measurement Mode BER% Search, 417
Measurement Mode BLER% Search, 403
No Thresholds, 392, 397, 412, 416, 420, 427
Pass Amplitude, 396, 400, 407
PN11, 425
PN15, 425
PN20, 425
PN23, 425
PN9, 425
Resync Limits, 425
Spcl Pattern 0's 1's, 424
Spcl Pattern Ignore Off On, 424
Spectrum Invert Off On, 403, 419
Stop Measurement, 402, 416
Sync Source BCH PDCH, 404
Sync Source BCH TCH, 422
Synchronize to BCH/PDCH, 404
Synchronize to BCH/TCH, 421
Target BER %, 394, 398
Timeslot, 402, 417
Total Bits, 427
Trigger Key, 405, 422, 429
Uplink Timing Advance, 405, 423
SEQ softkey, 101
Set Marker Off All Points softkey, 295
SF/2 softkey, 958
SFN RST Polarity softkey, 955

SFN-CFN Frame Offset softkey, 892
SHAPE softkey, 101
Signature field, 931
Sine softkey
 See amplitude modulation subsystem keys
 See DECT subsystem keys
 See EDGE subsystem keys
 See frequency modulation subsystem keys
 See GSM subsystem keys
 See low frequency output subsystem keys
 See NADC subsystem keys
 See PDC subsystem keys
 See phase modulation subsystem keys
 See PHS subsystem keys
 See TETRA subsystem keys
Single softkey
 See CDMA ARB subsystem keys
 See CDMA2000 ARB subsystem keys
 See custom subsystem keys
 See DECT subsystem keys
 See Dmodulation subsystem keys
 See dual ARB subsystem keys
 See EDGE subsystem keys
 See GSM subsystem keys
 See NADC subsystem keys
 See PDC subsystem keys
 See PHS subsystem keys
 See TETRA subsystem keys
 See wideband CDMA ARB subsystem keys
Single Sweep softkey, 166
Slot Format field, 828, 836, 876, 886, 904, 909
softkey, 119
Source Module softkey, 61
Spcl Pattern 0's 1's softkey, 424
Spcl Pattern Ignore Off On softkey, 424
Spectrum Invert Off On softkey
 See sense subsystem keys
Spread Rate 1 softkey, 248, 255, 263
Spread Rate 3, 255
Spread Rate 3 softkey, 248, 263
Spread Rate field, 484
Spreading Type Direct Mcarrier, 248
Spreading Type Direct Mcarrier softkey, 264
Spurious Response softkey, 854
Square softkey, 175, 183, 190, 196
SR1 9 Channel softkey, 250
SR1 Pilot softkey, 250
SR3 Direct 9 Channel softkey, 250
SR3 Direct Pilot softkey, 250
SR3 Mcarrier 9 Channel softkey, 250
SR3 MCarrier Pilot softkey, 250

- SS softkey, 656
 SSB softkey, 801, 806
 SSCH 2nd Scramble Group field, 853
 SSCH Power field, 853
 SSCH softkey, 340
 SSCH State field, 854
 Standard softkey, 339
 Start Access Slot Position in 80ms Period field, 916
 Start Frequency softkey, 70
 Start Sub-Channel# field, 920
 State field
 See CDMA2000 BBG subsystem keys and fields
 State softkey, 102, 121
 STD softkey, 873
 Step Dwell softkey, 57
 Step Power field, 896
 Stop CFN field, 957
 Stop Frequency softkey, 71
 Stop Measurement softkey
 See sense subsystem keys
 Store Custom CDMA State softkey, 233, 252, 256
 Store Custom Dig Mod State softkey, 283
 Store Custom Multicarrier softkey, 232, 250
 Store Custom W-CDMA State softkey, 334, 337
 Store To File softkey, 21, 120, 126, 317, 346
 string response data, 12
 string SCPI parameter, 11
 strings, quote usage, 16
 STS softkey, 801, 806
 Sub Channel Timing (RPS17) softkey
 See wideband CDMA base band generator subsystem keys and fields
 Subnet Mask softkey, 73
 subsystems, SCPI commands
 See SCPI command subsystems
 SW softkey, 726, 730, 732
 Sweep Direction Down Up softkey, 51
 Sweep Repeat Single Cont softkey, 165
 Sweep Type List Step softkey, 56
 Swept-Sine softkey, 175, 183, 190, 196
 Symbol Out Polarity Neg Pos softkey, 134
 Symbol Rate field, 876, 885, 908
 Symbol Rate softkey, 283, 339, 347, 622, 904
 Symbol Sync Out Polarity Neg Pos softkey, 136
 Symbol Sync Polarity Neg Pos softkey, 130, 132
 Symbol Timing Err softkey, 442
 Sync Out Offset softkey, 589, 621, 664, 698, 733, 766, 814
 SYNC softkey, 693, 696, 757
 Sync softkey, 230, 663
 Sync Source BCH PDCH softkey, 404
 Sync Source BCH TCH softkey, 422
 Sync Source SFN FClk ESG softkey, 956
 Synchronize to BCH/PDCH softkey, 404
 Synchronize to BCH/TCH softkey, 421
 System ID field, 477
 system subsystem keys
 8648A/B/C/D, 158, 160
 8656B,8657A/B, 158, 160
 8657D NADC, 158, 160
 8657D PDC, 158, 160
 8657J PHS, 158, 160
 Error Info, 157
 Help Mode Single Cont, 157, 158
 PN9 Mode Preset, 161
 Power On Last Preset, 159
 Preset, 160
 Preset Normal User, 162
 Restore Sys Defaults, 161
 Save User Preset, 162
 SCPI, 158, 160
 Screen Saver Delay
 1 hr, 163
 Screen Saver Mode, 163
 Screen Saver Off On, 164
 Time/Date, 156, 164
 View Next Error Message, 157
- ## T
- T1 softkey, 619
 T2 softkey, 619
 Target BER % softkey
 See sense subsystem keys
 TCH All softkey, 757
 TCH softkey, 757
 TCH/FS softkey, 658
 tDPCH Offset field, 838
 Test Model 1 w/16 DPCH softkey, 330, 335
 Test Model 1 w/32 DPCH softkey, 330, 335
 Test Model 1 w/64 DPCH softkey, 330, 335
 Test Model 2 softkey, 330, 335
 Test Model 3 w/16 DPCH softkey, 330, 335
 Test Model 3 w/32 DPCH softkey, 330, 335
 Test Model 4 softkey, 330, 335
 Test Model 5 w/2HSPDSCH softkey, 330, 335
 Test Model 5 w/4HSPDSCH softkey, 330, 335
 Test Model 5 w/8HSPDSCH softkey, 330, 335

Index

- TETRA Off On softkey, 820
- TETRA softkey, 280, 282
- TETRA subsystem keys
 - 16 1's & 16 0's, 788, 797, 799, 801, 802, 804, 806, 808, 809, 810, 811
 - 16PSK, 794
 - 16QAM, 794
 - 256QAM, 794
 - 2-Lvl FSK, 794
 - 32 1's & 32 0's, 788, 797, 799, 801, 802, 804, 806, 808, 809, 810, 811
 - 32QAM, 794
 - 4 1's & 4 0's, 788, 797, 799, 801, 802, 804, 806, 808, 809, 810, 811
 - 4-Lvl FSK, 794
 - 4QAM, 794
 - 64 1's & 64 0's, 788, 797, 799, 801, 802, 804, 806, 808, 809, 810, 811
 - 64QAM, 794
 - 8 1's & 8 0's, 788, 797, 799, 801, 802, 804, 806, 808, 809, 810, 811
 - 8PSK, 794
 - All Timeslots, 813
 - APCO 25 C4FM, 791
 - B, 800, 805
 - B1, 798, 803
 - B2, 798, 803
 - BBG Data Clock Ext Int, 778
 - BBG Ref Ext Int, 790
 - Begin Frame, 813
 - Begin Timeslot #, 813, 814
 - BPSK, 794
 - Bus, 796, 818
 - Continuous, 816
 - D8PSK, 794
 - Data Format Pattern Framed, 787
 - Dn Custom Cont, 812
 - Dn Normal Cont, 812
 - Dn Normal Disc, 812
 - Dn Sync Cont, 812
 - Dn Sync Disc, 812
 - Ext, 788, 796, 797, 799, 801, 802, 804, 806, 808, 809, 810, 811, 818
 - Ext BBG Ref Freq, 791
 - Ext Data Clock Normal Symbol, 790
 - Ext Delay Bits, 819
 - Ext Delay Off On, 819
 - Ext Polarity Neg Pos, 820
 - Fall Delay, 782, 783
 - TETRA subsystem keys (*continued*)
 - Fall Time, 782, 783
 - FCOR, 800, 805
 - Filter Alpha, 778
 - Filter BbT, 779
 - FIX4, 788, 797, 799, 801, 802, 803, 804, 805, 806, 807, 808, 809, 810, 811, 812
 - Free Run, 817
 - Freq Dev, 792
 - Gate Active Low High, 817
 - Gated, 816
 - Gaussian, 791
 - Gray Coded QPSK, 794
 - I/Q Scaling, 792
 - IS-95, 791
 - IS-95 Mod, 791
 - IS-95 Mod w/EQ, 791
 - IS-95 OQPSK, 794
 - IS-95 QPSK, 794
 - IS-95 w/EQ, 791
 - MSK, 794
 - Nyquist, 791
 - Optimize FIR For EVM ACP, 788
 - OQPSK, 794
 - $\pi/4$ DQPSK, 794
 - Patt Trig In 1, 818
 - Patt Trig In 2, 818
 - Phase Dev, 793
 - Phase Polarity Normal Invert, 795
 - PN11, 788, 797, 799, 801, 802, 804, 806, 808, 809, 810, 811
 - PN15, 788, 797, 799, 801, 802, 804, 806, 808, 809, 810, 811
 - PN20, 788, 797, 799, 801, 802, 804, 806, 808, 809, 810, 811
 - PN23, 788, 797, 799, 801, 802, 804, 806, 808, 809, 810, 811
 - PN9, 788, 797, 799, 801, 802, 804, 806, 808, 809, 810, 811
 - PN9 Mode Normal Quick, 780
 - QPSK, 794
 - Recall Secondary Frame State, 795
 - Rectangle, 791
 - Reset & Run, 817
 - Restore TETRA Factory Default, 789
 - Rise Delay, 784, 785
 - Rise Time, 785, 786
 - Root Nyquist, 791
 - Save Secondary Frame State, 796

- TETRA subsystem keys (*continued*)
- Scramble Off On, 781
 - Scramble Seed, 781
 - Secondary Frame Off On, 797
 - Sine, 787
 - Single, 816
 - SSB, 801, 806
 - STS, 801, 806
 - Symbol Rate, 815
 - Sync Out Offset, 814
 - TETRA Off On, 820
 - Timeslot Ampl Main Delta, 807
 - Timeslot Off On, 808
 - Trigger & Run, 817
 - Trigger Key, 796, 818
 - TS, 799, 804, 808, 809, 811
 - UN3/4 GSM Gaussian, 791
 - Up Control 1, 812
 - Up Control 2, 812
 - Up Custom, 812
 - Up Normal, 812
 - User File, 787, 788, 797, 799, 801, 802, 804, 806, 808, 809, 810, 811
 - User FIR, 791
 - User FSK, 793, 794
 - User I/Q, 794
 - TFCI Field Off On softkey, 339, 344, 347, 349
 - TFCI Pat field, 837
 - TFCI Pattern field, 877, 905
 - TFCI State field, 878, 906
 - Tfirst field, 829
 - TGD field, 959
 - Tgl field, 829
 - TGL1 field, 959
 - TGL2 field, 960
 - TGPL1 field, 960
 - TGPRC field, 961
 - TGPS Inactive Active softkey, 961
 - TGSN field, 962
 - Through softkey, 207, 210, 218, 223, 242, 246, 269, 273, 290, 293, 308, 311, 326, 328, 436, 443
 - Time field, 478
 - Time/Date softkey, 156, 164
 - 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, 919
 - Timeslot softkey
 - See sense subsystem keys
 - Timeslot Type softkey, 777
 - Timing Offset softkey, 920, 955, 965
 - tOCNS Offset field, 845
 - Toggle Marker 1 softkey, 301
 - Toggle State softkey, 315, 317
 - Total Bits field, 859, 970
 - Total Bits softkey, 427
 - Total Block field, 972
 - Total Blocks field, 861
 - TotalPwr field, 871, 901
 - TPC Pat Steps field, 878
 - TPC Pat Trig Polarity Neg Pos softkey, 880
 - TPC Pattern field, 879
 - TPC Steps field, 838
 - TPC UserFile Trig field, 880
 - Tp-m field, 922
 - Tp-p field, 923
 - Traffic Bearer softkey, 562, 573
 - Traffic Bearer with Z field softkey, 562, 573
 - Traffic softkey, 230
 - Transp Chan A softkey, 833
 - Transp Chan B softkey, 833
 - Transp Position Flexible Fixed softkey, 864
 - Transport CH softkey, 846
 - TrCH BER field, 886
 - TrCh BlkSize 168 softkey, 918
 - TrCh BlkSize 360 softkey, 918
 - TrCH State Off On softkey, 984
 - TrCHI State Off On softkey, 866
 - Triangle softkey, 175, 183, 190, 196
 - Trigger & Run softkey
 - See CDMA ARB subsystem keys
 - See CDMA2000 ARB subsystem keys
 - See custom subsystem keys
 - See DECT subsystem keys
 - See Dmodulation subsystem keys
 - See dual ARB subsystem keys
 - See EDGE subsystem keys
 - See GSM subsystem keys
 - See NADC subsystem keys
 - See PDC subsystem keys
 - See PHS subsystem keys

Index

Trigger & Run softkey (continued)

See TETRA subsystem keys

See wideband CDMA ARB subsystem keys

Trigger Advance field, [521](#)

Trigger In Polarity Neg Pos softkey, [167](#)

Trigger Key softkey

See amplitude modulation subsystem keys

See CDMA ARB subsystem keys

See CDMA2000 ARB subsystem keys

See DECT subsystem keys

See Dmodulation subsystem keys

See dual ARB subsystem keys

See EDGE subsystem keys

See frequency modulation subsystem keys

See GSM subsystem keys

See list/sweep subsystem keys

See low frequency output subsystem keys

See NADC subsystem keys

See PDC subsystem keys

See phase modulation subsystem keys

See PHS subsystem keys

See sense subsystem keys

See TETRA subsystem keys

See trigger subsystem keys

See wideband CDMA ARB subsystem keys

Trigger Out Polarity Neg Pos softkey, [166](#)

trigger subsystem keys

Bus, [167](#), [521](#)

Ext, [167](#), [521](#)

Free Run, [167](#), [521](#)

Single Sweep, [166](#)

Sweep Repeat Single Cont, [165](#)

Trigger In Polarity Neg Pos, [167](#)

Trigger Key, [167](#), [521](#)

Trigger Out Polarity Neg Pos, [166](#)

Trigger Sync Reply (RPS7) softkey

See wideband CDMA base band generator
subsystem keys and fields

Truncated PN9 softkey, [436](#)

TS softkey, [662](#), [799](#), [804](#), [808](#), [809](#), [811](#)

TSC0 softkey, [619](#), [657](#), [660](#)

TSC1 softkey, [619](#), [657](#), [660](#)

TSC2 softkey, [619](#), [657](#), [660](#)

TSC3 softkey, [619](#), [657](#), [660](#)

TSC4 softkey, [619](#), [657](#), [660](#)

TSC5 softkey, [619](#), [657](#), [660](#)

TSC6 softkey, [619](#), [657](#), [660](#)

TSC7, [657](#), [660](#)

TSC7 softkey, [619](#), [657](#), [660](#)

TTI field, [866](#), [925](#), [975](#), [984](#)

TTI Frame Clock (RPS9) softkey

See wideband CDMA base band generator
subsystem keys and fields

Turbo Coding field, [471](#), [519](#)

Turbo softkey, [857](#), [862](#), [968](#)

Type softkey, [339](#), [347](#)

U

UDI 64 kbps softkey, [932](#)

UDI ISDN (25.101 v3.5) softkey, [835](#)

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, [614](#)

unit subsystem keys

dBm, [169](#)

dBuV, [169](#)

dBuVemf, [169](#)

mV, [169](#)

mVemf, [169](#)

uV, [169](#)

uVemf, [169](#)

Up Control 1 softkey, [812](#)

Up Control 2 softkey, [812](#)

Up Custom softkey, [698](#), [732](#), [812](#)

Up Normal softkey, [812](#)

Up TCH All softkey, [698](#), [732](#)

Up TCH softkey, [698](#), [732](#)

Up VOX softkey, [732](#)

Up/Down softkey, [839](#), [879](#)

Update Display Cycle End Cont softkey, [370](#)

Update in Remote Off On softkey, [85](#)

Uplink MCS-1 softkey, [658](#)

Uplink MCS-5 softkey, [614](#)

Uplink MCS-9 softkey, [614](#)

- Uplink Timing Advance softkey
 - See sense subsystem keys
 - User File softkey
 - See CDMA2000 BBG subsystem keys and fields
 - See custom subsystem keys
 - See DECT subsystem keys
 - See EDGE subsystem keys
 - See GPS subsystem keys
 - See GSM subsystem keys
 - See NADC subsystem keys
 - See PDC subsystem keys
 - See PHS subsystem keys
 - See TETRA subsystem keys
 - See wideband CDMA base band generator subsystem keys and fields
 - User FIR softkey
 - See CDMA ARB subsystem keys
 - See CDMA2000 ARB subsystem keys
 - See CDMA2000 BBG subsystem keys and fields
 - See custom subsystem keys
 - See DECT subsystem keys
 - See Dmodulation subsystem keys
 - See EDGE subsystem keys
 - See GPS subsystem keys
 - See GSM subsystem keys
 - See NADC subsystem keys
 - See PDC subsystem keys
 - See PHS subsystem keys
 - See TETRA subsystem keys
 - See wideband CDMA ARB subsystem keys
 - See wideband CDMA base band generator subsystem keys and fields
 - User Flatness softkey, [103](#), [121](#)
 - User FSK softkey
 - See custom subsystem keys
 - See DECT subsystem keys
 - See Dmodulation subsystem keys
 - See EDGE subsystem keys
 - See GSM subsystem keys
 - See NADC subsystem keys
 - See PDC subsystem keys
 - See PHS subsystem keys
 - See TETRA subsystem keys
 - User I/Q softkey
 - See custom subsystem keys
 - See DECT subsystem keys
 - See Dmodulation subsystem keys
 - User I/Q softkey (continued)
 - See EDGE subsystem keys
 - See GSM subsystem keys
 - See NADC subsystem keys
 - See PDC subsystem keys
 - See PHS subsystem keys
 - See TETRA subsystem keys
 - uV softkey, [169](#)
 - uVemf softkey, [169](#)
 - UW softkey, [754](#), [756](#), [774](#), [776](#)
 - UWCDMA softkey, [103](#)
- ## V
- View Next Error Message softkey, [157](#)
- ## W
- Walsh Code softkey, [253](#), [257](#)
 - Walsh field
 - See CDMA2000 BBG subsystem keys and fields
 - Waveform Length softkey, [213](#), [238](#)
 - Waveform Runtime Scaling softkey, [300](#)
 - waveform, creating a multitone, [308](#)
 - W-CDMA Off On softkey, [358](#), [985](#)
 - WCDMA softkey
 - See CDMA ARB subsystem keys
 - See CDMA2000 ARB subsystem keys
 - See Dmodulation subsystem keys
 - See wideband CDMA ARB subsystem keys
 - wideband CDMA ARB subsystem keys
 - 1 DPCH, [330](#), [335](#)
 - 2 Carriers, [331](#)
 - 2.100 MHz, [328](#)
 - 3 Carriers, [331](#)
 - 3 DPCH, [330](#), [335](#)
 - 4 Carriers, [331](#)
 - 40.000 MHz, [326](#), [328](#)
 - APCO 25 C4FM, [323](#)
 - Apply Channel Setup, [338](#), [347](#)
 - ARB Reference Ext Int, [352](#)
 - ARB Sample Clock, [353](#)
 - Bus, [356](#)
 - Channel, [339](#), [347](#)
 - Chip Rate, [323](#)
 - Clear Header, [325](#)
 - Clip |I| To, [321](#), [332](#)
 - Clip |Q| To, [322](#), [332](#)
 - Clip At PRE POST FIR Filter, [321](#)
 - Clip Type |I+jQ| To, [322](#), [333](#)

Index

wideband CDMA ARB subsystem keys

(continued)

Clipping Type $|I+jQ|$ $|I|$, $|Q|$, 322, 333
Continuous, 355
Custom WCDMA State, 345
DPCCH, 345
DPCCH + 1 DPDCH, 345
DPCCH + 2 DPDCH, 345
DPCCH + 3 DPDCH, 345
DPCCH + 4 DPDCH, 345
DPCCH + 5 DPDCH, 345
DPCH, 340
Equal Energy per Symbol, 343
Ext Delay Off On, 357
Ext Delay Time, 356
Ext Key, 356
Ext Polarity Neg Pos, 357
Filter Alpha, 324
Filter BbT, 324
First Spread Code, 339, 347
Free Run, 354
Gain Unit dB Lin Index, 348
Gate Active Low High, 355
Gated, 355
Gaussian, 323
I/Q Mapping Norma Invert, 327
I/Q Mod Filter Manual Auto, 328
I/Q Output Filter Manual Auto, 326
Increment Scramble Code, 334
Increment Timing Offset, 337
IS-2000 SR3 DS, 323
IS-95, 323
IS-95 Mod, 323
IS-95 Mod w/EQ, 323
IS-95 w/EQ, 323
Left Alternate, 339
Link Down Up, 329
Marker 1, 349, 350
Marker 1 Polarity Neg Pos, 350
Marker 2, 349, 350
Marker 2 Polarity Neg Pos, 351
Marker 3, 349, 350
Marker 3 Polarity Neg Pos, 351
Marker 4, 349, 350
Marker 4 Polarity Neg Pos, 351
Modulator Atten Manual Auto, 327
None, 349, 350
Nyquist, 323
OCNS, 340

wideband CDMA ARB subsystem keys

(continued)

Optimize ACP ADJ ALT, 329, 344
Optimize FIR For EVM ACP, 325
Patt Trig In 1, 357
Patt Trig In 2, 357
PCCPCH + SCH, 330, 335
PCCPCH + SCH + 1 DPCH, 330, 335
PCCPCH + SCH + 3 DPCH, 330, 335
PICH, 340
Power, 347
PPCCPCH, 340, 341
PSCH, 340
Random, 339, 347
Rectangle, 323
Reference Freq, 352
Reset & Run, 354
Retrigger Mode Off On, 353
Right Alternate, 339
Root Nyquist, 323
Save Setup To Header, 325
Scale to 0dB, 343
SCCPCH, 340, 341
Scramble Code, 339, 345, 347
Scramble Offset, 339, 347
Second DPDCH I Q, 345
Single, 355
SSCH, 340
Standard, 339
Store Custom W-CDMA State, 334, 337
Store To File, 346
Symbol Rate, 339, 347
Test Model 1 w/16 DPCH, 330, 335
Test Model 1 w/32 DPCH, 330, 335
Test Model 1 w/64 DPCH, 330, 335
Test Model 2, 330, 335
Test Model 3 w/16 DPCH, 330, 335
Test Model 3 w/32 DPCH, 330, 335
Test Model 4, 330, 335
Test Model 5 w/2HSPDSCH, 330, 335
Test Model 5 w/4HSPDSCH, 330, 335
Test Model 5 w/8HSPDSCH, 330, 335
TFCI Field Off On, 339, 344, 347, 349
Through, 326, 328
Trigger & Run, 354
Trigger Key, 356
Type, 339, 347
UN3/4 GSM Gaussian, 323
User FIR, 323

- wideband CDMA ARB subsystem keys
 - (continued)
 - WCDMA, 323
 - W-CDMA Off On, 358
- wideband CDMA base band generator
 - subsystem keys and fields
 - # of Blocks, 864
 - 1/2 Conv, 857, 862, 968
 - 1/3 Conv, 857, 862, 968
 - 10 msec, 889
 - 10ms Frame Pulse (RPS6), 941, 943, 945, 947, 949, 951, 953
 - 12.2 kbps (34.121 v3.8), 835
 - 144 kbps (34.121 v3.8), 835
 - 20 msec, 889
 - 2560 msec, 889
 - 2nd Scr Offset, 837, 844
 - 384 kbps (34.121 v3.8), 835
 - 40 msec, 889
 - 64 kbps (34.121 v3.8), 835
 - 80 msec, 889
 - 80ms Frame Pulse (RPS20), 941, 943, 945, 947, 949, 951, 953
 - A, 827
 - ACS, 854
 - Actual BER, 978
 - Actual BLER, 971, 980
 - AICH, 925
 - AICH Trigger Polarity Pos Neg, 898
 - All Down, 839, 879
 - All Up, 839, 879
 - Alt power in, 939
 - AMR 12.2 kbps, 835, 932
 - APCO 25 C4FM, 840, 890
 - Apply Channel Setup, 822, 867
 - B, 827
 - Base Delay Tp-a, 921
 - BBG Chip Clock Ext Int, 821
 - BBG Data Clock Ext In, 825
 - BER, 860, 971, 973, 979, 982
 - Beta, 872, 882
 - BLER, 972, 973, 981, 982
 - Blk Set Size, 857
 - Blk Size, 855, 967, 976
 - Blocking, 854
 - Burst gate in, 940
 - C Power, 868
 - C Power value, 899
 - C/N value, 822, 868, 898
 - wideband CDMA base band generator
 - subsystem keys and fields (continued)
 - CFN #0 Frame Pulse (RPS10), 935
 - Chan Code, 832, 833, 842
 - Channel Code, 848, 873, 882, 926, 927
 - Channel Code field, 847
 - Channel State, 881, 889
 - Channel State Off On, 825, 830, 831, 832, 839, 842, 848, 850, 852, 871, 901, 967, 968, 976, 977
 - ChCode Ctl, 914
 - ChCode Dat, 914
 - Chip Clock (RPS1), 935, 941, 943, 945, 947, 949, 951, 953
 - Chip Rate, 831, 872
 - Comp Mode Start Trigger Polarity Neg Pos, 964
 - Comp Mode Stop Trigger Polarity Neg Pos, 964
 - Compressed Mode Start Trigger, 963
 - Compressed Mode Stop Trigger, 964
 - CRC Size, 858, 969, 977
 - Ctrl Beta, 902
 - Ctrl Pwr, 903
 - Data, 884
 - Data Beta, 906
 - Data field, 982
 - Data Pwr, 908
 - Data Rate, 844
 - DCH1, 869
 - DCH2, 869
 - DCH3, 869
 - DCH4, 869
 - DCH5, 869
 - DCH6, 869
 - DL Reference 1.1, 962
 - DL Reference 1.2, 962
 - DL Reference 2.1, 962
 - DL Reference 2.2, 962
 - Down/Up, 839, 879
 - DPCCH, 869, 893
 - DPCCH Power, 876
 - DPCCH Raw Data (RPS4), 935
 - DPCCH Raw Data Clock (RPS5), 935
 - DPCH + 1, 823, 824
 - DPCH + 2, 823, 824
 - DPCH Channel Balance, 831
 - DPDCH, 869
 - DPDCH Power, 884

Index

wideband CDMA base band generator
 subsystem keys and fields (*continued*)
 DPDCH Raw Data (RPS2), 935
 DPDCH Raw Data Clock (RPS3), 935
 Eb/No, 899
 Eb/No value (dB), 869
 Ec/No value, 823, 900
 Equal Powers, 845, 893
 Error BER, 979
 Error Bits, 859, 970
 Error Blocks, 861, 972
 Ext, 839
 Ext Clock Rate x1 x2 x4, 821
 FBI State, 875
 Filter Alpha, 841, 891
 Filter BbT, 841, 891
 FIX, 875
 FIX4, 834, 846, 848, 849, 858, 862, 874, 883,
 902, 903, 905, 907, 973, 978
 Flat Noise BW, 870
 Frame Clock Polarity Neg Pos, 889
 Frame Sync Trigger Mode Single Cont, 956
 Gaussian, 840, 890
 Higher Layer, 958
 Infinity, 961
 Init Power, 894
 Init Pwr, 912, 929
 Intermod, 854
 IS-95, 840, 890
 IS-95 Mod, 840, 890
 IS-95 Mod w/EQ, 840, 890
 IS-95 w/EQ, 890
 Left, 828
 Link Down Up, 867
 Max BlksSize, 863
 Max Input, 854
 Max NumOfBlks, 863
 Max Power, 894
 Max Pwr, 913, 930
 Message Data Raw Data (RPS11), 941, 943,
 945, 947, 949, 951, 953
 Message Part, 911
 Message Pulse (RPS22), 941, 943, 945, 947,
 949, 951, 953
 Message-Control Raw Data (RPS13), 943,
 945, 947, 949, 951, 953
 Message-Control Raw Data Clock (RPS12),
 941, 943, 945, 947, 949, 951, 953
 Min Power, 895

wideband CDMA base band generator
 subsystem keys and fields (*continued*)
 Msg Ctrl, 900
 Msg Data, 900
 Msg Pwr, 911, 928
 N Power, 870, 901
 NONE, 968
 None, 857, 862, 973, 982
 NONE (RPS0), 935, 941, 943, 945, 947, 949,
 951, 953
 Normal, 828
 Num of Blk, 974, 983
 Num of Pre, 912, 929
 Number of AICH, 897
 Number of PRACH, 926, 928
 Number of PRACH 80ms, 912
 Number of Preamble, 929
 Nyquist, 840, 890
 Off, 925
 Omitted, 960
 On, 925
 On/Off, 845, 917
 Optimize FIR For EVM ACP, 841, 892
 Paging Indicator, 850
 Pattern trigger in 1, 940
 Pattern trigger in 2, 940
 PCCPCH, 823, 824
 Performance Req, 854
 Phase Polarity Normal Invert, 851
 Phase Polarity Normal Inverted, 867
 PI Bits, 849
 PICH, 823, 824
 Playback Ratio, 827
 PN15, 826, 833, 843, 846, 848, 873, 874, 877,
 879, 883, 902, 905, 907
 PN9, 826, 833, 843, 846, 848, 858, 873, 874,
 877, 879, 883, 902, 905, 907, 969, 978
 Power, 827, 830, 834, 843, 847, 850, 851
 Power Control Signal Polarity Neg Pos, 897
 Power Hold Off On, 893
 Power Mode Norm TPC, 897
 Pp-m, 914, 931
 PRACH, 893
 PRACH Mode Single Multi, 910
 PRACH Power Setup Mode Pp-m Total, 918
 PRACH Processing (RPS19), 941, 943, 945,
 947, 949, 951, 953
 PRACH Scrambling Code, 919
 PRACH Trigger, 923

- wideband CDMA base band generator
 - subsystem keys and fields (*continued*)
 - PRACH Trigger Polarity Neg Pos, 924
 - PRACH Trigger Source Immedi Trigger, 924
 - Pre Sig, 915
 - Preamble, 900
 - Preamble power average, 917
 - Preamble Pulse (RPS21), 941, 943, 945, 947, 949, 951, 953
 - Preamble Raw Data (RPS15), 941, 943, 945, 947, 949, 951, 953
 - Preamble Raw Data Clock (RPS16), 941, 943, 945, 947, 949, 951, 953
 - PSCH State, 851
 - Puncture, 974, 983
 - PwrOffs, 957
 - RACH TrCH, 900
 - Ramp Step, 913, 930
 - Rate Match Attr, 865, 975, 983
 - Rectangle, 840, 890
 - Ref Data Rate, 869
 - Ref Sensitivity, 854
 - Reset to Initial Power, 896
 - Right, 828
 - RMC 144 kbps (25.141 v3.9), 932
 - RMC 384 kbps (25.141 v3.9), 932
 - RMC 64 kbps (25.141 v3.9), 932
 - RMC122 kbps (25.141 v3.9), 932
 - Root Nyquist, 840, 890
 - Scale to 0dB, 845, 893
 - SCFN, 963
 - Scrambling Code, 852, 955
 - SF/2, 958
 - SFN RST Polarity, 955
 - SFN-CFN Frame Offset, 892
 - Signature, 931
 - Slot Format, 828, 836, 876, 886, 904, 909
 - Spurious Response, 854
 - SSCH 2nd Scramble Group, 853
 - SSCH Power, 853
 - SSCH State, 854
 - Start Access Slot Position in 80ms Period, 916
 - Start Sub-Channel#, 920
 - STD, 873
 - Step Power, 896
 - Stop CFN, 957
- wideband CDMA base band generator
 - subsystem keys and fields (*continued*)
 - Sub Channel Timing (RPS17), 941, 943, 945, 947, 949, 951, 953
 - Symbol Rate, 876, 885, 904, 908
 - Sync Source SFN FClk ESG, 956
 - tDPCH Offset, 838
 - TFCI Pat, 837
 - TFCI Pattern, 877, 905
 - TFCI State, 878, 906
 - Tfirst, 829
 - TGD, 959
 - Tgl, 829
 - TGL1, 959
 - TGL2, 960
 - TGPL1, 960
 - TGPL2, 960
 - TGPRC, 961
 - TGPS Inactive Active, 961
 - TGSN, 962
 - Timeslot Offset, 919
 - Timing Offset, 920, 955, 965
 - tOCNS Offset, 845
 - Total Bits, 859, 970
 - Total Blocks, 861, 972
 - TotalPwr, 871, 901
 - TPC Pat Steps, 878
 - TPC Pat Trig Polarity Neg Pos, 880
 - TPC Pattern, 879
 - TPC Steps, 838
 - TPC UserFile Trig, 880
 - Tp-m, 922
 - Tp-p, 923
 - Transp Chan A, 833
 - Transp Chan B, 833
 - Transp Position Flexible Fixed, 864
 - Transport CH, 846
 - TrCH BER, 886
 - TrCh BlkSize 168, 918
 - TrCh BlkSize 360, 918
 - TrCH State Off On, 866, 984
 - Trigger Sync Reply (RPS7), 941, 943, 945, 947, 949, 951, 953
 - TTI, 866, 925, 975, 984
 - TTI Frame Clock (RPS9), 935
 - Turbo, 857, 862, 968
 - UDI 64 kbps, 932
 - UDI ISDN (25.101 v3.5), 835
 - UN3/4 GSM Gaussian, 840

Index

wideband CDMA base band generator
 subsystem keys and fields (*continued*)
 Up/Down, [839](#), [879](#)
 User File, [833](#), [839](#), [846](#), [848](#), [858](#), [873](#), [874](#),
 [877](#), [883](#), [902](#), [905](#), [907](#), [969](#), [978](#)
 User FIR, [840](#), [890](#)
 W-CDMA Off On, [985](#)