Agilent N9062A Signal Analyzer User Guide

This manual provides documentation for the
following X-Series Analyzers:
PXA Signal Analyzer N9030A
MXA Signal Analyzer N9020A
EXA Signal Analyzer N9010A
CXA Signal Analyzer N9000A
MXE EMI Receiver N9038A

Agilent X-Series Signal Analyzer

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EXA Signal Analyzer N9010A
CXA Signal Analyzer N9000A
MXE EMI Receiver N9038A

N9062A & W9062A SCPI Language Compatibility Guide

Agilent Technologies

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http://www.agilent.com/find/mxa
http://www.agilent.com/find/exa
http://www.agilent.com/find/cxa
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http://www.agilent.com/find/tips

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1 Getting Started

This chapter gives a quick overview of the N9062A & W9062A SCPI Language Compatibility application on Agilent X-series analyzers.

What Does the Agilent N9062A & W9062A SCPI Language Compatibility Application Do?

The Agilent N9062A & W9062A SCPI Language Compatibility application is designed to allow X-Series signal analyzers (including CXA, EXA, MXA and PXA) to be controlled using the SCPI programming commands (as known as SCPI commands, or SCPI) from the following Rohde & Schwarz (R&S) instruments:

- R&S FSE
- R&S FSP
- R&S FSU

The X-Series analyzer with the N9062A/W9062A application installed is able to emulate the FSE/FSP/FSU measurement functions as closely as possible in many automated systems with minimal or no modification to the currently used measurement software.

The N9062A/W9062A application supports over 300 SCPI commands from the FSE/FSP/FSU instruments and 16 of IEEE488.2 standard SCPI commands.

NOTE

The N9062A/W9062A application supports commands from the Spectrum Analyzer (default) mode. Commands from other options or modes are not supported.

The N9062A/W9062A does not support the same front panel operations, user interface and measurement screen display as the FSE/FSP/FSU instruments.

The N9062A/W9062A does not support the Split Screen feature.

The N9062A/W9062A partly supports Channel Power measurements, OBW measurements, ACP measurements and IQ traces.

Documentation for the N9062A & W9062A SCPI Language Compatibility application

Signal Analyzers with N9062A/W9062A

When you purchase your X-Series signal analyzer with the SCPI Language Compatibility application, this manual - the *N9062A & W9062A SCPI Language Compatibility Guide* (N9062-90001) is included on the documentation CD.

For information on PXA series analyzers and other related documentation, refer to the PXA web site at http://www.agilent.com/find/pxa.

For information on MXA series analyzers and other related documentation, refer to the MXA web site at http://www.agilent.com/find/mxa.

For information on EXA series analyzers and other related documentation, refer to the EXA web site at http://www.agilent.com/find/exa.

For information on CXA series analyzers and other related documentation, refer to the CXA web site at http://www.agilent.com/find/cxa.

This *SCPI Language Compatibility Guide* is not designed to be a comprehensive guide to all SCPI commands. It gives brief descriptions of the supported commands, and highlights important functional or behavioral differences that you should be aware of when transferring your existing code to your X-Series analyzer. For a fuller description of these SCPI commands, refer to the manuals supplied with your original analyzer.

Signal Analyzer Updates

For the latest information about this instrument, including software upgrades, application information, and product information, please visit the URL above.

SCPI Language Compatibility Application General Rules and Limitations

The N9062A/W9062A application has been designed to emulate the remote operation of the R&S FSE/FSP/FSU instruments for the most commonly used commands needed for basic spectrum analyzer functions. It is not an absolute direct replacement for these instruments in all cases, and does not support instrument modes beyond the core spectrum analyzer. It also does not emulate the local front-panel interface (buttons) and display as used for manual operation.

Couplings

The N9062A/W9062A application uses the auto coupling features of the X-Series analyzers, and may be slightly different from the FSE/FSP/FSU. To eliminate the possibilities of "Meas Uncal" errors between auto and manual values, values will default to the X-Series auto settings where applicable (for example resolution bandwidth).

The parameter’s default value is adjusted to match that of the FSE/FSP/FSU unless otherwise stated.

Data Formats

N9062A/W9062A application supports data formats defined for the X-Series analyzers. For more information, see *SA Programmer’s Guide*.

Markers

The N9062A/W9062A application emulates the behavior of FSE/FSP/FSU instruments.

Numeric Ranges

Numeric ranges are limited to that of the X-Series analyzers unless otherwise stated. For more information about X-Series numeric ranges, see *SA Programmer’s Guide*.

Remote Control

The N9062A/W9062A application in X-Series signal analyzers supports remote operation through the following interfaces: GPIB, LAN, USB or Telnet.

Returning Data

Data returned in response to a command or query is defined in the following Chapter 3 , “Compatible SCPI Commands,” on page 37, unless otherwise stated. For more information about X-Series data returning, see *SA Programmer’s Guide*.

The data returned from queries, especially from a trace query, match the FSE/FSP/FSU for the most common data formats (ASCII, Binary 32).

Units

The N9062A/W9062A application supports the following standard units. Any units supported by FSE/FSP/FSU commands that are not supported by the application are noted in the table and details found in Chapter 3 , “Compatible SCPI Commands,” on page 37.

Frequency Units: HZ, KHZ, MHZ, GHZ

Amplitude Units: DB, DBM, DBUV, DBMV, DBUA, V, A, W

Time Units: KS, S, MS, US, NS

Status System & SRQ

The STATus subsystem is a remote-only command structure that allows a controller to determine the operating status of the instrument. The system can also allow the instrument to request service from the controller on an interrupt basis. The system is a complex hierarchy, where specific details of an instrument’s condition are summarized upward to higher level registers. The use of this system is optional, and your programs may vary widely in the depth to which you use it.

The topmost Status Byte Register, Standard Event Status Register, and their SRQ behavior, are specified by IEEE 488.2 standard. The N9062A/W9062A application adopts the Status system of the Agilent X-Series analyzers, which conforms to the IEEE 488.2 standard and behaves like that of any IEEE488.2-compliant instrument (including the FSE, FSP, or FSU). These status conditions, events, or commands should emulate any compliant instrument, for example:

- operation complete, *OPC and *OPC?
- Status Byte bits, including Error/Event reporting, plus *CLS, *STB
- Standard Event Status Register bits, plus *ESE, *ESR, *PSC
- SRQ behavior and *SRE mask
- most error conditions (top level), plus STATus:QUEue? and SYSTem:ERRor? queries
- use of STATus:OPERation and STATus:QUEStionable commands, although specific bits may be mapped differently

At lower levels of details, different vendors have implemented their status systems differently. Therefore, if a program (written for FSE/FSP/FSU) makes deep or sophisticated use of the status subsystem, it may not run correctly with N9062A/W9062A and so require modification. The top differences include (but are not limited to) the following:

- RF & IF Overload condition
- parallel polling, IST-flag (Individual Status), and PPE (Parallel Poll Enable) mask
- limit or limit margin mask failure reporting
- sweep break feature (of a multi-sweep measurement)
- specific error message numbers, specific error message text
- status conditions associated with Screen B (specifically)

For more information about the X-Series Status system, see *SA Programmer’s Guide*.

Supported Commands and Queries

Only a subset of the FSE/FSP/FSU series commands is supported in the N9062A/W9062A application. The list of supported commands was determined by feedback from our customers combined with technical considerations and constraints.

The supported FSE/FSP/FSU commands are summarized with short notes in Table 3-1 on page 38. In some case, a command is accepted without error, but no action taken, for example, a display line.

Unsupported Commands and Queries

If a command or query is valid for FSE/FSP/FSU products but not supported by the N9062A/W9062A application, the X-Series analyzer may handle it in the following way:

- Generate an error message. This kind of SCPI commands is not covered in this manual.

NOTE	If your use case is not fully supported, contact your local Agilent Technologies Sales and Service Office, or if in the United States, call 1-800-829-4444.

Hardware and Firmware Requirements for N9062A/W9062A

One of the following Agilent signal analyzers is required to run the N9062A/W9062A application.

Table 1-1 Compatible Agilent PXA Series Signal Analyzers

Analyzer Model Number	Upper Frequency Limit	Firmware
N9030A-503	3.6 GHz	Rev A.06.00 or later
N9030A-508	8.4 GHz	Rev A.06.00 or later
N9030A-513	13.6 GHz	Rev A.06.00 or later
N9030A-526	26.5 GHz	Rev A.06.00 or later
N9030A-543	43 GHz	Rev A.08.00 or later
N9030A-544	44 GHz	Rev A.08.00 or later
N9030A-550	50 GHz	Rev A.08.00 or later

Table 1-2 Compatible Agilent MXA Series Signal Analyzers

Analyzer Model Number	Upper Frequency Limit	Firmware
N9020A-503	3.6 GHz	Rev A.06.00 or later
N9020A-508	8.4 GHz	Rev A.06.00 or later
N9020A-513	13.6 GHz	Rev A.06.00 or later
N9020A-526	26.5 GHz	Rev A.06.00 or later

Table 1-3 Compatible Agilent EXA Series Signal Analyzers

Analyzer Model Number	Upper Frequency Limit	Firmware
N9010A-503	3.6 GHz	Rev A.06.00 or later
N9010A-507	7 GHz	Rev A.06.00 or later
N9010A-513	13.6 GHz	Rev A.06.00 or later
N9010A-526	26.5 GHz	Rev A.06.00 or later

Table 1-4 Compatible Agilent CXA Series Signal Analyzers

Analyzer Model Number	Upper Frequency Limit	Firmware
N9000A-503	3 GHz	Rev A.10.01 or later
N9000A-507	7.5 GHz	Rev A.10.01 or later

For maximum compatibility, you should select an X-Series analyzer that equals or exceeds the frequency range of the FSE/FSP/FSU analyzer you are replacing.

Installing the N9062A & W9062A SCPI Language Compatibility Application

N9062A & W9062A SCPI Language Compatibility for the R&S FSE/FSP/FSU analyzers is a licensed application on the X-Series analyzers. The application must be installed and licensed on the X-Series analyzer, PXA, MXA, EXA and CXA, for it to work correctly.

License for N9062A/W9062A

License N9062A-2FP is required to provide SCPI language compatibility on Agilent X-Series analyzers PXA, MXA and EXA.

License W9062A-2FP is required to provide SCPI language compatibility on Agilent X-Series analyzer CXA.

Installation

The license is installed on the X-Series analyzer in one of the following ways:

- If you purchased a new X-Series analyzer with the N9062A/W9062A application then the product is installed and licensed and ready to use.
- If you have an X-Series analyzer and have subsequently purchased the N9062A/W9062A application then you can download the N9062A/W9062A application from the Agilent website. The N9062A & W9062A SCPI Language Compatibility application is installed as part of a software upgrade. See the link below for Signal Analyzers software upgrade site. After upgrading your software you should then use your entitlement certificate to license the product (see Licensing below).

The latest revision of the software may be downloaded from:

http://www.agilent.com/find/pxa_software

http://www.agilent.com/find/mxa_software

http://www.agilent.com/find/exa_software

http://www.agilent.com/find/cxa_software

NOTE No calibration is required after the N9062A/W9062A application is installed.

Licensing

When you order a licensed product, you receive an entitlement certificate. Instructions are provided on your entitlement certificate to direct you to the Web site to redeem your certificate for a license key. You need to provide your instrument product number and serial number, and the entitlement certificate

number.

Required Information:	Front Panel Key Path:
Model #: (Ex. N9020A)	
Instrument Serial Number: _____	**System** > **Show > System**

The license is downloaded from the license website onto a USB storage device so that it can be loaded into the instrument.

A license key is usually for one instrument model/serial number combination. The license key can only be installed on that instrument.

License Installation Procedure over USB

1. Redeem the Option Upgrade Entitlement Certificate by following the instructions on the Certificate.
2. After redeeming your Option Upgrade Entitlement Certificate you will receive an e-mail with an attached License File.
3. Locate a USB storage device and save the .lic file to the root directory of the USB storage device.
4. Connect the USB storage device to one of the signal analyzer USB ports. Windows detects the new hardware and may display the configuration menu. This menu may be configured according to your preferences.
5. The signal analyzer automatically consumes the license file. (This may take a few minutes) When the license is consumed the Agilent License Manager displays a “Successful License Installation” message.
6. Alternatively the license file can be manually installed over USB or LAN by placing the license file in the following folder on the signal analyzer.
   C:\Program Files\Agilent\licensing

Verify the Installation

1. Press **System** > **Show** > **System** to display the list of installed applications.
2. Verify that the new application appears in the list.

   If you require further assistance, please contact the Agilent support team.

   Online assistance: http://www.agilent.com/find/assist

   If you do not have access to the Internet, contact your local Agilent Technologies Sales and Service Office, or if in the United States, call 1-800-829-4444.

Running Software that Requires SCPI Commands

You only have access to a subset of SCPI commands from FSE/FSP/FSU instruments. The SCPI commands supported by X-Series analyzers are listed in Table 3-1 on page 38.

If you are not familiar with the SCPI language, Chapter 4 , “A Brief Introduction to the SCPI Language,” on page 165 contains some useful information.

Service and Calibration

Since the Performance Verification and Adjustment Software uses the SCPI command language, you need to exit the N9062A & W9062A SCPI Language Compatibility application and change to the Spectrum Analyzer application prior to calibration or service of your Agilent X-Series analyzer.

2 Front Panel Operations

This chapter describes the available front panel operations that are supported by the N9062A & W9062A SCPI Language Compatibility application on the Agilent X-series analyzers including CXA, EXA, MXA and PXA.

Selecting SCPI Language Compatibility Mode

NOTE Option N9062A-2FP or W9062A-2FP is required to use the SCPI Language Compatibility mode.

To select the SCPI Language Compatibility mode, press the **Mode** hardkey on the X-Series analyzer front panel and then select the **SCPI Language Compatibility** mode. If there are more than six modes on the signal analyzer, then use the More button to find the **SCPI Language Compatibility** mode selection. Figure 2-1 is an example mode menu map showing the N9062A/W9062A application installed.

Figure 2-1 Example Mode Menu Map for X-Series Analyzers

Alternatively, you can select this mode using following SCPI commands.

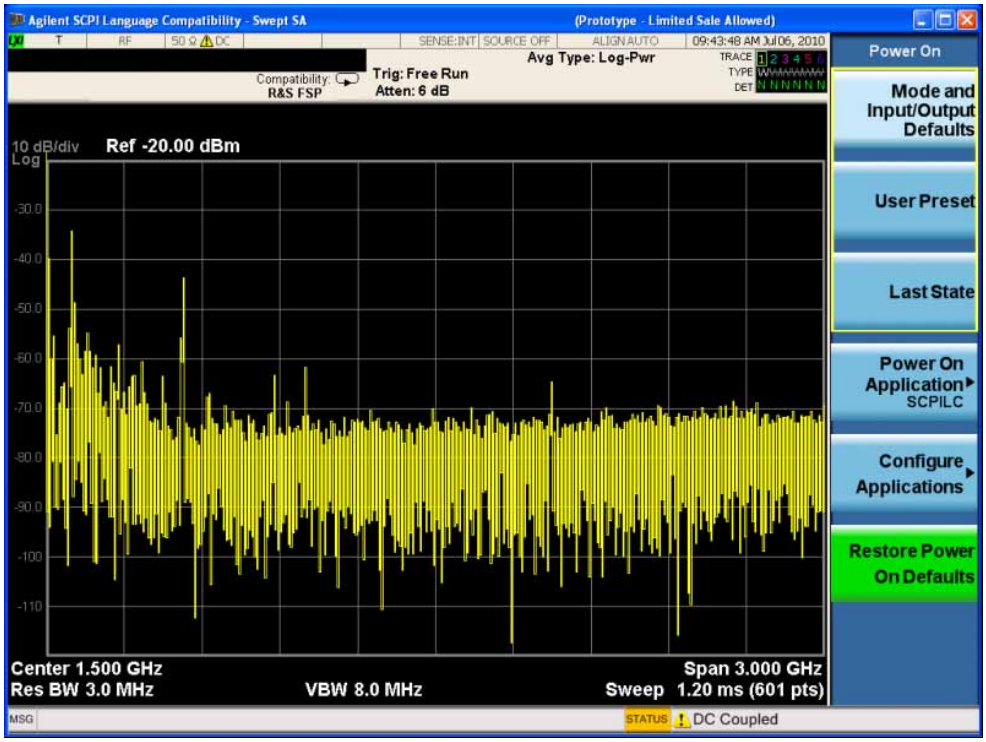
Key Path:	**Front-panel key**
Remote Command	`:INST SCPIRLC` `:INST:NSELect 270`
Initial S/W Revision:	A.06.00 or later

Selecting SCPI Language Compatibility Mode as the Power-on Application

NOTE Option N9062A-2FP or W9062A-2FP is required to use the SCPI Language Compatibility mode.

To select the SCPI Language Compatibility mode as the power-on application, press the **System** hardkey on the X-Series analyzer front panel and then select the **Power On**, **SCPILC**. If there are more than six modes on the signal analyzer, then use the More button to find the **SCPILC** mode selection. Figure 2-2 is an example showing the power-on application setup.

Figure 2-2 Example Power On Mode Menu Map for X-Series Analyzers



Mode Setup

NOTE License N9062A-2FP or W9062A-2FP is required for emulating FSE, FSP or FSU.

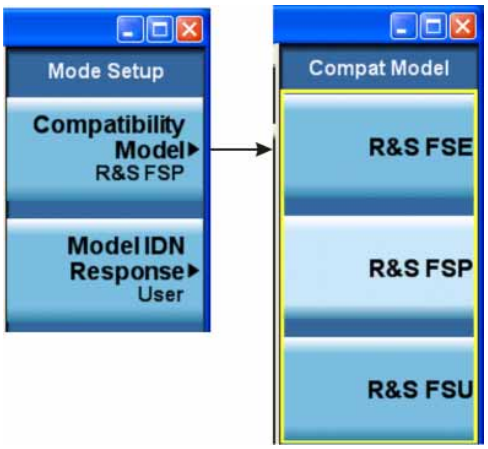
Allows you to adjust the mode setup configuration for current mode.

Key Path:	**Front-panel key**
Initial S/W Revision:	A.06.00 or later

Selecting Compatibility Model

To select the compatibility model you wish to emulate, press the **Mode Setup** hardkey on the front panel and then press **Compatibility Model**. Figure 2-3 shows the menu map that allows you to select the Compatibility Mode from FSE, FSP and FSU.

Figure 2-3 Mode Setup > Compatibility Mode Selection Menu Map



NOTE When the **Mode IDN Response** selects Compatibility Model, it does not affect the response to the command “ID?” which always returns the model number of your X-Series analyzer, like "N9020A".

The selected compatibility model determines the response to the “IDN?” command. Setting the Compatibility Model to ‘R&S FSE’, ‘R&S FSP’ or ‘R&S FSU’ affects the response to the SCPI command ‘*IDN?’ This command will return the model number and firmware version number of the corresponding instrument.

Alternatively, you can select the desired compatibility mode using the following SCPI command.

Key Path:	**Mode Setup**
Remote Command	`[:SENSe]:RLC:TYPE FSE|FSP|FSU` `[:SENSe]:RLC:TYPE?`
Example	RLC:TYPE FSU RLC:TYPE?
Preset	FSP
State Saved	**Saved in instrument state.**
Range	FSE|FSP|FSU
Notes	If you don't install the N9062A-2FP or W9062A-2FP license, **SCPI Language Compatibility** mode is not available.
Initial S/W Revision:	A.06.00 or later

R&S FSE

Selects emulation of FSE.

Key Path:	**Mode Setup, Compatibility Model**
Example:	RLC:TYPE FSE
Initial S/W Revision:	A.06.00 or later

R&S FSP

Selects emulation of FSP.

Key Path:	**Mode Setup, Compatibility Model**
Example:	RLC:TYPE FSP
Initial S/W Revision:	A.06.00 or later

R&S FSU

Selects emulation of FSU.

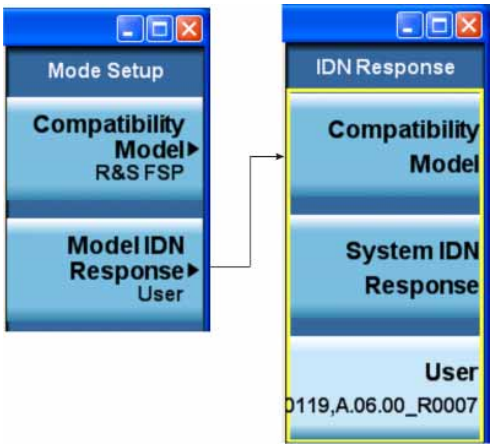
Key Path:	**Mode Setup, Compatibility Model**
Example:	RLC:TYPE FSU
Initial S/W Revision:	A.06.00 or later

Selecting Mode IDN Response

NOTE This selection is active only within the SCPI Language Compatibility mode.

To select the response to the command '*IDN?' as what you desire, press the **Mode Setup** hardkey on the front panel and then press **Mode IDN Response**. Figure 2-4 shows the menu map that allows you to select the response type from the list.

Figure 2-4 Mode Setup > Mode IDN Response Selection Menu Map



The available selections are as follows:

Compatibility Model — Sets the response to the command '*IDN?' to the model number and firmware version number that you select from the Compatibility Model list, like `Rohde&Schwarz,FSP-26,123456/789,04.00`.

System IDN Response — Sets the response to the command '*IDN?' to the model number and firmware version number of your X-Series analyzer, like `Agilent Technologies,N9020A,US04000119,A.06.00_R0008`.

User — Sets the response to the command '*IDN?' to the name that you want. To press **User**, enter a name for your case and press **Done**, you will get the name when you read from the command '*IDN?', like `My Analyzer`.

By default, the response is set the same as **System IDN Response**. If you don't enter a name, the response is also set the same as **System IDN Response**.

NOTE The **System IDN Response** selection refers back to the system-level IDN response as selected under the **System** key (either **Factory** or **User**). These selections apply to the entire instrument, across all modes.

Alternatively, you can select the desired response using the following SCPI command.

Key Path:	**Mode Setup**
Remote Command:	`[:SENSe]:RLC:IDN:TYPE SYSTem|COMPatibility|USER` `[:SENSe]:RLC:IDN:TYPE?`
Example:	SENS:RLC:IDN:TYPE SYSTem RLC:IDN:TYPE?
State Saved:	**Saved in instrument state.**
Range:	SYSTem | COMPatibility | USER
Initial S/W Revision:	A.06.00 or later

Compatibility Model

Sets the response to *IDN command as the emulated instrument, like `Rohde&Schwarz,FSP-26,123456/789,04.00`.

Key Path:	**Mode Setup, Mode IDN Response**
Example:	RLC:IDN:TYPE COMP
Initial S/W Revision:	A.06.00 or later

System IDN Response

Sets the response to *IDN command as the analyzer system, like “N9020A”.

Key Path:	**Mode Setup, Mode IDN Response**
Example:	RLC:IDN:TYPE SYST
Initial S/W Revision:	A.06.00 or later

User IDN Response

Allows you to set or get the user-defined mode IDN response.

If you don’t enter anything, the system IDN response will be used instead.

Key Path:	**Mode Setup**
Remote Command:	`[:SENSe]:RLC:IDN:USER <string>` `[:SENSe]:RLC:IDN:USER?`
Example:	RLC:IDN:USER “abc” RLC:IDN:USER?
State Saved:	**Saved in instrument state.**
Initial S/W Revision:	A.06.00 or later

Restore Mode Defaults

Resets the state for the currently active mode by resetting the mode persistent setting to their default values and by performing a mode preset. This function will never cause a mode switch. This function performs a full preset on the active mode.

Send Commands

After you finish setting up the N9062A/W9062A application, you can send FSE/FSP/FSU commands to X-Series analyzers.

It is recommended to use Agilent 82357B USB/GPIB interface and free instrument to PC connection tool Agilent IO Libraries Suite when you connect the instrument to a PC. For more details, visit:

http://www.agilent.com/find/82357B

http://www.agilent.com/find/iolib

NOTE	The commands can be sent via a GPIB, LAN, USB, or Telnet connection that your X-Series analyzer can support.

3 Compatible SCPI Commands

This chapter lists the IEEE standard SCPI commands and the FSE/FSP/FSU SCPI commands that are supported by the N9062A/W9062A application on the Agilent X-series analyzers including CXA, EXA, MXA and PXA and gives brief details on the parameters of the commands.

It’s assumed that you have previous experience in programming SCPI. This chapter is not intended to teach you everything about the SCPI programming language.

If you are not familiar with the SCPI language, Chapter 4 , “A Brief Introduction to the SCPI Language,” on page 165 contains some useful information.

If you are using other optional programming compatibility modes, you should refer to the manual that came with the option.

NOTE

Most FSE/FSP/FSU SCPI commands have a numeric suffix at the first node, corresponding to the Split Screen A/B feature, for example, CALCulate<1|2>, INITiate<1|2> and so on. However, the N9062A or W9062A does not support suffix "2". That is, Full Screen is assumed, and all commands are mapped as if to parameter <1>. Besides, the numeric suffix of "1" can be omitted, for example, CALCulate1 is equal to CALCulate.

If you send a command with the numeric suffix of "2", an error message will be displayed in the X-Series message area.

SCPI Summary Table

This table is a brief summary of the FSE/FSP/FSU SCPI commands covered by the N9062A & W9062A SCPI Language Compatibility application in the X-Series analyzers, with short notes on operation. For more details, see “Supported SCPI Commands” on page 57.

Table 3-1 SCPI Commands Summary Table

SCPI Command	Corresponding Model	Support	Notes
Abort	FSE/FSP/FSU	Yes	
CALCulate<1|2>:DELTamarker<1...4>[:STATe] ON | OFF	FSE/FSP/FSU	Yes	All DELTamarker functions are not supported in CCDF and APD measurements.
CALCulate<1|2>:DELTamarker<1...4>:MODE ABSolute|RELative	FSE/FSP/FSU	Yes	
CALCulate<1|2>:DELTamarker<1...4>:AOFF	FSE/FSP/FSU	Yes	
CALCulate<1|2>:DELTamarker<1...4>:TRACe 1 to 3	FSE/FSP/FSU	Yes	
CALCulate<1|2>:DELTamarker<1...4>:X 0 to MAX (frequency | sweep time)	FSE/FSP/FSU	Yes	
CALCulate<1|2>:DELTamarker<1...4>:X:RELative?	FSE/FSP/FSU	Yes	
CALCulate<1|2>:DELTamarker<1...4>:Y?	FSE/FSP/FSU	Yes	The only unit supported is dB.
CALCulate<1|2>:DELTamarker<1...4>:MAXimum[:PEAK]	FSE/FSP/FSU	Yes	
CALCulate<1|2>:DELTamarker<1...4>:MAXimum:LEFT	FSE/FSP/FSU	Yes	
CALCulate<1|2>:DELTamarker<1...4>:MAXimum:NEXT	FSE/FSP/FSU	Yes	
CALCulate<1|2>:DELTamarker<1...4>:MAXimum:RIGHt	FSE/FSP/FSU	Yes	
CALCulate<1|2>:DELTamarker<1...4>:MINimum[:PEAK]	FSE/FSP/FSU	Yes	
CALCulate<1|2>:DELTamarker<1...4>:MINimum:LEFT	FSE/FSP/FSU	Yes	
CALCulate<1|2>:DELTamarker<1...4>:MINimum:NEXT	FSE/FSP/FSU	Yes	

Table 3-1 SCPI Commands Summary Table

SCPI Command	Corresponding Model	Support	Notes
CALCulate<1|2>:DELTamarker<1...4>:MINimum:RIGHt	FSE/FSP/FSU	Yes	
CALCulate<1|2>:DELTamarker<1...4>:LINK ON | OFF	FSU	Yes	
CALCulate<1|2>:DELTamarker<1...4>:FUNCtion:FIXed[:STATe] ON | OFF	FSE/FSP/FSU	Yes	
CALCulate<1|2>:DELTamarker<1...4>:FUNCtion:FIXed:RPOint:MAXimum[:PEAK] <numeric_value>	FSP/FSU	Yes	
CALCulate<1|2>:DELTamarker<1...4>:FUNCtion:FIXed:RPOint:Y <numeric_value>	FSE/FSP/FSU	Yes	
CALCulate<1|2>:DELTamarker<1...4>:FUNCtion:FIXed:RPOint:Y:OFFSet <numeric_value>	FSE/FSP/FSU	Yes	
CALCulate<1|2>:DELTamarker<1...4>:FUNCtion:FIXed:RPOint:X <numeric_value>	FSE/FSP/FSU	Yes	
CALCulate<1|2>:DELTamarker<1...4>:FUNCtion:PNOise[:STATe]	FSE/FSP/FSU	Yes	
CALCulate<1|2>:DELTamarker<1...4>:FUNCtion:PNOise:AUTO ON | OFF	FSU	Yes	
CALCulate<1|2>:DELTamarker<1...4>:FUNCtion:PNOise:RESult?	FSE/FSP/FSU	Yes	
CALCulate<1|2>:LIMit<1...8>:ACTive?	FSE/FSU	Yes[a]	All LIMit functions are not supported in CCDF and APD measurements.
CALCulate<1|2>:LIMit<1...8>:TRACe 1 to 3	FSE/FSP/FSU	Yes	
CALCulate<1|2>:LIMit<1...8>:STATe ON | OFF	FSE/FSP/FSU	Yes	
CALCulate<1|2>:LIMit<1...8>:UNIT DBM | DBPW | WATT | DBUV | DBMV | VOLT |DBUA | AMPere| DB | DEG | RAD | S | HZ | PCT | UNITLESS	FSE/FSP/FSU	Yes	The units supported are DBM, DBPW, WATT, DBUV, DBMV, VOLT, DBUA, and DB. All limit lines use the same unit.
CALCulate<1|2>:LIMit<1...8>:FAIL?	FSE/FSP/FSU	Yes	
CALCulate<1|2>:LIMit<1...8>:CLEar[:IMMediate]	FSE/FSP/FSU	Yes	
CALCulate<1|2>:LIMit<1...8>:COMMent <string>	FSE/FSP/FSU	Yes	

Table 3-1 SCPI Commands Summary Table

SCPI Command	Corresponding Model	Support	Notes
CALCulate<1|2>:LIMit<1...8>:COPY 1 to 8 | <name>	FSE/FSP/FSU	Yes	Do not support the parameter option <name>
CALCulate<1|2>:LIMit<1...8>:NAME <name of limit line>	FSE/FSP/FSU	Yes	
CALCulate<1|2>:LIMit<1...8>:DELete	FSE/FSP/FSU	Yes	
CALCulate<1|2>:LIMit<1...8>:ESPectrum:MODE AUTO | MANual | USER	FSP	Accepted[b]	
CALCulate<1|2>:LIMit<1...8>:ESPectrum:VALue <numeric_value>	FSP	Accepted	
CALCulate<1|2>:LIMit<1...8>:ESPectrum:RESTore	FSP	Accepted	
CALCulate<1|2>:LIMit<1...8>:ACPower[:STATe]	FSE/FSP/FSU	Yes	
CALCulate<1|2>:LIMit<1...8>:ACPower:ACHannel[:RELative]	FSE/FSP/FSU	Yes	
CALCulate<1|2>:LIMit<1...8>:ACPower:ACHannel[:RELative]:STATe	FSE/FSP/FSU	Yes	
CALCulate<1|2>:LIMit<1...8>:ACPower:ACHannel:ABSolute	FSE/FSP/FSU	Yes	
CALCulate<1|2>:LIMit<1...8>:ACPower:ACHannel:ABSolute:STATe	FSE/FSP/FSU	Yes	
CALCulate<1|2>:LIMit<1...8>:ACPower:ACHannel:RESult?	FSE/FSP/FSU	Yes	
CALCulate<1|2>:LIMit<1...8>:ACPower:ALTernate<1|2>[:RELative]	FSE/FSP/FSU	Yes	
CALCulate<1|2>:LIMit<1...8>:ACPower:ALTernate<1|2>[:RELative]:STATe	FSE/FSP/FSU	Yes	
CALCulate<1|2>:LIMit<1...8>:ACPower:ALTernate<1|2>:ABSolute	FSE/FSP/FSU	Yes	
CALCulate<1|2>:LIMit<1...8>:ACPower:ALTernate<1|2>:ABSolute:STATe	FSE/FSP/FSU	Yes	
CALCulate<1|2>:LIMit<1...8>:ACPower:ALTernate<1|2>:RESult?	FSE/FSP/FSU	Yes	
CALCulate<1|2>:LIMit<1...8>:CONTrol[:DATA] <numeric_value>,<numeric_value>...	FSE/FSP/FSU	Yes	

Table 3-1 SCPI Commands Summary Table

SCPI Command	Corresponding Model	Support	Notes
CALCulate<1|2>:LIMit<1...8>:CONTrol:DOMain FREQuency | TIME	FSE/FSP/FSU	Yes	
CALCulate<1|2>:LIMit<1...8>:CONTrol:OFFSet <numeric_value>	FSE/FSP/FSU	Yes	
CALCulate<1|2>:LIMit<1...8>:CONTrol:MODE RELative | ABSolute	FSE/FSP/FSU	Yes	
CALCulate<1|2>:LIMit<1...8>:CONTrol:SHIFt <numeric_value>	FSE/FSP/FSU	Yes	
CALCulate<1|2>:LIMit<1...8>:CONTrol:SPACing LINear | LOGarithmic	FSE/FSP/FSU	Yes	
CALCulate<1|2>:LIMit<1...8>:LOWer[:DATA] <numeric_value>,<numeric_value>...	FSE/FSP/FSU	Yes	The unit supported are DBM and DB.
CALCulate<1|2>:LIMit<1...8>:LOWer:STATe ON | OFF	FSE/FSP/FSU	Yes	
CALCulate<1|2>:LIMit<1...8>:LOWer:OFFSet <numeric_value>	FSE/FSP/FSU	Yes	The unit supported are DBM and DB.
CALCulate<1|2>:LIMit<1...8>:LOWer:MARGin <numeric_value>	FSE/FSP/FSU	Yes	The unit supported are DBM and DB.
CALCulate<1|2>:LIMit<1...8>:LOWer:MODE RELative | ABSolute	FSE/FSP/FSU	Yes	
CALCulate<1|2>:LIMit<1...8>:LOWer:SHIFt <numeric_value>	FSE/FSP/FSU	Yes	The unit supported are DBM and DB.
CALCulate<1|2>:LIMit<1...8>:LOWer:SPACing LINear | LOGarithmic	FSE/FSP/FSU	Yes	
CALCulate<1|2>:LIMit<1...8>:LOWer:THReshold <numeric_value>	FSP/FSU	Yes	The only unit supported is DBM.
CALCulate<1|2>:LIMit<1...8>:UPPer[:DATA] <numeric_value>,<numeric_value>...	FSE/FSP/FSU	Yes	The unit supported are DBM and DB.
CALCulate<1|2>:LIMit<1...8>:UPPer:STATe ON | OFF	FSE/FSP/FSU	Yes	
CALCulate<1|2>:LIMit<1...8>:UPPer:OFFSet <numeric_value>	FSE/FSP/FSU	Yes	The unit supported are DBM and DB.
CALCulate<1|2>:LIMit<1...8>:UPPer:MARGin <numeric_value>	FSE/FSP/FSU	Yes	The unit supported are DBM and DB.
CALCulate<1|2>:LIMit<1...8>:UPPer:MODE RELative | ABSolute	FSE/FSP/FSU	Yes	

Table 3-1 SCPI Commands Summary Table

SCPI Command	Corresponding Model	Support	Notes
CALCulate<1|2>:LIMit<1...8>:UPPer:SHIFt <numeric_value>	FSE/FSP/FSU	Yes	The unit supported are DBM and DB.
CALCulate<1|2>:LIMit<1...8>:UPPer:SPACing LINear | LOGarithmic	FSE/FSP/FSU	Yes	
CALCulate<1|2>:LIMit<1...8>:UPPer:THReshold <numeric_value>	FSP/FSU	Yes	The only unit supported is DBM.
CALCulate<1|2>:MARKer<1...4>[:STATe] ON | OFF	FSE/FSP/FSU	Yes	
CALCulate<1|2>:MARKer<1...4>:AOFF	FSE/FSP/FSU	Yes	
CALCulate<1|2>:MARKer<1...4>:TRACe 1 to 3	FSE/FSP/FSU	Yes	
CALCulate<1|2>:MARKer<1...4>:X 0 to MAX (frequency | sweep time)	FSE/FSP/FSU	Yes	
CALCulate<1|2>:MARKer<1...4>:X:SLIMits[:STATe] ON | OFF	FSE/FSP/FSU	Yes	
CALCulate<1|2>:MARKer<1...4>:X:SLIMits:LEFT 0 to MAX (frequency | sweep time)	FSP/FSU	Yes	
CALCulate<1|2>:MARKer<1...4>:X:SLIMits:RIGHT 0 to MAX (frequency | sweep time)	FSP/FSU	Yes	
CALCulate<1|2>:MARKer<1...4>:COUNt ON | OFF	FSE/FSP/FSU	Yes	
CALCulate<1|2>:MARKer<1...4>:COUNt:RESolution 0.1 | 1 | 10 | 100 | 1000 | 10000 Hz	FSE/FSP/FSU	Yes	Support the parameter option: 1 | 10 | 100 | 1000 | 10000 | 100000 | 1000000 Hz
CALCulate<1|2>:MARKer<1...4>:COUNt:FREQuency?	FSE/FSP/FSU	Yes	
CALCulate<1|2>:MARKer<1...4>:LOEXclude ON | OFF	FSE/FSP/FSU	Yes	
CALCulate<1|2>:MARKer<1...4>:Y?	FSE/FSP/FSU	Yes	
CALCulate<1|2>:MARKer<1...4>:Y:PERCent	FSP/FSU	Accepted	
CALCulate<1|2>:MARKer<1...4>:MAXimum[:PEAK]	FSE/FSP/FSU	Yes	
CALCulate<1|2>:MARKer<1...4>:MAXimum:NEXT	FSE/FSP/FSU	Yes	
CALCulate<1|2>:MARKer<1...4>:MAXimum:LEFT	FSE/FSP/FSU	Yes	

Table 3-1 SCPI Commands Summary Table

SCPI Command	Corresponding Model	Support	Notes
CALCulate<1|2>:MARKer<1...4>:MAXimum:RIGHt	FSE/FSP/FSU	Yes	
CALCulate<1|2>:MARKer<1...4>:MAXimum:AUTO ON | OFF	FSU	Yes	
CALCulate<1|2>:MARKer<1...4>:MINimum:AUTO ON | OFF	FSU	Yes	
CALCulate<1|2>:MARKer<1...4>:MINimum[:PEAK]	FSE/FSP/FSU	Yes	
CALCulate<1|2>:MARKer<1...4>:MINimum:NEXT	FSE/FSP/FSU	Yes	
CALCulate<1|2>:MARKer<1...4>:MINimum:RIGHt	FSE/FSP/FSU	Yes	
CALCulate<1|2>:MARKer<1...4>:MINimum:LEFT	FSE/FSP/FSU	Yes	
CALCulate<1|2>:MARKer<1...4>:PEXCursion <numeric_value>	FSE/FSP/FSU	Yes	The only unit supported is DB.
CALCulate<1|2>:MARKer<1...4>:FUNCtion:CENTer	FSE/FSP/FSU	Yes	
CALCulate<1|2>:MARKer<1…4>:FUNCtion:CSTep	FSE/FSP/FSU	Yes	
CALCulate<1|2>:MARKer<1...4>:FUNCtion:FPEaks	FSE/FSP/FSU	Yes	
CALCulate<1|2>:MARKer<1...4>:FUNCtion:FPEaks:COUNt?	FSE/FSP/FSU	Yes	
CALCulate<1|2>:MARKer<1…4>:FUNCtion:REFerence	FSE/FSP/FSU	Yes	
CALCulate<1|2>:MARKer<1…4>:FUNCtion:FPEaks:X?	FSE/FSP/FSU	Yes	
CALCulate<1|2>:MARKer<1…4>:FUNCtion:FPEaks:Y?	FSE/FSP/FSU	Yes	
CALCulate<1|2>:MARKer<1…4>:FUNCtion:FPEaks:SORT X|Y	FSE/FSP/FSU	Yes	
CALCulate<1|2>:MARKer<1…4>:FUNCtion:SUMMary:RMS[:STATe] ON | OFF	FSE/FSP/FSU	Yes	
CALCulate<1|2>:MARKer<1...4>:FUNCtion:SUMMary:RMS:RESult?	FSE/FSP/FSU	Yes	

Table 3-1 SCPI Commands Summary Table

SCPI Command	Corresponding Model	Support	Notes
CALCulate<1|2>:MARKer<1...4>:FUNCtion:NOISe[:STATe] ON|OFF	FSE/FSP/FSU	Yes	
CALCulate<1|2>:MARKer<1...4>:FUNCtion:NOISe:RESult?	FSE/FSP/FSU	Yes	
CALCulate<1|2>:MARKer<1...4>:FUNCtion:POWer:SELect ACPower | CPOWer | MCACpower | OBANdwidth | OBWidth | CN | CN0	FSE/FSP/FSU	Yes	Support ACPower, MCACPower, CPOWer, OBANdwidth and OBWidth.
CALCulate<1|2>:MARKer<1...4>:FUNCtion:POWer:RESult? ACPower | CPOWer | MCACpower | OBANdwidth | OBWidth | CN | CN0	FSE/FSP/FSU	Yes	Support ACPower, MCACPower, CPOWer, OBANdwidth and OBWidth.
CALCulate:STATistics:APD[:STATe] ON | OFF	FSP/FSU	Accepted	
CALCulate:STATistics:CCDF[:STATe] ON | OFF	FSP/FSU	Yes	
CALCulate:STATistics:CCDF:X<1 to 3>? P0_01 | P0_1 | P1 | P10	FSU	Yes	
CALCulate:STATistics:NSAMples 100 to 1E9	FSP/FSU	Yes	Min = 1000
CALCulate:STATistics:SCALe:AUTO ONCE	FSP/FSU	Accepted	
CALCulate:STATistics:SCALe:X:RLEVel –130dBm to 30dBm	FSP/FSU	Accepted	
CALCulate:STATistics:SCALe:X:RANGe 10dB to 200dB	FSP/FSU	Accepted	
CALCulate:STATistics:SCALe:Y:UPPer 1E–8 to 1.0	FSP/FSU	Accepted	
CALCulate:STATistics:SCALe:Y:LOWer 1E–9 to 0.1	FSP/FSU	Accepted	
CALCulate:STATistics:PRESet	FSP/FSU	Accepted	
CALCulate:STATistics:RESult<1 to 3>? MEAN | PEAK | CFACtor | ALL	FSP/FSU	Yes	
CALCulate<1|2>:DLINe<1|2> MINimum…MAXimum	FSE/FSP/FSU	Accepted	
CALCulate<1|2>:DLINe<1|2>:STATe ON | OFF	FSE/FSP/FSU	Yes	
CALCulate<1|2>:THReshold MINimum to MAXimum (depending on current unit)	FSE/FSP/FSU	Yes	
CALCulate<1|2>:THReshold:STATe ON | OFF	FSE/FSP/FSU	Yes	

Table 3-1 SCPI Commands Summary Table

SCPI Command	Corresponding Model	Support	Notes
CALCulate<1|2>:FLINe<1|2> 0...fmax	FSE/FSP/FSU	Accepted	
CALCulate<1|2>:FLINe<1|2>:STATe ON | OFF	FSE/FSP/FSU	Accepted	
CALCulate<1|2>:TLINe<1|2> 0...1000s	FSE/FSP/FSU	Accepted	
CALCulate<1|2>:TLINe<1|2>:STATe ON | OFF	FSE/FSP/FSU	Accepted	
CALCulate<1|2>:UNIT:POWer DBM | V | A | W | DB | PCT | UNITLESS |DBPW | WATT | DBUV |DBMV | VOLT | DBUA | AMPere	FSE/FSP/FSU	Yes	Support DBM | DBUV | DBMV | DBUA | V | A | W.
CALibration[:ALL]?	FSE/FSP/FSU	Yes	
CALibration:STATe ON | OFF	FSE/FSP/FSU	Yes	
DISPlay:FORMat SINGle | SPLit	FSE/FSP/FSU	Accepted	Most of screen display functions are not supported. Most of the DISPlay related commands are accepted, but take no action, unless otherwise stated.
DISPlay:ANNotation:FREQuency ON | OFF	FSE/FSP/FSU	Accepted	
DISPlay:LOGO ON | OFF	FSE/FSP/FSU	Accepted	
DISPlay:PSAVe[:STATe] ON | OFF	FSE/FSP/FSU	Accepted	
DISPlay:PSAVe:HOLDoff 1 to 60	FSE/FSP/FSU	Accepted	
DISPlay:CMAP<1 to 26>:DEFault<1|2>	FSE/FSP/FSU	Accepted	
DISPlay:CMAP<1 to 26>:HSL <hue>,<sat>,<lum>	FSE/FSP/FSU	Accepted	
DISPlay:CMAP<1 to 26>:PDEFined BLACk | BLUE | BROWn | GREen | CYAN | RED | MAGenta | YELLow | WHITe | DGRAy | LGRAy | LBLUe | LGREen | LCYan | LRED | LMAGenta	FSE/FSP/FSU	Accepted	
DISPlay[:WINDow<1|2>]:SELect	FSE/FSP/FSU	Accepted	
DISPlay[:WINDow<1|2>]:SIZE LARGe|SMALl	FSP/FSU	Accepted	
DISPlay[:WINDow<1|2>]:TEXT[:DATA] <string>	FSE/FSP/FSU	Accepted	
DISPlay[:WINDow<1|2>]:TEXT:STATe ON | OFF	FSE/FSP/FSU	Accepted	
DISPlay[:WINDow<1|2>]:TIME ON | OFF	FSE/FSP/FSU	Accepted	

Table 3-1 SCPI Commands Summary Table

SCPI Command	Corresponding Model	Support	Notes
DISPlay[:WINDow<1|2>]:TRACe<1 to 3>:Y[:SCALe] 10dB to 200dB	FSE/FSP/FSU	Yes	
DISPlay[:WINDow<1|2>]:TRACe<1 to 3>:Y[:SCALe]:MODE ABSolute | RELativ	FSE/FSP/FSU	Accepted	
DISPlay[:WINDow<1|2>]:TRACe<1 to 3>:Y[:SCALe]:RLEVel	FSE/FSP	Yes	
DISPlay[:WINDow<1|2>]:TRACe<1 to 3>:Y[:SCALe]:RLEVel:OFFSet	FSE/FSP/FSU	Yes	
DISPlay[:WINDow<1|2>]:TRACe<1 to 3>:Y[:SCALe]:PDIVision	FSE/FSP/FSU	Yes	The only unit supported is DB.
DISPlay[:WINDow<1|2>]:TRACe<1 to 3>:Y:SPACing LINear | LOGarithmic| LDB	FSE/FSP/FSU	Yes	Do not support the parameter option LDB.
DISPlay[:WINDow<1|2>]:TRACe<1 to 3>:MODE WRITe | VIEW | AVERage | MAXHold | MINHold	FSE/FSP/FSU	Yes	
DISPlay[:WINDow<1|2>]:TRACe<1 to 3>[:STATe] ON | OFF	FSE/FSP/FSU	Yes	
FORMat[:DATA]	FSE/FSP/FSU	Yes	The supported formats are X-Series specific: ASC,8 REAL,32 REAL,64 and INT,32
HCOPy:ABORt	FSE/FSP/FSU	Yes	HCOPy functions are not supported, except HCOPY:ABORt and HCOPY[:IMMediate].
HCOPy:CMAP<1 to 26>:DEFault1|2|3	FSP/FSU	Accepted	All the printer setting commands are accepted, but take no action.
HCOPy:CMAP<1 to 26>:HSL <hue>,<sat>,<lum>	FSP/FSU	Accepted	
HCOPy:CMAP<1 to 26>:PDEFined BLACk | BLUE | BROWn | GREen | CYAN | RED | MAGenta | YELLow | WHITe | DGRAy | LGRAy | LBLUe | LGREen | LCYan | LRED | LMAGenta	FSP/FSU	Accepted	
HCOPy:DESTination<1|2> <string>	FSE/FSP/FSU	Accepted	
HCOPy:DEVice:COLor ON|OFF	FSE/FSP/FSU	Accepted	

Table 3-1 SCPI Commands Summary Table

SCPI Command	Corresponding Model	Support	Notes
HCOPy:DEVice:LANGuage<1|2> GDI | WMF | EWMF | BMP	FSE/FSP/FSU	Accepted	
HCOPy[:IMMediate<1|2>]	FSE/FSP/FSU	Yes	HCOPy functions are not supported, except HCOPY:ABORt and HCOPY[:IMMediate].
HCOPy:ITEM:ALL	FSE/FSP/FSU	Accepted	
HCOPy:ITEM:WINDow<1|2>:TABle:STATe ON | OFF	FSE/FSP/FSU	Accepted	
HCOPy:ITEM:WINDow<1|2>:TEXT <string>	FSE/FSP/FSU	Accepted	
HCOPy:ITEM:WINDow<1|2>:TRACe:STATe ON | OFF	FSE/FSP/FSU	Accepted	
HCOPy:PAGE:ORIentation<1|2> LANDscape | PORTrait	FSE/FSP/FSU	Accepted	
INITiate<1|2>:CONTinuous ON | OFF	FSE/FSP/FSU	Yes	
INITiate<1|2>:CONMeas	FSE/FSP/FSU	Yes	
INITiate<1|2>[:IMMediate]	FSE/FSP/FSU	Yes	
INPut<1|2>:ATTenuation	FSE/FSP/FSU	Yes	Only support 2 dB steps.
INPut<1|2>:ATTenuation:AUTO	FSE/FSP/FSU	Yes	
INPut<1|2>:EATT	FSP/FSU	Yes	Max = 24 dB
INPut<1|2>:EATT:AUTO	FSP/FSU	Yes	
INPut<1|2>:EATT:STATe	FSP/FSU	Yes	
INPut<1|2>:IMPedance	FSE/FSP/FSU	Yes	
INPut<1|2>:GAIN:STATe	FSP/FSU	Yes	
INSTrument[:SELect] SANalyzer | DDEMod | ADEMod | MGSM | WCDPower|BWCDpower |MWCDpower | BC2K| BDO	FSE/FSP/FSU	Yes	Agilent supports its own list with more options.
INSTrument:NSELect <numeric value>	FSE/FSP/FSU	Yes	Agilent supports its own list with more options.
MMEMory:CATalog? <path>	FSE/FSP/FSU	Yes	
MMEMory:CDIRectory <directory_name>	FSE/FSP/FSU	Yes	
MMEMory:COPY <file_source>,<file_destination>	FSE/FSP/FSU	Yes	

Table 3-1 SCPI Commands Summary Table

SCPI Command	Corresponding Model	Support	Notes
MMEMory:DATA <file_name>[,<block data>]	FSE/FSP/FSU	Yes	
MMEMory:DELete <file_name>	FSE/FSP/FSU	Yes	
MMEMory:INITialize <msus>	FSE/FSP/FSU	Accepted	
MMEMory:LOAD:STATe 1,<file_name>	FSE/FSP/FSU	Yes	
MMEMory:LOAD:AUTO 1,<file_name>	FSE/FSP/FSU	Yes	
MMEMory:MDIRectory <directory_name>	FSE/FSP/FSU	Yes	
MMEMory:MOVE <file_source>,<file_destination>	FSE/FSP/FSU	Yes	
MMEMory:MSIS <device>	FSE/FSP/FSU	Accepted	
MMEMory:NAME <file_name>	FSE/FSP/FSU	Yes	Only support "*.png" files.
MMEMory:RDIRectory <directory_name>	FSE/FSP/FSU	Yes	
MMEMory:STORe<1|2>:STATe 1,<file_name>	FSE/FSP/FSU	Yes	
MMEMory:STORe<1|2>:TRACe 1 to 3,<file_name>	FSE/FSP/FSU	Yes	Agilent supports TRACE1 | TRACE2 | TRACE3 | TRACE4 | TRACE5 | TRACE6 | ALL. Do not support Split Screen (screen A or screen B).
MMEMory:CLEar:STATe 1,<file_name>	FSE/FSP/FSU	Accepted	
MMEMory:CLEar:ALL	FSE/FSP/FSU	Accepted	
MMEMory:SELect[:ITEM]:HWSettings ON | OFF	FSE/FSP/FSU	Accepted	The following MMEM:SEL commands related to printer settings are accepted, but take no action.
MMEMory:SELect[:ITEM]:TRACe[:ACTive] ON | OFF	FSE/FSP/FSU	Accepted	
MMEMory:SELect[:ITEM]:LINes:ALL ON | OFF	FSE/FSP/FSU	Accepted	
MMEMory:SELect[:ITEM]:SCData ON | OFF	FSE/FSP/FSU	Accepted	
MMEMory:SELect[:ITEM]:TRANsducer:ALL ON | OFF	FSE/FSP/FSU	Accepted	
MMEMory:SELect[:ITEM]:ALL	FSE/FSP/FSU	Accepted	
MMEMory:SELect[:ITEM]:NONE	FSE/FSP/FSU	Accepted	

Table 3-1 SCPI Commands Summary Table

SCPI Command	Corresponding Model	Support	Notes
MMEMory:SELect[:ITEM]:DEFault	FSE/FSP/FSU	Accepted	
MMEMory:COMMent <string>	FSE/FSP/FSU	Accepted	
[SENSe<1|2>:]AVERage:COUNt 0 to 32767	FSE/FSP/FSU	Yes	Max = 10000
[SENSe<1|2>:]AVERage[:STATe<1 to 3>] ON | OFF	FSE/FSP/FSU	Yes	
[SENSe<1|2>:]AVERage:TYPE VIDeo | LINear	FSP/FSU	Yes	
[SENSe<1|2>:]BANDwidth|BWIDth[:RESolution] <numeric_value>	FSE/FSP/FSU	Yes	Min = 1 Hz Max = 8 MHz
[SENSe<1|2>:]BANDwidth|BWIDth[:RESolution]:AUTO ON | OFF	FSE/FSP/FSU	Yes	
[SENSe<1|2>:]BANDwidth|BWIDth[:RESolution]:RATio 0.0001 to 1	FSE/FSP/FSU	Yes	
[SENSe<1|2>:]BANDwidth|BWIDth[:RESolution]:TYPE NORMal | FFT | CFILter | RRC	FSP/FSU	Yes	
[SENSe<1|2>:]BANDwidth|BWIDth:VIDeo 1Hz to 10MHz	FSE/FSP/FSU	Yes	Max = 50 MHz
[SENSe<1|2>:]BANDwidth|BWIDth:VIDeo:AUTO ON | OFF	FSE/FSP/FSU	Yes	
[SENSe<1|2>:]BANDwidth|BWIDth:VIDeo:RATio 0.01 to 1000	FSP/FSU	Yes	
[SENSe<1|2>:]CORRection:EGAin:INPut[:MAGNitude] –200...200dB	FSP/FSU	Yes	Min = –81.90 dB Max = 81.90 dB
[SENSe<1|2>:]CORRection:TRANsducer:SELect <name>	FSP/FSU	Yes	
[SENSe<1|2>:]CORRection:TRANsducer:UNIT <string>	FSP/FSU	Accepted	Preset to DB
[SENSe<1|2>:]CORRection:TRANsducer:SCALing LINear | LOGarithmic	FSP/FSU	Yes	
[SENSe<1|2>:]CORRection:TRANsducer:COMMent <string>	FSP/FSU	Yes	
[SENSe<1|2>:]CORRection:TRANsducer:DATA <freq>,<level>..	FSP/FSU	Yes	All parameters are dimensionless
[[SENSe<1|2>:]CORRection:TRANsducer[:STATe] ON | OFF	FSP/FSU	Yes	

Table 3-1 SCPI Commands Summary Table

SCPI Command	Corresponding Model	Support	Notes
[SENSe<1|2>:]CORRection:TRANsducer:DELete	FSP/FSU	Yes	
[SENSe<1|2>:]CORRection:TRANsducer:VIEW ON | OFF	FSP/FSU	Yes	
[SENSe<1|2>:]DETector<1..3>[:FUNCtion] APEak | NEGative | POSitive | SAMPle | RMS |AVERage | QPEak	FSE/FSP/FSU	Yes	
[SENSe<1|2>:]DETector<1 to 3>[:FUNCtion]:AUTO ON | OFF	FSE/FSP/FSU	Yes	
[SENSe<1|2>:]FREQuency:CENTer 0 to fmax	FSE/FSP/FSU	Yes	The value of fmax depends on the analyzer hardware.
[SENSe<1|2>:]FREQuency:CENTer:STEP 0 to fmax	FSE/FSP/FSU	Yes	
[SENSe<1|2>:]FREQuency:CENTer:STEP:LINK SPAN | RBW | OFF	FSE/FSP/FSU	Yes	
[SENSe<1|2>:]FREQuency:CENTer:STEP:LINK :FACTor 1 to 100 PCT	FSE/FSP/FSU	Yes	
[SENSe<1|2>:]FREQuency:SPAN 0 to fmax	FSE/FSP/FSU	Yes	
[SENSe<1|2>:]FREQuency:SPAN:FULL	FSE/FSP/FSU	Yes	
[SENSe<1|2>:]FREQuency:STARt 0 to fmax	FSE/FSP/FSU	Yes	
[SENSe<1|2>:]FREQuency:STOP 0 to fmax	FSE/FSP/FSU	Yes	
[SENSe<1|2>:]FREQuency:MODE CW | FIXed | SWEep	FSE/FSP/FSU	Yes	
[SENSe<1|2>:]FREQuency:OFFSet	FSE/FSP/FSU	Yes	
[SENSe<1|2>:]POWer:ACHannel:SPACing:CHANnel 100 Hz to 2000 MHz	FSE/FSP/FSU	Yes	
[SENSe<1|2>:]POWer:ACHannel:SPACing:ACHannel 100 Hz to 2000 MHz	FSE/FSP/FSU	Yes	
[SENSe<1|2>:]POWer:ACHannel:SPACing:ALTernate<1|2> 100 Hz to 2000 MHz	FSE/FSP/FSU	Yes	
[SENSe<1|2>:]POWer:ACHannel:TXCHannel:COUNt 1 | 2 | 3 | 4	FSP/FSU	Yes	
[SENSe<1|2>:]POWer:ACHannel:ACPairs 0 | 1 | 2 | 3	FSE/FSP/FSU	Yes	

Table 3-1 SCPI Commands Summary Table

SCPI Command	Corresponding Model	Support	Notes
[SENSe<1|2>:]POWer:ACHannel:BANDwidth|BWIDth[:CHANnel] 100 Hz to 1000 MHz	FSE/FSP/FSU	Yes	
[SENSe<1|2>:]POWer:ACHannel:BANDwidth|BWIDth:ACHannel 100Hz–1000MHz	FSE/FSP/FSU	Yes	
[SENSe<1|2>:]POWer:ACHannel:BANDwidth|BWIDth:ALTernate<1|2> 100 Hz to 1000 MHz	FSP/FSU	Yes	
[SENSe<1|2>:]POWer:ACHannel:MODE ABSolute | RELative	FSE/FSP/FSU	Yes	
[SENSe<1|2>:]POWer:ACHannel:REFerence:AUTO ONCE	FSE/FSP/FSU	Accepted	
SENSe<1|2>:]POWer:ACHannel:REFerence:TXCHannel:AUTO MINimum | MAXimum | LHIGhest	FSP/FSU	Yes	
[SENSe<1|2>:]POWer:ACHannel:REFerence:TXCHannel:MANual 1 | 2 | 3 | 4	FSP/FSU	Yes	
[SENSe<1|2>:]POWer:ACHannel:PRESet ACPower | CPOWer | MCACpower | OBANdwidth | OBWidth | CN | CN0	FSE/FSP/FSU	Yes	
[SENSe<1|2>:]POWer:ACHannel:PRESet:RLEVel	FSP/FSU	Accepted	
[SENSe<1|2>:]POWer:BANDwidth|BWIDth 10 to 99.9PCT	FSP/FSU	Yes	
[SENSe<1|2>:]POWer:HSPeed ON | OFF	FSP/FSU	Yes	
[SENSe<1|2>:]POWer:NCORrection ON | OFF	FSP/FSU	Yes	
[SENSe<1|2>:]POWer:TRACe 1 to 3	FSP/FSU	Accepted	
[SENSe<1|2>:]ROSCillator:SOURce INTernal | EXTernal	FSE/FSP/FSU	Yes	
[SENSe<1|2>:]SWEep:TIME 2.5ms to 16000s (frequency domain) | 1us to 16000s (time domain)	FSE/FSP/FSU	Yes	
[SENSe<1|2>:]SWEep:TIME:AUTO ON | OFF	FSE/FSP/FSU	Yes	
[SENSe<1|2>:]SWEep:COUNt 0 to 32767	FSE/FSP/FSU	Yes	Max = 10000
[SENSe<1|2>:]SWEep:EGATe ON | OFF	FSE/FSP/FSU	Yes	
[SENSe<1|2>:]SWEep:EGATe:TYPE LEVel | EDGE	FSE/FSP/FSU	Yes	

Table 3-1 SCPI Commands Summary Table

SCPI Command	Corresponding Model	Support	Notes
[SENSe<1|2>:]SWEep:EGATe:POLarity POSitive | NEGative	FSE/FSP/FSU	Yes	
[SENSe<1|2>:]SWEep:EGATe:HOLDoff 125 ns to 100 s	FSE/FSP/FSU	Yes	
[SENSe<1|2>:]SWEep:EGATe:LENGth 0 to 100 s	FSE/FSP/FSU	Yes	
[SENSe<1|2>:]SWEep:EGATe:SOURce EXTernal | IFPower | RFPower	FSE/FSP/FSU	Yes	
[SENSe<1|2>:]SWEep:POINts 125 to 8001	FSP/FSU	Yes	
STATus:OPERation[:EVENt]?	FSE/FSP/FSU	Yes	
STATus:OPERation:CONDition?	FSE/FSP/FSU	Yes	
STATus:OPERation:ENABle	FSE/FSP/FSU	Yes	Max = 32767
STATus:OPERation:PTRansition	FSE/FSP/FSU	Yes	Max = 32767
STATus:OPERation:NTRansition	FSE/FSP/FSU	Yes	Max = 32767
STATus:PRESet	FSE/FSP/FSU	Yes	
STATus:QUEStionable[:EVENt]	FSE/FSP/FSU	Yes	
STATus:QUEStionable:CONDition	FSE/FSP/FSU	Yes	
STATus:QUEStionable:ENABle	FSE/FSP/FSU	Yes	Max = 32767
STATus:QUEStionable:PTRansition	FSE/FSP/FSU	Yes	Max = 32767
STATus:QUEStionable:NTRansition	FSE/FSP/FSU	Yes	Max = 32767
STATus:QUEStionable:FREQuency[:EVENt]	FSE/FSP/FSU	Yes	
STATus:QUEStionable:FREQuency:CONDition	FSE/FSP/FSU	Yes	
STATus:QUEStionable:FREQuency:ENABle	FSE/FSP/FSU	Yes	Max = 32767
STATus:QUEStionable:FREQuency:PTRansition	FSE/FSP/FSU	Yes	Max = 32767
STATus:QUEStionable:FREQuency:NTRansition	FSE/FSP/FSU	Yes	Max = 32767
STATus:QUEue[:NEXT]?	FSE/FSP/FSU	Yes	Agilent supports its own Error messages. See *Instrument Messages* for more details.
SYSTem:COMMunicate:GPIB[:SELF]:ADDRess	FSE/FSP/FSU	Yes	

Table 3-1 SCPI Commands Summary Table

SCPI Command	Corresponding Model	Support	Notes
SYSTem:COMMunicate:GPIB[:SELF]:RTERminator LFEOI|EOI	FSE/FSP/FSU	Accepted	
SYSTem:DATE	FSE/FSP/FSU	Yes	Date display format is, for example, 2010,5,10
SYSTem:DISPlay:FPANel ON | OFF	FSP/FSU	Yes	
SYSTem:DISPlay:UPDate	FSE/FSP/FSU	Accepted	
SYSTem:ERRor?	FSE/FSP/FSU	Yes	
SYSTem:ERRor:LIST?	FSP/FSU	Accepted	
SYSTem:ERRor:CLEar:ALL	FSP/FSU	Accepted	
SYSTem:PRESet	FSE/FSP/FSU	Yes	
SYSTem:TIME	FSE/FSP/FSU	Yes	
SYSTem:VERSion	FSE/FSP/FSU	Yes	
TRACe<1|2>[:DATA] TRACE1 | TRACE2 | TRACE3 | SPURious | ABITstream | PWCDp | CTABle, <block> | <numeric_value>	FSE/FSP/FSU	Yes	Support the parameter list as: TRACe[1][:DATA] TRACE1|TRACE2|TRACE3| TRACE4|TRACE5|TRACE6, <data> where <data> can be ASCII, REAL or INTeger.
TRACe<1|2>:IQ:DATA	FSP/FSU	Yes	
TRACe<1|2>:IQ:SET <filter type>,<rbw>,<sample rate>,<trigger source>,<trigger slope>,<pretrigger samples>,<# of samples>	FSP/FSU	Yes	
TRACe<1|2>:IQ:SRATe 15.625kHz to 32MHz	FSP/FSU	Yes	
TRACe:IQ:STATe ON | OFF	FSP/FSU	Yes	
TRIGger<1|2>[:SEQuence]:SOURce	FSE/FSP/FSU	Yes	The following source selections are not supported: IFPower, TV, AF, FM, AM and PM.
TRIGger<1|2>[:SEQuence]:LEVel:IFPower –30 to –10DBM	FSP/FSU	Accepted	
TRIGger<1|2>[:SEQuence]:LEVel:RFPower <real>	FSP/FSU	Yes	Min = –200 dBm Max = 100 dBm

Table 3-1 SCPI Commands Summary Table

SCPI Command	Corresponding Model	Support	Notes
TRIGger<1|2>[:SEQuence]:LEVel:VIDeo 0 to 100PCT	FSE/FSP/FSU	Yes	
TRIGger<1|2>[:SEQuence]:HOLDoff <time>	FSE/FSP/FSU	Yes	Min = 0 Max = 500 ms
TRIGger<1|2>[:SEQuence]:SLOPe POSitive|NEGative	FSE/FSP/FSU	Yes	

a. Agilent supports up to 6 limit lines.
b. "Accepted" means this command is accepted, but takes no action and reports no error.

Agilent N9062A/W9062A Supported IEEE SCPI Commands

The Agilent N9062A/W9062A application also supports the following IEEE 488.2 SCPI commands:

Table 3-2 IEEE 488.2 SCPI Commands

SCPI Commands	Description
*CAL?	Performs a full alignment and returns a number indicating the success of the alignment. A zero is returned if the alignment is successful. A one is returned if any part of the alignment fails.
*CLS	Clears the status byte. It does this by emptying the error queue and clearing all bits in all of the event registers. The status byte registers summarize the states of the other registers. It is also responsible for generating service requests.
*ESE <number> *ESE?	Selects the desired bits from the standard event status enable register. This register monitors I/O errors and synchronization conditions such as operation complete, request control, query error, device dependent error, execution error, command error and power on. The selected bits are OR'd to become a summary bit (bit 5) in the status byte register which can be queried. The query returns the state of the standard event status enable register.
*ESR?	Queries and clears the standard event status event register. (This is a destructive read.)
ID?	This command does not follow any of the SCPI rules. It only exists so that production can get a universal response to the ID? command for every instrument.
*IDN?	Returns an instrument identification information. The string will contain the model number, serial number and firmware revision. The response is organized into four fields separated by commas. The field definitions are as follows: 1.Manufacturer 2.Model 3.Serial number 4.Firmware version
*OPC *OPC?	The *OPC command sets bit 0 in the standard event status register to "1" when pending operations have finished. It does not hold off subsequent operations. The *OPC? query stops new commands from being processed until the current processing is complete. Then it returns a "1", and the program continues. This query can be used to synchronize events of other instruments on the external bus.
*OPT?	Returns a string of all the installed instrument options. It is a comma separated list such as: "BAC,BAH". There are a few options that include more then one mode. An instrument with one of these options will report the option number once for each mode.
*RCL <register>	This command recalls the instrument state from the specified instrument memory register.

Table 3-2 IEEE 488.2 SCPI Commands

SCPI Commands	Description
*RST	This command presets the instrument to a factory defined condition that is appropriate for remote programming operation. *RST is equivalent to performing the commands: 1.:SYSTem:PRESet, with preset type set to MODE. 2.*CLS which clears the STATus bits and error queue 3.:INITiate:CONTinous OFF which selects single sweep/measurement *RST does not change the mode and only resets the parameters for the current mode.
*SAV <register>	This command saves the instrument state to the specified instrument memory register.
*SRE <integer> *SRE?	This command sets the value of the service request enable register. The query returns the value of the register.
*STB?	Returns the value of the status byte register without erasing its contents.
*TRG	This command triggers the instrument. Use the command :TRIGger[:SEQuence]:SOURce to select the trigger source.
*TST?	This query performs a self test and returns a number indicating the success of the testing. A zero is returned if the test is successful.
*WAI	This command causes the instrument to wait until all pending commands/processes are completed before executing any additional commands. There is no query form for the command.

Supported SCPI Commands

Mode Selection

NOTE	When Option N9062A–2FP or W9062A-2FP is licensed, the SCPI Language Compatibility mode is available.

To invoke SCPI Language Compatibility mode, enter either of the following commands[1]:

```
:INST SCPILC
```

```
:INST:NSELect 270
```

Key Path	**Front-panel key**
Remote Command	`:INSTrument[:SELect] SCPILC` `:INSTrument:NSELect 270`

Mode Setup

Allows you to adjust the Mode Setup settings.

Key Path	**Front-panel key**
Initial S/W Revision	A.06.00

Compatibility Mode

The command allows you to set the model you want to emulate.

The query returns the model currently being emulated.

This setting affects the response string of “*IDN?”, and the entire SCPI tree, according to the current selection.

Key Path	**Mode Setup**
Remote Command	`[:SENSe]:RLC:TYPE FSE|FSP|FSU` `[:SENSe]:RLC:TYPE?`
Example	SENS:RLC:TYPE FSU RLC:TYPE?
State Saved	**Saved in instrument state.**

1. After changing into or out of SCPI Language Compatibility mode, allow seconds of delay before sending subsequent commands.

Range	**FSE | FSP| FSU**
Initial S/W Revision	A.06.00 or later

R&S FSE

Selects emulation of the R&S FSE.

Key Path	**Mode Setup, Compatibility Mode**
Example	RLC:TYPE FSE
Initial S/W Revision	A.06.00 or later

R&S FSP

Selects emulation of the R&S FSP.

Key Path	**Mode Setup, Compatibility Mode**
Example	RLC:TYPE FSP
Initial S/W Revision	A.06.00 or later

R&S FSU

Selects emulation of the R&S FSU.

Key Path	**Mode Setup, Compatibility Mode**
Example	RLC:TYPE FSU
Initial S/W Revision	A.06.00 or later

Mode IDN Response

The command allows you to set or query the Mode IDN Response type.

This setting affects the response string of "*IDN?", and the whole SCPI tree, according to the current selection.

The query returns the current state of this setting.

Key Path	**Mode Setup**
Remote Command	`[:SENSe]:RLC:IDN:TYPE SYSTem|COMPatibility|USER` `[:SENSe]:RLC:IDN:TYPE?`
Example	SENS:RLC:IDN:TYPE SYSTem RLC:IDN:TYPE?
State Saved	**Saved in instrument state.**
Range	SYSTem | COMPatibility | USER

Initial S/W Revision	A.06.00 or later

Compatibility Model

Sets the response to the *IDN command to be a string describing the emulated instrument, such as “FSP”.

Key Path	**Mode Setup, Mode IDN Response**
Example	RLC:IDN:TYPE COMP
Initial S/W Revision	A.06.00

System IDN Response

Sets the response to the *IDN command to be a string describing the analyzer model, such as “N9020A”.

Key Path	**Mode Setup, Mode IDN Response**
Example	RLC:IDN:TYPE SYST
Initial S/W Revision	A.06.00

User IDN Response

Allows you to set or query the user-defined mode IDN response.

This setting affects the response string of “*IDN?”, and the whole SCPI tree, according to the current selection.

The query returns the current User IDN Response string, unless the string is empty, in which case the System IDN Response is returned instead.

Key Path	**Mode Setup**
Remote Command	`[:SENSe]:RLC:IDN:USER <string>` `[:SENSe]:RLC:IDN:USER?`
Example	SENS:RLC:IDN:USER “abc” RLC:IDN:USER?
State Saved	**Saved in instrument state.**
Initial S/W Revision	A.06.00

ABORt Subsystem

The ABORt subsystem contains commands for aborting triggered actions. An action may be triggered again immediately after being aborted. All commands trigger events, and therefore have no *RST value.

ABORt

Aborts any current measurement and resets the trigger system.

Remote Command	:ABORt
Example	:ABOR
Remote Command Notes	FSE, FSP, FSU

CALCulate:DELTamarker Subsystem

The CALCulate:DELTamarker subsystem controls the delta-marker functions.

NOTE All delta marker functions are not supported in the CCDF and APD measurements.

CALCulate<1|2>:DELTamarker<1...4>[:STATe] ON | OFF

When delta marker 1 is selected, this command switches the delta marker on and off.

When any one of delta markers 2 through 4 is selected, that marker becomes the delta marker. If the marker was not activated, it becomes activated, and is placed at the maximum of the measurement curve.

If the numeric suffix is omitted, delta marker 1 is automatically selected.

The query returns the current state of this setting.

Remote Command	:CALCulate[1]:DELTamarker[1]|2|3|4[:STATe] ON|OFF|1|0 :CALCulate[1]:DELTamarker[1]|2|3|4[:STATe]?
Example	CALC:DELT ON
Remote Command Notes	FSE, FSP, FSU
Preset	OFF
State Saved	Saved in instrument state.

CALCulate<1|2>:DELTamarker<1...4>:MODE ABSolute|RELative

The command switches the frequency input of the delta marker between Absolute and Relative modes.

The query returns the current state of this setting.

Remote Command	:CALCulate[1]:DELTamarker[1]|2|3|4:MODE ABSolute|RELative :CALCulate[1]:DELTamarker[1]|2|3|4:MODE?
Example	CALC:DELT:MODE ABS CALC:DELT:MODE REL CALC:DELT:MODE?

Remote Command Notes	FSE, FSP, FSU
Preset	RELative
State Saved	**Saved in instrument state.**
Range	ABSolute | RELative

CALCulate<1|2>:DELTamarker<1...4>:AOFF

Switches off all active delta markers.

Remote Command	`:CALCulate[1]:DELTamarker[1]|2|3|4:AOFF`
Example	CALC:DELT:AOFF
Remote Command Notes	FSE, FSP, FSU

CALCulate<1|2>:DELTamarker<1...4>:TRACe <1…3>

Assigns the specified delta marker to the specified trace.

Remote Command	`:CALCulate[1]:DELTamarker[1]|2|3|4:TRACe 1|2|3`
Example	CALC:DELT:TRAC 1
Remote Command Notes	FSE, FSP, FSU
Preset	1
State Saved	Saved in instrument state.
Min	1
Max	3

CALCulate<1|2>:DELTamarker<1...4>:X<0…MAX>(frequency | sweep time)

The command positions the specified delta marker at the indicated frequency (span > 0) or time (span = 0).

The query returns the current value of this parameter.

Remote Command	`:CALCulate[1]:DELTamarker[1]|2|3|4:X <real>` `:CALCulate[1]:DELTamarker[1]|2|3|4:X?`
Example	CALC:DELT:X 10.7MHz CALC:DELT:X?
Remote Command Notes	FSE, FSP, FSU

CALCulate<1|2>:DELTamarker<1...4>:X:RELative?

Queries the frequency or time value of the specified delta marker, relative to marker 1, or to the reference position (for CALCulate:DELTamarker:FUNCtion:FIXed:STATe ON). If required, the corresponding

delta marker is activated.

This command is not supported in the CCDF and APD measurements.

Remote Command	`:CALCulate[1]:DELTamarker[1]|2|3|4:X:RELative?`
Example	CALC:DELT:X:REL?
Remote Command Notes	FSE, FSP, FSU

CALCulate<1|2>:DELTamarker<1...4>:Y?

Queries the measured value of the specified delta marker. If required, the specified delta marker is activated. The returned result is a value relative to marker 1, or to the reference position if the reference is fixed.

The only unit supported is dB.

Remote Command	`:CALCulate[1]:DELTamarker[1]|2|3|4:Y?`
Example	CALC:DELT:Y?
Remote Command Notes	FSE, FSP, FSU

CALCulate<1|2>:DELTamarker<1...4>:MAXimum[:PEAK]

Places the delta marker at the current maximum value of the trace. If required, the specified delta marker is first activated.

Remote Command	`:CALCulate[1]:DELTamarker[1]|2|3|4:MAXimum[:PEAK]`
Example	CALC:DELT:MAX
Remote Command Notes	FSE, FSP, FSU

CALCulate<1|2>:DELTamarker<1...4>:MAXimum:LEFT

Places the delta marker at the next smaller maximum to the left of the current value (that is, in order of decreasing X values). If required, the specified delta marker is first activated.

Remote Command	`:CALCulate[1]:DELTamarker[1]|2|3|4:MAXimum:LEFT`
Example	CALC:DELT:MAX:LEFT
Remote Command Notes	FSE, FSP, FSU

CALCulate<1|2>:DELTamarker<1...4>:MAXimum:NEXT

Places the delta marker at the next smaller maximum on the trace. If required, the specified delta marker is first activated.

Remote Command	`:CALCulate[1]:DELTamarker[1]|2|3|4:MAXimum:NEXT`
Example	CALC:DELT:MAX:NEXT

Remote Command Notes	FSE, FSP, FSU

CALCulate<1|2>:DELTamarker<1...4>:MAXimum:RIGHt

Places the delta marker at the next smaller maximum to the right of the current value (that is, in order of increasing X values). If required, the specified delta marker is first activated.

Remote Command	`:CALCulate[1]:DELTamarker[1]|2|3|4:MAXimum:RIGHt`
Example	CALC:DELT:MAX:RIGH
Remote Command Notes	FSE, FSP, FSU

CALCulate<1|2>:DELTamarker<1...4>:MINimum[:PEAK]

Places the delta marker at the current minimum on the trace. If required, the specified delta marker is first activated.

Remote Command	`:CALCulate[1]:DELTamarker[1]|2|3|4:MINimum[:PEAK]`
Example	CALC:DELT:MIN
Remote Command Notes	FSE, FSP, FSU

CALCulate<1|2>:DELTamarker<1...4>:MINimum:LEFT

Places the delta marker at the next higher minimum to the left of the current value (that is, in order of decreasing X values). If required, the specified delta marker is first activated.

Remote Command	`:CALCulate[1]:DELTamarker[1]|2|3|4:MINimum:LEFT`
Example	CALC:DELT:MIN:LEFT
Remote Command Notes	FSE, FSP, FSU

CALCulate<1|2>:DELTamarker<1...4>:MINimum:NEXT

Places the delta marker at the next higher minimum of the trace. If required, the specified delta marker is first activated.

Remote Command	`:CALCulate[1]:DELTamarker[1]|2|3|4:MINimum:NEXT`
Example	CALC:DELT:MIN:NEXT
Remote Command Notes	FSE, FSP, FSU

CALCulate<1|2>:DELTamarker<1...4>:MINimum:RIGHt

Places the delta marker at the next higher minimum to the right of the current value (that is, in order of increasing X values). If required, the specified delta marker is first activated.

Remote Command	`:CALCulate[1]:DELTamarker[1]|2|3|4:MINimum:RIGHt`

Example	CALC:DELT:MIN:RIGH
Remote Command Notes	FSE, FSP, FSU

CALCulate<1|2>:DELTamarker<1...4>:LINK ON | OFF

The command switches the link between delta marker 1 and marker 1 on or off.

If the link is “on”, and the X-axis value of marker 1 is changed, then delta marker 1 will change by the same amount.

The numeric suffix of DELTamarker may only be 1, or be omitted, because this functionality is only available for marker 1 and delta marker 1.

The query returns the current state of this setting.

Remote Command	`:CALCulate[1]:DELTamarker[1]|2|3|4:LINK ON|OFF|1|0` `:CALCulate[1]:DELTamarker[1]|2|3|4:LINK?`
Example	CALC:DELT:LINK ON
Remote Command Notes	FSU
Preset	OFF
State Saved	Saved in instrument state.

CALCulate<1|2>:DELTamarker<1...4>:FUNCtion:FIXed[:STATe] ON | OFF

The command switches between relative measurement, and measurement relative to a fixed reference.

If required, marker 1 is activated and a peak search is performed.

If marker 1 is activated, its position becomes the reference point for the measurement. The reference point can then be changed, using commands CALCulate:DELTamarker:FUNCtion:FIXed:RPOint:X and :RPOint:Y, independently of the position of marker 1 and of any trace.

The query returns the current state of this setting.

Remote Command	`:CALCulate[1]:DELTamarker[1]|2|3|4:FUNCtion:FIXed[:STATe] ON|OFF|1|0` `:CALCulate[1]:DELTamarker[1]|2|3|4:FUNCtion:FIXed[:STATe]?`
Example	CALC:DELT:FUNC:FIX ON
Remote Command Notes	FSE, FSP, FSU
Preset	OFF
State Saved	Saved in instrument state.

CALCulate<1|2>:DELTamarker<1...4>:FUNCtion:FIXed:RPOint:MAXimum[:PEAK] <numeric_value>

Sets the reference point for all delta markers when you are making measurements using a fixed reference point (enabled by the command CALC:DELT:FUNC:FIX:STAT ON). You can specify a value using the <numeric_value> parameter, or specify the peak of the selected trace [:PEAK].

For phase-noise measurements (selected via CALCulate:DELTamarker:FUNCtion:PNOise:STATe ON), the command specifies a new reference point for delta marker 2.

Remote Command	`:CALCulate[1]:DELTamarker[1]|2|3|4:FUNCtion:FIXed:RPOint:MAXimum[:PEAK]`
Example	CALC:DELT:FUNC:FIX:RPO:MAX
Remote Command Notes	FSP, FSU

CALCulate<1|2>:DELTamarker<1...4>:FUNCtion:FIXed:RPOint:Y <numeric_value>

Sets or queries a Y-axis reference point for all delta markers when you are making measurements using a fixed reference point (enabled by CALCulate:DELTamarker:FUNCtion:FIXed:STATe ON).

For phase-noise measurements (selected via CALCulate:DELTamarker:FUNCtion:PNOise:STATe ON), the command specifies a new reference point level for delta marker 2.

Remote Command	`:CALCulate[1]:DELTamarker[1]|2|3|4:FUNCtion:FIXed:RPOint:Y <amplitude>` `:CALCulate[1]:DELTamarker[1]|2|3|4:FUNCtion:FIXed:RPOint:Y?`
Example	CALC:DELT2:FUNC:FIX:RPO:Y –10DBM CALC:DELT2:FUNC:FIX:RPO:Y?
Remote Command Notes	FSE, FSP, FSU

CALCulate<1|2>:DELTamarker<1...4>:FUNCtion:FIXed:RPOint:Y:OFFSet <numeric_value>

Sets or queries the additional offset for all delta markers when you are making measurements using a fixed reference value (enabled by CALCulate:DELTamarker:FUNCtion:FIXed:STATe ON).

For phase-noise measurements (selected via CALCulate:DELTamarker:FUNCtion:PNOise:STATe ON), specifies an additional offset that is included in the display of delta marker 2.

Remote Command	`:CALCulate[1]:DELTamarker[1]|2|3|4:FUNCtion:FIXed:RPOint:Y:OFFSet <rel_ampl>` `:CALCulate[1]:DELTamarker[1]|2|3|4:FUNCtion:FIXed:RPOint:Y:OFFSet?`
Example	CALC:DELT2:FUNC:FIX:RPO:Y:OFFS 10DB CALC:DELT2:FUNC:FIX:RPO:Y:OFFS?
Remote Command Notes	FSE, FSP, FSU

Preset	0

CALCulate<1|2>:DELTamarker<1...4>:FUNCtion:FIXed:RPOint:X <numeric_value>

Sets or queries the reference frequency or time for all delta markers when you are making measurements using a fixed reference value (enabled by CALCulate:DELTamarker:FUNCtion:FIXed:STATe ON).

For phase-noise measurements (selected via CALCulate:DELTamarker:FUNCtion:PNOise:STATe ON), specifies a reference frequency or time for delta marker 2.

Remote Command	`:CALCulate[1]:DELTamarker[1]|2|3|4:FUNCtion:FIXed:RPOint:X <real>` `:CALCulate[1]:DELTamarker[1]|2|3|4:FUNCtion:FIXed:RPOint:X?`
Example	CALC:DELT2:FUNC:FIX:RPO:X 10MHz CALC1:DELT:FUNC:FIX:RPO:X?
Remote Command Notes	FSE, FSP, FSU

CALCulate<1|2>:DELTamarker<1...4>:FUNCtion:PNOise[:STATe] ON|OFF

The command switches phase-noise measurement on or off for all active delta markers. All correction values are included.

If required, marker 1 is activated, and a peak search is performed. If marker 1 is activated, its position becomes the measurement's reference point.

The measurement's reference point can be modified with commands CALCulate:DELTamarker:FUNCtion:FIXed:RPOint:X and ...:RPOint:Y, independently of the position of marker 1 and of any trace.

The DELTamarker numeric suffix <1 to 4> is not required for this command.

The query returns the current state of this setting.

Remote Command	`:CALCulate[1]:DELTamarker[1]|2|3|4:FUNCtion:PNOise[:STATe] ON|OFF|1|0` `:CALCulate[1]:DELTamarker[1]|2|3|4:FUNCtion:PNOise[:STATe]?`
Example	CALC:DELT:FUNC:PNO ON
Remote Command Notes	FSE, FSP, FSU
Preset	OFF
State Saved	Saved in instrument state.

CALCulate<1|2>:DELTamarker<1...4>:FUNCtion:PNOise:AUTO ON | OFF

The command switches on or off automatic peak search action for fixed reference marker 1. When activated, this search occurs at the end of each sweep.

You can use this functionality to track a drifting source during a phase noise measurement. Delta marker 2, which shows the phase noise measurement result, retains the delta frequency value. Therefore the results of phase noise measurement with a specified offset remain valid.

When marker 2 reaches the limit of the span, the delta marker value is automatically adjusted to be within the span. In such cases, select a wider span.

The query returns the current state of this setting.

Remote Command	`:CALCulate[1]:DELTamarker[1]|2|3|4:FUNCtion:PNOise:AUTO ON|OFF|1|0` `:CALCulate[1]:DELTamarker[1]|2|3|4:FUNCtion:PNOise:AUTO ?`
Example	CALC:DELT:FUNC:PNO:AUTO ON
Remote Command Notes	FSU
Preset	OFF
State Saved	Saved in instrument state.

CALCulate<1\|2>:DELTamarker<1...4>:FUNCtion:PNOise:RESult?

Queries the result of a phase noise measurement. If required, the measurement is switched on.

Remote Command	`:CALCulate[1]:DELTamarker[1]|2|3|4:FUNCtion:PNOise:RESult?`
Example	CALC:DELT:FUNC:PNO:RES?
Remote Command Notes	FSE, FSP, FSU

CALCulate:LIMit Subsystem

The CALCulate:LIMit subsystem includes the limit lines and limit checks. Limit lines may be defined as upper or lower. The limit line Y-values correspond to the X-axis values. The number of x and y values must be identical.

X Series Analyzers support up to 6 active limit lines at the same time.

CALCulate<1\|2>:LIMit<1...6>:ACTive?

Queries the names of all active limit lines. For this command, all the numeric suffixes are ignored.

The return values are sorted alphabetically. If there are no active limit lines, an empty string is returned.

Remote Command	`:CALCulate[1]:LIMit[1]|2|3|4|5|6:ACTive?`
Example	CALC:LIM:ACT?
Remote Command Notes	FSE, FSU
Preset	“”

State Saved	Saved in instrument state.

CALCulate<1|2>:LIMit<1...6>:TRACe <1…3>

The command assigns a limit line to a trace.

The query returns the current assignment.

Remote Command	`:CALCulate[1]:LIMit[1]|2|3|4|5|6:TRACe 1|2|3` `:CALCulate[1]:LIMit[1]|2|3|4|5|6:TRACe?`
Example	CALC:LIM:TRAC 1
Remote Command Notes	FSE, FSP, FSU
Preset	1
State Saved	Saved in instrument state.
Min	1
Max	3

CALCulate<1|2>:LIMit<1...6>:STATe ON | OFF

The command switches the limit check for the specified limit line on or off.

The limit check result may be queried using CALCulate:LIMit<1...6>:FAIL?.

The query returns the current state of this setting.

Remote Command	`:CALCulate[1]:LIMit[1]|2|3|4|5|6:STATe ON|OFF|1|0` `:CALCulate[1]:LIMit[1]|2|3|4|5|6:STATe?`
Example	CALC:LIM:STAT ON
Remote Command Notes	FSE, FSP, FSU
Preset	OFF
State Saved	Saved in instrument state.

CALCulate<1|2>:LIMit<1...6>:UNIT DBM | DBPW | WATT | DBUV | DBMV | VOLT |DBUA | AMPere| DB | DEG | RAD | S | HZ | PCT | UNITLESS

The command specifies the unit for all limit lines.

This mode supports only the following amplitude units: DBM, DBPW, WATT, DBUV, DBMV, VOLT, DBUA and DB.

The command ignores the numeric suffix of LIMit, and sets all limit lines to the same unit.

The query returns the current state of this setting.

Remote Command	:CALCulate[1]:LIMit[1]|2|3|4|5|6:UNIT DBM|DBUV|DBMV|DBUA|A|V|W :CALCulate[1]:LIMit[1]|2|3|4|5|6:UNIT?
Example	CALC:LIM:UNIT DBM CALC:LIM:UNIT?
Remote Command Notes	FSE, FSP, FSU
Preset	DBM
State Saved	Saved in instrument state.
Range	DBM | DBUV | DBMV | DBUA | A | V | W

CALCulate<1|2>:LIMit<1...6>:FAIL?

Returns the limit check result for the specified limit line.

To obtain a valid result, you must perform a complete sweep.

The numeric value returned has the following meaning:

0	PASS
1	FAIL
2	MARGIN

Remote Command	:CALCulate[1]:LIMit[1]|2|3|4|5|6:FAIL?
Example	CALC:LIM:FAIL?
Remote Command Notes	FSE, FSP, FSU
Min	0
Max	2

CALCulate<1|2>:LIMit<1...6>:CLEar[:IMMediate]

Deletes the current limit check result for all limit lines.

Remote Command	:CALCulate[1]:LIMit[1]|2|3|4|5|6:CLEar[:IMMediate]
Example	CALC:LIM:CLE
Remote Command Notes	FSE, FSP, FSU

CALCulate<1|2>:LIMit<1...6>:COMMent <string>

The command defines a comment for the specified limit line. The comment string may have a maximum length of 40 characters.

The query returns the current value of this string.

Remote Command	:CALCulate[1]:LIMit[1]|2|3|4|5|6:COMMent <string> :CALCulate[1]:LIMit[1]|2|3|4|5|6:COMMent?
Example	CALC:LIM:COMM ‘GSM2’ CALC:LIM:COMM?
Remote Command Notes	FSE, FSP, FSU
Preset	“”
State Saved	**Saved in instrument state.**

CALCulate<1\|2>:LIMit<1...6>:COPY 1 to 6 | <name>

Copies the limit line specified by the numeric suffix of LIMit onto the limit line specified by the command’s parameter.

This mode does not support the parameter option <name>.

Remote Command	:CALCulate[1]:LIMit[1]|2|3|4|5|6:COPY <int>
Example	CALC:LIM:COPY 2
Remote Command Notes	FSE, FSP, FSU
Min	1
Max	6

CALCulate<1|2>:LIMit<1...6>:NAME <name of limit line>

The command assigns a name to the limit line specified by the numeric suffix of LIMit. A limit line with this name is created, if it does not already exist.

The query returns the current value of this string.

Remote Command	:CALCulate[1]:LIMit[1]|2|3|4|5|6:NAME <string> :CALCulate[1]:LIMit[1]|2|3|4|5|6:NAME?
Example	CALC:LIM:NAME ‘test’ CALC:LIM:NAME?
Remote Command Notes	FSE, FSP, FSU
Preset	'REM1' to 'REM6' for lines 1 to 6
State Saved	Saved in instrument state.

CALCulate<1|2>:LIMit<1...6>:DELete

Deletes the specified limit line.

Remote Command	`:CALCulate[1]:LIMit[1]|2|3|4|5|6:DELete`
Example	CALC:LIM:DEL
Remote Command Notes	FSE, FSP, FSU

CALCulate:LIMit:ESPectrum Subsystem

The CALCulate:LIMit:SPECtrum subsystem defines the limit check for spectrum emission measurements.

The following SCPI commands of this subsystem are accepted by the analyzer, but result in no action, and report no error.

CALCulate<1|2>:LIMit<1...6>:ESPectrum:MODE AUTO | MANual | USER

This command is accepted, but takes no action and reports no error.

Remote Command	`:CALCulate[1]:LIMit[1]|2|3|4|5|6:ESPectrum:MODE AUTO|MANual|USER` `:CALCulate[1]:LIMit[1]|2|3|4|5|6:ESPectrum:MODE?`
Example	CALC:LIM:ESP:MODE AUTO CALC:LIM:ESP:MODE
Remote Command Notes	FSP
Preset	AUTO
State Saved	**Saved in instrument state.**
Range	AUTO | MANual | USER

CALCulate<1|2>:LIMit<1...6>:ESPectrum:VALue <numeric_value>

Sets manual limit line selection. The limit line is selected by specifying the expected dBm power.

This command is accepted, but takes no action and reports no error.

Remote Command	`:CALCulate[1]:LIMit[1]|2|3|4|5|6:ESPectrum:VALue <integer>` `:CALCulate[1]:LIMit[1]|2|3|4|5|6:ESPectrum:VALue?`
Example	CALC:LIM:ESP:VAL 39 CALC:LIM:ESP:VAL?
Remote Command Notes	FSP
Preset	0

CALCulate<1|2>:LIMit<1...6>:ESPectrum:RESTore

Restores the standard limit lines for the spectrum emission mask measurement. Any modifications that were made to the standard limit lines are lost, and the default setting is restored.

This command is accepted, but takes no action and reports no error.

Remote Command	:CALCulate[1]:LIMit[1]|2|3|4|5|6:ESPectrum:RESTore
Example	CALC:LIM:ESP:REST
Remote Command Notes	FSP

CALCulate:LIMit:ACPower Subsystem

The CALCulate:LIMit:ACPower subsystem checks the limit for adjacent channel power (ACP) measurement.

CALCulate<1|2>:LIMit<1…6>:ACPower[:STATe]

Switches on and off the limit check for ACP measurements in the selected measurement window. In addition, you should use the commands CALCulate:LIMit:ACPower:ACHannel:STATe or CALCulate:LIMit:ACPower:ALTernate:STATe to specify whether the limit check is to be performed for the upper/lower adjacent channel or for the alternate adjacent channels.

The numeric suffix is irrelevant for this command.

Remote Command	:CALCulate[1]:LIMit[1]|2|3|4|5|6:ACPower[:STATe] ON|OFF|1|0 :CALCulate[1]:LIMit[1]|2|3|4|5|6:ACPower[:STATe]?
Example	CALC:LIM:ACP ON CALC:LIM:ACP?
Notes	FSU, FSP, FSE
Preset	OFF
State Saved	Saved in instrument state.

CALCulate<1|2>:LIMit<1…6>:ACPower:ACHannel[:RELative]

Specifies the relative limit of the upper/lower adjacent channel for ACP measurements in the selected measurement window. The reference value for the relative limit value is the measured channel power.

The numeric suffix is irrelevant for this command.

Remote Command	:CALCulate[1]:LIMit[1]|2|3|4|5|6:ACPower:ACHannel[:RELative] <real>,<real> :CALCulate[1]:LIMit[1]|2|3|4|5|6:ACPower:ACHannel[:RELative]?

Example	CALC:LIM:ACP:ACH 30DB, 30DB CALC:LIM:ACP:ACH:REL 30DB, 30DB CALC:LIM:ACP:ACH? CALC:LIM:ACP:ACH:REL?
Notes	FSU, FSP, FSE
Preset	0dB, 0dB
State Saved	Saved in instrument state.

CALCulate<1\|2>:LIMit<1…6>:ACPower:ACHannel[:RELative]:STATe

Invokes the limit check for the relative limit value of the adjacent channel when

ACP measurement is performed.

The result can be queried with CALCulate:LIMit:ACPower:ACHannel:RESult?. A complete measurement must be performed between switching on the limit check and the result query, since otherwise no valid results are available.

The numeric suffix is irrelevant for this command.

Remote Command	`:CALCulate[1]:LIMit[1]|2|3|4|5|6:ACPower:ACHannel[:RELative]:STATe ON|OFF|1|0` `:CALCulate[1]:LIMit[1]|2|3|4|5|6:ACPower:ACHannel[:RELative]:STATe?`
Example	CALC:LIM:ACP:ACH:STAT ON CALC:LIM:ACP:ACH:REL:STAT ON CALC:LIM:ACP:ACH:STAT? CALC:LIM:ACP:ACH:REL:STAT?
Notes	FSU, FSP, FSE
Preset	OFF
State Saved	Saved in instrument state.

CALCulate<1\|2>:LIMit<1…6>:ACPower:ACHannel:ABSolute

Specifies the absolute limit value for the lower/upper adjacent channel during ACP measurement in the selected measurement window.

The numeric suffix in LIMIt is irrelevant for this command.

Remote Command	`:CALCulate[1]:LIMit[1]|2|3|4|5|6:ACPower:ACHannel:ABSolute <real>,<real>` `:CALCulate[1]:LIMit[1]|2|3|4|5|6:ACPower:ACHannel:ABSolute?`

Example	CALC:LIM:ACP:ACH:ABS 30DBM, 30DBM CALC:LIM:ACP:ACH:ABS?
Notes	FSU, FSP, FSE
Preset	–200dBm, –200dBm
State Saved	Saved in instrument state.

CALCulate<1\|2>:LIMit<1…6>:ACPower:ACHannel:ABSolute:STATe

Invokes the limit check for the adjacent channel when ACP measurement is performed. Before the command, the limit check for the channel/adjacent-channel measurement must be globally switched on using CALC:LIM:ACP ON.

The result can be queried with CALCulate:LIMit:ACPower:ACHannel:RESult?. A complete measurement must be performed between switching on the limit check and the result query, since otherwise no valid results are available.

The numeric suffix in LIMIt is irrelevant for this command.

Remote Command	`:CALCulate[1]:LIMit[1]|2|3|4|5|6:ACPower:ACHannel:ABSolute:STATe ON|OFF|1|0` `:CALCulate[1]:LIMit[1]|2|3|4|5|6:ACPower:ACHannel:ABSolute:STATe?`
Example	CALC:LIM:ACP:ACH:ABS:STAT ON CALC:LIM:ACP:ACH:ABS:STAT?
Notes	FSU, FSP, FSE
Preset	OFF
State Saved	Saved in instrument state.

CALCulate<1|2>:LIMit<1…6>:ACPower:ACHannel:RESult?

Queries the result of the limit check for the upper/lower adjacent channel in the selected measurement window when ACP measurement is performed.

If the power measurement of the adjacent channel is switched off, the command produces a query error.

The numeric suffix is irrelevant for this command.

The result is returned in the form <result>, <result> where <result> = PASSED | FAILED, and where the first returned value denotes the lower, the second denotes the upper adjacent channel.

Remote Command	`:CALCulate[1]:LIMit[1]|2|3|4|5|6:ACPower:ACHannel:RESult?`
Example	CALC:LIM:ACP:ACH:RES?
Notes	FSU, FSP, FSE

CALCulate<1|2>:LIMit<1…6>:ACPower:ALTernate<1|2>[:RELative]

Specifies the limit for the first/second alternate adjacent channel in the selected measurement window for ACP measurements. The reference value for the relative limit value is the measured channel power.

The numeric suffix after ALTernate<1|2> denotes the first or the second alternate channel. The numeric suffixes <1 to 6> are irrelevant for this command.

Remote Command	`:CALCulate[1]:LIMit[1]|2|3|4|5|6:ACPower:ALTernate[1]|2[:RELative] <real>,<real>` `:CALCulate[1]:LIMit[1]|2|3|4|5|6:ACPower:ALTernate[1]|2[:RELative]?`
Example	CALC:LIM:ACP:ALT 30DB, 30DB CALC:LIM:ACP:ALT2:REL 30DB, 30DB CALC:LIM:ACP:ALT? CALC:LIM:ACP:ALT2:REL?
Notes	FSU, FSP, FSE
Preset	0dB, 0dB
State Saved	Saved in instrument state.

CALCulate<1|2>:LIMit<1…6>:ACPower:ALTernate<1|2>[:RELative]:STATe

Invokes the limit check for the first/second alternate adjacent channel in the selected measurement window for ACP measurements. Before the command, the limit check must be activated using CALCulate:LIMit:ACPower:STATe ON.

The numeric suffix after ALTernate<1|2> denotes the first or the second alternate channel. The numeric suffixes <1 to 6> are irrelevant for this command.

The result can be queried with CALCulate:LIMit:ACPower:ALTernate<1|2>:RESult?. A complete measurement must be performed between switching on the limit check and the result query, since otherwise no valid results are obtained.

Remote Command	`:CALCulate[1]:LIMit[1]|2|3|4|5|6:ACPower:ALTernate[1]|2[:RELative]:STATe ON|OFF|1|0` `:CALCulate[1]:LIMit[1]|2|3|4|5|6:ACPower:ALTernate[1]|2[:RELative]:STATe?`
Example	CALC:LIM:ACP:ALT:STAT ON CALC:LIM:ACP:ALT2:REL:STAT ON CALC:LIM:ACP:ALT:STAT? CALC:LIM:ACP:ALT2:REL:STAT?
Notes	FSU, FSP, FSE
Preset	OFF

State Saved	Saved in instrument state.

CALCulate<1|2>:LIMit<1…6>:ACPower:ALTernate<1|2>:ABSolute

Specifies the absolute limit value for the lower/upper alternate adjacent channel power measurement (Adjacent Channel Power) in the selected measurement window.

The numeric suffix after ALTernate<1|2> denotes the first or the second alternate channel. The numeric suffixes <1 to 6> are irrelevant for this command.

Remote Command	`:CALCulate[1]:LIMit[1]|2|3|4|5|6:ACPower:ALTernate[1]|2:ABSolute <real>,<real>` `:CALCulate[1]:LIMit[1]|2|3|4|5|6:ACPower:ALTernate[1]|2:ABSolute?`
Example	CALC:LIM:ACP:ALT:ABS 30DBM, 30DBM CALC:LIM:ACP:ALT:ABS?
Notes	FSU, FSP, FSE
Preset	–200dBm, –200dBm
State Saved	Saved in instrument state.

CALCulate<1|2>:LIMit<1…6>:ACPower:ALTernate<1|2>:ABSolute:STATe

Specifies the limit check for the first/second alternate adjacent channel in the selected measurement window for ACP measurement.

Before the command, the limit check must be globally switched on for the channel/adjacent channel power with the command CALCulate:LIMit:ACPower:STATe ON.

The numeric suffix after ALTernate<1|2> denotes the first or the second alternate channel. The numeric suffixes <1 to 6> are irrelevant for this command.

The result can be queried with CALCulate:LIMit:ACPower:ALTernate<1|2>:RESult?. A complete measurement must be performed between switching on the limit check and the result query, since otherwise no valid results are available.

Remote Command	`:CALCulate[1]:LIMit[1]|2|3|4|5|6:ACPower:ALTernate[1]|2:ABSolute:STATe ON|OFF|1|0` `:CALCulate[1]:LIMit[1]|2|3|4|5|6:ACPower:ALTernate[1]|2:ABSolute:STATe?`
Example	CALC:LIM:ACP:ALT:ABS:STAT ON CALC:LIM:ACP:ALT:ABS:STAT?
Notes	FSU, FSP, FSE
Preset	OFF
State Saved	Saved in instrument state.

CALCulate<1|2>:LIMit<1…6>:ACPower:ALTernate<1|2>:RESult?

Queries the result of the limit check for the first/second alternate adjacent channel in the selected measurement window for ACP measurements.

The numeric suffix after ALTernate<1|2> denotes the first or the second alternate channel. The numeric suffixes <1 to 6> are irrelevant for this command.

If the power measurement of the adjacent channel is switched off, the command produces a query error.

The result is returned in the form <result>, <result> where <result> = PASSED | FAILED and where the first (second) returned value denotes the lower (upper) alternate adjacent channel.

Remote Command	`:CALCulate[1]:LIMit[1]|2|3|4|5|6:ACPower:ALTernate[1]|2 :RESult?`
Example	CALC:LIM:ACP:ALT:RES? CALC:LIM:ACP:ALT2:RES?
Notes	FSU, FSP, FSE

CALCulate:LIMit:CONTrol Subsystem

The CALCulate:LIMit:CONTrol subsystem controls the X-axis.

NOTE All limit functions are not supported in the CCDF and APD measurements.

CALCulate<1|2>:LIMit<1...6>:CONTrol[:DATA] <numeric_value>,<numeric_value>..

The command specifies the X-axis values (frequencies or times) of the upper or lower limit lines.

This mode does not support any unit for this command.

The query returns the current values of these settings.

Remote Command	`:CALCulate[1]:LIMit[1]|2|3|4|5|6:CONTrol[:DATA] <real>,<real>…` `:CALCulate[1]:LIMit[1]|2|3|4|5|6:CONTrol[:DATA]?`
Example	CALC:LIM:CONT:DATA 1.0e7,2.0e7,1.0e8,3.0e8,1.0e9 CALC:LIM:CONT:DATA?
Remote Command Notes	FSE, FSP, FSU
State Saved	Saved in instrument state.

CALCulate<1|2>:LIMit<1...6>:CONTrol:DOMain FREQuency | TIME

The command switches between frequency or time domain for the X-axis.

The query returns the current state of this setting.

Remote Command	:CALCulate[1]:LIMit[1]|2|3|4|5|6:CONTrol:DOMain FREQuency|TIME :CALCulate[1]:LIMit[1]|2|3|4|5|6:CONTrol:DOMain?
Example	CALC:LIM:CONT:DOM FREQ CALC:LIM:CONT:DOM?
Remote Command Notes	FSE, FSP, FSU
Preset	FREQuency
State Saved	**Saved in instrument state.**
Range	FREQuency | TIME

CALCulate<1|2>:LIMit<1...6>:CONTrol:OFFSet <numeric_value>

The command defines an offset for the X-axis value of the specified relative limit line, in the frequency or time domain.

The query returns the current value of this setting.

Remote Command	:CALCulate[1]:LIMit[1]|2|3|4|5|6:CONTrol:OFFSet <real> :CALCulate[1]:LIMit[1]|2|3|4|5|6:CONTrol:OFFSet?
Example	CALC:LIM:CONT:OFFS 1 CALC:LIM:CONT:OFFS?
Remote Command Notes	FSE, FSP, FSU
Preset	0

CALCulate<1|2>:LIMit<1...6>:CONTrol:MODE RELative | ABSolute

The command switches between relative or absolute scaling for the X-axis of the specified limit line.

The query returns the current state of this setting.

Remote Command	:CALCulate[1]:LIMit[1]|2|3|4|5|6:CONTrol:MODE RELative|ABSolute :CALCulate[1]:LIMit[1]|2|3|4|5|6:CONTrol:MODE?
Example	CALC:LIM:CONT:MODE ABS CALC:LIM:CONT:MODE
Remote Command Notes	FSE, FSP, FSU
Preset	ABS
State Saved	**Saved in instrument state.**

Range	RELative | ABSolute

CALCulate<1|2>:LIMit<1...6>:CONTrol:SHIFt <numeric_value>

The command shifts the specified limit line in the X-direction, by the specified value.

The query returns the current value of this setting for the specified limit line.

Remote Command	`:CALCulate[1]:LIMit[1]|2|3|4|5|6:CONTrol:SHIFt <real>` `:CALCulate[1]:LIMit[1]|2|3|4|5|6:CONTrol:SHIFt?`
Preset	0
SCPI Command Notes SCPI Command Notes	FSE, FSP, FSU
SCPI Example[DEF]SCPI Example	CALC:LIM:CONT:SHIF 1 CALC:LIM:CONT:SHIF?

CALCulate<1|2>:LIMit<1...6>:CONTrol:SPACing LINear | LOGarithmic

The command switches between linear or logarithmic interpolation for calculation of limit lines from frequency points.

The query returns the current state of this setting.

Remote Command	`:CALCulate[1]:LIMit[1]|2|3|4|5|6:CONTrol:SPACing LINear|LOGarithmic` `:CALCulate[1]:LIMit[1]|2|3|4|5|6:CONTrol:SPACing?`
Example	CALC:LIM:CONT:SPAC LOG CALC:LIM:CONT:SPAC
Remote Command Notes	FSE, FSP, FSU
Preset	LIN
State Saved	**Saved in instrument state.**
Range	LINear | LOGarithmic

CALCulate:LIMit:LOWer Subsystem

The CALCulate:LIMit:LOWer subsystem controls the lower limit line.

NOTE All limit functions are not supported in the CCDF and APD measurements.

CALCulate<1|2>:LIMit<1...6>:LOWer[:DATA] <numeric_value>,<numeric_value>..

The command defines a set of values for the specified lower limit line.

The query returns the current value set.

This mode does not support any unit for this command.

Remote Command	`CALCulate[1]:LIMit[1]|2|3|4|5|6:LOWer[:DATA] <real>,<real>…` `CALCulate[1]:LIMit[1]|2|3|4|5|6:LOWer[:DATA]?`
Example	CALC:LIM:LOW:DATA 1,20,100,300,1 CALC:LIM:LOW:DATA?
Remote Command Notes	FSE, FSP, FSU
State Saved	Saved in instrument state.

CALCulate<1\|2>:LIMit<1...6>:LOWer:STATe ON \| OFF

The command activates or deactivates the specified lower limit line. Limit check is activated separately, using CALC:LIM:STAT ON.

The query returns the current state of this setting.

Remote Command	`:CALCulate[1]:LIMit[1]|2|3|4|5|6:LOWer:STATe ON|OFF|1|0` `:CALCulate[1]:LIMit[1]|2|3|4|5|6:LOWer:STATe?`
Example	CALC:LIM:LOW:STAT OFF CALC:LIM:LOW:STAT?
Remote Command Notes	FSE, FSP, FSU
Preset	OFF
State Saved	Saved in instrument state.

CALCulate<1\|2>:LIMit<1...6>:LOWer:OFFSet <numeric_value>

The command defines an offset for the Y axis of the specified relative lower limit line.

This mode does not support any unit for this command.

The query returns the current value of this setting.

Remote Command	`:CALCulate[1]:LIMit[1]|2|3|4|5|6:LOWer:OFFSet <real>` `:CALCulate[1]:LIMit[1]|2|3|4|5|6:LOWer:OFFSet?`
Example	CALC:LIM:LOW:OFFS 1 CALC:LIM:LOW:OFFS?
Remote Command Notes	FSE, FSP, FSU
Preset	0

CALCulate<1|2>:LIMit<1...6>:LOWer:MARGin <numeric_value>

The command defines a margin for the specified lower limit line. At the margin level, out-of-limit values are signaled (if the limit check is active), but are not treated as violations of the limit value.

This mode does not support any unit for this command.

The query returns the current value of this setting.

Remote Command	:CALCulate[1]:LIMit[1]|2|3|4|5|6:LOWer:MARGin <real> :CALCulate[1]:LIMit[1]|2|3|4|5|6:LOWer:MARGin?
Example	CALC:LIM:LOW:MARG 10 CALC:LIM:LOW:MARG?
Remote Command Notes	FSE, FSP, FSU
Preset	0

CALCulate<1|2>:LIMit<1...6>:LOWer:MODE RELative | ABSolute

The command switches between relative or absolute scaling for the Y-axis of the specified lower limit line.

Selecting RELative causes the unit to be switched to dB.

The query returns the current state of this setting.

Remote Command	:CALCulate[1]:LIMit[1]|2|3|4|5|6:LOWer:MODE RELative|ABSolute :CALCulate[1]:LIMit[1]|2|3|4|5|6:LOWer:MODE?
Example	CALC:LIM:LOW:MODE ABS CALC:LIM:LOW:MODE?
Remote Command Notes	FSE, FSP, FSU
Preset	ABS
State Saved	**Saved in instrument state.**
Range	RELative | ABSolute

CALCulate<1|2>:LIMit<1...6>:LOWer:SHIFt <numeric_value>

The command shifts the specified limit line in the Y-direction, by the specified amount.

This mode does not support any unit for this command.

The query returns the current value of this setting.

Remote Command	:CALCulate[1]:LIMit[1]|2|3|4|5|6:LOWer:SHIFt <real> :CALCulate[1]:LIMit[1]|2|3|4|5|6:LOWer:SHIFt?

Example	CALC:LIM:LOW:SHIF 1 CALC:LIM:LOW:SHIF?
Remote Command Notes	FSE, FSP, FSU
Preset	0

CALCulate<1\|2>:LIMit<1...6>:LOWer:SPACing LINear \| LOGarithmic

The command switches between linear or logarithmic interpolation for the lower limit line.

The query returns the current state of this setting.

Remote Command	`:CALCulate[1]:LIMit[1]|2|3|4|5|6:LOWer:SPACing LINear|LOGarithmic` `:CALCulate[1]:LIMit[1]|2|3|4|5|6:LOWer:SPACing?`
Example	CALC:LIM:LOW:SPAC LIN CALC:LIM:LOW:SPAC?
Remote Command Notes	FSE, FSP, FSU
Preset	LIN
State Saved	**Saved in instrument state.**
Range	LINear | LOGarithmic

CALCulate<1|2>:LIMit<1...6>:LOWer:THReshold <numeric_value>

The command defines an absolute threshold value for limit lines with relative Y-axis scaling.

The absolute threshold value is used for the limit check when it exceeds the relative limit value.

This mode supports only dBm units.

The query returns the current value of this setting.

Remote Command	`CALCulate[1]:LIMit[1]|2|3|4|5|6:LOWer:THReshold <ampl>` `CALCulate[1]:LIMit[1]|2|3|4|5|6:LOWer:THReshold?`
Example	CALC:LIM:LOW:THR 1DBM CALC:LIM:LOW:THR?
Remote Command Notes	FSP, FSU
Preset	–200dBm

CALCulate:LIMit:UPPer Subsystem

The CALCulate:LIMit:UPPer subsystem controls the upper limit line.

NOTE All limit functions are not supported in the CCDF and APD measurements.

CALCulate<1|2>:LIMit<1...6>:UPPer[:DATA] <numeric_value>,<numeric_value>..

The command defines a set of values for the specified upper limit line.

This mode does not support any unit for this command.

The query returns the current value set.

Remote Command	:CALCulate[1]:LIMit[1]|2|3|4|5|6:UPPer[:DATA] <real>,<real>… :CALCulate[1]:LIMit[1]|2|3|4|5|6:UPPer[:DATA]?
Example	CALC:LIM:UPP:DATA –10,0,0,–10,–5 CALC:LIM:UPP:DATA?
Remote Command Notes	FSE, FSP, FSU
State Saved	Saved in instrument state.

CALCulate<1|2>:LIMit<1...6>:UPPer:STATe ON | OFF

The command activates or deactivates the specified upper limit line. Limit check is activated separately, using CALC:LIM:STAT ON.

The query returns the current state of this setting.

Remote Command	:CALCulate[1]:LIMit[1]|2|3|4|5|6:UPPer:STATe ON|OFF|1|0 :CALCulate[1]:LIMit[1]|2|3|4|5|6:UPPer:STATe?
Example	CALC:LIM:UPP:STAT OFF CALC:LIM:UPP:STAT?
Remote Command Notes	FSE, FSP, FSU
Preset	OFF
State Saved	Saved in instrument state.

CALCulate<1|2>:LIMit<1...6>:UPPer:OFFSet <numeric_value>

The command defines an offset for the Y-axis of the specified relative upper limit line.

This mode does not support any unit for this command.

The query returns the current value of this setting.

Remote Command	CALCulate[1]:LIMit[1]|2|3|4|5|6:UPPer:OFFSet <real> CALCulate[1]:LIMit[1]|2|3|4|5|6:UPPer:OFFSet?

Example	CALC:LIM:UPP:OFFS 1 CALC:LIM:UPP:OFFS?
Remote Command Notes	FSE, FSP, FSU
Preset	0

CALCulate<1\|2>:LIMit<1...6>:UPPer:MARGin <numeric_value>

The command defines a margin for the specified upper limit line. At the margin level, out-of-limit values are signaled (if the limit check is active), but are not treated as violations of the limit value.

This mode does not support any unit for this command.

The query returns the current value of this setting.

Remote Command	`:CALCulate[1]:LIMit[1]|2|3|4|5|6:UPPer:MARGin <real>` `:CALCulate[1]:LIMit[1]|2|3|4|5|6:Upper:MARGin?`
Example	CALC:LIM:UPP:MARG 10 CALC:LIM:UPP:MARG?
Remote Command Notes	FSE, FSP, FSU
Preset	0

CALCulate<1|2>:LIMit<1...6>:UPPer:MODE RELative | ABSolute

The command switches between relative or absolute scaling for the Y-axis of the specified upper limit line.

Selecting RELative causes the unit to be switched to dB.

The query returns the current state of this setting.

Remote Command	`:CALCulate[1]:LIMit[1]|2|3|4|5|6:UPPer:MODE RELative|ABSolute` `:CALCulate[1]:LIMit[1]|2|3|4|5|6:UPPer:MODE?`
Example	CALC:LIM:UPP:MODE ABS CALC:LIM:UPP:MODE?
Remote Command Notes	FSE, FSP, FSU
Preset	ABS
State Saved	**Saved in instrument state.**
Range	RELative | ABSolute

CALCulate<1|2>:LIMit<1...6>:UPPer:SHIFt <numeric_value>

The command shifts the specified limit line in the Y-direction by the specified amount.

This mode does not support any unit for this command.

The query returns the current value of this setting.

Remote Command	`CALCulate[1]:LIMit[1]|2|3|4|5|6:UPPer:SHIFt <real>` `CALCulate[1]:LIMit[1]|2|3|4|5|6:UPPer:SHIFt?`
Example	CALC:LIM:UPP:SHIF 1 CALC:LIM:UPP:SHIF?
Remote Command Notes	FSE, FSP, FSU
Preset	0

CALCulate<1\|2>:LIMit<1...6>:UPPer:SPACing LINear \| LOGarithmic

The command switches between linear or logarithmic interpolation for the upper limit line.

The query returns the current state of this setting.

Remote Command	`:CALCulate[1]:LIMit[1]|2|3|4|5|6:UPPer:SPACing LINear|LOGarithmic` `:CALCulate[1]:LIMit[1]|2|3|4|5|6:UPPer:SPACing?`
Example	CALC:LIM:UPP:SPAC LIN CALC:LIM:UPP:SPAC?
Remote Command Notes	FSE, FSP, FSU
Preset	LIN
State Saved	**Saved in instrument state.**
Range	LINear | LOGarithmic

CALCulate<1\|2>:LIMit<1...6>:UPPer:THReshold <numeric_value>

The command specifies an absolute threshold value for limit lines with relative Y-axis scaling. The absolute threshold value is used for the limit check when it exceeds the relative limit value.

This mode supports only dBm units.

The query returns the current value of this setting.

Remote Command	`:CALCulate[1]:LIMit[1]|2|3|4|5|6:UPPer:THReshold <ampl>` `:CALCulate[1]:LIMit[1]|2|3|4|5|6:UPPer:THReshold?`
Example	CALC:LIM:UPP:THR 1DBM CALC:LIM:UPP:THR?
Remote Command Notes	FSP, FSU
Preset	–200dBm

CALCulate:MARKer Subsystem

The CALCulate:MARKer subsystem controls marker functions in the instrument.

NOTE All marker functions are not supported in the CCDF and APD measurements.

CALCulate<1|2>:MARKer<1...4>[:STATe] ON | OFF

The command switches the specified marker on or off.

If no numeric suffix is supplied, marker 1 is selected automatically.

If marker 2, 3 or 4 is selected and used as a delta marker, it is switched to marker mode.

The query returns the current state of this setting.

Remote Command	`:CALCulate[1]:MARKer[1]|2|3|4:STATe ON|OFF|1|0` `:CALCulate[1]:MARKer[1]|2|3|4:STATe?`
Example	CALC:MARK3:STAT ON
Remote Command Notes	FSE, FSP, FSU
Preset	OFF
State Saved	Saved in instrument state.

CALCulate<1|2>:MARKer<1...4>:AOFF

Turns off all active markers.

All delta markers are turned off.

All active marker and delta marker measurement functions are turned off.

Remote Command	`:CALCulate[1]:MARKer[1]|2|3|4:AOFF`
Example	CALC:MARK:AOFF
Remote Command Notes	FSE, FSP, FSU

CALCulate<1|2>:MARKer<1...4>:TRACe 1 to 3

The command assigns the specified marker to the trace defined by the command parameter.

If required, the corresponding marker is turned on.

The query returns the current assignment.

Remote Command	`:CALCulate[1]:MARKer[1]|2|3|4:TRACe 1|2|3` `:CALCulate[1]:MARKer[1]|2|3|4:TRACe?`
Example	CALC:MARK:TRAC 2

Remote Command Notes	FSE, FSP, FSU
Preset	1
Min	1
Max	3

CALCulate<1\|2>:MARKer<1...4>:X <0…MAX> (frequency \| sweep time)

The command places the selected marker at the indicated frequency, time, or level (for APD or CCDF measurements).

If marker 2, 3 or 4 is selected and used as delta marker, it is switched to marker mode.

The query returns the current value of this setting.

Remote Command	`:CALCulate[1]:MARKer[1]|2|3|4:X <real>` `:CALCulate[1]:MARKer[1]|2|3|4:X?`
Example	CALC:MARK:X 1000000000 CALC:MARK:X?
Remote Command Notes	FSE, FSP, FSU

CALCulate<1|2>:MARKer<1...4>:X:SLIMits[:STATe] ON | OFF

The command switches the search range limits on or off.

For this command, the numeric suffix <1...4> is ignored.

If time domain power measurement is active, this command limits the evaluation range on the trace.

The query returns the current state of this setting.

Remote Command	`:CALCulate[1]:MARKer[1]|2|3|4:X:SLIMits[:STATe] ON|OFF|1|0` `:CALCulate[1]:MARKer[1]|2|3|4:X:SLIMits[:STATe]?`
Example	CALC:MARK:X:SLIM:STAT ON
Remote Command Notes	FSE, FSP, FSU
Preset	OFF
State Saved	Saved in instrument state.

CALCulate<1|2>:MARKer<1...4>:X:SLIMits:LEFT <0…MAX> (frequency | sweep time)

The command sets the left limit of the search range for markers and delta markers.

The query returns the current value of this setting.

Remote Command	:CALCulate[1]:MARKer[1]|2|3|4:X:SLIMits:LEFT <real> :CALCulate[1]:MARKer[1]|2|3|4:X:SLIMits:LEFT?
Example	CALC:MARK:X:SLIM:LEFT 1MHZ CALC:MARK:X:SLIM:LEFT?
Remote Command Notes	FSP, FSU

CALCulate<1\|2>:MARKer<1...4>:X:SLIMits:RIGHT <0…MAX> (frequency \| sweep time)

The command sets the right limit of the search range for markers and delta markers.

The query returns the current value of this setting.

Remote Command	:CALCulate[1]:MARKer[1]|2|3|4:X:SLIMits:RIGHt <real> :CALCulate[1]:MARKer[1]|2|3|4:X:SLIMits:RIGHt?
Example	CALC:MARK:X:SLIM:RIGH 1MHZ CALC:MARK:X:SLIM:RIGH?
Remote Command Notes	FSP, FSU

CALCulate<1\|2>:MARKer<1...4>:COUNt ON \| OFF

The command switches on or off operation of the frequency counter at the marker position.

The query returns the current state of this setting.

Remote Command	:CALCulate[1]:MARKer[1]|2|3|4:COUNt ON|OFF|1|0 :CALCulate[1]:MARKer[1]|2|3|4:COUNt?
Example	CALC:MARK:COUN ON
Remote Command Notes	FSE, FSP, FSU
Preset	OFF

CALCulate<1\|2>:MARKer<1...4>:COUNt:RESolution 0.1 \| 1 \| 10 \| 100 \| 1000 \| 10000 Hz

The command specifies the resolution of the frequency counter.

This mode supports the following resolutions: 1 | 10 | 100 | 1000| 10000 | 100000 | 1000000 Hz.

The query returns the current value of this setting.

Remote Command	:CALCulate[1]:MARKer[1]|2|3|4:COUNt:RESolution <freq> :CALCulate[1]:MARKer[1]|2|3|4:COUNt:RESolution?
Example	CALC:MARK:COUN:RES 1kHZ CALC:MARK:COUN:RES?

Remote Command Notes	FSE, FSP, FSU
Preset	1KHZ
Min	1
Max	10KHz

CALCulate<1|2>:MARKer<1...4>:COUNt:FREQuency?

Queries the frequency counter result for the specified marker.

Remote Command	`:CALCulate[1]:MARKer[1]|2|3|4:COUNt:FREQuency?`
Example	CALC:MARK:COUN:FREQ?
Remote Command Notes	FSE, FSP, FSU

CALCulate<1|2>:MARKer<1...4>:LOEXclude ON | OFF

The command switches local oscillator suppression for peak search on or off.

This setting is valid for all markers and delta markers.

The query returns the current state of this setting.

Remote Command	`:CALCulate[1]:MARKer[1]|2|3|4:LOEXclude ON|OFF|1|0` `:CALCulate[1]:MARKer[1]|2|3|4:LOEXclude?`
Example	CALC:MARK:LOEX ON
Remote Command Notes	FSE, FSP, FSU
Preset	ON
State Saved	Saved in instrument state.

CALCulate<1|2>:MARKer<1...4>:Y?

Queries the measured value of the specified marker.

If required, the marker is activated, or switched to marker mode.

Remote Command	`:CALCulate[1]:MARKer[1]|2|3|4:Y?`
Example	CALC:MARK2:Y 1
Remote Command Notes	FSE, FSP, FSU

CALCulate<1|2>:MARKer<1...4>:Y:PERCent

This command positions the selected marker in the selected window to the given probability. If marker 2, 3 or 4 is selected and used as a delta marker, it is switched to marker mode.

This command is accepted, but takes no action and reports no error.

Remote Command	:CALCulate[1]:MARKer[1]|2|3|4:Y:PERCent <float> :CALCulate[1]:MARKer[1]|2|3|4:Y:PERCent?
Example	CALC:MARK2:Y:PERC 95PCT
Remote Command Notes	FSP, FSU
Min	0
Max	100

CALCulate<1\|2>:MARKer<1...4>:MAXimum[:PEAK]

Places the delta marker at the current maximum on the measured curve. If required, the delta marker is first activated.

This command is an event, and therefore has no *RST value and no query.

Remote Command	:CALCulate[1]:MARKer[1]|2|3|4:MAXimum[:PEAK]
Example	CALC:MARK:MAX
Remote Command Notes	FSE, FSP, FSU

CALCulate<1\|2>:MARKer<1...4>:MAXimum:NEXT

Places the marker at the next smaller maximum value of the corresponding trace.

Remote Command	:CALCulate[1]:MARKer[1]|2|3|4:MAXimum:NEXT
Example	CALC:MARK:MAX:NEXT
Remote Command Notes	FSE, FSP, FSU

CALCulate<1\|2>:MARKer<1...4>:MAXimum:LEFT

Places the marker at the next smaller maximum to the left of the current value (that is, in order of decreasing X values) on the trace.

Remote Command	:CALCulate[1]:MARKer[1]|2|3|4:MAXimum:LEFT
Example	CALC:MARK:MAX:LEFT
Remote Command Notes	FSE, FSP, FSU

CALCulate<1\|2>:MARKer<1...4>:MAXimum:RIGHt

Places the delta marker at the next smaller maximum to the right of the current value (that is, in order of increasing X values). If required, the corresponding delta marker is first activated.

This command is an event, and therefore has no *RST value and no query.

Remote Command	`CALCulate[1]:MARKer[1]|2|3|4:MINimum:RIGHt`
Example	CALC:MARK:MIN:RIGH
Remote Command Notes	FSE, FSP, FSU

CALCulate<1|2>:MARKer<1...4>:MAXimum:AUTO ON | OFF

For marker 1, the command switches on or off operation of automatic maximum peak search at the end of each sweep.

The marker search limit settings are taken into account.

For this command, the numeric suffix <1 to 4> is ignored.

The query returns the current state of this setting.

Remote Command	`:CALCulate[1]:MARKer[1]|2|3|4:MAXimum:AUTO ON|OFF|1|0` `:CALCulate[1]: MARKer[1]|2|3|4:MAXimum:AUTO?`
Example	CALC:MARK:MAX:AUTO ON CALC:MARK:MAX:AUTO?
Remote Command Notes	FSU
Preset	OFF
State Saved	Saved in instrument state.

CALCulate<1|2>:MARKer<1...4>:MINimum:AUTO ON | OFF

For marker 1, the command switches on or off operation of automatic minimum peak search at the end of each sweep.

The marker search limit settings are taken into account.

For this command, the numeric suffix <1 to 4> is ignored.

The query returns the current state of this setting.

Remote Command	`:CALCulate[1]:MARKer[1]|2|3|4:MINimum:AUTO ON|OFF|1|0` `:CALCulate[1]: MARKer[1]|2|3|4:MINimum:AUTO?`
Example	CALC:MARK:MIN:AUTO ON CALC:MARK:MIN:AUTO?
Remote Command Notes	FSU
Preset	OFF
State Saved	Saved in instrument state.

CALCulate<1|2>:MARKer<1...4>:MINimum[:PEAK]

Places the delta marker at the current maximum on the trace.

If required, the corresponding delta marker is first activated.

This command is an event, and therefore has no *RST value and no query.

Remote Command	`:CALCulate[1]:MARKer[1]|2|3|4:MINimum [:PEAK]`
Example	`CALC:MARK:MIN`
Remote Command Notes	FSE, FSP, FSU

CALCulate<1|2>:MARKer<1...4>:MINimum:NEXT

Places the marker at the next smaller maximum of the corresponding trace.

Remote Command	`:CALCulate[1]:MARKer[1]|2|3|4:MINimum:NEXT`
Example	CALC:MARK:`MIN`:NEXT
Remote Command Notes	FSE, FSP, FSU

CALCulate<1|2>:MARKer<1...4>:MINimum:RIGHt

Places the delta marker at the next smaller maximum to the right of the current value (that is, in order of increasing X values).

If required, the corresponding delta marker is first activated.

This command is an event, and therefore has no *RST value and no query.

Remote Command	`CALCulate[1]:MARKer[1]|2|3|4:MAXimum:RIGHt`
Example	CALC:MARK:MAX:RIGH
Remote Command Notes	FSE, FSP, FSU

CALCulate<1|2>:MARKer<1...4>:MINimum:LEFT

Places the marker at the next smaller maximum to the left of the current value (that is, in order of decreasing X values) on the trace.

Remote Command	`:CALCulate[1]:MARKer[1]|2|3|4:MINimum:LEFT`
Example	CALC:MARK:`MIN`:LEFT
Remote Command Notes	FSE, FSP, FSU

CALCulate<1|2>:MARKer<1...4>:PEXCursion <numeric_value>

The command specifies the peak excursion.

This mode supports only dB units.

The query returns the current value of this setting.

Remote Command	:CALCulate[1]:MARKer[1]|2|3|4:PEXCursion <rel_ampl> :CALCulate[1]:MARKer[1]|2|3|4:PEXCursion?
Example	CALC:MARK:PEXC 10dB
Remote Command Notes	FSE, FSP, FSU
Preset	6dB
State Saved	Saved in instrument state.

CALCulate:MARKer:FUNCtion Subsystem

CALCulate<1|2>:MARKer<1…4>:FUNCtion:CENTer

Sets the center frequency of the selected measurement window equal to the frequency of the indicated marker.

Remote Command	:CALCulate[1]:MARKer[1]|2|3|4:FUNCtion:CENTer
Example	CALC:MARK:FUNC:CENT
Notes	FSE, FSP, FSU

CALCulate<1|2>:MARKer<1…4>:FUNCtion:CSTep

Sets the step width of the center frequency in the selected measurement window to the X value of the current marker.

Remote Command	:CALCulate[1]:MARKer[1]|2|3|4:FUNCtion:CSTep
Example	CALC:MARK:FUNC:CST
Notes	FSE, FSP, FSU

CALCulate<1|2>:MARKer<1…4>:FUNCtion:FPEaks

Searches the selected trace for the indicated number of maxima.

Remote Command	:CALCulate[1]:MARKer[1]|2|3|4:FUNCtion:FPEaks[:IMMediate] <int> :CALCulate[1]:MARKer[1]|2|3|4:FUNCtion:FPEaks[:IMMediate]?
Example	CALC:MARK:FUNC:FPE 5
Notes	FSE, FSP, FSU
Preset	0

CALCulate<1|2>:MARKer<1…4>:FUNCtion:FPEaks:COUNt?

Reads out the number of maxima found during the search. If no search has been performed, 0 is returned.

Remote Command	:CALCulate[1]:MARKer[1]|2|3|4:FUNCtion:FPEaks:COUNt?
Example	CALC:MARK:FUNC:FPE:COUN?
Notes	FSE, FSP, FSU

CALCulate<1|2>:MARKer<1…4>:FUNCtion:REFerence

Sets the reference level in the selected measurement window to the power measured by the indicated marker.

Remote Command	:CALCulate[1]:MARKer[1]|2|3|4:FUNCtion:REFerence
Example	CALC:MARK:FUNC:REF
Notes	FSE, FSP, FSU

CALCulate<1|2>:MARKer<1…4>:FUNCtion:FPEaks:X?

Reads out the list of X values of the maxima found. The number of available values can be queried with CALC:MARK:FUNC:FPEaks:COUNt?.

Remote Command	:CALCulate[1]:MARKer[1]|2|3|4:FUNCtion:FPEaks:X?
Example	CALC:MARK:FUNC:FPE:X?
Notes	FSE, FSP, FSU

CALCulate<1|2>:MARKer<1…4>:FUNCtion:FPEaks:Y?

Reads out the list of X values of the maxima foand. The number of available values can be queried with CALC:MARK:FUNC:FPEaks:COUNt?.

Remote Command	:CALCulate[1]:MARKer[1]|2|3|4:FUNCtion:FPEaks:Y?
Example	CALC:MARK:FUNC:FPE:Y?
Notes	FSE, FSP, FSU

CALCulate<1|2>:MARKer<1…4>:FUNCtion:FPEaks:SORT X|Y

Sets the sort mode for the search for maxima:

Remote Command	:CALCulate[1]:MARKer[1]|2|3|4:FUNCtion:FPEaks:SORT X|Y :CALCulate[1]:MARKer[1]|2|3|4:FUNCtion:FPEaks:SORT?
Example	CALC:MARK:FUNC:FPE:SORT X CALC:MARK:FUNC:FPE:SORT?

Notes	FSE, FSP, FSU

CALCulate<1|2>:MARKer<1…4>:FUNCtion:SUMMary:RMS[:STATe] ON | OFF

Switches on or off the measurement of the effective (RMS) power in the selected measurement window. If necessary the function is switched on previously.

Remote Command	`:CALCulate[1]:MARKer[1]|2|3|4:FUNCtion:SUMMary:RMS[:STATe] ON|OFF|1|0` `:CALCulate[1]:MARKer[1]|2|3|4:FUNCtion:SUMMary:RMS[:STATe]?`
Example	CALC:MARK:FUNC:SUMM:RMS ON CALC:MARK:FUNC:SUMM:RMS?
Notes	FSE, FSP, FSU
Preset	OFF
State Saved	Saved in instrument state.

CALCulate<1|2>:MARKer<1…4>:FUNCtion:SUMMary:RMS:RESult?

Queries the result of the measurement of the RMS power value in the selected measurement window.

Remote Command	`:CALCulate[1]:MARKer[1]|2|3|4:FUNCtion:SUMMary:RMS:RESult?`
Example	CALC:MARK:FUNC:SUMM:RMS:RES?
Notes	FSE, FSP, FSU

CALCulate<1|2>:MARKer<1...4>:FUNCtion:NOISe[:STATe]

The command switches noise measurement on or off for all markers.

The noise power density is measured at the marker positions. The result may be queried using CALCulate:MARKer:FUNCtion:NOISe:RESult?.

The query returns the current state of this setting.

Remote Command	`:CALCulate[1]:MARKer[1]|2|3|4:FUNCtion:NOISe[:STATe] ON|OFF|1|0` `:CALCulate[1]:DELTamarker[1]|2|3|4:FUNCtion:NOISe[:STATe]?`
Example	CALC:MARK:FUNC:NOIS ON
Remote Command Notes	FSE, FSP, FSU
Preset	OFF
State Saved	Saved in instrument state.

CALCulate<1|2>:MARKer<1...4>:FUNCtion:NOISe:RESult?

Queries the noise measurement result.

To obtain a valid result, a complete sweep must be performed after switching on the function, but before querying the measured value. This is possible only in Single sweep mode.

Remote Command	`:CALCulate[1]:MARKer[1]|2|3|4:FUNCtion:NOISe:RESult?`
Example	CALC:MARK:FUNC:NOIS:RES?
Remote Command Notes	FSE, FSP, FSU

CALCulate<1|2>:MARKer<1...4>:FUNCtion:REFerence?

Sets the reference level to the power measured by the specified marker.

If marker 2, 3 or 4 is selected, and used as delta marker, it is switched to marker mode.

This command is an event, and therefore has neither *RST value nor query.

The value of the numeric suffix <1 to 4> is ignored.

Remote Command	`:CALCulate[1]:MARKer[1]|2|3|4:FUNCtion:REFerence`
Example	CALC:MARK:FUNC:REF
Remote Command Notes	FSE, FSP, FSU

CALCulate:MARKer:FUNCtion:POWer Subsystem

The CALCulate:MARKer:FUNCtion:POWER subsystem includes commands for control of power measurement.

CALCulate<1|2>:MARKer<1...4>:FUNCtion:POWer:SELect ACPower | CPOWer | MCACpower | OBANdwidth | OBWidth | CN | CN0

Selects and activates the specified power measurement type.

This mode supports: ACPower, MCACpower, CPOWer, OBANdwidth and OBWidth.

Remote Command	`CALCulate[1]:MARKer[1]|2|3|4:FUNCtion:POWer:SELect ACPower|CPOWer|MCACpower|OBANdwidth|OBWidth|CN|CN0`
Example	CALC:MARK:FUNC:POW:SEL OBW
Remote Command Notes	FSE, FSP, FSU

CALCulate<1|2>:MARKer<1...4>:FUNCtion:POWer:RESult? ACPower | CPOWer | MCACpower | OBANdwidth | OBWidth | CN | CN0

Queries the result for the specified power measurement type.

This mode supports ACPower, CPOWer, MCACpower, OBANdwidth and OBWidth.

Remote Command	`CALCulate[1]:MARKer[1]|2|3|4:FUNCtion:POWer:RESult? ACPower|CPOWer|MCACpower|OBANdwidth|OBWidth|CN|CN0`
Example	CALC:MARK:FUNC:POW:RES? OBW
Remote Command Notes	FSE, FSP, FSU

CALCulate<1|2>:MARKer<1...4>:FUNCtion:POWer:RESult:PHZ ON | OFF

The command switches the query response for power measurement results between absolute values (OFF) and output referred to measurement bandwidth (ON).

The query returns the current state of this setting.

Remote Command	`:CALCulate[1]:MARKer[1]|2|3|4:FUNCtion:POWer:RESult:PHZ ON|OFF|1|0` `:CALCulate[1]:MARKer[1]|2|3|4:FUNCtion:POWer:RESult:PHZ ?`
Example	CALC:MARK:FUNC:POW:RES:PHZ OFF CALC:MARK:FUNC:POW:RES:PHZ?
Remote Command Notes	FSP, FSU
Preset	OFF
State Saved	Saved in instrument state.

CALCulate:STATistics Subsystem

The CALCulate:STATistics subsystem controls the statistical measurement functionality.

CALCulate:STATistics:APD[:STATe] ON | OFF

This command is accepted, but takes no action and reports no error.

Remote Command	`:CALCulate:STATistics:APD:STATe ON|OFF|1|0` `:CALCulate:STATistics:APD:STATe?`
Example	CALC:STAT:APD:STAT ON
Remote Command Notes	FSP, FSU
Preset	OFF
State Saved	Saved in instrument state.

CALCulate:STATistics:CCDF[:STATe] ON | OFF

The command activates or deactivates measurement of the complementary cumulative distribution function (CCDF).

When this function is activated, the APD measurement is turned off.

The query returns the current state of this setting.

Remote Command	:CALCulate:STATistics:CCDF:STATe ON|OFF|1|0 :CALCulate:STATistics:CCDF:STATe?
Example	CALC:STAT:CCDF:STAT ON
Remote Command Notes	FSP, FSU
Preset	OFF
State Saved	Saved in instrument state.

CALCulate:STATistics:CCDF:X<1…3>? P0_01 | P0_1 | P1 | P10

Queries the level values for the probabilities 0.01%, 0.1%, 1% and 10%.

Remote Command	CALCulate:STATistics:CCDF:X[1]|2|3? P0_01|P0_1|P1|P10
Example	CALC:STAT:CCDF:X? P10
Remote Command Notes	FSU

CALCulate:STATistics:NSAMples <100…1E9>

The command specifies the number of measurement points to be acquired for the statistical measurement functions.

The minimum value supported by this mode is 1000.

The query returns the current value of this setting.

Remote Command	:CALCulate[1]:STATistics:NSAMples <int> :CALCulate[1]:STATistics:NSAMples?
Example	CALC:STAT:NSAM 100000 CALC:STAT:NSAM?
Remote Command Notes	FSP, FSU
Preset	100000
State Saved	Saved in instrument state.
Min	1000
Max	1E9

CALCulate:STATistics:SCALe:AUTO ONCE

This command is accepted, but takes no action and reports no error.

Remote Command	:CALCulate[1]:STATistics:SCALe:AUTO ONCE
Example	CALC:STAT:SCAL:AUTO ONCE
Remote Command Notes	FSP, FSU

CALCulate:STATistics:SCALe:X:RLEVel –130dBm to 30dBm

Specifies the reference level for the X-axis of the measurement display. The setting is identical to the reference level setting using the command DISPlay:WINDow:TRACe:Y: RLEVel.

This command is accepted, but takes no action and reports no error.

Remote Command	:CALCulate[1]:STATistics:SCALe:X:RLEVel <ampl> :CALCulate[1]:STATistics:SCALe:X:RLEVel?
Example	CALC:STAT:SCAL:X:RLEV –60dBm CALC:STAT:SCAL:X:RLEV?
Remote Command Notes	FSP, FSU
Preset	–20dBm
State Saved	Saved in instrument state.
Min	–130
Max	30

CALCulate:STATistics:SCALe:X:RANGe 10dB to 200dB

Specifies the level range for the X-axis of the measurement display. The setting is identical to the level range setting defined with the command DISPlay:WINDow:TRACe:Y:SCALe.

This command is accepted, but takes no action and reports no error.

Remote Command	:CALCulate[1]:STATistics:SCALe:X:RANGe <rel_ampl> :CALCulate[1]:STATistics:SCALe:X:RANGe?
Example	CALC:STAT:SCAL:X:RANG 20dB CALC:STAT:SCAL:X:RANG?
Remote Command Notes	FSP, FSU
Preset	100dB
State Saved	Saved in instrument state.
Min	10
Max	200

CALCulate:STATistics:SCALe:Y:UPPer 1E–8 to 1.0

Specifies the upper limit for the Y-axis of the display, in statistical measurements. Since probabilities are specified on the Y axis, the entered numerical values are dimensionless.

This command is accepted, but takes no action and reports no error.

Remote Command	`:CALCulate[1]:STATistics:SCALe:Y:UPPer <real>` `:CALCulate[1]:STATistics:SCALe:Y:UPPer?`
Example	CALC:STAT:SCAL:Y:UPP 0.01 CALC:STAT:SCAL:Y:UPP?
Remote Command Notes	FSP, FSU
Preset	1.0
State Saved	Saved in instrument state.
Min	1e–8
Max	1.0

CALCulate:STATistics:SCALe:Y:LOWer 1E–9 to 0.1

Specifies the lower limit for the Y-axis of the display, in statistical measurements. Since probabilities are specified on the Y axis, the entered numerical values are dimensionless.

This command is accepted, but takes no action and reports no error.

Remote Command	`:CALCulate[1]:STATistics:SCALe:Y:LOWer <real>` `:CALCulate[1]:STATistics:SCALe:Y:LOWer?`
Example	CALC:STAT:SCAL:Y:LOW 0.001 CALC:STAT:SCAL:Y:LOW?
Remote Command Notes	FSP, FSU
Preset	1e–6
State Saved	Saved in instrument state.
Min	1e–9
Max	0.1

CALCulate:STATistics:PRESet

Resets the scaling of the X- and Y-axes in a statistical measurement. The following values are set:

This command is accepted, but takes no action and reports no error.

Remote Command	`:CALCulate[1]:STATistics:PRESet`
Example	CALC:STAT:PRES

Remote Command Notes	FSP, FSU

CALCulate:STATistics:RESult<1…3>? MEAN | PEAK | CFACtor | ALL

Queries the results of statistical measurements of a recorded trace.

Currently, only TRACE1 is valid for CCDF measurements.

Remote Command	`CALCulate:STATistics:RESult? MEAN|PEAK|CFACtor|ALL`
Example	CALC:STAT:RES? ALL
Remote Command Notes	FSP, FSU

CALCulate:THReshold Subsystem

The CALCulate:THReshold subsystem controls the threshold value for maximum/minimum marker searches.

CALCulate<1|2>:DLINe<1|2> MINimum…MAXimum

Specifies the position of Display Line 1 or 2. These lines enable the user to mark any levels in the diagram. The unit depends on the setting made with CALC:UNIT.

This command is accepted, but takes no action and reports no error.

Remote Command	`:CALCulate[1]:DLINe[1]|2 <ampl>` `:CALCulate[1]:DLINe[1]|2?`
Example	CALC:DLIN –20DBM
Remote Command Notes	FSE, FSP, FSU
State Saved	Saved in instrument state.

CALCulate<1|2>:DLINe<1|2>:STATe ON | OFF

The command turns Display Line 1 or 2 (level lines) on or off.

The query returns the current state of this setting.

Remote Command	`:CALCulate[1]:DLINe[1]|2:STATe ON|OFF|1|0` `:CALCulate[1]:DLINe[1]|2:STATe?`
Example	CALC:DLIN:STAT ON
Remote Command Notes	FSE, FSP, FSU
Preset	OFF
State Saved	Saved in instrument state.

CALCulate<1|2>:THReshold MINimum to MAXimum (depending on current unit)

The command specifies the threshold value for the maximum/minimum search of markers with marker search functions MAX PEAK, NEXT PEAK, etc.

The associated display line is automatically turned on.

The query returns the current value of this setting.

Remote Command	`:CALCulate[1]:THReshold <ampl>` `:CALCulate[1]:THReshold?`
Example	CALC:THR –82DBM
Remote Command Notes	FSE, FSP, FSU
State Saved	Saved in instrument state.

CALCulate<1|2>:THReshold:STATe ON | OFF

The command turns the threshold line on or off.

The unit depends on the setting performed by CALC:UNIT.

The query returns the current state of this setting.

Remote Command	`:CALCulate[1]:THReshold:STATe ON|OFF|1|0` `:CALCulate[1]:THReshold:STATe?`
Example	CALC:THR:STAT ON
Remote Command Notes	FSE, FSP, FSU
Preset	OFF
State Saved	Saved in instrument state.

CALCulate<1|2>:FLINe<1|2> 0...fmax

Specifies the position of the frequency lines.

This command is accepted, but takes no action and reports no error.

Remote Command	`:CALCulate[1]:FLINe[1]|2 <freq>` `:CALCulate[1]:FLINe[1]|2?`
Example	CALC:FLIN 120MHz
Remote Command Notes	FSE, FSP, FSU
State Saved	Saved in instrument state.

CALCulate<1|2>:FLINe<1|2>:STATe ON | OFF

Switches the frequency line on or off.

This command is accepted, but takes no action and reports no error.

Remote Command	:CALCulate[1]:FLINe[1]|2:STATe ON|OFF|1|0 :CALCulate[1]:FLINe[1]|2:STATe?
Example	CALC:FLIN:STAT ON
Remote Command Notes	FSE, FSP, FSU
Preset	OFF
State Saved	Saved in instrument state.

CALCulate<1\|2>:TLINe<1\|2> 0...1000s

Specifies the position of the time lines.

This command is accepted, but takes no action and reports no error.

Remote Command	:CALCulate[1]:TLINe[1]|2 <time> :CALCulate[1]:TLINe[1]|2?
Example	CALC:TLIN 10ms
Remote Command Notes	FSE, FSP, FSU
State Saved	Saved in instrument state.

CALCulate<1\|2>:TLINe<1\|2>:STATe ON | OFF

Switches the time line on or off.

This command is accepted, but takes no action and reports no error.

Remote Command	:CALCulate[1]:TLINe[1]|2:STATe ON|OFF|1|0 :CALCulate[1]:TLINe[1]|2:STATe?
Example	CALC:TLIN:STAT ON
Remote Command Notes	FSE, FSP, FSU
Preset	OFF
State Saved	Saved in instrument state.

CALCulate:UNIT Subsystem

The CALCulate:Unit subsystem specifies the units for power measurement settings.

CALCulate<1|2>:UNIT:POWer DBM | V | A | W | DB | PCT | UNITLESS |DBPW | WATT | DBUV |DBMV | VOLT | DBUA | AMPere

The command selects the power units.

This mode supports the following unit parameters: DBM | DBUV | DBMV | DBUA | V | A | W.

The query returns the current unit selection.

Remote Command	`:CALCulate[1]:UNIT:POWer DBM|DBUV|DBMV|DBUA|V|A|W` `:CALCulate[1]:UNIT:POWer?`
Example	CALC:UNIT:POW DBM
Remote Command Notes	FSE, FSP, FSU
Preset	DBM
State Saved	Saved in instrument state.
Range	DBM | DBUV | DBMV | DBUA | V | A | W
Backward Compatibility	UNIT[1]|2:POWer

dBm

Sets the unit for the selected amplitude scale (log/lin) to dBm.

Remote Command Example:	UNIT:POW DBM

dBmV

Sets the unit for the selected amplitude scale (log/lin) to dBmV.

Remote Command Example:	UNIT:POW DBMV

W

Sets the unit for the selected amplitude scale (log/lin) to Watt.

Remote Command Example:	UNIT:POW W

V

Sets the unit for the selected amplitude scale (log/lin) to Volt.

Remote Command Example:	UNIT:POW V

A

Sets the unit for the selected amplitude scale (log/lin) to Ampere.

Remote Command Example:	`UNIT:POW A`

dBµV

Sets the unit for the selected amplitude scale (log/lin) to dBµV.

Remote Command Example:	UNIT:POW DBUV

dBµA

Sets the unit for the selected amplitude scale (log/lin) to dBµA.

Remote Command Example:	UNIT:POW DBUA

CALibration Subsystem

The CALibration subsystem specifies the data for system error correction.

CALibration[:ALL]?

Initiates the acquisition of system error correction data.

If the acquisition was successful, "0" is returned.

Mode	All
Remote Command	`:CALibration[:ALL]?`
Example	:CAL?
Remote Command Notes	FSE, FSP, FSU

CALibration:STATe ON | OFF

Specifies whether the current calibration data is to be taken into account by the instrument (ON) or not (OFF).

Remote Command	`:CALibration:STATe ON|OFF|1|0`
Example	CAL:STAT OFF
Remote Command Notes	FSE, FSP, FSU
Preset	ON
State Saved	No

DISPlay Subsystem

The DISPLay subsystem commands control the selection and presentation of textual and graphical information and measurement data.

This mode does not support the screen display function. All DISPlay-related SCPI commands are accepted, but take no action and report no error.

DISPlay:FORMat SINGle | SPLit

Switches the measurement result display between FULL SCREEN and SPLIT SCREEN.

This command is accepted, but takes no action and reports no error.

Remote Command	`:DISPlay:FORMat SINGle|SPLit` `:DISPlay:FORMat?`
Example	DISP:FORM SING
Remote Command Notes	FSE, FSP, FSU
Preset	SINGle
State Saved	Saved in instrument state.
Range	SINGle|SPLit

DISPlay:ANNotation:FREQuency ON | OFF

Switches X-axis annotation on or off.

This command is accepted, but takes no action and reports no error.

Remote Command	`:DISPlay:ANNotation:FREQuency ON|OFF|1|0` `:DISPlay:ANNotation:FREQuency?`
Example	DISP:ANN:FREQ OFF DISP:ANN:FREQ?
Remote Command Notes	FSE, FSP, FSU
Preset	ON
State Saved	Saved in instrument state.

DISPlay:LOGO ON | OFF

Switches the on-screen company logo on or off.

This command is accepted, but takes no action and reports no error.

Remote Command	`:DISPlay:LOGO ON|OFF|1|0` `:DISPlay:LOGO?`
Example	DISP:LOGO OFF DISP:LOGO?
Remote Command Notes	FSE, FSP, FSU
Preset	ON
State Saved	Saved in instrument state.

DISPlay:PSAVe[:STATe] ON | OFF

Switches the display power-save mode on or off.

This command is accepted, but takes no action and reports no error.

Remote Command	`:DISPlay:PSAVe[:STATe] ON|OFF|1|0` `:DISPlay:PSAVe[:STATe]?`
Example	DISP:PSAV OFF DISP:PSAV?
Remote Command Notes	FSE, FSP, FSU
Preset	OFF
State Saved	Saved in instrument state.

DISPlay:PSAVe:HOLDoff 1 to 60

Specifies the holdoff time for the display's power-save mode.

This command is accepted, but takes no action and reports no error.

Remote Command	`:DISPlay:PSAVe:HOLDoff <int>` `:DISPlay:PSAVe:HOLDoff?`
Example	DISP:PSAV:HOLD 30 DISP:PSAV:HOLD?
Remote Command Notes	FSE, FSP, FSU
Preset	15
Min	1
Max	60

DISPlay:CMAP<1 to 26>:DEFault<1|2>

Resets the display's screen colors to their defaults.

This command is accepted, but takes no action and reports no error.

Remote Command	`:DISPlay:CMAP[1]|2|3|4|5|6|7|8|9|10|11|12|13|14|15|16|17|18|19|20|21|22|23|24|25|26:DEFault[1]|2`
Example	DISP:CMAP:DEF
Remote Command Notes	FSE, FSP, FSU

DISPlay:CMAP<1 to 26>:HSL <hue>,<sat>,<lum>

Defines the instrument's color map.

This command is accepted, but takes no action and reports no error.

Remote Command	:DISPlay:CMAP[1]|2|3|4|5|6|7|8|9|10|11|12|13|14|15|16|17|18|19|20|21|22|23|24|25|26:HSL <real>,<real>,<real> :DISPlay:CMAP[1]|2|3|4|5|6|7|8|9|10|11|12|13|14|15|16|17|18|19|20|21|22|23|24|25|26:HSL?
Example	DISP:CMAP:HSL 0.3,0.8,1.0 DISP:CMAP:HSL?
Remote Command Notes	FSE, FSP, FSU
State Saved	Saved in instrument state.

DISPlay:CMAP<1 to 26>:PDEFined BLACk | BLUE | BROWn | GREen | CYAN | RED | MAGenta | YELLow | WHITe | DGRAy | LGRAy | LBLUe | LGREen | LCYan | LRED | LMAGenta

Specifies predefined color values for the instrument's color map.

This command is accepted, but takes no action and reports no error.

Remote Command	:DISPlay:CMAP[1]|2|3|4|5|6|7|8|9|10|11|12|13|14|15|16|17|18|19|20|21|22|23|24|25|26:PDEFined BLACk|BLUE|BROWn|GREen|CYAN|RED|MAGenta|YELLow|WHITe|DGRAy|LGRAy|LBLUe|LGREen|LCYan|LRED|LMAGenta :DISPlay:CMAP[1]|2|3|4|5|6|7|8|9|10|11|12|13|14|15|16|17|18|19|20|21|22|23|24|25|26:PDEFined?
Example	DISP:CMAP:PDEF BLAC DISP:CMAP:PDEF?
Remote Command Notes	FSE, FSP, FSU
State Saved	Saved in instrument state.
Range	BLACk | BLUE | BROWn | GREen | CYAN | RED | MAGenta | YELLow | WHITe | DGRAy | LGRAy | LBLUe | LGREen | LCYan | LRED | LMAGenta

DISPlay[:WINDow<1\|2>]:SELect

This command is accepted, but takes no action and reports no error.

Remote Command	:DISPlay:WINDow[1]:SELect
Example	DISP:WIND:SEL
Remote Command Notes	FSE, FSP, FSU
Backwards Compatibility SCPI	:DISPlay:SELect

DISPlay[:WINDow<1|2>]:SIZE LARGe|SMALl

Switches the measurement window between full screen and half screen.

This command is accepted, but takes no action and reports no error.

Remote Command	:DISPlay:WINDow[1]:SIZE LARGe|SMALl :DISPlay:WINDow[1]:TRACe[1]|2|3:MODE?
Example	DISP:WIND:SIZE LARG DISP:WIND:SIZE?
Remote Command Notes	FSP, FSU
Preset	SMALl
State Saved	Saved in instrument state.
Range	LARGe | SMALl
Backwards Compatibility SCPI	:DISPlay:SIZE

DISPlay[:WINDow<1|2>]:TEXT[:DATA] <string>

Specifies a comment (max. 20 characters) that can be displayed on the screen.

This command is accepted, but takes no action and reports no error.

Remote Command	:DISPlay:WINDow[1]:TEXT[:DATA] <string> :DISPlay:WINDow[1]:TEXT[:DATA]?
Example	DISP:WIND:TEXT:DATA “123” DISP:WIND:TEXT:DATA?
Remote Command Notes	FSE, FSP, FSU
Preset	“”
State Saved	Saved in instrument state.
Backwards Compatibility SCPI	:DISPlay:TEXT[:DATA]

DISPlay[:WINDow<1|2>]:TEXT:STATe ON | OFF

Switches display of the comment (screen title) on or off.

This command is accepted, but takes no action and reports no error.

Remote Command	:DISPlay:WINDow[1]:TEXT :STATe ON|OFF|1|0 :DISPlay:WINDow[1]:TEXT :STATe?
Example	DISP:WIND:TEXT:STAT ON DISP:WIND:TEXT:STAT?

Remote Command Notes	FSE, FSP, FSU
Preset	OFF
State Saved	Saved in instrument state.
Backwards Compatibility SCPI	:DISPlay:TEXT:STATe

DISPlay[:WINDow<1|2>]:TIME ON | OFF

Switches on-screen display of date and time on or off.

This command is accepted, but takes no action and reports no error.

Remote Command	`:DISPlay:WINDow[1]:TIME ON|OFF|1|0` `:DISPlay:WINDow[1]:TIME?`
Example	DISP:WIND:TIME ON DISP:WIND:TIME?
Remote Command Notes	FSE, FSP, FSU
Preset	OFF
State Saved	Saved in instrument state.
Backwards Compatibility SCPI	:DISPlay:TIME

DISPlay[:WINDow<1|2>]:TRACe<1 to 3>:Y[:SCALe] 10dB to 200dB

The command specifies the display range of the Y-axis (level axis) with logarithmic scaling (DISP:TRAC:Y:SPAC LOG).

The query returns the current value of this setting.

Remote Command	`DISPlay:WINDow[1]:TRACe[1]|2|3:Y[:SCALe] <rel_ampl>` `DISPlay:WINDow[1]:TRACe[1]|2|3:Y[:SCALe]?`
Example	DISP:WIND:TRAC:Y 20dB DISP:WIND:TRAC:Y?
Remote Command Notes	FSE, FSP, FSU
Preset	100dB
Min	10dB
Max	200dB
Backwards Compatibility SCPI	:DISPlay[1]:TRACe[1]|2|3`:Y[:SCALe]`

DISPlay[:WINDow<1|2>]:TRACe<1 to 3>:Y[:SCALe]:MODE ABSolute | RELativ

Specifies the scale type of the Y-axis (absolute or relative).

This command is accepted, but takes no action and reports no error.

Remote Command	:DISPlay:WINDow[1]:TRACe:Y[:SCALe]:MODE ABSolute|RELative :DISPlay:WINDow[1]:TRACe:Y[:SCALe]:MODE?
Example	DISP:WIND:TRAC:Y:MODE ABS DISP:WIND:TRAC:Y:MODE?
Remote Command Notes	FSE, FSP, FSU
Preset	ABS
State Saved	Saved in instrument state.
Range	ABSolute | RELative
Backwards Compatibility SCPI	:DISPlay[1]:TRACe[1]|2|3:Y[:SCALe]:MODE

DISPlay[:WINDow<1|2>]:TRACe<1 to 3>:Y[:SCALe]:RLEVel

The command specifies the reference level.

The query returns the current value of this setting.

Remote Command	:DISPlay:WINDow[1]:TRACe[1]|2|3:Y[:SCALe]:RLEVel <ampl> :DISPlay:WINDow[1]:TRACe[1]|2|3:Y[:SCALe]:RLEVel?
Example	DISP:TRAC:Y:RLEV 20dBm
Remote Command Notes	FSE, FSP, FSU
Preset	–20 dBm
State Saved	Saved in instrument state.
Min	–130 dBm
Max	30 dBm
Backwards Compatibility SCPI	:DISPlay:TRACe[1]|2|3:Y[:SCALe]:RLEVel

DISPlay[:WINDow<1|2>]:TRACe<1 to 3>:Y[:SCALe]:RLEVel:OFFSet

The command specifies the offset of the reference level.

The query returns the current value of this setting.

Remote Command	:DISPlay:WINDow[1]:TRACe[1]|2|3:Y[:SCALe]:RLEVel:OFFSet <rel_ampl> :DISPlay:WINDow[1]:TRACe[1]|2|3:Y[:SCALe]:RLEVel:OFFSet?
Example	DISP:TRAC:Y:RLEV:OFFS –10dB

Remote Command Notes	FSE, FSP, FSU
Preset	0 dB
State Saved	Saved in instrument state.
Min	–200.0 dB
Max	200 dB
Backwards Compatibility SCPI	:DISPlay:TRACe[1]|2|3:Y[:SCALe]:RLEVel:OFFSet

DISPlay[:WINDow<1|2>]:TRACe<1 to 3>:Y[:SCALe]:PDIVision

The command specifies the scaling of the Y-axis, using the currently-selected unit.

This mode supports only dB units.

The query returns the current value of this setting.

Remote Command	`DISPlay:WINDow[1]:TRACe<1 to 3>:Y[:SCALe]:PDIVision <rel_ampl>` `DISPlay:WINDow[1]:TRACe<1 to 3>:Y[:SCALe]:PDIVision?`
Example	DISP:WIND:TRAC:Y:PDIV 5 DISP:WIND:TRAC:Y:PDIV?
Remote Command Notes	FSE, FSP, FSU
State Saved	Saved in instrument state.
Backwards Compatibility SCPI	:DISPlay[1]:TRACe[1]|2|3`:Y[:SCALe]:PDIVision`

DISPlay[:WINDow<1|2>]:TRACe<1 to 3>:Y:SPACing LINear | LOGarithmic| LDB

The command switches between linear and logarithmic display.

This mode does not support the parameter option LDB.

The query returns the current state of this setting.

Remote Command	`:DISPlay:WINDow[1]:TRACe[1]|2|3:Y:SPACing LINear|LOGarithmic` `:DISPlay:WINDow[1]:TRACe[1]|2|3:Y:SPACing?`
Example	DISP:WIND:TRAC:Y:SPAC LOG DISP:WIND:TRAC:Y:SPAC?
Remote Command Notes	FSE, FSP, FSU
Preset	LOG
State Saved	Saved in instrument state.
Backwards Compatibility SCPI	:DISPlay[1]:TRACe[1]|2|3`:Y:SPACing`

DISPlay[:WINDow<1|2>]:TRACe<1…3>:MODE WRITe | VIEW | AVERage | MAXHold | MINHold

The command specifies the display type and evaluation mode for the specified trace.

The query returns the current state of this setting for the specified trace.

Remote Command	`:DISPlay:WINDow[1]:TRACe[1]|2|3:MODE WRITe|VIEW|AVERage|MAXHold|MINHold` `:DISPlay:WINDow[1]:TRACe[1]|2|3:MODE?`
Example	DISP:WIND1:TRAC:MODE WRIT
Remote Command Notes	FSE, FSP, FSU
Preset	WRITe
State Saved	Saved in instrument state.
Range	WRITe | VIEW | AVERage | MAXHold | MINHold
Backwards Compatibility SCPI	:DISPlay:TRACe[1]|2|3:MODE

DISPlay[:WINDow<1|2>]:TRACe<1 to 3>[:STATe] ON | OFF

The command switches on or off display of the corresponding trace.

The query returns the current state of this setting.

Remote Command	`:DISPlay[1]:WINDow[1]:TRACe[1]|2|3[:STATe] ON|OFF|1|0` `:DISPlay[1]:WINDow[1]:TRACe[1]|2|3[:STATe]?`
Example	DISP:TRAC1 ON
Remote Command Notes	FSE, FSP, FSU
Preset	ON for Trace 1, OFF for the others
State Saved	Saved in instrument state.
Backwards Compatibility SCPI	:DISPlay[1]:TRACe[1]|2|3[:STATe]

FORMat Subsystem

The FORMat subsystem specifies the format of data transmitted from and received by the instrument.

FORMat[:DATA]

The command specifies the format for data transmitted from the instrument to a control PC.

This command is specific to X-Series analyzers.

The query returns the current state of this setting.

Remote Command	:FORMat[:DATA] ASCii|INTeger,32|REAL,32|REAL|64 :FORMat[:DATA]?
Example	FORM REAL,32 FORM ASC
Remote Command Notes	FSE, FSP, FSU
Preset	ASCii

HCOPy Subsystem

The HCOPy subsystem controls the rendering of display information on output devices or to files.

Most of the HCOPy subsystem SCPI commands are accepted, but take no action and report no error. There are two exceptions: HCOPy:ABORt and HCOPy[:IMMediate].

HCOPy:ABORt

Aborts hardcopy output.

Remote Command	:HCOPy:ABORt
Example	HCOP:ABOR
Remote Command Notes	FSE, FSP, FSU

HCOPy:CMAP<1 to 26>:DEFault1|2|3

This command is accepted, but takes no action and reports no error.

Remote Command	:HCOPy:CMAP[1]|2|3|4|5|6|7|8|9|10|11|12|13|14|15|16|17|18|19|20|21|22|23|24|25|26:DEFault[1]|2|3
Example	HCOP:CMAP:DEF
Remote Command Notes	FSP, FSU

HCOPy:CMAP<1 to 26>:HSL <hue>,<sat>,<lum>

This command is accepted, but takes no action and reports no error.

Remote Command	:HCOPy:CMAP[1]|2|3|4|5|6|7|8|9|10|11|12|13|14|15|16|17|18|19|20|21|22|23|24|25|26:HSL <real>,<real>,<real> :HCOPy:CMAP[1]|2|3|4|5|6|7|8|9|10|11|12|13|14|15|16|17|18|19|20|21|22|23|24|25|26:HSL?
Example	HCOP:CMAP:HSL 0.3,0.8,1.0 HCOP:CMAP:HSL?

Remote Command Notes	FSP, FSU
State Saved	Saved in instrument state.

HCOPy:CMAP<1 to 26>:PDEFined BLACk | BLUE | BROWn | GREen | CYAN | RED | MAGenta | YELLow | WHITe | DGRAy | LGRAy | LBLUe | LGREen | LCYan | LRED | LMAGenta

This command is accepted, but takes no action and reports no error.

Remote Command	`:HCOPy:CMAP[1]|2|3|4|5|6|7|8|9|10|11|12|13|14|15|16|17|18|19|20|21|22|23|24|25|26:PDEFined BLACk|BLUE|BROWn|GREen|CYAN|RED|MAGenta|YELLow|WHITe|DGRAy|LGRAy|LBLUe|LGREen|LCYan|LRED|LMAGenta` `:HCOPy:CMAP[1]|2|3|4|5|6|7|8|9|10|11|12|13|14|15|16|17|18|19|20|21|22|23|24|25|26:PDEFined?`
Example	HCOP:CMAP:PDEF BLAC HCOP:CMAP:PDEF?
Remote Command Notes	FSP, FSU
State Saved	Saved in instrument state.
Range	BLACk | BLUE | BROWn | GREen | CYAN | RED | MAGenta | YELLow | WHITe | DGRAy | LGRAy | LBLUe | LGREen | LCYan | LRED | LMAGenta

HCOPy:DESTination<1|2> <string>

This command is accepted, but takes no action and reports no error.

Remote Command	`:HCOPy:DESTination[1]|2 <string>` `:HCOPy:DESTination[1]|2?`
Example	HCOP:DEST ‘MMEM’ HCOP:DEST?
Remote Command Notes	FSE, FSP, FSU
State Saved	Saved in instrument state.

HCOPy:DEVice:COLor ON|OFF

This command is accepted, but takes no action and reports no error.

Remote Command	`:HCOPy:DEVice:COLor ON|OFF|1|0` `:HCOPy:DEVice:COLor?`
Example	HCOP:DEV:COL OFF HCOP:DEV:COL?

Remote Command Notes	FSE, FSP, FSU
Preset	OFF
State Saved	Saved in instrument state.

HCOPy:DEVice:LANGuage<1|2> GDI | WMF | EWMF | BMP

This command is accepted, but takes no action and reports no error.

Remote Command	`:HCOPy:DEVice:LANGuage[1]|2 GDI|WMF|EWMF|BMP` `:HCOPy:DEVice:LANGuage?`
Example	HCOP:DEV:LANG GDI HCOP:DEV:LANG?
Remote Command Notes	FSE, FSP, FSU
State Saved	Saved in instrument state.
Range	GDI | WMF | EWMF | BMP

HCOPy[:IMMediate<1|2>]

Initiates hard copy output. The numeric suffix specifies which printer configuration should be used for the output. If there is no suffix, configuration 1 is selected.

Remote Command	`:HCOPy[:IMMediate]`
Example	HCOP:IMM
Remote Command Notes	FSE, FSP, FSU

HCOPy:ITEM:ALL

This command is accepted, but takes no action and reports no error.

Remote Command	`:HCOPy:ITEM:ALL`
Example	HCOP:ITEM:ALL
Remote Command Notes	FSE, FSP, FSU

HCOPy:ITEM:WINDow<1|2>:TABle:STATe ON | OFF

This command is accepted, but takes no action and reports no error.

Remote Command	`:HCOPy:ITEM:WINDow[1]|2:TABLe:STATe ON|OFF|1|0` `:HCOPy:ITEM:WINDow[1]|2:TABLe:STATe?`
Example	HCOP:ITEM:WIND:TABL:STAT OFF HCOP:ITEM:WIND:TABL:STAT?

Remote Command Notes	FSE, FSP, FSU
Preset	OFF
State Saved	Saved in instrument state.

HCOPy:ITEM:WINDow<1|2>:TEXT <string>

This command is accepted, but takes no action and reports no error.

Remote Command	`:HCOPy:ITEM:WINDow[1]|2:TEXT <string>` `:HCOPy:ITEM:WINDow[1]|2:TEXT?`
Example	HCOP:ITEM:WIND:TEXT ‘comment’ HCOP:ITEM:WIND:TEXT?
Remote Command Notes	FSE, FSP, FSU
State Saved	Saved in instrument state.

HCOPy:ITEM:WINDow<1|2>:TRACe:STATe ON | OFF

This command is accepted, but takes no action and reports no error.

Remote Command	`:HCOPy:ITEM:WINDow[1]|2:TRACe:STATe ON|OFF|1|0` `:HCOPy:ITEM:WINDow[1]|2:TRACe:STATe?`
Example	HCOP:ITEM:WIND:TRAC:STAT OFF HCOP:ITEM:WIND:TRAC:STAT?
Remote Command Notes	FSE, FSP, FSU
Preset	OFF
State Saved	Saved in instrument state.

HCOPy:PAGE:ORIentation<1|2> LANDscape | PORTrait

This command is accepted, but takes no action and reports no error.

Remote Command	`:HCOPy:PAGE:ORIentation[1]|2 LANDscape|PORTrait` `:HCOPy:PAGE:ORIentation[1]|2?`
Example	HCOP:PAGE:ORI LAND HCOP:PAGE:ORI?
Remote Command Notes	FSE, FSP, FSU
State Saved	Saved in instrument state.
Range	LANDscape | PORTrait

INITiate Subsystem

The INITiate subsystem controls the init-measurement function.

INITiate<1|2>:CONTinuous ON | OFF

The command switches the trigger system between the continuously-initiated mode (Continuous) or single measurement mode (Single).

The query returns the current state of this setting.

Remote Command	`:INITiate[1]:CONTinuous ON|OFF|1|0` `:INITiate[1]:CONTinuous?`
Example	:INIT:CONT 0 :INIT:CONT 1
Remote Command Notes	FSE, FSP, FSU
Preset	ON
State Saved	Saved in instrument state.

INITiate<1|2>:CONMeas

In Single sweep mode, this command resumes a stopped measurement from the current position.

Remote Command	`:INITiate[1]:CONMeas`
Example	INIT:CONM
Remote Command Notes	FSE, FSP, FSU

INITiate<1|2>[:IMMediate]

Initiates a new sweep.

Remote Command	`:INITiate[1][:IMMediate]`
Example	INIT
Remote Command Notes	FSE, FSP, FSU

INPut Subsystem

The INPut subsystem controls the input characteristics of the instrument's RF inputs.

INPut<1|2>:ATTenuation

The command specifies the input attenuator setting.

With the Electronic Attenuator Option, this mode supports 2 dB steps.

The query returns the current value of this setting.

Remote Command	:INPut[1]:ATTenuation <rel_ampl> :INPut[1]:ATTenuation?
Example	INP:ATT 40dB
Remote Command Notes	FSE, FSP, FSU
Preset	6dB
State Saved	Saved in instrument state.
Min	0
Max	70

INPut<1\|2>:ATTenuation:AUTO

The command switches between coupling of the input attenuation to the reference level (state ON), and manual input attenuation (state OFF).

The query returns the current state of this setting.

Remote Command	:INPut[1]:ATTenuation:AUTO ON|OFF|1|0 :INPut[1]:ATTenuation:AUTO?
Example	INP:ATT:AUTO ON
Remote Command Notes	FSP, FSU
Preset	ON
State Saved	Saved in instrument state.

INPut<1\|2>:EATT

The command specifies the setting of the electronic input attenuator.

This mode supports a maximum value of 24 dB.

The query returns the current value of this setting.

Remote Command	:INPut[1]:EATT <rel_ampl> :INPut[1]:EATT?
Example	INP:EATT 15dB
Remote Command Notes	FSP, FSU
Preset	0
State Saved	Saved in instrument state.
Min	0

Max	24

INPut<1|2>:EATT:AUTO

The command switches between coupling of the electronic input attenuation to the reference level (state ON), and manual input attenuation (state OFF).

The query returns the current state of this setting.

Remote Command	`:INPut[1]:EATT:AUTO ON|OFF|1|0` `:INPut[1]:EATT:AUTO?`
Example	INP:EATT:AUTO ON
Remote Command Notes	FSP, FSU
Preset	ON
State Saved	Saved in instrument state.

INPut<1|2>:EATT:STATe

The command switches electronic input attenuation on or off.

The query returns the current state of this setting.

Remote Command	`:INPut[1]:EATT:STATe ON|OFF|1|0` `:INPut[1]:EATT:STATe?`
Example	INP:EATT:STAT ON
Remote Command Notes	FSP, FSU
Preset	OFF
State Saved	Saved in instrument state.

INPut<1|2>:IMPedance

The command sets the instrument's nominal input impedance.

The query returns the current state of this setting.

Remote Command	`:INPut[1]:IMPedance 50|75` `:INPut[1]:IMPedance?`
Example	INP:IMP 75 INP:IMP?
Remote Command Notes	FSE, FSP, FSU
State Saved	Saved in instrument state.
Range	50 | 75

INPut<1|2>:GAIN:STATe

The command switches the instrument's preamplifier on or off.

The query returns the current state of this setting.

Remote Command	`:INPut[1]:GAIN:STATe ON|OFF|1|0` `:INPut[1]:GAIN:STATe?`
Example	INP:GAIN:STAT ON
Remote Command Notes	FSP, FSU
Preset	OFF
State Saved	Saved in instrument state.

INSTrument Subsystem

The INSTrument subsystem allows you to select the analyzer's operating mode.

INSTrument[:SELect] SANalyzer | DDEMod | ADEMod | MGSM | WCDPower|BWCDpower |MWCDpower | BC2K| BDO

The command selects the analyzer's mode according to the value of a text parameter.

This mode supports a parameter set that differs from that listed above. For details, see the table of available parameter values in the section "INSTrument:NSELect <numeric value>" on page 121.

The query returns the current state of this setting.

Remote Command	`:INSTrument[:SELect] <string>` `:INSTrument[:SELect]?`
Example	:INST:SEL SA
Remote Command Notes	FSE, FSP, FSU
State Saved	Saved in instrument state.

INSTrument:NSELect <numeric value>

The command selects the analyzer's mode according to the value of a numeric parameter.

This mode supports the parameter values listed in the table below.

Mode Identification Numbers and Strings for X-Series Analyzers:

Mode	**:INSTrument:NSELect <integer>**	**:INSTrument[:SELect] <parameter>**
Spectrum Analyzer	1	SA
GSM	3	GSM

Mode	**:INSTrument:NSELect <integer>**	**:INSTrument[:SELect] <parameter>**
cdmaOne	4	CDMA
NADC	5	NADC
PDC	6	PDC
I/Q Analyzer (Basic)	8	BASIC
WCDMA with HSDPA/HSUPA	9	WCDMA
cdma2000	10	CDMA2K
GSM/EDGE/EDGE Evo	13	EDGEGSM
Phase Noise	14	PNOISE
1xEV-DO	15	CDMA1XEV
Combined WLAN	19	CWLAN
802.16 OFDMA (WiMAX/WiBro)	75	WIMAXOFDMA
Combined Fixed WiMAX	81	CWIMAXOFDM
Vector Signal Analyzer (VXA)	100	VSA
89601 VSA	101	VSA89601
LTE	102	LTE
iDEN/WiDEN/MotoTalk	103	IDEN
802.16 OFDM (Fixed WiMAX)	104	WIMAXFIXED
LTE TDD	105	LTETDD
TD-SCDMA with HSPA/8PSK	211	TDSCDMA
Noise Figure	219	NFIGURE
Bluetooth	228	BLUETOOTH
Measuring Receiver	233	MRECEIVE
Analog Demod	234	ADEMOD
DVB-T/H	235	DVB
DTMB	236	DTMB
ISDB-T	239	ISDBT
CMMB	240	CMMB
Remote Language Compatibility	266	RLC
SCPI Language Compatibility	270	SCPILC

Remote Command	:INSTrument:NSELect <integer> :INSTrument:NSELect?
Example	:INST:NSEL 1
Remote Command Notes	FSE, FSP, FSU
State Saved	Saved in instrument state.

MMEMory Subsystem

The MMEMory (mass memory) subsystem allows access to the analyzer's storage media, and permits storage of various settings.

MMEMory:CATalog? <path>

Reads the content of the specified directory.

Remote Command	:MMEMory:CATalog <string> :MMEMory:CATalog?
Example	:MMEM:CAT 'C:' :MMEM:CAT?
Remote Command Notes	FSE, FSP, FSU
State Saved	Saved in instrument state.

MMEMory:CDIRectory <directory_name>

The command changes the current directory to that specified by <directory_name>.

The query returns the current directory setting.

Remote Command	:MMEMory:CDIRectory <string> :MMEMory:CDIRectory?
Example	:MMEM:CDIR 'C:\Temp' :MMEM:CDIR?
Remote Command Notes	FSE, FSP, FSU
State Saved	Saved in instrument state.

MMEMory:COPY <file_source>,<file_destination>

If <file_source> specifies a single file, copies the file to <file_destination>.

If <file_source> lists more than one file, copies the files to the destination directory specified by <file_destination>.

Remote Command	:MMEMory:COPY <string>,<string>

Example	:MMEM:COPY ‘C:\test.txt’ ‘D:’
Remote Command Notes	FSE, FSP, FSU

MMEMory:DATA <file_name>[,<block_data>]

The command writes the data block <block_data> from the control computer into the file specified by <file_name> (in the analyzer).

The query transfers the file specified by <file_name> from the analyzer to the control computer.

Remote Command	`:MMEMory:DATA <string>[,<block_data>]` `:MMEMory:DATA? <string>`
Example	:MMEM:DATA ‘TEST.CFG’,#217This is the file :MMEM:DATA? ‘TEST.CFG’
Remote Command Notes	FSE, FSP, FSU
State Saved	Saved in instrument state.

MMEMory:DELete <file_name>

Deletes the file specified by <file_name>.

Remote Command	`:MMEMory:DELete <string >`
Example	:MMEM:DEL ‘C:\test.txt’
Remote Command Notes	FSE, FSP, FSU

MMEMory:INITialize <msus>

This command is accepted, but takes no action and reports no error.

Remote Command	`:MMEMory:INITialize <string >`
Example	:MMEM:INIT ‘A:’
Remote Command Notes	FSE, FSP, FSU

MMEMory:LOAD:STATe 1,<file_name>

Loads device settings from the file specified by <file_name>. The file contents are set as the new analyzer state.

Remote Command	`:MMEMory:LOAD:STATe 1,<string>`
Example	:MMEM:LOAD:STAT 1,’myState.state’
Remote Command Notes	FSE, FSP, FSU

MMEMory:LOAD:AUTO 1,<file_name>

Specifies a settings file, the contents of which will automatically be loaded (and set as the analyzer state) when the analyzer is switched on.

Remote Command	`:MMEMory:LOAD:AUTO 1,<string>`
Example	:MMEM:LOAD:AUTO 1,'myState.state'
Remote Command Notes	FSE, FSP, FSU

MMEMory:MDIRectory <directory_name>

Creates the new directory specified by <directory_name>.

Remote Command	`:MMEMory:MDIRectory <string >`
Example	:MMEM:MDIR 'C:\T1'
Remote Command Notes	FSE, FSP, FSU

MMEMory:MOVE <file_source>,<file_destination>

If <file_destination> contains no path information, then <file_source> is renamed to <file_destination>.

If <file_destination> contains path information, <file_source> is moved to the specified path, and renamed if <file_destination> also includes a file name.

Remote Command	`:MMEMory:MOVE <string>,<string>`
Example	:MMEM:MOVE 'C:\test.txt' 'D:'
Remote Command Notes	FSE, FSP, FSU

MMEMory:MSIS <device>

This command is accepted, but takes no action and reports no error.

Remote Command	`:MMEMory:MSIS <string >` `:MMEMory:MSIS?`
Example	:MMEM:MSIS 'A:'
Remote Command Notes	FSE, FSP, FSU

MMEMory:NAME <file_name>

The command specifies the path and name of the destination file, for use when a print-to-file operation is initiated using the command HCOPy:IMMediate.

The specified destination file type must be PNG.

The query returns the current value of this setting.

Remote Command	:MMEMory:NAME <string > :MMEMory:NAME?
Example	:MMEM:NAME '1.PNG' :MMEM:NAME?
Remote Command Notes	FSE, FSP, FSU

MMEMory:RDIRectory <directory_name>

Deletes the directory specified by <directory_name>.

Remote Command	:MMEMory:RDIRectory <string>
Example	:MMEM:RDIR 'C:\Test'
Remote Command Notes	FSE, FSP, FSU

MMEMory:STORe<1\|2>:STATe 1,<file_name>

Stores the current analyzer state settings in a set of files. The files use the specified file name, but have differing extensions..

Remote Command	:MMEMory:STORe:STATe 1,<string>
Example	:MMEM:STORe:STAT 1,'myState.state'
Remote Command Notes	FSE, FSP, FSU

MMEMory:STORe<1\|2>:TRACe <1…6>,<file_name>

Stores the specified trace (1…6) in an ASCII-format file specified by <file_name>.

Remote Command	:MMEMory:STORe:TRACe TRACE1|TRACE2|TRACE3|TRACE4|TRACE5|TRACE6|ALL,<string>
Example	:MMEM:STORe:TRACe TRACe1,'Trace1.trace'
Remote Command Notes	FSE, FSP, FSU

MMEMory:CLEar:STATe 1,<file_name>

Clears the analyzer setting specified by <file_name>.

This command is accepted, but takes no action and reports no error.

Remote Command	:MMEMory:CLEar:STATe 1,<string>
Example	:MMEM:CLE:STAT 1,'Trace1.trace'
Remote Command Notes	FSE, FSP, FSU

MMEMory:CLEar:ALL

Clears all analyzer settings in the current directory.

This command is accepted, but takes no action and reports no error.

Remote Command	`:MMEMory:CLEar:ALL`
Example	:MMEM:CLE:ALL
Remote Command Notes	FSE, FSP, FSU

MMEMory:SELect[:ITEM]:HWSettings ON | OFF

This command is accepted, but takes no action and reports no error.

Remote Command	`:MMEMory:SELect[:ITEM]:HWSettings ON|OFF|1|0` `:MMEMory:SELect[:ITEM]:HWSettings?`
Example	MMEM:SEL:HWS OFF MMEM:SEL:HWS?
Remote Command Notes	FSE, FSP, FSU
Preset	On
State Saved	Saved in instrument state.

MMEMory:SELect[:ITEM]:TRACe[:ACTive] ON | OFF

This command is accepted, but takes no action and reports no error.

Remote Command	`:MMEMory:SELect[:ITEM]:TRACe[:ACTive] ON|OFF|1|0` `:MMEMory:SELect[:ITEM]:TRACe[:ACTive]?`
Example	MMEM:SEL:TRAC OFF MMEM:SEL:TRAC?
Remote Command Notes	FSE, FSP, FSU
Preset	OFF
State Saved	Saved in instrument state.

MMEMory:SELect[:ITEM]:LINes:ALL ON | OFF

This command is accepted, but takes no action and reports no error.

Remote Command	`:MMEMory:SELect[:ITEM]:LINes:ALL ON|OFF|1|0` `:MMEMory:SELect[:ITEM]:LINes:ALL?`

Example	MMEM:SEL:LIN:ALL OFF MMEM:SEL:LIN:ALL?
Remote Command Notes	FSE, FSP, FSU
Preset	ON
State Saved	Saved in instrument state.

MMEMory:SELect[:ITEM]:SCData ON | OFF

This command is accepted, but takes no action and reports no error.

Remote Command	`:MMEMory:SELect[:ITEM]:SCData ON|OFF|1|0` `:MMEMory:SELect[:ITEM]:SCData?`
Example	MMEM:SEL:SCD OFF MMEM:SEL:SCD?
Remote Command Notes	FSE, FSP, FSU
Preset	OFF
State Saved	Saved in instrument state.

MMEMory:SELect[:ITEM]:TRANsducer:ALL ON | OFF

This command is accepted, but takes no action and reports no error.

Remote Command	`:MMEMory:SELect[:ITEM]:TRANsducer:ALL ON|OFF|1|0` `:MMEMory:SELect[:ITEM]:TRANsducer:ALL?`
Example	MMEM:SEL:TRAN:ALL OFF MMEM:SEL:TRAN:ALL?
Remote Command Notes	FSE, FSP, FSU
Preset	ON
State Saved	Saved in instrument state.

MMEMory:SELect[:ITEM]:ALL

This command is accepted, but takes no action and reports no error.

Remote Command	`:MMEMory:SELect[:ITEM]:ALL`
Example	MMEM:SEL:ALL
Remote Command Notes	FSE, FSP, FSU

MMEMory:SELect[:ITEM]:NONE

This command is accepted, but takes no action and reports no error.

Remote Command	`:MMEMory:SELect[:ITEM]:NONE`
Example	MMEM:SEL:NONE
Remote Command Notes	FSE, FSP, FSU

MMEMory:SELect[:ITEM]:DEFault

This command is accepted, but takes no action and reports no error.

Remote Command	`:MMEMory:SELect[:ITEM]:DEFault`
Example	MMEM:SEL: DEF
Remote Command Notes	FSE, FSP, FSU

MMEMory:COMMent <string>

Specifies a comment (max. 60 characters), to be associated with a stored analyzer setting.

This command is accepted, but takes no action and reports no error.

Remote Command	`:MMEMory:COMMent <string>` `:MMEMory:COMMent?`
Example	MMEM:COMM ‘Unknown Trace’ MMEM:COMM?
Remote Command Notes	FSE, FSP, FSU
State Saved	Saved in instrument state.

SENSe:AVERage Subsystem

The SENSe:AVERage subsystem calculates the acquired data average. After several successive measurements, a new test result is obtained.

[SENSe<1|2>:]AVERage:COUNt 0 to 32767

Specifies the number of measurements that contribute to the average value.

In the SCPILC mode, the maximum value is 10000 and not 32767 as in FSx.

Remote Command	`[:SENSe]:AVERage:COUNt <integer>` `[:SENSe]:AVERage:COUNt?`
Example	SENS:AVER:COUN 10 SENS:AVER:COUN?

Remote Command Notes	FSE, FSP, FSU
Preset	1
State Saved	Saved in instrument state.
Min	0
Max	10000
Backward Compatibility	:SENSe1:AVERage:COUNt

[SENSe<1|2>:]AVERage[:STATe<1 to 3>] ON | OFF

Switches on or off the selected trace's average calculation (STATe<1 to 3>) within the measurement window.

Remote Command	`[:SENSe]:AVERage:STATe[1]|2|3 ON|OFF|1|0` `[:SENSe]:AVERage:STATe[1]|2|3?`
Example	AVER:STAT1 OFF SENS:AVER:STAT3 ON
Remote Command Notes	FSE, FSP, FSU
Preset	OFF
State Saved	Yes.
Backwards Compatibility SCPI	:SENSe1:AVERage[:STATe]

[SENSe<1|2>:]AVERage:TYPE VIDeo | LINear

Specifies the average function type.

Remote Command	`[:SENSe]:AVERage:TYPE VIDeo|LINear` `[:SENSe]:AVERage?`
Example	AVER:TYPE LIN AVER:TYPE?
Remote Command Notes	FSP, FSU
Preset	VIDeo
Range	VIDeo | LINear
Backwards Compatibility SCPI	:SENSe1:AVERage:TYPE

SENSe:BANDwidth Subsystem

The SENSe:BANDwidth subsystem specifies the instrument's filter bandwidths. Both BANDwidth and BWIDth perform the same functions.

[SENSe<1|2>:]BANDwidth|BWIDth[:RESolution] <numeric_value>

Specifies the instrument's resolution bandwidth.

In the SCPILC mode, the maximum resolution bandwidth is 8 MHz (not 10 MHz as in FSx) and the minimum resolution bandwidth is 1 Hz (not 10 Hz as in FSx).

Remote Command	`[:SENSe]:BANDwidth|BWIDth[:RESolution] <freq>` `[:SENSe]:BANDwidth|BWIDth[:RESolution]?`
Example	BAND 1 KHZ BAND?
Remote Command Notes	The setting and querying of values depends on the current bandwidth type.
Remote Command Notes	
Remote Command Notes	FSE, FSP, FSU
Preset	3 MHz
State Saved	Saved in instrument state.
Min	1 Hz
Max	8 MHz
Backwards Compatibility SCPI	:SENSe1:BANDwidth|BWIDth[:RESolution]

[SENSe<1|2>:]BANDwidth|BWIDth[:RESolution]:AUTO ON | OFF

Automatically couples the instrument’s resolution bandwidth to the span or it cancels the coupling.

Remote Command	`[:SENSe]:BANDwidth|BWIDth[:RESolution]:AUTO OFF|ON|0|1` `[:SENSe]:BANDwidth|BWIDth[:RESolution]:AUTO?`
Example	BWID:AUTO ON BWID:AUTO?
Remote Command Notes	FSE, FSP, FSU
Preset	ON
Backwards Compatibility SCPI	:SENSe1:BANDwidth|BWIDth[:RESolution]:AUTO

[SENSe<1|2>:]BANDwidth|BWIDth[:RESolution]:RATio 0.0001 to 1

Specifies the resolution bandwidth (Hz) / span (Hz) ratio.

Remote Command	`[:SENSe]:BANDwidth|BWIDth[:RESolution]:RATio <real>` `[:SENSe]:BANDwidth|BWIDth[:RESolution]:RATio?`
Example	BAND:RAT 0.1

Remote Command Notes	FSE, FSP, FSU
Preset	0.02 with BAND:TYPE NORMal or RBW > 30 kHz 0.01 with BAND:TYPE FFT for RBW 30 kHz
State Saved	Saved in instrument state.
Min	0.0001
Max	1
Backwards Compatibility SCPI	:SENSe1:BANDwidth|BWIDth[:RESolution]:RATio

[SENSe<1|2>:]BANDwidth|BWIDth[:RESolution]:TYPE NORMal | FFT | CFILter | RRC

Sets the resolution bandwidth filter type to "normal" analog, FIR in 1, 3, 10 steps, or FFT for bandwidths less than 100 kHz.

Remote Command	`[:SENSe]:BANDwidth|BWIDth[:RESolution]:TYPE NORMal|FFT|CFILter | RRC` `[:SENSe]:BANDwidth|BWIDth[:RESolution]:TYPE?`
Example	BAND:TYPE RRC BAND:TYPE?
Remote Command Notes	FSP, FSU
Preset	NORMal
State Saved	Saved in instrument state.
Range	NORMal | FFT | CFILter | RRC
Backwards Compatibility SCPI	:SENSe1:BANDwidth|BWIDth[:RESolution]:TYPE

[SENSe<1|2>:]BANDwidth|BWIDth:VIDeo 1Hz to 10MHz

Sets the instrument's video bandwidth to between10 Hz and 10 MHz in 1, 3, 10 steps.

In the SCPILC mode, the maximum video bandwidth is 50 MHz and not 10 MHz as in FSx.

Remote Command	`[:SENSe]:BANDwidth|BWIDth:VIDeo <freq>` `[:SENSe]:BANDwidth|BWIDth:VIDeo?`
Example	BAND:VID 1KHZ BAND:VID?
Remote Command Notes	FSE, FSP, FSU
Couplings	
Preset	10 MHz
State Saved	Saved in instrument state.

Min	1 Hz
Max	50 MHz
Backwards Compatibility SCPI	:SENSe1:BANDwidth|BWIDth[:RESolution]:VIDeo

[SENSe<1|2>:]BANDwidth|BWIDth:VIDeo:AUTO ON | OFF

Automatically couples the instrument's video bandwidth to its resolution bandwidth or cancels the coupling.

Remote Command	`[:SENSe]:BANDwidth|BWIDth:VIDeo:AUTO ON|OFF|1|0[:SENSe]:BANDwidth|BWIDth:VIDeo:AUTO?`
Example	BAND:VID:AUTO OFF
Remote Command Notes	FSE, FSP, FSU
Preset	ON
State Saved	Saved in instrument state.
Backwards Compatibility SCPI	:SENSe1:BANDwidth|BWIDth[:RESolution]:VIDeo:AUTO

[SENSe<1|2>:]BANDwidth|BWIDth:VIDeo:RATio 0.01 to 1000

Specifies the video bandwidth (Hz) / resolution bandwidth (Hz) ratio.

Remote Command	`[:SENSe]:BANDwidth|BWIDth:VIDeo:RATio <real>` `[:SENSe]:BANDwidth|BWIDth:VIDeo:RATio?`
Example	BAND:VID:RAT 2 BAND:VID:RAT?
Remote Command Notes	FSE, FSP, FSU
Preset	3
State Saved	Saved in instrument state.
Min	0.00001
Max	3000000
Backwards Compatibility SCPI	:SENSe1:BANDwidth|BWIDth[:RESolution]:VIDeo:RATio

SENSe:CORRection Subsystem

The SENSe:CORRection subsystem controls calibration andnormalization.

[SENSe<1|2>:]CORRection:EGAin:INPut[:MAGNitude] –200...200dB

Informs the analyzer of an external gain.

SCPILC mode supports the range of –81.90 to 81.90 dB, not –200 to 200 dB as FSP.

Remote Command	`[:SENSe]:CORRection:EGAin:INPut[:MAGNitude] <rel_ampl>` `[:SENSe]:CORRection:EGAin:INPut[:MAGNitude]?`
Example	CORR:EGA:INP 10DB
Remote Command Notes	FSP
Preset	0 dB
State Saved	Saved in instrument state.
Min	–81.90 dB
Max	81.90 dB
Backwards Compatibility SCPI	:SENSe1:CORRection:EGAin:INPut[:MAGNitude]

[SENSe<1\|2>:]CORRection:TRANsducer:SELect <name>

This command controls the transducer factor designated by <name>. If <name> does not exist yet, a new transducer factor is created.

Currently, this command support 6 correction settings.

Remote Command	`[:SENSe]:CORRection:TRANsducer:SELect <string>` `[:SENSe]:CORRection:TRANsducer:SELect?`
Example	CORR:TRAN:SEL “A” CORR:TRAN:SEL?
Notes	Altogether there are only 6 different transducers can be selected. If there is a new transducer, the most old one will be replaced by the new one. Name of the transducer factor in string data form with a maximum of 8 characters. FSU, FSP, FSE
State Saved	Saved in instrument state.

[SENSe<1\|2>:]CORRection:TRANsducer:UNIT <string>

Specifies the unit of the transducer factor selected.

This command won’t invoke any action and the default value in the system is always “DB”.

Remote Command	`[:SENSe]:CORRection:TRANsducer:UNIT <string>` `[:SENSe]:CORRection:TRANsducer:UNIT?`
Example	CORR:TRAN:UNIT “DB” CORR:TRAN:UNIT?

Notes	This command won't invoke any action and the default value in the system is always "DB". FSU, FSP, FSE
Remote Command Notes	Currently, this command support 6 correction settings.
State Saved	Saved in instrument state.

[SENSe<1\|2>:]CORRection:TRANsducer:SCALing LINear \| LOGarithmic

Specifies whether the frequency scaling of the transducer factor is linear or logarithmic.

Remote Command	`[:SENSe]:CORRection:TRANsducer:SCALing LINear|LOGarithmic` `[:SENSe]:CORRection:TRANsducer:SCALing?`
Example	CORR:TRAN:SCAL LIN CORR:TRAN:SCAL?
Notes	FSU, FSP, FSE
Preset	LINear
State Saved	Saved in instrument state.

[SENSe<1|2>:]CORRection:TRANsducer:COMMent <string>

This command defines the comment for the selected transducer factor.

Currently, this command support 6 correction settings.

Remote Command	`[:SENSe]:CORRection:TRANsducer:COMMent <string>` `[:SENSe]:CORRection:TRANsducer:COMMent?`
Example	CORR:TRAN:COMM "NA" CORR:TRAN:COMM?
Notes	FSU, FSP, FSE
State Saved	Saved in instrument state.

[SENSe<1|2>:]CORRection:TRANsducer:DATA <freq>,<level>..

Specifies the reference values of the transducer factor selected. These values are

entered as a sequence of frequency/level pairs. The frequencies must be sent in ascending order.

Currently, this command support 6 correction settings.

Remote Command	`[:SENSe]:CORRection:TRANsducer:DATA <freq_real>,<level_real>,…` `[:SENSe]:CORRection:TRANsducer:DATA?`

Example	CORR:TRAN:DATA 1,2,3,4,5,6,7,8,9,0 CORR:TRAN:DATA?
Notes	All parameters are sent as dimensionless. Currently, this command support 6 correction settings. FSU, FSP, FSE
State Saved	Saved in instrument state.

[SENSe<1\|2>:]CORRection:TRANsducer[:STATe] ON | OFF

Switches the selected transducer factor on or off.

Currently, this command support 6 correction settings.

Remote Command	`[:SENSe]:CORRection:TRANsducer:STATe ON|OFF|1|0` `[:SENSe]:CORRection:TRANsducer:STATe?`
Example	CORR:TRAN:STAT OFF CORR:TRAN:STAT?
Notes	FSU, FSP, FSE
Preset	OFF
State Saved	Saved in instrument state.

[SENSe<1|2>:]CORRection:TRANsducer:DELete

Deletes the selected transducer factor.

Currently, this command support 6 correction settings.

Remote Command	`[:SENSe]:CORRection:TRANsducer:DELete`
Example	CORR:TRAN:DEL
Notes	FSU, FSP, FSE
State Saved	Saved in instrument state.

[SENSe<1|2>:]CORRection:TRANsducer:VIEW ON | OFF

Switches on the display of the active transducer factor or set.

Currently, this command support 6 correction settings.

Remote Command	`[:SENSe]:CORRection:TRANsducer:VIEW ON|OFF|1|0` `[:SENSe]:CORRection:TRANsducer:VIEW?`
Example	CORR:TRAN:VIEW OFF CORR:TRAN:VIEW?

Notes	FSU, FSP, FSE
Preset	OFF
State Saved	Saved in instrument state.

SENSe:DETector Subsystem

The SENSe:DETector subsystem controls measurement data acquisition via selection of the detector for the corresponding trace.

[SENSe<1|2>:]DETector<1..3>[:FUNCtion] APEak | NEGative | POSitive | SAMPle | RMS |AVERage | QPEak

Switches on the data acquisition detector in the selected trace.

Remote Command	`[:SENSe]:DETector[1]|2|3[:FUNCtion] APEak|NEGative|POSitive|SAMPle|RMS|AVERage|QPEak` `[:SENSe]:DETector[1]|2|3[:FUNCtion]?`
Example	DET POS
Remote Command Notes	
Remote Command Notes	FSE, FSP, FSU
Preset	APEak
State Saved	Saved in instrument state.
Range	APEak | NEGative | POSitive | SAMPle | RMS | AVERage | QPEak
Backwards Compatibility SCPI	:SENSe1:DETector[1]|2|3[:FUNCtion]

[SENSe<1|2>:]DETector<1 to 3>[:FUNCtion]:AUTO ON | OFF

Either couples the detector to the current trace setting or turns coupling off.

Remote Command	`[:SENSe]:DETector[1]|2|3[:FUNCtion]:AUTO ON|OFF|1|0` `[:SENSe]:DETector[1]|2|3[:FUNCtion]:AUTO?`
Example	DET:AUTO OFF
Remote Command Notes	FSE, FSP, FSU
Preset	ON
State Saved	Saved in instrument state.
Backwards Compatibility SCPI	:SENSe1:DETector[1]|2|3[:FUNCtion]:AUTO

SENSe:FREQuency Subsystem

The SENSe:FREQuency subsystem specifies the active display's frequency axis. The frequency axis can

either be set via the center frequency and span, or via the start and stop frequency.

[SENSe<1|2>:]FREQuency:CENTer 0 to fmax

Specifies the analyzer's center frequency or the measuring frequency for span = 0.

Remote Command	`[:SENSe]:FREQuency:CENTer <freq>` `[:SENSe]:FREQuency:CENTer?`
Example	FREQ:CENT 50MHz `FREQ:CENT?`
Remote Command Notes	FSE, FSP, FSU
Preset	fmax /2 with fmax = maximum frequency
State Saved	Saved in instrument state.
Min	Depends on instrument minimum frequency
Max	Depends on instrument maximum frequency
Backwards Compatibility SCPI	:SENSe1:FREQuency:CENTer

[SENSe<1|2>:]FREQuency:CENTer:STEP 0 to fmax

Specifies the center frequency's step width.

Remote Command	`[:SENSe]:FREQuency:CENTer:STEP <freq>` `[:SENSe]:FREQuency:CENTer:STEP?`
Example	FREQ:CENT:STEP 120MHz
Remote Command Notes	FSE, FSP, FSU
Preset	1MHz
State Saved	Saved in instrument state.
Min	1 Hz
Max	27.0 GHz
Backwards Compatibility SCPI	:SENSe1:FREQuency:CENTer:STEP

[SENSe<1|2>:]FREQuency:CENTer:STEP:LINK SPAN | RBW | OFF

Couples the center frequency's step width to the span (span >0) or to the resolution bandwidth (span = 0), or cancels the coupling.

Remote Command	`[:SENSe]:FREQuency:CENTer:STEP:LINK SPAN | RBW | OFF` `[:SENSe]:FREQuency:CENTer:STEP:LINK?`

Example	FREQ:CENT:STEP:LINK RBW FREQ:CENT:STEP:LINK?
Remote Command Notes	FSE, FSP, FSU
Preset	SPAN
State Saved	Saved in instrument state.
Backwards Compatibility SCPI	:SENSe1:FREQuency:CENTer:STEP:LINK

[SENSe<1|2>:]FREQuency:CENTer:STEP:LINK:FACTor 1 to 100 PCT

Couples the center frequency's step width to a factor of the span (span >0) or to the resolution bandwidth (span = 0).

Remote Command	`[:SENSe]:FREQuency:CENTer:STEP:LINK:FACTor <int>` `[:SENSe]:FREQuency:CENTer:STEP:LINK:FACTor?`
Example	FREQ:CENT:STEP:LINK:FACTor 20PCT
Remote Command Notes	FSE, FSP, FSU
State Saved	Saved in instrument state.
Min	1
Max	100
Backwards Compatibility SCPI	:SENSe1:FREQuency:CENTer:STEP:LINK:FACTor

[SENSe<1|2>:]FREQuency:SPAN 0 to fmax

Specifies the frequency span.

Remote Command	`[:SENSe]:FREQuency:SPAN <freq>` `[:SENSe]:FREQuency:SPAN?`
Example	FREQ:SPAN 10MHz
Remote Command Notes	FSE, FSP, FSU
Preset	3 GHz
State Saved	Saved in instrument state.
Max	26.5 GHz
Backwards Compatibility SCPI	:SENSe1:FREQuency:SPAN

[SENSe<1|2>:]FREQuency:SPAN:FULL

Sets the frequency span to maximum.

Remote Command	`[:SENSe]:FREQuency:SPAN:FULL`

Example	FREQ:SPAN:FULL
Remote Command Notes	FSE, FSP, FSU
Backwards Compatibility SCPI	:SENSe1:FREQuency:SPAN:FULL

[SENSe<1|2>:]FREQuency:STARt 0 to fmax

Specifies the analyzer's start frequency. This command is available only in the frequency domain (span > 0).

Remote Command	`[:SENSe]:FREQuency:STARt <freq>` `[:SENSe]:FREQuency:STARt?`
Example	FREQ:STAR 200MHz FREQ:STAR?
Remote Command Notes	FSE, FSP, FSU
Preset	0 Hz
State Saved	Saved in instrument state.
Min	0Hz
Max	Depends on the instrument maximum frequency

[SENSe<1|2>:]FREQuency:STOP 0 to fmax

Specifies the analyzer's stop frequency. This command is available only in the frequency domain (span > 0).

Remote Command	`[:SENSe]:FREQuency:STOP <freq>` `[:SENSe]:FREQuency:STOP?`
Example	FREQ:STOP 220MHz FREQ:STOP?
Remote Command Notes	FSE, FSP, FSU
Preset	3GHZ
State Saved	Saved in instrument state.
Min	0Hz
Max	27.0 GHz

[SENSe<1|2>:]FREQuency:MODE CW | FIXed | SWEep

This command switches between time domain (CW | FIXed) and frequency domain (SWEep).

Remote Command	`[:SENSe]:FREQuency:MODE CW|FIXed|SWEep` `[:SENSe]:FREQuency:MODE?`
Example	FREQ:MODE CW
Remote Command Notes	FSE, FSP, FSU
Preset	SWEep
Range	CW|FIXed|SWEep
Backwards Compatibility SCPI	:SENSe1:FREQuency:MODE

[SENSe<1|2>:]FREQuency:OFFSet

Specifies the instrument's frequency offset.

Remote Command	`[:SENSe]:FREQuency:OFFSet <freq>` `[:SENSe]:FREQuency:OFFSet?`
Example	FREQ:OFFS 10MHz
Remote Command Notes	FSE, FSP, FSU
Preset	0 Hz
State Saved	Saved in instrument state.
Min	–500 GHz
Max	500 GHz
Backwards Compatibility SCPI	:SENSe1:FREQuency:OFFSet

SENSe:POWer Subsystem

The SENSe:POWer subsystem controls the instrument's channel and adjacent channel power measurements.

[SENSe<1|2>:]POWer:ACHannel:SPACing:CHANnel 100 Hz to 2000 MHz

Specifies the channel spacing for the carrier signals. This command is available only for measurements in the frequency domain (span > 0).

Remote Command	`[:SENSe]:POWer:ACHannel:SPACing:CHANnel 1000` `[:SENSe]:POWer:ACHannel:SPACing:CHANnel`
Example	POW:ACH:SPAC:CHAN 2000 POW:ACH:SPAC:CHAN?

Remote Command Notes	FSE, FSP, FSU
Preset	20 kHz
State Saved	Saved in instrument state.
Min	100 Hz
Max	2 GHz

[SENSe<1|2>:]POWer:ACHannel:SPACing:ACHannel 100 Hz to 2000 MHz

Specifies the channel spacing of the adjacent channel to the TX channel. At the same time, the spacing of alternate adjacent channels 1 and 2 is set to double or triple the entered value.

This command is available only in the frequency domain (span > 0).

Remote Command	`[:SENSe]:POWer:ACHannel:SPACing:ACHannel <freq>` `[:SENSe]:POWer:ACHannel:SPACing:ACHannel?`
Example	POW:ACH:SPAC:ACH 33kHz
Remote Command Notes	FSE, FSP, FSU
Preset	20KHz
State Saved	Saved in instrument state.
Min	100Hz
Max	2000MHz

[SENSe<1|2>:]POWer:ACHannel:SPACing:ALTernate<1|2> 100 Hz to 2000 MHz

Specifies the spacing between the first (ALTernate1) or second alternate adjacent channel (ALTernate2) and the TX channel.

Remote Command	`[:SENSe]:POWer:ACHannel:SPACing:ALTernate[1]|2 <freq>` `[:SENSe]:POWer:ACHannel:SPACing:ALTernate[1]|2?`
Example	POW:ACH:SPAC:ALT1 100kHz
Remote Command Notes	FSE, FSP, FSU
Preset	40000|60000
State Saved	Saved in instrument state.
Min	100Hz
Max	2000MHz

[SENSe<1|2>:]POWer:ACHannel:TXCHannel:COUNt 1 | 2 | 3 | 4

Specifies the number of carrier signals. This command is only available for multicarrier channel and

adjacent-channel power measurements.

Remote Command	`[:SENSe]:POWer:ACHannel:TXCHannel:COUNt <int>` `[:SENSe]:POWer:ACHannel:TXCHannel:COUNt?`
Example	POW:ACH:TXCH:COUN 1 POW:ACH:TXCH:COUN?
Remote Command Notes	FSP, FSU
Preset	4
State Saved	Saved in instrument state.
Min	1
Max	4

[SENSe<1\|2>:]POWer:ACHannel:ACPairs 0 \| 1 \| 2 \| 3

Specifies the number of adjacent channels (upper and lower channel in pairs).The number 0 represents a pure channel power measurement.

Remote Command	`[:SENSe]:POWer:ACHannel:ACPairs` `[:SENSe]:POWer:ACHannel:ACPairs?`
Example	POW:ACH:ACP 3
Remote Command Notes	FSE, FSP, FSU
Preset	0
Range	0|1|2|3

[SENSe<1|2>:]POWer:ACHannel:BANDwidth|BWIDth[:CHANnel] 100 Hz to 1000 MHz

Specifies the radio communication system’s channel bandwidth.

Remote Command	`[:SENSe]:POWer:ACHannel:BANDwidth|BWIDth[:CHANnel] <freq>` `[:SENSe]:POWer:ACHannel:BANDwidth|BWIDth[:CHANnel]?`
Example	POW:ACH:BWID 30kHz
Remote Command Notes	FSE, FSP, FSU
Preset	14KHz
State Saved	Saved in instrument state.
Min	100Hz
Max	1000MHz

[SENSe<1|2>:]POWer:ACHannel:BANDwidth|BWIDth:ACHannel 100Hz–1000MHz

Specifies the radio transmission system's adjacent channel bandwidth. If the adjacent channel bandwidth is changed, all alternate adjacent channel's bandwidths are automatically set to the same value.

Remote Command	`[:SENSe]:POWer:ACHannel:BANDwidth|BWIDth:ACHannel <freq>` `[:SENSe]:POWer:ACHannel:BANDwidth|BWIDth:ACHannel?`
Example	POW:ACH:BWID:ACH 30kHz
Remote Command Notes	FSE, FSP, FSU
Preset	14KHz
State Saved	Saved in instrument state.
Min	100Hz
Max	1000MHz

[SENSe<1|2>:]POWer:ACHannel:BANDwidth|BWIDth:ALTernate<1|2> 100 Hz to 1000 MHz

Specifies the radio transmission system's channel bandwidth for the first and second alternate adjacent channel. If alternate adjacent channel 1's bandwidth is changed, then alternate adjacent channel 2's bandwidth is automatically set to the same value.

Remote Command	`[:SENSe]:POWer:ACHannel:BANDwidth|BWIDth:ALTernate[1]|2 <freq>` `[:SENSe]:POWer:ACHannel:BANDwidth|BWIDth:ALTernate[1]|2?`
Example	POW:ACH:BWID:ALT2 30kHz
Remote Command Notes	FSP, FSU
Preset	14KHz
State Saved	Saved in instrument state.
Min	100Hz
Max	1000MHz

[SENSe<1|2>:]POWer:ACHannel:MODE ABSolute | RELative

Switches between absolute and relative adjacent channel measurements.

Remote Command	`[:SENSe]:POWer:ACHannel:MODE ABSolute|RELative` `[:SENSe]:POWer:ACHannel:MODE?`
Example	POW:ACH:MODE REL
Remote Command Notes	FSE, FSP, FSU

Preset	ABSolute
State Saved	**Saved in instrument state.**
Range	ABSolute|RELative

[SENSe<1\|2>:]POWer:ACHannel:REFerence:AUTO ONCE

Sets the relative measurement's reference value to the currently measured channel power.

This command is accepted, but takes no action and reports no error.

Remote Command	`[:SENSe]:POWer:ACHannel:REFerence:AUTO ONCE`
Example	POW:ACH:REF:AUTO ONCE
Remote Command Notes	FSE, FSP, FSU
State Saved	Saved in instrument state.

[SENSe<1\|2>:]POWer:ACHannel:REFerence:TXCHannel:AUTO MINimum | MAXimum | LHIGhest

Activates the automatic selection of the transmission channel that is used as a reference channel in relative adjacent-channel power measurements.

Remote Command	`[:SENSe]:POWer:ACHannel:REFerence:TXCHannel:AUTO MINimum|MAXimum|LHIGhest` `[:SENSe]:POWer:ACHannel:REFerence:TXCHannel:AUTO?`
Example	SENS:POW:ACH:REF:TXCH:AUTO MIN
Remote Command Notes	FSP, FSU
State Saved	**Saved in instrument state.**
Range	MINimum | MAXimum | LHIGhest

[SENSe<1\|2>:]POWer:ACHannel:REFerence:TXCHannel:MANual 1 | 2 | 3 | 4

Selects the transmission channel to use as a reference channel in relative adjacent-channel power measurements.

The command is only available for multicarrier and adjacent-channel power measurements.

Remote Command	`[:SENSe]:POWer:ACHannel:REFerence:TXCHannel:MANual 1 | 2` `[:SENSe]:POWer:ACHannel:REFerence:TXCHannel:MANual?`
Example	POW:ACH:REF:TXCH:MAN 2 POW:ACH:REF:TXCH:MAN?
Remote Command Notes	FSP, FSU

Preset	1
State Saved	Saved in instrument state.
Min	1
Max	2

[SENSe<1|2>:]POWer:ACHannel:PRESet ACPower | CPOWer | MCACpower | OBANdwidth | OBWidth | CN | CN0

Adjusts the frequency span, the measurement bandwidths including the required detector for the number of channels, the channel bandwidths, and the channel spacings selected in the active power measurement. If required, switches on the adjacent-channel power measurement prior to the adjustment.

Remote Command	`[:SENSe]:POWer:ACHannel:PRESet ACPower|CPOWer|MCACpower|OBANdwidth|OBWidth|CN|CN0`
Example	SENS:POW:ACH:PRES ACP
Remote Command Notes	FSE, FSP, FSU
State Saved	No
Range	ACPower | CPOWer | MCACpower | OBANdwidth | OBWidth | CN | CN0

[SENSe<1|2>:]POWer:ACHannel:PRESet:RLEVel

Adjusts the reference level to the measured channel power. If required, switches on the adjacent channel power measurement.

This command is accepted, but takes no action and reports no error.

Remote Command	`[:SENSe]:POWer:ACHannel:PRESet:RLEVel`
Example	SENS:POW:ACH:PRES:RLEV
Remote Command Notes	FSP, FSU

[SENSe<1|2>:]POWer:BANDwidth|BWIDth 10 to 99.9PCT

Specifies the power percentage with respect to the total power.

Remote Command	`[:SENSe]:POWer:BANDwidth|BWIDth <real>` `[:SENSe]:POWer:BANDwidth|BWIDth?`
Example	POW:BAND 99.0 POW:BAND?
Remote Command Notes	FSP, FSU
Preset	99PCT
State Saved	Saved in instrument state.

Min	10
Max	99.99

[SENSe<1|2>:]POWer:HSPeed ON | OFF

Switches on or off the high-speed channel or adjacent channel power measurement.

Remote Command	`[:SENSe]:POWer:HSPeed ON|OFF|1|0` `[:SENSe]:POWer:HSPeed?`
Example	POW:HSP ON POW:HSP?
Remote Command Notes	FSP, FSU
Preset	OFF
State Saved	Saved in instrument state.

[SENSe<1|2>:]POWer:NCORrection ON | OFF

Switches on or off the instrument inherent noise correction for channel power measurement.

Remote Command	`[:SENSe]:POWer:NCORrection ON|OFF|1|0` `[:SENSe]:POWer:NCORrection?`
Example	POW:NCOR ON POW:NCOR?
Remote Command Notes	FSP, FSU
Preset	OFF
State Saved	Saved in instrument state.

[SENSe<1|2>:]POWer:TRACe 1 to 3

Assigns the channel or adjacent channel power measurement to the indicated trace in the selected measurement window.

This command is accepted, but takes no action and reports no error.

Remote Command	`[:SENSe]:POWer:TRACe <int>` `[:SENSe]:POWer:TRACe?`
Example	SENS:POW:TRAC 1 SENS:POW:TRAC?
Remote Command Notes	FSP, FSU
State Saved	Saved in instrument state.

Min	1
Max	3

SENSe:ROSCillator Subsystem

The SENSe:ROSCillator subsystem controls the reference oscillator. The numeric suffix in SENSe is irrelevant for the commands in this subsystem.

[SENSe<1|2>:]ROSCillator:SOURce INTernal | EXTernal

Switches between an external or internal reference oscillator for frequency processing of external generators 1 and 2.

Remote Command	`[:SENSe]:ROSCillator:SOURce INTernal|EXTernal` `[:SENSe]:ROSCillator:SOURce?`
Example	ROSC:SOUR EXT
Remote Command Notes	FSE, FSP, FSU
Preset	INT
State Saved	Yes.
Range	INTernal|EXTernal

SENSe:SWEep Subsystem

The SENSe:SWEep subsystem controls the sweep parameters.

[SENSe<1|2>:]SWEep:TIME 2.5ms to 16000s (frequency domain) | 1us to 16000s (time domain)

Specifies sweep time.

Remote Command	`[:SENSe]:SWEep:TIME <time>` `[:SENSe]:SWEep:TIME?`
Example	SWE:TIME 500ms
Remote Command Notes	FSE, FSP, FSU
Preset	1ms
State Saved	Saved in instrument state.
Min	1 ms
Max	4000 s

[SENSe<1|2>:]SWEep:TIME:AUTO ON | OFF

Automatically couples sweep time to the frequency span and bandwidth settings.

Remote Command	`[:SENSe]:SWEep:TIME:AUTO OFF|ON|0|1` `[:SENSe]:SWEep:TIME:AUTO?`
Example	SWE:TIME:AUTO OFF
Remote Command Notes	FSE, FSP, FSU
Preset	ON
State Saved	Saved in instrument state.

[SENSe<1|2>:]SWEep:COUNt 0 to 32767

Specifies the number of single sweeps that are used to calculate the average or maximum value.

SCPILC mode supports the maximum value of 10000, not 32767 as in FSx.

Remote Command	`[:SENSe]:SWEep:COUNt <int>` `[:SENSe]:SWEep:COUNt?`
Example	SENS:SWE:COUN 1000 SENS:SWE:COUN?
Remote Command Notes	FSE, FSP, FSU
Preset	0
State Saved	Saved in instrument state.
Min	0
Max	10000

[SENSe<1|2>:]SWEep:EGATe ON | OFF

Switches on or off sweep control by an external gate signal.

Remote Command	`[:SENSe]:SWEep:EGATe ON|OFF|1|0` `[:SENSe]:SWEep:EGATe?`
Example	SWE:EGAT ON SWE:EGAT?
Remote Command Notes	FSE, FSP, FSU
Preset	OFF
State Saved	Saved in instrument state.

[SENSe<1|2>:]SWEep:EGATe:TYPE LEVel | EDGE

Specifies the external gate signal's triggering type (level or edge).

Remote Command	`[:SENSe]:SWEep:EGATe:TYPE LEVel|EDGE` `[:SENSe]:SWEep:EGATe:TYPE?`
Example	SWE:EGAT:TYPE LEVel SWE:EGAT:TYPE?
Remote Command Notes	FSE, FSP, FSU
Preset	EDGE
State Saved	Saved in instrument state.
Range	LEVel | EDGE

[SENSe<1|2>:]SWEep:EGATe:POLarity POSitive | NEGative

Specifies the external gate signal's polarity.

Remote Command	`[:SENSe]:SWEep:EGATe:POLarity POSitive|NEGative` `[:SENSe]:SWEep:EGATe:POLarityh°O`
Example	SWE:EGAT:POL NEG SWE:EGAT:POL?
Remote Command Notes	FSE, FSP, FSU
Preset	POSitive
State Saved	Saved in instrument state.
Range	POSitive | NEGative

[SENSe<1|2>:]SWEep:EGATe:HOLDoff 125 ns to 100 s

For edge triggering, specifies the instrument's holdoff time.

Remote Command	`[:SENSe]:SWEep:EGATe:HOLDoff <time>` `[:SENSe]:SWEep:EGATe:HOLDoff ?`
Example	SWE:EGAT:HOLD 0.0002 SWE:EGAT:HOLD?
Remote Command Notes	FSE, FSP, FSU
Couplings	0
State Saved	Saved in instrument state.
Min	125ns

Max	100s

[SENSe<1|2>:]SWEep:EGATe:LENGth 0 to 100 s

For edge triggering, specifies the time interval during which the instrument sweeps.

Remote Command	`[:SENSe]:SWEep:EGATe:LENGth <time>` `[:SENSe]:SWEep:EGATe:LENGthË7O`
Example	SWE:EGAT:LENG 1 SWE:EGAT:LENG?
Remote Command Notes	FSE, FSP, FSU
Preset	1.25e–7
State Saved	Saved in instrument state.
Min	0
Max	100s

[SENSe<1|2>:]SWEep:EGATe:SOURce EXTernal | IFPower | RFPower

Switches between an external gate signal and an IF power signal as the signal source for the gate mode.

Remote Command	`[:SENSe]:SWEep:EGATe:SOURce EXTernal|IFPower|RFPower` `[:SENSe]:SWEep:EGATe:SOURce?`
Example	SENS:SWE:EGAT:SOUR EXT SENS:SWE:EGAT:SOUR?
Remote Command Notes	FSE, FSP, FSU
Preset	**EXTernal**
Range	**EXTernal | IFPower | RFPower**

[SENSe<1|2>:]SWEep:POINts 125 to 8001

Specifies the number of measurement points for one sweep run.

Remote Command	`[:SENSe]:SWEep:POINts <integer>` `[:SENSe]:SWEep:POINts?`
Example	SWE:POIN 251 SWE:POIN?
Remote Command Notes	FSP, FSU
Preset	FSP: 501 FSU: 625

State Saved	Saved in instrument state.
Min	1
Max	8001

STATus Subsystem

The STATus subsystem provides the status reporting system commands. The status registers are not influenced by *RST.

STATus:OPERation[:EVENt]?

Queries the contents of the EVENt section in the STATus:OPERation register. After the readout, the contents of the EVENt section are deleted.

Remote Command	`:STATus:OPERation[:EVENt]?`
Example	STAT:OPER?
Remote Command Notes	FSE, FSP, FSU
Preset	0

STATus:OPERation:CONDition?

Queries the CONDition section in the STATus:OPERation register. The current hardware status is reflected in the value returned. The contents of the CONDition section are not deleted after the readout.

Remote Command	`:STATus:OPERation:CONDition`
Example	STAT:OPER:COND?
Remote Command Notes	FSE, FSP, FSU
Preset	0

STATus:OPERation:ENABle

Specifies the bits of the ENABle section in the STATus:OPERation register.

This mode supports the maximum value of 32767, not 65535 as in FSx.

Remote Command	`:STATus:OPERation:ENABle <integer>` `:STATus:OPERation:ENABle?`
Example	STAT:OPER:ENAB 1
Remote Command Notes	FSE, FSP, FSU
Preset	0
Min	0
Max	32767

STATus:OPERation:PTRansition

Specifies the edge detectors of all bits in the STATus:OPERation register from 0 to 1 for the transitions of the CONDition bit.

This mode supports the maximum value of 32767, not 65535 as FSx.

Remote Command	`:STATus:OPERation:PTRansition <integer>` `:STATus:OPERation:PTRansition?`
Example	STAT:OPER:PTR 1
Remote Command Notes	FSE, FSP, FSU
Preset	32767
Min	0
Max	32767
SCPI Status Bits/OPC Dependencies	Sequential command

STATus:OPERation:NTRansition

Specifies the edge detectors of all bits in the STATus:OPERation register from 1 to 0 for the transitions of the CONDition bit.

This mode supports the maximum value of 32767, not 65535 as in FSx.

Mode	All
Remote Command	`:STATus:OPERation:NTRansition <integer>` `:STATus:OPERation:NTRansition?`
Example	STAT:OPER:NTR 1
Remote Command Notes	FSE, FSP, FSU
Preset	0
Min	0
Max	32767
SCPI Status Bits/OPC Dependencies	Sequential command

STATus:PRESet

Resets the edge detectors and ENABle parts of all registers to a defined value.

Remote Command	`:STATus:PRESet`
Example	STAT:PRES

Remote Command Notes	FSE, FSP, FSU

STATus:QUEStionable[:EVENt]

Queries the contents of the EVENt section in the STATus:QUEStionable register. After the readout, the contents of the EVENt section are deleted.

Remote Command	`:STATus:QUEStionable[:EVENt]?`
Example	STAT:QUES?
Remote Command Notes	FSE, FSP, FSU
Preset	0

STATus:QUEStionable:CONDition

Queries the CONDition section in the STATus:QUEStionable register. The contents of the CONDition section are not deleted after a readout.

Remote Command	`:STATus:QUEStionable:CONDition?`
Example	STAT:QUES:COND?
Remote Command Notes	FSE, FSP, FSU
Preset	0

STATus:QUEStionable:ENABle

Specifies the bits of the ENABle section in the STATus-QUEStionable register. The

ENABle register selectively enables individual events in the associated EVENt section for the summary bit in the status byte.

This mode supports the maximum value of 32767, not 65535 as FSx.

Remote Command	`:STATus:QUEStionable:ENABle <integer>` `:STATus:QUEStionable:ENABle?`
Example	:STATus:QUEStionable:ENABle 16
Remote Command Notes	FSE, FSP, FSU
Preset	0
Min	0
Max	32767

STATus:QUEStionable:PTRansition

This mode supports the maximum value of 32767, not 65535 as in FSx.

Remote Command	`:STATus:QUEStionable:PTRansition <integer>.` `:STATus:QUEStionable:PTRansition?`
Example	STAT:QUES:PNTR 16
Remote Command Notes	FSE, FSP, FSU
Preset	0
Min	0
Max	32767

STATus:QUEStionable:NTRansition

Specifies the edge detectors of all bits in the STATus:OPERation register from 1 to 0 for the transitions of the CONDition bit.

This mode supports the maximum value of 32767, not 65535 as FSx.

Remote Command	`:STATus:QUEStionable:NTRansition <integer>.` `:STATus:QUEStionable:NTRansition?`
Example	STAT:QUES:NTR 16
Remote Command Notes	FSE, FSP, FSU
Preset	0
Min	0
Max	32767

STATus:QUEStionable:FREQuency[:EVENt]

Queries the contents of the EVENt section in the STATus:QUEStionable: FREQuency register.

Remote Command	`:STATus:QUEStionable:FREQuency[:EVENt]?`
Example	STAT:QUES:FREQ?
Remote Command Notes	FSE, FSP, FSU
Preset	0

STATus:QUEStionable:FREQuency:CONDition

Queries the contents of the CONDition section in the

STATus:QUEStionable:FREQuency register. The contents of the CONDition section are not deleted

after a readout.

Remote Command	`:STATus:QUEStionable:FREQuency:CONDition?`
Example	STAT:QUES:FREQ:COND?
Remote Command Notes	FSE, FSP, FSU
Preset	0

STATus:QUEStionable:FREQuency:ENABle

Specifies the bits of the ENABle section in the STATus:QUEStionable:FREQuency register.

This mode supports the maximum value of 32767, not 65535 as FSx.

Remote Command	`:STATus:QUEStionable:FREQuency:ENABle <integer>` `:STATus:QUEStionable:FREQuency:ENABle?`
Example	STAT:QUES:FREQ:ENAB 2
Remote Command Notes	FSE, FSP, FSU
Preset	32767
Min	0
Max	32767

STATus:QUEStionable:FREQuency:PTRansition

Specifies the edge detectors of all bits in the STATus:QUEStionable:FREQuency register from 0 to 1 for the transitions of the CONDition bit.

This mode supports the maximum value of 32767, not 65535 as in FSx.

Remote Command	`:STATus:QUEStionable:FREQuency:PTRansition <integer>` `:STATus:QUEStionable:FREQuency:PTRansition?`
Example	STAT:QUES:FREQ:PTR 2
Remote Command Notes	FSE, FSP, FSU
Preset	32767
Min	0
Max	32767

STATus:QUEStionable:FREQuency:NTRansition

Specifies the edge detectors of all bits in the STATus:QUEStionable:FREQuency register from 1 to 0 for the transitions of the CONDition bit.

This mode supports the maximum value of 32767, not 65535 as in FSx.

Remote Command	:STATus:QUEStionable:FREQuency:NTRansition <integer> :STATus:QUEStionable:FREQuency:NTRansition?
Example	STAT:QUES:FREQ:NTR 2
Remote Command Notes	FSE, FSP, FSU
Preset	0
Min	0
Max	32767

STATus:QUEue[:NEXT]?

Returns the earliest entry to the error queue then deletes it.

Remote Command	:STATus:QUEue[:NEXT]?
Example	STAT:QUE?
Remote Command Notes	FSE, FSP, FSU

SYSTem Subsystem

This subsystem includes commands for general functions.

SYSTem:COMMunicate:GPIB[:SELF]:ADDRess

Changes the analyzer's IEC/IEEE-bus address.

Changing this address may require further communication to use the new address.

Remote Command	:SYSTem:COMMunicate:GPIB[:SELF]:ADDRess <integer> :SYSTem:COMMunicate:GPIB[:SELF]:ADDRess?
Example	:SYST:COMM:GPIB:ADDR 17
Remote Command Notes	Note: Changing the Address on the GPIB port requires all further communication to use the new address.
Remote Command Notes	FSE, FSP, FSU
State Saved	No
Range	0 to 30

SYSTem:COMMunicate:GPIB[:SELF]:RTERminator LFEOI | EOI

Changes the GPIB receive terminator.

Currently, this command won't invoke any action.

Remote Command	:CALCulate[1]:MARKer[1]|2|3|4:FUNCtion:FPEaks:SORT X|Y :CALCulate[1]:MARKer[1]|2|3|4:FUNCtion:FPEaks:SORT?
Example	CALC:MARK:FUNC:FPE:SORT X CALC:MARK:FUNC:FPE:SORT?
Notes	FSE, FSP, FSU Currently, this command won't invoke any action.

SYSTem:DATE

Sets or queries the date portion of the analyzer's internal clock.

Remote Command	:SYSTem:DATE <year>,<month>,<day> :SYSTem:DATE?
Example	:SYST:DATE 2006,05,26
Remote Command Notes	FSE, FSP, FSU

SYSTem:DISPlay:FPANel ON | OFF

Turns the on-screen display of front panel keys on or off.

Mode	All
Remote Command	SYSTem:DISPlay:FPANel ON | OFF SYSTem:DISPlay:FPANel?
Example	:SYST:DISP:FPAN ON :SYST:DISP:FPAN?
Remote Command Notes	FSP, FSU
Preset	ON
State Saved	No

SYSTem:DISPlay:UPDate

This command is accepted, but takes no action and reports no error.

Remote Command	:SYSTem:DISPlay:UPDate ON|OFF|1|0 :SYSTem:DISPlay:UPDate?
Example	SYST:DISP:UPD ON
Remote Command Notes	FSE, FSP, FSU
Preset	ON

SYSTem:ERRor?

Queries the first (oldest) entry in the error queue, then deletes that entry.

Remote Command	`:SYSTem:ERRor[:NEXT]?`
Example	:SYST:ERR?
Remote Command Notes	FSE, FSP, FSU

SYSTem:ERRor:LIST?

This command is accepted, but takes no action and reports no error.

Remote Command	`:SYSTem:ERRor:LIST?`
Example	:SYST:ERR:LIST?
Remote Command Notes	FSP, FSU

SYSTem:ERRor:CLEar:ALL

This command is accepted, but takes no action and reports no error.

Remote Command	`:SYSTem:ERRor:CLEar:ALL`
Example	:MMEM:CLE:ALL
Remote Command Notes	FSP, FSU

SYSTem:PRESet

Initiates a reset of the analyzer.

Remote Command	`:SYSTem:PRESet`
Example	`:SYST:PRES`
Remote Command Notes	FSE, FSP, FSU

SYSTem:TIME

Sets or queries the time portion of the analyzer's internal clock. The sequence of entry is hour, minute, second.

Remote Command	`:SYSTem:TIME <hour>,<minute>,<second>` `:SYSTem:TIME?`
Example	:SYST:TIME 13,05,26
Remote Command Notes	FSE, FSP, FSU

SYSTem:VERSion

Queries the analyzer's SCPI version number.

This command is a query and therefore has no *RST value.

Remote Command	`:SYSTem:VERSion?`
Example	:SYST:VERS?
Remote Command Notes	FSE, FSP, FSU

TRACe Subsystem

TRACe<1|2>[:DATA] TRACE1 | TRACE2 | TRACE3 | SPURious | ABITstream | PWCDp | CTABle, <block> | <numeric_value>

The command writes trace data from the control computer to the specified trace of the analyzer.

The TRACe[:DATA] command is of the form:

`:TRACe:DATA <trace>,<data>`

where <trace> may be one of the following parameters:

`TRACE1, TRACE2, TRACE3, TRACE4, TRACE5, TRACE6`

and where <data> may be either:

- ASCII data, consisting of a set of comma-separated values, or,

- `REAL` or `INT`eger, sent as a definite length block, with a header describing the data to follow.

The query reads the specified trace data from the analyzer to the control computer.

Remote Command	`:TRACe[1][:DATA]`
	`TRACE1|TRACE2|TRACE3|TRACE4|TRACE5|TRACE6,<data>`
	`:TRACe[1][:DATA]?`
	`TRACE1|TRACE2|TRACE3|TRACE4|TRACE5|TRACE6`

Example	TRAC? TRACE1
Remote Command Notes	FSE, FSP, FSU

TRACe:IQ Subsystem

This subsystem includes commands for handling measured I/Q data.

TRACe<1|2>:IQ:DATA

This query causes a measurement to be performed, then returns a list of measurement results. The results are corrected for frequency response before being returned.

Before sending this query, specify the measurement settings using TRACe<1|2>:IQ:SET <filter

type>,<rbw>,<sample rate>,<trigger source>,<trigger slope>,<pretrigger samples>,<# of samples>.

Remote Command	`:TRACe[1]:IQ:DATA?`
Example	TRAC:IQ:DATA?
Remote Command Notes	FSP, FSU

TRACe<1|2>:IQ:SET <filter type>,<rbw>,<sample rate>,<trigger source>,<trigger slope>,<pretrigger samples>,<# of samples>

Specifies the analyzer settings for measurement of I/Q data.

Remote Command	`TRACe[1]:IQ:SET <filter type>,<rbw>,<sample rate>,<trigger source>,<trigger slope>,<pretrigger samples>,<# of samples>`
Example	TRAC:IQ:SET NORM,10MHz,32MHz,EXT,POS,0,2048 TRAC:IQ:SET NORM,1MHz,4MHz,EXT,POS,1024,512
Remote Command Notes	FSP, FSU

TRACe:IQ:SRATe 15.625kHz to 32MHz

Specifies the sampling rate for I/Q data acquisition.

Remote Command	`TRACe[1]:IQ:SRATe <freq>` `TRACe[1]:IQ:SRATe?`
Example	TRAC:IQ:SRAT 4MHZ TRAC:IQ:SRAT?
Remote Command Notes	FSP, FSU
Preset	32MHz
State Saved	Saved in instrument state.
Min	15.625kHz
Max	32MHz

TRACe:IQ:STATe ON | OFF

Switches the current measurement between SWEEP mode and I/Q mode.

Remote Command	`:TRACe:IQ:STATe ON|OFF|1|0` `:TRACe:IQ:STATe?`
Example	TRAC:IQ:STAT ON
Remote Command Notes	FSP, FSU

Preset	OFF
State Saved	Saved in instrument state.

TRIGger Subsystem

This subsystem includes commands that control and synchronize the start of a sweep.

An external trigger signal can be supplied via the connector on the analyzer's rear panel.

TRIGger<1|2>[:SEQuence]:SOURce

Selects the trigger source.

This mode supports only parameter options: IMMediate, EXTernal, VIDeo, RFPower.

It does **not** support parameter options: IFPower, TV, AF, FM, AM and PM.

Remote Command	`:TRIGger[1][:SEQuence]:SOURce IMMediate|EXTernal|VIDeo|IFPower|RFPower|TV|AF|FM|AM|PM` `:TRIGger[1][:SEQuence]:SOURce?`
Example	TRIG:SOUR EXT
Remote Command Notes	
Remote Command Notes	FSE, FSP, FSU
Preset	`IMMediate`
Range	IMMediate|EXTernal|VIDeo|IFPower|RFPower|TV|AF|FM|AM|PM

TRIGger<1|2>[:SEQuence]:LEVel:IFPower –30 to –10DBM

This command sets the level of the IF power trigger source.

This command is accepted, but takes no action and reports no error.

Remote Command	`:TRIGger[1][:SEQuence]:LEVel:IFPower <ampl>` `:TRIGger[1][:SEQuence]:LEVel:IFPower?`
Example	TRIG:LEV:IFP –20DBM
Remote Command Notes	FSP, FSU
Preset	–20dBm
State Saved	Saved in instrument state.
Min	30dBm
Max	–70dBm

TRIGger<1|2>[:SEQuence]:LEVel:RFPower

Sets the RF power trigger level.

This mode supports the level range:–200 to 100 dBm.

Remote Command	`:TRIGger[1][:SEQuence]:LEVel:RFPower <real>` `:TRIGger[1][:SEQuence]:LEVel:RFPower?`
Example	TRIG:LEV:RFP –20DBM
Remote Command Notes	FSP
Preset	–20dBm
State Saved	Saved in instrument state.
Min	–200dBm
Max	100dBm

TRIGger<1\|2>[:SEQuence]:LEVel:VIDeo 0 to 100PCT

Sets the video trigger level.

Remote Command	`TRIGger[1][:SEQuence]:LEVel:VIDeo <real>` `TRIGger[1][:SEQuence]:LEVel:VIDeo?`
Example	TRIG:LEV:VID 40 TRIG:LEV:VID?
Remote Command Notes	FSE, FSP, FSU
Preset	50
State Saved	Saved in instrument state.
Min	0
Max	100

TRIGger<1\|2>[:SEQuence]:HOLDoff

Specifies the trigger delay period.

Remote Command	`:TRIGger[1][:SEQuence]:HOLDoff <time>` `:TRIGger[1][:SEQuence]:HOLDoff?`
Example	TRIG:HOLD 100ms
Remote Command Notes	FSE, FSP, FSU
Preset	0s
State Saved	Saved in instrument state.
Min	0s
Max	0.5s

TRIGger<1|2>[:SEQuence]:SLOPe

Sets the trigger signal slope to positive or negative.

The trigger slope setting applies to all trigger sources.

Remote Command	`:TRIGger[1][:SEQuence]:SLOPe POSitive|NEGative` `:TRIGger[1][:SEQuence]:SLOPe?`
Example	TRIG:SLOP NEG
Remote Command Notes	FSE, FSP, FSU
Preset	POSitive
State Saved	Saved in instrument state.
Range	POSitive|NEGative

4 A Brief Introduction to the SCPI Language

Overview

This section is not intended to teach you everything about the SCPI (Standard Commands for Programmable Instruments) programming language. The SCPI Consortium or IEEE can provide that level of detailed information.

Programming with SCPI requires knowledge of:

- Computer programming languages, such as C, C++, and Microsoft® Visual Basic®
- The language of your instrument, such as MXA or FSP

Topics covered in this chapter include:

For more information refer to:

IEEE Standard 488.1-2004, *IEEE Standard Digital Interface for Programmable Instrumentation.* New York, NY, 1998.

IEEE Standard 488.2-2004, *IEEE Standard Codes, Formats, Protocols and Comment Commands for Use with ANSI/IEEE Std 488.1-1987*. New York, NY, 1998.

SCPI Language Basics

SCPI is an ASCII-based instrument command language designed for test and measurement instruments, with the goal of reducing automatic test equipment (ATE) program development time.

SCPI accomplishes this goal by providing a consistent programming environment control and data usage. This consistent programming environment is achieved by the use of defined program messages, instrument responses, and data formats across all SCPI instruments.

By providing a consistent programming environment, replacing one SCPI instrument with another SCPI instrument in a system will usually requires less effort than with non-SCPI instrument.

SCPI is not a standard which completely provides for interchangeable instrumentation. SCPI helps move toward interchangeability by defining instrument commands and responses, but no functionality,

accuracy, resolution, and so on.

Table 4-1 Common Terms used in this Book

Term	Description
Command	An instruction. You combine commands to form messages that control instruments to complete a specified task. In general, a command consists of mnemonics (also known as keywords), parameters and punctuation.
Query	A special type of command. Queries instruct the instrument to make response data available to the controller. Query keywords always end with a question mark, ?.

Command Syntax

A command consists of keywords, parameters and punctuation. A typical command is made up of keywords set off by colons. The keywords are followed by parameters that can be followed by optional units.

Here is an example:

```
SENSe:FREQuency:STARt 1.5 MHZ
```

Table 4-2

Command Keywords	Many commands have both a long and a short form: use either one. A combination of the two is not allowed. Consider the `:FREQuency` command for example: • Short form is `:FREQ` • Long from is `:FREQUENCY` SCPI is not case sensitive, so `fREquEncy` is just as valid as FREQUENCY, but `FREQ` and `FREQUENCY` are the only valid forms of the FREQuency command and `FREQU` is not a valid form. For example, `Sens:Freq:Star 1.5 mhz` is the same as `SENSE:FREQUENCY:START 1.5 MHZ`. In this documentation, upper case letters indicate the short form of the keyword. The lower case letters indicate the long form of the keyword.
Punctuation	• A vertical bar "|" dictates a choice of one element from a list. For example: <A> | <B> indicates that either A or B can be selected, but not both. • Square brackets "[ ]" indicates that the enclosed items are optional. • Angle brackets "< >" indicates a variable items to be entered to represent user choices. • Braces "{ }" can optionally be used in the command either not at all, once, or several times. • A question mark "?" after a subsystem command indicates that the command is a query. The returned information, <value> varies in format according to the type of the field.
Separator	• A colon ":" separates keywords of different levels. The colon before the root keyword is usually omitted. • A space separates a keyword and a parameter, as well as a parameter and a unit.

NOTE	The command SENS:FREQU:STAR is not valid because FREQU is neither the short, nor the long form of the command.

Command Statement Rules Overview

Besides the standard notation of SCPI described above, please remember the following rules in programming:

- command statements read from left to right
- use either long form or short form of keywords, but do not use both
- no separating space between the keywords, only use a colon to separate keywords of different levels
- always separating a keyword from a variable with a space
- always separating a variable from its unit with a space (if variable has a unit)

Creating Valid Commands

Commands are not case sensitive and there are often many different ways of writing a particular command. These are examples of valid commands for a given command syntax:

Command Syntax	Sample Valid Commands
[SENSe:]BANDwidth[:RESolution] <freq>	The following sample commands are all identical. They all cause the same result. • Sense:Band:Res 1700 • BANDWIDTH:RESOLUTION 1.7e3 • sens:band 1.7KHZ • SENS:band 1.7E3Hz • band 1.7kHz • bandwidth:RES 1.7e3Hz
MEASure:SPECtrum[n]?	• MEAS:SPEC? • Meas:spec? • meas:spec3? The number 3 in the last meas example causes it to return different results then the commands above it. See the command description for more information.
[:SENSe]:DETector[:FUNCtion] NEGative|POSitive|SAMPle	• DET:FUNC neg • Detector:Func Pos
INITiate:CONTinuous ON|OFF|1|0	The sample commands below are identical. • INIT:CONT ON • init:continuous 1

Special Characters in Commands

Special Character	Meaning	Example
|	A vertical stroke between **parameters** indicates alternative choices. The effect of the command is different depending on which parameter is selected.	Command: `TRIGger:SOURce EXTernal|INTernal|LINE` The choices are external, internal, and line. Ex: `TRIG:SOURCE INT` is one possible command choice.
	A vertical stroke between **keywords** indicates identical effects exist for both keywords. The command functions the same for either keyword. Only one of these keywords is used at a time.	Command: `SENSe:BANDwidth|BWIDth:OFFSet` Two identical commands are: Ex1: `SENSE:BWIDTH:OFFSET` Ex2: `SENSE:BAND:OFFSET`
[ ]	keywords in square brackets are optional when composing the command. These implied keywords are executed even if they are omitted.	Command: `[SENSe:]BANDwidth[:RESolution]:AUTO` The following commands are all valid and have identical effects: Ex1: `bandwidth:auto` Ex2: `band:resolution:auto` Ex3: `sense:bandwidth:auto`
< >	Angle brackets around a word, or words, indicates they are not to be used literally in the command. They represent the needed item.	Command: `SENS:FREQ <freq>` In this command example the word <freq> should be replaced by an actual frequency. Ex: `SENS:FREQ 9.7MHz`.

{ }	Parameters in braces can optionally be used in the command either not at all, once, or several times.	Command:
		`MEASure:BW <freq>{,level}`
		A valid command is:
		`meas:BW 6 MHz, 3 dB, 60 dB`

Parameters in Commands

There are four basic types of parameters: booleans, keywords, variables and arbitrary block program data.

OFF|ON|0|1 (Boolean) — This is a two state boolean-type parameter. The numeric value 0 is equivalent to OFF. Any numeric value other than 0 is equivalent to ON. The numeric values of 0 or 1 are commonly used in the command instead of OFF or ON. Queries of the parameter always return a numeric value of 0 or 1.

keyword — The keywords that are allowed for a particular command are defined in the command syntax description.

Units

Numeric variables may include units. The valid units for a command depend on the variable type being used. See the following variable descriptions. The indicated default units are used if no units are sent. Units can follow the numerical value with, or without, a space.

Variable

A variable can be entered in exponential format as well as standard numeric format. The appropriate range of the variable and its optional units are defined in the command description.

The following keywords may also be used in commands, but not all commands allow keyword variables.

- 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.

The numeric value for the function's MINimum, MAXimum, or DEFault can be queried by adding the keyword to the command in its query form. The keyword must be entered following the question mark.

Example query: `SENSE:FREQ:CENTER? MAX`

Variable Parameters

<ampl>	Is a rational number followed by optional units. The default units are dBm. Acceptable units include: dBm, dBmV, dBμV.
<angle> <degrees>	Is a rational number followed by optional units. The default units are degrees. Acceptable units include: DEG, RAD.
<bit_pattern>	Specifies a series of bits rather than a numeric value. The bit series is the binary representation of a numeric value. There are no units. Bit patterns are most often specified as hexadecimal numbers, though octal, binary or decimal numbers may also be used. In the SCPI language these numbers are specified as: • Hexadecimal, #Hdddd or #hdddd where ‘d’ represents a hexadecimal digit 0 to 9 and ‘a’ to ‘f’. So #h14 can be used instead of the decimal number 20. • Octal, #Oddddddd or #oddddddd where ‘d’ represents an octal digit 0 to 7. So #o24 can be used instead of the decimal number 20. • Binary, #Bddddddddddddddddd or #bddddddddddddddddd where ‘d’ represents a 1 or 0. So #b10100 can be used instead of the decimal number 20.
<current>	Is a rational number followed by optional units. The default units are Amperes. Acceptable units include: A, mA, μA, nA.
<freq> <bandwidth>	Is a positive rational number followed by optional units. The default unit is Hertz. Acceptable units include: Hz, kHz, MHz, GHz.
<integer>	is an integer value with no units.
<percent>	Is a rational number between 0 and 100. You can either use no units or use PCT.
<power>	Is a rational number followed by optional units. The default units are W. Acceptable units include: mAW, kW, W, mW, μW, nW, pW.
<real>	Is a floating point number with no units.
<rel_power> <rel_ampl>	Is a positive rational number followed by optional units. The default units are dB. Acceptable units include: dB.
<string>	Is a series of alpha numeric characters.
<time> <seconds>	Is a rational number followed by optional units. The default units are seconds. Acceptable units include: ks, s, ms, us, ns.
<voltage>	Is a rational number followed by optional units. The default units are Volts. Acceptable units include: V, mV, μV, nV

Block Program Data

Some parameters consist of a block of data. There are a few standard types of block data. Arbitrary blocks of program data can also be used.

<trace> Is an array of rational numbers corresponding to displayed trace data. See FORMat:DATA for information about available data formats.

A SCPI command often refers to a block of current trace data with a variable name such as: Trace1, TRACE2, or trace3, depending on which trace is being accessed.

<arbitrary block data> Consists of a block of data bytes. The first information sent in the block is an ASCII header beginning with #. The block is terminated with a semi-colon. The header can be used to determine how many bytes are in the data block. There are no units. (You do not get block data if your data type is ASCII, using `FORMat:DATA ASCII` command. Your data is comma separated ASCII values.

Block data example: suppose the header is #512320.

- The first digit in the header (5) tells you how many additional digits/bytes there are in the header.
- The 12320 means 12 thousand, 3 hundred, 20 data bytes follow the header.
- Divide this number of bytes by your current data format (bytes/data point), either 8 (for real,64), or 4 (for real,32). For this example, if you're using real64 then there are 1540 points in the block.

Putting Multiple Commands on the Same Line

Multiple commands can be written on the same line, reducing your code space requirement. To do this:

- Commands must be separated with a semicolon (;).
- If the commands are in different subsystems, the key word for the new subsystem must be preceded by a colon (:).
- If the commands are in the same subsystem, the full hierarchy of the command key words need not be included. The second command can start at the same key word level as the command that was just executed.

SCPI Termination and Separator Syntax

All binary trace and response data is terminated with <NL><END>, as defined in Section 8.5 of IEEE Standard 488.2-1992, *IEEE Standard Codes, Formats, Protocols and Common Commands for Use with ANSI/IEEE Std 488.1-1987*. New York, NY, 1992. (Although one intent of SCPI is to be interface independent, <END> is only defined for IEEE 488 operation.)

The following are some examples of good and bad commands. The examples are created from a theoretical instrument with the simple set of commands indicated below:

```
[:SENSe]
     :POWer
          [:RF]
          :ATTenuation 40dB

:TRIGger
     [:SEQuence]
     :EXTernal [1]
          :SLOPe
               POSitive

[:SENSe]
     :FREQuency
          :STARt
     :POWer
     [:RF]
          :MIXer
               :RANGe
              [:UPPer]
```

Bad Command	Good Command
`PWR:ATT 40dB`	`POW:ATT 40dB`
The short form of **POWER** is **POW**, not **PWR**.	
`FREQ:STAR 30MHz;MIX:RANG -20dBm`	`FREQ:STAR 30MHz;POW:MIX:RANG -20dBm`
The **MIX:RANG** command is in the same **:SENSE** subsystem as **FREQ**, but executing the **FREQ** command puts you back at the **SENSE** level. You must specify **POW** to get to the **MIX:RANG** command.	
`FREQ:STAR 30MHz;POW:MIX RANG -20dBm`	`FREQ:STAR 30MHz;POW:MIX:RANG -20dBm`
MIX and **RANG** require a colon to separate them.	
`:POW:ATT 40dB;TRIG:FREQ:STAR 2.3GHz`	`:POW:ATT 40dB;:FREQ:STAR 2.3GHz`
:FREQ:STAR is in the **:SENSE** subsystem, not the **:TRIGGER** subsystem.	
`:POW:ATT?:FREQ:STAR?`	`:POW:ATT?;:FREQ:STAR?`
:POW and **FREQ** are within the same **:SENSE** subsystem, but they are two separate commands, so they should be separated with a semicolon, not a colon.	
`:POW:ATT -5dB;:FREQ:STAR 10MHz`	`:POW:ATT 5dB;:FREQ:STAR 10MHz`
Attenuation cannot be a negative value.	