# Spectrum Analyzer

GSP-930

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PROGRAMMING MANUAL

GW INSTEK PART NO. 82SP-93000M01

The information in this manual was correct at the time of printing. However, Good Will continues to improve products and reserves the rights to change specification, equipment, and maintenance procedures at any time without notice.

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# Table of Contents

# SAFETY INSTRUCTIONS

This chapter contains important safety instructions that you must follow during operation and storage. Read the following before any operation to insure your safety and to keep the instrument in the best possible condition.

## Safety Symbols

These safety symbols may appear in this manual or on the instrument.

| | |
|---|---|
|  WARNING | Warning: Identifies conditions or practices that could result in injury or loss of life. |
|  CAUTION | Caution: Identifies conditions or practices that could result in damage to the instrument or to other properties. |
|  | DANGER High Voltage |
|  | Attention Refer to the Manual |
|  | Earth (ground) Terminal |
|  | Frame or Chassis Terminal |

Do not dispose electronic equipment as unsorted municipal waste. Please use a separate collection facility or contact the supplier from which this instrument was purchased.

## Safety Guidelines

General Guideline

- Do not place any heavy object on the instrument.

CAUTION

- Avoid severe impact or rough handling that leads to damaging the instrument.
- Do not discharge static electricity to the instrument.
- Use only mating connectors, not bare wires, for the terminals.
- Ensure signals to the RF input do not exceed +30dBm.
- Ensure reverse power to the TG output terminal does not exceed +30dBm.
- Do not supply any input signals to the TG output.
- Do not block the cooling fan opening.
- Do not disassemble the instrument unless you are qualified.

(Measurement categories) EN 61010-1:2010 specifies the measurement categories and their requirements as follows. The instrument falls under category II.

- Measurement category IV is for measurement performed at the source of low-voltage installation.
- Measurement category III is for measurement performed in the building installation.
- Measurement category II is for measurement performed on the circuits directly connected to the low voltage installation.
- Measurement category I is for measurements performed on circuits not directly connected to Mains.

| | |
|---|---|
| Power Supply<br>⚠ WARNING | • AC Input voltage range: 100V~240V<br>• Frequency: 50/60Hz<br>• To avoid electrical shock connect the protective grounding conductor of the AC power cord to an earth ground. |
| Battery<br>⚠ CAUTION | • Rating: 10.8V, 6 cell Li-ion battery<br>• Turn off the power and remove the power cord before installing or removing the battery. |
| Cleaning | • Disconnect the power cord before cleaning.<br>• Use a soft cloth dampened in a solution of mild detergent and water. Do not spray any liquid.<br>• Do not use chemicals containing harsh material such as benzene, toluene, xylene, and acetone. |
| Operation Environment | • Location: Indoor, no direct sunlight, dust free, almost non-conductive pollution (Note below)<br>• Temperature: 5° C to 45° C<br>• Humidity: <90%<br>(Pollution Degree) EN 61010-1:2010 specifies the pollution degrees and their requirements as follows. The instrument falls under degree 2.<br>Pollution refers to "addition of foreign matter, solid, liquid, or gaseous (ionized gases), that may produce a reduction of dielectric strength or surface resistivity".<br>• Pollution degree 1: No pollution or only dry, non-conductive pollution occurs. The pollution has no influence.<br>• Pollution degree 2: Normally only non-conductive pollution occurs. Occasionally, however, a temporary conductivity caused by condensation must be expected.<br>• Pollution degree 3: Conductive pollution occurs, or dry, non-conductive pollution occurs which becomes conductive due to condensation which is expected. In such conditions, equipment is normally protected against exposure to direct sunlight, precipitation, and full wind pressure, but neither temperature nor humidity is controlled. |

| | |
|---|---|
| Storage environment | • Location: Indoor<br>• Temperature: −20° C to 70° C<br>• Humidity: <90% |
| Disposal  | Do not dispose this instrument as unsorted municipal waste. Please use a separate collection facility or contact the supplier from which this instrument was purchased. Please make sure discarded electrical waste is properly recycled to reduce environmental impact. |

## Power cord for the United Kingdom

When using the instrument in the United Kingdom, make sure the power cord meets the following safety instructions.

NOTE: This lead/appliance must only be wired by competent persons

WARNING: THIS APPLIANCE MUST BE EARTHED

IMPORTANT: The wires in this lead are coloured in accordance with the following code:

| | |
|---|---|
| Green/ Yellow: | Earth |
| Blue: | Neutral |
| Brown: | Live (Phase) |


As the colours of the wires in main leads may not correspond with the coloured marking identified in your plug/appliance, proceed as follows:

The wire which is coloured Green & Yellow must be connected to the Earth terminal marked with either the letter E, the earth symbol ⏚ or coloured Green/Green & Yellow.

The wire which is coloured Blue must be connected to the terminal which is marked with the letter N or coloured Blue or Black.

The wire which is coloured Brown must be connected to the terminal marked with the letter L or P or coloured Brown or Red.

If in doubt, consult the instructions provided with the equipment or contact the supplier.

This cable/appliance should be protected by a suitably rated and approved HBC mains fuse: refer to the rating information on the equipment and/or user instructions for details. As a guide, a cable of 0.75mm$^2$ should be protected by a 3A or 5A fuse. Larger conductors would normally require 13A types, depending on the connection method used.

Any exposed wiring from a cable, plug or connection that is engaged in a live socket is extremely hazardous. If a cable or plug is deemed hazardous, turn off the mains power and remove the cable, any fuses and fuse assemblies. All hazardous wiring must be immediately destroyed and replaced in accordance to the above standard.

# GETTING STARTED

This chapter provides a brief overview of the GSP-930, the package contents, instructions for first time use and an introduction to the front panel, rear panel and GUI.

# GSP-930 Introduction

The GSP-930 is the most advanced spectrum analyzer GW Instek has produced to date. The GSP-930 features a split window display to view data in spectrum, topographic or spectrographic views.

## Main Features

| | |
|---|---|
| Performance | • 9kHz~3GHz bandwidth<br>• 1Hz resolution<br>• Nominal RBW accuracy of 5% <750kHz, 8% @>750kHz<br>• Video bandwidth 1Hz~1MHz (10 steps)<br>• Amplitude measurement range: DANL~30dBm (frequency dependent)<br>• Input attenuation: 0 ~ 50dB<br>• Phase noise: < -88dBc/Hz@1GHz, 10kHz |
| Features | • 10%-step increments for RBW bandwidth<br>• Three display modes: Spectrum, Topographic and Spectrographic<br>• Split window display<br>• Built-in EMI filter<br>• Auto Wake-up<br>• Built-in preamplifier<br>• Gate sweep<br>• Marker Frequency counter<br>• Two operating modes: Spectrum and Power Meter mode<br>• SEM measurement<br>• ACPR measurement |

| | |
|---|---|
| | • OCBW measurement<br>• Channel power measurement<br>• Demodulation analyzer<br>• Diverse marker functions and features with Peak Table<br>• Sequence function to automatically perform pre-programmed sequential operations<br>• Optional battery operation |
| Interface | • 8.4 color LCD (800×600)<br>• On-screen menu icons<br>• DVI-I video output<br>• RS-232 with RTS/CTS hardware flow control<br>• USB 2.0 with support for USB TMC<br>• LAN TCP/IP with LXI support<br>• Optional GPIB/IEEE488 interface<br>• IF output @ 886MHz<br>• Headphone output<br>• REF (reference clock) input/output BNC ports<br>• Alarm/Open collector output BNC port<br>• Trigger/Gate input BNC ports<br>• RF N-type input port<br>• Tracking generator output<br>• DC +7V/500mA output SMB port |

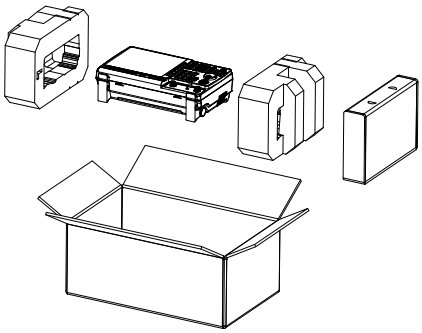
# Accessories

| Standard Accessories | Part number | Description |
|---|---|---|
| | Region dependant | User manual |
| | Region dependant | Power cord |
| Options | Option number | Description |
| | Opt1. | Tracking generator |
| | Opt2. | Battery (11.1V/5200mAH Li-ion battery) |
| | Opt3. | GPIB interface (IEEE 488 bus) |
| Optional Accessories | Part number | Description |
| | PWS-06 | USB Average Power Sensor (up to 6200 MHz; -32 to 20 dBm) |
| | GRA-415 | 6U Rack mount kit |

## Package Contents

Check the contents before using the GSP-930.

Opening the box

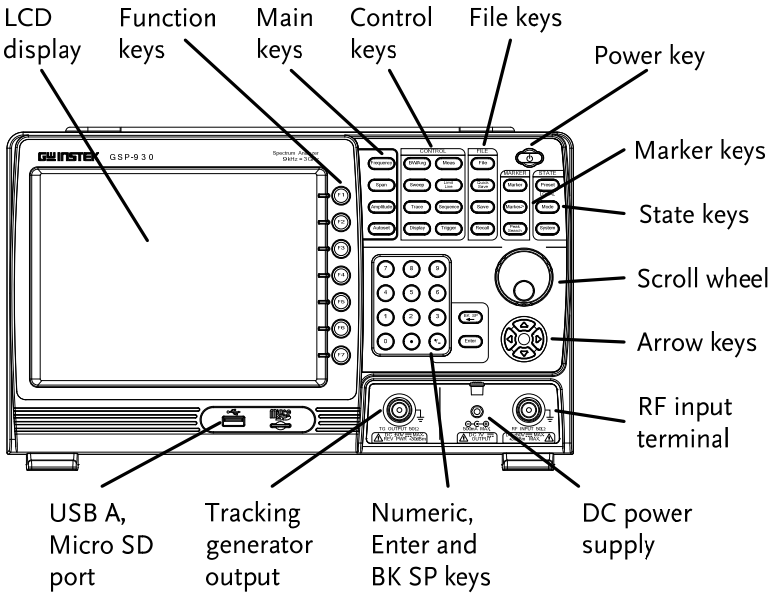


Contents (single unit)

- Main unit (may include optional GPIB, TG output)
- Quick Start manual
- User Manual CD
- Power cord x1 (region dependent)
- Optional battery pack
- Calibration certificate

# Appearance

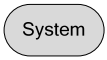
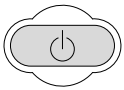
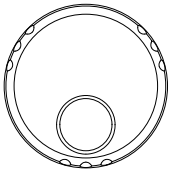
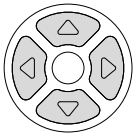
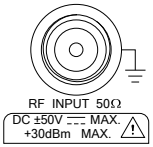
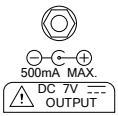
## GSP-930 Front Panel

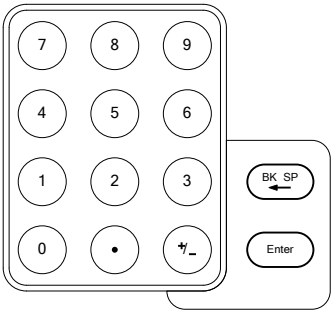
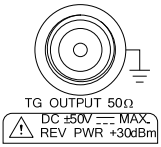



| | | |
|---|---|---|
| LCD display | | 800×600 color LCD display. The display shows the soft keys for the current function, frequency, amplitude and marker information. |
| Function keys | F1 ~ F7 | The F1 to F7 function keys directly correspond to the soft keys on the right-hand side of display. |
| Main keys | Frequency | Sets the center frequency, start frequency, stop frequency, center frequency step and frequency offset values. |

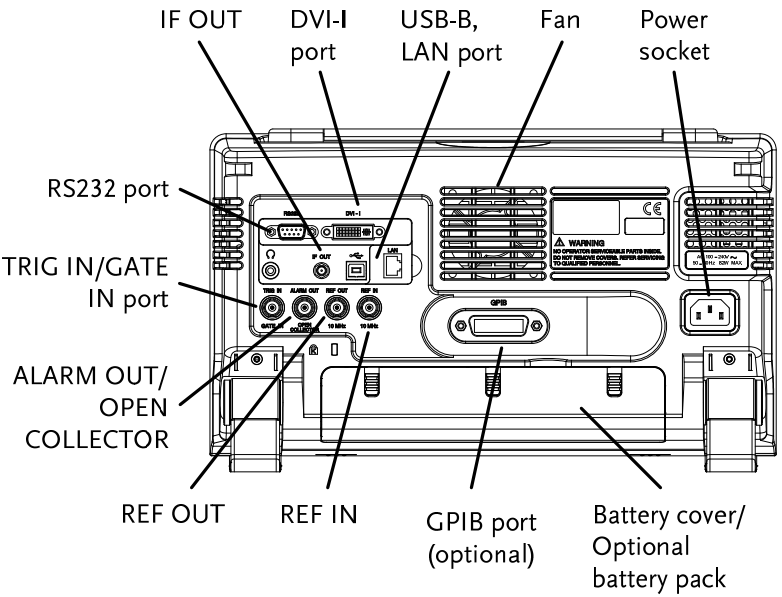
| | | |
|---|---|---|
| | Span | Sets the span, with options for full span, zero span and last span. |
| | Amplitude | Sets the amplitude reference level, attenuation, pre-amplifier controls, scale and other options for attenuation and scale. |
| | Autoset | Automatically searches the peak signal with maximum amplitude and displays it with appropriate horizontal and vertical scales. |
| Control keys | BW/Avg | Sets the resolution bandwidth, video bandwidth, average type and turns the EMI filter on/off. |
| | Sweep | Sets the sweep time and gate time. |
| | Trace | Sets traces and trace related functions. |
| | Display | The Display key configures the windowing mode and basic display properties. |
| | Meas | Accesses measurement options such as ACPR, OCBW, demodulation measurements, SEM, TOI and other advanced measurements. |
| | Limit Line | Sets and tests Pass/Fail limit lines. |
| | Sequence | Access, set and edit program sequences. |

| | | |
|---|---|---|
| | Trigger | Sets the triggering modes. |
| File | File | File utilities options |
| | Quick Save | The Quick Save utility allows you to save either the state, trace, screen limit line, correction or sequence with only a single press. |
| | Save | Save the trace, state etc., and save options. |
| | Recall | Recall the trace, state etc., and recall options. |
| Marker | Marker | Turns the Markers on/off and configures the markers. |
| | Marker-> | The *Marker→* key positions the markers on the trace. |
| | Peak Search | Finds each maximum and minimum peak. Used with the Marker function. |
| State | Preset<br>LOCAL | The *Preset* key will restore the spectrum analyzer to the Factory or User-defined settings.<br><br>The Preset key will also return the instrument back to local control after it has been in remote control mode. |

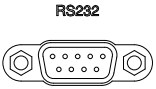
| | | |
|---|---|---|
| |  | The *Mode* key sets the spectrum analyzer to either Spectrum or Power Meter mode. |
| |  | The System key shows system information, settings and other system related functions. |
| Power key |  | Turns the instrument on/off. |
| Scroll wheel |  | Edit values, select listed items. |
| Arrow keys |  | Increment/decrement values (in steps), select listed items. |
| RF input terminal |  | RF input port. Accepts RF inputs.<br>• Maximum input: +33dBm<br>• Input impedance: 50Ω<br>• Maximum DC voltage: ±50V<br>• N-type: female |
| DC power supply |  | SMB port supplies power for optional accessories.<br>• DC +7V<br>• 500mA Max. |

| | | |
|---|---|---|
| Numeric keypad |  | The numeric keypad is used to enter vales and parameters. It is often used in conjunction with the arrow keys and scroll wheel. |
| TG output port |  | The Tracking Generator (TG) output source.<br>• N–type: female<br>• Input impedance: 50Ω<br>• Output power: –50dBm to 0dBm<br>• Maximum reversed power: +30dBm |
| USB A, Micro SD |  | USB A port, Micro SD port for saving/recalling settings/files. |

## Rear Panel




RS232

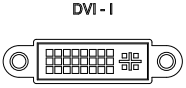



RS232 9 pin DSUB port.

IF OUT


SMA IF Out port.

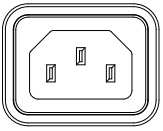
DVI-I



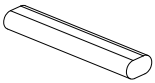

DVI video out port. Supports SVGA (800X600) @ 60Hz.

Fan

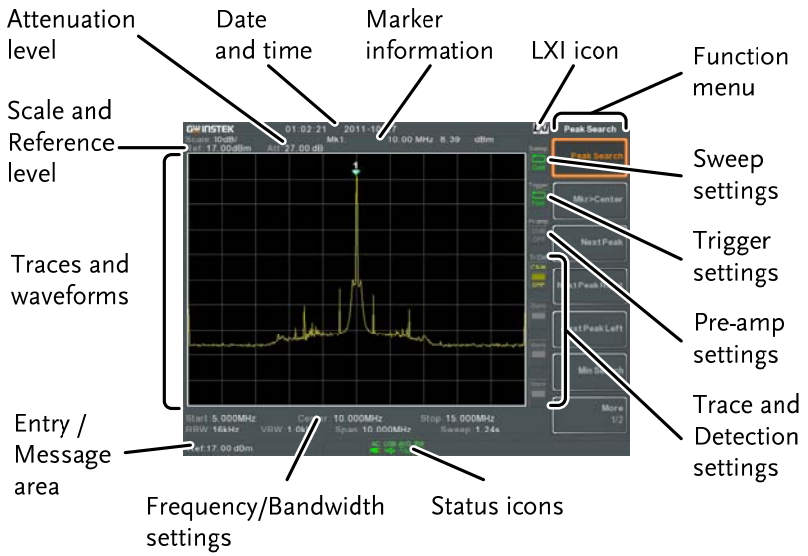
Power Socket



Power Socket:
100~240V, 50/60Hz.

| | | |
|---|---|---|
| Battery pack |  | Voltage: 10.8V<br>Capacity: 5200mAH |
| REF IN |  | BNC female reference input. |
| REF OUT |  | BNC female reference output:<br>10MHz, 50Ω impedance |
| Security Lock |  | |
| ALARM OUT |  | BNC female open collector Alarm output. |
| TRIG IN/GATE IN |  | BNC female 3.3V CMOS trigger input/gated sweep input. |
| Phone |  | 3.5mm stereo headphone jack (wired for mono operation) |
| USB B |  | USB B Device port. USB 1.1/2.0 |
| LAN |  | RJ-45 10Base-T/100Base-Tx |

## Display

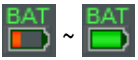



| | |
|---|---|
| Reference level | Displays the reference level. |
| Attenuation | Displays the vertical scale (attenuation) of the input signal. |
| Date/Time | Displays the date and time. |
| Marker information | Displays marker information. |
| LXI icon | This icon indicates the status of the LXI connection. For details, see page 25. |
| Function menu | Soft menu keys associated with the F1 to F7 function keys to the right of the display. |

| | | |
|---|---|---|
| Sweep settings |  | Sweep icon that shows the sweep status. |
| Trigger settings |  | Trigger icon that shows the trigger status. |
| Pre-amp settings |  | Pre-amplifier icon that shows the Pre-amplifier status. |
| Trace and detection settings |  | Trace icon that shows the trace type and the detection mode used for each trace. |

| | |
|---|---|
| Status Icons | Displays the interface status, power source status, and alarm status, etc. See the Status Icon Overview on page 21 for a list of the status icons. |
| Frequency/ Bandwidth settings | Displays the Start, Center and Stop frequencies, RBW, VBW, Span and Sweep settings. |
| Entry/Message area | This area is used to show system messages, errors and input values/parameters. |
| Trace and waveforms | Main display showing the input signals, traces, limit lines and marker positions. |

## Status Icon Overview

| | | |
|---|---|---|
| PreAmp |  | Indicates that the pre amplifier is on. |
| AC |  | Shown when running on AC power. |
| AC Charge |  | Shown when the AC power is charging the battery. |
| Alarm Off |  | Alarm buzzer output is currently off. |
| Alarm On |  | Alarm buzzer output is currently on. |
| Amplitude Offset |  | Indicates that the amplitude-shift is active. This icon appears when amplitude-related functions are used:<br>Reference level offset<br>Amplitude Correction<br>Input Z = 75Ω<br>Input Z cal >0 |
| Battery indicator |  | Indicates the battery charge. |
| Bandwidth Indicator |  | Indicates that the RBW or VBW settings are in manual mode. |
| Average |  | Indicates that the Average function is active. |
| External Lock |  | Indicates that the system is now locked and refers to the external reference input signal |

| | | |
|---|---|---|
| External Trigger |  | External trigger signal is being used. |
| Math |  | Trace math is being used. |
| Sequence Indicator |  | Shown when a sequence is running. |
| Sweep Indicator |  | Indicates that the sweep time is manually set. |
| Tracking generator |  | Indicates the tracking generator is turned on. |
| TG Normalization |  | Indicates that the tracking generator has been normalized. |
| Wake-up clock |  | Indicates that the wake-up clock is turned on. |
| USB |  | Indicates that a USB flash drive is inserted into the front panel and is recognized. |
| Micro SD |  | Indicates that a micro SD card is inserted into the front panel and is recognized. |

# REMOTE CONTROL

This chapter describes the basic configuration of IEEE488.2 based remote control. This chapter includesinterface configuration, a remote control overview as well as the control syntax and commands.

# Interface Configuration

## Configure to USB Remote Interface

| | | |
|---|---|---|
| USB configuration | PC side connector | Type A, host |
| | GSP side connector | Rear panel Type B, slave |
| | Speed | 1.1/2.0 (full speed/high speed) |
| | USB Class | USB TMC (USB T&M class) |

Panel operation

1. Connect the USB cable to the rear panel USB B port.

2. Press System >*More 1/2[F7]*>*RmtInterface Config[F2]*>*USB Mode* and toggle the USB mode to *Device*.

Note

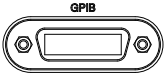
It may take a few moments to switch USB modes.

## Configure GPIB Interface

To use GPIB, the optional GPIB port must be installed.

Configure GPIB

3. Ensure the spectrum anlayzer is off before proceeding.
4. Connect a GPIB cable from a GPIB controller to the GPIB port on the spectrum analyzer.




5. Turn the spectrum analyzer on.

6. Press System >*More 1/2[F7]*>*RmtInterface Config[F2]*>*GPIB Addr* and set the GPIB address.

   GPIB address 0~30

GPIB constraints
- *Maximum 15 devices altogether, 20m cable length, 2m between each device*
- *Unique address assigned to each device*
- *At least 2/3 of the devices turned On*
- *No loop or parallel connection*

## Configure the LAN and LXI Interface

The GSP-930 is a class C LXI compliant instrument. The LXI specification allows instrumentation to be configured for basic remote control or monitoring over a LAN.

For details on the LXI specification and compliance classes, please see the LXI website @ http://www.lxistandard.org.

| | | |
|---|---|---|
| Background | The LAN interface is used for remote control over a network. The spectrum analyzer supports DHCP connections so the instrument can be automatically connected to an existing network. Alternatively, network settings can also be manually configured. | |
| LAN configuration Settings | IP Address | Default Gateway |
| | Subnet Mask | DNS Server |
| | DHCP on/off | |
| Connection | Connect an Ethernet cable from the network to the rear panel LAN port.   | |

Settings

7. Press System >*More 1/2[F7]*>*RmtInterface*> *LAN[F2]*>*LAN Config[F1]* to set the LAN settings:

| | |
|---|---|
| *IP Address[F1]* | Sets the IP address. |
| *Subnet Mask[F2]* | Sets the subnet mask. |
| *Default Gateway[F3]* | Sets the default gateway. |
| *DNS Server[F4]* | Sets the DNS server address |
| *LAN Config[F5]* | Toggles the LAN configuration between DHCP and manual settings. |

8. Press *Apply[F6]* to confirm the LAN configuration settings.

---

Display Icon


The LXI icon turns green when connected to a LAN and will flash if the "Identification" setting is on, see page 30.

---

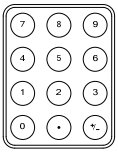
Set Password

The password on the LXI webpage can be set from the spectrum analyzer. The password is shown in the system information.

By default the password is set to: lxiWNpwd

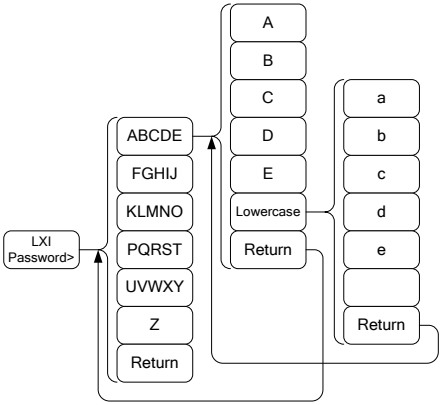
9. Press System >More 1/2[F7]>RmtInterface Config[F2]>LAN[F2]>LXIPassword[F2] to set the password.

10. Enter the password using the F1~F7 keys, as shown below, or use the numeric keypad to enter numbers:




Limitations:

- *No spaces*
- *Only 1~9, A~Z, a~z characters allowed*




Menu tree to enter the password

11. The password appears on the bottom of the screen as it is created.


12. Press Enter to confirm setting the password.

---

Reset LAN

It may be necessary to reset the LAN configuration settings before the LAN can be used.

13. Press System >More 1/2[F7]>RmtInterface Config[F2]>*LAN Reset[F3]* to reset the LAN.

14. The GSP-930 will now automatically reboot.

---

Note

Each time the LAN is reset, the default password is restored.

Default password: lxiWNpwd

## Configure RS232C

| | | |
|---|---|---|
| Background | The RS232C interface is used for remote control with a PC. | |
| RS232C Configuration settings | Baud Rate | Stop bit: 1 (fixed) |
| | Parity: none (fixed) | Data bit: 8 (fixed) |
| Connection | Connect an RS232C cable from the PC to the rear panel RS232 port. |   |

15. Press System >*More 1/2[F7]*>*RmtInterface Config*>*RS232 BaudRate[F4]* to set the baud rate.

| | | |
|---|---|---|
| 300 | 600 | 1200 |
| 2400 | 4800 | 9600 |
| 19200 | 38400 | 57600 |
| 115200 | | |

## RS232C Remote Control Function Check

| | |
|---|---|
| Functionality check | Invoke a terminal application such as MTTTY (Multi-Threaded TTY).<br><br>To check the COM port No, see the Device Manager in the PC. For WinXP; Control panel → System → Hardware tab. |
| | Run this query command via the terminal after the instrument has been configured for RS232 remote control (page 26).<br><br>*idn? |

This should return the Manufacturer, Model number, Serial number, and Firmware version in the following format.

- *GW-INSTEK,GSP-930,* XXXXXXXXXXXX*, V.X.X.X.X*

Manufacturer: GW-INSTEK
Model number : GSP-930
Serial number : XXXXXXXXXXXX
Firmware version : V.X.X.X

| | |
|---|---|
| Note | For further details, please see the programming manual, available on the GW Instek web site @ www.gwinstek.com. |

## LXI Browser Interface and Function Check

Functionality check

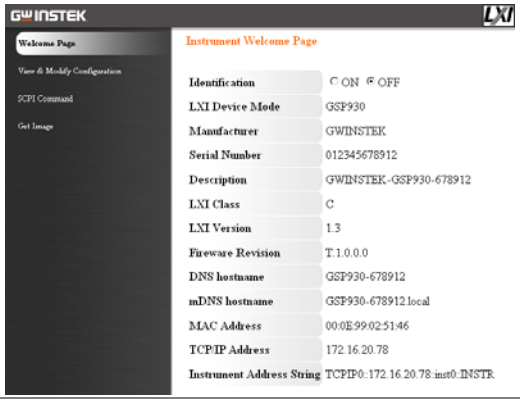
Enter the IP address of the spectrum analyzer in a web browser after the instrument has been configured and connected to the LAN (page 25).

http:// XXX.XXX.XXX.XXX

The web browser interface appears:

Welcome Page

The Welcome Page lists all the LXI and LAN configuration settings as well as the instrument identification. The instrument identification can be disabled from this page.




Note

The LXI icon in the GSP-930 display will flash when the Identification setting is turned on.

View & Modify Configuration

The View & Modify Configuration allows you to modify the LAN settings from the browser. A password must be entered to alter the settings.

Password: lxiWNpwd
[Note: password is case sensitive.]


Note

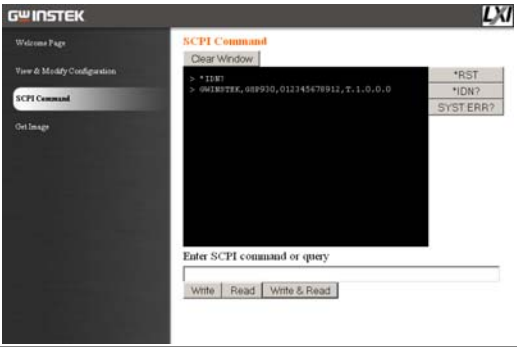
If the "Factory Defaults" option is chosen, the password will be reset back to the default password

It will also be necessary to manually reset the spectrum analyzer when a message prompts you to do so on the web browser.

SCPI Command

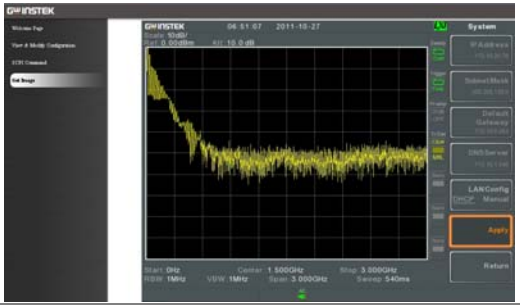
The SCPI Command page allows you to enter SCPI commands directly from the browser for full remote control. Please see the programming manual for details. A password must be entered before remote commands can be used.

Password: lxiWNpwd
[Note: password is case sensitive.]




Get Image

The Get Image page allows the browser to remotely capture a screenshot of the GSP-930 display.



Note

For further details, please see the programming manual, available on the GW Instek web site @ www.gwinstek.com.

## GPIB/LAN Control Function Check

| | |
|---|---|
| Functionality check | Please use the National Instruments Measurement & Automation Controller software to confirm GPIB/LAN functionality.<br><br>See the National Instrument website, http://www.ni.com for details. |
| Note | For further details, please see the programming manual, available on the GW Instek web site @ www.gwinstek.com. |

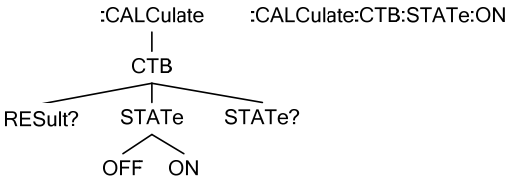
# Command Syntax

| | | |
|---|---|---|
| Compatible Standard | IEEE488.2 | Partial compatibility |
| | SCPI, 1999 | Partial compatibility |

**Command Structure**

SCPI commands follow a tree-like structure, organized into nodes. Each level of the command tree is a node. Each keyword in a SCPI command represents each node in the command tree. Each keyword (node) of a SCPI command is separated by a colon (:).

For example, the diagram below shows an SCPI sub-structure and a command example.




**Command types**

There are a number of different instrument commands and queries. A command sends instructions or data to the unit and a query receives data or status information from the unit.

Command types

| | |
|---|---|
| Simple | A single command with/without a parameter |
| Example | *IDN? |

| | | |
|---|---|---|
| | Query | A query is a simple or compound command followed by a question mark (?). A parameter (data) is returned. |
| | Example | CALCulate:CSO:STATe? |
| | Compound | Two or more commands on the same command line. Compound commands are separated with either a semi-colon (;) or a semi-colon and a colon (;:).<br><br>A semi-colon is used to join two related commands, with the caveat that the last command must begin at the last node of the first command.<br><br>A semi-colon and colon are used to combine two commands from different nodes. |
| | Example | :calc:acpr:stat?;:calc:cso:stat? |

Command Forms

Commands and queries have two different forms, long and short. The command syntax is written with the short form of the command in capitals and the remainder (long form) in lower case.

The commands can be written in capitals or lower-case, just so long as the short or long forms are complete. An incomplete command will not be recognized.

Below are examples of correctly written commands.

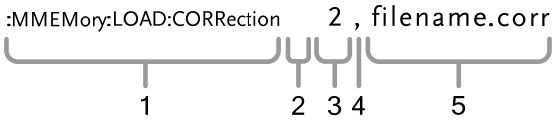
| | | |
|---|---|---|
| | Long form | CALCulate:ACPR:STATe?<br>calculate:acpr:state?<br>CALCULATE:ACPR:STATE? |
| | Short form | CALC:ACPR:STAT?<br>calc:acpr:stat? |

Square Brackets

Commands that contain square brackets indicate that the contents are optional. The function of the command is the same with or without the square bracketed items, as shown below.

Both ":OUTPut[:STATe]?" and "OUTPut" are both valid forms.

Command Format




1. Command header
2. Space
3. Parameter 1
4. Comma (no space before/after comma)
5. Parameter 2

Common parameters

| Type | Description | Example |
|---|---|---|
| <Boolean> | Boolean logic | 0, 1 |
| <NR1> | integers | 0, 1, 2, 3 |
| <NR2> | decimal numbers | 0.1, 3.14, 8.5 |
| <NR3> | floating point | 4.5e-1, 8.25e+1 |
| <NRf> | any of NR1, 2, 3 | 1, 1.5, 4.5e-1 |
| <freq> | NR3 + unit | 2.5 mhz |
| <limit num> | NR1 | |
| <point> | NR1 | |
| <offset> | NR3 + unit | 30 db |
| <rel_ampl> | NR3 + unit | 30 db |

| | | | |
|---|---|---|---|
| | <ampl> | NR3 + | 30 mv |
| | <trace name> | NR1 | trace1 |
| | <time> | NR3 + unit | 2.3e-6 ms |
| | <ip address> | string | 172.16.20.20 |
| Message Terminator | LF | Line feed code | |

# Status Registers

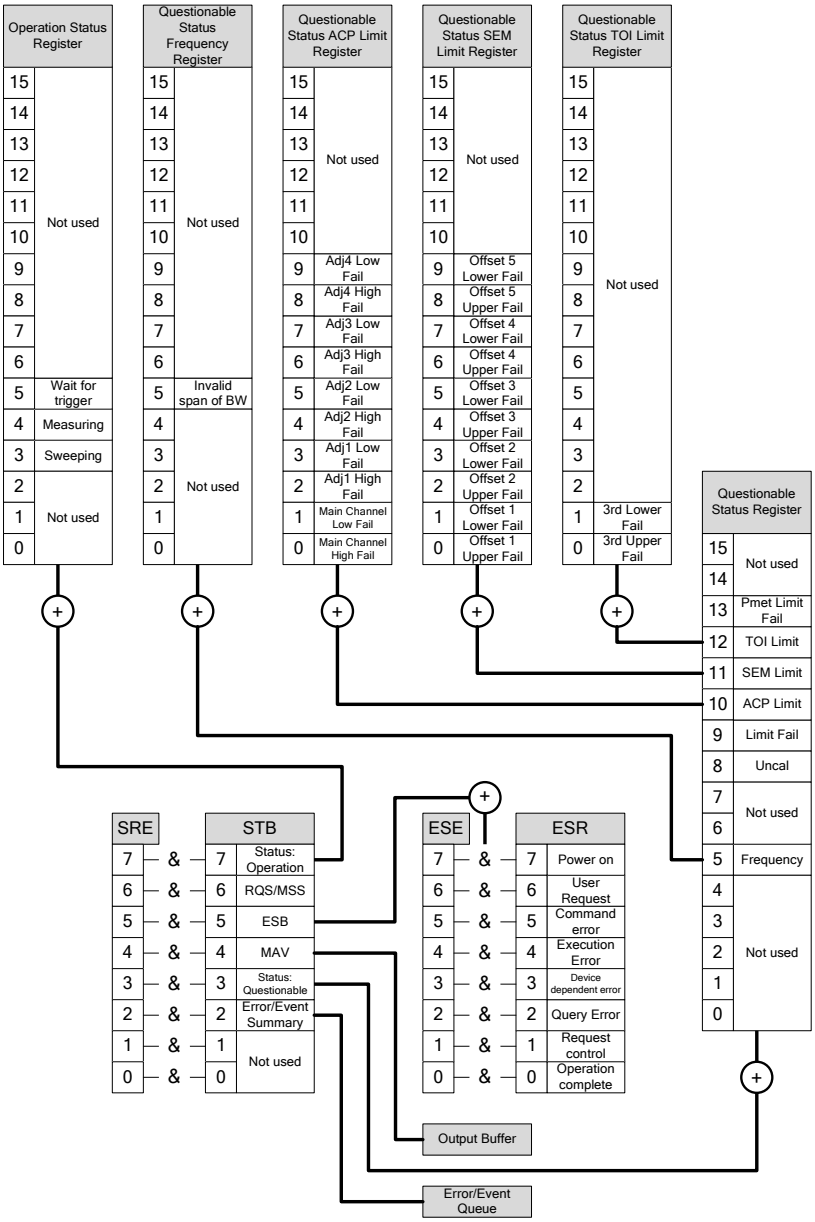
## Status Registers Overview

Description

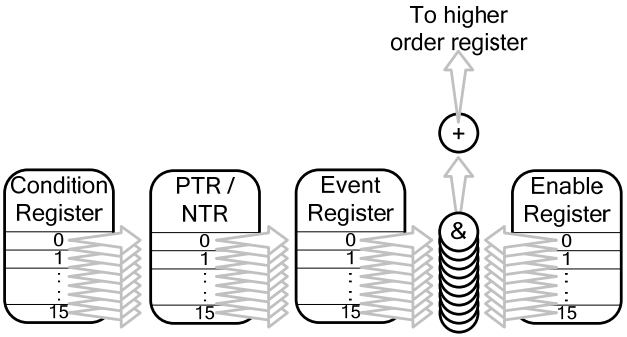
The status registers are used to determine the status of the spectrum analyzer. The status registers maintain the status of the pass/fail limits, trigger status and other operation statuses.

The status registers are arranged in a number of groups:

- *Questionable Status Registers*
- *Standard Event Status Registers*
- *Operation Status Registers*
- *Status Byte Register*
- *Service Request Enable Register*
- *Error/Event Queue*
- *Output Buffer*


Operation Status Register
15
14
13
12
11
10
9
8
7
6
Not used
5
Wait for trigger
4
Measuring
3
Sweeping
2
1
Not used
0
Questionable Status Frequency Register
15
14
13
12
11
10
9
8
7
6
Not used
5
Invalid span of BW
4
3
2
Not used
1
0
Questionable Status ACP Limit Register
15
14
13
12
11
10
Not used
9
Adj4 Low Fail
8
Adj4 High Fail
7
Adj3 Low Fail
6
Adj3 High Fail
5
Adj2 Low Fail
4
Adj2 High Fail
3
Adj1 Low Fail
2
Adj1 High Fail
1
Main Channel Low Fail
0
Main Channel High Fail
Questionable Status SEM Limit Register
15
14
13
12
11
10
Not used
9
Offset 5 Lower Fail
8
Offset 5 Upper Fail
7
Offset 4 Lower Fail
6
Offset 4 Upper Fail
5
Offset 3 Lower Fail
4
Offset 3 Upper Fail
3
Offset 2 Lower Fail
2
Offset 2 Upper Fail
1
Offset 1 Lower Fail
0
Offset 1 Upper Fail
Questionable Status TOI Limit Register
15
14
13
12
11
10
9
8
7
6
5
4
3
2
Not used
1
3rd Lower Fail
0
3rd Upper Fail
Questionable Status Register
15
14
Not used
13
Pmet Limit Fail
12
TOI Limit
11
SEM Limit
10
ACP Limit
9
Limit Fail
8
Uncal
7
6
Not used
5
Frequency
4
3
2
Not used
1
0
SRE
7 & 7
6 & 6
5 & 5
4 & 4
3 & 3
2 & 2
1 & 1
0 & 0
STB
7 Status: Operation
6 RQS/MSS
5 ESB
4 MAV
3 Status: Questionable
2 Error/Event Summary
1
Not used
0
ESE
7 & 7
6 & 6
5 & 5
4 & 4
3 & 3
2 & 2
1 & 1
0 & 0
ESR
7 Power on
6 User Request
5 Command error
4 Execution Error
3 Device dependent error
2 Query Error
1 Request control
0 Operation complete
Output Buffer
Error/Event Queue

| | |
|---|---|
| Status Register Structure | Each status register (excluding the status byte register) is divided into a number of register structures:<br>• *Condition register*<br>• *Positive transition register*<br>• *Negative transition register*<br>• *Event Register*<br>• *Event Enable Register* |
| Condition Registers | The condition registers report the state of the GSP-930. Condition registers can only be read. |
| PTR Registers | The positive transistion registers are used to filter for events that occur from a negative to a positive transition. |
| NTR Registers | The negative transition registers are used to filter for events that occur from a positive to negative transistion. |
| Event Registers | The PTR/NTP registers dictate the type transistion conditions that will set the corresponding bits in the event registers. The event registers can only be read. Reading an event register will clear it. |
| Event Enable Registers | The event enable registers determine which events in the corresponding event registers will set the summary bits in a higher-order register. |




## Status Byte Register (STB)

Overview

The Status Byte register consolidates the status events of all the status registers. The Status Byte register can be cleared with the *CLS command.

Any bits set in the Status byte register acts as a summary register for all the other status registers and indicates if there is a service request, an error in the Error Queue or data in the Output Queue. Reading the Status Byte register will reset the register to 0.

The Service Request Enable Register controls which bits in the Status Byte Register are able to generate service requests.

Bit Summary

| Bit | Weight | Description |
|---|---|---|
| 2 | 4 | Error/Event Queue Summary bit: This bit is set when there is a message in the error queue. |
| 3 | 8 | Questionable Status Summary Bit: This is the summary bit for the Questionable Status Register. |
| 4 | 16 | MAV: This bit is set when there is a message in the output queue. |

| | | |
|---|---|---|
| 5 | 32 | ESB: This is the summary bit for the Standard Event Register. |
| 6 | 64 | MSS/RQS: The MSS bit is the summary bit for the Service Request Enable Register. The RQS bit is set to 1 when the MSS bit is set to 1. |
| 7 | 128 | Operation Status Summary Bit: This is the summary bit for the Operation Status Register. |

## Standard Event Status Register (ESR)

Overview: The Standard Event Status Register Group indicates if any errors have occurred or fail limits tripped. Reading this register will clear the register.

Bit Summary

| Bit | Weight | Description |
|---|---|---|
| 2 | 4 | Query Error: When a query error has occurred, this bit is set to 1. |
| 3 | 8 | Device-Specific Error: When a device dependent error has occurred, this bit is set to 1. |
| 4 | 16 | Execution Error: When an execution error has occurred, this bit is set to 1. |
| 5 | 32 | Command Error: When a command error has occurred, this bit is set to 1. |
| 6 | 64 | User Request: When a panel key is pressed, this bit is set to 1. |
| 7 | 128 | Power On: When the instrument is turned off → on, this bit is set to 1. |

## Operation Status Register

Overview: The Operation Status Register Group indicates the operating status of the GSP-930.

Bit Summary

| Bit | Weight | Description |
|---|---|---|
| 3 | 8 | Sweeping: Indicates that a sweep is in progress. |
| 4 | 16 | Measuring: The instrument is currently performing a measurement. |
| 5 | 32 | Waiting for Trigger: The instrument is in a “wait for trigger” state. |

## Questionable Status Register

Overview: The Questionable Status Register Group indicates if any limits have been tripped.

Bit Summary

| Bit | Weight | Description |
|---|---|---|
| 5 | 32 | Frequency Status Summary Bit: This is the summary bit of the Frequency Status Register. |
| 8 | 256 | Uncal: The bit is set when an signal level occurs because the sweep is too fast |
| 9 | 512 | Limit fail: This bit is set to 1 when the limit line has been violated. |
| 10 | 1024 | ACP Limit Status Summary Bit: This is the summary bit for the ACP Limit Status Register. |
| 11 | 2048 | SEM Limit Status Summary Bit: This is the summary bit for the SEM Limit Status Register. |
| 12 | 4096 | TOI Limit Status Summary Bit: This is the summary bit for the TOI Limit Status Register. |

| | | |
|---|---|---|
| 13 | 8192 | Pmet Limit Fail: This bit is set to 1 when the power meter limit has been violated. |

## Questionable Status Frequency Register

Overview: The Questionable Status Frequency Register indicates if the span or BW settings are invalid.

Bit Summary

| Bit | Weight | Description |
|---|---|---|
| 5 | 32 | Invalid Span or BW: This is bit is set to 1 when there is an invalid span or bandwidth (setting) during the frequency count. |

## Questionable Status ACP Limit Register

Overview: The Questionable Status ACP Limit Register Group indicates if any adjacent channel limits have been tripped.

Bit Summary

| Bit | Weight | Description |
|---|---|---|
| 0 | 1 | Main Channel High Fail: This bit is set to 1 when the Main CH HLimit has been violated. |
| 1 | 2 | Main Channel Low Fail: This bit is set to 1 when the Main CH LLimit has been violated. |
| 2 | 4 | Adj1 High Fail: This bit is set to 1 when the ADJCH 1 HLimit has been violated. |
| 3 | 8 | Adj1 Low Fail: This bit is set to 1 when the ADJCH 1 LLimit has been violated. |
| 4 | 16 | Adj2 High Fail: This bit is set to 1 when the ADJCH 2 HLimit has been violated. |
| 5 | 32 | Adj2 Low Fail: This bit is set to 1 when the ADJCH 2 LLimit has been violated. |
| 6 | 64 | Adj3 High Fail: This bit is set to 1 when the ADJCH 3 HLimit has been violated. |
| 7 | 128 | Adj3 Low Fail: This bit is set to 1 when the ADJCH 3 LLimit has been violated. |

## Questionable Status SEM Limit Register

Overview

The Questionable Status SEM Limit Register Group indicates if any of the SEM offset limits have been tripped.

| Bit Summary | Bit | Weight | Description |
|---|---|---|---|
| | 0 | 1 | Offset 1 Upper Fail: This bit is set to 1 when the XXX upper limit has been violated. |
| | 1 | 2 | Offset 1 lower Fail: This bit is set to 1 when the XXX lower limit has been violated. |
| | 2 | 4 | Offset 2 Upper Fail: This bit is set to 1 when the XXX upper limit has been violated. |
| | 3 | 8 | Offset 2 lower Fail: This bit is set to 1 when the XXX lower limit has been violated. |
| | 4 | 16 | Offset 3 Upper Fail: This bit is set to 1 when the XXX upper limit has been violated. |
| | 5 | 32 | Offset 3 lower Fail: This bit is set to 1 when the XXX lower limit has been violated. |
| | 6 | 64 | Offset 4 Upper Fail: This bit is set to 1 when the XXX upper limit has been violated. |
| | 7 | 128 | Offset 4 lower Fail: This bit is set to 1 when the XXX lower limit has been violated. |
| | 8 | 256 | Offset 5 Upper Fail: This bit is set to 1 when the XXX upper limit has been violated. |
| | 9 | 512 | Offset 5 lower Fail: This bit is set to 1 when the XXX lower limit has been violated. |

## Questionable Status TOI Limit Register

Overview

The Questionable Status TOI Limit Register Group indicates if the 3rd Order Upper or Lower limit has been tripped.

Bit Summary

| Bit | Weight | Description |
|---|---|---|
| 0 | 1 | 3rd Upper Fail: This bit is set to 1 when the 3rd Order Upper limit has been tripped. |
| 1 | 2 | 3rd Lower Fail: This bit is set to 1 when the 3rd Order Lower limit has been tripped. |

# Command List

## SCPI Commands



## *CLS

Set →

| | |
|---|---|
| Description | The *CLS command clears the Standard Event Status, Operation Status and Questionable Status registers. The corresponding Enable registers in each of the above registers are not cleared.<br>If a <NL> newline code immediately precedes a *CLS command, the Error Que and the MAV bit in the Status Byte Register is also cleared. |
| Syntax | *CLS |

## *IDN

→ Query

| | |
|---|---|
| Description | Queries the manufacturer, model number, serial number, and firmware version of the instrument. |
| Query Syntax | *IDN? |

| | | |
|---|---|---|
| Return parameter | <string> | Returns the instrument identification as a string in the following format:<br>GW-INSTEK,GSP-930, XXXXXXXXXXXX,V.X.X.X.X<br>Manufacturer: GW-INSTEK<br>Model number : GSP-930<br>Serial number : XXXXXXXXXXXX<br>Firmware version : V.X.X.X.X |

## *ESE

Set → / → Query

| | |
|---|---|
| Description | Sets or queries the Standard Event Status Enable register. |
| Syntax | *ESE <NR1> |
| Query Syntax | *ESE? |
| Parameter | <NR1> 0~255 |
| Return parameter | <NR1> Returns the bit sum of the Standard Event Status Enable register. |

## *ESR?

→ Query

| | |
|---|---|
| Description | Queries the Standard Event Status register. The Event Status register is cleared after it is read. |
| Query Syntax | *ESR? |
| Return parameter | <NR1> Returns the bit sum of the Standard Event Status register and clears the register. |

## *OPC

Set → / → Query

| | |
|---|---|
| Description | The *OPC command sets the OPC bit (bit0) of the Standard Event Status Register when all current commands have been processed.<br>The *OPC? Query returns 1 when all the outstanding commands have completed. |

| | | |
|---|---|---|
| Syntax | *OPC | |
| Query Syntax | *OPC? | |
| Return parameter | 1 | Returns 1 when all the outstanding commands have completed. |

## *RST

Set →

| | |
|---|---|
| Description | Performs a device reset. Configures the unit to a known configuration (default settings). This known configuration is independent of the usage history. |
| Syntax | *RST |

## *SRE

Set →
→ Query

| | | |
|---|---|---|
| Description | Sets or queries the Service Request Enable register. The Service Request Enable register determines which registers of the Status Byte register are able to generate service requests. | |
| Syntax | *SRE <NR1> | |
| Query Syntax | *SRE? | |
| Parameter | <NR1> | 0~255 |
| Return parameter | <NR1> | Returns the bit sum of the Service Request Enable register. |

## *STB?

→ Query

| | | |
|---|---|---|
| Description | Queries the bit sum of the Status Byte register with MSS (Master summary Status). | |
| Query Syntax | *STB? | |
| Return parameter | <NR1> | Returns the bit sum of the Status Byte register with the MSS bit (bit 6). |

## *TST

→ Query

| | | |
|---|---|---|
| Description | Executes a self test. | |
| Query Syntax | *TST? | |
| Return parameter | 0 | Returns "0" if there are no errors. |
| | <NR1> | Returns an error code <NR1> if there is an error. |

## *WAI

Set →

| | |
|---|---|
| Description | Prevents any other commands or queries from being executed until all outstanding commands have completed. |
| Syntax | *WAI |

## CALCulate Commands

## :CALCulate:ACPR:ACHannel<n>:HLIMit: FAIL?

→ Query

| | | |
|---|---|---|
| Description | Returns the ACPR upper limit pass/fail judgment for the selected channel. | |
| Query Syntax | :CALCulate:ACPR:ACHannel<n>:HLIMit:FAIL? | |
| Parameter | <n> | <NR1>adjacent channel 1~3 |
| Return parameter | 0 | <boolean>Pass |
| | 1 | <boolean>Fail |

| | |
|---|---|
| Query Example | :CALC:ACPR:ACH<n>:HLIM:FAIL?<br>>0 |

## :CALCulate:ACPR:ACHannel<n>:LLIMit:FAIL? → Query

| | | |
|---|---|---|
| Description | Returns the ACPR lower limit pass/fail judgment for the selected channel. | |
| Query Syntax | :CALCulate:ACPR:ACHannel<n>:LLIMit:FAIL? | |
| Parameter | <n> | <NR1>adjacent channel 1~3 |
| Return parameter | 0<br>1 | <boolean>Pass<br><boolean>Fail |
| Query Example | :CALC:ACPR:ACH1:LLIM:FAIL?<br>>0 | |

## :CALCulate:ACPR:ACHannel<n>:LOWer? → Query

| | | |
|---|---|---|
| Description | Returns the ACPR adjacent channel lower bandwidth for the selected channel. | |
| Query Syntax | :CALCulate:ACPR:ACHannel<n>:LOWer? | |
| Parameter | <n> | <NR1>adjacent channel 1~3 |
| Return parameter | <NR3> | Adjacent bandwidth in dBm |
| Query Example | :CALC:ACPR:ACH1:LOW?<br>>1.801e+01 | |

## :CALCulate:ACPR:ACHannel<n>:UPPer? → Query

| | |
|---|---|
| Description | Returns the ACPR adjacent channel upper bandwidth for the selected channel. |
| Query Syntax | :CALCulate:ACPR:ACHannel<n>:UPPer? |

| | | |
|---|---|---|
| Parameter | <n> | <NR1>adjacent channel 1~3 |
| Return parameter | <NR3> | Adjacent bandwidth in dBm |
| Query Example | :CALC:ACPR:ACH1:UPP?<br>>1.921e+01 | |

## :CALCulate:ACPR:ACHannel<n>:STATe

Set / Query

| | | |
|---|---|---|
| Description | Sets or queries the state of the selected adjacent channel. | |
| Syntax | :CALCulate:ACPR:ACHannel<n>:STATe {OFF\|ON\|0\|1} | |
| Query Syntax | :CALCulate:ACPR:ACHannel<n>:STATe? | |
| Parameter | <n> | <NR1>adjacent channel 1~3 |
| | 0 | Disable the selected channel. |
| | 1 | Enable the selected channel. |
| | OFF | Disable the selected channel. |
| | ON | Enable the selected channel. |
| Return parameter | 0 | The selected channel is enabled. |
| | 1 | The selected channel is disabled. |
| Query Example | :CALC:ACPR:ACH1:STAT?<br>>1 | |

## :CALCulate:ACPR:CHANnel:HLIMit:FAIL?

Query

| | | |
|---|---|---|
| Description | Returns the ACPR upper limit pass/fail judgment for the main channel. | |
| Query Syntax | :CALCulate:ACPR:CHANnel:HLIMit:FAIL? | |
| Return parameter | 0 | <boolean>Pass |
| | 1 | <boolean>Fail |
| Query Example | :CALC:ACPR:CHAN:HLIM:FAIL?<br>>0 | |

## :CALCulate:ACPR:CHAN:LLIMit:FAIL? → Query

| | | |
|---|---|---|
| Description | Returns the ACPR lower limit pass/fail judgment for the main channel. | |
| Query Syntax | :CALCulate:ACPR:CHAN:LLIMit:FAIL? | |
| Return parameter | 0 | <boolean>Pass |
| | 1 | <boolean>Fail |
| Query Example | :CALC:ACPR:CHAN:LLIM:FAIL?<br><0 | |

## :CALCulate:ACPR:CHPower? → Query

| | | |
|---|---|---|
| Description | Returns the ACPR main channel power in the current chosen unit (default dBm). | |
| Query Syntax | :CALCulate:ACPR:CHPower? | |
| Return parameter | <NR3> | Power |
| Query Example | :CALC:ACPR:CHP?<br><-1.028e+02 | |

## :CALCulate:ACPR:STATe → Set / → Query

| | | |
|---|---|---|
| Description | Sets or queries the state of the main channel. | |
| Syntax | :CALCulate:ACPR:STATe {OFF\|ON\|0\|1} | |
| Query Syntax | :CALCulate:ACPR:STATe? | |
| Parameter | 0 | Main channel is disabled. |
| | 1 | Main channel is enabled. |
| | OFF | Main channel is disabled. |
| | ON | Main channel is enabled. |
| Return parameter | 0 | Main channel is enabled. |
| | 1 | Main channel is disabled. |

| | |
|---|---|
| Query Example | :CALC:ACPR:STAT?<br>>1 |

## :CALCulate:CNR:RESult? → Query

| | | |
|---|---|---|
| Description | Returns the CNR measurement result in dB. | |
| Query Syntax | :CALCulate:CNR:RESult? | |
| Return parameter | <NR3> | CNR measurement in dB |
| Query Example | :CALC:CNR:RES?<br>>-4.959e+01 | |

## :CALCulate:CNR:STATe → Set → Query

| | | |
|---|---|---|
| Description | Sets or queries the state of the CNR measurement function. | |
| Syntax | :CALCulate:CNR:STATe {ON\|OFF\|1\|0} | |
| Query Syntax | :CALCulate:CNR:STATe? | |
| Parameter | 0 | CNR is off. |
| | 1 | CNR is on. |
| | OFF | CNR is off. |
| | ON | CNR is on. |
| Return parameter | 0 | CNR is off. |
| | 1 | CNR is on. |
| Query Example | :CALC:CNR:STAT?<br>>1 | |

## :CALCulate:CSO:RESult? → Query

| | |
|---|---|
| Description | Returns the CSO measurement result in dB. |
| Query Syntax | :CALCulate:CSO:RESult? |

| | | |
|---|---|---|
| Return parameter | <NR3> | CSO measurement in dB |
| Query Example | :CALC:CSO:RES?<br>>4.04e+00 | |

## :CALCulate:CSO:STATe

Set → / → Query

| | | |
|---|---|---|
| Description | Sets or queries the state of the CSO measurement function. | |
| Syntax | :CALCulate:CSO:STATe {ON\|OFF\|1\|0} | |
| Query Syntax | :CALCulate:CSO:STATe? | |
| Parameter | 0 | CSO is off. |
| | 1 | CSO is on. |
| | OFF | CSO is off. |
| | ON | CSO is on. |
| Return parameter | 0 | CSO is off. |
| | 1 | CSO is on. |
| Query Example | :CALC:CSO:STAT?<br>>1 | |

## :CALCulate:CTB:RESult?

→ Query

| | | |
|---|---|---|
| Description | Returns the CTB measurement result in dB. | |
| Query Syntax | :CALCulate:CTB:RESult? | |
| Return parameter | <NR3> | CTB measurement in dB |
| Query Example | :CALC:CTB:RES?<br>>-4.237e+01 | |

## :CALCulate:CTB:STATe

Set → / → Query

| | |
|---|---|
| Description | Sets or queries the state of the CTB measurement function. |
| Syntax | :CALCulate:CTB:STATe {ON\|OFF\|1\|0} |

| | | |
|---|---|---|
| Query Syntax | :CALCulate:CTB:STATe? | |
| Parameter | 0 | CTB is off. |
| | 1 | CTB is on. |
| | OFF | CTB is off. |
| | ON | CTB is on. |
| Return parameter | 0 | CTB is off. |
| | 1 | CTB is on. |
| Query Example | :CALC:CTB:STAT?<br>>0 | |

## :CALCulate:CTB:RESTart Set

| | |
|---|---|
| Description | Restarts the CTB measurement. |
| Syntax | :CALCulate:CTB:RESTart |

## :CALCulate:DELTamarker<n>:PAIR:SPAN Set

| | | |
|---|---|---|
| Description | Sets the span between the chosen marker and the delta marker. | |
| Syntax | :CALCulate:DELTamarker<n>:PAIR:SPAN <freq> | |
| Parameter | <freq> | <NR3> frequency of span in Hz. |
| Example | :CALC:DELT1:PAIR:SPAN 1e+9 | |

## :CALCulate:DELTamarker<n>:PAIR:CENTer Set

| | | |
|---|---|---|
| Description | Sets the frequency span between the chosen marker and the delta marker, centered from the center frequency. | |
| Syntax | :CALCulate:DELTamarker<n>:PAIR:CENTer <freq> | |
| Parameter | <freq> | <NR3> frequency of span in Hz. |
| Example | :CALC:DELT1:PAIR:CENT 1e+9 | |

## :CALCulate:DELTamarker<n>:X

Set → / → Query

| | | |
|---|---|---|
| Description | Sets or queries the selected delta marker position. | |
| Syntax | :CALCulate:DELTamarker<n>:X <freq> | |
| Query Syntax | :CALCulate:DELTamarker<n>:X? | |
| Parameter | <n> | Marker number. |
| Return parameter | <freq> | <NR3> frequency in Hz. |
| Example | :CALC:DELT1:X?<br>>1e+9 | |

## :CALCulate:DELTamarker<n>:Y

Set → / → Query

| | | |
|---|---|---|
| Description | Returns the selected delta marker Y axis value. The Y axis units are the same as the units used for the trace (default=dBm). | |
| Query Syntax | :CALCulate:DELTamarker<n>:Y? | |
| Parameter | <n> | Marker number. |
| Return parameter | <freq> | <NR3> frequency in Hz. |
| Example | :CALC:DELT1:Y?<br>>−1.032e+1 | |

## :CALCulate:DEMod:AM:RESult:CURRent?

→ Query

| | | |
|---|---|---|
| Description | Returns the measurement results for AM demodulation as a comma separated string. | |
| Query Syntax | :CALCulate:DEMod:AM:RESult:CURRent? | |
| Return parameter | <depth,mode,rate,power,carr freq, offset,sinad> | |
| | depth | Modulation depth in %. |
| | mode | AM. |
| | rate | Modulation rate in Hz. |

| | | |
|---|---|---|
| | power | Carrier power in dBm. |
| | carr freq. | Carrier frequency in Hz. |
| | offset | Carrier frequency offset in Hz. |
| | sinad | Signal to noise and distortion ratio in dB |
| Query Example | :CALC:DEM:AM:RES:CURR?<br>>9.840e+1,1.02e+2,-1.12e+1,3.21e+1,-1.14e+1,<br>2.7e+3,1.61e+1 | |

## :CALCulate:DEMod: AM:RESult:MINimum? → Query

| | | |
|---|---|---|
| Description | Returns the minimum recorded measurement results for AM demodulation as a comma separated string. | |
| Query Syntax | :CALCulate:DEMod:AM:RESult:MINimum? | |
| Return parameter | <depth,mode,rate,power,carr freq, offset,sinad> | |
| | depth | Modulation depth in %. |
| | mode | AM. |
| | rate | Modulation rate in Hz. |
| | power | Carrier power in dBm. |
| | carr freq. | Carrier frequency in Hz. |
| | offset | Carrier frequency offset in Hz. |
| | sinad | Signal to noise and distortion ratio in dB |
| Query Example | :CALC:DEM:AM:RES:MIN?<br>>9.840e+1,1.02e+2,-1.12e+1,3.21e+1,-1.14e+1,<br>2.7e+3,1.61e+1 | |

## :CALCulate:DEMod: AM:RESult:MAXimum? → Query

| | | |
|---|---|---|
| Description | Returns the maximum recorded measurement results for AM demodulation as a comma separated string. | |
| Query Syntax | :CALCulate:DEMod:AM:RESult:MAXimum? | |
| Return parameter | <depth,mode,rate,power,carr freq, offset,sinad> | |
| | depth | Modulation depth in %. |
| | mode | AM. |
| | rate | Modulation rate in Hz. |

| | | |
|---|---|---|
| | power | Carrier power in dBm. |
| | carr freq. | Carrier frequency in Hz. |
| | offset | Carrier frequency offset in Hz. |
| | sinad | Signal to noise and distortion ratio in dB |
| Query Example | :CALC:DEM:AM:RES:MAX?<br>>9.840e+1,1.02e+2,−1.12e+1,3.21e+1,−1.14e+1,<br>2.7e+3,1.61e+1 | |

## :CALCulate:DEMod:AM:STATe

Set / Query

| | | |
|---|---|---|
| Description | Sets or queries the state of the AM Analysis function. | |
| Syntax | :CALCulate:DEMod:AM:STATe {ON\|OFF\|1\|0} | |
| Query Syntax | :CALCulate:DEMod:AM:STATe? | |
| Parameter | 0 | Turn AM Analysis off. |
| | 1 | Turn AM Analysis on. |
| | OFF | Turn AM Analysis off. |
| | ON | Turn AM Analysis on. |
| Return parameter | 0 | AM Analysis is off. |
| | 1 | AM Analysis is on. |
| Example | :CALC:DEM:AM:STAT 1 | |

## :CALCulate:DEMod:EARPhone:STATe

Set / Query

| | | |
|---|---|---|
| Description | Sets or queries the state of the ear phone out port. | |
| Syntax | :CALCulate:DEMod:EARPhone:STATe {ON\|OFF\|1\|0} | |
| Query Syntax | :CALCulate:DEMod:EARPhone:STATe? | |
| Parameter | 0 | Turn the phone output off. |
| | 1 | Turn the phone output on. |
| | OFF | Turn the phone output off. |
| | ON | Turn the phone output on. |
| Return parameter | 0 | Phone output is off. |
| | 1 | Phone output is on. |

| | |
|---|---|
| Example | :CALC:DEM:EARP:STAT 1 |

## :CALCulate:DEMod:FM:RESult:CURRent? → Query

| | | |
|---|---|---|
| Description | Returns the measurement results for FM demodulation as a comma separated string. | |
| Query Syntax | :CALCulate:DEMod:FM:RESult:CURRent? | |
| Return parameter | <deviation,mode,rate,power,carr freq, offset,sinad> | |
| | Deviation | Frequency deviation in Hz. |
| | mode | FM. |
| | rate | Modulation rate in Hz. |
| | power | Carrier power in dBm. |
| | carr freq. | Carrier frequency in Hz. |
| | offset | Carrier frequency offset in Hz. |
| | sinad | Signal to noise and distortion ratio in dB |
| Query Example | :CALC:DEM:FM:RES:CURR?<br>>9.840e+1,1.02e+2,−1.12e+1,3.21e+1,−1.14e+1,<br>2.7e+3,1.61e+1 | |

## :CALCulate:DEMod: FM:RESult:MINimum? → Query

| | | |
|---|---|---|
| Description | Returns the minimum recorded measurement results for FM demodulation as a comma separated string. | |
| Query Syntax | :CALCulate:DEMod:FM:RESult:MINimum? | |
| Return parameter | <deviation,mode,rate,power,carr freq, offset,sinad> | |
| | Deviation | Frequency deviation in %. |
| | Mode | FM. |
| | Rate | Modulation rate in Hz. |
| | Power | Carrier power in dBm. |
| | carr freq. | Carrier frequency in Hz. |
| | Offset | Carrier frequency offset in Hz. |
| | Sinad | Signal to noise and distortion ratio in dB |

| | |
|---|---|
| Query Example | :CALC:DEM:FM:RES:MIN?<br>>9.840e+1,1.02e+2,−1.12e+1,3.21e+1,−1.14e+1,<br>2.7e+3,1.61e+1 |

## :CALCulate:DEMod: FM:RESult:MAXimum? → Query

| | | |
|---|---|---|
| Description | Returns the maximum recorded measurement results for FM demodulation as a comma separated string. | |
| Query Syntax | :CALCulate:DEMod:FM:RESult:MAXimum? | |
| Return parameter | <deviation,mode,rate,power,carr freq, offset,sinad> | |
| | Deviation | Frequency deviation in %. |
| | mode | FM. |
| | rate | Modulation rate in Hz. |
| | power | Carrier power in dBm. |
| | carr freq. | Carrier frequency in Hz. |
| | offset | Carrier frequency offset in Hz. |
| | sinad | Signal to noise and distortion ratio in dB |
| Query Example | :CALC:DEM:FM:RES:MAX?<br>>9.840e+1,1.02e+2,−1.12e+1,3.21e+1,−1.14e+1,<br>2.7e+3,1.61e+1 | |

## :CALCulate:DEMod:FM:STATe → Set / → Query

| | | |
|---|---|---|
| Description | Sets or queries the state of the FM Analysis function. | |
| Syntax | :CALCulate:DEMod:FM:STATe {ON\|OFF\|1\|0} | |
| Query Syntax | :CALCulate:DEMod:FM:STATe? | |
| Parameter | 0 | Turn FM Analysis off. |
| | 1 | Turn FM Analysis on. |
| | OFF | Turn FM Analysis off. |
| | ON | Turn FM Analysis on. |
| Return parameter | 0 | FM Analysis is off. |
| | 1 | FM Analysis is on. |
| Example | :CALC:DEM:FM:STAT 1 | |

## :CALCulate:JITTer:STATe

Set → / → Query

| | | |
|---|---|---|
| Description | Sets or queries the state of the Jitter Analysis function. | |
| Syntax | :CALCulate:JITTer:STATe {ON\|OFF\|1\|0} | |
| Query Syntax | :CALCulate:JITTer:STATe? | |
| Parameter | 0 | Turn Jitter Analysis off. |
| | 1 | Turn Jitter Analysis on. |
| | OFF | Turn Jitter Analysis off. |
| | ON | Turn Jitter Analysis on. |
| Return parameter | 0 | Jitter Analysis is off. |
| | 1 | Jitter Analysis is on. |
| Example | :CALCulate:JITTer:STATe 1 | |

## :CALCulate:JITTer:CARRier:POWer?

→ Query

| | | |
|---|---|---|
| Description | Returns the carrier power in dBm. | |
| Query Syntax | :CALCulate:JITTer:CARRier:POWer? | |
| Return parameter | <NR3> | dBm |
| Query Example | :CALC:JITT:CARR:POW?<br>>-5.237e+01 | |

## :CALCulate:JITTer: PHASe?

→ Query

| | | |
|---|---|---|
| Description | Returns the carrier phase jitter in radians. | |
| Query Syntax | :CALCulate:JITTer:PHASe? | |
| Return parameter | <NR3> | Rad |
| Query Example | :CALC:JITT:PHAS?<br>>1.5307e+01 | |

## :CALCulate:JITTer:TIME? → Query

| | | |
|---|---|---|
| Description | Returns the carrier jitter time in seconds. | |
| Query Syntax | :CALCulate:JITTer:TIME? | |
| Return parameter | <NR3> | Seconds |
| Query Example | :CALC:JITT:TIME?<br>>.5.31e-08 | |

## :CALCulate:LIMit<n>:CLEar Set →

| | | |
|---|---|---|
| Description | Clears the High Limit, Low Limit and the Pass/Fail state for the selected limit line. | |
| Syntax | :CALCulate:LIMit<n>:CLEar | |
| Parameter | <n> | Selected limit line |
| Example | :CALC:LIM1:CLE | |

## :CALCulate:LIMit<n>:DATA Set → / → Query

| | | |
|---|---|---|
| Description | Sets or queries the frequency, amplitude limit of every point in the selected limit line. The data is stored in block data format. | |
| Syntax | :CALCulate:LIMit<n>:DATA <block data> | |
| Query Syntax | :CALCulate:LIMit<n>:DATA? | |
| Parameter/<br>Return parameter | <block data> | Hz,dBm,Hz,dBm,Hz…… |
| | <n> | Seleted limit line |
| Example | :CALCulate:LIMit3:DATA?<br>>1e+6,-10,2e+6,-30,3e+6,-40,4e+6…… | |

## :CALCulate:LIMit:FAIL? → Query

| | | |
|---|---|---|
| Description | Returns the Pass/Fail judgment. | |
| Query Syntax | :CALCulate:LIMit:FAIL? | |
| Return parameter | 0 | Pass |
| | 1 | Fail |
| Query Example | :CALC:LIM:FAIL?<br>>1 | |

## :CALCulate:LIMit:LOW

Set ⟶

| | | |
|---|---|---|
| Description | Selects which limit line is used for the low limit. | |
| Syntax | :CALCulate:LIMit:LOW <limit num> | |
| Parameter | <limit num> | <NR1> 1~5 |
| Example | :CALC:LIM:LOW 2 | |

## :CALCulate:LIMit:HIGH

Set ⟶

| | | |
|---|---|---|
| Description | Selects which limit line is used for the high limit. | |
| Syntax | :CALCulate:LIMit:HIGH <limit num> | |
| Parameter | <limit num> | <NR1> 1~5 |
| Example | :CALC:LIM:HIGH 2 | |

## :CALCulate:LIMit<n>:MARKer

Set ⟶

| | | |
|---|---|---|
| Description | Sets the current marker position to a point on a limit line. The vertical position of the point is the marker's vertical position + a user-defined offset. | |
| Syntax | :CALCulate:LIMit<n>:MARKer <point>,<offset> | |
| Parameter | <point> | <NR1> point 1~10 |
| | <offset> | <NR3> dB |
| | <n> | Seleted limit line |
| Example | :CALC:LIM1:MARK 5, 20 | |

## :CALCulate:LIMit:PASS:MODE

Set → / → Query

| | | |
|---|---|---|
| Description | Sets or queries the Pass/Fail conditions for the limit line testing. | |
| Syntax | :CALCulate:LIMit:PASS:MODE {ALL\|MAX\|MIN} | |
| Query Syntax | :CALCulate:LIMit:PASS:MODE? | |
| Parameter/ Return Parameter | ALL | All-in. |
| | MAX | Max-In |
| | MIN | Min-In |
| Example | :CALC:LIM:PASS:MODE ALL | |

## :CALCulate:LIMit:STATe

Set → / → Query

| | | |
|---|---|---|
| Description | Turns the current limit line on/off. | |
| Syntax | :CALCulate:LIMit:STATe {ON\|OFF\|1\|0} | |
| Query Syntax | :CALCulate:LIMit:STATe? | |
| Parameter | 0 | Limit line is off. |
| | 1 | Limit line is on. |
| | OFF | Limit line is off. |
| | ON | Limit line is on. |
| Return parameter | 0 | Limit line is off. |
| | 1 | Limit line is on. |
| Example | :CALC:LIM:STAT 1 | |

## :CALCulate:LIMit<n>:TRACe

Set →

| | |
|---|---|
| Description | Creates a limit line from the current trace with a user defined offset. |
| Syntax | :CALCulate:LIMit<n>:TRACe <offset> |

| | | |
|---|---|---|
| Parameter | <n> | <NR1> limit line 1~5 |
| | <offset> | dB |
| Example | :CALC:LIM2:TRAC 10 | |

## :CALCulate:MARKer:AOFF

Set →

| | |
|---|---|
| Description | Turns all the markers off. |
| Syntax | :CALCulate:MARKer:AOFF |
| Example | :CALC:MARK:AOFF |

## :CALCulate:MARKer<n>:FCOunt:RESolution

Set →
→ Query

| | | |
|---|---|---|
| Description | Sets or queries the frequency counter resolution in Hz for the selected marker. | |
| Syntax | :CALCulate:MARKer<n>:FCOunt:RESolution <freq> | |
| Query Syntax | :CALCulate:MARKer<n>:FCOunt:RESolution? | |
| Parameter | <n> | <NR1>Maker number 1~6 |
| | <freq> | <NR3> frequency resolution in Hz. |
| Return parameter | <freq> | <NR3> frequency resolution in Hz. |
| Example | :CALC:MARK1:FCO:RES? | |
| | >1.0e+3 | |

## :CALCulate:MARKer<n>:FCOunt: RESolution:AUTO

Set →
→ Query

| | |
|---|---|
| Description | Sets the frequency counter resolution Auto setting on/off. |
| Syntax | :CALCulate:MARKer<n>:FCOunt:RESolution:AUTO {ON\|OFF\|1\|0} |
| Query Syntax | :CALCulate:MARKer<n>:FCOunt:RESolution:AUTO? |

| | | |
|---|---|---|
| Parameter | <n> | Marker number 1~6 |
| | 0 | Auto is off. |
| | 1 | Auto is on. |
| | OFF | Auto is off. |
| | ON | Auto is on. |
| Return parameter | 0 | Auto is off. |
| | 1 | Auto is on. |
| Example | :CALC:MARK1:FCO:RES:AUTO? | |

## :CALCulate:MARKer<n>:FCOunt:STATe

Set → / → Query

| | |
|---|---|
| Description | Sets or queries the state of the frequency counter function. |
| Syntax | :CALCulate:MARKer<n>:FCOunt:STATe {ON\|OFF\|1\|0} |
| Query Syntax | :CALCulate:MARKer<n>:FCOunt:STATe? |

| | | |
|---|---|---|
| Parameter | 0 | Turn frequency counter off. |
| | 1 | Turn frequency counter on. |
| | OFF | Turn frequency counter off. |
| | ON | Turn frequency counter on. |
| Return parameter | 0 | Frequency counter is off. |
| | 1 | Frequency counter is on. |
| Example | :CALC:MARKer1:FCO:STAT 1 | |

## :CALCulate:MARKer<n>:FCOunt:X?

→ Query

| | | |
|---|---|---|
| Description | Returns the frequency of the selected marker in Hz. | |
| Query Syntax | :CALCulate:MARKer<n>:FCOunt:X? | |
| Parameter | <n> | <NR1> Marker number 1~6 |
| Return parameter | <NR3> | Frequency in Hz. |
| Example | :CALC:MARK1:FCOU:X?<br>>2.0083e+8 | |

## :CALCulate:MARKer<n>:NOISe:STATe

Set → / → Query

| | | |
|---|---|---|
| Description | Sets or queries the state of the Marker Noise function. | |
| Syntax | :CALCulate:MARKer<n>:NOISe:STATe {ON\|OFF\|1\|0} | |
| Query Syntax | :CALCulate:MARKer<n>:NOISe:STATe? | |
| Parameter | 0 | Turn marker noise off. |
| | 1 | Turn marker noise on. |
| | OFF | Turn marker noise off. |
| | ON | Turn marker noise on. |
| Return parameter | 0 | Marker noise is off. |
| | 1 | Marker noise is on. |
| Example | :CALC:MARK2:NOIS:STAT ON | |

## :CALCulate:MARKer<n>:NOISe:Y?

Set → / → Query

| | | |
|---|---|---|
| Description | Returns the average noise level over a BW of 1Hz from the marker position. | |
| Query Syntax | :CALCulate:MARKer<n>:NOISe:Y? | |
| Parameter | <n> | Maker number 1~6 |
| Return parameter | <NR3> | Average noise level in dBm/Hz |
| Example | :CALC:MARK1:NOIS:Y?<br>>1.166e+2 | |

## :CALCulate:MARKer<n>:PEAK

Set →

| | | |
|---|---|---|
| Description | Sets the selected marker to the selected peak. | |
| Query Syntax | :CALCulate:MARKer<n>:PEAK {MAXimum\|MINimum\|NEXT\|RIGHt\|LEFT} | |
| Parameter | <n> | <NR1> Marker number 1~6 |
| | MAXimum | Highest peak value |

| | | |
|---|---|---|
| | MIMimum | Lowest peak value |
| | NEXT | Next peak |
| | RIGHt | Next peak right |
| | LEFT | Next peak left |
| Example | :CALC:MARK1:PEAK NEXT | |

## :CALCulate:MARKer<n>:PEAK:CTRack:STATe

Set → / → Query

| | | |
|---|---|---|
| Description | Sets or queries the state of the Peak Track function. | |
| Syntax | :CALCulate:MARKer<n>:PEAK:CTRack:STATe {ON\|OFF\|1\|0} | |
| Query Syntax | :CALCulate:MARKer<n>:PEAK:CTRack:STATe? | |
| Parameter | 0 | Turn peak track off. |
| | 1 | Turn peak track on. |
| | OFF | Turn peak track off. |
| | ON | Turn peak track on. |
| Return parameter | 0 | Peak track is off. |
| | 1 | Peak track is on. |
| Example | :CALC:MARK1:PEAK:CTR:STAT ON | |

## :CALCulate:MARKer:PEAK:DATA?

→ Query

| | | |
|---|---|---|
| Description | Returns all of the peak data values?????????? | |
| Query syntax | :CALCulate:MARKer:PEAK:DATA? | |
| Return parameter | <block data> | Hz,dBm,Hz,dBm,Hz…… |
| Example | :CALCulate:MARKer:PEAK:DATA? >XXXXXXXXXXXXx | |

## :CALCulate:MARKer<n>:PEAK:EXCursion

Set → / → Query

| | | |
|---|---|---|
| Description | Sets or queries the peak excursion value. | |
| Syntax | :CALCulate:MARKer<n>:PEAK:EXCursion <rel ampl> | |
| Query Syntax | :CALCulate:MARKer<n>:PEAK:EXCursion? | |
| Parameter | <n> | Marker number 1~6 |
| | <rel ampl> | Peak excursion dB (offset from threshold) |
| Return parameter | <NR3> | Peak excursion in dB. |
| Example | :CALC:MARK1:PEAK:EXC 6 db | |

## :CALCulate:MARKer:PEAK:SORT:TYPE

Set → / → Query

| | | |
|---|---|---|
| Description | Sets or queries the peak sort type for the peak table. | |
| Syntax | :CALCulate:MARKer:PEAK:SORT:TYPE {FREQuency\|Amplitude} | |
| Query Syntax | :CALCulate:MARKer:PEAK:SORT:TYPE? | |
| Parameter/ Return parameter | FREQuency | Sort by frequency |
| | Amplitude | Sort by amplitude |
| Example | :CALC:MARK:PEAK:SORT:TYPE FREQ | |

## :CALCulate:MARKer:PEAK:TABLe:STATe

Set → / → Query

| | | |
|---|---|---|
| Description | Sets or queries the state of the Peak Table. | |
| Syntax | :CALCulate:MARKer:PEAK:TABLe:STATe {ON\|OFF\|1\|0} | |
| Query Syntax | :CALCulate:MARKer:PEAK:TABLe:STATe? | |
| Parameter | 0 | Turn peak table off. |
| | 1 | Turn peak table on. |
| | OFF | Turn peak table off. |
| | ON | Turn peak table on. |
| Return parameter | 0 | peak table is off. |
| | 1 | peak table is on. |

| | |
|---|---|
| Example | :CALC:MARK:PEAK:TABL:STAT ON |

## :CALCulate:MARKer:PEAK:THReshold

Set → / → Query

| | | |
|---|---|---|
| Description | Sets or queries the peak threshold value. | |
| Syntax | :CALCulate:MARKer:PEAK:THReshold < ampl> | |
| Query Syntax | :CALCulate:MARKer:PEAK:THReshold? | |
| Parameter | < ampl> | Peak Threshold level in mV/dBm |
| Return parameter | <NR3> | Peak threshold. Note: the unit returned depends on the currently set vertical units. |
| Example | :CALC:MARK:PEAK:THR −3 dBm | |

## :CALCulate:MARKer:PEAK:THReshold:STATe

Set → / → Query

| | | |
|---|---|---|
| Description | Sets or queries the state of the Peak Threshold. | |
| Syntax | :CALCulate:MARKer:PEAK:THReshold:STATe {ON\|OFF\|1\|0} | |
| Query Syntax | :CALCulate:MARKer:PEAK:THReshold:STATe? | |
| Parameter | 0 | Turn peak threshold off. |
| | 1 | Turn peak threshold on. |
| | OFF | Turn peak threshold off. |
| | ON | Turn peak threshold on. |
| Return parameter | 0 | Peak threshold is off. |
| | 1 | Peak threshold is on. |
| Example | :CALC:MARK:PEAK:THR:STAT ON | |

## :CALCulate:MARKer<n>:SET

Set →

| | |
|---|---|
| Description | Sets the selected marker to one of five preset positions. |

| | | |
|---|---|---|
| Query Syntax | :CALCulate:MARKer<n>:SET {CENTer\|STARt\|STOP \|STEP\|RLEVel} | |
| Parameter | <n> | <NR1> Marker number 1~6 |
| | CENTer | Set to center frequency |
| | STARt | Set to start frequency |
| | STOP | Set to stop frequency |
| | STEP | Set to CF STEP frequency |
| | RLEVel | Set to the Reference level |
| Example | :CALC:MARK1:SET CENT | |

## :CALCulate:MARKer<n>:STATe

Set → / → Query

| | | |
|---|---|---|
| Description | Sets or queries the state of the selected marker. | |
| Syntax | :CALCulate:MARKer<n>:STATe {ON\|OFF\|1\|0} | |
| Query Syntax | :CALCulate:MARKer<n>:STATe? | |
| Parameter | <n> | <NR1> Marker number 1~6 |
| | 0 | Turn the selected marker off. |
| | 1 | Turn the selected marker on. |
| | OFF | Turn the selected marker off. |
| | ON | Turn the selected marker on. |
| Return parameter | 0 | The selected marker is off. |
| | 1 | The selected marker on. |
| Example | :CALC:MARK1:STAT ON | |

## :CALCulate:MARKer:TABLe:STATe

Set → / → Query

| | | |
|---|---|---|
| Description | Sets or queries the state of the marker table. | |
| Syntax | :CALCulate:MARKer:TABLe:STATe {ON\|OFF\|1\|0} | |
| Query Syntax | :CALCulate:MARKer:TABLe:STATe | |
| Parameter | 0 | Turn the table off. |
| | 1 | Turn the table on. |
| | OFF | Turn the table off. |

| | | |
|---|---|---|
| | ON | Turn the table on. |
| Return parameter | 0 | The table is off. |
| | 1 | The table is on. |
| Example | :CALC:MARK:TABL:STAT ON | |

## :CALCulate:MARKer<n>:TRACe

Set → Query

| | | |
|---|---|---|
| Description | Assigns a trace to the selected marker. Queries which trace is assigned to the selected marker. | |
| Syntax | :CALCulate:MARKer<n>:TRACe <trace name> | |
| Query Syntax | :CALCulate:MARKer<n>:TRACe? | |
| Parameter/ Return parameter | <n> | <NR1> Marker number 1~6 |
| | <trace name> | The name of the trace: (A, B, C, D, E) |
| Example | :CALC:MARK2:TRAC A | |

## :CALCulate:MARKer<n>:TRACe:AUTO

Set → Query

| | | |
|---|---|---|
| Description | Sets or queries the state of the Marker Trace function. Allows a trace to be automatically assigned to the selected marker (on) or allows a trace to be assigned manually (off). | |
| Syntax | :CALCulate:MARKer<n>:TRACe:AUTO {ON\|OFF\|1\|0} | |
| Query Syntax | :CALCulate:MARKer<n>:TRACe:AUTO? | |
| Parameter | <n> | <NR1> Marker number 1~6 |
| | 0 | Turn the auto function off. |
| | 1 | Turn the auto function on. |
| | OFF | Turn the auto function off. |
| | ON | Turn the auto function on. |
| Return parameter | 0 | The auto function is off. |
| | 1 | The auto function is on. |
| Example | :CALC:MARK2:TRAC:AUTO OFF | |

## :CALCulate:MARKer<n>:TYPE

Set → Query

| | | |
|---|---|---|
| Description | Sets or queries the marker type. | |
| Syntax | :CALCulate:MARKer<n>:TYPE {NORMal\|DELTa} | |
| Query Syntax | :CALCulate:MARKer<n>:TYPE? | |
| Parameter/ Return parameter | <n> | <NR1> Marker number 1~6 |
| | <NORMal> | Normal marker |
| | <DELTa> | Delta marker |
| Example | :CALC:MARK1:TYPE NORM | |

## :CALCulate:MARKer<n>:X

Set → Query

| | | |
|---|---|---|
| Description | Sets or returns the marker position in Hz. | |
| Syntax | :CALCulate:MARKer<n>:X <freq> | |
| Query Syntax | :CALCulate:MARKer<n>:X? | |
| Parameter/ Return parameter | <n> | <NR1> Marker number 1~6 |
| | <freq> | Hz |
| Example | :CALC:MARK4:X 2.0e+6 | |

## :CALCulate:MARKer<n>:Y?

Set → Query

| | | |
|---|---|---|
| Description | Returns the marker vertical position in dBm. | |
| Query Syntax | :CALCulate:MARKer<n>:Y? | |
| Parameter | <n> | <NR1> Marker number 1~6 |
| Return parameter | <NR3> | dBm |
| Example | :CALC:MARK1:Y? | |
| | >-5.43e+1 | |

## :CALCulate:MATH:PDIF (Set)

| | | |
|---|---|---|
| Description | Calculates the power difference between two traces (TR1 and TR2). | |
| Query Syntax | :CALCulate:MATH:PDIF <Destination trace, TR1 trace,TR2 trace> | |
| Parameter | <des. trace> | <NR1> Destination trace. |
| | <TR1> | Source trace 1 |
| | <TR2> | Source trace 2 |
| Example | :CALC:MATH:PDIF 1,2,3 | |

## :CALCulate:MATH:LDIF (Set)

| | | |
|---|---|---|
| Description | Calculates the logarithmic difference between two traces (TR1 and TR2). | |
| Query Syntax | :CALCulate:MATH:LDIF <des. trace, TR1 trace,TR2 trace, Ref> | |
| Parameter | <des. trace> | <NR1>Destination trace. |
| | <TR1> | <NR1>Source trace 1 |
| | <TR2> | <NR1>Source trace 2 |
| | <Ref> | <NR1>Reference level |
| Example | :CALC:MATH:LDIF 1,2,3 | |

## :CALCulate:MATH:LOFF (Set)

| | |
|---|---|
| Description | Adds an offset to a source trace. |
| Query Syntax | :CALCulate:MATH:LOFF <des. trace, TR1 trace, offset> |

| | | |
|---|---|---|
| Parameter | <des. trace> | <NR1>Destination trace. |
| | <TR1> | <NR1>Source trace 1 |
| | <offset> | <NR1>Offset in dB |
| Example | :CALC:MATH:LOFF 1,2,2.0e+1 | |

## :CALCulate:NDB:STATe

Set → Query

| | | |
|---|---|---|
| Description | Sets or queries the state of the NdB BW function. | |
| Syntax | :CALCulate:NDB:STATe {ON\|OFF\|1\|0} | |
| Query Syntax | :CALCulate:NDB:STATe? | |
| Parameter | 0 | Turn NdB BW off. |
| | 1 | Turn NdB BW on. |
| | OFF | Turn NdB BW off. |
| | ON | Turn NdB BW on. |
| Return parameter | 0 | NdB BW is off. |
| | 1 | NdB BW is on. |
| Example | :CALC:NDB:STAT ON | |

## :CALCulate:NDB:BANDwidth|BWIDth?

→ Query

| | | |
|---|---|---|
| Description | Returns the NdB bandwidth measurement. | |
| Query Syntax | :CALCulate:NDB:BANDwidth\|BWIDth? | |
| Return parameter | <NR3> | NdB bandwidth in Hz. |
| Example | :CALC:NDB:BAND?<br>>5.5e+04 | |

## :CALCulate:NORMalize:STATe

Set → Query

| | |
|---|---|
| Description | Turns the tracking generator normalization on/off. |
| Syntax | :CALCulate:NORMalize:STATe{ON\|OFF\|1\|0} |

| | | |
|---|---|---|
| Query Syntax | :CALCulate:NORMalize:STATe? | |
| Parameter | 0 | Turn normalization off. |
| | 1 | Turn normalization on. |
| | OFF | Turn normalization off. |
| | ON | Turn normalization on. |
| Return parameter | 0 | normalization is off. |
| | 1 | normalization is on. |
| Example | :CALC:NORM:STAT ON | |

## :CALCulate:OCBW:STATe

Set → / → Query

| | | |
|---|---|---|
| Description | Turns the OCBW measurement on/off. | |
| Syntax | :CALCulate:OCBW:STATe {ON\|OFF\|1\|0} | |
| Query Syntax | :CALCulate:OCBW:STATe? | |
| Parameter | 0 | Turn OCBW off. |
| | 1 | Turn OCBW on. |
| | OFF | Turn OCBW off. |
| | ON | Turn OCBW on. |
| Return parameter | 0 | OCBW is off. |
| | 1 | OCBW is on. |
| Example | :CALC:OCBW:STAT ON | |

## :CALCulate:OCBW:BANDwidth|BWIDth?

→ Query

| | | |
|---|---|---|
| Description | Returns the OCBW bandwidth measurement. | |
| Query Syntax | :CALCulate:OCBW:BANDwidth\|BWIDth? | |
| Return parameter | <NR3> | OCBW bandwidth in Hz. |
| Example | :CALC:OCBW:BAND?<br>>4.1e+03 | |

## :CALCulate:OCBW:CHPower?

→ Query

| | | |
|---|---|---|
| Description | Returns the OCBW channel power measurement. | |
| Query Syntax | :CALCulate:OCBW:CHPower? | |
| Return parameter | <NR3> | OCBW channel power in dBm. |
| Example | :CALC:OCBW:CHP?<br>>9.13e+01 | |

## :CALCulate:OCBW:POWer? → Query

| | | |
|---|---|---|
| Description | Returns the OCBW total power measurement. | |
| Query Syntax | :CALCulate:OCBW:POWer? | |
| Return parameter | <NR3> | OCBW total power in dBm. |
| Example | :CALC:OCBW:POW?<br>>1.33e+01 | |

## :CALCulate:PMETer:POWer? → Query

| | | |
|---|---|---|
| Description | Returns the power meter power measurement. | |
| Query Syntax | :CALCulate:PMETer:POWer? | |
| Return parameter | <NR3> | Power in dBm. |
| Example | :CALC:PMET:POW?<br>>-0.83e+01 | |

## :CALCulate:PMETer:LIMit:STATe Set → / → Query

| | | |
|---|---|---|
| Description | Turns the pass/fail limits on/off. | |
| Syntax | :CALCulate:PMETer:LIMit:STATe {ON\|OFF\|1\|0} | |
| Query Syntax | :CALCulate:PMETer:LIMit:STATe? | |
| Parameter | 0 | Turns limits off. |
| | 1 | Turns limits on. |
| | OFF | Turns limits off. |
| | ON | Turns limits on. |

| | | |
|---|---|---|
| Return parameter | 0 | Turns limits off. |
| | 1 | Turns limits on. |
| Example | :CALC:PMET:LIM:STAT?<br>>1 | |

## :CALCulate:PMETer:LIMit:FAIL? → Query

| | | |
|---|---|---|
| Description | Returns the pass/fail judgment. | |
| Query Syntax | :CALCulate:PMETer:LIMit:FAIL? | |
| Return parameter | 0 | Pass, or limits are not on. |
| | 1 | Fail |
| Example | :CALC:PMET:LIM:FAIL?<br>>1 | |

## :CALCulate:SEM:STATe → Set / → Query

| | | |
|---|---|---|
| Description | Turns the SEM measurement on/off. | |
| Syntax | :CALCulate:SEM:STATe {ON\|OFF\|1\|0} | |
| Query Syntax | :CALCulate:SEM:STATe? | |
| Parameter | 0 | Turns SEM off. |
| | 1 | Turns SEM on. |
| | OFF | Turns SEM off. |
| | ON | Turns SEM on. |
| Return parameter | 0 | SEM is off. |
| | 1 | SEM is on. |
| Example | :CALC:SEM:STAT ON | |

## :CALCulate:SEM:OFFSet<n>:RESult? → Query

| | |
|---|---|
| Description | Returns the start, stop frequencies as well as the pass/fail limits and judgements for the chosen offset. |
| Query syntax | :CALCulate:SEM:OFFSet<n>:RESult? |

| | | |
|---|---|---|
| Parameter | <n> | Offset number 1~5. |
| Return parameter | <start freq> | Start frequency of the selected channel |
| | <low dBm> | Lower dBm measurement |
| | <low p/f> | Lower pass/fail limit judgment. |
| | | 0 = pass, 1 = fail. |
| | <stop freq> | Stop frequency of the selected channel |
| | <upp dBm> | Upper dBm measurement |
| | <upp p/f> | Upper pass/fail limit judgment |
| | | 0 = pass, 1 = fail. |
| Example | :CALC:SEM:OFFS<n>:RES? | |
| | >9e+7, −7.9e+1,0,1.7e+7,−6.9e+1,0 | |

## :CALCulate:TOI:DIFFerential? → Query

| | | |
|---|---|---|
| Description | Returns the third order intermodulation distortion. | |
| Query syntax | :CALCulate:TOI:DIFFerential? | |
| Return parameter | <base lower> | dBc |
| | <base upper> | dBc |
| | <3rd order lower> | dBc |
| Example | :CALC:TOI:DIFF? | |
| | >0.0e+0,−1.67e−1,−1.09e+1,−6.61e+0 | |

## :CALCulate:TOI:FREQuency:STEPsize? → Query

| | | |
|---|---|---|
| Description | Returns the delta of the base lower and base upper. | |
| Query syntax | :CALCulate:TOI:FREQuency:STEPsize? | |
| Return parameter | <NR3> | Δf: Hz |
| Example | :CALC:TOI:FREQ:STEP? | |
| | >6.65e+5 | |

## :CALCulate:TOI:LIMit:STATe → Set / → Query

| | | |
|---|---|---|
| Description | Turns the TOI pass/fail limit on/off. | |
| Syntax | :CALCulate:TOI:LIMit:STATe {ON\|OFF\|1\|0} | |
| Query Syntax | :CALCulate:TOI:LIMit:STATe? | |
| Parameter | 0 | Turns pass/fail limit off. |
| | 1 | Turns pass/fail limit on. |
| | OFF | Turns pass/fail limit off. |
| | ON | Turns pass/fail limit on. |
| Return parameter | 0 | Turns pass/fail limit off. |
| | 1 | Turns pass/fail limit on. |
| Example | :CALC:TOI:LIM:STAT ON | |

## :CALCulate:TOI:RESult? → Query

| | | |
|---|---|---|
| Description | Returns the third order intercept and the pass/fail judgments. | |
| Query syntax | :CALCulate:TOI:RESult? | |
| Return parameter | <3rd lower> | 3rd order lower intercept |
| | <lower p/f> | 3rd order lower pass/fail judgment. |
| | | 0=pass, 1=fail |
| | <3rd upper> | 3rd order upper intercept |
| | <upper p/f> | 3rd order lower pass/fail judgment |
| | | 0=pass, 1=fail |
| Example | :CALC:TOI:RES?<br>>-5.5e+1,0, -6.61e+1,0 | |

## :CALCulate:TOI:STATe Set → / → Query

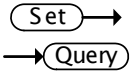
| | | |
|---|---|---|
| Description | Turns TOI measurement on/off. | |
| Syntax | :CALCulate:TOI:STATe {ON\|OFF\|1\|0} | |
| Query Syntax | :CALCulate:TOI:STATe? | |
| Parameter | 0 | Turns TOI measurement off. |
| | 1 | Turns TOI measurement on. |

| | | |
|---|---|---|
| | OFF | Turns TOI measurement off. |
| | ON | Turns TOI measurement on. |
| Return parameter | 0 | TOI measurement is off. |
| | 1 | TOI measurement is on. |
| Example | :CALC:TOI:STAT ON | |

## CONFigure Commands



## :CONFigure:MODE




| | | |
|---|---|---|
| Description | Sets or queries the operating mode, spectrum or power meter. | |
| Query Syntax | :CONFigure:MODE {SA\|PMET} | |
| Parameter/ Return parameter | <SA> | Spectrum mode |
| | <PMET> | Power meter mode |
| Example | :CONF:MODE SA | |

## DISPlay Commands

## :DISPlay:BRIGhtness

Set → / → Query

| | | |
|---|---|---|
| Description | Sets or queries the LCD brightness level. | |
| Syntax | :DISPlay:BRIGhtness {HIGH\|MIDDle\|LOW} | |
| Query Syntax | :DISPlay:BRIGhtness? | |
| Parameter/ Return parameter | <HIGH> | High brightness level |
| | <MIDDle> | Mid brightness level |
| | <LOW> | Low brightness level |
| Example | :DISP:BRIG HIGH | |

## :DISPlay:ENABle

Set → / → Query

| | | |
|---|---|---|
| Description | Turns the LCD backlight on/off. | |
| Syntax | :DISPlay:ENABle {OFF\|ON\|0\|1} | |
| Query Syntax | :DISPlay:ENABle? | |
| Parameter | 0 | Turn LCD backlight off. |
| | 1 | Turn LCD backlight on. |
| | OFF | Turn LCD backlight off. |
| | ON | Turn LCD backlight on. |
| Return parameter | 0 | LCD backlight is off. |
| | 1 | LCD backlight is on. |
| Example | DISP:ENAB?<br>>1 | |

## :DISPlay:DEMod[:WINDow]:TRACe:X [:SCALe]:AUTO

Set → → Query

| | | |
|---|---|---|
| Description | Turns auto scale on/off for the x axis for AM/FM demodulation. | |
| Syntax | :DISPlay:DEMod[:WINDow]:TRACe:X[:SCALe]:AUTO {OFF\|ON\|0\|1} | |
| Query Syntax | :DISPlay:DEMod[:WINDow]:TRACe:X[:SCALe]:AUTO? | |
| Parameter | 0 | Turn Auto Scale off. |
| | 1 | Turn Auto Scale on. |
| | OFF | Turn Auto Scale off. |
| | ON | Turn Auto Scale on. |
| Return parameter | 0 | Auto Scale is off. |
| | 1 | Auto Scale is on. |
| Example | :DISP:DEM:TRAC:X:AUTO ON | |

## :DISPlay:DEMod[:WINDow]:TRACe:X [:SCALe]:PDIVision

Set → → Query

| | |
|---|---|
| Description | Sets or queries the Time axis Scale/Div. |

| | | |
|---|---|---|
| Syntax | :DISPlay:DEMod[:WINDow]:TRACe:X[:SCALe]: PDIVision <time> | |
| Query Syntax | :DISPlay:DEMod[:WINDow]:TRACe:X[:SCALe]: PDIVision? | |
| Parameter/ Return parameter | <time> | <NR3>Time division. Default = seconds |
| Example | :DISP:DEM:TRAC:X:PDIV 2 ms | |

## :DISPlay:DEMod[:WINDow]:TRACe:X[:SCALe]:RPOSition

Set → → Query

| | | |
|---|---|---|
| Description | Sets or queries the Reference Position of the trace for AM/FM demodulation (x-axis grid division). | |
| Syntax | :DISPlay:DEMod[:WINDow]:TRACe:X[:SCALe]: RPOSition <integer> | |
| Query Syntax | :DISPlay:DEMod[:WINDow]:TRACe:X[:SCALe]: RPOSition? | |
| Parameter/ Return parameter | <integer> | <NR1>1~10 |
| Example | :DISP:DEM:TRAC:X:RPOS 2 | |

## :DISPlay:DEMod[:WINDow]:TRACe:X[:SCALe]:RVALue

Set → → Query

| | | |
|---|---|---|
| Description | Sets or queries the Reference value time. | |
| Syntax | :DISPlay:DEMod[:WINDow]:TRACe:X[:SCALe]: RVALue <time> | |
| Query Syntax | :DISPlay:DEMod[:WINDow]:TRACe:X[:SCALe]: RVALue? | |

| | | |
|---|---|---|
| Parameter/ Return parameter | <time> | <NRf> |
| Example | :DISP:DEM:TRAC:X:RVAL 2 ms | |

## :DISPlay:DEMod[:WINDow]:TRACe:Y[:SCALe]:AUTO

Set →

| | |
|---|---|
| Description | Sets the vertical display scale to auto for AM/FM demodulation. |
| Syntax | :DISPlay:DEMod[:WINDow]:TRACe:Y[:SCALe]:AUTO <integer> |
| Example | :DISP:DEM:TRAC:Y:AUTO |

## :DISPlay:DEMod[:WINDow]:TRACe:Y[:SCALe]:PDIVision

Set → / → Query

| | | |
|---|---|---|
| Description | Sets or queries the Y-axis scale division. | |
| Syntax | :DISPlay:DEMod[:WINDow]:TRACe:Y[:SCALe]:PDIVision <integer> | |
| Query Syntax | :DISPlay:DEMod[:WINDow]:TRACe:Y[:SCALe]:PDIVision? | |
| Parameter/ Return parameter | <integer> | <NR1> AM Unit: %, FM Unit: Hz |
| Example | :DISP:DEM:TRAC:Y:PDIV 20 | |

## :DISPlay:DEMod[:WINDow]:TRACe:Y[:SCALe]:RPOSition

Set → / → Query

| | |
|---|---|
| Description | Sets or queries the Reference Position of the trace for AM/FM demodulation (y-axis grid division). |

| | | |
|---|---|---|
| Syntax | :DISPlay:DEMod[:WINDow]:TRACe:Y[:SCALe]: RPOSition <integer> | |
| Query Syntax | :DISPlay:DEMod[:WINDow]:TRACe:Y[:SCALe]: RPOSition? | |
| Parameter/ Return parameter | <integer> | <NR1>1~10 |
| Example | :DISP:DEM:TRAC:Y:RPOS 2 | |

## :DISPlay:DEMod[:WINDow]:TRACe:Y[:SCALe]:RVALue

Set → → Query

| | | |
|---|---|---|
| Description | Sets or queries the Reference value (AM: %, FM: Hz). | |
| Syntax | :DISPlay:DEMod[:WINDow]:TRACe:Y[:SCALe]: RVALue <integer> | |
| Query Syntax | :DISPlay:DEMod[:WINDow]:TRACe:Y[:SCALe]: RVALue? | |
| Parameter/ Return parameter | <integer> | <NR1> FM Unit: Hz, AM Unit: % |
| Example | :DISP:DEM:TRAC:Y:RVAL 2 % | |

## :DISPlay[:WINDow]:NORMal

Set →

| | |
|---|---|
| Description | Sets the display window to spectrum mode. |
| Syntax | :DISPlay[:WINDow]:NORMal |
| Example | :DISP:NORM |

## :DISPlay[:WINDow]:SPECtrogram

Set →

| | |
|---|---|
| Description | Sets the display window to spectrogram mode. |

| | |
|---|---|
| Syntax | :DISPlay[:WINDow]:SPECtrogram |
| Example | :DISP:SPEC |

## :DISPlay[:WINDow]:SPLit:NORMal Set

| | |
|---|---|
| Description | Creates two split windows, both in spectrum mode. |
| Syntax | :DISPlay[:WINDow]:SPLit:NORMal |
| Example | :DISP:SPL:NORM |

## :DISPlay[:WINDow]:SPLit:NORMal:ALTernate Set

| | |
|---|---|
| Description | Turns on Alternate Sweep function for split window mode. |
| Syntax | :DISPlay[:WINDow]:SPLit:NORMal:ALTernate |
| Example | :DISP:SPL:NORM:ALT |

## :DISPlay[:WINDow]:SPLit:NORMal:TYPE Set

| | |
|---|---|
| Description | Sets the active window in split screen mode. |
| Syntax | :DISPlay[:WINDow]:SPLit:NORMal:TYPE {UPPer\|LOWer} |
| Example | :DISP:SPL:NORM:TYPE UPP |

## :DISPlay[:WINDow]:SPLit:SPECtrogram Set

| | |
|---|---|
| Description | Sets the split screen mode to Spectrogram + Spectrum. |
| Syntax | :DISPlay[:WINDow]:SPLit:SPECtrogram |
| Example | :DISP:SPL:SPEC |

## :DISPlay[:WINDow]:SPLit:TOPO (Set)

| | |
|---|---|
| Description | Sets the split screen mode to Topographic + Spectrum. |
| Syntax | :DISPlay[:WINDow]:SPLit:TOPO |
| Example | :DISP:SPL:TOPO |

## :DISPlay[:WINDow]:TOPO (Set)

| | |
|---|---|
| Description | Sets the display window to topographic. |
| Syntax | :DISPlay[:WINDow]:TOPO |
| Example | :DISP:TOPO |

## :DISPlay[:WINDow]:TRACe<n>:MODE (Set)

| | | |
|---|---|---|
| Description | Sets or queries the marker type. | |
| Syntax | :DISPlay[:WINDow]:TRACe<n>:MODE {WRITe\|VIEW\|BLANk\|MAXHold\|MINHold\|PHOLd} | |
| Parameter | <n> | <NR1> Trace number 1~4 |
| | WRITe | Clear and Write |
| | VIEW | Hold the last trace |
| | BLANK | Clears the trace |
| | MAXHold | Hold the maximum/minimum points from |
| | MINHold | each trace |
| | PHOLd | WHAT is PHOLD? |
| Example | :DISP:TRAC4:MODE VIEW | |

## :DISPlay[:WINDow]:TRACe:Y:DLINe (Set) (Query)

| | |
|---|---|
| Description | Sets the display line amplitude level. |
| Syntax | :DISPlay[:WINDow]:TRACe:Y:DLINe <ampl> |

| | | |
|---|---|---|
| Query Syntax | :DISPlay[:WINDow]:TRACe:Y:DLINe? | |
| Parameter/ Return parameter | <ampl> | <NR3> dBm |
| Example | :DISP:TRAC:Y:DLIN -5.0e+1 | |

## :DISPlay[:WINDow]:TRACe:Y:DLINe:STATe

Set → Query

| | | |
|---|---|---|
| Description | Turns the display line on/off. | |
| Syntax | :DISPlay[:WINDow]:TRACe:Y:DLINe:STATe {OFF\|ON\|0\|1} | |
| Query Syntax | :DISPlay[:WINDow]:TRACe:Y:DLINe:STATe? | |
| Parameter | 0 | Turn display line off. |
| | 1 | Turn display line on. |
| | OFF | Turn display line off. |
| | ON | Turn display line on. |
| Return parameter | 0 | The display line is off. |
| | 1 | The display line is on. |
| Example | :DISP:TRAC:Y:DLIN:STAT ON | |

## :DISPlay[:WINDow]:TRACe:Y[:SCALe]: NRLevel

Set → Query

| | | |
|---|---|---|
| Description | Sets or queries the normalized reference level for the TG option. | |
| Syntax | :DISPlay[:WINDow]:TRACe:Y[:SCALe]:NRLevel <rel_ampl> | |
| Query Syntax | :DISPlay[:WINDow]:TRACe:Y[:SCALe]:NRLevel? | |
| Parameter/ Return parameter | <rel_ampl> | <NR3> dB |
| Example | :DISP:TRAC:Y:NRLevel 5 dB | |

## :DISPlay[:WINDow]:TRACe:Y[:SCALe]: NRPosition

Set → Query →

| | | |
|---|---|---|
| Description | Sets the position of the normalized reference level. The 0~10 Y-axis grid divisions correspond to the bottom~top grid divisions. | |
| Syntax | :DISPlay[:WINDow]:TRACe:Y[:SCALe]:NRPosition <integer> | |
| Query Syntax | :DISPlay[:WINDow]:TRACe:Y[:SCALe]:NRPosition? | |
| Parameter/ Return parameter | <integer> | <NR1> 0~10 |
| Example | :DISP:TRAC:Y:NRP 5 | |

## :DISPlay[:WINDow]:TRACe:Y[:SCALe]:PDIVision

Set → Query →

| | | |
|---|---|---|
| Description | Sets or queries the Y-axis scale/div when the amplitude scale is logarithmic. | |
| Syntax | :DISPlay[:WINDow]:TRACe:Y[:SCALe]:PDIVision{1\|2\|5\|10} | |
| Query Syntax | :DISPlay[:WINDow]:TRACe:Y[:SCALe]:PDIVision? | |
| Parameter/ Return parameter | 1 | 1 dBm |
| | 2 | 2 dBm |
| | 5 | 5 dBm |
| | 10 | 10 dBm |
| Example | :DISP:TRAC:Y:PDIV 10 | |

## :DISPlay[:WINDow]:TRACe:Y[:SCALe]: POSition

Set → Query →

| | |
|---|---|
| Description | Sets or queries the position of the on-screen scale. |

| | | |
|---|---|---|
| Syntax | :DISPlay[:WINDow]:TRACe:Y[:SCALe]:POSition {LEFT\|CENTer\|RIGHt} | |
| Query Syntax | :DISPlay[:WINDow]:TRACe:Y[:SCALe]:POSition? | |
| Parameter/ Return parameter | LEFT | Position the scale to left |
| | CENTer | Position the scale to the center |
| | RIGHt | Position the scale to right |
| Example | :DISP:TRAC:Y:POS LEFT | |

## :DISPlay[:WINDow]:TRACe:Y[:SCALe]:RLEVel

Set → Query

| | | |
|---|---|---|
| Description | Sets or queries the Y-axis reference level. The units depend on the scale type (logarithmic/linear). | |
| Syntax | :DISPlay[:WINDow]:TRACe:Y[:SCALe]:RLEVel <ampl> | |
| Query Syntax | :DISPlay[:WINDow]:TRACe:Y[:SCALe]:RLEVel? | |
| Parameter/ Return parameter | <ampl> | <NR3> |
| Example | :DISP:TRAC:Y:RLEV 1 mV | |

## :DISPlay[:WINDow]:TRACe:Y[:SCALe]:RLEVel:OFFSet

Set → Query

| | | |
|---|---|---|
| Description | Sets or queries the Y-axis reference level offset. | |
| Syntax | :DISPlay[:WINDow]:TRACe:Y[:SCALe]:RLEVel:OFFSet <rel_ampl> | |
| Query Syntax | :DISPlay[:WINDow]:TRACe:Y[:SCALe]:RLEVel:OFFSet ? | |
| Parameter/ Return parameter | <ampl> | <NR3> dB |
| Example | :DISP:TRAC:Y:RLEV OFFS -5.0e+1 dB | |

## :DISPlay[:WINDow]:TRACe:Y[:SCALe]:SPACing

Set → / → Query

| | | |
|---|---|---|
| Description | Sets or queries the type of scale: logarithmic or linear. | |
| Syntax | :DISPlay[:WINDow]:TRACe:Y[:SCALe]:SPACing {LINear\|LOGarithmic} | |
| Query Syntax | :DISPlay[:WINDow]:TRACe:Y[:SCALe]:SPACing? | |
| Parameter/ Return parameter | LINear | Linear scale |
| | LOGarithmic | Logarithmic scale |
| Example | :DISP:TRAC:Y:SPAC LOG | |

## :DISPlay[:WINDow]:TRACe:Y[:SCALe]:STATe

Set → / → Query

| | | |
|---|---|---|
| Description | Turns the on-screen scale on/off. | |
| Syntax | :DISPlay[:WINDow]:TRACe:Y[:SCALe]:STATe {OFF\|ON\|0\|1} | |
| Query Syntax | :DISPlay[:WINDow]:TRACe:Y[:SCALe]:STATe? | |
| Parameter | 0 | Turn scale off. |
| | 1 | Turn scale on. |
| | OFF | Turn scale off. |
| | ON | Turn scale on. |
| Return parameter | 0 | Scale is off. |
| | 1 | Scale is on. |
| Example | :DISP:TRAC:Y:STAT ON | |

## FORMat Commands

## :FORMat:TRACe:DATA

Set → / → Query

| | | |
|---|---|---|
| Description | Sets or queries data format used to save trace data. | |
| Syntax | :FORMat:TRACe:DATA {ASC\|BINary\|HEXadecimal\|INTeger\|OCTal\|REAL} | |
| Query Syntax | :FORMat:TRACe:DATA? | |
| Parameter/ Return parameter | ASC | ASCII??? |
| | BINary | Binary |
| | HEXadecimal | Hexadecimal |
| | INTeger | Integer |
| | OCTal | Octal |
| | REAL | Real number data |
| Example | :FORM:TRAC:DATA ASC | |

## INITiate Commands



### :INITiate:CONTinuous

Set → / → Query

| | | |
|---|---|---|
| Description | Set the trigger to continuous or single. ON=continuous, OFF=single trigger. When set to OFF the trigger is initiated with the ":INITiate[:IMMediate]" command. | |
| Syntax | :INITiate:CONTinuous {OFF\|ON\|0\|1} | |
| Query Syntax | :INITiate:CONTinuous? | |
| Parameter | 0 | Set trigger to single. |
| | 1 | Set trigger to continuous. |
| | OFF | Set trigger to single. |
| | ON | Set trigger to continuous. |
| Return parameter | 0 | Set trigger to single. |
| | 1 | Set trigger to continuous. |
| Example | :INIT:CONT ON | |

### :INITiate[:IMMediate]

Set →

| | |
|---|---|
| Description | Initiates an immediate trigger when the trigger is set to single (:INITiate:CONTinuous OFF). |
| Syntax | :INITiate[:IMMediate] |
| Example | :INIT |

## INPut Commands



### :INPut:ATTenuation

Set → Query

| | | |
|---|---|---|
| Description | Sets or queries the input attenuation. | |
| Syntax | :INPut:ATTenuation <rel_ampl> | |
| Query Syntax | :INPut:ATTenuation? | |
| Parameter/ Return parameter | <rel_ampl> | <NR3> dB |
| Example | :INP:ATT 10 dB | |

### :INPut:ATTenuation:AUTO

Set → Query

| | | |
|---|---|---|
| Description | Sets or queries whether the automatic input attenuation is on/off. | |
| Syntax | :INPut:ATTenuation:AUTO {OFF\|ON\|0\|1} | |
| Query Syntax | :INPut:ATTenuation:AUTO? | |
| Parameter | 0 | Turn automatic input attenuation off. |
| | 1 | Turn automatic input attenuation on. |
| | OFF | Turn automatic input attenuation off. |
| | ON | Turn automatic input attenuation on. |
| Return parameter | 0 | Automatic input attenuation is off. |
| | 1 | Automatic input attenuation is on. |
| Example | :INP:ATT ON | |

## :INPut:IMPedance

Set → Query

| | | |
|---|---|---|
| Description | Sets or the input impedance in Ω. | |
| Syntax | :INPut:IMPedance {50\|75} | |
| Query Syntax | :INPut:IMPedance? | |
| Parameter/ Return parameter | 50 | <NR1> |
| | 75 | <NR1> |
| Example | :INP:IMP 75 | |

## :INPut:OFFSet

Set → Query

| | | |
|---|---|---|
| Description | Sets or queries the input offset (Input Z Calibration). | |
| Syntax | :INPut:OFFSet <rel_ampl> | |
| Query Syntax | :INPut:OFFSet? | |
| Parameter/ Return parameter | <rel_ampl> | <NR3> dB |
| Example | :INP:OFFS 10 dB | |

## MMEMory Commands



### :MMEMory:CATalog? → Query

| | |
|---|---|
| Description | Returns a list of all the files that have been saved to the local memory. |
| Query Syntax | :MMEMory:CATalog? |
| Example | :MMEM:CAT?<br>>LocalState1.sta, QuickJpg.jpg,QuickJpg1.jpg,····· |

### :MMEMory:CDIRectory → Set

| | |
|---|---|
| Description | Sets the source directory. |

| | |
|---|---|
| Syntax | :MMEMory:CDIRectory {LOCAL\|USB\|SD} |
| Parameter | LOCAL<br>USB<br>SD |
| Example | :MMEM:CD LOCAL |

## :MMEMory:COPY

Set

| | |
|---|---|
| Description | Copies a designated file from the current file directory to the destination directory. The file can be renamed after it is copied. |
| Syntax | :MMEMory:COPY <src_file_name>,<dest_file_name> |
| Parameter | <src_file_name><br><dest_file_name> |
| Example | :MMEM:COPY quick1.jpg, quick2.jpg |

## :MMEMory:DELete

Set

| | |
|---|---|
| Description | Deletes the designated file from the current directory. |
| Syntax | :MMEMory:DELete <src_file_name> |
| Parameter | <src_file_name> |
| Example | :MMEM:DEL quick1.jpg |

## :MMEMory:DESTination

Set

| | |
|---|---|
| Description | Sets the source directory. |
| Syntax | :MMEMory:DESTination {LOCAL\|USB\|SD} |
| Parameter | LOCAL<br>USB<br>SD |
| Example | :MMEM:DEST SD |

## :MMEMory:LOAD:CORRection Set

| | | |
|---|---|---|
| Description | Loads correction data from a file to the internal memory. | |
| Syntax | :MMEMory:LOAD:CORRection <corr num>, <dest_file_name> | |
| Parameter | <corr num><br><dest_file_name> | <NR1> correction set 1~5<br>XXX.cor |
| Example | :MMEM:LOAD:CORR 2,test.corr | |

## :MMEMory:LOAD:LIMit Set

| | | |
|---|---|---|
| Description | Loads limit line data from a file to the internal memory. | |
| Syntax | :MMEMory:LOAD:LIMit <lim num>,<dest_file_name> | |
| Parameter | <lim num><br><dest_file_name> | <NR1> limit line 1~5<br>XXX.lim |
| Example | :MMEM:LOAD:LIM 2,test.lim | |

## :MMEMory:LOAD:PMET Set

| | | |
|---|---|---|
| Description | Loads power meter data from a file to the internal memory. | |
| Syntax | :MMEMory:LOAD:PMET <dest_file_name> | |
| Parameter | <dest_file_name> | XXX.pmet |
| Example | :MMEMory:LOAD:PMET test.pmet | |

## :MMEMory:LOAD:SEQuence Set

| | |
|---|---|
| Description | Loads sequence data from a file to the internal memory. |

| | | |
|---|---|---|
| Syntax | :MMEMory:LOAD:SEQuence <seq num>, <dest_file_name> | |
| Parameter | <seq num> | <NR1>sequence number 1~5 |
| | <dest_file_name> | XXX.seq |
| Example | :MMEM:LOAD:SEQ 2,test.seq | |

## :MMEMory:LOAD:STATe

Set ⟶

| | | |
|---|---|---|
| Description | Loads the instrument state from a file to the internal memory. | |
| Syntax | :MMEMory:LOAD:STATe <dest_file_name> | |
| Parameter | <dest_file_name> | XXX.stat |
| Example | :MMEM:LOAD:STAT test.stat | |

## :MMEMory:LOAD:TRACe

Set ⟶

| | | |
|---|---|---|
| Description | Loads trace data from a file to the internal memory. | |
| Syntax | :MMEMory:LOAD:TRACe <trace name>, <dest_file_name> | |
| Parameter | <trace name> | <NR1> 1~4 |
| | <dest_file_name> | XXX.tra |
| Example | :MMEM:LOAD:TRAC 2,test.tra | |

## :MMEMory:MOVE

Set ⟶

| | | |
|---|---|---|
| Description | Moves a designated file from the current file directory to the destination directory. The file can be renamed after it is moved. | |
| Syntax | :MMEMory:MOVE <src_file_name>,<dest_file_name> | |
| Parameter | <src_file_name> | |
| | <dest_file_name> | |

| | |
|---|---|
| Example | :MMEM:MOVE quick1.jpg, quick2.jpg |

## :MMEMory:RENname

Set →

| | |
|---|---|
| Description | Renames the designated file from the current file. |
| Syntax | :MMEMory:RENname <old_file_name>,<new_file_name> |
| Parameter | <old_file_name><br><new_file_name> |
| Example | :MMEM:REN quick1.jpg, quick2.jpg |

## :MMEMory:STORe:CORRection

Set →

| | | |
|---|---|---|
| Description | Store correction data to a file from the internal memory. | |
| Syntax | :MMEMory:STOR:CORRection<br><corr num>,<new_dest_file_name> | |
| Parameter | <corr num><br><new_dest_file_name> | <NR1> correction set 1~5<br>XXX.cor |
| Example | :MMEM:STOR:CORR 2,test.corr | |

## :MMEMory:STORe:LIMit

Set →

| | | |
|---|---|---|
| Description | Store limit line data to a file from the internal memory. | |
| Syntax | :MMEMory:STOR:LIMit<br><lim num>,<new_dest_file_name> | |
| Parameter | <lim num><br><new_dest_file_name> | <NR1> limit line 1~5<br>XXX.lim |
| Example | :MMEM:STOR:LIM 2,test.lim | |

## :MMEMory:STORe:PMET

Set →

| | |
|---|---|
| Description | Store power meter data to a file from the internal memory. |
| Syntax | :MMEMory:STORe:PMET <dest_file_name> |
| Parameter | <dest_file_name> XXX.pmet |
| Example | :MMEMory:STOR:PMET test.pmet |

## :MMEMory:STORe:SCReen

Set →

| | |
|---|---|
| Description | Store a screen-shot to the current file directory. |
| Syntax | :MMEMory:STORe:SCReen <new_dest_file_name> |
| Parameter | <new_dest_file_name> XXX.jpg |
| Example | :MMEMory:STOR:SCR test.jpg |

## :MMEMory:STORe:SEQuence

Set →

| | |
|---|---|
| Description | Store sequence data to a file from the internal memory. |
| Syntax | :MMEMory:STORe:SEQuence <seq num>, <new_dest_file_name> |
| Parameter | <seq num> <NR1>sequence number 1~5<br><new_dest_file_name> XXX.seq |
| Example | :MMEM:STOR:SEQ 2,test.seq |

## :MMEMory:STORe:STATe

Set →

| | |
|---|---|
| Description | Store the instrument state to a file from the internal memory. |
| Syntax | :MMEMory:STORe:STATe <new_dest_file_name> |
| Parameter | <new_dest_file_name> XXX.stat |
| Example | :MMEM:STORe:STAT test.stat |

## :MMEMory:STORe:TRACe (Set)

| | | |
|---|---|---|
| Description | Store trace data to a file from the internal memory. | |
| Syntax | :MMEMory:STORe:TRACe <trace name>, <new_dest_file_name> | |
| Parameter | <trace name> | <NR1> 1~4 |
| | <new_dest_file_name> | XXX.tra |
| Example | :MMEM:STORe:TRAC 2,test.tra | |

## OUTPut Commands



## :OUTPut[:STATe] (Set) (Query)

| | | |
|---|---|---|
| Description | Turns the tracking generator output on/off. | |
| Syntax | :OUTPut[:STATe] {OFF\|ON\|0\|1} | |
| Query Syntax | :OUTPut[:STATe]? | |
| Parameter | 0 | Turn TG output off. |
| | 1 | Turn TG output on. |
| | OFF | Turn TG output off. |
| | ON | Turn TG output on. |
| Return parameter | 0 | TG output is off. |
| | 1 | TG output is on. |
| Example | :OUTP ON | |

## SENSe Commands

## [:SENSe]:ACPR:ACHannel<n>:BANDwidth|BWIDth

Set → Query

| | | |
|---|---|---|
| Description | Sets or queries the adjacent channel bandwidth for the selected adjacent channel. Used with ACPR measurement. | |
| Syntax | [:SENSe]:ACPR:ACHannel<n>:BANDwidth\|BWIDth <freq> | |
| Query Syntax | [:SENSe]:ACPR:ACHannel<n>:BANDwidth\|BWIDth? | |
| Parameter/ Return parameter | <freq> | <NR3> Hz |
| Example | :ACPR:ACH1:BAND 2.0e+6 | |

## [:SENSe]:ACPR:ACHannel<n>:HLIMit

Set → Query

| | |
|---|---|
| Description | Sets or queries the high limit for the selected adjacent channel. Used with ACPR measurement. |
| Syntax | [:SENSe]:ACPR:ACHannel<n>:HLIMit <ampl> |
| Query Syntax | [:SENSe]:ACPR:ACHannel<n>:HLIMit? |

| | | |
|---|---|---|
| Parameter/ Return parameter | <ampl> | <NR3> dBm |
| Example | :ACPR:ACH1:HLIM −3.0e+1 | |

## [:SENSe]:ACPR:ACHannel<n>:LLIMit

Set → Query

| | |
|---|---|
| Description | Sets or queries the low limit for the selected adjacent channel. Used with ACPR measurement. |
| Syntax | [:SENSe]:ACPR:ACHannel<n>:LLIMit <ampl> |
| Query Syntax | [:SENSe]:ACPR:ACHannel<n>:LLIMit? |

| | | |
|---|---|---|
| Parameter/ Return parameter | <ampl> | <NR3> dBm |
| Example | :ACPR:ACH1:LLIM −5.0e+1 | |

## [:SENSe]:ACPR:ACHannel<n>:OFFSet

Set → Query

| | |
|---|---|
| Description | Sets or queries the adjacent channel offset for the selected adjacent channel. Used with ACPR measurement. |
| Syntax | [:SENSe]:ACPR:ACHannel<n>:OFFSet <freq> |
| Query Syntax | [:SENSe]:ACPR:ACHannel<n>:OFFSet? |

| | | |
|---|---|---|
| Parameter/ Return parameter | <freq> | <NR3> Hz |
| Example | :ACPR:ACH1:OFFSet 2.0e+6 | |

## [:SENSe]:ACPR:BANDwidth|BWIDth

Set → Query

| | |
|---|---|
| Description | Sets or queries the main channel bandwidth for ACPR measurements. |
| Syntax | [:SENSe]:ACPR:BANDwidth|BWIDth <freq> |
| Query Syntax | [:SENSe]:ACPR:BANDwidth|BWIDth? |

| | | |
|---|---|---|
| Parameter/ Return parameter | <freq> | <NR3> Hz |
| Example | :ACPR: BAND 2.0e+6 | |

## [:SENSe]:ACPR:HLIMit

Set → Query

| | | |
|---|---|---|
| Description | Sets or queries the high limit for the main channel. Used with ACPR measurement. | |
| Syntax | [:SENSe]:ACPR:HLIMit <ampl> | |
| Query Syntax | [:SENSe]:ACPR:HLIMit? | |
| Parameter/ Return parameter | <ampl> | <NR3> |
| Example | :ACPR: HLIM -3.0e+1 | |

## [:SENSe]:ACPR:LLIMit

Set → Query

| | | |
|---|---|---|
| Description | Sets or queries the low limit for the main channel. Used with ACPR measurement. | |
| Syntax | [:SENSe]:ACPR:LLIMit <ampl> | |
| Query Syntax | [:SENSe]:ACPR:LLIMit? | |
| Parameter/ Return parameter | <ampl> | <NR3> |
| Example | :ACPR:ACH1:LLIM -5.0e+1 | |

## [:SENSe]:ACPR:HELP

Set →

| | | |
|---|---|---|
| Description | Turns the on-screen help on/off. | |
| Syntax | [:SENSe]:ACPR:HELP {OFF\|ON\|0\|1} | |
| Parameter | 0 | Turn help off. |
| | 1 | Turn help on. |
| | OFF | Turn help off. |

| | | |
|---|---|---|
| | ON | Turn help on. |
| Example | :ACPR:HELP ON | |

## [:SENSe]:ACPR:SPACe

Set → Query

| | | |
|---|---|---|
| Description | Sets or queries the channel spacing between the main channels. | |
| Syntax | [:SENSe]:ACPR:SPACe <freq> | |
| Query Syntax | [:SENSe]:ACPR:SPACe? | |
| Parameter/ Return parameter | <freq> | <NR3> Hz |
| Example | :ACPR: SPAC 2.0e+6 | |

## [:SENSe]:ASET:AMPLitude

Set → Query

| | | |
|---|---|---|
| Description | Sets or queries the autoset amplitude floor level. | |
| Syntax | [:SENSe]:ASET:AMPLitude <ampl> | |
| Query Syntax | [:SENSe]:ASET:AMPLitude? | |
| Parameter/ Return parameter | <ampl> | <NR3> |
| Example | :ASET:AMPL 8.0e+1 | |

## [:SENSe]:ASET:AMPLitude:AUTO

Set → Query

| | | |
|---|---|---|
| Description | Sets autoset amplitude floor level to auto or manual. | |
| Syntax | [:SENSe]:ASET:AMPLitude:AUTO {OFF\|ON\|0\|1} | |
| Query Syntax | [:SENSe]:ASET:AMPLitude:AUTO? | |
| Parameter | 0 | Turn autoset amplitude floor to manual. |
| | 1 | Turn autoset amplitude floor to auto. |
| | OFF | Turn autoset amplitude floor to manual. |
| | ON | Turn autoset amplitude floor to auto. |

| | | |
|---|---|---|
| Return parameter | 0 | Autoset amplitude floor is in manual. |
| | 1 | Autoset amplitude floor is in auto. |
| Example | :ASET:AMPL:AUTO 1 | |

## [:SENSe]:ASET:RUN

Set →

| | |
|---|---|
| Description | Activates the Autoset function. |
| Syntax | [:SENSe]:ASET:RUN |
| Example | :ASET:RUN |

## [:SENSe]:ASET:SPAN

Set →
→ Query

| | | |
|---|---|---|
| Description | Sets or queries the Autoset span. | |
| Syntax | [:SENSe]:ASET:SPAN <freq> | |
| Query Syntax | [:SENSe]:ASET:SPAN? | |
| Parameter/ Return parameter | <freq> | <NR3> Hz |
| Example | ASET:SPAN 2.0e+6 | |

## [:SENSe]:ASET:SPAN:AUTO

Set →
→ Query

| | | |
|---|---|---|
| Description | Turns the Autoset span to auto or manual. | |
| Syntax | [:SENSe]:ASET:SPAN:AUTO {OFF\|ON\|0\|1} | |
| Query Syntax | [:SENSe]:ASET:SPAN:AUTO? | |
| Parameter | 0 | Turn Autoset span to manual (off). |
| | 1 | Turn Autoset span to automatic (on). |
| | OFF | Turn Autoset span to manual (off). |
| | ON | Turn Autoset span to automatic (on). |
| Return parameter | 0 | Autoset span is set to manual (off). |
| | 1 | Autoset span is set to automatic (on). |
| Example | :ASET:SPAN:AUTO | |

## [:SENSe]:AVERage:COUNt

Set → / → Query

| | | |
|---|---|---|
| Description | Sets the number of traces that are used with the average function. | |
| Syntax | [:SENSe]:AVERage:COUNt <integer> | |
| Query Syntax | [:SENSe]:AVERage:COUNt? | |
| Parameter/ Return parameter | <integer> | <NR1> |
| Example | :AVER:COUN 20 | |

## [:SENSe]:AVERage:STATe

Set → / → Query

| | | |
|---|---|---|
| Description | Turns the Average function on/off. | |
| Syntax | [:SENSe]:AVERage:STATe {OFF\|ON\|0\|1} | |
| Query Syntax | [:SENSe]:AVERage:STATe? | |
| Parameter | 0 | Turn the Average function off. |
| | 1 | Turn the Average function on. |
| | OFF | Turn the Average function off. |
| | ON | Turn the Average function on. |
| Return parameter | 0 | The Average function is off. |
| | 1 | The Average function is on. |
| Example | :AVER:STAT ON | |

## [:SENSe]:AVERage:TYPE

Set →

| | |
|---|---|
| Description | Sets the method that the Average function uses to calculate the average. |
| Syntax | [:SENSe]:AVERage:TYPE {VOLTage\|LOGarithmic\|POWer} |
| Query syntax | [:SENSe]:AVERage:TYPE? |

| | | |
|---|---|---|
| Parameter/Return parameter | VOLTage | Sets Average to voltage |
| | LOGarithmic | Sets Average to logarithmic |
| | POWer | Sets Average to power |
| Example | :AVER:TYPE VOLT | |

## [:SENSe]:BANDwidth|BWIDth[:RESolution]

Set → Query →

| | | |
|---|---|---|
| Description | Sets the resolution bandwidth (RBW). | |
| Syntax | [:SENSe]:BANDwidth\|BWIDth[:RESolution] <freq> | |
| Query Syntax | [:SENSe]:BANDwidth\|BWIDth[:RESolution]? | |
| Parameter/ Return parameter | <freq> | <NR3> Hz |
| Example | :BAND 1.0e+6 | |

## [:SENSe]:BANDwidth|BWIDth [:RESolution]:AUTO

Set → Query →

| | | |
|---|---|---|
| Description | Turns the RBW to auto (on) or manual (off). | |
| Syntax | [:SENSe]: BANDwidth\|BWIDth[:RESolution]:AUTO {OFF\|ON\|0\|1} | |
| Query Syntax | [:SENSe]: BANDwidth\|BWIDth[:RESolution]:AUTO? | |
| Parameter | 0 | Turn RBW to manual (off). |
| | 1 | Turn RBW to automatic (on). |
| | OFF | Turn RBW to manual (off). |
| | ON | Turn RBW to automatic (on). |
| Return parameter | 0 | RBW is set to manual (off). |
| | 1 | RBW is set to automatic (on). |
| Example | :BAND:AUTO ON | |

## [:SENSe]:BANDwidth|BWIDth:VIDeo

Set → Query →

| | | |
|---|---|---|
| Description | Sets the video bandwidth (VBW). | |
| Syntax | [:SENSe]:BANDwidth\|BWIDth:VIDeo <freq> | |
| Query Syntax | [:SENSe]:BANDwidth\|BWIDth:VIDeo? | |
| Parameter/ Return parameter | <freq> | <NR3> Hz |
| Example | BAND:VID 1.0e+6 | |

## [:SENSe]:BANDwidth|BWIDth:VIDeo:AUTO

Set → Query

| | | |
|---|---|---|
| Description | Turns the VBW to auto (on) or manual (off). | |
| Syntax | [:SENSe]:BANDwidth\|BWIDth:VIDeo:AUTO {OFF\|ON\|0\|1} | |
| Query Syntax | [:SENSe]:BANDwidth\|BWIDth:VIDeo:AUTO? | |
| Parameter | 0 | Turn VBW to manual (off). |
| | 1 | Turn VBW to automatic (on). |
| | OFF | Turn VBW to manual (off). |
| | ON | Turn VBW to automatic (on). |
| Return parameter | 0 | VBW is set to manual (off). |
| | 1 | VBW is set to automatic (on). |
| Example | :BAND:VID:AUTO OFF | |

## [:SENSe]:CHANnel:SPACe:DOWN

Set →

| | |
|---|---|
| Description | Moves to the previous main channel when using measurements that have a channel space setting. |
| Syntax | [:SENSe]:CHANnel:SPACe:DOWN |
| Example | :CHAN:SPAC:DOWN |

## [:SENSe]:CHANnel:SPACe:UP

Set →

| | |
|---|---|
| Description | Moves to the next main channel when using measurements that have a channel space setting. |
| Syntax | [:SENSe]:CHANnel:SPACe:UP |
| Example | :CHAN:SPAC:UP |

## [:SENSe]:CNR:CHANnel:SPACe

Set → / → Query

| | | |
|---|---|---|
| Description | Sets the channel space bandwidth for CNR measurements. | |
| Syntax | [:SENSe]:CNR:CHANnel:SPACe <freq> | |
| Query Syntax | [:SENSe]:CNR:CHANnel:SPACe? | |
| Parameter/ Return parameter | <freq> | <NR3> Hz |
| Example | :CNR:CHAN:SPAC 6.0e+6 | |

## [:SENSe]:CNR:DELTamarker:MODE

Set →

| | | |
|---|---|---|
| Description | Turns the CNR Noise Marking function to Min(AUTO) or Δ Marker(MANual). | |
| Syntax | [:SENSe]:CNR:DELTamarker:MODE {AUTO\|MANual } | |
| Parameter | AUTO | Sets the Noise Marking to Min. |
| | Δ Marker | Sets the Noise Marking to Δ Marker. |
| Example | :CNR:DELT:MODE AUTO | |

## [:SENSe]:CORRection:CSET<n>:DATA

Set →

| | |
|---|---|
| Description | Sets an offset for a certain frequency for a selected correction set. |
| Syntax | [:SENSe]:CORRection:CSET<n>:DATA <freq>,<offset> |

| | | |
|---|---|---|
| Parameter | <freq> | <NR3> Hz |
| | <offset> | <NR3> dB |
| | <n> | <NR1>correction set number |
| Example | CORR:CSET1:DATA 2e+6,30 | |

## [:SENSe]:CORRection:CSET<n>:STATe

Set / Query

| | | |
|---|---|---|
| Description | Turns the selected correction set on/off. | |
| Syntax | [:SENSe]:CORRection:CSET<n>:STATe {OFF\|ON\|0\|1} | |
| Query Syntax | [:SENSe]:CORRection:CSET<n>:STATe? | |
| Parameter | 0 | Turn turn the selected correction set off. |
| | 1 | Turn turn the selected correction set on. |
| | OFF | Turn turn the selected correction set off. |
| | ON | Turn turn the selected correction set on. |
| | <n> | <NR1>correction set number |
| Return parameter | 0 | The selected correction set is off. |
| | 1 | The selected correction set is on. |
| Example | :CORR:CSET1:STAT ON | |

## [:SENSe]:CORRection:CSET<n>:DELete

Set / Query

| | | |
|---|---|---|
| Description | Deletes the chosen correction set. | |
| Syntax | [:SENSe]:CORRection:CSET<n>:DELete | |
| Parameter | <n> | <NR1>correction set number |
| Example | :CORR:CSET1:DEL 2 | |

## [:SENSe]:CSO:CHANnel:SPACe

Set / Query

| | |
|---|---|
| Description | Sets the channel space bandwidth for CSO measurements. |
| Syntax | [:SENSe]:CSO:CHANnel:SPACe <freq> |

| | | |
|---|---|---|
| Query Syntax | [:SENSe]:CSO:CHANnel:SPACe? | |
| Parameter/ Return parameter | <freq> | <NR3> Hz |
| Example | :CSO:CHAN:SPAC 6.0e+6 | |

## [:SENSe]:CTB:CHANnel:SPACe

Set → / → Query

| | | |
|---|---|---|
| Description | Sets the channel space bandwidth for CTB measurements. | |
| Syntax | [:SENSe]:CTB:CHANnel:SPACe <freq> | |
| Query Syntax | [:SENSe]:CTB:CHANnel:SPACe? | |
| Parameter/ Return parameter | <freq> | <NR3> Hz |
| Example | :CTB:CHAN:SPAC 6.0e+6 | |

## [:SENSe]:DEMod:EARPone:TYPE

Set →

| | | |
|---|---|---|
| Description | Sets the demodulation type for the Ear Phone Out demodulation function. | |
| Syntax | [:SENSe]:DEMod:EARPone:TYPE {AM\|FM} | |
| Parameter | AM | AM demodulation |
| | FM | FM demodulation |
| Example | :DEM:EARP:TYPE AM | |

## [:SENSe]:DEMod:EARPone:VOLume

Set → / → Query

| | | |
|---|---|---|
| Description | Sets the volume setting for the demodulation function. | |
| Syntax | [:SENSe]:DEMod:EARPone:VOLume <integer> | |
| Query Syntax | [:SENSe]:DEMod:EARPone:VOLume? | |

| | | |
|---|---|---|
| Parameter/ Return parameter | <integer> | <NR1> 0~15 |
| Example | :DEM:EARP:VOL 7 | |

## [:SENSe]:DEMod:EARPone:GAIN

Set → / → Query

| | | |
|---|---|---|
| Description | Sets the gain setting for the demodulation function. | |
| Syntax | [:SENSe]:DEMod:EARPone:GAIN <rel_ampl> | |
| Query Syntax | [:SENSe]:DEMod:EARPone:GAIN? | |
| Parameter/ Return parameter | <rel_ampl> | <NR1> 0~18, 6dB steps |
| Example | :DEM:EARP:GAIN 6 | |

## [:SENSe]:DEMod:FILTer:LPASs

Set → / → Query

| | | |
|---|---|---|
| Description | Sets the low pass filter settings for the AM/FM Analysis function. | |
| Syntax | [:SENSe]:DEMod:FILTer:LPASs {LEVel<n>\|Bypass} | |
| Query Syntax | [:SENSe]:DEMod:FILTer:LPASs? | |
| Parameter/ Return parameter | Bypass <n> | Sets the low pass filter to bypass. <NR1>1~5 |

The filters 1 to 5 are shown in the table below. The GSP-930 will automatically detect the signal frequency.

| AM/FM Signal Frequency (Hz) | Selectable bandwidth of LPF (Hz) | | | | |
|---|---|---|---|---|---|
| | <n>=1 | <n>=2 | <n>=3 | <n>=4 | <n>=5 |
| ≥78,125 | 156,250 | 78,125 | 52,083 | 39,063 | 31,250 |
| ≥39,063 | 78,125 | 39,063 | 26,042 | 19,531 | 15,625 |
| ≥19,531 | 39,063 | 19,531 | 13,021 | 9,766 | 7,813 |
| ≥7,813 | 15,625 | 7,813 | 5,208 | 3,906 | 3,125 |
| ≥3,906 | 7,813 | 3,906 | 2,604 | 1,953 | 1,563 |
| ≥1,953 | 3,906 | 1,953 | 1,302 | 977 | 781 |
| ≥781 | 1,563 | 781 | 521 | 391 | 313 |
| ≥391 | 781 | 391 | 260 | 195 | 156 |

| | | | | | |
|---|---|---|---|---|---|
| ≥195 | 391 | 195 | 130 | 98 | 78 |
| ≥78 | 156 | 78 | 52 | 39 | 31 |
| ≥39 | 78 | 39 | 26 | 20 | 16 |
| ≥20 | 39 | 20 | 13 | 10 | 8 |
| ≥8 | 16 | 8 | 5 | 4 | 3 |

Example :DEM:FILT:LPAS B

## [:SENSe]:DEMod:IFBW

Set → Query

| | | |
|---|---|---|
| Description | Sets or queries the IF bandwidth for the AM/FM Analysis function. | |
| Syntax | [:SENSe]:DEMod:IFBW <freq> | |
| Query Syntax | [:SENSe]:DEMod:IFBW? | |
| Parameter/ Return parameter | <freq> | <NR3>Hz. |
| Example | DEM:IFBW 3.0e+5 | |

## [:SENSe]:DETector[:FUNCtion]

Set → Query

| | | |
|---|---|---|
| Description | Sets/queries the trace detection mode when in manual mode. | |
| Syntax | [:SENSe]:DETector[:FUNCtion] {AVERage\|SAMPle\|POSitive\|NEGative\|NORMal} | |
| Query Syntax | [:SENSe]:DETector[:FUNCtion]? | |
| Parameter/ Return parameter | AVERage | Sets the detector mode to Average. |
| | SAMPle | Sets the detector mode to Sample. |
| | POSitive | Sets the detector mode to Peak+. |
| | NEGative | Sets the detector mode to Peak−. |
| | NORMal | Sets the detector mode to Normal. |
| Example | :DET NORM | |

## [:SENSe]:DETector[:FUNCtion]:AUTO

Set → Query

| | | |
|---|---|---|
| Description | Turns the trace detection mode to auto (on) or manual (off). | |
| Syntax | [:SENSe]:DETector[:FUNCtion]:AUTO {OFF\|ON\|0\|1} | |
| Query Syntax | [:SENSe]:DETector[:FUNCtion]:AUTO? | |
| Parameter | 0 | Turn the detection mode to manual (off). |
| | 1 | Turn the detection mode to auto (on). |
| | OFF | Turn the detection mode to manual (off). |
| | ON | Turn the detection mode to auto (on). |
| Return parameter | 0 | The detection mode is set to manual. |
| | 1 | The detection mode is set to automatic. |
| Example | :DET:AUTO ON | |

## [:SENSe]:EMIFilter:STATe

Set → Query

| | | |
|---|---|---|
| Description | Turns the EMI filter on/off. | |
| Syntax | [:SENSe]:EMIFilter:STATe {OFF\|ON\|0\|1} | |
| Query Syntax | [:SENSe]:EMIFilter:STATe? | |
| Parameter | 0 | Turn the EMI filter off. |
| | 1 | Turn the EMI filter on. |
| | OFF | Turn the EMI filter off. |
| | ON | Turn the EMI filter on. |
| Return parameter | 0 | The EMI filter is off. |
| | 1 | The EMI filter is on. |
| Example | :EMI:STAT 0 | |

## [:SENSe]:EMIFilter:BANDwidth|BWIDth [:RESolution]

Set →

| | |
|---|---|
| Description | Sets the EMI filter bandwidth (must be set to the exact bandwidth). |
| Syntax | [:SENSe]:EMIFilter:BANDwidth\|BWIDth[:RESolution] <freq> |

| | | |
|---|---|---|
| Parameter | <freq> | <NR3>Hz {200Hz, 9kHz, 120kHz} |
| Example | :EMIF:BAND 2.0e+2 | |

## [:SENSe]:FREQuency:CENTer

Set → / → Query

| | | |
|---|---|---|
| Description | Sets the center frequency. | |
| Syntax | [:SENSe]:FREQuency:CENTer <freq> | |
| Query Syntax | [:SENSe]:FREQuency:CENTer? | |
| Parameter/ Return parameter | <freq> | <NR3>Hz |
| Example | :FREQ:CENT 1.0e+9 | |

## [:SENSe]:FREQuency:CENTer:STEP

Set → / → Query

| | | |
|---|---|---|
| Description | Sets the CF Step frequency. | |
| Syntax | [:SENSe]:FREQuency:CENTer:STEP <freq> | |
| Query Syntax | [:SENSe]:FREQuency:CENTer:STEP? | |
| Parameter/ Return parameter | <freq> | <NR3>Hz |
| Example | FREQ:CENT:STEP 1.0e+3 | |

## [:SENSe]:FREQuency:CENTer:STEP:AUTO

Set → / → Query

| | | |
|---|---|---|
| Description | Turns the CF Step frequency setting to auto (on) or manual (off). | |
| Syntax | [:SENSe]:FREQuency:CENTer:STEP:AUTO {OFF\|ON\|0\|1} | |
| Query Syntax | [:SENSe]:FREQuency:CENTer:STEP:AUTO? | |
| Parameter | 0 | Turn CF Step to manual (off). |
| | 1 | Turn CF Step to auto (on). |
| | OFF | Turn CF Step to manual (off). |

| | | |
|---|---|---|
| | ON | Turn CF Step to auto (on). |
| Return parameter | 0 | CF Step is set to manual. |
| | 1 | CF Step is set to automatic. |
| Example | :FREQ:CENT:STEP:AUTO OFF | |

## [:SENSe]:FREQuency:OFFSet

Set → Query

| | | |
|---|---|---|
| Description | Sets the frequency offset settings. | |
| Syntax | [:SENSe]:FREQuency:OFFSet <freq> | |
| Query Syntax | [:SENSe]:FREQuency:OFFSet? | |
| Parameter/ Return parameter | <freq> | <NR3>Hz |
| Example | :FREQ:OFFS 1.0e+6 | |

## [:SENSe]:FREQuency:SPAN

Set → Query

| | | |
|---|---|---|
| Description | Sets the span settings. | |
| Syntax | [:SENSe]:FREQuency:SPAN <freq> | |
| Query Syntax | [:SENSe]:FREQuency:SPAN? | |
| Parameter/ Return parameter | <freq> | <NR3>Hz |
| Example | :FREQ:SPAN 2.0e+9 | |

## [:SENSe]:FREQuency:SPAN:FULL

Set →

| | |
|---|---|
| Description | Set the span to Full Span. |
| Syntax | [:SENSe]:FREQuency:SPAN:FULL |
| Example | :FREQ:SPAN:FULL |

## [:SENSe]:FREQuency:SPAN:PREVious

Set →

| | |
|---|---|
| Description | Set the span to the previous span setting. |
| Syntax | [:SENSe]:FREQuency:SPAN:PREVious |
| Example | :FREQ:SPAN:PREV |

## [:SENSe]:FREQuency:STARt

Set → / → Query

| | | |
|---|---|---|
| Description | Sets the start frequency. | |
| Syntax | [:SENSe]:FREQuency:STARt <freq> | |
| Query Syntax | [:SENSe]:FREQuency:STARt? | |
| Parameter/ Return parameter | <freq> | <NR3>Hz |
| Example | FREQ:STAR 0 | |

## [:SENSe]:FREQuency:STOP

Set → / → Query

| | | |
|---|---|---|
| Description | Sets the stop frequency. | |
| Syntax | [:SENSe]:FREQuency:STOP <freq> | |
| Query Syntax | [:SENSe]:FREQuency:STOP? | |
| Parameter/ Return parameter | <freq> | <NR3>Hz |
| Example | FREQ:STOP 1.0e+6 | |

## [:SENSe]:LIMit<n>:DELete

Set →

| | | |
|---|---|---|
| Description | Deletes the chosen limit line. | |
| Syntax | [:SENSe]:LIMit<n>:DELete | |
| Parameter | <n> | <NR1> limit line number |
| Example | :LIM3:DEL | |

## [:SENSe]:JITTer:OFFSet:STARt

Set → Query

| | | |
|---|---|---|
| Description | Sets the start offset for phase jitter measurements. | |
| Syntax | [:SENSe]:JITTer:OFFSet:STARt <freq> | |
| Query Syntax | [:SENSe]:JITTer:OFFSet:STARt? | |
| Parameter/ Return parameter | <freq> | <NR3>Hz |
| Example | JITT:OFFS:STAR 1.0e+7 | |

## [:SENSe]:JITTer:OFFSet:STOP

Set → Query

| | | |
|---|---|---|
| Description | Sets the stop offset for phase jitter measurements. | |
| Syntax | [:SENSe]:JITTer:OFFSet:STOP <freq> | |
| Query Syntax | [:SENSe]:JITTer:OFFSet:STOP? | |
| Parameter/ Return parameter | <freq> | <NR3>Hz |
| Example | JITT:OFFS:STOP 1.5e+7 | |

## [:SENSe]:NDB:BANDwidth|BWIDth

Set → Query

| | | |
|---|---|---|
| Description | Sets the NdB amplitude for NdB bandwidth measurements. | |
| Syntax | [:SENSe]:NDB:BANDwidth\|BWIDth <rel_amp> | |
| Query Syntax | [:SENSe]:NDB:BANDwidth\|BWIDth? | |
| Parameter/ Return parameter | <rel_ampl> | <NR3> dB |
| Example | :NDB:BAND 3 dB | |

## [:SENSe]:OCBW:BANDwidth|BWIDth

Set → Query

| | | |
|---|---|---|
| Description | Sets the OCBW bandwidth for OCBW measurements. | |
| Syntax | [:SENSe]:OCBW:BANDwidth\|BWIDth <freq> | |
| Query Syntax | [:SENSe]:OCBW:BANDwidth\|BWIDth? | |
| Parameter/ Return parameter | <freq> | <NR3>Hz |
| Example | :OCBW:BAND 4.5+6 | |

## [:SENSe]:OCBW:PERCent

Set → Query

| | | |
|---|---|---|
| Description | Sets or queries the OCBW percentage (OCBW %) parameter. | |
| Syntax | [:SENSe]:OCBW:PERCent <integer> | |
| Query Syntax | [:SENSe]:OCBW:PERCent? | |
| Parameter/ Return parameter | <integer> | <NR1>0~100 |
| Example | :OCBW:PERC 90 | |

## [:SENSe]:OCBW:SPACe

Set → Query

| | | |
|---|---|---|
| Description | Sets the OCBW channel space for OCBW measurements. | |
| Syntax | [:SENSe]:OCBW:SPACe <freq> | |
| Query Syntax | [:SENSe]:OCBW:SPACe? | |
| Parameter/ Return parameter | <freq> | <NR3>Hz |
| Example | :OCBW:SPAC 6e+7 | |

## [:SENSe]:OCBW:SPAN

Set → Query

| | |
|---|---|
| Description | Sets the OCBW span for OCBW measurements. |
| Syntax | [:SENSe]:OCBW:SPAN <freq> |

| | | |
|---|---|---|
| Query Syntax | [:SENSe]:OCBW:SPAN? | |
| Parameter/ Return parameter | <freq> | <NR3>Hz |
| Example | :OCBW:SPAN 1e+7 | |

## [:SENSe]:PMETer:FREQuency

Set → / → Query

| | | |
|---|---|---|
| Description | Sets the power meter measurement frequency. | |
| Syntax | [:SENSe]:PMETer:FREQuency <freq> | |
| Query Syntax | [:SENSe]:PMETer:FREQuency? | |
| Parameter/ Return parameter | <freq> | <NR3>Hz |
| Example | :PMET:FREQ 2e+7 | |

## [:SENSe]:PMETer:HLIMit

Set → / → Query

| | | |
|---|---|---|
| Description | Sets the power meter high limit for pass/fail tests. | |
| Syntax | [:SENSe]:PMETer:HLIMit <ampl> | |
| Query Syntax | [:SENSe]:PMETer:HLIMit? | |
| Parameter/ Return parameter | <ampl> | <NR3> dBm |
| Example | :PMET:HLIM 10 | |

## [:SENSe]:PMETer:HOLD:STATe

Set → / → Query

| | | |
|---|---|---|
| Description | Turns the power meter Max/Min Hold function on/off. | |
| Syntax | [:SENSe]:PMETer:HOLD:STATe {OFF\|ON\|0\|1} | |
| Query Syntax | [:SENSe]:PMETer:HOLD:STATe? | |
| Parameter | 0 | Turn the Max/Min Hold function off. |
| | 1 | Turn the Max/Min Hold function on. |
| | OFF | Turn the Max/Min Hold function off. |

| | | |
|---|---|---|
| | ON | Turn the Max/Min Hold function on. |
| Return parameter | 0 | The Max/Min Hold function is off. |
| | 1 | The Max/Min Hold function is on. |
| Example | :PEMT:HOLD:STAT 0 | |

## [:SENSe]:PMETer:LLIMit

Set → Query

| | | |
|---|---|---|
| Description | Sets the power meter low limit for pass/fail tests. | |
| Syntax | [:SENSe]:PMETer:LLIMit <ampl> | |
| Query Syntax | [:SENSe]:PMETer:LLIMit? | |
| Parameter/ Return parameter | <ampl> | <NR3> dBm |
| Example | :PMET:LLIM 0 | |

## [:SENSe]:PMETer:PSENsor:MODE

Set → Query

| | | |
|---|---|---|
| Description | Sets or queries the power meter sensor mode. | |
| Syntax | [:SENSe]:PMETer:PSENsor:MODE {LOWNoise\|FASTer} | |
| Query Syntax | [:SENSe]:PMETer:PSENsor:MODE? | |
| Parameter/ Return parameter | LOWNoise | Sets the power meter mode to low noise. |
| | FASTer | Set the power meter mode to fast. |
| Example | :PMET:PSEN:MODE | |

## [:SENSe]:PMETer:RECording:TIME

Set → Query

| | | |
|---|---|---|
| Description | Sets or queries the power meter recording time. | |
| Syntax | [:SENSe]:PMETer:RECording:TIME <hour>,<minute>,<second> | |
| Query Syntax | [:SENSe]:PMETer:RECording:TIME? | |

| | | |
|---|---|---|
| Parameter/ Return parameter | <hour> | <NR1>Recording time: hours. |
| | <minute> | <NR1>Recording time: minutes. |
| | <second> | <NR1>Recording time: seconds. |
| Example | :PMET:REC:TIME 1,10,30 | |

## [:SENSe]:PMETer:RECording:TIME:STEP

Set → Query

| | |
|---|---|
| Description | Sets or queries the power meter recording interval in seconds. |
| Syntax | [:SENSe]:PMETer:RECording:TIME:STEP <time> |
| Query Syntax | [:SENSe]:PMETer:RECording:TIME:STEP? |

| | | |
|---|---|---|
| Parameter/ Return parameter | <time> | <NR1>time in seconds. |
| Example | :PMET:REC:TIME:STEP 10s | |

## [:SENSe]:POWer[:RF]:GAIN

Set → Query

| | |
|---|---|
| Description | Sets the preamplifier to Auto or Bypass mode. |
| Syntax | [:SENSe]:POWer[:RF]:GAIN {AUTO\|BYPASS} |
| Query Syntax | [:SENSe]:POWer[:RF]:GAIN? |

| | | |
|---|---|---|
| Parameter/ Return parameter | AUTO | Sets the preamplifier to auto mode. |
| | BYPASS | Sets the preamplifier to bypass mode. |
| Example | :POW:GAIN AUTO | |

## [:SENSe]:SEMask:BANDwidth|BWIDth:INTegration

Set → Query

| | |
|---|---|
| Description | Sets the channel integration bandwidth for SEM measurements (user defined only). |
| Syntax | [:SENSe]:SEMask:BANDwidth\|BWIDth:INTegration <freq> |

| | | |
|---|---|---|
| Query Syntax | [:SENSe]:SEMask:BANDwidth\|BWIDth:INTegration? | |
| Parameter/ Return parameter | <freq> | <NR3>Hz |
| Example | :SEM:BAND:INT 3.84e+6 | |

## [:SENSe]:SEMask:BANDwidth|BWIDth[:RESolution]

Set → Query

| | | |
|---|---|---|
| Description | Sets the RBW for SEM measurements. | |
| Syntax | [:SENSe]:SEMask:BANDwidth\|BWIDth[:RESolution] <freq> | |
| Query Syntax | [:SENSe]:SEMask:BANDwidth\|BWIDth[:RESolution]? | |
| Parameter/ Return parameter | <freq> | <NR3>Hz |
| Example | :SEM:BAND 2.2e+4 | |

## [:SENSe]:SEMask:BANDwidth|BWIDth[:RESolution]:AUTO

Set → Query

| | | |
|---|---|---|
| Description | Turns the RBW setting to auto (on) or manual (off) for SEM measurements. | |
| Syntax | [:SENSe]:SEMask:BANDwidth\|BWIDth[:RESolution]: AUTO {OFF\|ON\|0\|1} | |
| Query Syntax | [:SENSe]:SEMask:BANDwidth\|BWIDth[:RESolution]: AUTO? | |
| Parameter | 0 | Turn RBW to manual (off). |
| | 1 | Turn RBW to auto (on). |
| | OFF | Turn RBW to manual (off). |
| | ON | Turn RBW to auto (on). |
| Return parameter | 0 | RBW is set to manual. |
| | 1 | RBW is set to automatic. |

| | |
|---|---|
| Example | :SEM:BAND: AUTO OFF |

## [:SENSe]:SEMask:CARRier:AUTO

Set → / → Query

| | | |
|---|---|---|
| Description | Turns the PSDRef or TotalPwrRef modes to auto (on) or manual (off) for SEM measurements. | |
| Syntax | [:SENSe]:SEMask:CARRier:AUTO {OFF\|ON\|0\|1} | |
| Query Syntax | [:SENSe]:SEMask:CARRier:AUTO? | |
| Parameter | 0 | Turn PSDRef/TotalPwrRef to manual (off). |
| | 1 | Turn PSDRef/TotalPwrRef to auto (on). |
| | OFF | Turn PSDRef/TotalPwrRef to manual (off). |
| | ON | Turn PSDRef/TotalPwrRef to auto (on). |
| Return parameter | 0 | PSDRef/TotalPwrRef is set to manual. |
| | 1 | PSDRef/TotalPwrRef is set to automatic. |
| Example | :SEM:CARR:AUTO OFF | |

## [:SENSe]:SEMask:CARRier:CPSD

Set → / → Query

| | | |
|---|---|---|
| Description | Sets the PSDRef for SEM measurements. | |
| Syntax | [:SENSe]:SEMask:CARRier:CPSD <NR3> | |
| Query Syntax | [:SENSe]:SEMask:CARRier:CPSD? | |
| Parameter/ Return parameter | <NR3> | PSD ref unit = dBm/Hz |
| Example | :SEM:CARR:CPSD 20 | |

## [:SENSe]:SEMask:CARRier: POWer

Set → / → Query

| | | |
|---|---|---|
| Description | Sets the TotalPwrRef amplitude for SEM measurements. | |
| Syntax | [:SENSe]:SEMask:CARRier: POWer <ampl> | |
| Query Syntax | [:SENSe]:SEMask:CARRier: POWer? | |
| Parameter/ Return parameter | <ampl> | <NR3> |
| Example | :SEM:CARR:POW 2 dbm | |

## [:SENSe]:SEMask:FREQuency:SPAN

Set → / → Query

| | | |
|---|---|---|
| Description | Sets the channel span for SEM measurements (user-defined only). | |
| Syntax | [:SENSe]:SEMask:FREQuency:SPAN<freq> | |
| Query Syntax | [:SENSe]:SEMask:FREQuency:SPAN? | |
| Parameter/ Return parameter | <freq> | <NR3>Hz |
| Example | :SEM:FREQ:SPAN 2.2e+7 | |

## [:SENSe]:SEMask:GWLan:MODulation

Set → / → Query

| | | |
|---|---|---|
| Description | Sets the modulation type for the 802.11g SEM measurement. | |
| Syntax | [:SENSe]:SEMask:GWLan:MODulation {SINGle\|MULTIcarrier} | |
| Query Syntax | [:SENSe]:SEMask:GWLan:MODulation? | |
| Parameter/ Return parameter | SINGle<br>MULTIcarrier | ERP-OFDM/DSSS-OFDN<br>ERP-DSSS/ERP-PBCC/ERP-CCK |
| Example | :SEM:GWL:MOD SING | |

## [:SENSe]:SEMask:HELP:STATe

Set → / → Query

| | | |
|---|---|---|
| Description | Turns the on-screen help window on/off. | |
| Syntax | [:SENSe]:SEMask:HELP:STATe {OFF\|ON\|0\|1} | |
| Query Syntax | [:SENSe]:SEMask:HELP:STATe? | |
| Parameter | 0 | Turns the help window off. |
| | 1 | Turns the help window on. |
| | OFF | Turns the help window off. |
| | ON | Turns the help window on. |
| Return parameter | 0 | Help window is off. |
| | 1 | Help window is on. |
| Example | :SEM:HELP:STATE 1 | |

## [:SENSe]:SEMask:NWLan:CHANnel: BANDwidth|BWIDth

Set → / → Query

| | | |
|---|---|---|
| Description | Sets the modulation type for the 802.11g SEM measurement. Only 20MHz or 40MHz can be used. | |
| Syntax | [:SENSe]:SEMask:NWLan:CHANnel: BANDwidth\|BWIDth <freq> | |
| Parameter/ Return parameter | <freq> | <NR3> 20 MHz or 40MHz (2e+7 \| 4e+7)can be selected. |
| Example | :SEM:NWL:CHAN:BAND 20 MHZ | |

## [:SENSe]:SEMask:OFFSet<n>:ADDition: BANDwidth|BWIDth[:RESolution]?

→ Query

| | |
|---|---|
| Description | Returns the RBW of the selected offset for the additional requirements of the selected 3GPP SEM test. |

| | | |
|---|---|---|
| Query syntax | [:SENSe]:SEMask:OFFSet<n>:ADDition:<br>BANDwidth\|BWIDth[:RESolution]? | |
| Parameter/<br>Return parameter | <n><br><NR3> | Offset 1 to 5<br>RBW in Hz |
| Example | :SEM:OFFS1:ADD:BAND?<br>>XXXXXXXXXXXx | |

## [:SENSe]:SEMask:OFFSet<n>:ADDition:FREQuency:STARt? → Query

| | | |
|---|---|---|
| Description | Returns the start frequency of the selected offset for the additional requirements of the selected 3GPP SEM test. | |
| Query syntax | [:SENSe]:SEMask:OFFSet<n>:ADDition:<br>FREQuency:STARt? | |
| Parameter/<br>Return parameter | <n><br><NR3> | Offset 1 to 5<br>Start frequency in Hz |
| Example | :SEM:OFFS1:ADD:FREQ:STAR?<br>>2.5e+6 | |

## [:SENSe]:SEMask:OFFSet<n>:ADDition:FREQuency:STOP? → Query

| | | |
|---|---|---|
| Description | Returns the stop frequency of the selected offset for the additional requirements of the selected 3GPP SEM test. | |
| Query syntax | [:SENSe]:SEMask:OFFSet<n>:ADDition:<br>FREQuency:STOP? | |
| Parameter/<br>Return parameter | <n><br><NR3> | Offset 1 to 5<br>Stop frequency in Hz |
| Example | :SEM:OFFS1:ADD:FREQ:STOP?<br>>3.5e+6 | |

## [:SENSe]:SEMask:OFFSet<n>:ADDition: STARt:ABSolute? → Query

| | | |
|---|---|---|
| Description | Returns the "start" amplitude (dBm) of the Absolute Mask for the selected offset for the additional requirements of the selected 3GPP SEM test. | |
| Query syntax | [:SENSe]:SEMask:OFFSet<n>:ADDition:STARt: ABSolute? | |
| Parameter/ Return parameter | <n> | Offset 1 to 5 |
| | <NR3> | Amplitude at start frequency |
| Example | :SEM:OFFS1:ADD:STAR:ABS? >1.5e+1 | |

## [:SENSe]:SEMask:OFFSet<n>:ADDition: STARt: RELative? → Query

| | | |
|---|---|---|
| Description | Returns the "start" amplitude (dBc) of the Relative Mask for the selected offset for the additional requirements of the selected 3GPP SEM test. | |
| Query syntax | [:SENSe]:SEMask:OFFSet<n>:ADDition:STARt: RELative? | |
| Parameter/ Return parameter | <n> | Offset 1 to 5 |
| | <NR3> | Relative amplitude at start frequency |
| Example | :SEM:OFFS1:ADD:STAR:REL? >1.5e+1 | |

## [:SENSe]:SEMask:OFFSet<n>:ADDition: STATe? → Query

| | |
|---|---|
| Description | Returns the state mask for the additional requirements for the selected offset. |

| | | |
|---|---|---|
| Syntax | [:SENSe]:SEMask:OFFSet<n>:ADDition:STATe? | |
| Return parameter | 0 | Mask is off. |
| | 1 | Mask is on. |
| Example | :SEM:OFF1:ADD:STAT?<br>>0 | |

## [:SENSe]:SEMask:OFFSet<n>:ADDition: STOP:ABSolute? → Query

| | | |
|---|---|---|
| Description | Returns the "Stop" amplitude (dBm) of the Absolute Mask for the selected offset for the additional requirements of the selected 3GPP SEM test. | |
| Query syntax | [:SENSe]:SEMask:OFFSet<n>:ADDition:STOP: ABSolute? | |
| Parameter/ Return parameter | <n> | Offset 1 to 5 |
| | <NR3> | Amplitude at stop frequency |
| Example | :SEM:OFFS1:ADD:STOP:ABS?<br>>1.5e+1 | |

## [:SENSe]:SEMask:OFFSet<n>:ADDition: STOP: RELative? → Query

| | | |
|---|---|---|
| Description | Returns the "stop" amplitude (dBc) of the Relative Mask for the selected offset for the additional requirements of the selected 3GPP SEM test. | |
| Query syntax | [:SENSe]:SEMask:OFFSet<n>:ADDition:STOP: RELative? | |
| Parameter/ Return parameter | <n> | Offset 1 to 5 |
| | <NR3> | Relative amplitude at stop frequency |
| Example | :SEM:OFFS1:ADD:STOP:REL?<br>>1.5e+1 | |

## [:SENSe]:SEMask:OFFSet<n>:BANDwidth|BWIDth[:RESolution]

Set → / → Query

| | | |
|---|---|---|
| Description | Sets or queries the resolution bandwidth of the selected offset. | |
| Syntax | [:SENSe]:SEMask:OFFSet<n>:BANDwidth\|BWIDth[:RESolution] <freq> | |
| Query Syntax | [:SENSe]:SEMask:OFFSet<n>:BANDwidth\|BWIDth[:RESolution]? | |
| Parameter/ Return parameter | <freq> | <NR3> Hz |
| | <n> | <NR1>offset 1~5 |
| Example | SEM:OFFS1:BAND 3.0e+3 | |

## [:SENSe]:SEMask:OFFSet<n>:BANDwidth|BWIDth[:RESolution]:AUTO

Set → / → Query

| | | |
|---|---|---|
| Description | Turns the resolution bandwidth for the selected channel to manual or automatic mode. | |
| Syntax | [:SENSe]:SEMask:OFFSet<n>:BANDwidth\|BWIDth[:RESolution]:AUTO {OFF\|ON\|0\|1} | |
| Query Syntax | [:SENSe]:SEMask:OFFSet<n>:BANDwidth\|BWIDth[:RESolution]:AUTO? | |
| Parameter | 0 | Set RBW to manual. |
| | 1 | Set RBW to auto. |
| | OFF | Set RBW to manual. |
| | ON | Set RBW to auto. |
| Return parameter | 0 | RBW is set to manual. |
| | 1 | RBW is set to auto. |

## [:SENSe]:SEMask:OFFSet<n>:FREQuency:STARt

Set → / → Query

| | | |
|---|---|---|
| Description | Sets or queries the start frequency of the selected offset. | |
| Syntax | [:SENSe]:SEMask:OFFSet<n>:FREQuency:STARt <freq> | |
| Query Syntax | [:SENSe]:SEMask:OFFSet<n>:FREQuency:STARt? | |
| Parameter/ Return parameter | <freq> | <NR3> Hz |
| | <n> | <NR1>offset 1~5 |
| Example | SEM:OFFS1:FREQ:STAR 2.5e+3 | |

## [:SENSe]:SEMask:OFFSet<n>:FREQuency:STOP

Set → / → Query

| | | |
|---|---|---|
| Description | Sets or queries the stop frequency of the selected offset. | |
| Syntax | [:SENSe]:SEMask:OFFSet<n>:FREQuency:STOP <freq> | |
| Query Syntax | [:SENSe]:SEMask:OFFSet<n>:FREQuency:STOP? | |
| Parameter/ Return parameter | <freq> | <NR3> Hz |
| | <n> | <NR1>offset 1~5 |
| Example | SEM:OFFS1:FREQ:STOP 2.5e+3 | |

## [:SENSe]:SEMask:OFFSet<n>:STARt:ABSolute

Set → / → Query

| | |
|---|---|
| Description | Sets or queries the amplitude of the start frequency of the Absolute Mask for the selected offset. |
| Syntax | [:SENSe]:SEMask:OFFSet<n>:STARt:ABSolute <ampl> |
| Query Syntax | [:SENSe]:SEMask:OFFSet<n>:STARt:ABSolute? |

| | | |
|---|---|---|
| Parameter/ Return parameter | <ampl> | <NR3> dBm |
| | <n> | <NR1>offset 1~5 |
| Example | SEM:OFFS1:STAR:ABS 1.5e+1 | |

## [:SENSe]:SEMask:OFFSet<n>:STARt:RELative

Set → / → Query

| | | |
|---|---|---|
| Description | Sets or queries the amplitude of the start frequency of the Relative Mask for the selected offset. | |
| Syntax | [:SENSe]:SEMask:OFFSet<n>:STARt:RELative <ampl> | |
| Query Syntax | [:SENSe]:SEMask:OFFSet<n>:STARt:RELative? | |
| Parameter/ Return parameter | <ampl> | <NR3> dBc |
| | <n> | <NR1> offset 1~5 |
| Example | SEM:OFFS1:STAR:REL 2.5e+1 | |

## [:SENSe]:SEMask:OFFSet<n>:STATe

Set → / → Query

| | | |
|---|---|---|
| Description | Turns the selected offset on/off. | |
| Syntax | [:SENSe]:SEMask:OFFSet<n>:STATe {OFF\|ON\|0\|1} | |
| Query Syntax | [:SENSe]:SEMask:OFFSet<n>:STATe? | |
| Parameter | 0 | Turns the selected offset off. |
| | 1 | Turns the selected offset on. |
| | OFF | Turns the selected offset off. |
| | ON | Turns the selected offset on. |
| Return parameter | 0 | The selected offset is off. |
| | 1 | The selected offset is on. |
| Example | SEM:OFFS1:STAT 1 | |

## [:SENSe]:SEMask:OFFSet<n>:STOP:ABSolute

Set → / → Query

| | | |
|---|---|---|
| Description | Sets or queries the amplitude of the stop frequency of the Absolute Mask for the selected offset. | |
| Syntax | [:SENSe]:SEMask:OFFSet<n>:STOP:ABSolute <ampl> | |
| Query Syntax | [:SENSe]:SEMask:OFFSet<n>:STOP:ABSolute? | |
| Parameter/ Return parameter | <ampl> | <NR3> dBm |
| | <n> | <NR1>offset 1~5 |
| Example | SEM:OFFS1:STOP:ABS 1.5e+1 | |

## [:SENSe]:SEMask:OFFSet<n>:STOP:ABSolute:COUPle

Set → → Query

| | | |
|---|---|---|
| Description | Couples the Absolute Stop amplitude to the Absolute Start amplitude for the selected offset. | |
| Syntax | [:SENSe]:SEMask:OFFSet<n>:STOP:ABSolute:COUPle {OFF\|ON\|0\|1} | |
| Query Syntax | [:SENSe]:SEMask:OFFSet<n>:STOP:ABSolute: COUPle? | |
| Parameter | 0 | Turns coupling off. |
| | 1 | Turns coupling on. |
| | OFF | Turns coupling off. |
| | ON | Turns coupling on. |
| Return parameter | 0 | Coupling is off. |
| | 1 | Coupling is on. |
| Example | SEM:OFFS1:STOP:ABS:COUP 0 | |

## [:SENSe]:SEMask:OFFSet<n>:STOP:RELative

Set → → Query

| | |
|---|---|
| Description | Sets or queries the amplitude of the stop frequency of the Relative Mask for the selected offset. |
| Syntax | [:SENSe]:SEMask:OFFSet<n>:STOP:RELative <ampl> |

| | | |
|---|---|---|
| Query Syntax | [:SENSe]:SEMask:OFFSet<n>:STOP:RELative? | |
| Parameter/ Return parameter | <ampl> | <NR3> dBc |
| | <n> | <NR1>offset 1~5 |
| Example | SEM:OFFS1:STOP:REL 1.5e+1 | |

## [:SENSe]:SEMask:OFFSet<n>:STOP:RELative:COUPle

Set → → Query

| | | |
|---|---|---|
| Description | Couples the Relative Stop amplitude to the Relative Start amplitude for the selected offset. | |
| Syntax | [:SENSe]:SEMask:OFFSet<n>:STOP:RELative:COUPle {OFF\|ON\|0\|1} | |
| Query Syntax | [:SENSe]:SEMask:OFFSet<n>:STOP:RELative: COUPle? | |
| Parameter | 0 | Turns coupling off. |
| | 1 | Turns coupling on. |
| | OFF | Turns coupling off. |
| | ON | Turns coupling on. |
| Return parameter | 0 | Coupling is off. |
| | 1 | Coupling is on. |

## [:SENSe]:SEMask:OFFSet<n>:TEST

Set → → Query

| | | |
|---|---|---|
| Description | Sets or queries the masks to use for the Fail Mask(s). | |
| Syntax | [:SENSe]:SEMask:OFFSet<n>:TEST {ABS\|REL\|AND\|OR} | |
| Query Syntax | [:SENSe]:SEMask:OFFSet<n>:TEST? | |
| Parameter/ Return parameter | ABS | Absolute mask |
| | REL | Relative mask |
| | AND | Absolute and Relative mask |
| | OR | Absolute or Relative mask |
| Example | :SEM:OFFS:1:TEST ABS | |

## [:SENSe]:SEMask:SELect

Set → / → Query

| | | |
|---|---|---|
| Description | Selects or queries the type of spectrum emission mask. | |
| Syntax | [:SENSe]:SEMask:SELect {MANual\|W3GPP\|BWLan\|GWLan\|NWLan\|WIMax} | |
| Query Syntax | [:SENSe]:SEMask:SELect? | |
| Parameter/ Return parameter | MANual | User-defined SEM |
| | W3GPP | 3GPP SEM |
| | BWLan | 802.11b SEM |
| | GWLan | 802.11g SEM |
| | NWLan | 802.11n SEM |
| | WIMax | 802.16 SEM |
| Example | :SEM:SEL MAN | |

## [:SENSe]:SEMask:TYPE

Set → / → Query

| | | |
|---|---|---|
| Description | Selects or queries the method used as the reference for calculating the offset power: Total power reference or power spectral density reference. | |
| Syntax | [:SENSe]:SEMask:TYPE {PSDRef\|TPRef} | |
| Query Syntax | [:SENSe]:SEMask:TYPE? | |
| Parameter/ Return parameter | PSDRef | Power Spectral Density Reference |
| | TPRef | Total Power Reference |
| Example | :SEM:TYPE PSDR | |

## [:SENSe]:SEMask:W3GPP:DUPLex:TYPE

Set → / → Query

| | |
|---|---|
| Description | Selects or queries the type of duplexing used for 3GPP tests. |
| Syntax | [:SENSe]:SEMask:W3GPP:DUPLex:TYPE {FDD\|TDD} |

| | | |
|---|---|---|
| Query Syntax | [:SENSe]:SEMask:W3GPP:DUPLex:TYPE? | |
| Parameter/ Return parameter | FDD | Frequency-division duplexing |
| | TDD | Time-division duplexing |
| Example | :SEM:W3GPP:DUPL:TYPE FDD | |

## [:SENSe]:SEMask:W3GPP:FDD:ADDition:Limit

Set → / → Query

| | | |
|---|---|---|
| Description | Selects or queries the operating band used for the 3GPP FDD additional requirements. See the user manual for a list of the 3GPP operation bands. | |
| Syntax | [:SENSe]:SEMask:W3GPP:FDD:ADDition:Limit {NONE \| BAND<n>} | |
| Query Syntax | [:SENSe]:SEMask:W3GPP:FDD:ADDition:Limit? | |
| Parameter/ Return parameter | NONE | |
| | BAND<n> | When n = band number |
| Example | :SEM:W3GPP:FDD:ADD:L BAND4 | |

## [:SENSe]:SEMask:W3GPP:FDD:ADDition:MOPower

Set → / → Query

| | | |
|---|---|---|
| Description | Selects or queries Max Out Power for the 3GPP additional requirements for the selected offset. Please see the user manual for a list of the selectable maximum power output levels. | |
| Syntax | [:SENSe]:SEMask:W3GPP:FDD:ADDition:MOPower {NONE \| LEVel<n>} | |
| Query Syntax | [:SENSe]:SEMask:W3GPP:FDD:ADDition:MOPower? | |
| Parameter/ Return parameter | NONE | |
| | LEVEL<n> | N= maximum power output level. |
| Example | :SEM:W3GPP:FDD:ADD:MOP LEV43 | |

## [:SENSe]:SEMask:W3GPP:FDD:MOPower

Set → / → Query

| | | |
|---|---|---|
| Description | Selects or queries Max Out Power for the selected offset. Please see the user manual for a list of the selectable maximum power output levels. | |
| Syntax | [:SENSe]:SEMask:W3GPP:FDD:MOPower {NONE \| LEVel<n>} | |
| Query Syntax | [:SENSe]:SEMask:W3GPP:FDD:MOPower? | |
| Parameter/ Return parameter | NONE | |
| | LEVEL<n> | N= maximum power output level. |
| Example | :SEM:W3GPP:FDD:MOP LEV43 | |

## [:SENSe]:SEMask:W3GPP:FDD:TRANsmit:MODE

Set → / → Query

| | | |
|---|---|---|
| Description | Selects or queries the transmit mode of the FDD 3GPP test: Base station, or User Equipment. | |
| Syntax | [:SENSe]:SEMask:W3GPP:FDD:TRANsmit:MODE {BS\|UE} | |
| Query Syntax | [:SENSe]:SEMask:W3GPP:FDD:TRANsmit:MODE? | |
| Parameter/ Return parameter | BS | Base station |
| | UE | User Equipment |
| Example | :SEM:W3GPP:FDD:TRAN:MODE UE | |

## [:SENSe]:SEMask:W3GPP:TDD:CHIP:RATE

Set → / → Query

| | |
|---|---|
| Description | Selects or queries the chip rate for TDD 3GPP tests. |
| Syntax | [:SENSe]:SEMask:W3GPP:TDD:CHIP:RATE {3.84e+6\|1.28e+6\|7.68e+6} |
| Query Syntax | [:SENSe]:SEMask:W3GPP:TDD:CHIP:RATE? |

| | | |
|---|---|---|
| Parameter/ Return parameter | 3.84e+6 | <freq> |
| | 1.28e+6 | <freq> |
| | 7.68e+6 | <freq> |
| Example | :SEM:W3GPP:TDD:CHIP:RATE 3.84e+6 | |

## [:SENSe]:SEMask:W3GPP:TDD:MOPower

Set → Query

| | |
|---|---|
| Description | Selects or queries Max Out Power for TDD 3GPP tests. See the user manual for the a list of the power levels. |
| Syntax | [:SENSe]:SEMask:W3GPP:TDD:ADDition:MOPower {NONE \| LEVel<n>} |
| Query Syntax | [:SENSe]:SEMask:W3GPP:TDD:ADDition:MOPower? |

| | | |
|---|---|---|
| Parameter/ Return parameter | LEVEL<n> | N=maximum output power |
| Example | :SEM:W3GPP:TDD:MOP LEV1 | |

## [:SENSe]:SEMask:W3GPP:TDD:TRANsmit:MODE

Set → Query

| | |
|---|---|
| Description | Selects or queries the transmit mode of the TDD 3GPP test: Base station, or User Equipment. |
| Syntax | [:SENSe]:SEMask:W3GPP:TDD:TRANsmit:MODE {BS\|UE} |
| Query Syntax | [:SENSe]:SEMask:W3GPP:TDD:TRANsmit:MODE? |

| | | |
|---|---|---|
| Parameter/ Return parameter | BS | Base station |
| | UE | User Equipment |
| Example | :SEM:W3GPP:TDD:TRAN:MODE UE | |

## [:SENSe]:SEMask:WIMax:CHANnel:BANDwidth|BWIDth

Set → Query

| | | |
|---|---|---|
| Description | Selects or queries the 802.16 channel bandwidth (10M or 20M channelization). | |
| Syntax | [:SENSe]:SEMask:WIMax:CHANnel:BANDwidth\|BWIDth {1e+7\|2e+7} | |
| Query Syntax | [:SENSe]:SEMask:WIMax:CHANnel:BANDwidth\| BWIDth? | |
| Parameter/ Return parameter | 1e+7 | <freq> |
| | 2e+7 | <freq> |
| Example | :SEM:WIM:CHAN:BAND 1e+7 | |

## [:SENSe]:SEQuence<n>:DELete

Set →

| | | |
|---|---|---|
| Description | Deletes the chosen sequence. | |
| Syntax | [:SENSe]:SEQuence<n>:DELete | |
| Parameter | <n> | <NR1> sequence 1 to 5. |
| Example | :SEQ1:DEL | |

## [:SENSe]:SWEep:EGATe:DELay

Set →
→ Query

| | | |
|---|---|---|
| Description | Sets or queries the gate delay time. | |
| Syntax | [:SENSe]:SWEep:EGATe:DELlay <time> | |
| Query Syntax | [:SENSe]:SWEep:EGATe:DELlay? | |
| Parameter/ Return parameter | <time> | Gate delay time in seconds |
| Example | SWE:EGAT:DEL 10 ms | |

## [:SENSe]:SWEep:EGATe:LENGth

Set →
→ Query

| | |
|---|---|
| Description | Sets or queries the gate length time. |
| Syntax | [:SENSe]:SWEep:EGATe:LENGth <time> |

| | | |
|---|---|---|
| Query Syntax | [:SENSe]:SWEep:EGATe:LENgth? | |
| Parameter/ Return parameter | <time> | Gate length time in seconds |
| Example | SWE:EGAT:LENG 10 ms | |

## [:SENSe]:SWEep:EGATe:STATe

Set → Query

| | | |
|---|---|---|
| Description | Turns the gated sweep mode on/off. | |
| Syntax | [:SENSe]:SWEep:EGATe:STATe {OFF\|ON\|0\|1} | |
| Query Syntax | [:SENSe]:SWEep:EGATe:STATe? | |
| Parameter | 0 | Turns gated sweep mode off. |
| | 1 | Turns gated sweep mode on. |
| | OFF | Turns gated sweep mode off. |
| | ON | Turns gated sweep mode on. |
| Return parameter | 0 | Gated sweep mode is off. |
| | 1 | Gated sweep mode is on. |
| Example | :SWE:EGAT:STAT 1 | |

## [:SENSe]:SWEep:TIME

Set → Query

| | | |
|---|---|---|
| Description | Sets the sweep time. | |
| Syntax | [:SENSe]:SWEep:TIME <time> | |
| Query Syntax | [:SENSe]:SWEep:TIME? | |
| Parameter/ Return parameter | <time> | Sweep time in seconds |
| Example | SWE:TIME 60 ms | |

## [:SENSe]:SWEep:TIME:AUTO

Set → Query

| | |
|---|---|
| Description | Turns the Sweep time setting to auto (on) or manual (off). |

| | | |
|---|---|---|
| Syntax | [:SENSe]:SWEep:TIME:AUTO {OFF\|ON\|0\|1} | |
| Query Syntax | [:SENSe]:SWEep:TIME:AUTO? | |
| Parameter | 0 | Turn sweep time to manual (off). |
| | 1 | Turn sweep time to auto (on). |
| | OFF | Turn sweep time to manual (off). |
| | ON | Turn sweep time to auto (on). |
| Return parameter | 0 | Sweep time is set to manual. |
| | 1 | Sweep time is set to automatic. |
| Example | :SWE:TIME:AUTO 0 | |

## [:SENSe]:TOI:REFerence

Set → Query

| | | |
|---|---|---|
| Description | Sets the TOI reference to the upper or lower base. | |
| Syntax | [:SENSe]:TOI:REFerence {UPPer\|LOWer} | |
| Query Syntax | [:SENSe]:TOI:REFerence? | |
| Parameter/ Return parameter | UPPer | Upper base. |
| | LOWer | Lower base. |
| Example | :TOI:REF UPP | |

## [:SENSe]:TOI:LIMit

Set → Query

| | | |
|---|---|---|
| Description | Sets the TOI pass/fail limit amplitude. | |
| Syntax | [:SENSe]:TOI:LIMit <ampl> | |
| Query Syntax | [:SENSe]:TOI:LIMit? | |
| Parameter/ Return parameter | <ampl> | dBm |
| Example | TOI:LIM 30 dbm | |

# SEQuence Commands

## :SEQuence:MODE

Set → / → Query

| | | |
|---|---|---|
| Description | Sets the sequence run mode to single or continuous. | |
| Syntax | :SEQuence:MODE {SINGle\|CONTinuous} | |
| Query Syntax | :SEQuence:MODE? | |
| Parameter/ Return parameter | SINGle | Single run mode |
| | CONTinuous | Continuous run mode |
| Example | :SEQ:MODE SING | |

## :SEQuence:TEST:ACTive

Set →

| | |
|---|---|
| Description | Runs the current sequence. |
| Syntax | :SEQuence:TEST:ACTive |
| Example | :SEQ1:TEST:ACT |

## SOURce Commands

## :SOURce:POWer[:LEVel][:IMMediate][:AMPLitude]

Set → / → Query

| | |
|---|---|
| Description | Sets the tracking generator power level. |
| Syntax | :SOURce:POWer[:LEVel][:IMMediate][:AMPLitude] <ampl> |
| Query Syntax | :SOURce:POWer[:LEVel][:IMMediate][:AMPLitude]? |
| Parameter/ Return parameter | <ampl> dBm |
| Example | :SOUR:POW 30 dbm |

## :SOURce:POWer[:LEVel][:IMMediate][:AMPLitude]:OFFSet

Set → / → Query

| | |
|---|---|
| Description | Sets the tracking generator offset level. |
| Syntax | :SOURce:POWer[:LEVel][:IMMediate][:AMPLitude] :OFFSet <rel_ampl> |
| Query Syntax | :SOURce:POWer[:LEVel][:IMMediate][:AMPLitude] :OFFSet? |
| Parameter/ Return parameter | <rel_ampl> dB |
| Example | :SOUR:POW:OFFS 10 db |

## :SOURce:POWer[:LEVel][:IMMediate][:AMPLitude]:STEP

Set → / → Query

| | |
|---|---|
| Description | Sets the tracking generator step level. |
| Syntax | :SOURce:POWer[:LEVel][:IMMediate][:AMPLitude]: STEP <rel_ampl> |
| Query Syntax | :SOURce:POWer[:LEVel][:IMMediate][:AMPLitude]: STEP? |

| | | |
|---|---|---|
| Parameter/ Return parameter | <rel_ampl> | dB |
| Example | :SOUR:POW:STEP .5 db | |

## :SOURce:POWer[:LEVel][:IMMediate][:AMPLitude]:STEP:AUTO

Set → / → Query

| | | |
|---|---|---|
| Description | Turns the tracking generator step level setting to auto (on) or manual (off). | |
| Syntax | :SOURce:POWer[:LEVel][:IMMediate][:AMPLitude]:STEP:AUTO {OFF\|ON\|0\|1} | |
| Query Syntax | :SOURce:POWer[:LEVel][:IMMediate][:AMPLitude]:STEP:AUTO? | |
| Parameter | 0 | Turn TG step level to manual (off). |
| | 1 | Turn TG step level to auto (on). |
| | OFF | Turn TG step level to manual (off). |
| | ON | Turn TG step level to auto (on). |
| Return parameter | 0 | TG step level is set to manual. |
| | 1 | TG step level is set to automatic. |
| Example | :SOUR:POW:STEP:AUTO 1 | |

## :SOURce:POWer:MODE

Set → / → Query

| | | |
|---|---|---|
| Description | Sets the Power Sweep mode. | |
| Syntax | :SOURce:POWer:MODE {FIXed\|SWEep} | |
| Query Syntax | :SOURce:POWer:MODE? | |
| Parameter/ Return parameter | FIXed | Power sweep off. |
| | SWEep | Power sweep on. |
| Example | :SOUR:POW:MODE FIX | |

## :SOURce:POWer:SWEep

Set → / → Query

| | | |
|---|---|---|
| Description | Sets the Power Sweep offset level. | |
| Syntax | :SOURce:POWer:SWEep <rel_ampl> | |
| Query Syntax | :SOURce:POWer:SWEep? | |
| Parameter/ Return parameter | <rel_ampl> | dB |
| Example | :SOUR:POW:SWE 10 db | |

## SYSTem Commands



### :SYSTem:ALARm:STATe

Set → / → Query

| | |
|---|---|
| Description | Sets the system alarm output on/off |
| Syntax | :SYSTem:ALARm:STATe {OFF\|ON\|0\|1} |
| Query Syntax | :SYSTem:ALARm:STATe? |

| | | |
|---|---|---|
| Parameter | 0 | Turn the alarm off. |
| | 1 | Turn the alarm on. |
| | OFF | Turn the alarm off. |
| | ON | Turn the alarm off. |
| Return parameter | 0 | The alarm is off. |
| | 1 | The alarm is on. |
| Example | :SYST:ALAR:STAT 1 | |

## :SYSTem:CLOCk<n>:DATE

Set → / → Query

| | | |
|---|---|---|
| Description | Sets the day for the selected wake-up clock. | |
| Syntax | :SYSTem:CLOCk<n>:DATE [MONday\|TUESday\|WEDnesday\|THURsday\|FRIday\|SATurday\|SUNday] | |
| Query Syntax | :SYSTem:CLOCk<n>:DATE? | |
| Parameter/ Return parameter | <n> | Wake-up clock number 1 to 7 |
| | MONday | Set to Monday |
| | TUESday | Set to Tuesday |
| | WEDnesday | Set to Wednesday |
| | THURsday | Set to Thursday |
| | FRIday | Set to Friday |
| | SATurday | Set to Saturday |
| | SUNday | Set to Sunday |
| Example | :SYST:CLOC1:DATE MON | |

## :SYSTem:CLOCk<n>:MODE

Set → / → Query

| | |
|---|---|
| Description | Sets the alarm mode for the selected wake-up clock. |
| Syntax | :SYSTem:CLOCk<n>:MODE {REPeat\|SINGle} |
| Query Syntax | :SYSTem:CLOCk<n>:MODE? |

| | | |
|---|---|---|
| Parameter/ Return parameter | <n> | Wake-up clock number 1 to 7 |
| | REPeat | Set the wake-up clock to repeat. |
| | SINGle | Set the wake-up clock to single. |
| Example | :SYST:CLOC1:MODE REP | |

## :SYSTem:CLOCk<n>:STATe

Set → / → Query

| | | |
|---|---|---|
| Description | Turns the selected wake-up clock on/off. | |
| Syntax | :SYSTem:CLOCk<n>:STATe {OFF\|ON\|0\|1} | |
| Query Syntax | :SYSTem:CLOCk<n>:STATe? | |
| Parameter | <n> | Wake-up clock number 1 to 7 |
| | 0 | Turn the wake-up clock off. |
| | 1 | Turn the wake-up clock on. |
| | OFF | Turn the wake-up clock off. |
| | ON | Turn the wake-up clock off. |
| Return parameter | 0 | The wake-up clock is off. |
| | 1 | The wake-up clock is on. |
| Example | :SYST:CLOC1:STATE 1 | |

## :SYSTem:CLOCk<n>:TIME

Set → / → Query

| | | |
|---|---|---|
| Description | Sets the alarm time for the selected wake-up clock. | |
| Syntax | :SYSTem:CLOCk<n>:TIME <hour>,<minute> | |
| Query Syntax | :SYSTem:CLOCk<n>:TIME? | |
| Parameter/ Return parameter | <hour> | <NR1> Sets the alarm hour. |
| | <minute> | <NR1> Sets the alarm minute. |
| | <n> | Wake-up clock number 1 to 7 |
| Example | :SYST:CLOC1:TIME 20,50 | |

## :SYSTem:COMMunicate:GPIB[:SELF]:ADDRess

Set ⟶

| | | |
|---|---|---|
| Description | Sets the GPIB address. | |
| Syntax | :SYSTem:COMMunicate:GPIB[:SELF]:ADDRess <integer> | |
| Parameter | <integer> | 0 to 30 |
| Example | :SYST:COMM:GPIB:ADDR 10 | |

## :SYSTem:COMMunicate:LAN:ADDRess

Set ⟶

| | | |
|---|---|---|
| Description | Sets the IP address. | |
| Syntax | :SYSTem:COMMunicate:LAN:ADDRess <ip address> | |
| Parameter | <ip address> | XXX.XXX.XXX.XXX |
| Example | :SYST:COMM:LAN:ADDR 172.16.20.20 | |

## :SYSTem:COMMunicate:LAN:MASK

Set ⟶

| | | |
|---|---|---|
| Description | Sets the LAN mask. | |
| Syntax | :SYSTem:COMMunicate:LAN:MASK <ip address> | |
| Parameter | <ip address> | XXX.XXX.XXX.XXX |
| Example | :SYST:COMM:LAN:MASK 172.16.20.20 | |

## :SYSTem:COMMunicate:LAN:GATEway

Set ⟶

| | | |
|---|---|---|
| Description | Sets the LAN gateway. | |
| Syntax | :SYSTem:COMMunicate:LAN:GATEway <ip address> | |
| Parameter | <ip address> | XXX.XXX.XXX.XXX |
| Example | :SYST:COMM:LAN:GATE 172.16.20.20 | |

## :SYSTem:COMMunicate:LAN:CONFigure Set

| | | |
|---|---|---|
| Description | Configures the LAN to manual or DHCP mode. | |
| Syntax | :SYSTem:COMMunicate:LAN:CONFigure {DHCP\|MANual} | |
| Parameter/ Return parameter | DHCP | Configure the LAN to DHCP |
| | MANual | Configure the LAN manually |
| Example | :SYST:COMM:LAN:CONF DHCP | |

## :SYSTem:COMMunicate:LCI Set

| | | |
|---|---|---|
| Description | Configures the LAN to manual or DHCP mode. | |
| Syntax | :SYSTem:COMMunicate:LAN:CONFigure {DHCP\|MANual} | |
| Parameter/ Return parameter | DHCP | Configure the LAN to DHCP |
| | MANual | Configure the LAN manually |
| Example | :SYST:COMM:LAN:CONF DHCP | |

## :SYSTem:COMMunicate:SERial[:RECeive] :BAUD Set

| | | |
|---|---|---|
| Description | Sets the RS232 Baud rate. | |
| Syntax | :SYSTem: COMMunicate:SERial[:RECeive]:BAUD <integer> | |
| Parameter | <integer> | 300\|600\|1200\|2400\|4800\|9600\|19200\|38400\|57600\|115200 |
| Example | :SYST:COMM:SER:BAUD 9600 | |

## :SYSTem:COMMunicate:USB:MODE Set

| | |
|---|---|
| Description | Configures the USB mode. |

| | | |
|---|---|---|
| Syntax | :SYSTem:COMMunicate:USB:MODE {HOST\|DEVice} | |
| Parameter/ Return parameter | HOST | USB host mode |
| | DEVice | USB device mode |
| Example | :SYST:COMM:USB:MODE DEV | |

## :SYSTem:DATE

Set → / → Query

| | | |
|---|---|---|
| Description | Sets the system date. | |
| Syntax | :SYSTem:DATE <year>,<month>,<day> | |
| Query Syntax | :SYSTem:DATE? | |
| Parameter/ Return parameter | <year> | <NR1> |
| | <month> | <NR1> |
| | <day> | <NR1> |
| Example | :SYST:DATE 2011,03,27 | |

## :SYSTem:ERRor:CLEar

Set →

| | |
|---|---|
| Description | Clears the errors messages from the error queue. |
| Syntax | :SYSTem:ERRor:CLEar |

## :SYSTem:ERRor[:NEXT]?

→ Query

| | |
|---|---|
| Description | Returns the next message from the error queue. Reading the error from the error queue will clear that error from the queue. |
| Syntax | :SYST:ERR? |

## :SYSTem:KLOCk

Set →

| | |
|---|---|
| Description | Locks/unlocks the front panel keys. |
| Syntax | :SYSTem:KLOCk {ON\|OFF} |

| | | |
|---|---|---|
| Parameter | ON | Lock the front panel keys |
| | OFF | Unlock the front panel keys |
| Example | :SYST:KLOCK OFF | |

## :SYSTem:PRESet

Set →

| | |
|---|---|
| Description | Returns the GSP-930 to preset settings. |
| Syntax | :SYST:PRES |

## :SYSTem:PRESet:TYPE

Set →
→ Query

| | | |
|---|---|---|
| Description | Sets the preset type between user-defined and factory default. | |
| Syntax | :SYSTem:PRESet:TYPE {USER\|FACTory} | |
| Query Syntax | :SYSTem:PRESet:TYPE? | |
| Parameter/ Return parameter | USER | User defined preset |
| | FACTory | Factory default |
| Example | :SYST:PRES:TYPE USER | |

## :SYSTem:PRESet:USER:SAVE

Set →

| | |
|---|---|
| Description | Save the current environment as the "User" preset settings. |
| Syntax | :SYST:PRES:USER:SAVE |

## :SYSTem:REBoot

Set →

| | |
|---|---|
| Description | Restart/Reboot the GSP-930. |
| Syntax | :SYSTem:REBoot |

## :SYSTem:SHUTdown

Set →

| | |
|---|---|
| Description | Shut down the GSP-930. |
| Syntax | :SYST:SHUT |

## :SYSTem:TIME

Set → / → Query

| | | |
|---|---|---|
| Description | Sets the system time. | |
| Syntax | :SYSTem:TIME <hour>,<minute>,<second> | |
| Query Syntax | :SYSTem:TIME? | |
| Parameter/ Return parameter | <hour> | <NR1> |
| | <minute> | <NR1> |
| | <second> | <NR1> |
| Example | :SYST:TIME 19,26,30 | |

## :SYSTem:UPDate

Set →

| | |
|---|---|
| Description | Updates the system with new firmware from files located on an external USB drive. The firmware files must be included in the directory named /gsp930. |
| Syntax | :SYST:UPD |

## :SYSTem:VERSion:HARDware?

→ Query

| | | |
|---|---|---|
| Description | Returns the system firmware version. | |
| Query Syntax | :SYSTem:VERSion:HARDware? | |
| Return parameter | <string> | T.1.X.X.X |
| Example | :SYST:VERS:HARD?<br>>T.1.0.0.0 | |

## :SYSTem:VERSion:SOFTware?

→ Query

| | |
|---|---|
| Description | Returns the system software version. |

| | | |
|---|---|---|
| Query Syntax | :SYSTem:VERSion:SOFTware? | |
| Return parameter | <string> | T1.00_2011.11.21_13 |
| Example | :SYST:VERS:SOFT?<br>> T1.00_2011.11.21_13 | |

## STATus Commands



## :STATus:OPERation:CONDition? → Query

| | |
|---|---|
| Description | Returns the bit weight of the Operation Status Condition register. |
| Query Syntax | :STATus:OPERation:CONDition? |

| Return parameter | Bit | Bit Weight | Description |
|---|---|---|---|
| | 0~2 | N/A | Not used |
| | 3 | 8 | Sweeping |
| | 4 | 16 | Measuring |
| | 5 | 32 | Wait for Trigger |
| | 6~15 | N/A | Not used |
| Example | :STAT:OPER:COND?<br>>8 | | |

## :STATus:OPERation:ENABle

Set → / → Query

| | |
|---|---|
| Description | Sets or queries the Operation Status Event Enable register. |
| Syntax | :STATus:OPERation:ENABle <integer> |
| Query Syntax | :STATus:OPERation:ENABle? |

| Return parameter | Bit | Bit Weight | Description |
|---|---|---|---|
| | 0~2 | N/A | Not used |
| | 3 | 8 | Sweeping |
| | 4 | 16 | Measuring |
| | 5 | 32 | Wait for Trigger |
| | 6~15 | N/A | Not used |
| Example | :STAT:OPER:ENAB 32 | | |

## :STATus:OPERation[:EVENt]?

→ Query

| | |
|---|---|
| Description | Returns the bit weight of the Operation Status Event register. Reading this register will clear the event register. |
| Query Syntax | :STATus:OPERation[:EVENt]? |

| Return parameter | Bit | Bit Weight | Description |
|---|---|---|---|
| | 0~2 | N/A | Not used |
| | 3 | 8 | Sweeping |
| | 4 | 16 | Measuring |
| | 5 | 32 | Wait for Trigger |
| | 6~15 | N/A | Not used |
| Example | :STAT:OPER?<br>>8 | | |

## :STATus:OPERation:NTRansition

Set → / → Query

| | |
|---|---|
| Description | Sets or queries the bit weight of the NTR filter for the Operation Status register. |
| Syntax | :STATus:OPERation:NTRansition <integer> |
| Query Syntax | :STATus:OPERation:NTRansition? |

| Return parameter | Bit | Bit Weight | Description |
|---|---|---|---|
| | 0~2 | N/A | Not used |
| | 3 | 8 | Sweeping |
| | 4 | 16 | Measuring |
| | 5 | 32 | Wait for Trigger |
| | 6~15 | N/A | Not used |
| Example | :STAT:OPER:NTR 32 | | |

## :STATus:OPERation:PTRansition

Set → / → Query

| | |
|---|---|
| Description | Sets or queries the bit weight of the PTR filter for the Operation Status register. |
| Syntax | :STATus:OPERation:PTRansition <integer> |
| Query Syntax | :STATus:OPERation:PTRansition? |

| Return parameter | Bit | Bit Weight | Description |
|---|---|---|---|
| | 0~2 | N/A | Not used |
| | 3 | 8 | Sweeping |
| | 4 | 16 | Measuring |
| | 5 | 32 | Wait for Trigger |
| | 6~15 | N/A | Not used |
| Example | :STAT:OPER:PTR 32 | | |

## :STATus:QUEStionable:CONDition? → Query

| | |
|---|---|
| Description | Returns the bit weight of the Questionable Status Condition register. |
| Query Syntax | :STATus:QUEStionable:CONDition? |

| Return parameter | Bit | Bit Weight | Description |
|---|---|---|---|
| | 5 | 16 | Frequency |
| | 8 | 128 | Uncal |
| | 9 | 512 | Limit Fail |
| | 10 | 1024 | ACPLimit |
| | 11 | 2048 | SEM Limit |
| | 12 | 4096 | TOI Limit |
| | 13 | 8192 | Pmet Limit Fail |
| Example | :STAT:QUES:COND?<br>>16 | | |

## :STATus:QUEStionable:ENABle Set → / → Query

| | |
|---|---|
| Description | Sets or queries the Questionable Status Event Enable register. |
| Syntax | :STATus:QUEStionable:ENABle <integer> |
| Query Syntax | :STATus:QUEStionable:ENABle? |

| Return parameter | Bit | Bit Weight | Description |
|---|---|---|---|
| | 5 | 16 | Frequency |
| | 8 | 128 | Uncal |
| | 9 | 512 | Limit Fail |
| | 10 | 1024 | ACPLimit |
| | 11 | 2048 | SEM Limit |
| | 12 | 4096 | TOI Limit |
| | 13 | 8192 | Pmet Limit Fail |
| Example | :STAT:QUES:ENAB 4096 | | |

## :STATus:QUEStionable[:EVENt]? → Query

| | |
|---|---|
| Description | Returns the bit weight of the Questionable Status Event register. Reading this register will clear the event register. |
| Query Syntax | :STATus:QUEStionable[:EVENt]? |

| Return parameter | Bit | Bit Weight | Description |
|---|---|---|---|
| | 5 | 16 | Frequency |
| | 8 | 128 | Uncal |
| | 9 | 512 | Limit Fail |
| | 10 | 1024 | ACPLimit |
| | 11 | 2048 | SEM Limit |
| | 12 | 4096 | TOI Limit |
| | 13 | 8192 | Pmet Limit Fail |
| Example | :STAT:QUES?<br>>16 | | |

## :STATus:QUEStionable:NTRansition → Set / → Query

| | |
|---|---|
| Description | Sets or queries the bit weight of the NTR filter for the Questionable Status register. |
| Syntax | :STATus:QUEStionable:NTRansition <integer> |
| Query Syntax | :STATus: QUEStionable:NTRansition? |

| Return parameter | Bit | Bit Weight | Description |
|---|---|---|---|
| | 5 | 16 | Frequency |
| | 8 | 128 | Uncal |
| | 9 | 512 | Limit Fail |
| | 10 | 1024 | ACPLimit |
| | 11 | 2048 | SEM Limit |
| | 12 | 4096 | TOI Limit |
| | 13 | 8192 | Pmet Limit Fail |
| Example | :STAT:QUES:NTR 32 | | |

## :STATus:QUEStionable:PTRansition

Set / Query

| | |
|---|---|
| Description | Sets or queries the bit weight of the PTR filter for the Questionable Status register. |
| Syntax | :STATus:QUEStionable:PTRansition <integer> |
| Query Syntax | :STATus: QUEStionable:PTRansition? |

| Return parameter | Bit | Bit Weight | Description |
|---|---|---|---|
| | 5 | 16 | Frequency |
| | 8 | 128 | Uncal |
| | 9 | 512 | Limit Fail |
| | 10 | 1024 | ACPLimit |
| | 11 | 2048 | SEM Limit |
| | 12 | 4096 | TOI Limit |
| | 13 | 8192 | Pmet Limit Fail |
| Example | :STAT:QUES:PTR 32 | | |

## :STATus:QUEStionable:FREQuency:CONDition?

Query

| | |
|---|---|
| Description | Returns the bit weight of the Questionable Status Frequency Condition register. |
| Query Syntax | :STATus:QUEStionable:FREQuency:CONDition? |

| Return parameter | Bit | Bit Weight | Description |
|---|---|---|---|
| | 5 | 16 | Invalid Span/BW |
| Example | :STAT:QUES:FREQ:COND?<br>>16 | | |

## :STATus:QUEStionable:FREQuency:ENABle

Set → Query

| Description | Sets or queries the Questionable Status Frequency Event Enable register. | | |
|---|---|---|---|
| Syntax | :STATus:QUEStionable:FREQuency:ENABle <integer> | | |
| Query Syntax | :STATus:QUEStionable:FREQuency:ENABle? | | |
| Return parameter | Bit | Bit Weight | Description |
| | 5 | 16 | Invalid Span/BW |
| Example | :STAT:QUES:FREQ:ENAB 16 | | |

## :STATus:QUEStionable:FREQuency[:EVENt]?

→ Query

| Description | Returns the bit weight of the Questionable Status Frequency Event register. Reading this register will clear the event register. | | |
|---|---|---|---|
| Query Syntax | :STATus:QUEStionable:FREQuency[:EVENt]? | | |
| Return parameter | Bit | Bit Weight | Description |
| | 5 | 16 | Invalid Span/BW |
| Example | :STAT:QUES:FREQ?<br>>16 | | |

## :STATus:QUEStionable:FREQuency:NTRansition

Set → Query

| Description | Sets or queries the bit weight of the NTR filter for the Questionable Status Frequency register. |
|---|---|

| | | | |
|---|---|---|---|
| Syntax | :STATus:QUEStionable:FREQuency:NTRansition <integer> | | |
| Query Syntax | :STATus:QUEStionable:FREQuency:NTRansition? | | |
| Return parameter | Bit | Bit Weight | Description |
| | 5 | 16 | Invalid Span/BW |
| Example | :STAT:QUES:FREQ:NTR 16 | | |

## :STATus:QUEStionable:FREQuency:PTRansition

Set → / → Query

| | |
|---|---|
| Description | Sets or queries the bit weight of the PTR filter for the Questionable Status Frequency register. |
| Syntax | :STATus:QUEStionable:FREQuency:PTRansition <integer> |
| Query Syntax | :STATus:QUEStionable:FREQuency:PTRansition? |

| | | | |
|---|---|---|---|
| Return parameter | Bit | Bit Weight | Description |
| | 5 | 16 | Invalid Span/BW |
| Example | :STAT:QUES:FREQ:PTR 16 | | |

## :STATus:QUEStionable:ACPLimit:CONDition?

→ Query

| | |
|---|---|
| Description | Returns the bit weight of the Questionable Status ACP Limit Condition register. |
| Query Syntax | :STATus:QUEStionable:ACPLimit:CONDition? |

| Return parameter | Bit | Bit Weight | Description |
|---|---|---|---|
| | 0 | 1 | Main channel high fail |
| | 1 | 2 | Main channel low fail |
| | 2 | 4 | Adj1 high fail |
| | 3 | 8 | Adj1 low fail |
| | 4 | 16 | Adj2 high fail |
| | 5 | 32 | Adj2 low fail |
| | 6 | 64 | Adj3 high fail |
| | 7 | 128 | Adj3 low fail |

| | |
|---|---|
| Example | :STAT:QUES:ACPL:COND?<br>>1 |

## :STATus:QUEStionable:ACPLimit:ENABle

Set → / → Query

| | |
|---|---|
| Description | Sets or queries the Questionable Status ACP Limit Event Enable register. |
| Syntax | :STATus:QUEStionable:ACPLimit:ENABle <integer> |
| Query Syntax | :STATus:QUEStionable:ACPLimit:ENABle? |

| Return parameter | Bit | Bit Weight | Description |
|---|---|---|---|
| | 0 | 1 | Main channel high fail |
| | 1 | 2 | Main channel low fail |
| | 2 | 4 | Adj1 high fail |
| | 3 | 8 | Adj1 low fail |
| | 4 | 16 | Adj2 high fail |
| | 5 | 32 | Adj2 low fail |
| | 6 | 64 | Adj3 high fail |
| | 7 | 128 | Adj3 low fail |

| | |
|---|---|
| Example | :STAT:QUES:ACPL:ENAB 3 |

## :STATus:QUEStionable:ACPLimit[:EVENt]? → Query

| | |
|---|---|
| Description | Returns the bit weight of the Questionable Status ACP limit Event register. Reading this register will clear the event register. |

| | | | |
|---|---|---|---|
| Query Syntax | :STATus:QUEStionable:ACPLimit[:EVENt]? | | |
| Return parameter | Bit | Bit Weight | Description |
| | 0 | 1 | Main channel high fail |
| | 1 | 2 | Main channel low fail |
| | 2 | 4 | Adj1 high fail |
| | 3 | 8 | Adj1 low fail |
| | 4 | 16 | Adj2 high fail |
| | 5 | 32 | Adj2 low fail |
| | 6 | 64 | Adj3 high fail |
| | 7 | 128 | Adj3 low fail |
| Example | :STAT:ACPL:QUES?<br>>3 | | |

## :STATus:QUEStionable:ACPLimit:NTRansition

Set → / → Query

| | |
|---|---|
| Description | Sets or queries the bit weight of the NTR filter for the Questionable Status ACP Limit register. |
| Syntax | :STATus:QUEStionable:ACPLimit:NTRansition <integer> |
| Query Syntax | :STATus:QUEStionable:ACPLimit:NTRansition? |

| Return parameter | Bit | Bit Weight | Description |
|---|---|---|---|
| | 0 | 1 | Main channel high fail |
| | 1 | 2 | Main channel low fail |
| | 2 | 4 | Adj1 high fail |
| | 3 | 8 | Adj1 low fail |
| | 4 | 16 | Adj2 high fail |
| | 5 | 32 | Adj2 low fail |
| | 6 | 64 | Adj3 high fail |
| | 7 | 128 | Adj3 low fail |

| | |
|---|---|
| Example | :STAT:QUES:ACPL:NTR 3 |

## :STATus:QUEStionable:ACPLimit:PTRansition

Set → / → Query

| | |
|---|---|
| Description | Sets or queries the bit weight of the PTR filter for the Questionable Status ACP Limit register. |
| Syntax | :STATus:QUEStionable:ACPLimit:PTRansition <integer> |
| Query Syntax | :STATus:QUEStionable:ACPLimit:PTRansition? |

| Return parameter | Bit | Bit Weight | Description |
|---|---|---|---|
| | 0 | 1 | Main channel high fail |
| | 1 | 2 | Main channel low fail |
| | 2 | 4 | Adj1 high fail |
| | 3 | 8 | Adj1 low fail |
| | 4 | 16 | Adj2 high fail |
| | 5 | 32 | Adj2 low fail |
| | 6 | 64 | Adj3 high fail |
| | 7 | 128 | Adj3 low fail |

| | |
|---|---|
| Example | :STAT:QUES:ACPL:PTR 3 |

## :STATus:PRESet

Set →

| | |
|---|---|
| Description | Loads the preset settings. |
| Syntax | :STATus:PRESet |

## TRACe Commands



## :TRACe[:DATA]?

→ Query

| | |
|---|---|
| Description | Returns the trace data for the selected trace in CSV format. |

| | | |
|---|---|---|
| Query Syntax | :TRACe[:DATA]? <trace name> | |
| Parameter | <trace name> | [trace1\|trace2\|trace3\|trace4\|trace5] |
| Return Parameter | <data> | Trace data in CSV format |
| Example | :TRACe[:DATA]? trace1<br>>-5.234e+01,-4.593e+01,-5.533e+01,-4.604e+01,-<br>>5.353e+01,-4.557e+01,-5.280e+0<br>>1,-4.785e+01,-5.459e+01,-4.578e+01,····· | |

## TRIGger Commands



### :TRIGger[:SEQuence]:DELay

Set → → Query

| | | |
|---|---|---|
| Description | Sets the trigger delay time in seconds. | |
| Syntax | :TRIGger[:SEQuence]:DELay <time> | |
| Query Syntax | :TRIGger[:SEQuence]:DELay? | |
| Parameter/ Return parameter | <time> | Delay time in seconds |
| Example | :TRIG:DEL 1.0e-2 | |

### :TRIGger[:SEQuence]:DEMod:DELay

Set → → Query

| | |
|---|---|
| Description | Sets the AF trigger delay time in seconds for AM/FM demodulation. |
| Syntax | :TRIGger[:SEQuence]:DEMod:DELay <time> |
| Query Syntax | :TRIGger[:SEQuence]:DEMod:DELay? |

| | | |
|---|---|---|
| Parameter/ Return parameter | <time> | Delay time in seconds |
| Example | :TRIG:DEM:DEL 1.0 ms | |

## :TRIGger[:SEQuence]:DEMod:LEVel

Set → / → Query

| | |
|---|---|
| Description | Sets the trigger level for AM/FM demodulation. |
| Syntax | :TRIGger[:SEQuence]:DEMod:LEVel <integer> |
| Query Syntax | :TRIGger[:SEQuence]:DEMod:LEVel? |

| | | |
|---|---|---|
| Parameter/ Return parameter | <integer> | Trigger level in % |
| Example | :TRIG:DEM:LEV 10 | |

## :TRIGger[:SEQuence]:DEMod:MODE

Set → / → Query

| | |
|---|---|
| Description | Sets the triggering mode for the AF Trigger in AM/FM demodulation. |
| Syntax | :TRIGger[:SEQuence]:DEMod:MODE {NORMal\|SINGle\|CONTinuous} |
| Query Syntax | :TRIGger[:SEQuence]:DEMod:MODE? |

| | | |
|---|---|---|
| Parameter/ Return parameter | NORMal | Normal trigger mode |
| | SINGle | Single trigger |
| | CONTinuous | Continuous trigger |
| Example | :TRIG:DEM:MODE CONT | |

## :TRIGger[:SEQuence]:DEMod:SLOPe

Set → / → Query

| | |
|---|---|
| Description | Sets the trigger slope. |
| Syntax | :TRIGger[:SEQuence]:DEMod:SLOPe {POSitive\|NEGative} |
| Query Syntax | :TRIGger[:SEQuence]:DEMod:SLOPe? |

| | | |
|---|---|---|
| Parameter/ Return parameter | POSitive | Positive slope |
| | NEGative | Negative slope |
| Example | :TRIG:DEM:SLOP POS | |

## :TRIGger[:SEQuence]:DEMod:SOURce Set

| | | |
|---|---|---|
| Description | Sets the triggering source for AM/FM demodulation | |
| Syntax | :TRIGger[:SEQuence]:DEMod:SOURce {IMMediate\|VIDeo} | |
| Parameter | IMMediate | Free run trigger |
| | VIDeo | Trigger on the video signal level |
| Example | :TRIG:DEM:SOUR IMM | |

## :TRIGger[:SEQuence]:EXTernal:SLOPe Set Query

| | | |
|---|---|---|
| Description | Sets the external trigger slope | |
| Syntax | :TRIGger[:SEQuence]:EXTernal:SLOPe {POSitive\|NEGative} | |
| Query Syntax | :TRIGger[:SEQuence]:EXTernal:SLOPe? | |
| Parameter/ Return parameter | POSitive | Positive slope |
| | NEGative | Negative slope |
| Example | :TRIG:EXT:SLOP POS | |

## :TRIGger[:SEQuence]:MODE Set Query

| | |
|---|---|
| Description | Sets the triggering mode. |
| Syntax | :TRIGger[:SEQuence]:MODE {NORMal\|SINGle\|CONTinuous} |
| Query Syntax | :TRIGger[:SEQuence]:MODE? |

| | | |
|---|---|---|
| Parameter/ Return parameter | NORMal | Normal trigger mode |
| | SINGle | Single trigger |
| | CONTinuous | Continuous trigger |
| Example | :TRIG: MODE CONT | |

## :TRIGger[:SEQuence]:PMETer:SOURce

Set → Query

| | |
|---|---|
| Description | Sets the triggering source to immediate or external |
| Syntax | :TRIGger[:SEQuence]:PMETer:SOURce {IMMediate\|EXTernal} |
| Query Syntax | :TRIGger[:SEQuence]:PMETer:SOURce? |

| | | |
|---|---|---|
| Parameter/ Return parameter | IMMediate | Free run trigger |
| | EXTernal | External trigger |
| Example | :TRIG:PMET:SOUR IMM | |

## :TRIGger[:SEQuence]:SOURce

Set → Query

| | |
|---|---|
| Description | Sets the triggering source to immediate, external or video. |
| Syntax | :TRIGger[:SEQuence]:SOURce {IMMediate\|EXTernal\|VIDeo} |
| Query Syntax | :TRIGger[:SEQuence]:SOURce? |

| | | |
|---|---|---|
| Parameter/ Return parameter | IMMediate | Free run trigger |
| | EXTernal | External trigger |
| | VIDeo | Video trigger |
| Example | :TRIG:SOUR IMM | |

## :TRIGger[:SEQuence]:VIDeo:FREQuency

Set → Query

| | |
|---|---|
| Description | Sets the video trigger frequency. |
| Syntax | :TRIGger[:SEQuence]:VIDeo:FREQuency <freq> |

| | | |
|---|---|---|
| Query Syntax | :TRIGger[:SEQuence]:VIDeo:FREQuency? | |
| Parameter/ Return parameter | <freq> | <NR3> frequency in Hz. |
| Example | :TRIG:VID:FREQ?<br>>2.5e+6 | |

## :TRIGger[:SEQuence]:VIDeo:LEVel

Set → Query

| | | |
|---|---|---|
| Description | Sets the video trigger level. | |
| Syntax | :TRIGger[:SEQuence]:VIDeo:LEVel <ampl> | |
| Query Syntax | :TRIGger[:SEQuence]:VIDeo:LEVel? | |
| Parameter/ Return parameter | <ampl> | <NR3> amplitude in dBm. |
| Example | :TRIG:VID:LEV 10 | |

## :TRIGger[:SEQuence]:VIDeo:SLOPe

Set → Query

| | | |
|---|---|---|
| Description | Sets the video trigger slope | |
| Syntax | :TRIGger[:SEQuence]:VIDeo:SLOPe {POSitive\|NEGative} | |
| Query Syntax | :TRIGger[:SEQuence]:VIDeo:SLOPe? | |
| Parameter/ Return parameter | POSitive | Positive slope |
| | NEGative | Negative slope |
| Example | :TRIG:VID:SLOP POS | |

## UNIT Commands



### :UNIT:PMETer:POWer

Set → Query

| | | |
|---|---|---|
| Description | Sets the amplitude unit used for the Power Meter mode. | |
| Syntax | :UNIT:PMETer:POWer {DBM\|MW} | |
| Query Syntax | :UNIT:PMETer:POWer? | |
| Parameter/ Return parameter | DBM | Decibels |
| | MW | Milliwatts |
| Example | :UNIT:PMET:POW DBM | |

### :UNIT:POWer

Set → Query

| | | |
|---|---|---|
| Description | Sets the amplitude unit used for the Spectrum mode. | |
| Syntax | :UNIT:POWer {DBM\|DBMV\|DBUV\|W\|V} | |
| Query Syntax | :UNIT:POWer? | |
| Parameter/ Return parameter | DBM | Decibels |
| | DBMV | decibels relative to one millivolt |
| | DBUV | decibels relative to one microvolt |
| | W | Watt |
| | V | Volt |
| Example | :UNIT:POW DBM | |