Programming Manual

BTS Master™
MT8221B, MT8222B

The High Performance Base Station Analyzer
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Chapter 1 — General Information

1-1 About this Manual
This SCPI Programming Manual provides information for remote operation of the BTS Master MT822xB High Performance Base Station Analyzer using commands sent from an external controller via Ethernet or USB connection. This Programming Manual includes the following:

• An overview of Ethernet and USB connection to the BTS Master.
• An overview of Standard Commands for Programmable Instruments (SCPI) command structure and conventions.
• The IEEE common commands that are supported by the MT822xB.
• A complete listing and description of all the SCPI commands that can be used to remotely control functions of the BTS Master. The commands are organized by instrument mode starting in Chapter 4.

This manual is intended to be used in conjunction with the BTS Master MT822xB High Performance Base Station Analyzer User Manual, P/N: 105800-00207. Refer to that manual for general information about the MT822xB, including equipment set up and operating instructions.

1-2 Contacting Anritsu
To contact Anritsu, please visit:
http://www.anritsu.com/contact.asp

From here, you can select the latest sales, select service and support contact information in your country or region, provide online feedback, complete a “Talk to Anritsu” form to have your questions answered, or obtain other services offered by Anritsu.

Updated product information can be found on the Anritsu web site:
http://www.anritsu.com/

Search for the product model number. The latest documentation is on the product page under the Library tab.

1-3 Introduction
This chapter provides a general description of remote programming setup, interface connections using Ethernet or USB, and cable requirements.

1-4 Remote Programming Setup and Interface
Remote programming and operation of the BTS Master is accessed via the Ethernet or the USB interface. The following paragraphs provide information about the interface connections, cable requirements, and setting up remote operation.

Ethernet Interface Connection and Setup
The MT822xB fully supports the IEEE-802.3 standard. Most MT822xB functions (except power on/off) can be controlled via an Ethernet connection to a PC connected directly (with an Ethernet cross-over cable) or through a network. The MT822xB software supports the TCP/IP network protocol.
Ethernet networking uses a bus or star topology where all of the interfacing devices are connected to a central cable called the bus, or are connected to a hub. Ethernet uses the CSMA/CD access method to handle simultaneous transmissions over the bus. CSMA/CD stands for *Carrier Sense Multiple Access/Collision Detection*. This standard enables network devices to detect simultaneous data channel usage, called a *collision*, and provides for a contention protocol. When a network device detects a collision, the CSMA/CD standard dictates that the data is retransmitted after waiting a random amount of time. If a second collision is detected, the data is again retransmitted after waiting twice as long. This is known as exponential back off.

The TCP/IP setup requires the following:

- **IP Address**: Every computer/electronic device in a TCP/IP network requires an IP address. An IP address has four numbers (each between 0 and 255) separated by periods. For example: 128.111.122.42 is a valid IP address.

- **Subnet Mask**: The subnet mask distinguishes the portion of the IP address that is the network ID from the portion that is the station ID. The subnet mask 255.255.0.0, when applied to the IP address given above, would identify the network ID as 128.111 and the station ID as 122.42. All stations in the same local area network should have the same network ID, but different station IDs.

- **Default Gateway**: A TCP/IP network can have a gateway to communicate beyond the LAN identified by the network ID. A gateway is a computer or electronic device that is connected to two different networks and can move TCP/IP data from one network to the other. A single LAN that is not connected to other LANs requires a default gateway setting of 0.0.0.0. If you have a gateway, then the default gateway would be set to the appropriate value of your gateway.

- **Ethernet Address**: An Ethernet address is a unique 48-bit value that identifies a network interface card to the rest of the network. Every network card has a unique ethernet address (MAC address) permanently stored into its memory.

Interface between the BTS Master and other devices on the network is via a category five (CAT-5) interface cable connected to a network. This cable uses four twisted pairs of insulated copper wires terminated into an RJ45 connector. CAT-5 cabling is capable of supporting frequencies up to 100 MHz and data transfer speeds up to 1 Gbps, which accommodates 1000Base-T, 100Base-T, and 10Base-T networks. CAT-5 cables are based on the EIA/TIA 568 Commercial Building Telecommunications Wiring Standard developed by the Electronics Industries Association. A pinout diagram is shown in Table 1-1.

### Table 1-1. 8-pin Ethernet RJ45 Connector Pinout Diagram

<table>
<thead>
<tr>
<th>Pin</th>
<th>Name</th>
<th>Description</th>
<th>Wire Color</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>TX+</td>
<td>Transmit data (&gt; +3 volts)</td>
<td>White/Orange</td>
</tr>
<tr>
<td>2</td>
<td>TX–</td>
<td>Transmit data (&lt; –3 volts)</td>
<td>Orange</td>
</tr>
<tr>
<td>3</td>
<td>RX+</td>
<td>Receive data (&gt; +3 volts)</td>
<td>White/Green</td>
</tr>
<tr>
<td>4</td>
<td>–</td>
<td>Not used (common mode termination)</td>
<td>Blue</td>
</tr>
<tr>
<td>5</td>
<td>–</td>
<td>Not used (common mode termination)</td>
<td>White/Blue</td>
</tr>
<tr>
<td>6</td>
<td>RX–</td>
<td>Receive data (&lt; –3 volts)</td>
<td>Green</td>
</tr>
<tr>
<td>7</td>
<td>–</td>
<td>Not used (common mode termination)</td>
<td>White/Brown</td>
</tr>
<tr>
<td>8</td>
<td>–</td>
<td>Not used (common mode termination)</td>
<td>Brown</td>
</tr>
</tbody>
</table>
TCP/IP connectivity requires setting up the parameters described at the beginning of this section. The following is a brief overview of how to set up a general LAN connection on the MT822xB.

**BTS Master LAN Connections**

The RJ-45 connector is used to connect the BTS Master to a local area network. Integrated into this connector are two LEDs. The amber LED indicates the presence of LAN voltages (a live LAN connection) while the green LED flashes to show that LAN traffic is present. The instrument IP address is set by pressing the Shift key, then the System (8) key followed by the System Options soft key and the Ethernet Config soft key. The instrument IP address can be set automatically using DHCP, or manually by entering the desired IP address, gateway address and subnet mask.

<table>
<thead>
<tr>
<th>Note</th>
<th>You may need to consult your network documentation or network administrator for assistance in configuring your network setup.</th>
</tr>
</thead>
</table>

An active Ethernet cable must be connected to the MT822xB before it is turned ON in order to enable the Ethernet port for DHCP or for a static IP address.

Depending upon local conditions, the port may remain enabled when changing from DHCP to static IP address, when changing from static IP address to DHCP, or when temporarily disconnecting the Ethernet cable.

If the port becomes disabled, ensure that an active Ethernet cable is attached to the MT822xB and then cycle the power OFF and back ON.

**USB Interface Connection and Setup**

Dynamic Host Configuration Protocol (DHCP) is an Internet protocol that automates the process of setting IP addresses for devices that use TCP/IP, and is the most common method of configuring a device for network use. To determine if a network is set up for DHCP, connect the MT822xB to the network and select DHCP protocol in the Ethernet Config menu.

Power cycle the BTS Master. If the network is set up for DHCP, then the assigned IP address should be displayed briefly after the power-up sequence.

To display the IP address of the instrument on, press the Shift key, then the System (8) key, then the System Options soft key and the Ethernet Config soft key.

**USB Interface Connection and Setup**

The Universal Serial Bus (USB) architecture is a high-performance networking standard that is considered “plug and play” compatible. The USB driver software is automatically detected and configured by the operating system of the devices that are connected to the bus. The MT822xB conforms to the USB 2.0 standard and is a USB “full-speed” device that supports data rates of up to 10 Mbps with the following restrictions:

- One USB network can support up to 127 devices
- The maximum length of USB cables between active devices is 5 meters (for USB 2.0) and 3 meters (for USB 1.0)

To run the following example, you must have NI-VISA 2.5 or later installed on the controller PC and you must select the VISA library (visa32.dll) as a reference in a Visual Basic project. For remote USB control, the controlling PC needs to have a version of VISA installed that supports USBTMC (USB Test and Measurement Class) devices.

1. Power on the MT822xB and controller PC and wait for the systems to power up completely.
2. Connect the USB cable mini-B connector to the MT822xB.
3. Connect the USB cable A connector to the controller PC USB host port. The controller PC should indicate “New Hardware Found” if the combination of USB VID/PID/Serial Number has never been connected to this controller PC.

4. Select to allow the Wizard to search for and install the USB software automatically.
5. After the software installs, close the Wizard by clicking Finish.

**Figure 1-3. USB Found New Hardware Wizard**

**USB Interface, Type Mini-B**

The USB 2.0 Mini-B device connector can be used to connect the MT822xB directly to a PC. The first time the MT822xB is connected to a PC, the normal USB device detection by the computer operating system takes place. The CD-ROM that is shipped with the instrument contains a driver for Windows 2000, Windows XP and Windows Vista. The driver is installed when Master Software Tools is installed. Drivers are not available for earlier versions of the Windows operating system. During the driver installation process, place the CD-ROM in the computer drive and specify that the installation wizard should search the CD-ROM for the driver.
1-5 Sending SCPI Commands

SCPI commands can be sent to the BTS Master though any Virtual Instrument Software Architecture (VISA) controller. VISA is a commonly used API in the Test and Measurement industry for communicating with instruments from a PC. The physical connection between the PC and the BTS Master can be Ethernet or USB. NI-VISA is the National Instruments implementation of the VISA I/O standard. Information and downloads are available at http://www.ni.com/visa/

The following example describes the verification that a VISA controller can see the BTS Master.

**Note** The images shown and instruction for your instrument and software may differ from the examples.

1. On the PC, run VISA Interactive Control and double-click on the BTS Master.

2. Select the viWrite tab and execute the default *IDN? write by clicking the Execute button.

![VISA Interactive Control](image1.png)

**Figure 1-4.** VISA Interactive Control

![VISA Interactive Control viWrite Tab](image2.png)

**Figure 1-5.** VISA Interactive Control viWrite Tab
3. Select the viRead tab and click the **Execute** button. If the PC is connected to the MT822xB the command returns the following information from the Buffer: manufacturer name ("Anritsu"), model number/options, serial number, and firmware package number.

![VISA Interactive Control viRead Tab](image)

**Figure 1-6.** VISA Interactive Control viRead Tab
Chapter 2 — Programming with SCPI

2-1 Introduction

This chapter provides an introduction to SCPI programming that includes descriptions of the command types, hierarchical command structure, command subsystems, data parameters and notational conventions.

2-2 Introduction to SCPI Programming

The Standard Commands for Programmable Instruments (SCPI) defines a set of standard programming commands for use by all SCPI compatible instruments. SCPI is intended to give the user a consistent environment for program development. It does so by defining controller messages, instrument responses, and message formats for all SCPI compatible instruments. SCPI commands are messages to the instrument to perform specific tasks. The MT822xB command set includes:

- “SCPI Common Commands” on page 2-1
- “SCPI Required Commands” on page 2-2
- “SCPI Optional Commands” on page 2-2

**Note** This instrument follows the SCPI standard but is not fully compliant with the standard.

SCPI Common Commands

Some common commands are defined in the IEEE-488.2 standard and must be implemented by all SCPI compatible instruments. These commands are identified by the asterisk (*) at the beginning of the command keyword. These commands are defined to control instrument status registers, status reporting, synchronization, and other common functions. The common commands supported by the BTS Master are shown below.

**IDN?**

**Title:** Identification Query

**Description:** This command returns the following information in <string> format separated by commas: manufacturer name (“Anritsu”), model number/options, serial number, firmware package number. The model number and options are separated by a “/” and each option is separated by a “/”.

For example, the return string might look like:

“Anritsu,MT822xB/3/2,62011032,1.23”

**RST**

**Title:** Reset

**Description:** This command restores parameters in the current application as well as system settings to their factory default values.

System settings affected by this command are Ethernet configuration, language, volume and brightness. Note that the unit will power-cycle after this command is executed.

After executing this command communication will be lost. Wait a minimum of 60 seconds before re-establishing communication.

**Front Panel Access:** Shift-8 (System), System Options, Reset, Factory Defaults

**Related Command:** :SYSTem:PRESet
SCPI Required Commands

The required SCPI commands supported by the MT822xB are listed in the Table 2-1. These command work in all measurement modes and are described in Chapter 3 on page 3-1.

Table 2-1. SCPI Required Commands

<table>
<thead>
<tr>
<th>Command</th>
</tr>
</thead>
<tbody>
<tr>
<td>:STATus</td>
</tr>
<tr>
<td>:SYSTem</td>
</tr>
</tbody>
</table>

SCPI Optional Commands

Table 2-2 lists the optional SCPI commands that comprise the majority of the command set described in this document. These commands control most of the programmable functions of the MT822xB.

Table 2-2. SCPI Optional Commands

<table>
<thead>
<tr>
<th>Command</th>
<th>Command</th>
<th>Command</th>
<th>Command</th>
</tr>
</thead>
<tbody>
<tr>
<td>:ABORT</td>
<td>:FETCh</td>
<td>:MEASure</td>
<td>:TRACe</td>
</tr>
<tr>
<td>:CALCulate</td>
<td>:FORMat</td>
<td>:MMEMory</td>
<td>:TRIGger</td>
</tr>
<tr>
<td>:CALibration</td>
<td>:INITiate</td>
<td>:READ</td>
<td>:UNIT</td>
</tr>
<tr>
<td>:CONFigure</td>
<td>:INPut</td>
<td>:SENSe</td>
<td>:[SENSe]</td>
</tr>
<tr>
<td>:DISPlay</td>
<td>:INStrument</td>
<td>:SOURce</td>
<td></td>
</tr>
</tbody>
</table>

The SCPI optional commands are sorted by measurement modes and commands may be repeated in more than one mode.

- Chapter 3, “All Mode Commands”
- Chapter 4, “Cable & Antenna Commands”
- Chapter 5, “Spectrum Analyzer Commands”
- Chapter 6, “VSG Commands”
- Chapter 7, “GSM Commands”
- Chapter 8, “WCDMA Commands”
- Chapter 9, “TDSCDMA Commands”
- Chapter 10, “CDMA Commands”
- Chapter 11, “EVDO Commands”
- Chapter 12, “Fixed WiMAX Commands”
- Chapter 13, “Mobile WiMAX Commands”
- Chapter 14, “LTE Commands”
- Chapter 15, “TD-LTE Commands”
2-3 Subsystem Commands

Subsystem commands control all instrument functions and some general purpose functions. All subsystem commands are identified by the colon used between keywords, as in :INITiate:CONTInuous.

The following information is provided for each subsystem command described in the following chapters.

- The command name, see “Command Names” on page 2-3.
- The path from the subsystem root command, see “Hierarchical Command Structure” on page 2-4.
- The query form of the command (if applicable), see “Query Commands” on page 2-5.
- The command title
- A description of the purpose of the command.
- The data parameters used as arguments for the command, see “Data Parameters” on page 2-6. This may include the parameter type and the available parameter choices.

Command Names

Typical SCPI commands consist of one or more keywords, parameters, and punctuation. SCPI command keywords can be a mixture of upper and lower case characters. Except for common commands, each keyword has a long and a short form. In this manual, the long form is presented with the short form in upper case and the remainder in lower case. For example, the long form of the command keyword to control the instrument display is :DISPlay.

The short form keyword is usually the first four characters of the long form (example: DISP for DISPlay). The exception to this is when the long form is longer than four characters and the fourth character is a vowel. In such cases, the vowel is dropped and the short form becomes the first three characters of the long form. Example: the short form of the keyword :POWer is :POW.

Some command keywords may have a numeric suffix to differentiate between multiple instrument features such as multiple trace options. For example; keywords :TRACe[:DATA]{1|2|3}, :TRACe1, or :TRACe3.

| Note | In the previous paragraph, :TRACe is identical to :TRACe1. If a numeric suffix it not included in a command, the first option is implied. Curly brackets { } designate optional keyword parameters. Square brackets [ ] designate optional command keywords. |

As with any programming language, the exact command keywords and command syntax must be used. The syntax of the individual commands is described in detail in the programming command chapters. Unrecognized versions of long form or short form commands, or improper syntax, will generate an error.

Long Format vs. Short Format

Each keyword has a long format and a short format. The start frequency can be specified by :SENSe:FREQuency:STARt or :SENS:FREQ:STAR. The capital letters in the command specification indicate the short form of the command. A mixture of the entire short form elements with entire long form elements of each command is acceptable. For example, :SENSe:FREQuency:STARt is an acceptable form of the command. However, :SENSe:FREQuen:STA is not an acceptable form of the command because :FREQuen is not the entire short or long form of the command element.
Hierarchical Command Structure

All SCPI commands, except the common commands, are organized in a hierarchical structure similar to the inverted tree file structure used in most computers. The SCPI standard refers to this structure as “the Command Tree.” The command keywords that correspond to the major instrument control functions are located at the top of the command tree. The root command keywords for the MT822xB SCPI command set are shown in Figure 2-1.

Figure 2-1. SCPI Command Tree

All MT822xB SCPI commands, except the :ABORt command, have one or more subcommands (keywords) associated with them to further define the instrument function to be controlled. The subcommand keywords may also have one or more associated subcommands (keywords). Each subcommand level adds another layer to the command tree. The command keyword and its associated subcommand keywords form a portion of the command tree called a command subsystem. The :CONFigure command subsystem is shown in Figure 2-2.

Figure 2-2. SCPI :CONFigure Subsystem
A colon (:) separates each subsystem. For example, the command :SENSe:FREQuency:STARt <freq> sets the start frequency. The start frequency is part of the :FREQuency subsystem which is part of the :SENSe subsystem. Stop frequency is also part of the :SENSe:FREQuency subsystem. It is specified by :SENSe:FREQuency:STOP.

**Query Commands**

All commands, unless specifically noted in the commands syntax descriptions, have a query form. As defined in IEEE-488.2, a query is a command with a question mark symbol appended (examples: *IDN? and :OPTions?). When a query form of a command is received, the current setting associated with the command is placed in the output buffer. Query commands always return the short form of the parameter unless otherwise documented. Boolean values are returned as 1 or 0, even when they can be set as on or off.

**Identifiers**

The following identifiers have been used throughout the optional command definitions. Descriptions are provided here. In most cases, units are specified with the individual command.

**Table 2-3. Description of Command Identifiers**

<table>
<thead>
<tr>
<th>Identifier</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;amplitude&gt;</td>
<td>Amplitude value. Units specified with the command.</td>
</tr>
<tr>
<td>&lt;freq&gt;</td>
<td>Frequency. Units specified with the command.</td>
</tr>
<tr>
<td>&lt;integer&gt;</td>
<td>Integer value, no units. Range specified with the command.</td>
</tr>
<tr>
<td>&lt;number&gt;</td>
<td>Numeric value, integer, or real.</td>
</tr>
<tr>
<td>&lt;percentage&gt;</td>
<td>Percentage value from 0–100. Units are always %.</td>
</tr>
<tr>
<td>&lt;rel ampl&gt;</td>
<td>Relative amplitude. Units are always dB.</td>
</tr>
<tr>
<td>&lt;x-parameter&gt;</td>
<td>Parameter value in the units of the x-axis. Units are specified with the command.</td>
</tr>
<tr>
<td>&lt;string&gt;</td>
<td>The string should be enclosed in either single quotes (‘’) or double quotes (&quot; &quot;).</td>
</tr>
<tr>
<td>&lt;file name&gt;</td>
<td>The name should be enclosed in either single quotes (‘’) or double quotes (&quot; &quot;). The need for an extension is documented with applicable commands.</td>
</tr>
<tr>
<td>&lt;voltage&gt;</td>
<td>Voltage. Units specified with the command.</td>
</tr>
<tr>
<td>&lt;current&gt;</td>
<td>Current. Units specified with the command.</td>
</tr>
</tbody>
</table>
Data Parameters

Data parameters, referred to simply as “parameters,” are the quantitative values used as arguments for the command keywords. The parameter type associated with a particular SCPI command is determined by the type of information required to control the particular instrument function. For example, Boolean (ON | OFF) type parameters are used with commands that control switch functions.

Some command descriptions specify the type of data parameter to be used with each command. The most commonly used parameter types are numeric, extended numeric, discrete, and Boolean.

**Numeric**

Numeric parameters comprise integer numbers or any number in decimal or scientific notation, and may include polarity signs. This includes `<NR1>`, `<NR2>`, and `<NR3>` numeric data as defined in “Data Parameter Notations” below. Parameters that accept all three `<NR>` formats are designated `<NRf>` throughout this document.

**Extended Numeric**

Extended numeric parameters include values such as MAXimum and MINimum.

**Discrete**

Discrete parameters, such as INTernal and EXTernal, are used to control program settings to a predetermined finite value or condition.

**Boolean**

Boolean parameters represent binary conditions and may be expressed as ON, OFF or 1, 0.

Data Parameter Notations

The following syntax conventions are used for data parameter descriptions in this manual:

<table>
<thead>
<tr>
<th>Table 2-4. Parameter Notations</th>
</tr>
</thead>
<tbody>
<tr>
<td><code>&lt;arg&gt;</code> ::=a generic command argument consisting of one or more of the other data types</td>
</tr>
<tr>
<td><code>&lt;bNR1&gt;</code> ::=boolean values in <code>&lt;NR1&gt;</code> format; numeric 1 or 0</td>
</tr>
<tr>
<td><code>&lt;boolean&gt;</code> ::=ON</td>
</tr>
<tr>
<td><code>&lt;integer&gt;</code> ::=an unsigned integer without a decimal point (implied radix point)</td>
</tr>
<tr>
<td><code>&lt;NR1&gt;</code> ::=a signed integer without a decimal point (implied radix point)</td>
</tr>
<tr>
<td><code>&lt;NR2&gt;</code> ::=a signed number with an explicit radix point</td>
</tr>
<tr>
<td><code>&lt;NR3&gt;</code> ::=a scaled explicit decimal point numeric value with and exponent (e.g., floating point number)</td>
</tr>
<tr>
<td><code>&lt;NRf&gt;</code> ::=&lt;NR1&gt;</td>
</tr>
<tr>
<td><code>&lt;nv&gt;</code> ::=SCPI numeric value: <code>&lt;NRf&gt;</code></td>
</tr>
<tr>
<td><code>&lt;char&gt;</code> ::=&lt;CHARACTER PROGRAM DATA&gt; Examples: CW, FIXed, UP, and DOWN</td>
</tr>
<tr>
<td><code>&lt;string&gt;</code> ::=&lt;STRING PROGRAM DATA&gt; ASCII characters enclosed by double quotes For example: “OFF”</td>
</tr>
<tr>
<td><code>&lt;block&gt;</code> ::=IEEE-488.2 block data format</td>
</tr>
<tr>
<td><code>&lt;NA&gt;</code> ::=Not Applicable</td>
</tr>
</tbody>
</table>

Unit Suffixes

Unit suffixes are not required for data parameters, provided the values are scaled for the global default units. The BTS Master SCPI default units are: Hz (Hertz) for frequency related parameters s (seconds) for time related parameters, and m (meters) for distance related parameters.
2-4 Notational Conventions

The SCPI interface standardizes command syntax and style that simplifies the task of programming across a wide range of instrumentation. As with any programming language, the exact command keywords and command syntax must be used. Unrecognized commands or improper syntax will not function.

Table 2-5. Notational Conventions

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>:</td>
<td>A colon links command keywords together to form commands. The colon is not an actual part of the keyword, but is a signal to the SCPI interface parser. A colon must precede a root keyword immediately following a semicolon (see &quot;Notational Examples&quot; on page 2-8).</td>
</tr>
<tr>
<td>;</td>
<td>A semicolon separates commands if multiple commands are placed on a single program line.</td>
</tr>
<tr>
<td>[ ]</td>
<td>Square brackets enclose one or more optional keywords.</td>
</tr>
<tr>
<td>{ }</td>
<td>Braces enclose one or more keyword or command parameters that may be included one or more times.</td>
</tr>
<tr>
<td></td>
<td>A vertical bar indicates &quot;or&quot; and is used to separate alternative parameter options. Example: ON</td>
</tr>
<tr>
<td>&lt;&gt;</td>
<td>Angle brackets enclose parameter descriptions.</td>
</tr>
<tr>
<td>::=</td>
<td>Means &quot;is defined as&quot; For example: &lt;a&gt;::=&lt;b&gt;&lt;c&gt; indicates that &lt;b&gt;&lt;c&gt; can replace &lt;a&gt;.</td>
</tr>
<tr>
<td>sp</td>
<td>Space, referred to as white space, must be used to separate keywords from their associated data parameters. It must not be used between keywords or inside keywords.</td>
</tr>
<tr>
<td>XXX</td>
<td>Indicates a root command name</td>
</tr>
</tbody>
</table>

For further information about SCPI command syntax and style, refer to the Standard Commands for Programmable Instruments (SCPI) 1999.0 document.
## 2-5 Notational Examples

Table 2-6 provides examples of valid command syntax:

### Table 2-6. Creating Valid Commands

<table>
<thead>
<tr>
<th>Command Specification</th>
<th>Valid Forms</th>
</tr>
</thead>
<tbody>
<tr>
<td>[:SENSe]:FREQuency:STARt &lt;freq&gt;</td>
<td>The following all produce the same result:</td>
</tr>
<tr>
<td></td>
<td>:SENSe:FREQuency:STARt 1 MHZ</td>
</tr>
<tr>
<td></td>
<td>:SENS:FREQ:STAR 1 MHZ</td>
</tr>
<tr>
<td></td>
<td>:sense:frequency:start 1000000</td>
</tr>
<tr>
<td></td>
<td>:FREQ:STAR 1000 KHZ</td>
</tr>
<tr>
<td>:CALCulate:MARKer{1</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>:CALC:MARK:X 1 GHZ</td>
</tr>
<tr>
<td></td>
<td>:CALC:MARK1:X 1 GHZ</td>
</tr>
<tr>
<td></td>
<td>:CALC:MARK2:X 2 GHZ</td>
</tr>
<tr>
<td>:UNIT:POWer DBM</td>
<td>DBV</td>
</tr>
<tr>
<td></td>
<td>:UNIT:POWer DBM</td>
</tr>
<tr>
<td></td>
<td>:unit:pow dbm</td>
</tr>
<tr>
<td>:INITiate:CONTinuous OFF</td>
<td>ON</td>
</tr>
<tr>
<td></td>
<td>:INITiate:CONTinuous OFF</td>
</tr>
<tr>
<td></td>
<td>:init:cont 0</td>
</tr>
</tbody>
</table>

Command statements read from left to right and from top to bottom. In the command statement above, the :FREQuency keyword immediately follows the :SENSe keyword with no separating space. A space (sp) is used between the command string and its argument.

Note that the first keyword in the command string does not require a leading colon; however, it is good practice to always use a leading colon for all keywords. Note also that the :SENSe keyword is optional. This is a SCPI convention for all voltage or signal source type instruments that allows shorter command statements to be used.

The following is an example of a multiple command statement that uses two separate commands in a single statement:

: FREQuency:STARt 10E6; : FREQuency:STOP 20E9

---

**Note**  
A semicolon is used to join the commands and a leading colon used immediately after the semicolon to start the second command.

### Command Terminators

The <new line> character (ASCII 10) in the last data byte of a command string is used as a command terminator. Use of a command terminator will reset the command path to the root of the tree.
2-6 Formatting Conventions

This manual uses the following conventions in describing SCPI commands.

**Table 2-7. Formatting Conventions**

<table>
<thead>
<tr>
<th>:COMMands:LOOK:LIKE:THIS</th>
<th>Commands are formatted to differentiate them from their description.</th>
</tr>
</thead>
<tbody>
<tr>
<td>:COMMand:QUERies:LOOK:LIKE:THIS?</td>
<td>The query form of the command is followed by a “?”</td>
</tr>
<tr>
<td>Front-panel key sequences use this formatting</td>
<td>Front-panel key presses are formatted to differentiate them from text descriptions. Key presses are separated by a comma (“,”).</td>
</tr>
<tr>
<td>&lt;identifier&gt;</td>
<td>Identifiers are enclosed in “&lt; &gt;”. They indicate that some type of data must be provided. See Table 2-3 for details on the types of identifiers.</td>
</tr>
<tr>
<td></td>
<td>The “</td>
</tr>
<tr>
<td>[optional input]</td>
<td>Optional input is be enclosed in “[]”. The “[]” are not part of the command.</td>
</tr>
</tbody>
</table>
Parameter Names

The following tables list the parameter options for the :TRACe:PREamble? command in each supported measurement mode.

Spectrum Analyzer Parameter Names

Table 2-8. Available Parameters in Spectrum Analyzer Mode (1 of 4)

<table>
<thead>
<tr>
<th>Parameter Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>SN</td>
<td>Instrument serial #</td>
</tr>
<tr>
<td>UNIT_NAME</td>
<td>Instrument name</td>
</tr>
<tr>
<td>DESCR</td>
<td>Trace name</td>
</tr>
<tr>
<td>DATE</td>
<td>Trace date/time</td>
</tr>
<tr>
<td>BASE_VER</td>
<td>Base FW version</td>
</tr>
<tr>
<td>APP_NAME</td>
<td>Application name</td>
</tr>
<tr>
<td>APP_VER</td>
<td>Application FW version</td>
</tr>
<tr>
<td>UNITS</td>
<td>Amplitude units</td>
</tr>
<tr>
<td>CENTER_FREQ</td>
<td>Center frequency</td>
</tr>
<tr>
<td>SPAN</td>
<td>Frequency span</td>
</tr>
<tr>
<td>FREQ_STEP</td>
<td>Frequency step size</td>
</tr>
<tr>
<td>RBW</td>
<td>Resolution bandwidth</td>
</tr>
<tr>
<td>RBW_TYPE</td>
<td>RBW coupling auto/manual</td>
</tr>
<tr>
<td>VBW</td>
<td>Video bandwidth</td>
</tr>
<tr>
<td>VBW_TYPE</td>
<td>VBW coupling auto/manual</td>
</tr>
<tr>
<td>RBW_VBW_RATIO</td>
<td>RBW/VBW ratio</td>
</tr>
<tr>
<td>SPAN_RBW_RATIO</td>
<td>Span/RBW ratio</td>
</tr>
<tr>
<td>INPUT_ATTEN</td>
<td>Input attenuation</td>
</tr>
<tr>
<td>ATтен_TYPE</td>
<td>Attenuation coupling auto/manual</td>
</tr>
<tr>
<td>REFERENCE_LEVEL</td>
<td>Reference level</td>
</tr>
<tr>
<td>SCALE</td>
<td>Y-axis scale</td>
</tr>
<tr>
<td>PREAMP_SET</td>
<td>Preamp state</td>
</tr>
<tr>
<td>REF_LEVEL_OFFSET</td>
<td>Reference level offset</td>
</tr>
<tr>
<td>DETECTION</td>
<td>Detection type</td>
</tr>
<tr>
<td>TRACE_AVERAGE</td>
<td>Number of traces to average</td>
</tr>
<tr>
<td>SWEEP_TYPE</td>
<td>Single/continuous</td>
</tr>
<tr>
<td>CURRENT_SIGNAL</td>
<td>Current signal index</td>
</tr>
<tr>
<td>CURRENT_CHANNEL</td>
<td>Current signal channel</td>
</tr>
<tr>
<td>TRACE_MODE</td>
<td>Normal/Avg/Max</td>
</tr>
</tbody>
</table>
### Table 2-8. Available Parameters in Spectrum Analyzer Mode (2 of 4)

<table>
<thead>
<tr>
<th>Parameter Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>TRACE_STATUS</td>
<td>TRACING AVIEW_NOT_BLANK: 0x0000000000000001 TRACING AWRITE_NOT_HOLD: 0x0000000000000002 TRACING A_DATA_VALID: 0x0000000000000004 TRACING B VIEW_NOT_BLANK: 0x0000000000010000 TRACING B_WRITE_NOT_HOLD: 0x0000000000020000 TRACING B_DATA_VALID: 0x0000000000040000 TRACING C VIEW_NOT_BLANK: 0x0000000100000000 TRACING C_WRITE_NOT_HOLD: 0x0000000200000000 TRACING C_DATA_VALID: 0x0000000400000000 TRACING C IS B_MINUS_A ON: 0x0000001000000000 TRACING C IS A_MINUS_B ON: 0x0000002000000000</td>
</tr>
<tr>
<td>TRACE_COUNT</td>
<td>Number of traces averaged</td>
</tr>
<tr>
<td>UI_DATA_POINTS</td>
<td>Number of display points</td>
</tr>
<tr>
<td>IMPEDANCE</td>
<td>Input impedance</td>
</tr>
<tr>
<td>REFERENCE_FREQUENCY</td>
<td>Reference freq</td>
</tr>
<tr>
<td>SET_SWEEP_TIME</td>
<td>Minimum sweep time setting</td>
</tr>
<tr>
<td>TRIGGER_TYPE</td>
<td>Trigger type</td>
</tr>
<tr>
<td>VIDEO_TRIGGER_LEVEL</td>
<td>Video trigger level</td>
</tr>
<tr>
<td>TRIGGER_POSITION</td>
<td>Trigger position as a percent of the display</td>
</tr>
<tr>
<td>PEAK_THRESHOLD</td>
<td>Marker peak search threshold</td>
</tr>
<tr>
<td>MARKER_TABLE</td>
<td>Marker table status</td>
</tr>
<tr>
<td>ACTIVE_MEASUREMENT</td>
<td>Current measurement</td>
</tr>
<tr>
<td>ANTENNA</td>
<td>Antenna index</td>
</tr>
<tr>
<td>OCC_BW_METHOD</td>
<td>Occupied bandwidth method</td>
</tr>
<tr>
<td>OCC_BW_PERCENT</td>
<td>Occupied bandwidth % of power setting</td>
</tr>
<tr>
<td>OCC_BW_DBC</td>
<td>Occupied bandwidth dB setting</td>
</tr>
<tr>
<td>OCC_BW_MEASURED_DB</td>
<td>Occupied bandwidth measured dB setting</td>
</tr>
<tr>
<td>OCC_BW_MEASURED_PERCENT</td>
<td>Occupied bandwidth measured % value</td>
</tr>
<tr>
<td>OCC_BW_VALUE</td>
<td>Measured occupied bandwidth</td>
</tr>
<tr>
<td>OCC_BW_LINE_MARKER_INFO</td>
<td>Mask off 16 bits at a time to get the display point location of the 3 OBW display indicators</td>
</tr>
<tr>
<td>CH_PWR_WIDTH</td>
<td>Channel power integration bandwidth</td>
</tr>
<tr>
<td>CH_PWR_VALUE</td>
<td>Measured channel power</td>
</tr>
<tr>
<td>CH_PWR_DENSITY</td>
<td>Measured channel power density</td>
</tr>
<tr>
<td>CH_PWR_LINE_MARKER_INFO</td>
<td>Mask off 16 bits at a time to get the display point location of the 2 channel power display indicators</td>
</tr>
<tr>
<td>ACRPR_MAIN_CH_BW</td>
<td>ACRPR main channel bandwidth</td>
</tr>
<tr>
<td>ACRPR_ADJC_CH_BW</td>
<td>ACRPR adjacent channel bandwidth</td>
</tr>
<tr>
<td>ACRPR_CHANNEL_SPACING</td>
<td>ACRPR channel spacing</td>
</tr>
<tr>
<td>ACRPR_MAIN_CH_PWR</td>
<td>ACRPR measured main channel power</td>
</tr>
<tr>
<td>Parameter Name</td>
<td>Description</td>
</tr>
<tr>
<td>----------------------------------------</td>
<td>-----------------------------------------------------------------------------</td>
</tr>
<tr>
<td>ACPR_UPPER_CH_PWR</td>
<td>ACPR measured upper channel power</td>
</tr>
<tr>
<td>ACPR_LOWER_CH_PWR</td>
<td>ACPR measured lower channel power</td>
</tr>
<tr>
<td>ACPR_LOWER_CH_LINE_MARKER_INFO</td>
<td>Mask off 16 bits at a time to get the display point location of the 2 ACPR lower channel display indicators</td>
</tr>
<tr>
<td>ACPR_MAIN_CH_LINE_MARKER_INFO</td>
<td>Mask off 16 bits at a time to get the display point location of the 2 ACPR main channel display indicators</td>
</tr>
<tr>
<td>ACPR_UPPER_CH_LINE_MARKER_INFO</td>
<td>Mask off 16 bits at a time to get the display point location of the 2 ACPR upper channel display indicators</td>
</tr>
<tr>
<td>AM_FM_DEMOD_VOL</td>
<td>AM/FM demod volume</td>
</tr>
<tr>
<td>AM_FM_DEMOD_FREQENCY</td>
<td>AM/FM demod freq</td>
</tr>
<tr>
<td>AM_FM_DEMOD_TYPE</td>
<td>AM/FM demod type</td>
</tr>
<tr>
<td>AM_FM_DEMOD_TIME</td>
<td>AM/FM demod time</td>
</tr>
<tr>
<td>AM_FM_LINE_MARKER</td>
<td>Display point location of the demodulation frequency</td>
</tr>
<tr>
<td>BEAT_FREQUENCY_OSC_FREQUENCY</td>
<td>BFO oscillator freq</td>
</tr>
<tr>
<td>CI_C_TYPE</td>
<td>C/I measurement carrier type</td>
</tr>
<tr>
<td>CI_C_VALUE</td>
<td>C/I measurement measured carrier power</td>
</tr>
<tr>
<td>CI_I_BB_VALUE</td>
<td>C/I measurement measured broadband interference power</td>
</tr>
<tr>
<td>CI_I_NB_VALUE</td>
<td>C/I measurement measured narrowband interference power</td>
</tr>
<tr>
<td>CI_I_WB_VALUE</td>
<td>C/I measurement measured wideband interference power</td>
</tr>
<tr>
<td>CI_BB_VALUE</td>
<td>C/I measurement with broadband interference</td>
</tr>
<tr>
<td>CI_NB_VALUE</td>
<td>C/I measurement with narrowband interference</td>
</tr>
<tr>
<td>CI_WB_VALUE</td>
<td>C/I measurement with wideband interference</td>
</tr>
<tr>
<td>MKR_SPA_FREQNx</td>
<td>Marker x frequency (where x is the marker number 0-11, 0 represent the reference marker #1 and 1 represent delta marker #1, 2 represent reference marker #2, and 3 represent delta marker #2, and so on)</td>
</tr>
<tr>
<td>MKR_SPA_POINTx</td>
<td>Reference marker x display point</td>
</tr>
<tr>
<td>MKR_SPA_MAGNTx</td>
<td>Reference marker x magnitude</td>
</tr>
<tr>
<td>MKR_SPA_PRCNTx</td>
<td>Reference marker x display percentage</td>
</tr>
</tbody>
</table>
### Table 2-8. Available Parameters in Spectrum Analyzer Mode (4 of 4)

<table>
<thead>
<tr>
<th>Parameter Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>MKR_SPA_FLAGSx</td>
<td>Reference marker x flags:</td>
</tr>
<tr>
<td></td>
<td>SPA_MKR_FLAG_ON_OFF: 0x00000001</td>
</tr>
<tr>
<td></td>
<td>SPA_MKR_FLAG_DELTA_MKR: 0x00000002</td>
</tr>
<tr>
<td></td>
<td>SPA_MKR_FLAG_SELECTED: 0x00000004</td>
</tr>
<tr>
<td></td>
<td>SPA_MKR_FLAG_DATA_INVALID: 0x00000008</td>
</tr>
<tr>
<td></td>
<td>SPA_MKR_FLAG_DATA_STALE: 0x000000010</td>
</tr>
<tr>
<td></td>
<td>SPA_MKR_FLAG_FIXED: 0x00000020</td>
</tr>
<tr>
<td></td>
<td>SPA_MKR_FLAG_MASK: 0x0000000FF</td>
</tr>
<tr>
<td></td>
<td>SPA_MKR_FLAG_DISPL_AMPL_HZ: 0x00000100</td>
</tr>
<tr>
<td></td>
<td>SPA_MKR_FLAG_DISPL_AMPL_PER_HZ: 0x00000200</td>
</tr>
<tr>
<td></td>
<td>SPA_MKR_FLAG_DISP_FLAG: 0x0000000F00</td>
</tr>
<tr>
<td></td>
<td>SPA_MKR_FLAG_RELATIVE: 0x00001000</td>
</tr>
<tr>
<td></td>
<td>SPA_MKR_STANDARD: 0x10000000</td>
</tr>
<tr>
<td></td>
<td>SPA_MKR_FIELD_STRENGHT: 0x20000000</td>
</tr>
<tr>
<td></td>
<td>SPA_MKR_NOISE: 0x30000000</td>
</tr>
<tr>
<td></td>
<td>SPA_MKR_COUNTER: 0x40000000</td>
</tr>
<tr>
<td></td>
<td>SPA_MKR_TIME: 0x50000000</td>
</tr>
<tr>
<td>MKR_SPA_REF_TOx</td>
<td>Specifies which marker is the marker x reference to</td>
</tr>
<tr>
<td>MKR_SPA_TRACex</td>
<td>Specifies which trace the marker x is for.</td>
</tr>
<tr>
<td>LIM_LFLAGS_UP</td>
<td>Upper limit flags:</td>
</tr>
<tr>
<td></td>
<td>LIMIT_FLAG_ON: 0x00000004</td>
</tr>
<tr>
<td></td>
<td>LIMIT_FLAG_ALARM_ON: 0x00000002</td>
</tr>
<tr>
<td>LIM_FREQNC_UPx</td>
<td>Upper limit point x freq (where x is the limit point number starting with 0)</td>
</tr>
<tr>
<td>LIM_MAGNTD_UPx</td>
<td>Upper limit point x amplitude</td>
</tr>
<tr>
<td>LIM_LFLAGS_LO</td>
<td>Lower limit flags:</td>
</tr>
<tr>
<td></td>
<td>LIMIT_FLAG_ON: 0x00000004</td>
</tr>
<tr>
<td></td>
<td>LIMIT_FLAG_ALARM_ON: 0x00000002</td>
</tr>
<tr>
<td>LIM_FREQNC_LOx</td>
<td>Lower limit point x freq (where x is the limit point number starting with 0)</td>
</tr>
<tr>
<td>LIM_MAGNTD_LOx</td>
<td>Lower limit point x amplitude</td>
</tr>
</tbody>
</table>
### Cable & Antenna Parameter Names

**Table 2-9. Available Parameters in Cable & Antenna Mode (1 of 7)**

<table>
<thead>
<tr>
<th>Parameter Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>SN</td>
<td>Instrument serial #</td>
</tr>
<tr>
<td>UNIT_NAME</td>
<td>Instrument name</td>
</tr>
<tr>
<td>TYPE</td>
<td>The data type (Setup or Data).</td>
</tr>
<tr>
<td>DESCRIPTOR</td>
<td>Trace name</td>
</tr>
<tr>
<td>DATE</td>
<td>Trace date/time</td>
</tr>
<tr>
<td>BASE_VER</td>
<td>Base FW version</td>
</tr>
<tr>
<td>APP_NAME</td>
<td>Application name</td>
</tr>
<tr>
<td>APP_VER</td>
<td>Application FW version</td>
</tr>
<tr>
<td>APP_MODE</td>
<td>Application Mode</td>
</tr>
<tr>
<td>CHECKSUM</td>
<td>Checksum</td>
</tr>
<tr>
<td>DIST_UNITS</td>
<td>Distance units</td>
</tr>
<tr>
<td>AMPL_UNITS</td>
<td>Y-axis value units</td>
</tr>
<tr>
<td>MEASUREMENT</td>
<td>Measurement</td>
</tr>
<tr>
<td>1PORT_DOMAIN</td>
<td>1-Port Domain</td>
</tr>
<tr>
<td>FREQ_TOKYO_GAS</td>
<td>Tokyo Gas Frequency</td>
</tr>
<tr>
<td>FREQ_START</td>
<td>Start Frequency</td>
</tr>
<tr>
<td>FREQ_STOP</td>
<td>Stop Frequency</td>
</tr>
<tr>
<td>DIST_START</td>
<td>Start distance</td>
</tr>
<tr>
<td>DIST_STOP</td>
<td>Stop distance</td>
</tr>
<tr>
<td>CAL_STATUS</td>
<td>Calibrate Status (On/Off)</td>
</tr>
<tr>
<td>SWEEP_TIME</td>
<td>Sweep time</td>
</tr>
<tr>
<td>SWEEP_TYPE</td>
<td>Sweep type (Single/Continuous)</td>
</tr>
<tr>
<td>FREQ_STEP</td>
<td>Frequency step size</td>
</tr>
<tr>
<td>MARKER_SELECTED</td>
<td>The selected marker</td>
</tr>
<tr>
<td>MARKER_TABLE</td>
<td>Marker table status (On/Off)</td>
</tr>
<tr>
<td>TRACE_VIEW</td>
<td>Trace View (View/Blank)</td>
</tr>
<tr>
<td>TRACE_STATE</td>
<td>Trace State (Write/Hold)</td>
</tr>
<tr>
<td>WINDOWING</td>
<td>Windowing Type (Rectangular/Nominal Side Lobe/Low Side Lobe/Minimum Side Lobe)</td>
</tr>
<tr>
<td>CABLE</td>
<td>Cable index from the cable list</td>
</tr>
<tr>
<td>PROP_VEL</td>
<td>Propagation velocity</td>
</tr>
<tr>
<td>CABLE_LOSS</td>
<td>Cable Loss</td>
</tr>
<tr>
<td>BIAS_TEE_STATE</td>
<td>Bias tee state (On/Off)</td>
</tr>
<tr>
<td>BIAS_TEE_VOLTAGE_SELECTION</td>
<td>Bias tee voltage selection (12V,15V,18V,21V,24V)</td>
</tr>
<tr>
<td>BIAS_TEE_VOLTAGE</td>
<td>Bias tee voltage</td>
</tr>
<tr>
<td>BIAS_TEE_CURRENT_SELECTION</td>
<td>Bias tee current selection (Low/High)</td>
</tr>
<tr>
<td>BIAS_TEE_CURRENT</td>
<td>Bias tee current</td>
</tr>
<tr>
<td>CW_STATUS</td>
<td>RF Immunity (On/Off)</td>
</tr>
<tr>
<td>OUTPUT_POWER_LEVEL</td>
<td>Power Level (High/Low)</td>
</tr>
</tbody>
</table>
## Table 2-9. Available Parameters in Cable & Antenna Mode (2 of 7)

<table>
<thead>
<tr>
<th>Parameter Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>IL_SENSITIVITY</td>
<td>Auto/Normal/High</td>
</tr>
<tr>
<td>CURRENT_SIGNAL_STD</td>
<td>Current signal standard</td>
</tr>
<tr>
<td>FULL_SCREEN</td>
<td>Full Screen</td>
</tr>
<tr>
<td>RESOLUTION</td>
<td>Sweep Resolution (137/275/551)</td>
</tr>
<tr>
<td>1PORT_DISP_FORMAT</td>
<td>1 Port Display Format</td>
</tr>
<tr>
<td>2PORT_DISP_FORMAT</td>
<td>2 Port Display Format</td>
</tr>
<tr>
<td>UI_DATA_POINTS</td>
<td>Number of display points (137/275/551)</td>
</tr>
<tr>
<td>REFERENCE_LEVEL</td>
<td>Reference level</td>
</tr>
<tr>
<td>SCALE</td>
<td>Y-axis scale</td>
</tr>
<tr>
<td>RF_SOURCE_POWER_LEVEL</td>
<td>Source Power Level</td>
</tr>
<tr>
<td>PM_RELATIVE</td>
<td>PM Relative</td>
</tr>
<tr>
<td>PM_OFFSET</td>
<td>PM Offset</td>
</tr>
<tr>
<td>CAL_TEMP_WINDOW</td>
<td>Cal Temp window</td>
</tr>
<tr>
<td>PM_UPPER_THRESHOLD_STATE</td>
<td>PM upper threshold state</td>
</tr>
<tr>
<td>PM_LOWER_THRESHOLD_STATE</td>
<td>PM lower threshold state</td>
</tr>
<tr>
<td>CENTER_FREQ</td>
<td>Center Frequency</td>
</tr>
<tr>
<td>SPAN</td>
<td>Span Frequency</td>
</tr>
<tr>
<td>CAL_COEFFICIENT_PTR</td>
<td>Calibrate coefficient</td>
</tr>
<tr>
<td>SMITH_CHART_TYPE</td>
<td>Smith chart type</td>
</tr>
<tr>
<td>DISPLAY_CHANNELS</td>
<td>Display Channels</td>
</tr>
<tr>
<td>ACTIVE_DISPLAY_CHANNEL</td>
<td>The current active display channel</td>
</tr>
<tr>
<td>NUM_OF_CHANNELS</td>
<td>Channel number</td>
</tr>
<tr>
<td>SEND_CAL_PROMPTS</td>
<td>Send Cal prompts</td>
</tr>
<tr>
<td>SET_SWEEP_DATA_TYPE</td>
<td>Set sweep data type</td>
</tr>
<tr>
<td>TUNE_MODE</td>
<td>Tune mode</td>
</tr>
<tr>
<td>AVERAGING</td>
<td>Averaging</td>
</tr>
<tr>
<td>SMITH_PHASE_SELECTION</td>
<td>Smith phase selection</td>
</tr>
<tr>
<td>10_MHZ_TCXO_DAC</td>
<td>10 MHz TCXO DAC</td>
</tr>
<tr>
<td>PM_DBMUNITS</td>
<td>PM dBm units</td>
</tr>
<tr>
<td>PM_ZERO</td>
<td>PM Zero</td>
</tr>
<tr>
<td>PM_DBUNITS</td>
<td>PM dB units</td>
</tr>
<tr>
<td>PM_DATA</td>
<td>PM data</td>
</tr>
<tr>
<td>PM_STATUS</td>
<td>PM Status</td>
</tr>
<tr>
<td>DISP_CHANNELS</td>
<td>Display channels</td>
</tr>
<tr>
<td>ACTIVE_DISP_CHANNEL</td>
<td>Active display channel</td>
</tr>
<tr>
<td>DMAX</td>
<td>Dmax</td>
</tr>
<tr>
<td>FAULT_RESOLUTION</td>
<td>Fault Resolution</td>
</tr>
<tr>
<td>SUGGESTED_SPAN</td>
<td>Suggested span</td>
</tr>
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### Table 2-9. Available Parameters in Cable & Antenna Mode (3 of 7)

<table>
<thead>
<tr>
<th>Parameter Name</th>
<th>Description</th>
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<tbody>
<tr>
<td>START_FREQ_STATUS</td>
<td>Start frequency status</td>
</tr>
<tr>
<td>PM_ZERO_DATA</td>
<td>PM zero data</td>
</tr>
<tr>
<td>PM_REL_DATA</td>
<td>PM rel data</td>
</tr>
<tr>
<td>FIELD_MENU</td>
<td>Cable &amp; Antenna/Field</td>
</tr>
<tr>
<td>UI_DATA_POINTS</td>
<td>Number of display points</td>
</tr>
<tr>
<td>SET_Sweep_TIME</td>
<td>Minimum sweep time setting</td>
</tr>
<tr>
<td>AVERAGING_FACTOR</td>
<td>Averaging Factor</td>
</tr>
<tr>
<td>AVERAGE_COUNT</td>
<td>Averaging count</td>
</tr>
<tr>
<td>SCALE_RESOLUTION_RL</td>
<td>S11 Log Magnitude scale resolution</td>
</tr>
<tr>
<td>REFERENCE_VALUE_RL</td>
<td>S11 Log Magnitude reference value</td>
</tr>
<tr>
<td>REFERENCE_LINE_RL</td>
<td>S11 Log Magnitude reference line</td>
</tr>
<tr>
<td>SCALE_RESOLUTION_RL_DIST</td>
<td>S11 Log Magnitude Fault Location scale resolution</td>
</tr>
<tr>
<td>REFERENCE_VALUE_RL_DIST</td>
<td>S11 Log Magnitude Fault Location reference value</td>
</tr>
<tr>
<td>REFERENCE_LINE_RL_DIST</td>
<td>S11 Log Magnitude Fault Location reference line</td>
</tr>
<tr>
<td>SCALE_RESOLUTION_SWR</td>
<td>S11 VSWR scale resolution</td>
</tr>
<tr>
<td>REFERENCE_VALUE_SWR</td>
<td>S11 VSWR reference value</td>
</tr>
<tr>
<td>REFERENCE_LINE_SWR</td>
<td>S11 VSWR reference line</td>
</tr>
<tr>
<td>SCALE_RESOLUTION_SWR_DIST</td>
<td>S11 VSWR Fault Location scale resolution</td>
</tr>
<tr>
<td>REFERENCE_VALUE_SWR_DIST</td>
<td>S11 VSWR Fault Location reference value</td>
</tr>
<tr>
<td>REFERENCE_LINE_SWR_DIST</td>
<td>S11 VSWR Fault Location reference line</td>
</tr>
<tr>
<td>SCALE_RESOLUTION_CL</td>
<td>Cable loss Scale resolution</td>
</tr>
<tr>
<td>REFERENCE_VALUE_CL</td>
<td>Cable loss reference value</td>
</tr>
<tr>
<td>REFERENCE_LINE_CL</td>
<td>Cable loss reference line</td>
</tr>
<tr>
<td>SCALE_RESOLUTION_IL</td>
<td>IL scale resolution</td>
</tr>
<tr>
<td>REFERENCE_VALUE_IL</td>
<td>IL reference value</td>
</tr>
<tr>
<td>REFERENCE_LINE_IL</td>
<td>IL reference line</td>
</tr>
<tr>
<td>SCALE_RESOLUTION_IG</td>
<td>S21 Log Magnitude scale resolution</td>
</tr>
<tr>
<td>REFERENCE_VALUE_IG</td>
<td>S21 Log Magnitude reference value</td>
</tr>
<tr>
<td>REFERENCE_LINE_IG</td>
<td>S21 Log Magnitude reference line</td>
</tr>
<tr>
<td>SCALE_RESOLUTION_PHASE_S11</td>
<td>S11 Phase scale resolution</td>
</tr>
<tr>
<td>REFERENCE_VALUE_PHASE_S11</td>
<td>S11 Phase reference value</td>
</tr>
<tr>
<td>REFERENCE_LINE_PHASE_S11</td>
<td>S11 Phase reference line</td>
</tr>
<tr>
<td>SCALE_RESOLUTION_PHASE_IL</td>
<td>S21 Phase scale resolution</td>
</tr>
<tr>
<td>REFERENCE_VALUE_PHASE_IL</td>
<td>S21 Phase reference value</td>
</tr>
<tr>
<td>REFERENCE_LINE_PHASE_IL</td>
<td>S21 Phase reference line</td>
</tr>
<tr>
<td>SCALE_RESOLUTION_PHASE_IG</td>
<td>Scale Resolution Phase IG</td>
</tr>
<tr>
<td>REFERENCE_VALUE_PHASE_IG</td>
<td>Reference value phase IG</td>
</tr>
<tr>
<td>REFERENCE_LINE_PHASE_IG</td>
<td>Reference line phase IG</td>
</tr>
<tr>
<td>RL_DIST_TOP</td>
<td>DTF Return Loss Top Value</td>
</tr>
<tr>
<td>RL_DIST_BOTTOM</td>
<td>DTF Return Loss Bottom Value</td>
</tr>
</tbody>
</table>
## Table 2-9. Available Parameters in Cable & Antenna Mode (4 of 7)

<table>
<thead>
<tr>
<th>Parameter Name</th>
<th>Description</th>
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</thead>
<tbody>
<tr>
<td>SWR_DIST_TOP</td>
<td>DTF VSWR Top Value</td>
</tr>
<tr>
<td>SWR_DIST_BOTTOM</td>
<td>DTF VSWR Bottom Value</td>
</tr>
<tr>
<td>RL_MAG_TOP</td>
<td>Return Loss Top Value</td>
</tr>
<tr>
<td>RL_MAG_BOTTOM</td>
<td>Return Loss Bottom Value</td>
</tr>
<tr>
<td>SWR_MAG_TOP</td>
<td>VSWR Top Value</td>
</tr>
<tr>
<td>SWR_MAG_BOTTOM</td>
<td>VSWR Bottom Value</td>
</tr>
<tr>
<td>CL_MAG_TOP</td>
<td>Cable Loss Top Value</td>
</tr>
<tr>
<td>CL_MAG_BOTTOM</td>
<td>Cable Loss Bottom Value</td>
</tr>
<tr>
<td>IL_MAG_TOP</td>
<td>IL Magnitude Top</td>
</tr>
<tr>
<td>IL_MAG_BOTTOM</td>
<td>IL Magnitude Bottom</td>
</tr>
<tr>
<td>IG_MAG_TOP</td>
<td>2-Port Gain Top Value</td>
</tr>
<tr>
<td>IG_MAG_BOTTOM</td>
<td>2-Port Gain Bottom</td>
</tr>
<tr>
<td>S11_PHASE_TOP</td>
<td>1-Port Phase Top Value</td>
</tr>
<tr>
<td>S11_PHASE_BOTTOM</td>
<td>1-Port Phase Bottom</td>
</tr>
<tr>
<td>IL_PHASE_TOP</td>
<td>IL Phase Top Value</td>
</tr>
<tr>
<td>IL_PHASE_BOTTOM</td>
<td>IL Phase Bottom Value</td>
</tr>
<tr>
<td>IG_PHASE_TOP</td>
<td>2-Port Phase Top Value</td>
</tr>
<tr>
<td>IG_PHASE_BOTTOM</td>
<td>2-Port Phase Bottom</td>
</tr>
<tr>
<td>GD_S11_MAG_TOP</td>
<td>S11 Group Delay Top</td>
</tr>
<tr>
<td>GD_S11_MAG_BOTTOM</td>
<td>S11 Group Delay Bottom</td>
</tr>
<tr>
<td>GD_S21_MAG_TOP</td>
<td>S21 Group Delay Top</td>
</tr>
<tr>
<td>GD_S21_MAG_BOTTOM</td>
<td>S21 Group Delay Bottom</td>
</tr>
<tr>
<td>SCALE_RESOLUTION_GD_S11</td>
<td>S11 Group Delay scale resolution</td>
</tr>
<tr>
<td>REFERENCE_VALUE_GD_S11</td>
<td>S11 Group Delay reference value</td>
</tr>
<tr>
<td>REFERENCE_LINE_GD_S11</td>
<td>S11 Group Delay reference line</td>
</tr>
<tr>
<td>SCALE_RESOLUTION_GD_S21</td>
<td>S21 Group Delay scale resolution</td>
</tr>
<tr>
<td>REFERENCE_VALUE_GD_S21</td>
<td>S21 Group Delay reference value</td>
</tr>
<tr>
<td>REFERENCE_LINE_GD_S21</td>
<td>S21 Group Delay reference line</td>
</tr>
<tr>
<td>CONNECTOR_TYPE</td>
<td>DUT Connector type</td>
</tr>
<tr>
<td>USER_CONNECTOR_x_OPEN</td>
<td>DUT connector open for x user (where x is the user number 1 or 2).</td>
</tr>
<tr>
<td>USER_CONNECTOR_x_SHORT</td>
<td>DUT connector short for x user (where x is the user number 1 or 2).</td>
</tr>
<tr>
<td>USER_CONNECTOR_x_Cy</td>
<td>DUT connector for x user of capacitance coefficient y. Where x is the user number (1-2) and y is the coefficient number (0-3).</td>
</tr>
<tr>
<td>VVM_MODE</td>
<td>Vector Volt Meter mode (Table or CW).</td>
</tr>
<tr>
<td>VVM_CW_FREQ</td>
<td>Vector Volt Meter CW frequency.</td>
</tr>
<tr>
<td>VVM_MEAS_TYPE</td>
<td>Vector Volt Meter measurement type (Return or Insertion).</td>
</tr>
<tr>
<td>VVM_RETURN_MEAS_FORMAT</td>
<td>Vector Volt Meter return measurement format (dB/VSWR/Impedance).</td>
</tr>
</tbody>
</table>
### Available Parameters in Cable & Antenna Mode (5 of 7)

<table>
<thead>
<tr>
<th>Parameter Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>VVM_CABLE</td>
<td>Vector Volt Meter selected cable.</td>
</tr>
<tr>
<td>VVM_RF_OFF</td>
<td>Vector Volt Meter RF on/off.</td>
</tr>
<tr>
<td>VVM_RETURN_REF_AMP</td>
<td>Vector Volt Meter Return Ref Amp.</td>
</tr>
<tr>
<td>VVM_RETURN_REF_PHASE</td>
<td>Vector Volt Meter Return Ref. phase.</td>
</tr>
<tr>
<td>VVM_RETURN_REF_VSWR</td>
<td>Vector Volt Meter Return Ref VSWR.</td>
</tr>
<tr>
<td>VVM_RETURN_REF_REAL</td>
<td>Vector Volt Meter Return Ref Real.</td>
</tr>
<tr>
<td>VVM_RETURN_REF_IMAG</td>
<td>Vector Volt Meter Return Ref Imag.</td>
</tr>
<tr>
<td>VVM_INSERTION_REF_AMP</td>
<td>Vector Volt Meter Insertion Ref Amp.</td>
</tr>
<tr>
<td>VVM_INSERTION_REF_PHASE</td>
<td>Vector Volt Meter Insertion Ref Phase.</td>
</tr>
<tr>
<td>VVM_Amp_x</td>
<td>Vector Volt Meter amplitude x (where x is the cable number 1 to 5).</td>
</tr>
<tr>
<td>VVM_DELTA_Amp_x</td>
<td>Vector Volt Meter delta amplitude x (where x is the cable number 1 to 5).</td>
</tr>
<tr>
<td>VVM_PHASE_x</td>
<td>Vector Volt Meter phase x (where x is the cable number 1 to 5).</td>
</tr>
<tr>
<td>VVM_DELTA_PHASE_x</td>
<td>Vector Volt Meter delta phase x (where x is the cable number 1 to 5).</td>
</tr>
<tr>
<td>VVM_CW_Amp</td>
<td>Vector Volt Meter CW amplitude.</td>
</tr>
<tr>
<td>VVM_CW_PHASE</td>
<td>Vector Volt Meter delta phase.</td>
</tr>
<tr>
<td>VVM_CW_VSWR</td>
<td>Vector Volt Meter CW VSWR.</td>
</tr>
<tr>
<td>VVM_CW_REAL</td>
<td>Vector Volt Meter delta Real.</td>
</tr>
<tr>
<td>VVM_CW_IMAG</td>
<td>Vector Volt Meter delta Imag</td>
</tr>
<tr>
<td>SAVED_FREQ_START</td>
<td>Saved Start Frequency.</td>
</tr>
<tr>
<td>SAVED_FREQ_STOP</td>
<td>Saved Stop Frequency.</td>
</tr>
<tr>
<td>VVM_SAVED_REAL</td>
<td>Saved Real.</td>
</tr>
<tr>
<td>VVM_SAVED_IMAG</td>
<td>Saved Imag.</td>
</tr>
<tr>
<td>VVM_SAVE_REFERENCE</td>
<td>Saved reference.</td>
</tr>
<tr>
<td>MKR_REF_FREQNx</td>
<td>Reference marker x frequency (where x is the marker number 0-5)</td>
</tr>
</tbody>
</table>
### Table 2-9. Available Parameters in Cable & Antenna Mode (6 of 7)

<table>
<thead>
<tr>
<th>Parameter Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>MKR_REF_FLAGSx</td>
<td>Reference marker x flags:</td>
</tr>
<tr>
<td>MKR_FLAG_ON_OFF</td>
<td>0x00000001</td>
</tr>
<tr>
<td>MKR_FLAG_NOISE</td>
<td>0x00000002</td>
</tr>
<tr>
<td>MKR_FLAG_PHASE_NOISE</td>
<td>0x00000004</td>
</tr>
<tr>
<td>MKR_FLAG_AMP_TRACK</td>
<td>0x00000008</td>
</tr>
<tr>
<td>MKR_FLAG_DELTA_MKR</td>
<td>0x00000020</td>
</tr>
<tr>
<td>MKR_FLAG_DATA_INVALID</td>
<td>0x00000040</td>
</tr>
<tr>
<td>MKR_FLAG_DATA_STALE</td>
<td>0x00000080</td>
</tr>
<tr>
<td>MKR_FLAG_SELECTED</td>
<td>0x00000100</td>
</tr>
<tr>
<td>MKR_FLAG_COUNTER</td>
<td>0x00000200</td>
</tr>
<tr>
<td>MKR_FLAG_DELT_DISPL_PER_HZ</td>
<td>0x00000080</td>
</tr>
<tr>
<td>MKR_FLAG_TRACE_A</td>
<td>0x00001000</td>
</tr>
<tr>
<td>MKR_FLAG_TRACE_B</td>
<td>0x00002000</td>
</tr>
<tr>
<td>MKR_FLAG_TRACE_C</td>
<td>0x00004000</td>
</tr>
<tr>
<td>MKR_FLAG_TRACE_MASK</td>
<td>0x00007000</td>
</tr>
<tr>
<td>MKR_DLT_FREQNx</td>
<td>Delta marker x frequency (where x is the marker number 0-5)</td>
</tr>
<tr>
<td>MKR_DLT_FLAGSx</td>
<td>Delta marker x flags:</td>
</tr>
<tr>
<td>LIM_LFLAGS_UP-1</td>
<td>Upper limit flags:</td>
</tr>
<tr>
<td>LIMIT_FLAG_UPPER</td>
<td>0x00000001</td>
</tr>
<tr>
<td>LIMIT_FLAG_ON</td>
<td>0x00000004</td>
</tr>
<tr>
<td>LIMIT_FLAG_ALARM_ON</td>
<td>0x00000002</td>
</tr>
<tr>
<td>LIMIT_FLAG_SEGMENTED</td>
<td>0x00000020</td>
</tr>
<tr>
<td>LIMIT_FLAG_ALARM_EVENT</td>
<td>0x00000040</td>
</tr>
<tr>
<td>LIMIT_FLAG_LEFT_OF_START_FREQ</td>
<td>0x00000080</td>
</tr>
<tr>
<td>LIMIT_FLAG_RIGHT_OF_STOP_FREQ</td>
<td>0x00000100</td>
</tr>
<tr>
<td>LIMIT_FLAG_MASK</td>
<td>0x000007FF</td>
</tr>
<tr>
<td>LIM_NUMPTS_UP-1</td>
<td>Number of upper limit points</td>
</tr>
<tr>
<td>LIM_CURFRQ_UP-1</td>
<td>Upper limit current frequency</td>
</tr>
<tr>
<td>LIM_CURMAG_UP-1</td>
<td>Upper limit current magnitude</td>
</tr>
<tr>
<td>LIM_PFLAGS_UPx</td>
<td>Upper limit x flags (where x is the limit point number starting with 0)</td>
</tr>
<tr>
<td>LIM_FREQNC_UPx</td>
<td>Upper limit point x freq (where x is the limit point number starting with 0)</td>
</tr>
<tr>
<td>LIM_MAGNTD_UPx</td>
<td>Upper limit point x-parameter (where x is the limit point number starting with 0)</td>
</tr>
</tbody>
</table>
Table 2-9. Available Parameters in Cable & Antenna Mode (7 of 7)

<table>
<thead>
<tr>
<th>Parameter Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>LIM_LFLAGS_LO-1</td>
<td>Lower limit flags:</td>
</tr>
<tr>
<td></td>
<td>LIMIT_FLAG_UPPER 0x00000001</td>
</tr>
<tr>
<td></td>
<td>LIMIT_FLAG_ON: 0x00000004</td>
</tr>
<tr>
<td></td>
<td>LIMIT_FLAG_ALARM_ON: 0x00000002</td>
</tr>
<tr>
<td></td>
<td>LIMIT_FLAG_SEGMENTED: 0x00000020</td>
</tr>
<tr>
<td></td>
<td>LIMIT_FLAG_ALARM_EVENT: 0x00000040</td>
</tr>
<tr>
<td></td>
<td>LIMIT_FLAG_LEFT_OF_START_FREQ: 0x00000080</td>
</tr>
<tr>
<td></td>
<td>LIMIT_FLAG_RIGHT_OF_STOP_FREQ: 0x00000100</td>
</tr>
<tr>
<td></td>
<td>LIMIT_FLAG_MASK: 0x000007FF</td>
</tr>
<tr>
<td>LIM_NUMPTS_LO-1</td>
<td>Number of lower limit points</td>
</tr>
<tr>
<td>LIM_CURFRQ_LO-1</td>
<td>Lower limit current frequency</td>
</tr>
<tr>
<td>LIM_CURMAG_LO-1</td>
<td>Lower limit current magnitude</td>
</tr>
<tr>
<td>LIM_PFFLAGS_LOx</td>
<td>Lower limit x flags (where x is the limit point number starting with 0)</td>
</tr>
<tr>
<td>LIM_FREQNC_LOx</td>
<td>Lower limit point x freq (where x is the limit point number starting with 0)</td>
</tr>
<tr>
<td>LIM_MAGNTD_LOx</td>
<td>Lower limit point x (where x is the limit point number starting with 0)</td>
</tr>
</tbody>
</table>
### GSM Parameter Names

Table 2-10. Available Parameters in GSM Mode

<table>
<thead>
<tr>
<th>Parameter Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>SN</td>
<td>Instrument serial #</td>
</tr>
<tr>
<td>UNIT_NAME</td>
<td>Instrument name</td>
</tr>
<tr>
<td>TYPE</td>
<td>The data type (Setup or Data)</td>
</tr>
<tr>
<td>DESCR</td>
<td>Trace name</td>
</tr>
<tr>
<td>DATE</td>
<td>Trace date/time</td>
</tr>
<tr>
<td>BASE_VER</td>
<td>Base FW version</td>
</tr>
<tr>
<td>APP_NAME</td>
<td>Application name</td>
</tr>
<tr>
<td>APP_VER</td>
<td>Application FW version</td>
</tr>
<tr>
<td>APP_MODE</td>
<td>Application Mode</td>
</tr>
<tr>
<td>REFERENCE_LEVEL</td>
<td>Reference Level</td>
</tr>
<tr>
<td>CENTER_FREQ</td>
<td>Center freq</td>
</tr>
<tr>
<td>SIGNAL_STANDARD</td>
<td>Current signal standard (the value is the index of the signal standard list, where a value of 1 is the first index in the list)</td>
</tr>
<tr>
<td>CHANNEL</td>
<td>Current channel</td>
</tr>
<tr>
<td>POWER_OFFSET</td>
<td>Applied power offset</td>
</tr>
<tr>
<td>REFERENCE_FREQUENCY</td>
<td>Selected external reference frequency</td>
</tr>
<tr>
<td>UNITS</td>
<td>Amplitude units</td>
</tr>
<tr>
<td>CURRENT_VIEW</td>
<td>Current view</td>
</tr>
<tr>
<td>CURRENT_MEASUREMENTS</td>
<td>Current measurements</td>
</tr>
<tr>
<td>DYNAMIC_ATTENUATION</td>
<td>Dynamic range on/off</td>
</tr>
<tr>
<td>SPAN</td>
<td>Frequency span</td>
</tr>
<tr>
<td>MANUAL_SYSTEM_SELECT</td>
<td>GSM/EDGE select</td>
</tr>
<tr>
<td>CURRENT_SPECTRUM_VIEW</td>
<td>Current spectrum view (single or multiple channel spectrum)</td>
</tr>
<tr>
<td>I_Q_VIEW</td>
<td>IQ view</td>
</tr>
<tr>
<td>RUN_HOLD</td>
<td>Run/Hold on/off</td>
</tr>
<tr>
<td>MC_SPECTRUM_START_FREQ</td>
<td>Multi-channel spectrum start frequency</td>
</tr>
<tr>
<td>MC_SPECTRUM_STOP_FREQ</td>
<td>Multi-channel spectrum stop frequency</td>
</tr>
<tr>
<td>MC_CHANNEL_CURSOR</td>
<td>Multi-channel spectrum channel cursor (used for markers)</td>
</tr>
<tr>
<td>MC_FREQ_CURSOR</td>
<td>Multi-channel spectrum frequency cursor (used for markers)</td>
</tr>
<tr>
<td>TEST_MODEL</td>
<td>Current pass fail model being tested</td>
</tr>
</tbody>
</table>
## WiMAX, Mobile WiMAX Parameter Names

Table 2-11. Available Parameters in WiMAX and Mobile WiMAX Mode (1 of 2)

<table>
<thead>
<tr>
<th>Parameter Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>SN</td>
<td>Instrument serial #</td>
</tr>
<tr>
<td>UNIT_NAME</td>
<td>Instrument name</td>
</tr>
<tr>
<td>TYPE</td>
<td>The data type (Setup or Data)</td>
</tr>
<tr>
<td>DESCR</td>
<td>Trace name</td>
</tr>
<tr>
<td>DATE</td>
<td>Trace date/time</td>
</tr>
<tr>
<td>BASE_VER</td>
<td>Base FW version</td>
</tr>
<tr>
<td>APP_NAME</td>
<td>Application name</td>
</tr>
<tr>
<td>APP_VER</td>
<td>Application FW version</td>
</tr>
<tr>
<td>APP_MODE</td>
<td>Application Mode</td>
</tr>
<tr>
<td>REFERENCE_LEVEL</td>
<td>Reference Level</td>
</tr>
<tr>
<td>UNITS</td>
<td>Amplitude units</td>
</tr>
<tr>
<td>SCALE</td>
<td>Y axis scale</td>
</tr>
<tr>
<td>CENTER_FREQ</td>
<td>Center freq</td>
</tr>
<tr>
<td>SIGNAL_STANDARD</td>
<td>Current signal standard (the value is the index of the signal standard list, where a value of 0 is the first index in the list)</td>
</tr>
<tr>
<td>CHANNEL</td>
<td>Current channel</td>
</tr>
<tr>
<td>POWER_OFFSET</td>
<td>Applied power offset</td>
</tr>
<tr>
<td>REFERENCE_FREQUENCY</td>
<td>Selected external reference frequency</td>
</tr>
<tr>
<td>UNITS</td>
<td>Amplitude units</td>
</tr>
<tr>
<td>CURRENT_VIEW</td>
<td>Current view</td>
</tr>
<tr>
<td>CURRENT_MEASUREMENTS</td>
<td>Current measurements</td>
</tr>
<tr>
<td>DYNAMIC_ATTENUATION</td>
<td>Dynamic range on/off</td>
</tr>
<tr>
<td>SPAN</td>
<td>Frequency span</td>
</tr>
<tr>
<td>PVT_FRAME_START_TIME</td>
<td>Power vs. Time start time</td>
</tr>
<tr>
<td>PVT_FRAME_STOP_TIME</td>
<td>Power vs. Time stop time</td>
</tr>
<tr>
<td>BW_SELECT</td>
<td>Current Bandwidth (MHz)</td>
</tr>
<tr>
<td>CURRENT_SPECTRUM_VIEW</td>
<td>Current spectrum view (single or multiple channel spectrum)</td>
</tr>
<tr>
<td>I_Q_VIEW</td>
<td>IQ view</td>
</tr>
<tr>
<td>RUN_HOLD</td>
<td>Run/Hold on/off</td>
</tr>
<tr>
<td>TEST_MODEL</td>
<td>Current pass fail model being tested</td>
</tr>
<tr>
<td>CP_RATIO</td>
<td>Cyclic Prefix Ratio (the value is the index of the CP Ratio list, where a value of 0 is the first index in the list)</td>
</tr>
<tr>
<td>SPECTRUM_SPAN</td>
<td>Spectrum frequency span (the value is the index of the span list, where a value of 0 is the first index in the list)</td>
</tr>
<tr>
<td>AUTO_SPAN</td>
<td>Auto span on/off</td>
</tr>
<tr>
<td>MAX_HOLD</td>
<td>Max hold on/off</td>
</tr>
<tr>
<td>EVM_SUB_CARRIER_TOP</td>
<td>Y Axis Max for EVM vs. Symbol/Sub-Carrier</td>
</tr>
<tr>
<td>EVM_SUB_CARRIER_SCALE</td>
<td>EVM vs. Symbol/Sub-Carrier scale</td>
</tr>
<tr>
<td>SPECTRAL_FLATNESS_SCALE</td>
<td>Spectral Flatness scale</td>
</tr>
</tbody>
</table>
Table 2-11. Available Parameters in WiMAX and Mobile WiMAX Mode (2 of 2)

<table>
<thead>
<tr>
<th>Parameter Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACRP_DISPLAY_GRAPH</td>
<td>Display ACPR trace on/off</td>
</tr>
<tr>
<td>NUM_OF_ACRP_MAIN_CHANNELS</td>
<td>Number of main channels</td>
</tr>
<tr>
<td>NUM_OF_ACRP_ADJC_CHANNELS</td>
<td>Number of adjacent channels</td>
</tr>
<tr>
<td>CONSTELLATION_REFERENCE_POINTS</td>
<td>Constellation reference points on/off</td>
</tr>
<tr>
<td>SPECTRAL_FLATNESS_TOP</td>
<td>Y Axis Max for Spectral Flatness</td>
</tr>
<tr>
<td>SPECTRAL_FLATNESS_EVM_SUB_START</td>
<td>Spectral Flatness/EVM vs. sub-carrier start</td>
</tr>
<tr>
<td>SPECTRAL_FLATNESS_EVM_SUB_STOP</td>
<td>Spectral Flatness/EVM vs. sub-carrier stop</td>
</tr>
<tr>
<td>EVM_SYM_START</td>
<td>EVM vs. Symbol start</td>
</tr>
<tr>
<td>EVM_SYM_STOP</td>
<td>EVM vs. Symbol stop</td>
</tr>
</tbody>
</table>
**WCDMA Parameter Names**

Table 2-12. Available Parameters in WCDMA Mode (1 of 2)

<table>
<thead>
<tr>
<th>Parameter Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>SN</td>
<td>Instrument serial #</td>
</tr>
<tr>
<td>UNIT_NAME</td>
<td>Instrument name</td>
</tr>
<tr>
<td>TYPE</td>
<td>The data type (Setup or Data)</td>
</tr>
<tr>
<td>DESCR</td>
<td>Trace name</td>
</tr>
<tr>
<td>DATE</td>
<td>Trace date/time</td>
</tr>
<tr>
<td>BASE_VER</td>
<td>Base FW version</td>
</tr>
<tr>
<td>APP_NAME</td>
<td>Application name</td>
</tr>
<tr>
<td>APP_VER</td>
<td>Application FW version</td>
</tr>
<tr>
<td>APP_MODE</td>
<td>Application Mode</td>
</tr>
<tr>
<td>CENTER_FREQ</td>
<td>Center frequency</td>
</tr>
<tr>
<td>AUTO_SCRAMBLING_CODE</td>
<td>Auto scrambling code detection on/off</td>
</tr>
<tr>
<td>SCRAMBLING_CODE</td>
<td>Selected manual scrambling code</td>
</tr>
<tr>
<td>MAX_SPREADING_FACTOR</td>
<td>Maximum spreading factor</td>
</tr>
<tr>
<td>REFERENCE_LEVEL</td>
<td>Reference Level</td>
</tr>
<tr>
<td>THRESHOLD</td>
<td>Active channel threshold</td>
</tr>
<tr>
<td>CURRENT_MEASUREMENTS</td>
<td>Currently active measurements</td>
</tr>
<tr>
<td>SCALE</td>
<td>Display scale (dB/division)</td>
</tr>
<tr>
<td>POWER_OFFSET</td>
<td>Applied power offset</td>
</tr>
<tr>
<td>SCCPCH_CODE</td>
<td>Selected S-CCPCH channelization code</td>
</tr>
<tr>
<td>PICH_CODE</td>
<td>Selected PICH channelization code</td>
</tr>
<tr>
<td>CURRENT_VIEW</td>
<td>Current view</td>
</tr>
<tr>
<td>CDP_ZOOM</td>
<td>Zoom range for code domain power</td>
</tr>
<tr>
<td>CDP_ZOOM_START</td>
<td>Start code for zoom window</td>
</tr>
<tr>
<td>REFERENCE_FREQUENCY</td>
<td>Reference Frequency</td>
</tr>
<tr>
<td>SCCPCH_SPREAD_FCT</td>
<td>Selected S-CCPCH spreading factor</td>
</tr>
<tr>
<td>RUN_HOLD</td>
<td>Run/hold state</td>
</tr>
<tr>
<td>EXT_REF_FREQ</td>
<td>Selected external reference frequency</td>
</tr>
<tr>
<td>DYNAMIC_ATTENUATION</td>
<td>Dynamic range on/off</td>
</tr>
<tr>
<td>ACLR_DISPLAY_GRAPH</td>
<td>Display ACLR trace on/off</td>
</tr>
<tr>
<td>MARKER_TABLE</td>
<td>Marker table on/off</td>
</tr>
<tr>
<td>OTA_AUTO_SC</td>
<td>OTA auto scrambling code on/off</td>
</tr>
<tr>
<td>OTA_CODE_LOCK</td>
<td>OTA code lock on/off</td>
</tr>
<tr>
<td>OTA_DISPLAY_VALUE</td>
<td>Selected OTA display value</td>
</tr>
<tr>
<td>OTA_SORT_PARAM</td>
<td>Selected OTA sort parameter</td>
</tr>
<tr>
<td>OTA_MANUAL_SC_1</td>
<td>Selected manual scrambling code 1</td>
</tr>
<tr>
<td>OTA_MANUAL_SC_2</td>
<td>Selected manual scrambling code 2</td>
</tr>
<tr>
<td>OTA_MANUAL_SC_3</td>
<td>Selected manual scrambling code 3</td>
</tr>
<tr>
<td>OTA_MANUAL_SC_4</td>
<td>Selected manual scrambling code 4</td>
</tr>
<tr>
<td>Parameter Name</td>
<td>Description</td>
</tr>
<tr>
<td>--------------------------------------</td>
<td>-----------------------------------------------------------------------------</td>
</tr>
<tr>
<td>OTA_MANUAL_SC_5</td>
<td>Selected manual scrambling code 5</td>
</tr>
<tr>
<td>OTA_MANUAL_SC_6</td>
<td>Selected manual scrambling code 6</td>
</tr>
<tr>
<td>CODOGRAM_SINGLE_SWEEP_TIME</td>
<td>Single sweep time for codogram</td>
</tr>
<tr>
<td>TEST_MODEL</td>
<td>Current pass fail model being tested</td>
</tr>
<tr>
<td>CONSTELLATION_CODE</td>
<td>Code number for which IQ data is being displayed</td>
</tr>
<tr>
<td>CONSTELLATION_SPREAD</td>
<td>Spreading factor of code for which IQ data is being displayed</td>
</tr>
<tr>
<td>NUM_OF_ACLR_MAIN_CHANNELS</td>
<td>Number of main channels</td>
</tr>
<tr>
<td>NUM_OF_ACLR_MAIN_CHANNELS</td>
<td>Number of adjacent channels</td>
</tr>
<tr>
<td>BAND_SPECTRUM_START_FREQ</td>
<td>Band spectrum start frequency</td>
</tr>
<tr>
<td>BAND_SPECTRUM_STOP_FREQ</td>
<td>Band spectrum stop frequency</td>
</tr>
<tr>
<td>DL_CHANNEL_NUMBER</td>
<td>Currently selected band spectrum channel</td>
</tr>
<tr>
<td>AUTO_THRESHOLD</td>
<td>Auto threshold value</td>
</tr>
<tr>
<td>HSDPA_DEMOD_SINGLE_SWEEP_TIME</td>
<td>Single sweep time for hsdpa</td>
</tr>
<tr>
<td>BAND_SPECTRUM_REFERENCE_LEVEL</td>
<td>Reference level for band spectrum</td>
</tr>
<tr>
<td>CONSTELLATION_PERSISTENCE</td>
<td>Persistence level for IQ data</td>
</tr>
<tr>
<td>SIGNAL_STANDARD</td>
<td>Current Signal standard</td>
</tr>
<tr>
<td>CHANNEL</td>
<td>Current channel</td>
</tr>
<tr>
<td>CONSTELLATION_MARKER</td>
<td>Display location of the IQ marker</td>
</tr>
<tr>
<td>RF_MKR_POINT_[1]</td>
<td>2</td>
</tr>
<tr>
<td>RF_MKR_STATE_[1]</td>
<td>2</td>
</tr>
<tr>
<td>DEMOD_MKR_POINT_[1]</td>
<td>2</td>
</tr>
<tr>
<td>DEMOD_MKR_STATE_[1]</td>
<td>2</td>
</tr>
<tr>
<td>CODOGRAM_MKR_POINT_1</td>
<td>Codogram marker point number</td>
</tr>
<tr>
<td>CODOGRAM_MKR_STATE_1</td>
<td>Codogram marker on/off</td>
</tr>
<tr>
<td>CODOGRAM_MKR_TIME_1</td>
<td>Codogram marker time offset</td>
</tr>
</tbody>
</table>
## CDMA Parameter Names

Table 2-13. Available Parameters in CDMA Mode (1 of 2)

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>UNIT_NAME</td>
<td>Instrument name</td>
</tr>
<tr>
<td>TYPE</td>
<td>The data type (Setup or Data)</td>
</tr>
<tr>
<td>DESCR</td>
<td>Trace name</td>
</tr>
<tr>
<td>DATE</td>
<td>Trace date/time</td>
</tr>
<tr>
<td>BASE_VER</td>
<td>Base FW version</td>
</tr>
<tr>
<td>APP_NAME</td>
<td>Application name</td>
</tr>
<tr>
<td>APP_VER</td>
<td>Application FW version</td>
</tr>
<tr>
<td>APP_MODE</td>
<td>Application Mode</td>
</tr>
<tr>
<td>CENTER_FREQ</td>
<td>Center frequency</td>
</tr>
<tr>
<td>REFERENCE_LEVEL</td>
<td>Reference Level</td>
</tr>
<tr>
<td>THRESHOLD</td>
<td>Active channel threshold</td>
</tr>
<tr>
<td>CURRENT_MEASUREMENTS</td>
<td>Currently active measurements</td>
</tr>
<tr>
<td>SCALE</td>
<td>Display scale (dB/division)</td>
</tr>
<tr>
<td>SPAN</td>
<td>Span</td>
</tr>
<tr>
<td>POWER_OFFSET</td>
<td>Applied power offset</td>
</tr>
<tr>
<td>CURRENT_VIEW</td>
<td>Current view</td>
</tr>
<tr>
<td>CDP_ZOOM</td>
<td>Zoom range for code domain power (16/32/64)</td>
</tr>
<tr>
<td>CDP_ZOOM_START</td>
<td>Start code for zoom window</td>
</tr>
<tr>
<td>REFERENCE_FREQUENCY</td>
<td>Reference Frequency</td>
</tr>
<tr>
<td>RUN_HOLD</td>
<td>Run/hold state</td>
</tr>
<tr>
<td>DYNAMIC_ATTENUATION</td>
<td>Dynamic range on/off</td>
</tr>
<tr>
<td>MARKER_TABLE</td>
<td>Marker table on/off</td>
</tr>
<tr>
<td>TEST_MODEL</td>
<td>Current pass fail model being tested</td>
</tr>
<tr>
<td>NUM_OF_ACLR_MAIN_CHANNELS</td>
<td>Number of main channels</td>
</tr>
<tr>
<td>NUM_OF_ACLR_ADJC_CHANNELS</td>
<td>Number of adjacent channels</td>
</tr>
<tr>
<td>SIGNAL_STANDARD</td>
<td>Current Signal standard</td>
</tr>
<tr>
<td>CHANNEL</td>
<td>Current channel</td>
</tr>
<tr>
<td>CHANNEL_WIDTH</td>
<td>Channel width</td>
</tr>
<tr>
<td>DATA_MODULATION</td>
<td>Data channel modulation type</td>
</tr>
<tr>
<td>PN_OFFSET</td>
<td>PN offset</td>
</tr>
<tr>
<td>WALSH_CODE</td>
<td>Walsh code (64/128)</td>
</tr>
<tr>
<td>CDP_SCALE</td>
<td>Code Domain Power scale</td>
</tr>
<tr>
<td>MEAS_SPEED</td>
<td>Measurement speed (Fast/Normal/Slow)</td>
</tr>
<tr>
<td>PN_TYPE</td>
<td>PN trigger type (No Trig/GPS/Ext)</td>
</tr>
<tr>
<td>PN_SEARCH_TYPE</td>
<td>PN search type (Auto/Manual)</td>
</tr>
<tr>
<td>TRIGGER_POLARITY</td>
<td>Trigger polarity (Rising/Falling)</td>
</tr>
<tr>
<td>PN_INCREMENT</td>
<td>PN increment</td>
</tr>
<tr>
<td>SPUR_EMM_DISPLAY_POINTS</td>
<td>Number of Spurious Emission display points</td>
</tr>
</tbody>
</table>
Table 2-13. Available Parameters in CDMA Mode (2 of 2)

<table>
<thead>
<tr>
<th>SN</th>
<th>Instrument serial #</th>
</tr>
</thead>
<tbody>
<tr>
<td>CDP_UNITS</td>
<td>Code Domain Power unit type (Relative/Absolute)</td>
</tr>
<tr>
<td>USER_PWR_UNIT</td>
<td>Default unit (dBm/W/mW)</td>
</tr>
<tr>
<td>BAND_CLASS</td>
<td>Band class</td>
</tr>
<tr>
<td>USER_CARRIER_BW</td>
<td>Carrier bandwidth (1.23/1.24/1.25)</td>
</tr>
<tr>
<td>RF_MKR_POINT_[1]</td>
<td>2</td>
</tr>
<tr>
<td>RF_MKR_STATE_[1]</td>
<td>2</td>
</tr>
<tr>
<td>DEMOD_MKR_POINT_[1]</td>
<td>2</td>
</tr>
<tr>
<td>DEMOD_MKR_STATE_[1]</td>
<td>2</td>
</tr>
</tbody>
</table>
## EVDO Parameter Names

Table 2-14. Available Parameters in EVDO Mode (1 of 2)

<table>
<thead>
<tr>
<th>Parameter Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>SN</td>
<td>Instrument serial #</td>
</tr>
<tr>
<td>UNIT_NAME</td>
<td>Instrument name</td>
</tr>
<tr>
<td>TYPE</td>
<td>The data type (Setup or Data)</td>
</tr>
<tr>
<td>DESCR</td>
<td>Trace name</td>
</tr>
<tr>
<td>DATE</td>
<td>Trace date/time</td>
</tr>
<tr>
<td>BASE_VER</td>
<td>Base FW version</td>
</tr>
<tr>
<td>APP_NAME</td>
<td>Application name</td>
</tr>
<tr>
<td>APP_VER</td>
<td>Application FW version</td>
</tr>
<tr>
<td>APP_MODE</td>
<td>Application Mode</td>
</tr>
<tr>
<td>CENTER_FREQ</td>
<td>Center frequency</td>
</tr>
<tr>
<td>REFERENCE_LEVEL</td>
<td>Reference Level</td>
</tr>
<tr>
<td>THRESHOLD</td>
<td>Active channel threshold</td>
</tr>
<tr>
<td>CURRENT_MEASUREMENTS</td>
<td>Currently active measurements</td>
</tr>
<tr>
<td>SCALE</td>
<td>Display scale (dB/division)</td>
</tr>
<tr>
<td>SPAN</td>
<td>Span</td>
</tr>
<tr>
<td>POWER_OFFSET</td>
<td>Applied power offset</td>
</tr>
<tr>
<td>CURRENT_VIEW</td>
<td>Current view</td>
</tr>
<tr>
<td>CDP_ZOOM</td>
<td>Zoom range for code domain power (16/32/64)</td>
</tr>
<tr>
<td>CDP_ZOOM_START</td>
<td>Start code for zoom window</td>
</tr>
<tr>
<td>REFERENCE_FREQUENCY</td>
<td>Reference Frequency</td>
</tr>
<tr>
<td>RUN_HOLD</td>
<td>Run/hold state</td>
</tr>
<tr>
<td>DYNAMIC_ATTENUATION</td>
<td>Dynamic range on/off</td>
</tr>
<tr>
<td>MARKER_TABLE</td>
<td>Marker table on/off</td>
</tr>
<tr>
<td>TEST_MODEL</td>
<td>Current pass fail model being tested</td>
</tr>
<tr>
<td>NUM_OF_ACLR_MAIN_CHANNELS</td>
<td>Number of main channels</td>
</tr>
<tr>
<td>NUM_OF_ACLR_ADJC_CHANNELS</td>
<td>Number of adjacent channels</td>
</tr>
<tr>
<td>SIGNAL_STANDARD</td>
<td>Current Signal standard</td>
</tr>
<tr>
<td>CHANNEL</td>
<td>Current channel</td>
</tr>
<tr>
<td>CHANNEL_WIDTH</td>
<td>Channel width</td>
</tr>
<tr>
<td>DATA_MODULATION</td>
<td>Data channel modulation type</td>
</tr>
<tr>
<td>PN_OFFSET</td>
<td>PN offset</td>
</tr>
<tr>
<td>WALSH_CODE</td>
<td>Walsh code (64/128)</td>
</tr>
<tr>
<td>POWER_TIME</td>
<td>Power vs. Time slot type</td>
</tr>
<tr>
<td>CDP_SCALE</td>
<td>Code Domain Power scale</td>
</tr>
<tr>
<td>SPUR_EMM_DISPLAY_POINTS</td>
<td>Number of Spurious Emission display points</td>
</tr>
<tr>
<td>POWER_VS_TIME_THRESHOLD</td>
<td>Power vs. Time threshold</td>
</tr>
<tr>
<td>MEAS_SPEED</td>
<td>Measurement speed (Fast/Normal/Slow)</td>
</tr>
<tr>
<td>PN_TYPE</td>
<td>PN trigger type (No Trig/GPS/Ext)</td>
</tr>
</tbody>
</table>
Table 2-14. Available Parameters in EVDO Mode (2 of 2)

<table>
<thead>
<tr>
<th>Parameter Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>PN_SEARCH_TYPE</td>
<td>PN search type (Auto/Manual)</td>
</tr>
<tr>
<td>TRIGGER_POLARITY</td>
<td>Trigger polarity (Rising/Falling)</td>
</tr>
<tr>
<td>PN_INCREMENT</td>
<td>PN increment</td>
</tr>
<tr>
<td>CDP_UNITS</td>
<td>Code Domain Power unit type (Relative/Absolute)</td>
</tr>
<tr>
<td>POWER_VS_TIME_START</td>
<td>Power vs. Time start chip</td>
</tr>
<tr>
<td>POWER_VS_TIME_STOP</td>
<td>Power vs. Time stop chip</td>
</tr>
<tr>
<td>USER_PWR_UNIT</td>
<td>Default unit (dBm/W/mW)</td>
</tr>
<tr>
<td>BAND_CLASS</td>
<td>Band class</td>
</tr>
<tr>
<td>USER_CARRIER_BW</td>
<td>Carrier bandwidth (1.23/1.24/1.25)</td>
</tr>
<tr>
<td>RF_MKR_POINT_[1]2</td>
<td>3</td>
</tr>
<tr>
<td>RF_MKR_STATE_[1]2</td>
<td>3</td>
</tr>
<tr>
<td>DEMOD_MKR_POINT_[1]2</td>
<td>3</td>
</tr>
<tr>
<td>DEMOD_MKR_STATE_[1]2</td>
<td>3</td>
</tr>
</tbody>
</table>
# TDSCDMA Parameter Names

Table 2-15. Available Parameters in TDSCDMA Mode (1 of 2)

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>SN</td>
<td>Instrument serial #</td>
</tr>
<tr>
<td>UNIT_NAME</td>
<td>Instrument name</td>
</tr>
<tr>
<td>TYPE</td>
<td>The data type (Setup or Data)</td>
</tr>
<tr>
<td>DESCR</td>
<td>Trace name</td>
</tr>
<tr>
<td>DATE</td>
<td>Trace date/time</td>
</tr>
<tr>
<td>BASE_VER</td>
<td>Base FW version</td>
</tr>
<tr>
<td>APP_NAME</td>
<td>Application name</td>
</tr>
<tr>
<td>APP_VER</td>
<td>Application FW version</td>
</tr>
<tr>
<td>APP_MODE</td>
<td>Application Mode</td>
</tr>
<tr>
<td>CENTER_FREQ</td>
<td>Center frequency</td>
</tr>
<tr>
<td>SIGNAL_STANDARD</td>
<td>Current Signal Standard</td>
</tr>
<tr>
<td>CHANNEL</td>
<td>Current Signal Standard Channel</td>
</tr>
<tr>
<td>SPAN</td>
<td>Span</td>
</tr>
<tr>
<td>REFERENCE_LEVEL</td>
<td>Reference Level</td>
</tr>
<tr>
<td>SCALE</td>
<td>Display Scale</td>
</tr>
<tr>
<td>POWER_OFFSET</td>
<td>Applied power offset</td>
</tr>
<tr>
<td>UNITS</td>
<td>0 = dBm, 1 = Watts</td>
</tr>
<tr>
<td>DYNAMIC_ATTENUATION</td>
<td>Dynamic range on/off</td>
</tr>
<tr>
<td>REFERENCE_FREQUENCY</td>
<td>Reference Frequency</td>
</tr>
<tr>
<td>OTA_DISPLAY_MODE</td>
<td>0 = Code Scan, 1 = Tau Scan</td>
</tr>
<tr>
<td>CURRENT_VIEW</td>
<td>Current view</td>
</tr>
<tr>
<td>CURRENT_MEASUREMENTS</td>
<td>Currently active measurements</td>
</tr>
<tr>
<td>POWER_TIME_VIEW</td>
<td>0 = Sub-Frame, 1 = Slot View</td>
</tr>
<tr>
<td>POWER_VS_TIME_START</td>
<td>Start time</td>
</tr>
<tr>
<td>POWER_VS_TIME_STOP</td>
<td>Stop time has</td>
</tr>
<tr>
<td>SLOT_NUMBER_SET</td>
<td>Slot number (7 = auto)</td>
</tr>
<tr>
<td>SLOT_NUMBER_RETURN</td>
<td>Slot number</td>
</tr>
<tr>
<td>Dynamic Range</td>
<td>0 = Normal, 1 = Wide</td>
</tr>
<tr>
<td>MARKER_TABLE</td>
<td>Marker table on/off</td>
</tr>
<tr>
<td>NUM_OF_ACLR_MAIN_CHANNELS</td>
<td>Number of main channels</td>
</tr>
<tr>
<td>NUM_OF_ACLR_ADJC_CHANNELS</td>
<td>Number of adjacent channels</td>
</tr>
<tr>
<td>CHANNEL_WIDTH</td>
<td>Channel width</td>
</tr>
<tr>
<td>SCRAMBLING_CODE_SET</td>
<td>Scrambling code (128 = auto)</td>
</tr>
<tr>
<td>SCRAMBLING_CODE_SET_RETURN</td>
<td>Actual detected scrambling code</td>
</tr>
<tr>
<td>SCRAMBLING_CODE_1</td>
<td>Scrambling code 1</td>
</tr>
<tr>
<td>SCRAMBLING_CODE_2</td>
<td>Scrambling code 2</td>
</tr>
<tr>
<td>SCRAMBLING_CODE_3</td>
<td>Scrambling code 3</td>
</tr>
<tr>
<td>SCRAMBLING_CODE_4</td>
<td>Scrambling code 4</td>
</tr>
<tr>
<td>SPREADING_FACTOR</td>
<td>Spread factor</td>
</tr>
</tbody>
</table>
Table 2-15. Available Parameters in TDSCDMA Mode (2 of 2)

<table>
<thead>
<tr>
<th>SN</th>
<th>Instrument serial #</th>
</tr>
</thead>
<tbody>
<tr>
<td>SYNC_DL_CODE_SET</td>
<td>Sync DL code (32 = auto)</td>
</tr>
<tr>
<td>SYNC_DL_CODE_RETURN</td>
<td>Actual detected sync DL code set</td>
</tr>
<tr>
<td>DWPTS</td>
<td>DWPTS Power</td>
</tr>
<tr>
<td>NUM_OF_CARRIERS</td>
<td>0 = 1 carrier, 1 = 3 carriers</td>
</tr>
<tr>
<td>MAX_USERS_SET</td>
<td>Max users set (0 = auto)</td>
</tr>
<tr>
<td>MAX_USERS_RETURN</td>
<td>Max users detected</td>
</tr>
<tr>
<td>UPLINK_SLOT_SWITCH_POINT</td>
<td>Uplink slot switch point set</td>
</tr>
<tr>
<td>THRESHOLD</td>
<td>Threshold</td>
</tr>
<tr>
<td>MEAS_SPEED</td>
<td>Measurement speed (Fast/Normal/Slow)</td>
</tr>
<tr>
<td>TAU_OFFSET</td>
<td>Tau time offset</td>
</tr>
<tr>
<td>TRIGGER_TYPE</td>
<td>Trigger type (No Trig/GPS/External)</td>
</tr>
<tr>
<td>TRIGGER_POLARITY</td>
<td>Trigger polarity (Rising/Falling)</td>
</tr>
<tr>
<td>TRIGGER_ACCURACY</td>
<td>Trigger accuracy</td>
</tr>
<tr>
<td>CDP_ZOOM</td>
<td>CDP Zoom</td>
</tr>
<tr>
<td>CDP_ZOOM_START</td>
<td>CDP Zoom Start</td>
</tr>
<tr>
<td>WALSH_CODE</td>
<td>Walsh Code</td>
</tr>
<tr>
<td>CDP_SCALE</td>
<td>CDP scale</td>
</tr>
<tr>
<td>CDP_UNITS</td>
<td>CDP units (Absolute/Relative)</td>
</tr>
<tr>
<td>DATA_MODULATION</td>
<td>Data Modulation (QPSK/8PSK/16QAM)</td>
</tr>
<tr>
<td>DEMOD_MODE</td>
<td>Demod mode</td>
</tr>
<tr>
<td>RUN_HOLD</td>
<td>Run/hold</td>
</tr>
<tr>
<td>CODE_AUTOSAVE</td>
<td>Code autosave on/off</td>
</tr>
<tr>
<td>TEST_MODEL</td>
<td>Current pass fail model being tested</td>
</tr>
<tr>
<td>RF_MKR_POINT_[1][2][3][4][5][6]</td>
<td>RF marker point number</td>
</tr>
<tr>
<td>RF_MKR_STATE_[1][2][3][4][5][6]</td>
<td>RF marker on/off</td>
</tr>
<tr>
<td>DEMOD_MKR_POINT_[1][2][3][4][5][6]</td>
<td>Code domain marker point number</td>
</tr>
<tr>
<td>DEMOD_MKR_STATE_[1][2][3][4][5][6]</td>
<td>Code domain marker on/off</td>
</tr>
</tbody>
</table>
Chapter 3 — All Mode Commands

3-1 :INSTRument Subsystem

One instrument may contain many logical instruments (“modes”). This subsystem controls the selection of the current instrument mode.

:INSTRument:CATalog:FULL?

Title: Query Available Modes

Description: Returns a comma-separated list of available modes. Mode names are enclosed in double quotes (“ “). Immediately following the string name is the application number. For example, an MT8221B instrument with SPA, WCDMA, Cable & Antenna, and Fixed WiMAX would return the string: “SPA”1,”WCDMA”5,”VNA”2,”WIMAX_D”18.

An instrument with all available modes would return the string: “SPA”1,”VNA”2,”T1”4,”WCDMA”5,”CDMA”7,”GSM”8,”EVDO”9,”HI_PM”10,”E1”11,”WIMAX_D”18,”WIMAX_E”19,”TDSCDMA”23,”VSG”25,”PM”6,”CS”15,”IA”14

Front Panel Access: Shift-9 (Mode)

| Note | The “VNA” return from the instrument refers to the Cable & Antenna measurement mode. |

:INSTRument:NSELect <integer>

:INSTRument:NSELect?

Title: Select Mode by Number

Description: Sets the instrument mode based on the value of <integer>. The query version returns the number associated with the current mode. Use :INSTRument:CATalog:FULL? to get a list of available mode names and their integer representations. After issuing the set command, wait a minimum of 60 seconds before issuing the next command.

Parameter: <integer>

Parameter Type: <integer>

Related Command: :INSTRument:CATalog:FULL?

:INSTRument[:SELeect]:INITiate:CONTInuous

:STATus:OPERation?

Front Panel Access: Shift-9 (Mode)

:INSTRument[:SELeect] <string>

:INSTRument[:SELeect]?

Title: Select Mode by Name

Description: Sets the instrument mode based on the mode name specified by <string>. Enclose the <string> argument in single or double quotes. The query version returns the name of the current mode. Use :INSTRument:CATalog:FULL? to get a list of available modes.

Parameter: <string>

Related Command: :INSTRument:CATalog:FULL?

:INSTRument:NSELect

Front Panel Access: Shift-9 (Mode)
3-2 :MMEMory Subsystem

The Mass MEMory subsystem contains functions that provide access to the instrument’s setup and data storage.

**:MMEMory:DATA <file name>**

**Title:** Transfer Data

**Description:** Transfers the data stored in the given file from the instrument to the controlling program. Data is transferred in the form of <header><block>. The ASCII <header> specifies the number of data bytes. It looks like #AX, where A is the number of digits in X and X is the number of bytes in <block>. <file name> should be enclosed in either single quotes (‘’) or double quotes (“ ”) and should contain a file extension (.stp, .jpg) and the file must not be larger than 262136 bytes. Use the command MMEMory:MSIS to set the current storage location.

**Parameter:** <file name>

**:MMEMory:DELete <file name>**

**Title:** Delete Setup/Measurement

**Description:** Removes the measurement or setup file specified by <file name> from the current mass storage device. <file name> should be enclosed in either single quotes (‘’) or double quotes (“ ”). It should contain one of the following file extensions:

- “.stp” for setup
- “.edg” for GSM measurements
- “.spa” for SPA measurement
- “.wcd” for WCDMA measurements
- “.wmxd” for WiMAX
- “.wmxe” for Mobile WiMAX measurements
- “.vna” for Cable & Antenna measurements
- “.cdma” for CDMA measurements
- “.tds” for TDSCDMA measurements
- “.evdo” for EVDO measurements
- “.ia” for Interference Analysis measurements
- “.cs” for Channel Scanner measurements
- “.lte” for LTE Analyzer measurements
- “.tdlte” for TD-LTE Analyzer measurements

Use the command MMEMory:MSIS to set the current mass storage location.

**Parameter:** <file name>

**Related Command:**
- :MMEMory:STORE:STATe
- :MMEMory:STORE:TRACe
- :MMEMory:MSIS INTernal|USB

**Front Panel Access:** Shift-7 (File), Delete, Delete Selected File
**:MMEMory:INITialize [USB]**

**Title:** Format Storage Device

**Description:** Formats the USB Flash drive. Issuing this command will erase all files on an installed USB Flash drive and create the /usr directory for storage of measurements, setups and jpg files.

**Parameter:** [USB]

**Parameter Type:** <char>

**Front Panel Access:** Shift-7 (File), Directory Management, Format USB

**:MMEMory:LOAD:STATe <integer>,<file name>**

**Title:** Recall Setup

**Description:** Recalls a previously stored instrument setup in the current storage location. The setup file to be loaded is specified by <file name>. <file name> should be enclosed in either single quotes (‘’) or double quotes (“”) and should contain a file extension “.stp”. Use the command MMEMory:MSIS to set the current storage location. The <integer> parameter is not currently used, but it must be sent.

Send a 1.

**Parameter:** <integer>, <file name>

**Related Command:** :MMEMory:STORe:STATe

**Front Panel Access:** Shift-7 (File), Recall, Recall Setup
:**MEMory:LOAD:TRACe <integer>,<file name>**

**Title:** Recall Measurement

**Description:** The instrument must be in the mode of the saved trace in order to recall that trace. Use :INSTrument:SELect or :INSTrument:NSELect to set the mode.

Recalls a previously stored measurement trace from the current storage location. The saved measurement trace to be loaded is specified by `<file name>`. `<file name>` should be enclosed in either single quotes (‘’) or double quotes (‘”’) and should contain a file extension. Note that the trace specified by `<file name>` should be available at the current mass storage location. Use the command MMEMory:MSIS to set the current mass storage location. The `<integer>` parameter is not currently used, but it must be sent.

Send a 1.

In some modes, the recall of the traces using the front panel allows a user to retain or discard the instrument setup that was saved along with the measurement. This choice is not supported using a SCPI command. :MMEMory:LOAD:STATe is the recommended method to restore a saved instrument setup.

**File name extensions:**

- “.edg” for GSM
- “.spa” for SPA
- “.wcd” for WCDMA
- “.wnxd” for WiMAX
- “.wmxe” for Mobile WiMAX
- “.vna” for Cable & Antenna
- “.cdma” for CDMA
- “.tds” for TDS-CDMA
- “.evdo” for EVDO
- “.ia” for Interference Analysis
- “.cs” for Channel Scanner
- “.pm” for Power Meter
- “.lte” for LTE Analyzer
- “.tdlte” for TD-LTE Analyzer

**Parameter:** `<integer>`, `<file name>`

**Example:** To recall trace with file name “trace”:

```plaintext
:MMEMory:LOAD:TRACe 1,"trace.spa"
```

**Related Command:**

- :MMEMory:STORe:TRACe
- :MMEMory:STORe:TRACe
- :MMEMory:MSIS INTernal|USB

**Front Panel Access:** Shift-7 (File), Recall, Recall Measurement
:MMEMory:MSIS INTernal|USB
:MMEMory:MSIS?

Title: Storage Location

Description: Sets the storage location. Setting the storage location to INTernal will set the current storage location to be the internal memory. Setting the storage location to USB will set the current storage location to be the USB Flash drive. Note that changing the current location to save files causes the “Copy to Destination” on the front panel to be automatically changed if the selected current location is the same as the destination. When the change occurs, the instrument will cycle through each of the available storage locations. For example, if “Copy to Destination” is on USB and the “Current Location” is changed to USB, “Copy to Destination” will cycle to INTernal. Note that the storage location must be available in order for it to be set.

Parameter: INTernal|USB
Parameter Type: <char>
Related Command: :MMEMory:MSIS:DESTination
Front Panel Access: Shift-7 (File), Directory Management, Current Location

:MMEMory:MSIS:COPY

Title: Copy From Current Location To Destination

Description: Copies all measurements, setups and jpg files stored in the current storage location to the “copy to destination” location.

Related Command: :MMEMory:MSIS
:MMEMory:MSIS:DESTination
Front Panel Access: Shift-7 (File), Directory Management, Copy From Current Location To Destination

:MMEMory:MSIS:DESTination INTernal|USB
:MMEMory:MSIS:DESTination?

Title: Copy to Destination

Description: Sets the destination to where measurements and setups in the current storage location are copied. Setting the location to INTernal will result in copying the files that are stored at the current storage location to the internal memory when the command :MMEMory:MSIS:COPY is sent. Setting the location to USB will result in copying the files that are stored at the current storage location to the USB Flash drive when the command :MMEMory:MSIS:COPY is sent. Setting the location to USB will result in copying the files that are stored at the current storage location to the USB Flash drive when the command :MMEMory:MSIS:COPY is sent. Note that changing the destination to which the instrument will copy files, will automatically changed the “Current Location” on the front panel if the current location is the same as the selected copy to destination.

Parameter: INTernal|USB
Parameter Type: <char>
Related Command: :MMEMory:MSIS
:MMEMory:MSIS:COPY
Front Panel Access: Shift-7 (File), Directory Management, Copy To Destination
:MMEMory:STORe:JPEG <file name>

Title: Save Screen as JPEG

Description: Saves the current screen measurement as a jpeg file. This will save the screen as a jpeg file specified by <file name> with the extension .jpg to the current storage location. <file name> should be enclosed in either single quotes (‘’) or double quotes (“”) and should not contain a file extension. Use the command MMEMory:MSIS to set the current storage location.

Parameter: <file name>

Example: To save the screen into the file name “trace”:
/MMEMory:STORe:JPEG “trace”

Related Command: :MMEMory:DATA?
/MMEMory:MSIS INTERNAL|USB

Front Panel Access: Shift-7 (File), Save, Save Screen as JPEG

:MMEMory:STORe:STATE <integer>,<file name>

Title: Save Setup

Description: Stores the current setup into the file specified by <file name>. <file name> should be enclosed in either single quotes (‘’) or double quotes (“”) and should not contain a file extension. Use the command MMEMory:MSIS to set the current storage location. The <integer> parameter is not currently used, but it must be sent. Send a value of 0.

Parameter: <integer>, <file name>

Example: To save the setup into the file name “trace”:
/MMEMory:STORe:STATE 0,"trace"

Related Command: :MMEMory:LOAD:STATE
/MMEMory:MSIS INTERNAL|USB

Front Panel Access: Shift-7 (File), Save, Save Setup

:MMEMory:STORe:TRACe <integer>,<file name>

Title: Save Measurement

Description: Stores the trace into the file specified by <file name>. <file name> should be enclosed in either single quotes (‘’) or double quotes (“”) and should not contain a file extension. Use the command MMEMory:MSIS to set the current storage location. The <integer> parameter is not currently used, but it must be sent. Send a 0.

Parameter: <integer>, <file name>

Example: To save the trace into the file name “trace”:
/MMEMory:STORe:TRACe 0,"trace"

Related Command: :MMEMory:LOAD:TRACe
/MMEMory:MSIS INTERNAL|USB

Front Panel Access: Shift-7 (File), Save, Save Measurement
3-3 :STATus Subsystem

The commands in this subsystem relate to the current operating state of the instrument.

:STATus:OPERation?

Title: Query Operation Status

Description: This command requests information about the current status of the instrument. Each bit of the return value represents some operation. Only a subset of the bits are implemented for each application. The number returned is the decimal representation of the bit-wise OR of the enabled bits:

<table>
<thead>
<tr>
<th>Bit</th>
<th>Decimal Value</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>1</td>
<td>Not implemented</td>
</tr>
<tr>
<td>1</td>
<td>2</td>
<td>Not implemented</td>
</tr>
<tr>
<td>2</td>
<td>4</td>
<td>Not implemented</td>
</tr>
<tr>
<td>3</td>
<td>8</td>
<td>Not implemented</td>
</tr>
<tr>
<td>4</td>
<td>16</td>
<td>Not implemented</td>
</tr>
<tr>
<td>5</td>
<td>32</td>
<td>Not implemented</td>
</tr>
<tr>
<td>6</td>
<td>64</td>
<td>Not implemented</td>
</tr>
<tr>
<td>7</td>
<td>128</td>
<td>Not implemented</td>
</tr>
<tr>
<td>8</td>
<td>256</td>
<td>Sweep Complete</td>
</tr>
<tr>
<td>9</td>
<td>512</td>
<td>Not implemented</td>
</tr>
<tr>
<td>10</td>
<td>1024</td>
<td>Not implemented</td>
</tr>
<tr>
<td>11</td>
<td>2048</td>
<td>Not implemented</td>
</tr>
<tr>
<td>12</td>
<td>4096</td>
<td>Not implemented</td>
</tr>
<tr>
<td>13</td>
<td>8192</td>
<td>Not implemented</td>
</tr>
<tr>
<td>14</td>
<td>16384</td>
<td>Not implemented</td>
</tr>
<tr>
<td>15</td>
<td>0</td>
<td>Will always be 0</td>
</tr>
</tbody>
</table>

This bit is set to 0 when the command :INITiate[:IMMediate] is sent to trigger a sweep. It will have a value of 1 when the sweep has completed.
3-4  :SYSTem Subsystem

This subsystem contains commands that affect instrument functionality that does not directly relate to data collection, display or transfer.

**:SYSTem:OPTions?**

*Title:* Query Installed Options

*Description:* Returns a string of the installed options. Options are separated by a “/”. The string will return “NONE” if no options are installed.

*Related Command:* *IDN?*

**:SYSTem:PRESet**

*Title:* Preset

*Description:* This command restores all application parameters to their factory preset values. This does not modify system parameters such as Ethernet configuration, language, volume or brightness.

*Related Command:* *RST*

*Front Panel Access:* Shift-1 (Preset), Preset
Chapter 4 — Cable & Antenna Commands

4-1 :CALCulate Subsystem

The commands in this subsystem process data that has been collected via the SENSe subsystem.

:CALCulate:LIMit:ALARm OFF|ON|0|1
:CALCulate:LIMit:ALARm?

Title: Limit Alarm

Description: Enables/disables the currently active limit line alarm. Setting the value to ON or 1 will turn on the limit alarm. Setting the value to OFF or 0 will turn off the limit alarm. The query version of the command returns a 1 if the currently selected limit line alarm is set to ON and returns 0 if OFF. Use :CALCulate:LIMit:TYPe to set the currently active limit line.

Parameter: OFF|ON|0|1

Parameter Type: <boolean>

Default Value: OFF

Example:
To turn off limit alarm:
:CALCulate:LIMit:ALARm OFF
:CALCulate:LIMit:ALARm 0

To turn on limit alarm:
:CALCulate:LIMit:ALARm ON
:CALCulate:LIMit:ALARm 1

Related Command: :CALCulate:LIMit:TYPe

Front Panel Access: Shift-6 (Limit), Limit Alarm

:CALCulate:LIMit:CLEar

Title: Clear Selected Limit

Description: Deletes all limit points for the currently active limit line. The current selected limit line can be modified by using the :CALCulate:LIMit:TYPe command.

Default Value: OFF

Related Command: :CALCulate:LIMit:TYPe

Front Panel Access: Shift-6 (Limit), Clear Limit

:CALCulate:LIMit:POINt:ADD

Title: Add Limit Point

Description: Adds a new limit point to the currently active limit line. Use :CALCulate:LIMit:TYPe to set the currently active limit line.

Related Command: :CALCulate:LIMit:TYPe

Front Panel Access: Shift-6 (Limit), Limit Edit, Add Point
CALCulate:LIMit:POINt:FREQuency <freq>
CALCulate:LIMit:POINt:FREQuency?

Title: Limit Point Frequency
Description: Sets the limit point frequency of the current selected limit. Use :CALCulate:LIMit:TYPe to set the currently active limit line.
Parameter: <freq>
Default Unit: Hz
Related Command: :CALCulate:LIMit:TYPe
Front Panel Access: Shift-6 (Limit), Limit Edit, Frequency

CALCulate:LIMit:POINt:VALue <value>
CALCulate:LIMit:POINt:VALue?

Title: Limit Point Value
Description: Sets the limit point value of the current selected limit. The <value> parameter is the limit point value in dB or time units for group delay. Use :CALCulate:LIMit:TYPe to set the currently active limit line.
Parameter: <value>
Default Unit: Current active value unit.
Related Command: :CALCulate:LIMit:TYPe
Front Panel Access: Shift-6 (Limit), Limit Edit, Value

CALCulate:LIMit:POINt?

Title: Number of Limit Points
Description: Returns the number of points currently in the selected limit line. Use :CALCulate:LIMit:TYPe to set the currently active limit line.
Related Command: :CALCulate:LIMit:TYPe

CALCulate:LIMit:VALue <value>
CALCulate:LIMit:VALue?

Title: Move Limit
Description: Sets the currently active limit line value. This command moves an entire single or multi-segment limit line up or down by the given <value>. This command is equivalent to the command :CALCulate:LIMit:Y. Use :CALCulate:LIMit:TYPe to set the currently active limit line.
Parameter: <value>
Default Unit: Current active value unit.
Related Command: :CALCulate:LIMit:Y
:CALCulate:LIMit:TYPe
Front Panel Access: Shift-6 (Limit), Limit Edit, Amplitude
:CALCulate:LIMit[:STATe] OFF|ON|0|1
:CALCulate:LIMit[:STATe]?

Title: Limit State
Description: Turns the currently selected limit line (upper or lower) ON or OFF. If the value is set to ON or 1, the currently selected limit line is ON. If the value is set to OFF or 0, the currently selected limit line is OFF. The query version of the command returns a 1 if the currently selected limit line is ON and returns a 0 if OFF. Use :CALCulate:LIMit:TYPe to set the currently active limit line.

Parameter: OFF|ON|0|1
Parameter Type: <boolean>
Default Value: OFF
Example: To turn on the currently selected limit line:
:CALCulate:LIMit ON
:CALCulate:LIMit:STATe ON
:CALCulate:LIMit:STATe 1

To turn off the currently selected limit line:
:CALCulate:LIMit OFF
:CALCulate:LIMit:STATe 0
:CALCulate:LIMit 0

Front Panel Access: Shift-6 (Limit), On/Off

:CALCulate:MARKer:AOFF

Title: Turn All Markers Off
Description: Turns off all markers.
Front Panel Access: Marker, All Markers Off

:CALCulate:MARKer:TABLE:DATA?

Title: Marker Table Data
Description: Reports marker information similar to the Marker table. The response begins with an ASCII header. The header specifies the number of following bytes. It looks like #AX, where A is the number of digits in X and X is the number of bytes that follow the header. Parameters are returned in comma-delimited ASCII format. Each parameter is returned as “NAME=VALUE[UNITS].”

<table>
<thead>
<tr>
<th>Parameter Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>MKR_REFx</td>
<td>Reference marker state</td>
</tr>
<tr>
<td>MKR_DLTx</td>
<td>Delta marker state.</td>
</tr>
<tr>
<td>MKR_REF_FREQNx</td>
<td>Reference marker x frequency</td>
</tr>
<tr>
<td>MKR_DLT_FREQNx</td>
<td>Delta marker x frequency</td>
</tr>
<tr>
<td>MKR_REF_AMPLy</td>
<td>Reference marker y-axis</td>
</tr>
<tr>
<td>MKR_DLTAMPL</td>
<td>Delta marker y magnitude.</td>
</tr>
</tbody>
</table>

x = marker 1 to 6.

Front Panel Access: Marker, Marker Table On
:CALCulate:MARKer:TABLE[:STATe] OFF|ON|0|1
:CALCulate:MARKer:TABLE[:STATe]?

Title: Marker Table State
Description: Turns the Marker Table on or off. Setting the value to ON or 1 will turn on the marker table. Setting the value to OFF or 0 will turn off the marker table.
Parameter: OFF|ON|0|1
Parameter Type: <boolean>
Default Value: OFF
Example: To turn on marker table:
:CALCulate:MARKer:TABLE ON
:CALCulate:MARKer:TABLE 1
Front Panel Access: Marker, Marker Table

:CALCulate:MARKer{1|2|3|4|5|6}:DELTa:X <x-parameter>
:CALCulate:MARKer{1|2|3|4|5|6}:DELTa:X?

Title: Delta Marker X Value
Description: Sets the location of the delta marker on the x-axis at the specified location <x-parameter> + the reference marker x-axis. <x-parameter> is defined in the current x-axis units. The query version of the command returns the location of the delta marker on the x-axis.
Parameter: <x-parameter>
Default Unit: Current x-axis unit
Example: If both the reference and delta marker #1 is currently at 1 GHz on the x-axis, send the command below to set the delta marker #1 to 2 GHz on the x-axis:
:CALCulate:MARKer1:DELTa:X 1GHz
(In zero span) If both the reference and delta marker #1 is currently at 25 us on the x-axis, send the command below to set the delta marker to 50us on the x-axis:
:CALCulate:MARKer1:DELTa:X 25us
Related Command: :CALCulate:MARKer{1|2|3|4|5|6}:X
Front Panel Access: Marker, Delta

:CALCulate:MARKer{1|2|3|4|5|6}:DELTa:Y?

Title: Delta Marker Read Y Value
Description: Reads the current Y value for the specified delta marker. The units are the units of the y-axis.
Default Unit: Current y-axis unit
Cable & Antenna Commands

:CALCulate:MARKer{1|2|3|4|5|6}:DELTa[:STATe] OFF|ON|0|1
:CALCulate:MARKer{1|2|3|4|5|6}:DELTa[:STATe]?

Title: Delta Marker State
Description: Sets the specified delta marker on or off.
Parameter: OFF|ON|0|1
Parameter Type: <boolean>
Default Value: OFF

Example: To turn on delta marker #3:
:CALCulate:MARKer3:DELTa ON
:CALCulate:MARKer3:DELTa 1
:CALCulate:MARKer3:DELTa:STATe ON
:CALCulate:MARKer3:DELTa:STATe 1

To turn off delta marker #6:
:CALCulate:MARKer6:DELTa OFF
:CALCulate:MARKer6:DELTa:STATe OFF
:CALCulate:MARKer6:DELTa:STATe 0

Front Panel Access: Marker, Delta

:CALCulate:MARKer{1|2|3|4|5|6}:MAXimum

Title: Marker (Maximum) Peak Search
Description: Puts the specified marker at the maximum amplitude in the trace.

:CALCulate:MARKer{1|2|3|4|5|6}:MINimum

Title: Marker (Minimum) Valley Search
Description: Puts the specified marker at the minimum value in the trace.
Related Command: :CALCulate:MARKer{1|2|3|4|5|6}:VALLey

:CALCulate:MARKer{1|2|3|4|5|6}:PEAK

Title: Marker Peak Search
Description: Puts the specified marker at the maximum value in the trace.
Related Command: :CALCulate:MARKer{1|2|3|4|5|6}:MAXimum

:CALCulate:MARKer{1|2|3|4|5|6}:VALLey

Title: Marker Valley Search
Description: Puts the specified marker at the minimum value in the trace.
Related Command: :CALCulate:MARKer{1|2|3|4|5|6}:MINimum
:CALCulate:MARKer{1|2|3|4|5|6}:X <x-parameter>
:CALCulate:MARKer{1|2|3|4|5|6}:X?

Title: Marker X Value
Description: Sets the location of the marker on the x-axis at the specified location. <x-parameter> is defined in the current x-axis units. The query version of the command returns the location of the marker on the x-axis. Note that the marker is snapped to the data point closest to the specified value. If the specified marker is not on it is set to on.
Parameter: <x-parameter>
Default Unit: Current x-axis unit
Example: To set reference marker #2 to 5 hertz on the x-axis:
:CALCulate:MARKer2:X 5
:CALCulate:MARKer2:X 5Hz
To set reference marker #1 to 1.5 GHz on the x-axis:
:CALCulate:MARKer1:X 1.5GHz
:CALCulate:MARKer1:X 1.5GHz
(In zero span) To set reference marker #3 to 1.5 seconds on the x-axis:
:CALCulate:MARKer3:X 1.5
:CALCulate:MARKer3:X 1.5s
(In zero span) To set reference marker #1 to 25 us:
:CALCulate:MARKer1:X 25us
:CALCulate:MARKer1:X 25us


:CALCulate:MARKer{1|2|3|4|5|6}:Y?

Title: Marker Read Y Value
Description: Reads the current Y value for the specified marker. The units are the units of the y-axis.
Default Unit: Current y-axis unit

:CALCulate:MARKer{1|2|3|4|5|6}[:STATe] OFF|ON|0|1
:CALCulate:MARKer{1|2|3|4|5|6}[:STATe]?

Title: Marker State
Description: Sets the specified marker on/off. If no marker is specified in {1|2|3|4|5|6}, then marker defaults to 1.
Parameter: OFF|ON|0|1
Parameter Type: <boolean>
Default Value: OFF
Example: To turn off reference marker #1:
:CALCulate:MARKer1:STATe OFF

Front Panel Access: Marker, On/Off
:CALCulate:MATH:FUNCTION NORMAL|ADD|SUBTract

Title: Trace Math Function
Description: Sets math operations on the currently selected measurement and the trace stored in memory. Note that there MUST be a trace stored in Memory. Setting the FUNCTION to NORMAL is equivalent of setting the Trace Math to “No Trace Math” on the front panel. Setting the FUNCTION to ADD is equivalent of setting the Trace Math to “Trace Plus Memory” on the front panel. Setting the FUNCTION to SUBTract is equivalent to setting the Trace Math to “Trace Minus Memory” on the front panel. The query version of the command returns the string “NORM” for no trace math, returns the string “ADD” for trace plus memory, and returns the string “SUBT” for trace minus memory.

Parameter: NORMAL | ADD | SUBTract
Parameter Type: <char>
Default Value: NORMAL
Range: NORMAL | ADD | SUBTract
Related Command: :CALCulate:MATH:MEMorize
Front Panel Access: Shift-5 (Trace)

:CALCulate:MATH:MEMorize

Title: Trace To Memory
Description: Copies the current measurement trace into memory.
Front Panel Access: Shift-5 (Trace), Copy Trace To Display Memory

:CALCulate:MATH:OVERlay ON|OFF

Title: Trace Overlay On/Off
Description: Turns trace stored in memory on or off.
Front Panel Access: Shift-5 (Trace), Trace Overlay

:CALCulate:SMOothing <integer>

Title: Smoothing
Description: Sets the smoothing percentage. The query form of the command returns the current smoothing percentage.

Parameter: <integer>
Parameter Type: <integer>
Default Value: 0
Default Unit: %
Range: 0 to 10
Front Panel Access: Shift-3 (Sweep), Averaging/Smoothing, Smoothing %
:CALCulate:TRANsform:CLAVerage?

Title: Cable Loss Average
Description: Reports the cable loss average.
Default Value: 1 dB
Default Unit: dB

:CALCulate:TRANsform:DISTance:CABLoss
:CALCulate:TRANsform:DISTance:CABLoss?

Title: Cable Loss
Description: Sets the cable loss for DTF measurements.
Default Value: 0
Range: 0.0 to 5
Front Panel Access: Freq/Dist, Cable Loss

:CALCulate:TRANsform:DISTance:DMAX?

Title: Distance Maximum
Description: Reports the maximum horizontal distance that can be analyzed in DTF. Note that the unit return is based on the current distance units.
Default Value: MT8221B: 9.13 m
            MT8222B: 5.87 m
Default Unit: Meters (m)
Range: 0.0 m to 1500 m

:CALCulate:TRANsform:DISTance:FRESolution?

Title: Fault Resolution
Description: Reports the system's ability to separate two closely spaced discontinuities in DTF measurements. Note that the return value is based on the current distance units.
Default Value: MT8221B: 0.03 m
            MT8222B: 0.02 m
Default Unit: Meters (m)
Range: 0.0 m to 1500 m

:CALCulate:TRANsform:DISTance:PVELocity
:CALCulate:TRANsform:DISTance:PVELocity?

Title: Propagation Velocity
Description: Sets the propagation velocity of the cable for DTF measurements.
Default Value: 0.8
Range: 0.001 to 1.0
Front Panel Access: Freq/Dist, Prop Velocity
:CALCulate:TRANSform:DISTance:START
:CALCulate:TRANSform:DISTance:START?

Title: Start Distance
Description: Sets the start distance for DTF measurements.
Default Value: 0.0 m
Default Unit: Meters (m)
Range: 0.0 m to 1000.0 m
Front Panel Access: Freq/Dist, Start Dist

:CALCulate:TRANSform:DISTance:STOP
:CALCulate:TRANSform:DISTance:STOP?

Title: Stop Distance
Description: Sets the stop distance for DTF measurements.
Default Value: 1000.0 m
Default Unit: Meters (m)
Range: 0.0 m to 1000.0 m
Front Panel Access: Freq/Dist, Stop Dist

:CALCulate:TRANSform:DISTance:UNIT METers|FEET
:CALCulate:TRANSform:DISTance:UNIT?

Title: Distance Units
Description: Sets the units to be used for DTF measurements.
Parameter: METers|FEET
Parameter Type: <char>
Default Value: Meters
Range: METers|FEET
Front Panel Access: Shift-8 (System), Application Options, Units

:CALCulate:TRANSform:DISTance:WINDow RECTangular|MSLobe| NSLobe|LSLobe
:CALCulate:TRANSform:DISTance:WINDow?

Title: Windowing
Description: Sets the windowing for DTF measurements. Available types are Rectangular, Nominal Side Lobe, Low Side Lobe and Minimum Side Lobe.
Parameter: RECTangular|MSLobe| NSLobe|LSLobe
Parameter Type: <char>
Default Value: Rectangular
Range: RECTangular|MSLobe| NSLobe|LSLobe
Front Panel Access: Freq/Dist, Next, DTF Setup, Windowing
4-2  :CALibration Subsystem

This subsystem controls the system calibration.

:CALibration:STATe?

Title: Calibration State

Description: Reports the calibrated state. This command returns a 1 if the instrument has been calibrated with discrete Open, Short, and Load components and returns 0 if the instrument has not been calibrated.

Default Value: OFF

Related Command: [:SENSe]CORRection:COLL:LOAD
[:SENSe]CORRection:COLL:OPEN
[:SENSe]CORRection:COLL:SHORT
[:SENSe]CORRection:COLL:THRU
4-3 :CONFigure Subsystem

This set of commands prepares the instrument for the selected measurement. It disables any currently-enabled measurements and activates the specified measurement. It sets the instrument to single sweep mode, waiting for an :INITiate command. It will not initiate the taking of a measurement.

Current instrument settings may be changed to default values. These changes are identified with their respective measurement commands.

:CONFigure:MEASure:RLDTf

Title: Configure DTF Return Loss
Description: Changes the Cable & Antenna measurement to DTF Return Loss.
Related Command: :CONFigure:MEASure:MENu
Front Panel Access: Shift-4 (Measure), DTF Return Loss

:CONFigure:MEASure:RLFReq

Title: Configure Return Loss
Description: Changes the current measurement to Return Loss.
Related Command: :CONFigure:MEASure:MENu
Front Panel Access: Shift-4 (Measure), Return Loss

:CONFigure:MEASure:1PHase

Title: Configure 1-Port Phase Measurement
Description: Changes the current measurement to 1-Port Phase.
Related Command: :CONFigure:MEASure:MENu
Front Panel Access: Shift-4 (Measure), More, 1-Port Phase

:CONFigure:MEASure:SMChart

Title: Configure Smith Chart
Description: Changes the measurement to Smith Chart.
Related Command: :CONFigure:MEASure:MENu
Front Panel Access: Shift-4 (Measure), More, Smith Chart

:CONFigure:MEASure:SWRDtf

Title: Configure DTF VSWR
Description: Changes the measurement to DTF VSWR.
Related Command: :CONFigure:MEASure:MENu
Front Panel Access: Shift-4 (Measure), VSWR Fault Location
4-4 :DISPlay Subsystem

This subsystem provides commands that modify the display of data for the user. They do not modify the way in which data are returned to the controller.

:DISPlay:WINDow:TRACe:MEMORY[:STATe] OFF|ON|0|1
:DISPlay:WINDow:TRACe:MEMORY[:STATe]?

Title: Display Trace from Memory
Description: Enables/disables displaying the memory trace. Setting the value to ON or 1 will result in displaying the trace in memory.
Parameter: OFF|ON|0|1
Parameter Type: <boolean>
Default Value: OFF
Front Panel Access: Shift-5 (Trace), Trace Overlay

:DISPlay:WINDow:TRACe:Y[:SCALe]:AUToscale

Title: Autoscale
Description: Autoscales the active channel display so that the trace is shown in the middle of the display.
Front Panel Access: Amplitude, Autoscale

:DISPlay:WINDow:TRACe:Y[:SCALe]:BOTTom <value>

Title: Scale Bottom level.
Description: Sets the Bottom value for the current graph. This command is invalid for Smith charts.
Default Unit: Current active amplitude unit
Range: Log Magnitude: 0 dB to 60 dB
       Phase: -180 degree to 90 degree
       VSWR: 1 to 65
       DTF RL: 0 dB to 60 dB
       DTF VSWR: 1 to 65
       S21 Log Magnitude: 0.1 dB to 25 dB
       S21 Phase: 0.1 degree to 90 degree
Front Panel Access: Amplitude, Bottom.
Title: Scale Resolution Per Division

Description: Sets the scale per division for the y-axis. For Phase, set the scale (degree/division) for the y-axis. For all other measurement modes, set the scale (dB/division). The resolution per division value is maintained separately for each measurement. This command is invalid for Smith charts.

Parameter: <value>

Default Value: Return Loss: 6 dB
Phase: 45 degree
VSWR: 9.1
Log Magnitude Fault Location: 6 dB
VSWR Fault Location: 9.1
S21 Log Magnitude: 22 dB

Default Unit: Current active amplitude unit

Range:
S11 Log Magnitude: 0 dB to 60 dB
Phase: -180 degree to 90 degree
VSWR: 1 to 65
S11 DTF RL: 1 dB to 10 dB
DTF VSWR: 1 to 10
S21 Log Magnitude: 0.1 dB to 25 dB
S21 Phase: 0.1 degree to 90 degree

Title: Scale Top level.

Description: Sets the Top value for the current graph. This command is invalid for Smith charts.

Default Unit: Current active amplitude unit

Range:
Log Magnitude: 0 dB to 60 dB
Phase: -180 degree to 90 degree
VSWR: 1 to 65
DTF RL: 0 dB to 60 dB
DTF VSWR: 1 to 65
S21 Log Magnitude: 0.1 dB to 25 dB
S21 Phase: 0.1 degree to 90 degree
Title: Smith Chart Scalable Type

Description: Sets the Smith chart display scale type. Setting the value to 0 is equivalent of setting the Smith Chart scale to “Normal” on the front panel. Setting the value to 10 is equivalent of setting the Smith Chart scale to “Expand 10dB” on the front panel. Setting the value to 20 is equivalent of setting the Smith Chart scale to “Expand 20dB” on the front panel. Setting the value to 30 is equivalent of setting the Smith Chart scale to “Expand 30dB” on the front panel. Setting the value to -3 is equivalent of setting the Smith Chart scale to “Compress 3dB” on the front panel.

Parameter: 0|10|20|30|-3

Default Value: Normal

Default Unit: Current active amplitude unit

Range: 0|10|20|30|-3

Front Panel Access: Measurement, S11 Reflection, Smith Chart, Scale
4-5 :FORMat Subsystem

This subsystem contains commands that determine the formatting of numeric data when it is transferred. The format setting affects data in specific commands only. If a command is affected, it is noted in the command description.

:FORMat[:READings][:DATA] ASCii|INTeger,32|REAL,32
:FORMat[:READings][:DATA]?  

Title: Numeric Data Format

Description: This command specifies the format in which data is returned in certain commands. 

ASCii format returns the data in comma-separated ASCII format. The units are the current instrument units. This format requires many more bytes so it is the slowest format. INTeger 32 values are signed 32-bit integers in little-endian byte order. This format returns the data in 4-byte blocks. The units are always dBm. For example, if the measured result was -12.345 dBm, that value would be sent as -12345.) REAL,32 values are 32-bit floating point numbers conforming to the IEEE 754 standard in little-endian byte order. This format returns the data in 4-byte binary format. The units are the current instrument units. Both INTeger,32 and REAL,32 formats return a definite block length. Each transfer begins with an ASCII header such as #42204. The first digit represents the number of following digits in the header (in this example, 4). The remainder of the header indicates the number of bytes that follow the header (in this example, 2204). You then divide the number of following bytes by the number of bytes in the data format you’ve chosen (4 for both INTeger,32 and REAL,32, so 2204/4) to get the number of data points (in this example, 551).

Parameter: ASCii | INTeger,32 | REAL,32

Parameter Type: <char>

Default Value: ASCii

Related Command: :TRACE[:DATA]
Interpreting Returned Data Pair

The following section provides two conversion examples on interpreting returned data pairs. Examples are provided for both integer and real number formats.

Converting INTeger,32 and REAL,32 Values

- For a 551 point trace, the instrument returns 4415 bytes.
  - The first 7 bytes make up the “header” information in ASCI format.
  - The next 4408 bytes make up the actual data (8 bytes x 551 datapoints = 4408 total bytes).
- Each datapoint consists of 8 bytes.
  - The first 4 bytes are the real component
  - The next 4 bytes are the imaginary component.
- The returned value is in little endian format (the little end comes first).
- Negative numbers are represented in two’s compliment format.
- The data is scaled by a factor of 1e6.

Converting INTeger,32 Example:
The instrument returns the following S11 RL data point in INT,32 format:
4d 15 fc ff [real], ef a2 f8 ff [imag]

1. Convert from little endian to big endian:
   ff fc 15 4d [real], ff f8 a2 ef [imag]
2. Since the MSb in both components is 1, they are negative numbers.
3. The binary representation is:
   111111111111000010101001101 [real], 1111111111110001010001011101111 [imag]
4. Convert from two’s complement (not the bits and add 1):
   11110101010110011 [real], 1110101110100010001 [imag]
5. Convert the binary values to decimal:
   256691 [real], 482577 [imag]
6. Take out the 1e6 scale factor:
   0.256691 [real], 0.482577 [imag]
7. Finally, convert the values to dB:
   \(10 \log(0.256691^2 + 0.482577^2) = -5.25 \text{ dB}\)
Converting REAL,32 Example:
The instrument returns the following values in REAL,32 format:
00 31 2a 47 [real], 00 e8 6a c6 [imag]

1. Convert from little endian to big endian:
   47 2a 31 00 [real], c6 6a e8 00 [imag]

2. The binary representation of the real portion, 47 2a 31 00 is:
   01000111 00101010 01110001 00000000

3. Binary is in IEEE format:
   • 1st bit is sign bit
   • next 8 bits are exponent
   • next 23 bits are normalized value

4. Convert binary to decimal:
   0, the MSb is the sign bit
   10001110, exponent. The actual exponent value is this value minus 127. So, it is 142 – 127 = 15.
   0101010 01101010 11101000 00000000 (as normalized value) and adding 1 and multiplying by 2^exponent
   results in 1+(0/2+1/4+0/8+1/16+0/32+1/64+...) * 2^15 = 43520 (approx.)

5. Repeat steps 2 through 4 for the imaginary portion.
   c6 6a e8 00 in binary is 11000110 01101010 11101000 00000000
   The MSb is the sign bit
   The next 8 bits is the exponent, which is 10001100. The actual value is 140 – 127 = 13
   Converting the remaining bits and multiplying by exponent and accounting for sign, results in
   -(1+(1/2+1/4+0/8+1/16+0/32+1/64+...) * 2^13) = -14976 (approx).

6. Take out the 1e6 scale factor from both parts:
   .043520 [real], -.014976 [imag]

7. Finally, convert the values to dB:
   \[10 \times \log((.043520)^2 + (-.014976)^2) = -26.7401848\text{ dB}\]
4-6 :INITiate Subsystem

This subsystem controls the triggering of measurements.

:INITiate:CONTInuous OFF|ON|0|1

Title: Continuous/Single Sweep

Description: Specifies whether the sweep/measurement is triggered continuously. If the value is set to ON or 1, another sweep/measurement is triggered as soon as the current one completes. If continuous is set to OFF or 0, the instrument enters the “idle” state and waits for the :INITiate[:IMMediate] command or for :INITiate:CONTInuous ON. The default value is ON. That is, sending :INIT:CONT is equivalent to sending :INIT:CONT ON. The query version of the command returns a 1 if the instrument is continuously sweeping/measuring and returns a 0 if the instrument is in single sweep/measurement mode. Note that rapid toggling between ON and OFF is not allowed. The instrument must be allowed to make a full sweep before toggling can be done. Note that the set command is available only if the instrument is in Cable & Antenna mode.

Parameter: OFF|ON|0|1

Parameter Type: <boolean>

Default Value: 0

Related Command: :INITiate[:IMMediate]

Front Panel Access: Shift-3 (Sweep), Sweep Type

:INITiate:HOLD OFF|ON|0|1

Title: Hold Sweep

Description: Stops a sweep at its current measurement point. If the instrument is currently sweeping, setting a value of ON or 1, will pause the sweep. If the instrument is currently not sweeping, setting a value of OFF or 0, will resume sweeping. The query version of the command returns a 1 if the hold command is set and returns a 0 if a Run is set instead. Note that the set command is available only if the instrument is in Cable & Antenna mode.

Parameter: OFF|ON|0|1

Parameter Type: <boolean>

Default Value: ON

Front Panel Access: Shift-3 (Sweep), Run/Hold
:INITiate[:IMMediate]

Title: Trigger Sweep/Measurement

Description: Initiates a sweep/measurement. If :INITiate:CONTinuous is set to ON, this command is ignored. Use this command in combination with :STATus:OPERation? to synchronize the capture of one complete set of data. When this command is sent, the “sweep complete” bit of :STATus:OPERation? is set to 0, indicating that the measurement has not completed. The data collection is then triggered. The controlling program can poll :STATus:OPERation? to determine the status. When the “sweep complete” bit is set to 1, data is ready to be retrieved.

Related Command: :INITiate:CONTinuous
:STATus:OPERation?

Front Panel Access: Shift-3 (Sweep), Trigger Sweep
4-7 :SOURce Subsystem

The commands in this subsystem controls the internal signal source.

:SOURce:POWer LOW|HIGH
:SOURce:POWer?

  Title: Power Levels
  Description: Sets the power levels for the 2-port measurements.
  Parameter: LOW|HIGH
  Parameter Type: <char>
  Default Value: HIGH
  Range: –35 dBm to 0 dBm
Front Panel Access: Shift-3 (Sweep), Output Power
4-8 :TRACe Subsystem

This subsystem contains commands related to the transfer of trace data to and from the instrument.

:TRACe:PREamble? [1]

Title: Trace Header Transfer

Description: Returns trace header information for the trace. Use the commands in the MMEory subsystem to store and recall traces from the instrument memory. The response begins with an ASCII header. The header specifies the number of following bytes. It looks like #AX, where A is the number of digits in X and X is the number of bytes that follow the header. Parameters are returned in comma-delimited ASCII format. Each parameter is returned as “NAME=VALUE[ UNITS],” Note that currently only Trace A header is retrieved. Valid parameters are shown in “Cable & Antenna Parameter Names” on page 2-14.

Parameter: [1]
Related Command: :TRACe:DATA

:TRACe[:DATA]? [1]

Title: Trace Data Query

Description: Transfers the current active trace data from the instrument to the controller. The format of the block data that is returned can be specified by the command :FORMat:DATA. The block data in the command form is always sent in ASCII format.

The response begins with an ASCII header that specifies the number of data bytes. It looks like #AX, where A is the number of digits in X and X is the number of bytes that follow the header. Each data point is separated by a comma delimiter. Except for the group delay, each data point consists of real and imaginary pair scaled by 10^6. Thus for a 551 point trace there is a total of 1102 points.

Trace setup information can be acquired using :TRACe[:DATA]:PREamble?.

By default this command will return a 551 data points regardless of the data point setting. At 275 data points the values returned are paired and at 137 data points the values are in fours. To get the same number of data points as the data points setting, use the command :FORMat[:READings][:DATA]:DPoints to set whether the data returned should be based on the data points setting.

When in dual overlay mode, a second set of data is returned when no parameter is passed in with the query. The response starts with an ASCII header that is exactly like the one described above. The header will have the format #AX where A is the number of digits in X and X is the number of bytes that follow the header. When there are two sets of data, a second ASCII header will trail the first header. The second header will have the format $AX where A is the number of digits in X and X is the number of bytes in the first set of data. The starting point of the second set of data can be found by subtracting the total byte size of the first set of data from the byte size located in the first header. For example, if the first header is $540000 and the second header is $41000, the beginning of the second set of data is 40000(size of total packet size)-1000(size of first data set).

Alternatively, the two headers can be skipped and after 551 points are read from the first set, the second set starts.

Parameter: [1]
Related Command: :FORMat[:READings][:DATA]
:FORMat[:READings][:DATA]:DPoints
:TRACe[:DATA]:PREamble?
The commands in this subsystem relate to device-specific parameters, not signal-oriented parameters.

[ :SENSe ] :AVERage :CLEar

Title: Restart Averaging
Description: Clears and restarts averaging of the measurement data. Note that averaging state must be ON for averaging to restart.
Related Command: [:SENSe]:AVERage[:STATe]
Front Panel Access: Shift-3 (Sweep), Averaging, Restart

[ :SENSe ] :AVERage :COUNT <integer>
[:SENSe ] :AVERage :COUNT? 

Title: Number of Traces to Average
Description: Sets the number of traces to average.
Parameter: <integer>
Parameter Type: <integer>
Default Value: 10
Range: 2 to 65535
Front Panel Access: Shift-3 (Sweep), Averaging, Averaging Factor

[ :SENSe ] :AVERage [:STATe] OFF|ON|0|1
[:SENSe ] :AVERage [:STATe]?

Title: Averaging State
Description: Turns trace averaging ON or OFF. Setting the value to ON or 1 will result in turning trace averaging ON.
Parameter: OFF|ON|0|1
Parameter Type: <boolean>
Default Value: OFF
Front Panel Access: Shift-3 (Sweep), Averaging, Averaging

[ :SENSe ] :CORRection :COLLect :ABORt 

Title: Calibration Abort
Description: Aborts the calibration measurement and restarts the current sweep and/or measurement.
Related Command: [:SENSe]:CORRection:COLLect:INITialize
[:SENSe]:CORRection:COLLect:OPEN
[:SENSe]:CORRection:COLLect:SHOR
[:SENSe]:CORRection:COLLect:THRu
[:SENSe]:CORRection:COLLect:LOAD
[:SENSe]:CORRection:COLLect:DUT:CONNector

Title: DUT Connector Type
Description: Sets the DUT Connector type. The query version of the command returns the following connector type:

<table>
<thead>
<tr>
<th>Return Value</th>
<th>Actual Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>NMALe</td>
<td>N Male</td>
</tr>
<tr>
<td>NFEMale</td>
<td>N Female</td>
</tr>
<tr>
<td>KMAle</td>
<td>K Male</td>
</tr>
<tr>
<td>KFEMale</td>
<td>K Female</td>
</tr>
<tr>
<td>716Male</td>
<td>7/16 Male</td>
</tr>
<tr>
<td>716Female</td>
<td>7/16 Female</td>
</tr>
<tr>
<td>TNCMale</td>
<td>TNC Male</td>
</tr>
<tr>
<td>TNCFemale</td>
<td>TNC Female</td>
</tr>
<tr>
<td>SMAMale</td>
<td>SMA or 3.5mm Male</td>
</tr>
<tr>
<td>SMAFemale</td>
<td>SMA or 3.55mm Female</td>
</tr>
<tr>
<td>USR1</td>
<td>User 1</td>
</tr>
<tr>
<td>USR2</td>
<td>User 2</td>
</tr>
</tbody>
</table>

Parameter: NMALe | NFEMale | KMAle | KFEMale | 716Male | 716Female | TNCMale | TNCFemale | SMAMale | SMAFemale | USR1 | USR2

Parameter Type: <char>
Default Value: N Male
Front Panel Access: Shift-2 (Calibrate), DUT Connector

[:SENSe]:CORRection:COLLect:DUT:USR{1|2}:C{0|1|2|3}
[:SENSe]:CORRection:COLLect:DUT:USR{1|2}:C{0|1|2|3}?

Title: DUT User 1/ User 2 Capacitance Coefficient Value
Description: Sets the DUT capacitance value for the specified coefficient and user. The query version of the command returns the DUT capacitance coefficient value for the specified user.

Default Value: 0
Range: -2000 to 2000

[:SENSe]:CORRection:COLLect:DUT:USR{1|2}:OPEN
[:SENSe]:CORRection:COLLect:DUT:USR{1|2}:OPEN?

Title: DUT User 1/ User 2 Open Value
Description: Sets the DUT open value for the specified user. The query version of the command returns the DUT open value for the given user.

Default Value: 0
Range: 0 to 1000
Front Panel Access: Shift-2 (Calibrate), Configure DUT User, Open
[:SENSe]:CORRection:COLLect:DUT:USR{1|2}:SHORT
[:SENSe]:CORRection:COLLect:DUT:USR{1|2}:SHORT?

Title: DUT User 1/ User 2 Short Value

Description: Sets the DUT short value for the specified user. The query version of the command returns the DUT short value for the given user.

Default Value: 0

Range: 0 to 1000

Front Panel Access: Shift-2 (Calibrate), Configure DUT User, Short

[:SENSe]:CORRection:COLLect:INITialize

Title: Calibration Initialize

Description: Shift-2 (Calibrate), Configure DUT User, Short Initiates the calibration process. This command must be issue before sending Open, Short, Load, or Thru commands. Use the query command [:SENSe]:CORRection:COLLect:STATus? to check if initialization has completed and that the next calibrate step can be proceeded.

Notes:
1. Once the calibration sequence has been initialized remotely, calibration steps must be completed remotely. To exit the calibration sequence before it is completed use the ABORt command.
2. During calibration Data Points is set to 551. Set to desired Data Points value after calibration is completed.

Related Command: [:SENSe]:CORRection:COLLect:STATus?
[:SENSe]:CORRection:COLLect:OPEN
[:SENSe]:CORRection:COLLect:SHORt
[:SENSe]:CORRection:COLLect:LOAD
[:SENSe]:CORRection:COLLect:ABORt

[:SENSe]:CORRection:COLLect:LOAD

Title: Calibration Load

Description: Starts the Load calibration measurement. This is the last calibration steps for 1-Port (OSL) and the third calibration steps for 2- Port (OSLT). Note that the Calibration Short process must be completed before calling this command. You must also connect the Load to the RF Out port (or to the end of the test port extension cable) prior to issuing this command. Use the query command [:SENSe]:CORRection:COLLect:STATus? to check if the Load calibration measurement has completed and that the next calibrate step can be proceeded.

Related Command: [:SENSe]:CORRection:COLLect:STATus?
[:SENSe]:CORRection:COLLect:INITialize
[:SENSe]:CORRection:COLLect:OPEN
[:SENSe]:CORRection:COLLect:SHORt
[:SENSe]:CORRection:COLLect:METHod:POWer LOW|HIGH
[:SENSe]:CORRection:COLLect:METHod:POWer?

Title: Calibrate Power
Description: Set the calibrate power. Factory Preset / *RST High. LOW power is valid for 2-port calibration only.
Parameter: LOW|HIGH
Parameter Type: <char>
Front Panel Access: Shift-2 (Calibrate), Output Power

[:SENSe]:CORRection:COLLect:METHod:TYPE 0|1
[:SENSe]:CORRection:COLLect:METHod:TYPE?

Title: Calibrate Type
Description: Configures the calibrate type. If 1 is set then Calibration procedures consist of Open-Short-Load-Thru (OSLT) for 2-port. If 0 is set then Calibration procedures consist of Open-Short-Load (OSL) for 1-port. The query version of the command returns a 1 if the calibrate type is set to 2-Port and 0 if the calibrate type is set to 1-Port. Factory Preset / *RST 2-Port
Parameter: 0|1
Parameter Type: <boolean>
Front Panel Access: Shift-2 (Calibrate), Cal Type

[:SENSe]:CORRection:COLLect:OPEN

Title: Calibration Open
Description: Starts the Open calibration measurement. This is the first calibration step for both the 1-Port(Open-Short-Load) and 2-Port (Open-Short-Load-Thru) calibration. Note that the initialize step [:SENSe]:CORR:COLL:INIT must be completed before calling this command. Note that you must connect the Open to the RF Out port (or to the end of the test port extension cable) before issuing this command. Use the query command [:SENSe]:CORRection:COLLect:STATus? to check if the Open calibration measurement has completed and that the next calibrate step can be proceeded.
Related Command: [:SENSe]:CORRection:COLLect:STATus?
[:SENSe]:CORRection:COLLect:INITialize,

[:SENSe]:CORRection:COLLect:SHORT

Title: Calibration Short
Description: Starts the Short calibration measurement. This is the second calibration step for both the 1-Port(Open-Short-Load) and 2-Port (Open-Short-Load-Thru) calibration. Note that the Calibration Open process must be completed before calling this command. You must also connect the Short to the RF Out port (or to the end of the test port extension cable) before issuing this command. Use the query command [:SENSe]:CORRection:COLLect:STATus? to check if the Short calibration measurement has completed and that the next calibrate step can be proceeded.
Related Command: [:SENSe]:CORRection:COLLect:STATus?
[:SENSe]:CORRection:COLLect:INITialize
[:SENSe]:CORRection:COLLect:OPEN
[:SENSe]:CORRection:COLLect:LOAD
[:SENSe]:CORRection:COLLect:STATus? [INITialize|OPEN|SHORt|LOAD|THRu]

Title: Calibration Status
Description: This command requests information about the current calibration step or the specified calibration step. If no calibration step is specified, it returns a 1 if the current calibration step has completed, otherwise it returns a 0. If INITialized is specified, the command returns a 1 if the Initialize step has completed and returns a 0 if it has not been completed. If OPEN is specified, the command returns a 1 if the Open step has completed and returns a 0 if it has not been completed. If SHORt is specified, the command returns a 1 if the Short step has completed and returns a 0 if it has not been completed. If LOAD is specified, the command returns a 1 if the Load step has completed and returns a 0 if it has not been completed.

Parameter: INITialize| OPEN|SHORt|LOAD|THRu
Parameter Type: <char>
Range: INITialize| OPEN|SHORt|LOAD|THRu
Related Command: [:SENSe]:CORRection:COLLect:INITialize
[:SENSe]:CORRection:COLLect:OPEN
[:SENSe]:CORRection:COLLect:SHORt
[:SENSe]:CORRection:COLLect:LOAD

[:SENSe]:CORRection:COLLect:THRu
Title: Calibration Thru
Description: Starts the Thru Calibration measurement. This is the last calibration step for the 2-Port calibration type. Note that the Calibration Load process must be completed before calling this command. You must also connect the RF Out port to the RF In port, include any test port extension cables used in the Calibration Load step before issuing this command.

Related Command: [:SENSe]:CORRection:COLLect:INITialize
[:SENSe]:CORRection:COLLect:OPEN
[:SENSe]:CORRection:COLLect:SHORt
[:SENSe]:CORRection:COLLect:LOAD

[:SENSe]:CORRection:TYPE STANDARD|FLEX
[:SENSe]:CORRection:TYPE?
Title: Calibration Type
Description: Set Calibration type - Standard, or Flex.
Parameter: STANDARD|FLEX
Parameter Type: <char>
Front Panel Access: Shift-2 (Calibrate), Cal Type

[:SENSe]:FREQuency:CABle <index>
Title: Cable Selection
Description: Sets the cable selection to the <index> in the cable list for the DTF measurement. Note that the command is available only if the instrument is in Cable & Antenna mode.
Parameter: <index>
Front Panel Access: Freq/Dist, Cable
[:SENSe]:FREQuency:LINK UPLINK|DOWNLINK|UPANDDWNLINK
[:SENSe]:FREQuency:LINK?

Title: Signal Standard Link
Description: Set “Link” signal standard parameter.
Parameter: UPLINK|DOWNLINK|UPANDDWNLINK
Parameter Type: <char>
Front Panel Access: Freq/Dist, Signal Standard, Uplink/DownLink/Uplink plus DownLink

[:SENSe]:FREQuency:STARt <freq>
[:SENSe]:FREQuency:STARt?

Title: Start Frequency
Description: Sets the start frequency. Note that in the spectrum analyzer, changing the value of the start frequency will change the value of the coupled parameters, Center Frequency and Span. Note that in Cable & Antenna mode, changing the value of the start frequency may affect the DTF distance range.
Parameter: <freq>
Default Value: 400 MHz
Default Unit: Hz
Range: MT8221B: 400 MHz to 4.0 GHz
       MT8222B: 400 MHz to 6.0 GHz
Related Command: [:SENSe]:FREQuency:STOP?
Front Panel Access: Freq, Start Freq

[:SENSe]:FREQuency:STOP <freq>
[:SENSe]:FREQuency:STOP?

Title: Stop Frequency
Description: Sets the stop frequency. Note that in the spectrum analyzer, changing the value of the stop frequency will change the value of the coupled parameters, Center Frequency and Span. Note that in Cable & Antenna mode, changing the value of the start frequency may affect the DTF distance range. Note that the set command is available only if the instrument is in Cable & Antenna mode.
Parameter: <freq>
Default Value: MT8221B: 4.0 GHz
                MT8222B: 6.0 GHz
Default Unit: Hz
Range: MT8221B: 400 MHz to 4.0 GHz
       MT8222B: 400 MHz to 6.0 GHz
[:SENSe]:SWEep:RESolution LOW|MEDium|HIGH
[:SENSe]:SWEep:RESolution?

Title: Sweep Resolution
Description: Sets the resolution of the sweep. Set value to LOW for 137 data points, MEDium for 275 data points, and HIGH for 551 data points. The query version of this commands returns 137 for LOW sweep resolution, 275 for MEDium sweep resolution, and 551 for HIGH sweep resolution. Note that a sweep with low resolution will complete in less time than a sweep with high resolution but will not contain as many data points.

Parameter: LOW|MEDium|HIGH
Parameter Type: <char>
Default Value: HIGH (or for a query “551”)
Front Panel Access: Shift-3 (Sweep), Data Points

[:SENSe]:SWEep:RFIMmunity 0|1
[:SENSe]:SWEep:RFIMmunity?

Title: RF Immunity
Description: Sets RF Immunity. Set value to 1 for Low RF Immunity and 0 for High RF Immunity. Note that a sweep with RF immunity enabled with be slightly slower than a sweep with RF immunity disabled.

Parameter: 0|1
Parameter Type: <boolean>
Default Value: Low
Front Panel Access: Shift-3 (Sweep), RF Immunity
Chapter 5 — Spectrum Analyzer Commands

5-1  :ABORt Subsystem

The abort subsystem includes commands that allow the user to stop current measurement activities on the instrument.

:ABORt

Title: Abort

Description: Restarts the current sweep and/or measurement. Resets the trigger system. If :INITiate:CONTinuous is OFF (i.e. the instrument is in single sweep mode), send the command :INITiate[:IMMediate] to trigger the next sweep. If :INITiate:CONTinuous is ON (i.e. the instrument is in continuous sweep mode) a new sweep will start immediately.

Parameter: NA

Related Command: :INITiate:CONTinuous

:INITiate[:IMMediate]
5-2  :CALCulate Subsystem

The commands in this subsystem process data that has been collected via the SENSe subsystem.

:CALCulate:LIMit:ALARm OFF|ON|0|1
:CALCulate:LIMit:ALARm?

Title: Limit Alarm
Description: Enables/disables the currently active limit line alarm. Setting the value to ON or 1 will turn on the limit alarm. Setting the value to OFF or 0 will turn off the limit alarm. The query version of the command returns a 1 if the currently selected limit line alarm is set to ON and returns 0 if OFF. Use :CALCulate:LIMit:TYPe to set the currently active limit line.

Parameter: OFF|ON|0|1
Parameter Type: <boolean>
Default Value: OFF
Example: To turn off limit alarm:
  :CALCulate:LIMit:ALARm OFF
  :CALCulate:LIMit:ALARm 0
To turn on limit alarm:
  :CALCulate:LIMit:ALARm ON
  :CALCulate:LIMit:ALARm 1

Related Command: :CALCulate:LIMit:TYPe
Front Panel Access: Shift-6 (Limit), Limit Alarm

:CALCulate:LIMit:CENTer

Title: Move Limit to Current Center Frequency
Description: Moves the center of the current active limit line to the center frequency. If no limit line is turned on, a new flat default limit line is turned on.

Example: To move the limit to the current center:
  :CALCulate:LIMit:CENTer
Front Panel Access: Shift-6 (Limit), Limit Move, Move Limit to Current Center Freq

:CALCulate:LIMit:ENVelope:CREate

Title: Create Limit Envelope
Description: Creates a limit envelope. This generates a limit line that formed a mask just above or below the existing signals. Note that this command will turn on the currently selected limit line if it is not already on. Use :CALCulate:LIMit:TYPe to set the currently active limit line.

Example: To create a limit envelope:
  :CALCulate:LIMit:ENVelope:CREate
Front Panel Access: Shift-6 (Limit), Limit Envelope, Create Envelope
:CALCulate:LIMit:ENVelope:OFFSet <amplitude>

Title: Limit Envelope Offset

Description: Sets limit envelope offset. This defines how far away from the measured signal the active limit envelope is placed. Use :CALCulate:LIMit:TYPe to set the currently active limit line.

Parameter: <amplitude>

Default Value: 3 dB for upper limit, –3 dB for lower limit

Default Unit: dB

Range: –100 dB to 100 dB

Example: To set the limit envelope offset to 5dB:

:CALCulate:LIMit:ENVelope:OFFSet 5

Front Panel Access: Shift-6 (Limit), Limit Envelope, Upper Offset (If limit is toggled to Upper)
Shift-6 (Limit), Limit Envelope, Lower Offset (If limit is toggled to Lower)

:CALCulate:LIMit:ENVelope:POINt <number>

:CALCulate:LIMit:ENVelope:POINt?

Title: Number of Limit Envelope Points

Description: Sets the number of inflection point for the currently active limit envelope. Use :CALCulate:LIMit:TYPe to set the currently active limit line.

Parameter: <number>

Default Value: 21

Range: 2 to 41

Example: To set the number of inflection point to 31:

:CALCulate:LIMit:ENVelope:POINt 31

Front Panel Access: Shift-6 (Limit), Limit Envelope, Upper Point (If limit is toggled to Upper)
Shift-6 (Limit), Limit Envelope, Lower Point (If limit is toggled to Lower)

:CALCulate:LIMit:ENVelope:SHApe SQUare|SLOPe

:CALCulate:LIMit:ENVelope:SHApe?

Title: Limit Envelope Shape

Description: Sets the currently active limit envelope shape.

Parameter Type: <char>

Parameter: SQUare|SLOPe

Example: To set the limit envelope to a square:

:CALCulate:LIMit:ENVelope:SHApe SQUare

Front Panel Access: Shift-6 (Limit), Limit Envelope, Upper Shape (If limit is toggled to Upper) or Lower Shape (If limit is toggled to Lower)
**:CALCulate:LIMit:ENVelope:UPDate:X**
- **Title:** Update Limit Envelope Frequency
- **Description:** Updates limit envelope frequency. Note that this command is valid only if the limit envelope shape is set to a square. Use :CALCulate:LIMit:TYPe to set the currently active limit line.
- **Example:** To adjust the envelope frequency:
  
  :CALCulate:LIMit:ENVelope:UPDate:X

**:CALCulate:LIMit:ENVelope:UPDate:Y**
- **Title:** Update Limit Envelope Amplitude
- **Description:** Updates the amplitude of the current limit without changing the frequencies of the inflection point. Use :CALCulate:LIMit:TYPe to set the currently active limit line.
- **Example:** To adjust the limit envelope amplitude:
  
  :CALCulate:LIMit:ENVelope:UPDate:Y

**Front Panel Access:** Shift-6 (Limit), Limit Envelope, Update Envelope Amplitude

**:CALCulate:LIMit:FAIL?**
- **Title:** Limit Fail State
- **Description:** Query whether the currently active limit line (upper or lower) has failed or not. The command returns a 0 on success, 1 on fail, and 2 if the current active limit is OFF or the alarm is OFF. Use :CALCulate:LIMit:TYPe to set the currently active limit line.

**:CALCulate:LIMit:LOWer:ALARm OFF|ON|0|1**

**:CALCulate:LIMit:LOWer:ALARm?**
- **Title:** Lower Limit Alarm
- **Description:** Enables/disables the lower limit alarm. It is a combination of the commands :CALCulate:LIMit:TYPe 1; :CALCulate:LIMit:ALARm ON|OFF. Setting the value to ON or 1 will turn on the lower limit alarm. Setting the value to OFF or 0 will turn off the lower limit alarm. The query version of the command returns a 1 if the lower limit line alarm is ON and returns 0 if OFF. Note that using this command set the lower limit line active for editing.
- **Parameter:** OFF|ON|0|1
- **Parameter Type:** <boolean>
- **Default Value:** OFF
- **Related Command:** :CALCulate:LIMit:ALARm
- **Front Panel Access:** Shift-6 (Limit), Limit Alarm

**:CALCulate:LIMit:LOWer:FAIL?**
- **Title:** Lower Limit Fail State
- **Description:** Query whether the lower limit line has failed or not. The command returns a 0 on success, 1 on fail, and 2 if the lower limit line is OFF or the alarm is OFF.
:CALCulate:LIMit:LOWer:POINt?

Title: Number of Lower Limit Points
Description: Returns the number of points currently in the lower limit line.
Default Value: 2
Related Command: :CALCulate:LIMit:POINt?

:CALCulate:LIMit:LOWer[:STATe] OFF|ON|0|1
:CALCulate:LIMit:LOWer[:STATe]?

Title: Lower Limit State
Description: Turns the lower limit line ON or OFF. It is a combination of the commands
:CALCulate:LIMit:TYPe 1; :CALCulate:LIMit:STATe ON|OFF. The query version of the
command returns a 1 if the lower limit line is ON and returns a 0 if OFF.
Parameter: OFF|ON|0|1
Parameter Type: <boolean>
Default Value: OFF
Example:
To turn on lower limit:
:CALCulate:LIMit:LOWer ON
:CALCulate:LIMit:LOWer 1
:CALCulate:LIMit:LOWer:STATe ON
To turn off lower limit:
:CALCulate:LIMit:LOWer OFF
:CALCulate:LIMit:LOWer 0
:CALCulate:LIMit:LOWer:STATe 0
Related Command: :CALCulate:LIMit:ALARm
Front Panel Access: Shift-6 (Limit), Limit Alarm

:CALCulate:LIMit:LTYPe ABSolute|RELative
:CALCulate:LIMit:LTYPe?

Title: Limit Line Type
Description: Sets the currently active limit line type. Absolutes limit lines set the limit inflection
points based upon the entered frequencies for each point. Relative limit lines set the limit
inflection points relative to the current center frequency.
Parameter: ABSolute|RELative
Parameter Type: <char>
Default Value: ABSolute
Range: ABSolute|RELative
Example: To set the limit line type to relative:
:CALCulate:LIMit:LTYPe RELative
Related Command: :CALCulate:LIMit[:STATe]
Front Panel Access: Shift-6 (Limit), Limit Advanced, Limit Line Type
**:CALCulate:LIMit:MIRRor**

- **Title:** Limit Mirror
- **Description:** Creates a limit mirror. Use :CALCulate:LIMit:TYPe to set the currently active limit line.
- **Related Command:** :CALCulate:LIMit:TYPe
- **Front Panel Access:** Shift-6 (Limit), Limit Advanced, Limit Mirror

**:CALCulate:LIMit:POINt:ADD**

- **Title:** Add Limit Point
- **Description:** Adds a new limit point to the currently active limit line. Use :CALCulate:LIMit:TYPe to set the currently active limit line.
- **Related Command:** :CALCulate:LIMit:TYPe
- **Front Panel Access:** Shift-6 (Limit), Limit Edit, Add Point

**:CALCulate:LIMit:POINt:DELETE**

- **Title:** Delete Limit Point
- **Description:** Deletes the currently active limit point. The active point becomes the point that is immediately to the left of the point that was deleted. Note that deletion is only valid if there are more than 2 limit points. Use :CALCulate:LIMit:TYPe to set the currently active limit line.
- **Example:** To delete the currently active limit point:
  
  :CALCulate:LIMit:POINt:DELETE

- **Front Panel Access:** Shift-6 (Limit), Limit Edit, Delete Point

**:CALCulate:LIMit:POINt:LEFT**

- **Title:** Next Point Left
- **Description:** Selects the limit point immediately to the left of the active point, making it active for editing or deleting. Use :CALCulate:LIMit:TYPe to set the currently active limit line.
- **Example:** To select the point to the left of the active point:

  :CALCulate:LIMit:POINt:LEFT

- **Front Panel Access:** Shift-6 (Limit), Limit Edit, Next Point Left

**:CALCulate:LIMit:POINt:RIGHT**

- **Title:** Next Point Right
- **Description:** Selects the limit point immediately to the right of the active point, making it active for editing or deleting. Use :CALCulate:LIMit:TYPe to set the currently active limit line.
- **Example:** To select the point to the right of the active point:

  :CALCulate:LIMit:POINt:RIGHT

- **Front Panel Access:** Shift-6 (Limit), Limit Edit, Next Point Right
**:CALCulate:LIMit:POINt:X <x-parameter>**

Title: Limit Point X Value

Description: Sets the location of the active limit point on the x-axis at the specified location. `<x-parameter>` is defined in the current x-axis. Note that this will change the Move Limit on the front panel to Point if it is currently set to Limit. The query version of the command returns the location of the active limit point on the x-axis. Use :CALCulate:LIMit:TYPe to set the currently active limit line.

Parameter: `<x-parameter>`

Default Unit: Hz or for zero span in seconds

Example: To set the active point to 5 Hertz:

:CALCulate:LIMit:POINt:X 5
:CALCulate:LIMit:POINt:X 5Hz

To set the active point to 500 MHz:

:CALCulate:LIMit:POINt:X 500MHz

To set the active point to 2.5 seconds (In zero span):

:CALCulate:LIMit:POINt:X 2.5
:CALCulate:LIMit:POINt:X 2.5s

To set the active point to 25 us (In zero span):

:CALCulate:LIMit:POINt:X 25us

Front Panel Access: Shift-6 (Limit), Limit Edit, Frequency

**:CALCulate:LIMit:POINt:Y <y-parameter>**

**:CALCulate:LIMit:POINt:Y?**

Title: Limit Point Y Value

Description: Sets the location of the active limit point on the y-axis at the specified location. `<y-parameter>` is defined in the current y-axis. Note that this will change the Move Limit on the front panel to Point if it is currently set to Limit. The query version of the command returns the location of the active limit point on the y-axis. Use :CALCulate:LIMit:TYPe to set the currently active limit line.

Parameter: `<y-parameter>`

Default Unit: Current y-axis unit.

Example: To set the active point to 5dBm:

:CALCulate:LIMit:POINt:Y 5

(If y-axis unit is dBm)

:CALCulate:LIMit:POINt:Y 5dBm

Front Panel Access: Shift-6 (Limit), Limit Edit, Amplitude

**:CALCulate:LIMit:POINt?**

Title: Number of Limit Points

Description: Returns the number of points currently in the selected limit line. Use :CALCulate:LIMit:TYPe to set the currently active limit line.

Related Command: :CALCulate:LIMit:TYPe
:CALCulate:LIMit:TYPe 0|1
:CALCulate:LIMit:TYPe?

  Title: Set Limit Line Upper or Lower
  Description: Sets the currently active limit line to either upper or lower. Subsequent limit line operations will be performed on the selected limit line.
  Parameter: 0|1 (0 = upper limit line, 1 = lower limit line)
  Parameter Type: number
  Default Value: 0 (upper)
  Range: 0|1
  Example: To set the active limit line to upper:
           :CALCulate:LIMit:TYPe 0

Front Panel Access: Shift-6 (Limit), Limit

:CALCulate:LIMit:UPPer:ALARm OFF|ON|0|1
:CALCulate:LIMit:UPPer:ALARm?

  Title: Upper Limit Alarm
  Description: Enables/disables the alarm for the upper limit. It is a combination of the commands :CALCulate:LIMit:TYPe 0; :CALCulate:LIMit:ALARm ON|OFF. Setting the value to ON or 1 will turn on the upper limit alarm. Setting the value to OFF or 0 will turn off the upper limit alarm. The query version of the command returns a 1 if the upper limit line alarm is ON and returns 0 if OFF.
  Parameter: OFF|ON|0|1
  Parameter Type: <boolean>
  Default Value: OFF
  Related Command: :CALCulate:LIMit:ALARm
  Front Panel Access: Shift-6 (Limit), Limit Alarm

:CALCulate:LIMit:UPPer:FAIL?

  Title: Upper Limit Fail State
  Description: Query whether the upper limit line has failed or not. The command returns a 0 on success, 1 on fail, and 2 if the upper limit line is OFF or the alarm is OFF.

:CALCulate:LIMit:UPPer:POINt?

  Title: Number of Upper Limit Points
  Description: Returns the number of points currently in the upper limit line.
  Default Value: 2
  Related Command: :CALCulate:LIMit:POINt?
**Title:** Upper Limit State  
**Description:** Turns the upper limit line ON or OFF. It is a combination of the commands  
`:CALCulate:LIMit:TYPe 0; :CALCulate:LIMit:STATe ON|OFF. The query version of the  
command returns a 1 if the upper limit line is ON and returns a 0 if OFF.  
**Parameter:** OFF|ON|0|1  
**Parameter Type:** <boolean>  
**Default Value:** OFF  
**Example:**  
To turn on upper limit:  
`:CALCulate:LIMit:UPPer ON`  
`:CALCulate:LIMit:UPPer 1`  
`:CALCulate:LIMit:UPPer:STATe ON`  
To turn off upper limit:  
`:CALCulate:LIMit:UPPer OFF`  
`:CALCulate:LIMit:UPPer 0`  
`:CALCulate:LIMit:UPPer:STATe 0`  
**Related Command:** :CALCulate:LIMit[:STATe]  
**Front Panel Access:** Shift-6 (Limit), On/Off

**Title:** Move Limit  
**Description:** Sets the currently active limit line value. This command moves an entire single or  
multi-segment limit line up or down by the given <value>. This command is equivalent to  
the command :CALCulate:LIMit:Y. Use :CALCulate:LIMit:TYPe to set the currently  
active limit line.  
Note that this will change the Move Limit on the front panel to Limit if it is currently set  
to Point.  
**Parameter:** <value>  
**Default Unit:** Current y-axis unit.  
**Related Command:** :CALCulate:LIMit:Y  
`:CALCulate:LIMit:TYPe`  
**Front Panel Access:** Shift-6 (Limit), Limit Edit, Amplitude

**Title:** Add Vertical ADD  
**Description:** Adds vertical. This will add two inflection points that share the same frequency and are  
centered midpoint between adjacent points. Use :CALCulate:LIMit:TYPe to set the  
currently active limit line.  
**Related Command:** :CALCulate:LIMit:TYPe  
**Front Panel Access:** Shift-6 (Limit), Limit Edit, Add Vertical
*:CALCulate:LIMit:X <x-parameter>

Title: Limit X Value

Description: Sets the location of the active limit line on the x-axis at the specified location. This moves the entire limit and moves the active limit point to the given value. <x-parameter> is defined in the current x-axis. Note that this will change the Move Limit on the front panel to Limit if it is currently set to Point. Use :CALCulate:LIMit:TYPe to set the currently active limit line.

Parameter: <x-parameter>

Default Unit: Hz or for zero span in seconds

Example: To move the limit and set active point to 5 Hz:

:CALCulate:LIMit:X 5
:CALCulate:LIMit:X 5Hz

To move the limit and set active point to 500 MHz:

:CALCulate:LIMit:X 500MHz

To move the limit and set active point to 2.5 seconds (In zero span):

:CALCulate:LIMit:X 2.5
:CALCulate:LIMit:X 2.5s

To move the limit and set active point to 25us (In zero span):

:CALCulate:LIMit:X 25us

Front Panel Access: Shift-6 (Limit), Limit Edit, Frequency

*:CALCulate:LIMit:Y <y-parameter>

Title: Limit Line Y Value

Description: Sets the location of the active limit line on the y-axis at the specified location. This moves the entire limit and moves the current active limit point by the given value. <y-parameter> is defined in the current y-axis. Note that this will change the Move Limit on the front panel to Limit if it is currently set to Point. Use :CALCulate:LIMit:TYPe to set the currently active limit line.

Parameter: <y-parameter>

Default Unit: Current y-axis unit.

Example: To move limit and set the active point to 5 dbm:

:CALCulate:LIMit:Y 5

(If y-axis unit is dBm)

:CALCulate:LIMit:Y 5dBm

Front Panel Access: Shift-6 (Limit), Limit Edit, Amplitude

*:CALCulate:LIMit[:SET]:DEFault

Title: Set Default Limit

Description: Deletes all limit points for the currently active limit line and sets the default limit line value. Note that this command will turn on the currently selected limit line if it is not already on. The current selected limit line can be modified by using the command :CALCulate:LIMit:TYPe.

Front Panel Access: Shift-6 (Limit), Set Default Limit
:CALCulate:LIMit[:STATe] OFF|ON|0|1

:CALCulate:LIMit[:STATe]?

Title: Limit State

Description: Turns the currently selected limit line (upper or lower) ON or OFF. If the value is set to ON or 1, the currently selected limit line is ON. If the value is set to OFF or 0, the currently selected limit line is OFF. The query version of the command returns a 1 if the currently selected limit line is ON and returns a 0 if OFF. Use :CALCulate:LIMit:TYPe to set the currently active limit line.

Parameter: OFF|ON|0|1

Parameter Type: <boolean>

Default Value: OFF

Example: To turn on the currently selected limit line:

:CALCulate:LIMit ON
:CALCulate:LIMit:STATe ON
:CALCulate:LIMit:STATe 1

To turn off the currently selected limit line:

:CALCulate:LIMit OFF
:CALCulate:LIMit:STATe 0
:CALCulate:LIMit 0

Front Panel Access: Shift-6 (Limit), On/Off

:CALCulate:MARKer:AOFF

Title: Turn All Markers Off

Description: Turns off all markers.

Front Panel Access: Marker, More, All Markers Off

:CALCulate:MARKer:PEAK:THReshold <percentage>

:CALCulate:MARKer:PEAK:THReshold?

:CALCulate:MARKer:PEAK:THReshold

Title: Peak Threshold

Description: Sets the peak/valley threshold as a percentage of the display. :CALCulate:MARKer:MAXimum:LEFT and :CALCulate:MARKer:MAXimum:RIGHt use this value to determine whether a particular display point qualifies as a peak.

Parameter: <percentage>

Default Value: 10

Default Unit: %

Range: 0% to 100%

Front Panel Access: Marker, More Peak Options, Peak Threshold
:CALCulate:MARKer:TABLE[:STATe] OFF|ON|0|1
:CALCulate:MARKer:TABLE[:STATe]?

**Title:** Marker Table State

**Description:** Turns the Marker Table on or off. Setting the value to ON or 1 will turn on the marker table. Setting the value to OFF or 0 will turn off the marker table.

Note: Marker Table Large mode is not supported with this command.

**Parameter:** OFF|ON|0|1

**Parameter Type:** <boolean>

**Default Value:** OFF

**Example:** To turn on marker table:

```
:CALCulate:MARKer:TABLE ON
:CALCulate:MARKer:TABLE 1
```

**Front Panel Access:** Marker, More, Marker Table

:CALCulate:MARKer\{1|2|3|4|5|6\}:DELTa:NOISe[:STATe] OFF|ON|0|1
:CALCulate:MARKer\{1|2|3|4|5|6\}:DELTa:NOISe[:STATe]?

**Title:** Marker Noise

**Description:** Turns the delta marker noise on or off. Note that if counter marker is set to on when setting marker noise to on, then counter marker is set to off. This command is not valid in zero span. The query version of this command returns a 1 if the specified delta marker is noise marker and returns a 0 if not.

**Parameter:** OFF|ON|0|1

**Parameter Type:** <boolean>

**Default Value:** OFF

**Example:** To turn on marker noise for delta marker #1:

```
:CALCulate:MARKer1:DELTa:NOISe ON
:CALCulate:MARKer1:DELTa:NOISe 1
:CALCulate:MARKer:DELTa:NOISe 1
:CALCulate:MARKer:DELTa:NOISe:STATe ON
```

To turn on marker noise for delta marker #2:

```
:CALCulate:MARKer2:DELTa:NOISe ON
:CALCulate:MARKer2:DELTa:NOISe 1
:CALCulate:MARKer2:DELTa:NOISe:STATe ON
```

To turn off marker noise #5:

```
:CALCulate:MARKer5:DELTa:NOISe OFF
:CALCulate:MARKer5:DELTa:NOISe 0
:CALCulate:MARKer5:DELTa:NOISe:STATe OFF
```

**Front Panel Access:** Marker, More, Marker Noise
:CALCulate:MARKer{1|2|3|4|5|6}:DELTa:X <x-parameter>

Title: Delta Marker X Value

Description: Sets the location of the delta marker on the x-axis at the specified location <x-parameter> + the reference marker x-axis. <x-parameter> is defined in the current x-axis units. The query version of the command returns the absolute location of the delta marker on the x-axis.

Parameter: <x-parameter>

Default Unit: Hz or seconds if in zero span

Example: If both the reference and delta marker #1 is currently at 1 GHz on the x-axis, send the command below to set the delta marker #1 to 1 GHz on the x-axis:

:CALCulate:MARKer1:DELTa:X 1GHz

(In zero span) If both the reference and delta marker #1 is currently at 25 μs on the x-axis, send the command below to set the delta marker to 25 μs on the x-axis:

:CALCulate:MARKer1:DELTa:X 25us


Front Panel Access: Marker, Delta

:CALCulate:MARKer{1|2|3|4|5|6}:DELTa:Y?

Title: Delta Marker Read Y Value

Description: Reads the current absolute Y value for the specified delta marker. The units are the units of the y-axis.

Default Unit: Current y-axis unit

:CALCulate:MARKer{1|2|3|4|5|6}:DELTa[:SET]:SPAN

Title: Delta Marker to Span

Description: Sets the total span width to the value of the specified delta marker. Note that this command is valid only if delta marker is on.

Example: To set the span to the value of delta marker #4:

:CALCulate:MARKer4:DELTa:SPAN

Front Panel Access: Marker, More Peak Options, Delta Marker to Span

:CALCulate:MARKer{1|2|3|4|5|6}:DELTa[:STATe] OFF|ON|0|1

Title: Delta Marker State

Description: Sets the specified delta marker on or off.

Parameter: OFF|ON|0|1

Parameter Type: <boolean>

Default Value: OFF

Example: To turn on delta marker #3:

:CALCulate:MARKer3:DELTa ON
:CALCulate:MARKer3:DELTa 1
:CALCulate:MARKer3:DELTa:STATe ON
:CALCulate:MARKer3:DELTa:STATe 1
To turn off delta marker #6:

```
:CALCulate:MARKer6:DELTa OFF
:CALCulate:MARKer6:DELTa:STATe OFF
:CALCulate:MARKer6:DELTa:STATe 0
```

Front Panel Access: Marker, Delta

---

### :CALCulate:MARKer{1|2|3|4|5|6}:FCOunt[:STATe] OFF|ON|0|1

**Title:** Marker Counter

**Description:** Turns the marker frequency counter on or off. The marker counter is turned off when the selected marker is turned off. If delta marker is on when setting marker counter to on, then delta marker is turned off. If noise marker is set to on when setting marker counter to on, then noise marker is set to off. This command is not valid in zero span.

**Parameter:** OFF|ON|0|1

**Parameter Type:** <boolean>

**Default Value:** OFF

**Example:** To turn on frequency counter for reference marker #2:

```
:CALCulate:MARKer2:FCOunt ON
:CALCulate:MARKer2:FCOunt 1
```

Front Panel Access: Marker, More, Counter Marker

---

### :CALCulate:MARKer{1|2|3|4|5|6}:FIXed[:STATe] OFF|ON|0|1

**Title:** Marker Fixed State

**Description:** Sets the specified reference marker fixed state on or off. If Fixed is set to on, then the selected reference markers stay at the amplitude they were at when the marker is set to Fixed.

**Parameter:** OFF|ON|0|1

**Parameter Type:** <boolean>

**Default Value:** OFF

**Example:** To set reference marker #1 to fixed:

```
:CALCulate:MARKer:FIXed ON
:CALCulate:MARKer:FIXed 1
```

Front Panel Access: Marker, More, Marker Style

---

### :CALCulate:MARKer{1|2|3|4|5|6}:MAXimum

**Title:** Marker (Maximum) Peak Search

**Description:** Puts the specified marker at the maximum amplitude in the trace.

Front Panel Access: Marker, [Marker 1/2/3/4/5/6.] Peak Search Marker, More Peak Options, Peak Search
:CALCulate:MARKer{1|2|3|4|5|6}:MAXimum:LEFT

Title: Marker (Maximum) Peak Search Left
Description: Puts the specified marker on the next highest peak to the left of the current peak. The next highest peak must be above the peak threshold. If no point meets that criterion, the marker is set to the first point on the trace.
Related Command: :CALCulate:MARKer:PEAK:THReshold
Front Panel Access: Marker, More Peak Options, Next Peak Left

:CALCulate:MARKer{1|2|3|4|5|6}:MAXimum:RIGHT

Title: Marker (Maximum) Peak Search Right
Description: Puts the specified marker on the next highest peak to the right of the current peak. The next highest peak must be above the peak threshold. If no point meets that criterion, the marker is set to the last point on the trace.
Related Command: :CALCulate:MARKer:PEAK:THReshold
Front Panel Access: Marker, More Peak Options, Next Peak Right

:CALCulate:MARKer{1|2|3|4|5|6}:NOISe[:STATe] OFF|ON|0|1

:CALCulate:MARKer{1|2|3|4|5|6}:NOISe[:STATe]?

Title: Marker Noise
Description: Turns the marker noise on or off for the specified reference marker. Note that if counter marker is set to on when setting marker noise to on, then counter marker is set to off. This command is not valid in zero span.
Parameter: OFF|ON|0|1
Parameter Type: <boolean>
Default Value: OFF
Example: To set reference marker #3 as noise marker:
:CALCulate:MARKer3:NOISe ON
:CALCulate:MARKer3:NOISe 1
Front Panel Access: Marker, More, Marker Noise

:CALCulate:MARKer{1|2|3|4|5|6}:X <x-parameter>

:CALCulate:MARKer{1|2|3|4|5|6}:X?

Title: Marker X Value
Description: Sets the location of the marker on the x-axis at the specified location. <x-parameter> is defined in the current x-axis units. The query version of the command returns the location of the marker on the x-axis. Note that the marker is snapped to the data point closest to the specified value. If the specified marker is not on it is set to on.
Parameter: <x-parameter>
Default Unit: Hz or seconds if in zero span
Example: To set reference marker #2 to 5 hertz on the x-axis:
:CALCulate:MARKer2:X 5
:CALCulate:MARKer2:X 5Hz
To set reference marker #1 to 1.5 GHz on the x-axis:
:CALCulate:MARKer:X 1.5GHz
:CALCulate:MARKer1:X 1.5GHz
(In zero span) To set reference marker #3 to 1.5 seconds on the x-axis:

:CALCulate:MARKer3:X 1.5
:CALCulate:MARKer3:X 1.5s

(In zero span) To set reference marker #1 to 25 us:

:CALCulate:MARKer:X 25us
:CALCulate:MARKer1:X 25us


:CALCulate:MARKer{1|2|3|4|5|6}:Y?

  Title: Marker Read Y Value
  Description: Reads the current Y value for the specified marker. The units are the units of the y-axis.
  Default Unit: Current y-axis unit

:CALCulate:MARKer{1|2|3|4|5|6}[:SET]:CENTER

  Title: Marker Frequency to Center
  Description: Sets the center frequency equal to the frequency of the specified marker. Note that this will result in a change to the start and stop frequencies and may also result in a change to the span. Note that this command is not valid in zero span.

Front Panel Access: Marker, Marker Freq to Center

:CALCulate:MARKer{1|2|3|4|5|6}[:SET]:RLEVEL

  Title: Marker to Reference Level
  Description: Sets the reference level equal to the measured amplitude of the specified marker. Note that this may result in a change to the input attenuation.

Front Panel Access: Marker, Marker to Ref Lvl

:CALCulate:MARKer{1|2|3|4|5|6}[:STATe] OFF|ON|0|1
:CALCulate:MARKer{1|2|3|4|5|6}[:STATe]?

  Title: Marker State
  Description: Sets the specified marker on/off.
  Parameter: OFF|ON|0|1
  Parameter Type: <boolean>
  Default Value: OFF
  Example: To turn off reference marker #1:
           :CALCulate:MARKer1:STATe OFF

Front Panel Access: Marker, On/Off
5-3 :CONFigure Subsystem

This set of commands prepares the instrument for the selected measurement. It disables any currently-enabled measurements and activates the specified measurement. It sets the instrument to single sweep mode, waiting for an :INITiate command. It will not initiate the taking of a measurement.

Current instrument settings may be changed to default values. These changes are identified with their respective measurement commands.

:CONFigure:ACPower

Title: Configure Adjacent Channel Power Ratio
Description: Configures the default adjacent channel power ratio measurement. Disables any other active one-button measurements, including channel power, occupied bandwidth, AM/FM demodulation and C/I. Sets the main channel bandwidth equal to the span. Sets the adjacent channel bandwidth and channel spacing equal to the main channel bandwidth. Sets the detection method to RMS. Sets the instrument to single sweep mode (:INITiate:CONTinuous OFF). Measurement settings can be modified by using the [:SENSe]:ACPower commands before initiating a sweep.

Related Command: [:SENSe]:ACPower:STATe
[:SENSe]:ACPower:BANDwidth|BWIDth:MAIN
[:SENSe]:ACPower:BANDwidth|BWIDth:ADJacent
[:SENSe]:ACPower:BANDwidth|BWIDth:SPACing

:CONFigure:CHPower

Title: Configure Channel Power
Description: Configures the default channel power measurement. Disables any other active one-button measurements, including ACPR, occupied bandwidth, AM/FM demodulation and C/I. Sets the integration bandwidth equal to the span. Sets the detection method to RMS. Sets the instrument to single sweep mode (:INITiate:CONTinuous OFF). Measurement settings can be modified by using the [:SENSe]:CHPower commands before initiating a sweep. Note that this measurement is not valid in zero span.

Related Command: [:SENSe]:CHPower:STATe
:SENSe:CHPower:BANDwidth|BWIDth:INTegration

:CONFigure:FSTRength

Title: Configure Field Strength
Description: Configures the default field strength measurement. Disables any other active one-button measurements, including channel power, adjacent channel power, occupied bandwidth, AM/FM demodulation and C/I. Sets the antenna to the first antenna in the instrument’s antenna list. Sets the instrument to single sweep mode (:INITiate:CONTinuous OFF). Measurement settings can be modified by using the [:SENSe]:FSTRength commands before initiating a sweep. Note that this measurement is not valid in zero span.

Related Command: [:SENSe]:FSTRength:ANTenna
**:CONFigure:OBWidth**

**Title:** Configure Occupied Bandwidth

**Description:** Configures the default occupied bandwidth measurement. Disables any other active one-button measurements, including channel power, ACPR, AM/FM demodulation and C/I. Sets the method to %. Sets the % of power to 99%. Sets the instrument to single sweep mode (:INITiate:CONTinuous OFF). Measurement settings can be modified by using the [:SENSe]:OBWidth commands before initiating a sweep. Note that this measurement is not valid in zero span.

**Related Command:**
- [:SENSe]:OBWidth:STATe
- [:SENSe]:OBWidth:METHod
- [:SENSe]:OBWidth:PERCent
- [:SENSe]:OBWidth:XDB
5-4 :DISPlay Subsystem

This subsystem provides commands that modify the display of data for the user. They do not modify the way in which data are returned to the controller.

**:DISPlay:WINDow:TRACe:Y[:SCALe]:PDIVision <rel ampl>**
**:DISPlay:WINDow:TRACe:Y[:SCALe]:PDIVision?**

**Title:** Scale

**Description:** Sets the scale (dB/division) for the y-axis.

**Parameter:** <rel ampl>

**Default Value:** 10 dB/div

**Default Unit:** dB

**Range:** 1 dB to 15 dB

**Front Panel Access:** Amplitude, Scale

**:DISPlay:WINDow:TRACe:Y[:SCALe]:RLEVel <amplitude>**
**:DISPlay:WINDow:TRACe:Y[:SCALe]:RLEVel?**

**Title:** Reference Level

**Description:** Sets the reference level amplitude value for the y-axis. Note that this may cause a change in attenuation if the automatic input attenuation coupling is enabled.

**Parameter:** <amplitude>

**Default Value:** 10 dBm

**Default Unit:** Current active amplitude unit

**Range:** With reference level offset = 0 dB: 30 dBm to -150 dBm

**Example:** To set the reference level to 15dBm (If y-axis is dBm)

**:DISPlay:WINDow:TRACe:Y:SCALe:RLEVel 15**

**:DISPlay:WINDow:TRACe:Y:SCALe:RLEVel 15dBm**

**Related Command:** :DISPlay:WINDow:TRACe:Y[:SCALe]:RLEVel:OFFSET

**Front Panel Access:** Amplitude, Reference Level

**:DISPlay:WINDow:TRACe:Y[:SCALe]:RLEVel:OFFSET <rel ampl>**
**:DISPlay:WINDow:TRACe:Y[:SCALe]:RLEVel:OFFSET?**

**Title:** Reference Level Offset

**Description:** Sets the reference level offset value for the y-axis.

**Parameter:** <rel ampl>

**Default Value:** 0 dB

**Default Unit:** dB

**Range:** -99.9 dB to 99.9 dB

**Front Panel Access:** Amplitude, RL Offset
5-5 :FETCh Subsystem

This set of commands returns the most recent measurement data of the active measurement. They will not switch to another measurement.

To make a new measurement, use the INITiate command. To get new measurement data, use the READ or MEASure query commands.

:FETCh:ACPower?

Title: Fetch Adjacent Channel Power Ratio

Description: Returns the most recent adjacent channel power ratio measurement results. If the instrument is sweeping, it will not return until the sweep is complete. If the instrument is not sweeping and the current data is not valid it will return error -230. This could occur if there was a *RST immediately before the :FETCh? or if a measurement parameter was changed without an :INITiate.

Data is returned as 3 comma-separated values: main channel power, lower adjacent channel power, upper adjacent channel power.

Default Unit: Current amplitude units

:FETCh:CHPower:CHPower?

Title: Fetch Channel Power

Description: Returns the most recent channel power measurement result. It returns only the channel power, not the channel power density. Use :FETCh:CHPower? to get both channel power and channel power density.

Default Unit: Current amplitude units

Related Command: :FETCh:CHPower?
:FETCh:CHPower:DENSity?

:FETCh:CHPower:DENSity?

Title: Fetch Channel Power Density

Description: Returns the most recent channel power density measurement result. It returns only the channel power density, not the channel power. Use :FETCh:CHPower? to get both channel power and channel power density. If the instrument is sweeping, it will not return until the sweep is complete. If the instrument is not sweeping and the current data is not valid it will return error -230. This could occur if there was a *RST immediately before the :FETCh? or if a measurement parameter was changed without an :INITiate.

Default Unit: Current amplitude units
Title: Fetch Channel Power/Density

Description: This command returns the most recent channel power measurement results: channel power and channel power density. If the instrument is sweeping, it will not return until the sweep is complete. If the instrument is not sweeping and the current data is not valid it will return error -230. This could occur if there was a *RST immediately before the :FETCh? or if a measurement parameter was changed without an :INITiate.

Data is returned as 2 comma-separated values: channel power, channel power density.

Default Unit: Current amplitude units

Related Command: :FETCh:CHPower:CHPower?
                :FETCh:CHPower:DENSity?

Title: Fetch Occupied Bandwidth Frequency

Description: Returns the most recent occupied bandwidth lower frequency and upper frequency.

Data is returned as 2 comma-separated values: lower frequency and upper frequency in Hz.

Default Unit: Hz

Related Command: :FETCh:CHPower?
                :FETCh:CHPower:CHPower?

Title: Fetch Occupied Bandwidth

Description: Returns the most recent occupied bandwidth measurement results: occupied bandwidth, percent of power and dB down. One of either percent of power or dB down is measured and the other is set. That is determined by the value set using [:SENSe]:OBWidth:METHod. If the instrument is sweeping, it will not return until the sweep is complete. If the instrument is not sweeping and the current data is not valid it will return error -230. This could occur if there was a *RST immediately before the :FETCh? or if a measurement parameter was changed without an :INITiate.

Data is returned as 3 comma-separated values: occupied bandwidth, percent of power, dB down.

Default Unit: OBW in Hz, Percent of Power in %, dB Down in dB
5-6  :FORMat Subsystem

This subsystem contains commands that determine the formatting of numeric data when it is transferred. The format setting affects data in specific commands only. If a command is affected, it is noted in the command description.

:FORMat[:READings][:DATA] ASCii|INTeger,32|REAL,[<length>]

:FORMat[:READings][:DATA]?

Title: Numeric Data Format

Description: This command specifies the format in which data is returned in certain commands. The optional <length> parameter is needed for REAL format only. It defines the length of the floating point number in bits. Valid values are 32 and 64. If no length is specified, the default length of REAL data is set to 64 bits.

ASCii format returns the data in comma-separated ASCII format. The units are the current instrument units. This format requires many more bytes so it is the slowest format. INTeger, 32 values are signed 32-bit integers in little-endian byte order. This format returns the data in 4-byte blocks. The units are always mdBm. For example, if the measured result was -12.345 dBm, that value would be sent as -12345. REAL,32 values are 32-bit floating point numbers conforming to the IEEE 754 standard in little-endian byte order. This format returns the data in 4-byte binary format. The units are the current instrument units. REAL,64 values are 64-bit floating point numbers conforming to the IEEE 754 standard in little-endian byte order. This format returns the data in 8-byte binary format. The units are the current instrument units. For a more precise reading, REAL,64 should be used instead of REAL,32 when the current instrument unit is set to Volt or Watt.

Both INTeger and REAL formats return a definite block length. Each transfer begins with an ASCII header such as #42204 for INTeger,32 and REAL,32 and #44408 for REAL,64. The first digit represents the number of following digits in the header (in this example, 4). The remainder of the header indicates the number of bytes that follow the header (in this example, 2204 for INT,32 and REAL,32 and 4408 for REAL,64). You then divide the number of following bytes by the number of bytes in the data format you've chosen (4 for both INTeger,32 and REAL,32; therefore 2204/4, and 8 for REAL,64) to get the number of data points (in this example, 551).

Parameter: ASCii|INTeger,32|REAL,[<length>]

Parameter Type: <char>

Default Value: ASCii

Related Command: :TRACe[:DATA]
5-7 :INITiate Subsystem

This subsystem controls the triggering of measurements.

:INITiate:CONTinuous OFF|ON|0|1
:INITiate:CONTinuous?

Title: Continuous/Single Sweep

Description: Specifies whether the sweep/measurement is triggered continuously. If the value is set to ON or 1, another sweep/measurement is triggered as soon as the current one completes. If continuous is set to OFF or 0, the instrument enters the “idle” state and waits for the :INITiate[:IMMediate] command or for :INITiate:CONTinuous ON. The default value is ON. That is, sending :INIT:CONT is equivalent to sending :INIT:CONT ON. The query version of the command returns a 1 if the instrument is continuously sweeping/measuring and returns a 0 if the instrument is in single sweep/measurement mode. Note that rapid toggling between ON and OFF is not allowed. The instrument must be allowed to make a full sweep before toggling can be done.

Parameter: OFF|ON|0|1
Parameter Type: <boolean>
Default Value: ON
Related Command: :INITiate[:IMMediate]
Front Panel Access: Shift-3 (Sweep), Sweep (Single/Continuous)

:INITiate[:IMMediate] ONCE|AVERage

Title: Trigger Sweep/Measurement

Description: Initiates a sweep/measurement. If :INITiate:CONTinuous is set to ON, this command is ignored. Use this command in combination with :STATus:OPERation? to synchronize the capture of one complete set of data. When this command is sent, the “sweep complete” bit of :STATus:OPERation? is set to 0, indicating that the measurement has not completed. The data collection is then triggered. The controlling program can poll :STATus:OPERation? to determine the status. When the “sweep complete” bit is set to 1, data is ready to be retrieved.

If the value is set to ONCE, then INITiate[:IMMediate] will sweep once. If the value is set to AVERage and trace averaging is on, the unit will sweep and average the next X traces, where X is equal to Shift-5 (Trace) -> Trace A Operations -> # of Averages.

If the value is set to AVERage and trace averaging is off, then the unit will sweep once. When averaging is on, the sweep complete bit is set after the Xth sweep is completed.

If no argument is specified, then AVERage is sent.

Default Value: ONCE
Related Command: :INITiate:CONTinuous
:STATus:OPERation?
5-8 :MEASURE Subsystem

These commands take the instrument from its current state, enable the specified measurement and put the instrument into single sweep mode. They correct any parameters that are invalid given the new measurement state such that a valid measurement can take place. Other settings may be changed; see the documentation of CONFigure for each measurement. They then initiate the measurement. When the measurement is complete, they return the result.

To make a measurement with settings other than the “default” measurement settings applied by CONFigure, do the following:

- Send the appropriate CONFigure command to set the desired measurement.
- Modify the settings as required.
- Send the appropriate READ command to measure and return the result.

To get the current measurement data, use the appropriate FETCH command.

:MEASURE:ACP

Title: Measure Adjacent Channel Power Ratio
Description: Sets the active measurement to adjacent channel power ratio, sets the default measurement parameters, triggers a new measurement and returns the main channel power lower adjacent and upper adjacent channel power results. It is a combination of the commands :CONFigure:ACP; :READ:ACP? For a description of the default adjacent channel power ratio measurement parameters see :CONFigure:ACP. To make an adjacent channel power ratio measurement with settings other than the default values send:

:CONFigure:ACP

Commands to set desired settings
:READ:ACP?

Data is returned as 3 comma-separated values: main channel power, lower adjacent channel power, upper adjacent channel power.

Default Unit: Current amplitude units
Related Command: :CONFigure:ACP

:MEASURE:CHP

Title: Measure Channel Power
Description: Sets the active measurement to channel power, sets the default measurement parameters, triggers a new measurement and returns the channel power result. To measure both channel power and channel power density use :MEASURE:CHP? It is a combination of the commands :CONFigure:CHP; :READ:CHP:CHP? For a description of the default channel power measurement parameters see :CONFigure:CHP. To make a channel power measurement with settings other than the default values send:

:CONFigure:CHP

Commands to set desired settings
:READ:CHP:CHP?

Default Unit: Current amplitude units
Related Command: :MEASURE:CHP?

:MEASURE:CHP:DENS

Title: Measure Channel Power Density
**:MEASure:CHPower:DENSity?**

**Title:** Measure Channel Power Density

**Description:** Sets the active measurement to channel power, sets the default measurement parameters, triggers a new measurement and returns the channel power density result. To measure both channel power and channel power density use :MEASure:CHPower? It is a combination of the commands :CONFigure:CHPower; :READ:CHPower:DENSity? For a description of the default channel power measurement parameters see :CONFigure:CHPower. To make a channel power measurement with settings other than the default values send:

- :CONFigure:CHPower
- Commands to set desired settings
- :READ:CHPower:DENSity?

**Default Unit:** Current amplitude units

**Related Command:**
- :MEASure:CHPower?
- :MEASure:CHPower:CHPower?
- :CONFigure:CHPower

---

**:MEASure:CHPower?**

**Title:** Measure Channel Power/Density

**Description:** Sets the active measurement to channel power, sets the default measurement parameters, triggers a new measurement and returns the channel power and channel power density results. It is a combination of the commands :CONFigure:CHPower; :READ:CHPower? For a description of the default channel power measurement parameters see :CONFigure:CHPower. To make a channel power measurement with settings other than the default values send:

- :CONFigure:CHPower
- Commands to set desired settings
- :READ:CHPower?

Data is returned as 2 comma-separated values: channel power, channel power density.

**Default Unit:** Current amplitude units

**Related Command:**
- :MEASure:CHPower:CHPower?
- :MEASure:CHPower:DENSity?
- :CONFigure:CHPower

---

**:MEASure:IQ:CAPtura REMote**

**Title:** Transfer A Captured Waveform

**Description:** Initiates an IQ capture sequence. If SINGle is passed as an argument, the data will be saved to a file on the instrument. SINGle is also the default if no parameter is passed. If REMote is passed as an argument, then data will be routed to the SCPI output and must be received using MEASure:IQ:GET?. See Appendix B, “IQ Waveform Capture” for an IQ_SCPI.cpp example of how to use these two commands together to quickly transfer the captured data to a PC.

**Parameter:**
- SINGle | REMote

**Default Value:** Single

**Range:** Single, Remote

**Related Command:** :MEASure:IQ:GET?
:MEASURE:IQ:GET?

Title: Transfer A Captured Waveform

Description: Receives a block of IQ data after a capture sequence has already been initiated by issuing the :MEASure:IQ:CAPture REMote command.

Related Command: :MEASure:IQ:CAPture SINGle|REMoTe

:MEASURE:OBWidth?

Title: Measure Occupied Bandwidth

Description: Sets the active measurement to occupied bandwidth, sets the default measurement parameters, triggers a new measurement and returns the occupied bandwidth, percent of power and dB down results. It is a combination of the commands :CONDigure:OBWidth; :READ:OBWidth? For a description of the default occupied bandwidth measurement parameters see :CONDigure:OBWidth. To make an occupied bandwidth measurement with settings other than the default values send:

:CONDigure:OBWidth
Commands to set desired settings
:READ:OBWidth?

Data is returned as 3 comma-separated values: occupied bandwidth, percent of power, dB down.

Default Unit:
For OBW: Hz
For Percent of Power: %
For dB Down: dB

Related Command: :CONDigure:OBWidth
:CONDigure:RF SPECTrum
5-9  :MEMory Subsystem

The Mass MEMory subsystem contains functions that provide access to the instrument’s setup and data storage.

**:MEMory:STORe:LIImit <file name>**

Title: Save Limit

Description: Stores the current limit setup into the file specified by <file name>. <file name> should be enclosed in either single quotes (‘) or double quotes (“”) and should not contain a file extension. Use the command :MEMory:MSIS to set the current storage location.

Parameter: <file name>

Related Command: :MEMory:MSIS INTernal|USB

Front Panel Access: Shift-7 (File), Save, Change Type, (select Limit Line from list)
5-10  :READ Subsystem

This set of commands combines the ABORt, INITiate and FETCh commands. It aborts any current triggering sequence and sets the trigger state to idle. It then initiates a new active measurement (i.e. begins the collection of new data). When the measurement is complete, it returns the result. These commands will not switch to another measurement.

To get the current measurement data, use the FETCh command.

:READ:ACPower?

Title: Read Adjacent Channel Power Ratio

Description: Triggers a new adjacent channel power ratio measurement and returns the results: main channel power, lower adjacent and upper adjacent channel power. It is a combination of the commands :ABORT; :INITiate; :FETCh:ACPower? The channel power measurement must be the active measurement (specified by the command :CONFigure:ACPower). The current measurement can be queried using the command :CONFigure?

Data is returned as 3 comma-separated values: main channel power, lower adjacent channel power, upper adjacent channel power.

Related Command: :READ:ACPower?
               :CONFigure

:READ:CHPower:DENSity?

Title: Read Channel Power Density

Description: Triggers a new channel power measurement and returns the channel power density result. It is a combination of the commands :ABORT; :INITiate; :FETCh:CHPower:DENSity? It returns only the channel power density, not the channel power. Use the command :READ:CHPower? to get both channel power and channel power density. The channel power measurement must be the active measurement (specified by :CONFigure:CHPower). The current measurement can be queried using :CONFigure? command.

Default Unit: Current amplitude units

Related Command: :READ:CHPower?
                 :READ:CHPower:DENSity?
                 :CONFigure

:READ:CHPower?

Title: Read Channel Power/Density

Description: Triggers a new channel power measurement and returns the results: channel power and channel power density. It is a combination of the commands :ABORT; :INITiate; :FETCh:CHPower? The channel power measurement must be the active measurement (specified by the command :CONFigure:CHPower). The current measurement can be queried using the command :CONFigure?

Data is returned as 2 comma-separated values: channel power, channel power density.

Related Command: :READ:CHPower:CHPower?
                 :READ:CHPower:DENSity?
                 :CONFigure
Title: Read Occupied Bandwidth

Description: Triggers a new occupied bandwidth measurement and returns the results: occupied bandwidth, percent of power and dB down. It is a combination of the commands :ABORT; :INITiate; :FETCh:OBWidth? The occupied bandwidth measurement must be the active measurement (specified by :CONFigure:OBWidth). The current measurement can be queried using the :CONFigure?

Data is returned as 3 comma-separated values: occupied bandwidth, percent of power, dB down.

Default Unit: For OBW: Hz
For Percent of Power: %
For dB Down: dB

Related Command: :CONFigure
5-11  :TRACe Subsystem

This subsystem contains commands related to the transfer of trace data to and from the instrument.

**:TRACe:COPY TRACE1,TRACE2|TRACE3**

- **Title:** Trace Copy
- **Description:** Copies Trace A to either Trace B or Trace C. Copying Trace A to Trace B is equivalent to pressing the Shift-5 (Trace), Trace B Operations, A->B on the front panel. This store Trace A into Trace B and turns on Trace B if it was off. Copying Trace A to Trace C is equivalent to pressing the Shift-5 (Trace), Trace C Operations, A->C on the front panel. This store Trace A into Trace C and turns on Trace C if it was off.
- **Parameter:** TRACE1,TRACE2|TRACE3
- **Parameter Type:** <char>
- **Example:** To copy Trace A to Trace B:
  ```
  :TRACe:COPY TRACE1,TRACE2
  ```
  To copy Trace A to Trace C:
  ```
  :TRACe:COPY TRACE1,Trace3
  ```

**:TRACe:EXCHange TRACE2,TRACE3**

- **Title:** Trace Exchange
- **Description:** Swaps Trace B and Trace C.
- **Parameter:** TRACE2,TRACE3
- **Parameter Type:** <char>
- **Front Panel Access:**
  - Shift-5 (Trace), Trace B Operations, B<->C
  - Shift-5 (Trace), Trace C Operations, B<->C
:TRACe:PREamble? {1|2|3}

**Title:** Trace Header Transfer

**Description:** Returns trace header information for the specified trace. Data can be transferred to and from the 3 available display traces. Use the commands in the MMEMory subsystem to store and recall traces from the instrument memory. The response begins with an ASCII header. The header specifies the number of following bytes. It looks like #AX, where A is the number of digits in X and X is the number of bytes that follow the header. Parameters are returned in comma-delimited ASCII format. Each parameter is returned as “NAME=VALUE[ UNITS],” Note that the parameters returns depend on the firmware version and that this document does not cover all parameter values returned by the command. Valid parameter names are shown in “Spectrum Analyzer Parameter Names” on page 2-10.

**Parameter:** [1]|2|3

**Range:** 1|2|3

:TRACe[:DATA] {1|2|3},(<header><block>)

:TRACe[:DATA]? {1|2|3}

**Title:** Trace Data Transfer

**Description:** This command transfers data from the controlling program to the instrument. The query form transfers data from the instrument to the controller. Data is transferred to the instrument enclosed in parentheses as (<header><block>) and from the instrument as <header><block>.

The ASCII header specifies the number of data bytes. It looks like #AX, where A is the number of digits in X and X is the number of bytes in the <block>.

The format of the block data in the query form is specified by :FORMat:DATA. The block data in the command form is always sent in ASCII format. Data can be transferred to and from the 3 available display traces. Use the commands in the MMEMory subsystem to store and recall traces from the instrument memory. The command form does not support setting all trace points to a single value. To do this, send the same value to each point.

Trace setup information can be acquired using :TRACe[:DATA]:PREamble?.

To acquire the data from trace A in the instrument send :TRACe[:DATA]? 1. A 551 point trace is returned as #42204<block data>. <block> data could be in either INTeger,32 or REAL,32 format. In both cases, there is 4 bytes per data point. So, 4 bytes per point * 551 data points gives 2204 bytes in <block> data. This example assumes that :FORMat:DATA INTeger,32 or :FORMat:DATA REAL,32 has been sent to the instrument before the query command is sent.

The query command will return a #0 if data is invalid for the active trace.

**Parameter:** [1|2|3],(<header><block>)

**Related Command:** :FORMat:DATA

:TRACe[:DATA]:PREamble?
:TRACe{1|2|3}:DISPlay[:STATe] OFF|ON|0|1
:TRACe{1|2|3}:DISPlay[:STATe]?

Title: Trace View State

Description: Specifies whether the specified trace should be displayable (visible) or hidden. TRACe1 corresponds to Trace A, TRACe2 corresponds to Trace B, and TRACe3 corresponds to Trace C. Setting the value to ON or 1 will set the specified trace visible. Setting the value to OFF or 0 will set the specified trace hidden. Note that issuing this command will also set the specified trace as active trace.

Parameter: OFF|ON|0|1
Parameter Type: <boolean>
Default Value: ON for Trace A
OFF for Trace B
OFF for Trace C

Example: To set Trace A to Blank:
:TRACe:DISPlay OFF
:TRACe1:DISPlay 0

To set Trace B to View:
:TRACe2:DISPlay ON
:TRACe2:DISPlay:STATe ON
:TRACe2:DISPlay 1

Front Panel Access: Shift-5 (Trace), View/Blank

:TRACe{1|2|3}:WRITe[:STATe] OFF|ON|0|1
:TRACe{1|2|3}:WRITe[:STATe]?

Title: Trace Write State

Description: Specifies whether the specified trace state should be set to write or hold. TRACe1 corresponds to Trace A, TRACe2 corresponds to Trace B, and TRACe3 corresponds to Trace C. Setting the state to ON or 1 will set the specified trace to write. Setting the state to OFF or 0 will set the specified trace to hold.

Parameter: OFF|ON|0|1
Parameter Type: <boolean>
Default Value: ON for Trace A
OFF for Trace B
OFF for Trace C

Example: To set Trace A to Hold:
:TRACe:WRITe:STATe OFF
:TRACe:WRITe OFF OR :TRACe:WRITe 0

To set Trace C to Write:
:TRACe3:WRITe ON
:TRACe3:WRITe:STATe ON
:TRACe3:WRITe 1

Related Command: :TRACe:DATA

Front Panel Access: Shift-5 (Trace), Write/Hold
:TRACe1:OPERation NORMal|MAXHold|MINHold|AVERage
:TRACe1:OPERation?

Title: Trace A Operation
Description: This command specifies how successive traces are combined to produce the resulting display values.

Setting the operation to NORMal is equivalent to pressing the Shift-5 (Trace), Trace A Operations, Normal->A on the front panel. This displays a trace based on the detection method selected.

Setting the operation to MAXHold is equivalent to pressing the Shift-5 (Trace), Trace A Operations, Max Hold->A on the front panel. This displays the largest signal for each display point over multiple sweeps.

Setting the operation to MINHold is equivalent to pressing the Shift-5 (Trace), Trace A Operations, Min Hold->A on the front panel. This displays the smallest signal for each display point over multiple sweeps.

Setting the operation to AVERage is equivalent to pressing the Shift-5 (Trace), Trace A Operations, Average->A on the front panel. This displays the average value of multiple sweeps for each display point.

The query version of the command returns the current operation mode or “NONE” if no operation is set.

Parameter: NORMal|MAXHold|MINHold|AVERage
Parameter Type: <char>
Default Value: NORMal
Related Command: [:SENSe]:AVERage:TYPE

:TRACe2:OPERation MAXHold|MINHold
:TRACe2:OPERation?

Title: Trace B Operation
Description: This command specifies how successive traces are combined to produce the resulting display values.

Setting the operation to MAXHold is equivalent to pressing the Shift-5 (Trace), Trace B Operations, Max Hold->B on the front panel. This displays the largest signal for each display point over multiple sweeps.

Setting the operation to MINHold is equivalent to pressing the Shift-5 (Trace), Trace B Operations, Min Hold->B on the front panel. This displays the smallest signal for each display point over multiple sweeps.

The query version of the command returns the current operation mode or “NONE” if no operation is set.

Parameter: MAXHold|MINHold
Parameter Type: <char>
Default Value: None
Range: MAXHold|MINHold
Title: Trace C Operation

Description: This command specifies how successive traces are combined to produce the resulting display values.

Setting the operation to MAXHold is equivalent to pressing the Shift-5 (Trace), Trace C Operations, Max Hold->C on the front panel. This displays the largest signal for each display point over multiple sweeps.

Setting the operation to MINHold is equivalent to pressing the Shift-5 (Trace), Trace C Operations, Min Hold->C on the front panel. This displays the smallest signal for each display point over multiple sweeps.

Setting the operation to A-B is equivalent to pressing the Shift-5 (Trace), Trace C Operations, A-B->C. This displays the difference between trace A and trace B values in trace C.

Setting the operation to B-A is equivalent to pressing the Shift-5 (Trace), Trace C Operations, B-A->C. This displays the difference between trace B and trace A values in trace C.

The query version of the command returns the current operation mode or “NONE” if no operation is set.

Parameter: MAXHold|MINHold|A-B|B-A

Parameter Type: <char>

Default Value: None

Range: MAXHold|MINHold|A-B|B-A
5-12 :TRIGger Subsystem

This subsystem contains commands related to the triggering of instrument functions for the purposes of synchronization. Related commands appear in the ABORt and INITiate subsystems.

:TRIGger[:SEQuence]:SOURce IMMEDIATE|EXTERNAL|VIDEo
:TRIGger[:SEQuence]:SOURce?

Title: Trigger Source

Description: This command defines the trigger source. IMMEDIATE triggering is the equivalent of free-run triggering. EXTERNAL triggering is triggered when a TTL signal is applied to the External Trigger input connector. EXTERNAL triggering is always done on the rising edge of the signal. It is available only in zero span mode.

Parameter: IMMEDIATE|EXTERNAL|VIDEo

Parameter Type: <char>

Default Value: IMMEDIATE

Range: IMMEDIATE|EXTERNAL|VIDEo

Related Command: :TRIGger[:SEQuence]:VIDEo:LEVEL
:TRIGger[:SEQuence]:VIDEo:POSITION

Front Panel Access: Shift-3 (Sweep), Triggering, Source, Free Run|External|Video

:TRIGger[:SEQuence]:VIDEo:DELAY <percentage> or <time>
:TRIGger[:SEQuence]:VIDEo:DELAY?

Title: Video Trigger Position (time)

Description: This command sets the video triggering delay as either a percentage of the display or in time units. If setting the delay by time is desired, then time units must be specified when sending the command. The query version of this command will return the video triggering delay as a percentage.

Default Value: -1

Default Unit: %

Range: -100% to 200% (-1 ms to 2 ms)

Example:

To set the delay to 1 ms:

:TRIGger:SEQuence:VIDEo:DELAY 1 ms

To set the delay to 1%:

:TRIGger:SEQuence:VIDEo:DELAY 1

Front Panel Access: Shift-3 (Sweep), Triggering, Delay
:TRIGger[:SEQuence]:VIDeo:LEVel <amplitude>
:TRIGger[:SEQuence]:VIDeo:LEVel?

Title: Video Trigger Level

Description: This command sets the video triggering level.

Parameter: <amplitude>

Default Value: -65.0 dBm

Default Unit: Current amplitude unit

Range: 30 dBm to -150 dBm

Front Panel Access: Shift-3 (Sweep), Triggering, Level

:TRIGger[:SEQuence]:VIDeo:POSition <percentage>
:TRIGger[:SEQuence]:VIDeo:POSition?

Title: Video Trigger Position

Description: This command sets the video triggering position as a percentage of the display. When the sweep is triggered, the trigger point is drawn at the location defined by the position. The graph appearing to the left of the trigger position is data acquired before the trigger. The graph appearing to the right of the trigger position is data acquired after the trigger.

Parameter: <percentage>

Default Value: 1

Default Unit: %

Range: 0% to 100%

Front Panel Access: Shift-3 (Sweep), Triggering, Delay
5-13  :UNIT Subsystem

The unit subsystem is used to modify the default units used for related parameters. These changes affect parameters in both commands and responses.

:UNIT:POWer DBM|DBV|DBMV|DBUV|V|W
:UNIT:POWer?

Title: Measurement Units
Description: Sets the default amplitude units for input, output and display.
Available units: dBm, dBV, dBmV, dBuV, V, W.
Note that linear units are not operational with SPA V3.06. The set command is non-operational with SPA V3.06 as well.
Parameter: DBM | DBV | DBMV | DBUV | V | W
Parameter Type: <char>
Default Value: dBm
Front Panel Access: Amplitude, Units, Unit of Measure
5-14 [:SENSe] Subsystem

The commands in this subsystem relate to device-specific parameters, not signal-oriented parameters.

[:SENSe]:ACPwr:BANDwidth|BWIDth:ADJacent <freq>
[:SENSe]:ACPwr:BANDwidth|BWIDth:ADJacent?

Title: ACPR Adjacent Channel Bandwidth
Description: Sets the adjacent channel bandwidth for the ACPR measurement.
Parameter: <freq>
Default Value: 10.35 MHz
Default Unit: Hz
Range: 10 Hz to 7.1 GHz
Front Panel Access: Shift-4 (Measure), ACPR, Adj Ch BW

[:SENSe]:ACPwr:BANDwidth|BWIDth:MAIN <freq>
[:SENSe]:ACPwr:BANDwidth|BWIDth:MAIN?

Title: ACPR Main Channel Bandwidth
Description: Sets the main channel bandwidth for the ACPR measurement.
Parameter: <freq>
Default Value: 10.35 MHz
Default Unit: Hz
Range: 10 Hz to 7.1 GHz
Front Panel Access: Shift-4 (Measure), ACPR, Main Ch BW

[:SENSe]:ACPwr:BANDwidth|BWIDth:SPACing <freq>
[:SENSe]:ACPwr:BANDwidth|BWIDth:SPACing?

Title: ACPR Channel Spacing
Description: Sets the channel spacing for the ACPR measurement.
Parameter: <freq>
Default Value: 10.35 MHz
Default Unit: Hz
Range: 10 Hz to 7.1 GHz
Front Panel Access: Shift-4 (Measure), ACPR, Ch Spacing

[:SENSe]:ACPwr:STATe OFF|ON|0|1
[:SENSe]:ACPwr:STATe?

Title: ACPR Measurement State
Description: Sets the state of the adjacent channel power ratio measurement, ON or OFF. When using :CONFigure:ACPwr, the state is automatically set to ON.
Parameter: OFF|ON|0|1
Parameter Type: <boolean>
Default Value: OFF
[:SENSe]:AVERage:COUNt <integer>

[:SENSe]:AVERage:COUNt?

Title: Number of Traces to Average
Description: Sets the number of traces to average.
Parameter: <integer>
Parameter Type: <integer>
Default Value: 10
Range: 2 to 65535
Front Panel Access: Shift-5 (Trace), Trace A Operations, # of Averages

[:SENSe]:AVERage:TYPE NONE|SCALar|MAXimum|MINimum
[:SENSe]:AVERage:TYPE?

Title: Trace Mode (Normal/Average/Max Hold/Min Hold)
Description: Specifies how successive traces are combined to produce the resulting display value.
Setting the TYPE to NONE is the equivalent of setting the trace mode to “Normal->A” on the front panel. The displayed value for a point is the current measured value for that point. Setting the TYPE to SCALar is the equivalent of setting the trace mode to “Average->A” on the front panel. The displayed value for a point is the average of the last <integer> measured values where <integer> is set by [:SENSe]:AVERage:COUNt.
Setting the TYPE to MAXimum is the equivalent of setting the trace mode to “Max Hold->A” on the front panel. The displayed value for a point is the maximum measured value for that point over sweeps. Setting the TYPE to MINimum is the equivalent of setting the trace mode to “Min Hold->A” on the front panel. The displayed value for a point is the minimum measured value for that point over sweeps.
Parameter: NONE|SCALar|MAXimum|MINimum
Parameter Type: <char>
Default Value: NONE
Example: To set the TYPE to SCALar:
:SENSe:AVERage:TYPE SCALar
To set the TYPE to MAXimum:
:SENSe:AVERage:TYPE MAXimum
Related Command: [:SENSe]:AVERage:COUNt
Front Panel Access: Shift-5 (Trace), Trace A Operations
**:SENSe**:BANDwidth|BWIDth:VIDeo <freq>
**:SENSe**:BANDwidth|BWIDth:VIDeo?

**Title:** Video Bandwidth

**Description:** Sets the video bandwidth. Note that using this command turns the automatic video bandwidth setting OFF.

**Parameter:** <freq>

**Default Value:** 3 MHz

**Default Unit:** Hz

**Range:** 1 Hz to 10 MHz in a 1:3 sequence

**Related Command:** [:SENSe]:BANDwidth|BWIDth:VIDeo:AUTO

**Front Panel Access:** BW, VBW

**:SENSe**:BANDwidth|BWIDth:VIDeo:AUTO OFF|ON|0|1
**:SENSe**:BANDwidth|BWIDth:VIDeo:AUTO?

**Title:** Video Bandwidth Coupling

**Description:** Sets the state of the coupling of the video bandwidth to the resolution bandwidth. Setting the value to ON or 1 will result in the video bandwidth being coupled to the resolution bandwidth. That is, when the resolution bandwidth changes, the video bandwidth changes. Setting the value to OFF or 0 will result in the video bandwidth being un-coupled from the resolution bandwidth. That is, changing the resolution bandwidth will not change the video bandwidth. When this command is issued, the video bandwidth setting itself will not change. The default value is ON. That is, sending :SENS:BAND:VID:AUTO is equivalent to sending :SENS:BAND:VID:AUTO ON.

**Parameter:** OFF|ON|0|1

**Parameter Type:** <boolean>

**Default Value:** ON

**Front Panel Access:** BW, Auto VBW

**:SENSe**:BANDwidth|BWIDth:VIDeo:RATio <number>
**:SENSe**:BANDwidth|BWIDth:VIDeo:RATio?

**Title:** Video Bandwidth to Resolution Bandwidth Ratio

**Description:** Sets the ratio of the video bandwidth to the resolution bandwidth for use when the video to resolution bandwidth coupling is enabled. Note that the front panel interface sets the inverse ratio: the resolution bandwidth to the video bandwidth.

**Parameter:** <number>

**Default Value:** 0.33

**Range:** 0.000001 to 1

**Related Command:** [:SENSe]:BANDwidth|BWIDth:VIDeo:AUTO

**Front Panel Access:** BW, RBW/VBW (note that this is the inverse ratio)
[:SENSe]:BANDwidth|BWIDth:VIDeo:TYPE LOGarithmic|LINear
[:SENSe]:BANDwidth|BWIDth:VIDeo:TYPE?

Title: VBW/Average Type
Description: Changes the VBW/Average type.
Default Value: LINear
Front Panel Access: BW, VBW/Average Type

[:SENSe]:BANDwidth|BWIDth][:RESolution] <freq>
[:SENSe]:BANDwidth|BWIDth[:RESolution]?

Title: Resolution Bandwidth
Description: Sets the resolution bandwidth. Note that using this command turns the automatic resolution bandwidth setting OFF.
Parameter: <freq>
Default Value: 10 MHz
Default Unit: Hz
Range: 1 Hz to 10 MHz in a 1:3 sequence
Related Command: [:SENSe]:BANDwidth|BWIDth[:RESolution]:AUTO
Front Panel Access: BW, RBW

[:SENSe]:BANDwidth|BWIDth[:RESolution]:AUTO OFF|ON|0|1
[:SENSe]:BANDwidth|BWIDth[:RESolution]:AUTO?

Title: Resolution Bandwidth Coupling
Description: Sets the state of the coupling of the resolution bandwidth to the frequency span. Setting the value to ON or 1 will result in the resolution bandwidth being coupled to the span. That is, when the span changes, the resolution bandwidth changes. Setting the value to OFF or 0 will result in the resolution bandwidth being un-coupled from the span. That is, changing the span will not change the resolution bandwidth. When this command is issued, the resolution bandwidth setting itself will not change. The default value is ON. That is, sending :SENS:BAND:RES:AUTO is equivalent to sending :SENS:BAND:RES:AUTO ON.
Parameter: OFF|ON|0|1
Parameter Type: <boolean>
Default Value: ON
Related Command: [:SENSe]:BANDwidth|BWIDth[:RESolution]:RATio
Front Panel Access: BW, Auto RBW
[:SENSe]:BANDwidth|BWIDth[:RESolution]:RATio <number>
[:SENSe]:BANDwidth|BWIDth[:RESolution]:RATio?

Title: Resolution Bandwidth to Span Ratio
Description: Sets the ratio of the resolution bandwidth to the span for use when the resolution bandwidth to span coupling is enabled. Note that the front panel interface sets the inverse ratio: the span to the resolution bandwidth.
Parameter: <number>
Default Value: 0.010000
Range: 0.000001 to 1
Related Command: [:SENSe]:BANDwidth|BWIDth[:RESolution]:AUTO
Front Panel Access: BW, Span/RBW (note that this is the inverse ratio)

[:SENSe]:CHPower:BANDwidth|BWIDth:INTegration <freq>
[:SENSe]:CHPower:BANDwidth|BWIDth:INTegration?

Title: Channel Power Integration Bandwidth
Description: Sets the integration bandwidth for the channel power measurement. Integration bandwidth must be less than or equal to the frequency span.
Parameter: <freq>
Default Value: 10.35 MHz
Default Unit: Hz
Range: 10 Hz to 7.1 GHz
Related Command: [:SENSe]:FREQuency:SPAN
Front Panel Access: Shift-4 (Measure), Channel Power, Ch Pwr Width

[:SENSe]:CHPower:STATe OFF|ON|0|1
[:SENSe]:CHPower:STATe?

Title: Channel Power Measurement State
Description: Sets the state of the channel power measurement, ON or OFF. When using :CONFigure:CHPower, the state is automatically set to ON.
Parameter: OFF|ON|0|1
Parameter Type: <boolean>
Default Value: OFF
Related Command: :CONFigure:ACPower
Front Panel Access: Shift-4 (Measure), ACPR, On/Off
[:SENSe]:CORRection:IMPedance[:INPut]:OFFSet <rel ampl>
[:SENSe]:CORRection:IMPedance[:INPut]:OFFSet?

Title: Other Input Impedance Loss

Description: Sets the value that is used for amplitude correction when the value set by [:SENSe]:CORRection:IMPedance[:INPut][:MAGNitude] is something other than 50 or 75. This value is not applied if the impedance is set to either 50 or 75.

Parameter: <rel ampl>
Default Value: 0
Default Unit: dB
Range: 0 dB to 100 dB

Related Command: [:SENSe]:CORRection:IMPedance[:INPut][:MAGNitude]

Front Panel Access: Shift-8 (System), Application Options, Impedance

[:SENSe]:CORRection:IMPedance[:INPut][:MAGNitude] <integer>
[:SENSe]:CORRection:IMPedance[:INPut][:MAGNitude]? 

Title: Input Impedance

Description: Sets the input impedance that is used for amplitude correction and conversion between units (dBm vs. dBV vs. Volts, etc.). If the value of <integer> is 50, no correction is performed. If the value of <integer> is 75, correction is done based on Anritsu adapter 12N50-75B. To place the instrument in Other or offset mode, send a 2. Once in the “Other” mode, the command, [:SENSe]:CORRection:IMPedance[:INPut]:OFFSET, can be used to adjust the offset.

Parameter: <integer>
Parameter Type: <integer>
Default Value: 50 Ohm
Range: 50 Ohm, 75 Ohm, all other values are treated as described above

Front Panel Access: Shift-8 (System), Application Options, Impedance

[:SENSe]:DEToector[:FUNCTION] POSitive|RMS|NEGative|SAMPle|QUASI
[:SENSe]:DEToector[:FUNCTION]?

Title: Detection Type

Description: Sets the detection method for calculating each display point. Each display point represents several measurements. The detection type determines how the display point is derived from its associated measurements. POSitive Peak detection displays the maximum value of the associated measurements. RMS detection displays the average power of the associated measurements. NEGative Peak detection displays the minimum value of the associated measurements. SAMPlE detection displays the “middle” point of those measurements associated with a display point. For example, if there are 3 measurement frequencies associated with a given display point, sample detection will display the value at the frequency of the second measurement point.

Parameter: POSitive| RMS| NEGative| SAMPlE| QUASI
Parameter Type: <char>
Default Value: (Positive) Peak

Front Panel Access: Amplitude, Detection, Peak | RMS | Negative | Sample | Quasi
[:SENSe]:FREQuency:CENTer <freq>
[:SENSe]:FREQuency:CENTer?

Title: Center Frequency
Description: Sets the center frequency. Note that changing the value of the center frequency will change the value of the coupled parameters Start Frequency and Stop Frequency. It may also change the value of the span.

Parameter: <freq>
Default Value: 3.55 GHz
Default Unit: Hz
Range: 0 Hz and 10 Hz to 7.099 GHz
Front Panel Access: Freq, Center Freq

[:SENSe]:FREQuency:SIGStandard:CHANnel <number>
[:SENSe]:FREQuency:SIGStandard:CHANnel?

Title: Channel Selection
Description: Sets the channel number for the selected signal standard.

Parameter: <number>
Front Panel Access: Frequency, Channel

[:SENSe]:FREQuency:SIGStandard:NAMe <string>
[:SENSe]:FREQuency:SIGStandard:NAMe?

Title: Signal Standard
Description: Selects the desired signal standard from the list. The <string> argument is the name of the desired signal standard as displayed in the instrument’s current signal standard list. The list can be seen on the instrument by choosing the Signal Standard submenu button in the Freq menu. The list can also be downloaded remotely and viewed using Anritsu Master Software Tools. For example, if the desired Signal Standard is P-GSM 900 - Uplink, then the value of the <string> argument would be “P-GSM 900 - Uplink”.
The query form of this command will return the name of the currently selected Signal Standard from the list.

Parameter: <string>
Front Panel Access: Freq, Signal Standard

[:SENSe]:FREQuency:SPAN <freq>
[:SENSe]:FREQuency:SPAN?

Title: Frequency Span
Description: Sets the frequency span. Setting the value of <freq> to 0 Hz is the equivalent of setting the span mode to zero span. Note that changing the value of the frequency span will change the value of the coupled parameters Start Frequency and Stop Frequency and may change the Center Frequency.

Parameter: <freq>
Default Value: 7.1 GHz
Default Unit: Hz
Range: 0 Hz to 7.1 GHz
[:SENSe]:FREQuency:SPAN:FULL

Title:  Frequency Span – Full
Description:  Sets the frequency span to full span. Note that changing the value of the frequency span will change the value of the coupled parameters, Start Frequency and Stop Frequency and may change the Center Frequency.
Default Value:  7.1 GHz
Front Panel Access:  Span, Full Span

[:SENSe]:FREQuency:SPAN:PREVIOUS

Title:  Frequency Span – Last
Description:  Sets the frequency span to the previous span value. Note that changing the value of the frequency span will change the value of the coupled parameters, Start Frequency and Stop Frequency and may change the Center Frequency.
Default Unit:  Hz
Range:  0 Hz and 10 Hz to 7.1 GHz
Front Panel Access:  Freq, Span, Last Span

[:SENSe]:FREQuency:START <freq>
[:SENSe]:FREQuency:START?

Title:  Start Frequency
Description:  Sets the start frequency. Note that in the spectrum analyzer, changing the value of the start frequency will change the value of the coupled parameters, Center Frequency and Span.
Parameter:  <freq>
Default Value:  0 Hz
Default Unit:  Hz
Range:  0 Hz to 7.1 GHz
Related Command:  [:SENSe]:FREQuency:STOP?
Front Panel Access:  Freq, Start Freq

[:SENSe]:FREQuency:STEP[:INCRement] <freq>
[:SENSe]:FREQuency:STEP[:INCRement]?

Title:  Frequency Step
Description:  Sets the frequency step to the given frequency value.
Parameter:  <freq>
Default Value:  1 MHz
Default Unit:  Hz
Range:  1 Hz to 7.1 GHz
Front Panel Access:  Freq, Freq Step
[:SENSe]:FREQuency:STOP <freq>
[:SENSe]:FREQuency:STOP?

- **Title:** Stop Frequency
- **Description:** Sets the stop frequency. Note that in the spectrum analyzer, changing the value of the stop frequency will change the value of the coupled parameters, Center Frequency and Span.
- **Parameter:** <freq>
- **Default Value:** 7.1 GHz
- **Default Unit:** Hz
- **Range:** 10 Hz to 7.1 GHz

[:SENSe]:FSTReNGTH:ANTenna <antenna>
[:SENSe]:FSTReNGTH:ANTenna?

- **Title:** Field Strength Antenna
- **Description:** Selects an antenna from the antenna list to use for field strength measurement result calculations. The <antenna> argument is a 1-based index of the position of the desired antenna in the instrument’s current antenna list. The list can be seen on the instrument by choosing the “Antenna” soft-key button in the “F Strength” menu. For example, if the desired antenna were the 3rd item on the antenna listing then the value of the <antenna> argument would be 3. Setting the <antenna> argument to 0 indicates that no antenna is selected.
- **Parameter:** <antenna>
- **Default Value:** 1

- **Related Command:** :CONFigure:FSTReNGTH

- **Front Panel Access:** Shift-4 (Measure), Field Strength, Antenna

[:SENSe]:FSTReNGTH:STATe OFF|ON|0|1
[:SENSe]:FSTReNGTH:STATe?

- **Title:** Field Strength Measurement State
- **Description:** Sets the state of the field strength measurement, ON or OFF. When using :CONFigure:FSTReNGTH, the state is automatically set to ON.
- **Parameter:** OFF|ON|0|1
- **Parameter Type:** <boolean>
- **Default Value:** OFF

- **Related Command:** :CONFigure:CHPower

- **Front Panel Access:** Shift-4 (Measure), Field Strength, On/Off
[:SENSe]:IQ:SAMPlerate <freq>
[:SENSe]:IQ:SAMPlerate?

Title: Sample Rate
Description: Sets the sample rate. Sample rate choices are 25 kHz, 500 kHz, 2.5 MHz, 6.25 MHz, 12.5 MHz, 20 MHz, and 40 MHz. The query returns the current Sample Rate frequency in Hz.
Parameter: <freq>
Default Value: 40 MHz
Range: 25 kHz, 500 kHz, 2.5 MHz, 6.25 MHz, 12.5 MHz, 20 MHz, 40 MHz
Front Panel Access: Shift-4 (Measure), More, IQ Waveform Capture, Sample Rate

[:SENSe]:IQ:LENgth <seconds>
[:SENSe]:IQ:LENgth?

Title: Capture Length
Description: Sets the length of the capture time in milliseconds. Query returns the length of the current capture time in milliseconds.
Parameter: <seconds>
Parameter Type: <char>
Default Value: 10 ms
Default Unit: ms
Range: 1 us to 800 ms
Front Panel Access: Shift-4 (Measure), More, IQ Waveform Capture, Capture Length

[:SENSe]:OBWidth:METHod XDB|PERCent
[:SENSe]:OBWidth:METHod?

Title: Occupied Bandwidth Measurement Method
Description: Sets the method for calculating occupied bandwidth. XDB calculates the occupied bandwidth based on points a specified number of dB below the carrier. Issue command [:SENSe]:OBWidth:XDB to set the number of dB to be used. PERCent calculates the occupied bandwidth based on points a specified percentage of the carrier power below the carrier. Issue command [:SENSe]:OBWidth:PERCent to set the percentage to be used.
Parameter: XDB|PERCent
Parameter Type: <char>
Default Value: PERCent
Related Command: [:SENSe]:OBWidth:XDB [:SENSe]:OBWidth:PERCent
Front Panel Access: Shift-4 (Measure), OCC BW, Method, % Int Pwr|> dBc
[:SENSe]:OBWidth:PERCent <percentage>
[:SENSe]:OBWidth:PERCent?

Title: Occupied Bandwidth Percent of Power
Description: This command sets the percentage of carrier power used to measure the occupied bandwidth. This value is used in the measurement if :SENSe:OBWidth:METHod is set to PERCent.
Parameter: <percentage>
Default Value: 99
Default Unit: %
Range: 0% to 100%
Related Command: [:SENSe]:OBWidth:METHod
Front Panel Access: Shift-4 (Measure), OCC BW, %

[:SENSe]:OBWidth:STATE OFF|ON|0|1
[:SENSe]:OBWidth:STATE?

Title: Occupied Bandwidth Measurement State
Description: Sets the state of the occupied bandwidth measurement, ON or OFF. When using :CONFigure:OBWidth, the state is automatically set to ON.
Parameter: OFF|ON|0|1
Parameter Type: <boolean>
Default Value: OFF
Related Command: :CONFigure:OBWidth
Front Panel Access: Shift-4 (Measure), OCC BW, On/Off

[:SENSe]:OBWidth:XDB <rel ampl>
[:SENSe]:OBWidth:XDB?

Title: Occupied Bandwidth dB Down
Description: This command sets the number of dB below the carrier used to measure the occupied bandwidth. This value is used in the measurement if :SENSe:OBWidth:METHod is set to XDB.
Parameter: <rel ampl>
Default Value: 3 dBC
Default Unit: dBC
Range: 0 to 100 dBC
Related Command: [:SENSe]:OBWidth:METHod
Front Panel Access: Shift-4 (Measure), OCC BW, dBC
[:SENSe]:OPTion:IF:BWSTate 1|2|3|4|5
[:SENSe]:OPTion:IF:BWSTate?

Title: IF Bandwidth State
Description: Sets the IF Bandwidth. Setting a value of 1 is equivalent of setting the IF Bandwidth to Normal on the front panel. Setting a value of 3 is equivalent of setting the IF Bandwidth to 10 MHz BW on the front panel. Setting the value of 4 is equivalent of setting the IF Bandwidth to 16 MHz BW on the front panel. Note that option 89 must be available and in Zero span for the command to be valid. The query version of this command will return a 0 if not in zero span.
Parameter: 1|2|3|4|5
Range: 1|2|3|4|5
Front Panel Access: Span, Zero Span

[:SENSe]:POWer[:RF]:ATTenuation <rel ampl>
[:SENSe]:POWer[:RF]:ATTenuation?

Title: Input Attenuation
Description: Sets the input attenuation. Note that issuing this command will set the automatic input attenuation OFF.
Parameter: <rel ampl>
Default Value: 30 dB
Default Unit: dB
Range: 0 dB to 65 dB
Related Command: [:SENSe]:POWer[:RF]:ATTenuation:AUTO
Front Panel Access: Amplitude, Atten Lvl

[:SENSe]:POWer[:RF]:ATTenuation:AUTO OFF|ON|0|1
[:SENSe]:POWer[:RF]:ATTenuation:AUTO?

Title: Input Attenuation Coupling
Description: Sets the input attenuation coupling. Setting the value to ON or 1 will result in the input attenuation being coupled to the reference level. Setting the value to OFF or 0 will result in the input attenuation being un-coupled from the reference level. That is, changing the reference level will not change the input attenuation. When this command is issued, the input attenuator setting itself will not change. The default value is ON. That is, sending :SENS:POW:ATT:AUTO is equivalent to sending :SENS:POW:ATT:AUTO ON.
Parameter: OFF|ON|0|1
Parameter Type: <boolean>
Default Value: ON
Related Command: [:SENSe]:POWer[:RF]:ATTenuation
Front Panel Access: Amplitude, Auto Atten
[:SENSe]:POWer[:RF]:GAIN[:STATe] OFF|ON|0|1
[:SENSe]:POWer[:RF]:GAIN[:STATe]?

Title: Preamp State
Description: Sets the state of the preamp. Note that this may cause a change in the reference level and/or attenuation.
Parameter: OFF|ON|0|1
Parameter Type: <boolean>
Default Value: OFF
Front Panel Access: Amplitude, Pre Amp

[:SENSe]:SWEep:TIME[:LLIMit]
[:SENSe]:SWEep:TIME[:LLIMit]?

Title: Minimum Sweep Time
Description: Sets the value of the minimum sweep time parameter. The sweep will complete in the shortest time possible greater than the specified time. To sweep as fast as possible, enter the minimum value allowed for the sweep time.
Default Value: 0.001
Default Unit: Seconds
Range: 10 µs to 600000000 µs
Front Panel Access: Shift-3 (Sweep), Sweep Time

[:SENSe]:SWEep:TIME:ACTual?

Title: Actual sweep time.
Description: Returns the actual sweep time in seconds as opposed to the specified sweep time.

[:SENSe]:SWEep:TIME:AUTO ON|OFF
[:SENSe]:SWEep:TIME:AUTO?

Title: Auto Sweep Time
Description: Toggles Auto Sweep Time.
Front Panel Access: Shift-3 (Sweep), Auto Sweep Time
Chapter 6 — VSG Commands

6-1 [:SENSe] Subsystem

The commands in this subsystem relate to device-specific parameters, not signal-oriented parameters.

:INITiate:IMMediate

Title: Manual Trigger

Description: When this command is received, the instrument will begin to play the modulated signal pattern(s) that have been selected. Prior to issuing this command the user must select the proper signals, set up the trigger delay, and select the desired trigger type. After these parameters are set, the user must turn modulation ON for the desired output (signal and/or interferer).

Related Command: [:SENSe][:SIGNal]:MODulation
[:SENSe][:SIGNal]:USER:PATTern
[:SENSe]:TRIGger
[:SENSe]:TRIGger:DElay

[:SENSe]:FREQuency:CENTer[:SIGNal] <freq>
[:SENSe]:FREQuency:CENTer[:SIGNal]?

Title: Center Frequency

Description: Edits the center frequency of the main signal. The query reports the center frequency of the main signal.

Default Unit: Hz

[:SENSe]:FREQuency:OFFSet[:INTerferer] <freq>
[:SENSe]:FREQuency:OFFSet[:INTerferer]?

Title: Offset Frequency

Description: Edits the center frequency of the interferer. The query reports the center frequency of the interferer.

Range: –5 MHz to 5 MHz

Default Unit: Hz

[:SENSe]:INTerferer:MODE OFF|CW|MOD
[:SENSe]:INTerferer:MODE?

Title: Main Signal Mode

Description: Sets the mode of the interferer. The query reports the mode of the interferer.

Range: OFF|CW|MOD
[:SENSe]::INTERferer::POWer <power level>
[:SENSe]::INTERferer::POWer?
  Title: Interferer Power Level
  Description: Changes the interferer power level. The query reports the interferer power level.
  Range: –124 dBm to 0 dBm
  Default Unit: dBm

[:SENSe]::INTERferer::USER::PATTern
[:SENSe]::INTERferer::USER::PATTern?
  Title: Interferer User Pattern
  Description: Select a user pattern from the pattern index to apply to the interferer. The query returns
  the user pattern index number for the interferer (-1 if no current pattern).

[:SENSe]::NOISe::POWer <power level>
[:SENSe]::NOISe::POWer?
  Title: Relative Noise Power Level
  Description: Edits the relative noise power level. The query reports the relative noise power level.
  Range: –124 dBm to 0 dBm
  Default Unit: dBm

[:SENSe]::RF OFF|ON|0|1
[:SENSe]::RF?
  Title: RF Power
  Description: Toggles the RF power state (on/off). The query reports the RF power state.
  Range: OFF|ON|0|1

[:SENSe]::TRIGger <NONE|POS|NEG>
[:SENSe]::TRIGger?
  Title: Trigger Type
  Description: Selects the type of external trigger for modulation. The query reports the trigger type.
  Return values for this command are 0 for NONE, 1 for POS, and 2 for NEG.
  Range: NONE|POS|NEG

[:SENSe]::TRIGger::DELay <seconds>
[:SENSe]::TRIGger?
  Title: Trigger Delay
  Description: Sets the trigger delay time. The query reports the trigger delay.
  Default Unit: Seconds

[:SENSe][:SIGNal]::MODE OFF|CW|MOD
[:SENSe][:SIGNal]::MODE?
  Title: Main Signal Mode
  Description: Sets the mode of the main signal. The query reports the mode of the main signal.
  Range: OFF|CW|MOD
[:SENSe][:SIGNal]:POWer <power level>
[:SENSe][:SIGNal]:POWer?

Title: Main Power Level
Description: Changes the main signal power level. The query reports the main signal power level.
Default Unit: dBm

[:SENSe][:SIGNal]:USER:PATTern
[:SENSe][:SIGNal]:USER:PATTern?

Title: Interferer User Pattern
Description: Select a user pattern from the pattern index to apply to the main signal. The query returns the user pattern index number for main signal (-1 if no current pattern).
Chapter 7 — GSM Commands

7-1 :ABORt Subsystem

The abort subsystem includes commands that allow the user to stop current measurement activities on the instrument.

:ABORt

Title: Abort

Description: Restarts the current sweep and/or measurement. Resets the trigger system. If :INITiate:CONTinuous is OFF (i.e. the instrument is in single sweep mode), send the command :INITiate[:IMMediate] to trigger the next sweep. If :INITiate:CONTinuous is ON (i.e. the instrument is in continuous sweep mode) a new sweep will start immediately.

Parameter: NA

Related Command: :INITiate:CONTinuous

:INITiate[:IMMediate]

Front Panel Access: Shift-3 (Sweep), Trigger Sweep
7-2 :CONFigure Subsystem

This set of commands prepares the instrument for the selected measurement. It disables any currently-enabled measurements and activates the specified measurement. It sets the instrument to single sweep mode, waiting for an :INITiate command. It will not initiate the taking of a measurement.

Current instrument settings may be changed to default values. These changes are identified with their respective measurement commands.

:CONFigure:SUMmary

Title: Configure Summary Measurement

Description: This command configures the summary of all the related numerical measurement results. It disables any other active measurements. None of the instrument parameters are changed by the execution of this command. Sets the instrument to single sweep mode (:INITiate:CONTinuous OFF). Measurement settings can be modified by using the [:SENSe] commands before initiating a measurement.

Front Panel Access: Shift-4 (Measurement), GSM/EDGE Summary

:CONFigure:DEMod

Title: Configure Demodulation Measurement

Description: This command configures the Demodulator measurement. It disables any other active measurements. None of the instrument parameters are changed by the execution of this command. Sets the instrument to single sweep mode (:INITiate:CONTinuous OFF). Measurement settings can be modified by using the [:SENSe] commands before initiating a measurement.

Front Panel Access: Shift-4 (Measurement), Demodulator

:CONFigure:PFail

Title: Configure PASS/FAIL Measurement

Description: This command configures the PASS/FAIL measurement. It disables any other active measurements. None of the instrument parameters are changed by the execution of this command. Sets the instrument to single sweep mode (:INITiate:CONTinuous OFF). Measurement settings can be modified by using the [:SENSe] commands before initiating a measurement. The measurement results are equivalent to the results that are displayed by choosing Measurements, then Pass/Fail mode from the front panel.

Related Command: :FETCh:PFail?
              MEASURE:PFail?
              READ:PFail?

Front Panel Access: Shift-4 (Measurement), Pass/Fail Mode
:CONFigure:PVTFrame

Title: Configure Power vs. Time (Frame) Measurement

Description: This command configures the Power vs. Time (Frame) measurement. It disables any other active measurements. None of the instrument parameters are changed by the execution of this command. Sets the instrument to single sweep mode (:INITiate:CONTinuous OFF). Measurement settings can be modified by using the [:SENSe] commands before initiating a measurement.

Related Command: MEASure:PVTFrame?
READ:PVTFrame?
FETCh:PVTFrame?

Front Panel Access: Shift-4(Measurement), Power vs. Time (Frame)

:CONFigure:PVTSlot

Title: Configure Power vs. Time (Slot) Measurement

Description: This command configures the Power vs. Time (Slot) measurement. It disables any other active measurements. None of the instrument parameters are changed by the execution of this command. Sets the instrument to single sweep mode (:INITiate:CONTinuous OFF). Measurement settings can be modified by using the [:SENSe] commands before initiating a measurement.

Related Command: MEASure:PVTSlot?
READ:PVTSlot?
FETCh:PVTSlot?

Front Panel Access: Shift-4 (Measurement), Power vs. Time (Slot)

:CONFigure:SPECTrum:MULTi

Title: Configure Multi-Channel Spectrum Measurement

Description: This command configures the Multi-Channel Spectrum measurement. It disables any other active measurements. None of the instrument parameters are changed by the execution of this command. Sets the instrument to single sweep mode (:INITiate:CONTinuous OFF). Measurement settings can be modified by using the [:SENSe]:RF commands before initiating a measurement.

Front Panel Access: Shift-4 (Measurement), Spectrum, Multi-Channel Spectrum

:CONFigure:SPECTrum:SINGle

Title: Configure Single Channel Spectrum Measurement

Description: This command configures the Single Channel Spectrum measurement. It disables any other active measurements. None of the instrument parameters are changed by the execution of this command. Sets the instrument to single sweep mode (:INITiate:CONTinuous OFF). Measurement settings can be modified by using the [:SENSe]:RF commands before initiating a measurement.

Related Command: MEASure:SPECTrum:SINGle?
READ:SPECTrum:SINGle?
FETCh:SPECTrum:SINGle?

Front Panel Access: Shift-4 (Measurement), Spectrum, Channel Spectrum
Title: Configure Query

Description: :CONFigure? query returns the name of the measurement previously set up using a CONFigure command or a MEASure? query. The list below shows the possible return values and the actual names of each configuration.

<table>
<thead>
<tr>
<th>Returns Value</th>
<th>Actual Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPEC, SING</td>
<td>Single Channel Spectrum</td>
</tr>
<tr>
<td>SPEC, MULT</td>
<td>Multi-Channel Spectrum</td>
</tr>
<tr>
<td>PVTF</td>
<td>Power vs. Time (Frame)</td>
</tr>
<tr>
<td>PVTS</td>
<td>Power vs. Time (Slot)</td>
</tr>
<tr>
<td>DEM</td>
<td>Demodulator</td>
</tr>
<tr>
<td>PF</td>
<td>Pass/Fail Mode</td>
</tr>
<tr>
<td>SUMM</td>
<td>Summary</td>
</tr>
</tbody>
</table>
7-3  :DISPlay Subsystem

This subsystem provides commands that modify the display of data for the user. They do not modify the way in which data are returned to the controller.

:DISPlay:WINDow:TRACe:Y[:SCALe]:OFFSet <rel ampl>
:DISPlay:WINDow:TRACe:Y[:SCALe]:OFFSet?

Title: Power Offset
Description: Sets the power offset value for the y-axis.
Parameter: <rel ampl>
Default Value: 0 dB
Default Unit: dB
Range: –100 dB to 100 dB
Front Panel Access: Amplitude, Power Offset
7-4 :FETCh Subsystem

This set of commands returns the most recent measurement data of the active measurement. They will not switch to another measurement.

To make a new measurement, use the INITiate command. To get new measurement data, use the READ or MEASure query commands.

:FETCh:DEMod?

Title: Fetch Demodulator

Description: Returns the most recent Demodulator measurement results. The Demodulator measurement must be the active measurement. The current measurement can be queried using CONFigure? . Use the CONFigure:DEMod command to set Demodulator as the active measurement.

Data is returned as 9 comma-delimited values: Phase Error (rms), Phase Error (peak), EVM (rms) in %, EVM (peak) in %, Origin Offset in dB, C/I in dB, Magnitude Error (rms) in %, Modulation Type, and TSC. “...” is returned for data that is not valid at that instance.

Related Command: MEASure:DEMod?
CONFigure:DEMod
READ:DEMod?

:FETCh:PFail?

Title: Fetch PASS/FAIL

Description: Returns the most recent PASS/FAIL measurement results. Measurement results are returned in a block of ASCII text in the format of <header><block>. The ASCII header specifies the number of data bytes. It looks like #AX, where A is the number of digits in X and X is the number of bytes in the <block>. The block consists of a set of records which indicate individual test results. Records are comma-separated. Each record follows the format <test ID>: <input1> <input2> <min> <max> <value1> <value2> <PASS/FAIL/OPTION NOT INSTALLED>. The <test ID> field indicates which test was performed to retrieve these results. The < input1> and < input2> fields indicate the test setup. The <min> and <max> fields indicate the minimum and maximum values against which <value1> and <value2> were compared to arrive at the final PASS/FAIL result. If the specified test is not available in the instrument, the <PASS/FAIL> field will indicate “option not available” instead of “pass” or “fail”. All unused fields for a given test are represented by a double dash (“--”). To receive valid measurements, the Pass/Fail measurement must be the active. The current measurement can be queried using CONFigure?. Use the :CONFigure:PFail to set Pass/Fail as the active measurement.

Related Command: MEASure:PFail?
:CONFigure:PFail
READ:PFail?
:FETCH:PVTFrame?

Title: Fetch Power vs. Time (Frame)

Description: Returns the most recent Power vs. Time (Frame) measurement results. The Power vs. Time (Frame) measurement must be the active measurement. The current measurement can be queried using CONFigure??. Use the CONFigure:PVTFrame command to set Power vs. Time (Frame) as the active measurement.

Data is returned as 9 comma-delimited values: Channel Power in dBm, Burst Power in dBm, Average Burst Power in dBm, Span in MHz, Occupied Bandwidth in MHz, Frequency Error in MHz, Frequency Error (ppm), Modulation Type, and TSC. “- -” is returned for each data that is not valid at that instance.

Related Command: MEASURE:PVTFrame?
CONFigure:PVTFrame
READ:PVTFrame?

:FETCH:PVTSlot?

Title: Fetch Power vs. Time (Slot)

Description: Returns the most recent Power vs. Time (Slot) measurement results. The Power vs. Time (Slot) measurement must be the active measurement. The current measurement can be queried using CONFigure?? Use the CONFigure:PVTSlot command to set Power vs. Time (Slot) as the active measurement.

Data is returned as 9 comma-delimited values: Channel Power in dBm, Burst Power in dBm, Average Burst Power in dBm, Span in MHz, Occupied Bandwidth in MHz, Frequency Error in MHz, Frequency Error (ppm), Modulation Type, and TSC. “- -” is returned for each data that is not valid at that instance.

:FETCH:SPECTrum:MULTi?

Title: Fetch Multi-Channel Spectrum

Description: Returns the most recent Multi-Channel Spectrum measurement results. The Multi-Channel Spectrum measurement must be the active measurement. The current measurement can be queried using CONFigure??. Use the CONFigure:SPECTrum:MULTi command to set Multi-Channel Spectrum as the active measurement.

Data is returned as 1 value: Span in MHz.

Related Command: MEASURE:SPECTrum:MULTi?
:CONFigure:SPECTrum:MULTi
READ:SPECTrum:MULTi?

:FETCH:SPECTrum:SINGle?

Title: Fetch Single Channel Spectrum

Description: Returns the most recent Single Channel Spectrum measurement results. The Single Channel Spectrum measurement must be the active measurement. The current measurement can be queried using CONFigure?? Use the CONFigure:SPECTrum:SINGle command to set Single Channel Spectrum as the active measurement.

Data is returned as 9 comma-delimited values.

Related Command: MEASURE:PVTSlot?
:CONFigure:PVTSlot
READ:PVTSlot?
7-5 :FORMat Subsystem

This subsystem contains commands that determine the formatting of numeric data when it is transferred.

The format setting affects data in specific commands only. If a command is affected, it is noted in the command description.

:FORMat[:READings][:DATA] ASCII|INTeger,32|REAL,32
:FORMat[:READings][:DATA]?

**Title:** Numeric Data Format

**Description:** This command specifies the format in which data is returned in certain commands.

ASCII format returns the data in comma-separated ASCII format. The units are the current instrument units. This format requires many more bytes so it is the slowest format. INTeger 32 values are signed 32-bit integers in little-endian byte order. This format returns the data in 4-byte blocks. (WCDMA and Cable & Antenna only: The units are always dBm. For example, if the measured result was -12.345 dBm, that value would be sent as -12345.) REAL,32 values are 32-bit floating point numbers conforming to the IEEE 754 standard in little-endian byte order. This format returns the data in 4-byte binary format. The units are the current instrument units.

Both INTeger,32 and REAL,32 formats return a definite block length. Each transfer begins with an ASCII header such as #42204. The first digit represents the number of following digits in the header (in this example, 4). The remainder of the header indicates the number of bytes that follow the header (in this example, 2204). You then divide the number of following bytes by the number of bytes in the data format you’ve chosen (4 for both INTeger,32 and REAL,32→ so 2204/4) to get the number of data points (in this example, 551).

**Parameter:** ASCII|INTeger,32|REAL,32

**Parameter Type:** <char>

**Default Value:** ASCII

**Related Command:** :TRACe[:DATA]
7-6  :INITiate Subsystem

This subsystem controls the triggering of measurements.

:INITiate:CONTinuous OFF|ON|0|1
:INITiate:CONTinuous?

Title: Continuous/Single Sweep
Description: Specifies whether the sweep/measurement is triggered continuously. If the value is set to ON or 1, another sweep/measurement is triggered as soon as the current one completes. If continuous is set to OFF or 0, the instrument enters the “idle” state and waits for the :INITiate[:IMMediate] command or for :INITiate:CONTinuous ON. The default value is ON. That is, sending :INIT:CONT is equivalent to sending :INIT:CONT ON. The query version of the command returns a 1 if the instrument is continuously sweeping/measuring and returns a 0 if the instrument is in single sweep/measurement mode. Note that rapid toggling between ON and OFF is not allowed. The instrument must be allowed to make a full sweep before toggling can be done. Note that the set command is available only if the instrument is in Cable & Antenna mode.

Parameter: OFF|ON|0|1
Parameter Type: <boolean>
Default Value: ON
Related Command: :INITiate[:IMMediate]
:INITiate:HOLD
Front Panel Access: Shift-3 (Sweep), Sweep (Single/Continuous)

:INITiate[:IMMediate]

Title: Trigger Sweep/Measurement
Description: Initiates a sweep/measurement. If :INITiate:CONTinuous is set to ON, this command is ignored. Use this command in combination with :STATus:OPERation? to synchronize the capture of one complete set of data. When this command is sent, the “sweep complete” bit of :STATus:OPERation? is set to 0, indicating that the measurement has not completed. The data collection is then triggered. The controlling program can poll :STATus:OPERation? to determine the status. When the “sweep complete” bit is set to 1, data is ready to be retrieved.

Related Command: :INITiate:CONTinuous
:STATus:OPERation?
Front Panel Access: Shift-3 (Sweep), Trigger Sweep
7-7 :MEASure Subsystem

These commands take the instrument from its current state, enable the specified measurement and put the instrument into single sweep mode. They correct any parameters that are invalid given the new measurement state such that a valid measurement can take place. Other settings may be changed; see the documentation of CONFigure for each measurement. They then initiate the measurement. When the measurement is complete, they return the result.

To make a measurement with settings other than the “default” measurement settings applied by CONFigure, do the following:

- Send the appropriate CONFigure command to set the desired measurement.
- Modify the settings as required.
- Send the appropriate READ command to measure and return the result.

To get the current measurement data, use the appropriate FETCh command.

:MEASure:DEMod?

Title: Measure Demodulator
Description: Sets the active measurement to Demodulator, sets the default measurement parameters, triggers a new measurement and returns the Phase Error (rms), Phase Error (peak), EVM (rms), EVM (peak), Origin Offset, C/I, Magnitude Error (rms), Modulation Type, and TSC measurement. It is a combination of the following commands CONFigure:DEMod; READ:DEMod? To make a Demodulator measurement with settings other than the default values send:

CONFigure:DEMod
Commands to set desired settings
READ:DEMod?

Data is returned as 9 comma-delimited values: Phase Error (rms), Phase Error (peak), EVM (rms) in %, EVM (peak) in %, Origin Offset in dB, C/I in dB, Magnitude Error (rms) in %, Modulation Type, and TSC.

“..” is returned for each data that is not valid at that instance.

Related Command: CONFigure:DEMod
READ:DEMod?
FETCh:DEMod?

Front Panel Access: Shift-4(Measurement), Demodulator

:MEASure:PFail?

Title: Measure PASS/FAIL
Description: Sets the active measurement to PASS/FAIL, sets the default measurement parameters, triggers a new measurement and returns the PASS/FAIL results. It is a combination of the commands :CONFigure:PFail; :READ:PFail? To make a channel power measurement with settings other than the default values send:

:CONFigure PFail
Commands to set desired settings
:READ:PFail?

Related Command: :CONFigure:PFail
READ:PFail?
FETCh:PFail?

Front Panel Access: Shift-4 (Measurement), PASS/FAIL mode
:MEASURE::PVTFramen

Title: Measure Power vs. Time (Frame)
Description: Sets the active measurement to Power vs. Time (Frame), sets the default measurement parameters, triggers a new measurement and returns the Channel Power, Burst Power, Average Burst Power, Span, Occupied Bandwidth, Frequency Error, Frequency Error (ppm), Modulation Type, and TSC measurement. It is a combination of the following commands CONFigure::PVTFramen; READ::PVTFramen? To make a Power vs. Time (Frame) measurement with settings other than the default values send:

:CONFigure::PVTFramen
Commands to set desired settings
READ::PVTFramen?

Data is returned as 9 comma-delimited values: Channel Power in dBm, Burst Power in dBm, Average Burst Power in dBm, Span in MHz, Occupied Bandwidth in MHz, Frequency Error in MHz, Frequency Error (ppm), Modulation Type, and TSC. “..” is returned for each data that is not valid at that instance.

:MEASURE::PVTSlotn

Title: Measure Power vs. Time (Slot)
Description: Sets the active measurement to Power vs. Time (Slot), sets the default measurement parameters, triggers a new measurement and returns the Channel Power, Burst Power, Average Burst Power, Span, Occupied Bandwidth, Frequency Error, Frequency Error (ppm), Modulation Type, and TSC measurement. It is a combination of the following commands CONFigure::PVTSlotn; READ::PVTSlotn? To make a Power vs. Time (Slot) measurement with settings other than the default values send:

CONFigure::PVTSlotn
Commands to set desired settings
READ::PVTSlotn?

Data is returned as 9 comma-delimited values: Channel Power in dBm, Burst Power in dBm, Average Burst Power in dBm, Span in MHz, Occupied Bandwidth in MHz, Frequency Error in MHz, Frequency Error (ppm), Modulation Type, and TSC. “..” is returned for each data that is not valid at that instance.

Related Command: CONFigure::PVTSlotn
:READ::PVTSlotn?
:FETCH::PVTSlotn?

Front Panel Access: Shift-4(Measurement), Power vs. Time (Slot)
:MEASure:SPECTrum:MULTi?

**Title:** Measure Multi-Channel Spectrum

**Description:** Sets the active measurement to Multi-Channel Spectrum, sets the default measurement parameters, triggers a new measurement and returns the Span. It is a combination of the following commands: 

- CONFigure:SPECTrum:MULTi
- READ:SPECTrum:MULTi?

To make a Multi-Channel Spectrum measurement with settings other than the default values send:

- CONFigure:SPECTrum:MULTi
- Commands to set desired settings
- READ:SPECTrum:MULTi?

Data is returned as 1 value: Span in MHz.

**Related Command:** CONFigure:SPECTrum:MULTi
- READ:SPECTrum:MULTi?
- FETCH:SPECTrum:MULTi?

**Front Panel Access:** Shift-4 (Measurement), Spectrum, Multi-Channel Spectrum

:MEASure:SPECTrum:SINGle?

**Title:** Measure Single Channel Spectrum

**Description:** Sets the active measurement to Single Channel Spectrum, sets the default measurement parameters, triggers a new measurement and returns the Channel Power, Burst Power, Average Burst Power, Span, Occupied Bandwidth, Frequency Error, Frequency Error (ppm), Modulation Type, and TSC measurement. It is a combination of the following commands: 

- CONFigure:SPECTrum:SINGle
- READ:SPECTrum:SINGle?

To make a Single Channel Spectrum measurement with settings other than the default values send:

- CONFigure:SPECTrum:SINGle
- Commands to set desired settings
- READ:SPECTrum:SINGle?

Data is returned as 9 comma-delimited values: Channel Power in dBm, Burst Power in dBm, Average Burst Power in dBm, Span in MHz, Occupied Bandwidth in MHz, Frequency Error in MHz, Frequency Error (ppm), Modulation Type, and TSC. “-” is returned for each data that is not valid at that instance.

**Related Command:** CONFigure:SPECTrum:SINGle
- READ:SPECTrum:SINGle?
- FETCH:SPECTrum:SINGle?

**Front Panel Access:** Shift-4 (Measurement), Spectrum, Channel Spectrum
**7-8 :READ Subsystem**

This set of commands combines the ABORT, INITiate and FETCh commands. It aborts any current triggering sequence and sets the trigger state to idle. It then initiates a new active measurement (i.e. begins the collection of new data). When the measurement is complete, it returns the result. These commands will not switch to another measurement.

To get the current measurement data, use the FETCh command.

**:READ:DEMod?**

**Title:** Read Demodulator

**Description:** Triggers a new Demodulator measurement and returns the results: Phase Error (rms), Phase Error (peak), EVM (rms), EVM (peak), Origin Offset, C/I, Magnitude Error (rms), Modulation Type, and TSC measurement. It is a combination of the commands :ABORT; :INITiate; FETCh:DEMod? The Demodulator measurement must be the active measurement (specified by CONFigure:DEMod). The current measurement can be queried using CONFigure?

Data is returned as 9 comma-delimited values: Phase Error (rms), Phase Error (peak), EVM (rms) in %, EVM (peak) in %, Origin Offset in dB, C/I in dB, Magnitude Error (rms) in %, Modulation Type, and TSC. “-” is returned for each data that is not valid at that instance.

**Related Command:** MEASure:DEMod?

**Front Panel Access:** Shift-4(Measurement), Demodulator

**:READ:PFail?**

**Title:** Read PASS/FAIL

**Description:** Triggers a new PASS/FAIL measurement and returns the results. It is a combination of the commands :ABORT; :INITiate; FETCh:PFail? The PASS/FAIL measurement must be active. The current measurement can be queried using :CONFigure?

**Related Command:** MEASure:PFail?

**Front Panel Access:** Shift-4 (Measurement), PASS/FAIL Mode
**:READ:PVTFrame?**

**Title:** Read Power vs. Time (Frame)

**Description:** Triggers a new Power vs. Time (Frame) measurement and returns the results: Channel Power, Burst Power, Average Burst Power, Span, Occupied Bandwidth, Frequency Error, Frequency Error (ppm), Modulation Type, and TSC measurement. It is a combination of the commands :ABORT; :INITiate; FETCh:PVTFrame? The Power vs. Time (Frame) measurement must be the active measurement (specified by CONFigure:PVTFrame. The current measurement can be queried using CONFigure?

Data is returned as 9 comma-delimited values: Channel Power in dBm, Burst Power in dBm, Average Burst Power in dBm, Span in MHz, Occupied Bandwidth in MHz, Frequency Error in MHz, Frequency Error (ppm), Modulation Type, and TSC. “--” is returned for each data that is not valid at that instance.

**Related Command:** MEASure:PVTFrame?

:CONFigure:PVTFrame

:FETCh:PVTFrame?

**Front Panel Access:** Shift-4 (Measurement), Power vs. Time (Frame)

---

**:READ:PVTSlot?**

**Title:** Read Power vs. Time (Slot)

**Description:** Triggers a new Power vs. Time (Slot) measurement and returns the results: Channel Power, Burst Power, Average Burst Power, Span, Occupied Bandwidth, Frequency Error, Frequency Error (ppm), Modulation Type, and TSC measurement. Result Format See FETCh:PFail? It is a combination of the commands :ABORT; :INITiate; FETCh:PVTSlot? The Power vs. Time (Slot) measurement must be the active measurement (specified by CONFigure:PVTSlot. The current measurement can be queried using CONFigure?

Data is returned as 9 comma-delimited values: Channel Power in dBm, Burst Power in dBm, Average Burst Power in dBm, Span in MHz, Occupied Bandwidth in MHz, Frequency Error in MHz, Frequency Error (ppm), Modulation Type, and TSC. “--” is returned for each data that is not valid at that instance.

**Related Command:** MEASure:PVTSlot? CONFigure:PVTSlot FETCh:PVTSlot?

**Front Panel Access:** Shift-4 (Measurement), Power vs. Time (Slot)

---

**:READ:SPECTrum:MULTi?**

**Title:** Read Multi-Channel Spectrum

**Description:** Triggers a new Multi-Channel Spectrum measurement and returns the results: Span. It is a combination of the commands :ABORT; :INITiate; FETCh:SPECTrum:MULTi? The Multi-Channel Spectrum measurement must be the active measurement (specified by CONFigure:SPECTrum:MULTi. The current measurement can be queried using CONFigure?

Data is returned as 1 value: Span in MHz.

**Default Unit:** MHz

**Front Panel Access:** Shift-4(Measurement), Spectrum, Multi-Channel Spectrum
:READ:SPECTrum:SINGLE?

Title: Read Single Channel Spectrum

Description: Triggers a new Single Channel Spectrum measurement and returns the results: Channel Power, Burst Power, Average Burst Power, Span, Occupied Bandwidth, Frequency Error, Frequency Error (ppm), Modulation Type, and TSC measurement. It is a combination of the commands :ABORT; :INITiate; FETCh:SPECTrum:SINGLE? The Single Channel Spectrum measurement must be the active measurement (specified by CONFIGure:SPECTrum:SINGLE). The current measurement can be queried using :CONFigure?

Data is returned as 9 comma-delimited values: Channel Power in dBm, Burst Power in dBm, Average Burst Power in dBm, Span in MHz, Occupied Bandwidth in MHz, Frequency Error in MHz, Frequency Error (ppm), Modulation Type, and TSC. “..” is returned for each data that is not valid at that instance.

Related Command: MEASure:SPECTrum:SINGLE?
:CONFIGure:SPECTrum:SINGLE FETCh:SPECTrum:SINGLE?

Front Panel Access: Shift-4 (Measurement), Spectrum, Channel Spectrum
7-9 :TRACe Subsystem

This subsystem contains commands related to the transfer of trace data to and from the instrument.

:TRACe:PREamble? <trace type>

Title: Trace Header Transfer

Description: Returns trace header information for the specified trace. The <trace type> must be one of the following: SINGle|MULTi|PVTFrame|PVTSlot|DEMod

Data can be transferred to and from the 5 available display trace types. Use the commands in the MMEMory subsystem to store and recall traces from the instrument memory. The response begins with an ASCII header. The header specifies the number of following bytes. It looks like #AX, where A is the number of digits in X and X is the number of bytes that follow the header. Note that the instrument must be set in the selected view. Use the CONFigure commands to set the unit to the selected view. Parameters are returned in comma-delimited ASCII format. Each parameter is returned as “NAME=VALUE[ UNITS],” Valid parameters are shown in “GSM Parameter Names” on page 2-21.

Parameter: <trace type>

Related Command: :TRACe:DATA?

:TRACe[:DATA]? <trace type>

Title: Trace Data Transfer

Description: This command transfers trace data from the instrument to the controller. The <trace type> must be one of the following: SINGle|MULTi|PVTFrame|PVTSlot|DEMod.

The format of the block data in the query form is specified by :FORMat:DATA. The block data in the command form is always sent in ASCII format. The response begins with an ASCII header that specifies the number of data bytes. It looks like #AX, where A is the number of digits in X and X is the number of bytes that follow the header. Each data point is separated by a comma delimiter. Trace setup information can be acquired using :TRACe[:DATA]:PREamble?.

Use the commands in the MMEMory subsystem to store and recall traces from the instrument memory. Except for DEMod, there is only one value per data point. For DEMod, each data point is represented by 2 values, 4 bytes each: IData (no units), and QData (no units). For SINGle, MULTi, PVTFrame, and PVTSlot, the unit is in dBm. Note that the instrument must be set in the selected view. Use the CONFigure commands to set the unit to the selected view.

Parameter: <trace type>

Related Command: :FORMat[:DATA]

:TRACe[:DATA]:PREamble?
7-10 [:SENSe] Subsystem

The commands in this subsystem relate to device-specific parameters, not signal-oriented parameters.

[:SENSe]:FREQuency:BAND AUTO|GSM|EDGE
[:SENSe]:FREQuency:BAND?

Title: GSM/EDGE Measurement Selection
Description: This command toggles the type of signal that is measured. AUTO allows the instrument to search for a GSM or EDGE signal automatically. GSM sets the instrument to measure only GSM signals. EDGE sets the instrument to measure only EDGE signals.
The query form of the command returns the measurement mode that the instrument is currently in.

Parameter: AUTO|GSM|EDGE
Parameter Type: <char>
Default Value: AUTO
Front Panel Access: Setup, GSM/EDGE Select

[:SENSe]:FREQuency:CENTer <freq>
[:SENSe]:FREQuency:CENTer?

Title: Center Frequency
Description: Sets the center frequency. Note that changing the value of the center frequency will change the value of the coupled parameters Start Frequency and Stop Frequency. It may also change the value of the span.

Parameter: <freq>
Default Value: 1 GHz
Default Unit: Hz
Range: 0 Hz to 7.1 GHz
Front Panel Access: Freq, Center Freq

[:SENSe]:FREQuency:SIGStandard <index>
[:SENSe]:FREQuency:SIGStandard?

Title: Signal Standard
Description: Selects the desired signal standard from the list. The <index> argument is a 1-based index of the position of the desired signal standard in the instrument’s current signal standard list. The list can be seen on the instrument by choosing the “Signal Standard” soft-key button in the “Frequency” menu. The list can also be downloaded remotely and viewed using Anritsu Master Software Tools. For example, if the desired Signal Standard is the 3rd item on the list then the value of the <index> argument would be 3.
The query form of this command will return the index of the currently-selected Signal Standard on the list.

Parameter: <index>
Front Panel Access: Frequency, Signal Standard
[:SENSe]:FREQuency:SIGStandard:CHANnel <number>
[:SENSe]:FREQuency:SIGStandard:CHANnel?

**Title:** Channel Selection
**Description:** Sets the channel number for the selected signal standard.
**Parameter:** <number>

Front Panel Access: Frequency, Channel

[:SENSe]:FREQuency:STARt?

**Title:** Start Frequency
**Description:** Queries the start frequency of the Multi-Channel Spectrum. Note that this command is valid only if the current view is set to Multi-Channel Spectrum.
**Parameter:** <freq>
**Default Unit:** Hz

Related Command: [:SENSe]:FREQuency:STOP?

[:SENSe]:FREQuency:STOP?

**Title:** Stop Frequency
**Description:** Queries the stop frequency of the Multi-Channel Spectrum. Note that this command is valid only if the current view is set to Multi-Channel Spectrum.
**Parameter:** <freq>
**Default Unit:** Hz

[:SENSe]:PFail <test set>
[:SENSe]:PFail?

**Title:** PASS/FAIL Test Selection
**Description:** Selects the active test set to be used in subsequent PASS/FAIL measurements. The <test set> value must correspond to a test set that is defined in the test set list. To view the list on the instrument, go into the “Measurement” menu, press the “Pass/Fail Mode” key, and then press the “Select Pass/Fail Test” soft key. Alternatively, the list can be retrieved remotely and viewed using the Anritsu Master Software Tools. The <test set> argument is a 1-based index of the position of the desired Pass/Fail test set in the instrument’s current Pass/Fail test set list. For example, if the desired Pass/Fail test is the 3rd item on the list then the value of the <test set> argument would be 3.

When using the query form of the command, the return value is the currently selected test set number. If there is not a valid test set selected, the return value is “–1” (negative 1).

**Parameter:** <test set>

Related Command: :CONFigure:PFail

Front Panel Access: Measurement, Pass/Fail Mode, Select Pass/Fail Test
[:SENSe]:POWer[:RF]:RANGe:AUTO OFF|ON|0|1
[:SENSe]:POWer[:RF]:RANGe:AUTO?

Title: Automatic Amplitude Range

Description: Sets the automatic amplitude range. Setting the value to ON or 1 will result in the amplitude range being coupled to the detected input signal level. Setting the value to OFF or 0 will result in the input attenuation being un-coupled from the input signal level. That is, changing the input signal level will not change the amplitude range. When this command is issued, the amplitude range itself will not change. The default value is ON. That is, sending :SENS:POW:RANG:AUTO is equivalent to sending :SENS:POW:RANG:AUTO ON.

Parameter: OFF|ON|0|1
Parameter Type: <boolean>
Default Value: ON
Related Command: [:SENSe]:POWer[:RF]:RANGe
Front Panel Access: Amplitude, Auto Range

[:SENSe]:POWer[:RF]:RANGe[:IMMediate]

Title: Amplitude Range

Description: Re-calculates amplitude range. Note that issuing this command will set the automatic dynamic range OFF.

Related Command: [:SENSe]:POWer[:RF]:RANGe:AUTO
Front Panel Access: Amplitude, Adjust Range

[:SENSe]:PVTFrame:STARt?

Title: Power vs. Time (Frame) Start Time

Description: Queries the Power vs. Time (Frame) start time. Only valid in the Power vs. Time (Frame) measurement.

Default Unit: seconds
Related Command: [:SENSe]:PVTFrame:STOP?

[:SENSe]:PVTFrame:STOP?

Title: Power vs. Time (Frame) Stop Time

Description: Queries the Power vs. Time (Frame) stop time. Only valid in the Power vs. Time (Frame) measurement.

Default Unit: seconds
Related Command: [:SENSe]:PVTFrame:STARt?

[:SENSe]:PVTSlot:STARt?

Title: Power vs. Time (Slot) Start Time

Description: Queries the Power vs. Time (Slot) start time. Only valid in the Power vs. Time (Slot) measurement.

Default Unit: seconds
Related Command: [:SENSe]:PVTSlot:STOP?
[:SENSe]:PVTSlot:STOP?

Title:  Power vs. Time (Slot) Stop Time

Description: Queries the Power vs. Time (Slot) stop time. Only valid in the Power vs. Time (Slot) measurement.

Default Unit: seconds

Related Command: [:SENSe]:PVTSlot:STARt?
8-1 :ABORt Subsystem

The abort subsystem includes commands that allow the user to stop current measurement activities on the instrument.

:ABORt

Title: Abort

Description: Restarts the current sweep and/or measurement. Resets the trigger system. If :INITiate:CONTinuous is OFF (i.e. the instrument is in single sweep mode), send the command :INITiate[:IMMediate] to trigger the next sweep. If :INITiate:CONTinuous is ON (i.e. the instrument is in continuous sweep mode) a new sweep will start immediately.

Parameter: NA

Related Command: :INITiate:CONTinuous
                :INITiate[:IMMediate]

Front Panel Access: Shift-3 (Sweep), Reset Sweep
8-2 :CALCulate Subsystem

The commands in this subsystem process data that has been collected via the SENSe subsystem.

:CALCulate:MARKer:AOFF

Title: Turn All Markers Off
Description: Turns off all markers.
Front Panel Access: Marker, All Markers Off

:CALCulate:MARKer{1|2|3|4|5|6}:X <x-parameter>
:CALCulate:MARKer{1|2|3|4|5|6}:X?

Title: Marker X Value
Description: Sets the location of the marker on the x-axis at the specified location. <x-parameter> is defined in the current x-axis units. The query version of the command returns the location of the marker on the x-axis. Note that the marker is snapped to the data point closest to the specified value. If the specified marker is not on it is set to on.
Parameter: <x-parameter>
Default Unit: Current x-axis unit
Example: To set reference marker #2 to 5 hertz on the x-axis:
:CALCulate:MARKer2:X 5
:CALCulate:MARKer2:X 5Hz
To set reference marker #1 to 1.5 GHz on the x-axis:
:CALCulate:MARKer:X 1.5GHz
:CALCulate:MARKer1:X 1.5GHz

:CALCulate:MARKer{1|2|3|4|5|6}:Y?

Title: Marker Read Y Value
Description: Reads the current Y value for the specified marker. The units are the units of the y-axis.
Default Unit: Current y-axis unit

:CALCulate:MARKer{1|2|3|4|5|6}[:STATe] OFF|ON|0|1
:CALCulate:MARKer{1|2|3|4|5|6}[:STATe]?

Title: Marker State
Description: Sets the specified marker on/off.
Parameter: OFF|ON|0|1
Parameter Type: <boolean>
Default Value: OFF
Example: To turn off reference marker #1:
:CALCulate:MARKer1:STATe OFF
Front Panel Access: Marker, On/Off
8-3 :CONFigure Subsystem

This set of commands prepares the instrument for the selected measurement. It disables any currently-enabled measurements and activates the specified measurement. It sets the instrument to single sweep mode, waiting for an :INITiate command. It will not initiate the taking of a measurement.

Current instrument settings may be changed to default values. These changes are identified with their respective measurement commands.

:CONFigure SUMMARY|PFail

Title: Configure Summary Measurement
Description: This command configures the UMTS Summary or PASS/FAIL measurement. It disables any other active measurements. None of the instrument parameters are changed by the execution of this command. Sets the instrument to single sweep mode (:INITiate:CONTinuous OFF). Measurement settings can be modified by using the [:SENSe] commands before initiating a measurement. In SUMMARY mode, the measurement results are equivalent to the results that are displayed by choosing Measurements, then WCDMA Summary from the front panel. In PFail mode, the results are equivalent to those that are displayed by choosing Measurements, then Pass Fail Mode from the front panel. This set of commands returns the most recent measurement data of the active measurement. They will not switch to another measurement. To get new measurement data, use the READ command.

Parameter: SUMMARY | PFail
Parameter Type: <char>

:CONFigure:DEMod <char>

Title: Configure Demodulation Measurement
Description: Valid <char> parameter options: SUMMary | CDPower | CODogram | HSDPa
The HSDPA measurement is only available if option 65 is installed. This command configures the selected demodulation measurement. It disables any other active measurements. None of the instrument parameters are changed by the execution of this command. Sets the instrument to single sweep mode (:INITiate:CONTinuous OFF). Measurement settings can be modified by using the [:SENSe]:DEMod commands before initiating a measurement.

When the SUMMARY option is selected, the measurement results are equivalent to the results that are displayed by choosing Measurements, then Demod, then Summary from the front panel. When the CDP option is selected, the measurement results are equivalent to the results that are displayed by choosing Measurements, then Demod, then CDP from the front panel. When the CODOGRAM option is selected, the measurement results are equivalent to the results that are displayed by choosing Measurements, then Demod, then Codogram from the front panel. When the HSDPa option is selected, the measurement results are equivalent to the results that are displayed by choosing Measurements, then Demod, then HSDPA from the front panel.

Parameter: <char>
Related Command: [:SENSe]:DEMod:SCODE
[:SENSe]:DEMod:SFACtor
[:SENSe]:DEMod:THRShold
[:SENSe]:DEMod:PICH:CODE
[:SENSe]:DEMod:SCCPch:CODE

Front Panel Access: Shift-4 (Measurement), Demodulator
8-3 :CONFigure Subsystem

**Title:** Configure Over-The-Air Measurement

**Description:** This command configures the over-the-air measurement. It disables any other active measurements. None of the instrument parameters are changed by the execution of this command. Sets the instrument to single sweep mode (:INITiate:CONTinuous OFF). Measurement settings can be modified by using the [:SENSe]:OTA commands before initiating a measurement. The measurement results are equivalent to the results that are displayed by choosing Measurements, then OTA from the front panel.

**Related Command:** [:SENSe]:OTA:RESet
[:SENSe]:OTA:SCODe
[:SENSe]:OTA:SORT

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**Title:** Configure RF Measurement

**Description:** Valid parameter options: SUMMary|SPECtrum|ACLR|EMISsion|BANDspectrum

This command configures the selected RF measurement. It disables any other active measurements. None of the instrument parameters are changed by the execution of this command. Sets the instrument to single sweep mode (:INITiate:CONTinuous OFF). Measurement settings can be modified by using the [:SENSe]:RF commands before initiating a measurement.

When the SUMMary option is selected, the measurement results are equivalent to the results that are displayed by choosing Measurements, then RF, then Summary from the front panel. When the SPECtrum option is selected, the measurement results are equivalent to the results that are displayed by choosing Measurements, then RF, then Channel Spectrum from the front panel. When the ACLR option is selected, the measurement results are equivalent to the results that are displayed by choosing Measurements, then RF, then ACLR from the front panel. When the EMISsion option is selected, the measurement results are equivalent to the results that are displayed by choosing Measurements, then RF, then Spectral Emission Mask from the front panel. When the BANDspectrum option is selected, the measurement results are equivalent to the results that are displayed by choosing Measurements, then RF, then Band Spectrum from the front panel.

**Parameter:** <char>

**Related Command:** [:SENSe]:FREQuency
[:SENSe]:RF:ACLR:MAINchannelcount
[:SENSe]:RF:ACLR:ADJCchannelcount
8-4 :DISPLAY Subsystem

This subsystem provides commands that modify the display of data for the user. They do not modify the way in which data are returned to the controller.

:DISPLAY:WINDOW:TRACE:Y[:SCALE]:OFFSET <rel ampl>
:DISPLAY:WINDOW:TRACE:Y[:SCALE]:OFFSET?

Title: Power Offset
Description: Sets the power offset value for the y-axis.
Parameter: <rel ampl>
Default Value: 0 dB
Default Unit: dB
Range: 0 dB to 100 dB
Front Panel Access: Amplitude, Power Offset

:DISPLAY:WINDOW:TRACE:Y[:SCALE]:PDIVision <rel ampl>
:DISPLAY:WINDOW:TRACE:Y[:SCALE]:PDIVision?

Title: Scale
Description: Sets the scale (dB/division) for the y-axis.
Parameter: <rel ampl>
Default Value: 10 dB/div
Default Unit: dB
Range: 1 dB to 15 dB
Front Panel Access: Amplitude, Scale
8-5 :FETCh Subsystem

This set of commands returns the most recent measurement data of the active measurement. They will not switch to another measurement.

To make a new measurement, use the INITiate command. To get new measurement data, use the READ or MEASure query commands.

: FETCh : ACLR?

Title: Fetch Adjacent Channel Leakage Ratio
Description: Returns the most recent adjacent channel leakage ratio measurement results. If the instrument is sweeping, it will not return until the sweep is complete. If the instrument is not sweeping and the current data is not valid it will return error -230. This could occur if there was a *RST immediately before the :FETCh? or if a measurement parameter was changed without an :INITiate.

Data is returned as 12 comma-separated values: -20 MHz channel power, -15 MHz channel power, -10 MHz channel power, -5 MHz channel power, Main channel power 1, Main channel power 2, Main channel power 3, Main channel power 4, +5 MHz channel power, +10 MHz channel power, +15 MHz channel power, +20 MHz channel power.

Default Unit: dBm

: FETCh : CHPower?

Title: Fetch Channel Power/Density
Description: Returns the most recent channel power measurement results. If the instrument is sweeping, it will not return until the sweep is complete. If the instrument is not sweeping and the current data is not valid it will return error -230. This could occur if there was a *RST immediately before the :FETCh? or if a measurement parameter was changed without an :INITiate.

Default Unit: dBm

Related Command: : FETCh : CHPower : CHPower?
: FETCh : CHPower : DENSity?

: FETCh : DEMod : ACTChannels?

Title: Fetch Active Channel Count
Description: Returns the active channel count from the most recent measurement results. If the instrument is sweeping, it will not return until the sweep is complete. If the instrument is not sweeping and the current data is not valid it will return error -230. This could occur if there was a *RST immediately before the :FETCh? or if a measurement parameter was changed without an :INITiate.

Data is returned as a single value representing the total number of active channels.

Default Unit: No Units
:FETCH:DEMOD:CDPower?

Title: Fetch Demodulated Channel Power

Description: Returns the most recent absolute power measurement results for the requested logical channel. If the instrument is sweeping, it will not return until the sweep is complete. If the instrument is not sweeping and the current data is not valid it will return error -230. This could occur if there was a *RST immediately before the :FETCh? or if a measurement parameter was changed without an :INITiate.

Data is returned as 4 comma-delimited values: CPICH power, PCCPCH power, PICH power, SCCPCH power.

Default Unit: dBm

Related Command: :CONFIGure:DEMOD CDPower
                  :MEASure:DEMOD:CDPower?
                  :READ:DEMOD:CDPower?

Front Panel Access: Measurement, Demodulator, CDP

:FETCH:DEMOD:CFTThrough?

Title: Fetch Carrier Feed Through

Description: Returns the most recent carrier feed through measurement results. If the instrument is sweeping, it will not return until the sweep is complete. If the instrument is not sweeping and the current data is not valid it will return error -230. This could occur if there was a *RST immediately before the :FETCh? or if a measurement parameter was changed without an :INITiate.

Data is returned as a single value representing the carrier feed through.

Default Unit: dB

:FETCH:DEMOD:EVM?

Title: Fetch Error Vector Magnitude (EVM)

Description: Returns the most recent EVM measurement result. If the instrument is sweeping, it will not return until the sweep is complete. If the instrument is not sweeping and the current data is not valid it will return error -230. This could occur if there was a *RST immediately before the :FETCh? or if a measurement parameter was changed without an :INITiate.

Data is returned as a single value representing the RMS error vector magnitude

Default Unit: %

:FETCH:DEMOD:FERRor:PPM?

Title: Fetch Frequency Error PPM

Description: Returns the most recent frequency error PPM measurement result. If the instrument is sweeping, it will not return until the sweep is complete. If the instrument is not sweeping and the current data is not valid it will return error -230. This could occur if there was a *RST immediately before the :FETCh? or if a measurement parameter was changed without an :INITiate.

Data is returned as a single value representing the frequency error PPM.

Default Unit: No units

Related Command: :MEASure:DEMOD:FERRor:PPM?
                  :READ:DEMOD:FERRor:PPM?
:FETCH:DEMOD:FERRor:PRECise?

Title: Fetch Frequency Error
Description: Returns the most recent frequency error measurement result. If the instrument is sweeping, it will not return until the sweep is complete. If the instrument is not sweeping and the current data is not valid it will return error –230. This could occur if there was a *RST immediately before the :FETCH? or if a measurement parameter was changed without an :INITiate.

Data is returned as a single value representing the frequency error. Note that this command is the same as :FETCH:DEMod:FERRor?, but returns the result with a precision of one-tenth Hertz.

Default Unit: Hertz

:FETCH:DEMOD:FERRor?

Title: Fetch Frequency Error
Description: Returns the most recent frequency error measurement result. If the instrument is sweeping, it will not return until the sweep is complete. If the instrument is not sweeping and the current data is not valid it will return error –230. This could occur if there was a *RST immediately before the :FETCH? or if a measurement parameter was changed without an :INITiate.

Data is returned as a single value representing the frequency error.

Default Unit: Hertz

:FETCH:DEMOD:HSDPa:FERRor:PPM?

Title: Fetch HSDPA Frequency Error PPM
Description: Returns the most recent HSDPA frequency error PPM measurement result. If the instrument is sweeping, it will not return until the sweep is complete. If the instrument is not sweeping and the current data is not valid it will return error –230. This could occur if there was a *RST immediately before the :FETCH? or if a measurement parameter was changed without an :INITiate.

Data is returned as a single value representing the HSDPA frequency error PPM.

Default Unit: No units
Related Command: MEASURE:DEMOD:HSDPa:FERRor:PPM?
READ:DEMOD:HSDPa:FERRor:PPM?

:FETCH:DEMOD:HSDPa:FERRor?

Title: Fetch HSDPA Frequency Error
Description: Returns the most recent HSDPA frequency error measurement result. If the instrument is sweeping, it will not return until the sweep is complete. If the instrument is not sweeping and the current data is not valid it will return error –230. This could occur if there was a *RST immediately before the :FETCH? or if a measurement parameter was changed without an :INITiate.

Data is returned as a single value representing the HSDPA frequency error.

Default Unit: Hertz
:**FETCh:**DEMod:**HSDPa:**TXFRequency?  
**Title:** Fetch HSDPA Transmitter Frequency  
**Description:** Returns the most recent HSDPA transmitter frequency measurement results. If the instrument is sweeping, it will not return until the sweep is complete. If the instrument is not sweeping and the current data is not valid it will return error –230. This could occur if there was a *RST immediately before the :FETCh? or if a measurement parameter was changed without an :INITiate.  
Data is returned as a single value representing the HSDPA carrier frequency.  
**Default Unit:** Hertz  
**Related Command:**  
:MEASure:**DEMod:**HSDPa:**TXFRequency?  
:READ:**DEMod:**HSDPa:**TXFRequency?  

:**FETCh:**DEMod:**NFLoor?  
**Title:** Fetch Code Domain Noise Floor  
**Description:** Returns the most recent code domain noise floor measurement result. If the instrument is sweeping, it will not return until the sweep is complete. If the instrument is not sweeping and the current data is not valid it will return error –230. This could occur if there was a *RST immediately before the :FETCh? or if a measurement parameter was changed without an :INITiate.  
Data is returned as a single value representing the noise floor power level.  
**Default Unit:** dB  

:**FETCh:**DEMod:**NUMChannels?  
**Title:** Fetch Total Channel Count  
**Description:** Returns the total channel count from the most recent measurement results. If the instrument is sweeping, it will not return until the sweep is complete. If the instrument is not sweeping and the current data is not valid it will return error –230. This could occur if there was a *RST immediately before the :FETCh? or if a measurement parameter was changed without an :INITiate.  
Data is returned as a single value representing the total number of channels.  
**Default Unit:** No units  

:**FETCh:**DEMod:**SPower?  
**Title:** Fetch Synch Channel Power  
**Description:** Returns the most recent absolute power measurement results for the requested synch channel. If the instrument is sweeping, it will not return until the sweep is complete. If the instrument is not sweeping and the current data is not valid it will return error –230. This could occur if there was a *RST immediately before the :FETCh? or if a measurement parameter was changed without an :INITiate.  
Data is returned as 3 comma-delimited values: SCH power, PSCH power, SSCH power.  
**Default Unit:** dBm
:FETCH:DEMod:SUMMary?

Title: Fetch Modulation Summary
Description: Returns the most recent Modulation Summary measurement results. Data is returned as 13 comma-delimited values: Carrier Frequency, Frequency Error, channel Power, P-CPICH Power, Carrier Feed Through, Peak CDE, EVM, P-CCPCH Power, S-CCPCH Power, PICH Power, PSCH Power, SSCH Power, RMS Phase Er (deg). All invalid values are replaced with “...”. Power units are in watt or dBm as per what is set by the user. Frequency is always in Hz.

Related Command: :CONFigure:DEMod SUMMary
:MEASure:DEMod:SUMMary?
:READ:DEMod:SUMMary?

Front Panel Access: Measurements, Demodulator, Modulation Summary

:FETCh:DEMod:TXFRequency:PRECise?

Title: Fetch Transmitter Frequency
Description: Returns the most recent transmitter frequency measurement results. If the instrument is sweeping, it will not return until the sweep is complete. If the instrument is not sweeping and the current data is not valid it will return error –230. This could occur if there was an *RST immediately before the :FETCh? or if a measurement parameter was changed without an :INITiate.

Data is returned as a single value representing the carrier frequency. Note that this command is the same as :FETCh:DEMod:TXFRequency?, but returns the result with a precision of one-tenth Hertz.

Default Unit: Hertz

:FETCh:DEMod:TXFRequency?

Title: Fetch Transmitter Frequency
Description: Returns the most recent transmitter frequency measurement results. If the instrument is sweeping, it will not return until the sweep is complete. If the instrument is not sweeping and the current data is not valid it will return error –230. This could occur if there was an *RST immediately before the :FETCh? or if a measurement parameter was changed without an :INITiate.

Data is returned as a single value representing the carrier frequency.

Default Unit: Hertz

:FETCh:EMISsion:FAIL?

Title: Fetch Spectral Emission Mask Pass/Fail
Description: Returns the most recent spectral emission mask pass/fail measurement result. Any violation of the spectral emission mask template will cause a FAIL result. If the instrument is sweeping, it will not return until the sweep is complete. If the instrument is not sweeping and the current data is not valid it will return error –230. This could occur if there was an *RST immediately before the :FETCh? or if a measurement parameter was changed without an :INITiate.

Data is returned as a single value indicating the PASS/FAIL status of the spectral emission mask measurement (PASS = 0, FAIL = 1).

Default Unit: No units
Title: Fetch Spectral Emission Mask Template Data

Description: Returns the spectral emission mask template power level, frequency, and PASS/FAIL data for all ten frequency ranges shown in the Spectral Emission Summary. If the instrument is sweeping, it will not return until the sweep is complete. If the instrument is not sweeping and the current data is not valid it will return error –230. This could occur if there was a *RST immediately before the :FETCh? or if a measurement parameter was changed without an :INITiate. Any violation of the spectral emission mask template will cause a FAIL result.

For each frequency range, the data is returned as 3 comma delimited values: Power Level in dBm, Frequency in Hz, and PASS/FAIL. The order in which the data is returned is shown below (from top to bottom).

Range: -12.5 MHz to -8 MHz
-8 MHz to -4 MHz
-4 MHz to -3.515 MHz
-3.515 MHz to -2.715 MHz
-2.715 MHz to -2.515 MHz
2.515 MHz to 2.715 MHz
2.715 MHz to 3.515 MHz
3.515 MHz to 4 MHz
4 MHz to 8 MHz
8 MHz to 12.5 MHz

Related Command: MEASure:EMISSion:TEMPPlate:DATA?
READ:EMISSion:TEMPPlate:DATA?

Title: Fetch Spectral Emission Mask Template

Description: Returns the spectral emission mask template used for the most recent spectral emission mask measurement. Any violation of the spectral emission mask template will cause a FAIL result. If the instrument is sweeping, it will not return until the sweep is complete. If the instrument is not sweeping and the current data is not valid it will return error –230. This could occur if there was a *RST immediately before the :FETCh? or if a measurement parameter was changed without an :INITiate.

Data is returned as a single value representing the template used for the current spectral emission mask measurement results.

Templates:
Template 0: Power >= 43 dBm
Template 1: 43 dBm > Power >= 39 dBm
Template 2: 39 dBm > Power >= 31 dBm
Template 3: Power < 31 dBm

Default Unit: No units
:**FETCh:EMISsion?**

**Title:** Fetch Spectral Emission Mask Results

**Description:** Returns the most recent spectral emission mask pass/fail and template measurement results. Any violation of the spectral emission mask template will cause a FAIL result. If the instrument is sweeping, it will not return until the sweep is complete. If the instrument is not sweeping and the current data is not valid it will return error -230. This could occur if there was a *RST immediately before the :FETCh? or if a measurement parameter was changed without an :INITiate.

Data is returned as 2 comma-delimited values: PASS/FAIL status (PASS = 0, FAIL = 1), template number. See :FETCh:EMISsion:TEMPlate command for valid template numbers.

**Default Unit:** No units

**Related Command:** :FETCh:EMISsion:FAIL?
:FETCh:EMISsion:TEMPlate?

:**FETCh:OBWidth?**

**Title:** Fetch Occupied Bandwidth

**Description:** Returns the most recent occupied bandwidth measurement results. If the instrument is sweeping, it will not return until the sweep is complete. If the instrument is not sweeping and the current data is not valid it will return error -230. This could occur if there was a *RST immediately before the :FETCh? or if a measurement parameter was changed without an :INITiate.

**Default Unit:** Hz

:**FETCh:OTA{1|2|3|4|5|6}?**

**Title:** Fetch Over The Air

**Description:** Returns the most recent over-the-air measurement results. If the instrument is sweeping, it will not return until the sweep is complete. If the instrument is not sweeping and the current data is not valid it will return error -230. This could occur if there was a *RST immediately before the :FETCh? or if a measurement parameter was changed without an :INITiate.

The measurement results are returned as 5 comma delimited values: scrambling code, CPICH power, chip energy, Ec/I0 ratio, pilot dominance. If valid results are not available in the requested position (1-6), the returned string will contain a series of 3 dashes “---” instead of the numeric results.

**Default Unit:**
- Scrambling Code: No units
- CPICH power: dBm
- EC/I0: dB
- Chip Energy: dBm
- Pilot dominance: No units
:FETCH:PFail?

Title: Fetch PASS/FAIL

Description: Returns the most recent PASS/FAIL measurement results. If the instrument is actively measuring, it will not return until the measurement is complete. If the instrument is not actively measuring and the current data is not valid it will return error -230. This could occur if there was a *RST immediately before the :FETCH? or if a measurement parameter was changed without an :INITiate. Measurement results are returned in a block of ASCII text in the format of <header><block>. The ASCII header specifies the number of data bytes. It looks like #AX, where A is the number of digits in X and X is the number of bytes in the <block>. The block consists of a set of records which indicate individual test results. Records are comma-separated. Each record follows the format <test ID>: <input1> <input2> <min> <max> <value1> <value2> <PASS/FAIL/OPTION NOT INSTALLED>. The <test ID> field indicates which test was performed to retrieve these results. The <input1> and <input2> fields indicate the test setup. The <min> and <max> fields indicate the minimum and maximum values against which <value1> and <value2> were compared to arrive at the final PASS/FAIL result. If the specified test is not available in the instrument, the <PASS/FAIL> field will indicate “option not available” instead of “pass” or “fail”. All unused fields for a given test are represented by a double dash (“--”).

Related Command: MEASURE:PFail?
:CONFIGURE:PFail
READ:PFail?

:FETCH:PTAPower?

Title: Fetch Peak to Average Power Ratio

Description: Returns the most recent peak to average power ratio measurement result. If the instrument is sweeping, it will not return until the sweep is complete. If the instrument is not sweeping and the current data is not valid it will return error -230. This could occur if there was a *RST immediately before the :FETCH? or if a measurement parameter was changed without an :INITiate.

Default Unit: dB

:FETCH:RF:SUMmary?

Title: Fetch RF Summary

Description: Returns the most recent RF Summary measurement results. Data is returned as 10 comma-delimited values: Channel Power, Carrier Frequency, Frequency Error, Spectral Emission, Occupied Bandwidth, Peak to Avg Power, Filtered -10MHz, Filtered -5 MHz, Filtered 5MHz, Filtered 10 MHz. All invalid values are replaced with “--”. Power units are in watt or dBm as per what is set by the user. Frequency is always in Hz.

Related Command: :CONFIGURE:RF SUMmary
:MEASURE:RF:SUMmary?
:READ:RF:SUMmary?

Front Panel Access: Measurements, RF, RF Summary
8-6 :FORMat Subsystem

This subsystem contains commands that determine the formatting of numeric data when it is transferred. The format setting affects data in specific commands only. If a command is affected, it is noted in the command description.

:FORMat[:READings][:DATA] ASCii|INTeger,32|REAL,32
:FORMat[:READings][:DATA]?

Title: Numeric Data Format

Description: This command specifies the format in which data is returned in certain commands. ASCii format returns the data in comma-separated ASCII format. The units are the current instrument units. This format requires many more bytes so it is the slowest format. INTeger 32 values are signed 32-bit integers in little-endian byte order. This format returns the data in 4-byte blocks. The units are always mdBm. For example, if the measured result was -12.345 dBm, that value would be sent as -12345.) REAL,32 values are 32-bit floating point numbers conforming to the IEEE 754 standard in little-endian byte order. This format returns the data in 4-byte binary format. The units are the current instrument units.

Both INTeger,32 and REAL,32 formats return a definite block length. Each transfer begins with an ASCII header such as #42204. The first digit represents the number of following digits in the header (in this example, 4). The remainder of the header indicates the number of bytes that follow the header (in this example, 2204). You then divide the number of following bytes by the number of bytes in the data format you’ve chosen (4 for both INTeger,32 and REAL,32 so 2204/4) to get the number of data points (in this example, 551).

Parameter: ASCii | INTeger,32 | REAL,32

Parameter Type: <char>

Default Value: ASCii

Related Command: :TRACe[:DATA]
8-7 :INITiate Subsystem

This subsystem controls the triggering of measurements.

:INITiate:CONTinuous OFF|ON|0|1
:INITiate:CONTinuous?

Title: Continuous/Single Sweep
Description: Specifies whether the sweep/measurement is triggered continuously. If the value is set to ON or 1, another sweep/measurement is triggered as soon as the current one completes. If continuous is set to OFF or 0, the instrument enters the “idle” state and waits for the :INITiate[:IMMediate] command or for :INITiate:CONTinuous ON. The default value is ON. That is, sending :INIT:CONT is equivalent to sending :INIT:CONT ON. The query version of the command returns a 1 if the instrument is continuously sweeping/measuring and returns a 0 if the instrument is in single sweep/measurement mode. Note that rapid toggling between ON and OFF is not allowed. The instrument must be allowed to make a full sweep before toggling can be done. Note that the set command is available only if the instrument is in Cable & Antenna mode.

Parameter: OFF|ON|0|1
Parameter Type: <boolean>
Default Value: ON
Related Command: :INITiate[:IMMediate]
:INITiate:HOLD
Front Panel Access: Shift-3 (Sweep), Sweep (Single/Continuous)

:INITiate[:IMMediate]

Title: Trigger Sweep/Measurement
Description: Initiates a sweep/measurement. If :INITiate:CONTinuous is set to ON, this command is ignored. Use this command in combination with :STATus:OPERation? to synchronize the capture of one complete set of data. When this command is sent, the “sweep complete” bit of :STATus:OPERation? is set to 0, indicating that the measurement has not completed. The data collection is then triggered. The controlling program can poll :STATus:OPERation? to determine the status. When the “sweep complete” bit is set to 1, data is ready to be retrieved.

Related Command: :INITiate:CONTinuous
:STATus:OPERation?
Front Panel Access: Shift-3 (Sweep), Trigger Sweep
8-8 :MEASure Subsystem

These commands take the instrument from its current state, enable the specified measurement and put the instrument into single sweep mode. They correct any parameters that are invalid given the new measurement state such that a valid measurement can take place. Other settings may be changed; see the documentation of CONFigure for each measurement. They then initiate the measurement. When the measurement is complete, they return the result.

To make a measurement with settings other than the “default” measurement settings applied by CONFigure, do the following:

- Send the appropriate CONFigure command to set the desired measurement.
- Modify the settings as required.
- Send the appropriate READ command to measure and return the result.

To get the current measurement data, use the appropriate FETCh command.

:MEASure:ACLR?

Title: Measure Adjacent Channel Leakage Ratio

Description: Sets the active measurement to adjacent channel power ratio, sets the default measurement parameters, triggers a new measurement and returns the main channel(s) power, and adjacent channel(s) power. It is a combination of the commands :CONFigure:RF ACLR; :READ:ACLR? For a description of the default adjacent channel power ratio measurement parameters see :CONFigure:RF ACLR. To make an adjacent channel power ratio measurement with settings other than the default values send:

:CONFigure:RF ACLR

Commands to set desired settings
:READ:ACLR?

Data is returned as 12 comma-separated values: -20 MHz channel power, -15 MHz channel power, -10 MHz channel power, -5 MHz channel power, Main channel power 1, Main channel power 2, Main channel power 3, Main channel power 4, +5 MHz channel power, +10 MHz channel power, +15 MHz channel power, +20 MHz channel power.

Default Unit: dBm

:MEASure:CHPower?

Title: Measure Channel Power

Description: Sets the active measurement to Code Domain Power (CDP), sets the default measurement parameters, triggers a new measurement and returns the channel power results. It is a combination of the commands :CONFigure:DEMod CDPower; :READ:CHPower? For a description of the default channel power measurement parameters see :CONFigure:DEMod CDPower. To make a channel power measurement with settings other than the default values send:

:CONFigure:DEMOd CDPower

Commands to set desired settings
:READ:CHPower?

Default Unit: dBm

Related Command: :CONFigure:DEMod CDPower
:MEASure:DEMod:ACTChannels?

Title: Measure Active Code Domain Channels

Description: Sets the active measurement to code domain power, sets the default measurement parameters, triggers a new measurement and returns the number of active traffic channels. It is a combination of the commands :CONFigure:DEMod CDP; :READ:DEMod:ACTChannels? For a description of the default code domain power measurement parameters see :CONFigure:DEMod CDP.

Related Command: :CONFigure:RF ACLR
:CONFigure:DEMod:CDP

:MEASure:DEMod:CDPower?

Title: Measure Code Domain Power

Description: Sets the active measurement to code domain power, sets the default measurement parameters, triggers a new measurement and returns the channel power results. It is a combination of the commands :CONFigure:DEMod CDpower; :READ:DEMod:CDPower? For a description of the default channel power measurement parameters see :CONFigure:DEMod CDpower. To make a code domain power measurement with settings other than the default values send:

:CONFigure:DEMod CDpower
Commands to set desired settings
:READ:DEMod:CDPower?

Results are returned as 4 comma-delimited values: CPICH power, PCCPCH power, PICH power, SCCPCH power.

Default Unit: dBm

Related Command: :CONFigure:DEMod CDpower
:READ:DEMod:CDPower?
FETCh:DEMod:CDPower?

:MEASure:DEMod:CFTThrough?

Title: Measure Carrier Feed Through

Description: Sets the active measurement to code domain power, sets the default measurement parameters, triggers a new measurement and returns the carrier feed through results. It is a combination of the commands :CONFigure:DEMod CDP; :READ:DEMod:CFTThrough? For a description of the default code domain power measurement parameters see :CONFigure:DEMod CDP. To make a carrier feed through measurement with settings other than the default values send:

:CONFigure:DEMod CDP
Commands to set desired settings
:READ:DEMod:CFTThrough?

Default Unit: dB

Related Command: :CONFigure:DEMod CDP
:MEASure:DEMod:EVM?

Title: Measure Error Vector Magnitude
Description: Sets the active measurement to code domain power, sets the default measurement parameters, triggers a new measurement and returns the EVM results. It is a combination of the commands :CONFigure:DEMod CDP; :READ:DEMod:EVM? For a description of the default code domain power measurement parameters see :CONFigure:DEMod CDP. To make a carrier feed through measurement with settings other than the default values send:

:CONFigure:DEMod CDP
Commands to set desired settings
:READ:DEMod:EVM?

Default Unit: %
Related Command: :CONFigure:DEMod CDP

:MEASure:DEMod:FERRor:PPM?

Title: Measure Frequency Error PPM
Description: Sets the active measurement to code domain power, sets the default measurement parameters, triggers a new measurement and returns the frequency error PPM results. It is a combination of the commands :CONFigure:DEMod CDP; :READ:DEMod:FERRor:PPM? For a description of the default code domain power measurement parameters, see :CONFigure:DEMod CDP. To make a frequency error measurement with settings other than the default values send:

:CONFigure:DEMod CDP
Commands to set desired settings
:READ:DEMod:FERRor:PPM?

Related Command: :READ:DEMod:FERRor:PPM?
:FETCh:DEMod:FERRor:PPM?
:CONFigure:DEMod:CDP

:MEASure:DEMod:FERRor:PRECise?

Title: Measure Frequency Error
Description: Sets the active measurement to code domain power, sets the default measurement parameters, triggers a new measurement and returns the frequency error results. It is a combination of the commands :CONFigure:DEMod CDP; :READ:DEMod:FERRor:PRECise? For a description of the default code domain power measurement parameters see :CONFigure:DEMod CDP. To make a frequency error measurement with settings other than the default values send:

:CONFigure:DEMod CDP
Commands to set desired settings
:READ:DEMod:FERRor:PRECise?

Note that this command is the same as :MEASure:DEMod:FERRor?, but returns the result with a precision of one-tenth Hertz.

Default Unit: Hz
Related Command: :CONFigure:DEMod CDP
:MEASure:DEMod:FERRor?
:MEASure:DEMod:FERRor?

Title: Measure Frequency Error

Description: Sets the active measurement to code domain power, sets the default measurement parameters, triggers a new measurement and returns the frequency error results. It is a combination of the commands :CONFigure:DEMod CDP; :READ:DEMod:FERRor? For a description of the default code domain power measurement parameters see :CONFigure:DEMod CDP. To make a frequency error measurement with settings other than the default values send:

:CONFigure:DEMod CDP
Commands to set desired settings
:READ:DEMod:FERRor?

Default Unit: Hz

Related Command: :CONFigure:DEMod CDP

:MEASure:DEMod:HSDPa:FERRor:PPM?

Title: Measure HSDPA Frequency Error PPM

Description: Sets the active measurement to HSDPA sets the default measurement parameters, triggers a new measurement and returns the HSDPA frequency error PPM results. It is a combination of the commands :CONFigure:DEMod HSDPa; :READ:DEMod:HSDPa:FERRor:PPM? For a description of the default HSDPA measurement parameters, see :CONFigure:DEMod HSDPa. To make a frequency error measurement with settings other than the default values send:

:CONFigure:DEMod HSDPa
Commands to set desired settings
:READ:DEMod:HSDPa:FERRor:PPM?

Related Command: :READ:DEMod:HSDPa:FERRor:PPM?
:FETCH:DEMod:HSDPa:FERRor:PPM?
:CONFigure:DEMod HSDPa

:MEASure:DEMod:HSDPa:FERRor?

Title: Measure HSDPA Frequency Error

Description: Sets the active measurement to HSDPA, sets the default measurement parameters, triggers a new measurement and returns the HSDPA frequency error results. It is a combination of the commands :CONFigure:DEMod HSDPa; :READ:DEMod:HSDPa:FERRor? For a description of the default HSDPA measurement parameters, see :CONFigure:DEMod HSDPa. To make a frequency error measurement with settings other than the default values send:

:CONFigure:DEMod HSDPa
Commands to set desired settings
:READ:DEMod:HSDPa:FERRor?

Default Unit: Hz

Related Command: :READ:DEMod:HSDPa:FERRor?
:FETCH:DEMod:HSDPa:FERRor?
:CONFigure:DEMod HSDPa
**Title:** Measure HSDPA Transmitter Frequency

**Description:** Sets the active measurement to HSDPA, sets the default measurement parameters, triggers a new measurement and returns the HSDPA transmitter frequency results. It is a combination of the commands :CONFigure:DEMod HSDPa; :READ:DEMod:HSDPa:TXFRequency? For a description of the default HSDPA measurement parameters, see :CONFigure:DEMod HSDPa. To make a transmitter frequency measurement with settings other than the default values send:

:CONFigure:DEMod HSDPa
Commands to set desired settings
:READ:DEMod:HSDPa:TXFRequency?

**Default Unit:** Hz

**Related Command:** :READ:DEMod:HSDPa:TXFRequency?
:FETCh:DEMod:HSDPa:TXFRequency?
:CONFigure:DEMod HSDPa

**Title:** Measure Code Domain Noise Floor

**Description:** Sets the active measurement to code domain power, sets the default measurement parameters, triggers a new measurement and returns the noise floor results. It is a combination of the commands :CONFigure:DEMod CDP; :READ:DEMod:NFLoor? For a description of the default code domain power measurement parameters see :CONFigure:DEMod CDP. To make a noise floor measurement with settings other than the default values send:

:CONFigure:DEMod HSDPa
Commands to set desired settings
:READ:DEMod:NFLoor?

**Default Unit:** dB

**Related Command:** :CONFigure:DEMod CDP

**Title:** Measure Code Domain Channel Count

**Description:** Sets the active measurement to code domain power, sets the default measurement parameters, triggers a new measurement and returns the number of channels. It is a combination of the commands :CONFigure:DEMod CDP; :READ:DEMod:NUMChannels? For a description of the default code domain power measurement parameters see :CONFigure:DEMod CDP. To make a channel count measurement with settings other than the default values send:

:CONFigure:DEMod HSDPa
Commands to set desired settings
:READ:DEMod:NUMChannels?

**Default Unit:** dB

**Related Command:** :CONFigure:DEMod CDP
:MEASure:DEMod:SPOWer?

Title: Measure Synch Channel Power

Description: Sets the active measurement to code domain power, sets the default measurement parameters, triggers a new measurement and returns the synch channel power results. It is a combination of the commands :CONFigure:DEMod CDP; :READ:DEMod:SPOWer? For a description of the default code domain power measurement parameters see :CONFigure:DEMod CDP. To make a synch channel power measurement with settings other than the default values send:

:CONFigure:DEMod CDP
Commands to set desired settings
:READ:DEMod:SPOWer?

Results are returned as 3 comma-delimited values: SCH power, PSCH power, SSCH power.

Default Unit: dBm

Related Command: :CONFigure:DEMod CDP

:MEASure:DEMod:SUMMary?

Title: Measure Modulation Summary

Description: Sets the active measurement to Modulation Summary, sets the default measurement parameters, triggers a new measurement and returns Carrier Frequency, Frequency Error, channel Power, P-CPICH Power, Carrier Feed Through, Peak CDE, EVM, P-CCPCH Power, S-CCPCH Power, PICH Power, PSCH Power, SSCH Power, RMS Phase Er (deg). It is a combination of the following commands

:CONFigure:DEMod SUMMary; :READ:DEMod:SUMMary? To make a Demodulator Summary measurement with settings other than the default values send:

:CONFigure:DEMod SUMMary Commands to set desired settings
:READ:DEMod:SUMMary?

Data is returned as 13 comma-delimited values: Carrier Frequency, Frequency Error, channel Power, P-CPICH Power, Carrier Feed Through, Peak CDE, EVM, P-CCPCH Power, S-CCPCH Power, PICH Power, PSCH Power, SSCH Power, RMS Phase Er (deg). All invalid values are replaced with “--”. Power units are in watt or dBm as per what is set by the user. Frequency is always in Hz.

Related Command: :CONFigure:DEMod SUMMARY
:READ:DEMod:SUMMary?
:FETCH:DEMod:SUMMary?

Front Panel Access: Measurements, Demodulator, Modulation Summary
Title: Measure Transmitter Frequency

Description: Sets the active measurement to code domain power, sets the default measurement parameters, triggers a new measurement and returns the transmitter frequency results. It is a combination of the commands :CONFigure:DEMod CDP; :READ:DEMod:TXFRequency:PRECise? For a description of the default code domain power measurement parameters see :CONFigure:DEMod CDP. To make a transmitter frequency measurement with settings other than the default values send:

:CONFigure:DEMod CDP
:READ:DEMod:TXFRequency:PRECise?

Note that this command is the same as :MEASure:DEMod:TXFRequency?, but returns the result with a precision of one-tenth Hertz.

Default Unit: Hertz

Related Command: :CONFigure:DEMod CDP
:MEASure:DEMod:TXFRequency?

Title: Measure Transmitter Frequency

Description: Sets the active measurement to code domain power, sets the default measurement parameters, triggers a new measurement and returns the transmitter frequency results. It is a combination of the commands :CONFigure:DEMod CDP; :READ:DEMod:TXFRequency? For a description of the default code domain power measurement parameters see :CONFigure:DEMod CDP. To make a transmitter frequency measurement with settings other than the default values send:

:CONFigure:DEMod CDP
:READ:DEMod:TXFRequency?

Default Unit: Hertz

Related Command: :CONFigure:DEMod CDP

Title: Measure Spectral Emission Mask Pass/Fail status

Description: Sets the active measurement to spectral emission mask, sets the default measurement parameters, triggers a new measurement and returns the spectral emission mask pass/fail results. It is a combination of the commands :CONFigure:RF EMISsion; :READ:EMISsion:FAIL? For a description of the default spectral emission mask measurement parameters see :CONFigure:RF EMISsion. To make a spectral emission mask pass/fail status measurement with settings other than the default values send:

:CONFigure:RF EMISsion Commands to set desired settings
:READ:EMISsion:FAIL?

Related Command: :MEASure:EMISsion
:MEASure:EMISsion:TEMPlate?
:CONFigure:RF EMISsion
Title: Measure Spectral Emission Mask Template Data  
Description: Sets the active measurement to spectral emission mask, sets the default measurement parameters, triggers a new measurement and returns the spectral emission mask template power level, frequency, and PASS/FAIL data for all ten frequency ranges shown in the Spectral Emission Summary. It is a combination of the commands :CONFigure:RF EMISsion; :READ:EMISsion:TEMPPlate:DATA? For a description of the default spectral emission mask measurement parameters, see :CONFigure:RF EMISsion. To make a spectral emission mask template measurement with settings other than the default values send:

:CONFigure:RF EMISsion  
Commands to set desired settings  
:READ:EMISsion:TEMPPlate:DATA?  

For each frequency range, the data is returned as 3 comma delimited values: Power Level in dBm, Frequency in Hz, and PASS/FAIL.

Related Command: :READ:EMISsion:TEMPPlate:DATA?  
:FETCH:EMISsion:TEMPPlate:DATA?  
:CONFigure:RF EMISsion

Title: Measure Spectral Emission Mask Template  
Description: Sets the active measurement to spectral emission mask, sets the default measurement parameters, triggers a new measurement and returns the spectral emission mask template results. It is a combination of the commands :CONFigure:RF EMISsion; :READ:EMISsion:TEMPPlate? For a description of the default spectral emission mask measurement parameters see :CONFigure:RF EMISsion. To make a spectral emission mask template measurement with settings other than the default values send:

:CONFigure:RF EMISsion  
Commands to set desired settings  
:READ:EMISsion:TEMPPlate?  

Related Command: :MEASure:EMISsion?  
:MEASure:EMISsion:FAIL?  
:CONFigure:RF EMISsion

Title: Measure Spectral Emission Mask  
Description: Sets the active measurement to spectral emission mask, sets the default measurement parameters, triggers a new measurement and returns the spectral emission mask measurement results. It is a combination of the commands :CONFigure:RF EMISsion; :READ:EMISsion? For a description of the default spectral emission mask measurement parameters see :CONFigure:RF EMISsion. To make a spectral emission mask measurement with settings other than the default values send:

:CONFigure:RF EMISsion  
Commands to set desired settings  
:READ:EMISsion?  

Results are returned as 2 comma-delimited values: pass/fail status, and template number.

Related Command: :MEASure:EMISsion:FAIL?  
:MEASure:EMISsion:TEMPPlate?
:MEASure:OBWidth?

Title: Measure Occupied Bandwidth

Description: Sets the active measurement to RF spectrum, sets the default measurement parameters, triggers a new measurement and returns the occupied bandwidth results. It is a combination of the commands :CONFigure:RF SPECTrum; :READ:OBWidth? For a description of the default occupied bandwidth measurement parameters see :CONFigure:RF SPECTrum. To make an occupied bandwidth measurement with settings other than the default values send:

:CONFigure:RF SPECTrum

Commands to set desired settings

:READ:OBWidth?

Default Unit: Hz

Related Command: :CONFigure:OBWidth

:MEASure:OTA{1|2|3|4|5|6}? 

Title: Measure Over The Air

Description: Sets the active measurement to over-the-air, sets the default measurement parameters, triggers a new measurement and returns the OTA measurement results. It is a combination of the commands :CONFigure:OTA; :READ:OBWidth? For a description of the default occupied bandwidth measurement parameters see :CONFigure:RF SPECTrum. To make an OTA measurement with settings other than the default values send:

:CONFigure:OTA

Commands to set desired settings

:READ:OTA?

The measurement results are returned as 5 comma delimited values: scrambling code, CPICH power, chip energy, Ec/I0 ratio, pilot dominance.

Default Unit: Scrambling Code: No units
CPICH power: dBm
Chip Energy: dBm
EC/I0: dB
Pilot dominance: No units

Related Command: :CONFigure:OTA

:MEASure:PFail?

Title: Measure PASS/FAIL

Description: Sets the active measurement to PASS/FAIL, sets the default measurement parameters, triggers a new measurement and returns the PASS/FAIL results. It is a combination of the commands :CONFigure:PFail; :READ:PFail? To make a channel power measurement with settings other than the default values send:

:CONFigure PFail

Commands to set desired settings

:READ:PFail?

Related Command: :CONFigure:PFail
READ:PFail?
FETCh:PFail?

Front Panel Access: Shift-4 (Measurement), PASS/FAIL
**:MEASURE:PTAPower?**

**Title:** Measure Peak to Average Power

**Description:** Sets the active measurement to RF spectrum, sets the default measurement parameters, triggers a new measurement and returns the PTAP measurement results. It is a combination of the commands :CONFigure:RF SPECTrum; :READ:PTAPower? For a description of the default occupied bandwidth measurement parameters see :CONFigure:RF SPECTrum. To make a peak to average power measurement with settings other than the default values send:

:CONFigure:RF SPECTrum

Commands to set desired settings

:READ:PTAPower?

**Default Unit:** dB

**Related Command:** :CONFigure:RF SPECTrum

**:MEASURE:RF:SUMMARY?**

**Title:** Measure RF Summary

**Description:** Sets the active measurement to RF Summary, sets the default measurement parameters, triggers a new measurement and returns Carrier Frequency, Frequency Error, channel Power, P-CPICH Power, Carrier Feed Through, Peak CDE, EVM, P-CCPCH Power, S-CCPCH Power, PICH Power, PSCH Power, SSCH Power, RMS Phase Er (deg). It is a combination of the following commands :CONFigure:RF SUMMary; :READ:RF:SUMMary? To make a RF Summary measurement with settings other than the default values send: :CONFigure:RF SUMMary Commands to set desired settings

:READ:RF:SUMMary?

Data is returned as 10 comma-delimited values: Channel Power, Carried Frequency, Frequency Error, Spectral Emission, Occupied Bandwidth, Peak to Avg Power, Filtered -10MHz, Filtered -5 MHz, Filtered 5MHz, Filtered 10 MHz. All invalid values are replaced with “--”. Power units are in watt or dBm as per what is set by the user. Frequency is always in Hz.

**Related Command:** :CONFigure:RF SUMMary

:READ:RF:SUMMary?

:FETCH:RF:SUMMary?

**Front Panel Access:** Measurements, RF, RF Summary
**8-9 :READ Subsystem**

This set of commands combines the ABORt, INITiate and FETCh commands. It aborts any current triggering sequence and sets the trigger state to idle. It then initiates a new active measurement (i.e. begins the collection of new data). When the measurement is complete, it returns the result. These commands will not switch to another measurement.

To get the current measurement data, use the FETCh command.

### :READ:ACLR?

**Title:** Read Adjacent Channel Leakage Ratio (ACLR)

**Description:** Triggers a new adjacent channel power ratio measurement and returns the results: main channel power, lower adjacent and upper adjacent channel power, and lower alternate and upper alternate channel power. It is a combination of the commands :ABORT; :INITiate; :FETCh:ACLR? The ACLR measurement must be the active measurement (specified by :CONFigure:RF ACLR). The current measurement can be queried using :CONFigure?

Data is returned as 12 comma-separated values: -20 MHz channel power, -15 MHz channel power, -10 MHz channel power, -5 MHz channel power, Main channel power 1, Main channel power 2, Main channel power 3, Main channel power 4, +5 MHz channel power, +10 MHz channel power, +15 MHz channel power, +20 MHz channel power.

**Related Command:** :CONFigure:RF ACLR

### :READ:CHPower?

**Title:** Read Channel Power

**Description:** Triggers a new channel power measurement and returns the channel power result. It is a combination of the commands :ABORT; :INITiate; :FETCh:CHPower:CHPower? It returns only the channel power, not the channel power density. Use the command :READ:CHPower? to get both channel power and channel power density. The channel power measurement must be the active measurement (specified by :CONFigure:CHPower). The current measurement can be queried using the :CONFigure? command.

**Default Unit:** Current amplitude units

**Related Command:** :READ:CHPower?

### :READ:DEMod:ACTChannels?

**Title:** Read Active Code Domain Channel Count

**Description:** Triggers a new measurement and returns the active channel count. It is a combination of the commands :ABORT; :INITiate; :FETCh:DEMod:ACTChannels? A demodulation measurement must be active. The current measurement can be queried using :CONFigure?

**Default Unit:** dB

**Related Command:** :CONFigure:DEMod
:READ:DEMod:CDPower?

Title: Read Code Domain Power

Description: Triggers a new measurement and returns the Pilot Power, Channel Power, Noise Floor, Rho, Carrier Feed Through, Tau, RMS Phase Error, Frequency Error, Frequency Error PPM, Page, Sync, and Q Page measurement results. It is a combination of the following commands: :ABORT; :INITiate; :FETCh:DEMod:CDPower? In order for the data to be accurate, the Code Domain Power measurement must be the active measurement (specified by :CONFigure:DEMod CDPower. The current measurement can be queried using :CONFigure?

Data is returned as 12 comma-delimited values: Pilot Power in the current user set unit (dBm/W/mW), Channel Power in the current user set unit (dBm/W/mW), Noise Floor in dB, Rho, Carrier Feed Through in dB, Tau in ps, RMS Phase Error in deg, Frequency Error in Hz, Frequency Error PPM, Page in dBm, Sync in dBm, and Q Page. All invalid values are replaced with "--".

Default Unit: dBm

Related Command: CONFigure:DEMod CDPPower
:MEASure:DEMod:CDPower?
:FETCh:DEMod:CDPower?

Front Panel Access: Measurement, Demodulator, CDP

:READ:DEMod:CFTHrough?

Title: Read Carrier Feed Through

Description: Triggers a new measurement and returns the carrier feed through results. It is a combination of the commands: :ABORT; :INITiate; :FETCh:DEMod:CFTHrough? The carrier feed through measurement must be active. The current measurement can be queried using :CONFigure?

Default Unit: dB

:READ:DEMod:EVM?

Title: Read Error Vector Magnitude (EVM)

Description: Triggers a new measurement and returns the EVM results. It is a combination of the commands: :ABORT; :INITiate; :FETCh:DEMod:EVM? The EVM measurement must be active. The current measurement can be queried using :CONFigure?

Default Unit: %

Related Command: :CONFigure:DEMod

:READ:DEMod:FERRor:PPM?

Title: Read Frequency Error PPM

Description: See Also: :CONFigure:DEMod Triggers a new measurement and returns the frequency error results. It is a combination of the commands: :ABORT; :INITiate; :FETCh:DEMod:FERRor:PPM? The frequency error PPM measurement must be active. The current measurement can be queried using :CONFigure?

Related Command: :MEASure:DEMod:FERRor:PPM?
:FETCh:DEMod:FERRor:PPM?
:CONFigure:DEMod CDP
:READ:DEMod:FERRor:PRECise?

Title: Read Frequency Error

Description: Triggers a new measurement and returns the frequency error results. It is a combination of the commands :ABORT; :INITiate; :FETCh:DEMod:FERRor:PRECise? The frequency error measurement must be active. The current measurement can be queried using :CONFigure? Note that this command is the same as :READ:DEMod:FERRor?, but returns the result with a precision of one-tenth Hertz.

Default Unit: Hertz

Related Command: :CONFigure:DEMod

:READ:DEMod:FERRor?

Title: Read Frequency Error

Description: Triggers a new measurement and returns the frequency error results. It is a combination of the commands :ABORT; :INITiate; :FETCh:DEMod:FERRor? The frequency error measurement must be active. The current measurement can be queried using :CONFigure?

Default Unit: Hertz

Related Command: :CONFigure:DEMod

:READ:DEMod:HSDPa:FERRor:PPM?

Title: Read HSDPA Frequency Error PPM

Description: Triggers a new measurement and returns the frequency error results. It is a combination of the commands :ABORT; :INITiate; :FETCh:DEMod:HSDPa:FERRor:PPM? The HSDPA frequency error PPM measurement must be active. The current measurement can be queried using :CONFigure?

Related Command: :MEASure:DEMod:HSDPa:FERRor:PPM?

:READ:DEMod:HSDPa:FERRor?

Title: Read HSDPA Frequency Error

Description: Triggers a new measurement and returns the frequency error results. It is a combination of the commands :ABORT; :INITiate; :FETCh:DEMod:HSDPa:FERRor? The HSDPA frequency error measurement must be active. The current measurement can be queried using :CONFigure?

Default Unit: Hertz

Related Command: :MEASure:DEMod:HSDPa:FERRor?
WCDMA Commands

:READ:DEMod:HSDPa:TXFRequency?

Title: Read HSDPA Transmitter Frequency
Description: Triggers a new measurement and returns the HSDPA transmitter frequency results. It is a combination of the commands :ABORT; :INITiate; :FETCh:DEMod:HSDPa:TXFRequency? The HSDPA transmitter frequency measurement must be active. The current measurement can be queried using :CONFigure?
Default Unit: Hz
Related Command: :MEASure:DEMod:HSDPa:TXFRequency?
:FETCh:DEMod:HSDPa:TXFREquency?
:CONFigure:DEMod HSDPa

:READ:DEMod:NFLoor?

Title: Read Noise Floor
Description: Triggers a new measurement and returns the noise floor results. It is a combination of the commands :ABORT; :INITiate; :FETCh:DEMod:NFLoor? The noise floor measurement must be active. The current measurement can be queried using :CONFigure?
Default Unit: dB
Related Command: :CONFigure:DEMod

:READ:DEMod:NUMChannels?

Title: Read Code Domain Channel Count
Description: Triggers a new measurement and returns the channel count. It is a combination of the commands :ABORT; :INITiate; :FETCh:DEMod:NUMChannels? A demodulation measurement must be active. The current measurement can be queried using :CONFigure?
Default Unit: dB
Related Command: :CONFigure:DEMod

:READ:DEMod:SPOWer?

Title: Read Synch Channel Power
Description: Triggers a new measurement and returns the synch channel power results. It is a combination of the commands :ABORT; :INITiate; :FETCh:DEMod:SPOWer? The synch channel power measurement must be active. The current measurement can be queried using :CONFigure?
Results are returned as 3 comma-delimited values: SCH power, PSCH power, SSCH power.
Default Unit: dBm
Related Command: :CONFigure:DEMod
**:READ:DEMod:SUMMary?**

**Title:** Read Modulation Summary

**Description:** Triggers a new Modulation Summary measurement and returns the results. It is a combination of the commands :ABORT; :INITiate; FETCh:DEMod:SUMMary?

The current measurement can be queried using :CONFigure?

Data is returned as 13 comma-delimited values: Carrier Frequency, Frequency Error, channel Power, P-CPICH Power, Carrier Feed Through, Peak CDE, EVM, P-CCPCH Power, S-CCPCH Power, PICH Power, PSCH Power, SSCH Power, RMS Phase Er (deg). All invalid values are replaced with “--”. Power units are in watt or dBm as per what is set by the unit. Frequency is always in Hz.

**Related Command:** :CONFigure:DEMod SUMMARY

**:READ:DEMod:SUMMary?**

**:FETCh:DEMod:SUMMary?**

**Front Panel Access:** Measurements, Demodulator, Modulation Summary

**:READ:DEMod:TXFRequency:PRECise?**

**Title:** Read Transmitter Frequency

**Description:** Triggers a new measurement and returns transmitter frequency results. It is a combination of the commands :ABORT; :INITiate; :FETCh:DEMod:TXFRequency:PRECise? The carrier frequency measurement must be active. The current measurement can be queried using :CONFigure? Note that this command is the same as :READ:DEMod:TXFRequency?, but returns the result with a precision of one-tenth Hertz.

**Default Unit:** Hz

**Related Command:** :CONFigure:DEMod

**:READ:DEMod:TXFRequency?**

**:READ:EMISsion:FAIL?**

**Title:** Read Spectral Emission Mask Pass/Fail Status

**Description:** Triggers a new spectral emission mask measurement and returns the pass/fail results. It is a combination of the commands :ABORT; :INITiate; :FETCh:EMISsion:FAIL? The spectral emission mask measurement must be active. The current measurement can be queried using :CONFigure?

**Related Command:** :CONFigure:RF EMISsion
**:READ:EMISSion:TEMPLate:DATA?**

**Title:** Read Spectral Emission Mask Template Data

**Description:** Triggers a new spectral emission mask measurement and returns the spectral emission mask template power level, frequency, and PASS/FAIL data for all ten frequency ranges shown in the Spectral Emission Summary. It is a combination of the commands :ABORT; :INITiate; :FETCh:EMISSion:TEMPLate:DATA? The spectral emission mask measurement must be active. The current measurement can be queried using :CONFigure?

For each frequency range, the data is returned as 3 comma-delimited values: Power Level in dBm, Frequency in Hz, and PASS/FAIL.

**Related Command:** :MEASure:EMISSion:TEMPLate:DATA?
:FETCh:EMISSion:TEMPLate:DATA?
:CONFigure:RF EMISSion

**:READ:EMISSion:TEMPLate?**

**Title:** Read Spectral Emission Mask Template

**Description:** Triggers a new spectral emission mask measurement and returns the template number result. It is a combination of the commands :ABORT; :INITiate; :FETCh:EMISSion:TEMPLate? The spectral emission mask measurement must be active. The current measurement can be queried using :CONFigure?

**Related Command:** :CONFigure:RF EMISSion

**:READ:EMISSion?**

**Title:** Read Spectral Emission Mask

**Description:** Triggers a new spectral emission mask measurement and returns the results: pass/fail status and template number. It is a combination of the commands :ABORT; :INITiate; :FETCh:EMISSion? The spectral emission mask measurement must be active. The current measurement can be queried using :CONFigure?

Results are returned as 2 comma-delimited values: pass/fail status, and template number.

**Related Command:** :CONFigure:RF EMISSion

**:READ:OBWidth?**

**Title:** Read Occupied Bandwidth

**Description:** Triggers a new occupied bandwidth measurement and returns the results: occupied bandwidth, percent of power and dB down. It is a combination of the commands :ABORT; :INITiate; :FETCh:OBWidth? The occupied bandwidth measurement must be the active measurement (specified by :CONFigure:OBWidth). The current measurement can be queried using the :CONFigure?

**Default Unit:** Hz

**Related Command:** :CONFigure
:READ:OTA{1|2|3|4|5|6}?

Title:  Read Over The Air

Description: Triggers a new over-the-air measurement and returns the result. It is a combination of the commands :ABORT; :INITiate; :FETCh:OTA? The over-the-air measurement must be active. The current measurement can be queried using :CONFigure?

The measurement results are returned as 5 comma delimited values: scrambling code, CPICH power, chip energy, Ec/I0 ratio, pilot dominance.

Default Unit:
- Scrambling Code: No units
- CPICH power: dBm
- Chip Energy: dBm
- EC/I0: dB
- Pilot dominance: No units

Related Command: :CONFigure:OTA

:READ:PFail?

Title:  Read PASS/FAIL

Description: Triggers a new PASS/FAIL measurement and returns the results. It is a combination of the commands :ABORT; :INITiate; FETCh:PFail? The PASS/FAIL measurement must be active. The current measurement can be queried using :CONFigure?

Related Command: MEASure:PFail?
:CONFigure:PFail
FETCh:PFail?
:CONFigure:PFail

Front Panel Access:  Shift-4 (Measurement), PASS/FAIL

:READ:PTAPower?

Title:  Read Peak to Average Power Ratio

Description: Triggers a new measurement and returns the peak to average power ratio result. It is a combination of the commands :ABORT; :INITiate; :FETCh:PTAPower? The peak to average power measurement must be active. The current measurement can be queried using :CONFigure?

Default Unit: dB

Related Command: :CONFigure:RF
:READ:RF:SUMMary?

**Title:** Read RF Summary

**Description:** Triggers a new RF Summary measurement and returns the results. It is a combination of the commands :ABORT; :INITiate; FETCH:RF:SUMmary? The current measurement can be queried using :CONFigure?

Data is returned as 10 comma-delimited values: Channel Power, Carrier Frequency, Frequency Error, Spectral Emission, Occupied Bandwidth, Peak to Avg Power, Filtered -10MHz, Filtered -5 MHz, Filtered 5MHz, Filtered 10 MHz. All invalid values are replaced with “--”. Power units are in watt or dBm as per what is set by the user. Frequency is always in Hz

**Related Command:**
- :CONFigure:RF:SUMmary
- :READ:RF:SUMmary?
- :FETCH:RF:SUMmary?

**Front Panel Access:** Measurements, RF, RF Summary
8-10 :TRACe Subsystem

This subsystem contains commands related to the transfer of trace data to and from the instrument.

:TRACe:PREamble? <trace type>

Title: Trace Header Transfer

Description: The <trace type> must be one of the following: ACLR|SPECTrum|EMISsion|DEMod. Returns trace header information for the specified trace. Data can be transferred to and from the 4 available display trace types.

Use the commands in the MMEMory subsystem to store and recall traces from the instrument memory. The response begins with an ASCII header. The header specifies the number of following bytes. It looks like #AX, where A is the number of digits in X and X is the number of bytes that follow the header. Parameters are returned in comma-delimited ASCII format. Each parameter is returned as “NAME=VALUE[ UNITS],” Valid parameter names are shown in “WCDMA Parameter Names” on page 2-24.

Parameter: <trace type>

Related Command: :TRACe:DATA?

:TRACe[:DATA] ACLR|SPECtrum|EMISsion|DEMod,(<header><block>)
:TRACe[:DATA]? ACLR|SPECtrum|EMISsion|DEMod

Title: Trace Data Transfer

Description: This command transfers data from the controlling program to the instrument. The query form transfers trace data from the instrument to the controller. Before executing this command the instrument must be set to the desired measurement.

The ASCII header specifies the number of data bytes. It looks like #AX, where A is the number of digits in X and X is the number of bytes in the <block>. The number of bytes in the block is calculated by multiplying the number of data points by the number of bytes used to transfer each data point. Also note that the second argument must be enclosed in parentheses.

The format of the block data in the query form is specified by :FORMat:DATA. The block data in the command form is always sent in ASCII format. Trace setup information can be acquired using :TRACe[:DATA]:PREamble?. Data can be transferred to and from the 4 available display types. Use the commands in the MMEMory subsystem to store and recall traces from the instrument memory. This command does not support setting all trace points to a single value. To do this, send the same value to each point. For RF traces (ACLR, Spectrum and EMISsion), there is only one value per data point.

For example, to transfer a 501 point trace from the controlling program to the ACLR trace in the instrument the command :TRACe:DATA ACLR,#42004<block>) would be sent. <block> data could be in either INTeger,32 or REAL,32 format. In both cases, there would be 4 bytes per data point. So, 4 bytes per point * 501 data points gives 2004 bytes in <block> data. For the demodulated code domain power trace, each data point is represented by 6 values of 4 bytes each: code number (no units), absolute power (dBm), relative power (dB), spreading factor (no units), symbol EVM (%), code state( 0 = Inactive, 1 = Active). If Option 65 is installed code state will indicate the modulation type (0 = Noise, 1 = QPSK, 2 = 16_QAM).

Note that the instrument must be set in the selected view. Use the CONFigure command to set the unit to the selected view.

Parameter: ACLR|SPECTrum|EMISsion|DEMod,(<header><block>)

Parameter Type: <char>

Related Command: :FORMat:DATA
:TRACe[:DATA]:PREamble?
8-11 [:SENSe] Subsystem

The commands in this subsystem relate to device-specific parameters, not signal-oriented parameters.

[:SENSe]:AVERage:FERRor OFF|ON|0|1
[:SENSe]:AVERage:FERRor?

Title: Frequency Error Averaging State
Description: Turns averaging for Frequency Error ON or OFF. Setting the value to ON or 1 will result in turning frequency error averaging ON.

The Query form of this command returns either “1” or “0”. “1” corresponds to frequency error averaging being ON and “0” corresponds to frequency error averaging being OFF.

Parameter: OFF|ON|0|1
Parameter Type: <boolean>
Default Value: OFF

Related Command: [:SENSe]:AVERage:FERRor:COUNT
[:SENSe]:AVERage:FERRor:COUNT?

Front Panel Access: Setup, More, Freq Err Avg

[:SENSe]:AVERage:FERRor:COUNT <integer>
[:SENSe]:AVERage:FERRor:COUNT?

Title: Average Frequency Error Count
Description: Sets the number that is used for averaging the frequency error.

Parameter: <integer>
Parameter Type: <integer>
Default Value: 2
Range: 2 to 15

Related Command: [:SENSe]:AVERage:FERRor
[:SENSe]:AVERage:FERRor?

Front Panel Access: Setup, More, Freq Err Avg Cnt

[:SENSe]:DEMod:CODogram:TIME <seconds>
[:SENSe]:DEMod:CODogram:TIME?

Title: Codogram Measurement Time
Description: This command refers to the minimum elapsed time between successive codogram measurements.

Parameter: <seconds>
Default Value: 5 seconds
Range: 5 seconds to 6000 seconds
[:SENSe]:DEMod:CPICh:ABSolute?

Title: Absolute Common Pilot Channel (CPICH) Level
Description: Queries the absolute Common Pilot Channel level.
Default Unit: dB
Related Command: MEASure:DEMod:CDPower?
                 :READ:DEMod:CDPower?
                 :FETCh:DEMod:CDPower?

[:SENSe]:DEMod:CPICh:RELative?

Title: Relative Common Pilot Channel (CPICH) Level
Description: Queries the relative Common Pilot Channel level.
Default Unit: dB
Related Command: MEASure:DEMod:CDPower?
                 :READ:DEMod:CDPower?
                 :FETCh:DEMod:CDPower?

[:SENSe]:DEMod:CTRLchannels:UNIT RELative|ABSolute|DELTa

[:SENSe]:DEMod:CTRLchannels:UNIT?

Title: Control Channels Display Units
Description: This command refers to the display units for the control channels in the HSDPA and CDP view. Setting the value to RELative will result in displaying P-CCPCH, S-CCPCH, PICH, P-SCH and S-SCH in relative powers. Setting the value to ABSolute will result in displaying P-CCPCH, S-CCPCH, PICH, P-SCH and S-SCH in absolute powers.
Parameter: RELative | ABSolute | DELTa
Parameter Type: <char>
Default Value: RELative
Range: RELative | ABSolute | DELTa
Front Panel Access: Shift-4 (Measure), Demodulator, HSDPA, Control Channels; Shift-4 (Measure), Demodulator, CDP, Control Channels

[:SENSe]:DEMod:HSDPa:IQPersistence <integer>
[:SENSe]:DEMod:HSDPa:IQPersistence?

Title: HSDPA IQ Persistence
Description: Sets the number of samples before displaying the screen.
Parameter: <integer>
Default Value: 1
Range: 1 to 48
Front Panel Access: Measurements, Demodulator, HSDPA, IQ Persistence
[:SENSe]:DEMod:HSDPa:TIME <seconds>

Title: HSDPA Measurement Time
Description: This command refers to the minimum elapsed time between successive codogram measurements.
Parameter: <seconds>
Default Value: 5 seconds
Range: 5 to 6000 seconds
Front Panel Access: Measurements, Demodulator, HSDPA, Single Sweep Time

[:SENSe]:DEMod:PCCPch:RELative?

Title: Relative Primary Common Control Physical Channel (P-CCPCH) Level
Description: Queries the relative Primary Common Control Physical Channel level.
Default Unit: dB
Related Command: MEASure:DEMod:CDPower?
:READ:DEMod:CDPower?
:FETCh:DEMod:CDPower?

[:SENSe]:DEMod:PCDerror?

Title: Peak Code Domain Error
Description: Queries the Peak Code Domain Error.
Default Unit: dB

[:SENSe]:DEMod:PICH:CODE <code number>
[:SENSe]:DEMod:PICH:CODE?

Title: PICH Code Number
Description: This command refers to the channelization code number of the PICH channel for W-CDMA code domain demodulation measurements.
Parameter: <code number>
Default Value: 16
Range: 0 to 255
Front Panel Access: Setup, PICH Code

[:SENSe]:DEMod:SCCPch:CODE <code number>
[:SENSe]:DEMod:SCCPch:CODE?

Title: S-CCPCH Code Number
Description: This command refers to the channelization code number of the S-CCPCH channel for W-CDMA code domain demodulation measurements.
Parameter: <code number>
Default Value: 3
[:SENSe]:DEMod:SCCPch:SFACtor 4|8|16|32|64|128|256
[:SENSe]:DEMod:SCCPch:SFACtor?

Title: S-CCPCH Spreading Factor
Description: This command refers to the spreading factor of the S-CCPCH channel for W-CDMA code domain demodulation measurements.
Parameter: 4|8|16|32|64|128|256
Default Value: 256
Front Panel Access: Setup, S-CCPCH Spread

[:SENSe]:DEMod:SCODE <scrambling code>
[:SENSe]:DEMod:SCODE?

Title: Scrambling Code
Description: This command refers to the primary scrambling code used for W-CDMA code domain demodulation measurements. When the auto scrambling code feature is turned on, this setting will be overwritten by the automatically detected value.
Parameter: <scrambling code>
Default Value: 0
Range: 0 to 255

[:SENSe]:DEMod:SCODE:AUTO OFF|ON|0|1
[:SENSe]:DEMod:SCODE:AUTO?

Title: Automatic Scrambling Code Detection
Description: Sets the state of the automatic scrambling code detection feature. Setting the value to ON or 1 will result in the scrambling code being set to the code of the strongest detected signal. That is, the instrument will detect the strongest signal present and use the scrambling code of that signal for demodulation. Setting the value to OFF or 0 will force the instrument to base all demodulation on the user-selected scrambling code value. The default value is ON. That is, sending :SENSe:DEM:SCOD:AUTO is equivalent to sending :SENSe:DEM:SCOD:AUTO ON.
Parameter: OFF|ON|0|1
Parameter Type: <boolean>
Default Value: ON
Related Command: [:SENSe]:DEMod:SCODE
Front Panel Access: Setup, Scrambling Code

[:SENSe]:DEMod:SFACtor 256|512
[:SENSe]:DEMod:SFACtor?

Title: Maximum Spreading Factor
Description: This command refers to the maximum spreading factor used when demodulating a UMTS/W-CDMA signal.
Parameter: 256|512
Default Value: 512
Front Panel Access: Setup, Max Spreading
[SENSe]:DEMod:THRShold <rel ampl>
[SENSe]:DEMod:THRShold?

Title: Active Code Threshold
Description: This command refers to the threshold used for detecting active vs. inactive traffic channels in W-CDMA code domain demodulation measurements. If the automatic threshold feature is used, this setting will be overwritten by the automatically detected threshold.
Parameter: <rel ampl>
Default Value: -30 dB
Range: -50 dB to -10 dB

[SENSe]:DEMod:THRShold:AUTO OFF|ON|0|1
[SENSe]:DEMod:THRShold:AUTO?

Title: Automatic Threshold
Description: Sets the state of the automatic threshold feature. Setting the value to ON or 1 will enable the automatic threshold feature. Setting the value to OFF or 0 will disable the automatic threshold feature. The default value is ON. That is, sending :SENS:DEM:THRS:AUTO is equivalent to sending :SENS:DEM:THRS:AUTO ON.
Parameter: OFF|ON|0|1
Parameter Type: <boolean>
Default Value: ON
Related Command: [SENSe]:DEMod:THRShold
Front Panel Access: Setup, Threshold

[SENSe]:FREQuency:CENTer <freq>
[SENSe]:FREQuency:CENTer?

Title: Center Frequency
Description: Sets the center frequency. Note that changing the value of the center frequency will change the value of the coupled parameters Start Frequency and Stop Frequency. It may also change the value of the span. Note that the set command is available only if the instrument is in Cable & Antenna mode.
Parameter: <freq>
Default Value: 1 GHz
Default Unit: Hz
Range: 824 MHz to 2.7 GHz
Front Panel Access: Freq, Center Freq
[:SENSe]:FREQuency:STARt?

Title: Start Frequency
Description: Queries the start frequency of the RF Band Spectrum. Note that this command is valid only if the current view is set to RF Band Spectrum.
Parameter: <freq>
Default Unit: Hz
Related Command: [:SENSe]:FREQuency:STOP?
Front Panel Access: Freq, Start Freq

[:SENSe]:FREQuency:STOP?

Title: Stop Frequency
Description: Queries the stop frequency of the RF Band Spectrum. Note that this command is valid only if the current view is set to RF Band Spectrum.
Parameter: <freq>
Default Unit: Hz

[:SENSe]:OTA:RESet

Title: OTA Reset
Description: This command forces the instrument to reset the over-the-air measurement and start fresh without any history. When the auto scrambling code feature is ON the RESet command will clear the list of scrambling codes and attempt to detect new codes. When the auto scrambling code feature is OFF the RESet command will force the instrument to take new measurements for all of the user-selected scrambling codes.
Front Panel Access: Measurements, Over-the-Air, Reset

[:SENSe]:OTA:SCODe:AUTO OFF|ON|0|1
[:SENSe]:OTA:SCODe:AUTO?

Title: Automatic OTA Scrambling Code Detection
Description: Sets the state of the automatic scrambling code detection feature. Setting the value to ON or 1 will result in the scrambling codes being set to the codes of the strongest detected signals. That is, the instrument will detect the strongest signals present. Setting the value to OFF or 0 will force the instrument to base all over-the-air measurements on the user-selected scrambling code values. The default value is ON. That is, sending :SENS:DEM:OTA:SCOD:AUTO is equivalent to sending :SENS:DEM:OTA:SCOD:AUTO ON.
Parameter: OFF|ON|0|1
Parameter Type: <boolean>
Default Value: ON
Related Command: [:SENSe]:DEMod:OTA:SCODe
Front Panel Access: Measurements, Over-the-Air, Auto Scrambling
[:SENSe]:OTA:SCODe:LOCK OFF|ON|0|1
[:SENSe]:OTA:SCODe:LOCK?

Title: OTA Scrambling Code Lock
Description: This command refers to the primary scrambling codes used for W-CDMA over-the-air measurements. When scrambling code lock is ON, the instrument will not search for any new scrambling codes and will only measure the codes that have already been detected. When scrambling code lock is OFF, the instrument will dynamically update the list of scrambling codes that are to be included in the current measurements. This feature has no effect when scrambling code auto detection is OFF for over-the-air measurements. The default value for this command is ON. That is, sending SENS:DEM:OTA:LOCK is equivalent to SENS:DEM:OTA:LOCK ON.

Parameter: OFF|ON|0|1
Parameter Type: <boolean>
Default Value: OFF
Front Panel Access: Measurements, Over-the-Air, Code Lock

[:SENSe]:OTA:SCODe{1|2|3|4|5|6}<scrambling code>
[:SENSe]:OTA:SCODe{1|2|3|4|5|6}?  

Title: OTA Scrambling Code
Description: This command refers to the primary scrambling codes used for W-CDMA over-the-air measurements. To disable the specified code use a scrambling code value of ‘–1’. When the auto scrambling code feature is turned on, setting this value has no direct effect on measurement results.

Parameter: <scrambling code>
Default Value: –1
Range: –1 to 511

[:SENSe]:OTA:SORT CODE|POWer
[:SENSe]:OTA:SORT?

Title: OTA Sort Parameter
Description: This command refers to the parameter that is used to sort the over-the-air measurement results.

Parameter: CODE|POWer
Parameter Type: <char>
Default Value: CODE
Front Panel Access: Measurements, Over-the-Air, Sort By
[[:SENSe]:PFail <test set>]

[[:SENSe]:PFail?]

**Title:** PASS/FAIL Test Selection

**Description:** Selects the active test set to be used in subsequent PASS/FAIL measurements. The <test set> value must correspond to a test set that is defined in the test set list. For more information on loading test sets to the instrument, see the :MMEMory:STORe:PFail command. NOTE: The first test set in the list would be test set 0, the next test set would be 1, etc.

When using the query form of the command, the return value is the currently selected test set number. If there is not a valid test set selected, the return value is “-1” (negative 1).

**Parameter:** <test set>

**Related Command:** :CONFigure:PFail

**Front Panel Access:** Measurement, Pass Fail Mode, Select Pass/Fail Test

[[:SENSe]:POWer[:RF]:RANGe:AUTO OFF|ON|0|1]

[[:SENSe]:POWer[:RF]:RANGe:AUTO?]

**Title:** Automatic Amplitude Range

**Description:** Sets the automatic amplitude range. Setting the value to ON or 1 will result in the amplitude range being coupled to the detected input signal level. Setting the value to OFF or 0 will result in the input attenuation being un-coupled from the input signal level. That is, changing the input signal level will not change the amplitude range. When this command is issued, the amplitude range itself will not change. The default value is ON. That is, sending :SENS:POW:RANG:AUTO is equivalent to sending :SENS:POW:RANG:AUTO ON.

**Parameter:** OFF|ON|0|1

**Parameter Type:** <boolean>

**Default Value:** ON

**Related Command:** [:SENSe]:POWer[:RF]:RANGe

**Front Panel Access:** Amplitude, Auto Range

[[:SENSe]:POWer[:RF]:RANGe[:IMMediate]]

**Title:** Amplitude Range

**Description:** Re-calculates amplitude range. Note that issuing this command will set the automatic dynamic range OFF.

**Related Command:** [:SENSe]:POWer[:RF]:RANGe:AUTO

**Front Panel Access:** Amplitude, Adjust Range
[:SENSe]:RF:ACLR:ADJCchannelcount <num of channels>
[:SENSe]:RF:ACLR:ADJCchannelcount?

Title: ACLR ADJC Channel Count
Description: This command refers to the number of Adjacent channels in the ACLR view.
Parameter: <num of channels>
Default Value: 2
Range: 1 to 4
Front Panel Access: Measurements, RF Measurement, ACLR, Select # of Adjacent Channels

[:SENSe]:RF:ACLR:MAINchannelcount <num of main channels>
[:SENSe]:RF:ACLR:MAINchannelcount?

Title: ACLR MAIN Channel Count
Description: This command refers to the number of main channels in the ACLR view.
Parameter: <num of main channels>
Default Value: 1 Main Channel
Range: 1 to 4
Front Panel Access: Measurements, RF Measurement, ACLR, Select # of Main Channels
Chapter 9 — TDSCDMA Commands

9-1 :ABORt Subsystem

The abort subsystem includes commands that allow the user to stop current measurement activities on the instrument.

:ABORt

  Title: Abort
  Description: Restarts the current sweep and/or measurement. Resets the trigger system. If :INITiate:CONTinuous is OFF (i.e. the instrument is in single sweep mode), send the command :INITiate[:IMMediate] to trigger the next sweep. If :INITiate:CONTinuous is ON (i.e. the instrument is in continuous sweep mode) a new sweep will start immediately.
  Parameter: NA
  Related Command: :INITiate:CONTinuous
                  :INITiate[:IMMediate]
  Front Panel Access: Shift-3 (Sweep), Reset Sweep
This set of commands prepares the instrument for the selected measurement. It disables any currently-enabled measurements and activates the specified measurement. It sets the instrument to single sweep mode, waiting for an :INITiate command. It will not initiate the taking of a measurement.

Current instrument settings may be changed to default values. These changes are identified with their respective measurement commands.

**:CONFigure:DEMod <char>**

**Title:** Configure Demodulation Measurement

**Description:** Valid <char> parameter options: DEMod SUMMary | CDPData

This command configures the selected demodulation measurement. It disables any other active measurements. Sets the instrument to single sweep mode (:INITiate:CONTinuous OFF). Measurement settings can be modified by using the [:SENSe]:DEMod commands before initiating a measurement. When the SUMMARY option is selected, the measurement results are equivalent to the results that are displayed by choosing Measurements, then Demodulator, then Modulation Summary from the front panel.

When the CDPData option is selected, the measurement results are equivalent to the results that are displayed by choosing Measurements, then Demodulator, then CDP from the front panel.

**Parameter:** <char>

**Front Panel Access:** Shift-4 (Measurement), Demodulator

**:CONFigure:OTA**

**Title:** Configure Over-The-Air Measurement

**Description:** Valid parameter options: CSCan | TSCan

This command configures the selected Over The Air measurement. It disables any other active measurements. Sets the instrument to single sweep mode (:INITiate:CONTinuous OFF). Measurement settings can be modified before initiating a measurement. When the CSCan option is selected, the measurement results are equivalent to the results that are displayed by choosing Measurements, then OTA, then Code Scan from the front panel.

When the TSCan option is selected, the measurement results are equivalent to the results that are displayed by choosing Measurements, then OTA, then Tau Scan from the front panel.
:CONFigure:RF <char>

Title: Configure RF Measurement

Description: Valid parameter options: RF SUMmary | SPECtrum | PVTSlot | EMISsion

This command configures the selected RF measurement. It disables any other active measurements. Sets the instrument to single sweep mode (:INITiate:CONTinuous OFF). Measurement settings can be modified by using the [:SENSe]:RF commands before initiating a measurement.

When the SUMmary option is selected, the measurement results are equivalent to the results that are displayed by choosing Measurements, then RF, then RF Summary from the front panel. When the SPECtrum option is selected, the measurement results are equivalent to the results that are displayed by choosing Measurements, then RF, then Channel Spectrum from the front panel. When the PVTSlot option is selected, the measurement results are equivalent to the results that are displayed by choosing Measurements, then RF, then Power vs. Time from the front panel. When the EMISsion option is selected, the measurement results are equivalent to the results that are displayed by choosing Measurements, then RF, then Spurious Emission from the front panel.

Parameter: <char>

Related Command: [:SENSe]:FREQuency
[:SENSe]:RF:ACLR:MAINchannelcount
[:SENSe]:RF:ACLR:ADJCchannelcount
This subsystem provides commands that modify the display of data for the user. They do not modify the way in which data are returned to the controller.

```
:DISPLAY:WINDow:TRACe:Y[:SCALe]:OFFSet <rel ampl>
:DISPLAY:WINDow:TRACe:Y[:SCALe]:OFFSet?

Title: Power Offset
Description: Sets the power offset value for the y-axis.
Parameter: <rel ampl>
Default Value: 0 dB
Default Unit: dB
Range: -100 dB to 100 dB
Front Panel Access: Amplitude, Power Offset

:DISPLAY:WINDow:TRACe:Y[:SCALe]:PDIVision <rel ampl>
:DISPLAY:WINDow:TRACe:Y[:SCALe]:PDIVision?

Title: Scale
Description: Sets the scale (dB/division) for the y-axis.
Parameter: <rel ampl>
Default Value: 10 dB/div
Default Unit: dB
Range: 1 dB to 15 dB
Front Panel Access: Amplitude, Scale
This set of commands returns the most recent measurement data of the active measurement. They will not switch to another measurement.

To make a new measurement, use the INITiate command. To get new measurement data, use the READ or MEASure query commands.

**:FETCh:DEMod:CDPData?**

- **Title:** Fetch Demodulator Code Domain Power Data
- **Description:** Returns the most recent Code Domain Data measurement results. Data is returned as 24 comma-delimited values: Slot Power in dBm, DwPTS Power in dBm, Channel Power RRC in dBm, Freq Error in Hz, Freq Error in PPM, EVM RMS percentage, EVM Peak in percentage, RMS Phase Error in percentage, Carrier Feed Through in dB, DwPTS EVM in percentage, DwPTS PCDE in dB, CDP Noise Floor in dB, CDP Threshold hold in dB, Tau in nanoseconds, Sync DL Code in unitless number, Scrambling Code in unitless number, Max User in unitless number, Spread Factor in dB, Data Modulation Type (0 = Noise, 1 = QPSK, 2 = 8PSK, 3 = 16QAM), Scrambling Code 1 in dB, Scrambling Code 2 in dB, Scrambling Code 3 in dB, and Scrambling Code 4 in dB.

**Related Command:**
- :CONFigure:DEMod CDPData
- :MEASure:DEMod:CDPData?
- :READ:DEMod:CDPData?

**Front Panel Access:** Measurement, Demodulator, CDP Data

**:FETCh:DEMod:SUMMary?**

- **Title:** Fetch Modulation Summary
- **Description:** Returns the most recent Modulation Summary measurement results. Data is returned as 9 comma-delimited values: Slot Power, EVM, Peak EVM, Frequency error, Frequency Error PPM, Tau, Noise Floor, Carrier Feed Through, Peak CDE. All invalid values are replaced with “--”. Power units are in watt or dBm as per what is set by the user. Frequency is always in Hz.

**Related Command:**
- :CONFigure:DEMod SUMMary
- :MEASure:DEMod:SUMMary?
- :READ:DEMod:SUMMary?

**Front Panel Access:** Measurements, Demodulator, Modulation Summary

**:FETCh:OTA?**

- **Title:** Fetch OTA Pilot Scan
- **Description:** Returns the most recent Pilot Scan measurement results. Data is returned as 2 comma-delimited values: DwPTS Power in dBm, and Pilot Dominance in dBm. All invalid values are replaced with “--”.

**Related Command:**
- :CONFigure:OTA
- :MEASure:OTA?
- :READ:OTA?

**Front Panel Access:** Measurement, OTA, Pilot Scan
:**FETCh:RF:EMISSion?**

**Title:** Fetch RF Spurious Emission

**Description:** Returns the most recent Spurious Emission measurement result. Data is returned as 3 comma-delimited values for Left Power, Center Power, and Right Power in dBm. They are followed by 8 comma-delimited values for each marker/boundary: Marker number, Marker Start Frequency in MHz, Marker Stop Frequency in MHz, Marker Peak Power Frequency in MHz, Marker Peak Power in dBm, Marker Power Margin in dB, RBW in MHz, and Pass/Fail.

**Related Command:** :CONFigure:RF EMISSion

**Front Panel Access:** Measurement, RF, Spurious Emission

:**FETCh:RF:SPECTrum?**

**Title:** Fetch RF Spectrum

**Description:** Returns the most recent RF Channel Spectrum measurement results. Data is returned as 6 comma-delimited values: Channel Power in dBm, Occupied Bandwidth in Hz, Left Channel Power in dBm, Left Channel Occupied Bandwidth in Hz, Right Channel Power in dBm and Right Channel Occupied Bandwidth in Hz.

**Related Command:** :CONFigure:RF SPECTrum

**Front Panel Access:** Measurement, RF, Channel Spectrum

:**FETCh:RF:SUMMary?**

**Title:** Fetch RF Summary

**Description:** Returns the most recent RF Summary measurement results. Data is returned as 11 comma-delimited values: Channel Power, Channel Power RRC, Occupied Bandwidth, DwPTS Power, UpPTS Power, ON/OFF Ratio, Slot PAR, Left Channel Power, Right Channel Power, Left Channel Occupied Bandwidth, Right Channel Occupied Bandwidth. All invalid values are replaced with “--”. Power units are in watt or dBm as per what is set by the user. Frequency is always in Hz.

**Related Command:** :CONFigure:RF SUMMary

**Front Panel Access:** Measurements, RF, RF Summary
9-5 :FORMat Subsystem

This subsystem contains commands that determine the formatting of numeric data when it is transferred. The format setting affects data in specific commands only. If a command is affected, it is noted in the command description.

:FORMat[:READings][:DATA] ASCii|INTeger,32|REAL,32
:FORMat[:READings][:DATA]? Title: Numeric Data Format
Description: This command specifies the format in which data is returned in certain commands.

ASCii format returns the data in comma-separated ASCII format. The units are the current instrument units. This format requires many more bytes so it is the slowest format. INTeger 32 values are signed 32-bit integers in little-endian byte order. This format returns the data in 4-byte blocks. (WCDMA and Cable & Antenna only: The units are always mdBm. For example, if the measured result was -12.345 dBm, that value would be sent as -12345.) REAL,32 values are 32-bit floating point numbers conforming to the IEEE 754 standard in little-endian byte order. This format returns the data in 4-byte binary format. The units are the current instrument units.

Both INTeger,32 and REAL,32 formats return a definite block length. Each transfer begins with an ASCII header such as #42204. The first digit represents the number of following digits in the header (in this example, 4). The remainder of the header indicates the number of bytes that follow the header (in this example, 2204). You then divide the number of following bytes by the number of bytes in the data format you’ve chosen (4 for both INTeger,32 and REAL,32 so 2204/4) to get the number of data points (in this example, 551).

Parameter: ASCii | INTeger,32 | REAL,32
Parameter Type: <char>
Default Value: ASCii
Related Command: :TRACe[:DATA]
9-6  :INITiate Subsystem

This subsystem controls the triggering of measurements.

:INITiate:CONTinuous OFF|ON|0|1
:INITiate:CONTinuous?

Title: Continuous/Single Sweep

Description: Specifies whether the sweep/measurement is triggered continuously. If the value is set to ON or 1, another sweep/measurement is triggered as soon as the current one completes. If continuous is set to OFF or 0, the instrument enters the “idle” state and waits for the :INITiate[:IMMediate] command or for :INITiate:CONTinuous ON. The default value is ON. That is, sending :INIT:CONT is equivalent to sending :INIT:CONT ON. The query version of the command returns a 1 if the instrument is continuously sweeping/measuring and returns a 0 if the instrument is in single sweep/measurement mode. Note that rapid toggling between ON and OFF is not allowed. The instrument must be allowed to make a full sweep before toggling can be done. Note that the set command is available only if the instrument is in Cable & Antenna mode.

Parameter: OFF|ON|0|1
Parameter Type: <boolean>
Default Value: ON
Related Command: :INITiate[:IMMediate]
:INITiate:HOLD
Front Panel Access: Shift-3 (Sweep), Sweep (Single/Continuous)

:INITiate[:IMMediate]

Title: Trigger Sweep/Measurement

Description: Initiates a sweep/measurement. If :INITiate:CONTinuous is set to ON, this command is ignored. Use this command in combination with :STATus:OPERation? to synchronize the capture of one complete set of data. When this command is sent, the “sweep complete” bit of :STATus:OPERation? is set to 0, indicating that the measurement has not completed. The data collection is then triggered. The controlling program can poll :STATus:OPERation? to determine the status. When the “sweep complete” bit is set to 1, data is ready to be retrieved.

Related Command: :INITiate:CONTinuous
:STATus:OPERation?
Front Panel Access: Shift-3 (Sweep),Trigger Sweep
9-7  :MEASure Subsystem

These commands take the instrument from its current state, enable the specified measurement and put the instrument into single sweep mode. They correct any parameters that are invalid given the new measurement state such that a valid measurement can take place. Other settings may be changed; see the documentation of CONFigure for each measurement. They then initiate the measurement. When the measurement is complete, they return the result.

To make a measurement with settings other than the “default” measurement settings applied by CONFigure, do the following:

- Send the appropriate CONFigure command to set the desired measurement.
- Modify the settings as required.
- Send the appropriate READ command to measure and return the result.

To get the current measurement data, use the appropriate FETCh command.

:MEASure:DEMod:CDPData?

Title: Measure Demodulator Code Domain Power Data

Description: Sets the active measurement to Code Domain Data, sets the default measurement parameters, triggers a new measurement and returns the Slot Power, DwPTS Power, Channel Power RRC, Frequency Error in Hz, Frequency Error in PPM, EVM RMS, EVM Peak, RMS Phase Error, Carrier Feed Through, DwPTS EVM, DwPTS PCDE, CDP Noise Floor, CDP Threshold, Tau, Selected Slot, Sync DL Code, Scrambling Code, Max Users, Spread Factor, Data Modulation Type, Scrambling Code 1, Scrambling Code 2, Scrambling Code 3, and Scrambling Code 4 measurement results. It is a combination of the following commands :CONFigure:DEMod CDPower; :READ:DEMod:CDPData?

To make a CDP Data measurement with settings other than the default values send:

:CONFigure:DEMod CDPData

Commands to set desired settings

:READ:DEMod:CDPData?

Data is returned as 24 comma-delimited values: Slot Power in dBm, DwPTS Power in dBm, Channel Power RRC in dBm, Freq Error in Hz, Freq Error in PPM, EVM RMS percentage, EVM Peak in percentage, RMS Phase Error in percentage, Carrier Feed Through in dB, DwPTS EVM in percentage, DwPTS PCDE in dB, CDP Noise Floor in dB, CDP Threshold hold in dB, Tau in nanoseconds, Sync DL Code in unitless number, Scrambling Code in unitless number, Max User in unitless number, Spread Factor in dB, Data Modulation Type (0 = Noise, 1 = QPSK, 2 = 8PSK, 3 = 16QAM), Scrambling Code 1 in dB, Scrambling Code 2 in dB, Scrambling Code 3 in dB, and Scrambling Code 4 in dB. All invalid values are replaced with “--”. 

Related Command: :CONFigure:DEMod CDPData

:READ:DEMod:CDPData?

:FETCh:DEMod:CDPData?

Front Panel Access: Measurement, Demodulator, CDP Data
:MEASURE:DEMod:SUMMARY?

Title: Measure Modulation Summary

Description: Sets the active measurement to Modulation Summary, sets the default measurement parameters, triggers a new measurement and returns Slot Power, EVM, Peak EVM, Frequency error, Frequency Error PPM, Tau, Noise Floor, Carrier Feed Through, Peak CDE. It is a combination of the following commands :CONFigure:DEMod SUMMARY; :READ:DEMod:SUMMARY?

To make a Demodulator Summary measurement with settings other than the default values send: :CONFigure:DEMod SUMMARY Commands to set desired settings

:READ:DEMod:SUMMARY?

Data is returned as 9 comma-delimited values: Slot Power, EVM, Peak EVM, Frequency error, Frequency Error PPM, Tau, Noise Floor, Carrier Feed Through, Peak CDE. All invalid values are replaced with “--”. Power units are in watt or dBm as per what is set by the user. Frequency is always in Hz.

Related Command: :CONFigure:DEMod SUMMARY
:READ:DEMod:SUMMARY?
:FETCh:DEMod:SUMMary?

Front Panel Access: Measurements, Demodulator, Modulation Summary

:MEASURE:OTA?

Title: Measure OTA Pilot Scan

Description: Sets the active measurement to Pilot Scan, sets the default measurement parameters, triggers a new measurement and returns DwPTS Power and Pilot Dominance. It is a combination of the following commands :CONFigure:OTA PSCAN; :READ:OTA? To make an OTA Pilot Scan measurement with settings other than the default values send:

:CONFigure:OTA

Commands to set desired settings

:READ:OTA?

Data is returned as 2 comma-delimited values: DwPTS Power in dBm, and Pilot Dominance in dBm. All invalid values are replaced with “--”.

Related Command: :CONFigure:OTA
:READ:OTA?
:FETCh:OTA?

Front Panel Access: Measurement, OTA, Pilot Scan
**:MEASure:RF:EMISsion?**

**Title:** Measure RF Spurious Emission

**Description:** Sets the active measurement to Spurious Emission, sets the default measurement parameters, triggers a new measurement and returns the Left Power, Center Power, Right Power, followed by Marker Number, Marker Start Frequency, Marker Stop Frequency, Marker Peak Power Frequency, Marker Peak Power, Marker Power Margin, Marker RBW, Marker’s Pass/Fail Status for all markers/boundaries. It is a combination of the following commands :CONFigure:RF EMISsion; :READ:RF:EMISsion? To make an RF Spurious Emission measurement with settings other than the default values send:

**Related Command:** :CONFigure:RF EMISsion

**Related Command:** :READ:RF:EMISsion?

**Related Command:** :FETCh:RF:EMISsion?

**Front Panel Access:** Measurement, RF, Spurious Emission

**:MEASure:RF:SPECTrum?**

**Title:** Measure RF Spectrum

**Description:** Sets the active measurement to Channel Spectrum, sets the default measurement parameters, triggers a new measurement and returns the Channel Power, Occupied Bandwidth, Left Channel Power, Left Channel Occupied Bandwidth, Right Channel Power and Right Channel Occupied Bandwidth measurement results. It is a combination of the following commands :CONFigure:RF SPECTrum; :READ:RF:SPECTrum?

To make an RF Spectrum measurement with settings other than the default values send:

**Related Command:** :CONFigure:RF SPECTrum

**Related Command:** :READ:RF:SPECTrum?

**Related Command:** :FETCh:RF:SPECTrum?

**Front Panel Access:** Measurement, RF, Channel Spectrum
:MEASURE:RF:SUMMARY?

**Title:** Measure RF Summary

**Description:** Sets the active measurement to RF Summary, sets the default measurement parameters, triggers a new measurement and returns Channel Power, Channel Power RRC, Occupied Bandwidth, DwPTS Power, UpPTS Power, ON/OFF Ratio, Slot PAR, Left Channel Power, Right Channel Power, Left Channel Occupied Bandwidth, Right Channel Occupied Bandwidth. It is a combination of the following commands

:CONFIGURE:RF SUMMARY; :READ:RF:SUMMARY?

To make a RF Summary measurement with settings other than the default values send:

:CONFIGURE:RF SUMMARY Commands to set desired settings :READ:RF:SUMMARY?

Data is returned as 11 comma-delimited values: Channel Power, Channel Power RRC, Occupied Bandwidth, DwPTS Power, UpPTS Power, ON/OFF Ratio, Slot PAR, Left Channel Power, Right Channel Power, Left Channel Occupied Bandwidth, Right Channel Occupied Bandwidth. All invalid values are replaced with “-". Power units are in watt or dBm as per what is set by the user. Frequency is always in Hz.

**Related Command:** :CONFIGURE:RF SUMMARY
:READ:RF:SUMMARY?
:FETCh:RF:SUMMARY?

**Front Panel Access:** Measurements, RF, RF Summary
9-8 :READ Subsystem

This set of commands combines the ABORt, INITiate and FETCh commands. It aborts any current triggering sequence and sets the trigger state to idle. It then initiates a new active measurement (i.e. begins the collection of new data). When the measurement is complete, it returns the result. These commands will not switch to another measurement.

To get the current measurement data, use the FETCh command.

:READ:DEMod:CDPData?

Title: Read Demodulator Code Domain Data

Description: Triggers a new measurement and returns the Slot Power, DwPTS Power, Channel Power RRC, Frequency Error in Hz, Frequency Error in PPM, EVM RMS, EVM Peak, RMS Phase Error, Carrier Feed Through, DwPTS EVM, DwPTS PCDE, CDP Noise Floor, CDP Threshold, Tau, Selected Slot, Sync DL Code, Scrambling Code, Max Users, Spread Factor, Data Modulation Type, Scrambling Code 1, Scrambling Code 2, Scrambling Code 3, and Scrambling Code 4 measurement results. It is a combination of the following commands: ABORt; INITiate; :FETCh:DEMod:CDPData?

In order for the data to be accurate, the Code Domain Power measurement must be the active measurement (specified by :CONFigure:DEMod CDPData). The current measurement can be queried using :CONFigure?

Data is returned as 24 comma-delimited values: Slot Power in dBm, DwPTS Power in dBm, Channel Power RRC in dBm, Freq Error in Hz, Freq Error in PPM, EVM RMS percentage, EVM Peak in percentage, RMS Phase Error in percentage, Carrier Feed Through in dB, DwPTS EVM in percentage, DwPTS PCDE in dB, CDP Noise Floor in dB, CDP Threshold hold in dB, Tau in nanoseconds, Sync DL Code in unitless number, Scrambling Code in unitless number, Max User in unitless number, Spread Factor in dB, Data Modulation Type (0 = Noise, 1 = QPSK, 2 = 8PSK, 3 = 16QAM), Scrambling Code 1 in dB, Scrambling Code 2 in dB, Scrambling Code 3 in dB, and Scrambling Code 4 in dB. All invalid values are replaced with “--”.

Related Command: :CONFigure:DEMod CDPData
:MEASure:DEMod:CDPData?
:FETCh:DEMod:CDPData?

Front Panel Access: Measurement, Demodulator, CDP Data

:READ:DEMod:SUMMary?

Title: Read Modulation Summary

Description: Triggers a new RF Summary measurement and returns the results. It is combination of the commands: ABORt; INITiate; FETCh: DEMod:SUMMary? The current measurement can be queried using :CONFigure?

Data is returned as 9 comma-delimited values: Slot Power, EVM, Peak EVM, Frequency error, Frequency Error PPM, Tau, Noise Floor, Carrier Feed Through, Peak CDE. All invalid values are replaced with “--”. Power units are in watt or dBm as per what is set by the user. Frequency is always in Hz.

Related Command: :CONFigure:DEMod SUMMary
:READ:DEMod:SUMMary?
:FETCh:DEMod:SUMMary?

Front Panel Access: Measurements, Demodulator, Modulation Summary
:READ:OTA?

Title: Read OTA Pilot Scan

Description: Sets the active measurement to Pilot Scan, sets the default measurement parameters, triggers a new measurement and returns DwPTS Power and Pilot Dominance. It is a combination of the following commands :ABORt; :INITiate; :FETCh:OTA? In order for the data to be accurate, the Pilot Scan must be the active measurement (specified by :CONFigure:OTA. The current measurement can be queried using :CONFigure?

Data is returned as 2 comma-delimited values: DwPTS Power in dBm, and Pilot Dominance in dBm. All invalid values are replaced with “--”.

Related Command: :CONFigure:OTA
:MEASure:OTA?
:FETCh:OTA?

Front Panel Access: Measurement, OTA, Pilot Scan

:READ:RF:EMISsion?

Title: Read RF Spurious Emission

Description: Triggers a new measurement and returns the Left Power, Center Power, Right Power, followed by Marker Number, Marker Start Frequency, Marker Stop Frequency, Marker Peak Power Frequency, Marker Peak Power, Marker Power Margin, Marker RBW, Marker’s Pass/Fail Status for all markers/boundaries markers/boundaries. It is a combination of the following commands :ABORt; :INITiate; :FETCh:RF:EMISsion? In order for the data to be accurate, the Spurious Emission measurement must be the active measurement (specified by :CONFigure:RF EMISsion. The current measurement can be queried using :CONFigure?

Data is returned as 3 comma-delimited values for Left Power, Center Power, and Right Power in dBm. They are followed by 8 comma-delimited values for each marker/boundary: Marker number, Marker Start Frequency in MHz, Marker Stop Frequency in MHz, Marker Peak Power Frequency in MHz, Marker Peak Power in dBm, Marker Power Margin in dB, RBW in MHz, and Pass/Fail.

Related Command: :CONFigure:RF EMISsion
:MEASure:RF:EMISsion?
:FETCh:RF:EMISsion?

Front Panel Access: Measurement, RF, Spurious Emission
Title: Read Power vs. Time

Description: Triggers a new measurement and returns the Channel Power RRC, Sync Download Power, Sync Upload Power, On Off Ratio, Peak Average Ratio, Dw Up Delta, Slot 1 Power, Slot 2 Power, Slot 3 Power, Slot 4 Power, Slot 5 Power, Slot 6 Power, and Slot 7 Power. It is a combination of the following commands CONFIGure:RF PVTSlot;
:READ:RF:PVTSlot? To make an RF ACPR measurement with settings other than the default values send:

:CONFIGure:RF PVTSlot
Commands to set desired settings
:READ:RF:PVTSlot?

Data is returned as 13 comma-delimited values: The Channel Power RRC in dBm, Sync Download Power in dBm, Sync Upload Power in dBm, On Off Ratio in dB, Peak Average Ratio in dB, Dw Up Delta in dB, Slot 1 to 7 Power in dBm.

Related Command: :CONFIGure:RF PVTSlot
:MEASURE:RF:PVTSlot?
:FETCH:RF:PVTSlot?
:READ:RF:SPECtrum?

Title: Read RF Spectrum

Description: Triggers a new measurement and returns the Channel Power, Occupied Bandwidth, Left Channel Power, Left Channel Occupied Bandwidth, Right Channel Power and Right Channel Occupied Bandwidth measurement results. It is a combination of the following commands :ABORt; :INITiate; :FETCh:RF:SPECtrum? In order for the data to be accurate, the Channel Spectrum measurement must be the active measurement (specified by :CONFigure:RF SPECtrum). The current measurement can be queried using :CONFigure?

Data is returned as 2 comma-delimited values: Channel Power in dBm, and Occupied bandwidth in Hz.

Default Value: 42

Related Command: :FETCh:RF:SPECtrum?
:CONFigure:RF SPECtrum
:MEASure:RF:SPECtrum?

Front Panel Access: Measurement, RF, Channel Spectrum

:READ:RF:SUMMary?

Title: Read RF Summary

Description: Triggers a new RF Summary measurement and returns the results. It is combination of the commands :ABORT; :INITiate; FETCh:RF:SUMMary? The current measurement can be queried using :CONFigure?

Data is returned as 11 comma-delimited values: Channel Power, Channel Power RRC, Occupied Bandwidth, DwPTS Power, UpPTS Power, ON/OFF Ratio, Slot PAR, Left Channel Power, Right Channel Power, Left Channel Occupied Bandwidth, Right Channel Occupied Bandwidth. All invalid values are replaced with “--”. Power units are in watt or dBm as per what is set by the user. Frequency is always in Hz.

Related Command: :CONFigure:RF SUMMary
:READ:RF:SUMMary
:FETCh:RF:SUMMary?

Front Panel Access: Measurements, RF, RF Summary
9-9  :TRACe Subsystem

This subsystem contains commands related to the transfer of trace data to and from the instrument.

:TRACe:PREAMble? <trace type>

Title: Trace Header Transfer

Description: Returns trace header information for the specified trace. The <trace type> must be one of the following: SPECtrum | EMISsion | DEMod | OTA | PVTSlot.

Data can be transferred to and from the 5 available display trace types. Use the commands in the MMErory subsystem to store and recall traces from the instrument memory. The response begins with an ASCII header. The header specifies the number of following bytes. It looks like #AX, where A is the number of digits in X and X is the number of bytes that follow the header. Parameters are returned in comma-delimited ASCII format. Each parameter is returned as “NAME=VALUE[ UNITS],” Valid parameter names are shown in “TDSCDMA Parameter Names” on page 2-30.

Parameter: <trace type>

Related Command: :TRACe:DATA?
Title: Trace Data Transfer

Description: This command transfers trace data from the instrument to the controller. The trace type must be one of the following: SPECtrum|EMISsion|DEMod|OTA|PVTSlot.

The format of the block data in the query form is specified by :FORMat:DATA. The block data in the command form is always sent in ASCII format. The response begins with an ASCII header that specifies the number of data bytes. It looks like #AX, where A is the number of digits in X and X is the number of bytes that follow the header. Each data point is separated by a comma delimiter. Trace setup information can be acquired using :TRACe[:DATA]:PREamble?. Use the commands in the MMEMory subsystem to store and recall traces from the instrument memory.

The RF measurements Power vs. Time and Channel Spectrum both only have one value per data point that is returned in dBm. Each value is 4 bytes.

For the RF Spurious Emission measurement, each data point will have two values. The first value is the wave data, while the second value is the mask data. Both values are four bytes and returned in dBm. Note that the second value, which is the mask, may contain default value 300 dBm. This is to signify the mask for the frequency point isn’t valid and out of range.

The Demodulator Code Domain Power measurement has six values per data point. The first value is the point number, which has no unit. The second value is the relative power returned in dB of I data. The third value is the absolute power returned in dBm of I data. The fourth value is the relative power returned in dB of Q data. The fifth value is the absolute power returned in dBm of Q data. The fourth value is the type, which is defined in the following table.

<table>
<thead>
<tr>
<th>Return Value</th>
<th>Signal Type</th>
<th>Color</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Inactive</td>
<td>Grey</td>
</tr>
<tr>
<td>1</td>
<td>QPSK</td>
<td>Orange</td>
</tr>
<tr>
<td>2</td>
<td>8PSK</td>
<td>Purple</td>
</tr>
<tr>
<td>3</td>
<td>16QAM</td>
<td>Brown</td>
</tr>
</tbody>
</table>

All values are four bytes each.

Over the Air (OTA) measurements will have three values per data point. The first value is the type, which can be 0 (Noise, Grey), 1 (Primary, Blue), and 2 (Secondary, Red), or.

The second value is the Ec/Io returned in dB. The third value is Tau returned in s. All three values are the same and are 4 bytes each.

Note that the instrument must be set in the selected view. Use the CONFigure command to set the unit to the selected view.

Parameter: <trace type>

Related Command: :FORMat[:DATA]
:TRACe[:DATA]:PREamble?
9-10 :TRIGger Subsystem

This subsystem contains commands related to the triggering of instrument functions for the purposes of synchronization. Related commands appear in the ABORt and INITiate subsystems.

:TRIGger:SEQUence:SLOPe RISing|FALLing
:TRIGger:SEQUence:SLOPe?

Title: External Trigger Polarity
Description: This command sets the external trigger polarity. Note that this setting can only be changed when the PN Type is set to “EXT”.
Parameter: RISing|FALLing
Parameter Type: <char>
Default Value: RISing
Default Unit: NA
Range: RISing, FALLing
Related Command: [:SENSe]:PN:TRIGger
[:SENSe]:PN:TRIGger?
Front Panel Access: Setup, Ext Trigger Polarity
9-11  :UNIT Subsystem

The unit subsystem is used to modify the default units used for related parameters. These changes affect parameters in both commands and responses.

:UNIT:POWer DBM|W
:UNIT:POWer?

Title: Measurement Units
Description: Sets the default amplitude units for input, output and display.
Parameter: DBM | W
Parameter Type: <char>
Default Value: dBm
Front Panel Access: Amplitude, Units, Unit of Measure
9-12 [:SENSe] Subsystem

The commands in this subsystem relate to device-specific parameters, not signal-oriented parameters.

[:SENSe]:DEMod:CDPData:UNITs RELative|ABSolute
[:SENSe]:DEMod:CDPData:UNITs?

Title: Code Domain Data Unit Type
Description: Sets the Code Domain Power unit type. The query form returns either a “REL” for relative units, or an “ABS” for absolute units in Ascii (without the double quotes).

Default Value: RELative
Range: RELative, ABSolute
Front Panel Access: Measurement, Demodulator, CDP Data, CDP Units

[:SENSe]:DEMod:MODType Auto|QPSK|8PSK|16QAM
[:SENSe]:DEMod:MODType?

Title: Modulation Type
Description: This command sets the Data Slot Modulation Type. Options are: auto-detection, assumed QPSK, assumed 8PSK, assumed 16QAM. The query version of this command returns the current setting.

Default Value: Auto
Range: Auto|QPSK|8PSK|16QAM
Front Panel Access: Setup, More, Modulation Type

[:SENSe]:DEMod:MUSer Auto|2-16 (even)
[:SENSe]:DEMod:MUSer?

Title: Max Users
Description: Sets the Walsh codes.
Default Value: Auto (0)
Range: Auto|2 to 16 (even numbers only)
Front Panel Access: Setup, Max Users

[:SENSe]:DEMod:SCRamblingcode Auto|0-127
[:SENSe]:DEMod:SCRamblingcode?

Title: Scrambling Code
Description: This command sets the Scrambling/Midamble Code of downlink data slot to be demodualted.
Default Value: Auto (128)
Range: Auto|0 to 127
Front Panel Access: Setup, Scrambling Midamble Code
[:SENSe]:DEMod:SPRFactor Auto|16|1
[:SENSe]:DEMod:SPRFactor?

Title: Spread Factor
Description: This command sets the spreading factor of the downlink data slot to be demodulated.
Default Value: Auto
Range: Auto|16|1
Front Panel Access: Setup, More, Spreading Factor

[:SENSe]:DWPTs Auto|On|Off
[:SENSe]:DWPTs?

Title: DwPTS
Description: This command sets the Downlink Pilot Time Slot. Options are: auto-detection, assumed ON or assumed OFF.
The query form of this command will returns the current setting.
Default Value: Auto
Range: Auto|On|Off
Front Panel Access: Setup, More, DwPTS

[:SENSe]:FREQuency:CENTer <freq>
[:SENSe]:FREQuency:CENTer?

Title: Center Frequency
Description: Sets the center frequency. Note that changing the value of the center frequency will change the value of the coupled parameters Start Frequency and Stop Frequency. It may also change the value of the span. Note that the set command is available only if the instrument is in Cable & Antenna mode.
Parameter: <freq>
Default Value: 2.01 GHz
Default Unit: Hz
Range: 1 MHz to 2.7 GHz
Front Panel Access: Freq, Center Freq

[:SENSe]:FREQuency:SIGStandard <index>
[:SENSe]:FREQuency:SIGStandard?

Title: Signal Standard
Description: Selects the desired signal standard from the list. The <index> argument is a 1-based index of the position of the desired signal standard in the instrument’s current signal standard list. The list can be seen on the instrument by choosing the “Signal Standard” soft-key button in the “Frequency” menu. The list can also be downloaded remotely and viewed using Anritsu Master Software Tools. For example, if the desired Signal Standard is the 3rd item on the list then the value of the <index> argument would be 3.
The query form of this command will return the index of the currently-selected Signal Standard on the list.
Parameter: <index>
Front Panel Access: Frequency, Signal Standard
[:SENSe]:FREQuency:SIGStandard:CHANnel <number>
[:SENSe]:FREQuency:SIGStandard:CHANnel?

Title: Channel Selection
Description: Sets the channel number for the selected signal standard.
Parameter: <number>
Front Panel Access: Frequency, Channel

[:SENSe]:NUMCarriers 1|3
[:SENSe]:NUMCarriers?

Title: Number of Carriers
Description: This command sets the number of main:center TD-SCDMA carriers, for multicarrier configuration. The query version returns the current setting.
Default Value: 1
Range: 1|3
Front Panel Access: Setup, More, Number of Carriers

[:SENSe]:PFail <test set>
[:SENSe]:PFail?

Title: PASS/FAIL Test Selection
Description: Selects the active test set to be used in subsequent PASS/FAIL measurements. The <test set> value must correspond to a test set that is defined in the test set list. To view the list on the instrument, go into the “Measurement” menu, press the “Pass/Fail Mode” key, and then press the “Select Pass/Fail Test” soft key. Alternatively, the list can be retrieved remotely and viewed using the Anritsu Master Software Tools. The <test set> argument is a 1-based index of the position of the desired Pass/Fail test set in the instrument’s current Pass/Fail test set list. For example, if the desired Pass/Fail test is the 3rd item on the list then the value of the <test set> argument would be 3.

When using the query form of the command, the return value is the currently selected test set number. If there is not a valid test set selected, the return value is “-1” (negative 1).

Parameter: <test set>
Related Command: :CONFigure:PFail
Front Panel Access: Measurement, Pass Fail Mode, Select Pass/Fail Test
[:SENSe]:POWer[:RF]:RANGe:AUTO OFF|ON|0|1
[:SENSe]:POWer[:RF]:RANGe:AUTO?

Title: Automatic Amplitude Range
Description: Sets the automatic amplitude range. Setting the value to ON or 1 will result in the amplitude range being coupled to the detected input signal level. Setting the value to OFF or 0 will result in the input attenuation being un-coupled from the input signal level. That is, changing the input signal level will not change the amplitude range. When this command is issued, the amplitude range itself will not change. The default value is ON. That is, sending :SENS:POW:RANG:AUTO is equivalent to sending :SENS:POW:RANG:AUTO ON.

Parameter: OFF|ON|0|1
Parameter Type: <boolean>
Default Value: ON
Related Command: [:SENSe]:POWer[:RF]:RANGe
Front Panel Access: Amplitude, Auto Range

[:SENSe]:POWer[:RF]:RANGe[:IMMediate]

Title: Amplitude Range
Description: Re-calculates amplitude range. Note that issuing this command will set the automatic dynamic range OFF.
Related Command: [:SENSe]:POWer[:RF]:RANGe:AUTO
Front Panel Access: Amplitude, Adjust Range

[:SENSe]:RF:SPECTrum:SPAN 5|10|20|30
[:SENSe]:RF:SPECTrum:SPAN?

Title: Spectrum View Span
Description: Sets the span for the Spectrum view. Setting the value to 5 will set the span for the Spectrum view to 5 MHz. Setting the value to 10 will set the span for the Spectrum view to 10 MHz. Setting the value to 20 will set the span for the Spectrum view to 20 MHz. Setting the value to 30 will set the span for the Spectrum view to 30 MHz.

Parameter: 5|10|20|30
Default Value: 5 MHz
Default Unit: MHz
Front Panel Access: Measurement, RF, Spectrum, Span

[:SENSe]:SLOTselection Auto|0-6
[:SENSe]:SLOTselection?

Title: Slot Selection
Description: Sets the Walsh codes.
Default Value: Auto (7)
Range: Auto, 0 to 6
Front Panel Access: Setup, Slot Selection
[:SENSe]:SWEep:SPEed FAST|NORM|SLOW
[:SENSe]:SWEep:SPEed?

Title: Measurement Speed
Description: Sets the measurement speed. The query form returns either “FAST”, “NORM”, or “SLOW” in Ascii (without the double quotes).
Parameter: FAST|NORM|SLOW
Parameter Type: <char>
Default Value: Norm
Range: FAST, NORM, SLOW
Front Panel Access: Setup, Meas Speed

[:SENSe]:SYDLcode Auto|0-31
[:SENSe]:SYDLcode?

Title: Sync-DL Code
Description: This command sets the Sync-DL code of the Downlink Pilot Time Slot used in subframe sync.
Default Value: Auto (32)
Range: Auto, 0 to 31
Front Panel Access: Setup, SYNC-DL Code

[:SENSe]:TAU:OFFSET <integer>
[:SENSe]:TAU:OFFSET?

Title: Tau Offset
Description: Sets the Tau offset in microsecond.
Default Value: 0
Range: -5000000 to 5000000
Front Panel Access: Setup, Trigger, Tau Offset

[:SENSe]:TRIGger NOTRig|GPS|EXT
[:SENSe]:TRIGger?

Title: External Trigger
Description: Sets the external trigger. The query form returns either “NOTRIG”, “GPS”, or “EXT” in Ascii (without the double quotes).
Default Value: No Trig
Range: NOTRig, GPS, EXT
Front Panel Access: Setup, Trigger, Trigger Type
Title: Uplink Switch Point

Description: Index of the the last downlink slot in the subframe.

Default Value: 3
Range: 0 to 6

Front Panel Access: Setup, Uplink Switch Point
Chapter 10 — CDMA Commands

10-1 :ABORt Subsystem

The abort subsystem includes commands that allow the user to stop current measurement activities on the instrument.

:ABORt

Title: Abort

Description: Restarts the current sweep and/or measurement. Resets the trigger system. If :INITiate:CONTinuous is OFF (i.e. the instrument is in single sweep mode), send the command :INITiate[:IMMediate] to trigger the next sweep. If :INITiate:CONTinuous is ON (i.e. the instrument is in continuous sweep mode) a new sweep will start immediately.

Parameter: NA

Related Command: :INITiate:CONTinuous
  :INITiate[:IMMediate]

Front Panel Access: Shift-3 (Sweep), Reset Sweep
10-2  :CALCulate Subsystem

The commands in this subsystem process data that has been collected via the SENSE subsystem.

:CALCulate:MARKer:AOFF

Title: Turn All Markers Off
Description: Turns off all markers.
Front Panel Access: Marker, All Markers Off

:CALCulate:MARKer{1|2|3|4|5|6}:Y?

Title: Marker Read Y Value
Description: Reads the current Y value for the specified marker. The units are the units of the y-axis.
Default Unit: Current y-axis unit

:CALCulate:MARKer{1|2|3|4|5|6}[:STATe] OFF|ON|0|1
:CALCulate:MARKer{1|2|3|4|5|6}[:STATe]?

Title: Marker State
Description: Sets the specified marker on/off.
Parameter: OFF|ON|0|1
Parameter Type: <boolean>
Default Value: OFF
Example: To turn off reference marker #1:

:CALCulate:MARKer1:STATe OFF

Front Panel Access: Marker, On/Off
10-3 :CONFigure Subsystem

This set of commands prepares the instrument for the selected measurement. It disables any currently-enabled measurements and activates the specified measurement. It sets the instrument to single sweep mode, waiting for an :INITiate command. It will not initiate the taking of a measurement.

Current instrument settings may be changed to default values. These changes are identified with their respective measurement commands.

:CONFigure SUMMARY|PFail

Title: Configure Summary and Pass/Fail Measurements

Description: This command configures the summary and PASS/FAIL measurements. It disables any other active measurements. None of the instrument parameters are changed by the execution of this command. Sets the instrument to single sweep mode (:INITiate:CONTinuous OFF). Measurement settings can be modified by using the [:SENSe] commands before initiating a measurement.

Parameter: SUMMARY|PFail

Front Panel Access: Shift-4 (Measurement), CDMA Summary or Pass/Fail Mode

:CONFigure:DEMod <char>

Title: Configure Demodulation Measurement

Description: Valid <char> parameter options: SUMMARY|CDPower|CDPTable

This command configures the selected demodulation measurement. It disables any other active measurements. Sets the instrument to single sweep mode (:INITiate:CONTinuous OFF). Measurement settings can be modified by using the [:SENSe]:DEMod commands before initiating a measurement.

When the SUMMARY option is selected, the measurement results are equivalent to the results that are displayed by choosing Measurements, then Demodulator, then Modulation Summary from the front panel. When the CDPower option is selected, the measurement results are equivalent to the results that are displayed by choosing Measurements, then Demodulator, then CDP from the front panel. When the CDPTable option is selected, the measurement results are equivalent to the results that are displayed by choosing Measurements, then Demodulator, then CDP Table from the front panel.

Parameter: <char>

Front Panel Access: Shift-4 (Measurement), Demodulator

:CONFigure:OTA <char>

Title: Configure Over-The-Air Measurement

Description: Valid parameter options: PSCAn|MPATh. This command configures the selected Over The Air measurement. It disables any other active measurements. Sets the instrument to single sweep mode (:INITiate:CONTinuous OFF). Measurement settings can be modified before initiating a measurement. When the PSCAn option is selected, the measurement results are equivalent to the results that are displayed by choosing Measurements, then OTA, then Pilot Scan from the front panel. When the MPATh option is selected, the measurement results are equivalent to the results that are displayed by choosing Measurements, then OTA, then Multipath from the front panel.

Parameter: <char>
:CONFigure:RF <char>

Title: Configure RF Measurement

Description: Valid parameter options: SUMMary | SPECtrum | ACPR | EMISsion

This command configures the selected RF measurement. It disables any other active measurements. Sets the instrument to single sweep mode (:INITiate:CONTInuous OFF). Measurement settings can be modified by using the [:SENSe]:RF commands before initiating a measurement.

When the SUMMary option is selected, the measurement results are equivalent to the results that are displayed by choosing Measurements, then RF, then RF Summary from the front panel. When the SPECtrum option is selected, the measurement results are equivalent to the results that are displayed by choosing Measurements, then RF, then Channel Spectrum from the front panel. When the ACPR option is selected, the measurement results are equivalent to the results that are displayed by choosing Measurements, then RF, then ACPR from the front panel. When the EMISsion option is selected, the measurement results are equivalent to the results that are displayed by choosing Measurements, then RF, then Spurious Emission from the front panel.

Parameter: <char>

Related Command: [:SENSe]:FREQuency
[:SENSe]:RF:ACLR:MAINchannelcount
[:SENSe]:RF:ACLR:ADJcchannelcount
10-4 :DISPlay Subsystem

This subsystem provides commands that modify the display of data for the user. They do not modify the way in which data are returned to the controller.

:DISPlay:WINDow:TRACe:Y[:SCALe]:OFFSet <rel ampl>
:DISPlay:WINDow:TRACe:Y[:SCALe]:OFFSet?

  Title: Power Offset
  Description: Sets the power offset value for the y-axis.
  Parameter: <rel ampl>
  Default Value: 0 dB
  Default Unit: dB
  Range: -100 dB to 100 dB

Front Panel Access: Amplitude, Power Offset

:DISPlay:WINDow:TRACe:Y[:SCALe]:PDIVision <rel ampl>
:DISPlay:WINDow:TRACe:Y[:SCALe]:PDIVision?

  Title: Scale
  Description: Sets the scale (dB/division) for the y-axis.
  Parameter: <rel ampl>
  Default Value: 10 dB/div
  Default Unit: dB
  Range: 1 dB to 15 dB

Front Panel Access: Amplitude, Scale
10-5 :FETCh Subsystem

This set of commands returns the most recent measurement data of the active measurement. They will not switch to another measurement.

To make a new measurement, use the INITiate command. To get new measurement data, use the READ or MEASure query commands.

:FETCh:DEMod:CDPower?

Title: Fetch Demodulated Channel Power

Description: Returns the most recent Code Domain Power measurement results.

Data is returned as 12 comma-delimited values: Pilot Power in the current user set unit (dBm/W/mW), Channel Power in the current user set unit (dBm/W/mW), Noise Floor in dB, Rho, Carrier Feed Through in dB, Tau in ps, RMS Phase Error in deg, Frequency Error in Hz, Frequency Error PPM, Page in dBm, Sync in dBm, and Q Page. All invalid values are replaced with “--”.

Default Unit: dBm

Related Command: :CONfigure:DEMod CDPower
:MEASure:DEMod:CDPower?
:READ:DEMod:CDPower?

Front Panel Access: Measurement, Demodulator, CDP

:FETCh:OTA:MPATh?

Title: Fetch OTA Multipath

Description: Returns the most recent Multipath measurement results.

Data is returned as 14 comma-delimited values: six Ec/Io Values in dB, six Tau values in ps, Channel Power in the current user set unit (dBm/W/mW), and Multipath Power in dB. All invalid values are replaced with “--”.

Related Command: :CONfigure:OTA MPATh
:MEASure:OTA:MPATh?
:READ:OTA:MPATh?

Front Panel Access: Measurement, OTA, Multipath
:FETCH:PFail?

Title: Fetch PASS/FAIL

Description: Returns the most recent PASS/FAIL measurement results. Measurement results are returned in a block of ASCII text in the format of <header><block>. The ASCII header specifies the number of data bytes. It looks like #AX, where A is the number of digits in X and X is the number of bytes in the <block>. The block consists of a set of records which indicate individual test results. Records are comma-separated. Each record follows the format <test ID>: <input1> <input2> <min> <max> <value1> <value2> <PASS/FAIL/OPTION NOT INSTALLED>. The <test ID> field indicates which test was performed to retrieve these results. The <input1> and <input2> fields indicate the test setup. The <min> and <max> fields indicate the minimum and maximum values against which <value1> and <value2> were compared to arrive at the final PASS/FAIL result. If the specified test is not available in the instrument, the <PASS/FAIL> field will indicate "option not available" instead of "pass" or "fail". All unused fields for a given test are represented by a double dash ("--"). To receive valid measurements, the Pass/Fail measurement must be the active. The current measurement can be queried using CONFIGure?. Use the :CONFIGure:PFail to set Pass/Fail as the active measurement.

Related Command: MEASure:PFail?
:CONFIGure:PFail
READ:PFail?

:FETCh:RF:ACPR?

Title: Fetch Adjacent Channel Power Ratio

Description: Returns the most recent Adjacent Channel Power Ratio measurement results.

Data is returned as 9 comma-delimited values: The Absolute Adjacent Channel 1 Power, Absolute Adjacent Channel 2 Power, Absolute Main Channel 1 Power, Absolute Main Channel 2 Power, Absolute Main Channel 3 Power, Absolute Main Channel 4 Power, Absolute Main Channel 5 Power, Absolute Adjacent Channel 3 Power, Absolute Adjacent Channel 4 Power. All values are returned in dBm. Note that the values for all five main channel carriers are shown even if the number of carriers set on the instrument is below five.

Related Command: :CONFIGure:RF ACPR
:MEASure:RF:ACPR?
:READ:RF:ACPR?

Front Panel Access: Measurement, RF, ACPR

:FETCh:RF:EMISSion?

Title: Fetch RF Spurious Emission

Description: Returns the most recent Spurious Emission measurement result. Data is returned as 5 comma-delimited values for each marker/boundary (40 values total): Marker Amplitude in dB, Marker Frequency in Hz, RBW in Hz, Pass/Fail, and Mask Boundary Frequency in Hz. Markers that are not on will return "--" for Marker Amplitude, Marker Frequency, RBW, and Pass/Fail. All Mask Boundary Frequencies will show normally.

Related Command: :CONFIGure:RF EMISSion
:MEASure:RF:EMISSion?
:READ:RF:EMISSion?

Front Panel Access: Measurement, RF, Spurious Emission
Title: Fetch RF Spectrum

Description: Returns the most recent RF Channel Spectrum measurement results.

Data is returned as 4 comma-delimited values: Channel Power in the current user set unit (dBm/W/mW), Occupied bandwidth in Hz, Channel Power in fW, and Peak to Average Power in dB.

Related Command: :CONFigure:RF SPECtrum
:MEASure:RF:SPECtrum?
:READ:RF:SPECtrum?

Front Panel Access: Measurement, RF, Channel Spectrum
10-6 :FORMat Subsystem

This subsystem contains commands that determine the formatting of numeric data when it is transferred. The format setting affects data in specific commands only. If a command is affected, it is noted in the command description.

:FORMat[:READings][:DATA] ASCii|INTeger,32|REAL,32
:FORMat[:READings][:DATA]?

Title: Numeric Data Format

Description: This command specifies the format in which data is returned in certain commands.

- ASCii format returns the data in comma-separated ASCII format. The units are the current instrument units. This format requires many more bytes so it is the slowest format. INTeger 32 values are signed 32-bit integers in little-endian byte order. This format returns the data in 4-byte blocks.

- Both INTeger,32 and REAL,32 formats return a definite block length. Each transfer begins with an ASCII header such as #42204. The first digit represents the number of following digits in the header (in this example, 4). The remainder of the header indicates the number of bytes that follow the header (in this example, 2204). You then divide the number of following bytes by the number of bytes in the data format you’ve chosen (4 for both INTeger,32 and REAL,32—so 2204/4) to get the number of data points (in this example, 551).

Parameter: ASCii|INTeger,32|REAL,32

Parameter Type: <char>

Default Value: ASCii

Related Command: :TRACe[:DATA]
10-7  :INITiate Subsystem

This subsystem controls the triggering of measurements.

:INITiate:CONTinuous OFF|ON|0|1

:INITiate:CONTinuous?

Title: Continuous/Single Sweep

Description: Specifies whether the sweep/measurement is triggered continuously. If the value is set to ON or 1, another sweep/measurement is triggered as soon as the current one completes. If continuous is set to OFF or 0, the instrument enters the “idle” state and waits for the :INITiate[:IMMediate] command or for :INITiate:CONTinuous ON. The default value is ON. That is, sending :INIT:CONT is equivalent to sending :INIT:CONT ON. The query version of the command returns a 1 if the instrument is continuously sweeping/measuring and returns a 0 if the instrument is in single sweep/measurement mode. Note that rapid toggling between ON and OFF is not allowed. The instrument must be allowed to make a full sweep before toggling can be done. Note that the set command is available only if the instrument is in Cable & Antenna mode.

Note: Issue the command :INITiate[:IMMediate] after changing from single sweep mode to continuous sweep mode in order to begin sweeping.

Parameter: OFF|ON|0|1

Parameter Type: <boolean>

Default Value: ON

Related Command: :INITiate[:IMMediate]

:INITiate:HOLD

Front Panel Access: Shift-3 (Sweep), Sweep (Single/Continuous)

:INITiate[:IMMediate]

Title: Trigger Sweep/Measurement

Description: Use this command in combination with :STATus:OPERation? to synchronize the capture of one complete set of data. When this command is sent, the “sweep complete” bit of :STATus:OPERation? is set to 0, indicating that the measurement has not completed. The data collection is then triggered. The controlling program can poll :STATus:OPERation? to determine the status. When the “sweep complete” bit is set to 1, data is ready to be retrieved.

Related Command: :INITiate:CONTinuous

:STATus:OPERation?

Front Panel Access: Shift-3 (Sweep),Trigger Sweep
10-8 :MEASure Subsystem

These commands take the instrument from its current state, enable the specified measurement and put the instrument into single sweep mode. They correct any parameters that are invalid given the new measurement state such that a valid measurement can take place. Other settings may be changed; see the documentation of CONFigure for each measurement. They then initiate the measurement. When the measurement is complete, they return the result.

To make a measurement with settings other than the “default” measurement settings applied by CONFigure, do the following:

- Send the appropriate CONFigure command to set the desired measurement.
- Modify the settings as required.
- Send the appropriate READ command to measure and return the result.

To get the current measurement data, use the appropriate FETCH command.

:MEASure:DEMod:CDPower?

Title: Measure Code Domain Power
Description: Sets the active measurement to Code Domain Power, sets the default measurement parameters, triggers a new measurement and returns the Pilot Power, Channel Power, Noise Floor, Rho, Carrier Feed Through, Tau, RMS Phase Error, Frequency Error, Frequency Error PPM, Page, Sync, and Q Page measurement results. It is a combination of the following commands :CONFigure:DEMod CDPower; :READ:DEMod:CDPower? To make a CDP measurement with settings other than the default values send:

:CONFigure:DEMod CDPower
Commands to set desired settings
:READ:DEMod:CDPower?

Data is returned as 12 comma-delimited values: Pilot Power in the current user set unit (dBm/W/mW), Channel Power in the current user set unit (dBm/W/mW), Noise Floor in dB, Rho, Carrier Feed Through in dB, Tau in ps, RMS Phase Error in deg, Frequency Error in Hz, Frequency Error PPM, Page in dBm, Sync in dBm, and Q Page. All invalid values are replaced with “--”.

Default Unit: dBm
Related Command: :CONFigure:DEMod CDPower
 :READ:DEMod:CDPower?
 FETCH:DEMod:CDPower?
:MEASURE:OTA:MPATH?

Title: Measure OTA Multipath

Description: Sets the active measurement to Multipath, sets the default measurement parameters, triggers a new measurement and returns six Ec/Io values, six Tau values, Channel Power, and Multipath Power. It is a combination of the following commands :CONFigure:OTA MPATH; :READ:OTA:MPATH? To make an OTA Multipath measurement with settings other than the default values send:

:CONFigure:OTA MPATH

Commands to set desired settings

:READ:OTA:MPATH?

Data is returned as 14 comma-delimited values: six Ec/Io Values in dB, six Tau values in ps, Channel Power in the current user set unit (dBm/W/mW), and Multipath Power in dB. All invalid values are replaced with “-".

Related Command: :CONFigure:OTA MPATH

:READ:OTA:MPATH?

FETCH:OTA:MPATH?

Front Panel Access: Measurement, OTA, Multipath

:MEASURE:PFail?

Title: Measure PASS/FAIL

Description: Sets the active measurement to PASS/FAIL, sets the default measurement parameters, triggers a new measurement and returns the PASS/FAIL results. It is a combination of the commands :CONFigure:PFail; :READ:PFail? To make a channel power measurement with settings other than the default values send:

:CONFigure PFail

Commands to set desired settings

:READ:PFail?

Related Command: :CONFigure PFail

READ:PFail?

FETCH:PFail?

Front Panel Access: Shift-4 (Measurement), PASS/FAIL
**:MEASURE:RF:ACPR?**

**Title:** Measure Adjacent Channel Power Ratio

**Description:** Sets the active measurement to ACPR, sets the default measurement parameters, triggers a new measurement, and returns the power levels for each of the adjacent and main channels (9 total). It is a combination of the commands :CONFigure:RF ACPR; :READ:RF:ACPR? To make an RF ACPR measurement with settings other than the default values send:

:CONFigure:RF ACPR

Commands to set desired settings

:READ:RF:ACPR?

Data is returned as 9 comma-delimited values: The Absolute Adjacent Channel 1 Power, Absolute Adjacent Channel 2 Power, Absolute Main Channel 1 Power, Absolute Main Channel 2 Power, Absolute Main Channel 3 Power, Absolute Main Channel 4 Power, Absolute Main Channel 5 Power, Absolute Adjacent Channel 3 Power, Absolute Adjacent Channel 4 Power. All values are returned in dBm.

Note that the values for all five main channel carriers are shown even if the number of carriers set on the instrument is below five.

**Related Command:** :READ:RF:ACPR?

:CONFigure:RF ACPR

:FETCH:RF:ACPR?

**Front Panel Access:** Measurement, RF, ACPR

**:MEASURE:RF:EMISSION?**

**Title:** Measure RF Spurious Emission

**Description:** Sets the active measurement to Spurious Emission, sets the default measurement parameters, triggers a new measurement and returns the Marker Amplitude, Marker Frequency, RBW, a Pass/Fail assessment, and the Mask Boundary Frequency for all markers/boundaries. It is a combination of the following commands :CONFigure:RF EMISSION; :READ:RF:EMISSION? To make an RF Spurious Emission measurement with settings other than the default values send:

:CONFigure:RF EMISSION

Commands to set desired settings

:READ:RF:EMISSION?

Data is returned as 5 comma-delimited values for each marker/boundary: Marker Amplitude in dB, Marker Frequency in Hz, RBW in Hz, Pass/Fail, and Mask Boundary Frequency in Hz.

Markers that are not on will return “--” for Marker Amplitude, Marker Frequency, RBW, and Pass/Fail. Mask Boundary Frequency will show normally despite the corresponding marker being off.

**Related Command:** :CONFigure:RF EMISSION

:READ:RF:EMISSION?

:FETCH:RF:EMISSION?

**Front Panel Access:** Measurement, RF, Spurious Emission
Title: Measure RF Spectrum
Description: Sets the active measurement to Channel Spectrum, sets the default measurement parameters, triggers a new measurement and returns the Channel Power (Current User Set Unit), Occupied Bandwidth, Channel Power (Watts) and Peak to Average Power measurement results. It is a combination of the following commands: :CONFigure:RF SPECtrum; :READ:RF:SPECtrum? To make an RF Spectrum measurement with settings other than the default values send:

:CONFigure:RF SPECtrum
Commands to set desired settings

:READ:RF:SPECtrum?

Data is returned as 4 comma-delimited values: Channel Power in the current user set unit (dBm/W/mW), Occupied bandwidth in Hz, Channel Power in fW, and Peak to Average Power in dB.

Related Command: :CONFigure:RF SPECtrum
:READ:RF:SPECtrum?
:FETCh:RF:SPECtrum?

Front Panel Access: Measurement, RF, Channel Spectrum
10-9 :READ Subsystem

This set of commands combines the ABORt, INITiate and FETCh commands. It aborts any current triggering sequence and sets the trigger state to idle. It then initiates a new active measurement (i.e. begins the collection of new data). When the measurement is complete, it returns the result. These commands will not switch to another measurement.

To get the current measurement data, use the FETCh command.

:READ:DEMod:CDPower?

  Title:  Read Code Domain Power

  Description:  Triggers a new measurement and returns the Pilot Power, Channel Power, Noise Floor, Rho, Carrier Feed Through, Tau, RMS Phase Error, Frequency Error, Frequency Error PPM, Page, Sync, and Q Page measurement results. It is a combination of the following commands :ABORt; :INITiate; :FETCh:DEMod:CDPower? In order for the data to be accurate, the Code Domain Power measurement must be the active measurement (specified by :CONFigure:DEMod CDPower). The current measurement can be queried using :CONFigure?

  Data is returned as 12 comma-delimited values: Pilot Power in the current user set unit (dBm/W/mW), Channel Power in the current user set unit (dBm/W/mW), Noise Floor in dB, Rho, Carrier Feed Through in dB, Tau in ps, RMS Phase Error in deg, Frequency Error in Hz, Frequency Error PPM, Page in dBm, Sync in dBm, and Q Page. All invalid values are replaced with “--”.

  Default Unit:  dBm

  Related Command:  CONFigure:DEMod CDPower
                   :MEASure:DEMod:CDPower?
                   :FETCh:DEMod:CDPower?

  Front Panel Access:  Measurement, Demodulator, CDP

:READ:OTA:MPATH?

  Title:  Read OTA Multipath

  Description:  Triggers a new measurement and returns six Ec/Io values, six Tau values, Channel Power, and Multipath Power. It is a combination of the following commands :ABORt; :INITiate; :FETCh:OTA:MPATH? In order for the data to be accurate, the Multipath measurement must be the active measurement (specified by :CONFigure:OTA MPATH). The current measurement can be queried using :CONFigure?

  Data is returned as 14 comma-delimited values: six Ec/Io Values in dB, six Tau values in ps, Channel Power in the current user set unit (dBm/W/mW), and Multipath Power in dB. All invalid values are replaced with “--”.

  Related Command:  :CONFigure:OTA MPATH
                   :MEASure:OTA:MPATH?
                   :FETCh:OTA:MPATH?

  Front Panel Access:  Measurement, OTA, Multipath
:READ:PFail?

Title: Read PASS/FAIL

Description: Triggers a new PASS/FAIL measurement and returns the results. It is a combination of the commands :ABORT; :INITiate; FETCh:PFail? The PASS/FAIL measurement must be active. The current measurement can be queried using :CONFigure?

Related Command: MEASure:PFail?
:FETCh:PFail?
:CONFigure:PFail

Front Panel Access: Shift-4 (Measurement), PASS/FAIL

:READ:RF:ACPR?

Title: Read Adjacent Channel Power Ratio

Description: Triggers a new measurement, and returns the power levels for each of the adjacent and main channels (9 total). It is a combination of the commands :ABORt; :INITiate; :FETCh:RF:ACPR? In order for the data to be accurate, the ACPR measurement must be the active measurement (specified by :CONFigure:RF ACPR. The current measurement can be queried using :CONFigure?

Data is returned as 9 comma-delimited values: The Absolute Adjacent Channel 1 Power, Absolute Adjacent Channel 2 Power, Absolute Main Channel 1 Power, Absolute Main Channel 2 Power, Absolute Main Channel 3 Power, Absolute Main Channel 4 Power, Absolute Main Channel 5 Power, Absolute Adjacent Channel 3 Power, Absolute Adjacent Channel 4 Power. All values are returned in dBm. Note that the values for all five main channel carriers are shown even if the number of carriers set on the instrument is below five.

Related Command: :FETCh:RF:ACPR?
:CONFigure:RF ACPR
:MEASure:RF:ACPR?

Front Panel Access: Measurement, RF, ACPR

:READ:RF:EMISsion?

Title: Read RF Spurious Emission

Description: Triggers a new measurement and returns the Marker Amplitude, Marker Frequency, RBW, a Pass/Fail assessment, and the Mask Boundary Frequency for all markers/boundaries. It is a combination of the following commands :ABORt; :INITiate; :FETCh:RF:EMISsion? In order for the data to be valid, the Spurious Emission measurement must be the active measurement (specified by :CONFigure:RF EMISsion. The current measurement can be queried using :CONFigure?

Data is returned as 5 comma-delimited values for each marker/boundary (40 values total): Marker Amplitude in dB, Marker Frequency in Hz, RBW in Hz, Pass/Fail, and Mask Boundary Frequency in Hz. Markers that are not on will return “--” for Marker Amplitude, Marker Frequency, RBW, and Pass/Fail. All Mask Boundary Frequencies will show normally.

Related Command: :CONFigure:RF EMISsion
:MEASure:RF:EMISsion?
:FETCh:RF:EMISsion?

Front Panel Access: Measurement, RF, Spurious Emission
Title: Read RF Spectrum

Description: Triggers a new measurement and returns the Channel Power (Current User Set Unit), Occupied Bandwidth, Channel Power (Watts) and Peak to Average Power measurement results. It is a combination of the following commands :ABORt; :INITiate; :FETCH:RF:SPECTrum? In order for the data to be accurate, the Channel Spectrum measurement must be the active measurement (specified by :CONFigure:RF SPECTrum). The current measurement can be queried using :CONFigure?

Data is returned as 4 comma-delimited values: Channel Power in the current user set unit (dBm/W/mW), Occupied bandwidth in Hz, Channel Power in fW, and Peak to Average Power in dB.

Related Command: :FETCH:RF:SPECTrum?
:CONFigure:RF SPECTrum
:MEASURE:RF:SPECTrum?

Front Panel Access: Measurement, RF, Channel Spectrum
10-10 :TRACe Subsystem

This subsystem contains commands related to the transfer of trace data to and from the instrument.

:TRACe:PREamble? <trace type>

Title: Trace Header Transfer

Description: Returns trace header information for the specified trace. The <trace type> must be one of the following: SPECtrum | EMISsion | DEMod | PSCAn | MPATh.

Data can be transferred to and from the 5 available display trace types. Use the commands in the MMEMory subsystem to store and recall traces from the instrument memory. The response begins with an ASCII header. The header specifies the number of following bytes. It looks like #AX, where A is the number of digits in X and X is the number of bytes that follow the header. Parameters are returned in comma-delimited ASCII format. Each parameter is returned as “NAME=VALUE[ UNITS].” Valid parameter names are shown in “CDMA Parameter Names” on page 2-26.

Parameter: <trace type>

Related Command: :TRACe:DATA?
Title: Trace Data Transfer

Description: This command transfers trace data from the instrument to the controller. The `<trace type>` must be one of the following: SPECtrum|EMISsion|DEMod|PSCAn|MPATh|ACPR.

The format of the block data in the query form is specified by :FORMat:DATA. The block data in the command form is always sent in ASCII format.

The response begins with an ASCII header that specifies the number of data bytes. It looks like #AX, where A is the number of digits in X and X is the number of bytes that follow the header. Each data point is separated by a comma delimiter.

Trace setup information can be acquired using :TRACe[:DATA]:PREamble?. Use the commands in the MMEMory subsystem to store and recall traces from the instrument memory.

The RF measurements ACPR and Channel Spectrum both only have one value per data point that is returned in dBm. Each value is 4 bytes.

For the RF Spurious Emission measurement, each data point will have two values. The first value is the wave data, while the second value is the mask data. Both values are four bytes and returned in dBm.

The Demodulator Code Domain Power measurement has four values per data point. The first value is the point number, which has no unit. The second value is the relative power returned in dB. The third value is the absolute power returned in dBm. The fourth value is the type, which is defined in the following table.

<table>
<thead>
<tr>
<th>Return Value</th>
<th>Signal Type</th>
<th>Color</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Noise</td>
<td>Grey</td>
</tr>
<tr>
<td>1</td>
<td>IS95 Traffic</td>
<td>Yellow</td>
</tr>
<tr>
<td>2</td>
<td>CDMA2000 Traffic</td>
<td>Orange</td>
</tr>
<tr>
<td>3</td>
<td>CDMA2000 Traffic</td>
<td>Orange</td>
</tr>
<tr>
<td>4</td>
<td>Pilot</td>
<td>Red</td>
</tr>
<tr>
<td>5</td>
<td>Sync</td>
<td>Blue</td>
</tr>
<tr>
<td>6</td>
<td>Page</td>
<td>Green</td>
</tr>
<tr>
<td>7</td>
<td>Q Page</td>
<td>Purple</td>
</tr>
</tbody>
</table>

All values are four bytes each.

Both of the Over the Air (OTA) measurements, Pilot Scan and Multipath, will have three values per data point. The first value is the type, which can be 0 (Noise, Grey), 1 (Primary, Blue), and 2 (Secondary, Red), or. The second value is the Ec/Io returned in dB. The third value is Tau returned in s. All three values are the same and are 4 bytes each.

Note that the instrument must be set in the selected view. Use the CONFigure command to set the unit to the selected view.

Parameter: `<trace type>`

Related Command: :FORMat[:DATA]
:TRACe[:DATA]:PREamble?
10-11 :TRIGger Subsystem

This subsystem contains commands related to the triggering of instrument functions for the purposes of synchronization. Related commands appear in the ABORt and INITiate subsystems.

:TRIGger:SEQuence:SLOPe RISing|FALLing
:TRIGger:SEQuence:SLOPe?

Title: External Trigger Polarity
Description: This command sets the external trigger polarity. Note that this setting can only be changed when the PN Type is set to “EXT”.
Parameter: RISing|FALLing
Parameter Type: <char>
Default Value: RISing
Default Unit: NA
Range: RISing, FALLing
Related Command: [:SENSe]:PN:TRIGger
[:SENSe]:PN:TRIGger?
Front Panel Access: Setup, Ext Trigger Polarity
10-12 :UNIT Subsystem

The unit subsystem is used to modify the default units used for related parameters. These changes affect parameters in both commands and responses.

:UNIT:POWer DBM|W
:UNIT:POWer?

  Description: Sets the default amplitude units for input, output and display.
  Parameter:  DBM|W
  Parameter Type:  <char>
  Default Value:  dBm

Front Panel Access:  Amplitude, Unit
10-13 [:SENSe] Subsystem

The commands in this subsystem relate to device-specific parameters, not signal-oriented parameters.

[:SENSe]:ACPower:BANDwidth|:MAIN <freq>
[:SENSe]:ACPower:BANDwidth|:MAIN?

Title: ACPR Main Channel Bandwidth
Description: Sets the main channel carrier bandwidth. The <freq> value must be 1.23|1.24|1.25.
Parameter: <freq>
Default Value: 1.25 MHz
Default Unit: MHz
Range: 1.23 MHz, 1.24 MHz, 1.25 MHz
Front Panel Access: Setup, Carrier BW (MHz)

[:SENSe]:DEMod:CDPower:UNITs RELative|ABSolute
[:SENSe]:DEMod:CDPower:UNITs?

Title: Code Domain Power Unit Type
Description: Sets the Code Domain Power unit type. The query form returns either a “REL” for relative units, or an “ABS” for absolute units in Ascii (without the double quotes).
Parameter: RELative|ABSolute
Parameter Type: <char>
Default Value: RELative
Range: RELative, ABSolute
Front Panel Access: Measurement, Demodulator, CDP, CDP Units

[:SENSe]:DEMod:CDPower:ZOOM 16|32|64
[:SENSe]:DEMod:CDPower:ZOOM?

Title: Code Domain Power Zoom
Description: Sets the zoom for the Code Domain Power measurement. The query form returns either 16, 32, or 64.
Parameter: 16|32|64
Default Value: 16
Range: 16, 32, 64
Related Command: [:SENSe]:DEmod:CDPower:ZOOM:STARt
[:SENSe]:DEmod:CDPower:ZOOM:STARt?
Front Panel Access: Measurement, Demodulator, CDP, Zoom
[:SENSe]:DEMod:CDPower:ZOOM:STARt <integer>
[:SENSe]:DEMod:CDPower:ZOOM:STARt?

Title: Code Domain Power Zoom Start Index
Description: Sets the zoom start index for the Code Domain Power measurement.
Parameter: <integer>
Parameter Type: <integer>
Default Value: 0
Range: 0 to 112
Related Command: [:SENSe]:DEMod:CDPower:ZOOM
[:SENSe]:DEMod:CDPower:ZOOM?
Front Panel Access: Measurement, Demodulator, CDP, Zoom Start Index

[:SENSe]:FREQuency:CENTer <freq>
[:SENSe]:FREQuency:CENTer?

Title: Center Frequency
Description: Sets the center frequency. Note that changing the value of the center frequency will change the value of the coupled parameters Start Frequency and Stop Frequency. It may also change the value of the span. Note that the set command is available only if the instrument is in Cable & Antenna mode.
Parameter: <freq>
Default Value: 1 GHz
Default Unit: Hz
Range: 1 MHz to 2.7 GHz
Front Panel Access: Freq, Center Freq

[:SENSe]:FREQuency:SIGStandard <index>
[:SENSe]:FREQuency:SIGStandard?

Title: Signal Standard
Description: Selects the desired signal standard from the list. The <index> argument is a 1-based index of the position of the desired signal standard in the instrument’s current signal standard list. The list can be seen on the instrument by choosing the “Signal Standard” soft-key button in the “Frequency” menu. The list can also be downloaded remotely and viewed using Anritsu Master Software Tools. For example, if the desired Signal Standard is the 3rd item on the list then the value of the <index> argument would be 3.

The query form of this command will return the index of the currently-selected Signal Standard on the list.
Parameter: <index>
Front Panel Access: Frequency, Signal Standard
[:SENSe]:FREQuency:SIGStandard:CHANnel <number>
[:SENSe]:FREQuency:SIGStandard:CHANnel?

Title: Channel Selection
Description: Sets the channel number for the selected signal standard.
Parameter: <number>
Front Panel Access: Frequency, Channel

[:SENSe]:FREQuency:SPAN?

Title: Frequency Span
Description: This is a query command only. The user can not set the span in CDMA or EVDO modes.
Parameter: <freq>
Default Unit: Hz

[:SENSe]:PFail <test set>
[:SENSe]:PFail?

Title: PASS/FAIL Test Selection
Description: Selects the active test set to be used in subsequent PASS/FAIL measurements. The <test set> value must correspond to a test set that is defined in the test set list. To view the list on the instrument, go into the “Measurement” menu, press the “Pass/Fail Mode” key, and then press the “Select Pass/Fail Test” soft key. Alternatively, the list can be retrieved remotely and viewed using the Anritsu Master Software Tools. The <test set> argument is a 1-based index of the position of the desired Pass/Fail test set in the instrument’s current Pass/Fail test set list. For example, if the desired Pass/Fail test is the 3rd item on the list then the value of the <test set> argument would be 3.

When using the query form of the command, the return value is the currently selected test set number. If there is not a valid test set selected, the return value is “-1” (negative 1).

Parameter: <test set>
Related Command: :CONFigure:PFail
Front Panel Access: Measurement, Pass Fail Mode, Select Pass/Fail Test

[:SENSe]:PN:OFFSet <integer>
[:SENSe]:PN:OFFSet?

Title: PN Offset
Description: Sets the PN offset. Note that this can only be changed when PN Trigger is set to “GPS”, or “EXT”. A return value of the PN offset query is invalid when PN search type is AUTO.

Parameter: <integer>
Parameter Type: <integer>
Default Value: 0
Range: 0 to 511
Related Command: [:SENSe]:PN:TRIGger
[:SENSe]:PN:TRIGger?
[:SENSe]:PN:STYPe [:SENSe]:PN:STYPe?

Front Panel Access: Setup, PN Setup, PN Offset
[:SENSe]:PN:STYPe:AUTO 1|0|ON|OFF
[:SENSe]:PN:STYPe:AUTO?

Title: PN Search Type
Description: Sets the PN search type. The default value is ON. That is, sending :SENSe:PN:STYPe:AUTO is equivalent to sending :SENSe:PN:STYPe:AUTO ON. The query form returns either a 1 for ON, or a 0 for OFF. Note that this can only be changed when PN Trigger is set to “GPS”, or “EXT”.

Parameter: 1|0|ON|OFF
Parameter Type: <boolean>
Default Value: ON
Range: ON, OFF
Related Command: [:SENSe]:PN:TRIGger [:SENSe]:PN:TRIGger?
[:SENSe]:PN:OFFSet [:SENSe]:PN:OFFSet?
Front Panel Access: Setup, PN Setup, PN Search Type

[:SENSe]:PN:TRIGger NOTRig|GPS|EXT
[:SENSe]:PN:TRIGger?

Title: External PN Trigger
Description: Sets the external PN trigger. The query form returns either “NOTRIG”, “GPS”, or “EXT” in Ascii (without the double quotes).

Parameter: NOTRig|GPS|EXT
Parameter Type: <char>
Default Value: No Trig
Range: NOTRig, GPS, EXT
Related Command: [:SENSe]:PN:STYPe [:SENSe]:PN:STYPe?
[:SENSe]:PN:OFFSet [:SENSe]:PN:OFFSet?
Front Panel Access: Setup, PN Setup, PN Trigger

[:SENSe]:POWer[:RF]:RANGe:AUTO OFF|ON|0|1
[:SENSe]:POWer[:RF]:RANGe:AUTO?

Title: Automatic Amplitude Range
Description: Sets the automatic amplitude range. Setting the value to ON or 1 will result in the amplitude range being coupled to the detected input signal level. Setting the value to OFF or 0 will result in the input attenuation being un-coupled from the input signal level. That is, changing the input signal level will not change the amplitude range. When this command is issued, the amplitude range itself will not change. The default value is ON. That is, sending :SENS:POW:RANG:AUTO is equivalent to sending :SENS:POW:RANG:AUTO ON.

Parameter: OFF|ON|0|1
Parameter Type: <boolean>
Default Value: ON
Related Command: [:SENSe]:POWer[:RF]:RANGe
Front Panel Access: Amplitude, Auto Range
[:SENSe]:POWer[:RF]:RANGe[:IMMediate]

Title: Amplitude Range

Description: Re-calculates amplitude range. Note that issuing this command will set the automatic dynamic range OFF.

Related Command: [:SENSe]:POWer[:RF]:RANGe:AUTO

Front Panel Access: Amplitude, Adjust Range

[:SENSe]:RF:ACPR:MAINchannelcount <integer>
[:SENSe]:RF:ACPR:MAINchannelcount?

Title: Main Channel Carrier Count

Description: Sets the number of main channel carriers.

Parameter: <integer>

Parameter Type: <integer>

Default Value: 1

Range: 1 to 5

Front Panel Access: Setup, Number of Carriers

[:SENSe]:SWEep:SPEed FAST|NORM|SLOW
[:SENSe]:SWEep:SPEed?

Title: Measurement Speed

Description: Sets the measurement speed. The query form returns either “FAST”, “NORM”, or “SLOW” in Ascii (without the double quotes).

Parameter: FAST|NORM|SLOW

Parameter Type: <char>

Default Value: Norm

Range: FAST, NORM, SLOW

Front Panel Access: Setup, Meas Speed

[:SENSe]:WCODE 64|128
[:SENSe]:WCODE?

Title: Walsh Codes

Description: Sets the Walsh codes.

Parameter: 64|128

Default Value: 128

Range: 64, 128

Front Panel Access: Setup, Walsh Codes
Chapter 11 — EVDO Commands

11-1  :ABORt Subsystem

The abort subsystem includes commands that allow the user to stop current measurement activities on the instrument.

:ABORt

   Title: Abort
   Description: Restarts the current sweep and/or measurement. Resets the trigger system. If :INITiate:CONTinuous is OFF (i.e. the instrument is in single sweep mode), send the command :INITiate[:IMMediate] to trigger the next sweep. If :INITiate:CONTinuous is ON (i.e. the instrument is in continuous sweep mode) a new sweep will start immediately.

   Parameter: NA
   Related Command: :INITiate:CONTinuous
                   :INITiate[:IMMediate]
   Front Panel Access: Shift-3 (Sweep), Reset Sweep
11-2 :CALCulate Subsystem

The commands in this subsystem process data that has been collected via the SENSE subsystem. Valid measurements with the use of markers are RF Measurement, Channel Spectrum, and the Demodulator Measurement, CDP MAC.

:CALCulate:MARKer:AOFF

Title: Turn All Markers Off
Description: Turns off all markers.
Front Panel Access: Marker, All Markers Off

:CALCulate:MARKer{1|2|3|4|5|6}:Y?

Title: Marker Read Y Value
Description: Reads the current Y value for the specified marker. The units are the units of the y-axis.
Default Unit: Current y-axis unit

:CALCulate:MARKer{1|2|3|4|5|6}[:STATe] OFF|ON|0|1
:CALCulate:MARKer{1|2|3|4|5|6}[:STATe]?

Title: Marker State
Description: Sets the specified marker on/off.
Parameter: OFF|ON|0|1
Parameter Type: <boolean>
Default Value: OFF
Example: To turn off reference marker #1:
:CALCulate:MARKer1:STATe OFF
Front Panel Access: Marker, On/Off
11-3  :CONFigure Subsystem

This set of commands prepares the instrument for the selected measurement. It disables any currently-enabled measurements and activates the specified measurement. It sets it to SS and triggers ONE sweep. It will not initiate the taking of a measurement.

Current instrument settings may be changed to default values. These changes are identified with their respective measurement commands.

:CONFigure SUMMary|PFail

Title: Configure Summary and Pass/Fail Measurements
Description: This command configures the summary and PASS/FAIL measurements. It disables any other active measurements. None of the instrument parameters are changed by the execution of this command. Sets the instrument to single sweep mode (:INITiate:CONTinuous OFF). Measurement settings can be modified by using the [:SENSe] commands before initiating a measurement.
Parameter: SUMMary | PFail
Parameter Type: <char>
Front Panel Access: Shift-4 (Measurement), EVDO Summary or Pass/Fail Mode

:CONFigure:DEMod <char>

Title: Configure Demodulation Measurement
Description: Valid <char> parameter options: SUMMary | CDPMac | CDPData

This command configures the selected demodulation measurement. It disables any other active measurements. Sets the instrument to single sweep mode (:INITiate:CONTinuous OFF). Measurement settings can be modified by using the [:SENSe]:DEMod commands before initiating a measurement.

When the SUMMARY option is selected, the measurement results are equivalent to the results that are displayed by choosing Measurements, then Demodulator, then Modulation Summary from the front panel. When the CDPMac option is selected, the measurement results are equivalent to the results that are displayed by choosing Measurements, then Demodulator, then CDP MAC from the front panel. When the CDPData option is selected, the measurement results are equivalent to the results that are displayed by choosing Measurements, then Demodulator, then CDP Data from the front panel.

Parameter: <char>
Front Panel Access: Shift-4 (Measurement), Demodulator

:CONFigure:OTA <char>

Title: Configure Over-The-Air Measurement
Description: This command configures the selected Over The Air measurement. It disables any other active measurements. Sets the instrument to single sweep mode (:INITiate:CONTinuous OFF). Measurement settings can be modified before initiating a measurement. When the PSCAn option is selected, the measurement results are equivalent to the results that are displayed by choosing Measurements, then OTA, then Pilot Scan from the front panel. When the MPATh option is selected, the measurement results are equivalent to the results that are displayed by choosing Measurements, then OTA, then Multipath from the front panel.

Parameter: <char> PSCAn, MPATh
Title: Configure RF Measurement

Description: Valid parameter options: SUMMary | SPECtrum | ACPR | EMISsion | PVTtime

This command configures the selected RF measurement. It disables any other active measurements. Sets the instrument to single sweep mode (:INITiate:CONTinuous OFF). Measurement settings can be modified by using the [:SENSe]:RF commands before initiating a measurement.

When the SUMMary option is selected, the measurement results are equivalent to the results that are displayed by choosing Measurements, then RF, then RF Summary from the front panel. When the SPECtrum option is selected, the measurement results are equivalent to the results that are displayed by choosing Measurements, then RF, then Channel Spectrum from the front panel. When the ACPR option is selected, the measurement results are equivalent to the results that are displayed by choosing Measurements, then RF, then ACPR from the front panel. When the EMISsion option is selected, the measurement results are equivalent to the results that are displayed by choosing Measurements, then RF, then Spurious Emission from the front panel. When the PVTtime option is selected, the measurement results are equivalent to the results that are displayed by choosing Measurements, then RF, then Power vs. Time from the front panel.

Parameter: <char>

Related Command: [:SENSe]:FREQuency
[:SENSe]:RF:ACLR:MAINchannelcount
[:SENSe]:RF:ACLR:ADJCchannelcount
11-4 :DISPlay Subsystem

This subsystem provides commands that modify the display of data for the user. They do not modify the way in which data are returned to the controller.

:DISPlay:WINDow:TRACe:Y[:SCALe]:OFFSet <rel ampl>
:DISPlay:WINDow:TRACe:Y[:SCALe]:OFFSet?

  Title: Power Offset
  Description: Sets the power offset value for the y-axis.
  Parameter: <rel ampl>
  Default Value: 0 dB
  Default Unit: dB
  Range: -100 dB to 100 dB

Front Panel Access: Amplitude, Power Offset

:DISPlay:WINDow:TRACe:Y[:SCALe]:PDIVision <rel ampl>
:DISPlay:WINDow:TRACe:Y[:SCALe]:PDIVision?

  Title: Scale
  Description: Sets the scale (dB/division) for the y-axis.
  Parameter: <rel ampl>
  Default Value: 10 dB/div
  Default Unit: dB
  Range: 1 dB to 15 dB

Front Panel Access: Amplitude, Scale
11-5  :FETCh Subsystem

This set of commands returns the most recent measurement data of the active measurement. They will not switch to another measurement.

To make a new measurement, use the INITiate command. To get new measurement data, use the READ or MEASure query commands.

:FETCh:DEMod:CDPData?

Title:  Fetch Demodulator Code Domain Power Data
Description:  Returns the most recent Code Domain Power Data measurement results.

Data is returned as 6 comma-delimited values: Active Data Power in the current user set unit (dBm/W/mW), Data Modulation, Rho Pilot, Rho Overall1, Max Data CDP in dB, and Min Data CDP in dB. All invalid values are replaced with “--”.

Related Command:  :CONFigure:DEMod CDPData
:MEASure:DEMod:CDPData?
:READ:DEMod:CDPData?

Front Panel Access:  Measurement, Demodulator, CDP Data

:FETCh:DEMod:CDPMac?

Title:  Fetch Demodulator Code Domain Power MAC
Description:  Returns the most recent Code Domain Power MAC measurement results.

Data is returned as 8 comma-delimited values: Pilot & MAC Power in the current user set unit (dBm/W/mW), Channel Power in the current user set unit (dBm/W/mW), Frequency Error in Hz, Frequency Error PPM, Rho Pilot, Rho Overall1, Data Modulation, and Noise Floor in dB. All invalid values are replaced with “--”.

Related Command:  :CONFigure:DEMod CDPMac
:MEASure:DEMod:CDPMac?
:READ:DEMod:CDPMac?

Front Panel Access:  Measurement, Demodulator, CDP MAC

:FETCh:DEMod:SUMMary?

Title:  Fetch Demodulator Summary
Description:  Returns the most recent Modulation Summary measurement results.

Data is returned as 12 comma-delimited values: Pilot & MAC Power in the current user set unit (dBm/W/mW), Channel Power in the current user set unit (dBm/W/mW), Rho Pilot, Rho Mac, Rho Data, Rho Overall1, Rho Overall2, Data Modulation, Noise Floor in dB, RMS Phase Error, Frequency Error in Hz, Tau in tens of microseconds. All invalid values are replaced with “--”.

Related Command:  :CONFigure:DEMod SUMMary
:MEASure:DEMod:SUMMary?
:READ:DEMod:SUMMary?

Front Panel Access:  Measurement, Demodulator, Modulation Summary
:FETCH:OTA:MPATH?

**Title:** Fetch OTA Multipath

**Description:** Returns the most recent Multipath measurement results.

Data is returned as 14 comma-delimited values: six Ec/Io Values in dB, six Tau values in ps, Channel Power in the current user set unit (dBm/W/mW), and Multipath Power in dB. All invalid values are replaced with “--”.

**Related Command:**
:CONFigure:OTA MPATH
:MEASure:OTA:MPATH?
:READ:OTA:MPATH?

**Front Panel Access:** Measurement, OTA, Multipath

:FETCH:PFail?

**Title:** Fetch PASS/FAIL

**Description:** Returns the most recent PASS/FAIL measurement results. Measurement results are returned in a block of ASCII text in the format of <header><block>. The ASCII header specifies the number of data bytes. It looks like #AX, where A is the number of digits in X and X is the number of bytes in the <block>. The block consists of a set of records which indicate individual test results. Records are comma-separated. Each record follows the format <test ID>: <input1> <input2> <min> <max> <value1> <value2> <PASS/FAIL/OPTION NOT INSTALLED>. The <test ID> field indicates which test was performed to retrieve these results. The <input1> and <input2> fields indicate the test setup. The <min> and <max> fields indicate the minimum and maximum values against which <value1> and <value2> were compared to arrive at the final PASS/FAIL result. If the specified test is not available in the instrument, the <PASS/FAIL> field will indicate “option not available” instead of “pass” or “fail”. All unused fields for a given test are represented by a double dash (“--”). To receive valid measurements, the Pass/Fail measurement must be the active. The current measurement can be queried using CONFigure?. Use the :CONFigure:PFail to set Pass/Fail as the active measurement.

**Related Command:** MEASure:PFail?
:CONFigure:PFail
READ:PFail?

:FETCH:RF:ACPR?

**Title:** Fetch Adjacent Channel Power Ratio

**Description:** Returns the most recent Adjacent Channel Power Ratio measurement results.

Data is returned as 9 comma-delimited values: The Absolute Adjacent Channel 1 Power, Absolute Adjacent Channel 2 Power, Absolute Main Channel 1 Power, Absolute Main Channel 2 Power, Absolute Main Channel 3 Power, Absolute Main Channel 4 Power, Absolute Main Channel 5 Power, Absolute Adjacent Channel 3 Power, Absolute Adjacent Channel 4 Power. All values are returned in dBm. Note that the values for all five main channel carriers are shown even if the number of carriers set on the instrument is below five.

**Related Command:**
:CONFigure:RF ACPR
:MEASure:RF:ACPR?
:READ:RF:ACPR?
:FETCH:RF:EMISSion?

Title: Fetch RF Spurious Emission
Description: Returns the most recent Spurious Emission measurement result. Data is returned as 5 comma-delimited values for each marker/boundary (40 values total): Marker Amplitude in dB, Marker Frequency in Hz, RBW in Hz, Pass/Fail, and Mask Boundary Frequency in Hz. Markers that are not on will return “--” for Marker Amplitude, Marker Frequency, RBW, and Pass/Fail. All Mask Boundary Frequencies will show normally.

Related Command: :CONFigure:RF EMISSion
:MEASURE:RF:EMISSion?
:READ:RF:EMISSion?

Front Panel Access: Measurement, RF, Spurious Emission

:FETCH:RF:SPECTrurm?

Title: Fetch RF Spectrum
Description: Returns the most recent RF Channel Spectrum measurement results. Data is returned as 4 comma-delimited values: Channel Power in the current user set unit (dBm/W/mW), Occupied bandwidth in Hz, Channel Power in fW, and Peak to Average Power in dB.

Related Command: :CONFigure:RF SPECTrurm
:MEASURE:RF:SPECTrurm?
:READ:RF:SPECTrurm?

Front Panel Access: Measurement, RF, Channel Spectrum

:FETCH:RF:SUMMary?

Title: Fetch RF Summary
Description: Returns the most recent RF Summary measurement results. Data is returned as 9 comma-delimited values: Channel Power, Pilot & MAC Power, Frequency Error, Spurious Emission, Occupied Bandwidth, Idle Activity, Active Activity, ON/OFF Ratio, Peak to Avg Power. All invalid values are replaced with “--”. Power units are in watt or dBm as per what is set by the user. Frequency is always in Hz.

Related Command: :CONFigure:RF SUMMary
:MEASURE:RF:SUMMary?
:READ:RF:SUMMary?

Front Panel Access: Measurements, RF, RF Summary
11-6 :FORMat Subsystem

This subsystem contains commands that determine the formatting of numeric data when it is transferred. The format setting affects data in specific commands only. If a command is affected, it is noted in the command description.

:FORMat[:READings][:DATA] ASCii|INTeger,32|REAL,32
:FORMat[:READings][:DATA]?

Title: Numeric Data Format

Description: This command specifies the format in which data is returned in certain commands.

ASCii format returns the data in comma-separated ASCII format. The units are the current instrument units. This format requires many more bytes so it is the slowest format. INTeger 32 values are signed 32-bit integers in little-endian byte order. This format returns the data in 4-byte blocks. (WCDMA and Cable & Antenna only: The units are always mdBm. For example, if the measured result was -12.345 dBm, that value would be sent as -12345.) REAL,32 values are 32-bit floating point numbers conforming to the IEEE 754 standard in little-endian byte order. This format returns the data in 4-byte binary format. The units are the current instrument units.

Both INTeger,32 and REAL,32 formats return a definite block length. Each transfer begins with an ASCII header such as #42204. The first digit represents the number of following digits in the header (in this example, 4). The remainder of the header indicates the number of bytes that follow the header (in this example, 2204). You then divide the number of following bytes by the number of bytes in the data format you’ve chosen (4 for both INTeger,32 and REAL,32—so 2204/4) to get the number of data points (in this example, 551).

Parameter: ASCii | INTeger,32 | REAL,32
Parameter Type: <char>
Default Value: ASCii
Related Command: :TRACe[:DATA]
11-7 :INITiate Subsystem

This subsystem controls the triggering of measurements.

:INITiate:CONTinuous OFF|ON|0|1
:INITiate:CONTinuous?

Title: Continuous/Single Sweep
Description: Specifies whether the sweep/measurement is triggered continuously. If the value is set to ON or 1, another sweep/measurement is triggered as soon as the current one completes. If continuous is set to OFF or 0, the instrument enters the “idle” state and waits for the :INITiate[:IMMediate] command or for :INITiate:CONTinuous ON. The default value is ON. That is, sending :INIT:CONT is equivalent to sending :INIT:CONT ON. The query version of the command returns a 1 if the instrument is continuously sweeping/measuring and returns a 0 if the instrument is in single sweep/measurement mode. Note that rapid toggling between ON and OFF is not allowed. The instrument must be allowed to make a full sweep before toggling can be done. Note that the set command is available only if the instrument is in Cable & Antenna mode.

Note: Issue the command :INITiate[:IMMediate] after changing from single sweep mode to continuous sweep mode in order to begin sweeping.

Parameter: OFF|ON|0|1
Parameter Type: <boolean>
Default Value: ON
Related Command: :INITiate[:IMMediate]
Front Panel Access: Shift-3 (Sweep), Sweep (Single/Continuous)

:INITiate[:IMMediate]
Title: Trigger Sweep/Measurement
Description: Use this command in combination with :STATus:OPERation? to synchronize the capture of one complete set of data. When this command is sent, the “sweep complete” bit of :STATus:OPERation? is set to 0, indicating that the measurement has not completed. The data collection is then triggered. The controlling program can poll :STATus:OPERation? to determine the status. When the “sweep complete” bit is set to 1, data is ready to be retrieved.

Related Command: :INITiate:CONTinuous
:STATus:OPERation?
Front Panel Access: Shift-3 (Sweep), Trigger Sweep
11-8 :MEASure Subsystem

These commands take the instrument from its current state, enable the specified measurement and put the instrument into single sweep mode. They correct any parameters that are invalid given the new measurement state such that a valid measurement can take place. Other settings may be changed; see the documentation of CONFigure for each measurement. They then initiate the measurement. When the measurement is complete, they return the result.

To make a measurement with settings other than the “default” measurement settings applied by CONFigure, do the following:

- Send the appropriate CONFigure command to set the desired measurement.
- Modify the settings as required.
- Send the appropriate READ command to measure and return the result.

To get the current measurement data, use the appropriate FETCH command.

:MEASure:DEMod:CDPData?

Title: Measure Demodulator Code Domain Power Data

Description: Sets the active measurement to Code Domain Power Data, sets the default measurement parameters, triggers a new measurement and returns the Active Data Power, Data Modulation, Rho Pilot, Rho Overall1, Max Data CDP, and Min Data CDP. It is a combination of the following commands: CONFigure:DEMod CDPData;

:READ:DEMod:CDPData? To make a CDP Data measurement with settings other than the default values send:

:CONFigure:DEMod CDPData

Commands to set desired settings

:READ:DEMod:CDPData?

Data is returned as 6 comma-delimited values: Active Data Power in the current user set unit (dBm/W/mW), Data Modulation, Rho Pilot, Rho Overall1, Max Data CDP in dB, and Min Data CDP in dB. All invalid values are replaced with “--”.

Related Command: :CONFigure:DEMod CDPData

:READ:DEMod:CDPData?

:FETCH:DEMod:CDPData?

Front Panel Access: Measurement, Demodulator, CDP Data
:MEASure:DEMod:CDPMac?

Title: Measure Demodulator Code Domain Power MAC

Description: Sets the active measurement to Code Domain Power Mac, sets the default measurement parameters, triggers a new measurement and returns the Pilot & MAC Power, Channel Power, Frequency Error, Frequency Error PPM, Rho Pilot, Rho Overall1, Data Modulation, Noise Floor. It is a combination of the following commands

:CONFigure:DEMod CDPMac; :READ:DEMod:CDPMac? To make a CDP MAC measurement with settings other than the default values send:

:CONFigure:DEMod CDPMac

Commands to set desired settings

:READ:DEMod:CDPMac?

Data is returned as 8 comma-delimited values: Pilot & MAC Power in the current user set unit (dBm/W/mW), Channel Power in the current user set unit (dBm/W/mW), Frequency Error in Hz, Frequency Error PPM, Rho Pilot, Rho Overall1, Data Modulation, and Noise Floor in dB. All invalid values are replaced with “--”.

Related Command: :CONFigure:DEMod CDPMac

:READ:DEMod:CDPMac?

:FETCH:DEMod:CDPMac?

Front Panel Access: Measurement, Demodulator, CDP MAC

:MEASure:DEMod:SUMMary?

Title: Measure Demodulator Summary

Description: Sets the active measurement to Modulation Summary, sets the default measurement parameters, triggers a new measurement and returns the Pilot & MAC Power, Channel Power, Rho Pilot, Rho Mac, Rho Data, Rho Overall1, Rho Overall2, Data Modulation, Noise Floor, RMS Phase Error, Frequency Error and Tau. It is a combination of the following commands: :CONFigure:DEMod SUMMary; :READ:DEMod:SUMMary? To make a Demodulator Summary measurement with settings other than the default values send:

:CONFigure:DEMod SUMMary

Commands to set desired settings

:READ:DEMod:SUMMary?

Data is returned as 12 comma-delimited values: Pilot & MAC Power in the current user set unit (dBm/W/mW), Channel Power in the current user set unit (dBm/W/mW), Rho Pilot, Rho Mac, Rho Data, Rho Overall1, Rho Overall2, Data Modulation, Noise Floor in dB, RMS Phase Error, Frequency Error in Hz, Tau in tens of microseconds. All invalid values are replaced with “--”.

Related Command: :CONFigure:DEMod SUMMary

:READ:DEMod:SUMMary?

:FETCH:DEMod:SUMMary?

Front Panel Access: Measurement, Demodulator, Modulation Summary
:MEASure:OTA:MPATH?

Title: Measure OTA Multipath
Description: Sets the active measurement to Multipath, sets the default measurement parameters, triggers a new measurement and returns six Ec/Io values, six Tau values, Channel Power, and Multipath Power. It is a combination of the following commands :CONFigure:OTA MPATH; :READ:OTA:MPATH? To make an OTA Multipath measurement with settings other than the default values send:

:CONFigure:OTA MPATH
Commands to set desired settings
:READ:OTA:MPATH?

Data is returned as 14 comma-delimited values: six Ec/Io Values in dB, six Tau values in ps, Channel Power in the current user set unit (dBm/W/mW), and Multipath Power in dB. All invalid values are replaced with “--”.

Related Command:
:CONFigure:OTA MPATH
:READ:OTA:MPATH?
:FETCH:OTA:MPATH?

Front Panel Access: Measurement, OTA, Multipath

:MEASure:PFail?

Title: Measure PASS/FAIL
Description: Sets the active measurement to PASS/FAIL, sets the default measurement parameters, triggers a new measurement and returns the PASS/FAIL results. It is a combination of the commands :CONFigure:PFail; :READ:PFail? To make a channel power measurement with settings other than the default values send:

:CONFigure PFail
Commands to set desired settings
:READ:PFail?

Related Command:
:CONFigure:PFail
READ:PFail?
FETCH:PFail?

Front Panel Access: Shift-4 (Measurement), PASS/FAIL
:MEASure:RF:ACPR?

Title: Measure Adjacent Channel Power Ratio

Description: Sets the active measurement to ACPR, sets the default measurement parameters, triggers a new measurement, and returns the power levels for each of the adjacent and main channels (9 total). It is a combination of the commands :CONFigure:RF ACPR; :READ:RF:ACPR? To make an RF ACPR measurement with settings other than the default values send:

:CONFigure:RF ACPR
Commands to set desired settings
:READ:RF:ACPR?

Data is returned as 9 comma-delimited values: The Absolute Adjacent Channel 1 Power, Absolute Adjacent Channel 2 Power, Absolute Main Channel 1 Power, Absolute Main Channel 2 Power, Absolute Main Channel 3 Power, Absolute Main Channel 4 Power, Absolute Main Channel 5 Power, Absolute Adjacent Channel 3 Power, Absolute Adjacent Channel 4 Power. All values are returned in dBm.

Note that the values for all five main channel carriers are shown even if the number of carriers set on the instrument is below five.

Related Command: :READ:RF:ACPR?
:CONFigure:RF ACPR
:FETCh:RF:ACPR?

Front Panel Access: Measurement, RF, ACPR

:MEASure:RF:EMISsion?

Title: Measure RF Spurious Emission

Description: Sets the active measurement to Spurious Emission, sets the default measurement parameters, triggers a new measurement and returns the Marker Amplitude, Marker Frequency, RBW, a Pass/Fail assessment, and the Mask Boundary Frequency for all markers/boundaries. It is a combination of the following commands :CONFigure:RF EMISsion; :READ:RF:EMISsion? To make an RF Spurious Emission measurement with settings other than the default values send:

:CONFigure:RF EMISsion
Commands to set desired settings
:READ:RF:EMISsion?

Data is returned as 5 comma-delimited values for each marker/boundary: Marker Amplitude in dB, Marker Frequency in Hz, RBW in Hz, Pass/Fail, and Mask Boundary Frequency in Hz.

Markers that are not on will return “--” for Marker Amplitude, Marker Frequency, RBW, and Pass/Fail. Mask Boundary Frequency will show normally despite the corresponding marker being off.

Related Command: :CONFigure:RF EMISsion
:READ:RF:EMISsion?
:FETCh:RF:EMISsion?

Front Panel Access: Measurement, RF, Spurious Emission
:MEASure:RF:SPECTrum?

Title: Measure RF Spectrum

Description: Sets the active measurement to Channel Spectrum, sets the default measurement parameters, triggers a new measurement and returns the Channel Power (Current User Set Unit), Occupied Bandwidth, Channel Power (Watts) and Peak to Average Power measurement results. It is a combination of the following commands :CONFigure:RF SPECTrum; :READ:RF:SPECTrum? To make an RF Spectrum measurement with settings other than the default values send:

:CONFigure:RF SPECTrum
 Commands to set desired settings
 :READ:RF:SPECTrum?

Data is returned as 4 comma-delimited values: Channel Power in the current user set unit (dBm/W/mW), Occupied bandwidth in Hz, Channel Power in fW, and Peak to Average Power in dB.

Related Command: :CONFigure:RF SPECTrum
 :READ:RF:SPECTrum?

Front Panel Access: Measurement, RF, Channel Spectrum

:MEASure:RF:SUMMary?

Title: Measure RF Summary

Description: Sets the active measurement to RF Summary, sets the default measurement parameters, triggers a new measurement and returns Channel Power, Pilot & MAC Power, Frequency Error, Spurious Emission, Occupied Bandwidth, Idle Activity, Active Activity, ON/OFF Ratio, Peak to Avg Power. It is a combination of the following commands :CONFigure:RF SUMMary; :READ:RF:SUMMary?

To make a RF Summary measurement with settings other than the default values send:

:CONFigure:RF SUMMary Commands to set desired settings :READ:RF:SUMMary?

Data is returned as 9 comma-delimited values: Channel Power, Pilot & MAC Power, Frequency Error, Spurious Emission, Occupied Bandwidth, Idle Activity, Active Activity, ON/OFF Ratio, Peak to Avg Power. All invalid values are replaced with “-”. Power units are in watt or dBm as per what is set by the user. Frequency is always in Hz.

Related Command: :CONFigure:RF SUMMary
 :READ:RF:SUMMary?
 :FETCh:RF:SUMMary?

Front Panel Access: Measurements, RF, RF Summary
11-9  :READ Subsystem

This set of commands combines the ABORt, INITiate and FETCh commands. It aborts any current triggering sequence and sets the trigger state to idle. It then initiates a new active measurement (i.e. begins the collection of new data). When the measurement is complete, it returns the result. These commands will not switch to another measurement.

To get the current measurement data, use the FETCh command.

:READ:OTA:MPATH?

Title: Read OTA Multipath

Description: Triggers a new measurement and returns six Ec/Io values, six Tau values, Channel Power, and Multipath Power. It is a combination of the following commands :ABORt; :INITiate; :FETCh:OTA:MPATH? In order for the data to be accurate, the Multipath measurement must be the active measurement (specified by :CONFigure:OTA MPATH). The current measurement can be queried using :CONFigure?

Data is returned as 14 comma-delimited values: six Ec/Io Values in dB, six Tau values in ps, Channel Power in the current user set unit (dBm/W/mW), and Multipath Power in dB. All invalid values are replaced with “..”.

Related Command: :CONFigure:OTA MPATH
:MEASure:OTA:MPATH?
:FETCh:OTA:MPATH?

Front Panel Access: Measurement, OTA, Multipath

:READ:PFail?

Title: Read PASS/FAIL

Description: Triggers a new PASS/FAIL measurement and returns the results. It is a combination of the commands :ABORT; :INITiate; FETCh:PFail? The PASS/FAIL measurement must be active. The current measurement can be queried using :CONFigure?

Related Command: :MEASure:PFail?
:CONFigure PFail
:FETCh:PFail?

Front Panel Access: Shift-4 (Measurement), PASS/FAIL
:READ:RF:ACPR?

Title: Read Adjacent Channel Power Ratio

Description: Triggers a new measurement, and returns the power levels for each of the adjacent and main channels (9 total). It is a combination of the commands :ABORt; :INITiate; :FETCh:RF:ACPR? In order for the data to be accurate, the ACPR measurement must be the active measurement (specified by :CONFigure:RF ACPR. The current measurement can be queried using :CONFigure?

Data is returned as 9 comma-delimited values: The Absolute Adjacent Channel 1 Power, Absolute Adjacent Channel 2 Power, Absolute Main Channel 1 Power, Absolute Main Channel 2 Power, Absolute Main Channel 3 Power, Absolute Main Channel 4 Power, Absolute Main Channel 5 Power, Absolute Adjacent Channel 3 Power, Absolute Adjacent Channel 4 Power. All values are returned in dBm. Note that the values for all five main channel carriers are shown even if the number of carriers set on the instrument is below five.

Related Command: :FETCh:RF:ACPR?
:CONFigure:RF ACPR
:MEASure:RF:ACPR?

Front Panel Access: Measurement, RF, ACPR

:READ:RF:EMISsion?

Title: Read RF Spurious Emission

Description: Triggers a new measurement and returns the Marker Amplitude, Marker Frequency, RBW, a Pass/Fail assessment, and the Mask Boundary Frequency for all markers/boundaries. It is a combination of the following commands :ABORt; :INITiate; :FETCh:RF:EMISsion? In order for the data to be valid, the Spurious Emission measurement must be the active measurement (specified by :CONFigure:RF EMISsion. The current measurement can be queried using :CONFigure?

Data is returned as 5 comma-delimited values for each marker/boundary (40 values total): Marker Amplitude in dB, Marker Frequency in Hz, RBW in Hz, Pass/Fail, and Mask Boundary Frequency in Hz. Markers that are not on will return “--” for Marker Amplitude, Marker Frequency, RBW, and Pass/Fail. All Mask Boundary Frequencies will show normally.

Related Command: :CONFigure:RF EMISsion
:MEASure:RF:EMISsion?
:FETCh:RF:EMISsion?

Front Panel Access: Measurement, RF, Spurious Emission
:READ:RF:SPECTrum?

Title: Read RF Spectrum

Description: Triggers a new measurement and returns the Channel Power (Current User Set Unit), Occupied Bandwidth, Channel Power (Watts) and Peak to Average Power measurement results. It is a combination of the following commands :ABORT; :INITiate; :FETCh:RF:SPECTrum? In order for the data to be accurate, the Channel Spectrum measurement must be the active measurement (specified by :CONFigure:RF SPECTrum). The current measurement can be queried using :CONFigure?

Data is returned as 4 comma-delimited values: Channel Power in the current user set unit (dBm/W/mW), Occupied bandwidth in Hz, Channel Power in fW, and Peak to Average Power in dB.

Related Command: :FETCh:RF:SPECTrum?
:CONFigure:RF SPECTrum
:MEASure:RF:SPECTrum?

Front Panel Access: Measurement, RF, Channel Spectrum

:READ:RF:SUMMary?

Title: Read RF Summary

Description: Triggers a new RF Summary measurement and returns the results. It is combination of the commands :ABORT; :INITiate; FETCh:RF:SUMMary? The current measurement can be queried using :CONFigure?

Data is returned as 9 comma-delimited values: Channel Power, Pilot & MAC Power, Frequency Error, Spurious Emission, Occupied Bandwidth, Idle Activity, Active Activity, ON/OFF Ratio, Peak to Avg Power. All invalid values are replaced with “--”. Power units are in watt or dBm as per what is set by the user. Frequency is always in Hz.

Related Command: :CONFigure:RF SUMMary
:READ:RF:SUMMary?
:FETCh:RF:SUMMary?

Front Panel Access: Measurements, RF, RF Summary
11-10 :TRACe Subsystem

This subsystem contains commands related to the transfer of trace data to and from the instrument.

:TRACe:PREamble? <trace type>

Title: Trace Header Transfer

Description: Returns trace header information for the specified trace. The <trace type> must be one of the following: SPECTrum | EMSsion | CDPMac | CDPData | PSCAN | MPATH.

Data can be transferred to and from the 6 available display trace types. Use the commands in the MMEMory subsystem to store and recall traces from the instrument memory. The response begins with an ASCII header. The header specifies the number of following bytes. It looks like #AX, where A is the number of digits in X and X is the number of bytes that follow the header.)

Parameters are returned in comma-delimited ASCII format. Each parameter is returned as “NAME=VALUE[ UNITS],” Valid parameter names are shown in “EVDO Parameter Names” on page 2-28.

Parameter: <trace type>

Related Command: :TRACe:DATA?
:TRACe[:DATA]? <trace type>

**Title:** Trace Data Transfer

**Description:** This command transfers trace data from the instrument to the controller. The `<trace type>` must be one of the following:

- SPECtrum
- EMISsion
- CDPMac
- CDPData
- PSCAn
- MPATh
- ACPR.

The format of the block data in the query form is specified by :FORMat:DATA. The block data in the command form is always sent in ASCII format. The response begins with an ASCII header that specifies the number of data bytes. It looks like #AX, where A is the number of digits in X and X is the number of bytes that follow the header. Each data point is separated by a comma delimiter. Trace setup information can be acquired using :TRACe[:DATA]:PREamble?. Use the commands in the MMEMory subsystem to store and recall traces from the instrument memory.

The RF measurements ACPR and Channel Spectrum both only have one value per data point that is returned in dBm. Each value is 4 bytes.

For the RF Spurious Emission measurement, each data point will have two values. The first value is the wave data, while the second value is the mask data. Both values are four bytes and returned in dBm.

Power vs. Time data points have three values each. The first value is the wave data. The second value is the upper mask data. The third value is the lower mask data. All values are returned in dB and are 4 bytes each.

The Demodulator Code Domain Power MAC measurement has four values per data point. The first value is the point number, which has no unit. The second value is the relative power returned in dB. The third value is the absolute power returned in dBm. The fourth value is the type, which is defined in the following.

<table>
<thead>
<tr>
<th>Return Value</th>
<th>Signal Type</th>
<th>Color</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Noise</td>
<td>Grey</td>
</tr>
<tr>
<td>1</td>
<td>IS95 Traffic</td>
<td>Yellow</td>
</tr>
<tr>
<td>2</td>
<td>CDMA2000 Traffic</td>
<td>Orange</td>
</tr>
<tr>
<td>3</td>
<td>CDMA2000 Traffic</td>
<td>Orange</td>
</tr>
<tr>
<td>4</td>
<td>Pilot</td>
<td>Red</td>
</tr>
<tr>
<td>5</td>
<td>Sync</td>
<td>Blue</td>
</tr>
<tr>
<td>6</td>
<td>Page</td>
<td>Green</td>
</tr>
<tr>
<td>7</td>
<td>Q Page</td>
<td>Purple</td>
</tr>
</tbody>
</table>

For the Code Domain Power Data measurement, each data point has six values. The first value is the point number, which has no unit. The second value is the relative I Data Magnitude, which is returned in dB. The third value is the absolute I Data Magnitude returned in dBm. The fourth value is the relative Q Data Magnitude returned in dBi. The fifth value is the absolute Q Data Magnitude returned in dBm. The sixth value is the type, which follows the table above in terms of returned values. All values are four bytes each.

Both of the Over the Air (OTA) measurements, Pilot Scan and Multipath, will have three values per data point. The first value is the type, which can be 0 (Noise, Grey), 1 (Primary, Blue), and 2 (Secondary, Red), or. The second value is the Ec/Io returned in dB. The third value is Tau returned in s. All three values are the same for both measurements and are 4 bytes each.
Note that the instrument must be set in the selected view. Use the CONFigure command to set the unit to the selected view.

Parameter: <trace type>

Related Command: :FORMat[:DATA]
:TRACe[:DATA]:PREamble?
11-11 :TRIGger Subsystem

This subsystem contains commands related to the triggering of instrument functions for the purposes of synchronization. Related commands appear in the ABORt and INITiate subsystems.

**:TRIGger:SEQuence:SLOPe RISing|FALLing**
**:TRIGger:SEQuence:SLOPe?**

Title:  External Trigger Polarity

Description: This command sets the external trigger polarity. Note that this setting can only be changed when the PN Type is set to “EXT”.

Parameter:  RISing|FALLing

Parameter Type:  <char>

Default Value:  RISing

Default Unit:  NA

Range:  RISing, FALLing

Related Command:  [:SENSe]:PN:TRIGger
                [:SENSe]:PN:TRIGger?

Front Panel Access: Setup, Ext Trigger Polarity
11-12 :UNIT Subsystem

The unit subsystem is used to modify the default units used for related parameters. These changes affect parameters in both commands and responses.

:UNIT:POWer \( DBM|W \)
:UNIT:POWer?

Title: Measurement Units

Description: Sets the default amplitude units for input, output and display.

Parameter: \( DBM|W \)

Parameter Type: <char>

Default Value: \( dBm \)

Front Panel Access: Amplitude, Units, Unit of Measure
11-13 [:SENSe] Subsystem

The commands in this subsystem relate to device-specific parameters, not signal-oriented parameters.

[:SENSe]:ACP\Power:BA\Nd\ith|:MA\IN \<freq>
[:SENSe]:ACP\Power:BA\Nd\ith|:MA\IN?

Title: ACPR Main Channel Bandwidth
Description: Sets the main channel carrier bandwidth. The \<freq> value must be 1.23|1.24|1.25.
Parameter: \<freq>
Default Value: 1.25 MHz
Default Unit: MHz
Range: 1.23 MHz, 1.24 MHz, 1.25 MHz
Front Panel Access: Setup, Carrier BW (MHz)

[:SENSe]:DE\Mod:CD\Power:UNITs REL\ative|ABS\olute
[:SENSe]:DE\Mod:CD\Power:UNITs?

Title: Code Domain Power Unit Type
Description: Sets the Code Domain Power unit type. The query form returns either a “REL” for relative units, or an “ABS” for absolute units in Ascii (without the double quotes).
Parameter: RELative|ABSolute
Parameter Type: <char>
Default Value: RELative
Range: RELative, ABSolute
Front Panel Access: Measurement, Demodulator, CDP, CDP Units

[:SENSe]:DE\Mod:CD\Power:ZOOM 16|32|64
[:SENSe]:DE\Mod:CD\Power:ZOOM?

Title: Code Domain Power Zoom
Description: Sets the zoom for the Code Domain Power measurement. The query form returns either 16, 32, or 64.
Parameter: 16|32|64
Default Value: 16
Range: 16, 32, 64
Related Command: [:SENSe]:DE\Mod:CD\Power:ZOOM:STARt
[:SENSe]:DE\Mod:CD\Power:ZOOM:STARt?
Front Panel Access: Measurement, Demodulator, CDP MAC, Zoom
[:SENSe]:DEMod:CDPower:ZOOM:START <integer>
[:SENSe]:DEMod:CDPower:ZOOM:START?

Title: Code Domain Power Zoom Start Index
Description: Sets the zoom start index for the Code Domain Power measurement.
Parameter: <integer>
Parameter Type: <integer>
Default Value: 0
Range: 0 to 112
Related Command: [:SENSe]:DEMod:CDPower:ZOOM
[:SENSe]:DEMod:CDPower:ZOOM?
Front Panel Access: Measurement, Demodulator, CDP Mac, Zoom Start Index

[:SENSe]:FREQuency:CENTer <freq>
[:SENSe]:FREQuency:CENTer?

Title: Center Frequency
Description: Sets the center frequency.
Parameter: <freq>
Default Value: 1 GHz
Default Unit: Hz
Range: 1 MHz to 2.7 GHz
Front Panel Access: Freq, Center Freq

[:SENSe]:FREQuency:SIGStandard <index>
[:SENSe]:FREQuency:SIGStandard?

Title: Signal Standard
Description: Selects the desired signal standard from the list. The <index> argument is a 1-based index of the position of the desired signal standard in the instrument’s current signal standard list. The list can be seen on the instrument by choosing the “Signal Standard” soft-key button in the “Frequency” menu. The list can also be downloaded remotely and viewed using Anritsu Master Software Tools. For example, if the desired Signal Standard is the 3rd item on the list then the value of the <index> argument would be 3.

The query form of this command will return the index of the currently-selected Signal Standard on the list.

Parameter: <index>

Front Panel Access: Frequency, Signal Standard

[:SENSe]:FREQuency:SIGStandard:CHANnel <number>
[:SENSe]:FREQuency:SIGStandard:CHANnel?

Title: Channel Selection
Description: Sets the channel number for the selected signal standard.
Parameter: <number>

Front Panel Access: Frequency, Channel
[:SENSe]:FREQuency:SPAN?

Title: Frequency Span
Description: This is a query command only. The user can not set the span in CDMA or EVDO modes.
Parameter: <freq>
Default Unit: Hz

[:SENSe]:PFail <test set>
[:SENSe]:PFail?

Title: PASS/FAIL Test Selection
Description: Selects the active test set to be used in subsequent PASS/FAIL measurements. The <test set> value must correspond to a test set that is defined in the test set list. To view the list on the instrument, go into the “Measurement” menu, press the “Pass/Fail Mode” key, and then press the “Select Pass/Fail Test” soft key. Alternatively, the list can be retrieved remotely and viewed using the Anritsu Master Software Tools. The <test set> argument is a 1-based index of the position of the desired Pass/Fail test set in the instrument’s current Pass/Fail test set list. For example, if the desired Pass/Fail test is the 3rd item on the list then the value of the <test set> argument would be 3.
When using the query form of the command, the return value is the currently selected test set number. If there is not a valid test set selected, the return value is “-1” (negative 1).
Parameter: <test set>
Related Command: :CONFigure PFail
Front Panel Access: Measurement, Pass Fail Mode, Select Pass/Fail Test

[:SENSe]:PN:OFFSet <integer>
[:SENSe]:PN:OFFSet?

Title: PN Offset
Description: Sets the PN offset. Note that this can only be changed when PN Trigger is set to “GPS”, or “EXT”. A return value of the PN offset query is invalid when PN search type is AUTO.
Parameter: <integer>
Parameter Type: <integer>
Default Value: 0
Range: 0 to 511
Related Command: [:SENSe]:PN:TRIGger
[:SENSe]:PN:TRIGger?
[:SENSe]:PN:STYPe [:SENSe]:PN:STYPe?
Front Panel Access: Setup, PN Setup, PN Offset
[:SENSe]:PN:STYPe:AUTO 1|0|ON|OFF
[:SENSe]:PN:STYPe:AUTO?

Title: PN Search Type

Description: Sets the PN search type. The default value is ON. That is, sending :SENSe:PN:STYPe:AUTO is equivalent to sending :SENSe:PN:STYPe:AUTO ON. The query form returns either a 1 for ON, or a 0 for OFF. Note that this can only be changed when PN Trigger is set to “GPS”, or “EXT”.

Parameter: 1|0|ON|OFF
Parameter Type: <boolean>
Default Value: 1
Range: ON, OFF
Related Command: [:SENSe]:PN:TRIGger
[:SENSe]:PN:TRIGger?
[:SENSe]:PN:OFFSet [:SENSe]:PN:OFFSet?

Front Panel Access: Setup, PN Setup, PN Search Type

[:SENSe]:PN:TRIGger NOTRig|GPS|EXT
[:SENSe]:PN:TRIGger?

Title: External PN Trigger

Description: Sets the external PN trigger. The query form returns either “NOTRIG”, “GPS”, or “EXT” in Ascii (without the double quotes).

Parameter: NOTRIG|GPS|EXT
Parameter Type: <char>
Default Value: NOTRIG
Range: NOTRIG, GPS, EXT
Related Command: [:SENSe]:PN:STYPe
[:SENSe]:PN:STYPe?
[:SENSe]:PN:OFFSet [:SENSe]:PN:OFFSet?

Front Panel Access: Setup, PN Setup, PN Trigger

[:SENSe]:POWer[:RF]:RANGe:AUTO OFF|ON|0|1
[:SENSe]:POWer[:RF]:RANGe:AUTO?

Title: Automatic Amplitude Range

Description: Sets the automatic amplitude range. Setting the value to ON or 1 will result in the amplitude range being coupled to the detected input signal level. Setting the value to OFF or 0 will result in the input attenuation being un-coupled from the input signal level. That is, changing the input signal level will not change the amplitude range. When this command is issued, the amplitude range itself will not change. The default value is ON. That is, sending :SENS:POW:RANG:AUTO is equivalent to sending :SENS:POW:RANG:AUTO ON.

Parameter: OFF|ON|0|1
Parameter Type: <boolean>
Default Value: ON
Related Command: [:SENSe]:POWer[:RF]:RANGe

Front Panel Access: Amplitude, Auto Range
**[:SENSe]:POWer[:RF]:RANGe[:IMMediate]**

**Title:** Amplitude Range

**Description:** Re-calculates amplitude range. Note that issuing this command will set the automatic dynamic range OFF.

**Related Command:** [:SENSe]:POWer[:RF]:RANGe:AUTO

**Front Panel Access:** Amplitude, Adjust Range

**[:SENSe]:RF:ACPR:MAINchannelcount <integer>**

**[:SENSe]:RF:ACPR:MAINchannelcount?**

**Title:** Main Channel Carrier Count

**Description:** Sets the number of main channel carriers.

**Parameter:** <integer>

**Parameter Type:** <integer>

**Default Value:** 1

**Range:** 1 to 5

**Front Panel Access:** Setup, Number of Carriers

**[:SENSe]:SWEep:SPEed FAST|NORM|SLOW**

**[:SENSe]:SWEep:SPEed?**

**Title:** Measurement Speed

**Description:** Sets the measurement speed. The query form returns either “FAST”, “NORM”, or “SLOW” in Ascii (without the double quotes).

**Parameter:** FAST|NORM|SLOW

**Parameter Type:** <char>

**Default Value:** Norm

**Range:** FAST, NORM, SLOW

**Front Panel Access:** Setup, Meas Speed

**[:SENSe]:WCODe 64|128**

**[:SENSe]:WCODe?**

**Title:** Walsh Codes

**Description:** Sets the Walsh codes.

**Parameter:** 64|128

**Default Value:** 128

**Range:** 64, 128

**Front Panel Access:** Setup, Walsh Codes
Chapter 12 — Fixed WiMAX Commands

12-1 :ABORt Subsystem

The abort subsystem includes commands that allow the user to stop current measurement activities on the instrument.

:ABORt

  Title: Abort
  Description: Restarts the current sweep and/or measurement. Resets the trigger system. If
  :INITiate:CONTinuous is OFF (i.e. the instrument is in single sweep mode), send the
  command :INITiate[:IMMediate] to trigger the next sweep. If :INITiate:CONTinuous is
  ON (i.e. the instrument is in continuous sweep mode) a new sweep will start
  immediately.

  Parameter: NA

  Related Command: :INITiate:CONTinuous
                   :INITiate[:IMMediate]

  Front Panel Access: Shift-3 (Sweep), Reset Sweep
12-2 :CONFigure Subsystem

This set of commands prepares the instrument for the selected measurement. It disables any currently-enabled measurements and activates the specified measurement. It sets the instrument to single sweep mode, waiting for an :INITiate command. It will not initiate the taking of a measurement.

Current instrument settings may be changed to default values. These changes are identified with their respective measurement commands.

:CONFigure SUMMARY

Title: Configure Summary Measurement

Description: This command configures the summary of all the related numerical measurement results. It disables any other active measurements. None of the instrument parameters are changed by the execution of this command. Sets the instrument to single sweep mode (:INITiate:CONTinuous OFF). Measurement settings can be modified by using the [:SENSe] commands before initiating a measurement.

Parameter: SUMMARY

Parameter Type: <char>

Front Panel Access: Shift-4 (Measurement), WiMAX Summary

:CONFigure:DEMod <char>

Title: Configure Demodulation Measurement

Description: Valid <char> parameters are:
SUMMary | CONStln | SFLatness | EVSCarrier | EVSYmbol.

This command configures the selected demodulation measurement. It disables any other active measurements. None of the instrument parameters are changed by the execution of this command. Sets the instrument to single sweep mode (:INITiate:CONTinuous OFF). Measurement settings can be modified by using the [:SENSe]:DEMod commands before initiating a measurement.

When the SUMMARY option is selected, the measurement results are equivalent to the results that are displayed by choosing Measurements, then Demodulator, then Modulation Summary from the front panel. When the CONStln option is selected, the measurement results are equivalent to the results that are displayed by choosing Measurements, then Demodulator, then Constellation from the front panel. When the SFLatness option is selected, the measurement results are equivalent to the results that are displayed by choosing Measurements, then Demodulator, then Spectral Flatness from the front panel. When the EVSCarrier option is selected, the measurement results are equivalent to the results that are displayed by choosing Measurements, then Demodulator then EVM vs Sub Carrier from the front panel. When the EVSYmbol option is selected, the measurement results are equivalent to the results that are displayed by choosing Measurements, then Demodulator then EVM vs Symbol from the front panel.

Parameter: <char>

Front Panel Access: Shift-4 (Measurement), Demodulator
:CONFigure PFail

Title: Configure PASS/FAIL Measurement

Description: This command configures the PASS/FAIL measurement. It disables any other active measurements. None of the instrument parameters are changed by the execution of this command. Sets the instrument to single sweep mode (:INITiate:CONTinuous OFF). Measurement settings can be modified by using the [:SENSe] commands before initiating a measurement. The measurement results are equivalent to the results that are displayed by choosing Measurements, then PASS/FAIL from the front panel.

Parameter: PFail

Related Command: :FETCh:PFail?
MEASURE:PFail?
READ:PFail?

Front Panel Access: Shift-4 (Measurement), PASS/FAIL Mode

:CONFigure:RF <char>

Title: Configure RF Measurement

Description: Valid parameter options: SUMMary|SPECtrum|PVTime|ACPR

This command configures the selected RF measurement. It disables any other active measurements. None of the instrument parameters are changed by the execution of this command. Sets the instrument to single sweep mode (:INITiate:CONTinuous OFF). Measurement settings can be modified by using the [:SENSe]:RF commands before initiating a measurement.

When the SUMMary option is selected, the measurement results are equivalent to the results that are displayed by choosing Measurements, then RF, then RF Summary from the front panel. When the SPECtrum option is selected, the measurement results are equivalent to the results that are displayed by choosing Measurements, then RF, then Spectrum from the front panel. When the PVTime option is selected, the measurement results are equivalent to the results that are displayed by choosing Measurements, then RF, then Power vs Time from the front panel. When the ACPR option is selected, the measurement results are equivalent to the results that are displayed by choosing Measurements, then RF, then ACPR from the front panel.

Parameter: <char>

Related Command: [:SENSe]:FREQuency
[:SENSe]:RF:ACLR:MAINchannelcount
[:SENSe]:RF:ACLR:ADJCchannelcount
This subsystem provides commands that modify the display of data for the user. They do not modify the way in which data are returned to the controller.

**:DISPlay:WINDow:TRACe:MAXHold OFF|ON|0|1**

Title: Max Hold State

Description: Specifies whether the Max Hold is ON or OFF. The default value is ON. That is, sending :DISP:WIND:TRAC:MAXH is equivalent to sending :DISP:WIND:TRAC:MAXH ON. The query version of the command returns a 1 if Max Hold is set to ON and returns a 0 if the Max Hold is set to OFF. Note that this command is available only in the Spectrum and EVM vs. Sub-carrier views.

Parameter: OFF|ON|0|1

Default Value: 0

Front Panel Access: Shift-5 (Trace), Max Hold

**:DISPlay:WINDow:TRACe:Y[:SCALe]:OFFSet <rel ampl>**

Title: Power Offset

Description: Sets the power offset value for the y-axis.

Parameter: <rel ampl>

Default Value: 0 dB

Default Unit: dB

Range: 0 dB to 100 dB

Front Panel Access: Amplitude, Power Offset

**:DISPlay:WINDow:TRACe:Y[:SCALe]:PDIVision <value>**

Title: Scale Resolution Per Division

Description: Sets the scale per division for the y-axis. The units change from dB/div to % when EVM is the y-axis value. The resolution per division value is maintained separately for each measurement.

Parameter: <value>

Default Value: Spectral Flatness: 1 dB/div

EVM vs. SubCarrier: 0.50%

EVM vs. Symbol: 0.50%

All others: 10dB/div

Default Unit: Current active amplitude unit

Range: EVM vs. SubCarrier: 0.1 % to 10 %

EVM vs. SubCarrier: 0.1 % to 10 %

All others: 1 dB to 15 dB
Title: Y Axis Max

Description: Sets the maximum value of the Y axis. Note that this command is available only in the Spectral Flatness and EVM vs. Symbol/Sub-carrier views.

Parameter: <amplitude>

Default Value:
- Spectral Flatness: 5dB
- EVM vs. Symbol: 5%
- EVM vs. Sub-carrier: 5%

Default Unit: Current active amplitude unit

Range:
- Spectral Flatness: –5 to 5
- EVM vs. Symbol: 1% to 100%
- EVM vs. Sub-carrier: 1% to 100%

Front Panel Access: Amplitude, Y Axis Max
12-4 :FETCh Subsystem

This set of commands returns the most recent measurement data of the active measurement. They will not switch to another measurement.

To make a new measurement, use the INITiate command. To get new measurement data, use the READ or MEASure query commands.

:FETCh:DEMod:CONStln?

Title: Fetch Constellation
Description: Returns the constellation of the demodulated data symbol over one frame measurement results.

Data is returned as 8 comma-delimited values: EVM (rms) in %, EVM (pk) in %, RCE (rms) in dB, RCE (pk) in dB, Carrier Frequency in MHz, Freq Error in MHz, Freq Error in ppm, and the Base Station ID. “--” is returned for each data that is not valid at that instance.

:FETCh:DEMod:EVSCarrier?

Title: Fetch EVM vs. Sub Carrier
Description: Returns the EVM vs. Sub Carrier measurement results.

Data is returned as 8 comma-delimited values: EVM (rms) in %, EVM (pk) in %, RCE (rms) in dB, RCE (pk) in dB, Carrier Frequency in MHz, Freq Error in MHz, Freq Error in ppm, and the Base Station ID. “--” is returned for each data that is not valid at that instance.

:FETCh:DEMod:EVSYmbol?

Title: Fetch EVM vs. Symbol
Description: Returns the EVM vs. Symbol measurement results.

Data is returned as 8 comma-delimited values: EVM (rms) in %, EVM (pk) in %, RCE (rms) in dB, RCE (pk) in dB, Carrier Frequency in MHz, Freq Error in MHz, Freq Error in ppm, and the Base Station ID. “--” is returned for each data that is not valid at that instance.

:FETCh:DEMod:SFLatness?

Title: Fetch Spectral Flatness
Description: Returns the absolute delta of the power between adjacent sub carriers in dB. “--” is returned for data that is not valid at that instance.
**:FETCh:PFail?**

**Title:** Fetch PASS/FAIL

**Description:** Returns the most recent PASS/FAIL measurement results. Measurement results are returned in a block of ASCII text in the format of <header><block>. The ASCII header specifies the number of data bytes. It looks like #AX, where A is the number of digits in X and X is the number of bytes in the <block>. The block consists of a set of records which indicate individual test results. Records are comma-separated. Each record follows the format <test ID>: <input1> <input2> <min> <max> <value1> <value2>, <PASS/FAIL/OPTION NOT INSTALLED>. The <test ID> field indicates which test was performed to retrieve these results. The <input1> and <input2> fields indicate the test setup. The <min> and <max> fields indicate the minimum and maximum values against which <value1> and <value2> were compared to arrive at the final PASS/FAIL result. If the specified test is not available in the instrument, the <PASS/FAIL> field will indicate “option not available” instead of “pass” or “fail”. All unused fields for a given test are represented by a double dash (“--”). To receive valid measurements, the Pass/Fail measurement must be the active. The current measurement can be queried using CONFigure?. Use the :CONFigure:PFail to set Pass/Fail as the active measurement.

**Related Command:** MEASure:PFail?
:CONFigure:PFail
READ:PFail?

**:FETCh:RF:ACPR?**

**Title:** Fetch Adjacent Channel Power Ratio

**Description:** Returns the most recent adjacent channel power ratio measurement results. Data is returned as 11 comma-delimited values: The Channel Power in dBm, relative adjacent channel 1 power level, absolute adjacent channel 1 power level, relative adjacent channel 2 power level, absolute adjacent channel 2 power level, relative adjacent channel 3 power level, absolute adjacent channel 3 power level, relative adjacent channel 4 power level, absolute adjacent channel 4 power level, relative adjacent channel 5 power level, absolute adjacent channel 5 power level. The relative adjacent channel power level is in dB and the absolute adjacent channel power level is in dBm. “--” is returned for each data that is not valid at that instance.

**Related Command:** :CONFigure:RF ACPR
:MEASure:RF:ACPR?
:READ:RF:ACPR?

**Front Panel Access:** CDMA, EVDO: Measurement, RF, ACPR

**:FETCh:RF:PVTime?**

**Title:** Fetch Power vs. Time

**Description:** Returns the most recent WiMAX 802.16-2004 OFDM signal over approximately one frame time domain measurement results. Data is returned as 4 comma-delimited values: The Channel Power in dBm, Preamble power in dBm, burst power of data bursts in dBm, and the Crest Factor in dB. “--” is returned for each data that is not valid at that instance.
:FETCh:RF:SPECTrum?

Title: Fetch RF Spectrum

Description: Returns the most recent RF Spectrum measurement results.

Data is returned as 2 comma-delimited values: Channel Power(RSSI) in dBm and Occupied bandwidth measurement in MHz. "--" is returned for each data that is not valid at that instance.

Related Command: :CONFigure:RF SPECTrum
:MEASure:RF:SPECTrum?
:READ:RF:SPECTrum?

Front Panel Access: CDMA, EVDO, TDSCDMA: Measurement, RF, Channel Spectrum
12-5 :FORMat Subsystem

This subsystem contains commands that determine the formatting of numeric data when it is transferred. The format setting affects data in specific commands only. If a command is affected, it is noted in the command description.

`:FORMat[:READings][:DATA] ASCII|INTeger,32|REAL,32
`:FORMat[:READings][:DATA]?

Title: Numeric Data Format
Description: This command specifies the format in which data is returned in certain commands.

ASCII format returns the data in comma-separated ASCII format. The units are the current instrument units. This format requires many more bytes so it is the slowest format. INTeger 32 values are signed 32-bit integers in little-endian byte order. This format returns the data in 4-byte blocks. (WCDMA and Cable & Antenna only: The units are always dBm. For example, if the measured result was -12.345 dBm, that value would be sent as -12345.) REAL,32 values are 32-bit floating point numbers conforming to the IEEE 754 standard in little-endian byte order. This format returns the data in 4-byte binary format. The units are the current instrument units.

Both INTeger,32 and REAL,32 formats return a definite block length. Each transfer begins with an ASCII header such as #42204. The first digit represents the number of following digits in the header (in this example, 4). The remainder of the header indicates the number of bytes that follow the header (in this example, 2204). You then divide the number of following bytes by the number of bytes in the data format you’ve chosen (4 for both INTeger,32 and REAL,32—so 2204/4) to get the number of data points (in this example, 551).

Parameter: ASCII | INTeger,32 | REAL,32
Parameter Type: <char>
Default Value: ASCII
Related Command: :TRACE[:DATA]
12-6  :INITiate Subsystem

This subsystem controls the triggering of measurements.

:INITiate:CONTinuous OFF|ON|0|1
:INITiate:CONTinuous?

Title: Continuous/Single Sweep
Description: Specifies whether the sweep/measurement is triggered continuously. If the value is set to ON or 1, another sweep/measurement is triggered as soon as the current one completes. If continuous is set to OFF or 0, the instrument enters the “idle” state and waits for the :INITiate[:IMMediate] command or for :INITiate:CONTinuous ON. The default value is ON. That is, sending :INIT:CONT is equivalent to sending :INIT:CONT ON. The query version of the command returns a 1 if the instrument is continuously sweeping/measuring and returns a 0 if the instrument is in single sweep/measurement mode. Note that rapid toggling between ON and OFF is not allowed. The instrument must be allowed to make a full sweep before toggling can be done. Note that the set command is available only if the instrument is in Cable & Antenna mode.

Parameter: OFF|ON|0|1
Parameter Type: <boolean>
Default Value: ON
Related Command: :INITiate[:IMMediate]
:INITiate:HOLD
Front Panel Access: Shift-3 (Sweep), Sweep (Single/Continuous)

:INITiate[:IMMediate]

Title: Trigger Sweep/Measurement
Description: Initiates a sweep/measurement. If :INITiate:CONTinuous is set to ON, this command is ignored. Use this command in combination with :STATus:OPERation? to synchronize the capture of one complete set of data. When this command is sent, the “sweep complete” bit of :STATus:OPERation? is set to 0, indicating that the measurement has not completed. The data collection is then triggered. The controlling program can poll :STATus:OPERation? to determine the status. When the “sweep complete” bit is set to 1, data is ready to be retrieved.

Related Command: :INITiate:CONTinuous
:STATus:OPERation?
Front Panel Access: Shift-3 (Sweep), Trigger Sweep
12-7 :MEASure Subsystem

These commands take the instrument from its current state, enable the specified measurement and put the instrument into single sweep mode. They correct any parameters that are invalid given the new measurement state such that a valid measurement can take place. Other settings may be changed; see the documentation of CONFigure for each measurement. They then initiate the measurement. When the measurement is complete, they return the result.

To make a measurement with settings other than the “default” measurement settings applied by CONFigure, do the following:

- Send the appropriate CONFigure command to set the desired measurement.
- Modify the settings as required.
- Send the appropriate READ command to measure and return the result.

To get the current measurement data, use the appropriate FETCH command.

:MEASure:DEMod:CONStln?

Title: Measure Constellation
Description: Sets the active measurement to Constellation, sets the default measurement parameters, triggers a new measurement, and returns the EVM (rms), EVM (pk), RCE (rms), RCE (pk), Carrier Frequency, Freq Error, Freq Error, and the Base Station ID. It is a combination of the commands :CONFigure:DEMod CONStln; :READ:DEMod:CONStln?
To make a Demodulated Constellation measurement with settings other than the default values send:

:CONFigure:DEMod CONStln
Commands to set desired settings
:READ:DEMod:CONStln?

Data is returned as 8 comma-delimited values: EVM (rms) in %, EVM (pk) in %, RCE (rms) in dB, RCE (pk) in dB, Carrier Frequency in MHz, Freq Error in MHz, Freq Error in ppm, and the Base Station ID.

Related Command: :READ:DEMod:CONStln?
:CONFigure:DEMod CONStln

:MEASure:DEMod:EVSCarrier?

Title: Measure EVM vs. Sub Carrier
Description: Sets the active measurement to EVM vs. Sub Carrier, sets the default measurement parameters, triggers a new measurement, and returns the EVM (rms), EVM (pk), RCE (rms), RCE (pk), Carrier Frequency, Freq Error, Freq Error, and the Base Station ID. It is a combination of the commands :CONFigure:DEMod EVSCarrier; :READ:DEMod:EVSCarrier? To make a EVM vs. Symbol measurement with settings other than the default values send:

:CONFigure:DEMod EVSCarrier
Commands to set the desired settings
:READ:DEMod:EVSCarrier?

Data is returned as 8 comma-delimited values: EVM (rms) in %, EVM (pk) in %, RCE (rms) in dB, RCE (pk) in dB, Carrier Frequency in MHz, Freq Error in MHz, Freq Error in ppm, and the Base Station ID.

Related Command: :READ:DEMod:EVSCarrier?
:CONFigure:DEMod EVSCarrier
**:MEASure:DEMod:EVSYmbol?**

**Title:** Measure EVM vs. Symbol

**Description:** Sets the active measurement to EVM vs. Symbol, sets the default measurement parameters, triggers a new measurement, and returns the EVM (rms), EVM (pk), RCE (rms), RCE (pk), Carrier Frequency, Freq Error, Freq Error, and the Base Station ID. It is a combination of the commands :CONFigure:DEMod EVSYmbol; :READ:DEMod:EVSYmbol? To make a EVM vs. Symbol measurement with settings other than the default values send:

:CONFigure:DEMod EVSYmbol
Commands to set the desired settings
:READ:DEMod:EVSYmbol?

Data is returned as 8 comma-delimited values: EVM (rms) in %, EVM (pk) in %, RCE (rms) in dB, RCE (pk) in dB, Carrier Frequency in MHz, Freq Error in MHz, Freq Error in ppm, and the Base Station ID.

**Related Command:** :READ:DEMod:EVSYmbol?
:CONFigure:DEMod EVSYmbol

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**:MEASure:DEMod:SFLatness?**

**Title:** Measure Spectral Flatness

**Description:** Sets the active measurement to Spectral Flatness, sets the default measurement parameters, triggers a new measurement, and returns the absolute delta of the power between adjacent sub carriers in dB. It is a combination of the commands

:CONFigure:DEMod SFLatness; :READ:DEMod:SFLatness? To make a Spectral Flatness measurement with settings other than the default values send:

:CONFigure:DEMod SFLatness
Commands to set desired settings
:READ:DEMod:SFLatness?

**Related Command:** :READ:DEMod:SFLatness?
:CONFigure:DEMod SFLatness

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**:MEASure:PFail?**

**Title:** Measure PASS/FAIL

**Description:** Sets the active measurement to PASS/FAIL, sets the default measurement parameters, triggers a new measurement and returns the PASS/FAIL results. It is a combination of the commands :CONFigure:PFail; :READ:PFail? To make a channel power measurement with settings other than the default values send:

:CONFigure PFail
Commands to set desired settings
:READ:PFail?

**Related Command:** :CONFigure:PFail
:READ:PFail?
FETCH:PFail?

**Front Panel Access:** Shift-4 (Measurement), PASS/FAIL
**:MEASure:RF:ACPR?**

**Title:** Measure Adjacent Channel Power Ratio  
**Description:** Sets the active measurement to ACPR, sets the default measurement parameters, triggers a new measurement, and returns the power levels for each channel (both absolute and relative). It is a combination of the commands :CONFigure:RF ACPR; :READ:RF:SPEctrum? To make an RF ACPR measurement with settings other than the default values send:

:CONFigure:RF ACPR  
Commands to set desired settings  
:READ:RF:ACPR?  

Data is returned as 11 comma-delimited values: The Channel Power in dBm, relative adjacent channel 1 power level, absolute adjacent channel 1 power level, relative adjacent channel 2 power level, absolute adjacent channel 2 power level, relative adjacent channel 3 power level, absolute adjacent channel 3 power level, relative adjacent channel 4 power level, absolute adjacent channel 4 power level, relative adjacent channel 5 power level, absolute adjacent channel 5 power level. The relative adjacent channel power level is in dB and the absolute adjacent channel power level is in dBm.

**Related Command:** :READ:RF:ACPR?  
:CONFigure:RF ACPR  
:FETCh:RF:ACPR?  

**Front Panel Access:** Measurement, RF, ACPR

**:MEASure:RF:PVTime?**

**Title:** Measure Power vs. Time  
**Description:** Sets the active measurement to Power vs. Time, sets the default measurement parameters, triggers a new measurement and returns the Channel Power, Preamble power, burst power of data bursts, and the Crest Factor. It is a combination of the following commands CONFigure:RF PVTime; :READ:RF:PVTime? To make an RF ACPR measurement with settings other than the default values send:

:CONFigure:RF PVTime  
Commands to set desired settings  
:READ:RF:PVTime?  

Data is returned as 4 comma-delimited values: The Channel Power in dBm, Preamble power in dBm, burst power of data bursts in dBm, and the Crest Factor in dB.

**Related Command:** :READ:RF:PVTime?  
:CONFigure:RF PVTime
Title: Measure RF Spectrum

Description: Sets the active measurement to Spectrum, sets the default measurement parameters, triggers a new measurement and returns the Channel Power (RSSI) and Occupied bandwidth measurement. It is a combination of the following commands: :CONFigure:RF SPECtrum; :READ:RF:SPECtrum? To make an RF Spectrum measurement with settings other than the default values send:

:CONFigure:RF SPECtrum

Commands to set desired settings

:READ:RF:SPECtrum?

Data is returned as 2 comma-delimited values: Channel Power (RSSI) in dBm Occupied bandwidth measurement in MHz.

Related Command: :CONFigure:RF SPECtrum

:READ:RF:SPECtrum?

:FETCH:RF:SPECtrum?

Front Panel Access: Measurement, RF, Channel Spectrum
12-8 :READ Subsystem

This set of commands combines the ABORt, INITiate and FETCh commands. It aborts any current triggering sequence and sets the trigger state to idle. It then initiates a new active measurement (i.e. begins the collection of new data). When the measurement is complete, it returns the result. These commands will not switch to another measurement.

To get the current measurement data, use the FETCh command.

:READ:DEMod:CONStln?

Title: Read Constellation

Description: Triggers a new Constellation measurement and returns the results: EVM (rms), EVM (pk), RCE (rms), RCE (pk), Carrier Frequency, Freq Error, Freq Error, and the Base Station ID. The Constellation measurement must be the active measurement (specified by :CONFigure:DEMod CONStln). The current measurement can be queried using the command :CONFigure?

Data is returned as 8 comma-delimited values: EVM (rms) in %, EVM (pk) in %, RCE (rms) in dB, RCE (pk) in dB, Carrier Frequency in MHz, Freq Error in MHz, Freq Error in ppm, and the Base Station ID.

Related Command: :FETCh:DEMod:CONStln?
:CONFigure:DEMod CONStln

:READ:DEMod:EVSCarrier?

Title: Read EVM vs. Sub Carrier

Description: Triggers a new EVM vs. Sub Carrier measurement and returns the results: EVM (rms), EVM (pk), RCE (rms), RCE (pk), Carrier Frequency, Freq Error, Freq Error, and the Base Station ID. The EVM vs. Sub Carrier measurement must be the active measurement (specified by :CONFigure:DEMod EVSCarrier). The current measurement can be queried using the command :CONFigure?

Data is returned as 8 comma-delimited values: EVM (rms) in %, EVM (pk) in %, RCE (rms) in dB, RCE (pk) in dB, Carrier Frequency in MHz, Freq Error in MHz, Freq Error in ppm, and the Base Station ID.

Related Command: :FETCh:DEMod:EVSCarrier?
:CONFigure:DEMod EVSCarrier

:READ:DEMod:EVSYmbol?

Title: Read EVM vs. Symbol

Description: Triggers a new EVM vs. Symbol measurement and returns the results: EVM (rms), EVM (pk), RCE (rms), RCE (pk), Carrier Frequency, Freq Error, Freq Error, and the Base Station ID. The EVM vs. Symbol measurement must be the active measurement (specified by :CONFigure:DEMod EVSYmbol). The current measurement can be queried using the command :CONFigure?

Data is returned as 8 comma-delimited values: EVM (rms) in %, EVM (pk) in %, RCE (rms) in dB, RCE (pk) in dB, Carrier Frequency in MHz, Freq Error in MHz, Freq Error in ppm, and the Base Station ID.

Related Command: :FETCh:DEMod:EVSYmbol?
:CONFigure:DEMod EVSYmbol
**:READ:DEMod:SFLatness?**

**Title:** Read Spectral Flatness

**Description:** Triggers a new Spectral Flatness measurement and returns the absolute delta of the power between adjacent sub carriers in dB. The Spectral Flatness measurement must be the active measurement (specified by :CONFigure:DEMod SFLatness). The current measurement can be queried using the command :CONFigure?

**Related Command:** :FETCh:DEMod:SFLatness?
:CONFigure:DEMod SFLatness

**:READ:PFail?**

**Title:** Read PASS/FAIL

**Description:** Triggers a new PASS/FAIL measurement and returns the results. It is a combination of the commands :ABORT; :INITiate; FETCh:PFail? The PASS/FAIL measurement must be active. The current measurement can be queried using :CONFigure?

**Related Command:** MEASURE:PFail?
:CONFigure PFail
FETCh:PFail?
:CONFigure:PFail

**Front Panel Access:** Shift-4 (Measurement), PASS/FAIL

**:READ:RF:ACPR?**

**Title:** Read Adjacent Channel Power Ratio

**Description:** Triggers a new Adjacent Channel Power Ratio measurement and returns the results: Power levels for each channel (both absolute and relative). It is a combination of the commands :ABORT; :INITiate; FETCh:RF:ACPR? The ACPR measurement must be the active measurement (specified by :CONFigure:RF ACPR). The current measurement can be queried using :CONFigure?

Data is returned as 11 comma-delimited values: The Channel Power in dBm, relative adjacent channel 1 power level, absolute adjacent channel 1 power level, relative adjacent channel 2 power level, absolute adjacent channel 2 power level, relative adjacent channel 3 power level, absolute adjacent channel 3 power level, relative adjacent channel 4 power level, absolute adjacent channel 4 power level, relative adjacent channel 5 power level, absolute adjacent channel 5 power level. The relative adjacent channel power level is in dB and the absolute adjacent channel power level is in dBm.

**Related Command:** :FETCh:RF:ACPR?
:CONFigure:RF ACPR
:MEASURE:RF:ACPR?

**Front Panel Access:** CDMA, EVDO: Measurement, RF, ACPR
Title: Read Power vs. Time

Description: Triggers a new Power vs. Time measurement and returns the results: Channel Power, Preamble power, burst power of data bursts, and the Crest Factor. It is a combination of the commands :ABORT; :INITiate; :FETCh:RF:PVTime? The Power vs. Time measurement must be the active measurement (specified by :CONFigure:RF PVTime. The current measurement can be queried using :CONFigure?

Data is returned as 4 comma-delimited values: The Channel Power in dBm, Preamble power in dBm, burst power of data bursts in dBm, and the Crest Factor in dB.

Related Command: :FETCh:RF:PVTime?
:CONFigure:RF PVTime

Title: Read RF Spectrum

Description: Triggers a new RF Spectrum measurement and returns the results: Channel Power (RSSI) and Occupied bandwidth measurement. It is a combination of the commands :ABORT; :INITiate; :FETCh:RF:SPECTrum? The Spectrum measurement must be the active measurement (specified by :CONFigure:RF SPECTrum. The current measurement can be queried using :CONFigure?

Data is returned as 2 comma-delimited values: Channel Power(RSSI) in dBm and Occupied bandwidth measurement in MHz.

Related Command: :FETCh:RF:SPECTrum?
:CONFigure:RF SPECTrum
:MEASure:RF:SPECTrum?
12-9 :TRACe Subsystem

This subsystem contains commands related to the transfer of trace data to and from the instrument.

:TRACe:PREamble? <trace type>

Title: Returns trace header information for the specified trace. The <trace type> must be one of the following:

SPECtrum | PVTime | ACPR | CONStln | SFLatness | EVSCarrier | EVSYmbol

Data can be transferred to and from the 7 available display trace types. Use the commands in the MMEMory subsystem to store and recall traces from the instrument memory. The response begins with an ASCII header. The header specifies the number of following bytes. It looks like #AX, where A is the number of digits in X and X is the number of bytes that follow the header. Parameters are returned in comma-delimited ASCII format. Each parameter is returned as “NAME=VALUE[ UNITS],” Valid parameter names are shown in Chapter 2.

Parameter: <trace type>
Related Command: :TRACe:DATA?

:TRACe[:DATA]? <trace type>

Title: Trace Data Transfer

Description: This command transfers trace data from the instrument to the controller. The <trace type> must be one of the following:

SPECtrum | PVTime | CONStln | SFLatness | EVSCarrier | EVSYmbol

The format of the block data in the query form is specified by :FORMat:DATA. The block data in the command form is always sent in ASCII format. The response begins with an ASCII header that specifies the number of data bytes. It looks like #AX, where A is the number of digits in X and X is the number of bytes that follow the header. Each data point is separated by a comma delimiter. Trace setup information can be acquired using :TRACe[:DATA]:PREamble?.

Use the commands in the MMEMory subsystem to store and recall traces from the instrument memory. Except for CONStln there is only one value per data point. If max hold is set to ON for SPECtrum and EVM vs. Sub Carrier then the max hold value is returned. For CONStln, each data point is represented by 3 values 4 bytes each: IData (no units), QData (no units), and the constellation type (no units). For SPECtrum and PVTime unit is in dBm. For Spectral Flatness unit is in dB. For EVM vs Sub Carrier and EVM vs Symbol unit is in percent. Note that the instrument must be set in the selected view. Use the CONFigure command to set the unit to the selected view.

Parameter: <trace type>
Related Command: :FORMat[:DATA]
:TRACe[:DATA]:PREamble?
12-10 [:SENSe] Subsystem

The commands in this subsystem relate to device-specific parameters, not signal-oriented parameters.

[:SENSe]:BANDwidth|BWIDth[:RESolution] <index>
[:SENSe]:BANDwidth|BWIDth[:RESolution]?

Title: Resolution Bandwidth
Description: Sets the resolution bandwidth. The <index> argument is a 1-based index of the position of the desired bandwidth in the instrument’s current bandwidth list. The list can be seen on the instrument by choosing the “BW” soft-key button in the “Setup” menu. For example, if the desired bandwidth is the 3rd item on the list then the value of the <index> argument would be 3.

The query form of this command will return the index of the currently-selected bandwidth on the list. The Default is the 1st index in the bandwidth list.

Parameter: <index>
Default Value: The default bandwidth is 1.25MHz which is the 1st index in the bandwidth list.
Front Panel Access: Setup, BW

[:SENSe]:CPRatio <index>
[:SENSe]:CPRatio?

Title: Cyclic Prefix Ratio (G)
Description: Selects the desired Cyclic Prefix Ratio from the list. The <index> argument is a 1-based index of the position of the desired CP Ratio in the instrument’s current CP Ratio list. The list can be seen on the instrument by choosing the “CP Ratio (G)” soft-key button in the “Setup” menu. For example, if the desired CP Ratio is the 3rd item on the list then the value of the <index> argument would be 3.

The query form of this command will return the index of the currently-selected CP Ratio on the list. The default CP ratio is the first index in the CP ratio list.

Parameter: <index>
Default Value: The default CP Ratio is 1/4 which is the 1st index in the CP ratio list.
Front Panel Access: Setup, CP Ratio (G)

[:SENSe]:DEMod:CONStln:POINts?

Title: Number of Constellation Point
Description: Queries the number of Constellation points.

[:SENSe]:DEMod:CONStln:REFPoints[:STATe] OFF|ON|0|1
[:SENSe]:DEMod:CONStln:REFPoints[:STATe]?

Title: Constellation Reference Points
Description: Sets the display of the reference points for the various constellations on/off. The query will return 1 for ON and 0 for OFF.

Parameter: OFF|ON|0|1
Parameter Type: <boolean>
Default Value: 1
Front Panel Access: Shift 4 (Measurement), Demodulator, Constellation, Reference Points
[:SENSe]:DEMod:EVSCarrier:STARt:X?
    Title: EVM vs. Sub Carrier Start Value
    Description: Queries the EVM vs. Sub Carrier start value.
    Related Command: [:SENSe]:DEMod:EVSCarrier:STOP:X?

[:SENSe]:DEMod:EVSCarrier:STOP:X?
    Title: EVM vs. Sub Carrier Stop Value
    Description: Queries the EVM vs. Sub Carrier stop value.
    Related Command: [:SENSe]:DEMod:EVSCarrier:STARt:X?

[:SENSe]:DEMod:EVSYmbol:STARt:X?
    Title: EVM vs. Symbol Start Value
    Description: Queries the EVM vs. Symbol start value.
    Related Command: [:SENSe]:DEMod:EVSYmbol:STOP:X?

[:SENSe]:DEMod:EVSYmbol:STOP:X?
    Title: EVM vs. Symbol Stop Value
    Description: Queries the EVM vs. Symbol stop value.
    Related Command: [:SENSe]:DEMod:EVSYmbol:STARt:X?

[:SENSe]:DEMod:SFLatness:STARt:X?
    Title: Spectral Flatness Start Value
    Description: Queries the Spectral Flatness start value.
    Related Command: [:SENSe]:DEMod:SFLatness:STOP:X?

[:SENSe]:DEMod:SFLatness:STOP:X?
    Title: Spectral Flatness Stop Value
    Description: Queries the Spectral Flatness stop value.
    Related Command: [:SENSe]:DEMod:SFLatness:STARt:X?

[:SENSe]:DLFLength 2.5|5|10
[:SENSe]:DLFLength?
    Title: Down Link Frame Length
    Description: Set the Down Link Frame Length. Setting the length to 2.5 will result in setting the Frame Length to 2.5 ms. Setting the length to 5 will result in setting the Frame Length to 5 ms. Setting the length to 10 will result in setting the Frame Length to 10 ms.
    The query form of this command will return the Down Link Frame Length in unit of seconds.
    Parameter: 2.5|5|10
    Default Value: 2500 us
    Default Unit: seconds
    Front Panel Access: Setup, DL Frame Length
[:SENSe]:FREQuency:CENTer <freq>
[:SENSe]:FREQuency:CENTer?

Title: Center Frequency
Description: Sets the center frequency. Note that changing the value of the center frequency will change the value of the coupled parameters Start Frequency and Stop Frequency. It may also change the value of the span. Note that the set command is available only if the instrument is in Cable & Antenna mode.

Parameter: <freq>
Default Value: 2.5 GHz
Default Unit: Hz
Range: 0 Hz to 7.1 GHz
Front Panel Access: Freq, Center Freq

[:SENSe]:FREQuency:SIGStandard <index>
[:SENSe]:FREQuency:SIGStandard?

Title: Signal Standard
Description: Selects the desired signal standard from the list. The <index> argument is a 1-based index of the position of the desired signal standard in the instrument’s current signal standard list. The list can be seen on the instrument by choosing the “Signal Standard” soft-key button in the “Frequency” menu. The list can also be downloaded remotely and viewed using Anritsu Master Software Tools. For example, if the desired Signal Standard is the 3rd item on the list then the value of the <index> argument would be 3.

The query form of this command will return the index of the currently-selected Signal Standard on the list.

Parameter: <index>
Front Panel Access: Frequency, Signal Standard

[:SENSe]:FREQuency:SIGStandard:CHANnel <number>
[:SENSe]:FREQuency:SIGStandard:CHANnel?

Title: Channel Selection
Description: Sets the channel number for the selected signal standard.
Parameter: <number>
Front Panel Access: Frequency, Channel

[:SENSe]:PFail <test set>
[:SENSe]:PFail?

Title: PASS/FAIL Test Selection
Description: Selects the active test set to be used in subsequent PASS/FAIL measurements. The <test set> value must correspond to a test set that is defined in the test set list. To view the list on the instrument, go into the “Measurement” menu, press the “Pass/Fail Mode” key, and then press the “Select Pass/Fail Test” soft key. Alternatively, the list can be retrieved remotely and viewed using the Anritsu Master Software Tools. The <test set> argument is a 1-based index of the position of the desired Pass/Fail test set in the instrument’s current Pass/Fail test set list. For example, if the desired Pass/Fail test is the 3rd item on the list then the value of the <test set> argument would be 3.
When using the query form of the command, the return value is the currently selected test set number. If there is not a valid test set selected, the return value is “-1” (negative 1).

**Parameter:** `<test set>`

**Related Command:** :CONFigure:PFail

**Front Panel Access:** Measurement, Pass Fail Mode, Select Pass/Fail Test

```plaintext
[:SENSe]:POWer[:RF]:RANGe:AUTO OFF|ON|0|1
[:SENSe]:POWer[:RF]:RANGe:AUTO?
```

**Title:** Automatic Amplitude Range

**Description:** Sets the automatic amplitude range. Setting the value to ON or 1 will result in the amplitude range being coupled to the detected input signal level. Setting the value to OFF or 0 will result in the input attenuation being un-coupled from the input signal level. That is, changing the input signal level will not change the amplitude range. When this command is issued, the amplitude range itself will not change. The default value is ON. That is, sending :SENS:POW:RANG:AUTO is equivalent to sending :SENS:POW:RANG:AUTO ON.

**Parameter:** OFF|ON|0|1

**Parameter Type:** <boolean>

**Default Value:** ON

**Related Command:** [:SENSe]:POWer[:RF]:RANGe

**Front Panel Access:** Amplitude, Auto Range

```plaintext
[:SENSe]:POWer[:RF]:RANGe[:IMMediate]
```

**Title:** Amplitude Range

**Description:** Re-calculates amplitude range. Note that issuing this command will set the automatic dynamic range OFF.

**Related Command:** [:SENSe]:POWer[:RF]:RANGe:AUTO

**Front Panel Access:** Amplitude, Adjust Range

```plaintext
[:SENSe]:RF:ACPR:ADJCchannelcount?
```

**Title:** ACPR ADJC Channel Count

**Description:** Returns the number of Adjacent channels in the ACPR view.

**Range:** 1 to 4

```plaintext
[:SENSe]:RF:ACPR:MAINchannelcount?
```

**Title:** ACPR MAIN Channel Count

**Description:** Returns the number of main channels in the ACPR view.

**Range:** 1 to 4
[:SENSe]:RF:PVTime:FRAME:STARt?

Title: Power vs. Time Frame Start Time
Description: Queries the Power vs. Time Frame start time.
Default Unit: seconds
Related Command: [:SENSe]:RF:PVTime:FRAME:STOP?
[:SENSe]:DLFLength?

[:SENSe]:RF:PVTime:FRAME:STOP?

Title: Power vs. Time Frame Stop Time
Description: Queries the Power vs. Time frame stop time.
Default Unit: seconds
Related Command: [:SENSe]:RF:PVTime:FRAME:STARt?
[:SENSe]:DLFLengeth?

[:SENSe]:RF:SPECTrum:SPAN 5|10|20|30
[:SENSe]:RF:SPECTrum:SPAN?

Title: Spectrum View Span
Description: Sets the span for the Spectrum view. Setting the value to 5 will set the span for the Spectrum view to 5 MHz. Setting the value to 10 will set the span for the Spectrum view to 10 MHz. Setting the value to 20 will set the span for the Spectrum view to 20 MHz. Setting the value to 30 will set the span for the Spectrum view to 30 MHz.
Parameter: 5|10|20|30
Default Value: 5 MHz
Default Unit: MHz
Front Panel Access: Measurement, RF, Spectrum, Span
Chapter 13 — Mobile WiMAX Commands

13-1 :ABORt Subsystem

The abort subsystem includes commands that allow the user to stop current measurement activities on the instrument.

:ABORt

Title: Abort

Description: Restarts the current sweep and/or measurement. Resets the trigger system. If :INITiate:CONTinuous is OFF (i.e. the instrument is in single sweep mode), send the command :INITiate[:IMMediate] to trigger the next sweep. If :INITiate:CONTinuous is ON (i.e. the instrument is in continuous sweep mode) a new sweep will start immediately.

Parameter: NA

Related Command: :INITiate:CONTinuous

:INITiate[:IMMediate]

Front Panel Access: Shift-3 (Sweep), Reset Sweep
13-2  :CONFigure Subsystem

This set of commands prepares the instrument for the selected measurement. It disables any currently-enabled measurements and activates the specified measurement. It sets the instrument to single sweep mode, waiting for an :INITiate command. It will not initiate the taking of a measurement.

Current instrument settings may be changed to default values. These changes are identified with their respective measurement commands.

:CONFigure PFail

Title: Configure PASS/FAIL Measurement

Description: This command configures the PASS/FAIL measurement. It disables any other active measurements. None of the instrument parameters are changed by the execution of this command. Sets the instrument to single sweep mode (:INITiate:CONTinuous OFF). Measurement settings can be modified by using the [:SENSe] commands before initiating a measurement. The measurement results are equivalent to the results that are displayed by choosing Measurements, then PASS/FAIL from the front panel.

Parameter: PFail

Related Command: :FETCh:PFail?
                MEASure:PFail?
                READ:PFail?

Front Panel Access: Shift-4 (Measurement), PASS/FAIL Mode

:CONFigure SUMMARY

Title: Configure Summary Measurement

Description: This command configures the summary of all the related numerical measurement results. It disables any other active measurements. None of the instrument parameters are changed by the execution of this command. Sets the instrument to single sweep mode (:INITiate:CONTinuous OFF). Measurement settings can be modified by using the [:SENSe] commands before initiating a measurement.

Parameter: SUMMARY

Parameter Type: <char>

Front Panel Access: Shift-4 (Measurement), WiMAX Summary
:CONFigure:DEMod <char>

Title: Configure Demodulation Measurement

Description: Valid <char> parameters are: SUMMary|CONStIn|SFLatness|EVSCarrier|EVSYmbol.

This command configures the selected demodulation measurement. It disables any other active measurements. None of the instrument parameters are changed by the execution of this command. Sets the instrument to single sweep mode (:INITiate:CONTInuous OFF). Measurement settings can be modified by using the [:SENSe]:DEMod commands before initiating a measurement.

When the SUMMARY option is selected, the measurement results are equivalent to the results that are displayed by choosing Measurements, then Demodulator, then Modulation Summary from the front panel. When the CONStIn option is selected, the measurement results are equivalent to the results that are displayed by choosing Measurements, then Demodulator, then Constellation from the front panel. When the SFLatness option is selected, the measurement results are equivalent to the results that are displayed by choosing Measurements, then Demodulator, then Spectral Flatness from the front panel. When the EVSCarrier option is selected, the measurement results are equivalent to the results that are displayed by choosing Measurements, then Demodulator then EVM vs Sub Carrier from the front panel. When the EVSYmbol option is selected, the measurement results are equivalent to the results that are displayed by choosing Measurements, then Demodulator then EVM vs Symbol from the front panel.

Parameter: <char>

Front Panel Access: Shift-4 (Measurement), Demodulator

:CONFigure:RF <char>

Title: Configure RF Measurement

Description: Valid parameter options: SUMMary|SPECtrum|PVTime|ACPR

This command configures the selected RF measurement. It disables any other active measurements. None of the instrument parameters are changed by the execution of this command. Sets the instrument to single sweep mode (:INITiate:CONTInuous OFF). Measurement settings can be modified by using the [:SENSe]:RF commands before initiating a measurement.

When the SUMMary option is selected, the measurement results are equivalent to the results that are displayed by choosing Measurements, then RF, then RF Summary from the front panel. When the SPECtrum option is selected, the measurement results are equivalent to the results that are displayed by choosing Measurements, then RF, then Spectrum from the front panel. When the PVTime option is selected, the measurement results are equivalent to the results that are displayed by choosing Measurements, then RF, then Power vs Time from the front panel. When the ACPR option is selected, the measurement results are equivalent to the results that are displayed by choosing Measurements, then RF, then ACPR from the front panel.

Parameter: <char>

Related Command: [:SENSe]:FREQuency
[:SENSe]:RF:ACLR:MAINchannelcount
[:SENSe]:RF:ACLR:ADJCchannelcount
13-3 :DISPlay Subsystem

This subsystem provides commands that modify the display of data for the user. They do not modify the way in which data are returned to the controller.

:DISPlay:WINDow:TRACe:MAXHold OFF|ON|0|1
:DISPlay:WINDow:TRACe:MAXHold?

Title: Max Hold State
Description: Specifies whether the Max Hold is ON or OFF. The default value is ON. That is, sending :DISP:WIND:TRAC:MAXH is equivalent to sending :DISP:WIND:TRAC:MAXH ON. The query version of the command returns a 1 if Max Hold is set to ON and returns a 0 if the Max Hold is set to OFF. Note that this command is available only in the Spectrum and EVM vs. Sub-carrier views.

Parameter: OFF|ON|0|1
Parameter Type: <boolean>
Default Value: ON
Front Panel Access: Shift-5 (Trace), Max Hold

:DISPlay:WINDow:TRACe:Y[:SCALe]:OFFSet <rel ampl>
:DISPlay:WINDow:TRACe:Y[:SCALe]:OFFSet?

Title: Power Offset
Description: Sets the power offset value for the y-axis.

Parameter: <rel ampl>
Default Value: 0 dB
Default Unit: dB
Range: 0 dB to 100 dB
Front Panel Access: Amplitude, Power Offset

:DISPlay:WINDow:TRACe:Y[:SCALe]:PDIVision <value>
:DISPlay:WINDow:TRACe:Y[:SCALe]:PDIVision?

Title: Scale Resolution Per Division
Description: Sets the scale per division for the y-axis. The units change from dB/div to % when EVM is the y-axis value. The resolution per division value is maintained separately for each measurement.

Parameter: <value>
Default Value: Spectral Flatness: 1 dB/div
EVM vs. SubCarrier: 0.50%
EVM vs. Symbol: 0.50%
All others: 10dB/div
Default Unit: Current active amplitude unit
Range: EVM vs. SubCarrier: 0.1 % to 10 %
EVM vs. SubCarrier: 0.1 % to 10 %
All others: 1 dB to 15 dB
:\DISPLAY:WINDow:TRACe:Y[:SCALe]:TOP <amplitude>
:\DISPLAY:WINDow:TRACe:Y[:SCALe]:TOP?

Title: Y Axis Max
Description: Sets the maximum value of the Y axis. Note that this command is available only in the Spectral Flatness and EVM vs. Symbol/Sub-carrier views.
Parameter: <amplitude>
Default Value: Spectral Flatness: 5dB
EVM vs. Symbol: 5%
EVM vs. Sub-carrier: 5%
Default Unit: Current active amplitude unit
Range: Spectral Flatness: -5dB to 5dB
EVM vs. Symbol: 1% to 100%
EVM vs. Sub-carrier: 1% to 100%

Front Panel Access: Amplitude, Y Axis Max
13-4  :FETCh Subsystem

This set of commands returns the most recent measurement data of the active measurement. They will not switch to another measurement.

To make a new measurement, use the INITiate command. To get new measurement data, use the READ or MEASure query commands.

:FETCh:DEMod:CONStln?
   Title: Fetch Constellation
   Description: Returns the constellation of the demodulated data symbol over one frame measurement results.
   Data is returned as 8 comma-delimited values: EVM (rms) in %, EVM (pk) in %, RCE (rms) in dB, RCE (pk) in dB, Carrier Frequency in MHz, Freq Error in MHz, Freq Error in ppm, and the Base Station ID. “--” is returned for each data that is not valid at that instance.

:FETCh:DEMod:EVSCarrier?
   Title: Fetch EVM vs. Sub Carrier
   Description: Returns the EVM vs. Sub Carrier measurement results.
   Data is returned as 8 comma-delimited values: EVM (rms) in %, EVM (pk) in %, RCE (rms) in dB, RCE (pk) in dB, Carrier Frequency in MHz, Freq Error in MHz, Freq Error in ppm, and the Base Station ID. “--” is returned for each data that is not valid at that instance.

:FETCh:DEMod:EVSYmbol?
   Title: Fetch EVM vs. Symbol
   Description: Returns the EVM vs. Symbol measurement results.
   Data is returned as 8 comma-delimited values: EVM (rms) in %, EVM (pk) in %, RCE (rms) in dB, RCE (pk) in dB, Carrier Frequency in MHz, Freq Error in MHz, Freq Error in ppm, and the Base Station ID. “--” is returned for each data that is not valid at that instance.

:FETCh:DEMod:SFLatness?
   Title: Fetch Spectral Flatness
   Description: Returns the absolute delta of the power between adjacent sub carriers in dB. “--” is returned for data that is not valid at that instance.
:**FETCh:**PFail?

**Title:** Fetch PASS/FAIL

**Description:** Returns the most recent PASS/FAIL measurement results. Measurement results are returned in a block of ASCII text in the format of <header><block>. The ASCII header specifies the number of data bytes. It looks like #AX, where A is the number of digits in X and X is the number of bytes in the <block>. The block consists of a set of records which indicate individual test results. Records are comma-separated. Each record follows the format <test ID>: <input1> <input2> <min> <max> <value1> <value2> <PASS/FAIL/OPTION NOT INSTALLED>.

The <test ID> field indicates which test was performed to retrieve these results. The <input1> and <input2> fields indicate the test setup. The <min> and <max> fields indicate the minimum and maximum values against which <value1> and <value2> were compared to arrive at the final PASS/FAIL result. If the specified test is not available in the instrument, the <PASS/FAIL> field will indicate “option not available” instead of “pass” or “fail”. All unused fields for a given test are represented by a double dash (“--”). To receive valid measurements, the Pass/Fail measurement must be the active. The current measurement can be queried using CONFigure?. Use the :CONFigure:PFail to set Pass/Fail as the active measurement.

**Related Command:** MEASure:PFail?
 :CONFigure:PFail
 READ:PFail?

:**FETCh:**RF:ACPR?

**Title:** Fetch Adjacent Channel Power Ratio

**Description:** Returns the most recent adjacent channel power ratio measurement results.

Data is returned as 11 comma-delimited values: The Channel Power in dBm, relative adjacent channel 1 power level, absolute adjacent channel 1 power level, relative adjacent channel 2 power level, absolute adjacent channel 2 power level, relative adjacent channel 3 power level, absolute adjacent channel 3 power level, relative adjacent channel 4 power level, absolute adjacent channel 4 power level, relative adjacent channel 5 power level, absolute adjacent channel 5 power level. The relative adjacent channel power level is in dB and the absolute adjacent channel power level is in dBm. “--” is returned for each data that is not valid at that instance.

**Related Command:** :CONFigure:RF ACPR
 :MEASure:RF:ACPR?
 :READ:RF:ACPR?

**Front Panel Access:** CDMA, EVDO: Measurement, RF, ACPR

:**FETCh:**RF:PVTime?

**Title:** Fetch Power vs. Time

**Description:** Returns the most recent WiMAX 802.16-2004 OFDM signal over approximately one frame time domain measurement results.

Data is returned as 4 comma-delimited values: The Channel Power in dBm, Preamble power in dBm, downlink burst power of data bursts in dBm, and uplink burst power of data bursts in dBm. “--” is returned for each data that is not valid at that instance.
:FETCh:RF:SPECTrum?

Title: Fetch RF Spectrum

Description: Returns the most recent RF Spectrum measurement results.

Data is returned as 2 comma-delimited values: Channel Power(RSSI) in dBm and Occupied bandwidth measurement in MHz. “--” is returned for each data that is not valid at that instance.

Related Command: :CONFigure:RF SPECTrum
:MEASure:RF:SPECTrum?
:READ:RF:SPECTrum?
13-5 :FORMat Subsystem

This subsystem contains commands that determine the formatting of numeric data when it is transferred.
The format setting affects data in specific commands only. If a command is affected, it is noted in the command description.

:FORMat[:READings][:DATA] ASCii|INTeger,32|REAL,32
:FORMat[:READings][:DATA]?

Title: Numeric Data Format

Description: This command specifies the format in which data is returned in certain commands.

ASCii format returns the data in comma-separated ASCII format. The units are the current instrument units. This format requires many more bytes so it is the slowest format. INTeger 32 values are signed 32-bit integers in little-endian byte order. This format returns the data in 4-byte blocks. (WCDMA and Cable & Antenna only: The units are always dBm. For example, if the measured result was -12.345 dBm, that value would be sent as -12345.) REAL,32 values are 32-bit floating point numbers conforming to the IEEE 754 standard in little-endian byte order. This format returns the data in 4-byte binary format. The units are the current instrument units.

Both INTeger,32 and REAL,32 formats return a definite block length. Each transfer begins with an ASCII header such as #42204. The first digit represents the number of following digits in the header (in this example, 4). The remainder of the header indicates the number of bytes that follow the header (in this example, 2204). You then divide the number of following bytes by the number of bytes in the data format you’ve chosen (4 for both INTeger,32 and REAL,32 so 2204/4) to get the number of data points (in this example, 551).

Parameter: ASCii | INTeger,32 | REAL,32
Parameter Type: <char>
Default Value: ASCii
Related Command: :TRACE[:DATA]
13-6  :INITiate Subsystem

This subsystem controls the triggering of measurements.

:INITiate:CONTinuous OFF|ON|0|1
:INITiate:CONTinuous?

Title: Continuous/Single Sweep
Description: Specifies whether the sweep/measurement is triggered continuously. If the value is set to ON or 1, another sweep/measurement is triggered as soon as the current one completes. If continuous is set to OFF or 0, the instrument enters the “idle” state and waits for the :INITiate[:IMMediate] command or for :INITiate:CONTinuous ON. The default value is ON. That is, sending :INIT:CONT is equivalent to sending :INIT:CONT ON. The query version of the command returns a 1 if the instrument is continuously sweeping/measuring and returns a 0 if the instrument is in single sweep/measurement mode. Note that rapid toggling between ON and OFF is not allowed. The instrument must be allowed to make a full sweep before toggling can be done. Note that the set command is available only if the instrument is in Cable & Antenna mode.

Parameter: OFF|ON|0|1
Parameter Type: <boolean>
Default Value: ON
Related Command: :INITiate[:IMMediate]
:INITiate:HOLD
Front Panel Access: Shift-3 (Sweep), Sweep (Single/Continuous)

:INITiate[:IMMediate]

Title: Trigger Sweep/Measurement
Description: Initiates a sweep/measurement. If :INITiate:CONTinuous is set to ON, this command is ignored. Use this command in combination with :STATus:OPERation? to synchronize the capture of one complete set of data. When this command is sent, the “sweep complete” bit of :STATus:OPERation? is set to 0, indicating that the measurement has not completed. The data collection is then triggered. The controlling program can poll :STATus:OPERation? to determine the status. When the “sweep complete” bit is set to 1, data is ready to be retrieved.

Related Command: :INITiate:CONTinuous
 :STATus:OPERation?
Front Panel Access: Shift-3 (Sweep), Trigger Sweep
13-7 :MEASure Subsystem

These commands take the instrument from its current state, enable the specified measurement and put the instrument into single sweep mode. They correct any parameters that are invalid given the new measurement state such that a valid measurement can take place. Other settings may be changed; see the documentation of CONFigure for each measurement. They then initiate the measurement. When the measurement is complete, they return the result.

To make a measurement with settings other than the “default” measurement settings applied by CONFigure, do the following:

- Send the appropriate CONFigure command to set the desired measurement.
- Modify the settings as required.
- Send the appropriate READ command to measure and return the result.

To get the current measurement data, use the appropriate FETCH command.

:MEASure:DEMod:CONStln?

Title: Measure Constellation
Description: Sets the active measurement to Constellation, sets the default measurement parameters, triggers a new measurement, and returns the EVM (rms), EVM (pk), RCE (rms), RCE (pk), Carrier Frequency, Freq Error, Freq Error, and the Base Station ID. It is a combination of the commands :CONFigure:DEMod CONStln; :READ:DEMod:CONStln?

To make a Demodulated Constellation measurement with settings other than the default values send:

:CONFigure:DEMod CONStln

Commands to set desired settings
:READ:DEMod:CONStln?

Data is returned as 8 comma-delimited values: EVM (rms) in %, EVM (pk) in %, RCE (rms) in dB, RCE (pk) in dB, Freq Error in MHz, CINR in dB, Base Station ID, and the Sector ID.

Related Command: :READ:DEMod:CONStln?
:CONFigure:DEMod CONStln

:MEASure:DEMod:EVSCarrier?

Title: Measure EVM vs. Sub Carrier
Description: Sets the active measurement to EVM vs. Sub Carrier, sets the default measurement parameters, triggers a new measurement, and returns the EVM (rms), EVM (pk), RCE (rms), RCE (pk), Carrier Frequency, Freq Error, Freq Error, and the Base Station ID. It is a combination of the commands :CONFigure:DEMod EVSCarrier;

:READ:DEMod:EVSCarrier? To make a EVM vs. Symbol measurement with settings other than the default values send:

:CONFigure:DEMod EVSCarrier
Commands to set the desired settings
:READ:DEMod:EVSCarrier?

Data is returned as 8 comma-delimited values: EVM (rms) in %, EVM (pk) in %, RCE (rms) in dB, RCE (pk) in dB, Carrier Frequency in MHz, Freq Error in MHz, Freq Error in ppm, and the Base Station ID.

Related Command: :READ:DEMod:EVSCarrier?
:CONFigure:DEMod EVSCarrier?
:**MEASURE:DEMod:EVSYmbol?**

**Title:** Measure EVM vs. Symbol

**Description:** Sets the active measurement to EVM vs. Symbol, sets the default measurement parameters, triggers a new measurement, and returns the EVM (rms), EVM (pk), RCE (rms), RCE (pk), Carrier Frequency, Freq Error, Freq Error, and the Base Station ID. It is a combination of the commands :CONFigure:DEMod EVSYmbol; :READ:DEMod:EVSYmbol? To make a EVM vs. Symbol measurement with settings other than the default values send:

:**CONFigure:DEMod EVSYmbol**

Commands to set the desired settings

:**READ:DEMod:EVSYmbol?**

Data is returned as 8 comma-delimited values: EVM (rms) in %, EVM (pk) in %, RCE (rms) in dB, RCE (pk) in dB, Carrier Frequency in MHz, Freq Error in MHz, Freq Error in ppm, and the Base Station ID.

**Related Command:** :CONFigure:DEMod EVSYmbol

:READ:DEMod:EVSYmbol


:**MEASURE:DEMod:SFLatness?**

**Title:** Measure Spectral Flatness

**Description:** Sets the active measurement to Spectral Flatness, sets the default measurement parameters, triggers a new measurement, and returns the absolute delta of the power between adjacent sub carriers in dB. It is a combination of the commands :CONFigure:DEMod SFLatness; :READ:DEMod:SFLatness? To make a Spectral Flatness measurement with settings other than the default values send:

:**CONFigure:DEMod SFLatness**

Commands to set desired settings

:**READ:DEMod:SFLatness?**

**Related Command:** :CONFigure:DEMod SFLatness

:READ:DEMod:SFLatness


:**MEASURE:PFail?**

**Title:** Measure PASS/FAIL

**Description:** Sets the active measurement to PASS/FAIL, sets the default measurement parameters, triggers a new measurement and returns the PASS/FAIL results. It is a combination of the commands :CONFigure:PFail; :READ:PFail? To make a channel power measurement with settings other than the default values send:

:**CONFigure PFail**

Commands to set desired settings

:**READ:PFail?**

**Related Command:** :CONFigure:PFail

:READ:PFail

:FETCH:PFail?

**Front Panel Access:** Shift-4 (Measurement), PASS/FAIL
:MEASure:RF:ACPR?

Title: Measure Adjacent Channel Power Ratio

Description: Sets the active measurement to ACPR, sets the default measurement parameters, triggers a new measurement, and returns the power levels for each channel (both absolute and relative). It is a combination of the commands :CONFigure:RF ACPR; :READ:RF:SPECTrum? To make an RF ACPR measurement with settings other than the default values send:

:CONFigure:RF ACPR
Commands to set desired settings
:READ:RF:ACPR?

Data is returned as 11 comma-delimited values: The Channel Power in dBm, relative adjacent channel 1 power level, absolute adjacent channel 1 power level, relative adjacent channel 2 power level, absolute adjacent channel 2 power level, relative adjacent channel 3 power level, absolute adjacent channel 3 power level, relative adjacent channel 4 power level, absolute adjacent channel 4 power level, relative adjacent channel 5 power level, absolute adjacent channel 5 power level. The relative adjacent channel power level is in dB and the absolute adjacent channel power level is in dBm.

Related Command:
:READ:RF:ACPR?
:CONFigure:RF ACPR
:FETCh:RF:ACPR?

Front Panel Access: Measurement, RF, ACPR

:MEASure:RF:PVTime?

Title: Measure Power vs. Time

Description: Sets the active measurement to Power vs. Time, sets the default measurement parameters, triggers a new measurement and returns the Channel Power, Preamble power, burst power of data bursts, and the Crest Factor. It is a combination of the following commands CONFigure:RF PVTime; :READ:RF:PVTime? To make an RF ACPR measurement with settings other than the default values send:

:CONFigure:RF PVTime
Commands to set desired settings
:READ:RF:PVTime?

Data is returned as 4 comma-delimited values: The Channel Power in dBm, Preamble power in dBm, burst power of data bursts in dBm, and the Crest Factor in dB.

Related Command:
:READ:RF:PVTime?
:CONFigure:RF PVTime
Title: Measure RF Spectrum

Description: Sets the active measurement to Spectrum, sets the default measurement parameters, triggers a new measurement and returns the Channel Power (RSSI) and Occupied bandwidth measurement. It is a combination of the following commands :CONFigure:RF SPECtrum; :READ:RF:SPECtrum? To make an RF Spectrum measurement with settings other than the default values send:

:CONFigure:RF SPECtrum
Commands to set desired settings
:READ:RF:SPECtrum?

Data is returned as 2 comma-delimited values: Channel Power (RSSI) in dBm Occupied bandwidth measurement in MHz.

Related Command: :CONFigure:RF SPECtrum
:READ:RF:SPECtrum?
:FETCh:RF:SPECtrum?

Front Panel Access: Measurement, RF, Channel Spectrum
13-8 :READ Subsystem

This set of commands combines the ABORt, INITiate and FETCh commands. It aborts any current triggering sequence and sets the trigger state to idle. It then initiates a new active measurement (i.e. begins the collection of new data). When the measurement is complete, it returns the result. These commands will not switch to another measurement.

To get the current measurement data, use the FETCh command.

:READ:DEMod:CONStln?

Title: Read Constellation

Description: Triggers a new Constellation measurement and returns the results: EVM (rms), EVM (pk), RCE (rms), RCE (pk), Carrier Frequency, Freq Error, Freq Error, and the Base Station ID. The Constellation measurement must be the active measurement (specified by :CONFigure:DEMod CONStln). The current measurement can be queried using the command :CONFigure?

Data is returned as 8 comma-delimited values: EVM (rms) in %, EVM (pk) in %, RCE (rms) in dB, RCE (pk) in dB, Carrier Frequency in MHz, Freq Error in MHz, Freq Error in ppm, and the Base Station ID.

Related Command: :FETCh:DEMod:CONStln?
:CONFigure:DEMod CONStln

:READ:DEMod:EVSCarrier?

Title: Read EVM vs. Sub Carrier

Description: Triggers a new EVM vs. Sub Carrier measurement and returns the results: EVM (rms), EVM (pk), RCE (rms), RCE (pk), Carrier Frequency, Freq Error, Freq Error, and the Base Station ID. The EVM vs. Sub Carrier measurement must be the active measurement (specified by :CONFigure:DEMod EVSCarrier). The current measurement can be queried using the command :CONFigure?

Data is returned as 8 comma-delimited values: EVM (rms) in %, EVM (pk) in %, RCE (rms) in dB, RCE (pk) in dB, Carrier Frequency in MHz, Freq Error in MHz, Freq Error in ppm, and the Base Station ID.

Related Command: :FETCh:DEMod:EVSCarrier?
:CONFigure:DEMod EVSCarrier

:READ:DEMod:EVSYmbol?

Title: Read EVM vs. Symbol

Description: Triggers a new EVM vs. Symbol measurement and returns the results: EVM (rms), EVM (pk), RCE (rms), RCE (pk), Carrier Frequency, Freq Error, Freq Error, and the Base Station ID. The EVM vs. Symbol measurement must be the active measurement (specified by :CONFigure:DEMod EVSYmbol). The current measurement can be queried using the command :CONFigure?

Data is returned as 8 comma-delimited values: EVM (rms) in %, EVM (pk) in %, RCE (rms) in dB, RCE (pk) in dB, Carrier Frequency in MHz, Freq Error in MHz, Freq Error in ppm, and the Base Station ID.

Related Command: :FETCh:DEMod:EVSYmbol?
:CONFigure:DEMod EVSYmbol
**:READ:DEMod:SFLatness?**

**Title:** Read Spectral Flatness

**Description:** Triggers a new Spectral Flatness measurement and returns the absolute delta of the power between adjacent sub carriers in dB. The Spectral Flatness measurement must be the active measurement (specified by :CONFigure:DEMod SFLatness. The current measurement can be queried using the command :CONFigure?

**Related Command:** :FETCh:DEMod:SFLatness?
:CONFigure:DEMod SFLatness

**:READ:PFail?**

**Title:** Read PASS/FAIL

**Description:** Triggers a new PASS/FAIL measurement and returns the results. It is a combination of the commands :ABORT; :INITiate; FETCh:PFail? The PASS/FAIL measurement must be active. The current measurement can be queried using :CONFigure?

**Related Command:** MEASure:PFail?
:CONFigure:PFail
FETCh:PFail?
:CONFigure:PFail

**Front Panel Access:** Shift-4 (Measurement), PASS/FAIL

**:READ:RF:ACPR?**

**Title:** Read Adjacent Channel Power Ratio

**Description:** Triggers a new Adjacent Channel Power Ratio measurement and returns the results: Power levels for each channel (both absolute and relative). It is a combination of the commands :ABORT; :INITiate; FETCh:RF:ACPR? The ACPR measurement must be the active measurement (specified by :CONFigure:RF ACPR. The current measurement can be queried using :CONFigure?

Data is returned as 11 comma-delimited values: The Channel Power in dBm, relative adjacent channel 1 power level, absolute adjacent channel 1 power level, relative adjacent channel 2 power level, absolute adjacent channel 2 power level, relative adjacent channel 3 power level, absolute adjacent channel 3 power level, relative adjacent channel 4 power level, absolute adjacent channel 4 power level, relative adjacent channel 5 power level, absolute adjacent channel 5 power level. The relative adjacent channel power level is in dB and the absolute adjacent channel power level is in dBm.

**Related Command:** :FETCh:RF:ACPR?
:CONFigure:RF ACPR
:MEASure:RF:ACPR?

**:READ:RF:PVTime?**

**Title:** Read Power vs. Time

**Description:** Triggers a new Power vs. Time measurement and returns the results: Channel Power, Preamble power, burst power of data bursts, and the Crest Factor. It is a combination of the commands :ABORT; :INITiate; FETCh:RF:PVTime? The Power vs. Time measurement must be the active measurement (specified by :CONFigure:RF PVTime. The current measurement can be queried using :CONFigure?

Data is returned as 4 comma-delimited values: The Channel Power in dBm, Preamble power in dBm, burst power of data bursts in dBm, and the Crest Factor in dB.

**Related Command:** :FETCh:RF:PVTime?
:CONFigure:RF PVTime
:READ:RF:SPECTrum?

Title: Read RF Spectrum

Description: Triggers a new RF Spectrum measurement and returns the results: Channel Power (RSSI) and Occupied bandwidth measurement. It is a combination of the commands :ABORT; :INITiate; :FETCh:RF:SPECTrum? The Spectrum measurement must be the active measurement (specified by :CONFigure:RF SPECtrum. The current measurement can be queried using :CONFigure?

Data is returned as 2 comma-delimited values: Channel Power(RSSI) in dBm and Occupied bandwidth measurement in MHz.

Related Command: :FETCh:RF:SPECTrum?
:CONFigure:RF SPECtrum
:MEASure:RF:SPECTrum?
13-9  :TRACe Subsystem

This subsystem contains commands related to the transfer of trace data to and from the instrument.

:TRACe:PREamble? <trace type>

Title: Trace Header Transfer

Description: Returns trace header information for the specified trace. The <trace type> must be one of the following:

SPECtrum | PVTime | ACPR | CONStln | SFLatness | EVSCarrier | EVSYmbol

Data can be transferred to and from the 7 available display trace types. Use the commands in the MMEMory subsystem to store and recall traces from the instrument memory. The response begins with an ASCII header. The header specifies the number of following bytes. It looks like #AX, where A is the number of digits in X and X is the number of bytes that follow the header. Parameters are returned in comma-delimited ASCII format. Each parameter is returned as “NAME=VALUE[ UNITS],” Valid parameter names are shown in Chapter 2.

Parameter: <trace type>

Related Command: :TRACe:DATA?

:TRACe[:DATA]? <trace type>

Title: Trace Data Transfer

Description: This command transfers trace data from the instrument to the controller. The <trace type> must be one of the following:

SPECtrum | PVTime | CONStln | SFLatness | EVSCarrier | EVSYmbol.

The format of the block data in the query form is specified by :FORMat:DATA. The block data in the command form is always sent in ASCII format. The response begins with an ASCII header that specifies the number of data bytes. It looks like #AX, where A is the number of digits in X and X is the number of bytes that follow the header. Each data point is separated by a comma delimiter. Trace setup information can be acquired using :TRACe[:DATA]:PREamble?.

Use the commands in the MMEMory subsystem to store and recall traces from the instrument memory. Except for CONStln there is only one value per data point. If max hold is set to ON for SPECtrum and EVM vs. Sub Carrier then the max hold value is returned. For CONStln, each data point is represented by 3 values 4 bytes each: IData (no units), QData (no units), and the constellation type (no units). For SPECtrum and PVTime unit is in dBm. For Spectral Flatness unit is in dB. For EVM vs Sub Carrier and EVM vs Symbol unit is in percent. Note that the instrument must be set in the selected view. Use the CONFigure command to set the unit to the selected view.

Parameter: <trace type>

Related Command: :FORMat[:DATA]

:TRACe[:DATA]:PREamble?
13-10 [:SENSe] Subsystem

The commands in this subsystem relate to device-specific parameters, not signal-oriented parameters.

[:SENSe]:BANDwidth|BWIDth[:RESolution] <index>
[:SENSe]:BANDwidth|BWIDth[:RESolution]?

Title: Resolution Bandwidth
Description: Sets the resolution bandwidth. The <index> argument is a 1-based index of the position of the desired bandwidth in the instrument’s current bandwidth list. The list can be seen on the instrument by choosing the “BW” soft-key button in the “Setup” menu. For example, if the desired bandwidth is the 3rd item on the list then the value of the <index> argument would be 3.

The query form of this command will return the index of the currently-selected bandwidth on the list. The Default is the 1st index in the bandwidth list.

Parameter: <index>
Default Value: The default bandwidth is 1.25MHz which is the 1st index in the bandwidth list.
Front Panel Access: Setup, BW

[:SENSe]:CPRatio <index>
[:SENSe]:CPRatio?

Title: Cyclic Prefix Ratio (G)
Description: Selects the desired Cyclic Prefix Ratio from the list. The <index> argument is a 1-based index of the position of the desired CP Ratio in the instrument’s current CP Ratio list. The list can be seen on the instrument by choosing the “CP Ratio (G)” soft-key button in the “Setup” menu. For example, if the desired CP Ratio is the 3rd item on the list then the value of the <index> argument would be 3.

The query form of this command will return the index of the currently-selected CP Ratio on the list. The default CP ratio is the first index in the CP ratio list.

Parameter: <index>
Default Value: The default CP Ratio is 1/4 which is the 1st index in the CP ratio list.
Front Panel Access: Setup, CP Ratio (G)

[:SENSe]:DEMod:CONStln:REFPoints[:STATe] OFF|ON|0|1
[:SENSe]:DEMod:CONStln:REFPoints[:STATe]?

Title: Constellation Reference Points
Description: Sets the display of the reference points for the various constellations on/off.

Parameter: OFF|ON|0|1
Parameter Type: <boolean>
Default Value: ON
Front Panel Access: Shift 4 (Measurement), Demodulator, Constellation, Reference Points
[:SENSe]:FREQuency:CENTer <freq>
[:SENSe]:FREQuency:CENTer?

Title: Center Frequency

Description: Sets the center frequency. Note that changing the value of the center frequency will change the value of the coupled parameters Start Frequency and Stop Frequency. It may also change the value of the span. Note that the set command is available only if the instrument is in Cable & Antenna mode.

Parameter: <freq>
Default Value: 2.5 GHz
Default Unit: Hz
Range: 0 Hz to 7.1 GHz
Front Panel Access: Freq, Center Freq

[:SENSe]:FREQuency:SIGStandard <index>
[:SENSe]:FREQuency:SIGStandard?

Title: Signal Standard

Description: Selects the desired signal standard from the list. The <index> argument is a 1-based index of the position of the desired signal standard in the instrument’s current signal standard list. The list can be seen on the instrument by choosing the “Signal Standard” soft-key button in the “Frequency” menu. The list can also be downloaded remotely and viewed using Anritsu Master Software Tools. For example, if the desired Signal Standard is the 3rd item on the list then the value of the <index> argument would be 3.

The query form of this command will return the index of the currently-selected Signal Standard on the list.

Parameter: <index>
Front Panel Access: Frequency, Signal Standard

[:SENSe]:FREQuency:SIGStandard:CHANnel <number>
[:SENSe]:FREQuency:SIGStandard:CHANnel?

Title: Channel Selection

Description: Sets the channel number for the selected signal standard.

Parameter: <number>
Related Command: [:SENSe]:CORRection:REFPlane
Front Panel Access: Frequency, Channel
[:SENSe]:PFail <test set>
[:SENSe]:PFail?

Title: PASS/FAIL Test Selection
Description: Selects the active test set to be used in subsequent PASS/FAIL measurements. The <test set> value must correspond to a test set that is defined in the test set list. To view the list on the instrument, go into the “Measurement” menu, press the “Pass/Fail Mode” key, and then press the “Select Pass/Fail Test” soft key. Alternatively, the list can be retrieved remotely and viewed using the Anritsu Master Software Tools. The <test set> argument is a 1-based index of the position of the desired Pass/Fail test set in the instrument's current Pass/Fail test set list. For example, if the desired Pass/Fail test is the 3rd item on the list then the value of the <test set> argument would be 3.

When using the query form of the command, the return value is the currently selected test set number. If there is not a valid test set selected, the return value is “-1” (negative 1).

Parameter: <test set>
Related Command: :CONFigure:PFail
Front Panel Access: Measurement, Pass Fail Mode, Select Pass/Fail Test

[:SENSe]:POWer[:RF]:RANGe:AUTO OFF|ON|0|1
[:SENSe]:POWer[:RF]:RANGe:AUTO?

Title: Automatic Amplitude Range
Description: Sets the automatic amplitude range. Setting the value to ON or 1 will result in the amplitude range being coupled to the detected input signal level. Setting the value to OFF or 0 will result in the input attenuation being un-coupled from the input signal level. That is, changing the input signal level will not change the amplitude range. When this command is issued, the amplitude range itself will not change. The default value is ON. That is, sending :SENS:POW:RANG:AUTO is equivalent to sending :SENS:POW:RANG:AUTO ON.

Parameter: OFF|ON|0|1
Parameter Type: <boolean>
Default Value: ON
Related Command: [:SENSe]:POWer[:RF]:RANGe
Front Panel Access: Amplitude, Auto Range

[:SENSe]:POWer[:RF]:RANGe[:IMMediate]

Title: Amplitude Range
Description: Re-calculates amplitude range. Note that issuing this command will set the automatic dynamic range OFF.
Related Command: [:SENSe]:POWer[:RF]:RANGe:AUTO
Front Panel Access: Amplitude, Adjust Range
[SENSe]:RF:SPECTrum:SPAN 5|10|20|30
[SENSe]:RF:SPECTrum:SPAN?

Title: Spectrum View Span
Description: Sets the span for the Spectrum view. Setting the value to 5 will set the span for the Spectrum view to 5 MHz. Setting the value to 10 will set the span for the Spectrum view to 10 MHz. Setting the value to 20 will set the span for the Spectrum view to 20 MHz. Setting the value to 30 will set the span for the Spectrum view to 30 MHz.

Parameter: 5|10|20|30
Default Value: 5 MHz
Default Unit: MHz
Front Panel Access: Measurement, RF, Spectrum, Span
Chapter 14 — LTE Commands

14-1 :ABORt Subsystem

The abort subsystem includes commands that allow the user to stop current measurement activities on the instrument.

:ABORt

Title: Abort

Description: Restarts the current sweep and/or measurement. If INITiate:CONTinuous is OFF (i.e. the instrument is in single sweep mode), send the command :INITiate[:IMMediate] to trigger the next sweep. If :INITiate:CONTinuous is ON (i.e. the instrument is in continuous sweep mode) a new sweep will start immediately.

Parameter: NA
14-2 :CALCulate Subsystem

The commands in this subsystem process data that has been collected via the SENSe subsystem.

:CALCulate:MARKer:AOFF

Title: Turn All Markers Off
Description: Turns off all markers in Channel Spectrum.
Front Panel Access: Marker, Markers Off

:CALCulate:MARKer1:DELTa:X <x1 parameter>
:CALCulate:MARKer1:DELTa:X?

Title: Delta Marker 1 X Value
Description: Sets/Queries the relative location of the delta marker from the reference marker on the x-axis.
Note: The query value might not always match the set value since the instrument will round the set value based on the display pixel resolution.
The x1 parameter is used to set the delta position. For example, CALC:MARK1:DELT:X 2 MHz will set the delta value to 2 MHz.
Parameter: <x1 parameter>
Default Unit: Hz
Related Command: :CALCulate:MARKer1:X
Front Panel Access: Marker, Marker Select (M1), Marker State (Delta), (Use arrow keys or rotary knob.)

:CALCulate:MARKer1:DELTa:Y?

Title: Delta Marker 1 Read Y Value
Description: Reads the current absolute Y value for delta marker 1.
Default Unit: dBm

:CALCulate:MARKer1:MAXimum

Title: Set Marker 1 to Peak
Description: Moves marker 1 to peak position on data trace.
Parameter: NA
Front Panel Access: Marker, Marker Select (M1), Peak Search

:CALCulate:MARKer1:STATE OFF|ON|DELta
:CALCulate:MARKer1:STATE?

Title: Set Marker 1 State
Description: Sets marker 1 on/off or delta.
Parameter: OFF|ON|DELta
Parameter Type: <char>
Default Value: OFF
Front Panel Access: Marker, Marker Select (M1), Marker State
:CALCulate:MARKer1:X <x-parameter>
:CALCulate:MARKer1:X?

Title: Set Marker 1 Value
Description: Sets/Queries the location of marker 1 on the x-axis at the specified location.
Parameter: <x-parameter>
Default Unit: Hz
Front Panel Access: Marker, Marker Select (M1), Peak Search

:CALCulate:MARKer1:Y?

Title: Marker 1 Read Y Value
Description: Reads the current Y value for marker 1.
Default Unit: dBm

:CALCulate:MARKer2:DELTa:X <x1 parameter>
:CALCulate:MARKer2:DELTa:X?

Title: Delta Marker X Value
Description: Sets/Queries the relative location of the delta marker from the reference marker on the x-axis.
Note: The query value might not always match the set value since the instrument will round the set value based on the display pixel resolution.
The x1 parameter is used to set the delta position.
For example, :CALC:MARK2:DELT:X 2 MHz will set the delta value to 2 MHz.
Parameter: <x1 parameter>
Default Unit: Hz
Related Command: :CALCulate:MARKer2:X
Front Panel Access: Marker, Marker Select (M2), Marker State (Delta), (Use arrow keys or rotary knob.)

:CALCulate:MARKer2:DELTa:Y?

Title: Delta Marker 2 Read Y Value
Description: Reads the current absolute Y value for delta marker 2.
Default Unit: dBm

:CALCulate:MARKer2:MAXimum

Title: Set Marker 2 to Peak
Description: Moves marker 2 to peak position on data trace.
Parameter: NA
Front Panel Access: Marker, Marker Select (M2), Peak Search
**:CALCulate:MARKer2:STATE OFF|ON|DELta**

**Title:** Set Marker 2 State  
**Description:** Sets marker 2 on/off or delta.  
**Parameter:** OFF|ON|Delta  
**Parameter Type:** <char>  
**Default Value:** OFF  
**Front Panel Access:** Marker, Marker Select (M2), Marker State

**:CALCulate:MARKer2:X <x-parameter>**

**Title:** Set Marker 2 Value  
**Description:** Sets/Queries the location of marker 2 on the x-axis at the specified location.  
**Parameter:** <x-parameter>  
**Default Unit:** Hz  
**Front Panel Access:** Marker, Marker Select (M2), Peak Search

**:CALCulate:MARKer2:Y?**

**Title:** Marker2 Read Y Value  
**Description:** Reads the current Y value for marker 2.  
**Default Unit:** dBm
14-3 :CONFigure Subsystem

This set of commands prepares the instrument for the selected measurement. It disables any currently-enabled measurements and activates the specified measurement. It sets the instrument to single sweep mode, waiting for an :INITiate command. It will not initiate the taking of a measurement.

Current instrument settings may be changed to default values. These changes are identified with their respective measurement commands.

:CONFigure?

Title: Configure Query

Description: :CONFigure? query returns the name of the measurement previously set up using a CONFigure command or a MEASure? query. The list below shows the possible return values.

SUMM
RF,SPEC
RF,ACLR
RF,SEM
RF,SUMM
DEM,CONS
DEM,CCPG
DEM,CCPT
DEM,PVRB
DEM,SUMM
PF
OTA,OTAS
OTA,OTATX
OTA,MAP

:CONFigure SUMMARY

Title: Set Measurement to LTE Summary

Description: Sets the measurement to LTE Summary. It disables any other active measurements. None of the instrument parameters are changed by the execution of this command. (:INITiate:CONTinuous OFF). Measurement settings can be modified by using the [:SENSe] commands before initiating a measurement.

Parameter: SUMMARY

Parameter Type: <char>

Front Panel Access: Measurements, LTE Summary
:CONFigure:DEMod SUMMARY|CONStln|CCPGraph|CCPTable

Title: Select the Modulation Measurement
Description: Sets measurement to one of the Modulation screens. This can be one of:
- SUMMARY: Modulation Summary view
- CONStln: Modulation Constellation diagram.
- CCPGraph: Control Channel Powers - Bar-graph view.
- CCPTable: Control Channel Powers - Table view.

It disables any other active measurements. None of the instrument parameters are changed by the execution of this command. Sets the instrument to single sweep mode (:INITiate:CONTinuous OFF). Measurement settings can be modified by using the [:SENSe] commands before initiating a measurement.

Parameter: SUMMARY|CONStln|CCPGraph|CCPTable
Parameter Type: <char>
Front Panel Access: Measurements, Modulation, (Constellation, Control Channel Power, Modulation Summary).

If Control Channel Power is selected, press Control Channel Power again then press Display Mode to select Bar Graph or Table.

:CONFigure:OTA SCANner|TXTEst|MAPping

Title: Configure Over-the-Air Measurement
Description: Sets the measurement to one of the Over-the-Air screens.
Parameter: SCANner|TXTEst|MAPping
Parameter Type: <char>
Front Panel Access: Measurements, Over-the-Air, Scanner

:CONFigure:RF SUMMARY|SPECTrum|ACLR|SEM

Title: Select RF Measurements
Description: This command configures RF measurements. It disables any other active measurements. None of the instrument parameters are changed by the execution of this command. Sets the instrument to single sweep mode (:INITiate:CONTinuous OFF). Measurement settings can be modified by using the [:SENSe] commands before initiating a measurement.

Set measurement to one of the RF measurement screens. This can be one of:
- SUMMARY: RF measurement summary screen.
- SPECTrum: RF Channel Spectrum measurement screen.
- ACLR: ACLR measurement view.
- SEM: Spectral Emission Mask measurement.

Parameter: SUMMARY|SPECTrum|ACLR|SEM
Front Panel Access: Measurements, RF, (Channel Spectrum, ACLR, Spectral Emission Mask, RF Summary)
14-4 :DISPlay Subsystem

This subsystem provides commands that modify the display of data for the user. They do not modify the way in which data are returned to the controller.

:DISPlay:WINDow:TRACe:Y[:SCALe]:OFFSet <rel ampl>
:DISPlay:WINDow:TRACe:Y[:SCALe]:OFFSet?

Title: Power Offset
Description: Sets the power offset value for the y-axis.
Parameter: <rel ampl>
Default Value: 0 dB
Default Unit: dB
Range: -100 dB to 100 dB
Front Panel Access: Amplitude, Power Offset

:DISPlay:WINDow:TRACe:Y[:SCALe]:PDIVision <rel ampl>
:DISPlay:WINDow:TRACe:Y[:SCALe]:PDIVision?

Title: Scale
Description: Sets the Scale/Division setting for the y-axis. This only affects the scale for the Channel Spectrum measurement.
Parameter: <rel ampl>
Default Value: 10 dB/div
Default Unit: dB
Range: 1 dB to 15 dB
Front Panel Access: Amplitude, Scale
14-5  :FETCh Subsystem

This set of commands returns the most recent measurement data of the active measurement. They will not switch to another measurement.

To make a new measurement, use the INITiate command. To get new measurement data, use the READ or MEASure query commands.

:FETCh:DEMod:CCPData?

Title: Fetch Control Power Data

Description: Returns the most recent Control Channel Power measurement numeric results.

Data is returned as 24 comma-delimited values: RS_POWER, PSS_POWER, SSS_POWER, BCH_POWER, CFI_POWER, RS_TOTAL_POWER, PSS_TOTAL_POWER, SSS_TOTAL_POWER, BCH_TOTAL_POWER, CFI_TOTAL_POWER, TOTAL_POWER, TOTAL_CHANNEL_POWER

Front Panel Access: Measurements, Modulation, Control Channel Power

:FETCh:DEMod:CONStln?

Title: Fetch Constellation

Description: Returns the constellation measurement numeric results of the demodulated data symbol over one sub-frame measurement.

Data is returned as 9 comma-delimited values: EVM (rms) in %, EVM (pk) in %, Ref Signal (RS) Power in dBm, Sync Signal (SS) Power in dBm, Carrier Frequency in MHz, Freq Error in Hz, Freq Error in ppm, the Cell ID, and the number of measurements used in the frequency error average. “--” is returned for each data that is not valid at that instance.

If frequency error average is on, then the response string includes the averaged frequency error value.

Front Panel Access: Measurements, Modulation, Constellation

:FETCh:OTA:MAPping?

Title: Fetch OTA Coverage Mapping

Description: Returns the most recent Coverage Mapping measurement results.

Data is returned as 2 comma-delimited values: Channel Power in dBm and Occupied bandwidth measurement in MHz. “--” is returned for each data that is not valid at that instance.

Data is returned as 6 sets of comma-delimited values. Each set as follows: Cell ID, Group ID, Sector ID, S-SS Power, RSRP, RSRQ, and SINR.

Following the six sets of data is a final value for the Dominance. “--” is returned for each data that is not valid at that instance.

Front Panel Access: Measurements, Over-the-Air, Mapping
**:FETCh:OTA:SCANner?**

**Title:** Fetch OTA Scanner  
**Description:** Returns the most recent OTA Scanner measurement results.  
Data is returned as 6 sets of comma-delimited values. Each set as follows: Cell ID, Group ID, Sector ID, S-SS Power, RSRP, RSRQ, and SINR  
Following the six sets of data is a final value for the Dominance. “--” is returned for each data that is not valid at that instance.  
**Front Panel Access:** Measurements, Over-the-Air, Scanner

**:FETCh:OTA:TXTEst?**

**Title:** Fetch OTA Tx Test  
**Description:** Returns the most recent OTA Tx Text measurement results.  
Data is returned as 3 sets of comma-delimited values. Each set as follows: Cell ID, Group ID, Sector ID, S-SS Power, RSRP, RSRQ, and SINR  
Following the six sets of data is an addition set of four numbers: Dominance, Antenna count, Average Power, Delta Power. “--” is returned for each data that is not valid at that instance.  
**Front Panel Access:** Measurements, Over-the-Air, Tx Test

**:FETCh:RF:ACLR?**

**Title:** Fetch Adjacent Channel Leakage Ratio  
**Description:** Returns the most recent adjacent channel leakage ratio measurement results. If the instrument is sweeping, it will not return until the sweep is complete. Refer to “:READ:RF:ACLR?” on page 14-17 for a description of the returned data.  
**Default Unit:** dBm  
**Front Panel Access:** Measurements, RF, ACLR

**:FETCh:RF:SEM?**

**Title:** Fetch Spectral Emission Mask  
**Description:** Returns Spectral Emission Mask measurement results (Pass or Fail).  
**Front Panel Access:** Measurements, RF, Spectral Emission Mask

**:FETCh:RF:SPECTrum?**

**Title:** Fetch RF Spectrum  
**Description:** Returns the most recent RF Spectrum measurement results. Data is returned as 2 comma-delimited values: Channel Power in dBm and Occupied bandwidth measurement in MHz. “--“ is returned for each data that is not valid at that instance.  
**Front Panel Access:** Measurements, RF, Channel Spectrum
Title: Fetch Summary

Description: Returns the values displayed in a Summary measurement view. If the current display is not a summary screen, then the return value is 'N/A'. The return value is a comma separated list of the values displayed on the screen, in the order they are displayed from top to bottom. The list is preceded by the name of the summary view; either “LTE Summary”, “RF Summary” or “Modulation Summary”.

If frequency Error is a parameter in the summary results, then the returned value will be current displayed value averaged over an indeterminate number of previous measurements. Averaged value only returned if Frequency Error Average Count > 1. The maximum number of averaged values will be the value setting for Frequency Error Average Count.
14-6  :FORMat Subsystem

This subsystem contains commands that determine the formatting of numeric data when it is transferred. The format setting affects data in specific commands only. If a command is affected, it is noted in the command description.

:FORMat[:READings][:DATA] ASCii|INTeger,32|REAL,32
:FORMat[:READings][:DATA]?

Title:  Numeric Data Format
Description:  This command specifies the format in which data is returned in certain commands.

ASCii format returns the data in comma-separated ASCII format. The units are the current instrument units. This format requires many more bytes so it is the slowest format.

INTeger values are signed 32-bit integers in little-endian byte order. This format returns the data in 4-byte blocks.

REAL values are 32-bit floating point numbers conforming to the IEEE 754 standard in little-endian byte order. This format returns the data in 4-byte binary format. The units are the current instrument units.

Both INTeger and REAL formats return a definite block length. Each transfer begins with an ASCII header such as #42204. The first digit represents the number of following digits in the header (in this example, 4). The remainder of the header indicates the number of bytes that follow the header (in this example, 2204). You then divide the number of following bytes by the number of bytes in the data format you’ve chosen (4 for both INTeger and REAL) to get the number of data points (in this example, 551).

Parameter:  ASCii | INTeger,32 | REAL,32
Parameter Type:  <char>
Default Value:  ASCii
14-7 :INITiate Subsystem

This subsystem controls the triggering of measurements.

:INITiate:CONTinuous OFF|ON|0|1

:INITiate:CONTinuous?

Title: Continuous/Single Sweep

Description: Specifies whether the sweep/measurement is triggered continuously. If the value is set to ON or 1, another sweep/measurement is triggered as soon as the current one completes. If continuous is set to OFF or 0, the instrument enters the “idle” state and waits for the :INITiate[:IMMediate] command or for :INITiate:CONTinuous ON. The default value is ON. That is, sending :INIT:CONT is equivalent to sending :INIT:CONT ON. The query version of the command returns a 1 if the instrument is continuously sweeping/measuring and returns a 0 if the instrument is in single sweep/measurement mode. Note that rapid toggling between ON and OFF is not allowed. The instrument must be allowed to make a full sweep before toggling can be done.

Parameter: OFF|ON|0|1

Parameter Type: <boolean>

Default Value: ON

Related Command: :INITiate[:IMMediate]

Front Panel Access: Shift-3 (Sweep), Sweep

:INITiate[:IMMediate]

Title: Trigger Sweep/Measurement

Description: Initiates a sweep/measurement. If :INITiate:CONTinuous is set to ON, this command is ignored. Use this command in combination with :STATus:OPERation? to synchronize the capture of one complete set of data. When this command is sent, the “sweep complete” bit of :STATus:OPERation? is set to 0, indicating that the measurement has not completed. The data collection is then triggered. The controlling program can poll :STATus:OPERation? to determine the status. When the “sweep complete” bit is set to 1, data is ready to be retrieved.

Related Command: :INITiate:CONTinuous

:STATus:OPERation?

Front Panel Access: Shift-3 (Sweep), Sweep (Single), Trigger Sweep
14-8 :MEASure Subsystem

These commands take the instrument from its current state, enable the specified measurement and put the instrument into single sweep mode. They correct any parameters that are invalid given the new measurement state such that a valid measurement can take place. Other settings may be changed; see the documentation of CONFigure for each measurement. They then initiate the measurement. When the measurement is complete, they return the result.

To make a measurement with settings other than the “default” measurement settings applied by CONFigure, do the following:

- Send the appropriate CONFigure command to set the desired measurement.
- Modify the settings as required.
- Send the appropriate READ command to measure and return the result.

To get the current measurement data, use the appropriate FETCh command.

:MEAsure:DEMod:AVERage?

Title: Measure Constellation with Frequency Error Averaging

Description: Triggers a series of new Constellation measurements and returns the results. The number of measurements is set by the [:SENSe]AVErage:FERRor:COUNt n command. Although ‘n’ measurements are taken, only a single result string returns. This will be the measured results of the last measurement in the set, except for frequency error, which is averaged over the entire ‘n’ measurements.

Note: If n is large, then an appropriately large value for the time-out of the SCPI interface is required.

Data is returned as 9 comma-delimited values: EVM (rms) in %, EVM (pk) in %, Ref Signal (RS) Power in dBm, Sync Signal (SS) Power in dBm, Carrier Frequency in MHz, Freq Error in Hz, Freq Error in ppm, the Cell ID, and the number of measurements average for Frequency Error. “--” is returned for each data that is not valid at that instance.

Front Panel Access: Measurements, Modulation, Constellation

:MEASure:DEMod:CCPData?

Title: Read Modulation Control Channel Power Data

Description: Sets the active measurement to Control Channel Power, sets the default measurement parameters, triggers a new measurement, and returns the measured values:

| RS_POWER, PSS_POWER, SSS_POWER, BCH_POWER, CFI_POWER, | RS_TOTAL_POWER, PSS_TOTAL_POWER, SSS_TOTAL_POWER, | BCH_TOTAL_POWER, CFI_TOTAL_POWER, TOTAL_POWER, TOTAL_CHANNEL_POWER. |

Data returned is the same for Bar Graph or Table mode. The Control Channel Power measurement must be the active measurement.

Front Panel Access: Measurements, Modulation, Control Channel Power
:MEASURE:DEMod:CONStln?

Title: Measure Constellation

Description: Triggers a new Constellation measurement and returns the results. The Constellation measurement must be the active measurement (specified by :CONFigure:DEMod CONStln. The current measurement can be queried using the command :CONFigure?

Data is returned as 9 comma-delimited values: EVM (rms) in %, EVM (pk) in %, Ref Signal (RS) Power in dBm, Sync Signal (SS) Power in dBm, Carrier Frequency in MHz, Freq Error in Hz, Freq Error in ppm, the Cell ID, and the number of measurements average for Frequency Error. “-” is returned for each data that is not valid at that instance.

Front Panel Access: Measurements, Modulation, Constellation

:MEASURE:OTA:MAPping?

Title: Measure OTA Coverage Mapping

Description: Sets the active measurement to OTA Coverage Mapping, sets the default measurement parameters, triggers a new measurement, and returns the measured values:

Data is returned as 6 sets of comma-delimited values. Each set as follows: Cell ID, Group ID, Sector ID, S-SS Power, RSRP, RSRQ, and SINR

Following the six sets of data is a final value for the Dominance.

“-” is returned for each data that is not valid at that instance.

Default Unit: dBm

Front Panel Access: Measurements, Over-the-Air, Mapping

:MEASURE:OTA:MAPping:RUN START|STOP

:MEASURE:OTA:MAPping:RUN?

Title: Coverage Mapping Data Collection

Description: Turns On/Off the coverage mapping data collection. Unit needs to be in Mapping measurement mode for this to have any affect.

No data is returned.

Front Panel Access: Measurements, Over-the-Air, Mapping, Start/Stop Data Collection (Main menu key)

:MEASURE:OTA:SCANner?

Title: Measure OTA Scanner

Description: Sets the active measurement to OTA Scanner, sets the default measurement parameters, triggers a new measurement, and returns the measured values:

Data is returned as 6 sets of comma-delimited values. Each set as follows: Cell ID, Group ID, Sector ID, S-SS Power, RSRP, RSRQ, and SINR

Following the six sets of data is a final value for the Dominance.

“-” is returned for each data that is not valid at that instance.

Default Unit: dBm

Front Panel Access: Measurements, Over-the-Air, Scanner
:MEASure:OTA:TXTEst?
Title: Measure OTA Tx Test
Description: Sets the active measurement to OTA Tx Test, sets the default measurement parameters, triggers a new measurement, and returns the measured values:
Data is returned as 3 sets of comma-delimited values. Each set as follows: Cell ID, Group ID, Sector ID, S-SS Power, RSRP, RSRQ, and SINR
Following the six sets of data is an additional set of four results: Dominance, Antenna count, Average Power, Delta Power.
“--” is returned for each data that is not valid at that instance.
Default Unit: dBm
Front Panel Access: Measurements, Over-the-Air, Tx Test

:MEASure:RF:ACLR?
Title: Measure Adjacent Channel Leakage Ratio
Description: Sets the active measurement to adjacent channel power ratio, sets the default measurement parameters, triggers a new measurement and returns the main channel(s) power, and adjacent channel(s) power. It is a combination of the commands :CONFigure:RF ACLR and :READ:RF:ACLR? Refer to “:READ:RF:ACLR?” on page 14-17 for a description of the returned data.
Default Unit: dBm
Front Panel Access: Measurements, RF, ACLR

:MEASure:RF:SEM?
Title: Measure Spectral Emission Mask
Description: Sets the active measurement to Spectral Emission Mask and returns a PASS or FAIL result.
Front Panel Access: Measurements, RF, Spectral Emission Mask

:MEASure:RF:SPECTruman
Title: Measure RF Spectrum
Description: Sets the active measurement to Channel Spectrum, sets the default measurement parameters, triggers a new measurement and returns the Channel Power and Occupied Bandwidth measurement results. It is a combination of the following command: :CONFigure:RF SPECTrum and :READ:RF:SPECTruman.
Data is returned as 2 comma-delimited values: Channel Power in dBm and Occupied bandwidth in MHz.
Front Panel Access: Measurements, RF, Channel Spectrum
14-9 :READ Subsystem

This set of commands combines the ABORt, INITiate and FETCh commands. It aborts any current triggering sequence and sets the trigger state to idle. It then initiates a new active measurement (i.e. begins the collection of new data). When the measurement is complete, it returns the result. These commands will not switch to another measurement.

To get the current measurement data, use the FETCh command.

:READ:DEMod:CONStln?

  Title: Read Constellation
  Description: Triggers a new Constellation measurement and returns the results. The Constellation measurement must be the active measurement (specified by :CONFigure:DEMod CONStln. The current measurement can be queried using the command :CONFigure?

  Data is returned as 8 comma-delimited values: EVM (rms) in %, EVM (pk) in %, Ref Signal (RS) Power in dBm, Sync Signal (SS) Power in dBm, Carrier Frequency in MHz, Freq Error in Hz, Freq Error in ppm, and the Cell ID. "--" is returned for each data that is not valid at that instance.

Front Panel Access: Measurements, Modulation, Constellation

:READ:OTA:MAPping?

  Title: Read OTA Coverage Mapping
  Description: Triggers a new OTA Coverage Mapping measurement and returns the results. The OTA Scanner measurement must be the active measurement (specified by :CONFigure:OTA MAPping. The current measurement can be queried using the command :CONFigure?

  Data is returned as 6 sets of comma-delimited values. Each set as follows: Cell ID, Group ID, Sector ID, S-SS Power, RSRP, RSRQ, and SINR

  Following the six sets of data is a final value for the Dominance.

  "--" is returned for each data that is not valid at that instance.

  Default Unit: dBm

Front Panel Access: Measurements, Over-the-Air, Mapping

:READ:OTA:SCAnner?

  Title: Read OTA Scanner
  Description: Triggers a new OTA Scanner measurement and returns the results. The OTA Scanner measurement must be the active measurement (specified by :CONFigure:OTA SCAnner. The current measurement can be queried using the command :CONFigure?

  Data is returned as 6 sets of comma-delimited values. Each set as follows: Cell ID, Group ID, Sector ID, S-SS Power, RSRP, RSRQ, and SINR

  Following the six sets of data is a final value for the Dominance.

  "--" is returned for each data that is not valid at that instance.

  Default Unit: dBm

Front Panel Access: Measurements, Over-the-Air, Scanner
:READ:OTA:TXTEst?

Title: Read OTA Tx Test

Description: Triggers a new OTA Tx Test measurement and returns the results. The OTA Tx Test measurement must be the active measurement (specified by :CONFigure:OTA Tx Test. The current measurement can be queried using the command :CONFigure?

Data is returned as 3 sets of comma-delimited values. Each set as follows: Cell ID, Group ID, Sector ID, S-SS Power, RSRP, RSRQ, and SINR

Following the six sets of data is and addition set of four numbers: Dominance, Antenna count, Average Power, Delta Power.

“--” is returned for each data that is not valid at that instance.

Default Unit: dBm

Front Panel Access: Measurements, Over-the-Air, Tx Test

:READ:PFail?

Title: Read PASS/FAIL

Description: Triggers a new PASS/FAIL measurement and returns the results. It is a combination of the commands :ABORT; :INITiate; FETCh:PFail? The PASS/FAIL measurement must be active. The current measurement can be queried using :CONFigure?

Related Command: :MEASure:PFail?
                 :CONFigure PFail
                 :FETCh:PFail?
                 :CONFigure PFail

Front Panel Access: Measurements, Pass/Fail Test

:READ:RF:ACLR?

Title: Read Adjacent Channel Leakage Ratio

Description: Triggers a new Adjacent Channel Leakage Ratio measurement and returns the results: Power levels for each channel (both absolute and relative). If the instrument is sweeping, it will not return until the sweep is complete. If the instrument is not sweeping and the current data is not valid it will return error -230. This could occur if there was a *RST immediately before the :FETCh? or if a measurement parameter was changed without an :INITiate.

Data is returned as 11 comma-separated values: Main channel power, Left alternate channel power - relative, absolute, Left adjacent channel power - relative, absolute, Main channel power - relative, absolute, Right adjacent channel power -relative, absolute, Right Alternate channel power - relative, absolute.

Default Unit: dBm

Front Panel Access: Measurements, RF, ACLR

:READ:RF:SEM?

Title: Read RF Spectral Emission Mask

Description: Triggers a new RF Spectral Emission Mask measurement and returns a PASS or FAIL result. It is a combination of the commands :ABORT; :INITiate; FETCh:RF:SEM? The current measurement can be queried using :CONFigure?

Front Panel Access: Measurements, RF, Spectral Emission Mask
READ:RF:SPECTrum?

Title: Read RF Spectrum

Description: Triggers a new RF Spectrum measurement and returns the results: Channel Power and Occupied BW measurement. It is a combination of the commands :ABORT; :INITiate; FETCh:RF:SPECtrum? The current measurement can be queried using :CONfigure?

Data is returned as 2 comma-delimited values: Channel Power in dBm and Occupied bandwidth measurement in MHz.

Related Command: 
:FETCh:RF:SPECtrum?
:CONfigure:RF SPECTrum
:MEASure:RF:SPECtrum?

Front Panel Access: Measurements, RF, Channel Spectrum
14-10 :UNIT Subsystem

The unit subsystem is used to modify the default units used for related parameters. These changes affect parameters in both commands and responses.

:UNIT:POWer DBM|W
:UNIT:POWer?

Title: Measurement Units

Description: Sets/Returns the current display mode for power values as either dBm or in watts.

Parameter: DBM|W

Parameter Type: <char>

Default Value: dBm

Front Panel Access: Amplitude, Units
14-11 [:SENSe] Subsystem

The commands in this subsystem relate to device-specific parameters, not signal-oriented parameters.

[:SENSe]:AVErage:FERRoR:COUNt n
[:SENSe]:AVErage:FERRoR:COUNt?

Title: Frequency Error Average

Description: When count is greater than one, the frequency error value is averaged over past measurements. If count is one, then no averaging occurs.

If Count = N, and M is the number of measured values, then when M < N:
FE next = (FE1 + FE2 + ... + FEN-1)/(N-1).

When M >= N:
FE next = [(N-1) * FE previous + FE new]/N

Note: This is commonly called a modified (or running) moving average.

Parameter: 1-15
Parameter Type: <char>
Default Value: 1
Front Panel Access: Setup, Freq Err Ave Cnt

[:SENSe]:AVErage:FERRoR:RESet

Title: Frequency Error Average Reset

Description: Resets the frequency error averaging. Does not change the value of Count set with [:SENSe]:AVErage:FERRoR:COUNt n.

Front Panel Access: Setup, Freq Err Ave Cnt

[:SENSe]:BANDWidth[:RESolution] 1.4|3|5|10|15|20
[:SENSe]:BANDWidth[:RESolution]?

Title: Bandwidth

Description: Sets the channel bandwidth. 15 MHz and 20 MHz are only available if Option 543 is installed.

Parameter: 1.4|3|5|10|15|20
Parameter Type: <char>
Default Value: The default bandwidth is 10 MHz.

Front Panel Access: Setup, BW

[:SENSe]:CELLID <char>
[:SENSe]:CELLID?

Title: Cell ID

Description: Sets the Cell ID value used when Sync Type is set to ‘RS’.

Parameter: (the known Cell ID)
Parameter Type: <char>

Front Panel Access: Setup, Sync (RS), Cell ID
[:SENSe]:EVM?
  Title: EVM
  Description: Returns the measured EVM value. This consists of 4 comma-separated numbers: Mean value, maximum value, minimum value and standard deviation.

[:SENSe]:EVM:MAXHold ON|OFF
[:SENSe]:EVM:MAXHold?
  Title: EVM Max Hold
  Description: Turns Max Hold on or off (toggle) for measured EVM value.
  Parameter: OFF|ON|0|1
  Parameter Type: <boolean>
  Default Value: OFF
  Related Command: [:SENSe]:EVM?
  Front Panel Access: Setup, EVM Max Hold

[:SENSe]:EVM:MODe AUTO|PBCHonly
[:SENSe]:EVM:MODe?
  Title: Set EVM Mode
  Description: Sets/Returns the EVM Mode to either Auto or PBCH Only.
  Parameter: AUTO|PBCHonly
  Parameter Type: <char>
  Default Value: AUTO
  Front Panel Access: Setup, EVM Mode

[:SENSe]:EVM:RESet
  Title: Reset EVM Max Hold
  Description: Resets the maximum value stored for the EVM measurement. Also resets minimum, mean and standard deviation.

[:SENSe]:FREQuency:CENTer <freq>
[:SENSe]:FREQuency:CENTer?
  Title: Center Frequency
  Description: Sets the center frequency.
  Parameter: <freq>
  Default Value: 1 GHz
  Default Unit: Hz
  Range: 10 MHz to 4 GHz
  Front Panel Access: Freq, Center Freq
[:SENSe]:FREQuency:SIGStandard:CHANnel <number>
[:SENSe]:FREQuency:SIGStandard:CHANnel?

Title: Channel Selection
Description: Sets the channel number for the selected signal standard.
Parameter: <number>
Front Panel Access: Frequency, Channel

[:SENSe]:FREQuency:SIGStandard:NAMe [String]
[:SENSe]:FREQuency:SIGStandard:NAMe?

Title: Signal Standard
Description: Selects the desired signal standard from the list. The <string> argument is the name of the desired signal standard as displayed in the instrument's current signal standard list. The list can be seen on the instrument by choosing the Signal Standard submenu button in the Freq menu. The list can also be downloaded remotely and viewed using Anritsu Master Software Tools. For example, if the desired Signal Standard is P-GSM 900 - Uplink, then the value of the <string> argument would be “P-GSM 900 - Uplink”. The query form of this command will return the name of the currently selected Signal Standard from the list.
Parameter: <string>
Front Panel Access: Freq, Signal Standard
Title: Coverage Mapping Measurement Parameter

Description: Selects the measurement parameter used by the mapping system. The selected parameter's threshold levels will be used to determine the signal quality and corresponding color displayed on the map. This will also be the parameter name and value shown if a kml file is created and loaded into Google Earth.

Parameter: <string> SSSPower | RSRP | RSRQ | SINR
Default Value: SSSPower

Example: [:SENSe][:OTA]:MAPPING:MEASurement SSSPower

Related Command: [:SENSe][:OTA]:MAPPING:SSSPower:THRESHold "xx.x,xx.x,xx.x,xx.x,xx.x"
[:SENSe][:OTA]:MAPPING:SSSPower:THRESHold?
[:SENSe][:OTA]:MAPPING:RSRP:THRESHold "xx.x,xx.x,xx.x,xx.x,xx.x"
[:SENSe][:OTA]:MAPPING:RSRP:THRESHold?
[:SENSe][:OTA]:MAPPING:RSRQ:THRESHold "xx.x,xx.x,xx.x,xx.x,xx.x"
[:SENSe][:OTA]:MAPPING:RSRQ:THRESHold?
[:SENSe][:OTA]:MAPPING:SINR:THRESHold "xx.x,xx.x,xx.x,xx.x,xx.x"
[:SENSe][:OTA]:MAPPING:SINR:THRESHold?

[:SENSe][:OTA]:MAPping:SSSPower:THREShold "xx.x,xx.x,xx.x,xx.x,xx.x"
[:SENSe][:OTA]:MAPping:SSSPower:THREShold?

[:SENSe][:OTA]:MAPping:RSRP:THREShold "xx.x,xx.x,xx.x,xx.x,xx.x"
[:SENSe][:OTA]:MAPping:RSRP:THREShold?

[:SENSe][:OTA]:MAPping:RSRQ:THREShold "xx.x,xx.x,xx.x,xx.x,xx.x"
[:SENSe][:OTA]:MAPping:RSRQ:THREShold?

[:SENSe][:OTA]:MAPping:SINR:THREShold "xx.x,xx.x,xx.x,xx.x,xx.x"
[:SENSe][:OTA]:MAPping:SINR:THREShold?

Title: Coverage Mapping Thresholds

Description: The above commands set/return the threshold levels used in coverage mapping. There are five defined levels: Excellent, Very Good, Good, Fair and Poor. For each level, there is a threshold power that sets the lower boundary for that level. Setting the Excellent threshold to -100.0 dBm, for instance, means that measurement greater than -100.0 dBm will be considered excellent in the report and as display on the coverage map. Thresholds are set as a comma separated list of power values in order from Excellent to Poor. No units are used, and when setting the threshold values, enclose the all five values in a single set of quote markers.

Examples: Sending: :SENSe:OTA:MAPping:SSSPower:THREShold?
Returns: -107.0,-110.0,-114.0,-117.0,-120.0
Sending: :SENSe:OTA:MAPping:SSSPower:THREShold "-100.0,-103.0,-104.5,-112.0,-118.0"
Sets the SS-SS Power thresholds to:
Excellent: 100.0 dBm
Very Good: 103.0 dBm
Good: 104.5 dBm
Fair: 112.0 dBm
Poor: 118.0 dBm

Parameter: <string> “xxx.x,xxx.x,xxx.x,xxx.x,xxx.x”


[:SENSe][:OTA]:MAPping:POInts:DELeTe

Title: Clear Coverage Mapping measurement

Description: Clears all data points collected for the coverage map.

Front Panel Access: Measurement, Over-the-Air, Mapping, Point Distance/Time Setup, Delete All Points

[:SENSe][:OTA]:MAPping:RECALL:MAP <filename>

Title: Recall Coverage Map

Description: Recalls a saved coverage map from memory.

Front Panel Access: Measurement, Over-the-Air, Mapping, Save/Recall Points/Map, Recall a Map
[:SENSe][:OTA]:MAPping:RECall:MAP:DEFAult
Title: Coverage Map Default Grid
Description: Recalls a default grid for coverage mapping.
Front Panel Access: Measurement, Over-the-Air, Mapping, Save/Recall Points/Map, Recall Default Grid

[:SENSe][:OTA]:MAPping:REPeat:TYPe: TIMe|DISTance
[:SENSe][:OTA]:MAPping:REPeat:TYPe?
Title: Coverage Map Repeat Type
Description: Sets the mode for determining data collection trigger. Setting is either Time or Distance. In Time mode, data is collected at fixed intervals in time; in Distance mode, data is collected at fixed intervals in distance.
Related Command: [:SENSe][:OTA]:MAPping:REPeat:TIMe [:SENSe][:OTA]:MAPping:REPeat:DISTance
Front Panel Access: Measurement, Over-the-Air, Mapping, Point Distance/Time Setup, Repeat Type

[:SENSe][:OTA]:MAPping:REPeat:TIMe <seconds>
[:SENSe][:OTA]:MAPping:REPeat:TIMe?
Title: Coverage Map Repeat Time Interval
Description: Sets the time interval for data collection.
Related Command: [:SENSe][:OTA]:MAPping:REPeat:TYPe: TIMe|DISTance
Front Panel Access: Measurement, Over-the-Air, Mapping, Point Distance/Time Setup, Repeat Time

[:SENSe][:OTA]:MAPping:REPeat:DISTance <meters>
[:SENSe][:OTA]:MAPping:REPeat:DISTance?
Title: Coverage Map Repeat Distance Interval
Description: Sets the distance interval for data collection.
Related Command: [:SENSe][:OTA]:MAPping:REPeat:TYPe: TIMe|DISTance
Front Panel Access: Measurement, Over-the-Air, Mapping, Point Distance/Time Setup, Repeat Distance

[:SENSe][:OTA]:MAPping:SAVe:KML "<filename>"
Title: Coverage Map Save KML data file
Description: Saves all collected data to a KML data file. This file is compatible with various GIS programs, including Google Maps and Google Earth. The filename must be enclosed in quotation marks. Do not include the file extension.
Front Panel Access: Measurement, Over-the-Air, Mapping, Save/Recall Points/Map, Save KML Points

[:SENSe][:OTA]:MAPping:SAVe:TEXt "<filename>"
Title: Coverage Map Save KML data file
Description: Saves all collected data to a tab delimited text file. The filename must be enclosed in quotation marks. Do not include the file extension.
Front Panel Access: Measurement, Over-the-Air, Mapping, Save/Recall Points/Map, Save Tab Delimited Points
[:SENSe][:OTA]:SORTby CELLid|GROUPid|SECTORid|SSSPower|RSRP|RSRQ|SINR
[:SENSe][:OTA]:SORTby?

Title: OTA Scanner Sort By
Description: Sets the parameter used for sorting the OTA Scanner table. This is used by all OTA displays (Scanner, Tx Test and Mapping).
S-SS Power, RSRP, SINR, RSRQ are descending. Cell ID, Sector ID, Group ID are ascending.
Front Panel Access: Measurement, Over-the-Air, Scanner, Sort By

[:SENSe]:POWER[:RF]:RANGe[:IMMediate]

Title: Amplitude Range
Description: Re-calculates amplitude range. Note that issuing this command will set the automatic dynamic range OFF.
Related Command: [:SENSe]:POWer[:RF]:RANGe:AUTO
Front Panel Access: Amplitude, Adjust Range

[:SENSe]:POWer[:RF]:RANGe:AUTO <Boolean (default=1 [ON])>
[:SENSe]:POWer[:RF]:RANGe:AUTO?

Title: Automatic Amplitude Range
Description: Sets the automatic amplitude range. Setting the value to ON or 1 will result in the amplitude range being coupled to the detected input signal level. Setting the value to OFF or 0 will result in the input attenuation being un-coupled from the input signal level. That is, changing the input signal level will not change the amplitude range. When this command is issued, the amplitude range itself will not change. The default value is ON. That is, sending :SENS:POW:RANG:AUTO is equivalent to sending :SENS:POW:RANG:AUTO ON.
Parameter: OFF|ON|0|1
Parameter Type: <boolean>
Default Value: ON
Related Command: [:SENSe]:POWer[:RF]:RANGe
Front Panel Access: Amplitude, Auto Range

[:SENSe]:RF:SPECTrurn:SPAN Auto|1.4|3|5|10|15|20|30
[:SENSe]:RF:SPECTrurn:SPAN?

Description: Sets the span for the Spectrum view. For example, setting the value to 5 will set the span for the Spectrum view to 5 MHz and setting the value to 20 will set the span for the Spectrum view to 20 MHz.
Parameter: Auto|1.4|3|5|10|15|20|30
Default Value: Auto
Default Unit: MHz
Front Panel Access: Measurements, RF, Channel Spectrum, Span
[:SENSe]:SYNC:TYPe SS|RS
[:SENSe]:SYNC:TYPe?

Title: Set Sync Type
Description: Sets the sync type setting.
Parameter: SS|RS
Parameter Type: <char>
Default Value: SS
Front Panel Access: Setup, Sync, Sync Type
Chapter 15 — TD-LTE Commands

15-1 :ABORt Subsystem

The abort subsystem includes commands that allow the user to stop current measurement activities on the instrument.

:ABORt

Title: Abort
Description: Restarts the current sweep and/or measurement. If INITiate:CONTinuous is OFF (i.e. the instrument is in single sweep mode), send the command :INITiate[:IMMediate] to trigger the next sweep. If :INITiate:CONTinuous is ON (i.e. the instrument is in continuous sweep mode) a new sweep will start immediately.

Parameter: NA
15-2 :CALCulate Subsystem

The commands in this subsystem process data that has been collected via the SENSe subsystem.

:CALCulate:MARKer:AOFF

Title: Turn All Markers Off
Description: Turn off All markers in RF Channel Spectrum and RF Power vs. Time.
Front Panel Access: Marker, Markers Off

:CALCulate:MARKer1:DELTa:X <x1 parameter>,<x2 parameter>
:CALCulate:MARKer1:DELTa:X?

Title: Delta Marker 1 X Value
Description: Sets/Queries the relative location of the delta marker from the reference marker on the x-axis. Note: The query value might not always match the set value since the instrument will round the set value based on the display pixel resolution.

In Channel Spectrum view, the x1 parameter is used to set the delta position. The x2 parameter is ignored. For example, :CALC:MARK1:DELT:X 2 MHz will set the delta value to 2 MHz. In Power vs. Time view, the x2 parameter is used to set the delta position.

The units must be specified (valid units are us, ms, s). The x1 parameter value is ignored but is required. For example, :CALC:MARK1:DELT:X 0,1 ms will set the delta value to 1 ms.

Parameters: <x1 parameter>,<x2 parameter>
Default Unit: Hz in RF Channel Spectrum view and microseconds in Power vs Time view.
Related Command: :CALCulate:MARKer1:X
Front Panel Access: Marker, Marker Select (M1), Marker State (Delta), (Use arrow keys or rotary knob.)

:CALCulate:MARKer1:DELTa:Y?

Title: Delta Marker 1 Read Y Value
Description: Reads the current absolute Y value for delta marker 1.
Default Unit: dBm

:CALCulate:MARKer1:MAXimum

Title: Set Marker 1 to Peak
Description: Moves marker 1 to peak position on data trace.
Parameter: NA
Front Panel Access: Marker, Marker Select (M1), Peak Search
:CALCulate:MARKer1:STATE OFF|ON|DELta
:CALCulate:MARKer1:STATE?

Title: Set Marker 1 State
Description: Sets marker 1 on/off or delta.
Parameter: OFF|ON|DELta
Parameter Type: <char>
Default Value: OFF
Front Panel Access: Marker, Marker Select (M1), Marker State

:CALCulate:MARKer1:X <x1 parameter>,<x2 parameter>
:CALCulate:MARKer1:X?

Title: Set Marker 1 Value
Description: Sets/Queries the location of marker 1 on the x-axis at the specified location.
   In Channel Spectrum view, the x1 parameter is used to set the position. The x2 parameter is ignored. For example, :CALC:MARK1:X 756.24 MHz will set Marker 1 to 756.24 MHz.
   In Power vs. Time view, the x2 parameter is used to set the position of the marker in time units.
   The units must be specified (valid units are us, ms, s). The x1 parameter value is ignored but is required. For example, :CALC:MARK1:X 0,1 ms will set Marker 1 to 1 ms.
Parameters: <x1 parameter>,<x2 parameter>
Default Unit: Hz in RF Channel Spectrum view and microseconds in Power vs. Time view.
Front Panel Access: Marker, Marker Select (M1), Peak Search

:CALCulate:MARKer1:Y?

Title: Marker 1 Read Y Value
Description: Reads the current Y value for marker 1.
Default Unit: dBm
:CALCulate:MARKer2:DELTa:X <x1 parameter>,<x2 parameter>

Title: Delta Marker 2 X Value
Description: Sets/Queries the relative location of the delta marker from the reference marker on the x-axis. Note: The query value might not always match the set value since the instrument will round the set value based on the display pixel resolution.

In Channel Spectrum view, the x1 parameter is used to set the delta position. The x2 parameter is ignored. For example, :CALC:MARK2:DEL:T:X 2 MHz will set the Marker 2 delta value to 2 MHz.

In Power vs. Time view, the x2 parameter is used to set the delta position. The units must be specified (valid units are us, ms, s). The x1 parameter value is ignored but is required.

For example, :CALC:MARK2:DEL:T:X 0,1 ms will set the Marker 2 delta value to 1 ms.

Parameters: <x1 parameter>,<x2 parameter>
Default Unit: Hz in RF Channel Spectrum view and microseconds in Power vs. Time view.
Related Command: :CALCulate:MARKer2:X
Front Panel Access: Marker, Marker Select (M2), Marker State (Delta), (Use arrow keys or rotary knob.)

:CALCulate:MARKer2:DELTa:Y?

Title: Delta Marker 2 Read Y Value
Description: Reads the current absolute Y value for delta marker 2.
Default Unit: dBm

:CALCulate:MARKer2:MAXimum

Title: Set Marker 2 to Peak
Description: Moves marker 2 to peak position on data trace.
Parameter: NA
Front Panel Access: Marker, Marker Select (M2), Peak Search

:CALCulate:MARKer2:STATe OFF|ON|DELta

Title: Set Marker 2 State
Description: Sets marker 2 on/off or delta.
Parameter: OFF|ON|Delta
Parameter Type: <char>
Default Value: OFF
Front Panel Access: Marker, Marker Select (M2), Marker State
:CALCulate:MARKer2:X <x1 parameter>,<x2 parameter>

Title: Set Marker 2 Value
Description: Sets/Queries the location of marker 2 on the x-axis at the specified location.

In Channel Spectrum view, the x1 parameter is used to set the position. The x2 parameter is ignored. For example, :CALC:MARK2:X 756.24 MHz will set Marker 2 to 756.24 MHz.

In Power vs. Time view, the x2 parameter is used to set the position of the marker in time units. The units must be specified (valid units are us, ms, s). The x1 parameter value is ignored but is required. For example, :CALC:MARK2:X 0,1 ms will set Marker 2 to 1 ms.

Parameters: <x1 parameter>,<x2 parameter>

Default Unit: Hz in RF Channel Spectrum view and microseconds in Power vs. Time view.

Front Panel Access: Marker, Marker Select (M2), Peak Search

:CALCulate:MARKer2:Y?

Title: Marker2 Read Y Value
Description: Reads the current Y value for marker 2.

Default Unit: dBm
15-3 :CONFigure Subsystem

This set of commands prepares the instrument for the selected measurement. It disables any currently-enabled measurements and activates the specified measurement. It sets the instrument to single sweep mode, waiting for an :INITiate command. It will not initiate the taking of a measurement.

Current instrument settings may be changed to default values. These changes are identified with their respective measurement commands.

:CONFigure SUMMARY

Title: Set Measurement to TD-LTE Summary

Description: Sets the measurement to TD-LTE Summary. It disables any other active measurements. None of the instrument parameters are changed by the execution of this command. (:INITiate:CONTinuous OFF). Measurement settings can be modified by using the [:SENSe] commands before initiating a measurement.

Parameter: SUMMARY

Parameter Type: <char>

Front Panel Access: Measurements, TD-LTE Summary

:CONFigure?

Title: Configure Query

Description: :CONFigure? query returns the name of the measurement previously set up using a CONFigure command or a MEASure? query. The list below shows the possible return values.

SUMM
RF,SPEC
RF,ACLR
RF,SEM
RF, PVT, SUBF
RF, PVT, FRAM
RF,SUMM
DEM,CONS
DEM,CCPG
DEM,CCPT
DEM,PVRB
DEM,SUMM
PF
OTA,OTAS
OTA,OTATX
OTA,MAP
:CONFigure:DEMod SUMMary|CONStln|CCPGraph|CCPTable

Title: Select the Modulation Measurement

Description: Sets measurement to one of the Modulation screens. This can be one of:

SUMMary: Modulation Summary view
CONStln: Modulation Constellation diagram.
CCPGraph: Control Channel Powers - Bar-graph view.
CCPTable: Control Channel Powers - Table view.

It disables any other active measurements. None of the instrument parameters are changed by the execution of this command. Sets the instrument to single sweep mode (:INITiate:CONTinuous OFF). Measurement settings can be modified by using the [:SENSe] commands before initiating a measurement.

Parameter: SUMMary|CONStln|CCPGraph|CCPTable
Parameter Type: <char>
Front Panel Access: Measurements, Modulation, (Constellation, Control Channel Power, Modulation Summary). If Control Channel Power is selected, press Control Channel Power again then press Display Mode to select Bar Graph or Table.

:CONFigure:OTA SCANner|TXTEst|MAPping

Title: Select the Over-the-Air Scanner Measurement

Description: Sets the measurement to one of the Over-the-Air screens.

Parameter: SCANner|TXTEst|MAPping
Parameter Type: <char>
Front Panel Access: Measurements, Over-the-Air, Scanner

:CONFigure:RF SUMMary|SPECtrum|ACLR|SEM|PVTime

Title: Select RF Measurements

Description: This command configures RF measurements. It disables any other active measurements. None of the instrument parameters are changed by the execution of this command. Sets the instrument to single sweep mode (:INITiate:CONTinuous OFF). Measurement settings can be modified by using the [:SENSe] commands before initiating a measurement.

Set measurement to one of the RF measurement screens. This can be one of:

SUMMary: RF measurement summary screen.
SPECtrum: RF Channel Spectrum measurement screen.
ACLR: ACLR measurement view.
SEM: Spectral Emission Mask measurement.
PVTime: Power vs. Time measurement

Parameter: SUMMary|SPECtrum|ACLR|SEM|PVTime
Front Panel Access: Measurements, RF, (Channel Spectrum, Power vs. Time, ACLR, Spectral Emission Mask, RF Summary)
:CONFigure:RF:PVTime FRAMe|SUBFrame

Title: Configure Power vs Time Measurements

Description: Sets the current display mode for Power vs. Time measurements; either ‘Frame’ or ‘Sub-frame’.

Parameter: FRAMe|SUBFrame

Parameter Type: <char>

Front Panel Access: Measurements, RF, Power vs. Time, View
15-4 :DISPlay Subsystem

This subsystem provides commands that modify the display of data for the user. They do not modify the way in which data are returned to the controller.

:DISPlay:WINDow:TRACe:Y[:SCALe]:OFFSet <rel ampl>
:DISPlay:WINDow:TRACe:Y[:SCALe]:OFFSet?

Title: Power Offset

Description: Sets the power offset value for the y-axis.

Parameter: <rel ampl>

Default Value: 0 dB

Default Unit: dB

Range: -100 dB to 100 dB

Front Panel Access: Amplitude, Power Offset

:DISPlay:WINDow:TRACe:Y[:SCALe]:PDIVision <rel ampl>
:DISPlay:WINDow:TRACe:Y[:SCALe]:PDIVision?

Title: Scale

Description: Sets the Scale/Division setting for the y-axis. This only affects the scale for the Channel Spectrum and Power vs Time measurements.

Parameter: <rel ampl>

Default Value: 10 dB/div

Default Unit: dB

Range: 1 dB to 15 dB

Front Panel Access: Amplitude, Scale
15-5  :FETCh Subsystem

This set of commands returns the most recent measurement data of the active measurement. They will not
switch to another measurement.

To make a new measurement, use the INITiate command. To get new measurement data, use the READ or
MEASure query commands.

: FETCh :DEMod:CCPData?

Title: Fetch Demodulator Code Domain Power Data

Description: Returns the most recent Control Channel Power measurement numeric results.

Data is returned as 24 comma-delimited values: RS_POWER, PSS_POWER,
SSS_POWER, BCH_POWER, CFL_POWER, RS_TOTAL_POWER,
PSS_TOTAL_POWER, SSS_TOTAL_POWER, BCH_TOTAL_POWER,
CFL_TOTAL_POWER, TOTAL_POWER, TOTAL_CHANNEL_POWER

Front Panel Access: Measurements, Modulation, Control Channel Power

: FETCh :DEMod:CONStln?

Title: Fetch Constellation

Description: Returns the constellation measurement numeric results of the demodulated data symbol
over one sub-frame measurement. Data is returned as 9 comma-delimited values:
EVM (rms) in %, EVM (pk) in %, Ref Signal (RS) Power in dBm, Sync Signal (SS) Power
in dBm, Carrier Frequency in MHz, Freq Error in Hz, Freq Error in ppm, the Cell ID,
and the number of measurements used in the frequency error average. “--” is returned for
each data that is not valid at that instance.

Front Panel Access: Measurements, Modulation, Constellation

: FETCh :OTA :MAPping?

Title: Fetch OTA Coverage Mapping

Description: Returns the most recent Coverage Mapping measurement results. Data is returned as 2
comma-delimited values: Channel Power in dBM and Occupied bandwidth measurement
in MHz. “--” is returned for each data that is not valid at that instance.

Data is returned as 6 sets of comma-delimited values. Each set as follows: Cell ID, Group
ID, Sector ID, S-SS Power, RSRP, RSRQ, and SINR.

Following the six sets of data is a final value for the Dominance.

“--” is returned for each data that is not valid at that instance.

Front Panel Access: Measurements, Over-the-Air, Mapping

: FETCh :OTA :SCANner?

Title: Fetch OTA Scanner

Description: Returns the most recent OTA Scanner measurement results.

Data is returned as 6 sets of comma-delimited values. Each set as follows: Cell ID, Group
ID, Sector ID, S-SS Power, RSRP, RSRQ, and SINR

Following the six sets of data is a final value for the Dominance.

“--” is returned for each data that is not valid at that instance.

Front Panel Access: Measurements, RF, Channel Spectrum
:FETCH:OTA:TXTEst?

Title: Fetch OTA Tx Test

Description: Returns the most recent OTA Tx Test measurement results. Data is returned as 2 comma-delimited values: Channel Power in dBm and Occupied bandwidth measurement in MHz. “--” is returned for each data that is not valid at that instance.

Data is returned as 3 sets of comma-delimited values. Each set as follows: Cell ID, Group ID, Sector ID, S-SS Power, RSRP, RSRQ, and SINR

Following the six sets of data is and addition set of four numbers: Dominance, Antenna count, Average Power, Delta Power.

“--” is returned for each data that is not valid at that instance.

Front Panel Access: Measurements, RF, Channel Spectrum

:FETCH:RF:ACLR?

Title: Fetch Adjacent Channel Leakage Ratio

Description: Returns the most recent adjacent channel leakage ratio measurement results. If the instrument is sweeping, it will not return until the sweep is complete. Refer to “:READ:RF:ACLR?” on page 15-19 for a description of the returned data.

Default Unit: dBm

Front Panel Access: Measurements, RF, ACLR

:FETCH:RF:PVTime?

Title: Fetch Power vs. Time

Description: Returns Power vs. Time measurement results – Total Frame Power, DwPTS Power, Transmit Off Power, Cell ID, Timing Error, Sub-Frame Power 1, 2, ...10. “--” is returned for each data that is not valid at that instance.

Front Panel Access: Measurements, RF, Power vs. Time

:FETCH:RF:SEM?

Title: Fetch Spectral Emission Mask

Description: Returns Spectral Emission Mask measurement results (Pass or Fail).

Front Panel Access: Measurements, RF, Spectral Emission Mask

:FETCH:RF:SPECTrump?

Title: Fetch RF Spectrum

Description: Returns the most recent RF Spectrum measurement results. Data is returned as 2 comma-delimited values: Channel Power in dBm and Occupied bandwidth measurement in MHz. “--” is returned for each data that is not valid at that instance.

Front Panel Access: Measurements, RF, Channel Spectrum
Title: Fetch Summary

Description: Returns the values displayed in a Summary measurement view. If the current display is not a summary screen, then the return value is ‘N/A’. The return value is a comma separated list of the values displayed on the screen, in the order they are displayed from top to bottom. The list is preceded by the name of the summary view; either “TD-LTE Summary”, “RF Summary” or “Modulation Summary”.

If frequency Error is a parameter in the summary results, then the returned value will be the current displayed value averaged over an indeterminate number of previous measurements.

Averaged value only returned if Frequency Error Average Count > 1. The maximum number of averaged values will be the value setting for Frequency Error Average Count.
15-6 :FORMat Subsystem

This subsystem contains commands that determine the formatting of numeric data when it is transferred. The format setting affects data in specific commands only. If a command is affected, it is noted in the command description.

:FORMat[:READings][:DATA] ASCII|INTeger,32|REAL,32
:FORMat[:READings][:DATA]?

Title: Numeric Data Format

Description: This command specifies the format in which data is returned in certain commands.

ASCII format returns the data in comma-separated ASCII format. The units are the current instrument units. This format requires many more bytes so it is the slowest format.

INTeger values are signed 32-bit integers in little-endian byte order. This format returns the data in 4-byte blocks.

REAL values are 32-bit floating point numbers conforming to the IEEE 754 standard in little-endian byte order. This format returns the data in 4-byte binary format. The units are the current instrument units.

Both INTeger and REAL formats return a definite block length. Each transfer begins with an ASCII header such as #42204. The first digit represents the number of following digits in the header (in this example, 4). The remainder of the header indicates the number of bytes that follow the header (in this example, 2204). You then divide the number of following bytes by the number of bytes in the data format you’ve chosen (4 for both INTeger and REAL) to get the number of data points (in this example, 551).

Parameter: ASCII|INTeger,32|REAL,32

Parameter Type: <char>

Default Value: ASCII
15-7 :INITiate Subsystem

This subsystem controls the triggering of measurements.

:INITiate:CONTinuous OFF|ON|0|1
:INITiate:CONTinuous?

Title: Continuous/Single Sweep

Description: Specifies whether the sweep/measurement is triggered continuously. If the value is set to ON or 1, another sweep/measurement is triggered as soon as the current one completes. If continuous is set to OFF or 0, the instrument enters the “idle” state and waits for the :INITiate[:IMMediate] command or for :INITiate:CONTinuous ON. The default value is ON. That is, sending :INIT:CONT is equivalent to sending :INIT:CONT ON. The query version of the command returns a 1 if the instrument is continuously sweeping/measuring and returns a 0 if the instrument is in single sweep/measurement mode. Note that rapid toggling between ON and OFF is not allowed. The instrument must be allowed to make a full sweep before toggling can be done.

Parameter: OFF|ON|0|1
Parameter Type: <boolean>
Default Value: ON

Related Command: :INITiate[:IMMediate]
Front Panel Access: Shift-3 (Sweep), Sweep

:INITiate[:IMMediate]

Title: Trigger Sweep/Measurement

Description: Initiates a sweep/measurement. If :INITiate:CONTinuous is set to ON, this command is ignored. Use this command in combination with :STATus:OPERation? to synchronize the capture of one complete set of data. When this command is sent, the “sweep complete” bit of :STATus:OPERation? is set to 0, indicating that the measurement has not completed. The data collection is then triggered. The controlling program can poll :STATus:OPERation? to determine the status. When the “sweep complete” bit is set to 1, data is ready to be retrieved.

Related Command: :INITiate:CONTinuous
:STATus:OPERation?

Front Panel Access: Shift-3 (Sweep), Sweep (Single), Trigger Sweep
15-8 :MEASure Subsystem

These commands take the instrument from its current state, enable the specified measurement and put the instrument into single sweep mode. They correct any parameters that are invalid given the new measurement state such that a valid measurement can take place. Other settings may be changed; see the documentation of CONFigure for each measurement. They then initiate the measurement. When the measurement is complete, they return the result.

To make a measurement with settings other than the “default” measurement settings applied by CONFigure, do the following:

- Send the appropriate CONFigure command to set the desired measurement.
- Modify the settings as required.
- Send the appropriate READ command to measure and return the result.

To get the current measurement data, use the appropriate FETCH command.

:MEAsure:DEMod:AVERAGE?

Title: Measure Constellation with Frequency Error Averaging
Description: Triggers a series of new Constellation measurements and returns the results. The number of measurements is set by the [:SENSe]:AVERAGE:FERRor:COUNt n command.
Although ‘n’ measurements are taken, only a single result string returns. This will be the measured results of the last measurement in the set, except for frequency error, which is averaged over the entire ‘n’ measurements.

Note: If n is large, then an appropriately large value for the time-out of the SCPI interface is required.

Data is returned as 9 comma-delimited values: EVM (rms) in %, EVM (pk) in %, Ref Signal (RS) Power in dBm, Sync Signal (SS) Power in dBm, Carrier Frequency in MHz, Freq Error in Hz, Freq Error in ppm, the Cell ID, and the number of measurements average for Frequency Error. “--” is returned for each data that is not valid at that instance.

Front Panel Access: Measurements, Modulation, Constellation

:MEAsure:DEMod:CCPData?

Title: Read Modulation Control Channel Power Data
Description: Sets the active measurement to Control Channel Power, sets the default measurement parameters, triggers a new measurement, and returns the measured values: RS_POWER, PSS_POWER, SSS_POWER, BCH_POWER, CFI_POWER, RS_TOTAL_POWER, PSS_TOTAL_POWER, SSS_TOTAL_POWER, BCH_TOTAL_POWER, CFI_TOTAL_POWER, TOTAL_POWER, TOTAL_CHANNEL_POWER.
Data returned is the same for Bar Graph or Table mode. The Control Channel Power measurement must be the active measurement.

Front Panel Access: Measurements, Modulation, Control Channel Power
:MEASure:DEMod:CONStln?

Title: Measure Constellation

Description: Triggers a new Constellation measurement and returns the results. The Constellation measurement must be the active measurement (specified by :CONFigure:DEMod CONStln. The current measurement can be queried using the command :CONFigure?

Data is returned as 9 comma-delimited values: EVM (rms) in %, EVM (pk) in %, Ref Signal (RS) Power in dBm, Sync Signal (SS) Power in dBm, Carrier Frequency in MHz, Freq Error in Hz, Freq Error in ppm, the Cell ID, and the number of measurements average for Frequency Error. ‘--’ is returned for each data that is not valid at that instance.

Front Panel Access: Measurements, Modulation, Constellation

:MEASure:OTA:MAPping?

Title: Measure OTA Coverage Mapping

Description: Sets the active measurement to OTA Coverage Mapping, sets the default measurement parameters, triggers a new measurement, and returns the measured values:

Data is returned as 6 sets of comma-delimited values. Each set as follows: Cell ID, Group ID, Sector ID, S-SS Power, RSRP, RSRQ, and SINR

Following the six sets of data is a final value for the Dominance.

‘--’ is returned for each data that is not valid at that instance.

Default Unit: dBm

Front Panel Access: Measurements, Over-the-Air, Mapping

:MEASure:OTA:MAPping:RUN STARt|STOP

:MEASure:OTA:MAPping:RUN?

Title: Coverage Mapping Data Collection

Description: Turns On/Off the coverage mapping data collection. Unit needs to be in Mapping measurement mode for this to have any affect.

No data is returned.

Front Panel Access: Measurements, Over-the-Air, Mapping, Start/Stop Data Collection (Main Menu key)

:MEASure:OTA:SCANner?

Title: Measure OTA Scanner

Description: Sets the active measurement to OTA Scanner, sets the default measurement parameters, triggers a new measurement, and returns the measured values:

Data is returned as 6 sets of comma-delimited values. Each set as follows: Cell ID, Group ID, Sector ID, S-SS Power, RSRP, RSRQ, and SINR

Following the six sets of data is a final value for the Dominance.

‘--’ is returned for each data that is not valid at that instance.

Default Unit: dBm

Front Panel Access: Measurements, Over-the-Air, Scanner
:MEASure:OTA:TXTEst?

Title: Measure OTA Tx Test

Description: Sets the active measurement to OTA Tx Test, sets the default measurement parameters, triggers a new measurement, and returns the measured values:

- Data is returned as 3 sets of comma-delimited values. Each set as follows: Cell ID, Group ID, Sector ID, S-SS Power, RSRP, RSRQ, and SINR
- Following the six sets of data is an additional set of four results: Dominance, Antenna count, Average Power, Delta Power.
- "--" is returned for each data that is not valid at that instance.

Default Unit: dBm

Front Panel Access: Measurements, Over-the-Air, Tx Test

:MEASure:RF:ACLR?

Title: Measure Adjacent Channel Leakage Ratio

Description: Sets the active measurement to adjacent channel power ratio, sets the default measurement parameters, triggers a new measurement and returns the main channel(s) power, and adjacent channel(s) power. It is a combination of the commands :CONFigure:RF ACLR and :READ:RF:ACLR? Refer to " :READ:RF:ACLR? " on page 15-19 for a description of the returned data.

Default Unit: dBm

Front Panel Access: Measurements, RF, ACLR

:MEASure:RF:PVTime?

Title: Measure Power vs. Time (Frame)

Description: Sets the active measurement to Power vs. Time (Frame), sets the default measurement parameters, triggers a new measurement and returns the Total Frame Power, DwPTS Power, Transmit Off Power, Cell ID, Timing Error, Sub-Frame Power 1, 2, ...10. "--" is returned for each data that is not valid at that instance. It is a combination of the following commands: :CONFigure:RF PVTime and :READ:RF:PVTime?

Front Panel Access: Measurements, RF, Power vs. Time

:MEASure:RF:SEM?

Title: Measure Spectral Emission Mask

Description: Sets the active measurement to Spectral Emission Mask and returns a PASS or FAIL result.

Front Panel Access: Measurements, RF, Spectral Emission Mask

:MEASure:RF:SPECtrum?

Title: Measure RF Spectrum

Description: Sets the active measurement to Channel Spectrum, sets the default measurement parameters, triggers a new measurement and returns the Channel Power and Occupied Bandwidth measurement results. It is a combination of the following command:CONFigure:RF SPECtrum and :READ:RF:SPECtrum?. Data is returned as 2 comma-delimited values: Channel Power in dBm and Occupied bandwidth in MHz.

Front Panel Access: Measurements, RF, Channel Spectrum
15-9  :READ Subsystem

This set of commands combines the ABORt, INITiate and FETCh commands. It aborts any current triggering sequence and sets the trigger state to idle. It then initiates a new active measurement (i.e. begins the collection of new data). When the measurement is complete, it returns the result. These commands will not switch to another measurement.

To get the current measurement data, use the FETCh command.

:READ:DEMod:CONStln?
Title: Read Constellation
Description: Triggers a new Constellation measurement and returns the results. The Constellation measurement must be the active measurement (specified by :CONFigure:DEMod CONStln. The current measurement can be queried using the command :CONFigure? Data is returned as 8 comma-delimited values: EVM (rms) in %, EVM (pk) in %, Ref Signal (RS) Power in dBm, Sync Signal (SS) Power in dBm, Carrier Frequency in MHz, Freq Error in Hz, Freq Error in ppm, and the Cell ID. “--” is returned for each data that is not valid at that instance.

Front Panel Access: Measurements, Modulation, Constellation

:READ:OTA:MAPping?
Title: Read OTA Coverage Mapping
Description: Triggers a new OTA Coverage Mapping measurement and returns the results. The OTA Scanner measurement must be the active measurement (specified by :CONFigure:OTA MAPping. The current measurement can be queried using the command :CONFigure? Data is returned as 6 sets of comma-delimited values. Each set as follows: Cell ID, Group ID, Sector ID, S-SS Power, RSRP, RSRQ, and SINR. Following the six sets of data is a final value for the Dominance. “--” is returned for each data that is not valid at that instance.

Default Unit: dBm
Front Panel Access: Measurements, Over-the-Air, Mapping

:READ:OTA:SCANner?
Title: Read OTA Scanner
Description: Triggers a new OTA Scanner measurement and returns the results. The OTA Scanner measurement must be the active measurement (specified by :CONFigure:OTA SCANner. The current measurement can be queried using the command :CONFigure? Data is returned as 6 sets of comma-delimited values. Each set as follows: Cell ID, Group ID, Sector ID, S-SS Power, RSRP, RSRQ, and SINR. Following the six sets of data is a final value for the Dominance. “--” is returned for each data that is not valid at that instance.

Default Unit: dBm
Front Panel Access: Measurements, Over-the-Air, Scanner
:READ:OTA:TXTEst?
Title: Read OTA Tx Test
Description: Triggers a new OTA Tx Test measurement and returns the results. The OTA Tx Test measurement must be the active measurement (specified by :CONFigure:OTA Tx Test. The current measurement can be queried using the command :CONFigure?
Data is returned as 3 sets of comma-delimited values. Each set as follows: Cell ID, Group ID, Sector ID, S-SS Power, RSRP, RSRQ, and SINR
Following the six sets of data is and addition set of four numbers: Dominance, Antenna count, Average Power, Delta Power.
“--” is returned for each data that is not valid at that instance.
Default Unit: dBm
Front Panel Access: Measurements, Over-the-Air, Tx Test

:READ:PFail?
Title: Read PASS/FAIL
Description: Triggers a new PASS/FAIL measurement and returns the results. It is a combination of the commands :ABORT; :INITiate; FETCh:PFail? The PASS/FAIL measurement must be active. The current measurement can be queried using :CONFigure?
Related Command: :MEASure:PFail?
:CONFigure PFail
:FETCh:PFail?
:CONFigure PFail
Front Panel Access: Measurements, Pass/Fail Test

:READ:RF:ACLR?
Title: Read Adjacent Channel Leakage Ratio
Description: Triggers a new Adjacent Channel Leakage Ratio measurement and returns the results: Power levels for each channel (both absolute and relative). If the instrument is sweeping, it will not return until the sweep is complete. If the instrument is not sweeping and the current data is not valid it will return error -230. This could occur if there was a *RST immediately before the :FETCh? or if a measurement parameter was changed without an :INITiate.
Data is returned as 11 comma-separated values: Main channel power, Left alternate channel power - relative, absolute, Left adjacent channel power - relative, absolute, Main channel power - relative, absolute, Right adjacent channel power - relative, absolute, Right Alternate channel power - relative, absolute.
Default Unit: dBm
Front Panel Access: Measurements, RF, ACLR
:READ:RF:PVTime?

Title: Read Power vs. Time

Description: Triggers a new Power vs. Time measurement and returns the results: Total Frame Power, DwPTS Power, Transmit Off Power, Cell ID, Timing Error, Sub-Frame Power 1, 2, ..., 10. “-” is returned for each data that is not valid at that instance. It is a combination of the commands :ABORT; :INITiate; :FETCH:RF:PVTime?

The Power vs. Time measurement must be the active measurement (specified by :CONFigure:RF PVTime). The current measurement can be queried using :CONFigure?

Related Command: :FETCH:RF:PVTime?
:CONFigure:RF PVTime

Front Panel Access: Measurements, RF, Power vs. Time

:READ:RF:SEM?

Title: Read RF Spectral Emission Mask

Description: Triggers a new RF Spectral Emission Mask measurement and returns a PASS or FAIL result. It is a combination of the commands :ABORT; :INITiate; :FETCH:RF:SEM? The current measurement can be queried using :CONFigure?

Front Panel Access: Measurements, RF, Spectral Emission Mask

:READ:RF:SPECTruman

Title: Read RF Spectrum

Description: Triggers a new RF Spectrum measurement and returns the results: Channel Power and Occupied BW measurement. It is a combination of the commands :ABORT; :INITiate; :FETCH:RF:SPECTruman? The current measurement can be queried using :CONFigure?

Data is returned as 2 comma-delimited values: Channel Power (RSSI) in dBm and Occupied bandwidth measurement in MHz.

Related Command: :FETCH:RF:SPECTruman?
:CONFigure:RF SPECTruman
:MEASURE:RF:SPECTruman?

Front Panel Access: Measurements, RF, Channel Spectrum
15-10 :TRIGger Subsystem

This subsystem contains commands related to the triggering of instrument functions for the purposes of synchronization. Related commands appear in the ABORt and INITiate subsystems.

:TRIGger:SEQUence:SLOPe RISing|FALLing
:TRIGger:SEQUence:SLOPe?

  Title: External Trigger Polarity
  Description: This command sets/returns the external trigger polarity. Note that this setting can only be changed when the Trigger Source is set to “Ext”.
  Parameter: RISing | FALLing
  Parameter Type: <char>
  Default Value: RISing
  Default Unit: NA
  Range: RISing, FALLing

Front Panel Access: Setup, Trigger, Trigger Source (Ext), Trigger Polarity
15-11 :UNIT Subsystem

The unit subsystem is used to modify the default units used for related parameters. These changes affect parameters in both commands and responses.

:UNIT:POWer DBM|W
:UNIT:POWer?

Title: Measurement Units
Description: Sets/Returns the current display mode for power values as either dBm or in watts.
Parameter: DBM|W
Parameter Type: <char>
Default Value: dBm
Front Panel Access: Amplitude, Units
15-12 [:SENSe] Subsystem

The commands in this subsystem relate to device-specific parameters, not signal-oriented parameters.

[:SENSe]:AVERage:FERRor:COUNt n

[:SENSe]:AVERage:FERRor:COUNt?

Title: Frequency Error Average
Description: When count is greater than one, the frequency error value is averaged over past measurements. If count is one, then no averaging occurs.

If Count = N, and M is the number of measured values, then when M < N:
\[ FE_{next} = \frac{(FE_1 + FE_2 + ... + FE_{N-1})}{(N-1)} \]

When M >= N:
\[ FE_{next} = \frac{(N-1) \times FE_{previous} + FE_{new}}{N} \]

Note: This is commonly called a modified (or running) moving average.

Parameter: 1-15
Parameter Type: <char>
Default Value: 1
Front Panel Access: Setup, Freq Err Ave Cnt

[:SENSe]:AVERage:FERRor:RESet

Title: Frequency Error Average Reset
Description: Resets the frequency error averaging. Does not change the value of Count set with [:SENSe]:AVERage:FERRor:COUNt n.

Front Panel Access: Setup, Freq Err Ave Cnt

[:SENSe]:BANDwidth[:RESolution] 1.4|3|5|10|15|20

[:SENSe]:BANDwidth[:RESolution]?

Title: Bandwidth
Description: Sets the channel bandwidth. 15 MHz and 20 MHz are only available if Option 543 is installed.

Parameter: 1.4|3|5|10|15|20
Parameter Type: <char>
Default Value: The default bandwidth is 10 MHz.
Front Panel Access: Setup, BW

[:SENSe]:EVM?

Title: EVM
Description: Returns the measured EVM value. This consists of 4 comma-separated numbers: Mean value, maximum value, minimum value and standard deviation.
[:SENSe]:EVM:MAXHold ON|OFF
[:SENSe]:EVM:MAXHold?

Title: EVM Max Hold
Description: Turns Max Hold on or off (toggle) for measured EVM value.
Parameter: OFF | ON | 0 | 1
Parameter Type: <boolean>
Default Value: OFF
Related Command: [:SENSe]:EVM?
Front Panel Access: Setup, EVM Max Hold

[:SENSe]:EVM:MODe AUTO|PBCHonly
[:SENSe]:EVM:MODe?

Title: Set EVM Mode
Description: Sets/Returns the EVM Mode to either Auto or PBCH Only.
Parameter: AUTO | PBCHonly
Parameter Type: <char>
Default Value: AUTO
Front Panel Access: Setup, EVM Mode

[:SENSe]:EVM:RESet

Title: Reset EVM Max Hold
Description: Resets the maximum value stored for the EVM measurement. Also resets minimum, mean and standard deviation.

[:SENSe]:FREQuency:CENTer <freq>
[:SENSe]:FREQuency:CENTer?

Title: Center Frequency
Description: Sets the center frequency.
Parameter: <freq>
Default Value: 1 GHz
Default Unit: Hz
Range: 10 MHz to 4 GHz
Front Panel Access: Freq, Center Freq

[:SENSe]:FREQuency:SIGStandard:CHANnel <number>
[:SENSe]:FREQuency:SIGStandard:CHANnel?

Title: Channel Selection
Description: Sets the channel number for the selected signal standard.
Parameter: <number>
Front Panel Access: Frequency, Channel
Title: Signal Standard

Description: Selects the desired signal standard from the list. The <string> argument is the name of the desired signal standard as displayed in the instrument’s current signal standard list. The list can be seen on the instrument by choosing the Signal Standard submenu button in the Freq menu. The list can also be downloaded remotely and viewed using Anritsu Master Software Tools. For example, if the desired Signal Standard is P-GSM 900 - Uplink, then the value of the <string> argument would be “P-GSM 900 - Uplink”.

The query form of this command will return the name of the currently selected Signal Standard from the list.

Parameter: <string>

Front Panel Access: Freq, Signal Standard
Title: Coverage Mapping Measurement Parameter

Description: Selects the measurement parameter used by the mapping system. The selected parameter's threshold levels will be used to determine the signal quality and corresponding color displayed on the map. This will also be the parameter name and value shown if a kml file is created and loaded into Google Earth.

Parameter: <string> SSSPower | RSRP | RSRQ | SINR

Default Value: SSSPower

Example: [:SENSe][:OTA]:MAPping:MEASurement SSSPower

Related Command: [:SENSe][:OTA]:MAPping:SSSPower:THREShold "xx.x,xx.x,xx.x,xx.x,xx.x"
[:SENSe][:OTA]:MAPping:SSSPower:THREShold?

[:SENSe][:OTA]:MAPping:RSRP:THREShold "xx.x,xx.x,xx.x,xx.x,xx.x"
[:SENSe][:OTA]:MAPping:RSRP:THREShold?

[:SENSe][:OTA]:MAPping:RSRQ:THREShold "xx.x,xx.x,xx.x,xx.x,xx.x"
[:SENSe][:OTA]:MAPping:RSRQ:THREShold?

[:SENSe][:OTA]:MAPping:SINR:THREShold "xx.x,xx.x,xx.x,xx.x,xx.x"
[:SENSe][:OTA]:MAPping:SINR:THREShold?

Title: Coverage Mapping Thresholds

Description: The above commands set/return the threshold levels used in coverage mapping. There are five defined levels: Excellent, Very Good, Good, Fair and Poor. For each level, there is a threshold power that sets the lower boundary for that level. Setting the Excellent threshold to -100.0 dBm, for instance, means that measurement greater than -100.0 dBm will be considered excellent in the report and as display on the coverage map.

Thresholds are set as a comma separated list of power values in order from Excellent to Poor. No units are used, and when setting the threshold values, enclose the all five values in a single set of quote markers.

Examples:

Sending: SENSe:OTA:MAPping:SSSPower:THREShold?
Returns: -107.0,-110.0,-114.0,-117.0,-120.0

Sending: SENSe:OTA:MAPping:SSSPower:THREShold -100.0,-103.0,-104.5,-112.0,-118.0
Sets the S-SS Power thresholds to:
Excellent: 100.0 dBm
Very Good: 103.0 dBm
Good: 104.5 dBm
Fair: 112.0 dBm
Poor: 118.0 dBm

Parameter: <string> “xxx.x,xxx.x,xxx.x,xxx.x,xxx.x”


[SENSe][:OTA]:MAPping:POInts:DELetE

Title: Clear Coverage Mapping measurement

Description: Clears all data points collected for the coverage map.

Front Panel Access: Measurement, Over-the-Air, Mapping, Point Distance/Time Setup, Delete All Points

[SENSe][:OTA]:MAPping:RECAll:MAP <filename>

Title: Recall Coverage Map

Description: Recalls a saved coverage map from memory.

Front Panel Access: Measurement, Over-the-Air, Mapping, Save/Recall Points/Map, Recall a Map
[:SENSe][:OTA]:MAPping:RECall:MAP:DEFAult

Title: Coverage Map Default Grid
Description: Recalls a default grid for coverage mapping.
Front Panel Access: Measurement, Over-the-Air, Mapping, Save/Recall Points/Map, Recall Default Grid

[:SENSe][:OTA]:MAPping:REPeat:TYPe: TIME|DISTance
[:SENSe][:OTA]:MAPping:REPeat:TYPe?

Title: Coverage Map Repeat Type
Description: Sets the mode for determining data collection trigger. Setting is either Time or Distance. In Time mode, data is collected at fixed intervals in time; in Distance mode, data is collected at fixed intervals in distance.
Related Command: [:SENSe][:OTA]:MAPping:REPeat:TIMe
[:SENSe][:OTA]:MAPping:REPeat:DISTance
Front Panel Access: Measurement, Over-the-Air, Mapping, Point Distance/Time Setup, Repeat Type

[:SENSe][:OTA]:MAPping:REPeat:TIMe <seconds>
[:SENSe][:OTA]:MAPping:REPeat:TIMe?

Title: Coverage Map Repeat Time Interval
Description: Sets the time interval for data collection.
Related Command: [:SENSe][:OTA]:MAPping:REPeat:TYPe: TIME|DISTance
Front Panel Access: Measurement, Over-the-Air, Mapping, Point Distance/Time Setup, Repeat Time

[:SENSe][:OTA]:MAPping:REPeat:DISTance <meters>
[:SENSe][:OTA]:MAPping:REPeat:DISTance?

Title: Coverage Map Repeat Distance Interval
Description: Sets the distance interval for data collection.
Related Command: [:SENSe][:OTA]:MAPping:REPeat:TYPe: TIME|DISTance
Front Panel Access: Measurement, Over-the-Air, Mapping, Point Distance/Time Setup, Repeat Distance

[:SENSe][:OTA]:MAPping:SAVe:KML "<filename>"

Title: Coverage Map Save KML data file
Description: Saves all collected data to a KML data file. This file is compatible with various GIS programs, including Google Maps and Google Earth. The filename must be enclosed in quotation marks. Do not include the file extension.
Front Panel Access: Measurement, Over-the-Air, Mapping, Save/Recall Points/Map, Save KML Points

[:SENSe][:OTA]:MAPping:SAVe:TEXT "<filename>"

Title: Coverage Map Save KML data file
Description: Saves all collected data to a tab delimited text file. The filename must be enclosed in quotation marks. Do not include the file extension.
Front Panel Access: Measurement, Over-the-Air, Mapping, Save/Recall Points/Map, Save Tab Delimited Points
[:SENSe][:OTA]:SORTby CELLid|GROUpid|SECTorid|SSSPower|RSRP|RSRQ|SINR
[:SENSe][:OTA]:SORTby?

Title: OTA Scanner Sort By
Description: Sets the parameter used for sorting the OTA Scanner table. This is used by all OTA displays (Scanner, Tx Test and Mapping).
S-SS Power, RSRP, SINR, RSRQ are descending. Cell ID, Sector ID, Group ID are ascending.
Front Panel Access: Measurement, Over-the-Air, Scanner, Sort By

[:SENSe]:POWer[:RF]:RANGe[:IMMediate]

Title: Amplitude Range
Description: Re-calculates amplitude range. Note that issuing this command will set the automatic dynamic range OFF.
Related Command: [:SENSe]:POWer[:RF]:RANGe:AUTO
Front Panel Access: Amplitude, Adjust Range

[:SENSe]:POWer[:RF]:RANGe:AUTO {Boolean (default=1 [ON])}
[:SENSe]:POWer[:RF]:RANGe:AUTO?

Title: Automatic Amplitude Range
Description: Sets the automatic amplitude range. Setting the value to ON or 1 will result in the amplitude range being coupled to the detected input signal level. Setting the value to OFF or 0 will result in the input attenuation being un-coupled from the input signal level. That is, changing the input signal level will not change the amplitude range.
When this command is issued, the amplitude range itself will not change. The default value is ON. That is, sending :SENS:POW:RANG:AUTO is equivalent to sending :SENS:POW:RANG:AUTO ON.

Parameter: OFF|ON|0|1
Parameter Type: <boolean>
Default Value: ON
Related Command: [:SENSe]:POWer[:RF]:RANGe
Front Panel Access: Amplitude, Auto Range

[:SENSe]:RF:SPECTrurm:SPAN Auto|1.4|3|5|10|15|20|30
[:SENSe]:RF:SPECTrurm:SPAN?

Title: Automatic Amplitude Range
Description: Sets the span for the Spectrum view. For example, setting the value to 5 will set the span for the Spectrum view to 5 MHz and setting the value to 20 will set the span for the Spectrum view to 20 MHz.

Parameter: Auto|1.4|3|5|10|15|20|30
Default Value: Auto
Default Unit: MHz
Front Panel Access: Measurements, RF, Channel Spectrum, Span
[:SENSe]:SUBFrame <Sub-frame number 0-9>
[:SENSe]:SUBFrame?

Title: Set Sub-Frame Number
Description: Sets/returns the sub-frame number. The sub-frame number is used in Power vs. Time to zoom in the trace data to a particular sub-frame.
Parameter: 0-9
Parameter Type: <char>
Default Value: 0
Front Panel Access: Measurement, RF, Power vs. Time, View (Sub-Frame), Sub-Frame Number

[:SENSe]:TRIGger NOTRIGger|EXTERNAL
[:SENSe]:TRIGger?

Title: External Trigger
Description: Sets the external trigger. The query form returns either “NOTRIG” or “EXT” in Ascii (without the double quotes).
Default Value: No Trig
Front Panel Access: Setup, Trigger, Trigger Source
Appendix A — Programming Example

A-1 C/C++

This example is run on the command line. It sends the *IDN? query to the instrument and prints the response to the console.

```c
#include "stdafx.h"
#include "stdio.h"
#include "string.h"
#include "visa.h"

#define BUFFER_SIZE 255

int main(int argc, char* argv[])
{
    ViStatus status; /* For checking errors */
    ViSession defaultRM, instr; /* Communication channels */
    ViUInt32 retCount; /* Return count from string I/O */
    ViChar buffer[BUFFER_SIZE]; /* Buffer for string I/O */
    char tempDisplay[BUFFER_SIZE]; /* Display buffer for example */
    char *pAddress;

    /* Make sure we got our address. */
    if ( argc < 2 )
    {
        printf("Usage: IdnExample "USB0::0x0B58::0xFFF9::xxxxxxxx_xxx_xx::INSTR"
        " where xxxxxxxx_xxx_xx is the USB Device ID of your instrument."
        "t where xxxxxxxx_xxx_xx is the USB Device ID of your instrument."
        return -1;
    }

    /* Store the address. */
    pAddress = argv[1];

    /* Begin by initializing the system*/
    status = viOpenDefaultRM(&defaultRM);

    if (status < VI_SUCCESS)
```

```c
```
{ /* Error Initializing VISA...exiting*/
    printf("Can't initialize VISA\n");
    return -1;
}

/* USB0::0x0B58::0xFFF9::xxxxxxxx_xxx_xx::INSTR*/
/* NOTE: For simplicity, we will not show error checking*/
/* TODO: Add error handling. */
status = viOpen(defaultRM, pAddress, VI_NULL, VI_NULL, &instr);

/* Set the timeout for message-based communication*/
/* TODO: Add error handling. */
status = viSetAttribute(instr, VI_ATTR_TMO_VALUE, 120000);

/* Ask the device for identification */
sprintf(buffer, "*IDN?\n");
status = viWrite(instr, (unsigned char *)&buffer[0], 6, &retCount);
status = viRead(instr, (unsigned char *)buffer, BUFFER_SIZE, &retCount);

/* TODO: Add code to process data. */
strncpy(tempDisplay, buffer, retCount);
tempDisplay[retCount] = 0; /* Null-terminate display string. */
printf("*IDN? Returned %d bytes: %s\n", retCount, tempDisplay);

/* Close down the system */
/* TODO: Add error handling. */
status = viClose(instr);
status = viClose(defaultRM);

return 0;
}
This function can be called in a Visual Basic program. It sends the *IDN? query to the instrument and returns the byte count and ASCII response string.

Rem This example is based on Example 2-1 from the NI-VISA User Manual.

Public Sub IdnMain(ByVal address As String, ByRef byteCount As String, ByRef returnBytes As String)
    Const BUFFER_SIZE = 200
    Dim stat As ViStatus
    Dim dfltRM As ViSession
    Dim sesn As ViSession
    Dim retCount As Long
    Dim buffer As String * BUFFER_SIZE

    Rem ***Include visa32.dll as a reference in your project.***

    Rem Begin by initializing the system
    stat = viOpenDefaultRM(dfltRM)
    If (stat < VI_SUCCESS) Then
        Rem Error initializing VISA...exiting
        MsgBox “Can't initialize VISA”
        Exit Sub
    End If

    Rem Open communication with Device
    Rem NOTE: For simplicity, we will not show error checking
    Rem TODO: Add error handling.
    stat = viOpen(dfltRM, address, VI_NULL, VI_NULL, sesn)

    Rem Set the timeout for message-based communication
    Rem TODO: Add error handling.
    stat = viSetAttribute(sesn, VI_ATTR_TMO_VALUE, 120000)

    Rem Ask the device for identification
    Rem TODO: Add error handling.
    stat = viWrite(sesn, "*IDN?", 5, retCount)
    stat = viRead(sesn, buffer, BUFFER_SIZE, retCount)

    Rem TODO: Add code to process the data.
    byteCount = retCount
    returnBytes = Left(buffer, retCount)

    Rem Close down the system
    Rem TODO: Add error handling.
    stat = viClose(sesn)
    stat = viClose(dfltRM)
End Sub
This example shows how to read the trace data from the instrument in 32-bit integer format. The output is an array of data point magnitudes. Figure A-1 shows the data capture and conversion to 32-bit integers in the format used by LabVIEW. Figure A-2 shows the details of the conversion.

Note
Your instrument must first be defined to the VISA resource manager using NI-MAX. The VISA resource for your instrument serves as the VISA resource input to the vi.

Figure A-1. Data Capture
Figure A-2. Data Conversion
Appendix B — IQ Waveform Capture

Example of Metafile and C++ code are shown below. The MATLAB script is used to read a WCAP file from the instrument and unpack the data into a MATLAB array. The C++ sample program uses the SCPI commands to initiate a capture and save it directly to the PC.

B-1 MATLAB Script (getdata_simple_24.m)

```matlab
function Data = getdata_simple_24()
% target file has 24 bit data
% I/Q both contained in same file, 1-by-1
% use with *.wcap files captured manually on unit
% Data contains complex-valued contents of filename.wcap

fidIQ = fopen('filename.wcap','r');

% fetch # of complex data samples
stat = fseekStr(fidIQ, '"CaptureSample" Value="');
if stat == -1
    disp 'ERROR: data size could not be found in file';
    fclose(fidIQ);
    return;
else
    samples = fscanf(fidIQ, '%d', 1);
end

% fetch sample rate
stat = fseekStr(fidIQ, '"SamplingClock" Value="');
if stat == -1
    disp 'ERROR: sample rate could not be found in file';
    samp_rate = 1;
else
    samp_rate = fscanf(fidIQ, '%d', 1);
end

% fetch freq_offset
stat = fseekStr(fidIQ, '"FreqOffset" Value="');
if stat == -1
    disp 'ERROR: sample rate could not be found in file';
    freq_offset = 0;
else
    freq_offset = fscanf(fidIQ, '%e', 1);
end

freq_offset
```
%find data section
stat = fseekStr(fidIQ, '<Data>');
if stat == -1
    disp 'ERROR: data could not be found in file';
    fclose(fidIQ);
    return;
end
DataIQ = fread(fidIQ,samples*2,'bit24');
Data = DataIQ(1:2:end) + j*DataIQ(2:2:end);
fclose(fidIQ);

len = length(Data);
% t = [0:len-1]/samp_rate;
freqs = [-len/2:len/2-1]*samp_rate/len;
f = fftshift(20*log10(abs(fft(Data)+eps)));
f = f-max(f);
plot(freqs,f);
length(Data)

function status = fseekStr(fid, str)
% read from fid until we find str
% used to extract values from the XML-based .wcap files
status = 0;
len = length(str);
ii = 1;
fseek(fid,0,'bof');
while ( 1 )
    cc = fread(fid,1);
    if cc == str(ii)
        if ii == len
            break; %found it, ready to import
        end
        ii = ii + 1;
    else
        ii = 1;
    end
    if feof(fid)
        status = -1;
        return
    end
end
This script initiates a capture but does not allow for the data to be saved on the instrument. Instead, data is saved directly to the PC.

/*
Anritsu Company
Example SCPI-based program to initiate IQ capture and receive data on PC

Data captured using this program will be written to binary output, data.bin.
Data points are packed in an alternating fashion: I0, Q0, I1, Q1...
Each data point is 3 bytes in size (I0 = 3 bytes, Q0 = 3 bytes).
*/

#include "stdafx.h"
#include "stdio.h"
#include "string.h"
#include "visa.h"
#include <windows.h>

#define BUFFER_SIZE 0x80000/* maximum size of scpi response buffer */

int _tmain(int argc, _TCHAR* argv[])
{
    ViStatus status;            /* For checking errors */
    ViSession defaultRM, instr; /* Communication channels */
    ViUInt32 retCount;          /* Return count from string I/O */
    char *pAddress;
    char *pFileName;
    FILE * fd;

    int i;
    ViChar cmdBuf[256];
    ViChar statStr[256];
    char dataBuf[BUFFER_SIZE];

    // the VISA address of the instrument
    pAddress = "TCPIP::10.0.0.10::inst0::INSTR";
    // the output filename of the data
    pFileName = "data.bin";

    /* Begin by initializing the system*/
    status = viOpenDefaultRM(&defaultRM);
    if (status != VI_SUCCESS)
    {
        /* Error Initializing VISA...exiting*/
        printf("Can't initialize VISA\n");
        return -1;
    }

    /* Open communication with TCP/IP device at xxx.xxx.xxx.xxx*/
    /* NOTE: For simplicity, we will not show error checking*/
    /* TODO: Add error handling. */
status = viOpen(defaultRM, pAddress, VI_NULL, VI_NULL, &instr);
if (status != VI_SUCCESS)
{
    printf("viOpen failed %d\n",status);
    return -1;
}
/* Set the timeout for message-based communication*/
/* TODO: Add error handling. */
status = viSetAttribute(instr, VI_ATTR_TMO_VALUE,30000);

fd = fopen(pFileName,"wb");
if (fd == NULL)
{
    printf("Can't open the file\n");
    status = viClose(instr);
    status = viClose(defaultRM);
    return -1;
}
/* initiate capture */
sprintf(&cmdBuf[0],"MEASure:IQ:CAPture REMote\n");
status = viWrite(instr, (unsigned char *)&cmdBuf[0],(ViUInt32)strlen(cmdBuf), &retCount);
/* printf("%d, %d, %d\n",i,(numBytes - bytesLeft),retCount); */
if (status != VI_SUCCESS)
{
    printf("viWrite 1 failed 0x%x\n",status);
    viStatusDesc(instr,status,statStr);
    printf("statStr 1 = %s\n",statStr);
    fclose(fd);
    /* Close down the system */
    status = viClose(instr);
    status = viClose(defaultRM);
    return -1;
}

i = 0;
while (1)
{
    /* initiate capture */
sprintf(&cmdBuf[0],"MEASure:IQ:GET?\n");
status = viWrite(instr, (unsigned char *)&cmdBuf[0],(ViUInt32)strlen(cmdBuf), &retCount);
    if (status != VI_SUCCESS)
    {
        printf("viWrite 1 failed 0x%x\n",status);
        viStatusDesc(instr,status,statStr);
        printf("statStr 1 = %s\n",statStr);
        break;
    }
status = viRead(instr, (unsigned char *)dataBuf, BUFFER_SIZE, &retCount);
    if (status != VI_SUCCESS)
    {
        printf("viRead 1 failed 0x%x\n", status);
        viStatusDesc(instr, status, statStr);
        printf("statStr 1 = %s\n", statStr);
        break;
    }

    if(!strncmp(dataBuf, "#10", strlen("#10")))
    {
        break;
    }
    else
    {
        /* append data to end of file */
        /* data comes back in form #xYYYYYY  
        where YYYYYY indicates the size of the buffer and x  
        indicates the number of digits in the buffer size  
        the data immediately follows the buffer size */
        char tempBuf[16];
        int numDigits, size;
        strncpy(tempBuf, &dataBuf[1], 1);
        tempBuf[1] = '\0';
        sscanf(tempBuf, "%d\n", &numDigits);
        strncpy(tempBuf, &dataBuf[2], numDigits);
        tempBuf[numDigits] = '\0';
        sscanf(tempBuf, "%d\n", &size);
        fwrite(&dataBuf[2+numDigits], size, 1, fd);
    }
    printf("i=%d,retCount=%d\n", i++, retCount);
}

fclose(fd);
/* Close down the system */
/* TODO: Add error handling. */
status = viClose(instr);
status = viClose(defaultRM);

return 0;
}
Appendix C — List of Commands by Mode

Chapter 3—All Mode Commands

[:INSTrument:CATalog:FULL?] ................................................................................................................ 3-1
[:INSTrument:NSELect <integer>] ........................................................................................................ 3-1
[:INSTrument:NSELect?] ..................................................................................................................... 3-1
[:INSTrument[:SELet] <string>] .......................................................................................................... 3-1
[:INSTrument[:SELet]?] ..................................................................................................................... 3-1
[:MMEMory:DATA <file name>] ........................................................................................................... 3-2
[:MMEMory:DELETE <file name>] ..................................................................................................... 3-2
[:MMEMory:INITialize [USB]] ............................................................................................................ 3-3
[:MMEMory:LOAD:STATe <integer>,<file name>] .................................................................................. 3-3
[:MMEMory:LOAD:TRACe <integer>,<file name>] .................................................................................. 3-4
[:MMEMory:MSIS INTernal|USB]
[:MMEMory:MSIS?] ......................................................................................................................... 3-5
[:MMEMory:MSIS:COpy]..................................................................................................................... 3-5
[:MMEMory:MSIS:DESTination INTernal|USB]
[:MMEMory:MSIS:DESTination?] ........................................................................................................ 3-5
[:MMEMory:STORe:JPEG <file name>] ................................................................................................. 3-6
[:MMEMory:STORe:STATe <integer>,<file name>] .............................................................................. 3-6
[:MMEMory:STORe:TRACe <integer>,<file name>] .............................................................................. 3-6
[:STATus:OPERation?] ...................................................................................................................... 3-7
[:SYSTem:OPTions?] ........................................................................................................................ 3-8
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Chapter 4—Cable & Antenna Commands

[:CALCulate:LIMit:ALARm OFF|ON|0|1] ......................................................................................... 4-1
[:CALCulate:LIMit:ALARm?] ............................................................................................................. 4-1
[:CALCulate:LIMit:CLEar] .................................................................................................................. 4-1
[:CALCulate:LIMit:POINt:ADD] ....................................................................................................... 4-1
[:CALCulate:LIMit:POINt:FREQuency <freq>] .................................................................................. 4-2
[:CALCulate:LIMit:POINt:FREQuency?] ............................................................................................ 4-2
[:CALCulate:LIMit:POINt:VALue <value>] ....................................................................................... 4-2
[:CALCulate:LIMit:POINt:VALue?] .................................................................................................... 4-2
[:CALCulate:LIMit:POINt?] ............................................................................................................... 4-2
[:CALCulate:LIMit:VALue <value>] .................................................................................................. 4-2
[:CALCulate:LIMit:VALue?] ............................................................................................................... 4-2
[:CALCulate:LIMit[:STATe] OFF|ON|0|1] ......................................................................................... 4-3
[:CALCulate:LIMit[:STATe]?] .......................................................................................................... 4-3
[:CALCulate:MARKer:AOFF] ............................................................................................................. 4-3
[:CALCulate:MARKer:TABLe:DATA?] ............................................................................................... 4-3
[:CALCulate:MARKer:TABLe[:STATe] OFF|ON|0|1]........................................................................ 4-4
[:CALCulate:MARKer:TABLe[:STATe]?] ............................................................................................ 4-4
CALCulate:MARKer{1|2|3|4|5|6}:DELTa:X <x-parameter>
CALCulate:MARKer{1|2|3|4|5|6}:DELTa:X?
CALCulate:MARKer{1|2|3|4|5|6}:DELTa:Y?
CALCulate:MARKer{1|2|3|4|5|6}:DELTa[:STATe] OFF|ON|0|1
CALCulate:MARKer{1|2|3|4|5|6}:DELTa[:STATe]?
CALCulate:MARKer{1|2|3|4|5|6}:MAXimum
CALCulate:MARKer{1|2|3|4|5|6}:MINimum
CALCulate:MARKer{1|2|3|4|5|6}:PEAK
CALCulate:MARKer{1|2|3|4|5|6}:VALLey
CALCulate:MARKer{1|2|3|4|5|6}:X <x-parameter>
CALCulate:MARKer{1|2|3|4|5|6}:X?
CALCulate:MARKer{1|2|3|4|5|6}:Y?
CALCulate:MARKer{1|2|3|4|5|6}[:STATe] OFF|ON|0|1
CALCulate:MARKer{1|2|3|4|5|6}[:STATe]?
CALCulate:MATH:FUNCtion NORMal|ADD|SUBtract
CALCulate:MATH:FUNCtion?
CALCulate:MATH:MEMorize
CALCulate:MATH:OVERlay ON|OFF
CALCulate:SMOothing <integer>
CALCulate:SMOothing?
CALCulate:TRANsform:CLAVerage?
CALCulate:TRANsform:DISTance:CABLoss
CALCulate:TRANsform:DISTance:CABLoss?
CALCulate:TRANsform:DISTance:DMAX?
CALCulate:TRANsform:DISTance:FRESolution?
CALCulate:TRANsform:DISTance:PVELocity
CALCulate:TRANsform:DISTance:PVELocity?
CALCulate:TRANsform:DISTance:START
CALCulate:TRANsform:DISTance:START?
CALCulate:TRANsform:DISTance:STOP
CALCulate:TRANsform:DISTance:STOP?
CALCulate:TRANsform:DISTance:UNIT METers|FEET
CALCulate:TRANsform:DISTance:UNIT?
CALCulate:TRANSform:DISTance:WINDow RECTangular|MSLobe|NSLobe|LSLobe
CALCulate:TRANSform:DISTance:WINDow?
CALCulate:TRANsform:WINDow:TRACe:MEMory[:STATe] OFF|ON|0|1
CALCulate:TRANsform:WINDow:TRACe:MEMory[:STATe]?
CALCulate:MATH:STATe?
[:SENSe]:CORRection:TYPE STANDARD|FLEX
[:SENSe]:CORRection:TYPE? ............................................................................................................................... 4-26
[:SENSe]:FREQuency:CABle <index> ............................................................................................................. 4-26
[:SENSe]:FREQuency:LINK UPDLNK|DOWNLNK|UPANDDWNLINK
[:SENSe]:FREQuency:LINK?................................................................................................................................ 4-27
[:SENSe]:FREQuency:START <freq>
[:SENSe]:FREQuency:START? ............................................................................................................................... 4-27
[:SENSe]:FREQuency:STOP <freq>
[:SENSe]:FREQuency:STOP? .................................................................................................................................. 4-27
[:SENSe]:SWEep:RESolution LOW|MEDium|HIGH
[:SENSe]:SWEep:RESolution? .................................................................................................................................. 4-28
[:SENSe]:SWEep:RFIMmunity 0|1
[:SENSe]:SWEep:RFIMmunity?.............................................................................................................................. 4-28

Chapter 5—Spectrum Analyzer Commands

:ABORt ..................................................................................................................................................................... 5-1
:CALCulate:LIImit:ALARm OFF|ON|0|1
:CALCulate:LIImit:ALARm? ..................................................................................................................................... 5-2
:CALCulate:LIImit:CENTer ........................................................................................................................................ 5-2
:CALCulate:LIImit:ENVelope:CREate ....................................................................................................................... 5-2
:CALCulate:LIImit:ENVelope:OFFSet <amplitude>
:CALCulate:LIImit:ENVelope:POINT <number>
:CALCulate:LIImit:ENVelope:SHAPe SQUare|SLOPe
:CALCulate:LIImit:ENVelope:SHAPe? ...................................................................................................................... 5-3
:CALCulate:LIImit:ENVelope:UPDATE:X ............................................................................................................. 5-4
:CALCulate:LIImit:ENVelope:UPDATE:Y ............................................................................................................. 5-4
:CALCulate:LIImit:FAIL? ......................................................................................................................................... 5-4
:CALCulate:LIImit:LOWer:ALARm OFF|ON|0|1
:CALCulate:LIImit:LOWer:ALARm? ......................................................................................................................... 5-4
:CALCulate:LIImit:LOWer:FAIL? ............................................................................................................................. 5-4
:CALCulate:LIImit:LOWer[:STATE] OFF|ON|0|1
:CALCulate:LIImit:LOWer[:STATE]? ........................................................................................................................ 5-5
:CALCulate:LIImit:LTYPE ABSolute|RELative
:CALCulate:LIImit:MIRRor ...................................................................................................................................... 5-6
:CALCulate:LIImit:POINT:ADD ................................................................................................................................... 5-6
:CALCulate:LIImit:POINT:DELETE .......................................................................................................................... 5-6
:CALCulate:LIImit:POINT:LEFT .................................................................................................................................. 5-6
:CALCulate:LIImit:POINT:RIGHT ................................................................................................................................ 5-6
:CALCulate:LIImit:POINT:X <x-parameter>
:CALCulate:LIImit:POINT:X? ................................................................................................................................... 5-7

C-4 PN: 10580-00208 Rev. C MT822xB SCPI PM
CALCIulate:LIIMt:POINt:Y <y-parameter>
CALCIulate:LIIMt:POINt:Y?
CALCIulate:LIIMt:POI?
CALCIulate:LIIMt:TYPE 0|1
CALCIulate:LIIMt:TYPE?
CALCIulate:LIIMt:UPPer:ALARm OFF|ON|0|1
CALCIulate:LIIMt:UPPer:ALARm?
CALCIulate:LIIMt:UPPer:FAIL?
CALCIulate:LIIMt:UPPer:POINt?
CALCIulate:LIIMt:UPPer[:STATe] OFF|ON|0|1
CALCIulate:LIIMt:UPPer[:STATe]?
CALCIulate:LIIMt:VALue <value>
CALCIulate:LIIMt:VERTical:ADD
CALCIulate:LIMit:X <x-parameter>
CALCIulate:LIMit:Y <y-parameter>
CALCIulate:LIMit[:SET]:DEFault
CALCIulate:LIMit[:STATe] OFF|ON|0|1
CALCIulate:LIMit[:STATe]?
CALCIulate:MARKer:AOFF
CALCIulate:MARKer:PEAK:THReshold <percentage>
CALCIulate:MARKer:PEAK:THReshold?
CALCIulate:MARKer:TAble[:STATe] OFF|ON|0|1
CALCIulate:MARKer:TAble[:STATe]?
CALCIulate:MARKer{1|2|3|4|5|6}:DELTa:NOISe[:STATe] OFF|ON|0|1
CALCIulate:MARKer{1|2|3|4|5|6}:DELTa:NOISe[:STATe]?
CALCIulate:MARKer{1|2|3|4|5|6}:DELTa:X <x-parameter>
CALCIulate:MARKer{1|2|3|4|5|6}:DELTa:X?
CALCIulate:MARKer{1|2|3|4|5|6}:DELTa:Y?
CALCIulate:MARKer{1|2|3|4|5|6}:DELTa[:SET]:SPAN
CALCIulate:MARKer{1|2|3|4|5|6}:DELTa[:STATe] OFF|ON|0|1
CALCIulate:MARKer{1|2|3|4|5|6}:DELTa[:STATe]?
CALCIulate:MARKer{1|2|3|4|5|6}:FCOunt[:STATe] OFF|ON|0|1
CALCIulate:MARKer{1|2|3|4|5|6}:FCOunt[:STATe]?
CALCIulate:MARKer{1|2|3|4|5|6}:FIXed[:STATe] OFF|ON|0|1
CALCIulate:MARKer{1|2|3|4|5|6}:FIXed[:STATe]?
CALCIulate:MARKer{1|2|3|4|5|6}:MAXimum
CALCIulate:MARKer{1|2|3|4|5|6}:MAXimum:LEFT
CALCIulate:MARKer{1|2|3|4|5|6}:MAXimum:RIGHT
CALCIulate:MARKer{1|2|3|4|5|6}:NOISe[:STATe] OFF|ON|0|1
CALCIulate:MARKer{1|2|3|4|5|6}:NOISe[:STATe]?
CALCIulate:MARKer{1|2|3|4|5|6}:X <x-parameter>
CALCIulate:MARKer{1|2|3|4|5|6}:X?
CALCIulate:MARKer{1|2|3|4|5|6}:Y?
CALCIulate:MARKer{1|2|3|4|5|6}[:SET]:CENTer
:CALCulate::MARKer{1|2|3|4|5|6}[:SET]:RLEVel ................................................................. 5-16
:CALCulate::MARKer{1|2|3|4|5|6}[:STATe] OFF|ON|0|1
:CALCulate::MARKer{1|2|3|4|5|6}[:STATe]?

:CONFigure::ACPower ................................................................. 5-17
:CONFigure::CHPower ................................................................. 5-17
:CONFigure::FSTReNGTH ............................................................. 5-17

:DISPlay::WINDow::TRACe::Y[:SCALe]:RLEVel:OFFSet? .............................. 5-19
:DISPlay::WINDow::TRACe::Y[:SCALe]:RLEVel <amplitude> ........................................ 5-19
:DISPlay::WINDow::TRACe::Y[:SCALe]:RLEVel:OFFSet <rel ampl> ............. 5-19
:FETCh::ACPower? ................................................................................ 5-20

:FETCh::CHPower::CHPower? ............................................................. 5-20
:FETCh::CHPower::DENSity? ............................................................... 5-20
:FETCh::CHPower? ............................................................................. 5-21
:FETCh::OBWidth::FREQuency? ............................................................. 5-21
:FETCh::OBWidth? .................................................................................. 5-21

:FORMat[:READings][:DATA] ASCii|INTeger,32|REAL,[<length>] .................................................. 5-22

:INITiate::CONTinuous OFF|ON|0|1
:INITiate::CONTinuous? ............................................................................. 5-23
:INITiate::IMMediate] ONCE|AVERage ......................................... 5-23

:MEASure::ACPower? ............................................................................. 5-24
:MEASure::CHPower::CHPower? ............................................................. 5-24
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:MEASure::CHPower? ............................................................................. 5-25

:MEASure::IQ::CAPture SINGLE|REMote ........................................ 5-25
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:READ::CHPower::DENSity? ............................................................... 5-28
:READ::CHPower? ............................................................................. 5-28

:READ::OBWidth? .................................................................................. 5-29

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:TRACE::EXCHange TRACE2,TRACE3 .................................................. 5-30
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:TRACE[:DATA] {1|2|3},(<header><block>) .......................................................... 5-31
:TRACE[:DATA]? {1|2|3} .................................................................................. 5-31
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TRACe{1|2|3}:DISPlay[:STATe]?.................................................................5-32
TRACe{1|2|3}:WRITE[:STATe] OFF|ON|0|1
TRACe{1|2|3}:WRITE[:STATe]?........................................................................5-32
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TRACe1:OPERation?....................................................................................5-33
TRACe2:OPERation MAXHold|MINHold
TRACe2:OPERation?....................................................................................5-33
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TRIGger[:SEQUence]:SOURce IMMediate|EXTernal|VIDeo
TRIGger[:SEQUence]:SOURce?.................................................................5-35
TRIGger[:SEQUence]:VIDeo:DELay <percentage> or <time>
TRIGger[:SEQUence]:VIDeo:DELay?..........................................................5-35
TRIGger[:SEQUence]:VIDeo:LEVel <amplitude>
TRIGger[:SEQUence]:VIDeo:LEVel?............................................................5-36
TRIGger[:SEQUence]:VIDeo:POSition <percentage>
TRIGger[:SEQUence]:VIDeo:POSition?.......................................................5-36
UNIT:POWer DBM|DBV|DBMV|DBUV|V|W
UNIT:POWer?............................................................................................5-37
[:SENSe]:ACPower:BANDwidth|BWIDth:ADJacent <freq>
[:SENSe]:ACPower:BANDwidth|BWIDth:ADJacent?....................................5-38
[:SENSe]:ACPower:BANDwidth|BWIDth:MAIN <freq>
[:SENSe]:ACPower:BANDwidth|BWIDth:MAIN?..........................................5-38
[:SENSe]:ACPower:BANDwidth|BWIDth:SPACing <freq>
[:SENSe]:ACPower:BANDwidth|BWIDth:SPACing?......................................5-38
[:SENSe]:ACPower:STATe OFF|ON|0|1
[:SENSe]:ACPower:STATe?.......................................................................5-38
[:SENSe]:AVERage:COUNt <integer>
[:SENSe]:AVERage:COUNt?.......................................................................5-39
[:SENSe]:AVERage:TYPE NONE|SCALar|MAXimum|MINimum
[:SENSe]:AVERage:TYPE?.........................................................................5-39
[:SENSe]:BANDwidth|BWIDth:VIDeo <freq>
[:SENSe]:BANDwidth|BWIDth:VIDeo?..........................................................5-40
[:SENSe]:BANDwidth|BWIDth:VIDeo:AUTO OFF|ON|0|1
[:SENSe]:BANDwidth|BWIDth:VIDeo:AUTO?..................................................5-40
[:SENSe]:BANDwidth|BWIDth:VIDeo:RATio <number>
[:SENSe]:BANDwidth|BWIDth:VIDeo:RATio?...............................................5-40
[:SENSe]:BANDwidth|BWIDth:VIDeo:TYPE LOGarithmic|LINear
[:SENSe]:BANDwidth|BWIDth:VIDeo:TYPE?...............................................5-41
[:SENSe]:BANDwidth|BWIDth[:RESolution] <freq>
[:SENSe]:BANDwidth|BWIDth[:RESolution]?............................................5-41
[:SENSe]:BANDwidth|BWIDth[:RESolution]:AUTO OFF|ON|0|1
[:SENSe]:BANDwidth|BWIDth[:RESolution]:AUTO?....................................5-41
[:SENSe]:BANDwidth|BWIDth[:RESolution]:RATio <number>
[:SENSe]:BANDwidth|BWIDth[:RESolution]:RATio?....................................5-42
::SENSe::POWer[:RF]:ATTenuation:AUTO OFF|ON|0|1
::SENSe::POWer[:RF]:ATTenuation:AUTO?

::SENSe::POWer[:RF]:GAIN[:STATe] OFF|ON|0|1
::SENSe::POWer[:RF]:GAIN[:STATe]?

::SENSe::SWEep:TIME[:LLIMit]
::SENSe::SWEep:TIME[:LLIMit]?

::SENSe::SWEep:TIME:ACTual?

::SENSe::SWEep:TIME:AUTO ON|OFF
::SENSe::SWEep:TIME:AUTO?

Chapter 6—VSG Commands

:INITiate::IMMediate

::SENSe::FREQuency:CENTer[:SIGNal] <freq>
::SENSe::FREQuency:CENTer[:SIGNal]?

::SENSe::FREQuency:OFFSet[:INTerferer] <freq>
::SENSe::FREQuency:OFFSet[:INTerferer]?

::SENSe::INTerferer:MODE OFF|CW|MOD
::SENSe::INTerferer:MODE?

::SENSe::INTerferer:POWer <power level>
::SENSe::INTerferer:POWer?

::SENSe::INTerferer:USER:PATTern
::SENSe::INTerferer:USER:PATTern?

::SENSe::NOISe:POWer <power level>
::SENSe::NOISe:POWer?

::SENSe::RF OFF|ON|0|1
::SENSe::RF?

::SENSe::TRIGger <NONE|POS|NEG>
::SENSe::TRIGger?

::SENSe::TRIGger:DELay <seconds>
::SENSe::TRIGger?

::SENSe:::SIGNal::MODE OFF|CW|MOD
::SENSe:::SIGNal::MODE?

::SENSe:::SIGNal::POWer <power level>
::SENSe:::SIGNal::POWer?

::SENSe:::SIGNal::USER:PATTern
::SENSe:::SIGNal::USER:PATTern?

Chapter 7—GSM Commands

:ABORt

:CONFigure:SUMMary

:CONFigure:DEMod

:CONFigure:PFail

:CONFigure:PVTFrame

:CONFigure:PVTSlot

:CONFigure:SPECtrum:MULTi

:CONFigure:SPECtrum:SINGle
Chapter 8—WCDMA Commands

:ABORt............................................................................................................... 8-1

:CALCulate:MARKer:AOFF ............................................................................. 8-2

:CALCulate:MARKer{1|2|3|4|5|6}:X <x-parameter> ......................................................... 8-2

:CALCulate:MARKer{1|2|3|4|5|6}:Y? ........................................................................... 8-2

:CALCulate:MARKer{1|2|3|4|5|6}:STATE OFF|ON|0|1 .................................................. 8-2

:CONFigure:SUMMary|PFail ........................................................................... 8-3

:CONFigure:DEMod <char> .............................................................................. 8-3

:CONFigure:OTA ................................................................................................ 8-4

:CONFigure:RF <char> .................................................................................... 8-4

:DISPlay:WINDow:TRACe:Y[:SCALe]:OFFSet <rel ampl> .................. 8-5

:DISPlay:WINDow:TRACe:Y[:SCALe]:OFFSet? ........................................ 8-5

:DISPlay:WINDow:TRACe:Y[:SCALe]:PDIVision <rel ampl> .... 8-5

:DISPlay:WINDow:TRACe:Y[:SCALe]:PDIVision? ..................................... 8-5

:FETCh:ACLR? .................................................................................................. 8-6

:FETCh:CHPower? ............................................................................................. 8-6

:FETCh:DEMod:ACTChannels? ...................................................................... 8-6

:FETCh:DEMod:CDPower? ............................................................................. 8-7

:FETCh:DEMod:CFTThrough? ........................................................................ 8-7

:FETCh:DEMod:EVM? ...................................................................................... 8-7

:FETCh:DEMod:FERRor:PPM? ....................................................................... 8-7

:FETCh:DEMod:FERRor:PRECise? ................................................................. 8-8

:FETCh:DEMod:FERRor? ............................................................................... 8-8

:FETCh:DEMod:HSDPa:FERRor:PPM? ............................................................ 8-8

:FETCh:DEMod:HSDPa:FERRor? ..................................................................... 8-8

:FETCh:DEMod:HSDPa:TXFRequency? ......................................................... 8-9

:FETCh:DEMod:NFLoor? ................................................................................ 8-9

:FETCh:DEMod:NUMChannels? ....................................................................... 8-9

:FETCh:DEMod:SPOWER? ............................................................................... 8-9

:FETCh:DEMod:SUMMary? ............................................................................ 8-10

:FETCh:DEMod:TXFRequency:PRECise? ......................................................... 8-10

:FETCh:DEMod:TXFRequency? ...................................................................... 8-10

:FETCh:EMISsion:FAIL? .................................................................................. 8-10

:FETCh:EMISsion:TEMPlate:DATA? ................................................................. 8-11
:FETCH:EMISSION? .................................................................................................................................................... 8-12
:FETCH:OBWIDTH? .................................................................................................................................................. 8-12
:FETCH:OTA(1|2|3|4|5|6)? ........................................................................................................................................... 8-12
:FETCH:PFAIL? ....................................................................................................................................................... 8-13
:FETCH:PTAPower? ................................................................................................................................................. 8-13
:FETCH:RF:SUMMARY? .......................................................................................................................................... 8-13
:FETCH:OTA{1|2|3|4|5|6}? ............................................................................................................................................. 8-13
:FETCH:PFAIL? ....................................................................................................................................................... 8-13
:MEASURE:ACLR? ................................................................................................................................................... 8-16
:MEASURE:CHPower? ............................................................................................................................................. 8-16
:MEASURE:DEMOD:ACTChannels? ...................................................................................................................... 8-17
:MEASURE:DEMOD:CDPower? .............................................................................................................................. 8-17
:MEASURE:DEMOD:CFTThrough? .......................................................................................................................... 8-17
:MEASURE:DEMOD:EVM? ...................................................................................................................................... 8-18
:MEASURE:DEMOD:FRRor:PPM? ........................................................................................................................... 8-18
:MEASURE:DEMOD:FRRor:PRECise? ..................................................................................................................... 8-18
:MEASURE:DEMOD:FRRor? ................................................................................................................................... 8-19
:MEASURE:DEMOD:HSDPa:FRRor:PPM? ................................................................................................................ 8-19
:MEASURE:DEMOD:HSDPa:FRRor? ......................................................................................................................... 8-19
:MEASURE:DEMOD:HSDPa:TXFREQUENCY? ....................................................................................................... 8-20
:MEASURE:DEMOD:NFLOOR? ................................................................................................................................. 8-20
:MEASURE:DEMOD:NUMChannels? ....................................................................................................................... 8-20
:MEASURE:DEMOD:SPOWER? ............................................................................................................................... 8-21
:MEASURE:DEMOD:SUMMARY? ........................................................................................................................... 8-21
:MEASURE:DEMOD:TXFREQUENCY? ...................................................................................................................... 8-22
:MEASURE:EMISSion:FAIL? ................................................................................................................................... 8-22
:MEASURE:EMISSion:TEMPLATE:DATA? ............................................................................................................. 8-23
:MEASURE:EMISSion:TEMPLATE? ......................................................................................................................... 8-23
:MEASURE:EMISSion? ........................................................................................................................................... 8-23
:MEASURE:OBWIDTH? ........................................................................................................................................... 8-24
:MEASURE:OTA{1|2|3|4|5|6}? ...................................................................................................................................... 8-24
:MEASURE:PFAIL? .................................................................................................................................................. 8-24
:MEASURE:PTAPower? ........................................................................................................................................... 8-25
:MEASURE:RF:SUMMARY? ................................................................................................................................... 8-25
:READ:ACLR? ....................................................................................................................................................... 8-26
:READ:CHPower?......................................................................................................................................................... 8-26
:READ:DEMod:ACTChannels? ........................................................................................................................................ 8-26
:READ:DEMod:CDPower? ............................................................................................................................................... 8-27
:READ:DEMod:CFThroug? .............................................................................................................................................. 8-27
:READ:DEMod:EVM? ...................................................................................................................................................... 8-27
:READ:DEMod:FERRor:PPM? ......................................................................................................................................... 8-27
:READ:DEMod:FERRor:PRECise? ............................................................................................................................... 8-28
:READ:DEMod:FERRor? ................................................................................................................................................ 8-28
:READ:DEMod:HSDPa:FERRor:PPM? ............................................................................................................................ 8-28
:READ:DEMod:HSDPa:FERRor? ..................................................................................................................................... 8-28
:READ:DEMod:HSDPa:TXFRequency? .......................................................................................................................... 8-29
:READ:DEMod:NFLoor? ................................................................................................................................................. 8-29
:READ:DEMod:NUMChannels? ..................................................................................................................................... 8-29
:READ:DEMod:SPOWer? ............................................................................................................................................... 8-29
:READ:DEMod:SUMMary? ........................................................................................................................................... 8-30
:READ:DEMod:TXFRequency? .................................................................................................................................... 8-30
:READ:EMISsion:FAIL?................................................................................................................................................... 8-30
:READ:EMISSsion:TEMPLate:DATA? ........................................................................................................................... 8-31
:READ:EMISSsion:TEMPLate? ..................................................................................................................................... 8-31
:READ:EMISSsion?......................................................................................................................................................... 8-31
:READ:OBWidth? ......................................................................................................................................................... 8-31
:READ:OTA{1|2|3|4|5|6}? .................................................................................................................................................. 8-32
:READ:PFail? ............................................................................................................................................................... 8-32
:READ:PTAPower? ......................................................................................................................................................... 8-32
:READ:RF:SUMMary? .................................................................................................................................................. 8-33
:TRACe:PREamble? <trace type> .............................................................................................................................. 8-34
:TRACe:[DATA] ACLR|SPECTrum|EMISSsion|DEMod,(<header><block>)
:TRACe:[DATA]? ACLR|SPECTrum|EMISSsion|DEMod ............................................................................................................. 8-34

[:SENSe]:AVERage:FERRor OFF|ON|0|1
[:SENSe]:AVERage:FERRor?

[:SENSe]:AVERage:FERRor:COUNT <integer>
[:SENSe]:AVERage:FERRor:COUNT?

[:SENSe]:DEMod:CODogram:TIME <seconds>
[:SENSe]:DEMod:CODogram:TIME?

[:SENSe]:DEMod:CPICh:ABSolute?
[:SENSe]:DEMod:CPICh:RELative?

[:SENSe]:DEMod:CTRLChannels:UNIT RELative|ABSolute|DELTa
[:SENSe]:DEMod:CTRLChannels:UNIT?

[:SENSe]:DEMod:HSDPa:IQPersistence <integer>
[:SENSe]:DEMod:HSDPa:IQPersistence?
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[:SENSe]:DEMod:HSDP:TIME <seconds>
[:SENSe]:DEMod:HSDP:TIME? ................................................................. 8-37
[:SENSe]:DEMod:PCCPch:RELative? ......................................................... 8-37
[:SENSe]:DEMod:PCDerror? ................................................................. 8-37
[:SENSe]:DEMod:PICH:CODE <code number>
[:SENSe]:DEMod:PICH:CODE? ................................................................. 8-37
[:SENSe]:DEMod:SCCPch:CODE <code number>
[:SENSe]:DEMod:SCCPch:CODE? ................................................................. 8-37
[:SENSe]:DEMod:SCCPch:SFACtor 4|8|16|32|64|128|256
[:SENSe]:DEMod:SCCPch:SFACtor? ................................................................. 8-38
[:SENSe]:DEMod:SCODE <scrambling code>
[:SENSe]:DEMod:SCODE? .............................................................................. 8-38
[:SENSe]:DEMod:SCODE:AUTO OFF|ON|0|1
[:SENSe]:DEMod:SCODE:AUTO? ........................................................................ 8-38
[:SENSe]:DEMod:SFACtor 256|512
[:SENSe]:DEMod:SFACtor? .............................................................................. 8-38
[:SENSe]:DEMod:THRS:TIME <seconds>
[:SENSe]:DEMod:THRS:TIME? ................................................................. 8-37
[:SENSe]:DEMod:THRS:RELative? ................................................................. 8-37
[:SENSe]:DEMod:THRS:THRS:TIME <seconds>
[:SENSe]:DEMod:THRS:THRS:TIME? ................................................................. 8-39
[:SENSe]:FREQuency:CENTer <freq>
[:SENSe]:FREQuency:CENTer? ........................................................................ 8-39
[:SENSe]:FREQuency:STARt? ........................................................................... 8-40
[:SENSe]:FREQuency:STOP? ........................................................................... 8-40
[:SENSe]:OTA:RESet.................................................................................. 8-40
[:SENSe]:OTA:SCODE:AUTO OFF|ON|0|1
[:SENSe]:OTA:SCODE:AUTO? ........................................................................ 8-40
[:SENSe]:OTA:SCODe:AUTO OFF|ON|0|1
[:SENSe]:OTA:SCODe:AUTO? ........................................................................ 8-40
[:SENSe]:OTA:SORT CODE|POWer
[:SENSe]:OTA:SORT? ................................................................................... 8-41
[:SENSe]:PFail <test set>
[:SENSe]:PFail? ....................................................................................... 8-42
[:SENSe]:POWer:[RF]:RANGe:AUTO OFF|ON|0|1
[:SENSe]:POWer:[RF]:RANGe:AUTO? ......................................................... 8-42
[:SENSe]:POWer:[RF]:RANGe:[IMMediate] ...................................................... 8-42
[:SENSe]:RF:ACLR:ADJCchannelcount <num of channels>
[:SENSe]:RF:ACLR:ADJCchannelcount? ......................................................... 8-43
[:SENSe]:RF:ACLR:MAINchannelcount <num of main channels>
[:SENSe]:RF:ACLR:MAINchannelcount? ......................................................... 8-43

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:ABORt ..................................................................................................... 9-1
:CONFigure:DEMod <char> ....................................................................... 9-2
-CONFigure:OTA ......................................................................................................................................................... 9-2
-CONFigure:RF <char> ............................................................................................................................................... 9-3
:DISPlay:WINdow:TRACe:Y[:SCALe]:OFFSet <rel ampl> ....................................................................................................... 9-4
:DISPlay:WINdow:TRACe:Y[:SCALe]:OFFSet? ............................................................................................................... 9-4
:DISPlay:WINdow:TRACe:Y[:SCALe]:PDIVision <rel ampl> ........................................................................................................... 9-4
:DISPlay:WINdow:TRACe:Y[:SCALe]:PDIVision? ........................................................................................................... 9-4
:FETCh:OTA? .......................................................................................................................................................... 9-5
:FETCh:RF:EMISSsion? .............................................................................................................................................. 9-6
:FETCh:RF:SPECTrum? .............................................................................................................................................. 9-6
:FETCh:RF:SUMMary? .............................................................................................................................................. 9-6
:FORMat[:READings][:DATA] ASCii|INTeger,32|REAL,32 ............................................................................................................ 9-7
:FORMat[:READings][:DATA]? .............................................................................................................................................. 9-7
:INITiate:CONTinuous OFF|ON|0|1 ........................................................................................................................................ 9-8
:INITiate:CONTinuous? .............................................................................................................................................. 9-8
:INITiate[:IMMediate] .............................................................................................................................................. 9-8
:MEASure:DEMod:SUMMary? ........................................................................................................................................... 9-10
:MEASure:OTA? .......................................................................................................................................................... 9-10
:MEASure:RF:EMISSsion? ........................................................................................................................................... 9-11
:MEASure:RF:SPECTrum? ........................................................................................................................................... 9-11
:MEASure:RF:SUMMary? ........................................................................................................................................... 9-12
:READ:OTA? .......................................................................................................................................................... 9-14
:READ:RF:EMISSsion? ........................................................................................................................................... 9-14
:READ:RF:PVTSlot? .................................................................................................................................................... 9-15
:READ:RF:SPECTrum? ........................................................................................................................................... 9-16
:READ:RF:SUMMary? ........................................................................................................................................... 9-16
:TRACe:PREamble? <trace type> ............................................................................................................................................ 9-17
:TRACe[:DATA]? <trace type> ............................................................................................................................................ 9-18
:TRIGger:SEQuence:SLOPe RISing|FALLing ..................................................................................................................... 9-19
:TRIGger:SEQuence:SLOPe? ........................................................................................................................................... 9-19
:UNIT:POWer DBM|W ................................................................................................................................................... 9-20
:UNIT:POWer? .......................................................................................................................................................... 9-20
[:SENSe]:DEMod:CDPData:UNITs RELative|ABSolute .................................................................................................... 9-21
[:SENSe]:DEMod:CDPData:UNITs? ........................................................................................................................................ 9-21
[:SENSe]:DEMod:MODType Auto|QPSK|8PSK|16QAM ........................................................................................................... 9-21
[:SENSe]:DEMod:MODType? ........................................................................................................................................ 9-21
[:SENSe]:DEMod:MUSer Auto|2-16 (even) ...................................................................................................................... 9-21
[:SENSe]:DEMod:MUSer? ........................................................................................................................................... 9-21
Chapter 10—CDMA Commands

:ABORt .............................................................. 10-1

:CALCulate:MARKer:AOFF .............................................. 10-2

:CALCulate:MARKer{1|2|3|4|5|6}:Y? ............................................. 10-2

:CALCulate:MARKer{1|2|3|4|5|6}[:STATe] OFF|ON|0|1

:CALCulate:MARKer{1|2|3|4|5|6}[:STATe]? ............................................. 10-2

:CONFigure SUMMary|PFail ............................................. 10-3

:CONFigure:DEMod <char> ............................................... 10-3

:CONFigure:OTA <char> ................................................ 10-3

:CONFigure:RF <char> .................................................. 10-4

:DISPlay:WINDow:TRACe:Y[:SCALe]:OFFSet <rel ampl>

[:DISPLAY:WINDow:TRACE:Y[:SCALe]:PDIVision <rel ampl> .............................................................. 10-5
:FETCh:DEMod:CDPower? .................................................................................................................. 10-6
:FETCh:OTA:MPATH? ...................................................................................................................... 10-6
:FETCh:PFail? ................................................................................................................................. 10-7
:FETCh:RF:ACPR? .......................................................................................................................... 10-7
:FETCh:RF:EMISSION? .................................................................................................................... 10-7
:FETCh:RF:SPECTrum? .................................................................................................................... 10-8
:FORMat[:READings][:DATA] ASCii|INTeger,32|REAL,32 ................................................................. 10-9
:INITiate[:IMMediate]................................................................................................................... 10-10
:INITiate:CONTinuous OFF|ON|0|1 ............................................................................................... 10-10
:INITiate[:IMMediate]................................................................................................................... 10-10
:MEASure:DEMod:CDPower? ....................................................................................................... 10-11
:MEASure:OTA:MPATH? ................................................................................................................ 10-12
:MEASure:PFail? ........................................................................................................................... 10-12
:MEASure:RF:ACPR? ..................................................................................................................... 10-13
:MEASure:RF:EMISSION? ............................................................................................................. 10-13
:MEASure:RF:SPECTrum? ............................................................................................................ 10-14
:READ:OTA:MPATH? .................................................................................................................. 10-15
:READ:PFail? ............................................................................................................................... 10-16
:READ:RF:ACPR? ......................................................................................................................... 10-16
:READ:RF:EMISSION? ............................................................................................................... 10-16
:READ:RF:SPECTrum? ................................................................................................................ 10-17
:TRACE:PREamble? <trace type> ................................................................................................. 10-18
:TRACE[data]? <trace type> ....................................................................................................... 10-19
:TRIGger:SEQuence:SLOPe RISing|FALLing ................................................................................ 10-20
:UNIT:POWer DBM|W .................................................................................................................... 10-21
:UNIT:POWer? .............................................................................................................................. 10-21
[:SENSe]:ACPower:BANDwidth[:MAIN <freq> ........................................................................... 10-22
[:SENSe]:ACPower:BANDwidth[:MAIN?] .................................................................................... 10-22
[:SENSe]:DEMod:CDPower:UNITs RELative|ABSolute ................................................................ 10-22
[:SENSe]:DEMod:CDPower:UNITs? ............................................................................................... 10-22
[:SENSe]:DEMod:CDPower:ZOOM 16|32|64 .................................................................................. 10-22
[:SENSe]:DEMod:CDPower:ZOOM? .............................................................................................. 10-22
[:SENSe]:DEMod:CDPower:ZOOM:START <integer> ................................................................. 10-23
[:SENSe]:DEMod:CDPower:ZOOM:START? ................................................................................ 10-23
[:SENSe]:FREQuency:CENTer <freq> ....................................................................................... 10-23
[:SENSe]:FREQuency:CENTer? .................................................................................................... 10-23
[:SENSe]:FREQuency:SIGStandard <index> ................................................................................ 10-23
[:SENSe]:FREQuency:SIGStandard? .......................................................................................... 10-23
[:SENSe]:FREQuency:SIGStandard:CHANnel <number>
[:SENSe]:FREQuency:SIGStandard:CHANnel? ............................................................... 10-24
[:SENSe]:FREQuency:SPAN? ....................................................................................... 10-24
[:SENSe]:PFail <test set>
[:SENSe]:PFail? ........................................................................................................ 10-24
[:SENSe]:PN:OFFSet <integer>
[:SENSe]:PN:OFFSet? .................................................................................................. 10-24
[:SENSe]:PN:STYPe:AUTO 1|0|ON|OFF
[:SENSe]:PN:STYPe:AUTO? ....................................................................................... 10-25
[:SENSe]:PN:TRIGger NOTrig|GPS|EXT
[:SENSe]:PN:TRIGger? ............................................................................................. 10-25
[:SENSe]:POWer[:RF]:RANGe:AUTO OFF|ON|0|1
[:SENSe]:POWer[:RF]:RANGe:AUTO? ................................................................. 10-25
[:SENSe]:POWer[:RF]:RANGe[:IMMediate] ................................................................... 10-26
[:SENSe]:RF:ACPR:MAINchannelcount <integer>
[:SENSe]:RF:ACPR:MAINchannelcount? ................................................................. 10-26
[:SENSe]:SWEep:SPEed FAST|NORM|SLOW
[:SENSe]:SWEep:SPEed? ........................................................................................... 10-26
[:SENSe]:WCODe 64|128
[:SENSe]:WCODe? ...................................................................................................... 10-26

Chapter 11—EVDO Commands

:ABORt ...................................................................................................................... 11-1
:CALCulate:MARKer:AOFF ....................................................................................... 11-2
:CALCulate:MARKer{1|2|3|4|5|6}:Y? ........................................................................... 11-2
:CALCulate:MARKer{1|2|3|4|5|6}:STATE OFF|ON|0|1
:CALCulate:MARKer{1|2|3|4|5|6}:STATE? ............................................................... 11-2
:CONFigure SUMMary|PFail .................................................................................... 11-3
:CONFigure:DEMod <char> .................................................................................... 11-3
:CONFigure:OTA <char> ......................................................................................... 11-3
:CONFigure:RF <char> ........................................................................................... 11-3
:DISPlay:WINDow:TRACe:Y[:SCALE]:OFFSet <rel ampl>
:DISPlay:WINDow:TRACe:Y[:SCALE]:OFFSet? ..................................................... 11-4
:DISPlay:WINDow:TRACe:Y[:SCALE]:PDIVision <rel ampl>
:FETCh:DEMod:CDPMac? ....................................................................................... 11-5
:FETCh:OTA:MPATh? ............................................................................................... 11-6
:FETCh:PFail? .......................................................................................................... 11-6
:FETCh:RF:ACPR? .................................................................................................. 11-6
:FETCh:RF:EMISsion? ............................................................................................ 11-6
:FETCh:RF:SPECtrum? ........................................................................................... 11-6
:FORMat[:READings][:DATA] ASCii|INTeger,32|REAL,32
:FORMat[:READings][:DATA]? .............................................................................................................................. 11-9
:INITiate:CONTinuous OFF|ON|0|1
:INITiate:CONTinuous?........................................................................................................................................ 11-10
:INITiate[:IMMediate]........................................................................................................................................ 11-10
:MEASure:DEMod:CDPData?.................................................................................................................................. 11-11
:MEASure:DEMod:CDPMac?.................................................................................................................................. 11-12
:MEASure:DEMod:SUMMary?.................................................................................................................................. 11-12
:MEASure:OTA:MPATh?.......................................................................................................................................... 11-13
:MEASure:PFail?.................................................................................................................................................. 11-13
:MEASure:RF:ACPR?............................................................................................................................................. 11-14
:MEASure:RF:EMISsion?......................................................................................................................................... 11-14
:MEASure:RF:SPECTrum?....................................................................................................................................... 11-15
:MEASure:RF:SUMMary?....................................................................................................................................... 11-15
:READ:OTA:MPATh?........................................................................................................................................... 11-16
:READ:PFail?.................................................................................................................................................... 11-16
:READ:RF:ACPR?.................................................................................................................................................. 11-17
:READ:RF:EMISsion?........................................................................................................................................... 11-17
:READ:RF:SPECTrum?.......................................................................................................................................... 11-18
:READ:RF:SUMMary?.......................................................................................................................................... 11-18
:TRACe:PREamble? <trace type>.......................................................................................................................... 11-19
:TRACe[:DATA]? <trace type>............................................................................................................................. 11-20
:TRIGger:SEQuence:SLOPe RISing|FALLing
:TRIGger:SEQuence:SLOPe?................................................................................................................................... 11-22
:UNIT:POWer DBM|W
:UNIT:POWer?.................................................................................................................................................. 11-23
[:SENSe]:ACPower:BANDwidth:MAIN <freq>
[:SENSe]:ACPower:BANDwidth:MAIN?.................................................................................................................. 11-24
[:SENSe]:DEMod:CDPower:UNITs RELative|ABSolute
[:SENSe]:DEMod:CDPower:UNITs?.......................................................................................................................... 11-24
[:SENSe]:DEMod:CDPower:ZOOM 16|32|64
[:SENSe]:DEMod:CDPower:ZOOM?.......................................................................................................................... 11-24
[:SENSe]:DEMod:CDPower:ZOOM:STARt <integer>
[:SENSe]:DEMod:CDPower:ZOOM:STARt?.................................................................................................................. 11-25
[:SENSe]:FREQuency:CENTer <freq>
[:SENSe]:FREQuency:CENTer?.................................................................................................................................. 11-25
[:SENSe]:FREQuency:SIGStandard <index>
[:SENSe]:FREQuency:SIGStandard?.......................................................................................................................... 11-25
[:SENSe]:FREQuency:SIGStandard:CHANnel <number>
[:SENSe]:FREQuency:SIGStandard:CHANnel?........................................................................................................ 11-25
[:SENSe]:FREQuency:SPAN?.................................................................................................................................... 11-26
[:SENSe]:PFail <test set>
[:SENSe]:PFail?................................................................................................................................................ 11-26
[:SENSe]:PN:OFFSet <integer>
[:SENSe]:PN:OFFSet?............................................................................................................ 11-26
[:SENSe]:PN:STYPe:AUTO 1|0|ON|OFF
[:SENSe]:PN:STYPe:AUTO?........................................................................................................... 11-27
[:SENSe]:PN:TRIGger NOTRig|GPS|EXT
[:SENSe]:PN:TRIGger?............................................................................................................................... 11-27
[:SENSe]:POWer[:RF]:RANGe:AUTO OFF|ON|0|1
[:SENSe]:POWer[:RF]:RANGe:AUTO?................................................................................................ ................ 11-27
[:SENSe]:POWer[:RF]:RANGe[:IMMediate]............................................................................................... 11-28
[:SENSe]:RF:ACPR:MAINchannelcount <integer>
[:SENSe]:RF:ACPR:MAINchannelcount?............................................................................................................ 11-28
[:SENSe]:SWEep:SPEed FAST|NORM|SLOW
[:SENSe]:SWEep:SPEed? ................................................................................................................................... 11-28
[:SENSe]:WCODe 64|128
[:SENSe]:WCODe? .............................................................................................................................................. 11-28

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:ABORt ................................................................................................................................................................. 12-1
:CONFigure SUMMary ........................................................................................................................................... 12-2
:CONFigure:DEMod <char>........................................................................................................................... 12-2
:CONFigure PFail .................................................................................................................................................. 12-3
:CONFigure:RF <char>.......................................................................................................................................... 12-3
:DISPlay:WINDow:TRACe:MAXHold OFF|ON|0|1
:DISPlay:WINDow:TRACe:MAXHold? ................................................................................................................... 12-4
:DISPlay:WINDow:TRACe:Y[:SCALe]:OFFSet <rel ampl>
:DISPlay:WINDow:TRACe:Y[:SCALe]:OFFSet?............................................................................................................. 12-4
:DISPlay:WINDow:TRACe:Y[:SCALe]:PDIVision <value>
:DISPlay:WINDow:TRACe:Y[:SCALe]:PDIVision?.................................................................................................. 12-4
:DISPlay:WINDow:TRACe:Y[:SCALe]:TOP <amplitude>
:DISPlay:WINDow:TRACe:Y[:SCALe]:TOP?......................................................................................................... 12-5
:FETCh:DEMod:CONStln?................................................................................................................................. 12-6
:FETCh:DEMod:EVSCarrier?.............................................................................................................................. 12-6
:FETCh:DEMod:EVSYmbol?............................................................................................................................... 12-6
:FETCh:DEMod:SFLatness?.................................................................................................................................. 12-6
:FETCh:PFail?...................................................................................................................................................... 12-7
:FETCh:RF:ACPR? ................................................................................................................................................ 12-7
:FETCh:RF:PVTime?.......................................................................................................................................... 12-7
:FETCh:RF:SPEctrum?........................................................................................................................................ 12-8
:FORMat[:READings][:DATA] ASCii|INTeger,32|REAL,32
:FORMat[:READings][:DATA]?......................................................................................................................... 12-9
:INITiate:CONTinuous OFF|ON|0|1
:INITiate:CONTinuous?....................................................................................................................................... 12-10
:INITiate[:IMMediate]....................................................................................................................................... 12-10
:MEASure:DEMod:CONStln?............................................................................................................................. 12-11
:MEASure:DEMod:EVSCarrier?.......................................................................................................................... 12-11
[:SENSe]:DEMod:EVSYmbol? ................................................................. 12-12
[:MEASure]:DEMod:EVSYmbol? .......................................................... 12-12
[:MEASure]:DEMod:SFLatness? .......................................................... 12-12
[:MEASure]:PFail? ............................................................................. 12-12
[:MEASure]:RF:ACPR? ....................................................................... 12-13
[:MEASure]:RF:PVTIme? ................................................................. 12-13
[:MEASure]:RF:SPECTrum? .............................................................. 12-14
[:READ]:DEMod:CONStIn? .............................................................. 12-15
[:READ]:DEMod:EVSCarrier? .......................................................... 12-15
[:READ]:DEMod:EVSCarrier? .......................................................... 12-15
[:READ]:DEMod:SFLatness? ........................................................... 12-16
[:READ]:PFail? ................................................................................ 12-16
[:READ]:RF:ACPR? ....................................................................... 12-16
[:READ]:RF:PVTIme? .................................................................. 12-17
[:READ]:RF:SPECTrum? .............................................................. 12-17
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 :DISPlay:WINDow:TRACe:Y[:SCALe]:OFFSet? ........................................................................................................ 13-4

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<td>:FORMat[:READings][[:DATA]ASCii]INTeger,32</td>
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<td>ON</td>
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<td>:MEAsure:RF:SPE ctrum?</td>
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Display:Window:Trace:Y[:Scale]:PDIVision <rel ampl>
Display:Window:Trace:Y[:Scale]:PDIVision?
FETCh:DEMod:CCPData?
FETCh:DEMod:CONStLn?
FETCh:OTA:MAPping?
FETCh:OTA:SCANner?
FETCh:OTA:TXTEst?
FETCh:RF:ACLR?
FETCh:RF:PVTIme?
FETCh:RF:SEM?
FETCh:RF:SPECTrum?
FETCh:SUMMary?
FORMat[:READings][:DATA] ASCII|INTeger,32|REAL,32
FORMat[:READings][:DATA]?
INITiate:CONTinuous OFF|ON|0|1
INITiate[:IMMediate] ...
MEAsure:DEMod:AVERage?
MEAsure:DEMod:CCPData?
MEAsure:DEMod:CONStLn?
MEAsure:OTA:MAPping?
MEAsure:OTA:MAPping:RUN STARt|STOP
MEAsure:OTA:MAPping:RUN?
MEAsure:OTA:SCANner?
MEAsure:OTA:TXTEst?
MEAsure:RF:ACLR?
MEAsure:RF:PVTIme?
MEAsure:RF:SEM?
MEAsure:RF:SPECTrum?
READ:DEMod:CONStLn?
READ:OTA:MAPping?
READ:OTA:SCANner?
READ:OTA:TXTEst?
READ:PFail?
READ:RF:ACLR?
READ:RF:PVTIme?
READ:RF:SEM?
READ:RF:SPECTrum?
TRIGger:SEQUence:SLOPe RISing|FALLing
TRIGger:SEQUence:SLOPe?
UNIT:POWer DBM|W
UNIT:POWer?
[:SENSe]:AVErage:FERRor:COUNt n
[:SENSe]:AVErage:FERRor:COUNt?

[:SENSe]:BANDWidth[:RESolution] 1.4|3|5|10|15|20
[:SENSe]:BANDWidth[:RESolution]?

[:SENSe]:EVM?
[:SENSe]:EVM:MAXHold ON|OFF
[:SENSe]:EVM:MAXHold?
[:SENSe]:EVM:MODe AUTO|PBCHonly
[:SENSe]:EVM:MODe?
[:SENSe]:EVM:RESet

[:SENSe]:FREQuency:CENTer <freq>
[:SENSe]:FREQuency:CENTer?

[:SENSe]:FREQuency:SIGStandard:CHANnel <number>
[:SENSe]:FREQuency:SIGStandard:CHANnel?
[:SENSe]:FREQuency:SIGStandard:NAMe [String]
[:SENSe]:FREQuency:SIGStandard:NAMe?

[:SENSe][:OTA]:MAPping:MEASurement SSSPower|RSRP|RSRQ|SINR
[:SENSe][:OTA]:MAPping:MEASurement?

[:SENSe][:OTA]:MAPping:SSSPower:THREShold “xx.x,xx.x,xx.x,xx.x,xx.x “
[:SENSe][:OTA]:MAPping:SSSPower:THREShold?

[:SENSe][:OTA]:MAPping:RSRP:THREShold “xx.x,xx.x,xx.x,xx.x,xx.x”
[:SENSe][:OTA]:MAPping:RSRP:THREShold?

[:SENSe][:OTA]:MAPping:RSRQ:THREShold “xx.x,xx.x,xx.x,xx.x,xx.x”
[:SENSe][:OTA]:MAPping:RSRQ:THREShold?

[:SENSe][:OTA]:MAPping:SINR:THREShold “xx.x,xx.x,xx.x,xx.x,xx.x”
[:SENSe][:OTA]:MAPping:SINR:THREShold?

[:SENSe][:OTA]:MAPping:POInts:DELete

[:SENSe][:OTA]:MAPping:RECall:MAP <filename>
[:SENSe][:OTA]:MAPping:RECall:MAP:DEFAult

[:SENSe][:OTA]:MAPping:REPeat:TYPe: TIMe|DISTance
[:SENSe][:OTA]:MAPping:REPeat:TYPe?

[:SENSe][:OTA]:MAPping:REPeat:TIMe <seconds>
[:SENSe][:OTA]:MAPping:REPeat:TIMe?

[:SENSe][:OTA]:MAPping:REPeat:DISTance <meters>
[:SENSe][:OTA]:MAPping:REPeat:DISTance?

[:SENSe][:OTA]:MAPping:SAVe:KML “<filename>”
[:SENSe][:OTA]:MAPping:SAVe:TEXT “<filename>”

[:SENSe][:OTA]:SORTby CELLid|GROUpid|SECTorid|SSSPower|RSRP|RSRQ|SINR
[:SENSe][:OTA]:SORTby?

[:SENSe]:POWer[:RF]:RANGe[:IMMediate]
[:SENSe]:POWer[:RF]:RANGe:AUTO {Boolean (default=1 [ON])}
[:SENSe]:POWer[:RF]:RANGe:AUTO?

[:SENSe]:RF:SPECtrum:SPAN Auto|1.4|3|5|10|15|20|30
[:SENSe]:RF:SPECtrum:SPAN?
[:SENSe]:SUBFrame <Sub-frame number 0-9>
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[:SENSe]:TRIGger? ............................................................................................................................. 15-30