For safety and warning information, please read this manual before attempting to use the equipment.

Additional safety and warning information is provided within the MS2690A/MS2691A/MS2692A Signal Analyzer Operation Manual (Mainframe Operation), MS2830A Signal Analyzer Operation Manual (Main Frame Operation), MS2840A Signal Analyzer Operation Manual (Main Frame Operation), or MS2850A Signal Analyzer Operation Manual (Main Frame Operation). Please also refer to them before using the equipment.

Keep this manual with the equipment.

ANRITSU CORPORATION
Safety Symbols

To prevent the risk of personal injury or loss related to equipment malfunction, Anritsu Corporation uses the following safety symbols to indicate safety-related information. Ensure that you clearly understand the meanings of the symbols BEFORE using the equipment. Some or all of the following symbols may be used on all Anritsu equipment. In addition, there may be other labels attached to products that are not shown in the diagrams in this manual.

Symbols used in manual

⚠️ **DANGER**  This indicates a very dangerous procedure that could result in serious injury or death if not performed properly.

⚠️ **WARNING**  This indicates a hazardous procedure that could result in serious injury or death if not performed properly.

⚠️ **CAUTION**  This indicates a hazardous procedure or danger that could result in light-to-severe injury, or loss related to equipment malfunction, if proper precautions are not taken.

Safety Symbols Used on Equipment and in Manual

The following safety symbols are used inside or on the equipment near operation locations to provide information about safety items and operation precautions. Ensure that you clearly understand the meanings of the symbols and take the necessary precautions BEFORE using the equipment.

- This indicates a prohibited operation. The prohibited operation is indicated symbolically in or near the barred circle.
- This indicates an obligatory safety precaution. The obligatory operation is indicated symbolically in or near the circle.
- This indicates a warning or caution. The contents are indicated symbolically in or near the triangle.
- This indicates a note. The contents are described in the box.
- These indicate that the marked part should be recycled.
Notes on Export Management

This product and its manuals may require an Export License/Approval by the Government of the product's country of origin for re-export from your country.

Before re-exporting the product or manuals, please contact us to confirm whether they are export-controlled items or not.

When you dispose of export-controlled items, the products/manuals need to be broken/shredded so as not to be unlawfully used for military purpose.
About This Manual

Associated Documents

The operation manual configuration of the MS2690A/MS2691A/MS2692A, MS2830A, MS2840A or MS2850A Signal Analyzer is shown below.
- Signal Analyzer Operation Manual (Mainframe Operation)
- Signal Analyzer Operation Manual (Mainframe Remote Control)  
  <This document>
  Description of basic operations, maintenance procedures, common functions and common remote functions of the mainframe

- Signal Analyzer Operation Manual (Signal Analyzer Function Operation)
- Signal Analyzer Operation Manual (Signal Analyzer Function Remote Control)  
  Description of basic operations, functions and remote functions of the signal analyzer

- Signal Analyzer Operation Manual (Spectrum Analyzer Function Operation)
- Signal Analyzer Operation Manual (Spectrum Analyzer Function Remote Control)  
  Description of basic operations, functions and remote functions of the spectrum analyzer

**Convention Used in This Manual**

Throughout this document, the use of MS269x Series is assumed unless otherwise specified. If using MS2830A, MS2840A, or MS2850A, change MS269xA to read MS2830A, MS2840A, or MS2850A.
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Chapter 1  Basics of Remote Control

This chapter provides an overview of the remote control of the MS2690A/MS2691A/MS2692A, MS2830A, MS2840A, or MS2850A Signal Analyzer.

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1.1 Overview

Automatic measurement can be performed in combination with an external controller (PC). The MS2690A/MS2691A/MS2692A, MS2830A, MS2840A, or MS2850A is equipped with GPIB, Ethernet and USB interfaces as standard. The following functions are supported via these interfaces:

- Control of all functions, except for the power switch
- Reading of all the status and settings
- Interrupts and serial polls

An overview of each interface is shown below:

(1) GPIB

The GPIB interface of the MS2690A/MS2691A/MS2692A, MS2830A, MS2840A, or MS2850A conforms to the IEEE488.1/IEEE488.2 standard. The interface functions shown below are supported:

- SH1, AH1, T6, L4, SR1, RL1, PP0, DC1, DT0, C0, E2

(2) Ethernet (1000BASE-T)

The Ethernet interface of the MS2690A/MS2691A/MS2692A, MS2830A, MS2840A, or MS2850A can be used as a remote control interface conforming to the VXI-11 protocol using TCP/IP. Control programs can be described using VISA software supporting the VXI-11 protocol. The interface functions shown below are supported:

- SH1, AH1, T6, L4, SR1, RL1, PP0, DC1, DT0, C0

In addition, the Ethernet interface can be controlled by a Raw Socket connection using TCP/IP. Control programs can be described by using the VISA software or a Telnet client supporting Raw Socket connections. Interrupt functions and serial port operation are not supported at Raw Socket connection.

(3) USB

The USB interface of the MS2690A/MS2691A/MS2692A, MS2830A, MS2840A, or MS2850A can be used as a remote control interface conforming to the USBTMC-USB488 protocol. Control programs can be described using VISA software supporting the USBTMC-USB488 protocol. The interface functions shown below are supported:

- SH1, AH1, T6, L4, SR1, RL1, PP0, DC1, DT0, C0
1.2 Connection

Connect the MS2690A/MS2691A/MS2692A, MS2830A, MS2840A, or MS2850A and an external controller (PC) to be used for remote control using the dedicated connector for the applicable interface on the rear panel. Connection cables are provided as additional parts with the MS2690A/MS2691A/MS2692A, MS2830A, MS2840A, or MS2850A.

![Diagram of connection](image)

**Figure 1.2-1** Connection port connecting to external controller (PC)
## 1.2 Connection

### 1.2.1 GPIB connection

Connect the GPIB connector on the rear panel of the MS2690A/MS2691A/MS2692A, MS2830A, MS2840A, or MS2850A and an external device using a GPIB cable.

**Note:**

Be sure to connect the GPIB cable before turning power on to the MS2690A/MS2691A/MS2692A, MS2830A, MS2840A, or MS2850A. Connecting it while the power is on may damage internal circuits.

Up to 15 devices, including the external controller (PC), can be connected into one unit. Be sure to abide by the conditions shown below when connecting devices.

![GPIB cable connection diagram](image)

*Figure 1.2.1-1  GPIB cable connection*
1.2.2 Ethernet connection

Connect the Ethernet connector on the rear panel and external devices using LAN cables.

**Note:**
Check the network settings before LAN connection. The destination LAN may be affected depending on settings.

Use a LAN crossover cable to connect the MS2690A/MS2691A/MS2692A, MS2830A, MS2840A, or MS2850A and an external device. Use a network hub when connecting to multiple external devices.

![Sample connection with one external device](image)

**Figure 1.2.2-1 Sample connection with one external device**

![Sample connection with multiple external devices](image)

**Figure 1.2.2-2 Sample connection with multiple external devices**

**Note:**
External devices may experience difficulty in communicating with the MS2690A/MS2691A/MS2692A, MS2830A, MS2840A, or MS2850A, depending on the status of communications between them. A LAN crossover-cable connection is recommended to ensure communication stability.
1.2.3 USB connection

Connect the USB (Remote) connector on the rear panel and external devices using USB cables. The external controller (PC) can be connected to multiple devices via a USB hub, etc.

![Sample connection with one external device](image1)

**Figure 1.2.3-1** Sample connection with one external device

![Sample connection with multiple external devices](image2)

**Figure 1.2.3-2** Sample connection with multiple external devices
1.3 Interface Settings

This section describes setting methods for the MS2690A/MS2691A/MS2692A, MS2830A, MS2840A, or MS2850A and the external controller (PC) for remote control. Connecting a mouse or keyboard may be required to perform settings.

1.3.1 GPIB interface settings

<Procedure>

1. Press the Configuration screen. Then press (Interface Settings) to display the Interface Settings tab window.

2. Change the GPIB primary address of the MS2690A/MS2691A/MS2692A, MS2830A, MS2840A, or MS2850A. Set a value in the range from 0 to 30 for Address in the GPIB Settings field.

   The Resource Name used during control program description by VISA is as shown below:

   When the GPIB primary address is 1:
   GPIB0::1::INSTR

3. Change the delimiter setting.

   Select “CR/LF,” “LF,” or “None (EOI only)” for Terminator in the Terminator Settings field.
1.3 Interface Settings

Figure 1.3.1-1 Interface Settings tab window
1.3.2 Ethernet interface settings

**<Procedure>**

1. Press \( \text{Menu} \) to display the Configuration screen. Then press \( \text{F1} \) (Interface Settings) to display the Interface Settings tab window.

2. The MS2690A/MS2691A/MS2692A, MS2830A, MS2840A, or MS2850A network settings can be checked and set.

   Check IP Address, Subnet Mask, and Host Name in the Ethernet Settings field. When changing the settings in Windows, follow the “How to change IP Address and Subnet Mask on Windows” procedure described on the next page. To set the IP Address, Subnet Mask, and Default Gateway at the Configuration screen, proceed after setting DHCP to Off.

   The Resource Name used during control program description by VISA is as shown below:

   When IP Address = 192.168.0.1:
   
   TCPIP::192.168.0.1::INSTR

3. Change the delimiter setting.

   Select “CR/LF,” “LF,” or “None (EOI only)” for Terminator in the Terminator Settings field.

4. Set the Raw Socket Port Number.

   At Raw Socket connection, set the Raw Socket Port Number of the Ethernet Settings.

   Setting range 1 to 65535
   Default 49153
   Resolution 1
1.3 Interface Settings

Figure 1.3.2-1 Interface Settings tab window
<How to change IP Address and Subnet Mask on Windows>
When the OS on MS2690A/MS2691A/MS2692A, MS2830A, MS2840A, or MS2850A is Windows XP
1. Connect a keyboard. Press the Windows key to open the Start menu and then click Control Panel. (Or connect a mouse and move the pointer to the bottom of the screen by using it to open the Start menu.) The Control Panel window is displayed.

2. On the Control Panel window, click Network Connections to display the Network Connections window. Then click Local Area Connection on the Network Connections window to display the Local Area Connection Properties window.
3. On the Local Area Connection Properties window, click Internet Protocol (TCP/IP) to display the Internet Protocol (TCP/IP) Properties window. Change the settings according to the connection conditions.

4. Check the changed settings on the Configuration screen.
When the OS on MS2690A/MS2691A/MS2692A, MS2830A, MS2840A, or MS2850A is Windows Embedded Standard 7

1. On the keyboard, press the Windows logo key, and then the Start button, and click Control Panel. In Control Panel, click Network and Sharing Center, and then click Change adapter settings.

2. Right-click Local Area Connection, and then click Properties.
3. In the **Local Area Connection Properties** dialog box, click **Internet Protocol Version 4 (TCP/IP)**, and then click **Properties**. In the **Internet Protocol Version 4 (TCP/IP) Properties** dialog box, change the settings according to the connection conditions.

4. In the Configuration screen, check that the settings have changed.
1.3.3 USB interface settings

<Procedure>

1. Press to display the Configuration screen. Then press (Interface Settings) to display the Interface Settings tab window.

2. Check Vendor ID, Product ID, and Serial Number displayed in the USB(B) Settings field. The Resource Name used during control program description by VISA is as shown below:

   When Vendor ID = 0x0B5B, Product ID = 0x0006, Serial Number = 123456789:
   
   USB0::0x0B5B::0x0006::123456789::INSTR


![Interface Settings tab window](image)

Figure 1.3.3-1 Interface Settings tab window
1.4 Interface Selection/Changing

The MS2690A/MS2691A/MS2692A, MS2830A, MS2840A, or MS2850A supports GPIB, Ethernet and USB as remote control interfaces. Only one of these can be used at once.

The interface to be used is determined automatically according to the communication start command received from the external controller (PC) while in Local status. It enters Remote status when the interface is determined. Remote on the front panel goes off in Local status and lights up in Remote status.

To change the interface, the MS2690A/MS2691A/MS2692A, MS2830A, MS2840A, or MS2850A must enter Local status again. Press Local on the front panel to enter Local status, then send a command via the desired interface.
1.5 Initialization

Initialization types and targets for the MS2690A/MS2691A/MS2692A, MS2830A, MS2840A, or MS2850A are shown in the table below.

<table>
<thead>
<tr>
<th>Item</th>
<th>IFC</th>
<th>DCL/SDC</th>
<th>Power On</th>
<th>*RST</th>
<th>*CLS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interface bus initialization</td>
<td>✓</td>
<td>–</td>
<td>✓</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>Message exchange initialization</td>
<td>–</td>
<td>✓</td>
<td>✓</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>• Input buffer and output queue</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Message processing and status</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>OPC status initialization</td>
<td>–</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Event status initialization</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td>Protected settings initialization</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(Calibration values, Correction values, OS settings, application load/execution status, etc.)</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>Initialization of settings saved at power-off</td>
<td>–</td>
<td>–</td>
<td>*</td>
<td>✓</td>
<td>–</td>
</tr>
<tr>
<td>Initialization of settings not saved at power-off (window status, measurement results, etc.)</td>
<td>–</td>
<td>–</td>
<td>✓</td>
<td>✓</td>
<td>–</td>
</tr>
</tbody>
</table>

*: Restores the settings from the last power-off.

(1) IFC (Interface Clear)
- Reception of control command IFC from external controller (PC) (GPIB)
- create_link request from external controller (PC) (Ethernet)
- Establishment of USB2.0 link (USB)
- Pressing of [Local] key

(2) DCL (Device Clear)/SDC (Selectable Device Clear)
- Reception of control command, DCL or SDC, from external controller (PC) (GPIB)
- device_clear request from external controller (PC) (Ethernet)
- Reception of INITIATE_CLEAR from external controller (PC) (USB)

(3) Power On
- Power-on of the MS2690A/MS2691A/MS2692A, MS2830A, MS2840A, or MS2850A

(4) *RST
- Reception of *RST command (GPIB/Ethernet/USB)

(5) *CLS
- Reception of *CLS command (GPIB/Ethernet/USB)
1.6 Language Mode

You can select a remote control command from *SCPI mode*, which is the command format defined by the Standard Commands for Programmable Instrumentation (SCPI) Consortium, and *Native mode*, which is our unique format.

- **SCPI Mode**
  This is a command format defined by the SCPI Consortium and enables control of instruments offered by various manufacturers following a common rule.

- **Native Mode**
  This is one of our unique command formats. The SCPI mode command is not compatible with some applications of this instrument. The Native mode enables remote control of the applications.

Follow the procedure shown below to initialize the language mode to the Native mode.

- Execute System Reset.
- Execute the system recovery function.
1.6.1 Language mode switching

The language mode can be switched by the configuration tab window or a remote command. Follow the procedure below in order to switch the mode on the Configuration screen.

<Procedure>

1. Press \( \text{(System Config)} \) to display the Configuration display. Next, press \( \text{(Interface Settings)} \) to display the Interface Settings screen.

2. Select Language of Remote Language Settings from either SCPI or Native.

```
Figure 1.6.1-1  Interface Settings tab window
```

The following command is used for changing into the SCPI mode, by using the remote command.

```
SYST:LANG SCPI
```

The following command is used for changing into the Native mode, by using the remote command.

```
:SYSTem:LANGuage NATive
```
1.6.2 How to use SCPI command by Native mode

Some functions of the applications of this instrument only support the SCPI commands. In order to enable remote control of the functions, convert the corresponding SCPI commands into the Native commands. The conversion rule is shown below.

Conversion rule
(1) Delete the numeric parameter in the program header of an SCPI command, and describe the argument corresponding to the numeric parameter as the first argument. If the argument can have only one numeric value and the argument can be omitted, omit it. Describe the argument if it cannot be omitted.
(2) Use the first one if multiple nodes can be selected.
(3) Delete those layers which can be deleted.
(4) Alter all long forms into short forms.
(5) Delete the colon mark ("\:" ) at the head.

Example 1
Convert :CALCulate:MARKer[1]|2[:SET]:CENTer into a Native command.

(1) Put a numeric parameter of the program header at the head of the argument.
>:CALCulate:MARKer[1]|2[:SET]:CENTer <freq>
↓
>:CALCulate:MARKer[:SET]:CENTer <integer>,<freq>
(1 or 2 can be entered into <integer>.)

(2) Delete the layers that can be deleted.
>:CALCulate:MARKer[:SET]:CENTer <integer>,<freq>
↓
>:CALCulate:MARKer:CENTer <integer>,<freq>

(3) Alter all long forms into short forms.
>:CALCulate::MARKer:CENTer <integer>,<freq>
↓
>:CALC:MARK:CENT <integer>,<freq>

(4) Delete the colon mark ("\:" ) at the head.
>:CALC:MARK:CENT <integer>,<freq>
↓
Example 2
Convert :DISPlay:WINDow[1]:TRACeY[:SCALe]:PDIVision <percent> into a Native command.

(1) Put a numeric parameter of the program header at the head of the argument.
   In this example, the numeric parameter should be deleted, since there is only one numeric parameter.
   :DISPlay:WINDow[1]:TRACeY[:SCALe]:PDIVision <percent> ↓
   :DISPlay:WINDow:TRACeY[:SCALe]:PDIVision <percent>

(2) Delete the layers that can be deleted
   :DISPlay:WINDow:TRACeY[:SCALe]:PDIVision <percent> ↓
   :DISPlay:WINDow:TRACeY:PDIVision <percent>

(3) Alter all long forms into short forms.
   :DISPlay:WINDow:TRACeY:PDIVision <percent> ↓
   :DISP:WIND:TRAC:Y:PDIV <percent>

(4) Delete the colon mark ("\:"") at the head.
   :DISP:WIND:TRAC:Y:PDIV <percent> ↓
   DISP:WIND:TRAC:Y:PDIV <percent>
Example 3
Convert [:SENSe]:BPOWer|:TXPower [:STATe]? into a Native command.

1. Use the leading one if multiple nodes can be selected.
   [:SENSe]:BPOWer|:TXPower [:STATe]?
   ↓
   [:SENSe]:BPOWer [:STATe]?

2. Delete the layers that can be deleted.
   [:SENSe]:BPOWer [:STATe]?
   ↓
   :BPOWer?

3. Alter all long forms into short forms.
   :BPOWer?
   ↓
   :BPOW?

4. Delete the colon mark ("":) at the head.
   :BPOW?
   ↓
   BPOW?
1.7 SCPI Device Message Details

1.7.1 SCPI Program message formats

Among all device messages, those that are transmitted from the external controller (PC) to the MS2690A/MS2691A/MS2692A, MS2830A, MS2840A, or MS2850A are called “program messages”. Program messages fall into two groups: program commands, which set or specify instrument parameters, and program queries, which request parameters and measurement results.

An example of transmitting a program message from the external controller (PC) program to the MS2690A/MS2691A/MS2692A, MS2830A, MS2840A, or MS2850A with a PRINT or any other statement is shown below.

Program Message

PRINT @1; "MEAS:ACP?"

Program Message Terminator

A program message, when transmitted from the external controller (PC) to this unit, is terminated by a specified terminator.

Program Message Terminator

CR (Carriage Return) is ignored without being processed as a terminator.
Program message

<Example>
PRINT @1; “CONF:ACP; READ:ACP?”

Multiple commands can be transmitted separately by separating them with semicolons (“;”).

Program message unit

Program data

Program header

Control header

Common command header
Control header

Short Form data corresponds to the short form of SCPI. Long Form data corresponds to the long form of SCPI. Refer to the character program data for each specification. The numeric data is specified as a single ASCII code byte indicating any value within the range of numeric data, from 0 to 9.0.

Common command header

The common command header is denoted by an asterisk (*) before the character program data.

Program data
Character program data

Defined strings of data are composed of any of the lowercase and uppercase alphanumeric characters A to Z and 0 to 9, and the underscore (“_”).

<Examples>
:SYSTem:BEEPer 0............................... Sets sound to off.

Numeric program data

Numeric program data is grouped into four types: integral (NR1), fixed-point decimal (NR2), floating-point decimal (NR3), and hexadecimal formats.

Integral (NR1)

- Integral data can have leading zeroes (e.g., 005, +005, −20).
- No space is allowed between a sign (+ or −) and the numeric value that follows it.
- The plus (“+”) sign can be omitted (e.g., 005, +005, −20).
Fixed-point decimal (NR2)

- An integer is represented in the integral part.
- No space is allowed between a digit and the decimal point that follows it.
- The plus (“+”) sign can be omitted.
- The digit 0 in the integral part may be omitted.
- Any number of zeroes, including none, may precede the numeric value in the integral part (e.g., −0.5, +00204, −5).
Floating-point decimal (NR3)

- E denotes the power of 10, or the exponent.
- Spaces are allowed both before and after, only before or only after E/e.
- A numeric value is required in the mantissa.
- Alternatively selectable numeric values (ex. 123) and character strings are unavailable.
- The plus (“+”) sign can be omitted (from both the mantissa and the exponent).

<Examples>
- \(-22.34E+6 \rightarrow -22.34 \times 10^6 (= -22,340,000)\)
- \(5.3e-4 \rightarrow 5.3 \times 10^{-4} (= 0.00053)\)
Hexadecimal data

Binary data
The table below lists the suffix data that is used in the MS2690A/MS2691A/MS2692A, MS2830A, MS2840A, or MS2850A. The suffix codes available vary depending on the function.

<table>
<thead>
<tr>
<th>Category</th>
<th>Suffix Code</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frequency</td>
<td>GHZ or GZ</td>
<td>GHz</td>
</tr>
<tr>
<td></td>
<td>MHZ or MZ</td>
<td>MHz</td>
</tr>
<tr>
<td></td>
<td>KHZ or KZ</td>
<td>kHz</td>
</tr>
<tr>
<td></td>
<td>HZ</td>
<td>Hz</td>
</tr>
<tr>
<td>Level</td>
<td>DB</td>
<td>dB</td>
</tr>
<tr>
<td></td>
<td>DBM or DM</td>
<td>dBm</td>
</tr>
<tr>
<td></td>
<td>DBMV</td>
<td>dBmV</td>
</tr>
<tr>
<td></td>
<td>DBUV or DBU</td>
<td>dBµV</td>
</tr>
<tr>
<td></td>
<td>DBUVE</td>
<td>dBµV (emf)</td>
</tr>
<tr>
<td></td>
<td>DBUVM</td>
<td>dBµV/m</td>
</tr>
<tr>
<td></td>
<td>W</td>
<td>W</td>
</tr>
<tr>
<td></td>
<td>MW</td>
<td>mW</td>
</tr>
<tr>
<td></td>
<td>UW</td>
<td>µW</td>
</tr>
<tr>
<td></td>
<td>NW</td>
<td>nW</td>
</tr>
<tr>
<td></td>
<td>PW</td>
<td>pW</td>
</tr>
<tr>
<td></td>
<td>FW</td>
<td>fW</td>
</tr>
<tr>
<td></td>
<td>V</td>
<td>V</td>
</tr>
<tr>
<td></td>
<td>MV</td>
<td>mV</td>
</tr>
<tr>
<td></td>
<td>UV</td>
<td>µV</td>
</tr>
<tr>
<td>Time</td>
<td>S</td>
<td>s</td>
</tr>
<tr>
<td></td>
<td>MS</td>
<td>ms</td>
</tr>
<tr>
<td></td>
<td>US</td>
<td>µs</td>
</tr>
<tr>
<td></td>
<td>NS</td>
<td>ns</td>
</tr>
<tr>
<td>Bit count</td>
<td>GBIT</td>
<td>Gbit</td>
</tr>
<tr>
<td></td>
<td>MBIT</td>
<td>Mbit</td>
</tr>
<tr>
<td></td>
<td>KBIT</td>
<td>kbit</td>
</tr>
<tr>
<td></td>
<td>BIT</td>
<td>bit</td>
</tr>
<tr>
<td>Angle</td>
<td>RAD</td>
<td>radian</td>
</tr>
<tr>
<td></td>
<td>DEG</td>
<td>degree</td>
</tr>
</tbody>
</table>
String program data

An arbitrary character string is enclosed by one pair of double quotation marks (“ ”) or single quotation marks (‘ ’). The characters that can be used vary depending on their function.

Logic program data

Logical program data indicates a logical value by the program data specified in SCPI. On/off of character program data and 1/0 of numeric program data are defined as values corresponding to true/false.
1.7.2 SCPI Response message formats

The formats in which the external controller (PC) transmits response messages from the MS2690A/MS2691A/MS2692A, MS2830A, MS2840A, or MS2850A by way of INPUT and other statements are described below.

A response message is composed of one or more response message units to one or more program queries issued with one PRINT statement.

Response unit has no header and only returns the data of the measurement data.
Chapter 1  Basics of Remote Control

Response data

- Character response data
- Numeric response data
- String response data

Character response data

Defined strings of data are composed of any of the lowercase and uppercase alphanumeric characters A to Z and the digits 0 to 9, and the underscore (“_”).

Numeric response data

Integer (NR1)

- The leading digit must be non-zero.
  - Examples>
  - 123, -1234
Fixed-point decimal (NR2)

- The leading digit must be non-zero.
- A fixed-point decimal number having a value of 0 in its decimal place is output as an integer.

<Examples>
12.34, −12.345

Hexadecimal data

Binary data
String response data

ASCII character other than a double quotation mark
### 1.7.3 Structure of SCPI command

The SCPI commands are based on a layered structure. The commands are grouped according to their related functions, and each of them has a layer structure called a "sub-system".

![Example of SCPI command tree](image)

Although the same header may be in the commands, it corresponds to each function, according to the position of the header. Therefore, the commands need to be described with all the headers available on the full path.
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1.7.4 Command definition method

The command tree in the previous page comprises the SCPI commands listed above. Overviews of the SCPI command definitions are shown below.

<Command Format>
The command starts with a colon (":"), and the commands are configured by consolidating a header with a header by a colon (":").

<Omission format of header>
The headers have both a short and a long form, the short form being an abbreviated version of the long form. The commands are interpreted as being the same, regardless of whether the short or long form is used (both can be used at the same time). Uppercase and lower case alphabetic characters are used in this manual to distinguish between the short and long forms. (Uppercase letters denote the short form.) It should be noted that the headers are not case sensitive.

Example:
long form   > :SENSe:FREQuency:CENTer 1000000
short form  > :SENS:FREQ:CENT 1000000
long + short form > :SENSe:FREQ:CENTer 1000000

<Option Node>
[ ] indicates an Option Node.
A header enclosed by square brackets ("["]") may be omitted, and is treated as the same command whether omitted or not.

Example:
"STATus:OPERation:[EVENt]?
When the header is not omitted   > :STATus:OPERation:EVENt?
When the header is omitted      > :STATus:OPERation?
There must be at least one space between a command and a parameter. Furthermore, if there is more than one parameter, they need to be separated by commas.

### 1.7.5 Composition of commands

As in the following examples, commands can be combined by a semi-colon (";"). The second command is referred to as the same level as the bottom layer of the first command. Thus, the second command can be described as in Example 1, or can be described without the upper header over FREQency, as in Example 2.

**Example 1:**

```
>:SENSe:FREQuency:CENTER 1000000
:SENSe:FREQuency:SPAN 500000
```

**Example 2:**

```
>:SENSe:FREQuency:CENTER 1000000;SPAN 500000
```
1.8 Native Device Message Details

1.8.1 Native Program message formats

Among all device messages, those that are transmitted from the external controller (PC) to the MS2690A/MS2691A/MS2692A, MS2830A, MS2840A, or MS2850A are called “program messages”. Program messages fall into two groups: program commands, which set or specify instrument parameters, and program queries, which request parameters and measurement results.

An example of transmitting a program message from the external controller (PC) program to the MS2690A/MS2691A/MS2692A, MS2830A, MS2840A, or MS2850A with a PRINT or any other statement is shown below.

A program message, when transmitted from the external controller (PC) to this unit, is terminated by a specified terminator.

CR (Carriage Return) is ignored without being processed as a terminator.
Program message

Multiple commands can be transmitted separately by separating them with semicolons (\;).

Program message unit

The program header of each IEEE488.2 common command begins with an asterisk (\*). The program header of each program query (query) generally ends with a question mark (?).

Program data

Defined strings of data are composed of any of the alphabetical lower-case and upper-case characters A to Z, the digits 0 through 9, and the underscore (\_).

Character program data

\textit{<Examples>}
\begin{itemize}
  \item \texttt{LOAD S...} \hspace{1em} Loads the Signal Analyzer.
  \item \texttt{SOUND 0 ...} \hspace{1em} Sets sound to Off.
\end{itemize}
Numeric program data

Numeric program data is grouped into four types: integral (NR1), fixed-point decimal (NR2), floating-point decimal (NR3), and hexadecimal.

### Integral (NR1)
- Integral data can have leading zeroes (e.g., 005, +005).
- No space is allowed between a sign (+ or −) and the numeric value that follows it.
- The “+” sign can be omitted (e.g., 005, +005, −20).

### Fixed-point decimal (NR2)
- An integer is represented in the integral part.
- No space is allowed between a digit and the decimal point that follows it.
- The “+” sign can be omitted.
- The digit 0 in the integral part may be omitted.
- Any number of zeroes may precede the numeric value in the integral part (e.g., −0.5, +00204, −5).
Floating-point decimal (NR3)

- E denotes the power of 10, or the exponent.
- Spaces are allowed both before and after, only before or only after E/e.
- A numeric value is required in the mantissa.
- Alternatively selectable numeric values (ex. 1|2) and character strings are unavailable.
- The “+” sign can be omitted (from both the mantissa and exponent).

<Examples>
- \(-22.34E+6 \rightarrow -22.34 \times 10^6 (= -22,340,000)\)
- \(5.3e-4 \rightarrow 5.3 \times 10^{-4} (= 0.00053)\)
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Hexadecimal data

Binary data
The table below lists the suffix data that is used.
The suffix codes available vary depending on the function.

### Table 1.8.1-1  Suffix codes

<table>
<thead>
<tr>
<th>Category</th>
<th>Suffix Code</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frequency</td>
<td>GHZ or GZ</td>
<td>GHz</td>
</tr>
<tr>
<td></td>
<td>MHZ or MZ</td>
<td>MHz</td>
</tr>
<tr>
<td></td>
<td>KHZ or KZ</td>
<td>kHz</td>
</tr>
<tr>
<td></td>
<td>HZ</td>
<td>Hz</td>
</tr>
<tr>
<td>Level</td>
<td>DB</td>
<td>dB</td>
</tr>
<tr>
<td></td>
<td>DBM or DM</td>
<td>dBm</td>
</tr>
<tr>
<td></td>
<td>DBMV</td>
<td>dBmV</td>
</tr>
<tr>
<td></td>
<td>DBUV or DBU</td>
<td>dBµV</td>
</tr>
<tr>
<td></td>
<td>DBUVE</td>
<td>dBµV(emu)</td>
</tr>
<tr>
<td></td>
<td>DBUVN</td>
<td>dBµV/m</td>
</tr>
<tr>
<td></td>
<td>W</td>
<td>W</td>
</tr>
<tr>
<td></td>
<td>MW</td>
<td>mW</td>
</tr>
<tr>
<td></td>
<td>UW</td>
<td>µW</td>
</tr>
<tr>
<td></td>
<td>NW</td>
<td>nW</td>
</tr>
<tr>
<td></td>
<td>PW</td>
<td>pW</td>
</tr>
<tr>
<td></td>
<td>FW</td>
<td>fW</td>
</tr>
<tr>
<td></td>
<td>V</td>
<td>V</td>
</tr>
<tr>
<td></td>
<td>MV</td>
<td>mV</td>
</tr>
<tr>
<td></td>
<td>UV</td>
<td>µV</td>
</tr>
<tr>
<td>Time</td>
<td>S</td>
<td>s</td>
</tr>
<tr>
<td></td>
<td>MS</td>
<td>ms</td>
</tr>
<tr>
<td></td>
<td>US</td>
<td>µs</td>
</tr>
<tr>
<td></td>
<td>NS</td>
<td>ns</td>
</tr>
<tr>
<td>Bit count</td>
<td>GBIT</td>
<td>Gbit</td>
</tr>
<tr>
<td></td>
<td>MBIT</td>
<td>Mbit</td>
</tr>
<tr>
<td></td>
<td>KBIT</td>
<td>kbit</td>
</tr>
<tr>
<td></td>
<td>BIT</td>
<td>bit</td>
</tr>
<tr>
<td>Angle</td>
<td>RAD</td>
<td>radian</td>
</tr>
<tr>
<td></td>
<td>DEG</td>
<td>degree</td>
</tr>
</tbody>
</table>
String program data

Arbitrary character string enclosed by one pair of “ ” (double quotation marks) or ‘ ’ (single quotation marks). The characters that can be used vary depending on the function.
1.8.2 Native Response message formats

The formats in which the external controller (PC) transmits response messages from the MS2690A/MS2691A/MS2692A, MS2830A, MS2840A, or MS2850A by way of INPUT and other statements are described below.

A response message is composed of one or more response message units to one or more program queries issued with one PRINT statement.

Use a TRM command to specify the terminator format.
Chapter 1  Basics of Remote Control

Response data

- Character response data
  - Defined strings of data are composed of any of the alphabetical lower case and upper case characters A to Z, the digits 0 through 9, and the underscore (_).

- Numeric response data
  - Integer (NR1)
    - The leading digit must be non-zero.
    - <Examples>
      - 123, -1234
1.8 Native Device Message Details

Fixed-point decimal (NR2)

- The leading digit must be non-zero.
- A fixed-point decimal number having a value of 0 in its decimal place is output as an integer.

<Examples>
12.34, −12.345

Hexadecimal data

Binary data
String response data
1.9 Status Structure

The Status Byte (STB) that is transmitted to the external controller (PC) complies with the IEEE488.1 standard. Its bit string, called a “status summary message,” provides summary information about the current data placed in a register or queue.

1.9.1 IEEE488.2 standard status model

The standard model of the status structure defined by IEEE488.2 is shown below.

![IEEE488.2 standard status model](image)
In the status model, an IEEE488.1 status byte is used as the lowest-level status, which consists of seven summary message bits that are supplied from an upper status structure. The status data structure is organized into a register model and a queue model to generate these summary message bits.

**Table 1.9.1-1  Register model and queue model**

<table>
<thead>
<tr>
<th>Register model</th>
<th>Queue model</th>
</tr>
</thead>
<tbody>
<tr>
<td>A set of registers used to keep a record of the events and conditions that have been encountered in the device. Its structure is built of an Event Status register and an Event Status Enable register. If their AND operation results in non-zero, the corresponding bit of the status byte is set to 1; otherwise, it is set to 0. If their OR operation results in 1, the corresponding summary bit is set to 1; otherwise, it is set to 0.</td>
<td>A queue used to keep a sequential record of status or information. In the queue structure, a bit is set to 1 only if data exists at the corresponding position in the queue; otherwise, a bit is 0.</td>
</tr>
</tbody>
</table>

On the basis of the register model and the queue model thus described, the standard model in the IEEE488.2 status data structure is assembled of two kinds of register models and one queue model.

<1> Standard Event Status register and Standard Event Status Enable register

<2> Status Byte register and Service request Enable register

<3> Output queue

**Table 1.9.1-2  Register models and queue model of IEEE488.2 standard status**

<table>
<thead>
<tr>
<th>Standard Event Status Register</th>
<th>Status Byte Register</th>
<th>Output Queue</th>
</tr>
</thead>
<tbody>
<tr>
<td>The Standard Event Status register is structured in the register model described above. Among all the events that the device may encounter, this register holds bits that represent eight kinds of standard events: &lt;1&gt; power-on, &lt;2&gt; user request, &lt;3&gt; command error, &lt;4&gt; execution error, &lt;5&gt; device-dependent error, &lt;6&gt; query error, &lt;7&gt; bus control request, and &lt;8&gt; operation complete. Bit6 (DIO6) of the Status Byte Register works as an OR output bit to report an Event Summary Bit (ESB) summary message.</td>
<td>The Status Byte register holds an RQS bit seven summary message bits from the status data structure. Bit6 (DIO7) of the Service Request Enable register is system-reserved as an RQS bit to report a service request to the external controller. The mechanism of this SRQ conforms to the specifications of IEEE488.1.</td>
<td>The Output Queue is structured in the queue model described above. Bit4 (DIO5) of the Status Byte Register works as a Message Available (MAV) summary message to report the availability of data in the output buffer.</td>
</tr>
</tbody>
</table>
1.9.2 Status Byte (STB) register

The STB register consists of an STB device and an RQS (or MSS) message.

(1) ESB and MAV summary messages
The ESB and MAV summary messages are described below.

ESB summary message
The ESB (Event Summary Bit) summary message is a message defined by IEEE488.2. It is reported by STB register bit5. The ESB summary message is set to 1 when any one of the bits registered in the Standard Event Status register is set to 1 where event occurrence is enabled. The ESB summary bit is, in turn, set to 0 when none of the events registered in the Status Event Status register occur where event occurrence is enabled.

MAV summary message
The MAV (Message Available) summary message is a message defined by IEEE488.2. It is reported by STB register bit4. This bit indicates whether the output queue is empty. It is used by the device to synchronize message exchanges with the external controller (PC). For example, the external controller (PC) might transmit a query command to the device and wait for MAV to be set to 1. If reading from the output queue is begun without first checking MAV, all system bus actions are deferred until the device responds.
1.9.3 SCPI Device-dependent summary messages

The structure of the status byte register is as shown below when the SCPI mode is selected.

![Diagram of Status Byte Register in SCPI Mode]

Figure 1.9.3-1 Status byte register in SCPI mode
1.9.4 Native Device-dependent summary messages

When language mode is Native, in addition to the Status Bite Register defined by IEEE488.2, Extended Event Status Bits (EESB) are defined individually. EESB 0 to 3 are used as summary bits for application-specific Extended Event Status registers.

EESB 3 and EESB 2 correspond to the extended event status of the main applications of the MS2690A/MS2691A/MS2692A, MS2830A, MS2840A, or MS2850A (Signal Analyzer, Spectrum Analyzer, etc.) while EESB 1 and EESB 0 correspond to the extended event status of other sub applications (Signal Generator, etc.).
Figure 1.9.4-1 Status byte register in Native mode
1.9 Status Structure

1.9.5 Reading and clearing STB register

The STB register is read by serial polling or by using an *STB? query. Either way, an STB message as defined by IEEE488.1 is read, but the value that is transmitted to bit6 (position) varies with each method used. The STB register can be cleared using the *CLS command.

Use Serial Polling to read STB register

If serial polling is implemented under IEEE488.1, a 7-bit status byte and an RQS message bit based on IEEE488.1 are returned. Serial polling does not alter the value of the status byte. The device will set the RQS message bit to 0 immediately on polling.

Use an *STB Common Query to read STB register

Issuing an *STB common query causes the device to transmit a response message, in the integer format, comprising the MSS (Master Summary Status) message in the STB register. Hence, a response to *STB? matches one to serial polling, except that an MSS summary message appears at the bit6 position, instead of an RQS message.

Define *MSS (Master Summary Status)

The MSS message indicates that the device has at least one service request condition. The MSS message appears at the bit6 position as a device response to an *STB query, but not as a response to serial polling. It must not be viewed as part of the IEEE488.1 status byte. MSS consists of total OR which is the combination of the bits of the STB register and the SRQ Enable (SRE) register with one another.

Use the *CLS Common Command to clear STB register

The *CLS common command clears the entire status structure and also summary messages responding to it. The execution of *CLS does not affect the settings of the enable registers.
1.9.6 Service Request (SRQ) enable operation

Bits 0 to 7 of the Service Request Enable (SRE) register control whether the corresponding bits of the STB register will generate an SRQ. The SRB register bits are associated with the STB register bits. If the STB register bit associated with a SRE register bit that is 1 is set to 1, the device sets the RQS bit to 1, issuing a service request to the external controller (PC).

![Figure 1.9.6-1 Service Request (SRQ) enable operation](image)

**Read from SRE register**

The SRE register is read using an *SRE? common query. A response message to this query is given as an integer between 0 and 255, equaling the sum of the values of the SRE register bits.

**Update SRE register**

The SRE register is written to using an *SRE common command with an integer between 0 and 255 as a parameter and with the SRE register bits being set to 0 or 1. The value of bit6 is ignored.
### 1.9.7 Standard Event Status register model

Bit definitions of Standard Event Status register

The operations of the Standard Event Status register are shown below.

```
<table>
<thead>
<tr>
<th>bit</th>
<th>Event name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>7</td>
<td>Power on (PON)</td>
<td>Power transition from Off to On</td>
</tr>
<tr>
<td>6</td>
<td>Not used</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Command error (CME)</td>
<td>Device message with illegal header received</td>
</tr>
<tr>
<td>4</td>
<td>Execution error (EXE)</td>
<td>Device message with illegal parameter received or the executed function has not completed normally</td>
</tr>
<tr>
<td>3</td>
<td>Device-dependent error (DDE)</td>
<td>Error caused by a condition other than CME, EXE, and QYE</td>
</tr>
<tr>
<td>2</td>
<td>Query error (QYE)</td>
<td>Attempt to read data from the output queue when it is empty or queued data lost before it is read</td>
</tr>
<tr>
<td>1</td>
<td>Not used</td>
<td></td>
</tr>
<tr>
<td>0</td>
<td>Operation complete (OPC)</td>
<td>Set to 1 when the MS2690A/MS2691A/MS2692A, MS2830A, MS2840A, or MS2850A has processed the *OPC command.</td>
</tr>
</tbody>
</table>
```
1.9.8 Standard Event Status register operation

The operation methods for the Standard Event Status registers and Standard Event Status Enable registers are shown in the table below.

<table>
<thead>
<tr>
<th>Register</th>
<th>Operation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standard Event Status register</td>
<td><strong>Read</strong> This register is read using an *ESR? common query.</td>
</tr>
<tr>
<td></td>
<td><strong>Write</strong> This register cannot be written externally.</td>
</tr>
<tr>
<td></td>
<td><strong>Clear</strong> This register is cleared when:</td>
</tr>
<tr>
<td></td>
<td>1. The *CLS command is received.</td>
</tr>
<tr>
<td></td>
<td>2. The power is turned on (bit7 is turned on, with all other bits being</td>
</tr>
<tr>
<td></td>
<td>cleared to 0).</td>
</tr>
<tr>
<td></td>
<td>3. An event is read in response to an *ESR? query command.</td>
</tr>
<tr>
<td>Standard Event Status Enable</td>
<td><strong>Read</strong> This register is read using an *ESE? common query.</td>
</tr>
<tr>
<td>Enable register</td>
<td><strong>Write</strong> This register is written to using an *ESE common command.</td>
</tr>
<tr>
<td></td>
<td><strong>Clear</strong> This register is cleared when:</td>
</tr>
<tr>
<td></td>
<td>1. An *ESE command with a data value of 0 is received.</td>
</tr>
<tr>
<td></td>
<td>2. The power is turned on.</td>
</tr>
</tbody>
</table>

1.9.9 SCPI Specification Status register

The following registers are available, in addition to the status register specified in IEEE488.2 by the specification of SCPI in the SCPI mode.

<table>
<thead>
<tr>
<th>Register</th>
<th>Operation</th>
</tr>
</thead>
<tbody>
<tr>
<td>QUESTIONable Status</td>
<td>Reports the status of signals such as measurement results. It is used</td>
</tr>
<tr>
<td>register</td>
<td>to require service to external controller when an error occurs. It is not</td>
</tr>
<tr>
<td></td>
<td>used in this instrument.</td>
</tr>
<tr>
<td>OPERation Status</td>
<td>Reports some of the statuses of this instrument.</td>
</tr>
<tr>
<td>register</td>
<td></td>
</tr>
</tbody>
</table>
The SCPI specification status register has the following configuration.

### Figure 1.9.9-1 Configuration of SCPI Specification Status Register

### Table 1.9.9-2 SCPI Specification Status register configurations

<table>
<thead>
<tr>
<th>Register - Filter</th>
<th>Operation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Condition Register</td>
<td>Monitors device status and changes depending on the device status. Therefore, this register does not store the status.</td>
</tr>
<tr>
<td>Transition Filter</td>
<td>Sets the contents of the condition register to the event register. The transition filter has the three types shown below, according to what change of the condition register is measured.</td>
</tr>
<tr>
<td></td>
<td>(1) Positive direction change The event becomes true only when the corresponding condition changes false into true.</td>
</tr>
<tr>
<td></td>
<td>(2) Negative direction change The event becomes true only when the corresponding condition changes from true into false.</td>
</tr>
<tr>
<td></td>
<td>(3) Both direction change The event becomes true when a change in either the positive or negative direction is present.</td>
</tr>
<tr>
<td>Event Register</td>
<td>Stores the output of transition filter.</td>
</tr>
<tr>
<td>Event Enable Register</td>
<td>Selects which bit of the corresponding event register is used to set the summary message to true when set to 1.</td>
</tr>
</tbody>
</table>
1.9.10 SCPI specification status register operation

How to operate the SCPI specification status register and error/event queue is shown below.

<table>
<thead>
<tr>
<th>Register</th>
<th>Operation</th>
</tr>
</thead>
</table>
| SCPI event register             | **Read**  `STATus::EVENt?`<br>This register is read using a query.*  
| (Main Application)              | **Write**  This register cannot be written externally.                      |
|                                 | **Clear**  This register is cleared when:<br>(1) *CLS command is received.  
|                                 | (2) The power is On.                                                   
|                                 | (3) An event is read in response to `STATus::EVENt?` Query command.*    
|                                 | (4) A language mode is switched.                                       |
| SCPI enable register            | **Read**  `STATus::ENABle?`<br>This register is read by using a query.*  
| (Main Application)              | **Write**  This register is written by using a command.*                |
|                                 | **Clear**  This register is cleared when:<br>(1) `STATus::PRESet` command is received.  
|                                 | (2) The power is On.                                                   
|                                 | (3) `STATus::ENABle 0` command is received.*                           
|                                 | (4) A language mode is switched.                                       |

*: The target applications need to be specified by Application Switch as the control targets.
### 1.9 Status Structure

#### Table 1.9.10-1  SCPI Status register operation (Cont’d)

<table>
<thead>
<tr>
<th>Register</th>
<th>Operation</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>SCPI Transition Filter</strong></td>
<td><strong>Read</strong></td>
</tr>
</tbody>
</table>
| (Main Application)         | \`:STATus:...:PTransiton?\`
|                           | \`:STATus:...:NTransiton?\`
|                           | This register is read using a query.* |
| **Write**                  | \`:STATus:...:PTransiton\`
|                           | \`:STATus:...:NTransiton\`
|                           | This register is written using a command.* |
| **Clear**                  | This register is cleared when: |
|                           | (1) \`:STATus:PRESet` command is received. |
|                           | (2) The power is on. |
|                           | (3) \`:STATus:...:PTransiton 0` command is received.* |
|                           | (4) A language mode is switched. |
| **Error/Event Queue**      | **Read**  |
| (Main Application)         | \`:SYSTem:ERRor?\`
|                           | This register is read using a query.* |
| **Write**                  | This register cannot be written externally. |
| **Clear**                  | This register is cleared when: |
|                           | (1) \`*CLS` command is received. |
|                           | (2) The power is on. |
|                           | (3) An event is read in response to \`:SYSTem:ERRor?` Query command. |
|                           | (4) A language mode is switched. |

*: The target applications need to be specified by Application Switch as the control targets.

The values after the register and filter influenced by \`:STATus:PRESet` have been reset are shown in the following table.

**Table 1.9.10-2  Values after the register and filter influenced by \`:STATus:PRESet` have been reset.**

<table>
<thead>
<tr>
<th>Register</th>
<th>Enable Filter</th>
<th>Reset Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>OPERational Status Register</td>
<td>Enable Register</td>
<td>All 0</td>
</tr>
<tr>
<td>QUESTionable Status Register</td>
<td>PTransiton Filter</td>
<td>All 1</td>
</tr>
<tr>
<td></td>
<td>NTransiton Filter</td>
<td>All 0</td>
</tr>
</tbody>
</table>
1.9.11 Extended Event Status register

When language mode is Native, each application operating on the MS2690A/MS2691A/MS2692A, MS2830A, MS2840A, or MS2850A has a unique Extended Event Status register and Extended Event Status Enable register. Only the statuses specified to be controllable in the Application Switch menu can be read.

The Extended Event Status register of each application transmits summary messages to EESB 0 to EESB 3 of the Status Byte register. Events that occur simultaneously in up to nine applications can be detected by service requests.

Applications are roughly classified into main applications (Signal Analyzer, Spectrum Analyzer, etc.) mainly for RF signal analysis, and other Sub Applications (Signal Generator, etc.).

The Extended Event Status register of the Main Application specified as the control target in the Application Switch menu can be read. The summary messages are transmitted to EESB 3 and EESB 2 of the Status Byte register.

Of the eight Extended Event Status registers of the Sub Applications, only those specified as control targets in the Application Switch menu can be read. The summary messages are transmitted to the summary register, and its logical sum is then transmitted to EESB 1 and EESB 0 of the Status Byte register.
Figure 1.9.11-1  Extended event status register model
1.9.12 Extended Error Event Status register (Main Application)

The operation model of the Extended Error Event Status registers for the Main Applications is shown below.

Main Application indicates an application mainly with RF signal analysis functionality (Signal Analyzer, Spectrum Analyzer, etc.). Only the Extended Error Event Status register and the Extended Error Event Status Enable register of the applications specified as control targets in the Application Switch menu can be read.

Figure 1.9.12-1  Extended Error Event Status register (Main Application)

The Extended Error Event Status Enable register (on the left of the figure above) specifies which bit of the Event Status register will cause a summary message to become true when it is set.

The specifications of the Extended Error Event Status register (on the right in the figure above) vary depending on the application. Refer to the Operation Manual (Remote Control) of each application for details.

The summary message of this register is transmitted to EESB 3 of the Status Byte register.

<Program example>
To create a service request when error event 0 of the Spectrum Analyzer function occurs:

```
SYS SPECT
*SRE 8
ESE3 1
```

Specifies the Spectrum Analyzer as the control target.

Enables bit3 of the Service Request Enable register.

Enables bit0 of the Extended Error Event Status Enable register of the main application.
1.9.13 Extended End Event Status register (Main Application)

The operation model of the Extended End Event Status registers of Main Applications is shown below.

Main application indicates an application mainly with RF signal analysis functionality (Signal Analyzer, Spectrum Analyzer, etc.). Only the Extended End Event Status register and the Extended End Event Status Enable register of the applications specified as control targets in the Application Switch menu can be read.

![Diagram](image)

Figure 1.9.13-1  Extended End Event Status register (Main Application)

The Extended End Event Status Enable register (on the left of the figure above) specifies which bit of the Event Status register will cause a summary message to become true when it is set.

The specifications of the Extended End Event Status register (on the right in the figure above) vary depending on the application. Refer to the Operation Manual (Remote Control) of each application for details.

The summary message of this register is transmitted to EESB 2 of the Status Byte register.

*Program example*

To create a service request when end event 0 of the Spectrum Analyzer function occurs:

```
SYS SPECT ; Specifies the Spectrum Analyzer as the control target.
*SRE 4     ; Enables bit2 of the Service Request Enable register.
ESE2 1     ; Enables bit0 of the Extended End Event Status Enable register of the main application.
```
1.9.14 Extended Error Event Status register (Sub Applications)

The operation model of the Extended Error Event Status registers for Sub Applications (an example with Application a) is shown below.

Sub Application indicates an application other than the Main Applications (Signal Generator, etc.). Only the Extended Error Event Status register and the Extended Error Event Status Enable register of the applications specified as control targets in the Application Switch menu can be read. The summary register that sums up the logical OR of Sub Application event registers can be read regardless of whether the application is specified as a control target or not.

![Diagram of Extended Error Event Status register (Sub Application a)](image)

The Extended Error Event Status Enable register (on the left of the figure above) specifies which bit of the Event Status register will cause a summary message to become true when it is set.

**Fig 1.9.14-1  Extended Error Event Status register (Sub Application a)**

The Extended Error Event Status Enable register (on the left of the figure above) specifies which bit of the Event Status register will cause a summary message to become true when it is set.
The specifications of the Extended Error Event Status register (on the right in the figure above) vary depending on the application. Refer to the Operation Manual (Remote Control) of each application for details.

The summary message of this register is transmitted to EESB 1 of the Status Byte register.

<Program example>
To create a service request when error event 0 of the Signal Generator function (Application a) occurs:

```
SYS SG ; Specifies the Signal Generator as the control target.
*SRE 2 ; Enables bit1 of the Service Request Enable register.
ESE1 1 ; Enables bit0 of the Extended Error Event Status Summary register of the sub application.
ESEERR 1 ; Enables bit0 of the Extended Error Event Status Enable register of the sub application.
```
1.9.15 Extended End Event Status register (Sub Applications)

The operation model of the Extended End Event Status registers of Sub Applications (an example with Application a) is shown below.

Sub Application indicates an application other than the main applications (Signal Generator, etc.). Only the Extended End Event Status register and the Extended End Event Status Enable register of the applications specified as control targets in the Application Switch menu can be read. The summary register that sums up the logical OR of Sub Application event registers can be read regardless of whether the application is specified as a control target or not.

![Figure 1.9.15-1 Extended End Event Status register (Sub Application a)](image)

The Extended End Event Status Enable register (on the left of the figure above) specifies which bit of the Event Status register will cause a summary message to become true when it is set.
The specifications of the Extended End Event Status register (on the right in the figure above) vary depending on the application. Refer to the Operation Manual (Remote Control) of each application for details.

The summary message of this register is transmitted to EESB 0 of the Status Byte register.

<Program example>
To create a service request when end event 0 of the Signal Generator function (Application a) occurs:

```
SYS SG ; Specifies the Signal Generator as the control target.
*SRE 1 ; Enables bit0 of the Service Request Enable register.
ESE0 1 ; Enables bit0 of the Extended End Event Status Summary register of the sub application.
ESEEND 1 ; Enables bit0 of the Extended End Event Status Enable register of the sub application.
```
1.9.16 Extended Event Status register operation

The operation methods for the Extended Event Status registers and Extended Event Status Enable registers are shown in the table below.

### Table 1.9.16-1  Extended Event Status register operation

<table>
<thead>
<tr>
<th>Register</th>
<th>Operation</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Extended Error Event Status Register</strong></td>
<td><strong>Read</strong></td>
</tr>
<tr>
<td>(Main Application)</td>
<td>This register is read using an ESR3? query.*</td>
</tr>
<tr>
<td><strong>Write</strong></td>
<td>This register cannot be written externally.</td>
</tr>
<tr>
<td><strong>Clear</strong></td>
<td>This register is cleared when:</td>
</tr>
<tr>
<td></td>
<td>&lt;1&gt; The *CLS command is received.</td>
</tr>
<tr>
<td></td>
<td>&lt;2&gt; The power is turned on.</td>
</tr>
<tr>
<td></td>
<td>&lt;3&gt; An event is read in response to an ESR3? query command.*</td>
</tr>
<tr>
<td></td>
<td>&lt;4&gt; When the language mode has been switched.</td>
</tr>
<tr>
<td><strong>Extended Error Event Status Enable Register</strong></td>
<td><strong>Read</strong></td>
</tr>
<tr>
<td>(Main Application)</td>
<td>This register is read using an ESE3? query.*</td>
</tr>
<tr>
<td><strong>Write</strong></td>
<td>This register is written to using an ESE3 command.*</td>
</tr>
<tr>
<td><strong>Clear</strong></td>
<td>This register is cleared when:</td>
</tr>
</tbody>
</table>
|                                               | <1> An ESE3 command with a data value of 0 (i.e.,  
|                                               | ESE3 0) is received.*                        |
|                                               | <2> The power is turned on.                   |
|                                               | <4> When the language mode has been switched. |
| **Extended End Event Status Register**        | **Read**                                      |
| (Main Application)                            | This register is read using an ESR2? query.*  |
| **Write**                                     | This register cannot be written externally.   |
| **Clear**                                     | This register is cleared when:                |
|                                               | <1> The *CLS command is received.             |
|                                               | <2> The power is turned on.                   |
|                                               | <3> An event is read in response to an ESR2? query command.* |
|                                               | <4> When the language mode has been switched. |
| **Extended End Event Status Enable Register** | **Read**                                      |
| (Main Application)                            | This register is read using an ESE2? query.*  |
| **Write**                                     | This register is written to using an ESE2 command.* |
| **Clear**                                     | This register is cleared when:                |
|                                               | <1> An ESE2 command with a data value of 0 (i.e.,  
|                                               | ESE2 0) is received.*                        |
|                                               | <2> The power is turned on.                   |
|                                               | <3> When the language mode has been switched. |

*: The application must be specified as a control target in the Application Switch menu.
### Table 1.9.16-1  Extended Event Status register operation (Cont’d)

<table>
<thead>
<tr>
<th>Register</th>
<th>Operation</th>
</tr>
</thead>
</table>
| **Extended Error Event Status Summary Register (Sub Application)** | **Read**  
This register is read using an ESR1? query.  
**Write**  
This register cannot be written externally.  
**Clear**  
This register is cleared when:  
<1> The *CLS command is received.  
<2> The power is turned on.  
<3> An event is read in response to an ESR1? query command.  
<4> When the language mode has been switched. |
|                                  | **Extended Error Event Status Enable Summary Register (Sub Application)**  
**Read**  
This register is read using an ESE1? query.  
**Write**  
This register is written to using an ESE1 command.  
**Clear**  
This register is cleared when:  
<1> An ESE1 command with a data value of 0 (i.e., ESE1 0) is received.  
<2> The power is turned on.  
<3> When the language mode has been switched. |
|                                  | **Extended End Event Status Summary Register (Sub Application)**  
**Read**  
This register is read using an ESR0? query.  
**Write**  
This register cannot be written externally.  
**Clear**  
This register is cleared when:  
<1> The *CLS command is received.  
<2> The power is turned on.  
<3> An event is read in response to an ESR0? query command.  
<4> When the language mode has been switched. |
|                                  | **Extended End Event Status Enable Summary Register (Sub Application)**  
**Read**  
This register is read using an ESE0? query.  
**Write**  
This register is written to using an ESE0 command.  
**Clear**  
This register is cleared when:  
<1> An ESE0 command with a data value of 0 (i.e., ESE0 0) is received.  
<2> The power is turned on.  
<3> When the language mode has been switched. |
## Table 1.9.16-1  Extended Event Status register operation (Cont’d)

<table>
<thead>
<tr>
<th>Register</th>
<th>Read</th>
<th>Operation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Extended Error Event Status Register</td>
<td>Read</td>
<td>This register is read using an ESRERR? query.*</td>
</tr>
<tr>
<td>(Sub Application)</td>
<td>Write</td>
<td>This register cannot be written externally.</td>
</tr>
<tr>
<td><strong>Clear</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Clear</td>
<td>This register is cleared when:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>&lt;1&gt; The *CLS command is received.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>&lt;2&gt; The power is turned on.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>&lt;3&gt; An event is read in response to an ESRERR? query command.*</td>
</tr>
<tr>
<td></td>
<td></td>
<td>&lt;4&gt; When the language mode has been switched.</td>
</tr>
<tr>
<td>Extended Error Enable Register</td>
<td>Read</td>
<td>This register is read using an ESEERR? query.*</td>
</tr>
<tr>
<td>(Sub Application)</td>
<td>Write</td>
<td>This register is written to using an ESEERR command.*</td>
</tr>
<tr>
<td><strong>Clear</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Clear</td>
<td>This register is cleared when:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>&lt;1&gt; An ESEERR command with a data value of 0 (i.e., ESEERR 0) is received.*</td>
</tr>
<tr>
<td></td>
<td></td>
<td>&lt;2&gt; The power is turned on.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>&lt;3&gt; When the language mode has been switched.</td>
</tr>
<tr>
<td>Extended End Event Status Register</td>
<td>Read</td>
<td>This register is read using an ESREND? query.*</td>
</tr>
<tr>
<td>(Sub Application)</td>
<td>Write</td>
<td>This register cannot be written externally.</td>
</tr>
<tr>
<td><strong>Clear</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Clear</td>
<td>This register is cleared when:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>&lt;1&gt; The *CLS command is received.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>&lt;2&gt; The power is turned on.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>&lt;3&gt; An event is read in response to an ESREND? query command.*</td>
</tr>
<tr>
<td></td>
<td></td>
<td>&lt;4&gt; When the language mode has been switched.</td>
</tr>
<tr>
<td>Extended End Event Enable Register</td>
<td>Read</td>
<td>This register is read using an ESEEND? query.*</td>
</tr>
<tr>
<td>(Sub Application)</td>
<td>Write</td>
<td>This register is written to using an ESEEND command.*</td>
</tr>
<tr>
<td><strong>Clear</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Clear</td>
<td>This register is cleared when:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>&lt;1&gt; An ESEEND command with a data value of 0 (i.e., ESEEND 0) is received.*</td>
</tr>
<tr>
<td></td>
<td></td>
<td>&lt;2&gt; The power is turned on.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>&lt;3&gt; When the language mode has been switched.</td>
</tr>
</tbody>
</table>

*: The application must be specified as a control target in the Application Switch menu.
1.10 Synchronization

This section describes synchronized control of the MS2690A/MS2691A/MS2692A, MS2830A, MS2840A, or MS2850A (completing processing of a command message before proceeding to the next one).

Synchronized control methods are shown below:

1. Using sequential commands
2. Using the *WAI command
3. Using the *OPC command
4. Using the *OPC? query
5. Using the status query
6. Monitoring extended end event statuses

(1) Using sequential commands

Commands that are not processed until the currently executing command function completes are called sequential commands.

<Program example>
To query the marker level after measurement using the Spectrum Analyzer function completes:
(The sequential command SWP is used in this example.)

SYS SPECT ; Specifies the Spectrum Analyzer as the control target.
SWP ; Executes measurement.
MKL? ; Queries the marker level.
This command is not executed until SWP command processing completes.
>1.234 ; Reads the marker level.

(2) Using the *WAI command

The *WAI (Wait to Continue) command pauses processing until the preceding command processing completes. It is useful when using overlapping commands (⇒ sequential commands).

<Program example>
To query the marker level after measurement using the Spectrum Analyzer function completes:
(The overlapping command SNGLS is used in this example.)

SYS SPECT ; Specifies the Spectrum Analyzer as the control target.
SNGLS ; Executes measurement.
*WAI ; Waits until the SNGLS command processing completes.
MKL? ; Queries the marker level.
>1.234 ; Reads the marker level.
(3) Using the *OPC command

Transmitting the common IEEE488.2 command *OPC (Operation Complete) is a method for waiting until bit0 (OPC) of the Standard Event Status register indicating that the processing being executed completes is enabled. To wait for the event, read the Standard Event Status register directly or use a service request.

<Program example>

To query the marker level after measurement using the Spectrum Analyzer function completes:
(In this example, the Standard Event Status register is read directly and the overlapping command SNGLS is used.)

SYS SPECT ; Specifies the Spectrum Analyzer as the control target.
*CLS ; Clears the OPC status.
SNGLS ; Executes measurement.
*OPC ; Enters the processing completion wait status.
*ESR? ; Directly reads the Standard Event Status register.
>0 ; No event occurs.
*ESR? ; Directly reads the Standard Event Status register.
>1 ; An event occurs.
MKL? ; Queries the marker level.
>1.234 ; Reads the marker level.

(4) Using the *OPC? query

Reads the response of the common IEEE488.2 command *OPC? (Operation Complete Query).

<Program example>

To query the marker level after measurement using the Spectrum Analyzer function completes:
(The overlapping command SNGLS is used in this example.)

SYS SPECT ; Specifies the Spectrum Analyzer as the control target.
SNGLS ; Executes measurement.
*OPC? ; Enters the processing completion wait status.
>1 ; Returns 1 when SNGLS completes.
MKL? ; Queries the marker level.
>1.234 ; Reads the marker level.
(5) Using the status query
Queries the processing status and waits until the response indicating completion is returned.

<Program example>
To query the marker level after measurement using the Spectrum Analyzer function completes:
(The measurement status query SWP? is used in this example.)

SYS SPECT ; Specifies the Spectrum Analyzer as the control target.
SNGLS ; Executes measurement.
SWP? ; Queries the measurement status.
>1 ; Reads the measurement status (1: Measuring)
SWP? ; Queries the measurement status.
>0 ; Reads the measurement status (0: Measurement completed)
MKL? ; Queries the marker level.
>1.234 ; Reads the marker level.

(6) Monitoring extended end event status
Each application has a unique Extended End Event Status register and can be synchronized by monitoring it. To monitor the event, read the Extended End Event Status register directly or use a service request.

<Program example>
To query the marker level after measurement using the Spectrum Analyzer function completes:
(The Extended End Event Status register is read directly and the overlapping command SNGLS is used in this example.)

SYS SPECT ; Specifies the Spectrum Analyzer as the control target.
*CLS ; Clears the register.
SNGLS ; Executes measurement.
ESR2? ; Directly reads the Extended End Event Status register.
>0 ; No event occurs.
ESR2? ; Directly reads the Extended End Event Status register.
>1 ; An event occurs.
MKL? ; Queries the marker level.
>1.234 ; Reads the marker level.
This chapter describes IEEE488.2 Common Device Message for executing MS2690A/MS2691A/MS2692A, MS2830A, MS2840A, or MS2850A functions (hereinafter, referred to as “this application”) using a list organized by function. Refer to Chapter 3 “IEEE488.2 Common Device Message Details” for detailed specifications for each command.

2.1 IEEE488.2 Common Device Messages ....................... 2-2
### 2.1 IEEE488.2 Common Device Messages

IEEE488.2 common device messages available in this application are shown in Table 2.1-1.

<table>
<thead>
<tr>
<th>Function</th>
<th>Command</th>
<th>Query</th>
<th>Response</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Identification Query</td>
<td>---</td>
<td>*IDN?</td>
<td>ANRITSU,model,serial,firmware</td>
<td>model: Main unit model name</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>serial: Main unit serial number</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>version: Software package version</td>
</tr>
<tr>
<td>Self Test Query</td>
<td>---</td>
<td>*TST?</td>
<td>result</td>
<td>result: Self test result</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>= 0</td>
</tr>
<tr>
<td>Operation Complete</td>
<td>*OPC</td>
<td>*OPC?</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Preset All</td>
<td>*RST</td>
<td>---</td>
<td>---</td>
<td></td>
</tr>
<tr>
<td>Wait to Continue Command</td>
<td>*WAI</td>
<td>---</td>
<td>---</td>
<td></td>
</tr>
<tr>
<td>Clear Status Command</td>
<td>*CLS</td>
<td>---</td>
<td>---</td>
<td></td>
</tr>
<tr>
<td>Standard Event Status Enable Register Command/Query</td>
<td>*ESE n</td>
<td>*ESE?</td>
<td>n</td>
<td>n =</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>bit7: Power on</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>bit6: User request</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>bit5: Command error</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>bit4: Execution error</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>bit3: Device error</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>bit2: Query error</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>bit1: Not used</td>
</tr>
<tr>
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<td>---</td>
<td>*ESR?</td>
<td>n</td>
<td>bit0: Operation complete</td>
</tr>
<tr>
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<td>Response</td>
<td>Remarks</td>
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<tr>
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<td>---------</td>
<td>--------</td>
<td>----------</td>
<td>----------------------------------------</td>
</tr>
<tr>
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<td>*SRE n</td>
<td>*SRE?</td>
<td>n</td>
<td>n = bit7: EESB7</td>
</tr>
<tr>
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<td></td>
<td></td>
<td>bit6: Not used</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>bit5: ESB</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>bit4: MAV</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>bit3: EESB3</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>bit2: EESB2 (END Event)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>bit1: EESB1</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>bit0: EESB0</td>
</tr>
<tr>
<td>Read Status Byte Query</td>
<td>---</td>
<td>*STB?</td>
<td>n</td>
<td>n = bit7: EESB7</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>bit6: MSS/RQS</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>bit5: ESB</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>bit4: MAV</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>bit3: EESB3</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>bit2: EESB2 (END Event)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>bit1: EESB1</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>bit0: EESB0</td>
</tr>
</tbody>
</table>
Chapter 3  IEEE488.2 Common Device Message Details

This chapter describes detailed specifications on IEEE488.2 common device message remote control commands for executing MS2690A/MS2691A/MS2692A, MS2830A, MS2840A, or MS2850A functions in alphabetical order.

*CLS ................................................................. 3-2
*ESE/*ESE? ...................................................... 3-3
*ESR? ............................................................ 3-4
*IDN? ............................................................. 3-5
*OPC/*OPC? .................................................... 3-6
*RST ............................................................. 3-7
*SRE/*SRE? ...................................................... 3-8
*STB? ............................................................ 3-9
*TST? ............................................................. 3-10
*WAI ............................................................. 3-11
**CLS**

Clear Status Command

**Function**

Clears the status byte register, standard event status register, extended event status register and output queue data, and disables the wait for operation completion set by *OPC/*OPC? This is a common IEEE488.2 command.

**Command**

*CLS

**Example of Use**

To clear status.

*CLS
*ESE/*ESE?
Standard Event Status Enable Command/Query

Function

Sets the standard event status enable register. The standard event status enable register value is returned for the query. This is a common IEEE488.2 command/query.

Command

*ESE n

Query

*ESE?

Response

n

Parameter

n  Standard event status enable register
Value  =  \text{bit0} + \text{bit1} + \text{bit2} + \text{bit3} + \text{bit4} + \text{bit5} + \text{bit6} + \text{bit7}
bit0: 2^0 = 1  Operation completion
bit1: 2^1 = 2  Request control (not used)
bet2: 2^2 = 4  Query error
bit3: 2^3 = 8  Device error
bit4: 2^4 = 16 Execution error
bit5: 2^5 = 32 Command error
bit6: 2^6 = 64 User request
bit7: 2^7 = 128 Power ON

Range  0 to 255

Example of Use

To enable execution error and command error.

*ESE 48
*ESE?
> 48
*ESR?
Standard Event Status Register Query

Function

Returns the standard event status register value. The standard event status register value is cleared after readout. This is a common IEEE488.2 query.

Query

*ESR?

Response

n

Parameter

n

Standard event status register

Value  = bit0 + bit1 + bit2 + bit3 + bit4 + bit5 + bit6 + bit7
bit0: 2^0 = 1          Operation completion
bit1: 2^1 = 2          Request control (not used)
bit2: 2^2 = 4          Query error
bit3: 2^3 = 8          Device error
bit4: 2^4 = 16         Execution error
bit5: 2^5 = 32         Command error
bit6: 2^6 = 64         User request
bit7: 2^7 = 128        Power ON

Range  0 to 255

Example of Use

To query the standard event status register value (when an execution error and command error have occurred).

*ESR?
  > 48
**IDN?**  
Identification Query  

**Function**  
Queries device information. This is a common IEEE488.2 query.  

**Query**  
*IDN?*  

**Response**  
ANRITSU,model,serialnumber,firmware  

**Parameter**  
- **model**: Product model (7-character alphanumeric)  
- **serialnumber**: Serial number (10-digit number)  
- **firmware**: Firmware and software versions  

**Example of Use**  
To query device information.  
*IDN?*  
> ANRISTU,MS2690A,6000000000,1.00.00
*OPC/*OPC?
Operation Complete Command/Query

Function

*OPC/*OPC? is a command/query to synchronize between the device and the external controller (PC). This is a common IEEE488.2 command/query.

If a *OPC command is received, the operation completion bit (bit 0) is set to 1 once all active processes are complete.

If a *OPC? query is received, 1 is returned once all active processes are complete.

Command

*OPC

Query

*OPC?

Response

1

Details

The wait for operation completion set by *OPC/*OPC? is disabled after the following events:

- Power ON
- Reception of DCL or SCL on the IEEE488.1 interface
- Reception of the *CLS command
- Reception of the *RST command
- Completion of all active processing

Example of Use

To wait for completion of measurement.

*CLS  
Clears the event status.

*SRE 32  
Enables the ESB service request.

*ESE 1  
Enables the operation completion bit.

SNGLS; *OPC  
Waits for the start of measurement and completion of operation.

POWER?  
Queries the measurement results.
**IEEE488.2 Common Device Message Details**

**Chapter 3**

---

**RST**
Reset Command

Function

Initializes the device. This is a common IEEE488.2 command.

Command

*RST

Details

Initializes the settings and status of all loaded applications.

Example of Use

To initialize the device.

*RST
Chapter 3  IEEE488.2 Common Device Message Details

*SRE/*SRE?
Service Request Enable Command/Query

Function
Sets the service request enable register. The service request enable register value is returned for the query. This is a common IEEE488.2 command/query.

Command
*SRE  n

Query
*SRE?

Response
n

Parameter

n  Service request enable register
Value  = bit0 + bit1 + bit2 + bit3 + bit4 + bit5 + bit6 + bit7
bit0: 2^0 = 1  Extended event status (EESB0)
bit1: 2^1 = 2  Extended event status (EESB1)
bit2: 2^2 = 4  Extended event status (EESB2)
bit3: 2^3 = 8  Extended event status (EESB3)
bit4: 2^4 = 16 MAV
bit5: 2^5 = 32 ESB
bit6: 2^6 = 64 Not used
bit7: 2^7 = 128 Extended event status (EESB7)
Range  0 to 255

Example of Use
To enable the ESB service request.
*SRE  32
*SRE?
> 32
**STB?**

Status Byte Register Query

**Function**

Returns the status byte register value. This is a common IEEE488.2 query.

**Query**

*STB?

**Response**

n

**Parameter**

n  

Status byte register  

Value = bit0 + bit1 + bit2 + bit3 + bit4 + bit5 + bit6 + bit7  

bit0: $2^0 = 1$  

Extended event status (EESB0)  

bit1: $2^1 = 2$  

Extended event status (EESB1)  

bit2: $2^2 = 4$  

Extended event status (EESB2)  

bit3: $2^3 = 8$  

Extended event status (EESB3)  

bit4: $2^4 = 16$  

MAV  

bit5: $2^5 = 32$  

ESB  

bit6: $2^6 = 64$  

MSS/RQS  

bit7: $2^7 = 128$  

Extended event status (EESB7)  

Range 0 to 255

**Example of Use**

To query the status byte register value (when the ESB bit is 1).

*STB?

> 32
**TST?**  
Self-Test Query

Function

Returns the result of the self test executed at system activation. This is a common IEEE488.2 query.

Query

*TST?

Response

result

Parameter

<table>
<thead>
<tr>
<th>result</th>
<th>Self test result</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Normal termination</td>
</tr>
<tr>
<td>1</td>
<td>Error occurred</td>
</tr>
</tbody>
</table>

Example of Use

To query the self test result.
*TST?
> 0
*WAI
Wait-to-Continue Command

Function

Waits until all active processes are complete before executing the next command. This is a common IEEE488.2 command.

Command

*WAI

Example of Use

To wait for completion of measurement.
SNGLS; *WAI
POWER?
Chapter 4  SCPI Device Message Details

This chapter describes the detailed specifications of SCPI remote control commands for executing the functions of this equipment. The device messages are listed according to function.

4.1 Application Common Device Messages

4.1.1 Application Common Device Messages

:INSTrument[:SELection] SiganA|Spect|PNoise|Conf|Sig|BER|Wimax|WCDMADL|WCDMAUL|GSMETC|DSRC|TDSCDMA|XGPHS|VMA|AMA|3GLTE_DL|3GLTE_UL|LTTDD|LTE|TDDUL|CDMA2KFWD|EVDOFWD|WDEVICE|WLAN|WCDMA_BS|RNC|MED|AFLO|SDBTMM|UMTS|BBIF|EXTDIG|BASE5G|PA|TRXSC|PMEter

:SYSTem:MINimum

:INSTrument[:SELection]? ...

:INSTrument:SYSTem SiganA|Spect|PNoise|Conf|PMEter|BER|[ACTive]|[INActive]

MINimum ...

:INSTrument:SYSTem?

:INSTrument:REBoot...

:INSTrument:DEFault...

:INSTrument:PRESet ...

:DISPlay:ENABle ON|OFF|1|0 ...

:DISPlay:ENABle ...

:DISPlay:SCReen ON|OFF|1|0 ...

:DISPlay:SCReen ...

:MMEMory:STORe:SCReen ...

:MMEMory:STORe:SCReen ...

:MMEMory:DATA? ...

:MMEMory:STORe:STATe ...

:MMEMory:LOAD:STATe ...

:DISPlay:ERRor:MODE NORMal|REMain|LAST ...

:DISPlay:ERRor:MODE ...

:CALibration:ALL ...

:CALibration:TIME:ALL? ...

:CALibration:TEMPerature:ALL? ...

:CALibration:LEVel ...

:CALibration:TIME:LEVel?

:CALibration:TEMPerature:LEVel?

:CALibration:LOLeak ...

:CALibration:TIME:LOLeak?

:CALibration:TEMPerature:LOLeak?

:CALibration:BAND ...

:CALibration:TIME:BAND?

:CALibration:TEMPerature:BAND?

:CALibration:BAND:EXTRa ...

:CALibration:BAND:EXTRa:CLEar ...

:CALibration:FREquency:BAND:EXTRa? ...

:CALibration:TIME:BAND:EXTRa? ...

:CALibration:NFLoor ...

:CALibration:TIME:NFLoor?

:CALibration:TEMPerature:NFLoor? ...

:CALibration:NFLoor:MIxer ...

:CALibration:TIME:NFLoor:MIxer?

:CALibration:TEMPerature:NFLoor:MIxer?

:CALibration:NFLoor:MIxer:HARMOnic:BAND? ...

:CALibration:NFLoor:CLEar ...

:SYSTem:REsult:MODE A|B ...

:SYSTem:REsult:MODE ...

:SYSTem:ERRor? ...
Chapter 4  SCPI Device Message Details

4.1  Config Function Device Messages

4.1.1  QUEStionable Status Register

4.2  Config Function Device Messages
4.3 Power Meter Device Messages

4.3.1 Application Common Device Messages

4.3.2 Power Meter
Chapter 4  SCPI Device Message Details

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[:SENSe]:BERT[:BASEband]:RSYNc:THReshold <n>,500|5000|50000 ....................................... 4-180
[:SENSe]:BERT[:BASEband]:PRBS[:DATA]? ............................................................................. 4-179
PN9|PN11|PN15|PN20|PN23|ALL0|ALL1|ALT|FPN9|FPN11|FPN15|FPN20|FPN23|USER 4-178
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:MMEMory:LOAD:PATTern <pattern> ..................................................................................... 4-176
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:STATus:OPERation:NTRansition? ....................................................................................... 4-156
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:DATA? DATA? ER|EP ............................................................................................................ 4-162
:DATA? DATA? BEC? ............................................................................................................... 4-163
:DATA? DATA? CLEAR ........................................................................................................... 4-163
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:INITiate:MODE:ENDLess .................................................................................................... 4-164
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:INPUT:BERT[:BASEband]:CGATe:POLarity POSitive|NEGative|DISable .......................... 4-166
:INPUT:BERT[:BASEband]:CGATe:POLarity? ..................................................................... 4-167
:INPUT:BERT[:BASEband]:CGATe[:STATE] ON|OFF|1|0 ..................................................... 4-168
:INPUT:BERT[:BASEband]:CGATe[:STATE] .......................................................................... 4-169
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:INPUT:BERT[:BASEband]:CLOCk:POLarity? ..................................................................... 4-171
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:MMEMory:MSIS? .................................................................................................................. 4-175
:MMEMory:LOAD:PATTern <pattern> .................................................................................. 4-176
:STATus:BERT:MEASure? ....................................................................................................... 4-177
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[:SENSe]:BERT[:BASEband]:PRBS[:DATA] ... 4-179
[:SENSe]:BERT[:BASEband]:RSYNc:THReshold? .................................................................. 4-181
[:SENSe]:BERT[:BASEband]:RSYNc:THReshold <n>,500|5000|50000 ............................. 4-180
[:SENSe]:BERT[:BASEband]:RSYNc:THReshold <n>,500|5000|50000 ............................. 4-180
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Application Common Device Messages

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[:SENSe]:BERT[:BASEband]:RSYNc[:STATE]? ..................................................................... 4-183
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[:SENSe]:BERT[:BASEband]:STOP:CRTeria:EBIT? ............................................................ 4-187
[:SENSe]:BERT[:BASEband]:STOP:CRTeria[:SELection] EBIT|NONE .................................. 4-188
[:SENSe]:BERT[:BASEband]:STOP:CRTeria[:SELection]? .................................................... 4-189
[:SENSe]:BERT[:BASEband]:TBITs <bit> .............................................................................. 4-190
[:SENSe]:BERT[:BASEband]:TBITs? .................................................................................... 4-191
[:SENSe]:BERT[:BASEband]:MODE SINGle|CONTinuous|ENDLess .................................. 4-192
[:SENSe]:BERT[:BASEband]:MODE? ................................................................................... 4-193
[:SENSe]:BERT[:BASEband]:PRBS:PNFix:LENGth <bit> ..................................................... 4-194
[:SENSe]:BERT[:BASEband]:PRBS:PNFix:LENGth? ............................................................ 4-195
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[:SENSe]:BERT[:BASEband]:PRBS:PNFix:INITial? .............................................................. 4-197
[:SENSe]:BERT[:BASEband]:PRBS:USER:SYNC:LENGth <bit> ......................................... 4-198
[:SENSe]:BERT[:BASEband]:PRBS:USER:SYNC:LENGth? ................................................ 4-199
[:SENSe]:BERT[:BASEband]:SYNLoss:COUNt? ................................................................. 4-200
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[:SENSe]:BERT[:BASEband]:RSYNc:COUNt:ACTION? ........................................................ 4-202
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### 4.1 Application Common Device Messages

Application common device messages available in this application are shown in Table 4.1-1.

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<th>Device Messages</th>
</tr>
</thead>
<tbody>
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</tr>
<tr>
<td>Application Status</td>
<td>:Instrum:SYSTem SIGANA</td>
</tr>
<tr>
<td>System Re-boot</td>
<td>:SYSTem:REBoot</td>
</tr>
<tr>
<td>Preset Current Application</td>
<td>:Instrum:DEFault</td>
</tr>
<tr>
<td>LCD Power</td>
<td>:DISPlay:ENABLE ON</td>
</tr>
<tr>
<td>Hard Copy</td>
<td>:MMEMory:STORE:SCReen [&lt;filename&gt;,&lt;device&gt;]</td>
</tr>
<tr>
<td>Hard Copy Mode</td>
<td>:MMEMory:STORE:SCReen:MODE BMP</td>
</tr>
<tr>
<td>Save Parameter Setting as file</td>
<td>:MMEMory:STORE:STATE [&lt;filename&gt;,&lt;device&gt;]</td>
</tr>
<tr>
<td>Recall Parameter Setting as file</td>
<td>:MMEMory:LOAD:STATE [&lt;filename&gt;,&lt;device&gt;[&lt;mode&gt;]</td>
</tr>
<tr>
<td>Error Message Display Mode</td>
<td>:DISPlay:ERRor:MODE NORMAL</td>
</tr>
<tr>
<td>All Calibration</td>
<td>:CALibration:ALL</td>
</tr>
<tr>
<td>All Calibration Time Query</td>
<td>:CALibration:TIME:ALL?</td>
</tr>
<tr>
<td>All Calibration Temperature Query</td>
<td>:CALibration:TEMPerature:ALL?</td>
</tr>
<tr>
<td>Level Calibration</td>
<td>:CALibration:LEVEL</td>
</tr>
<tr>
<td>Level Calibration Time Query</td>
<td>:CALibration:TIME:LEVEL?</td>
</tr>
<tr>
<td>Level Calibration Temperature Query</td>
<td>:CALibration:TEMPerature:LEVEL?</td>
</tr>
</tbody>
</table>
### 4.1 Application Common Device Messages

<table>
<thead>
<tr>
<th>Function</th>
<th>Device Messages</th>
</tr>
</thead>
<tbody>
<tr>
<td>Local Leak Calibration</td>
<td>:CALibration:LOLeak</td>
</tr>
<tr>
<td>Local Leak Calibration Time Query</td>
<td>:CALibration:TIME:LOLeak?</td>
</tr>
<tr>
<td>Local Leak Calibration Temperature Query</td>
<td>:CALibration:TEMPerature:LOLeak?</td>
</tr>
<tr>
<td>Bandwidth Calibration</td>
<td>:CALibration:BAND</td>
</tr>
<tr>
<td>Bandwidth Calibration Time Query</td>
<td>:CALibration:TIME:BAND?</td>
</tr>
<tr>
<td>Bandwidth Calibration Temperature Query</td>
<td>:CALibration:TEMPerature:BAND?</td>
</tr>
<tr>
<td>Extra Bandwidth Calibration</td>
<td>:CALibration:BAND:EXTRa</td>
</tr>
<tr>
<td>Extra Bandwidth Calibration Clear</td>
<td>:CALibration:BAND:EXTRa:CLEar</td>
</tr>
<tr>
<td>Extra Bandwidth Calibration Frequency Query</td>
<td>:CALibration:FREQuency:BAND:EXTRa?</td>
</tr>
<tr>
<td>Extra Bandwidth Calibration Time Query</td>
<td>:CALibration:TIME:BAND:EXTRa?</td>
</tr>
<tr>
<td>Analyze Noise Floor</td>
<td>:CALibration:NFLoor</td>
</tr>
<tr>
<td>Analyze Noise Floor Time Query</td>
<td>:CALibration:TIME:NFLoor?</td>
</tr>
<tr>
<td>Analyze Noise Floor Temperature Query</td>
<td>:CALibration:TEMPerature:NFLoor?</td>
</tr>
<tr>
<td>Analyze External Mixer Noise Floor</td>
<td>:CALibration:NFLoor:MIXer</td>
</tr>
<tr>
<td>Analyze External Mixer Noise Floor Time Query</td>
<td>:CALibration:TIME:NFLoor:MIXer?</td>
</tr>
<tr>
<td>Analyze External Mixer Noise Floor Temperature Query</td>
<td>:CALibration:TEMPerature:NFLoor:MIXer?</td>
</tr>
<tr>
<td>Analyze External Mixer Noise Floor Band Query</td>
<td>:CALibration:NFLoor:MIXer:HAMonic:BAND?</td>
</tr>
<tr>
<td>Analyze Noise Floor Clear</td>
<td>:CALibration:NFLoor:CLEar</td>
</tr>
<tr>
<td>Result Mode</td>
<td>:SYSTem:RESult:MODE A</td>
</tr>
<tr>
<td></td>
<td>:SYSTem:RESult:MODE?</td>
</tr>
</tbody>
</table>
## Table 4.1-1  Application Common Device Messages (Cont’d)

<table>
<thead>
<tr>
<th>Function</th>
<th>Device Messages</th>
</tr>
</thead>
<tbody>
<tr>
<td>System Error Query</td>
<td>:SYSTEM:ERRor?</td>
</tr>
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<td>Language mode switching</td>
<td>:SYSTEM:LANGuage SCPI</td>
</tr>
<tr>
<td></td>
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</tr>
<tr>
<td>Reference Signal Query</td>
<td>[:SENSe]:ROSCillator:SOURce?</td>
</tr>
<tr>
<td>Attenuation Mode</td>
<td>[:SENSe]:POWer[:RF]:ATTenuation:MODE_COMBined</td>
</tr>
<tr>
<td></td>
<td>[:SENSe]:POWer[:RF]:ATTenuation:MODE?</td>
</tr>
<tr>
<td>Correction (On/Off)</td>
<td>[:SENSe]:CORRection[:STATE] ON</td>
</tr>
<tr>
<td></td>
<td>[:SENSe]:CORRection[:STATE]?</td>
</tr>
<tr>
<td>Correction Make Up</td>
<td>[:SENSe]:CORRection:MAKE &lt;freq&gt;,&lt;real&gt;</td>
</tr>
<tr>
<td>Correction Make Up All Clear</td>
<td>[:SENSe]:CORRection:MAKE:CLEar</td>
</tr>
<tr>
<td>Correction File Save</td>
<td>:MME</td>
</tr>
<tr>
<td>Correction File Recall</td>
<td>:MME</td>
</tr>
<tr>
<td>Correction Data Read</td>
<td>[:SENSe]:FREQuency:SYNThesis:LPHase ON</td>
</tr>
<tr>
<td></td>
<td>[:SENSe]:FREQuency:SYNThesis:LPHase?</td>
</tr>
<tr>
<td>Low Phase Noise</td>
<td>:DISPlay:WINDow[1]:ANNotation[:ALL] ON</td>
</tr>
<tr>
<td></td>
<td>:DISPlay:WINDow[1]:ANNotation[:ALL]?</td>
</tr>
<tr>
<td>Status of Calibration Alert</td>
<td>:CALibration:ALERt:STATe?</td>
</tr>
<tr>
<td>Noise Source Power On/Off</td>
<td>:OUTPut:MANual:NOISe[:STATe] ON</td>
</tr>
<tr>
<td></td>
<td>:OUTPut:MANual:NOISe[:STATe]?</td>
</tr>
</tbody>
</table>
4.1 Application Common Device Messages

:**INStrument[:SELect]**

SIGANA|SPECT|PNOISE|CONFIG|SG|BER|WIMAX|WCDMADL|WCDMAUL|GSM|ETC_DSRC|TDSCDMA|XGPHS|VMA|AMA|3GLTE_DL|3GLTE_UL|LTETDDDL|LTETDDUL|CDMA2KFWD|EVDOFWD|WDEVICE|WLAN|WCDMA_BS|RNC|MEDIAFLO|ISDBTMM|UMTS|BBIF|EXTDIG|BASE5G|PA|TRXS

C|PMETer

Application Switch

Function

This command switches the target application for control.

Command

:**INStrument[:SELect]** <apl_name>

Parameter

<table>
<thead>
<tr>
<th>&lt;apl_name&gt;</th>
<th>Target application name</th>
</tr>
</thead>
<tbody>
<tr>
<td>SIGANA</td>
<td>Signal Analyzer</td>
</tr>
<tr>
<td>SPECT</td>
<td>Spectrum Analyzer</td>
</tr>
<tr>
<td>PNOISE</td>
<td>Phase Noise</td>
</tr>
<tr>
<td>CONFIG</td>
<td>Config</td>
</tr>
<tr>
<td>SG</td>
<td>Signal Generator</td>
</tr>
<tr>
<td>BER</td>
<td>BER Test</td>
</tr>
<tr>
<td>WIMAX</td>
<td>WiMAX</td>
</tr>
<tr>
<td>WCDMADL</td>
<td>W-CDMA/HSPA Downlink</td>
</tr>
<tr>
<td>WCDMAUL</td>
<td>W-CDMA/HSPA Uplink</td>
</tr>
<tr>
<td>GSM</td>
<td>GSM</td>
</tr>
<tr>
<td>ETC_DSRC</td>
<td>ETC/DSRC</td>
</tr>
<tr>
<td>TDSCDMA</td>
<td>TD-SCDMA</td>
</tr>
<tr>
<td>XGPHS</td>
<td>XG-PHS</td>
</tr>
<tr>
<td>VMA</td>
<td>Vector Modulation Analysis</td>
</tr>
<tr>
<td>AMA</td>
<td>Analog Modulation Analysis</td>
</tr>
<tr>
<td>3GLTE_DL</td>
<td>3GLTE Downlink</td>
</tr>
<tr>
<td>3GLTE_UL</td>
<td>3GLTE Uplink</td>
</tr>
<tr>
<td>LTETDDDL</td>
<td>LTE-TDD Downlink</td>
</tr>
<tr>
<td>LTETDDUL</td>
<td>LTE-TDD Uplink</td>
</tr>
<tr>
<td>CDMA2KFWD</td>
<td>CDMA2000</td>
</tr>
<tr>
<td>EVDOFWD</td>
<td>EVDO</td>
</tr>
<tr>
<td>WDEVICE</td>
<td>Wireless Network Device Test</td>
</tr>
<tr>
<td>WLAN</td>
<td>WLAN (802.11)</td>
</tr>
<tr>
<td>WCDMA_BS</td>
<td>W-CDMA BS</td>
</tr>
<tr>
<td>RNC</td>
<td>W-CDMA RNC Simulator Control</td>
</tr>
<tr>
<td>MEDIAFLO</td>
<td>MediaFLO</td>
</tr>
<tr>
<td>ISDBTMM</td>
<td>ISDB-Tmm</td>
</tr>
</tbody>
</table>
### Details

This function is used to switch the operation/control target application. An application that has not been loaded cannot be switched to. Before using this command, load the application by using the SYSTem:APPLication:LOAD command.

The software version V6.00.00 or later does not support the commands of the UMTS Measurement Software and Digital I/F Control Software.

### Example of Use

To switch the control target to Signal Analyzer.

```plaintext
INST SIGANA
```
4.1 Application Common Device Messages

:INSTrument[:SESelect]?
Application Switch Query

Function

This command queries the controlled application.

Query

:INSTrument[:SESelect]?

Response

<apl_name>

Parameter

<apl_name> Target application name
SIGANA Signal Analyzer
SPECT Spectrum Analyzer
PNOISE Phase Noise
CONFIG Config
SG Signal Generator
BER BER Test
WIMAX WiMAX
WCDMA_DL W-CDMA/HSPA Downlink
WCDMA_UL W-CDMA/HSPA Uplink
GSM GSM
ETC_DSRC ETC/DSRC
TDSCDMA TD-SCDMA
XGPHS XG-PHS
VMA Vector Modulation Analysis
ANA Analog Modulation Analysis
3GLTE_DL 3GLTE Downlink
3GLTE_UL 3GLTE Uplink
LTETDDDL LTE-TDD Downlink
LTETDDUL LTE-TDD Uplink
CDMA2KFWD CDMA2000
EVDO_FWD EVDO
WDEVICE Wireless Network Device Test
WLAN WLAN (802.11)
WCDMA_BS W-CDMA BS
RNC W-CDMA RNC Simulator Control
MEDIAFLO MediaFLO
ISDBTMM ISDB-Tmm
UMTS UMTS Measurement Software
BBIF Digital I/F Control Software
EXTDIG Extended Digitizing
BASE5G 5G Measurement
PA PA Measurement
Chapter 4  SCPI Device Message Details

TRXSC  TRX Sweep Calibration
PMET  Power Meter

Details

This function is used to switch the operation/control target application. The software version V6.00.00 or later does not support the commands of the UMTS Measurement Software and Digital I/F Control Software.

Example of Use

To query the control target.

INST?
> SIGANA

:INSTrument:SYSTem

SIGANA|SPECT|PNOISE|CONFIG|PMETer|BER,[ACTive]|INACtive|MINimum

Application Status

Function

This command sets the status of the specified application.

Command

:INSTrument:SYSTem <apl_name>,<window>

Parameter

<table>
<thead>
<tr>
<th>&lt;apl_name&gt;</th>
<th>Target application name</th>
</tr>
</thead>
<tbody>
<tr>
<td>SIGANA</td>
<td>Signal Analyzer</td>
</tr>
<tr>
<td>SPECT</td>
<td>Spectrum Analyzer</td>
</tr>
<tr>
<td>PNOISE</td>
<td>Phase Noise</td>
</tr>
<tr>
<td>CONFIG</td>
<td>Config</td>
</tr>
<tr>
<td>PMETer</td>
<td>Power Meter</td>
</tr>
<tr>
<td>BER</td>
<td>BER Test</td>
</tr>
<tr>
<td>&lt;window&gt;</td>
<td>Application window status</td>
</tr>
<tr>
<td>ACTive</td>
<td>Operation enabled (displayed on top screen)</td>
</tr>
<tr>
<td>INACtive</td>
<td>Inactive</td>
</tr>
<tr>
<td>MINimum</td>
<td>Minimized</td>
</tr>
</tbody>
</table>

When omitted. Active

Details

This function is used to switch the operation/control target application. Applications that have not been loaded are not switched to. Using the SYSTem:APPLication:LOAD command, load the applications before using this command.

When the target application is set to CONFIG:
The behavior of application window status differs depending on the setting as follows. Config is a background application and does not save the inactive or minimized status as an application window status.
- When the application window status is set to INACtive (inactive status):
4.1 Application Common Device Messages

The command is accepted, but the status is not changed.

- When the application window status is set to MINimum (minimized status):
  The screen changes automatically to that of another application that started up last. The CONFIG will be in the IDLE status: started up but is not running.

Example of Use

To switch the window status of Spectrum Analyzer to Active.
INST:SYST SPECT,ACT

:INSTRument:SYSTem?
Application Status Query

Function

This command queries the status of the specified application.

Query

:INSTRument:SYSTem? <apl_name>

Response

<status>,<window>

Parameter

- <apl_name> Target application name
  SIGANA Signal Analyzer
  SPECT Spectrum Analyzer
  PNOISE Phase Noise
  CONFIG Config
  PMET Power Meter
  BER BER Test
- <status> Application status
  CURR Executed and targeted for operation
  RUN Executed but not targeted for operation
  IDLE Loaded but not executed
  UNL Not loaded
- <window> Application window status
  ACT Operation enabled (displayed on top screen)
  INAC Inactive
  MIN Minimized
  NON Window not displayed

Details

This function is used to switch the operation/control target application.

Example of Use

To query the status of the Spectrum Analyzer.
INST:SYST? SPECT
  > CURR,ACT
Chapter 4  SCPI Device Message Details

:SYSTem:REBoot
System Re-boot

Function
This command reboots the system.

Command
:SYSTem:REBoot

Details
If this command is received, remote control communication is disabled until all applications are rebooted.

Example of Use
To reboot the system.
SYST:REB

:INSTrument:DEFault
Preset Current Application

Function
This command initializes the settings and status of the currently selected application.

Command
:INSTrument:DEFault

Example of Use
To initialize the settings and status of the currently selected application.
INST:DEF
4.1 Application Common Device Messages

:SYSTem:PRESet
Preset Current Application

Function
This command initializes the settings and status of the currently selected application.

Command
:SYSTem:PRESet

Example of Use
To initialize the settings and status of the currently selected application.
SYST:PRES

:DISPlay:ENABle ON|OFF|1|0
LCD Power

Function
This command turns the LCD backlight ON/OFF.

Command
:DISPlay:ENABle <switch>

Parameter

<table>
<thead>
<tr>
<th>&lt;switch&gt;</th>
<th>LCD backlight status</th>
</tr>
</thead>
<tbody>
<tr>
<td>ON</td>
<td>1</td>
</tr>
<tr>
<td>OFF</td>
<td>0</td>
</tr>
</tbody>
</table>

Details
When the Local key is pressed, the LCD backlight automatically turns ON.

Example of Use
To turn the LCD backlight OFF.
DISP:ENAB OFF

Related Command
This command has the same function as the following command.
:DISPlay:SCReen <switch>
Chapter 4  SCPI Device Message Details

:DISPlay:ENABle?
LCD Power Query

Function
This command queries the ON/OFF status of the LCD backlight.

Query
:DISPlay:ENABle?

Response
<switch>

Parameter
<switch>  LCD backlight status
  1  On (Default)
  0  Off

Details
When the Local key is pressed, the LCD backlight automatically turns ON.

Example of Use
To query the ON/OFF status of the LCD backlight.
DISP:ENAB?
> 0

Related Command
This command has the same function as the following command.
:DISPlay:SCReen?

:DISPlay:SCReen ON|OFF|1|0
LCD Power

Function
This command turns the LCD backlight ON/OFF.
Refer to
:DISPlay:ENABle <switch>

Related Command
This command has the same function as the following command.
:DISPlay:ENABle <switch>
4.1 Application Common Device Messages

:DISPlay:SCReen?
LCD Power Query

Function
This command queries the ON/OFF status of the LCD backlight.
Refer to
:DISPlay:ENABle?

Related Command
This command has the same function as the following command.
:DISPlay:ENABle?

:MMEMory:STORe:SCReen [<filename> [,<device>]]
Hard Copy

Function
This command saves a screen hardcopy into a file. The name of the file to be saved and save destination drive name can be specified.

Command
:MMEMory:STORe:SCReen [<filename> [,<device>]]

Parameter

<filename> Target file name
Character string within 32 characters enclosed by double quotes (“ ”) or single quotes (‘ ’) (excluding extension)
The following characters cannot be used:
\ / : * ? " " ’ ‘ < > |
Automatically named as “Copy date sequential number.bmp” when omitted.

<device> Drive name
A, B, D, E, F, ...
Set to Drive D when omitted.

Details
A sequential number from 00 to 999 will be added to the file name.
When a file is saved following a file with file number 999, 00 is added to the newly saved file.
Files are saved to the following directory in the specified drive.
\Anritsu Corporation\Signal Analyzer\User Data\Copy Files
When file name is omitted, up to 1000 files can be saved in a folder.
When file name is specified, it is possible to save more than 1000 files.

Example of Use
To save a screen hardcopy into a file, after naming the file “TEST,” in the internal storage.
MMEM:STOR:SCR "TEST",D
**:MMEMory:STORe:SCReen:MODE BMP|PNG**

**Hard Copy Mode**

**Function**

This command sets the screen hardcopy file format.

**Command**

`:MMEMory:STORe:SCReen:MODE <mode>`

**Parameter**

- `<mode>`: File format
  - BMP: BMP format (Default)
  - PNG: PNG format

**Example of Use**

To save hardcopies in the PNG format.

```
MMEM:STOR:SCR:MODE PNG
```

**:MMEMory:STORe:SCReen:MODE?**

**Hard Copy Mode Query**

**Function**

This command queries the screen hardcopy file format.

**Query**

`:MMEMory:STORe:SCReen:MODE?`

**Response**

- `<mode>`

**Parameter**

- `<mode>`: File format
  - BMP: BMP format (Default)
  - PNG: PNG format

**Example of Use**

To query the screen hardcopy file format.

```
MMEM:STOR:SCR:MODE?
> PNG
```
:MMEMory:DATA? <filename>,<device>

Hard Copy Transfer

Function

This command transfers the binary data from the specified image file in the `\Anritsu Corporation\Signal Analyzer\USER DATA\Copy Files` folder of the Signal Analyzer onto the external PC.

Query

:MMEMory:DATA? <filename>,<device>

Response

The output of “# (ASCII format)” is followed by the output of “Digits number of binary data byte length (ASCII format), “Binary data byte length (ASCII format),” and “Image file data string (binary format),” in this order.

Example:

> #73145784<3145784 bytes of data>

The number 7 following # indicates that seven characters that indicate the binary data length follow. “3145784” indicates that “this is followed by 3145784 bytes of binary data.”

Parameter

<table>
<thead>
<tr>
<th>&lt;filename&gt;</th>
<th>Target filename</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Character string within 32 characters (excluding extension)</td>
</tr>
<tr>
<td></td>
<td>With or without double quotes (“ ”) and single quotes (‘ ’).</td>
</tr>
<tr>
<td></td>
<td>The following characters cannot be used: \ / : * ? “ ‘ ’ &lt; &gt;</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>&lt;device&gt;</th>
<th>Drive name: A, B, D, E, F, ...</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Set to Drive D when omitted.</td>
</tr>
</tbody>
</table>
Details

When the transfer ends successfully, the binary data of the specified image file is stored in the external PC.
When it fails, an error message is displayed on the Signal Analyzer.

Note:
Occasionally, binary data can match a reserved keyword of communication application and have a malfunction. Perform the setting so that the terminator will be disabled by a communication application to be used.

Example of Use

To transfer binary data of the “Sample.bmp” file from Drive D to the external PC.

```
MMEM:DATA? Sample.bmp,D
>73145784BM6\00\0\0...
```
4.1 Application Common Device Messages

:MMEMory:STORe:STATe [<filename> [,<device>]]

Save Parameter Setting as file

Function
Saves the application settings and status into a parameter setting file.

Command
:MMEMory:STORe:STATe [<filename> [,<device>]]

Parameter

<filename>
Target filename
Character string within 32 characters enclosed by double quotes (" ") or single quotes (’ ) (excluding extension)
The following characters cannot be used:
\ / : * ? “ " ‘ ‘ < > |
When omitted, the file is automatically named in the following format: “Param date_sequential number.xml”

<device>
Drive name
A, B, D, E, F, ...
Set to Drive D when omitted.

Details
A sequential number from 00 to 999 will be added to the file name.
When a file is saved following a file with file number 999, 00 is added to the newly saved file.
Files are saved to the following directory in the specified drive.
\Anritsu Corporation\Signal Analyzer\User Data\Parameter Setting
When file name is omitted, up to 1000 files can be saved in a folder.
When file name is specified, it is possible to save more than 1000 files.

Example of Use
To save the parameter setting file “TEST” in the internal storage.
MMEM:STOR:STAT "TEST", D
:MMEMory:LOAD:STATe <filename>[,<device>[,<mode>]]

Recall Parameter Setting file

Function

This command recalls the application settings and status into a parameter setting file.

Command

:MMEMory:LOAD:STATe <filename>[,<device>[,<mode>]]

Parameter

- `<filename>`
  - Target filename
  - Character string within 32 characters enclosed by double quotes (" ") or single quotes (’ ’) (excluding extension)
  - The following characters cannot be used:
    \ / : * ? “ ’ < > |

- `<device>`
  - Drive name
  - A,B,D,E,F,...

- `<mode>`
  - Target application
  - ALL
    - All applications
  - CURR
    - Only the currently operated application
  - When omitted
    - All applications

Example of Use

To restore settings of all applications to the contents of the parameter setting file "TEST" saved in the internal storage.

MMEM:LOAD:STAT "TEST",D
4.1 Application Common Device Messages

:DISPlay:ERRor:MODE NORMal|REMain|LAST
Error Message Display Mode

Function

Selects the error message display mode when an error occurs during remote control.

Command

:DISPlay:ERRor:MODE <mode>

Parameter

<mode>  Error message display mode
NORMAL  Deletes the error message display once the next command is received. (Default)
REMain  Keeps the first error message displayed.
LAST    Keeps the last error message displayed.

Details

The setting of the error message display mode cannot be initialized.

Example of Use

To keep the first error message displayed.
DISP:ERR:MODE REM
Chapter 4  SCPI Device Message Details

:DISPlay:ERRor:MODE?
Error Message Display Mode Query

Function

This command queries the error message display mode when an error occurs during remote control.

Query

:DISPlay:ERRor:MODE?

Response

<mode>

Parameter

<mode>  Error message display mode
NORM  Deletes the error message display once the next command is received. (Default)
REM  Keeps the first error message displayed.
LAST  Keeps the last error message displayed.

Details

The setting of the error message display mode cannot be initialized.

Example of Use

To query the error message display mode when an error occurs during remote control.
DISP:ERR:MODE?
> REM

:CALibration:ALL
All Calibration

Function

Executes all calibrations except Extra Bandwidth Calibration, SG I/Q Cal, SG I/Q External Cal. However, Analyze Noise Floor and Analyze External Mixer Noise Floor are not executed.

Command

:CALibration:ALL

Details

For SG I/Q Cal and SG I/Q External Cal, refer to Section 2.8 “CAL Setting” in MS2690A/MS2691A/MS2692A Signal Analyzer Option 020 Vector Signal Generator Operation Manual (Remote Control).

Example of Use

To execute all calibrations.
CAL:ALL
4.1 Application Common Device Messages

:CALibration:TIME:ALL?
All Calibration Time Query

Function
This command queries the time elapsed since the last All Calibration Time Command.

Query
:CALibration:TIME:ALL?

Response
<time>

Parameter
<time> Time elapsed since calibration was performed
Suffix code None. Value is returned in s units.

Details
This can be used as a criterion for whether to execute calibration.

Example of Use
To query the time elapsed since the last time all the calibrations were performed.
CAL:TIME:ALL?
> 100
:CALibration:TEMPerature:ALL?
All Calibration Temperature Query

Function
This command queries the temperature when the last time all the calibrations were performed.

Query
:CALibration:TEMPerature:ALL?

Response
<temperature>

Parameter
<temperature> Temperature of the RF unit at the time of the calibration
Resolution 0.01°C
Returns a value in Celsius (°C) units.

Details
This can be used as a criterion for whether to execute calibration. The standard temperature of the RF unit is about 50°C during operation at normal temperature.

Example of Use
To query the temperature when the last time all the calibrations were performed.

```
CAL:TEMP:ALL?
> 50.00
```
4.1 Application Common Device Messages

:CALibration:LEVel
Level Calibration

Function
This command executes Level Calibration.

Command
:CALibration:LEVel

Example of Use
To executes Level Calibration.
CAL:LEV

:CALibration:TIME:LEVel?
Level Calibration Time Query

Function
This command queries the time elapsed since the last Level Calibration.

Query
:CALibration:TIME:LEVel?

Response
<time>

Parameter
<time> Time elapsed since calibration was performed.
Suffix code None. Value is returned in s units.

Details
This command is available for MS2830A, MS2840A, or MS2850A.
This can be used as a criterion for whether to execute calibration.

Example of Use
To query the time elapsed since the last Level Calibration.
CAL:TIME:LEV?
> 100
Chapter 4  SCPI Device Message Details

:CALibration:TEMPerature:LEVel?
Level Calibration Temperature Query

Function
This command queries the temperature at the last Level Calibration.

Query
:CALibration:TEMPerature:LEVel?

Response
<temperature>

Parameter
<temperature>  Temperature of the RF unit at the time of the calibration
Resolution  0.01°C
Returns a value in Celsius (°C) units.

Details
This command is available for MS2830A, MS2840A, or MS2850A.
This can be used as a criterion for whether to execute calibration.
The standard temperature of the RF unit is about 50°C during operation
at normal temperature.

Example of Use
To query the temperature at the time of the last Level Calibration.
CAL:TEMP:LEV?
> 50.00

:CALibration:LOLeak
Local Leak Calibration

Function
This command executes Local Leak Calibration.

Command
:CALibration:LOLeak

Example of Use
To execute Local Leak Calibration.
CAL:LOL
:CALibration:TIME:LOLeak?
Local Leak Calibration Time Query

Function
This command queries the time elapsed since the last Local Leak calibration.

Query
:CALibration:TIME:LOLeak?

Response
<time>

Parameter
<time> Time elapsed since calibration was performed
Suffix code None. Value is returned in s units.

Details
This command is available for MS2830A, MS2840A, or MS2850A. This can be used as a criterion for whether to execute calibration.

Example of Use
To query the time elapsed since the last Local Leak Calibration.
CAL:TIME:LOL?
> 100
**:CALibration:TEMPerature:LOLeak?**

Local Leak Calibration Temperature Query

**Function**

This command queries the temperature at the last Local Leak Calibration.

**Query**

`:CALibration:TEMPerature:LOLeak?`

**Response**

`<temperature>`

**Parameter**

`<temperature>`  
Temperature of the RF unit at the time of the calibration  
Resolution 0.01°C  
Returns a value in Celsius (°C) units.

**Details**

This command is available for MS2830A, MS2840A, or MS2850A.  
This can be used as a criterion for whether to execute calibration.  
The standard temperature of the RF unit is about 50°C during operation at normal temperature.

**Example of Use**

To query the temperature at the last Local Leak Calibration.

```
CAL:TEMP:LOL?
> 50.00
```
4.1 Application Common Device Messages

:CALibration:BAND
Bandwidth Calibration

Function
This command executes Bandwidth Calibration.

Command :CALibration:BAND

Example of Use
To execute Bandwidth Calibration.
CAL:BAND

:CALibration:TIME:BAND?
Bandwidth Calibration Time Query

Function
This command queries the time elapsed since the last Bandwidth Calibration.

Query :CALibration:TIME:BAND?

Response <time>

Parameter <time> Time elapsed since calibration was performed
Suffix code None. Value is returned in s units.

Details This command is available for MS2830A, MS2840A, or MS2850A. This can be used as a criterion for whether to execute calibration.

Example of Use
To query the time elapsed since the last Bandwidth Calibration.
CAL:TIME:BAND?
> 100
:CALibration:TEMPerature:BAND?
Bandwidth Calibration Temperature Query

Function
This command queries the temperature at the last Bandwidth Calibration.

Query
:CALibration:TEMPerature:BAND?

Response
<temperature>

Parameter
<temperature> Temperature of the RF unit at the time of the calibration
Resolution 0.01°C
Returns a value in Celsius (°C) units.

Details
This command is available for MS2830A, MS2840A, or MS2850A. This can be used as a criterion for whether to execute calibration. The standard temperature of the RF unit is about 50°C during operation at normal temperature.

Example of Use
To query the temperature at the last Bandwidth Calibration.
CAL:TEMP:BAND?
> 50.00
4.1 Application Common Device Messages

**:CALibration:BAND:EXTRA**

Extra Bandwidth Calibration

**Function**

This command executes band calibration within the current central frequency.

**Command**

**:CALibration:BAND:EXTRA**

**Details**

MS269xA

If this command is executed when MS269xA holds 100 values obtained by calibration, the oldest value is discarded and replaced by the newly obtained one.

MS2830A, MS2840A, MS2850A

If this command is executed, the value obtained by the previous calibration is discarded and replaced by the newly obtained one.

**Example of Use**

Executes band calibration within the current center frequency.

CAL:BAND:EXTR

**:CALibration:BAND:EXTRA:CLEar**

Extra Bandwidth Calibration Clear

**Function**

This command clears all the values obtained by Extra Band Cal and held by MS2690A/MS2691A/MS2692A, MS2830A, MS2840A or MS2850A.

**Command**

**:CALibration:BAND:EXTRA:CLEar**

**Example of Use**

To clear all the values obtained by Extra Band Cal and held by MS2690A/MS2691A/MS2692A, MS2830A, MS2840A, or MS2850A.

CAL:BAND:EXTR:CLE
Chapter 4  SCPI Device Message Details

:CALibration:FREQuency:BAND:EXTRa?
Extra Bandwidth Calibration Frequency Query

Function
This command queries a list of center frequencies of values that are obtained by Extra Band Cal and held by MS269xA.

Query
:CALibration:FREQuency:BAND:EXTRa?

Response
<freq>,<freq>,...

Parameter
<freq>  Center frequency of value obtained by Extra Band Cal
Range  30 MHz to 6 GHz
Resolution  1 Hz
Suffix code  None. Value is returned in Hz units.

Details
This command is available only for MS269xA.
The values are output in date and time order of calibration from the most recent first.
The values are output as many as the number of values held by MS269xA.
“–999.0” is returned when there exist no values obtained by Extra Band Cal.

Example of Use
To query a list of center frequencies of values that are obtained by Extra Band Cal and held by MS269xA.
CAL:FREQ:BAND:EXTR?
> 1000000000,2000000000,3000000000
4.1 Application Common Device Messages

:CALibration:TIME:BAND:EXTRa?
Extra Bandwidth Calibration Time Query

Function
This command queries a list of the elapsed time of each Extra Band Cal.

Query
:CALibration:TIME:BAND:EXTRa?

Response
<time>,<time>,...

Parameter
<time>  Elapsed time of Extra Band Cal
Suffix code  None. Value is returned in s units.

Details
This command is available only for MS269xA.
The values are output in date and time order of calibration from the most recent first.
The values are output as many as the number of values held by MS269xA.
“–999.0” is returned when there exist no values obtained by Extra Band Cal.

Example of Use
To query a list of the elapsed time of each Extra Band Cal.
CAL:TIME:BAND:EXTR?
> 1187,12872,21897
**:CALibration:NFLoor**

**Analyze Noise Floor**

**Function**

This command queries the noise floor calibration values inside the measuring instrument that are used for Noise Floor Reduction.

**Command**

:CALibration:NFLoor

**Details**

This command is available only when the MS2840A-051/151 or MS2850A-051/151 is installed, and the external mixer is Off for the spectrum analyzer function.

**Example of Use**

To query the noise floor calibration values inside the measuring instrument.

CAL:NFL

**:CALibration:TIME:NFLoor?**

**Analyze Noise Floor Time Query**

**Function**

This command queries the elapsed time since the last Analyze Noise Floor.

**Query**

:CALibration:TIME:NFLoor?

**Response**

<time>

**Parameter**

<time> Elapsed time since the last Analyze Noise Floor

Suffix code None. Value is returned in s units.

**Details**

This command is available only when the MS2840A-051/151 or MS2850A-051/151 is installed.

“***” is returned if Analyze Noise Floor has never been executed after shipment.

**Example of Use**

To query the elapsed time since the last Analyze Noise Floor.

CAL:TIME:NFL?

> 100
**Function**

This command queries the temperature inside the measuring instrument when the last Analyze Noise Floor was executed.

**Query**

`CALibration:TEMPerature:NFLoor?`

**Response**

`<temp>`

**Parameter**

`<temp>`  
Internal temperature when the last Analyze Noise Floor was executed.  
Suffix code  
None. Value is returned in °C units.

**Details**

This command is available only when the MS2840A-051/151 or MS2850A-051/151 is installed.  
“0.00” is returned if Analyze Noise Floor has never been executed after shipment.  
The internal temperature is about 50°C during operation at normal temperature.

**Example of Use**

To query the internal temperature when the last Analyze Noise Floor was executed.  
`CAL:TEMP:NFL?`  
`> 50.00`
:CALibration:NFLoor:MIXer
Analyze External Mixer Noise Floor

Function
This command queries the noise floor calibration values of the currently set external mixer band that are used for Noise Floor Reduction.

Command
:CALibration:NFLoor:MIXer

Details
This command is available only when the MS2840A-051/151 and MS2840A-044/046 are installed, or only when the MS2850A-051/151 is installed, and the external mixer is On for the spectrum analyzer function.
It is unavailable when the external mixer is Off.

Example of Use
To query the noise floor calibration values of the currently set external mixer band.
:CAL:NFL:MIX
4.1 Application Common Device Messages

:CALibration:TIME:NFLoor:MIXer?
Analyze External Mixer Noise Floor Time Query

Function
This command queries the elapsed time since the last Analyze External Mixer Noise Floor was executed.

Query
:CALibration:TIME:NFLoor:MIXer?

Response
<time>

Parameter
<time> Elapsed time since the last Analyze External Mixer Noise Floor.

Suffix code None. Value is returned in s units.

Details
This command is available only when the MS2840A-051/151 and MS2840A-044/046 are installed, or only when the MS2850A-051/151 is installed.
“***” is returned if Analyze External Mixer Noise Floor has never been executed after shipment.

Example of Use
To query the elapsed time since the last Analyze External Mixer Noise Floor was executed.
CAL:TIME:NFL:MIX?
> 100
:CALibration:TEMPerature:NFLoor:MIXer?

Analyze External Mixer Noise Floor Temperature Query

**Function**

This command queries the temperature inside the measuring instrument when the last Analyze External Mixer Noise Floor was executed.

**Query**

:CALibration:TEMPerature:NFLoor:MIXer?

**Response**

<temp>

**Parameter**

<temp> Internal temperature when Analyze External Mixer Noise Floor was executed

  Suffix code None. Value is returned in °C units.

**Details**

This command is available only when the MS2840A-051/151 and MS2840A-044/046 are installed, or only when the MS2850A-051/151 is installed.

“0.00” is returned if Analyze External Mixer Noise Floor has never been executed after shipment.

The internal temperature is about 50°C during operation at normal temperature.

**Example of Use**

To query the internal temperature when Analyze External Mixer Noise Floor was executed.

CAL:TEMP:NFL:MIX?

> 50.00
4.1 Application Common Device Messages

:CALibration:NFLoor:MIXer:HARMonic:BAND?

Analyze External Mixer Noise Floor Band Query

Function

This command queries the external mixer band when the last Analyze External Mixer Noise Floor was executed.

Query

:CALibration:NFLoor:MIXer:HARMonic:BAND?

Response

<b>band></b>

Parameter

<b>band</b>
- External mixer band
  - VHP: High Performance Waveguide Mixer Band VHP (50.0 to 75.0 GHz, 8+)
  - EHP: High Performance Waveguide Mixer Band EHP (60.0 to 90.0 GHz, 12–)
  - A: Band A (26.5 to 40.0 GHz, 4+)
  - Q: Band Q (33.0 to 50.0 GHz, 5+)
  - U: Band U (40.0 to 60.0 GHz, 6+)
  - V: Band V (50.0 to 75.0 GHz, 8+)
  - E: Band E (60.0 to 90.0 GHz, 9+)
  - W: Band W (75.0 to 110.0 GHz, 11+)
  - F: Band F (90.0 to 140.0 GHz, 14+)
  - D: Band D (110.0 to 170.0 GHz, 17+)
  - G: Band G (140.0 to 220.0 GHz, 22+)
  - Y: Band Y (170.0 to 260.0 GHz, 26+)
  - J: Band J (220.0 to 325.0 GHz, 33+)

Details

This command is available only when the MS2840A-051/151 and MS2840A-044/046 are installed, or only when the MS2850A-051/151 is installed.

“***” is returned if Analyze External Mixer Noise Floor has never been executed after shipment.

Example of Use

To query the external mixer band when the last Analyze External Mixer Noise Floor was executed.

CAL:NFL:MIX:HARM:BAND?

> VHP
Chapter 4  SCPI Device Message Details

:CALibration:NFLoor:CLEar
Analyze Noise Floor Clear

Function
This command clears the noise floor calibration values acquired by Analyze Noise Floor and Analyze External Mixer Noise Floor and stored in MS2840A or MS2850A.

Command
:CALibration:NFLoor:CLEar

Details
This command is available only when the MS2840A-051/151 or MS2850A-051/151 is installed and in the spectrum analyzer function. The noise floor calibration values that are stored inside at the shipment are not cleared by this command.

Example of Use
To clear the noise floor calibration values that are acquired by Analyze Noise Floor and Analyze External Mixer Noise Floor.
CAL:NFL:CLE

:SYSTem:RESult:MODE A|B
Result Mode

Function
This command sets the output mode of the measured result.

Command
:SYSTem:RESult:MODE <mode>

Parameter

<table>
<thead>
<tr>
<th>&lt;mode&gt;</th>
<th>Output mode</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Mode A (Default)</td>
</tr>
<tr>
<td>B</td>
<td>Mode B</td>
</tr>
</tbody>
</table>

Details
The Result Mode is initialized to Mode A through the following operation.
- Execute System Reset.
- Execute the system recovery function.

Example of Use
To set the response mode to Mode A.
SYST:RES:MODE A
4.1 Application Common Device Messages

:SYSTem:RESult:MODE?
Result Mode Query

Function
This command queries the output mode of the measured result.

Query
:SYSTem:RESult:MODE?

Response
<mode>

Parameter
<mode>  Output mode
A       Mode A (Default)
B       Mode B

Details
The Result Mode is initialized to Mode A through the following operation.
- Execute System Reset.
- Execute the system recovery function.

Example of Use
To query the response mode.
SYST:RES:MODE?
> A
:SYSTem:ERRor?
System Error Query

Function

This command queries the error messages that exist in errors and the event queue.
A description consisting of numbers and characters related to the error or event is saved to the error or event queue.

Query

:SYSTem:ERRor?

Response

<Error/event_number>, "<Error/event_description>"

Parameter

<Error/event_number>
This is an integer in the range of −32768 to +32767. The value zero indicates that there is no error or that no event has occurred.
A negative number indicates the occurrence of a standard error reserved by SCPI. A positive number indicates the occurrence of an error defined by MS269xA, MS2830A, MS2840A, or MS2850A.

<Error/event_description>
Each error message corresponds to an <Error/event number>. This character string can be up to 255 characters long.
### Table 4.1-2  Error Messages List

<table>
<thead>
<tr>
<th>Error/event_number</th>
<th>Error/event_description</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>–100</td>
<td>Command error</td>
<td>Indicates that the command is incorrect or invalid.</td>
</tr>
<tr>
<td>–108</td>
<td>Parameter not allowed</td>
<td>Indicates that the number of parameters does not match.</td>
</tr>
<tr>
<td>–109</td>
<td>Missing parameter</td>
<td>Indicates that the number of parameters does not match. This is used if the number is not either too large or too small.</td>
</tr>
<tr>
<td>–113</td>
<td>Undefined header</td>
<td>This is an undefined command.</td>
</tr>
<tr>
<td>–120</td>
<td>Numeric data error</td>
<td>An invalid value is included.</td>
</tr>
<tr>
<td>–140</td>
<td>Character data error</td>
<td>This indicates that characters that cannot be used were input.</td>
</tr>
<tr>
<td>–150</td>
<td>String data error</td>
<td>This indicates that an incorrect character string is included in the command.</td>
</tr>
<tr>
<td>–160</td>
<td>Block data error</td>
<td>This is an error in the binary data format.</td>
</tr>
<tr>
<td>–200</td>
<td>Execution error</td>
<td>This indicates that this is an execution error other than parameter settings.</td>
</tr>
<tr>
<td>–220</td>
<td>Parameter error</td>
<td>This indicates that a set parameter is incorrect or invalid.</td>
</tr>
<tr>
<td>–221</td>
<td>Setting conflict</td>
<td>This indicates that this is setting disabled state.</td>
</tr>
<tr>
<td>–222</td>
<td>Data out of range</td>
<td>This indicates that the settable range has been exceeded.</td>
</tr>
<tr>
<td>–250</td>
<td>Mass storage error</td>
<td>This is a file manipulation related error.</td>
</tr>
<tr>
<td>–252</td>
<td>Missing media</td>
<td>This indicates that the specified drive does not exist.</td>
</tr>
<tr>
<td>–253</td>
<td>Corrupt media</td>
<td>This is a format error.</td>
</tr>
<tr>
<td>–256</td>
<td>File name not found</td>
<td>This indicates that the file does not exist.</td>
</tr>
<tr>
<td>–350</td>
<td>Queue overflow</td>
<td>This indicates that the error event queue has overflowed.</td>
</tr>
</tbody>
</table>

**Details**

For commands that requires synchronization by *WAI commands when querying marker value:

Make sure to perform synchronization by *WAI and *OPC commands before querying the error messages by SYST:ERR?

**Example of Use**

To query an error message.

SYST:ERR?
> -100,Command error
:SYSTem:LANGuage SCPI|NATive
Language mode switching

Function

This command switches the language mode.

Command

:SYSTem:LANGuage <mode>

Parameter

<mode> Language mode
    SCPI SCPI mode
    NATive Native mode (Default)

Details

The language mode is initialized to the Native mode through the following operation.

- Execute System Reset.
- Execute system recovery function.

Example of Use

To switch the language mode to the Native mode.

SYST:LANG NAT
4.1 Application Common Device Messages

:SYSTem:LANGuage?
Language mode switching Query

Function
This command queries the language mode.

Query
:SYSTem:LANGuage?

Response

Parameter

<mode>

Language mode
SCPI
SCPI mode
NAT
Native mode (Default)

Details
The language mode is initialized to the Native mode through the following operation.
- Execute System Reset.
- Execute system recovery function.

Example of Use

To query the language mode.
SYST:LANG?
> NAT
[:SENSe]:ROSCillator:SOURce?
Reference Signal Query

Function
This command queries the frequency reference signal source.

Query
[:SENSe]:ROSCillator:SOURce?

Response
<source>

Parameter
<source> Language mode
    INT Internal reference signal source
    INTU Internal reference signal source (Unlock state)
    EXT External reference signal source
    EXTU External reference signal source (Unlock state)

Details
During frequency reference stabilization, *** is returned.

Example of Use
To query the external reference signal source.
ROSC:SOUR?
> EXT
4.1 Application Common Device Messages

[:SENSe]:POWer[:RF]:ATTenuation:MODE COMBined|MEChanical

Attenuation Mode

Function

This command sets Attenuation Mode.

Command

[:SENSe]:POWer[:RF]:ATTenuation:MODE <mode>

Parameter

<mode> Attenuator mode

For MS2690A/MS2691A/MS2692A:

This command is not available.

For MS2830A, MS2840A, or MS2850A:

MEChanical Uses mechanical attenuator.

COMBined Switches between electronic and mechanical attenuator according to frequencies.

Default

MEChanical (except below)

COMBined (MS2840A-046

without MS2840A-019/119)

Details

This sets the attenuator operation mode to be used.

Example of Use

To set attenuation mode to mechanical attenuator mode.

POW:ATT:MODE MECH
[:SENSe]:POWer[:RF]:ATTenuation:MODE?

Attenuation Mode Query

Function
This command queries Attenuation Mode.

Query
[:SENSe]:POWer[:RF]:ATTenuation:MODE?

Response
<mode>

Parameter

<mode> Attenuator mode

For MS2690A/MS2691A/MS2692A:
This command is not available.

For MS2830A, MS2840A, or MS2850A:
MECH Uses mechanical attenuator.
COMB Switches between electronic and mechanical attenuator according to frequencies.

Details
This sets the attenuator operation mode to be used.

Example of Use
To query Attenuation Mode.
POW:ATT:MODE?
> MECH
4.1 Application Common Device Messages

[:SENSe]:CORRection[:STATe] ON|OFF|1|0
Correction (On/Off)

Function
This command switches on/off the level frequency correction of the signal analyzer.

Command
[:SENSe]:CORRection[:STATe] <switch>

Parameter
<switch> Correction processing On/Off
ON|1 Sets Correction processing On.
OFF|0 Sets Correction processing Off. (Default)

Example of Use
To switch on the level frequency correction of the signal analyzer.
CORR ON

[:SENSe]:CORRection[:STATe]?
Correction On/Off Query

Function
This command queries on/off of the level frequency correction processing of the signal analyzer.

Query
[:SENSe]:CORRection[:STATe]?

Response
<switch>

Parameter
<switch> Correction processing On/Off
1 Correction processing On
0 Correction processing Off

Example of Use
To query the setting of the level frequency correction processing of the signal analyzer.
CORR?
> 1
[:SENSe]:CORRection:MAKE <freq>,<real>
Correction Make Up

Function
This command adds data to the level frequency correction table of the signal analyzer.

Command
[:SENSe]:CORRection:MAKE <freq>,<real>

Parameter

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Range</th>
<th>Resolution</th>
<th>Suffix code</th>
<th>Default</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;freq&gt;</td>
<td>Frequency to be corrected</td>
<td>–1 to 400 GHz</td>
<td>1 Hz</td>
<td>HZ, KHZ, KZ, MHZ, MZ, GHZ, GZ</td>
<td>0 Hz</td>
</tr>
<tr>
<td>&lt;real&gt;</td>
<td>Correction level</td>
<td>–100 to 100 dB</td>
<td>0.001 dB</td>
<td>DB</td>
<td>0 dB</td>
</tr>
</tbody>
</table>

Details
Up to 4096 data can be set. The data is not initialized by sending the command.
If you add the data continuously, set Correction to Off. You can then perform the setting smoothly.

Example of Use
To add data to the level frequency correction table of the signal analyzer.
CORR:MAKE 100MHZ,3DB

[:SENSe]:CORRection:MAKE:CLEar
Correction Make Up All Clear

Function
This command initializes the level frequency correction table of the signal analyzer.

Command
[:SENSe]:CORRection:MAKE:CLEar

Example of Use
To initialize the level frequency correction table of the signal analyzer.
CORR:MAKE:CLE
:MMEMory:STORe:CORRection [<filename>[,<device>]]

Correction File Save

Function
This command saves the level frequency correction table of the signal analyzer.

Command
:MMEMory:STORe:CORRection [<filename>[,<device>]]

Parameter

<filename> Target file name
Character string within 32 characters enclosed by double quotes (“ ”) or single quotes (’’) (excluding extension)
The following characters cannot be used: \\/: * ? " ' < > |
Automatically named as “Corr date sequential number.” when omitted.

<device> Drive name
A, B, D, E, F, ...
D drive is used when omitted.

Example of Use
To save the level frequency correction table of the signal analyzer in drive D under the file name "TEST".
MMEM:STOR:CORR "TEST", D
:MMEMory:LOAD:CORRection <filename>[,<device>]
Correction File Recall

Function
This command queries the level frequency correction table of the signal analyzer.

Command
:MMEMory:LOAD:CORRection <filename>[,<device>]

Parameter

<filename>  Target file name
Character string within 32 characters enclosed by double quotes (“ ”) or single quotes (‘ ’) (excluding extension)
The following characters cannot be used:
\ / : * ? “ " ’ < > |

<device>  Drive name
A, B, D, E, F, ...
D drive is used when omitted.

Example of Use
To load the level frequency table named “TEST” in drive D.
MMEM:LOAD:CORR "TEST", D
4.1 Application Common Device Messages

[:SENSe]:CORRection:DATA?
Correction Data Read

Function

This command queries the level frequency correction table data of the signal analyzer.

Query

[:SENSe]:CORRection:DATA?

Response

<number>,<freq_1>,<real_1>,<freq_2>,<real_2>,...

Parameter

- **<number>**: Number of data
  - Range: 0 to 4096

- **<freq>**: Frequency to be corrected
  - Range: –1 to 400 GHz
  - Resolution: 1 Hz
  - Suffix code: None. Value is returned in Hz units.

- **<real>**: Correction level
  - Range: –100 to 100 dB
  - Resolution: 0.001 dB
  - Suffix code: None. Value is returned in dB units.

Example of Use

To query the level frequency correction table data of the signal analyzer.

CORR:DATA?

> 1,1000000,10.000
[:SENSe]:FREQuency:SYNThesis:LPHase ON|OFF|1|0

Low Phase Noise

Function
This command enables/disables Low Phase Noise function.

Command
[:SENSe]:FREQuency:SYNThesis:LPHase <switch_n>

Parameter

<table>
<thead>
<tr>
<th>&lt;switch_n&gt;</th>
<th>Low Phase Noise switch</th>
</tr>
</thead>
<tbody>
<tr>
<td>ON</td>
<td>1</td>
</tr>
<tr>
<td>OFF</td>
<td>0</td>
</tr>
<tr>
<td>Default</td>
<td>On</td>
</tr>
</tbody>
</table>

Details
This command is available when MS2830A-062/066 or MS2840A-066/166 is installed.
When setting is enabled, the phase noise characteristics can be improved by using the Low Phase Noise function to perform measurement at all applications.
Moreover, if a signal outside the DUT frequency range is input while this function is enabled, it may be possible to measure spurious noise generated within the unit.
Refer to the mainframe Operation Manual (Operation) for details about spurious noise generation conditions.

Example of Use
To enable Low Phase Noise switch.
FREQ:SYNT:LPH ON
Low Phase Noise Query

This command queries the On/Off status of Low Phase Noise function.

[:SENSe]:FREQuency:SYNThesis:LPHase?

Query

[:SENSe]:FREQuency:SYNThesis:LPHase?

Response

<switch_n>

Parameter

<switch_n> Low Phase Noise switch
1 Low Phase Noise switch enabled.
0 Low Phase Noise switch disabled.

Details

This command is available when MS2830A-062/066 or MS2840A-066/166 is installed.

Example of Use

To query the On/Off status of Low Phase Noise function.
FREQ:SYNT:LPH?
> 1
**Chapter 4  SCPI Device Message Details**

**:DISPlay:WINDow[1]:ANNotation[:ALL] ON|OFF|1|0**

Display Annotation

**Function**

This command turns On/Off Display Annotation. When set to Off, the frequency and level of the measurement target are hidden from the screen.

**Command**

:DISPlay:WINDow[1]:ANNotation[:ALL] <switch_n>

**Parameter**

<switch_n>

<table>
<thead>
<tr>
<th>Display Annotation</th>
<th>Parameter</th>
</tr>
</thead>
<tbody>
<tr>
<td>ON</td>
<td>1</td>
</tr>
<tr>
<td>OFF</td>
<td>0</td>
</tr>
</tbody>
</table>

**Details**

Displays or hides the frequency and level of the measurement target by switching Display Annotation.

**Example of Use**

To set Display Annotation to Off.

DISP:WIND:ANN OFF
4.1 Application Common Device Messages

:DISPlay:WINDow[1]:ANNotation[:ALL]?
Display Annotation Query

Function
This command queries On/Off Display Annotation. When set to Off, the frequency and level of the measurement target are hidden from the screen.

Query
:DISPlay:WINDow[1]:ANNotation[:ALL]?

Response
<switch_n>

Parameter
<switch_n> Display Annotation
1 Display
0 Hide

Details
Queries whether the frequency and level of the measurement target are displayed on or hidden from the screen by Display Annotation.

Example of Use
To query whether Display Annotation is On or Off.
DISP:WIND:ANN?
> 0

:CALibration:ALERt:STATe?
Status of Calibration Alert

Function
Queries the Calibration Alert status.

Query
:CALibration:ALERt:STATe?

Response
<state>

Parameter
<state> Alert status
1 Alert
0 No Alert

Example of Use
To query Alert status.
CAL:ALER:STAT?
> 1
Chapter 4  SCPI Device Message Details

:OUTPut:MANual:NOISe[:STATe] ON|OFF|1|0
Noise Source Power On/Off

Function
This command sets Noise Source power On/Off.

Command
:OUTPut:MANual:NOISe[:STATe] <switch>

Parameter

<table>
<thead>
<tr>
<th>&lt;switch&gt;</th>
<th>Noise Source power On/Off</th>
</tr>
</thead>
<tbody>
<tr>
<td>ON</td>
<td>1</td>
</tr>
<tr>
<td>OFF</td>
<td>0</td>
</tr>
</tbody>
</table>

Details
Set only while Noise Source is connected to the Noise Source Drive connector found in the rear panel.

Notes:
- Leaving Noise Source power On is dangerous. Set Noise Power On only at minimum necessary times.
- Remove Noise Source only after setting Noise Source power Off.

In Noise Figure Measurement Function, if NF CAL, NF measurement, etc. is executed, Noise Source power is switched Off.

Example of Use
To set Noise Source power On.
OUTP:MAN:NOIS ON

Related Commands
This command has the same function as the following commands.
:SOURce:NOISe[:STATe] ON|OFF|1|0
:DIAGnostic:SERVice:NSOurce ON|OFF|1|0
:OUTPut:MANual:NOISe[:STATe]?
Noise Source Power On/Off Query

Function
This command queries the On/Off state of the Noise Source power.

Query
:OUTPut:MANual:NOISe[:STATe]?

Response
<switch>

Parameter
<switch> Noise Source power On/Off
  ON Sets Noise Source power On.
  OFF Sets Noise Source power Off.

Example of Use
To queries the On/Off state of the Noise Source power.
OUTP:MAN:NOIS?
> ON

Related Commands
This command has the same function as the following commands.
:SOURce:NOISe[:STATe]?
:DIAGnostic:SERVice:NSOurce?
4.1.1 QUEStionable Status Register

The figure below shows the layer structure of the QUEStionable status register.

![QUEStionable Status Register Diagram](image)

Table 4.1.1-1 QUEStionable Status Register

<table>
<thead>
<tr>
<th>Byte definition of QUEStionable Status Register</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>DB8</td>
<td>QUEStionable Calibration Register summary</td>
</tr>
</tbody>
</table>

![QUEStionable Calibration Register Diagram](image)

Table 4.1.1-2 QUEStionable Calibration Register

<table>
<thead>
<tr>
<th>Byte definition of QUEStionable Calibration Register</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>DB14</td>
<td>Indicates the occurrence of Calibration Alert</td>
</tr>
</tbody>
</table>
### 4.1 Application Common Device Messages

#### Table 4.1.1-3 Device messages for QUEStionable Status Register

<table>
<thead>
<tr>
<th>Function</th>
<th>Device Messages</th>
</tr>
</thead>
<tbody>
<tr>
<td>Questionable Status Register Event</td>
<td>:STATus:QUEStionable[:EVENt]?</td>
</tr>
<tr>
<td>Questionable Status Register Condition</td>
<td>:STATus:QUEStionable:CONDition?</td>
</tr>
<tr>
<td>Questionable Status Register Enable</td>
<td>:STATus:QUEStionable:ENABLE &lt;integer&gt;</td>
</tr>
<tr>
<td></td>
<td>:STATus:QUEStionable:ENABLE?</td>
</tr>
<tr>
<td>Questionable Status Register Negative Transition</td>
<td>:STATus:QUEStionable:NTRansition &lt;integer&gt;</td>
</tr>
<tr>
<td></td>
<td>:STATus:QUEStionable:NTRansition?</td>
</tr>
<tr>
<td>Questionable Status Register Positive Transition</td>
<td>:STATus:QUEStionable:PTRansition &lt;integer&gt;</td>
</tr>
<tr>
<td></td>
<td>:STATus:QUEStionable:PTRansition?</td>
</tr>
<tr>
<td>Questionable Calibration Register Event</td>
<td>:STATus:QUEStionable:CALibration[:EVENt]?</td>
</tr>
<tr>
<td>Questionable Calibration Register Condition</td>
<td>:STATus:QUEStionable:CALibration:CONDition?</td>
</tr>
<tr>
<td>Questionable Calibration Register Enable</td>
<td>:STATus:QUEStionable:CALibration:ENABLE &lt;integer&gt;</td>
</tr>
<tr>
<td></td>
<td>:STATus:QUEStionable:CALibration:ENABLE?</td>
</tr>
<tr>
<td>Questionable Calibration Register Negative Transition</td>
<td>:STATus:QUEStionable:CALibration:NTRansition &lt;integer&gt;</td>
</tr>
<tr>
<td></td>
<td>:STATus:QUEStionable:CALibration:NTRansition?</td>
</tr>
<tr>
<td>Questionable Calibration Register Positive Transition</td>
<td>:STATus:QUEStionable:CALibration:PTRansition &lt;integer&gt;</td>
</tr>
<tr>
<td></td>
<td>:STATus:QUEStionable:CALibration:PTRansition?</td>
</tr>
</tbody>
</table>
:STATus:QUEStionable[:EVENt]?
Questionable Status Register Event

Function
This command queries the event register of the QUEStionable status register.

Query
:STATus:QUEStionable[:EVENt]?

Response
<integer>

Parameter
<integer> Total bytes of event register
Range 1
Resolution 0 to 65535

Details
This command is available only in the SCPI mode.

Example of Use
To query the contents of the event register of the QUEStionable status register.
STAT:QUES?
> 256

:STATus:QUEStionable:CONDition?
Questionable Status Register Condition

Function
This command queries the condition register of the QUEStionable status register.

Query
:STATus:QUEStionable:CONDition?

Response
<integer>

Parameter
<integer> Total bytes of condition register
Range 1
Resolution 0 to 65535

Example of Use
To query the contents of the condition register of the QUEStionable status register.
STAT:QUES:COND?
> 256
**:STATus:QUEStionable:ENABle <integer>**

Questionable Status Register Enable

**Function**

This command sets the event enable register of the QUEStionable status register.

**Command**

`:STATus:QUEStionable:ENABle <integer>`

**Parameter**

<integer> Total bytes of event enable register

Range 1
Resolution 0 to 65535

**Details**

This command is available only in the SCPI mode.

**Example of Use**

To set the event enable register of the QUEStionable status register to 256.

`STAT:QUES:ENAB 256`

**:STATus:QUEStionable:ENABle?**

Questionable Status Register Enable Query

**Function**

This command queries the event enable register of the QUEStionable status register.

**Query**

`:STATus:QUEStionable:ENABle?`

**Response**

<integer>

**Parameter**

<integer> Total bytes of the event enable register

Range 1
Resolution 0 to 65535

**Example of Use**

To query the event enable register of the QUEStionable status register.

`STAT:QUES:ENAB?`

`> 256`
Chapter 4  SCPI Device Message Details

:STATus:QUESTionable:NTRansition <integer>
Questionable Status Register Negative Transition

Function

This command sets the transition filter (negative direction change) of the QUESTionable status register.

Command

:STATus:QUESTionable:NTRansition <integer>

Parameter

<integer>  Total bytes of transition filter (negative direction change)
Range      1
Resolution 0 to 65535

Details

This command is available only in the SCPI mode.

Example of Use

To set the transition filter (negative direction change) of the QUESTionable status register to 256.
STAT:QUES:NTR 256

:STATus:QUESTionable:NTRansition?
Questionable Status Register Negative Transition Query

Function

This command queries the transition filter (negative direction change) of the QUESTionable status register.

Query

:STATus:QUESTionable:NTRansition?

Response

<integer>

Parameter

<integer>  Total bytes of transition filter (negative direction change)
Range      1
Resolution 0 to 65535

Example of Use

To query the transition filter (negative direction change) of the QUESTionable status register.
STAT:QUES:NTR?
> 256
4.1 Application Common Device Messages

:STATus:QUESTionable:PTRansition <integer>
Questionable Status Register Positive Transition

Function
This command sets the transition filter (positive direction change) of the QUESTionable status register.

Command
:STATus:QUESTionable:PTRansition <integer>

Parameter
<integer> Total bytes of transition filter (positive direction change)
Range 1
Resolution 0 to 65535

Details
This command is available only in the SCPI mode.

Example of Use
To set the transition filter (positive direction change) of the QUESTionable status register to 256.
STAT:QUES:PTR 256

:STATus:QUESTionable:PTRansition?
Questionable Status Register Positive Transition Query

Function
This command queries the transition filter (positive direction change) of the QUESTionable status register.

Query
:STATus:QUESTionable:PTRansition?

Response
<integer>

Parameter
<integer> Total bytes of transition filter (positive direction change)
Range 1
Resolution 0 to 65535

Example of Use
To query the transition filter (positive direction change) of the QUESTionable status register.
STAT:QUES:PTR?
> 256
:STATus:QUESTionable:CALibration[:EVENt]?
Questionable Calibration Register Event

Function
This command queries the event register of the QUESTionable Calibration register.

Query
STATus:QUESTionable:CALibration[:EVENt]?

Response
<integer>

Parameter
<integer> Total bytes of event register
Range 1
Resolution 0 to 65535

Example of Use
To query the contents of the event register of the QUESTionable Calibration register.
STAT:QUES:CAL?
> 16384

:STATus:QUESTionable:CALibration:CONDition?
Questionable Calibration Register Condition

Function
This command queries the condition register of the QUESTionable Calibration register.

Query
:STATus:QUESTionable:CALibration:CONDition?

Response
<integer>

Parameter
<integer> Total bytes of condition register
Range 1
Resolution 0 to 65535

Example of Use
To query the contents of the condition register of the QUESTionable Calibration register.
STAT:QUES:CAL:COND?
> 16384
4.1 Application Common Device Messages

:STATus:QUESTionable:CALibration:ENABle <integer>
Questionable Calibration Register Enable

Function
This command sets the event enable register of the QUESTionable Calibration register.

Command
:STATus:QUESTionable:CALibration:ENABle <integer>

Parameter
<integer> Total bytes of event enable register
  Range 1
  Resolution 0 to 65535

Details
This command is available only in the SCPI mode.

Example of Use
To set the event enable register of the QUESTionable Calibration register to 16384.
STAT:QUES:CAL:ENAB 16384

:STATus:QUESTionable:CALibration:ENABle?
Questionable Calibration Register Enable Query

Function
This command queries the event enable register of the QUESTionable Calibration register.

Query
:STATus:QUESTionable:CALibration:ENABle?

Response
<integer>

Parameter
<integer> Total bytes of event enable register
  Range 1
  Resolution 0 to 65535

Example of Use
To query the event enable register of the QUESTionable Calibration register.
STAT:QUES:CAL:ENAB?
> 16384
:STATus:QUESTionable:CALibration:NTRansition <integer>
Questionable Calibration Register Negative Transition

Function

This command sets the transition filter (negative direction change) of the QUESTionable Calibration register.

Command

:STATus:QUESTionable:CALibration:NTRansition <integer>

Parameter

<integer> Total bytes of transition filter (negative direction change)
Range 1
Resolution 0 to 65535

Details

This command is available only in the SCPI mode.

Example of Use

To set the transition filter (negative direction change) of the QUESTionable Calibration register to 16384.
STAT:QUES:CAL:NTR 16384

:STATus:QUESTionable:CALibration:NTRansition?
Questionable Calibration Register Negative Transition Query

Function

This command queries the transition filter (negative direction change) of the QUESTionable Calibration register.

Query

:STATus:QUESTionable:CALibration:NTRansition?

Response

<integer>

Parameter

<integer> Total bytes of transition filter (negative direction change)
Range 1
Resolution 0 to 65535

Example of Use

To query the transition filter (negative direction change) of the QUESTionable Calibration register.
STAT:QUES:CAL:NTR?
> 16384
4.1 Application Common Device Messages

:STATus:QUESTionable:CALibration:PTRansition <integer>
Questionable Calibration Register Positive Transition

Function
This command sets the transition filter (positive direction change) of the QUESTionable Calibration register.

Command
:STATus:QUESTionable:CALibration:PTRansition <integer>

Parameter
<integer> Total bytes of transition filter (positive direction change)
Range 1
Resolution 0 to 65535

Details
This command is available only in the SCPI mode.

Example of Use
To set the transition filter (positive direction change) of the QUESTionable Calibration register to 16384.
STAT:QUES:CAL:PTR 16384

:STATus:QUESTionable:CALibration:PTRansition?
Questionable Calibration Register Positive Transition Query

Function
This command queries the transition filter (positive direction change) of the QUESTionable Calibration register.

Query
:STATus:QUESTionable:CALibration:PTRansition?

Response
<integer>

Parameter
<integer> Total bytes of transition filter (positive direction change)
Range 1
Resolution 0 to 65535

Example of Use
To query the transition filter (positive direction change) of the QUESTionable Calibration register.
STAT:QUES:CAL:PTR?
> 16384
## 4.2 Config Function Device Messages

Config Function device messages available in this application are shown in Table 4.2-1.

<table>
<thead>
<tr>
<th>Function</th>
<th>Device Messages</th>
</tr>
</thead>
<tbody>
<tr>
<td>Load Application</td>
<td>:SYStem:APPLication:LOAD &lt;apl_name&gt;</td>
</tr>
<tr>
<td>Unload Application</td>
<td>:SYStem:APPLication:UNLoad &lt;apl_name&gt;</td>
</tr>
<tr>
<td>Delimiter (Terminator)</td>
<td>:SYStem:COMMunicate:GPIB[1][SELF]:DELimiter LF</td>
</tr>
<tr>
<td></td>
<td>:SYStem:COMMunicate:GPIB[1][SELF]:DELimiter?</td>
</tr>
<tr>
<td>Sound On/Off</td>
<td>:SYStem:BEEPer ON</td>
</tr>
<tr>
<td></td>
<td>:SYStem:BEEPer?</td>
</tr>
<tr>
<td>Screen Hard Copy Color</td>
<td>:MMEMory:STORe:SCReen:THEMe NORMal</td>
</tr>
<tr>
<td></td>
<td>:MMEMory:STORe:SCReen:THEMe?</td>
</tr>
<tr>
<td>Frequency Reference</td>
<td>[:SENSe]:ROSCillator:SOURce:AUTO ON</td>
</tr>
<tr>
<td></td>
<td>[:SENSe]:ROSCillator:SOURce:AUTO?</td>
</tr>
<tr>
<td>Move Parameter File (HDD/SSD to Device)</td>
<td>:MMEMory:MOVE:STATe &lt;filename&gt;,&lt;device&gt;</td>
</tr>
<tr>
<td>Copy Parameter File (Device to HDD/SSD)</td>
<td>:MMEMory:COPY:STATe &lt;filename&gt;,&lt;device&gt;</td>
</tr>
<tr>
<td>Delete Parameter File</td>
<td>:MMEMory:DELeTe:STATe &lt;filename&gt;,&lt;device&gt;</td>
</tr>
<tr>
<td>Protect Parameter File</td>
<td>:MMEMory:PROTection:STATe[:STATe] &lt;filename&gt;,ON</td>
</tr>
<tr>
<td></td>
<td>:MMEMory:PROTection:STATe[:STATe]? &lt;filename&gt;,&lt;device&gt;</td>
</tr>
<tr>
<td>Parameter File List Query</td>
<td>:MMEMory:CATalog:STATe? &lt;device&gt;</td>
</tr>
<tr>
<td>Move Hard Copy File (HDD/SSD to Device)</td>
<td>:MMEMory:MOVE:SCReen &lt;filename&gt;,&lt;device&gt;</td>
</tr>
<tr>
<td>Copy Hard Copy File (Device to HDD/SSD)</td>
<td>:MMEMory:COPY:SCReen &lt;filename&gt;,&lt;device&gt;</td>
</tr>
<tr>
<td>Delete Hard Copy File</td>
<td>:MMEMory:DELeTe:SCReen &lt;filename&gt;,&lt;device&gt;</td>
</tr>
<tr>
<td>Protect Hard Copy File</td>
<td>:MMEMory:PROTection:SCReen[:STATe] &lt;filename&gt;,ON</td>
</tr>
<tr>
<td></td>
<td>:MMEMory:PROTection:SCReen[:STATe]? &lt;filename&gt;,&lt;device&gt;</td>
</tr>
</tbody>
</table>
### 4.2 Config Function Device Messages

<table>
<thead>
<tr>
<th>Function</th>
<th>Device Messages</th>
</tr>
</thead>
<tbody>
<tr>
<td>Move Trace File</td>
<td>:MMEMory:MOVE:TRACe &lt;filename&gt;,&lt;apl_name&gt;,&lt;device&gt;</td>
</tr>
<tr>
<td>(HDD/SSD to Device)</td>
<td></td>
</tr>
<tr>
<td>Copy Trace File</td>
<td>:MMEMory:COPY:TRACe &lt;filename&gt;,&lt;apl_name&gt;,&lt;device&gt;</td>
</tr>
<tr>
<td>(Device to HDD/SSD)</td>
<td></td>
</tr>
<tr>
<td>Delete Trace File</td>
<td>:MMEMory:DELe:TRACe &lt;filename&gt;,&lt;apl_name&gt;,&lt;device&gt;</td>
</tr>
<tr>
<td>Protect Trace File</td>
<td>:MMEMory:PROTection:TRACe[:STATe]</td>
</tr>
<tr>
<td></td>
<td>&lt;filename&gt;,ON</td>
</tr>
<tr>
<td></td>
<td>:MMEMory:PROTection:TRACe[:STATe]?</td>
</tr>
<tr>
<td></td>
<td>&lt;filename&gt;,&lt;apl_name&gt;,&lt;device&gt;</td>
</tr>
<tr>
<td>Trace File List Query</td>
<td>:MMEMory:CATalog:TRACe? &lt;apl_name&gt;,&lt;device&gt;</td>
</tr>
<tr>
<td>Move Digitize File</td>
<td>:MMEMory:MOVE:DIGitize &lt;filename&gt;,&lt;apl_name&gt;,&lt;device&gt;</td>
</tr>
<tr>
<td>(HDD/SSD to Device)</td>
<td></td>
</tr>
<tr>
<td>Copy Digitize File</td>
<td>:MMEMory:COPY:DIGitize &lt;filename&gt;,&lt;apl_name&gt;,&lt;device&gt;</td>
</tr>
<tr>
<td>(Device to HDD/SSD)</td>
<td></td>
</tr>
<tr>
<td>Delete Digitize File</td>
<td>:MMEMory:DELe:DIGitize &lt;filename&gt;,&lt;apl_name&gt;,&lt;device&gt;</td>
</tr>
<tr>
<td>Protect Digitize File</td>
<td>:MMEMory:PROTection:DIGitize[:STATe]</td>
</tr>
<tr>
<td></td>
<td>&lt;filename&gt;,ON</td>
</tr>
<tr>
<td></td>
<td>:MMEMory:PROTection:DIGitize[:STATe]?</td>
</tr>
<tr>
<td></td>
<td>&lt;filename&gt;,&lt;apl_name&gt;,&lt;device&gt;</td>
</tr>
<tr>
<td>Digitize File List Query</td>
<td>:MMEMory:CATalog:DIGitize? &lt;apl_name&gt;,&lt;device&gt;</td>
</tr>
<tr>
<td>Move System Information File</td>
<td>:MMEMory:MOVE:SYSinfo &lt;filename&gt;,&lt;device&gt;</td>
</tr>
<tr>
<td>(HDD/SSD to Device)</td>
<td></td>
</tr>
<tr>
<td>Copy System Information File</td>
<td>:MMEMory:COPY:SYSinfo &lt;filename&gt;,&lt;device&gt;</td>
</tr>
<tr>
<td>(Device to HDD/SSD)</td>
<td></td>
</tr>
<tr>
<td>Delete System Information File</td>
<td>:MMEMory:DELe:SYSinfo &lt;filename&gt;,&lt;device&gt;</td>
</tr>
<tr>
<td>Protect System Information File</td>
<td>:MMEMory:PROTection:SYSinfo[:STATe]</td>
</tr>
<tr>
<td></td>
<td>&lt;filename&gt;,ON</td>
</tr>
<tr>
<td></td>
<td>:MMEMory:PROTection:SYSinfo[:STATe]?</td>
</tr>
<tr>
<td></td>
<td>&lt;filename&gt;,&lt;device&gt;</td>
</tr>
<tr>
<td>System Information Query</td>
<td>:SYSTem:INFormation:CATalog?</td>
</tr>
<tr>
<td>Product Model Query</td>
<td>:SYSTem:INFormation:MODel?</td>
</tr>
<tr>
<td>Product Type Query</td>
<td>:SYSTem:INFormation:TYPE?</td>
</tr>
<tr>
<td>Serial Number Query</td>
<td>:SYSTem:INFormation:SERial?</td>
</tr>
<tr>
<td>Running Time Query</td>
<td>:SYSTem:INFormation:RTIME?</td>
</tr>
</tbody>
</table>
### Table 4.2-1  Config Function Device Messages (Cont’d)

<table>
<thead>
<tr>
<th>Function</th>
<th>Device Messages</th>
</tr>
</thead>
<tbody>
<tr>
<td>Attenuator Switching Times</td>
<td>:SYSTem:INFormation:SWITCH?</td>
</tr>
<tr>
<td>Option Information Query</td>
<td>:SYSTem:Hardware:OPTion:CATalog?</td>
</tr>
<tr>
<td>Software License Information Query</td>
<td>:SYSTem:SOFTWARE:CATalog?</td>
</tr>
<tr>
<td>Software License and Option Information Query</td>
<td>:SYSTem:SOFTWARE:CATalog:ALL?</td>
</tr>
<tr>
<td>Software Version Query</td>
<td>:SYSTem:APPLication:VERSION? &lt;apl_name&gt;</td>
</tr>
<tr>
<td>FPGA, PLD, DSP Version Query</td>
<td>:SYSTem:FPGA:VERSION? &lt;hardware&gt;</td>
</tr>
<tr>
<td>All FPGA, PLD, DSP Version Query</td>
<td>:SYSTem:FPGA:VERSION:CATalog?</td>
</tr>
<tr>
<td>Hardware Revision Query</td>
<td>:SYSTem:HARDware:REVision? &lt;hardware&gt;</td>
</tr>
<tr>
<td>All Hardware Revision Query</td>
<td>:SYSTem:HARDware:REVision:CATalog?</td>
</tr>
<tr>
<td>RF Temperature Query</td>
<td>:SYSTem:TEMPerature:RF?</td>
</tr>
<tr>
<td>External Reference Frequency</td>
<td>[:SENSe]:ROSCillator:EXtternal:FREQuency &lt;freq&gt;</td>
</tr>
<tr>
<td></td>
<td>[:SENSe]:ROSCillator:EXternal:FREQuency?</td>
</tr>
<tr>
<td>Calibration Alert Mode</td>
<td>:CALibration:ALERt:MODE NONE</td>
</tr>
<tr>
<td></td>
<td>:CALibration:ALERt:MODE?</td>
</tr>
<tr>
<td>Calibration Alert Temperature</td>
<td>:CALibration:ALERt:TEMPerature</td>
</tr>
<tr>
<td></td>
<td>:CALibration:ALERt:TEMPerature?</td>
</tr>
<tr>
<td>Calibration Alert Time</td>
<td>:CALibration:ALERt:TIME</td>
</tr>
<tr>
<td></td>
<td>:CALibration:ALERt:TIME?</td>
</tr>
</tbody>
</table>
4.2 Config Function Device Messages

:SYSTem:APPLication:LOAD <apl_name>
Load Application

Function
Activates an application.

Command
:SYSTem:APPLication:LOAD <apl_name>

Parameter

<table>
<thead>
<tr>
<th>&lt;apl_name&gt;</th>
<th>Target application name</th>
</tr>
</thead>
<tbody>
<tr>
<td>SIGANA</td>
<td>Signal Analyzer</td>
</tr>
<tr>
<td>SPECT</td>
<td>Spectrum Analyzer</td>
</tr>
<tr>
<td>PNOISE</td>
<td>Phase Noise</td>
</tr>
<tr>
<td>PMETer</td>
<td>Power Meter</td>
</tr>
<tr>
<td>BER</td>
<td>BER Test</td>
</tr>
</tbody>
</table>

Details
This function activates an installed application and registers it to the Application Switch menu.
In order to use the [SIGANA] argument with MS2830A, the analysis bandwidth option (MS2830A-006/106) is required.
In order to use the [SIGANA] argument with MS2840A, the analysis bandwidth option (MS2840A-006/106) is required.
In order to use the [PNOISE] argument with MS2830A, the phase noise measurement option (MS2830A-010/110) is required.
In order to use the [PNOISE] argument with MS2840A, the phase noise measurement option (MS2840A-010/110) is required.
In order to use the [PNOISE] argument with MS2850A, the phase noise measurement option (MS2850A-010/110) is required.
For parameters to specify an application other than the standard ones, refer to the operation manual (remote control) for each application.

Example of Use
To activate the Signal Analyzer application.
SYST:APPL:LOAD SIGANA
Chapter 4  SCPI Device Message Details

:SYSTem:APPLication:UNLoad <apl_name>

Unload Application

Function
Exits an application.

Command
:SYSTem:APPLication:UNLoad <apl_name>

Parameter

- <apl_name>  Target application name
- SIGANA    Signal Analyzer
- SPECT     Spectrum Analyzer
- PNOISE    Phase Noise
- PMETER    Power Meter
- BER       BER Test

Details
This function exits an activated application and deletes it from the Application Switch menu.
In order to use the [SIGANA] argument with MS2830A, the analysis bandwidth option (MS2830A-006/106) is required.
In order to use the [SIGANA] argument with MS2840A, the analysis bandwidth option (MS2840A-006/106) is required.
In order to use the [PNOISE] argument with MS2830A, the phase noise measurement option (MS2830A-010/110) is required.
In order to use the [PNOISE] argument with MS2840A, the phase noise measurement option (MS2840A-010/110) is required.
In order to use the [PNOISE] argument with MS2850A, the phase noise measurement option (MS2850A-010/110) is required.
For parameters to specify an application other than the standard ones, refer to the operation manual (remote control) for each application.

Example of Use
To exit the Signal Analyzer application.
SYST:APPL:UNL SIGANA
4.2 Config Function Device Messages

:SYStem:COMMunicate:GPIB[1][SELF]:DELimiter LF|CRLF|NONE

Delimiter (Terminator)

Function

Sets a delimiter (termination code) for remote control.

Command

:SYStem:COMMunicate:GPIB[1][SELF]:DELimiter <mode>

Parameter

<mode>  Delimiter type
LF  LF
CRLF  CR/LF (Default)
NONE  None (EOI only)

Example of Use

To set the delimiter to CR/LF.

SYST:COMM:GPIB:DEL CRLF
:SYSTem:COMMunicate:GPIB[1][:SELF]:DELimiter?

Delimiter (Terminator) Query

Function
This command queries a delimiter (termination code) for remote control.

Query
:SYSTem:COMMunicate:GPIB[1][:SELF]:DELimiter?

Response
<mode>

Parameter

<table>
<thead>
<tr>
<th>&lt;mode&gt;</th>
<th>Delimiter type</th>
</tr>
</thead>
<tbody>
<tr>
<td>LF</td>
<td>LF</td>
</tr>
<tr>
<td>CRLF</td>
<td>CR/LF (Default)</td>
</tr>
<tr>
<td>NONE</td>
<td>None (EOI only)</td>
</tr>
</tbody>
</table>

Example of Use
To query a delimiter (termination code) for remote control.
SYST:COMM:GPIB:DEL?
> CRLF
4.2 Config Function Device Messages

:SYSTem:BEEPer ON|OFF|0|1
Sound On/Off

Function
This command turns the sound ON/OFF.

Command
:SYSTem:BEEPer <switch>

Parameter

<table>
<thead>
<tr>
<th>&lt;switch&gt;</th>
<th>Sound ON/OFF</th>
</tr>
</thead>
<tbody>
<tr>
<td>ON</td>
<td>1</td>
</tr>
<tr>
<td>OFF</td>
<td>0</td>
</tr>
</tbody>
</table>

Example of Use
To set sound to ON.
SYST:BEEP ON

:SYSTem:BEEPer?
Sound On/Off Query

Function
This command queries the sound ON/OFF status.

Query
:SYSTem:BEEPer?

Response

<table>
<thead>
<tr>
<th>&lt;switch&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
</tr>
<tr>
<td>0</td>
</tr>
</tbody>
</table>

Example of Use
To query the sound ON/OFF status.
SYST:BEEP?
> 1
**Chapter 4  SCPI Device Message Details**

**:MMEMory:STORe:SCReen:THEMe**

**NORMal|REVerse|MONochrome|MREVerse**

Screen Hard Copy Color

**Function**

Sets the screen hardcopy color image.

**Command**

`:MMEMory:STORe:SCReen:THEMe <mode>`

**Parameter**

<table>
<thead>
<tr>
<th>&lt;mode&gt;</th>
<th>Color image setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>NORMal</td>
<td>Displays color image (Default)</td>
</tr>
<tr>
<td>REVerse</td>
<td>Reverse displays color image.</td>
</tr>
<tr>
<td>MONochrome</td>
<td>Displays monochrome image.</td>
</tr>
<tr>
<td>MREVerse</td>
<td>Reverse displays monochrome image.</td>
</tr>
</tbody>
</table>

**Example of Use**

To reverse the screen hardcopy color image.

```
MMEM:STOR:SCR:THEM REV
```

**:MMEMory:STORe:SCReen:THEMe?**

Screen Hard Copy Color Query

**Function**

This command queries the screen hardcopy color image settings.

**Query**

`:MMEMory:STORe:SCReen:THEMe?`

**Response**

```
<mode>
```

<table>
<thead>
<tr>
<th>&lt;mode&gt;</th>
<th>Color image setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>NORM</td>
<td>Displays color image (Default)</td>
</tr>
<tr>
<td>REV</td>
<td>Reverse displays color image.</td>
</tr>
<tr>
<td>MON</td>
<td>Displays monochrome image.</td>
</tr>
<tr>
<td>MREV</td>
<td>Reverse displays monochrome image.</td>
</tr>
</tbody>
</table>

**Example of Use**

To query the screen hardcopy color image settings.

```
MMEM:STOR:SCR:THEM?
> REV
```
4.2 Config Function Device Messages

[:SENSe]:ROSCillator:SOURce:AUTO ON|OFF|1|0
Frequency Reference

Function
This command selects the frequency reference signal source.

Command
[:SENSe]:ROSCillator:SOURce:AUTO <switch>

Parameter
<switch> Frequency reference signal source
  OFF|0 Uses internal reference signal source.
  ON|1 Synchronizes with the external reference signal source if an external reference signal is input.
  Synchronizes with the internal reference signal source if no input is detected. (Default)

Example of Use
To use the internal frequency reference signal source.
ROSC:SOUR:AUTO OFF

[:SENSe]:ROSCillator:SOURce:AUTO?
Frequency Reference Query

Function
This command queries the frequency reference signal source.

Query
[:SENSe]:ROSCillator:SOURce:AUTO?

Response
<switch>

Parameter
<switch> Frequency reference signal source
  0 Uses internal reference signal source.
  1 Synchronizes with the internal reference signal source if no input is detected. (Default)

Example of Use
To query the internal frequency reference signal source.
ROSC:SOUR:AUTO?
> 0
:MMEMory:MOVE:STATe <filename>,<device>
Move Parameter File (HDD/SSD to Device)

Function
Moves a parameter file saved in the internal storage to the specified device.

Command
:MMEMory:MOVE:STATe <filename>,<device>

Parameter

<filename>  Target filename
Character string within 32 characters enclosed by double quotes (" ") or single quotes (’ ’) (excluding extension)
The following characters cannot be used:
\ / : * ? “ “ ’ ‘ < > |

<device>  Drive name
A,B,E,F,...

Details
If a file of the same name already exists in the move destination folder, the file in the move destination folder is deleted.

Example of Use
To move the "parameter" parameter file to drive E.
MMEM:MOVE:STAT "parameter",e
**:MMEMory:COPY:STATe <filename>,<device>**

Copy Parameter File (Device to HDD/SSD)

**Function**

Copies a parameter file from the specified storage device to the internal storage.

**Command**

`:MMEMory:COPY:STATe <filename>,<device>`

**Parameter**

- `<filename>`: Target filename
  - Character string within 32 characters enclosed by double quotes (" ") or single quotes (’ ’) (excluding extension)
  - The following characters cannot be used: \ / : * ? " " ' ' < > |

- `<device>`: Drive name
  - A,B,E,F,...

**Details**

If a file of the same name already exists in the move destination folder, the file in the move destination folder is deleted.

**Example of Use**

To copy the "parameter" parameter file in drive E to the internal storage.

`MMEM:COPY:STAT "parameter",e`
Delete Parameter File

Function

Deletes a parameter file saved in the specified device.

Command

:MMEMory:DELeTe:STATe <filename>,<device>

Parameter

<filename>  Target filename  
Character string within 32 characters enclosed by double quotes (" ") or single quotes (’’) (excluding extension)
The following characters cannot be used:
\ / : * ? “ ” ‘ ‘ < > |

<device>  Drive name  
A,B,D,E,F,...

Example of Use

To delete the parameter file “Parameter” saved in drive E.

MMEM:DEL:STAT "Parameter",e
4.2 Config Function Device Messages

:MMEMory:PROTection:STATe[:STATe] <filename>,ON|OFF|0|1,<device>

Protect Parameter File

Function

Protects a parameter file saved in the specified drive. Protected files cannot be deleted.

Command

:MMEMory:PROTection:STATe[:STATe]
<filename>,<switch>,<device>

Parameter

<table>
<thead>
<tr>
<th>&lt;filename&gt;</th>
<th>Target filename</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Character string within 32 characters enclosed by double quotes (“”) or single quotes (‘’) (excluding extension)</td>
</tr>
<tr>
<td></td>
<td>The following characters cannot be used: \ / : * ? “ ” ‘ ’ &lt; &gt;</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>&lt;switch&gt;</th>
<th>Protection ON/OFF</th>
</tr>
</thead>
<tbody>
<tr>
<td>ON</td>
<td>1</td>
</tr>
<tr>
<td>OFF</td>
<td>0</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>&lt;device&gt;</th>
<th>Drive name</th>
</tr>
</thead>
<tbody>
<tr>
<td>A,B,D,E,F,...</td>
<td></td>
</tr>
</tbody>
</table>

Example of Use

To protect the parameter file “Parameter” saved in drive E.

MMEM:PROT:STAT "Parameter",ON,e
**:MMEMory:PROTection:STATe[:STATe]? <filename>,<device>**

Protect Parameter File Query

**Function**

This command queries the protection of parameter files saved in the specified drive. Protected files cannot be deleted.

**Query**

```plaintext
:MMEMory:PROTection:STATe[:STATe]? <filename>,<device>
```

**Response**

```plaintext
<switch>
```

**Parameter**

- `<filename>`: Target filename
  - Character string within 32 characters enclosed by double quotes (" ") or single quotes (’ ’) (excluding extension)
  - The following characters cannot be used:
    - \
    - / : * ? “ ” ‘ ’ < > |

- `<switch>`: Protection ON/OFF
  - 1: Protects the file.
  - 0: Does not protect the file.

- `<device>`: Drive name
  - A, B, D, E, F, ...

**Example of Use**

To query the protection of a parameter file saved in the specified drive.

```plaintext
MMEM:PROT:STAT? "Parameter",e
> 1
```
4.2 Config Function Device Messages

:MMEMory:CATalog:STATe? <device>
Parameter File List Query

Function
Queries a list of parameter files saved in the specified device.

Query
:MMEMory:CATalog:STATe? <device>

Response
<number>,<filename_1>,<filename_2>...

Parameter
<device> Drive name
A,B,D,E,F,...
<number> Number of files
Range 0 to 1000
<filename> File Name
If the number of files exceeds 1000, the first 1000 files are returned, sorted by filename.

Example of Use
To query the parameter filenames saved in drive E.
MMEM:CAT:STAT? e
> 3,Param_00,Param_01,Param_02
Chapter 4  SCPI Device Message Details

:MMEMory:MOVE:SCReen <filename>,<device>
Move Hard Copy File (HDD/SSD to Device)

Function
Moves a screen hardcopy file saved in the internal storage to the specified device.

Command
:MMEMory:MOVE:SCReen <filename>,<device>

Parameter

<filename>
Target filename
Character string within 32 characters enclosed by double quotes (" ") or single quotes (‘ ’) (excluding extension)
The following characters cannot be used:
\ / : * ? " " ' ' < > |

<device>
Drive name
A,B,E,F,...

Details
• The format of the target file is switched according to the File Type Setting.
• If a file of the same name already exists in the move destination folder, the file in the move destination folder is deleted.

Example of Use
To move the "bitmap" screen hard copy file to drive E.
MMEM:MOVE:SCR "bitmap",e
:MMEMory:COPY:SCRen <filename>,<device>
Copy Hard Copy File (Device to HDD/SSD)

Function
Copies a screen hardcopy file from the specified storage device to the internal storage.

Command
:MMEMory:COPY:SCRen <filename>,<device>

Parameter

- <filename> Target filename
  Character string within 32 characters enclosed by double quotes (" ") or single quotes (’ ’) (excluding extension)
  The following characters cannot be used:
  \ / : * ? " " ' ' < > |

- <device> Drive name
  A,B,E,F,...

Details
- The format of the target file is switched according to the File Type Setting.
- If a file of the same name already exists in the move destination folder, the file in the move destination folder is deleted.

Example of Use
To copy the "bitmap" screen hard copy file on drive E to the internal storage.
MMEM:COPY:SCR "bitmap",e
Chapter 4  SCPI Device Message Details

:MMEMory:DELe:SCReen <filename>,<device>
Delete Hard Copy File

Function
This command deletes a screen hardcopy file saved in the specified drive.

Command
:MMEMory:DELe:SCReen <filename>,<device>

Parameter

<filename> Target filename
Character string within 32 characters enclosed by double quotes (" ") or single quotes (’ ’) (excluding extension)
The following characters cannot be used:
\ / : * ? " " ' ' < > |

<device> Drive name
A,B,D,E,F,...

Details
The format of the target file is switched according to the File Type Setting.

Example of Use
To delete the screen hardcopy file “Copy” saved in drive E.

MMEM:DEL:SCR "Copy",e
4.2 Config Function Device Messages

:MMEMory:PROTection:SCReen[:STATe]
<filename>,ON|OFF|0|1,<device>

Protect Hard Copy File

Function
This command protects a screen hardcopy file saved in the specified drive. Protected files cannot be deleted.

Command
:MMEMory:PROTection:SCReen[:STATe]
<filename>,<switch>,<device>

Parameter
<filename> Target filename
Character string within 32 characters enclosed by double quotes (" ") or single quotes (’ ’) (excluding extension)
The following characters cannot be used:
\ / : * ? “ ” ‘ ’ < > |

<switch> Protection ON/OFF
ON|1 Protects the file.
OFF|0 Does not protect the file.

<device> Drive name
A,B,D,E,F,...

Details
The format of the target file is switched according to the File Type Setting.

Example of Use
To protect the screen hardcopy file “Copy” saved in drive E.
MMEM:PROT:SCR "Copy",ON,e
Function

This command queries the protection status of a screen hardcopy file saved in the specified drive. Protected files cannot be deleted.

Query

:MMEMory:PROTection:SCRen[:STATe]? <filename>,<device>

Response

<switch>

Parameter

<filename> Target filename
Character string within 32 characters enclosed by double quotes (" ") or single quotes (’ ’) (excluding extension)
The following characters cannot be used:
\ / : * ? “ ” ‘ ’ < > |

<switch> Protection ON/OFF
1 Protects the file.
0 Does not protect the file.

<device> Drive name
A,B,D,E,F,...

Details

The format of the target file is switched according to the File Type Setting.

Example of Use

To protect the screen hardcopy file “Copy” saved in drive E.

MMEM: PROT: SCR? "Copy", e

> 1
4.2 Config Function Device Messages

:MMEMory:CATalog:SCReen? <device>

Hard Copy File List Query

Function

Queries a list of screen hardcopy files saved in the specified device.

Query

:MMEMory:CATalog:SCReen? <device>

Response

<number>,<filename_1>,<filename_2>...

Parameter

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;device&gt;</td>
<td>Drive name</td>
</tr>
<tr>
<td></td>
<td>A, B, D, E, F, ...</td>
</tr>
<tr>
<td>&lt;number&gt;</td>
<td>Number of files</td>
</tr>
<tr>
<td>Range</td>
<td>0 to 1000</td>
</tr>
<tr>
<td>&lt;filename&gt;</td>
<td>File Name</td>
</tr>
</tbody>
</table>
|            | If the number of files exceeds 1000, the first 1000 files are returned, sorted by filename.

Example of Use

To query the screen hardcopy filenames saved in drive E.

MMEM:CAT:SCR? e

> 3,Copy_00,Copy_01,Copy_02
Move Trace File (HDD/SSD to Device)

Function

Moves a trace file saved in the internal storage to the specified device.

Command

:MMEMory:MOVE:TRACe <filename>,<apl_name>,<device>

Parameter

- `<filename>`: Target filename
  - Character string within 32 characters enclosed by double quotes (" ") or single quotes (’ ’) (excluding extension)
  - The following characters cannot be used: \ / : * ? " " ' ' < > |

- `<apl_name>`: Target application name
  - SPECT: Spectrum Analyzer
  - SIGANA: Signal Analyzer
  - PNOISE: Phase Noise

- `<device>`: Drive name
  - A, B, E, F, ...

Details

If a file of the same name already exists in the move destination folder, the file in the move destination folder is deleted.

Example of Use

To copy the "trace" trace file of the Spectrum Analyzer from the internal storage to drive E.

```
MMEM:MOVE:TRAC "trace",SPECT,e
```
:MMEMory:COPY:TRACe <filename>,<apl_name>,<device>
Copy Trace File (Device to HDD/SSD)

Function
Copies a trace file from the specified storage device to the internal storage.

Command
:MMEMory:COPY:TRACe <filename>,<apl_name>,<device>

Parameter

- `<filename>`
  Target filename
  Character string within 32 characters enclosed by double quotes (" "), or single quotes (`'`), (excluding extension)
  The following characters cannot be used:
  \ / : * ? " " ' ' < > |

- `<apl_name>`
  Target application name
  SPECT Spectrum Analyzer
  SIGANA Signal Analyzer
  PNOISE Phase Noise

- `<device>`
  Drive name
  A, B, E, F, ...

Details
If a file of the same name already exists in the move destination folder, the file in the move destination folder is deleted.

Example of Use
To copy the "trace" trace file from drive E to the internal storage.

```
MMEM:COPY:TRAC "trace",SPECT,e
```
Chapter 4  SCPI Device Message Details

:MMEMory:DELeTe:TRACe <filename>,<apl_name>,<device>
Delete Trace File

Function
This command deletes the trace file saved in the specified drive.

Command
:MMEMory:DELeTe:TRACe <filename>,<apl_name>,<device>

Parameter

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
</table>
| <filename> | Target filename  
Character string within 32 characters enclosed by double quotes (") or single quotes ('') (excluding extension)  
The following characters cannot be used: \ / : * ? " " ' '< > | |
| <apl_name> | Target application name  
SPECT  Spectrum Analyzer  
SIGANA  Signal Analyzer  
PNOISE  Phase Noise |
| <device> | Drive name  
A,B,D,E,F,... |

Example of Use
To delete the trace file “Trace” saved in drive E.
MMEM:DEL:TRAC "Trace",SPECT,e
4.2 Config Function Device Messages

:MMEMory:PROTection:TRACE[:STATe]
<filename>,ON|OFF|0|1,<apl_name>,<device>

Protect Trace File

Function

This command saves a trace file saved in the specified drive. Protected files cannot be deleted.

Command

:MMEMory:PROTection:TRACE[:STATe]
<filename>,<switch>,<apl_name>,<device>

Parameter

<filename>  Target filename
Character string within 32 characters enclosed by double quotes (" ") or single quotes (‘ ’)
(excluding extension)
The following characters cannot be used:
\ / : * ? “ ” ‘ ’ < > |

<switch>  Protection ON/OFF
ON|1  Protects the file.
OFF|0  Does not protect the file.

<apl_name>  Target application name
SPECT  Spectrum Analyzer
SIGANA  Signal Analyzer
PNOISE  Phase Noise

<device>  Drive name
A, B, D, E, F, ...

Example of Use

To protect the trace file “Trace” saved in drive E.
MMEM:PROT:TRAC "Trace",ON,SPECT,e
:MMEMory:PROTection:TRACe[:STATe]?
<filename>,<apl_name>,<device>
Protect Trace File Query

Function

This command queries the protection of a trace file saved in the specified drive. Protected files cannot be deleted.

Query

:MMEMory:PROTection:TRACe[:STATe]?
<filename>,<apl_name>,<device>

Response

<switch>

Parameter

<filename> Target filename
Character string within 32 characters enclosed by double quotes (" ") or single quotes (’ ’) (excluding extension)
The following characters cannot be used:
\ / : * ? “ ” ‘ ’ < > |

<switch> Protection ON/OFF
1 Protects the file.
0 Does not protect the file.

<apl_name> Target application name
SPECT Spectrum Analyzer
SIGANA Signal Analyzer
PNOISE Phase Noise

<device> Drive name
A,B,D,E,F,...

Example of Use

To query the protection of the "Trace" trace file saved in drive E.

MMEM:PROT:TRAC? "Trace",SPECT,e
> 1
4.2 Config Function Device Messages

:MMEMory:CATalog:TRACe? <apl_name>,<device>
Trace File List Query

Function
Queries a list of trace files saved in the specified device.

Query
:MMEMory:CATalog:TRACe? <apl_name>,<device>

Response
<number>,<filename_1>,<filename_2>,...

Parameter

<device>  Drive name
A,B,D,E,F,...

<number>  Number of files
Range 0 to 1000

<filename>  File Name
If the number of files exceeds 1000, the first 100
0 files are returned, sorted by filename.

<apl_name>  Target application name
SPECT  Spectrum Analyzer
SIGANA  Signal Analyzer
PNOISE  Phase Noise

Example of Use
To query the trace filenames saved in drive E.
MMEM:CAT:TRAC? SPECT,e
> 3,Trace_00,Trace_01,Trace_02
**Chapter 4  SCPI Device Message Details**

`:MMEMory:MOVE:DI GI tize <filename>,<apl_name>,<device>`

Move Digitize File (HDD/SSD to Device)

**Function**

Moves a digitized file saved in the internal storage to the specified device.

**Command**

`:MMEMory:MOVE:DI GI tize <filename>,<apl_name>,<device>`

**Parameter**

- `<filename>`
  
  Target filename
  
  Character string within 128 characters enclosed by double quotes (" ") or single quotes (’ ’) (excluding extension)
  
  The following characters cannot be used: \ / : * ? " " ' ' < > |

- `<apl_name>`
  
  Target application name
  
  SIGANA  
  
  Signal Analyzer

- `<device>`
  
  Drive name
  
  A,B,E,F,...

**Details**

If a file of the same name already exists in the move destination folder, the file in the move destination folder is deleted.

**Example of Use**

To move the "digitize" digitize file of the Signal Analyzer function to drive E.

```
MMEM:MOVE:DG "digitize",SIGANA,e
```
4.2 Config Function Device Messages

:MMEMory:COPY:DIGitize <filename>,<apl_name>,<device>
Copy Digitize File (Device to HDD/SSD)

Function
Copies a digitized file from the specified storage device to the internal storage.

Command
:MMEMory:COPY:DIGitize <filename>,<apl_name>,<device>

Parameter

- `<filename>`: Target filename
  Character string within 128 characters enclosed by double quotes (" ") or single quotes (’ ’) (excluding extension)
  The following characters cannot be used:
  \ / : * ? “ ” ‘ ’ < > |

- `<apl_name>`: Target application name
  SIGANA: Signal Analyzer

- `<device>`: Drive name
  A,B,E,F,...

Details
If a file of the same name already exists in the move destination folder, the file in the move destination folder is deleted.

Example of Use
To copy the "digitize" digitize file in drive E to the Signal Analyzer folder on the internal storage.
MMEM:COPY:DIG "digitize",SIGANA,e
Chapter 4  SCPI Device Message Details

:MMEMory:DELeTe:DIGitize <filename>,<apl_name>,<device>
Delete Digitize File

Function

Deletes a digitized file saved in the specified device.

Command

:MMEMory:DELeTe:DIGitize <filename>,<apl_name>,<device>

Parameter

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;filename&gt;</td>
<td>Target filename&lt;br&gt;Character string within 128 characters enclosed by double quotes (&quot; &quot;) or single quotes (‘ ’) (excluding extension)&lt;br&gt;The following characters cannot be used:&lt;br&gt;\ / : * ? &quot; &quot; ' '&lt; &gt;</td>
</tr>
<tr>
<td>&lt;apl_name&gt;</td>
<td>Target application name&lt;br&gt;SIGANA Signal Analyzer</td>
</tr>
<tr>
<td>&lt;device&gt;</td>
<td>Drive name&lt;br&gt;A,B,D,E,F,...</td>
</tr>
</tbody>
</table>

Example of Use

To delete the digitized file “Digitize” saved in drive E.

MMEM:DEL:DIG "Digitize",SIGANA,e
4.2 Config Function Device Messages

:MMEMory:PROTection:DIGitize[:STATe]
<filename>,ON|OFF|0|1,<apl_name>,<device>

Protect Digitize File

Function

This command saves a digitize file saved to the specified drive. Protected files cannot be deleted.

Command

:MMEMory:PROTection:DIGitize[:STATe]
<filename>,<switch>,<apl_name>,<device>

Parameter

- **<filename>**
  - Target filename
  - Character string within 128 characters enclosed by double quotes (" ") or single quotes (' ') (excluding extension)
  - The following characters cannot be used: \
    / : * ? " " ' '< > |

- **<switch>**
  - Protection ON/OFF
  - ON|1 Protects the file.
  - OFF|0 Does not protect the file.

- **<apl_name>**
  - Target application name
  - SIGANA Signal Analyzer

- **<device>**
  - Drive name
  - A,B,D,E,F,...

Example of Use

To protect the digitized file “Digitize” saved in drive E.

```
MMEM:PROT:DIG "Digitize",ON,SIGANA,e
```
Chapter 4  SCPI Device Message Details

:MMEMory:PROTection:DIGitize[:STATe]?
<filename>,<apl_name>,<device>
Protect Digitize File Query

Function
This command queries the protection of a digitize file saved to the specified drive. Protected files cannot be deleted.

Query
:MMEMory:PROTection:DIGitize[:STATe]?
<filename>,<apl_name>,<device>

Response
<switch>

Parameter
<filename>  Target filename
Character string within 128 characters enclosed by double quotes (" ") or single quotes (' ') (excluding extension)
The following characters cannot be used: \
 / : * ? " " ' '< > |

<switch>  Protection ON/OFF
1  Protects the file.
0  Does not protect the file.

<apl_name>  Target application name
SIGANA  Signal Analyzer

<Device>  Drive name
A,B,D,E,F,...

Example of Use
To query the protection of the "Digitize" digitize file saved in drive E.
MMEM: PROT:DIG? "Digitize",SIGANA,e
> 1
4.2 Config Function Device Messages

:MMEMory:CATalog:DIGitize? <apl_name>,<device>
Digitize File List Query

Function
Queries a list of digitized files saved in the specified device.

Query
:MMEMory:CATalog:DIGitize? <apl_name>,<device>

Response
<number>,<filename_1>,<filename_2>,...

Parameter
<device> Drive name
A,B,D,E,F,...
<number> Number of files
Range 0 to 1000
<filename> File Name
If the number of files exceeds 1000, the first 1000 files are returned, sorted by filename.
<apl_name> Target application name
SIGANA Signal Analyzer

Example of Use
To query the digitized filenames saved in drive E.
MMEM:CAT:DIG? SIGANA,E
> 3,Digitize_00,Digitize_01,Digitize_02
\textbf{MMEMory:MOVE:SYSinfo <filename>,<device>}

Move System Information File (HDD/SSD to Device)

\textbf{Function}

Moves a system information file saved in the internal storage to the specified device.

\textbf{Command}

:\texttt{MMEMory:MOVE:SYSinfo <filename>,<device>}

\textbf{Parameter}

\begin{itemize}
  \item \texttt{<filename>}
    \begin{itemize}
      \item Target filename
      \item Character string within 32 characters enclosed by double quotes (" ") or single quotes (’ ) (excluding extension)
      \item The following characters cannot be used: \texttt{\textbackslash / : * ? " " ‘ ‘ < > |}
    \end{itemize}
  \item \texttt{<device>}
    \begin{itemize}
      \item Drive name
      \item \texttt{A,B,E,F,...}
    \end{itemize}
\end{itemize}

\textbf{Details}

If a file of the same name already exists in the move destination folder, the file in the move destination folder is deleted.

\textbf{Example of Use}

To move the "SystemInfo" system information file to drive E.
\texttt{MMEM:MOVE:SYS "SystemInfo",e}
4.2 Config Function Device Messages

/MMEMory:COPY:SYSinfo <filename>,<device>
Copy System Information File (Device to HDD/SSD)

Function
Copies a system information file from the specified storage device to the internal storage.

Command
/MMEMory:COPY:SYSinfo <filename>,<device>

Parameter
<filename> Target filename
Character string within 32 characters enclosed by double quotes (" " ) or single quotes (‘ ’) (excluding extension)
The following characters cannot be used:
\ / : * ? “ ” ’ ‘ < > |
<device> Drive name
A,B,E,F,...

Details
If a file of the same name already exists in the move destination folder, the file in the move destination folder is deleted.

Example of Use
To copy the "SystemInfo" system information file to the internal storage.
/MMEM:COPY:SYS "SystemInfo",e
:MMEMory:DELe:SYSinfo <filename>,<device>
Delete System Information File

Function

Deletes a system information file saved in the specified device.

Command

:MMEMory:DELe:SYSinfo <filename>,<device>

Parameter

<filename>  
Target filename  
Character string within 32 characters enclosed by double quotes (" ") or single quotes (' ') (excluding extension) 
The following characters cannot be used: \\
/ : * ? " ' < > |

<device>  
Drive name  
A,B,D,E,F,...

Example of Use

To delete the system information file “SystemInfo” saved in drive E.
MMEM:DELSYS "SystemInfo",e
4.2 Config Function Device Messages

:MMEMory:PROTection:SYSinfo[:STATe] 
<filename>,ON|OFF|0|1,<device>

Protect System Information File

Function

This command protects a system information file saved to the specified drive. Protected files cannot be deleted.

Command

:MMEMory:PROTection:SYSinfo[:STATe] 
<filename>,<switch>,<device>

Parameter

<filename>
Target filename
Character string within 32 characters enclosed by double quotes (“ ”) or single quotes (‘ ’) (excluding extension)
The following characters cannot be used:
\ / : * ? “ ” ‘ ’ < > |

<switch>
Protection ON/OFF
ON|1
Protects the file.
OFF|0
Does not protect the file.

<device>
Drive name
A,B,D,E,F,...

Example of Use

To protect the system information file “SystemInfo” saved in drive E.
MMEM:PROT:SYS "SystemInfo",ON,e
:MMEMory:PROTection:SYSinfo[:STATe]? <filename>,<device>
Protect System Information File Query

Function

This command queries the protection of the system information file saved in the specified drive. Protected files cannot be deleted.

Query

:MMEMory:PROTection:SYSinfo[:STATe]? <filename>,<device>

Response

<switch>

Parameter

<filename> Target filename
Character string within 32 characters enclosed by double quotes (" ") or single quotes (' ') (excluding extension)
The following characters cannot be used:
\ / : * ? " " ' ' < > |
<switch> Protection ON/OFF
1 Protects the file.
0 Does not protect the file.
<device> Drive name
A,B,D,E,F,...

Example of Use

To protect the system information file “SystemInfo” saved in drive E.
MMEM:PROT:SYS? "SystemInfo",e
> 1
4.2 Config Function Device Messages

**:MMEMory:CATalog:SYSinfo? <device>**

System Information File List Query

Function
Queries a list of system information files saved in the specified device.

Query
:MMEMory:CATalog:SYSinfo? <device>

Response
<number>,<filename_1>,<filename_2>,...

Parameter
- **<device>**
  Drive name  
  A, B, D, E, F, ...
- **<number>**
  Number of files  
  Range  
  0 to 1000
- **<filename>**
  File Name  
  If the number of files exceeds 1000, the first 1000 files are returned, sorted by filename.

Example of Use
To query the system information filenames saved in drive E.

```
MMEM:CAT:SYS? E
> 3,SystemInfo_00,SystemInfo_01,SystemInfo_02
```

**:SYSTem:INFormation:CATalog?**

System Information Query

Function
Queries system information.

Query
:SYSTem:INFormation:CATalog?

Response
<type>,<model>,<serial>,<time>

Parameter
- **<type>**
  Model
- **<model>**
  Name
- **<serial>**
  Serial number
- **<time>**
  Running time  
  Suffix code  
  None. Returns the time in minutes.

Example of Use
To query all system information.

```
SYST:INF:CAT?
> Signal Analyzer,MS2690A,610000000,100
```
Chapter 4  SCPI Device Message Details

:SYSTem:INFormation:MODel?
Product Model Query

Function
This command queries the product model name.

Query
:SYSTem:INFormation:MODel?

Response
<model>

Parameter
<model>  Name

Example of Use
To query the product model name.
SYST:INF:MOD?
>MS2690A

:SYSTem:INFormation:TYPE?
Product Type Query

Function
This command queries the product type name.

Query
:SYSTem:INFormation:TYPE?

Response
<type>

Parameter
<type>  Product Type

Example of Use
To query the product type.
SYST:INF:TYPE?
> Signal Analyzer
4.2 Config Function Device Messages

:SYSTem:INFormation:SERial?
Serial Number Query

Function
This command queries the serial number.

Query
:SYSTem:INFormation:SERial?

Response
<serial>

Parameter
<serial> Serial number

Example of Use
To query the serial number.
SYST:INF:SER?
> 610000000

:SYSTem:INFormation:RTIMe?
Running Time Query

Function
This command queries the running time.

Query
:SYSTem:INFormation:RTIMe?

Response
<time>

Parameter
<time> Running time
    Suffix code None. Returns the time in minutes.

Example of Use
To query the running time.
SYST:INF:RTIM?
> 100
Chapter 4  SCPI Device Message Details

:SYSTem:INFormation:SWITch?
Attenuator Switching Times

Function
This command queries the number of switch times of the attenuators.

Query
:SYSTem:INFormation:SWITch?

Response
<number>,<switch_times1>,<switch_times2>,...

Parameter
<number>
Number of attenuators

<switch_times>
Number of switch times
Queries the number of switch times of all the attenuators that are mounted.

Example of Use
To query the number of switch times of the attenuators.
SYST:INF:SWIT?
> 6,616,534,551,83,488,482

:SYSTem:HARDware:OPTion:CATalog?
Option Information Query

Function
Queries option information.

Query
:SYSTem:HARDware:OPTion:CATalog?

Response
<total>,<number>,<switch>,<name>,...

Parameter
<total>
Total number of selectable options

<number>
Option number

<switch>
With or without option

<name>
Option name

Example of Use
To query option information.
SYST:HARD:OPT:CAT?
> 0
### :SYSTem:SOFTWARE:CATalog?

**Software License Information Query**

**Function**
Queries licensed software information.

**Query**
:SYSTem:SOFTWARE:CATalog?

**Response**
<total>,<license_name>,<name>,<license_name2>,...

**Parameter**
- <total>: Total number of licensed software
- <license_name>: Software license name (Model Name)
- <name>: Software name

**Details**
Queries the license information of installed software. When sending this command to the MS2830A, MS2840A, or MS2850A, the licensed software information for which license expiry date is specified is not returned.

**Example of Use**
To query the licensed software Information.
SYST:SOFT:CAT?
> 3,MX269000A,STANDARD SOFTWARE,MX269010A,Mobile WiMAX...
Chapter 4  SCPI Device Message Details

:SYSTem:SOFTWARE:CATalog:ALL?
Software License and Option Information Query

Function
Queries licensed software information including options.

Query
:SYSTem:SOFTWARE:CATalog:ALL?

Response
<total>,<license_name>,<option_num>,<switch>,<name>,<license_name2>,...

Parameter
- <total> Total number of licensed software including options
- <license_name> Software license name (Model name)
- <option_num> Option number
- <switch> Option On/Off
  - ON Enables the Option
  - OFF Disables the Option
- <name> Software name

Details
Queries the license information of the installed software including options.
If the software is not the option, the response of <option_num> and <switch> are “–”.
When sending this command to the MS2830A, MS2840A, or MS2850A, the licensed software information for which license expiry date is specified is not returned.

Example of Use
To query the licensed software information including options.
SYST:SOFT:CAT:ALL?
> 3,MX269000A,-,-,STANDARD SOFTWARE,MX269000A-001,001,ON,
Mobile WiMAX Measurement Software...
4.2 Config Function Device Messages

:SYSTem:APPLication:VERSion? <apl_name>
Software Version Query

Function
Queries the application version.

Query
:SYSTem:APPLication:VERSion? <apl_name>

Response
version

Parameter
<apl_name> Target application name
SIGANA Signal Analyzer
SPECT Spectrum Analyzer
FNOISE Phase Noise
PMETer Power Meter
BER BER Test

Details
For parameters to specify an application other than the standard ones, refer to the operation manual (remote control) for each application.

Example of Use
To query the version of the Signal Analyzer application.
SYST:APPL:VERS? SIGANA
> 4.0.0
Chapter 4  SCPI Device Message Details

:SYSTem:FPGA:VERSion? <hardware>
FPGA, PLD, DSP Version Query

**Function**

This command queries the version number of the FPGA, PLD, and DSP

**Query**

:SYSTem:FPGA:VERSion? <hardware>

**Response**

<version>

**Parameter**

<hardware>  Type of FPGA, PLD, DSP

For MS2690A/MS2691A/MS2692A:

- **HWC**: Hardware Controller FPGA
- **CNTR_KEY**: Control PLD And Panel
- **LOCAL**: IF/Local FPGA
- **MICRO**: RF/Micro FPGA
- **MEAS_PCI**: PCI FPGA on Measure Unit
- **MEAS_CORE**: Core FPGA on Measure Unit
- **MEAS_COM**: COM DSP on Measure Option Unit
- **MEAS_HS_CORE**: Core FPGA on Measure Option Unit
- **SGBB**: Baseband FPGA on SG Unit
- **SGRF**: RF FPGA on SG Unit
- **BBIFIF**: BBIF Interface FPGA
- **BBIFMAIN**: BBIF Main FPGA

For MS2830A, MS2840A, MS2850A:

- **HWC**: Hardware Controller FPGA on Main Unit
- **CNTR_KEY**: Control PLD And Panel on Main Unit
- **MEAS_PCI**: Measure PCI FPGA on Main Unit
- **MEAS_HS_CORE**: Measure HSCore FPGA on Main Unit
- **MEAS_CORE**: Measure Core FPGA on Main Unit
- **MEAS_COM**: Measure COM DSP on Main Unit
- **SA_RF**: RF FPGA on SA RF Unit
- **SA_13G_RF**: RF FPGA on SA 13GHz RF Unit (only MS2830A)
- **SG_BB**: Baseband FPGA on VSG Unit
- **SG_RF**: RF FPGA on VSG Unit
- **CONV_DOWN**: Down Conv FPGA on Down Converter Unit
- **CONV_2ND**: 2nd Conv FPGA on 2nd Converter Unit
- **CONV_2ND_POW**: Power Controller on 2nd Converter Unit
- **ATT_DRIVER**: ATT Driver FPGA on ATT Driver Unit
- **MEAS_WB**: Wideband FPGA on 1 GHz BW Digitizing Unit

<version>  Version number of FPGA, PLD, and DSP
Details

Queries the version number of the specified FPGA, PLD, or DSP. “–” is returned when reading a version number of hardware not installed. To acquire in batch the version numbers of all the FPGAs, use :SYSTem:FPGA:VERSion:CATalog?.

Example of Use

To query the version number of HWC FPGA.

```
SYST:FPGA:VERS? HWC
> 5
```
Chapter 4  SCPI Device Message Details

:SYSTem:FPGA:VERSion:CATalog?
All FPGA, PLD, DSP Version Query

Function

This command queries the version numbers of all the FPGA, PLD, and DSPs.

Query

:SYSTem:FPGA:VERSion:CATalog?

Response

<hardware1>,<version1>,<hardware2>,...

Parameter

<hardware>  Type of FPGA, PLD, DSP

For MS2690A/MS2691A/MS2692A:

HWC  Hardware Controller FPGA
CNTR_KEY  Control PLD And Panel
LOCAL  IF/Local FPGA
MICRO  RF/Micro FPGA
MEAS_PCI  PCI FPGA on Measure Unit
MEAS_CORE  Core FPGA on Measure Unit
MEAS_COM  COM DSP on Measure Unit
MEAS_HS_CORE  Core FPGA on Measure Option Unit
SGBB  Baseband FPGA on SG Unit
SGRF  RF FPGA on SG Unit
BBIFIF  BBIF Interface FPGA
BBIFMAIN  BBIF Main FPGA

For MS2830A, MS2840A, MS2850A:

HWC  Hardware Controller FPGA on Main Unit
CNTR_KEY  Control PLD And Panel on Main Unit
MEAS_PCI  Measure PCI FPGA on Main Unit
MEAS_HS_CORE  Measure HSCore FPGA on Main Unit
MEAS_CORE  Measure Core FPGA on Main Unit
MEAS_COM  Measure COM DSP on Main Unit
SA_RF  RF FPGA on SA RF Unit
SA_13G_RF  RF FPGA on SA 13GHz RF Unit (only MS2830A)
SG_BB  Baseband FPGA on VSG Unit
SG_RF  RF FPGA on VSG Unit
CONV_DOWN  Down Conv FPGA on Down Converter Unit
CONV_2ND  2nd Conv FPGA on 2nd Converter Unit
CONV_2ND_POW  Power Controller on 2nd Converter Unit
ATT_DRIVER  ATT Driver FPGA on ATT Driver Unit
MEASWB  Wideband FPGA on 1 GHz BW Digitizing Unit

<version>  Version number of FPGA, PLD, and DSP
4.2 Config Function Device Messages

Details
Queries the version number of the specified FPGA, PLD, or DSP.
“_” is returned when reading a version number of hardware not installed.

Example of Use
To query the version number of FPGA.

```
SYST:FPGA:VERS:CAT?
>HWC,5,CNTR_KEY,5,LOCAL,3,MICRO,3,MEAS_PCI,12,MEAS_CORE,68,MEAS_COM,68,MEAS_HS_CORE, -,SGBB,2,
SGRF,5,BBIFIF, -,BBIFMAIN, -
```
Chapter 4  SCPI Device Message Details

:SYSTem:HARDware:REVision? <hardware>

Hardware Revision Query

Function
Queries the hardware revision number.

Query
:SYSTem:HARDware:REVision? <hardware>

Response
<revision>

Parameter

<hardware>     Hardware type

For MS2690A/MS2691A/MS2692A:
  IF        IF Unit
  LOCAL     IF/Local Unit
  MICRO     RF/Micro Unit
  MEAS      Measure Unit
  WBAND     Measure Option Unit
  SG        SG Unit
  CPU       CPU Unit
  BBIF      Baseband Interface Unit
  CARRIER   Carrier Unit

For MS2830A, MS2840A, MS2850A:
  MAIN       Main Unit
  SARF       SA RF Unit
  SA13GRF    SA 13GHz RF Unit (only MS2830A)
  SG         VSG Unit
  CONV_DOWN  Down Converter Unit
  CONV_2ND   2nd Converter Unit
  ATT_DRIVER ATT_Driver Unit
  WBAND      Main Option Unit
  AUDIO      Sub Supply/Audio Unit
  WBAND_1GHZ 1 GHz BW Digitizing Unit

<revision>     Revision number

Details
This command queries the revision number of the specified hardware.
“–” is returned when reading a revision number of hardware not installed.
To acquire in batch the hardware names and revision numbers, use
:SYSTem:HARDware:REVision:CATalog?.

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Example of Use

To query the revision number of the IF unit.

```
:SYSTem:HARDware:REVision:CATalog?
> 1
```

:SYSTem:HARDware:REVision:CATalog?

All Hardware Revision Query

Function

This command queries the revision number of all the hardware.

Query

:SYSTem:HARDware:REVision:CATalog?

Response

```
<hardware1>,<revision1>,<hardware2>,...
```

Parameter

- `<hardware>`: Hardware type
  - For MS2690A/MS2691A/MS2692A:
    - IF: IF Unit
    - LOCAL: IF/Local Unit
    - MICRO: RF/Micro Unit
    - MEAS: Measure Unit
    - WBAND: Measure Option Unit
    - SG: SG Unit
    - CPU: CPU Unit
    - BBIF: Baseband Interface Unit
    - CARRIER: Carrier Unit
  - For MS2830A, MS2840A, MS2850A:
    - MAIN: Main Unit
    - SARF: SPA RF Unit
    - SA13GRF: SA 13GHz RF Unit (only MS2830A)
    - SG: VSG Unit
    - CONV_DOWN: Down Converter Unit
    - CONV_2ND: 2nd Converter Unit
    - ATT_DRIVER: ATT_Driver Unit
    - WBAND: Main Option Unit
    - WBAND_1GHZ: 1 GHz BW Digitizing Unit

Details

This command queries the revision number of all the hardware.

“–” is returned when reading a revision number of hardware not installed.
Example of Use

To query all the revision numbers.

`SYST:HARD:REV:CAT?`  
> IF,1,LOCAL,1,MICRO,1,MEAS,1,WBAND,1,SG,1,CPU,1,BBIF,-

`:SYStem:TEMPerture:RF?`

RF Temperature Query

**Function**

This command returns the reading for the temperature of the RF unit in the signal analyzer.

**Query**

`:SYStem:TEMPerture:RF?`

**Response**

`<temperature>`

**Parameter**

`<temperature>`: Temperature of RF unit of current signal analyzer

- **Resolution**: 0.01 °C
- **Returns**: a value in Celsius (°C) units.

**Details**

This can be used as a criterion for whether to execute calibration. The standard temperature of the RF unit is about 50°C during operation at normal temperature.

**Example of Use**

To return the reading for the temperature of the RF unit in the signal analyzer.

`SYST:TEMP:RF?`

> 50.78
4.2 Config Function Device Messages

[:SENSe]:ROSCillator:EXTernal:FREQuency <freq>

External Reference Frequency

Function

This command sets the frequency of the reference frequency signal.

Command

[SENSe]:ROSCillator:EXTernal:FREQuency <freq>

Parameter

<freq> Frequency of reference frequency signal

For MS2690A/MS2691A/MS2692A:

  Range Either value of 10 MHz or 13 MHz

For MS2830A, MS2840A, MS2850A:

  Range Either value of 5 MHz, 10 MHz, or 13 MHz
  Default 10 MHz
  Suffix code HZ, KHZ, KZ, MHZ, MZ, GHZ, GZ

Details

Sets signal frequency, when using external reference signal as the signal source for reference frequency.

If the Reference Signal is Fixed to Internal, this function cannot be set.

Example of Use

To set the frequency of the reference frequency signal to 10 MHz.

ROSC:EXT:FREQ 10MHZ
[SENSe]:ROSCillator:EXTernal:FREQuency?
External Reference Frequency Query

Function

This command queries the frequency of the reference frequency signal.

Query

[:SENSe]:ROSCillator:EXTernal:FREQuency?

Response

<freq>

Parameter

<freq> Frequency of reference frequency signal
Resolution 1 Hz
Suffix code None. Value is returned in Hz units.

Details

Queries signal frequency, when using external reference signal as the signal source for reference frequency.

Example of Use

To query the frequency of the reference frequency signal.
ROSC:EXT:FREQ?
> 10000000
4.2 Config Function Device Messages

:CALibration:ALERt:MODE NONE|TEMPerature|TIME|BOTH

Calibration Alert Mode

Function

This command sets the alert mode of Calibration Alert.

Command

:CALibration:ALERt:MODE <mode>

Parameter

<table>
<thead>
<tr>
<th>&lt;mode&gt;</th>
<th>Alert mode</th>
</tr>
</thead>
<tbody>
<tr>
<td>NONE</td>
<td>No alert occurs. (Default)</td>
</tr>
<tr>
<td>TEMPerature</td>
<td>An alert occurs according to the temperature change inside the MS2690A, MS2691A, MS2692A, MS2830A, MS2840A, or MS2850A from the last automatic calibration (SIGANA All).</td>
</tr>
<tr>
<td>TIME</td>
<td>An alert occurs according to the elapsed time since the last automatic calibration (SIGANA All).</td>
</tr>
<tr>
<td>BOTH</td>
<td>An alert occurs when either of temperature change or elapsed time meets the specified trigger conditions.</td>
</tr>
</tbody>
</table>

Example of Use

To set the alert mode so that an alert occurs when either of temperature change or elapsed time meets the specified trigger conditions.

CAL:ALER:MODE BOTH
**:CALibration:ALERt:MODE?**

Calibration Alert Mode Query

**Function**

This command queries the alert mode of Calibration Alert.

**Query**

:CALibration:ALERt:MODE?

**Response**

<mode>

**Parameter**

<mode> Alert mode

NONE No alert occurs. (Default)

TEMP An alert occurs according to the temperature change inside the MS2690A, MS2691A, MS2692A, MS2830A, MS2840A, or MS2850A from the last automatic calibration (SIGANA All).

TIME An alert occurs according to the elapsed time since the last automatic calibration (SIGANA All).

BOTH An alert occurs when either of temperature change or elapsed time meets the specified conditions.

**Example of Use**

To query the alert mode.

CAL:ALER:MODE?

> BOTH
4.2 Config Function Device Messages

:CALibration:ALERt:TEMPerature
Calibration Alert Temperature

Function
This command sets the temperature thresholds to trigger an alert of Calibration Alert.

Command
:CALibration:ALERt:TEMPerature <temperature>

Parameter
<temperature> Temperature thresholds
  Range 0.5 to 50.0°C
  Resolution 0.5°C
  Suffix code None, set a value in °C.
  Default 2.0°C

Example of Use
To set the temperature thresholds to trigger an alert to 3°C.
CAL:ALER:TEMP 3

:CALibration:ALERt:TEMPerature?
Calibration Alert Temperature Query

Function
This command queries the temperature thresholds to trigger an alert of Calibration Alert.

Query
:CALibration:ALERt:TEMPerature?

Response
<temperature>

Parameter
<temperature> Temperature thresholds
  Range 0.5 to 50.0°C
  Resolution 0.5°C
  Suffix code None. A value is returned in °C.
  Default 2.0°C

Example of Use
To query the temperature thresholds to trigger an alert.
CAL:ALER:TEMP?
> 3.0
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:CALibration:ALERt:TIME
Calibration Alert Time

Function
This command sets the elapsed time conditions to trigger an alert of Calibration Alert.

Command
:CALibration:ALERt:TIME <time>

Parameter
<time>  Elapsed time conditions
  Resolution  1 to 200 h (hours)
  Resolution  1 h (hour)
  Suffix code None, set a value in hours.
  Default  1 h (hour)

Example of Use
To set the elapsed time to trigger an alert to 3 hours.
CAL:ALER:TIME 3

:CALibration:ALERt:TIME?
Calibration Alert Time Query

Function
This command queries the elapsed time conditions to trigger an alert of Calibration Alert.

Query
:CALibration:ALERt:TIME?

Response
<time>

Parameter
<time>  Elapsed time conditions
  Range  1 to 200 h (hours)
  Resolution  1 h (hour)
  Suffix code None. A value is returned in hours.
  Default  1 h (hour)

Example of Use
To query the elapsed time conditions to trigger an alert.
CAL:ALER:TIME?
> 3
4.3 Power Meter Device Messages

4.3.1 Application Common Device Messages

Application common device messages available in the power meter application are shown below.

<table>
<thead>
<tr>
<th>Function</th>
<th>Device Messages</th>
</tr>
</thead>
<tbody>
<tr>
<td>Current Measurement Query</td>
<td>:CONFigure?</td>
</tr>
<tr>
<td>Power Meter Configure</td>
<td>:CONFigure:PMETer:POWer</td>
</tr>
<tr>
<td>Display Title</td>
<td>:DISPlay:ANNotation:TITle[:STATe] ON</td>
</tr>
<tr>
<td></td>
<td>:DISPlay:ANNotation:TITle[:STATe]?</td>
</tr>
<tr>
<td>Title Entry</td>
<td>:DISPlay:ANNotation:TITle:DATA &lt;string&gt;</td>
</tr>
<tr>
<td></td>
<td>:DISPlay:ANNotation:TITle:DATA?</td>
</tr>
<tr>
<td>Measurement Status</td>
<td>:STATus:ERRor?</td>
</tr>
</tbody>
</table>
**:CONFigure?**  
Current Measurement Query

**Function**
This command queries the current measurement function.

**Query**
:CONFigure?

**Response**

```
<mode>
```

**Parameter**

```
<mode> Measurement function
ACP ACP measurement
BPOW Burst Average Power measurement
OBW OBW measurement
CHP Channel Power measurement
SEM Spectrum Emission Mask measurement
SPUR Spurious Emission measurement
SAN OFF
PMET Power Meter measurement
```

**Example of Use**
To query the current measurement function.
```
CONF?
> ACP
```

**:CONFigure:PMETer:POWer**  
Power Meter Configure

**Function**
This command switches the control target from the synchronizing application software to the Power Meter application.

**Command**
:CONFigure:PMETer:POWer

**Example of Use**
To switch the control target to the Power Meter Application.
```
CONF:PMET:POW
```
4.3 Power Meter Device Messages

:DISPlay:ANNotation:TITLe[:STATe] ON|OFF|1|0
Display Title

Function
This command enables/disables the title display.

Command
:DISPlay:ANNotation:TITLe[:STATe] <switch>

Parameter
<switch> Title display On/Off
   ON|1 Enables the title display.
   OFF|0 Disables the title display.
   Default ON

Example of Use
To display the title.
DISP:ANN:TITL ON

:DISPlay:ANNotation:TITLe[:STATe]?
Display Title Query

Function
This command turns the title on/off.

Query
:DISPlay:ANNotation:TITLe[:STATe]?

Response
<switch>

Parameter
<switch> Title display ON/OFF
   1 Title display is enabled.
   0 Title display is displayed.

Example of Use
To query the title display On/Off state.
DISP:ANN:TITL?
> 1
:DISPlay:ANNotation:TITLe:DATA <string>

Title Entry

Function
This command registers the title character string.

Command
:DISPlay:ANNotation:TITLe:DATA <string>

Parameter
<string>
Character string within 32 characters enclosed by double quotes (""") or single quotes (’’)

Example of Use
To set the title character string.
DISP:ANN:TITL:DATA 'SPECTRUM ANALYZER'

Remarks
This command has the same function as the following command.
:DISPlay:ACPower:ANNotation:TITLe:DATA

:DISPlay:ANNotation:TITLe:DATA?

Title Entry Query

Function
This command queries the title character string.

Query
:DISPlay:ANNotation:TITLe:DATA?

Response
<string>

Parameter
<string>
Character string within 32 characters enclosed by double quotes (””) or single quotes (‘’)

Example of Use
To query the title character string.
DISP:ANN:TITL:DATA?
> SPECTRUM ANALYZER

Remarks
This command has the same function as the following command.
:DISPlay:ACPower:ANNotation:TITLe:DATA
4.3 Power Meter Device Messages

:STATus:ERRor?
Measurement Status Query

Function

This command queries the measurement status.

Query

:STATus:ERRor?

Response

<status>

Parameter

<status>

Value

Measurement status

= bit0 + bit1 + bit2 + bit3 + bit4 + bit5 + bit6
+ bit7 + bit8 + bit9 + bit10 + bit11 + bit12
+ bit13 + bit14 + bit15

- When the target application is not SG or BER, the bit assignments are as follows:

bit0 : $2^0 = 1$  (Not used)

bit1 : $2^1 = 2$  (Not used)

bit2 : $2^2 = 4$  (Not used)

bit3 : $2^3 = 8$  (Not used)

bit4 : $2^4 = 16$  (Not used)

bit5 : $2^5 = 32$  (Not used)

bit6 : $2^6 = 64$  (Not used)

bit7 : $2^7 = 128$  (Not used)

bit8 : $2^8 = 256$  (Not used)

bit9 : $2^9 = 512$  (Not used)

bit10 : $2^{10} = 1024$  (Not used)

bit11 : $2^{11} = 2048$  (Not used)

bit12 : $2^{12} = 4096$  (Not used)

bit13 : $2^{13} = 8192$  (Not used)

bit14 : $2^{14} = 16384$  (Not used)

bit15 : $2^{15} = 32768$  (Not used)

- When the target application is SG, the bit assignments are as follows:

  Lock abnormal status during using the external reference signal source

  ALC circuit is abnormal

  Outside level accuracy assurance

bit0 : $2^0 = 1$

bit1 : $2^1 = 2$

bit2 : $2^2 = 4$

bit3 : $2^3 = 8$

bit4 : $2^4 = 16$

bit5 : $2^5 = 32$  (Not used)
bit6 : $2^6 = 64$ (Not used)
bit7 : $2^7 = 128$ (Not used)
bit8 : $2^8 = 256$ (Not used)
bit9 : $2^9 = 512$ (Not used)
bit10 : $2^{10} = 1024$ (Not used)
bit11 : $2^{11} = 2048$ (Not used)
bit12 : $2^{12} = 4096$ (Not used)
bit13 : $2^{13} = 8192$ (Not used)
bit14 : $2^{14} = 16384$ (Not used)
bit15 : $2^{15} = 32768$ (Not used)

- When the target application is BER, the bit assignments are as follows:
  bit0 : $2^0 = 1$ Sync Loss occurred
  bit1 : $2^1 = 2$ Clock signal error
  bit2 : $2^2 = 4$ Enable signal error
  bit3 : $2^3 = 8$ (Not used)
  bit4 : $2^4 = 16$ (Not used)
  bit5 : $2^5 = 32$ (Not used)
  bit6 : $2^6 = 64$ (Not used)
  bit7 : $2^7 = 128$ (Not used)
  bit8 : $2^8 = 256$ (Not used)
  bit9 : $2^9 = 512$ (Not used)
  bit10 : $2^{10} = 1024$ (Not used)
  bit11 : $2^{11} = 2048$ (Not used)
  bit12 : $2^{12} = 4096$ (Not used)
  bit13 : $2^{13} = 8192$ (Not used)
  bit14 : $2^{14} = 16384$ (Not used)
  bit15 : $2^{15} = 32768$ (Not used)

Range 0 to 65535

Details

Always, 0 is returned.

Example of Use

To query the measurement status.

```
STAT:ERR?
> 0
```
### 4.3 Power Meter Device Messages

#### 4.3.2 Power Meter

Power meter device messages available in the power meter application are shown below.

<table>
<thead>
<tr>
<th>Function</th>
<th>Device Messages</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average Power Query</td>
<td>:SYSTem:PMETer:MEASure? [DBM]</td>
</tr>
<tr>
<td>Zeroing</td>
<td>:SYSTem:PMETer:ZERoset</td>
</tr>
<tr>
<td>Sensor Connected Query</td>
<td>:SYSTem:PMETer:CONNection?</td>
</tr>
<tr>
<td>Current Com Port Number Query</td>
<td>:SYSTem:PMETer:COMMunicate:USB:PORT?</td>
</tr>
<tr>
<td>Current Sensor Model Query</td>
<td>:SYSTem:PMETer:SENSe:MODEL?</td>
</tr>
<tr>
<td></td>
<td>:SYSTem:PMETer:SENSe:FREQuency[:CW</td>
</tr>
<tr>
<td></td>
<td>[:SENSe]:FREQuency:CENTer &lt;freq&gt;</td>
</tr>
<tr>
<td></td>
<td>[:SENSe]:FREQuency:CENTer?</td>
</tr>
<tr>
<td>Level Offset State</td>
<td>:SYSTem:PMETer:SENSe:CORRection:GAIN2:STATe &lt;boolean&gt;</td>
</tr>
<tr>
<td></td>
<td>:SYSTem:PMETer:SENSe:CORRection:GAIN2:STATe?</td>
</tr>
<tr>
<td>Level Offset Value</td>
<td>:SYSTem:PMETer:SENSe:CORRection:GAIN2[:INPut][:MAGNitud e] &lt;rel_ampl&gt;</td>
</tr>
<tr>
<td></td>
<td>:SYSTem:PMETer:SENSe:CORRection:GAIN2[:INPut][:MAGNitud e]?</td>
</tr>
<tr>
<td>Average State</td>
<td>:SYSTem:PMETer:SENSe:AVERage[:STATe] &lt;boolean&gt;</td>
</tr>
<tr>
<td></td>
<td>:SYSTem:PMETer:SENSe:AVERage[:STATe]?</td>
</tr>
<tr>
<td>Average Count</td>
<td>:SYSTem:PMETer:SENSe:AVERage:COUNt &lt;ext_integer&gt;</td>
</tr>
<tr>
<td></td>
<td>:SYSTem:PMETer:SENSe:AVERage:COUNt?</td>
</tr>
<tr>
<td>Reference Level Set</td>
<td>:SYSTem:PMETer:SENSe:RELativeset</td>
</tr>
<tr>
<td>Range</td>
<td>:SYSTem:PMETer:SENSe:RANGe AUTO</td>
</tr>
<tr>
<td>Device Status Error</td>
<td>:SYSTem:PMETer:SENSe:RANGe?</td>
</tr>
<tr>
<td>Aperture Time</td>
<td>:SYSTem:PMETer:APERture:TIME &lt;aper_time&gt;</td>
</tr>
<tr>
<td></td>
<td>:SYSTem:PMETer:APERture:TIME?</td>
</tr>
<tr>
<td>Aperture Mode</td>
<td>:SYSTem:PMETer:APERture:MODE LAT</td>
</tr>
<tr>
<td></td>
<td>:SYSTem:PMETer:APERture:MODE?</td>
</tr>
</tbody>
</table>
Function

This command queries the measurement power in specified units.

Query

:SYSTem:PMETer:MEASure? [<unit>]

Response

<real>

Parameter

<unit>

Unit

DBM Query the measurement power value in dBm units.

WATT Query the measurement power value in W units.

DB Query the relative power value in dB units.

When omitted

<real>

Measurement power

Resolution

When unit is DBM, DB: 0.01

When unit is W: Three significant figures (floating point type)

Not connected −999.999

Details

The measurement power includes the offset value and averaging result.

Example of Use

To query the measurement power value in W units.

SYST:PMET:MEAS? WATT

> 0.002
### :SYSTem:PMETer:ZERoset

Zeroing adjustment

**Function**

Executes the zeroing for the power sensor.

**Command**

:SYSTem:PMETer:ZERoset

**Details**

Do not execute calibration during the zeroing. Failure to do so will not guarantee the response to the following query command:

```
STATus:OPERation:CONDition?
```

**Example of Use**

To execute the zeroing for the power sensor.

```
SYST:PMET:ZER
```
Chapter 4  SCPI Device Message Details

:SYSTem:PMETer:COMMunicate:USB:PORT?
Current Com Port Number Query

Function
Query the number of the COM Port to which the USB Power Sensor is connected.

Query
:SYSTem:PMETer:COMMunicate:USB:PORT?

Response
<integer>

Parameter
<integer>  COM Port number
Resolution  1
When not connected: -999

Example of Use
To query the number of the COM Port to which the USB Power Sensor is connected.
SYST:PMET:COMM:USB:PORT?
> 10

:SYSTem:PMETer:SENSe:MODel?
Current Sensor Model Query

Function
Query the model of the connected USB power sensor.

Query
:SYSTem:PMETer:SENSe:MODel?

Response
<model>

Parameter
<model>  USB Power Sensor model
NOSENSOR  Unknown
MA24104A  MA24104A
MA24105A  MA24105A
MA24106A  MA24106A
MA24108A  MA24108A
MA24118A  MA24118A
MA24126A  MA24126A

Example of Use
To query the model of the connected USB power sensor.
SYST:PMET:SENS:MOD?
> MA24104A
### :SYSTem:PMETer:SENSe:FREQuency[:CW][:FIXed] <freq>

**Frequency**

This command sets the center frequency of the signal to be measured. The setting range is determined by that of USB power sensors.

**Command**


**Parameter**

- **<freq>**
  - The center frequency of the signal
  - Range: Varies depending on the USB Power Sensor.
  - Resolution: Varies depending on the USB Power Sensor.
  - Default: 1 GHz
  - Suffix code: HZ, KHZ, KZ, MHZ, MZ, GHZ, GZ

HZ when omitted.

**Example of Use**

To set the center frequency of the signal to be measured to 2.5 GHz.

SYST:PMET:SENS:FREQ 2.5GHZ

### :SYSTem:PMETer:SENSe:FREQuency[:CW][:FIXed]?

**Frequency Query**

This command queries the center frequency setting.

**Query**

:SYSTem:PMETer:SENSe:FREQuency[:CW][:FIXed]?

**Response**

<freq>

**Parameter**

- **<freq>**
  - The center frequency of the signal
  - Range: Varies depending on the USB Power Sensor.
  - Resolution: Varies depending on the USB Power Sensor.
  - Suffix code: None. Value is returned in Hz units.

**Example of Use**

To query the center frequency setting.

SYST:PMET:SENS:FREQ?

> 2500000000
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[:SENSe]:FREQuency:CENTer <freq>
Frequency

Function
This command sets the center frequency of the signal to be measured. The setting range is determined by that of USB power sensors.

Command
[:SENSe]:FREQuency:CENTer <freq>

Parameter

<freq>  The center frequency of the signal
Range  Varies depending on the USB Power Sensor.
Resolution  Varies depending on the USB Power Sensor.
Suffix code  HZ, KHZ, KZ, MHZ, MZ, GHZ, GZ
  HZ when omitted.

Details
When the display is other than Power Meter, refer to the “Spectrum Analyzer Function Remote Control” or “Signal Analyzer Function Remote Control.”

Example of Use
To set the center frequency of the signal to be measured to 2.5 GHz.
FREQ:CENT 2.5GHZ

[:SENSe]:FREQuency:CENTer?
Frequency Query

Function
This command queries the center frequency setting.

Query
[:SENSe]:FREQuency:CENTer?

Response

<freq>

Parameter

<freq>  The center frequency of the signal
Range  Varies depending on the USB Power Sensor.
Resolution  Varies depending on the USB Power Sensor.
Suffix code  HZ when omitted.

Details
When the display is other than Power Meter, refer to the “Spectrum Analyzer Function Remote Control” or “Signal Analyzer Function Remote Control.”
Example of Use

To query the center frequency setting.

FREQ:CENT?
> 2500000000

:SYSTem:PMETer:SENSe:CORRection:GAIN2:STATe <boolean>

Level Offset State

Function

This command enables and disables the addition of the level offset value.

Command

:SYSTem:PMETer:SENSe:CORRection:GAIN2:STATe <boolean>

Parameter

<boolean> Enables and disables the addition of the level offset value.

ON|1 Enables the addition of the offset level.
OFF|0 Disables the addition of the offset level.
Default OFF

Example of Use

To enable the level offset value.

SYST:PMET:SENS:CORR:GAIN2:STAT ON

:SYSTem:PMETer:SENSe:CORRection:GAIN2:STATe?

Level Offset State Query

Function

This command queries whether the addition of the level offset value is enabled or disabled.

Query

:SYSTem:PMETer:SENSe:CORRection:GAIN2:STATe?

Response

<boolean>

Parameter

<boolean> Enables and disables the addition of the level offset value.

1 Enables the addition of the offset level.
0 Disables the addition of the offset level.
Example of Use

To query whether the addition of the level offset value is enabled or disabled.
SYST:PMET:SENS:CORR:GAIN2:STAT?
> 1

:SYSTem:PMETer:SENSe:CORRection:GAIN2[:INPut][:MAGNitude]
<rel_ampl>
Level Offset Value

Function
This command sets the level offset value in dB units.

Command
:SYSTem:PMETer:SENSe:CORRection:GAIN2[:INPut][:MAGNitude] <rel_ampl>

Parameter
<rel_ampl> Offset value
Range −100.00 to +100.00
Resolution 0.01
Default 0.00
Suffix code DB
DB when omitted.

Example of Use
To set the level offset value to 10 dB.
SYST:PMET:SENS:CORR:GAIN 10

:SYSTem:PMETer:SENSe:CORRection:GAIN2[:INPut][:MAGNitude]?
Level Offset Query

Function
This command queries the level offset value setting.

Query
:SYSTem:PMETer:SENSe:CORRection:GAIN2[:INPut][:MAGNitude]?

Response
<rel_ampl>

Parameter
<rel_ampl> Offset value
Range −100.00 to +100.00
Resolution 0.01
Suffix code None. Value is returned in dB units.
4.3 Power Meter Device Messages

Example of Use
To query the level offset value setting.
SYST:PMET:SENS:CORR:GAIN2?
> 10.00

:SYSTem:PMETer:SENSe:AVERage[:STATe] <boolean>

Average State

Function
This command enables or disables averaging of the measurement power.

Command
:SYSTem:PMETer:SENSe:AVERage[:STATe] <boolean>

Parameter
<boolean> Averaging status
ON|1 Enables averaging.
OFF|0 Disables averaging.
Default OFF

Example of Use
To execute averaging.
SYST:PMET:SENS:AVER ON

:SYSTem:PMETer:SENSe:AVERage[:STATe]?

Average State Query

Function
This command queries whether the averaging of the measurement power is enabled or disabled.

Query
:SYSTem:PMETer:SENSe:AVERage[:STATe]?

Response
<boolean>

Parameter
<boolean> Averaging status
1 Enables averaging.
0 Disables averaging.

Example of Use
To execute averaging.
SYST:PMET:SENS:AVER?
> 1
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:SYSTem:PMETer:SENSe:AVERage:COUNt <ext_integer>

Average Count

Function

This command sets the number of times the measurement power is averaged.

Command

:SYSTem:PMETer:SENSe:AVERage:COUNt <ext_integer>

Parameter

<ext_integer> Number of averaging times
  Range 2 to 1000
  Resolution 1
  Default 10
  Suffix code None

Example of Use

To set the number of averaging times to 100.
SYST:PMET:SENS:AVER:COUN 100

:SYSTem:PMETer:SENSe:AVERage:COUNt?

Average Count Query

Function

This command queries the specified number of times to average the measurement power.

Query

:SYSTem:PMETer:SENSe:AVERage:COUNt?

Response

<ext_integer>

Parameter

<ext_integer> Averaging times
  Range 2 to 1000
  Resolution 1
  Suffix code None

Example of Use

To query the specified number of averaging times.
SYST:PMET:SENS:AVER:COUN?
> 100
4.3 Power Meter Device Messages

:SYSTem:PMETer:SENSe:RELativeset

Reference Level Set

Function

This command sets the displayed average power as the reference relative value.

Command

:SYSTem:PMETer:SENSe:RELativeset

Example of Use

To set the average power as the reference.
SYST:PMET:SENS:REL

:SYSTem:PMETer:SENSe:RANGe AUTO|LOW|HIGH

Range

Function

This command sets the measurement range of the power sensor.

Command

:SYSTem:PMETer:SENSe:RANGe <range>

Parameter

<range>

<table>
<thead>
<tr>
<th>AUTO</th>
<th>Measurement range</th>
<th>Automatic setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>LOW</td>
<td></td>
<td>When the model is MA24108A, MA24118A, or MA24126A:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Input range: –40 to –7 dBm</td>
</tr>
<tr>
<td></td>
<td></td>
<td>When the model is MA24105A:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Input range: +3 to +38 dBm</td>
</tr>
<tr>
<td>HIGH</td>
<td></td>
<td>When the model is MA24108A, MA24118A, or MA24126A:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Input range: –7 to +20 dBm</td>
</tr>
<tr>
<td></td>
<td></td>
<td>When the model is MA24105A:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Input range: +38 to +51.76 dBm</td>
</tr>
</tbody>
</table>

Details

When the model is MA24104A/MA24106A, Range is always set to Auto.

Example of Use

To set the Measurement range to High.
SYST:PMET:SENS:RANG HIGH
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:SYSTem:PMETer:SENSe:RANGe?
Range Query

Function
This command queries the setting measurement range of the power sensor.

Query
:SYSTem:PMETer:SENSe:RANGe?

Response
<range>

Parameter
<range>
Measurement range
AUTO
Automatic setting
LOW
When the model is MA24108A, MA24118A, or MA24126A:
Input range: –40 to –7 dBm
When the model is MA24105A:
Input range: +3 to +38 dBm
HIGH
When the model is MA24108A, MA24118A, or MA24126A:
Input range: –7 to +20 dBm
When the model is MA24105A:
Input range: +38 to +51.76 dBm

Details
When the model is MA24104A/MA24106A, Range is always set to Auto.

Example of Use
To query the setting operating power range.
SYST:PMET:SENS:RANG?
> HIGH
4.3  Power Meter Device Messages

:SYSTem:PMETer:DEVice:ERRor?
Device Status Error Query

Function
This command queries Device Status Error.

Query
:SYSTem:PMETer:DEVice:ERRor?

Response
<integer>

Parameter
<integer>  Bit sum of Device Status Error
Range 0 to 65535
0 Normal (Success)
−999 Not connected

Resolution 1

Details

Example of Use
To query Device Status Error.
SYST:PMET:DEV:ERR?
> 0
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:SYSTem:PMETer:APERture:TIME <aper_time>

Aperture Time

Function

This command sets Aperture Time for MA24108A, MA24118A, and MA24126A.

Command

:SYSTem:PMETer:APERture:TIME <aper_time>

Parameter

<aper_time>  Aperture Time
  Range       0.01 to 300.00 ms
  Resolution  0.01 ms
  Default     20.00 ms
  Unit        ms
  Suffix code None

Example of Use

To set Aperture Time to 20 ms.
SYST:PMET:APER:TIME 20

:SYSTem:PMETer:APERture:TIME?

Aperture Time Query

Function

This command queries the Aperture Time set for MA24108A, MA24118A, and MA24126A.

Query

:SYSTem:PMETer:APERture:TIME?

Response

<aper_time>

Parameter

<aper_time>  Aperture Time
  Range       0.01 to 300.00 ms
  Resolution  0.01 ms
  Suffix code None, Value is returned in ms units.

Example of Use

To query the set Aperture Time.
SYST:PMET:APER:TIME?
> 20.00
4.3 Power Meter Device Messages

:SYSTem:PMETer:APERture:MODE LAT|HAT
Aperture Mode

Function
This command sets Aperture Mode for MA24104A and MA24106A.

Command
:SYSTem:PMETer:APERture:MODE <mode>

Parameter

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;mode&gt;</td>
<td>Aperture Mode</td>
</tr>
<tr>
<td>LAT</td>
<td>Low Aperture Time mode</td>
</tr>
<tr>
<td>HAT</td>
<td>High Aperture Time mode</td>
</tr>
<tr>
<td>Default</td>
<td>LAT</td>
</tr>
</tbody>
</table>

Example of Use
To set Aperture Mode to LAT.
SYS'T:PMET:APER:MODE LAT

:SYSTem:PMETer:APERture:MODE?
Aperture Mode Query

Function
This command queries the Aperture Mode set for MA24104A and MA24106A.

Query
:SYSTem:PMETer:APERture:MODE?

Response

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;mode&gt;</td>
<td>Aperture Mode</td>
</tr>
<tr>
<td>LAT</td>
<td>Low Aperture Time mode</td>
</tr>
<tr>
<td>HAT</td>
<td>High Aperture Time mode</td>
</tr>
</tbody>
</table>

Example of Use
To query the set Aperture Mode.
SYS'T:PMET:APER:MODE?
> LAT
4.3.3 OPERation Status Register

The figure below shows the layer structure of the OPERation Status Register.

<table>
<thead>
<tr>
<th>Field</th>
<th>Byte</th>
</tr>
</thead>
<tbody>
<tr>
<td>Zeroing</td>
<td>DB0</td>
</tr>
<tr>
<td>SETTling (NOT USED)</td>
<td>DB1</td>
</tr>
<tr>
<td>RANGing (NOT USED)</td>
<td>DB2</td>
</tr>
<tr>
<td>SWEeping (NOT USED)</td>
<td>DB3</td>
</tr>
<tr>
<td>MEASuring (NOT USED)</td>
<td>DB4</td>
</tr>
<tr>
<td>Waiting for TRIG (NOT USED)</td>
<td>DB5</td>
</tr>
<tr>
<td>Waiting for ARM (NOT USED)</td>
<td>DB6</td>
</tr>
<tr>
<td>CORRecting (NOT USED)</td>
<td>DB7</td>
</tr>
<tr>
<td>NOT USED</td>
<td>DB8</td>
</tr>
<tr>
<td>NOT USED</td>
<td>DB9</td>
</tr>
<tr>
<td>NOT USED</td>
<td>DB10</td>
</tr>
<tr>
<td>NOT USED</td>
<td>DB11</td>
</tr>
<tr>
<td>NOT USED</td>
<td>DB12</td>
</tr>
<tr>
<td>INSTrument (NOT USED)</td>
<td>DB13</td>
</tr>
<tr>
<td>PROgram (NOT USED)</td>
<td>DB14</td>
</tr>
<tr>
<td>NOT USED</td>
<td>DB15</td>
</tr>
</tbody>
</table>

**Figure 4.3.3-1** OPERation Status Register

**Table 4.3.3-1** OPERation Status Register

<table>
<thead>
<tr>
<th>Byte definition of OPERation Status Register</th>
</tr>
</thead>
<tbody>
<tr>
<td>DB0</td>
</tr>
</tbody>
</table>
The table below shows device messages for the OPERation status register.

Table 4.3.3-2 Device messages for OPERation status register

<table>
<thead>
<tr>
<th>Function</th>
<th>Device message</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operation Status Register Event</td>
<td>:STATus:OPERation[:EVENt]?</td>
</tr>
<tr>
<td>Operation Status Register Condition</td>
<td>:STATus:OPERation:CONDition?</td>
</tr>
<tr>
<td>Operation Status Register Enable</td>
<td>:STATus:OPERation:ENABLE &lt;integer&gt;</td>
</tr>
<tr>
<td></td>
<td>:STATus:OPERation:ENABLE?</td>
</tr>
<tr>
<td>Operation Status Register Negative Transition</td>
<td>:STATus:OPERation:NTRansition &lt;integer&gt;</td>
</tr>
<tr>
<td></td>
<td>:STATus:OPERation:NTRansition?</td>
</tr>
<tr>
<td>Operation Status Register Positive Transition</td>
<td>:STATus:OPERation:PTRansition &lt;integer&gt;</td>
</tr>
<tr>
<td></td>
<td>:STATus:OPERation:PTRansition?</td>
</tr>
</tbody>
</table>
Chapter 4  SCPI Device Message Details

:STATus:OPERation[:EVENt]?
Operation Status Register Event

Function

This command queries the event register of the OPERation Status Register.

Query

:STATus:OPERation[:EVENt]?

Response

<integer>

Parameter

<integer>  Total bytes of event register
Resolution  1
Range  0 to 65535

Details

This command is available only in the SCPI mode.

Example of Use

To query the event register of the OPERation Status Register.
STAT:OPER?
> 0

:STATus:OPERation:CONDition?
Operation Status Register Condition

Function

This command queries the condition register of the OPERation Status Register.

Query

:STATus:OPERation:CONDition?

Response

<integer>

Parameter

<integer>  Total bytes of condition register
Resolution  1
Range  0 to 65535

Example of Use

To query the contents of the condition register of the OPERation Status Register.
STAT:OPER:COND?
> 0
4.3 Power Meter Device Messages

:\texttt{STATus:OPERation:ENABle <integer>}

Operation Status Register Enable

**Function**

This command sets the event enable register of the OPERation status register.

**Command**

:\texttt{:STATus:OPERation:ENABle <integer>}

**Parameter**

\begin{itemize}
  \item \texttt{<integer>}: Total bytes of event enable register
  \item Resolution: 1
  \item Range: 0 to 65535
\end{itemize}

**Details**

This command is available only in the SCPI mode.

**Example of Use**

To set the event enable register of the OPERation status register to 16.

\begin{verbatim}
STAT:OPER:ENAB 16
\end{verbatim}

:\texttt{STATus:OPERation:ENAB?}

Operation Status Register Enable Query

**Function**

This command queries the event enable register of the OPERation status register.

**Query**

:\texttt{:STATus:OPERation:ENAB?}

**Response**

\begin{itemize}
  \item \texttt{<integer>}: Total bytes of event enable register
\end{itemize}

**Parameter**

\begin{itemize}
  \item Resolution: 1
  \item Range: 0 to 65535
\end{itemize}

**Example of Use**

To query the event enable register of the OPERation status register.

\begin{verbatim}
STAT:OPER:ENAB?
> 16
\end{verbatim}
4-156

Chapter 4  SCPI Device Message Details

:STATus:OPERation:NTRansition <integer>
Operation Status Register Negative Transition

Function

This command sets the transition filter (negative direction change) of the
OPERation status register.

Command

:STATus:OPERation:NTRansition <integer>

Parameter

<integer>  Total bytes of transition filter (negative direction change)
Resolution 1
Range 0 to 65535

Details

This command is available only in the SCPI mode.

Example of Use

To set the transition filter (negative direction change) of the OPERation
status register to 16.
STAT:OPER:NTR 16

:STATus:OPERation:NTRansition?
Operation Status Register Negative Transition Query

Function

This command queries the transition filter (negative direction change) of
the OPERation status register.

Query

:STATus:OPERation:NTRansition?

Response

<integer>

Parameter

<integer>  Total bytes of transition filter (negative direction change)
Resolution 1
Range 0 to 65535

Example of Use

To query the transition filter (negative direction change) of the
OPERation status register.
STAT:OPER:NTR?
> 16
4.3 Power Meter Device Messages

:STATus:OPERation:PTransition <integer>
Operation Status Register Positive Transition

Function
This command sets the transition filter (positive direction change) of the OPERation status register.

Command
:STATus:OPERation:PTransition <integer>

Parameter
<integer> Total bytes of transition filter (positive direction change)
Resolution 1
Range 0 to 65535

Details
This command is available only in the SCPI mode.

Example of Use
To set the transition filter (positive direction change) of the OPERation status register to 16.
STAT:OPER:PTR 16

:STATus:OPERation:PTransition?
Operation Status Register Positive Transition Query

Function
This command queries the transition filter (positive direction change) of the OPERation status register.

Query
:STATus:OPERation:PTransition?

Response
<integer>

Parameter
<integer> Total bytes of transition filter (positive direction change)
Resolution 1
Range 0 to 65535

Example of Use
To query the transition filter (positive direction change) of the OPERation status register.
STAT:OPER:PTR?
> 16
# 4.4 BER Settings

Table 4.1-1 shows device messages for setting functions for BER.

<table>
<thead>
<tr>
<th>Function</th>
<th>Device Message</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bit Error Rate Query</td>
<td>:CALCurate:BERT[:BASEband]:BER? EP</td>
</tr>
<tr>
<td>Received Bit Query</td>
<td>:CALCurate:BERT[:BASEband]:DATA:COUNt?</td>
</tr>
<tr>
<td>Result and Status Query</td>
<td>:DATA:DATA? ER</td>
</tr>
<tr>
<td>Error Bit Query</td>
<td>:DATA:DATA:BEC?</td>
</tr>
<tr>
<td>Count Clear</td>
<td>:DATA:COUNt:CLEar</td>
</tr>
<tr>
<td>Start Measurement by Continuous Mode</td>
<td>:INITiate:MODE:CONTinuous</td>
</tr>
<tr>
<td>Start Measurement by Endless Mode</td>
<td>:INITiate:MODE:ENDLess</td>
</tr>
<tr>
<td>Start Measurement by Single Mode</td>
<td>:INITiate:MODE:SINGle</td>
</tr>
<tr>
<td>Enable Polarity</td>
<td>:INPut:BERT[:BASEband]:CGATe:POLarity POSitive</td>
</tr>
<tr>
<td></td>
<td>:INPut:BERT[:BASEband]:CGATe:POLarity?</td>
</tr>
<tr>
<td></td>
<td>:INPut:BERT[:BASEband]:CGATe[:STATe] ON</td>
</tr>
<tr>
<td></td>
<td>:INPut:BERT[:BASEband]:CGATe[:STATe]?</td>
</tr>
<tr>
<td>Clock Polarity</td>
<td>:INPut:BERT[:BASEband]:CLOCk:POLarity POSitive</td>
</tr>
<tr>
<td></td>
<td>:INPut:BERT[:BASEband]:CLOCk:POLarity?</td>
</tr>
<tr>
<td>Data Polarity</td>
<td>:INPut:BERT[:BASEband]:DATA:POLarity POSitive</td>
</tr>
<tr>
<td></td>
<td>:INPut:BERT[:BASEband]:DATA:POLarity?</td>
</tr>
<tr>
<td>Display BER User Pattern</td>
<td>:MMEMory:LIST:PATTern?</td>
</tr>
<tr>
<td>File List Query</td>
<td>:MMEMory:MSIS &lt;drive&gt;</td>
</tr>
<tr>
<td>Drive to load User Pattern</td>
<td>:MMEMory:MSIS?</td>
</tr>
<tr>
<td>Load User Pattern</td>
<td>:MMEMory:LOAD:PATTern &lt;pattern&gt;</td>
</tr>
<tr>
<td>Measurement Status Query</td>
<td>:STATus:BERT:MEASure?</td>
</tr>
<tr>
<td>Data Pattern Type</td>
<td>[:SENSe]:BERT[:BASEband]:PRBS[:DATA] PN9</td>
</tr>
<tr>
<td>Sync Loss Threshold</td>
<td>[:SENSe]:BERT[:BASEband]:RSYNc:THReshold &lt;n&gt;,500</td>
</tr>
<tr>
<td>Auto Re-sync</td>
<td>[:SENSe]:BERT[:BASEband]:RSYNc[:STATe] ON</td>
</tr>
<tr>
<td></td>
<td>[:SENSe]:BERT[:BASEband]:RSYNc[:STATe]?</td>
</tr>
</tbody>
</table>
### Table 4.4-1  Device messages for setting BER (Cont’d)

<table>
<thead>
<tr>
<th>Function</th>
<th>Device Message</th>
</tr>
</thead>
<tbody>
<tr>
<td>BER – On/Off</td>
<td>[:SENSe]:BERT[:BASeband]:STATe  ON</td>
</tr>
<tr>
<td></td>
<td>[:SENSe]:BERT[:BASeband]:STATe?</td>
</tr>
<tr>
<td>Measurement Error Bit</td>
<td>[:SENSe]:BERT[:BASeband]:STOP:CRITera:EBIT &lt;bit&gt;</td>
</tr>
<tr>
<td></td>
<td>[:SENSe]:BERT[:BASeband]:STOP:CRITera:EBIT?</td>
</tr>
<tr>
<td>Count Mode</td>
<td>[:SENSe]:BERT[:BASeband]:STOP:CRITera[:SELect] EBIT</td>
</tr>
<tr>
<td></td>
<td>[:SENSe]:BERT[:BASeband]:STOP:CRITera[:SELect]?</td>
</tr>
<tr>
<td>Measurement Bit</td>
<td>[:SENSe]:BERT[:BASeband]:TBITs &lt;bit&gt;</td>
</tr>
<tr>
<td></td>
<td>[:SENSe]:BERT[:BASeband]:TBITs?</td>
</tr>
<tr>
<td>Measurement Mode</td>
<td>[:SENSe]:BERT[:BASeband]:MODE SINGLE</td>
</tr>
<tr>
<td></td>
<td>[:SENSe]:BERT[:BASeband]:MODE?</td>
</tr>
<tr>
<td>PN Fix Pattern Length</td>
<td>[:SENSe]:BERT[:BASeband]:PRBS:PNFix:LENGth &lt;bit&gt;</td>
</tr>
<tr>
<td></td>
<td>[:SENSe]:BERT[:BASeband]:PRBS:PNFix:LENGth?</td>
</tr>
<tr>
<td>PN Fix Pattern Initial Value</td>
<td>[:SENSe]:BERT[:BASeband]:PRBS:PNFix:INITial &lt;n&gt;</td>
</tr>
<tr>
<td></td>
<td>[:SENSe]:BERT[:BASeband]:PRBS:PNFix:INITial?</td>
</tr>
<tr>
<td>Length for Sync on User Pattern</td>
<td>[:SENSe]:BERT[:BASeband]:PRBS:USER:SYNC:LENGth &lt;bit&gt;</td>
</tr>
<tr>
<td></td>
<td>[:SENSe]:BERT[:BASeband]:PRBS:USER:SYNC:LENGth?</td>
</tr>
<tr>
<td>Sync Loss Count Query</td>
<td>[:SENSe]:BERT[:BASeband]:SYNLoss:COUNt?</td>
</tr>
<tr>
<td>Count Action at Sync Loss</td>
<td>[:SENSe]:BERT[:BASeband]:RSYNc:COUNt:ACTion CLEar</td>
</tr>
<tr>
<td></td>
<td>[:SENSe]:BERT[:BASeband]:RSYNc:COUNt:ACTion?</td>
</tr>
<tr>
<td>Sync Start Position on User Pattern</td>
<td>[:SENSe]:BERT[:BASeband]:PRBS:USER:SYNC:STARt &lt;bit&gt;</td>
</tr>
<tr>
<td></td>
<td>[:SENSe]:BERT[:BASeband]:PRBS:USER:SYNC:STARt?</td>
</tr>
<tr>
<td>User Pattern File Name Query</td>
<td>[:SENSe]:BERT[:BASeband]:PRBS:USER:PATTern?</td>
</tr>
<tr>
<td>User Pattern Length Query</td>
<td>[:SENSe]:BERT[:BASeband]:PRBS:USER:LENGth?</td>
</tr>
<tr>
<td>Start Measurement</td>
<td>:INITiate[:IMMediate]</td>
</tr>
<tr>
<td>Stop Measurement</td>
<td>:ABORT</td>
</tr>
</tbody>
</table>

Bit Error Rate Query

Function
Queries the bit error rate of BER measurement.

Query
:CALCulate:BERT[:BASeband]:BER? <format>

Response
<bit>

Parameter

<format>  
EP    Returns the bit error rate as a percentage.
ER    Returns the bit error rate as an exponent.

<bit>  
EP    0.000 to 100.000%
ER    0.000E+00 to 1.000E+02

Details
Unusable unless the measurement screen is set for BER test.
This command is available when MS269xA-020/120 Vector Signal
Generator, MS2830A-026/126 BER Measurement Function or
MS2840A-026/126 BER Measurement Function is installed.

Example of Use
To query the bit error rate in BER measurement as a percentage.
CALC:BERT:BER? EP
> 5.000
:CALCulate:BERT[:BASeband]:DATA:COUNt?

Received Bit Query

Function
Queries the reception bit count value of BER measurement.

Query
:CALCulate:BERT[:BASeband]:DATA:COUNt?

Response

<bit>

Parameter

<bit>  Number of count bits
Range    0 to (2^{32}−1)

Details
Unusable unless the measurement screen is set for BER test. This command is available when MS269xA-020/120 Vector Signal Generator, MS2830A-026/126 BER Measurement Function or MS2840A-026/126 BER Measurement Function is installed.

Example of Use
To query the reception bit count value of BER measurement.
CALC:BERT:DATA:COUN?
> 12356789
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:DATA:DATA? ER|EP
Result and Status Query

Function
Queries the bit error rate and status information of BER measurement.

Query
 :DATA:DATA? <format>

Response
 <per>,<countbit>,<errorbit>,<status>,<error>
(when format is EP)
 <exp>,<countbit>,<errorbit>,<status>,<error>
(when format is ER)

Parameter
 <per>  Bit error rate (percentage)
 Range  0.000 to 100.000%
 <exp>  Bit error rate (exponent format)
 Range  0.000E+00 to 1.000E+02
 <countbit>  Number of count bits
 <errorbit>  Number of error bits
 <status>  Measurement status
 <error>  Error status
 <format>  Response format
 EP  Returns the bit error rate in percentage
 ER  Returns the bit error rate in exponent format

Details
Unusable unless the measurement screen is set for BER test.
This command is available when MS269xA-020/120 Vector Signal
Generator, MS2830A-026/126 BER Measurement Function or
MS2840A-026/126 BER Measurement Function is installed.

Example of Use
To query the bit error rate in percentage.
DATA:DATA? EP
> 10.000,1000,100,0,NONE
4.4 BER Settings

:DATA:DATA:BEC?
Error Bit Query

Function
Queries the number of error bits of BER measurement.

Query
:DATA:DATA:BEC?

Response
<bit>

Parameter
<bit> Number of error bits
Range 0 to \(2^{32}\) bit

Details
Unusable unless the measurement screen is set for BER test.
This command is available when MS269xA-020/120 Vector Signal Generator, MS2830A-026/126 BER Measurement Function or MS2840A-026/126 BER Measurement Function is installed.

Example of Use
To query the number of error bits.
DATA:DATA:BEC?
> 0

:DATA:COUNt:CLEar
Count Clear

Function
Resets the BER measurement bit count to 0.

Command
:DATA:COUNt:CLEar

Details
Unusable unless the measurement screen is set for BER test.
This command is valid only when the measurement mode is Single or Endless.
This command is available when MS269xA-020/120 Vector Signal Generator, MS2830A-026/126 BER Measurement Function or MS2840A-026/126 BER Measurement Function is installed.

Example of Use
To reset the bit count to 0.
DATA:COUN:CLE
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:INITiate:MODE:CONTinuous
Start Measurement by Continuous Mode

Function
Starts the BER measurement in Continuous mode.

Command
:INITiate:MODE:CONTinuous

Details
When executing this command for BER measurement function, switch the application to BER Test.
This command is available when MS269xA-020/120 Vector Signal Generator, MS2830A-026/126 BER Measurement Function or MS2840A-026/126 BER Measurement Function is installed.

Note:
The BER measurement is also available when the signal generator application is active.

For the above command operation for other than BER measurement function, see the operation manual of each application.

Example of Use
To start the BER measurement in Continuous mode.
INIT:MODE:CONT

:INITiate:MODE:ENDLess
Start Measurement by Endless Mode

Function
Starts the BER measurement in Endless mode.

Command
:INITiate:MODE:ENDLess

Details
Unusable unless the measurement screen is set for BER test.
This command is available when MS269xA-020/120 Vector Signal Generator, MS2830A-026/126 BER Measurement Function or MS2840A-026/126 BER Measurement Function is installed.

Example of Use
To start the BER measurement in Endless mode.
INIT:MODE:ENDL
4.4 BER Settings

:INITiate:MODE:SINGle
Start Measurement by Single Mode

Function
Starts the BER measurement in Single mode.

Command
:INITiate:MODE:SINGle

Details
When executing this command for BER measurement function, switch the application to BER Test.
This command is available when MS269xA-020/120 Vector Signal Generator, MS2830A-026/126 BER Measurement Function or MS2840A-026/126 BER Measurement Function is installed.

Note:
The BER measurement is also available when the signal generator application is active.
For the above command operation for other than BER measurement function, see the operation manual of each application.

Example of Use
To start the BER measurement in Single mode.
INIT:MODE:SING
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:INPut:BERT[:BASeband]:CGATe:POLarity POSitive|NEGative|DISable

Enable Polarity

Function

Sets or disables the polarity of the Enable signal for BER measurement.

Command

:INPut:BERT[:BASeband]:CGATe:POLarity <polarity>

Parameter

<polarity>    Enable signal polarity
  POSitive    Positive logic (high active)
  NEGative    Negative logic (low active)
  DISable     Disables the signal polarity

Details

Unusable unless the measurement screen is set for BER test.
This command is available when MS269xA-020/120 Vector Signal Generator, MS2830A-026/126 BER Measurement Function or MS2840A-026/126 BER Measurement Function is installed.

Example of Use

To set the Enable signal polarity to positive.

INP:BERT:CGAT:POL POS
:INPut:BERT[:BASeband]:CGATe:POLarity?

Enable Polarity Query

Function

Queries the polarity of the Enable signal for BER measurement.

Query

:INPut:BERT[:BASeband]:CGATe:POLarity?

Response

<polarity>

Parameter

<polarity> Enable signal polarity

POS Positive logic (active high)

NEG Negative logic (active low)

DIS Enables the signal polarity

Details

Unusable unless the measurement screen is set for BER test.

This command is available when MS269xA-020/120 Vector Signal Generator, MS2830A-026/126 BER Measurement Function or MS2840A-026/126 BER Measurement Function is installed.

Example of Use

To query the polarity of the Enable signal.

INP:BERT:CGAT:POL?

> POS
**INPut:BERT[:BASeband]:CGATe[:STATe] ON|OFF|1|0**

Enable Polarity – On/Off

**Function**

Enables/disables the Enable signals of BER measurement.

**Command**

:`INPut:BERT[:BASeband]:CGATe[:STATe] <on_off>`

**Parameter**

- `<on_off>` Enables/disables Enable signal
  - `ON|1` Enabled
  - `OFF|0` Disabled

**Details**

Unusable unless the measurement screen is set for BER test. This command is available when MS269xA-020/120 Vector Signal Generator, MS2830A-026/126 BER Measurement Function or MS2840A-026/126 BER Measurement Function is installed.

**Example of Use**

To enable the Enable signal.

`INP:BERT:CGAT ON`
4.4 BER Settings

:INPut:BERT[:BASeband]:CGATe[:STATe]?

Enable Polarity – On/Off Query

Function

Queries whether the Enable signal is enabled or disabled for BER measurement.

Query

:INPut:BERT[:BASeband]:CGATe[:STATe]?

Response

<on_off>

Parameter

<on_off> Enable signal status

<table>
<thead>
<tr>
<th>Value</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Enabled</td>
</tr>
<tr>
<td>0</td>
<td>Disabled</td>
</tr>
</tbody>
</table>

Details

Unusable unless the measurement screen is set for BER test.
This command is available when MS269xA-020/120 Vector Signal Generator, MS2830A-026/126 BER Measurement Function or MS2840A-026/126 BER Measurement Function is installed.

Example of Use

To query whether the Enable signal is enabled.
INP:BERT:CGAT?
> 1
\textbf{:INPut:BERT[:BASeband]:CLOCk:POLarity POSitive|NEGative}

Clock Polarity

Function

Sets the polarity of the clock signal for BER measurement.

Command

\texttt{:INPut:BERT[:BASeband]:CLOCk:POLarity <polarity>}

Parameter

\begin{itemize}
  \item \texttt{<polarity>}: Clock signal polarity
  \item \texttt{POSitive}: Data is detected at the rising edge.
  \item \texttt{NEGative}: Data is detected at the falling edge.
\end{itemize}

Details

Unusable unless the measurement screen is set for BER test.
This command is available when MS269xA-020/120 Vector Signal Generator, MS2830A-026/126 BER Measurement Function or MS2840A-026/126 BER Measurement Function is installed.

Example of Use

To set the clock signal polarity to Positive.
\texttt{INP:BERT:CLOC:POL POS}
:INPut:BERT[:BASeband]:CLOCK:POLarity?

Clock Polarity Query

Function
Queries the polarity of the clock signal of BER measurement.

Query
:INPut:BERT[:BASeband]:CLOCK:POLarity?

Response
<polarity>

Parameter
<polarity> Clock signal polarity
POS Data is detected at the rising edge.
NEG Data is detected at the falling edge.

Details
Unusable unless the measurement screen is set for BER test.
This command is available when MS269xA-020/120 Vector Signal
Generator, MS2830A-026/126 BER Measurement Function or
MS2840A-026/126 BER Measurement Function is installed.

Example of Use
To query the polarity of the clock signal.
INP:BERT:CLOC:POL?
> POS
:INPut:BERT[:BASeband]:DATA:POLarity POSitive|NEGative

Data Polarity

Function
Sets the logic (positive or negative) of the Data signal for BER measurement.

Command
:INPut:BERT[:BASeband]:DATA:POLarity <polarity>

Parameter

<polarity>  |  Data signal logic
----------|-------------------
POSitive   |  Positive logic
NEGative   |  Negative logic

Details
Unusable unless the measurement screen is set for BER test.
This command is available when MS269xA-020/120 Vector Signal Generator, MS2830A-026/126 BER Measurement Function or MS2840A-026/126 BER Measurement Function is installed.

Example of Use
To set the Data signal logic to positive.
INP:BERT:DATA:POL POS
:INPut:BERT[:BASeband]:DATA:POLarity?

Data Polarity Query

Function

Queries the logic (positive or negative) of the data signal for BER measurement.

Query

:INPut:BERT[:BASeband]:DATA:POLarity?

Response

<polarity>

Parameter

<polarity> Data signal logic
POS Positive logic
NEG Negative logic

Details

Unusable unless the measurement screen is set for BER test.
This command is available when MS269xA-020/120 Vector Signal Generator, MS2830A-026/126 BER Measurement Function or MS2840A-026/126 BER Measurement Function is installed.

Example of Use

To query the logic (positive or negative) of the data signal.
INP:BERT:DATA:POL?
> POS
Chapter 4  SCPI Device Message Details

:MMEMory:LIST:PATTern?
Display BER User Pattern File List Query

Function
Queries the list of the user pattern files for BER measurement.

Query
:MMEMory:LIST:PATTern?

Response
<s1>,<s2>,<s3>........,<s99>,<s100>

Parameter
<s1>,........,<s100>  Existing user pattern file names (within 32 characters)

Range       up to 100 files

Details
Unusable unless the measurement screen is set for BER test.
Returns ***, if there is no user pattern file.
The file lists of response messages are in alphabetical order.
This command is available when MS269xA-020/120 Vector Signal
Generator, MS2830A-026/126 BER Measurement Function or
MS2840A-026/126 BER Measurement Function is installed.

Example of Use
To query the list of the user pattern files for BER measurement.
MMEM:LIST:PATT?
> TEST1,TEST2,TEST3
4.4 BER Settings

:MMEMory:MSIS <drive>
Drive to load User Pattern

Function
Sets the name of the drive to load the user-defined pattern file for BER measurement.

Command
:MMEMory:MSIS <drive>

Parameter
<drive> Load source drive name

Details
Unusable unless the measurement screen is set for BER test.
This command is available when MS269xA-020/120 Vector Signal Generator, MS2830A-026/126 BER Measurement Function or MS2840A-026/126 BER Measurement Function is installed.

Example of Use
To load the user-defined pattern from drive D.
MMEM:MSIS D

:MMEMory:MSIS?
Drive to load User Pattern Query

Function
Queries the drive name loading the user-defined pattern file for BER measurement.

Query
:MMEMory:MSIS?

Response
<drive>

Parameter
<drive> Load source drive name

Details
Unusable unless the measurement screen is set for BER test.
This command is available when MS269xA-020/120 Vector Signal Generator, MS2830A-026/126 BER Measurement Function or MS2840A-026/126 BER Measurement Function is installed.

Example of Use
To query the load source drive of the user-defined pattern.
MMEM:MSIS?
> D
:MMEMory:LOAD:PATTern <pattern>
Load User Pattern

Function

Loads the user-defined pattern for BER measurement from a file.

Command

:MMEMory:LOAD:PATTern <pattern>

Parameter

<pattern>  
User-defined pattern to be loaded
Specify a character string within 32 characters, obtained by removing an extension (bpn) from the target user defined pattern file name.

Details

Unusable unless the measurement screen is set for BER test.
Only files with extension “bpn” can be loaded.
It is not settable when data type is not UserDefine.
If the specified user define pattern file does not exist, an error is returned to the standard status register. The standard status register value can be checked by *ESR? command.
This command is available when MS269xA-020/120 Vector Signal Generator, MS2830A-026/126 BER Measurement Function or MS2840A-026/126 BER Measurement Function is installed.

Example of Use

To load the user-defined pattern file “USERPATTERN.bpn”.
MMEM:LOAD:PATT "USERPATTERN"
4.4 BER Settings

:STATus:BERT:MEASure?
Measurement Status Query

Function
- Queries the measurement status for BER measurement.

Query
- [:STATus:BERT:MEASure?]

Response
- <status>

Parameter
- <status>
  - Measurement Status
  - 0: During halt
  - 1: During measurement
  - 2: Synchronization is being built up.
  - 3: Stopped due to the occurrence of measurement error.
  - 4: Stopped because SyncLoss count exceeded the maximum.
  - 5: Stopped because count bit exceeded the maximum.

Details
- Unusable unless the measurement screen is set for BER test.
- The error contents can be obtained by using :STATus:ERRor? when a measurement error occurs.
- This command is available when MS269xA-020/120 Vector Signal Generator, MS2830A-026/126 BER Measurement Function or MS2840A-026/126 BER Measurement Function is installed.

Example of Use
- To query the current measurement status.
  - STAT:BERT:MEAS?
  - > 0
[SENSe]:BERT[BASeband]:PRBS[DATA]
PN9|PN11|PN15|PN20|PN23|ALL0|ALL1|ALT|FPN9|FPN11|FPN15|FPN20|FPN23|USER
Data Pattern Type

Function
Sets the data pattern type for BER measurement.

Command
[:SENSe]:BERT[BASeband]:PRBS[DATA] <pattern>

Parameter
<pattern> Data pattern type
  PN9 PN9
  PN11 PN11
  PN15 PN15
  PN20 PN20
  PN23 PN23
  ALL0 All 0 (00...0)
  ALL1 All 1 (11...1)
  ALT Repetition of “01” patterns (0,1,0,1,...)
  FPN9 PN9 Fix
  FPN11 PN11 Fix
  FPN15 PN15 Fix
  FPN20 PN20 Fix
  FPN23 PN23 Fix
  USER User-defined pattern

Details
Unusable unless the measurement screen is set for BER test.
This command is available when MS269xA-020/120 Vector Signal Generator, MS2830A-026/126 BER Measurement Function or MS2840A-026/126 BER Measurement Function is installed.

Example of Use
To set the data pattern type to PN9.
BERT:PRBS PN9
4.4 BER Settings

[:SENSe]:BERT[:BASeband]:PRBS[:DATA]?
Data Pattern Type Query

Function
Queries the data pattern type for BER measurement.

Query
[:SENSe]:BERT[:BASeband]:PRBS[:DATA]?

Response
<pattern>

Parameter
<pattern> Data pattern type
PN9 PN9
PN11 PN11
PN15 PN15
PN20 PN20
PN23 PN23
ALL0 All 0 (00...0)
ALL1 All 1 (11...1)
ALT Repetition of “01” patterns (0,1,0,1,...)
FPN9 PN9 Fix
FPN11 PN11 Fix
FPN15 PN15 Fix
FPN20 PN20 Fix
FPN23 PN23 Fix
USER User-defined pattern

Details
Unusable unless the measurement screen is set for BER test.
This command is available when MS269xA-020/120 Vector Signal Generator, MS2830A-026/126 BER Measurement Function or MS2840A-026/126 BER Measurement Function is installed.

Example of Use
To query the data pattern type.
BERT:PRBS?
> PN9
[:SENSe]:BERT[:BASEband]:RSYNc:THReshold <n>,500|5000|50000
Sync Loss Threshold

Function
Sets the Sync Loss judgment condition for the BER measurement.

Command
[:SENSe]:BERT[:BASEband]:RSYNc:THReshold <n>,<a>

Parameter
<n> Numerator of Sync Loss threshold
Range 1 to (a/2) bits

[a] Dominator of Sync Loss threshold
500 500 bits
5000 5000 bits
50000 50000 bits

Details
Unusable unless the measurement screen is set for BER test.
During BER measurement, if n bits out of continuous a bits are detected as error bits, it is judged as Sync Loss.
This command is valid only when auto resynchronization is disabled.
This command is available when MS269xA-020/120 Vector Signal Generator, MS2830A-026/126 BER Measurement Function or MS2840A-026/126 BER Measurement Function is installed.

Example of Use
To set the Sync Loss threshold to 123/500 bits.
BERT:RSYN:THR 123,500
4.4 BER Settings

[:SENSe]:BERT[:BASeband]:RSYNc:THReshold?
Sync Loss Threshold Query

Function
Queries the Sync Loss judgment condition for the BER measurement.

Query
[:SENSe]:BERT[:BASeband]:RSYNc:THReshold?

Response
<n>,<a>

Parameter
<n> Numerator of Sync Loss threshold
   Range 1 to (a/2) bits
[a] Dominator of Sync Loss threshold
   500 500 bits
   5000 5000 bits
   50000 50000 bits

Details
Unusable unless the measurement screen is set for BER test.
This command is available when MS269xA-020/120 Vector Signal Generator, MS2830A-026/126 BER Measurement Function or MS2840A-026/126 BER Measurement Function is installed.

Example of Use
To query the Sync Loss judgment condition.
BERT:RSYN:THR?
> 123,500
[:SENSe]:BERT[:BASeband]:RSYNc[:STATe] ON|OFF|1|0

Auto Re-sync

Function

Enables (ON) or disables (OFF) the automatic resynchronization for BER measurement.

Command

[:SENSe]:BERT[:BASeband]:RSYNc[:STATe] <on_off>

Parameter

<on_off>                  Automatic resynchronization ON/OFF
  ON|1                  Enables automatic resynchronization
  OFF|0                 Disables automatic resynchronization

Details

Unusable unless the measurement screen is set for BER test.
This command is available when MS269xA-020/120 Vector Signal Generator, MS2830A-026/126 BER Measurement Function or MS2840A-026/126 BER Measurement Function is installed.

Example of Use

To enable the automatic resynchronization.
BERT:RSYN ON
Auto Re-sync Query

Queries the ON/OFF status of the automatic resynchronization for BER measurement.

**Query**: [:SENSe]:BERT[:BASEband]:RSYN[:STATe]?

**Response**: <on_off>

**Parameter**

<table>
<thead>
<tr>
<th>&lt;on_off&gt;</th>
<th>Automatic resynchronization ON/OFF status</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Automatic resynchronization is enabled.</td>
</tr>
<tr>
<td>0</td>
<td>Automatic resynchronization is disabled.</td>
</tr>
</tbody>
</table>

**Details**

Unusable unless the measurement screen is set for BER test. This command is available when MS269xA-020/120 Vector Signal Generator, MS2830A-026/126 BER Measurement Function or MS2840A-026/126 BER Measurement Function is installed.

**Example of Use**

To query the ON/OFF status of the automatic resynchronization.

```
BERT:RSYN?
> 1
```
[:SENSe]:BERT[:BASeband]:STATe ON|OFF|1|0
BER: On/Off

Function
Starts or stops BER measurement.

Command
[:SENSe]:BERT[:BASeband]:STATe <on_off>

Parameter

<on_off>  Start/stop of BER measurement
ON|1  Start
OFF|0  Stop

Details
Unusable unless the measurement screen is set for BER test.
This command is available when MS269xA-020/120 Vector Signal Generator, MS2830A-026/126 BER Measurement Function or MS2840A-026/126 BER Measurement Function is installed.

Example of Use
To start BER measurement.
BERT:STAT ON
4.4 BER Settings

[:SENSe]:BERT[:BASeband]:STATe?
BER- On/Off Query

Function
Queries the measurement status of BER measurement.

Query
[:SENSe]:BERT[:BASeband]:STATe?

Response
<on_off>

Parameter
<on_off> BER measurement status
 1 During measurement
 0 During halt

Details
Unusable unless the measurement screen is set for BER test.
This command is available when MS269xA-020/120 Vector Signal
Generator, MS2830A-026/126 BER Measurement Function or
MS2840A-026/126 BER Measurement Function is installed.

Example of Use
To query the measurement status of BER measurement.
BERT:STAT?
> 1
[:SENSe]:BERT[:BASeband]:STOP:CRITeria:EBIT <bit>

Measurement Error Bit

Function
Sets the number of measurement error bits for BER measurement.

Command
[:SENSe]:BERT[:BASeband]:STOP:CRITeria:EBIT <bit>

Parameter

<table>
<thead>
<tr>
<th>&lt;bit&gt;</th>
<th>Number of measurement error bits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Range</td>
<td>1 to 2 Gbits</td>
</tr>
<tr>
<td></td>
<td>1 to 2147 Mbits</td>
</tr>
<tr>
<td></td>
<td>1 to 2147483 kbits</td>
</tr>
<tr>
<td></td>
<td>1 to 2147483647 bits</td>
</tr>
<tr>
<td>Suffix code</td>
<td>GBIT, MBIT, KBIT, BIT</td>
</tr>
<tr>
<td></td>
<td>BIT is applied when omitted.</td>
</tr>
</tbody>
</table>

Details
Unusable unless the measurement screen is set for BER test.
This command is available when MS269xA-020/120 Vector Signal Generator, MS2830A-026/126 BER Measurement Function or MS2840A-026/126 BER Measurement Function is installed.

Note:
This function is not available when the measurement mode is set to Endless or the count mode is set to NONE.

Example of Use
To set the number of measurement error bits to 4,095 bits.
BERT:STOP:CRIT:EBIT 4095
4.4 BER Settings

[:SENSe]:BERT[:BASEband]:STOP:CRITeria:EBIT?
Measurement Error Bit Query

Function
Queries the number of measurement error bits for BER measurement.

Query
[:SENSe]:BERT[:BASEband]:STOP:CRITeria:EBIT?

Response
<bit>

Parameter
<bit>  Number of measurement error bits
Range
1 to 2 Gbits
1 to 2147 Mbits
1 to 2147483 kbits
1 to 2147483647 bits

Details
Unusable unless the measurement screen is set for BER test.
This command is available when MS269xA-020/120 Vector Signal Generator, MS2830A-026/126 BER Measurement Function or MS2840A-026/126 BER Measurement Function is installed.

Example of Use
To query the number of measurement error bits.
BERT:STOP:CRIT:EBIT?
> 4095
Chapter 4  SCPI Device Message Details

[:SENSe]:BERT[:BASeband]:STOP:CRITeria[:SELect] EBIT|NONE

Count Mode

Function

Sets the BER measurement end condition.

Command

[:SENSe]:BERT[:BASeband]:STOP:CRITeria[:SELect] <mode>

Parameter

<mode>  BER measurement end condition
EBIT    BER measurement ends when the specified number of error bits is reached.
NONE    BER measurement ends when the specified number of count bits is reached.

Details

Unusable unless the measurement screen is set for BER test.
This command is available when MS269xA-020/120 Vector Signal Generator, MS2830A-026/126 BER Measurement Function or MS2840A-026/126 BER Measurement Function is installed.

Example of Use

To end the BER measurement when the specified number of error bits is reached.
BERT:STOP:CRIT EBIT
4.4  BER Settings

[:SENSe]:BERT[:BASeband]:STOP:CRITeria[:SEList]?  
Count Mode Query

Function  
Queries the measurement end condition of BER measurement.

Query  
[:SENSe]:BERT[:BASeband]:STOP:CRITeria[:SEList]?

Response  
<mode>

Parameter  
<mode>  
EBIT  
BER measurement ends when the specified number of error bits is reached.

NONE  
BER measurement ends when the specified number of count bits is reached.

Details  
Unusable unless the measurement screen is set for BER test. This command is available when MS269xA-020/120 Vector Signal Generator, MS2830A-026/126 BER Measurement Function or MS2840A-026/126 BER Measurement Function is installed.

Example of Use  
To query the measurement end condition of BER measurement.  
BERT:STOP:CRIT?  
> EBIT
[:SENSe]:BERT[:BASeband]:TBITs <bit>

Measurement Bit

Function

Sets the number of measurement bits for BER measurement.

Command

[:SENSe]:BERT[:BASeband]:TBITs <bit>

Parameter

<bit> Number of measurement bits

Range

1 to 4 Gbits
1 to 4294 Mbits
1 to 4294967 Kbits
1000 to 4294967295 bits

Suffix code

GBIT, MBIT, KBIT, BIT

BIT is applied when omitted.

Details

Unusable unless the measurement screen is set for BER test.
This command is available when MS269xA-020/120 Vector Signal Generator, MS2830A-026/126 BER Measurement Function or MS2840A-026/126 BER Measurement Function is installed.

Note:

This function is not available when the measurement mode is set to Endless or the count mode is set to EBIT.

Example of Use

To set the number of measurement bits to 10,000 bits.

BERT:TBIT 10000
4.4 BER Settings

[:SENSe]:BERT[:BASeband]:TBITs?
Measurement Bit Query

Function
Queries the number of measurement bits for BER measurement.

Query
[:SENSe]:BERT[:BASeband]:TBITs?

Response
<bit>

Parameter
<bit> Number of measurement bits
Range
1 to 4 Gbits
1 to 4294 Mbits
1 to 4294967 kbits
1000 to 4294967295 bits

Details
Unusable unless the measurement screen is set for BER test.
This command is available when MS269xA-020/120 Vector Signal Generator, MS2830A-026/126 BER Measurement Function or MS2840A-026/126 BER Measurement Function is installed.

Example of Use
To query the number of the measurement bits.
BERT:TBIT?
> 10000
Measurement Mode

Function

Sets the BER measurement mode.

Command

[:SENSe]:BERT[:BASEband]:MODE <mode>

Parameter

<br>

<table>
<thead>
<tr>
<th>&lt;mode&gt;</th>
<th>Measurement mode</th>
</tr>
</thead>
<tbody>
<tr>
<td>SINGle</td>
<td>Single mode</td>
</tr>
<tr>
<td>CONTinuous</td>
<td>Continuous mode</td>
</tr>
<tr>
<td>ENDLess</td>
<td>Endless mode</td>
</tr>
</tbody>
</table>

Details

Unusable unless the measurement screen is set for BER test.

If set to the endless mode, the other settings will be changed as follows:

- **Count Mode**
  - Measurement Bit: 4294967295 bits

This command is available when MS269xA-020/120 Vector Signal Generator, MS2830A-026/126 BER Measurement Function or MS2840A-026/126 BER Measurement Function is installed.

Example of Use

To set the measurement mode to Single mode.

BERT:MODE SING
### [:SENSe]:BERT[:BASeband]:MODE?

**Measurement Mode Query**

**Function**

Queries the measurement mode of BER measurement.

**Query**

[:SENSe]:BERT[:BASeband]:MODE?

**Response**

<mode>

**Parameter**

<table>
<thead>
<tr>
<th>&lt;mode&gt;</th>
<th>Measurement mode</th>
</tr>
</thead>
<tbody>
<tr>
<td>SING</td>
<td>Single mode</td>
</tr>
<tr>
<td>CONT</td>
<td>Continuous mode</td>
</tr>
<tr>
<td>ENDL</td>
<td>Endless mode</td>
</tr>
</tbody>
</table>

**Details**

Unusable unless the measurement screen is set for BER test. This command is available when MS269xA-020/120 Vector Signal Generator, MS2830A-026/126 BER Measurement Function or MS2840A-026/126 BER Measurement Function is installed.

**Example of Use**

To query the measurement mode.

BERT:MODE?

> SING
[:SENSe]:BERT[:BASEband]:PRBS:PNFix:LENGth <bit>

PN Fix Pattern Length

**Function**
Sets the length of PN Fix pattern for BER measurement.

**Command**
[:SENSe]:BERT[:BASEband]:PRBS:PNFix:LENGth <bit>

**Parameter**

- <bit> Bit length of PN Fix pattern
  - Range 96 to 134217728 bits
  - Suffix code None

**Details**

Unusable unless the measurement screen is set for BER test. This command is valid only when Data Type is set to PN Fix. This command is available when MS269xA-020/120 Vector Signal Generator, MS2830A-026/126 BER Measurement Function or MS2840A-026/126 BER Measurement Function is installed.

**Example of Use**

To set the length of the PN Fix pattern to 1,024 bits.

BERT:PRBS:PNF:LENG 1024
4.4 BER Settings

[:SENSe]:BERT[:BASeband]:PRBS:PNFix:LENGth?
PN Fix Pattern Length Query

Function
Queries the length of PN Fix pattern for BER measurement.

Query
[:SENSe]:BERT[:BASeband]:PRBS:PNFix:LENGth?

Response
/bit>

Parameter
/bit> Bit length of PN Fix pattern
Range 96 to 134217728 bits
Suffix code None

Details
Unusable unless the measurement screen is set for BER test.
This command is available when MS269xA-020/120 Vector Signal
Generator, MS2830A-026/126 BER Measurement Function or
MS2840A-026/126 BER Measurement Function is installed.

Example of Use
To query the length of PN Fix pattern.
BERT:PRBS:PNF:LENG?
> 1024
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[:SENSe]:BERT[:BASeband]:PRBS:PNFix:INITial <n>
PN Fix Pattern Initial Value

Function
Sets the initial value of PN Fix pattern in binary, for BER measurement.

Command
[:SENSe]:BERT[:BASeband]:PRBS:PNFix:INITial <n>

Parameter
<n>  PN Fix pattern initial value (binary)
Range 00…0 to 11…1 [9 bits] (for PN9 Fix)
00…0 to 11…1 [15 bits] (for PN15 Fix)
00…0 to 11…1 [20 bits] (for PN20 Fix)
00…0 to 11…1 [23 bits] (for PN23 Fix)

Details
Unusable unless the measurement screen is set for BER test.
This command is valid only when Data Type is set to PN Fix.
Prefix “#B”, a character string indicating binary, to the parameter.
This command is available when MS269xA-020/120 Vector Signal Generator, MS2830A-026/126 BER Measurement Function or MS2840A-026/126 BER Measurement Function is installed.

Example of Use
To set the PN9 Fix initial value to 101,010,101.
BERT:PRBS:PNF:INIT #B101010101
4.4 BER Settings

[:SENSe]:BERT[:BASeband]:PRBS:PNFix:INITial?

PN Fix Pattern Initial Value Query

Function

Queries the initial value of PN Fix pattern in binary, for BER measurement.

Query

[:SENSe]:BERT[:BASeband]:PRBS:PNFix:INITial?

Response

<n>

Parameter

<n> PN Fix pattern initial value (binary)

Range

00…0 to 11…1 [9 bits] (for PN9 Fix)
00…0 to 11…1 [15 bits] (for PN15 Fix)
00…0 to 11…1 [20 bits] (for PN20 Fix)
00…0 to 11…1 [23 bits] (for PN23 Fix)

Details

Unusable unless the measurement screen is set for BER test.
This command is available when MS269xA-020/120 Vector Signal Generator, MS2830A-026/126 BER Measurement Function or MS2840A-026/126 BER Measurement Function is installed.

Example of Use

To query the initial value of PN9 Fix.
BERT:PRBS:PNF:INIT?
> 101010101
Function

Sets the length of the partial bit string, which is used for synchronization judgment, in the user-defined pattern for BER measurement.

Command

[:SENSe]:BERT[:BASEband]:PRBS:USER:SYNC:LENGth <bit>

Parameter

<bit> Length of synchronization judgment bit string

Range 8 to 1024 bits

Details

Unusable unless the measurement screen is set for BER test.
This command is valid only when Data Type is set to User Define.
This command is available when MS269xA-020/120 Vector Signal Generator, MS2830A-026/126 BER Measurement Function or MS2840A-026/126 BER Measurement Function is installed.

Example of Use

To set the length of the synchronization judgment bit string in the user-defined pattern to 65 bits.
BERT:PRBS:USER:SYNC:LENG 65
4.4 BER Settings

[:SENSe]:BERT[:BASEband]:PRBS:USER:SYNC:LENGth?
Length for Sync on User Pattern Query

Function

Queries the length of the partial bit string, which is used for synchronization judgment, in the user-defined pattern for BER measurement.

Query

[:SENSe]:BERT[:BASEband]:PRBS:USER:SYNC:LENGth?

Response

<bit>

Parameter

<bit> Length of synchronization judgment bit string
Range 8 to 1024 bits

Details

Unusable unless the measurement screen is set for BER test.
This command is available when MS269xA-020/120 Vector Signal Generator, MS2830A-026/126 BER Measurement Function or MS2840A-026/126 BER Measurement Function is installed.

Example of Use

To query the length of the synchronization judgment bit string in the user-defined pattern.
BERT:PRBS:USER:SYNC:LENG?
> 65
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[:SENSe]:BERT[:BASEband]:SYNLoss:COUNt?
Sync Loss Count Query

Function
Queries the number of Sync Loss (out of synchronization) errors having occurred during the BER measurement.

Query
[:SENSe]:BERT[:BASEband]:SYNLoss:COUNt?

Response
<count>

Parameter
<count> Number of Sync Loss errors occurred

Range 0 to 65535

Details
Unusable unless the measurement screen is set for BER test. This command is available when MS269xA-020/120 Vector Signal Generator, MS2830A-026/126 BER Measurement Function or MS2840A-026/126 BER Measurement Function is installed.

Example of Use
To query the number of Sync Loss errors.
BER:T:SYNL:COUN?
> 500
4.4 BER Settings

[:SENSe]:BERT[:BASeband]:RSYNc:COUNt:ACTion CLEar|KEEP

Count Action at Sync Loss

Function
Sets the action when Sync Loss occurs during BER measurement.

Command
[:SENSe]:BERT[:BASeband]:RSYNc:COUNt:ACTion <a>

Parameter

<table>
<thead>
<tr>
<th>&lt;a&gt;</th>
<th>Action when Sync Loss occurs</th>
</tr>
</thead>
<tbody>
<tr>
<td>CLEar</td>
<td>Clears current count value</td>
</tr>
<tr>
<td>KEEP</td>
<td>Keeps current count value</td>
</tr>
</tbody>
</table>

Details
Unusable unless the measurement screen is set for BER test.
Selects whether to clear or keep the count value when Sync Loss occurs during measurement.
This command is valid only when auto resynchronization is enabled.
This command is available when MS269xA-020/120 Vector Signal Generator, MS2830A-026/126 BER Measurement Function or MS2840A-026/126 BER Measurement Function is installed.

Example of Use
To clear the count value when Sync Loss occurs.
BERT:RSYN:COUN:ACT CLE
[:SENSe]:BERT[:BASeband]:RSYNc:COUNt:ACTion?
Count Action at Sync Loss Query

Function
Queries the action when Sync Loss occurs during BER measurement.

Query
[:SENSe]:BERT[:BASeband]:RSYNc:COUNt:ACTion?

Response
<a>

Parameter
<a>
Action against Sync Loss
CLE  Clears current count value.
KEEP  Keeps current count value.

Details
Unusable unless the measurement screen is set for BER test.
This command is available when MS269xA-020/120 Vector Signal Generator, MS2830A-026/126 BER Measurement Function or MS2840A-026/126 BER Measurement Function is installed.

Example of Use
To query the action when Sync Loss occurs.
BERT:RSYN:COUN:ACT?
> CLE
4.4 BER Settings

[:SENSe]:BERT[:BASeband]:PRBS:USER:SYNC:STARt <bit>
Sync Start Position on User Pattern

Function

Sets the start position of the partial bit string, which is used for synchronization judgment, in the user-defined pattern for BER measurement.

Command

[:SENSe]:BERT[:BASeband]:PRBS:USER:SYNC:STARt <bit>

Parameter

<bit> Start position of synchronization judgment bit string

Range 1 to (Pattern Length) bits

Details

Unusable unless the measurement screen is set for BER test.
This command is valid only when Data Type is set to User Define.
This command is available when MS269xA-020/120 Vector Signal Generator, MS2830A-026/126 BER Measurement Function or MS2840A-026/126 BER Measurement Function is installed.

Example of Use

To set the 31st bit from the start of the user-defined pattern as the start position of synchronization judgment bit string.

BERT:PRBS:USER:SYNC:STAR 31
[:SENSe]:BERT[:BASeband]:PRBS:USER:SYNC:STARt?
Sync Start Position on User Pattern Query

Function
Queries the start position of the partial bit string, which is used for synchronization judgment, in the user-defined pattern for BER measurement.

Query
[:SENSe]:BERT[:BASeband]:PRBS:USER:SYNC:STARt?

Response
<bit>

Parameter
<bit>  
Start position of synchronization judgment bit string
Range  
1 to (Pattern Length) bits

Details
Unusable unless the measurement screen is set for BER test.
This command is available when MS269xA-020/120 Vector Signal Generator, MS2830A-026/126 BER Measurement Function or MS2840A-026/126 BER Measurement Function is installed.

Example of Use
To query the start position of the partial bit string, which is used for synchronization judgment, in the user-defined pattern for BER measurement.
BERT:PRBS:USER:SYNC:STAR?
> 31
4.4 BER Settings

[:SENSe]:BERT[:BASEband]:PRBS:USER:PATTern?

User Pattern File Name Query

Function
Queries the user-defined pattern name for BER measurement.

Query
[:SENSe]:BERT[:BASEband]:PRBS:USER:PATTern?

Response
<pattern>,<drive>

Parameter

<pattern> Character string within 32 characters, obtained by removing the extension (bpm) from the loaded user-defined pattern file name.

<drive> The name of the drive from which the user-defined pattern file is loaded.

Details
Unusable unless the measurement screen is set for BER test. *** is returned if a user-defined pattern is not loaded.

This command is available when MS269xA-020/120 Vector Signal Generator, MS2830A-026/126 BER Measurement Function or MS2840A-026/126 BER Measurement Function is installed.

Example of Use
To query the user-defined pattern name.
BERT:PRBS:USER:PATT?
> ***
[:SENSe]:BERT[:BASeband]:PRBS:USER:LENGth?
User Pattern Length Query

Function
Queries the bit length of the user-defined pattern for BER measurement.

Query
[:SENSe]:BERT[:BASeband]:PRBS:USER:LENGth?

Response
<bit>

Parameter
<bit> Bit length of user-defined pattern
Range 8 to 1024 bits (for MS269xA)
       8 to 4096 bits (for MS2830A, MS2840A)

Details
Unusable unless the measurement screen is set for BER test.
This command is available when MS269xA-020/120 Vector Signal
Generator, MS2830A-026/126 BER Measurement Function or
MS2840A-026/126 BER Measurement Function is installed.

Example of Use
To query the bit length of the user-defined pattern.
BERT:PRBS:USER:LENG?
> 1024
4.4 BER Settings

:INITiate[:IMMediate]
Start Measurement

Function
Starts the BER measurement.

Command
:INITiate[:IMMediate]

Details
When executing this command for BER measurement function, switch the application to BER Test.
This command is available when MS269xA-020/120 Vector Signal Generator, MS2830A-026/126 BER Measurement Function or MS2840A-026/126 BER Measurement Function is installed.

Note:
The BER measurement is also available when the signal generator application is active.
For the above command operation for other than BER measurement function, see the operation manual of each application.

Example of Use
To start the BER measurement.
INIT
Chapter 4  SCPI Device Message Details

:ABORt
Stop Measurement

Function

Stops the BER measurement.

Command

:ABORt

Details

When executing this command for BER measurement function, switch the application to BER Test.
This command is available when MS269xA-020/120 Vector Signal Generator, MS2830A-026/126 BER Measurement Function or MS2840A-026/126 BER Measurement Function is installed.

Note:

The BER measurement is also available when the signal generator application is active.

For the above command operation for other than BER measurement function, see the operation manual of each application.

Example of Use

To stop the BER measurement.

ABOR
Chapter 5  Native Device Message List

This section describes Native remote control commands for executing MS2690A/MS2691A/MS2692A, MS2830A, MS2840A, or MS2850A functions (hereinafter, referred to as “this application”) using a list organized by function. Refer to Chapter 6 “Device Message Details” for detailed specifications for each command.

5.1 Application Common Device Messages ....................... 5-2
5.2 Config Function Device Messages ............................... 5-7
5.3 Power Meter Device Messages ................................. 5-11
5.4 BER Measurement Settings ..................................... 5-12
## 5.1 Application Common Device Messages

Application common device messages available in this application are shown in Table 5.1-1.

<table>
<thead>
<tr>
<th>Function</th>
<th>Command</th>
<th>Query</th>
<th>Response</th>
<th>Remarks</th>
</tr>
</thead>
</table>
| Application Switch/Status     | SYS apl, window  | SYS? apl| status,window | apl: Application name  
 window: Window status  
 status: Application execution status  
 = SIGANA | SPECT | CONFIG | …  
 = ACT | INACT | MIN | NON | CURRENT | IDLE | RUN | UNLOAD |
| System Re-boot                | REBOOT           | ---     | ---      | ---                                                                 |
| Preset Current Application    | PRE              | ---     | ---      | ---                                                                 |
|                               | INI              | ---     | ---      | ---                                                                 |
| LCD Power                     | DISPLAY on_off   | DISPLAY?| on_off   | ---                                                                 |
| Hard Copy                     | PRINT file, device| ---   | ---      | file: File name  
 device: Drive name  
 = A | B | D | E | … |
|                               | PRINT            | ---     | ---      | ---                                                                 |
| Hard Copy Mode                | PMOD format      | PMOD?   | format   | format: File format  
 = BMP | PNG |
|                               | PMOD             | PMOD?   | BMP      | ---                                                                 |
| Save Parameter Setting as file| SVPRM file, device| ---  | ---      | file: File name  
 device: Drive name  
 = A | B | D | E | … |
<p>|                               | SVPRM            | ---     | ---      | ---                                                                 |</p>
<table>
<thead>
<tr>
<th>Function</th>
<th>Command</th>
<th>Query</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Recall Parameter Setting file</td>
<td>RCPRM file, device, apl</td>
<td>---</td>
<td>file: File name</td>
</tr>
<tr>
<td></td>
<td></td>
<td>---</td>
<td>device: Drive name</td>
</tr>
<tr>
<td></td>
<td></td>
<td>---</td>
<td>= A</td>
</tr>
<tr>
<td></td>
<td></td>
<td>---</td>
<td>apl: Target application</td>
</tr>
<tr>
<td></td>
<td></td>
<td>---</td>
<td>= ALL</td>
</tr>
<tr>
<td>Error Message Display Mode</td>
<td>REMDISP mode</td>
<td>REMDISP?</td>
<td>mode: Display mode</td>
</tr>
<tr>
<td></td>
<td></td>
<td>---</td>
<td>= NORMAL</td>
</tr>
<tr>
<td>Calibration</td>
<td>CAL mode</td>
<td>---</td>
<td>mode: Calibration mode</td>
</tr>
<tr>
<td></td>
<td></td>
<td>---</td>
<td>= ALL</td>
</tr>
<tr>
<td>All Calibration Temperature Query</td>
<td>---</td>
<td>CAL:TEMP:ALL?</td>
<td>temperature</td>
</tr>
<tr>
<td>Bandwidth Calibration Temperature Query</td>
<td>---</td>
<td>CAL:TEMP:BAND?</td>
<td>temperature</td>
</tr>
<tr>
<td>Level Calibration Temperature Query</td>
<td>---</td>
<td>CAL:TEMP:LEVEL?</td>
<td>temperature</td>
</tr>
<tr>
<td>Local Leak Calibration Temperature Query</td>
<td>---</td>
<td>CAL:TEMP:LOLeak?</td>
<td>temperature</td>
</tr>
<tr>
<td>All Calibration Time Query</td>
<td>---</td>
<td>CAL:TIME:ALL?</td>
<td>time</td>
</tr>
<tr>
<td>Bandwidth Calibration Time Query</td>
<td>---</td>
<td>CAL:TIME:BAND?</td>
<td>time</td>
</tr>
<tr>
<td>Level Calibration Time Query</td>
<td>---</td>
<td>CAL:TIME:LEV?</td>
<td>time</td>
</tr>
<tr>
<td>Local Leak Calibration Time Query</td>
<td>---</td>
<td>CAL:TIME:LOV?</td>
<td>time</td>
</tr>
<tr>
<td>Reference Clock Status Query</td>
<td>---</td>
<td>ROSC:STAT?</td>
<td>status</td>
</tr>
<tr>
<td>Language mode switching</td>
<td>SYST:LANG SCPI</td>
<td>SYST:LANG?</td>
<td>mode: Language mode</td>
</tr>
<tr>
<td></td>
<td>SYST:LANG NAT</td>
<td>mode</td>
<td>= SCPI</td>
</tr>
<tr>
<td></td>
<td>SYST:RES:MODE B</td>
<td>mode</td>
<td>= A</td>
</tr>
<tr>
<td></td>
<td></td>
<td>source</td>
<td>= INT</td>
</tr>
<tr>
<td>Function</td>
<td>Command</td>
<td>Query</td>
<td>Response</td>
</tr>
<tr>
<td>----------------------------------</td>
<td>---------</td>
<td>----------</td>
<td>-------------------------------</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Correction (On/Off)</td>
<td>CORR switch_com</td>
<td>CORR?</td>
<td>switch_res</td>
</tr>
<tr>
<td>Correction Make Up</td>
<td>CORR:MAKE freq,real</td>
<td>???</td>
<td></td>
</tr>
<tr>
<td>Correction Make Up All Clear</td>
<td>CORR:MAKE:CLE</td>
<td>???</td>
<td></td>
</tr>
<tr>
<td>Save Correction File</td>
<td>MMEM:STOR:CORR filename,device</td>
<td>???</td>
<td></td>
</tr>
<tr>
<td>Recall Correction File</td>
<td>MMEM:LOAD:CORR filename,device</td>
<td>???</td>
<td></td>
</tr>
<tr>
<td>Correction Data Read</td>
<td>???</td>
<td>CORR:DATA?</td>
<td>number,freq_1,real_1,freq_2,real_2,...</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Correction Make Up</td>
<td>CORD n,freq,real</td>
<td>???</td>
<td></td>
</tr>
<tr>
<td>Correction Make Up All Clear</td>
<td>CORC</td>
<td>???</td>
<td></td>
</tr>
<tr>
<td>Low Phase Noise (On/Off)</td>
<td>FREQ:SYNT:LPH switch_n</td>
<td>FREQ:SYNT:LPH?</td>
<td>on_off</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>System Error Query</td>
<td>???</td>
<td>SYST:ERR?</td>
<td>Error/event_number, Error/event_description</td>
</tr>
<tr>
<td>Software License Install Command</td>
<td>SWKEYINST fname,drive</td>
<td>???</td>
<td></td>
</tr>
<tr>
<td>Software License Name Query</td>
<td>???</td>
<td>SWKEYNAME? index</td>
<td>license</td>
</tr>
</tbody>
</table>

- **Function**: The function being performed by the command.
- **Command**: The command used to execute the function.
- **Query**: The query used to request data or information.
- **Response**: The response returned by the device.
- **Remarks**: Additional notes or descriptions related to the function or command.
<table>
<thead>
<tr>
<th>Function</th>
<th>Command</th>
<th>Query</th>
<th>Response</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Extended END Event Status Enable Register</td>
<td>ESE0 n</td>
<td>ESE0?</td>
<td>byte</td>
<td>byte = Status bit</td>
</tr>
<tr>
<td>(Signal Generator/BER function)</td>
<td></td>
<td></td>
<td></td>
<td>bit7: Not used</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>bit6: Not used</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>bit5: Not used</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>bit4: Not used</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>bit3: Not used</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>bit2: Not used</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>bit1: BER</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>bit0: Signal Generator</td>
</tr>
<tr>
<td>Extended END Event Status Register</td>
<td>---</td>
<td>ESR0?</td>
<td>byte</td>
<td></td>
</tr>
<tr>
<td>(Signal Generator/BER function)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Extended ERROR Event Status Enable Register</td>
<td>ESE1 n</td>
<td>ESE1?</td>
<td>byte</td>
<td>byte = Status bit</td>
</tr>
<tr>
<td>(Signal Generator/BER function)</td>
<td></td>
<td></td>
<td></td>
<td>bit7: Not used</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>bit6: Not used</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>bit5: Not used</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>bit4: Not used</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>bit3: Not used</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>bit2: Not used</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>bit1: BER</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>bit0: Signal Generator</td>
</tr>
<tr>
<td>Extended ERROR Event Status Register</td>
<td>---</td>
<td>ESR1?</td>
<td>byte</td>
<td></td>
</tr>
<tr>
<td>(Signal Generator/BER function)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Function</td>
<td>Command</td>
<td>Query</td>
<td>Response</td>
<td>Remarks</td>
</tr>
<tr>
<td>----------------------------------------------</td>
<td>---------</td>
<td>-------</td>
<td>----------</td>
<td>----------------------------------------------</td>
</tr>
</tbody>
</table>
| END Event Status Enable Register            | ESEEND n | ESEEND? | byte     | *byte = Status bit*  
| (BER Measurement function)                  |         |       |          | *bit7 : Measurement end*  
|                                              |         |       |          | *bit6 : Not used*  
|                                              |         |       |          | *bit5 : Not used*  
|                                              |         |       |          | *bit4 : Not used*  
|                                              |         |       |          | *bit3 : Not used*  
|                                              |         |       |          | *bit2 : Not used*  
|                                              |         |       |          | *bit1 : Measurement interruption*  
|                                              |         |       |          | *bit0 : Measurement complete*  |
| END Event Status Register                    | ---     | ESEEND? | byte     |                                             |
| (BER Measurement function)                   |         |       |          |                                             |
| ERROR Event Status Enable Register           | ESEERR n | ESEERR? | byte     | *byte = Status bit*  
| (BER Measurement function)                   |         |       |          | *bit7 : Not used*  
|                                              |         |       |          | *bit6 : Not used*  
|                                              |         |       |          | *bit5 : Not used*  
|                                              |         |       |          | *bit4 : Not used*  
|                                              |         |       |          | *bit3 : Bit count overflow*  
|                                              |         |       |          | *bit2 : Syncloss count overflow*  
|                                              |         |       |          | *bit1 : Measurement stop with synchronization incompletion*  
|                                              |         |       |          | *bit0 : Measurement start failure*  |
| ERROR Event Status Register                    | ---     | ESEERR? | byte     |                                             |
| (BER Measurement function)                   |         |       |          |                                             |
5.2 Config Function Device Messages

Device messages for setting Config function are shown in Table 5.2-1.

<table>
<thead>
<tr>
<th>Function</th>
<th>Command</th>
<th>Query</th>
<th>Response</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Load Application</td>
<td>LOAD apl</td>
<td>---</td>
<td>---</td>
<td>apl: Application name</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>= SIGANA</td>
</tr>
<tr>
<td>Unload Application</td>
<td>UNLOAD apl</td>
<td>---</td>
<td>---</td>
<td></td>
</tr>
<tr>
<td>Delimiter (Terminator)</td>
<td>TRM code</td>
<td>TRM?</td>
<td>code</td>
<td>code: Termination code</td>
</tr>
<tr>
<td></td>
<td>DELM code</td>
<td>DELM?</td>
<td>code</td>
<td>= LF</td>
</tr>
<tr>
<td>Sound On/Off</td>
<td>SOUND on_off</td>
<td>SOUND?</td>
<td>on_off</td>
<td></td>
</tr>
<tr>
<td>Screen Hard Copy Color</td>
<td>COLOR flag</td>
<td>COLOR?</td>
<td>flag</td>
<td>flag: Color image setting</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>= NORMAL</td>
</tr>
<tr>
<td>Frequency Reference</td>
<td>FREQREF source</td>
<td>FREQREF?</td>
<td>source</td>
<td>Source: Selection method</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>= INT</td>
</tr>
<tr>
<td>Function</td>
<td>Command</td>
<td>Query</td>
<td>Response</td>
<td>Remarks</td>
</tr>
<tr>
<td>-----------------------------------------------</td>
<td>----------------------</td>
<td>------------------------</td>
<td>----------</td>
<td>---------</td>
</tr>
<tr>
<td>Move Parameter File (HDD/SSD to Device)</td>
<td>MVRCDAT file,device</td>
<td>---</td>
<td>---</td>
<td></td>
</tr>
<tr>
<td>Copy Parameter File (Device to HDD/SSD)</td>
<td>CPRCDAT file,device</td>
<td>---</td>
<td>---</td>
<td></td>
</tr>
<tr>
<td>Delete Parameter File</td>
<td>DELRCDAT file,device</td>
<td>---</td>
<td>---</td>
<td></td>
</tr>
<tr>
<td>Protect Parameter File</td>
<td>PRTRCDAT file,device</td>
<td>PRTRCDAT? file,device</td>
<td>on_off</td>
<td></td>
</tr>
<tr>
<td>Parameter File List Query</td>
<td>---</td>
<td>LISTRCDAT? device</td>
<td>number, file1, file2, ...</td>
<td></td>
</tr>
<tr>
<td>Move Hard Copy File (HDD/SSD to Device)</td>
<td>MVCOPYDAT file,device</td>
<td>---</td>
<td>---</td>
<td></td>
</tr>
<tr>
<td>Copy Hard Copy File (Device to HDD/SSD)</td>
<td>CPCOPYDAT file,device</td>
<td>---</td>
<td>---</td>
<td></td>
</tr>
<tr>
<td>Delete Hard Copy File</td>
<td>DELCOPYDAT file,device</td>
<td>---</td>
<td>---</td>
<td></td>
</tr>
<tr>
<td>Protect Hard Copy File</td>
<td>PRTCOPYDAT file, device</td>
<td>PRTCOPYDAT? file, device</td>
<td>on_off</td>
<td></td>
</tr>
<tr>
<td>Hard Copy File List Query</td>
<td>---</td>
<td>LISTCOPYDAT? device</td>
<td>number, file1, file2, ...</td>
<td></td>
</tr>
<tr>
<td>Function</td>
<td>Command</td>
<td>Query</td>
<td>Response</td>
<td>Remarks</td>
</tr>
<tr>
<td>----------------------------------</td>
<td>--------------------</td>
<td>-----------------</td>
<td>----------</td>
<td>---------</td>
</tr>
<tr>
<td><strong>Move Trace File (HDD/SSD to Device)</strong></td>
<td>MVTRCEDAT file,apl,device</td>
<td>---</td>
<td>---</td>
<td></td>
</tr>
<tr>
<td><strong>Copy Trace File (Device to HDD/SSD)</strong></td>
<td>CPTRCEDAT file,apl,device</td>
<td>---</td>
<td>---</td>
<td></td>
</tr>
<tr>
<td><strong>Delete Trace File</strong></td>
<td>DELTRCEDAT file,apl,device</td>
<td>---</td>
<td>---</td>
<td></td>
</tr>
<tr>
<td><strong>Protect Trace File</strong></td>
<td>PRTTRCEDAT file,on_off,apl,device</td>
<td>PRTTRCEDAT? file,apl,device</td>
<td>on_off</td>
<td></td>
</tr>
<tr>
<td><strong>Trace File List Query</strong></td>
<td>---</td>
<td>LISTTRCEDAT? apl,device</td>
<td>number,File1,File2,..</td>
<td></td>
</tr>
<tr>
<td><strong>Move Digitize File (HDD/SSD to Device)</strong></td>
<td>MVDGTZDAT file,apl,device</td>
<td>---</td>
<td>---</td>
<td></td>
</tr>
<tr>
<td><strong>Copy Digitize File (Device to HDD/SSD)</strong></td>
<td>CPDGTZDAT file,apl,device</td>
<td>---</td>
<td>---</td>
<td></td>
</tr>
<tr>
<td><strong>Delete Digitize File</strong></td>
<td>DELDGTZDAT file,apl,device</td>
<td>---</td>
<td>---</td>
<td></td>
</tr>
<tr>
<td><strong>Protect Digitize File</strong></td>
<td>PRTDGTZDAT file,on_off,apl,device</td>
<td>PRTDGTZDAT? file,apl,device</td>
<td>on_off</td>
<td></td>
</tr>
<tr>
<td><strong>Digitize File List Query</strong></td>
<td>---</td>
<td>LISTDGTZDAT? apl,device</td>
<td>number,File1,File2,..</td>
<td></td>
</tr>
</tbody>
</table>

**file:** Target filename  
**device:** Drive name  
**apl:** Application name  
**= A | B | D | E | ..**  
**= SIGANA | SPECT | ..**
<table>
<thead>
<tr>
<th>Function</th>
<th>Command</th>
<th>Query</th>
<th>Response</th>
<th>Remarks</th>
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<tbody>
<tr>
<td>Move System Information File</td>
<td>MVSYSINFO</td>
<td>file,device</td>
<td>---</td>
<td>file: Target filename</td>
</tr>
<tr>
<td>(HDD/SSD to Device)</td>
<td></td>
<td></td>
<td></td>
<td>device: Drive name</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>= A</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>apl: Application name</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>= SIGANA</td>
</tr>
<tr>
<td>Copy System Information File</td>
<td>CPSYSINFO</td>
<td>file,device</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>(Device to HDD/SSD)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Delete System Information File</td>
<td>DELSYSINFO</td>
<td>file,device</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Protect System Information File</td>
<td>PRTSYSINFO</td>
<td>file,device</td>
<td>---</td>
<td>---</td>
</tr>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>System Information File List Query</td>
<td></td>
<td>LISTSYSINFO?</td>
<td>number,</td>
<td>---</td>
</tr>
<tr>
<td></td>
<td></td>
<td>device</td>
<td>file1,file2,…</td>
<td></td>
</tr>
<tr>
<td>System Information Query</td>
<td></td>
<td>SYSINFO?</td>
<td>string</td>
<td>info: Information type</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>= MODEL</td>
</tr>
<tr>
<td>Running Time Query</td>
<td></td>
<td>TMCNT?</td>
<td>minutes</td>
<td>minutes: Running time</td>
</tr>
<tr>
<td>Option Information Query</td>
<td></td>
<td>OPTINFO?</td>
<td>num1,swl,model1,num2,sw2 ,model2,…</td>
<td>num: Option number</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>(000 to 999)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>sw: Switch (On/Off)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>model: Option name</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>type: Application name</td>
</tr>
<tr>
<td>Software Version Query</td>
<td></td>
<td>SOFTVER?</td>
<td>apl</td>
<td>apl: Application name</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>version</td>
<td>= SIGANA</td>
</tr>
<tr>
<td>FPGA Version Query</td>
<td></td>
<td>FPGAVER?</td>
<td>hardware</td>
<td>hardware: Hardware</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>version</td>
<td>version: Version</td>
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<tr>
<td>Hardware Revision Query</td>
<td></td>
<td>HARDREV?</td>
<td>hardware</td>
<td>hardware: Hardware</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>revision</td>
<td>revision: Revision</td>
</tr>
<tr>
<td>RF Temperature Query</td>
<td></td>
<td>SYST:TEMP:RF?</td>
<td>temperature</td>
<td>temperature: RF unit</td>
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</table>
### 5.3 Power Meter Device Messages

Device messages for setting Power Meter are shown in Table 5.3-1.

<table>
<thead>
<tr>
<th>Function</th>
<th>Command</th>
<th>Query</th>
<th>Response</th>
<th>Remarks</th>
</tr>
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<tbody>
<tr>
<td>Center Frequency</td>
<td>CNF freq</td>
<td>CNF?</td>
<td>freq</td>
<td></td>
</tr>
<tr>
<td>Average Power Query</td>
<td>---</td>
<td>POWER? DBM</td>
<td>WATT</td>
<td>DB</td>
</tr>
<tr>
<td>Zero Set</td>
<td>ZAJ</td>
<td>---</td>
<td>---</td>
<td></td>
</tr>
<tr>
<td></td>
<td>ZEROSET</td>
<td>---</td>
<td>---</td>
<td></td>
</tr>
<tr>
<td>Reference Level Offset Mode</td>
<td>ROFFSETMD on_off</td>
<td>ROFFSETMD?</td>
<td>on_off</td>
<td></td>
</tr>
<tr>
<td>Level Offset</td>
<td>RFLVLOFS rel_ampl</td>
<td>RFLVLOFS?</td>
<td>rel_ampl</td>
<td></td>
</tr>
<tr>
<td>Reference Level Offset Value</td>
<td>ROFFSET level</td>
<td>ROFFSET?</td>
<td>level</td>
<td></td>
</tr>
<tr>
<td>Reference Level Set</td>
<td>SETREL</td>
<td>---</td>
<td>---</td>
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</table>
### 5.4 BER Measurement Settings

Device messages for setting the bit error rate (BER) measurement function are shown in Table 5.4-1.

<table>
<thead>
<tr>
<th>Function</th>
<th>Command</th>
<th>Query</th>
<th>Response</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Measurement Mode</td>
<td>MODE mode</td>
<td>MODE?</td>
<td>mode</td>
<td>mode: Measurement mode = SINGLE</td>
</tr>
<tr>
<td>Start Measurement</td>
<td>START</td>
<td>---</td>
<td>---</td>
<td></td>
</tr>
<tr>
<td>Stop Measurement</td>
<td>STOP</td>
<td>---</td>
<td>---</td>
<td></td>
</tr>
<tr>
<td>Start Measurement by Single Mode</td>
<td>SNGLS</td>
<td>---</td>
<td>---</td>
<td></td>
</tr>
<tr>
<td>Start Measurement by Continuous Mode</td>
<td>CONTS</td>
<td>---</td>
<td>---</td>
<td></td>
</tr>
<tr>
<td>Start Measurement by Endless Mode</td>
<td>ENDSL</td>
<td>---</td>
<td>---</td>
<td></td>
</tr>
<tr>
<td>Count Clear</td>
<td>COUNTCLR</td>
<td>---</td>
<td>---</td>
<td></td>
</tr>
<tr>
<td>Count Mode</td>
<td>COUNTMODE mode</td>
<td>COUNTMODE?</td>
<td>mode</td>
<td>mode: Measurement end condition = DATABIT</td>
</tr>
<tr>
<td>Measurement Bit</td>
<td>BERBIT bit</td>
<td>BERBIT?</td>
<td>bit</td>
<td>bit: Number of measurement bits</td>
</tr>
<tr>
<td>Measurement Error Bit</td>
<td>ERRORBIT bit</td>
<td>ERRORBIT?</td>
<td>bit</td>
<td>bit: Number of measurement error bits</td>
</tr>
<tr>
<td>Data Polarity</td>
<td>Data polarity</td>
<td>DATA?</td>
<td>polarity</td>
<td>polarity: Polarity = POS</td>
</tr>
<tr>
<td>Clock Polarity</td>
<td>CLK polarity</td>
<td>CLK?</td>
<td>polarity</td>
<td>polarity: Polarity = RISE</td>
</tr>
<tr>
<td>Enable Polarity</td>
<td>ENBL polarity</td>
<td>ENBL?</td>
<td>polarity</td>
<td>polarity: Polarity = HIGH</td>
</tr>
</tbody>
</table>
Table 5.4-1  BER measurement setting messages (Cont’d)

<table>
<thead>
<tr>
<th>Function</th>
<th>Command</th>
<th>Query</th>
<th>Response</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data Pattern Type</td>
<td>TYPE pattern</td>
<td>TYPE?</td>
<td>pattern</td>
<td>Data pattern type = PN9</td>
</tr>
<tr>
<td>PN Fix Pattern Initial Value</td>
<td>PInicial n</td>
<td>PInicial?</td>
<td>n</td>
<td></td>
</tr>
<tr>
<td>PN Fix Pattern Length</td>
<td>PNFIXLENG bit</td>
<td>PNFIXLENG?</td>
<td>bit</td>
<td></td>
</tr>
<tr>
<td>Sync Start Position on User Pattern</td>
<td>SYNCSTARTPOS bit</td>
<td>SYNCSTARTPOS?</td>
<td>bit</td>
<td></td>
</tr>
<tr>
<td>Length for Sync on User Pattern</td>
<td>SYNCLENG bit</td>
<td>SYNCLENG?</td>
<td>bit</td>
<td></td>
</tr>
<tr>
<td>Drive to load User Pattern</td>
<td>LOADMEDIA drive</td>
<td>LOADMEDIA?</td>
<td>drive</td>
<td>drive: Drive letter</td>
</tr>
<tr>
<td>User Pattern File List</td>
<td>USERPATLST s1,s2,...,s100</td>
<td>USERPATLST?</td>
<td>s*: Pattern file name</td>
<td></td>
</tr>
<tr>
<td>Load User Pattern</td>
<td>LOADUSERPAT pattern</td>
<td>---</td>
<td>---</td>
<td>pattern: Pattern file name</td>
</tr>
<tr>
<td>User Pattern File Name Query</td>
<td>USERPAT pattern</td>
<td>USERPAT?</td>
<td>pattern,drive</td>
<td>Pattern: Pattern file name</td>
</tr>
<tr>
<td>User Pattern Length Query</td>
<td>USERPATLENG</td>
<td>USERPATLENG?</td>
<td>bit</td>
<td>drive: Drive</td>
</tr>
<tr>
<td>Auto Re-sync</td>
<td>AUTORESYNC on_off</td>
<td>AUTORESYNC?</td>
<td>on_off</td>
<td></td>
</tr>
<tr>
<td>Sync Loss Threshold</td>
<td>SYNCLOSSTHLD n,a</td>
<td>SYNCLOSSTHLD?</td>
<td>n,a</td>
<td>n: Numerator of threshold (bit) = 500</td>
</tr>
<tr>
<td>Count Action at Sync Loss</td>
<td>SYNCLOSSACT action</td>
<td>SYNCLOSSACT?</td>
<td>action</td>
<td>action: Action at Sync Loss = COUNT_CLEAR</td>
</tr>
</tbody>
</table>
Chapter 6  Native Device Message Details

This chapter describes detailed specifications on Native remote control commands for executing MS2690A/MS2691A/MS2692A, MS2830A, MS2840A, or MS2850A functions in alphabetical order.

<table>
<thead>
<tr>
<th>Command</th>
<th>Page</th>
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</thead>
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<td>AUTORESYNC/AUTORESYNC?</td>
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<td>BER?</td>
<td>6-5</td>
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<tr>
<td>BERBIT/BERBIT?</td>
<td>6-6</td>
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<tr>
<td>BITERR?</td>
<td>6-7</td>
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<tr>
<td>CAL</td>
<td>6-7</td>
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<tr>
<td>CAL:TEMP:ALL?</td>
<td>6-8</td>
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<tr>
<td>CAL:TEMP:BAND?</td>
<td>6-9</td>
</tr>
<tr>
<td>CAL:TEMP:LEV?</td>
<td>6-10</td>
</tr>
<tr>
<td>CAL:TEMP:LOL?</td>
<td>6-11</td>
</tr>
<tr>
<td>CAL:TIME:ALL?</td>
<td>6-12</td>
</tr>
<tr>
<td>CAL:TIME:BAND?</td>
<td>6-13</td>
</tr>
<tr>
<td>CAL:TIME:LEV?</td>
<td>6-14</td>
</tr>
<tr>
<td>CAL:TIME:LOL?</td>
<td>6-15</td>
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<tr>
<td>CLK/CLK?</td>
<td>6-16</td>
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<td>CNF/CNF?</td>
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<td>COLOR/COLOR?</td>
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<td>CONTS</td>
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<td>CORC</td>
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<td>CORD</td>
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<tr>
<td>CORR/CORR?</td>
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<td>CORR:DATA?</td>
<td>6-22</td>
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<td>CORR:MAKE:CLE</td>
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<td>COUNTCLR</td>
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<td>COUNTMODE/COUNTMODE?</td>
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<td>CPTRCEDAT</td>
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<td>DATA/DATA?</td>
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<td>DELM/DELM?</td>
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<td>DELRCDAT</td>
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<td>DELTRCEDAT</td>
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<td>DISPLAY/DISPLAY?</td>
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<td>Message Code Description</td>
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<td>ERRORBIT/ERRORBIT?</td>
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<td>ESE0/ESE0?</td>
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<td>ESE1/ESE1?</td>
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<td>ESEEND/ESEEND?</td>
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<td>ESEERR/ESEERR?</td>
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<td>FREQ:SYNT:LPH/FREQ:SYNT:LPH?</td>
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<td>LISTDGTZDAT?</td>
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<td>LISTTRCEDAT?</td>
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<td>LOADUSERPAT</td>
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<td>MMEM:LOAD:CORR</td>
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<td>MMEM:STOR:CORR</td>
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<td>MODE/MODE?</td>
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<td>MVCOPYDAT</td>
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<td>MVDGTZDAT</td>
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<tr>
<td>PRTDGTZDAT/PRTDGTZDAT?</td>
<td>6-84</td>
</tr>
<tr>
<td>PRTRCDAT/PRTRCDAT?</td>
<td>6-85</td>
</tr>
<tr>
<td>PRTSYSINFO/PRTSYSINFO?</td>
<td>6-86</td>
</tr>
<tr>
<td>PRTRCEDAT/PRTRCEDAT?</td>
<td>6-87</td>
</tr>
</tbody>
</table>
**Chapter 6  Native Device Message Details**

**AUTORESYNC/AUTORESYNC?**

**Auto Re-sync**

**Function**

Enables (ON) or disables (OFF) the automatic resynchronization for BER measurement.

**Command**

AUTORESYNC on_off

**Query**

AUTORESYNC?

**Response**

on_off

**Parameter**

- **on_off**
  - ON|1  Automatic resynchronization ON
  - OFF|0  Automatic resynchronization OFF

**Detail**

Unusable unless the measurement screen is set for BER test.

This command is available when MS269xA-020/120 Vector Signal Generator, MS2830A-026/126 BER Measurement Function or MS2840A-026/126 BER Measurement Function is installed.

**Example of Use**

To enable the automatic resynchronization.

```
AUTORESYNC ON
AUTORESYNC?
> 1
```
**BER?**

**Bit Error Rate Query**

**Function**

This command returns the bit error rate of the BER measurement function.

**Query**

`BER? a`

**Response**

`p`

Where `a` is EP (in percentage)

`e`

Where `a` is ER (in exponents)

**Parameter**

- `a` Bit error rate format
  - EP The bit rate is returned in percentage.
  - ER The bit rate is returned in exponent format.

- `p`
  - Range 0.000 to 100.000%

- `e`
  - Range 0.00E+00 to 1.00E+02

**Detail**

Unusable unless the measurement screen is set for BER test.

This command is available when MS269xA-020/120 Vector Signal Generator, MS2830A-026/126 BER Measurement Function or MS2840A-026/126 BER Measurement Function is installed.

**Example of Use**

To query the bit error rate of the BER measurement function in percentage.

```
BER? EP
> 5.000
```
BERBIT/BERBIT?

Measurement Bit

Function

Sets the number of measurement bits for BER measurement.

Command

BERBIT bit

Query

BERBIT?

Response

bit

Integer in bit units, unitless

Parameter

<table>
<thead>
<tr>
<th>bit</th>
<th>Number of measurement bits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Range</td>
<td>1 to 4 Gbits</td>
</tr>
<tr>
<td></td>
<td>1 to 4294 Mbits</td>
</tr>
<tr>
<td></td>
<td>1 to 4294967 Kbits</td>
</tr>
<tr>
<td></td>
<td>1000 to 4294967295 bits</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Suffix code</th>
<th>GBIT, MBIT, KBIT, BIT</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIT is applied when omitted.</td>
<td></td>
</tr>
</tbody>
</table>

Detail

Unusable unless the measurement screen is set for BER test.

This command is available when MS269xA-020/120 Vector Signal Generator, MS2830A-026/126 BER Measurement Function or MS2840A-026/126 BER Measurement Function is installed. 

Note:

This function is not available when the measurement mode is set to Endless or the count mode is set to EBIT.

Example of Use

To set the number of measurement bits to 10,000 bits.

BERBIT 10000BIT
**BITERR?**

**Error Bit Query**

**Function**

Queries the number of error bits in the BER measurement.

**Query**

```
BITERR?
```

**Response**

```
bit  Number of error bits

Range 0 to 2^32 bits
```

**Detail**

Unusable unless the measurement screen is set for BER test.

This command is available when MS269xA-020/120 Vector Signal Generator, MS2830A-026/126 BER Measurement Function or MS2840A-026/126 BER Measurement Function is installed.

**Example of Use**

To query the number of error bits.

```
BITERR?
```

> 0

---

**CAL**

**Calibration**

**Function**

Executes calibration.

**Command**

```
CAL mode
```

**Parameter**

```
mode

ALL  To execute all calibrations except EXTRABAND
LEVEL To execute Level CAL
LOLEAK_SUPPRESS To execute local leak suppression
BAND To execute CAL within the frequency band
EXTRABANDExecutes analysis bandwidth calibration within the current frequency.
EXTRABAND_CLEARClears the correction value of Extra Band Cal.
NFLOORAcquires the noise floor calibration values inside the measuring instrument that are used for Noise Floor Reduction.
NFLOOR_MIXAcquires the noise floor calibration values of the currently set external mixer band that are used for Noise Floor Reduction.
```
Example of Use

To execute all calibrations.
CAL ALL

**CAL:TEMP:ALL?**

All Calibration Temperature Query

**Function**

This command queries the temperature when the last time all the calibrations were performed.

**Query**

CAL:TEMP:ALL?

**Response**

temperature

**Parameter**

<table>
<thead>
<tr>
<th>temperature</th>
<th>Temperature of the RF unit at the time of the calibration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Resolution</td>
<td>0.01°C</td>
</tr>
<tr>
<td>Suffix code</td>
<td>None. Returns a value in Celsius (°C) units.</td>
</tr>
</tbody>
</table>

**Details**

This command is available for MS2830A, MS2840A, or MS2850A. This can be used as a criterion for whether to execute calibration. The standard temperature of the RF unit is about 50°C during operation at normal temperature.

**Example of Use**

To query the temperature when the last time all the calibrations were performed.
CAL:TEMP:ALL?
> 50.00
CAL:TEMP:BAND?

Bandwidth Calibration Temperature Query

Function

This command queries the temperature and time at the last Bandwidth Calibration.

Query

CAL:TEMP:BAND?

Response

temperature

Parameter

<table>
<thead>
<tr>
<th>temperature</th>
<th>Temperature of the RF unit at the time of the calibration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Resolution</td>
<td>0.01°C</td>
</tr>
<tr>
<td>Suffix code</td>
<td>None. Returns a value in Celsius (°C) units.</td>
</tr>
</tbody>
</table>

Details

This command is available for MS2830A, MS2840A, or MS2850A.
This can be used as a criterion for whether to execute calibration.
The standard temperature of the RF unit is about 50°C during operation at normal temperature.

Example of Use

To query the temperature at the last Bandwidth Calibration.

```
CAL:TEMP:BAND?
> 50.00
```
CAL:TEMP:LEV?
Level Calibration Temperature Query

Function

This command queries the temperature at the last Level Calibration.

Query

CAL:TEMP:LEV?

Response

temperature

Parameter

<table>
<thead>
<tr>
<th>temperature</th>
<th>Temperature of the RF unit at the time of the calibration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Resolution</td>
<td>0.01°C</td>
</tr>
<tr>
<td>Suffix code</td>
<td>None. Returns a value in Celsius (°C) units.</td>
</tr>
</tbody>
</table>

Details

This command is available for MS2830A, MS2840A, or MS2850A. This can be used as a criterion for whether to execute calibration. The standard temperature of the RF unit is about 50°C during operation at normal temperature.

Example of Use

To query the temperature at the time of the last Level Calibration.

```
CAL:TEMP:LEV?
> 50.00
```
**CAL:TEMP:LOL?**

Local Leak Calibration Temperature Query

**Function**

This command queries the temperature at the last Local Leak Calibration.

**Query**

CAL:TEMP:LOL?

**Response**

Temperature of the RF unit at the time of the calibration

- **Parameter**
  - temperature
    - Resolution: 0.01°C
    - Suffix code: None. Returns a value in Celsius (°C) units.

**Details**

This command is available for MS2830A, MS2840A, or MS2850A. This can be used as a criterion for whether to execute calibration. The standard temperature of the RF unit is about 50°C during operation at normal temperature.

**Example of Use**

To query the temperature at the last Local Leak Calibration.

```
CAL:TEMP:LOL?
> 50.00
```
CAL:TIME:ALL?
All Calibration Time Query

Function
This command queries the time elapsed since the last All Calibration Command.

Query
CAL:TIME:ALL?

Response

time

Parameter
time
Time elapsed since calibration was performed
Suffix code
None. Value is returned in s units.

Details
This command is available for MS2830A, MS2840A, or MS2850A.
This can be used as a criterion for whether to execute calibration.

Example of Use
To query the time elapsed since the last time all the calibrations were performed.
CAL:TIME:ALL?
> 100
CAL:TIME:BAND?
Bandwidth Calibration Time Query

Function

This command queries the time elapsed since the last Bandwidth Calibration.

Query

CAL:TIME:BAND?

Response

time

Parameter

time Time elapsed since calibration was performed
Suffix code None. Value is returned in s units.

Details

This command is available for MS2830A, MS2840A, or MS2850A. This can be used as a criterion for whether to execute calibration.

Example of Use

To query the time elapsed since the last Bandwidth Calibration.
CAL:TIME:BAND?
> 100
CAL:TIME:LEV?
Level Calibration Time Query

Function
This command queries the time elapsed since the last Level Calibration.

Query
CAL:TIME:LEV?

Response
time

Parameter
time Time elapsed since calibration was performed
Suffix code None. Value is returned in s units.

Details
This command is available for MS2830A, MS2840A, or MS2850A. This can be used as a criterion for whether to execute calibration.

Example of Use
To query the time elapsed since the last Level Calibration.
CAL:TIME:LEV?
> 100
CAL:TIME:LOL?
Local Leak Calibration Time Query

Function
This command queries the time elapsed since the last Local Leak calibration.

Query
CAL:TIME:LOL?

Response
time

Parameter
time  Time elapsed since calibration was performed
Suffix code None. Value is returned in s units.

Details
This command is available for MS2830A, MS2840A, or MS2850A. This can be used as a criterion for whether to execute calibration.

Example of Use
To query the time elapsed since the last Local Leak Calibration.
CAL:TIME:LOL?
> 100
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CLK/CLK?
Clock Polarity

Function
Sets the polarity of the clock signal for BER measurement.

Command
CLK polarity

Query
CLK?

Response
polarity

Parameter

<table>
<thead>
<tr>
<th>polarity</th>
<th>Clock signal polarity</th>
</tr>
</thead>
<tbody>
<tr>
<td>RISE</td>
<td>Data is detected at the rising edge</td>
</tr>
<tr>
<td>FALL</td>
<td>Data is detected at the falling edge</td>
</tr>
</tbody>
</table>

Detail
Unusable unless the measurement screen is set for BER test.
This command is available when MS269xA-020/120 Vector Signal Generator, MS2830A-026/126 BER Measurement Function or MS2840A-026/126 BER Measurement Function is installed.

Example of Use
To set the clock signal polarity to RISE.
CLK RISE
**CNF/CNF?**

**Center Frequency**

**Function**

This command sets the measurement center frequency for the power sensor. The setting range and resolution are determined by that of USB power sensor.

**Command**

CNF freq

**Query**

CNF?

**Response**

freq

Suffix code None. Value is returned in Hz units.

**Parameter**

freq Center Frequency

Range Depends on the model of the USB Power Sensor.

Resolution Depends on the model of the USB Power Sensor.

Suffix code HZ, KHZ, KZ, MHZ, MZ, GHZ, GZ Hz when omitted.

**Details**

When the display is other than Power Meter, refer to the “Spectrum Analyzer Function Remote Control” or “Signal Analyzer Function Remote Control”.

**Example of Use**

To set the center frequency to 2.5 GHz.

CNF 2.5GHZ

CNF?

> 2500000000
COLOR(COLOR?
Screen Hard Copy Color

Function
Sets the screen hardcopy color image.

Command
COLOR flag

Query
COLOR?

Response
flag

Parameter
flag
Color image setting
NORMAL Displays color image (Default)
REVERSE Reverses color image
MONOCHROME Converts color image to gray scale
MREVERSE Converts color image to reverse gray scale

Example of Use
To reverse the screen hardcopy color image.
COLOR REVERSE
**CONTS**

Start Measurement by Continuous Mode

**Function**

Starts the BER measurement in Continuous mode.

**Command**

CONTS

**Detail**

When executing this command for BER measurement function, switch the application to BER Test.

This command is available when MS269xA-020/120 Vector Signal Generator, MS2830A-026/126 BER Measurement Function or MS2840A-026/126 BER Measurement Function is installed

*Note:*

The BER measurement is also available when the signal generator application is active.

For the above command operation for other than BER measurement function, see the operation manual of each application.

**Example of Use**

To start the BER measurement in Continuous mode.

CONTS

---

**CORC**

Correction Make Up All Clear

**Function**

This command initializes the data on the level frequency correction table. This is the same command as CORR:MAKE:CLE

**Command**

CORC

**Example of Use**

To initialize the data on the level frequency correction table.

CORC
CORD
Correction Make Up

Function
This command adds some data to the level frequency correction table. This is the same function as CORR:MAKE.

Command
CORD n,freq,real

Parameter

n  Table Number (Parameter provided for backward compatibility. Setting will be ignored.)
   Range 0 to 149
   Resolution 1
   Suffix code None

data
freq Frequency to be corrected
   Range –1 GHz to 400 GHz
   Resolution 1 Hz
   Suffix code HZ, KHZ, KZ, MHZ, MZ, GHZ, GZ

data
real Correction level
   Range –100 to 100 dB
   Resolution 0.001 dB
   Suffix code DB

Details
Up to 4096 data can be set. The data is not initialized by sending the command. The data is not initialized by sending the command. If you add the data continuously, set Correction to Off. You can then perform the setting smoothly.

Example of Use
To add the data to the level frequency correction table.
CORD 0,100MHZ,3DB
CORR/CORR?
Correction (On/Off)

Function
This command sets whether to perform the level frequency correction processing.

Command
CORR switch_com

Query
CORR?

Response
switch_res

Parameter
switch_com Correction processing On/Off
  ON|1 Sets Correction processing On.
  OFF|0 Sets Correction processing Off. (Default)

Switch_res Correction processing On/Off
  1 Correction processing On
  0 Correction processing Off (Default)

Example of Use
To set the level frequency correction processing to On.
CORR ON
CORR?
> 1
CORR:DATA?
Correction Data Read

Function
This command queries the level frequency correction table data of the signal analyzer.

Query
CORR:DATA?

Response
number,freq_1,real_1,freq_2,real_2,...

Parameter

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Number of data</th>
</tr>
</thead>
<tbody>
<tr>
<td>number</td>
<td>Number of data</td>
</tr>
<tr>
<td>Range</td>
<td>0 to 4096.</td>
</tr>
</tbody>
</table>

freq

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Frequency to be corrected</th>
</tr>
</thead>
<tbody>
<tr>
<td>freq</td>
<td>Frequency to be corrected</td>
</tr>
<tr>
<td>Range</td>
<td>–1 GHz to 400 GHz</td>
</tr>
<tr>
<td>Resolution</td>
<td>1 Hz</td>
</tr>
<tr>
<td>Suffix code</td>
<td>None. Value is returned in Hz units.</td>
</tr>
</tbody>
</table>

real

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Correction level</th>
</tr>
</thead>
<tbody>
<tr>
<td>real</td>
<td>Correction level</td>
</tr>
<tr>
<td>Range</td>
<td>–100 to 100 dB</td>
</tr>
<tr>
<td>Resolution</td>
<td>0.001 dB</td>
</tr>
<tr>
<td>Suffix code</td>
<td>None. Value is returned in dB units.</td>
</tr>
</tbody>
</table>

Example of Use
To query the level frequency correction table data of the signal analyzer.
CORR:DATA?
> 1,1000000,10.000
**CORR:MAKE**

**Correction Make Up**

Function

This command adds some data to the level frequency correction table.

Command

CORR:MAKE freq, real

Parameter

<table>
<thead>
<tr>
<th>freq</th>
<th>Frequency to be corrected</th>
</tr>
</thead>
<tbody>
<tr>
<td>Range</td>
<td>–1 to 400 GHz</td>
</tr>
<tr>
<td>Resolution</td>
<td>1 Hz</td>
</tr>
<tr>
<td>Suffix code</td>
<td>HZ, KHZ, KZ, MHZ, MZ, GHZ, GZ</td>
</tr>
<tr>
<td>Default</td>
<td>0 Hz</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>real</th>
<th>Correction level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Range</td>
<td>–100 to +100 dB</td>
</tr>
<tr>
<td>Resolution</td>
<td>0.001 dB</td>
</tr>
<tr>
<td>Suffix code</td>
<td>DB</td>
</tr>
<tr>
<td>Default</td>
<td>0 dB</td>
</tr>
</tbody>
</table>

Details

Up to 4096 data can be set. The data is not initialized by sending the command.

The data is not initialized by sending the command. If you add the data continuously, set Correction to Off. You can then perform the setting smoothly.

Example of Use

To add the data to the level frequency correction table.

CORR:MAKE 100MHZ, 3DB
Chapter 6  Native Device Message Details

CORR:MAKE:CLE
Correction Make Up All Clear

Function
This command initializes the data on the level frequency correction table.

Command
CORR:MAKE:CLE

Example of Use
To initialize the data on the level frequency correction table.
CORR:MAKE:CLE

COUNTCLR
Count Clear

Function
Resets the BER measurement bit count to 0.

Command
COUNTCLR

Details
Unusable unless the measurement screen is set for BER test.
This command is valid only when the measurement mode is Single or Endless.
This command is available when MS269xA-020/120 Vector Signal Generator, MS2830A-026/126 BER Measurement Function or MS2840A-026/126 BER Measurement Function is installed.

Example of Use
To reset the bit count to 0.
COUNTCLR
COUNTMODE/COUNTMODE?

Count Mode

Function
Sets the BER measurement end condition.

Command
COUNTMODE mode

Query
COUNTMODE?

Response
mode

Parameter
mode
  DATABIT  BER measurement ends when the specified number of count bits is reached.
  ERRORBIT BER measurement ends when the specified number of error bits is reached.

Detail
Unusable unless the measurement screen is set for BER test.
This command is available when MS269xA-020/120 Vector Signal Generator, MS2830A-026/126 BER Measurement Function or MS2840A-026/126 BER Measurement Function is installed.

Example of Use
To end the BER measurement when the specified number of count bits is reached.
COUNTMODE DATABIT
CPCOPYDAT
Copy Hard Copy file (Device to HDD/SSD)

Function
Copies a screen hardcopy file from the specified storage device to the internal storage.

Command
CPCOPYDAT file,device

Parameter
- **file**: Target filename
  - Character string within 32 characters enclosed by double quotes (" ") or single quotes (‘ ’) (excluding extension)
  - The following characters cannot be used:
    - \ / : * ? “ ” ‘ ’ < > |
- **device**: Drive name
  - A, B, E, F, ...

Details
- The format of the target file is switched according to the File Type Setting.
- If a file of the same name already exists in the move destination folder, the file in the move destination folder is deleted.

Example of Use
To copy the screen hardcopy file “bitmap” from drive E to the internal storage.
CPCOPYDAT "bitmap",e
Chapter 6  Native Device Message Details

CPDGTZDAT
Copy Digitize File (Device to HDD/SSD)

Function
Copies a digitized file from the specified storage device to the internal storage.

Command
CPDGTZDAT file,apl,device

Parameter

file   Target filename
       Character string within 128 characters enclosed by double quotes (" ") or single quotes (’ ) (excluding extension)
       The following characters cannot be used:
       \ / : * ? “ ” ‘ ’ < > |

apl   Target application name
       SIGANA    Signal Analyzer

device  Drive name
        A, B, E, F, ...

Details
If a file of the same name already exists in the move destination folder, the file in the move destination folder is deleted.

Example of Use
To copy the digitized file “digitize” from drive E to the Signal Analyzer folder in the internal storage.
CPDGTZDAT "digitize",SIGANA,e
**CPRCDAT**

Copy Parameter File (Device to HDD/SSD)

**Function**

Copies a parameter file from the specified storage device to the internal storage.

**Command**

CPRCDAT file,device

**Parameter**

- **file**
  - Target filename
  - Character string within 32 characters enclosed by double quotes (" ") or single quotes (’ ) (excluding extension)
  - The following characters cannot be used:
    - \ / : * ? “ ” ‘ ’ < > |

- **device**
  - Drive name
  - A, B, E, F, ...

**Details**

If a file of the same name already exists in the move destination folder, the file in the move destination folder is deleted.

**Example of Use**

To copy the parameter file “parameter” from drive E to the internal storage.

CPRCDAT "parameter",e
**CPSYSINFO**

**Copy System Information File (Device to HDD/SSD)**

**Function**

Copies a system information file from the specified storage device to the internal storage.

**Command**

```
CPSYSINFO file,device
```

**Parameter**

- **file**
  - Target filename
  - Character string within 32 characters enclosed by double quotes (" ") or single quotes (’ )
  - (excluding extension)
  - The following characters cannot be used:
    - \ / : * ? “ ” ‘ ’ < > |

- **device**
  - Drive name
  - A, B, E, F, ...

**Details**

If a file of the same name already exists in the move destination folder, the file in the move destination folder is deleted.

**Example of Use**

To copy the system information file “SystemInfo” from drive E to the internal storage.

```
CPSYSINFO "SystemInfo",e
```
Chapter 6  Native Device Message Details

CPTRCEDAT
Copy Trace Data (Device to HDD/SSD)

Function
Copies a trace file from the specified storage device to the internal storage.

Command
CPTRCEDAT file,apl,device

Parameter

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>file</td>
<td>Target filename&lt;br&gt;Character string within 32 characters enclosed by double quotes (&quot; &quot;) or single quotes (’ ’) (excluding extension)&lt;br&gt;The following characters cannot be used:&lt;br&gt;\ / : * ? “ ” ‘ ’ &lt; &gt;</td>
</tr>
<tr>
<td>apl</td>
<td>Target application name&lt;br&gt;SPECT  Spectrum Analyzer&lt;br&gt;SIGANA  Signal Analyzer&lt;br&gt;PNOISE  Phase Noise</td>
</tr>
<tr>
<td>device</td>
<td>Drive name&lt;br&gt;A, B, E, F, ...</td>
</tr>
</tbody>
</table>

Details
If a file of the same name already exists in the move destination folder, the file in the move destination folder is deleted.

Example of Use
To copy the "trace" trace file of the Spectrum Analyzer from drive E to the internal storage.
CPTRCEDAT "trace",SPECT,e
DATA/DATA?

Data Polarity

Function

Sets the logic (positive or negative) of the Data signal for BER measurement.

Command

DATA polarity

Query

DATA?

Response

polarity

Parameter

<table>
<thead>
<tr>
<th>polarity</th>
<th>Data signal logic</th>
</tr>
</thead>
<tbody>
<tr>
<td>POS</td>
<td>Positive logic</td>
</tr>
<tr>
<td>NEG</td>
<td>Negative logic</td>
</tr>
</tbody>
</table>

Detail

Unusable unless the measurement screen is set for BER test. This command is available when MS269xA-020/120 Vector Signal Generator, MS2830A-026/126 BER Measurement Function or MS2840A-026/126 BER Measurement Function is installed.

Example of Use

To set the Data signal logic to positive.

DATA POS
**DELCOPYDAT**
Delete Hard Copy File

**Function**
This command deletes a screen hardcopy file saved in the specified drive.

**Command**
DELCOPYDAT file,device

**Parameter**

- **file**
  Target filename
  Character string within 32 characters enclosed by double quotes (" ") or single quotes ( ’ )
  (excluding extension)
  The following characters cannot be used:
  \ / : * ? “ ” ’ ‘ < > |

- **device**
  Drive name
  A, B, D, E, F, ...

**Example of Use**
To delete the screen hardcopy file “Copy” saved in drive E.
DELCOPYDAT "Copy",e
DELDGTZDAT
Delete Digitize File

Function

Deletes a digitized file saved in the specified device.

Command

DELDGTZDAT file,apl,device

Parameter

file Target filename
Character string within 128 characters enclosed by double quotes (" ") or single quotes (' ') (excluding extension)
The following characters cannot be used:
\ / : * ? " " ' ' < > |
apl Target application name
SIGANA Signal Analyzer
device Drive name
A, B, D, E, F, ...

Example of Use

To delete the digitized file “Digitize” saved in drive E.
DELDGTZDAT "Digitize",SIGANA,e
**DELM/DELM?**

Delimiter (Terminator)

**Function**
Sets a delimiter (termination code) for remote control.

**Command**
DELM code

**Query**
DELM?

**Response**
code

**Parameter**

<table>
<thead>
<tr>
<th>code</th>
<th>Delimiter type</th>
</tr>
</thead>
<tbody>
<tr>
<td>LF</td>
<td>LF</td>
</tr>
<tr>
<td>CRLF</td>
<td>CR/LF (Default)</td>
</tr>
<tr>
<td>NONE</td>
<td>None (EOI only)</td>
</tr>
</tbody>
</table>

**Example of Use**

To set the delimiter to CR/LF.
DELM CRLF
Chapter 6  Native Device Message Details

DELRCDAT
Delete Parameter File

Function

Deletes a parameter file saved in the specified device.

Command

DELRCDAT file,device

Parameter

file
Target filename
Character string within 32 characters enclosed by double quotes (" ") or single quotes ( ‘ ’) (excluding extension)
The following characters cannot be used:
\ / : * ? " " ‘ ‘ < > |

device
Drive name
A, B, D, E, F, ...

Example of Use

To delete the parameter file “Parameter” saved in drive E.
DELRCDAT "Parameter", e
DELSYSINFO
Delete System Information File

Function

Deletes a system information file saved in the specified device.

Command

DELSYSINFO file,device

Parameter

file  Target filename
      Character string within 32 characters enclosed by double quotes (" ") or single quotes (‘ ’) (excluding extension)
      The following characters cannot be used:
      \ / : * ? “ ” ‘ ’ < > |

device  Drive name
        A, B, D, E, F, ...  

Example of Use

To delete the system information file “SystemInfo” saved in drive E.
DELSYSINFO "SystemInfo",e
DELTRCEDAT
Delete Trace File

Function

This command deletes the trace file saved in the specified drive.

Command

DELTRCEDAT file,apl,device

Parameter

file
Target filename
Character string within 32 characters enclosed by double quotes (" ") or single quotes (' ') (excluding extension)
The following characters cannot be used:
\ / : * ? " " ' '< > |

apl
Target application name
SPECT Spectrum Analyzer
SIGANA Signal Analyzer
PNOISE Phase Noise

device
Drive name
A, B, D, E, F, ...

Example of Use

To delete the "Trace" trace file of the Spectrum Analyzer saved in drive E.
DELTRCEDAT "Trace",SPECT,e
DISPLAY/DISPLAY?

LCD Power

Function

This command turns the LCD backlight ON/OFF.

Command

DISPLAY on_off

Query

DISPLAY?

Response

on_off

Parameter

<table>
<thead>
<tr>
<th>Parameter</th>
<th>LCD backlight status</th>
</tr>
</thead>
<tbody>
<tr>
<td>on_off</td>
<td></td>
</tr>
<tr>
<td>ON</td>
<td>On (Default)</td>
</tr>
<tr>
<td>OFF</td>
<td>Off</td>
</tr>
</tbody>
</table>

Details

When the Local key is pressed, the LCD backlight automatically turns ON.

Example of Use

To turn the LCD backlight OFF.
DISPLAY OFF
**ENBL/ENBL?**

Enable Polarity

**Function**
Sets or disables the polarity of the Enable signal for BER measurement.

**Command**
ENBL polarity

**Query**
ENBL?

**Response**
polarity

**Parameter**
polarity
- **HIGH**: Positive logic (high active)
- **LOW**: Negative logic (low active)
- **DISABLE**: Disables the signal polarity

**Detail**
Unusable unless the measurement screen is set for BER test.
This command is available when MS269xA-020/120 Vector Signal Generator, MS2830A-026/126 BER Measurement Function or MS2840A-026/126 BER Measurement Function is installed.

**Example of Use**
To set the Enable signal polarity to positive.
ENBL HIGH

**ENDLS**

Start Measurement by Endless Mode

**Function**
Starts the BER measurement in Endless mode.

**Command**
ENDLS

**Detail**
Unusable unless the measurement screen is set for BER test.
This command is available when MS269xA-020/120 Vector Signal Generator, MS2830A-026/126 BER Measurement Function or MS2840A-026/126 BER Measurement Function is installed.

**Example of Use**
To start the BER measurement in Endless mode.
ENDLS
Chapter 6  Native Device Message Details

ERRORBIT/ERRORBIT?
Measurement Error Bit

Function
Sets the number of measurement error bits for BER measurement.

Command
ERRORBIT bit

Query
ERRORBIT?

Response
bit
 Integer in bit units, unitless

Parameter
bit  Number of measurement bits
 Range  1 to 2 Gbits
          1 to 2147 Mbits
          1 to 2147483 kbits
          1 to 2147483647 bits
 Suffix code  GBIT, MBIT, KBIT, BIT
               BIT is applied when omitted.

Detail
Unusable unless the measurement screen is set for BER test.
This command is available when MS269xA-020/120 Vector Signal
Generator, MS2830A-026/126 BER Measurement Function or
MS2840A-026/126 BER Measurement Function is installed.

Note:
This function is not available when the measurement mode is set
to Endless or the count mode is set to NONE.

Example of Use
To set the number of measurement error bits to 4,095 bits.
ERRORBIT 4095
ESE0/ESE0?
Extended End Event Status Enable Register

Function

Sets the extended end event status enable register. When an end event occurs in the specified application, the end summary bit (ESB) value of the corresponding status byte register is set to 1 (true).

Command

ESE0 n

Query

ESE0?

Response

n

Parameter

n  Extended end event status enable register

Value = bit0 + bit1 + ... + bit7

bit7 = 2^7 = 128  Bit 7: Not used
bit6 = 2^6 = 64   Bit 6: Not used
bit5 = 2^5 = 32   Bit 5: Not used
bit4 = 2^4 = 16   Bit 4: Not used
bit3 = 2^3 = 8    Bit 3: Not used
bit2 = 2^2 = 4    Bit 2: Not used
bit1 = 2^1 = 2    Bit 1: BER measurement function
bit0 = 2^0 = 1    Bit 0: Signal Generator function

Details

Set the sum of the values for bits to be enabled to the parameter, from the values 2^0 = 1, 2^1 = 2, 2^2 = 4, 2^3 = 8, 2^4 = 16, 2^5 = 32, 2^6 = 64, and 2^7 = 128, corresponding to the extended end event status enable register bits 0, 1, 2, 3, 4, 5, 6, and 7.

This command is available when MS269xA-020/120 Vector Signal Generator, MS2830A-026/126 BER Measurement Function or MS2840A-026/126 BER Measurement Function is installed.

Example of Use

To enable an end event for the BER measurement function.

ESE0 2

Related Commands

ESR0?  Queries the extended end event status register.
ESE1/ESE1?
Extended Error Event Status Enable Register

Function
Sets the extended error event status enable register. When an error event occurs in the specified application, the error summary bit (ESB) value in the corresponding status byte register is set to 1 (true).

Command
ESE1 n

Query
ESE1?

Response
n

Parameter
n Extended error event status enable register
Value = bit0 + bit1 + ... + bit7

bit7 = 2^7 = 128 Bit 7: Not used
bit6 = 2^6 = 64 Bit 6: Not used
bit5 = 2^5 = 32 Bit 5: Not used
bit4 = 2^4 = 16 Bit 4: Not used
bit3 = 2^3 = 8 Bit 3: Not used
bit2 = 2^2 = 4 Bit 2: Not used
bit1 = 2^1 = 2 Bit 1: BER measurement function
bit0 = 2^0 = 1 Bit 0: Signal Generator function

Details
Set the sum of the values for bits to be enabled to the parameter, from the values 2^0 = 1, 2^1 = 2, 2^2 = 4, 2^3 = 8, 2^4 = 16, 2^5 = 32, 2^6 = 64, and 2^7 = 128, corresponding to the extended error event status enable register bits 0, 1, 2, 3, 4, 5, 6, and 7.

This command is available when MS269xA-020/120 Vector Signal Generator, MS2830A-026/126 BER Measurement Function or MS2840A-026/126 BER Measurement Function is installed.

Example of Use
To enable an error event for the BER measurement function.
ESE1 2

Related Commands
ESR1? Queries the extended error event status register
ESEEND/ESEEND?
End Event Status Enable Register

Function
Sets the end event status enable register that can be used for the Signal Generator and BER measurement functions. When a specified end event occurs, the end summary bit (ESB) value corresponding to the event is set to 1 (true).

Command
ESEEND n

Query
ESEEND?

Response
n

Parameter
n  End event status enable register
  Value = bit0 + bit1 + ... + bit7

Signal Generator function
- bit7 = 2⁷ = 128  Bit 7: Not used
- bit6 = 2⁶ = 64   Bit 6: Not used
- bit5 = 2⁵ = 32   Bit 5: Completion of waveform pattern copy
- bit4 = 2⁴ = 16   Bit 4: Completion of waveform pattern loading to waveform memory
- bit3 = 2³ = 8    Bit 3: Not used
- bit2 = 2² = 4    Bit 2: Not used
- bit1 = 2¹ = 2    Bit 1: Not used
- bit0 = 2⁰ = 1    Bit 0: Not used

BER measurement function
- bit7 = 2⁷ = 128  Bit 7: Measurement stop by the STOP or START command
- bit6 = 2⁶ = 64   Bit 6: Not used
- bit5 = 2⁵ = 32   Bit 5: Not used
- bit4 = 2⁴ = 16   Bit 4: Not used
- bit3 = 2³ = 8    Bit 3: Not used
- bit2 = 2² = 4    Bit 2: Not used
- bit1 = 2¹ = 2    Bit 1: Measurement stop due to parameter change
- bit0 = 2⁰ = 1    Bit 0: Measurement completion
Details

Set the sum of the values for bits to be enabled to the parameter, from the values $2^0 = 1$, $2^1 = 2$, $2^2 = 4$, $2^3 = 8$, $2^4 = 16$, $2^5 = 32$, $2^6 = 64$, and $2^7 = 128$, corresponding to the end event status enable register bits 0, 1, 2, 3, 4, 5, 6, and 7.

This command is available when MS269xA-020/120 Vector Signal Generator, MS2830A-026/126 BER Measurement Function or MS2840A-026/126 BER Measurement Function is installed.

Example of Use

Enables BER measurement stop event due to parameter change.

```
ESEEND 2
```

Related Commands

```
ESREND? Queries the end event status register.
```
**ESEERR/ESEERR?**

Error Event Status Enable Register

**Function**

Sets the error event status enable register that can be used for the Signal Generator and BER measurement functions. When a specified error event occurs, the error summary bit (ESB) value corresponding to the event is set to 1 (true).

**Command**

ESEERR n

**Query**

ESEERR?

**Response**

n

**Parameter**

n  

Error event status enable register

Value = bit0 + bit1 + ... + bit7

**Signal Generator function**

- bit7 = 2^7 = 128  
  Bit 7: Not used
- bit6 = 2^6 = 64  
  Bit 6: Not used
- bit5 = 2^5 = 32  
  Bit 5: Waveform pattern copy error
- bit4 = 2^4 = 16  
  Bit 4: Waveform pattern loading to waveform memory error
- bit3 = 2^3 = 8  
  Bit 3: Not used
- bit2 = 2^2 = 4  
  Bit 2: Not used
- bit1 = 2^1 = 2  
  Bit 1: Not used
- bit0 = 2^0 = 1  
  Bit 0: Not used

**BER measurement function**

- bit7 = 2^7 = 128  
  Bit 7: Not used
- bit6 = 2^6 = 64  
  Bit 6: Not used
- bit5 = 2^5 = 32  
  Bit 5: Not used
- bit4 = 2^4 = 16  
  Bit 4: Not used
- bit3 = 2^3 = 8  
  Bit 3: Bit count overflow
- bit2 = 2^2 = 4  
  Bit 2: Syncloss count overflow
- bit1 = 2^1 = 2  
  Bit 1: Measurement stop with synchronization incompletion
- bit0 = 2^0 = 1  
  Bit 0: Measurement start failure
Details

Set the sum of the values for bits to be enabled to the parameter, from the values $2^0 = 1$, $2^1 = 2$, $2^2 = 4$, $2^3 = 8$, $2^4 = 16$, $2^5 = 32$, $2^6 = 64$, and $2^7 = 128$, corresponding to the error event status enable register bits 0, 1, 2, 3, 4, 5, 6, and 7.

This command is available when MS269xA-020/120 Vector Signal Generator, MS2830A-026/126 BER Measurement Function or MS2840A-026/126 BER Measurement Function is installed.

Example of Use

To enable the waveform pattern loading error event.

SYS SG
ESEERR 16

Related Commands

ESEERR? Queries the error event status register.

> 0
ESR0?
Extended End Event Status Register Query

Function
Queries the extended end event status.

Query
ESR0?

Response
n

Parameter
n
Extended end event status register
Value = bit0 + bit1 + ... + bit7

bit7 = $2^7 = 128$  Bit 7: Not used
bit6 = $2^6 = 64$  Bit 6: Not used
bit5 = $2^5 = 32$  Bit 5: Not used
bit4 = $2^4 = 16$  Bit 4: Not used
bit3 = $2^3 = 8$  Bit 3: Not used
bit2 = $2^2 = 4$  Bit 2: Not used
bit1 = $2^1 = 2$  Bit 1: BER measurement function
bit0 = $2^0 = 1$  Bit 0: Signal Generator function

Details
The response is the sum of the values $2^0 = 1$, $2^1 = 2$, $2^2 = 4$, $2^3 = 8$, $2^4 = 16$, $2^5 = 32$, $2^6 = 64$, and $2^7 = 128$, corresponding to the extended end event status register bits 0, 1, 2, 3, 4, 5, 6, and 7. When a response is read, the extended end event status register value is cleared.

This command is available when MS269xA-020/120 Vector Signal Generator, MS2830A-026/126 BER Measurement Function or MS2840A-026/126 BER Measurement Function is installed.

Example of Use
To readout the extended end event status register.

ESR0?
> 0

Related Commands
ESE0  Sets the extended end event status enable register.
ESR1?
Extended Error Event Status Register Query

Function
Queries the extended error event status.

Query
ESR1?

Response
n

Parameter
n
Extended error event status register
Value = bit0 + bit1 + ... + bit7
bit7 = 2^7 = 128  Bit 7: Not used
bit6 = 2^6 = 64  Bit 6: Not used
bit5 = 2^5 = 32  Bit 5: Not used
bit4 = 2^4 = 16  Bit 4: Not used
bit3 = 2^3 = 8  Bit 3: Not used
bit2 = 2^2 = 4  Bit 2: Not used
bit1 = 2^1 = 2  Bit 1: BER measurement function
bit0 = 2^0 = 1  Bit 0: Signal Generator function

Details
The response is the sum of the values 2^0 = 1, 2^1 = 2, 2^2 = 4, 2^3 = 8, 2^4 = 16, 2^5 = 32, 2^6 = 64, and 2^7 = 128, corresponding to the extended error event status register bits 0, 1, 2, 3, 4, 5, 6, and 7. When a response is read, the extended error event status register value is cleared.

This command is available when MS269xA-020/120 Vector Signal Generator, MS2830A-026/126 BER Measurement Function or MS2840A-026/126 BER Measurement Function is installed.

Example of Use
To readout the extended error event status register.
ESR1?
> 0

Related Commands
ESE1  Sets the extended error event status enable register.
ESREND?
Event Status Register Query

Function
Queries the end event status that is used for the Signal Generator and BER measurement functions. This command can be used for the currently active function.

Query
ESREND?

Response
n
Parameter
n  End event status register
  Value = \( \text{bit0} + \text{bit1} + ... + \text{bit7} \)

Signal Generator function
- \( \text{bit7} = 2^7 = 128 \)  Bit 7: Not used
- \( \text{bit6} = 2^6 = 64 \)  Bit 6: Not used
- \( \text{bit5} = 2^5 = 32 \)  Bit 5: Completion of waveform pattern copy
- \( \text{bit4} = 2^4 = 16 \)  Bit 4: Completion of waveform pattern loading to waveform memory
- \( \text{bit3} = 2^3 = 8 \)  Bit 3: Not used
- \( \text{bit2} = 2^2 = 4 \)  Bit 2: Not used
- \( \text{bit1} = 2^1 = 2 \)  Bit 1: Not used
- \( \text{bit0} = 2^0 = 1 \)  Bit 0: Not used

BER measurement function
- \( \text{bit7} = 2^7 = 128 \)  Bit 7: Measurement stop by the STOP or START command
- \( \text{bit6} = 2^6 = 64 \)  Bit 6: Not used
- \( \text{bit5} = 2^5 = 32 \)  Bit 5: Not used
- \( \text{bit4} = 2^4 = 16 \)  Bit 4: Not used
- \( \text{bit3} = 2^3 = 8 \)  Bit 3: Not used
- \( \text{bit2} = 2^2 = 4 \)  Bit 2: Not used
- \( \text{bit1} = 2^1 = 2 \)  Bit 1: Measurement stop due to parameter change
- \( \text{bit0} = 2^0 = 1 \)  Bit 0: Measurement completion
Details

Unusable unless the measurement screen is set for BER test. The response is the sum of the values $2^0 = 1$, $2^1 = 2$, $2^2 = 4$, $2^3 = 8$, $2^4 = 16$, $2^5 = 32$, $2^6 = 64$, and $2^7 = 128$, corresponding to the end event status register bits 0, 1, 2, 3, 4, 5, 6, and 7. When a response is read, the end event status register value is cleared.

This command is available when MS269xA-020/120 Vector Signal Generator, MS2830A-026/126 BER Measurement Function or MS2840A-026/126 BER Measurement Function is installed.

Example of Use

To readout the end event status register for the BER Measurement function.

```
ESREND?
> 0
```

Related Commands

**ESEERR**

Sets the end event status enable register.
ESRERR?
Error Event Status Register Query

Function
Queries the error event status that is used for the Signal Generator and BER functions.
This command can be used for the currently active function.

Query
ESRERR?

Response
n

Parameter
n
Error event status register
Value = bit0 + bit1 + ... + bit7

Signal Generator function
\[
\begin{align*}
\text{bit7} &= 2^7 = 128 & \text{Bit 7: } & \text{Not used} \\
\text{bit6} &= 2^6 = 64 & \text{Bit 6: } & \text{Not used} \\
\text{bit5} &= 2^5 = 32 & \text{Bit 5: } & \text{Waveform pattern copy error} \\
\text{bit4} &= 2^4 = 16 & \text{Bit 4: } & \text{Waveform pattern loading to waveform memory error} \\
\text{bit3} &= 2^3 = 8 & \text{Bit 3: } & \text{Not used} \\
\text{bit2} &= 2^2 = 4 & \text{Bit 2: } & \text{Not used} \\
\text{bit1} &= 2^1 = 2 & \text{Bit 1: } & \text{Not used} \\
\text{bit0} &= 2^0 = 1 & \text{Bit 0: } & \text{Not used}
\end{align*}
\]

BER measurement function
\[
\begin{align*}
\text{bit7} &= 2^7 = 128 & \text{Bit 7: } & \text{Not used} \\
\text{bit6} &= 2^6 = 64 & \text{Bit 6: } & \text{Not used} \\
\text{bit5} &= 2^5 = 32 & \text{Bit 5: } & \text{Not used} \\
\text{bit4} &= 2^4 = 16 & \text{Bit 4: } & \text{Not used} \\
\text{bit3} &= 2^3 = 8 & \text{Bit 3: } & \text{Bit count overflow} \\
\text{bit2} &= 2^2 = 4 & \text{Bit 2: } & \text{Syncloss count overflow} \\
\text{bit1} &= 2^1 = 2 & \text{Bit 1: } & \text{Measurement stop with synchronization incompletion} \\
\text{bit0} &= 2^0 = 1 & \text{Bit 0: } & \text{Measurement start failure}
\end{align*}
\]
Details

Unusable unless the measurement screen is set for BER test. The response is the sum of the values $2^0 = 1$, $2^1 = 2$, $2^2 = 4$, $2^3 = 8$, $2^4 = 16$, $2^5 = 32$, $2^6 = 64$, and $2^7 = 128$, corresponding to the error event status register bits 0, 1, 2, 3, 4, 5, 6, and 7. When a response is read, the error event status register value is cleared.

This command is available when MS269xA-020/120 Vector Signal Generator, MS2830A-026/126 BER Measurement Function or MS2840A-026/126 BER Measurement Function is installed.

Example of Use

To readout the error event status register for the BER measurement function.

```
ESRERR?
> 0
```

Related Commands

```
ESEERR       Sets the error event status enable register
```

### FPGAVER?

**FPGA Version Query**

**Function**

Queries the FPGA version.

**Query**

```plaintext
FPGAVER? hardware
FPGAVER? ALL
```

**Response**

```
version
```

**Parameter**

<table>
<thead>
<tr>
<th>hardware</th>
<th>FPGA type</th>
</tr>
</thead>
<tbody>
<tr>
<td>hardware</td>
<td>FPGA type</td>
</tr>
</tbody>
</table>

For MS2690A/MS2691A/MS2692A:

| HWC       | Hardware Controller FPGA |
| CNTR_KEY  | Control PLD And Panel    |
| LOCAL     | IF/Local FPGA            |
| MICRO     | RF/Micro FPGA            |
| MEAS_PCI  | PCI FPGA on Measure Unit |
| MEAS_CORE | Core FPGA on Measure Unit|
| MEAS_COM  | COM DSP on Measure Unit  |
| MEAS_HS_CORE | Core FPGA on Measure Option Unit |
| SGBB      | Baseband FPGA on SG Unit |
| SGRF      | RF FPGA on SG Unit       |
| BBIFIF    | BBIF Interface FPGA      |
| BBIFMAIN  | BBIF Main FPGA           |
| BBIFPCI   | BBIF PCI FPGA            |
| ALL       | All FPGA                 |

For MS2830A, MS2840A, MS2850A:

| HWC       | Hardware Controller FPGA on Main Unit |
| CNTR_KEY  | Control PLD And Panel on Main Unit    |
| MEAS_PCI  | Measure PCI FPGA on Main Unit         |
| MEAS_CORE | Measure Core FPGA on Main Unit        |
| MEAS_COM  | Measure COM DSP on Main Unit          |
| SA_RF     | RF FPGA on SA RF Unit                |
| SA_13G_RF | RF FPGA on SA 13GHz RF Unit (only MS2830A) |
| SG_BB     | Baseband FPGA on VSG Unit            |
| SG_RF     | RF FPGA on VSG Unit                  |
| CONV_DOWN | Down Conv FPGA on Down Convertor Unit|
| CONV_2ND  | 2nd Conv FPGA on 2nd Convertor Unit   |
| ATT_DRIVER| ATT_Driver FPGA on ATT Driver Unit    |
| AF        | AF FPGA on Sub Supply/Audio Unit      |
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<table>
<thead>
<tr>
<th>MEAS_WB</th>
<th>Wideband FPGA on 1 GHz BW Digitizing Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>ALL</td>
<td>All FPGA</td>
</tr>
<tr>
<td>version</td>
<td>FPGA version number</td>
</tr>
</tbody>
</table>

Details

All FPGA names and their versions are returned when `FPGAVER? ALL` is executed.
“–” is returned when reading a version number of hardware not installed.

Example of Use

To query the HWC FPGA version.

```
FPGAVER? HWC
> 5
```
FREQREF/FREQREF?

Frequency Reference

Function

This command selects the frequency reference signal source.

Command

FREQREF source

Query

FREQREF?

Response

source

Parameter

source
INT
AUTO

Frequency reference signal source
Uses internal reference signal source.
Synchronizes with the external reference signal source if an external reference signal is input.
(Default)
Synchronizes with the internal reference signal source if no input is detected.

Example of Use

To use the internal frequency reference signal source.
FREQREF INT
FREQREF?
> INT
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FREQ:SYNT:LPH/FREQ:SYNT:LPH?
Low Phase Noise

Function

This command enables/disables Low Phase Noise function.

Command

FREQ:SYNT:LPH switch_n

Query

FREQ:SYNT:LPH?

Response

on_off  Low Phase Noise switch status

Parameter

switch_n  Low Phase Noise switch
ON  Enables Low Phase Noise switch.
1  Enables Low Phase Noise switch.
OFF  Disables Low Phase Noise switch.
0  Disables Low Phase Noise switch.

on_off  Low Phase Noise switch status
1  Low Phase Noise switch enabled.
0  Low Phase Noise switch disabled.

Default  On

Details

This command is available when MS2830A-062/066 or MS2840A-066/166 is installed.

When setting is enabled, the phase noise characteristics can be improved by using the Low Phase Noise function to perform measurement at all applications.
Moreover, if a signal outside the DUT frequency range is input while this function is enabled, it may be possible to measure spurious noise generated within the unit.
Refer to the mainframe Operation Manual (Operation) for details about spurious noise generation conditions.

Example of Use

To enable Low Phase Noise switch.
FREQ:SYNT:LPH ON
To query the On/Off status of Low Phase Noise function.
FREQ:SYNT:LPH?
> 1
HARDREV?
Hardware Revision Query

Function
Queries the hardware revision number.

Query
HARDREV? hardware
HARDREV? ALL

Response
revision

Parameter

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>hardware</td>
<td>Hardware type</td>
</tr>
</tbody>
</table>

For MS2690A/MS2691A/MS2692A:
- IF       | IF Unit                          |
- LOCAL    | IF/Local Unit                    |
- MICRO    | RF/Micro Unit                    |
- MEAS     | Measure Unit                     |
- WBAND    | Measure Option Unit              |
- SG       | SG Unit                          |
- CPU      | CPU Unit                         |
- BBIF     | BBIF Unit                        |
- CARRIER  | Carrier Unit                     |
- ALL      | All hardware                     |

For MS2830A, MS2840A, MS2850A:
- MAIN     | Main Unit                        |
- SARF     | SA RF Unit                       |
- SA13GRF  | SA 13GHz RF Unit (only MS2830A) |
- SG       | VSG Unit                         |
- CONV_DOWN| Down Converter Unit             |
- CONV_2ND | 2nd Converter Unit              |
- ATT_DRIVER| ATT_Driver Unit                 |
- AUDIO    | Sub Supply/Audio Unit            |
- WBAND_1GHZ| 1 GHz BW Digitizing Unit        |
- ALL      | All hardware                     |

Details
All hardware names and their revisions are returned when HARDREV? ALL is executed.
“...” is returned when reading a revision number of hardware not installed.

Example of Use
To query the revision number of the IF unit.

HARDREV? IF
> 1
Chapter 6  Native Device Message Details

INI
Preset Current Application

Function
This command initializes the settings and status of the currently selected application.

Command
INI

Example of Use
To initialize settings of the Spectrum Analyzer.
SYS SPECT
INI

LISTCOPYDAT?
Hard Copy File List Query

Function
Queries a list of screen hardcopy files saved in the specified device.

Query
LISTCOPYDAT? device

Response
number,file1,file2,...

number  Number of files
Range    0 to 1000
file     File name
      If the number of files exceeds 1000, the first 1000 files are returned, sorted by filename.

Parameter
device   Drive name
      A, B, D, E, F, ...

Example of Use
To query the screen hardcopy filenames saved in drive E.
LISTCOPYDAT? e
> 3,Copy_00,Copy_01,Copy_02
LISTDGTZDAT?
Digitize File List Query

Function
Queries a list of digitized files saved in the specified device.

Query
LISTDGTZDAT? apl,device

Response
number, file1, file2, ...

<table>
<thead>
<tr>
<th>number</th>
<th>Number of files</th>
</tr>
</thead>
<tbody>
<tr>
<td>Range</td>
<td>0 to 1000</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>file</th>
<th>File name</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>If the number of files exceeds 1000, the first 1000 files are returned, sorted by filename.</td>
</tr>
</tbody>
</table>

Parameter
apl    | Target application name |
SIGANA  | Signal Analyzer         |

device | Drive name |
        | A, B, D, E, F, ... |

Example of Use
To query the digitized filenames saved in drive E.
LISTDGTZDAT? SIGANA, e
> 3, Digitize_00, Digitize_01, Digitize_02
**Chapter 6  Native Device Message Details**

**LISTRCDAT?**
Parameter File List Query

**Function**
Queries a list of parameter files saved in the specified device.

**Query**

```
LISTRCDAT? device
```

**Response**

```
number, file1, file2, ...
```

- **number**: Number of files
  - **Range**: 0 to 1000
- **file**: File name
  - *If the number of files exceeds 1000, the first 100 files are returned, sorted by filename.*

**Parameter**

- **device**: Drive name
  - *A, B, D, E, F, ...*

**Example of Use**

To query the parameter filenames saved in drive E.

```
LISTRCDAT? e
```

```
> 3, Param_00, Param_01, Param_02
```
LISTSYSINFO?
System Information File List Query

Function
Queries a list of system information files saved in the specified device.

Query
LISTSYSINFO? device

Response
number, file1, file2, ...

<table>
<thead>
<tr>
<th>number</th>
<th>Number of files</th>
</tr>
</thead>
<tbody>
<tr>
<td>Range</td>
<td>0 to 1000</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>file</th>
<th>File name</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>If the number of files exceeds 1000, the first 100 files are returned, sorted by filename.</td>
</tr>
</tbody>
</table>

Parameter
device    Drive name
A, B, D, E, F, ...

Example of Use
To query the system information filenames saved in drive E.
LISTSYSINFO? e
> 3,SystemInfo_00,SystemInfo_01,SystemInfo_02
LISTTRCEDAT?
Trace File List Query

Function
Queries a list of trace files saved in the specified device.

Query
LISTTRCEDAT? apl,device

Response
number,file1,file2,...

number Number of files
Range 0 to 1000

file File name
If the number of files exceeds 1000, the first 1000 files are returned, sorted by filename.

Parameter
apl Target application name
SPECT Spectrum Analyzer
PNOISE Phase Noise
drive Drive name
A, B, D, E, F, ...

Example of Use
To query the trace filenames saved in drive E.
LISTTRCEDAT? SPECT,e
> 3,Trace_00,Trace_01,Trace_02
LOAD
Load Application

Function
Activates an application.

Command
LOAD apl

Parameter
apl Target application name
SIGANA Signal Analyzer
SPECT Spectrum Analyzer
PNOISE Phase Noise
PMET Power Meter
BER BER Test

Details
This function activates an installed application and registers it to the Application Switch menu.

In order to use the [SIGANA] argument with MS2830A, the analysis bandwidth option (MS2830A-006/106) is required.
In order to use the [SIGANA] argument with MS2840A, the analysis bandwidth option (MS2840A-006/106) is required.

In order to use the [PNOISE] argument with MS2830A, the phase noise measurement option (MS2830A-010/110) is required.
In order to use the [PNOISE] argument with MS2840A, the phase noise measurement option (MS2840A-010/110) is required.
In order to use the [PNOISE] argument with MS2850A, the phase noise measurement option (MS2850A-010/110) is required.

For parameters to specify an application other than the standard ones, refer to the operation manual (remote control) for each application.

Example of Use
To activate the Signal Analyzer application.
LOAD SIGANA
LOADMEDIA/LOADMEDIA?
Drive to load User Pattern

Function
Sets the name of the drive to load the user-defined pattern file for BER measurement.

Command
LOADMEDIA drive

Query
LOADMEDIA?

Response
drive

Parameter
drive Load source drive name

Detail
Unusable unless the measurement screen is set for BER test.
This command is available when MS269xA-020/120 Vector Signal Generator, MS2830A-026/126 BER Measurement Function or MS2840A-026/126 BER Measurement Function is installed.

Example of Use
To load the user-defined pattern from drive D.
LOADMEDIA D
LOADUSERPAT

Load User Pattern

Function

Loads the user-defined pattern for BER measurement from a file.

Command

LOADUSERPAT pattern

Parameter

pattern User-defined pattern to be loaded
Specify a character string within 32 characters, obtained by removing an extension (bpn) from the target user defined pattern file name.

Details

Unusable unless the measurement screen is set for BER test.
Only files with extension “bpn” can be loaded.
It is not settable when data type is not UserDefine.
If the specified user define pattern file does not exist, an error is returned to the standard status register. The standard status register value can be checked by *ESR? command.
This command is available when MS269xA-020/120 Vector Signal Generator, MS2830A-026/126 BER Measurement Function or MS2840A-026/126 BER Measurement Function is installed.

Example of Use

To load the user-defined pattern file “USERPATTERN.bpn”.
LOADUSERPAT "USERPATTERN"
Chapter 6  Native Device Message Details

MEASERROR?
Error Query

Function
Queries BER measurement error status.

Query
MEASERROR?

Response
error

Parameter

<table>
<thead>
<tr>
<th>error</th>
<th>Error status</th>
</tr>
</thead>
<tbody>
<tr>
<td>NONE</td>
<td>No error</td>
</tr>
<tr>
<td>SYNCLOSS</td>
<td>Sync Loss status</td>
</tr>
<tr>
<td>CLOCKERROR</td>
<td>Clock signal error</td>
</tr>
<tr>
<td>ENABLEERROR</td>
<td>Enable signal error</td>
</tr>
</tbody>
</table>

Details
Error status query is executed in the following priority:
Enable signal error > Clock signal error > Sync Loss status
Unusable unless the measurement screen is set for BER test.
This command is available when MS269xA-020/120 Vector Signal Generator, MS2830A-026/126 BER Measurement Function or MS2840A-026/126 BER Measurement Function is installed.

Example of Use
To query error status.
MEASERROR?
> 1
MMEM:LOAD:CORR
Recall Correction File

Function

This command loads a level frequency correction table.

Command

MMEM:LOAD:CORR filename,device

Parameter

filename
Target filename
Character string within 32 characters enclosed by double quotes (" ") or single quotes (‘ ’) (excluding extension)
The following characters cannot be used:
\ / : * ? “ ” ‘ ’ < > |

device
Drive name
A, B, D, E, F, ...
Set to Drive D when omitted.

Example of Use

To load the level frequency table named “TEST” in drive D.
MMEM:LOAD:CORR "TEST",D
**MMEM:STOR:CORR**

**Save Correction File**

**Function**

This command initializes the data on the level frequency correction table.

**Command**

```
MMEM:STOR:CORR filename,device
```

**Parameter**

- **filename**
  
  Target filename

  Character string within 32 characters enclosed by double quotes (" " ) or single quotes (' ')
  (excluding extension)

  The following characters cannot be used:
  
  \ / : * ? " " ' '

  Automatically named “Corr date_sequential number.csv”.

- **device**

  Drive name

  A, B, D, E, F, ...

  Set to Drive D when omitted.

**Example of Use**

To save the level frequency correction table under the name “TEST” in drive D.

```
MMEM:STOR:CORR "TEST",D
```
MODE/MODE?
Measurement Mode

Function
Selects the BER measurement mode.

Command
MODE mode

Query
MODE?

Response
mode

Parameter
mode Measurement mode
SINGLE Single mode
CONTINUOUS Continuous mode
ENDLESS Endless mode

Details
Unusable unless the measurement screen is set for BER test.

When the measurement mode is set to Endless, other settings are changed as below.

Count Mode Data Bit
Measurement Bit 4294967295 bit

This command is available when MS269xA-020/120 Vector Signal Generator, MS2830A-026/126 BER Measurement Function or MS2840A-026/126 BER Measurement Function is installed.

Example of Use
To set the measurement mode to Single mode.
MODE SINGLE
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MVCOPYDAT
Move Hard Copy File (HDD/SSD to Device)

Function
Moves a screen hardcopy file saved in the internal storage to the specified device.

Command
MVCOPYDAT file,device

Parameter
file  Target filename
      Character string within 32 characters enclosed by double quotes (" ") or single quotes (’ ’) (excluding extension)
The following characters cannot be used:
      \ / : * ? “ ’ ’ < > |

device  Drive name
      A, B, E, F, ...

Details
• The format of the target file is switched according to the File Type Setting.
• If a file of the same name already exists in the move destination folder, the file in the move destination folder is deleted.

Example of Use
To move the screen hardcopy file “bitmap” to drive E.
MVCOPYDAT "bitmap",e
Chapter 6  Native Device Message Details

MVDGTZDAT
Move Digitize file (HDD/SSD to Device)

Function

Moves a digitized file saved in the internal storage to the specified device.

Command

MVDGTZDAT file,apl,device

Parameter

- **file**: Target filename
  - Character string within 128 characters enclosed by double quotes (" ") or single quotes (’ ’) (excluding extension)
  - The following characters cannot be used: \ / : * ? “ ” ‘ ’ « > |
- **apl**: Target application name
  - SIGANA: Signal Analyzer
- **device**: Drive name
  - A, B, E, F, ...

Details

If a file of the same name already exists in the move destination folder, the file in the move destination folder is deleted.

Example of Use

To move the digitized file “digitize” for the Signal Analyzer function to drive E.

MVDGTZDAT "digitize",SIGANA,e
Chapter 6  Native Device Message Details

MVRCDAT
Move Parameter File (HDD/SSD to Device)

Function
Moves a parameter file saved in the internal storage to the specified device.

Command
MVRCDAT file,device

Parameter

<table>
<thead>
<tr>
<th>file</th>
<th>Target filename</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Character string within 32 characters enclosed by double quotes (“ ”) or single quotes (‘ ’) (excluding extension)</td>
</tr>
<tr>
<td></td>
<td>The following characters cannot be used:</td>
</tr>
<tr>
<td></td>
<td>\ / : * ? “ ” ‘ ’ &lt; &gt;</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>device</th>
<th>Drive name</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>A, B, E, F, ...</td>
</tr>
</tbody>
</table>

Details
If a file of the same name already exists in the move destination folder, the file in the move destination folder is deleted.

Example of Use
To move the parameter file “parameter” to drive E.
MVRCDAT "parameter",e
MVSYSINFO
Move System Information File (HDD/SSD to Device)

Function
Moves a system information file saved in the internal storage to the
specified device.

Command
MVSYSINFO file,device

Parameter
file 
Target filename
Character string within 32 characters enclosed
by double quotes (“”) or single quotes (‘’)
(excluding extension)
The following characters cannot be used:
\ / : * ? “ ” ‘ ’ < > |
device 
Drive name
A, B, E, F, ...

Details
If a file of the same name already exists in the move destination folder,
the file in the move destination folder is deleted.

Example of Use
To move the system information file “SystemInfo” to drive E.
MVSYSINFO "SystemInfo",e
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MVTRCEDAT
Move Trace File (HDD/SSD to Device)

Function

Moves a trace file recorded in the internal storage to the specified device.

Command

MVTRCEDAT file,apl,device

Parameter

file  Target filename
Character string within 32 characters enclosed by double quotes (" ") or single quotes (’ ’) (excluding extension)
The following characters cannot be used:
\ / : * ? “ ” ’ ’ < > |

apl  Target application name
SPECT  Spectrum Analyzer
SIGANA  Signal Analyzer
PNOISE  Phase Noise

device  Drive name
A, B, E, F, ...

Details

If a file of the same name already exists in the move destination folder, the file in the move destination folder is deleted.

Example of Use

To move the trace file "trace" saved in the Spectrum Analyzer folder of the internal storage to drive E.

MVTRCEDAT "trace",SPECT,e
OPTINFO?
Option Information Query

Function
Queries option information.

Query
OPTINFO? [format]

Response
num1,sw1,model1,num2,sw2,model2,...
(when format is ALL)
num1,sw1,model1,num2,sw2,model2,...
(when format is HARD)
num1,type1,sw1,model1,type2,num2,sw2,model2,...
(when format is SOFT)
num  Option number (000 to 999)
sw   Switch (On/Off)
model Option name
type  Application type

Parameter
format  Response format
ALL  Queries all hardware/software options.
HARD  Queries hardware options.
SOFT  Queries software options.

Detail
The option information is output in the registered number.

Example of Use
To query the option number.
OPTINFO? ALL
> 3,001,OFF,RUBIDUIUM REFERENCE OSCILLATOR,
003,OFF,PRESELECTOR SPURIOUS MODE,...
2,3,MX269000A,001,OFF,SOFTOPTION-001,MX269000A,002,OFF,S
OFTOPTION-010,...
PMOD/PMOD?

Hard Copy Mode

Function

This command sets the screen hardcopy file format.

Command

PMOD format

Query

PMOD?

Response

format

Parameter

<table>
<thead>
<tr>
<th>format</th>
<th>File format</th>
</tr>
</thead>
<tbody>
<tr>
<td>BMP</td>
<td>BMP format (Default)</td>
</tr>
<tr>
<td>PNG</td>
<td>PNG format</td>
</tr>
<tr>
<td>When omitted.</td>
<td>BMP format</td>
</tr>
</tbody>
</table>

Example of Use

To save hardcopies in the PNG format.

PMOD PNG
PNFIXLENG/PNFIXLENG?
PN Fix Pattern Length

Function
Sets the length of PN Fix pattern for BER measurement.

Command
PNFIXLENG bit

Query
PNFIXLENG?

Response
bit
   Integer in bit units, unitless

Parameter
bit
   Bit length of PN Fix pattern
     Range  96 to 134217728 bits
     Suffix code  None

Details
Unusable unless the measurement screen is set for BER test.
This command is valid only when Data Type is set to PN Fix.
This command is available when MS269xA-020/120 Vector Signal Generator, MS2830A-026/126 BER Measurement Function or MS2840A-026/126 BER Measurement Function is installed.

Example of Use
To set the bit length of the PN Fix pattern to 1,024.
PNFIXLENG 1024
**Chapter 6  Native Device Message Details**

---

**PNINITIAL/PNINITIAL?**

PN Fix Pattern Initial Value

**Function**

Sets the initial value of PN Fix pattern in binary, for BER measurement.

**Command**

```
PNINITIAL n
```

**Query**

```
PNINITIAL?
```

**Response**

```
n
```

**Parameter**

```
n    PN Fix pattern initial value (binary)
```

**Range**

- 00…0 to 11…1 [9 bits] (for PN9 Fix)
- 00…0 to 11…1 [15 bits] (for PN15 Fix)
- 00…0 to 11…1 [20 bits] (for PN20 Fix)
- 00…0 to 11…1 [23 bits] (for PN23 Fix)

**Details**

Usable unless the measurement screen is set for BER test.

This command is valid only when Data Type is set to PN Fix.

Prefix “#B”, a character string indicating binary, to the parameter.

This command is available when MS269xA-020/120 Vector Signal Generator, MS2830A-026/126 BER Measurement Function or MS2840A-026/126 BER Measurement Function is installed.

**Example of Use**

To set the PN9 Fix initial value to “101010101”.

```
PNINITIAL #B101010101
```
Chapter 6  Native Device Message Details

POWER?
Average Power Query

Function
This command queries the measurement power in specified units.

Query
POWER? [unit]

Response
real

Parameter

<table>
<thead>
<tr>
<th>unit</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>DBM</td>
<td>Query the measurement power value in dBm units.</td>
</tr>
<tr>
<td>WATT</td>
<td>Query the measurement power value in W units.</td>
</tr>
<tr>
<td>DB</td>
<td>Query the relative power value in dB units.</td>
</tr>
</tbody>
</table>

When omitted real

Resolution
When unit is DBM, DB: 0.01
When unit is WATT: Three significant figures (floating point type)

Not connected –999.999

Details
The measurement power includes the offset value and averaging result.

Example of Use
To query the measurement power value in W units.

POWER? WATT
> 0.002
POW:ATT:MODE/POW:ATT:MODE?

Attenuation Mode

Function

This command sets Attenuation Mode.

Command

POW:ATT:MODE mode

Query

POW:ATT:MODE?

Parameter

mode  Attenuator mode

For MS2690A/MS2691A/MS2692A:
This command is not available.

For MS2830A, MS2840A, MS2850A:

- MECH  Uses mechanical attenuator.
- COMB  Switches between electronic and mechanical attenuator according to frequencies.

Default

- MECH  (except below)
- COMB  (MS2840A-046 without MS2840A-019/119)

Details

This sets the attenuator operation mode to be used.

Example of Use

To set attenuation mode to mechanical attenuator mode.
POW:ATT:MODE MECH

To query attenuation mode.
POW:ATT:MODE?
> MECH
PRE
Preset Current Application

Function

This command initializes the settings and status of the currently selected application.

Command

PRE

Example of Use

To initialize settings of the Spectrum Analyzer.
SYS SPECT
PRE
PRINT
Hard Copy

Function
This command saves a screen hardcopy into a file. The name of the file to be saved and save destination drive name can be specified.

Command
PRINT file,device

Parameter
file
Target filename
Character string within 32 characters enclosed by double quotes (" ") or single quotes (‘ ’) (excluding extension)
The following characters cannot be used:
\ / : * ? “ ” ‘ ’ < > | Automatically named as “Copy date sequential number.bmp” when omitted.

device
Drive name
A, B, D, E, F, ...
Set to Drive D when omitted.

Details
A sequential number from 00 to 999 will be added to the file name.
When a file is saved following a file with file number 999, 00 is added to the newly saved file.

Files are saved to the following directory in the specified drive.
\Anritsu Corporation\Signal Analyzer\User Data\Copy Files

When file name is omitted, up to 1000 files can be saved in a folder.
When file name is specified, it is possible to save more than 1000 files.

Example of Use
To save a screen hardcopy into a file, after naming the file “TEST,” in the internal storage.
PRINT "TEST", D
Chapter 6  Native Device Message Details

PRTCOPYDAT/PRTCOPYDAT?
Protect Hard Copy File

Function
This command protects a screen hardcopy file saved in the specified drive. Protected files cannot be deleted.

Command
PRTCOPYDAT file,on_off,device

Query
PRTCOPYDAT? file,device

Response
on_off

Parameter

file          Target filename
Character string within 32 characters enclosed by double quotes (" ") or single quotes (' ') (excluding extension)
The following characters cannot be used:
\ / : * ? " " ' ' < > |

on_off        Protection ON/OFF
ON            Protects the file.
OFF           Does not protect the file.

device        Drive name
A, B, D, E, F, ...

Example of Use
To protect the screen hardcopy file “Copy” saved in drive E.
PRTCOPYDAT "Copy",ON,e
**PRTDGTZDAT/PRTDGTZDAT?**

**Protect Digitize File**

**Function**

This command saves a digitize file saved to the specified drive. Protected files cannot be deleted.

**Command**

```
PRTDGTZDAT file,on_off,apl,device
```

**Query**

```
PRTDGTZDAT? file,apl,device
```

**Response**

```
on_off
```

**Parameter**

- **file**
  
  Target filename
  
  Character string within 128 characters enclosed by double quotes (" ") or single quotes (' ') (excluding extension)
  
  The following characters cannot be used:
  
  \ / : * ? “ ” ‘ ’ < > |

- **on_off**
  
  Protection ON/OFF
  
  ON
  
  OFF

- **apl**
  
  Target application name
  
  SIGANA

- **device**
  
  Drive name
  
  A, B, D, E, F, ...

**Example of Use**

To protect the digitized file “Digitize” saved in drive E.

```
PRTDGTZDAT "Digitize",ON,SIGANA,e
```
PRTRCDAT/PRTRCDAT?
Protect Parameter File

Function

Protects a parameter file saved in the specified drive. Protected files cannot be deleted.

Command

PRTRCDAT file,on_off,device

Query

PRTRCDAT? file,device

Response

on_off

Parameter

file
Target filename
Character string within 32 characters enclosed by double quotes (" ") or single quotes (’ ) (excluding extension)
The following characters cannot be used:
\ / : * ? “ ” ‘ ’ < > |

on_off
ON
Protects the file.
OFF
Does not protect the file.

device
Drive name
A, B, D, E, F, ...

Example of Use

To protect the parameter file “Parameter” saved in drive E.
PRTRCDAT "Parameter",ON,e
Chapter 6  Native Device Message Details

**PRTSYSINFO/PRTSYSINFO?**
Protect System Information File

**Function**

This command protects a system information file saved to the specified drive. Protected files cannot be deleted.

**Command**

```
PRTSYSINFO file,on_off,device
```

**Query**

```
PRTSYSINFO? file,device
```

**Response**

```
on_off
```

**Parameter**

- **file**
  Target filename
  Character string within 32 characters enclosed by double quotes (" ") or single quotes (’ ’) (excluding extension)
  The following characters cannot be used:
  \ / : * ? " " ' ' < > |

- **on_off**
  Protection ON/OFF
  ON
  Protects the file.
  OFF
  Does not protect the file.

- **device**
  Drive name
  A, B, D, E, F, ...

**Example of Use**

To protect the system information file “SystemInfo” saved in drive E.

```
PRTSYSINFO "SystemInfo",ON,e
```
PRTRCEDAT/PRTRCEDAT?
Protect Trace File

Function
This command saves a trace file saved in the specified drive. Protected files cannot be deleted.

Command
PRTRCEDAT file,on_off,apl,device

Query
PRTRCEDAT? file,apl,device

Response
on_off

Parameter

file Target filename
Character string within 32 characters enclosed by double quotes (" ") or single quotes (’ ) (excluding extension)
The following characters cannot be used:
\ / : * ? “ " ' < > |
on_off Protection ON/OFF
ON Protects the file.
OFF Does not protect the file.

apl Target application name
SPECT Spectrum Analyzer
SIGANA Signal Analyzer
PNOISE Phase Noise
device Drive name
A, B, D, E, F, ...

Example of Use
To protect the "Trace" trace file of the Spectrum Analyzer saved in drive E.
PRTRCEDAT "Trace",ON,SPECT,e
Chapter 6  Native Device Message Details

**RCPRM**

Recall Parameter Setting file

**Function**

This command recalls the application settings and status into a parameter setting file.

**Command**

RCPRM file, dev, apl

**Parameter**

- **file**
  - Target filename
  - Character string within 32 characters enclosed by double quotes (" ") or single quotes (‘ ’) (excluding extension)
  - The following characters cannot be used:
    \ / : * ? “ ” ‘ ’ < > |

- **device**
  - Drive name
  - A, B, D, E, F, ...

- **apl**
  - Target application
  - ALL  All applications
  - CURR Only the currently operated application
  - When omitted  All applications

**Example of Use**

To restore settings of all applications to the contents of the parameter setting file “TEST” saved in the internal storage.

RCPRM "TEST", D, ALL
**RCVBIT?**

Received Bit Query

**Function**

This command returns the received bit count during BER measurement.

**Query**

RCVBIT?

**Response**

n

**Parameter**

- **n** Bit count
  - Range: 0 to \(2^{32} - 1\)

**Detail**

Unusable unless the measurement screen is set for BER test.

This command is available when MS269xA-020/120 Vector Signal Generator, MS2830A-026/126 BER Measurement Function or MS2840A-026/126 BER Measurement Function is installed.

**Example of Use**

To query the received bit count.

```
RCVBIT?
> 12356789
```

**REBOOT**

System Re-boot

**Function**

This command reboots the system.

**Command**

REBOOT

**Details**

If this command is received, remote control communication is disabled until all applications are rebooted.

**Example of Use**

To reboot the system.

```
REBOOT
```
REMDISP/REMDISP?
Error Message Display Mode

Function
Selects the error message display mode when an error occurs during remote control.

Command
REMDISP mode

Query
REMDISP?

Response
mode

Parameter
mode
NORMAL  Error message display mode
DELETES THE ERROR MESSAGE DISPLAY ONCE THE NEXT COMMAND IS RECEIVED. (Default)
REMAIN  To keep the first error message displayed. (Same as REMAIN)
REMA
REMAIN_LAST  Keeps the last error message displayed.

Details
The setting of the error message display mode cannot be initialized.

Example of Use
To keep the first error message displayed.
REMDISP REMAIN
RESULT?
Result and Status Query

Function
Queries the bit error rate and status information of BER measurement.

Query
RESULT? format

Response
per,countbit,errorbit,status,error
(when format is EP)
exp,countbit,errorbit,status,error
(when format is ER)
per,countbit,errorbit,syncloss,status,error
(when format is EP_WSYNCLOSS)
exp,countbit,errorbit,syncloss,status,error
(when format is ER_WSYNCLOSS)

per
Bit error rate (percentage)

Range 0.000 to 100.000%

exp
Bit error rate (exponent format)

Range 0.000E+00 to 1.000E+02

countbit
Number of count bits

totalbit
Number of error bits

syncloss
Number of Sync Loss errors occurred during measurement

status
Measurement status

totalerror
Error status

Parameter
format
Response format

EP
Returns the bit error rate in percentage

ER
Returns the bit error rate in exponent format

EP_WSYNCLOSS
Returns the bit error rate in percentage

ER_WSYNCLOSS
Returns the bit error rate in exponent format

Detail
Unusable unless the measurement screen is set for BER test.
This command is available when MS269xA-020/120 Vector Signal Generator, MS2830A-026/126 BER Measurement Function or MS2840A-026/126 BER Measurement Function is installed.

Example of Use
To query the bit error rate in percentage.
RESULT? EP
> 10.000,1000,100,0,NONE
Chapter 6  Native Device Message Details

RFLVLOFS/RFLVLOFS?
Level Offset Value

Function
This command sets the level offset value in dB units.

Command
RFLVLOFS rel_ampl

Query
RFLVLOFS?

Response
rel_ampl

Parameter

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>rel_ampl</td>
<td>Offset value</td>
<td></td>
</tr>
<tr>
<td>Range</td>
<td>–100.00 to +100.00</td>
<td></td>
</tr>
<tr>
<td>Resolution</td>
<td>0.01</td>
<td></td>
</tr>
<tr>
<td>Default</td>
<td>0.00</td>
<td></td>
</tr>
<tr>
<td>Suffix code</td>
<td>DB</td>
<td></td>
</tr>
<tr>
<td></td>
<td>DB when omitted</td>
<td></td>
</tr>
</tbody>
</table>

Details
This function cannot be executed when the display is other than Power Meter.

Example of Use
To set the level offset value to 10 dB.
RFLVLOFS 10
RFLVLOFS?
> 10.00
ROFFSET/ROFFSET?
Ref. Level Offset Value

Function
This command sets the reference level offset function On/Off and sets the offset value.

Command
ROFFSET level
ROFFSET on_off

Query
ROFFSET?

Response
level
OFF
When the reference level offset function is ON
When the reference level offset function is OFF

Parameter
level
Reference level offset value
Range –100.00 to +100.00 dB
Resolution 0.01 dB
Suffix code DB
dB is used even when omitted.

on_off
ON
OFF
Reference level offset function ON/OFF
Sets the reference level offset function to ON.
Sets the reference level offset function to OFF.

Example of Use
To set the reference level offset function to On at +10 dB.
ROFFSET 10
ROFFSET 10DB
ROFFSET ON
ROFFSET?
> 10.00
ROFFSETMD/ROFFSETMD?
Reference Level Offset Mode

Function
This command sets the reference level offset function On/Off.

Command
ROFFSETMD on_off

Query
ROFFSETMD?

Response
on_off

Parameter
on_off
ON
OFF
Reference level offset function On/Off
Sets the reference level offset function to On.
Sets the reference level offset function to Off.

Example of Use
To set the reference level offset function to On.
ROFFSETMD ON
ROSC:EXT:FREQ/ROSC:EXT:FREQ?

External Reference Frequency

Function

This command sets the frequency of the reference frequency signal.

Command

ROSC:EXT:FREQ freq

Query

ROSC:EXT:FREQ?

Response

freq

Suffix code None. Value is returned in Hz units.

Parameter

freq Frequency of reference frequency signal

Range

[MS269xA] Either value of 10 MHz or 13 MHz
[MS2830A] 5 MHz, 10 MHz, or 13 MHz
[MS2840A] 5 MHz, 10 MHz, or 13 MHz
[MS2850A] 5 MHz, 10 MHz, or 13 MHz
Default 10 MHz

Suffix code HZ, KHZ, KZ, MHZ, MZ, GHZ, GZ

Details

This sets signal frequency, when using external reference signal as the signal source for reference frequency.

If the Reference Signal is Fixed to Internal, this function cannot be set.

Example of Use

To set the frequency of the reference frequency signal to 10 MHz.
ROSC:EXT:FREQ 10MHZ
ROSC:EXT:FREQ?
> 10000000
ROSC:SOUR?
Reference Signal Query

Function
This command queries the frequency reference signal source.

Query
ROSC:SOUR?

Response
source

Parameter

<table>
<thead>
<tr>
<th>source</th>
<th>Language mode</th>
</tr>
</thead>
<tbody>
<tr>
<td>INT</td>
<td>Internal reference signal source</td>
</tr>
<tr>
<td>INTU</td>
<td>Internal reference signal source (Unlock state)</td>
</tr>
<tr>
<td>EXT</td>
<td>External reference signal source</td>
</tr>
<tr>
<td>EXTU</td>
<td>External reference signal source (Unlock state)</td>
</tr>
</tbody>
</table>

Details
During frequency reference stabilization, *** is returned.

Example of Use
To query the external reference signal source.
ROSC:SOUR?
> EXT
ROSC:STAT?
Reference Clock Status Query

Function

This command queries the status of the frequency reference signal source.

Query

ROSC:STAT?

Response

status

Parameter

status
0
Status of frequency reference signal source
Frequency reference signal source is in the locked status.
1
Frequency reference signal source is in the unlocked status.

Example of Use

To query the internal frequency reference signal source.

ROSC:STAT?
> 0
**SETREL**

Reference Level Set

**Function**

This command sets the power in the Power Meter display as the reference in relative value.

**Command**

```
SETREL
```

**Example of Use**

To set the power in the Power Meter display as the reference.
```
SETREL
```

---

**SNGLS**

Start Measurement by Single Mode

**Function**

Starts the BER measurement in Single mode.

**Command**

```
SNGLS
```

**Detail**

When executing this command for BER measurement function, switch the application to BER Test.

This command is available when MS269xA-020/120 Vector Signal Generator, MS2830A-026/126 BER Measurement Function or MS2840A-026/126 BER Measurement Function is installed.

*Note:*

The BER measurement is also available when the signal generator application is active.
For the above command operation for other than BER measurement function, see the operation manual of each application.

**Example of Use**

To start the BER measurement in Single mode.
```
SNGLS
```
**SOFTVER?**

Software Version Query

**Function**

Queries the application version.

**Query**

`SOFTVER? apl`

**Response**

`version`

**Parameter**

<table>
<thead>
<tr>
<th>apl</th>
<th>Target application name</th>
</tr>
</thead>
<tbody>
<tr>
<td>SIGANA</td>
<td>Signal Analyzer</td>
</tr>
<tr>
<td>SPECT</td>
<td>Spectrum Analyzer</td>
</tr>
<tr>
<td>PNOISE</td>
<td>Phase Noise</td>
</tr>
<tr>
<td>PMET</td>
<td>Power Meter</td>
</tr>
<tr>
<td>BER</td>
<td>BER Test</td>
</tr>
</tbody>
</table>

**Details**

For parameters to specify an application other than the standard ones, refer to the operation manual (remote control) for each application.

**Example of Use**

To query the version of the Signal Analyzer application.

```plaintext
SOFTVER? SIGANA
> 4.0.0
```
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SOUND/SOUND?
Sound On/Off

Function
Sets the sound file ON/OFF.

Command
SOUND on_off

Query
SOUND?

Response
on_off

Parameter

<table>
<thead>
<tr>
<th>on_off</th>
<th>Sound ON/OFF</th>
</tr>
</thead>
<tbody>
<tr>
<td>ON</td>
<td>On (Default)</td>
</tr>
<tr>
<td>OFF</td>
<td>Off</td>
</tr>
</tbody>
</table>

Example of Use
To set sound to ON.
SOUND ON
START
Start Measurement

Function
Starts the BER measurement.

Command
START

Details
When executing this command for BER measurement function, switch the application to BER Test.
This command is available when MS269xA-020/120 Vector Signal Generator, MS2830A-026/126 BER Measurement Function or MS2840A-026/126 BER Measurement Function is installed.

Note:
The BER measurement is also available when the signal generator application is active.
For the above command operation for other than BER measurement function, see the operation manual of each application.

Example of Use
To start the BER measurement.
START
STATUS?

Status Query

Function

Queries the BER measurement status.

Query

STATUS?

Response

status          Measurement status
  EXEC          During measurement
  SYNCHRONIZING Synchronization is established.
  STOP          Measurement is stopped with no error.
  ERROR         Measurement is stopped and an error has occurred.

Details

Unusable unless the measurement screen is set for BER test. The error contents can be queried by using the MEASERROR? command. This command is available when MS269xA-020/120 Vector Signal Generator, MS2830A-026/126 BER Measurement Function or MS2840A-026/126 BER Measurement Function is installed.

Example of Use

To query the measurement status.

STATUS?
> EXEC
STOP
Stop Measurement

Function
Stops the BER measurement.

Command
STOP

Detail
When executing this command for BER measurement function, switch the application to BER Test.
This command is available when MS269xA-020/120 Vector Signal Generator, MS2830A-026/126 BER Measurement Function or MS2840A-026/126 BER Measurement Function is installed.

Note:
The BER measurement is also available when the signal generator application is active.
For the above command operation for other than BER measurement function, see the operation manual of each application.

Example of Use
To stop the BER measurement.
STOP
STOPSTATUS?
Stop Status Query

Function
Queries the BER measurement stop status.

Query
STOPSTATUS?

Response

<table>
<thead>
<tr>
<th>status</th>
<th>Measurement stop status</th>
</tr>
</thead>
<tbody>
<tr>
<td>STOP_NORMAL</td>
<td>Measurement is stopped normally.</td>
</tr>
<tr>
<td>STOP_OVERFLOW_DATA_COUNT</td>
<td>The number of count bits exceeds the upper limit.</td>
</tr>
<tr>
<td>STOP_OVERFLOW_SYNCLOSS</td>
<td>The number of Sync Loss errors exceeds the upper limit.</td>
</tr>
<tr>
<td>STOP_ABNORMAL_COUNT</td>
<td>Measurement is stopped due to abnormality.</td>
</tr>
<tr>
<td>EXEC</td>
<td>During measurement</td>
</tr>
<tr>
<td>SYNCHRONIZING</td>
<td>Synchronization is established.</td>
</tr>
</tbody>
</table>

Detail
Unusable unless the measurement screen is set for BER test.
This command is available when MS269xA-020/120 Vector Signal Generator, MS2830A-026/126 BER Measurement Function or MS2840A-026/126 BER Measurement Function is installed.

Example of Use
To query the measurement stop status.
STOPSTATUS?
> EXEC
SVPRM
Save Parameter Setting as file

Function
Saves the application settings and status into a parameter setting file.

Command
SVPRM file,device

Parameter
file
Target filename
- Character string within 32 characters enclosed by double quotes (“ ”) or single quotes (’ ’) (excluding extension)
- The following characters cannot be used: \ / : * ? " " ' ' < > | 
- When omitted, the file is automatically named in the following format: “Param date_sequential number.xml”

device
Drive name
- A, B, D, E, F, ...
- Set to Drive D when omitted.

Details
A sequential number from 00 to 999 will be added to the file name.
When a file is saved following a file with file number 999, 00 is added to the newly saved file.

Files are saved to the following directory in the specified drive.
\Anritsu Corporation\Signal Analyzer\User Data\Parameter Setting

When file name is omitted, up to 1000 files can be saved in a folder.
When file name is specified, it is possible to save more than 1000 files.

Example of Use
To save the parameter setting file “TEST” in the internal storage.
SVPRM "TEST", D
**SWKEYINST**

Software License Install Command

**Function**

Installs the software license key from the specified file.

**Command**

\[ \text{SWKEYINST } \text{fname,drive} \]

**Query**

None

**Response**

None

**Parameter**

- **fname**
  Target file name
  Character string within 32 characters enclosed by double quotes (" ") or single quotes (‘ ’) (excluding extension)
  The following characters cannot be used:
  \ / : * ? “ ” ‘ ’ < > |

- **drive**
  The name of the drive from which the license file is loaded

**Detail**

Installs the software license key from the specified file in the specified drive.
Searches the specified file in the following directory in the specified drive.
\Anritsu Corporation\Signal Analyzer\Install

**Example of Use**

To install the software license from MX269006.xml file in the USB memory device(E:\).
\SWKEYINST "MX269006A",e
SWKEYNAME?
Software License Name Query

Function
Queries the software license key corresponding to the specified index number.

Command
None

Query
SWKEYNAME? index

Response
license
License name
License number corresponding to index number.

Parameter
index
Index number
Range 1 to 100

Example of Use
To query the fifth license name.
SWKEYNAME? 5
> MX269010A
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SYNCLENG/SYNCLENG?
Length for Sync on User Pattern

Function
Sets the length of the partial bit string, which is used for synchronization judgment, in the user-defined pattern for BER measurement.

Command
SYNCLENG bit

Query
SYNCLENG?

Response
bit

Parameter
bit  Length of synchronization judgment bit string
     Range  8 to 1024 bits

Details
Unusable unless the measurement screen is set for BER test.
This command is valid only when Data Type is set to User Define.
This command is available when MS269xA-020/120 Vector Signal Generator, MS2830A-026/126 BER Measurement Function or MS2840A-026/126 BER Measurement Function is installed.

Example of Use
To set the length of the synchronization judgment bit string in the user-defined pattern to 65 bits.
SYNCLENG 65
**SYNCLOSS?**
Sync Loss Count Query

**Function**
Queries the number of Sync Loss (out of synchronization) errors having occurred during the BER measurement.

**Query**
`SYNCLOSS?`

**Response**
```
count
Range 0 to 65535
```

**Detail**
Unusable unless the measurement screen is set for BER test. This command is available when MS269xA-020/120 Vector Signal Generator, MS2830A-026/126 BER Measurement Function or MS2840A-026/126 BER Measurement Function is installed.

**Example of Use**
To query the number of Sync Loss errors.
```
SYNCLOSS?
> 500
```
SYNCOLOSSACT/SYNCOLOSSACT?
Count Action at Sync Loss

Function
Sets the action when Sync Loss occurs during BER measurement.

Command
SYNCOLOSSACT a

Query
SYNCOLOSSACT?

Response
a

Parameter

Action when Sync Loss occurs

COUNT_CLEAR  Clears current count value
COUNT_KEEP   Keeps current count value

Details
Unusable unless the measurement screen is set for BER test.
Selects whether to clear or keep the count value when Sync Loss occurs during measurement.
This command is valid only when auto resynchronization is enabled.
This command is available when MS269xA-020/120 Vector Signal Generator, MS2830A-026/126 BER Measurement Function or MS2840A-026/126 BER Measurement Function is installed.

Example of Use
To clear the count value when Sync Loss occurs.
SYNCOLOSSACT COUNT_Clear
SYNCLOSSTHLD/SYNCLOSSTHLD?
Sync Loss Threshold

Function
Sets the Sync Loss judgment condition for the BER measurement.

Command
SYNCLOSSTHLD n, a

Query
SYNCLOSSTHLD?

Response
n, a

Parameter
n  Numerator of Sync Loss threshold
   Range   1 to (a/2) bits
a  Dominator of Sync Loss threshold
   500     500 bits
   5000    5000 bits
   50000   50000 bits

Details
Unusable unless the measurement screen is set for BER test.
During BER measurement, if n bits out of continuous a bits are detected
as error bits, it is judged as Sync Loss.

This command is valid only when auto resynchronization is disabled.

This command is available when MS269xA-020/120 Vector Signal
Generator, MS2830A-026/126 BER Measurement Function or
MS2840A-026/126 BER Measurement Function is installed.

Example of Use
To set the Sync Loss threshold to 123/500 bits.
SYNCLOSSTHLD 123, 500
SYNCSTARTPOS/SYNCSTARTPOS?
Sync Start Position on User Pattern

**Function**
Sets the start position of the partial bit string, which is used for synchronization judgment, in the user-defined pattern for BER measurement.

**Command**
```
SYNCSTARTPOS bit
```

**Query**
```
SYNCSTARTPOS?
```

**Response**
```
bit
```

**Parameter**
```
bit
Start position of synchronization judgment bit string
Range 1 to (Pattern Length) bits
```

**Details**
Unusable unless the measurement screen is set for BER test.
This command is valid only when Data Type is set to User Define.
This command is available when MS269xA-020/120 Vector Signal Generator, MS2830A-026/126 BER Measurement Function or MS2840A-026/126 BER Measurement Function is installed.

**Example of Use**
To set the 31st bit from the start of the user-defined pattern as the start position of synchronization judgment bit string.
```
SYNCSTARTPOS 31
```
SYS/SYS?
Application Switch/Status

Function

Switches the target application for operation/control. Also queries the status of the specified application.

Command

SYS apl,window

Query

SYS? apl

Response

status,window

Parameter

apl | Target application name
---|---
SIGANA | Signal Analyzer
SPECT | Spectrum Analyzer
PNOISE | Phase Noise
CONFIG | Config
SG | Signal Generator
BER | BER Test
WIMAX | WiMAX
WCDMA_DL | W-CDMA/HSPA Downlink
WCDMA_UL | W-CDMA/HSPA Uplink
GSM | GSM
ETC_DSRC | ETC/DSRC
TDSCDMA | TD-SCDMA
XGPHS | XG-PHS
VMA | Vector Modulation Analysis
3GLTE_DL | 3GLTE Downlink
3GLTE_UL | 3GLTE Uplink
LTETDD_DL | LTE-TDD Downlink
LTETDD_UL | LTE-TDD Uplink
CDMA2000_FWD | CDMA2000
EVDO_FWD | EVDO
WCDMA_BS | W-CDMA BS
RNC | W-CDMA RNC Simulator Control
MEDIAFLO | MediaFLO
ISDB-TMM | ISDB-Tmm
UMTS | UMTS Measurement Software
BBIF | Digital I/F Control Software
EXTDIG | Extended Digitizing
BASE5G | 5G Measurement
Any optional installed software other than those above can be specified. Refer to the Operation Manual (Remote Control) of each application for details.

**Details**

This function is used to switch the operation/control target application. The status of the target application for remote control is **CURRENT**.

An application that has not been loaded cannot be switched to. Before using this command, load the application by using the **LOAD** command.

When the target application is set to **CONFIG**, the behavior of application window status differs depending on the setting as follows. Config is a background application and does not save the inactive or minimized status as an application window status.

- When the application window status is set to **INACT** (inactive status): The command is accepted, but the status is not changed.
- When the application window status is set to **MIN** (minimized status): The screen changes automatically to that of another application that started up last. The **CONFIG** will be in the **IDLE** status: started up but is not running.

**Example of Use**

To switch the operation target application to the Signal Analyzer.

```plaintext
SYS SIGANA,ACT
SYS? SIGANA
> CURRENT,ACT
```
**SYSINFO?**
System Information Query

**Function**
Queries system information.

**Query**
- `SYSINFO? info`
- `SYSINFO? ALL`

**Response**
- `string`
  Returns specified information with a character string.
  All system information is returned when `ALL` is specified.

**Parameter**
- `info`
  Information type
  - `MODEL` Product Model
  - `TYPE` Product type
  - `SERIAL` Serial number
  - `RTIME` Running time (minutes)

**Example of Use**
To query all system information.
`SYSINFO? ALL`
>`Signal Analyzer, MS2690A, 610000000, 100,`
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SYST:ERR?
System Error Query

Function
This command queries the error messages that exist in errors and the event queue.
A description consisting of numbers and characters related to the error or event is saved to the error or event queue.

Query
SYST:ERR?

Response
<Error/event_number>, "<Error/event_description>"

Parameters
<Error/event_number>
This is an integer in the range of –32768 to +32767. The value zero indicates that there is no error or that no event has occurred. A negative number indicates the occurrence of a standard error reserved by SCPI. A positive number indicates the occurrence of an error defined by MS269xA, MS2830A, MS2840A, or MS2850A.

<Error/event_description>
Each error message corresponds to an <Error/event number>. This character string can be up to 255 characters long.

<table>
<thead>
<tr>
<th>Error/event_number</th>
<th>Error/event_description</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>–100</td>
<td>Command error</td>
<td>Indicates that the command is incorrect or invalid.</td>
</tr>
<tr>
<td>–108</td>
<td>Parameter not allowed</td>
<td>Indicates that the number of parameters does not match.</td>
</tr>
<tr>
<td>–109</td>
<td>Missing parameter</td>
<td>Indicates that the number of parameters does not match. This is used if the number is not either too large or too small.</td>
</tr>
<tr>
<td>–113</td>
<td>Undefined header</td>
<td>This is an undefined command.</td>
</tr>
<tr>
<td>–120</td>
<td>Numeric data error</td>
<td>An invalid value is included.</td>
</tr>
<tr>
<td>–140</td>
<td>Character data error</td>
<td>This indicates that characters that cannot be used were input.</td>
</tr>
<tr>
<td>–150</td>
<td>String data error</td>
<td>This indicates that an incorrect character string is included in the command.</td>
</tr>
<tr>
<td>–160</td>
<td>Block data error</td>
<td>This is an error in the binary data format.</td>
</tr>
<tr>
<td>–200</td>
<td>Execution error</td>
<td>This indicates that this is an execution error other than parameter settings.</td>
</tr>
</tbody>
</table>
Table 6-1  Error messages (Cont'd)

<table>
<thead>
<tr>
<th>Error/event_number</th>
<th>Error/event_description</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>–220</td>
<td>Parameter error</td>
<td>This indicates that a set parameter is incorrect or invalid.</td>
</tr>
<tr>
<td>–221</td>
<td>Setting conflict</td>
<td>This indicates that this is setting disabled state.</td>
</tr>
<tr>
<td>–222</td>
<td>Data out of range</td>
<td>This indicates that the settable range has been exceeded.</td>
</tr>
<tr>
<td>–250</td>
<td>Mass storage error</td>
<td>A file operation error occurs.</td>
</tr>
<tr>
<td>–252</td>
<td>Missing media</td>
<td>No specified driver</td>
</tr>
<tr>
<td>–253</td>
<td>Corrupt media</td>
<td>Format error</td>
</tr>
<tr>
<td>–256</td>
<td>File name not found</td>
<td>No file</td>
</tr>
<tr>
<td>–350</td>
<td>Queue overflow</td>
<td>This indicates that the error event queue has overflowed.</td>
</tr>
</tbody>
</table>

Details

For commands that requires synchronization by *WAI commands when querying marker value:
Make sure to perform synchronization by *WAI and *OPC commands before querying the error messages by SYST: ERR?

Example of Use

To query an error message.
SYST:ERR?
> -100,Command error

SYST:LANG/SYST:LANG?

Language mode switching

Function

This command witches the language mode.

Command

SYST:LANG SCPI
SYST:LANG NAT

Query

SYST:LANG?

Response

mode

Parameter

mode Language mode
SCPI SCPI mode
NAT Native mode (Default)

Example of Use

To switch the language mode to the SCPI mode.
SYST:LANG SCPI
**SYST:RES:MODE/SYST:RES:MODE?**

**Result Mode**

**Function**

This command sets the output mode of the measured result.

**Command**

SYST:RES:MODE A

SYST:RES:MODE B

**Query**

SYST:RES:MODE?

**Parameter**

<table>
<thead>
<tr>
<th>mode</th>
<th>Output mode</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Mode A (Default)</td>
</tr>
<tr>
<td>B</td>
<td>Mode B</td>
</tr>
</tbody>
</table>

**Details**

The Result Mode is initialized to Mode A through the following operation.

- Execute System Reset.
- Execute the system recovery function.

**Example of Use**

To set the response mode to Mode A.

SYST:RES:MODE A

SYST:RES:MODE?

> A
**SYST:TEMP:RF?**

RF Temperature Query

Function

This command returns the reading for the temperature of the RF unit in the signal analyzer.

Query

SYST:TEMP:RF?

Response

temperature

Parameter

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>temperature</td>
<td>Measured temperature of RF unit in the signal analyzer</td>
</tr>
<tr>
<td>Resolution</td>
<td>0.01°C</td>
</tr>
<tr>
<td>Suffix code</td>
<td>Returns a value in Celsius (°C) units.</td>
</tr>
</tbody>
</table>

Details

This can be used as a criterion for whether to execute calibration. The standard temperature of the RF unit is about 50°C during operation at normal temperature.

Example of Use

To return the reading for the temperature of the RF unit in the signal analyzer.

SYST:TEMP:RF?

> 50.78

---

**TMCNT?**

Running Time Query

Function

This command queries the running time.

Query

TMCNT?

Response

minutes

<table>
<thead>
<tr>
<th>Suffix code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>None</td>
<td>Returns the time in minutes.</td>
</tr>
</tbody>
</table>

Example of Use

To query the running time.

TMCNT?

> 100
Chapter 6  Native Device Message Details

TRM/TRM?
Delimiter (Terminator)

Function
Sets a delimiter (termination code) for remote control.

Command
TRM code

Query
TRM?

Response
code

Parameter
code | Delimiter type
---|---
LF | LF
CRLF | CR/LF (Default)
NONE | None (EOI only)

Example of Use
To set the delimiter to CR/LF.
TRM CRLF
TYPE/TYPE?

Data Pattern Type

Function

Sets the data pattern type for BER measurement.

Command

TYPE pattern

Query

TYPE?

Response

pattern

Parameter

<table>
<thead>
<tr>
<th>pattern</th>
<th>Data pattern type</th>
</tr>
</thead>
<tbody>
<tr>
<td>PN9</td>
<td>PN9</td>
</tr>
<tr>
<td>PN11</td>
<td>PN11</td>
</tr>
<tr>
<td>PN15</td>
<td>PN15</td>
</tr>
<tr>
<td>PN20</td>
<td>PN20</td>
</tr>
<tr>
<td>PN23</td>
<td>PN23</td>
</tr>
<tr>
<td>ALL0</td>
<td>All 0 (00…0)</td>
</tr>
<tr>
<td>ALL1</td>
<td>All 1 (11…1)</td>
</tr>
<tr>
<td>ALT</td>
<td>Repetition of “01” patterns (0101….)</td>
</tr>
<tr>
<td>PN9FIX</td>
<td>PN9 Fix</td>
</tr>
<tr>
<td>PN11FIX</td>
<td>PN11 Fix</td>
</tr>
<tr>
<td>PN15FIX</td>
<td>PN15 Fix</td>
</tr>
<tr>
<td>PN20FIX</td>
<td>PN20 Fix</td>
</tr>
<tr>
<td>PN23FIX</td>
<td>PN23 Fix</td>
</tr>
<tr>
<td>USER</td>
<td>User-defined pattern</td>
</tr>
</tbody>
</table>

Detail

Unusable unless the measurement screen is set for BER test.

This command is available when MS269xA-020/120 Vector Signal Generator, MS2830A-026/126 BER Measurement Function or MS2840A-026/126 BER Measurement Function is installed.

Example of Use

To set the data pattern type to PN9.

TYPE PN9
Chapter 6  Native Device Message Details

UNLOAD
Unload Application

Function
Exits an application.

Command
UNLOAD apl

Parameter
apl  Target application name
SIGANA  Signal Analyzer
SPECT  Spectrum Analyzer
PNOISE  Phase Noise
PMET  Power Meter
BER  BER Test

Details
This function exits an activated application and deletes it from the Application Switch menu.

In order to use the [SIGANA] argument with MS2830A, the analysis bandwidth option (MS2830A-006/106) is required.
In order to use the [SIGANA] argument with MS2840A, the analysis bandwidth option (MS2840A-006/106) is required.
In order to use the [PNOISE] argument with MS2830A, the phase noise measurement option (MS2830A-010/110) is required.
In order to use the [PNOISE] argument with MS2840A, the phase noise measurement option (MS2840A-010/110) is required.
In order to use the [PNOISE] argument with MS2850A, the phase noise measurement option (MS2850A-010/110) is required.

For parameters to specify an application other than the standard ones, refer to the operation manual (remote control) for each application.

Example of Use
To exit the Signal Analyzer application.
UNLOAD SIGANA
**USERPAT?**

User Pattern File Name Query

**Function**
Queries the user-defined pattern name for BER measurement.

**Query**
USERPAT?

**Response**
pattern, drive

**Parameter**

- **pattern**: Character string within 32 characters, obtained by removing the extension (bpn) from the loaded user-defined pattern file name.
- **drive**: The name of the drive from which the user-defined pattern file is loaded.

**Details**
Unusable unless the measurement screen is set for BER test. *** is returned if a user-defined pattern is not loaded.

This command is available when MS269xA-020/120 Vector Signal Generator, MS2830A-026/126 BER Measurement Function or MS2840A-026/126 BER Measurement Function is installed.

**Example of Use**
To query the user-defined pattern name.

```
USERPAT?
> ***
```
USERPATLENG?
User Pattern Length Query

Function
Queries the bit length of the user-defined pattern for BER measurement.

Query
USERPATLENG?

Response
<table>
<thead>
<tr>
<th>bit</th>
<th>Bit length of user-defined pattern</th>
</tr>
</thead>
<tbody>
<tr>
<td>Range</td>
<td>8 to 1024 bits (for MS269xA)</td>
</tr>
<tr>
<td></td>
<td>8 to 4096 bits (for MS2830A, MS2840A)</td>
</tr>
</tbody>
</table>

Detail
Unusable unless the measurement screen is set for BER test. This command is available when MS269xA-020/120 Vector Signal Generator, MS2830A-026/126 BER Measurement Function or MS2840A-026/126 BER Measurement Function is installed.

Note:
The BER measurement is also available when the signal generator application is active.

Example of Use
To query the bit length of the user-defined pattern.

USERPATLENG?
> 1024
USERPATLST?
Display BER User Pattern File List Query

Function
This command returns the list of user-defined pattern files for BER measurement.

Query
USERPATLST?

Response
s1,s2,s3,....,s99,s100

Parameter
s1,........,s100 User-defined pattern file name (within 32 characters)
Range up to 100 files

Details
Unusable unless the measurement screen is set for BER test.
“***” is returned if there is no user-defined pattern.
The user-defined pattern files returned in a response message are listed in alphabetical order.
This command is available when MS269xA-020/120 Vector Signal Generator, MS2830A-026/126 BER Measurement Function or MS2840A-026/126 BER Measurement Function is installed.

Example of Use
To query the list of user-defined pattern files for BER measurement.
USERPATLST?
> TEST1,TEST2,TEST3
**ZAJ**

**Zero Set**

**Function**

Executes the zeroing of the power sensor. This command is the same as ZEROSET command.

**Command**

ZAJ

**Details**

This function cannot be executed, when the display is other than the Power Meter.

Do not execute calibration during the zeroing. Failure to do so will not guarantee the response to the following query command:

`STATus:OPERation:CONDition?`

**Example of Use**

To execute the zero adjustment for the power sensor.

ZAJ

---

**ZEROSET**

**Zero Set**

**Function**

Executes the zeroing of the power sensor. This command is the same as ZAJ command.

**Command**

ZEROSET

**Details**

This function cannot be executed, when the display is other than the Power Meter.

Do not execute calibration during the zeroing. Failure to do so will not guarantee the response to the following query command:

`STATus:OPERation:CONDition?`

**Example of Use**

To execute the zero adjustment for the power sensor.

ZEROSET
### Table 5.4-1  BER measurement setting messages (Cont’d)

<table>
<thead>
<tr>
<th>Function</th>
<th>Command</th>
<th>Query</th>
<th>Response</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Result and Status Query</td>
<td>---</td>
<td>RESULT? EP</td>
<td>per,countbit,errorbit,status,error</td>
<td>per : Error rate (%)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>RESULT? ER</td>
<td>exp,countbit,errorbit,status,error</td>
<td>exp : Error rate (exponent)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>RESULT? EP_WSYNCLOSS</td>
<td>per,countbit,errorbit,syncloss,status,error</td>
<td>countbit : Number of count bits</td>
</tr>
<tr>
<td></td>
<td></td>
<td>RESULT? ER_WSYNCLOSS</td>
<td>exp,countbit,errorbit,syncloss,status,error</td>
<td>errorbit : Number of error bits</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>syncloss : Number of generated Sync Loss</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>status : Measurement status</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>error : Error status</td>
</tr>
<tr>
<td>Error Rate Query</td>
<td>---</td>
<td>BER? EP</td>
<td>per</td>
<td>per : Error rate (%)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>BER? ER</td>
<td>exp</td>
<td>exp : Error rate (exponent)</td>
</tr>
<tr>
<td>Count Bit Query</td>
<td>---</td>
<td>RCVBIT?</td>
<td>bit</td>
<td>bit : Number of count bits</td>
</tr>
<tr>
<td>Error Bit Query</td>
<td>---</td>
<td>BITERR?</td>
<td>bit</td>
<td>bit : Number of error bits</td>
</tr>
<tr>
<td>Sync Loss Count Query</td>
<td>---</td>
<td>SYNCLOSS?</td>
<td>count</td>
<td>Count : Number of generated Sync Loss</td>
</tr>
<tr>
<td>Status Query</td>
<td>---</td>
<td>STATUS?</td>
<td>status</td>
<td>status : Measurement status</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>= EXEC</td>
</tr>
<tr>
<td>Stop Status Query</td>
<td>---</td>
<td>STOPSTATUS?</td>
<td>status</td>
<td>status : Measurement stop status</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>= EXEC</td>
</tr>
<tr>
<td>Error Query</td>
<td>---</td>
<td>MEASERROR?</td>
<td>status</td>
<td>status : Error information</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>= NONE</td>
</tr>
</tbody>
</table>