MS2690A/MS2691A/MS2692A and MS2830A/MS2840A/MS2850A Signal Analyzer Operation Manual Mainframe Remote Control

42nd Edition

- **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

Document No.: M-W2851AE-42.0

Safety Symbols

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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.

MS2690A/MS2691A/MS2692A and MS2830A/MS2840A/MS2850A
Signal Analyzer
Operation Manual Mainframe Remote Control

1 March 2007 (First Edition)
12 May 2023 (42nd Edition)

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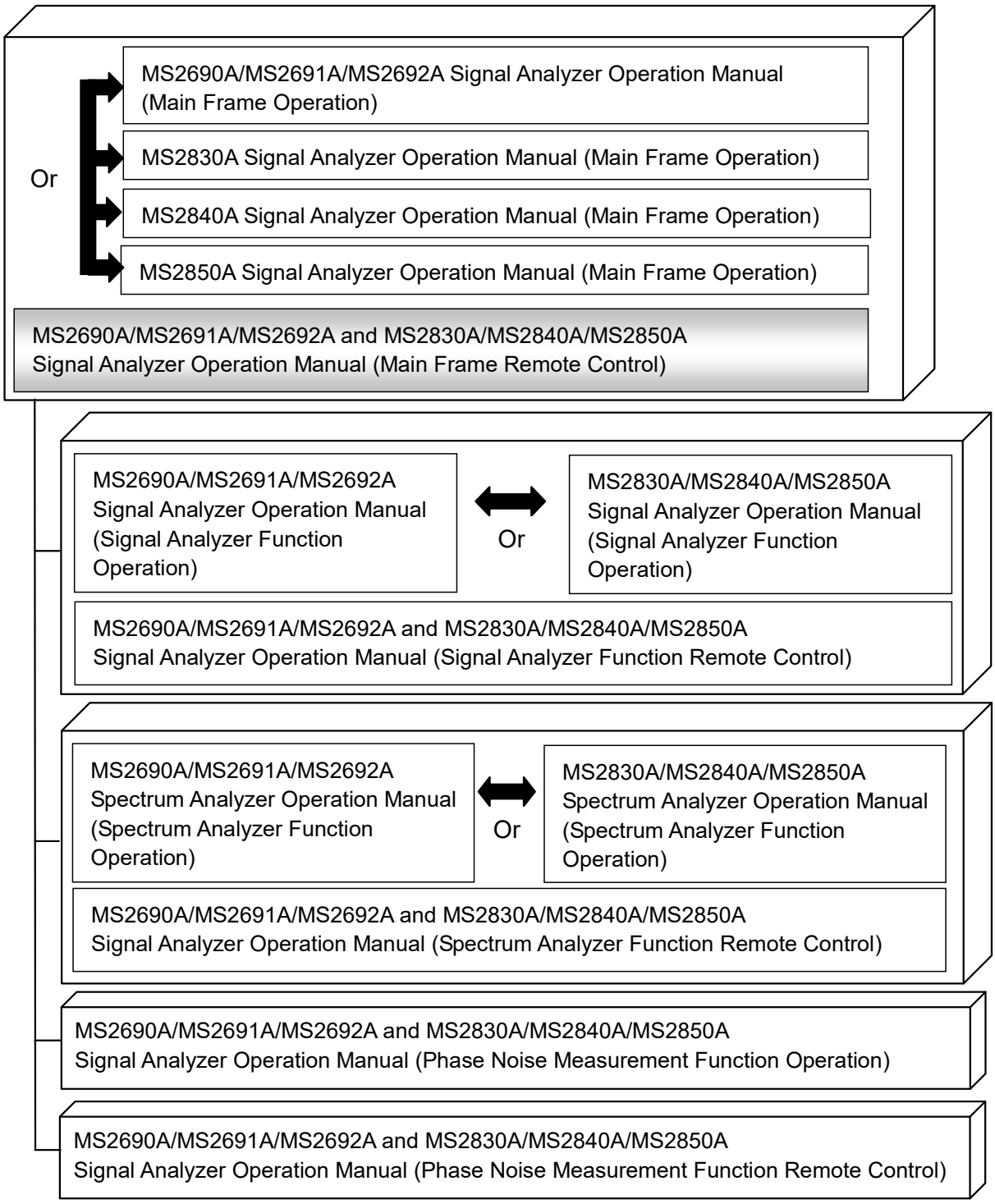
About This Manual

■ 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

- Signal Analyzer Operation Manual (Phase Noise Measurement Function Operation)
- Signal Analyzer Operation Manual (Phase Noise Measurement Function Remote Control)
  Description of basic operations, common functions and common remote functions of the Phase Noise Measurement function

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.

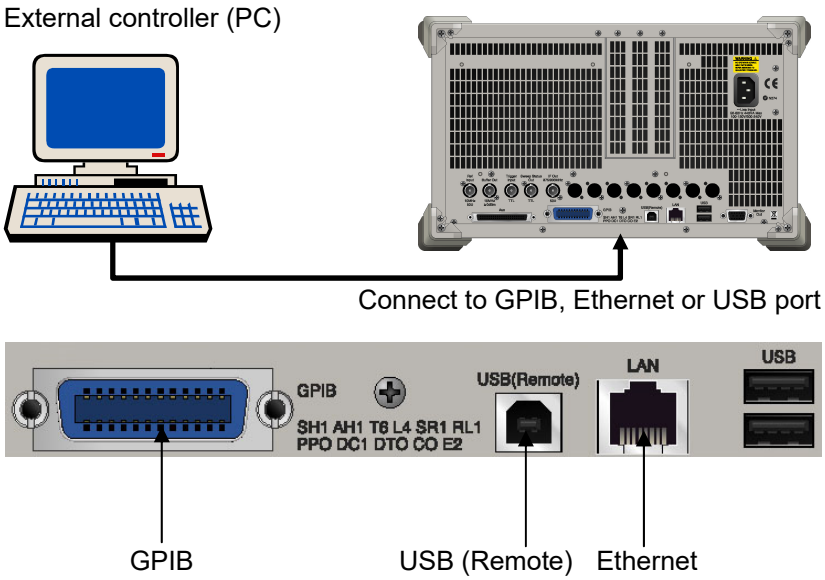


Figure 1.2-1 Connection port connecting to external controller (PC)

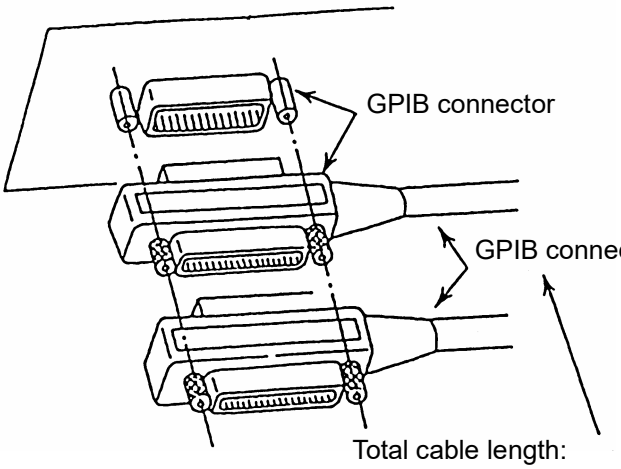
1.2.1 GPIB connection

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.



Total cable length:	Up to 20 m
Cable length between devices:	Up to 4 m
Number of devices that can be connected:	Up to 15

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.

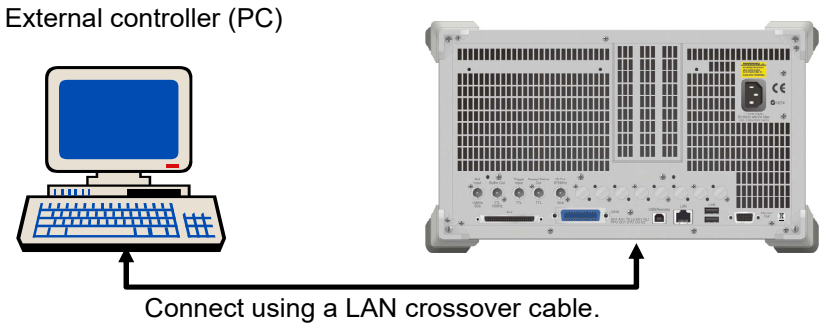


Figure 1.2.2-1 Sample connection with one external device

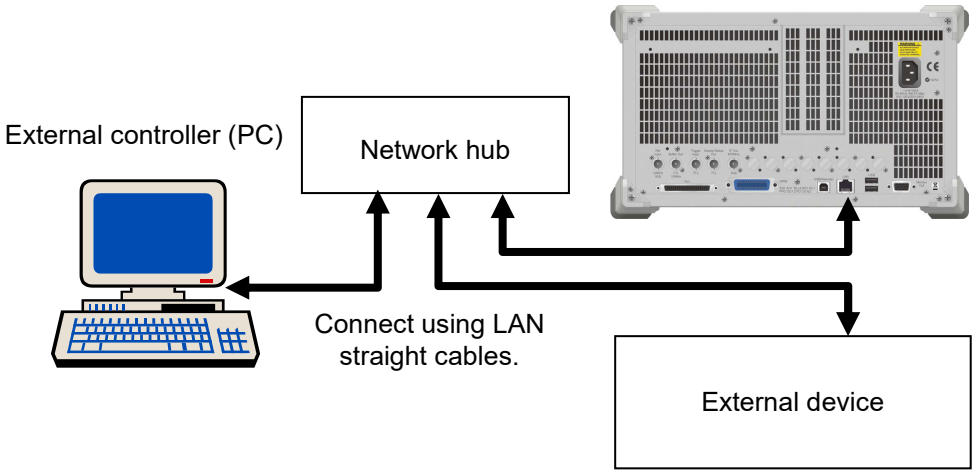


Figure 1.2.2-2 Sample connection with multiple external devices

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.

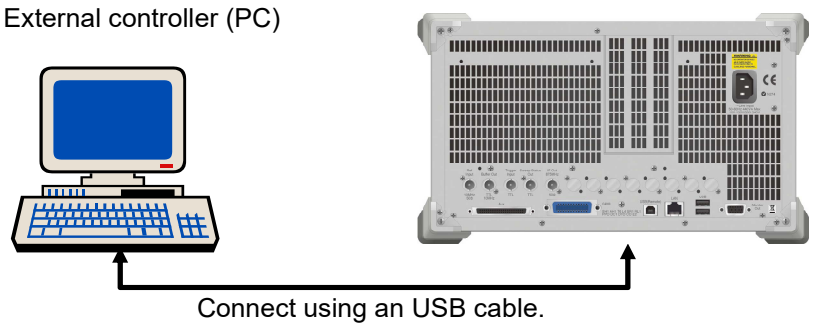


Figure 1.2.3-1 Sample connection with one external device

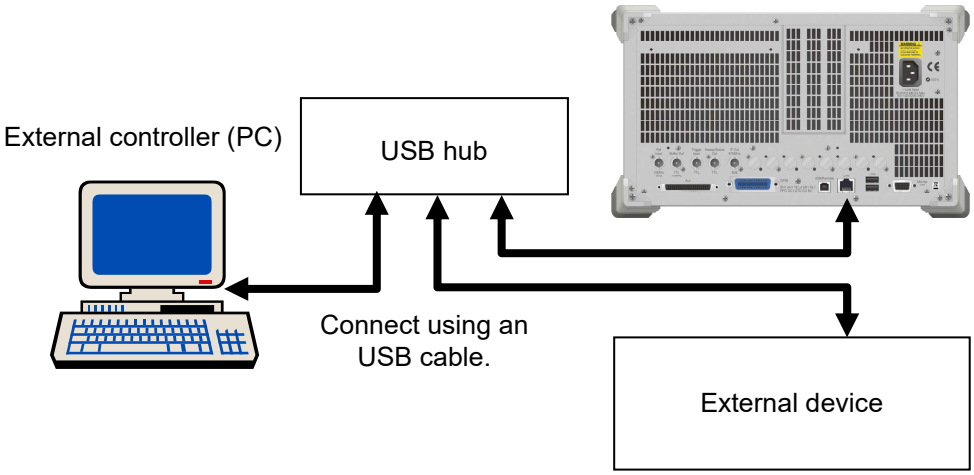


Figure 1.2.3-2 Sample connection with multiple external devices

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 System Config to display the Configuration screen. Then press F1 (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.

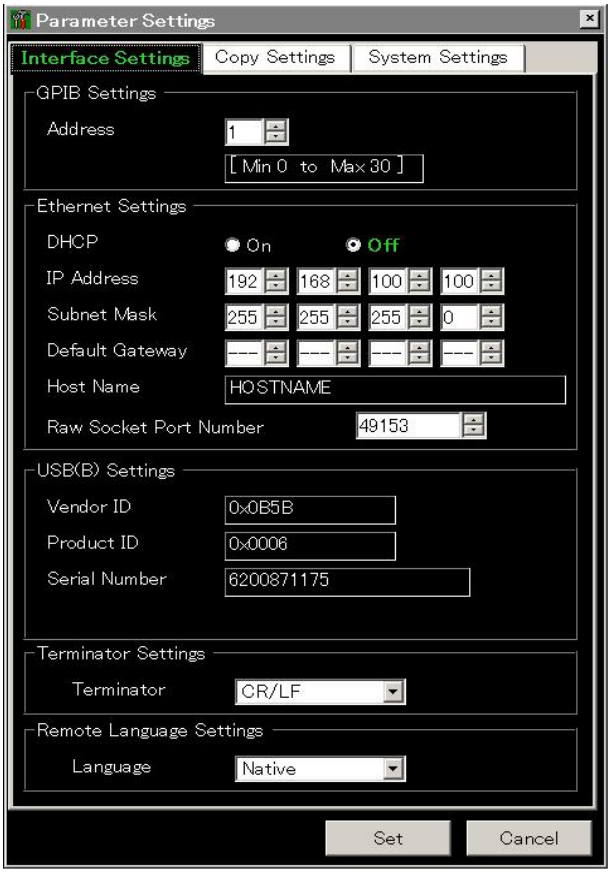


Figure 1.3.1-1 Interface Settings tab window

1.3.2 Ethernet interface settings

<Procedure>

1. Press System Config to display the Configuration screen. Then press 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

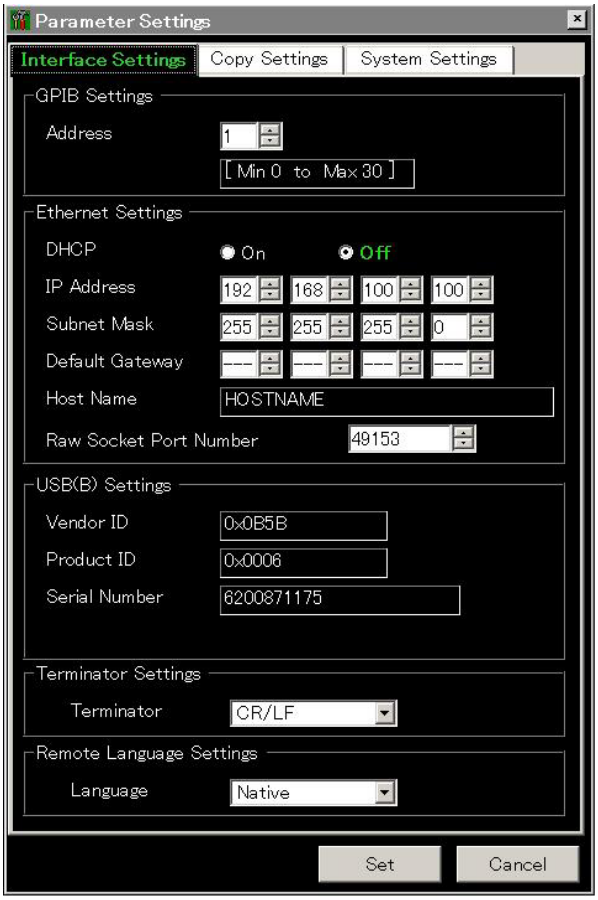
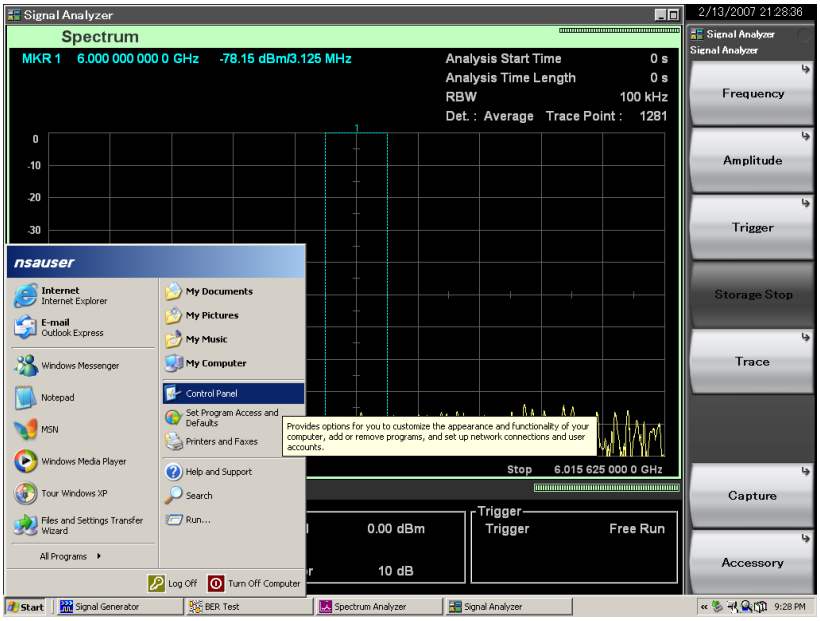


Figure 1.3.2-1 Interface Settings tab window

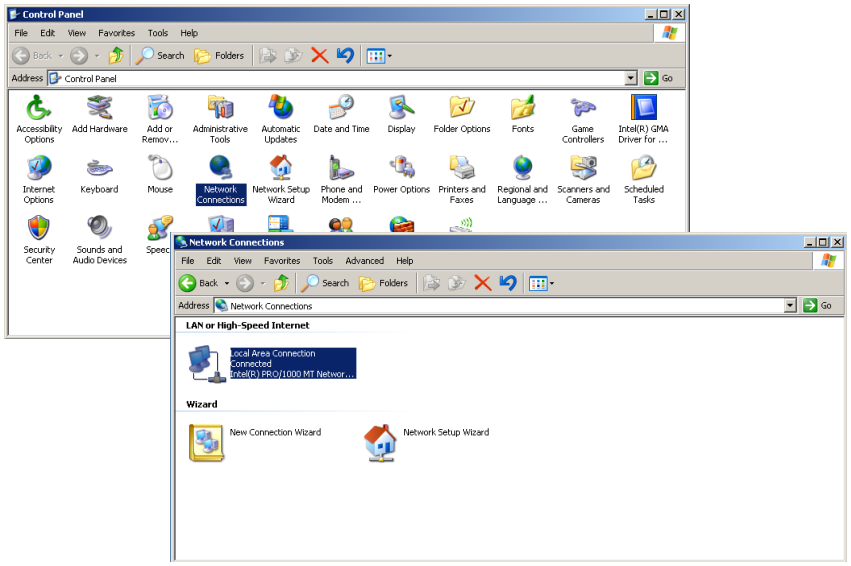
<How to change IP Address and Subnet Mask on Windows>

When the OS is Windows XP

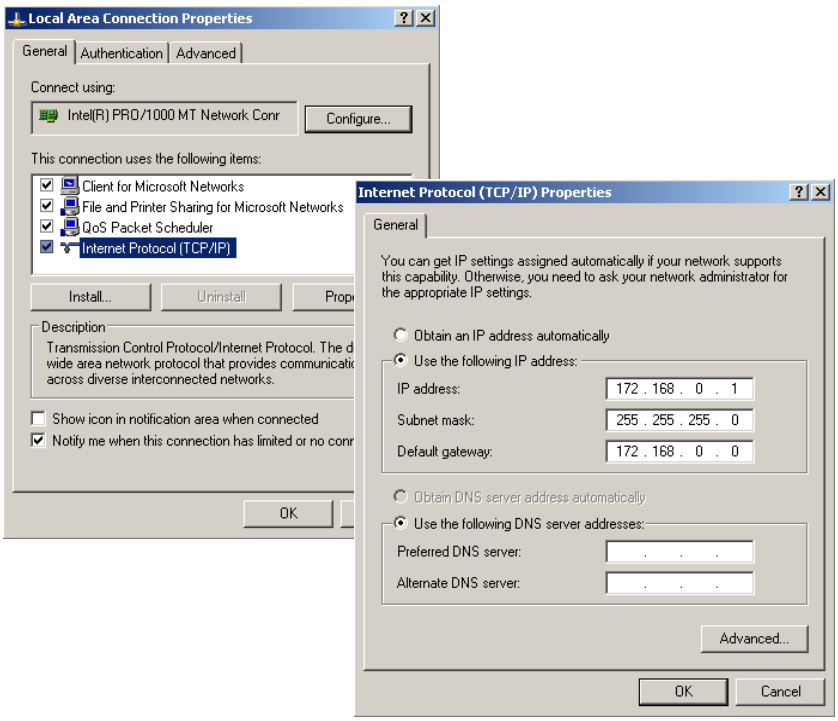
1. Connect a keyboard, press the **Windows logo key** to open the Start menu and then click Control Panel. (Or connect a mouse and move the pointer to the bottom of the screen to display the task bar, and click **Start** to display the Start menu.) The Control Panel window is displayed.



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.



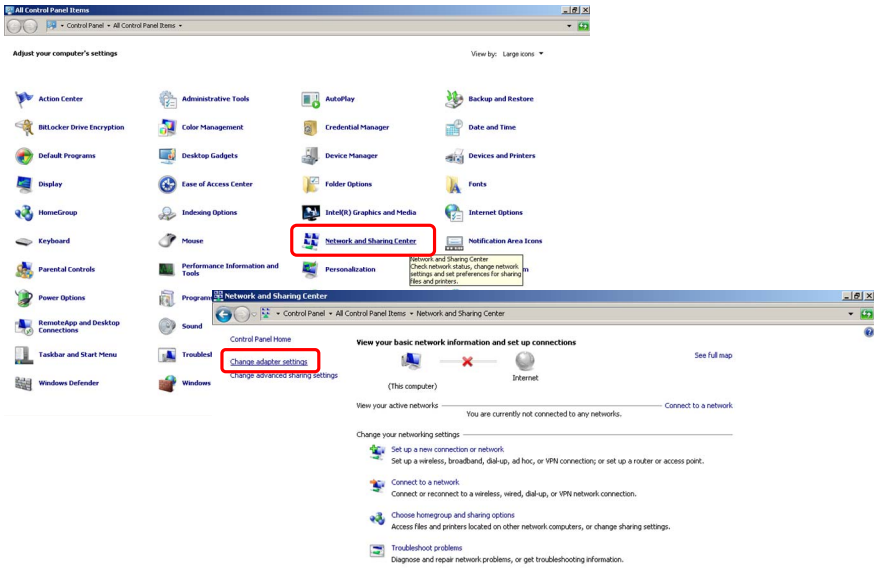
3. On the Local Area Connection Properties window, click Internet Protocol (TCP/IP) to display the Internet Protocol (TCP/IP) Properties window.
   Change the settings according to the connection conditions.



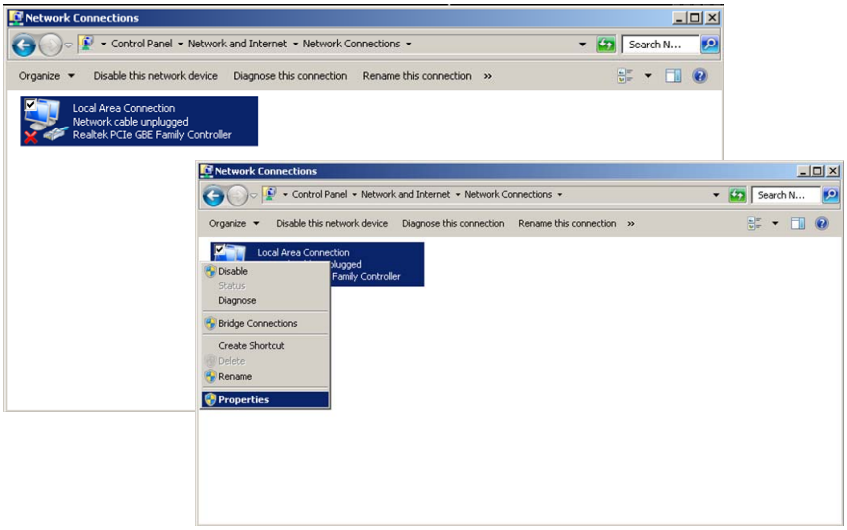
4. In the Configuration screen, check that the settings have changed.

When the OS is Windows Embedded Standard 7

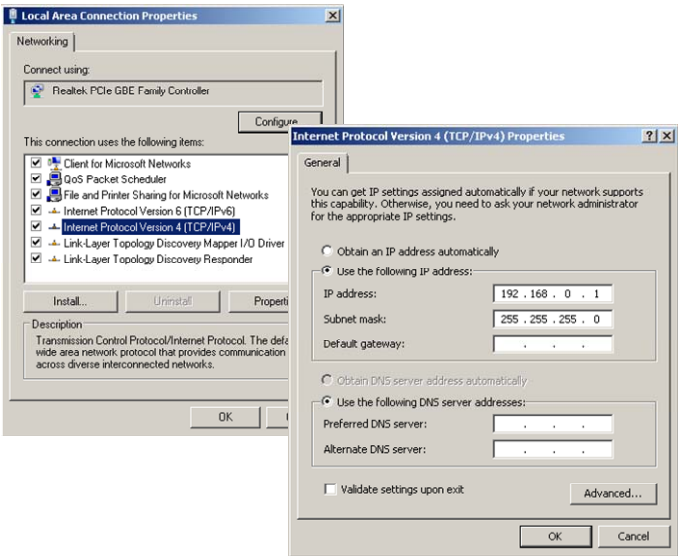
1. On the keyboard, press the **Windows logo key** to open the Start menu and then click **Control Panel**. The Control Panel window is displayed.
2. In Control Panel, click **Network and Sharing Center**, and then click **Change adapter settings**.



3. Right-click **Local Area Connection**, and then click **Properties**.



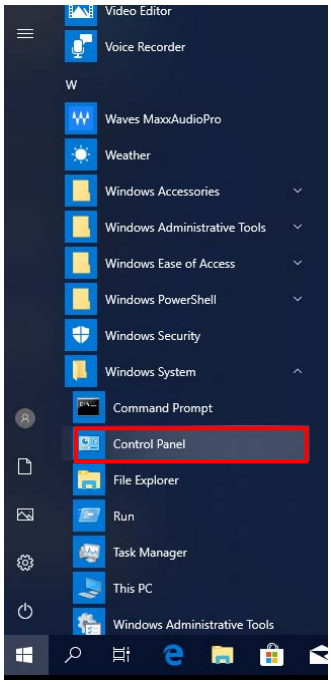
4. In the **Local Area Connection Properties** dialog box, click **Internet Protocol Version 4 (TCP/IP)**, and then click **Properties**. In the **Internet Protocol Version 4 (TCP/IP) Properties** dialog box, change the settings according to the connection conditions.



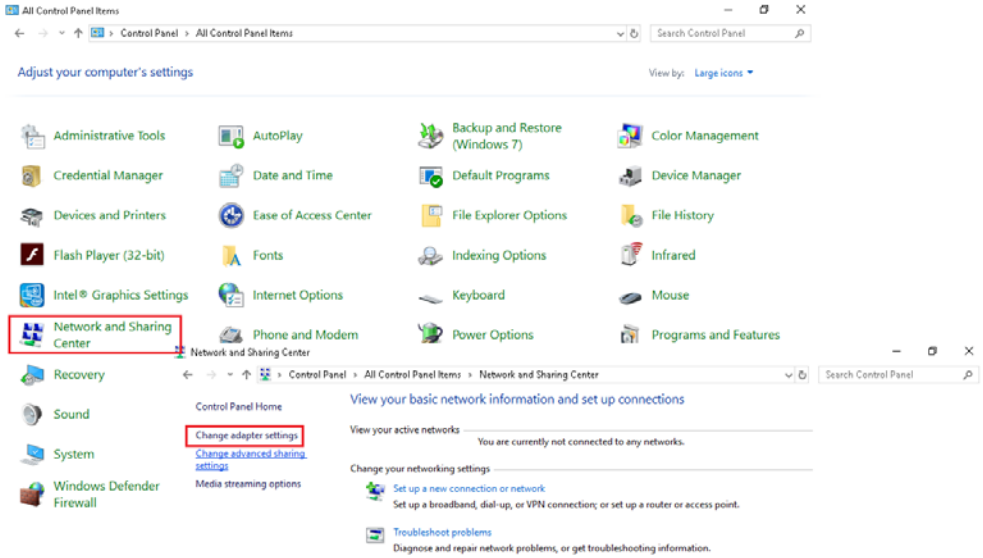
5. In the Configuration screen, check that the settings have changed.

When the OS is Windows 10

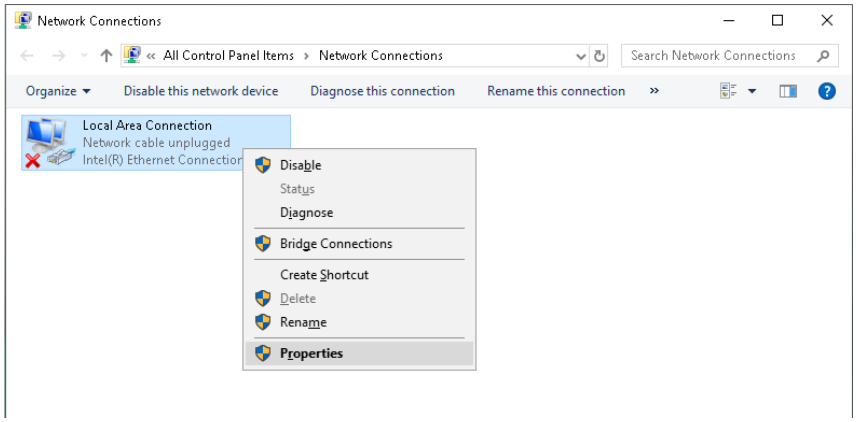
1. On the keyboard, press the **Windows logo key** to open the Start menu, and then click **Windows System > Control Panel** in the **W** column of the app list displayed. The Control Panel window is displayed.



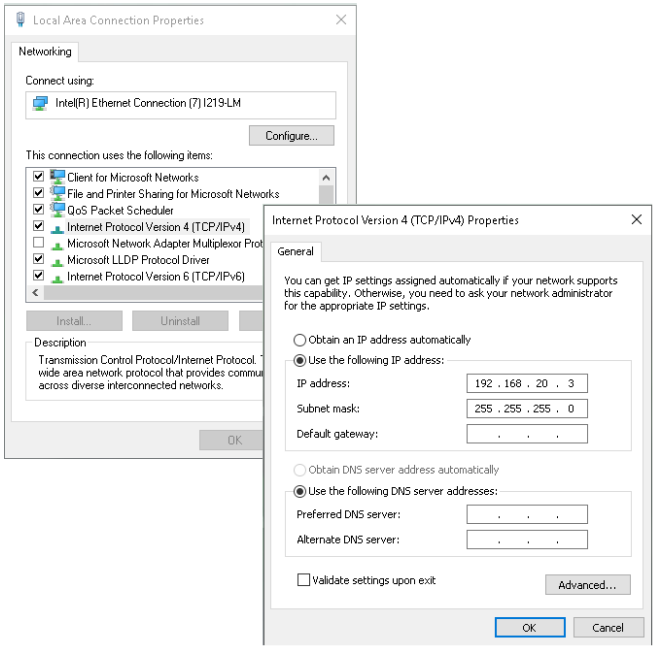
2. In Control Panel, click **Network and Sharing Center**, and then click **Change adapter settings**.



3. Right-click **Local Area Connection**, and then click **Properties**



4. 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.



5. In the Configuration screen, check that the settings have changed.

1.3.3 USB interface settings

<Procedure>

1. Press System Config to display the Configuration screen. Then press F1 (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`
3. Change the delimiter setting.
   Select "CR/LF," "LF," or "None (EOI only)" for Terminator in the Terminator Settings field.

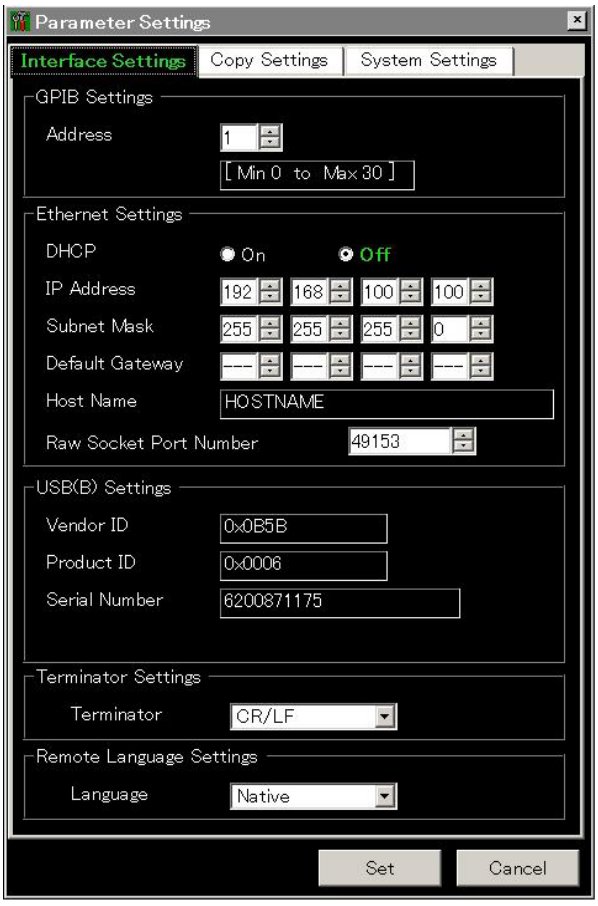


Figure 1.3.3-1 Interface Settings tab window

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 1.5-1 Initialization level

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

*: 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 System Config to display the Configuration display. Next, press F1 (Interface Settings) to display the Interface Settings screen.
2. Select Language of Remote Language Settings from either SCPI or Native.

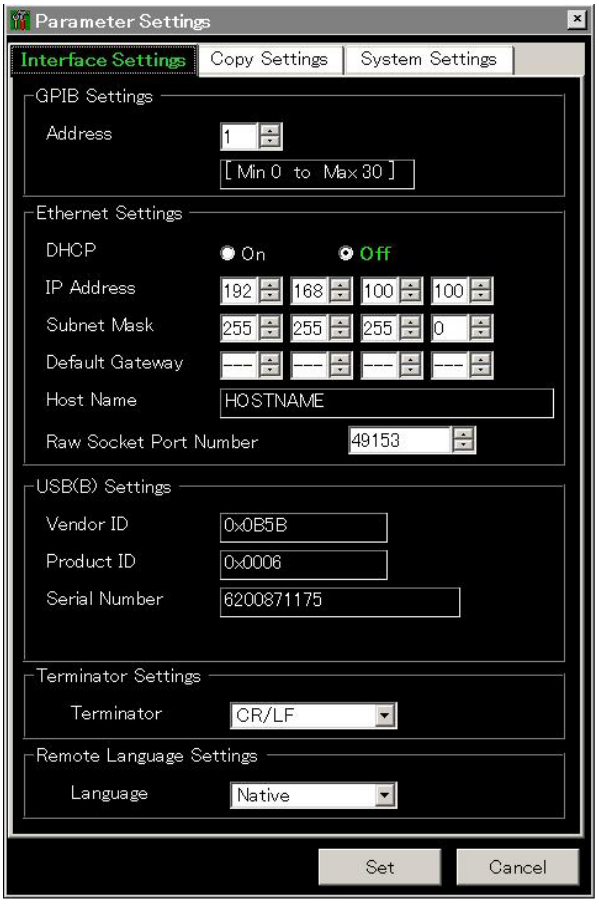


Figure 1.6.1-1 Interface Settings tab window

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>
↓
```

```
CALC:MARK:CENT <integer>,<freq>
```

Example 2

Convert :DISPlay:WINDow[1]:TRACe]Y[: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]:TRACe:Y[:SCALe]:PDIVision <percent>
↓
:DISPlay:WINDow:TRACe:Y[:SCALe]:PDIVision <percent>
```

(2) Delete the layers that can be deleted

```
:DISPlay:WINDow:TRACe:Y[:SCALe]:PDIVision <percent>
↓
:DISPlay:WINDow:TRACe:Y:PDIVision <percent>
```

(3) Alter all long forms into short forms.

```
:DISPlay:WINDow:TRACe:Y: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?

↓

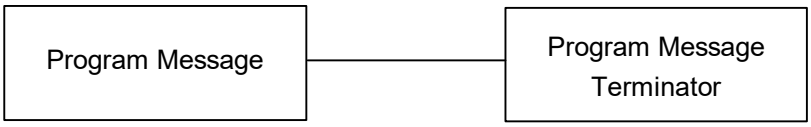
BPOW?

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.

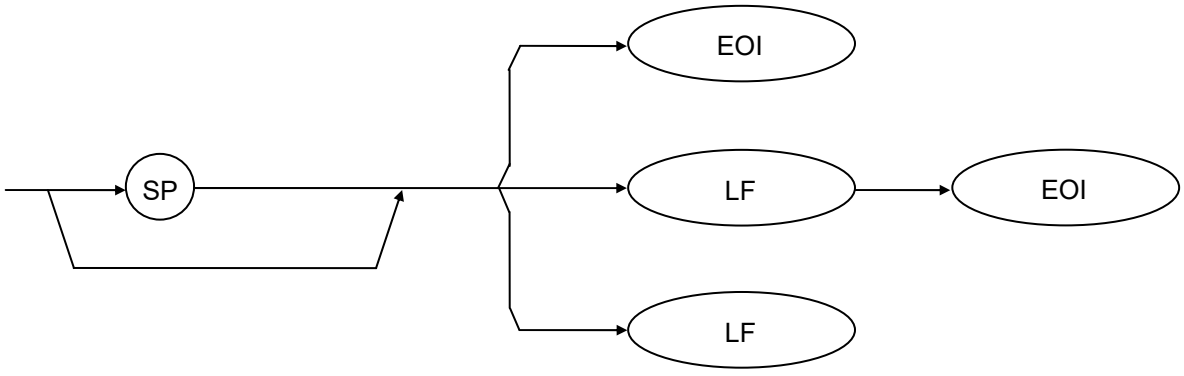
An example of transmitting a program message from the external controller (PC) program to the MS2690A/MS2691A/MS2692A, MS2830A, MS2840A, or MS2850A with a PRINT or any other statement is shown below.



PRINT @1;“MEAS:ACP?”
Program message

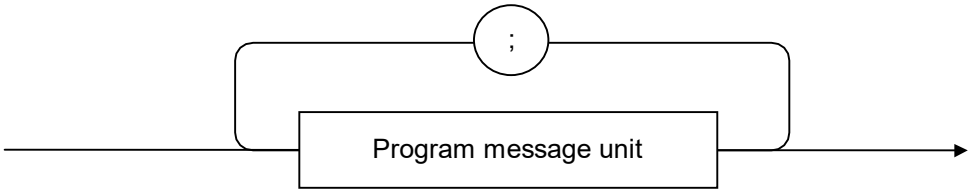
A program message, when transmitted from the external controller (PC) to this unit, is terminated by a specified terminator.

Program Message Terminator



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

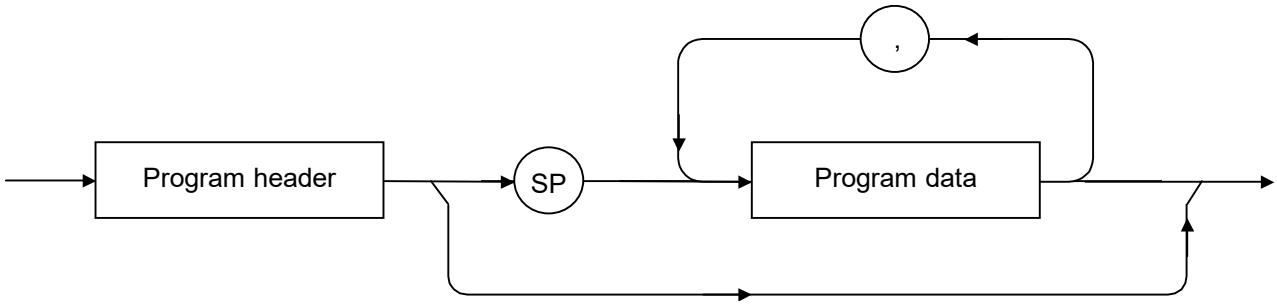
Program message



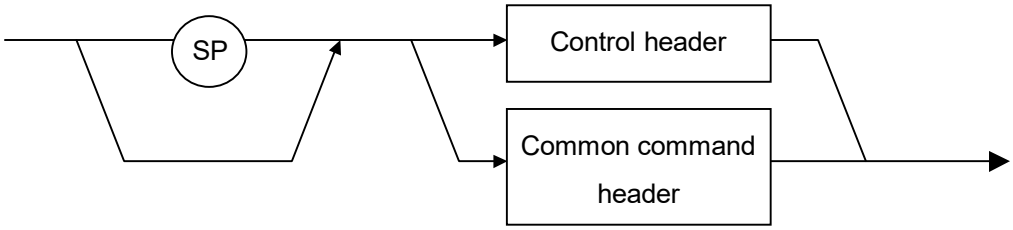
<Example>
PRINT @1; “CONF:ACP;READ:ACP?”

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

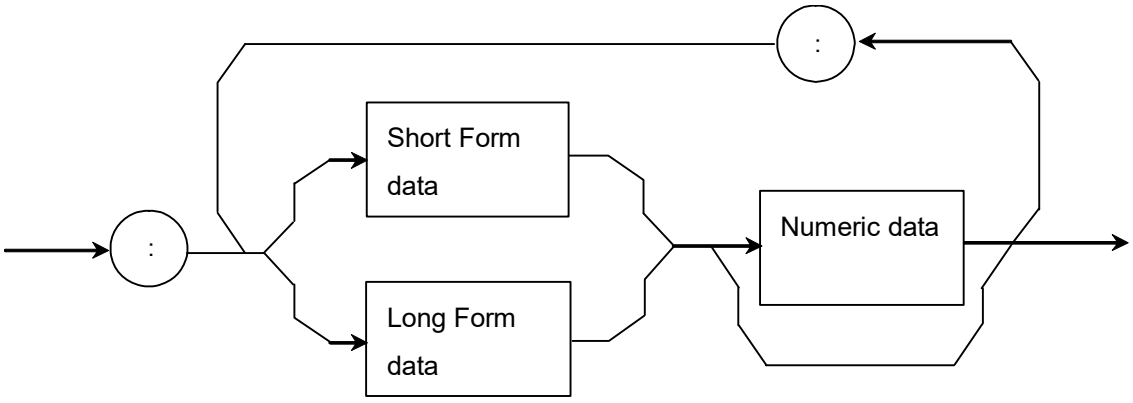
Program message unit



Program header

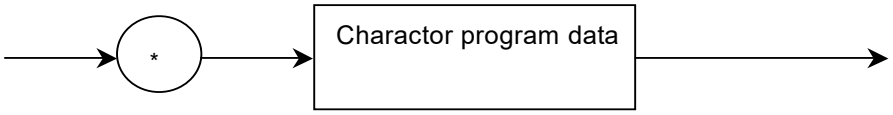


Control header



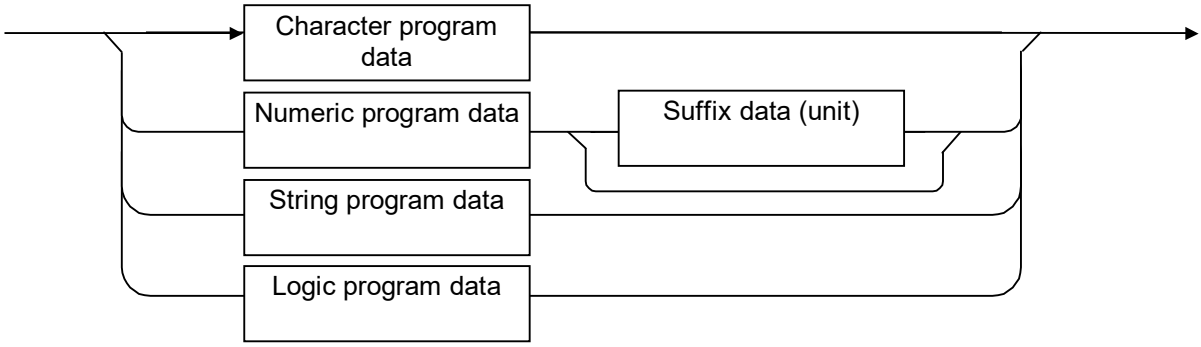
Short Form data corresponds to the short form of SCPI. Long Form data corresponds to the long form of SCPI. Refer to the character program data for each specification. The numeric data is specified as a single ASCII code byte indicating any value within the range of numeric data, from 0 to 9.0.

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>

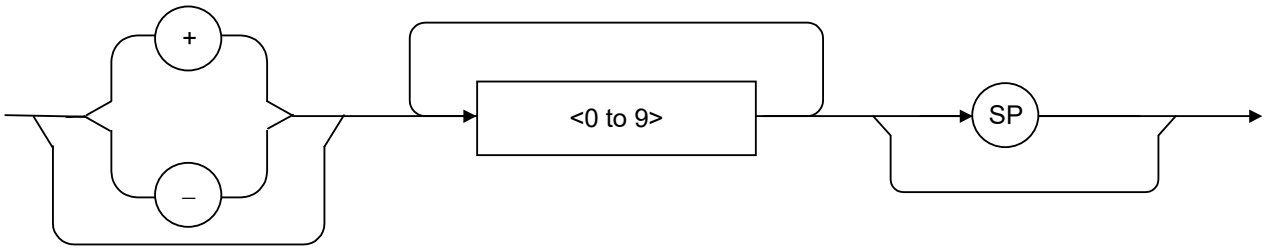
`:SYSTem:APPLication:LOAD SIGANA` ... Loads the Signal Analyzer.

`:SYSTem:BEEPer 0` ..... Sets sound to off.

Numeric program data

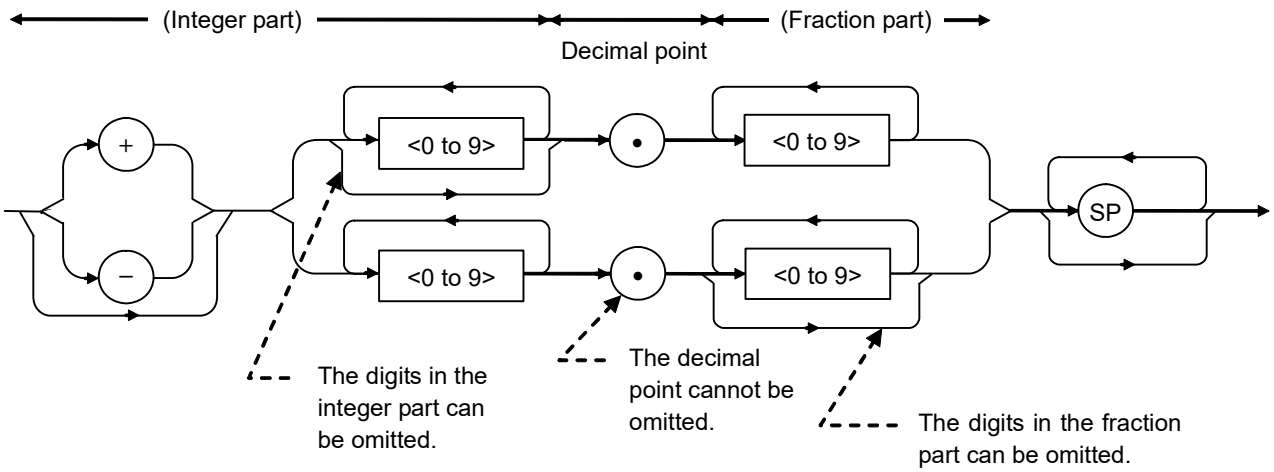
Numeric program data is grouped into four types: integral (NR1), fixed-point decimal (NR2), floating-point decimal (NR3), and hexadecimal formats.

Integral (NR1)



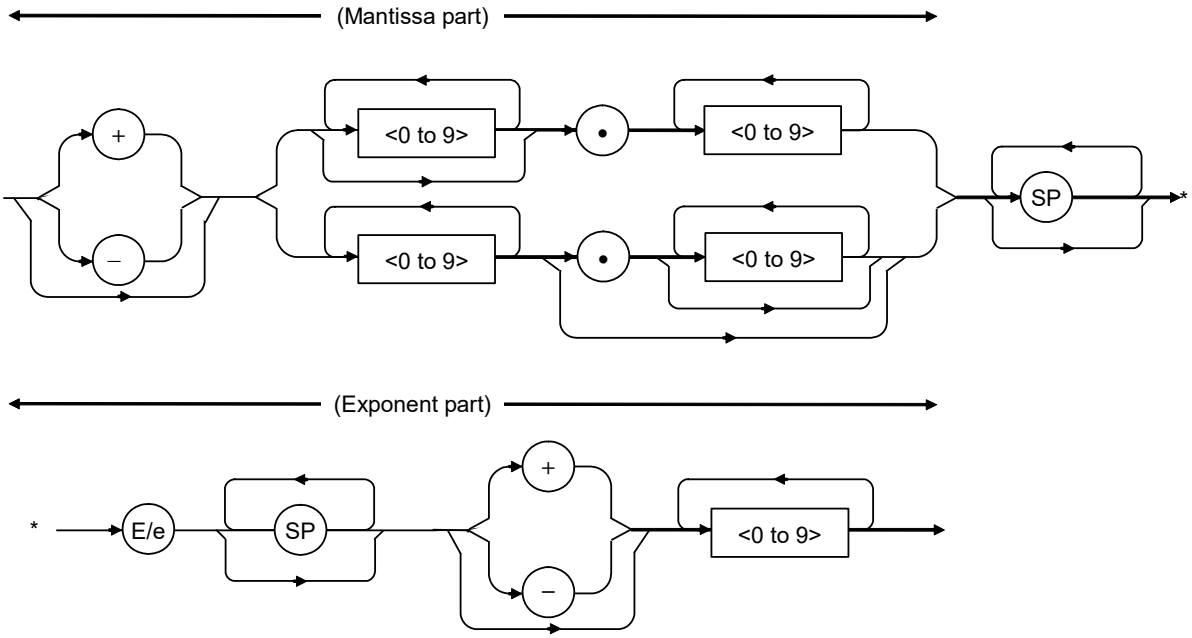
- Integral data can have leading zeroes (e.g., 005, +005, –20).
- No space is allowed between a sign (+ or –) and the numeric value that follows it.
- The plus ("+") sign can be omitted (e.g., 005, +005, –20).

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)



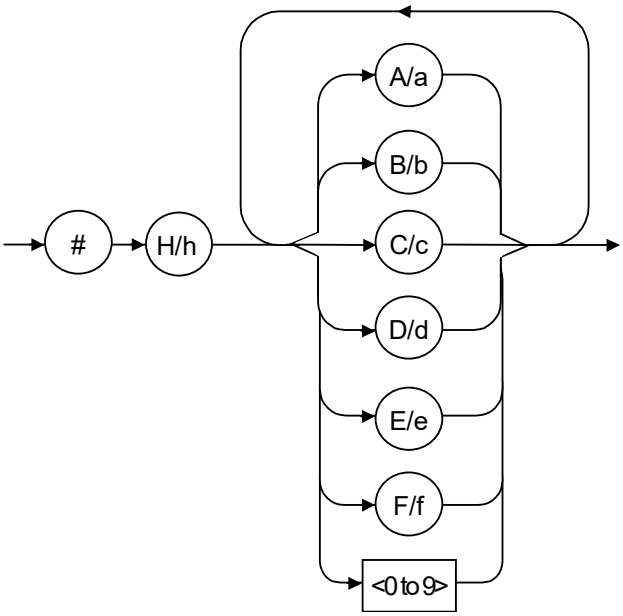
- E denotes the power of 10, or the exponent.
- Spaces are allowed both before and after, only before or only after E/e.
- A numeric value is required in the mantissa.
- Alternatively selectable numeric values (ex. 1|2) and character strings are unavailable.
- The plus ("+") sign can be omitted (from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

  <Examples>

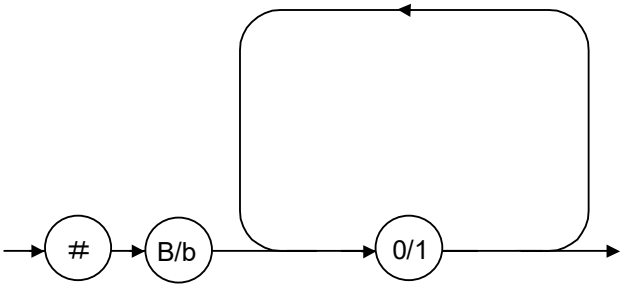
  $-22.34E+6 \rightarrow -22.34 \times 10^{6}$ (= –22,340,000)

  $5.3e-4 \rightarrow 5.3 \times 10^{-4}$ (= 0.00053)

Hexadecimal data



Binary data



Suffix data

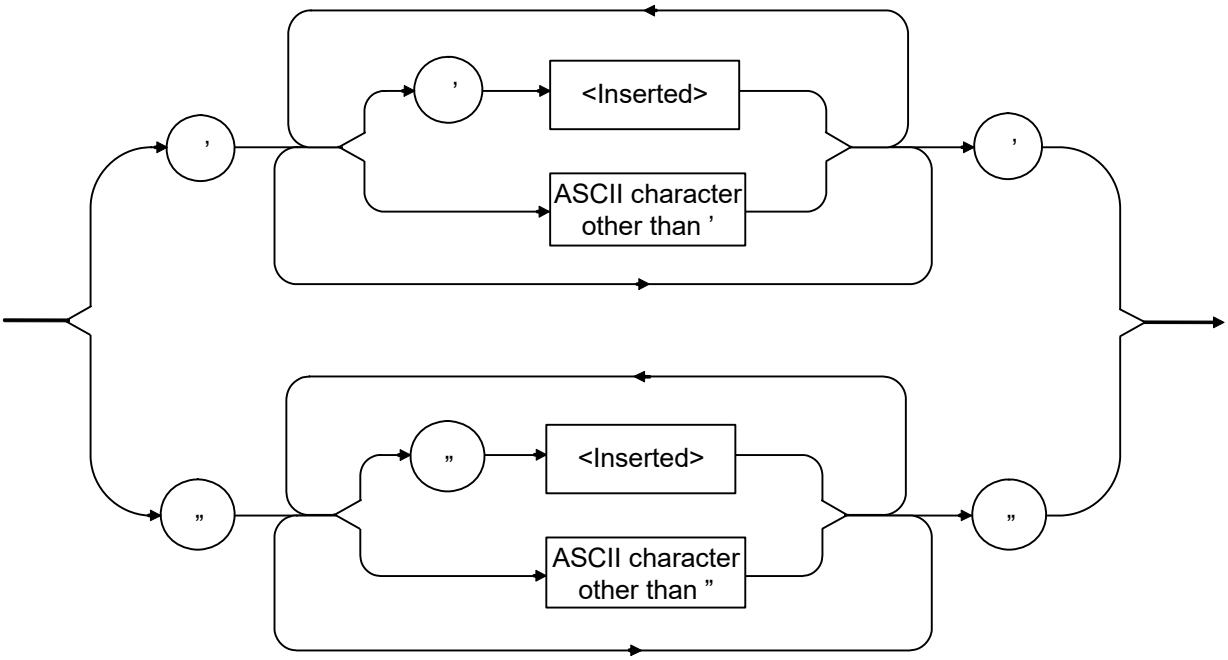
The table below lists the suffix data that is used in the MS2690A/MS2691A/MS2692A, MS2830A, MS2840A, or MS2850A. The suffix codes available vary depending on the function.

Table 1.7.1-1 Suffix codes

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

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.

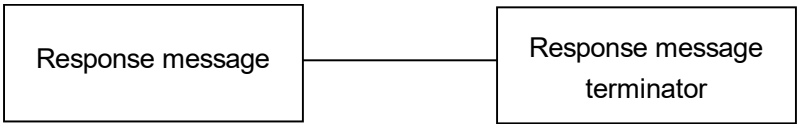


Logic program data

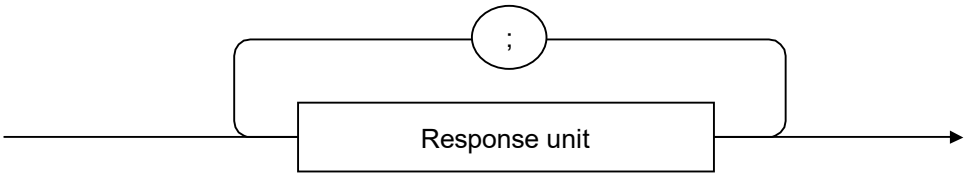
Logical program data indicates a logical value by the program data specified in SCPI. On/off of character program data and 1/0 of numeric program data are defined as values corresponding to true/false.

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.

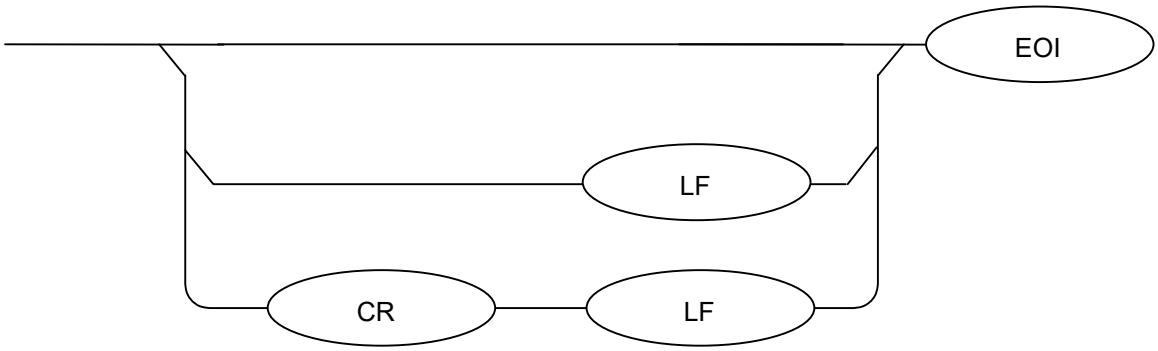


Response message



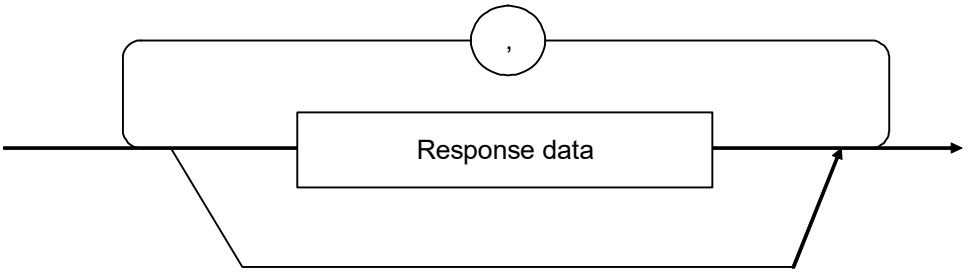
A response message is composed of one or more response message units to one or more program queries issued with one PRINT statement.

Response Message Terminator



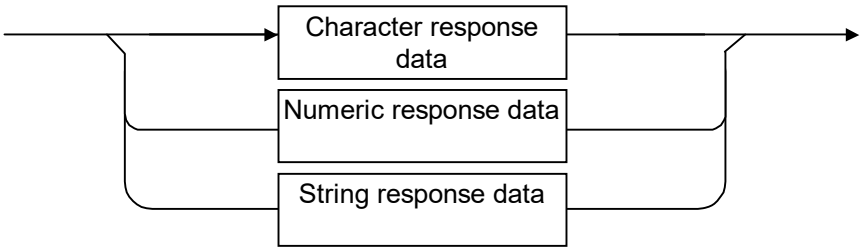
Use a
':SYSTem:COMMunicate:GPIB[1][:SELF]:DELimiter'
command to specify the terminator format.

Response Unit



Response unit has no header and only returns the data of the measurement data.

Response data

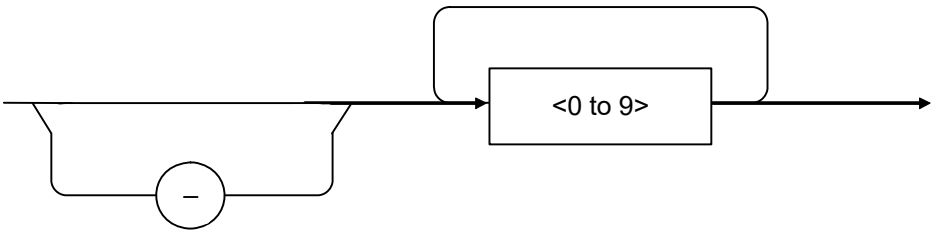


Character response data

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 ("_").

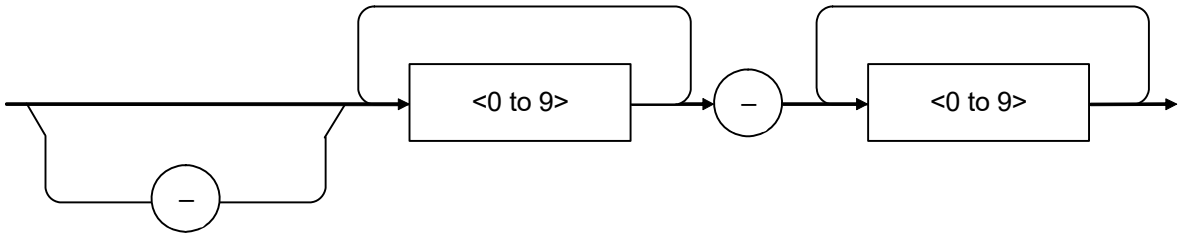
Numeric response data

Integer (NR1)



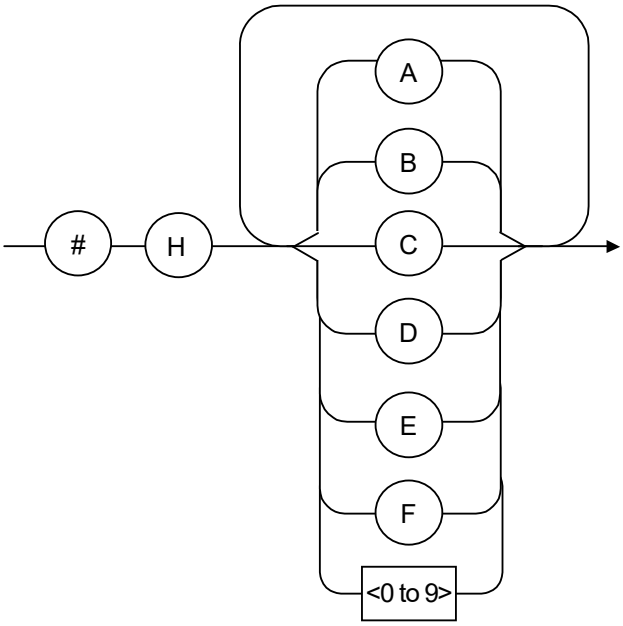
- The leading digit must be non-zero.
  <Examples>
  123, –1234

Fixed-point decimal (NR2)

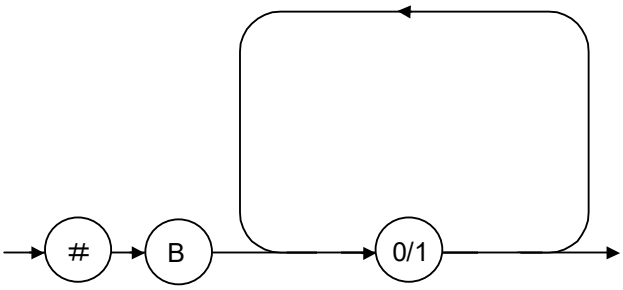


- The leading digit must be non-zero.
- A fixed-point decimal number having a value of 0 in its decimal place is output as an integer.
  <Examples>
  12.34, –12.345

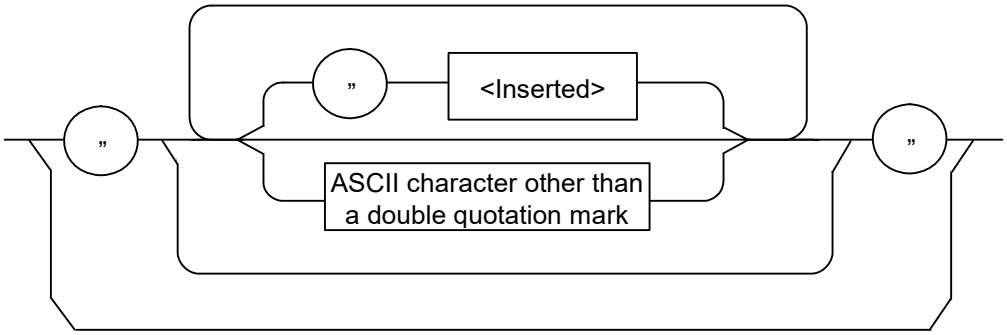
Hexadecimal data



Binary data

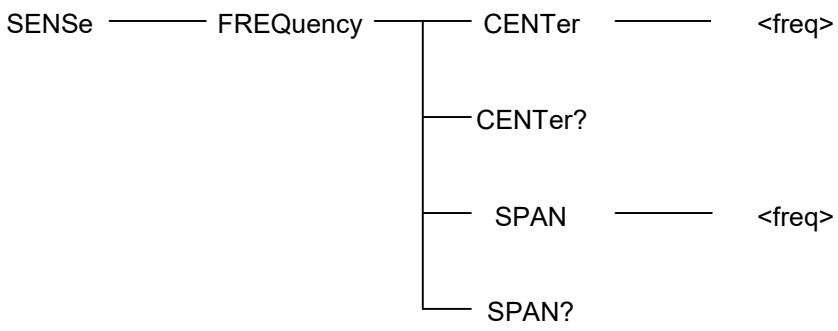


String response data



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

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.

1.7.4 Command definition method

:SENSe:FREQuency:CENTer <freq>
:SENSe:FREQuency:CENTer?
:SENSe:FREQuency:SPAN <freq>
:SENSe:FREQuency:SPAN?

Example of SCPI command

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?

<Header Separator>
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 FREQuency, as in Example 2.

Example 1: `>:SENSe:FREQuency:CENTer 1000000`
`:SENSe:FREQuency:SPAN 500000`

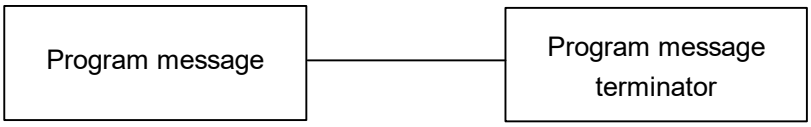
Example 2: `>:SENSe:FREQuency:CENTer 1000000;SPAN 500000`

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.

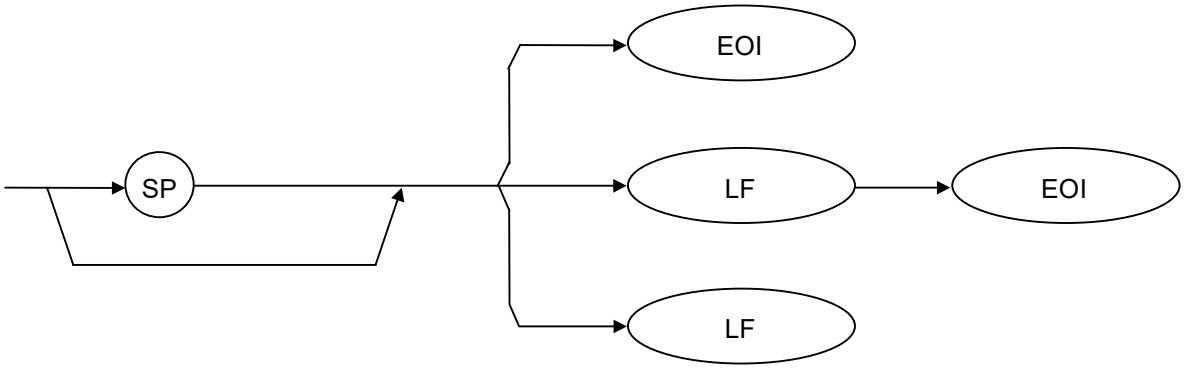
An example of transmitting a program message from the external controller (PC) program to the MS2690A/MS2691A/MS2692A, MS2830A, MS2840A, or MS2850A with a PRINT or any other statement is shown below.



PRINT @1;”CNF 1GHZ”
Program message

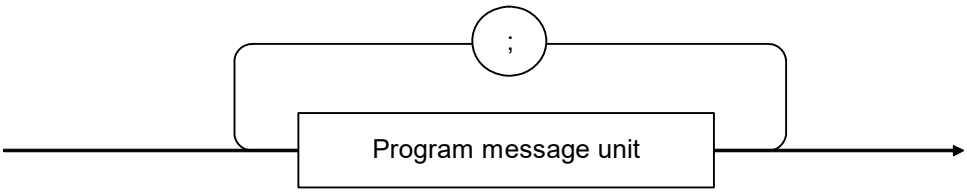
A program message, when transmitted from the external controller (PC) to this unit, is terminated by a specified terminator.

Program message terminator



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

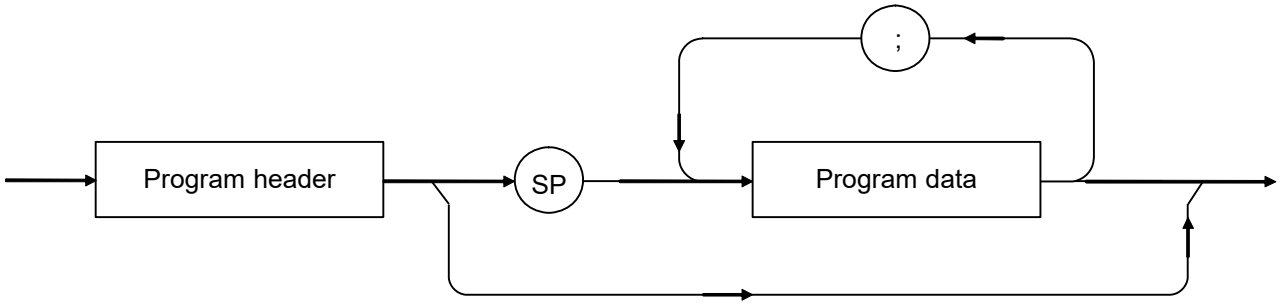
Program message



<Example>
PRINT @1;"CNF 1GHZ;RLV 0DBM"

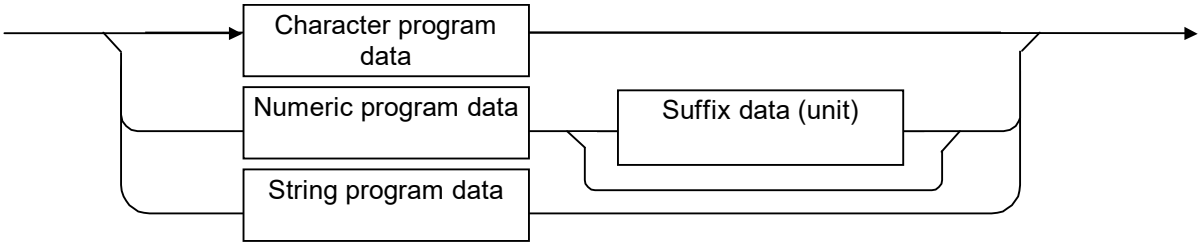
Multiple commands can be transmitted separately by separating them with semicolons (;).

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



Character 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 (_).

<Examples>

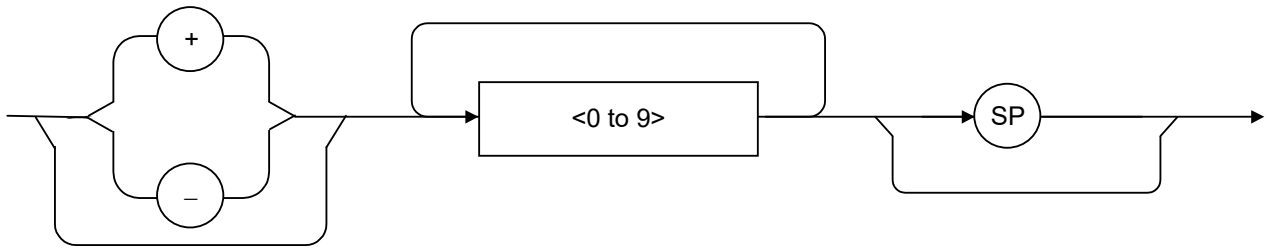
`LOAD SIGANA` ..... Loads the Signal Analyzer.

`SOUND 0` ..... Sets sound to Off.

Numeric program data

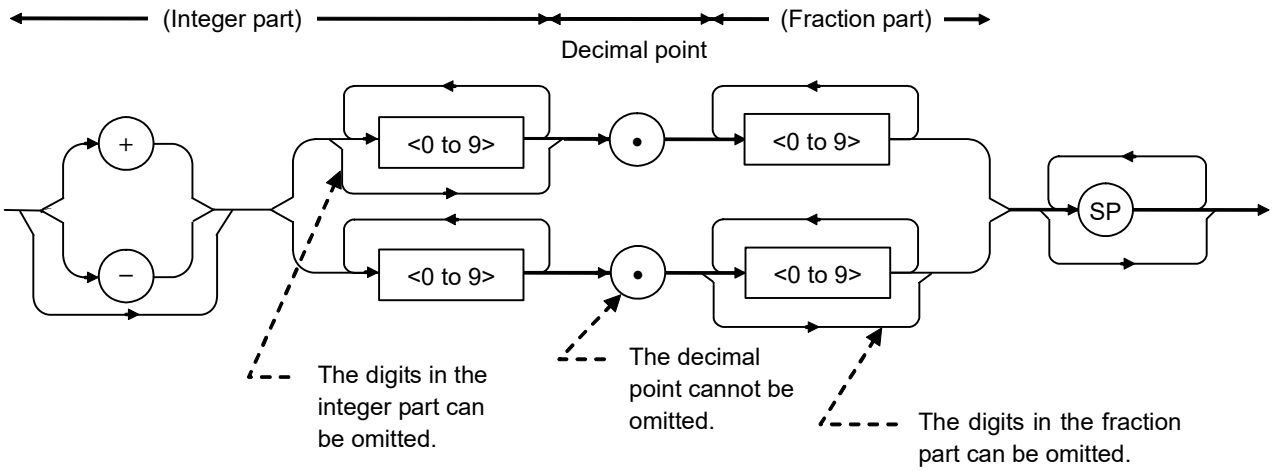
Numeric program data is grouped into four types: integral (NR1), fixed-point decimal (NR2), floating-point decimal (NR3), and hexadecimal.

Integral (NR1)



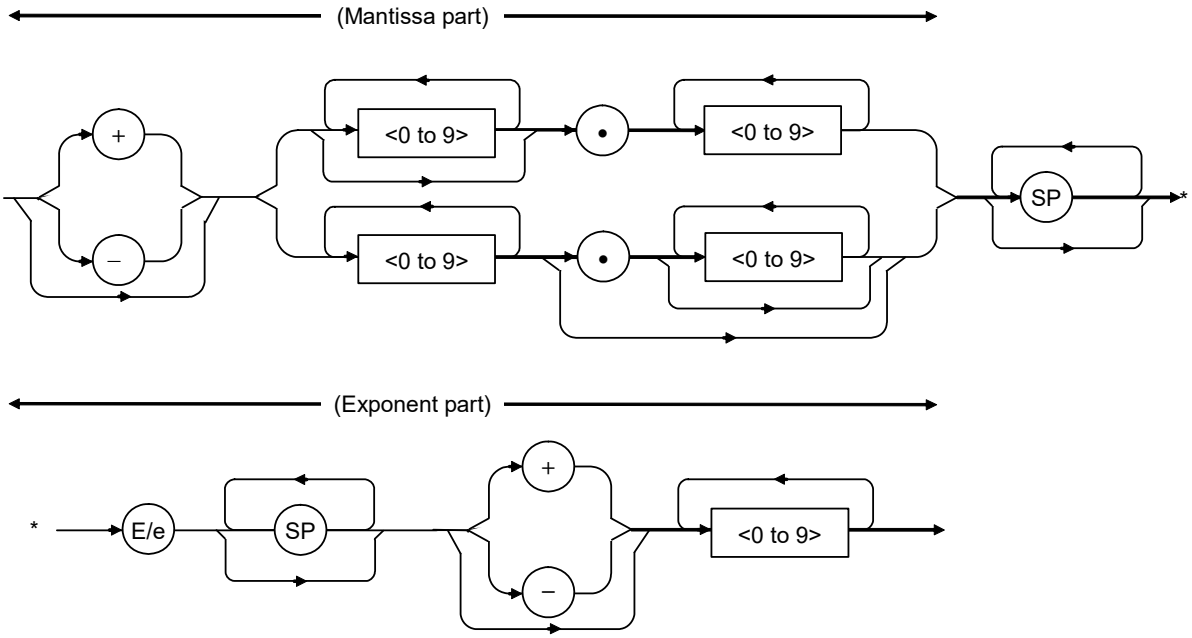
- Integral data can have leading zeroes (e.g., 005, +005).
- No space is allowed between a sign (+ or –) and the numeric value that follows it.
- The "+" sign can be omitted (e.g., 005, +005 , –20).

Fixed-point decimal (NR2)



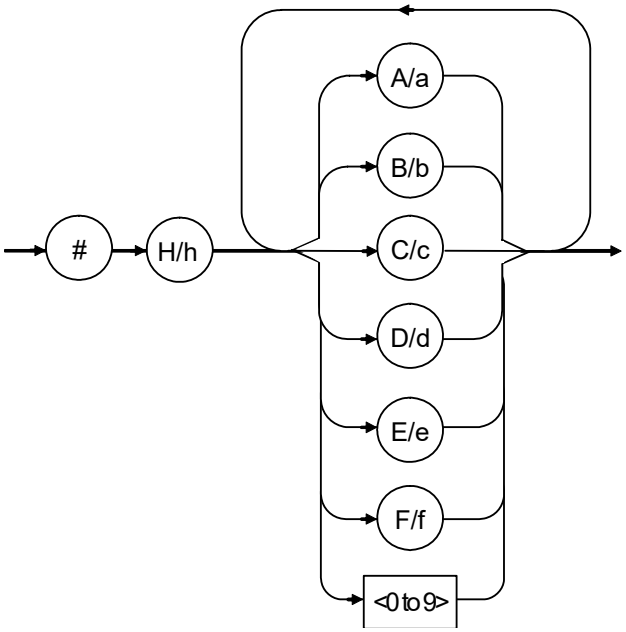
- An integer is represented in the integral part.
- No space is allowed between a digit and the decimal point that follows it.
- The "+" sign can be omitted.
- The digit 0 in the integral part may be omitted.
- Any number of zeroes may precede the numeric value in the integral part (e.g., –0.5, +00204,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

Floating-point decimal (NR3)

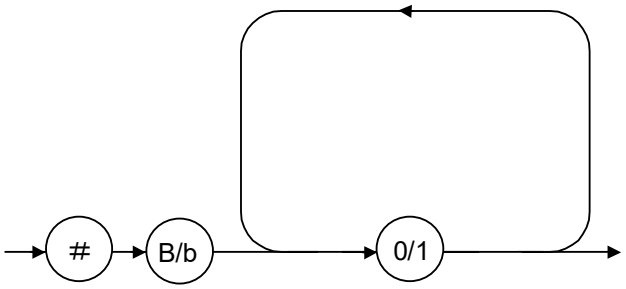


- E denotes the power of 10, or the exponent.
- Spaces are allowed both before and after, only before or only after E/e.
- A numeric value is required in the mantissa.
- Alternatively selectable numeric values (ex. 1|2) and character strings are unavailable.
- The "+" sign can be omitted (from both the mantissa and exponent).
  <Examples>
  –22.34E+6 → -22.34×10^{6} (= –22,340,000)
  5.3e–4 → 5.3×10^{-4} (= 0.00053)

Hexadecimal data



Binary data



Suffix data

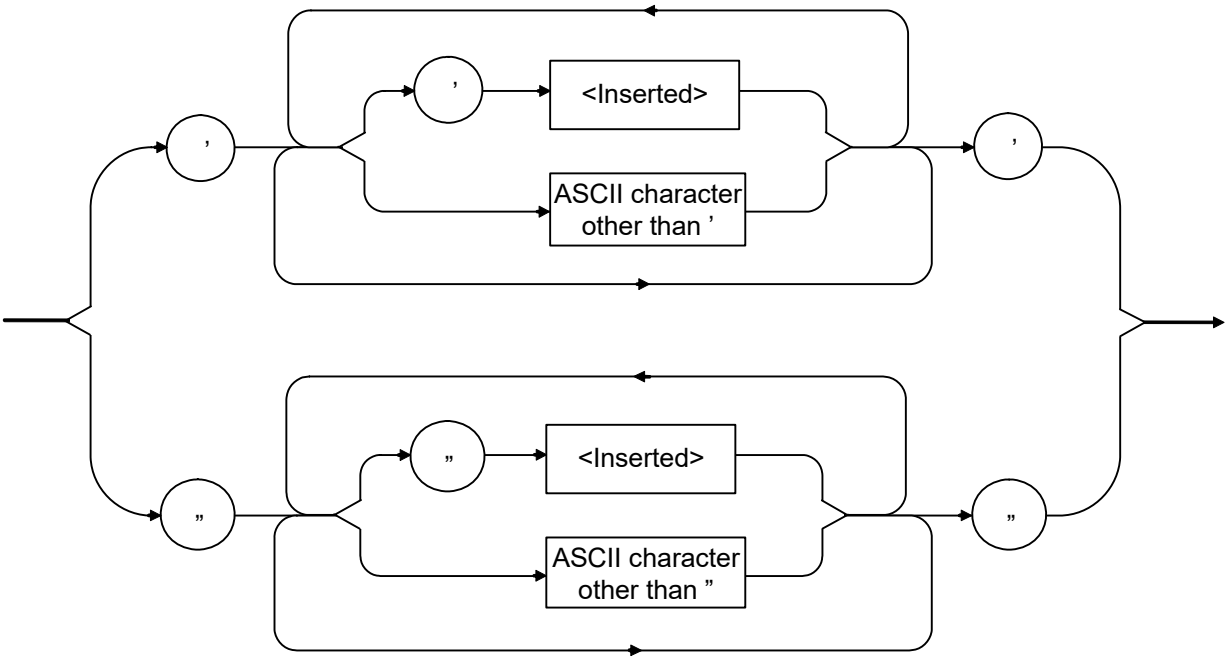
The table below lists the suffix data that is used.
The suffix codes available vary depending on the function.

Table 1.8.1-1 Suffix codes

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

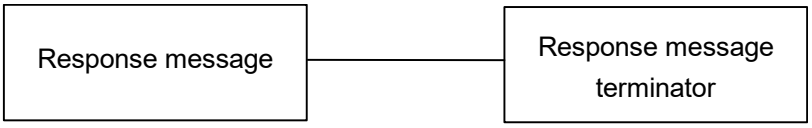
String program data

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.

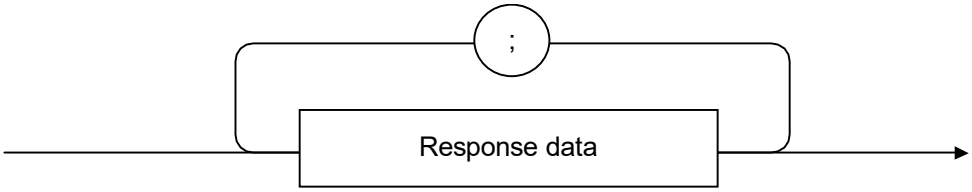


1.8.2 Native Response message formats

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.

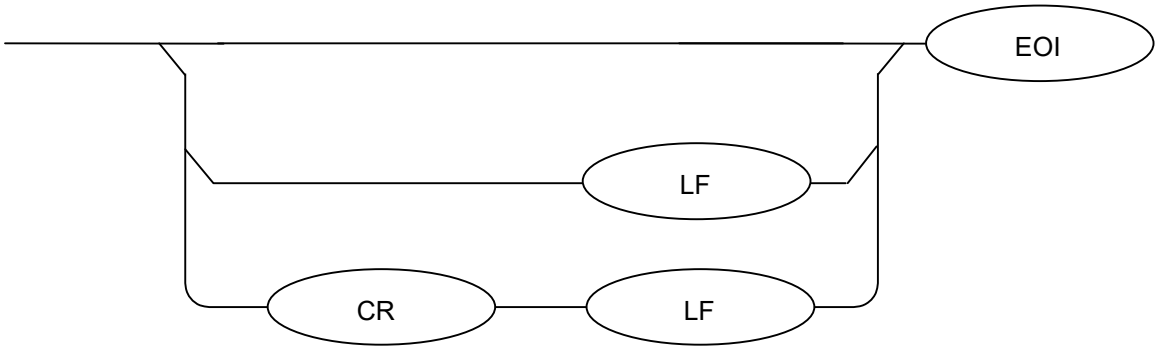


Response message



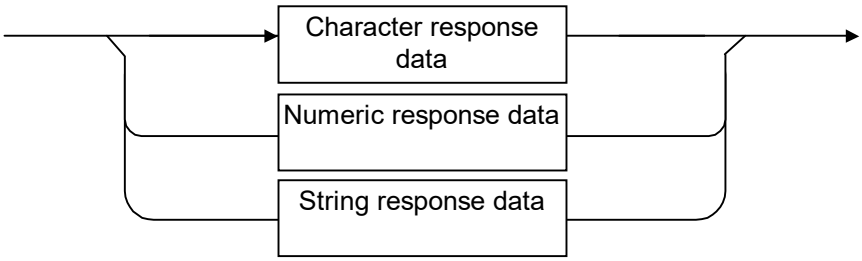
A response message is composed of one or more response message units to one or more program queries issued with one PRINT statement.

Response message terminator



Use a TRM command to specify the terminator format.

Response data

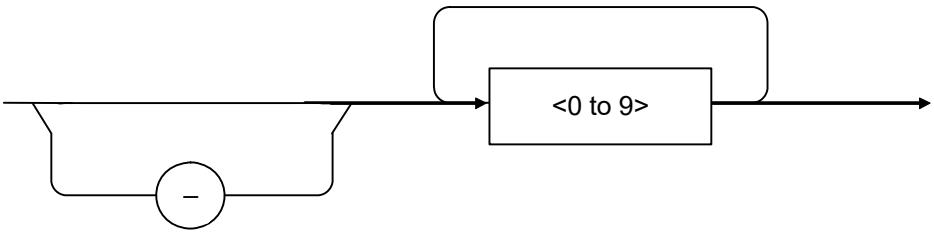


Character response data

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 (_).

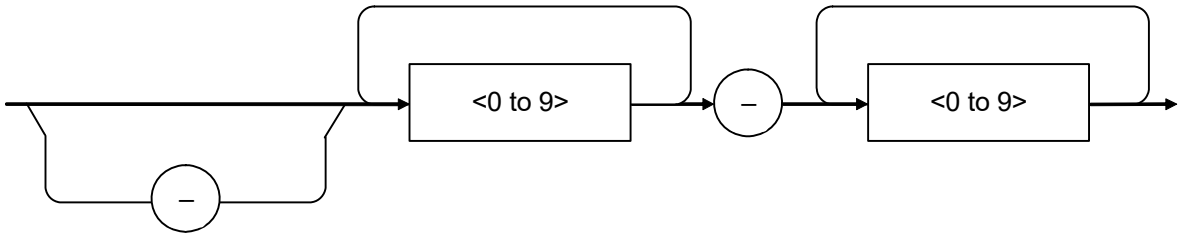
Numeric response data

Integer (NR1)



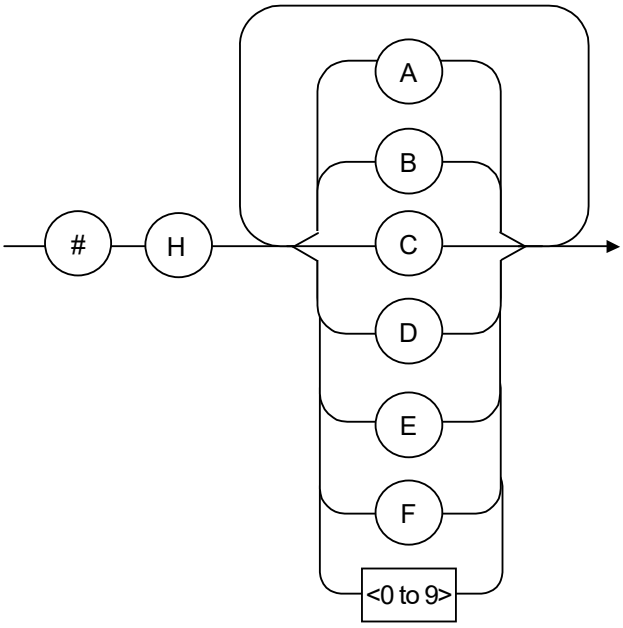
- The leading digit must be non-zero.
  <Examples>
  123, –1234

Fixed-point decimal (NR2)

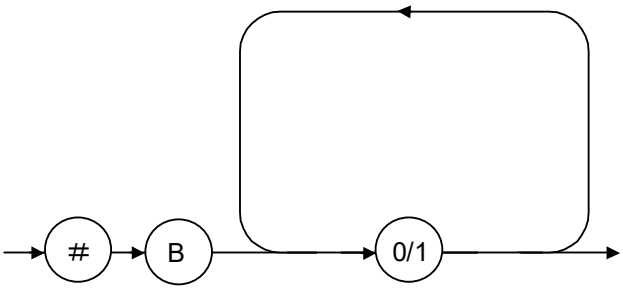


- The leading digit must be non-zero.
- A fixed-point decimal number having a value of 0 in its decimal place is output as an integer.
  <Examples>
  12.34, –12.345

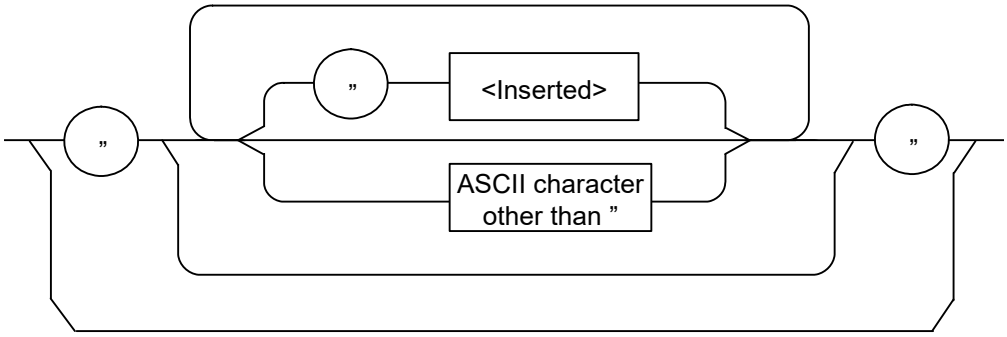
Hexadecimal data



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.

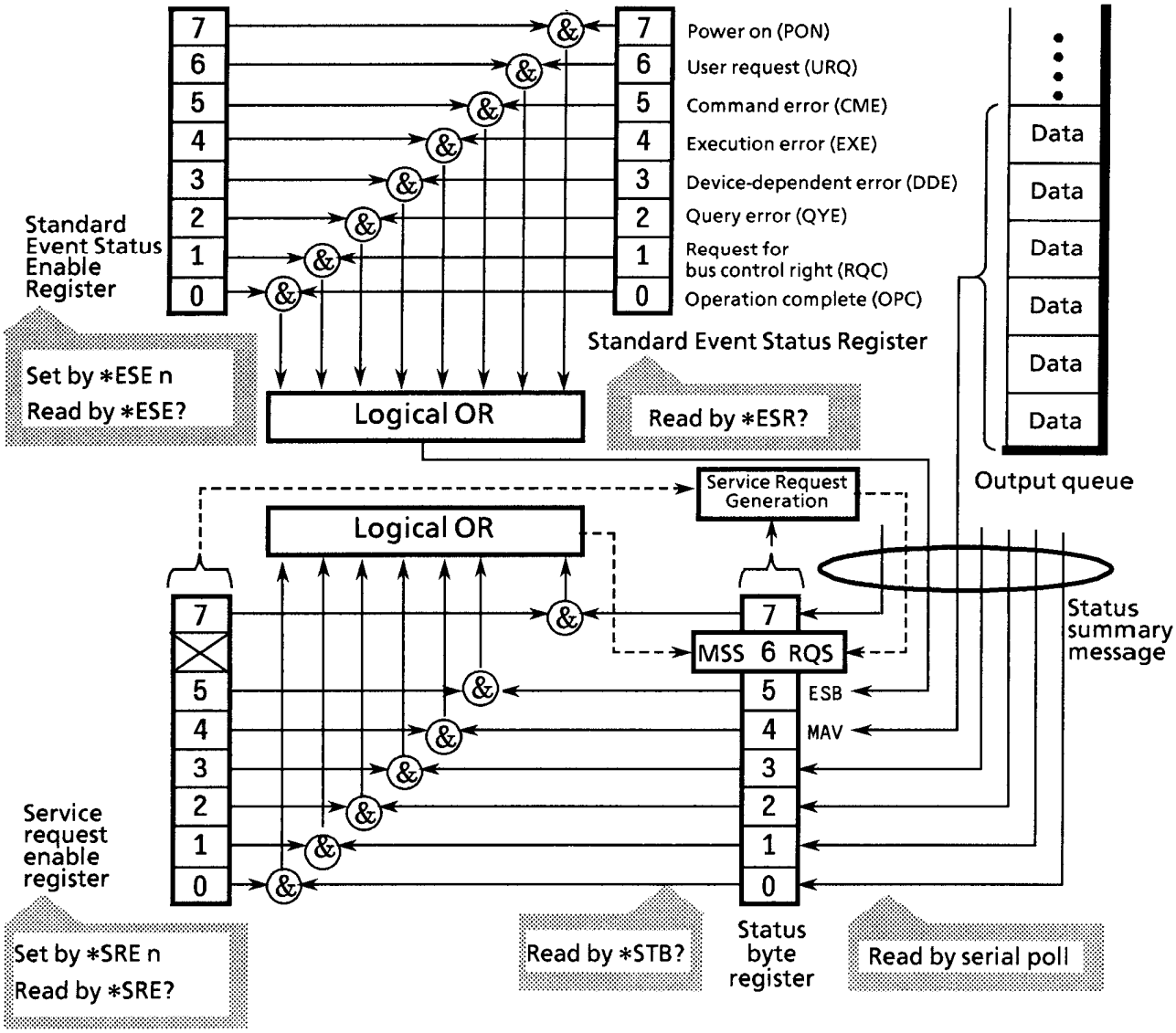


Figure 1.9.1-1 IEEE488.2 standard status model

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

Register model	Queue model
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.	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.

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

Standard Event Status Register	Status Byte Register	Output Queue
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: <1> power-on, <2> user request, <3> command error, <4> execution error, <5> device-dependent error, <6> query error, <7> bus control request, and <8> operation complete. Bit6 (DIO6) of the Status Byte Register works as an OR output bit to report an Event Summary Bit (ESB) summary message.	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.	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.

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.

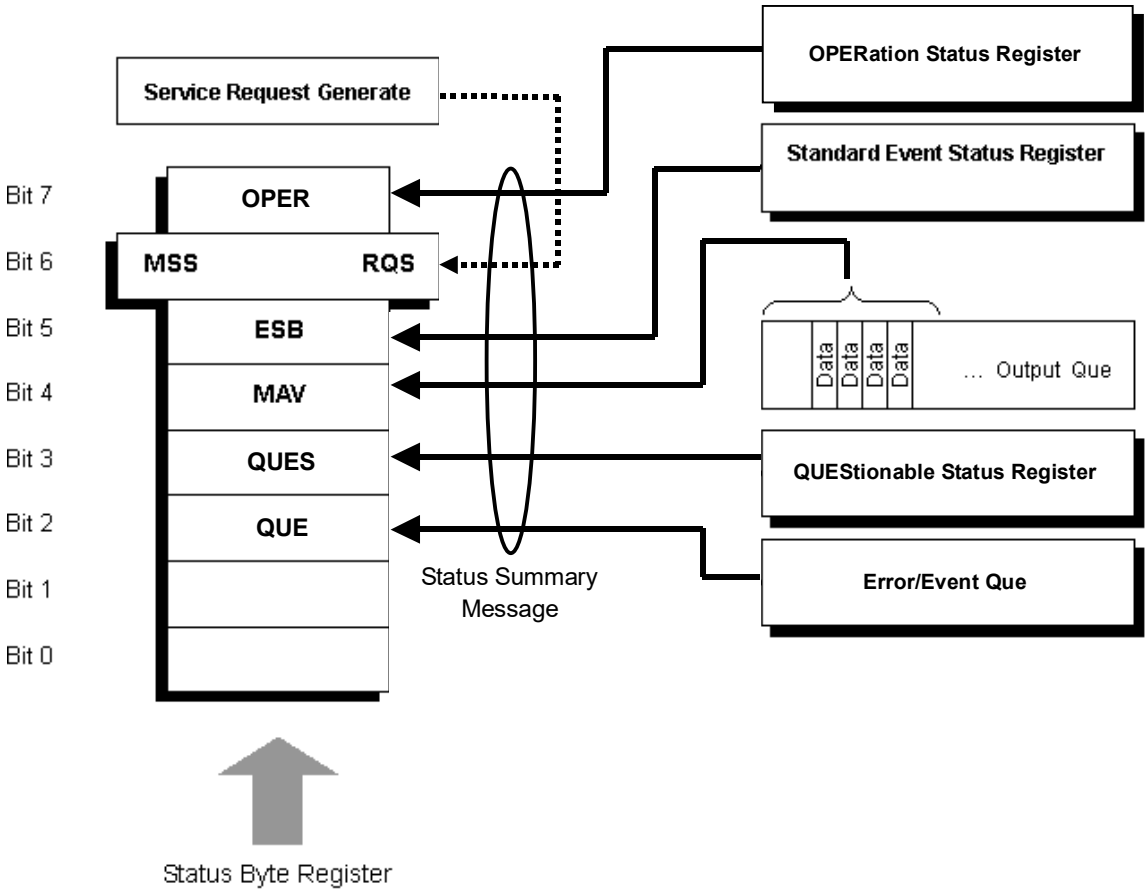


Figure 1.9.3-1 Status byte register in SCPI mode

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.).

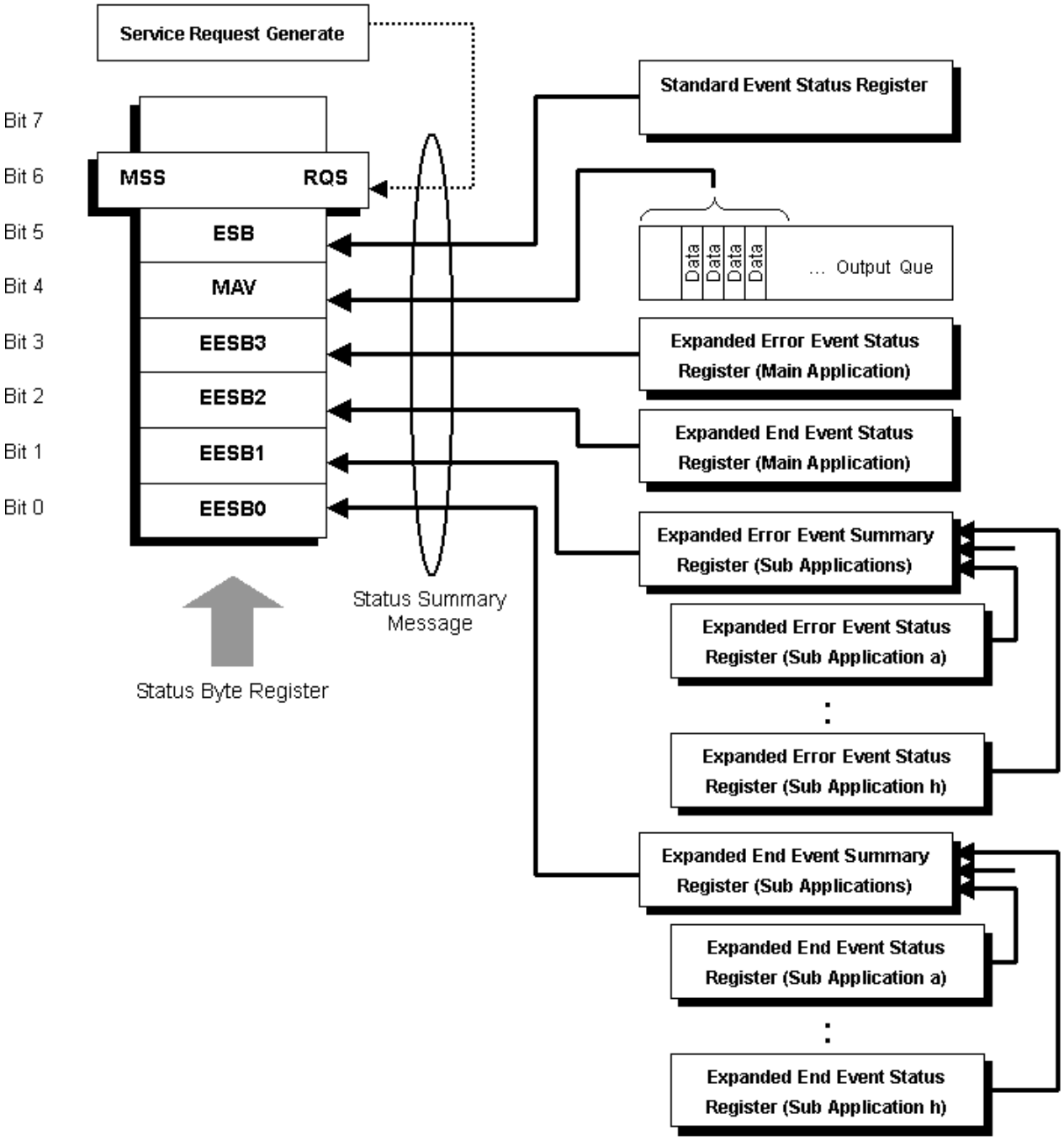


Figure 1.9.4-1 Status byte register in Native mode

1.9.5 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).

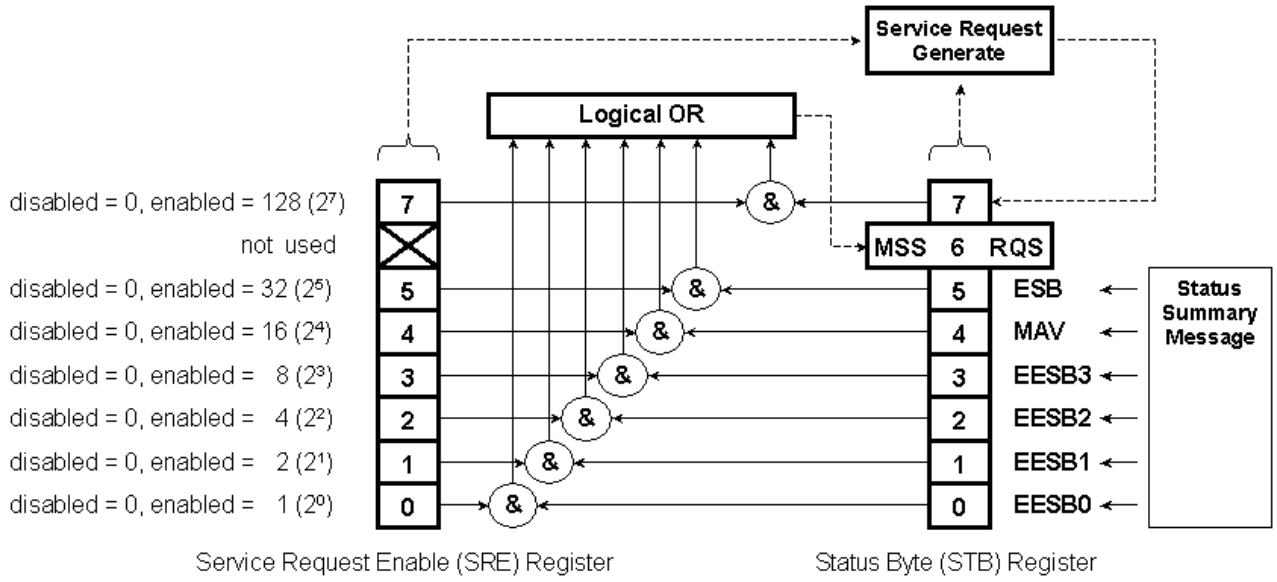


Figure 1.9.6-1 Service Request (SRQ) enable operation

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.

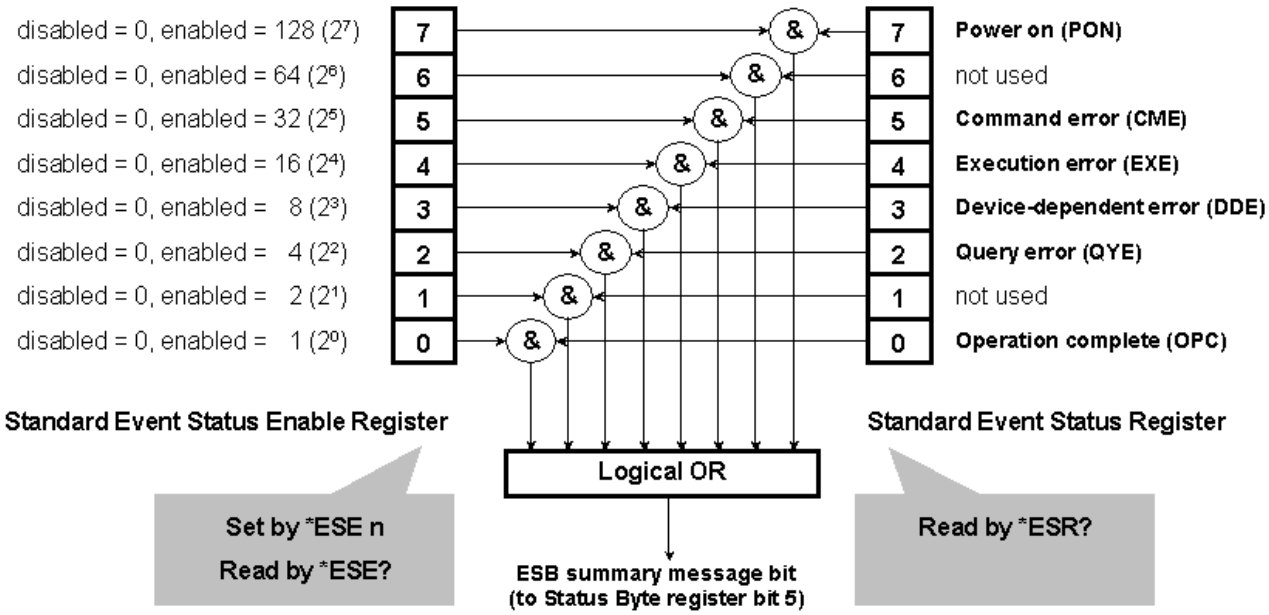


Figure 1.9.7-1 Standard event status register

The Standard Event Status Enable (ESE) register specifies which bit of the Event Status register will cause a summary message to become true when it is set.

Table 1.9.7-1 Bit events

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

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 1.9.8-1 Standard Event Status register operation

Register	Operation	
Standard Event Status register	Read	This register is read using an *ESR? common 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 (bit7 is turned on, with all other bits being cleared to 0). <3> An event is read in response to an *ESR? query command.
Standard Event Status Enable register	Read	This register is read using an *ESE? common query.
	Write	This register is written to using an *ESE common command.
	Clear	This register is cleared when: <1> An *ESE command with a data value of 0 is received. <2> The power is turned on.

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 1.9.9-1 SCPI Specification Status registers

Register - Filter	Operation
QUEStionable Status register	Reports the status of signals such as measurement results. It is used to require service to external controller when an error occurs. It is not used in this instrument.
OPERation Status register	Reports some of the statuses of this instrument.

The SCPI specification status register has the following configuration.

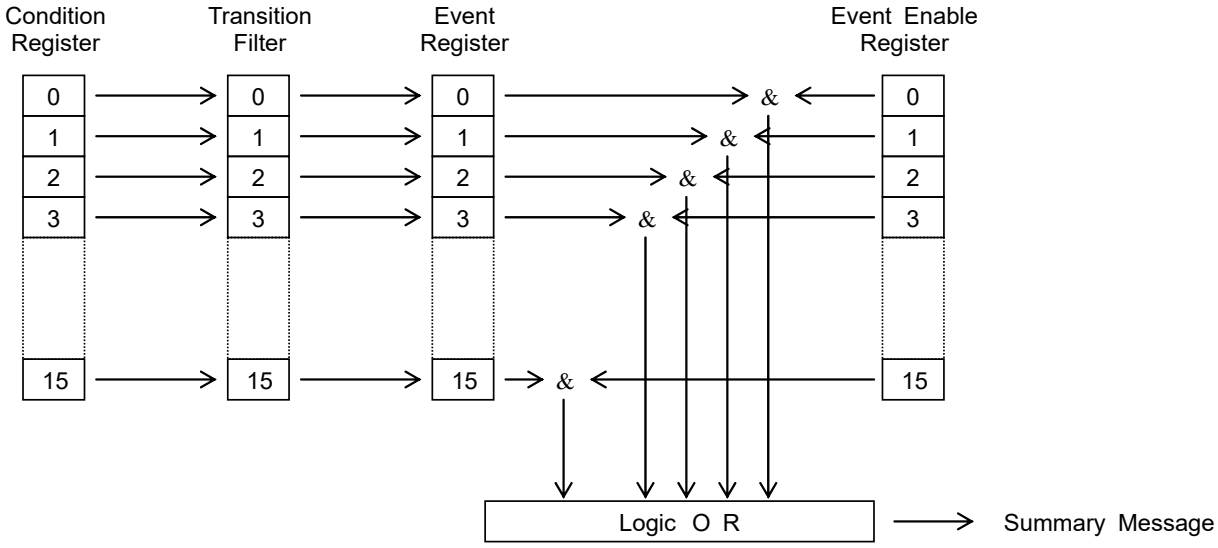


Figure 1.9.9-1 Configuration of SCPI Specification Status Register

Table 1.9.9-2 SCPI Specification Status register configurations

Register - Filter	Operation
Condition Register	Monitors device status and changes depending on the device status. Therefore, this register does not store the status.
Transition Filter	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. (1) Positive direction change The event becomes true only when the corresponding condition changes false into true. (2) Negative direction change The event becomes true only when the corresponding condition changes from true into false. (3) Both direction change The event becomes true when a change in either the positive or negative direction is present.
Event Register	Stores the output of transition filter.
Event Enable Register	Selects which bit of the corresponding event register is used to set the summary message to true when set to 1.

1.9.10 SCPI specification status register operation

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

Table 1.9.10-1 SCPI Status register operation

Register	Operation	
SCPI event register (Main Application)	Read	:STATus:...:EVENt? 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 :STATus:...:EVENt? Query command.* (4) A language mode is switched.
SCPI enable register (Main Application)	Read	:STATus:...:ENABle? This register is read by using an query.*
	Write	:STATus:...:ENABle This register is written by using a command.*
	Clear	This register is cleared when: (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.

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

Register	Operation	
SCPI Transition Filter (Main Application)	Read	:STATus:...:PTRansition? :STATus:...:NTRansition? This register is read using a query.*
	Write	:STATus:...:PTRansition :STATus:...:NTRansition 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:...:PTRansition 0 command is received.* (4) A language mode is switched.
Error/Event Queue (Main Application)	Read	: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.

Register	Enable Filter	Reset Value
OPERational Status Register	Enable Register	All 0
QUEStionable Status Register	PTRansition Filter	All 1
	NTRansition Filter	All 0

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.

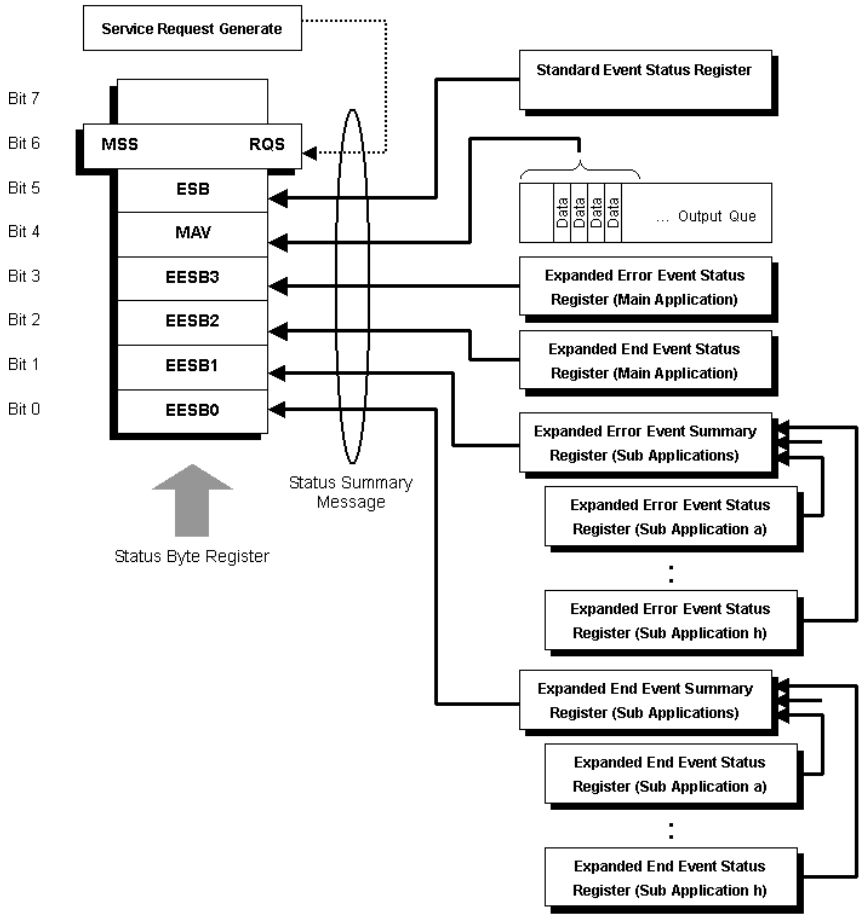


Figure 1.9.11-1 Extended event status register model

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.

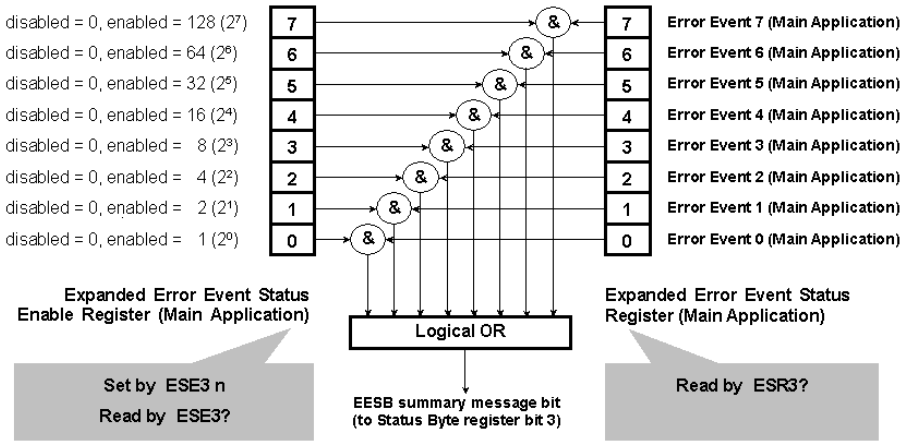


Figure 1.9.12-1 Extended Error Event Status register (Main Application)

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       ; Specifies the Spectrum Analyzer as the
                  control target.
*SRE 8          ; Enables bit3 of the Service Request
                  Enable register.
ESE3 1          ; 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.

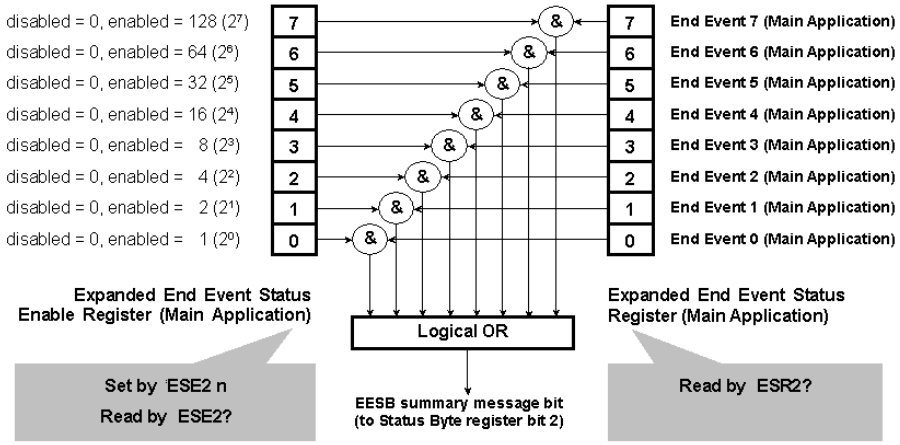


Figure 1.9.13-1 Extended End Event Status register (Main Application)

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.

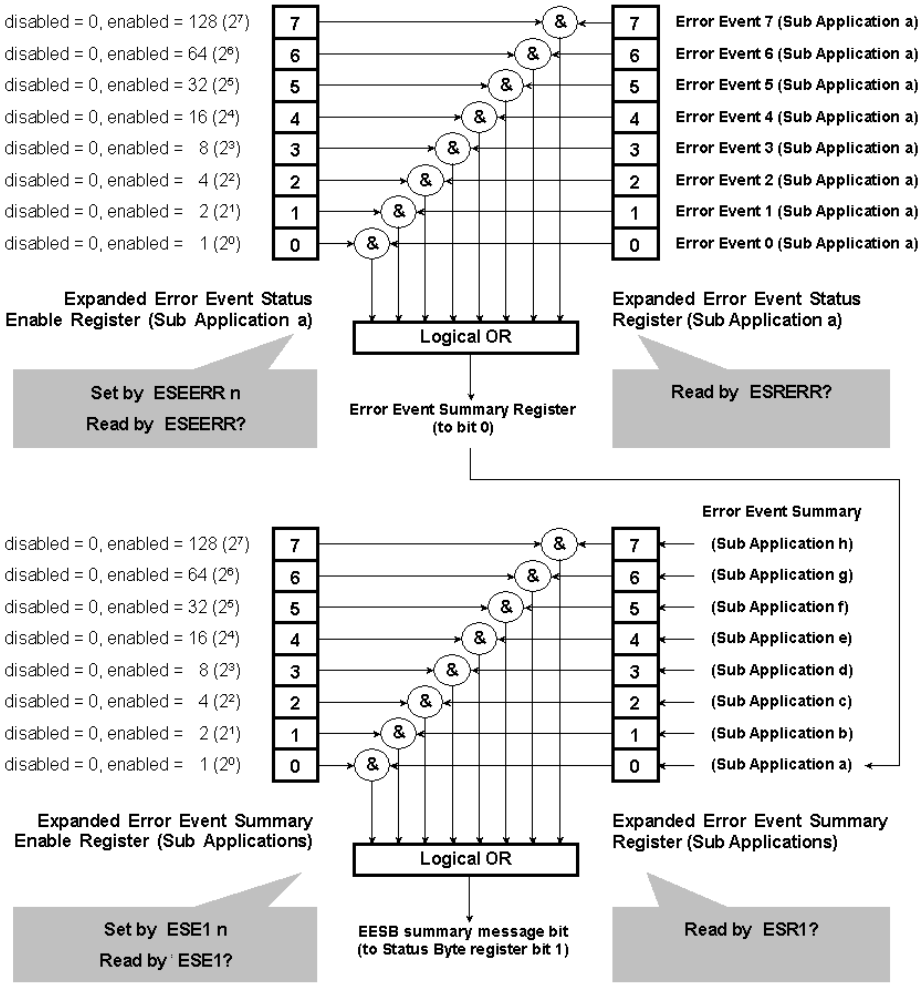


Fig 1.9.14-1 Extended Error Event Status register (Sub Application a)

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.

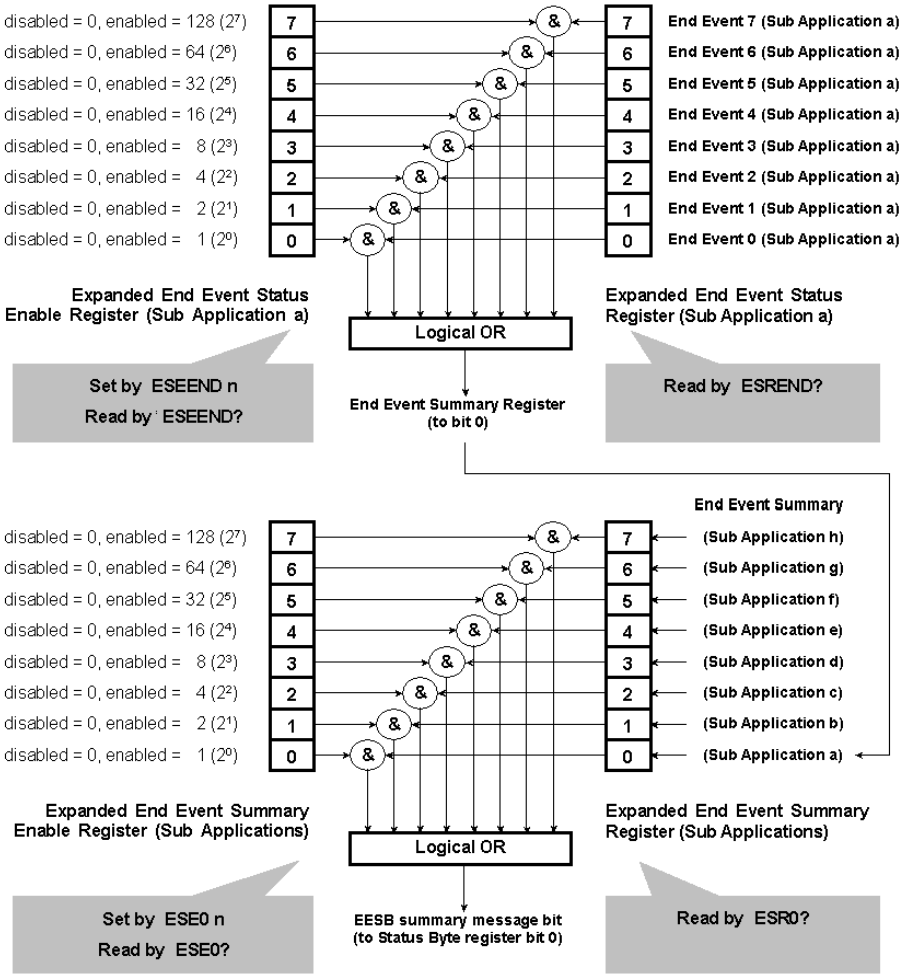


Figure 1.9.15-1 Extended End Event Status register (Sub Application a)

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

Register	Operation	
Extended Error Event Status Register (Main Application)	Read	This register is read using an ESR3? 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 ESR3? query command.* <4> When the language mode has been switched.
Extended Error Event Status Enable Register (Main Application)	Read	This register is read using an ESE3? query.*
	Write	This register is written to using an ESE3 command.*
	Clear	This register is cleared when: <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 (Main Application)	Read	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 (Main Application)	Read	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)

Register	Operation	
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)

Register	Operation	
Extended Error Event Status Register (Sub Application)	Read	This register is read using an ESRERR? 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 ESRERR? query command.* <4> When the language mode has been switched.
Extended Error Event Status Enable Register (Sub Application)	Read	This register is read using an ESEERR? query.*
	Write	This register is written to using an ESEERR command.*
	Clear	This register is cleared when: <1> An ESEERR command with a data value of 0 (i.e., `ESEERR 0`) is received.* <2> The power is turned on. <3> When the language mode has been switched.
Extended End Event Status Register (Sub Application)	Read	This register is read using an ESREND? 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 ESREND? query command.* <4> When the language mode has been switched.
Extended End Event Status Enable Register (Sub Application)	Read	This register is read using an ESEEND? query.*
	Write	This register is written to using an ESEEND command.*
	Clear	This register is cleared when: <1> An ESEEND command with a data value of 0 (i.e., `ESEEND 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.

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.
```

Chapter 2 IEEE488.2 Common Device Message List

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 2.1-1 IEEE488.2 Common Device messages

Function	Command	Query	Response	Remarks
Identification Query	---	*IDN?	ANRITSU,model,serial number,firmware	model: Main unit model name serial: Main unit serial number version: Software package version
Self Test Query	---	*TST?	result	result: Self test result = 0 | 1
Operation Complete	*OPC	*OPC?	1	
Preset All	*RST	---	---	
Wait to Continue Command	*WAI	---	---	
Clear Status Command	*CLS	---	---	
Standard Event Status Enable Register Command/Query	*ESE n	*ESE?	n	n = bit7: Power on bit6: User request bit5: Command error bit4: Execution error bit3: Device error bit2: Query error bit1: Not used bit0: Operation complete
Standard Event Status Register Query	---	*ESR?	n	

Table 2.1-1 IEEE488.2 Common Device messages (Cont'd)

Function	Command	Query	Response	Remarks
Service Request Enable Register Command/Query	*SRE n	*SRE?	n	n = bit7: EESB7 bit6: Not used bit5: ESB bit4: MAV bit3: EESB3 bit2: EESB2 (END Event) bit1: EESB1 bit0: EESB0
Read Status Byte Query	---	*STB?	n	n = bit7: EESB7 bit6: MSS/RQS bit5: ESB bit4: MAV bit3: EESB3 bit2: EESB2 (END Event) bit1: EESB1 bit0: EESB0

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 resister, 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	= 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 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.

*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
```

*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

`result`	Self test result
0	Normal termination
1	Error occurred

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 4-6
: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|TRXSC|PMETer 4-9
:INSTrument[:SELect]? 4-11
:INSTrument:SYSTem SIGANA|SPECT|PNOISE|CONFIG|PMETer|BER,[ACTive]|INACtive|
MINimum 4-12
:INSTrument:SYSTem? 4-13
:SYSTem:REBoot 4-14
:INSTrument:DEFault 4-14
:SYSTem:PRESet 4-15
:DISPlay:ENABle ON|OFF|1|0 4-15
:DISPlay:ENABle? 4-16
:DISPlay:SCReen ON|OFF|1|0 4-16
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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.

Table 4.1-1 Application Common Device Messages

Function	Device Messages
Application Switch	: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|TRXSC |PMETer
	:INSTrument[:SELect]?
Application Status	:INSTrument:SYSTem SIGANA|SPECT|PNOISE|CONFIG|PMETer|BER,[ACTive]|INACtive| MINimum
	:INSTrument:SYSTem?
System Re-boot	:SYSTem:REBoot
Preset Current Application	:INSTrument:DEFault
	:SYSTem:PRESet
LCD Power	:DISPlay:ENABle ON|OFF|1|0
	:DISPlay:ENABle?
	:DISPlay:SCReen ON|OFF|1|0
	:DISPlay:SCReen?
Hard Copy	:MMEMory:STORe:SCReen [<filename>[,<device>]]
Hard Copy Mode	:MMEMory:STORe:SCReen:MODE BMP|PNG
	:MMEMory:STORe:SCReen:MODE?
Hard Copy Transfer	:MMEMory:DATA? <filename>[,<device>]
Save Parameter Setting as file	:MMEMory:STORe:STATe [<filename>[,<device>]]
Recall Parameter Setting as file	:MMEMory:LOAD:STATe <filename>[,<device>[,<mode>]]
Error Message Display Mode	:DISPlay:ERRor:MODE NORMal|REMain|LAST
	:DISPlay:ERRor:MODE?
All Calibration	:CALibration:ALL
All Calibration Time Query	:CALibration:TIME:ALL?
All Calibration Temperature Query	:CALibration:TEMPerature:ALL?
Level Calibration	:CALibration:LEVel
Level Calibration Time Query	:CALibration:TIME:LEVel?
Level Calibration Temperature Query	:CALibration:TEMPerature:LEVel?

Table 4.1-1 Application Common Device Messages (Cont'd)

Function	Device Messages
Local Leak Calibration	:CALibration:LOLeak
Local Leak Calibration Time Query	:CALibration:TIME:LOLeak?
Local Leak Calibration Temperature Query	:CALibration:TEMPerature:LOLeak?
Bandwidth Calibration	:CALibration:BAND
Bandwidth Calibration Time Query	:CALibration:TIME:BAND?
Bandwidth Calibration Temperature Query	:CALibration:TEMPerature:BAND?
Extra Bandwidth Calibration	:CALibration:BAND:EXTRa
Extra Bandwidth Calibration Clear	:CALibration:BAND:EXTRa:CLEar
Extra Bandwidth Calibration Frequency Query	:CALibration:FREQuency:BAND:EXTRa?
Extra Bandwidth Calibration Time Query	:CALibration:TIME:BAND:EXTRa?
Analyze Noise Floor	:CALibration:NFLoor
Analyze Noise Floor Time Query	:CALibration:TIME:NFLoor?
Analyze Noise Floor Temperature Query	:CALibration:TEMPerature:NFLoor?
Analyze External Mixer Noise Floor	:CALibration:NFLoor:MIXer
Analyze External Mixer Noise Floor Time Query	:CALibration:TIME:NFLoor:MIXer?
Analyze External Mixer Noise Floor Temperature Query	:CALibration:TEMPerature:NFLoor:MIXer?
Analyze External Mixer Noise Floor Band Query	:CALibration:NFLoor:MIXer:HARMonic:BAND?
Analyze Noise Floor Clear	:CALibration:NFLoor:CLEar
Result Mode	:SYSTem:RESult:MODE A|B
	:SYSTem:RESult:MODE?

Table 4.1-1 Application Common Device Messages (Cont'd)

Function	Device Messages
System Error Query	:SYSTem:ERRor?
Language mode switching	:SYSTem:LANGuage SCPI|NATive
	:SYSTem:LANGuage?
Reference Signal Query	[:SENSe]:ROSCillator:SOURce?
Attenuation Mode	[:SENSe]:POWer[:RF]:ATTenuation:MODE COMBined|MECHanical
	[:SENSe]:POWer[:RF]:ATTenuation:MODE?
Correction (On/Off)	[:SENSe]:CORRection[:STATe] ON|OFF|1|0
	[:SENSe]:CORRection[:STATe]?
Correction Make Up	[:SENSe]:CORRection:MAKE <freq>,<real>
Correction Make Up All Clear	[:SENSe]:CORRection:MAKE:CLEar
Correction File Save	:MMEMory:STORe:CORRection [<filename>[,<device>]]
Correction File Recall	:MMEMory:LOAD:CORRection <filename>[,<device>]
Correction Data Read	[:SENSe]:CORRection:DATA?
Low Phase Noise	[:SENSe]:FREQuency:SYNThesis:LPHase ON|OFF|1|0
	[:SENSe]:FREQuency:SYNThesis:LPHase?
Display Annotation	:DISPlay:WINDow[1]:ANNotation[:ALL] ON|OFF|1|0
	:DISPlay:WINDow[1]:ANNotation[:ALL]?
Status of Calibration Alert	:CALibration:ALERt:STATe?
Noise Source Power On/Off	:OUTPut:MANual:NOISe[:STATe] ON|OFF|1|0
	:OUTPut:MANual:NOISe[:STATe]?

: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|TRXSC|PMETer

Application Switch

Function

This command switches the target application for control.

Command

```
:INSTrument[:SELect] <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
WCDMADL	W-CDMA/HSPA Downlink
WCDMAUL	W-CDMA/HSPA Uplink
GSM	GSM
ETC_DSRC	ETC/DSRC
TDSCDMA	TD-SCDMA
XGPHS	XG-PHS
VMA	Vector Modulation Analysis
AMA	Analog Modulation Analysis
3GLTE_DL	3GLTE Downlink
3GLTE_UL	3GLTE Uplink
LTETDDDL	LTE-TDD Downlink
LTETDDUL	LTE-TDD Uplink
CDMA2KFWD	CDMA2000
EVDOFWD	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
TRXSC	TRX Sweep Calibration
PMETer	Power Meter

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.

```
INST SIGANA
```

:INSTrument[:SELect]?

Application Switch Query

Function

This command queries the controlled application.

Query

```
:INSTrument[:SELect]?
```

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
WCDMADL	W-CDMA/HSPA Downlink
WCDMAUL	W-CDMA/HSPA Uplink
GSM	GSM
ETC_DSRC	ETC/DSRC
TDSCDMA	TD-SCDMA
XGPHS	XG-PHS
VMA	Vector Modulation Analysis
AMA	Analog Modulation Analysis
3GLTE_DL	3GLTE Downlink
3GLTE_UL	3GLTE Uplink
LTETDDDL	LTE-TDD Downlink
LTETDDUL	LTE-TDD Uplink
CDMA2KFWD	CDMA2000
EVDOFWD	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

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

<apl_name>	Target application name
SIGANA	Signal Analyzer
SPECT	Spectrum Analyzer
PNOISE	Phase Noise
CONFIG	Config
PMETer	Power Meter
BER	BER Test
<window>	Application window status
ACTive	Operation enabled (displayed on top screen)
INACtive	Inactive
MINimum	Minimized
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):

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
```

: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
```

: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

<switch>	LCD backlight status
ON|1	On (Default)
OFF|0	Off

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>
```

: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>
```

: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>]
```

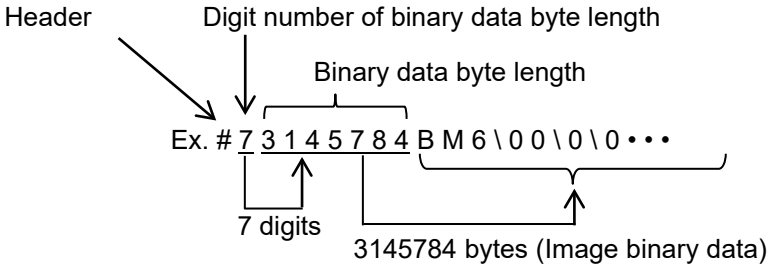
Response

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

<filename>	Target filename Character string within 32 characters (excluding extension) With or without double quotes (" ") and single quotes (' '). The following characters cannot be used: \ / : * ? " ″ ` ′ < > |
<device>	Drive name: A,B,D,E,F,... Set to Drive D when omitted.

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…
```

: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
```

: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
```

: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
```

: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
```

: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
```

: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
```

: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
```

: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
```

: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
```

: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
```

:CALibration:TEMPerature:NFLoor?

Analyze Noise Floor Temperature Query

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
```

: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
```

: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

```
<band>
```

Parameter

<band>	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
```

: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

<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 set the response mode to Mode A.

```
SYST:RES:MODE A
```

: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

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

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
```

:SYSTem:LANGuage?

Language mode switching Query

Function

This command queries the language mode.

Query

```
:SYSTem:LANGuage?
```

Response

```
<mode>
```

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
```

[: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
```

[: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

<freq>	Frequency to be corrected
Range	–1 to 400 GHz
Resolution	1 Hz
Suffix code	HZ, KHZ, KZ, MHZ, MZ, GHZ, GZ
Default	0 Hz
<real>	Correction level
Range	–100 to 100 dB
Resolution	0.001 dB
Suffix code	DB
Default	0 dB

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
```

[: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

<switch_n>	Low Phase Noise switch
ON|1	Enables Low Phase Noise switch.
OFF|0	Disables Low Phase Noise switch.
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
```

[:SENSe]:FREQuency:SYNThesis:LPHase?

Low Phase Noise Query

Function

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

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
```

: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>	Display Annotation
ON|1	Display
OFF|0	Hide
Default	ON

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
```

: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
```

: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

<switch>	Noise Source power On/Off
ON|1	Sets Noise Source power On.
OFF|0	Sets Noise Source power Off. (Default)

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.

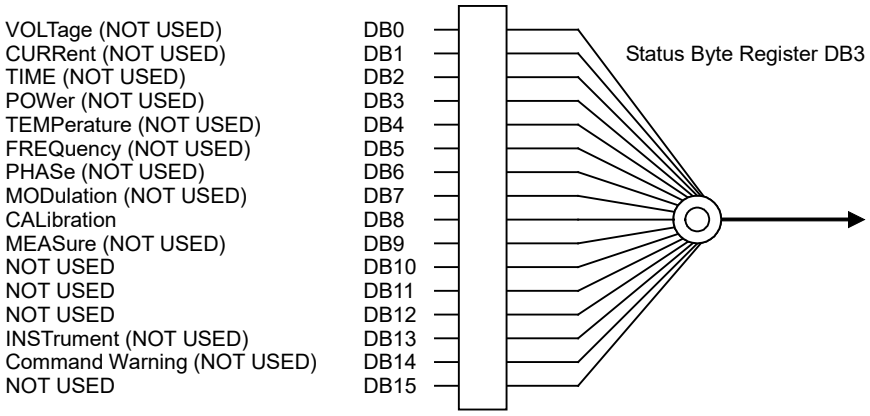


Figure 4.1.1-1 QUEStionable Status Register

Table 4.1.1-1 QUEStionable Status Register

Byte definition of QUEStionable Status Register	
DB8	QUEStionable Calibration Register summary

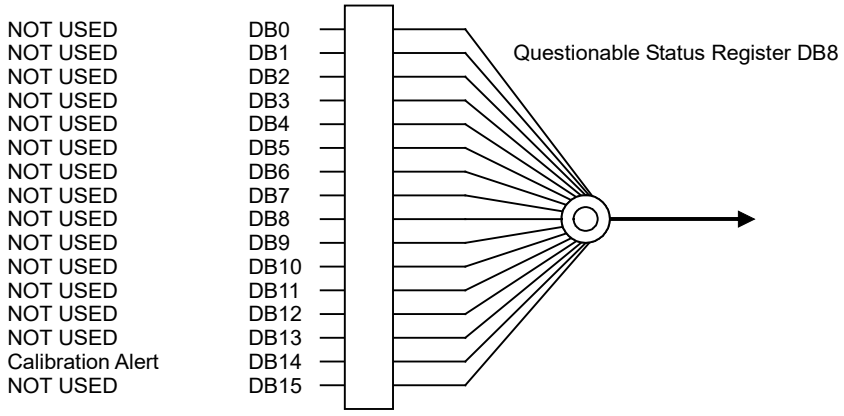


Figure 4.1.1-2 QUEStionable Calibration Register

Table 4.1.1-2 QUEStionable Calibration Register

Byte definition of QUEStionable Calibration Register	
DB14	Indicates the occurrence of Calibration Alert

Table 4.1.1-3 Device messages for QUEStionable Status Register

Function	Device Messages
Questionable Status Register Event	:STATus:QUEStionable[:EVENt]?
Questionable Status Register Condition	:STATus:QUEStionable:CONDition?
Questionable Status Register Enable	:STATus:QUEStionable:ENABle <integer>
	:STATus:QUEStionable:ENABle?
Questionable Status Register Negative Transition	:STATus:QUEStionable:NTRansition <integer>
	:STATus:QUEStionable:NTRansition?
Questionable Status Register Positive Transition	:STATus:QUEStionable:PTRansition <integer>
	:STATus:QUEStionable:PTRansition?
Questionable Calibration Register Event	:STATus:QUEStionable:CALibration[:EVENt]?
Questionable Calibration Register Condition	:STATus:QUEStionable:CALibration:CONDition?
Questionable Calibration Register Enable	:STATus:QUEStionable:CALibration:ENABle <integer>
	:STATus:QUEStionable:CALibration:ENABle?
Questionable Calibration Register Negative Transition	:STATus:QUEStionable:CALibration:NTRansition <integer>
	:STATus:QUEStionable:CALibration:NTRansition?
Questionable Calibration Register Positive Transition	:STATus:QUEStionable:CALibration:PTRansition <integer>
	:STATus:QUEStionable:CALibration:PTRansition?

: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
```

: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
```

: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
```

: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
```

: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 4.2-1 Config Function Device Messages

Function	Device Messages
Load Application	:SYSTem:APPLication:LOAD <apl_name>
Unload Application	:SYSTem:APPLication:UNLoad <apl_name>
Delimiter (Terminator)	:SYSTem:COMMunicate:GPIB[1][:SELF]:DELimiter LF|CRLF|NONE
	:SYSTem:COMMunicate:GPIB[1][:SELF]:DELimiter?
Sound On/Off	:SYSTem:BEEPer ON|OFF|0|1
	:SYSTem:BEEPer?
Screen Hard Copy Color	:MMEMory:STORe:SCReen:THEMe NORMal|REVerse|MONochrome|MREVerse
	:MMEMory:STORe:SCReen:THEMe?
Frequency Reference	[:SENSe]:ROSCillator:SOURce:AUTO ON|OFF|1|0
	[:SENSe]:ROSCillator:SOURce:AUTO?
Move Parameter File (HDD/SSD to Device)	:MMEMory:MOVE:STATe <filename>,<device>
Copy Parameter File (Device to HDD/SSD)	:MMEMory:COPY:STATe <filename>,<device>
Delete Parameter File	:MMEMory:DELete:STATe <filename>,<device>
Protect Parameter File	:MMEMory:PROTection:STATe[:STATe] <filename>,ON|OFF|0|1,<device>
	:MMEMory:PROTection:STATe[:STATe]? <filename>,<device>
Parameter File List Query	:MMEMory:CATalog:STATe? <device>
Move Hard Copy File (HDD/SSD to Device)	:MMEMory:MOVE:SCReen <filename>,<device>
Copy Hard Copy File (Device to HDD/SSD)	:MMEMory:COPY:SCReen <filename>,<device>
Delete Hard Copy File	:MMEMory:DELete:SCReen <filename>,<device>
Protect Hard Copy File	:MMEMory:PROTection:SCReen[:STATe] <filename>,ON|OFF|0|1,<device>
	:MMEMory:PROTection:SCReen[:STATe]? <filename>,<device>

Table 4.2-1 Config Function Device Messages (Cont'd)

Function	Device Messages
Hard Copy File List Query	:MMEMory:CATalog:SCReen? <device>
Move Trace File (HDD/SSD to Device)	:MMEMory:MOVE:TRACe <filename>,<apl_name>,<device>
Copy Trace File (Device to HDD/SSD)	:MMEMory:COPY:TRACe <filename>,<apl_name>,<device>
Delete Trace File	:MMEMory:DELete:TRACe <filename>,<apl_name>,<device>
Protect Trace File	:MMEMory:PROTection:TRACe[:STATe] <filename>,ON|OFF|0|1,<apl_name>,<device>
	:MMEMory:PROTection:TRACe[:STATe]? <filename>,<apl_name>,<device>
Trace File List Query	:MMEMory:CATalog:TRACe? <apl_name>,<device>
Move Digitize File (HDD/SSD to Device)	:MMEMory:MOVE:DIGitize <filename>,<apl_name>,<device>
Copy Digitize File (Device to HDD/SSD)	:MMEMory:COPY:DIGitize <filename>,<apl_name>,<device>
Delete Digitize File	:MMEMory:DELete:DIGitize <filename>,<apl_name>,<device>
Protect Digitize File	:MMEMory:PROTection:DIGitize[:STATe] <filename>,ON|OFF|0|1,<apl_name>,<device>
	:MMEMory:PROTection:DIGitize[:STATe]? <filename>,<apl_name>,<device>
Digitize File List Query	:MMEMory:CATalog:DIGitize? <apl_name>,<device>
Move System Information File (HDD/SSD to Device)	:MMEMory:MOVE:SYSinfo <filename>,<device>
Copy System Information File (Device to HDD/SSD)	:MMEMory:COPY:SYSinfo <filename>,<device>
Delete System Information File	:MMEMory:DELete:SYSinfo <filename>,<device>
Protect System Information File	:MMEMory:PROTection:SYSinfo[:STATe] <filename>,ON|OFF|0|1,<device>
	:MMEMory:PROTection:SYSinfo[:STATe]? <filename>,<device>
System Information File List Query	:MMEMory:CATalog:SYSinfo? <device>
Convert Recall File	:MMEMory:CONVert:STATe <filename>[,<device>]
System Information Query	:SYSTem:INFormation:CATalog?
Product Model Query	:SYSTem:INFormation:MODel?
Product Type Query	:SYSTem:INFormation:TYPE?
Serial Number Query	:SYSTem:INFormation:SERial?
Running Time Query	:SYSTem:INFormation:RTIMe?

Table 4.2-1 Config Function Device Messages (Cont'd)

Function	Device Messages
Attenuator Switching Times	:SYSTem:INFormation:SWITch?
Option Information Query	:SYSTem:HARDware:OPTion:CATalog?
Software License Information Query	:SYSTem:SOFTware:CATalog?
Software License and Option Information Query	:SYSTem:SOFTware:CATalog:ALL?
Software Version Query	:SYSTem:APPLication:VERSion? <apl_name>
FPGA, PLD, DSP Version Query	:SYSTem:FPGA:VERSion? <hardware>
All FPGA, PLD, DSP Version Query	:SYSTem:FPGA:VERSion:CATalog?
Hardware Revision Query	:SYSTem:HARDware:REVision? <hardware>
All Hardware Revision Query	:SYSTem:HARDware:REVision:CATalog?
RF Temperature Query	:SYSTem:TEMPerature:RF?
External Reference Frequency	[:SENSe]:ROSCillator:EXTernal:FREQuency <freq>
	[:SENSe]:ROSCillator:EXTernal:FREQuency?
Calibration Alert Mode	:CALibration:ALERt:MODE NONE|TEMPerature|TIME|BOTH
	:CALibration:ALERt:MODE?
Calibration Alert Temperature	:CALibration:ALERt:TEMPerature
	:CALibration:ALERt:TEMPerature?
Calibration Alert Time	:CALibration:ALERt:TIME
	:CALibration:ALERt:TIME?

:SYSTem:APPLication:LOAD <apl_name>

Load Application

Function

Activates an application.

Command

```
:SYSTem:APPLication:LOAD <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 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
```

: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
```

: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

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

Example of Use

To query a delimiter (termination code) for remote control.

```
SYST:COMM:GPIB:DEL?
> CRLF
```

:SYSTem:BEEPer ON|OFF|0|1

Sound On/Off

Function

This command turns the sound ON/OFF.

Command

```
:SYSTem:BEEPer <switch>
```

Parameter

<switch>	Sound ON/OFF
ON|1	On (Default)
OFF|0	Off

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

```
<switch>
```

Parameter

<switch>	Sound ON/OFF
1	On (Default)
0	Off

Example of Use

To query the sound ON/OFF status.

```
SYST:BEEP?
> 1
```

: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

<mode>	Color image setting
NORMal	Displays color image (Default)
REVerse	Reverse displays color image.
MONochrome	Displays monochrome image.
MREVerse	Reverse displays monochrome image.

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>
```

Parameter

<mode>	Color image setting
NORM	Displays color image (Default)
REV	Reverse displays color image.
MON	Displays monochrome image.
MREV	Reverse displays monochrome image.

Example of Use

To query the screen hardcopy color image settings.

```
MMEM:STOR:SCR:THEM?
> REV
```

[: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 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 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
```

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

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
```

: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

<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 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

```
:MMEMory:PROTection:STATe[: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 query the protection of a parameter file saved in the specified drive.

```
MMEM:PROT:STAT? "Parameter",e
> 1
```

: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
```

: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:SCReen <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: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 copy the "bitmap" screen hard copy file on drive E to the internal storage.

```
MMEM:COPY:SCR "bitmap",e
```

:MMEMory:DELete:SCReen <filename>,<device>

Delete Hard Copy File

Function

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

Command

```
:MMEMory:DELete: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
```

: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
```

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

Protect Hard Copy File Query

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:SCReen[: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
```

: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

<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 screen hardcopy filenames saved in drive E.

```
MMEM:CAT:SCR? e
> 3,Copy_00,Copy_01,Copy_02
```

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

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
```

: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

<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
```

: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
```

: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 1000 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
```

:MMEMory:MOVE:DIGitize <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: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 move the "digitize" digitize file of the Signal Analyzer function to drive E.

```
MMEM:MOVE:DIG "digitize",SIGANA,e
```

: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
```

: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

<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,D,E,F,...

Example of Use

To delete the digitized file “Digitize” saved in drive E.

```
MMEM:DEL:DIG "Digitize",SIGANA,e
```

: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
```

: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
```

: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
```

:MMEMory:MOVE:SYSinfo <filename>,<device>

Move System Information File (HDD/SSD to Device)

Function

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

Command

```
:MMEMory:MOVE: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 move the "SystemInfo" system information file to drive E.

```
MMEM:MOVE:SYS "SystemInfo",e
```

: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:DELete:SYSinfo <filename>,<device>

Delete System Information File

Function

Deletes a system information file saved in the specified device.

Command

```
:MMEMory:DELete: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:DEL:SYS "SystemInfo",e
```

: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
```

: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
```

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

Convert Recall File

Function

Converts a parameter file so that the MS2830A, MS2840A or MS2850A you are using can recall the parameter file, which was saved by another one consisting of different options.

Command

```
:MMEMory:CONVert:STATe <filename>[,<device>]
```

Parameter

<filename>	Target file name Character string within 27 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

This command is not available for MS269xA.

Example of Use

To convert a parameter file “TEST” saved on the internal storage:

```
MMEM:CONV:STAT “TEST”,D
```

: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
```

: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
```

: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
```

: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…
```

: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>,<lic
ense_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…
```

: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
PNOISE	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
```

: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
```

: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
`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.

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,-
```

: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?`.

Example of Use

To query the revision number of the IF unit.

```
SYST:HARD:REV? IF
> 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
<revision>	Revision number

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:TEMPerature:RF?

RF Temperature Query

Function

This command returns the reading for the temperature of the RF unit in the signal analyzer.

Query

```
:SYSTem:TEMPerature: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
```

[: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
```

: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

<mode>	Alert mode
NONE	No alert occurs. (Default)
TEMPerature	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 trigger conditions.

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
```

: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
```

: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 4.3.1-1 Power Meter Device Messages

Function	Device Messages
Current Measurement Query	:CONFigure?
Power Meter Configure	:CONFigure:PMETer:POWer
Display Title	:DISPlay:ANNotation:TITLe[:STATe] ON|OFF|1|0
	:DISPlay:ANNotation:TITLe[:STATe]?
Title Entry	:DISPlay:ANNotation:TITLe:DATA <string>
	:DISPlay:ANNotation:TITLe:DATA?
Measurement Status	:STATus:ERRor?

: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
```

: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
```

:STATus:ERRor?

Measurement Status Query

Function

This command queries the measurement status.

Query

```
:STATus:ERRor?
```

Response

```
<status>
```

Parameter

<status>	Measurement status
Value	= 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:

bit0 : $2^0 = 1$	Lock abnormal status during using the external reference signal source
bit1 : $2^1 = 2$	ALC circuit is abnormal
bit2 : $2^2 = 4$	Outside level accuracy assurance
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 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
```

4.3.2 Power Meter

Power meter device messages available in the power meter application are shown below.

Table 4.3.2-1 Power Meter Device Messages

Function	Device Messages
Average Power Query	:SYSTem:PMETer:MEASure? [DBM]|WATT|DB
Zeroing	:SYSTem:PMETer:ZERoset
Sensor Connected Query	:SYSTem:PMETer:CONNection?
Current Com Port Number Query	:SYSTem:PMETer:COMMunicate:USB:PORT?
Current Sensor Model Query	:SYSTem:PMETer:SENSe:MODel?
Frequency	:SYSTem:PMETer:SENSe:FREQuency[:CW|:FIXed] <freq>
	:SYSTem:PMETer:SENSe:FREQuency[:CW|:FIXed]?
	[:SENSe]:FREQuency:CENTer <freq>
	[:SENSe]:FREQuency:CENTer?
Level Offset State	:SYSTem:PMETer:SENSe:CORRection:GAIN2:STATe <boolean>
	:SYSTem:PMETer:SENSe:CORRection:GAIN2:STATe?
Level Offset Value	:SYSTem:PMETer:SENSe:CORRection:GAIN2[:INPut][:MAGNitude] <rel_ampl>
	:SYSTem:PMETer:SENSe:CORRection:GAIN2[:INPut][:MAGNitude]?
Average State	:SYSTem:PMETer:SENSe:AVERage[:STATe] <boolean>
	:SYSTem:PMETer:SENSe:AVERage[:STATe]?
Average Count	:SYSTem:PMETer:SENSe:AVERage:COUNt <ext_integer>
	:SYSTem:PMETer:SENSe:AVERage:COUNt?
Reference Level Set	:SYSTem:PMETer:SENSe:RELativeset
Range	:SYSTem:PMETer:SENSe:RANGe AUTO|LOW|HIGH
	:SYSTem:PMETer:SENSe:RANGe?
Device Status Error	:SYSTem:PMETer:DEVice:ERRor?
Aperture Time	:SYSTem:PMETer:APERture:TIME <aper_time>
	:SYSTem:PMETer:APERture:TIME?
Aperture Mode	:SYSTem:PMETer:APERture:MODE LAT|HAT
	:SYSTem:PMETer:APERture:MODE?

:SYSTem:PMETer:MEASure? [DBM]|WATT|DB

Average Power Query

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	`DBM`
`<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
```

:SYSTem:PMETer:CONNection?

Sensor Connected Query

Function

Query the power sensor connection status.

Query

```
:SYSTem:PMETer:CONNection?
```

Response

```
<connect>
```

Parameter

`<connect>`	USB power sensor connection
`1`	Connected
`0`	Not connected

Example of Use

To query whether the power sensor is connected.

```
SYST:PMET:CONN?
> 1
```

: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

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

```
:SYSTem:PMETer:SENSe:FREQuency[:CW|:FIXed] <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.
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

Function

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
```

[: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 commands 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 commands 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 commands 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:GAIN2 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.

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
```

: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
```

: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>	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 set the Measurement range to High.

```
SYST:PMET:SENS:RANG HIGH
```

: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
```

: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

For the response value, refer to Chapter 13-3 “STATUS?” in *the User Guide, Anritsu Power Xpert and USB Power Sensors*.

Example of Use

To query Device Status Error.

```
SYST:PMET:DEV:ERR?
> 0
```

: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
```

: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

<mode>	Aperture Mode
LAT	Low Aperture Time mode
HAT	High Aperture Time mode
Default	LAT

Example of Use

To set Aperture Mode to LAT.

```
SYST: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

```
<mode>
```

Parameter

<mode>	Aperture Mode
LAT	Low Aperture Time mode
HAT	High Aperture Time mode

Example of Use

To query the set Aperture Mode.

```
SYST:PMET:APER:MODE?
> LAT
```

4.3.3 OPERation Status Register

The figure below shows the layer structure of the OPERation Status Register.

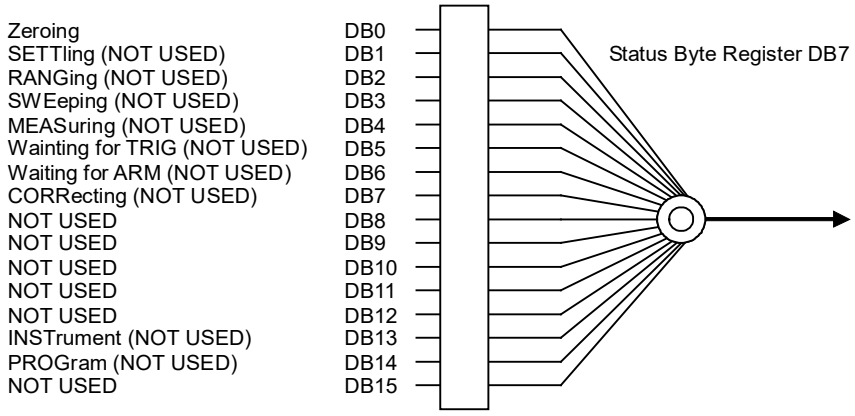


Figure 4.3.3-1 OPERation Status Register

Table 4.3.3-1 OPERation Status Register

Byte definition of OPERation Status Register	
DB0	Zero being executed

The table below shows device messages for the OPERation status register.

Table 4.3.3-2 Device messages for OPERation status register

Function	Device message
Operation Status Register Event	:STATus:OPERation[:EVENt]?
Operation Status Register Condition	:STATus:OPERation:CONDition?
Operation Status Register Enable	:STATus:OPERation:ENABle <integer>
	:STATus:OPERation:ENABle?
Operation Status Register Negative Transition	:STATus:OPERation:NTRansition <integer>
	:STATus:OPERation:NTRansition?
Operation Status Register Positive Transition	:STATus:OPERation:PTRansition <integer>
	:STATus:OPERation:PTRansition?

: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
```

:STATus:OPERation:ENABle <integer>

Operation Status Register Enable

Function

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

Command

```
:STATus:OPERation:ENABle <integer>
```

Parameter

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

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.

```
STAT:OPER:ENAB 16
```

:STATus:OPERation:ENABle?

Operation Status Register Enable Query

Function

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

Query

```
:STATus:OPERation:ENABle?
```

Response

```
<integer>
```

Parameter

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

Example of Use

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

```
STAT:OPER:ENAB?
> 16
```

: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
```

: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 4.4-1 Device messages for setting BER

Function	Device Message
Bit Error Rate Query	:CALCurate:BERT[:BASeband]:BER? EP|ER
Received Bit Query	:CALCurate:BERT[:BASeband]:DATA:COUNt?
Result and Status Query	:DATA:DATA? ER|EP
Error Bit Query	:DATA:DATA:BEC?
Count Clear	:DATA:COUNt:CLEar
Start Measurement by Continuous Mode	:INITiate:MODE:CONTinuous
Start Measurement by Endless Mode	:INITiate:MODE:ENDLess
Start Measurement by Single Mode	:INITiate:MODE:SINGle
Enable Polarity	:INPut:BERT[:BASeband]:CGATe:POLarity POSitive|NEGative|DISable
	:INPut:BERT[:BASeband]:CGATe:POLarity?
	:INPut:BERT[:BASeband]:CGATe[:STATe] ON|OFF|1|0
	:INPut:BERT[:BASeband]:CGATe[:STATe]?
Clock Polarity	:INPut:BERT[:BASeband]:CLOCk:POLarity POSitive|NEGative
	:INPut:BERT[:BASeband]:CLOCk:POLarity?
Data Polarity	:INPut:BERT[:BASeband]:DATA:POLarity POSitive|NEGative
	:INPut:BERT[:BASeband]:DATA:POLarity?
Display BER User Pattern File List Query	:MMEMory:LIST:PATTern?
Drive to load User Pattern	:MMEMory:MSIS <drive>
	:MMEMory:MSIS?
Load User Pattern	:MMEMory:LOAD:PATTern <pattern>
Measurement Status Query	:STATus:BERT:MEASure?
Data Pattern Type	[:SENSe]:BERT[:BASeband]:PRBS[:DATA] PN9|PN11|PN15|PN20|PN23|ALL0|ALL1|ALT|FPN9|FPN11|FPN15|FPN20|FPN23|USER
	[:SENSe]:BERT[:BASeband]:PRBS[:DATA]?
Sync Loss Threshold	[:SENSe]:BERT[:BASeband]:RSYNc:THReshold <n>,500|5000|50000
	[:SENSe]:BERT[:BASeband]:RSYNc:THReshold?
Auto Re-sync	[:SENSe]:BERT[:BASeband]:RSYNc[:STATe] ON|OFF|1|0
	[:SENSe]:BERT[:BASeband]:RSYNc[:STATe]?

Table 4.4-1 Device messages for setting BER (Cont'd)

Function	Device Message
BER – On/Off	[:SENSe]:BERT[:BASeband]:STATe ON|OFF|1|0
	[:SENSe]:BERT[:BASeband]:STATe?
Measurement Error Bit	[:SENSe]:BERT[:BASeband]:STOP:CRITeria:EBIT <bit>
	[:SENSe]:BERT[:BASeband]:STOP:CRITeria:EBIT?
Count Mode	[:SENSe]:BERT[:BASeband]:STOP:CRITeria[:SELect] EBIT|NONE
	[:SENSe]:BERT[:BASeband]:STOP:CRITeria[:SELect]?
Measurement Bit	[:SENSe]:BERT[:BASeband]:TBITs <bit>
	[:SENSe]:BERT[:BASeband]:TBITs?
Measurement Mode	[:SENSe]:BERT[:BASeband]:MODE SINGle|CONTinuous|ENDLelss
	[:SENSe]:BERT[:BASeband]:MODE?
PN Fix Pattern Length	[:SENSe]:BERT[:BASeband]:PRBS:PNFix:LENGth <bit>
	[:SENSe]:BERT[:BASeband]:PRBS:PNFix:LENGth?
PN Fix Pattern Initial Value	[:SENSe]:BERT[:BASeband]:PRBS:PNFix:INITial <n>
	[:SENSe]:BERT[:BASeband]:PRBS:PNFix:INITial?
Length for Sync on User Pattern	[:SENSe]:BERT[:BASeband]:PRBS:USER:SYNC:LENGth <bit>
	[:SENSe]:BERT[:BASeband]:PRBS:USER:SYNC:LENGth?
Sync Loss Count Query	[:SENSe]:BERT[:BASeband]:SYNLoss:COUNt?
Count Action at Sync Loss	[:SENSe]:BERT[:BASeband]:RSYNc:COUNt:ACTion CLEar|KEEP
	[:SENSe]:BERT[:BASeband]:RSYNc:COUNt:ACTion?
Sync Start Position on User Pattern	[:SENSe]:BERT[:BASeband]:PRBS:USER:SYNC:STARt <bit>
	[:SENSe]:BERT[:BASeband]:PRBS:USER:SYNC:STARt?
User Pattern File Name Query	[:SENSe]:BERT[:BASeband]:PRBS:USER:PATTern?
User Pattern Length Query	[:SENSe]:BERT[:BASeband]:PRBS:USER:LENGth?
Start Measurement	:INITiate[:IMMediate]
Stop Measurement	:ABORt

:CALCurate:BERT[:BASeband]:BER? EP|ER

Bit Error Rate Query

Function

Queries the bit error rate of BER measurement.

Query

```
:CALCurate:BERT[:BASeband]:BER? <format>
```

Response

```
<bit>
```

Parameter

`<format>`	Response format
EP	Returns the bit error rate as a percentage.
ER	Returns the bit error rate as an exponent.
`<bit>`	Bit error rate
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
```

:CALCurate:BERT[:BASeband]:DATA:COUNt?

Received Bit Query

Function

Queries the reception bit count value of BER measurement.

Query

```
:CALCurate: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
```

: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
```

: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
```

: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
```

: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
```

: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	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 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
```

: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
1	Enabled
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 query whether the Enable signal is enabled.

```
INP:BERT:CGAT?
> 1
```

:INPut:BERT[:BASeband]:CLOCk:POLarity POSitive|NEGative

Clock Polarity

Function

Sets the polarity of the clock signal for BER measurement.

Command

```
:INPut:BERT[:BASeband]:CLOCk:POLarity <polarity>
```

Parameter

`<polarity>`	Clock signal polarity
`POSitive`	Data is detected at the rising edge.
`NEGative`	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 set the clock signal polarity to Positive.

```
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
```

: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
```

: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 defied 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"
```

: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
```

[: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
```

[: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
```

[:SENSe]:BERT[:BASeband]:RSYNc[:STATe]?

Auto Re-sync Query

Function

Queries the ON/OFF status of the automatic resynchronization for BER measurement.

Query

```
[:SENSe]:BERT[:BASeband]:RSYNc[:STATe]?
```

Response

```
<on_off>
```

Parameter

<on_off>	Automatic resynchronization ON/OFF status
1	Automatic resynchronization is enabled.
0	Automatic resynchronization is 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 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
```

[: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

<bit>		Number of measurement error 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.

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
```

[: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
```

[: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
```

[:SENSe]:BERT[:BASeband]:STOP:CRITeria[:SELect]?

Count Mode Query

Function

Queries the measurement end condition of BER measurement.

Query

```
[:SENSe]:BERT[:BASeband]:STOP:CRITeria[:SELect]?
```

Response

```
<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 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
```

[: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
```

[:SENSe]:BERT[:BASeband]:MODE SINGle|CONTinuous|ENDLess

Measurement Mode

Function

Sets the BER measurement mode.

Command

```
[:SENSe]:BERT[:BASeband]:MODE <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.

If set to the endless mode, the other settings will be changed as follows:

Count Mode	Data Bit
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

<mode>	Measurement mode
SING	Single mode
CONT	Continuous mode
ENDL	Endless mode

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
```

[: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
```

[: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
```

[: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
```

[:SENSe]:BERT[:BASeband]:PRBS:USER:SYNC:LENGth <bit>

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

```
[: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
```

[: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
```

[: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.

```
BERT:SYNL:COUN?
> 500
```

[: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

<a>	Action when Sync Loss occurs
CLEar	Clears current count value
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.

```
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
```

[: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
```

[: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 (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.

```
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
```

: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
```

: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 5.1-1 Application common device messages

Function	Command	Query	Response	Remarks
Application Switch/Status	SYS apl,window	SYS? apl	status,window	apl: Application name = SIGANA | SPECT | CONFIG | … window: Window status = ACT | INACT | MIN | NON status: Application execution status = 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 | …
	SVPRM	---	---	

Table 5.1-1 Application common device messages (Cont'd)

Function	Command	Query	Response	Remarks
Recall Parameter Setting file	RCPRM file,device,apl	---	---	file: File name device: Drive name = A | B | D | E | … apl: Target application = ALL | CURR
	RCPRM file,device	---	---	
Error Message Display Mode	REMDISP mode	REMDISP?	mode	mode: Display mode = NORMAL | REMAIN | REMA | REMAIN_LAST
Calibration	CAL mode	---	---	mode: Calibration mode = ALL | LEVEL | LOLEAK_SUPPRESS | BAND | EXTRABAND | EXTRABAND_CLEAR Asynchronous command
All Calibration Temperature Query	---	CAL:TEMP:ALL?	temperature	
Bandwidth Calibration Temperature Query	---	CAL:TEMP:BAND?	temperature	
Level Calibration Temperature Query	---	CAL:TEMP:LEVel?	temperature	
Local Leak Calibration Temperature Query	---	CAL:TEMP:LOLeak?	temperature	
All Calibration Time Query	---	CAL:TIME:ALL?	time	
Bandwidth Calibration Time Query	---	CAL:TIME:BAND?	time	
Level Calibration Time Query	---	CAL:TIME:LEV?	time	
Local Leak Calibration Time Query	---	CAL:TIME:LOV?	time	
Reference Clock Status Query	---	ROSC:STAT?	status	
Language mode switching	SYST:LANG SCPI	SYST:LANG?	mode	mode : Language mode = SCPI | NAT
	SYST:LANG NAT			
Result Mode	SYST:RES:MODE A	SYST:RES:MODE?	mode	mode : Result Mode = A | B
	SYST:RES:MODE B			
Reference Signal Query	---	ROSC:SOUR?	source	source : Frequency reference signal source = INT | INTU | EXT | EXTU

Table 5.1-1 Application common device messages (Cont'd)

Function	Command	Query	Response	Remarks
Attenuation Mode	POW:ATT:MODE <mode>	POW:ATT:MODE?	mode	mode : Attenuator mode = MECH | COMB
Correction (On/Off)	CORR switch_com	CORR?	switch_res	switch_com : = ON|OFF|1|0
Correction Make Up	CORR:MAKE freq,real	---	---	
Correction Make Up All Clear	CORR:MAKE:CLE	---	---	
Save Correction File	MMEM:STOR:CORR filename,device	---	---	
Recall Correction File	MMEM:LOAD:CORR filename,device	---	---	
Correction Data Read	---	CORR:DATA?	number,freq_1,real_1 ,freq_2,real_2,...	number : Number of data freq : Frequency to correct real : Level to correct
Correction Make Up	CORD n,freq,real	---	---	
Correction Make Up All Clear	CORC	---	---	
Low Phase Noise (On/Off)	FREQ:SYNT:LPH switch_n	FREQ:SYNT:LPH?	on_off	switch_n : = ON|OFF|1|0 on_off: = 1|0
System Error Query	---	SYST:ERR?	Error/event_number, Error/event_description	
Software License Install Command	SWKEYINST fname,drive	---	---	fname: Target file name drive: Drive name where the license file is stored
Software License Name Query	---	SWKEYNAME? index	license	license: License name index: Index number

Table 5.1-1 Application common device messages (Cont'd)

Function	Command	Query	Response	Remarks
Extended END Event Status Enable Register (Signal Generator/BER function)	ESE0 n	ESE0?	byte	byte = Status bit bit7: Not used bit6: Not used bit5: Not used bit4: Not used bit3: Not used bit2: Not used bit1: BER bit0: Signal Generator
Extended END Event Status Register (Signal Generator/BER function)	---	ESR0?	byte	
Extended ERROR Event Status Enable Register (Signal Generator/BER function)	ESE1 n	ESE1?	byte	byte = Status bit bit7: Not used bit6: Not used bit5: Not used bit4: Not used bit3: Not used bit2: Not used bit1: BER bit0: Signal Generator
Extended ERROR Event Status Register (Signal Generator/BER function)	---	ESR1?	byte	

Table 5.1-1 Application common device messages (Cont'd)

Function	Command	Query	Response	Remarks
END Event Status Enable Register (BER Measurement function)	ESEEND n	ESEEND?	byte	byte = Status bit 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 (BER Measurement function)	---	ESREND?	byte	
ERROR Event Status Enable Register (BER Measurement function)	ESEERR n	ESEERR?	byte	byte = Status bit 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 (BER Measurement function)	---	ESRERR?	byte	

5.2 Config Function Device Messages

Device messages for setting Config function are shown in Table 5.2-1.

Table 5.2-1 Config function setting messages

Function	Command	Query	Response	Remarks
Load Application	LOAD apl	---	---	apl: Application name = SIGANA | SPECT | …
Unload Application	UNLOAD apl	---	---	
Delimiter (Terminator)	TRM code	TRM?	code	code: Termination code = LF | CRLF | NONE
	DELM code	DELM?	code	
Sound On/Off	SOUND on_off	SOUND?	on_off	
Screen Hard Copy Color	COLOR flag	COLOR?	flag	flag: Color image setting = NORMAL | REVERSE | MONOCHROME | MREVERSE
Frequency Reference	FREQREF source	FREQREF?	source	Source: Selection method = INT | AUTO

Table 5.2-1 Config function setting messages (Cont'd)

Function	Command	Query	Response	Remarks
Move Parameter File (HDD/SSD to Device)	MVRCDAT file,device	---	---	file: Target filename device: Drive name = A | B | D | E | …
Copy Parameter File (Device to HDD/SSD)	CPRCDAT file,device	---	---	
Delete Parameter File	DELRCDAT file,device	---	---	
Protect Parameter File	PRTRCDAT file,on_off,device	PRTRCDAT? file,device	on_off	
Parameter File List Query	---	LISTRCDAT? device	number,file1,file2,…	
Move Hard Copy File (HDD/SSD to Device)	MVCOPYDAT file,device	---	---	
Copy Hard Copy File (Device to HDD/SSD)	CPCOPYDAT file,device	---	---	
Delete Hard Copy File	DELCOPYDAT file,device	---	---	
Protect Hard Copy File	PRTCOPYDAT file,on_off,device	PRTCOPYDAT? file,device	on_off	
Hard Copy File List Query	---	LISTCOPYDAT? device	number,file1,file2,…	

Table 5.2-1 Config function setting messages (Cont'd)

Function	Command	Query	Response	Remarks
Move Trace File (HDD/SSD to Device)	MVTRCEDAT file,apl,device	---	---	file: Target filename device: Drive name = A | B | D | E | … apl: Application name = SIGANA | SPECT | …
Copy Trace File (Device to HDD/SSD)	CPTRCEDAT file,apl,device	---	---	
Delete Trace File	DELTRCEDAT file,apl,device	---	---	
Protect Trace File	PRTTRCEDAT file,on_off,apl,device	PRTTRCEDAT? file,apl,device	on_off	
Trace File List Query	---	LISTTRCEDAT? apl,device	number,file1,file2,...	
Move Digitize File (HDD/SSD to Device)	MVDGTZDAT file,apl,device	---	---	
Copy Digitize File (Device to HDD/SSD)	CPDGTZDAT file,apl,device	---	---	
Delete Digitize File	DELDGTZDAT file,apl,device	---	---	
Protect Digitize File	PRTDGTZDAT file,on_off,apl,device	PRTDGTZDAT? file,apl,device	on_off	
Digitize File List Query	---	LISTDGTZDAT? apl,device	number,file1,file2,...	

Table 5.2-1 Config function setting messages (Cont'd)

Function	Command	Query	Response	Remarks
Move System Information File (HDD/SSD to Device)	MVSYSINFO file,device	---	---	file: Target filename device: Drive name = A | B | D | E | … apl: Application name = SIGANA | SPECT | …
Copy System Information File (Device to HDD/SSD)	CPSYSINFO file,device	---	---	
Delete System Information File	DELSYSINFO file,device	---	---	
Protect System Information File	PRTSYSINFO file,on_off,device	PRTSYSINFO? file,device	on_off	
System Information File List Query	---	LISTSYSINFO? device	number,file1,file2,...	
System Information Query	---	SYSINFO? info	string	info: Information type = MODEL | TYPE | SERIAL | RTIME
Running Time Query	---	TMCNT?	minutes	minutes: Running time
Option Information Query	---	OPTINFO? ALL|HARD|SOFT	ALL: num1,sw1,model1,num2,sw2,model2,… HARD: num1,sw1,model1,num2,sw2,model2,… SOFT: num1,type1,sw1,model1,type2,num2,sw2,model2,…	num: Option number (000 to 999) sw: Switch (On/Off) model: Option name type: Application name
Software Version Query	---	SOFTVER? apl	version	apl: Application name = SIGANA | SPECT | …
FPGA Version Query	---	FPGAVER? hardware	version	hardware: Hardware version: Version
Hardware Revision Query	---	HARDREV? hardware	revision	hardware: Hardware revision: Revision
RF Temperature Query	---	SYST:TEMP:RF?	temperature	temperature: RF unit temperature
External Reference Frequency	ROSC:EXT:FREQ freq	ROSC:EXT:FREQ?	freq	

5.3 Power Meter Device Messages

Device messages for setting Power Meter are shown in Table 5.3-1.

Table 5.3-1 Power Meter setting messages

Function	Command	Query	Response	Remarks
Center Frequency	CNF freq	CNF?	freq	
Average Power Query	---	POWER? DBM|WATT|DB	real	
Zero Set	ZAJ	---	---	
	ZEROSET	---	---	
Reference Level Offset Mode	ROFFSETMD on_off	ROFFSETMD?	on_off	
Level Offset	RFLVLOFS rel_ampl	RFLVLOFS?	rel_ampl	
Reference Level Offset Value	ROFFSET level	ROFFSET?	level	
Reference Level Set	SETREL	---	---	

5.4 BER Measurement Settings

Device messages for setting the bit error rate (BER) measurement function are shown in Table 5.4-1.

Table 5.4-1 BER measurement setting messages

Function	Command	Query	Response	Remarks
Measurement Mode	MODE mode	MODE?	mode	mode: Measurement mode = SINGLE | CONTINUOUS | ENDLESS
Start Measurement	START	---	---	
Stop Measurement	STOP	---	---	
Start Measurement by Single Mode	SNGLS	---	---	
Start Measurement by Continuous Mode	CONTS	---	---	
Start Measurement by Endless Mode	ENDLS	---	---	
Count Clear	COUNTCLR	---	---	
Count Mode	COUNTMODE mode	COUNTMODE?	mode	mode: Measurement end condition = DATABIT | ERRORBIT
Measurement Bit	BERBIT bit	BERBIT?	bit	bit: Number of measurement bits
Measurement Error Bit	ERRORBIT bit	ERRORBIT?	bit	bit: Number of measurement error bits
Data Polarity	Data polarity	DATA?	polarity	polarity: Polarity = POS | NEG
Clock Polarity	CLK polarity	CLK?	polarity	polarity: Polarity = RISE | FALL
Enable Polarity	ENBL polarity	ENBL?	polarity	polarity: Polarity = HIGH | LOW | DISABLE

Table 5.4-1 BER measurement setting messages (Cont'd)

Function	Command	Query	Response	Remarks
Data Pattern Type	TYPE pattern	TYPE?	pattern	pattern: Data pattern type = PN9 | PN11 | PN15 | PN20 | PN23 | ALL0 | ALL1 | ALT | PN9FIX | PN11FIX | PN15FIX | PN20FIX | PN23FIX | USER
PN Fix Pattern Initial Value	PNINITIAL n	PNINITIAL?	n	
PN Fix Pattern Length	PNFIXLENG bit	PNFIXLENG?	bit	
Sync Start Position on User Pattern	SYNCSTARTPOS bit	SYNCSTARTPOS?	bit	
Length for Sync on User Pattern	SYNCLENG bit	SYNCLENG?	bit	
Drive to load User Pattern	LOADMEDIA drive	LOADMEDIA?	drive	drive: Drive letter
User Pattern File List	---	USERPATLST?	s1,s2,s3,...,s100	s*: Pattern file name
Load User Pattern	LOADUSERPAT pattern	---	---	pattern: Pattern file name
User Pattern File Name Query	---	USERPAT?	pattern,drive	Pattern: Pattern file name drive: Drive
User Pattern Length Query	---	USERPATLENG?	bit	
Auto Re-sync	AUTORESYNC on_off	AUTORESYNC?	on_off	
Sync Loss Threshold	SYNCLOSSTHLD n,a	SYNCLOSSTHLD?	n,a	n: Numerator of threshold (bit) a: Denominator of threshold (bit) = 500 | 5000 | 50000
Count Action at Sync Loss	SYNCLOSSACT action	SYNCLOSSACT?	action	action: Action at Sync Loss = COUNT_CLEAR | COUNT_KEEP

Table 5.4-1 BER measurement setting messages (Cont'd)

Function	Command	Query	Response	Remarks
Result and Status Query	---	RESULT? EP	per,countbit,errorbit,status,error	per : Error rate (%) exp : Error rate (exponent) countbit : Number of count bits errorbit : Number of error bits syncloss : Number of generated Sync Loss status : Measurement status error : Error status
		RESULT? ER	exp,countbit,errorbit,status,error	
		RESULT? EP_WSYNCLOSS	per,countbit,errorbit,syncloss,status,error	
		RESULT? ER_WSYNCLOSS	exp,countbit,errorbit,syncloss,status,error	
Error Rate Query	---	BER? EP	per	per: Error rate (%) exp: Error rate (exponent)
		BER? ER	exp	
Count Bit Query	---	RCVBIT?	bit	bit: Number of count bits
Error Bit Query	---	BITERR?	bit	bit: Number of error bits
Sync Loss Count Query	---	SYNCLOSS?	count	Count: Number of generated Sync Loss
Status Query	---	STATUS?	status	status: Measurement status = EXEC | SYNCHRONIZING | STOP | ERROR
Stop Status Query	---	STOPSTATUS?	status	status: Measurement stop status = EXEC | SYNCHRONIZING | STOP_NORMAL | STOP_OVERFLOW_DATACOUNT | STOP_OVERFLOW_SYNCLOSS | STOP_ABNORMAL_COUNT
Error Query	---	MEASERROR?	status	status: Error information = NONE | SYNCLOSS | CLOCKERROR | ENABLEERROR

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.

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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`	Automatic resynchronization ON/OFF
`ON|1`	Enables automatic resynchronization
`OFF|0`	Disables automatic resynchronization

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

`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.

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	Calibration 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
EXTRABAND	Executes analysis bandwidth calibration within the current frequency.
EXTRABAND_CLEAR	Clears the correction value of Extra Band Cal.
NFLOOR	Acquires the noise floor calibration values inside the measuring instrument that are used for Noise Floor Reduction.
NFLOOR_MIX	Acquires 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

`temperature`	Temperature of the RF unit at the time of the calibration
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 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

temperature	Temperature of the RF unit at the time of the calibration
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 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

`temperature`	Temperature of the RF unit at the time of the calibration
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 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
```

Parameter

`temperature`	Temperature of the RF unit at the time of the calibration
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
```

CLK/CLK?

Clock Polarity

Function

Sets the polarity of the clock signal for BER measurement.

Command

```
CLK polarity
```

Query

```
CLK?
```

Response

```
polarity
```

Parameter

`polarity`	Clock signal polarity
`RISE`	Data is detected at the rising edge
`FALL`	Data is detected at the falling edge

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
`freq`	Frequency to be corrected
Range	–1 GHz to 400 GHz
Resolution	1 Hz
Suffix code	`HZ, KHZ, KZ, MHZ, MZ, GHZ, GZ`
`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

`number`	Number of data
Range	0 to 4096.
`freq`	Frequency to be corrected
Range	–1 GHz 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
```

CORR:MAKE

Correction Make Up

Function

This command adds some data to the level frequency correction table.

Command

```
CORR:MAKE freq,real
```

Parameter

`freq`	Frequency to be corrected
Range	–1 to 400 GHz
Resolution	1 Hz
Suffix code	`HZ, KHZ, KZ, MHZ, MZ, GHZ, GZ`
Default	0 Hz

`real`	Correction level
Range	–100 to +100 dB
Resolution	0.001 dB
Suffix code	`DB`
Default	0 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.

```
CORR:MAKE 100MHZ,3DB
```

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.

```
CONTCLR
```

COUNTMODE/COUNTMODE?

Count Mode

Function

Sets the BER measurement end condition.

Command

```
COUNTMODE mode
```

Query

```
COUNTMODE?
```

Response

```
mode
```

Parameter

`mode`	BER measurement end condition
`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
```

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
```

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

`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 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

`polarity`	Data signal logic
`POS`	Positive logic
`NEG`	Negative logic

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

`code`	Delimiter type
`LF`	LF
`CRLF`	CR/LF (Default)
`NONE`	None (EOI only)

Example of Use

To set the delimiter to CR/LF.

```
DELM CRLF
```

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

`on_off`	LCD backlight status
`ON`	On (Default)
`OFF`	Off

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`	Enable signal 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
```

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 = 2^7 = 128	Bit 7:	Not used
bit6 = 2^6 = 64	Bit 6:	Not used
bit5 = 2^5 = 32	Bit 5:	Completion of waveform pattern copy
bit4 = 2^4 = 16	Bit 4:	Completion of waveform pattern loading to waveform memory
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:	Measurement stop by the STOP or START command
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:	Measurement stop due to parameter change
bit0 = 2^0 = 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 = 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:	Completion of waveform pattern copy
bit4 = 2^4 = 16	Bit 4:	Completion of waveform pattern loading to waveform memory
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:	Measurement stop by the STOP or START command
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:	Measurement stop due to parameter change
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

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

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

```
FPGAVER? hardware

FPGAVER? ALL
```

Response

```
version
```

Parameter

`hardware` FPGA type

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

MEAS_WB	Wideband FPGA on 1 GHz BW Digitizing Unit
ALL	All FPGA
version	FPGA version number

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	Frequency reference signal source
INT	Uses internal reference signal source.
AUTO	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
```

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

`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`	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
`revision`	Revision number

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
```

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,...
```

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
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
```

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 1000 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,...
```

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 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
`device`	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 defied 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"
```

MEASERROR?

Error Query

Function

Queries BER measurement error status.

Query

```
MEASERROR?
```

Response

```
error
```

Parameter

error	Error status
NONE	No error
SYNCLOSS	Sync Loss status
CLOCKERROR	Clock signal error
ENABLEERROR	Enable signal error

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
```

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
```

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
```

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

`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 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
```

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,...
```

(whwn `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,RUBIDIUM 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

`format`	File format
`BMP`	BMP format (Default)
`PNG`	PNG format
When omitted.	BMP format

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
```

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

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 "101010101".

```
PNINITIAL #B101010101
```

POWER?

Average Power Query

Function

This command queries the measurement power in specified units.

Query

```
POWER? [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	`DBM`	
`real`	Measurement power	
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
```

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`	Protects the file.
`OFF`	Does not protect the file.
`apl`	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.

```
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`	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 parameter file “Parameter” saved in drive E.

```
PRTRCDAT "Parameter",ON,e
```

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
```

PRTTRCEDAT/PRTTRCEDAT?

Protect Trace File

Function

This command saves a trace file saved in the specified drive. Protected files cannot be deleted.

Command

```
PRTTRCEDAT file,on_off,apl,device
```

Query

```
PRTTRCEDAT? 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.

```
PRTTRCEDAT "Trace",ON,SPECT,e
```

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`	Error message display mode
`NORMAL`	Deletes the error message display once the next command is received. (Default)
`REMAIN`	To keep the first error message displayed.
`REMA`	(Same as `REMAIN`)
`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
`errorbit`	Number of error bits
`syncloss`	Number of Sync Loss errors occurred during measurement
`status`	Measurement status
`error`	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
```

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

`rel_ampl`	Offset value
Range	–100.00 to +100.00
Resolution	0.01
Default	0.00
Suffix code	`DB` `DB` when omitted.

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`	When the reference level offset function is ON
`OFF`	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`	Reference level offset function ON/OFF
`ON`	Sets the reference level offset function to ON.
`OFF`	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`	Reference level offset function On/Off
`ON`	Sets the reference level offset function to On.
`OFF`	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

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
```

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	Status of frequency reference signal source
0	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

apl	Target application name
SIGANA	Signal Analyzer
SPECT	Spectrum Analyzer
PNOISE	Phase Noise
PMET	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.

```
SOFTVER? SIGANA
> 4.0.0
```

SOUND/SOUND?

Sound On/Off

Function

Sets the sound file ON/OFF.

Command

```
SOUND on_off
```

Query

```
SOUND?
```

Response

```
on_off
```

Parameter

`on_off`	Sound ON/OFF
`ON`	On (Default)
`OFF`	Off

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

status	Measurement stop status
STOP_NORMAL	Measurement is stopped normally.
STOP_OVERFLOW_DATACOUNT	The number of count bits exceeds the upper limit.
STOP_OVERFLOW_SYNCLOSS	The number of Sync Loss errors exceeds the upper limit.
STOP_ABNORMAL_COUNT	Measurement is stopped due to abnormality.
EXEC	During measurement
SYNCHRONIZING	Synchronization is established.

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

```
SWKEYINST 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 flash drive (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
```

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	Number of Sync Loss errors occurred
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
```

SYNCLOSSACT/SYNCLOSSACT?

Count Action at Sync Loss

Function

Sets the action when Sync Loss occurs during BER measurement.

Command

```
SYNCLOSSACT a
```

Query

```
SYNCLOSSACT?
```

Response

```
a
```

Parameter

a	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.

```
SYNCLOSSACT 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
WCDMADL	W-CDMA/HSPA Downlink
WCDMAUL	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
LTETDDDL	LTE-TDD Downlink
LTETDDUL	LTE-TDD Uplink
CDMA2KFWD	CDMA2000
EVDOFWD	EVDO
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
TRXSC	TRX Sweep Calibration
PMET	Power Meter

Any optional installed software other than those above can be specified. Refer to the Operation Manual (Remote Control) of each application for details.

window	Application window status
ACT	Operation enabled (displayed on top screen)
INACT	Inactive
MIN	Minimized
NON	Not displayed (query only)
When omitted.	Same as ACT

status	Application status
CURRENT	Executed and targeted for operation
RUN	Executed but not targeted for operation
IDLE	Loaded but not executed
UNLOAD	Not loaded

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.

```
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,
```

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 6-1 Error messages

Error/event_number	Error/event_description	Description
–100	Command error	Indicates that the command is incorrect or invalid.
–108	Parameter not allowed	Indicates that the number of parameters does not match.
–109	Missing parameter	Indicates that the number of parameters does not match. This is used if the number is not either too large or too small.
–113	Undefined header	This is an undefined command.
–120	Numeric data error	An invalid value is included.
–140	Character data error	This indicates that characters that cannot be used were input.
–150	String data error	This indicates that an incorrect character string is included in the command.
–160	Block data error	This is an error in the binary data format.
–200	Execution error	This indicates that this is an execution error other than parameter settings.

Table 6-1 Error messages (Cont'd)

Error/event_number	Error/event_description	Description
–220	Parameter error	This indicates that a set parameter is incorrect or invalid.
–221	Setting conflict	This indicates that this is setting disabled state.
–222	Data out of range	This indicates that the settable range has been exceeded.
–250	Mass storage error	A file operation error occurs.
–252	Missing media	No specified driver
–253	Corrupt media	Format error
–256	File name not found	No file
–350	Queue overflow	This indicates that the error event queue has overflowed.

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

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 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

`temperature`	Measured temperature of RF unit in the signal analyzer
Resolution	0.01°C
Suffix code	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
```

TMCNT?

Running Time Query

Function

This command queries the running time.

Query

```
TMCNT?
```

Response

`minutes`	Running time
Suffix code	None. Returns the time in minutes.

Example of Use

To query the running time.

```
TMCNT?
> 100
```

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

`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 (0101….)
`PN9FIX`	PN9 Fix
`PN11FIX`	PN11 Fix
`PN15FIX`	PN15 Fix
`PN20FIX`	PN20 Fix
`PN23FIX`	PN23 Fix
`USER`	User-defined pattern

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
```

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

`bit`	Bit length of user-defined pattern
Range	8 to 1024 bits (for MS269xA) 8 to 4096 bits (for MS2830A, MS2840A)

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
```