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

36th 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 (Mainframe Operation), MS2840A Signal Analyzer Operation Manual (Mainframe Operation), or MS2850A Signal Analyzer Operation Manual (Mainframe Operation). Please also refer to them before using the equipment.**
- **Keep this manual with the equipment.**

ANRITSU CORPORATION

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Safety Symbols

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

Symbols used in manual

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

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

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

Safety Symbols Used on Equipment and in Manual

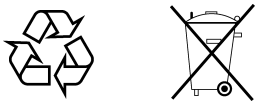
The following safety symbols are used inside or on the equipment near operation locations to provide information about safety items and operation precautions. Ensure that you clearly understand the meanings of the symbols and take the necessary precautions BEFORE using the equipment.

This indicates a prohibited operation. The prohibited operation is indicated symbolically in or near the barred circle.

This indicates an obligatory safety precaution. The obligatory operation is indicated symbolically in or near the circle.

This indicates a warning or caution. The contents are indicated symbolically in or near the triangle.

This indicates a note. The contents are described in the box.



These indicate that the marked part should be recycled.

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

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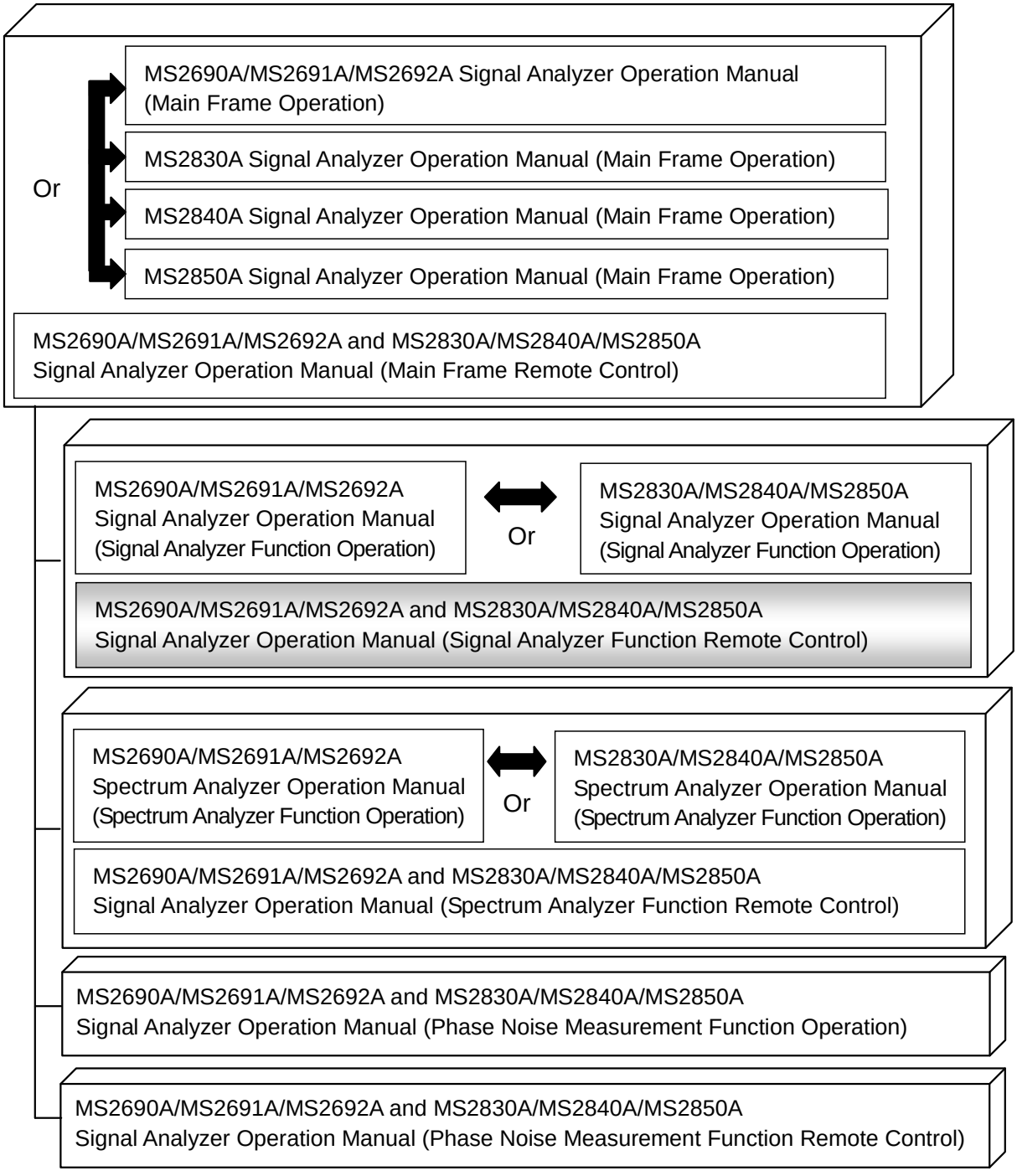
About This Manual

■ Operation manual configuration

The operation manual configuration of the MS2690A/MS2691A/MS2692A, MS2830A, MS2840A, and MS2850A Signal Analyzer is shown below.



- Signal Analyzer Operation Manual (Mainframe Operation)
- Signal Analyzer Operation Manual (Mainframe Remote Control)

  Description of basic operations, maintenance procedures, common functions and common remote functions of the mainframe

- Signal Analyzer Operation Manual (Signal Analyzer Function)
- Signal Analyzer Operation Manual (Signal Analyzer Function Remote Control) <This document>

  Description of basic operations, functions and remote functions of the signal analyzer

- Signal Analyzer Operation Manual (Spectrum Analyzer Function)
- 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)
- 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

Except where there is a good reason to do otherwise, this manual assumes the use of MS269xA.

Note that the descriptions in this manual also apply to MS2830A, MS2840A, or MS2850A.

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Chapter 1 Overview

This chapter provides an overview of the remote control of the Spectrum Analyzer function (hereinafter, referred to as “this application”).

1.1 Overview 1-2

1.1 Overview

Automatic measurement can be performed by using this instrument in connection with an external controller (PC). This instrument is standardly equipped with GPIB, Ethernet, and USB interfaces. You can also select a remote control command from the SCPI mode, which is a command format defined by the SCPI Consortium, and Native mode, which is our unique format.

See the *MS2690A/MS2691A/MS2692A and MS2830A/MS2840A/MS2850A Signal Analyzer Operation Manual (Mainframe Remote Control)* for how to switch the language mode.

You can use the Native mode by converting SCPI commands into Native ones. See the *MS2690A/MS2691A/MS2692A and MS2830A/MS2840A/MS2850A Signal Analyzer Operation Manual (Mainframe Remote Control)* for details.

To use the Signal Analyzer function on the MS2830A or MS2840A, Analysis Bandwidth 10 MHz Option or greater is required.

Chapter 2 SCPI Device Message Details

This chapter provides detailed specifications of SCPI Remote Control Command to execute the functions of this application by functions. Refer to the *MS2690A/MS2691A/MS2692A and MS2830A/MS2840A/MS2850A Signal Analyzer Operation Manual (Mainframe Remote Control)* for detailed specifications on IEEE488.2 common device message and application common device messages.

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2.1 Frequency Settings

Table 2.1-1 lists device messages for setting frequency.

Table 2.1-1 Device messages for setting frequency

Function	Device Message
Center Frequency	[:SENSe]:FREQuency:CENTer <freq>
	[:SENSe]:FREQuency:CENTer?
Frequency Step Size	[:SENSe]:FREQuency:CENTer:STEP[:INCRement] <freq>
	[:SENSe]:FREQuency:CENTer:STEP[:INCRement]?
Start Frequency	[:SENSe]:FREQuency:STARt <freq>
	[:SENSe]:FREQuency:STARt?
Stop Frequency	[:SENSe]:FREQuency:STOP <freq>
	[:SENSe]:FREQuency:STOP?
Frequency Span	[:SENSe]:FREQuency:SPAN <freq>
	[:SENSe]:FREQuency:SPAN?
Frequency Band Mode	[:SENSe]:FREQuency:BAND:MODE NORMal|SPURious
	[:SENSe]:FREQuency:BAND:MODE?
Sampling Rate	[:SENSe]:FREQuency:SRATe?
Switching Speed	[:SENSe]:FREQuency:SYNThesis[:STATe] BPHase|NORMal|FAST
	[:SENSe]:FREQuency:SYNThesis[:STATe]?

[:SENSe]:FREQuency:CENTer <freq>

Center Frequency

Function

This command sets the center frequency.

Command

```
[:SENSe]:FREQuency:CENTer <freq>
```

Parameter

`<freq>` Center frequency

Range

[MS269xA]

Without MS269xA-077/177/078/178, or frequency span ≤ 31.25 MHz

0 Hz to 6 GHz (MS2690A)
0 Hz to 13.5 GHz (MS2691A)
0 Hz to 26.5 GHz (MS2692A)

With MS269xA-077/177/078/178, and frequency span > 31.25 MHz

100 MHz to 6 GHz (MS2690A)
100 MHz to 13.5 GHz (MS2691A)

With MS269xA-077/177/078/178, without MS2692A-067/167, and frequency span > 31.25 MHz

100 MHz to 6 GHz (MS2692A)

With MS269xA-077/177/078/178, with MS2692A-067/167, and frequency span > 31.25 MHz

100 MHz to 26.5 GHz (MS2692A)

[MS2830A]

Without MS2830A-077/078, or frequency span ≤ 31.25 MHz

0 Hz to 3.6 GHz (Option 040)
0 Hz to 6.0 GHz (Option 041)
0 Hz to 13.5 GHz (Option 043)
0 Hz to 26.5 GHz (Option 044)
0 Hz to 43 GHz (Option 045)

With MS2830A-077/078, and frequency span > 31.25 MHz

300 MHz to 3.6 GHz (Option 040)
300 MHz to 6.0 GHz (Option 041)
300 MHz to 13.5 GHz (Option 043)

With MS2830A-077/078, without MS2830A-067/167, and frequency span > 31.25 MHz

300 MHz to 6 GHz (Option 044)
300 MHz to 6 GHz (Option 045)

With MS2830A-077/078, with MS2830A-067/167, and frequency span > 31.25 MHz

300 MHz to 26.5 GHz (Option 044)
300 MHz to 43 GHz (Option 045)

[MS2840A]

Without MS2840A-077/177/078/178, or frequency span ≤ 31.25 MHz

0 Hz to 3.6 GHz (Option 040)
0 Hz to 6.0 GHz (Option 041)
0 Hz to 26.5 GHz (Option 044)
0 Hz to 44.5 GHz (Option 046)

With MS2840A-077/177/078/178, and frequency span ≤ 31.25 MHz

300 MHz to 3.6 GHz (Option 040)
300 MHz to 6.0 GHz (Option 041)

With MS2840A-077/177/078/178, without MS2840A-067/167, and frequency span > 31.25 MHz

300 MHz to 6 GHz (Option 044)
300 MHz to 6 GHz (Option 046)

With MS2840A-077/177/078/178, with MS2840A-067/167, and frequency span > 31.25 MHz

300 MHz to 26.5 GHz (Option 044)
300 MHz to 44.5 GHz (Option 046)

[MS2850A]

Without MS2850A-034/134, or frequency span ≤ 510 MHz

100 MHz to 32 GHz (Option 047)
100 MHz to 44.5 GHz (Option 046)

With MS2850A-034/134, and frequency span > 510 MHz

4.2 GHz to 32 GHz (Option 047)
4.2 GHz to 44.5 GHz (Option 046)

Resolution: 1 Hz

Suffix code: `HZ`, `KHZ`, `KZ`, `MHZ`, `MZ`, `GHZ`, `GZ`

Hz is used when omitted.

Default

[MS269xA] 6.00 GHz (MS2690A/91A/92A)
[MS2830A] 3.6 GHz (Option 040/041/043/044/045)
[MS2840A] 3.6 GHz (Option 040/041/044/046)
[MS2850A] 3.6 GHz

Details

This command is not available while the Replay function is being executed.

This command is limited by the Frequency Span settings.

- When MS2690A/91/92A is used and Frequency Span is 50 MHz or more, the lower limit frequency is 100 MHz.
- When MS2830A, MS2840A is used and Frequency Span is 50 MHz or more, the lower limit frequency is 300 MHz.
- When MS2850A is used and Frequency Span is 1 GHz or more, the lower limit frequency is 4.2 GHz.

This function is restricted in the following condition:

- Center frequency is fixed to 0 Hz when Terminal is set to DigRF 3G (only for MS269x Series).

Example of Use

To set the center frequency to 123.456 kHz.

```
FREQ:CENT 123456
```

[:SENSe]:FREQuency:CENTer?

Center Frequency Query

Function

This command queries the center frequency.

Query

```
[:SENSe]:FREQuency:CENTer?
```

Response

```
<freq>
```

Parameter

`<freq>` Center frequency

Range

[MS269xA]

Without MS269xA-077/177/078/178, or frequency span ≤ 31.25 MHz

0 Hz to 6 GHz (MS2690A)
0 Hz to 13.5 GHz (MS2691A)
0 Hz to 26.5 GHz (MS2692A)

With MS269xA-077/177/078/178, and frequency span > 31.25 MHz

100 MHz to 6 GHz (MS2690A)
100 MHz to 13.5 GHz (MS2691A)

With MS269xA-077/177/078/178, without MS2692A-067/167, and frequency span > 31.25 MHz

100 MHz to 6 GHz (MS2692A)

With MS269xA-077/177/078/178, with MS2692A-067/167, and frequency span > 31.25 MHz

100 MHz to 26.5 GHz (MS2692A)

[MS2830A]

Without MS2830A-077/078, or frequency span ≤ 31.25 MHz

0 Hz to 3.6 GHz (Option 040)
0 Hz to 6.0 GHz (Option 041)
0 Hz to 13.5 GHz (Option 043)
0 Hz to 26.5 GHz (Option 044)
0 Hz to 43 GHz (Option 045)

With MS2830A-077/078, and frequency span > 31.25 MHz

300 MHz to 3.6 GHz (Option 040)
300 MHz to 6.0 GHz (Option 041)
300 MHz to 13.5 GHz (Option 043)

With MS2830A-077/078, without MS2830A-067/167, and frequency span > 31.25 MHz
300 MHz to 6 GHz (Option 044)
300 MHz to 6 GHz (Option 045)

With MS2830A-077/078, with MS2830A-067/167, and frequency span > 31.25 MHz
300 MHz to 26.5 GHz (Option 044)
300 MHz to 43 GHz (Option 045)

[MS2840A]

Without MS2840A-077/177/078/178, or frequency span ≤ 31.25 MHz
0 Hz to 3.6 GHz (Option 040)
0 Hz to 6.0 GHz (Option 041)
0 Hz to 26.5 GHz (Option 044)
0 Hz to 44.5 GHz (Option 046)

With MS2840A-077/177/078/178, and frequency span ≤ 31.25 MHz
300 MHz to 3.6 GHz (Option 040)
300 MHz to 6.0 GHz (Option 041)

With MS2840A-077/177/078/178, without MS2840A-067/167, and frequency span > 31.25 MHz
300 MHz to 6 GHz (Option 044)
300 MHz to 6 GHz (Option 046)

With MS2840A-077/177/078/178, with MS2840A-067/167, and frequency span > 31.25 MHz
300 MHz to 26.5 GHz (Option 044)
300 MHz to 44.5 GHz (Option 046)

[MS2850A]

Without MS2850A-034/134, or frequency span ≤ 510 MHz
100 MHz to 32 GHz (Option 047)
100 MHz to 44.5 GHz (Option 046)

With MS2850A-034/134, and frequency span > 510 MHz
4.2 GHz to 32 GHz (Option 047)
4.2 GHz to 44.5 GHz (Option 046)

Resolution: 1 Hz

Suffix code: None. Value is returned in Hz units.

Example of Use

To query the center frequency.

```
FREQ:CENT?
> 123456
```

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

Frequency Step Size

Function

This command sets the step size of the center, start and stop frequency.

Command

```
[:SENSe]:FREQuency:CENTer:STEP[:INCRement] <freq>
```

Parameter

<freq> Step size

Range

[MS269xA]

Without MS269xA-077/177/078/178, or frequency span ≤ 31.25 MHz

1 Hz to 6 GHz (MS2690A)
1 Hz to 13.5 GHz (MS2691A)
1 Hz to 26.5 GHz (MS2692A)

With MS269xA-077/177/078/178, and frequency span > 31.25 MHz

1 Hz to 6 GHz (MS2690A)
1 Hz to 13.5 GHz (MS2691A)

With MS269xA-077/177/078/178, without MS2692A-067/167, and frequency span > 31.25 MHz

1 Hz to 6 GHz (MS2692A)

With MS269xA-077/177/078/178, with MS2692A-067/167, and frequency span > 31.25 MHz

1 Hz to 26.5 GHz (MS2692A)

[MS2830A]

Without MS2830A-077/078, or frequency span ≤ 31.25 MHz

1 Hz to 3.6 GHz (Option 040)
1 Hz to 6.0 GHz (Option 041)
1 Hz to 13.5 GHz (Option 043)
1 Hz to 26.5 GHz (Option 044)
1 Hz to 43 GHz (Option 045)

With MS2830A-077/078, and frequency span > 31.25 MHz

1 Hz to 3.6 GHz (Option 040)
1 Hz to 6.0 GHz (Option 041)
1 Hz to 13.5 GHz (Option 043)

With MS2830A-077/078, without MS2830A-067/167, and frequency span > 31.25 MHz

1 Hz to 6 GHz (Option 044)
1 Hz to 6 GHz (Option 045)

With MS2830A-077/078, with MS2830A-067/167, and frequency span > 31.25 MHz

1 Hz to 26.5 GHz (Option 044)
1 Hz to 43 GHz (Option 045)

[MS2840A]

Without MS2840A-077/177/078/178, or frequency span ≤ 31.25 MHz
1 Hz to 3.6 GHz (Option 040)
1 Hz to 6.0 GHz (Option 041)
1 Hz to 26.5 GHz (Option 044)
1 Hz to 44.5 GHz (Option 046)

With MS2840A-077/177/078/178, and frequency span ≤ 31.25 MHz
1 Hz to 3.6 GHz (Option 040)
1 Hz to 6.0 GHz (Option 041)

With MS2840A-077/177/078/178, without MS2840A-067/167, and frequency span > 31.25 MHz
1 Hz to 6 GHz (Option 044)
1 Hz to 6 GHz (Option 046)

With MS2840A-077/177/078/178, with MS2840A-067/167, and frequency span > 31.25 MHz
1 Hz to 26.5 GHz (Option 044)
1 Hz to 44.5 GHz (Option 046)

[MS2850A]

1 Hz to 32 GHz (Option 047)
1 Hz to 44.5 GHz (Option 046)

Resolution	1 Hz
Suffix code	`HZ, KHZ, KZ, MHZ, MZ, GHZ, GZ` Hz is used when omitted.
Default	1 GHz

Example of Use

To set the step size to 100.0 kHz.

```
FREQ:CENT:STEP 100000
```

[:SENSe]:FREQuency:CENTer:STEP[:INCRement]?

Frequency Step Size Query

Function

This command queries the step size of the center, start and stop frequency.

Query

```
[:SENSe]:FREQuency:CENTer:STEP?
```

Response

```
<freq>
```

Parameter

`<freq>` Step size

Range

[MS269xA]

Without MS269xA-077/177/078/178, or frequency span ≤ 31.25 MHz

1 Hz to 6 GHz (MS2690A)
1 Hz to 13.5 GHz (MS2691A)
1 Hz to 26.5 GHz (MS2692A)

With MS269xA-077/177/078/178, and frequency span > 31.25 MHz

1 Hz to 6 GHz (MS2690A)
1 Hz to 13.5 GHz (MS2691A)

With MS269xA-077/177/078/178, without MS2692A-067/167, and frequency span > 31.25 MHz

1 Hz to 6 GHz (MS2692A)

With MS269xA-077/177/078/178, with MS2692A-067/167, and frequency span > 31.25 MHz

1 Hz to 26.5 GHz (MS2692A)

[MS2830A]

Without MS2830A-077/078, or frequency span ≤ 31.25 MHz

1 Hz to 3.6 GHz (Option 040)
1 Hz to 6.0 GHz (Option 041)
1 Hz to 13.5 GHz (Option 043)
1 Hz to 26.5 GHz (Option 044)
1 Hz to 43 GHz (Option 045)

With MS2830A-077/078, and frequency span > 31.25 MHz

1 Hz to 3.6 GHz (Option 040)
1 Hz to 6.0 GHz (Option 041)
1 Hz to 13.5 GHz (Option 043)

With MS2830A-077/078, without MS2830A-067/167, and frequency span > 31.25 MHz

1 Hz to 6 GHz (Option 044)
1 Hz to 6 GHz (Option 045)

With MS2830A-077/078, with MS2830A-067/167, and frequency span > 31.25 MHz
1 Hz to 26.5 GHz (Option 044)
1 Hz to 43 GHz (Option 045)

[MS2840A]

Without MS2840A-077/177/078/178, or frequency span ≤ 31.25 MHz
1 Hz to 3.6 GHz (Option 040)
1 Hz to 6.0 GHz (Option 041)
1 Hz to 26.5 GHz (Option 044)
1 Hz to 44.5 GHz (Option 046)

With MS2840A-077/177/078/178, and frequency span ≤ 31.25 MHz
1 Hz to 3.6 GHz (Option 040)
1 Hz to 6.0 GHz (Option 041)

With MS2840A-077/177/078/178, without MS2840A-067/167, and frequency span > 31.25 MHz
1 Hz to 6 GHz (Option 044)
1 Hz to 6 GHz (Option 046)

With MS2840A-077/177/078/178, with MS2840A-067/167, and frequency span > 31.25 MHz
1 Hz to 26.5 GHz (Option 044)
1 Hz to 44.5 GHz (Option 046)

[MS2850A]

1 Hz to 32 GHz (Option 047)
1 Hz to 44.5 GHz (Option 046)

Resolution 1 Hz

Suffix code None. Value is returned in Hz units.

Example of Use

To query the step size.

```
FREQ:CENT:STEP?
> 100000
```

[:SENSe]:FREQuency:STARt <freq>

Start Frequency

Function

This command sets the start frequency.

Command

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

Parameter

`<freq>` Start frequency

Range Range subtracting Frequency Span/2 from any of the following center frequency ranges:

[MS269xA]

Without MS269xA-077/177/078/178, or frequency span ≤ 31.25 MHz
- 0 Hz to 6 GHz (MS2690A)
- 0 Hz to 13.5 GHz (MS2691A)
- 0 Hz to 26.5 GHz (MS2692A)

With MS269xA-077/177/078/178, and frequency span > 31.25 MHz
- 100 MHz to 6 GHz (MS2690A)
- 100 MHz to 13.5 GHz (MS2691A)

With MS269xA-077/177/078/178, without MS2692A-067/167, and frequency span > 31.25 MHz
- 100 MHz to 6 GHz (MS2692A)

With MS269xA-077/177/078/178, with MS2692A-067/167, and frequency span > 31.25 MHz
- 100 MHz to 26.5 GHz (MS2692A)

[MS2830A]

Without MS2830A-077/078, or frequency span ≤ 31.25 MHz
- 0 Hz to 3.6 GHz (Option 040)
- 0 Hz to 6.0 GHz (Option 041)
- 0 Hz to 13.5 GHz (Option 043)
- 0 Hz to 26.5 GHz (Option 044)
- 0 Hz to 43 GHz (Option 045)

With MS2830A-077/078, and frequency span > 31.25 MHz
- 300 MHz to 3.6 GHz (Option 040)
- 300 MHz to 6.0 GHz (Option 041)
- 300 MHz to 13.5 GHz (Option 043)

With MS2830A-077/078, without MS2830A-067/167, and frequency span > 31.25 MHz
- 300 MHz to 6 GHz (Option 044)
- 300 MHz to 6 GHz (Option 045)

With MS2830A-077/078, with MS2830A-067/167, and frequency span > 31.25 MHz

300 MHz to 26.5 GHz (Option 044)
300 MHz to 43 GHz (Option 045)

[MS2840A]

Without MS2840A-077/177/078/178, or frequency span ≤ 31.25 MHz
0 Hz to 3.6 GHz (Option 040)
0 Hz to 6.0 GHz (Option 041)
0 Hz to 26.5 GHz (Option 044)
0 Hz to 44.5 GHz (Option 046)

With MS2840A-077/177/078/178, and frequency span ≤ 31.25 MHz
300 MHz to 3.6 GHz (Option 040)
300 MHz to 6.0 GHz (Option 041)

With MS2840A-077/177/078/178, without MS2840A-067/167, and frequency span > 31.25 MHz
300 MHz to 6 GHz (Option 044)
300 MHz to 6 GHz (Option 046)

With MS2840A-077/177/078/178, with MS2840A-067/167, and frequency span > 31.25 MHz
300 MHz to 26.5 GHz (Option 044)
300 MHz to 44.5 GHz (Option 046)

[MS2850A]

Without MS2850A-034/134, or frequency span ≤ 510 MHz
100 MHz to 32 GHz (Option 047)
100 MHz to 44.5 GHz (Option 046)

With MS2850A-034/134, and frequency span > 510 MHz
4.2 GHz to 32 GHz (Option 047)
4.2 GHz to 44.5 GHz (Option 046)

Resolution: 1 Hz

Suffix code: `HZ, KHZ, KZ, MHZ, MZ, GHZ, GZ`
Hz is used when omitted.

Default

[MS269xA] 5.984375 GHz

[MS2830A] 3.584375 GHz
(Option 005/105/007/009/109/077/078)
3.595 GHz (Option 006/106)

[MS2840A] 3.584375 GHz
(Option 005/105/009/109/077/177/078/178)
3.595 GHz (Option 006/106)

[MS2850A] 3.584375 GHz

Details

This command is not available while the Replay function is being executed.

This command is limited by the Frequency Span settings.

- When MS2690A/91/92A is used and Frequency Span is 50 MHz or more, the lower limit frequency is 100 MHz.
- When MS2830A, MS2840A is used and Frequency Span is 50 MHz or more, the lower limit frequency is 300 MHz.
- When MS2850A is used and Frequency Span is 1 GHz or more, the lower limit frequency is 4.2 GHz.

This function is restricted in the following condition:

- Start frequency is fixed to
  –270.833 kHz (for GSM) or –3.84 MHz (for W-CDMA)
  when Terminal is set to DigRF 3G (only for MS269x Series).

Example of Use

To set the start frequency to 1 GHz.

```
FREQ:STAR 1GHZ
```

[:SENSe]:FREQuency:STARt?

Start Frequency Query

Function

This command queries the start frequency.

Query

```
[:SENSe]:FREQuency:STARt?
```

Response

```
<freq>
```

Parameter

<freq> Start frequency

Range Range subtracting Frequency Span/2 from any of the following center frequency ranges:

[MS269xA]

Without MS269xA-077/177/078/178, or frequency span ≤ 31.25 MHz
0 Hz to 6 GHz (MS2690A)
0 Hz to 13.5 GHz (MS2691A)
0 Hz to 26.5 GHz (MS2692A)

With MS269xA-077/177/078/178, and frequency span > 31.25 MHz
100 MHz to 6 GHz (MS2690A)
100 MHz to 13.5 GHz (MS2691A)

With MS269xA-077/177/078/178, without MS2692A-067/167, and frequency span > 31.25 MHz
100 MHz to 6 GHz (MS2692A)

With MS269xA-077/177/078/178, with MS2692A-067/167, and frequency span > 31.25 MHz
100 MHz to 26.5 GHz (MS2692A)

[MS2830A]

Without MS2830A-077/078, or frequency span ≤ 31.25 MHz
0 Hz to 3.6 GHz (Option 040)
0 Hz to 6.0 GHz (Option 041)
0 Hz to 13.5 GHz (Option 043)
0 Hz to 26.5 GHz (Option 044)
0 Hz to 43 GHz (Option 045)

With MS2830A-077/078, and frequency span > 31.25 MHz
300 MHz to 3.6 GHz (Option 040)
300 MHz to 6.0 GHz (Option 041)
300 MHz to 13.5 GHz (Option 043)

With MS2830A-077/078, without MS2830A-067/167, and frequency span > 31.25 MHz
300 MHz to 6 GHz (Option 044)
300 MHz to 6 GHz (Option 045)

With MS2830A-077/078, with MS2830A-067/167,
and frequency span > 31.25 MHz
300 MHz to 26.5 GHz (Option 044)
300 MHz to 43 GHz (Option 045)

[MS2840A]

Without MS2840A-077/177/078/178, or frequency span ≤ 31.25 MHz
0 Hz to 3.6 GHz (Option 040)
0 Hz to 6.0 GHz (Option 041)
0 Hz to 26.5 GHz (Option 044)
0 Hz to 44.5 GHz (Option 046)

With MS2840A-077/177/078/178, and frequency span ≤ 31.25 MHz
300 MHz to 3.6 GHz (Option 040)
300 MHz to 6.0 GHz (Option 041)

With MS2840A-077/177/078/178, without MS2840A-067/167,
and frequency span > 31.25 MHz
300 MHz to 6 GHz (Option 044)
300 MHz to 6 GHz (Option 046)

With MS2840A-077/177/078/178, with MS2840A-067/167,
and frequency span > 31.25 MHz
300 MHz to 26.5 GHz (Option 044)
300 MHz to 44.5 GHz (Option 046)

[MS2850A]

Without MS2850A-034/134, or frequency span ≤ 510 MHz
100 MHz to 32 GHz (Option 047)
100 MHz to 44.5 GHz (Option 046)

With MS2850A-034/134, and frequency span > 510 MHz
4.2 GHz to 32 GHz (Option 047)
4.2 GHz to 44.5 GHz (Option 046)

Resolution 1 Hz
No suffix code. Value is returned in Hz units.

Example of Use

To query the start frequency.

```
FREQ:STAR?
> 1000000000
```

[:SENSe]:FREQuency:STOP <freq>

Stop Frequency

Function

This command sets the stop frequency.

Command

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

Parameter

<freq> Stop frequency

Range Range adding Frequency Span/2 to any of the following center frequency ranges:

[MS269xA]

Without MS269xA-077/177/078/178, or frequency span ≤ 31.25 MHz
0 Hz to 6 GHz (MS2690A)
0 Hz to 13.5 GHz (MS2691A)
0 Hz to 26.5 GHz (MS2692A)

With MS269xA-077/177/078/178, and frequency span > 31.25 MHz
100 MHz to 6 GHz (MS2690A)
100 MHz to 13.5 GHz (MS2691A)

With MS269xA-077/177/078/178, without MS2692A-067/167, and frequency span > 31.25 MHz
100 MHz to 6 GHz (MS2692A)

With MS269xA-077/177/078/178, with MS2692A-067/167, and frequency span > 31.25 MHz
100 MHz to 26.5 GHz (MS2692A)

[MS2830A]

Without MS2830A-077/078, or frequency span ≤ 31.25 MHz
0 Hz to 3.6 GHz (Option 040)
0 Hz to 6.0 GHz (Option 041)
0 Hz to 13.5 GHz (Option 043)
0 Hz to 26.5 GHz (Option 044)
0 Hz to 43 GHz (Option 045)

With MS2830A-077/078, and frequency span > 31.25 MHz
300 MHz to 3.6 GHz (Option 040)
300 MHz to 6.0 GHz (Option 041)
300 MHz to 13.5 GHz (Option 043)

With MS2830A-077/078, without MS2830A-067/167, and frequency span > 31.25 MHz
300 MHz to 6 GHz (Option 044)
300 MHz to 6 GHz (Option 045)

With MS2830A-077/078, with MS2830A-067/167, and frequency span > 31.25 MHz

300 MHz to 26.5 GHz (Option 044)
300 MHz to 43 GHz (Option 045)

[MS2840A]

Without MS2840A-077/177/078/178, or frequency span ≤ 31.25 MHz
0 Hz to 3.6 GHz (Option 040)
0 Hz to 6.0 GHz (Option 041)
0 Hz to 26.5 GHz (Option 044)
0 Hz to 44.5 GHz (Option 046)

With MS2840A-077/177/078/178, and frequency span ≤ 31.25 MHz
300 MHz to 3.6 GHz (Option 040)
300 MHz to 6.0 GHz (Option 041)

With MS2840A-077/177/078/178, without MS2840A-067/167, and frequency span > 31.25 MHz
300 MHz to 6 GHz (Option 044)
300 MHz to 6 GHz (Option 046)

With MS2840A-077/177/078/178, with MS2840A-067/167, and frequency span > 31.25 MHz
300 MHz to 26.5 GHz (Option 044)
300 MHz to 44.5 GHz (Option 046)

[MS2850A]

Without MS2850A-034/134, or frequency span ≤ 510 MHz
100 MHz to 32 GHz (Option 047)
100 MHz to 44.5 GHz (Option 046)

With MS2850A-034/134, and frequency span > 510 MHz
4.2 GHz to 32 GHz (Option 047)
4.2 GHz to 44.5 GHz (Option 046)

Resolution: 1 Hz

Suffix code: `HZ, KHZ, KZ, MHZ, MZ, GHZ, GZ`

Hz is used when omitted.

Default

[MS269xA] 6.015625 GHz

[MS2830A] 3.615625 GHz
(Option 005/105/007/009/109/077/078)
3.605 GHz (Option 006/106)

[MS2840A] 3.615625 GHz
(Option 005/105/009/109/077/177/078/178)
3.605 GHz (Option 006/106)

[MS2850A] 3.615625 GHz

Details

This command is not available while the Replay function is being executed.

This function is restricted in the following condition:

- If using the MS269x Series, when the terminal is set to DigRF 3G, the stop frequency is fixed at +270.833 kHz (when the Target System selected GSM) or +3.84 MHz (when the Target System selected W-CDMA).

Example of Use

To set the stop frequency to 10 GHz.

```
FREQ:STOP 10GHZ
```

[:SENSe]:FREQuency:STOP?

Stop Frequency Query

Function

This command queries the stop frequency.

Query

```
[:SENSe]:FREQuency:STOP?
```

Response

```
<freq>
```

Parameter

`<freq>` Stop frequency

Range Range adding Frequency Span/2 to any of the following center frequency ranges:

[MS269xA]

Without MS269xA-077/177/078/178, or frequency span ≤ 31.25 MHz
- 0 Hz to 6 GHz (MS2690A)
- 0 Hz to 13.5 GHz (MS2691A)
- 0 Hz to 26.5 GHz (MS2692A)

With MS269xA-077/177/078/178, and frequency span > 31.25 MHz
- 100 MHz to 6 GHz (MS2690A)
- 100 MHz to 13.5 GHz (MS2691A)

With MS269xA-077/177/078/178, without MS2692A-067/167, and frequency span > 31.25 MHz
- 100 MHz to 6 GHz (MS2692A)

With MS269xA-077/177/078/178, with MS2692A-067/167, and frequency span > 31.25 MHz
- 100 MHz to 26.5 GHz (MS2692A)

[MS2830A]

Without MS2830A-077/078, or frequency span ≤ 31.25 MHz
- 0 Hz to 3.6 GHz (Option 040)
- 0 Hz to 6.0 GHz (Option 041)
- 0 Hz to 13.5 GHz (Option 043)
- 0 Hz to 26.5 GHz (Option 044)
- 0 Hz to 43 GHz (Option 045)

With MS2830A-077/078, and frequency span > 31.25 MHz
- 300 MHz to 3.6 GHz (Option 040)
- 300 MHz to 6.0 GHz (Option 041)
- 300 MHz to 13.5 GHz (Option 043)

With MS2830A-077/078, without MS2830A-067/167, and frequency span > 31.25 MHz
- 300 MHz to 6 GHz (Option 044)
- 300 MHz to 6 GHz (Option 045)

With MS2830A-077/078, with MS2830A-067/167,
and frequency span > 31.25 MHz
300 MHz to 26.5 GHz (Option 044)
300 MHz to 43 GHz (Option 045)

[MS2840A]

Without MS2840A-077/177/078/178, or frequency span ≤ 31.25 MHz
0 Hz to 3.6 GHz (Option 040)
0 Hz to 6.0 GHz (Option 041)
0 Hz to 26.5 GHz (Option 044)
0 Hz to 44.5 GHz (Option 046)

With MS2840A-077/177/078/178, and frequency span ≤ 31.25 MHz
300 MHz to 3.6 GHz (Option 040)
300 MHz to 6.0 GHz (Option 041)

With MS2840A-077/177/078/178, without MS2840A-067/167,
and frequency span > 31.25 MHz
300 MHz to 6 GHz (Option 044)
300 MHz to 6 GHz (Option 046)

With MS2840A-077/177/078/178, with MS2840A-067/167,
and frequency span > 31.25 MHz
300 MHz to 26.5 GHz (Option 044)
300 MHz to 44.5 GHz (Option 046)

[MS2850A]

Without MS2850A-034/134, or frequency span ≤ 510 MHz
100 MHz to 32 GHz (Option 047)
100 MHz to 44.5 GHz (Option 046)

With MS2850A-034/134, and frequency span > 510 MHz
4.2 GHz to 32 GHz (Option 047)
4.2 GHz to 44.5 GHz (Option 046)

Resolution 1 Hz

No suffix code. Value is returned in Hz units.

Example of Use

To query the stop frequency.

```
FREQ:STOP?
> 10000000000
```

[:SENSe]:FREQuency:SPAN <freq>

Frequency Span

Function

This command sets the frequency span.

Command

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

Parameter

`<freq>` Frequency span

Range/Resolution

[MS269xA]

1000, 2500, 5000, 10000, 25000, 50000, 100000, 250000, 500000, 1000000, 2500000, 5000000, 10000000, 25000000, 31250000
50000000*1*2, 62500000*2, 100000000*1*3, 125000000*1*3

[MS2830A], [MS2840A]

1000*2, 2500*2, 5000*2, 10000*2, 25000*2, 50000*2, 100000*2,250000*2, 500000*2, 1000000*2, 2500000*2, 5000000*2, 10000000*2, 25000000*1, 31250000*1
50000000*3, 62500000*3, 100000000*4, 125000000*4

[MS2850A]

1000*2, 2500*2, 5000*2, 10000*2, 25000*2, 50000*2, 100000*2, 250000*2, 500000*2, 1000000*2, 2500000*2, 5000000*2, 10000000*2, 25000000*1, 31250000*1, 50000000*3, 62500000*3, 100000000*4, 125000000*4, 255000000*5, 510000000*6, 1000000000*7

Suffix code `HZ, KHZ, KZ, MHZ, MZ, GHZ, GZ`

`Hz` is used when omitted.

Default value

[MS2830A] 31.25 MHz
(Option 005/105/007/009/109/077/078)
10 MHz (Option 006/106)

[MS2840A] 31.25 MHz
(Option 005/105/009/109/077/177/078/178)
10 MHz (Option 006/106)

[MS2850A] 31.25 MHz

Details

This command is limited by the Frequency Band Mode, Center Frequency, and Terminal settings.

[MS269xA]

*1: Option 004/104
The following frequency spans are available when the Wideband Analysis Hardware option is installed:
50000000, 100000000, 125000000

*2: Option 077/177
The following frequency spans are available when the Analysis Bandwidth Extension to 62.5 MHz option is installed:
50000000, 62500000

*3: Option 078/178
In addition to the *2, the following frequency spans are available when the Analysis Bandwidth Extension to 125 MHz option is installed:
100000000, 125000000

The following frequency spans are not available when the Frequency Band Mode is Spurious.
50000000, 62500000, 100000000, 125000000

[MS2830A], [MS2840A]

*1: MS2830A-005/105/007/009/109
MS2840A-005/105/009/109
In addition to the *2 below, the following frequency spans are available when the Analysis Bandwidth Extension to 31.25 MHz option is installed:
25000000, 31250000

*2: Option 006/106
The following frequency spans are available when the Analysis Bandwidth 10 MHz option is installed:
1000, 2500, 5000, 10000, 25000, 50000, 100000, 250000, 500000, 1000000, 2500000, 5000000, 10000000

*3: MS2830A-077, MS2840A-077/177
In addition to the *1, the following frequency spans are available when the Analysis Bandwidth Extension to 62.5 MHz option is installed:
50000000, 62500000

*4: MS2830A-078, MS2840A-078/178
In addition to the *3, the following frequency spans are available when the Analysis Bandwidth Extension to 125 MHz option is installed:
100000000, 125000000

The following frequency spans are not available when the Frequency Band Mode is Spurious.
50000000, 62500000, 100000000, 125000000

[MS2850A]

*1, *2, *3, *4, *5: Option 032

The following frequency spans are available when the Analysis Bandwidth 255 MHz option is installed: :

1000, 2500, 5000, 10000, 25000, 50000, 100000, 250000, 500000, 1000000, 2500000, 5000000, 10000000, 25000000, 31250000, 50000000, 62500000, 100000000, 125000000, 255000000

*6: Option 033/133

In addition to the *1 to *5, the following frequency spans are available when the Analysis Bandwidth Extension to 510 MHz option is installed:

510000000

*7: Option 034/134

In addition to the *6, the following frequency spans are available when the Analysis Bandwidth Extension to 1 GHz option is installed:

1000000000

The following frequency spans are not available when the Frequency Band Mode is Spurious.

50000000, 62500000, 100000000, 125000000, 255000000, 510000000, 1000000000

The following frequency spans are not available when using High Performance Waveguide Mixer.

1000000000

This function is restricted in the following condition:

- If using the MS269x Series, when Terminal is set to DigRF 3G, the frequency span is fixed at 541.666 kHz (when the Target System selected GSM) or 7.68 MHz (when the Target System selected W-CDMA).
- This command is not available when the Replay function is executed.

Example of Use

To set the frequency span to 1 kHz.

```
FREQ:SPAN 1KHZ
```

Related Command

This command has the same function as the following commands:

```
[:SENSe]:ACPower:FREQuency:SPAN
[:SENSe]:CHPower:FREQuency:SPAN
[:SENSe]:OBWidth:FREQuency:SPAN
```

[:SENSe]:FREQuency:SPAN?

Frequency Span Query

Function

This command queries the frequency span.

Query

```
[:SENSe]:FREQuency:SPAN?
```

Response

```
<freq>
```

Parameter

`<freq>`	Frequency span
Range/Resolution	
[MS269xA]	1000, 2500, 5000, 10000, 25000, 50000, 100000, 250000, 500000, 1000000, 2500000, 5000000, 10000000, 25000000, 31250000 50000000*1*2, 62500000*2, 100000000*1*3, 125000000*1*3
[MS2830A], [MS2840A]	1000*2, 2500*2, 5000*2, 10000*2, 25000*2, 50000, 100000*2, 250000*2, 500000*2, 1000000*2, 2500000*2, 5000000*2, 10000000*2, 25000000*1, 31250000*1, 50000000*3, 62500000*3, 100000000*4, 125000000*4
[MS2850A]	1000*2, 2500*2, 5000*2, 10000*2, 25000*2, 50000*2, 100000*2, 250000*2, 500000*2, 1000000*2, 2500000*2, 5000000*2, 10000000*2, 25000000*1, 31250000*1, 50000000*3, 62500000*3, 100000000*4, 125000000*4, 255000000*5, 510000000*6, 1000000000*7
Suffix code	None. Value is returned in Hz units.

Details

This command is not available while the Replay function is being executed.
This command is limited by the Frequency Band Mode, Center Frequency, and Terminal settings.

[MS269xA]

*1: Option 004/104
The following frequency spans are available when the Wideband Analysis Hardware option is installed:
50000000, 100000000, 125000000

*2: Option 077/177

The following frequency spans are available when the Analysis Bandwidth Extension to 62.5 MHz option is installed:

50000000, 62500000

*3: Option 078/178

In addition to the *2, the following frequency spans are available when the Analysis Bandwidth Extension to 125 MHz option is installed:

100000000, 125000000

[MS2830A], [MS2840A]

*1: MS2830A-005/105/007/009/109
MS2840A-005/105/009/109

The following frequency spans are available when the Analysis Bandwidth Extension to 31.25 MHz option is installed:

25000000, 31250000

*2: Option 006/106

The following frequency spans are available when the Analysis Bandwidth 10 MHz option is installed:

1000, 2500, 5000, 10000, 25000, 50000, 100000, 250000, 500000, 1000000, 2500000, 5000000, 10000000

*3: MS2830A-077, MS2840A-077/177

In addition to the *1, the following frequency spans are available when the Analysis Bandwidth Extension to 62.5 MHz option is installed:

50000000, 62500000

*4: MS2830A-078, MS2840A-078/178

The following frequency spans are available when the Analysis Bandwidth Extension to 125 MHz option is installed:

100000000, 125000000

[MS2850A]

*1, *2, *3, *4, *5: Option 032

The following frequency spans are available when the Analysis Bandwidth 255 MHz option is installed: :

1000, 2500, 5000, 10000, 25000, 50000, 100000, 250000,
500000, 1000000, 2500000, 5000000, 10000000,
25000000, 31250000, 50000000, 62500000,
100000000, 125000000, 255000000

*6: Option 033/133

In addition to the *1 to *5, the following frequency spans are available when the Analysis Bandwidth Extension to 510 MHz option is installed:

510000000

*7: Option 034/134

In addition to the *6, the following frequency spans are available when the Analysis Bandwidth Extension to 1 GHz option is installed:

1000000000

This function is restricted in the following condition:

- If using the MS269x Series, when Terminal is set to DigRF 3G, the frequency span is fixed at 541.666 kHz (when the Target System selected GSM) or 7.68 MHz (when the Target System selected W-CDMA).
- This command is not available when the Replay function is executed.

Example of Use

To query the frequency span.

```
FREQ:SPAN?
> 1000
```

Related Command

This command has the same function as the following commands.

```
[:SENSe]:ACPower:FREQuency:SPAN?
[:SENSe]:CHPower:FREQuency:SPAN?
[:SENSe]:OBWidth:FREQuency:SPAN?
```

[:SENSe]:FREQuency:BAND:MODE NORMal|SPURious

Frequency Band Mode

Function

This command sets the frequency band path. The frequency at which the path is switched to the preselector band or a path that does not pass through the preselector can be set with this function.

Command

```
[:SENSe]:FREQuency:BAND:MODE <mode>
```

Parameter

`<mode>`	Frequency band mode

[MS269xA]

`NORMal`	Sets the frequency to switch to the preselector band to 6.0 GHz (Default value).
`SPURious`	Sets the frequency to switch to the preselector band to 3.0 GHz

[MS2830A-041/043/044/045], [MS2840A-041/044/046], [MS2850A]

`NORMal`	Sets the frequency to switch to the preselector band to 4.0 GHz (Default value).
`SPURious`	Sets the frequency to switch to the preselector band to 3.5 GHz.

Details

[MS269xA]

This command is not available in the following cases:

- When using the MS2690A.
- Fixed to NORMAL when the Option 003/103 pre-selector lower expansion is not installed in the MS2691A/MS2692A.
- SPURIOUS cannot be set when Frequency Span is set to 50 MHz or more.
- When Terminal is set to DigRF 3G (only for MS269x Series).
- When the Replay function is being executed.

[MS2830A]. [MS2840A]

This command is not available for Option 040 3.6 GHz Signal Analyzer.
SPURIOUS cannot be set when Frequency Span is set to 50 MHz or more.

Example of Use

To set the frequency to switch to the preselector band to 6.0 GHz.

```
FREQ:BAND:MODE NORM
```

[:SENSe]:FREQuency:BAND:MODE?

Frequency Band Mode Query

Function

This command queries the frequency band path. The frequency at which the path is switched to the preselector band or a path that does not pass through the preselector can be set with this function.

Query

```
[:SENSe]:FREQuency:BAND:MODE?
```

Response

```
<mode>
```

Parameter

<mode>	Frequency band mode
[MS269xA]	
NORM	Sets the frequency to switch to the preselector band to 6.0 GHz (Default value).
SPUR	Sets the frequency to switch to the preselector band to 3.0 GHz
[MS2830A-041/043/044/045], [MS2840A-041/044/046], [MS2850A]	
NORM	Sets the frequency to switch to the preselector band to 4.0 GHz (Default value).
SPUR	Sets the frequency to switch to the preselector band to 3.5 GHz.

Example of Use

To query the frequency band path.

```
FREQ:BAND:MODE?
> NORM
```

[:SENSe]:FREQuency:SRATe?

Sampling Rate Query

Function

This command queries the sampling rate of waveform capturing.

Query

```
[:SENSe]:FREQuency:SRATe?
```

Response

```
<freq>
```

No suffix code. Value is returned in Hz units.

Example of Use

To query the sampling rate.

```
FREQ:SRAT?
```

[:SENSe]:FREQuency:SYNThesis[:STATe] BPHase|NORMal|FAST

Switching Speed

Function

This command selects the switching speed of frequency.

Command

```
[:SENSe]:FREQuency:SYNThesis[:STATe] <mode>
```

Parameter

<mode>	Frequency switching speed
BPHase	The operation is done so as to improve the phase noise characteristic rather than the frequency switching speed.
NORMal	Same as the setting of BPHase.
FAST	The operation is done so as to increase the frequency switching speed at the cost of the phase noise characteristic.

Details

This command is available for MS2830A, MS2840A, and MS2850A.

Note that because the FAST setting gives priority to the switching speed of the local frequency, the phase noise characteristic worsens.

Example of Use

To set the frequency switching mode to the speed priority mode.

```
FREQ:SYNT FAST
```

[:SENSe]:FREQuency:SYNThesis[:STATe]?

Switching Speed Query

Function

This command queries the switching speed of frequency.

Query

```
[:SENSe]:FREQuency:SYNThesis[:STATe]?
```

Response

<mode>	Frequency switching speed

Parameter

<mode>	Frequency switching speed
BPHase	The operation is done so as to improve the phase noise characteristic rather than the frequency switching speed.
FAST	The operation is done so as to increase the frequency switching speed at the cost of the phase noise characteristic.

Details

This command is available for MS2830A, MS2840A, and MS2850A.

Note that because the FAST setting gives priority to the switching speed of the local frequency, the phase noise characteristic worsens.

Example of Use

To query frequency switching speed

```
FREQ:SYNT?
> FAST
```

2.2 Level Settings

Table 2.2-1 lists device messages for setting a level.

Table 2.2-1 Device messages for setting level

Function	Device Message
Reference Level	:DISPlay:WINDow[1]:TRACe:Y[:SCALe]:RLEVel <real>
	:DISPlay:WINDow[1]:TRACe:Y[:SCALe]:RLEVel?
RF Attenuator	[:SENSe]:POWer[:RF]:ATTenuation <rel_ampl>
	[:SENSe]:POWer[:RF]:ATTenuation?
RF Attenuator Auto/Manual	[:SENSe]:POWer[:RF]:ATTenuation:AUTO ON|OFF|1|0
	[:SENSe]:POWer[:RF]:ATTenuation:AUTO?
Scale Mode	:DISPlay:WINDow[1]:TRACe:Y[:SCALe]:SPACing LINear|LOGarithmic
	:DISPlay:WINDow[1]:TRACe:Y[:SCALe]:SPACing?
Log Scale Unit	:UNIT:POWer DBM|DBMV|V|W|DBUV|DBUVE|DBUVM
	:UNIT:POWer?
Ref.Level Offset Value	:DISPlay:WINDow[1]:TRACe:Y[:SCALe]:RLEvel:OFFSet <rel_ampl>
	:DISPlay:WINDow[1]:TRACe:Y[:SCALe]:RLEvel:OFFSet?
Reference Level Offset Mode	:DISPlay:WINDow[1]:TRACe:Y[:SCALe]:RLEVel:OFFSet:STATe ON|OFF|1|0
	:DISPlay:WINDow[1]:TRACe:Y[:SCALe]:RLEVel:OFFSet:STATe?
Pre Amp	[:SENSe]:POWer[:RF]:GAIN[:STATe] ON|OFF|1|0
	[:SENSe]:POWer[:RF]:GAIN[:STATe]?

:DISPlay:WINDow[1]:TRACe:Y[:SCALe]:RLEVel <real>

Reference Level

Function

This command sets the reference level.

Command

```
:DISPlay:WINDow[1]:TRACe:Y[:SCALe]:RLEVel <real>
```

Parameter

<real>	Reference level
Range	Value equivalent to –120 to +50 dBm (regardless of the ATT and Pre-Amp settings when the Replay function is executed)
Resolution	0.01 dB (When scale unit settings are dB-system units) 0.01 pV (When scale unit settings are V-system units) 0.01 yW (When scale unit settings are W-system units)
Suffix code	

DBM,DM	dBm
DBMV	dBmV
DBUV	dBμV
DBUVE	dBμV (emf)
DBUVM	dBμV/m
V	V
MV	mV
UV	μV
W	W
MW	mW
UW	μW
NW	nW
PW	pW
FW	fW

Log Scale Unit setting applies when omitted.
V is used for Linear Scale.

Default value	0 dBm

Example of Use

To set the reference level to 0 dBm.

```
DISP:WIND:TRAC:Y:RLEV 0DBM
```

Related Command

This command has the same function as the following commands.

```
:DISPlay:ACPower:VIEW[1]:WINDow[1]:TRACe:Y[:SCALe]:RLEVel
:DISPlay:CHPower:VIEW[1]:WINDow[1]:TRACe:Y[:SCALe]:RLEVel
:DISPlay:OBWidth:VIEW[1]:WINDow[1]:TRACe:Y[:SCALe]:RLEVel
:DISPlay:BPOWer|:TXPower:VIEW[1]:WINDow[1]:TRACe:Y[:SCALe]:RLEVel
```

:DISPlay:WINDow[1]:TRACe:Y[:SCALe]:RLEVel?

Reference Level Query

Function

This command queries the reference level.

Query

```
:DISPlay:WINDow[1]:TRACe:Y[:SCALe]:RLEVel?
```

Response

```
<real>
```

Parameter

`<real>`	Reference level
Range	Value equivalent to –120 to +50 dBm
Resolution	0.01 dB (When scale unit settings are dB-system units) 0.01 pV (When scale unit settings are V-system units) 0.01 yW (When scale unit settings are W-system units)

This command returns a value in the unit set in Log Scale Unit when Scale Mode is set to Log. (Note: V units for V, W units for W)
This command returns a value in V units when Scale Mode is set to Linear.

Example of Use

To query the reference level.

```
DISP:WIND:TRAC:Y:RLEV?
> 0.00
```

Related Command

This command has the same function as the following commands.

```
:DISPlay:ACPower:VIEW[1]:WINDow[1]:TRACe:Y[:SCALe]:RLEVel?
:DISPlay:CHPower:VIEW[1]:WINDow[1]:TRACe:Y[:SCALe]:RLEVel?
:DISPlay:OBWidth:VIEW[1]:WINDow[1]:TRACe:Y[:SCALe]:RLEVel?
:DISPlay:BPOWer|:TXPower:VIEW[1]:WINDow[1]:TRACe:Y[:SCALe]:RLEVel?
```

[:SENSe]:POWer[:RF]:ATTenuation <rel_ampl>

RF Attenuator

Function

This command sets the attenuator.

Command

```
[:SENSe]:POWer[:RF]:ATTenuation <rel_ampl>
```

Parameter

`<rel_ampl>`	Attenuator value
Range	0 to 60 dB
Resolution	
[MS269xA], **[MS2850A]**	2 dB
[MS2830A], **[MS2840A]**	2 dB or 10 dB Refer to "Table 2.3.2-3 Resolution of Input Attenuator" in the *MS2830A/MS2840A/MS2850A Signal Analyzer Operation Manual (Signal Analyzer Function Operation)*.
Suffix code	DB, dB is used when omitted.
Default value	10 dB

Details

This command is not available while the Replay function is being executed.

This command is not available in the following case:

- When Terminal is set to DigRF 3G (only for MS269x Series).

Example of Use

To set the attenuator to 10 dB.

```
POW:ATT 10
```

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

RF Attenuator Query

Function

This command queries the attenuator.

Query

```
[:SENSe]:POWer[:RF]:ATTenuation?
```

Response

```
<rel_ampl>
```

Parameter

`<rel_ampl>`		Attenuator value
Range		0 to 60 dB
Resolution		
[MS269xA], **[MS2850A]**		2 dB
[MS2830A], **[MS2840A]**		2 dB or 10 dB Refer to "Table 2.3.2-3 Resolution of Input Attenuator" in the *MS2830A/MS2840A/MS2850A Signal Analyzer Operation Manual (Signal Analyzer Function Operation)*.
Suffix code		None. Value is returned in dB units.
Default value		10 dB

Example of Use

To query the attenuator value.

```
POW:ATT?
> 10
```

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

RF Attenuator Auto/Manual

Function

This command enables/disables the automatic attenuation setting function.

Command

```
[:SENSe]:POWer[:RF]ATTenuation:AUTO <switch>
```

Parameter

<switch>	Automatic attenuation setting function On/Off
0|OFF	Disables the automatic attenuation setting function.
1|ON	Enables the automatic attenuation setting function (Default).

Details

This command is not available while the Replay function is being executed.

This command is not available in the following case:

- When Terminal is selected for DigRF 3G (only for MS269x Series).

Example of Use

To enable the automatic attenuation setting function.

```
POW:ATT:AUTO ON
```

[:SENSe]:POWer[:RF]:ATTenuation:AUTO?

RF Attenuator Auto/Manual Query

Function

This command queries the On/Off state of the automatic attenuation setting function.

Query

```
[:SENSe]:POWer[:RF]ATTenuation:AUTO?
```

Response

```
<switch>
```

Parameter

<switch>	Automatic mode On/Off
0	On
1	Off

Example of Use

To query the On/Off state of the automatic attenuation setting function.

```
POW:ATT:AUTO?
> 1
```

:DISPlay:WINDow[1]:TRACe:Y[:SCALe]:SPACing LINear|LOGarithmic

Scale Mode

Function

This command switches the scale mode.

Command

```
:DISPlay:WINDow[1]:TRACe:Y[:SCALe]:SPACing<mode>
```

Parameter

<mode>	Scale mode
LOGarithmic	Log scale (Default)
LINear	Linear scale

Details

This command is not available when Trace Mode is set to Spectrogram or No Trace.

Example of Use

To set the scale mode to Linear scale.

```
DISP:WIND:TRAC:Y:SPAC LIN
```

:DISPlay:WINDow[1]:TRACe:Y[:SCALe]:SPACing?

Scale Mode Query

Function

This command queries the scale mode.

Query

```
:DISPlay:WINDow[1]:TRACe:Y[:SCALe]:SPACing?
```

Response

```
<mode>
```

Parameter

<mode>	Scale mode
LOG	Log scale
LIN	Linear scale

Example of Use

To query the scale mode.

```
DISP:WIND:TRAC:Y:SPAC?
> LIN
```

:UNIT:POWer DBM|DBMV|V|W|DBUV|DBUVE|DBUVM

Log Scale Unit

Function

This command sets the level display unit system in Log scale mode.

Command

```
:UNIT:POWer <unit>
```

Parameter

<unit>	Level display unit in Log scale mode
DBM	dBm (Default)
DBMV	dBmV
DBUV	dBμV
DBUVE	dBμV (emf)
V	V
W	W
DBUVM	dBμV/m

Details

If V (W) is selected and a measurement result is 99.999 GV (GW) or more, 99.999 GV (GW) or more is displayed.

Example of Use

To set the level display unit system in Log scale mode to V.

```
UNIT:POW V
```

:UNIT:POWer?

Log Scale Unit Query

Function

This command queries the level display unit system in Log scale mode.

Query

```
:UNIT:POWer?
```

Response

```
<unit>
```

Parameter

<unit>	Level display unit in Log scale mode
DBM	dBm
DBMV	dBmV
DBUV	dBμV
DBUVE	dBμV (emf)
V	V
W	W
DBUVM	dBμV/m

Example of Use

To query the level display unit in Log scale mode.

```
UNIT:POW?
> V
```

:DISPlay:WINDow[1]:TRACe:Y[:SCALe]:RLEVel:OFFSet <rel_ampl>

Ref.Level Offset Value

Function

This command sets the offset value of the reference level offset function.

Command

```
:DISPlay:WINDow[1]:TRACe:Y[:SCALe]:RLEVel:OFFSet
<rel_ampl>
```

Parameter

<rel_ampl>	Reference Level Offset Value
Range	–100.00 to +100.00 dB
Resolution	0.01 dB
Suffix code	DB
	dB is used when omitted.
Default value	0 dB

Details

This command is not available in the following case:

- When Terminal is selected for DigRF 3G (only for MS269x Series).

Example of Use

To set the reference level offset function to +10 dB.

```
DISP:WIND:TRAC:Y:RLEV:OFFS 10
```

:DISPlay:WINDow[1]:TRACe:Y[:SCALe]:RLEVel:OFFSet?

Ref.Level Offset Value Query

Function

This command queries the offset value of the reference level offset function.

Query

```
:DISPlay:WINDow[1]:TRACe:Y[:SCALe]:RLEVel:OFFSet?
```

Response

```
<rel_ampl>
```

Parameter

<rel_ampl>	Reference level offset value
Range	–100.00 to +100.00 dB
Resolution	0.01 dB
Suffix code	None. Value is returned in dB units.

Example of Use

To query the reference level offset.

```
DISP:WIND:TRAC:Y:RLEV:OFFS?
> 10.00
```

:DISPlay:WINDow[1]:TRACe:Y[:SCALe]:RLEVel:OFFSet:STATe ON|OFF|1|0

Reference Level Offset Mode

Function

This command enables/disables the reference level offset function.

Command

```
:DISPlay:WINDow[1]:TRACe:Y[:SCALe]:RLEvel:OFFSet:STATe
<switch>
```

Parameter

<switch>	Reference level offset function On/Off
ON|1	Enables the reference level offset function.
OFF|0	Disables the reference level offset function (Default)

Details

This command is not available in the following case:

- When Terminal is selected for DigRF 3G (only for MS269x Series).

Example of Use

To enable the reference level offset function.

```
DISP:WIND:TRAC:Y:RLEVOFFS:STAT ON
```

:DISPlay:WINDow[1]:TRACe:Y[:SCALe]:RLEVel:OFFSet:STATe?

Reference Level Offset Mode Query

Function

This command queries the On/Off state of the reference level offset function.

Query

```
:DISPlay:WINDow[1]:TRACe:Y[:SCALe]:RLEvel:OFFSet:STATe?
```

Response

```
<switch>
```

Parameter

<switch>	Reference level offset function On/Off
1	On
0	Off

Example of Use

To query the On/Off state of the reference level offset function.

```
DISP:WIND:TRAC:Y:RLEVOFFS:STAT?
> 1
```

[:SENSe]:POWer[:RF]:GAIN[:STATe] ON|OFF|1|0

Pre Amp

Function

This command sets the pre-amplifier to On/Off.

Command

```
[:SENSe]:POWer[:RF]:GAIN[:STATe] <switch>
```

Parameter

<switch>	Pre-amplifier On/Off
ON|1	Sets Pre-amplifier to On.
OFF|0	Sets Pre-amplifier to Off (Default value).

Details

[MS269xA] This command is turned off and thus invalid when Option 008/108 6 GHz Preamplifier is NOT installed.

[MS2830A] This command is turned off and thus invalid when Option 008/108/068/168 Preamplifier is NOT installed.

[MS2840A] This command is turned off and thus invalid when Option 008/108/068/168/069/169 Preamplifier is NOT installed.

[MS2850A] This command is turned off and thus invalid when Option 068/168 Preamplifier is NOT installed.

[Common] This command is not available in the following case:

- When Terminal is selected for DigRF 3G (only for MS269x Series).
- Replay function is being executed.

Example of Use

To set the pre-amplifier to On.

```
POW:GAIN ON
```

[:SENSe]:POWer[:RF]:GAIN[:STATe]?

Pre Amp Query

Function

This command queries the On/Off state of the pre-amplifier.

Query

```
[:SENSe]:POWer[:RF]:GAIN[:STATe]?
```

Response

```
<switch>
```

Parameter

<switch>	Pre-amplifier On/Off
1	On
0	Off

Example of Use

To query the On/Off state of the pre-amplifier.

```
POW:GAIN?
> 1
```

2.3 Trigger Settings

Table 2.3-1 lists device messages for setting triggers.

Table 2.3-1 Device messages for setting trigger

Function	Device Message
Trigger Switch	:TRIGger[:SEQuence][:STATe] ON|OFF|1|0
	:TRIGger[:SEQuence][:STATe]?
Trigger Source	:TRIGger[:SEQuence]:SOURce EXTernal[1]|IMMediate|WIF|RFBurst|VIDeo|SG|BBIF|FRAMe
	:TRIGger[:SEQuence]:SOURce?
Trigger Slope	:TRIGger[:SEQuence]:SLOPe POSitive|NEGative
	:TRIGger[:SEQuence]:SLOPe?
Trigger Delay	:TRIGger[:SEQuence]:DELay <time>
	:TRIGger[:SEQuence]:DELay?
Log Scale Video Trigger Level	:TRIGger[:SEQuence]:VIDeo:LEVel[:LOGarithmic] <level>
	:TRIGger[:SEQuence]:VIDeo:LEVel[:LOGarithmic]?
Linear Scale Video Trigger Level	:TRIGger[:SEQuence]:VIDeo:LEVel:LINear <level>
	:TRIGger[:SEQuence]:VIDeo:LEVel:LINear?
Video Trigger Slope	:TRIGger[:SEQuence]:VIDeo:SLOPe POSitive|NEGative
	:TRIGger[:SEQuence]:VIDeo:SLOPe?
Video Trigger Delay	:TRIGger[:SEQuence]:VIDeo:DELay <time>
	:TRIGger[:SEQuence]:VIDeo:DELay?
Wide IF Trigger Level	:TRIGger[:SEQuence]:WIF|:RFBurst:LEVel:ABSolute <ampl>
	:TRIGger[:SEQuence]:WIF|:RFBurst:LEVel:ABSolute?
Wide IF Trigger Slope	:TRIGger[:SEQuence]:WIF|:RFBurst:SLOPe POSitive|NEGative
	:TRIGger[:SEQuence]:WIF|:RFBurst:SLOPe?
Wide IF Trigger Delay	:TRIGger[:SEQuence]:WIF|:RFBurst:DELay <time>
	:TRIGger[:SEQuence]:WIF|:RFBurst:DELay?
Trigger Hold	:TRIGger[:SEQuence]:HOLDoff <time>
	:TRIGger[:SEQuence]:HOLDoff?
Trigger Hold On/Off	:TRIGger[:SEQuence]:HOLDoff:STATe OFF|ON|0|1
	:TRIGger[:SEQuence]:HOLDoff:STATe?
Frame Trigger Period	:TRIGger[:SEQuence]:FRAMe:PERiod <time>
	:TRIGger[:SEQuence]:FRAMe:PERiod?
Frame Sync Source	:TRIGger[:SEQuence]:FRAMe:SYNC EXTernal[1]|IMMediate|Off|WIF|RFBurst
	:TRIGger[:SEQuence]:FRAMe:SYNC?
Frame Sync Offset	:TRIGger[:SEQuence]:FRAMe:OFFSet <time>
	:TRIGger[:SEQuence]:FRAMe:OFFSet?

:TRIGger[:SEQuence][:STATe] ON|OFF|1|0

Trigger Switch

Function

This command sets the trigger to On/Off.

Command

```
:TRIGger[:SEQuence][:STATe] <switch>
```

Parameter

<switch>	Trigger On/Off
OFF|0	Sets trigger to off (Default value).
ON|1	Sets trigger to on.

Details

This command is not available while the Replay function is being executed.

Example of Use

To set the trigger to On.

```
TRIG ON
```

:TRIGger[:SEQuence][:STATe]?

Trigger Switch Query

Function

This command queries the On/Off state of the trigger.

Query

```
:TRIGger[:SEQuence][:STATe]?
```

Response

```
<switch>
```

Parameter

<switch>	Trigger On/Off
0	Off
1	On

Example of Use

To query the On/Off state of the trigger.

```
TRIG?
> 0
```

:TRIGger[:SEQuence]:SOURce EXTernal[1|2]|EXT2|IMMediate|WIF|RFBurst|VIDeo|SG|BBIF|FRAMe

Trigger Source

Function

This command selects the trigger source.

Command

```
:TRIGger[:SEQuence]:SOURce <source>
```

Parameter

	<source>	Trigger signal source
[MS269xA]	EXTernal[1]	External input (External)
	IMMediate	Free run
	WIF|RFBurst	Wideband IF detection (Wide IF Video)
	VIDeo	Video detection (Video) (Default)
	SG	SG Marker
	BBIF	Baseband Interface (BBIF)
[MS2830A], [MS2840A]		
	EXTernal[1]	External input (Default)
	IMMediate	Free run
	WIF|RFBurst	Wideband IF detection (Wide IF Video)
	VIDeo	Video detection (Video)
	SG	SG Marker (SG Marker)
	FRAMe	Frame period trigger
[MS2850A]		
	EXTernal[1]	External input (External) (Default)
	EXTernal2|EXT2	External input 2 (External 2)
	IMMediate	Free run
	WIF|RFBurst	Wideband IF detection (Wide IF Video)
	VIDeo	Video detection (Video)
	FRAMe	Frame period trigger

Details

[MS269xA] SG marker trigger can be selected only when the Option 020/120 vector signal generator is installed. BBIF trigger cannot be selected only when the Option 040/140 Baseband Interface Unit is not installed or the software package is Ver.6.00.00 or later.
Settings for External, Video, Wide IF Video, and SG Marker cannot be performed when Terminal is set to DigRF 3G (only for MS269x Series).

[MS2830A], [MS2840A]
SG marker trigger can be selected only when the Option 020/120/021/121 Vector Signal Generator is installed.

[Common] Changing the trigger source sets trigger switch to ON.

This command is not available while the Replay function is being executed.

Example of Use

To set the trigger signal source to video trigger.

```
TRIG:SOUR VID
```

Related Command

This command has the same function as the following commands.

```
:TRIGger:ACPower[:SEQuence]:SOURce
:TRIGger:CHPower[:SEQuence]:SOURce
:TRIGger:OBWidth[:SEQuence]:SOURce
:TRIGger:BPOWer|:TXPower[:SEQuence]:SOURce
:TRIGger:CCDF|:PSTatistic[:SEQuence]:SOURce
```

:TRIGger[:SEQuence]:SOURce?

Trigger Source Query

Function

This command queries the trigger source type.

Query

```
:TRIGger[:SEQuence]:SOURce?
```

Response

```
<source>
```

Parameter

	<source>	Trigger signal source type
[MS269xA]	EXT	External input (External)
	IMM	Free run
	WIF	Wideband IF detection (Wide IF Video)
	VID	Video detection (Video)
	SG	SG Marker
	BBIF	Baseband Interface (BBIF)
[MS2830A], [MS2840A]		
	EXT	External input
	IMM	Free run
	WIF	Wideband IF detection (Wide IF Video)
	VID	Video detection (Video)
	SG	SG Marker (SG Marker)
	FRAM	Frame period trigger
[MS2850A]		
	EXT	External input (External)
	EXT2	External input 2 (External 2)
	IMM	Free run
	WIF	Wideband IF detection (Wide IF Video)
	VID	Video detection (Video)
	FRAM	Frame period trigger

Example of Use

To query the trigger signal source.

```
TRIG:SOUR?
> VID
```

Related Command

This command has the same function as the following commands.

```
:TRIGger:ACPower[:SEQuence]:SOURce?
:TRIGger:CHPower[:SEQuence]:SOURce?
:TRIGger:OBWidth[:SEQuence]:SOURce?
:TRIGger:BPOWer|:TXPower[:SEQuence]:SOURce?
:TRIGger:CCDF|:PSTatistic[:SEQuence]:SOURce?
```

:TRIGger[:SEQuence]:SLOPe POSitive|NEGative

Trigger Slope

Function

This command sets the trigger detection mode (rising/falling).

Command

```
:TRIGger[:SEQuence]:SLOPe <mode>
```

Parameter

<mode>	Trigger detection mode
POSitive	Detects at the rising edge (Default value).
NEGative	Detects at the falling edge.

Details

This command is not available while the Replay function is being executed.

Example of Use

To detect at the rising trigger.

```
TRIG:SLOP POS
```

Related Command

This command has the same function as the following commands.

```
:TRIGger[:SEQuence]:VIDeo:SLOPe
:TRIGger[:SEQuence]:WIF|:RFBurst:SLOPe
:TRIGger[:SEQuence]:EXTernal[1]:SLOPe
```

:TRIGger[:SEQuence]:SLOPe?

Trigger Slope Query

Function

This command queries the trigger detection method (rising/falling).

Query

```
:TRIGger[:SEQuence]:SLOPe?
```

Response

```
<mode>
```

Parameter

`<mode>`	Trigger detection mode
`POS`	Detects at the rising edge.
`NEG`	Detects at the falling edge.

Example of Use

To query the trigger detection mode.

```
TRIG:SLOP?
> POS
```

Related Command

This command has the same function as the following commands.

```
:TRIGger[:SEQuence]:VIDeo:SLOPe?
:TRIGger[:SEQuence]:WIF|:RFBurst:SLOPe?
:TRIGger[:SEQuence]:EXTernal[1]:SLOPe?
```

:TRIGger[:SEQuence]:DELay <time>

Trigger Delay

Function

This command sets the delay from trigger input to start of waveform capturing.

Command

```
:TRIGger[:SEQuence]:DELay <time>
```

Parameter

<time>		Delay time.
	Range/Resolution	Refer to the *MS2690A/MS2691A/MS2692A Signal Analyzer Operation Manual (Signal Analyzer function Operation)* or *MS2830A/MS2840A/MS2850A Signal Analyzer Operation Manual (Signal Analyzer function Operation)* for details.
	Suffix code	NS, US, MS, S S is used when omitted.
	Default value	0 ns

Details

This command is not available while the Replay function is being executed.

This command is not available in the following case:

- When Terminal is selected for DigRF 3G (only for MS269x Series).

Example of Use

To set the trigger delay to 20 ms.

```
TRIG:DEL 20MS
```

Related Command

This command has the same function as the following commands.

```
:TRIGger[:SEQuence]:VIDeo:DELay
:TRIGger[:SEQuence]:WIF|:RFBurst:DELay
:TRIGger[:SEQuence]:EXTernal[1]:DELay
```

:TRIGger[:SEQuence]:DELay?

Trigger Delay Query

Function

This command queries the delay from trigger input to start of waveform capturing.

Query

```
:TRIGger[:SEQuence]:DELay?
```

Response

```
<time>
```

Parameter

<time>		Delay time
	Range/Resolution	Refer to the *MS2690A/MS2691A/MS2692A Signal Analyzer Operation Manual (Signal Analyzer function Operation)* or *MS2830A/MS2840A/MS2850A Signal Analyzer Operation Manual (Signal Analyzer function Operation)* for details. Returns a value in s units without a suffix code.

Example of Use

To query the trigger delay.

```
TRIG:DEL?
> 0.02000000
```

Related Command

This command has the same function as the following commands.

```
:TRIGger[:SEQuence]:VIDeo:DELay?
:TRIGger[:SEQuence]:WIF|:RFBurst:DELay?
:TRIGger[:SEQuence]:EXTernal[1]:DELay?
```

:TRIGger[:SEQuence]:VIDeo:LEVel[:LOGarithmic] <level>

Log Scale Video Trigger Level

Function

This command sets the threshold at the level to start the capture against the video trigger in Log scale mode.

Command

```
:TRIGger[:SEQuence]:VIDeo:LEVel[:LOGarithmic] <level>
```

Parameter

<level>		Threshold at the level to start the capture
	Range	–150 to +50 dBm
	Resolution	1 dB
	Suffix code	DBM, DM
	Default value	–40 dBm

Details

This command is not available while the Replay function is being executed.

This command is not available in the following case:

- When Terminal is selected DigRF 3G (only for MS269x Series).

Example of Use

To set the threshold of the video trigger level in Log scale mode to –10 dBm.

```
TRIG:VID:LEV -10
```

:TRIGger[:SEQuence]:VIDeo:LEVel[:LOGarithmic]?

Log Scale Video Trigger Level Query

Function

This command queries the threshold at the level to start the capture against the video trigger in Log scale mode.

Query

```
:TRIGger[:SEQuence]:VIDeo:LEVel[:LOGarithmic]?
```

Response

```
<level>
```

Parameter

`<level>`		Threshold at the level to start the capture
	Range	–150 to +50 dBm
	Resolution	1 dB
		No suffix code. Value is returned in dBm units.

Example of Use

To query the threshold of the video trigger level in Log scale mode.

```
TRIG:VID:LEV?
> -10
```

:TRIGger[:SEQuence]:VIDeo:LEVel:LINear <level>

Linear Scale Video Trigger Level

Function

This command sets the threshold at the level to start the capture against the video trigger in Linear scale mode.

Command

```
:TRIGger[:SEQuence]:VIDeo:LEVel:LINear <level>
```

Parameter

<level>	Threshold at the level to start the capture
Range	0 to 100%
Resolution	1%
Suffix code	None
Default value	60%

Details

This command is not available while the Replay function is being executed.
This command is not available in the following case:

- When Terminal is set to DigRF 3G (only for MS269x Series).

Example of Use

To set the threshold of the video trigger level in Linear scale mode to 50%.

```
TRIG:VID:LEV:LIN 50
```

:TRIGger[:SEQuence]:VIDeo:LEVel:LINear?

Linear Scale Video Trigger Level Query

Function

This command queries the threshold at the level to start the capture against the video trigger in Linear scale mode.

Query

```
:TRIGger[:SEQuence]:VIDeo:LEVel:LINear?
```

Response

```
<level>
```

Parameter

`<level>` Threshold at the level to start the capture

When the trigger signal source is video detection (Video) and Lin scale:

Range	0 to 100%
Resolution	1%

No suffix code. Value is returned in % units.

Example of Use

To query the threshold of the video trigger level in Linear scale mode.

```
TRIG:VID:LEV:LIN?
> 50
```

:TRIGger[:SEQuence]:VIDeo:SLOPe POSitive|NEGative

Video Trigger Slope

Function

This command sets the detection mode of the trigger (rising/falling).
Refer to :TRIGger[:SEQuence]:SLOPe.

Related Command

This command has the same function as the following commands.
:TRIGger[:SEQuence]:SLOPe
:TRIGger[:SEQuence]:WIF|:RFBurst:SLOPe
:TRIGger[:SEQuence]:EXTernal[1]:SLOPe

:TRIGger[:SEQuence]:VIDeo:SLOPe?

Video Trigger Slope Query

Function

This command sets the detection method of the trigger (rising/falling).
Refer to :TRIGger[:SEQuence]:SLOPe?.

Related Command

This command has the same function as the following commands.
:TRIGger[:SEQuence]:SLOPe?
:TRIGger[:SEQuence]:WIF|:RFBurst:SLOPe?
:TRIGger[:SEQuence]:EXTernal[1]:SLOPe?

:TRIGger[:SEQuence]:VIDeo:DELay <time>

Video Trigger Delay

Function

This command sets the delay from trigger input to start of waveform capturing.
Refer to :TRIGger[:SEQuence]:DELay.

Related Command

This command has the same function as the following commands.
:TRIGger[:SEQuence]:DELay
:TRIGger[:SEQuence]:WIF|:RFBurst:DELay
:TRIGger[:SEQuence]:EXTernal[1]:DELay

:TRIGger[:SEQuence]:VIDeo:DELay?

Video Trigger Delay Query

Function

This command queries the delay from trigger input to start of waveform capturing.
Refer to :TRIGger[:SEQuence]:DELay?.

Related Command

This command has the same function as the following commands.
:TRIGger[:SEQuence]:DELay?
:TRIGger[:SEQuence]:WIF|:RFBurst:DELay?
:TRIGger[:SEQuence]:EXTernal[1]:DELay?

:TRIGger[:SEQuence]:WIF|:RFBurst:LEVel:ABSolute <ampl>

Wide IF Trigger Level

Function

This command sets the threshold at the level to start the capture against the Wide IF Video trigger.

Command

```
:TRIGger[:SEQuence]:WIF|:RFBurst:LEVel:ABSolute <ampl>
```

Parameter

<level>		Threshold at the level to start the capture
	Range	–60 to 50 dBm
	Resolution	1 dB
	Default value	–20 dBm

Details

This command is not available while the Replay function is being executed.

This command is not available in the following case:

- When Terminal is selected for DigRF 3G (only for MS269x Series).

Example of Use

To set the threshold of the Wide IF Video trigger level to 10 dBm.

```
TRIG:WIF:LEV:ABS 10
```

:TRIGger[:SEQuence]:WIF|:RFBurst:LEVel:ABSolute?

Wide IF Trigger Level Query

Function

This command queries the threshold at the level to start the capture against the Wide IF Video trigger.

Query

```
:TRIGger[:SEQuence]:WIF|:RFBurst:LEVel:ABSolute?
```

Response

```
<level>
```

Parameter

<level>		Threshold at the level to start the capture
	Range	–60 to 50 dBm
	Resolution	1 dB
		No suffix code. Value is returned in dBm units.

Example of Use

To query the threshold of the Wide IF Video trigger level.

```
TRIG:WIF:LEV:ABS?
> 10
```

:TRIGger[:SEQuence]:WIF|:RFBurst:SLOPe POSitive|NEGative

Wide IF Trigger Slope

Function

This command sets the trigger detection mode (rising/falling).
Refer to :TRIGger[:SEQuence]:SLOPe.

Related Command

This command has the same function as the following commands.
:TRIGger[:SEQuence]:SLOPe
:TRIGger[:SEQuence]:VIDeo:SLOPe
:TRIGger[:SEQuence]:EXTernal[1]:SLOPe

:TRIGger[:SEQuence]:WIF|:RFBurst:SLOPe?

Wide IF Trigger Slope Query

Function

This command queries the trigger detection mode (rising/falling).
Refer to :TRIGger[:SEQuence]:SLOPe?.

Related Command

This command has the same function as the following commands.
:TRIGger[:SEQuence]:SLOPe?
:TRIGger[:SEQuence]:VIDeo:SLOPe?
:TRIGger[:SEQuence]:EXTernal[1]:SLOPe?

:TRIGger[:SEQuence]:WIF|:RFBurst:DELay <time>

Wide IF Trigger Delay

Function

This command sets the delay from trigger input to start of waveform capturing.
Refer to :TRIGger[:SEQuence]:DELay.

Related Command

This command has the same function as the following commands.
:TRIGger[:SEQuence]:DELay
:TRIGger[:SEQuence]:VIDeo:DELay
:TRIGger[:SEQuence]:EXTernal[1]:DELay

:TRIGger[:SEQuence]:WIF|:RFBurst:DELay?

Wide IF Trigger Delay Query

Function

This command queries the delay from trigger input to start of waveform capturing.
Refer to :TRIGger[:SEQuence]:DELay?.

Related Command

This command has the same function as the following commands.
:TRIGger[:SEQuence]:DELay?
:TRIGger[:SEQuence]:VIDeo:DELay?
:TRIGger[:SEQuence]:EXTernal[1]:DELay?

:TRIGger[:SEQuence]:EXTernal[1]:SLOPe POSitive|NEGative

External Trigger Slope

Function

This command sets the trigger detection mode (rising/falling).
Refer to `:TRIGger[:SEQuence]:SLOPe`.

Related Command

This command has the same function as the following commands.

```
:TRIGger[:SEQuence]:SLOPe
:TRIGger[:SEQuence]:VIDeo:SLOPe
:TRIGger[:SEQuence]:WIF|RFBurst:SLOPe
```

:TRIGger[:SEQuence]:EXTernal[1]:SLOPe?

External Trigger Slope Query

Function

This command queries the trigger detection method.
Refer to `:TRIGger[:SEQuence]:SLOPe?`.

Related Command

This command has the same function as the following commands.

```
:TRIGger[:SEQuence]:SLOPe?
:TRIGger[:SEQuence]:VIDeo:SLOPe?
:TRIGger[:SEQuence]:WIF|RFBurst:SLOPe?
```

:TRIGger[:SEQuence]:EXTernal[1]:DELay <time>

External Trigger Delay

Function

This command sets the delay from trigger input to start of waveform capturing.

Refer to :TRIGger[:SEQuence]:DELay.

Related Command

This command has the same function as the following commands.

```
:TRIGger[:SEQuence]:DELay
:TRIGger[:SEQuence]:VIDeo:DELay
:TRIGger[:SEQuence]:WIF|RFBurst:DELay
```

:TRIGger[:SEQuence]:EXTernal[1]:DELay?

External Trigger Delay Query

Function

This command queries the delay from trigger input to start of waveform capturing.

Refer to :TRIGger[:SEQuence]:DELay?.

Related Command

This command has the same function as the following commands.

```
:TRIGger[:SEQuence]:DELay?
:TRIGger[:SEQuence]:VIDeo:DELay?
:TRIGger[:SEQuence]:WIF|RFBurst:DELay?
```

:TRIGger[:SEQuence]:HOLDoff <time>

Trigger Hold

Function

This command sets the fixed amount of time trigger input is disabled between the first trigger input and the next trigger input.

Command

```
:TRIGger[:SEQuence]:HOLDoff <time>
```

Parameter

`<time>`		Specified time
	Range	0 to 1 s
	Resolution	10 ns
	Suffix code	`NS, US, MS, S`
		S is used when the suffix code is omitted.
	Default	100 μs

Details

This command is not available for MS269x Series.
When this function is used to change a value, the Trigger Hold (ON/OFF) function is set to ON.
This command is not available for video trigger.

Example of Use

To set the amount of time trigger input is disabled to 100 ms.

```
TRIG:HOLD 100ms
```

:TRIGger[:SEQuence]:HOLDoff?

Trigger Hold Query

Function

This command queries the fixed amount of time trigger input is disabled between the first trigger input and the next trigger input.

Query

```
TRIGger[:SEQuence]:HOLDoff?
```

Response

```
<time>
```

Parameter

<time>	Specified time
Range	0 to 1 s
Resolution	10 ns
Suffix code	None. Value is returned in s units.
Default	100 μ s

Details

This command is not available for MS269x Series.

Example of Use

To query the amount of time trigger input is disabled.

```
TRIG:HOLD?
> 0.02000000
```

:TRIGger[:SEQuence]:HOLDoff:STATe OFF|ON|0|1

Trigger Hold On/Off

Function

This command sets the function for disabling trigger input between the first trigger input and the next trigger input for a fixed amount of time to On or Off.

Command

```
:TRIGger[:SEQuence]:HOLDoff:STATe <switch>
```

Parameter

`<switch>`	Trigger Hold On/Off
`ON|1`	Trigger Hold is On.
`OFF|0`	Trigger Hold is Off.

Details

This command is not available for MS269x Series.
When this function is set to On, the Trigger (On/Off) function is automatically set to On.
This command is not available for video trigger.

Example of Use

To set the setting for disabling trigger input for a fixed amount of time to On.

```
TRIG:HOLD:STAT ON
```

:TRIGger[:SEQuence]:HOLDoff:STATe?

Trigger Hold On/Off Query

Function

This command queries whether the function for disabling trigger input between the first trigger input and the next trigger input for a fixed amount of time is On or Off.

Query

```
:TRIGger[:SEQuence]:HOLDoff:STATe?
```

Response

```
<switch>
```

Parameter

<switch>	Trigger Hold On/Off
1	Trigger Hold is On.
0	Trigger Hold is Off.

Details

This command is not available for MS269x Series.

Example of Use

To query the setting for disabling trigger input for a fixed amount of time.

```
:TRIG:HOLD:STAT?
> 1
```

:TRIGger[:SEQuence]:FRAMe:PERiod <time>

Frame Trigger Period

Function

This command sets the period for frame trigger generation.

Command

```
:TRIGger[:SEQuence]:FRAMe:PERiod <time>
```

Parameter

<time>		Frame trigger
	Range	1 µs to 1 s
	Resolution	10 ns
	Suffix code	NS,US,MS,S
		S is used when the suffix code is omitted.
	Default	10 ms

Details

This command is not available for MS269x Series.

Example of Use

To set the frame trigger period to 10 ms.

```
TRIG:FRAM:PER 10MS
```

:TRIGger[:SEQuence]:FRAMe:PERiod?

Frame Trigger Period Query

Function

This command queries the period for frame trigger generation.

Query

```
:TRIGger[:SEQuence]:FRAMe:PERiod?
```

Response

```
<time>
```

Parameter

<time>		Delay time until the gate starts
	Range	1 µs to 1 s
	Resolution	10 ns
	Suffix code	None. Value is returned in s units.

Details

This command is not available for MS269x Series.

Example of Use

To query the frame trigger period.

```
TRIG:FRAM:PER?
> 0.02000000
```

:TRIGger[:SEQuence]:FRAMe:SYNC EXTernal[1]|IMMediate|Off|WIF|RFBurst

Frame Sync Source

Function

This command selects the synchronization signal source for starting a frame trigger.

Command

```
:TRIGger[:SEQuence]:FRAMe:SYNC <sync>
```

Parameter

<sync>	Sync signal source
EXTernal[1]	External input (Default)
IMMediate|Off	Free run
WIF|RFBurst	Wideband IF detection (Wide IF Video)

Details

This command is not available for MS269x Series.

Example of Use

To set the frame-trigger synchronization source to the Wide IF Video trigger.

```
TRIG:FRAM:SYNC WIF
```

:TRIGger[:SEQuence]:FRAMe:SYNC?

Frame Sync Source Query

Function

This command queries the synchronization signal source for starting a frame trigger.

Query

```
:TRIGger[:SEQuence]:FRAMe:SYNC?
```

Response

```
<sync>
```

Parameter

<sync>	Sync signal source
EXT	External input
IMM	Free run
WIF	Wideband IF detection (Wide IF Video)

Details

This command is not available for MS269x Series.

Example of Use

To query the frame-trigger synchronization source.

```
TRIG:FRAM:SYNC?
> WIF
```

:TRIGger[:SEQuence]:FRAMe:OFFSet <time>

Frame Sync Offset

Function

This command sets the offset time between when the signal source for generating a frame trigger is input and when the frame trigger is generated.

Command

```
:TRIGger[:SEQuence]:FRAMe:OFFSet <time>
```

Parameter

<time>	Specified time
Range	0 to 1 s
Resolution	10 ns
Suffix code	NS, US, MS, S S is used when the suffix code is omitted.
Default	0 s

Details

This command is not available for MS269x Series.

Example of Use

To set the offset time for generating a frame trigger to 100 ms.

```
TRIG:FRAM:OFFS 100ms
```

:TRIGger[:SEQuence]:FRAMe:OFFSet?

Frame Sync Offset Query

Function

This command queries the offset time between when the signal source for generating a frame trigger is input and when the frame trigger is generated.

Query

```
:TRIGger[:SEQuence]:FRAMe:OFFSet?
```

Response

```
<time>
```

Parameter

<time>		Offset time
	Range	0 to 1 s
	Resolution	10 ns
	Suffix code	None. Value is returned in s units.

Example of Use

To query the offset time for generating a frame trigger.

```
TRIG:FRAM:OFFS?
> 0.02000000
```

2.4 Capture Setting

Table 2.4-1 lists device messages for setting capture.

Table 2.4-1 Device messages for setting capture

Function	Device Message
Continuous Measurement	:INITiate:CONTinuous OFF|ON|0|1
	:INITiate:CONTinuous?
	:INITiate:MODE:CONTinuous
Single Measurement	:INITiate:MODE:SINGle
Initiate	:INITiate[:IMMediate]
Time Range	:MMEMory:STORe:IQData:MODE FULL|ATIMe|MANual
	:MMEMory:STORe:IQData:MODE?
Start Time	:MMEMory:STORe:IQData:STARt <time>
	:MMEMory:STORe:IQData:STARt?
Start Sample	:MMEMory:STORe:IQData:STARt:SAMPle <sample>
	:MMEMory:STORe:IQData:STARt:SAMPle?
Time Length	:MMEMory:STORe:IQData:LENGth <time>
	:MMEMory:STORe:IQData:LENGth?
Sample Length	:MMEMory:STORe:IQData:LENGth?
	:MMEMory:STORe:IQData:LENGth:SAMPle <sample>
Save Captured Data	:MMEMory:STORe:IQData <filename>,<device>
Cancel Execute Save Captured Data	:MMEMory:STORe:IQData:CANCel
Output Rate for Save Captured Data	:MMEMory:STORe:IQData:RATE <freq>
	:MMEMory:STORe:IQData:RATE?
Save Wave Data	:MMEMory:STORe:TRACe TRACe1|ALL[,<filename>[,<device>]]
Sweep Time Auto/Manual	[:SENSe]:SWEep:TIME:AUTO ON|OFF|1|0
	[:SENSe]:SWEep:TIME:AUTO?
Sweep Time	[:SENSe]:SWEep:TIME <time>
	[:SENSe]:SWEep:TIME?

:INITiate:CONTinuous OFF|ON|0|1

Continuous Measurement

Function

This command switches the capture mode between Single and Continuous.

Command

```
:INITiate:CONTinuous <switch>
```

Parameter

<switch>	Capture mode
0|OFF	Single measurement
1|ON	Continuous measurement (Default value)

Details

This command is set to Continuous and starts the capture, when it is set to On.
This command is set to Single and does not start the capture, when it is set to Off.
This command is not available while the Replay function is being executed.

Example of Use

To execute Continuous measurement.

```
INIT:CONT ON
```

:INITiate:CONTinuous?

Continuous Measurement Query

Function

This command queries the capture mode.

Query

```
:INITiate:CONTinuous?
```

Response

```
<switch>
```

Parameter

<switch>	Capture mode
0	Single measurement
1	Continuous measurement

Example of Use

To query the capture mode.

```
INIT:CONT?
> 0
```

:INITiate:MODE:SINGle

Single Measurement

Function

This command starts the single measurement.

Command

```
:INITiate:MODE:SINGle
```

Details

For querying the measurement value, such as a marker value, after this command has been executed, use *WAI commands to perform synchronized control.

This command is not available while the Replay function is being executed.

Example of Use

To execute the single measurement and query the results.

```
INIT:MODE:SING
*WAI
CALC:MARK:Y?
```

:INITiate:MODE:CONTinuous

Continuous Measurement

Function

This command starts continuous measurement.

Command

```
:INITiate:MODE:CONTinuous
```

Details

Note that this command does not support synchronized control in Continuous mode.

This command is not available while the Replay function is being executed.

Example of Use

To execute continuous measurement.

```
INIT:MODE:CONT
```

:INITiate[:IMMediate]

Initiate

Function

This command starts a measurement in the presently set capture mode.

Command

```
:INITiate:[IMMediate]
```

Details

For querying the measurement value, such as a marker value, after this command has been executed, use *WAI commands to perform synchronized control.

Note that this command does not support synchronized control in Continuous mode.

This command is not available while the Replay function is being executed.

Example of Use

To start a measurement in the presently set capture mode and query the results.

```
INIT
*WAI
CALC:MARK:Y?
```

:MMEMory:STORe:IQData:MODE FULL|ATIMe|MANual

Time Range

Function

This command sets the range of IQ data to be saved when executing Save Captured Data.

Command

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

Parameter

<mode>	Range over which IQ data is saved.
FULL	Full range (Default)
ATIMe	Range set in Analysis Time.
MANual	User-specified range

Details

ATIMe and MANual cannot be set when Terminal is set to RF and when Capture Time Length is set to 0 s. Also, ATIMe cannot be set when Analysis Time Length is set to 0.
ATIMe and MANual cannot be set when Terminal is set to DigRF and when Capture Sample Length is set to 0 s. Furthermore, ATIMe cannot be set when Analysis Sample Length is set to 0.

Example of Use

To set the range to FULL, in order to save IQ data over the full range.

```
MMEM:STOR:IQD:MODE FULL
```

:MMEMory:STORe:IQData:MODE?

Time Range Query

Function

This command queries the set range of IQ data to be saved when executing Save Captured Data.

Query

```
:MMEMory:STORe:IQData:MODE?
```

Response

```
<mode>
```

Parameter

<mode>	Range over which IQ data is saved.
FULL	Full range
ATIM	Range set in Analysis Time.
MAN	User-specified range

Example of Use

To query the range over which IQ data is saved.

```
MMEM:STOR:IQD:MODE?
> FULL
```

:MMEMory:STORe:IQData:STARt <time>

Start Time

Function

This command sets the start position of IQ data to be saved when executing Save Captured Data with Time Range set to MANual.

Command

```
:MMEMory:STORe:IQData:STARt <time>
```

Parameter

<time>	Start position

(When the Replay function is not executed)

Range	0 to Capture Time Length – Time Length
Resolution	Time Resolution
Default value	0

(When the Replay function is executed)

Range	Start time of analyzable IQ data
Resolution	Time Resolution
Suffix code	NS, US, MS, S S is used when omitted.

Details

This command is not available in the following cases:

- When Time Range is set to FULL or ATIMe.
- When Time Range is set to Manual and when Time Length is set to the upper limit.
- When Terminal is set to DigRF 3G (only for MS269x Series).

Example of Use

To set the start time to 12 ms.

```
MMEM:STOR:IQD:STAR 12MS
```

:MMEMory:STORe:IQData:STARt?

Start Time Query

Function

This command queries the start position IQ data to be saved when executing Save Captured Data with Time Range set to MANual.

Query

```
:MMEMory:STORe:IQData:STARt?
```

Response

```
<time>
```

Parameter

`<time>` Start position

(When the Replay function is not executed)

Range 0 to Capture Time Length – Time Length

Resolution Time Resolution

–999999999999 is returned when no measurement is performed or an error occurs.

(When the Replay function is executed)

Range Start time of analyzable IQ data

Resolution Time Resolution

No suffix code. Value is returned in S units.

–999999999999 is returned when no measurement is performed or an error occurs.

Example of Use

To query the start time.

```
MMEM:STOR:IQD:STAR?
> 0.01200000
```

:MMEMory:STORe:IQData:STARt:SAMPle <sample>

Start Sample

Function

This command uses the number of samples to set the start position of IQ data to be saved when executing Save Captured Data with Time Range set to MANual.

Command

```
:MMEMory:STORe:IQData:STARt:SAMPle <sample>
```

Parameter

<sample>		Start position
	Range	0 to Capture Sample Length – Sample Length
	Resolution	Time Resolution
	Default value	0
	Suffix code	None

Details

This command is not available in the following cases:

- When Time Range is set to FULL or ATIMe.
- When Time Range is set to Manual and when Time Length is set to the upper limit.
- When Terminal is RF.

Example of Use

To set the start time to 15360000 sample.

```
MMEM:STOR:IQD:STAR:SAMP 15360000
```

:MMEMory:STORe:IQData:STARt:SAMPle?

Start Sample Query

Function

This command uses the number of samples to query the start position of IQ data to be saved when executing Save Captured Data with Time Range set to MANual.

Query

```
:MMEMory:STORe:IQData:STARt:SAMPle?
```

Response

```
<sample>
```

Parameter

`<sample>` Start position

Range	0 to Capture Sample Length – Sample Length
Resolution	Time Resolution
Suffix code	None

–999999999999 is returned when no measurement is performed or an error occurs.

Example of Use

To query the start time.

```
MMEM:STOR:IQD:STAR:SAMP?
> 15360000
```

:MMEMory:STORe:IQData:LENGth <time>

Time Length

Function

This command sets the time length of IQ data to be saved when executing Save Captured Data with Time Range set to MANual.

Command

```
:MMEMory:STORe:IQData:LENGth <time>
```

Parameter

<time>		Time length
	Range	Time Resolution to Capture Time Length – Start Time
	Resolution	Time Resolution
	Default value	Capture Time Length – Start Time
	Suffix code	NS,US,MS,S S is used when omitted.

Details

This command is not available in the following cases:

- When Time Range is set to FULL or ATIMe.
- When Time Range is set to Manual and when Start Time is set to the upper limit value.
- When Terminal is set to DigRF 3G (only for MS269x Series).

Example of Use

To set the time length to 12 ms.

```
MMEM:STOR:IQD:LENG 12MS
```

:MMEMory:STORe:IQData:LENGth?

Time Length Query

Function

This command queries the time length of IQ data to be saved when executing Save Captured Data with Time Range set to MANual.

Query

```
:MMEMory:STORe:IQData:LENGth?
```

Response

```
<time>
```

Parameter

```
<time>
```

Time length

Range	Time Resolution to Capture Time Length – Start Time
Resolution	Time Resolution

No suffix code. Value is returned in S units.

–999999999999 is returned when no measurement is performed or an error occurs.

Example of Use

To query the time length.

```
MMEM:STOR:IQD:LENG?
> 0.01200000
```

:MMEMory:STORe:IQData:LENGth:SAMPle <sample>

Sample Length

Function

This command sets the sample length of IQ data to be saved when executing Save Captured Data with Time Range set to MANual.

Command

```
:MMEMory:STORe:IQData:LENGth:SAMPle <sample>
```

Parameter

<sample>		Sample length
	Range	Time Resolution to Capture Time Length – Start Time
	Resolution	Time Resolution
	Default value	Capture Sample Length – Start Sample

Details

This command is not available in the following cases:

- When Time Range is set to FULL or ATIMe.
- When Time Range is set to Manual and when Start Time is set to the upper limit.
- When Terminal is RF.

Example of Use

To set the sample length to 15360000.

```
MMEM:STOR:IQD:LENG:SAMP 15360000
```

:MMEMory:STORe:IQData:LENGth:SAMPle?

Sample Length Query

Function

This command queries the sample length of IQ data to be saved when executing Save Captured Data with Time Range set to MANual.

Query

```
:MMEMory:STORe:IQData:LENGth:SAMPle?
```

Response

```
<sample>
```

Parameter

`<sample>`		Sample length
	Range	Time Resolution to Capture Time Length – Start Time
	Resolution	Time Resolution

–999999999999 is returned when no measurement is performed or an error occurs.

Example of Use

To query the sample length.

```
MMEM:STOR:IQD:LENG:SAMP?
> 15360000
```

:MMEMory:STORe:IQData <filename>,<device>

Save Captured Data

Function

This command saves the captured waveform data into a file.

Command

```
:MMEMory:STORe:IQData <filename>,<device>
```

Parameter

<filename>	File name to be saved Specifies any character string enclosed by double quotation marks or single quotation marks.
<device>	Drive name to be saved Drive name, such as A, B, D and E.

Details

This function can be executed when a waveform is captured in the following cases:

- Measurement started by Single Measurement (SNGLS command) is completed.
- Storage Mode is set to OFF.

This function results in an error if a parameter requires re-capturing of waveform after execution of waveform capturing.

Files are saved in the following directory of the specified drive.
\Anritsu Corporation\Signal Analyzer\User Data\Digitized Data\Signal Analyzer

Up to 1000 files can be saved in the folder.

Example of Use

To save a waveform data file “DATA” into drive D:

```
MMEM:STOR:IQD "DATA",D
```

:MMEMory:STORe:IQData:CANCel

Cancel Execute Save Captured Data

Function

This command stops saving waveform data into a file.

Command

```
:MMEMory:STORe:IQData:CANCel
```

Example of Use

To stop saving waveform data into a file.

```
MMEM:STOR:IQD:CANC
```

:MMEMory:STORe:IQData:RATE <freq>

Output Rate for Save Captured Data

Function

This command sets the output rate when executing Save Captured Data.

Command

```
:MMEMory:STORe:IQData:RATE <freq>
```

Parameter

<freq>	Output rate
Range	Refer to the table below.
Resolution	Same as above.
Suffix code	HZ, KHZ, KZ, MHZ, MZ, GHZ, GZ Hz is used when omitted.

Frequency span [Hz]	Minimum [Hz]	Maximum [Hz]	Default value [Hz]	Resolution [Hz]
1000*2	1000	2000	2000	1
2500*2	2000	5000	5000	1
5000*2	5000	10000	10000	1
10000*2	10000	20000	20000	1
25000*2	20000	50000	50000	1
50000*2	50000	100000	100000	10
100000*2	100000	200000	200000	10
250000*2	200000	500000	500000	10
500000*2	500000	1000000	1000000	100
1000000*2	1000000	2000000	2000000	100
2500000*2	2000000	5000000	5000000	100
5000000*2	5000000	10000000	10000000	1000
10000000*2	10000000	20000000	20000000	1000
25000000*1	20000000	50000000	50000000	1000
31250000*1	20000000	50000000	50000000	1000
50000000*3	50000000	100000000	100000000	10000
62500000*4	50000000	100000000	100000000	1000
100000000*5	100000000	200000000	200000000	10000
125000000*5	100000000	200000000	200000000	10000

For 2690A/91A/92A:

*1, *2 : This can be set regardless of option configurations.

*3 : This can be set when the Option 004/104 (Wideband Analysis Hardware) or Option 077/177 (Analysis Bandwidth Extension to 32.5 MHz) is installed.

*4: This can be set when the Option 077/177 (Analysis Bandwidth Extension to 62.5 MHz) is installed.

*5: This can be set when the Option 004/104 (Wideband Analysis Hardware) or Option 077/177 (Analysis Bandwidth Extension to 125 MHz) is installed.

For MS2830A, MS2840A:

*1: This can be set when the MS2830A-005/105/007/009/109, MS2840A-005/105/009/109 (Analysis Bandwidth Extension to 31.25 MHz) is installed.

*2: This can be set when the Option 006/106 (Analysis Bandwidth 10 MHz) is installed.

*3, *4: This can be set when the MS2830A-077, MS2840A-077/177 (Analysis Bandwidth Extension to 62.5 MHz) is installed.

*5: This can be set when the MS2830A-078, MS2840A-078/178 (Analysis Bandwidth Extension to 125 MHz) is installed.

For MS2850A:

*1, *2: This can be set regardless of option configurations.

The output rate is following when the frequency span is ≥ 50 MHz.

Frequency span [Hz]	Minimum [Hz]	Maximum [Hz]	Default value [Hz]	Resolution [Hz]
50000000	50000000	81250000	81250000	1000
62500000	50000000	81250000	81250000	1000
100000000	81250000	162500000	162500000	1000
125000000	81250000	162500000	162500000	1000
255000000	162500000	325000000	325000000	1000
510000000*6	325000000	650000000	650000000	1000
1000000000*7	650000000	1300000000	1300000000	1000

*6: This can be set when the MS2850A-033/133 (Analysis Bandwidth Extension to 510 MHz) or MS2850A-034/134 (Analysis Bandwidth Extension to 1 GHz) is installed.

*7: This can be set when the MS2850A-034/134 (Analysis Bandwidth Extension to 1 GHz) is installed.

Details

The default value is returned if the frequency span is changed.
The setting range is limited by the Frequency Span setting.
The setting is enabled when Capture Time is set to Manual.

This command is not available in the following case:

- When Terminal is set for DigRF 3G (only for MS269x Series).

Example of Use

To set the output rate to 30 MHz.

```
MMEMO:STOR:IQD:RATE 30MHZ
```

:MMEMory:STORe:IQData:RATE?

Output Rate for Save Captured Data

Function

This command queries the output rate when executing Save Captured Data.

Query

```
:MMEMory:STORe:IQData:RATE?
```

Response

```
<freq>
```

Parameter

`<freq>`	Output rate
Range	Refer to the table below.
Resolution	Refer to the table below.

No suffix code. Value is returned in Hz units.

Frequency span [Hz]	Minimum [Hz]	Maximum [Hz]	Default value [Hz]	Resolution [Hz]
1000*2	1000	2000	2000	1
2500*2	2000	5000	5000	1
5000*2	5000	10000	10000	1
10000*2	10000	20000	20000	1
25000*2	20000	50000	50000	1
50000*2	50000	100000	100000	10
100000*2	100000	200000	200000	10
250000*2	200000	500000	500000	10
500000*2	500000	1000000	1000000	100
1000000*2	1000000	2000000	2000000	100
2500000*2	2000000	5000000	5000000	100
5000000*2	5000000	10000000	10000000	1000
10000000*2	10000000	20000000	20000000	1000
25000000*1	20000000	50000000	50000000	1000
31250000*1	20000000	50000000	50000000	1000
50000000*3	50000000	100000000	100000000	10000
62500000*4	50000000	100000000	100000000	1000
100000000*5	100000000	200000000	200000000	10000
125000000*5	100000000	200000000	200000000	10000

For 2690A/91A/92A:

*1, *2: This can be set regardless of option configurations.

*3: This can be set when the Option 004/104 (Wideband Analysis Hardware) or Option 077/177 (Analysis Bandwidth Extension to 62.5 MHz) is installed.

*4: This can be set when the Option 077/177 (Analysis Bandwidth Extension to 62.5 MHz) is installed.

*5: This can be set when the Option 004/104 (Wideband Analysis Hardware) or Option 078/178 (Analysis Bandwidth Extension to 125 MHz) is installed.

For MS2830A. MS2840A:

*1: This can be set when the MS2830A-005/105/007/009/109 MS2840A-005/105/009/109 (Analysis Bandwidth Extension to 31.25 MHz) is installed.

*2: This can be set when the Option 006/106 (Analysis Bandwidth 10 MHz) is installed.

*3, *4: This can be set when the MS2830A-077, MS2840A-077/177 (Analysis Bandwidth Extension 62.5 to MHz) is installed.

*5: This can be set when the MS2830A-078, MS2840A-078/178 (Analysis Bandwidth Extension to 125 MHz) is installed.

For MS2850A:

*1, *2: This can be set regardless of option configurations.

The output rate is following when the frequency span is 50 MHz or more.

Frequency span [Hz]	Minimum [Hz]	Maximum [Hz]	Default value [Hz]	Resolution [Hz]
50000000	50000000	81250000	81250000	1000
62500000	50000000	81250000	81250000	1000
100000000	81250000	162500000	162500000	1000
125000000	81250000	162500000	162500000	1000
255000000	162500000	325000000	325000000	1000
510000000*6	325000000	650000000	650000000	1000
1000000000*7	650000000	1300000000	1300000000	1000

*6: This can be set when the MS2850A-033/133 (Analysis Bandwidth Extension to 510 MHz) or MS2850A-034/134 (Analysis Bandwidth Extension to 1 GHz) is installed.

*7: This can be set when the MS2850A-034/134 (Analysis Bandwidth Extension to 1 GHz) is installed.

Details

The default value is returned if the frequency span is changed.
The setting range is limited by the Frequency Span setting.
The setting is enabled when Capture Time is set to Manual.

Example of Use

To query the output rate.

```
MMEMO:STOR:IQD:RATE?
> 30000000
```

:MMEMory:STORe:TRACe TRACe1|ALL[,<filename>[,<device>]]

Save Wave Data

Function

This command saves the waveform data in .csv file.

Command

```
:MMEMory:STORe:TRACe <trace>[,<filename>[,<device>]]
```

Parameter

`<trace>`	Trace to save
`TRACe1`	Trace currently displayed
`ALL`	Trace currently displayed
`<filename>`	Name of the file to be saved. Character string within 32 characters enclosed by double quotes (“ ”) or single quotes (‘ ’) (excluding extension) The following characters cannot be used: `\ / : * ? " ' ` ' < > |` Automatically named as “WaveData date sequential number.csv” when omitted.
`<device>`	Drive name `A,B,D,E,F,...` D drive is used when omitted.

Details

This function is available when the waveform is captured under the following conditions:

- Measurement performed using Single Measurement has finished.

When the file name is omitted, consecutive numbers from 0 to 99 are added to files. No more files can be saved if numbers up to 99 are already used.

Files are saved to the following directory in the specified drive.
\Anritsu Corporation\Signal Analyzer\User Data\Trace Data\Signal Analyzer

Up to 100 files can be saved in a folder.

Example of Use

To save the trace waveform-data file "trace" to the E drive.

```
MMEM:STOR:TRAC TRAC1,"trace",E
```

[:SENSe]:SWEep:TIME:AUTO ON|OFF|1|0

Capture Time Auto/Manual

Function

This command selects auto or manual setting for waveform capture time (Capture Time).

Command

```
[:SENSe]:SWEep:TIME:AUTO <switch>
```

Parameter

<switch>	Auto/manual mode for capture time
ON|1	Auto
OFF|0	Manual

Details

The minimum waveform capture time (Capture Time) required for measurement is set, when set to Auto.

This command is not available while the Replay function is being executed.

Example of Use

To set the waveform capture time automatically.

```
SWE:TIME:AUTO ON
```

Related Command

This command has the same function as the following commands.

```
[:SENSe]:ACPower:SWEep:TIME:AUTO
[:SENSe]:CHPower:SWEep:TIME:AUTO
[:SENSe]:OBWidth:SWEep:TIME:AUTO
```

[:SENSe]:SWEep:TIME:AUTO?

Capture Time Auto/Manual Query

Function

This command queries Auto/Manual setting of waveform capture time (Capture Time).

Query

```
[:SENSe]:SWEep:TIME:AUTO?
```

Response

```
<switch>
```

Parameter

<switch>	Auto/manual setting of capture time
1	Automatic
0	Manual

Related Command

This command has the same function as the following commands.

```
[:SENSe]:ACPower:SWEep:TIME:AUTO?
[:SENSe]:CHPower:SWEep:TIME:AUTO?
[:SENSe]:OBWidth:SWEep:TIME:AUTO?
```

Details

The minimum waveform capture time (Capture Time) required for measurement is set, when set to Auto.

Example of Use

To query the setting of the waveform capture time.

```
SWE:TIME:AUTO?
> 1
```

[:SENSe]:SWEep:TIME <time>

Capture Time Length

Function

This command sets waveform capture time.

Command

```
[:SENSe]:SWEep:TIME <time>
```

Parameter

<time>		Capture time
	Range/Resolution	Refer to the *MS2690A/MS2691A/MS2692A Signal Analyzer Operation Manual (Signal Analyzer function Operation)* or *MS2830A/MS2840A/MS2850A Signal Analyzer Operation Manual (Signal Analyzer function Operation)* for details.
	Suffix code	NS, US, MS, S S is used when omitted.

Details

The shortest capture time length will be set if automatic setting is enabled.

The automatic mode is switched to the manual mode when the capture time is set.

The setting range and resolution are limited by the Frequency Span setting.

This command is not available in the following cases:

- When Terminal is selected for DigRF 3G (only for MS269x Series).
- While the Replay function is being executed.

Example of Use

To set waveform capture time to 2 seconds:

```
SWE:TIME 2
```

Related Command

This command has the same function as the following commands.

```
[:SENSe]:ACPower:SWEep:TIME
[:SENSe]:CHPower:SWEep:TIME
[:SENSe]:OBWidth:SWEep:TIME
[:SENSe]:BPOWer|:TXPower:SWEep:TIME
```

[:SENSe]:SWEep:TIME?

Capture Time Length Query

Function

This command queries the waveform capture time.

Query

```
[:SENSe]:SWEep:TIME?
```

Response

```
<time>
```

Parameter

`<time>`		Capture time
	Range/Resolution	Refer to the *MS2690A/MS2691A/MS2692A Signal Analyzer Operation Manual (Signal Analyzer function Operation)* or *MS2830A/MS2840A/MS2850A Signal Analyzer Operation Manual (Signal Analyzer function Operation)* for details. No suffix code. Value is returned in S units.

Details

The capture time length with which the capture time is the shortest will be set when automatic setting is enabled.

The setting method is switched to the manual setting when capture time is set.

The setting range and resolution are limited by the Frequency Span setting.

Example of Use

To query the waveform capture time.

```
SWE:TIME?
> 2.00000000
```

Related Command

This command has the same function as the following commands.

```
[:SENSe]:ACPower:SWEep:TIME?
[:SENSe]:CHPower:SWEep:TIME?
[:SENSe]:OBWidth:SWEep:TIME?
[:SENSe]:BPOWer|:TXPower:SWEep:TIME?
```

2.5 Marker Settings

Table 2.5-1 lists device messages for setting a marker.

Table 2.5-1 Device messages for setting marker

Function	Device Message
All Marker Off	:CALCulate:MARKer:AOFF
Marker Query	:CALCulate:MARKer[1]|2|3|4|5|6|7|8|9|10[:PEAK]:Y?
	:CALCulate:MARKer[1]|2|3|4|5|6|7|8|9|10[:PEAK]:Y:DELTa?
Marker Phase Query	:CALCulate:MARKer[1]|2|3|4|5|6|7|8|9|10[:PEAK]:Y:PHASe?
Calculate Phase Spectrum	:CALCulate:PHASe:STATe ON|OFF|1|0
	:CALCulate:PHASe:STATe?
Marker to Center Frequency	:CALCulate:MARKer[1]|2|3|4|5|6|7|8|9|10[:SET]:CENTer
Marker to Reference Level	:CALCulate:MARKer[1]|2|3|4|5|6|7|8|9|10[:SET]:RLEVel
Zoom	:CALCulate:MARKer[1]|2|3|4|5|6|7|8|9|10:ZOOM
Zoom Out	:CALCulate:MARKer[1]|2|3|4|5|6|7|8|9|10:ZOUT
Marker State	:CALCulate:MARKer[1]|2|3|4|5|6|7|8|9|10:STATe ON|OFF|1|0
	:CALCulate:MARKer[1]|2|3|4|5|6|7|8|9|10:STATe?
Active Marker	:CALCulate:MARKer[1]|2|3|4|5|6|7|8|9|10:ACTive OFF|ON|0|1
	:CALCulate:MARKer[1]|2|3|4|5|6|7|8|9|10:ACTive?
Marker Result	:CALCulate:MARKer:RESult INTegration|TOTal|DENSity|AVERage|PEAK|PACCuracy
	:CALCulate:MARKer:RESult?
Marker Frequency	:CALCulate:MARKer[1]|2|3|4|5|6|7|8|9|10:X <freq>|<time>|<sample>|<dist>
	:CALCulate:MARKer[1]|2|3|4|5|6|7|8|9|10:X?
	:CALCulate:MARKer[1]|2|3|4|5|6|7|8|9|10:X:DELTa <freq>
	:CALCulate:MARKer[1]|2|3|4|5|6|7|8|9|10:X:DELTa?
	:CALCulate:MARKer[1]|2|3|4|5|6|7|8|9|10:PEAK:X?
Marker Width	:CALCulate:MARKer[1]|2|3|4|5|6|7|8|9|10:WIDTh <freq>
	:CALCulate:MARKer[1]|2|3|4|5|6|7|8|9|10:WIDTh?
Display Peak to Peak Value On/Off	:CALCulate:MARKer:PTPeak[:STATe] ON|OFF|1|0
	:CALCulate:MARKer:PTPeak[:STATe]?
Peak to Peak Value Query	:CALCulate:MARKer:PTPeak:RESult?

Table 2.5-1 Device messages for setting marker (Cont'd)

Function	Device Message
Marker Mode	:CALCulate:MARKer[1]|2|3|4|5|6|7|8|9|10:MODE POSitive|NORMal|DELTa|FIXed|OFF
	:CALCulate:MARKer[1]|2|3|4|5|6|7|8|9|10:MODE?
Relative To	:CALCulate:MARKer[1]|2|3|4|5|6|7|8|9|10:REFerence <integer>
	:CALCulate:MARKer[1]|2|3|4|5|6|7|8|9|10:REFerence?
Marker List	:CALCulate:MARKer:TABLe[:STATe] OFF|ON|0|1
	:CALCulate:MARKer:TABLe[:STATe]?
Spot Line	:CALCulate:MARKer:SLINe[:STATe] OFF|ON|0|1
	:CALCulate:MARKer:SLINe[:STATe]?
Couple Zone	:CALCulate:MARKer:COUPle:ZONE[:STATe] OFF|ON|0|1
	:CALCulate:MARKer:COUPle:ZONE[:STATe] ?
Zone Width Type	:CALCulate:MARKer[1]|2|3|4|5|6|7|8|9|10:WIDTh:TYPE ZONE|SPOT
	:CALCulate:MARKer[1]|2|3|4|5|6|7|8|9|10:WIDTh:TYPE?

:CALCulate:MARKer:AOFF

All Marker Off

Function

This command sets all markers to Off.

Command

```
:CALCulate:MARKer:AOFF
```

Example of Use

To set all markers to Off.

```
CALC:MARK:AOFF
```

Related Command

This command has the same function as the following commands.

```
:CALCulate:ACPower:MARKer:AOFF
:CALCulate:CHPower:MARKer:AOFF
:CALCulate:OBWidth:MARKer:AOFF
:CALCulate:BPOWer|:TXPower:MARKer:AOFF
```

:CALCulate:MARKer[1]|2|3|4|5|6|7|8|9|10[:PEAK]:Y?

Marker Query

Function

This command queries the marker value at the marker point of the main trace.

Query

```
:CALCulate:MARKer[n][:PEAK]:Y?
```

Response

<power>
(Spectrum, Power vs Time, Spectrogram trace)
<freq>
(Frequency vs Time trace)
<degree>
(At Phase vs Time)
<prob>
(For CCDF trace, when Marker Axis is Probability)
<prob_result>
(For CCDF trace, when Marker Axis is Distribution)

Parameter

(For Spectrum)

<n>	Marker number
1	Marker 1
2	Marker 2
3	Marker 3
4	Marker 4
5	Marker 5
6	Marker 6
7	Marker 7
8	Marker 8
9	Marker 9
10	Marker 10
When omitted:	Marker 1

(At Power vs Time, Frequency vs Time, Phase vs Time, Spectrogram trace)

<n>	Marker number
1	Marker 1
2	Marker 2
When omitted:	Marker 1

(For CCDF)

<n>	Marker number
1	Marker set in Marker Axis (CCDF)
When omitted:	Marker set in Marker Axis (CCDF).

<power> Marker value of the target marker

(When marker level display units are dB-system units)

No suffix code, in units specified by Scale Unit, 0.001 dB resolution

–999.0 is returned when no measurement is performed or an error has occurred.

(When marker level display units are V-system units)

No suffix code, V units, 0.01 pV resolution

–999.0 is returned when no measurement is performed or an error has occurred.

(When marker level display units are W-system units)

No suffix code, W units, 0.01 yW resolution

–999.0 is returned when no measurement is performed or an error has occurred.

<freq> Marker value of the target marker

No suffix code, in Hz units

–999999999999 is returned when no measurement is performed or an error has occurred.

<degree> Marker value of the target marker

No suffix code, degree units, 0.001 degree resolution

–999999999999 is returned if there is no measurement or an error.

<prob> Marker position of the target marker

Returns a value in % units without a suffix code.

–999.0 is returned when no measurement is performed or an error has occurred.

<prob_result> Marker value of the target marker

Returns a value in % units without a suffix code.

–999.0 is returned when no measurement is performed or an error has occurred.

Example of Use

To query the level of Marker 2.

```
CALC:MARK2:Y?
> -20.000
```

Related Command

This command has the same function as the following commands.

```
:CALCulate:ACPower:MARKer[1]|2|3|4|5|6|7|8|9|10:Y?
:CALCulate:CHPower:MARKer[1]|2|3|4|5|6|7|8|9|10:Y?
:CALCulate:OBWidth:MARKer[1]|2|3|4|5|6|7|8|9|10:Y?
:CALCulate:BPOWer|:TXPower:MARKer[1]|2|3|4|5|6|7|8|9|10:
Y?
```

:CALCulate:MARKer[1]|2|3|4|5|6|7|8|9|10[:PEAK]:Y:DELTa?

Marker Query

Function

This command queries the delta marker value on the main trace.

Query

```
:CALCulate:MARKer[n][:PEAK]:Y:DELTa?
```

Response

<rel_ampl_spe>
(For Spectrum trace)
<ratio_spe>
(For Spectrum trace, when Scale Mode is Linear and Marker Result is Peak (Fast) or Peak (Accuracy).)
<rel_ampl_pvt>
(For Power vs Time trace)
<ratio_pvt>
(For Power vs Time trace, when Scale Mode is Linear)
<freq>
（For Frequency vs Time trace)
<degree>
(At Phase vs Time)
<prob>
(When Trace Mode is set to CCDF and Marker Axis is set to Probability.)
<prob_result_gauss>,<prob_result_ref>
(When Trace Mode is set to CCDF and Marker Axis is set to Distribution.)

Parameter

(For Spectrum trace)

<n>	Marker number
1	Marker 1
2	Marker 2
3	Marker 3
4	Marker 4
5	Marker 5
6	Marker 6
7	Marker 7
8	Marker 8
9	Marker 9
10	Marker 10
When omitted:	Marker 1

(At Power vs Time, Frequency vs Time, Phase vs Time trace)

<n>	Marker number
1	Markers 1 and 2
When omitted:	Markers 1 and 2
<rel_ampl_spe>	Ratio between the marker selected by n and the marker specified by Relative To. Returns a value in dB units without a suffix code. –999.0 is returned when no measurement is performed or an error has occurred. –999.0 is returned when Marker Mode is set to other than Delta.
<rel_ampl_pvt>	Ratio between Marker 2 and Marker 1 Returns a value in dB units without a suffix code. –999.0 is returned when no measurement is performed or an error has occurred.
<ratio_spe>	Value of the marker selected by n ÷ Value of the marker specified by Relative To –999.0 is returned when no measurement is performed or an error has occurred. –999.0 is returned when Marker Mode is set to other than Delta.
<ratio_pvt>	Value of Marker 2 ÷ Value of Marker 1 –999.0 is returned when no measurement is performed or an error has occurred.
<freq>	Frequency of Marker 2 – Frequency of Marker 1 No suffix code. Value is returned in Hz units. –999999999999 is returned when no measurement is performed or an error has occurred.
<degree>	Phase of Marker 2 – Phase of Marker 1 No suffix code. Value is returned in degree units. –999999999999 is returned if there is no measurement or an error.

(CCDF)

<n>	Marker Number	
1	Marker set in Marker Axis	(CCDF)
When omitted	Marker set in Marker Axis	(CCDF)
<prob>	Marker position of the target marker No suffix code. Value is returned in % units. –999.0 is returned at no measurement or error	
<prob_result_gauss>	The difference value of the target marker and Gaussian trace is returned. No suffix code. Value is returned in % units. –999.0 is returned at Gaussian trace off, no measurement, or error	
<prob_result_ref>	The difference value of the target marker and reference trace is returned. No suffix code. Value is returned in % units. –999.0 returned at reference trace off, no measurement, or error	

Details

This command is available when any one of the following traces is active:

- Spectrum
- Power vs Time
- Frequency vs Time
- Phase vs Time
- CCDF

Example of Use

To query the delta marker value.

```
CALC:MARK:Y:DELT?
> 0.065
```

:CALCulate:MARKer[1]|2|3|4|5|6|7|8|9|10[:PEAK]:Y:PHASe?

Marker Phase Query

Function

Returns phase spectrum $\theta_k = \arg C_k$ [rad]

when marker position Fourier coefficient is C_k

However, $-\pi < \theta_k \leq \pi$.

Query

```
:CALCulate:MARKer[n][:PEAK]:Y:PHASe?
```

Response

```
<phase>
```

Parameter

`marker`	Marker Number
`1`	Specifies marker 1
`2`	Specifies marker 2
`3`	Specifies marker 3
`4`	Specifies marker 4
`5`	Specifies marker 5
`6`	Specifies marker 6
`7`	Specifies marker 7
`8`	Specifies marker 8
`9`	Specifies marker 9
`10`	Specifies marker 10
When omitted:	Specifies marker 1
`<phase>`	Marker position phase spectrum No suffix code, rad units, 0.0001 rad resolution –999.0 returned at no measurement or error

Details

–999.0 returned when $|C_k| = 0$

Returns phase spectrum of Zone Center position when Marker Result setting is Integration or Density

Returns phase spectrum for marker positions in zone when Marker Result is Peak (Fast) or Peak (Accuracy) and Zone Type is Zone

This function can be used in the following cases:

- At Spectrum trace
- When Marker Mode of target markers is Normal
- When Storage Mode is Normal
- When Noise Cancel is Off

When using this function, `:CALCulate:PHASe:STATe` must be set to ON. (For details, refer to `:CALCulate:PHASe:STATe`.)

Although multiple Fourier transformations are performed when Analysis Time Length is longer than 0 s, the phase spectrum used for the measurement results is the one for the Fourier transform performed last in the analysis time range. For example, when Analysis Start Time is 1 s and Analysis Time Length is 3 s, the phase spectrum for the Fourier transform performed at 4 s is used for the measurement result.

Example of Use

To read phase spectrum at 6 GHz

```
CALC:PHAS:STAT ON
INIT:MODE:SING
CALC:MARK:X 6GHZ
*WAI
CALC:MARK:Y:PHAS?
> 1.4325
```

:CALCulate:PHASe:STATe ON|OFF|1|0

Calculate Phase Spectrum

Function

This command sets phase spectrum calculation On and Off

Command

```
:CALCulate:PHASe:STATe <switch>
```

Parameter

<switch>	Sets phase spectrum calculation On and Off
0|OFF	Does not execute phase spectrum calculation (default setting)
1|ON	Executes phase spectrum calculation

Details

This function does not perform phase spectrum calculation at the Off → On switching instant. After setting to On, either execute one of the two commands below or read the phase spectrum after performing a single measurement.

```
:INITiate:MODE:SINGle
:INITiate:CALCulate
```

The phase spectrum can be read using the following command:

```
:CALCulate:MARKer[n][:PEAK]:Y:PHASe?
```

This function can be set when the Spectrum trace is active.

- Spectrum

Example of Use

To read phase spectrum at 6 GHz

```
CALC:PHAS:STAT ON
INIT:MODE:SING
CALC:MARK:X 6GHZ
*WAI
CALC:MARK:Y:PHAS?
> 1.4325
```

:CALCulate:PHASe:STATe?

Calculate Phase Spectrum Query

Function

This command queries phase spectrum calculation On and Off

Query

```
:CALCulate:PHASe:STATe?
```

Response

```
<switch>
```

Parameter

<switch>	Phase spectrum calculation On and Off
0	Does not execute phase spectrum calculation
1	Executes phase spectrum calculation

Example of Use

To query phase spectrum calculation On and Off

```
CALC:PHAS:STAT?
> 1
```

:CALCulate:MARKer[1]|2|3|4|5|6|7|8|9|10[:SET]:CENTer

Marker to Center Frequency

Function

This command sets the marker to the center frequency.

Command

```
:CALCulate:MARKer[n][:SET]:CENTer
```

Parameter

<n>		Marker number
	1	Marker1
	2	Marker2
	3	Marker3
	4	Marker4
	5	Marker5
	6	Marker6
	7	Marker7
	8	Marker8
	9	Marker9
	10	Marker10
	When omitted:	Marker1

Details

This command is available when the following trace is active:

- Spectrum
- Spectrogram(Unavailable for Marker 3 to 10).

This command is not available while the Replay function is being executed.

Example of Use

To set the marker frequency to the center frequency.

```
CALC:MARK:CENT
```

:CALCulate:MARKer[1]|2|3|4|5|6|7|8|9|10[:SET]:RLEVel

Marker to Reference Level

Function

This command sets the marker level to the reference level.

Command

```
:CALCulate:MARKer[n][:SET]:RLEVel
```

Parameter

<n>		Marker number
	1	Marker1
	2	Marker2
	3	Marker3
	4	Marker4
	5	Marker5
	6	Marker6
	7	Marker7
	8	Marker8
	9	Marker9
	10	Marker10
	When omitted:	Marker1

Details

This command is available when the following trace is active:

- Spectrum
- Spectrogram(Unavailable for Marker 3 to 10).

When Marker Result Type is Density, a value converted into Total Power is set to the reference level.
This command is not available when Marker Mode is set to Off.

Example of Use

To set the marker level to the reference level.

```
CALC:MARK:RLEV
```

:CALCulate:MARKer[1]|2|3|4|5|6|7|8|9|10:ZOOM

Zoom

Function

This command expands the trace in the range specified by the marker.

Command

```
:CALCulate:MARKer[n]:ZOOM
```

Parameter

(For Spectrum trace)

<n>	Marker number
1	Marker1
2	Marker2
3	Marker3
4	Marker4
5	Marker5
6	Marker6
7	Marker7
8	Marker8
9	Marker9
10	Marker10
When omitted:	Marker1

(At Power vs Time, Frequency vs Time, Phase vs Time trace)

<n>	Marker number
1	Expands between Markers 1 and 2.
When omitted:	Expands between Markers 1 and 2.

Details

This command reflects the zone range of the active marker to the display frequency range when the main trace is Spectrum. This command can be executed when the target marker is Normal or Delta.
This command reflects the time range of Marker1 and Marker2 to the analysis range when the main trace is Power vs Time, Frequency vs Time, or Phase vs Time. This command can be executed when both Markers 1 and 2 are set to On.
This command is available when any one of the following traces is active:

- Spectrum
- Power vs Time
- Frequency vs Time
- Phase vs Time

This command is available in the following cases:

- The analysis range is minimum (Power vs Time, Frequency vs Time, Phase vs Time).
- The display frequency range is minimum (Spectrum).
- Marker Result is Peak (Fast) or Peak (Normal), and furthermore, Zone Width Type is Spot (Spectrum).
- Either Marker 1 or 2 is set to Off (Power vs Time, Frequency vs Time, Phase vs Time).
- Marker Mode is set to Off or Fixed (Spectrum).

Example of Use

To expand the trace in the specified range of Marker 2.

```
CALC:MARK2:ZOOM
```

:CALCulate:MARKer[1]|2|3|4|5|6|7|8|9|10:ZOUT

Zoom Out

Function

This command compresses the display range of the horizontal axis scale to the range specified by the marker.

Command

```
:CALCulate:MARKer[n]:ZOUT
```

Parameter

(For Spectrum trace)

<n>	Marker number
1	Marker1
2	Marker2
3	Marker3
4	Marker4
5	Marker5
6	Marker6
7	Marker7
8	Marker8
9	Marker9
10	Marker10
When omitted:	Marker1

(For Power vs Time and Frequency vs Time traces)

<n>	Marker number
1	Compresses between Markers 1 and 2.
When omitted:	Compresses between Markers 1 and 2.

Details

This command compresses the display frequency range to the range specified by the zone width of the active marker when the main trace is Spectrum. This command can be executed when the target marker is Normal or Delta.
This command compresses the analysis time range to the range between Markers 1 and 2 when the main trace is Power vs Time or Frequency vs Time. This command can be executed when both Markers 1 and 2 are set to On.
This command is available when any one of the following traces is active:

- Spectrum
- Power vs Time
- Frequency vs Time
- Phase vs Time

This command is not available in the following cases:

- Marker Mode is Off or Fixed (Spectrum).
- Either Marker 1 or 2 is set to Off (Power vs Time, Frequency vs Time, Phase vs Time).
- Marker Result is Peak (Fast), or Peak (Normal), and Zone Width Type is Spot (Spectrum).

Example of Use

To compress the display range of the horizontal scale of Marker 2 to the range specified by the marker.

```
CALC:MARK2:ZOUT
```

:CALCulate:MARKer[1]|2|3|4|5|6|7|8|9|10:STATe ON|OFF|1|0

Marker State

Function

This command sets the main trace marker to On/Off.

Command

```
:CALCulate:MARKer[n]:MODE <switch>
```

Parameter

<n>	Marker number
1	Marker1
2	Marker2
3	Marker3
4	Marker4
5	Marker5
6	Marker6
7	Marker7
8	Marker8
9	Marker9
10	Marker10
When omitted:	Marker1
<switch>	Marker mode
ON|1	Sets the marker to Normal (Spectrum).
	Sets the marker to On (excluding Spectrum).
OFF|0	Sets the marker to Off.

Details

This command is available when any one of the following traces is active:

- Spectrum
- Power vs Time (Unavailable for Markers 3 to 10.)
- Frequency vs Time (Unavailable for Markers 3 to 10.)
- Phase vs Time (Unavailable for Markers 3 to 10.)
- CCDF (Unavailable for Markers 2 to 10.)
- Spectrogram (Unavailable for Marker 2 to 10).

This command sets the marker to the active marker if the marker is changed to On (or Normal) when the main trace is Spectrum, Power vs Time, Frequency vs Time, or Phase vs Time.
For querying a marker value after this command has been executed, use *WAI commands to perform synchronized control.

Example of Use

To set a marker value by setting Marker 2 to On.

```
CALC:MARK2:STAT ON
*WAI
CALC:MARK2:Y?
```

:CALCulate:MARKer[1]|2|3|4|5|6|7|8|9|10:STATe?

Marker State Query

Function

This command queries the On/Off state of the main trace marker.

Query

```
:CALCulate:MARKer[n]:STATe?
```

Response

```
<switch>
```

Parameter

<n>	Marker number
1	Marker1
2	Marker2
3	Marker3
4	Marker4
5	Marker5
6	Marker6
7	Marker7
8	Marker8
9	Marker9
10	Marker10
When omitted:	Marker1
<switch>	Marker mode
1	Marker is set to other than Off (Spectrum). Marker is set to On (excluding Spectrum).
0	Marker is set to Off.

Details

When a marker is set to On while the active trace is Spectrum, Power vs Time or Freq vs Time, the marker is set to the active marker.

Example of Use

To query the mode of Marker 2.

```
CALC:MARK2:STAT?
> 1
```

:CALCulate:MARKer[1]|2|3|4|5|6|7|8|9|10:ACTive OFF|ON|0|1

Active Marker

Function

This command specifies active marker of the main trace.

Command

```
:CALCulate:MARKer[n]:ACTive <switch>
```

Parameter

<n>	Marker number
1	Marker1
2	Marker2
3	Marker3
4	Marker4
5	Marker5
6	Marker6
7	Marker7
8	Marker8
9	Marker9
10	Marker10
When omitted:	Marker1
<switch>	Active marker
ON|1	Sets Marker n to active.
OFF|0	Sets Marker n to inactive.

Details

This command is available when any one of the following traces is active:

- Spectrum
- Power vs Time (Unavailable for Markers 3 to 10.)
- Frequency vs Time (Unavailable for Markers 3 to 10.)
- Phase vs Time (Unavailable for Markers 3 to 10.)
- Spectrogram(Unavailable for Markers 3 to 10.)

For Spectrum trace, multiple markers cannot be set to active.

Example of Use

To set Marker 1 to the active marker.

```
CALC:MARK:ACT ON
```

:CALCulate:MARKer[1]|2|3|4|5|6|7|8|9|10:ACTive?

Active Marker Query

Function

This command queries the active marker of the main trace.

Query

```
:CALCulate:MARKer[n]:ACTive?
```

Response

```
<switch>
```

Parameter

<n>	Marker number
1	Marker1
2	Marker2
3	Marker3
4	Marker4
5	Marker5
6	Marker6
7	Marker7
8	Marker8
9	Marker9
10	Marker10
When omitted:	Marker1
<switch>	Active marker
1	Active marker is set to On.
0	Active marker is set to Off.

Example of Use

To query the active marker.

```
CALC:MARK:ACT?
> 1
```

:CALCulate:MARKer:RESult INTegation|TOTal|DENSity|AVERage|PEAK|PACCuracy

Marker Result

Function

This command sets the type of the marker display value of the main trace.

Command

```
:CALCulate:MARKer:RESult <mode>
```

Parameter

<mode>	Type of marker value
INTegration	Integral power in zone
TOTal	Same as above
DENSity	Power density in zone
AVERage	Same as above
PEAK	Peak level in zone (emphasis on measurement speed)
PACCuracy	Peak level in zone (emphasis on level accuracy)

Details

This command is available when the following trace is active:

- Spectrum
- Spectrogram

Example of Use

To set the marker display value type to the total power in zone band.

```
CALC:MARK:RES INT
```

:CALCulate:MARKer:RESult?

Marker Result

Function

This command queries the type of the marker display value of the main trace.

Query

```
:CALCulate:MARKer:RESult?
```

Response

```
<mode>
```

Parameter

`<mode>`	Type of marker value
`INT`	Total power in zone band
`DENS`	Power per 1 Hz in zone band
`PEAK`	Peak power in zone (emphasis on measurement speed)
`PACC`	Peak power in zone (emphasis on level accuracy)

Details

This command is available when the following traces are active:

- Spectrum
- Spectrogram

Example of Use

To query the marker display value type.

```
CALC:MARK:RESL?
> INT
```

:CALCulate:MARKer[1]|2|3|4|5|6|7|8|9|10:X <freq>|<time>|<sample>|<dist>

Marker Frequency

Function

This command moves the center marker to the specified frequency (time).

Command

`:CALCulate:MARKer[n]:X <freq>`
(Spectrum, Spectrogram trace)
`:CALCulate:MARKer[n]:X <time>`
(Power vs Time, Frequency vs Time, Phase vs Time trace)
`:CALCulate:MARKer[n]:X <sample>`
(Power vs Time, Frequency vs Time trace, also Terminal is DigRF 3G (only for MS269x Series))
`:CALCulate:MARKer[n]:X <dist>`
(CCDF trace)

Parameter

(For Spectrum trace)

<n>	Marker number
1	Marker1
2	Marker2
3	Marker3
4	Marker4
5	Marker5
6	Marker6
7	Marker7
8	Marker8
9	Marker9
10	Marker10
When omitted:	Marker1

(For Power vs Time, Frequency vs Time, Phase vs Time, and CCDF, Spectrogram trace)

<n>	Marker number
1	Marker 1 (excluding CCDF) Horizontal-axis marker (CCDF)
2	Marker 2 (excluding CCDF) Marker 2 cannot be set when the trace is CCDF.
When omitted:	Marker 1 (excluding CCDF) Horizontal-axis marker (CCDF)

<freq>	Marker center frequency
Range/Resolution	In the frequency range of trace display Refer to the *MS2690A/MS2691A/MS2692A Signal Analyzer Operation Manual (Signal Analyzer function Operation)* or *MS2830A/MS2840A/MS2850A Signal Analyzer Operation Manual (Signal Analyzer function Operation)* for details.
Suffix code	HZ, KHZ, KZ, MHZ, MZ, GHZ, GZ Hz is used when omitted.
<time>	Marker position
Range/Resolution	In the time range of trace display Refer to the *MS2690A/MS2691A/MS2692A Signal Analyzer Operation Manual (Signal Analyzer function Operation)* or *MS2830A/MS2840A/MS2850A Signal Analyzer Operation Manual (Signal Analyzer function Operation)* for details.
Suffix code	NS, US, MS, S S is used when omitted.
<sample>	Marker position
Range/Resolution	In the time range of trace display Refer to the *MS2690A/MS2691A/MS2692A Signal Analyzer Operation Manual (Signal Analyzer function Operation)* or *MS2830A/MS2840A/MS2850A Signal Analyzer Operation Manual (Signal Analyzer function Operation)* for details.
<dist>	Marker position
Range/Resolution	In the power deviation range of trace display Refer to the *MS2690A/MS2691A/MS2692A Signal Analyzer Operation Manual (Signal Analyzer function Operation)* or *MS2830A/MS2840A/MS2850A Signal Analyzer Operation Manual (Signal Analyzer function Operation)* for details.
Suffix code	DB dB is used when omitted.

Details

The target marker is set to active when the marker position is changed in Spectrum and Spectrogram. Also, it is set to Normal when Marker Mode is set to Fixed or Off. If the marker position is changed during a Power vs Time, Frequency vs Time, or Phase vs Time, or Spectrogram, the target marker is set to On and changed to the active marker. In

addition, the marker position is shared among Power vs Time, Frequency vs Time, Phase vs Time. In CCDF, Marker Axis is changed to Distribution.

For querying the marker value after this command has been executed, use *WAI commands to perform synchronized control.

Note that this command does not support synchronized control in Continuous mode.

Settings for Power vs Time Frequency vs Time will be performed in units of samples when Terminal is set to DigRF 3G (only for MS269x Series).

Example of Use

To query the marker value by moving the marker center to 100 MHz.

```
CALC:MARK:X 100MHZ
*WAI
CALK:MARK:Y?
```

Related Command

This command has the same function as the following commands.

```
:CALCulate:ACPower:MARKer[1]|2|3|4|5|6|7|8|9|10:X
:CALCulate:CHPower:MARKer[1]|2|3|4|5|6|7|8|9|10:X
:CALCulate:OBWidth:MARKer[1]|2|3|4|5|6|7|8|9|10:X
:CALCulate:BPOWer|:TXPower:MARKer[1]|2|3|4|5|6|7|8|9|10:
X
```

:CALCulate:MARKer[1]|2|3|4|5|6|7|8|9|10:X?

Marker Frequency Query

Function

This command queries the center of the marker.

Query

```
:CALCulate:MARKer[n]:X?
```

Response

<freq>
(Spectrum, Spectrogram trace)
<time>
(At Power vs Time, Frequency vs Time, Phase vs Time trace)
<sample>
(Power vs Time, Frequency vs Time trace, also Terminal is DigRF 3G (only for MS269x Series))
<dist>
(For CCDF trace, when Marker Axis is Distribution)
<dist_result>
(For CCDF trace, when Marker Axis is Probability)

Parameter

(For Spectrum trace)

<n>	Marker number
1	Marker1
2	Marker2
3	Marker3
4	Marker4
5	Marker5
6	Marker6
7	Marker7
8	Marker8
9	Marker9
10	Marker10
When omitted:	Marker1

(At Power vs Time, Frequency vs Time, Phase vs Time, CCDF, Spectrogram trace)

<n>	Marker number
1	Marker 1 (on traces other than CCDF) Marker set in Marker Axis (on CCDF)
2	Marker 2 (excluding CCDF) Marker 2 cannot be set when the trace is CCDF.
When omitted:	Marker 1 (on traces other than CCDF) Marker set in Marker Axis (on CCDF)

<freq> Center frequency of marker

Range/Resolution In the frequency range of trace display
Refer to the *MS2690A/MS2691A/MS2692A Signal Analyzer Operation Manual (Signal Analyzer function Operation)* or *MS2830A/MS2840A/MS2850A Signal Analyzer Operation Manual (Signal Analyzer function Operation)* for details.
Value is returned in Hz units, without suffix code.
Hz is used when omitted.

<time> Marker position

Range/Resolution In the time range of trace display
Refer to the *MS2690A/MS2691A/MS2692A Signal Analyzer Operation Manual (Signal Analyzer function Operation)* or *MS2830A/MS2840A/MS2850A Signal Analyzer Operation Manual (Signal Analyzer function Operation)* for details.
Value is returned in a units, without suffix code.
S is used when omitted.

<sample> Marker position

Range/Resolution In the time range of trace display
Refer to the *MS2690A/MS2691A/MS2692A Signal Analyzer Operation Manual (Signal Analyzer function Operation)* or *MS2830A/MS2840A/MS2850A Signal Analyzer Operation Manual (Signal Analyzer function Operation)* for details.

<dist> Marker position

Range/Resolution In the power fluctuation of trace display
Refer to the *MS2690A/MS2691A/MS2692A Signal Analyzer Operation Manual (Signal Analyzer function Operation)* or *MS2830A/MS2840A/MS2850A Signal Analyzer Operation Manual (Signal Analyzer function Operation)* for details.
Value is returned in dB units, without suffix code.
dB is used when omitted.

<dist_result> Power fluctuation of marker position

Range/Resolution In the power fluctuation of trace display
Refer to the *MS2690A/MS2691A/MS2692A Signal Analyzer Operation Manual (Signal*

Analyzer function Operation) or *MS2830A/MS2840A/MS2850A Signal Analyzer Operation Manual (Signal Analyzer function Operation)* for details.
Value is returned in dB units, without suffix code.
dB is used when omitted.
–999.0 is returned when no measurement is performed or an error has occurred.

Details

If the marker position is changed during a Spectrum trace, the target marker becomes the active marker. In addition, if Marker Mode is Fixed or Off, Normal is specified. If the marker position is changed during a Power vs Time, Frequency vs Time, or Phase vs Time trace, the target marker is set to On and changed to the active marker. In addition, the marker position is shared among Power vs Time, Frequency vs Time, Phase vs Time.

Example of Use

To query the center of the zone marker.

```
CALC:MARK:X?
> 100000000.0
```

Related Command

This command has the same function as the following commands.

```
:CALCulate:ACPower:MARKer[1]|2|3|4|5|6|7|8|9|10:X?
:CALCulate:CHPower:MARKer[1]|2|3|4|5|6|7|8|9|10:X?
:CALCulate:OBWidth:MARKer[1]|2|3|4|5|6|7|8|9|10:X?
:CALCulate:BPOWer|:TXPower:MARKer[1]|2|3|4|5|6|7|8|9|10:
X?
```

:CALCulate:MARKer[1]|2|3|4|5|6|7|8|9|10:X:DELTa <freq>

Marker Frequency

Function

This command moves the center of the marker to the frequency specified by relative value.

Command

```
:CALCulate:MARKer[n]:X:DELTa <freq>
```

Parameter

<n> Marker number

1 Specifies marker 1
2 Specifies marker 2
3 Specifies marker 3
4 Specifies marker 4
5 Specifies marker 5
6 Specifies marker 6
7 Specifies marker 7
8 Specifies marker 8
9 Specifies marker 9
10 Specifies marker 10

When omitted, specifies marker 1

<freq>		Relative frequency from the marker specified by "Relative To".
	Range/Resolution	Within the frequency range of trace display For details, refer to *MS2690A/MS2691A/MS2692A Signal Analyzer Operation Manual (Signal Analyzer Function Operation)* or *MS2830A/MS2840A/MS2850A Signal Analyzer Operation Manual (Signal Analyzer Function Operation)*.
	Suffix code	HZ, KHZ, KZ, MHZ, MZ, GHZ, GZ Hz is used when omitted.

Details

Available only when Trace Mode is Spectrum. Available only when Marker Mode is Delta.

When reading out a marker value after executing this command, use the *WAI command and execute synchronization control.

Note that synchronization control during the Continuous mode is not supported.

Example of Use

To move the center of Marker 1 to the position of Marker 2 –100 MHz, and query the marker value.

```
CALC:MARK:X:DELT -100MHZ
*WAI
CALC:MARK:Y:DELT?
```

:CALCulate:MARKer[1]|2|3|4|5|6|7|8|9|10:X:DELTa?

Marker Frequency Query

Function

This command queries the center of marker in relative value.

Query

```
:CALCulate:MARKer[n]:X:DELTa?
```

Response

```
<freq>
```

Parameter

<n> Marker number

1 Specifies marker 1
2 Specifies marker 2
3 Specifies marker 3
4 Specifies marker 4
5 Specifies marker 5
6 Specifies marker 6
7 Specifies marker 7
8 Specifies marker 8
9 Specifies marker 9
10 Specifies marker 10

When omitted, specifies marker 1

Details

Available only when Trace Mode is Spectrum. Available only when Marker Mode is Delta.

Example of Use

To query the center of marker 1 in relative value.

```
CALC:MARK:X:DELT?
> -100000000.0
```

:CALCulate:MARKer[1]|2|3|4|5|6|7|8|9|10:PEAK:X?

Marker Frequency Query

Function

This command queries the frequency at the marker point. When Marker Mode is Delta, this command queries the frequency difference between the delta marker and the marker specified by Relative To.

Query

```
:CALCulate:MARKer[n]:PEAK:X?
```

Response

```
<freq>
```

Parameter

<n>	Marker number
1	Marker1
2	Marker2
3	Marker3
4	Marker4
5	Marker5
6	Marker6
7	Marker7
8	Marker8
9	Marker9
10	Marker10
When omitted:	Marker1
<freq>	Frequency at marker point No suffix code/Hz units/0.01 Hz resolution –999999999999 is returned when no measurement is performed or an error has occurred.

Details

This command is available when the following traces are active:

- Spectrum
- Spectrogram (Unavailable for Marker 3 to 10).

Example of Use

To query the frequency at the marker point of Marker 1.

```
CALC:MARK:PEAK:X?
> 1.00
```

:CALCulate:MARKer[1]|2|3|4|5|6|7|8|9|10:WIDTh <freq>

Marker Width

Function

This command sets the zone width of the marker in frequency.

Command

```
:CALCulate:MARKer[n]:WIDTh <freq>
```

Parameter

<n>	Marker number
1	Marker1
2	Marker2
3	Marker3
4	Marker4
5	Marker5
6	Marker6
7	Marker7
8	Marker8
9	Marker9
10	Marker10
When omitted:	Marker1
<freq>	Frequency marker width
Resolution	0.01 Hz
Range	Within the frequency range of trace display (Limited depending on the zone marker width.) Refer to the *MS2690A/MS2691A/MS2692A Signal Analyzer Operation Manual (Signal Analyzer function Operation)* or *MS2830A/MS2840A/MS2850A Signal Analyzer Operation Manual (Signal Analyzer function Operation)* for details.
Suffix code	HZ, KHZ, KZ, MHZ, MZ, GHZ, GZ Hz is used when omitted.

Details

This command is available when the following traces are set to active:

- Spectrum
- Spectrogram (Unavailable for Marker 3 to 10)

The target marker is set to active when the width of the zone marker is changed. Also, it is set to Normal when Marker Mode is Fixed or Off.

For reading out a marker value after this command has been executed, use *WAI commands to perform synchronized control.

Example of Use

To set a marker value by setting the width of the marker 1 to 100 kHz.

```
CALC:MARK:WIDT 100KHZ
*WAI
CALC:MARK:Y?
```

:CALCulate:MARKer[1]|2|3|4|5|6|7|8|9|10:WIDTh?

Marker Width Query

Function

This command queries the zone marker width.

Query

```
:CALCulate:MARKer[n]:WIDTh?
```

Response

```
<freq>
```

Parameter

<n>	Marker number
1	Marker1
2	Marker2
3	Marker3
4	Marker4
5	Marker5
6	Marker6
7	Marker7
8	Marker8
9	Marker9
10	Marker10
When omitted:	Marker1
<freq>	Frequency marker width
Resolution	0.01 Hz
Range	Within the frequency range of trace display (Limited depending on the zone marker width.) Refer to the *MS2690A/MS2691A/MS2692A Signal Analyzer Operation Manual (Signal Analyzer function Operation)* or *MS2830A/MS2840A/MS2850A Signal Analyzer Operation Manual (Signal Analyzer function Operation)* for details. No suffix code. Value is returned in Hz units.

Example of Use

To query the width of the marker 1.

```
CALC:MARK:WIDT?
> 100000.0
```

:CALCulate:MARKer:PTPeak[:STATe] ON|OFF|1|0

Display Peak to Peak Value On/Off

Function

This command sets the peak to peak measurement On/Off.

Command

```
:CALCulate:MARKer:PTPeak[:STATe] <switch>
```

Parameter

<switch>	Peak to Peak measurement function On/Off
ON|1	On
OFF|0	Off

Details

This command is available when the following traces are active:

- Power vs Time
- Frequency vs Time

On Power vs Time trace, this command can be set only when Scale Mode is set to Linear.

For querying the measurement value after this command has been executed, use *WAI commands to perform synchronized control.

Example of Use

To set Peak to Peak measurement function to On and query the results.

```
CALC:MARK:PTP ON
*WAI
CALC:MARK:PTP:RES?
```

:CALCulate:MARKer:PTPeak[:STATe]?

Display Peak to Peak Value On/Off Query

Function

This command queries the On/Off state of Peak to Peak measurement.

Query

```
:CALCulate:MARKer:PTPeak[:STATe]?
```

Response

```
<switch>
```

Parameter

<switch>	Peak to Peak measurement function On/Off
1	On
0	Off

Details

This command is available when the following traces are active:

- Power vs Time
- Frequency vs Time

Example of Use

To query the On/Off state of the Peak to Peak measurement.

```
CALC:MARK:PTP?
> 1
```

:CALCulate:MARKer:PTPeak:RESult?

Peak to Peak Value Query

Function

This command queries the result of the peak to peak measurement.

Query

```
:CALCulate:MARKer:PTPeak:RESult?
```

Response

```
<pos>,<neg>,<p-p>,<avg>
```

Parameter

	Result of peak to peak measurement
<pos>	+Peak value Values in % units will be returned when Terminal is DigRF 3G (only for MS269x Series) and the Input Source is Complex. Values in V units will be returned if it is not set to Complex. (Power vs Time)
<neg>	–Peak value Values in % units is returned when Terminal is DigRF 3G (only for MS269x Series) and the Input Source is Complex. Values in V units will be returned if it is not set to Complex. (Power vs Time)
<p-p>	{(–Peak) – (+Peak)}/2 Returns a value in % units without a suffix code. Values in % units is returned when Terminal is DigRF 3G (only for MS269x Series) and the Input Source is Complex. Values in V units will be returned if it is not set to Complex. (Power vs Time). No suffix code. Value is returned in Hz units. (Frequency vs Time). –999999999999 is returned when no measurement is performed or an error has occurred.

<avg>	Average value Returns a value in V units without a suffix code (Power vs Time). No suffix code. Value is returned in Hz units. (Frequency vs Time). –999999999999 is returned when no measurement is performed or an error has occurred.

Details

This command is available when the following traces are active:

- Power vs Time
- Frequency vs Time

Example of Use

To query the result of peak to peak measurement.

```
CALC:MARK:PTP:RES?
```

:CALCulate:MARKer[1]|2|3|4|5|6|7|8|9|10:MODE POSitive|NORMal|DELTa|FIXed|OFF

Marker Mode

Function

This command sets the marker mode.

Command

```
:CALCulate:MARKer[n]:MODE <mode>
```

Parameter

<n>	Marker number
1	Marker1
2	Marker2
3	Marker3
4	Marker4
5	Marker5
6	Marker6
7	Marker7
8	Marker8
9	Marker9
10	Marker10
When omitted:	Marker1
<mode>	Marker mode
POSition|NORMal	Normal
DELTa	Delta
FIXed	Fixed
OFF	Off
Default value	Off (Normal is set only for Marker1)

Details

This command is available when the following trace is active:

- Spectrum

For querying the marker value after this command has been executed, use *WAI commands to perform synchronized control.

Example of Use

To query the marker value by setting the Marker 1 mode to Delta.

```
CALC:MARK:MODE DELT
*WAI
CALC:MARK:Y?
```

Related Commands

This command has the same function as the following commands.

```
:CALCulate:ACPower:MARKer[1]|2|3|4|5|6|7|8|9|10:MODE
:CALCulate:CHPower:MARKer[1]|2|3|4|5|6|7|8|9|10:MODE
:CALCulate:OBWidth:MARKer[1]|2|3|4|5|6|7|8|9|10:MODE
```

:CALCulate:MARKer[1]|2|3|4|5|6|7|8|9|10:MODE?

Marker Mode Query

Function

This command queries the marker mode.

Query

```
:CALCulate:MARKer[n]:MODE?
```

Response

```
<mode>
```

Parameter

<n>	Marker number
1	Marker1
2	Marker2
3	Marker3
4	Marker4
5	Marker5
6	Marker6
7	Marker7
8	Marker8
9	Marker9
10	Marker10
When omitted:	Marker1
<mode>	Marker mode
NORM	Normal
DELT	Delta
FIX	Fixed
OFF	Off

Details

This command is available when the following trace is active:

- Spectrum

Example of Use

To query the mode of Marker 1.

```
CALC:MARK:MODE?
> DELT
```

:CALCulate:MARKer[1]|2|3|4|5|6|7|8|9|10:REFerence <integer>

Relative To

Function

This command sets the reference marker when Marker Mode is set to Delta.

Command

```
:CALCulate:MARKer[n]:REFerence <integer>
```

Parameter

<n>	Target marker number
1	Marker1
2	Marker2
3	Marker3
4	Marker4
5	Marker5
6	Marker6
7	Marker7
8	Marker8
9	Marker9
10	Marker10
When omitted:	Marker1

<integer>	Reference marker number
1	Marker1
2	Marker2
3	Marker3
4	Marker4
5	Marker5
6	Marker6
7	Marker7
8	Marker8
9	Marker9
10	Marker10

Details

This command is available when the following trace is active:

- Spectrum

The setting target marker cannot be set to the reference marker.

Example of Use

To set the reference marker for Marker 2 to Marker 4.

```
CALC:MARK2:REF 4
```

Related Commands

This command has the same function as the following commands.

```
:CALCulate:ACPower:MARKer[1]|2|3|4|5|6|7|8|9|10:REFerence
:CALCulate:CHPower:MARKer[1]|2|3|4|5|6|7|8|9|10:REFerence
:CALCulate:OBWidth:MARKer[1]|2|3|4|5|6|7|8|9|10:REFerence
```

:CALCulate:MARKer[1]|2|3|4|5|6|7|8|9|10:REFerence?

Relative To Query

Function

This command queries the reference marker when Marker Mode is set to Delta.

Query

```
:CALCulate:MARKer[n]:REFerence?
```

Response

```
<integer>
```

Parameter

<n>	Target marker number
1	Marker1
2	Marker2
3	Marker3
4	Marker4
5	Marker5
6	Marker6
7	Marker7
8	Marker8
9	Marker9
10	Marker10
When omitted:	Marker1
<integer>	Reference marker number
1	Marker1
2	Marker2
3	Marker3
4	Marker4
5	Marker5
6	Marker6
7	Marker7
8	Marker8
9	Marker9
10	Marker10

Details

This command is available when the following trace is active:

- Spectrum

Example of Use

To query the reference marker of Marker 2.

```
CALC:MARK2:REF?
> 4
```

Related Command

This command has the same function as the following commands.

```
:CALCulate:ACPower:MARKer[1]|2|3|4|5|6|7|8|9|10:REFerence?
:CALCulate:CHPower:MARKer[1]|2|3|4|5|6|7|8|9|10:REFerence?
:CALCulate:OBWidth:MARKer[1]|2|3|4|5|6|7|8|9|10:REFerence?
```


:CALCulate:MARKer:TABLe[:STATe] OFF|ON|0|1

Marker List

Function

This command sets the marker list display to On/Off.

Command

```
:CALCulate:MARKer:TABLe[:STATe] <switch>
```

Parameter

<switch>	Marker list display On/Off
ON|1	Sets the marker list display to On.
OFF|0	Sets the marker list display to Off.
Default value	Off

Details

This command is available when the following trace is active:

- Spectrum

Example of Use

To set the marker list display to On.

```
CALC:MARK:TABL ON
CALC:MARK:TABL?
> 1
```

:CALCulate:MARKer:TABLe[:STATe]?

Marker List Query

Function

This command queries the On/Off state of the marker list display.

Query

```
:CALCulate:MARKer:TABLe[:STATe]?
```

Response

```
<switch>
```

Parameter

<switch>	Marker list display On/Off
1	Marker list display On.
0	Marker list display Off.

Details

This command is available when the following trace is active:

- Spectrum

Example of Use

To query the On/Off state of the marker list display.

```
CALC:MARK:TABL?
> 1
```

:CALCulate:MARKer:SLINe[:STATe] OFF|ON|0|1

Spot Line

Function

This command displays or hides the marker line for spot marker.

Command

```
:CALCulate:MARKer:SLINe[:STATe] <switch>
```

Parameter

<switch>	Marker line display
ON|1	Displays the marker line.
OFF|0	Hides the marker line.

Details

This command is available when the following trace is active:

- Spectrum

Example of Use

To display the marker line.

```
CALC:MARK:SLIN ON
```

:CALCulate:MARKer:SLINe[:STATe]?

Spot Line Query

Function

This command queries the On/Off state of the marker line display for spot marker.

Query

```
:CALCulate:MARKer:SLINe[:STATe]?
```

Response

```
<switch>
```

Parameter

<switch>	Marker line display On/Off
1	Marker line is displayed.
0	Marker line is hidden.

Details

This function can be set when the following trace is active:

- Spectrum

Example of Use

To query the On/Off state of the marker line display.

```
CALC:MARK:SLIN?
> 1
```

:CALCulate:MARKer:COUPle:ZONE[:STATe] OFF|ON|0|1

Couple Zone

Function

This command enables or disables the Zone Width shared setting.

Command

```
:CALCulate:MARKer:COUPle:ZONE[:STATe] <switch>
```

Parameter

`<switch>`	Zone Width shared setting On/Off
`ON|1`	Sets the shared setting to On.
`OFF|0`	Sets the shared setting to Off.

Details

This command is available when the following trace is active:

- Spectrum

When this function is set to On, the Zone Width setting is shared among markers.

Example of Use

To enable the sharing of the Zone Width setting.

```
CALC:MARK:COUP:ZONE ON
```

:CALCulate:MARKer:COUPle:ZONE[:STATe] ?

Couple Zone Query

Function

This command queries whether the Zone Width shared setting is enabled/disabled.

Query

```
:CALCulate:MARKer:COUPle:ZONE[:STATe]?
```

Response

```
<switch>
```

Parameter

<switch>	Zone Width shared setting On/Off
1	On
0	Off

Details

This command is available when the following trace is active:

- Spectrum

When this function is set to On, the Zone Width setting is shared among markers.

Example of Use

To query whether the Zone Width shared setting is enabled.

```
CALC:MARK:COUP:ZONE?
> 1
```

:CALCulate:MARKer[1]|2|3|4|5|6|7|8|9|10:WIDTh:TYPE ZONE|SPOT

Zone Width Type

Function

This command sets the zone type of the marker.

Command

```
:CALCulate:MARKer[n]:WIDTh:TYPE <zone_type>
```

Parameter

<n>	Marker number
1	Marker1
2	Marker2
3	Marker3
4	Marker4
5	Marker5
6	Marker6
7	Marker7
8	Marker8
9	Marker9
10	Marker10
When omitted:	Marker1

<zone_type>	Zone type of marker
ZONE	Zone marker
SPOT	Spot marker

Details

This command is available when the following trace is active:

- Spectrum
- Spectrogram (Unavailable for Marker 2 to 10)

This command is available when Marker Result is Peak (Fast) or Peak (Accuracy).

For querying the marker value after this command has been executed, use *WAI commands to perform synchronized control.

Example of Use

To query the marker value by setting the zone type of Marker 1 to zone marker.

```
CALC:MARK:WIDT:TYPE ZONE
*WAI
CALC:MARK:Y?
```

:CALCulate:MARKer[1]|2|3|4|5|6|7|8|9|10:WIDTh:TYPE?

Zone Width Type Query

Function

This command queries the zone type of the marker.

Query

```
:CALCulate:MARKer[n]:WIDTh:TYPE?
```

Response

```
<zone_type>
```

Parameter

<n>	Marker number
1	Marker1
2	Marker2
3	Marker3
4	Marker4
5	Marker5
6	Marker6
7	Marker7
8	Marker8
9	Marker9
10	Marker10
When omitted:	Marker1

<zone_type>	Zone type of marker
ZONE	Zone marker
SPOT	Spot marker

Details

This command is available when the following trace is active:

- Spectrum
- Spectrogram (Unavailable for Marker 2 to 10)

This command is available when Marker Result is Peak (Fast) or Peak (Accuracy).

Example of Use

To query the zone type of Marker 1.

```
CALC:MARK:WIDT:TYPE?
> ZONE
```

2.6 Signal Search Settings

Table 2.6-1 lists device messages for setting signal search.

Table 2.6-1 Device messages for setting signal search

Function	Device Message
Peak Search	:CALCulate:MARKer[1]|2|3|4|5|6|7|8|9|10:MAXimum
Next Peak Search	:CALCulate:MARKer[1]|2|3|4|5|6|7|8|9|10:MAXimum:NEXT
Signal Search Resolution	:CALCulate:MARKer:SIGNal:RESolution|:EXCursion <rel_ampl>|<percent>|<freq>
	:CALCulate:MARKer:SIGNal:RESolution|:EXCursion?
Signal Search Threshold Level	:CALCulate:MARKer:SIGNal:THReshold:STATe ON|OFF|1|0
	:CALCulate:MARKer:SIGNal:THReshold:STATe?
Signal Search Mode	:CALCulate:MARKer:SIGNal:THReshold:MODE ABOVe|BELow
	:CALCulate:MARKer:SIGNal:THReshold:MODE?
Signal Search Threshold Level	:CALCulate:MARKer:SIGNal:THReshold <ampl>|<freq>
	:CALCulate:MARKer:SIGNal:THReshold?
Dip Search	:CALCulate:MARKer[1]|2|3|4|5|6|7|8|9|10:MINimum
Next Dip Search	:CALCulate:MARKer[1]|2|3|4|5|6|7|8|9|10:MINimum:NEXT
Search Peaks Sort Y	:CALCulate:MARKer:PEAK:SORT:Y
Search Peaks Sort X	:CALCulate:MARKer:PEAK:SORT:X
Search Peaks Number	:CALCulate:MARKer:PEAK:SORT:COUNt <integer>
	:CALCulate:MARKer:PEAK:SORT:COUNt?
Marker Readout Query	:CALCulate:MARKer:READout?

:CALCulate:MARKer[1]|2|3|4|5|6|7|8|9|10:MAXimum

Peak Search

Function

This command searches for the maximum level point of the main trace and moves the marker point.

Command

```
:CALCulate:MARKer[n]:MAXimum
```

Parameter

<n>	Marker number
1	Marker1
2	Marker2
3	Marker3
4	Marker4
5	Marker5
6	Marker6
7	Marker7
8	Marker8
9	Marker9
10	Marker10
When omitted:	Marker1

Details

This command is available on the following traces:

- Spectrum
- Power vs Time (Unavailable for Markers 3 to 10.)
- Frequency vs Time (Unavailable for Markers 3 to 10.)

For querying the marker value after this command has been executed, use *WAI commands to perform synchronized control.

Note that this command does not support synchronized control in Continuous mode.

Example of Use

To query the marker value by moving Marker 1 to the maximum level point.

```
CALC:MARK:MAX
*WAI
CALC:MARK:Y?
```

Related Command

This command has the same function as the following commands.

```
:CALCulate:ACPower:MARKer[1]|2|3|4|5|6|7|8|9|10:MAXimum
:CALCulate:CHPower:MARKer[1]|2|3|4|5|6|7|8|9|10:MAXimum
:CALCulate:OBWidth:MARKer[1]|2|3|4|5|6|7|8|9|10:MAXimum
:CALCulate:BPOWer|:TXPower:MARKer[1]|2|3|4|5|6|7|8|9|10:
MAXimum
```

:CALCulate:MARKer[1]|2|3|4|5|6|7|8|9|10:MAXimum:NEXT

Next Peak Search

Function

This command searches for the feature point of the main trace and moves the marker point to a lower peak point.

Command

```
:CALCulate:MARKer[n]:MAXimum:NEXT
```

Parameter

<n>	Marker number
1	Marker1
2	Marker2
3	Marker3
4	Marker4
5	Marker5
6	Marker6
7	Marker7
8	Marker8
9	Marker9
10	Marker10
When omitted:	Marker1

Details

This command is available on the following traces.

- Spectrum
- Power vs Time (Unavailable for Markers 3 to 10.)
- Frequency vs Time (Unavailable for Markers 3 to 10.)

For querying the marker value, after this command has been executed, use *WAI commands to perform synchronized control.

Note that this command does not support synchronized control in Continuous mode.

Example of Use

To query the marker value by moving Marker 1 to the next peak point.

```
CALC:MARK:MAX:NEXT
*WAI
CALC:MARK:Y?
```

Related Command

This command has the same function as the following command.

```
:CALCulate:ACPower:MARKer[1]|2|3|4|5|6|7|8|9|10:MAXimum:
NEXT
```

:CALCulate:MARKer:SIGNal:RESolution|:EXCursion <rel_ampl>|<percent>|<freq>

Signal Search Resolution

Function

This command sets the search resolution of the search point.

Command

`:CALCulate:MARKer:SIGNal:RESolution|:EXCursion <rel_ampl>`

(For Spectrum trace, when Result Mode is Integration or Density; or for Spectrum trace, when Result Mode is Peak (Fast) or Peak (Accuracy) and Scale Mode is Log Scale. For Power vs Time trace, when Scale Mode is Log Scale.)

`:CALCulate:MARKer:SIGNal:RESolution|:EXCursion <percent>`

(For Spectrum trace, when Result Mode is Peak (Fast) or Peak (Accuracy) and Scale Mode is Linear Scale. For Power vs Time trace, when Scale Mode is Linear Scale.)

`:CALCulate:MARKer:SIGNal:RESolution|:EXCursion <freq>`

(For Frequency vs Time trace)

Parameter

`<rel_ampl>`	Search resolution
Range	0.01 to 50.00 dB
Resolution	0.01
Suffix code	DB
	dB is used when omitted.
`<percent>`	Search resolution
Range	0.01 to 50.00%
Resolution	0.01
Suffix code	None
`<freq>`	Search resolution
When Scale Unit is Hz, ΔHz.	
Range	1 to 5000000 Hz
Resolution	0.01
Suffix code	HZ, KHZ, KZ, MHZ, MZ, GHZ, GZ
	Hz is used when omitted.

Details

This command is available when any one of the following traces is active:

- Spectrum
- Power vs Time
- Frequency vs Time

Example of Use

To set the resolution to 20 dB.

```
CALC:MARK:SIGN:RES 20DB
```

:CALCulate:MARKer:SIGNal:RESolution|:EXCursion?

Signal Search Resolution Query

Function

This command queries the search resolution at the search point.

Query

```
:CALCulate:MARKer:SIGNal:RESolution|:EXCursion?
```

Response

`<rel_ampl>`

(For Spectrum trace, when Result Mode is Integration or Density; or for Spectrum trace, when Result Mode is Peak (Fast) or Peak (Accuracy) and Scale Mode is Log Scale. For Power vs Time trace, when Scale Mode is Log Scale.)

`<percent>`

(For Spectrum trace, when Result Mode is Peak (Fast) or Peak (Accuracy) and Scale Mode is Linear Scale. For Power vs Time trace, when Scale Mode is Linear Scale.)

`<freq>`

Frequency vs Time trace

Parameter

`<rel_ampl>`	Search resolution
Range	0.01 to 50.00 dB
Resolution	0.01
	No suffix code. Value is returned in dB units.
`<percent>`	Search resolution
Range	0.01 to 50.00%
Resolution	0.01
Suffix code	None
	No suffix code. Value is returned in % units.
`<freq>`	Search resolution
When Scale Unit is Hz, ΔHz.	
Range	1 to 5000000 Hz
Resolution	0.01
	No suffix code. Value is returned in Hz units.

Details

This command is available when any one of the following traces is active:

- Spectrum
- Power vs Time
- Frequency vs Time

Example of Use

To query the search resolution.

```
CALC:MARK:SIGN:RES?
> 20.00
```

:CALCulate:MARKer:SIGNal:THReshold:STATe ON|OFF|1|0

Signal Search Threshold Level

Function

This command sets the threshold condition to search for the search point in the main trace.

Command

```
:CALCulate:MARKer:SIGNal:THReshold:STATe <switch>
```

Parameter

<switch>	Threshold when searching for the peak point
0|OFF	Sets the threshold to Off (Default value)
1|ON	Sets the threshold to On.

Details

This command is available when any one of the following traces is active:

- Spectrum
- Power vs Time
- Frequency vs Time

The threshold is set to On, when the search condition (Above/Below) of the threshold is changed.

Example of Use

To set the threshold to search for the search point to On.

```
CALC:MARK:SIGN:THR:STAT ON
```

:CALCulate:MARKer:SIGNal:THReshold:STATe?

Signal Search Threshold Level Query

Function

This command returns the On/Off state of the threshold to search for the search point in the main trace.

Query

```
:CALCulate:MARKer:SIGNal:THReshold:STATe?
```

Response

```
<switch>
```

Parameter

<switch>	On/Off of threshold to search for the peak point
0	Off
1	On

Details

This command is available when any one of the following traces is active:

- Spectrum
- Power vs Time
- Frequency vs Time

The threshold is set to On, when the search condition (Above/Below) of the threshold is changed.

Example of Use

To query the On/Off state of the threshold to search for the peak point.

```
CALC:MARK:SIGN:THR:STAT?
> 1
```

:CALCulate:MARKer:SIGNal:THReshold:MODE ABOVe|BELow

Signal Search Mode

Function

This command sets the threshold condition to search for the search point in the main trace.

Command

```
:CALCulate:MARKer:SIGNal:THReshold:MODE <mode>
```

Parameter

<mode>	Search method for threshold
ABOVe	Searches for only the upper side of threshold (Default value)
BELow	Searches for only the lower side of threshold

Details

This command is available when any one of the following traces is active:

- Spectrum
- Power vs Time
- Frequency vs Time

The threshold is set to On, when the search condition (Above/Below) of the threshold is changed.

Example of Use

To set the threshold condition to search for the search point.

```
CALC:MARK:SIGN:THR:MODE ABOV
```

:CALCulate:MARKer:SIGNal:THReshold:MODE?

Signal Search Mode Query

Function

This command queries the threshold condition to search for the search point in the main trace.

Query

```
:CALCulate:MARKer:SIGNal:THReshold:MODE?
```

Response

```
<mode>
```

Parameter

<mode>	Search method for threshold
ABOV	Searches for only the upper side of threshold.
BEL	Searches for only the lower side of threshold.

Details

This command is available when any one of the following traces is active:

- Spectrum
- Power vs Time
- Frequency vs Time

The threshold is set to On, when the search condition (Above/Below) of the threshold is changed.

Example of Use

To query the search method for the threshold.

```
CALC:MARK:SIGN:THR:MODE?
> ABOV
```

:CALCulate:MARKer:SIGNal:THReshold <ampl>|<freq>

Signal Search Threshold Level

Function

This command sets the threshold to search for the peak point.

Command

```
:CALCulate:MARKer:SIGNal:THReshold <ampl>
```
(Spectrum, Power vs Time trace)
```
:CALCulate:MARKer:SIGNal:THReshold <freq>
```
(Frequency vs Time trace)

Parameter

`<ampl>` Threshold to search for the search point

Range: All widths of Y-axis

Resolution: 0.01 dB (When Scale Unit settings are dB-system units, when Spectrum trace and Scale Mode are Linear Scale, or when Scale Unit is V.)
0.01 pV (When scale unit settings are V-system units, or when Power vs Time trace and Scale Mode are Linear)
0.01 fW (When scale unit settings are W-system units)

Suffix code

`DBM,DM`	dBm
`DBMV`	dBmV
`DBUV`	dBμV
`DBUVE`	dBμV (emf)
`DBUVM`	dBμV/m
`V`	V
`MV`	mV
`UV`	μV
`W`	W
`MW`	mW
`UW`	μW
`NW`	nW
`PW`	pW
`FW`	fW

The Scale Unit setting applies when omitted.
dBm is used when Spectrum trace and Scale Mode are Linear, or when Scale Unit is V.
V is used for Power vs Time and Linear scale.

<freq>	Threshold to search for the search point
Range	Range of Vertical Scale of the main trace
Resolution	1 Hz
Suffix code	HZ, KHZ, KZ, MHZ, MZ, GHZ, GZ Hz is used when omitted.

Details

This command is available when any one of the following traces is active:

- Spectrum
- Power vs Time
- Frequency vs Time

The search threshold is set to On, when the threshold for search is changed.

Example of Use

To set the threshold to search for the peak point to –10 dBm.

```
CALC:MARK:SIGN:THR -10DBM
```

:CALCulate:MARKer:SIGNal:THReshold?

Signal Search Threshold Level Query

Function

This command queries the threshold to search for the peak point.

Query

```
:CALCulate:MARKer:SIGNal:THReshold?
```

Response

<ampl>

(For Spectrum, Power vs Time trace)

<freq>

(For Frequency vs Time trace)

Parameter

<ampl> Threshold to search for the search point

Range	All widths of Y-axis
Resolution	0.01 dB (When Scale Unit settings are dB-system units or when Scale Mode is Linear)
	0.01 pV (When scale unit settings are V-system units)
	0.01 fW (When scale unit settings are W-system units)

Returns a value in units specified by Log Scale Unit without a suffix code. For Linear scale, returns a value in dBm units.

<freq> Threshold to search for the search point

Range	Range of Vertical Scale of main trace
Resolution	1 Hz

No suffix code. Value is returned in Hz units.

Example of Use

To query the threshold to search for the peak point.

```
CALC:MARK:SIGN:THR?
> -10.00
```

:CALCulate:MARKer[1]|2:MINimum

Dip Search

Function

This command searches for the minimum level point of the main trace and moves the marker point.

Command

```
:CALCulate:MARKer[n]:MINimum
```

Parameter

<n>	Marker number
1	Marker 1
2	Marker 2
When omitted:	Marker 1

Details

This command is available when the following trace is active:

- Frequency vs Time

For querying the marker value, after this command has been executed, use *WAI commands to perform synchronized control.

Note that this command does not support synchronized control in Continuous mode.

Example of Use

To query the marker value by moving Marker 1 to the minimum level point.

```
CALC:MARK:MIN
*WAI
CALC:MARK:Y?
```

:CALCulate:MARKer[1]|2:MINimum:NEXT

Next Dip Search

Function

This command searches for the characteristics of the main trace and moves the marker point to the peak point at which the marker value of a smaller level than the presently set marker level becomes the smallest.

Command

```
:CALCulate:MARKer[n]:MINimum:NEXT
```

Parameter

<n>	Marker number
1	Marker 1
2	Marker 2
When omitted:	Marker 1

Details

This command is available when the following trace is active:

- Frequency vs Time

For querying the marker value, after this command has been executed, use *WAI commands to perform synchronized control.

Note that this command does not support synchronized control in Continuous mode.

Example of Use

To query the marker value by moving Marker 1 to the second smallest peak point.

```
CALC:MARK1:MIN:NEXT
*WAI
CALC:MARK:Y?
```

:CALCulate:MARKer:PEAK:SORT:Y

Search Peaks Sort Y

Function

This command sorts as many markers as the number set in Search Peaks Number by level on the trace.

Command

```
:CALCulate:MARKer:PEAK:SORT:Y
```

Details

This command is available on the following trace:

- Spectrum

This command is not available when Marker Result is Integration or Density.

For querying the marker value, after this command has been executed, use *WAI commands to perform synchronized control.

Note that this command does not support synchronized control in Continuous mode.

Example of Use

To execute Search Peaks Sort Y and query the results.

```
CALC:MARK:PEAK:SORT:Y
*WAI
CALC:MARK:READ?
```

:CALCulate:MARKer:PEAK:SORT:X

Search Peaks Sort X

Function

This command sorts as many markers as the number set in Search Peaks Number by frequency on the trace.

Command

```
:CALCulate:MARKer:PEAK:SORT:X
```

Details

This command is available on the following trace:

- Spectrum

This command is not available when Marker Result is Integration or Density.

For querying the marker value, after this command has been executed, use *WAI commands to perform synchronized control.

Note that this command does not support synchronized control in Continuous mode.

Example of Use

To execute Search Peaks Sort X and query the results.

```
CALC:MARK:PEAK:SORT:X
:WAI
CALC:MARK:READ?
```

:CALCulate:MARKer:PEAK:SORT:COUNt <integer>

Search Peaks Number

Function

This command sets the number of searches when Search Peaks Sort Y/X is executed.

Command

```
:CALCulate:MARKer:PEAK:SORT:COUNt <integer>
```

Parameter

<integer>	Number of searches
Range	1 to 10
Resolution	1
Default value	10

Details

This command is available when the following trace is active:

- Spectrum

Example of Use

To set the number of searches to 5.

```
CALC:MARK:PEAK:SORT:COUN 5
```

:CALCulate:MARKer:PEAK:SORT:COUNt?

Search Peaks Number Query

Function

This command queries the number of searches when Search Peaks Sort Y/X is executed.

Command

```
:CALCulate:MARKer:PEAK:SORT:COUNt?
```

Parameter

<integer>	Number of searches
Range	1 to 10
Resolution	1
Default value	10

Details

This command is available when the following trace is active:

- Spectrum

Example of Use

To query the number of searches.

```
CALC:MARK:PEAK:SORT:COUN?
> 5
```

:CALCulate:MARKer:READout?

Marker Readout Query

Function

This command queries all marker values.

Query

```
:CALCulate:MARKer:READout?
```

Response

```
<freqs_1>,<power_1>,<freqs_2>,<power_2>,...,
<freqs_10>,<power_10>
```

(For Spectrum trace)

```
<time_1>,<power_1>,<time_2>,<power_2>
```

(For Power vs Time trace)

```
<sample_1>,<power_1>,<sample_2>,<power_2>
```

(When Terminal is DigRF 3G (only for MS269x Series))
(For Power vs Time trace)

```
<time_1>,<freqf_1>,<time_2>,<freqf_2>
```

(For Frequency vs Time trace)

```
<time_1>,<phase_1>,<time_2>,<phase_2>
```

(At Phase vs Time)

```
<sample_1>,<freqf_1>,<sample_2>,<freqf_2>
```

(When Terminal is DigRF 3G (only for MS269x Series))
(For Frequency vs Time trace) <dist>,<prob>

(For CCDF trace)

```
<freqs_1>,<time_1>,<power_1>,<freqs_2>,<time_2>,<power_2
>
```

(For Spectrogram trace)

Parameter

`<freqs_n>` Frequency of Marker n

No suffix code/Hz units/0.1 Hz resolution
–999999999999 is returned when no measurement is performed, an error has occurred, or marker is Off.

`<power_n>` Level of Marker n

(When marker level display units are dB-system units)
No suffix code/Units specified by Scale Unit/0.001 dB resolution
–999.0 is returned when no measurement is performed, an error has occurred, or marker is Off.

(When marker level display units are V-system units)

No suffix code/V units/0.01 pV resolution
–999.0 is returned when no measurement is performed, an error has occurred, or marker is Off.

(When marker level display units are W-system units)
No suffix code/W units/0.01 yW resolution
–999.0 is returned when no measurement is performed, an error has occurred, or marker is Off.

(When marker level display units are X-multiple-system units)
No suffix code/0.0001 resolution. For no magnification, 1 is returned.
–999.0 is returned when no measurement is performed, an error has occurred, or marker is Off.

<phase_n> Position of Marker n
No suffix code, degree units, 0.01 Hz resolution
–999.0 is returned when no measurement is performed, an error has occurred, or marker is set to Off.

<time_n> Time of Marker n
No suffix code/ s units/1 ns resolution
–999999999999 is returned when no measurement is performed, an error has occurred, or marker is Off.

<sample_n> Sample value of Marker n
No suffix code/ 1 sample resolution
–999999999999 is returned when no measurement is performed, an error has occurred, or marker is Off.

<freqf_f> Frequency of Marker n
No suffix code/Hz units/0.01 Hz resolution
–999999999999 is returned when no measurement is performed, an error has occurred, or marker is Off.

<dist> Position of Marker n
No suffix code/dB units/0.01 dB resolution
–999999999999 is returned when no measurement is performed, an error has occurred, or marker is Off.

<prob> Probability of Marker n
No suffix code/% units/0.0001% resolution
–999.0 is returned when no measurement is performed, an error has occurred, or marker is Off.

Example of Use

To query all marker values (Spectrum).

```
CALC:MARK:READ?
> 1000000.0,-15.321,1100000.0,-23.000,
1200000.0,-15.321,1300000.0,-12.680,
```

```
1400000.0,-5.622,1500000.0,-65.056,
1600000.0,-26.534,1700000.0,-34.264,
1800000.0,-35.644,-999999999999,-999.0
```

2.7 Trace Settings

Table 2.7-1 lists device messages for setting a trace.

Table 2.7-1 Device messages for setting a trace

Function	Device Message
Change Trace	:TRACe:MODE SPECtrum|PVTime|FVTime|PHASe|CCDF|SPGRam|NONE
	:TRACe:MODE?
Analysis Time Auto/Manual	:CALCulate:ATIMe:AUTO OFF|ON|0|1
	:CALCulate:ATIMe:AUTO?
Analysis Time Length	:CALCulate:ATIMe:LENGth <time>
	:CALCulate:ATIMe:LENGth?
Analysis Start Time	:CALCulate:ATIMe:STARt <time>
	:CALCulate:ATIMe:STARt?
Gate Mode On/Off	:CALCulate:ATIMe:GMODe OFF|ON|0|1
	:CALCulate:ATIMe:GMODe?
Period	:CALCulate:ATIMe:GMODe:PERiod <time>
	:CALCulate:ATIMe:GMODe:PERiod?
Range State	:CALCulate:ATIMe:GMODe:RANGe:STATe ON|OFF|1|0,ON|OFF|1|0,ON|OFF|1|0,
	:CALCulate:ATIMe:GMODe:RANGe: STATe?
Range Start Time	:CALCulate:ATIMe:GMODe:RANGe:STARt <time_1>,<time_2>,<time_3>
	:CALCulate:ATIMe:GMODe:RANGe: STARt?
Range Stop Time	:CALCulate:ATIMe:GMODe:RANGe:STOP <time_1>,<time_2>,<time_3>
	:CALCulate:ATIMe:GMODe:RANGe: STOP?
Calculate	:INITiate:CALCulate
Trace Point Query	[:SENSe]:SWEep:POINts?
Measurement Count Query	:TRACe:SWEep:COUNt?
Zoom Center	:DISPlay[:WINDow]:TRACe:X[:SCALe]:CENTer <freq>
	:DISPlay[:WINDow]:TRACe:X[:SCALe]:CENTer?
Zoom Width/Vertical Scale Width	:DISPlay[:WINDow]:TRACe:X[:SCALe]:WIDTh <freq>
	:DISPlay[:WINDow]:TRACe:X[:SCALe]:WIDTh?
Resolution Bandwidth	[:SENSe]:BANDwidth|:BWIDth[:RESolution] <bandwidth>
	[:SENSe]:BANDwidth|:BWIDth[:RESolution]?
	:CALCulate:BANDwidth|:BWIDth[:RESolution] <bandwidth>
	:CALCulate:BANDwidth|:BWIDth[:RESolution]?

Table 2.7-1 Device messages for setting a trace (Cont'd)

Function	Device Message
Resolution Bandwidth Auto/Manual	[:SENSe]:BANDwidth|:BWIDth[:RESolution]:AUTO ON|OFF|1|0
	[:SENSe]:BANDwidth|:BWIDth[:RESolution]:AUTO?
	:CALCulate:BANDwidth|:BWIDth[:RESolution]:AUTO ON|OFF|1|0
	:CALCulate:BANDwidth|:BWIDth[:RESolution]:AUTO?
Detection Mode	[:SENSe]:DETector[:FUNCtion] NORMal|POSitive|NEGative|SAMPle|AVERage
	[:SENSe]:DETector[:FUNCtion]?
	:CALCulate:DETector[:FUNCtion] NORMal|POSitive|NEGative|SAMPle|AVERage
	:CALCulate:DETector[:FUNCtion]?
Storage Mode	:TRACe:STORage:MODE OFF|MAXHold|LAVerage|MINHold
	:TRACe:STORage:MODE?
Storage Count	[:SENSe]:AVERage:COUNt <integer>
	[:SENSe]:AVERage:COUNt?
Log Scale Range	:DISPlay:WINDow[1]:TRACe:Y[:SCALe]:PDIVision[:LOGarithmic] <rel_ampl>
	:DISPlay:WINDow[1]:TRACe:Y[:SCALe]:PDIVision[:LOGarithmic]?
Linear Scale Range	:DISPlay:WINDow[1]:TRACe:Y[:SCALe]:PDIVision:LINear <percent>
	:DISPlay:WINDow[1]:TRACe:Y[:SCALe]:PDIVision:LINear?
Log Scale Line	:DISPlay:WINDow[1]:TRACe:Y[:SCALe]:LINE[:LOGarithmic] <line>
	:DISPlay:WINDow[1]:TRACe:Y[:SCALe]:LINE[:LOGarithmic]?
Smoothing	:CALCulate:SMOothing[:STATe] OFF|ON|0|1
	:CALCulate:SMOothing[:STATe]?
Smoothing Time Length	:CALCulate:SMOothing:LENGth <time>
	:CALCulate:SMOothing:LENGth?
Filter Type	:CALCulate:FILTer:TYPE OFF|RECT|GAUSsian|NYQuist|RNYQuist
	:CALCulate:FILTer:TYPE?
Rolloff Factor	:CALCulate:FILTer:ALPHa <real>
	:CALCulate:FILTer:ALPHa?
Filter Bandwidth	:CALCulate:FILTer:BANDwidth <bandwidth>
	:CALCulate:FILTer:BANDwidth?
Filter Frequency Offset	:CALCulate:FILTer:FOFFset <freq>
	:CALCulate:FILTer:FOFFset?

Table 2.7-1 Device messages for setting a trace (Cont'd)

Function	Device Message
Filter Auto/Manual	:CALCulate:FILTer:BANDwidth:AUTO ON|OFF|1|0
	:CALCulate:FILTer:BANDwidth:AUTO?
Zoom Width/Vertical Scale Width	:DISPlay[:WINDow]:TRACe:Y[:SCALe]:RANGe D2|D5|D10|D25
	:DISPlay[:WINDow]:TRACe:Y[:SCALe]:RANGe?
Maximum Frequency Range Query	:DISPlay[:WINDow]:TRACe:Y[:SCALe]:WIDTh?
Frequency Scale Unit	:UNIT:FREQuency HZ|DHZ
	:UNIT:FREQuency?
Measure Method	:CALCulate:CCDF|:PSTatistic:METHod CCDF|APD
	:CALCulate:CCDF|:PSTatistic:METHod?
Threshold On/Off	:CALCulate:CCDF|:PSTatistic:THReshold:STATe ON|OFF|1|0
	:CALCulate:CCDF|:PSTatistic:THReshold:STATe?
Threshold	:CALCulate:CCDF|:PSTatistic:THReshold <ampl>
	:CALCulate:CCDF|:PSTatistic:THReshold?
CCDF Meas Mode	:CALCulate:CCDF|:PSTatistic:MODE TIME|COUNt
	:CALCulate:CCDF|:PSTatistic:MODE?
Data Count	:CALCulate:CCDF|:PSTatistic:COUNts <sample>
	:CALCulate:CCDF|:PSTatistic:COUNts?
Store Reference Trace	:CALCulate:CCDF|:PSTatistic:STORe:REFerence
Reference Trace	[:SENSe]:CCDF|:PSTatistic:RTRace[:STATe] ON|OFF|1|0
	[:SENSe]:CCDF|:PSTatistic:RTRace[:STATe]?
Gaussian Trace	[:SENSe]:CCDF|:PSTatistic:GAUSsian[:STATe] ON|OFF|1|0
	[:SENSe]:CCDF|:PSTatistic:GAUSsian[:STATe]?
Marker Query	:CALCulate:MARKer[1][:PEAK]:X:DELTa?

Table 2.7-1 Device messages for setting a trace (Cont'd)

Function	Device Message
Power Distribution Scale	:DISPlay:WINDow[1]:TRACe:X[:SCALe]:PDIVision <rel_ampl>
	:DISPlay:WINDow[1]:TRACe:X[:SCALe]:PDIVision?
Marker Axis	:CALCulate:MARKer:AXIS PROB|DSTRbt
	:CALCulate:MARKer:AXIS?
Reset Result Every Capture	[:SENSe]:CCDF|:PSTatistic:ERESet[:STATe] ON|OFF|1|0
	[:SENSe]:CCDF|:PSTatistic:ERESet[:STATe]?
CCDF Configure	:CONFigure:CCDF|:PSTatistic
CCDF Initiate	:INITiate:CCDF|:PSTatistic
CCDF Fetch	:FETCh:CCDF|:PSTatistic[n]?
CCDF Read	:READ:CCDF|:PSTatistic[n]?
CCDF Measure	:MEASure: CCDF|:PSTatistic [n]?
Marker Frequency	:CALCulate:MARKer[1]:Y <prob>
Storage Stop	:TRACe:STORage:STOP
CCDF Trigger Source	:TRIGger:CCDF|:PSTatistic[:SEQuence]:SOURce EXTernal[1]|IMMediate|WIF|RFBurst|VIDeo|SG|BBIF
	:TRIGger:CCDF|:PSTatistic[:SEQuence]:SOURce?
Query Trace Data	:TRACE[:DATA]?[<start.[,<length>]]
Query Negative Trace Data	:TRACE[:DATA]:NEGative?[<start.[,<length>]]
Level Full Scale	:DISPlay:WINDow[1]:TRACe:Y[:SCALe]:PDIVision:RANGe <rel_ampl>
	:DISPlay:WINDow[1]:TRACe:Y[:SCALe]:PDIVision:RANGe?
Time Marker Position	:CALCulate:TMARker[1]|2:X <time>
	:CALCulate:TMARker[1]|2:X?
Couple Time Marker 1 and 2	:CALCulate:TMARker:COUPle:ZONE[:STATe] OFF|ON|0|1
	:CALCulate:TMARker:COUPle:ZONE[:STATe]?
Analyze with Spectrum Trace	:CALCulate:ANALyze:SPECtrum
Return To Spectrogram	:CALCulate:ANALyze:SPGRam
Time Marker Peak Query	:CALCulate:TMARker[1]|2:PEAK:X?
Phase Offset	:DISPlay:WINDow[1]:TRACe:Y[:SCALe]:PHASe:OFFSet <real>
	:DISPlay:WINDow[1]:TRACe:Y[:SCALe]:PHASe:OFFSet?
Phase Mode	:DISPlay:WINDow[1]:TRACe:Y[:SCALe]:PHASe:MODE <mode>
	:DISPlay:WINDow[1]:TRACe:Y[:SCALe]:PHASe:MODE?
Scale Division	:DISPlay:WINDow[1]:TRACe:Y[:SCALe]:PHASe:PDIVision <real>
	:DISPlay:WINDow[1]:TRACe:Y[:SCALe]:PHASe:PDIVision?
Phase Reference	:DISPlay:WINDow[1]:TRACe:Y[:SCALe]:PHASe:REFerence <time>
	:DISPlay:WINDow[1]:TRACe:Y[:SCALe]:PHASe:REFerence?
Phase Reference Mode	:DISPlay:WINDow[1]:TRACe:Y[:SCALe]:PHASe:REFerence:MODE <mode>
	:DISPlay:WINDow[1]:TRACe:Y[:SCALe]:PHASe:REFerence:MODE?

:TRACe:MODE SPECtrum|PVTime|FVTime|PHASe|CCDF|SPGRam|NONE

Change Trace

Function

This command sets the main trace type.

Command

```
:TRACe:MODE <trace>
```

Parameter

<trace>	Trace type
SPECtrum	Spectrum
PVTime	Power vs Time
FVTime	Frequency vs Time
PHASe	Phase vs Time
CCDF	CCDF
SPGRam	Spectrogram
NONE	No Trace

Details

Spectrogram is disabled when Scale Mode is set to Linear.
When Terminal is set for DigRF 3G (only for MS269x Series), the CCDF and Spectrogram can not be set.

Example of Use

To set trace type to Spectrum.

```
TRAC:MODE SPEC
```

:TRACe:MODE?

Change Trace Query

Function

This command queries the main trace type.

Command

```
:TRACe:MODE?
```

Response

```
<trace>
```

Parameter

<trace>	Trace type
SPEC	Spectrum
PVT	Power vs Time
FVT	Frequency vs Time
PHAS	Phase vs Time
CCDF	CCDF
SPGR	Spectrogram
NONE	No Trace

Example of Use

To query the main trace type.

```
TRAC:MODE?
> SPEC
```

:CALCulate:ATIMe:AUTO OFF|ON|0|1

Analysis Time Auto/Manual

Function

This command selects auto/manual mode for the analysis time of the main trace.

Command

```
:CALCulate:ATIMe:AUTO <switch>
```

Parameter

<switch>	Auto/manual mode for analysis time
ON|1	Auto
OFF|0	Manual

Details

Refer to the *MS2690A/MS2691A/MS2692A Signal Analyzer Operation Manual (Signal Analyzer function Operation)* or *MS2830A/MS2840A/MS2850A Signal Analyzer Operation Manual (Signal Analyzer function Operation)* for automatic setting operation.

Example of Use

To set the analysis time of the main trace manually.

```
CALC:ATIM:AUTO OFF
```

:CALCulate:ATIMe:AUTO?

Analysis Time Auto/Manual Query

Function

This command queries the auto/manual mode for the analysis time of the main trace.

Query

```
:CALCulate:ATIMe:AUTO?
```

Response

```
<switch>
```

Parameter

<switch>	Auto/manual mode for analysis time
1	Automatic
0	Manual

Details

Refer to the *MS2690A/MS2691A/MS2692A Signal Analyzer Operation Manual (Signal Analyzer function Operation)* or *MS2830A/MS2840A/MS2850A Signal Analyzer Operation Manual (Signal Analyzer function Operation)* for automatic setting.

Example of Use

To query the setting of analysis time of the main trace.

```
CALC:ATIM:AUTO?
> 0
```

:CALCulate:ATIMe:LENGth <time>

Analysis Time Length

Function

This command sets the analysis time length for the main trace.

Command

```
:CALCulate:ATIMe:LENGth <time>
```

Parameter

`<time>`		Time Analysis time length
	Range/Resolution	Refer to the *MS2690A/MS2691A/MS2692A Signal Analyzer Operation Manual (Signal Analyzer function Operation)* or *MS2830A/MS2840A/MS2850A Signal Analyzer Operation Manual (Signal Analyzer function Operation)* for details.
	Suffix code	NS, US, MS, S

Details

This command is not available in the following cases:

- This command cannot be set when the analysis start time (Analysis Start Time) is set to the maximum value.
- When Terminal is selected for DigRF 3G (only for MS269x Series).

Example of Use

To set the analysis time length for the main trace to 12 ms.

```
CALC:ATIM:LENG 12MS
```

:CALCulate:ATIMe:LENGth?

Analysis Time Length Query

Function

This command queries the analysis time length for the main trace.

Query

```
:CALCulate:ATIMe:LENGth?
```

Response

```
<time>
```

Parameter

`<time>`	Analysis time length
Range/Resolution	Refer to the *MS2690A/MS2691A/MS2692A Signal Analyzer Operation Manual (Signal Analyzer function Operation)* or *MS2830A/MS2840A/MS2850A Signal Analyzer Operation Manual (Signal Analyzer function Operation)* for details. No suffix code. Value is returned in S units.

Example of Use

To query the analysis time length for the main trace.

```
CALC:ATIM:LENG?
> 0.01200000
```

:CALCulate:ATIMe:STARt <time>

Analysis Start Time

Function

This command sets the analysis start time for the main trace.

Command

```
:CALCulate:ATIMe:STARt <time>
```

Parameter

<time>		Analysis time length
	Range/Resolution	Refer to the *MS2690A/MS2691A/MS2692A Signal Analyzer Operation Manual (Signal Analyzer function Operation)* or *MS2830A/MS2840A/MS2850A Signal Analyzer Operation Manual (Signal Analyzer function Operation)* for details.
	Suffix code	NS, US, MS, S S is used when omitted.

Details

This command is not available in the following cases:

- This command cannot be used when the analysis time length (Analysis Time Length) is set to the maximum value.
- When Terminal is selected DigRF 3G (only for MS269x Series).

Example of Use

To set the analysis start time to 12 ms.

```
CALC:ATIM:STAR 12MS
```

:CALCulate:ATIMe:STARt?

Analysis Start Time Query

Function

This command queries the analysis start time for the main trace.

Query

```
:CALCulate:ATIMe:STARt?
```

Response

```
<time>
```

Parameter

`<time>`		Analysis time length
	Range/Resolution	Refer to the *MS2690A/MS2691A/MS2692A Signal Analyzer Operation Manual (Signal Analyzer function Operation)* or *MS2830A/MS2840A/MS2850A Signal Analyzer Operation Manual (Signal Analyzer function Operation)* for details. Returns a value in s units without a suffix code.

Example of Use

To query the analysis start time.

```
CALC:ATIM:STAR?
> 0.01200000
```

:CALCulate:ATIMe:GMODe OFF|ON|0|1

Gate Mode On/Off

Function

When the main trace is CCDF, this command selects whether or not to use the GateMode for analysis of only the specified section in the Analysis Time.

Command

```
CALCulate:ATIMe:GMODe <switch>
```

Parameter

<switch>	Gate Mode Status
ON|1	Uses gate mode
OFF|0	Does not use gate mode

Details

This command is available when the CCDF trace is active.

Example of Use

To set the CCDF gate mode to On:

```
CALC:ATIM:GMOD ON
```

:CALCulate:ATIMe:GMODe?

Gate Mode On/Off Query

Function

When the main trace is CCDF, this command selects whether or not to read-out the GateMode for analysis of only the specified section in the Analysis Time.

Command

```
CALCulate:ATIMe:GMODe?
```

Response

<switch>	Gate Mode Status
1	Uses gate mode
0	Does not use gate mode

Details

This command is available when the CCDF trace is active.

Example of Use

To query the CCDF gate mode settings:

```
CALC:ATIM:GMOD?
> 1
```

:CALCulate:ATIMe:GMODe:PERiod <time>

Period

Function

When GateMode is On, this command sets the Period setting for each range.

Command

```
:CALCulate:ATIMe:GMODe:PERiod <time>
```

Parameter

<time>	Range setting cycle
Range/Resolution	Same as Analysis Time Length Refer to the *MS2690A/MS2691A/MS2692A Signal Analyzer Operation Manual (Signal Analyzer function Operation)* or *MS2830A/MS2840A/MS2850A Signal Analyzer Operation Manual (Signal Analyzer function Operation)* for automatic setting operation. Suffix code: NS, US, MS, S s is used when omitted.

Details

This command is available when the CCDF trace is active.
This function can be set when Gate Mode is On.

Example of Use

To set the CCDF gate mode span to 10 ms:

```
CALC:ATIM:GMOD:PER 10MS
```

:CALCulate:ATIMe:GMODe:PERiod?

Period Query

Function

When GateMode is On, this command queries the Period setting for each range.

Query

```
:CALCulate:ATIMe:GMODe:PERiod?
```

Response

<time>	Range setting cycle
Range/Resolution	Same as Analysis Time Length Refer to the *MS2690A/MS2691A/MS2692A Signal Analyzer Operation Manual (Signal Analyzer function Operation)* or *MS2830A/MS2840A/MS2850A Signal Analyzer Operation Manual (Signal Analyzer function Operation)* for automatic setting operation. No suffix code. Value is returned in s units.

Details

This command is available when the CCDF trace is active.

Example of Use

To query the CCDF gate mode setting span:

```
CALC:ATIM:GMOD:PER?
> 0.01000000
```

:CALCulate:ATIMe:GMODe:RANGe:STATe ON|OFF|1|0,ON|OFF|1|0,ON|OFF|1|0,

Range State

Function

This command sets each range On/Off.

Command

```
:CALCulate:ATIMe:GMODe:RANGe:STATe <switch_n>
```

Parameter

`<switch_n>`	Range n On/Off	
`ON|1`	Sets range to On	
`OFF|0`	Sets range to Off	
Default		
	Range1	On
	Range2 to 3	Off

Details

This function cannot set all segments to Off.
This command is available when the CCDF trace is active and when Gate Mode is On.

Example of Use

To set the range On/Off:

```
CALC:ATIM:GMOD:RANG:STAT ON,ON,OFF
```

:CALCulate:ATIMe:GMODe:RANGe:STATe?

Range State Query

Function

This command queries the range for setting parameter.

Query

```
:CALCulate:ATIMe:GMODe:RANGe:STATe?
```

Response

<switch_n>	Range On/Off
1	On
0	Off

Details

This command is available when the CCDF trace is active.

Example of Use

To query the range On/Off:

```
CALC:ATIM:GMOD:RANG:STAT?
> 1,1,0
```

:CALCulate:ATIMe:GMODe:RANGe:STARt <time_1>,<time_2>,<time_3>

Range Start Time

Function

This command sets the start time for each range.

Command

```
:CALCulate:ATIMe:GMODe:RANGe:STARt <time_n>
```

Parameter

<time_n>		Start time for each range
	Range	0 to (Range setting period (Period)—Resolution)
	Resolution	Same as Analysis Time Length Refer to the *MS2690A/MS2691A/MS2692A Signal Analyzer Operation Manual (Signal Analyzer Function Operation)* or *MS2830A/MS2840A/MS2850A Signal Analyzer Operation Manual (Signal Analyzer function Operation)* for details.
	Suffix code	NS, US, MS, S S is used when omitted.
	Default	Range1 to 3 0

Details

This command is available when the CCDF trace is active and when Gate Mode is On.

Example of Use

To set the start time for each range:

```
CALC:ATIM:GMOD:RANG:STAR 0,0.005,0.009
```

:CALCulate:ATIMe:GMODe:RANGe:STARt?

Range Start Time Query

Function

This command queries the start time for each range.

Query

```
:CALC:ATIM:GMOD:RANG:STAR?
```

Response

<time_n>	Start time for each range No suffix code. Value is returned in s units.

Details

This command is available when the CCDF trace is active.

Example of Use

To query the start time for each range:

```
:CALC:ATIM:GMOD:RANG:STAR?
> 0.00000000,0.00500000,0.00900000
```

:CALCulate:ATIMe:GMODe:RANGe:STOP <time_1>,<time_2>,<time_3>

Range Stop Time

Function

This command set the stop time for each range.

Command

```
:CALCulate:ATIMe:GMODe:RANGe:STOP <time_n>
```

Parameter

<time_n>	Stop time for each range	
Range	Resolution to Range setting period (Period)	
Resolution	Same as Analysis Time Length Refer to the *MS2690A/MS2691A/MS2692A Signal Analyzer Operation Manual (Signal Analyzer Function Operation)* or *MS2830A/MS2840A/MS2850A Signal Analyzer Operation Manual (Signal Analyzer function Operation)* for details.	
Default	Range1 to 3	Range setting period (Period)

Details

This command is available when the CCDF trace is active and when Gate Mode is On.

Example of Use

To set the stop time for each range:

```
CALC:ATIM:GMOD:RANG:STOP 0.001,0.006,0.010
```

:CALCulate:ATIMe:GMODe:RANGe: STOP?

Range Stop Time Query

Function

This command queries the stop time for each range.

Query

```
:CALC:ATIM:GMOD:RANG:STOP?
```

Response

<time_n>	Stop time for each range No suffix code. Value is returned in s units.

Details

This command is available when the CCDF trace is active.

Example of Use

To query the stop time for each range:

```
:CALC:ATIM:GMOD:RANG:STOP?
> 0.00100000,0.00600000,0.01000000
```

:INITiate:CALCulate

Calculate

Function

This command executes waveform analysis without capturing and is used to re-analyze the same captured waveform with different parameters.

Command

```
:INITiate:CALCulate
```

Details

This function can be executed only when the waveform capture time (Capture Time) is set to Manual.

When no waveform has been captured, or when a parameter that requires re-capturing of the waveform is changed, this function executes both waveform capturing and analysis.

Other commands or queries are received while this function is being executed.
If a command that requires re-capturing of a waveform or re-calculation of a trace is received, however, this function is paused during execution of such a command.

For querying the measurement value, such as a marker value, after this command has been executed, use *WAI commands to perform synchronized control.

Note that this command does not support synchronized control in Continuous mode.

Example of Use

To execute waveform analysis.

`TRAC:MODE SPEC`	Displays Spectrum trace
`SWE:TIME:AUTO OFF`	Sets the waveform capture time manually
`SWE:TIME 100MS`	Sets the waveform capture time to 100 ms
`INIT:MODE:SING`	Obtains IQ data
`*WAI`	Waits until end of query
`CALC:ATIM:LENG 10MS`	Sets the analysis time length to 10 ms
`CALC:ATIM:STAR 0S`	Sets the analysis start time to 0 s
`CONF:ACP`	Sets ACP measurement to ON
`INIT:CALC`	Starts analysis
`*WAI`	Waits until end of analysis
`FETC:ACP?`	Queries ACP measurement result
`CALC:ATIM:LENG 10MS`	Sets the analysis time length to 10 ms
`CALC:ATIM:STAR 90MS`	Sets the analysis start time to 90 ms
`INIT:CALC`	Starts analysis
`*WAI`	Waits until end of analysis

FETC:ACP?	Obtains ACP measurement result.

[:SENSe]:SWEep:POINts?

Trace Point Query

Function

This command queries the number of data points of the main trace.

Query

[:SENSe]:SWEep:POINts?	(excluding Spectrogram)
[:SENSe]:SWEep:POINts? n	(Spectrogram)

Response

<integer>

Parameter

<n>	The number of trace points
1	The number of time axis trace points
2	The number of frequency axis trace points
<integer>	Number of trace data points

Details

This command is available when any one of the following traces is set to active:

- Spectrum
- Power vs Time
- Frequency vs Time
- Phase vs Time
- Spectrogram

Example of Use

To query the number of the data points of the main trace.

```
SWE:POIN?
> 1281
```

Related Command

This command has the same function as the following commands.

```
[:SENSe]:ACPower:SWEep:POINts?
[:SENSe]:CHPower:SWEep:POINts?
[:SENSe]:OBWidth:SWEep:POINts?
```

:TRACe:SWEep:COUNt?

Measurement Count Query

Function

This command queries the current storage count of the main trace.

Query

```
:TRACe:SWEep:COUNt?
```

Response

```
<integer>
```

Parameter

`<integer>`	Storage count
Range	0 to 9999
Resolution	1

Details

This command is available when any one of the following traces is active:

- Spectrum
- Power vs Time
- Frequency vs Time
- Spectrogram

This command is not available when Storage Mode on the main trace is set to Off.

Example of Use

To query the current storage count of the main trace.

```
TRAC:SWE:COUN?
> 10
```

:DISPlay[:WINDow]:TRACe:X[:SCALe]:CENTer <freq>

Zoom Center

Function

This command sets the center frequency of the display frequency axis scale.

Command

```
:DISPlay[:WINDow]:TRACe:X[:SCALe]:CENTer <freq>
```

Parameter

<freq>		Scale center frequency
	Range/Resolution	Refer to the *MS2690A/MS2691A/MS2692A Signal Analyzer Operation Manual (Signal Analyzer function Operation)* or *MS2830A/MS2840A/MS2850A Signal Analyzer Operation Manual (Signal Analyzer function Operation)* for details.
	Suffix code	HZ, KHZ, KZ, MHZ, MZ, GHZ, GZ Hz is used when omitted.

Details

This command is available when the following trace is active:

- Spectrum

Example of Use

To set the center frequency of the display frequency axis scale to 20 kHz.

```
DISP:TRAC:X:CENT 20KHZ
```

:DISPlay[:WINDow]:TRACe:X[:SCALe]:CENTer?

Zoom Center Query

Function

This command queries the center frequency of the display frequency axis scale.

Query

```
:DISPlay[:WINDow]:TRACe:X[:SCALe]:CENTer?
```

Response

```
<freq>
```

Parameter

`<freq>`	Scale center frequency
Range/Resolution	Refer to the *MS2690A/MS2691A/MS2692A Signal Analyzer Operation Manual (Signal Analyzer function Operation)* or *MS2830A/MS2840A/MS2850A Signal Analyzer Operation Manual (Signal Analyzer function Operation)* for details. No suffix code. Value is returned in Hz units.

Details

This command is available when the following trace is active:

- Spectrum

Example of Use

To query the center frequency of the display frequency axis scale.

```
DISP:TRAC:X:CENT?
> 20000.0
```

:DISPlay[:WINDow]:TRACe:X[:SCALe]:WIDTh <freq>

Zoom Width/Vertical Scale Width

Function

This command sets the frequency width of the display frequency axis scale.

Command

```
:DISPlay[:WINDow]:TRACe:X[:SCALe]:WIDTh <freq>
```

Parameter

<freq>		Scale frequency width
	Range/Resolution	Refer to the *MS2690A/MS2691A/MS2692A Signal Analyzer Operation Manual (Signal Analyzer function Operation)* or *MS2830A/MS2840A/MS2850A Signal Analyzer Operation Manual (Signal Analyzer function Operation)* for details.
	Suffix code	HZ, KHZ, KZ, MHZ, MZ, GHZ, GZ Hz is used when omitted.

Details

This command is available when the following trace is active:

- Spectrum

Example of Use

To set the frequency width of the display frequency axis scale to 31.25 MHz.

```
DISP:TRAC:X:WIDT 31.25MHZ
```

:DISPlay[:WINDow]:TRACe:X[:SCALe]:WIDTh?

Zoom Width/Vertical Scale Width Query

Function

This command queries the frequency width of the display frequency axis scale.

Query

```
:DISPlay[:WINDow]:TRACe:X[:SCALe]:WIDTh?
```

Response

```
<freq>
```

Parameter

`<freq>`		Scale frequency width
	Range/Resolution	Refer to the *MS2690A/MS2691A/MS2692A Signal Analyzer Operation Manual (Signal Analyzer function Operation)* or *MS2830A/MS2840A/MS2850A Signal Analyzer Operation Manual (Signal Analyzer function Operation)* for details. No suffix code. Value is returned in Hz units.

Details

This command is available when the following trace is active:

- Spectrum

Example of Use

To query the frequency width of the display frequency axis scale.

```
DISP:TRAC:X:WIDT?
> 31250000.0
```

[:SENSe]:BANDwidth|:BWIDth[:RESolution] <bandwidth>

Resolution Bandwidth

Function

This command sets the resolution bandwidth (RBW).

Command

```
[:SENSe]:BANDwidth|:BWIDth[:RESolution] <bandwidth>
```

Parameter

<bandwidth>	Resolution bandwidth (RBW)
Range/Resolution	1 Hz to 10 MHz (1-3 Sequence)
Suffix code	HZ, KHZ, KZ, MHZ, MZ, GHZ, GZ
	Hz is used when omitted.

Details

This command is available when either of the following traces is active:

- Spectrum
- Spectrogram

The setting range of this function is limited according to the frequency span setting. Refer to the *MS2690A/MS2691A/MS2692A Signal Analyzer Operation Manual (Signal Analyzer function Operation)* or *MS2830A/MS2840A/MS2850A Signal Analyzer Operation Manual (Signal Analyzer function Operation)* for details.

Example of Use

To set the RBW to 300 kHz.

```
BAND 300KHZ
```

Related Command

This command has the same function as the following commands.

```
:CALCulate:BANDwidth|:BWIDth[:RESolution]
[:SENSe]:ACPower:BANDwidth[:RESolution]
:CALCulate:ACPower:BANDwidth[:RESolution]
[:SENSe]:CHPower:BANDwidth[:RESolution]
:CALCulate:CHPower:BANDwidth[:RESolution]
[:SENSe]:OBWidth:BANDwidth[:RESolution]
:CALCulate:OBWidth:BANDwidth[:RESolution]
[:SENSe]:BPOWer|:TXPower:BANDwidth[:RESolution]
:CALCulate:BPOWer|:TXPower:BANDwidth[:RESolution]
```

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

Resolution Bandwidth Query

Function

This command queries the resolution bandwidth (RBW).

Query

```
[:SENSe]:BANDwidth|:BWIDth[:RESolution]?
```

Response

```
<bandwidth>
```

Parameter

`<bandwidth>`	Resolution bandwidth (RBW)
Range/Resolution	1 Hz to 10 MHz (1-3 Sequence) No suffix code. Value is returned in Hz units.

Details

This command is available when the following trace is active:

- Spectrum
- Spectrogram

The setting range of this function is limited according to the frequency span setting. Refer to the *MS2690A/MS2691A/MS2692A Signal Analyzer Operation Manual (Signal Analyzer function Operation)* or *MS2830A/MS2840A/MS2850A Signal Analyzer Operation Manual (Signal Analyzer function Operation)* for details.

Example of Use

To query the RBW.

```
BAND?
> 300000
```

Related Command

This command has the same function as the following commands.

```
:CALCulate:BANDwidth|:BWIDth[:RESolution]?
[:SENSe]:ACPower:BANDwidth[:RESolution]?
:CALCulate:ACPower:BANDwidth[:RESolution]?
[:SENSe]:CHPower:BANDwidth[:RESolution]?
:CALCulate:CHPower:BANDwidth[:RESolution]?
[:SENSe]:OBWidth:BANDwidth[:RESolution]?
:CALCulate:OBWidth:BANDwidth[:RESolution]?
[:SENSe]:BPOWer|:TXPower:BANDwidth[:RESolution]?
:CALCulate:BPOWer|:TXPower:BANDwidth[:RESolution]?
```

:CALCulate:BANDwidth|:BWIDth[:RESolution] <bandwidth>

Resolution Bandwidth

Function

This command sets the resolution bandwidth (RBW).
Refer to [:SENSe]:BANDwidth|:BWIDth[:RESolution].

Related Command

This command has the same function as the following commands.

```
[:SENSe]:BANDwidth|:BWIDth[:RESolution]
[:SENSe]:ACPower:BANDwidth[:RESolution]
:CALCulate:ACPower:BANDwidth[:RESolution]
[:SENSe]:CHPower:BANDwidth[:RESolution]
:CALCulate:CHPower:BANDwidth[:RESolution]
[:SENSe]:OBWidth:BANDwidth[:RESolution]
:CALCulate:OBWidth:BANDwidth[:RESolution]
[:SENSe]:BPOWer|:TXPower:BANDwidth[:RESolution]
:CALCulate:BPOWer|:TXPower:BANDwidth[:RESolution]
```

:CALCulate:BANDwidth|:BWIDth[:RESolution]?

Resolution Bandwidth Query

Function

This command queries the resolution bandwidth (RBW).
Refer to [:SENSe]:BANDwidth|:BWIDth[:RESolution]?.

Related Command

This command has the same function as the following commands.

```
[:SENSe]:BANDwidth|:BWIDth[:RESolution]?
[:SENSe]:ACPower:BANDwidth[:RESolution]?
:CALCulate:ACPower:BANDwidth[:RESolution]?
[:SENSe]:CHPower:BANDwidth[:RESolution]?
:CALCulate:CHPower:BANDwidth[:RESolution]?
[:SENSe]:OBWidth:BANDwidth[:RESolution]?
:CALCulate:OBWidth:BANDwidth[:RESolution]?
[:SENSe]:BPOWer|:TXPower:BANDwidth[:RESolution]?
:CALCulate:BPOWer|:TXPower:BANDwidth[:RESolution]?
```

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

Resolution Bandwidth Auto/Manual

Function

This command enables/disables the automatic resolution bandwidth (RBW) setting function.

Command

```
[:SENSe]:BANDwidth|:BWIDth[:RESolution]:AUTO <switch>
```

Parameter

`<switch>`	Automatic resolution bandwidth setting function On/Off
`0|OFF`	Disables the automatic resolution bandwidth setting function.
`1|ON`	Enables the automatic resolution bandwidth setting function (Default value).

Details

This command is available when either of the following trace is active:

- Spectrum
- Spectrogram

Example of Use

To enable the automatic resolution bandwidth setting function.

```
BAND:AUTO ON
```

Related Command

This command has the same function as the following commands.

```
:CALCulate:BANDwidth|:BWIDth[:RESolution]:AUTO
[:SENSe]:ACPower:BANDwidth[:RESolution]:AUTO
:CALCulate:ACPower:BANDwidth[:RESolution]:AUTO
[:SENSe]:CHPower:BANDwidth[:RESolution]:AUTO
:CALCulate:CHPower:BANDwidth[:RESolution]:AUTO[:SENSe]:O
BWidth:BANDwidth[:RESolution]:AUTO
:CALCulate:OBWidth:BANDwidth[:RESolution]:AUTO
```

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

Resolution Bandwidth Auto/Manual Query

Function

This command queries the On/Off state of the automatic resolution bandwidth (RBW) setting function.

Query

```
[:SENSe]:BANDwidth|:BWIDth[:RESolution]:AUTO?
```

Response

```
<switch>
```

Parameter

<switch>	Automatic resolution bandwidth setting function On/Off
0	Disables the automatic resolution bandwidth setting function.
1	Enables the automatic resolution bandwidth setting function.

Details

This command is available when the either of the following trace is active:

- Spectrum
- Spectrogram

Example of Use

To query the On/Off state of the automatic resolution bandwidth setting function.

```
BAND:AUTO?
> 1
```

Related Command

This command has the same function as the following commands.

```
:CALCulate:BANDwidth|:BWIDth[:RESolution]:AUTO?
[:SENSe]:ACPower:BANDwidth[:RESolution]:AUTO?
:CALCulate:ACPower:BANDwidth[:RESolution]:AUTO?
[:SENSe]:CHPower:BANDwidth[:RESolution]:AUTO?
:CALCulate:CHPower:BANDwidth[:RESolution]:AUTO?
[:SENSe]:OBWidth:BANDwidth[:RESolution]:AUTO?
:CALCulate:OBWidth:BANDwidth[:RESolution]:AUTO?
```

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

Resolution Bandwidth Auto/Manual

Function

This command enables/disables the automatic resolution bandwidth (RBW) setting function.
Refer to `[:SENSe]:BANDwidth|:BWIDth[:RESolution]:AUTO`.

Related Command

This command has the same function as the following commands.

```
[:SENSe]:BANDwidth|:BWIDth[:RESolution]:AUTO
[:SENSe]:ACPower:BANDwidth[:RESolution]:AUTO
:CALCulate:ACPower:BANDwidth[:RESolution]:AUTO
[:SENSe]:CHPower:BANDwidth[:RESolution]:AUTO
:CALCulate:CHPower:BANDwidth[:RESolution]:AUTO
[:SENSe]:OBWidth:BANDwidth[:RESolution]:AUTO
:CALCulate:OBWidth:BANDwidth[:RESolution]:AUTO
```

:CALCulate:BANDwidth|:BWIDth[:RESolution]:AUTO?

Resolution Bandwidth Auto/Manual Query

Function

This command queries the On/Off state of the automatic resolution bandwidth (RBW) setting function.
Refer to `[:SENSe]:BANDwidth|:BWIDth[:RESolution]:AUTO?`.

Related Command

This command has the same function as the following commands.

```
[:SENSe]:BANDwidth|:BWIDth[:RESolution]:AUTO?
[:SENSe]:ACPower:BANDwidth[:RESolution]:AUTO?
:CALCulate:ACPower:BANDwidth[:RESolution]:AUTO?
[:SENSe]:CHPower:BANDwidth[:RESolution]:AUTO?
:CALCulate:CHPower:BANDwidth[:RESolution]:AUTO?
[:SENSe]:OBWidth:BANDwidth[:RESolution]:AUTO?
:CALCulate:OBWidth:BANDwidth[:RESolution]:AUTO?
```

[:SENSe]:DETector[:FUNCtion] NORMal|POSitive|NEGative|SAMPle|AVERage

Detection Mode

Function

This command selects the detection mode for waveform pattern.

Command

```
[:SENSe]:DETector[:FUNCtion] <mode>
```

Parameter

<mode>		Detection mode
	NORMal	Simultaneous detection for positive and negative peaks
	POSitive	Positive peak detection
	NEGative	Negative peak detection
	SAMPle	Sample detection
	AVERage	Average value detection
Default value		AVERage (Spectrum or Power vs Time trace) NORMal (Frequency vs Time trace) SAMPle (Phase vs Time trace) Positive (For Spectrogram trace)

Details

This command is available on the following traces:

- Spectrum (NORMal cannot be selected.)
- Power vs Time
- Frequency vs Time
- Phase vs Time (NORMal cannot be selected.)
- Spectrogram (NORMal cannot be selected.)

Sample detection is available only for Phase vs Time.

Example of Use

To set the detection mode to the positive peak.

```
DET POS
```

Related Command

This command has the same function as the following commands.

```
:CALCulate:DETector[:FUNCtion]
[:SENSe]:ACPower:DETector[:FUNCtion]
:CALCulate:ACPower:DETector[:FUNCtion]
[:SENSe]:CHPower:DETector[:FUNCtion]
:CALCulate:CHPower:DETector[:FUNCtion]
[:SENSe]:OBWidth:DETector[:FUNCtion]
:CALCulate:OBWidth:DETector[:FUNCtion]
```

[:SENSe]:DETector[:FUNCtion]?

Detection Mode Query

Function

This command queries the detection mode for waveform pattern.

Query

```
[:SENSe]:DETector[:FUNCtion]?
```

Response

```
<det>
```

Parameter

<det>	Detection mode selection
NORM	Simultaneous detection for positive and negative peaks
POS	Positive peak detection
NEG	Negative peak detection
SAMP	Sample detection
AVER	Average value detection

Example of Use

To query the detection mode.

```
DET?
> POS
```

Related Command

This command has the same function as the following commands.

```
:CALCulate:DETector[:FUNCtion]?
[:SENSe]:ACPower:DETector[:FUNCtion]?
:CALCulate:ACPower:DETector[:FUNCtion]?
[:SENSe]:CHPower:DETector[:FUNCtion]?
:CALCulate:CHPower:DETector[:FUNCtion]?
[:SENSe]:OBWidth:DETector[:FUNCtion]?
:CALCulate:OBWidth:DETector[:FUNCtion]?
```

:CALCulate:DETector[:FUNCtion]
NORMal|POSitive|NEGative|SAMPle|AVERage

Detection Mode

Function

This command selects the detection mode for waveform pattern.
Refer to `[:SENSe]:DETector[:FUNCtion]`.

Related Command

This command has the same function as the following commands.

```
[:SENSe]:DETector[:FUNCtion]
[:SENSe]:ACPower:DETector[:FUNCtion]
:CALCulate:ACPower:DETector[:FUNCtion]
[:SENSe]:CHPower:DETector[:FUNCtion]
:CALCulate:CHPower:DETector[:FUNCtion]
[:SENSe]:OBWidth:DETector[:FUNCtion]
:CALCulate:OBWidth:DETector[:FUNCtion]
```

:CALCulate:DETector[:FUNCtion]?

Detection Mode Query

Function

This command queries the detection mode for waveform pattern.
Refer to `[:SENSe]:DETector[:FUNCtion]?`.

Related Command

This command has the same function as the following commands.

```
[:SENSe]:DETector[:FUNCtion]?
[:SENSe]:ACPower:DETector[:FUNCtion]?
:CALCulate:ACPower:DETector[:FUNCtion]?
[:SENSe]:CHPower:DETector[:FUNCtion]?
:CALCulate:CHPower:DETector[:FUNCtion]?
[:SENSe]:OBWidth:DETector[:FUNCtion]?
:CALCulate:OBWidth:DETector[:FUNCtion]?
```

:TRACe:STORage:MODE OFF|MAXHold|LAVerage|MINHold

Storage Mode

Function

This command sets the storage mode for active trace data.

Command

```
:TRACe:STORage:MODE <mode>
```

Parameter

<mode>	Storage mode
OFF	Does not store data (Default value)
MAXHold	Stores the maximum value.
LAVerage	Stores the average value.
MINHold	Stores the minimum value.

Details

Storage mode is fixed to Off and cannot be set, when Capture Time is set to Manual.

This command is available when any one of the following traces is active:

- Spectrum
- Power vs Time
- Frequency vs Time (LAVerage cannot be selected.)
- Spectrogram

This command is not available while the Replay function is being executed.

Example of Use

To set the storage mode to Max Hold.

```
TRAC:STOR:MODE MAXH
```

:TRACe:STORage:MODE?

Storage Mode Query

Function

This command queries the storage mode for active trace data.

Command

```
:TRACe:STORage:MODE <mode>
```

Response

```
<mode>
```

Parameter

<mode>	Storage mode
OFF	Does not store data.
MAXH	Stores the maximum value.
LAV	Stores the average value
MINH	Stores the minimum value.

Details

This command is available when any one of the following traces is active:

- Spectrum
- Power vs Time
- Frequency vs Time (LAVerage cannot be selected.)
- Spectrogram

Example of Use

To query the storage mode.

```
TRAC:STOR:MODE?
> LAV
```

[:SENSe]:AVERage:COUNt <integer>

Storage Count

Function

This command sets the storage count.

Command

```
[:SENSe]:AVERage:COUNt <integer>
```

Parameter

<integer>	Storage count
Range	2 to 9999
Default value	10

Details

This command is available when any one of the following traces is active:

- Spectrum
- Power vs Time
- Frequency vs Time
- Spectrogram

This command is not available while the Replay function is being executed.

Example of Use

To set the storage count to 110.

```
AVER:COUN 110
```

Related Command

This command has the same function as the following commands.

```
[:SENSe]:ACPower:AVERage:COUNt
[:SENSe]:CHPower:AVERage:COUNt
[:SENSe]:OBWidth:AVERage:COUNt
[:SENSe]:BPOWer|:TXPower:ACPower:AVERage:COUNt
```

[:SENSe]:AVERage:COUNt?

Storage Count Query

Function

This command queries the storage count.

Query

```
[:SENSe]:AVERage:COUNt?
```

Response

```
<integer>
```

Parameter

<integer>	Storage count
Range	2 to 9999

Details

This function can be set when any one of the following traces is active:

- Spectrum
- Power vs Time
- Frequency vs Time
- Spectrogram

Example of Use

To query the storage count.

```
AVER:COUN?
> 110
```

Related Command

This command has the same function as the following commands.

```
[:SENSe]:ACPower:AVERage:COUNt?
[:SENSe]:CHPower:AVERage:COUNt?
[:SENSe]:OBWidth:AVERage:COUNt?
[:SENSe]:BPOWer|:TXPower:ACPower:AVERage:COUNt?
```

:DISPlay:WINDow[1]:TRACe:Y[:SCALe]:PDIVision[:LOGarithmic] <rel_ampl>

Log Scale Range

Function

This command sets the Y-axis scale range when Scale Mode is set to Log.

Command

```
:DISPlay:WINDow[1]:TRACe:Y[:SCALe]:PDIVision[:LOGarithmic] <rel_ampl>
```

Parameter

<rel_ampl>	Y axis scale range
0.1	0.1 dB/div
0.2	0.2 dB/div
0.5	0.5 dB/div
1	1 dB/div
2	2 dB/div
5	5 dB/div
10	10 dB/div
20	20 dB/div
Default value	10 dB/div

Details

This command is available when either of the following traces is active:

- Spectrum
- Power vs Time

Example of Use

To set the Y-axis scale range to 0.5 dB/div.

```
DISP:WIND:TRAC:PDIV 0.5
```

Related Command

This command has the same function as the following commands.

```
:DISPlay:ACPower:VIEW[1]:WINDow[1]:TRACe:Y[:SCALe]:PDIVision
:DISPlay:CHPower:VIEW[1]:WINDow[1]:TRACe:Y[:SCALe]:PDIVision
:DISPlay:OBWidth:VIEW[1]:WINDow[1]:TRACe:Y[:SCALe]:PDIVision
:DISPlay:BPOWer|:TXPower:VIEW[1]:WINDow[1]:TRACe:Y[:SCALe]:PDIVision
```

:DISPlay:WINDow[1]:TRACe:Y[:SCALe]:PDIVision[:LOGarithmic]?

Log Scale Range Query

Function

This command queries the Y-axis scale range when Scale Mode is set to Log.

Query

```
:DISPlay:WINDow[1]:TRACe:Y[:SCALe]:PDIVision[:LOGarithmic]?
```

Response

```
<rel_ampl>
```

Parameter

<rel_ampl>	Y axis scale range
0.1	0.1 dB/div
0.2	0.2 dB/div
0.5	0.5 dB/div
1	1 dB/div
2	2 dB/div
5	5 dB/div
10	10 dB/div
20	20 dB/div
Default value	10 dB

Details

This command is available when either of the following traces is active:

- Spectrum
- Power vs Time

Example of Use

To query the scale range.

```
DISP:WIND:TRAC:PDIV?
> 0.5
```

Related Command

This command has the same function as the following commands.

```
:DISPlay:ACPower:VIEW[1]:WINDow[1]:TRACe:Y[:SCALe]:PDIVision?
:DISPlay:CHPower:VIEW[1]:WINDow[1]:TRACe:Y[:SCALe]:PDIVision?
:DISPlay:OBWidth:VIEW[1]:WINDow[1]:TRACe:Y[:SCALe]:PDIVision?
:DISPlay:BPOWer|:TXPower:VIEW[1]:WINDow[1]:TRACe:Y[:SCALe]:PDIVision?
```

:DISPlay:WINDow[1]:TRACe:Y[:SCALe]:PDIVision:LINear <percent>

Linear Scale Range

Function

This command sets the Y-axis scale range when Scale Mode is set to Linear.

Command

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

Parameter

<percent>	Y axis scale range
1	1%/div
2	2%/div
5	5%/div
10	10%/div
Default value	10%/div

Details

This command is available when either of the following traces is active:

- Spectrum
- Power vs Time

Example of Use

To set the Y-axis scale range to 10%/div.

```
DISP:WIND:TRAC:Y:PDIV:LIN 10
```

:DISPlay:WINDow[1]:TRACe:Y[:SCALe]:PDIVision:LINear?

Linear Scale Range Query

Function

This command queries the Y-axis scale range when Scale Mode is set to Linear.

Query

```
:DISPlay:WINDow[1]:TRACe:Y[:SCALe]:PDIVision:LINear?
```

Response

```
<percent>
```

Parameter

<percent>	Y-axis scale range
1	1%/div
2	2%/div
5	5%/div
10	10%/div
Default value	10%/div

Details

This command is available when either of the following traces is active:

- Spectrum
- Power vs Time

Example of Use

To query the Y-axis scale range.

```
DISP:WIND:TRAC:PDIV:LIN?
> 10
```

:DISPlay:WINDow[1]:TRACe:Y[:SCALe]:LINE[:LOGarithmic] <line>

Log Scale Line

Function

This command sets the number of Y-axis scale segments in Log scale mode.

Command

```
:DISPlay:WINDow[1]:TRACe:Y[:SCALe]:LINE[:LOGarithmic]
<line>
```

Parameter

<line>	Number of Y-axis scale segments
10	10 segments (Default value)
12	12 segments

Details

This command is available only in Log scale mode.
This command is available when either of the following traces is active:

- Spectrum
- Power vs Time

Example of Use

To divide the Y-axis scale in Log scale mode.

```
DISP:WIND:TRAC:Y:LINE 12
```

:DISPlay:WINDow[1]:TRACe:Y[:SCALe]:LINE[:LOGarithmic]?

Log Scale Line Query

Function

This command queries the number of Y-axis scale segments in Log scale mode.

Query

```
:DISPlay:WINDow[1]:TRACe:Y[:SCALe]:LINE[:LOGarithmic]?
```

Response

```
<line>
```

Parameter

<line>	Number of Y-axis scale segments
10	10 segments
12	12 segments

Details

This command is available only in Log scale mode.
This command is available when either of the following traces is active:

- Spectrum
- Power vs Time

Example of Use

To query the number of Y-axis scale segments in Log scale mode.

```
DISP:WIND:TRAC:Y:LINE?
> 12
```

:CALCulate:SMOothing[:STATe] OFF|ON|0|1

Smoothing

Function

This command sets the main trace smoothing On/Off.

Command

```
:CALCulate:SMOothing[:STATe] <switch>
```

Parameter

<switch>	Smoothing ON/OFF
ON|1	On
OFF|0	Off

Details

This command is available when either of the following traces is active.

- Power vs Time
- Frequency vs Time

Example of Use

To execute the main trace smoothing.

```
CALC:SMO ON
```

:CALCulate:SMOothing[:STATe]?

Smoothing Query

Function

This command queries the On/Off state of the main trace smoothing.

Query

```
:CALCulate:SMOothing[:STATe]?
```

Response

```
<switch>
```

Parameter

<switch>	Smoothing ON/OFF
1	On
0	Off

Details

This command is available when either of the following traces is active:

- Power vs Time
- Frequency vs Time

Example of Use

To query the On/Off state of the active trace smoothing.

```
CALC:SMO?
> 1
```

:CALCulate:SMOothing:LENGth <time>

Smoothing Time Length

Function

This command sets the main trace smoothing time length.

Command

```
:CALCulate:SMOothing:LENGth <time>
```

Parameter

<time>		Smoothing time length
	Range/Resolution	Refer to the *MS2690A/MS2691A/MS2692A Signal Analyzer Operation Manual (Signal Analyzer function Operation)* or *MS2830A/MS2840A/MS2850A Signal Analyzer Operation Manual (Signal Analyzer function Operation)* for details.
	Suffix code	NS,US,MS,S S is used when omitted.

Details

This command is available when either of the following traces is active:

- Power vs Time
- Frequency vs Time

This command is not available in the following cases:

- When Terminal is selected for DigRF 3G (only for MS269x Series).

Example of Use

To set the smoothing time length to 20 μs.

```
CALC:SMO:LENG 20US
```

:CALCulate:SMOothing:LENGth?

Smoothing Time Length Query

Function

This command queries the main trace smoothing time length.

Query

```
:CALCulate:SMOothing:LENGth?
```

Response

```
<time>
```

Parameter

`<time>`	Smoothing time length
Range/Resolution	Refer to the *MS2690A/MS2691A/MS2692A Signal Analyzer Operation Manual (Signal Analyzer function Operation)* or *MS2830A/MS2840A/MS2850A Signal Analyzer Operation Manual (Signal Analyzer function Operation)* for details. Returns a value in s units without a suffix code.

Details

This command is available when either of the following traces is active:

- Power vs Time
- Frequency vs Time

Example of Use

To query the active trace smoothing time length.

```
CALC:SMO:LENG?
> 0.00002000
```

:CALCulate:FILTer:TYPE OFF|RECT|GAUSsian|NYQuist|RNYQuist

Filter Type

Function

This command selects filter type for the main trace.

Command

```
:CALCulate:FILTer:TYPE <filter>
```

Parameter

<filter>	Filter type
OFF	No filtering
RECT	Rectangle filter
GAUSsian	Gauss filter
NYQuist	Nyquist filter
RNYQuist	Root Nyquist filter

Details

This command is available when either of the following traces is active:

- Power vs Time
- CCDF (Only RECT or OFF can be selected)

Fixed to Off when the frequency span is set to 1 kHz.

Example of Use

To set the filter type to Nyquist.

```
CALC:FILT:TYPE NYQ
```

:CALCulate:FILTer:TYPE?

Filter Type Query

Function

This command queries filter type for the main trace.

Query

```
:CALCulate:FILTer:TYPE?
```

Response

```
<filter>
```

Parameter

`<filter>`	Filter type
`OFF`	No filtering
`RECT`	Rectangle filter
`GAUS`	Gauss filter
`NYQ`	Nyquist filter
`RNYQ`	Root Nyquist filter

Details

This command is available when either of the following traces is active:

- Power vs Time
- CCDF (Only RECT or OFF can be selected)

Fixed to Off when the frequency span is set to 1 kHz.

Example of Use

To query the filter type.

```
CALC:FILT:TYPE?
> NYQ
```

:CALCulate:FILTer:ALPHa <real>

Rolloff Factor

Function

This command sets the filter rolloff factor.

Command

```
:CALCulate:FILTer:ALPHa <real>
```

Parameter

<real>	Filter rolloff factor
Range	0.01 to 1.00
Resolution	0.01
Suffix code	None

Details

This command is available when the following trace is set to active:

- Power vs Time

This command is available when Filter Type
(cf. :CALCulate:FILTer:TYPE) is set to either of the following:

- Nyquist
- Root Nyquist

Example of Use

To set the filter rolloff factor to 0.22.

```
CALC:FILT:ALPH 0.22
```

:CALCulate:FILTer:ALPHa?

Rolloff Factor Query

Function

This command queries the filter rolloff factor.

Command

```
:CALCulate:FILTer:ALPHa?
```

Response

```
<real>
```

Parameter

`<real>`	Filter rolloff factor
Range	0.01 to 1.00
Resolution	0.01
Suffix code	None

Details

This command is available set when the following trace is set to active:

- Power vs Time

This command is available, when Filter Type
(cf. :CALCulate:FILTer:TYPE) is set to either of the following:

- Nyquist
- Root Nyquist

Example of Use

To query the filter rolloff factor.

```
CALC:FILT:ALPH?
> 0.22
```

:CALCulate:FILTer:BANDwidth <bandwidth>

Filter Bandwidth

Function

This command sets the filter bandwidth of the main trace.

Command

```
:CALCulate:FILTer:BANDwidth <bandwidth>
```

Parameter

<bandwidth>		Filter bandwidth
	Range/Resolution	Limited by settings for Frequency Span and Filter Type. Refer to the *MS2690A/MS2691A/MS2692A Signal Analyzer Operation Manual (Signal Analyzer function Operation)* or *MS2830A/MS2840A/MS2850A Signal Analyzer Operation Manual (Signal Analyzer function Operation)* for details.
	Suffix code	HZ, KHZ, KZ, MHZ, MZ, GHZ, GZ Hz is used when omitted.

Details

This command is available when any one of the following traces is active:

- Power vs Time
- Frequency vs Time
- CCDF

This command is available when the filter type for the active trace is set to one of the following:

- Rect
- Gauss
- Nyquist
- Root Nyquist

The setting range is limited by the Frequency Span and Filter Type settings.

Example of Use

To set the filter bandwidth of the main trace to 1 MHz.

```
CALC:FILT:BAND 1MHZ
```

:CALCulate:FILTer:BANDwidth?

Filter Bandwidth Query

Function

This command queries the filter bandwidth of the main trace.

Query

```
:CALCulate:FILTer:BANDwidth?
```

Response

```
<bandwidth>
```

Parameter

`<bandwidth>`	Filter bandwidth
Range/Resolution	Limited by settings for Frequency Span and Filter Type. Refer to the *MS2690A/MS2691A/MS2692A Signal Analyzer Operation Manual (Signal Analyzer Function Operation)* or *MS2830A/MS2840A/MS2850A Signal Analyzer Operation Manual (Signal Analyzer function Operation)* for details. No suffix code. Value is returned in Hz units.

Details

This command is available when any one of the following traces is active:

- Power vs Time
- Frequency vs Time
- CCDF

This command is available when the filter type for the active trace is set to one of the following:

- Rect
- Gauss
- Nyquist
- Root Nyquist

The setting range is limited by the Frequency Span and Filter Type settings.

Example of Use

To query the filter bandwidth of the main trace.

```
CALC:FILT:BAND?
> 1000000
```

:CALCulate:FILTer:FOFFset <freq>

Filter Frequency Offset

Function

This command sets the frequency offset of the main trace.

Command

```
:CALCulate:FILTer:FOFFset <freq>
```

Parameter

<freq>	Channel width
Range	–1 × frequency span to Frequency span Hz
Resolution	1 Hz
Suffix code	HZ, KHZ, KZ, MHZ, MZ, GHZ, GZ
	Hz is used when omitted.

Details

This command is available when either of the following traces is active:

- Power vs Time
- CCDF

This command is available when the filter type for the active trace is one of the following:

- Rect
- Gauss
- Nyquist
- Root Nyquist

Example of Use

To set the filter frequency offset of the main trace to 30 kHz.

```
CALC:FILT:FOFF 30KHZ
```

:CALCulate:FILTer:FOFFset?

Filter Frequency Offset Query

Function

This command queries the frequency offset of the main trace.

Query

```
:CALCulate:FILTer:FOFFset <freq>
```

Response

```
<freq>
```

Parameter

<freq>	Channel width
Range	–1 × frequency to Frequency span Hz
Resolution	1 Hz
	No suffix code. Value is returned in Hz units.

Details

This command is available when either of the following traces is active:

- Power vs Time
- CCDF

This command is available when the filter type for the active trace is one of the following:

- Rect
- Gauss
- Nyquist
- Root Nyquist

Example of Use

To query the frequency offset of the main trace.

```
CALC:FILT:FOFF?
> 30000
```

:CALCulate:FILTer:BANDwidth:AUTO ON|OFF|1|0

Filter Auto/Manual

Function

This command switches between auto and manual mode for filter bandwidth.

Command

```
:CALCulate:FILTer:BANDwidth:AUTO <switch>
```

Parameter

<switch>	Auto/manual filter bandwidth setting
ON|1	Sets filter bandwidth automatically.
OFF|0	Sets filter bandwidth manually.

Details

This command is available when the following trace is active:

- Frequency vs Time

Example of Use

To set filter bandwidth automatically.

```
CALC:FILT:BAND:AUTO ON
```

:CALCulate:FILTer:BANDwidth:AUTO?

Filter Auto/Manual Query

Function

This command queries the state of the filter bandwidth.

Query

```
:CALCulate:FILTer:BANDwidth:AUTO?
```

Response

```
<switch>
```

Parameter

<switch>	Auto/manual filter bandwidth
1	Auto
0	Manual

Details

This command is available when the following trace is active:

- Frequency vs Time

Example of Use

To query the filter bandwidth setting.

```
CALC:FILT:BAND:AUTO?
> 1
```

:DISPlay[:WINDow]:TRACe:Y[:SCALe]:RANGe D2|D5|D10|D25

Zoom Width/Vertical Scale Width

Function

This command sets the frequency width of the display frequency axis scale.

Command

```
:DISPlay[:WINDow]:TRACe:Y[:SCALe]:RANGe <scale>
```

Parameter

`<scale>`	Scale frequency width
`D2`	Frequency bandwidth /2
`D5`	Frequency bandwidth /5
`D10`	Frequency bandwidth /10
`D25`	Frequency bandwidth /25

Details

This command is available when the following trace is active:

- Frequency vs Time

Example of Use

To set the scale frequency bandwidth/10.

```
DISP:TRAC:Y:RANG D10
```

:DISPlay[:WINDow]:TRACe:Y[:SCALe]:RANGe?

Zoom Width/Vertical Scale Width Query

Function

This command queries the frequency width of the display frequency axis scale.

Query

```
:DISPlay[:WINDow]:TRACe:Y[:SCALe]:RANGe?
```

Response

```
<scale>
```

Parameter

<scale>	Scale frequency width
D2	Frequency bandwidth /2
D5	Frequency bandwidth /5
D10	Frequency bandwidth /10
D25	Frequency bandwidth /25

Details

This command is available when the following trace is active:

- Frequency vs Time

Example of Use

To query the scale frequency width.

```
DISP:TRAC:Y:RANG?
> D10
```

:DISPlay[:WINDow]:TRACe:Y[:SCALe]:WIDTh?

Maximum Frequency Range Query

Function

This command queries the maximum value of the frequency display range.

Query

```
:DISPlay[:WINDow]:TRACe:Y[:SCALe]:WIDTh?
```

Response

<freq>

No suffix code. Value is returned in Hz units.

Details

This command is available when the following trace is active:

- Frequency vs Time

Example of Use

To query the maximum value of the frequency display range.

```
DISP:TRAC:Y:WIDT?
> 6250000.00
```

:UNIT:FREQuency HZ|DHZ

Frequency Scale Unit

Function

This command sets the display unit system of the frequency axis.

Command

```
:UNIT:FREQuency <unit>
```

Parameter

<unit>	Display unit system of the frequency axis
HZ	Hz
DHZ	ΔHz

Details

This command is available when the following trace is active:

- Frequency vs Time

Example of Use

To set the display unit system to Hz.

```
UNIT:FREQ HZ
```

:UNIT:FREQuency?

Frequency Scale Unit Query

Function

This command queries the display unit system of the frequency axis.

Query

```
:UNIT:FREQuency?
```

Response

```
<unit>
```

Parameter

<unit>	Display unit system of the frequency axis
HZ	Hz
DHZ	ΔHz

Details

This command is available when the following trace is active:

- Frequency vs Time

Example of Use

To query the display unit system.

```
UNIT:FREQ?
> HZ
```

:CALCulate:CCDF|:PSTatistic:METHod CCDF|APD

Measure Method

Function

This command selects the measurement method for CCDF trace.

Command

```
:CALCulate:CCDF|:PSTatistic:METHod <mode>
```

Parameter

<mode>	Measurement method for CCDF trace
APD	APD Measurement
CCDF	CCDF Measurement

Details

This command is available when the following trace is active:

- CCDF

Example of Use

To set the APD measurement mode.

```
CALC:CCDF:METH APD
```

:CALCulate:CCDF|:PSTatistic:METHod?

Measure Method Query

Function

This command queries the measurement method for CCDF trace.

Query

```
:CALCulate:CCDF|:PSTatistic:METHod?
```

Response

```
<mode>
```

Parameter

<mode>	Measurement method for CCDF trace
APD	APD measurement
CCDF	CCDF measurement

Details

This command is available when the following trace is active:

- CCDF

Example of Use

To query the measurement method.

```
CALC:CCDF:METH?
> APD
```

:CALCulate:CCDF|:PSTatistic:THReshold:STATe ON|OFF|1|0

CCDF Threshold On/Off

Function

This command sets On/Off the minimum level setting for the CCDF measurement. When set to On, signals having a level less than the value specified by Threshold are excluded from the measurement target.

Command

```
:CALCulate:CCDF|:PSTatistic:THReshold:STATe <switch>
```

Parameter

<switch>	Threshold On/Off
ON|1	Sets Threshold to On
OFF|0	Set Threshold to Off

Details

This command is available when the CCDF trace is active.
This command is not available when Terminal is selected DigRF 3G (only for MS269x Series).

Example of Use

To set Threshold to On:

```
CALC:CCDF:THR:STAT ON
```

:CALCulate:CCDF|:PSTatistic:THReshold:STATe?

CCDF Threshold On/Off

Function

This command queries On/Off the minimum level setting for the CCDF measurement.

Query

```
:CALCulate:CCDF|:PSTatistic:THReshold:STATe?
```

Response

<switch>	Threshold On/Off
1	Sets Threshold to On
0	Sets Threshold to Off

Details

This command is available when the CCDF trace is active.
This command is not available in the following case when Terminal is selected DigRF 3G (only for MS269x Series).

Example of Use

To query the threshold On/Off.

```
CALC:CCDF:THR:STAT?
> ON
```

:CALCulate:CCDF|:PSTatistic:THReshold <ampl>

CCDF Threshold

Function

This command sets the minimum level of the input signal for the CCDF measurement.

Command

```
:CALCulate:CCDF|:PSTatistic:THReshold <ampl>
```

Parameter

`<ampl>`		Minimum level of input signal
	Range	–170 to reference level (Reference Level) dBm When the reference level offset value is On, it is added to the range.
	Resolution	0.01 dB
	Suffix code	DBM,DM dB is used when omitted.

Details

This command is available when the CCDF trace is active.
This command is not available in the case when Terminal is selected DigRF 3G (only for MS269x Series).

Example of Use

To set the minimum level to –20 dBm:

```
CALC:CCDF:THR -20
```

:CALCulate:CCDF|:PSTatistic:THReshold?

CCDF Threshold Query

Function

This command queries the minimum level of the input signal for the CCDF measurement.

Query

```
:CALCulate:CCDF|:PSTatistic:THReshold?
```

Response

```
<ampl>
```

Parameter

<ampl>	Minimum level of input signal
Range	–170 to reference level (Reference Level) dBm When the reference level offset value is On, it is added to the range.
Resolution	0.01 dB
Suffix code	None Value is returned in dBm unit.

Details

This command is available when the CCDF trace is active.
This command is not available in the case when Terminal is selected DigRF 3G (only for MS269x Series).

Example of Use

To query the minimum level:

```
CALC:CCDF:THR?
> -20.00
```

:CALCulate:CCDF|:PSTatistic:MODE TIME|COUNt

CCDF Meas Mode

Function

This command sets the specified method of the measurement target for the CCDF trace.

Command

```
:CALCulate:CCDF|:PSTatistic:MODE <mode>
```

Parameter

<mode>		Specified method for CCDF trace to be measured
	TIME	Analyses Range data specified at Time Length
	COUNT	Measures until specified data count reached

Details

This command is available when the CCDF trace is active.
This command is not available in the case when Terminal is selected DigRF 3G (only for MS269x Series).
This function can be set when Capture Time is Auto.

Example of Use

To set specified CCDF trace measurement method to data count.

```
:CALC:CCDF:MODE COUN
```

:CALCulate:CCDF|:PSTatistic:MODE?

CCDF Meas Mode Query

Function

This command queries the specified method of the measurement target for the CCDF trace.

Command

```
:CALCulate:CCDF|:PSTatistic:MODE?
```

Response

<mode>	Specified method for CCDF trace to be measured
TIME	Analyses Range data specified at Time Length
COUN	Measures until specified data count reached

Details

This command is available when the CCDF trace is active.
This command is not available in the case when Terminal is selected DigRF 3G (only for MS269x Series).

Example of Use

To query specified CCDF trace measurement method to data count.

```
:CALC:CCDF:MODE?
> COUN
```

:CALCulate:CCDF|:PSTatistic:COUNts <sample>

Data Count

Function

This command specifies the measurement target data count of the CCDF trace.

Command

```
:CALCulate:CCDF|:PSTatistic:COUNts <sample>
```

Parameter

<sample>	Data count for measurement target
Range	100 to 2000000000
Resolution	1 sample
Default	10000000

Details

This command is available when the CCDF trace is active.
This command is not available in the case when Terminal is selected DigRF 3G (only for MS269x Series).
This function can be set when Capture Time is Auto.

Example of Use

To set the measurement target data count of the CCDF trace to 5000000:

```
CALC:CCDF:COUN 5000000
```

:CALCulate:CCDF|:PSTatistic:COUNts?

Data Count Query

Function

This command queries the measurement target data count of the CCDF trace.

Command

```
:CALCulate:CCDF|:PSTatistic:COUNts?
```

Response

<sample> Measurement target data count

Details

This command is available when the CCDF trace is active.
This command is not available in the case when Terminal is selected DigRF 3G (only for MS269x Series).

Example of Use

To query the measurement target data count of the CCDF trace:

```
CALC:CCDF:COUN?
> 5000000
```

:CALCulate:CCDF|:PSTatistic:STORe:REFerence

Store Reference Trace

Function

This command records the current CCDF/APD waveform data in the internal memory as user-defined reference trace data.

Command

```
:CALCulate:CCDF|:PSTatistic:STORe:REFerence
```

Details

This function can be set when the CCDF trace is active.

Example of Use

To record the current measurement result in the reference data.

```
CALC:CCDF:STOR:REF
```

[:SENSe]:CCDF|:PSTatistic:RTRace[:STATe] ON|OFF|1|0

Reference Trace

Function

This command sets whether to show or hide the reference trace data recorded by the user during CCDF measurement.

Command

```
[:SENSe]:CCDF|:PSTatistic:RTRace[:STATe] <switch>
```

Parameter

<switch>

ON|1	Displays the reference trace data.
OFF|0	Does not display the reference trace data.

Details

This function can be set when the CCDF trace is active.
However, this function cannot be set when Measure Method is APD.
Nothing can be set when no reference trace data is recorded.

Example of Use

To display the reference trace data.

```
CCDF:RTR ON
```

[:SENSe]:CCDF|:PSTatistic:RTRace[:STATe]?

Reference Trace Query

Function

This command queries the display status of reference trace data during CCDF measurement.

Query

```
[:SENSe]:CCDF|:PSTatistic:RTRace[:STATe]?
```

Response

<switch>

Parameter

<switch>	Reference trace setting
1	Displays the reference trace data.
0	Does not display the reference trace data.

Example of Use

To query the display setting for a reference trace.

```
CCDF:RTR?
> 0
```

[:SENSe]:CCDF|:PSTatistic:GAUSsian[:STATe] ON|OFF|1|0

Gaussian Trace

Function

This command sets whether to show or hide the Gaussian trace data during CCDF measurement.

Command

```
[:SENSe]:CCDF|:PSTatistic:GAUSsian[:STATe] <switch>
```

Parameter

<switch>

ON|1	Displays Gaussian trace data.
OFF|0	Does not display Gaussian trace data.

Details

This function can be set when the CCDF trace is active.

However, this function cannot be set when Measure Method is APD.

Example of Use

To display Gaussian trace data.

```
CCDF:GAUS ON
```

[:SENSe]:CCDF|:PSTatistic:GAUSsian[:STATe]?

Gaussian Trace Query

Function

This command queries the display status of Gaussian trace data during CCDF measurement.

Query

```
[:SENSe]:CCDF|:PSTatistic:GAUSsian[:STATe]?
```

Response

<switch>

Parameter

<switch>	Gaussian trace setting
1	Displays Gaussian trace
0	Does not display Gaussian trace

Example of Use

To query the display setting for a Gaussian trace.

```
CCDF:GAUS?
> 0
```

:CALCulate:MARKer[1][:PEAK]:X:DELTa?

Marker Query

Function

This command queries the difference value for a Gaussian trace or reference trace of a CCDF trace.

Query

```
:CALCulate:MARKer[n][:PEAK]:X:DELTa?
```

Response

```
<dist>
```

(When the CCDF trace and marker axis are set to Distribution)

```
<dist_result_gauss>,<dist_result_ref>
```

(When the CCDF trace and marker axis are set to probability)

Parameter

`<n>` Marker number

`1` Targets marker specified by Marker Axis (CCDF)

When omitted Targets marker specified by Marker Axis (CCDF)

`<dist>` Marker position

Range/Resolution Within the trace-display power deviation range
Refer to the *MS2690A/MS2691A/MS2692A Signal Analyzer Operation Manual (Signal Analyzer Function Operation)* or *MS2830A/MS2840A/MS2850A Signal Analyzer Operation Manual (Signal Analyzer function Operation)* for details.

Suffix code None. Value is returned in dB unit.

`<dist_result_gauss>` Difference from the Gaussian trace at the marker position

Range/Resolution Within the trace-display power deviation range
Refer to the *MS2690A/MS2691A/MS2692A Signal Analyzer Operation Manual (Signal Analyzer Function Operation)* or *MS2830A/MS2840A/MS2850A Signal Analyzer Operation Manual (Signal Analyzer function Operation)* for details.

Suffix code None. Value is returned in dB unit.
Returns "–999.0" at Gaussian trace Off/Unmeasured/Error.

`<dist_result_ref>` Difference from the reference trace at the marker position

Range/Resolution Within the trace-display power deviation range
Refer to the *MS2690A/MS2691A/MS2692A Signal*

Analyzer Operation Manual (Signal Analyzer Function Operation) or *MS2830A/MS2840A/MS2850A Signal Analyzer Operation Manual (Signal Analyzer function Operation)* for details.

Suffix code	None. Value is returned in dB unit. Returns "–999.0" at reference trace Off/Unmeasured/Error.

Details

This function can be set when the CCDF trace is active.

Example of Use

To query delta marker value:

```
CALC:MARK:X:DELT?
> 0.065
```

:DISPlay:WINDow[1]:TRACe:X[:SCALe]:PDIVision <rel_ampl>

Power Distribution Scale

Function

This command sets power distribution axis scale.

Command

```
:DISPlay:WINDow[1]:TRACe:X[:SCALe]:PDIVision <rel_ampl>
```

Parameter

<rel_ampl>	Power distribution axis scale
5	5 dB
10	10 dB
20	20 dB
50	50 dB

Details

This command is available when the CCDF trace is active.

Example of Use

To set the power distribution axis scale to 10 dB:

```
DISP:WIND:TRAC:X:PDIV 10
```

:DISPlay:WINDow[1]:TRACe:X[:SCALe]:PDIVision?

Power Distribution Scale Query

Function

This command queries the power distribution axis scale.

Query

```
:DISPlay:WINDow[1]:TRACe:X[:SCALe]:PDIVision?
```

Response

```
<rel_ampl>
```

Parameter

<rel_ampl>	Power distribution axis scale
5	5 dB
10	10 dB
20	20 dB
50	50 dB

Details

This command is available set when the CCDF trace is active.

Example of Use

To query the power distribution axis scale.

```
DISP:WIND:TRAC:X:PDIV?
> 10
```

:CALCulate:MARKer:AXIS PROB|DSTRbt

Marker Axis

Function

This command specifies the marker movement axis for the main trace.

Command

```
:CALCulate:MARKer:AXIS <mode>
```

Parameter

<mode>	Marker movement axis
PROB	Probability distribution direction (vertical axis)
DSTRbt	Power distribution direction (horizontal axis)

Details

This command is available when the CCDF trace is active.

Example of Use

To set the marker movement axis into the probability distribution direction.

```
CALC:MARK:AXIS PROB
```

:CALCulate:MARKer:AXIS?

Marker Axis Query

Function

This command queries the marker movement axis for the main trace.

Query

```
:CALCulate:MARKer:AXIS?
```

Response

```
<mode>
```

Parameter

<mode>	Marker movement axis
PROB	Probability distribution direction (vertical axis)
DSTR	Power distribution direction (horizontal axis)

Details

This command is available when the CCDF trace is set to active.

Example of Use

To query the marker movement axis.

```
CALC:MARK:AXIS?
> PROB
```

[:SENSe]:CCDF|:PSTatistic:ERESet[:STATe] ON|OFF|1|0

Reset Result Every Capture

Function

This command sets whether to reset the result after each CCDF measurement.

Command

```
[:SENSe]:CCDF|:PSTatistic:ERESet[:STATe] <switch>
```

Parameter

```
<switch>
```

ON|1	Resets the result after each measurement
OFF|0	Does not reset the result after each measurement

Details

This command is available when the CCDF trace is active.
This command is not available while the Replay function is being executed.

Example of Use

To set to reset the result after each measurement.

```
CCDF:ERES ON
```

[:SENSe]:CCDF|:PSTatistic:ERESet[:STATe]?

Reset Result Every Capture Query

Function

This command queries whether to reset the result after each CCDF measurement.

Query

```
[:SENSe]:CCDF|:PSTatistic:ERESet[:STATe]?
```

Response

```
<switch>
```

Parameter

```
<switch>
```

1	Resets the result after each measurement.
0	Does not reset the result after each measurement

Details

This function can be set when the following trace is active:

- CCDF

Example of Use

To query whether to reset the result after each measurement.

```
CCDF:ERES?
> 1
```

:CONFigure:CCDF|:PSTatistic

CCDF Configure

Function

This command switches the trace mode to CCDF.

Command

```
:CONFigure:CCDF|:PSTatistic
```

Details

No measurement is performed.

This command is not available in the following cases:

- When Terminal is selected DigRF 3G (only for MS269x Series).

Example of Use

To switch to CCDF trace.

```
CONF:CCDF
```

:INITiate:CCDF|:PSTatistic

CCDF Initiate

Function

This command performs CCDF measurement once.

Command

```
:INITiate:CCDF|:PSTatistic
```

Details

When this function is executed, CCDF trace is set to On and single measurement is executed.

This command is not available in the following cases:

- When Terminal is selected for DigRF 3G (only for MS269x Series).

Example of Use

To perform the single CCDF measurement.

```
INIT:CCDF
```

:FETCh:CCDF|:PSTatistic[n]?

CCDF Fetch

Function

This command queries the result for CCDF measurement.

Query

```
:FETCh:CCDF|:PSTatistic[n]?
```

Response

When Result Mode is “A”.

```
<mean_power>,<peak_power_dbm>,<crest>
```
(n = 1 or when omitted)

```
<rel_ampl_1>,<rel_ampl_2>,<rel_ampl_3>,<rel_ampl_4>,
<rel_ampl_5>,<rel_ampl_6>
```
(n = 2)

```
<percent_1>,<percent_2>,<percent_3>,<percent_4>,
<percent_5>
```
(n = 3)

[Measure method is CCDF]

```
<meas_per_1>,<meas_per_2>,...< meas_per_5001>
```

[Measure method is APD]

```
<meas_per_1>,<meas_per_2>,...< meas_per_10001>
```
(n=4)

```
<gauss_per_1>,<gauss_per_2>,...<guass_per_5001>
```
(n=5)

[Measure method is CCDF]

```
<ref_per_1>,<ref_per_2>,...<ref_per_5001>
```

[Measure method is APD]

```
<ref_per_1>,<ref_per_2>,...<ref_per_10001>
```
(n=6)

```
<count>
```
(n=7)

```
<mean_power_range_1>,<peak_power_dbm_range_1>,
<crest_range_1>
```
(n=8)

```
<rel_ampl_ range_1_1>,<rel_ampl_ range_1_2>,
<rel_ampl_ range_1_3>,<rel_ampl_ range_1_4>,
<rel_ampl_ range_1_5>,<rel_ampl_ range_1_6>
```
(n=9)

```
<percent_range_1_1>,<percent_range_1_2>,
<percent_range_1_3>,<percent_ range_1_4>,
<percent_ range_1_5>
```
(n=10)

[Measure Method is CCDF]
<meas_per_ range_1_1>,<meas_per_ range_1_2>,...
<meas_per_ range_1_5001>
[Measure Method is APD]
<meas_per_ range_1_1>,<meas_per_ range_1_2>,...
<meas_per_ range_1_10001>

(n=11)

[Measure Method is CCDF]
<ref_per_range_1_1>,<ref_per_range_1_2>,...
<ref_per_range_1_5001>
[Measure Method is APD]
<ref_per_range_1_1>,<ref_per_range_1_2>,...
<ref_per_range_1_10001>

(n=13)

<count_range_1>

(n=14)

<mean_power_range_2>,<peak_power_dbm_range_2>,
<crest_range_2>

(n=15)

<rel_ampl_range_2_1>,<rel_ampl_range_2_2>,
<rel_ampl_range_2_3>,<rel_ampl_range_2_4>,
<rel_ampl_range_2_5>,<rel_ampl_range_2_6>

(n=16)

<percent_range_2_1>,<percent_range_2_2>,
<percent_range_2_3>,<percent_range_2_4>,
<percent_range_2_5>

(n=17)

[Measure Method is CCDF]
<meas_per_range_2_1>,<meas_per_range_2_2>,...
<meas_per_range_2_5001>
[Measure Method is APD]
<meas_per_range_2_1>,<meas_per_range_2_2>,...<meas_per_
range_2_10001>

(n=18)

[Measure Method is CCDF]
<ref_per_range_2_1>,<ref_per_range_2_2>,...
<ref_per_range_2_5001>
[Measure Method is APD]
<ref_per_range_2_1>,<ref_per_range_2_2>,...
<ref_per_range_2_10001>

(n=20)

<count_range_2>

(n=21)

<mean_power_range_3>,<peak_power_dbm_range_3>,
<crest_range_3>

(n=22)

<rel_ampl_range_3_1>,<rel_ampl_range_3_2>,
<rel_ampl_range_3_3>,<rel_ampl_range_3_4>,
<rel_ampl_range_3_5>,<rel_ampl_range_3_6>

(n=23)

<percent_range_3_1>,<percent_range_3_2>,
<percent_range_3_3>,<percent_range_3_4>,
<percent_range_3_5>

(n=24)

[Measure Method is CCDF]

<meas_per_range_3_1>,<meas_per_range_3_2>,...
<meas_per_range_3_5001>

[Measure Method is APD]

<meas_per_range_3_1>,<meas_per_range_3_2>,...
<meas_per_range_3_10001>

(n=25)

[Measure Method is CCDF]

<ref_per_range_3_1>,<ref_per_range_3_2>,...
<ref_per_range_3_5001>

[Measure Method is APD]

<ref_per_range_3_1>,<ref_per_range_3_2>,...
<ref_per_range_3_10001>

(n=27)

<count_range_3>

(n=28)

When Result Mode is “B”.

<mean_power>,<mean_power_prob>,<rel_ampl_1>,
<rel_ampl_2>,<rel_ampl_3>,<rel_ampl_4>,<rel_ampl_5>,
<rel_ampl_6>,<crest>,<count>

(n = 1 or when omitted)

[Measure method is CCDF]

<meas_per_1>,<meas_per_2>,...< meas_per_5001>

[Measure method is APD]

<meas_per_1>,<meas_per_2>,...< meas_per_10001>

(n=2)

<gauss_per_1>,<gauss_per_2>,...<guass_per_5001>

(n=3)

[Measure method is CCDF]

<ref_per_1>,<ref_per_2>,...<ref_per_5001>

[APD]

<ref_per_1>,<ref_per_2>,...<ref_per_10001>

(n=4)

Parameter

Measurement result type

<mean_power> Average power

<peak_power dbm> Maximum power
Returns a value in dBm units without a suffix code.
–999.0 is returned when no measurement is performed or an error has occurred.

<percent_n> Each of them indicates its probability distribution in each power fluctuation, below.
- 1, 2, 3, 4, 5 dB
(When Horizontal Scale is set to 5 dB)
- 2, 4, 6, 8, 10 dB
(When Horizontal Scale is set to 10 dB)
- 4, 8, 12, 16, 20 dB
(When Horizontal Scale is set to 20 dB)
- 10, 20, 30, 40, 50 dB
(When Horizontal Scale is set to 50 dB)

Returns a value in % units without a suffix code.
–999.0 is returned when no measurement is performed or an error has occurred.

<meas_per_n> Each value indicates the power deviation of the measured value in the probability distributions below.
- –50.00,−49.99, ...,49.99, 50.00 dB
(APD)
- 00.00, 00.01, ...,49.99, 50.00 dB
(CCDF)

A percentage value without a suffix code that has a resolution of 0.0001% is returned.
–999.0 is returned at no measurement or error

<guauss_percent_n> Each value indicates the power deviation of the Gaussian trace in the probability distributions below.
- –50.00, –49.99, ...,49.99, 50.00 dB
(This is for APD. "-999.0" is returned for all values.))
- 00.00, 00.01, ...,49.99, 50.00 dB
(CCDF)

A percentage value without a suffix code that has a resolution of 0.0001% is returned.
–999.0 returned at no measurement or error

`<ref_percent_n>` Each value indicates the power deviation of the reference trace in the probability distributions below.
- –50.00, –49.99, ...,49.99, 50.00 dB
(APD)
- 00.00, 00.01, ...,49.99, 50.00 dB
(CCDF)

A percentage value without a suffix code that has a resolution of 0.0001% is returned.
–999.0 returned at no measurement or error

`<mean_power_prob>` Probability distribution of average power
Returns a value in % units without a suffix code.
–999.0 is returned when no measurement is performed or an error has occurred.

`<rel_ampl_n>` Each of them indicates its power fluctuation in each probability distribution, below.
- 10,1, 0.1, 0.01, 0.001, 0.0001%

`<crest>` Crest factor
No suffix code. Value is returned in dB units.
–999.0 is returned when no measurement is performed or an error has occurred.

`<count>` Number of data samples
No suffix code
–999.0 is returned when no measurement is performed or an error has occurred.

`<mean_power_range_m>` Displays Range m average power.
Enabled when Gate Mode = On with Range m On.
Returns "–999.0" at Unmeasured/Error/disabled.

`<peak_power dbm_range_m>` Displays Range m max. power.
Suffix code No suffix code; returns dBm value.
Enabled when Gate Mode = On with Range m On.
Returns "–999.0" at Unmeasured/Error/Disabled.

<percent_range_m _n>	Displays probability distribution for each of following Range m measured power deviation. ● 1, 2, 3, 4, 5 dB (For 5 dB Horizontal Scale setting) ● 2, 4, 6, 8, 10 dB (For 10 dB Horizontal Scale setting) ● 4, 8, 12, 16, 20 dB (For 20 dB Horizontal Scale setting) ● 10, 20, 30, 40, 50 dB (For 50 dB Horizontal Scale setting)
Suffix code:	No suffix code; returns % units and 0.0001% resolution. Enabled when Gate Mode = On with Range m On. Returns "–999.0" at Unmeasured/Error/Disabled.
<meas_per_range_m _n>	Displays probability distribution for each of following Range m measured power deviation. ●–50.00, –49.99, ...,49.99,50.00 dB (For APD) ● 00.00,00.01, ...,49.99,50.00 dB (For CCDF)
Suffix code	No suffix code; returns % units and 0.0001% resolution. Enabled when Gate Mode = On with Range m On. Returns "–999.0" at Unmeasured/Error/Disabled.
<ref_per_range_m _n>	Displays probability distribution for each of following Range m reference trace power deviation. ● –50.00, –49.99, ..., 49.99, 50.00 dB (For APD) ● 00.00, 00.01, ..., 49.99, 50.00 dB (For CCDF)
Suffix code	No suffix code; returns % units and 0.0001% resolution. Enabled when Gate Mode = On with Range m On. Returns "–999.0" at Unmeasured/Error/Disabled.

<mean_power_prob_range_m>	Range m average power probability distribution
Suffix code	No suffix code; returns % units. Enabled when Gate Mode = On with Range m On. Returns "–999.0" at Unmeasured/Error/Disabled.
<rel_ampl_range_m _n>	Displays power deviation for each of following Range m probability distribution ● 10, 1, 0.1, 0.01, 0.001, 0.0001% Enabled when Gate Mode = On with Range m On. Returns "–999.0" at Unmeasured/Error/Disabled.

Details

This function queries the measurement result of the CCDF measurement performed last. This function does not accompany any capture, thus this function is used to output the measurement result in a different type, when the measurement has already completed.
Use READ command to perform re-measurement with redoing capture.

Return values in this function vary depending on Result Mode.
(cf. :SYSTem:RESult:MODE)

This command is available when the following trace is active:

- CCDF

Example of Use

To query the measurement result for CCDF measurement (n = 1, A mode).

```
FETC:CCDF?
> -66.68,-54.90,11.78
```

:READ:CCDF|:PSTatistic[n]?

CCDF Read

Function

This command performs CCDF measurement and queries the result. This command has the same function as the following commands executed in this order:

```
:INITiate:CCDF|:PSTatistic
:FETCh:CCDF|:PSTatistic[n]?
```

:MEASure: CCDF|:PSTatistic [n]?

CCDF Measure

Function

This command performs CCDF measurement and outputs the result.

This command has the same function as the following commands executed in this order:

```
:CONFigure:CCDF|:PSTatistic
:INITiate:CCDF|:PSTatistic
:FETCh:CCDF|:PSTatistic[n]?
```

:CALCulate:MARKer[1]:Y <prob>

Marker Frequency

Function

This command moves the center of the marker to the specified probability.

Command

```
:CALCulate:MARKer[n]:Y <prob>
```

Parameter

`<dist>`		Marker position
	Range/Resolution	In the probability distribution range of trace display Refer to the *MS2690A/MS2691A/MS2692A Signal Analyzer Operation Manual (Signal Analyzer function Operation)* or *MS2830A/MS2840A/MS2850A Signal Analyzer Operation Manual (Signal Analyzer function Operation)* for details. No suffix code. Unit: %

Details

When the marker position has changed, the target marker will be set to On and change into active marker. For CCDF, Marker Axis will change into Probability.

Example of Use

To move the marker to 1%.

```
CALC:MARK:Y 1
```

:TRACe:STORage:STOP

Storage Stop

Function

This command stops capturing the waveform which is in execution. It functions when Storage Mode of the main trace is Lin Average, Max. Hold, or Min Hold.

Command

```
:TRACe:STORage:STOP
```

Details

This command is not available while the Replay function is being executed.

Example of Use

To stop capturing the waveform.

```
TRAC:STOR:STOP
```

:TRIGger:CCDF|:PSTatistic[:SEQuence]:SOURce EXTernal[1]|IMMediate|WIF|RFBurst|VIDeo|SG|BBIF

CCDF Trigger Source

Function

This command sets the trigger source type.
Refer to `TRIGger[:SEQuence]:SOURce`.

Related Command

This command has the same function as the following commands.

```
TRIGger[:SEQuence]:SOURce
TRIGger:ACPower[:SEQuence]:SOURce
TRIGger:CHPower[:SEQuence]:SOURce
TRIGger:OBWidth[:SEQuence]:SOURce
TRIGger:BPOWer|:TXPower[:SEQuence]:SOURce
```

:TRIGger:CCDF|:PSTatistic[:SEQuence]:SOURce?

CCDF Trigger Source Query

Function

This command queries the trigger source.
Refer to `TRIGger[:SEQuence]:SOURce?`.

Related Command

This command has the same function as the following commands.

```
TRIGger[:SEQuence]:SOURce?
TRIGger:ACPower[:SEQuence]:SOURce?
TRIGger:CHPower[:SEQuence]:SOURce?
TRIGger:OBWidth[:SEQuence]:SOURce?
TRIGger:BPOWer|:TXPower[:SEQuence]:SOURce?
```

:TRACe[:DATA]? [<start>[,<length>]]

Query Trace Data

Function

This command queries the trace data.

Query

```
:TRACe[:DATA]? [<start>[,<length>]]
```

Response

```
<data_1>,<data_2>,...
```

If `REAL,32` is set for `FORMat[:DATA]`, the output of "# (ASCII format)" is followed by the output of "Range of character string indicating byte length of binary data (ASCII format", "Byte length of binary data (ASCII format)", and "Trace data string (binary format)", in this order. In the case of the binary format too, the response message terminator is attached (refer to "1.7.2 SCPI response message format" in the *MS2690A/MS2691A/MS2692A and MS2830A/MS2840A/MS2850A Signal Analyzer Operation Manual (Mainframe Remote Control)*.

Example: To query 1,001 points of trace data when `FORMat[:DATA]` is `REAL,32`.

```
> #44004<4004 bytes of data>
```

The number 4 following # indicates that four characters that indicate the binary data length follow. "`4004`" indicates that "this is followed by 4004 bytes of binary data."

Parameter

`<start>`	Starting point to read out
Range	0 to Number of trace points – 1
Resolution	1
When omitted:	0
`<length>`	Query length
Range	1 to Number of trace points – <start> For Spectrum trace, the maximum number is 5121.
Resolution	1
When omitted:	Number of trace points – <start> If 5122 or more is set, 5121 is automatically set.

<data_n> Trace data

For Spectrum or Power vs Time, Spectrogram trace

Resolution (In Log scale)
0.001 dBm
(In Linear scale)
{Voltage (V) / Reference level (V)} × 10000
Reference level is 10000.
–999.0 is returned when no measurement is performed or an error has occurred.

Data range Returns a value in the range of Start Freq to Stop Freq for Spectrum trace.
Returns a value in the range of Analysis Start Time to Analysis Start Time + Analysis Time Length for Power vs Time trace.
Divides a trace into the number of trace points and returns a value in the range of Start to Length for Spectrogram.
For the coordinates (frequency, time), the (Start Frequency, 0 seconds) position is point 0, and, for subsequent points, the time coordinate is fixed and the trace point position increases along the frequency axis. When the frequency axis coordinate reaches Stop Frequency, the time coordinate increases by one point and the trace point position again increases along the frequency axis.

For Frequency vs Time trace

Resolution 0.01 Hz resolution/Hz units
Center frequency is 0.00.
–999999999999 is returned when no measurement is performed or an error has occurred.

Data range Returns a value in the range of Analysis Start Time to Analysis Start Time + Analysis Time Length.

For Phase vs Time trace

Resolution 0.01 degree resolution Unit: degree
–999.0 is returned if there is no measurement or an error.

Data range Returns a value within the range of Analysis Start Time to Analysis Start Time + Analysis Time Length.

	For CCDF trace	
	Resolution	0.0001% resolution/Hz units –999.0 is returned when no measurement is performed or an error has occurred.
	Data range	Returns a value in the range of –50 to 50 dB in APD. Returns a value in the range of 0 to 50 dB in CCDF.

Details

For Power vs Time or Frequency vs Time, when Detection is set to Positive & Negative, reads out the trace data of Positive detection. In other cases, reads out the data of the set Detection.

This command is not available when Trace Mode is set to No Trace.

Example of Use

To query the trace data.

```
TRAC?
> -20000,-20231,-21233,...
```

:TRACe[:DATA]:NEGative? [<start>[,<length>]]

Query Negative Trace Data

Function

This command queries the trace data.

Query

```
:TRACe[:DATA]:NEGative? [<start>[,<length>]]
```

Response

```
<data_1>,<data_2>,...
```

Parameter

`<start>` Starting point to read out

- Range: 0 to Number of trace points – 1
- Resolution: 1
- When omitted: 0

`<length>` Query length

- Range: 1 to Number of trace points – <start>
- Resolution: 1
- When omitted: Number of trace points – <start>

`<data_n>` Trace data

For Power vs Time trace

- Resolution: (In Log scale) 0.001 dBm; (In Linear scale) {Voltage value (V) / Reference level (V)} × 10000. Reference level is 10000. –999.0 is returned when no measurement is performed or an error has occurred.
- Data range: Returns a value in the range of Analysis Start Time to Analysis Start Time + Analysis Time Length.

For Frequency vs Time trace

- Resolution: 0.01 Hz. Center frequency is 0.00. –999999999999 is returned when no measurement is performed or an error has occurred.
- Data range: Returns a value in the range of Analysis Start Time to Analysis Start Time + Analysis Time Length.

For Phase vs Time trace

Resolution	0.01 degree resolution Unit: degree –999.0 is returned if there is no measurement or an error.
Data range	Returns a value within the range of Analysis Start Time to Analysis Start Time + Analysis Time Length.

Details

For Power vs Time or Frequency vs Time, when Detection is set to Positive & Negative, this command queries the trace data of Negative detection. In other cases, this command queries the data of the set Detection.

This command is available when either of the following traces is active:

- Power vs Time
- Frequency vs Time
- Phase vs Time

Example of Use

To query the trace data.

```
TRAC:NEG?
> -20000,-20231,-21233,...
```

:DISPlay:WINDow[1]:TRACe:Y[:SCALe]:PDIVision:RANGe <rel_ampl>

Level Full Scale

Function

This command sets the level-axis scale range.

Command

```
:DISPlay:WINDow[1]:TRACe:Y[:SCALe]:PDIVision:RANGe
<rel_ampl>
```

Parameter

<rel_ampl>	Y-axis scale
Resolution	10 dB
Data Range	10 to 150 dB
Default value	100 dB

Details

This command is available in the following trace:

- Spectrogram

Example of Use

To set the scale range of the level axis to 50 dB.

```
DISP:WIND:TRAC:Y:PDIV:RANG 50
```

:DISPlay:WINDow[1]:TRACe:Y[:SCALe]:PDIVision:RANGe?

Level Full Scale Query

Function

This command queries the level-axis scale range.

Query

```
:DISPlay:WINDow[1]:TRACe:Y[:SCALe]:PDIVision:RANGe?
```

Response

```
<rel_ampl>
```

Parameter

<rel_ampl>	Y-axis scale
Resolution	10 dB
Data Range	10 to 150 dB
Default value:	100 dB

Details

This command is available in the following trace:

- Spectrogram

Example of Use

To query the level-axis range.

```
DISP:WIND:TRAC:Y:PDIV:RANG?
> 50
```

:CALCulate:TMARker[1]|2:X <time>

Time Marker Position

Function

This command moves Time Marker to the specified time.

Command

```
:CALCulate:TMARker[n]:X <time>
```

Parameter

<n>	Marker number
1	Marker 1
2	Marker 2
When omitted:	Marker 1
<time>	Marker position

(When Marker Type is Spot, or when Marker Type is Zone and when Couple Time 1 and 2 is Off)

Range	Analysis Start Time to Analysis Start Time + Analysis Time Length
Default value	Analysis Start Time

(When Marker Type is Zone or when Couple Time 1 and 2 is On)

Range	Bigger one of Analysis Start Time and (Marker 1 – Marker 2 + Analysis Start Time) to smaller one of Analysis Start Time + Analysis Time Length and Analysis Start Time + Analysis Time Length – (Marker 2 – Marker 1)
Default value	Analysis Start Time + Analysis Time Length/2
Suffix code	NS, US, MS, S S is used when omitted.

Details

This command is available in the following trace:

- Spectrogram

Marker 2 cannot be set when Marker Type is set to Spot.

Example of Use

To move the center of Time Marker 1 to 100 ms.

```
CALC:TMAR:X 100MS
```

:CALCulate:TMARker[1]|2:X?

Time Marker Position Query

Function

This command queries the time of Time Marker.

Command

```
:CALCulate:TMARker[n]:X?
```

Response

```
<time>
```

Parameter

<n>	Marker number
1	Marker 1
2	Marker 2
When omitted:	Marker 1
<time>	Marker position

(When Marker Type is Spot or when Marker Type is Zone and when Couple Time 1 and 2 is Off)

Range	Analysis Start Time to Analysis Start Time + Analysis Time Length
Default value	Analysis Start Time

(When Marker Type is Zone and when Couple Time 1 and 2 is On.)

Range	Bigger one of Analysis Start Time and (Marker 1 – Marker 2 + Analysis Start Time) to smaller one of Analysis Start Time + Analysis Time Length and Analysis Start Time + Analysis Time Length – (Marker 2 – Marker 1)
Default value	Analysis Start Time + Analysis Time Length/2
Suffix code	NS, US, MS, S S is used when omitted.

Details

This command is available in the following trace:

- Spectrogram

Example of Use

To query Time Marker 1.

```
CALC:TMAR:X?
> 0.10000000
```

:CALCulate:TMARker:COUPle:ZONE[:STATe] OFF|ON|0|1

Couple Time Marker 1 and 2

Function

This command enables/disables sharing of the Time Marker setting.

Command

```
:CALCulate:TMARker:COUPle:ZONE[:STATe] <switch>
```

Parameter

<switch>	Shared setting of Time Marker On/Off
ON|1	Sets the shared setting to On.
OFF|0	Sets the shared setting to Off.

Details

This command is available when the following trace is active:

- Spectrogram,

This command is not available when Marker Type is Spot.

Setting to On makes Time Marker 1 and Time Marker 2 move together.

Example of Use

To set the shared setting of Time Marker to On.

```
CALC:TMAR:COUP:ZONE ON
```

:CALCulate:TMARker:COUPle:ZONE[:STATe]?

Couple Time Marker 1 and 2 Query

Function

This command queries whether sharing of the Time Marker setting is enabled.

Query

```
:CALCulate:TMARker:COUPle:ZONE[:STATe]?
```

Response

```
<switch>
```

Parameter

<switch>	Time Marker setting sharing On/Off
1	On
0	Off

Details

This command is available when the following trace is active:

- Spectrogram

Example of Use

To query the On/Off state of the shared setting of Time Marker.

```
CALC:TMAR:COUP:ZONE?
> 1
```

:CALCulate:ANALyze:SPECtrum

Analyze with Spectrum Trace

Function

This command analyzes the range selected in Time 1 and Time 2 by using Spectrum trace.

Command

```
:CALCulate:ANALyze:SPECtrum
```

Details

This command is available when the following trace is active:

- Spectrogram

This command is not available when Marker is set to Off.

Example of Use

```
CALC:ANAL:SPEC
```

:CALCulate:ANALyze:SPGRam

Return To Spectrogram

Function

This command is used to return to Spectrogram trace from Spectrum trace.

Command

```
:CALCulate:ANALyze:SPGRam
```

Details

If you return to Spectrogram by using this command after you moved on to Spectrum by using the Analyze with Spectrum Trace command, the same analysis length as in Spectrum is set in Spectrogram.
This command can be set only after the Analyze with Spectrum Trace command has been used. This command cannot be set, if you change the parameter to set the analysis length after you returned to Spectrum.
Refer to the *MS2690A/MS2691A/MS2692A Signal Analyzer Operation Manual (Signal Analyzer function Operation)* or *MS2830A/MS2840A/MS2850A Signal Analyzer Operation Manual (Signal Analyzer function Operation)* for details.

This command is not available in the following case:

- When Terminal is set for DigRF 3G (only for MS269x Series).

Example of Use

To return to Spectrogram trace.

```
CALC:ANAL:SPGR
```

:CALCulate:TMARker[1]|2:PEAK:X?

Time Marker Peak Query

Function

This command queries the time of the peak at Time Marker.

Query

```
:CALCulate:TMARker[n]:PEAK:X?
```

Response

```
<time>
```

Parameter

<n>	Marker number
1	Marker 1
2	Marker 2

When omitted: Marker 1

(When Marker Type is Spot, or when Marker Type is Zone and when Couple Time 1 and 2 are Off)

Range: Analysis Start Time to Analysis Start Time + Analysis Time Length

(When Marker Type is Zone and when Couple Time 1 and 2 are On)

Range: The greater value of Analysis Start Time and (Marker 1 – Marker 2 + Analysis Start Time) to the smaller value of Analysis Start Time + Analysis Time Length and Analysis Start Time + Analysis Time Length – (Marker 2 – Marker 1)

No suffix code. Value is returned in s units.

Details

This command is available when the following trace is active:

- Spectrogram

This command is available when Marker Result is Peak.

Example of Use

To query the time of the peat at Time Marker.

```
CALC:TMAR:PEAK:X?
> 0.100000000
```

:DISPlay:WINDow[1]:TRACe:Y[:SCALe]:PHASe:OFFSet <real>

Phase Offset

Function

This command adds the Offset value to the measurement waveform in Phase vs Time measurement.

Command

```
:DISPlay:WINDow[1]:TRACe:Y[:SCALe]:PHASe:OFFSet <real>
```

Parameter

<real>

Range	–100 M to +100 M
Unit	degree
Default	0

Example of Use

To set 15 degrees as Phase Offset.

```
DISP:WIND:TRAC:Y:PHAS:OFFS 15
```

:DISPlay:WINDow[1]:TRACe:Y[:SCALe]:PHASe:OFFSet?

Phase Offset Query

Function

This command queries the Offset value to be added to the measurement waveform in Phase vs Time measurement.

Command

```
:DISPlay:WINDow[1]:TRACe:Y[:SCALe]:PHASe:OFFSet?
```

Response

<real>

Parameter

<real>

Range	–100M to +100M
Unit	degree
Default	0

Example of Use

To set 15 degrees as Phase Offset.

```
DISP:WIND:TRAC:Y:PHAS:OFFS?
> 15.00
```

:DISPlay:WINDow[1]:TRACe:Y[:SCALe]:PHASe:MODE <mode>

Phase Mode

Function

This command sets whether the phase is displayed with limitation by ±180 degrees or without the limitation in Phase vs Time measurement.

Command

```
:DISPlay:WINDow[1]:TRACe:Y[:SCALe]:PHASe:MODE <mode>
```

Parameter

<mode>

WRAP	Displays with the limitation by ±180 degrees.
UNWRap	Displays without the limitation.
Default	WRAP

Example of Use

To set WRAP as Phase Mode.

```
DISP:WIND:TRAC:Y:PHAS:MODE WRAP
```

:DISPlay:WINDow[1]:TRACe:Y[:SCALe]:PHASe:MODE?

Phase Mode Query

Function

This command sets whether the phase is displayed with limitation by ±180 degrees or without the limitation in Phase vs Time measurement.

Query

```
:DISPlay:WINDow[1]:TRACe:Y[:SCALe]:PHASe:MODE?
```

Parameter

<mode>

WRAP	Displays with the limitation by ±180 degrees.
UNWR	Displays without the limitation.
Default	WRAP

Example of Use

To query the value of Phase Mode.

```
DISP:WIND:TRAC:Y:PHAS:MODE?
> WRAP
```

:DISPlay:WINDow[1]:TRACe:Y[:SCALe]:PHASe:PDIVision <real>

Scale Division

Function

This command sets the value of degree/DIV of the graph in Phase vs Time measurement.

Command

```
:DISPlay:WINDow[1]:TRACe:Y[:SCALe]:PHASe:PDIVision <real>
```

Parameter

```
<real>
```

Range	0.01 to +200G
Unit	deg/Div
Default	36.00

Example of Use

To set 180 as deg./Div.

```
DISP:WIND:TRAC:Y:PHAS:PDIV 180
```

:DISPlay:WINDow[1]:TRACe:Y[:SCALe]:PHASe:PDIVision?

Scale Division Query

Function

This command queries the value of degree/DIV of the graph in Phase vs Time measurement.

Command

```
:DISPlay:WINDow[1]:TRACe:Y[:SCALe]:PHASe:PDIVision?
```

Response

```
<real>
```

Parameter

```
<real>
```

Range	0.01 to +200G
Unit	deg/Div
Default	36.00

Example of Use

To query the set value of deg./Div.

```
DISP:WIND:TRAC:Y:PHAS:PDIV?
> 180.00
```

:DISPlay:WINDow[1]:TRACe:Y[:SCALe]:PHASe:REFerence <time>

Phase Reference

Function

This command sets the reference time value for Phase vs. Time measurement.

Command

```
:DISPlay:WINDow[1]:TRACe:Y[:SCALe]:PHASe:REFerence <time>
```

Parameter

<real>

Range	0 to 2000
Unit	s
Suffix code	NS, US, MS, S
	S is used when the suffix code is omitted.
Default	0

Example of Use

To set 10 s as Phase Reference.

```
DISP:WIND:TRAC:Y:PHAS:REF 10
```

:DISPlay:WINDow[1]:TRACe:Y[:SCALe]:PHASe:REFerence?

Phase Reference Query

Function

This command queries the reference time value for Phase vs. Time measurement.

Query

```
:DISPlay:WINDow[1]:TRACe:Y[:SCALe]:PHASe:REFerence?
```

Parameter

<real>

Range	0 to 2000
Unit	s
Default	0

Example of Use

To query the value of Phase Reference.

```
DISP:WIND:TRAC:Y:PHAS:REF?
> 10.00000000
```

:DISPlay:WINDow[1]:TRACe:Y[:SCALe]:PHASe:REFerence:MODE <switch>

Phase Reference Mode

Function

This command sets whether to use the Reference value in Phase vs Time measurement.

Command

```
:DISPlay:WINDow[1]:TRACe:Y[:SCALe]:PHASe:REFerence:MIDE
<switch>
```

Parameter

<switch>

OFF|0	Do not use
ON|1	Use (Default)

Example of Use

To set the Phase Ref Mode to ON.

```
DISP:WIND:TRAC:Y:PHAS:REF:MODE ON
```

:DISPlay:WINDow[1]:TRACe:Y[:SCALe]:PHASe:REFerence:MODE?

Phase Reference Mode Query

Function

This command queries whether to use the Reference value in Phase vs Time measurement.

Query

```
:DISPlay:WINDow[1]:TRACe:Y[:SCALe]:PHASe:REFerence:MODE?
```

Parameter

<switch>

0	Do not use
1	Use

Example of Use

To query the value of Phase Reference.

```
DISP:WIND:TRAC:Y:PHAS:REF:MODE?
> 1
```

2.8 Measure Common Function Settings

Table 2.8-1 lists device messages for common setting of the Measure function.

Table 2.8-1 Device messages for common setting of Measure function

Function	Device Message
Select Standard	[:SENSe]:RADio:STANdard[:SELect] OFF|5GPRE|WCDMADN|WCDMAUP|MWIMAX|3GLTE_DL|3GLTE_UL|ETC_DSRC|TDSCDMA|XGPHS|CDMA2KFWD|EVDOFWD|3GLTE_TDD_DL|3GLTE_TDD_UL|ISDBTMM
	[:SENSe]:RADio:STANdard[:SELect]?
Measurement Off	:CONFigure:SANalyzer
Current Measurement Query	:CONFigure?
Load Standard Parameter	[:SENSe]:RADio:STANdard:LOAD <function>[,<pattern>]
	[:SENSe]:RADio:STANdard:LOAD? <function>
Low Phase Noise Performance Status Query	[:SENSe]:FREQuency:SYNThesis:LPHase:STATe?

[:SENSe]:RADio:STANdard[:SELect] OFF|5GPRE|WCDMADN|WCDMAUP|MWIMAXDL|MWIMAXUL|3GLTE_DL|3GLTE_UL|ETC_DSRC|TDSCDMA|XGPHS|CDMA2KFWD|EVDOFWD|3GLTE_TDD_DL|3GLTE_TDD_UL|ISDBTMM

Select Standard

Function

This command selects a type of the parameter setting of the Measure function using the communication standard.

Command

```
[:SENSe]:RADio:STANdard[:SELect] <standard>
```

Parameter

<standard>	Communication standard
OFF	Off
5GPRE	5G Pre-Standard
WCDMADN	3GPP W-CDMA Downlink
WCDMAUP	3GPP W-CDMA Uplink
MWIMAXDL	Mobile WiMAX (IEEE802.16e) Downlink
MWIMAXUL	Mobile WiMAX (IEEE802.16e) Uplink
	3GLTE_DL 3GPP LTE Downlink
3GLTE_UL	3GPP LTE Uplink
ETC_DSRC	ARIB STD-T75
TDSCDMA	3GPP TDD 1.28Mcps Option
	XGPHS XG-PHS
CDMA2KFWD	3GPP2 CDMA2000 Forward Link
EVDOFWD	3GPP2 EV-DO Forward Link
3GLTE_TDD_DL	3GPP LTE TDD Downlink
3GLTE_TDD_UL	3GPP LTE TDD Uplink
ISDBTMM	ISDB-Tmm

Details

This command is not available in the following case:

- When Terminal is set for DigRF 3G (only for MS269x Series).
- When using MS2830A, Option 005/105/007/009/109 is not installed.
- When using MS2840A, Option 005/105/009/109 is not installed.

Example of Use

To select the parameter conforming to 3GPP W-CDMA Uplink standard.

```
RAD:STAN WCDMAUP
```

[:SENSe]:RADio:STANdard[:SELect]?

Select Standard Query

Function

This command queries the setting of the communication standard.

Query

```
[:SENSe]:RADio:STANdard[:SELect]?
```

Response

```
<standard>
```

Parameter

<standard>	Communication standard
OFF	Off
5GPRE	5G Pre-Standard
WCDMADN	3GPP W-CDMA Downlink
WCDMAUP	3GPP W-CDMA Uplink
MWIMAXDL	Mobile WiMAX (IEEE802.16e) Downlink
MWIMAXUL	Mobile WiMAX (IEEE802.16e) Uplink
	3GLTE_DL 3GPP LTE Downlink
3GLTE_UL	3GPP LTE Uplink
ETC_DSRC	ARIB STD-T75
TDSCDMA	3GPP TDD 1.28Mcps Option
XGPHS	XG-PHS
CDMA2KFWD	3GPP2 CDMA2000 Forward Link
EVDOFWD	3GPP2 EV-DO Forward Link
3GLTE_TDD_DL	3GPP LTE TDD Downlink
3GLTE_TDD_UL	3GPP LTE TDD Uplink
ISDBTMM	ISDB-Tmm

Details

This command is not available in the following case:

- When using MS2830A, Option 005/105/007/009/109 is not installed.
- When using MS2840A, Option 005/105/009/109 is not installed.

Example of Use

To query the setting of the communication standard.

```
RAD:STAN?
> WCDMAUP
```

:CONFigure:SANalyzer

Measurement Off

Function

This command disables currently running measurement function.
No operation is made if no measurement function is running.

Command

```
:CONFigure:SANalyzer
```

Example of Use

To disable the currently running measurement function.

```
CONF:SAN
```

:CONFigure?

Current Measurement Query

Function

This command queries the names of the current Measure function.

Query

```
:CONFigure?
```

Response

```
<mode>
```

Parameter

<mode>	Measure function
ACP	ACP measurement
BPOW	Burst Average Power measurement
OBW	OBW measurement
CHP	Channel Power measurement
AM	AM Depth measurement
FM	FM Deviation measurement
SAN	Off
FMCW	FM CW measurement

Example of Use

To query the current Measure function.

```
CONF?
> ACP
```

[:SENSe]:RADio:STANdard:LOAD <function>[,<pattern>]

Load Standard Parameter

Function

This command selects the parameter of Measure.
The selectable parameters vary depending on the setting of Standard.

Command

```
[:SENSe]:RADio:STANdard:LOAD <function>[,<pattern>]
```

Parameter

<function>	Measure function
ADJ	ACP measurement
BRSTAVGPWR	Burst Average Power measurement
OBW	OBW measurement
CHPWR	Channel Power measurement

When Standard is set to 5G Pre-Standard (ACP measurement):

<pattern>	Parameter to be set
99MHZ_1CARR	1 carrier, Carrier Spacing 99 MHz
100MHZ_1CARR	1 carrier, Carrier Spacing 100 MHz
99MHZ_2CARR	2 carrier, Carrier Spacing 99 MHz
100MHZ_2CARR	2 carrier, Carrier Spacing 100 MHz
99MHZ_4CARR	4 carrier, Carrier Spacing 99 MHz
100MHZ_4CARR	4 carrier, Carrier Spacing 100 MHz
When omitted:	1 carrier, Carrier Spacing 99 MHz

When Standard is set to W-CDMA Uplink (ACP measurement):

<pattern>	Parameter to be set
UPLINK	3GPP W-CDMA Uplink, ACP measurement
When omitted:	3GPP W-CDMA Uplink, ACP measurement

When Standard is set to W-CDMA Uplink (Burst Average Power measurement):

<pattern>	Parameter to be set
MEAN	3GPP W-CDMA Uplink, Mean Power measurement
RRCFILTER	3GPP W-CDMA Uplink, RRC Filtered Power measurement
When omitted:	3GPP W-CDMA Uplink, Mean Power measurement

When Standard is set to W-CDMA Uplink (OBW measurement):

<pattern>	Parameter to be set
UPLINK	3GPP W-CDMA Uplink
When omitted:	3GPP W-CDMA Uplink

When Standard is set to W-CDMA Uplink (Channel Power measurement):

<pattern>	Parameter to be set
UPLINK	3GPP W-CDMA Uplink, Mean Power measurement
MEAN	3GPP W-CDMA Uplink, Mean Power measurement
RRCFILTER	3GPP W-CDMA Uplink, RRC Filtered Power measurement
When omitted:	3GPP W-CDMA Uplink, Mean Power measurement

When Standard is set to W-CDMA Downlink (ACP measurement):

<pattern>	Parameter to be set
DOWNLINK	3GPP W-CDMA Downlink, ACP measurement(Single Carrier)
SINGLECARR	3GPP W-CDMA Downlink, ACP measurement(Single Carrier)
2CARR	3GPP W-CDMA Downlink (2 Carriers)
When omitted:	3GPP W-CDMA Downlink, ACP measurement(Single Carrier)

When Standard is set to W-CDMA Downlink (Burst Average Power measurement):

<pattern>	Parameter to be set
MEAN	3GPP W-CDMA Downlink, Mean Power measurement
RRCFILTER	3GPP W-CDMA Downlink, RRC Filtered Power measurement
When omitted:	3GPP W-CDMA Downlink, Mean Power measurement

When Standard is set to W-CDMA Downlink (OBW measurement):

<pattern>	Parameter to be set
DOWNLINK	3GPP W-CDMA Downlink
When omitted:	3GPP W-CDMA Downlink

When Standard is set to W-CDMA Downlink (Channel Power measurement):

<pattern>	Parameter to be set
DOWNLINK	3GPP W-CDMA Downlink, Mean Power measurement
MEAN	3GPP W-CDMA Downlink, Mean Power measurement
RRCFILTER	3GPP W-CDMA Downlink, RRC Filtered Power

measurement

When omitted: 3GPP W-CDMA Downlink, Mean Power measurement

When Standard is set to Mobile WiMAX

<pattern>	Parameter to be set
10M	10MHz BW (Channel Bandwidth 10 MHz)
5M	5MHz BW (Channel Bandwidth 5 MHz)
When omitted:	10MHz BW

When Standard is set to LTE Uplink/Downlink (ACP measurement)

<pattern>	Parameter to be set
1M4BW_UTRA5MHZ	1.4MHz BW (UTRA 5 MHz)
1M4BW_EUTRA1M4HZ	1.4MHz BW (E-UTRA 1.4 MHz)
3MBW_UTRA5MHZ	3MHz BW (UTRA 5 MHz)
3MBW_EUTRA3MHZ	3MHz BW (E-UTRA 3 MHz)
5MBW_UTRA5MHZ	5MHz BW (UTRA 5 MHz)
5MBW_EUTRA5MHZ	5MHz BW (E-UTRA 5 MHz)
When omitted:	5MHz BW (UTRA 5 MHz)

When Standard is set to LTE TDD Downlink (ACP measurement)

<pattern>	Parameter to be set
1M4BW_UTRA1M6HZ	1.4MHz BW (UTRA 1.6 MHz)
1M4BW_EUTRA1M4HZ	1.4MHz BW (E-UTRA 1.4 MHz)
3MBW_UTRA1M6HZ	3MHz BW (UTRA 1.6 MHz)
3MBW_EUTRA3MHZ	3MHz BW (E-UTRA 3 MHz)
5MBW_UTRA1M6HZ	5MHz BW (UTRA 1.6 MHz)
5MBW_UTRA5MHZ	5MHz BW (UTRA 5 MHz)
5MBW_EUTRA5MHZ	5MHz BW (E-UTRA 5 MHz)
When omitted:	5MHz BW (E-UTRA 5 MHz)

When Standard is set to LTE TDD Uplink (ACP measurement)

<pattern>	Parameter to be set
1M4BW_UTRA1M6HZ	1.4MHz BW (UTRA 1.6 MHz)
1M4BW_EUTRA1M4HZ	1.4MHz BW (E-UTRA 1.4 MHz)
3MBW_UTRA1M6HZ	3MHz BW (UTRA 1.6 MHz)
3MBW_EUTRA3MHZ	3MHz BW (UTRA 1.6 MHz)
5MBW_EUTRA5MHZ	5MHz BW (E-UTRA 5 MHz)
When omitted:	5MHz BW (E-UTRA 5 MHz)

When Standard is set to LTE Uplink/Downlink, LTE TDD Uplink/Downlink (OBW measurement)

<pattern>	Parameter to be set
1M4BW	1.4MHz Bandwidth
3MBW	3MHz Bandwidth

5MBW	5MHz Bandwidth
10MBW	10MHz Bandwidth
15MBW	15MHz Bandwidth
20MBW	20MHz Bandwidth
When omitted:	5MHz Bandwidth

When Standard is set to LTE Uplink/Downlink, LTE TDD Uplink/Downlink (Channel Power measurement)

<pattern>	Parameter to be set
MEAN_1M4BW	Mean Power 1.4MHz BW
MEAN_3MBW	Mean Power 3MHz BW
MEAN_5MBW	Mean Power 5MHz BW
MEAN_10MBW	Mean Power 10MHz BW
MEAN_15MBW	Mean Power 15MHz BW
MEAN_20MBW	Mean Power 20MHz BW
FILTERED_1M4BW	Filtered Power 1.4MHz BW
FILTERED_3MBW	Filtered Power 3MHz BW
FILTERED_5MBW	Filtered Power 5MHz BW
FILTERED_10MBW	Filtered Power 10MHz BW
FILTERED_15MBW	Filtered Power 15MHz BW
FILTERED_20MBW	Filtered Power 20MHz BW
When omitted:	Mean Power 5MHz BW

When Standard is set to LTE Uplink/Downlink, LTE TDD Uplink/Downlink (Burst Average Power measurement)

<pattern>	Parameter to be set
MEAN_1M4BW	Mean Power 1.4Hz BW
MEAN_3MBW	Mean Power 3MHz BW
MEAN_5MBW	Mean Power 5MHz BW
MEAN_10MBW	Mean Power 10MHz BW
MEAN_15MBW	Mean Power 15MHz BW
MEAN_20MBW	Mean Power 20MHz BW
FILTERED_1M4BW	Filtered Power 1.4MHz BW
FILTERED_3MBW	Filtered Power 3MHz BW
FILTERED_5MBW	Filtered Power 5MHz BW
FILTERED_10MBW	Filtered Power 10MHz BW
FILTERED_15MBW	Filtered Power 15MHz BW
FILTERED_20MBW	Filtered Power 20MHz BW
When omitted:	Mean Power 5MHz BW

When Standard is set to ETC_DSRC (Applies to all but Burst Average Power measurement)

<pattern>	Parameter to be set
PI4DQPSK	π/4DQPSK

ASK	ASK
When omitted:	π/4DQPSK

When Standard is set to ETC_DSRC (Burst Average Power measurement)

<pattern>	Parameter to be set
MEAN	Mean Power
When omitted:	Mean Power

When Standard is set to TD-SCDMA (ACP measurement)

<pattern>	Parameter to be set
TDD128M1C	Single Carrier
TDD128M2C	2 Carriers
TDD128M3C	3 Carriers
TDD128M4C	4 Carriers
TDD128M5C	5 Carriers
TDD128M6C	6 Carriers
When omitted:	Single Carrier

When Standard is set to TD-SCDMA (CHP,OBW measurement)

<pattern>	Parameter to be set
TDD128M	3GPP TDD 1.28 Mcps Option
When omitted:	3GPP TDD 1.28 Mcps Option

When Standard is set to TD-SCDMA (Burst Average Power measurement)

<pattern>	Parameter to be set
MEAN	5 ms Subframe (Power measurement of 1 subframe)
When omitted:	5 ms Subframe

When Standard is set to XG-PHS (OBW measurement)

<pattern>	Parameter to be set
10MBW	10MHz BW
20MBW	20MHz BW
When omitted:	10MHz BW

When Standard is set to XG-PHS (CHP measurement)

<pattern>	Parameter to be set
MEAN_10MBW	Mean Power 10MHz BW
MEAN_20MBW	Mean Power 20MHz BW
When omitted:	Mean Power 10MHz BW

When Standard is set to CDMA2000 Forward Link

<pattern>	Parameter to be set

CDMA2KFWD	CDMA2000 Forward Link
When omitted:	CDMA2000 Forward Link

When Standard is set to EV-DO Forward Link (ACP, Channel Power, OBW setting)

<pattern>	Parameter to be set
EVDOFWD	EV-DO Forward Link
When omitted:	EV-DO Forward Link

When Standard is set to EV-DO Forward Link (Burst Average Power measurement)

<pattern>	Parameter to be set
EVDOFWDACTIVE	Active Slot
EVDOFWDIDLE	Idle Slot
When omitted:	Active Slot

When Standard is set to ISDB-Tmm (Channel Power measurement)

<pattern>	Parameter to be set
MEAN_14M2BW	14.2MHz BW
MEAN_5M6BW	5.6MHz BW (ISDB-T)
When omitted:	14.2MHz BW

When Standard is set to ISDB-Tmm (OBW measurement)

<pattern>	Parameter to be set
14M2BW	14.2MHz BW
5M6BW	5.6MHz BW (ISDB-T)
When omitted:	14.2MHz BW

Details

This function is not available under the following conditions:

- Standard setting is set to Off.
- When using MS2830A, Option 005/105/007/009/109 is not installed.
- When using MS2840A, Option 005/105/009/109 is not installed.

Example of Use

To set the ACP measurement parameters conforming to 3GPP W-CDMA Uplink.

```
RAD:STAN:LOAD ADJ,UPLINK
```

[:SENSe]:RADio:STANdard:LOAD? <function>

Load Standard Parameter Query

Function

This command queries the Measure function parameter. The parameter selected for the Standard setting differs.

Query

```
[:SENSe]:RADio:STANdard:LOAD? <function>
```

Response

```
<pattern>
```

Parameter

Refer to `[:SENSe]:RADio:STANdard:LOAD <function>[,<pattern>]`

Details

If the Standard parameter is not selected or is set to Off, *** is returned.

Example of Use

To query ACP measurement parameter.

```
RAD:STAN:LOAD? ADJ
> UPLINK
```

[:SENSe]:FREQuency:SYNThesis:LPHase:STATe?

Low Phase Noise Performance Status Query

Function

This command queries the state of Low Phase Noise function with the current measurement conditions.

Query

```
[:SENSe]:FREQuency:SYNThesis:LPHase:STATe?
```

Response

<status>	State of Low Phase Noise function

Parameter

<status>	State of Low Phase Noise function
1	Lowers Phase Noise
0	Does not lower Phase Noise

Detail

This function is available when MS2830A-062/066, MS2840A-066/166 is installed.

The low phase noise performance is improved when the Low Phase Noise Function switch is On and the center frequency is less than 3.7 GHz. (The low phase noise performance is improved when the Frequency Band Mode is Spurious and the center frequency is less than 3.5 GHz.)

Whether the Low Phase Noise option can be used or not is read from the current setting parameters by this function.

Example of Use

To query the state of Low Phase Noise function with the current measurement conditions.

```
FREQ:SYNT:LPH:STAT?
> 1
```

2.9 Adjacent Channel Power Measurement Settings

Table 2.9-1 lists device messages for Adjacent Channel Power measurement.

Table 2.9-1 Device messages for Adjacent Channel Power

Function	Device Message
Measure Adjacent Channel Power	[:SENSe]:ACPower[:STATe] ON|OFF|1|0
	[:SENSe]:ACPower[:STATe]?
	:CALCulate:ACPower[:STATe] ON|OFF|1|0
	:CALCulate:ACPower[:STATe]?
Adjacent Channel Power Reference Carrier Select	[:SENSe]:ACPower:CARRier[1]:RCARrier <integer>
	[:SENSe]:ACPower:CARRier[1]:RCARrier?
	:CALCulate:ACPower:CARRier[1]:RCARrier <integer>
	:CALCulate:ACPower:CARRier[1]:RCARrier?
Adjacent Channel Power Reference	[:SENSe]:ACPower:CARRier[1]:RCARrier:METHod STOTal|CTOTal|BSIDes|CSELect
	[:SENSe]:ACPower:CARRier[1]:RCARrier:METHod?
	:CALCulate:ACPower:CARRier[1]:RCARrier:METHod STOTal|CTOTal|BSIDes|CSELect
	:CALCulate:ACPower:CARRier[1]:RCARrier:METHod?
Adjacent Channel Power Noise Cancel	[:SENSe]:ACPower:CORRection:NOISe[:AUTO] ON|OFF|1|0
	[:SENSe]:ACPower:CORRection:NOISe[:AUTO]?
	:CALCulate:ACPower:CORRection:NOISe[:AUTO] ON|OFF|1|0
	:CALCulate:ACPower:CORRection:NOISe[:AUTO]?
Adjacent Channel Power Offset Channel Bandwidth	[:SENSe]:ACPower:OFFSet[1]:BANDwidth[:INTegration] <bandwidth>
	[:SENSe]:ACPower:OFFSet[1]:BANDwidth[:INTegration]?
	:CALCulate:ACPower:OFFSet[1]:BANDwidth[:INTegration] <bandwidth>
	:CALCulate:ACPower:OFFSet[1]:BANDwidth[:INTegration]?
Adjacent Channel Power Carrier Bandwidth	[:SENSe]:ACPower:CARRier[1]:LIST:BANDwidth[:INTegration] <bandwidth>
	[:SENSe]:ACPower:CARRier[1]:LIST:BANDwidth[:INTegration]?
	:CALCulate:ACPower:CARRier[1]:LIST:BANDwidth[:INTegration] <bandwidth>
	:CALCulate:ACPower:CARRier[1]:LIST:BANDwidth[:INTegration]?
Adjacent Channel Power In Band Center	[:SENSe]:ACPower:CARRier[1]:RCFRequency <freq>
	[:SENSe]:ACPower:CARRier[1]:RCFRequency?
	:CALCulate:ACPower:CARRier[1]:RCFRequency <freq>
	:CALCulate:ACPower:CARRier[1]:RCFRequency?

Table 2.9-1 Device messages for Adjacent Channel Power measurement (Cont'd)

Function	Device Message
Adjacent Channel Power Carrier Number	[:SENSe]:ACPower:CARRier[1]:COUNt <integer>
	[:SENSe]:ACPower:CARRier[1]:COUNt?
	:CALCulate: ACPower:CARRier[1]:COUNt <integer>
	:CALCulate: ACPower:CARRier[1]:COUNt?
Adjacent Channel Power Carrier Spacing	[:SENSe]:ACPower:CARRier[1]:LIST:WIDTh <bandwidth>
	[:SENSe]:ACPower:CARRier[1]:LIST:WIDTh?
	:CALCulate:ACPower:CARRier[1]:LIST:WIDTh <bandwidth>
	:CALCulate:ACPower:CARRier[1]:LIST:WIDTh?
Adjacent Channel Power Offset	[:SENSe]:ACPower:OFFSet[1]:LIST:STATe ON|OFF|1|0,ON|OFF|1|0,ON|OFF|1|0
	[:SENSe]:ACPower:OFFSet[1]:LIST:STATe?
	:CALCulate:ACPower:OFFSet[1]:LIST:STATe ON|OFF|1|0,ON|OFF|1|0,ON|OFF|1|0
	:CALCulate:ACPower:OFFSet[1]:LIST:STATe?
Adjacent Channel Power Offset Frequency	[:SENSe]:ACPower:OFFSet[1]:LIST[:FREQuency] <freq>,<freq>,<freq>
	[:SENSe]:ACPower:OFFSet[1]:LIST[:FREQuency]?
	:CALCulate:ACPower:OFFSet[1]:LIST[:FREQuency] <freq>,<freq>,<freq>
	:CALCulate:ACPower:OFFSet[1]:LIST[:FREQuency]?
Adjacent Channel Power Filter Type	[:SENSe]:ACPower:CARRier[1]:LIST:METHod IBW|RRC|RC
	[:SENSe]:ACPower:CARRier[1]:LIST:METHod?
	:CALCulate:ACPower:CARRier[1]:LIST:METHod IBW|RRC|RC
	:CALCulate:ACPower:CARRier[1]:LIST:METHod?
	[:SENSe]:ACPower:CARRier[1]:FILTer:TYPE RECT|NYQuist|RNYQuist
	[:SENSe]:ACPower:CARRier[1]:FILTer:TYPE?
	:CALCulate:ACPower:CARRier[1]:FILTer:TYPE RECT|NYQuist|RNYQuist
	:CALCulate:ACPower:CARRier[1]:FILTer:TYPE?
Adjacent Channel Power Offset Filter Type	[:SENSe]:ACPower:FILTer[:RRC][:STATe] OFF|ON|0|1
	[:SENSe]:ACPower:FILTer[:RRC][:STATe]?
	:CALCulate:ACPower:FILTer[:RRC][:STATe] OFF|ON|0|1
	:CALCulate:ACPower:FILTer[:RRC][:STATe]?
	[:SENSe]:ACPower:OFFSet[1]:FILTer:TYPE RECT|NYQuist|RNYQuist
	[:SENSe]:ACPower:OFFSet[1]:FILTer:TYPE?
	:CALCulate:ACPower:OFFSet[1]:FILTer:TYPE RECT|NYQuist|RNYQuist
	:CALCulate:ACPower:OFFSet[1]:FILTer:TYPE?

Table 2.9-1 Device messages for Adjacent Channel Power measurement (Cont'd)

Function	Device Message
Adjacent Channel Power Result Type	DISPlay:ACPower:RESult:TYPE CARRier|OFFSet
	DISPlay:ACPower:RESult:TYPE?
Adjacent Channel Power Rolloff Ratio	[:SENSe]:ACPower:CARRier[1]:LIST:FILTer:ALPHa <real>
	[:SENSe]:ACPower:CARRier[1]:LIST:FILTer:ALPHa?
	:CALCulate:ACPower:CARRier[1]:LIST:FILTer:ALPHa <real>
	:CALCulate:ACPower:CARRier[1]:LIST:FILTer:ALPHa?
Adjacent Channel Power Offset Rolloff Ratio	[:SENSe]:ACPower:FILTer[:RRC]:ALPHa <real>
	[:SENSe]:ACPower:FILTer[:RRC]:ALPHa?
	:CALCulate:ACPower:FILTer[:RRC]:ALPHa <real>
	:CALCulate:ACPower:FILTer[:RRC]:ALPHa?
Adjacent Channel Power Configure	:CONFigure:ACP
Adjacent Channel Power Initiate	:INITiate:ACP
Adjacent Channel Power Read Fetch	:FETCh:ACP[n]?
Adjacent Channel Power Read	:READ:ACP[n]?
Adjacent Channel Power Measure	:MEASure:ACP[n]?
All Marker Off	:CALCulate:ACPower:MARKer:AOFF
Peak Search	:CALCulate:ACPower:MARKer[1]|2|3|4|5|6|7|8|9|10:MAXimum
Next Peak Search	:CALCulate:ACPower:MARKer[1]|2|3|4|5|6|7|8|9|10:MAXimum:NEXT
Zone Marker Frequency (Time)	:CALCulate:ACPower:MARKer[1]|2|3|4|5|6|7|8|9|10:X <freq>|<time>|<sample>|<dist>
	:CALCulate:ACPower:MARKer[1]|2|3|4|5|6|7|8|9|10:X?
Marker Level Query	:CALCulate:ACPower:MARKer[1]|2|3|4|5|6|7|8|9|10:Y?
Title Entry	:DISPlay:ACPower:ANNotation:TITLe:DATA <string>
	:DISPlay:ACPower:ANNotation:TITLe:DATA?
Log Scale Range	:DISPlay:ACPower:VIEW[1]:WINDow[1]:TRACe:Y[:SCALe]:PDIVision <rel_ampl>
	:DISPlay:ACPower:VIEW[1]:WINDow[1]:TRACe:Y[:SCALe]:PDIVision?
Reference Level	:DISPlay:ACPower:VIEW[1]:WINDow[1]:TRACe:Y[:SCALe]:RLEVel <real>
	:DISPlay:ACPower:VIEW[1]:WINDow[1]:TRACe:Y[:SCALe]:RLEVel?
Trigger Source	:TRIGger:ACPower[:SEQuence]:SOURce EXTernal[1]|IMMediate|WIF|RFBurst|VIDeo|SG|BBIF
	:TRIGger:ACPower[:SEQuence]:SOURce?

Table 2.9-1 Device messages for Adjacent Channel Power measurement (Cont'd)

Function	Device Message
Average Count	[:SENSe]:ACPower:AVERage:COUNt <integer>
	[:SENSe]:ACPower:AVERage:COUNt?
Storage Mode	[:SENSe]:ACPower:AVERage[:STATe] ON|OFF|1|0
	[:SENSe]:ACPower:AVERage[:STATe]?
Resolution Bandwidth	[:SENSe]:ACPower:BANDwidth[:RESolution] <freq>
	[:SENSe]:ACPower:BANDwidth[:RESolution]?
	:CALCulate:ACPower:BANDwidth[:RESolution] <freq>
	:CALCulate:ACPower:BANDwidth[:RESolution]?
Resolution Bandwidth Auto/Manual	[:SENSe]:ACPower:BANDwidth[:RESolution]:AUTO ON|OFF|1|0
	[:SENSe]:ACPower:BANDwidth[:RESolution]:AUTO?
	:CALCulate:ACPower:BANDwidth[:RESolution]:AUTO ON|OFF|1|0
	:CALCulate:ACPower:BANDwidth[:RESolution]:AUTO?
Detection Mode	[:SENSe]:ACPower:DETector[:FUNCtion] NORMal|POSitive|NEGative|AVERage
	[:SENSe]:ACPower:DETector[:FUNCtion]?
	:CALCulate:ACPower:DETector[:FUNCtion] NORMal|POSitive|NEGative|AVERage
	:CALCulate:ACPower:DETector[:FUNCtion]?
Frequency Span	[:SENSe]:ACPower:FREQuency:SPAN <freq>
	[:SENSe]:ACPower:FREQuency:SPAN?
Trace Point Query	[:SENSe]:ACPower:SWEep:POINts?
Sweep Time	[:SENSe]:ACPower:SWEep:TIME <time>
	[:SENSe]:ACPower:SWEep:TIME?
Sweep Time Auto/Manual	[:SENSe]:ACPower:SWEep:TIME:AUTO OFF|ON|0|1
	[:SENSe]:ACPower:SWEep:TIME:AUTO?
Marker Mode	:CALCulate:ACPower:MARKer[1]|2|3|4|5|6|7|8|9|10:MODE NORMal|POSition|DELTa|FIXed|OFF
	:CALCulate:ACPower:MARKer[1]|2|3|4|5|6|7|8|9|10:MODE?
Relative To	:CALCulate:ACPower:MARKer[1]|2|3|4|5|6|7|8|9|10:REFerence <integer>
	:CALCulate:ACPower:MARKer[1]|2|3|4|5|6|7|8|9|10:REFerence?

[:SENSe]:ACPower[:STATe] ON|OFF|1|0

Measure Adjacent Channel Power

Function

This command sets Adjacent Channel Power measurement On/Off.

Command

```
[:SENSe]:ACPower[:STATe] <switch>
```

Parameter

<switch>	ACP measurement On/Off
ON|1	Sets ACP measurement to On.
OFF|0	Sets ACP measurement to Off (Default value)

Details

This command is available when the following trace is active;

- Spectrum

For reading out a measurement result after this command has been executed, use *WAI commands to perform synchronized control.

Example of Use

To execute ACP measurement and query the results.

```
ACP ON
*WAI
FETC:ACP?
```

Related Command

This command has the same function as the following command.

```
:CALCulate:ACPower[:STATe]
```

:CALCulate:ACPower[:STATe] ON|OFF|1|0

Measure Adjacent Channel Power

Function

This command sets Adjacent Channel Power measurement On/Off.
Refer to [:SENSe]:ACPower[:STATe].

Related Command

This command has the same function as the following command.

```
[:SENSe]:ACPower[:STATe]
```

[:SENSe]:ACPower[:STATe]?

Measure Adjacent Channel Power Query

Function

This command queries the setting for Adjacent Channel Power measurement.

Command

```
[:SENSe]:ACPower[:STATe]?
```

Parameter

<switch>	ACP measurement On/Off
1	On
0	Off

Details

This command is available when the following trace is active:

- Spectrum

Example of Use

To query the setting of ACP measurement.

```
ACP?
> 1
```

Related Command

This command has the same function as the following command.

```
:CALCulate:ACPower[:STATe]?
```

:CALCulate:ACPower[:STATe]?

Measure Adjacent Channel Power Query

Function

This command queries the setting of Adjacent Channel Power measurement.

Refer to `[:SENSe]:ACPower[:STATe]?`.

Related Command

This command has the same function as the following command.

```
[:SENSe]:ACPower[:STATe]?
```

[:SENSe]:ACPower:CARRier[1]:RCARrier <integer>

Adjacent Channel Power Reference Carrier Select

Function

This command sets the reference carrier number for Adjacent Channel Power measurement.

Command

```
[:SENSe]:ACPower:CARRier[1]:RCARrier <integer>
```

Parameter

<integer>	Reference carrier number
Range	1 to Carrier Number
Resolution	1
Unit	None

Details

This command is available when the following trace is active:

- Spectrum

For reading out a measurement result after this command has been executed, use *WAI commands to perform synchronized control.

Example of Use

To set the reference carrier number of ACP measurement to 2 and query the results.

```
ACP:CARR:RCAR 2
*WAI
FETC:ACP?
```

Related Command

This command has the same function as the following command.

```
:CALCulate:ACPower:CARRier[1]:RCARrier
```

:CALCulate:ACPower:CARRier[1]:RCARrier <integer>

Adjacent Channel Power Reference Carrier Select

Function

This command sets the reference carrier number for Adjacent Channel Power measurement.

Refer to `[:SENSe]:ACPower:CARRier[1]:RCARrier`.

Related Command

This command has the same function as the following command.

```
[:SENSe]:ACPower:CARRier[1]:RCARrier
```

[:SENSe]:ACPower:CARRier[1]:RCARrier?

Adjacent Channel Power Reference Carrier Select Query

Function

This command queries the reference carrier number for Adjacent Channel Power measurement.

Query

```
[:SENSe]:ACPower:CARRier[1]:RCARrier?
```

Response

```
<integer>
```

Parameter

<integer>	Reference carrier number
Range	1 to Carrier Number
Resolution	1
Unit	None
Default value	1

Details

This command is available when the following trace is active:

- Spectrum

Example of Use

To set the reference carrier number for Adjacent Channel Power measurement to 2.

```
ACP:CARR1:RCAR?
> 2
```

Related Command

This command has the same function as the following command.

```
:CALCulate:ACPower:CARRier[1]:RCARrier?
```

:CALCulate:ACPower:CARRier[1]:RCARrier?

Adjacent Channel Power Reference Carrier Select Query

Function

This command queries the reference carrier number for Adjacent Channel Power measurement.

Refer to `[:SENSe]:ACPower:CARRier[1]:RCARrier?`.

Related Command

This command has the same function as the following command.

```
[:SENSe]:ACPower:CARRier[1]:RCARrier?
```

[:SENSe]:ACPower:CARRier[1]:RCARrier:METHod STOTal|CTOTal|BSIDes|CSELect

Adjacent Channel Power Reference

Function

This command sets the reference of the relative level display for Adjacent Channel Power measurement.

Command

```
[:SENSe]:ACPower:CARRier[1]:RCARrier:METHod <method>
```

Parameter

<method>	Reference method for the relative level display of ACP measurement
STOTal	Sets the integral power on the whole screen to the reference (Span Total method)
CTOTal	Sets the total value of all carrier power (Carrier Total method) (Default value)
BSIDes	Carrier power of the largest carrier number is used as a reference for the upper offset, while the carrier power of the smallest carrier number is used as reference (Both Sides of Carriers method).
CSELect	Sets the carrier selected in Carrier Select to the reference.

Details

This command is available when the following trace is active:

- Spectrum

For reading out a measurement result after this command has been executed, use *WAI commands to perform synchronized control.

Example of Use

To set Carrier Total method to ACP measurement method and query the results.

```
ACP:CARR:RCAR:METH CTOT
*WAI
FETC:ACP?
```

Related Command

This command has the same function as the following command.

```
:CALCulate:ACPower:CARRier[1]:RCARrier:METHod
```

:CALCulate:ACPower:CARRier[1]:RCARrier:METHod STOTal|CTOTal|BSIDes|CSELect

Adjacent Channel Power Reference

Function

This command sets the reference of the relative level display for Adjacent Channel Power measurement.
Refer to `[:SENSe]:ACPower:CARRier[1]:RCARrier:METHod`.

Related Command

This command has the same function as the following command.
`[:SENSe]:ACPower:CARRier[1]:RCARrier:METHod`

[:SENSe]:ACPower:CARRier[1]:RCARrier:METHod?

Adjacent Channel Power Reference Query

Function

This command queries the reference of the relative level display for Adjacent Channel Power measurement.

Query

```
[:SENSe]:ACPower:CARRier[1]:RCARrier:METHod?
```

Response

```
<method>
```

Parameter

`<method>`	Reference method for the relative level display of ACP measurement
`STOT`	Sets the integral power on the whole screen to the reference (Span Total method)
`CTOT`	Sets the total value of all carrier power (Carrier Total method) (Default value)
`BSID`	Carrier power of the largest carrier number is used as a reference for the upper offset, while the carrier power of the smallest carrier number is used as reference (Both Sides of Carriers method).
`CSEL`	Sets the carrier selected in Carrier Select to the reference.

Details

This command is available when the following trace is active:

- Spectrum

Example of Use

To query ACP measurement method.

```
ACP:CARR:RCAR:METH?
> CTOT
```

Related Command

This command has the same function as the following command.

```
:CALCulate:ACPower:CARRier[1]:RCARrier:METHod?
```

:CALCulate:ACPower:CARRier[1]:RCARrier:METHod?

Adjacent Channel Power Reference Query

Function

This command queries the reference of the relative level display for Adjacent Channel Power measurement.
Refer to `[:SENSe]:ACPower:CARRier[1]:RCARrier:METHod?`.

Related Command

This command has the same function as the following command.
`[:SENSe]:ACPower:CARRier[1]:RCARrier:METHod?`

[:SENSe]:ACPower:CORRection:NOISe[:AUTO] ON|OFF|1|0

Adjacent Channel Power Noise Cancel

Function

This command sets whether to enable the noise-canceling function.

Command

```
[:SENSe]:ACPower:CORRection:NOISe[:AUTO] <switch>
```

Parameter

<switch>	Noise-canceling function on/off
ON|1	Enables the noise-canceling function.
OFF|0	Disables the noise-canceling function. (Default value)

Details

Fixed to Off and cannot be set in the following cases:

- ACP is Off
- Standard is Off
- The Standard Parameter which enables the noise-canceling function is not set in Load Standard Parameter.
- Any of Span, RBW, Detection, Sweep Time, VBW (when Detection is not set to RMS), and VBW Mode (when VBW is not set to Off and when Detection is not set to RMS)has been changed from Standard Parameter.
- Scale Mode is Linear.

The setting is disabled while the Replay function is being executed.

Example of Use

To disable the noise-canceling function.

```
ACP:CORR:NOIS OFF
```

Related Command

This command has the same function as the following command.

```
:CALCulate:ACPower:CORRection:NOISe[:AUTO]
```

:CALCulate:ACPower:CORRection:NOISe[:AUTO] ON|OFF|1|0

Adjacent Channel Power Noise Cancel

Function

This command sets whether to enable the noise-canceling function.
Refer to `[:SENSe]:ACPower:CORRection:NOISe[:AUTO]`.

Related Command

This command has the same function as the following command.
`[:SENSe]:ACPower:CORRection:NOISe[:AUTO]`

[:SENSe]:ACPower:CORRection:NOISe[:AUTO]?

Adjacent Channel Power Noise Cancel Query

Function

This command queries whether the noise-canceling function is enabled.

Query

```
[:SENSe]:ACPower:CORRection:NOISe[:AUTO]?
```

Response

```
<switch>
```

Parameter

<switch>	Noise-canceling function on/off
1	Noise-canceling function is enabled.
0	Noise-canceling function is disabled.

Details

The noise-canceling function is disabled in the following cases:

- ACP is Off.
- Standard is Off.
- The Standard Parameter which enables the noise-canceling function is not set in Load Standard Parameter.
- Any of Span, RBW, Detection, Sweep Time, VBW (when Detection is not set to RMS), and VBW Mode (when VBW is not set to Off and when Detection is not set to RMS)has been changed from Standard Parameter.
- Scale Mode is Linear.

Example of Use

To query whether the noise-canceling function is enabled.

```
ACP:CORR:NOIS?
> 0
```

Related Command

This command has the same function as the following command.

```
:CALCulate:ACPower:CORRection:NOISe[:AUTO]?
```

:CALCulate:ACPower:CORRection:NOISe[:AUTO]?

Adjacent Channel Power Noise Cancel Query

Function

This command queries whether the noise-canceling function is enabled.
Refer to `[:SENSe]:ACPower:CORRection:NOISe[:AUTO]?`.

Related Command

This command has the same function as the following command.

```
[:SENSe]:ACPower:CORRection:NOISe[:AUTO]?
```

[:SENSe]:ACPower:OFFSet[1]:BANDwidth[:INTegration] <bandwidth>

Adjacent Channel Power Offset Channel Bandwidth

Function

This command sets Offset Channel bandwidth for Adjacent Channel Power measurement.

Command

```
[:SENSe]:ACPower:OFFSet[1]:BANDwidth[:INTegration]
<bandwidth>
```

Parameter

<bandwidth>		Offset Channel bandwidth
	Range	**[MS269xA, MS2830A, MS2840A]** 1 Hz to 125 MHz **[MS2850A]** 1 Hz to 1 GHz
	Resolution	1 Hz
	Suffix code	HZ, KHZ, KZ, MHZ, MZ, GHZ, GZ Hz is used when omitted.
	Default value	3.84 MHz

Details

This command is available when the following trace is active:

- Spectrum

For reading out a measurement result after this command has been executed, use *WAI commands to perform synchronized control.

Example of Use

To set Offset Channel bandwidth to 3.84 MHz and query the results.

```
ACP:OFFS:BAND 3.84MHZ
*WAI
FETC:ACP?
```

Related Command

This command has the same function as the following command.

```
:CALCulate:ACPower:OFFSet[1]:BANDwidth[:INTegration]
```

:CALCulate:ACPower:OFFSet[1]:BANDwidth[:INTegration] <bandwidth>

Adjacent Channel Power Offset Channel Bandwidth

Function

This command sets Offset Channel bandwidth for Adjacent Channel Power measurement.
Refer to `[:SENSe]:ACPower:OFFSet[1]:BANDwidth[:INTegration]`.

Related Command

This command has the same function as the following command.
`[:SENSe]:ACPower:OFFSet[1]:BANDwidth[:INTegration]`

[:SENSe]:ACPower:OFFSet[1]:BANDwidth[:INTegration]?

Adjacent Channel Power Offset Channel Bandwidth Query

Function

This command queries Offset Channel bandwidth for Adjacent Channel Power measurement.

Query

`[:SENSe]:ACPower:OFFSet[1]:BANDwidth[:INTegration]?`

Response

`<bandwidth>`

Parameter

`<bandwidth>`		Offset Channel bandwidth
	Range	**[MS269xA, MS2830A, MS2840A]** 1 Hz to 125 MHz **[MS2850A]** 1 Hz to 5 GHz
	Resolution	1 Hz
	Suffix code.	None, value is returned in Hz units.

Details

This command is available when the following trace is set to active:

- Spectrum

Example of Use

To query Offset Channel bandwidth.

```
ACP:OFFS:BAND?
> 3840000
```

Related Command

This command has the same function as the following command.
`:CALCulate:ACPower:OFFSet[1]:BANDwidth[:INTegration]?`

:CALCulate:ACPower:OFFSet[1]:BANDwidth[:INTegration]?

Adjacent Channel Power Offset Channel Bandwidth Query

Function

This command queries Offset Channel bandwidth for Adjacent Channel Power measurement.
Refer to `[:SENSe]:ACPower:OFFSet[1]:BANDwidth[:INTegration]?`.

Related Command

This command has the same function as the following command.
`[:SENSe]:ACPower:OFFSet[1]:BANDwidth[:INTegration]?`

[:SENSe]:ACPower:CARRier[1]:LIST:BANDwidth[:INTegration] <bandwidth>

Adjacent Channel Power Carrier Bandwidth

Function

This command sets the measurement bandwidth of the carrier for Adjacent Channel Power measurement.

Command

```
[:SENSe]:ACPower:CARRier[1]:LIST:BANDwidth[:INTegration]
<bandwidth>
```

Parameter

<bandwidth>		Inband channel bandwidth
	Range	**[MS269xA, MS2830A, MS2840A]** 1 to 125 MHz **[MS2850A]** 1 Hz to 1 GHz
	Resolution	1 Hz
	Suffix code	HZ, KHZ, KZ, MHZ, MZ, GHZ, GZ Hz is used when omitted.
	Default value	3.84 MHz

Details

This command is available when the following trace is active:

- Spectrum

This command is not available when ACP Reference is set to the following:

- Span Total

For reading out a measurement result after this command has been executed, use *WAI commands to perform synchronized control.

Example of Use

To set the Inband channel bandwidth to 3.84 MHz and query the results.

```
ACP:CARR:LIST:BAND 3.84MHZ
*WAI
FETC:ACP?
```

Related Command

This command has the same function as the following command.

```
:CALCulate:ACPower:CARRier[1]:LIST:BANDwidth[:INTegration]
```

:CALCulate:ACPower:CARRier[1]:LIST:BANDwidth[:INTegration] <bandwidth>

Adjacent Channel Power Carrier Bandwidth

Function

This command sets the measurement bandwidth of the carrier for Adjacent Channel Power measurement.
Refer to `[:SENSe]:ACPower:OFFSet[1]:LIST:BANDwidth[:INTegration]`.

Related Command

This command has the same function as the following command.
`[:SENSe]:ACPower:CARRier[1]:LIST:BANDwidth[:INTegration]`

[:SENSe]:ACPower:CARRier[1]:LIST:BANDwidth[:INTegration]?

Adjacent Channel Power Carrier Bandwidth Query

Function

This command queries the measurement bandwidth of the carrier for Adjacent Channel Power measurement.

Query

`[:SENSe]:ACPower:CARRier[1]:LIST:BANDwidth[:INTegration]?`

Response

`<bandwidth>`

Parameter

`<bandwidth>`		Inband channel bandwidth
	Range	**[MS269xA, MS2830A, MS2840A]** 1 Hz to 125 MHz **[MS2850A]** 1 Hz to 1 GHz
	Resolution	1 Hz

No suffix code. Value is returned in Hz units.

Details

This command is available when the following trace is active:

- Spectrum

This command is not available when ACP Reference is set to the following:

- Span Total

Example of Use

To query the Inband channel bandwidth.

```
ACP:CARR:LIST:BAND?
> 3840000
```

Related Command

This command has the same function as the following command.
`:CALCulate:ACPower:CARRier[1]:LIST:BANDwidth[:INTegration]`

:CALCulate:ACPower:CARRier[1]:LIST:BANDwidth[:INTegration]?

Adjacent Channel Power Carrier Bandwidth Query

Function

This command queries the measurement bandwidth of the carrier for Adjacent Channel Power measurement.
Refer to `[:SENSe]:ACPower:OFFSet[1]:LIST:BANDwidth[:INTegration]?`.

Related Command

This command has the same function as the following command.
`[:SENSe]:ACPower:CARRier[1]:LIST:BANDwidth[:INTegration]?`

[:SENSe]:ACPower:CARRier[1]:RCFRequency <freq>

Adjacent Channel Power In Band Center

Function

This command sets the In Band center frequency for Adjacent Channel Power measurement.

Command

```
[:SENSe]:ACPower:CARRier[1]:RCFRequency <freq>
```

Parameter

`<freq>`		In Band center frequency
	Range	**[MS269xA, MS2830A, MS2840A]** 125 MHz centered at the center frequency (Center Frequency) of waveform capture **[MS2850A]** 1 GHz centered at the center frequency (Center Frequency) of waveform capture
	Resolution	1 Hz
	Suffix code	`HZ, KHZ, KZ, MHZ, MZ, GHZ, GZ` Hz is used when omitted.
	Default value	Center Frequency

Details

This command is available when the following trace is active:

- Spectrum

For reading out a measurement result after this command has been executed, use *WAI commands to perform synchronized control.

Example of Use

To set the In Band center frequency to 3.84 MHz and query the results.

```
ACP:CARR:RCFR 3.84MHZ
*WAI
FETC:ACP?
```

Related Command

This command has the same function as the following command.

```
:CALCulate:ACPower:CARRier[1]:RCFRequency
```

:CALCulate:ACPower:CARRier[1]:RCFRequency <freq>

Adjacent Channel Power In Band Center

Function

This command sets the Inband center frequency for Adjacent Channel Power measurement.
Refer to `[:SENSe]:ACPower:CARRier[1]:RCFRequency`.

Related Command

This command has the same function as the following command.
`[:SENSe]:ACPower:CARRier[1]:RCFRequency`

[:SENSe]:ACPower:CARRier[1]:RCFRequency?

Adjacent Channel Power In Band Center Query

Function

This command queries the In Band center frequency for Adjacent Channel Power measurement.

Query

```
[:SENSe]:ACPower:CARRier[1]:RCFRequency?
```

Response

```
<freq>
```

Parameter

`<freq>`		In Band center frequency
	Range	**[MS269xA, MS2830A, MS2840A]** 125 MHz centered at the center frequency (Center Frequency) of waveform capture **[MS2850A]** 1 GHz centered at the center frequency (Center Frequency) of waveform capture
	Resolution	1 Hz
	Suffix code	None, value is returned in Hz units.

Details

This command is available when the following trace is active:

- Spectrum

Example of Use

To query the In Band center frequency.

```
ACP:CARR:RCFR?
> 3840000
```

Related Command

This command has the same function as the following command.

```
:CALCulate:ACPower:CARRier[1]:RCFRequency?
```

:CALCulate:ACPower:CARRier[1]:RCFRequency?

Adjacent Channel Power In Band Center Query

Function

This command queries the In Band center frequency for Adjacent Channel Power measurement.
Refer to `[:SENSe]:ACPower:CARRier[1]:RCFRequency?`.

Related Command

This command has the same function as the following command.

```
[:SENSe]:ACPower:CARRier[1]:RCFRequency?
```

[:SENSe]:ACPower:CARRier[1]:COUNt <integer>

Adjacent Channel Power Carrier Number

Function

This command sets the carrier number for Adjacent Channel Power measurement.

Command

```
[:SENSe]:ACPower:CARRier[1]:COUNt <integer>
```

Parameter

<integer>	Carrier Number
Range	1 to 12
Resolution	1
Suffix code	None
Default value	1

Details

This command is available when the following trace is active:

- Spectrum

This command is not available when ACP Reference is set to the following:

- Span Total

For reading out a measurement result after this command has been executed, use *WAI commands to perform synchronized control.

Example of Use

To set the carrier number to 12 and query the results.

```
ACP:CARR:COUN 12
*WAI
FETC:ACP?
```

Related Command

This command has the same function as the following command.

```
:CALCulate:ACPower:CARRier[1]:COUNt
```

:CALCulate:ACPower:CARRier[1]:COUNt <integer>

Adjacent Channel Power Carrier Number

Function

This command sets the carrier number for Adjacent Channel Power measurement.

Refer to `[:SENSe]:ACPower:CARRier[1]:COUNt`.

Related Command

This command has the same function as the following command.

```
[:SENSe]:ACPower:CARRier[1]:COUNt
```

[:SENSe]:ACPower:CARRier[1]:COUNt?

Adjacent Channel Power Carrier Number Query

Function

This command queries the carrier number for Adjacent Channel Power measurement.

Query

```
[:SENSe]:ACPower:CARRier[1]:COUNt?
```

Response

```
<integer>
```

Parameter

<integer>	Carrier Number
Range	1 to 12
Resolution	1
Suffix code	None

Details

This command is available when the following trace is active:

- Spectrum

This command is not available when ACP Reference is set to the following:

- Span Total

Example of Use

To query the carrier number.

```
ACP:CARR:COUN?
> 12
```

Related Command

This command has the same function as the following command.

```
:CALCulate:ACPower:CARRier[1]:COUNt?
```

:CALCulate:ACPower:CARRier[1]:COUNt?

Adjacent Channel Power Carrier Number Query

Function

This command queries the carrier number for Adjacent Channel Power measurement.

Refer to `[:SENSe]:ACPower:CARRier[1]:COUNt?`.

Related Command

This command has the same function as the following command.

```
[:SENSe]:ACPower:CARRier[1]:COUNt?
```

[:SENSe]:ACPower:CARRier[1]:LIST:WIDTh <bandwidth>

Adjacent Channel Power Carrier Spacing

Function

This command sets the frequency interval among carriers for Adjacent Channel Power measurement.

Command

```
[:SENSe]:ACPower:CARRier[1]:LIST:WIDTh <bandwidth>
```

Parameter

<bandwidth>	Frequency interval among carriers
Range	**[MS269xA, MS2830A, MS2840A]** 0 to 125 MHz **[MS2850A]** 0 to 1 GHz
Resolution	1 Hz
Suffix code	HZ, KHZ, KZ, MHZ, MZ, GHZ, GZ Hz is used when omitted.
Default value	5 MHz

Details

This command is available when the following trace is active:

- Spectrum

This command is not available when ACP Reference is set to the following:

- Span Total

For reading out a measurement result after this command has been executed, use *WAI commands to perform synchronized control.

Example of Use

To set the frequency interval among carriers to 12.3 MHz and query the results.

```
ACP:CARR:LIST:WIDT 12300000
*WAI
FETC:ACP?
```

Related Command

This command has the same function as the following command.

```
:CALCulate:ACPower:CARRier[1]:LIST:WIDTh
```

:CALCulate:ACPower:CARRier[1]:LIST:WIDTh <bandwidth>

Adjacent Channel Power Carrier Spacing

Function

This command sets the frequency interval among carriers for Adjacent Channel Power measurement.
Refer to `[:SENSe]:ACPower:CARRier[1]:LIST:WIDTh`.

Related Command

This command has the same function as the following command.
`[:SENSe]:ACPower:CARRier[1]:LIST:WIDTh`

[:SENSe]:ACPower:CARRier[1]:LIST:WIDTh?

Adjacent Channel Power Carrier Spacing Query

Function

This command queries the frequency interval among carriers for Adjacent Channel Power measurement.

Query

```
[:SENSe]:ACPower:CARRier[1]:LIST:WIDTh?
```

Response

```
<bandwidth>
```

Parameter

<bandwidth>		Frequency interval among carriers
	Range	**[MS269xA, MS2830A, MS2840A]** 0 to 125 MHz **[MS2850A]** 0 to 1 GHz
	Resolution	1 Hz No suffix code. Value is returned in Hz units.

Details

This command is available when the following trace is active:

- Spectrum

This command is not available when ACP Reference is set to the following:

- Span Total

Example of Use

To query the frequency interval among carriers.

```
ACP:CARR:LIST:WIDT?
> 12300000
```

Related Command

This command has the same function as the following command.

```
:CALCulate:ACPower:CARRier[1]:LIST:WIDTh?
```

:CALCulate:ACPower:CARRier[1]:LIST:WIDTh?

Adjacent Channel Power Carrier Spacing Query

Function

This command queries the frequency interval among carriers for Adjacent Channel Power measurement.
Refer to `[:SENSe]:ACPower:CARRier[1]:LIST:WIDTh?`.

Related Command

This command has the same function as the following command.

```
[:SENSe]:ACPower:CARRier[1]:LIST:WIDTh?
```

[:SENSe]:ACPower:OFFSet[1]:LIST:STATe ON|OFF|1|0,ON|OFF|1|0,ON|OFF|1|0

Adjacent Channel Power Offset

Function

This command sets the offset channel On/Off for Adjacent Channel Power measurement.

Command

```
[:SENSe]:ACPower:OFFSet[1]:LIST:STATe
<switch_1>,<switch_2>,<switch_3>
```

Parameter

`<switch_n>`	Measurement channel offset_n On/Off
`ON|1`	Measures the offset channel n.
`OFF|0`	Does not measure the offset channel n.
Default value	
`switch_1`	On
`switch_2`	On
`switch_3`	Off

Details

This command is available when the following trace is set to active:

- Spectrum

For reading out a measurement result after this command has been executed, use *WAI commands to perform synchronized control.

Example of Use

To set the offset channel and query the results.

```
ACP:OFFS:LIST:STAT ON,ON,ON
*WAI
FETC:ACP?
```

Related Command

This command has the same function as the following command.

```
:CALCulate:ACPower:OFFSet[1]:LIST:STATe
```

:CALCulate:ACPower:OFFSet[1]:LIST:STATe ON|OFF|1|0,ON|OFF|1|0,ON|OFF|1|0

Adjacent Channel Power Offset

Function

This command sets the offset channel On/Off for Adjacent Channel Power measurement.
Refer to `[:SENSe]:ACPower:OFFSet[1]:LIST:STATe`.

Related Command

This command has the same function as the following command.
`[:SENSe]:ACPower:OFFSet[1]:LIST:STATe`

[:SENSe]:ACPower:OFFSet[1]:LIST:STATe?

Adjacent Channel Power Offset Query

Function

This command queries the On/Off state of the offset channel for Adjacent Channel Power measurement.

Query

```
[:SENSe]:ACPower:OFFSet[1]:LIST:STATe?
```

Response

```
<switch_1>,<switch_2>,<switch_3>
```

Parameter

<switch_n>	Measurement channel n On/Off
1	Measures the offset channel n.
0	Does not measure the offset channel n.

Details

This command is available when the following trace is active:

- Spectrum

Example of Use

To query the On/Off state of the offset channel.

```
ACP:OFFS:LIST:STAT?
> 1,1,1
```

Related Command

This command has the same function as the following command.

```
:CALCulate:ACPower:OFFSet[1]:LIST:STATe?
```

:CALCulate:ACPower:OFFSet[1]:LIST:STATe?

Adjacent Channel Power Offset Query

Function

This command queries the offset channel On/Off for Adjacent Channel Power measurement.

Refer to `[:SENSe]:ACPower:OFFSet[1]:LIST:STATe?`.

Related Command

This command has the same function as the following command.

```
[:SENSe]:ACPower:OFFSet[1]:LIST:STATe?
```

[:SENSe]:ACPower:OFFSet[1]:LIST[:FREQuency] <freq>,<freq>,<freq>

Adjacent Channel Power Offset Frequency

Function

This command sets the offset frequency of the offset channel for Adjacent Channel Power measurement.

Command

```
[:SENSe]:ACPower:OFFSet[1]:LIST[:FREQuency]
<freq_1>,<freq_2>,<freq_3>
```

Parameter

<freq_n>	Offset frequency for offset channel n
Range	**[MS269xA, MS2830A, MS2840A]** –125 to 125 MHz **[MS2850A]** –1 to 1 GHz
Resolution	1 Hz
Suffix code	HZ, KHZ, KZ, MHZ, MZ, GHZ, GZ Hz is used when omitted.
Default value	
freq_1	5 MHz
freq_2	10 MHz
freq_3	15 MHz

Details

This command is available when the following trace is active:

- Spectrum

For reading out a measurement result after this command has been executed, use *WAI commands to perform synchronized control.

Example of Use

To set the offset frequency of Offset Channel and query the results.

```
ACP:OFFS:LIST 30KHZ,50KHZ,50KHZ
*WAI
FETC:ACP?
```

Related Command

This command has the same function as the following command.

```
:CALCulate:ACPower:OFFSet[1]:LIST[:FREQuency]
```

:CALCulate:ACPower:OFFSet[1]:LIST[:FREQuency] <freq>,<freq>,<freq>

Adjacent Channel Power Offset Frequency

Function

This command sets the offset frequency of the offset channel for Adjacent Channel Power measurement.
Refer to `[:SENSe]:ACPower:OFFSet[1]:LIST[:FREQuency]`.

Related Command

This command has the same function as the following command.
`[:SENSe]:ACPower:OFFSet[1]:LIST[:FREQuency]`

[:SENSe]:ACPower:OFFSet[1]:LIST[:FREQuency]?

Adjacent Channel Power Offset Frequency Query

Function

This command queries the offset frequency of the offset channel for Adjacent Channel Power measurement.

Query

```
[:SENSe]:ACPower:OFFSet[1]:LIST[:FREQuency]?
```

Response

```
<freq_1>,<freq_2>,<freq_3>
```

Parameter

<freq_n>		Offset frequency for offset channel n
Range		**[MS269xA, MS2830A, MS2840A]**
		–125 to 125 MHz
		[MS2850A]
		–1 to 1 GHz
Resolution		1 Hz

No suffix code. Value is returned in Hz units.

Details

This command is available when the following trace is active:

- Spectrum

Example of Use

To query the offset frequency of Offset Channel.

```
ACP:OFFS:LIST?
> 30000,50000,50000
```

Related Command

This command has the same function as the following command.

```
:CALCulate:ACPower:OFFSet[1]:LIST[:FREQuency]?
```

:CALCulate:ACPower:OFFSet[1]:LIST[:FREQuency]?

Adjacent Channel Power Offset Frequency Query

Function

This command queries the offset frequency of the offset channel for Adjacent Channel Power measurement.
Refer to `[:SENSe]:ACPower:OFFSet[1]:LIST[:FREQuency]?`.

Related Command

This command has the same function as the following command.

```
[:SENSe]:ACPower:OFFSet[1]:LIST[:FREQuency]?
```

[:SENSe]:ACPower:CARRier[1]:LIST:METHod IBW|RRC|RC

Adjacent Channel Power Filter Type

Function

This command sets the filter type of carriers for Adjacent Channel Power measurement.

Command

```
[:SENSe]:ACPower:CARRier[1]:LIST:METHod <mode>
```

Parameter

<mode>	Measurement method of carrier
IBW	Rectangle filter
RRC	Root Nyquist filter (Default value)
RC	Nyquist filter

Details

This command is available when the following trace is active:

- Spectrum

This command is not available when ACP Reference is set to the following:

- Span Total

For reading out a measurement result after this command has been executed, use *WAI commands to perform synchronized control.

Example of Use

To set the measurement method of carriers for ACP measurement to Root Nyquist and query the results.

```
ACP:CARR:LIST:METH RRC
*WAI
FETC:ACP?
```

Related Command

This command has the same function as the following commands.

```
:CALCulate:ACPower:CARRier[1]:LIST:METHod
[:SENSe]:ACPower:CARRier[1]:FILTer:TYPE
:CALCulate:ACPower:CARRier[1]:FILTer:TYPE
```

:CALCulate:ACPower:CARRier[1]:LIST:METHod IBW|RRC|RC

Adjacent Channel Power Filter Type

Function

This command sets filter type of carriers for Adjacent Channel Power measurement.
Refer to `[:SENSe]:ACPower:CARRier[1]:LIST:METHod`.

Related Command

This command has the same function as the following commands.

```
[:SENSe]:ACPower:CARRier[1]:LIST:METHod
[:SENSe]:ACPower:CARRier[1]:FILTer:TYPE
:CALCulate:ACPower:CARRier[1]:FILTer:TYPE
```

[:SENSe]:ACPower:CARRier[1]:LIST:METHod?

Adjacent Channel Power Filter Type Query

Function

This command queries the filter type of carriers for Adjacent Channel Power measurement.

Query

```
[:SENSe]:ACPower:CARRier[1]:LIST:METHod?
```

Response

```
<mode>
```

Parameter

<mode>	Measurement method of carrier
IBW	Rectangle filter
RRC	Root Nyquist filter
RC	Nyquist filter

Details

This command is available when the following trace is active:

- Spectrum

This command is not available when ACP Reference is set to the following:

- Span Total

Example of Use

To query the measurement method of carriers for ACP measurement.

```
ACP:CARR:LIST:METH?
> RRC
```

Related Command

This command has the same function as the following commands.

```
:CALCulate:ACPower:CARRier[1]:LIST:METHod?
[:SENSe]:ACPower:CARRier[1]:FILTer:TYPE?
:CALCulate:ACPower:CARRier[1]:FILTer:TYPE?
```

:CALCulate:ACPower:CARRier[1]:LIST:METHod?

Adjacent Channel Power Filter Type Query

Function

This command queries the filter type of carriers for Adjacent Channel Power measurement.
Refer to `[:SENSe]:ACPower:CARRier[1]:LIST:METHod?`.

Related Command

This command has the same function as the following commands.

```
[:SENSe]:ACPower:CARRier[1]:LIST:METHod?
[:SENSe]:ACPower:CARRier[1]:FILTer:TYPE?
:CALCulate:ACPower:CARRier[1]:FILTer:TYPE?
```

[:SENSe]:ACPower:CARRier[1]:FILTer:TYPE RECT|NYQuist|RNYQuist

Adjacent Channel Power Filter Type

Function

This command sets the filter type of carriers for Adjacent Channel Power measurement.

Command

```
[:SENSe]:ACPower:CARRier[1]:FILTer:TYPE <filter>
```

Parameter

<filter>	Filter type
RECT	Rectangle filter
NYQuist	Nyquist filter
RNYQuist	Root Nyquist filter (Default value)

Details

This command is available when the following trace is active:

- Spectrum

This command is not available when ACP Reference is set to the following:

- Span Total

For reading out a measurement result after this command has been executed, use *WAI commands to perform synchronized control.

Example of Use

To set filter type of carriers for ACP measurement to Nyquist and query the results.

```
ACP:CARR:FILT:TYPE NYQ
*WAI
FETC:ACP?
```

Related Command

This command has the same function as the following commands.

```
[:SENSe]:ACPower:CARRier[1]:LIST:METHod
:CALCulate:ACPower:CARRier[1]:LIST:METHod
:CALCulate:ACPower:CARRier[1]:FILTer:TYPE
```

:CALCulate:ACPower:CARRier[1]:FILTer:TYPE RECT|NYQuist|RNYQuist

Adjacent Channel Power Filter Type

Function

This command sets filter type of carriers for Adjacent Channel Power measurement.
Refer to `[:SENSe]:ACPower:CARRier[1]:FILTer:TYPE`.

Related Command

This command has the same function as the following commands.

```
[:SENSe]:ACPower:CARRier[1]:LIST:METHod
:CALCulate:ACPower:CARRier[1]:LIST:METHod
[:SENSe]:ACPower:CARRier[1]:FILTer:TYPE
```

[:SENSe]:ACPower:CARRier[1]:FILTer:TYPE?

Adjacent Channel Power Filter Type Query

Function

This command queries filter type of carriers for Adjacent Channel Power measurement.

Command

```
[:SENSe]:ACPower:CARRier[1]:FILTer:TYPE?
```

Response

```
<filter>
```

Parameter

`<filter>`	Filter type
`RECT`	Rectangle filter
`NYQ`	Nyquist filter
`RNYQ`	Root Nyquist filter (Default value)

Details

This command is available when the following trace is active:

- Spectrum

This command is not available when ACP Reference is set to the following:

- Span Total

Example of Use

To query filter type of carriers for ACP measurement.

```
ACP:CARR:FILT:TYPE?
> NYQ
```

Related Command

This command has the same function as the following commands.

```
[:SENSe]:ACPower:CARRier[1]:LIST:METHod?
:CALCulate:ACPower:CARRier[1]:LIST:METHod?
:CALCulate:ACPower:CARRier[1]:FILTer:TYPE?
```

:CALCulate:ACPower:CARRier[1]:FILTer:TYPE?

Adjacent Channel Power Filter Type Query

Function

This command queries filter type of carriers for Adjacent Channel Power measurement.
Refer to [:SENSe]:ACPower:CARRier[1]:FILTer:TYPE?.

Related Command

This command has the same function as the following commands.
[:SENSe]:ACPower:CARRier[1]:LIST:METHod?
:CALCulate:ACPower:CARRier[1]:LIST:METHod?
[:SENSe]:ACPower:CARRier[1]:FILTer:TYPE?

[:SENSe]:ACPower:FILTer[:RRC][:STATe] OFF|ON|0|1

Adjacent Channel Power Offset Filter Type

Function

This command sets filter type of the offset channel for Adjacent Channel Power measurement.

Command

```
[:SENSe]:ACPower:FILTer[:RRC][:STATe] <switch>
```

Parameter

<switch>	Filter type
OFF|0	Rectangle filter
ON|1	Root Nyquist filter

Details

This command is available when the following trace is active:

- Spectrum

For reading out a measurement result after this command has been executed, use *WAI commands to perform synchronized control.

Example of Use

To set filter type of the offset channel for ACP measurement to Root Nyquist and query the results.

```
ACP:FILT ON
*WAI
FETC:ACP?
```

Related Command

This command has the same function as the following commands.

```
:CALCulate:ACPower:FILTer[:RRC][:STATe]
[:SENSe]:ACPower:OFFSet[1]:FILTer:TYPE
:CALCulate:ACPower:OFFSet[1]:FILTer:TYPE
```

:CALCulate:ACPower:FILTer[:RRC][:STATe] OFF|ON|0|1

Adjacent Channel Power Offset Filter Type

Function

This command sets filter type of the offset channel for Adjacent Channel Power measurement.
Refer to `[:SENSe]:ACPower:FILTer[:RRC][:STATe]`.

Related Command

This command has the same function as the following commands.

```
[:SENSe]:ACPower:FILTer[:RRC][:STATe]
[:SENSe]:ACPower:OFFSet[1]:FILTer:TYPE
:CALCulate:ACPower:OFFSet[1]:FILTer:TYPE
```

[:SENSe]:ACPower:FILTer[:RRC][:STATe]?

Adjacent Channel Power Offset Filter Type Query

Function

This command queries filter type of the offset channel for Adjacent Channel Power measurement.

Query

```
[:SENSe]:ACPower:FILTer[:RRC][:STATe]?
```

Response

```
<switch>
```

Parameter

<switch>	Filter type
0	Rectangle filter, Nyquist filter
1	Root Nyquist filter

Details

This command is available when the following trace is active:

- Spectrum

Example of Use

To query filter type of the offset channel for ACP measurement.

```
ACP:FILT?
> 1
```

Related Command

This command has the same function as the following commands.

```
:CALCulate:ACPower:FILTer[:RRC][:STATe]?
[:SENSe]:ACPower:OFFSet[1]:FILTer:TYPE?
:CALCulate:ACPower:OFFSet[1]:FILTer:TYPE?
```

:CALCulate:ACPower:FILTer[:RRC][:STATe]?

Adjacent Channel Power Offset Filter Type Query

Function

This command queries filter type of the offset channel for Adjacent Channel Power measurement.
Refer to [:SENSe]:ACPower:FILTer[:RRC][:STATe]?.

Related Command

This command has the same function as the following commands.

```
[:SENSe]:ACPower:FILTer[:RRC][:STATe]?
[:SENSe]:ACPower:OFFSet[1]:FILTer:TYPE?
:CALCulate:ACPower:OFFSet[1]:FILTer:TYPE?
```

[:SENSe]:ACPower:OFFSet[1]:FILTer:TYPE RECT|NYQuist|RNYQuist

Adjacent Channel Power Offset Filter Type

Function

This command sets filter type of the offset channel for Adjacent Channel Power measurement.

Command

```
[:SENSe]:ACPower:OFFSet[1]:FILTer:TYPE <mode>
```

Parameter

<mode>	Filter type
RECT	Rectangle filter
NYQuist	Nyquist filter
RNYQuist	Root Nyquist filter (Default value)

Details

This command is available when the following trace is active:

- Spectrum

For reading out a measurement result after this command has been executed, use *WAI commands to perform synchronized control.

Example of Use

To set filter type of the offset channel for ACP measurement to Nyquist and query the results.

```
ACP:OFFS:FILT:TYPE NYQ
*WAI
FETC:ACP?
```

Related Command

This command has the same function as the following commands.

```
[:SENSe]:ACPower:FILTer[:RRC][:STATe]
:CALCulate:ACPower:FILTer[:RRC][:STATe]
:CALCulate:ACPower:OFFSet[1]:FILTer:TYPE
```

:CALCulate:ACPower:OFFSet[1]:FILTer:TYPE RECT|NYQuist|RNYQuist

Adjacent Channel Power Offset Filter Type

Function

This command sets filter type of the offset channel for Adjacent Channel Power measurement.
Refer to `[:SENSe]:ACPower:OFFSet[1]:FILTer:TYPE`.

Related Command

This command has the same function as the following commands.

```
[:SENSe]:ACPower:FILTer[:RRC][:STATe]
:CALCulate:ACPower:FILTer[:RRC][:STATe]
[:SENSe]:ACPower:OFFSet[1]:FILTer:TYPE
```

[:SENSe]:ACPower:OFFSet[1]:FILTer:TYPE?

Adjacent Channel Power Offset Filter Type Query

Function

This command queries filter type of the offset channel for Adjacent Channel Power measurement.

Query

```
[:SENSe]:ACPower:OFFSet[1]:FILTer:TYPE?
```

Response

```
<mode>
```

Parameter

<mode>	Filter type
RECT	Rectangle filter
NYQ	Nyquist filter
RNYQ	Root Nyquist filter (Default value)

Details

This command is available when the following trace is active:

- Spectrum

Example of Use

To query filter type of the offset channel for ACP measurement.

```
ACP:OFFS:FILT:TYPE?
> NYQ
```

Related Command

This command has the same function as the following commands.

```
[:SENSe]:ACPower:FILTer[:RRC][:STATe]?
:CALCulate:ACPower:FILTer[:RRC][:STATe]?
[:SENSe]:ACPower:OFFSet[1]:FILTer:TYPE?
:CALCulate:ACPower:OFFSet[1]:FILTer:TYPE?
```

:CALCulate:ACPower:OFFSet[1]:FILTer:TYPE?

Adjacent Channel Power Offset Filter Type Query

Function

This command queries filter type of the offset channel for Adjacent Channel Power measurement.
Refer to `[:SENSe]:ACPower:OFFSet[1]:FILTer:TYPE?`.

Related Command

This command has the same function as the following commands.

```
[:SENSe]:ACPower:FILTer[:RRC][:STATe]?
:CALCulate:ACPower:FILTer[:RRC][:STATe]?
[:SENSe]:ACPower:OFFSet[1]:FILTer:TYPE?
```

:DISPlay:ACPower:RESult:TYPE CARRier|OFFSet

Adjacent Channel Power Result Type

Function

This command switches the result display type for Adjacent Channel Power measurement.

Command

```
:DISPlay:ACPower:RESult:TYPE <mode>
```

Parameter

<mode>		Filter type
	CARRier	Sets the result display for ACP measurement to Carrier Power.
	OFFSet	Sets the result display for ACP measurement to Offset Channel Power.

Details

This command is available when the following trace is active:

- Spectrum

Example of Use

To set the result display type to Carrier Power.

```
DISP:ACP:RES:TYPE CARR
```

:DISPlay:ACPower:RESult:TYPE?

Adjacent Channel Power Result Type Query

Function

This command queries the result display type for Adjacent Channel Power measurement.

Command

```
:DISPlay:ACPower:RESult:TYPE?
```

Response

```
<mode>
```

Parameter

<mode>	Filter type
CARR	Sets the result display for ACP measurement to Carrier Power.
OFFS	Sets the result display for ACP measurement to Offset Ch Power.

Details

This command is available when the following trace is active:

- Spectrum

Example of Use

To query the result display type.

```
ACP:RES:TYPE?
> CARR
```

[:SENSe]:ACPower:CARRier[1]:LIST:FILTer:ALPHa <real>

Adjacent Channel Power Rolloff Ratio

Function

This command sets the rolloff ratio of the reference channel filter for Adjacent Channel Power measurement.

Command

```
[:SENSe]:ACPower:CARRier[1]:LIST:FILTer:ALPHa <real>
```

Parameter

<real>	Filter rolloff ratio
Range	0.01 to 1.00
Resolution	0.01
Suffix code	None
Default value	0.22

Details

This command is available when the following trace is active:

- Spectrum

This command is available when the filter type (ACP Reference Filter Type) of the reference channel for ACP measurement is set to either of the following:

- Nyquist
- Root Nyquist

This command is not available when ACP Reference is set to the following:

- Span Total

For reading out a measurement result after this command has been executed, use *WAI commands to perform synchronized control.

Example of Use

To set the rolloff ratio of the reference channel filter for ACP measurement to 0.22 and query the results.

```
ACP:CARR:FILT:ALPH 0.22
*WAI
FETC:ACP?
```

Related Command

This command has the same function as the following command.

```
:CALCulate:ACPower:CARRier[1]:LIST:FILTer:ALPHa
```

:CALCulate:ACPower:CARRier[1]:LIST:FILTer:ALPHa <real>

Adjacent Channel Power Rolloff Ratio

Function

This command sets the rolloff ratio of the reference channel filter for ACP measurement.
Refer to `[:SENSe]:ACPower:CARRier[1]:LIST:FILTer:ALPHa`.

Related Command

This command has the same function as the following command.
`[:SENSe]:ACPower:CARRier[1]:LIST:FILTer:ALPHa`

[:SENSe]:ACPower:CARRier[1]:LIST:FILTer:ALPHa?

Adjacent Channel Power Rolloff Ratio Query

Function

This command queries the rolloff ratio of the reference channel filter for Adjacent Channel Power measurement.

Query

```
[:SENSe]:ACPower:CARRier[1]:LIST:FILTer:ALPHa?
```

Response

```
<real>
```

Parameter

<real>	Filter Rolloff ratio
Range	0.01 to 1.00
Resolution	0.01
Suffix code	None

Details

This command is available when the following trace is active:

- Spectrum

This command is available when the filter type (ACP Offset Filter Type) of the reference channel for ACP measurement is set to either of the following:

- Nyquist
- Root Nyquist

This command is not available when ACP Reference is set to the following:

- Span Total

Example of Use

To query the rolloff ratio of the reference channel filter for ACP measurement.

```
ACP:CARR:FILT:ALPH?
> 0.22
```

Related Command

This command has the same function as the following command.

```
:CALCulate:ACPower:CARRier[1]:LIST:FILTer:ALPHa?
```

:CALCulate:ACPower:CARRier[1]:LIST:FILTer:ALPHa?

Adjacent Channel Power Rolloff Ratio Query

Function

This command queries the rolloff ratio of the reference channel filter for Adjacent Channel Power measurement.
Refer to `[:SENSe]:ACPower:CARRier[1]:LIST:FILTer:ALPHa?`.

Related Command

This command has the same function as the following command.
`[:SENSe]:ACPower:CARRier[1]:LIST:FILTer:ALPHa?`

[:SENSe]:ACPower:FILTer[:RRC]:ALPHa <real>

Adjacent Channel Power Offset Rolloff Ratio

Function

This command sets the rolloff ratio of the offset channel filter for Adjacent Channel Power measurement.

Command

```
[:SENSe]:ACPower:FILTer[:RRC]:ALPHa <real>
```

Parameter

<real>	Filter rolloff ratio
Range	0.01 to 1.00
Resolution	0.01
Suffix code	None

Details

This command is available when the following trace is active:

- Spectrum

This command is not available when the filter type (ACP Offset Filter Type) of the reference channel for ACP measurement is set to either of the following:

- Nyquist
- Root Nyquist

For reading out a measurement result after this command has been executed, use *WAI commands to perform synchronized control.

Example of Use

To set the rolloff ratio of the offset channel filter for ACP measurement to 0.22 and query the results.

```
ACP:FILT:ALPH 0.22
*WAI
FETC:ACP?
```

Related Command

This command has the same function as the following command.

```
:CALCulate:ACPower:FILTer[:RRC]:ALPHa
```

:CALCulate:ACPower:FILTer[:RRC]:ALPHa <real>

Adjacent Channel Power Offset Rolloff Ratio

Function

This command sets the rolloff ratio of the offset channel filter for Adjacent Channel Power measurement.
Refer to `[:SENSe]:ACPower:FILTer[:RRC]:ALPHa`.

Related Command

This command has the same function as the following command.
`[:SENSe]:ACPower:FILTer[:RRC]:ALPHa`

[:SENSe]:ACPower:FILTer[:RRC]:ALPHa?

Adjacent Channel Power Offset Rolloff Ratio Query

Function

This command queries the rolloff ratio of the offset channel filter for Adjacent Channel Power measurement.

Command

```
[:SENSe]:ACPower:FILTer[:RRC]:ALPHa?
```

Response

```
<real>
```

Parameter

<real>	Filter rolloff ratio
Range	0.01 to 1.00
Resolution	0.01
Suffix code	None

Details

This command is available when the following trace is active:

- Spectrum

This command is available when the filter type (ACP Offset Filter Type) of the reference channel for ACP measurement is set to either of the following:

- Nyquist
- Root Nyquist

Example of Use

To query the rolloff ratio of the filter for ACP measurement.

```
ACP:FILT:ALPH?
> 0.22
```

Related Command

This command has the same function as the following command.

```
:CALCulate:ACPower:FILTer[:RRC]:ALPHa?
```

:CALCulate:ACPower:FILTer[:RRC]:ALPHa?

Adjacent Channel Power Offset Rolloff Ratio Query

Function

This command queries the rolloff ratio of the offset channel filter for Adjacent Channel Power measurement.
Refer to `[:SENSe]:ACPower:FILTer[:RRC]:ALPHa?`.

Related Command

This command has the same function as the following command.

```
[:SENSe]:ACPower:FILTer[:RRC]:ALPHa?
```

:CONFigure:ACP

Adjacent Channel Power Configure

Function

This command sets Adjacent Channel Power measurement to On.

Command

```
:CONFigure:ACP
```

Details

No measurement is performed.
Spectrum is set, if this command is executed when the trace is set to other than Spectrum.
Log is set, if this command is executed when Scale Mode is set to Linear.
For reading out a measurement result after this command has been executed, use *WAI commands to perform synchronized control.

Example of Use

To set ACP measurement to On and query the results.

```
CONF:ACP
*WAI
FETC:ACP?
```

:INITiate:ACP

Adjacent Channel Power Initiate

Function

This command performs an Adjacent Channel Power measurement.

Command

```
:INITiate:ACP
```

Details

When this function is executed, ACP measurement is set to On and a measurement is performed.
Spectrum is set, if this command is executed when the trace is set to other than Spectrum.
Log is set, if this command is executed when Scale Mode is set to Linear.
For reading out a measurement result after this command has been executed, use *WAI commands to perform synchronized control.

Example of Use

To perform an APC measurement and query the results.

```
INIT:ACP
*WAI
FETC:ACP?
```

:FETCh:ACP[n]?

Adjacent Channel Power Read Fetch

Function

This command queries the measurement result for Adjacent Channel Power measurement.

Query

```
:FETCh:ACP[n]?
```

Response

When RESult Mode is A.
For ACP measurement (ACP Result Type is OFFSet)
Two values of ref_carrier_a are output when ACP Reference is BSIDes.

```
<ref_carrier_a> (,<ref_carrier_a>),
<lower_offset_1_rel>,<lower_offset_1_abs>,
<upper_offset_1_rel>,<upper_offset_1_abs>,
<lower_offset_2_rel>,<lower_offset_2_abs>,
<upper_offset_2_rel>,<upper_offset_2_abs>,
<lower_offset_3_rel>,<lower_offset_3_abs>,
<upper_offset_3_rel>,<upper_offset_3_abs>
```

(n = 1 or when omitted)

ACP measurement (ACP Result Type is CARRier)

```
<integration_abs>,<total_carrier_a>,<power_1>,
<power_2>,<power_3>,<power_4>,<power_5>,
<power_6>,<power_7>,<power_8>,<power_9>,
<power_10>,<power_11>,<power_12>
```

(n = 1 or when omitted)

When RESult Mode is B.

If Carrier Number is 1 and only Offset-1 is On.

```
<ref_carrier_b>,<lower_offset_1_rel>,
<upper_offset_1_rel>
```

In other cases,

```
0.0,<total_carrier_b>,0.0,<ref_carrier_b>,
<lower_offset_1_rel>,<lower_offset_1_abs>,
<upper_offset_1_rel>,<upper_offset_1_abs>,
<lower_offset_2_rel>,<lower_offset_2_abs>,
<upper_offset_2_rel>,<upper_offset_2_abs>,
<lower_offset_3_rel>,<lower_offset_3_abs>,
<upper_offset_3_rel>,<upper_offset_3_abs>
```

(n = 1 or when omitted, and the ACP Reference is other than Both Sides of Carriers)

```
0.0,<total_carrier_b>,
<ref_carrier_lower>,<ref_carrier_upper>,
<lower_offset_1_rel>,<lower_offset_1_abs>,
<upper_offset_1_rel>,<upper_offset_1_abs>,
<lower_offset_2_rel>,<lower_offset_2_abs>,
<upper_offset_2_rel>,<upper_offset_2_abs>,
<lower_offset_3_rel>,<lower_offset_3_abs>,
<upper_offset_3_rel>,<upper_offset_3_abs>
```

(n = 1 or when omitted, and ACP Reference is Both Sides of Carriers)

```
<channel_1_rel>,<channel_1_abs>,
<channel_2_rel>,<channel_2_abs>,
......
<channel_12_rel>,<channel_12_abs>,
<lower_offset_1_rel>,<lower_offset_1_abs>,
<upper_offset_1_rel>,<upper_offset_1_abs>,
<lower_offset_2_rel>,<lower_offset_2_abs>,
<upper_offset_2_rel>,<upper_offset_2_abs>,
<lower_offset_3_rel>,<lower_offset_3_abs>,
<upper_offset_3_rel>,<upper_offset_3_abs>
```

(n = 2)

Parameter

<lower_offset_n_rel>	Relative power of the lower side of Offset-n
<upper_offset_n_rel>	Relative power of the upper side of Offset-n

No suffix code, in dB units, resolution: 0.01 dB
–999.0 is returned when no measurement is performed or an error has occurred.

<ref_carrier_b>	Power of reference carrier
<ref_carrier_lower>	Power of carrier on the left edge
<ref_carrier_upper>	Power of carrier on the right edge
<total_carrier_b>	Total power of all carriers
<channel_n_rel>	Relative power of carrier n in relation to carrier m Note: m is a value calculated by rounding up Carrier Number ÷ 2.
<lower_offset_n_abs>	Absolute power of the lower side of Offset-n

<upper_offset_n_abs> Absolute power of the upper side of Offset-n

No suffix code, in dBm units, resolution: 0.01 dB
–999.0 is returned when no measurement is performed or an error has occurred.

<integration_abs> Absolute value of the integral power on the whole screen

<total_carrier_a> Total power of all carriers

<ref_carrier_a> Power of reference carrier

<power_n> Absolute value of the power of carrier –n

No suffix code, in Log Scale units
(Note: dBm units for V, W units for W)
–999.0 is returned when no measurement is performed or an error has occurred.

Details

This command queries the measurement result of ACP measurement performed last. This function does not accompany any capture, thus this function is used to output the measurement result in a different type, when the measurement has already completed.
Use READ command to perform re-measurement with redoing capture.

Return values in this function vary depending on Result Mode.
(cf. :SYSTem:RESult:MODE)

Example of Use

To query the measurement result for ACP measurement.

```
FETC:ACP?
> -75.66,-75.66,-0.061,-75.73,0.016,-75.65,-1.441,-77.11,
-0.506,-76.17,-999.0,-999.0,-999.0,-999.0
```

:READ:ACP[n]?

Adjacent Channel Power Read

Function

This command performs a measurement for Adjacent Channel Power and outputs the measurement result.
This command has the same function as the following commands executed in this order:
`:INITiate:ACP`
`:FETCh:ACP[n]?`
This command is available when the following trace is active:

- Spectrum

:MEASure:ACP[n]?

Adjacent Channel Power Measure

Function

This command performs ACP measurement and queries the measurement result.
This command has the same function as the following commands executed in this order:
`:CONFigure:ACP`
`:INITiate:ACP`
`:FETCh:ACP[n]?`

:CALCulate:ACPower:MARKer:AOFF

All Marker Off

Function

This command sets all markers to Off.
Refer to `:CALCulate:MARKer:AOFF`.

Related Command

This command has the same function as the following commands.
`:CALCulate:MARKer:AOFF`
`:CALCulate:CHPower:MARKer:AOFF`
`:CALCulate:OBWidth:MARKer:AOFF`
`:CALCulate:BPOWer|:TXPower:MARKer:AOFF`

:CALCulate:ACPower:MARKer[1]|2|3|4|5|6|7|8|9|10:MAXimum

Peak Search

Function

This command searches for the maximum level point of the main trace and moves the marker point.

Refer to :CALCulate:MARKer[1]|2|3|4|5|6|7|8|9|10:MAXimum.

Related Command

This command has the same function as the following commands.

:CALCulate:MARKer[1]|2|3|4|5|6|7|8|9|10:MAXimum

:CALCulate:CHPower:MARKer[1]|2|3|4|5|6|7|8|9|10:MAXimum

:CALCulate:OBWidth:MARKer[1]|2|3|4|5|6|7|8|9|10:MAXimum

:CALCulate:BPOWer|:TXPower:MARKer[1]|2|3|4|5|6|7|8|9|10:MAXimum

:CALCulate:ACPower:MARKer[1]|2|3|4|5|6|7|8|9|10:MAXimum:NEXT

Next Peak Search

Function

This command searches for the feature point of the main trace and moves the marker point to the peak point at a smaller level than the current marker level.

Refer to

:CALCulate:MARKer[1]|2|3|4|5|6|7|8|9|10:MAXimum:NEXT.

Related Command

This command has the same function as the following command.

:CALCulate:MARKer[1]|2|3|4|5|6|7|8|9|10:MAXimum:NEXT

:CALCulate:ACPower:MARKer[1]|2|3|4|5|6|7|8|9|10:X <freq>|<time>|<sample>|<dist>

Zone Marker Frequency (Time)

Function

This command moves the center of the zone marker to the set frequency (time).

Refer to `:CALCulate:MARKer[1]|2|3|4|5|6|7|8|9|10:X`.

Related Command

This command has the same function as the following commands.

```
:CALCulate:MARKer[1]|2|3|4|5|6|7|8|9|10:X
:CALCulate:CHPower:MARKer[1]|2|3|4|5|6|7|8|9|10:X
:CALCulate:OBWidth:MARKer[1]|2|3|4|5|6|7|8|9|10:X
:CALCulate:BPOWer|:TXPower:MARKer[1]|2|3|4|5|6|7|8|9|10:X
```

:CALCulate:ACPower:MARKer[1]|2|3|4|5|6|7|8|9|10:X?

Zone Marker Frequency (Time) Query

Function

This command queries the center of the zone marker.

Refer to `:CALCulate:MARKer[1]|2|3|4|5|6|7|8|9|10:X?`.

Related Command

This command has the same function as the following commands.

```
:CALCulate:MARKer[1]|2|3|4|5|6|7|8|9|10:X?
:CALCulate:CHPower:MARKer[1]|2|3|4|5|6|7|8|9|10:X?
:CALCulate:OBWidth:MARKer[1]|2|3|4|5|6|7|8|9|10:X?
:CALCulate:BPOWer|:TXPower:MARKer[1]|2|3|4|5|6|7|8|9|10:X?
```

:CALCulate:ACPower:MARKer[1]|2|3|4|5|6|7|8|9|10:Y?

Marker Level Query

Function

This command queries the level of the marker point.
Refer to :CALCulate:MARKer[1]|2|3|4|5|6|7|8|9|10[:PEAK]:Y?.

Related Command

This command has the same function as the following commands.
:CALCulate:MARKer[1]|2|3|4|5|6|7|8|9|10[:PEAK]:Y?
:CALCulate:CHPower:MARKer[1]|2|3|4|5|6|7|8|9|10:Y?
:CALCulate:OBWidth:MARKer[1]|2|3|4|5|6|7|8|9|10:Y?
:CALCulate:BPOWer|:TXPower:MARKer[1]|2|3|4|5|6|7|8|9|10:Y?

:DISPlay:ACPower:ANNotation:TITLe:DATA <string>

Title Entry

Function

This command registers the title character string.
Refer to :DISPlay:ANNotation:TITLe:DATA.

Related Command

This command has the same function as the following commands.
:DISPlay:ANNotation:TITLe:DATA
:DISPlay:CHPowe:ANNotation:TITLe:DATA
:DISPlay:OBWidth:ANNotation:TITLe:DATA
:DISPlay:BPOWer|:TXPowe:ANNotation:TITLe:DATA

:DISPlay:ACPower:ANNotation:TITLe:DATA?

Title Entry Query

Function

This command queries the title character string.
Refer to :DISPlay:ANNotation:TITLe:DATA?.

Related Command

This command has the same function as the following commands.
:DISPlay:ANNotation:TITLe:DATA?
:DISPlay:CHPowe:ANNotation:TITLe:DATA?
:DISPlay:OBWidth:ANNotation:TITLe:DATA?
:DISPlay:BPOWer|:TXPowe:ANNotation:TITLe:DATA?

:DISPlay:ACPower:VIEW[1]:WINDow[1]:TRACe:Y[:SCALe]:PDIVision <rel_ampl>

Log Scale Range

Function

This command sets the Y-axis scale range when Scale Mode is set to Log.
Refer to: `DISPlay:WINDow[1]:TRACe:Y[:SCALe]:PDIVision [:LOGarithmic]`.

Related Command

This command has the same function as the following commands.

```
:DISPlay:WINDow[1]:TRACe:Y[:SCALe]:PDIVision[:LOGarithmic]
:DISPlay:CHPower:VIEW[1]:WINDow[1]:TRACe:Y[:SCALe]:PDIVision
:DISPlay:OBWidth:VIEW[1]:WINDow[1]:TRACe:Y[:SCALe]:PDIVision
:DISPlay:BPOWer|:TXPower:VIEW[1]:WINDow[1]:TRACe:Y[:SCALe]:PDIVision
```

:DISPlay:ACPower:VIEW[1]:WINDow[1]:TRACe:Y[:SCALe]:PDIVision ?

Log Scale Range Query

Function

This command queries the Y-axis scale range when Scale Mode is set to Log.
Refer to :`DISPlay:WINDow[1]:TRACe:Y[:SCALe]:PDIVision [:LOGarithmic]?`.

Related Command

This command has the same function as the following commands.

```
:DISPlay:WINDow[1]:TRACe:Y[:SCALe]:PDIVision[:LOGarithmic]?
:DISPlay:CHPower:VIEW[1]:WINDow[1]:TRACe:Y[:SCALe]:PDIVision
:DISPlay:OBWidth:VIEW[1]:WINDow[1]:TRACe:Y[:SCALe]:PDIVision
:DISPlay:BPOWer|:TXPower:VIEW[1]:WINDow[1]:TRACe:Y[:SCALe]:PDIVision
```

:DISPlay:ACPower:VIEW[1]:WINDow[1]:TRACe:Y[:SCALe]:RLEVel <real>

Reference Level

Function

This command sets the reference level.
Refer to :DISPlay:WINDow[1]:TRACe:Y[:SCALe]:RLEVel.

Related Command

This command has the same function as the following commands.
:DISPlay:WINDow[1]:TRACe:Y[:SCALe]:RLEVel
:DISPlay:CHPower:VIEW[1]:WINDow[1]:TRACe:Y[:SCALe]:RLEVel
:DISPlay:OBWidth:VIEW[1]:WINDow[1]:TRACe:Y[:SCALe]:RLEVel
:DISPlay:BPOWer|:TXPower:VIEW[1]:WINDow[1]:TRACe:Y[:SCALe]:RLEVel

:DISPlay:ACPower:VIEW[1]:WINDow[1]:TRACe:Y[:SCALe]:RLEVel?

Reference Level Query

Function

This command queries the reference level.
Refer to :DISPlay:WINDow[1]:TRACe:Y[:SCALe]:RLEVel?.

Related Command

This command has the same function as the following commands.
:DISPlay:WINDow[1]:TRACe:Y[:SCALe]:RLEVel?
:DISPlay:CHPower:VIEW[1]:WINDow[1]:TRACe:Y[:SCALe]:RLEVel?
:DISPlay:OBWidth:VIEW[1]:WINDow[1]:TRACe:Y[:SCALe]:RLEVel?
:DISPlay:BPOWer|:TXPower:VIEW[1]:WINDow[1]:TRACe:Y[:SCALe]:RLEVel?

:TRIGger:ACPower[:SEQuence]:SOURce EXTernal[1]|IMMediate|WIF|RFBurst|VIDeo|SG|BBIF

Trigger Source

Function

This command selects the trigger source type.
Refer to `TRIGger[:SEQuence]:SOURce`.

Related Command

This command has the same function as the following commands.

```
TRIGger[:SEQuence]:SOURce
TRIGger:CHPower[:SEQuence]:SOURce
TRIGger:OBWidth[:SEQuence]:SOURce
TRIGger:BPOWer|:TXPower[:SEQuence]:SOURce
TRIGger:CCDF|:PSTatistic[:SEQuence]:SOURce
```

:TRIGger:ACPower[:SEQuence]:SOURce?

Trigger Source Query

Function

This command queries the trigger source type.
Refer to `TRIGger[:SEQuence]:SOURce?`.

Related Command

This command has the same function as the following commands.

```
TRIGger[:SEQuence]:SOURce?
TRIGger:CHPower[:SEQuence]:SOURce?
TRIGger:OBWidth[:SEQuence]:SOURce?
TRIGger:BPOWer|:TXPower[:SEQuence]:SOURce?
TRIGger:CCDF|:PSTatistic[:SEQuence]:SOURce?
```

[:SENSe]:ACPower:AVERage:COUNt <integer>

Average Count

Function

This command sets the storage count.

Refer to `[:SENSe]:AVERage:COUNt`.

Related Command

This command has the same function as the following commands.

`[:SENSe]:AVERage:COUNt`

`[:SENSe]:CHPower:AVERage:COUNt`

`[:SENSe]:OBWidth:AVERage:COUNt`

`[:SENSe]:BPOWer|:TXPower:ACPower:AVERage:COUNt`

[:SENSe]:ACPower:AVERage:COUNt?

Average Count Query

Function

This command queries the storage count.

Refer to `[:SENSe]:AVERage:COUNt?`.

Related Command

This command has the same function as the following commands.

`[:SENSe]:AVERage:COUNt?`

`[:SENSe]:CHPower:AVERage:COUNt?`

`[:SENSe]:OBWidth:AVERage:COUNt?`

`[:SENSe]:BPOWer|:TXPower:ACPower:AVERage:COUNt?`

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

Storage Mode

Function

This command sets the storage mode.

Command

```
[:SENSe]:ACPower:AVERage[:STATe] <switch>
```

Parameter

<switch>	Setting of Storage Mode
ON|1	Sets Storage Mode to Average.
OFF|0	Sets Storage Mode to Off (Default value)

Example of Use

To set Storage Mode to Off.

```
ACP:AVER OFF
```

Related Command

This command has the same function as the following commands.

```
:TRACe:STORage:MODE
[:SENSe]:CHPower:AVERage[:STATe]
[:SENSe]:OBWidth:AVERage[:STATe]
[:SENSe]:BPOWer|:TXPower:AVERage[:STATe]
```

[:SENSe]:ACPower:AVERage[:STATe]?

Storage Mode Query

Function

This command queries the storage mode.

Query

```
[:SENSe]:ACPower:AVERage[:STATe]?
```

Response

```
<switch>
```

Parameter

<switch>	Storage Mode Setting
1	Average
0	Other than Average

Example of Use

To query the setting of Storage Mode.

```
ACP:AVER?
> 0
```

Related Command

This command has the same function as the following commands.

```
:TRACe:STORage:MODE?
[:SENSe]:CHPower:AVERage[:STATe]?
[:SENSe]:OBWidth:AVERage[:STATe]?
[:SENSe]:BPOWer|:TXPower:AVERage[:STATe]?
```

[:SENSe]:ACPower:BANDwidth[:RESolution] <freq>

Resolution Bandwidth

Function

This command sets the resolution bandwidth (RBW).
Refer to [:SENSe]:BANDwidth|:BWIDth[:RESolution].

Related Command

This command has the same function as the following commands.

```
[:SENSe]:BANDwidth|:BWIDth[:RESolution]
:CALCulate:BANDwidth|:BWIDth[:RESolution]
:CALCulate:ACPower:BANDwidth[:RESolution]
[:SENSe]:CHPower:BANDwidth[:RESolution]
:CALCulate:CHPower:BANDwidth[:RESolution]
[:SENSe]:OBWidth:BANDwidth[:RESolution]
:CALCulate:OBWidth:BANDwidth[:RESolution]
[:SENSe]:BPOWer|:TXPower:BANDwidth[:RESolution]
:CALCulate:BPOWer|:TXPower:BANDwidth[:RESolution]
```

:CALCulate:ACPower:BANDwidth[:RESolution] <freq>

Resolution Bandwidth

Function

This command sets the resolution bandwidth (RBW).
Refer to [:SENSe]:BANDwidth|:BWIDth[:RESolution].

Related Command

This command has the same function as the following commands.

```
[:SENSe]:BANDwidth|:BWIDth[:RESolution]
:CALCulate:BANDwidth|:BWIDth[:RESolution]
[:SENSe]:ACPower:BANDwidth[:RESolution]
[:SENSe]:CHPower:BANDwidth[:RESolution]
:CALCulate:CHPower:BANDwidth[:RESolution]
[:SENSe]:OBWidth:BANDwidth[:RESolution]
:CALCulate:OBWidth:BANDwidth[:RESolution]
[:SENSe]:BPOWer|:TXPower:BANDwidth[:RESolution]
:CALCulate:BPOWer|:TXPower:BANDwidth[:RESolution]
```

[:SENSe]:ACPower:BANDwidth[:RESolution]?

Resolution Bandwidth Query

Function

This command queries the resolution bandwidth (RBW).
Refer to `[:SENSe]:BANDwidth|:BWIDth[:RESolution]?`.

Related Command

This command has the same function as the following commands.

```
[:SENSe]:BANDwidth|:BWIDth[:RESolution]?
:CALCulate:BANDwidth|:BWIDth[:RESolution]?
:CALCulate:ACPower:BANDwidth[:RESolution]?
[:SENSe]:CHPower:BANDwidth[:RESolution]?
:CALCulate:CHPower:BANDwidth[:RESolution]?
[:SENSe]:OBWidth:BANDwidth[:RESolution]?
:CALCulate:OBWidth:BANDwidth[:RESolution]?
[:SENSe]:BPOWer|:TXPower:BANDwidth[:RESolution]?
:CALCulate:BPOWer|:TXPower:BANDwidth[:RESolution]?
```

:CALCulate:ACPower:BANDwidth[:RESolution]?

Resolution Bandwidth Query

Function

This command queries the resolution bandwidth (RBW).
Refer to `[:SENSe]:BANDwidth|:BWIDth[:RESolution]?`.

Related Command

This command has the same function as the following commands.

```
[:SENSe]:BANDwidth|:BWIDth[:RESolution]?
:CALCulate:BANDwidth|:BWIDth[:RESolution]?
[:SENSe]:ACPower:BANDwidth[:RESolution]?
[:SENSe]:CHPower:BANDwidth[:RESolution]?
:CALCulate:CHPower:BANDwidth[:RESolution]?
[:SENSe]:OBWidth:BANDwidth[:RESolution]?
:CALCulate:OBWidth:BANDwidth[:RESolution]?
[:SENSe]:BPOWer|:TXPower:BANDwidth[:RESolution]?
:CALCulate:BPOWer|:TXPower:BANDwidth[:RESolution]?
```

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

Resolution Bandwidth Auto/Manual

Function

This command enables/disables the automatic resolution bandwidth (RBW) setting function.
Refer to `[:SENSe]:BANDwidth|:BWIDth[:RESolution]:AUTO`.

Related Command

This command has the same function as the following commands.

```
[:SENSe]:BANDwidth|:BWIDth[:RESolution]:AUTO
:CALCulate:BANDwidth|:BWIDth[:RESolution]:AUTO
:CALCulate:ACPower:BANDwidth[:RESolution]:AUTO
[:SENSe]:CHPower:BANDwidth[:RESolution]:AUTO
:CALCulate:CHPower:BANDwidth[:RESolution]:AUTO[:SENSe]:O
BWidth:BANDwidth[:RESolution]:AUTO
:CALCulate:OBWidth:BANDwidth[:RESolution]:AUTO
```

:CALCulate:ACPower:BANDwidth[:RESolution]:AUTO ON|OFF|1|0

Resolution Bandwidth Auto/Manual

Function

This command enables/disables the automatic resolution bandwidth (RBW) setting function.
Refer to `[:SENSe]:BANDwidth|:BWIDth[:RESolution]:AUTO`.

Related Command

This command has the same function as the following commands.

```
[:SENSe]:BANDwidth|:BWIDth[:RESolution]:AUTO
:CALCulate:BANDwidth|:BWIDth[:RESolution]:AUTO
[:SENSe]:ACPower:BANDwidth[:RESolution]:AUTO
[:SENSe]:CHPower:BANDwidth[:RESolution]:AUTO
:CALCulate:CHPower:BANDwidth[:RESolution]:AUTO[:SENSe]:O
BWidth:BANDwidth[:RESolution]:AUTO
:CALCulate:OBWidth:BANDwidth[:RESolution]:AUTO
```

[:SENSe]:ACPower:BANDwidth[:RESolution]:AUTO?

Resolution Bandwidth Auto/Manual Query

Function

This command queries the On/Off state of the automatic resolution bandwidth (RBW).
Refer to `[:SENSe]:BANDwidth|:BWIDth[:RESolution]:AUTO?`.

Related Command

This command has the same function as the following commands.

```
[:SENSe]:BANDwidth|:BWIDth[:RESolution]:AUTO?
:CALCulate:BANDwidth|:BWIDth[:RESolution]:AUTO?
:CALCulate:ACPower:BANDwidth[:RESolution]:AUTO?
[:SENSe]:CHPower:BANDwidth[:RESolution]:AUTO?
:CALCulate:CHPower:BANDwidth[:RESolution]:AUTO?
[:SENSe]:OBWidth:BANDwidth[:RESolution]:AUTO?
:CALCulate:OBWidth:BANDwidth[:RESolution]:AUTO?
```

:CALCulate:ACPower:BANDwidth[:RESolution]:AUTO?

Resolution Bandwidth Auto/Manual Query

Function

This command queries the On/Off state of the automatic resolution bandwidth (RBW).
Refer to `[:SENSe]:BANDwidth|:BWIDth[:RESolution]:AUTO?`.

Related Command

This command has the same function as the following commands.

```
[:SENSe]:BANDwidth|:BWIDth[:RESolution]:AUTO?
:CALCulate:BANDwidth|:BWIDth[:RESolution]:AUTO?
[:SENSe]:ACPower:BANDwidth[:RESolution]:AUTO?
[:SENSe]:CHPower:BANDwidth[:RESolution]:AUTO?
:CALCulate:CHPower:BANDwidth[:RESolution]:AUTO?
[:SENSe]:OBWidth:BANDwidth[:RESolution]:AUTO?
:CALCulate:OBWidth:BANDwidth[:RESolution]:AUTO?
```

[:SENSe]:ACPower:DETector[:FUNCtion] NORMal|POSitive|NEGative|AVERage

Detection Mode

Function

This command selects the detection mode of the waveform pattern.
Refer to `[:SENSe]:DETector[:FUNCtion]`.

Related Command

This command has the same function as the following commands.

```
[:SENSe]:DETector[:FUNCtion]
:CALCulate:DETector[:FUNCtion]
:CALCulate:ACPower:DETector[:FUNCtion]
[:SENSe]:CHPower:DETector[:FUNCtion]
:CALCulate:CHPower:DETector[:FUNCtion]
[:SENSe]:OBWidth:DETector[:FUNCtion]
:CALCulate:OBWidth:DETector[:FUNCtion]
```

:CALCulate:ACPower:DETector[:FUNCtion] NORMal|POSitive|NEGative|AVERage

Detection Mode

Function

This command selects the detection mode of the waveform pattern.
Refer to `[:SENSe]:DETector[:FUNCtion]`.

Related Command

This command has the same function as the following commands.

```
[:SENSe]:DETector[:FUNCtion]
:CALCulate:DETector[:FUNCtion]
[:SENSe]:ACPower:DETector[:FUNCtion]
[:SENSe]:CHPower:DETector[:FUNCtion]
:CALCulate:CHPower:DETector[:FUNCtion]
[:SENSe]:OBWidth:DETector[:FUNCtion]
:CALCulate:OBWidth:DETector[:FUNCtion]
```

[:SENSe]:ACPower:DETector[:FUNCtion]?

Detection Mode Query

Function

This command selects the detection mode of the waveform pattern.
Refer to `[:SENSe]:DETector[:FUNCtion]?`.

Related Command

This command has the same function as the following commands.

```
[:SENSe]:DETector[:FUNCtion]?
:CALCulate:DETector[:FUNCtion]?
:CALCulate:ACPower:DETector[:FUNCtion]?
[:SENSe]:CHPower:DETector[:FUNCtion]?
:CALCulate:CHPower:DETector[:FUNCtion]?
[:SENSe]:OBWidth:DETector[:FUNCtion]?
:CALCulate:OBWidth:DETector[:FUNCtion]?
```

:CALCulate:ACPower:DETector[:FUNCtion]?

Detection Mode Query

Function

This command selects the detection mode of the waveform pattern.
Refer to `[:SENSe]:DETector[:FUNCtion]?`

Related Command

This command has the same function as the following commands.

```
[:SENSe]:DETector[:FUNCtion]?
:CALCulate:DETector[:FUNCtion]?
[:SENSe]:ACPower:DETector[:FUNCtion]?
[:SENSe]:CHPower:DETector[:FUNCtion]?
:CALCulate:CHPower:DETector[:FUNCtion]?
[:SENSe]:OBWidth:DETector[:FUNCtion]?
:CALCulate:OBWidth:DETector[:FUNCtion]?
```

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

Frequency Span

Function

This command sets the frequency span.
Refer to [:SENSe]:FREQuency:SPAN.

Related Command

This command has the same function as the following commands.
[:SENSe]:FREQuency:SPAN
[:SENSe]:CHPower:FREQuency:SPAN
[:SENSe]:OBWidth:FREQuency:SPAN

[:SENSe]:ACPower:FREQuency:SPAN?

Frequency Span Query

Function

This command queries the frequency span.
Refer to [:SENSe]:FREQuency:SPAN?.

Related Command

This command has the same function as the following commands.
[:SENSe]:FREQuency:SPAN?
[:SENSe]:CHPower:FREQuency:SPAN?
[:SENSe]:OBWidth:FREQuency:SPAN?

[:SENSe]:ACPower:SWEep:POINts?

Trace Point Query

Function

This command queries the number of the trace display points.
Refer to [:SENSe]:SWEep:POINts?.

Related Command

This command has the same function as the following commands.
[:SENSe]:SWEep:POINts?
[:SENSe]:CHPower:SWEep:POINts?
[:SENSe]:OBWidth:SWEep:POINts?

[:SENSe]:ACPower:SWEep:TIME <time>

Sweep Time

Function

This command sets the sweep time.
Refer to [:SENSe]:SWEep:TIME.

Related Command

This command has the same function as the following commands.
[:SENSe]:SWEep:TIME
[:SENSe]:CHPower:SWEep:TIME
[:SENSe]:OBWidth:SWEep:TIME
[:SENSe]:BPOWer|:TXPower:SWEep:TIME

[:SENSe]:ACPower:SWEep:TIME?

Sweep Time Query

Function

This command queries the sweep time.
Refer to [:SENSe]:SWEep:TIME?.

Related Command

This command has the same function as the following commands.
[:SENSe]:SWEep:TIME?
[:SENSe]:CHPower:SWEep:TIME?
[:SENSe]:OBWidth:SWEep:TIME?
[:SENSe]:BPOWer|:TXPower:SWEep:TIME?

[:SENSe]:ACPower:SWEep:TIME:AUTO OFF|ON|0|1

Sweep Time Auto/Manual

Function

This command enables/disables automatic setting for the waveform capture time.
Refer to [:SENSe]:SWEep:TIME:AUTO.

Related Command

This command has the same function as the following commands.
[:SENSe]:SWEep:TIME:AUTO
[:SENSe]:CHPower:SWEep:TIME:AUTO
[:SENSe]:OBWidth:SWEep:TIME:AUTO

[:SENSe]:ACPower:SWEep:TIME:AUTO?

Sweep Time Auto/Manual Query

Function

This command queries whether automatic setting is enabled for the waveform capture time.
Refer to [:SENSe]:SWEep:TIME:AUTO?.

Related Command

This command has the same function as the following commands.
[:SENSe]:SWEep:TIME:AUTO?
[:SENSe]:CHPower:SWEep:TIME:AUTO?
[:SENSe]:OBWidth:SWEep:TIME:AUTO?

:CALCulate:ACPower:MARKer[1]|2|3|4|5|6|7|8|9|10:MODE NORMal|POSition|DELTa|FIXed|OFF

Marker Mode

Function

This command sets the marker mode.
Refer to :CALCulate:MARKer[1]|2|3|4|5|6|7|8|9|10:MODE.

Related command

This command has the same function as the following commands.
:CALCulate:MARKer[1]|2|3|4|5|6|7|8|9|10:MODE
:CALCulate:CHPower:MARKer[1]|2|3|4|5|6|7|8|9|10:MODE
:CALCulate:OBWidth:MARKer[1]|2|3|4|5|6|7|8|9|10:MODE

:CALCulate:ACPower:MARKer[1]|2|3|4|5|6|7|8|9|10:MODE?

Marker Mode Query

Function

This command queries the marker mode.
Refer to :CALCulate:MARKer[1]|2|3|4|5|6|7|8|9|10:MODE?.

Related command

This command has the same function as the following commands.
:CALCulate:MARKer[1]|2|3|4|5|6|7|8|9|10:MODE?
:CALCulate:CHPower:MARKer[1]|2|3|4|5|6|7|8|9|10:MODE?
:CALCulate:OBWidth:MARKer[1]|2|3|4|5|6|7|8|9|10:MODE?

:CALCulate:ACPower:MARKer[1]|2|3|4|5|6|7|8|9|10:REFerence <integer>

Relative To

Function

This command sets the reference marker when Marker Mode is set to Delta.
Refer to :CALCulate:MARKer[1]|2|3|4|5|6|7|8|9|10:REFerence <integer>.

Related command

This command has the same function as the following commands.
:CALCulate:MARKer[1]|2|3|4|5|6|7|8|9|10:REFerence
:CALCulate:CHPower:MARKer[1]|2|3|4|5|6|7|8|9|10:REFerence
:CALCulate:OBWidth:MARKer[1]|2|3|4|5|6|7|8|9|10:REFerence

:CALCulate:ACPower:MARKer[1]|2|3|4|5|6|7|8|9|10:REFerence?

Relative To

Function

This command queries the reference marker when Marker Mode is set to Delta.
Refer to :CALCulate:MARKer[1]|2|3|4|5|6|7|8|9|10:REFerence?.

Related command

This command has the same function as the following commands.
:CALCulate:MARKer[1]|2|3|4|5|6|7|8|9|10:REFerence?
:CALCulate:CHPower:MARKer[1]|2|3|4|5|6|7|8|9|10:REFerence?
:CALCulate:OBWidth:MARKer[1]|2|3|4|5|6|7|8|9|10:REFerence?

2.10 Channel Power Measurement Settings

Table 2.10-1 lists device messages for Channel Power measurement.

Table 2.10-1 Device messages for Channel Power measurement

Function	Device Message
Measure Channel Power	[:SENSe]:CHPower[:STATe] ON|OFF|1|0
	[:SENSe]:CHPower[:STATe]?
	:CALCulate:CHPower[:STATe] ON|OFF|1|0
	:CALCulate:CHPower[:STATe]?
Channel Power Channel Center Frequency	[:SENSe]:CHPower:FREQuency:CENTer <freq>
	[:SENSe]:CHPower:FREQuency:CENTer?
	:CALCulate:CHPower:FREQuency:CENTer <freq>
	:CALCulate:CHPower:FREQuency:CENTer?
Channel Power Channel Bandwidth	[:SENSe]:CHPower:BANDwidth:INTegration <freq>
	[:SENSe]:CHPower:BANDwidth:INTegration?
	:CALCulate:CHPower:BANDwidth:INTegration <freq>
	:CALCulate:CHPower:BANDwidth:INTegration?
Channel Power Filter Type	[:SENSe]:CHPower:FILTer:TYPE RECT|NYQuist|RNYQuist
	[:SENSe]:CHPower:FILTer:TYPE?
	:CALCulate:CHPower:FILTer:TYPE RECT|NYQuist|RNYQuist
	:CALCulate:CHPower:FILTer:TYPE?
	[:SENSe]:CHPower:FILTer[:RRC][:STATe] ON|OFF|1|0
	[:SENSe]:CHPower:FILTer[:RRC][:STATe]?
	:CALCulate:CHPower:FILTer[:RRC][:STATe] ON|OFF|1|0
	:CALCulate:CHPower:FILTer[:RRC][:STATe]?
Channel Power Rolloff Ratio	[:SENSe]:CHPower:FILTer[:RRC]:ALPHa <real>
	[:SENSe]:CHPower:FILTer[:RRC]:ALPHa?
	:CALCulate:CHPower:FILTer[:RRC]:ALPHa <real>
	:CALCulate:CHPower:FILTer[:RRC]:ALPHa?
Channel Power Configure	:CONFigure:CHPower
Channel Power Initiate	:INITiate:CHPower
Channel Power Fetch	:FETCh:CHPower[n]?
	:FETCh:CHPower:CHPower?
	:FETCh:CHPower:DENSity?

Table 2.10-1 Device messages for Channel Power measurement (Cont'd)

Function	Device Message
Channel Power Read	:READ:CHPower[n]?
	:READ:CHPower:CHPower?
	:READ:CHPower:DENSity?
Channel Power Measure	:MEASure:CHPower[n]?
	:MEASure:CHPower:CHPower?
	:MEASure:CHPower:DENSity?
All Marker Off	:CALCulate:CHPower:MARKer:AOFF
Peak Search	:CALCulate:CHPower:MARKer[1]|2|3|4|5|6|7|8|9|10:MAXimum
Zone Marker Frequency (Time)	:CALCulate:CHPower:MARKer[1]|2|3|4|5|6|7|8|9|10:X <freq>|<time> |<sample>|<dist>
	:CALCulate:CHPower:MARKer[1]|2|3|4|5|6|7|8|9|10:X?
Marker Level Query	:CALCulate:CHPower:MARKer[1]|2|3|4|5|6|7|8|9|10:Y?
Title Entry	:DISPlay:CHPower:ANNotation:TITLe:DATA <string>
	:DISPlay:CHPower:ANNotation:TITLe:DATA?
Log Scale Range	:DISPlay:CHPower:VIEW[1]:WINDow[1]:TRACe:Y[:SCALe]:PDIVision <rel_ampl>
	:DISPlay:CHPower:VIEW[1]:WINDow[1]:TRACe:Y[:SCALe]:PDIVision?
Reference Level	:DISPlay:CHPower:VIEW[1]:WINDow[1]:TRACe:Y[:SCALe]:RLEVel <real>
	:DISPlay:CHPower:VIEW[1]:WINDow[1]:TRACe:Y[:SCALe]:RLEVel?
Trigger Source	:TRIGger:CHPower[:SEQuence]:SOURce EXTernal[1]|IMMediate|WIF|RFBurst|VIDeo|SG|BBIF
	:TRIGger:CHPower[:SEQuence]:SOURce?
Average Count	[:SENSe]:CHPower:AVERage:COUNt <integer>
	[:SENSe]:CHPower:AVERage:COUNt?
Storage Mode	[:SENSe]:CHPower:AVERage[:STATe] ON|OFF|1|0
	[:SENSe]:CHPower:AVERage[:STATe]?
Resolution Bandwidth	[:SENSe]:CHPower:BANDwidth[:RESolution] <freq>
	[:SENSe]:CHPower:BANDwidth[:RESolution]?
	:CALCulate:CHPower:BANDwidth[:RESolution] <freq>
	:CALCulate:CHPower:BANDwidth[:RESolution]?
Resolution Bandwidth Auto/Manual	[:SENSe]:CHPower:BANDwidth[:RESolution]:AUTO ON|OFF|1|0
	[:SENSe]:CHPower:BANDwidth[:RESolution]:AUTO?
	:CALCulate:CHPower:BANDwidth[:RESolution]:AUTO ON|OFF|1|0
	:CALCulate:CHPower:BANDwidth[:RESolution]:AUTO?

Table 2.10-1 Device messages for Channel Power measurement (Cont'd)

Function	Device Message
Detection Mode	[:SENSe]:CHPower:DETector[:FUNCtion] NORMal|POSitive|NEGative|AVERage
	[:SENSe]:CHPower:DETector[:FUNCtion]?
	:CALCulate:CHPower:DETector[:FUNCtion] NORMal|POSitive|NEGative|AVERage
	:CALCulate:CHPower:DETector[:FUNCtion]?
Frequency Span	[:SENSe]:CHPower:FREQuency:SPAN <freq>
	[:SENSe]:CHPower:FREQuency:SPAN?
Trace Point Query	[:SENSe]:CHPower:SWEep:POINts?
Sweep Time	[:SENSe]:CHPower:SWEep:TIME <time>
	[:SENSe]:CHPower:SWEep:TIME?
Sweep Time Auto/Manual	[:SENSe]:CHPower:SWEep:TIME:AUTO OFF|ON|0|1
	[:SENSe]:CHPower:SWEep:TIME:AUTO?
Marker Mode	:CALCulate:CHPower:MARKer[1]|2|3|4|5|6|7|8|9|10:MODE NORMal|POSition|DELTa|FIXed|OFF
	:CALCulate:CHPower:MARKer[1]|2|3|4|5|6|7|8|9|10:MODE?
Relative To	:CALCulate:CHPower:MARKer[1]|2|3|4|5|6|7|8|9|10:REFerence <integer>
	:CALCulate:CHPower:MARKer[1]|2|3|4|5|6|7|8|9|10:REFerence?

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

Measure Channel Power

Function

This command executes Channel Power measurement.

Command

```
[:SENSe]:CHPower[:STATe] <switch>
```

Parameter

<switch>	CHP measurement On/Off
ON|1	Sets CHP measurement On.
OFF|0	Sets CHP measurement Off (Default value).

Details

This command is available when the following trace is active:

- Spectrum

For reading out a measurement result after this command has been executed, use *WAI commands to perform synchronized control.

Example of Use

To set CHP measurement to On and query the results.

```
CHP ON
*WAI
FETC:CHP?
```

Related Command

This command has the same function as the following command.

```
:CALCulate:CHPower[:STATe]
```

:CALCulate:CHPower[:STATe] ON|OFF|1|0

Measure Channel Power

Function

This command executes Channel Power measurement.
Refer to `[:SENSe]:CHPower[:STATe]`.

Related Command

This command has the same function as the following command.
`[:SENSe]:CHPower[:STATe]`

[:SENSe]:CHPower[:STATe]?

Measure Channel Power Query

Function

This command queries the setting of Channel Power measurement.

Command

`[:SENSe]:CHPower[:STATe]?`

Parameter

`<switch>`	CHP measurement On/Off
1	On
0	Off

Details

This command is available when the following trace is active:

- Spectrum

Example of Use

To query the setting of CHP measurement.

```
CHP?
> 1
```

Related Command

This command has the same function as the following command.
`:CALCulate:CHPower[:STATe]?`

:CALCulate:CHPower[:STATe]?

Measure Channel Power Query

Function

This command queries the setting of Channel Power measurement.
Refer to `[:SENSe]:CHPower[:STATe]?`.

Related Command

This command has the same function as the following command.
`[:SENSe]:CHPower[:STATe]?`

[:SENSe]:CHPower:FREQuency:CENTer <freq>

Channel Power Channel Center Frequency

Function

This command sets the center frequency for Channel Power measurement.

Command

```
[:SENSe]:CHPower:FREQuency:CENTer <freq>
```

Parameter

<freq>		Channel center frequency
	Range	**[MS269xA, MS2830A, MS2840A]** 125 MHz centered at the center frequency (Center Frequency) of waveform capture **[MS2850A]** 1 GHz centered at the center frequency (Center Frequency) of waveform capture
	Resolution	1 Hz
	Suffix code	HZ, KHZ, KZ, MHZ, MZ, GHZ, GZ Hz is used when omitted.
	Default value	Center frequency of waveform capture (Center Frequency)

Details

This command is available when the following trace is active:

- Spectrum

For reading out a measurement result after this command has been executed, use *WAI commands to perform synchronized control.

Example of Use

To set the center frequency of Channel Power to 10 MHz and query the results.

```
CHP:FREQ:CENT 10MHZ
*WAI
FETC:CHP?
```

Related Command

This command has the same function as the following command.

```
:CALCulate:CHPower:FREQuency:CENTer
```

:CALCulate:CHPower:FREQuency:CENTer <freq>

Channel Power Channel Center Frequency

Function

This command sets the center frequency for Channel Power measurement.
Refer to `[:SENSe]:CHPower:FREQuency:CENTer`.

Related Command

This command has the same function as the following command.
`[:SENSe]:CHPower:FREQuency:CENTer`

[:SENSe]:CHPower:FREQuency:CENTer?

Channel Power Channel Center Frequency Query

Function

This command queries the center frequency for Channel Power measurement.

Query

```
[:SENSe]:CHPower:FREQuency:CENTer?
```

Response

```
<freq>
```

Parameter

<freq> Channel center frequency

Range **[MS269xA, MS2830A, MS2840A]**
125 MHz centered at the center frequency (Center Frequency) of waveform capture
[MS2850A]
1 GHz centered at the center frequency (Center Frequency) of waveform capture

Resolution 1 Hz

No suffix code. Value is returned in Hz units.

Details

This command is available when the following trace is active:

- Spectrum

Example of Use

To query the center frequency of Channel Power.

```
CHP:FREQ:CENT?
> 10000000
```

Related Command

This command has the same function as the following command.

```
:CALCulate:CHPower:FREQuency:CENTer?
```

:CALCulate:CHPower:FREQuency:CENTer?

Channel Power Channel Center Frequency Query

Function

This command queries the center frequency for Channel Power measurement.
Refer to `[:SENSe]:CHPower:FREQuency:CENTer?`.

Related Command

This command has the same function as the following command.

```
[:SENSe]:CHPower:FREQuency:CENTer?
```

[:SENSe]:CHPower:BANDwidth:INTegration <freq>

Channel Power Channel Bandwidth

Function

This command sets the channel bandwidth for channel power measurement.

Command

```
[:SENSe]:CHPower:BANDwidth:INTegration <freq>
```

Parameter

`<freq>`		Channel bandwidth
	`Range`	**[MS269xA, MS2830A, MS2840A]** 1 Hz to 125 MHz **[MS2850A]** 1 Hz to 1 GHz
	Resolution	1 Hz
	Suffix code	`HZ`, `KHZ`, `KZ`, `MHZ`, `MZ`, `GHZ`, `GZ` Hz is used when omitted.
	Default value	3.84 MHz

Details

This command is available when the following trace is active:

- Spectrum

For reading out a measurement result after this command has been executed, use *WAI commands to perform synchronized control.

Example of Use

To set the channel bandwidth to 1 MHz and query the results.

```
CHP:BAND:INT 1MHZ
*WAI
FETC:CHP?
```

Related Command

This command has the same function as the following command.

```
:CALCulate:CHPower:BANDwidth:INTegration
```

:CALCulate:CHPower:BANDwidth:INTegration <freq>

Channel Power Channel Bandwidth

Function

This command sets the channel bandwidth for channel power measurement.

Refer to `[:SENSe]:CHPower:BANDwidth:INTegration`.

Related Command

This command has the same function as the following command.

`[:SENSe]:CHPower:BANDwidth:INTegration`

[:SENSe]:CHPower:BANDwidth:INTegration?

Channel Power Channel Bandwidth Query

Function

This command queries the channel bandwidth for Channel Power measurement.

Query

```
[:SENSe]:CHPower:BANDwidth:INTegration?
```

Response

```
<freq>
```

Parameter

`<freq>`		Channel bandwidth
	`Range`	**[MS269xA, MS2830A, MS2840A]** 1 Hz to 125 MHz **[MS2850A]** 1 Hz to 1 GHz
	Resolution	1 Hz
	Suffix code	None, value is returned in Hz units.

Details

This command is available when the following trace is active:

- Spectrum

Example of Use

To query the channel bandwidth.

```
CHP:BAND:INT?
> 1000000
```

Related Command

This command has the same function as the following command.

```
:CALCulate:CHPower:BANDwidth:INTegration?
```

:CALCulate:CHPower:BANDwidth:INTegration?

Channel Power Channel Bandwidth Query

Function

This command queries the channel bandwidth for Channel Power measurement.

Refer to `[:SENSe]:CHPower:BANDwidth:INTegration?`.

Related Command

This command has the same function as the following command.

```
[:SENSe]:CHPower:BANDwidth:INTegration?
```

[:SENSe]:CHPower:FILTer:TYPE RECT|NYQuist|RNYQuist

Channel Power Filter Type

Function

This command sets filter type for channel power measurement.

Command

```
[:SENSe]:CHPower:FILTer:TYPE <filter>
```

Parameter

<filter>	Filter type
RECT	Rectangle filter
NYQuist	Nyquist filter
RNYQuist	Root Nyquist filter (Default value)

Details

This command is available when the following trace is active:

- Spectrum

For reading out a measurement result after this command has been executed, use *WAI commands to perform synchronized control.

Example of Use

To set the filter type to Nyquist and query the results.

```
CHP:FILT:TYPE NYQ
*WAI
FETC:CHP?
```

Related Command

This command has the same function as the following commands.

```
:CALCulate:CHPower:FILTer:TYPE
[:SENSe]:CHPower:FILTer[:RRC][:STATe]
:CALCulate:CHPower:FILTer[:RRC][:STATe]
```

:CALCulate:CHPower:FILTer:TYPE RECT|NYQuist|RNYQuist

Channel Power Filter Type

Function

This command sets filter type for channel power measurement.
Refer to `[:SENSe]:CHPower:FILTer:TYPE`.

Related Command

This command has the same function as the following commands.

```
[:SENSe]:CHPower:FILTer:TYPE
[:SENSe]:CHPower:FILTer[:RRC][:STATe]
:CALCulate:CHPower:FILTer[:RRC][:STATe]
```

[:SENSe]:CHPower:FILTer:TYPE?

Channel Power Filter Type Query

Function

This command queries filter type for Channel Power measurement.

Query

```
[:SENSe]:CHPower:FILTer:TYPE?
```

Response

```
<filter>
```

Parameter

`<filter>`	Filter type
`RECT`	Rectangle filter
`NYQ`	Nyquist filter
`RNYQ`	Root Nyquist filter (Default value)

Details

This command is available when the following trace is active:

- Spectrum

Example of Use

To query the filter type.

```
CHP:FILT:TYPE?
> NYQ
```

Related Command

This command has the same function as the following commands.

```
:CALCulate:CHPower:FILTer:TYPE?
[:SENSe]:CHPower:FILTer[:RRC][:STATe]?
:CALCulate:CHPower:FILTer[:RRC][:STATe]?
```

:CALCulate:CHPower:FILTer:TYPE?

Channel Power Filter Type Query

Function

This command queries filter type for Channel Power measurement.
Refer to `[:SENSe]:CHPower:FILTer:TYPE?`.

Related Command

This command has the same function as the following commands.

```
[:SENSe]:CHPower:FILTer:TYPE?
[:SENSe]:CHPower:FILTer[:RRC][:STATe]?
:CALCulate:CHPower:FILTer[:RRC][:STATe]?
```

[:SENSe]:CHPower:FILTer[:RRC][:STATe] ON|OFF|1|0

Channel Power Filter Type

Function

This command sets filter type for Channel Power measurement.

Command

```
[:SENSe]:CHPower:FILTer[:RRC][:STATe] <filter>
```

Parameter

<filter>	Filter type
0|OFF	Rectangle filter
1|ON	Root Nyquist filter (Default value)

Details

This command is available when the following trace is active:

- Spectrum

For reading out a measurement result after this command has been executed, use *WAI commands to perform synchronized control.

Example of Use

To set the filter type to Root Nyquist and query the results.

```
CHP:FILT 1
*WAI
FETC:CHP?
```

Related Command

This command has the same function as the following commands.

```
[:SENSe]:CHPower:FILTer:TYPE
:CALCulate:CHPower:FILTer:TYPE
:CALCulate:CHPower:FILTer[:RRC][:STATe]
```

:CALCulate:CHPower:FILTer[:RRC][:STATe] ON|OFF|1|0

Channel Power Filter Type

Function

This command sets filter type for Channel Power measurement.
Refer to `[:SENSe]:CHPower:FILTer[:RRC][:STATe]`.

Related Command

This command has the same function as the following commands.

```
[:SENSe]:CHPower:FILTer:TYPE
:CALCulate:CHPower:FILTer:TYPE
[:SENSe]:CHPower:FILTer[:RRC][:STATe]
```

[:SENSe]:CHPower:FILTer[:RRC][:STATe]?

Channel Power Filter Type Query

Function

This command queries the filter type for Channel Power measurement.

Query

```
[:SENSe]:CHPower:FILTer[:RRC][:STATe]?
```

Response

```
<filter>
```

Parameter

`<filter>`	Filter type
0	Rectangle filter, Nyquist filter
1	Root Nyquist filter (Default value)

Details

This command is available when the following trace is active:

- Spectrum

Example of Use

To query the filter type.

```
CHP:FILT?
> 1
```

Related Command

This command has the same function as the following commands.

```
[:SENSe]:CHPower:FILTer:TYPE?
:CALCulate:CHPower:FILTer:TYPE?
:CALCulate:CHPower:FILTer[:RRC][:STATe]?
```

:CALCulate:CHPower:FILTer[:RRC][:STATe]?

Channel Power Filter Type Query

Function

This command queries filter type for Channel Power measurement.

Refer to `[:SENSe]:CHPower:FILTer[:RRC][:STATe]?`.

Related Command

This command has the same function as the following commands.

```
[:SENSe]:CHPower:FILTer:TYPE?
:CALCulate:CHPower:FILTer:TYPE?
[:SENSe]:CHPower:FILTer[:RRC][:STATe]?
```

[:SENSe]:CHPower:FILTer[:RRC]:ALPHa <real>

Channel Power Rolloff Ratio

Function

This command sets the rolloff ratio for Channel Power measurement.

Command

```
[:SENSe]:CHPower:FILTer[:RRC]:ALPHa <real>
```

Parameter

<real>	Filter rolloff ratio
Range	0.01 to 1.00
Resolution	0.01
Suffix code	None
Default value	0.22

Details

This command is available when the following trace is active:

- Spectrum

This command is available when the filter type (Channel Power Filter Type) is set to either of the following:

- Nyquist
- Root Nyquist

For reading out a measurement result after this command has been executed, use *WAI commands to perform synchronized control.

Example of Use

To set the filter rolloff ratio to 0.22 and query the results.

```
CHP:FILT:ALPH 0.22
*WAI
FETC:CHP?
```

Related Command

This command has the same function as the following command.

```
:CALCulate:CHPower:FILTer[:RRC]:ALPHa
```

:CALCulate:CHPower:FILTer[:RRC]:ALPHa <real>

Channel Power Rolloff Ratio

Function

This command sets the rolloff ratio for Channel Power measurement.

Refer to `[:SENSe]:CHPower:FILTer[:RRC]:ALPHa`.

Related Command

This command has the same function as the following command.

```
[:SENSe]:CHPower:FILTer[:RRC]:ALPHa
```

[:SENSe]:CHPower:FILTer[:RRC]:ALPHa?

Channel Power Rolloff Ratio Query

Function

This command queries the rolloff ratio for Channel Power measurement.

Query

```
[:SENSe]:CHPower:FILTer[:RRC]:ALPHa?
```

Response

```
<real>
```

Parameter

`<real>`	Filter rolloff ratio
Range	0.01 to 1.00
Resolution	0.01
Suffix code	None
Default value	0.22

Details

This command is available when the following trace is active:

- Spectrum

This command is available when the filter type (Channel Power Filter Type) is set to the following:

- Nyquist
- Root Nyquist

Example of Use

To query the filter rolloff ratio.

```
CHP:FILT:ALPH?
> 0.22
```

Related Command

This command has the same function as the following command.

```
:CALCulate:CHPower:FILTer[:RRC]:ALPHa?
```

:CALCulate:CHPower:FILTer[:RRC]:ALPHa?

Channel Power Rolloff Ratio Query

Function

This command queries the rolloff ratio for Channel Power measurement.
Refer to `[:SENSe]:CHPower:FILTer[:RRC]:ALPHa?`.

Related Command

This command has the same function as the following command.

```
[:SENSe]:CHPower:FILTer[:RRC]:ALPHa?
```

:CONFigure:CHPower

Channel Power Configure

Function

This command sets Channel Power measurement to On.

Command

```
:CONFigure:CHPower
```

Details

No measurement is performed.
Spectrum is set if this command is executed when the trace is set to other than Spectrum.
Log is set if this command is executed when Scale Mode is set to Linear.
For reading out a measurement result after this command has been executed, use *WAI commands to perform synchronized control.

Example of Use

To set Channel Power measurement to On and query the results.

```
CONF:CHP
*WAI
FETC:CHP?
```

:INITiate:CHPower

Channel Power Initiate

Function

This command performs a Channel Power measurement.

Command

```
:INITiate:CHPower
```

Details

When this command is executed, Channel Power measurement is set to On and the measurement is performed.
Spectrum is set if this command is executed when the trace is set to other than Spectrum.
Log is set if this command is executed when Scale Mode is set to Linear.
For reading out a measurement result after this command has been executed, use *WAI commands to perform synchronized control.

Example of Use

To perform Channel Power measurement and query the results.

```
INIT:CHP
*WAI
FETC:CHP?
```

:FETCh:CHPower[n]?

Channel Power Fetch

Function

This command queries the results of Channel Power measurement.

Query

```
:FETCh:CHPower[n]?
```

Response

```
<power>,<density>
```

n = 1 or when omitted

Parameter

<power>	Power aggregate in the band specified in Channel bandwidth. When Scale Mode is Log: Log Scale Unit units (Note: dBm units for V, W units for W) Value without a suffix code is returned. –999.0 is returned when no measurement is performed.
<density>	Power density in the bandwidth specified for Channel bandwidth When Scale Mode is Log: Log Scale Unit units (Note: dBm units for V, W units for W) Returns a value without a suffix code. –99.0 is returned when no measurement is performed.

Details

This command queries the measurement result of Channel Power measurement performed last. This function does not accompany any capture, thus this function is used to output the measurement result in a different type, when the measurement has already completed.
Use READ command to perform re-measurement with redoing capture.

Example of Use

To query the measurement result of the total power and the power density.

```
FETC:CHP?
> -8.00,-50.00
```

:FETCh:CHPower:CHPower?

Channel Power Fetch Channel Power

Function

This command queries the power aggregate in the band for Channel Power measurement.

Query

```
:FETCh:CHPower:CHPower?
```

Response

```
<power>
```

Parameter

<power>	Power aggregate in the band specified in Channel bandwidth. When Scale Mode is Log: Log Scale Unit units (Note: dBm units for V, W units for W) Value without a suffix code is returned. –999.0 is returned when no measurement is performed.

Details

This command queries the measurement result of Channel Power measurement performed lastly. This function does not accompany any capture, thus this function is used to output the measurement result in a different type, when the measurement has already completed.
Use READ command to perform re-measurement with redoing capture.

Example of Use

To query the power aggregate.

```
FETC:CHP:CHP?
> -8.00
```

:FETCh:CHPower:DENSity?

Channel Power Fetch Density

Function

This command queries the power density in the band for Channel Power measurement.

Query

```
:FETCh:CHPower:DENSity?
```

Response

```
<density>
```

Parameter

`<density>`	Power density in the band specified in Channel bandwidth When Scale Mode is Log: Log Scale Unit units (Note: dBm units for V, W units for W) Value without a suffix code is returned. –999.0 is returned when no measurement is performed.

Details

This command queries the measurement result of Channel Power measurement performed lastly. This function does not accompany any capture, thus this function is used to output the measurement result in a different type, when the measurement has already completed.
Use READ command to perform re-measurement with redoing capture.

Example of Use

To query the power density.

```
FETC:CHP:DENS?
> -8.00
```

:READ:CHPower[n]?

Channel Power Read

Function

This command performs Channel Power measurement and queries the measurement result.

This command has the same function as the following commands executed in this order:

```
:INITiate:CHPower
:FETCh:CHPower[n]?
```

:READ:CHPower:CHPower?

Channel Power Read Channel Power

Function

This command performs Channel Power measurement and queries the power aggregate in the band.

This command functions the same as when the following commands are executed in this order:

```
:INITiate:CHPower
:FETCh:CHPower:CHPower?
```

:READ:CHPower:DENSity?

Channel Power Read Density

Function

This command performs Channel Power measurement and queries the power density in the band.

This command has the same function as the following commands executed in this order:

```
:INITiate:CHPower
:FETCh:CHPower:DENSity?
```

:MEASure:CHPower[n]?

Channel Power Measure

Function

This command performs Channel Power measurement and queries the measurement result.

This command has the same function as the following commands executed in this order:

```
:CONFigure:CHPower
:INITiate:CHPower
:FETCh:CHPower[n]?
```

:MEASure:CHPower:CHPower?

Channel Power Measure Channel Power

Function

This command performs Channel Power measurement and queries the power aggregate in the band.

This command has the same function as the following commands executed in this order:

```
:CONFigure:CHPower
:INITiate:CHPower
:FETCh:CHPower:CHPower?
```

:MEASure:CHPower:DENSity?

Channel Power Measure Density

Function

This command performs a measurement at Channel Power and outputs the power density in the band.

This command has the same function as the following commands executed in this order:

```
:CONFigure:CHPower
:INITiate:CHPower
:FETCh:CHPower:DENSity?
```

:CALCulate:CHPower:MARKer:AOFF

All Marker Off

Function

This command sets all markers to OFF.
Refer to :CALCulate:MARKer:AOFF.

Related Command

This command has the same function as the following commands:
:CALCulate:MARKer:AOFF
:CALCulate:ACPower:MARKer:AOFF
:CALCulate:OBWidth:MARKer:AOFF
:CALCulate:BPOWer|:TXPower:MARKer:AOFF

:CALCulate:CHPower:MARKer[1]|2|3|4|5|6|7|8|9|10:MAXimum

Peak Search

Function

This command searches for the maximum level point of the main trace and moves the marker point.
Refer to :CALCulate:MARKer[1]|2|3|4|5|6|7|8|9|10:MAXimum.

Related Command

This command has the same function as the following commands:
:CALCulate:MARKer[1]|2|3|4|5|6|7|8|9|10:MAXimum
:CALCulate:ACPower:MARKer[1]|2|3|4|5|6|7|8|9|10:MAXimum
:CALCulate:OBWidth:MARKer[1]|2|3|4|5|6|7|8|9|10:MAXimum
:CALCulate:BPOWer|:TXPower:MARKer[1]|2|3|4|5|6|7|8|9|10:MAXimum

:CALCulate:CHPower:MARKer[1]|2|3|4|5|6|7|8|9|10:X <freq>|<time>|<sample>|<dist>

Zone Marker Frequency (Time)

Function

This command moves the frequency (time) which specifies the center of the zone marker.

Refer to `:CALCulate:MARKer[1]|2|3|4|5|6|7|8|9|10:X`.

Related Command

This command has the same function as the following commands:

```
:CALCulate:MARKer[1]|2|3|4|5|6|7|8|9|10:X
:CALCulate:ACPower:MARKer[1]|2|3|4|5|6|7|8|9|10:X
:CALCulate:OBWidth:MARKer[1]|2|3|4|5|6|7|8|9|10:X
:CALCulate:BPOWer|:TXPower:MARKer[1]|2|3|4|5|6|7|8|9|10:X
```

:CALCulate:CHPower:MARKer[1]|2|3|4|5|6|7|8|9|10:X?

Zone Marker Frequency (Time) Query

Function

This command queries the center of the zone marker.

Refer to `:CALCulate:MARKer[1]|2|3|4|5|6|7|8|9|10:X?`.

Related Command

This command has the same function as the following commands.

```
:CALCulate:MARKer[1]|2|3|4|5|6|7|8|9|10:X?
:CALCulate:ACPower:MARKer[1]|2|3|4|5|6|7|8|9|10:X?
:CALCulate:OBWidth:MARKer[1]|2|3|4|5|6|7|8|9|10:X?
:CALCulate:BPOWer|:TXPower:MARKer[1]|2|3|4|5|6|7|8|9|10:X?
```

:CALCulate:CHPower:MARKer[1]|2|3|4|5|6|7|8|9|10:Y?

Marker Level Query

Function

This command queries the level at the marker point.
Refer to :CALCulate:MARKer[1]|2|3|4|5|6|7|8|9|10[:PEAK]:Y?.

Related Command

This command has the same function as the following commands.
:CALCulate:MARKer[1]|2|3|4|5|6|7|8|9|10[:PEAK]:Y?
:CALCulate:ACPower:MARKer[1]|2|3|4|5|6|7|8|9|10:Y?
:CALCulate:OBWidth:MARKer[1]|2|3|4|5|6|7|8|9|10:Y?
:CALCulate:BPOWer|:TXPower:MARKer[1]|2|3|4|5|6|7|8|9|10:Y?

:DISPlay:CHPower:ANNotation:TITLe:DATA <string>

Title Entry

Function

This command registers the title character string.
Refer to `:DISPlay:ANNotation:TITLe:DATA`.

Related Command

This command has the same function as the following commands.

```
:DISPlay:ANNotation:TITLe:DATA
:DISPlay:ACPowe:ANNotation:TITLe:DATA
:DISPlay:OBWidth:ANNotation:TITLe:DATA
:DISPlay:BPOWer|:TXPowe:ANNotation:TITLe:DATA
```

:DISPlay:CHPower:ANNotation:TITLe:DATA?

Title Entry Query

Function

This command queries the title character string.
Refer to `:DISPlay:ANNotation:TITLe:DATA?`.

Related Command

This command has the same function as the following commands.

```
:DISPlay:ANNotation:TITLe:DATA?
:DISPlay:ACPowe:ANNotation:TITLe:DATA?
:DISPlay:OBWidth:ANNotation:TITLe:DATA?
:DISPlay:BPOWer|:TXPowe:ANNotation:TITLe:DATA?
```

:DISPlay:CHPower:VIEW[1]:WINDow[1]:TRACe:Y[:SCALe]:PDIVision <rel_ampl>

Log Scale Range

Function

This command sets the Y-axis scale range when Scale Mode is set to Log.
Refer to `:DISPlay:WINDow[1]:TRACe:Y[:SCALe]:PDIVision [:LOGarithmic]`.

Related Command

This command has the same function as the following commands.

```
:DISPlay:WINDow[1]:TRACe:Y[:SCALe]:PDIVision[:LOGarithmic]
:DISPlay:ACPower:VIEW[1]:WINDow[1]:TRACe:Y[:SCALe]:PDIVision
:DISPlay:OBWidth:VIEW[1]:WINDow[1]:TRACe:Y[:SCALe]:PDIVision
:DISPlay:BPOWer|:TXPower:VIEW[1]:WINDow[1]:TRACe:Y[:SCALe]:PDIVision
```

:DISPlay:CHPower:VIEW[1]:WINDow[1]:TRACe:Y[:SCALe]:PDIVision ?

Log Scale Range Query

Function

This command queries the Y-axis scale range when Scale Mode is set to Log.
Refer to `:DISPlay:WINDow[1]:TRACe:Y[:SCALe]:PDIVision [:LOGarithmic]?`.

Related Command

This command has the same function as the following commands.

```
:DISPlay:WINDow[1]:TRACe:Y[:SCALe]:PDIVision[:LOGarithmic]?
:DISPlay:ACPower:VIEW[1]:WINDow[1]:TRACe:Y[:SCALe]:PDIVision?
:DISPlay:OBWidth:VIEW[1]:WINDow[1]:TRACe:Y[:SCALe]:PDIVision?
:DISPlay:BPOWer|:TXPower:VIEW[1]:WINDow[1]:TRACe:Y[:SCALe]:PDIVision?
```

:DISPlay:CHPower:VIEW[1]:WINDow[1]:TRACe:Y[:SCALe]:RLEVel <real>

Reference Level

Function

This command sets the reference level.
Refer to :DISPlay:WINDow[1]:TRACe:Y[:SCALe]:RLEVel.

Related Command

This command has the same function as the following commands.
:DISPlay:WINDow[1]:TRACe:Y[:SCALe]:RLEVel
:DISPlay:ACPower:VIEW[1]:WINDow[1]:TRACe:Y[:SCALe]:RLEVel
:DISPlay:OBWidth:VIEW[1]:WINDow[1]:TRACe:Y[:SCALe]:RLEVel
:DISPlay:BPOWer|:TXPower:VIEW[1]:WINDow[1]:TRACe:Y[:SCALe]:RLEVel

:DISPlay:CHPower:VIEW[1]:WINDow[1]:TRACe:Y[:SCALe]:RLEVel?

Reference Level Query

Function

This command queries the reference level.
Refer to :DISPlay:WINDow[1]:TRACe:Y[:SCALe]:RLEVel?.

Related Command

This command has the same function as the following commands.
:DISPlay:WINDow[1]:TRACe:Y[:SCALe]:RLEVel?
:DISPlay:ACPower:VIEW[1]:WINDow[1]:TRACe:Y[:SCALe]:RLEVel?
:DISPlay:OBWidth:VIEW[1]:WINDow[1]:TRACe:Y[:SCALe]:RLEVel?
:DISPlay:BPOWer|:TXPower:VIEW[1]:WINDow[1]:TRACe:Y[:SCALe]:RLEVel?

:TRIGger:CHPower[:SEQuence]:SOURce EXTernal[1]|IMMediate|WIF|RFBurst|VIDeo|SG|BBIF

Trigger Source

Function

This command selects the trigger source.
Refer to `TRIGger[:SEQuence]:SOURce`.

Related Command

This command has the same function as the following commands.

```
TRIGger[:SEQuence]:SOURce
TRIGger:ACPower[:SEQuence]:SOURce
TRIGger:OBWidth[:SEQuence]:SOURce
TRIGger:BPOWer|:TXPower[:SEQuence]:SOURce
TRIGger:CCDF|:PSTatistic[:SEQuence]:SOURce
```

:TRIGger:CHPower[:SEQuence]:SOURce?

Trigger Source Query

Function

This command queries the trigger source.
Refer to `TRIGger[:SEQuence]:SOURce?`.

Related Command

This command has the same function as the following commands.

```
TRIGger[:SEQuence]:SOURce?
TRIGger:ACPower[:SEQuence]:SOURce?
TRIGger:OBWidth[:SEQuence]:SOURce?
TRIGger:BPOWer|:TXPower[:SEQuence]:SOURce?
TRIGger:CCDF|:PSTatistic[:SEQuence]:SOURce?
```

[:SENSe]:CHPower:AVERage:COUNt <integer>

Average Count

Function

This command sets the storage count.

Refer to `[:SENSe]:AVERage:COUNt`.

Related Command

This command has the same function as the following commands.

`[:SENSe]:AVERage:COUNt`

`[:SENSe]:ACPower:AVERage:COUNt`

`[:SENSe]:OBWidth:AVERage:COUNt`

`[:SENSe]:BPOWer|:TXPower:ACPower:AVERage:COUNt`

[:SENSe]:CHPower:AVERage:COUNt?

Average Count Query

Function

This command queries the storage count.

Refer to `[:SENSe]:AVERage:COUNt?`.

Related Command

This command has the same function as the following commands.

`[:SENSe]:AVERage:COUNt?`

`[:SENSe]:ACPower:AVERage:COUNt?`

`[:SENSe]:OBWidth:AVERage:COUNt?`

`[:SENSe]:BPOWer|:TXPower:ACPower:AVERage:COUNt?`

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

Storage Mode

Function

This command sets the storage method.
Refer to [:SENSe]:ACPower:AVERage[:STATe].

Related Command

This command has the same function as the following commands.
:TRACe:STORage:MODE
[:SENSe]:ACPower:AVERage[:STATe]
[:SENSe]:OBWidth:AVERage[:STATe]
[:SENSe]:BPOWer|:TXPower:AVERage[:STATe]

[:SENSe]:CHPower:AVERage[:STATe]?

Storage Mode Query

Function

This command queries the storage method.
Refer to [:SENSe]:ACPower:AVERage[:STATe]?.

Related Command

This command has the same function as the following commands.
:TRACe:STORage:MODE?
[:SENSe]:ACPower:AVERage[:STATe]
[:SENSe]:OBWidth:AVERage[:STATe]
[:SENSe]:BPOWer|:TXPower:AVERage[:STATe]

[:SENSe]:CHPower:BANDwidth[:RESolution] <freq>

Resolution Bandwidth

Function

This command sets the resolution bandwidth (RBW).
Refer to `[:SENSe]:BANDwidth|:BWIDth[:RESolution]`.

Related Command

This command has the same function as the following commands.

```
[:SENSe]:BANDwidth|:BWIDth[:RESolution]
:CALCulate:BANDwidth|:BWIDth[:RESolution]
[:SENSe]:ACPower:BANDwidth[:RESolution]
:CALCulate:ACPower:BANDwidth[:RESolution]
:CALCulate:CHPower:BANDwidth[:RESolution]
[:SENSe]:OBWidth:BANDwidth[:RESolution]
:CALCulate:OBWidth:BANDwidth[:RESolution]
[:SENSe]:BPOWer|:TXPower:BANDwidth[:RESolution]
:CALCulate:BPOWer|:TXPower:BANDwidth[:RESolution]
```

:CALCulate:CHPower:BANDwidth[:RESolution] <freq>

Resolution Bandwidth

Function

This command sets the resolution bandwidth (RBW).
Refer to `[:SENSe]:BANDwidth|:BWIDth[:RESolution]`.

Related Command

This command has the same function as the following commands.

```
[:SENSe]:BANDwidth|:BWIDth[:RESolution]
:CALCulate:BANDwidth|:BWIDth[:RESolution]
[:SENSe]:ACPower:BANDwidth[:RESolution]
[:SENSe]:CHPower:BANDwidth[:RESolution]
:CALCulate:CHPower:BANDwidth[:RESolution]
[:SENSe]:OBWidth:BANDwidth[:RESolution]
:CALCulate:OBWidth:BANDwidth[:RESolution]
[:SENSe]:BPOWer|:TXPower:BANDwidth[:RESolution]
:CALCulate:BPOWer|:TXPower:BANDwidth[:RESolution]
```

[:SENSe]:CHPower:BANDwidth[:RESolution]?

Resolution Bandwidth Query

Function

This command queries the resolution bandwidth (RBW).
Refer to [:SENSe]:BANDwidth|:BWIDth[:RESolution]?.

Related Command

This command has the same function as the following commands.

```
[:SENSe]:BANDwidth|:BWIDth[:RESolution]?
:CALCulate:BANDwidth|:BWIDth[:RESolution]?
[:SENSe]:ACPower:BANDwidth[:RESolution]?
:CALCulate:ACPower:BANDwidth[:RESolution]?
:CALCulate:CHPower:BANDwidth[:RESolution]?
[:SENSe]:OBWidth:BANDwidth[:RESolution]?
:CALCulate:OBWidth:BANDwidth[:RESolution]?
[:SENSe]:BPOWer|:TXPower:BANDwidth[:RESolution]?
:CALCulate:BPOWer|:TXPower:BANDwidth[:RESolution]?
```

:CALCulate:CHPower:BANDwidth[:RESolution]?

Resolution Bandwidth Query

Function

This command queries the resolution bandwidth (RBW).
Refer to [:SENSe]:BANDwidth|:BWIDth[:RESolution]?.

Related Command

This command has the same function as the following commands.

```
[:SENSe]:BANDwidth|:BWIDth[:RESolution]?
:CALCulate:BANDwidth|:BWIDth[:RESolution]?
[:SENSe]:ACPower:BANDwidth[:RESolution]?
:CALCulate:ACPower:BANDwidth[:RESolution]?
[:SENSe]:CHPower:BANDwidth[:RESolution]?
[:SENSe]:OBWidth:BANDwidth[:RESolution]?
:CALCulate:OBWidth:BANDwidth[:RESolution]?
[:SENSe]:BPOWer|:TXPower:BANDwidth[:RESolution]?
:CALCulate:BPOWer|:TXPower:BANDwidth[:RESolution]?
```

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

Resolution Bandwidth Auto/Manual

Function

This command enables/disables the automatic resolution bandwidth (RBW) setting function.

Refer to `[:SENSe]:BANDwidth|:BWIDth[:RESolution]:AUTO`.

Related Command

This command has the same function as the following commands.

```
[:SENSe]:BANDwidth|:BWIDth[:RESolution]:AUTO
:CALCulate:BANDwidth|:BWIDth[:RESolution]:AUTO
[:SENSe]:ACPower:BANDwidth[:RESolution]:AUTO
:CALCulate:ACPower:BANDwidth[:RESolution]:AUTO
:CALCulate:CHPower:BANDwidth[:RESolution]:AUTO
[:SENSe]:OBWidth:BANDwidth[:RESolution]:AUTO
:CALCulate:OBWidth:BANDwidth[:RESolution]:AUTO
```

:CALCulate:CHPower:BANDwidth[:RESolution]:AUTO ON|OFF|1|0

Resolution Bandwidth Auto/Manual

Function

This command enables/disables the automatic resolution bandwidth (RBW) setting function.

Refer to `[:SENSe]:BANDwidth|:BWIDth[:RESolution]:AUTO`.

Related Command

This command has the same function as the following commands.

```
[:SENSe]:BANDwidth|:BWIDth[:RESolution]:AUTO
:CALCulate:BANDwidth|:BWIDth[:RESolution]:AUTO
[:SENSe]:ACPower:BANDwidth[:RESolution]:AUTO
:CALCulate:ACPower:BANDwidth[:RESolution]:AUTO
[:SENSe]:CHPower:BANDwidth[:RESolution]:AUTO
[:SENSe]:OBWidth:BANDwidth[:RESolution]:AUTO
:CALCulate:OBWidth:BANDwidth[:RESolution]:AUTO
```

[:SENSe]:CHPower:BANDwidth[:RESolution]:AUTO?

Resolution Bandwidth Auto/Manual Query

Function

This command queries the On/Off state of the automatic resolution bandwidth (RBW).
Refer to `[:SENSe]:BANDwidth|:BWIDth[:RESolution]:AUTO?`.

Related Command

This command has the same function as the following commands.

```
[:SENSe]:BANDwidth|:BWIDth[:RESolution]:AUTO?
:CALCulate:BANDwidth|:BWIDth[:RESolution]:AUTO?
[:SENSe]:ACPower:BANDwidth[:RESolution]:AUTO?
:CALCulate:ACPower:BANDwidth[:RESolution]:AUTO?
:CALCulate:CHPower:BANDwidth[:RESolution]:AUTO?
[:SENSe]:OBWidth:BANDwidth[:RESolution]:AUTO?
:CALCulate:OBWidth:BANDwidth[:RESolution]:AUTO?
```

:CALCulate:CHPower:BANDwidth[:RESolution]:AUTO?

Resolution Bandwidth Auto/Manual Query

Function

This command queries the On/Off state of the automatic resolution bandwidth (RBW).
Refer to `[:SENSe]:BANDwidth|:BWIDth[:RESolution]:AUTO?`.

Related Command

This command has the same function as the following commands.

```
[:SENSe]:BANDwidth|:BWIDth[:RESolution]:AUTO?
:CALCulate:BANDwidth|:BWIDth[:RESolution]:AUTO?
[:SENSe]:ACPower:BANDwidth[:RESolution]:AUTO?
:CALCulate:ACPower:BANDwidth[:RESolution]:AUTO?
[:SENSe]:CHPower:BANDwidth[:RESolution]:AUTO?
[:SENSe]:OBWidth:BANDwidth[:RESolution]:AUTO?
:CALCulate:OBWidth:BANDwidth[:RESolution]:AUTO?
```

[:SENSe]:CHPower:DETector[:FUNCtion] NORMal|POSitive|NEGative|AVERage

Detection Mode

Function

This command selects the detection mode for the waveform pattern.
Refer to `[:SENSe]:DETector[:FUNCtion]`.

Related Command

This command has the same function as the following commands.

```
[:SENSe]:DETector[:FUNCtion]
:CALCulate:DETector[:FUNCtion]
[:SENSe]:ACPower:DETector[:FUNCtion]
:CALCulate:ACPower:DETector[:FUNCtion]
:CALCulate:CHPower:DETector[:FUNCtion]
[:SENSe]:OBWidth:DETector[:FUNCtion]
:CALCulate:OBWidth:DETector[:FUNCtion]
```

:CALCulate:CHPower:DETector[:FUNCtion] NORMal|POSitive|NEGative|AVERage

Detection Mode

Function

This command selects the detection mode for the waveform pattern.
Refer to `[:SENSe]:DETector[:FUNCtion]`.

Related Command

This command has the same function as the following commands.

```
[:SENSe]:DETector[:FUNCtion]
:CALCulate:DETector[:FUNCtion]
[:SENSe]:ACPower:DETector[:FUNCtion]
:CALCulate:ACPower:DETector[:FUNCtion]
[:SENSe]:CHPower:DETector[:FUNCtion]
[:SENSe]:OBWidth:DETector[:FUNCtion]
:CALCulate:OBWidth:DETector[:FUNCtion]
```

[:SENSe]:CHPower:DETector[:FUNCtion]?

Detection Mode Query

Function

This command selects the detection mode for the waveform pattern.
Refer to [:SENSe]:DETector[:FUNCtion]?.

Related Command

This command has the same function as the following commands.

```
[:SENSe]:DETector[:FUNCtion]?
:CALCulate:DETector[:FUNCtion]?
[:SENSe]:ACPower:DETector[:FUNCtion]?
:CALCulate:ACPower:DETector[:FUNCtion]?
:CALCulate:CHPower:DETector[:FUNCtion]?
[:SENSe]:OBWidth:DETector[:FUNCtion]?
:CALCulate:OBWidth:DETector[:FUNCtion]?
```

:CALCulate:CHPower:DETector[:FUNCtion]?

Detection Mode Query

Function

This command selects the detection mode for the waveform pattern.
Refer to [:SENSe]:DETector[:FUNCtion]?.

Related Command

This command has the same function as the following commands.

```
[:SENSe]:DETector[:FUNCtion]?
:CALCulate:DETector[:FUNCtion]?
[:SENSe]:ACPower:DETector[:FUNCtion]?
:CALCulate:ACPower:DETector[:FUNCtion]?
[:SENSe]:CHPower:DETector[:FUNCtion]?
[:SENSe]:OBWidth:DETector[:FUNCtion]?
:CALCulate:OBWidth:DETector[:FUNCtion]?
```

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

Frequency Span

Function

This command sets the frequency span.

Refer to `[:SENSe]:FREQuency:SPAN`.

Related Command

This command has the same function as the following commands.

`[:SENSe]:FREQuency:SPAN`

`[:SENSe]:ACPower:FREQuency:SPAN`

`[:SENSe]:OBWidth:FREQuency:SPAN`

[:SENSe]:CHPower:FREQuency:SPAN?

Frequency Span Query

Function

This command queries the frequency span.

Refer to `[:SENSe]:FREQuency:SPAN?`.

Related Command

This command has the same function as the following commands.

`[:SENSe]:FREQuency:SPAN?`

`[:SENSe]:ACPower:FREQuency:SPAN?`

`[:SENSe]:OBWidth:FREQuency:SPAN?`

[:SENSe]:CHPower:SWEep:POINts?

Trace Point Query

Function

This command queries the number of the trace display points.
Refer to [:SENSe]:SWEep:POINts?.

Related Command

This command has the same function as the following commands.
[:SENSe]:SWEep:POINts?
[:SENSe]:ACPower:SWEep:POINts?
[:SENSe]:OBWidth:SWEep:POINts?

[:SENSe]:CHPower:SWEep:TIME <time>

Sweep Time

Function

This command sets the sweep time.
Refer to [:SENSe]:SWEep:TIME.

Related Command

This command has the same function as the following commands.
[:SENSe]:SWEep:TIME
[:SENSe]:ACPower:SWEep:TIME
[:SENSe]:OBWidth:SWEep:TIME
[:SENSe]:BPOWer|:TXPower:SWEep:TIME

[:SENSe]:CHPower:SWEep:TIME?

Sweep Time Query

Function

This command queries the sweep time.
Refer to [:SENSe]:SWEep:TIME?.

Related Command

This command has the same function as the following commands.
[:SENSe]:SWEep:TIME?
[:SENSe]:ACPower:SWEep:TIME
[:SENSe]:OBWidth:SWEep:TIME
[:SENSe]:BPOWer|:TXPower:SWEep:TIME

[:SENSe]:CHPower:SWEep:TIME:AUTO OFF|ON|0|1

Sweep Time Auto/Manual

Function

This command enables/disable the automatic sweep time setting function.

Refer to `[:SENSe]:SWEep:TIME:AUTO`.

Related Command

This command has the same function as the following commands.

`[:SENSe]:SWEep:TIME:AUTO`

`[:SENSe]:ACPower:SWEep:TIME:AUTO`

`[:SENSe]:OBWidth:SWEep:TIME:AUTO`

[:SENSe]:CHPower:SWEep:TIME:AUTO?

Sweep Time Auto/Manual Query

Function

This command queries the On/Off state of the automatic sweep time setting function.

Refer to `[:SENSe]:SWEep:TIME:AUTO?`.

Related Command

This command has the same function as the following commands.

`[:SENSe]:SWEep:TIME:AUTO?`

`[:SENSe]:ACPower:SWEep:TIME:AUTO?`

`[:SENSe]:OBWidth:SWEep:TIME:AUTO?`

:CALCulate:CHPower:MARKer[1]|2|3|4|5|6|7|8|9|10:MODE NORMal|POSition|DELTa|FIXed|OFF

Marker Mode

Function

This command sets the marker mode.
Refer to :CALCulate:MARKer[1]|2|3|4|5|6|7|8|9|10:MODE.

Related command

This command has the same function as the following commands.
:CALCulate:MARKer[1]|2|3|4|5|6|7|8|9|10:MODE
:CALCulate:ACPower:MARKer[1]|2|3|4|5|6|7|8|9|10:MODE
:CALCulate:OBWidth:MARKer[1]|2|3|4|5|6|7|8|9|10:MODE

:CALCulate:CHPower:MARKer[1]|2|3|4|5|6|7|8|9|10:MODE?

Marker Mode Query

Function

This command queries the marker mode.
Refer to :CALCulate:MARKer[1]|2|3|4|5|6|7|8|9|10:MODE?.

Related command

This command has the same function as the following commands.
:CALCulate:MARKer[1]|2|3|4|5|6|7|8|9|10:MODE?
:CALCulate:ACPower:MARKer[1]|2|3|4|5|6|7|8|9|10:MODE?
:CALCulate:OBWidth:MARKer[1]|2|3|4|5|6|7|8|9|10:MODE?

:CALCulate:CHPower:MARKer[1]|2|3|4|5|6|7|8|9|10:REFerence <integer>

Relative To

Function

This command sets the reference marker when Marker Mode is set to Delta.
Refer to `:CALCulate:MARKer[1]|2|3|4|5|6|7|8|9|10:REFerence <integer>`.

Related command

This command has the same function as the following commands.
`:CALCulate:MARKer[1]|2|3|4|5|6|7|8|9|10:REFerence`
`:CALCulate:ACPower:MARKer[1]|2|3|4|5|6|7|8|9|10:REFerence`
`:CALCulate:OBWidth:MARKer[1]|2|3|4|5|6|7|8|9|10:REFerence`

:CALCulate:CHPower:MARKer[1]|2|3|4|5|6|7|8|9|10:REFerence?

Relative To Query

Function

This command queries the reference marker when Marker Mode is set to Delta.
Refer to `:CALCulate:MARKer[1]|2|3|4|5|6|7|8|9|10:REFerence?`.

Related command

This command has the same function as the following commands.
`:CALCulate:MARKer[1]|2|3|4|5|6|7|8|9|10:REFerence?`
`:CALCulate:ACPower:MARKer[1]|2|3|4|5|6|7|8|9|10:REFerence?`
`:CALCulate:OBWidth:MARKer[1]|2|3|4|5|6|7|8|9|10:REFerence?`

2.11 Occupied Bandwidth Measurement Settings

Table 2.11-1 lists device messages for Occupied Bandwidth measurement.

Table 2.11-1 Device messages for Occupied Bandwidth measurement

Function	Device Message
Measure Occupied Bandwidth	[:SENSe]:OBWidth[:STATe] ON|OFF|1|0
	[:SENSe]:OBWidth[:STATe]?
	:CALCulate:OBWidth[:STATe] ON|OFF|1|0
	:CALCulate:OBWidth[:STATe]?
OBW Method	[:SENSe]:OBWidth:METHod NPERcent|XDB
	[:SENSe]:OBWidth:METHod?
	:CALCulate:OBWidth:METHod NPERcent|XDB
	:CALCulate:OBWidth:METHod?
OBW N% Ratio	[:SENSe]:OBWidth:PERCent <percent>
	[:SENSe]:OBWidth:PERCent?
	:CALCulate:OBWidth:PERCent <percent>
	:CALCulate:OBWidth:PERCent?
OBW X dB Value	[:SENSe]:OBWidth:XDB <rel_ampl>
	[:SENSe]:OBWidth:XDB?
	:CALCulate:OBWidth:XDB <rel_ampl>
	:CALCulate:OBWidth:XDB?
Occupied Bandwidth Configure	:CONFigure:OBWidth
Occupied Bandwidth Initiate	:INITiate:OBWidth
Occupied Bandwidth Fetch	:FETCh:OBWidth[n]?
	:FETCh:OBWidth:FERRor?
Occupied Bandwidth Read	:READ:OBWidth[n]?
	:READ:OBWidth:FERRor?
Occupied Bandwidth Measure	:MEASure:OBWidth[n]?
	:MEASure:OBWidth:FERRor?
All Marker Off	:CALCulate:OBWidth:MARKer:AOFF
Peak Search	:CALCulate:OBWidth:MARKer[1]|2|3|4|5|6|7|8|9|10:MAXimum
Zone Marker Frequency (Time)	:CALCulate:OBWidth:MARKer[1]|2|3|4|5|6|7|8|9|10:X <freq>|<time>|<sample>|<dist>
	:CALCulate:OBWidth:MARKer[1]|2|3|4|5|6|7|8|9|10:X?
Marker Level Query	:CALCulate:OBWidth:MARKer[1]|2|3|4|5|6|7|8|9|10:Y?
Title Entry	:DISPlay:OBWidth:ANNotation:TITLe:DATA <string>
	:DISPlay:OBWidth:ANNotation:TITLe:DATA?

Table 2.11-1 Device messages for Occupied Bandwidth measurement (Cont'd)

Function	Device Message
Log Scale Range	:DISPlay:OBWidth:VIEW[1]:WINDow[1]:TRACe:Y[:SCALe]:PDIVision <rel_ampl>
	:DISPlay:OBWidth:VIEW[1]:WINDow[1]:TRACe:Y[:SCALe]:PDIVision?
Reference Level	:DISPlay:OBWidth:VIEW[1]:WINDow[1]:TRACe:Y[:SCALe]:RLEVel <real>
	:DISPlay:OBWidth:VIEW[1]:WINDow[1]:TRACe:Y[:SCALe]:RLEVel?
Trigger Source	:TRIGger:OBWidth[:SEQuence]:SOURce EXTernal[1]|IMMediate|WIF|RFBurst|VIDeo|SG|BBIF
	:TRIGger:OBWidth[:SEQuence]:SOURce?
Average Count	[:SENSe]:OBWidth:AVERage:COUNt <integer>
	[:SENSe]:OBWidth:AVERage:COUNt?
Storage Mode	[:SENSe]:OBWidth:AVERage[:STATe] ON|OFF|1|0
	[:SENSe]:OBWidth:AVERage[:STATe]?
Resolution Bandwidth	[:SENSe]:OBWidth:BANDwidth[:RESolution] <freq>
	[:SENSe]:OBWidth:BANDwidth[:RESolution]?
	:CALCulate:OBWidth:BANDwidth[:RESolution] <freq>
	:CALCulate:OBWidth:BANDwidth[:RESolution]?
Resolution Bandwidth Auto/Manual	[:SENSe]:OBWidth:BANDwidth[:RESolution]:AUTO ON|OFF|1|0
	[:SENSe]:OBWidth:BANDwidth[:RESolution]:AUTO?
	:CALCulate:OBWidth:BANDwidth[:RESolution]:AUTO ON|OFF|1|0
	:CALCulate:OBWidth:BANDwidth[:RESolution]:AUTO?
Detection Mode	[:SENSe]:OBWidth:DETector[:FUNCtion] NORMal|POSitive|NEGative|AVERage
	[:SENSe]:OBWidth:DETector[:FUNCtion]?
	:CALCulate:OBWidth:DETector[:FUNCtion] NORMal|POSitive|NEGative|AVERage
	:CALCulate:OBWidth:DETector[:FUNCtion]?
Frequency Span	[:SENSe]:OBWidth:FREQuency:SPAN <freq>
	[:SENSe]:OBWidth:FREQuency:SPAN?
Trace Point Query	[:SENSe]:OBWidth:SWEep:POINts?
Sweep Time	[:SENSe]:OBWidth:SWEep:TIME <time>
	[:SENSe]:OBWidth:SWEep:TIME?
Sweep Time Auto/Manual	[:SENSe]:OBWidth:SWEep:TIME:AUTO OFF|ON|0|1
	[:SENSe]:OBWidth:SWEep:TIME:AUTO?
Marker Mode	:CALCulate:OBWidth:MARKer[1]|2|3|4|5|6|7|8|9|10:MODE NORMal|POSition|DELTa|FIXed|OFF
	:CALCulate:OBWidth:MARKer[1]|2|3|4|5|6|7|8|9|10:MODE?
Relative To	:CALCulate:OBWidth:MARKer[1]|2|3|4|5|6|7|8|9|10:REFerence <integer>
	:CALCulate:OBWidth:MARKer[1]|2|3|4|5|6|7|8|9|10:REFerence?

[:SENSe]:OBWidth[:STATe] ON|OFF|1|0

Measure Occupied Bandwidth

Function

This command executes Occupied Bandwidth measurement.

Command

```
[:SENSe]:OBWidth[:STATe] <switch>
```

Parameter

<switch>	OBW measurement On/Off
ON|1	On
OFF|0	Off

Details

This command is available when the following trace is active:

- Spectrum

For reading out a measurement result after this command has been executed, use *WAI commands to perform synchronized control.

Example of Use

To set OBW measurement to On and query the result.

```
OBW ON
*WAI
FETC:OBW?
```

Related Command

This command has the same function as the following command.

```
:CALCulate:OBWidth[:STATe]
```

:CALCulate:OBWidth[:STATe] ON|OFF|1|0

Measure Occupied Bandwidth

Function

This command performs Occupied Bandwidth measurement.
Refer to `[:SENSe]:OBWidth[:STATe]`.

Related Command

This command has the same function as the following command.

```
[:SENSe]:OBWidth[:STATe]
```

[:SENSe]:OBWidth[:STATe]?

Measure Occupied Bandwidth Query

Function

This command queries the Occupied Bandwidth measurement setting.

Command

```
[:SENSe]:OBWidth[:STATe]?
```

Parameter

<switch>	OBW measurement On/Off
1	On
0	Off

Details

This command is available when the following trace is active:

- Spectrum

Example of Use

To query the OBW measurement setting.

```
OBW?
> 1
```

Related Command

This command has the same function as the following command.

```
:CALCulate:OBWidth[:STATe]?
```

:CALCulate:OBWidth[:STATe]?

Measure Occupied Bandwidth Query

Function

This command queries the Occupied Bandwidth measurement setting.
Refer to `[:SENSe]:OBWidth[:STATe]?`.

Related Command

This command has the same function as the following command.

```
[:SENSe]:OBWidth[:STATe]?
```

[:SENSe]:OBWidth:METHod NPERcent|XDB

OBW Method

Function

This command sets the measurement method for Occupied Bandwidth measurement.

Command

```
[:SENSe]:OBWidth:METHod NPERcent|XDB
```

Parameter

<method>	Measurement method
NPERcent	N% method (Default value)
XDB	X dB Down method

Details

This command is available when the following trace is active:

- Spectrum

For reading out a measurement result after this command has been executed, use *WAI commands to perform synchronized control.

Example of Use

To set the measurement method of Occupied Bandwidth measurement to X dB Down method and query the results.

```
OBW:METH XDB
*WAI
FETC:OBW?
```

Related Command

This command has the same function as the following command.

```
:CALCulate:OBWidth:METHod
```

:CALCulate:OBWidth:METHod NPERcent|XDB

OBW Method

Function

This command sets the measurement method for Occupied Bandwidth measurement.

Refer to [:SENSe]:OBWidth:METHod.

Related Command

This command has the same function as the following command.

```
[:SENSe]:OBWidth:METHod
```

[:SENSe]:OBWidth:METHod?

OBW Method Query

Function

This command queries the measurement method of Occupied Bandwidth measurement.

Query

```
[:SENSe]:OBWidth:METHod?
```

Response

```
<method>
```

Parameter

<method>	Measurement method
NPER	N% method
XDB	X dB Down method

Details

This command is available when the following trace is active:

- Spectrum

Example of Use

To query the measurement method of Occupied Bandwidth measurement.

```
OBW:METH?
> XDB
```

Related Command

This command has the same function as the following command.

```
:CALCulate:OBWidth:METHod?
```

:CALCulate:OBWidth:METHod?

OBW Method Query

Function

This command queries the measurement method of Occupied Bandwidth measurement.

Refer to `[:SENSe]:OBWidth:METHod?`.

Related Command

This command has the same function as the following command.

```
[:SENSe]:OBWidth:METHod?
```

[:SENSe]:OBWidth:PERCent <percent>

OBW N% Ratio

Function

This command sets the condition for Occupied Frequency Bandwidth (N% method).

Command

```
[:SENSe]:OBWidth:PERCent <percent>
```

Parameter

<percent>	N%
Range	0.01 to 99.99%
Resolution	0.01
Suffix code	None
Default value	99.00%

Details

This command is available when the following trace is active:

- Spectrum

For reading out a measurement result after this command has been executed, use *WAI commands to perform synchronized control.

Example of Use

To set to 12.34% and query the results.

```
OBW:PERC 12.34
*WAI
FETC:OBW?
```

Related Command

This command has the same function as the following command.

```
:CALCulate:OBWidth:PERCent
```

:CALCulate:OBWidth:PERCent <percent>

OBW N% Ratio

Function

This command sets the condition for Occupied Frequency Bandwidth (N% method).
Refer to `[:SENSe]:OBWidth:PERCent`.

Related Command

This command has the same function as the following command.

```
[:SENSe]:OBWidth:PERCent
```

[:SENSe]:OBWidth:PERCent?

OBW N% Ratio Query

Function

This command sets the condition for Occupied Frequency Bandwidth (N% method).

```
Query
[:SENSe]:OBWidth:PERCent?
```

Response

```
<percent>
```

Parameter

<percent>	N%
Range	0.01 to 99.99%
Resolution	0.01
	No suffix code. Value is returned in % units.

Details

This command is available when the following trace is active:

- Spectrum

Example of Use

To query the condition of Occupied Frequency Bandwidth (N% method).

```
OBW:PERC?
> 12.34
```

Related Command

This command has the same function as the following command.

```
:CALCulate:OBWidth:PERCent?
```

:CALCulate:OBWidth:PERCent?

OBW N% Ratio Query

Function

This command queries the condition of Occupied Frequency Bandwidth (N% method).

Refer to `[:SENSe]:OBWidth:PERCent?`.

Related Command

This command has the same function as the following command.

```
[:SENSe]:OBWidth:PERCent?
```

[:SENSe]:OBWidth:XDB <rel_ampl>

OBW X dB Value

Function

This command sets the condition for Occupied Frequency Bandwidth (N% method).

Command

```
[:SENSe]:OBWidth:XDB <rel_ampl>
```

Parameter

<rel_ampl>	X dB
Range	0.01 to 100.00 dB
Resolution	0.01 dB
Suffix code	DB dB is used when omitted.
Default value	25.00 dB

Details

This command is available when the following trace is active:

- Spectrum

For reading out a measurement result after this command has been executed, use *WAI commands to perform synchronized control.

Example of Use

To set to 12.34 dB and query the results.

```
OBW:XDB 12.34
*WAI
FETC:OBW?
```

Related Command

This command has the same function as the following command.

```
:CALCulate:OBWidth:XDB
```

:CALCulate:OBWidth:XDB <rel_ampl>

OBW X dB Value

Function

This command sets the condition for Occupied Frequency Bandwidth (X dB).

Refer to `[:SENSe]:OBWidth:XDB`.

Related Command

This command has the same function as the following command.

```
[:SENSe]:OBWidth:XDB
```

[:SENSe]:OBWidth:XDB?

OBW X dB Value Query

Function

This command queries the condition of Occupied Frequency Bandwidth (X dB).

Query

```
[:SENSe]:OBWidth:XDB?
```

Response

```
<rel_ampl>
```

Parameter

<rel_ampl>	X dB
Range	0.01 to 100.00 dB
Resolution	0.01 dB Value is returned in dB units.
Default value	25.00 dB

Details

This command is available when the following trace is active:

- Spectrum

Example of Use

To query the condition of Occupied Frequency Bandwidth (X dB).

```
OBW:XDB?
> 12.34
```

Related Command

This command has the same function as the following command.

```
:CALCulate:OBWidth:XDB?
```

:CALCulate:OBWidth:XDB?

OBW X dB Value Query

Function

This command queries the condition of Occupied Frequency Bandwidth (X dB).

Refer to `[:SENSe]:OBWidth:XDB?`.

Related Command

This command has the same function as the following command.

```
[:SENSe]:OBWidth:XDB?
```

:CONFigure:OBWidth

Occupied Bandwidth Configure

Function

This command sets OBW measurement to On.

Command

```
:CONFigure:OBWidth
```

Details

No measurement is performed.
Spectrum is set, if this command is executed when the trace is set to other than Spectrum.
For reading out a measurement result after this command has been executed, use *WAI commands to perform synchronized control.

Example of Use

To set OBW measurement to On and query the results.

```
CONF:OBW
*WAI
FETC:OBW?
```

:INITiate:OBWidth

Occupied Bandwidth Initiate

Function

This command performs OBW measurement.

Command

```
:INITiate:OBWidth
```

Details

When this command is executed, OBW measurement is set to On and the measurement is performed.
Spectrum is set, if this command is executed when the trace is set to Spectrum.

Example of Use

To perform OBW measurement and query the results.

```
INIT:OBW
*WAI
FETC:OBW?
```

:FETCh:OBWidth[n]?

Occupied Bandwidth Fetch

Function

This command queries the measurement result of OBW measurement.

Query

```
:FETCh:OBWidth[n]?
```

Response

When Result Mode is A:

```
<obw>,<center>,<start>,<stop>
```

(n = 1 or when omitted)

When Result Mode is B:

```
<obw_nper>,-999.0,<span>,<trace_point>,
<rbw>,<freq_error>,<obw_xdb>
```

(n = 1 or when omitted)

Parameter

`<span>`	Frequency Span setting value
`<freq_error>`	Center frequency of Occupied Bandwidth and difference of center frequency
`<rbw>`	RBW setting value
`<obw>`	Occupied bandwidth
`<obw_nper>`	Occupied bandwidth (N% method) –999999999999 is returned, when OBW Method is X dB.
`<obw_xdb>`	Occupied bandwidth (X dB Down method) –999999999999 is returned, when OBW Method is N%.
`<center>`	Center frequency of Occupied Bandwidth
`<start>`	Lower side of frequency of Occupied Bandwidth
`<stop>`	Upper side of frequency of Occupied Bandwidth No suffix code/Hz units/1 Hz resolution –999999999999 is returned when no measurement is performed or an error has occurred.
`<trace_point>`	Number of trace points Returns a value without a suffix code. –999.0 is returned when no measurement is performed.

Details

This command queries the measurement result of OBW measurement performed lastly. This function does not accompany any capture, thus this function is used to output the measurement result in a different type, when the measurement has already completed.
Use READ command to perform re-measurement with redoing capture.

This command is available when the following trace is active:

- Spectrum

Return values in this function vary depending on Result Mode.
(cf. :SYSTem:RESult:MODE)

Example of Use

To query the measurement result of OBW measurement (A mode).

```
FETC:OBW?
> 30000,1000000000,900050000,1000050000
```

:FETCh:OBWidth:FERRor?

Occupied Bandwidth Fetch

Function

This command queries the difference between the center frequency of Occupied Bandwidth of OBW measurement and the center frequency.

Query

```
:FETCh:OBWidth:FERRor?
```

Response

```
<freq_error>
```

Parameter

`<freq_error>`	Difference between the center frequency of Occupied bandwidth and the center frequency. No suffix code, Hz units, 1 Hz resolution –999999999999 is returned when no measurement is performed or an error has occurred.

Details

This command queries the measurement result of OBW measurement performed lastly. This function does not accompany any capture, thus this function is used to output the measurement result in a different type, when the measurement has already completed.
Use READ command to perform re-measurement with redoing capture.

Example of Use

To query the difference between the center frequency of Occupied bandwidth of OBW measurement and the center frequency.

```
FETC:OBW:FERR?
> 30000
```

:READ:OBWidth[n]?

Occupied Bandwidth Read

Function

This command performs OBW measurement and outputs the measurement result.
This command has the same function as the following commands executed in this order:

```
:INITiate:OBWidth
:FETCh:OBWidth[n]?
```

:READ:OBWidth:FERRor?

Occupied Bandwidth Read

Function

This command performs OBW measurement and queries the difference between the center frequency of Occupied Bandwidth and the center frequency.
This command has the same function as the following commands executed in this order:

```
:INITiate:OBWidth
:FETCh:OBWidth:FERRor?
```

:MEASure:OBWidth[n]?

Occupied Bandwidth Measure

Function

This command performs OBW measurement and outputs the measurement result.
This command has the same function as the following commands executed in this order:

```
:CONFigure:OBWidth
:INITiate:OBWidth
:FETCh:OBWidth[n]?
```

:MEASure:OBWidth:FERRor?

Occupied Bandwidth Measure

Function

This command performs OBW measurement and outputs the difference between the center frequency of Occupied Bandwidth and the center frequency.
This command has the same function as the following commands executed in this order:

```
:CONFigure:OBWidth
:INITiate:OBWidth
:FETCh:OBWidth:FERRor?
```

:CALCulate:OBWidth:MARKer:AOFF

All Marker Off

Function

This command sets all markers to OFF.
Refer to :CALCulate:MARKer:AOFF.

Related Command

This command has the same function as the following commands.
:CALCulate:MARKer:AOFF
:CALCulate:ACPower:MARKer:AOFF
:CALCulate:CHPower:MARKer:AOFF
:CALCulate:BPOWer|:TXPower:MARKer:AOFF

:CALCulate:OBWidth:MARKer[1]|2|3|4|5|6|7|8|9|10:MAXimum

Peak Search

Function

This command searches for the maximum level point of the main trace and moves the marker point.
Refer to :CALCulate:MARKer[1]|2|3|4|5|6|7|8|9|10:MAXimum.

Related Command

This command has the same function as the following commands.
:CALCulate:MARKer[1]|2|3|4|5|6|7|8|9|10:MAXimum
:CALCulate:ACPower:MARKer[1]|2|3|4|5|6|7|8|9|10:MAXimum
:CALCulate:CHPower:MARKer[1]|2|3|4|5|6|7|8|9|10:MAXimum
:CALCulate:OBWidth:MARKer[1]|2|3|4|5|6|7|8|9|10:MAXimum
:CALCulate:BPOWer|:TXPower:MARKer[1]|2|3|4|5|6|7|8|9|10:MAXimum

:CALCulate:OBWidth:MARKer[1]|2|3|4|5|6|7|8|9|10:X <freq>|<time>|<sample>|<dist>

Zone Marker Frequency (Time)

Function

This command moves the frequency (time) which specified the center of the zone marker.
Refer to :CALCulate:MARKer[1]|2|3|4|5|6|7|8|9|10:X.

Related Command

This command has the same function as the following commands.
:CALCulate:MARKer[1]|2|3|4|5|6|7|8|9|10:X
:CALCulate:ACPower:MARKer[1]|2|3|4|5|6|7|8|9|10:X
:CALCulate:CHPower:MARKer[1]|2|3|4|5|6|7|8|9|10:X
:CALCulate:BPOWer|:TXPower:MARKer[1]|2|3|4|5|6|7|8|9|10:X

:CALCulate:OBWidth:MARKer[1]|2|3|4|5|6|7|8|9|10:X?

Zone Marker Frequency (Time) Query

Function

This command queries the center of the zone marker.
Refer to :CALCulate:MARKer[1]|2|3|4|5|6|7|8|9|10:X?.

Related Command

This command has the same function as the following commands.
:CALCulate:MARKer[1]|2|3|4|5|6|7|8|9|10:X?
:CALCulate:ACPower:MARKer[1]|2|3|4|5|6|7|8|9|10:X?
:CALCulate:CHPower:MARKer[1]|2|3|4|5|6|7|8|9|10:X?
:CALCulate:BPOWer|:TXPower:MARKer[1]|2|3|4|5|6|7|8|9|10:X?

:CALCulate:OBWidth:MARKer[1]|2|3|4|5|6|7|8|9|10:Y?

Marker Level Query

Function

This command queries the level of the marker point.
Refer to :CALCulate:MARKer[1]|2|3|4|5|6|7|8|9|10[:PEAK]:Y?.

Related Command

This command has the same function as the following commands.
:CALCulate:MARKer[1]|2|3|4|5|6|7|8|9|10[:PEAK]:Y?
:CALCulate:ACPower:MARKer[1]|2|3|4|5|6|7|8|9|10:Y?
:CALCulate:CHPower:MARKer[1]|2|3|4|5|6|7|8|9|10:Y?
:CALCulate:BPOWer|:TXPower:MARKer[1]|2|3|4|5|6|7|8|9|10:Y?

:DISPlay:OBWidth:ANNotation:TITLe:DATA <string>

Title Entry

Function

This command registers the title character string.
Refer to :DISPlay:ANNotation:TITLe:DATA.

Related Command

This command has the same function as the following commands.
:DISPlay:ANNotation:TITLe:DATA
:DISPlay:ACPowe:ANNotation:TITLe:DATA
:DISPlay:CHPowe:ANNotation:TITLe:DATA
:DISPlay:BPOWer|:TXPowe:ANNotation:TITLe:DATA

:DISPlay:OBWidth:ANNotation:TITLe:DATA?

Title Entry Query

Function

This command queries the title character string.
Refer to :DISPlay:ANNotation:TITLe:DATA?.

Related Command

This command has the same function as the following commands.
:DISPlay:ANNotation:TITLe:DATA?
:DISPlay:ACPowe:ANNotation:TITLe:DATA
:DISPlay:CHPowe:ANNotation:TITLe:DATA
:DISPlay:BPOWer|:TXPowe:ANNotation:TITLe:DATA

:DISPlay:OBWidth:VIEW[1]:WINDow[1]:TRACe:Y[:SCALe]:PDIVision <rel_ampl>

Log Scale Range

Function

This command sets the Y-axis scale range when Scale Mode is set to Log.
Refer to :DISPlay:WINDow[1]:TRACe:Y[:SCALe]:PDIVision [:LOGarithmic].

Related Command

This command has the same function as the following commands.
:DISPlay:WINDow[1]:TRACe:Y[:SCALe]:PDIVision[:LOGarithmic]
:DISPlay:ACPower:VIEW[1]:WINDow[1]:TRACe:Y[:SCALe]:PDIVision
:DISPlay:CHPower:VIEW[1]:WINDow[1]:TRACe:Y[:SCALe]:PDIVision
:DISPlay:BPOWer|:TXPower:VIEW[1]:WINDow[1]:TRACe:Y[:SCALe]:PDIVision

:DISPlay:OBWidth:VIEW[1]:WINDow[1]:TRACe:Y[:SCALe]:PDIVision ?

Log Scale Range Query

Function

This command queries the Y-axis scale range when Scale Mode is set to Log.
Refer to :DISPlay:WINDow[1]:TRACe:Y[:SCALe]:PDIVision [:LOGarithmic]?.

Related Command

This command has the same function as the following commands.
:DISPlay:WINDow[1]:TRACe:Y[:SCALe]:PDIVision[:LOGarithmic]?
:DISPlay:ACPower:VIEW[1]:WINDow[1]:TRACe:Y[:SCALe]:PDIVision?
:DISPlay:CHPower:VIEW[1]:WINDow[1]:TRACe:Y[:SCALe]:PDIVision?
:DISPlay:BPOWer|:TXPower:VIEW[1]:WINDow[1]:TRACe:Y[:SCALe]:PDIVision?

:DISPlay:OBWidth:VIEW[1]:WINDow[1]:TRACe:Y[:SCALe]:RLEVel <real>

Reference Level

Function

This command sets the reference level.
Refer to :DISPlay:WINDow[1]:TRACe:Y[:SCALe]:RLEVel.

Related Command

This command has the same function as the following commands.
:DISPlay:WINDow[1]:TRACe:Y[:SCALe]:RLEVel
:DISPlay:ACPower:VIEW[1]:WINDow[1]:TRACe:Y[:SCALe]:RLEVel
:DISPlay:CHPower:VIEW[1]:WINDow[1]:TRACe:Y[:SCALe]:RLEVel
:DISPlay:BPOWer|:TXPower:VIEW[1]:WINDow[1]:TRACe:Y[:SCALe]:RLEVel

:DISPlay:OBWidth:VIEW[1]:WINDow[1]:TRACe:Y[:SCALe]:RLEVel?

Reference Level Query

Function

This command queries the reference level.
Refer to :DISPlay:WINDow[1]:TRACe:Y[:SCALe]:RLEVel?.

Related Command

This command has the same function as the following commands.

```
:DISPlay:WINDow[1]:TRACe:Y[:SCALe]:RLEVel?
:DISPlay:ACPower:VIEW[1]:WINDow[1]:TRACe:Y[:SCALe]:RLEVe
l?
:DISPlay:CHPower:VIEW[1]:WINDow[1]:TRACe:Y[:SCALe]:RLEVe
l?
:DISPlay:BPOWer|:TXPower:VIEW[1]:WINDow[1]:TRACe:Y[:SCAL
e]:RLEVel?
```

:TRIGger:OBWidth[:SEQuence]:SOURce EXTernal[1]|IMMediate|WIF|RFBurst|VIDeo|SG|BBIF

Trigger Source

Function

This command selects the trigger source.
Refer to `TRIGger[:SEQuence]:SOURce`.

Related Command

This command has the same function as the following commands.

```
TRIGger[:SEQuence]:SOURce
TRIGger:ACPower[:SEQuence]:SOURce
TRIGger:CHPower[:SEQuence]:SOURce
TRIGger:BPOWer|:TXPower[:SEQuence]:SOURce
TRIGger:CCDF|:PSTatistic[:SEQuence]:SOURce
```

:TRIGger:OBWidth[:SEQuence]:SOURce?

Trigger Source Query

Function

This command queries the trigger source.
Refer to `TRIGger[:SEQuence]:SOURce?`.

Related Command

This command has the same function as the following commands.

```
TRIGger[:SEQuence]:SOURce?
TRIGger:ACPower[:SEQuence]:SOURce?
TRIGger:CHPower[:SEQuence]:SOURce?
TRIGger:BPOWer|:TXPower[:SEQuence]:SOURce?
TRIGger:CCDF|:PSTatistic[:SEQuence]:SOURce?
```

[:SENSe]:OBWidth:AVERage:COUNt <integer>

Average Count

Function

This command sets the storage count.
Refer to `[:SENSe]:AVERage:COUNt`.

Related Command

This command has the same function as the following commands.

```
[:SENSe]:AVERage:COUNt
[:SENSe]:ACPower:AVERage:COUNt
[:SENSe]:CHPower:AVERage:COUNt
[:SENSe]:BPOWer|:TXPower:ACPower:AVERage:COUNt
```

[:SENSe]:OBWidth:AVERage:COUNt?

Average Count Query

Function

This command queries the storage count.
Refer to [:SENSe]:AVERage:COUNt?.

Related Command

This command has the same function as the following commands.
[:SENSe]:AVERage:COUNt?
[:SENSe]:ACPower:AVERage:COUNt?
[:SENSe]:CHPower:AVERage:COUNt?
[:SENSe]:BPOWer|:TXPower:ACPower:AVERage:COUNt?

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

Storage Mode

Function

This command sets the storage method.
Refer to [:SENSe]:ACPower:AVERage[:STATe].

Related Command

This command has the same function as the following commands.
:TRACe:STORage:MODE
[:SENSe]:ACPower:AVERage[:STATe]
[:SENSe]:CHPower:AVERage[:STATe]
[:SENSe]:BPOWer|:TXPower:AVERage[:STATe]

[:SENSe]:OBWidth:AVERage[:STATe]?

Storage Mode Query

Function

This command queries the storage method.
Refer to [:SENSe]:ACPower:AVERage[:STATe]?.

Related Command

This command has the same function as the following commands.
:TRACe:STORage:MODE?
[:SENSe]:ACPower:AVERage[:STATe]?
[:SENSe]:CHPower:AVERage[:STATe]?
[:SENSe]:BPOWer|:TXPower:AVERage[:STATe]?

[:SENSe]:OBWidth:BANDwidth[:RESolution] <freq>

Resolution Bandwidth

Function

This command sets the resolution bandwidth (RBW).
Refer to `[:SENSe]:BANDwidth|:BWIDth[:RESolution]`.

Related Command

This command has the same function as the following commands.

```
[:SENSe]:BANDwidth|:BWIDth[:RESolution]
:CALCulate:BANDwidth|:BWIDth[:RESolution]
[:SENSe]:ACPower:BANDwidth[:RESolution]
:CALCulate:ACPower:BANDwidth[:RESolution]
[:SENSe]:CHPower:BANDwidth[:RESolution]
:CALCulate:CHPower:BANDwidth[:RESolution]
:CALCulate:OBWidth:BANDwidth[:RESolution]
[:SENSe]:BPOWer|:TXPower:BANDwidth[:RESolution]
:CALCulate:BPOWer|:TXPower:BANDwidth[:RESolution]
```

:CALCulate:OBWidth:BANDwidth[:RESolution] <freq>

Resolution Bandwidth

Function

This command sets the resolution bandwidth (RBW).
Refer to `[:SENSe]:BANDwidth|:BWIDth[:RESolution]`.

Related Command

This command has the same function as the following commands.

```
[:SENSe]:BANDwidth|:BWIDth[:RESolution]
:CALCulate:BANDwidth|:BWIDth[:RESolution]
[:SENSe]:ACPower:BANDwidth[:RESolution]
:CALCulate:ACPower:BANDwidth[:RESolution]
[:SENSe]:CHPower:BANDwidth[:RESolution]
:CALCulate:CHPower:BANDwidth[:RESolution]
[:SENSe]:OBWidth:BANDwidth[:RESolution]
[:SENSe]:BPOWer|:TXPower:BANDwidth[:RESolution]
:CALCulate:BPOWer|:TXPower:BANDwidth[:RESolution]
```

[:SENSe]:OBWidth:BANDwidth[:RESolution]?

Resolution Bandwidth Query

Function

This command queries the resolution bandwidth (RBW).
Refer to `[:SENSe]:BANDwidth|:BWIDth[:RESolution]?`.

Related Command

This command has the same function as the following commands.

`[:SENSe]:BANDwidth|:BWIDth[:RESolution]?`
`:CALCulate:BANDwidth|:BWIDth[:RESolution]?`
`[:SENSe]:ACPower:BANDwidth[:RESolution]?`
`:CALCulate:ACPower:BANDwidth[:RESolution]?`
`[:SENSe]:CHPower:BANDwidth[:RESolution]?`
`:CALCulate:CHPower:BANDwidth[:RESolution]?`
`:CALCulate:OBWidth:BANDwidth[:RESolution]?`
`[:SENSe]:BPOWer|:TXPower:BANDwidth[:RESolution]?`
`:CALCulate:BPOWer|:TXPower:BANDwidth[:RESolution]?`

:CALCulate:OBWidth:BANDwidth[:RESolution]?

Resolution Bandwidth Query

Function

This command queries the resolution bandwidth (RBW).
Refer to `[:SENSe]:BANDwidth|:BWIDth[:RESolution]?`.

Related Command

This command has the same function as the following commands.

`[:SENSe]:BANDwidth|:BWIDth[:RESolution]?`
`:CALCulate:BANDwidth|:BWIDth[:RESolution]?`
`[:SENSe]:ACPower:BANDwidth[:RESolution]?`
`:CALCulate:ACPower:BANDwidth[:RESolution]?`
`[:SENSe]:CHPower:BANDwidth[:RESolution]?`
`:CALCulate:CHPower:BANDwidth[:RESolution]?`
`[:SENSe]:OBWidth:BANDwidth[:RESolution]?`
`[:SENSe]:BPOWer|:TXPower:BANDwidth[:RESolution]?`
`:CALCulate:BPOWer|:TXPower:BANDwidth[:RESolution]?`

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

Resolution Bandwidth Auto/Manual

Function

This command enables/disables the automatic resolution bandwidth (RBW) setting function.
Refer to `[:SENSe]:BANDwidth|:BWIDth[:RESolution]:AUTO`.

Related Command

This command has the same function as the following commands.

```
[:SENSe]:BANDwidth|:BWIDth[:RESolution]:AUTO
:CALCulate:BANDwidth|:BWIDth[:RESolution]:AUTO
[:SENSe]:ACPower:BANDwidth[:RESolution]:AUTO
:CALCulate:ACPower:BANDwidth[:RESolution]:AUTO
[:SENSe]:CHPower:BANDwidth[:RESolution]:AUTO
:CALCulate:CHPower:BANDwidth[:RESolution]:AUTO
:CALCulate:OBWidth:BANDwidth[:RESolution]:AUTO
```

:CALCulate:OBWidth:BANDwidth[:RESolution]:AUTO ON|OFF|1|0

Resolution Bandwidth Auto/Manual

Function

This command enables/disables the automatic resolution bandwidth (RBW).
Refer to `[:SENSe]:BANDwidth|:BWIDth[:RESolution]:AUTO`.

Related Command

This command has the same function as the following commands.

```
[:SENSe]:BANDwidth|:BWIDth[:RESolution]:AUTO
:CALCulate:BANDwidth|:BWIDth[:RESolution]:AUTO
[:SENSe]:ACPower:BANDwidth[:RESolution]:AUTO
:CALCulate:ACPower:BANDwidth[:RESolution]:AUTO
[:SENSe]:CHPower:BANDwidth[:RESolution]:AUTO
:CALCulate:CHPower:BANDwidth[:RESolution]:AUTO
[:SENSe]:OBWidth:BANDwidth[:RESolution]:AUTO
```

[:SENSe]:OBWidth:BANDwidth[:RESolution]:AUTO?

Resolution Bandwidth Auto/Manual Query

Function

This command queries the On/Off state of the automatic resolution bandwidth (RBW).
Refer to `[:SENSe]:BANDwidth|:BWIDth[:RESolution]:AUTO?`.

Related Command

This command has the same function as the following commands.

```
[:SENSe]:BANDwidth|:BWIDth[:RESolution]:AUTO?
:CALCulate:BANDwidth|:BWIDth[:RESolution]:AUTO?
[:SENSe]:ACPower:BANDwidth[:RESolution]:AUTO?
:CALCulate:ACPower:BANDwidth[:RESolution]:AUTO?
[:SENSe]:CHPower:BANDwidth[:RESolution]:AUTO?
:CALCulate:CHPower:BANDwidth[:RESolution]:AUTO?
:CALCulate:OBWidth:BANDwidth[:RESolution]:AUTO?
```

:CALCulate:OBWidth:BANDwidth[:RESolution]:AUTO?

Resolution Bandwidth Auto/Manual Query

Function

This command queries the On/Off state of the automatic resolution bandwidth (RBW).
Refer to `[:SENSe]:BANDwidth|:BWIDth[:RESolution]:AUTO?`.

Related Command

This command has the same function as the following commands.

```
[:SENSe]:BANDwidth|:BWIDth[:RESolution]:AUTO?
:CALCulate:BANDwidth|:BWIDth[:RESolution]:AUTO?
[:SENSe]:ACPower:BANDwidth[:RESolution]:AUTO?
:CALCulate:ACPower:BANDwidth[:RESolution]:AUTO?
[:SENSe]:CHPower:BANDwidth[:RESolution]:AUTO?
:CALCulate:CHPower:BANDwidth[:RESolution]:AUTO?
[:SENSe]:OBWidth:BANDwidth[:RESolution]:AUTO?
```

[:SENSe]:OBWidth:DETector[:FUNCtion] NORMal|POSitive|NEGative|AVERage

Detection Mode

Function

This command selects the detection mode for the waveform pattern.
Refer to `[:SENSe]:DETector[:FUNCtion]`.

Related Command

This command has the same function as the following commands.

```
[:SENSe]:DETector[:FUNCtion]
:CALCulate:DETector[:FUNCtion]
[:SENSe]:ACPower:DETector[:FUNCtion]
:CALCulate:ACPower:DETector[:FUNCtion]
[:SENSe]:CHPower:DETector[:FUNCtion]
:CALCulate:CHPower:DETector[:FUNCtion]
:CALCulate:OBWidth:DETector[:FUNCtion]
```

:CALCulate:OBWidth:DETector[:FUNCtion] NORMal|POSitive|NEGative|AVERage

Detection Mode

Function

This command selects the detection mode for the waveform pattern.
Refer to `[:SENSe]:DETector[:FUNCtion]`.

Related Command

This command has the same function as the following commands.

```
[:SENSe]:DETector[:FUNCtion]
:CALCulate:DETector[:FUNCtion]
[:SENSe]:ACPower:DETector[:FUNCtion]
:CALCulate:ACPower:DETector[:FUNCtion]
[:SENSe]:CHPower:DETector[:FUNCtion]
:CALCulate:CHPower:DETector[:FUNCtion]
[:SENSe]:OBWidth:DETector[:FUNCtion]
```

[:SENSe]:OBWidth:DETector[:FUNCtion]?

Detection Mode Query

Function

This command selects the detection mode for the waveform pattern.
Refer to `[:SENSe]:DETector[:FUNCtion]?`.

Related Command

This command has the same function as the following commands.

```
[:SENSe]:DETector[:FUNCtion]?
:CALCulate:DETector[:FUNCtion]?
[:SENSe]:ACPower:DETector[:FUNCtion]?
:CALCulate:ACPower:DETector[:FUNCtion]?
[:SENSe]:CHPower:DETector[:FUNCtion]?
:CALCulate:CHPower:DETector[:FUNCtion]?
:CALCulate:OBWidth:DETector[:FUNCtion]?
```

:CALCulate:OBWidth:DETector[:FUNCtion]?

Detection Mode Query

Function

This command selects the detection mode for the waveform pattern.
Refer to `[:SENSe]:DETector[:FUNCtion]?`.

Related Command

This command has the same function as the following commands.

```
[:SENSe]:DETector[:FUNCtion]?
:CALCulate:DETector[:FUNCtion]?
[:SENSe]:ACPower:DETector[:FUNCtion]?
:CALCulate:ACPower:DETector[:FUNCtion]?
[:SENSe]:CHPower:DETector[:FUNCtion]?
:CALCulate:CHPower:DETector[:FUNCtion]?
[:SENSe]:OBWidth:DETector[:FUNCtion]?
```

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

Frequency Span

Function

This command sets the frequency span.
Refer to [:SENSe]:FREQuency:SPAN.

Related Command

This command has the same function as the following commands.
[:SENSe]:FREQuency:SPAN
[:SENSe]:ACPower:FREQuency:SPAN
[:SENSe]:CHPower:FREQuency:SPAN

[:SENSe]:OBWidth:FREQuency:SPAN?

Frequency Span Query

Function

This command queries the frequency span.
Refer to [:SENSe]:FREQuency:SPAN?.

Related Command

This command has the same function as the following commands.
[:SENSe]:FREQuency:SPAN?
[:SENSe]:ACPower:FREQuency:SPAN
[:SENSe]:CHPower:FREQuency:SPAN

[:SENSe]:OBWidth:SWEep:POINts?

Trace Point Query

Function

This command queries the number of trace display points.
Refer to `[:SENSe]:SWEep:POINts?`.

Related Command

This command has the same function as the following commands.
`[:SENSe]:SWEep:POINts?`
`[:SENSe]:ACPower:SWEep:POINts?`
`[:SENSe]:CHPower:SWEep:POINts?`

[:SENSe]:OBWidth:SWEep:TIME <time>

Sweep Time

Function

This command sets the sweep time.
Refer to `[:SENSe]:SWEep:TIME`.

Related Command

This command has the same function as the following commands.
`[:SENSe]:SWEep:TIME`
`[:SENSe]:ACPower:SWEep:TIME`
`[:SENSe]:CHPower:SWEep:TIME`
`[:SENSe]:BPOWer|:TXPower:SWEep:TIME`

[:SENSe]:OBWidth:SWEep:TIME?

Sweep Time Query

Function

This command queries the sweep time.
Refer to `[:SENSe]:SWEep:TIME?`.

Related Command

This command has the same function as the following commands.
`[:SENSe]:SWEep:TIME?`
`[:SENSe]:ACPower:SWEep:TIME?`
`[:SENSe]:CHPower:SWEep:TIME?`
`[:SENSe]:BPOWer|:TXPower:SWEep:TIME?`

[:SENSe]:OBWidth:SWEep:TIME:AUTO OFF|ON|0|1

Sweep Time Auto/Manual

Function

This command enables/disables the automatic sweep time setting function.

Refer to [:SENSe]:SWEep:TIME:AUTO.

Related Command

This command has the same function as the following commands.

[:SENSe]:SWEep:TIME:AUTO

[:SENSe]:ACPower:SWEep:TIME:AUTO

[:SENSe]:CHPower:SWEep:TIME:AUTO

[:SENSe]:OBWidth:SWEep:TIME:AUTO?

Sweep Time Auto/Manual Query

Function

This command queries the On/Off state of the automatic sweep time.

Refer to [:SENSe]:SWEep:TIME:AUTO?.

Related Command

This command has the same function as the following commands.

[:SENSe]:SWEep:TIME:AUTO?

[:SENSe]:ACPower:SWEep:TIME:AUTO?

[:SENSe]:CHPower:SWEep:TIME:AUTO?

:CALCulate:OBWidth:MARKer[1]|2|3|4|5|6|7|8|9|10:MODE NORMal|POSition|DELTa|FIXed|OFF

Marker Mode

Function

This command sets the marker mode.
Refer to `:CALCulate:MARKer[1]|2|3|4|5|6|7|8|9|10:MODE`.

Related command

This command has the same function as the following commands.

```
:CALCulate:MARKer[1]|2|3|4|5|6|7|8|9|10:MODE
:CALCulate:ACPower:MARKer[1]|2|3|4|5|6|7|8|9|10:MODE
:CALCulate:CHPower:MARKer[1]|2|3|4|5|6|7|8|9|10:MODE
```

:CALCulate:OBWidth:MARKer[1]|2|3|4|5|6|7|8|9|10:MODE?

Marker Mode Query

Function

This command queries the marker mode.
Refer to `:CALCulate:MARKer[1]|2|3|4|5|6|7|8|9|10:MODE?`.

Related command

This command has the same function as the following commands.

```
:CALCulate:MARKer[1]|2|3|4|5|6|7|8|9|10:MODE?
:CALCulate:ACPower:MARKer[1]|2|3|4|5|6|7|8|9|10:MODE?
:CALCulate:CHPower:MARKer[1]|2|3|4|5|6|7|8|9|10:MODE?
```

:CALCulate:OBWidth:MARKer[1]|2|3|4|5|6|7|8|9|10:REFerence <integer>

Relative To

Function

This command sets the reference marker when Marker Mode is set to Delta.
Refer to :CALCulate:MARKer[1]|2|3|4|5|6|7|8|9|10:REFerence <integer>.

Related command

This command has the same function as the following commands.
:CALCulate:MARKer[1]|2|3|4|5|6|7|8|9|10:REFerence
:CALCulate:ACPower:MARKer[1]|2|3|4|5|6|7|8|9|10:REFerence
:CALCulate:CHPower:MARKer[1]|2|3|4|5|6|7|8|9|10:REFerence

:CALCulate:OBWidth:MARKer[1]|2|3|4|5|6|7|8|9|10:REFerence?

Relative To

Function

This command queries the reference marker when Marker Mode is set to Delta.
Refer to
:CALCulate:MARKer[1]|2|3|4|5|6|7|8|9|10:REFerence?.

Related command

This command has the same function as the following commands.
:CALCulate:MARKer[1]|2|3|4|5|6|7|8|9|10:REFerence?
:CALCulate:ACPower:MARKer[1]|2|3|4|5|6|7|8|9|10:REFerence?
:CALCulate:CHPower:MARKer[1]|2|3|4|5|6|7|8|9|10:REFerence?

2.12 Burst Average Power Measurement Settings

Table 2.12-1 lists device messages for Burst Average Power measurement.

Table 2.12-1 Device messages for Burst Average Power measurement

Function	Device Message
Measure Burst Average Power	[:SENSe]:BPOWer|:TXPower[:STATe] ON|OFF|1|0
	[:SENSe]:BPOWer|:TXPower[:STATe]?
	:CALCulate:BPOWer|:TXPower[:STATe] ON|OFF|1|0
	:CALCulate:BPOWer|:TXPower[:STATe]?
Noise Cancel	[:SENSe]:BPOWer|:TXPower:CORRection:NOISe[:AUTO] ON|OFF|1|0
	[:SENSe]:BPOWer|:TXPower:CORRection:NOISe[:AUTO]?
	:CALCulate:BPOWer|:TXPower:CORRection:NOISe[:AUTO] ON|OFF|1|0
	:CALCulate:BPOWer|:TXPower:CORRection:NOISe[:AUTO]?
Burst Average Power Configure	:CONFigure:BPOWer|:TXPower
Burst Average Power Initiate	:INITiate:BPOWer|:TXPower
Burst Average Power Fetch	:FETCh:BPOWer|:TXPower[n]?
Burst Average Power Read	:READ:BPOWer|:TXPower[n]?
Burst Average Power Measure	:MEASure:BPOWer|:TXPower[n]?
Title Entry	:DISPlay:BPOWer|:TXPower:ANNotation:TITLe:DATA <string>
	:DISPlay:BPOWer|:TXPower:ANNotation:TITLe:DATA?
Log Scale Range	:DISPlay:BPOWer|:TXPower:VIEW[1]:WINDow[1]:TRACe:Y[:SCALe]:PDIVision <rel_ampl>
	:DISPlay:BPOWer|:TXPower:VIEW[1]:WINDow[1]:TRACe:Y[:SCALe]:PDIVision ?
Reference Level	:DISPlay:BPOWer|:TXPower:VIEW[1]:WINDow[1]:TRACe:Y[:SCALe]:RLEVel <real>
	:DISPlay:BPOWer|:TXPower:VIEW[1]:WINDow[1]:TRACe:Y[:SCALe]:RLEVel?
Trigger Source	:TRIGger:BPOWer|:TXPower[:SEQuence]:SOURce EXTernal[1]|IMMediate|WIF|RFBurst|VIDeo|SG|BBIF
	:TRIGger:BPOWer|:TXPower[:SEQuence]:SOURce?
Average Count	[:SENSe]:BPOWer|:TXPower:AVERage:COUNt <integer>
	[:SENSe]:BPOWer|:TXPower:AVERage:COUNt?
Storage Mode	[:SENSe]:BPOWer|:TXPower:AVERage[:STATe] ON|OFF|1|0
	[:SENSe]:BPOWer|:TXPower:AVERage[:STATe]?

Table 2.12-1 Device messages for Burst Average Power measurement (Cont'd)

Function	Device Message
Sweep Time	[:SENSe]:BPOWer|:TXPower:SWEep:TIME <time>
	[:SENSe]:BPOWer|:TXPower:SWEep:TIME?
Zone Marker Frequency (Time)	:CALCulate:BPOWer|:TXPower:MARKer[1]|2|3|4|5|6|7|8|9|10:X <freq>|<time>|<sample>|<dist>
	:CALCulate:BPOWer|:TXPower:MARKer[1]|2|3|4|5|6|7|8|9|10:X?
Marker Level Query	:CALCulate:BPOWer|:TXPower:MARKer[1]|2|3|4|5|6|7|8|9|10:Y?
All Marker Off	:CALCulate:BPOWer|:TXPower:MARKer:AOFF
Peak Search	:CALCulate:BPOWer|:TXPower:MARKer[1]|2|3|4|5|6|7|8|9|10:MAXimum
Resolution Bandwidth	[:SENSe]:BPOWer|:TXPower:BANDwidth[:RESolution] <freq>
	[:SENSe]:BPOWer|:TXPower:BANDwidth[:RESolution]?
	:CALCulate:BPOWer|:TXPower:BANDwidth[:RESolution] <freq>
	:CALCulate:BPOWer|:TXPower:BANDwidth[:RESolution]?

[:SENSe]:BPOWer|:TXPower[:STATe] ON|OFF|1|0

Measure Burst Average Power

Function

This command executes Burst Average Power measurement.

Command

```
[:SENSe]:BPOWer|:TXPower[:STATe] <switch>
```

Parameter

`<switch>`	Sets Burst Average Power measurement On/Off
`ON|1`	Sets Burst Average Power measurement On
`OFF|0`	Sets Burst Average Power measurement Off

Details

This command is available when the following trace is active:

- Power vs Time

Example of Use

To set Burst Average Power measurement to On and query the result.

```
BPOW ON
*WAI
FETC:BPOW?
```

Related Command

This command has the same function as the following command.

`:CALCulate:BPOWer|:TXPower[:STATe]`

:CALCulate:BPOWer|:TXPower[:STATe] ON|OFF|1|0

Measure Burst Average Power

Function

This command performs Burst Average Power measurement.

Refer to `[:SENSe]:BPOWer|:TXPower[:STATe]`.

Related Command

This command has the same function as the following command.

`[:SENSe]:BPOWer|:TXPower[:STATe]`

[:SENSe]:BPOWer|:TXPower[:STATe]?

Measure Burst Average Power Query

Function

This command queries the setting of Burst Average Power measurement.

Command

```
[:SENSe]:BPOWer|:TXPower[:STATe]?
```

Parameter

<switch>	Sets Burst Average Power measurement On/Off.
1	On
0	Off

Details

This command is available when the following trace is active:

- Power vs Time

Example of Use

To query the Burst Average Power measurement setting.

```
BPOW?
> 1
```

Related Command

This command has the same function as the following command.

```
:CALCulate:BPOWer|:TXPower[:STATe]
```

:CALCulate:BPOWer|:TXPower[:STATe]?

Measure Burst Average Power Query

Function

This command queries the Burst Average Power measurement setting.
Refer to `[:SENSe]:BPOWer|:TXPower[:STATe]?`.

Related Command

This command has the same function as the following command.

```
[:SENSe]:BPOWer|:TXPower[:STATe]?
```

[:SENSe]:BPOWer|:TXPower:CORRection:NOISe[:AUTO] ON|OFF|1|0

Noise Cancel

Function

This command sets whether to enable the noise-canceling function.

Command

```
[:SENSe]:BPOWer|:TXPower:CORRection:NOISe[:AUTO] <switch>
```

Parameter

<switch>	Noise-canceling function on/off
ON|1	Enables the noise-canceling function.
OFF|0	Disables the noise-canceling function.

Details

The noise-canceling function is fixed to Off in the following cases:

- Burst Average Power is Off.
- Standard is Off.
- The Standard Parameter which can enables the noise-canceling function is not set in Load Standard Parameter.
- Any of Span, RBW, Detection, Sweep Time, VBW (when Detection is not set to RMS), and VBW Mode (when VBW is not set to Off and when Detection is not set to RMS) has been changed from Standard Parameter.
- Scale Mode is Linear.

This command is available when the following trace is active:

- Power vs Time

The setting is disabled while the Replay function is being executed.

Example of Use

To disable the noise-canceling function.

```
BPOW:CORR:NOIS OFF
```

Related Command

This command has the same function as the following command.

```
:CALCulate:BPOWer|:TXPower:CORRection:NOISe[:AUTO]
```

:CALCulate:BPOWer|:TXPower:CORRection:NOISe[:AUTO] ON|OFF|1|0

Noise Cancel

Function

This command sets whether to enable the noise-canceling function.
Refer to `[:SENSe]:BPOWer|:TXPower:CORRection:NOISe[:AUTO]`.

Related Command

This command has the same function as the following command.
`[:SENSe]:BPOWer|:TXPower:CORRection:NOISe[:AUTO]`

[:SENSe]:BPOWer|:TXPower:CORRection:NOISe[:AUTO]?

Noise Cancel Query

Function

This command queries the noise-canceling function setting.

Query

```
[:SENSe]:BPOWer|:TXPower:CORRection:NOISe[:AUTO]?
```

Response

```
<switch>
```

Parameter

`<switch>`	Noise-canceling function on/off
`1`	On
`0`	Off

Details

The noise-canceling function is fixed to Off in the following cases:

- Burst Average Power is Off.
- Standard is Off.
- The Standard Parameter which enables the noise-canceling function is not set in Load Standard Parameter.
- Any of Span, RBW, Detection, Sweep Time, VBW (when Detection is not set to RMS), and VBW Mode (when VBW is not set to Off and when Detection is not set to RMS)has been changed from Standard Parameter.
- Scale Mode is Linear.

This command is available when the following trace is active:

- Power vs Time

Example of Use

To query the noise-canceling function setting.

```
BPOW:CORR:NOIS?
> 0
```

Related Command

This command has the same function as the following command.

```
:CALCulate:BPOWer|:TXPower:CORRection:NOISe[:AUTO]?
```

:CALCulate:BPOWer|:TXPower:CORRection:NOISe[:AUTO]?

Noise Cancel Query

Function

This command queries the setting of the noise-canceling function.
Refer to `[:SENSe]:BPOWer|:TXPower:CORRection:NOISe[:AUTO]?`.

Related Command

This command has the same function as the following command.
`[:SENSe]:BPOWer|:TXPower:CORRection:NOISe[:AUTO]?`

:CONFigure:BPOWer|:TXPower

Burst Average Power Configure

Function

This command sets Burst Average Power measurement to On.

Command

```
:CONFigure:BPOWer|:TXPower
```

Details

No measurement is performed.
Power vs Time is set, if this command is executed when the trace is set to other than Power vs Time.
Log is set, if this command is executed when Scale Mode is set to Linear.

Example of Use

To set Burst Average Power measurement to On and query the results.

```
CONF:BPOW
*WAI
FETC:BPOW?
```

:INITiate:BPOWer|:TXPower

Burst Average Power Initiate

Function

This command performs Burst Average Power measurement.

Command

```
:INITiate:BPOWer|:TXPower
```

Details

When this command is executed, Burst Average Power measurement is set to On and measurement will be performed.
Power vs Time is set, if this command is executed when the trace is set to other than Power vs Time.
Log is set, if this command is executed when Scale Mode is set to Linear.
For reading out a measurement result after this command has been executed, use *WAI commands to perform synchronized control.

Example of Use

To perform Burst Average Power measurement and query the results.

```
INIT:BPOW
*WAI
FETC:BPOW?
```

:FETCh:BPOWer|:TXPower[n]?

Burst Average Power Fetch

Function

This command queries the result for Burst Average Power measurement.

Query

```
:FETCh:BPOWer|:TXPower[n]?
```

Response

When RESult Mode is A:

```
<power>
```

(n = 1 or when omitted)

When RESult Mode is B:

```
<sweep_time>,<power>,<power>,<trace_point>,
-999.0,-999.0,-999.0,-999.0,
<burst_time>,-999.0
```

(n = 1 or when omitted)

Parameter

<sweep_time>	Sweep Time setting value Time for each trace point is returned in sample units when Terminal is set to DigRF 3G (only for MS269x Series).
<burst_time>	Length of Burst Average Power measurement span No suffix code, s units, 1 ns resolution –999999999999 is returned when no measurement is performed.
<power>	Average power in burst When Scale Mode is Log: Log Scale Unit units (Note: dBm units for V, μW units for W) Value without a suffix code is returned. –999.0 is returned when no measurement is performed.
<trace_point>	Number of trace points Value without a suffix code is returned. –999.0 is returned when no measurement is performed. Value is returned in sample units when Terminal is set to DigRF 3G (only for MS269x Series).

Details

This command queries the measurement result of Burst Average Power measurement performed lastly. This function does not accompany any capture, thus this function is used to output the measurement result in a different type, when the measurement has already completed.
Use READ command to perform re-measurement with redoing capture.

Return values in this function vary depending on Result Mode.
(cf. :SYSTem:RESult:MODE)

Example of Use

To query the measurement result of Burst Average Power measurement.
(n = 1 or when omitted, A mode)

```
FETC:BPOW?
> -66.70
```

:READ:BPOWer|:TXPower[n]?

Burst Average Power Read

Function

This command performs Burst Average Power measurement and outputs the measurement result.
This command has the same function as the following commands executed in this order:

```
:INITiate:BPOWer|:TXPower
:FETCh:BPOWer|:TXPower[n]?
```

:MEASure:BPOWer|:TXPower[n]?

Burst Average Power Measure

Function

This command performs Burst Average Power measurement and outputs the measurement result.
This command has the same function as the following commands executed in this order:

```
:CONFigure:BPOWer|:TXPower
:INITiate:BPOWer|:TXPower
:FETCh:BPOWer|:TXPower[n]?
```

:DISPlay:BPOWer|:TXPower:ANNotation:TITLe:DATA <string>

Title Entry

Function

This command registers the title character string.
Refer to :DISPlay:ANNotation:TITLe:DATA.

Related Command

This command has the same function as the following commands.
:DISPlay:ANNotation:TITLe:DATA
:DISPlay:ACPowe:ANNotation:TITLe:DATA
:DISPlay:CHPowe:ANNotation:TITLe:DATA
:DISPlay:OBWidth:ANNotation:TITLe:DATA

:DISPlay:BPOWer|:TXPower:ANNotation:TITLe:DATA?

Title Entry Query

Function

This command queries the title character string.
Refer to :DISPlay:ANNotation:TITLe:DATA?.

Related Command

This command has the same function as the following commands.
:DISPlay:ANNotation:TITLe:DATA?
:DISPlay:ACPower:ANNotation:TITLe:DATA?
:DISPlay:CHPower:ANNotation:TITLe:DATA?
:DISPlay:OBWidth:ANNotation:TITLe:DATA?

:DISPlay:BPOWer|:TXPower:VIEW[1]:WINDow[1]:TRACe:Y[:SCALe]:PDIVision <rel_ampl>

Log Scale Range

Function

This command sets the Y-axis scale range when Scale Mode is set to Log.
Refer to :DISPlay:WINDow[1]:TRACe:Y[:SCALe]:PDIVision [:LOGarithmic].

Related Command

This command has the same function as the following commands.
:DISPlay:WINDow[1]:TRACe:Y[:SCALe]:PDIVision[:LOGarithmic]
:DISPlay:ACPower:VIEW[1]:WINDow[1]:TRACe:Y[:SCALe]:PDIVision
:DISPlay:CHPower:VIEW[1]:WINDow[1]:TRACe:Y[:SCALe]:PDIVision
:DISPlay:OBWidth:VIEW[1]:WINDow[1]:TRACe:Y[:SCALe]:PDIVision

:DISPlay:BPOWer|:TXPower:VIEW[1]:WINDow[1]:TRACe:Y[:SCALe]:PDIVision ?

Log Scale Range Query

Function

This command queries the Y-axis scale range when Scale Mode is set to Log.
Refer to :DISPlay:WINDow[1]:TRACe:Y[:SCALe]:PDIVision [:LOGarithmic]?.

Related Command

This command has the same function as the following commands.
:DISPlay:WINDow[1]:TRACe:Y[:SCALe]:PDIVision[:LOGarithmic]?
:DISPlay:ACPower:VIEW[1]:WINDow[1]:TRACe:Y[:SCALe]:PDIVision?
:DISPlay:CHPower:VIEW[1]:WINDow[1]:TRACe:Y[:SCALe]:PDIVision?
:DISPlay:OBWidth:VIEW[1]:WINDow[1]:TRACe:Y[:SCALe]:PDIVision?

:DISPlay:BPOWer|:TXPower:VIEW[1]:WINDow[1]:TRACe:Y[:SCALe]:RLEVel <real>

Reference Level

Function

This command sets the reference level.
Refer to :DISPlay:WINDow[1]:TRACe:Y[:SCALe]:RLEVel.

Related Command

This command has the same function as the following commands.
:DISPlay:WINDow[1]:TRACe:Y[:SCALe]:RLEVel
:DISPlay:ACPower:VIEW[1]:WINDow[1]:TRACe:Y[:SCALe]:RLEVel
:DISPlay:CHPower:VIEW[1]:WINDow[1]:TRACe:Y[:SCALe]:RLEVel
:DISPlay:OBWidth:VIEW[1]:WINDow[1]:TRACe:Y[:SCALe]:RLEVel

:DISPlay:BPOWer|:TXPower:VIEW[1]:WINDow[1]:TRACe:Y[:SCALe]:RLEVel?

Reference Level Query

Function

This command queries the reference level.
Refer to :DISPlay:WINDow[1]:TRACe:Y[:SCALe]:RLEVel?.

Related Command

This command has the same function as the following commands.
:DISPlay:WINDow[1]:TRACe:Y[:SCALe]:RLEVel?
:DISPlay:ACPower:VIEW[1]:WINDow[1]:TRACe:Y[:SCALe]:RLEVel?
:DISPlay:CHPower:VIEW[1]:WINDow[1]:TRACe:Y[:SCALe]:RLEVel?
:DISPlay:OBWidth:VIEW[1]:WINDow[1]:TRACe:Y[:SCALe]:RLEVel?

:TRIGger:BPOWer|:TXPower[:SEQuence]:SOURce EXTernal[1]|IMMediate|WIF|RFBurst|VIDeo|SG|BBIF

Trigger Source

Function

This command selects the trigger source.
Refer to `TRIGger[:SEQuence]:SOURce`.

Related Command

This command has the same function as the following commands.

```
TRIGger[:SEQuence]:SOURce
TRIGger:ACPower[:SEQuence]:SOURce
TRIGger:CHPower[:SEQuence]:SOURce
TRIGger:OBWidth[:SEQuence]:SOURce
TRIGger:CCDF|:PSTatistic[:SEQuence]:SOURce
```

:TRIGger:BPOWer|:TXPower[:SEQuence]:SOURce?

Trigger Source Query

Function

This command queries the trigger source.
Refer to `TRIGger[:SEQuence]:SOURce?`.

Related Command

This command has the same function as the following commands.

```
TRIGger[:SEQuence]:SOURce?
TRIGger:ACPower[:SEQuence]:SOURce?
TRIGger:CHPower[:SEQuence]:SOURce?
TRIGger:OBWidth[:SEQuence]:SOURce?
TRIGger:CCDF|:PSTatistic[:SEQuence]:SOURce?
```

[:SENSe]:BPOWer|:TXPower:AVERage:COUNt <integer>

Average Count

Function

This command sets the storage count.
Refer to [:SENSe]:AVERage:COUNt.

Related Command

This command has the same function as the following commands.
[:SENSe]:AVERage:COUNt
[:SENSe]:ACPower:AVERage:COUNt
[:SENSe]:CHPower:AVERage:COUNt
[:SENSe]:OBWidth:AVERage:COUNt

[:SENSe]:BPOWer|:TXPower:AVERage:COUNt?

Average Count Query

Function

This command queries the storage count.
Refer to [:SENSe]:AVERage:COUNt?.

Related Command

This command has the same function as the following commands.
[:SENSe]:AVERage:COUNt?
[:SENSe]:ACPower:AVERage:COUNt?
[:SENSe]:CHPower:AVERage:COUNt?
[:SENSe]:OBWidth:AVERage:COUNt?

[:SENSe]:BPOWer|:TXPower:AVERage[:STATe] ON|OFF|1|0

Storage Mode

Function

This command sets the storage mode.

Refer to `[:SENSe]:ACPower:AVERage[:STATe]`.

Related Command

This command has the same function as the following commands.

`:TRACe:STORage:MODE`

`[:SENSe]:ACPower:AVERage[:STATe]`

`[:SENSe]:CHPower:AVERage[:STATe]`

`[:SENSe]:OBWidth:AVERage[:STATe]`

[:SENSe]:BPOWer|:TXPower:AVERage[:STATe]?

Storage Mode Query

Function

This command queries the storage mode.

Refer to `[:SENSe]:ACPower:AVERage[:STATe]?`.

Related Command

This command has the same function as the following commands.

`:TRACe:STORage:MODE?`

`[:SENSe]:ACPower:AVERage[:STATe]?`

`[:SENSe]:CHPower:AVERage[:STATe]?`

`[:SENSe]:OBWidth:AVERage[:STATe]?`

[:SENSe]:BPOWer|:TXPower:SWEep:TIME <time>

Sweep Time

Function

This command sets the capture time.
Refer to [:SENSe]:SWEep:TIME.

Related Command

This command has the same function as the following commands.
[:SENSe]:SWEep:TIME
[:SENSe]:ACPower:SWEep:TIME
[:SENSe]:CHPower:SWEep:TIME
[:SENSe]:OBWidth:SWEep:TIME

[:SENSe]:BPOWer|:TXPower:SWEep:TIME?

Sweep Time Query

Function

This command queries the capture time.
Refer to [:SENSe]:SWEep:TIME?.

Related Command

This command has the same function as the following commands.
[:SENSe]:SWEep:TIME?
[:SENSe]:ACPower:SWEep:TIME?
[:SENSe]:CHPower:SWEep:TIME?
[:SENSe]:OBWidth:SWEep:TIME?

:CALCulate:BPOWer|:TXPower:MARKer[1]|2|3|4|5|6|7|8|9|10:X <freq>|<time>|<sample>|<dist>

Zone Marker Frequency (Time)

Function

This command moves the center of the zone marker to the specified frequency (time).
Refer to :CALCulate:MARKer[1]|2|3|4|5|6|7|8|9|10:X.

Related Command

This command has the same function as the following commands.

```
:CALCulate:MARKer[1]|2|3|4|5|6|7|8|9|10:X
:CALCulate:ACPower:MARKer[1]|2|3|4|5|6|7|8|9|10:X
:CALCulate:CHPower:MARKer[1]|2|3|4|5|6|7|8|9|10:X
:CALCulate:OBWidth:MARKer[1]|2|3|4|5|6|7|8|9|10:X
```

:CALCulate:BPOWer|:TXPower:MARKer[1]|2|3|4|5|6|7|8|9|10:X?

Zone Marker Frequency (Time) Query

Function

This command queries the center of the zone marker.
Refer to :CALCulate:MARKer[1]|2|3|4|5|6|7|8|9|10:X?.

Related Command

This command has the same function as the following commands.

```
:CALCulate:MARKer[1]|2|3|4|5|6|7|8|9|10:X?
:CALCulate:ACPower:MARKer[1]|2|3|4|5|6|7|8|9|10:X?
:CALCulate:CHPower:MARKer[1]|2|3|4|5|6|7|8|9|10:X?
:CALCulate:OBWidth:MARKer[1]|2|3|4|5|6|7|8|9|10:X?
```

:CALCulate:BPOWer|:TXPower:MARKer[1]|2|3|4|5|6|7|8|9|10:Y?

Marker Level Query

Function

This command queries the level of the marker point.
Refer to :CALCulate:MARKer[1]|2|3|4|5|6|7|8|9|10[:PEAK]:Y?.

Related Command

This command has the same function as the following commands.

```
:CALCulate:MARKer[1]|2|3|4|5|6|7|8|9|10[:PEAK]:Y?
:CALCulate:ACPower:MARKer[1]|2|3|4|5|6|7|8|9|10:Y?
:CALCulate:CHPower:MARKer[1]|2|3|4|5|6|7|8|9|10:Y?
:CALCulate:OBWidth:MARKer[1]|2|3|4|5|6|7|8|9|10:Y?
```

:CALCulate:BPOWer|:TXPower:MARKer:AOFF

All Marker Off

Function

This command sets all markers to Off.
Refer to :CALCulate:MARKer:AOFF.

Related Command

This command has the same function as the following commands.
:CALCulate:MARKer:AOFF
:CALCulate:ACPower:MARKer:AOFF
:CALCulate:CHPower:MARKer:AOFF
:CALCulate:OBWidth:MARKer:AOFF

:CALCulate:BPOWer|:TXPower:MARKer[1]|2|3|4|5|6|7|8|9|10:MAXimum

Peak Search

Function

This command searches for the maximum level point of the active trace and moves the marker point.
Refer to :CALCulate:MARKer[1]|2|3|4|5|6|7|8|9|10:MAXimum.

Related Command

This command has the same function as the following commands.
:CALCulate:MARKer[1]|2|3|4|5|6|7|8|9|10:MAXimum
:CALCulate:ACPower:MARKer[1]|2|3|4|5|6|7|8|9|10:MAXimum
:CALCulate:CHPower:MARKer[1]|2|3|4|5|6|7|8|9|10:MAXimum
:CALCulate:OBWidth:MARKer[1]|2|3|4|5|6|7|8|9|10:MAXimum

[:SENSe]:BPOWer|:TXPower:BANDwidth[:RESolution] <freq>

Resolution Bandwidth

Function

This command sets the resolution bandwidth (RBW).
Refer to `[:SENSe]:BANDwidth|:BWIDth[:RESolution]`.

Related Command

This command has the same function as the following commands.

```
[:SENSe]:BANDwidth|:BWIDth[:RESolution]
:CALCulate:BANDwidth|:BWIDth[:RESolution]
[:SENSe]:ACPower:BANDwidth[:RESolution]
:CALCulate:ACPower:BANDwidth[:RESolution]
[:SENSe]:CHPower:BANDwidth[:RESolution]
:CALCulate:CHPower:BANDwidth[:RESolution]
[:SENSe]:OBWidth:BANDwidth[:RESolution]
:CALCulate:OBWidth:BANDwidth[:RESolution]
:CALCulate:BPOWer|:TXPower:BANDwidth[:RESolution]
```

:CALCulate:BPOWer|:TXPower:BANDwidth[:RESolution] <freq>

Resolution Bandwidth

Function

This command sets the resolution bandwidth (RBW).
Refer to `[:SENSe]:BANDwidth|:BWIDth[:RESolution]`.

Related Command

This command has the same function as the following commands.

```
[:SENSe]:BANDwidth|:BWIDth[:RESolution]
:CALCulate:BANDwidth|:BWIDth[:RESolution]
[:SENSe]:ACPower:BANDwidth[:RESolution]
:CALCulate:ACPower:BANDwidth[:RESolution]
[:SENSe]:CHPower:BANDwidth[:RESolution]
:CALCulate:CHPower:BANDwidth[:RESolution]
[:SENSe]:OBWidth:BANDwidth[:RESolution]
:CALCulate:OBWidth:BANDwidth[:RESolution]
[:SENSe]:BPOWer|:TXPower:BANDwidth[:RESolution]
```

[:SENSe]:BPOWer|:TXPower:BANDwidth[:RESolution]?

Resolution Bandwidth Query

Function

This command queries the resolution bandwidth (RBW).
Refer to [:SENSe]:BANDwidth|:BWIDth[:RESolution]?.

Related Command

This command has the same function as the following commands.

[:SENSe]:BANDwidth|:BWIDth[:RESolution]?
:CALCulate:BANDwidth|:BWIDth[:RESolution]?
[:SENSe]:ACPower:BANDwidth[:RESolution]?
:CALCulate:ACPower:BANDwidth[:RESolution]?
[:SENSe]:CHPower:BANDwidth[:RESolution]?
:CALCulate:CHPower:BANDwidth[:RESolution]?
[:SENSe]:OBWidth:BANDwidth[:RESolution]?
:CALCulate:OBWidth:BANDwidth[:RESolution]?
:CALCulate:BPOWer|:TXPower:BANDwidth[:RESolution]?

:CALCulate:BPOWer|:TXPower:BANDwidth[:RESolution]?

Resolution Bandwidth Query

Function

This command queries the resolution bandwidth (RBW).
Refer to [:SENSe]:BANDwidth|:BWIDth[:RESolution]?.

Related Command

This command has the same function as the following commands.

[:SENSe]:BANDwidth|:BWIDth[:RESolution]?
:CALCulate:BANDwidth|:BWIDth[:RESolution]?
[:SENSe]:ACPower:BANDwidth[:RESolution]?
:CALCulate:ACPower:BANDwidth[:RESolution]?
[:SENSe]:CHPower:BANDwidth[:RESolution]?
:CALCulate:CHPower:BANDwidth[:RESolution]?
[:SENSe]:OBWidth:BANDwidth[:RESolution]?
:CALCulate:OBWidth:BANDwidth[:RESolution]?
[:SENSe]:BPOWer|:TXPower:BANDwidth[:RESolution]?

2.13 AM Depth Measurement Settings

Table 2.13-1 lists device messages for setting the AM Depth measurement.

Table 2.13-1 Device Messages for setting AM Depth measurement

Function	Device Message
Measure AM Depth	`[:SENSe]:AM[:STATe] ON|OFF|1|0`
	`[:SENSe]:AM[:STATe]?`
AM Depth Configure	`:CONFigure:AM`
AM Depth Initiate	`:INITiate:AM`
AM Depth Fetch	`:FETCh:AM?`
AM Depth Read	`:READ:AM?`
AM Depth Measure	`:MEASure:AM?`

[:SENSe]:AM[:STATe] ON|OFF|1|0

Measure AM Depth

Function

This command executes the AM Depth measurement.

Command

```
[:SENSe]:AM[:STATe] <switch>
```

Parameter

<switch>	AM Depth measurement On/Off
ON|1	Sets the AM Depth measurement to On.
OFF|0	Sets the AM Depth measurement to Off.

Details

This command is available when the following trace is active:

- Power vs Time

For reading out a measurement result after this command has been executed, use *WAI commands to perform synchronized control.

Example of Use

To set the AM Depth measurement to On and query the result.

```
AM ON
*WAI
FETC:AM?
```

[:SENSe]:AM[:STATe]?

Measure AM Depth Query

Function

This command queries the On/Off state of the AM Depth measurement.

Query

```
[:SENSe]:AM[:STATe]?
```

Response

```
<switch>
```

Parameter

<switch>	AM Depth On/Off
1	On
0	Off

Example of Use

To query the On/Off state of the AM Depth measurement.

```
AM?
> 1
```

:CONFigure:AM

AM Depth Configure

Function

This command sets the AM Depth measurement to On.

Command

```
:CONFigure:AM
```

Details

No measurement is performed.
When this command is executed, Scale Mode is set to Linear and Detection is set to Pos&Neg, and Peak to Peak Function is set to ON.

Example of Use

To set the AM Depth measurement to On.

```
CONF:AM
```

:INITiate:AM

AM Depth Initiate

Function

This command starts the AM Depth measurement.

Command

```
:INITiate:AM
```

Details

When this command has been executed, AM Depth measurement is set to On and the measurement starts.
Scale Mode is set to Linear and Detection is set to Pos&Neg, and Peak to Peak Function is set to ON.
For reading out a measurement result after this command has been executed, use *WAI commands to perform synchronized control.

Example of Use

To start the AM Depth measurement and query the results.

```
INIT:AM
*WAI
FETC:AM?
```

:FETCh:AM?

AM Depth Fetch

Function

This command queries the result of the AM Depth measurement.

Query

```
:FETCh:AM?
```

Response

```
<pos>,<neg>,<p-p>,<avg>
```

Parameter

Peak to Peak measurement result

<pos>	+Peak value
<neg>	–Peak value
<p-p>	{(–Peak) – (+Peak)}/2 No suffix code. Value is returned in % units. –999999999999 is returned when no measurement is performed or an error occurs. Values in % units is returned when Terminal is DigRF 3G (only for MS269x Series) and the Input Source is Complex. Values in V units will be returned if it is not set to Complex.
<avg>	Average value No suffix code. Value is returned in V units. –999999999999 is returned when no measurement is performed or an error occurs.

Details

This command queries the result of the AM Depth measurement performed lastly. This function does not accompany any capture, thus this function is used to output the measurement result in a different type, when the measurement has already completed.
Use READ command to perform re-measurement with redoing capture.

Example of Use

To query the result of the AM Depth measurement.

```
FETC:AM?
```

:READ:AM?

AM Depth Read

Function

This command performs the AM Depth measurement and queries the result.
This command has the same function as the following commands executed in this order:

```
:INITiate:AM
:FETCh:AM?
```

:MEASure:AM?

AM Depth Measure

Function

This command performs the AM Depth measurement and queries the result.
This command has the same function as the following commands executed in this order:

```
:CONFigure:AM
:INITiate:AM
:FETCh:AM?
```

2.14 FM deviation Measurement Settings

Table 2.14-1 lists device messages for setting the FM deviation measurement.

Table 2.14-1 Device Messages for setting the FM deviation measurement

Function	Device Message
Measure FM deviation	`[:SENSe]:FM[:STATe] ON|OFF|1|0`
	`[:SENSe]:FM[:STATe]?`
FM deviation Configure	`:CONFigure:FM`
FM deviation Initiate	`:INITiate:FM`
FM deviation Fetch	`:FETCh:FM?`
FM deviation Read	`:READ:FM?`
FM deviation Measure	`:MEASure:FM?`

[:SENSe]:FM[:STATe] ON|OFF|1|0

Measure FM deviation

Function

This command executes the FM deviation measurement.

Command

```
[:SENSe]:FM[:STATe] <switch>
```

Parameter

<switch>	FM deviation measurement On/Off
ON|1	Sets FM deviation measurement to On.
OFF|0	Sets FM deviation measurement to Off.

Details

This command is available when the following trace is active:

- Frequency vs Time

For reading out a measurement result after this command has been executed, use *WAI commands to perform synchronized control.

Example of Use

To set the FM deviation measurement to On and query the result.

```
FM ON
*WAI
FETC:FM?
```

[:SENSe]:FM[:STATe]?

Measure FM deviation Query

Function

This command queries the On/Off state of the FM deviation measurement.

Query

```
[:SENSe]:FM[:STATe]?
```

Response

```
<switch>
```

Parameter

<switch>	FM deviation measurement On/Off
1	On
0	Off

Example of Use

To query the On/Off state of the FM deviation measurement.

```
FM?
> 1
```

:CONFigure:FM

FM deviation Configure

Function

This command sets the FM deviation measurement to On.

Command

```
:CONFigure:FM
```

Details

No measurement is performed.
After this command has been executed, then Scale Unit is set to ΔHz, Detection is set to Pos&Neg, and Peak to Peak Function is set to On.

Example of Use

To set the FM deviation measurement to On.

```
CONF:FM
```

:INITiate:FM

FM deviation Initiate

Function

This command starts the FM deviation measurement.

Command

```
:INITiate:FM
```

Details

After this command has been executed, then the FM deviation measurement is set to On and the measurement starts.
Scale Unit is set to ΔHz and Detection is set to Pos&Neg, and Peak to Peak function is set to ON.

For reading out a measurement result after this command has been executed, use *WAI commands to perform synchronized control.

Example of Use

To start the FM deviation measurement and query the results.

```
INIT:FM
*WAI
FETC:AM?
```

:FETCh:FM?

FM deviation Fetch

Function

This command queries the result of the FM deviation measurement.

Query

```
:FETCh:FM?
```

Response

```
<pos>,<neg>,<p-p>,<avg>
```

Parameter

	Peak to Peak measurement result
<pos>	+Peak value
<neg>	–Peak value
<p-p>	{(–Peak) – (+Peak)}/2
Suffix code	None, Value is returned in Hz units. (Frequency vs Time) –999999999999 is returned when no measurement is performed or an error occurs.
<avg>	Average value
Suffix code	None, Value is returned in Hz units. (Frequency vs Time) –999999999999 is returned when no measurement is performed or an error occurs.

Details

This command queries the result of the FM deviation measurement performed lastly. This function does not accompany any capture, thus this function is used to output the measurement result in a different type, when the measurement has already completed.
Use READ command to perform re-measurement with redoing capture.

Example of Use

To query the result of the FM deviation measurement.

```
FETC:FM?
```

:READ:FM?

FM deviation Read

Function

This command performs the FM deviation measurement and queries the result.
This command has the same function as the following commands executed in this order:

```
:INITiate:FM
:FETCh:FM?
```

:MEASure:FM?

FM deviation Measure

Function

This command performs the FM deviation measurement and queries the result.
This command has the same function as the following commands executed in this order:

```
:CONFigure:FM
:INITiate:FM
:FETCh:FM?
```

2.15 DigRF 3G Settings

Table 2.15-1 lists device messages for DigRF 3G measurement settings.

Note:

The DigRF 3G is not available only when the MS269x Series Option 040/140 Baseband Interface Unit is not installed or the software package is Ver.6.00.00 or later; it is not supported by MS 2830A, MS2840A and MS2850A.

Table 2.15-1 Device messages for DigRF 3G measurement settings

Function	Device Message
Terminal Change	[:SENSe]:FEED RF|DIGRF3G
	[:SENSe]:FEED?
Target System	[:SENSe]:DIGRf3g:TARGet WCDMA|GSM
	[:SENSe]:DIGRf3g:TARGet?
AD Full Range	[:SENSe]:DIGRf3g:ADRange <volt>
	[:SENSe]:DIGRf3g:ADRange?
I/Q Sign	[:SENSe]:DIGRf3g:IQSign SIGNbit|TWOComp
	[:SENSe]:DIGRf3g:IQSign?
Measurement Channel	[:SENSe]:DIGRf3g:MEASch PRIMary|DIVersity
	[:SENSe]:DIGRf3g:MEASch?
Capture Sample Length	[:SENSe]:SWEep:SAMPle <point>
	[:SENSe]:SWEep:SAMPle?
Analysis Start Sample	:CALCulate:ATIMe:STARt:SAMPle <point>
	:CALCulate:ATIMe:STARt:SAMPle?
Analysis Sample Length	:CALCulate:ATIMe:LENGth:SAMPle <point>
	:CALCulate:ATIMe:LENGth:SAMPle?
Input Source	:CALCulate:IQData <source>
	:CALCulate:IQData?
Result Delay	:CALCulate:TRIGger:DIGRf3g:DELay?
Vertical Scale Center	:DISPlay:WINDow[1]:TRACe:Y[:SCALe]:CVOLtage <voltage>
	:DISPlay:WINDow[1]:TRACe:Y[:SCALe]:CVOLtage?
Smoothing Sample Length	:CALCulate:SMOothing:LENGth:SAMPLe <sample>
	:CALCulate:SMOothing:LENGth:SAMPle?
Marker Unit	:UNIT:TMARker SAMPle|SEC
	:UNIT:TMARker?

[:SENSe]:FEED RF|DIGRF3G

Terminal Change

Function

This command sets Terminal.

Command

```
[:SENSe]:FEED <terminal>
```

Parameter

<terminal>	Terminal
RF	Sets RF for terminal.
DIGRF3G	Sets DigRF 3G (only for MS269x Series) for terminal.

Details

This command is not available while the Replay function is being executed.

This command is not available in the following case:

- Setting for DigRF 3G (only for MS269x Series) cannot be performed when the Option 040/140 Baseband Interface Unit is not installed or the software package is Ver.6.00.00 or later.

Example of Use

To set RF for Terminal.

```
FEED RF
```

[:SENSe]:FEED?

Terminal Change Query

Function

This command queries Terminal.

Query

```
[SENSe]:FEED?
```

Response

```
<terminal>
```

Parameter

<terminal>	Terminal
RF	RF
DIGRF3G	DigRF 3G (only for MS269x Series)

Example of Use

To query Terminal.

```
FEED?
> RF
```

[:SENSe]:DIGRf3g:TARGet WCDMA|GSM

Target System

Function

This command selects Target System of Input Signals.

Command

```
[:SENSe]:DIGRf3g:TARGet <communication>
```

Parameter

<communication>	Target System
WCDMA	Sets Target System for W-CDMA
GSM	Sets Target System for GSM

Details

This command is not available while the Replay function is being executed.

This command is not available in the following case:

- Setting for Target System cannot be performed when the Option 040/140 Baseband Interface Unit is not installed or the software package is Ver.6.00.00 or later.

Example of Use

To set W-CDMA for Target System of Input signal.

```
DIGR:TARG WCDMA
```

[:SENSe]:DIGRf3g:TARGet?

Target System Query

Function

This command queries the target system of Input signals.

Query

```
[SENSe]:DIGRf3g:TARGet?
```

Response

```
<communication>
```

Parameter

<communication>	Target System
WCDMA	W-CDMA
GSM	GSM

Example of Use

To query the target system of Input signals.

```
DIGR:TARG?
> WCDMA
```

[:SENSe]:DIGRf3g:ADRange <volt>

AD Full Range

Function

This command sets the coefficient used for the unit conversion of the DigRF 3G (only for MS269x Series) signal to the V unit system.

Command

```
[:SENSe]:DIGRf3g:ADRange <volt>
```

Parameter

<volt>	Voltage
Range	1 mV to 10 V
Resolution	0.1 mV
Suffix code	MV,V
	V is used when omitted.

Details

This command is not available while the Replay function is being executed.

This command is not available in the following case:

- When the Option 040/140 Baseband Interface Unit is not installed or the software package is Ver.6.00.00 or later.

Example of Use

To set the coefficient to 10 mV.

```
DIGR:ADR 10MV
```

[:SENSe]:DIGRf3g:ADRange?

AD Full Range Query

Function

This command queries the coefficient used for the unit conversion of the DigRF 3G (only for MS269x Series) signal to the V unit system.

Query

```
[:SENSe]:DIGRf3g:ADRange?
```

Response

```
<volt>
```

Parameter

<volt>	Voltage
Range	0.001 V to 10 V
Resolution	0.0001 V
Suffix codes	None

Example of Use

To query the coefficient used for the unit conversion of the DigRF 3G (only for MS269x Series) signal to the V unit system.

```
DIGR:ADR?
```

[:SENSe]:DIGRf3g:IQSign SIGNbit|TWOComp

I/Q Sign

Function

This command sets the I/Q Sign.

Command

```
[:SENSe]:DIGRf3g:IQSign <i/q sign>
```

Parameter

<i/q sign>	I/Q Sign
SIGNbit	Sets to Sign bit + Absolute value
TWOComp	Sets to two's complement.

Details

This command is not available while the Replay function is being executed.

This command is not available in the following case:

- Setting for I/Q Sign cannot be performed when the Option 040/140 Baseband Interface Unit is not installed or the software package is Ver.6.00.00 or later.

Example of Use

To set the I/Q Sign to “sign bit + absolute value”.

```
DIGR:IQS SIGN
```

[:SENSe]:DIGRf3g:IQSign?

I/Q Sign Query

Function

This command queries the I/Q Sign.

Query

```
[:SENSe]:DIGRf3g:IQSign?
```

Response

```
<i/q sign>
```

Parameter

<i/q sign>	I/Q Sign
SIGN	Sign bit + absolute value
TWOC	Two's complement

Example of Use

To query the I/Q Sign.

```
DIGR:IQS?
> SIGN
```

[:SENSe]:DIGRf3g:MEASch PRIMary|DIVersity

Measurement Channel

Function

This command sets the Logical channel Type of the receiving DigRF 3G (only for MS269x Series) signal.

Command

```
[:SENSe]:DIGRf3g:MEASch <channel>
```

Parameter

<channel>	Measurement Channel
PRIMary	Primary
DIVersity	Diversity

Details

This command is not available while the Replay function is being executed.

This command is not available in the following case:

- Setting for Measurement Channel cannot be performed when the Option 040/140 Baseband Interface Unit is not installed or the software package is Ver.6.00.00 or later.

Example of Use

To set Primary for Logical Channel Type.

```
DIGR:MEAS PRIM
```

[:SENSe]:DIGRf3g:MEASch?

Measurement Channel Query

Function

This command queries the Logical channel Type of the receiving DigRF 3G (only for MS269x Series) signal.

Query

```
[:SENSe]:DIGRf3g:MEASch?
```

Response

```
<channel>
```

Parameter

<channel>	Measurement Channel
PRIM	Primary
DIV	Diversity

Example of Use

To query the Logical Channel Type.

```
DIGR:MEAS?
> PRIM
```

[:SENSe]:SWEep:SAMPle <point>

Capture Sample Length

Function

This command sets the waveform capture sample length when Terminal is set to DigRF 3G (only for MS269x Series).

Command

```
[:SENSe]:SWEep:SAMPle <point>
```

Parameter

<point>	Number of capture samples
Range	100 to 500000000 (W-CDMA) 100 to 200000000 (GSM)
Resolution	1 sample
Default value	100

Details

The shortest capture time length is set when the automatic setting is enabled.

The automatic mode is switched to the manual mode when the capture time is set.

The setting range and resolution are limited by the Frequency Span setting.

This command is not available while the Replay function is being executed.

This command is not available in the following case:

- When Terminal is RF.

Example of Use

To set the number of waveform capture samples to 20000.

```
SWE:SAMP 20000
```

[:SENSe]:SWEep:SAMPle?

Capture Sample Length Query

Function

This command queries the number of waveform capture samples when Terminal is set to DigRF 3G (only for MS269x Series).

Query

```
[:SENSe]:SWEep:SAMPle?
```

Response

```
<point>
```

Parameter

<point>		Capture sample length
	Range	100 to 500000000 (W-CDMA) 100 to 200000000 (GSM)
	Resolution	1 sample
	Default value	100

Example of Use

To query waveform capture sample length.

```
SWE:SAMP?
> 20000
```

:CALCulate:ATIMe:STARt:SAMPle<point>

Analysis Start Sample

Function

This command sets the analysis start sample of the main trace with sample numbers when Terminal is set to DigRF 3G (only for MS269x Series).

Command

```
:CALCulate:ATIMe:STARt:SAMPle <point>
```

Parameter

<point>		Analysis start sample
	Range	0 to Capture Time Length – Analysis Time Length
	Resolution	1 sample

Details

This command is not available while the Replay function is being executed.

This command is not available in the following cases:

- When the analysis start sample is maximum.
- When RF is set for Terminal .

Example of Use

To set the analysis start position to 15360000 sample.

```
CALC:ATIM:STAR:SAMP 15360000
```

:CALCulate:ATIMe:STARt:SAMPle?

Analysis Start Sample Query

Function

This command querie the analysis start position of the main trace with sample numbers when Terminal is set to DigRF 3G (only for MS269x Series).

Query

```
:CALCulate:ATIMe:STARt:SAMPle?
```

Response

```
<point>
```

Parameter

<point>		Analysis start sample
	Range	0 to Capture Time Length – Analysis Time Length
	Resolution	1 sample

Example of Use

To query the analysis start sample.

```
CALC:ATIM:STAR:SAMP?
> 15360000
```

:CALCulate:ATIMe:LENGth:SAMPle <point>

Analysis Sample Length

Function

This command sets the analysis sample length of the main trace when Terminal is set to DigRF 3G (only for MS269x Series).

Command

```
:CALCulate:ATIMe:LENGth:SAMPle <point>
```

Parameter

<point>	Analysis sample length
Range	0 to Capture Time Length – Analysis Start Time
Resolution	1 sample

Details

This command is not available while the Replay function is being executed.

This command is not available in the following cases:

- When the analysis start sample is maximum.
- When RF is set for Terminal.

Example of Use

To set the analysis sample length of the main trace to 15360000.

```
CALC:ATIM:LENG:SAMP 15360000
```

:CALCulate:ATIMe:LENGth:SAMPle?

Analysis Sample Length Query

Function

This command queries the analysis sample length of the main trace when Terminal is set to DigRF 3G (only for MS269x Series).

Query

```
:CALCulate:ATIMe:LENGth:SAMPle?
```

Response

```
<point>
```

Parameter

<point>		Analysis sample length
	Range	0 to Capture Time Length – Analysis Start Time
	Resolution	1 sample

Example of Use

To query the analysis sample length of the main trace

```
CALC:ATIM:LENG:SAMP?
> 15360000
```

:CALCulate:IQData <source>

Input Source

Function

This command selects the Input Source when the data is analyzed.

Command

```
:CALCulate:IQData <source>
```

Parameter

<source>	Input Source
COMPlex	Selects a complex data for I and Q phase.
I	Selects the I phase data.
Q	Selects the Q phase data.

Details

This command is not available while the Replay function is being executed.

This command is not available in the following cases:

- When Terminal is set to RF.
- When the trace is set to Frequency vs Time, neither I nor Q phase can be set.

Example of Use

To select Complex for Input Source.

```
CALC:IQD COMP
```

:CALCulate:IQData?

Input Source Query

Function

This command queries the Input Source when the data is analyzed.

Command

```
:CALCulate:IQData?
```

Parameter

<source>	Input Source
COMP	I and Q phase
I	I phase
Q	Q phase

Example of Use

To query the Input Source.

```
CALC:IQD?
```

:CALCulate:TRIGger:DIGRf3g:DELay?

Result Delay Query

Function

This command queries the result of delay time by sample unit.

Command

```
:CALCulate:TRIGger:DIGRf3g:DELay?
```

Response

```
<sample>
```

Details

When a trigger is used for DigRF 3G (only for MS269x Series), a delay may occur in the results because there is no pre-trigger. The number of samples from the analysis start sample point to the actual trigger point (trigger input + trigger delay) is queried as a delay.

This command is not available while the Replay function is being executed.

Example of Use

To query the delay time by sample unit.

```
CALC:TRIG:DIGR:DEL?
```

:DISPlay:WINDow[1]:TRACe:Y[:SCALe]:CVOLtage <voltage>

Vertical Scale Center

Function

This command sets the value for center of the vertical scale.

Command

```
:DISPlay:WINDow[1]:TRACe:Y[SCALe]:CVOLtage <Voltage>
```

Parameter

<voltage>	Settings scale value
Range	–Reference Level to Reference Level
Resolution	0.01 pV
Suffix codes	PV,NV,UV,MV,V V is used when omitted.

Details

This command is available when the following trace is active.

- Power vs Time

This command is not available while the Replay function is being executed.

This command is not available in the following cases:

- When Terminal is selected RF.
- Scale Mode is Log.
- Input Source is Complex.

Example of Use

To set the value for center of vertical scale to 2 mV

```
DISP:WIND:TRAC:Y:CVOL 2MV
```

:DISPlay:WINDow[1]:TRACe:Y[:SCALe]:CVOLtage?

Vertical Scale Center Query

Function

This command queries the value for center of the vertical scale.

Query

```
:DISPlay:WINDow[1]:TRACe:Y[SCALe]:CVOLtage?
```

Response

```
<voltage>
```

Parameter

<voltage>	Settings scale value
Range	–70.7 V to 70.7 V
Resolution	0.01 pV
	No Suffix code

Details

–999999999999 is returned when Terminal is RF, when Scale Mode is Log, or when Input Source is Complex.

Example of Use

To query the value for center of the vertical scale

```
DISP:WIND:TRAC:Y:CVOL?
> 2000000
```

:CALCulate:SMOothing:LENGth:SAMPle<sample>

Smoothing Sample Length

Function

This command sets the smoothing sample length of the main trace when Terminal is set to DigRF 3G (only for MS269x Series).

Command

```
:CALCulate:SMOothing:LENGth:SAMPle <sample>
```

Parameter

<sample>	Smoothing sample length
Range	1 to 10000
Resolution	1 sample

Details

This command is available when the following trace is active.

- Power vs Time
- Frequency vs Time

This command is not available while the Replay function is being executed.

This command is not available in the following condition:

- When Terminal is set to RF.

Example of Use

To set the smoothing sample length is 500.

```
CALC:SMO:LENG:SAMP 500
```

:CALCulate:SMOothing:LENGth:SAMPle?

Smoothing Sample Length Query

Function

This command queries the smoothing sample length of the main trace when Terminal is set to DigRF 3G (only for MS269x Series).

Query

```
:CALCulate:SMOothing:LENGth:SAMPle?
```

Response

```
<sample>
```

Parameter

<sample>	Smoothing sample length
Range	1 to 10000
Resolution	1 sample

Details

This command is available when the following trace is active.

- Power vs Time
- Frequency vs Time

Example of Use

To query the smoothing sample length.

```
CALC:SMO:LENG:SAMP?
> 500
```

:UNIT:TMARker SAMPle|SECond

Marker Unit

Function

This command sets the units of the marker display value (time) when Terminal is set to DigRF 3G (only for MS269x Series).

Command

```
:UNIT:TMARker <Unit>
```

Parameter

<unit>	Units of marker display value
SAMPle	Sets Sample for the units of marker display value.
SECond	Sets second for the units of marker display value.

Details

This command is not available while the Replay function is being executed.

This command is not available in the following case:

- When RF is set for Terminal.

Example of Use

To set the marker display unit to Sample.

```
UNIT:TMAR SAMP
```

:UNIT:TMARker?

Marker Unit Query

Function

This command queries the units of the marker display value when Terminal is set to DigRF 3G (only for MS269x Series).

Query

```
:UNIT:TMARker?
```

Response

```
<unit>
```

Parameter

<unit>	Units of marker display value
SAMP	Sample
SEC	Second

Example of Use

To query the units of the marker display.

```
UNIT:TMAR?
> SAMP
```

2.16 Setting Replay function

Table 2.16-1 lists device messages for setting the Replay function.

Table 2.16-1 Device messages for setting Replay function

Function	Device Message
Stop Replay	:MMEMory:LOAD:IQData:STOP
Execute Replay	:MMEMory:LOAD:IQData <filename>,<device>,<application>
Replay File Information Query	:MMEMory:LOAD:IQData:INFormation?
Replay Execute Query	:MMEMory:LOAD:IQData:INFormation:STATe?
Replay Filename Query	:MMEMory:LOAD:IQData:INFormation:FILE?
Replay Device Query	:MMEMory:LOAD:IQData:INFormation:DEVice?
Replay Application Query	:MMEMory:LOAD:IQData:INFormation:APPLication?
Replay Start Time Query	:MMEMory:LOAD:IQData:INFormation:STARt?
Replay Time Length Query	:MMEMory:LOAD:IQData:INFormation:LENGth?
Replay Level Over Query	:MMEMory:LOAD:IQData:INFormation:CONDition?
Replay Error Icon Query	:MMEMory:LOAD:IQData:INFormation:ERRor?
Replay Correction Query	:MMEMory:LOAD:IQData:INFormation:CORRection?
Replay External Reference Query	:MMEMory:LOAD:IQData:INFormation:ROSCillator?

:MMEMory:LOAD:IQData:STOP

Stop Replay

Function

This command stops the Replay function.

Command

```
:MMEMory:LOAD:IQData:STOP
```

Details

This command is available only when the Replay function is being executed.

Example of Use

To stop the Replay function.

```
MMEM:LOAD:IQD:STOP
```

:MMEMory:LOAD:IQData <filename>,<device>,<application>

Execute Replay

Function

This command executes the Replay function. By selecting a file name, drive name, and an application, you can select IQ data for which the Replay function is executed.

Command

```
:MMEMory:LOAD:IQData <filename>,<device>,<application>
```

Parameter

`<filename>`	Target file name Character string within 128 characters enclosed by double quotes (" ") or single quotes (' ') (excluding extension) The following characters cannot be used: \ / : * ? " " ' ' < > |
`<device>`	Drive name `A,B,D,E,F,...`
`<application>`	Application to load IQ data file
`SIGANA`	Signal Analyzer
`EXTDIG`	Extended Digitizing

Details

This command is not available in the following case:

- When DigRF 3G (only for MS269x Series) is set for Terminal.

Example of Use

To query the IQ data file "TEST" of the signal analyzer from drive D, and execute the Replay function.

```
MMEM:LOAD:IQD "TEST",D,SIGANA
```

:MMEMory:LOAD:IQData:INFormation?

Replay File Information Query

Function

This command queries the file information while the Replay function is being executed.

Query

```
:MMEMory:LOAD:IQData:INFormation?
```

Response

```
<filename>,<start_time>,<time_length>
```

Parameter

<filename>	File name Character string within 128 characters (excluding extension) *** is returned unless the Replay function is executed.
<start_time>	Start time of analyzable IQ data
Resolution	1 ns No suffix code. Value is returned in S units. –999999999999 is returned unless the Replay function is executed.
<time_length>	Time length of analyzable IQ data
Resolution	1 ns No suffix code. Value is returned in S units. –999999999999 is returned unless the Replay function is executed.

Example of Use

To query the file information while the Replay function is being executed.

```
MMEM:LOAD:IQD:INF?
> TEST,-38.838771500,38.838771500
```

:MMEMory:LOAD:IQData:INFormation:STATe?

Replay Execute Query

Function

This command queries whether the Replay function is executed.

Query

```
:MMEMory:LOAD:IQData:INFormation:STATe?
```

Response

```
<switch>
```

Parameter

<switch>	Replay On/off
1	The Replay function is executed.
0	The Replay function is not executed.

Example of Use

To query whether the Replay function is executed.

```
MMEM:LOAD:IQD:INF:STAT?
> 1
```

:MMEMory:LOAD:IQData:INFormation:FILE?

Replay Filename Query

Function

This command queries the name of the file for which the Replay function is executed.

Query

```
:MMEMory:LOAD:IQData:INFormation:FILE?
```

Response

```
<filename>
```

Parameter

<filename>	File name Character string within 128 characters (excluding extension) *** is returned unless the Replay function is executed.

Example of Use

To query the name of the file for which the Replay function is executed.

```
MMEM:LOAD:IQD:INF:FILE?
```

:MMEMory:LOAD:IQData:INFormation:DEVice?

Replay Device Query

Function

This command queries the name of the drive for which the Replay function is executed.

Query

```
:MMEMory:LOAD:IQData:INFormation:DEVice?
```

Response

```
<device>
```

Parameter

<device>	Drive name A,B,D,E,F,... *** is returned unless the Replay function is executed.

Example of Use

To query the name of the drive for which the Replay function is executed.

```
MMEM:LOAD:IQD:INF:DEV?
```

:MMEMory:LOAD:IQData:INFormation:APPLication?

Replay Application Query

Function

This command queries the name of the application for which the Replay function is executed.

Query

```
:MMEMory:LOAD:IQData:INFormation:APPLication?
```

Response

```
<application>
```

Parameter

<application>	Application to load IQ data file
SIGANA	Signal Analyzer
EXTDIG	Extended Digitizing
	*** is returned unless the Replay function is executed.

Example of Use

To query the name of the application for which the Replay function is executed.

```
MMEM:LOAD:IQD:INF:APPL?
```

:MMEMory:LOAD:IQData:INFormation:STARt?

Replay Start Time Query

Function

This command queries the start time of analyzable IQ data for the Replay function.

Query

```
:MMEMory:LOAD:IQData:INFormation:STARt?
```

Response

```
<start_time>
```

Parameter

`<start_time>`		Start time of analyzable IQ data
	Resolution	1 ns No suffix code. Value is returned in S units. –999999999999 is returned unless the Replay function is executed.

Example of Use

To query the start time of analyzable IQ data for the Replay function.

```
MMEM:LOAD:IQD:INF:STAR?
```

:MMEMory:LOAD:IQData:INFormation:LENGth?

Replay Time Length Query

Function

This command queries the time length of analyzable IQ data for the Replay function.

Query

```
:MMEMory:LOAD:IQData:INFormation:LENGth?
```

Response

```
<time_length>
```

Parameter

`<time_length>`		Time length of analyzable IQ data
	Resolution	1 ns No suffix code. Value is returned in S units. –999999999999 is returned unless the Replay function is executed.

Example of Use

To query the time length of analyzable IQ data for the Replay function.

```
MMEM:LOAD:IQD:INF:LENG?
```

:MMEMory:LOAD:IQData:INFormation:CONDition?

Replay Level Over Query

Function

This command queries whether Level Over is displayed while the Replay function is being executed.

Query

```
:MMEMory:LOAD:IQData:INFormation:CONDition?
```

Response

<switch>

1	Level Over is displayed.
0	Normal –999.0 is returned unless the Replay function is executed.

Example of Use

To query whether Level Over is displayed while the Replay function is being executed.

```
MMEM:LOAD:IQD:INF:COND?
> 0
```

:MMEMory:LOAD:IQData:INFormation:ERRor?

Replay Error Icon Query

Function

This command queries whether Replay Error Info. icon is displayed while the Replay function is being executed.

Query

```
:MMEMory:LOAD:IQData:INFormation:ERRor?
```

Response

<switch>

1	Replay Error Info. icon is displayed.
0	Normal –999.0 is returned unless the Replay function is executed.

Details

The Replay Error Info. icon is displayed if the loaded xml file contains error information.

Example of Use

To query whether Replay Error Info. icon is displayed while the Replay function is being executed.

```
MMEM:LOAD:IQD:INF:ERR?
> 0
```

:MMEMory:LOAD:IQData:INFormation:CORRection?

Replay Correction Query

Function

This command queries the Correction value when the Replay function is executed.

Query

```
:MMEMory:LOAD:IQData:INFormation:CORRection?
```

Response

```
<real>
```

Parameter

`<real>`		Correction level
	Range	–100 to 100 dB 0.000 is returned when Correction is set to Off. –999.0 is returned unless the Replay function is executed.

Example of Use

To query the Correction value when the Replay function is executed.

```
MMEM:LOAD:IQD:INF:CORR?
```

:MMEMory:LOAD:IQData:INFormation:ROSCillator?

Replay External Reference Query

Function

This command queries the frequency reference signal source when the Replay function is executed.

Query

```
:MMEMory:LOAD:IQData:INFormation:ROSCillator?
```

Response

```
<source>
```

Parameter

`<source>`	Frequency reference signal source
`INT`	Internal reference signal source
`INTU`	Internal reference signal source (Unlock state)
`EXT`	External reference signal source
`EXTU`	External reference signal source (Unlock state)
	*** is returned unless the Replay function is executed.

Example of Use

To query the frequency reference signal source when the Replay function is executed.

```
MMEM:LOAD:IQD:INF:ROSC?
```

2.17 Sub Trace Settings

Table 2.17-1 lists device messages for setting sub traces.

Table 2.17-1 Device messages for setting sub traces

Function	Device Message
Change Sub Trace	:CALCulate:STRace:MODE OFF|PVTime|SPGRam
	:CALCulate:STRace:MODE?
Sub Trace Detection Mode	:CALCulate:STRace:DETector[:FUNCtion] NORMal|POSitive|NEGative|AVERage
	:CALCulate:STRace:DETector[:FUNCtion]?
Sub Trace Analysis Time Auto/Manual	:CALCulate:STRace:ATIMe:AUTO OFF|ON|0|1
	:CALCulate:STRace:ATIMe:AUTO?
Sub Trace Analysis Start Time	:CALCulate:STRace:ATIMe:STARt <time>
	:CALCulate:STRace:ATIMe:STARt?
Sub Trace Analysis Start Sample	:CALCulate:STRace:ATIMe:STARt:SAMPle <integer>
	:CALCulate:STRace:ATIMe:STARt:SAMPle?
Sub Trace Analysis Time Length	:CALCulate:STRace:ATIMe:LENGth <time>
	:CALCulate:STRace:ATIMe:LENGth?
Sub Trace Analysis Sample Length	:CALCulate:STRace:ATIMe:LENGth:SAMPle <integer>
	:CALCulate:STRace:ATIMe:LENGth:SAMPle?
Sub Trace Log Scale Level Full Scale	:DISPlay:WINDow[1]:STRace:Y[:SCALe]:PDIVision:RANGe:LOGarithmic <rel_ampl>
	:DISPlay:WINDow[1]:STRace:Y[:SCALe]:PDIVision:RANGe:LOGarithmic?
Sub Trace Linear Scale Level Full Scale	:DISPlay:WINDow[1]:STRace:Y[:SCALe]:PDIVision:RANGe:LINear <percent>
	:DISPlay:WINDow[1]:STRace:Y[:SCALe]:PDIVision:RANGe:LINear?
Sub Trace Resolution Bandwidth	:CALCulate:STRace:BANDwidth|:BWIDth[:RESolution] <bandwidth>
	:CALCulate:STRace:BANDwidth|:BWIDth[:RESolution]?
Sub Trace Resolution Bandwidth Auto/Manual	:CALCulate:STRace:BANDwidth|:BWIDth[:RESolution]:AUTO ON|OFF|1|0
	:CALCulate:STRace:BANDwidth|:BWIDth[:RESolution]:AUTO?
Sub Trace Result Delay Query	:CALCulate:STRace:TRIGger:DIGRf3g:DELay?

:CALCulate:STRace:MODE OFF|PVTime|SPGRam

Change Sub Trace

Function

This command sets the sub-trace type.

Command

```
:CALCulate:STRace:MODE <trace>
```

Parameter

<trace>	Type
OFF	None (Default value)
PVTime	Power vs Time
SPGRam	Spectrogram

Details

Spectrogram cannot be set when Scale Mode is set to Lin or when Terminal is set to DigRF 3G (only for MS269x Series).
This command is not available when Trace Mode is set to No Trace.

Example of Use

To set the sub trace to Spectrogram.

```
CALC:STR:MODE SPGR
```

:CALCulate:STRace:MODE?

Change Sub Trace Query

Function

This command queries the sub-trace type.

Query

```
:CALCulate:STRace:MODE?
```

Response

```
<trace>
```

Parameter

<trace>	Type
OFF	None
PVT	Power vs Time
SPGR	Spectrogram

Example of Use

To query the sub-trace type.

```
CALC:STR:MODE?
> SPGR
```

:CALCulate:STRace:DETector[:FUNCtion] NORMal|POSitive|NEGative|AVERage

Sub Trace Detection Mode

Function

This command sets the detection mode for the waveform pattern of the sub-trace.

Command

```
:CALCulate:STRace:DETector[:FUNCtion] <mode>
```

Parameter

<mode>	Detection mode
NORMal	Simultaneous detection of positive and negative peaks (unavailable for Spectrogram sub trace)
POSitive	Positive peak detection
NEGative	Negative peak detection
AVERage	Average value detection (Default)
Default value	POSitive (in Spectrogram) AVERage (in Power vs Time)

Details

This command is not available when the sub-trace is set to Off.

Example of Use

To set the detection mode to positive peak detection.

```
CALC:STR:DET POS
```

:CALCulate:STRace:DETector[:FUNCtion]?

Sub Trace Detection Mode Query

Function

This command queries the detection mode for the waveform pattern of the sub-trace.

Query

```
:CALCulate:STRace:DETector[:FUNCtion]?
```

Response

```
<mode>
```

Parameter

<mode>	Detection mode for sub trace
NORM	Simultaneous detection of positive and negative peaks
POS	Positive peak detection
NEG	Negative peak detection
AVER	Average value detection

Example of Use

To query the detection mode.

```
CALC:STR:DET?
> POS
```

:CALCulate:STRace:ATIMe:AUTO OFF|ON|0|1

Sub Trace Analysis Time Auto/Manual

Function

This command selects whether to set the analysis time for sub traces automatically or manually.

Command

```
:CALCulate:STRace:ATIMe:AUTO <switch>
```

Parameter

<switch>	Auto/Manual
ON|1	Auto (Default)
OFF|0	Manual

Details

This command is not available when the sub-trace is set to Off.

Example of Use

To set the analysis time of the sub-trace to On (Auto).

```
CALC:STR:ATIM:AUTO ON
```

:CALCulate:STRace:ATIMe:AUTO?

Sub Trace Analysis Time Auto/Manual Query

Function

This command queries whether the analysis time for sub traces is set automatically or manually.

Query

```
:CALCulate:STRace:ATIMe:AUTO?
```

Response

```
<switch>
```

Parameter

<switch>	Auto/Manual
1	Auto
0	Manual

Example of Use

To query whether the analysis time for sub traces is set automatically or manually.

```
CALC:STR:ATIM:AUTO?
> 1
```

:CALCulate:STRace:ATIMe:STARt <time>

Sub Trace Analysis Start Time

Function

This command sets the analysis start time of the sub-trace.

Command

```
:CALCulate:STRace:ATIMe:STARt <time>
```

Parameter

<time>		Analysis start time
	Range/Resolution	For details, refer to *MS2690A/MS2691A/MS2692A Signal Analyzer Operation Manual (Signal Analyzer function Operation)* or *MS2830A/MS2840A/MS2850A Signal Analyzer Operation Manual (Signal Analyzer function Operation)*.
	Suffix codes	NS,US,MS,S S is used when omitted.

Details

This command is not available when the analysis time length (Sub Trace Analysis Time Length) is set to the maximum value.

This command is not available in the following cases:

- When Terminal is set to DigRF 3G (only for MS269x Series).
- When the sub-trace is set to Off.

Example of Use

To set the analysis start time to 12 ms.

```
CALC:STR:ATIM:STAR 12MS
```

:CALCulate:STRace:ATIMe:STARt?

Sub Trace Analysis Start Time Query

Function

This command queries the analysis start time of the sub-trace.

Query

```
:CALCulate:STRace:ATIMe:STARt?
```

Response

```
<time>
```

Parameter

`<time>`		Analysis start time
	Range/Resolution	For details, refer to *MS2690A/MS2691A/MS2692A Signal Analyzer Operation Manual (Signal Analyzer function Operation)* or *MS2830A/MS2840A/MS2850A Signal Analyzer Operation Manual (Signal Analyzer function Operation)*. No suffix code. Value is returned in S units. –999.0 is returned when no measurement is performed or an error occurs.

Example of Use

To query the analysis start time.

```
CALC:STR:ATIM:STAR?
> 0.01200000
```

:CALCulate:STRace:ATIMe:STARt:SAMPle <integer>

Sub Trace Analysis Start Sample

Function

This command uses the number of samples to set the sub trace analysis start position when Terminal is set to DigRF 3G (only for MS269x Series).

Command

```
:CALCulate:STRace:ATIMe:STARt:SAMPle <integer>
```

Parameter

<integer>		Sub trace analysis start position
	Range	0 to Capture Time Length – Analysis Time Length
	Resolution	1 sample

Details

This command is not available when the analysis sample length (Sub Trace Analysis Length Sample) is set to the maximum value.

This command is not available in the following cases:

- When Terminal is RF.
- When the sub-trace is set to Off.

Example of Use

To set the analysis start position to 15360000 samples.

```
CALC:STR:ATIM:STAR:SAMP 15360000
```

:CALCulate:STRace:ATIMe:STARt:SAMPle?

Sub Trace Analysis Start Sample Query

Function

This command uses the number of samples to query the sub trace analysis start position when Terminal is set to DigRF 3G (only for MS269x Series).

Query

```
:CALCulate:STRace:ATIMe:STARt:SAMPle?
```

Response

```
<integer>
```

Parameter

<integer>	Sub trace analysis start position
Range	0 to Capture Time Length – Analysis Time Length
Resolution	1 sample –999.0 is returned when no measurement is performed or an error occurs.

Example of Use

To query the analysis start position.

```
CALC:STR:ATIM:STAR:SAMP?
> 15360000
```

:CALCulate:STRace:ATIMe:LENGth <time>

Sub Trace Analysis Time Length

Function

This command sets the analysis time length of the sub-trace.

Command

```
:CALCulate:STRace:ATIMe:LENGth <time>
```

Parameter

<time>		Time analysis length
	Range/Resolution	For details, refer to *MS2690A/MS2691A/MS2692A Signal Analyzer Operation Manual (Signal Analyzer Function Operation)* or *MS2830A/MS2840A/MS2850A Signal Analyzer Operation Manual (Signal Analyzer Function Operation)*.
	Suffix code	NS,US,MS,S

Details

This command is not available when the analysis start time (Sub Trace Analysis Start Time) is set to the maximum value.

This command is not available in the following cases:

- When Terminal is set to DigRF 3G (only for MS269x Series).
- When the sub-trace is set to Off.

Example of Use

To set the analysis time length of the sub-trace to 12 ms.

```
CALC:STR:ATIM:LENG 12MS
```

:CALCulate:STRace:ATIMe:LENGth?

Sub Trace Analysis Time Length Query

Function

This command queries the analysis time length of the sub-trace.

Query

```
:CALCulate:STRace:ATIMe:LENGth?
```

Response

```
<time>
```

Parameter

<time>		Time analysis length
	Range/Resolution	For details, refer to *MS2690A/MS2691A/MS2692A Signal Analyzer Operation Manual (Signal Analyzer Function Operation)* or *MS2830A/MS2840A/MS2850A Signal Analyzer Operation Manual (Signal Analyzer Function Operation)*. No suffix code. Value is returned in S units –999.0 is returned when no measurement is performed or an error occurs.

Example of Use

To query the analysis time length of the sub-trace.

```
CALC:STR:ATIM:LENG?
> 0.01200000
```

:CALCulate:STRace:ATIMe:LENGth:SAMPle <integer>

Sub Trace Analysis Sample Length

Function

This command sets the analysis sample length of the sub-trace when Terminal is set to DigRF 3G (only for MS269x Series).

Command

```
:CALCulate:STRace:ATIMe:LENGth:SAMPle <integer>
```

Parameter

<integer>	Analysis sample length
Range	0 to Capture Time Length – Analysis Start Time
Resolution	1 sample

Details

This command is not available when the analysis start position (Sub Trace Analysis Start Sample) is set to the maximum value.

This command is not available in the following cases:

- When Terminal is RF.
- When the sub-trace is set to Off.

Example of Use

To set the analysis sample length of the sub-trace to 15360000.

```
CALC:STR:ATIM:LENG:SAMP 15360000
```

:CALCulate:STRace:ATIMe:LENGth:SAMPle?

Sub Trace Analysis Sample Length Query

Function

This command queries the analysis sample length of the sub-trace when Terminal is set to DigRF 3G (only for MS269x Series).

Query

```
:CALCulate:STRace:ATIMe:LENGth:SAMPle?
```

Response

```
<integer>
```

Parameter

<integer>		Analysis sample length
	Range	0 to Capture Time Length – Analysis Start Time
	Resolution	1 sample

–999.0 is returned when no measurement is performed or an error occurs.

Example of Use

To query the analysis sample length of the sub-trace.

```
CALC:STR:ATIM:LENG:SAMP?
> 15360000
```

:DISPlay:WINDow[1]:STRace:Y[:SCALe]:PDIVision:RANGe:LOGarithmic <rel_ampl>

Sub Trace Log Scale Level Full Scale

Function

This command sets the level-axis scale range for sub traces in Log scale mode.

Command

```
:DISPlay:WINDow[1]:STRace:Y[:SCALe]:PDIVision:RANGe:LOGarithmic <rel_ampl>
```

Parameter

`<rel_ampl>`	Y-axis scale
Resolution	10 dB
Data Range	10 to 150 dB
Default value	100 dB
Suffix code	DB DB is used when omitted.

Details

This command is not available in the following cases:

- When the sub-trace is set to Off.
- When Scale Mode is set to Linear and when the sub-trace is set to Power vs Time.

Example of Use

To set the level-axis scale range for sub traces to 50 dB.

```
DISP:WIND:STR:Y:PDIV:RANG:LOG 50
```

:DISPlay:WINDow[1]:STRace:Y[:SCALe]:PDIVision:RANGe:LOGarithmic?

Sub Trace Log Scale Level Full Scale Query

Function

This command queries the level-axis scale range for sub traces in Log scale mode.

Query

```
:DISPlay:WINDow[1]:STRace:Y[:SCALe]:PDIVision:RANGe:LOGa
rithmic?
```

Response

```
<rel_ampl>
```

Parameter

<rel_ampl>	Y-axis scale
Resolution	10 dB
Data Range	10 to 150 dB
Default value	100 dB

–999.0 is returned when no measurement is performed or an error occurs.

Example of Use

To query the level-axis scale range for sub traces.

```
DISP:WIND:STR:Y:PDIV:RANG:LOG?
> 50
```

:DISPlay:WINDow[1]:STRace:Y[:SCALe]:PDIVision:RANGe:LINear <percent>

Sub Trace Linear Scale Level Full Scale

Function

This command sets the level-axis scale range for sub traces in Linear scale mode.

Command

```
:DISPlay:WINDow[1]:STRace:Y[:SCALe]:PDIVision:RANGe:LINear <percent>
```

Parameter

<percent>	Y-axis scale
10	10 %
20	20 %
50	50 %
100	100 %
Default value	100 %
	No suffix code

Details

This command is not available in the following cases:

- When the sub-trace is set to Off.
- When Scale Mode is set to Log and when the sub-trace is set to Power vs Time.
- When the sub-trace is set to Spectrogram.

Example of Use

To set the level-axis scale range for sub traces to 50%.

```
DISP:WIND:STR:Y:PDIV:RANG:LIN 50
```

:DISPlay:WINDow[1]:STRace:Y[:SCALe]:PDIVision:RANGe:LINear?

Sub Trace Linear Scale Level Full Scale Query

Function

This command queries the level-axis scale range for sub traces in Linear scale mode.

Query

```
:DISPlay:WINDow[1]:STRace:Y[:SCALe]:PDIVision:RANGe:LIN?
```

Response

```
<percent>
```

Parameter

<percent>	Y-axis scale
10	10%
20	20%
50	50%
100	100%
150	150%

–999.0 is returned when no measurement is performed or an error occurs.

Example of Use

To query the level-axis scale range for sub traces.

```
DISP:WIND:STR:Y:PDIV:RANG:LIN?
> 50
```

:CALCulate:STRace:BANDwidth|:BWIDth[:RESolution] <bandwidth>

Sub Trace Resolution Bandwidth

Function

This command sets the resolution bandwidth (RBW) of the sub-trace.

Command

```
:CALCulate:STRace:BANDwidth|:BWIDth[:RESolution]
<bandwidth>
```

Parameter

<bandwidth>	Resolution bandwidth (RBW)
Range/Resolution	1 Hz to 10 MHz (1-3 sequence)
Suffix code	HZ,KHZ,KZ,MHZ,MZ,GHZ,GZ Hz is used when omitted.

Details

This command is available when the following sub-trace is set to active:

- Spectrogram

This command is not available when Terminal is set to DigRF 3G (only for MS269x Series).

The setting range of this function varies depending on the setting of the frequency span. For details, refer to *MS2690A/MS2691A/MS2692A Signal Analyzer Operation Manual (Signal Analyzer function Operation)* or *MS2830A/MS2840A/MS2850A Signal Analyzer Operation Manual (Signal Analyzer function Operation)*.

Example of Use

To set the RBW of the sub-trace to 300 kHz.

```
CALC:STR:BAND 300KHZ
```

:CALCulate:STRace:BANDwidth|:BWIDth[:RESolution]?

Sub Trace Resolution Bandwidth Query

Function

This command queries the resolution bandwidth (RBW) of the sub-trace.

Query

```
:CALCulate:STRace:BANDwidth|:BWIDth[:RESolution]?
```

Response

```
<bandwidth>
```

Parameter

<bandwidth>	Resolution bandwidth (RBW)
Range/Resolution	1 Hz to 10 MHz (1-3 sequence) No suffix code. Value is returned in Hz units. –999.0 is returned when no measurement is performed or an error occurs.

Example of Use

To query the RBW of the sub-trace.

```
CALC:STR:BAND?
> 300000
```

:CALCulate:STRace:BANDwidth|:BWIDth[:RESolution]:AUTO ON|OFF|1|0

Sub Trace Resolution Bandwidth Auto/Manual

Function

This command selects whether to set the resolution bandwidth (RBW) for sub traces automatically or manually.

Command

```
:CALCulate:STRace:BANDwidth|:BWIDth[:RESolution]:AUTO
<switch>
```

Parameter

<switch>	Auto/Manual
ON|1	Enables auto mode (Default)
OFF|0	Disables auto mode.

Details

This command is available when the following sub-trace is set to active:

- Spectrogram

This command is not available when Terminal is set to DigRF 3G (only for MS269x Series).

Example of Use

To enable the auto mode of RBW.

```
CALC:STR:BAND:AUTO ON
```

:CALCulate:STRace:BANDwidth|:BWIDth[:RESolution]:AUTO?

Sub Trace Resolution Bandwidth Auto/Manual

Function

This command queries whether the resolution bandwidth (RBW) for sub traces is set automatically or manually.

Query

```
:CALCulate:STRace:BANDwidth|:BWIDth[:RESolution]:AUTO?
```

Response

```
<switch>
```

Parameter

<switch>	Auto/Manual
1	Auto mode is on.
0	Auto mode is off.

Example of Use

To query whether the RBW for sub traces is set automatically or manually.

```
CALC:STR:BAND:AUTO?
> 1
```

:CALCulate:STRace:TRIGger:DIGRf3g:DELay?

Sub Trace Result Delay Query

Function

This command queries the delay time of sub trace results in sample units.

Command

```
:CALCulate:STRace:TRIGger:DIGRf3g:DELay?
```

Response

```
<sample>
```

–999.0 is returned when no measurement is performed or an error occurs.

Details

When a trigger is used for DigRF 3G (only for MS269x Series), a delay may occur in the results because there is no pre-trigger. The number of samples from the analysis start sample point to the actual trigger point (trigger input + trigger delay) is queried as a delay.

Example of Use

To query the delay time in sample units.

```
CALC:STR:TRIG:DIGR:DEL?
```

2.18 Other Function Settings

Table 2.18-1 lists device messages for other settings.

Table 2.18-1 Device messages for other settings

Function	Device Message
Measurement Status Query	:STATus:ERRor?
Erase Warm Up Message	:DISPlay:ANNotation:WUP:ERASe
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?
Adjust Reference Clock	:CALibration:RCLock[:VALue] <integer>
	:CALibration:RCLock[:VALue]?
Adjust Reference Clock Preset	:CALibration:RCLock[:VALue]:PRESet
Pre-selector Auto Tune	:CALibration:YTF
	:CALibration:YTF?
Pre-selector Tune	[:SENSe]:POWer[:RF]:PADJust <freq>
	[:SENSe]:POWer[:RF]:PADJust?
Captured Data Query	[:SENSe]:DATA?
Binary Data Byte Order	:FORMat:BORDer NORMal|SWAPped
	:FORMat:BORDer?
Numeric Data Format	:FORMat[:DATA] ASCii|REAL[,<integer>]
	:FORMat[:DATA]?
Micro Wave Preselector Bypass	[:SENSe]:POWer[:RF]:MW:PRESelector[:STATe] ON|OFF|1|0
	[:SENSe]:POWer[:RF]:MW:PRESelector[:STATe]?

:STATus:ERRor?

Measurement Status Query

Function

This command queries the measurement status.

Query

```
:STATus:ERRor?
```

Response

```
<status>
```

Parameter

`<status>` Status

Value = bit0 + bit1 + bit2 + bit3 + bit4 + bit5 + bit6 + bit7 + bit8 + bit9 + bit10 + bit11 + bit12 + bit13 + bit14 + bit15

bit0 : 2^0 = 1	Not measured
bit1 : 2^1 = 2	Level over
bit2 : 2^2 = 4	Out of Range
bit3 : 2^3 = 8	(Not used)
bit4 : 2^4 = 16	(Not used)
bit5 : 2^5 = 32	(Not used)
bit6 : 26 = 64	(Not used)
bit7 : 27 = 128	(Not used)
bit8 : 28 = 256	(Not used)
bit9 : 29 = 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 255

Details

0 is returned when terminated normally.

Example of Use

To query the measurement status.

```
STAT:ERR?
> 0
```

:DISPlay:ANNotation:WUP:ERASe

Erase Warm Up Message

Function

This command erases the warm-up message shown shortly after started.

Command

```
:DISPlay:ANNotation:WUP:ERASe
```

Details

This command is not available while the Replay function is being executed.

Example of Use

To erase the warm-up message.

```
DISP:ANN:WUP:ERAS
```

:DISPlay:ANNotation:TITLe[:STATe] ON|OFF|1|0

Display Title

Function

This command sets the title display On/Off.

Command

```
:DISPlay:ANNotation:TITLe[:STATe] <switch>
```

Parameter

<switch>	Title display On/Off
ON|1	Displays the title.
OFF|0	Hides the title.

Example of Use

To display the title.

```
DISP:ANN:TITL ON
```

:DISPlay:ANNotation:TITLe[:STATe]?

Display Title Query

Function

This command queries the On/Off state of the title display.

Query

```
:DISPlay:ANNotation:TITLe[:STATe]?
```

Response

```
<switch>
```

Parameter

<switch>	Title display On/Off
1	Title is displayed.
0	Title is hidden.

Example of Use

To query the title display setting.

```
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 quotation marks (“ ”) or single quotation marks (‘ ’)

Example of Use

To set the title character string.

```
DISP:ANN:TITL:DATA 'SPECTRUM ANALYZER'
```

Related Command

This command has the same function as the following commands.

```
:DISPlay:ACPowe:ANNotation:TITLe:DATA
:DISPlay:CHPowe:ANNotation:TITLe:DATA
:DISPlay:OBWidth:ANNotation:TITLe:DATA
:DISPlay:BPOWer|:TXPowe: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

Example of Use

To query the title character string.

```
DISP:ANN:TITL:DATA?
> SPECTRUM ANALYZER
```

Related Command

This command has the same function as the following commands.

```
:DISPlay:ACPowe:ANNotation:TITLe:DATA?
:DISPlay:CHPowe:ANNotation:TITLe:DATA?
:DISPlay:OBWidth:ANNotation:TITLe:DATA?
:DISPlay:BPOWer|:TXPowe:ANNotation:TITLe:DATA?
```

:CALibration:RCLock[:VALue] <integer>

Adjust Reference Clock

Function

This command sets the adjustment value of the internal reference signal oscillator (Reference Clock).

Command

```
:CALibration:RCLock[:VALue] <integer>
```

Parameter

<integer>		Adjustment value
	Range	0 to 1023 (MS2830A) 0 to 4095 (MS2840A, MS2850A)
	Resolution	1

Details

This command is not available while the Replay function is being executed.

Example of Use

To set the adjustment value of the internal reference signal oscillator to 511.

```
CAL:RCL 511
```

:CALibration:RCLock[:VALue]?

Adjust Reference Clock Query

Function

This command queries the adjustment value of the internal reference signal oscillator (Reference Clock).

Query

```
:CALibration:RCLock[:VALue]?
```

Response

```
<integer>
```

Parameter

<integer>		Adjustment value
	Range	0 to 1023 (MS2830A) 0 to 4095 (MS2840A, MS2850A)
	Resolution	1

Example of Use

To query the adjustment value of the internal reference signal oscillator.

```
CAL:RCL?
> 511
```

:CALibration:RCLock[:VALue]:PRESet

Adjust Reference Clock Preset

Function

This command resets the adjustment value of the internal reference signal oscillator (Reference Clock).

Command

```
:CALibration:RCLock[:VALue]:PRESet
```

Details

This command is not available while the Replay function is being executed.

Example of Use

To reset the adjustment value of the internal reference signal oscillator.

```
CAL:RCL:PRES
```

:CALibration:YTF

Pre-selector Auto Tune

Function

This command tunes the preselector peaking bias value automatically, and performs the preselector auto tuning.

Command

```
:CALibration:YTF
```

Details

Preselector auto tuning is not available in the following conditions:

[Common]

- Replay function is being executed.
- Frequency Span is ≥ 50 MHz.
- Option 007/067/167 is installed and Preselector Bypass is ON.
- Frequency Band Mode is Normal and Center Frequency is ≤ 6.0 GHz
- Frequency Band Mode is Spurious and Center Frequency is ≤ 4.0 GHz

[MS269xA]

- MS2690A is used.
- Terminal is DigRF 3G.

[MS2830A], [MS2840A], [MS2850A]

- MS2830A-040/041/043 is used.
- MS2840A-040/041 is used.

Example of Use

To perform the preselector auto tuning.

```
CAL:YTF
```

:CALibration:YTF?

Pre-selector Auto Tune Query

Function

This command queries whether preselector auto tuning is completed normally.

Query

```
:CALibration:YTF?
```

Response

```
<result>
```

Parameter

<result>	Automatic tuning result
0	Normal end
1	Abnormal end

Details

Even if preselector auto turning cannot be executed, “normal end” may be returned as a result.

This command is not available in the following conditions:

[Common]

- Replay function is being executed

[MS269xA]

- MS2690A is used.
- Terminal is DigRF 3G

[MS2830A], [MS2840A], [MS2850A]

- MS2830A-040/041/043 is used.
- MS2840A-040/041 is used.

Example of Use

To query whether preselector auto tuning is completed normally.

```
CAL:YTF?
> 0
```

[:SENSe]:POWer[:RF]:PADJust <freq>

Pre-selector Tune

Function

This command sets the Preselector peaking bias value.

Command

```
[:SENSe]:POWer[:RF]:PADJust <freq>
```

Parameter

<freq>	Peaking bias value
Range	–128 to 127
Resolution	1
Default value	0

Details

The peaking bias value setting is available, but the preselector cannot be used under the following conditions:

[Common]

- Replay function is being executed.
- Frequency Span is ≥ 50 MHz.
- Option 007/067/167 is installed and Preselector Bypass is ON.
- Frequency Band Mode is Normal and Center Frequency is ≤ 6.0 GHz.
- Frequency Band Mode is Spurious and Center Frequency is ≤ 4.0 GHz.

This command is not available in the following conditions.

[MS269xA]

- MS2690A is used.
- Terminal is DigRF 3G

[MS2830A], [MS2840A], [MS2850A]

- MS2830A-040/041/043 is used.
- MS2840A-040/041 is used.

Example of Use

To set the peaking bias value to 100.

```
POW:PADJ 100
```

[:SENSe]:POWer[:RF]:PADJust?

Pre-selector Tune Query

Function

This command queries the Preselector peaking bias value.

Query

```
[:SENSe]:POWer[:RF]:PADJust?
```

Response

```
<freq>
```

Parameter

`<freq>`		Peaking bias value
	Range	–128 to 127
	Resolution	1

Details

This command is not available in the following conditions:

[Common]

- Replay function is being executed

[MS269xA]

- MS2690A is used.
- Terminal is DigRF 3G

[MS2830A], [MS2840A], [MS2850A]

- MS2830A-040/041/043 is used.
- MS2840A-040/041 is used.

Example of Use

To query the peaking bias value.

```
POW:PADJ?
> 100
```

[:SENSe]:DATA?

Captured Data Query

Function

This command queries the IQ data captured into the waveform memory.

Query

```
[:SENSe]:DATA? [<start>[,<length>]]
```

Response

When `ASCii,0` is set to `:FORMat[:DATA]`:

```
<datai_1>,<dataq_1>,<datai_2>,<dataq_2>,...
```

When `REAL,32` is set to `:FORMat[:DATA]`, "#"(in the Ascii format) is followed by, in the following order, "Character string range which indicates the byte length of the binary data (in the Ascii format)", "Byte length of binary data (in the Ascii format)", and "IQ data string(in the binary format)". Similarly, in the binary format, response message terminator is added. (For details, refer to 1.7.2 SCPI Response message formats in *MS2690A/MS2691A/MS2692A and MS2830A/MS2840A/MS2850A Signal Analyzer Operation Manual (Mainframe Remote Control)*).

Example: To query the two samples when REAL,32 is set to `:FORMat[:DATA]`:

```
> #216<16 bytes of data>
```

"2" in `#216` indicates that 2 characters with the binary data length follow after this, and "16" in it indicates that 16 Byte binary data follows after it.

Parameter

When Terminal is RF, parameters are set as follows:

`<start>`		Query start point (in sample units) Relative value from Analysis Start Time = 0 s Relative value from minimum Analysis Start Time (when Replay function is executed)
	Range	Starting from 0 (Analysis Start Time[s] + Analysis Time Length[s]) × Sampling Rate[Hz] – 1 (When Capture Time is Auto) Starting from 0 Capture Time Length[s] × Sampling Rate[Hz] – 1 (When Capture Time is Manual)
	Resolution	1

When omitted: 0

<length> Query length (in sample units)

Range
Starting from 1
(Analysis Start Time[s]
+ Analysis Time Length[s])
× Sampling Rate[Hz] – <start>
(When Capture Time is Auto)
Starting from 1
Capture Time Length[s] × Sampling Rate[Hz]
– <start>
(When Capture Time is Manual)
Up to 200000 can be set.

Resolution 1

When omitted
(Analysis Start Time[s]
+ Analysis Time Length[s])
× Sampling Rate[Hz] – <start>
(When Capture Time is Auto)
Capture Time Length[s] × Sampling Rate[Hz]
– <start>
(When Capture Time is Manual)
If more than 200000 is set, 200000 is automatically set.

<datai_n> I phase data
No suffix code
A parameter is read out in the index format of 8 digit effective figure when ASCii,0 is set to :FORMat[:DATA].
A parameter is read out in the 32 bits single precision floating number point format, when REAL,32 is set to :FORMat[:DATA].

<dataq_n> Q phase data
No suffix code
A parameter is read out in the index format of 8 digit effective figure when ASCii,0 is set to :FORMat[:DATA].
A parameter is read out in the 32 bits single precision floating number point format, when REAL,32 is set to :FORMat[:DATA].

When Terminal is DigRF 3G (only for MS269x Series), parameters are set as follows:

`<start>`	Same as when Terminal is RF:
`<length>`	Same as when Terminal is RF:
`<datai_n>`	I phase data No suffix code When ASCii,0 is set for `:FORMat[:DATA]`, it will be output as exponential form of 8 digits of essential figures. When REAL, 32 is set for `:FORMat[:DATA]`, Target System:GSM is output in 16 bit format, and Target System:W-CDMA is output in 8 bit format.
`<dataq_n>`	Q phase data No suffix code When ASCii,0 is set for `:FORMat[:DATA]`, it will be output as exponential form of 8 digits of essential figures. :When REAL, 32 is set for `:FORMat[:DATA]`, Target System:GSM is output in 16 bit format, and Target System:W-CDMA is output in 8 bit format.

Details

(When Terminal is RF)
The actually captured IQ data range is larger than the range set in Analysis Time, because of the internal analysis such as filter processing. Since IQ data read out by this command is within the range set in Analysis Time, you cannot read out all the IQ data captured by this command. Use the Save Captured Data function in order to read out all of them.

Note that the range of the IQ data read out by this command is different from that of the IQ data saved by the Save Captured Data function. The position at which Analysis Start Time of IQ data saved by Save Capture Data is 0 s is calculated by the following formula:

$$POS = TP - TD \times FS$$

Where

POS	Position at which Analysis Start Time of IQ data saved by Save Capture Data is 0 s [sample]
TP	"Trigger Position" value [sample] in XML file X
TD	Trigger Delay setting value [s] 0 is set when Trigger Switch is Off.
FS	Sampling Rate [Hz]

IQ data can be converted into power by the following formula:

$$P = 10Log_{10}\left(I^2 + Q^2\right)$$

Where

P	: Power[dBm]
I	: I phase data
Q	: Q phase data

The query function is disabled when Analysis Start Time is set to 0 s, when Analysis Time Length is set to 0 s, and when Capture Time is set to Auto.

The query function is disabled during measurement.

:FORMat[:DATA] and FORMat:BORDer can change the output mode in which this command reads out IQ data.

Sampling Rate can be read out by `[:SENSe]:FREQuency:SRATe?`.

When all the following conditions are met, this command reads out IQ data most rapidly.

- The terminal is RF.
- `:FORMat[:DATA]` is set to `REAL,32`.
- `:FORMat:BORDer` is set to `SWAPped`.

(When Terminal is DigRF 3G (only for MS269x Series))
Actual range of IQ data that is captured will be wider than what is set with Analysis Sample Length (or Capture Time Length), due to the internal analysis process, such as filter process, etc. Range of the IQ data that is read with this command is only the range set with Analysis Sample Length (or Capture Time Length), so all the IQ data that was captured with this command cannot be read. To read all the IQ data, use Save Captured Data function.

Beware that the range of IQ data read with this command and range of IQ data saved by the Save Captured Data function is different.

It cannot be read when the Analysis Start Sample is 0 s, Analysis Sample Length is 0 s, and Capture Time is Auto.

It cannot be queried while measuring.

Output format of IQ data by this command can be changed by `:FORMat[:DATA]` and `FORMat:BORDer`.

Example of Use

To query two IQ data samples from the 0th sample.
(When `ASCii,0` is set to `:FORMat[:DATA]`)

```
DATA? 0,2
> 2.4358980E-03,-1.9873490E+01,
  6.3400291E+00,1.2231689E-03
```

:FORMat:BORDer NORMal|SWAPped

Binary Data Byte Order

Function

This command sets the byte order of the reading data when `REAL,32` is set to `:FORMat[:DATA]`.

Command

```
:FORMat:BORDer <border>
```

Parameter

`<border>`	Byte order
`NORMal`	Sets the byte order to Big-endian (Default value)
`SWAPped`	Sets the byte order to Little-endian.

Details

This command sets the order in which the data is arranged when data is read out in a binary style. In Big-endian, the data is arranged in the descending order (starting from the most significant value in the sequence), and in Little-endian, the data is arranged in the ascending order (starting from the least significant value in the sequence).

(When Terminal is RF)
For instance, in Big-endian, “0x01234567” (four-byte data) is arranged in the order of “01 23 45 67”, while, in Little-endian, it is arranged in the order of “67 45 23 01”.

(When Terminal is DigRF 3G (only for MS269x Series))
The 2 byte data of “0x0123” in the Target System:GSM will be arranged in order of “23 01” in Big endian, and “01 23” in Little endian.
Arrangement order will not change for Target System:W-CDMA since the data is 8 bits.

Example of Use

To set the byte order to the little endian.

```
FORM:BORD SWAP
```

:FORMat:BORDer?

Binary Data Byte Order Query

Function

This command queries the byte order of the reading data when `REAL,32` is set to `:FORMat[:DATA]`.

Query

```
:FORMat:BORDer?
```

Response

```
<border>
```

Parameter

`<border>`	Byte order
`NORM`	Byte order is set to Big-endian.
`SWAP`	Byte order is set to Little-endian.

Example of Use

To query the byte order.

```
FORM:BORD?
> SWAP
```

:FORMat[:DATA] ASCii|REAL[,<integer>]

Numeric Data Format

Function

This command sets the IQ data format read out by [:SENSe]:DATA?.

Command

```
:FORMat[:DATA] <format>[,<length>]
```

Parameter

It will be following parameters when Terminal is RF:

`<format>`	IQ data format
`ASCii`	Ascii format (initial value)
`REAL`	Binary 32 bits floating point number format
`<length>`	Secondary setting to the selected format
`0`	This can be set only when ASCii is specified for format.
`32`	Returns the results in the 32 bits floating point number format. Setting is possible only when REAL is specified as the format.
When omitted:	0 is automatically set when ASCii is specified as the format, while 32 is automatically set when REAL is specified as the format.

It will be following parameters when Terminal is DigRF 3G (only for MS269x Series):

`<format>`	IQ data format
`ASCii`	Ascii format (Default value)
`REAL`	Binary 16 bits format (When the Target System is GSM) Binary 8 bits format (When the Target System is W-CDMA.)
`<length>`	Supplementary setting for selected format
`0`	0 is set only when ASCii is specified for format.
`32`	32 is set only when REAL is specified for format.
When omitted:	0 is set when ASCii is specified for format. 32 is set when REAL is specified for format.

Details

(When Terminal is RF)
When REAL is set, IQ data is read out in the 32 bits single precision floating point number format specified in IEEE754.

(When Terminal is DigRF 3G (only for MS269x Series))
When the REAL is set, IQ data is output in 16 bits for the Target System:GSM, and in 8 bits for Target System:W-CDMA.

Example of Use

To set the IQ data format to Ascii.

```
FORM ASC
```

:FORMat[:DATA]?

Numeric Data Format Query

Function

This command queries the format of the IQ data read out by [:SENSe]:DATA?.

Query

```
:FORMat[:DATA]?
```

Response

```
<format>,<length>
```

Parameter

When Terminal is RF, parameters are set as follows:

<format>	IQ data format
ASC	ASCii format(Default value)
REAL	Binary 32 bits floating point number format
<length>	Secondary setting to the selected format
0	Returns the results in the effective digit number unique to this instrument.
32	Returns the results in the 32 bits floating point number format.

When Terminal is RF, parameters are set as follows:

<format>	IQ data format
ASC	ASCii format (Default value)
REAL	Binary 16 bits format (When Target System is GSM) Binary 8 bits format (When Target System is W-CDMA)
<length>	Supplementary setting for selected format
0	Result is sent back in number of significant figures of this instrument.
32	Result is returned when the REAL is specified for format.

Example of Use

To query the IQ data format.

```
FORM?
> REAL,32
```

[:SENSe]:POWer[:RF]:MW:PRESelector[:STATe] ON|OFF|1|0

Micro Wave Preselector Bypass

Function

This command sets the Microwave Preselector Bypass.

Command

```
[:SENSe]:POWer[:RF]:MW:PRESelector[:STATe] <switch>
```

Parameter

<switch>	Microwave Preselector Bypass
ON|1	Enables bypassing
OFF|0	Disables bypassing
Default	ON

Details

This function is available when MS269xA-067/167 is installed.
This function is available when MS2830A-007/067/167, MS2840A-067/167 is installed.
This function is available for MS2850A.
If Frequency Span is 50 MHz or more, the microwave preselector is bypassed regardless of this setting.

Example of Use

To set the Micro Wave Preselector Bypass to ON.

```
POW:MW:PRES ON
```

[:SENSe]:POWer[:RF]:MW:PRESelector[:STATe]?

Micro Wave Preselector Bypass Query

Function

This command queries the Micro Wave Preselector Bypass.

Query

```
[:SENSe]:POWer[:RF]:MW:PRESelector[:STATe]?
```

Response

```
<status>
```

Parameter

`<status>`	Microwave Preselector Bypass
`1`	Enables bypassing
`0`	Disables bypassing

Details

This function is available when MS269xA-067/167 is installed.
This function is available when MS2830A-007/067/167, MS2840A-067/167 is installed.
If Frequency Span is 50 MHz or more, the microwave preselector is bypassed regardless of this setting.

Example of Use

To query the Micro Wave Preselector Bypass status.

```
POW:MW:PRES?
> 1
```

2.19 QUEStionable Status Register

Figure 2.19-1, Table 2.19-1, and Table 2.19-2 show the layer structure of the QUEStionable status register.

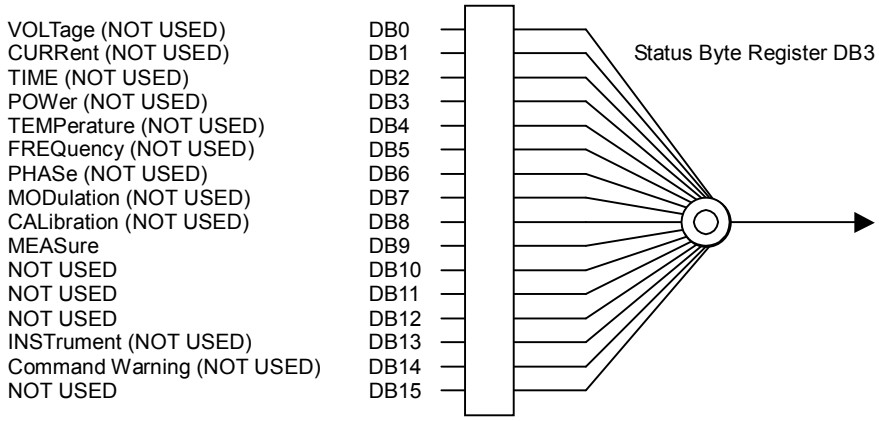

Figure 2.19-1 QUEStionable Status Register

Table 2.19-1 QUEStionable Status Register

Byte Definition of QUEStionable Status Register	
DB9	QUEStionable Measure register summary

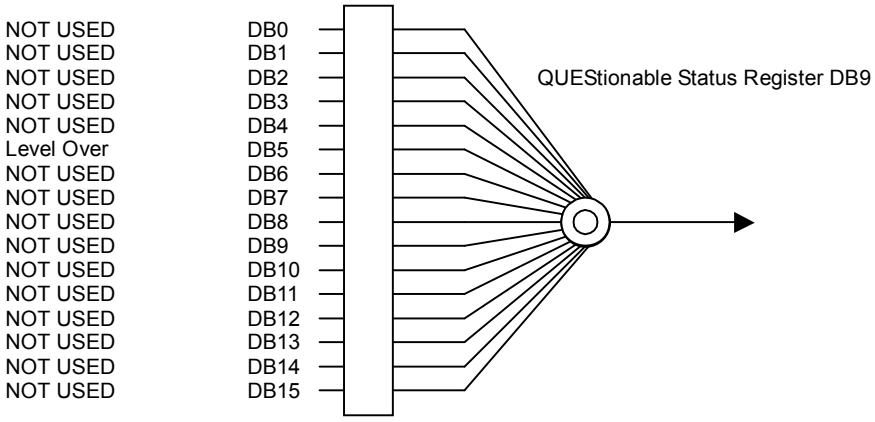

Figure 2.19-2 QUEStionable Measure Register

Table 2.19-2 QUEStionable Measure Register

Byte Definition of QUEStionable Measure Register	
DB5	Indicates that the level has exceeded its limit.

Table 2.19-3 lists device messages for the QUEStionable status register.

Table 2.19-3 Device message for QUEStionable Status Register

Function	Device Message
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 Measure Register Event	:STATus:QUEStionable:MEASure[:EVENt]?
Questionable Measure Register Condition	:STATus:QUEStionable:MEASure:CONDition?
Questionable Measure Register Enable	:STATus:QUEStionable:MEASure:ENABle <integer>
	:STATus:QUEStionable:MEASure:ENABle?
Questionable Measure Register Negative Transition	:STATus:QUEStionable:MEASure:NTRansition <integer>
	:STATus:QUEStionable:MEASure:NTRansition?
Questionable Measure Register Positive Transition	:STATus:QUEStionable:MEASure:PTRansition <integer>
	:STATus:QUEStionable:MEASure: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
	Resolution	1
	Range	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?
> 0
```

: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
	Resolution	1
	Range	0 to 65535

Example of Use

To query the contents of the condition register of the QUEStionable status register.

```
:STAT:QUES:COND?
> 0
```

: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
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 QUEStionable status register to 16.

```
:STAT:QUES:ENAB 16
```

: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 event enable register
Resolution	1
Range	0 to 65535

Example of Use

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

```
:STAT:QUES:ENAB?
> 16
```

:STATus:QUEStionable:NTRansition <integer>

Questionable Status Register Negative Transition

Function

This command sets the transition filter (negative transition) of the QUEStionable status register.

Command

```
:STATus:QUEStionable:NTRansition <integer>
```

Parameter

`<integer>`		Total bytes of transition filter (negative transition)
	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 transition) of the QUEStionable status register to 16.

```
:STAT:QUES:NTR 16
```

:STATus:QUEStionable:NTRansition?

Questionable Status Register Negative Transition Query

Function

This command queries the transition filter (negative transition) of the QUEStionable status register.

Query

```
:STATus:QUEStionable:NTRansition?
```

Response

```
<integer>
```

Parameter

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

Example of Use

To query the transition filter (negative transition) of the QUEStionable status register.

```
:STAT:QUES:NTR?
> 16
```

:STATus:QUEStionable:PTRansition <integer>

Questionable Status Register Positive Transition

Function

This command sets the transition filter (positive transition) of the QUEStionable status register.

Command

```
:STATus:QUEStionable:PTRansition <integer>
```

Parameter

<integer>		Total bytes of transition filter (positive transition)
	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 transition) of the QUEStionable status register to 16.

```
:STAT:QUES:PTR 16
```

:STATus:QUEStionable:PTRansition?

Questionable Status Register Positive Transition Query

Function

This command queries the transition filter (positive transition) of the QUEStionable status register.

Query

```
:STATus:QUEStionable:PTRansition?
```

Response

```
<integer>
```

Parameter

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

Example of Use

To query the transition filter (positive transition) of the QUEStionable status register.

```
:STAT:QUES:PTR?
> 16
```

:STATus:QUEStionable:MEASure[:EVENt]?

Questionable Measure Register Event

Function

This command queries the event register of the QUEStionable Measure register.

Query

```
:STATus:QUEStionable[: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 contents of the event register of the QUEStionable Measure register.

```
:STAT:QUES?
> 0
```

:STATus:QUEStionable:MEASure:CONDition?

Questionable Measure Register Condition

Function

This command queries the condition register of the QUEStionable Measure register.

Query

```
:STATus:QUEStionable: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 QUEStionable Measure register.

```
:STAT:QUES:COND?
> 0
```

:STATus:QUEStionable:MEASure:ENABle <integer>

Questionable Measure Register Enable

Function

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

Command

```
:STATus:QUEStionable: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 QUEStionable Measure register to 16.

```
:STAT:QUES:ENAB 16
```

:STATus:QUEStionable:MEASure:ENABle?

Questionable Measure Register Enable Query

Function

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

Query

```
:STATus:QUEStionable: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 QUEStionable Measure register.

```
:STAT:QUES:ENAB?
> 16
```

:STATus:QUEStionable:MEASure:NTRansition <integer>

Questionable Measure Register Negative Transition

Function

This command sets the transition filter (negative transition) of the QUEStionable Measure register.

Command

```
:STATus:QUEStionable:NTRansition <integer>
```

Parameter

<integer>		Total bytes of transition filter (negative transition)
	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 transition) of the QUEStionable Measure register to 16.

```
:STAT:QUES:NTR 16
```

:STATus:QUEStionable:MEASure:NTRansition?

Questionable Measure Register Negative Transition Query

Function

This command queries the transition filter (negative transition) of the QUEStionable Measure register.

Query

```
:STATus:QUEStionable:NTRansition?
```

Response

```
<integer>
```

Parameter

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

Example of Use

To query the transition filter (negative transition) of the QUEStionable Measure register.

```
:STAT:QUES:NTR?
> 16
```

:STATus:QUEStionable:MEASure:PTRansition <integer>

Questionable Measure Register Positive Transition

Function

This command sets the transition filter (positive transition) of the QUEStionable Measure register.

Command

```
:STATus:QUEStionable:PTRansition <integer>
```

Parameter

<integer>		Total bytes of transition filter (positive transition)
	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 transition) of the QUEStionable Measure register to 16.

```
:STAT:QUES:PTR 16
```

:STATus:QUEStionable:MEASure:PTRansition?

Questionable Measure Register Positive Transition Query

Function

This command queries the transition filter (positive transition) of the QUEStionable Measure register.

Query

```
:STATus:QUEStionable:PTRansition?
```

Response

```
<integer>
```

Parameter

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

Example of Use

To query the transition filter (positive transition) of the QUEStionable Measure register.

```
:STAT:QUES:PTR?
> 16
```

2.20 OPERation Status Register

Figure 2.20-1 and Table 2.20-1 show the layer structure of the OPERation Status Register.

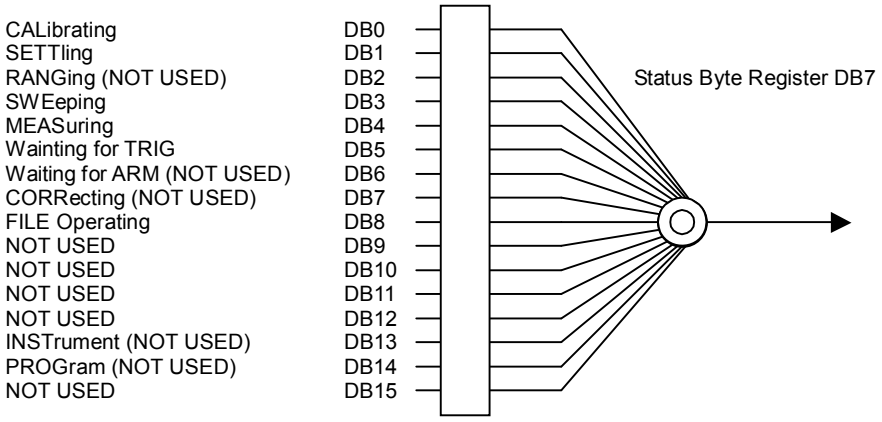

Figure 2.20-1 OPERation Status Register

Table 2.20-1 OPERation Status Register

Byte Definition of OPERation Status Register	
DB0	CAL is being executed.
DB1	Warm-up message is being displayed.
DB3	During Capturing (Fixed to 1 in Continuous)
DB4	During analyzing
DB5	During waiting for trigger.
DB8	File in operation

Table 2.20-2 lists device messages for the OPERation Status Register.

Table 2.20-2 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 contents of 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

Details

This command is available only in the SCPI mode.

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 transition) of the OPERation status register.

Command

```
:STATus:OPERation:NTRansition <integer>
```

Parameter

<integer>		Total bytes of transition filter (negative transition)
	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 transition) of the OPERation status to 16.

```
:STAT:OPER:NTR 16
```

:STATus:OPERation:NTRansition?

Operation Status Register Negative Transition Query

Function

This command queries the transition filter (negative transition) of the OPERation status register.

Query

```
:STATus:OPERation:NTRansition?
```

Response

```
<integer>
```

Parameter

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

Example of Use

To query the transition filter (negative transition) 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 transition) of the OPERation status register.

Command

```
:STATus:OPERation:PTRansition <integer>
```

Parameter

<integer>		Total bytes of transition filter (positive transition)
	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 transition) 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 transition) of the OPERation status register.

Query

```
:STATus:OPERation:PTRansition?
```

Response

```
<integer>
```

Parameter

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

Example of Use

To query the transition filter (positive transition) of the OPERation status register.

```
:STAT:OPER:PTR?
> 16
```

2.21 Batch Processing Function Setting

Table 2.21-1 lists messages related to the batch processing function.
MS2850A does not support this function.

Table 2.21-1 Batch Processing Function Messages

Function	Device Message
Measure Power Adjust	:MEASure:POWadj? ,<length>,<sg_start_level>,<sg_max_level>,<target>,<range> [,<frequency>[,<count>[,<adjust_log>]]]

:MEASure:POWadj? ,<length>,<sg_start_level>,<sg_max_level>,<target>,<range>[,<frequency>[,<count>[,<adjust_log>[,<sg_offset_switch>]]]]

Measure Power Adjust

Function

This command executes power adjustment and captures the results. Power adjustment combines the SG option and power measurement function and sets the output level of the DUT, such as amplifiers, to the specified level.

Query

```
:MEASure:POWadj?
<span>,<length>,<sg_start_level>,<sg_max_level>,<target>
,<range>[,<frequency>[,<count>[,<adjust_log>]]]
```

Response

```
<judge>,<sa_input>,<sg_output>,<count_res>,<time>,<sa_in
put_log_n>,<sg_output_log_n>,<count_log_n>
```

Parameter

`<span>` Analysis bandwidth

Range/Resolution

`1000`*[2], `2500`*[2], `5000`*[2], `10000`*[2], `25000`*[2], `50000`*[2], `100000`*[2], `250000`*[2], `500000`*[2], `1000000`*[2], `2500000`*[2], `5000000`*[2], `10000000`*[2], `25000000`*[1], `31250000`*[1], `50000000`*[3]*[4], `62500000`*[4], `100000000`*[3]*[5], `125000000`*[3]*[5]

[MS269xA]

*1, *2: This can be set regardless of option.

*3: Option 004/104

When the Wideband Analysis Hardware is installed, the following frequency spans can be set in addition to *1, *2.

`50000000, 100000000, 125000000`

*4: Option 077/177

When the Analysis Bandwidth Extension to 62.5 MHz option is installed, the following frequency spans can be set in addition to *1, *2.

`50000000, 62500000`

*5: Option 078/178

When the Analysis Bandwidth Extension to 125 MHz option is installed, the following frequency spans can be set in addition to *1, *2.

`100000000, 125000000`

[MS2830A], [MS2840A]

*1: Option 005/105/007/009/109
When the Analysis Bandwidth Extension to 31.25 MHz option is installed, the following frequency spans can be set in addition to *2.
25000000, 31250000

*2: Option 006/106
When the Analysis Bandwidth 10 MHz option is installed, only the following frequency spans can be set.
1000, 2500, 5000, 10000, 25000, 50000, 100000,250000,500000, 1000000, 2500000, 5000000, 10000000

*4: MS2830A-077, MS2840A-077/177
When the Analysis Bandwidth Extension to 62.5 MHz option is installed, the following frequency spans can be set in addition to *1, *2.
50000000, 62500000

*5: MS2830A-078, MS2840A-078/178
When the Analysis Bandwidth Extension to 125 MHz is installed, the following frequency spans can be set in addition to *1, *2, *3.
100000000, 125000000

Suffix code
HZ, KHZ, KZ, MHZ, MZ, GHZ, GZ
HZ is assumed if the value is omitted.
MAXimum, MINimum, and DEFault cannot be used.

<length>
Analysis length

Range
The setting range depends on . Refer to section 2.1.4 Setting Capture Time in the Operation version.

Suffix code
NS, US, MS, S
S is assumed if the value is omitted.

<sg_start_level>
Set the SG output level to be set as the default. When the DUT is inserted, set so that the DUT input level and RF Input do not exceed the maximum input level.

Range [MS269xA] –140 to –5 dBm
[MS2830A], [MS2840A]
–40.00 to +20.00 dBm (> 25 MHz)
–40.00 to +2.00 dBm (≤ 25 MHz)
–136.00 to +15.00 dBm (> 25 MHz) (Option 022/122)
–136.00 to –3.00 dBm (≤ 25 MHz) (Option 022/122)

Resolution
0.01 dBm

`<sg_max_level>` Specify the SG max. output level. Set so that the DUT input level and RF Input do not exceed the maximum input level.

Range [MS269xA] –140 to –5 dBm
[MS2830A], [MS2840A]
–40.00 to +20.00 dBm (≥ 25 MHz)
–40.00 to +2.00 dBm (≤ 25 MHz)
–136.00 to +15.00 dBm (≥ 25 MHz) (Option 022/122)
–136.00 to –3.00 dBm (≤ 25 MHz) (Option 022/122)

Resolution 0.01 dBm

Suffix code DBM, DM

`<target>` Target level at power adjustment

Range –150 to 30 dBm (Pre-Amp Off)
–150 to 10 dBm (Pre-Amp On)
When the reference level offset value is On, it is added to the range.

Resolution 0.01 dBm

Suffix code DBM, DM

`<range>` Power adjustment range
Power adjustment is evaluated as successful if within this specified range.

Range 0 to 20 dB

Resolution 0.01 dB

Suffix code DB

`<frequency>` Power adjustment frequency

Range [MS269xA] 125 MHz to 6 GHz
[MS2830A] 250 kHz to 3.6 GHz (Option 020/120)
250 kHz to 6 GHz (Option 041/043 and 021/121)
[MS2840A] 250 kHz to 3.6 GHz (Option 020/120)
250 kHz to 6 GHz (Option 041 and 021/121)

Resolution 0.01 Hz

Suffix code HZ, KHZ, KZ, MHZ, MZ, GHZ, GZ
HZ is assumed if the value is omitted.
MAXimum, MINimum, and DEFault cannot be used.
If omitted, the currently set frequency is used.

`<count>` Count of power adjustment times

Range 1 to 10, 5 when omitted.

Resolution 1

Suffix code None
Power adjustment is executed five times if the value is omitted.

`<adjust_log>` Specifies whether or not to output log at each power adjustment.

`ON|1` Outputs log

`OFF|0` Does not output log

<sg_offset_switch>	Specifies whether or not to return level offset setting in SG output level setting range.
ON|1	Returns level offset setting
OFF|0	Does not return level offset setting
<judge>	Evaluates power adjustment.
0	PASS.
1	FAIL
Unmeasured	"–999.0" is returned.
<sa_input>	DUT Output Level
Suffix code	None, dBm units
Resolution	0.01 dB
Unmeasured	"–999.0" is returned.
<sg_output>	Level output from SG Output of equipment
Suffix code	None, dBm units
Resolution	0.01 dB
Unmeasured	"–999.0" is returned.
<count_res>	Count of power adjustment times
<time>	Time required for power adjustment
Suffix code	None, ms units
Unmeasured	"–999.0" is returned.
<sa_input_log_n>	DUT output level at each adjustment Added to response when Log Output On.
Suffix code	None, dBm units
Resolution	0.01 dB
<sg_output_log_n>	Level output from SG Output at each adjustment Added to response when Log Output On.
Suffix code	None, dBm units
Resolution	0.01 dB
<count_log_n>	Count for each adjustment Added to response when Log Output On.

Details

Not executed when SG option not installed.
Not executed during replay.

SG setting and measurement are repeated until the target level specified at <target>, <range> is reached within the count specified at <count>.

In this application, the Reference Level and Attenuator settings are calculated as follows from the Adjustment Target Level, Crest Factor, and Correction value and are set automatically at the measurement section. Using this application, the Attenuator is set so that the Mixer Input Level become 0 dBm.

Reference Level setting value

$$\text{Reference Level} = < \text{target} > + \text{Crest Factor} - \text{Correction}^{*}$$

*: Crest Factor = 12 dB

However, it is rounded to 50 dBm when Reference Level > 50 dBm (30 dBm at Pre-amp On) and to –120 dBm when Reference Level < –120 dBm.

Attenuator Setting

$$\textit{Attenuator} = \text{Reference Level} - \text{Mixer Input Level} + \text{Pre} - \text{Amp Gain} - \text{Offset}^{*}$$

*: Mixer Input Level = 0
Pre-Amp Gain = 20 dB (only at Pre-Amp On)
Offset: Reference Level Offset

However, it is rounded to 60 dB when Attenuator > 60 and to 0 dBm when Attenuator < 0. Additionally, when the Attenuator value is an odd number, it is rounded up to the nearest even number (Example: 35 dB → 36 dB).

When using the SG offset function, switch to the SG application and set the offset level. Set the value with offset to this command arguments, sg_start_level and sg_max_level, and set sg_offset_switch to On. The responses sg_output and sg_output_log_n return the output level with offset.

Example of Use

To execute power adjustment under the following conditions:

Frequency:	2 GHz
Analysis width:	5 MHz
Analysis length:	500 µs
Start SG output level:	–30 dBm
Max. SG output level:	–5 dBm
Adjustment target level:	–10 dBm
Adjustment range:	0.4 dB
Adjustment count:	6 times
Log output:	On
SG Offset:	On

```
MEAS:POW? 5000000,500US,-30,-5,-10,0.4,2000000000,6,On
> 0,-9.6,-12.5,3,156,-28,-30,1,-9.5,-12.0,2,-9.6,-12.5,3
```

2.22 Setting External Mixer

Table 2.22-1 lists the device messages related to External Mixer settings.

Table 2.22-1 Device messages for setting External Mixer

Function	Device Message
External Mixer Mode	[:SENSe]:MIXer[:STATe] ON|OFF|1|0
	[:SENSe]:MIXer[:STATe]?
External Mixer Band	[:SENSe]:MIXer[:HARMonic]:BAND VHP|EHP|A|Q|U|V|E|W|F|D|G|Y|J
	[:SENSe]:MIXer[:HARMonic]:BAND?
External Mixer Bias	[:SENSe]:MIXer:BIAS <bias>
	[:SENSe]:MIXer:BIAS?
External Mixer Conversion Loss	[:SENSe]:MIXer:LOSS <power>
	[:SENSe]:MIXer:LOSS?

[:SENSe]:MIXer[:STATe] ON|OFF|1|0

External Mixer Mode

Function

This command switches between Internal and External Mixer.

Command

```
[:SENSe]:MIXer[:STATe] <switch>
```

Parameter

`<switch>`		External mixer switch
	`ON|1`	Selects External Mixer
	`OFF|0`	Selects Internal Mixer
	Default	OFF

Details

This function is available when Option 044/045 is installed for MS2830A.
This function is available when Option 044/046 is installed for MS2840A.
This function is readily available for MS2850A.

Example of Use

To use external mixer.

```
MIX ON
```

[:SENSe]:MIXer[:STATe]?

External Mixer Mode Query

Function

This command queries the current mixer mode.

Query

```
[:SENSe]:MIXer[:STATe]?
```

Response

```
<status>
```

Parameter

<status>	External mixer switch
1	Selects External Mixer
0	Selects Internal Mixer

Details

This function is available when Option 044/045 is installed for MS2830A.
This function is available when Option 044/046 is installed for MS2840A.
This function is readily available for MS2850A.

Example of Use

To query the current mixer mode.

```
MIX?
> 1
```

[:SENSe]:MIXer[:HARMonic]:BAND VHP|EHP|A|Q|U|V|E|W|F|D|G|Y|J

External Mixer Band

Function

This command selects external mixer band.

Command

```
[:SENSe]:MIXer[:HARMonic]:BAND <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 function is available when Option 044/045 is installed for MS2830A.
This function is available when Option 044/046 is installed for MS2840A.
This function is readily available for MS2850A.

When using High Performance Waveguide Mixer, set the parameters of the external mixer by using the Spectrum Analyzer function of the mainframe.
For details, refer to Section 2.20 “Setting External Mixer” in the *MS2690A/MS2691A/MS2692A and MS2830A/MS2840A/MS2850A Signal Analyzer Operation Manual (Spectrum Analyzer Function Remote Control).*

Example of Use

To set the external mixer band to Band U.

```
MIX:BAND U
```

[:SENSe]:MIXer[:HARMonic]:BAND?

External Mixer Band Query

Function

This command queries the current external mixer band.

Query

```
[:SENSe]: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 function is available when Option 044/045 is installed for MS2830A.
This function is available when Option 044/046 is installed for MS2840A.
This function is readily available for MS2850A.

Example of Use

To query the current external mixer band.

```
MIX:BAND?
> U
```

[:SENSe]:MIXer:BIAS <bias>

External Mixer Bias

Function

This command sets the external mixer's bias current.

Command

```
[:SENSe]:MIXer:BIAS <bias>
```

Parameter

<bias>		External mixer's bias current
	Range	0.0 to 20.0 mA
	Resolution	0.1 mA
	Suffix code	NA,UA,MA,A mA is used when omitted.
	Default	0.0 mA

Details

This function is available when Option 044/045 is installed for MS2830A.
This function is available when Option 044/046 is installed for MS2840A.
This function is readily available for MS2850A.

A value can be set per external mixer band.

When using High Performance Waveguide Mixer, the external mixer's bias current is fixed to 0.0 mA.

Example of Use

To set the external mixer's bias current to 10 mA.

```
MIX:BIAS 10MA
```

[:SENSe]:MIXer:BIAS?

External Mixer Bias Query

Function

This command queries the current external mixer's bias current.

Query

```
[:SENSe]:MIXer:BIAS?
```

Response

```
<bias>
```

Parameter

<bias>		External mixer's bias current
	Range	0.1 to 20.0 mA
	Resolution	0.1 mA
		No suffix code. Value is returned in mA units.

Details

This function is available when Option 044/045 is installed for MS2830A.
This function is available when Option 044/046 is installed for MS2840A.
This function is readily available for MS2850A.

One value is held per external mixer band.
When using High Performance Waveguide Mixer, the external mixer's bias current is fixed to 0.0 mA.

Example of Use

To query the current external mixer's bias current.

```
MIX:BIAS?
> 10.0
```

[:SENSe]:MIXer:LOSS <power>

External Mixer Conversion Loss

Function

This command sets the external mixer's conversion loss.

Command

```
[:SENSe]:MIXer:LOSS <power>
```

Parameter

<power>	Conversion Loss of External Mixer
Range	0.00 to 99.99 dB
Resolution	0.01 dB
Suffix code	DB
	dB is used when omitted.
Default	15.00 dB

Details

This function is available when Option 044/045 is installed for MS2830A.
This function is available when Option 044/046 is installed for MS2840A.
This function is readily available for MS2850A.

A value can be set per external mixer band.

When using High Performance Waveguide Mixer, set the parameters of the external mixer by using the Spectrum Analyzer function of the mainframe.
For details, refer to Section 2.20 "Setting External Mixer" in the *MS2690A/MS2691A/MS2692A and MS2830A/MS2840A/MS2850A Signal Analyzer Operation Manual (Spectrum Analyzer Function Remote Control).*

Example of Use

To set the external mixer's conversion loss to 10 dB.

```
MIX:LOSS 10DB
```

[:SENSe]:MIXer:LOSS?

External Mixer Conversion Loss Query

Function

This command queries the external mixer's conversion loss.

Query

```
[:SENSe]:MIXer:LOSS?
```

Response

```
<power>
```

Parameter

<power>		Conversion Loss of External Mixer
	Range	0.00 to 99.99 dB
	Resolution	0.01 dB
		No suffix code. Value is returned in dB units.

Details

This function is available when Option 044/045 is installed for MS2830A.
This function is available when Option 044/046 is installed for MS2840A.
This function is readily available for MS2850A.

One value is held per external mixer band.

When using High Performance Waveguide Mixer, set the parameters of the external mixer by using the Spectrum Analyzer function of the mainframe.
For details, refer to Section 2.20 "Setting External Mixer" in the *MS2690A/MS2691A/MS2692A and MS2830A/MS2840A/MS2850A Signal Analyzer Operation Manual (Spectrum Analyzer Function Remote Control).*

Example of Use

To query the current external mixer's conversion loss.

```
MIX:LOSS?
> 10.00
```

2.23 FM CW Measurement Settings

Table 2.23-1 lists device messages for setting FM CW measurement.
MS2850A does not support this function.

Table 2.23-1 Device messages for setting FM CW measurement

Function	Device Message
Measure FM CW	[:SENSe]:FMCW[:STATe] ON|OFF|1|0
	[:SENSe]:FMCW[:STATe]?
FM CW Configure	:CONFigure:FMCW
FM CW Initiate	:INITiate:FMCW
FM CW Fetch	:FETCh:FMCW?
FM CW Read	:READ:FMCW?
FM CW Measure	:MEASure:FMCW?
FM CW Measurement Interval Mode	:FMCW:INTVal:MODE AUTO|MARKer
	:FMCW:INTVal:MODE?
FM CW Number of Chirp	:FETCh:FMCW:CHIRp:NUMBer?
FM CW Fetch One of Chirp	:FETCh:FMCW:CHIRp[n]?
FM CW Slope	[:SENSe]:FMCW:CHIRp:SLOPe AUTO|UP|DOWN
	[:SENSe]:FMCW:CHIRp:SLOPe?

Table 2.23-2 Responses to FM CW Measurement Results

n	Response
Represents Chirp Index. n = 0 if omitted.	The numerical results of Chirp Index = n are as below. The response is returned separated by commas in the following order. "–999999999999" is returned when no measurement is performed or an error has occurred. 1. Chirp Index Range 0 to 9 2. Chirp State 0: Up Chirp,, 1: Down Chirp 3. Chirp Start Position Range 0 to Trace Point count – 1 4. Chirp Finish Position Range 0 to Trace Point count – 1 5. Chirp Deviation [Hz] 6. Chirp Rate [kHz/μs] 7. Chirp Time Length [s] 8. FM Error RMS [Hz] 9. FM Error Peak [Hz] 10. FM Slope Error RMS [kHz/μs] 11. FM Slope Error Peak [kHz/μs]

[:SENSe]:FMCW[:STATe] ON|OFF|1|0

Measure FM CW

Function

This command executes FM CW measurement.

Command

```
[:SENSe]:FMCW[:STATe] <switch>
```

Parameter

<switch>	FM CW measurement On/Off
ON|1	Sets FM CW measurement On.
OFF|0	Sets FM CW measurement Off (Default value).

Details

This command is available when the following trace is active:

- Frequency vs Time

For querying the measurement value after this command has been executed, use *WAI commands to perform synchronized control.

Example of Use

To set FM CW measurement to On and query the results.

```
FMCW ON
*WAI
FETC:FMCW?
```

[:SENSe]:FMCW[:STATe]?

Measure FM CW Query

Function

This command queries the On/Off setting of Channel Power measurement.

Query

```
[:SENSe]:FMCW[:STATe]?
```

Response

```
<switch>
```

Parameter

<switch>	FM CW measurement On/Off
1	On
0	Off

Example of Use

To query the On/Off setting of FM CW measurement.

```
FMCW?
> 1
```

:CONFigure:FMCW

FM CW Configure

Function

This command sets Channel Power measurement to On.

Command

```
:CONFigure:FMCW
```

Details

No measurement is performed.

For querying the measurement value after this command has been executed, use *WAI commands to perform synchronized control.

Example of Use

To set FM CW measurement to On and query the results.

```
CONF:FMCW
*WAI
FETC:FMCW?
```

:INITiate:FMCW

FM CW Initiate

Function

This command performs a FM CW measurement.

Command

```
:INITiate:FMCW
```

Details

When this command is executed, FM CW measurement is set to On and the measurement is performed.

Example of Use

To perform FM CW measurement and query the results.

```
INIT:FMCW
*WAI
FETC:FMCW?
```

:FETCh:FMCW?

FM CW Fetch

Function

This command queries the result of the 1st slope (Chirp Index = 0) of the FM CW measurement.

Query

```
:FETCh:FMCW?
```

Response

Refer to Table 2.23-2.

Parameter

None

Details

This function queries the measurement result of the FM CW measurement performed last. This function does not accompany any capture, thus this function is used to output the measurement result in a different type, when the measurement has already completed.
Use READ command to perform re-measurement with redoing capture.

Example of Use

To query the measurement result for FM CW measurement.

```
FETC:FMCW?
```

:READ:FMCW?

FM CW Read

Function

This command performs FM CW measurement and queries the result. This command has the same function as the following commands executed in this order:

```
:INITiate:FMCW
:FETCh:FMCW?
```

:MEASure:FMCW?

FM CW Measure

Function

This command performs FM CW measurement and queries the result. This command has the same function as the following commands executed in this order:

```
:CONFigure:FMCW
:INITiate:FMCW
:FETCh:FMCW?
```

[:SENSe]:FMCW:INTVal:MODE AUTO|MARKer

Measurement Interval Mode

Function

This command selects the mode to set the measurement interval.

Command

```
[:SENSe]:FMCW:INTVal:MODE <switch>
```

Parameter

<switch>		Measurement Interval Mode
	AUTO	Selects the measurement interval automatically. (Default)
	MARKer	Specify the measurement interval by markers manually.

Details

When the Measurement Interval Mode is set to AUTO, chirp signals are automatically detected and the measurement is performed.

When the Measurement Interval Mode is set to MARKer, the measurement is performed in the range specified by Marker1 and 2.

Example of Use

To set the Measurement Interval by markers manually.

```
FMCW:INTV:MODE MARK
```

[:SENSe]:FMCW:INTVal:MODE?

Measurement Interval Mode Query

Function

This command queries the current mode to set the measurement interval.

Query

```
[:SENSe]:FMCW:INTVal:MODE?
```

Response

```
<switch>
```

Parameter

<switch>		Measurement Interval Mode
	AUTO	Selects the measurement interval automatically.
	MARK	Specify the measurement interval by markers manually.

Example of Use

To query the current status of the Measurement Interval Mode.

```
FMCW:INTV:MODE?
> MARK
```

:FETCh:FMCW:CHIRp:NUMBer?

FM CW Fetch Number of Chirp

Function

This command queries the queryable chirp number (slope number) of the FM CW measurement.

Query

```
:FETCh:FMCW:CHIRp:NUMBer?
```

Response

```
<NUM>
```

Parameter

<NUM>	Chirp number
Range	0 to 10

Details

This command queries the chirp number queryable by the :FETCh:FMCW:CHIRp[n]? command.

Example of Use

To query the queyable chirp number.

```
:FETC:FMCW:CHIR:NUMB?
> 1
```

:FETCh:FMCW:CHIRp[n]?

FM CW Fetch One of Chirp

Function

This command queries the FM CW measurement results of the chirp (slope) specified by ChirpIndex (n).

Query

```
:FETCh:FMCW:CHIRp[n]?
```

Response

Refer to Table 2.23-2.

Parameter

<n>	Chirp Index
Range	0 to 9

Details

This function queries the measurement result of the FM CW measurement performed last. This function does not accompany any capture, thus this function is used to output the measurement result in a different type, when the measurement has already completed.
Use READ command to perform re-measurement with redoing capture.

Example of Use

To query the FM CW measurement results of ChipIndex (n=2).
FETC:FMCW:CHIR2?

[:SENSe]:FMCW:CHIRp:SLOPe AUTO|UP|DOWN

FMCW Slope

Function

This command sets the chirp type (up/down) to detect at automatic chirp detection.

Command

```
[:SENSe]:FMCW:CHIRp:SLOPe <switch>
```

Parameter

<switch>	Chirp type to detect automatically
UP	Detects up-chirps automatically.
DOWN	Detects down-chirps automatically.
AUTO	Detects both up-chirps and down-chirps automatically. (Default)

Details

When set to UP, up-chirps in which the frequency increases are detected. When set to DOWN, down-chirps in which the frequency decreases are detected. When set to AUTO, both up-chirps and down-chirps are detected.

Example of Use

To set the parameter to UP to detect up-chirps automatically.

```
FMCW:CHIR:SLOP UP
```

[:SENSe]:FMCW:CHIRp:SLOPe?

FMCW Slope Query

Function

This command queries the current chirp type (up/down) which is detected automatically.

Query

```
[:SENSe]:FMCW:CHIRp:SLOPe?
```

Response

```
<switch>
```

Parameter

<switch>	Chirp type to detect automatically
UP	Up-chirps are detected automatically.
DOWN	Down-chirps are detected automatically.
AUTO	Both up-chirps and down-chirps are detected automatically.

Example of Use

To query the current chirp type that is automatically detected.

```
FMCW:CHIR:SLOP?
>UP
```

Chapter 3 Native Device Message List

This chapter describes remote control commands for executing the signal analyzer function (hereinafter, referred to as "this application") using a list organized by functions. Refer to Chapter 4 "Device Message Details" for detailed specifications for each command. Refer to the *MS2690A/MS2691A/MS2692A and MS2830A/MS2840A/MS2850A Signal Analyzer Operation Manual (Mainframe Remote Control)* for detailed specifications on IEEE488.2 common device messages and application common device messages.

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3.1 IEEE488.2 Common Device Messages

Table 3.1-1 lists IEEE488.2 common device messages available in this application.

Table 3.1-1 IEEE488.2 common device messages

Function	Command	Query	Response	Remarks
Identification	---	*IDN?	ANRITSU,model,serial,version	model: Main unit model name serial: Main unit serial number version: Software package version
Operation Complete	*OPC	*OPC?	1	
Preset (All Application)	*RST	---	---	
Self Test	---	*TST?	result	result: Self test results = 0 | 1
Wait to Continue	*WAI	---	---	
Clear Status	*CLS	---	---	
Service Request Enable Register	*SRE byte	*SRE?	byte	byte = bit7: EESB7 bit6: Not used bit5: ESB bit4: MAV bit3: EESB3 bit2: EESB2 (END Event) bit1: EESB1 bit0: EESB0

Table 3.1-1 IEEE488.2 common device messages (Cont'd)

Function	Command	Query	Response	Remarks
Status Byte Register	---	*STB?	byte	byte = bit7: EESB7 bit6: MSS/RQS bit5: ESB bit4: MAV bit3: EESB3 bit2: EESB2 (END Event) bit1: EESB1 bit0: EESB0
Standard Event Status Enable Register	*ESE byte	*ESE?	byte	byte = 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	---	*ESR?	byte	

3.2 Application Common Device Messages

Table 3.2-1 lists application common device messages available in this application.

Table 3.2-1 Application common device messages

Function	Command	Query	Response	Remarks
Application Switch	SYS apl,window	SYS? apl	status,window	apl: Application name = SIGANA window: Window status = ACT | INACT | MIN | NON status: Application execution status = CURRENT | IDLE | RUN | UNLOAD
Preset (All Application)	*RST	---	---	
Preset (Active Application only)	PRE	---	---	
	INI	---	---	
System Restart	REBOOT	---	---	
LCD Power	DISPLAY on_off	DISPLAY?	on_off	
Error Display Mode	REMDISP mode	REMDISP?	mode	mode: Display mode = NORMAL | REMAIN | REMAIN_LAST
Save Parameter	SVPRM file device	---	---	file: Filename device: Drive name = A | B | D | E | …
	SVPRM	---	---	
Recall Parameter Setting file	RCPRM file,device,apl	---	---	file: Filename device: Drive name = A | B | D | E | … apl: Target application = ALL | CURR
	RCPRM file,device	---	---	

Table 3.2-1 Application common device messages (Cont'd)

Function	Command	Query	Response	Remarks
Hard Copy	PRINT file,device	---	---	file: Filename device: Drive name = A | B | D | E | …
	PRINT	---	---	
Hard Copy Mode	PMOD format	PMOD?	format	format: Specifies file format = BMP | PNG
	PMOD	PMOD?	BMP	
END Event Status Enable Register	ESE2 n	ESE2?	byte	byte = Status bit bit7: End of file operation bit6: Not used bit5: Not used bit4: Not used bit3: Not used bit2: Not used bit1: Not used bit0: End of measurement
END Event Status Register	---	ESR2?	byte	
ERROR Event Status Enable Register	ESE3 n	ESE3?	byte	byte = Status bit bit7: Not used bit6: Not used bit5: Not used bit4: Not used bit3: Not used bit2: Not used bit1: Not used bit0: Not used
ERROR Event Status Register	---	ESR3?	Byte	
Pre-selector Auto Tune	PRESEL AUTO	---	---	
Pre-selector Bias Reset	PRESEL PRESET	---	---	
Pre-selector Bias	PRESEL bias	PRESEL?	bias	bias = Bias value of pre-selector = –128 to 127

Table 3.2-1 Application common device messages (Cont'd)

Function	Command	Query	Response	Remarks
Calibration	CAL mode	---	---	mode: Calibration mode = ALL | LEVEL | LOLEAK_SUPPRESS | BAND Asynchronous command
Micro Wave Preselector Bypass	POW:MW:PRES switch	POW:MW:PRES?	status	switch = ON|OFF|1|0 status = 1|0

3.3 Frequency/Time Settings

Table 3.3-1 lists device messages for setting frequency and time.

Table 3.3-1 Frequency/time setting messages

Function	Command	Query	Response	Remarks
Center Frequency	CNF freq	CNF?	freq	
Frequency Step Size	FREQ:CENT:STEP freq	FREQ:CENT:STEP?	freq	
Frequency Span	SPF freq	SPF?	freq	
Start Frequency	STF freq	STF?	freq	
Stop Frequency	SOF freq	SOF?	freq	
Frequency Band Mode	BNDSP mode	BNDSP?	mode	mode: Frequency = NORMAL | SPURIOUS | THROUGH
Sampling Rate	---	SMPLRATE?	rate	
Capture Time Auto/Manual	ACAP auto_manual	ACAP?	auto_manual	
Capture Time Length	CAPLN time	CAPLN?	time	
Switching Speed	FREQ:SYNT mode	FREQ:SYNT?	mode	mode: Frequency switching speed = BPH | NORM |FAST

3.4 Level Settings

Table 3.4-1 lists device messages for setting levels.

Table 3.4-1 Level setting messages

Function	Command	Query	Response	Remarks
Reference Level	RLV level	RLV?	level	
Reference Level Offset Mode	ROFFSET on_off	ROFFSET?	OFF	When set to On, response is level.
	ROFFSETMD on_off	ROFFSETMD?	on_off	
Reference Level Offset Value	ROFFSET level	ROFFSET?	level	
Attenuator	AT att	AT?	att	att: Attenuator value
	AT AUTO			
Attenuator Step Up/Down	AT action	---	---	action: Operation = UP | DN
Pre Amp	PREAMP on_off	PREAMP?	on_off	
Scale Mode	SCALEMODE mode	SCALEMODE?	mode	mode: Scale mode = LOG | LIN
Log Scale Unit	AUNITS unit	AUNITS?	unit	unit: Units = DBM | DBUV | DBMV | DBUVE | V | W | DBUVM

3.5 Measurement/Trigger Settings

Table 3.5-1 lists device messages for setting measurement/trigger.

Table 3.5-1 Measurement/trigger setting messages

Function	Command	Query	Response	Remarks
Single Measurement	SNGLS	---	---	Asynchronous command
Continuous Measurement	CONTS	---	---	Asynchronous command
Storage Stop	STOP	---	---	
Trigger Switch	TRGS switch	TRGS?	switch	switch: = FREE | TRGD
Trigger Source	TRGSOURCE source	TRGSOURCE?	source	source: = VID | WIDEVID | EXT | SG | BBIF
Trigger Level (Video/Wide IF Video)	TRGLVL level	TRGLVL?	level	
Trigger Slope	TRGSLP edge	TRGSLP?	edge	edge: = RISE | FALL
Trigger Delay	TDLY time	TDLY?	time	
Trigger Hold	TRIG:HOLD	TRIG:HOLD?	time	
Trigger Hold On/Off	TRIG:HOLD:STAT	TRIG:HOLD:STAT?	switch	
Frame Trigger Period	TRIG:FRAM:PER	TRIG:FRAM:PER?	time	
Frame Sync Source	TRIG:FRAM:SYNC sync	TRIG:FRAM:SYNC?	sync	sync: = EXT |IMM | WIF
Frame Sync Offset	TRIG:FRAM:OFFS time	TRIG:FRAM:OFFS?	time	time: time set

3.6 Common Settings for Each Trace

Table 3.6-1 lists device messages for configuring the settings common to each trace.

Table 3.6-1 Common trace setting messages

Function	Command	Query	Response	Remarks
Change Trace	TRCCHG trace	TRCCHG?	trace	trace: Trace type = SPECTRUM | POWERVSTIME | FREQVSTIME|CCDF|SPECTROGRAM
Analysis Time Auto/Manual	AANLY auto_manual	AANLY?	auto_manual	
Analysis Time Length	ANLYLEN time	ANALYLEN?	time	
Analysis Start Time	ANLYST time	ANLYST?	time	
Calculate	CALC	---	---	Analyzes main trace.
Measurement Status	---	MSTAT?	status	status: Status = 0 | 2 | 9
Measurement Off	CONF:SAN	---	---	
Low Phase Noise Performance Status Query	---	FREQ:SYNT:LPH:STAT?	status	status: Status = 1 | 0

3.7 Spectrum Trace Settings

Table 3.7-1 lists device messages for setting spectrum trace.

Table 3.7-1 Spectrum trace setting messages

Function	Command	Query	Response	Remarks
Zoom Center	`ZMCNT freq`	`ZMCNT?`	`freq`	
Zoom Width	`ZMWDTH freq`	`ZMWDTH?`	`freq`	
Resolution Bandwidth (RBW)	`RB bandwidth` `RB AUTO`	`RB?`	`bandwidth`	`bandwidth`: Resolution bandwidth
Detection Mode	`DET mode`	`DET?`	`mode`	`mode`: Detection mode `= POS | NEG | AVG`
Storage Mode	`STORAGEMODE mode`	`STORAGEMODE?`	`mode`	`mode`: Storage mode `= OFF | MAX | LINAVG | MIN`
Storage Count	`STORAGECOUNT count`	`STORAGECOUNT?`	`count`	`count`: Storage count
Log Scale Range	`LOGSCALEDIV scale`	`LOGSCALEDIV?`	`scale`	`scale`: dB/div `= 0.1 | 0.2 | 0.5 | 1 | 2 | 5 | 10 | 20`
Linear Scale Range	`LINSCALEDIV scale`	`LINSCALEDIV?`	`scale`	`scale`: %/div `= 1 | 2 | 5 | 10`
Log Scale Line	`SCALELINES line`	`SCALELINES?`	`line`	`line`: Number of scale lines `= 10 | 12`

Table 3.7-1 Spectrum trace setting messages (Cont'd)

Function	Command	Query	Response	Remarks
Marker Mode	MKR mode,marker	MKR? marker	mode	mode: Marker ON/OFF marker: Marker type
	MKR mode	MKR?		
Active Marker	MKACT marker	MKACT?	marker	marker: Active marker
Marker Result	MKLTYPE type	MKLTYPE?	type	type: Marker value type = INT|TOTAL|DENS|AVG|PEAK|PACC
Marker Frequency	MKZF freq,marker	MKZF? marker	freq	marker: Marker type
Marker Width (Grid)	MKW width,marker	MKW? marker	width	width: Specifies width marker: Marker type
Marker Width (Frequency)	MZWF freq,marker	MZWF? marker	freq	marker: Marker type
Peak Search	MKPK HI	---	---	
	MKPK			
Next Peak	MKPK NH	---	---	
Signal Search Resolution	MKPX level	MKPX?	level	

Table 3.7-1 Spectrum trace setting messages (Cont'd)

Function	Command	Query	Response	Remarks
Relative To	CALC:MARK:REF marker,integer	CALC:MARK:REF? marker	integer	marker: Marker name
Marker List	CALC:MARK:TABL switch_com	CALC:MARK:TABL?	switch_res	
Spot Line	CALC:MARK:SLIN switch_com	CALC:MARK:SLIN?	switch_res	
Couple Zone	CALC:MARK:COUP:ZONE switch_com	CALC:MARK:COUP:ZONE?	switch_res	
Zone Width Type	CALC:MARK:WIDT:TYPE marker,type	CALC:MARK:WIDT:TYPE? marker	type	marker: Marker name type: ZONE|SPOT
Search Peaks Sort Y	CALC:MARK:PEAK:SORT: Y	---	---	
Search Peaks Sort X	CALC:MARK:PEAK:SORT: X	---	---	
Search Peaks Number	CALC:MARK:PEAK:SORT: COUN integer	CALC:MARK:PEAK:SORT: COUN?	integer	
Query Trace Data	---	TRAC? [start[,length]]	data_1,data_2,...	

Table 3.7-1 Spectrum trace setting messages (Cont'd)

Function	Command	Query	Response	Remarks
Marker Readout Query	---	CALC:MARK:READ?	freqs_1,power_1,freqs_2,power_2,..., freqs_10,power_10 (in Spectrum) <sample_1>,<freqf_1>,<sample_2>,<freqf_2> (When using MS269x Series, the terminal being set for DigRF 3G) time_1,power_1,time_2,power_2(in Power vs Time trace) <sample_1>,<power_1>,<sample_2>,<power_2> (When using MS269x Series, the terminal being set for DigRF 3G and Power vs Time trace) time_1,freqf_1,time_2,freqf_2 (in Frequency vs Time) dist,prob (in CCDF trace) <freqs_1>,<time_1>,<power_1>,<freqs_2>,<time_2>,<power_2> (in Spectrogram trace)	
Marker Frequency	CALC:MARK:X marker, type	CALC:MARK:X? marker	freq,time,sample,dist,dist_result	marker: marker name type: freq|time|sample|dist
Marker Frequency	CALC:MARK:X:DELT marker, type	CALC:MARK:X:DELT? marker	freq	marker: marker name type: freq
Marker Query	---	CALC:MARK:Y:DELT? marker	rel_ampl_spe,ratio_spe,rel_ampl_pvt,ratio_pvt,freq,prob,prob_result_gauss,prob_result_ref	marker: marker name

Table 3.7-1 Spectrum trace setting messages (Cont'd)

Function	Command	Query	Response	Remarks
Signal Search Mode	SRCHTH mode	SRCHTH?	mode	Mode: Detection mode = OFF | ON | ABOVE | BELOW
Signal Search Threshold Level	SRCHTHLVL level	SRCHTHLVL?	level	
Marker to Center Frequency	MKCF	---	---	
Marker to Reference Level	MKRL	---	---	
Zoom	ZOOM	---	---	
Zoom Out	ZOOMOUT	---	---	
Trace Point Query	---	FDPNT?	point	
Measurement Count Query	---	SWEEPCOUNT?	count	
Marker Level Query	---	MKL? type	ln	type: Marker n ln:Level of Marker n
Marker Phase Query	---	CALC:MARK:Y:PHAS? marker	phase	marker: marker name phase: phase spectrum
Calculate Phase Spectrum	CALC:PHAS:STAT switch_com	CALC:PHAS:STAT?	switch_res	switch_com: = ON | OFF | 1 | 0 switch_res: = 1 | 0

Table 3.7-2 lists device messages for setting Adjacent Channel Power measurement function of spectrum trace.

Table 3.7-2 Spectrum trace (Adjacent Channel Power measurement function) setting messages

Function	Command	Query	Response	Remarks
Measure Adjacent Channel Power	MEAS ADJ	MEAS?	ADJ	
	MEAS OFF	MEAS?	OFF	
ACP Reference	MADJMOD mode	MADJMOD?	mode	mode: Measurement method = MOD | TOTAL | INBAND | BOTHSIDE
ACP Channel Bandwidth	ADJCHBW freq	ADJCHBW?	freq	
ACP Carrier Bandwidth	ADJINBW freq	ADJINBW?	freq	
ACP In Band Center	ADJCARRIERCNT freq	ADJCARRIERCNT?	freq	
ACP Carrier Number	ADJCARRIERNUM num	ADJCARRIERNUM?	num	num: Carrier number
ACP Carrier Spacing	ADJCARRIERSPAC freq	ADJCARRIERSPAC?	freq	freq: Carrier spacing
ACP Channel Select	ADJCHSLCT ch,on_off	ADJCHSLCT? ch	on_off	
ACP Offset Frequency	ADJCHSP ch,freq	ADJCHSP? ch	freq	
ACP Filter Type	ADJFILTERTYPE filter	ADJFILTERTYPE?	filter,filter	filter: Filter type = RECT | NYQUIST | ROOTNYQUIST target: Target filter = INBAND | OFFSET
	ADJFILTERTYPE filter,target	ADJFILTERTYPE? target	filter	
ACP Power Result Type	ADJPWRTYPE mode	ADJPWRTYPE?	mode	mode: Result display type = CARRIER | OFFSET

Table 3.7-2 Spectrum trace (Adjacent Channel Power measurement function) setting messages (Cont'd)

Function	Command	Query	Response	Remarks
ACP Roll-off Factor	ADJROF ratio	ADJROF?	ratio,ratio	ratio: Filter rolloff ratio target: Target filter = INBAND | OFFSET
	ADJROF ratio,target	ADJROF? target	ratio	
Select Standard	SELECTSTD standard	SELECTSTD?	standard	standard: Communication method
Load Standard Parameter	LOADSTD ADJ,param	LOADSTD? ADJ	param	param: Parameter Type
	LOADSTD ADJ			
Noise Cancel	NOISECANCEL on_off	NOISECANCEL?	on_off	on_off: = ON | OFF

Table 3.7-2 Spectrum trace (Adjacent Channel Power measurement function) setting messages (Cont'd)

Function	Command	Query	Response	Remarks
ACP Measurement Result Query	---	RES?	lc,(lc),lr1,la1,ur1, ua1,lr2,la2,ur2,ua2, lr3,la3,ur3,ua3	lc: Reference power absolute value by ACP Reference lr1: Measurement frequency 1 (Bottom side) power relative value la1: Measurement frequency 1 (Bottom side) power absolute value ur1: Measurement frequency 1 (Top side) power relative value ua1: Measurement frequency 1 (Top side) power absolute value lr2: Measurement frequency 2 (Bottom side) power relative value la2: Measurement frequency 2 (Bottom side) power absolute value ur2: Measurement frequency 2 (Top side) power relative value ua2: Measurement frequency 2 (Top side) power absolute value lr3: Measurement frequency 3 (Bottom side) power relative value la3: Measurement frequency 3 (Bottom side) power absolute value ur3: Measurement frequency 3 (Top side) power relative value ua3: Measurement frequency 3 (Top side) power absolute value
		RES? OFFSET		

Table 3.7-2 Spectrum trace (Adjacent Channel Power measurement function) setting messages (Cont'd)

Function	Command	Query	Response	Remarks
ACP Measurement Result Query	`---`	`RES? CARRIER`	`ls,lca,lc1,lc2,lc3,lc4,lc5,lc6,lc7,lc8,lc9,lc10,lc11,lc12`	`ls:` Measurement span frequency power absolute value `lca:` Measurement carrier total power absolute value `lc1:` Measurement carrier-1 power absolute value `lc2:` Measurement carrier-2 power absolute value `lc3:` Measurement carrier-3 power absolute value `lc4:` Measurement carrier-4 power absolute value `lc5:` Measurement carrier-5 power absolute value `lc6:` Measurement carrier-6 power absolute value `lc7:` Measurement carrier-7 power absolute value `lc8:` Measurement carrier-8 power absolute value `lc9:` Measurement carrier-9 power absolute value `lc10:` Measurementcarrier-10 power absolute value `lc11:` Measurement carrier-11 power absolute value `lc12:` Measurement carrier-12 power absolute value

Table 3.7-3 lists device messages for setting Channel Power measurement function of spectrum trace.

Table 3.7-3 Spectrum trace (Channel Power measurement function) setting messages

Function	Command	Query	Response	Remarks
Measure Channel Power	MEAS CHPWR	MEAS?	CHPWR	
	MEAS OFF	MEAS?	OFF	
Channel Power Channel Center Frequency	CHPWRCENTER freq	CHPWRCENTER?	freq	
Channel Power Channel Bandwidth	CHPWRWIDTH freq	CHPWRWIDTH?	freq	
Channel Power Filter Type	CHPWRFLTRTYP filter	CHPWRFLTRTYP?	filter	filter: Filter type = RECT | NYQUIST | ROOTNYQUIST
Channel Power Rolloff Factor	CHPWRROF ratio	CHPWRROF?	ratio	ratio: Filter rolloff ratio
Select Standard	SELECTSTD standard	SELECTSTD?	standard	standard: Communication method
Load Standard Parameter	LOADSTD CHPWR,param	LOADSTD? CHPWR	param	param: Parameter Type
	LOADSTD CHPWR			
Channel Power Measurement Result Query	---	RES?	power,density	power: Total power in channel band density: Power density in channel band

Table 3.7-4 lists device messages for setting occupied bandwidth measurement function of spectrum trace.

Table 3.7-4 Spectrum trace (occupied bandwidth measurement function) setting messages

Function	Command	Query	Response	Remarks
Measure Occupied Bandwidth	`MEAS OBW`	`MEAS?`	`OBW`	
	`MEAS OFF`	`MEAS?`	`OFF`	
OBW Measurement Method	`MOBW method`	`MOBW?`	`method`	`method:` Measurement method `= N | XDB`
OBW N% Ratio	`OBWN ratio`	`OBWN?`	`ratio`	
OBW XdB Value	`OBWXDB level`	`OBWXDB?`	`level`	
Select Standard	`SELECTSTD standard`	`SELECTSTD?`	`standard`	`standard:` Communication method
Load Standard Parameter	`LOADSTD OBW,param`	`LOADSTD? OBW`	`param`	`param:` Parameter Type
	`LOADSTD OBW`			
OBW Measurement Result Query	`---`	`RES?`	`obw,center,start,stop`	`obw:` Occupied bandwidth `center:` Center frequency of occupied band `start:` Start frequency of occupied band `stop:` Stop frequency of occupied band

3.8 Power vs Time Trace Settings

Table 3.8-1 lists device messages for setting Power vs Time trace.

Table 3.8-1 Power vs Time trace setting messages

Function	Command	Query	Response	Remarks
Detection	DET mode	DET?	mode	mode: Detection mode = NRM | POS | NEG | AVG
Smoothing	SMOOTH on_off	SMOOTH?	on_off	
Smoothing Time Length	SMOOTHLN time	SMOOTHLN?	time	
Filter Type	FLTRTYP filter	FLTRTYP?	filter	filter: Filter type = RECT | GAUSS | NYQUIST | ROOTNYQUIST | OFF
Roll-off Factor	ROF factor	ROF?	factor	
Filter Bandwidth	FLTRBW bandwidth	FLTRBW?	bandwidth	
Filter Frequency Offset	FLTROFS freq	FLTROFS?	freq	
Storage Mode	STORAGEMODE mode	STORAGEMODE?	mode	mode: Storage mode = OFF | MAX | LINAVG | MIN
Storage Count	STORAGECOUNT count	STORAGECOUNT?	count	count: Storage count

Table 3.8-1 Power vs Time trace setting messages (Cont'd)

Function	Command	Query	Response	Remarks
Log Scale Range	LOGSCALEDIV scale	LOGSCALEDIV?	scale	scale: dB/div = 0.1 | 0.2 | 0.5 | 1 | 2 | 5 | 10 | 20
Linear Scale Range	LINSCALEDIV scale	LINSCALEDIV?	scale	scale: %/div = 1 | 2 | 5 | 10
Log Scale Line	SCALELINES line	SCALELINES?	line	line: Number of scale lines = 10 | 12
Marker Mode	MKR mode,marker	MKR? marker	mode	mode: Marker ON/OFF marker: Marker type = 1 | 2
	MKR mode	MKR?		
Active Marker	MKACT marker	MKACT?	marker	marker: Active marker = MKR1 | MKR2 | BOTH
Marker Position	MKP time,marker	MKP? marker		
Peak Search	MKPK HI	---	---	
	MKPK			
Next Peak	MKPK NH	---	---	
Signal Search Resolution	MKPX level	MKPX?	level	
Signal Search Mode	SRCHTH mode	SRCHTH?	mode	mode: Detection mode = OFF | ON | ABOVE | BELOW
Signal Search Threshold Level	SRCHTHLVL level	SRCHTHLVL?	level	

Table 3.8-1 Power vs Time trace setting messages (Cont'd)

Function	Command	Query	Response	Remarks
Display Peak to Peak Value On/Off	PEAKTOPEAK on_off	PEAKTOPEAK?	on_off	
Zoom	ZOOM	---	---	
Zoom Out	ZOOMOUT	---	---	
Time Trace Point Query	---	TDPNT?	point	
Measurement Count Query	---	SWEEPCOUNT?	count	
Marker Level Query	---	MKL?	l_1,l_2,l_{2-1}	l_1: Amplitude value of Marker 1 l_2: Amplitude value of Marker 2 l_2: Ratio between Markers 1 and 2
	---	MKL? 1	l_1	
	---	MKL? 2	l_2	
	---	MKL? 3	l_{2-1}	
Peak to Peak Value Query	---	PEAKTOPEAKRES?	pos,neg,p-p,avg	pos: +Peak value neg: –Peak value p-p: Peak to Peak value avg: Average value
	---	PEAKTOPEAKRES? POS	pos	
	---	PEAKTOPEAKRES? NEG	neg	
	---	PEAKTOPEAKRES? DELTAAVG	p-p	
	---	PEAKTOPEAKRES? AVG	avg	
Query Trace Data	---	TRAC? [start[,length]]	data_1,data_2,...	
Query Negative Trace Data	---	TRAC:NEG? [start[,length]]	data_1,data_2,...	

Table 3.8-2 lists device messages for setting Burst Average Power measurement function of Power vs Time trace.

Table 3.8-2 Power vs Time trace (Burst Average Power measurement function) setting messages

Function	Command	Query	Response	Remarks
Measure Burst Average Power	MEAS BRSTAVGPWR	MEAS?	BRSTAVGPWR	
	MEAS OFF	MEAS?	OFF	
Load Standard Parameter	LOADSTD BRSTAVGPWR,param	LOADSTD? BRSTAVGPWR	param	param: Parameter Type
	LOADSTD BRSTAVGPWR			
Noise Cancel	NOISECANCEL on_off	NOISECANCEL?	on_off	on_off: = ON | OFF
Burst Average Power Measurement Result Query	---	RES?	level	level: Average power within burst

Table 3.8-3 lists device messages for setting the AM Depth measurement function of Power vs Time trace.

Table 3.8-3 Power vs Time trace (AM Depth Measurement Function) setting messages

Function	Command	Query	Response	Remarks
Measure AM Depth	MEAS AM	MEAS?	AM	
	MEAS OFF	MEAS?	OFF	
Measure AM Depth	AM switch_com	AM?	tswitch_res	switch_com: = ON|OFF|1|0
AM Depth Configure	CONF:AM	---	---	
AM Depth Initiate	INIT:AM	---	---	
AM Depth Fetch	---	FETC:AM?	pos,neg,p-p,avg	
AM Depth Read		READ:AM?		
AM Depth Measure		MEAS:AM?		

3.9 Frequency vs Time Trace Settings

Table 3.9-1 lists device messages for setting Frequency vs Time trace.

Table 3.9-1 Frequency vs Time trace setting messages

Function	Command	Query	Response	Remarks
Detection	DET mode	DET?	mode	mode: Detection mode = NRM | POS | NEG | AVG
Smoothing	SMOOTH on_off	SMOOTH?	on_off	
Smoothing Time Length	SMOOTHLN time	SMOOTHLN?	time	
Filter Bandwidth	FLTRBW bandwidth	FLTRBW?	bandwidth	
Filter Auto/Manual	AFLTR auto_manual	AFLTR?	auto_manual	
Storage Mode	STORAGEMODE mode	STORAGEMODE?	mode	mode: Storage mode = OFF | MAX | MIN
Storage Count	STORAGECOUNT count	STORAGECOUNT?	count	count: Storage count
Frequency Scale Unit	FUNITS unit	FUNITS?	unit	unit: Frequency scale display unit = HZ | DHZ
Marker Mode	MKR mode,marker	MKR? Marker	mode	mode: Marker ON/OFF marker: Marker type = 1 | 2
	MKR mode	MKR?		
Active Marker	MKACT marker	MKACT?	marker	marker: Active marker = MKR1 | MKR2 | BOTH
Marker Position	MKP time	MKP?	time	point: Marker position time marker: Marker type = 1 | 2
	MKP time,marker	MKP? marker		

Table 3.9-1 Frequency vs Time trace setting messages (Cont'd)

Function	Command	Query	Response	Remarks
Marker Value in Pos&Neg detection	DETMODE det,marker	DETMODE? Marker	det	det: Detection mode = POS | NEG marker: Marker name = MKR1 | MKR2 | BOTH
	DETMODE det	DETMODE?		
Peak Search	MKPK HI	---	---	
	MKPK			
Next Peak	MKPK NH	---	---	
Dip Search	MKPK LO	---	---	
Next Dip	MKPK NL	---	---	
Signal Search Resolution	MKPX freq	MKPX?	freq	
Signal Search Mode	SRCHTH mode	SRCHTH?	mode	mode: Detection mode = OFF | ON | ABOVE | BELOW
Signal Search Threshold Frequency Deviation	SRCHTHLVL freq	SRCHTHLVL?	freq	
Display Peak to Peak Value On/Off	PEAKTOPEAK on_off	PEAKTOPEAK?	on_off	
Zoom Width	ZMWDTH scale	ZMWDTH?	scale	scale: Frequency bandwidth = DIVBY2 | DIVBY5 | DIVBY10 | DIVBY25
Zoom	ZOOM	---	---	
Zoom Out	ZOOMOUT	---	---	
Time Trace Point Query	---	TDPNT?	point	

Table 3.9-1 Frequency vs Time trace setting messages (Cont'd)

Function	Command	Query	Response	Remarks
Maximum Frequency Range Query	---	ANLYFREQRANGE?	freq	
Measurement Count Query	---	SWEEPCOUNT?	count	
Marker Frequency Query	---	MKL?	f_1,f_2,f_{2-1}	f_1: Frequency value of Marker 1 f_2: Frequency value of Marker 2 f_{2-1}: f_2 - f_1
	---	MKL? 1	f_1	
	---	MKL? 2	f_2	
	---	MKL? 3	f_{2-1}	
Peak to Peak Value Query	---	PEAKTOPEAKRES?	pos,neg,p-p,avg	pos: +Peak value neg: –Peak value p-p: Peak to Peak value avg: Average value
	---	PEAKTOPEAKRES? POS	pos	
	---	PEAKTOPEAKRES? NEG	neg	
	---	PEAKTOPEAKRES? DELTAAVG	p-p	
	---	PEAKTOPEAKRES? AVG	avg	
Query Trace Data	---	TRAC? [start[,length]]	data_1,data_2,...	
Query Negative Trace Data	---	TRAC:NEG? [start[,length]]	data_1,data_2,...	

Table 3.9-2 lists device messages for setting FM deviation measurement functions of Frequency vs Time trace.

Table 3.9-2 Frequency vs Time trace (FM deviation Measurement Function) setting messages

Function	Command	Query	Response	Remarks
Measure FM deviation	MEAS FM	MEAS?	FM	
	MEAS OFF	MEAS?	OFF	
Measure FM deviation	FM switch_com	FM?	switch_res	switch_com: = ON|OFF|1|0
FM deviation Configure	CONF:FM	---	---	
FM deviation Initiate	INIT:FM	---	---	
FM deviation Fetch	---	FETC:FM?	pos,neg,p-p,avg	
FM deviation Read		READ:FM?		
FM deviation Measure		MEAS:FM?		

Table 3.9-3 lists device messages for setting FM CW measurement functions of Frequency vs Time trace.

Table 3.9-3 Frequency vs Time trace (FM CW Measurement Function) setting messages

Function	Command	Query	Response	Remarks
Measure FM CW	MEAS FMCW	MEAS?	FMCW	
	MEAS OFF	MEAS?	OFF	
Measure FM CW	FMCW switch_com	FMCW?	switch_res	switch_com: = ON|OFF|1|0
FM CW Configure	CONF:FMCW	---	---	
FM CW Initiate	INIT:FMCW	---	---	
FM CW Fetch	---	FETC:FMCW?		
FM CW Read		READ:FMCW?		
FM CW Measure		MEAS:FMCW?		

3.10 CCDF Trace Settings

Table 3.10-1 lists device messages for setting CCDF trace.

Table 3.10-1 CCDF trace setting messages

Function	Command	Query	Response	Remarks
Measure Method	MMETHOD method	MMETHOD?	method	method: Measurement mode = CCDF | APD
CCDF Threshold On/Off	CALC:CCDF:THR:STAT switch_com	CALC:CCDF:THR:STAT?	switch_res	switch_com: = ON|OFF|1|0
CCDF Threshold	CALC:CCDF:THR	CALC:CCDF:THR?	ampl	
Level Threshold	THRSHLD level	THRSHLD?	level	
CCDF Measure Mode	CALC:CCDF:MODE mode	CALC:CCDF:MODE?	mode	Mode: specified method for measurement target = TIME|COUN
Data Count	CALC:CCDF:COUN sample	CALC:CCDF:COUN?	sample	sample_com: data count for measurement target
	CCDF:COUN sample	CCDF:COUN?	sample	
Gate Mode On/Off	CALC:ATIM:GMOD switch_com	CALC:ATIM:GMOD?	switch_res	Switch: = ON|OFF|1|0
Period	CALC:ATIM:GMOD:PER time	CALC:ATIM:GMOD:PER?	time	
Range State	CALC:ATIM:GMOD:RANG:STAT switch_com_1,switch_com_2,switch_com_3	CALC:ATIM:GMOD:RANG:STAT?	switch_res_1,switch_res_2,switch_res_3	Switch_com_n: Range_n On/Off = ON|OFF|1|0
Range Start Time	CALC:ATIM:GMOD:RANG:STAR time_1,time2,time3	CALC:ATIM:GMOD:RANG:STAR?	time_1,time_2,time_3	time_n: Range_n start time

Table 3.10-1 CCDF trace setting messages (Cont'd)

Function	Command	Query	Response	Remarks
Range Stop Time	CALC:ATIM:GMOD:RANG:STOP time_1,time_2,time_3	CALC:ATIM:GMOD:RANG:STOP?	time_1,time_2,time_3	time_n: Range_n stop time
Filter Type	FLTRTYP filter	FLTRTYP?	filter	filter: Filter type = RECT | OFF
Filter Bandwidth	FLTRBW bandwidth	FLTRBW?	bandwidth	
Filter Frequency Offset	FLTROFS freq	FLTROFS?	freq	
Power Distribution Scale	DISTSCALE scale	DISTSCALE?	scale	scale: Power distribution scale = 5 | 10 | 20 | 50
Marker Mode	MKR mode	MKR?	mode	mode: Marker ON/OFF
Marker Axis	MKAXIS axis	MKAXIS?	axis	axis: Marker movement axis = PROB | DSTRBT
Marker Position	MKP position	MKP?	position	position: Marker position type: Marker type = PROB | DSTRBT
	MKP position,type	MKP? type	position	
Reset Result Every Measurement	RSTEVRYCAP on_off	RSTEVRYCAP?	on_off	
Data Point Query	---	DTCNT?	point	

Table 3.10-1 CCDF trace setting messages (Cont'd)

Function	Command	Query	Response	Remarks
Marker Result	---	MKL?	data	data: Measured waveform's power deviation or probability
Power Result Query	---	SMMLYPWR?	average,max,crest	average: Average power max: Maximum power crest: Crest factor
	---	SMMLYPWR? AVG	average	
	---	SMMLYPWR? MAX	max	
	---	SMMLYPWR? CREST	crest	
Power Deviation and Distribution Query	---	PROBPWR? PWR	pd_1,pd_2,pd_3,pd_4,pd_5	pd_1: Power deviation of 10% pd_2: Power deviation of 1% pd_3: Power deviation of 0.1% pd_4: Power deviation of 0.01% pd_5: Power deviation of 0.001%
	---	PROBPWR? PROB	r_1,r_2,r_3,r_4,r_5	r_1: Probability distribution at 1/5 grid r_2: Probability distribution at 2/5 grid r_3: Probability distribution at 3/5 grid r_4: Probability distribution at 4/5 grid r_5: Probability distribution at 5/5 grid
Query Trace Data	---	TRAC? [start[,length]]	data_1,data_2,…	
Store Reference Trace	CALC:CCDF:STOR:REF	---	---	
Reference Trace	CCDF:RTR switch	CCDF:RTR?	switch	switch: display/no display = ON|OFF|1|0

Table 3.10-1 CCDF trace setting messages (Cont'd)

Function	Command	Query	Response	Remarks
Gaussian Trace	CCDF:GAUS switch	CCDF:GAUS?	switch	switch: display/no display = ON|OFF|1|0
Marker Query	---	CALC:MARK:X:DELT? marker	dist dist_result_gauss dist_result_ref	marker: marker name
CCDF Fetch	---	FETC:CCDF?	When Result Mode is A. mean_power,peak_power_dbm,crest (n=1 or when omitted.) rel_ampl_1,rel_ampl_2,rel_ampl_3,rel_ampl_4, rel_ampl_5,rel_ampl_6 (n=2) percent_1,percent_2,percent_3,percent_4,percent_5 (n=3) [CCDF] meas_per_1,meas_per_2,...meas_per_5001 [APD] meas_per_1,meas_per_2,...meas_per_10001 (n=4) gauss_per_1,gauss_per_2,...guass_per_5001 (n=5) [CCDF] ref_per_1,ref_per_2,...ref_per_5001 [APD] ref_per_1,ref_per_2,...ref_per_10001 (n=6)	

Table 3.10-1 CCDF trace setting messages (Cont'd)

Function	Command	Query	Response	Remarks
CCDF Fetch (Cont'd)	---	FETC:CCDF?	<count>(n=7) <mean_power_range_1>,<peak_power_dbm_range_1>,<crest_range_1>(n=8) <rel_ampl_range_1_1>,<rel_ampl_range_1_2>,<rel_ampl_range_1_3>, <rel_ampl_range_1_4>,<rel_ampl_range_1_5>,<rel_ampl_range_1_6>(n=9) <percent_range_1_1>,<percent_range_1_2>,<percent_range_1_3>, <percent_range_1_4>,<percent_range_1_5>(n=10) When Measure Method is CCDF: <meas_per_range_1_1>,<meas_per_range_1_2>,...< meas_per_range_1_5001> When Measure Method is APD: <meas_per_range_1_1>,<meas_per_range_1_2>,...< meas_per_range_1_10001>(n=11)	

Table 3.10-1 CCDF trace setting messages (Cont'd)

Function	Command	Query	Response	Remarks
CCDF Fetch (Cont'd)	---	FETC:CCDF?	When Measure Method is CCDF: <ref_per_range_1_1>,<ref_per_range_1_2>,...<ref_per_range_1_5001> When Measure Method is APD: <ref_per_range_1_1>,<ref_per_range_1_2>,…<ref_per_range_1_10001>(n=13) <count_range_1> (n=14) <mean_power_range_2>,<peak_power_dbm_range_2>,<crest_range_2> (n=15) <rel_ampl_range_2_1>,<rel_ampl_range_2_2>,<rel_ampl_range_2_3>,<rel_ampl_range_2_4>,<rel_ampl_range_2_5>,<rel_ampl_range_2_6> (n=16) <percent_range_2_1>,<percent_range_2_2>,<percent_range_2_3>,<percent_range_2_4>,<percent_range_2_5>(n=17)	

Table 3.10-1 CCDF trace setting messages (Cont'd)

Function	Command	Query	Response	Remarks
CCDF Fetch (Cont'd)	---	FETC:CCDF?	When Measure Method is CCDF: <meas_per_range_2_1>,<meas_per_range_2_2>,...<meas_per_range_2_5001> When Measure Method is APD: <meas_per_range_2_1>,<meas_per_range_2_2>,...<meas_per_range_2_10001>(n=18) When Measure Method is CCDF: <ref_per_range_2_1>,<ref_per_range_2_2>,...<ref_per_range_2_5001> When Measure Method is APD: <ref_per_range_2_1>,<ref_per_range_2_2>,...<ref_per_range_2_10001>(n=20) <count_range_2> (n=21) <mean_power_range_3>,<peak_power_dbm_range_3>,<crest_range_3> (n=22) <rel_ampl_range_3_1>,<rel_ampl_range_3_2>,<rel_ampl_range_3_3>, <rel_ampl_range_3_4>,<rel_ampl_range_3_5>,<rel_ampl_range_3_6> (n=23) <percent_range_3_1>,<percent_range_3_2>,<percent_range_3_3>, <percent_range_3_4>,<percent_range_3_5>(n=24)	

Table 3.10-1 CCDF trace setting messages (Cont'd)

Function	Command	Query	Response	Remarks
CCDF Fetch (Cont'd)	---	FETC:CCDF?	When Measure Method is CCDF: <meas_per_range_3_1>,<meas_per_range_3_2>,...<meas_per_range_3_5001> When Measure Method is APD: <meas_per_range_3_1>,<meas_per_range_3_2>,...<meas_per_range_3_10001>(n=25) When Measure Method is CCDF: <ref_per_range_3_1>,<ref_per_range_3_2>,...<ref_per_range_3_5001> When Measure Method is APD: <ref_per_range_3_1>,<ref_per_range_3_2>,...<ref_per_range_3_10001> (n=27) <count_range_3> (n=28)	

Table 3.10-1 CCDF trace setting messages (Cont'd)

Function	Command	Query	Response	Remarks
CCDF Fetch (Cont'd)	---	FETC:CCDF?	When Result Mode is B: mean_power,mean_power_prob,rel_ampl_1, rel_ampl_2,rel_ampl_3,rel_ampl_4,rel_ampl_5,rel_ampl_6,crest,count (n=1 or when omitted.) [CCDF] meas_per_1,meas_per_2,...meas_per_5001 [APD] meas_per_1,meas_per_2,...meas_per_10001 (n=2) gauss_per_1,gauss_per_2,...guass_per_5001 (n=3) [CCDF] ref_per_1,ref_per_2,...ref_per_5001 [APD] ref_per_1,ref_per_2,...ref_per_10001 (n=4)	

3.11 Spectrogram Trace Settings

Table 3.11-1 lists device messages for setting Spectrogram trace.

Table 3.11-1 Spectrogram trace setting messages

Function	Command	Query	Response	Remarks
Level Full Scale	DISP:WIND:TRAC:Y:PDIV:RANG rel_ampl	DISP:WIND:TRAC:Y:PDIV:RANG?	rel_ampl	
Resolution Bandwidth	RB bandwidth RB AUTO	RB?	bandwidth	
Detection	DET mode	DET?	mode	mode: Detection mode = POS | NEG | AVG
Active Marker	MKACT marker	MKACT?	marker	marker: Active marker
Marker Mode	MKR mode,marker	MKR? marker	mode	mode: Marker ON/OFF marker: Marker type
Time Marker Position	CALC:TMAR:X n,time	CALC:TMAR:X? n	time	
Marker Frequency	MKZF freq,marker	MKZF? marker	freq	marker: Marker type
Marker Width (Grid)	MKW width,marker	MKW? marker	width	marker: Marker type
Couple Time Marker 1 and 2	CALC:TMAR:COUP:ZONE switch_com	CALC:TMAR:COUP:ZONE?	switch_res	switch_com: = ON|OFF|1|0
Zone Width Type	CALC:MARK:WIDT:TYPE marker,type	CALC:MARK:WIDT:TYPE? marker	type	marker: Marker type type: Marker width type = ZONE|SPOT

Table 3.11-1 Spectrogram trace setting messages (Cont'd)

Function	Command	Query	Response	Remarks
Marker Result	MKLTYPE type_com	MKLTYPE?	type_res	type_com: Marker result = INT |TOTAL|DENS|AVG| PEAK|PACC
Marker to Center Freq	MKCF	---	---	
Marker to Reference Level	MKRL	---	---	
Marker Query	---	MKL? 1	l_1	
		MKL? 2	l_2	
Analyze with Spectrum Trace	CALC:ANAL:SPEC	---	---	
Return To Spectrogram	CALC:ANAL:SPGR	---	---	
Storage Mode	STORAGEMODE mode	STORAGEMODE?	mode	mode: Storage mode = OFF | MAX | LINAVG | MIN
Storage Count	STORAGECOUNT count	STORAGECOUNT?	count	
Query Trace Data	---	TRAC? start,length	data_1,data_2,...	
Trace Point Query	---	FDPNT?	point	
Time Trace Point Query	---	TDPNT?	point	
Time Marker Peak Query	---	CALC:TMAR:PEAK:X? n	time	

3.12 DigRF 3G Measurement Settings

Table 3.12-1 lists device messages for the DigRF 3G measurement settings.

Note:

The DigRF 3G is not available only when the MS269x Series Option 040/140 Baseband Interface Unit is not installed or the software package is Ver.6.00.00 or later; it is not supported by MS2830A, MS2840A and MS2850A.

Table 3.12-1 DigRF 3G measurement settings

Function	Command	Query	Response	Remarks
Terminal Change	FEED terminal	FEED?	terminal	terminal = RF | DIGRF3G
Target System	DIGR:TARG communication	DIGR:TARG?	communication	communication = WCDMA | GSM
AD Full Range	DIGR:ADR volt	DIGR:ADR?	volt	volt: Voltage
I/Q Sign	DIGR:IQS iq_sign	DIGR:IQS?	iq_sign	iq_sign = SIGN | TWOC
Measurement Channel	DIGR:MEAS channel	DIGR:MEAS?	channel	channel: Measurement Channel = PRIM | DIV
Capture Sample Length	SWE:SAMP point	SWE:SAMP?	point	point: Capture Sample Count
Analysis Start Sample	CALC:ATIM:STAR:SAMP point	CALC:ATIM:STAR:SAMP?	point	point: Analysis Sample Point
Analysis Sample Length	CALC:ATIM:LENG:SAMP point	CALC:ATIM:LENG:SAMP?	point	point: Analysis Sample Length

Table 3.12-1 DigRF3G measurement settings (Cont'd)

Function	Command	Query	Response	Remarks
Input Source	CALC:IQD source	CALC:IQD?	source	source: Input Source = COMP | I | Q
Result Delay Query	---	CALC:TRIG:DIGR:DEL?	sample	
Vertical Scale Center	DISP:WIND:TRAC:Y:CVOL voltage	DISP:WIND:TRAC:Y:CVOL?	voltage	voltage: Scale setting value
Smoothing Sample Length	CALC:SMO:LENG:SAMP sample	CALC:SMO:LENG:SAMP?	sample	sample: Smoothing sample length
Marker Unit	UNIT:TMAR unit	UNIT:TMAR?	unit	unit: Unit of Marker value = SAMP | SEC

3.13 Waveform Data Saving Function Settings

Table 3.13-1 lists device messages for setting the waveform data saving function.

Table 3.13-1 Waveform data saving function setting messages

Function	Command	Query	Response	Remarks
Save Captured Data	DGTZ file,device	---	---	File: File name Device: Drive name = A | B | D | E | ...
Cancel Execute Digitize	DGTZCANCEL	---	---	
Output Rate for Save Captured Data	DGTZRATE rate	DGTZRATE?	rate	rate: Output rate
Time Range	MMEM:STOR:IQD:MODE mode	MMEM:STOR:IQD:MODE?	mode	mode: Saving range = FULL|ATIM|MAN
Start Time	MMEM:STOR:IQD:STAR time	MMEM:STOR:IQD:STAR?	time	time: Start position
Start Sample	MMEM:STOR:IQD:STAR:SAMP sample	MMEM:STOR:IQD:STAR:SAMP?	sample	sample: Start sample position
Time Length	MMEM:STOR:IQD:LENG time	MMEM:STOR:IQD:LENG?	time	time: Time length
Sample Length	MMEM:STOR:IQD:LENG:SAMP sample	MMEM:STOR:IQD:LENG:SAMP?	sample	sample: Sample length
Save Wave Data	MMEM:STOR:TRAC trace [,filename[,device]]	---	---	trace: Trace to save = TRAC1|ALL

3.14 Replay Function Settings

Table 3.14-1 lists device messages for setting the Replay function.

Table 3.14-1 Replay function settings

Function	Command	Query	Response	Remarks
Stop Replay	MMEM:LOAD:IQD:STOP	---	---	
Execute Replay	MMEM:LOAD:IQD filename,device,application	---	---	filename: File name device: Drive name application: Application name
Replaying File Information Query	---	MMEM:LOAD:IQD:INF?	filename,start_time,time_length	filename: File name start_time: Data start time time_length: Data time length
Replay Execute Query	---	MMEM:LOAD:IQD:INF:STAT?	switch	Switch: Replay function On/Off state = 1|0
Replay Filename Query	---	MMEM:LOAD:IQD:INF:FILE?	filename	filename: File name
Replay Device Query	---	MMEM:LOAD:IQD:INF:DEV?	device	device: Drive name
Replay Application Query	---	MMEM:LOAD:IQD:INF:APPL?	application	application: Application name
Replay Start Time Query	---	MMEM:LOAD:IQD:INF:STAR?	start_time	start_time: Data start time
Replay Time Length Query	---	MMEM:LOAD:IQD:INF:LENG?	time_length	time_length: Data time length
Replay Level Over Query	---	MMEM:LOAD:IQD:INF:COND?	switch	switch: Level Over On/Off state = 1|0

Table 3.14-1 Replay function settings (Cont'd)

Function	Command	Query	Response	Remarks
Replay Error Query	---	MMEM:LOAD:IQD:INF:ERR?	switch	switch: Error icon On/Off state = 1|0
Replay Correction Query	---	MMEM:LOAD:IQD:INF:CORR?	real	real: Correction value
Replay External Reference Query	---	MMEM:LOAD:IQD:INF:ROSC?	source	source: Frequency reference signal source = INT|INTU|EXT|EXTU

3.15 Sub Trace Settings

Table 3.15-1 lists device messages for setting a sub-trace.

Table 3.15-1 Sub trace settings

Function	Command	Query	Response	Remarks
Change Sub Trace	CALC:STR:MODE trace	CALC:STR:MODE?	trace	trace: Trace type = OFF|PVT|SPGR
Sub Trace Detection Mode	CALC:STR:DET mode	CALC:STR:DET?	mode	mode: Detection mode = NORM|POS|NEG|AVER
Sub Trace Analysis Time Auto/Manual	CALC:STR:ATIM:AUTO switch_com	CALC:STR:ATIM:AUTO?	switch_res	switch_com: = ON|OFF|1|0
Sub Trace Analysis Start Time	CALC:STR:ATIM:STAR time	CALC:STR:ATIM:STAR?	time	time: Analysis start time
Sub Trace Analysis Start Sample	CALC:STR:ATIM:STAR:SAMP integer	CALC:STR:ATIM:STAR:SAMP?	integer	integer: Analysis sample length
Sub Trace Analysis Time Length	CALC:STR:ATIM:LENG time	CALC:STR:ATIM:LENG?	time	time: Analysis time length
Sub Trace Analysis Sample Length	CALC:STR:ATIM:LENG:SAMP integer	CALC:STR:ATIM:LENG:SAMP?	integer	integer: Analysis sample length
Sub Trace Log Scale Level Full Scale	DISP:WIND:STR:Y:PDIV :RANG:LOG rel_ampl	DISP:WIND:STR:Y:PDIV :RANG:LOG?	rel_ampl	
Sub Trace Linear Scale Level Full Scale	DISP:WIND:STR:Y:PDIV :RANG:LIN percent	DISP:WIND:STR:Y:PDIV :RANG:LIN?	percent	
Sub Trace Resolution Bandwidth	CALC:STR:BAND bandwidth	CALC:STR:BAND?	bandwidth	bandwidth: RBW

Table 3.15-1 Sub trace settings (Cont'd)

Function	Command	Query	Response	Remarks
Sub Trace Resolution Bandwidth Auto/Manual	CALC:STR:BAND:AUTO switch_com	CALC:STR:BAND:AUTO?	switch_res	switch_com: = ON|OFF|1|0
Sub Trace Result Delay Query	---	CALC:STR:TRIG:DIGR:DEL?	sample	

3.16 Reference Signal Settings

Device messages for setting reference signal are shown in Table 3.16-1.

Table 3.16-1 Reference signal settings

Function	Command	Query	Response	Remarks
Adjust Reference Clock	REFCLOCK_ADJUST value	REFCLOCK_ADJUST?	value	value: Adjustment value
	REFCLOCK_ADJUST PRESET	---	---	

3.17 Power Adjustment

The device message for setting power adjustment are shown in Table 3.17-1.

Note:

MS2850A does not support this function.

Table 3.17-1 Power adjustment settings

Function	Command	Query	Response	Remarks
Measure Power Adjust		MEA:POW? span,length,sg_start_level,sg_max_level, target,range[,frequency [,count [,adjust_log] [,sg_offset_switch]]]]	judge,sa_input,sg_output,count_res,time,sa_input_log_n, sg_output_log_n,count_log_n	

3.18 Other Settings

Table 3.18-1 lists device messages for other settings.

Table 3.18-1 Other setting messages

Function	Command	Query	Response	Remarks
Erase Warm Up Message	ERASEWUP	---	---	
Display Title	TTL on_off	TTL?	on_off	
Entry Title Character	TITLE string	TITLE?	string	string: Character string to be displayed
Captured Data Query	---	DATA? start,length	datai_1,dataq_1,datai_2,dataq_2,... (When ASCii, 0 is set to FORM) #ab<b bytes of data> (When REAL, 32 is set to FORM)	a: Byte length of binary data b: Number of byte
Binary Data Byte Order	FORM:BORD border	FORM:BORD? (Only when REAL,32 is set to FORM)	border (Only when REAL,32 is set to FORM)	border: Byte Order = NORM| SWAP
Numeric Data Format	FORM format,length	FORM?	format,length	

3.19 Setting External Mixer

Table 3.19-1 lists the device messages related to External Mixer settings.

Table 3.19-1 External Mixer Settings

Function	Command	Query	Response	Remarks
Mixer Mode	`MXRMODE mode`	`MXRMODE?`	`mode`	`mode:` Mixer mode `=EXT | INT`
External Mixer Band Select	`FULBAND band`	`FULBAND?`	`band`	`band:` External mixer band
External Mixer Bias	`MBIAS bias`	`MBIAS?`	`bias`	`bias:` External mixer's bias current `Range: 0.1 to 20.0 mA`
External Mixer Conversion Loss	`CNVLOSS power`	`CNVLOSS?`	`power`	`power:` Conversion Loss of External Mixer `Range: 0.00 to 99.99 dB`

Chapter 4 Native Device Message Details

This chapter describes detailed specifications on Native remote control commands for executing functions of this application in alphabetical order. Refer to the *MS2690A/MS2691A/MS2692A and MS2830A/MS2840A/MS2850A Signal Analyzer Operation Manual (Mainframe Remote Control)* for detailed specifications on IEEE488.2 common device messages and application common device messages.

AANLY/AANLY? 4-7
ACAP/ACAP? 4-8
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AANLY/AANLY?

Analysis Time Auto/Manual

Function

This command selects Auto/Manual mode for the Analysis Time of the main trace.

Command

```
AANLY auto_manual
```

Query

```
AANLY?
```

Response

```
auto_manual
```

Parameter

`auto_manual`	Auto/Manual mode of Analysis Time
`AUTO`	Auto
`MANUAL`	Manual

Details

Refer to the *MS2690A/MS2691A/MS2692A Signal Analyzer Operation Manual (Signal Analyzer function Operation)* or *MS2830A/MS2840A/MS2850A Signal Analyzer Operation Manual (Signal Analyzer function Operation)* for automatic setting operation.

Example of Use

To set the Analysis Time of the main trace manually.

```
AANLY MANUAL
```

ACAP/ACAP?

Capture Time Auto/Manual

Function

This command selects Auto/Manual mode for the waveform capture time of the active trace.

Command

```
ACAP auto_manual
```

Query

```
ACAP?
```

Response

```
auto_manual
```

Parameter

`auto_manual`	Auto/manual mode of capture time
`AUTO`	Auto
`MANUAL`	Manual

Details

When set to AUTO, the minimum waveform capture time required for measurement is set.

This command is not available while the Replay function is being executed.

Example of Use

To set the waveform Capture Time automatically.

```
ACAP AUTO
```

ADJCARRIERCNT/ADJCARRIERCNT?

ACP In Band Center

Function

This command sets the In Band center frequency for Adjacent Channel Power measurement.

Command

```
ADJCARRIERCNT freq
```

Query

```
ADJCARRIERCNT?
```

Response

`freq`

Returns a value in Hz units without a suffix code.

Parameter

`freq`		In Band center frequency
	Range	**[MS269xA, MS2830A, MS2840A]** 125 MHz centered at the center frequency of waveform capture **[MS2850A]** 1 GHz centered at the center frequency of waveform capture
	Resolution	1 Hz
	Suffix code	`HZ, KHZ, KZ, MHZ, MZ, GHZ, GZ` Hz is used when omitted.
	Default	Center Frequency

Details

This command is available when the following trace is active:

- Spectrum

Example of Use

To set In Band center frequency to 12.3 MHz.

```
ADJCARRIERCNT 12300000
```

ADJCARRIERNUM/ADJCARRIERNUM?

ACP Carrier Number

Function

This command sets the carrier number for Adjacent Channel Power measurement.

Command

```
ADJCARRIERNUM  n
```

Query

```
ADJCARRIERNUM?
```

Response

`n`

Returns a value without a suffix code.

Parameter

`n`		Carrier Number
	Range	1 to 12
	Resolution	1
	Suffix code	None
	Default	1

Details

This command is available when the following trace is active:

- Spectrum

This command is not available when ACP Reference is set to the following:

- Span Total

Example of Use

To set the carrier number to 12.

```
ADJCARRIERNUM  12
```

ADJCARRIERSPAC/ADJCARRIERSPAC?

ACP Carrier Spacing

Function

This command sets the frequency interval among carriers for Adjacent Channel Power measurement.

Command

```
ADJCARRIERSPAC freq
```

Query

```
ADJCARRIERSPAC?
```

Response

`freq`

Returns a value in Hz units without a suffix code.

Parameter

`freq`		Frequency interval among carriers
	Range	**[MS269xA, MS2830A, MS2840A]** 0 to 125 MHz **[MS2850A]** 0 to 1 GHz
	Resolution	1 Hz
	Suffix code	`HZ, KHZ, KZ, MHZ, MZ, GHZ, GZ` Hz is used when omitted.
	Default	5 MHz

Details

This command is available when the following trace is active:

- Spectrum

This command is not available when ACP Reference is set to the following:

- Span Total

Example of Use

To set the interval among carriers to 12.3 MHz.

```
ADJCARRIERSPAC 12300000
```

ADJCHBW/ADJCHBW?

ACP Offset Channel BW

Function

This command sets the bandwidth of the Offset Channel for Adjacent Channel Power measurement.

Command

```
ADJCHBW freq
```

Query

```
ADJCHBW?
```

Response

`freq`

Returns a value in Hz units without a suffix code.

Parameter

`freq`		Offset Channel bandwidth for Adjacent Channel Power measurement
	Range	**[MS269xA, MS2830A, MS2840A]** 1 Hz to 125 MHz **[MS2850A]** 1 Hz to 1 GHz
	Resolution	1 Hz
	Suffix code	`HZ, KHZ, KZ, MHZ, MZ, GHZ, GZ` Hz is used when omitted.
	Default	3.84 MHz

Details

This command is available when the following trace is active:

- Spectrum

Example of Use

To set the Offset Channel bandwidth to 3.84 MHz.

```
ADJCHBW 3840000
```

ADJCHSLCT/ADJCHSLCT?

ACP Channel Select

Function

This command selects the target Offset Channel for Adjacent Channel Power measurement.

Command

```
ADJCHSLCT ch,on_off
```

Query

```
ADJCHSLCT? ch
```

Response

```
on_off
```

Parameter

ch	Target Offset Channel for measurement
1	Offset Channel 1
2	Offset Channel 2
3	Offset Channel 3

on_off	Measurement ON/OFF
ON	To be measured
OFF	Not measured

Details

This command is available when the following trace is active:

- Spectrum

Example of Use

To set Offset Channel 2 for the measurement target.

```
ADJCHSLCT 2,ON
```

ADJCHSP/ADJCHSP?

ACP Offset Frequency

Function

This command sets the Offset Frequency of the Offset Channel for Adjacent Channel Power measurement.

Command

```
ADJCHSP ch,freq
```

Query

```
ADJCHSP? ch
```

Response

`freq`

Returns a value in Hz units without a suffix code.

Parameter

`ch`		Target offset channel for measurement
	`1`	Offset Channel 1
	`2`	Offset Channel 2
	`3`	Offset Channel 3
`freq`		Offset frequency for ACP measurement
	Range	**[MS269xA, MS2830A, MS2840A]** –125 to 125 MHz **[MS2850A]** –1 GHz to 1 GHz
	Resolution	1 Hz
	Suffix code	`HZ, KHZ, KZ, MHZ, MZ, GHZ, GZ` Hz is used when omitted.
	Default	
	Offset Channel 1	5 MHz
	Offset Channel 2	10 MHz
	Offset Channel 3	15 MHz

Details

This command is available when the following trace is active:

- Spectrum

Example of Use

To set the offset frequency of Offset Channel 1 to 50 MHz.

```
ADJCHSP 1,50000000
```

ADJFILTERTYPE/ADJFILTERTYPE?

ACP Filter Type

Function

This command sets the In Band filter or filter type of the Offset Channel for Adjacent Channel Power measurement.

Command

```
ADJFILTERTYPE filter,target
```

Query

```
ADJFILTERTYPE? target
```

Response

```
filter
filter,filter
```

(When the target is omitted: The former indicates the offset channel filter and the latter the In Band filter.)

Parameter

`filter`	Filter type
`RECT`	Rectangle filter
`NYQUIST`	Nyquist filter
`ROOTNYQUIST`	Root Nyquist filter
`target`	Filter to be set
`INBAND`	Sets the In Band filter.
`OFFSET`	Sets the offset channel filter.
When omitted:	Applies the same filter type to both the In Band and offset channel filters.

Details

This command is available when the following trace is active:

- Spectrum

Example of Use

To set the Offset Channel filter type to Nyquist.

```
ADJFILTERTYPE ROOTNYQUIST,OFFSET
```

ADJINBW/ADJINBW?

ACP Carrier BW

Function

This command sets the carrier measurement bandwidth for Adjacent Channel Power measurement.

Command

```
ADJINBW freq
```

Query

```
ADJINBW?
```

Response

`freq`

Returns a value in Hz units without a suffix code.

Parameter

`freq`	Carrier measurement bandwidth
Range	**[MS269xA, MS2830A, MS2840A]** 1 Hz to 125 MHz **[MS2850A]** 1 Hz to 1 GHz
Resolution	1 Hz
Suffix code	`HZ, KHZ, KZ, MHZ, MZ, GHZ, GZ` Hz is used when omitted.
Default	3.84 MHz

Details

This command is available when the following trace is active:

- Spectrum

This command is not available when ACP Reference is set to the following:

- Span Total

Example of Use

To set the carrier measurement bandwidth to 3.84 MHz.

```
ADJINBW 3840000
```

ADJPWRTYPE/ADJPWRTYPE?

ACP Power Result Type

Function

This command switches the result display type for Adjacent Channel Power measurement.

Command

```
ADJPWRTYPE mode
```

Query

```
ADJPWRTYPE?
```

Response

```
mode
```

Parameter

mode	Result display type
CARRIER	Sets the result display for Adjacent Channel Power measurement to Carrier Power.
OFFSET	Sets the result display for Adjacent Channel Power measurement to Offset Channel Power.

Details

This command is available when the following trace is active:

- Spectrum

Example of Use

To set the result display for Adjacent Channel Power measurement to Carrier Power.

```
ADJPWRTYPE CARRIER
```

ADJROF/ADJROF?

ACP Rolloff Factor

Function

This command sets the rolloff ratio of the In Band filter and/or Offset Channel filter for Adjacent Channel Power measurement.

Command

```
ADJROF ratio,target
```

Query

```
ADJROF? target
```

Response

```
ratio
ratio,ratio
```

(When the target is omitted: The former indicates the offset channel filter rolloff ratio, and the latter the In Band filter rolloff ratio.)

Parameter

`ratio`	Filter rolloff ratio
Range	0.01 to 1.00
Resolution	0.01
Default	0.22
`target`	Setting target
`INBAND`	Sets the rolloff ratio of In Band filter.
`OFFSET`	Sets the rolloff ratio of Offset Channel filter.
When omitted:	Applies the same rolloff ratio to both the In Band and offset channel filters.

Details

This command is available when the following trace is active:

- Spectrum

This command is available when the target ACP filter type is set to either of the following:

- Nyquist
- Root Nyquist

The In Band filter rolloff ratio cannot be set when ACP Reference is set to the following:

- Span Total

Example of Use

To set the filter rolloff ratio to 0.13.

```
ADJROF 0.13
```

AFLTR/AFLTR?

Filter Auto/Manual

Function

This command switches between auto and manual for filter bandwidth.

Command

```
AFLTR auto_manual
```

Query

```
AFLTR?
```

Response

```
auto_manual
```

Parameter

`auto_manual`	Auto/manual filter bandwidth setting
`AUTO`	Sets filter bandwidth automatically
`MANUAL`	Sets filter bandwidth manually

Details

This command is available when the following trace is active:

- Frequency vs Time

Example of Use

To set filter bandwidth automatically.

```
AFLTR AUTO
```

AM/AM?

Measure AM Depth

Function

This command performs the AM Depth measurement.

Command

```
AM switch_com
```

Query

```
AM?
```

Response

```
switch_res
```

Parameter

`switch_com`	AM Depth measurement On/Off
`ON`	Sets AM Depth measurement to On.
`1`	Same as above
`OFF`	Sets AM Depth measurement to Off.
`0`	Same as above
`switch_res`	AM Depth measurement On/Off
`1`	On
`0`	Off

Details

This command is available when the following trace is active:

- Power vs Time

Example of Use

To set the AM Depth measurement to On.

```
AM ON
AM?
> 1
```

ANLYFREQRANGE?

Maximum Frequency Range Query

Function

This command queries the maximum value of the frequency display range.

Query

```
ANLYFREQRANGE?
```

Response

`freq`

No suffix code. Value is returned in Hz units.

Details

This command is available when the following trace is active:

- Frequency vs Time

Example of Use

To query the maximum value of the frequency display range.

```
ANLYFREQRANGE?
```

ANLYLEN/ANLYLEN?

Analysis Time Length

Function

This command sets the analysis time length for the main trace.

Command

```
ANLYLEN time
```

Query

```
ANLYLEN?
```

Response

`time`

No suffix code. Value is returned in ms units.

Parameter

`time`	Analysis time length
Range and resolution	Refer to the *MS2690A/MS2691A/MS2692A Signal Analyzer Operation Manual (Signal Analyzer function Operation)* or *MS2830A/MS2840A/MS2850A Signal Analyzer Operation Manual (Signal Analyzer function Operation)* for details.
Suffix code	NS,US,MS,S

Details

This command is not available in the following cases:

- When the Analysis Start Time is set to the maximum value.
- When Terminal is DigRF 3G (only for MS269x Series).

Example of Use

To set the Analysis Time length for the main trace to 12 ms.

```
ANLYLEN 12
```

ANLYST/ANLYST?

Analysis Start Time

Function

This command sets the Analysis Start Time for the main trace.

Command

```
ANLYST time
```

Query

```
ANLYST?
```

Response

`time`

Returns a value in ms units without a suffix code.

Parameter

`time`		Start time
	Range and resolution	Refer to the *MS2690A/MS2691A/MS2692A Signal Analyzer Operation Manual (Signal Analyzer function Operation)* or *MS2830A/MS2840A/MS2850A Signal Analyzer Operation Manual (Signal Analyzer function Operation)* for details.
	Suffix code	NS,US,MS,S ms is used when omitted.

Details

This command is not available in the following cases:

- When the Analysis Start Time is set to the maximum value.
- When Terminal is set to DigRF 3G (only for MS269x Series).

Example of Use

To set the analysis start time to 12 ms.

```
ANLYST 12
```

AT/AT?

Attenuator

Function

This command sets the RF attenuator.

Command

```
AT att
AT action
```

Query

```
AT?
```

Response

```
att
```

Returns a value in dB units without a suffix code.

Parameter

`att`	Attenuator value
Range	0 to 60 dB
Resolution	**[MS269xA], [MS2850A]** 2 dB **[MS2830A]**, **[MS2840A]** 2 dB or 10 dB Refer to "Table 2.3.2-3 Resolution of Input Attenuator" in the *MS2830A/MS2840A/MS2850A Signal Analyzer Operation Manual (Signal Analyzer Function Operation)*.
Suffix code	DB, dB is used even when omitted.
Default	10 dB
`action`	Changes RF attenuator settings
`AUTO`	Automatically set according to the reference levels and other settings.
`UP`	Increases 1 step
`DN`	Decreases 1 step

Details

This command is not available in the following cases:

- When the Analysis Time Length is set to the maximum value.
- When Terminal is DigRF 3G (only for MS269x Series).
- When the Replay function is being executed.

Example of Use

To set the attenuator to 30 dB.

```
AT 30
```

AUNITS/AUNITS?

Log Scale Unit

Function

This command sets the level display unit system at log scale.

Command

```
AUNITS unit
```

Query

```
AUNITS?
```

Response

```
unit
```

Parameter

`unit`	Level display unit system at log scale
`DBM`	dBm
`DBUV`	dBμV
`DBMV`	dBmV
`DBUVE`	dBμV (emf)
`DBUVM`	dBμV/m
`V`	V
`W`	W

Details

This command is available when Scale Mode is set to Log.
If V (W) is selected and a measurement result is 99.999 GV (GW) or more, 99.999 GV (GW) or more is displayed.

Example of Use

To set the level display unit system at log scale to dBmV.

```
AUNITS DBMV
```

BNDSP/BNDSP?

Frequency Band Mode

Function

This command sets the frequency band path. The frequency at which the path is switched to the preselector band or a path that does not pass through the preselector can be set with this function.

Command

```
BNDSP mode
```

Query

```
BNDSP?
```

Response

```
mode
```

Parameter

`mode`	Frequency band mode

[MS269xA]

`NORMAL`	Sets the frequency to be switched to the preselector band to 6.0 GHz.
`SPURIOUS`	Sets the frequency to be switched to the preselector band to 3.0 GHz.

[MS2830A-041/043/044/045], [MS2840A-041/044/046], [MS2850A]

`NORMAL`	Sets the frequency to be switched to the preselector band to 4.0 GHz.
`SPURIOUS`	Sets the frequency to be switched to the preselector band to 3.5 GHz.

Details

This command is not available in the following cases:

[MS269x]

- When using the MS2690A.
- Fixed to NORMAL when the Option 003/103 Extension of Preselector Lower Limit to 3 GHz is not installed in the MS2691A.
- SPURIOUS cannot be set when the Option 003/103 Extension of Preselector Lower Limit to 3 GHz is not installed in the MS2691A.
- SPURIOUS cannot be set when Frequency Span is ≥ 50 MHz.
- When Terminal is DigRF 3G (only for MS269x Series).
- When the Replay function is being executed.

[MS2830A], [MS2840A]

- This command is not available when used with the 3.6 GHz Signal Analyzer option.

Example of Use

To set the frequency to switch to the preselector band to 3.0 GHz.

```
BNDSP SPURIOUS
```

CAL

Calibration

Function

This command executes calibration.

Command

```
CAL mode
```

Parameter

`mode`	Calibration mode
`ALL`	Executes all calibrations
`LEVEL`	Executes Level CAL
`LOLEAK_SUPPRESS`	Executes local leak suppression
`BAND`	Executes inband calibration
`EXTRABAND`	Executes analysis bandwidth calibration within the current frequency.

Example of Use

To execute all calibrations.

```
CAL ALL
```

CALC

Calculate

Function

This command executes waveform analysis without capturing. Used to re-analyze the same captured waveform with different parameters.

Command

```
CALC
```

Details

This command can be executed only when the waveform Capture Time (ACAP command) is set to MANUAL.
When no waveform has captured, or when a parameter that requires re-capturing of the waveform is changed, executes both waveform capturing and analysis.
Other command or query is received while this function is being executed. If a command that requires re-capturing of a waveform or re-calculation of a trace is received, however, this function is paused during execution of such a command.
Note that this command does not support synchronized control in Continuous mode.

Example of Use

To obtain ACP measurement results with 0 to 10 ms and 90 to 100 ms for the same IQ data:

`TRCCHG SPECTRUM`	Displays Spectrum trace
`ACAP MANUAL`	Sets the waveform capture time manually
`CAPLN 100MS`	Sets the waveform capture time to 100 ms
`SNGLS`	Obtains IQ data
`*WAI`	Waits until end of query
`ANLYLEN 10MS`	Sets the analysis time length to 10 ms
`ANLYST 0S`	Sets the analysis start time to 0 s
`MEAS ADJ`	Sets ACP measurement to ON
`CALC`	Starts analysis
`*WAI`	Waits until end of analysis
`RES?`	Obtains ACP measurement result
`ANLYLEN 10MS`	Sets the analysis time length to 10 ms
`ANLYST 90MS`	Sets the analysis start time to 90 ms
`MEAS ADJ`	Sets ACP measurement to ON
`CALC`	Starts analysis
`*WAI`	Waits until end of analysis
`RES?`	Obtains ACP measurement result.

CALC:ANAL:SPEC

Analyze with Spectrum Trace

Function

This command analyzes the range selected in Time 1 and Time 2 by using Spectrum trace.

Command

```
CALC:ANAL:SPEC
```

Details

This command is available when the following trace is active:

- Spectrogram

The command is not available when Marker is set to Off.

Example of Use

To analyze the range selected in Time 1 and Time 2 by using Spectrum trace.

```
CALC:ANAL:SPEC
```

CALC:ANAL:SPGR

Return To Spectrogram

Function

This command is used to return to Spectrogram trace from Spectrum trace.

Command

```
CALC:ANAL:SPGR
```

Details

If you return to Spectrogram by this command after you moved on to Spectrum by the Analyze with Spectrum Trace command, the same analysis length as in Spectrum is set in Spectrogram.
This command can be set only after the Analyze with Spectrum Trace command has been used. The command cannot be set, if you change the parameter to set the analysis length after you returned to Spectrum.
Refer to the *MS2690A/MS2691A/MS2692A Signal Analyzer Operation Manual (Signal Analyzer function Operation)* or *MS2830A/MS2840A/MS2850A Signal Analyzer Operation Manual (Signal Analyzer function Operation)* for details.

This command is not available in the following case:

- When Terminal is set to DigRF 3G (only for MS269x Series).

Example of Use

To return to Spectrogram trace.

```
CALC:ANAL:SPGR
```

CALC:ATIM:GMOD/CALC:ATIM:GMOD?

Gate Mode On/Off

Function

When the main trace is CCDF, this command selects whether or not to use the GateMode for analysis of only the specified section in the Analysis Time, as well as to read-out.

Command

```
CALC:ATIM:GMOD switch_com
```

Query

```
CALCul:ATIM:GMOD?
```

Response

```
switch_res
```

Parameter

`switch_com`	Gate Mode On/Off
`ON|1`	Sets Gate Mode to On
`OFF|0`	Sets Gate Mode to Off
`switch_res`	
`1`	Gate Mode: On
`0`	Gate Mode: Off

Details

This function can be set when the CCDF trace is active.

Example of Use

To set CCDF Gate Mode to On:

```
CALC:ATIM:GMOD ON
```

To query CCDF Gate Mode settings:

```
CALC:ATIM:GMOD?
> 1
```

CALC:ATIM:GMOD:PER/CALC:ATIM:GMOD:PER?

Period

Function

When GateMode is On, this command sets or queries the Period setting for each range.

Command

```
CALC:ATIM:GMOD:PER time
```

Query

```
CALC:ATIM:GMOD:PER?
```

Response

Time
No suffix code
Returns the values in s unit

Parameter

<time>	Range setting cycle
Range/Resolution	Same as Analysis Time length For details, refer to *MS2690A/MS2691A/MS2692A Signal Analyzer Operation Manual (Signal Analyzer function Operation)* or *MS2830A/MS2840A/MS2850A Signal Analyzer Operation Manual (Signal Analyzer function Operation)*.
Suffix code	NS, US, MS, S, s is used when omitted.
Default	Analysis Time length value

Details

This function can be set when the following trace is active.

- CCDF
- When Gate Mode is On

Example of Use

To set the interval of the CCDF gate mode to 10 ms:

```
CALC:ATIM:GMOD:PER 10MS
```

To query the interval of the CCDF gate mode:

```
CALC:ATIM:GMOD:PER?
> 0.01000000
```

CALC:ATIM:GMOD:RANG:STAT/CALC:ATIM:GMOD:RANG:STAT?

Range State

Function

This command sets and queries each range On/Off.

Command

```
CALC:ATIM:GMOD:RANG:STAT
switch_com_1, switch_com_2, switch_com_3
```

Query

```
CALC:ATIM:GMOD:RANG:STAT?
```

Response

```
switch_res_1, switch_res_2, switch_res_3
```

Parameter

`switch_com_n`	Range n On/Off
`ON|1`	Sets Range_n to On
`OFF|0`	Sets Rnage_n to Off
Default	
Range1	On
Range2 to 3	Off
`switch_res n`	
`1`	Range_n: On
`0`	Range_n: Off

Details

All segments cannot be set to Off.
This function can be set when the CCDF trace is active.
Also, this function can be set when Gate Mode is On.

Example of Use

To set the range On/Off:

```
CALC:ATIM:GMOD:RANG:STAT ON,ON,OFF
```

To query the range On/Off:

```
CALC:ATIM:GMOD:RANG:STAT?
> 1,1,0
```

CALC:ATIM:GMOD:RANG:STAR/CALC:ATIM:GMOD:RANG:STAR?

Range Start Time

Function

This command sets and queries the start time of each range.

Command

```
CALC:ATIM:GMOD:RANG:STAR <time_n>
```

Query

```
CALC:ATIM:GMOD:RANG:STAR?
```

Response

```
time_1,time_2,time_3
```

Suffix code none, returns values in S unit

Parameter

`time_n`		Start time for each Range
	Range	0 to (Range setting period (Period) – Resolution)
	Resolution	Same as Analysis Time Length For details, refer to *MS2690A/MS2691A/MS2692A Signal Analyzer Operation Manual (Signal Analyzer Function Operation)* or *MS2830A/MS2840A/MS2850A Signal Analyzer Operation Manual (Signal Analyzer Function Operation)*.
	Suffix code	NS, US, MS, S S is used when the suffix code is omitted.
	Default	Range1 to 3 0

Details

This function can be set when the following trace is active.

- CCDF

Also, this function can be set when Gate Mode is On.

Example of Use

To set the start time of each range:

```
CALC:ATIM:GMOD:RANG:STAR 0,0.006,0.01
```

To query the start time of each range:

```
CALC:ATIM:GMOD:RANG:STAR?
> 0.00000000,0.00600000,0.01000000
```

CALC:ATIM:GMOD:RANG:STOP/CALC:ATIM:GMOD:RANG:STOP?

Range Stop Time

Function

This command sets and queries the stop time for each range.

Command

```
CALC:ATIM:GMOD:RANG:STOP time_1,time_2,time_3
```

Query

```
CALC:ATIM:GMOD:RANG:STOP?
```

Response

```
time_1,time_2,time_3
```

Parameter

`time_n` Stop time for each Range

Range	Resolution to Range setting period (Period)
Resolution	Same as Analysis Time Length For details, refer to *MS2690A/MS2691A/MS2692A Signal Analyzer Operation Manual (Signal Analyzer Function Operation)* or *MS2830A/MS2840A/MS2850A Signal Analyzer Operation Manual (Signal Analyzer Function Operation)*.
Suffix code	NS, US, MS, S S is used when the suffix code is omitted.
Default	Range1 to 3 100 ms

Details

This function can be set when the following trace is active.

- CCDF

Also, this function ca be set when Gate Mode is On.

Example of Use

To set the stop time for each range:

```
CALC:ATIM:GMOD:RANG:STOP 0.001,0.06,0.010
```

To query the stop time for each range:

```
:CALC:ATIM:GMOD:RANG:STOP?
> 0.00100000,0.06000000,0.01000000
```

CALC:ATIM:LENG:SAMP/CALC:ATIM:LENG:SAMP?

Analysis Sample Length

Function

This command sets the Analysis Sample Length for main trace when Terminal is DigRF 3G (only for MS269x Series).

Command

```
CALC:ATIM:LENG:SAMP point
```

Query

```
CALC:ATIM:LENG:SAMP?
```

Response

```
point
```

Parameter

point	Analysis sample length
Range	0 to Capture Time Length – Analysis Start Time
Resolution	1 sample

Details

This command is not available in the following cases:

- When Terminal is set to RF.
- When Analysis Start Sample is the maximum value.
- When the Replay function is being executed.

Example of Use

To set Analysis Sample Length of the main trace to 15360000.

```
CALC:ATIM:LENG:SAMP 15360000
```

CALC:ATIM:STAR:SAMP/CALC:ATIM:STAR:SAMP?

Analysis Start Sample

Function

This command sets the number of sample to Analysis Start Sample of the main trace when Terminal is DigRF 3G (only for MS269x Series).

Command

```
CALC:ATIM:STAR:SAMP point
```

Query

```
CALC:ATIM:STAR:SAMP?
```

Response

```
point
```

Parameter

`point`		Analysis start sample
	Range	0 to Capture Time Length – Analysis Time Length
	Resolution	1 sample

Details

This command is not available in the following cases:

- When Input Terminal is RF.
- When Analysis Sample Length is the maximum value.
- When the Replay function is being executed.

Example of Use

To set Analysis Start Sample to 15360000 sample.

```
CALC:ATIM:STAR:SAMP 15360000
```

CALC:CCDF:MODE/CALC:CCDF:MODE?

CCDF Meas Mode

Function

This command sets or reads the specified measurement method for the CCDF trace to be measured.

Command

```
CALC:CCDF:MODE <mode>
```

Query

```
CALC:CCDF:MODE?
```

Response

```
mode
```

Parameter

mode	Specified method for CCDF trace to be measured
TIME	Analyses Range data specified at Time Length
COUNT	Measures until specified data count reached

Details

This function can be set when the following trace is active.

- CCDF

Also, this function can be set when Capture Time is Auto.

Example of Use

To set specified CCDF trace measurement method to data count.

```
CALC:CCDF:MODE COUN
```

To read specified CCDF trace measurement method.

```
CALC:CCDF:MODE?
> COUN
```

Remarks

An error is displayed is this function is set when Capture Time is Manual. The error name is the same as the screen operation.

CALC:CCDF:COUN/CALC:CCDF:COUN?

Data Count

Function

This command specifies and queries the measurement target data count of the CCDF trace.

Command

```
CALC:CCDF:COUN sample
```

Query

```
CALC:CCDF:COUN?
```

Response

```
sample
```

Parameter

`sample`	Measurement target data count
Range	100 to 2000000000
Resolution	1 sample
Default	10000000

Details

This function can be set when the CCDF trace is active.
Also, this function can be set when CCDF Meas Mod is Count.

Example of Use

To set the measurement target data count of the CCDF trace to 5000000:

```
CALC:CCDF:COUN 5000000
```

CALC:CCDF:STOR:REF

Store Reference Trace

Function

This command records the current CCDF/APD waveform data in the internal memory as user-defined reference trace data.

Command

```
CALC:CCDF:STOR:REF
```

Details

This function can be set when the CCDF trace is active.

Example of Use

To record the current measurement result in the reference data.

```
CALC:CCDF:STOR:REF
```

CALC:CCDF:THR/CALC:CCDF:THR? <ampl>

CCDF Threshold

Function

This command sets the minimum level of the input signal for the CCDF measurement.

Command

```
CALC:CCDF:THR <ampl>
```

Query

```
CALC:CCDF:THR?
```

Parameter

<ampl>		Minimum level of input signal
	Range	–170 to reference level (Reference Level) dBm When the reference level offset value is On, it is added to the range.
	Resolution	0.01 dB
	Suffix code	DBM,DM dB is used when omitted.

Details

This command is available when the CCDF trace is active.
This command is not available in the case when Terminal is selected DigRF 3G (only for MS269x Series).

Example of Use

To set the minimum level to –20 dBm:

```
CALC:CCDF:THR -20
CALC:CCDF:THR?
> -20
```

CALC:CCDF:THR:STAT/CALC:CCDF:THR:STAT?

CCDF Threshold On/Off

Function

This command sets On/Off the minimum level setting for the CCDF measurement. When set to On, signals having a level less than the value specified by Threshold are excluded from the measurement target.

Command

```
CALC:CCDF:THR:STAT switch_com
```

Query

```
CALC:CCDF:THR:STAT?
```

Response

```
switch_res
```

Parameter

`switch_com`	Threshold On/off
`ON|1`	Sets Threshold to On.
`OFF|0`	Sets Threshold to Off.
`switch_res`	Threshold On/off
`1`	On
`0`	Off

Details

This command is available when the following trace is set to active:

- CCDF

This command is not available in the following condition:

- When Terminal is set to DigRF 3G (only for MS269x Series).

Example of Use

To set Threshold to On.

```
CALC:CCDF:THR:STAT ON
CALC:CCDF:THR:STAT?
> 1
```

CALC:IQD/CALC:IQD?

Input Source

Function

This command selects the Input Source for data analysis.

Command

```
CALC:IQD source
```

Query

```
CALC:IQD?
```

Response

```
source
```

Parameter

source	Input Source
COMP	Selects complex data of I and Q phases.
I	Selects I-phase data.
Q	Selects Q-phase data.

Details

This command is not available in the following cases:

- When Terminal is set to RF.
- Neither I phase nor Q can be set when Trace is Frequency vs Time.
- When the Replay function is being executed.

Example of Use

To set Input Source to Complex.

```
CALC:IQD COMP
```

CALC:MARK:AOFF

All Marker Off

Function

This command sets all markers to Off.

Command

```
CALC:MARK:AOFF
```

Example of Use

To set all markers to Off.

```
CALC:MARK:AOFF
```

CALC:MARK:COUP:ZONE/CALC:MARK:COUP:ZONE?

Couple Zone

Function

This command enables/disables sharing of the Zone Width setting.

Command

```
CALC:MARK:COUP:ZONE switch_com
```

Query

```
CALC:MARK:COUP:ZONE?
```

Response

```
switch_res
```

Parameter

`switch_com`	Zone Width setting sharing On/Off
`ON`	Enables setting sharing (On).
`1`	Same as above
`Off`	Disables setting sharing (Off).
`0`	Same as above
`switch_res`	Zone Width setting sharing On/Off
`1`	On
`0`	Off

Details

This command is available when the following trace is active:

- Spectrum

When set to On, the Zone Width setting is shared among markers.

Example of Use

To enable sharing of the Zone Width setting (On).

```
CALC:MARK:COUP:ZONE ON
CALC:MARK:COUP:ZONE?
> 1
```

CALC:MARK:PEAK:SORT:COUN/CALC:MARK:PEAK:SORT:COUN?

Search Peaks Number

Function

This command sets the number of searches when Search Peaks Sort Y/X is executed.

Command

```
CALC:MARK:PEAK:SORT:COUN integer
```

Query

```
CALC:MARK:PEAK:SORT:COUN?
```

Response

```
integer
```

Parameter

`integer`	Number of searches
Range	1 to 10
Resolution	1
Default	10

Details

This command is available when the following trace is active:

- Spectrum

Example of Use

To set the number of searches to 6.

```
CALC:MARK:PEAK:SORT:COUN 6
CALC:MARK:PEAK:SORT:COUN?
> 6
```

CALC:MARK:PEAK:SORT:X

Search Peaks Sort X

Function

This command sorts as many markers as the number set in Search Peaks Number by frequency (time) on the trace.

Command

```
CALC:MARK:PEAK:SORT:X
```

Details

This command is available when the following trace is active:

- Spectrum

This command cannot be executed when Marker Result is Integration or Density.

Note that this command does not support synchronized control in Continuous mode.

Example of Use

To sort the markers by frequency in order to query the marker values.

```
CALC:MARK:PEAK:SORT:X
*WAI
CALC:MARK:READ?
```

CALC:MARK:PEAK:SORT:Y

Search Peaks Sort Y

Function

This command sorts as many markers as the number set in Search Peaks Number by level on the trace.

Command

```
CALC:MARK:PEAK:SORT:Y
```

Details

This command is available when the following trace is active:

- Spectrum

This command cannot be executed when Marker Result is Integration or Density.

Note that this command does not support synchronized control in Continuous mode.

Example of Use

To query the marker value by sorting markers by level.

```
CALC:MARK:PEAK:SORT:Y
*WAI
CALC:MARK:READ?
```

CALC:MARK:READ?

Marker Readout Query

Function

This command queries all the marker values.

Query

```
CALC:MARK:READ?
```

Response

```
freqs_1,power_1,freqs_2,power_2,...,
freqs_10,power_10
```
(For Spectrum trace)

```
time_1,power_1,time_2,power_2
```
(For Power vs Time trace)

```
sample_1,power_1,sample_2,power_2
```
(When trace is Power vs Time, and Terminal is set to DigRF 3G (only for MS269x Series))

```
time_1,freqf_1,time_2,freqf_2
```
(For Frequency vs Time trace)

```
sample_1,freqf_1,sample_2,freqf_2
```
(When trace is Frequency vs Time, and Terminal is set to DigRF 3G (only for MS269x Series))

```
time_1,degree_1,time_2,degree_2
```
(For Phase vs Time trace)

```
sample_1,degree_1,sample_2,degree_2
```
(When trace is Phase vs Time, and Terminal is set to DigRF 3G (only for MS269x Series))

```
dist,prob
```
(For CCDF trace)

```
freqs_1,time_1,power_1,freqs_2,time_2,power_2
```
(For Spectrogram trace)

Parameter

`freqs_n` Frequency of Marker n

No suffix code, Hz units, 0.1 Hz resolution

–999999999999 is returned when no measurement is performed, an error has occurred, or marker is set to Off.

`power_n` Level of Marker n

(When marker level display units are dB-system units)

No suffix code, in units specified by Scale Unit, 0.001 dB resolution

–999.0 is returned when no measurement is performed, an error has occurred, or marker is set to Off.

(When marker level display units are V-system units)

No suffix code, V units, 0.01 pV resolution

–999.0 is returned when no measurement is performed, an error has occurred, or marker is set to Off.

(When marker level display units are W-system units)

No suffix code, W units, 0.01 yW resolution

–999.0 is returned when no measurement is performed, an error has occurred, or marker is set to Off.

(When marker level display units are X-multiple-system units)

No suffix code, 0.0001 resolution. For no magnification, 1 is returned.

–999.0 is returned when no measurement is performed, an error has occurred, or marker is set to Off.

`time_n` Time of Marker n

No suffix code, s units, 1 ns resolution

–999999999999 is returned when no measurement is performed, an error has occurred, or marker is set to Off.

`sample_n` Sample of Marker n

No suffix code, 1 sample resolution

–999999999999 is returned when no measurement is performed, an error has occurred, or marker is set to Off.

`freqf_f` Frequency of Marker n

No suffix code, Hz units, 0.01 Hz resolution

–999999999999 is returned when no measurement is performed, an error has occurred, or marker is set to Off.

`degree` Position of Marker n

No suffix code, degree units, 0.001 degree resolution

999999999999 is returned when no measurement is performed, an error has occurred, or marker is set to Off.

`dist` Position of Marker n

No suffix code, dB units, 0.01 dB resolution

–999999999999 is returned when no measurement is performed, an error has occurred, or marker is set to Off.

`prob` Probability of Marker n

No suffix code, % units, 0.0001% resolution

–999999999999 is returned when no measurement is performed, an error has occurred, or marker is set to Off.

Example of Use

To query all marker values (Spectrum).

```
CALC:MARK:READ?
> 1000000.0,-15.321,1100000.0,-23.000,
1200000.0,-15.321,1300000.0,-12.680,
1400000.0,-5.622,1500000.0,-65.056,
1600000.0,-26.534,1700000.0,-34.264,
1800000.0,-35.644,-999999999999,-999.0
```

CALC:MARK:REF/CALC:MARK:REF?

Relative To

Function

This command sets the reference marker when Marker Mode is set to Delta.

Command

```
CALC:MARK:REF marker,integer
```

Query

```
CALC:MARK:REF? marker
```

Response

```
integer
```

Parameter

`marker`	Target marker number
`1`	Marker1
`2`	Marker2
`3`	Marker3
`4`	Marker4
`5`	Marker5
`6`	Marker6
`7`	Marker7
`8`	Marker8
`9`	Marker9
`10`	Marker10
`integer`	Reference marker number
`1`	Marker1
`2`	Marker2
`3`	Marker3
`4`	Marker4
`5`	Marker5
`6`	Marker6
`7`	Marker7
`8`	Marker8
`9`	Marker9
`10`	Marker10
When omitted:	Active marker

Details

This command is available when the following trace is active:

- Spectrum

The setting target marker cannot be set to the reference marker.

Example of Use

To set the reference marker for Marker 2 to Marker 4.

```
CALC:MARK:REF 2,4
CALC:MARK:REF? 2
> 4
```

CALC:MARK:SLIN/CALC:MARK:SLIN?

Spot Line

Function

This command displays/hides the marker line when the zone type of the marker is set to Spot.

Command

```
CALC:MARK:SLIN switch_com
```

Query

```
CALC:MARK:SLIN?
```

Response

```
switch_res
```

Parameter

`switch_com`	Marker line display
`ON`	Displays the marker line.
`1`	Same as above
`OFF`	Hides the marker line.
`0`	Same as above
`switch_res`	Marker line display On/Off state
`1`	Marker line is displayed.
`0`	Marker line is hidden.

Details

This command is available when the following trace is active:

- Spectrum

Example of Use

To display the marker line.

```
CALC:MARK:SLIN ON
CALC:MARK:SLIN?
> 1
```

CALC:MARK:TABL/CALC:MARK:TABL?

Marker List

Function

This command selects the marker list display On/Off.

Command

```
CALC:MARK:TABL switch_com
```

Query

```
CALC:MARK:TABL?
```

Response

```
switch_res
```

Parameter

switch_com	Marker list display On/Off
ON	Sets the marker list display to On.
1	Same as above
OFF	Sets the marker list display to Off.
0	Same as above
switch_res	Marker list display On/Off state
1	On
0	Off

Details

This command is available when the following trace is active:

- Spectrum

Example of Use

To set the marker list display to On.

```
CALC:MARK:TABL ON
CALC:MARK:TABL?
> 1
```

CALC:MARK:WIDT:TYPE/CALC:MARK:WIDT:TYPE?

Zone Width Type

Function

This command sets the zone type of the marker.

Command

```
CALC:MARK:WIDT:TYPE marker,type
```

Query

```
CALC:MARK:WIDT:TYPE? marker
```

Response

```
type
```

Parameter

type	Zone type
ZONE	Zone marker
SPOT	Spot marker
marker	Marker type
1	Marker1
2	Marker2
3	Marker3
4	Marker4
5	Marker5
6	Marker6
7	Marker7
8	Marker8
9	Marker9
10	Marker10

Details

This command is available when the following trace is active:

- Spectrum
- Spectrogram (Unavailable for Marker 3 to 10)

This command is not available when Marker Result is Peak (Fast) or Peak (Accuracy).

Example of Use

To query a marker value by setting the zone type of the active marker to zone marker.

```
CALC:MARK:WIDT:TYPE 1,ZONE
*WAI
MKL?
```

CALC:MARK:X/CALC:MARK:X?

Marker Frequency

Function

This command moves the center of the marker to the specified frequency (time). This command queries the center of the marker.

Command

`CALC:MARK:X marker, freq`

(At spectrum, spectrogram trace)

`CALC:MARK:X marker, time`

(At Power vs Time, Frequency vs Time, Phase vs Time trace)

`CALC:MARK:X marker, sample`

(When performing a Power vs Time, Frequency vs Time, or Phase vs Time trace for the MS269x series with the DigRF 3G terminal)

`CALC:MARK:X marker, dist`

(At CCDF trace)

Query

`CALC:MARK:X? marker`

Response

`freq`

(At spectrum, spectrogram trace)

`time`

(At Power vs Time, Frequency vs Time, Phase vs Time trace)

`sample`

(When performing a Power vs Time, Frequency vs Time, or Phase vs Time trace for the MS269x series with the DigRF 3G terminal)

`dist`

(When Trace Mode is set to CCDF and Marker Axis is set to Distribution.

`dist_result`

(When Trace Mode is set to CCDF and Marker Axis is set to Probability.

Parameter

(At Spectrum trace)

`marker`	Marker number
`1`	Specifies marker 1
`2`	Specifies marker 2
`3`	Specifies marker 3
`4`	Specifies marker 4
`5`	Specifies marker 5
`6`	Specifies marker 6
`7`	Specifies marker 7
`8`	Specifies marker 8
`9`	Specifies marker 9
`10`	Specifies marker 10
When omitted	Specifies marker 1

(At Power vs Time, Frequency vs Time, Phase vs Time, CCDF, or Spectrogram trace)

`marker`	Marker number
`1`	Specifies Marker 1 (except CCDF) Specifies horizontal marker (CCDF)
`2`	Specifies Marker 2 (except CCDF) Cannot be specified when trace is CCDF.
When omitted	Specifies Marker 1 (except CCDF) Specifies horizontal marker (CCDF)
`freq`	Center Frequency of the marker
Range/Resolution	Within the frequency range of trace display For details, refer to *MS2690A/MS2691A/MS2692A Signal Analyzer Operation Manual (Signal Analyzer Function Operation)* or *MS2830A/MS2840A/MS2850A Signal Analyzer Operation Manual (Signal Analyzer Function Operation)*.
Suffix code	`HZ, KHZ, KZ, MHZ, MZ, GHZ, GZ` Hz is used when omitted.
`time`	Marker position
Range/Resolution	Within the time range of trace display For details, refer to *MS2690A/MS2691A/MS2692A Signal Analyzer Operation Manual (Signal Analyzer Function Operation)* or *MS2830A/MS2840A/MS2850A Signal Analyzer Operation Manual (Signal Analyzer Function Operation)*.
Suffix code	`NS, US, MS, S` S is used when the suffix code is omitted.

`sample`	Marker position
Range/Resolution	Within the sample range of trace display For details, refer to *MS2690A/MS2691A/MS2692A Signal Analyzer Operation Manual (Signal Analyzer Function Operation)* or *MS2830A/MS2840A/MS2850A Signal Analyzer Operation Manual (Signal Analyzer Function Operation)*.
`dist`	Marker position
Range/Resolution	Within the power deviation range of trace display For details, refer to *MS2690A/MS2691A/MS2692A Signal Analyzer Operation Manual (Signal Analyzer Function Operation)* or *MS2830A/MS2840A/MS2850A Signal Analyzer Operation Manual (Signal Analyzer Function Operation)*.
Suffix code	`DB` dB is used when omitted.
`dist_result`	Power deviation at marker position
Range/Resolution	Within the power deviation range of trace display For details, refer to *MS2690A/MS2691A/MS2692A Signal Analyzer Operation Manual (Signal Analyzer Function Operation)* or *MS2830A/MS2840A/MS2850A Signal Analyzer Operation Manual (Signal Analyzer Function Operation)*.
Suffix code	None. Value is returned in dB units. –999.0 is returned at no measurement or error.

Details

If the marker position is changed during a Spectrum trace, the target marker becomes the active marker. In addition, if Marker Mode is Fixed or Off, Normal is specified. If the marker position is changed during Power vs Time, Frequency vs Time, Phase vs Time, or Spectrogram, the target marker is set to On and changed to the active marker. In addition, the marker position is shared among Power vs Time, Frequency vs Time, Phase vs Time. During a CCDF trace, Marker Axis changes to Distribution.

When reading out a marker value after executing this command, use the *WAI command and execute synchronization control.

Note that synchronization control during the Continuous mode is not supported.

If using the MS269x Series, the settings for Power vs Time Frequency vs Time and Phase vs Time will be performed in units of samples when the terminal is set to DigRF 3G.

Example of Use

To move the center of Marker 2 to 100 MHz and query the marker value.

```
CALC:MARK:X 2, 100MHZ
*WAI
CALC:MARK:Y?
```

To query the center of Marker 2

```
CALC:MARK:X? 2
> 100000000.0
```

Related Command

This command has the same function as the following command.

```
CALC:ACP:MARK:X marker
CALC:CHP:MARK:X marker
CALC:OBW:MARK:X marker
CALC:BPOW:MARK:X marker
```

CALC:MARK:X:DELT/CALC:MARK:X:DELT?

Marker Query

Function

When in Spectrum trace, this command moves the center of the marker to the frequency specified by relative value. This command queries the center of marker in relative value. When in CCDF trace, this command queries the difference value of a Gaussian trace or reference trace.

Command

```
CALC:MARK:X:DELT marker, freq
```

(When in Spectrum trace)

Query

```
CALC:MARK:X:DELT? marker
```

Response

```
freq
```

(When in Spectrum trace, and Marker mode is Delta)

```
dist
```

(When Trace Mode is set to CCDF and Marker Axis is set to Distribution.

```
dist_result_gauss,dist_result_ref
```

(When Trace Mode is set to CCDF and Marker Axis is set to Probability.

Parameter

(At Spectrum trace)

marker	Marker Number
1	Specifies marker 1 (Spectrum)
2	Specifies marker 2 (Spectrum)
3	Specifies marker 3 (Spectrum)
4	Specifies marker 4 (Spectrum)
5	Specifies marker 5 (Spectrum)
6	Specifies marker 6 (Spectrum)
7	Specifies marker 7 (Spectrum)
8	Specifies marker 8 (Spectrum)
9	Specifies marker 9 (Spectrum)
10	Specifies marker 10 (Spectrum)
When omitted	Specifies marker 1 (Spectrum)

(At CCDF trace)

marker	Marker Number
1	Marker set in Marker Axis
When omitted:	Marker set in Marker Axis

`freq`	Marker position
Range/Resolution	Within the frequency range of trace display For details, refer to *MS2690A/MS2691A/MS2692A Signal Analyzer Operation Manual (Signal Analyzer Function Operation)* or *MS2830A/MS2840A/MS2850A Signal Analyzer Operation Manual (Signal Analyzer Function Operation)*.
Suffix code	`HZ`, `KHZ`, `KZ`, `MHZ`, `MZ`, `GHZ`, `GZ` Hz is used when omitted.
`dist`	Marker position
Range/Resolution	Within the power deviation range of trace display For details, refer to *MS2690A/MS2691A/MS2692A Signal Analyzer Operation Manual (Signal Analyzer Function Operation)* or *MS2830A/MS2840A/MS2850A Signal Analyzer Operation Manual (Signal Analyzer Function Operation)*.
Suffix code	None. Value is returned in dB units.
`dist_result_gauss`	Difference from the Gaussian trace at the marker position
Range/Resolution	Within the power deviation range of trace display For details, refer to *MS2690A/MS2691A/MS2692A Signal Analyzer Operation Manual (Signal Analyzer Function Operation)* or *MS2830A/MS2840A/MS2850A Signal Analyzer Operation Manual (Signal Analyzer Function Operation)*.
Suffix code	None. Value is returned in dB units. –999.0 is returned at Gaussian trace off, no measurement, or error

`dist_result_ref`	Difference from the reference trace at the marker position
Range/Resolution	Within the power deviation range of trace display For details, refer to *MS2690A/MS2691A/MS2692A Signal Analyzer Operation Manual (Signal Analyzer Function Operation)* or *MS2830A/MS2840A/MS2850A Signal Analyzer Operation Manual (Signal Analyzer Function Operation)*.
Suffix code	None. Value is returned in dB units. –999.0 is returned at reference trace off, no measurement, or error

Details

This function can be set when the following trace is active.

- Spectrum
- CCDF

Example of Use

To query the delta marker value

```
CALC:MARK:X:DELT?
> 0.065
```

CALC:MARK:Y:DELT?

Marker Query

Function

This command queries the delta marker value of main trace.

Query

```
CALC:MARK:Y:DELT? marker
```

Response

`rel_ampl_spe`
(At Spectrum trace)

`ratio_spe`
(For a Spectrum trace when Scale Mode is set to Linear and Marker Result is set to Peak (Fast) or Peak (Accuracy))

`rel_ampl_pvt`
(At Power vs Time trace)

`ratio_pvt`
(At Power vs Time trace and when Scale Mode is set to Linear)

`freq`
(At Frequency vs Time trace)

`degree`
(At Phase vs Time trace)

`prob`
(At CCDF trace and Marker Axis is set to Probability.)

`prob_result_gauss,prob_result_ref`
(At CCDF trace and Marker Axis is set to Distribution.

Parameter

(At Spectrum trace)

`marker`	`Marker number`
`1`	Specifies marker 1
`2`	Specifies marker 2
`3`	Specifies marker 3
`4`	Specifies marker 4
`5`	Specifies marker 5
`6`	Specifies marker 6
`7`	Specifies marker 7
`8`	Specifies marker 8
`9`	Specifies marker 9
`10`	Specifies marker 10
When omitted	Specifies marker 1

(At Power vs Time, Frequency vs Time, Phase vs Time trace)

marker	Marker number
1	Marker 1 and 2 are targeted.
When omitted	Marker 1 and 2 are targeted.
rel_ampl_spe	Comparison of the marker selected by n and the Relative To target marker No suffix code. Value is returned in dB units. –999.0 is returned at no measurement or error –999.0 is returned when Marker Mode is set other than Delta.

(At CCDF trace)

marker	Marker Number
1	Marker set in Marker Axis
When omitted	The marker specified for Marker Axis is targeted.
rel_ampl_pvt	Comparison of Marker 1 and Marker 2 No suffix code. Value is returned in dB units. –999.0 is returned at no measurement or error
ratio_spe	Value of the marker selected by n or the Relative To target marker –999.0 is returned at no measurement or error. –999.0 is returned when Marker Mode is set other than Delta.
ratio_pvt	Marker 1 or Marker 2 value –999.0 is returned at no measurement or error
freq	Marker 2 frequency - Marker 1 frequency No suffix code. Value is returned in Hz units. –999999999999 is returned at no measurement or error
degree	Marker 2 frequency – Marker 1 frequency No suffix code. Value is returned in degree units. -999999999999 is returned if there is no measurement or an error.
prob	Marker position of the target marker A percentage value with no suffix code is returned. –999.0 is returned if there is no measurement or an error
prob_result_gauss	The difference value of the target marker and Gaussian trace is returned. A percentage value with no suffix code is

returned.
–999.0 is returned if the Gaussian trace is off, there is no measurement, or there is an error.

`prob_result_ref` The difference value of the target marker and reference trace is returned.
A percentage value with no suffix code is returned.
–999.0 is returned if the Gaussian trace is off, there is no measurement, or there is an error.

Details

This function can be set when the following trace is active.

- Spectrum
- Power vs Time
- Frequency vs Time
- Phase vs Time

Example of Use

To query the delta marker value

```
CALC:MARK:Y:DELT?
> 0.065
```

CALC:MARK:Y:PHAS?

Marker Phase Query

Function

Returns phase spectrum $\theta_k = \arg C_k$ [rad]

when marker position Fourier coefficient is C_k

However, $-\pi < \theta_k \leq \pi$

Query

```
CALC:MARK:Y:PHAS? marker
```

Response

```
phase
```

Parameter

`marker`	Marker Number
`1`	Specifies Marker 1
`2`	Specifies Marker 2
`3`	Specifies Marker 3
`4`	Specifies Marker 4
`5`	Specifies Marker 5
`6`	Specifies Marker 6
`7`	Specifies Marker 7
`8`	Specifies Marker 8
`9`	Specifies Marker 9
`10`	Specifies Marker 10
`phase`	Marker position phase spectrum
Suffix code	No suffix code, rad units
Resolution	0.0001 rad
	–999.0 is returned at no measurement or error

Details

–999.0 is returned when $|C_k| = 0$.

Returns phase spectrum of Zone Center position when Marker Result setting is Integration or Density.

Returns phase spectrum for marker positions in zone when Marker Result is Peak (Fast) or Peak (Accuracy) and Zone Type is Zone.

This function can be used in the following cases:

- At Spectrum trace
- When Marker Mode of target markers is Normal
- When Storage Mode is Normal
- When Noise Cancel is Off

When using this function, :CALCulate:PHASe:STATe must be set to ON.
(For details, refer to :CALCulate:PHASe:STATe.)

Although multiple Fourier transformations are performed when Analysis Time Length is longer than 0 s, the phase spectrum used for the measurement results is the one for the Fourier transform performed last in the analysis time range. For example, when Analysis Start Time is 1 s and Analysis Time Length is 3 s, the phase spectrum for the Fourier transform performed at 4 s is used for the measurement result.

Example of Use

To read phase spectrum at 6 GHz

```
CALC:PHAS:STAT ON
SNGLS
CALC:MARK:X 1,6GHZ
*WAI
CALC:MARK:Y:PHAS? 1
>1.4325
```

CALC:PHAS:STAT/CALC:PHAS:STAT?

Calculate Phase Spectrum

Function

This command sets phase spectrum calculation On and Off

Command

```
CALC:PHAS:STAT switch_com
```

Query

```
CALC:PHAS:STAT?
```

Response

```
switch_res
```

Parameter

`switch_com`	Sets phase spectrum calculation On and Off
`0|OFF`	Does not execute phase spectrum calculation (default setting)
`1|ON`	Executes phase spectrum calculation
`switch_res`	Sets phase spectrum calculation On and Off
`0`	Does not execute phase spectrum calculation
`1`	Executes phase spectrum calculation

Details

This function does not perform phase spectrum calculation at the Off → On switching instant. After setting to On, either execute one of the two commands below or read the phase spectrum after performing a single measurement.

```
SNGLS
CALC
```

The phase spectrum can be read using the following command:

```
CALC:MARK:Y:PHAS?
```

This function can be set when the Spectrum trace is active.

- `Spectrum`

Example of Use

To read phase spectrum at 6 GHz

```
CALC:PHAS:STAT ON
SNGLS
CALC:MARK:X 1,6GHZ
*WAI
CALC:MARK:Y:PHAS? 1
>1.4325
```

CALC:SMO:LENG:SAMP/CALC:SMO:LENG:SAMP?

Smoothing Sample Length

Function

This command sets the Smoothing Sample Length of the main trace when Terminal is DigRF 3G (only for MS269x Series).

Command

```
CALC:SMO:LENG:SAMP sample
```

Query

```
CALC:SMO:LENG:SAMP?
```

Response

```
sample
```

Parameter

`sample`	Smoothing Sample Length
Range	1 to 10000
Resolution	1 sample

Details

This command is available when the following trace is active:

- Power vs Time
- Frequency vs Time
- Phase vs Time

This command is not available in the following cases:

- When Terminal is RF.
- When the Replay function is being executed.

Example of Use

To set the Smoothing Sample Length to 500.

```
CALC:SMO:LENG:SAMP 500
```

CALC:STR:ATIM:AUTO/CALC:STR:ATIM:AUTO?

Sub Trace Analysis Time Auto/Manual

Function

This command selects whether to set the analysis time for sub traces automatically or manually.

Command

```
CALC:STR:ATIM:AUTO switch_com
```

Query

```
CALC:STR:ATIM:AUTO?
```

Response

```
switch_res
```

Parameter

`switch_com`	Auto/Manual
`ON|1`	Auto
`OFF|0`	Manual
`switch_res`	Auto/Manual
`1`	Auto
`0`	Manual

Details

This command is not available when the sub trace is set to Off.

Example of Use

To set the analysis time to the auto mode.

```
CALC:STR:ATIM:AUTO ON
CALC:STR:ATIM:AUTO?
> 1
```

CALC:STR:ATIM:LENG/CALC:STR:ATIM:LENG?

Sub Trace Analysis Time Length

Function

This command sets the analysis time length of the sub-trace.

Command

```
CALC:STR:ATIM:LENG time
```

Query

```
CALC:STR:ATIM:LENG?
```

Response

```
time
```

No suffix code. Value is returned in S units.

Parameter

`time`	Time analysis length
Range/Resolution	For details, refer to *MS2690A/MS2691A/MS2692A Signal Analyzer Operation Manual (Signal Analyzer function Operation)* or *MS2830A/MS2840A/MS2850A Signal Analyzer Operation Manual (Signal Analyzer function Operation)*.
Suffix code	`NS`, `US`, `MS`, `S` S is used when omitted.

Details

This command is not available when the analysis start time (Sub Trace Analysis Start Time) is set to the maximum value.

This command is not available in the following condition:

- When Terminal is set to DigRF 3G (only for MS269x Series).
- When the sub-trace is set to Off.

Example of Use

To set the analysis time length of the sub-trace to 12 ms.

```
CALC:STR:ATIM:LENG 12MS
CALC:STR:ATIM:LENG?
> 0.01200000
```

CALC:STR:ATIM:LENG:SAMP/CALC:STR:ATIM:LENG:SAMP?

Sub Trace Analysis Sample Length

Function

This command sets the sub trace analysis sample length when Terminal is set to DigRF 3G (only for MS269x Series).

Command

```
CALC:STR:ATIM:LENG:SAMP integer
```

Query

```
CALC:STR:ATIM:LENG:SAMP?
```

Response

```
integer
```

Parameter

`integer`	Analysis sample length
Range	0 to Capture Time Length – Analysis Start Time
Resolution	1 sample

Details

This command is not available when the analysis start position (Sub Trace Analysis Start Sample) is set to the maximum value.

This command is not available in the following condition:

- When Terminal is RF:
- When the sub-trace is set to Off.

Example of Use

To set the analysis sample length of the sub-trace to 15360000.

```
CALC:STR:ATIM:LENG:SAMP 15360000
CALC:STR:ATIM:LENG:SAMP?
> 15360000
```

CALC:STR:ATIM:STAR/CALC:STR:ATIM:STAR?

Sub Trace Analysis Start Time

Function

This command sets the analysis start time of the sub-trace.

Command

```
CALC:STR:ATIM:STAR time
```

Query

```
CALC:STR:ATIM:STAR?,
```

Response

```
time
```

Parameter

`time`	Time analysis length
Range/Resolution	For details, refer to *MS2690A/MS2691A/MS2692A Signal Analyzer Operation Manual (Signal Analyzer function Operation)* or *MS2830A/MS2840A/MS2850A Signal Analyzer Operation Manual (Signal Analyzer function Operation)*.
Suffix code	NS, US, MS, S S is used when omitted.

Details

This command is not available when the analysis time length (Sub Trace Analysis Time Length) is set to the maximum value.

This command is not available in the following cases:

- When Terminal is set to DigRF 3G (only for MS269x Series).
- When the sub-trace is set to Off.

Example of Use

To set the analysis start time to 12 ms.

```
CALC:STR:ATIM:STAR 12MS
CALC:STR:ATIM:STAR?
> 0.01200000
```

CALC:STR:ATIM:STAR:SAMP/CALC:STR:ATIM:STAR:SAMP?

Sub Trace Analysis Start Sample

Function

This command uses the number of samples to set the sub trace analysis start position when Terminal is set to DigRF 3G (only for MS269x Series).

Command

```
CALC:STR:ATIM:STAR:SAMP integer
```

Query

```
CALC:STR:ATIM:STAR:SAMP?
```

Response

```
integer
```

Parameter

`integer`		Sub trace analysis start position
	Range	0 to Capture Time Length – Analysis Time Length
	Resolution	1 sample

Details

This command is not available when the analysis start position (Sub Trace Analysis Start Sample) is set to the maximum value.

This command is not available in the following cases:

- When Terminal is RF.
- When the sub-trace is set to Off.

Example of Use

To set the analysis start position to 15360000 sample.

```
CALC:STR:ATIM:STAR:SAMP 15360000
CALC:STR:ATIM:STAR:SAMP?
> 15360000
```

CALC:STR:BAND/CALC:STR:BAND?

Sub Trace Resolution Bandwidth

Function

This command sets the resolution bandwidth (RBW) of the sub-trace.

Command

```
CALC:STR:BAND bandwidth
```

Query

```
CALC:STR:BAND?
```

Response

```
bandwidth
```

Parameter

`bandwidth`	Resolution bandwidth (RBW)
Range/Resolution	1 Hz to 10 MHz (1-3 sequence)
Suffix code	`HZ, KHZ, KZ, MHZ, MZ, GHZ, GZ` Hz is used when omitted.

Details

This command is available when the following sub-trace is set to active.

- Spectrogram

This command is not available when Terminal is set to DigRF 3G (only for MS269x Series).

The setting range is limited by the Frequency Span setting. For details, refer to *MS2690A/MS2691A/MS2692A Signal Analyzer Operation Manual (Signal Analyzer function Operation)* or *MS2830A/MS2840A/MS2850A Signal Analyzer Operation Manual (Signal Analyzer function Operation)*.

Example of Use

To set the resolution bandwidth of the sub-trace to 300 kHz.

```
CALC:STR:BAND 300KHZ
CALC:STR:BAND?
> 300000
```

CALC:STR:BAND:AUTO/CALC:STR:BAND:AUTO?

Sub Trace Resolution Bandwidth Auto/Manual

Function

This command selects whether to set the resolution bandwidth (RBW) for sub traces automatically or manually.

Command

```
CALC:STR:BAND:AUTO switch_com
```

Query

```
CALC:STR:BAND:AUTO?
```

Response

```
switch_res
```

Parameter

`switch_com`	Auto/Manual
`ON|1`	Sets the auto mode to On.
`OFF|0`	Sets the auto mode to Off.
`switch_res`	Auto/Manual
`1`	Auto mode is set to On.
`0`	Auto mode is set to Off.

Details

This command is not available when the following sub-trace is set to active.

- Spectrogram

This command is not available when Terminal is set to DigRF 3G (only for MS269x Series).

Example of Use

To enable automatic setting for the sub trace RBW.

```
CALC:STR:BAND:AUTO ON
CALC:STR:BAND:AUTO?
> 1
```

CALC:STR:DET/CALC:STR:DET?

Sub Trace Detection Mode

Function

This command selects the detection mode for waveform patterns of sub traces.

Command

```
CALC:STR:DET mode
```

Query

```
CALC:STR:DET?
```

Response

```
mode
```

Parameter

`mode`	Detection mode
`NORM`	Simultaneous detection of positive and negative peaks (unavailable for Spectrogram sub trace)
`POS`	Positive peak detection
`NEG`	Negative peak detection
`AVER`	Average value detection

Details

This command is not available when the sub-trace is set to Off.

Example of Use

To set the detection mode to positive peak detection.

```
CALC:STR:DET POS
CALC:STR:DET?
> POS
```

CALC:STR:MODE/CALC:STR:MODE?

Change Sub Trace

Function

This command sets the sub-trace type.

Command

```
CALC:STR:MODE trace
```

Query

```
CALC:STR:MODE?
```

Response

```
trace
```

Parameter

`trace`	Trace type
`OFF`	None
`PVT`	Power vs Time
`SPGR`	Spectrogram

Details

Spectrogram cannot be set when Scale Mode is set to Lin or when Terminal is set to DigRF 3G (only for MS269x Series).
This command is not available when Trace Mode is set to No Trace.

Example of Use

To set the sub-trace to Spectrogram.

```
CALC:STR:MODE SPGR
CALC:STR:MODE?
> SPGR
```

CALC:STR:TRIG:DIGR:DEL?

Sub Trace Result Delay Query

Function

This command queries the delay time of sub trace results in sample units.

Command

```
CALC:STR:TRIG:DIGR:DEL?
```

Response

```
sample
```

Details

When a trigger is used for DigRF 3G (only for MS269x Series), a delay may occur in the results because there is no pre-trigger. The number of samples from the analysis start sample point to the actual trigger point (trigger input + trigger delay) is queried as a delay.

Example of Use

To query the delay time in sample units.

```
CALC:STR:TRIG:DIGR:DEL?
```

CALC:TMAR:COUP:ZONE/CALC:TMAR:COUP:ZONE?

Couple Time Marker 1 and 2

Function

This command enables/disables sharing of the Time Marker setting.

Command

```
CALC:TMAR:COUP:ZONE switch_com
```

Query

```
CALC:TMAR:COUP:ZONE?
```

Response

```
switch_res
```

Parameter

switch_com	Time Marker setting sharing On/Off
ON	Enables setting sharing (On).
1	Same as above
OFF	Disables setting sharing (Off).
0	Same as above
switch_res	Time Marker setting sharing On/Off
1	On
0	Off

Details

This command is available when the following trace is active:

- Spectrogram

This command is not available when Marker Type is Spot.

Setting to On makes Time Marker 1 and Time Marker 2 move together.

Example of Use

To enable sharing of the Time Marker setting (On).

```
CALC:TMAR:COUP:ZONE ON
CALC:TMAR:COUP:ZONE?
> 1
```

CALC:TMAR:PEAK:X?

Time Marker Peak Query

Function

This command queries the time at the peak of Time Marker.

Query

```
:CALC:TMAR:PEAK:X?
```

Response

```
time
```

Parameter

n	Marker number
1	Marker 1
2	Marker 2

(When Marker Type is Spot, or when Marker Type is Zone and when Couple Time 1 and 2 are Off)

Range	Analysis Start Time to Analysis Start Time + Analysis Time Length

(When Marker Type is Zone and when Couple Time 1 and 2 are On)

Range	Greater value of Analysis Start Time and (Marker 1 – Marker 2 + Analysis Start Time) to Smaller value of (Analysis Start Time + Analysis Time Length) and ((Analysis Start Time + Analysis Time Length) – (Marker 2 – Marker 1))
Suffix code	None . Value is returned in s units.

Details

This command is available when the following trace is active:

- Spectrogram

This command is available when Marker Result is Peak.

Example of Use

To query the time at the peat of Time Marker.

```
CALC:TMAR:PEAK:X?
> 0.100000000
```

CALC:TMAR:X/CALC:TMAR:X?

Time Marker Position

Function

This command moves Time Marker to the specified time.

Command

```
CALC:TMAR:X n,time
```

Query

```
CALC:TMAR:X? n
```

Response

```
time
```

Parameter

n	Marker number
1	Time Marker 1
2	Time Marker 2
When omitted:	Time Marker 1
time	Marker position

(When Marker Type is Spot, or when Marker Type is Zone and when Couple Time 1 and 2 are Off)

Range	Analysis Start Time to Analysis Start Time + Analysis Time Length
Default	Analysis Start Time

(When Marker Type is Zone or when Couple Time 1 and 2 are On)

Range	From Analysis Start Time or (Marker 1 – Marker 2 + Analysis Start Time), whichever is greater, to (Analysis Start Time + Analysis Time Length) or ((Analysis Start Time + Analysis Time Length) – (Marker 2 – Marker 1)), whichever is smaller
Default	Analysis Start Time + Analysis Time Length/2
Suffix code	NS, US, MS, S S is used when omitted.

Details

Marker 2 cannot be set when Marker Type is set to Spot.

This command is available when the following trace is active:

- Spectrogram

Example of Use

To move the center point of Time Marker 1 to 100 ms.

```
CALC:TMAR:X 100MS
CALC:TMAR:X? 1
> 0.10000000
```

CALC:TRIG:DIGR:DEL?

Result Delay Query

Function

This command queries the delay time of the result by sample unit.

Query

```
CALC:TRIG:DIGR:DEL?
```

Response

```
sample
```

Details

Since there is no pre-trigger when the trigger is used with DigRF 3G (only for MS269x Series), there is a chance of delay in the results. Sample numbers from the sample point where the analysis has started to the actual trigger point (trigger input + trigger delay) will be read as a delay.

This command is not available in the following case:

- When Terminal is RF.

Example of Use

To query the delay time by sample unit. .

```
CALC:TRIG:DIGR:DEL?
```

CAPLN/CAPLN?

Capture Time Length

Function

This command sets waveform capture time.

Command

```
CAPLN time
```

Query

```
CAPLN?
```

Response

```
time
```

Parameter

`time` Capture time

Range and resolution

Refer to the *MS2690A/MS2691A/MS2692A Signal Analyzer Operation Manual (Signal Analyzer Function Operation)* or *MS2830A/MS2840A/MS2850A Signal Analyzer Operation Manual (Signal Analyzer Function Operation)* for details.

Suffix code `NS`, `US`, `MS`, `S`

ms is used when omitted.

Details

The shortest capture time length will be set if automatic setting is enabled.

The setting method is switched to the manual setting when capture time is set.

The setting range and resolution are limited by the Frequency Span setting.

This command is not available in the following cases:

- When Terminal is DigRF 3G (only for MS269x Series).
- When the Replay function is being executed.

Example of Use

To set waveform capture time to 2 seconds.

```
CAPLN 2S
```

CCDF:COUN/CCDF:COUN?

Data Count

Function

This command specifies and queries the measurement target data count of the CCDF trace.

Command

```
CCDF:COUN <sample>
```

Query

```
CCDF:COUN?
```

Response

```
sample
```

Parameter

`sample`	`Measurement target data count`
Range	100 to 2000000000
Resolution	1 sample
Default	10000000

Details

This function can be set when the CCDF trace is active.
Also, this function can be set when CCDF Meas Mode is Count.

Example of Use

To set the measurement target data count of the CCDF trace to 5000000:

```
CCDF:COUN 5000000
```

CCDF:GAUS/CCDF:GAUS?

Gaussian Trace

Function

This command sets whether to show or hide the Gaussian trace data during CCDF measurement.

Command

```
CCDF:GAUS switch
```

Query

```
CCDF:GAUS?
```

Parameter

`switch`

`ON|1`	To display Gaussian trace data.
`OFF|0`	Does not display Gaussian trace data.

Details

This function can be set when the CCDF trace is active.
However, this function cannot be set if Measure Method is APD.

Example of Use

To display Gaussian trace data.

```
CCDF:GAUS ON
```

To query Gaussian trace data display setting.

```
CCDF:GAUS?
> 0
```

CCDF:RTR/CCDF:RTR?

Reference Trace

Function

This command sets whether to show or hide the reference trace data recorded by a user during CCDF measurement.

Command

```
CCDF:RTR switch
```

Query

```
CCDF:RTR?
```

Parameter

`switch`

`ON|1`	Displays the reference trace data.
`OFF|0`	Does not display the reference trace data.

Details

This function can be set when the CCDF trace is active.
Nothing can be set when no reference trace data is recorded.

Example of Use

To display the reference trace data.

```
CCDF:RTR ON
```

To query the reference trace data display settings.

```
CCDF:RTR?
> 0
```

CHPWRCENTER/CHPWRCENTER?

Channel Power Channel Center Frequency

Function

This command sets the center frequency for Channel Power measurement.

Command

```
CHPWRCENTER freq
```

Query

```
CHPWRCENTER?
```

Response

```
freq
```

Parameter

`freq`		Channel center frequency
	Range	**[MS269xA, MS2830A, MS2840A]** 125 MHz centered at the center frequency of waveform capture **[MS2850A]** 1 GHz centered at the center frequency of waveform capture
	Resolution	1 Hz
	Suffix code	`HZ, KHZ, KZ, MHZ, MZ, GHZ, GZ` Hz is used when omitted.
	Default	Center frequency of waveform capture

Details

This command is available when the following trace is active:

- Spectrum

For reading out a measurement result after this command has been executed, use *WAI commands to perform synchronized control.

Example of Use

To set the Channel Power center frequency to 6.01 GHz and query the results.

```
CHPWRCENTER 6.01GHZ
*WAI
RES?
```

CHPWRFLTRTYP/CHPWRFLTRTYP?

Channel Power Filter Type

Function

This command sets the filter type for Channel Power measurement.

Command

```
CHPWRFLTRTYP filter
```

Query

```
CHPWRFLTRTYP?
```

Response

```
filter
```

Parameter

`filter`	Filter type
`RECT`	Rectangle filter
`NYQUIST`	Nyquist filter
`ROOTNYQUIST`	Root Nyquist filter

Details

This command is available when the following trace is active:

- Spectrum

For reading out a measurement result after this command has been executed, use *WAI commands to perform synchronized control.

Example of Use

To set the filter type to Nyquist filter and query the results.

```
CHPWRFLTRTYP NYQUIST
*WAI
RES?
```

CHPWRROF/CHPWRROF?

Channel Power Rolloff Factor

Function

This command sets the filter rolloff ratio for Channel Power measurement.

Command

```
CHPWRROF factor
```

Query

```
CHPWRROF?
```

Response

```
factor
```

Parameter

`factor`	Filter rolloff ratio
Range	0.01 to 1
Resolution	0.01
Default	0.22

Details

This command is available when the following trace is active:

- Spectrum

This command is available when the channel power filter type is set to either of the followings:

- Nyquist
- Root Nyquist

For reading out a measurement result after this command has been executed, use *WAI commands to perform synchronized control.

Example of Use

To set the filter rolloff ratio to 0.62 and query the results.

```
CHPWRROF 0.62
*WAI
RES?
```

CHPWRWIDTH/CHPWRWIDTH?

Channel Power Channel Bandwidth

Function

This command sets the channel bandwidth for Channel Power measurement.

Command

```
CHPWRWIDTH freq
```

Query

```
CHPWRWIDTH?
```

Response

```
freq
```

Parameter

`freq`	Channel bandwidth
Range	1 Hz to 125 MHz
Resolution	1 Hz
Suffix code	`HZ, KHZ, KZ, MHZ, MZ, GHZ, GZ` Hz is used when omitted.
Default	3.84 MHz

Details

This command is available when the following trace is active:

- Spectrum

For reading out a measurement result after this command has been executed, use *WAI commands to perform synchronized control.

Example of Use

To set the channel bandwidth to 1 MHz and query the results.

```
CHPWRWIDTH 1MHZ
*WAI
RES?
```

CNF/CNF?

Center Frequency

Function

This command sets the center frequency for waveform capturing.

Command

```
CNF freq
```

Query

```
CNF?
```

Response

```
freq
```

Parameter

`freq` Center frequency

Range

[MS269xA]

Without MS269xA-077/177/078/178, or frequency span ≤ 31.25 MHz
0 Hz to 6 GHz (MS2690A)
0 Hz to 13.5 GHz (MS2691A)
0 Hz to 26.5 GHz (MS2692A)

With MS269xA-077/177/078/178, and frequency span > 31.25 MHz
100 MHz to 6 GHz (MS2690A)
100 MHz to 13.5 GHz (MS2691A)

With MS269xA-077/177/078/178, without MS2692A-067/167, and frequency span > 31.25 MHz
100 MHz to 6 GHz (MS2692A)

With MS269xA-077/177/078/178, with MS2692A-067/167, and frequency span > 31.25 MHz
100 MHz to 26.5 GHz (MS2692A)

[MS2830A]

Without MS2830A-077/078, or frequency span ≤ 31.25 MHz
0 Hz to 3.6 GHz (Option 040)
0 Hz to 6.0 GHz (Option 041)
0 Hz to 13.5 GHz (Option 043)
0 Hz to 26.5 GHz (Option 044)
0 Hz to 43 GHz (Option 045)

With MS2830A-077/078, and frequency span > 31.25 MHz
300 MHz to 3.6 GHz (Option 040)
300 MHz to 6.0 GHz (Option 041)
300 MHz to 13.5 GHz (Option 043)

With MS2830A-077/078, without MS2830A-067/167, and frequency span > 31.25 MHz
300 MHz to 6 GHz (Option 044)
300 MHz to 6 GHz (Option 045)

With MS2830A-077/078, with MS2830A-067/167,
and frequency span > 31.25 MHz
300 MHz to 26.5 GHz (Option 044)
300 MHz to 43 GHz (Option 045)

[MS2840A]

Without MS2840A-077/177/078/178, or frequency span ≤ 31.25 MHz
0 Hz to 3.6 GHz (Option 040)
0 Hz to 6.0 GHz (Option 041)
0 Hz to 26.5 GHz (Option 044)
0 Hz to 44.5 GHz (Option 046)

With MS2840A-077/177/078/178, and frequency span ≤ 31.25 MHz
300 MHz to 3.6 GHz (Option 040)
300 MHz to 6.0 GHz (Option 041)

With MS2840A-077/177/078/178, without MS2840A-067/167,
and frequency span > 31.25 MHz
300 MHz to 6 GHz (Option 044)
300 MHz to 6 GHz (Option 046)

With MS2840A-077/177/078/178, with MS2840A-067/167,
and frequency span > 31.25 MHz
300 MHz to 26.5 GHz (Option 044)
300 MHz to 44.5 GHz (Option 046)

[MS2850A]

Without MS2850A-034/134, or frequency span ≤ 510 MHz
100 MHz to 32 GHz (Option 047)
100 MHz to 44.5 GHz (Option 046)

With MS2850A-034/134, and frequency span > 510 MHz
4.2 GHz to 32 GHz (Option 047)
4.2 GHz to 44.5 GHz (Option 046)

Resolution	1 Hz
Suffix code	`HZ`, `KHZ`, `KZ`, `MHZ`, `MZ`, `GHZ`, `GZ` Hz is used when omitted.
Default	
[MS269xA]	6.00 GHz (MS2690A/91A/92A)
[MS2830A]	3.6 GHz (Option 040/041/043/044/045)
[MS2840A]	3.6 GHz (Option 040/041/044/045)
[MS2850A]	3.6 GHz

Details

Limited by the Frequency Span setting.

When MS2690A/91/92A, MS2850A is used and Frequency Span is 50 MHz or more, the lower limit frequency is 100 MHz.

When MS2830A or MS2840A is used and Frequency Span is 50 MHz or more, the lower limit frequency is 300 MHz.

When MS2850A is used and Frequency Span is 1 GHz or more, the

lower limit frequency is 4.2 GHz.

This command is limited in the following case.

- When Terminal is DigRF 3G (only for MS269x Series), the center frequency is fixed to 0 Hz.

This command is not available while the Replay function is being executed.

Example of Use

To set the center frequency for waveform capturing to 12.3 MHz.

```
CNF 12300000
```

CNVLOSS/CNVLOSS?

External Mixer Conversion Loss

Function

This command sets the external mixer's conversion loss.

Command

```
CNVLOSS power
```

Query

```
CNVLOSS?
```

Response

```
power
```

Parameter

`power`	External mixer's conversion loss
Range	0.00 to 99.99 dB
Resolution	0.01 dB
Suffix code	None. Value is returned in dB units.
Default	15.00 dB

Details

This function is available only when Option 044/045 is installed for MS2830A.
This function is available only when Option 044/046 is installed for MS2840A.
This function is readily available for MS2850A.

A value is held per one external mixer's band.

Example of Use

To set the external mixer's conversion loss to 10.00 dB.

```
CNVLOSS 10.00
CNVLOSS?
> 10.00
```

CONF:AM

AM Depth Configure

Function

This command sets the AM Depth measurement to On.

Command

```
CONF:AM
```

Details

No measurement is performed.
Scale Mode is set to Linear and Detection is set to Pos&Neg, and Peak to Peak function is set to ON.

Example of Use

To set the AM Depth measurement to On.

```
CONF:AM
```

CONF:FM

FM deviation Configure

Function

This command sets the FM deviation measurement to On.

Command

```
CONF:FM
```

Details

No measurement is performed.
Scale Unit is set to ΔHz, Detection is set to Pos&Neg, and Peak to Peak function is set to ON.

Example of Use

To set the FM deviation measurement to On.

```
CONF:FM
```

CONF:FMCW

FM CW Configure

Function

This command sets the FM CW measurement to On.

Command

```
CONF:FMCW
```

Details

No measurement is performed.
Scale Unit is set to ΔHz, Detection is set to Pos&Neg.

Example of Use

To set the FM CW measurement to On.

```
CONF:FMCW
```

CONF:SAN

Measurement Off

Function

This command disables currently running measurement function.
No operation is made if no measurement function is running.

Command

```
CONF:SAN
```

Example of Use

To disable the currently running measurement function.

```
CONF:SAN
```

CONTS

Continuous Measurement

Function

This command executes continuous measurement.

Command

```
CONTS
```

Details

Other commands or queries are received while this function is being executed.
If a command that requires re-capturing of a waveform or re-calculation of a trace is received, however, this function is paused during execution of such command.
This command is not available while the Replay function is being executed.

Example of Use

To start continuous measurement.

```
CONTS
```

DATA?

Captured Data Query

Function

This command queries the IQ data captured into the waveform memory.

Query

```
DATA? start,length
```

Response

When ASC,0 is set to FORM:

```
datai_1,dataq_1,datai_2,dataq_2,...
```

When REAL,32 is set to :FORM, "#" (in the Ascii format) is followed by, in the following order, "Character string range which indicates the byte length of the binary data (in the Ascii format)", "Byte length of binary data (in the Ascii format)", and "IQ data string (in the binary format). Similarly, in the binary format, response message terminator is added. For details, refer to 1.8.2 Native Response Message Mode in the *MS2690A/MS2691A/MS2692A and MS2830A/MS2840A/MS2850A Signal Analyzer Operation Manual (Mainframe Remote Control)*.

Example: To read out two samples when REAL,32 is set to :FORM:
> #216<16 bytes of data>
"2" in #216 indicates that 2 characters with the binary data length follow, and "16" in it indicates that 16 Byte binary data follows.

Parameter

When the terminal is set to RF, the parameters are set as follows:

`start` Query starting point (in sample units)
Relative value from Analysis Start Time = 0 s
Relative value from minimum Analysis Start Time (when Replay function is executed)

Range: 0 to
(Analysis Start Time [s]
+ Analysis Time Length [s])
× Sampling Rate [Hz] – 1
(When Capture Time is Auto)
0 to
Capture Time Length [s] × Sampling Rate [Hz] – 1
(When Capture Time is Manual)

Resolution: 1

When omitted: 0

`length` Query length (in sample units)

Range
1 to
(Analysis Start Time [s]
+ Analysis Time Length [s])
× Sampling Rate[Hz] – <start>
(When Capture Time is Auto)
1 to
Capture Time Length [s] × Sampling Rate [Hz]
– <start>
(When Capture Time is Manual)
Up to 200000 can be set.

Resolution
1

When omitted:
(Analysis Start Time [s]
+ Analysis Time Length [s])
× Sampling Rate [Hz] – <start>
(When Capture Time is Auto)
Capture Time Length [s] × Sampling Rate [Hz]
– <start>
(When Capture Time is Manual)
If more than 200000 is set, then 200000 is automatically set.

`datai_n` I phase data
No suffix code
A parameter is read out in the index format of 8 digit effective figure when ASC,0 is set to :FORMat[:DATA].
A parameter is read out in the 32 bits single precision floating number point format, when REAL,32 is set to :FORMat [:DATA].

`dataq_n` Q data
No suffix code
A parameter is read out in the index format of 8 digit effective figure when ASC,0 is set to :FORMat[:DATA].

A parameter is read out in the 32 bits single precision floating number point format, when REAL,32 is set to :FORMat[:DATA].

When the terminal is DigRF 3G (only for MS269x Series), the parameters are set as follows:

`start` Same as when the terminal is RF:

`length` Same as when the terminal is RF:

`datai_n` I-phase data
No Suffix code
When ASCii,0 is set for :FORMat[:DATA], it will be output as exponential form of 8 digits of essential figures.
When REAL,32 is set for :FORMat[:DATA], Target System:GSM is output in 16 bit format, and Target System:W-CDMA is output in 8 bit format.

`dataq_n` Q-phase data
No Suffix code
When ASCii,0 is set for :FORMat[:DATA], it will be output as exponential form of 8 digits of essential figures.
When REAL,32 is set for :FORMat[:DATA], Target System:GSM is output in 16 bit format, and Target System:W-CDMA is output in 8 bit format.

Details

(When Terminal is RF)
The actually captured IQ data range is larger than the range set in Analysis Time, because of the internal analysis such as filter processing. Since IQ data read out by this command is within the range set in Analysis Time, you cannot read out all the IQ data captured by this command. Use the Save Captured Data function in order to read out all of them.

Note that the range of the IQ data read out by this command is different from that of the IQ data saved by the Save Captured Data function. The position at which Analysis Start Time of IQ data saved by Save Capture Data is 0 s is calculated by the following formula:

$$POS = TP - TD \times FS$$

Where,
- `POS`: Position at which Analysis Start Time of IQ data saved by Save Capture Data is 0 s [sample]
- `TP`: "Trigger Position" value [sample] in XML file X
- `TD`: Trigger Delay setting value [s]
  0 is set when Trigger Switch is Off.
- `FS`: Sampling Rate [Hz]

IQ data can be converted into power by the following formula:

$$P = 10Log_{10}\left(I^2 + Q^2\right)$$

Where, P: Power [dBm]
I: I phase data
Q: Q phase data

The query function is disabled when Analysis Start Time is set to 0 s, when Analysis Time Length is set to 0 s, and when Capture Time is set to Auto.

The query function is disabled during measurement.

FORM and FORM:BORD allows you to change the mode in which this command reads out IQ data.

Sampling Rate can be read out by SMPLRATE?.

(When the terminal is DigRF 3G (only for MS269x Series))
Actual range of IQ data that is captured will be wider than what is set with Analysis Sample Length (or Capture Time Length), due to the internal analysis process, such as filter process, etc. Range of the IQ data that is read with this command is only the range set with Analysis Sample Length (or Capture Time Length), so all the IQ data that was captured with this command cannot be read. To read all the IQ data, use Save Captured Data function.

Beware that the range of IQ data read with this command and range of IQ data saved by the Save Captured Data function is different.

It cannot be queried when the Analysis Start Sample is 0 s, Analysis Sample Length is 0 s, and Capture Time is Auto.

It cannot be queried while measuring.

Output format of IQ data by this command can be changed by FORM and FORM:BORD.

When all the following conditions are met, this command reads out IQ data most rapidly.

- The terminal is RF.
- :FORMat[:DATA] is set to REAL,32.
- :FORMat:BORDer is set to SWAPped.

Example of Use

To query two IQ data samples from the 0th sample.
(When ASC,0 is set to FORM)

```
DATA? 0,2
> 2.4358980E-03,-1.9873490E+01,
  6.3400291E+00,1.2231689E-03
```

DET/DET?

Detection

Function

This command sets the detection mode for the main trace.

Command

```
DET mode
```

Query

```
DET?
```

Response

```
mode
```

Parameter

`mode`	Detection mode
`NRM`	Maximum/minimum value detection
`POS`	Maximum value detection
`NEG`	Minimum value detection
`AVG`	Average value detection
`SAMP`	Sample detection

Details

This command is available on the following traces:

- Spectrum, Spectrogram (NRM, SAMP is not available)
- Power vs Time (SAMP is not available)
- Frequency vs Time (SAMP is not available)
- Phase vs Time (NRM is not available)

Example of Use

To set the detection mode for the main trace to maximum value detection.

```
DET POS
```

DETMODE/DETMODE?

Marker Value in Pos&Neg detection

Function

This command selects the marker value to be displayed when the detection mode is Pos&Neg.

Command

```
DETMODE det,marker
```

Query

```
DETMODE? marker
```

Response

```
det
```

Parameter

det	Detection mode to be displayed
POS	Displays the maximum value detection value
NEG	Displays the minimum value detection value
marker	Displayed marker
1	Marker 1
2	Marker 2
When omitted	Active marker Marker 1 applies when both Markers 1 and 2 are active.

Details

This command is available on the following trace:

- Frequency vs Time

This command is available only when Detection is set to Pos&Neg.

Example of Use

To set the display value for Marker 1 as the maximum value detection value.

```
DETMODE POS,1
```

DGTZ

Save Captured Data

Function

This command saves captured waveform data into a file.

Command

```
DGTZ file,device
```

Parameter

`file`	Name of file to be saved Any character string enclosed by double quotes or single quotes.
`device`	Saving drive name Drive name such as A, B, D, E, etc.

Details

This function can be executed when a waveform is captured in the following cases:

- Measurement performed by Single Measurement (`SNGLS` command) is completed.
- Storage Mode is set to OFF.

This function results in an error if a parameter requires re-capturing of waveform after execution of waveform capturing.

Files are saved in the following directory of the specified drive.
\Anritsu Corporation\Signal Analyzer\User Data
\Digitized Data\Signal Analyzer

Up to 1000 files can be saved in a folder.

Example of Use

To save a waveform data file “DATA” into drive D.

```
DGTZ "DATA",D
```

DGTZCANCEL

Cancel Execute Digitize

Function

This command cancels saving of waveform data into a file.

Command

```
DGTZCANCEL
```

Example of Use

To cancel digitizing.

```
DGTZCANCEL
```

DGTZRATE/DGTZRATE?

Output Rate for Save Captured Data

Function

This command sets the output rate when executing Save Captured Data.

Command

```
DGTZRATE rate
```

Query

```
DGTZRATE?
```

Response

```
rate
```

Parameter

`rate`	Output rate
Range	Refer to the table below.
Resolution	Same as above.
Suffix code	`HZ, KHZ, KZ, MHZ, MZ, GHZ, GZ` Hz is used when omitted.

Frequency span[Hz]	Minimum [Hz]	Maximum [Hz]	Default [Hz]	Resolution [Hz]
1000*2	1000	2000	2000	1
2500*2	2000	5000	5000	1
5000*2	5000	10000	10000	1
10000*2	10000	20000	20000	1
25000*2	20000	50000	50000	1
50000*2	50000	100000	100000	10
100000*2	100000	200000	200000	10
250000*2	200000	500000	500000	10
500000*2	500000	1000000	1000000	100
1000000*2	1000000	2000000	2000000	100
2500000*2	2000000	5000000	5000000	100
5000000*2	5000000	10000000	10000000	1000
10000000*2	10000000	20000000	20000000	1000
25000000*1	20000000	50000000	50000000	1000
31250000*1	20000000	50000000	50000000	1000
50000000*3, *4	50000000	100000000	100000000	10000
62500000*4	50000000	100000000	100000000	1000
100000000*3, *5	100000000	200000000	200000000	10000
125000000*3, *5	100000000	200000000	200000000	10000

For 2690A/91A/92A:

*1,*2: This can be set regardless of option configurations.

*3: This can be set when the Option 004/104 (Wideband Analysis Hardware) is installed.

*4: This can be set when the Option 077/177 (Analysis Bandwidth Extension to 62.5 MHz) is installed.

*5: This can be set when the Option 078/178 (Analysis Bandwidth Extension to 125 MHz) is installed.

For MS2830A, MS2840A:

*1: This can be set when the MS2830A-005/105/007/009/109, MS2840A-005/105/009/109 (Analysis Bandwidth Extension to 31.25 MHz) is installed.

*2: This can be set when the Option 006/106 (Analysis Bandwidth 10 MHz) is installed.

*4: This can be set when the MS2830A-077, MS2840A-077/177 (Analysis Bandwidth Extension to 62.5 MHz) is installed.

*5: This can be set when the MS2830A-078, MS2840A-078/178 (Analysis Bandwidth Extension to 125 MHz) is installed.

For MS2850A:

*1, *2: This can be set regardless of option configurations.

The output rate is following when the frequency span is ≥ 50 MHz.

Frequency span [Hz]	Minimum [Hz]	Maximum [Hz]	Default value [Hz]	Resolution [Hz]
50000000	50000000	81250000	81250000	1000
62500000	50000000	81250000	81250000	1000
100000000	81250000	162500000	162500000	1000
125000000	81250000	162500000	162500000	1000
255000000	162500000	325000000	325000000	1000
510000000*6	325000000	650000000	650000000	1000
1000000000*7	650000000	1300000000	1300000000	1000

*6: This can be set when the MS2850A-033/133 (Analysis Bandwidth Extension to 510 MHz) or MS2850A-034/134 (Analysis Bandwidth Extension to 1 GHz) is installed.

*7: This can be set when the MS2850A-034/134 (Analysis Bandwidth Extension to 1 GHz) is installed.

Details

Returns to the default value if the frequency span is changed.
The setting range is limited by the Frequency Span setting.
This command is not available in the following case:

- When Terminal is DigRF 3G (only for MS269x Series).

Example of Use

To set the output rate to 30 MHz.

```
DGTZRATE 30MHZ
```

DIGR:ADR/DIGR:ADR?

AD Full Range

Function

This command sets the entering the factor for converting the DigRF 3G (only for MS269x Series) signal to V units.

Command

```
DIGR:ADR volt
```

Query

```
DIGR:ADR?
```

Response

```
volt
```

Parameter

volt	Voltage
Range	1 mV to 10V
Resolution	0.1 mV
Suffix code	V, MV

V is used when omitted.

Details

This command is not available in the following cases:

[MS269xA]

- Setting for AD Full Range cannot be performed when the Option 040/140 Baseband Interface Unit is not installed in this instrument.
- When the Replay function is being executed.

[MS2830A], [MS2840A], [MS2850A]

- Not available

Example of Use

To set coefficient is 10 mV

```
DIGR:ADR 10MV
```

DIGR:IQS/DIGR:IQS?

I/Q Sign

Function

This command sets the I/Q sign.

Command

```
DIGR:IQS iq_sign
```

Query

```
DIGR:IQS?
```

Response

```
iq_sign
```

Parameter

`iq_sign`	I/Q Sign
`SIGN`	Sets to “Sign Bit + Abs. Value”
`TWOC`	Sets to “Two's Complement”

Details

This command is not available in the following cases:

[MS269xA]

- Setting for I/Q Sign cannot be performed when the Option 040/140 Baseband Interface Unit is not installed in this instrument.
- When the Replay function is being executed.

[MS2830A], [MS2840A], [MS2850A]

- Not available

Example of Use

To set the I/Q Sign to Sign + Bit Abs.Value.

```
DIGR:IQS SIGN
```

DIGR:MEAS/DIGR:MEAS?

Measurement Channel

Function

This command sets the Logical channel Type of the receiving DigRF 3G (only for MS269x Series) signal.

Command

```
DIGR:MEAS channel
```

Query

```
DIGR:MEAS?
```

Response

```
channel
```

Parameter

`channel`	Measurement Channel
`PRIM`	Sets to Primary
`DIV`	Sets to Diversity

Details

This command is not available in the following cases:

[MS269xA]

- Setting for Measurement Channel cannot be performed when the Option 040/140 Baseband Interface Unit is not installed in this instrument.
- When the Replay function is being executed.

[MS2830A], [MS2840A], [MS2850A]

- Not available

Example of Use

To set the Logical Channel Type to Primary.

```
DIGR:MEAS PRIM
```

DIGR:TARG/DIGR:TARG?

Target System

Function

This command selects the communication method for DigRF 3G (only for MS269x Series).

Command

```
DIGR:TARG communication
```

Query

```
DIGR:TARG?
```

Response

```
communication
```

Parameter

communication	Communication method
WCDMA	Sets the communication method to W-CDMA
GSM	Sets the communication method to GSM

Details

This command is not available in the following cases:

[MS269xA]

- Setting for Target System cannot be performed when the Option 040/140 Baseband Interface Unit is not installed in this instrument.
- When the Replay function is being executed.

[MS2830A], [MS2840A], [MS2850A]

- Not available

Example of Use

To set the communication method of input signal to W-CDMA.

```
DIGR:TARG WCDMA
```

DISP:WIND:STR:Y:PDIV:RANG:LIN/DISP:WIND:STR:Y:PDIV:RANG:LIN?

Sub Trace Linear Scale Level Full Scale

Function

This command sets the level-axis scale range for sub traces in Linear scale mode.

Command

```
DISP:WIND:STR:Y:PDIV:RANG:LIN percent
```

Query

```
DISP:WIND:STR:Y:PDIV:RANG:LIN?
```

Response

```
percent
```

Parameter

`percent`	Y-axis Scale
`10`	10 %
`20`	20 %
`50`	50 %
`100`	100 %
Default	100 %
Suffix code	None

Details

This command is not available in the following cases:

- When the sub-trace is set to Off.
- When Scale Mode is set to Log AND the sub-trace is set to Power vs Time.
- When the sub-trace is set to Spectrogram.

Example of Use

To set the level-axis scale range for sub traces to 50%.

```
DISP:WIND:STR:Y:PDIV:RANG:LIN 50
DISP:WIND:STR:Y:PDIV:RANG:LIN?
> 50
```

DISP:WIND:STR:Y:PDIV:RANG:LOG/DISP:WIND:STR:Y:PDIV:RANG:LOG?

Sub Trace Log Scale Level Full Scale

Function

This command sets the level-axis scale range for sub traces in Log scale mode.

Command

```
DISP:WIND:STR:Y:PDIV:RANG:LOG rel_ampl
```

Query

```
DISP:WIND:STR:Y:PDIV:RANG:LOG?
```

Response

```
rel_ampl
```

Parameter

`rel_ampl`	Y-axis Scale
Resolution	10 dB
Range	10 to 150 dB
Default	100 dB
Suffix code	DB dB is used when omitted.

Details

This command is not available in the following cases:

- When the sub-trace is set to Off.
- When Scale Mode is set to Linear AND the sub-trace is set to Power vs Time.

Example of Use

To set the level-axis scale range for sub traces to 50 dB.

```
DISP:WIND:STR:Y:PDIV:RANG:LOG 50
DISP:WIND:STR:Y:PDIV:RANG:LOG?
> 50
```

DISP:WIND:TRAC:Y:CVOL/DISP:WIND:TRAC:Y:CVOL?

Vertical Scale Center

Function

This command sets the value for the center of the vertical scale.

Command

```
DISP:WIND:TRAC:Y:CVOL voltage
```

Query

```
DISP:WIND:TRAC:Y:CVOL?
```

Response

```
voltage
```

Parameter

`voltage`	Scale setting value
Range	–Reference Level to Reference Level
Resolution	0.01 pV
Suffix code	PV, NV, UV, MV, V V is used when omitted.

Details

This command is available when the following trace is active:

- Power vs Time

This command is not available in the following cases:

- When Terminal is RF
- When Scale Mode is Log
- When Input Source is Complex
- When the Replay function is being executed.

Example of Use

To set the value for center of vertical scale to 2 mV.

```
DISP:WIND:TRAC:Y:CVOL 2MV
```

DISP:WIND:TRAC:Y:PDIV:RANG/DISP:WIND:TRAC:Y:PDIV:RANG?

Level Full Scale

Function

This command sets the level-axis scale range.

Command

```
DISP:WIND:TRAC:Y:PDIV:RANG rel_ampl
```

Query

```
DISP:WIND:TRAC:Y:PDIV:RANG?
```

Response

```
rel_ampl
```

Parameter

`rel_ampl`	Y-axis scale
`Resolution`	10 dB
`Range`	10 to 150 dB
Default	100 dB

Details

This command is available on the following trace:

- Spectrogram

Example of Use

To set the scale range of the level axis to 50 dB.

```
DISP:WIND:TRAC:Y:PDIV:RANG 50
DISP:WIND:TRAC:Y:PDIV:RANG?
> 50
```

DISTSCALE/DISTSCALE?

Power Distribution Scale

Function

This command sets power distribution axis scale.

Command

```
DISTSCALE scale
```

Query

```
DISTSCALE?
```

Response

```
scale
```

Parameter

`scale`	Power distribution axis scale
`05`	5 dB
`10`	10 dB
`20`	20 dB
`50`	50 dB

Details

This command is available when the following trace is active:

- CCDF

Example of Use

To set the power distribution axis scale to 10 dB.

```
DISTSCALE 10
```

DTCNT?

Data Point Query

Function

This command queries the number of the measured points.

Query

```
DTCNT?
```

Response

```
point
```

Details

This command is available when the following trace is active:

- CCDF

Example of Use

To query the number of the measured points.

```
DTCNT?
```

ERASEWUP

Erase Warm Up Message

Function

This command erases the warm-up message.

Command

```
ERASEWUP
```

Details

This command is not available while the Replay function is being executed.

Example of Use

To erase the warm-up message.

```
ERASEWUP
```

ESE2/ESE2?

End Event Status Enable Command/Query

Function

This command sets the END event status enable register. When the query command is issued, the value of the END event status enable register is returned.

Command

```
ESE2 n
```

Query

```
ESE2?
```

Response

```
n
```

Parameter

n	END event status enable register	
Value	= bit0 + bit1 + bit2 + bit3 + bit4 + bit5 + bit6 + bit7	
	bit0: 2^0 = 1	End of measurement
	bit1: 2^1 = 2	End of analysis
	bit2: 2^2 = 4	(Not used)
	bit3: 2^3 = 8	End of Storage Stop
	bit4: 2^4 = 16	End of Marker value calculation
	bit5: 2^5 = 32	End of Measure
	bit6: 2^6 = 64	End of Peak Search
	bit7: 2^7 = 128	End of file operation
Range	0 to 255	

Example of Use

To enable the End of measurement.

```
ESE2 1
ESE2?
> 1
```

ESE3/ESE3?

ERROR Event Status Enable Command/Query

Function

This command sets the ERROR event status enable register. When the query command is issued, the value of the ERROR event status enable register is returned.

Command

```
ESE3 n
```

Query

```
ESE3?
```

Response

```
n
```

Parameter

n		ERROR event status enable register
	Value	= bit0 + bit1 + bit2 + bit3 + bit4 + bit5 + bit6 + bit7
		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)
	Range	0 to 255

ESR2?

END Event Status Register Query

Function

This command queries the END event status register value and clears the END event status register after query.

Query

```
ESR2?
```

Response

```
n
```

Parameter

`n` END event status register

Value	= bit0 + bit1 + bit2 + bit3 + bit4 + bit5 + bit6 + bit7	
	bit0: 2^0 = 1	End of measurement
	bit1: 2^1 = 2	End of analysis
	bit2: 2^2 = 4	(Not used)
	bit3: 2^3 = 8	End of Storage Stop
	bit4: 2^4 = 16	End of Marker value calculation
	bit5: 2^5 = 32	End of Measure
	bit6: 2^6 = 64	End of Peak Search
	bit7: 2^7 = 128	End of file operation
Range	0 to 255	

Details

The register corresponding to ESR2 is enabled even when an operation is finished due to error occurrence.

Example of Use

To query the END event status register value.

```
ESR2?
> 1                    End of measurement
```

ESR3?

ERROR Event Status Register Query

Function

This command queries the error event status register value and clears the ERROR event status register after query.

Query

```
ESR3?
```

Response

```
n
```

Parameter

`n` ERROR event status register

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

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)

Range 0 to 255

FDPNT?

Trace Point Query

Function

This command queries the number of data points on the frequency axis of the main trace.

Query

```
FDPNT?
```

Response

```
point
```

Parameter

`point`	Number of data points on the frequency axis

Details

This command is available when the following traces are active:

- Spectrum
- Spectrogram

Example of Use

To query the number of data points on the frequency axis of the main trace.

```
FDPNT?
```

FEED/FEED?

Terminal Change

Function

This command selects Terminal.

Command

```
FEED terminal
```

Query

```
FEED?
```

Response

```
terminal
```

Parameter

`terminal`	Terminal
`RF`	Sets Terminal to RF
`DIGRF3G`	Sets Terminal to DigRF 3G (only for MS269x Series)

Details

This command is not available in the following cases:

[MS269xA]

- Setting for DigRF 3G (only for MS269x Series) cannot be performed when the Option 040/140 Baseband Interface Unit is not installed in this instrument.
- When the Replay function is being executed.

[MS2830A], [MS2840A], [MS2850A]

- Not available

Example of Use

To set Terminal to RF.

```
FEED RF
```

FETC:AM?

AM Depth Fetch

Function

This command queries the result of the AM Depth measurement.

Query

```
FETC:AM?
```

Response

```
pos,neg,p-p,avg
```

Parameter

	Peak to Peak measurement result
pos	+Peak value
neg	–Peak value
p-p	{(–Peak) – (+Peak)}/2
Suffix code	None, Value is returned in % units. –999999999999 is returned when no measurement is performed or an error occurs.
avg	Average value
Suffix code	None, Value is returned in V units. –999999999999 is returned when no measurement is performed or an error occurs.

Details

This function outputs the result of the last performed AM Depth measurement. Because this function is not related to capturing, it can be used to output the results of a previously finished measurement in a different format.
To perform measurement again by using the results of another capturing attempt, use the READ command.

Example of Use

To query the result of the AM Depth measurement.

```
FETC:AM?
```

FETC:CCDF?

CCDF Fetch

Function

This command fetches the CCDF measurement result.

Query

```
FETC:CCDF?
```

Response

When Result Mode is “A”.

```
mean_power,peak_power_dbm,crest
```
(n=1 or when omitted)

```
rel_ampl_1,rel_ampl_2,rel_ampl_3,rel_ampl_4,
rel_ampl_5,rel_ampl_6
```
(n=2)

```
percent_1,percent_2,percent_3,percent_4,
percent_5
```
(n=3)

[Measure method is CCDF]

```
meas_per_1,meas_per_2,...meas_per_5001
```

[Measure method is APD]

```
meas_per_1,meas_per_2,...meas_per_10001
```
(n=4)

gauss_per_1, gauss_per_2,...guass_per_5001

(n=5)

[Measure method is CCDF]

```
ref_per_1,ref_per_2,...ref_per_5001
```

[Measure method is APD]

```
ref_per_1,ref_per_2,...ref_per_10001
```
(n=6)

```
count
```
(n=7)

```
mean_power_range_1,
peak_power_dbm_range_1,crest_range_1
```
(n=8)

```
rel_ampl_range_1_1,rel_ampl_range_1_2,
rel_ampl_ range_1_3,rel_ampl_range_1_4,
rel_ampl_range_1_5,rel_ampl_range_1_6
```
(n=9)

```
percent_range_1_1, percent_range_1_2, percent_range_1_3,
percent_range_1_4,percent_range_1_5
```
(n=10)

[Measure Method is CCDF]
meas_per_range_1_1,meas_per_ range_1_2,...
meas_per_range_1_5001
[Measure Method is APD]
meas_per_range_1_1,meas_per_range_1_2,...
meas_per_range_1_10001
(n=11)
[Measure Method is CCDF]
ref_per_range_1_1,ref_per_range_1_2,...
ref_per_range_1_5001
[Measure Method is APD]
ref_per_range_1_1,ref_per_range_1_2,...
ref_per_range_1_10001
(n=13)
count_range_1
(n=14)
mean_power_range_2,
peak_power_dbm_range_2,crest_range_2
(n=15)
rel_ampl_range_2_1,rel_ampl_range_2_2,
rel_ampl_range_2_3,rel_ampl_range_2_4,
rel_ampl_range_2_5,rel_ampl_range_2_6
(n=16)
percent_range_2_1, percent_range_2_2, percent_range_2_3,
percent_range_2_4,percent_range_2_5
(n=17)
[Measure Method is CCDF]
meas_per_range_2_1,meas_per_range_2_2,...
meas_per_range_2_5001
[Measure Method is APD]
meas_per_range_2_1,meas_per_range_2_2,...
meas_per_range_2_10001
(n=18)
[Measure Method is CCDF]
ref_per_range_2_1,ref_per_range_2_2,...
ref_per_range_2_5001
[Measure Method is APD]
ref_per_range_2_1,ref_per_range_2_2,...
ref_per_range_2_10001
(n=20)
count_range_2
(n=21)
mean_power_range_3,peak_power_dbm_range_3,crest_range_3
(n=22)

```
rel_ampl_range_3_1,rel_ampl_range_3_2,
rel_ampl_range_3_3,rel_ampl_range_3_4,
rel_ampl_range_3_5,rel_ampl_range_3_6
```
(n=23)
```
percent_range_3_1,percent_range_3_2,percent_range_3_3,
percent_range_3_4,percent_range_3_5
```
(n=24)

[Measure Method is CCDF]
```
meas_per_range_3_1,meas_per_range_3_2,...
meas_per_range_3_5001
```
[Measure Method is APD]
```
meas_per_range_3_1,meas_per_range_3_2,...
meas_per_range_3_10001
```
(n=25)

[Measure Method is CCDF]
```
ref_per_range_3_1,ref_per_range_3_2,...
ref_per_range_3_5001
```
[Measure Method is APD]
```
ref_per_range_3_1,ref_per_range_3_2,...
ref_per_range_3_10001
```
(n=27)
```
count_range_3
```
(n=28)

When Result Mode is “B”.
```
mean_power, mean_power_prob, rel_ampl_1,
rel_ampl_2, rel_ampl_3, rel_ampl_4, rel_ampl_5,
rel_ampl_6,crest, count
```
(n = 1 or when omitted)

[Measure method is CCDF]
```
meas_per_1, meas_per_2,... meas_per_5001
```
[Measure method is APD]
```
meas_per_1, meas_per_2,... meas_per_10001
```
(n=2)
```
gauss_per_1, gauss_per_2,...guass_per_5001
```
(n=3)

[Measure method is CCDF]
```
ref_per_1, ref_per_2,...ref_per_5001
```
[APD]
```
ref_per_1, ref_per_2,...ref_per_10001
```
(n=4)

Parameter

	Measurement Result types
`mean_power`	Average power
`peak_power dbm`	Max power

Suffix code	None. Value is returned in dBm units. –999.0 is returned at no measurement or error
`percent_n`	Each value indicates the power deviation in the probability distributions below. • 1, 2, 3, 4, 5 dB (When Horizontal Scale is set to 5 dB) • 2, 4, 6, 8, 10 dB (When Horizontal Scale is set to 10 dB) • 4, 8, 12, 16, 20 dB (When Horizontal Scale is set to 20 dB) •10, 20, 30, 40, 50 dB (When Horizontal Scale is set to 50 dB)
Resolution	0.0001%
Suffix code	None. Value is returned in % units. –999.0 is returned at no measurement or error
`mean_power_prob`	Mean power probability distribution
Suffix code	None. Value is returned in % units. –999.0 is returned at no measurement or error.
`rel_ampl_n`	Each value indicates the power deviation in the probability distributions below. • 10, 1, 0.1, 0.01, 0.001, 0.0001%
`meas_percent_n`	Each value indicates the power deviation of the measured value in the probability distributions below. • –50.00, –49.99, ...,49.99, 50.00 dB (APD) • 00.00, 00.01, ...,49.99, 50.00 dB (CCDF)
Resolution	0.0001%
Suffix code	None. Value is returned in % units. –999.0 is returned at no measurement or error
`guauss_percent_n`	Each value indicates the power deviation of the Gaussian trace in the probability distributions below. • –50.00, –49.99, ...,49.99, 50.00 dB (APD, "–999.0" is returned for all values.) • 00.00, 00.01, ..,49.99, 50.00 dB (CCDF)
Resolution	0.0001%
Suffix code	None. Value is returned in % units. –999.0 is returned at no measurement or error.

`ref_percent_n`	Each value indicates the power deviation of the reference trace in the probability distributions below. • –50.00, –49.99, ...,49.99, 50.00 dB (APD) • 00.00, 00.01, ...,49.99, 50.00 dB (CCDF)
Resolution	0.0001%
Suffix code	None. Value is returned in % units. –999.0 is returned at no measurement or error
`crest`	Crest factor
Suffix code	None. Value is returned in dB units. –999.0 is returned at no measurement or error
`Count`	Number of data samples
Suffix code	None. –999.0 is returned at no measurement or error

Details

This function outputs the result of the last performed CCDF measurement. Because this function is not related to capturing, it can be used to output the results of a previously finished measurement in a different format.

To perform measurement again by using the results of another capturing attempt, use the READ command.

The value returned by this command differs depending on Result Mode. (cf. `:SYSTem:RESult:MODE`)

This function can be set when the following trace is active.
• CCDF

Example of Use

To query the measurement result during CCDF measurement (n = 1, A mode).

```
FETC:CCDF?
> -66.68,-54.90,11.78
```

FETC:FM?

FM deviation Fetch

Function

This command queries the result of the FM deviation measurement.

Query

```
FETC:FM?
```

Response

```
pos,neg,p-p,avg
```

Parameter

	Peak to Peak measurement result
`pos`	+Peak value
`neg`	–Peak value
`p-p`	{(–Peak) – (+Peak)}/2
Suffix code	None, Value is returned in Hz units. (Frequency vs Time) –999999999999 is returned when no measurement is performed or an error occurs.
`avg`	Average value
Suffix code	None, Value is returned in Hz units. (Frequency vs Time) –999999999999 is returned when no measurement is performed or an error occurs.

Details

This command queries the result of the FM deviation measurement performed lastly. This function does not accompany any capture, thus this function is used to output the measurement result in a different type, when the measurement has already completed.
Use READ command to perform re-measurement with redoing capture.

Example of Use

To query the result of the FM deviation measurement.

```
FETC:FM?
```

FETC:FMCW?

FM CW Fetch

Function

This command queries the result for FM CW measurement.

Query

```
FETC:FMCW?
```

Response

Refer to Table 2.23-2

Parameter

None

Details

This function queries the measurement result of the FM CW measurement performed last. This function does not accompany any capture, thus this function is used to output the measurement result in a different type, when the measurement has already completed.
Use READ command to perform re-measurement with redoing capture.

Example of Use

To query the measurement result for FM CW measurement.

```
FETC:FMCW?
```

FLTRBW/FLTRBW?

Filter Bandwidth

Function

This command sets the filter bandwidth of the main trace.

Command

```
FLTRBW bandwidth
```

Query

```
FLTRBW?
```

Response

```
bandwidth
```

Parameter

`bandwidth` Filter bandwidth

Range and resolution

Limited by settings for Frequency Span and Filter Type.
Refer to the *MS2690A/MS2691A/MS2692A Signal Analyzer Operation Manual (Signal Analyzer Function Operation)* or *MS2830A/MS2840A/MS2850A Signal Analyzer Operation Manual (Signal Analyzer Function Operation)* for details.

Suffix code: HZ, KHZ, KZ, MHZ, MZ, GHZ, GZ
Hz is used when omitted.

Details

This command is available when any of the following traces is active:

- Power vs Time
- CCDF
- Frequency vs Time

This command is available when the Filter Type is set to any of the following:

- Rect
- Gauss
- Nyquist
- Root Nyquist

The setting range is limited by the Frequency Span and Filter Type settings.

Example of Use

To set the filter bandwidth of the main trace to 1 MHz.

```
FLTRBW 1MHz
```

FLTROFS/FLTROFS?

Filter Frequency Offset

Function

This command sets the filter frequency offset of the main trace.

Command

```
FLTROFS freq
```

Query

```
FLTROFS?
```

Response

`freq`

Returns a value in Hz units without a suffix code.

Parameter

`freq`		Channel width
	Range	–1 × Frequency span to Frequency span Hz
	Resolution	1 Hz
	Suffix code	`HZ, KHZ, KZ, MHZ, MZ, GHZ, GZ` Hz is used when omitted.

Details

This command is available when either of the following traces is active:

- Power vs Time
- CCDF

This command is available when the Filter Type is set to any of the following:

- Rect
- Gauss
- Nyquist
- Root Nyquist

Example of Use

To set the filter frequency offset of the main trace to 30 kHz.

```
FLTROFS 30KHZ
```

FLTRTYP/FLTRTYP?

Filter Type

Function

This command selects the Filter Type for the main trace.

Command

```
FLTRTYP filter
```

Query

```
FLTRTYP?
```

Response

```
filter
```

Parameter

`filter`	Filter type
`RECT`	Rectangle filter
`GAUSS`	Gauss filter
`NYQUIST`	Nyquist filter
`ROOTNYQUIST`	Root Nyquist filter
`OFF`	No filtering

Details

This command is available when either of the following traces is active:

- Power vs Time
- CCDF (selectable for rectangle filter and no filtering only)

The filter type is fixed to OFF when the frequency span is set to 1 kHz.

Example of Use

To set the Filter Type to Gauss filter.

```
FLTRTYP GAUSS
```

FM/FM?

Measure FM deviation

Function

This command performs the FM deviation measurement.

Command

```
FM switch_com
```

Query

```
FM?
```

Response

```
switch_res
```

Parameter

switch_com	FM deviation measurement On/Off
ON/1	Sets FM deviation measurement to On.
OFF/0	Sets FM deviation measurement to Off.
switch_res	FM deviation measurement On/Off
1	On
0	Off

Details

This command is available when the following trace is active:

- Frequency vs Time

Example of Use

To set the FM deviation measurement to On.

```
FM ON
FM?
> 1
```

FMCW/FMCW?

Measure FM CW

Function

This command executes FM CW measurement.

Command

```
FMCW switch_com
```

Query

```
FMCW?
```

Response

```
switch_res
```

Parameter

`switch_com`	FM CW measurement On/Off
`ON/1`	Sets FM CW measurement On.
`OFF/0`	Sets FM CW measurement Off (Default).
`switch_res`	FM CW measurement On/Off
`1`	Set FM CW measurement On.
`0`	Set FM CW measurement Off

Details

This command is available when the following trace is active:

- Frequency vs Time

Example of Use

To set FM CW measurement to On.

```
FMCW ON
FMCW?
> 1
```

FORM/FORM?

Numeric Data Format

Function

This command sets the format of the IQ data read out by DATA?.

Command

```
FORM format_com,length
```

Query

```
FORM?
```

Response

```
format_res,length
```

Parameter

The following are set when the terminal is RF:

`format_com`	IQ data format
`ASC`	Ascii format (Default)
`REAL`	Binary 32 bits floating point number format
`format_res`	IQ data format
`ASC`	Ascii format (Default)
`REAL`	Binary 32 bits floating point number format
`length`	Secondary setting to the selected format
`0`	Returns the results in the effective digit number unique to this instrument. Setting is possible only when ASCii is specified as the format.
`32`	Returns the results in the 32 bits floating point number format. Setting is possible only when REAL is specified as the format.
When omitted:	0 is automatically set when ASCii is specified as the format, while 32 is automatically set when REAL is specified as the format.

The following are set when the terminal is DigRF 3G (only for MS269x Series):

`format_com`	IQ data format
`ASC`	Ascii format (Default)
`REAL`	Binary 16 bits format (When Target System is GSM). Binary 8 bits format (When Target System is W-CDMA).

`format_res`	IQ data format
`ASC`	Ascii format (Default)
`REAL`	Binary 16 bits format (When Target System is GSM) Binary 8 bits format (When Target System is W-CDMA)
`length`	Supplementary setting for selected format
`0`	Result is sent back in number of significant figures of this instrument. This can be set only when ASCii is specified for format.
`32`	This is returned when the REAL is specified for format. This can be set only when REAL is specified for format.
When omitted	0 is set when ASC is specified for format. 32 is set when REAL is specified for format.

Details

(When Terminal is RF)
When REAL is set, IQ data is queried in the 32 bits single precision floating point number format specified in IEEE754.

(When Terminal is DigRF 3G (only for MS269x Series))
When the REAL is set, IQ data is output in 16 bits for the Target System:GSM, and in 8 bits for Target System:W-CDMA.

Example of Use

To set the IQ data format to Ascii.

```
FORM ASC
FORM?
> REAL,32
```

FORM:BORD/FORM:BORD?

Binary Data Byte Order

Function

This command sets the byte order of the reading data when `REAL,32` is set to `FORM`.

Command

```
FORM:BORD border_com
```

Query

```
FORM:BORD?
```

Response

```
border_res
```

Parameter

`border_com`	Byte order
`NORM`	Sets the byte order to Big-endian (Default)
`SWAP`	Sets the byte order to Little-endian.

`border_res`	Byte order
`NORM`	Bite order is Big-endian.
`SWAP`	Bite order is Little-endian.

Details

This command sets the order in which the data is arranged when data is read out in a binary style. In Big-endian, the data is arranged in the descending order (starting from the most significant value in the sequence), and in Little-endian, the data is arranged in the ascending order (starting from the least significant value in the sequence).

(When Terminal is RF)
For instance, in Big-endian, “0x01234567” (four-byte data) is arranged in the order of “01 23 45 67, while, in Little-endian, it is arranged in the order of “67 45 23 01”.

(When Terminal is DigRF 3G (only for MS269x Series))
The 2 byte data of “0x0123” in the Target System:GSM will be arranged in order of “23 01” in Big endian, and “01 23” in Little endian.
Arrangement order will not change for Target System:W-CDMA since the data is 8 bits.

Example of Use

To set the byte order to the little endian.

```
FORM:BORD SWAP
FORM:BORD?
> SWAP
```

FREQ:CENT:STEP/FREQ:CENT:STEP?

Frequency Step Size

Function

This command sets the step size of the center, start and stop frequency.

Command

```
FREQ:CENT:STEP freq
```

Query

```
FREQ:CENT:STEP?
```

Response

```
freq
```

Parameter

`freq` Step size

Range

[MS269xA]

Without MS269xA-077/177/078/178, or frequency span ≤ 31.25 MHz
1 Hz to 6 GHz (MS2690A)
1 Hz to 13.5 GHz (MS2691A)
1 Hz to 26.5 GHz (MS2692A)

With MS269xA-077/177/078/178, and frequency span > 31.25 MHz
1 Hz to 6 GHz (MS2690A)
1 Hz to 13.5 GHz (MS2691A)

With MS269xA-077/177/078/178, without MS2692A-067/167, and frequency span > 31.25 MHz
1 Hz to 6 GHz (MS2692A)

With MS269xA-077/177/078/178, with MS2692A-067/167, and frequency span > 31.25 MHz
1 Hz to 26.5 GHz (MS2692A)

[MS2830A]

Without MS2830A-077/078, or frequency span ≤ 31.25 MHz
1 Hz to 3.6 GHz (Option 040)
1 Hz to 6.0 GHz (Option 041)
1 Hz to 13.5 GHz (Option 043)
1 Hz to 26.5 GHz (Option 044)
1 Hz to 43 GHz (Option 045)

With MS2830A-077/078, and frequency span > 31.25 MHz
1 Hz to 3.6 GHz (Option 040)
1 Hz to 6.0 GHz (Option 041)
1 Hz to 13.5 GHz (Option 043)

With MS2830A-077/078, without MS2830A-067/167, and frequency span > 31.25 MHz
1 Hz to 6 GHz (Option 044)
1 Hz to 6 GHz (Option 045)

With MS2830A-077/078, with MS2830A-067/167,
and frequency span > 31.25 MHz
1 Hz to 26.5 GHz (Option 044)
1 Hz to 43 GHz (Option 045)

[MS2840A]

Without MS2840A-077/177/078/178, or frequency span ≤ 31.25 MHz
1 Hz to 3.6 GHz (Option 040)
1 Hz to 6.0 GHz (Option 041)
1 Hz to 26.5 GHz (Option 044)
1 Hz to 44.5 GHz (Option 046)

With MS2840A-077/177/078/178, and frequency span ≤ 31.25 MHz
1 Hz to 3.6 GHz (Option 040)
1 Hz to 6.0 GHz (Option 041)

With MS2840A-077/177/078/178, without MS2840A-067/167,
and frequency span > 31.25 MHz
1 Hz to 6 GHz (Option 044)
1 Hz to 6 GHz (Option 046)

With MS2840A-077/177/078/178, with MS2840A-067/167,
and frequency span > 31.25 MHz
1 Hz to 26.5 GHz (Option 044)
1 Hz to 44.5 GHz (Option 046)

[MS2850A]

1 Hz to 32 GHz (Option 047)
1 Hz to 44.5 GHz (Option 046)

Resolution	1 Hz
Suffix code	`HZ, KHZ, KZ, MHZ, MZ, GHZ, GZ`
	Hz is used when omitted.
Default	1 GHz

Example of Use

To set the step size to 100.0 kHz.

```
FREQ:CENT:STEP 100000
```

To query the step size.

```
FREQ:CENT:STEP?
> 100000
```

FREQ:SYNT/FREQ:SYNT?

Switching Speed

Function

This command selects the switching speed of frequency.

Command

```
FREQ:SYNT mode
```

Query

```
FREQ:SYNT?
```

Response

mode	Frequency switching mode

Parameter

<mode>	Frequency switching speed
BPH	The operation is done so as to improve the phase noise characteristic rather than the frequency switching speed.
NORM	Becomes same setting as BPH (response is BPH).
FAST	The operation is done so as to increase the frequency switching speed at the cost of the phase noise characteristic.

Details

This command is available for MS2830A, MS2840A, and MS2850A.

Note that because the FAST setting gives priority to the switching speed of the local frequency, the phase noise characteristic worsens.

Example of Use

To set the frequency switching mode to the speed priority mode.

```
FREQ:SYNT FAST
```

To query frequency switching speed

```
FREQ:SYNT?
> FAST
```

FREQ:SYNT:LPH:STAT?

Low Phase Noise Performance Status Query

Function

This command queries the state of Low Phase Noise function with the current measurement conditions.

Query

```
FREQ:SYNT:LPH:STAT?
```

Response

`status`	Low Phase Noise function status

Parameter

`status`	Low Phase Noise function status
`1`	Lowers Phase Noise
`0`	Does not lower Phase Noise

Detail

This function is available when MS2830A-062/066, MS2840A-066/166 is installed.
The phase noise performance is improved when the Low Phase Noise switch is On and the center frequency is less than 3.7 GHz (3.5 GHz when the Frequency Band Mode is Spurious).

Whether the Low Phase Noise option can be used or not is read from the current setting parameters by this function.

Example of Use

To query the state of Low Phase Noise function with the current measurement conditions.

```
FREQ:SYNT:LPH:STAT?
> 1
```

FULBAND/FULBAND?

External Mixer Band Select

Function

This command selects external mixer band.

Command

```
FULBAND band
```

Query

```
FULBAND?
```

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 function is available for MS2830A-044/045.
This function is available for MS2840A-044/046.
This function is readily available for MS2850A.

Example of Use

To set the external mixer band to Band U.

```
FULBAND U
FULBAND?
> U
```

FUNITS/FUNITS?

Frequency Scale Unit

Function

This command sets the display unit system of the frequency axis.

Command

```
FUNITS unit
```

Query

```
FUNITS?
```

Response

```
unit
```

Parameter

`unit`	Display unit system of the frequency axis
`HZ`	Hz
`DHZ`	ΔHz

Details

This command is available when the following trace is active:

- Frequency vs Time

Example of Use

To set the display unit system to Hz.

```
FUNITS HZ
```

INI

Initialize

Function

This command initializes the parameters.

Command

```
INI
```

Example of Use

To initialize the parameters.

```
INI
```

INIT:AM

AM Depth Initiate

Function

This command starts the AM Depth measurement.

Command

```
INIT:AM
```

Details

When this function has been executed, the AM Depth measurement is set to On and the measurement will start.
Scale Mode is set to Linear and Detection is set to Pos&Neg, and Peak to Peak function is set to On.

Example of Use

To start the AM Depth measurement.

```
INIT:AM
```

INIT:FM

FM deviation Initiate

Function

This command starts the FM deviation measurement.

Command

```
INIT:FM
```

Details

When this function has been executed, the FM Deviation measurement is set to On and the measurement starts.
Scale Unit is set to ΔHz and Detection is set to Pos&Neg, and Peak to Peak function is set to ON.

Example of Use

To start the FM deviation measurement.

```
INIT:FM
```

INIT:FMCW

FM CW Initiate

Function

This command starts the FM CW measurement.

Command

```
INIT:FMCW
```

Details

When this function has been executed, the FM CW measurement is set to On and the measurement starts.
Scale Unit is set to ΔHz, Detection is set to Pos&Neg.

Example of Use

To start the FM CW measurement.

```
INIT:FMCW
```

LINSCALEDIV/LINSCALEDIV?

Liner Scale Range

Function

This command sets the scale range of the level axis for the main trace (Lin scale).

Command

```
LINSCALEDIV scale
```

Query

```
LINSCALEDIV?
```

Response

`scale`

Returns a value in percentage units without a suffix code.

Parameter

`scale`	Level axis scale
Range	1 to 10% (1-2-5 sequence)
Default	10%/div

Details

This command is available when either of the following traces is active:

- Spectrum
- Power vs Time

This command is available when Scale Mode is Linear.

Example of Use

To set the scale of level axis for the main trace to 10%/div.

```
LINSCALEDIV 10
```

LOADSTD/LOADSTD?

Load Standard Parameter

Function

This command changes parameter settings according to the communication method selected for Standard.

Command

```
LOADSTD measure
LOADSTD measure,pattern
```

Query

```
LOADSTD? measure
```

Response

```
pattern
```

Parameter

measure	Target measurement
ADJ	ACP measurement (Spectrum)
CHPWR	Channel power measurement (Spectrum)
OBW	OBW measurement (Spectrum)
BRSTAVGPWR	Burst Average Power measurement (Power vs Time)

When Standard is set to 5G Pre-Standard (ACP measurement):

<pattern>	Parameter to be set
99MHZ_1CARR	1 carrier, Carrier Spacing 99 MHz
100MHZ_1CARR	1 carrier, Carrier Spacing 100 MHz
99MHZ_2CARR	2 carrier, Carrier Spacing 99 MHz
100MHZ_2CARR	2 carrier, Carrier Spacing 100 MHz
99MHZ_4CARR	4 carrier, Carrier Spacing 99 MHz
100MHZ_4CARR	4 carrier, Carrier Spacing 100 MHz
When omitted:	1 carrier, Carrier Spacing 99 MHz

When Standard is set to W-CDMA Uplink (ACP measurement):

Pattern	Parameter to be set
UPLINK	3GPP W-CDMA Uplink
When omitted:	3GPP W-CDMA Uplink

When Standard is set to W-CDMA Uplink (OBW measurement):

Pattern	Parameter to be set
UPLINK	3GPP W-CDMA Uplink
When omitted:	3GPP W-CDMA Uplink

When Standard is set to W-CDMA Uplink (Channel Power measurement)

Pattern	Parameter to be set
UPLINK	3GPP W-CDMA Uplink, Mean Power measurement
MEAN	3GPP W-CDMA Uplink, Mean Power measurement
RRCFILTER	3GPP W-CDMA Uplink, RRC Filtered Power measurement
When omitted:	3GPP W-CDMA Uplink, Mean Power measurement

When Standard is set to W-CDMA Uplink (Burst Average Power measurement)

Pattern	Parameter to be set
MEAN	3GPP W-CDMA Uplink, Mean Power measurement
RRCFILTER	3GPP W-CDMA Uplink, RRC Filtered Power measurement
When omitted:	3GPP W-CDMA Uplink, Mean Power measurement

When Standard is set to W-CDMA Downlink (ACP measurement):

Pattern	Parameter to be set
DOWNLINK	3GPP W-CDMA Downlink (Single Carrier)
SINGLECARR	3GPP W-CDMA Downlink (Single Carrier)
2CARR	3GPP W-CDMA Downlink (2 Carriers)
When omitted:	3GPP W-CDMA Downlink (Single Carrier)

When Standard is set to W-CDMA Downlink (OBW measurement)

Pattern	Parameter to be set
DOWNLINK	3GPP W-CDMA Downlink
When omitted:	3GPP W-CDMA Downlink

When Standard is set to W-CDMA Downlink (Channel Power measurement)

Pattern	Parameter to be set
DOWNLINK	3GPP W-CDMA Downlink, Mean Power measurement
MEAN	3GPP W-CDMA Downlink, Mean Power measurement
RRCFILTER	3GPP W-CDMA Downlink, RRC Filtered Power measurement
When omitted:	3GPP W-CDMA Downlink, Mean Power measurement

When Standard is set to W-CDMA Downlink (Burst Average Power measurement)

Pattern	Parameter to be set
MEAN	3GPP W-CDMA Downlink, Mean Power measurement
RRCFILTER	3GPP W-CDMA Downlink, RRC Filtered Power measurement
When omitted:	3GPP W-CDMA Downlink, Mean Power measurement

When Standard is set to Mobile WiMAX

pattern	Parameter to be set
10M	10MHz BW (Channel Bandwidth 10 MHz)
5M	5MHz BW (Channel Bandwidth 5 MHz)
When omitted:	10MHz BW

When Standard is set to LTE Uplink/Downlink (ACP measurement)

pattern	Parameter to be set
1M4BW_UTRA5MHZ	1.4MHz BW (UTRA 5 MHz)
1M4BW_EUTRA1M4HZ	1.4MHz BW (E-UTRA 1.4 MHz)
3MBW_UTRA5MHZ	3MHz BW (UTRA 5 MHz)
3MBW_EUTRA3MHZ	3MHz BW (E-UTRA 3 MHz)
5MBW_UTRA5MHZ	5MHz BW (UTRA 5 MHz)
5MBW_EUTRA5MHZ	5MHz BW (E-UTRA 5 MHz)
When omitted:	5MHz BW (UTRA 5 MHz)

When Standard is set to LTE TDD Downlink (ACP measurement)

pattern	Parameter to be set
1M4BW_UTRA1M6HZ	1.4MHz BW(UTRA 1.6 MHz)
1M4BW_EUTRA1M4HZ	1.4MHz BW(E-UTRA 1.4 MHz)
3MBW_UTRA1M6HZ	3MHz BW(UTRA 1.6 MHz)
3MBW_EUTRA3MHZ	3MHz BW(E-UTRA 3 MHz)
5MBW_UTRA1M6HZ	5MHz BW(UTRA 1.6 MHz)
5MBW_UTRA5MHZ	5MHz BW(UTRA 5 MHz)
5MBW_EUTRA5MHZ	5MHz BW(E-UTRA 5 MHz)
When omitted:	5MHz BW(E-UTRA 5 MHz)

When Standard is set to LTE TDD Uplink (ACP measurement)

pattern	Parameter to be set
1M4BW_UTRA1M6HZ	1.4MHz BW (UTRA 1.6 MHz)
1M4BW_EUTRA1M4HZ	1.4MHz BW (E-UTRA 1.4 MHz)
3MBW_UTRA1M6HZ	3MHz BW (UTRA 1.6 MHz)
3MBW_EUTRA3MHZ	3MHz BW (E-UTRA 3 MHz)
5MBW_UTRA1M6HZ	5MHz BW (UTRA 1.6 MHz)

5MBW_EUTRA5MHZ	5MHz BW (E-UTRA 5 MHz)
When omitted	5MHz BW (E-UTRA 5 MHz)

When Standard is set to LTE Uplink/Downlink or LTE TDD Uplink/Downlink (OBW measurement)

pattern	Parameter to be set
1M4BW	1.4MHz Bandwidth
3MBW	3MHz Bandwidth
5MBW	5MHz Bandwidth
10MBW	10MHz Bandwidth
15MBW	15MHz Bandwidth
20MBW	20MHz Bandwidth
When omitted:	5MHz Bandwidth

When Standard is set to LTE Uplink/Downlink or LTE TDD Uplink/Downlink (Channel Power measurement)

pattern	Parameter to be set
MEAN_1M4BW	Mean Power 1.4MHz BW
MEAN_3MBW	Mean Power 3MHz BW
MEAN_5MBW	Mean Power 5MHz BW
MEAN_10MBW	Mean Power 10MHz BW
MEAN_15MBW	Mean Power 15MHz BW
MEAN_20MBW	Mean Power 20MHz BW
FILTERED_1M4BW	Filtered Power 1.4MHz BW
FILTERED_3MBW	Filtered Power 3MHz BW
FILTERED_5MBW	Filtered Power 5MHz BW
FILTERED_10MBW	Filtered Power 10MHz BW
FILTERED_15MBW	Filtered Power 15MHz BW
FILTERED_20MBW	Filtered Power 20MHz BW
When omitted:	Mean Power 5MHz BW

When Standard is set to LTE Uplink/Downlink or LTE TDD Uplink/Downlink (Burst Average Power measurement)

pattern	Parameter to be set
MEAN_1M4BW	Mean Power 1.4Hz BW
MEAN_3MBW	Mean Power 3MHz BW
MEAN_5MBW	Mean Power 5MHz BW
MEAN_10MBW	Mean Power 10MHz BW
MEAN_15MBW	Mean Power 15MHz BW
MEAN_20MBW	Mean Power 20MHz BW
FILTERED_1M4BW	Filtered Power 1.4MHz BW
FILTERED_3MBW	Filtered Power 3MHz BW
FILTERED_5MBW	Filtered Power 5MHz BW
FILTERED_10MBW	Filtered Power 10MHz BW

FILTERED_15MBW	Filtered Power 15MHz BW
FILTERED_20MBW	Filtered Power 20MHz BW
When omitted:	Mean Power 5MHz BW

When Standard is set to ETC_DSRC (Applies to all but Burst Average Power measurement)

pattern	Parameter to be set
PI4DQPSK	π/4DQPSK
ASK	ASK
When omitted:	π/4DQPSK

When Standard is set to ETC_DSRC (Burst Average Power measurement)

pattern	Parameter to be set
MEAN	Mean Power
When omitted:	Mean Power

When Standard is set to TD-SCDMA (ACP measurement)

pattern	Parameter to be set
TDD128M1C	Single Carrier
TDD128M2C	2 Carriers
TDD128M3C	3 Carriers
TDD128M4C	4 Carriers
TDD128M5C	5 Carriers
TDD128M6C	6 Carriers
When omitted:	Single Carrier

When Standard is set to TD-SCDMA (CHP, OBW measurement)

pattern	Parameter to be set
TDD128M	3GPP TDD 1.28 Mcps Option
When omitted:	3GPP TDD 1.28 Mcps Option

When Standard is set to TD-SCDMA (Burst Average Power measurement)

pattern	Parameter to be set
MEAN	5 ms Subframe (Power measurement of 1 subframe)
When omitted:	5 ms Subframe

When Standard is set to XG-PHS (OBW measurement)

pattern	Parameter to be set
10MBW	10MHz BW
20MBW	20MHz BW
When omitted:	10MHz BW

When Standard is set to XG-PHS (CHP measurement)

pattern	Parameter to be set
MEAN_10MBW	Mean Power 10MHz BW
MEAN_20MBW	Mean Power 20MHz BW
When omitted:	Mean Power 10MHz BW

When Standard is set to CDMA2000 Forward Link

pattern	Parameter to be set
CDMA2KFWD	CDMA2000 Forward Link
When omitted:	CDMA2000 Forward Link

When Standard is set to EV-DO Forward Link (ACP, Channel Power, OBW measurement)

pattern	Parameter to be set
EVDOFWD	EV-DO Forward Link
When omitted:	EV-DO Forward Link

When Standard is set to EV-DO Forward Link (Burst Average Power measurement)

pattern	Parameter to be set
EVDOFWDACTIVE	Active Slot
EVDOFWDIDLE	Idle Slot
When omitted:	Active Slot

When Standard is set to ISDB-Tmm (Channel Power measurement)

pattern	Parameter to be set
MEAN_14M2BW	14.2MHz BW
MEAN_5M6BW	5.6MHz BW (ISDB-T)
When omitted:	14.2MHz BW

When Standard is set to ISDB-Tmm (OBW measurement)

pattern	Parameter to be set
14M2BW	14.2MHz BW
5M6BW	5.6MHz BW (ISDB-T)
When omitted:	14.2MHz BW

Details

This command is available when Standard is set to OFF.

Standard parameters of a trace that is different from the main trace cannot be set.

The communication methods selectable for Standard are limited when the Replay function is executed, because Span and Capture Time are fixed.

If using MS2830A, this command is not available if Option 005/105/007/009/109 (Analysis Bandwidth Extension to 31.25 MHz) is NOT installed.
If using MS2840A, this command is not available if Option 005/105/009/109 (Analysis Bandwidth Extension to 31.25 MHz) is NOT installed.

Example of Use

To set the ACP measurement parameters conforming to 3GPP W-CDMA Uplink.

```
LOADSTD ADJ,UPLINK
```

LOGSCALEDIV/LOGSCALEDIV?

Log Scale Range

Function

This command sets the scale range of the level axis for the main trace (Log scale).

Command

```
LOGSCALEDIV scale
```

Query

```
LOGSCALEDIV?
```

Response

```
scale
```

Returns a value in dB units without a suffix code.

Parameter

`scale`	Level axis scale
Range	0.1 to 20.0 dB (1-2-5 sequence)
Resolution	0.1 dB
Default	10 dB/div
Suffix code	DB dB is used even when omitted.

Details

This command is available when the following traces are active:

- Spectrum
- Power vs Time

This command is available when Scale Mode is Log.

Example of Use

To set the scale of level axis for the main trace to 10 dB/div.

```
LOGSCALEDIV 10
```

MADJMOD/MADJMOD?

ACP Reference

Function

This command sets the reference of the relative level display for Adjacent Channel Power measurement.

Command

```
MADJMOD mode

MADJMOD num
```

Query

```
MADJMOD?
```

Response

```
mode

num
```

Parameter

`mode` — Reference method for the relative level display for ACP measurement.

`MOD`	Uses the integral power of the whole screen as a reference (Span Total method).
`TOTAL`	Same as `MOD`.
`INBAND`	Uses the total value of all carrier power as a reference (Carrier Total method).
`BOTHSIDE`	The carrier power of the largest carrier number is used as a reference for the upper offset, while the carrier power of the smallest carrier number is used as a reference for the lower offset (Both Sides of Carriers method).

`num` — Carrier number used as a reference when the reference of the relative level display for ACP measurement is set to Carrier.

Range	1 to Carrier Number (cf. `ADJCARRIERNUM`)
Resolution	1
Suffix code	None

Details

This command is available when the following trace is active:

- Spectrum

For reading out a measurement result after this command has been executed, use *WAI commands to perform synchronized control.

Example of Use

To set the relative level display reference for ACP measurement to Carrier Total and query the results.

```
MADJMOD INBAND
*WAI
RES?
```

MBIAS/MBIAS?

External Mixer Bias

Function

This command sets the external mixer's bias current.

Command

```
MBIAS bias
```

Query

```
MBIAS?
```

Response

```
bias
```

Parameter

`bias`		External mixer's bias current
	Range	0.0 to 20.0 mA
	Resolution	0.1 mA
	Suffix code	None, value is returned in mA units.
	Default	0.0 mA

Details

This function is available when Option 044/045 is installed for MS2830A.
This function is available when Option 044/046 is installed for MS2840A.
This function is readily available for MS2850A.

A value is held per one external mixer's band.

Example of Use

To set the external mixer's bias current to 10.0 mA.

```
MBIAS 10.0
MBIAS?
> 10.0
```

MEAS/MEAS?

Measure

Function

This command performs the measurement function for the main trace.

Command

```
MEAS item
```

Query

```
MEAS?
```

Response

```
item
```

Parameter

item	Measurement function type
ADJ	ACP measurement (Spectrum)
CHPWR	Channel Power measurement (Spectrum)
OBW	OBW measurement (Spectrum)
BRSTAVGPWR	Burst Average Power measurement (Power vs Time)
AM	AM Depth measurement (Power vs Time)
FM	FM deviation measurement (Frequency vs Time)
FMCW	FM CW measurement (Frequency vs Time)
OFF	Measurement function OFF
	Executable trace type is shown in parentheses.

Details

This command is available when any of the following traces is active:

- Spectrum
- Power vs Time
- Frequency vs Time

The following measurement functions cannot be used when Scale Mode is Lin:

- ACP
- Channel Power
- Burst Average Power

Note that this command does not support synchronized control in Continuous mode.

Example of Use

To perform OBW measurement and query the results.

```
SNGLS
MEAS OBW
*WAI
RES?
```

MEAS:AM?

AM Depth Measure

Function

This command performs the AM Depth measurement and queries the result.

This command has the same function as the following commands executed in this order:

```
CONF:AM
INIT:AM
FETC:AM?
```

MEAS:FM?

FM deviation Measure

Function

This command performs the FM deviation measurement and queries the result.
This command has the same function as the following commands executed in this order:

```
CONF:FM
INIT:FM
FETC:FM?
```

MEAS:FMCW?

FM CW Measure

Function

This command performs the FM CW measurement and queries the result.
This command has the same function as the following commands executed in this order:`CONF:FMCW`

```
INIT:FMCW
FETC:FMCW?
```

MEAS:POW?

Measure Power Adjust

Function

This command executes power adjustment and reads the result. Power adjustment combines the SG option and power measurement functions to set the output level of the DUT, such as an amplifier, to the specified level.

Query

```
MEAS:POW?
span,length,sg_start_level,sg_max_level,target,range[,fr
equency [,count[,adjust_log]]]
```

Response

judge,sa_input,sg_output,count_res,time,sa_input_log_n,sg_output_log_n ,count_log_n

Parameter

`span` Analysis bandwidth

Range/Resolution `1000*2, 2500*2, 5000*2, 10000*2, 25000*2,50000*2, 100000*2,250000*2, 500000*2, 1000000*2, 2500000*2, 5000000*2,10000000*2, 25000000*1, 31250000*1,50000000*3,*4, 62500000*4, 100000000*3,*5, 125000000*3,*5`

[MS269xA]

*1,*2: This can be set regardless of option configurations.

*3: Option 004/104

When the Wideband Analysis Hardware is installed, the following frequency spans can be set in addition to *1,*2.

`50000000, 100000000, 125000000`

*4: Option 077/177

When the Analysis Bandwidth Extension to 62.5 MHz option is installed, the following frequency spans can be set in addition to *1,*2.

`50000000, 62500000`

*5: Option 078/178

When the Analysis Bandwidth Extension to 125 MHz option is installed, the following frequency spans can be set in addition to *1,*2.

`100000000, 125000000`

[MS2830A], [MS2840A]

*1: MS2830A-005/105/007/009/109
MS2840A-005/105/009/109
When the Analysis Bandwidth Extension to 31.25 MHz option is installed, the following frequency spans can be set in addition to *2.
`25000000 , 31250000`

*2: Option 006/106
When the Analysis Bandwidth 10 MHz option is installed, the following frequency spans can be set.
`1000 , 2500 , 5000,10000,25000,50000, 100000 ,250000 ,500000 , 1000000 , 2500000 , 5000000 , 10000000`

*4: MS2830A-077, MS2840A-077/177
When the Analysis Bandwidth Extension to 62.5 MHz option is installed, the following frequency spans can be set in addition to *1,*2.
`50000000, 62500000`

*5: MS2830A-078, MS2840A-078/178
When the Analysis Bandwidth Extension to 125 MHz option is installed, the following frequency spans can be set in addition to *1,*2.
`100000000, 125000000`

Suffix code `HZ, KHZ, KZ, MHZ, MZ, GHZ, GZ`
Hz is used when omitted.
MAXimum, MINimum, and DEFault cannot be used.

`length` Analysis length

Range The setting range varies with . Refer to section 2.4.1 Setting Capture Time in the Operation version.

Suffix code NS,US,MS,S
S is used when omitted.

`sg_start_level` Set the SG output level set at the start. When inserting a DUT, specify the DUT input level and RF Input so the maximum input level is not exceeded.

Range
[MS269xA] –140 to –5 dBm
[MS2830A], [MS2840A]
–40.00 to +20.00 dBm (> 25 MHz)
–40.00 to +2.00 dBm (≤ 25 MHz)
–136.00 to +15.00 dBm (> 25 MHz) (Option 022/122)
–136.00 to –3.00 dBm (≤ 25 MHz) (Option 022/122)

Resolution 0.01 dBm

`sg_max_level` Set the SG maximum output level. When inserting a DUT, specify the DUT input level and RF Input so the maximum input level is not exceeded.

Range
[MS269xA] –140 to –5 dBm
[MS2830A], [MS2840A]
–40.00 to +20.00 dBm (> 25 MHz)
–40.00 to +2.00 dBm (≤ 25 MHz)
–136.00 to +15.00 dBm (> 25 MHz) (Option 022/122)
–136.00 to –3.00 dBm (≤ 25 MHz) (Option 022/122)

Resolution 0.01 dBm
Suffix code DBM, DM

`target` Target level when executing power adjustment.

Range –150 to 30 dBm (Pre-Amp Off)
–150 to 10 dBm (Pre-Amp On)
When the reference level offset value is On, it is added to the range.

Resolution 0.01 dBm
Suffix code DBM, DM

`range` Power adjustment range
Power adjusted is evaluated as PASS when adjustment is within the specified range.

Range 0 to 20 dB
Resolution 0.01 dB
Suffix code DB

`frequency` Power adjustment execution frequency

Range
[MS269xA] 125 MHz to 6 GHz
[MS2830A] 250 kHz to 3.6 GHz (Option 020/120)
250 kHz to 6 GHz (Option 041/043 and 021/121)
[MS2840A] 250 kHz to 3.6 GHz (Option 020/120)
250 kHz to 6 GHz (Option 041 and 021/121)

Resolution 0.01 Hz
Suffix code HZ, KHZ, KZ, MHZ, MZ, GHZ, GZ
Hz is used when omitted.
MAXimum, MINimum, and DEFault cannot be used.

When omitted The currently set frequency can be used.

`count` Power adjustment execution count

`Range` 1 to 10, 5 when omitted.
Resolution 1
Suffix code None
If the value is omitted, power adjustment is executed 5 times.

`adjust_log` Specifies whether or not to output Log at each power adjustment.

`ON|1` Output log
`OFF|0` Do not output log

`sg_offset_switch` Specifies whether or not to return level offset setting in SG output level setting range.

`ON|1` Return level offset setting
`OFF|0` Do not return the level offset setting values

`judge` Evaluates power adjustment
`0` PASS.

1	FAIL
Unmeasured	"–999.0" is returned.
sa_input	DUT output level
Suffix code	None, dBm units
Resolution	0.01 dB (resolution)
Unmeasured	"–999.0" is returned.
sg_output	Output level of SG Output of this equipment
Suffix code	None, dBm units
Resolution	0.01 dB (resolution)
Unmeasured	–999.0 is returned if there is no measurement.
count_res	Power adjustment execution count
time	Power adjustment time
Suffix code	None, ms units
Unmeasured	–999.0 is returned if there is no measurement.
sa_input_log_n	DUT output level at power adjustment Added to response when Log Output on
Suffix code	None, dBm units
Resolution	0.01 dB
sg_output_log_n	Output level from SG Output at each power adjustment Added to response when Log Output on
Suffix code	None, dBm units
Resolution	0.01 dB
count_log_n	Power adjustment count Added to response when Log Output on

Details

This function cannot be performed when the SG option is not installed.
This function cannot be executed during replay.
SG setting and measurement are executed repeatedly until the target level specified at target, range is reached within the count specified at count. This is used for various measurements with specified output level. In this application, the Reference Level and Attenuator settings are calculated as follows from the Adjustment Target Level, Crest Factor, and Correction value and are set automatically at the measurement section. Using this application, the Attenuator is set so that the Mixer Input Level become 0 dBm.

Reference Level setting value

$$\text{ReferenceLevel} = \langle \text{target} \rangle + \text{CrestFactor} - \text{Correction}^{*}$$

*: Crest Factor = 12 dB
However, it is rounded to 50 dBm when Reference Level > 50 dBm (30 dBm at Pre-amp On) and to –120 dBm when Reference Level < –120 dBm.

Attenuator setting values

$$\textit{Attenuator} = \text{ReferenceLevel} - \text{MixerInputLevel} + \text{Pre} - \text{AmpGain} - \text{Offset}^{*}$$

*: Mixer Input Level = 0
Pre-Amp Gain = 20 dB (only at Pre-Amp On)
Offset: Reference Level Offset

However, it is rounded to 60 dB when Attenuator > 60 and to 0 dBm when Attenuator < 0. Additionally, when the Attenuator value is an odd number, it is rounded up to the nearest even number (Example: 35 dB → 36 dB).

When using the SG offset function, switch to the SG application and set the offset level. Set the value with offset to this command arguments, sg_start_level and sg_max_level, and set sg_offset_switch to On. The responses sg_output and sg_output_log_n return the output level with offset.

Example of Use

To execute power adjustment under the following conditions:

Frequency:	2 GHz
Analysis width:	5 MHz
Analysis length:	500 µs
Start SG output level:	–30 dBm
Max. SG output level:	–5 dBm
Adjustment target level:	–10 dBm
Adjustment range:	0.4 dB
Adjustment count:	6 times
Log output:	On
SG Offset:	On

```
MEAS:POW? 5000000,500US,-30,-5,-10,0.4,2000000000,6,On
> 0,-9.6,-12.5,3,156,-28,-30,1,-9.5,-12.0,2,-9.6,-12.5,3
```

MKACT/MKACT?

Active Marker

Function

This command specifies active marker for the active trace.

Command

```
MKACT marker
```

Query

```
MKACT?
```

Response

```
marker
```

Parameter

(For Spectrum trace)

`marker`	Active marker
`MKR1`	Marker 1
`MKR2`	Marker 2
`MKR3`	Marker 3
`MKR4`	Marker 4
`MKR5`	Marker 5
`MKR6`	Marker 6
`MKR7`	Marker 7
`MKR8`	Marker 8
`MKR9`	Marker 9
`MKR10`	Marker 10

(At Power vs Time, Frequency vs Time, Phase vs Time, Spectrogram trace)

`marker`	Active marker
`MKR1`	Marker 1
`MKR2`	Marker 2
`BOTH`	Both Marker 1 and 2

Details

This command is available when any of the following traces is active:

- Spectrum
- Power vs Time
- Frequency vs Time
- Phase vs Time
- Spectrogram

For Spectrum trace, multiple markers cannot be set to Active.

Example of Use

To set Marker 1 to the active marker.

```
MKACT MKR1
```

MKAXIS/MKAXIS?

Marker Axis

Function

This command specifies the marker movement axis for the main trace.

Command

```
MKAXIS axis
```

Query

```
MKAXIS?
```

Response

```
axis
```

Parameter

`axis`	Marker movement axis
`PROB`	Probability distribution direction (vertical axis)
`DSTRBT`	Power distribution direction (horizontal axis)

Details

This command is available when the following trace is active:

- CCDF

Example of Use

To set the marker movement axis to the probability distribution direction.

```
MKAXIS PROB
```

MKCF

Marker to Center Freq

Function

This command sets the active marker frequency to the center frequency for waveform capturing.

Command

```
MKCF
```

Details

This command is available when the following trace is active:

- Spectrum
- Spectrogram

This command is not available when the marker mode is set to Off.
This command is not available while the Replay function is being executed.

Example of Use

To set the active marker frequency to the center frequency for waveform capturing.

```
MKCF
```

MKF?

Marker Frequency Query

Function

This command queries the frequency at the marker point of the active marker, and queries the frequency difference between the delta marker and the marker set by Relative To when Marker Mode is Delta.

Query

```
MKF? marker
```

Response

```
freq
```

No suffix code. Value is returned in Hz units and with a resolution of 0.01 Hz.

Parameter

`marker`	Marker number
1	Marker1
2	Marker2
3	Marker3
4	Marker4
5	Marker5
6	Marker6
7	Marker7
8	Marker8
9	Marker9
10	Marker10
When omitted:	Active marker

Details

This command is available when the following trace is active:

- Spectrum
- Spectrogram

Example of Use

To query the frequency at the active marker point.

```
MKF?
> 1000000000.00
```

MKL?

Marker Query

Function

This command queries the data at the marker point of the main trace.

Query

`MKL? type` (Spectrum, Power vs Time, Freq vs Time, Phase vs Time)

`MKL?` (CCDF)

Response

For Spectrum, Spectrogram (Unavailable for type 3 to 10)

This command queries the level at the active marker point, and the level ratio for delta markers (Spectrum).

Type	Response	Type of Data
1	l_1	Level of Marker1
2	l_2	Level of Marker2
3	l_3	Level of Marker3
4	l_4	Level of Marker4
5	l_5	Level of Marker5
6	l_6	Level of Marker6
7	l_7	Level of Marker7
8	l_8	Level of Marker8
9	l_9	Level of Marker9
10	l_{10}	Level of Marker10
When omitted	l	Level of active marker

Response has no suffix code. The units of the results are shown below:

Scale Mode	Marker Result	Units
Log	Integration	Log Scale Unit, However, μV units for V, and μW units for W
	Density	
	Peak (Fast)	Log Scale Unit, However, μV units for V, μW units for μW
	Peak (Accuracy)	
Lin	Integration	dBm units
	Density	
	Peak (Fast)	μV units
	Peak (Accuracy)	

For Power vs Time trace

Response has no suffix code.

For Power vs Time trace, returns a value in Log Scale Unit when Scale Mode is Log. However, for V, the unit is μV, and for W, the unit is μW. Returns a value in μV units when Scale Mode is Lin.

Scale Mode	Marker Result	Units
1	l_1	Level of Marker1
2	l_2	Level of Marker2
3	l_{2-1}	Ratio of Marker 2 and Marker 1 dB units. However, when Power vs Time trace and Scale Mode are Lin, it is a value of Marker2/Marker1.
When omitted	l_1,l_2,l_{2-1}	

For Frequency vs Time trace

Response has no suffix code. Returns a value in Hz units without a suffix code.

type	Response	Type of data
1	l_1	Frequency of Marker1
2	l_2	Frequency of Marker2
3	l_{2-1}	Frequency of Marker2 – Frequency of Marker1
When omitted	l_1, l_2, l_{2-1}	

For Phase vs Time trace

Response has no suffix code. Returns a value in degree units without a suffix code.

type	Response	Type of data
1	l_1	Phase of Marker1
2	l_2	Phase of Marker2
3	l_{2-1}	Phase of Marker2 – Phase of Marker1
When omitted	l_1, l_2, l_{2-1}	

For CCDF trace

data

Response has no suffix code. Returns a value in dB units (when Marker Axis is Probability).

Response has no suffix code. Returns a value in percentage units (when Marker Axis is Distribution).

Details

*** is returned if there is no marker value.

Example of Use

To query the marker value of Marker 2.

```
MKL? 2
```

MKLTYPE/MKLTYPE?

Marker Result

Function

This command sets the type of the marker display value of the main trace.

Command

```
MKLTYPE type_com
```

Query

```
MKLTYPE?
```

Response

```
type_res
```

Parameter

`type_com`	Marker value type
`INT`	Integral power in zone
`TOTAL`	Same as above
`DENS`	Power density in zone
`AVG`	Same as above
`PEAK`	Peak level in zone (emphasis on measurement speed)
`PACC`	Peak level in zone (emphasis on level accuracy)

`type_res`	Marker value type
`TOTAL`	Integral power in zone
`AVG`	Power density in zone
`PEAK`	Peak level in zone (emphasis on measurement speed)
`PACC`	Peak level in zone (emphasis on level accuracy)

Details

This command is available when either of the following traces is active:

- Spectrum
- Spectrogram

Example of Use

To set the marker display value type to the average power in zone band.

```
MKLTYPE AVG
```

MKP/MKP?

Marker Position

Function

This command sets the marker position for the main trace.

Command

`MKP time, marker`	(Power vs Time, Frequency vs Time, Phase vs Time)
`MKP sample, marker`	(When performing a Power vs Time, Frequency vs Time, or Phase vs Time trace for the MS269x series with the DigRF 3G terminal)
`MKP position, type`	(CCDF)

Query

`MKP? marker`	(Power vs Time, Frequency vs Time, Phase vs Time)
`MKP? type`	(CCDF)

Response

`time`	(Power vs Time, Frequency vs Time, Phase vs Time)
Suffix code	None. Value is returned in ms units.
`sample`	(When performing a Power vs Time, Frequency vs Time, or Phase vs Time trace for the MS269x series with the DigRF 3G terminal)
Suffix code	None. Value is returned in sample units.
`position`	(CCDF)
Suffix code	None. Value is returned in dB units (when type = `PROB`).
Suffix code	None. Value is returned in percentage units (when type = `DSTRBT`).

Parameter

(Power vs Time, Frequency vs Time, Phase vs Time trace)

`time`	Marker position
Range and resolution	Refer to the *MS2690A/MS2691A/MS2692A Signal Analyzer Operation Manual (Signal Analyzer Function Operation)* or *MS2830A/MS2840A/MS2850A Signal Analyzer Operation Manual (Signal Analyzer Function Operation)* for details.
Suffix code	`NS,US,MS,S` ms is used when omitted.

`sample`	Marker position
Range and Resolution	For details, refer to the *MS2690A/MS2691A/MS2692A Signal Analyzer Operation Manual (Signal Analyzer Function Operation)* or *MS2830A/MS2840A/MS2850A Signal Analyzer Operation Manual (Signal Analyzer Function Operation)*
Suffix code	None
`marker`	Marker type
`1`	Marker 1
`2`	Marker 2
When omitted:	Active marker Marker 1 applies when both Markers 1 and 2 are set to active.

For CCDF trace:

`position`	Marker position
Range and resolution	For details, refer to the *MS2690A/MS2691A/MS2692A Signal Analyzer Operation Manual (Signal Analyzer Function Operation)* or *MS2830A/MS2840A/MS2850A Signal Analyzer Operation Manual (Signal Analyzer Function Operation)*.
Suffix code	% (When type is `DSTRBT`) DB (When type is `PROB`) Same as above, when omitted.
`type`	Marker type
`PROB`	Power deviation (horizontal axis)
`DSTRBT`	Probability distribution (vertical axis)
When omitted:	Marker Axis

Details

This command is available when any of the following traces is active:

- Power vs Time
- Frequency vs Time
- Phase vs Time
- CCDF

Note that this command does not support synchronized control in Continuous mode.

Only when performing Power vs Time, Frequency vs Time, or Phase vs Time trace for the MS269x series with the DigRF 3G terminal, settings in sample units are available.

Example of Use

To query a marker value by setting the position of Marker 1 to 10 μs.

```
MKP 10US,1
*WAI
MKL?
```

MKPK

Signal Search

Function

This command searches for the peak point of the main trace and moves the marker.

Command

```
MKPK move
```

Parameter

`move`	Detection method
`HI`	Moves to the peak point where the marker value becomes maximum (Peak Search).
`NH`	Moves to the peak point lower than that before execution where the marker value becomes maximum (Next Peak).
`LO`	Moves to the peak point where the marker value becomes minimum (Dip Search) (Frequency vs Time).
`NL`	Moves to the peak point higher than that before execution where the marker value becomes minimum (Next Dip) (Frequency vs Time).
When omitted:	Moves to the peak point where the marker value becomes maximum (Peak Search).

Details

This command is available when any of the following traces is active:

- Spectrum
- Power vs Time
- Frequency vs Time

When the main trace is Power vs Time or Frequency vs Time while the active marker is set to BOTH (both Markers 1 and 2), only Marker 1 moves to the peak point.

Note that this command does not support synchronized control in Continuous mode.

Example of Use

To move the main trace marker to the maximum peak point and query the marker value.

```
MKPK HI
*WAI
MKL?
```

MKPX/MKPX?

Search Resolution

Function

This command sets the search resolution at the search point of the main trace.

Command

`MKPX level`

(For Spectrum trace, when Result Mode is Integration or Density; or for Spectrum trace, when Result Mode is Peak (Fast) or Peak (Accuracy) and Scale Mode is Log Scale. For Power vs Time trace, when Scale Mode is Log Scale.)

`MKPX percent`

(For Spectrum trace, when Result Mode is Peak (Fast) or Peak (Accuracy) and Scale Mode is Linear Scale. For Power vs Time trace, when Scale Mode is Linear Scale.)

`MKPX freq`

(For `Freq vs Time trace`)

Query

`MKPX?`

Response

`level`

(For Spectrum trace, when Result Mode is Integration or Density; or for Spectrum trace, when Result Mode is Peak (Fast) or Peak (Accuracy) and Scale Mode is Log Scale. For Power vs Time trace, when Scale Mode is Log Scale.)
Returns a value in dB units without a suffix code.

`percent`

(For Spectrum trace, when Result Mode is Peak (Fast) or Peak (Accuracy) and Scale Mode is Linear Scale. For Power vs Time trace, when Scale Mode is Linear Scale.)
Returns a value in percentage units without a suffix code.

`freq`

(For Freq vs Time trace)
Returns a value in Hz units without a suffix code.

Parameter

`level`	Search resolution
Range	0.01 to 50.00 dB
Resolution	0.01
Suffix code	`DB`
	dB is used when omitted.
Default	1 dB
`percent`	Search resolution
Range	0.01 to 50.00%
Resolution	0.01
Suffix code	None
`freq`	Search resolution
Range	1 to 5000000 Hz
Resolution	0.01
Suffix code	`HZ, KHZ, KZ, MHZ, MZ, GHZ, GZ`
	Hz is used when omitted.

Details

This command is available when any of the following traces is active:

- Spectrum
- Power vs Time
- Frequency vs Time

Example of Use

To set the search resolution at the main trace point to 20 dB.

```
MKPX 20DB
```

MKR/MKR?

Marker Mode

Function

This command sets the marker mode.

Command

`MKR mode,marker`	(Spectrum,Power vs Time,Frequency vs Time,Phase vs Time,Spectrogram))
`MKR mode`	(CCDF)

Query

`MKR? marker`	(Spectrum,Power vs Time,Frequency vs Time,Phase vs Time,Spectrogram))
`MKR?`	(CCDF)

Response

`mode`

Parameter

(For Spectrum trace)

`mode`	Marker mode
`ON`	Normal
`DELTA`	Delta
`FIXED`	Fixed
`OFF`	Off
`marker`	Marker type
`1`	Marker1
`2`	Marker2
`3`	Marker3
`4`	Marker4
`5`	Marker5
`6`	Marker6
`7`	Marker7
`8`	Marker8
`9`	Marker9
`10`	Marker10
When omitted:	Active marker

(At Power vs Time, Frequency vs Time, Phase vs Time, CCDF, Spectrogram trace)

`mode`	Marker ON/OFF
`ON`	Sets the marker to ON
`OFF`	Sets the marker to OFF

`marker`	Marker type
`1`	Marker 1
`2`	Marker 2
When omitted:	Active marker Marker 1 applies when both Markers 1 and 2 are active.

Details

For reading out a measurement result after this command has been executed, use *WAI commands to perform synchronized control.

Example of Use

To query a marker value by setting the marker mode of the active marker to Delta.

```
MKR 1
*WAI
MKL?
```

MKRL

Marker to Reference Level

Function

This command sets the active marker level to the reference level.

Command

```
MKRL
```

Details

This command is available when either of the following traces is active:

- Spectrum
- Spectrogram

When Marker Result Type is Average Power, a value converted into Total Power is set to the reference level.

This command is not available when the marker mode is set to Off.

Example of Use

To set the marker level to the reference level.

```
MKRL
```

MKW/MKW?

Marker Width (Grid)

Function

This command sets the zone width of the marker in grid (div).

Command

```
MKW width,marker
```

Query

```
MKW? marker
```

Response

```
width
```

Parameter

width	Zone marker width
0	0.5 div
5	1 div
6	2 div
7	5 div
2	10 div
1	Spot
marker	Marker type
1	Marker1
2	Marker2
3	Marker3
4	Marker4
5	Marker5
6	Marker6
7	Marker7
8	Marker8
9	Marker9
10	Marker10
When omitted:	Active marker

Details

This command is available when either of the following traces is active:

- Spectrum
- Spectrogram (Unavailable for Marker 3 to 10)

Returns *** when the zone marker width is different from the set value of the width parameter when queried.

The target marker is set to be active when the width of zone marker is changed. Also, it is set to Normal when Marker Mode is set to Fixed or Off.

Width cannot be set to Spot when Marker Result is Integration or Density.

For reading out a measurement result after this command has been

executed, use *WAI commands to perform synchronized control.

Example of Use

To query a marker value by setting the width of Marker 2 to Spot.

```
MKW 1,2
*WAI
MKL?
```

MKZF/MKZF?

Marker Frequency

Function

This command sets the center frequency of the marker.

Command

```
MKZF freq,marker
```

Query

```
MKZF? marker
```

Response

```
freq
```

Parameter

`freq` Center frequency of marker

Range and resolution

Within the frequency range of trace display
Refer to the *MS2690A/MS2691A/MS2692A Signal Analyzer Operation Manual (Signal Analyzer Function Operation)* or *MS2830A/MS2840A/MS2850A Signal Analyzer Operation Manual (Signal Analyzer Function Operation)* for details.

Suffix code `HZ, KHZ, KZ, MHZ, MZ, GHZ, GZ`

Hz is used when omitted.

`marker` Marker type

`1`	Marker1
`2`	Marker2
`3`	Marker3
`4`	Marker4
`5`	Marker5
`6`	Marker6
`7`	Marker7
`8`	Marker8
`9`	Marker9
`10`	Marker10
When omitted:	Active marker

Details

This command is available when the following trace is active:

- Spectrum
- Spectrogram (Unavailable for Marker 3 to 10)

For Spectrum, when the center frequency of a zone marker is changed, the marker is set to ON and becomes the active marker.

Note that this command does not support synchronized control in Continuous mode.

Example of Use

To set the center frequency of the active marker to 6 GHz.

```
MKZF 6GHZ
```

MMEM:LOAD:IQD

Execute Replay

Function

This command executes the Replay function. IQ data for which the Replay function is to be executed can be selected by selecting a file name, drive name, and an application.

Command

```
MMEM:LOAD:IQD filename,device,application
```

Parameter

`filename`	Target file name Character string within 128 characters enclosed by double quotes (“ ”) or single quotes (‘ ’) (excluding extension) The following characters cannot be used: `\ / : * ? " ' ` ' < > |`
`device`	Drive name `A,B,D,E,F,...`
`application`	Application to load IQ data file
`SIGANA`	Signal Analyzer
`EXTDIG`	Extended Digitizing

Details

This command is not available when Terminal is set to DigRF 3G (only for MS269x Series).

Example of Use

To query the IQ data file “TEST” of the signal analyzer from drive D, and execute the Replay function.

```
MMEM:LOAD:IQD "TEST",D,SIGANA
```

MMEM:LOAD:IQD:INF?

Replaying File Information Query

Function

This command queries the file information when the Replay function is being executed.

Query

```
MMEM:LOAD:IQD:INF?
```

Response

```
filename,start_time,time_length
```

Parameter

`filename`	File name Character string within 128 characters (excluding extension) *** is returned when the Replay function is not executed.
`start_time`	Start time of analyzable IQ data
Resolution	1 ns No suffix code. Value is returned in S units. –999999999999 is returned when the Replay function is not executed.
`time_length`	Time length of analyzable IQ data
Resolution	1 ns No suffix code. Value is returned in S units. –999999999999 is returned when the Replay function is not executed.

Example of Use

To query the file information when the Replay function is being executed.

```
MMEM:LOAD:IQD:INF?
> TEST,-38.838771500,38.838771500
```

MMEM:LOAD:IQD:INF:APPL?

Replay Application Query

Function

This command queries the name of the application for which the Replay function is executed.

Query

```
MMEM:LOAD:IQD:INF:APPL?
```

Response

```
application
```

Parameter

application	Application to load IQ data file
SIGANA	Signal Analyzer
EXTDIG	Extended Digitizing
	*** is returned when the Replay function is executed.

Example of Use

To query the name of the application for which the Replay function is executed.

```
MMEM:LOAD:IQD:INF:APPL?
```

MMEM:LOAD:IQD:INF:COND?

Replay Level Over Query

Function

This command queries whether Level Over is displayed while the Replay function is being executed.

Query

```
MMEM:LOAD:IQD:INF:COND?
```

Response

```
switch
```

1	Level Over is displayed.
0	Normal
	–999.0 is returned when the Replay function is executed.

Example of Use

To query whether Level Over is displayed when the Replay function is being executed.

```
MMEM:LOAD:IQD:INF:COND?
> 0
```

MMEM:LOAD:IQD:INF:CORR?

Replay Correction Query

Function

This command queries the Correction value when the Replay function is being executed.

Query

```
MMEM:LOAD:IQD:INF:CORR?
```

Response

```
real
```

Parameter

`real`	Correction level
`Range`	–100 to 100 dB 0.000 is returned when Correction is set to Off. –999.0 is returned when the Replay function is not executed.

Example of Use

To query the Correction value when the Replay function is being executed.

```
MMEM:LOAD:IQD:INF:CORR?
```

MMEM:LOAD:IQD:INF:DEV?

Replay Device Query

Function

This command queries the name of the drive for which the Replay function is executed.

Query

```
MMEM:LOAD:IQD:INF:DEV?
```

Response

```
device
```

Parameter

`device`	Drive name `A,B,D,E,F,...` *** is returned when the Replay function is not executed.

Example of Use

To query the name of the drive for which the Replay function is executed.

```
MMEM:LOAD:IQD:INF:DEV?
```

MMEM:LOAD:IQD:INF:ERR?

Replay Level Over Query

Function

This command queries whether Replay Error Info. icon is displayed while the Replay function is being executed.

Query

```
MMEM:LOAD:IQD:INF:ERR?
```

Response

```
switch
```

1	Replay Error Info. icon is displayed.
0	Normal –999.0 is returned when the Replay function is not executed.

Details

The Replay Error Info. icon is displayed if the loaded xml file contains error information.

Example of Use

To query whether Replay Error Info. icon is displayed while the Replay function is being executed.

```
MMEM:LOAD:IQD:INF:ERR?
> 0
```

MMEM:LOAD:IQD:INF:FILE?

Replay Filename Query

Function

This command queries the name of the file for which the Replay function is executed.

Query

```
MMEM:LOAD:IQD:INF:FILE?
```

Response

```
filename
```

Parameter

filename	File name Character string within 128 characters (excluding extension) *** is returned when the Replay function is not executed.

Example of Use

To query the name of the file for which the Replay function is executed.

```
MMEM:LOAD:IQD:INF:FILE?
```

MMEM:LOAD:IQD:INF:LENG?

Replay Time Length Query

Function

This command queries the time length of analyzable IQ data for the Replay function.

Query

```
MMEM:LOAD:IQD:INF:LENG?
```

Response

```
time_length
```

Parameter

time_length	Time length of analyzable IQ data
Resolution	1 ns No suffix code. Value is returned in S units. –999999999999 is returned when the Replay function is not executed.

Example of Use

To query the time length of analyzable IQ data for the Replay function.

```
MMEM:LOAD:IQD:INF:LENG?
```

MMEM:LOAD:IQD:INF:ROSC?

Replay External Reference Query

Function

This command queries the frequency reference signal source when the Replay function is executed.

Query

```
MMEM:LOAD:IQD:INF:ROSC?
```

Response

```
source
```

Parameter

<source>	Frequency reference signal source
INT	Internal reference signal source
INTU	Internal reference signal source (Unlock state)
EXT	External reference signal source
EXTU	External reference signal source (Unlock state)
	*** is returned when the Replay function is not executed.

Example of Use

To query the frequency reference signal source when the Replay function is executed.

```
MMEM:LOAD:IQD:INF:ROSC?
```

MMEM:LOAD:IQD:INF:STAR?

Replay Start Time Query

Function

This command queries the start time of analyzable IQ data for the Replay function.

Query

```
MMEM:LOAD:IQD:INF:STAR?
```

Response

```
start_time
```

Parameter

start_time	Start time of analyzable IQ data
Resolution	1 ns No suffix code. Value is returned in S units. –999999999999 is returned when the Replay function is not executed.

Example of Use

To query the start time of analyzable IQ data for the Replay function.

```
MMEM:LOAD:IQD:INF:STAR?
```

MMEM:LOAD:IQD:INF:STAT?

Replay Execute Query

Function

This command queries whether the Replay function is executed.

Query

```
MMEM:LOAD:IQD:INF:STAT?
```

Response

```
switch
```

Parameter

switch	Replay function On/Off
1	On
0	Off

Example of Use

To query whether the Replay function is executed.

```
MMEM:LOAD:IQD:INF:STAT?
> 1
```

MMEM:LOAD:IQD:STOP

Stop Replay

Function

This command stops the Replay function.

Command

```
MMEM:LOAD:IQD:STOP
```

Details

This command is available while the Replay function is being executed.

Example of Use

To stop the Replay function.

```
MMEM:LOAD:IQD:STOP
```

MMEM:STOR:IQD:LENG/MMEM:STOR:IQD:LENG?

Time Length

Function

This command sets the time length of IQ data to be saved when executing Save Captured Data with Time Range set to MANual.

Command

```
MMEM:STOR:IQD:LENG time
```

Query

```
MMEM:STOR:IQD:LENG?
```

Response

```
time
```

No suffix code. Value is returned in S units.

Parameter

`time`	Time length of IQ data
Range	Time Resolution to Capture Time Length – Start Time
Resolution	Time Resolution
Suffix code	NS, US, MS, S S is used when omitted.

Details

This command is not available in the following cases:

- When Time Range is set to FULL or ATIMe.
- When Time Range is set to Manual AND Start Time is set to the upper limit.
- When Terminal is set to DigRF 3G (only for MS269x Series).

Example of Use

To set the time length to 12 ms.

```
MMEM:STOR:IQD:LENG 12MS
MMEM:STOR:IQD:LENG?
> 0.01200000
```

MMEM:STOR:IQD:LENG:SAMP/MMEM:STOR:IQD:LENG:SAMP?

Sample Length

Function

This command sets the sample length of IQ data to be saved when executing Save Captured Data with Time Range set to MANual.

Command

```
MMEM:STOR:IQD:LENG:SAMP sample
```

Query

```
MMEM:STOR:IQD:LENG:SAMP?
```

Response

```
sample
```

Parameter

`sample`	Sample length of IQ data
Range	Time Resolution to Capture Time Length – Start Time
Resolution	Time Resolution

Details

This command is not available in the following cases:

- When Time Range is set to FULL or ATIMe.
- When Time Range is set to Manual AND Start Time is set to the upper limit.
- When Terminal is set to RF.

Example of Use

To set the sample length for saving the IQ data to 15360000.

```
MMEM:STOR:IQD:LENG:SAMP 15360000
MMEM:STOR:IQD:LENG:SAMP?
> 15360000
```

MMEM:STOR:IQD:MODE/MMEM:STOR:IQD:MODE?

Time Range

Function

This command sets the range of IQ data to be saved when executing Save Captured Data.

Command

```
MMEM:STOR:IQD:MODE mode
```

Query

```
MMEM:STOR:IQD:MODE?
```

Response

```
mode
```

Parameter

mode	Range over which IQ data is stored.
FULL	Full range
ATIM	Range set in Analysis Time
MAN	User-specified range

Details

ATIMe and MANual cannot be set when Terminal is set to RF and when Capture Time Length is set to 0 s. Furthermore, ATIMe cannot be set when Analysis Time Length is set to 0 s.
ATIMe and MANual cannot be set when Terminal is set to DigRF and when Capture Sample Length is set to 0 s. Furthermore, ATIMe cannot be set when Analysis Sample Length is set to 0 s.

Example of Use

To set the range to Full.

```
MMEM:STOR:IQD:MODE FULL
MMEM:STOR:IQD:MODE?
> FULL
```

MMEM:STOR:IQD:STAR/MMEM:STOR:IQD:STAR?

Start Time

Function

This command sets the start position of IQ data to be saved when executing Save Captured Data with Time Range set to MANual.

Command

```
MMEM:STOR:IQD:STAR time
```

Query

```
MMEM:STOR:IQD:STAR?
```

Response

```
time
```

No suffix code. Value is returned in S units.

Parameter

`time` Start position

(When the Replay function is not executed.)

Range	0 to Capture Time Length – Time Length
Resolution	Time Resolution

(When the Replay function is executed.)

Range	Start time of analyzable IQ data
Resolution	Time Resolution
Suffix codes	`NS, US, MS, S`
	S is used when omitted.

Details

This command is not available in the following cases:

- When Time Range is set to FULL or ATIMe.
- When Time Range is set to Manual AND when Time Length is set to the upper limit.
- When Terminal is set to DigRF 3G (only for MS269x Series).

Example of Use

To set the start position to 12 ms.

```
MMEM:STOR:IQD:STAR 12MS
MMEM:STOR:IQD:STAR?
> 0.01200000
```

MMEM:STOR:IQD:STAR:SAMP/MMEM:STOR:IQD:STAR:SAMP?

Start Sample

Function

This command uses the number of samples to set the start position of IQ data to be saved when executing Save Captured Data with Time Range set to MANual.

Command

```
MMEM:STOR:IQD:STAR:SAMP sample
```

Query

```
MMEM:STOR:IQD:STAR:SAMP?
```

Response

```
sample
```

Value is returned without a suffix code.

Parameter

`sample`	Start position
Range	0 to Capture Sample Length – Sample Length
Resolution	Time Resolution
Default	0
Suffix code	None

Details

This command is not available in the following cases:

- When Time Range is set to FULL or ATIMe.
- When Time Range is set to Manual AND when Time Length is set to the upper limit.
- When Terminal is set to RF.

Example of Use

To set the start position to 15360000 sample.

```
MMEM:STOR:IQD:STAR:SAMP 15360000
MMEM:STOR:IQD:STAR:SAMP?
> 15360000
```

MMEM:STOR:TRAC

Save Wave Data

Function

This command saves the waveform data in .csv file.

Command

```
MMEM:STOR:TRAC trace,filename,device
```

Parameter

`trace`	Trace to save
`TRAC1`	Trace currently displayed
`ALL`	Trace currently displayed
`filename`	Name of the file to be saved. Character string within 32 characters enclosed by double quotes (“ ”) or single quotes (‘ ’) (excluding extension) The following characters cannot be used: `\ / : * ? " ' ` ' < > |` Automatically named as “WaveData date sequential number.csv” when omitted.
`device`	Drive name `A,B,D,E,F,...` D drive is used when omitted.

Details

This function is available when the waveform is captured under the following conditions:

- Measurement performed using Single Measurement has finished.

When the file name is omitted, consecutive numbers from 0 to 99 are added to files. No more files can be saved if numbers up to 99 are already used.

Files are saved to the following directory in the specified drive.

\Anritsu Corporation\Signal Analyzer\User Data\Trace Data\Signal Analyzer

Up to 100 files can be saved in a folder.

Example of Use

To save the trace waveform-data file "trace" to the E drive.

```
MMEM:STOR:TRAC TRAC1,"trace",E
```

MMETHOD/MMETHOD?

Measure Method

Function

This command selects the measurement method for CCDF trace.

Command

```
MMETHOD method
```

Query

```
MMETHOD?
```

Response

```
method
```

Parameter

`method`	Measurement method for CCDF trace
`APD`	APD measurement
`CCDF`	CCDF measurement

Details

This command is available when the following trace is active:

- CCDF

Example of Use

To set the APD measurement mode.

```
MMETHOD APD
```

MOBW/MOBW?

OBW Method

Function

This command sets the OBW measurement method.

Command

```
MOBW method
```

Query

```
MOBW?
```

Response

```
method
```

Parameter

`method`	Measurement method
`N`	N% method (Default)
`XDB`	X dB method

Details

This command is available when the following trace is active:

- Spectrum

Example of Use

To set the OBW measurement method to X dB Down and query the results.

```
MOBW XDB
*WAI
RES?
```

MSTAT?

Measurement Status Query

Function

This command queries the main trace status.

Query

```
MSTAT?
```

Response

```
status
```

Parameter

status	Status
0	Normal end
2	Level over
9	Not measured

Example of Use

To query the main trace status.

```
MSTAT?
```

MXRMODE/MXRMODE?

Mixer Mode

Function

This command switches between Internal and External Mixer.

Command

```
MXRMODE mode
```

Query

```
MXRMODE?
```

Response

```
mode
```

Parameter

`mode`	Mixer mode
`EXT`	Selects External Mixer
`INT`	Selects Internal Mixer

Details

This function is available when Option 044/045 is installed for MS2830A.
This function is available when Option 044/046 is installed for MS2840A.
This function is readily available for MS2850A.

Example of Use

To use external mixer.

```
MXRMODE EXT
MXRMODE?
> EXT
```

MZWF/MZWF?

Marker Width (Frequency)

Function

This command sets the zone width of the marker in frequency.

Command

```
MZWF freq,marker
```

Query

```
MZWF? marker
```

Response

`freq`

Returns a value in Hz units without a suffix code.

Parameter

`freq`	Marker frequency width
Resolution	0.01 Hz
Range	Within frequency range of trace display (Restricted according to the marker's zone width) Refer to the *MS2690A/MS2691A/MS2692A Signal Analyzer Operation Manual (Signal Analyzer Function Operation)* or *MS2830A/MS2840A/MS2850A Signal Analyzer Operation Manual (Signal Analyzer Function Operation)* for details.
Suffix code	`HZ, KHZ, KZ, MHZ, MZ, GHZ, GZ` Hz is used when omitted.
`marker`	Marker type
`1`	Marker1
`2`	Marker2
`3`	Marker3
`4`	Marker4
`5`	Marker5
`6`	Marker6
`7`	Marker7
`8`	Marker8
`9`	Marker9
`10`	Marker10
When omitted:	Active marker

Details

This command is available when the following trace is active:

- Spectrum
- Spectrogram

The target marker is set to be active when the width of zone marker is changed. Also, it is set to Normal when Marker Mode is set to Fixed or Off.

For reading out a measurement result after this command has been executed, use *WAI commands to perform synchronized control.

Example of Use

To query a marker value by setting the active marker frequency width to 2 MHz.

```
MZWF 2000000
*WAI
MKL?
```

NOISECANCEL/NOISECANCEL?

Noise Cancel

Function

This command sets whether to enable the noise-canceling function.

Command

```
NOISECANCEL on_off
```

Query

```
NOISECANCEL?
```

Response

```
on_off
```

Parameter

on_off	Noise-canceling function on/off
ON	Enables the noise-canceling function.
OFF	Disables the noise-canceling function.

Details

This command is available only when the main trace is Spectrum or Power vs Time (cf. TRCCHG).

The noise canceling function is fixed to Off in the following cases:

- ACP is Off (when the active trace is Spectrum).
- Burst Average Power is Off (when the active trace is Power vs Time).
- Standard is Off.

- The Standard Parameter which can execute the noise canceling function is not set in Load Standard Parameter.
- Any of Span, RBW, and Time Detection has been changed from Standard Parameter (ACP).
- Any of Span, Detection, Filter Type, Filter BW (when Filter Type is not set to Off), and Filter Rolloff Factor (when Filter Type is Nyquist or Root Nyquist) has been changed from Standard Parameter (Burst Average Power).
- Scale Mode is Linear.
- When the Replay function is being executed.

Example of Use

To disable the noise canceling function.

```
NOISECANCEL OFF
```

OBWN/OBWN?

OBW N% Ratio

Function

This command sets the OBW (N% method) condition.

Command

```
OBWN ratio
```

Query

```
OBWN?
```

Response

```
ratio
```

Returns a value in percentage units without a suffix code.

Parameter

`ratio`	N%
Range	0.01 to 99.99%
Resolution	0.01
Suffix code	None

Details

This function can be set when the following trace is active:

- Spectrum

For reading out a measurement result after this command has been executed, use *WAI commands to perform synchronized control.

Example of Use

To set to 12.34% and query the results.

```
OBWN 12.34
*WAI
RES?
```

OBWXDB/OBWXDB?

OBW X dB Value

Function

This command sets the OBW (X dB) condition.

Command

```
OBWXDB level
```

Query

```
OBWXDB?
```

Response

```
level
```

Returns a value in dB units without a suffix code.

Parameter

`level`	X dB
Range	0.01 to 100.00 dB
Resolution	0.01 dB
Suffix code	`DB` dB is used even when omitted.
Default	25.00 dB

Details

This command is available when the following trace is active:

- Spectrum

For reading out a measurement result after this command has been executed, use *WAI commands to perform synchronized control.

Example of Use

To set to 12.34 dB and query the results.

```
OBWXDB 12.34
*WAI
RES?
```

PEAKTOPEAK/PEAKTOPEAK?

Display Peak to Peak Value On/Off

Function

This command sets the Peak to Peak measurement ON/OFF.

Command

```
PEAKTOPEAK on_off
```

Query

```
PEAKTOPEAK?
```

Response

```
on_off
```

Parameter

`on_off`	Peak to peak measurement function ON/OFF
`ON`	On
`OFF`	Off

Details

This command is available when either of the following traces is active:

- Power vs Time
- Frequency vs Time

For Power vs Time trace, this command is available only when Scale Mode is Linear Scale.

Example of Use

To set the Peak to peak measurement function to On and query the results.

```
PEAKTOPEAK ON
*WAI
PEAKTOPEAKRES?
```

PEAKTOPEAKRES?

Peak to Peak Value Query

Function

This command queries the results of the Peak to Peak measurement.

Query

```
PEAKTOPEAKRES? format
```

Response

`pos` (when format is POS)

`neg` (when format is NEG)

`p-p` (when format is DELTAAVG)

Returns a value in percentage units without a suffix code.
Values in % units will be returned when the terminal is DigRF 3G (only for MS269x Series) and the Input Source is Complex. Values in µV units will be returned if it is not set to Complex.
(Power vs Time)

No suffix code. Value is returned in Hz units.
(Frequency vs Time)

`avg` (when format is AVG)

Returns a value in µV units without a suffix code.
(Power vs Time)

Returns a value in Hz units without a suffix code.
(Frequency vs Time)

`pos,neg,p-p,avg` (when format is omitted)

Parameter

`format`	Result of Peak to Peak measurement
`POS`	+Peak value
`NEG`	–Peak value
`DELTAAVG`	{(–Peak) – (+Peak)}/2
`AVG`	Average value
When omitted:	All values

Details

Returns *** when the measurement results in an error.

This command is available when either of the following traces is active:

- Power vs Time
- Frequency vs Time

Example of Use

To query all the results of Peak to Peak measurement.

```
PEAKTOPEAKRES?
```

POW:MW:PRES/POW:MW:PRES?

Micro Wave Preselector Bypass

Function

This command sets the micro wave preselector bypass.

Command

```
POW:MW:PRES switch
```

Query

```
POW:MW:PRES?
```

Response

```
status
```

Parameter

`switch`	Microwave Preselector Bypass
`ON|1`	Enables bypassing
`OFF|0`	Disables bypassing
Default	`ON`
`status`	Microwave Preselector Bypass
`1`	Enables bypassing
`0`	Disables bypassing

Details

This command is available when Option 067/167 is installed for MS269xA.
This command is available when Option 007/067/167 is installed for MS2830A.
This command is available when Option 067/167 is installed for MS2840A.
This command is available for MS2850A
If Frequency Span is 50 MHz or more, the microwave preselector is bypassed regardless of this setting.

Example of Use

To set micro wave preselector bypass to ON.

```
POW:MW:PRES ON
```

To query the state of micro wave preselector bypass

```
POW:MW:PRES?
> 1
```

PRE

Initialize

Function

This command initializes the parameters.

Command

```
PRE
```

Example of Use

To initialize the parameters.

```
PRE
```

PREAMP/PREAMP?

Pre Amp

Function

This command sets Pre Amp On/Off.

Command

```
PREAMP on_off
```

Query

```
PREAMP?
```

Response

```
on_off
```

Parameter

on_off	Pre Amp On/Off
ON	On
OFF	Off (Default)

Details

[MS269xA] The pre-amplifier is fixed to Off when the Option 008/108 6 GHz Preamplifier is not installed.

[MS2830A] This pre-amplifier is fixed to Off when Option 008/108/068/168 Preamplifier is not installed.

[MS2840A] This pre-amplifier is fixed to Off when Option 008/108/068/168/069/169 Preamplifier is not installed.

[MS2850A] This pre-amplifier is fixed to Off when Option 068/168 Preamplifier is not installed.

[Common] This command is not available in the following cases:

- When Terminal is DigRF 3G (only for MS269x Series)
- When the Replay function is being executed.

Example of Use

To set Pre Amp to On.

```
PREAMP ON
```

PRESEL/PRESEL?

Pre-selector

Function

This command sets the Preselector peaking bias value.

Command

```
PRESEL action
PRESEL bias
```

Query

```
PRESEL?
```

Response

```
bias
```

Parameter

`action`	Action
`AUTO`	Sets peaking bias value automatically.
`PRESET`	Sets peaking bias value to 0.
`bias`	Peaking bias value
Range	–128 to 127
Resolution	1
Default	0

Details

The automatic setting of the peaking bias value cannot be used under the following conditions.
Also, the peaking bias value setting is available, but the preselector cannot be used:

[Common]

- Replay function is being executed.
- Frequency Span is ≥ 50 MHz.
- Option 007/067/167 is installed and Preselector Bypass is ON.
- Frequency Band Mode is Normal and Center Frequency is ≤ 6.0 GHz.
- Frequency Band Mode is Spurious and Center Frequency is ≤ 4.0 GHz.

This command is not available in the following conditions:

[MS269xA]

- MS2690A is used.
- Terminal is DigRF 3G.

[MS2830A], [MS2840A], [MS2850A]

- MS2830A-040/041/043 is used.
- MS2840A-040/041 is used.

Example of Use

To set the peaking bias value to 1.

```
PRESEL 1
```

PROBPWR?

Power Deviation and Distribution Query

Function

This command queries the power deviation and probability distribution.

Query

```
PROBPWR? type
```

Response

$pd_1,pd_2,pd_3,pd_4,pd_5,pd_6$ (When type is PWR)

Returns a value without a suffix code in dB units with a resolution of 0.01 dB.

Each indicates power deviation at the following probability distribution:

- 10, 1, 0.1, 0.01, 0.001, 0.0001%

r_1,r_2,r_3,r_4,r_5 (When type is PROB)

Returns a value without a suffix code in percentage units with a resolution of 0.0001%.

Each of them indicates probability distribution at the following power deviation:

- 1, 2, 3, 4, 5 dB (When Horizontal Scale is set to 5 dB)
- 2, 4, 6, 8, 10 dB (When Horizontal Scale is set to 10 dB)
- 4, 8, 12, 16, 20 dB (When Horizontal Scale is set to 20 dB)
- 10, 20, 30, 40, 50 dB (When Horizontal Scale is set to 50 dB)

Parameter

type	Query target
PWR	Power deviation at specific probability distribution
PROB	Probability distribution at specific power deviation

Details

This command is available when the following trace is active:

- CCDF

Returns *** when no power or probability matches.

Example of Use

To query the probability distribution at specific power deviation.

```
PROBPWR? PROB
```

RB/RB?

Resolution Bandwidth

Function

This command sets the resolution bandwidth (RBW).

Command

```
RB bandwidth
RB AUTO
```

Query

```
RB?
```

Response

`bandwidth`

No suffix code. Value is returned in Hz units.

Parameter

`bandwidth`	Resolution bandwidth (RBW)
Range and resolution	1 Hz to 10 MHz (1–3 sequence)
Suffix code	`HZ, KHZ, KZ, MHZ, MZ, GHZ, GZ` Hz is used when omitted.
`AUTO`	Sets the resolution bandwidth automatically, according to the frequency span settings.

Details

This command is available when the following trace is active:

- Spectrum
- Spectrogram

The setting range of this function is limited according to the frequency span setting. Refer to the *MS2690A/MS2691A/MS2692A Signal Analyzer Operation Manual (Signal Analyzer Function Operation)* or *MS2830A/MS2840A/MS2850A Signal Analyzer Operation Manual (Signal Analyzer Function Operation)* for details.

Example of Use

To set the RBW to 300 Hz.

```
RB 300
```

READ:AM?

AM Depth Read

Function

This command performs the AM Depth measurement and queries the result.
It works in the same way as the two commands are transmitted in the following order:

```
INIT:AM
FETC:AM?
```

READ:FM?

FM deviation Read

Function

This command performs the FM deviation measurement and queries the result.
It works in the same way as the two commands are transmitted in the following order:

```
INIT:FM
FETC:FM?
```

READ:FMCW?

FM CW Read

Function

This command performs the FM CW measurement and queries the result.
It works in the same way as the two commands are transmitted in the following order:

```
INIT:FMCW
FETC:FMCW?
```

REFCLOCK_ADJUST/REFCLOCK_ADJUST?

Adjust Reference Clock

Function

This command sets the adjustment value of the internal reference signal oscillator (Reference Clock).

Command

```
REFCLOCK_ADJUST value
REFCLOCK_ADJUST PRESET
```

Query

```
REFCLOCK_ADJUST?
```

Response

```
value
```

Parameter

`value`		Adjustment value
	Range	0 to 1023 (MS2830A) 0 to 4095 (MS2840A, MS2850A)
	Resolution	1
`PRESET`		Resets the adjustment value to the factory default value.

Details

This command is not available while the Replay function is being executed.

Example of Use

To set the adjustment value of the internal reference signal oscillator to 511.

```
REFCLOCK_ADJUST 511
```

RES?

Measurement Result Query

Function

This command queries the measurement results of the measurement function for the main trace.

Query

```
RES?
RES? mode
```

(in ACP measurement)

Response

Format varies according to the measurement function to be executed. Refer to the following pages for details.

Parameter

mode	Query mode of ACP result
CARRIER	Queries the result of carrier power.
OFFSET	Queries the adjacent channel power result.
When omitted:	Queries the adjacent channel power result.

Details

Returns *** when the measurement results in an error.
This command is available when any of the following traces is active:

- Spectrum
- Power vs Time
- Frequency vs Time

The mode can be specified when the following measurement function is executed.

- ACP

Example of Use

To execute OBW measurement and query the result.

```
MEAS OBW
*WAI
RES?
```

Response (detailed)

For ACP measurement (for Spectrum trace and when mode is set to OFFSET or omitted):

`lc(,lc),lr1,la1,ur1,ua1,lr2,la2,ur2,la2,lr3,la3,ur3,ua3`

Returns values without suffix codes.

Two lc values will be output when ACP Reference is set to Both Sides of Carriers.

Symbol	Description	Units
`lc`	Reference power (Power specified by ACP Reference)	When Scale Mode is Log: In Log Scale Unit units (dBm for V, μW for W)
`la1`	Absolute value of the total power centered at {(Carrier Freq.) – (Offset Freq.1)}	Same as `lc`
`lr1`	Relative value of the total power centered at {(Carrier Freq.) – (Offset Freq.1)} and the reference power.	In dBc units
`ua1`	Absolute value of the total power centered at {(Carrier Freq.) + (Offset Freq.1)}	Same as `lc`
`ur1`	Relative value of the total power centered at {(Carrier Freq.) + (Offset Freq.1)} and the reference power.	Same as `lr1`
`la2`	Absolute value of the total power centered at {(Carrier Freq.) – (Offset Freq.2)}	Same as `lc`
`lr2`	Relative value of the total power centered at {(Carrier Freq.) – (Offset Freq.2)} and the reference power.	Same as `lr1`
`ua2`	Absolute value of the total power centered at {(Carrier Freq.) + (Offset Freq.2)}	Same as `lc`
`ur2`	Relative value of the total power centered at {(Carrier Freq.) + (Offset Freq.2)} and the reference power.	Same as `lr1`
`la3`	Absolute value of the total power centered at {(Carrier Freq.) – (Offset Freq.3)}	Same as `lc`
`lr3`	Relative value of the total power centered at {(Carrier Freq.) – (Offset Freq.3)} and the reference power.	Same as `lr1`
`ua3`	Absolute value of the total power centered at {(Carrier Freq.) + (Offset Freq.3)}	Same as `lc`
`ur3`	Relative value of the total power centered at {(Carrier Freq.) + (Offset Freq.3)} and the reference power.	Same as `lr1`

For ACP measurement (for Spectrum trace and when mode is set to CARRIER)

`ls,lca,lc1,lc2,lc3,lc4,lc5,lc6,`
`lc7,lc8,lc9,lc10,lc11,lc12`

Returns a value without a suffix code.

The result of the carrier position greater than the carrier number set by ACP Carrier Number is output as "***".

Symbol	Description	Units
`ls`	Absolute value of the integral power on the whole screen	When Scale Mode is Log in Log Scale Unit (however, dBm in V, and μW in W)
`lca`	Absolute value of the total of all carrier power	Same as `ls`
`lc1`	Absolute value of the power of carrier – 1	Same as `ls`
`lc2`	Absolute value of the power of carrier – 2	Same as `ls`
`lc3`	Absolute value of the power of carrier – 3	Same as `ls`
`lc4`	Absolute value of the power of carrier – 4	Same as `ls`
`lc5`	Absolute value of the power of carrier – 5	Same as `ls`
`lc6`	Absolute value of the power of carrier – 6	Same as `ls`
`lc7`	Absolute value of the power of carrier – 7	Same as `ls`
`lc8`	Absolute value of the power of carrier – 8	Same as `ls`
`lc9`	Absolute value of the power of carrier – 9	Same as `ls`
`lc10`	Absolute value of the power of carrier – 10	Same as `ls`
`lc11`	Absolute value of the power of carrier – 11	Same as `ls`
`lc12`	Absolute value of the power of carrier – 12	Same as `ls`

For Channel Power measurement (for Spectrum trace):

`power,density`

Returns values without suffix codes.

Symbol	Description	Units
`power`	Total power of the band specified using Channel bandwidth (CHPWRWIDTH command)	When Scale Mode is Log: In Log Scale Unit units (dBm for V, μW for W)
`density`	Power density of the band specified using Channel bandwidth (CHPWRWIDTH command)	Same as `power`

For OBW measurement (for Spectrum trace):

`obw,center,start,stop`

Returns values without suffix codes.

Symbol	Description	Units
`obw`	Occupied bandwidth	In Hz units
`center`	Center frequency of the occupied bandwidth	In Hz units
`start`	Start frequency of the occupied bandwidth	In Hz units
`stop`	Stop frequency of the occupied bandwidth	In Hz units

For Burst Average Power measurement (for Power vs Time trace):

`level`

Returns a value without a suffix code.

Symbol	Description	Units
`level`	Burst average power	When Scale Mode is Log: In Log Scale Unit units (dBm for V, µW for W)

For AM Depth measurement (Power vs Time trace)

`pos,neg,p-p,avg`

Value is returned, without suffix code.

Symbol	Description	Units
`pos`	+peak value	%(Values in % units will be returned when the terminal is DigRF 3G (only for MS269x Series) and the Input Source is Complex. Values in V units will be returned if it is not set to Complex.)
`neg`	–peak value	
`p-p`	{(–Peak) – (+Peak)}/2	
`avg`	Average value	V

For FM deviation measurement (Frequency vs Time trace)

`pos,neg,p-p,avg`

Value is returned, without suffix code.

Symbol	Description	Units
`pos`	+peak value	Hz
`neg`	–peak value	Hz
`p-p`	{(–Peak) – (+Peak)}/2	Hz
`avg`	Average value	Hz

For FM CW measurement (Frequency vs Time trace)

Refer to Table 2.23-2.

RLV/RLV?

Reference Level

Function

This command sets the reference level.

Command

```
RLV level
```

Query

```
RLV?
```

Response

```
level
```

Returns a value without a suffix code.
When Scale Mode is Log, returns a value in Log Scale Unit units (μV when V, and μW when W).
When Scale Mode is Lin, returns a value in μV units.

Parameter

`level` Reference level

Range	Value equivalent to –120 to +50 dBm (regardless of the ATT and Pre-Amp settings when the Replay function is executed)	
Resolution	0.01 dB (When Scale Unit settings are dB-system units) 0.01 pV (When Scale Unit settings are V-system units.) 0.01 yW (When Scale Unit settings are W-system units.)	
Suffix code	`DBM, DM`	dBm
	`DBMV`	dBmV
	`DBUV`	dBμV
	`DBUVE`	dBV (emf)
	`V`	V
	`MV`	mV
	`UV`	μV
	`W`	W
	`MW`	mW
	`UW`	μW
	`NW`	nW
	`PW`	pW
	`FW`	fW
	Log Scale Unit settings apply when omitted. `V` is used for Linear Scale.	
Default	0 dBm	

Example of Use

To set the reference level to –10 dBm.

```
RLV -10DBM
```

ROF/ROF?

Rolloff Factor

Function

This command sets the filter rolloff ratio.

Command

```
ROF factor
```

Query

```
ROF?
```

Response

```
factor
```

Parameter

`factor`	Rolloff ratio
Range	0.01 to 1.00
Resolution	0.01

Details

This command is available when the following trace is active:

- Power vs Time

This command is available when either of the following types is set using Filter Type (`FLTRTYP` command):

- Nyquist
- Root Nyquist

Example of Use

To set the rolloff ratio to 0.62.

```
ROF 0.62
```

ROFFSET/ROFFSET?

Reference Level Offset

Function

This command sets the offset value of the reference level offset function.

Command

```
ROFFSET level
ROFFSET on_off
```

Query

```
ROFFSET?
```

Response

`level`	When this function is ON
`OFF`	When this function is OFF

Parameter

`level`	Reference level offset value
Range	–100 to 100 dB
Resolution	0.01
Suffix code	`DB` dB is used even when omitted.
Default	0 dB
`on_off`	Reference level offset function ON/OFF
`ON`	ON
`OFF`	OFF

Details

Changing the offset value sets the reference level offset function to ON.

This command is not available in the following case:

- When Terminal is DigRF 3G (only for MS269x Series).

Example of Use

To set the reference level offset function to OFF.

```
ROFFSET OFF
```

ROFFSETMD/ROFFSETMD?

Reference Level Offset On/Off

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`	On
`OFF`	Off

Details

This command is not available in the following case:

- When Terminal is DigRF 3G (only for MS269x Series)

Example of Use

To set the reference level offset function to OFF.

```
ROFFSETMD OFF
```

RSTEVRYCAP/RSTEVRYCAP?

Reset Result Every Capture

Function

This command sets whether to reset the result after each CCDF measurement.

Command

```
RSTEVRYCAP on_off
```

Query

```
RSTEVRYCAP?
```

Response

```
on_off
```

Parameter

on_off

ON	Resets the result after each measurement.
OFF	Does not reset the result after each measurement.

Details

This command is available when the following trace is active:

- CCDF

This command is not available while the Replay function is being executed.

Example of Use

To set to reset the result after each measurement.

```
RSTEVRYCAP ON
```

SCALELINES/SCALELINES?

Log Scale Line

Function

This command sets the number of Y-axis scale segments for log scale.

Command

```
SCALELINES line
```

Query

```
SCALELINES?
```

Response

```
line
```

Parameter

`line`	Number of Y-axis scale segments
`10`	10 segments (Default)
`12`	12 segments

Details

This command is available when either of the following traces is active:

- Spectrum
- Power vs Time

This command is available only when Scale Mode is Log.

Example of Use

To set the number of scale segments to 12.

```
SCALELINES 12
```

SCALEMODE/SCALEMODE?

Scale Mode

Function

This command switches the scale mode.

Command

```
SCALEMODE mode
```

Query

```
SCALEMODE?
```

Response

```
mode
```

Parameter

mode	Scale mode
LOG	Log scale (Default)
LIN	Linear scale

Details

This command is not available when Trace Mode is set to Spectrogram or No Trace.

Example of Use

To set the scale mode to Linear scale.

```
SCALEMODE LIN
```

SELECTSTD/SELECTSTD?

Select Standard

Function

This command selects the communication method used when executing a measurement function. The parameter set by executing Load Standard Parameter is changed according to the selected communication method.

Command

```
SELECTSTD standard
```

Query

```
SELECTSTD?
```

Response

```
standard
```

Parameter

`standard`	Communication method
`OFF`	Does not use Load Standard Parameter (`LOADSTD` command)
`5GPRE`	5G Pre-Standard
`WCDMAUP`	3GPP W-CDMA Uplink
`WCDMADN`	3GPP W-CDMA Downlink
`MWIMAXDL`	Mobile WiMAX (IEEE802.16e-2005) Downlink
`MWIMAXUL`	Mobile WiMAX (IEEE802.16e-2005) Uplink
`3GLTE_DL`	3GPP LTE Downlink
`3GLTE_UL`	3GPP LTE Uplink
`ETC_DSRC`	ARIB STD-T75
`TDSCDMA`	3GPP TDD 1.28Mcps Option
`XGPHS`	XG-PHS
`CDMA2KFWD`	3GPP2 CDMA2000 Forward Link
`EVDOFWD`	3GPP2 EV-DO Forward Link
`3GLTE_TDD_DL`	3GPP LTE TDD Downlink
`3GLTE_TDD_UL`	3GPP LTE TDD Uplink

Details

This command is not available in the following case:

- When Terminal is DigRF 3G (only for MS269x Series)
- If using MS2830A, this command is not available if Option 005/105/007/009/109 Analysis Bandwidth Extension to 31.25 MHz is not installed.
- If using MS2840A, this command is not available if Option 005/105/009/109 Analysis Bandwidth Extension to 31.25 MHz is not installed.

Example of Use

To execute a measurement function using parameter conforming to 3GPP W-CDMA Uplink.

```
SELECTSTD WCDMAUP
```

SMMLYPWR?

Power Result Query

Function

This command queries the average power, maximum power, and crest factor of CCDF measurement.

Query

```
SMMLYPWR? type
```

Response

`average` (When `type` is `AVG`)
Returns a value in dBm units without a suffix code.

`max` (When `type` is `MAX`)
Returns a value in dBm units without a suffix code.

`crest` (When `type` is `CREST`)
Returns a value in dB units without a suffix code.

`average,max,crest` (When `type` is omitted)

Parameter

`type`	Measurement result type
`AVG`	Average power
`MAX`	Maximum power
`CREST`	Crest factor
When omitted:	All of the above

Details

This command is available when the following trace is active:

- CCDF

Example of Use

To query the average power of measurement result.

```
SMMLYPWR? AVG
```

SMOOTH/SMOOTH?

Smoothing

Function

This command enables/disables smoothing for the main trace.

Command

```
SMOOTH on_off
```

Query

```
SMOOTH?
```

Response

```
on_off
```

Parameter

`on_off`	Smoothing ON/OFF
`ON`	On
`OFF`	Off

Details

This command is available when either of the following traces is active:

- Power vs Time
- Frequency vs Time

Example of Use

To enable smoothing for the main trace.

```
SMOOTH ON
```

SMOOTHLN/SMOOTHLN?

Smoothing Time Length

Function

This command sets the time length for smoothing the main trace.

Command

```
SMOOTHLN time
```

Query

```
SMOOTHLN?
```

Response

`time`

Returns a value in ms units without a suffix code.

Parameter

`time`		Smoothing time length
	Range and resolution	Refer to the *MS2690A/MS2691A/MS2692A Signal Analyzer Operation Manual (Signal Analyzer Function Operation)* or *MS2830A/MS2840A/MS2850A Signal Analyzer Operation Manual (Signal Analyzer Function Operation)* for details.
	Suffix code	`NS,US,MS,S` MS is used when omitted.

Details

This command is available when either of the following traces is active:

- Power vs Time
- Frequency vs Time

This command is not available in the following case:

- When Terminal is DigRF 3G (only for MS269x Series)

Example of Use

To set the smoothing time length to 20 μs.

```
SMOOTHLN 20 US
```

SMPLRATE?

Sampling Rate Query

Function

This command queries the sampling rate of waveform capturing.

Query

```
SMPLRATE?
```

Response

```
rate
```

No suffix code. Value is returned in Hz units.

Example of Use

To query the sampling rate.

```
SMPLRATE?
```

SNGLS

Single Measurement

Function

This command performs single measurement.

Command

```
SNGLS
```

Details

Other commands and queries can be received even while this function is being executed.
If a command that requires re-capturing of a waveform or re-calculation of a trace is received, however, this function is paused while executing that command.
Note that this command does not support synchronized control in Continuous mode.
This command is not available while the Replay function is being executed.

Example of Use

To perform single measurement and query the marker value.

```
SNGLS
*WAI
MKL?
```

SOF/SOF?

Stop Frequency

Function

This command sets the stop frequency of waveform capturing.

Command

```
SOF freq
```

Query

```
SOF?
```

Response

```
freq
```

Parameter

`freq` Stop frequency

Range Range adding Frequency Span/2 to the following center frequency ranges:

[MS269xA]

Without MS269xA-077/177/078/178, or frequency span ≤ 31.25 MHz
- 0 Hz to 6 GHz (MS2690A)
- 0 Hz to 13.5 GHz (MS2691A)
- 0 Hz to 26.5 GHz (MS2692A)

With MS269xA-077/177/078/178, and frequency span > 31.25 MHz
- 100 MHz to 6 GHz (MS2690A)
- 100 MHz to 13.5 GHz (MS2691A)

With MS269xA-077/177/078/178, without MS2692A-067/167, and frequency span > 31.25 MHz
- 100 MHz to 6 GHz (MS2692A)

With MS269xA-077/177/078/178, with MS2692A-067/167, and frequency span > 31.25 MHz
- 100 MHz to 26.5 GHz (MS2692A)

[MS2830A]

Without MS2830A-077/078, or frequency span ≤ 31.25 MHz
- 0 Hz to 3.6 GHz (Option 040)
- 0 Hz to 6.0 GHz (Option 041)
- 0 Hz to 13.5 GHz (Option 043)
- 0 Hz to 26.5 GHz (Option 044)
- 0 Hz to 43 GHz (Option 045)

With MS2830A-077/078, and frequency span > 31.25 MHz
- 300 MHz to 3.6 GHz (Option 040)
- 300 MHz to 6.0 GHz (Option 041)
- 300 MHz to 13.5 GHz (Option 043)

With MS2830A-077/078, without MS2830A-067/167, and frequency span > 31.25 MHz

300 MHz to 6 GHz (Option 044)
300 MHz to 6 GHz (Option 045)
With MS2830A-077/078, with MS2830A-067/167,
and frequency span > 31.25 MHz
300 MHz to 26.5 GHz (Option 044)
300 MHz to 43 GHz (Option 045)

[MS2840A]

Without MS2840A-077/177/078/178, or frequency span ≤ 31.25 MHz
0 Hz to 3.6 GHz (Option 040)
0 Hz to 6.0 GHz (Option 041)
0 Hz to 26.5 GHz (Option 044)
0 Hz to 44.5 GHz (Option 046)
With MS2840A-077/177/078/178, and frequency span ≤ 31.25 MHz
300 MHz to 3.6 GHz (Option 040)
300 MHz to 6.0 GHz (Option 041)
With MS2840A-077/177/078/178, without MS2840A-067/167,
and frequency span > 31.25 MHz
300 MHz to 6 GHz (Option 044)
300 MHz to 6 GHz (Option 046)
With MS2840A-077/177/078/178, with MS2840A-067/167,
and frequency span > 31.25 MHz
300 MHz to 26.5 GHz (Option 044)
300 MHz to 44.5 GHz (Option 046)

[MS2850A]

Without MS2850A-034/134, or frequency span ≤ 510 MHz
100 MHz to 32 GHz (Option 047)
100 MHz to 44.5 GHz (Option 046)
With MS2850A-034/134, and frequency span > 510 MHz
4.2 GHz to 32 GHz (Option 047)
4.2 GHz to 44.5 GHz (Option 046)

Resolution 1 Hz

Suffix code `HZ, KHZ, KZ, MHZ, MZ, GHZ, GZ`
Hz is used when omitted.

Default

[MS269xA] 6.015625 GHz

[MS2830A] 3.615625 GHz
(Option 005/105/007/009/109/077/078)
3.605 GHz (Option 006/106)

[MS2840A] 3.615625 GHz
(Option 005/105/009/109/077/177/078/178)
3.605 GHz (Option 006/106)

[MS2850A] 3.615625 GHz

Details

This function is restricted by the following condition:

- Stop frequency will be fixed to +270.833 kHz (for GSM) or +3.84 MHz (for W-CDMA) when the terminal is set to DigRF 3G (only for MS269x Series).

This command is not available while the Replay function is being executed.

Example of Use

To set the stop frequency to 16 MHz.

```
SOF 16000000
```

SPF/SPF?

Frequency Span

Function

This command sets the frequency span of waveform capturing.

Command

```
SPF freq
```

Query

```
SPF?
```

Response

```
freq
```

Returns a value in Hz units without a suffix code.

Parameter

`freq` Frequency span

Range **[MS269xA]** 1000, 2500, 5000, 10000, 25000, 50000, 100000, 250000, 500000, 1000000, 2500000, 5000000, 10000000, 25000000, 31250000 50000000*1 *2, 62500000*2, 100000000*1 *3, 125000000*1 *3

[MS2830A], [MS2840A]

1000*2, 2500*2, 5000*2, 10000*2, 25000*2, 50000*2, 100000*2,250000*2, 500000*2, 1000000*2, 2500000*2, 5000000*2, 10000000*2, 25000000*1, 31250000*1 50000000*3, 62500000*3, 100000000*4, 125000000*4

[MS2850A]

1000*2, 2500*2, 5000*2, 10000*2, 25000*2, 50000*2, 100000*2, 250000*2, 500000*2, 1000000*2, 2500000*2, 5000000*2, 10000000*2, 25000000*1, 31250000*1, 50000000*3, 62500000*3, 100000000*4, 125000000*4, 255000000*5, 510000000*6, 1000000000*7

Suffix code `HZ, KHZ, KZ, MHZ, MZ, GHZ, GZ`

Hz is used when omitted.

Default

[MS269xA] 31.25 MHz

[MS2830A] 31.25 MHz
(Option 005/105/007/009/109/077/078)
10 MHz (Option 006/106)

[MS2840A] 31.25 MHz
(Option 005/105/009/109/077/177/078/178)
10 MHz (Option 006/106)
[MS2850A] 31.25 MHz

Details

This function is restricted by the Frequency Band Mode, Center Frequency and Terminal settings.

[MS269xA]

*1: Option 004/104
The following frequency spans are available when the Wideband Analysis Hardware is installed:
50000000, 100000000, 125000000

*2: Option 077/177
The following frequency spans are available when the Analysis Bandwidth Extension to 62.5 MHz option is installed:
50000000, 62500000

*3: Option 078/178
In addition to the *2, the following frequency spans are available when the Analysis Bandwidth Extension to 125 MHz option is installed:
100000000, 125000000

The following frequency spans are not available when the Frequency Band Mode is Spurious.
50000000, 62500000, 100000000, 125000000

[MS2830A], [MS2840A]

*1: MS2830A-005/105/007/009/109
MS2840A-005/105/009/109
In addition to the *2 below, the following frequency spans are available when the Analysis Bandwidth Extension to 31.25 MHz option is installed:
25000000, 31250000

*2: Option 006/106
The following frequency spans are available when the Analysis Bandwidth 10 MHz option is installed:
1000, 2500, 5000, 10000, 25000, 50000, 100000, 250000, 500000, 1000000, 2500000, 5000000, 10000000

*3: MS2830A-077, MS2840A-077/177
In addition to the *1, the following frequency spans are available when the Analysis Bandwidth Extension to 62.5 MHz option is installed:
50000000, 62500000

*4: MS2830A-078, MS2840A-078/178
In addition to the *3, the following frequency spans are available

when the Analysis Bandwidth Extension to 125 MHz option is installed:

100000000, 125000000

The following frequency spans are not available when the Frequency Band Mode is Spurious.

50000000, 62500000, 100000000, 125000000

[MS2850A]

*1, *2, *3, *4, *5: Option 032

The following frequency spans are available when the Analysis Bandwidth 255 MHz option is installed: :

1000, 2500, 5000, 10000, 25000, 50000, 100000, 250000,
500000, 1000000, 2500000, 5000000, 10000000,
25000000, 31250000, 50000000, 62500000,
100000000, 125000000, 255000000

*6: Option 033/133

In addition to the *1 to *5, the following frequency spans are available when the Analysis Bandwidth Extension to 510 MHz option is installed:

510000000

*7: Option 034/134

In addition to the *6, the following frequency spans are available when the Analysis Bandwidth Extension to 1 GHz option is installed:

1000000000

The following frequency spans are not available when using High Performance Waveguide Mixer.

1000000000

The following frequency spans are not available when the Frequency Band Mode is Spurious.

50000000, 62500000, 100000000, 125000000, 255000000,
510000000, 1000000000

This function is restricted by the following condition:

- Frequency span will be fixed to 541.666 kHz (for GSM) or 7.68 MHz (for W-CDMA) when the terminal is set to DigRF 3G (only for MS269x Series).
- This command is not available while the Replay function is being executed.

Example of Use

To set the frequency span of waveform capturing to 25 MHz.

```
SPF 25000000
```

SRCHTH/SRCHTH?

Search Threshold

Function

This command sets the threshold value condition for the main trace search point detection.

Command

```
SRCHTH mode
```

Query

```
SRCHTH?
```

Response

```
mode
```

Parameter

mode	Threshold value condition
OFF	Does not set the threshold value.
ON	Sets the threshold value (setting only).
ABOVE	Executes detection above the threshold value.
BELOW	Executes detection below the threshold value.

Details

This command is available when any one of the following traces is active:

- Spectrum
- Power vs Time
- Frequency vs Time

Changing the detection threshold condition (ABOVE/BELOW) sets the threshold to On.

Example of Use

To set the main trace detection threshold value condition to below the threshold.

```
SRCHTH BELOW
```

SRCHTHLVL/SRCHTHLVL?

Search Threshold Level

Function

This command sets the threshold value for the main trace search point detection.

Command

`SRCHTHLVL level`	(Spectrum, Power vs Time)
`SRCHTHLVL freq`	(Freq vs Time)

Query

```
SRCHTHLVL?
```

Response

`Level`

Returns a value without a suffix code.

For Spectrum trace, returns a value in Log Scale Unit units when Scale Mode is Log (note that `dBm` is used for `V` while μ`W` is used for `W`). When Scale Mode is Lin, returns a value in `dBm` units.
For Power vs Time trace, returns a value in Log Scale Unit units when Scale Mode is Log (note that μ`V` is used for `V` while μ`W` is used for `W`). When Scale Mode is Lin, returns a value in μ`V` units.

`freq`

Returns a value in Hz units without a suffix code.

Parameter

`level`	Threshold value for search point detection
Range	Sets the vertical scale range of the main trace.
Resolution	0.01 dB (When Scale Unit is dB-system units)
	0.01 pV (When Scale Unit is V-system units)
	0.01 yW (When Scale Unit is W-system units)

Suffix code	DBM, DM	dBm
	DBMV	dBmV
	DBUV	dBμV
	DBUVE	dBμV (emf)
	V	V
	MV	mV
	UV	μV
	W	W
	MW	mW
	UW	μW
	NW	nW
	PW	pW
	FW	fW

Log Scale Unit settings apply when omitted.
(For Spectrum trace, dBm units for V.)
In the linear scale mode, dBm units are used for Spectrum trace, while V units are used for Power vs Time trace.

freq	Threshold value for search point detection
Range	Sets the vertical scale range of the main trace.
Resolution	1 Hz
Suffix code	HZ, KHZ, KZ, MHZ, MZ, GHZ, GZ

Hz is used when omitted.

Details

This command is available when any one of the following traces is active:

- Spectrum
- Power vs Time
- Frequency vs Time

Changing the detection threshold value sets the detection threshold value to On.

Example of Use

To set the threshold value for search point detection to –50 dBm.

```
SRCHTHLVL -50
```

STF/STF?

Start Frequency

Function

This command sets the start frequency of waveform capturing.

Command

```
STF freq
```

Query

```
STF?
```

Response

```
freq
```

Parameter

`freq` Start frequency

Range: Range subtracting Frequency Span/2 from the following center frequency ranges:

[MS269xA]

Without MS269xA-077/177/078/178, or frequency span ≤ 31.25 MHz
- 0 Hz to 6 GHz (MS2690A)
- 0 Hz to 13.5 GHz (MS2691A)
- 0 Hz to 26.5 GHz (MS2692A)

With MS269xA-077/177/078/178, and frequency span > 31.25 MHz
- 100 MHz to 6 GHz (MS2690A)
- 100 MHz to 13.5 GHz (MS2691A)

With MS269xA-077/177/078/178, without MS2692A-067/167, and frequency span > 31.25 MHz
- 100 MHz to 6 GHz (MS2692A)

With MS269xA-077/177/078/178, with MS2692A-067/167, and frequency span > 31.25 MHz
- 100 MHz to 26.5 GHz (MS2692A)

[MS2830A]

Without MS2830A-077/078, or frequency span ≤ 31.25 MHz
- 0 Hz to 3.6 GHz (Option 040)
- 0 Hz to 6.0 GHz (Option 041)
- 0 Hz to 13.5 GHz (Option 043)
- 0 Hz to 26.5 GHz (Option 044)
- 0 Hz to 43 GHz (Option 045)

With MS2830A-077/078, and frequency span > 31.25 MHz
- 300 MHz to 3.6 GHz (Option 040)
- 300 MHz to 6.0 GHz (Option 041)
- 300 MHz to 13.5 GHz (Option 043)

With MS2830A-077/078, without MS2830A-067/167, and frequency span > 31.25 MHz

300 MHz to 6 GHz (Option 044)
300 MHz to 6 GHz (Option 045)
With MS2830A-077/078, with MS2830A-067/167,
and frequency span > 31.25 MHz
300 MHz to 26.5 GHz (Option 044)
300 MHz to 43 GHz (Option 045)

[MS2840A]

Without MS2840A-077/177/078/178, or frequency span ≤ 31.25 MHz
0 Hz to 3.6 GHz (Option 040)
0 Hz to 6.0 GHz (Option 041)
0 Hz to 26.5 GHz (Option 044)
0 Hz to 44.5 GHz (Option 046)
With MS2840A-077/177/078/178, and frequency span ≤ 31.25 MHz
300 MHz to 3.6 GHz (Option 040)
300 MHz to 6.0 GHz (Option 041)
With MS2840A-077/177/078/178, without MS2840A-067/167,
and frequency span > 31.25 MHz
300 MHz to 6 GHz (Option 044)
300 MHz to 6 GHz (Option 046)
With MS2840A-077/177/078/178, with MS2840A-067/167,
and frequency span > 31.25 MHz
300 MHz to 26.5 GHz (Option 044)
300 MHz to 44.5 GHz (Option 046)

[MS2850A]

Without MS2850A-033/133, or frequency span ≤ 510 MHz
100 MHz to 32 GHz (Option 047)
100 MHz to 44.5 GHz (Option 046)
With MS2850A-034/134, and frequency span > 510 MHz
4.2 GHz to 32 GHz (Option 047)
4.2 GHz to 44.5 GHz (Option 046)

Resolution 1 Hz

Suffix code `HZ, KHZ, KZ, MHZ, MZ, GHZ, GZ`
Hz is used when omitted.

Default

[MS269xA] 5.984375 GHz

[MS2830A] 3.584375 GHz
(Option 005/105/007/009/109/077/078)
3.595 GHz (Option 006/106)

[MS2840A] 3.584375 GHz
(Option 005/105/009/109/077/177/078/178)
3.595 GHz (Option 006/106)

[MS2850A] 3.584375 GHz

Details

This command is not available while the Replay function is being executed.

This function is restricted by the Frequency Span setting.

When MS2690A/91/92A is used and Frequency Span is 50 MHz or more, the lower limit frequency is 100 MHz.

When MS2830A, MS2840A is used and Frequency Span is 50 MHz or more, the lower limit frequency is 300 MHz.

When MS2850A is used and Frequency Span is 1 GHz or more, the lower limit frequency is 4.2 GHz.

This function is restricted by the following condition:

- Start frequency is fixed to –270.833 kHz (for GSM) or –3.84 MHz (for W-CDMA) when the terminal is set to DigRF 3G (only for MS269x Series).

Example of Use

To set the start frequency of waveform capturing to 12.3 MHz.

```
STF 12300000
```

STOP

Storage Stop

Function

This command stops waveform capturing under execution. Functions when Storage Mode of the main trace is Lin Average, Max Hold, or Min Hold.

Command

```
STOP
```

Details

This command is not available while the Replay function is being executed.

Example of Use

To stop waveform capturing.

```
STOP
```

STORAGECOUNT/STORAGECOUNT?

Storage Count

Function

This command sets the storage count of the main trace.

Command

```
STORAGECOUNT count
```

Query

```
STORAGECOUNT?
```

Response

```
count
```

Parameter

`count`	Storage count
Range	2 to 9999
Resolution	1
Default	10

Details

This command is available when any of the following traces is active:

- Spectrum
- Power vs Time
- Freq vs Time
- Spectrogram

This command is not available while the Replay function is being executed.

Example of Use

To set the storage count of the main trace to 200.

```
STORAGECOUNT 200
```

STORAGEMODE/STORAGEMODE?

Storage Mode

Function

This command sets the storage mode for the main trace data.

Command

```
STORAGEMODE mode
```

Query

```
STORAGEMODE?
```

Response

```
mode
```

Parameter

`mode`	Storage mode
`OFF`	Does not store any data. (Default)
`MAX`	Stores the maximum value.
`LINAVG`	Stores the average value.
`MIN`	Stores the minimum value.

Details

When Capture Time is set to Manual, the storage mode is fixed to OFF.
This command is available when any one of the following traces is active:

- Spectrum
- Power vs Time
- Freq vs Time (LINAVG cannot be set.)
- Spectrogram

This command is not available while the Replay function is being executed.

Example of Use

To set the storage mode to LINAVG.

```
STORAGEMODE LINAVG
```

SWE:SAMP/SWE:SAMP?

Capture Sample Length

Function

This command sets the number of waveform capture samples when the terminal is set to DigRF 3G (only for MS269x Series).

Command

```
SWE:SAMP point
```

Query

```
SWE:SAMP?
```

Response

```
point
```

Parameter

point	Number of capture samples
Range	100 to 500000000 (W-CDMA) 100 to 200000000 (GSM)
Suffix code	None
Resolution	1
Default	0

Details

The shortest capture time length is set when the automatic setting is enabled.

The automatic mode is switched to the manual mode when the capture time length is set.

The setting range and resolution are limited by the Frequency Span setting.

This command is available in the following cases:

- When Terminal is RF.
- When the Replay function is being executed.

Example of Use

To set waveform capture sample length to 20000.

```
SWE:SAMP 20000
```

SWEEPCOUNT?

Measurement Count Query

Function

This command queries the current storage count of the main trace.

Query

```
SWEEPCOUNT?
```

Response

```
count
```

Parameter

`count`	Storage count
Range	0 to 9999
Resolution	1

Details

This command is available when any one of the following traces is active:

- Spectrum
- Power vs Time
- Frequency vs Time

The command is not available when Storage Mode of the main trace is set to OFF.

Example of Use

To query the current storage count of the main trace.

```
SWEEPCOUNT?
```

TDLY/TDLY?

Trigger Delay

Function

This command sets the delay from trigger input to start of waveform capturing.

Command

```
TDLY time
```

Query

```
TDLY?
```

Response

`time`

Returns a value in ms units without a suffix code.

Parameter

`time`		Delay time
	Range and resolution	Refer to the *MS2690A/MS2691A/MS2692A Signal Analyzer Operation Manual (Signal Analyzer Function Operation)* or *MS2830A/MS2840A/MS2850A Signal Analyzer Operation Manual (Signal Analyzer Function Operation)* for details.
	Suffix code	`NS,US,MS,S` MS is used when omitted.
	Default	0 s

Details

Changing the trigger delay sets the trigger delay to ON.

The setting range is limited by the Frequency Span setting.

This command is not available in the following cases:

- When Terminal is DigRF 3G (only for MS269x Series).
- When the Replay function is being executed.

Example of Use

To set the trigger delay to 20 ms.

```
TDLY 20MS
```

TDPNT?

Time Trace Point Query

Function

This command queries the number of trace points on the time axis of the main trace.

Query

```
TDPNT?
```

Response

```
point
```

Parameter

`point`	Number of trace points Returns a value without a suffix code.

Details

This command is available when either of the following traces is active:

- Power vs Time
- Frequency vs Time
- Phase vs Time
- Spectrogram

The number of data points is determined according to analysis time length and frequency span.

Example of Use

To query the number of the main trace data points.

```
TDPNT?
```

THRSHLD/THRSHLD?

Threshold

Function

This command sets the minimum level of input signals for CCDF measurement.

Command

```
THRSHLD level
```

Query

```
THRSHLD?
```

Response

`level`

No suffix code. Values is returned in dBm units.

Parameter

`level`		Minimum level of input signals
	Range	–170 to reference level (dBm) When the reference level offset value is On, it is added to the range.
	Resolution	0.01 dBm
	Suffix code	`DB,DBM,DM` dBm is used when omitted.

Details

This command is available when the following trace is active:

- CCDF

Example of Use

To set the minimum level to –20 dBm.

```
THRSHLD -20
```

TITLE/TITLE?

Title Entry

Function

This command registers the title character string.

Command

```
TITLE string
```

Query

```
TITLE?
```

Response

```
string
```

Parameter

`string`	Title character string
Range	Character string within 32 characters enclosed by double quotes (“ ”) or single quotes (‘ ’).

Details

Setting the title character string sets title display (Display Title) to On automatically.

Example of Use

To set the title character string to Anritsu.

```
TITLE "Anritsu"
```

TRAC?

Query Trace Data

Function

This command queries the trace data.

Query

```
TRAC? [start[,length]]
```

Response

```
data_1,data_2,...
```

Parameter

`start` Query start point

- Range: 0 to Number of trace points – 1
- Resolution: 1
- When omitted: 0

`length` Query length

- Range: 1 to Number of trace points – start
  For Spectrum, 5121 is the maximum.
  For Spectrogram, 9999 is the maximum.
- Resolution: 1
- When omitted: Number of trace points – start
  For spectrum, if 5122 or more is set, 5121 is automatically set.
  For Spectrogram, if 10000 or more is set, 9999 is automatically set.

`data_n` Trace data

For Spectrum or Power vs Time, Spectrogram trace

- Resolution:
  (In Log scale)
  0.001 dBm
  (In Linear scale)
  {Voltage value (V) / Reference level (V)} × 10000
  Reference level is 10000.
  –999.0 is returned when no measurement is performed or an error has occurred.

Data range	Returns a value within the range of Start Freq to Stop Freq for Spectrum trace. Returns a value within the range of Analysis Start Time to Analysis Start Time + Analysis Time Length for Power vs Time trace. Divides a trace into the number of trace points and returns a value within the range of Start to Length for Spectrogram. For the coordinates (frequency, time), the (Start Frequency, 0 seconds) position is point 0, and, for subsequent points, the time coordinate is fixed and the trace point position increases along the frequency axis. When the frequency axis coordinate reaches Stop Frequency, the time coordinate increases by one point and the trace point position again increases along the frequency axis.

For Freq vs Time trace

Resolution	0.01 Hz Center frequency is 0. –999999999999 is returned when no measurement is performed or an error has occurred.
Data range	Returns a value within the range of Analysis Start Time to Analysis Start Time + Analysis Time Length.

For Phase vs Time trace

Resolution	0.01 degree resolution Unit: degree –999999999999 is returned when no measurement is performed, an error has occurred.
Data range	Returns a value within the range of Analysis Start Time to Analysis Start Time + Analysis Time Length.

For CCDF trace

Resolution	0.0001% –999.0 is returned when no measurement is performed or an error has occurred.
Data range	Returns a value within the range of –50 to 50 dB for APD. Returns a value within the range of 0 to 50 dB for CCDF.

Details

For Power vs Time or Frequency vs Time, when Detection is set to Positive & Negative, returns the reading for the trace data of Positive detection. In other cases, reads out the data of the set Detection.

This command is not available when Trace Mode is set to No Trace.

Example of Use

To query the trace data.

```
TRAC?
> -20000,-20231,-21233,...
```

TRAC:NEG?

Query Negative Trace Data

Function

This command queries the trace data.

Query

```
TRAC:NEG? [start[,length]]
```

Response

```
data_1,data_2,...
```

Parameter

`start`		Starting point to query
	Range	0 to Number of trace points – 1
	Resolution	1
	When omitted:	0
`length`		Query length
	Range	1 to Number of trace points – `start`
	Resolution	1
	When omitted:	Number of trace points – `start`
`data_n`		Trace data
	For Power vs Time trace	
	Resolution	(In Log scale) 0.001 dBm (In Linear scale) {Voltage value (V) / Reference level (V)} × 10000 The reference level is 10000. –999.0 is returned when no measurement is performed or an error has occurred.
	Data range	Returns a value within the range of Analysis Start Time to Analysis Start Time + Analysis Time Length.
	For Freq vs Time trace	
	Resolution	0.01 Hz The center frequency is 0.00. –999999999999 is returned when no measurement is performed or an error has occurred.
	Data range	Returns a value within the range of Analysis Start Time to Analysis Start Time + Analysis Time Length.

Details

For Power vs Time or Frequency vs Time, when Detection is set to Positive & Negative, reads out the trace data of Negative detection. In other cases, reads out the data of the set Detection.

This command is available when either of the following traces is active:

- Power vs Time
- Frequency vs Time

Example of Use

To query the trace data.

```
TRAC:NEG?
> -20000,-20231,-21233,...
```

TRCCHG/TRCCHG?

Change Trace

Function

This command sets the main trace type.

Command

```
TRCCHG trace
```

Query

```
TRCCHG?
```

Response

```
trace
```

Parameter

`trace`	Trace type
`SPECTRUM`	Spectrum
`POWERVSTIME`	Power vs Time
`FREQVSTIME`	Frequency vs Time
`PHASEVSTIME`	Phase vs Time
`CCDF`	CCDF
`SPECTROGRAM`	Spectrogram
`NONE`	No Trace

Details

This command is not available in the following cases:

- Spectrogram can be set when Scale Mode is Linear.
- When Terminal is selected DigRF 3G (only for MS269x Series), the CCDF, Spectrogram and No Trace cannot be set.

Example of Use

To set trace type to Spectrum.

```
TRCCHG SPECTRUM
```

TRGLVL/TRGLVL?

Trigger Level

Function

This command sets the trigger level for the Video and Wide IF Video triggers.

Command

```
TRGLVL level
```

Query

```
TRGLVL?
```

Response

`level` Trigger Level (Video)

Returns Trigger Level (Video) when the trigger source is not Wide IF Video.
Returns a value in dBm units without a suffix code (when Scale Mode is Log).
Returns a value in percentage units without a suffix code (when Scale Mode is Lin).

`level` Trigger Level (Wide IF Video)

Returns Trigger Level (Wide IF Video) when the trigger source is Wide IF Video.
Returns a value in dBm units without a suffix code.

Parameter

`level` Trigger Level (Video)

When Scale Mode is Log:

Range	–150 to +50 dBm (Video trigger) When the reference level offset value is On, it is added to the range.
Resolution	1 dB
Suffix code	`DBM, DM` dBm is used when omitted.
Default	–40 dBm

When Scale Mode is Lin:

Range	0 to 100%
Resolution	1%
Suffix code	None
Default	60%

`level` Trigger Level (Wide IF Video)

Range	–60 to +50 dBm (Wide IF Video trigger) When the reference level offset value is On, it is added to the range.
Resolution	1 dB

Suffix code	DBM, DM dBm is used when omitted.
Default	–20 dB

Details

When the trigger source is Wide IF Video, Trigger Level (Wide IF Video) is set, and trigger switch is set to ON. When the trigger source is not Wide IF Video, Trigger Level (Video) is set, trigger source is set to Video, and trigger switch is set to ON.

This command is not available in the following cases:

- When Terminal is DigRF 3G (only for MS269x Series).
- When the Replay function is being executed.

Example of Use

To set the trigger level to 50 dBm.

```
TRGLVL 50
```

TRGS/TRGS?

Trigger Switch

Function

This command sets the trigger to On/Off.

Command

```
TRGS switch
```

Query

```
TRGS?
```

Response

```
switch
```

Parameter

switch	Trigger ON/OFF
FREE	OFF (Default)
TRGD	ON

Details

This command is not available while the Replay function is being executed.

Example of Use

To set the trigger to ON.

```
TRGS TRGD
```

TRGSLP/TRGSLP?

Trigger Slope

Function

This command sets the trigger detection direction (rising/falling).

Command

```
TRGSLP edge
```

Query

```
TRGSLP?
```

Response

```
edge
```

Parameter

`edge`	Trigger detection direction
`RISE`	Rising edge (Default)
`FALL`	Falling edge

Details

Changing the trigger detection direction sets trigger switch to On.

This command is not available while the Replay function is being executed.

Example of Use

To set the trigger detection direction to rising edge.

```
TRGSLP RISE
```

TRGSOURCE/TRGSOURCE?

Trigger Source

Function

This command sets the trigger source type.

Command

```
TRGSOURCE source
```

Query

```
TRGSOURCE?
```

Response

```
source
```

Parameter

`source`	Trigger source type
[MS269xA]	
`VID`	Video trigger (Default)
`WIDEVID`	Wide IF Video trigger
`EXT`	External trigger
`SG`	SG Marker trigger
`BBIF`	Baseband Interface trigger
[MS2830A], [MS2840A]	
`VID`	Video detection (Video) (Default)
`WIDEVID`	Wideband IF detection (Wide IF Video)
`EXT`	External input (Default)
`SG`	SG Marker (SG Marker)
`FRAME`	Frame period trigger
[MS2850A]	
`VID`	Video detection (Video) (Default)
`WIDEVID`	Wideband IF detection (Wide IF Video)
`EXT`	External input (External)
`EXT2`	External input (External 2)
`FRAME`	Frame period trigger

Details

[MS269xA] SG Marker trigger can be selected only when the Option 020/120 Vector Signal Generator is installed. BBIF trigger can only be selected when the Option 040/140 Baseband Interface Unit is installed or the software package is older than Ver.6.00.00.
Settings for External, Video, Wide IF Video, and SG Marker cannot be performed when Terminal is set to DigRF 3G.

[MS2830A], [MS2840A]
SG marker trigger can be selected only when the Option 020/120/021/121 Vector Signal Generator is installed.

[Common] Changing the trigger source sets trigger switch to ON.

This command is not available while the Replay function is being executed.

Example of Use

To set trigger source to External.

```
TRGSOURCE EXT
```

TRIG:FRAM:OFFS/TRIG:FRAM:OFFS?

Frame Sync Offset

Function

This command sets the offset time between when a signal source for generating a frame trigger is input and when the frame trigger is generated.

Command

```
TRIG:FRAM:OFFS time
```

Query

```
TRIG:FRAM:OFFS?
```

Response

```
time
```

Parameter

<time>	Offset time
Range	0 to 1 s
Resolution	10 ns
Suffix code	NS, US, MS, S S is used when the suffix code is omitted.
Default	0 s

Details

This command is not available for MS269x Series.

Example of Use

To set the offset time for generating a frame trigger to 100 ms.

```
TRIG:FRAM:OFFS 100ms
```

To query the offset time for generating a frame trigger.

```
TRIG:FRAM:OFFS?
> 0.10000000
```

TRIG:FRAM:PER/TRIG:FRAM:PER?

Frame Trigger Period

Function

This command sets the period for generating a frame trigger.

Command

```
TRIG:FRAM:PER time
```

Query

```
TRIG:FRAM:PER?
```

Parameter

`time`	Frame trigger
Range	1 µs to 1 s
Resolution	10 ns
Suffix code	`NS, US, MS, S` S is used when the suffix code is omitted.
Default	10 ms

Details

This command is not available for MS269x Series.

Example of Use

To set the frame trigger period to 10 ms.

```
TRIG:FRAM:PER 10MS
```

To query the frame trigger period.

```
TRIG:FRAM:PER?
> 0.02000000
```

TRIG:FRAM:SYNC/TRIG:FRAM:SYNC?

Frame Sync Source

Function

This command selects the synchronization signal source for starting a frame trigger.

Command

```
TRIG:FRAM:SYNC sync
```

Query

```
TRIG:FRAM:SYNC?
```

Parameter

`sync`	Sync signal source
`EXT`	External input (Default)
`IMM`	Free run
`WIF`	Wideband IF detection (Wide IF Video)

Details

This command is not available for MS269x Series.

Example of Use

To set the frame-trigger synchronization source to the Wide IF Video trigger.

```
TRIG:FRAM:SYNC WIF
```

To query the frame-trigger synchronization signal source.

```
TRIG:FRAM:SYNC?
> WIF
```

TRIG:HOLD/TRIG:HOLD?

Trigger Hold

Function

This command sets the fixed amount of time trigger input is disabled between the first trigger input and the next trigger input.

Command

```
TRIG:HOLD time
```

Query

```
TRIG:HOLD?
```

Parameter

`time`		Offset time
	Range	0 to 1 s
	Resolution	10 ns
	Suffix code	`NS, US, MS, S` S is used when the suffix code is omitted.
Default		100 μ s

Details

This command is not available for MS269x Series.

When this function is used to change a value, the Trigger Hold (ON/OFF) function is set to ON.

This command is not available for video trigger.

Example of Use

To set the amount of time trigger input is disabled to 100 ms.

```
TRIG:HOLD 100ms
```

To query the amount of time trigger input is disabled.

```
TRIG:HOLD?
> 0.02000000
```

TRIG:HOLD:STAT/TRIG:HOLD:STAT?

Trigger Hold On/Off

Function

This command sets the function for disabling trigger input between the first trigger input and the next trigger input for a fixed amount of time to On or Off.

Command

```
TRIG:HOLD:STAT switch
```

Query

```
TRIG:HOLD:STAT?
```

Parameter

<switch>	Trigger Hold On/Off
ON|1	Trigger Hold is On.
OFF|0	Trigger Hold is Off.

Details

This command is not available for MS269x Series.

When this function is set to On, the Trigger(On/Off) function is automatically set to On.

Example of Use

To set the setting for disabling trigger input for a fixed amount of time to On.

```
TRIG:HOLD:STAT ON
```

To query the setting for disabling trigger input for a fixed amount of time.

```
:TRIG:HOLD:STAT?
> 1
```

TTL/TTL?

Title On/Off

Function

This command sets title display to On/Off.

Command

```
TTL on_off
```

Query

```
TTL?
```

Response

```
on_off
```

Parameter

`on_off`	Title display On/Off
`ON`	Displays the title.
`OFF`	Hides the title.

Example of Use

To hide the title.

```
TTL OFF
```

UNIT:TMAR/UNIT:TMAR?

Marker Unit

Function

This command sets the units of the marker display value (time) when the terminal is set to DigRF 3G (only for MS269x Series).

Command

```
UNIT:TMAR unit
```

Query

```
UNIT:TMAR?
```

Response

```
unit
```

Parameter

`unit`	Units of marker display value
`SAMP`	Sets the units of marker display value to Sample
`SEC`	Sets the units of marker display value to seconds

Details

This command is available when either of the following trace is set to active:

- Power vs Time
- Frequency vs Time
- Phase vs Time

This command is available in the following cases:

- When Terminal is set to RF.
- When the Replay function is being executed.

Example of Use

To set the marker display unit to Sample

```
UNIT:TMAR SAMP
```

ZMCNT/ZMCNT?

Zoom Center

Function

This command sets the center frequency of display frequency axis scale.

Command

```
ZMCNT freq
```

Query

```
ZMCNT?
```

Response

```
freq
```

Parameter

`freq`	Scale center frequency
Range and resolution	Refer to the *MS2690A/MS2691A/MS2692A Signal Analyzer Operation Manual (Signal Analyzer Function Operation)* or *MS2830A/MS2840A/MS2850A Signal Analyzer Operation Manual (Signal Analyzer Function Operation)* for details.
Suffix code	`HZ, KHZ, KZ, MHZ, MZ, GHZ, GZ` Hz is used when omitted.

Details

This command is available when the following trace is active:

- Spectrum

Example of Use

To set the center frequency of the display frequency axis scale to 20 kHz.

```
ZMCNT 20KHZ
```

ZMWDTH/ZMWDTH?

Zoom Width/Vertical Scale Width

Function

This command sets the frequency width of the display frequency axis scale.

Command

`ZMWDTH freq`	(Spectrum)
`ZMWDTH scale`	(Frequency vs Time)

Query

```
ZMWDTH?
```

Response

```
freq
```

Parameter

`freq`	Scale frequency width
Range and resolution	Refer to the *MS2690A/MS2691A/MS2692A Signal Analyzer Operation Manual (Signal Analyzer Function Operation)* or *MS2830A/MS2840A/MS2850A Signal Analyzer Operation Manual (Signal Analyzer Function Operation)* for details.
Suffix code	`HZ, KHZ, KZ, MHZ, MZ, GHZ, GZ` Hz is used when omitted.
`scale`	Scale frequency width
`DIVBY2`	Frequency bandwidth/2
`DIVBY5`	Frequency bandwidth/5
`DIVBY10`	Frequency bandwidth/10
`DIVBY25`	Frequency bandwidth/25

Details

This command is available when either of the following traces is active:

- Spectrum
- Frequency vs Time

Example of Use

To set the frequency width of the display frequency axis scale to 31.25 MHz.

```
ZMWDTH 31.25MHz
```

ZOOM

Zoom

Function

This command expands the trace in the range specified by the marker.

Command

```
ZOOM
```

Details

When the main trace is Spectrum, the active marker zone range is reflected to the display frequency range.
When the main trace is Power vs Time, Frequency vs Time, or Phase vs Time, the time range between Marker and Marker is reflected to the analysis range.

This command is not available in the following cases:

- The analysis range is minimum (Power vs Time, Frequency vs Time, Phase vs Time).
- The display frequency range is minimum (Spectrum).
- Marker Result is Peak (Fast), or Peak (Normal), and Zone Width Type is Spot (Spectrum).
- Either Marker 1 or 2 is set to Off (Power vs Time, Frequency vs Time, Phase vs Time).
- Marker Mode is set to Off or Fixed (Spectrum).

This command is available when any one of the following traces is active:

- Spectrum
- Power vs Time
- Frequency vs Time
- Phase vs Time

Example of Use

To expand the specified range of the zone marker when the main trace is Spectrum.

```
ZOOM
```

ZOOMOUT

Zoom Out

Function

This command compresses the display frequency range to the range specified by the marker.

Command

```
ZOOMOUT
```

Details

When the main trace is Spectrum, the display frequency range is compressed (zoom out) to the range specified by the active marker zone width.
When the main trace is Power vs Time, Frequency vs Time, or Phase vs Time, the analysis time range is compressed (zoom out) to the range between Marker1 and Marker2 for setting change.

This command is not available in the following cases:

- The active marker is set to Off or Fixed (Spectrum).
- Either Marker 1 or 2 is set to Off (Power vs Time, Frequency vs Time, Phase vs Time).
- Marker Result is Peak (Fast), or Peak (Normal) AND Zone Width Type is Spot.

Example of Use

To compress the display range when the main trace is Spectrum.

```
ZOOMOUT
```