MX269017A
Vector Modulation Analysis Software
Operation Manual
Remote Control

26th 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), and MX269017A Vector Modulation Analysis Software Operation Manual (Operation). Please also refer to them before using the equipment.**
- **Keep this manual with the equipment.**

ANRITSU CORPORATION

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MX269017A
Vector Modulation Analysis Software
Operation Manual Remote Control

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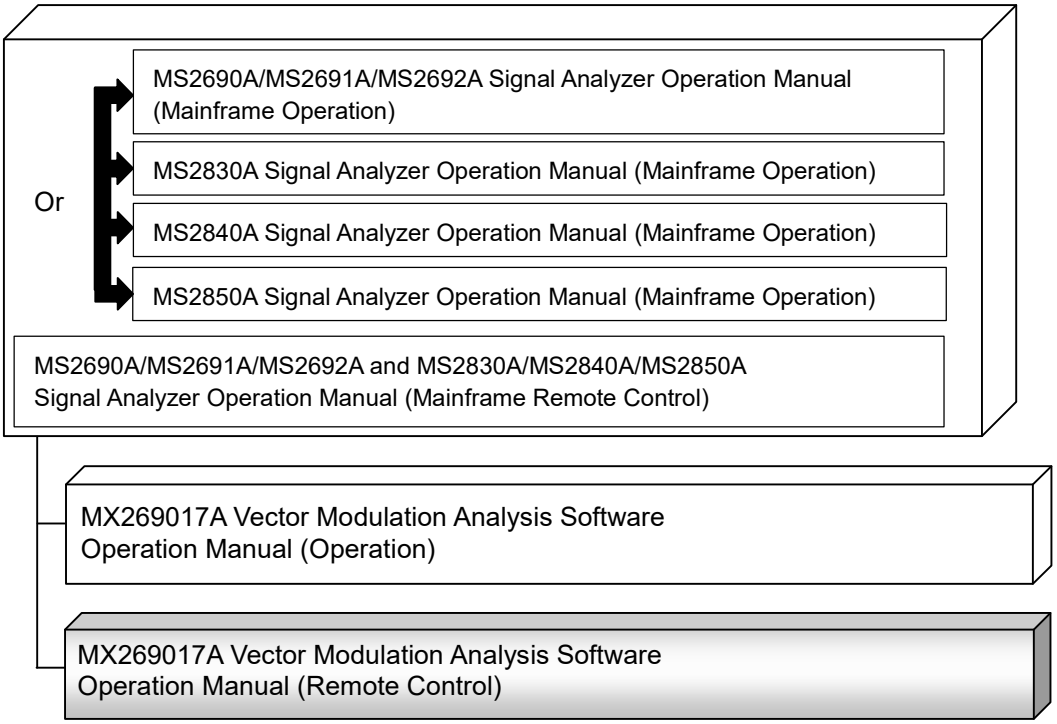
About This Manual

■ **About this document**

This operation manual is for MX269017A Vector Modulation Analysis Software (Remote Control).



- Mainframe: Operation
- Mainframe: Remote Control

These describe basic operations, maintenance procedures, common functions and common remote functions of the signal analyzer.

- MX269017A Vector Modulation Analysis Software Operation Manual (Operation)

This document describes the operation of MX269017A Vector Modulation Analysis Software.

- MX269017A Vector Modulation Analysis Software Operation Manual (Remote Control): This document

This document describes the remote control of MX269017A Vector Modulation Analysis Software Operation Manual.

Table of Contents

Chapter 1 Overview..... 1-1

1.1 Overview 1-2
1.2 Basic Flow of Control 1-3
1.3 Native Mode 1-12
1.4 Setting Numeric Program Data 1-15

Chapter 2 SCPI Device Message Details.. 2-1

2.1 Selecting applications 2-6
2.2 Basic Parameter 2-12
2.3 System Parameter Settings 2-30
2.4 Utility Functions..... 2-120
2.5 Common Measurement Function 2-123
2.6 Power Meter Measurement Function 2-139
2.7 Modulation Analysis 2-140
2.8 Power vs Time 2-250
2.9 Capture 2-321
2.10 Replay Function 2-326
2.11 Saving Measurement Results 2-336

Chapter 3 SCPI Status Register..... 3-1

3.1 Querying Measurement Status 3-2
3.2 STATus:QUEStionable Register..... 3-3
3.3 STATus:OPERation Register 3-13

1

2

3

IV.

Chapter 1 Overview

This chapter provides an overview of the remote control of the MX269017A Vector Modulation Analysis Software (hereinafter, referred to as “this application”).

1.1 Overview 1-2
1.1.1 Interface 1-2
1.1.2 Controlled Application 1-2
1.2 Basic Flow of Control 1-3
1.2.1 Initial Setting 1-4
1.2.2 Setting Basic Parameter 1-6
1.2.3 Configuring Common Settings 1-7
1.2.4 Modulation Analysis 1-8
1.2.5 Power vs Time 1-10
1.3 Native Mode 1-12
1.4 Setting Numeric Program Data 1-15

1.1 Overview

This application can be controlled from an external controller (PC) by remote control commands using the MS269x Series, MS2830A, MS2840A or MS2850A Signal Analyzer. The remote control commands are defined by the SCPI format.

1.1.1 Interface

This instrument has GPIB, Ethernet, and USB interfaces for remote control. Those interfaces cannot be used at the same time.

The interface is automatically determined when a command is received at the start of communication. This instrument enters the remote state after the interface has been determined. At remote-interface operation, the front panel Remote lamp lights; the lamp is off at local-interface operation.

Refer to the *MS2690A/MS2691A/MS2692A or MS2830A/MS2840A/MS2850A Signal Analyzer manual (Mainframe Remote Control)* for more details of the basic operations for remote control, such as interface setting.

1.1.2 Controlled Application

Two types of the remote control commands can be used with this instrument: commands that are commonly applied to this instrument or all the applications (hereinafter, referred to as, "Common command"), and the other commands unique to a specific application. Common commands can be executed at any time and do not depend on the currently controlled application. However, a command unique to a specific application can be executed at the controlled application. If it is executed at another application, the command is not executed or an error occurs.

In this instrument, multiple applications can be activated at the same time. Only one application resource can be executed per piece of hardware at one time. This application measures an input signal by using the resource of RF input. Thus, this application cannot be executed at the same time with another application using the same resource such as the signal analyzer function. In order to execute a function unique to the application by using remote control, you need to select this application while it has been activated. Furthermore, this application can be executed at the same time with another application that uses by itself a resource not used by this application, such as the Vector Signal Generator Option 020.

1.2 Basic Flow of Control

This section describes the basic remote control command programming operations for measuring GSM/EDGE signals.

Figure 1.2-1 shows the control flow for a basic test. Note the parameter settings for the measurement, type of measurement function, and measurement execution order, although the measurement order can be changed.

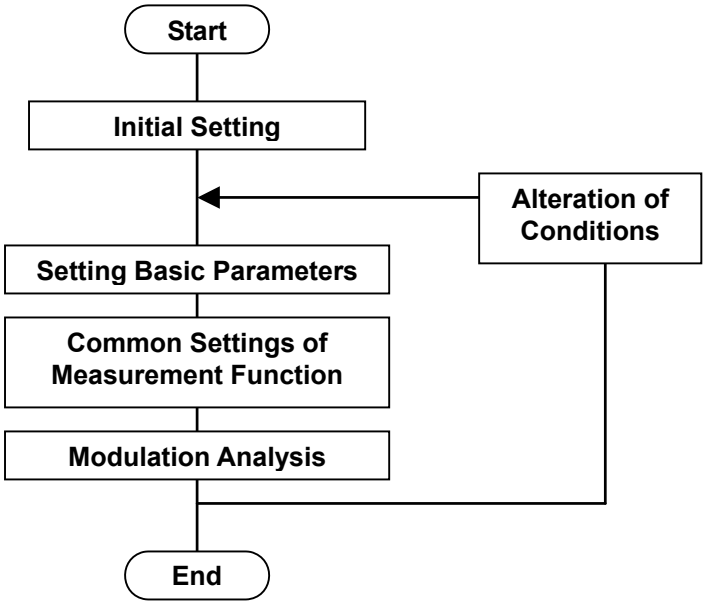


Figure 1.2-1 Basic Test Flow

(1) Initial Setting
The communication interface is initialized, the communication mode is set, the application is activated/selected, and the parameter is initialized.

☞ 1.2.1 Initial Setting

(2) Setting of Basic Parameters
The carrier frequency, input level and all other measurement parameters are set.

☞ 1.2.2 Setting Basic Parameter

(3) Configuring Common Settings
Parameters common to the functions that this application executes are set. The parameters include the trigger and system parameters.

☞ 1.2.3 Configuring Common Settings

(4) Modulation Analysis
The measurement functions to be executed in this application are executed. Set parameters such as trace/storage mode for each measurement function in order to execute the measurement and query the measurement result.

☞ 1.2.4 Modulation Analysis

1.2.1 Initial Setting

As part of the initial settings, perform the preparations for using the measuring instrument and the application. The following actions are included in the initial settings.

(1) Initializing Communication Interface
The remote control interface to be used is initialized so sending and receiving of commands can start. Refer to the instruction manual of the interface for details.

(2) Setting Language Mode and Response Format
The language mode and the response format used to communicate are set. Refer to the *MS2690A/MS2691A/MS2692A or MS2830A/MS2840A/MS2850A Signal Analyzer manual (Mainframe Remote Control)* for details.

(3) Starting the Application
The application is started. The signal analyzer and spectrum analyzer applications can also be loaded (started).

(4) Selecting the Application
The target application is selected.

(5) Initialization
All parameters and states are reset at initialization.

(6) Setting Measurement Mode.
After initialization, the measurement mode is at continuous measurement one. To select the single measurement mode, switch it to the single measurement one.

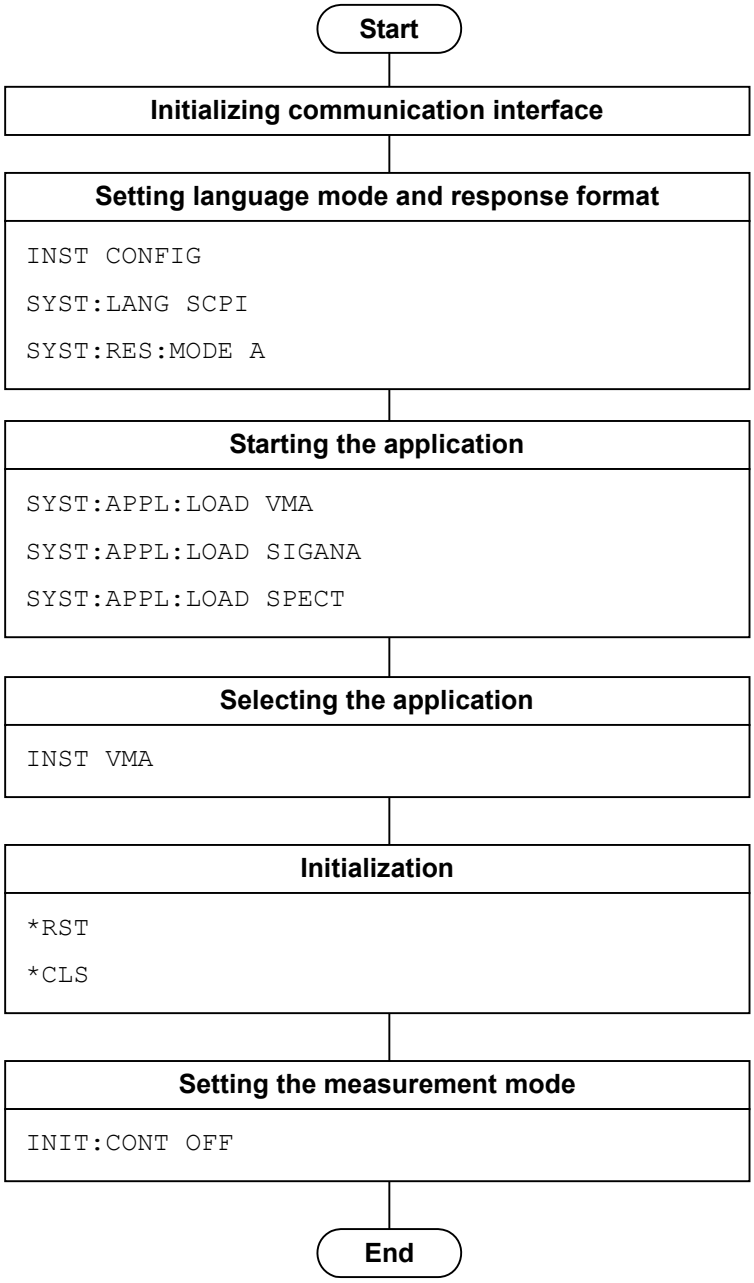


Figure 1.2.1-1 Initialization Flow and Command Example

1.2.2 Setting Basic Parameter

Set the parameters used in common for all measurements, such as carrier frequency and input level. The basic parameters include the following:

(1) Carrier Frequency

(2) Input Level (Reference Level/Attenuator)

(3) Level Offset

(4) Pre-Amp (Option)

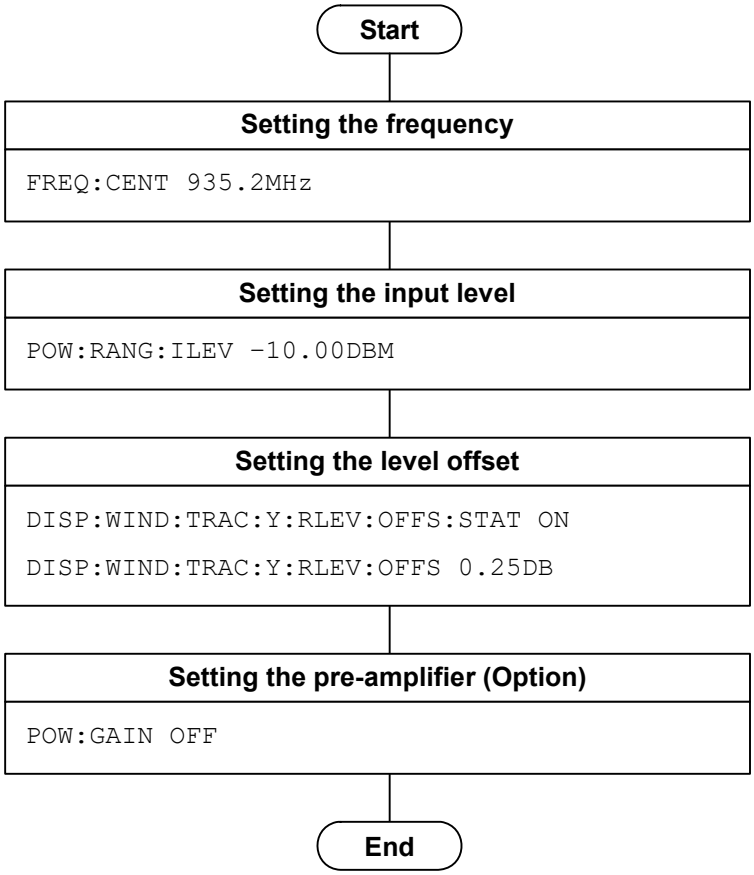


Figure 1.2.2-1 Basic Parameter Setting Flow and Command Examples

1.2.3 Configuring Common Settings

Parameters common to the functions that this application executes are set. The parameters can be set in any order, unless otherwise specified.

(1) Trigger

(a) Trigger Switch

(b) Trigger Source

(c) Trigger Slope

(d) Trigger Delay

(e) Wide IF Trigger Level

(2) System Parameter

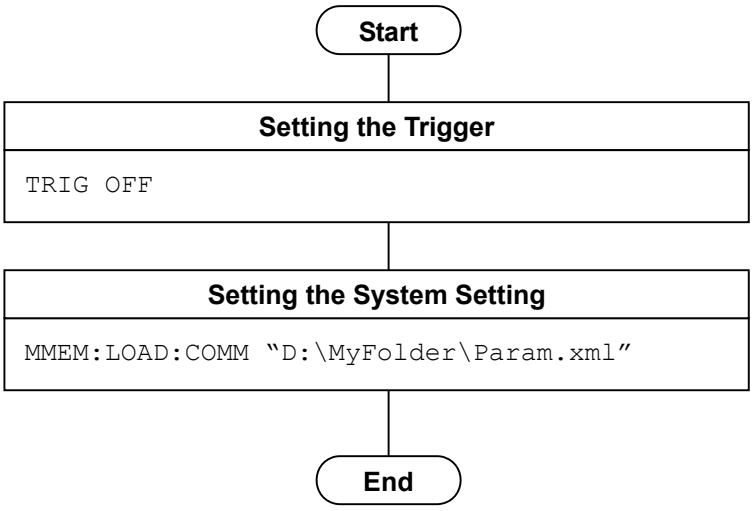


Figure 1.2.3-1 Flow of Common Settings for Measurement Functions and Command Examples

1.2.4 Modulation Analysis

This executes the Modulation Analysis function in the following order:

(1) Select the measurement function.

(2) Set the measurement parameters.
The following parameters are only applied to Modulation Analysis:

(a) Storage Mode

(b) Storage Count

(c) Target Slot Number

(3) Execute measurement and read out the result.

(4) Set the display content.
This setting is required for displaying measured results on the screen, in a manner similar to the manual operation, although it is not necessary when only reading out measured results through remote control.

(a) Trace

(b) Scale

(c) Marker

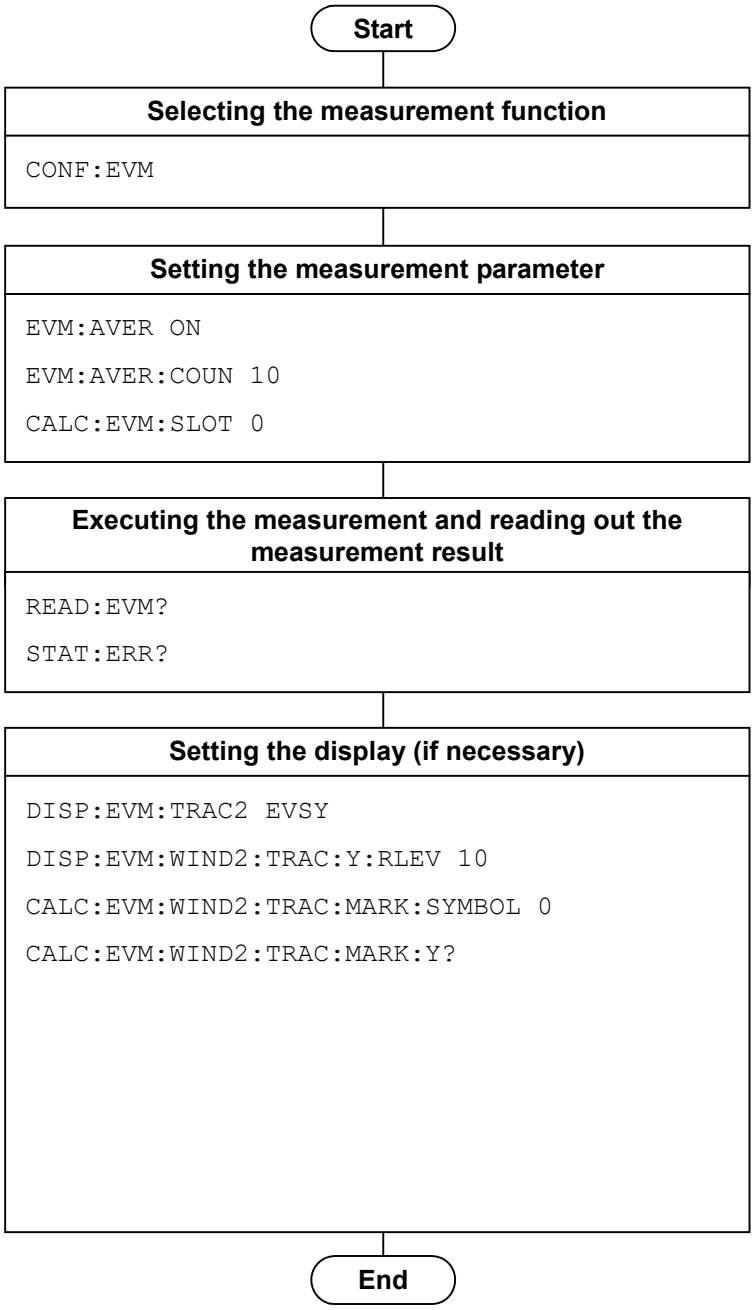


Figure 1.2.4-1 Flow of Modulation Analysis and Command Examples

1.2.5 Power vs Time

This executes the Power vs Time function in the following order:

(1) Select the measurement function.

(2) Set the measurement parameters.

  (a) Common Setting

  (b) Carrier Frequency

  (c) Offset Value

  (d) Input Level

  (e) Storage Mode

  (f) Storage Count

  (g) Wide Dynamic Range (if necessary)

(3) Execute measurement and read out the result.

(4) Set the display content.
The following changes the screen settings.
They do not affect measurement results.

  (a) Trace

  (b) Scale

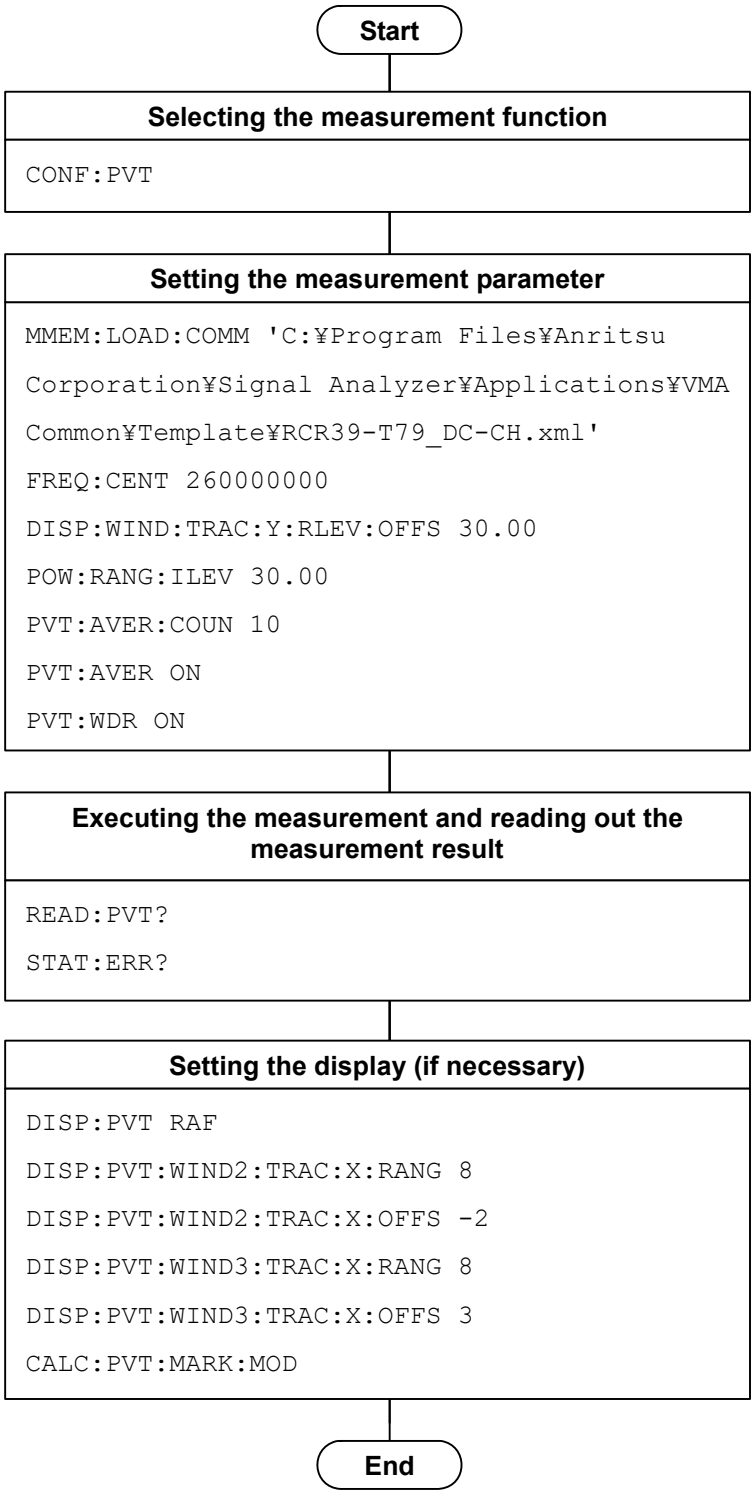


Figure 1.2.5-1 Flow of Power vs Time and Command Examples

1.3 Native Mode

In this instrument, the syntax/format types of the remote control commands are defined as "Language mode". The language mode has two modes: SCPI and Native.

(1) SCPI Mode
The SCPI mode processes commands conforming to the syntax/format defined in SCPI (ver1999.0). For programming, you can use the character string in long/short form format and can omit angled bracket ([ ]) definition character strings.

On the Configuration screen, the SCPI mode is automatically set after transmitting command `SYST:LANG SCPI`.

(2) Native Mode
The Native mode processes commands that are in this instrument's own definition type. Unless otherwise specified, the character string of a command header is fixed. If application commands are defined only by the SCPI mode, character strings converted according to the conversion rules are the commands in the Native mode.

Note:

The `STATus:QUEStionable` and `STATus:OPERation` registers cannot be used, even when the corresponding commands are converted to Native–mode commands according to the conversion rules.

On the Configuration screen, the Native mode is automatically set after transmitting `SYST:LANG NAT`.

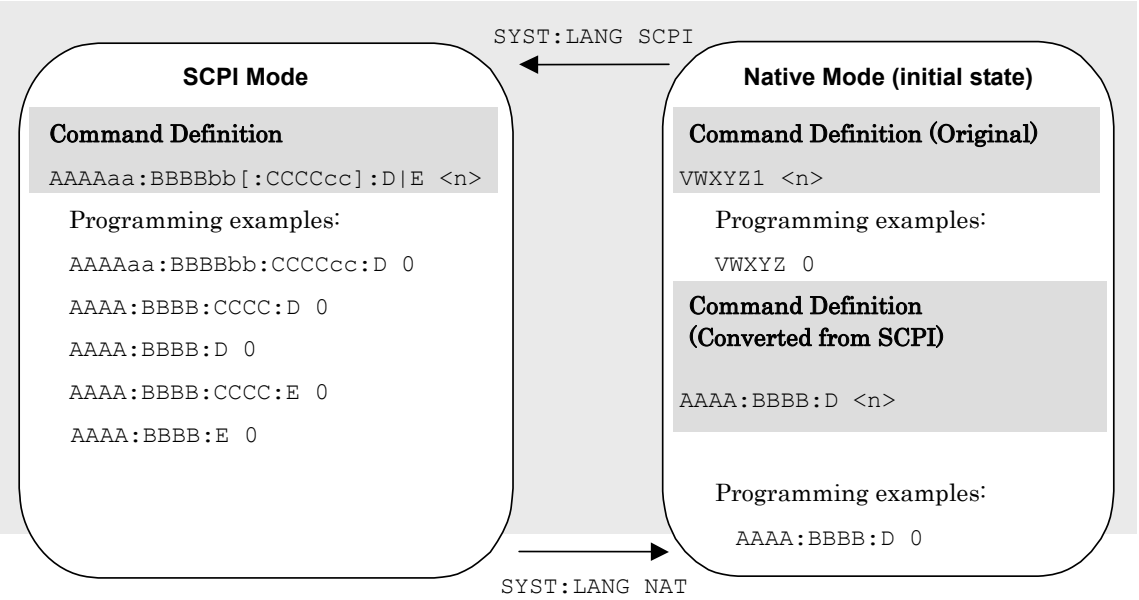


Figure 1.3-1 SCPI and Native modes

This application is only defined as the SCPI mode commands. You need to follow the conversion rules below in order to control this application by using the Native mode.

Conversion Rules:

(1) Move the numeric parameter in the program header of an SCPI command before the argument. Delete a numeric parameter which only has one value and can be deleted. Describe the argument if it cannot be deleted.

(2) Use the first node if multiple ones can be selected.

(3) Delete those layers which can be deleted.

(4) Alter all the long-formed characters into short-formed ones.

(5) Delete the colon mark (“:”) at the head.

Example 1:

To convert `:CALCulate:MARKer[1]|2[:SET]:CENTer` into a Native mode command.

(1) Move the numeric parameter in the program header before the argument.

```
:CALCulate:MARKer[1]|2[:SET]:CENTer
↓
:CALCulate:MARKer[:SET]:CENTer <integer>
```

(A numeric value(1 or 2) is put <integer>.)

(2) Delete the layers which can be deleted.

```
:CALCulate:MARKer[:SET]:CENTer <integer>
↓
:CALCulate:MARKer:CENTer <integer>
```

(3) Alter all the long-formed characters into short-formed ones.

```
:CALCulate:MARKer:CENTer <integer>
↓
:CALC:MARK:CENT <integer>
```

(4) Delete the colon mark (“:”) at the head.

```
:CALC:MARK:CENT <integer>
↓
CALC:MARK:CENT <integer>
```

Example 2:

To convert `[:SENSe]:BPOWer|:TXPower[:STATe]?` into a Native mode command.

(1) Use the first node if multiple ones can be selected.

`[:SENSe]`**`:BPOWer|:TXPower`**`[:STATe]?`

↓

`[:SENSe]`**`:BPOWer`**`[:STATe]?`

(2) Delete the layers which can be deleted.

`[:SENSe]``:BPOWer`**`[:STATe]`**`?`

↓

`:BPOWer?`

(3) Alter all the long-formed characters into short-formed ones.

`:BPOWer?`

↓

`:BPOW?`

(4) Delete the colon mark (":") at the head.

`:BPOW?`

↓

`BPOW?`

Example 3:

To convert `:FETCh:EVM[n]?` into a Native mode command.

(1) Move the numeric parameter in the program header before the argument.

`:FETCh:EVM`**`[n]`**`?`

↓

`:FETCh:EVM?` **`<integer>`**

(A numeric value is put in <integer>.)

(2) Alter all the long-formed characters into short-formed ones.

`:FETCh:EVM?` `<integer>`

↓

`:FETC:EVM?` `<integer>`

(3) Delete the colon mark (":") at the head.

`:FETC:EVM? <integer>`

↓

`FETC:EVM? <integer>`

(4) Set a numeric value to the argument.

`:FETC:EVM? <integer>`

↓

`FETC:EVM? 1`

1.4 Setting Numeric Program Data

The following character programs can be used for setting numeric program data (numeric parameter).

(1) `DEFault`
After `DEFault` has been set to numeric program data, the target parameter is set to the initial value.

(2) `MINimum`
After `MINimum` has been set to numeric program data, the target parameter is set to the minimum value.

(3) `MAXimum`
After `MAXimum` has been set to numeric program data, the target parameter is set to the maximum value.

In this application, `DEFault`, `MINimum`, and `MAXimum` can be used for the following parameters:

```
<numeric_value>

<freq>

<real>

<rel_power>

<integer>

<rel_ampl>

<time>
```

Chapter 2 SCPI Device Message Details

This chapter describes the detailed specifications of SCPI remote control commands for executing the functions of this application. The device messages are listed according to function. Refer to the *MS2690A/MS2691A/MS2692A or MS2830A/MS2840A/MS2850A Signal Analyzer Operation Manual (Mainframe Remote Control)* for detailed specifications of the IEEE488.2 common device messages and application common device messages.

2.1 Selecting applications 2-6
2.1.1 Launching Applications 2-7
2.1.2 Selecting applications 2-8
2.1.3 Initialization 2-11
2.2 Basic Parameter 2-12
2.2.1 Carrier Frequency 2-13
2.2.2 RF Spectrum 2-15
2.2.3 Input Level 2-16
2.2.4 Level Offset 2-18
2.2.5 Level Offset State 2-19
2.2.6 Pre-Amp State 2-20
2.2.7 Frequency Band Mode 2-22
2.2.8 Preselector Auto Tune 2-24
2.2.9 Preselector Tune 2-26
2.2.10 Micro Wave Preselector Bypass 2-28
2.3 System Parameter Settings 2-30
2.3.1 Common Setting Recall 2-35
2.3.2 Common Setting File Name Query 2-36
2.3.3 Frame Formatted/Non-Formatted/SCBT Select 2-37
2.3.4 Modulation Type 2-38
2.3.5 2FSK Auto Select 2-40
2.3.6 Modulation Index 2-41
2.3.7 4FSK Auto Select 2-42
2.3.8 Maximum Frequency Deviation 2-44
2.3.9 Mapping Edit 2-46
2.3.10 Symbol Rate 2-47
2.3.11 Span Up 2-49
2.3.12 Measurement Filter 2-50
2.3.13 2nd Measurement Filter 2-52
2.3.14 Reference Filter 2-54
2.3.15 2nd Reference Filter 2-56
2.3.16 Roll Off/BT 2-58
2.3.17 2nd Roll Off/BT 2-59
2.3.18 Measurement Filter Edit 2-60
2.3.19 Reference Filter Edit 2-62

2.3.20 Frame Format 2-64
2.3.21 Slot Length 2-66
2.3.22 Measurement Offset 2-67
2.3.23 Measurement Interval 2-68
2.3.24 Sync Word Search 2-69
2.3.25 Burst Search 2-70
2.3.26 2nd Word Enable 2-71
2.3.27 Search Slot 2-72
2.3.28 Sync Word Length 2-74
2.3.29 Sync Word(HEX) 2-76
2.3.30 Sync Word Offset 2-78
2.3.31 Equalizer Adaptive 2-80
2.3.32 Equalizer Convergence 2-81
2.3.33 Equalizer Length 2-82
2.3.34 Deviation Calculation 2-83
2.3.35 Deviation RMS Reference 2-84
2.3.36 H-CPM Decode Method 2-85
2.3.37 Origin Offset Cancel 2-86
2.3.38 Origin Offset Reference 2-87
2.3.39 BER Setting 2-88
2.3.40 Method of Symbol Rate Error 2-92
2.3.41 Numeric Only 2-93
2.3.42 Droop Cancel 2-95
2.3.43 Capture OSR 2-96
2.3.44 Capture Interval 2-97
2.3.45 APSK Ring Ratio (R2/R1) 2-98
2.3.46 APSK Ring Ratio (R3/R1) 2-99
2.3.47 EVM Reference 2-100
2.3.48 Burst Gap Size 2-101
2.3.49 Off Slot Power Range 2-102
2.3.50 Off Slot Power User Start 2-104
2.3.51 Off Slot Power User Stop 2-105
2.3.52 Rise / Fall Off Detect Level 2-106
2.3.53 Rise / Fall Off Detect Level Unit 2-107
2.3.54 Subcarrier Spacing 2-108
2.3.55 FFT Size 2-109
2.3.56 GI Size 2-110
2.3.57 Lower Guard Subcarrier 2-111
2.3.58 Upper Guard Subcarrier 2-112
2.3.59 Signal Type 2-113
2.3.60 Burst Period 2-114
2.3.61 Subcarrier MAP 2-115
2.3.62 Pilot IQ MAP 2-116
2.3.63 Multicarrier Filter 2-117

2.3.64 Multicarrier Filter Edit 2-118
2.4 Utility Functions 2-120
2.4.1 Erase Warm Up Message 2-120
2.4.2 Display Title 2-121
2.4.3 Title Entry 2-122
2.5 Common Measurement Function 2-123
2.5.1 Measurement and Control 2-124
2.5.2 Trigger Switch 2-128
2.5.3 Trigger Source 2-129
2.5.4 Trigger Slope 2-131
2.5.5 Trigger Delay 2-132
2.5.6 Wide IF Trigger Level 2-134
2.5.7 Video Trigger Level 2-136
2.5.8 Frame Trigger Period Auto 2-137
2.5.9 Frame Trigger Period 2-138
2.6 Power Meter Measurement Function 2-139
2.7 Modulation Analysis 2-140
2.7.1 Measure 2-155
2.7.2 Trace Mode 2-161
2.7.3 Scale (Vertical) – EVM vs Symbol 2-165
2.7.4 Scale (Vertical) – Mag. Error vs Symbol 2-167
2.7.5 Scale (Vertical) – Phase Error vs Symbol 2-169
2.7.6 Scale (Interpolation) – Constellation 2-171
2.7.7 Points/Symbol Number – Constellation 2-173
2.7.8 Scale (Unit) – Numeric 2-175
2.7.9 Scale (Unit) – Symbol Rate Error 2-177
2.7.10 Scale (Unit) – Symbol Table 2-179
2.7.11 Scale (Vertical) – Equalizer Amplitude 2-181
2.7.12 Scale (Vertical) – Equalizer Phase 2-183
2.7.13 Scale (Vertical) – Equalizer Group Delay 2-185
2.7.14 Scale (Vertical) – Equalizer Impulse 2-187
2.7.15 Scale (Vertical) – FSK Error vs Symbol 2-189
2.7.16 Scale (Vertical) – Fidelity vs Symbol 2-191
2.7.17 Scale (Vertical) – EVM vs Subcarrier 2-193
2.7.18 Storage Mode 2-194
2.7.19 Storage Count 2-195
2.7.20 Select Trace 2-196
2.7.21 Zoom In 2-198
2.7.22 Zoom Out 2-198
2.7.23 Next Trace 2-199
2.7.24 Next View 2-199
2.7.25 Target Slot Number 2-200
2.7.26 Marker On/Off – Constellation 2-202
2.7.27 Marker On/Off – EVM vs Symbol 2-204

2.7.28 Marker On/Off – Mag. Error vs Symbol 2-206
2.7.29 Marker On/Off – Phase Error vs Symbol..... 2-208
2.7.30 Marker On/Off – I and Q vs Symbol 2-210
2.7.31 Marker On/Off – Magnitude vs Symbol 2-212
2.7.32 Marker On/Off – Phase vs Symbol..... 2-214
2.7.33 Marker On/Off – Frequency vs Symbol 2-216
2.7.34 Marker On/Off – EVM vs Subcarrier..... 2-218
2.7.35 Marker Number – Constellation..... 2-219
2.7.36 Marker Number – EVM vs Symbol 2-221
2.7.37 Marker Number – Mag. Error vs Symbol..... 2-223
2.7.38 Marker Number – Phase Error vs Symbol.... 2-225
2.7.39 Marker Number – I and Q vs Symbol 2-227
2.7.40 Marker Number – Magnitude vs Symbol 2-229
2.7.41 Marker Number – Phase vs Symbol..... 2-231
2.7.42 Marker Number – Frequency vs Symbol..... 2-233
2.7.43 Marker Number – Constellation (Subcarrier)..... 2-235
2.7.44 Marker Number – EVM vs Subcarrier 2-237
2.7.45 Marker Result – Constellation 2-239
2.7.46 Marker Result – EVM vs Symbol..... 2-241
2.7.47 Marker Result – Mag. Error vs Symbol 2-242
2.7.48 Marker Result – Phase Error vs Symbol 2-243
2.7.49 Marker Result – I and Q vs Symbol..... 2-244
2.7.50 Marker Result – Magnitude vs Symbol..... 2-246
2.7.51 Marker Result – Phase vs Symbol 2-247
2.7.52 Marker Result – Frequency vs Symbol 2-248
2.7.53 Marker Result – EVM vs Subcarrier 2-249
2.8 Power vs Time 2-250
2.8.1 Measure..... 2-257
2.8.2 Trace Mode 2-259
2.8.3 Unit 2-260
2.8.4 Display Item 2-261
2.8.5 Slot..... 2-262
2.8.6 Load Mask Setting..... 2-263
2.8.7 Upper – Rise – Time..... 2-264
2.8.8 Upper – Rise – Absolute limits 2-266
2.8.9 Upper – Rise – Relative limits 2-268
2.8.10 Upper – Rise – Fail Logic 2-270
2.8.11 Upper – Fall – Time 2-272
2.8.12 Upper – Fall – Absolute limits..... 2-274
2.8.13 Upper – Fall – Relative limits..... 2-276
2.8.14 Upper – Fall – Fail Logic 2-278
2.8.15 Lower – Rise – Time..... 2-280
2.8.16 Lower – Rise – Absolute limits 2-282

2.8.17 Lower – Rise – Relative limits 2-284
2.8.18 Lower – Rise – Fail Logic 2-286
2.8.19 Lower – Fall – Time 2-288
2.8.20 Lower – Fall – Absolute limits 2-290
2.8.21 Lower – Fall – Relative limits 2-292
2.8.22 Lower – Fall – Fail Logic 2-294
2.8.23 Storage Mode 2-296
2.8.24 Storage Count 2-297
2.8.25 Average Type 2-298
2.8.26 Filler Type 2-299
2.8.27 Filler Bandwidth 2-300
2.8.28 Filler Roll-off Factor 2-302
2.8.29 Marker – On/Off 2-303
2.8.30 Active Trace 2-304
2.8.31 Marker Position 2-305
2.8.32 Marker Value 2-307
2.8.33 Marker to Modana (Modulation Analysis) Area 2-310
2.8.34 Marker Tx Power 2-311
2.8.35 Log Scale 2-312
2.8.36 Log Scale Line 2-314
2.8.37 Wide Dynamic Range 2-315
2.8.38 Scale Range (Horizontal) – Rise 2-316
2.8.39 Scale Range (Horizontal) – Fall 2-317
2.8.40 Scale Offset (Horizontal) – Rise 2-318
2.8.41 Scale Offset (Horizontal) – Fall 2-319
2.8.42 Mask Table Title 2-320
2.9 Capture 2-321
2.9.1 Saving Captured Waveform Data to File 2-321
2.9.2 Canceling Saving of Waveform Data 2-322
2.9.3 Selecting Auto or Manual Waveform Capture Time 2-323
2.9.4 Setting Waveform Capture Time 2-324
2.9.5 Setting Waveform Capture Interval 2-325
2.10 Replay Function 2-326
2.11 Saving Measurement Results 2-336
2.11.1 Saving a measurement result in a file 2-337
2.11.2 Setting the saving file type 2-338

2.1 Selecting applications

Table 2.1-1 lists the device messages for setup operations such as loading/selecting/initializing an application.

Table 2.1-1 Selecting applications

Parameter	Device Message
Load Application	`:SYSTem:APPLication:LOAD VMA`
Unload Application	`:SYSTem:APPLication:UNLoad VMA`
Application Switch	`:INSTrument[:SELect] VMA|CONFIG`
	`:INSTrument[:SELect]?`
Application Status	`:INSTrument:SYSTem VMA,[ACTive]|INACtive|MINimum`
	`:INSTrument:SYSTem? VMA`
Initialization	`:INSTrument:DEFault`
	`:SYSTem:PRESet`

2.1.1 Launching Applications

:SYSTem:APPLication:LOAD VMA

Load Application

Function

This command loads this application.

Command

```
:SYSTem:APPLication:LOAD VMA
```

Details

This function loads an installed application and registers it to the Application Switch menu.
This function is available when the control-targeted application is Config.

Example of Use

To load this application.

```
SYST:APPL:LOAD VMA
```

:SYSTem:APPLication:UNLoad VMA

Unload Application

Function

This command exits this application.

Command

```
:SYSTem:APPLication:UNLoad VMA
```

Details

This function exits an activated application and deletes it from the Application Switch menu.
This function is available when the control-targeted application is Config.

Example of Use

To exit this application.

```
SYST:APPL:UNL VMA
```

2.1.2 Selecting applications

:INSTrument[:SELect] VMA|CONFIG

Application Switch

Function

This command selects the controlled application.

Command

```
:INSTrument[:SELect] <apl_name>
```

Parameter

<apl_name>	Application
VMA	This application
CONFIG	Config

Example of Use

To switch the control target to this application.

```
INST VMA
```

:INSTrument[:SELect]?

Application Switch Query

Function

This command queries the controlled application.

Query

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

Response

```
<apl_name>
```

Parameter

<apl_name>	Application
VMA	This application
CONFIG	Config

Example of Use

To query the controlled application.

```
INST?
> VMA
```

:INSTrument:SYSTem VMA,[ACTive]|INACtive|MINimum

Application Switch And Window Status

Function

This command selects the control target application and specifies the window status.

Command

```
:INSTrument:SYSTem <apl_name>,<window>
```

Parameter

<apl_name>	Application
VMA	This application
SIGANA	Signal Analyzer
SPECT	Spectrum Analyzer
CONFIG	Config
<window>	Window status
ACTive	Active
INACtive	Inactive
MINimum	Minimized
When omitted	Active

Example of Use

To select this application with the window in active status.

```
INST:SYST VMA,ACT
```

:INSTrument:SYSTem? VMA

Application Switch And Window Status Query

Function

This queries the status of the specified application.

Query

```
:INSTrument:SYSTem? <apl_name>
```

Response

```
<status>,<window>
```

Parameter

`<apl_name>`	Application
`VMA`	This application
`SIGANA`	Signal Analyzer
`SPECT`	Spectrum Analyzer
`CONFIG`	Config
`<status>`	Application status
`CURR`	Executed and targeted for control
`RUN`	Executed but not targeted for control
`IDLE`	Loaded but not executed
`UNL`	Not loaded
`<window>`	Window status
`ACT`	Active
`INAC`	Inactive
`MIN`	Minimized
`NON`	Window not displayed

Example of Use

To query the status of this application.

```
INST:SYST? VMA
> CURR,ACT
```

2.1.3 Initialization

:INSTrument:DEFault

Preset Current Application

Function

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

Command

`:INSTrument:DEFault`

Example of Use

To initialize the settings and status of the currently selected application.
`INST:DEF`

:SYSTem:PRESet

Preset Current Application

Function

This command initializes the settings and status of the currently selected application.
:Refer to `INSTrument:DEFault`.

Example of Use

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

2.2 Basic Parameter

Table 2.2-1 lists the parameters applied in common to this application, such as frequency and level.

Table 2.2-1 Basic Parameter

Parameter	Device Message
Carrier Frequency	[:SENSe]:FREQuency:CENTer <freq>
	[:SENSe]:FREQuency:CENTer?
RF Spectrum	[:SENSe]:EVM:SPECtrum NORMal|REVerse
	[:SENSe]:EVM:SPECtrum?
Input Level	[:SENSe]:POWer[:RF]:RANGe:ILEVel <real>
	[:SENSe]:POWer[:RF]:RANGe:ILEVel?
Level Offset	:DISPlay:WINDow[1]:TRACe:Y[:SCALe]:RLEVel:OFFSet <rel_power>
	:DISPlay:WINDow[1]:TRACe:Y[:SCALe]:RLEVel:OFFSet?
Level Offset State	:DISPlay:WINDow[1]:TRACe:Y[:SCALe]:RLEVel:OFFSet:STATe OFF|ON|0|1
	:DISPlay:WINDow[1]:TRACe:Y[:SCALe]:RLEVel:OFFSet:STATe?
Pre-Amp State	[:SENSe]:POWer[:RF]:GAIN[:STATe] OFF|ON|0|1
	[:SENSe]:POWer[:RF]:GAIN[:STATe]?
Frequency Band Mode	[:SENSe]:FREQuency:BAND:MODE NORMal|SPURious
	[:SENSe]:FREQuency:BAND:MODE?
Pre-selector Auto Tune	:CALibration:YTF
	:CALibration:YTF?
Pre-selector Tune	[:SENSe]:POWer[:RF]:PADJust <freq>
	[:SENSe]:POWer[:RF]:PADJust?
Micro Wave Preselector Bypass	[:SENSe]:POWer[:RF]:MW:PRESelector[:STATe] ON|OFF|1|0
	[:SENSe]:POWer[:RF]:MW:PRESelector[:STATe]?

2.2.1 Carrier Frequency

[:SENSe]:FREQuency:CENTer <freq>

Carrier Frequency

Function

This command sets the carrier frequency of the measured signal.

Command

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

Parameter

<freq>		Carrier frequency
	Range	100 kHz to the upper limit of the main unit
	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 carrier frequency to 800 GHz.

```
FREQ:CENT 800MHZ
```

[:SENSe]:FREQuency:CENTer?

Carrier Frequency Query

Function

This command queries the carrier frequency of the measured signal.

Query

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

Response

```
<freq>
```

Parameter

`<freq>`		Carrier frequency
	Range	100 kHz to the upper limit of the main unit
	Resolution	1 Hz Value is returned in Hz units.

Example of Use

To query the carrier frequency.

```
FREQ:CENT?
> 800000000
```

2.2.2 RF Spectrum

[:SENSe]:EVM:SPECtrum NORMal|REVerse

RF Spectrum

Function

This command sets whether to reverse the input signal IQ spectrum.

Command

```
[:SENSe]:EVM:SPECtrum <mode>
```

Parameter

<mode>	Spectrum reverse
NORM	Disables the Spectrum Reverse function. (default)
REV	Enables the Spectrum Reverse function.

Example of Use

To enable the Spectrum Reverse function.

```
EVM:SPEC REV
```

[:SENSe]:EVM:SPECtrum?

RF Spectrum Query

Function

This command queries the IQ spectrum reverse function status.

Query

```
[:SENSe]:EVM:SPECtrum?
```

Response

```
<mode>
```

Parameter

<mode>	Spectrum reverse
NORM	Disables the Spectrum Reverse function. (default)
REV	Enables the Spectrum Reverse function.

Example of Use

To query the spectrum reverse function status.

```
EVM:SPEC?
> REV
```

2.2.3 Input Level

[:SENSe]:POWer[:RF]:RANGe:ILEVel <real>

Input Level

Function

This command sets the input level of RF signals.

Command

```
[:SENSe]:POWer[:RF]:RANGe:ILEVel <real>
```

Parameter

`<real>`		Input level
	Range	When Pre Amp is Off: (–60.00 + Level Offset) to (30.00 + Level Offset) When Pre Amp is On: (–80.00 + Level Offset) to (10.00 + Level Offset)
	Resolution	0.01 dB
	Unit	1 dBm
	Suffix code	`DBM` dBm is used when omitted.
	Default	–10.00 dBm

Details

The setting range when Pre Amp is Off is applied if the MS2690A/MS2691A/MS2692A-008/108 6 GHz Preamplifier, MS2830A-008/108/068/168 Preamplifier, MS2840A-008/108/068/168/069/169 Preamplifier, or MS2850A-068/168 Preamplifier is not installed.

Example of Use

To set the input level to –15.00 dBm.

```
POW:RANG:ILEV -15.00
```

[:SENSe]:POWer[:RF]:RANGe:ILEVel?

Input Level Query

Function

This command queries the input level of RF signals.

Query

```
[:SENSe]:POWer[:RF]:RANGe:ILEVel?
```

Response

```
<real>
```

Parameter

<real>		Input level
	Range	When Pre Amp is Off: (–60.00 + Level Offset) to (30.00 + Level Offset) When Pre Amp is On: (–80.00 + Level Offset) to (10.00 + Level Offset)
	Resolution	0.01 dB Value is returned in dBm units.

Example of Use

To query the input level.

```
POW:RANG:ILEV?
> -15.00
```

2.2.4 Level Offset

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

Level Offset

Function

This command sets the input level offset value.

Command

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

Parameter

<rel_power>		Offset value
	Range	–99.99 to 99.99 dB
	Resolution	0.01 dB
	Suffix code	DB dB is used when omitted.
	Default	0.00 dB

Example of Use

To set the input level offset value to +10 dB.

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

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

Level Offset Query

Function

This command sets the input level offset value.

Query

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

Response

```
<rel_power>
```

Parameter

<rel_power>		Offset value
	Range	–99.99 to 99.99 dB
	Resolution	0.01 dB

Example of Use

To query the input level offset value.

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

2.2.5 Level Offset State

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

Level Offset State

Function

This command enables/disables the offset function of the input level.

Command

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

Parameter

<switch>	Enable/disable input level offset function
OFF|0	Disabled (default)
ON|1	Enabled

Example of Use

To enable the input level offset value.

```
DISP:WIND:TRAC:Y:RLEV:OFFS:STAT ON
```

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

Level Offset State Query

Function

This command queries the state of the input level offset function.

Query

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

Response

```
<switch>
```

Parameter

<switch>	Enable/disable input level offset function
0	Disabled
1	Enabled

Example of Use

To query the state of the input level offset function.

```
DISP:WIND:TRAC:Y:RLEV:OFFS:STAT?
> 1
```

2.2.6 Pre-Amp State

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

Pre-Amp State

Function

Sets On/Off of the Pre-Amp.

Command

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

Parameter

`<switch>`	Pre-Amp On/Off
`OFF|0`	Off (default)
`ON|1`	On

Details

This command is disabled when the MS2690A/MS2691A/MS2692A-008/108 6 GHz Preamplifier, MS2830A-008/108/068/168 Preamplifier, MS2840A-008/108/068/168/069/169 Preamplifier, or MS2850A-068/168 Preamplifier is not installed.

Example of Use

To set Pre-Amp to On.

```
POW:GAIN ON
```

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

Pre-Amp State Query

Function

This command queries the state of Pre-Amp.

Query

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

Response

```
<switch>
```

Parameter

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

Details

Off is returned when MS2690A/MS2691A/MS2692A-008/108 6 GHz Preamplifier, MS2830A-008/108/068/168 Preamplifier, MS2840A-008/108/068/168/069/169 Preamplifier, or MS2850A-068/168 Preamplifier is not installed.

Example of Use

To query the state of Pre-Amp.

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

2.2.7 Frequency Band Mode

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

Frequency Band Mode

Function

This command sets the path of the frequency band. This function can be used for changing the preselector band switching frequency and for setting a path that is not filtered via the preselector.

Command

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

Parameter

`<mode>`	Frequency Band Mode
[MS269xA]	
`NORMal`	Sets the frequency to be switched to the preselector band to 6.0 GHz. (default)
`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-047/046]	
`NORMal`	Sets the frequency to be switched to the preselector band to 4.0 GHz. (default)
`SPURious`	Sets the frequency to be switched to the preselector band to 3.5 GHz.

Details

[MS269xA]

This command is not available in the following cases:

- When using MS2690A
- When the Option 003 Preselector lower limit frequency extension is not installed in the MS2691A/MS2692A because the setting is fixed to NORMAL
- When the replay function is being executed.

[MS2830A], [MS2840A]

This command is not available when used with the 3.6 GHz Signal Analyzer option 040.

Example of Use

To set the frequency to be switched 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 path of the frequency band.

Query

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

Response

```
<mode>
```

Parameter

<mode>	Frequency band mode
[MS269xA]	
NORM	Sets the frequency to be switched to the preselector band to 6.0 GHz.
SPUR	Sets the frequency to be switched to the preselector band to 3.0 GHz.
[MS2830A-041/043/044/045], [MS2840A-041/044/046], [MS2850A-047/046]	
NORM	Sets the frequency to be switched to the preselector band to 4.0 GHz.
SPUR	Sets the frequency to be switched to the preselector band to 3.5 GHz.

Example of Use

To query the path of the frequency band.

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

2.2.8 Preselector Auto Tune

: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.

[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.

[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
```

2.2.9 Preselector Tune

[: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
	Range	–128 to 127
	Resolution	1
	Default	0

Details

In the following conditions, the peaking bias value can be set, but 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.

[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
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.

[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
```

2.2.10 Micro Wave Preselector Bypass

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

Micro Wave Preselector Bypass

Function

This command sets the Micro Wave 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 only when MS2692A-067/167, MS2830A-007/067/167, MS2840A-067/167, or MS2850A-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 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> Microwave Preselector Bypass

Parameter

<status> Microwave Preselector Bypass

1	Enables bypassing
0	Disables bypassing

Details

This function is available only when MS2692A-067/167, MS2830A-007/067/167, MS2840A-067/167, or MS2850A-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
```

2.3 System Parameter Settings

Table 2.3-1 lists the device messages for the communication system of the measurement target.

Table 2.3-1 System Parameter Settings

Parameter	Device Message
Common Setting Recall	:MMEMory:LOAD:COMMon <filename>
Common Setting File Name Query	[:SENSe]:COMMon:FNAMe?
Frame Formatted /Non-Formatted Select	:CALCulate:EVM FRAMe|NOFormatted|SCBT
	:CALCulate:EVM?
Modulation Type	:CALCulate:EVM:FRAMe|NOFormatted|SCBT:MODulation BPSK|DBPSk|PI2Dbpsk|QPSK|DQPSk|OQPSk|PI4Dqpsk|8PSK|D8PSk|16Qam|32Qam|64Qam|128Qam|256Qam|512Qam|1024qam|2048qam|2FSK|4FSK|HCPM|2ASK|4ASK|MSK|16APsk|32APsk
	:CALCulate:EVM:FRAMe|NOFormatted|SCBT:MODulation?
2FSK Auto Select	:CALCulate:EVM:FRAMe|NOFormatted:MODulation:AUTO:2FSK OFF|ON|0|1
	:CALCulate:EVM:FRAMe|NOFormatted:MODulation:AUTO:2FSK?
Modulation Index	:CALCulate:EVM:FRAMe|NOFormatted:MODulation:MODindex <real>
	:CALCulate:EVM:FRAMe|NOFormatted:MODulation:MODindex?
4FSK Auto Select	:CALCulate:EVM:FRAMe|NOFormatted:MODulation:AUTO:4FSK OFF|ON|0|1
	:CALCulate:EVM:FRAMe|NOFormatted:MODulation:AUTO:4FSK?
Maximum Frequency Deviation	:CALCulate:EVM:FRAMe|NOFormatted:MODulation:MAXDeviation <freq>
	:CALCulate:EVM:FRAMe|NOFormatted:MODulation:MAXDeviation?
Mapping Edit	:CALCulate:EVM:FRAMe:MODulation:MAPPingedit <filename>
	:CALCulate:EVM:FRAMe:MODulation:MAPPingedit?
Symbol Rate	:CALCulate:EVM:FRAMe|NOFormatted:MODulation:SRATe <rate>
	:CALCulate:EVM:FRAMe|NOFormatted:MODulation:SRATe?
Span Up	:CALCulate:EVM:FRAMe|NOFormatted:MODulation:SPANup OFF|ON|0|1
	:CALCulate:EVM:FRAMe|NOFormatted:MODulation:SPANup?

Table 2.3-1 System Parameter Settings (Cont'd)

Function	Device Message
Measurement Filter	:CALCulate:EVM:FRAMe|NOFormatted:FILTer:MEASurement NONE|RNYQuist|NYQuist|GAUSsian|STDT98|RECT|IRECt|IGAus|HCPM|USERdefined
	:CALCulate:EVM:FRAMe|NOFormatted:FILTer:MEASurement?
2nd Measurement Filter	:CALCulate:EVM:FRAMe|NOFormatted:2NDFilter:MEASurement NONE|IRECt|IGAus
	:CALCulate:EVM:FRAMe|NOFormatted:2NDFilter:MEASurement?
Reference Filter	:CALCulate:EVM:FRAMe|NOFormatted:FILTer:REFerence RNYQuist|NYQuist|GAUSsian|GAUSsian2|STDT98|HSINe|RECT|H-CPM_P25|USERdefined
	:CALCulate:EVM:FRAMe|NOFormatted:FILTer:REFerence?
2nd Reference Filter	:CALCulate:EVM:FRAMe|NOFormatted:2NDFilter:REFerence NONE|HSINe
	:CALCulate:EVM:FRAMe|NOFormatted:2NDFilter:REFerence?
Roll Off/BT	:CALCulate:EVM:FRAMe|NOFormatted:FILTer:ROFFBT <real>
	:CALCulate:EVM:FRAMe|NOFormatted:FILTer:ROFFBT?
2nd Roll Off/BT	:CALCulate:EVM:FRAMe|NOFormatted:2NDFilter:ROFFbt <real>
	:CALCulate:EVM:FRAMe|NOFormatted:2NDFilter:ROFFbt?
Measurement Filter Edit	:CALCulate:EVM:FRAMe|NOFormatted:FILTer:MEASurement:FILTeredit <filename>
	:CALCulate:EVM:FRAMe|NOFormatted:FILTer:MEASurement:FILTeredit?
Reference Filter Edit	:CALCulate:EVM:FRAMe|NOFormatted:FILTer:REFerence:FILTeredit <filename>
	:CALCulate:EVM:FRAMe|NOFormatted:FILTer:REFerence:FILTeredit?
Frame Format	:CALCulate:EVM:FRAMe:FRAMe:FORMat <k>,<n[0],…,n[k-1]>
	:CALCulate:EVM:FRAMe:FRAMe:FORMat?
Slot Length	:CALCulate:EVM:FRAMe:SLOT:SLENgth <n>
	:CALCulate:EVM:FRAMe:SLOT:SLENgth?
Measurement Offset	:CALCulate:EVM:FRAMe:SLOT:OFFSet <n>
	:CALCulate:EVM:FRAMe:SLOT:OFFSet?
Measurement Interval	:CALCulate:EVM:FRAMe|NOFormatted:SLOT:INTVal <n>
	:CALCulate:EVM:FRAMe|NOFormatted:SLOT:INTVal?
Sync Word Search	:CALCulate:EVM:FRAMe:SEARch:SYNSearch OFF|ON|0|1
	:CALCulate:EVM:FRAMe:SEARch:SYNSearch?
Burst Search	:CALCulate:EVM:FRAMe:SEARch:BURSearch OFF|ON|0|1
	:CALCulate:EVM:FRAMe:SEARch:BURSearch?

Table 2.3-1 System Parameter Settings (Cont'd)

Function	Device Message
2nd Word Enable	:CALCulate:EVM:FRAMe:SEARch:2NDWord OFF|ON|0|1
	:CALCulate:EVM:FRAMe:SEARch:2NDWord?
Search Slot	:CALCulate:EVM:FRAMe:SEARch:1STWord|2NDWord:SLT <n>
	:CALCulate:EVM:FRAMe:SEARch:1STWord|2NDWord:SLT?
Sync Word Length	:CALCulate:EVM:FRAMe:SEARch:1STWord|2NDWord:SLENgth <n>
	:CALCulate:EVM:FRAMe:SEARch:1STWord|2NDWord:SLENgth?
Sync Word (HEX)	:CALCulate:EVM:FRAMe:SEARch:1STWord|2NDWord:WORD <hex>
	:CALCulate:EVM:FRAMe:SEARch:1STWord|2NDWord:WORD?
Sync Word Offset	:CALCulate:EVM:FRAMe:SEARch:1STWord|2NDWord:OFFSet <n>
	:CALCulate:EVM:FRAMe:SEARch:1STWord|2NDWord:OFFSet?
Equalizer Adaptive	:CALCulate:EVM:FRAMe|NOFormatted:EQUalizer:ADPTive OFF|HOLD|ON
	:CALCulate:EVM:FRAMe|NOFormatted:EQUalizer:ADPTive?
Equalizer Convergence	:CALCulate:EVM:FRAMe|NOFormatted:EQUalizer:CONVergence <real>
	:CALCulate:EVM:FRAMe|NOFormatted:EQUalizer:CONVergence?
Equalizer Length	:CALCulate:EVM:FRAMe|NOFormatted:EQUalizer:LENGth <n>
	:CALCulate:EVM:FRAMe|NOFormatted:EQUalizer:LENGth?
Deviation Calculation	:CALCulate:EVM:FRAMe|NOFormatted:DEViation PRE|POST
	:CALCulate:EVM:FRAMe|NOFormatted:DEViation?
Deviation RMS Reference	:CALCulate:EVM:FRAMe|NOFormatted:DEViation:REFerence IDEal|NOMinal
	:CALCulate:EVM:FRAMe|NOFormatted:DEViation:REFerence?
H-CPM Decode Method	:CALCulate:EVM:FRAMe|NOFormatted:DECode:METHod:HCPM TYPe1|TYPe2
	:CALCulate:EVM:FRAMe|NOFormatted:DECode:METHod:HCPM?
Origin Offset Cancel	:CALCulate:EVM:FRAMe|NOFormatted:ORIGinoffset:CANCel OFF|ON
	:CALCulate:EVM:FRAMe|NOFormatted:ORIGinoffset:CANCel?
Origin Offset Reference	:CALCulate:EVM:FRAMe|NOFormatted:ORIGinoffset:REFerence OFFSet|ACTual
	:CALCulate:EVM:FRAMe|NOFormatted:ORIGinoffset:REFerence?
BER Mode	:CALCulate:EVM[:VIEW]:BER OFF|ON|0|1
	:CALCulate:EVM[:VIEW]:BER?
BER Slot Number	:CALCulate:EVM[:VIEW]:BER:SLOT <number>
	:CALCulate:EVM[:VIEW]:BER:SLOT?
BER Pattern	:CALCulate:EVM[:VIEW]:BER:PATTern <pattern name>
	:CALCulate:EVM[:VIEW]:BER:PATTern?
Method of Symbol Rate Error	:CALCulate:EVM:FRAMe|NOFormatted:METHod:SRERror FTFRame | SLOT
	:CALCulate:EVM:FRAMe|NOFormatted:METHod:SRERror?
Numeric Only	:CALCulate:EVM:NUMonly OFF|ON|0|1
	:CALCulate:EVM:NUMonly?
Droop Cancel	:CALCulate:EVM:FRAMe|NOFormatted:DROop:CANCel OFF|ON
	:CALCulate:EVM:FRAMe|NOFormatted:DROop:CANCel?

Table 2.3-1 System Parameter Settings (Cont'd)

Function	Device Message
Capture OSR	:CALCulate:EVM:FRAMe|NOFormatted:CAPTure:OSR 1|2|4|8|16|32
	:CALCulate:EVM:FRAMe|NOFormatted:CAPTure:OSR?
Capture Interval	:CALCulate:EVM:FRAMe|NOFormatted:CAPTure:INTVal 1FRame|10FRame
	:CALCulate:EVM:FRAMe|NOFormatted:CAPTure:INTVal?
APSK Ring Ratio (R2/R1)	:CALCulate:EVM:FRAMe|NOFormatted:APSK:R21Ratio <real>
	:CALCulate:EVM:FRAMe|NOFormatted:APSK:R21Ratio?
APSK Ring Ratio (R3/R1)	:CALCulate:EVM:FRAMe|NOFormatted:APSK:R31Ratio <real>
	:CALCulate:EVM:FRAMe|NOFormatted:APSK:R31Ratio?
EVM Reference	:CALCulate:EVM:FRAMe|NOFormatted:EVM:REFerence CONStellationmax|RMS
	:CALCulate:EVM:FRAMe|NOFormatted:EVM:REFerence?
Burst Gap Size	:CALCulate:PVTime:FRAMe:BGAPsize <val>
	:CALCulate:PVTime:FRAMe:BGAPsize?
Off Slot Power Range	:CALCulate:PVTime:OFFPower:RANGe <val>
	:CALCulate:PVTime:OFFPower:RANGe?
Off Slot Power User Start	:CALCulate:PVTime:OFFPower:USER:STARt <val>
	:CALCulate:PVTime:OFFPower:USER:STARt?
Off Slot Power User Stop	:CALCulate:PVTime:OFFPower:USER:STOP <val>
	:CALCulate:PVTime:OFFPower:USER:STOP?
Rise / Fall Off Detect Level	:CALCulate:PVTime:RIFall:OFFLevel <val>
	:CALCulate:PVTime:RIFall:OFFLevel?
Rise / Fall Off Detect Level Unit	:CALCulate:PVTime:RIFall:OFFLevel:UNIT <val>
	:CALCulate:PVTime:RIFall:OFFLevel:UNIT?
Subcarrier Spacing	:CALCulate:EVM:SCBT:MODulation:SUBCarrier:SPACing <real>
	:CALCulate:EVM:SCBT:MODulation:SUBCarrier:SPACing?
FFT Size	:CALCulate:EVM:SCBT:MODulation:FFTSize <size>
	:CALCulate:EVM:SCBT:MODulation:FFTSize?
GI Size	:CALCulate:EVM:SCBT:MODulation:GI <size>
	:CALCulate:EVM:SCBT:MODulation:GI?
Lower Guard Subcarrier	:CALCulate:EVM:SCBT:MODulation:SUBCarrier:GUARd:LOWer <size>
	:CALCulate:EVM:SCBT:MODulation:SUBCarrier:GUARd:LOWer?
Upper Guard Subcarrier	:CALCulate:EVM:SCBT:MODulation:SUBCarrier:GUARd:UPPer <size>
	:CALCulate:EVM:SCBT:MODulation:SUBCarrier:GUARd:UPPer?
Signal Type	:CALCulate:EVM:SCBT:MODulation:SIGNal <type>
	:CALCulate:EVM:SCBT:MODulation:SIGNal?
Burst Period	:CALCulate:EVM:SCBT:MODulation:SIGNal:BURSt:PERiod <time>
	:CALCulate:EVM:SCBT:MODulation:SIGNal:BURSt:PERiod?

Table 2.3-1 System Parameter Settings (Cont'd)

Function	Device Message
Subcarrier MAP	`:CALCulate:EVM:SCBT:SCMap <filename>`
	`:CALCulate:EVM:SCBT:SCMap?`
Pilot IQ MAP	`:CALCulate:EVM:SCBT:PMAP <filename>`
	`:CALCulate:EVM:SCBT:PMAP?`
Multicarrier Filter	`:CALCulate:EVM:SCBT:FILTer:MULTicarrier <select>`
	`:CALCulate:EVM:SCBT:FILTer:MULTicarrier?`
Multicarrier Filter Edit	`:CALCulate:EVM:SCBT:FILTer:MULTicarrier:FILTeredit <filename>`
	`:CALCulate:EVM:SCBT:FILTer:MULTicarrier:FILTeredit?`

2.3.1 Common Setting Recall

:MMEMory:LOAD:COMMon <filename>

Common Setting Recall

Function

This command sets the parameter file in Common Setting.

Command

```
:MMEMory:LOAD:COMMon <filename>
```

Parameter

`<filename>`	Parameter file set in Common Setting. Specify with any character string enclosed by double quotes (" ") or single quotes (' ') . Specify the full path starting with the drive name and suffix the extension. However, character strings that exceed 255 characters cannot be specified.

Example of Use

To set the parameter file (E:\MyFolder\Param.xml) in Common Setting.

```
MMEM:LOAD:COMM "E:\MyFolder\Param.xml"
```

2.3.2 Common Setting File Name Query

[:SENSe]:COMMon:FNAMe?

Common Setting File Name Query

Function

This command queries the parameter file name used for Common Setting.

Query

```
[:SENSe]:COMMon:FNAMe?
```

Response

```
<filename>
```

Parameter

`<filename>`	Parameter file name used for Common Setting

Example of Use

To query the parameter file name used for Common Setting.

```
COMM:FNAM?
> Parameter.xml
```

2.3.3 Frame Formatted/Non-Formatted/SCBT Select

:CALCulate:EVM FRAMe|NOFormatted|SCBT

Frame Formatted/Non-Formatted/SCBT Select

Function

This command selects the format of the signal to be measured.

Command

```
:CALCulate:EVM <format>
```

Parameter

<format>	Signal format
FRAMe	Frame formatted (default)
NOFormatted	Non-formatted
SCBT	Single Carrier Block Transmission

Details

An option is required for using SCBT.

☞ 1.2.2 “Options” in the *MX269017A Vector Modulation Analysis Software Operation Manual Operation*

Example of Use

To select Frame formatted for the signal to be measured.

```
CALC:EVM FRAM
```

:CALCulate:EVM?

Frame Formatted/Non-Formatted Select Query

Function

This command queries the format of the signal to be measured.

Query

```
:CALCulate:EVM?
```

Response

```
<format>
```

Parameter

<format>	Signal format
FRAM	Frame formatted
NOF	Non-formatted
SCBT	Single Carrier Block Transmission

Example of Use

To query the format of the signal to be measured.

```
CALC:EVM?
> FRAM
```

2.3.4 Modulation Type

:CALCulate:EVM:FRAMe|NOFormatted|SCBT:MODulation BPSK|DBPSk|PI2Dbpsk|QPSK|DQPSk|OQPSk|PI4Dqpsk|8PSK|D8PSk |16Qam|32Qam|64Qam|128Qam|256Qam512Qam|1024qam|2048qam|2FSK |4FSK|HCPM|2ASK|4ASK|MSK|16APsk|32APsk

Modulation Type

Function

This command sets the Modulation Type.

Command

```
:CALCulate:EVM:FRAMe|NOFormatted:MODulation <mod>
```

Parameter

<mod>	Modulation Type
BPSK	BPSK (default)
DBPSk	DBPSK
PI2Dbpsk	PI/2 DBPSK
QPSK	QPSK
DQPSk	DQPSK
OQPSk	O-QPSK
PI4Dqpsk	PI/4 DQPSK
8PSK	8PSK
D8PSk	D8PSK
16Qam	16QAM
32Qam	32QAM
64Qam	64QAM
128Qam	128QAM
256Qam	256QAM
512Qam	512QAM
1024qam	1024QAM
2048qam	2048QAM
2FSK	2FSK
4FSK	4FSK
HCPM	H-CPM
2ASK	2ASK
4ASK	4ASK
MSK	MSK
16APsk	16APSK
32APsk	32APSK

Details

The options are required to select the following modulation types.

- 512QAM, 1024QAM, 2048QAM
- 16APSK, 32APSK

1.2.2 “Options” in the *MX269017A Vector Modulation Analysis Software Operation Manual Operation*

Only the following modulation types can be set for SCBT.

- QPSK, 16QAM, 64QAM, 256QAM

Example of Use

To set 256QAM as the Modulation Type of Non-Formatted.

```
CALC:EVM:NOF:MOD 256Q
```

:CALCulate:EVM:FRAMe|NOFormatted|SCBT:MODulation?

Modulation Type Query

Function

This command queries the Modulation Type.

Query

```
:CALCulate:EVM:FRAMe|NOFormatted:MODulation?
```

Response

```
<mod>
```

Parameter

<mod>	Modulation Type
BPSK	BPSK
DBPS	DBPSK
PI2D	PI/2 DBPSK
QPSK	QPSK
DQPS	DQPSK
OQPS	O-QPSK
PI4D	PI/4 DQPSK
8PSK	8PSK
D8PS	D8PSK
16Q	16QAM
32Q	32QAM
64Q	64QAM
128Q	128QAM
256Q	256QAM
512Q	512QAM
1024	1024QAM
2048	2048QAM
2FSK	2FSK
4FSK	4FSK
HCPM	H-CPM
2ASK	2ASK
4ASK	4ASK
MSK	MSK
16AP	16APSK
32AP	32APSK

Example of Use

To query the Modulation Type of Non-Formatted.

```
CALC:EVM:NOF:MOD?
> 256Q
```

2.3.5 2FSK Auto Select

:CALCulate:EVM:FRAMe|NOFormatted:MODulation:AUTO:2FSK OFF|ON|0|1

2FSK Auto Select

Function

This command sets Deviation setting mode when Modulation Type is 2FSK.

Command

```
:CALCulate:EVM:FRAMe|NOFormatted:MODulation:AUTO:2FSK
<switch>
```

Parameter

<switch>	Deviation setting mode
OFF|0	Set Deviation to user-specified value.
ON|1	Auto-detects Deviation (default)

Example of Use

To set Deviation of Frame Formatted to user-specified value.

```
CALC:EVM:FRAM:MOD:AUTO:2FSK OFF
```

:CALCulate:EVM:FRAMe|NOFormatted:MODulation:AUTO:2FSK?

2FSK Auto Select Query

Function

This command queries Deviation setting mode when Modulation Type is 2FSK.

Query

```
:CALCulate:EVM:FRAMe|NOFormatted:MODulation:AUTO:2FSK?
```

Response

```
<switch>
```

Parameter

<switch>	Deviation setting mode
OFF|0	Set Deviation to user-specified value.
ON|1	Auto-detects Deviation

Example of Use

To query the Deviation setting mode of Frame Formatted

```
CALC:EVM:FRAM:MOD:AUTO:2FSK?
> 0
```

2.3.6 Modulation Index

:CALCulate:EVM:FRAMe|NOFormatted:MODulation:MODindex <real>

Modulation Index

Function

This command sets Modulation Index when Modulation Type is 2FSK.

Command

```
:CALCulate:EVM:FRAMe|NOFormatted:MODulation:MODindex
<real>
```

Parameter

<real>	Modulation Index
Range	0.2 to 10
Resolution	0.01
Default	1

Example of Use

To set the Modulation Index of Frame-Formatted to 1.5.

```
CALC:EVM:FRAM:MOD:MOD 1.5
```

:CALCulate:EVM:FRAMe|NOFormatted:MODulation:MODindex?

Modulation Index Query

Function

This command queries Modulation Index when Modulation Type is 2FSK.

Query

```
:CALCulate:EVM:FRAMe|NOFormatted:MODulation:MODindex?
```

Response

```
<real>
```

Parameter

<real>	Modulation Index
Range	0.2 to 10
Resolution	0.01
Default	1

Example of Use

To query the Modulation Index of Frame-Formatted.

```
CALC:EVM:FRAM:MOD:MOD?
> 1.50
```

2.3.7 4FSK Auto Select

:CALCulate:EVM:FRAMe|NOFormatted:MODulation:AUTO:4FSK OFF|ON|0|1

4FSK Auto Select

Function

This command sets Deviation setting mode when Modulation Type is 4FSK.

Command

```
:CALCulate:EVM:FRAMe|NOFormatted:MODulation:AUTO:4FSK
<switch>
```

Parameter

`<switch>`	Deviation setting mode
`OFF|0`	Set Deviation to user-specified value.
`ON|1`	Auto-detects Deviation (default)

Example of Use

To set the Deviation of Frame-Formatted to user-specified value.

```
CALC:EVM:FRAM:MOD:AUTO:4FSK OFF
```

:CALCulate:EVM:FRAMe|NOFormatted:MODulation:AUTO:4FSK?

4FSK Auto SelectQuery

Function

This command queries Deviation setting mode when Modulation Type is 4FSK.

Query

```
:CALCulate:EVM:FRAMe|NOFormatted:MODulation:AUTO:4FSK?
```

Response

```
<switch>
```

Parameter

`<switch>`	Deviation setting mode
`OFF|0`	Set Deviation to user-specified value.
`ON|1`	Auto-detects Deviation

Example of Use

To query the Deviation setting mode of Frame-Formatted.

```
CALC:EVM:FRAM:MOD:AUTO:4FSK?
> 0
```

2.3.8 Maximum Frequency Deviation

:CALCulate:EVM:FRAMe|NOFormatted:MODulation:MAXDeviation <freq>

Maximum Frequency Deviation

Function

This command queries Deviation setting mode when Modulation Type is 4FSK.

Command

```
:CALCulate:EVM:FRAMe|NOFormatted:MODulation:MAXDeviation
<freq>
```

Parameter

`<freq>`		Maximum frequency deviation
	Range	120 to 300000 Hz
	Resolution	1 Hz
	Suffix code	`HZ`, `KHZ`, `KZ`, `MHZ`, `MZ`, `GHZ`, `GZ`
		Hz is used when omitted.
	Default	945 Hz

Example of Use

To set the maximum frequency deviation of Frame Formatted to 120 kHz.

```
CALC:EVM:FRAM:MOD:MAXD 120000
```

:CALCulate:EVM:FRAMe|NOFormatted:MODulation:MAXDeviation?

Maximum Frequency Deviation Query

Function

This command queries the parameter file name used for Common Setting.

Query

```
:CALCulate:EVM:FRAMe|NOFormatted:MODulation:MAXDeviation
?
```

Response

```
<freq>
```

Parameter

<freq>	Maximum frequency deviation
Range	120 to 300000 Hz
Resolution	1 Hz

Example of Use

To query the maximum frequency deviation of Frame Formatted.

```
CALC:EVM:FRAM:MOD:MAXD?
> 120000
```

2.3.9 Mapping Edit

:CALCulate:EVM:FRAMe:MODulation:MAPPingedit <filename>

Mapping Edit

Function

This command sets the Symbol Mapping file for Mapping Edit.

Command

```
:CALCulate:EVM:FRAMe:MODulation:MAPPingedit <filename>
```

Parameter

`<filename>`	Symbol Mapping file Specify with any character string enclosed by double quotes (" ") or single quotes (' '). Specify the full path starting with the drive name and suffix the extension. However, character strings that exceed 255 characters cannot be specified.

Example of Use

To set a Symbol Mapping file (E:\MyFolder\SymbolMap) for Mapping Edit.

```
CALC:EVM:FRAM:MOD:MAPP "E:\MyFolder\SymbolMap"
```

:CALCulate:EVM:FRAMe:MODulation:MAPPingedit?

Mapping Edit Query

Function

This command queries the Symbol Mapping file name specified for Mapping Edit.

Query

```
:CALCulate:EVM:FRAMe:MODulation:MAPPingedit?
```

Response

```
<filename>
```

Parameter

`<filename>`	The Symbol Mapping file used for Mapping Edit

Example of Use

To query the Symbol Mapping file name used for Mapping Edit.

```
CALC:EVM:FRAM:MOD:MAPP?
> SymbolMap
```

2.3.10 Symbol Rate

:CALCulate:EVM:FRAMe|NOFormatted:MODulation:SRATe <rate>

Symbol Rate

Function

This command sets the symbol rate.

Command

```
:CALCulate:EVM:FRAMe|NOFormatted:MODulation:SRATe <rate>
```

Parameter

<rate>		Symbol rate
	Range	0.1 ksps to 125 Msps
	Resolution	0.1 sps
	Default	100 sps

Details

The range of the symbol rate varies according to the settings (modulation method and carrier frequency) and the configuration options.

Example of Use

To set the symbol rate of Non-Formatted to 5 Msps.

```
CALC:EVM:NOF:MOD:SRAT 5000000
```

:CALCulate:EVM:FRAMe|NOFormatted:MODulation:SRATe?

Symbol Rate Query

Function

This command queries the symbol rate.

Query

```
:CALCulate:EVM:FRAMe|NOFormatted:MODulation:SRATe?
```

Response

```
<rate>
```

Parameter

<rate>		Symbol rate
	Range	0.1 ksps to 125 Msps
	Resolution	0.1 sps

Example of Use

To query the symbol rate of Non-Formatted.

```
CALC:EVM:NOF:MOD:SRAT?
> 5000000.0
```

2.3.11 Span Up

:CALCulate:EVM:FRAMe|NOFormatted:MODulation:SPANup OFF|ON|0|1

Span Up

Function

This command sets the span up.

Command

```
:CALCulate:EVM:FRAMe|NOFormatted:MODulation:SPANup
<switch>
```

Parameter

<switch>	Enable/disable span up
OFF|0	Disabled (default)
ON|1	Enabled

Example of Use

To enable the span up.

```
CALC:EVM:NOF:MOD:SPAN ON
```

:CALCulate:EVM:FRAMe|NOFormatted:MODulation:SPANup?

Span Up Query

Function

This command queries the state of the span up.

Query

```
:CALCulate:EVM:FRAMe|NOFormatted:MODulation:SPANup?
```

Response

```
<switch>
```

Parameter

<switch>	Enable/disable span up
0	Disabled
1	Enabled

Example of Use

To query the state of the span up.

```
CALC:EVM:NOF:MOD:SPAN?
> 1
```

2.3.12 Measurement Filter

:CALCulate:EVM:FRAMe|NOFormatted:FILTer:MEASurement NONE|RNYQuist|NYQuist|GAUSsian|STDT98|RECT|IRECt|IGAus|HCPM|USERdefined

Measurement Filter

Function

This command selects the Measurement Filter.

Command

```
:CALCulate:EVM:FRAMe|NOFormatted:FILTer:MEASurement
<select>
```

Parameter

<select>	Measurement Filter
NONE	No filter
RNYQuist	Root Nyquist filter (default)
NYQuist	Nyquist filter
GAUSsian	Gaussian filter
STDT98	Filter conforming to ARIB STD-T98 specifications
RECT	RECT filter. Filter that executes addition processing during 1 symbol interval in time axis.
IRECt	Inverse Rectangular filter
IGAus	Inverse Gaussian filter
HCPM	Measurement filter for P25 Phase2 Inbound (H-CPM_P25) specified in TIA102.BBAB.
USERdefined	User defined filter

Example of Use

To set the reception filter of Frame-formatted to Gaussian.

```
CALC:EVM:FRAM:FILT:MEAS GAUS
```

:CALCulate:EVM:FRAMe|NOFormatted:FILTer:MEASurement?

Measurement Filter Query

Function

This command queries the Measurement Filter.

Query

```
:CALCulate:EVM:FRAMe|NOFormatted:FILTer:MEASurement?
```

Response

```
<select>
```

Parameter

<select>	Measurement Filter
NONE	No filter
RNYQ	Root Nyquist filter
NYQ	Nyquist filter
GAUS	Gaussian filter
STDT98	Filter conforming to ARIB STD-T98 specifications
RECT	RECT filter. Filter that executes addition processing during 1 symbol interval in time axis.
IRECt	Inverse Rectangular filter
IGA	Inverse Gaussian filter
HCPM	Measurement filter for P25 Phase2 Inbound (H-CPM_P25) specified in TIA102.BBAB.
USER	User-defined filter

Example of Use

To query the reception filter of Frame-formatted.

```
CALC:EVM:FRAM:FILT:MEAS?
> GAUS
```

2.3.13 2nd Measurement Filter

:CALCulate:EVM:FRAMe|NOFormatted:2NDFilter:MEASurement NONE|IRECt|IGAus

2nd Measurement Filter

Function

This command selects the 2nd Measurement Filter.

Command

```
:CALCulate:EVM:FRAMe|NOFormatted:2NDFilter:MEASurement
<select>
```

Parameter

`<select>`	2nd Measurement Filter
`NONE`	No filter
`IRECt`	Inverse Rectangular filter
`IGAus`	Inverse Gaussian filter

Example of Use

To set the 2nd reception filter of Frame-formatted to Inverse Gaussian.

```
CALC:EVM:FRAM:2NDF:MEAS IGA
```

:CALCulate:EVM:FRAMe|NOFormatted:2NDFilter:MEASurement?

2nd Measurement Filter Query

Function

This command queries the 2nd Measurement Filter.

Query

```
:CALCulate:EVM:FRAMe|NOFormatted:2NDFilter:MEASurement?
```

Response

```
<select>
```

Parameter

<select>	2nd Measurement Filter
NONE	No filter
IREC	Inverse Rectangular filter
IGA	Inverse Gaussian filter

Example of Use

To query the 2nd reception filter of Frame-formatted.

```
CALC:EVM:FRAM:2NDF:MEAS?
> IGA
```

2.3.14 Reference Filter

:CALCulate:EVM:FRAMe|NOFormatted:FILTer:REFerence RNYQuist|NYQuist|GAUSsian|GAUSsian2|STDT98|HSINe|RECT|HCPM|USERdefined

Reference Filter

Function

This command selects the Reference Filter.

Command

```
:CALCulate:EVM:FRAMe|NOFormatted:FILTer:REFerence
<select>
```

Parameter

<select>	Reference Filter
RNYQuist	Root Nyquist filter
NYQuist	Nyquist filter (default)
GAUSsian	Gaussian filter
GAUSsian2	Gaussian filter (Type2)
STDT98	Filter conforming to ARIB STD-T98 specifications
HSINe	Half-sine filter
RECT	RECT filter. Filter that executes addition processing during 1 symbol interval in time axis.
HCPM	Transmission filter for P25 Phase2 Inbound (H-CPM_P25) specified in TIA102.BBAB.
USERdefined	User-defined filter

Example of Use

To set the reference filter of Non-formatted to Nyquist.

```
CALC:EVM:NOF:FILT:REF NYQ
```

:CALCulate:EVM:FRAMe|NOFormatted:FILTer:REFerence?

Reference Filter Query

Function

This command queries the Reference Filter.

Query

```
:CALCulate:EVM:FRAMe|NOFormatted:FILTer:REFerence?
```

Response

```
<select>
```

Parameter

`<select>`	Reference Filter
`RNYQ`	Root Nyquist filter
`NYQ`	Nyquist filter
`GAUS`	Gaussian filter
`GAUS2`	Gaussian filter (Type2)
`STDT98`	Filter conforming to ARIB STD-T98 specifications
`HSIN`	Half-sine filter
`RECT`	RECT filter. Filter that executes addition processing during 1 symbol interval in time axis.
`HCPM`	Transmission filter for P25 Phase2 Inbound (H-CPM_P25) specified in TIA102.BBAB.
`USER`	User-defined filter

Example of Use

To query the reference filter selected for Non-formatted.

```
CALC:EVM:NOF:FILT:REF?
> NYQ
```

2.3.15 2nd Reference Filter

:CALCulate:EVM:FRAMe|NOFormatted:2NDFilter:REFerence NONE|HSINe

2nd Reference Filter

Function

This command selects the 2nd Reference Filter.

Command

```
:CALCulate:EVM:FRAMe|NOFormatted:2NDFilter:REFerence
<select>
```

Parameter

`<select>`	2nd Reference Filter
`NONE`	No filter (default)
`HSINe`	Half-sine filter

Example of Use

To set the 2nd reference filter of Non-formatted to Half-sine.

```
CALC:EVM:NOF:2NDF:REF HSIN
```

:CALCulate:EVM:FRAMe|NOFormatted:2NDFilter:REFerence?

2nd Reference Filter Query

Function

This command queries the 2nd Reference Filter.

Query

```
:CALCulate:EVM:FRAMe|NOFormatted:2NDFilter:REFerence?
```

Response

```
<select>
```

Parameter

`<select>`	2nd Reference Filter
`NONE`	No filter (default)
`HSIN`	Half-sine filter

Example of Use

To query the 2nd reference filter selected for Non-formatted.

```
CALC:EVM:NOF:2NDF:REF?
> HSIN
```

2.3.16 Roll Off/BT

:CALCulate:EVM:FRAMe|NOFormatted:FILTer:ROFFbt <real>

Roll Off/BT

Function

This command sets the roll-off ratio or bandwidth time product.

Command

```
:CALCulate:EVM:FRAMe|NOFormatted:FILTer:ROFFbt <real>
```

Parameter

<real>		Roll-off ratio or bandwidth time product
	Range	0.03 to 1
	Resolution	0.01
	Default	1

Example of Use

To set the roll-off ratio or bandwidth time product of Non-formatted to 0.25.

```
CALC:EVM:NOF:FILT:ROFF 0.25
```

:CALCulate:EVM:FRAMe|NOFormatted:FILTer:ROFFbt?

Roll Off/BT Query

Function

This command queries the roll-off ratio or bandwidth time product.

Query

```
:CALCulate:EVM:FRAMe|NOFormatted:FILTer:ROFFbt?
```

Response

```
<real>
```

Parameter

<real>		Roll-off ratio or bandwidth time product
	Range	0.03 to 1
	Resolution	0.01

Example of Use

To query the roll-off ratio or bandwidth time product of Non-formatted.

```
:CALC:EVM:NOF:FILT:ROFFbt?
> 0.25
```

2.3.17 2nd Roll Off/BT

:CALCulate:EVM:FRAMe|NOFormatted:2NDFilter:ROFFbt <real>

2nd Roll Off/BT

Function

This command sets the bandwidth time product of the 2nd Filter.

Command

```
:CALCulate:EVM:FRAMe|NOFormatted:2NDFilter:ROFFbt <real>
```

Parameter

<real>	Bandwidth time product
Range	0.03 to 1
Resolution	0.001
Default	1

Example of Use

To set the bandwidth time product of Non-formatted to 0.769.

```
CALC:EVM:NOF:2NDF:ROFF 0.769
```

:CALCulate:EVM:FRAMe|NOFormatted:2NDFilter:ROFFbt?

2nd Roll Off/BT Query

Function

This command queries the bandwidth time product of the 2nd Filter.

Query

```
:CALCulate:EVM:FRAMe|NOFormatted:2NDFilter:ROFFbt?
```

Response

```
<real>
```

Parameter

<real>	Bandwidth time product
Range	0.03 to 1
Resolution	0.001

Example of Use

To query the bandwidth time product of Non-formatted.

```
CALC:EVM:NOF:2NDF:ROFFbt?
> 0.769
```

2.3.18 Measurement Filter Edit

:CALCulate:EVM:FRAMe|NOFormatted:FILTer:MEASurement:FILTeredit <filename>

Measurement Filter Edit

Function

This command sets the filter definition file to Measurement Edit of the User Defined Filter.

Command

```
:CALCulate:EVM:FRAMe|NOFormatted:FILTer:MEASurement:FILT
eredit <filename>
```

Parameter

`<filename>`	Filter definition file Specify with any character string enclosed by double quotes (" ") or single quotes (' ') . Specify the full path starting with the drive name and suffix the extension. However, character strings that exceed 255 characters cannot be specified.

Example of Use

To set the filter definition file (E:\MyFolder\MeasFilter) to Measurement Edit.

```
:CALC:EVM:NOF:FILT:MEAS:FILT "E:\MyFolder\MeasFilter"
```

:CALCulate:EVM:FRAMe|NOFormatted:FILTer:MEASurement:FILTeredit?

Measurement Filter Edit Query

Function

This command queries the filter definition file name specified in Measurement Edit of the User Defined Filter.

Query

```
:CALCulate:EVM:FRAMe|NOFormatted:FILTer:MEASurement:FILT
eredit?
```

Response

```
<filename>
```

Parameter

`<filename>`	Filter definition file used in `Measurement Edit`

Example of Use

To query filter definition file name used in Measurement Edit.

```
:CALC:EVM:NOF:FILT:MEAS:FILT?
> MeasFilter
```

2.3.19 Reference Filter Edit

:CALCulate:EVM:FRAMe|NOFormatted:FILTer:REFerence:FILTeredit <filename>

Reference Filter Edit

Function

This command sets the filter definition file to Reference Edit of the User Defined Filter.

Command

```
:CALCulate:EVM:FRAMe|NOFormatted:FILTer:REFerence:FILTer
edit <filename>
```

Parameter

`<filename>`	Filter definition file Specify with any character string enclosed by double quotes (" ") or single quotes (' '). Specify the full path starting with the drive name and suffix the extension. However, character strings that exceed 255 characters cannot be specified.

Example of Use

To set filter definition file (E:\MyFolder\RefFilter) to Reference Edit.

```
:CALC:EVM:NOF:FILT:REF:FILT "E:\MyFolder\RefFilter"
```

:CALCulate:EVM:FRAMe|NOFormatted:FILTer:REFerence:FILTeredit?

Reference Filter Edit Query

Function

This command queries the filter definition file name specified in Reference Edit of the User Defined File.

Query

```
:CALCulate:EVM:FRAMe|NOFormatted:FILTer:REFerence:FILTer
edit?
```

Response

```
<filename>
```

Parameter

`<filename>`	Filter definition file used in Reference Edit

Example of Use

To query filter definition file name used in Reference Edit.

```
:CALC:EVM:NOF:FILT:REF:FILT?
> RefFilter
```

2.3.20 Frame Format

:CALCulate:EVM:FRAMe:FRAMe:FORMat <k>,<n[0],…,n[k-1]>

Frame Format

Function

This command sets Slots per Frame and Measurement Slot for analysis.

Command

```
:CALCulate:EVM:FRAMe:FRAMe:FORMat <k>,<n[0],…,n[k-1]>
```

Parameter

<k>		Slots per Frame
	Range	1 to 20
	Resolution	1
	Default	1
<n[o],…,n[k-1]>		Slot (0) to Slot (k–1), select for analysis
	1	Analyzed
	0	Not analyzed

Example of Use

To set Slots per Frame and Measurement Slot for analysis.

```
CALC:EVM:FRAM:FRAM:FORM 5,1,0,1,0,0
```

:CALCulate:EVM:FRAMe:FRAMe:FORMat?

Frame Format Query

Function

This command queries Slots per Frame and Measurement Slot for analysis.

Query

```
:CALCulate:EVM:FRAMe:FRAMe:FORMat?
```

Response

```
<k>,<n[o],…,n[k-1]>
```

Parameter

<k>	Slots per Frame
Range	1 to 20
Resolution	1
Default	1
<n[o],…,n[k-1]>	Slot (0) to Slot (k–1), select for analysis
1	Analyzed
0	Not analyzed

Example of Use

To query Slots per Frame and Measurement Slot for analysis.

```
CALC:EVM:FRAM:FRAM:FORM
> 5,1,0,1,0,0
```

2.3.21 Slot Length

:CALCulate:EVM:FRAMe:SLOT:SLENgth <n>

Slot Length

Function

This command sets Slots Length per one slot.

Command

```
:CALCulate:EVM:FRAMe:SLOT:SLENgth <n>
```

Parameter

<n>		Slots per Frame
	Range	10 to 4096
	Resolution	1
	Default	10

Example of Use

To set the Slot Length to 100.

```
CALC:EVM:FRAM:SLOT:SLEN 100
```

:CALCulate:EVM:FRAMe:SLOT:SLENgth?

Slot Length Query

Function

This command queries Slots Length per one slot.

Query

```
:CALCulate:EVM:FRAMe:SLOT:SLENgth?
```

Response

```
<n>
```

Parameter

<n>		Slots per Frame
	Range	10 to 4096
	Resolution	1
	Default	10

Example of Use

To query the Slot Length.

```
CALC:EVM:FRAM:SLOT:SLEN?
> 100
```

2.3.22 Measurement Offset

:CALCulate:EVM:FRAMe:SLOT:OFFSet <n>

Measurement Offset

Function

This command sets the Measurement Offset.

Command

```
:CALC:EVM:FRAM:SLOT:OFFS <n>
```

Parameter

<n>		Measurement Offset
	Range	0 to (Slot Length–10)
	Resolution	1
	Default	0

Example of Use

To set the Slot Offset to 50.

```
CALC:EVM:FRAM:SLOT:OFFS 50
```

:CALCulate:EVM:FRAMe:SLOT:OFFSet?

Measurement Offset Query

Function

This command queries the Measurement Offset.

Query

```
:CALCulate:EVM:FRAMe:SLOT:OFFSet?
```

Response

```
<n>
```

Parameter

<n>		Measurement Offset
	Range	0 to (Slot Length–10)
	Resolution	1

Example of Use

To query the Measurement Offset.

```
CALC:EVM:FRAM:SLOT:OFFS?
> 50
```

2.3.23 Measurement Interval

:CALCulate:EVM:FRAMe|NOFormatted:SLOT:INTVal <n>

Measurement Interval

Function

This command sets the Measurement Interval.

Command

```
:CALCulate:EVM:FRAMe|NOFormatted:SLOT:INTVal <n>
```

Parameter

<n>		Measurement Offset
	Range	10 to (Slot Length–Measurement Offset)
	Resolution	1
	Default	10

Example of Use

To set the Measurement Interval of Non-Formatted to 500.

```
CALC:EVM:NOF:SLOT:INTV 500
```

:CALCulate:EVM:FRAMe|NOFormatted:SLOT:INTVal?

Measurement Interval Query

Function

This command queries the Measurement Interval.

Query

```
:CALCulate:EVM:FRAMe|NOFormatted:SLOT:INTVal?
```

Response

```
<mod>
```

Parameter

<n>		Measurement Offset
	Range	10 to (Slot Length–Measurement Offset)
	Resolution	1

Example of Use

To query the Measurement Interval of Non-Formatted.

```
CALC:EVM:NOF:SLOT:INTV?
> 500
```

2.3.24 Sync Word Search

:CALCulate:EVM:FRAMe:SEARch:SYNSearch OFF|ON|0|1

Sync Word Search

Function

This command sets whether to search Sync Word consisting a specific pattern.

Command

```
:CALCulate:EVM:FRAMe:SEARch:SYNSearch <switch>
```

Parameter

<switch>	Sync Word Search
OFF|0	Disabled (default)
ON|1	Enabled

Example of Use

To enable Sync Word Search.

```
CALC:EVM:FRAM:SEAR:SYNS ON
```

:CALCulate:EVM:FRAMe:SEARch:SYNSearch?

Sync Word Search Query

Function

This command queries the On/Off status of searching Sync Word consisting a specific pattern.

Query

```
:CALCulate:EVM:FRAMe:SEARch:SYNSearch?
```

Response

```
<switch>
```

Parameter

<switch>	Sync Word Search
OFF|0	Disabled
ON|1	Enabled

Example of Use

To query the On/Off status of Sync Word Search.

```
CALC:EVM:FRAM:SEAR:SYNS?
> 1
```

2.3.25 Burst Search

:CALCulate:EVM:FRAMe:SEARch:BURSearch OFF|ON|0|1

Burst Search

Function

This command sets whether to conduct Burst Search.

Command

```
:CALCulate:EVM:FRAMe:SEARch:BURSearch <switch>
```

Parameter

<switch>	Burst Search
OFF|0	Disabled (default)
ON|1	Enabled

Example of Use

To conduct Burst Search.

```
CALC:EVM:FRAM:SEAR:BURS ON
```

:CALCulate:EVM:FRAMe:SEARch:BURSearch?

Burst Search Query

Function

This command queries the On/Off status of Burst Search.

Query

```
:CALCulate:EVM:FRAMe:SEARch:BURSearch?
```

Response

```
<switch>
```

Parameter

<switch>	Burst Search
OFF|0	Disabled
ON|1	Enabled

Example of Use

To query the On/Off status of Burst Search.

```
CALC:EVM:FRAM:SEAR:BURS?
> 1
```

2.3.26 2nd Word Enable

:CALCulate:EVM:FRAMe:SEARch:2NDWord OFF|ON|0|1

2nd Word Enable

Function

This command sets whether to conduct 2nd Word Search.

Command

```
:CALCulate:EVM:FRAMe:SEARch:2NDWord <switch>
```

Parameter

<switch>	2nd Word Enable
OFF|0	Disabled (default)
ON|1	Enabled

Example of Use

To conduct 2nd Word Search.

```
CALC:EVM:FRAM:SEAR:2NDW ON
```

:CALCulate:EVM:FRAMe:SEARch:2NDWord?

2nd Word Enable Query

Function

This command queries the On/Off status of 2nd Word Search.

Query

```
:CALCulate:EVM:FRAMe:SEARch:2NDWord?
```

Response

```
<switch>
```

Parameter

<switch>	2nd Word Enable
OFF|0	Disabled
ON|1	Enabled

Example of Use

To query the On/Off status of 2nd Word Search.

```
CALC:EVM:FRAM:SEAR:2NDW?
> 1
```

2.3.27 Search Slot

:CALCulate:EVM:FRAMe:SEARch:1STWord|2NDWord:SLT <n>

Search Slot

Function

This command sets a Slot number for the position detected by Sync Word (1st Word or 2nd Word).

Command

```
:CALCulate:EVM:FRAMe:SEARch:1STWord|2NDWord:SLT <slot>
```

Parameter

<n>		Slot number for the position detected by Sync Word
	Range	Select from Measurement Slot
	Resolution	1
	Default	0

Example of Use

To set a Slot number for the position detected by 1st Word to 3.

```
CALC:EVM:FRAM:SEAR:1STW:SLT 3
```

:CALCulate:EVM:FRAMe:SEARch:1STWord|2NDWord:SLT?

Search Slot Query

Function

This command queries the Slot number for the position detected by Sync Word (1st Word or 2nd Word).

Query

```
:CALCulate:EVM:FRAMe:SEARch:2NDWord:SLT?
```

Response

```
<n>
```

Parameter

<n>		Slot number for the position detected by Sync Word
	Range	Measurement Slot
	Resolution	1

Example of Use

To query the Slot number for the position detected by 1st Word.

```
CALC:EVM:FRAM:SEAR:1STW:SLT?
> 3
```

2.3.28 Sync Word Length

:CALCulate:EVM:FRAMe:SEARch:1STWord|2NDWord:SLENgth <n>

Sync Word Length

Function

This command sets Sync Word Length for Sync Word (1st Word or 2nd Word).

Command

```
:CALCulate:EVM:FRAMe:SEARch:1STWord|2NDWord:SLENgth <n>
```

Parameter

<n>		Sync Word Length
	Range	Refer to Table 2.3.28-1, Table 2.3.28-2
	Resolution	1
	Default	1

Table 2.3.28-1 Setting Range of Sync Word Length (Modulation Type)

Modulation Type	Setting Range [symbol]
BPSK, DBPSK, PI/2DBPSK, 2FSK, 2ASK, MSK	1 to (128 or Slot Length, whichever smaller)
QPSK, O-QPSK, DQPSK, PI/4DQPSK, 4FSK, H-CPM	1 to (64 or Slot Length, whichever smaller)
8PSK, D8PSK	1 to (42 or Slot Length, whichever smaller)
16QAM, 16APSK	1 to (32 or Slot Length, whichever smaller)
32QAM, 32APSK	1 to (25 or Slot Length, whichever smaller)
64QAM	1 to (21 or Slot Length, whichever smaller)
128QAM	1 to (18 or Slot Length, whichever smaller)
256QAM	1 to (16 or Slot Length, whichever smaller)
512QAM	1 to (14 or Slot Length, whichever smaller)
1024QAM	1 to (12 or Slot Length, whichever smaller)
2048QAM	1 to (11 or Slot Length, whichever smaller)

Table 2.3.28-2 Setting Range of Sync Word Length (Number of characters of Sync Word (HEX))

Item	Value [symbol]
Maximum	(Number of characters of Sync Word (HEX)) × 4 / (Bits per symbol)
Minimum	{(Number of characters of Sync Word (HEX) – 1) × 4 / (Bits per symbol)} + 1

Note:

The decimal point is suppressed.

Table 2.3.28-3 Bits per Symbol of Modulation Type

Modulation Type	Bits per Symbol
BPSK, DBPSK, PI/2DBPSK, 2FSK, 2ASK, MSK	1
QPSK, O-QPSK, DQPSK, PI/4DQPSK, 4FSK, H-CPM	2
8PSK, D8PSK	3
16QAM, 16APSK	4
32QAM, 32APSK	5
64QAM	6
128QAM	7
256QAM	8
512QAM	9
1024QAM	10
2048QAM	11

Example of Use

To set Sync Word Length of 2nd Word to 16.

```
CALC:EVM:FRAM:SEAR:2NDW:SLEN 16
```

:CALCulate:EVM:FRAMe:SEARch:1STWord|2NDWord:SLENgth?

Sync Word Length Query

Function

This command queries Sync Word Length for Sync Word (1st Word or 2nd Word).

Query

```
:CALCulate:EVM:FRAMe:SEARch:1STWord|2NDWord:SLENgth?
```

Response

```
<n>
```

Parameter

<n>		Sync Word Length
	Range	Refer to Table 2.3.28-1, Table 2.3.28-2
	Resolution	1

Example of Use

To query Sync Word Length of 2nd Word.

```
CALC:EVM:FRAM:SEAR:2NDW:SLEN?
> 16
```

2.3.29 Sync Word(HEX)

:CALCulate:EVM:FRAMe:SEARch:1STWord|2NDWord:WORD <hex>

Sync Word(HEX)

Function

This command sets Sync Word (1st Word or 2nd Word).

Command

```
:CALCulate:EVM:FRAMe:SEARch:1STWord|2NDWord:WORD <hex>
```

Parameter

<hex>		Sync Word
	Description	Specify Sync Word as a left-aligned hexadecimal value, assuming the first bit in Sync Word to be MSB.
	Characters	(Sync Word Length) × (Bits per symbol)/4, and round it up to the whole number.
	Default	0

Example of Use

To set 1st Word to 5C.

```
CALC:EVM:FRAM:SEAR:1STW:WORD 5C
```

:CALCulate:EVM:FRAMe:SEARch:1STWord|2NDWord:WORD?

Sync Word(HEX) Query

Function

This command queries Sync Word (1st Word or 2nd Word).

Query

```
:CALCulate:EVM:FRAMe:SEARch:1STWord:WORD?
```

Response

```
<hex>
```

Parameter

<hex>		Sync Word
	Description	Specify Sync Word as a left-aligned hexadecimal value, assuming the first bit in Sync Word to be MSB.
	Characters	(Sync Word Length)×(bits per symbol) / 4, and round it up to the whole number.

Example of Use

To query 1st Word.

```
CALC:EVM:FRAM:SEAR:1STW:WORD?
> 5C
```

2.3.30 Sync Word Offset

:CALCulate:EVM:FRAMe:SEARch:1STWord|2NDWord:OFFSet <n>

Sync Word Offset

Function

This command sets Sync Word Offset of Sync Word (1st Word or 2nd Word) as an interval between the first symbol of Slot and the first symbol of the Sync Word, in symbols.

Command

```
:CALCulate:EVM:FRAMe:SEARch:1STWord|2NDWord:OFFSet <n>
```

Parameter

<n>		Sync Word Offset of Sync Word
	Range	0 to (Slot Length – Sync Word Length)
	Resolution	1
	Default	0

Example of Use

To set Sync Word Offset of 2nd Word to 10.

```
CALC:EVM:FRAM:SEAR:2NDW:OFFS 10
```

:CALCulate:EVM:FRAMe:SEARch:1STWord|2NDWord:OFFSet?

Sync Word Offset Query

Function

This command queries Sync Word Offset of Sync Word (1st Word or 2nd Word) as an interval between the first symbol of Slot and the first symbol of Sync Word.

Query

```
:CALCulate:EVM:FRAMe:SEARch:1STWord|2NDWord:OFFSet?
```

Response

```
<n>
```

Parameter

<n>		Sync Word Offset of Sync Word
	Range	0 to (Slot Length– Sync Word Length)
	Resolution	1

Example of Use

To query Sync Word Offset of 2nd Word.

```
CALC:EVM:FRAM:SEAR:2NDW:OFFS?
> 10
```

2.3.31 Equalizer Adaptive

:CALCulate:EVM:FRAMe|NOFormatted:EQUalizer:ADPTive OFF|HOLD|ON

Equalizer Adaptive

Function

This command sets Equalizer Mode.

Command

```
:CALCulate:EVM:FRAMe|NOFormatted:EQUalizer:ADPTive
<select>
```

Parameter

<select>	Equalizer mode
ON	Enables Equalizer (with factor update).
HOLD	Enables Equalizer (without factor update).
OFF	Disables Equalizer (default).

Example of Use

To set Equalizer mode to ON.

```
CALC:EVM:NOF:EQU:ADPT ON
```

:CALCulate:EVM:FRAMe|NOFormatted:EQUalizer:ADPTive?

Equalizer Adaptive Query

Function

This command queries Equalizer Mode.

Query

```
:CALCulate:EVM:FRAMe|NOFormatted:EQUalizer:ADPTive?
```

Response

```
<select>
```

Parameter

<select>	Equalizer mode
ON	Enables Equalizer (with factor update).
HOLD	Enables Equalizer (without factor update).
OFF	Disables Equalizer

Example of Use

To query Equalizer Mode.

```
CALC:EVM:NOF:EQU:ADPT?
> ON
```

2.3.32 Equalizer Convergence

:CALCulate:EVM:FRAMe|NOFormatted:EQUalizer:CONVergence <real>

Equalizer Convergence

Function

This command sets Convergence for Equalizer.

Command

```
:CALCulate:EVM:FRAMe|NOFormatted:EQUalizer:CONVergence
<real>
```

Parameter

<real>	Equalizer Convergence
Range	1e-20 to 1
Resolution	5 digits of essential figure
Default	1.0000e-4

Example of Use

To set Convergence to 1.23e-4.

```
:CALC:EVM:NOF:EQU:CONV 1.23e-4
```

:CALCulate:EVM: FRAMe|NOFormatted:EQUalizer:CONVergence?

Equalizer Convergence Query

Function

This command queries Convergence for Equalizer.

Query

```
:CALCulate:EVM:FRAMe|NOFormatted:EQUalizer:CONVergence?
```

Response

```
<real>
```

Parameter

<real>	Equalizer Convergence
Range	1e-20 to 1
Resolution	5 digits of essential figure

Example of Use

To query the Convergence setting value.

```
CALC:EVM:NOF:EQU:CONV?
> 1.2300e-04
```

2.3.33 Equalizer Length

:CALCulate:EVM:FRAMe|NOFormatted:EQUalizer:LENGth <n>

Equalizer Length

Function

This command sets Filter Length for Equalizer.

Command

```
:CALCulate:EVM:FRAMe|NOFormatted:EQUalizer:LENGth <n>
```

Parameter

<n>		Equalizer Filter Length
	Range	11 to 501
	Resolution	1
	Default	61

Example of Use

To set Filter Length of Equalizer to 51.

```
CALC:EVM:NOF:EQU:LENG 51
```

:CALCulate:EVM:FRAMe|NOFormatted:EQUalizer:LENGth?

Equalizer Length Query

Function

This command queries Filter Length for Equalizer.

Query

```
:CALCulate:EVM:FRAMe|NOFormatted:EQUalizer:LENGth?
```

Response

```
<n>
```

Parameter

<n>		Equalizer Filter Length
	Range	11 to 501
	Resolution	1

Example of Use

To query Filter Length for Equalizer.

```
CALC:EVM:NOF:EQU:LENG?
> 51
```

2.3.34 Deviation Calculation

:CALCulate:EVM:FRAMe|NOFormatted:DEViation PRE|POST

Deviation Calculation

Function

This command sets the timing for Deviation Calculation.

Command

```
:CALCulate:EVM:FRAMe|NOFormatted:DEViation <select>
```

Parameter

<select>	Deviation Calculation
PRE	Pre-Measurement Filtering
POST	Post-Measurement Filtering (default)

Example of Use

To set Deviation Calculation of Frame-Formatted to Pre-Measurement Filtering.

```
CALC:EVM:FRAM:DEV PRE
```

:CALCulate:EVM:FRAMe|NOFormatted:DEViation?

Deviation Calculation Query

Function

This command queries the timing for Deviation Calculation.

Query

```
:CALCulate:EVM:FRAMe|NOFormatted:DEViation?
```

Response

```
<select>
```

Parameter

<select>	Deviation Calculation
PRE	Pre-Measurement Filtering
POST	Post-Measurement Filtering

Example of Use

To query Deviation Calculation of Frame-Formatted.

```
CALC:EVM:FRAM:DEV?
> PRE
```

2.3.35 Deviation RMS Reference

:CALCulate:EVM:FRAMe|NOFormatted:DEViation:REFerence IDEal|NOMinal

Deviation RMS Reference

Function

This command sets reference value to calculate Deviation rms.

Command

```
:CALCulate:EVM:FRAMe|NOFormatted:DEViation:REFerence
<select>
```

Parameter

<select>	Deviation RMS Reference
IDEal	Ideal average (default)
NOMinal	Nominal settings

Example of Use

To set Deviation rms Reference of Frame-Formatted to Ideal average.

```
CALC:EVM:FRAM:DEV:REF IDE
```

:CALCulate:EVM:FRAMe|NOFormatted:DEViation:REFerence?

Deviation RMS Reference Query

Function

This command queries reference value to calculate Deviation rms.

Query

```
:CALCulate:EVM:FRAMe|NOFormatted:DEViation:REFerence?
```

Response

```
<select>
```

Parameter

<select>	Deviation RMS Reference
IDE	Ideal average
NOM	Nominal settings

Example of Use

To query reference value to calculate Deviation rms Reference.

```
CALC:EVM:FRAM:DEV:REF?
> IDE
```

2.3.36 H-CPM Decode Method

:CALCulate:EVM:FRAMe|NOFormatted:DECode:METHod:HCPM TYPe1|TYPe2

H-CPM Decode Method

Function

This command sets decode method for calculating H-CPM ideal signal.
This function is available when Modulation Type is H-CPM.

Command

```
:CALCulate:EVM:FRAMe|NOFormatted:DECode:METHod:HCPM
<select>
```

Parameter

<select>	H-CPM Decode Method
TYPe1	Decodes by ISI reduction filter (default)
TYPe2	Decodes by Vitabi algorithm.

Example of Use

To set H-CPM DecodeMethod of Frame-Formatted to Type1.

```
CALC:EVM:FRAM:DEC:METH:HCPM TYP1
```

:CALCulate:EVM:FRAMe|NOFormatted:DECode:METHod:HCPM?

H-CPM Decode Method Query

Function

This command queries decode method for calculating H-CPM ideal signal.
This function is available when Modulation Type is H-CPM.

Query

```
:CALCulate:EVM:FRAMe|NOFormatted:DECode:METHod:HCPM?
```

Response

```
<select>
```

Parameter

<select>	H-CPM Decode Method
TYP1	Decoding by ISI reduction filter
TYP2	Decoding by Vitabi algorithm

Example of Use

To query H-CPM Decode Method of Frame-Formatted.

```
CALC:EVM:FRAM:DEC:METH:HCPM?
> TYP1
```

2.3.37 Origin Offset Cancel

:CALCulate:EVM:FRAMe|NOFormatted:ORIGinoffset:CANCel OFF|ON

Origin Offset Cancel

Function

This command sets the parameters for Origin Offset Cancel.
This function is available when Modulation Type is other than FSK or ASK.

Command

```
:CALCulate:EVM:FRAMe|NOFormatted:ORIGinoffset:CANCel
<select>
```

Parameter

<select>	Origin Offset Cancel
OFF|0	Does not cancel Origin Offset.
ON|1	Cancels Origin Offset (default).

Example of Use

To set Origin Offset Cancel of Frame-Formatted to OFF.

```
CALC:EVM:FRAM:ORIG:CANC OFF
```

:CALCulate:EVM:FRAMe|NOFormatted:ORIGinoffset:CANCel?

Origin Offset Cancel Query

Function

This command queries the parameters for Origin Offset Cancel.

Query

```
:CALCulate:EVM:FRAMe|NOFormatted:ORIGinoffset:CANCel?
```

Response

```
<select>
```

Parameter

<select>	Origin Offset Cancel
0	Does not cancel Origin Offset.
1	Cancels Origin Offset.

Example of Use

To query the parameters for Origin Offset Cancel of Frame-Formatted.

```
CALC:EVM:FRAM:ORIG:CANC?
> 0
```

2.3.38 Origin Offset Reference

:CALCulate:EVM:FRAMe|NOFormatted:ORIGinoffset:REFerence OFFSet|ACTual

Origin Offset Reference

Function

This command sets the parameters for Origin Offset Reference.
This function is available when Modulation Type is O-QPSK.

Command

```
:CALCulate:EVM:FRAMe|NOFormatted:ORIGinoffset:REFerence
<select>
```

Parameter

<select>	Origin Offset Reference
OFFSet	Combined power with IQ symbol time shifted by 0.5 symbol (default)
ACTual	IQ power of actual signals

Example of Use

To set Origin Offset Reference of Frame-Formatted to Offset.

```
CALC:EVM:FRAM:ORIG:REF OFFS
```

:CALCulate:EVM:FRAMe|NOFormatted:ORIGinoffset:REFerence?

Origin Offset Reference Query

Function

This command queries the parameters for Origin Offset Reference.

Query

```
:CALCulate:EVM:FRAMe|NOFormatted:ORIGinoffset:REFerence?
```

Response

```
<select>
```

Parameter

<select>	Origin Offset Reference
OFFS	Combined power with IQ symbol time shifted by 0.5 symbol
ACT	IQ power of actual signals

Example of Use

To query the parameters for Origin Offset Reference of Frame-Formatted.

```
CALC:EVM:FRAM:ORIG:REF?
> OFFS
```

2.3.39 BER Setting

:CALCulate:EVM[:VIEW]:BER OFF|ON|0|1

BER Mode

Function

This command sets the BER measurement On/Off.

Command

```
:CALCulate:EVM[:VIEW]:BER OFF|ON|0|1
```

Parameter

<select>	BER measurement
OFF|0	Off
ON|1	On

Details

BER measurement is available when the Frame Formatted is selected for the signal to be measured. BER measurement is not available when Sync Word Search is Off.

Example of Use

To set the BER measurement On.

```
CALC:EVM:BER ON
```

:CALCulate:EVM[:VIEW]:BER?

BER Mode Query

Function

This command queries the BER measurement On/Off.

Query

```
:CALCulate:EVM[:VIEW]:BER?
```

Response

```
<select>
```

Parameter

<select>	BER measurement
0	Off
1	On

Example of Use

To query the BER measurement On/Off.

```
CALC:EVM:BER?
> 1
```

:CALCulate:EVM[:VIEW]:BER:SLOT <number>

BER Slot Number

Function

This command sets the Slot number for BER measurement.

Command

```
:CALCulate:EVM[:VIEW]:BER:SLOT <number>
```

Parameter

<number>		Slot
	Range	0 to 19
	Resolution	1
	Initial value	0

Example of Use

To set the Slot number for BER measurement to 3.

```
CALC:EVM:BER:SLOT 3
```

:CALCulate:EVM[:VIEW]:BER:SLOT?

BER Slot Number Query

Function

This command queries the Slot number for BER measurement.

Query

```
:CALCulate:EVM[:VIEW]:BER:SLOT?
```

Response

```
<number>
```

Parameter

<number>		Slot
	Range	0 to 19
	Resolution	1

Example of Use

To query the Slot number for BER measurement.

```
CALC:EVM:BER:SLOT?
> 3
```

:CALCulate:EVM[:VIEW]:BER:PATTern <pattern name>

BER Pattern

Function

This command loads the pattern for BER measurement.

Command

```
:CALCulate:EVM[:VIEW]:BER:PATTern <pattern name>
```

Parameter

`<pattern name>`	Pattern name Specify as a string of up to 32 characters enclosed by either double (" ") or single (' ') quotation marks. The following characters cannot be used: `\ / : * ? " " ' ' < > |`

Details

Pattern files are in the following directory

<u>When the OS on MS2690A/MS2691A/MS2692A/MS2830A/MS2840A/MS2850A is Windows Embedded Standard 7 or Windows 10.</u>

C:\Anritsu\SignalAnalyzer\Applications\VMA Common\Template\BER

<u>When the OS is other than the above mentioned</u>

C:\Program Files\Anritsu Corpolation\SignalAnalyzer\Applications\VMA Common\Template\BER

Example of Use

To load the pattern "P25 Tone".

```
CALC:EVM:BER:PATT "P25_TONE"
```

:CALCulate:EVM[:VIEW]:BER:PATTern?

BER Pattern Query

Function

This command queries the patten name for BER measurement.

```
CALCulate:EVM[:VIEW]:BER:PATTern?
```

Parameter

<pattern name>	Pattern name Character string within 32 characters (excluding extension)

Example of Use

To query the pattern name for BER measurement.

```
CALC:EVM:BER:PATT?
> P25_TONE
```

2.3.40 Method of Symbol Rate Error

:CALCulate:EVM:FRAMe|NOFormatted:METHod:SRERror FTFRame | SLOT

Method of Symbol Rate Error

Function

This command sets the Symbol Rate Error measurement mode.

Command

```
:CALCulate:EVM:FRAMe|NOFormatted:METHod:SRERror <select>
```

Parameter

<select>	Symbol Rate Error Measurement mode
FTFRame	Searches each frame for Sync Word, and calculates the symbol rate error from the time difference of Sync Word between frames. Capture Interval needs to be set to 10 Frame.
SLOT	Searches a slot for symbol timings, and calculates the symbol rate error from symbol timing changes that occur with time. Measurement can be performed without using Sync Word.

Example of Use

To set the Symbol Rate Error measurement mode to FTFRame:

```
CALC:EVM:FRAM:METH:SRER FTFR
```

:CALCulate:EVM:FRAMe|NOFormatted:METHod:SRERror?

Method of Symbol Rate Error Query

Function

This command queries the Symbol Rate Error measurement mode.

Query

```
:CALCulate:EVM:FRAMe|NOFormatted:METHod:SRERror?
```

Response

```
<select>
```

Parameter

<select>	This command queries the Symbol Rate Error measurement mode.
FTFR	Calculates from the time difference between frames.
SLOT	Calculates from the symbol timings in a slot.

Example of Use

To query the Symbol Rate Error measurement mode:

```
CALC:EVM:FRAM:METH:SRER?
> SLOT
```

2.3.41 Numeric Only

:CALCulate:EVM:NUMonly OFF|ON|0|1

Numeric Only

Function

This command displays numeric results only, without plotting them in a graph.

Command

```
:CALCulate:EVM:NUMonly <switch>
```

Parameter

`<switch>`	Numeric Only display mode
`OFF|0`	Displays numeric results and also plots them to a graph. (default) This is available, regardless of Trace Mode.
`ON|1`	Displays numeric results only. This is available only when Trace Mode is Numeric or Custom Numeric. If EVM[n] is other than the following, an invalid value (–999.0) is returned.(n=1, 12, 19, 20)

Example of Use

To display numeric results only:

```
CALC:EVM:NUM ON
```

:CALCulate:EVM:NUMonly?

Numeric Only Query

Function

This command queries whether the Numeric Only display mode is on.

Query

```
:CALCulate:EVM:NUMonly?
```

Response

```
<switch>
```

Parameter

`<switch>`	Numeric Only display mode
`OFF|0`	Displays numeric results and also plots them to a graph. This is available, regardless of Trace Mode.
`ON|1`	Displays numeric results only. This is available only when Trace Mode is Numeric or Custom Numeric.

Example of Use

To query if only numeric results are displayed.

```
CALC:EVM:FRAM:NUM?
> 1
```

2.3.42 Droop Cancel

:CALCulate:EVM:FRAMe|NOFormatted:DROop:CANCel OFF|ON

Droop Cancel

Function

Sets the parameters related to Droop Cancel. This function is unavailable when Modulation Type is FSK.

Command

```
:CALCulate:EVM:FRAMe|NOFormatted:DROop:CANCel <select>
```

Parameter

<select>	Droop Cancel operation mode
OFF|0	Does not execute Droop Cancel.
ON|1	Executes Droop Cancel. (default)

Example of Use

To set Droop Cancel of Frame-Formatted to Off.

```
CALC:EVM:FRAM:DRO:CANC OFF
```

:CALCulate:EVM:FRAMe|NOFormatted:DROop:CANCel?

Droop Cancel Query

Function

Queries the parameters related to Droop Cancel.

Query

```
:CALCulate:EVM:FRAMe|NOFormatted:DROop:CANCel?
```

Response

```
<select>
```

Parameter

<select>	Droop Cancel operation mode
0	Does not execute Droop Cancel.
1	Executes Droop Cancel.

Example of Use

To query the Droop Cancel parameters when Frame Formatted is selected.

```
CALC:EVM:FRAM:DRO:CANC?
> 0
```

2.3.43 Capture OSR

:CALCulate:EVM:FRAMe|NOFormatted:CAPTure:OSR 1|2|4|8|16|32

Capture Over Sampling Ratio

Function

This command sets the over sampling rate when capturing the reception signal. The reception bandwidth (SPAN) of the measuring instrument is changed using this parameter.

Command

```
:CALCulate:EVM:FRAMe|NOFormatted:CAPTure:OSR <number>
```

Parameter

<number>	Over sampling rate	
Range	1, 2, 4, 8, 16, 32	
Default	8	(Modulation Type = 2FSK, 4FSK, H-CPM)
	16	(Modulation Type = OQPSK)
	4	(Other than those above)

Example of Use

To set Capture OSR to 8 when Frame Formatted is selected.

```
CALC:EVM:FRAM:CAPT:OSR 8
```

:CALCulate:EVM:FRAMe|NOFormatted:CAPTure:OSR?

Capture Over Sampling Ratio Query

Function

This command queries the over sampling rate when capturing the reception signal.

Query

```
:CALCulate:EVM:FRAMe|NOFormatted:CAPTure:OSR?
```

Response

```
<number>
```

Parameter

<number>	Over sampling rate	
Range	1, 2, 4, 8, 16, 32	
Default	8	(Modulation Type = 2FSK, 4FSK, H-CPM)
	16	(Modulation Type = OQPSK)
	4	(Other than those above)

Example of Use

To query Capture OSR when Frame Formatted is selected.

```
CALC:EVM:FRAM:CAPT:OSR?
> 8
```

2.3.44 Capture Interval

:CALCulate:EVM:FRAMe|NOFormatted:CAPTure:INTVal 1FRame|10FRame

Capture Interval

Function

This command sets waveform capture interval used for one analysis.

Command

```
:CALCulate:EVM:FRAMe|NOFormatted:CAPTure:INTVal <switch>
```

Parameter

<switch>	Waveform capture interval (in frames)
1FRame	1 Frame (default)
10FRame	10 Frame

Details

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

This parameter is automatically changed in the following cases.

- When the Measuring Object is changed to Frame Formatted and Sync Word Search to On, this parameter is set to 10 Frame.
- When the Measuring Object is changed to Non-Formatted or Sync Word Search to Off, this parameter is set to 1 Frame.

Example of Use

To set the waveform capture interval used for one analysis to 10 Frame.

```
CALC:EVM:FRAM:CAPT:INTV 10FR
```

:CALCulate:EVM:FRAMe|NOFormatted:CAPTure:INTVal?

Capture Interval Query

Function

This command queries waveform capture interval used for one analysis.

Query

```
:CALCulate:EVM:FRAMe|NOFormatted:CAPTure:INTVal?
```

Response

```
<switch>
```

Parameter

<switch>	Waveform capture interval (in frames)
1FR	1 Frame
10FR	10 Frame

Example of Use

To query the capture interval of the waveform.

```
CALC:EVM:FRAM:CAPT:INTV?
> 10FR
```

2.3.45 APSK Ring Ratio (R2/R1)

:CALCulate:EVM:FRAMe|NOFormatted:APSK:R21Ratio <real>

APSK Ring Ratio (R2/R1)

Function

This command sets radius (R2/R1) for 16APSK and 32APSK.

Command

```
:CALCulate:EVM:FRAMe|NOFormatted:APSK:R21Ratio <real>
```

Parameter

<real>		R2/R1
	Range	2.000 to 4.000
	Resolution	0.001
	Default	3.150

Example of Use

To set 2.751 to R2/R1 when Frame-Formatted is selected.

```
CALC:EVM:FRAM:APSK:R21R 2.751
```

:CALCulate:EVM:FRAMe|NOFormatted:APSK:R21Ratio?

APSK Ring Ratio (R2/R1) Query

Function

This command queries radius (R2/R1) for 16APSK and 32APSK.

Query

```
:CALCulate:EVM:FRAMe|NOFormatted:APSK:R21Ratio?
```

Response

```
<real>
```

Parameter

<real>		R2/R1
	Range	2.000 to 4.000
	Resolution	0.001

Example of Use

To query R2/R1 when Frame-Formatted is selected.

```
:CALC:EVM:FRAM:APSK:R21R?
> 4.000
```

2.3.46 APSK Ring Ratio (R3/R1)

:CALCulate:EVM:FRAMe|NOFormatted:APSK:R31Ratio <real>

APSK Ring Ratio (R3/R1)

Function

This command sets radius (R3/R1) for 32APSK.

Command

```
:CALCulate:EVM:FRAMe|NOFormatted:APSK:R31Ratio <real>
```

Parameter

<real>		R3/R1
	Range	4.000 to 9.000
	Resolution	0.001
	Default	5.270

Example of Use

To set 5.945 to R3/R1 when Frame-Formatted is selected.

```
CALC:EVM:FRAM:APSK:R31R 5.945
```

:CALCulate:EVM:FRAMe|NOFormatted:APSK:R31Ratio?

APSK Ring Ratio (R3/R1) Query

Function

This command queries a radius (R3/R1) for 32APSK.

Query

```
:CALCulate:EVM:FRAMe|NOFormatted:APSK:R31Ratio?
```

Response

```
<real>
```

Parameter

<real>		R3/R1
	Range	4.000 to 9.000
	Resolution	0.001

Example of Use

To query R3/R1 when Frame-Formatted is selected.

```
:CALC:EVM:FRAM:APSK:R31R?
> 5.945
```

2.3.47 EVM Reference

:CALCulate:EVM:FRAMe|NOFormatted:EVM:REFerence CONStellationmax|RMS

EVM Reference

Function

This command sets the EVM reference for the EVM measurement. It is available when Modulation Type is other than FSK and ASK.

Command

```
:CALCulate:EVM:FRAMe|NOFormatted:EVM:REFerence <select>
```

Parameter

`<select>`	EVM reference
`CONStellationmax`	Calculates EVM based on a symbol point in the outermost layer of the constellation.
`RMS`	Calculates EVM based on the average power of all symbol points.

Example of Use

To set EVM reference to CONStellationmax.

```
CALC:EVM:FRAM:EVM:REF CONS
```

:CALCulate:EVM:FRAMe|NOFormatted:EVM:REFerence?

EVM Reference

Function

This command queries the EVM reference for the EVM measurement.

Query

```
:CALCulate:EVM:FRAMe|NOFormatted:EVM:REFerence?
```

Response

```
<select>
```

Parameter

`<select>`	EVM reference
`CONS`	Calculates EVM based on a symbol point in the outermost layer of the constellation.
`RMS`	Calculates EVM based on the average power of all symbol points.

Example of Use

To query the EVM reference.

```
CALC:EVM:FRAM:EVM:REF?
> CONS
```

2.3.48 Burst Gap Size

:CALCulate:PVTime:FRAMe:BGAPsize <val>

Burst Gap Size

Function

This command sets the number of data to measure before rise and after fall of a burst waveform.

Command

```
:CALCulate:PVTime:FRAMe:BGAPsize <val>
```

Parameter

<val>	Burst Gap Size
20	20 symbol (Default)
40	40 symbol
60	60 symbol
80	80 symbol
100	100 symbol

Example of Use

To set Burst Gap Size to 60.

```
CALC:PVT:FRAM:BGAP 60
```

:CALCulate:PVTime:FRAMe:BGAPsize?

Burst Gap Size Query

Function

This command queries the number of data to measure before rise and after fall of a burst waveform.

Query

```
:CALCulate:PVTime:FRAMe:BGAPsize?
```

Response

```
<val>
```

Parameter

<val>	Burst Gap Size
20	20 symbol
40	40 symbol
60	60 symbol
80	80 symbol
100	100 symbol

Example of Use

To query Burst Gap Size.

```
CALC:PVT:FRAM:BGAP?
> 60
```

2.3.49 Off Slot Power Range

:CALCulate:PVTime:OFFPower:RANGe <val>

Off Slot Power Range

Function

This command sets the calculation range of Off Slot Power.

Command

```
:CALCulate:PVTime:OFFPower:RANGe <val>
```

Parameter

`<val>`	Off Slot Power Range
`MEASurementinterval`	Off Slot Power is calculated in the range below: Measurement Offset to Measurement Offset + Measurement Interval It is the same range as Modulation Analysis.
`SLOTlength`	Calculates Off Slot Power in the range of 0 to Slot Length.(Default)
`USER`	Calculates Off Slot Power in a user-defined range.

Example of Use

To set Off Slot Power Range to `USER`.

```
CALC:PVT:OFFP:RANG USER
```

:CALCulate:PVTime:OFFPower:RANGe?

Off Slot Power Range Query

Function

This command queries the calculation range of Off Slot Power.

Query

```
:CALCulate:PVTime:OFFPower:RANGe?
```

Response

```
<val>
```

Parameter

<val>	Off Slot Power Range
MEAS	Off Slot Power is calculated in the range below: Measurement Offset to Measurement Offset + Measurement Interval It is the same range as Modulation Analysis.
SLOT	Calculates Off Slot Power in the range of 0 to Slot Length.
USER	Calculates Off Slot Power in a user-defined range.

Example of Use

To query Off Slot Power Range.

```
CALC:PVT:OFFP:RANG?
> USER
```

2.3.50 Off Slot Power User Start

:CALCulate:PVTime:OFFPower:USER:STARt <val>

Off Slot Power User Start

Function

This command sets the calculation start position of Off Slot Power.
This function is available when Off Slot Power Range is User.

Command

```
:CALCulate:PVTime:OFFPower:USER:STARt <val>
```

Parameter

<val>		Off Slot Power User Start
	Range	–Burst Gap Size to Slot Length+Burst Gap Size
	Resolution	0.125 [symbol]
	Default	0

Example of Use

To set Off Slot Power User Start to –10 symbol.

```
CALC:PVT:OFFP:USER:STAR -10
```

:CALCulate:PVTime:OFFPower:USER:STARt?

Off Slot Power User Start Query

Function

This command queries the calculation start position of Off Slot Power.

Query

```
:CALCulate:PVTime:OFFPower:USER:STARt?
```

Response

```
<val>
```

Parameter

<val>		Off Slot Power User Start
	Range	–Burst Gap Size to Slot Length+Burst Gap Size
	Resolution	0.125 [symbol]

Example of Use

To query Off Slot Power User Start.

```
CALC:PVT:OFFP:USER:STAR?
> -10.000
```

2.3.51 Off Slot Power User Stop

:CALCulate:PVTime:OFFPower:USER:STOP <val>

Off Slot Power User Stop

Function

This command sets the calculation end positon of Off Slot Power. This function is available when Off Slot Power Range is User.

Command

```
:CALCulate:PVTime:OFFPower:USER:STOP <val>
```

Parameter

<val>		Off Slot Power User Stop
	Range	–Burst Gap Size to Slot Length+Burst Gap Size
	Resolution	0.125 [symbol]
	Default	0

Example of Use

To set Off Slot Power User Stop to 160 symbol.

```
CALC:PVT:OFFP:USER:STOP 160
```

:CALCulate:PVTime:OFFPower:USER:STOP?

Off Slot Power User Stop Query

Function

This command queries the calculation end positon of Off Slot Power.

Query

```
:CALCulate:PVTime:OFFPower:USER:STOP?
```

Response

```
<val>
```

Parameter

<val>		Off Slot Power User Stop
	Range	–Burst Gap Size to Slot Length+Burst Gap Size
	Resolution	0.125 [symbol]

Example of Use

To query Off Slot Power User Stop.

```
CALC:PVT:OFFP:USER:STOP?
> -10.000
```

2.3.52 Rise / Fall Off Detect Level

:CALCulate:PVTime:RIFall:OFFLevel <val>

Rise / Fall Off Detect Level

Function

This command sets the Off detect level in a burst waveform at the Rise/Fall Time measurement.

Command

```
:CALCulate:PVTime:RIFall:OFFLevel <val>
```

Parameter

<val>	Rise / Fall Off Detect Level
Range	–80.00 to –10.00
Resolution	0.01
Default	–50.00

Example of Use

To set Rise / Fall Off Detect Level to –30.00.

```
CALC:PVT:RIF:OFFL -30
```

:CALCulate:PVTime:RIFall:OFFLevel?

Rise and Fall Off Detect Level Query

Function

This command queries the Off detect level in a burst waveform at the Rise/Fall Time measurement.

Query

```
:CALCulate:PVTime:RIFall:OFFLevel?
```

Response

```
<val>
```

Parameter

<val>	Rise / Fall Off Detect Level
Range	–80.00 to –10.00
Resolution	0.01

Example of Use

To query Rise/Fall Off Detect Level.

```
CALC:PVT:RIF:OFFL?
> -30.00
```

2.3.53 Rise / Fall Off Detect Level Unit

:CALCulate:PVTime:RIFall:OFFLevel:UNIT <val>

Rise / Fall Off Detect Level Unit

Function

This command sets the unit for Off detect level in a burst waveform at Rise/Fall Time measurement.

Command

```
:CALCulate:PVTime:RIFall:OFFLevel:UNIT <val>
```

Parameter

<val>	Rise / Fall Off Detect Level Unit
DBM	dBm (Default)
DB	dB

Example of Use

To set Rise/Fall Off Detect Level Unit to dB.

```
CALC:PVT:RIF:OFFL:UNIT DB
```

:CALCulate:PVTime:RIFall:OFFLevel:UNIT?

Rise / Fall Off Detect Level Unit Query

Function

This command queries the unit for Off detect level in a burst waveform at Rise/Fall Time measurement.

Query

```
:CALCulate:PVTime:RIFall:OFFLevel:UNIT?
```

Response

```
<val>
```

Parameter

<val>	Rise / Fall Off Detect Level Unit
DBM	dBm
DB	dB

Example of Use

To query Rise/Fall Off Detect Level Unit.

```
CALC:PVT:RIF:OFFL:UNIT?
> DB
```

2.3.54 Subcarrier Spacing

:CALCulate:EVM:SCBT:MODulation:SUBCarrier:SPACing <real>

Subcarrier Spacing

Function

This command sets the subcarrier spacing for single carrier block transmissions to measure.

Command

```
:CALCulate:EVM:SCBT:MODulation:SUBCarrier:SPACing <real>
```

Parameter

<real>		Subcarrier Spacing
	Range	10 to 18 kHz
	Resolution	0.5 kHz
	Suffix code	HZ, KHZ, KZ, MHZ, MZ, GHZ, GZ Hz is used when omitted.
	Default	10 kHz

Example of Use

To set the subcarrier spacing to 10 kHz.

```
CALC:EVM:SCBT:MOD:SUBC:SPAC 10KHZ
```

:CALCulate:EVM:SCBT:MODulation:SUBCarrier:SPACing?

Subcarrier Spacing Query

Function

This command queries the subcarrier spacing for single carrier block transmissions to measure.

Query

```
:CALCulate:EVM:SCBT:MODulation:SUBCarrier:SPACing?
```

Response

```
<real>
```

Parameter

<real>		Subcarrier Spacing
	Range	10 to 18 kHz
	Resolution	0.5 kHz Value is returned in Hz units.

Example of Use

To query the subcarrier spacing.

```
CALC:EVM:SCBT:MOD:SUBC:SPAC?
> 10000
```

2.3.55 FFT Size

:CALCulate:EVM:SCBT:MODulation:FFTSize <size>

FFT Size

Function

This command sets the FFT size for single carrier block transmissions to measure.

Command

```
:CALCulate:EVM:SCBT:MODulation:FFTSize <size>
```

Parameter

<size>	FFT Size
64	Sets the FFT size to 64. (Default)
128	Sets the FFT size to 128.

Example of Use

To set the FFT size to 64.

```
CALC:EVM:SCBT:MOD:FFTS 64
```

:CALCulate:EVM:SCBT:MODulation:FFTSize?

FFT Size Query

Function

This command queries the FFT size for single carrier block transmissions to measure.

Query

```
:CALCulate:EVM:SCBT:MODulation:FFTSize?
```

Response

```
<size>
```

Parameter

<size>	FFT Size
64	FFT Size = 64
128	FFT Size = 128

Example of Use

To query the FFT size.

```
CALC:EVM:SCBT:MOD:FFTS?
> 64
```

2.3.56 GI Size

:CALCulate:EVM:SCBT:MODulation:GI <size>

GI Size

Function

This command sets the GI size for single carrier block transmissions to measure.

Command

```
:CALCulate:EVM:SCBT:MODulation:GI <size>
```

Parameter

<size>		GI Size
	Range	6 to 32
	Resolution	1
	Default	6

Example of Use

To set the GI size to 6.

```
CALC:EVM:SCBT:MOD:GI 6
```

:CALCulate:EVM:SCBT:MODulation:GI?

GI Size Query

Function

This command queries the GI size for single carrier block transmissions to measure.

Query

```
:CALCulate:EVM:SCBT:MODulation:GI?
```

Response

```
<size>
```

Parameter

<size>		GI Size
	Range	6 to 32
	Resolution	1

Example of Use

To query the GI size.

```
CALC:EVM:SCBT:MOD:GI?
> 6
```

2.3.57 Lower Guard Subcarrier

:CALCulate:EVM:SCBT:MODulation:SUBCarrier:GUARd:LOWer <size>

Lower Guard Subcarrier

Function

This command sets the number of lower guard subcarriers for single carrier block transmissions to measure.

Command

```
:CALCulate:EVM:SCBT:MODulation:SUBCarrier:GUARd:LOWer
<size>
```

Parameter

<size>		Number of Lower Guard Subcarriers
	Range	10 to 30
	Resolution	1
	Default	10

Example of Use

To set the number of lower guard subcarriers to 10.

```
CALC:EVM:SCBT:MOD:SUBC:GUAR:LOW 10
```

:CALCulate:EVM:SCBT:MODulation:SUBCarrier:GUARd:LOWer?

Lower Guard Subcarrier Query

Function

This command queries the number of lower guard subcarriers for single carrier block transmissions to measure.

Query

```
:CALCulate:EVM:SCBT:MODulation:SUBCarrier:GUARd:LOWer?
```

Response

```
<size>
```

Parameter

<size>		Number of Lower Guard Subcarriers
	Range	10 to 30
	Resolution	1

Example of Use

To query the number of lower guard subcarriers.

```
CALC:EVM:SCBT:MOD:SUBC:GUAR:LOW?
> 10
```

2.3.58 Upper Guard Subcarrier

:CALCulate:EVM:SCBT:MODulation:SUBCarrier:GUARd:UPPer <size>

Upper Guard Subcarrier

Function

This command sets the number of upper guard subcarriers for single carrier block transmissions to measure.

Command

```
:CALCulate:EVM:SCBT:MODulation:SUBCarrier:GUARd:UPPr
<size>
```

Parameter

<size>		Number of Upper Guard Subcarriers
	Range	10 to 30
	Resolution	1
	Default	10

Example of Use

To set the number of upper guard subcarriers to 10.

```
CALC:EVM:SCBT:MOD:SUBC:GUAR:UPP 10
```

:CALCulate:EVM:SCBT:MODulation:SUBCarrier:GUARd:UPPer?

Upper Guard Subcarrier Query

Function

This command queries the number of upper guard subcarriers for single carrier block transmissions to measure.

Query

```
:CALCulate:EVM:SCBT:MODulation:SUBCarrier:GUARd:UPPer?
```

Response

```
<size>
```

Parameter

<size>		Number of Upper Guard Subcarriers
	Range	10 to 30
	Resolution	1

Example of Use

To query the number of upper guard subcarriers.

```
CALC:EVM:SCBT:MOD:SUBC:GUAR:UPP?
> 10
```

2.3.59 Signal Type

:CALCulate:EVM:SCBT:MODulation:SIGNal <type>

Signal Type

Function

This command sets the signal type for single carrier block transmissions to measure.

Command

```
:CALCulate:EVM:SCBT:MODulation:SIGNal <type>
```

Parameter

<type>	Signal Type
CONTinuous	Continuous (Default)
BURSt	Burst

Example of Use

To set the signal type to Burst.

```
CALC:EVM:SCBT:MOD:SIGN BURS
```

:CALCulate:EVM:SCBT:MODulation:SIGNal?

Signal Type Query

Function

This command queries the signal type for single carrier block transmission to measure.

Query

```
:CALCulate:EVM:SCBT:MODulation:SIGNal?
```

Response

```
<type>
```

Parameter

<type>	Signal Type
CONTinuous	Continuous (Default)
BURSt	Burst

Example of Use

To query the signal type.

```
CALC:EVM:SCBT:MOD:SIGN?
> BURS
```

2.3.60 Burst Period

:CALCulate:EVM:SCBT:MODulation:SIGNal:BURSt:PERiod <time>

Burst Period

Function

This command sets the burst period for single carrier block transmissions to measure.

Command

```
:CALCulate:EVM:SCBT:MODulation:SIGNal:BURSt:PERiod <time>
```

Parameter

<time>		Burst Period
	Range	1 ms to 1 s
	Resolution	0.1ms
	Suffix code	NS, US, MS, S Second is used when omitted.
	Default	1 ms

Example of Use

To set the burst period to 10 ms.

```
CALC:EVM:SCBT:MOD:SIGN:BURS:PER 10MS
```

:CALCulate:EVM:SCBT:MODulation:SIGNal:BURSt:PERiod?

Burst Period Query

Function

This command queries the burst period for single carrier block transmission to measure.

Query

```
:CALCulate:EVM:SCBT:MODulation:SIGNal:BURSt:PERiod?
```

Response

```
<time>
```

Parameter

<time>		Burst Period
	Range	1 ms to 1 s
	Resolution	0.1 ms Value is returned in second units.

Example of Use

To query the burst period.

```
CALC:EVM:SCBT:MOD:SIGN:BURS:PER?
> 0.01
```

2.3.61 Subcarrier MAP

:CALCulate:EVM:SCBT:SCMap <filename>

Subcarrier MAP

Function

This command sets a Subcarrier MAP file for Subcarrier MAP.

Command

```
:CALCulate:EVM:SCBT:SCMap <filename>
```

Parameter

`<filename>`	Subcarrier MAP file Specify with any character string enclosed by double quotes (" ") or single quotes (' ') . Specify the full path starting with the drive name and suffix the extension. However, character strings that exceed 255 characters cannot be specified.

Example of Use

To set the file name (E:\MyFolder\SubcarrierMap) for Subcarrier MAP.

```
CALC:EVM:SCBT:SCM "E:\MyFolder\SubcarrierMap"
```

:CALCulate:EVM:SCBT:SCMap?

Subcarrier MAP Query

Function

This command queries the Subcarrier MAP file name specified for Subcarrier MAP.

Query

```
:CALCulate:EVM:SCBT:SCMap?
```

Response

```
<filename>
```

Parameter

`<filename>`	File name used for Subcarrier MAP

Example of Use

To query the file name used for Subcarrier MAP.

```
CALC:EVM:SCBT:SCM?
> SubcarrierMap
```

2.3.62 Pilot IQ MAP

:CALCulate:EVM:SCBT:PMAP <filename>

Pilot IQ MAP

Function

This command sets a Pilot IQ MAP file for Pilot IQ MAP.

Command

```
:CALCulate:EVM:SCBT:PMAP <filename>
```

Parameter

<filename>	Pilot IQ MAP file Specify with any character string enclosed by double quotes (" ") or single quotes (' ') . Specify the full path starting with the drive name and suffix the extension. However, character strings that exceed 255 characters cannot be specified.

Example of Use

To set a file name (E:\MyFolder\PilotIQMap) for Pilot IQ MAP.

```
CALC:EVM:SCBT:PMAP "E:\MyFolder\PilotIQMap"
```

:CALCulate:EVM:SCBT:PMAP?

Pilot IQ MAP Query

Function

This command queries the Pilot IQ MAP file name specified for Pilot IQ MAP.

Query

```
:CALCulate:EVM:SCBT:PMAP?
```

Response

```
<filename>
```

Parameter

<filename>	File name used for Pilot IQ MAP

Example of Use

To query the file name used for Pilot IQ MAP.

```
CALC:EVM:SCBT:PMAP?
> PilotIQMap
```

2.3.63 Multicarrier Filter

:CALCulate:EVM:SCBT:FILTer:MULTicarrier <select>

Multicarrier Filter

Function

This command selects whether to perform filtering that removes the adjacent waves when the Measuring Object is set to Single Carrier Block Transmission.

Command

```
:CALCulate:EVM:SCBT:FILTer:MULTicarrier <select>
```

Parameter

<select>	Multicarrier Filter
NONE	No filtering (Default)
USERdefined	Filtering by user-defined filter coefficients

Example of Use

To set the filtering by user-defined filter coefficients.

```
CALC:EVM:SCBT:FILT:MULT USER
```

Remarks

This function is available only when MX269017A-072 is installed.

:CALCulate:EVM:SCBT:FILTer:MULTicarrier?

Multicarrier Filter Query

Function

This command queries the setting of the filtering that removes the adjacent waves when the Measuring Object is set to Single Carrier Block Transmission.

Query

```
:CALCulate:EVM:SCBT:FILTer:MULTicarrier?
```

Response

```
<select>
```

Parameter

<select>	Multicarrier Filter
NONE	No filtering
USER	Filtering by user-defined filter coefficients

Example of Use

To query the setting of Multicarrier Filter.

```
CALC:EVM:SCBT:FILT:MULT?
> USER
```

Remarks

This function is available only when MX269017A-072 is installed.

2.3.64 Multicarrier Filter Edit

:CALCulate:EVM:SCBT:FILTer:MULTicarrier:FILTeredit <filename>

Multicarrier Filter Edit

Function

This command sets the filter coefficients file for the filter that removes adjacent waves when the Measuring Object is set to Single Carrier Block Transmission.

Command

```
:CALCulate:EVM:SCBT:FILTer:MULTicarrier:FILTeredit
<filename>
```

Parameter

`<filename>`	Filter coefficients file for Multicarrier Filter. Specify with any character string enclosed by double quotes (“ ”) or single quotes (‘ ’) . Specify the full path starting with the drive name and suffix the extension. However, character strings that exceed 255 characters cannot be specified.

Example of Use

To set the filter coefficients (E:\MyFolder\MulticarrierFilter) for Multicarrier Filter.

```
CALC:EVM:SCBT:FILT:MULT:FILT
"E:\MyFolder\MulticarrierFilter"
```

Remarks

This function is available only when MX269017A-072 is installed.

:CALCulate:EVM:SCBT:FILTer:MULTicarrier:FILTeredit?

Multicarrier Filter Edit Query

Function

This command queries the filter coefficients file name specified for the filter that removes adjacent waves when the Measuring Object is set to Single Carrier Block Transmission.

Query

```
:CALCulate:EVM:SCBT:FILTer:MULTicarrier:FILTeredit?
```

Response

```
<filename>
```

Parameter

`<filename>`	Filter coefficients file name for Multicarrier Filter

Example of Use

To query the filter coefficients file name for Multicarrier Filter.

```
CALC:EVM:SCBT:FILT:MULT:FILT?
> MulticarrierFilter
```

Remarks

This function is available only when MX269017A-072 is installed.

2.4 Utility Functions

Table 2.4-1 lists the device messages for the utility function of the measurement target.

Table 2.4-1 Utility Functions

Parameter	Device Message
Erase Warm Up Message	`:DISPlay:ANNotation:WUP:ERASe`
Display Title	`:DISPlay:ANNotation:TITLe[:STATe] OFF|ON|0|1`
	`:DISPlay:ANNotation:TITLe[:STATe]?`
Title Entry	`:DISPlay:ANNotation:TITLe:DATA <string>`
	`:DISPlay:ANNotation:TITLe:DATA?`

2.4.1 Erase Warm Up Message

:DISPlay:ANNotation:WUP:ERASe

Erase Warm Up Message

Function

This command erases the warmup message displayed immediately after startup.

Command

```
:DISPlay:ANNotation:WUP:ERASe
```

Example of Use

To erase the warmup message

```
DISP:ANN:WUP:ERAS
```

2.4.2 Display Title

:DISPlay:ANNotation:TITLe[:STATe] OFF|ON|0|1

Display Title

Function

This command turns the title on/off.

Command

```
:DISPlay:ANNotation:TITLe[:STATe] <switch>
```

Parameter

<switch>	Title display On/Off
OFF|0	Off
ON|1	On (default)

Example of Use

To display the title.

```
DISP:ANN:TITL ON
```

:DISPlay:ANNotation:TITLe[:STATe]?

Display Title Query

Function

This command queries whether the title display is enabled/disabled.

Query

```
:DISPlay:ANNotation:TITLe[:STATe]?
```

Response

```
<switch>
```

Parameter

<switch>	Title display On/Off
0	Off
1	On

Example of Use

To query the title display On/Off state.

```
DISP:ANN:TITL?
> 1
```

2.4.3 Title Entry

:DISPlay:ANNotation:TITLe:DATA <string>

Title Entry

Function

This command sets the title character string.

Command

```
:DISPlay:ANNotation:TITLe:DATA <string>
```

Parameter

<string>	Character string within 32 characters enclosed by double quotes (" ") or single quotes (' ')

Example of Use

To set the title character string to TEST.

```
DISP:ANN:TITL:DATA "TEST"
```

:DISPlay:ANNotation:TITLe:DATA?

Title Entry Query

Function

This command queries the title character string.

Query

```
:DISPlay:ANNotation:TITLe:DATA?
```

Response

```
<string>
```

Parameter

<string>	Title character string

Example of Use

To query the title character string.

```
DISP:ANN:TITL:DATA?
> TEST
```

2.5 Common Measurement Function

Table 2.5-1 lists the device messages for performing operations common to the measurement functions.

Table 2.5-1 Common Measurement Function

Parameter	Device Message
Continuous Measurement	:INITiate:CONTinuous OFF|ON|0|1
	:INITiate:CONTinuous?
	:INITiate:MODE:CONTinuous
Single Measurement	:INITiate:MODE:SINGle
Initiate	:INITiate[:IMMediate]
Reanalysis	:INITiate:CALCulate
Configure	:CONFigure?
Trigger Switch	:TRIGger[:SEQuence][:STATe] OFF|ON|0|1
	:TRIGger[:SEQuence][:STATe]?
Trigger Source	:TRIGger[:SEQuence]:SOURce EXTernal[1|2]|EXT2|IMMediate|WIF|RFBurst|VIDeo|SG|FRAMe
	:TRIGger[:SEQuence]:SOURce?
Trigger Slope	:TRIGger[:SEQuence]:SLOPe POSitive|NEGative
	:TRIGger[:SEQuence]:SLOPe?
Trigger Delay	:TRIGger[:SEQuence]:DELay <time>
	:TRIGger[:SEQuence]:DELay?
Wide IF Trigger Level	:TRIGger[:SEQuence]:WIF|:RFBurst:LEVel:ABSolute <ampl>
	:TRIGger[:SEQuence]:WIF|:RFBurst:LEVel:ABSolute?
Log Scale Video Trigger Level	:TRIGger[:SEQuence]:VIDeo:LEVel[:LOGarithmic] <level>
	:TRIGger[:SEQuence]:VIDeo:LEVel[:LOGarithmic]?
Frame Trigger Period Auto	:TRIGger[:SEQuence]:FRAMe:PERiod:AUTO OFF|ON|0|1
	:TRIGger[:SEQuence]:FRAMe:PERiod:AUTO?
Frame Trigger Period	:TRIGger[:SEQuence]:FRAMe:PERiod <time>
	:TRIGger[:SEQuence]:FRAMe:PERiod?

2.5.1 Measurement and Control

:INITiate:CONTinuous OFF|ON|0|1

Continuous Measurement

Function

This command sets continuous or single measurement mode.

Command

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

Parameter

<switch>	Measurement mode
0|OFF	Single measurement mode
1|ON	Continuous measurement mode (default)

Details

When ON is set, continuous measurement starts. When OFF is set, the single measurement mode is engaged and measurement does not start.

Example of Use

To make a continuous measurement.

```
INIT:CONT ON
```

:INITiate:CONTinuous?

Continuous Measurement Query

Function

This command queries the measurement mode.

Query

```
:INITiate:CONTinuous?
```

Response

```
<switch>
```

Parameter

<switch>	Measurement mode
0	Single measurement mode
1	Continuous measurement mode

Example of Use

To query the measurement mode setting.

```
INIT:CONT?
> 1
```

:INITiate:MODE:CONTinuous

Continuous Measurement

Function

This command starts continuous measurement.

Command

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

Example of Use

To make a continuous measurement.

```
INIT:MODE:CONT
```

:INITiate:MODE:SINGle

Single Measurement

Function

This command starts single measurement.

Command

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

Example of Use

To start a single measurement.

```
INIT:MODE:SING
```

:INITiate[:IMMediate]

Initiate

Function

Measurement starts with the current measurement mode.

Command

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

Example of Use

To start measurement

```
INIT
```

:INITiate:CALCulate

Initiate Calculate

Function

This command executes reanalysis while the Replay function is being executed.

Command

```
:INITiate:CALCulate
```

Details

This command is available only while the Replay function is being executed.

Example of Use

To execute reanalysis while the Replay function is being executed.

```
INIT:CALC
```

:CONFigure?

Configure Query

Function

To query the measurement function name.

Query

```
:CONFigure?
```

Response

```
<mode>
```

Parameter

<mode>	Measurement function
EVM	Modulation Analysis
PVT	Power vs Time
PMET	Power Meter

Example of Use

To query the measurement function name.

```
CONF?
> EVM
```

2.5.2 Trigger Switch

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

Trigger Switch

Function

This command sets the trigger wait state On/Off.

Command

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

Parameter

<switch>	Trigger wait state On/Off
OFF|0	Off (default)
ON|1	On

Example of Use

To set the trigger wait state On.

```
TRIG ON
```

:TRIGger[:SEQuence][:STATe]?

Trigger Switch Query

Function

This command queries the trigger wait state On/Off.

Query

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

Response

```
<switch>
```

Parameter

<switch>	Trigger wait state On/Off
0	Off
1	On

Example of Use

To query the trigger wait state setting.

```
TRIG?
> 1
```

2.5.3 Trigger Source

:TRIGger[:SEQuence]:SOURce

EXTernal[1|2]|EXT2|IMMediate|WIF|RFBurst|VIDeo|SG|FRAMe

Trigger Source

Function

This command selects the trigger signal source.

Command

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

Parameter

`<source>`	Trigger signal source
`EXTernal[1]`	External input (External) (Default)
`EXTernal2`	External input 2 (External 2) (For only MS2850A)
`IMMediate`	Free run
`WIF|RFBurst`	Wideband IF detection (Wide IF Video)
`VIDeo`	Video Detection (Video)
`SG`	SG Marker
`FRAMe`	Internal Trigger

Details

SG marker can be selected only when the Vector Signal Generator option is installed.

The period of internal trigger is defined by Frame Trigger Period.

Example of Use

To set the trigger signal source to External.

```
TRIG:SOUR EXT
```

:TRIGger[:SEQuence]:SOURce?

Trigger Source Query

Function

This command queries the trigger signal source.

Query

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

Response

```
<source>
```

Parameter

<source>	Trigger Source
EXT	External input (External)
EXT2	External input 2 (External 2) (For only MS2850A)
IMM	Free run
WIF	Wideband IF detection (Wide IF Video)
VID	Video Detection (Video)
SG	SG Marker
FRAM	Internal Trigger

Example of Use

To query the trigger signal source.

```
TRIG:SOUR?
> EXT
```

2.5.4 Trigger Slope

:TRIGger[:SEQuence]:SLOPe POSitive|NEGative

Trigger Slope

Function

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

Command

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

Parameter

<mode>	Trigger detection mode
POSitive	Detects a trigger at the rising edge (default).
NEGative	Detects a trigger at the falling edge.

Example of Use

To detect a trigger at the rising edge.

```
TRIG:SLOP POS
```

:TRIGger[:SEQuence]:SLOPe?

Trigger Slope Query

Function

This command queries the trigger detection mode (rising or falling).

Query

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

Response

```
<mode>
```

Parameter

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

Example of Use

To query the trigger detection mode.

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

2.5.5 Trigger Delay

:TRIGger[:SEQuence]:DELay <time>

Trigger Delay

Function

This command sets the delay time from the trigger point to the start position of the frame.

Command

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

Parameter

<time>	Delay time from trigger point to start position of frame
Range	–2 to 2 seconds
Resolution	Refer to Table 2.5.5-1
Suffix code	NS, US, MS, S Second is used when omitted.
Default	0 second

Table 2.5.5-1 Trigger delay resolution

Symbol Rate Setting Values [symbol/s]	Trigger Delay Resolution [microseconds]
100 to 500	500
501 to 1250	200
1251 to 2500	100
2501 to 5000	50
5001 to 12500	20
12501 to 25000	10
25001 to 50000	5
50001 to 125000	2
125001 to 250000	1
250001 to 500000	0.5
500001 to 1250000	0.2
1250001 to 2500000	0.1
2500001 to 5000000	0.05
5000001 to 12500000	0.02

Example of Use

To set the trigger delay time to 20 ms.

```
TRIG:DEL 20MS
```

:TRIGger[:SEQuence]:DELay?

Trigger Delay Query

Function

This command queries the setting for the delay time from the trigger point to the start position of the frame.

Query

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

Response

```
<time>
```

Parameter

<time>		Delay time from trigger point to start position of frame
	Range	–2 to 2 seconds
	Resolution	Refer to Table 2.5.5-1 Value is returned in second units.

Example of Use

To query the delay time.

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

2.5.6 Wide IF Trigger Level

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

Wide IF Trigger Level

Function

This command sets the threshold value of the level at which measurement starts in the Wide IF Video trigger.

Command

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

Parameter

<ampl>		Threshold value of level at which measurement starts
	Range	(–60 + Level Offset) to (50 + Level Offset) dBm
	Resolution	1 dB
	Default	–20 dBm

Example of Use

To set the threshold value 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 value of the level at which measurement starts in the Wide IF Video trigger.

Query

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

Response

```
<ampl>
```

Parameter

<ampl>	Threshold value of level at which measurement starts
Range	(–60 + Level Offset) to (50 + Level Offset) dBm
Resolution	1 dB No suffix code. Value is returned in dBm units.

Example of Use

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

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

2.5.7 Video Trigger Level

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

Log Scale Video Trigger Level

Function

This command sets the threshold level where a trigger sweep starts in video trigger in Log scale mode.

Command

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

Parameter

<level>	Threshold level at which measurement starts
Range	–150 to 50 dBm
Resolution	1 dB
Suffix code	DBM, DM
Default	–40 dBm

Example of Use

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

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

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

Log Scale Video Trigger Level Query

Function

This command queries the threshold level where a trigger sweep starts in video trigger in Log scale mode.

Query

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

Response

```
<level>
```

Parameter

<level>	Threshold level at which measurement starts

When the trigger source is the video detection and in Log scale mode.

Range	–150 to +50 dBm
Resolution	1 dB
Suffix code	None. Value is returned in dBm units.

Example of Use

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

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

2.5.8 Frame Trigger Period Auto

:TRIGger[:SEQuence]:FRAMe:PERiod:AUTO OFF|ON|0|1

Frame Trigger Period Auto

Function

This command sets whether to set the frame trigger period automatically. This function is available when Trigger Switch is On and Trigger Source is Frame.

Command

```
:TRIGger[:SEQuence]:FRAMe:PERiod:AUTO <switch>
```

Parameter

<switch>	Frame Trigger Period Auto
OFF|0	Off
ON|1	On (Default)

Example of Use

To set Frame Trigger Period Auto to On.

```
TRIG:FRAM:PER:AUTO ON
```

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

Frame Trigger Period Auto Query

Function

This command queries whether to set the frame trigger period automatically.

Query

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

Response

```
<switch>
```

Parameter

<switch>	Frame Trigger Period Auto
OFF|0	Off
ON|1	On

Example of Use

To query Frame Trigger Period Auto.

```
TRIG:FRAM:PER:AUTO?
> 1
```

2.5.9 Frame Trigger Period

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

Frame Trigger Period

Function

Sets the frame trigger period. This function is available when Trigger Switch is On, Trigger Source is Frame, and Frame Trigger Period Auto is Off.

Command

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

Parameter

<time>		Frame Trigger Period
	Range	0.0000002 to 2.6843545 s
	Resolution	100 ns
	Suffix code	NS, US, MS, S Second is used when omitted.
	Default	100.0000 ms

Example of Use

To set the frame trigger period to 40 ms.

```
TRIG:FRAM:PER 40MS
```

:TRIGger[:SEQuence]:FRAMe:PERiod?

Frame Trigger Period Query

Function

This command queries the frame trigger period.

Query

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

Response

```
<time>
```

Parameter

<time>		Frame Trigger Period
	Range	0.0000002 to 2.6843545 s
	Resolution	100 ns Value is returned in seconds.

Example of Use

To query the frame trigger period.

```
TRIG:FRAM:PER?
> 0.04
```

2.6 Power Meter Measurement Function

Table 2.6-1 shows device messages for fetching the Power Meter measurement functions. The application (Power Meter) to be used must be loaded in advance.

Refer to *MS2690A/MS2691A/MS2692A and MS2830A/MS2840A/MS2850A Signal Analyzer Operation Manual Signal Analyzer Function Remote Control* or *MS2690A/MS2691A/MS2692A and MS2830A/MS2840A/MS2850A Signal Analyzer Operation Manual Spectrum Analyzer Function Remote Control* for commands/queries to be used for control after these measurement functions have been fetched.

Table 2.6-1 Power Meter Function

Parameter	Device Message
Configure – Power Meter	`:CONFigure:PMETer:POWer`

:CONFigure:PMETer:POWer

Power Meter

Function

This command selects Power Meter.

Command

`:CONFigure:PMETer:POWer`

Details

No measurement is made.

Example of Use

To select Power Meter.

`:CONFigure:PMETer:POWer`

2.7 Modulation Analysis

Table 2.7-1 lists device messages for Modulation Analysis.

Table 2.7-1 Device messages for executing Modulation Analysis and for querying the result

Parameter	Device Message
Configure	`:CONFigure:EVM`
Initiate	`:INITiate:EVM`
Equalizer Reset	`:INITiate:EVM:EQUalizer`
Re-measurement mode	`[:SENSe]:EVM:REMeasure OFF|ON|0|1`
Re-measurement mode Query	`[:SENSe]:EVM:REMeasure?`
Re-measurement Threshold	`[:SENSe]:EVM:REMeasure:THReshold <real>`
Re-measurement Threshold Query	`[:SENSe]:EVM:REMeasure:THReshold?`
Signal Level Too Low Display	`[:SENSe]:EVM:SIGDisplay OFF|ON|0|1`
Signal Level Too Low Display Query	`[:SENSe]:EVM:SIGDisplay?`
Fetch	`:FETCh:EVM[n]?`
Read	`:READ:EVM[n]?`
Measure	`:MEASure:EVM[n]?`

Table 2.7-2 lists the responses to parameter [n] of the device messages in Table 2.7-1. "–999.0" is always returned when Result Mode is set to B.

Table 2.7-2 Responses of Modulation Analysis Result

n	Result Mode	Response
1 or omitted	A	Returns with comma-separated value formats in the following order: 1. Frequency Error [Hz]*8 (Average value for Storage Count) 2. Frequency Error [Hz]*8 (Maximum value for Storage Count) 3. Frequency Error [ppm]*8 (Average value for Storage Count) 4. Frequency Error [ppm]*8 (Maximum value for Storage Count) 5. Tx Power [dBm]*8 (Average value for Storage Count) 6. Tx Power [dBm]*8 (Maximum value for Storage Count) 7. Filtered Power [dBm] (Average value for Storage Count) 8. Filtered Power [dBm] (Maximum value for Storage Count) 9. Phase Error (RMS) [degree]*1 (Average value for Storage Count) 10. Phase Error (RMS) [degree]*1 (Maximum value for Storage Count) 11. Phase Error (Peak) [degree]*1 (Average value for Storage Count) 12. Phase Error (Peak) [degree]*1 (Maximum value for Storage Count) 13. Origin Offset [dB]*1 (Average value for Storage Count) 14. Origin Offset [dB]*1 (Maximum value for Storage Count) 15. EVM (RMS) [%]*1,*8 (Average value for Storage Count) 16. EVM (RMS) [%]*1,*8 (Maximum value for Storage Count) 17. EVM (Peak) [%]*1,*8 (Average value for Storage Count) 18. EVM (Peak) [%]*1,*8 (Maximum value for Storage Count) 19. Magnitude Error (RMS) [%] (Average value for Storage Count) 20. Magnitude Error (RMS) [%] (Maximum value for Storage Count) 21. Magnitude Error (Peak) [%] (Average value for Storage Count) 22. Magnitude Error (Peak) [%] (Maximum value for Storage Count) 23. Droop Factor [dB/Symbol]*2 (Average value for Storage Count) 24. Droop Factor [dB/Symbol]*2 (Maximum value for Storage Count) 25. Deviation [Hz]*3 (Average value for Storage Count) 26. Deviation [Hz]*3 (Maximum value for Storage Count) 27. IQ Gain Imbalance [dB]*4 (Average value for Storage Count) 28. IQ Gain Imbalance [dB]*4 (Maximum value for Storage Count) 29. Quadrature Error [degree]*4 (Average value for Storage Count) 30. Quadrature Error [degree]*4 (Maximum value for Storage Count) 31. FSK Error (RMS) [%]*3 (Average value for Storage Count) 32. FSK Error (RMS) [%]*3 (Maximum value for Storage Count) 33. FSK Error (peak) [%]*3 (Average value for Storage Count) 34. FSK Error (peak) [%]*3 (Maximum value for Storage Count)

Table 2.7-2 Responses of Modulation Analysis Result (Cont'd)

n	Result Mode	Response
1 or omitted Cont'd	A	Returns with comma-separated value formats in the following order: 35. Tx Power [W] (Average value for Storage Count) 36. Tx Power [W] (Maximum value for Storage Count) 37. Filtered Power [W] (Average value for Storage Count) 38. Filtered Power [W] (Maximum value for Storage Count) 39. Origin Offset [%]*1,*8 (Average value for Storage Count) 40. Origin Offset [%]*1,*8 (Maximum value for Storage Count) 41. Symbol Rate Error [ppm]*7 (Average value for Storage Count) 42. Symbol Rate Error [ppm]*7 (Maximum value for Storage Count) 43. Jitter P-P Min [%]*3 (Average value for Storage Count) 44. Jitter P-P Min [%]*3 (Maximum value for Storage Count) 45. Jitter P-P Max [%]*3 (Average value for Storage Count) 46. Jitter P-P Max [%]*3 (Maximum value for Storage Count) 47. MER (RMS) [dB]*1 (Average value for Storage Count) 48. MER (RMS) [dB]*1 (Maximum value for Storage Count) 49. MER (Peak) [dB]*1 (Average value for Storage Count) 50. MER (Peak) [dB]*1 (Maximum value for Storage Count) 51. Deviation +Peak [Hz]*3 (Average value for Storage Count) 52. Deviation +Peak [Hz]*3 (Maximum value for Storage Count) 53. Deviation –Peak [Hz]*3 (Average value for Storage Count) 54. Deviation –Peak [Hz]*3 (Maximum value for Storage Count) 55. Deviation (Peak-Peak)/2 [Hz]*3 (Average value for Storage Count) 56. Deviation (Peak-Peak)/2 [Hz]*3 (Maximum value for Storage Count) 57. Offset EVM (RMS) [%]*5 (Average value for Storage Count) 58. Offset EVM (RMS) [%]*5 (Maximum value for Storage Count) 59. Offset EVM (Peak) [%]*5 (Average value for Storage Count) 60. Offset EVM (Peak) [%]*5 (Maximum value for Storage Count) 61. Modulation Fidelity (RMS) [%]*3(Average value for Storage Count) 62. Modulation Fidelity (RMS) [%]*3(Maximum value for Storage Count) 63. Modulation Fidelity (Peak) [%]*3(Average value for Storage Count) 64. Modulation Fidelity (Peak) [%]*3(Maximum value for Storage Count) 65. Deviation Rms [%]*6(Average value for Storage Count) 66. Deviation Rms [%]*6(Maximum value for Storage Count) 67. TimingOffset Rms [us] *8 (Average value for Storage Count) 68. TimingOffset Rms [us] *8 (Maximum value for Storage Count)

Table 2.7-2 Responses of Modulation Analysis Result (Cont'd)

n	Result Mode	Response
1 or omitted Cont'd	A	*1: When Modulation Type is 2FSK, 4FSK or H-CPM: –999.0 *2: When Modulation Type is QPSK, 16QAM, 32QAM, 64QAM, 128QAM, 256QAM, 2FSK, 4FSK or H-CPM: –999.0 *3: When Modulation Type is other than 2FSK, 4FSK or H-CPM: –999.0 *4: When Modulation Type is BPSK, 2FSK, 4FSK or H-CPM: –999.0 *5 : When Modulation Type is other than O-QPSK: –999.0 *6: When Modulation Type is other than 2FSK: –999.0 *7: When Measuring Object is Non-Formatted, or when Measuring Object is Formatted and Sync Word Search is Off, or when Measuring Object is Formatted and Capture Interval is 1 Frame, or when it is in Single Measurement Mode and Storage Mode is Off: : –99999.0 *8: Measurement results can be obtained when the Measuring Object is SCBT.
2	A	The Constellation graph display data is returned for each symbol, with a comma-separated value format and the I- and Q-phase data alternating. Number of output data items ((Measurement Interval – 1) ×8 + 1) ×2 (Interpolation On) ((Measurement Interval – 1) ×1 + 1) ×2 (Interpolation Off) Output data number when the Measuring Object is SCBT. (Number of symbols specified for Subcarrier MAP) × (FFT Size – (Lower Guard Subcarrer + Upper Guard Subcarrer)) Pilots and subcarrier values excluded from EVM calculation:. –999.0 When Modulation Type is 2FSK, 4FSK or H-CPM: –999.0

Table 2.7-2 Responses of Modulation Analysis Result (Cont'd)

n	Result Mode	Response
3	A	The EVM vs Symbol graph display data is returned with comma-separated value formats: Number of output data items Measurement Interval Output data number when the Measuring Object is SCBT (Number of symbols specifed for Subcarrier MAP) Unit: %
4	A	The Mag. Error vs Symbol graph display data is returned with comma-separated value formats: Number of output data items Measurement Interval Unit: %
5	A	The Phase Error vs Symbol graph display data is returned with comma-separated value formats: Number of output data items Measurement Interval Unit: degree
6	A	Returns the display data of phase I in the I and Q vs Symbol graph delimited by commas (,). Number of output data items (Measurement Interval – 1) × 8 + 1
7	A	Returns the display data of phase Q in the I and Q vs Symbol graph delimited by commas (,). Number of output data items (Measurement Interval – 1) × 8 + 1
8	A	The Magnitude vs Symbol graph display data is returned with comma-separated value formats. Number of output data items (Measurement Interval – 1) × 8 + 1 Unit: Volt
9	A	The Phase vs Symbol graph display data is returned with comma-separated value formats. Number of output data items (Measurement Interval – 1) × 8 + 1 Unit: degree
10	A	The Frequency vs Symbol graph display data is returned with comma-separated value formats. Number of output data items (Measurement Interval – 1) × 8 + 1 Unit: GHz
11	A	The Signal Monitor graph display data is returned with comma-separated value formats. Number of output data items 1025 Unit: dBm

Table 2.7-2 Responses of Modulation Analysis Result (Cont'd)

n	Result Mode	Response
12	A	Returns the measurement result data of FSK Deviation with comma-separated value formats in the following order: 1. Deviation [Hz], +3:Average*1 (Average value for Storage Count) 2. Deviation [Hz], +3:Average*1 (Maximum value for Storage Count) 3. Deviation [Hz], +3:+Max. Peak*1 (Average value for Storage Count) 4. Deviation [Hz], +3:+Max. Peak*1 (Maximum value for Storage Count) 5. Deviation [Hz], +3:+Min. Peak*1 (Average value for Storage Count) 6. Deviation [Hz], +3:+Min. Peak*1 (Maximum value for Storage Count) 7. Deviation [Hz], +3:–Max. Peak*1 (Average value for Storage Count) 8. Deviation [Hz], +3:–Max. Peak*1 (Maximum value for Storage Count) 9. Deviation [Hz], +3:–Min. Peak*1 (Average value for Storage Count) 10. Deviation [Hz], +3:–Min. Peak*1 (Maximum value for Storage Count) 11. Deviation [Hz], +3: (Peak to Peak)/2*1 (Average value for Storage Count) 12. Deviation [Hz], +3: (Peak to Peak)/2*1 (Maximum value for Storage Count) 13. Deviation [%], +3:+Max. Peak*1 (Average value for Storage Count) 14. Deviation [%], +3:+Max. Peak*1 (Maximum value for Storage Count) 15. Deviation [%], +3:–Max. Peak*1 (Average value for Storage Count) 16. Deviation [%], +3:–Max. Peak*1 (Maximum value for Storage Count) 17. Deviation [Hz], +1:Average (Average value for Storage Count) 18. Deviation [Hz], +1:Average (Maximum value for Storage Count) 19. Deviation [Hz], +1:+Max. Peak (Average value for Storage Count) 20. Deviation [Hz], +1:+Max. Peak (Maximum value for Storage Count)

Table 2.7-2 Responses of Modulation Analysis Result (Cont'd)

n	Result Mode	Response
12	A	21. Deviation [Hz], +1:+Min. Peak (Average value for Storage Count) 22. Deviation [Hz], +1:+Min. Peak (Maximum value for Storage Count) 23. Deviation [Hz], +1:–Max. Peak (Average value for Storage Count) 24. Deviation [Hz], +1:–Max. Peak (Maximum value for Storage Count) 25. Deviation [Hz], +1:–Min. Peak (Average value for Storage Count) 26. Deviation [Hz], +1:–Min. Peak (Maximum value for Storage Count) 27. Deviation [Hz], +1: (Peak to Peak)/2 (Average value for Storage Count) 28. Deviation [Hz], +1: (Peak to Peak)/2 (Maximum value for Storage Count) 29. Deviation [%], +1:+Max. Peak (Average value for Storage Count) 30. Deviation [%], +1:+Max. Peak (Maximum value for Storage Count) 31. Deviation [%], +1:–Max. Peak (Average value for Storage Count) 32. Deviation [%], +1:–Max. Peak (Maximum value for Storage Count) 33. Deviation [Hz], –1:Average (Average value for Storage Count) 34. Deviation [Hz], –1:Average (Maximum value for Storage Count) 35. Deviation [Hz], –1:+Max. Peak (Average value for Storage Count) 36. Deviation [Hz], –1:+Max. Peak (Maximum value for Storage Count) 37. Deviation [Hz], –1:+Min. Peak (Average value for Storage Count) 38. Deviation [Hz], –1:+Min. Peak (Maximum value for Storage Count) 39. Deviation [Hz], –1:–Max. Peak (Average value for Storage Count) 40. Deviation [Hz], –1:–Max. Peak (Maximum value for Storage Count) 41. Deviation [Hz], –1:–Min. Peak (Average value for Storage Count) 42. Deviation [Hz], –1:–Min. Peak (Maximum value for Storage Count) 43. Deviation [Hz], –1: (Peak to Peak)/2 (Average value for Storage Count) 44. Deviation [Hz], –1: (Peak to Peak)/2 (Maximum value for Storage Count)

Table 2.7-2 Responses of Modulation Analysis Result (Cont'd)

n	Result Mode	Response
12	A	45. Deviation [%], –1:+Max. Peak (Average value for Storage Count) 46. Deviation [%], –1:+Max. Peak (Maximum value for Storage Count) 47. Deviation [%], –1:–Max. Peak (Average value for Storage Count) 48. Deviation [%], –1:–Max. Peak (Maximum value for Storage Count) 49. Deviation [Hz], –3:Average (Average value for Storage Count) 50. Deviation [Hz], –3:Average*1 (Maximum value for Storage Count) 51. Deviation [Hz], –3:+Max. Peak*1 (Average value for Storage Count) 52. Deviation [Hz], –3:+Max. Peak*1 (Maximum value for Storage Count) 53. Deviation [Hz], –3:+Min. Peak*1 (Average value for Storage Count) 54. Deviation [Hz], –3:+Min. Peak*1 (Maximum value for Storage Count) 55. Deviation [Hz], –3:–Max. Peak*1 (Average value for Storage Count) 56. Deviation [Hz], –3:–Max. Peak*1 (Maximum value for Storage Count) 57. Deviation [Hz], –3:–Min. Peak*1 (Average value for Storage Count) 58. Deviation [Hz], –3:–Min. Peak*1 (Maximum value for Storage Count) 59. Deviation [Hz], –3: (Peak to Peak)/2*1 (Average value for Storage Count) 60. Deviation [Hz], –3: (Peak to Peak)/2*1 (Maximum value for Storage Count) 61. Deviation [%], –3:+Max. Peak*1 (Average value for Storage Count) 62. Deviation [%], –3:+Max. Peak*1 (Maximum value for Storage Count) 63. Deviation [%], –3:–Max. Peak*1 (Average value for Storage Count) 64. Deviation [%], –3:–Max. Peak*1 (Maximum value for Storage Count) When Modulation Type is other than 2FSK or 4FSK: –999.0 for the number of times equal to that of output data items *1 : When Modulation Type is 2FSK: –999.0

Table 2.7-2 Responses of Modulation Analysis Result (Cont'd)

n	Result Mode	Response
13	A	The Symbol Table graph display data is returned with comma-separated value formats. Number of output data items Measurement Interval [symbol] × Bits per Symbol When Modulation type is PI4DQPSK, (Measurement Interval – 1) [symbol] × Bits per Symbol Unit: None When Non-Formatted is selected for signal format and Modulation Type is neither 2FSK nor 4FSK: –999.0 for the number of times equal to that of output data items
14	A	The Equalizer Amplitude graph display data is returned with comma-separated value formats.[0.01 dB resolution] Number of output data 257 points Unit: dB –999.0 for the number of times equal to that of output data items (when not measured)
15	A	The Equalizer Phase graph display data is returned with comma-separated value formats.[0.01 degree resolution] Number of output data 257 points Unit: degree –999.0 for the number of times equal to that of output data items (when not measured)
16	A	The Equalizer Group Delay graph display data is returned with comma-separated value formats. Number of output data 257 points Unit: ns –999.0 for the number of times equal to that of output data items (when not measured)
17	A	The Equalizer Impulse Response graph display data is returned with comma-separated value formats. [0.01 dB resolution] Number of output data Equalizer Tap Unit: dB –999.0 for the number of times equal to that of output data items (when not measured)
18	A	The FSK Error vs Symbol graph display data is returned with comma-separated value formats. [0.01% resolution] Number of output data Measurement Interval Unit: % –999.0 for the number of times equal to that of output data items (when not measured)

Table 2.7-2 Responses of Modulation Analysis Result (Cont'd)

n	Result Mode	Response
19	A	1. BER [%]*1 (Average value for Storage Count) 2. BER [%]*1 (Maximum value for Storage Count) *1: If BER measurement is invalid: –999.0
20	A	Returns the measurement result data of ASK Deviation with comma-separated value formats in the following order: 1. Frequency Error [Hz], (Average value for Storage Count) 2. Frequency Error [Hz], (Maximum value for Storage Count) 3. Frequency Error [ppm], (Average value for Storage Count) 4. Frequency Error [ppm], (Maximum value for Storage Count) 5. Tx Power [dBm] (Average value for Storage Count) 6. Tx Power [dBm] (Maximum value for Storage Count) 7. –999.0 8. –999.0 9. Modulation Index (RMS) [no unit] (Average value for Storage Count) 10. Modulation Index (RMS) [no unit] (Maximum value for Storage Count) 11. Eye Opening (X-Time) [%] (Average value for Storage Count) 12. Eye Opening (X-Time) [%] (Maximum value for Storage Count) 13. Eye Opening (Y-Amplitude) [%] (Average value for Storage Count) 14. Eye Opening (Y-Amplitude) [%] (Maximum value for Storage Count)
21	A	Returns the equalizer coefficient data separated by commas (,) in the order of I, Q, I, Q…. Output data number Equalizer Tap × 2 –999.0 for the number of times equal to that of output data items (when not measured)
22	A	The EVM vs Subcarrier graph display data is returned with comma-separated value formats. Number of output data FFT Size – (Lower Guard Subcarrier + Upper Guard Subcarrier) –999.0 for the number of times equal to that of output data items (when not measured)

Table 2.7-3 lists device messages for parameter settings for Modulation Analysis.

Table 2.7-3 Device Messages for Parameter Settings of Modulation Analysis

Parameter	Device Message
Trace Mode	:DISPlay:EVM[:VIEW][:SELect]:TRACe[1]|2|3|4|5|6|7|8 CONStellation|EVSYmbol|MESYmbol|PESYmbol|TRELlis| EYEDiagram|NUMeric|IQSYmbol|MGSYmbol|PHSYmbol| FRSYmbol|SMONitor|SYMBoltable|EQAMplitude|EQPHase| EQGRoupdelay|EQIMpulse|FSSYmbol|FISYmbol|HISTogram|CNUMeric|EVSubcarrier
	:DISPlay:EVM[:VIEW][:SELect]:TRACe[1]|2|3|4|5|6|7|8?
Scale (Vertical) – EVM vs Symbol	:DISPlay:EVM[:VIEW]:WINDow2:TRACe[1]|2|3|4|5|6|7|8 :Y[:SCALe]:RLEVel 5|10|20|50
	:DISPlay:EVM[:VIEW]:WINDow2:TRACe[1]|2|3|4|5|6|7|8 :Y[:SCALe]:RLEVel?
Scale (Vertical) – Mag. Error vs Symbol	:DISPlay:EVM[:VIEW]:WINDow3:TRACe[1]|2|3|4|5|6|7|8 :Y[:SCALe]:RLEVel 5|10|20|50
	:DISPlay:EVM[:VIEW]:WINDow3:TRACe[1]|2|3|4|5|6|7|8 :Y[:SCALe]:RLEVel?
Scale (Vertical) – Phase Error vs Symbol	:DISPlay:EVM[:VIEW]:WINDow4:TRACe[1]|2|3|4|5|6|7|8 :Y[:SCALe]:RLEVel 5|10|20|50
	:DISPlay:EVM[:VIEW]:WINDow4:TRACe[1]|2|3|4|5|6|7|8 :Y[:SCALe]:RLEVel?
Scale (Interpolation) – Constellation	:DISPlay:EVM[:VIEW]:WINDow[1]:TRACe[1]|2|3|4|5|6|7|8 :INTerpolation OFF|ON|0|1
	:DISPlay:EVM[:VIEW]:WINDow[1]:TRACe[1]|2|3|4|5|6|7|8 :INTerpolation?
Points/Symbol Number – Constellation	:DISPlay:EVM[:VIEW]:WINDow[1]:TRACe[1]|2|3|4|5|6|7|8:INTerpolation:POINts 1|2|8
	:DISPlay:EVM[:VIEW]:WINDow[1]:TRACe[1]|2|3|4|5|6|7|8:INTerpolation:POINts?
Scale (Unit) – Numeric	:DISPlay:EVM[:VIEW]:WINDow2:TRACe[1]|2|3|4|5|6|7|8:Y[:SCALe]:UNIT:POWer DBM|W
	:DISPlay:EVM[:VIEW]:WINDow2:TRACe[1]|2|3|4|5|6|7|8:Y[:SCALe]:UNIT:POWer?
Scale (Unit) – Symbol Rate Error	:DISPlay:EVM[:VIEW]:WINDow2:TRACe[1]|2|3|4|5|6|7|8:Y[:SCALe]:UNIT:SRATe <unit>
	:DISPlay:EVM[:VIEW]:WINDow2:TRACe[1]|2|3|4|5|6|7|8:Y[:SCALe]:UNIT:SRATe?
Scale (Unit) – Symbol Table	:DISPlay:EVM[:VIEW]:WINDow2:TRACe[1]|2|3|4|5|6|7|8:SYMBol :FORMat BIN|HEX
	:DISPlay:EVM[:VIEW]:WINDow2:TRACe[1]|2|3|4|5|6|7|8:SYMBol :FORMat?

Table 2.7-3 Device Messages for Parameter Settings of Modulation Analysis (Cont'd)

Parameter	Device Message
Scale (Vertical) – Equalizer Amplitude	:DISPlay:EVM[:VIEW]:WINDow14:TRACe[1]|2|3|4|5|6|7|8:Y[:SCALe]:RLEVel <real>
	:DISPlay:EVM[:VIEW]:WINDow14:TRACe[1]|2|3|4|5|6|7|8:Y[:SCALe]:RLEVel?
Scale (Vertical) – Equalizer Phase	:DISPlay:EVM[:VIEW]:WINDow15:TRACe[1]|2|3|4|5|6|7|8:Y[:SCALe]:RLEVel <real>
	:DISPlay:EVM[:VIEW]:WINDow15:TRACe[1]|2|3|4|5|6|7|8:Y[:SCALe]:RLEVel?
Scale (Vertical) – Equalizer Group Delay	:DISPlay:EVM[:VIEW]:WINDow16:TRACe[1]|2|3|4|5|6|7|8:Y[:SCALe]:RLEVel <real>
	:DISPlay:EVM[:VIEW]:WINDow16:TRACe[1]|2|3|4|5|6|7|8:Y[:SCALe]:RLEVel?
Scale (Vertical) – Equalizer Impulse	:DISPlay:EVM[:VIEW]:WINDow17:TRACe[1]|2|3|4|5|6|7|8:Y[:SCALe]:RLEVel 20|50|100
	:DISPlay:EVM[:VIEW]:WINDow17:TRACe[1]|2|3|4|5|6|7|8:Y[:SCALe]:RLEVel?
Scale (Vertical) – FSK Error vs Symbol	:DISPlay:EVM[:VIEW]:WINDow18:TRACe[1]|2|3|4|5|6|7|8:Y[:SCALe]:RLEVel 5|10|20|50
	:DISPlay:EVM[:VIEW]:WINDow18:TRACe[1]|2|3|4|5|6|7|8:Y[:SCALe]:RLEVel?
Scale (Vertical) – Fidelity vs Symbol	:DISPlay:EVM[:VIEW]:WINDow19:TRACe[1]|2|3|4|5|6|7|8:Y[:SCALe]:RLEVel 5|10|20|50
	:DISPlay:EVM[:VIEW]:WINDow19:TRACe[1]|2|3|4|5|6|7|8:Y[:SCALe]:RLEVel?
Scale (Vertical) – EVM vs Subcarrier	:DISPlay:EVM[:VIEW]:WINDow22:TRACe[1]|2|3|4|5|6|7|8:Y[:SCALe]:RLEVel 5|10|20|50
	:DISPlay:EVM[:VIEW]:WINDow22:TRACe[1]|2|3|4|5|6|7|8:Y[:SCALe]:RLEVel?
Storage Mode	[:SENSe]:EVM:AVERage[:STATe] OFF|ON|AMAXimum|0|1|2
	[:SENSe]:EVM:AVERage[:STATe]?
Storage Count	[:SENSe]:EVM:AVERage:COUNt <integer>
	[:SENSe]:EVM:AVERage:COUNt?
Select Trace	:DISPlay:TRACe[:SELect] TRACe1|TRACe2|TRACe3|TRACe4|TRACe5|TRACe6|TRACe7|TRACe8|
	:DISPlay:TRACe[:SELect]?
Zoom In	:DISPlay:TRACe:ZOOM
Zoom Out	:DISPlay:TRACe:ZOUT
Next Trace	:DISPlay:TRACe:NEXT
Next View	:DISPlay:VIEW:NEXT
Target Slot Number	:CALCulate:EVM[:VIEW]:SLOT <integer>
	:CALCulate:EVM[:VIEW]:SLOT?

Table 2.7-4 lists device messages for setting Modulation Analysis and reading marker settings and position values.

Table 2.7-4 Device Message for Markers of Modulation Analysis

Parameter	Device Message
Marker On/Off – Constellation	:CALCulate:EVM:WINDow[1]:TRACe[1]|2|3|4|5|6|7|8 :MARKer[:STATe] OFF|ON|0|1
	:CALCulate:EVM:WINDow[1]:TRACe[1]|2|3|4|5|6|7|8 :MARKer[:STATe]?
Marker On/Off – EVM vs Symbol	:CALCulate:EVM:WINDow2:TRACe[1]|2|3|4|5|6|7|8 :MARKer[:STATe] OFF|ON|0|1
	:CALCulate:EVM:WINDow2:TRACe[1]|2|3|4|5|6|7|8 :MARKer[:STATe]?
Marker On/Off – Mag. Error vs Symbol	:CALCulate:EVM:WINDow3:TRACe[1]|2|3|4|5|6|7|8 :MARKer[:STATe] OFF|ON|0|1
	:CALCulate:EVM:WINDow3:TRACe[1]|2|3|4|5|6|7|8 :MARKer[:STATe]?
Marker On/Off – Phase Error vs Symbol	:CALCulate:EVM:WINDow4:TRACe[1]|2|3|4|5|6|7|8 :MARKer[:STATe] OFF|ON|0|1
	:CALCulate:EVM:WINDow4:TRACe[1]|2|3|4|5|6|7|8 :MARKer[:STATe]?
Marker On/Off – I and Q vs Symbol	:CALCulate:EVM:WINDow8:TRACe[1]|2|3|4|5|6|7|8 :MARKer[:STATe] OFF|ON|0|1
	:CALCulate:EVM:WINDow8:TRACe[1]|2|3|4|5|6|7|8 :MARKer[:STATe]?
Marker On/Off – Magnitude vs Symbol	:CALCulate:EVM:WINDow9:TRACe[1]|2|3|4|5|6|7|8 :MARKer[:STATe] OFF|ON|0|1
	:CALCulate:EVM:WINDow9:TRACe[1]|2|3|4|5|6|7|8 :MARKer[:STATe]?
Marker On/Off – Phase vs Symbol	:CALCulate:EVM:WINDow10:TRACe[1]|2|3|4|5|6|7|8 :MARKer[:STATe] OFF|ON|0|1
	:CALCulate:EVM:WINDow10:TRACe[1]|2|3|4|5|6|7|8 :MARKer[:STATe]?
Marker On/Off – Frequency vs Symbol	:CALCulate:EVM:WINDow11:TRACe[1]|2|3|4|5|6|7|8 :MARKer[:STATe] OFF|ON|0|1
	:CALCulate:EVM:WINDow11:TRACe[1]|2|3|4|5|6|7|8 :MARKer[:STATe]?
Marker On/Off – EVM vs Subcarrier	:CALCulate:EVM:WINDow22:TRACe[1]|2|3|4|5|6|7|8 :MARKer[:STATe] OFF|ON|0|1
	:CALCulate:EVM:WINDow22:TRACe[1]|2|3|4|5|6|7|8 :MARKer[:STATe]?

Table 2.7-4 Device Message for Markers of Modulation Analysis (Cont'd)

Parameter	Device Message
Marker Number – Constellation	:CALCulate:EVM:WINDow[1]:TRACe[1]|2|3|4|5|6|7|8 :MARKer:SYMBol <real>
	:CALCulate:EVM:WINDow[1]:TRACe[1]|2|3|4|5|6|7|8 :MARKer:SYMBol?
Marker Number – EVM vs Symbol	:CALCulate:EVM:WINDow2:TRACe[1]|2|3|4|5|6|7|8 :MARKer:SYMBol <real>
	:CALCulate:EVM:WINDow2:TRACe[1]|2|3|4|5|6|7|8 :MARKer:SYMBol?
Marker Number – Mag. Error vs Symbol	:CALCulate:EVM:WINDow3:TRACe[1]|2|3|4|5|6|7|8 :MARKer:SYMBol <real>
	:CALCulate:EVM:WINDow3:TRACe[1]|2|3|4|5|6|7|8 :MARKer:SYMBol?
Marker Number – Phase Error vs Symbol	:CALCulate:EVM:WINDow4:TRACe[1]|2|3|4|5|6|7|8 :MARKer:SYMBol <real>
	:CALCulate:EVM:WINDow4:TRACe[1]|2|3|4|5|6|7|8 :MARKer:SYMBol?
Marker Number – I and Q vs Symbol	:CALCulate:EVM:WINDow8:TRACe[1]|2|3|4|5|6|7|8 :MARKer:SYMBol <integer>
	:CALCulate:EVM:WINDow8:TRACe[1]|2|3|4|5|6|7|8 :MARKer:SYMBol?
Marker Number – Magnitude vs Symbol	:CALCulate:EVM:WINDow9:TRACe[1]|2|3|4|5|6|7|8 :MARKer:SYMBol <integer>
	:CALCulate:EVM:WINDow9:TRACe[1]|2|3|4|5|6|7|8 :MARKer:SYMBol?
Marker Number – Phase vs Symbol	:CALCulate:EVM:WINDow10:TRACe[1]|2|3|4|5|6|7|8 :MARKer:SYMBol <integer>
	:CALCulate:EVM:WINDow10:TRACe[1]|2|3|4|5|6|7|8 :MARKer:SYMBol?
Marker Number – Frequency vs Symbol	:CALCulate:EVM:WINDow11:TRACe[1]|2|3|4|5|6|7|8 :MARKer:SYMBol <integer>
	:CALCulate:EVM:WINDow11:TRACe[1]|2|3|4|5|6|7|8 :MARKer:SYMBol?
Marker Number – Constellation (Subcarrier)	:CALCulate:EVM:WINDow[1]:TRACe[1]|2|3|4|5|6|7|8 :MARKer:SUBCarrier <integer>
	:CALCulate:EVM:WINDow[1]:TRACe[1]|2|3|4|5|6|7|8 :MARKer:SUBCarrier?
Marker Number – EVM vs Subcarrier	:CALCulate:EVM:WINDow22:TRACe[1]|2|3|4|5|6|7|8 :MARKer:SUBCarrier <integer>
	:CALCulate:EVM:WINDow22:TRACe[1]|2|3|4|5|6|7|8 :MARKer:SUBCarrier?

Table 2.7-4 Device Message for Markers of Modulation Analysis (Cont'd)

Parameter	Device Message
Marker Result – Constellation	`:CALCulate:EVM:WINDow[1]:TRACe[1]|2|3|4|5|6|7|8` `:MARKer:X?`
	`:CALCulate:EVM:WINDow[1]:TRACe[1]|2|3|4|5|6|7|8` `:MARKer:Y?`
Marker Result – EVM vs Symbol	`:CALCulate:EVM:WINDow2:TRACe[1]|2|3|4|5|6|7|8` `:MARKer:Y?`
Marker Result – Mag. Error vs Symbol	`:CALCulate:EVM:WINDow3:TRACe[1]|2|3|4|5|6|7|8` `:MARKer:Y?`
Marker Result – Phase Error vs Symbol	`:CALCulate:EVM:WINDow4:TRACe[1]|2|3|4|5|6|7|8` `:MARKer:Y?`
Marker Result – I and Q vs Symbol	`:CALCulate:EVM:WINDow8:TRACe[1]|2|3|4|5|6|7|8` `:MARKer:I:Y?`
	`:CALCulate:EVM:WINDow8:TRACe[1]|2|3|4|5|6|7|8` `:MARKer:Q:Y?`
Marker Result – Magnitude vs Symbol	`:CALCulate:EVM:WINDow9:TRACe[1]|2|3|4|5|6|7|8` `:MARKer:Y?`
Marker Result – Phase vs Symbol	`:CALCulate:EVM:WINDow10:TRACe[1]|2|3|4|5|6|7|8` `:MARKer:Y?`
Marker Result – Frequency vs Symbol	`:CALCulate:EVM:WINDow11:TRACe[1]|2|3|4|5|6|7|8` `:MARKer:Y?`
Marker Result – EVM vs Subcarrier	`:CALCulate:EVM:WINDow22:TRACe[1]|2|3|4|5|6|7|8` `:MARKer:Y?`

2.7.1 Measure

:CONFigure:EVM

Modulation Analysis

Function

This command selects Modulation Analysis.

Command

```
:CONFigure:EVM
```

Details

No measurement is made.

Example of Use

To select Modulation Analysis.

```
CONF:EVM
```

:INITiate:EVM

Modulation Analysis

Function

This command executes Modulation Analysis.

Command

```
:INITiate:EVM
```

Example of Use

To execute Modulation Analysis.

```
INIT:EVM
```

:INITiate:EVM:EQUalizer

Equalizer Reset

Function

This command initializes filter coefficients of Equalizer.

Command

```
:INITiate:EVM:EQUalizer
```

Example of Use

To initialize filter coefficients of Equalizer.

```
INIT:EVM:EQU
```

[:SENSe]:EVM:REMeasure OFF|ON|0|1

Re-measurement Mode

Function

This command sets the re-measurement mode On and Off.

Command

```
[:SENSe]:EVM:REMeasure OFF|ON|0|1
```

Parameter

<switch>	Settings
OFF|0	Off
ON|1	On

Example of Use

To set the re-measurement mode to On.

```
:EVM:REM ON
```

[:SENSe]:EVM:REMeasure?

Re-measurement Mode Query

Function

This command queries the re-measurement mode setting.

Query

```
[:SENSe]:EVM:REMeasure?
```

Response

<switch>	Settings
0	Off
1	On

Example of Use

To query re-measurement mode setting.

```
:EVM:REM?
```

[:SENSe]:EVM:REMeasure:THReshold <real>

Re-measurement Threshold

Function

This command sets the re-measurement mode threshold value.

Command

```
[:SENSe]:EVM:REMeasure:THReshold <real>
```

Parameter

<real>		Threshold
	Range	0.5% to 10%
	Resolution	0.01%
	Suffix code	None

Example of Use

To set the threshold to 5%.

```
EVM:REM:THR 5
```

[:SENSe]:EVM:REMeasure:THReshold?

Re-measurement Threshold Query

Function

This command queries the re-measurement mode threshold value.

Query

```
[:SENSe]:EVM:REMeasure:THReshold?
```

Response

<real>		Threshold
	Range	0.5% to 10%
	Resolution	0.01%

Example of Use

To query the re-measurement mode threshold value.

```
:EVM:REM:THR?
> 5.00
```

[:SENSe]:EVM:SIGDisplay OFF|ON|0|1

Signal Level Too Low Display

Function

This command sets the low signal level display On and Off.

Command

```
[:SENSe]:EVM:SIGDisplay OFF|ON|0|1
```

Parameter

<switch>	Settings
OFF|0	Off
ON|1	On

Example of Use

To set low signal level display notification.

```
:EVM:SIGD ON
```

[:SENSe]:EVM:SIGDisplay?

Signal Level Too Low Display Query

Function

This command queries the low signal level display notification setting.

Query

```
[:SENSe]:EVM:SIGDisplay?
```

Response

<switch>	Settings
0	Off
1	On

Example of Use

To query low signal level display notification setting.

```
:EVM:SIGD?
> 1
```

:FETCh:EVM[n]?

Modulation Analysis Query

Function

This command queries the measurement result of Modulation Analysis.

Query

```
:FETCh:EVM[n]?
```

Response

See Table 2.7-2.

Example of Use

To query the measurement result of Modulation Analysis.

```
FETC:EVM?
```

:READ:EVM[n]?

Modulation Analysis Query

Function

This command performs Single measurement once with the current settings, and then queries the measured result of Modulation Analysis.

Query

```
:READ:EVM[n]?
```

Response

See Table 2.7-2.

Example of Use

To perform measurement and query the measured result of Modulation Analysis.

```
READ:EVM?
```

:MEASure:EVM[n]?

Modulation Analysis Query

Function

This command performs Single measurement once with the current settings, and then queries the measured result of Modulation Analysis.

Query

```
:MEASure:EVM[n]?
```

Response

See Table 2.7-2.

Example of Use

To perform measurement and query the measured result of Modulation Analysis.

```
MEAS:EVM?
```

2.7.2 Trace Mode

:DISPlay:EVM[:VIEW][:SELect]:TRACe[1]|2|3|4|5|6|7|8 CONStellation|EVSYmbol|MESYmbol|PESYmbol|TRELlis|EYEDiagram|NUMeric|IQSYmbol|MGSYmbol|PHSYmbol|FRSYmbol|SMONitor|SYMBoltable|EQAMplitude|EQPHase|EQGRoupdelay|EQIMpulse|FSSYmbol|FISYmbol|HISTogram|CNUMeric|EVSubcarrier

Trace Mode

Function

This command sets the graph type on the graph window when Modulation Analysis is selected.

Command

```
:DISPlay:EVM[:VIEW][:SELect]:TRACe[n] <mode>
```

Parameter

<n>	Trace position
1	Trace 1
2	Trace 2
3	Trace 3
4	Trace 4
5	Trace 5
6	Trace 6
7	Trace 7
8	Trace 8
When omitted	Trace 1
<mode>	Trace Mode
CONStellation	Constellation
EVSYmbol	EVM vs Symbol
MESYmbol	Mag. Error vs Symbol
PESYmbol	Phase Error vs Symbol
TRELlis	Trellis
EYEDiagram	Eye Diagram
NUMeric	Numeric
IQSYmbol	I and Q vs Symbol
MGSYmbol	Magnitude vs Symbol
PHSYmbol	Phase vs Symbol
FRSYmbol	Frequency vs Symbol
SMONitor	Signal Monitor
SYMBoltable	Symbol Table
EQAMplitude	Equalizer Amplitude
EQPhase	Equalizer Phase

`EQGroupdelay`	Equalizer Group Delay
`EQImpulse`	Equalizer Impulse Response
`FSSYmbol`	FSK Error vs Symbol
`FISYmbol`	Modulation Fidelity vs Symbol
`HISTogram`	Histogram
`CNUMeric`	Custom Numeric
`EVSubcarrier`	EVM vs Subcarrier

The Trade Mode initial values of each Trace position are listed in Table 2.7.2-1.

Table 2.7.2-1 Trace Mode initial values of each trace position

Trace Position	Trace Mode Initial Value
Trace 1	Numeric
Trace 2	Constellation
Trace 3	EVM vs Symbol
Trace 4	Mag. Error vs Symbol
Trace 5	Signal Monitor
Trace 6	I and Q vs Symbol
Trace 7	Eye Diagram
Trace 8	Trellis

Example of Use

To set Trace Mode of Trace 2 to Phase Error vs Symbol.

```
DISP:EVM:TRAC2 PESY
```

:DISPlay:EVM[:VIEW][:SELect]:TRACe[1]|2|3|4|5|6|7|8?

Trace Mode Query

Function

This command queries the graph type on the graph window when Modulation Analysis is selected.

Query

```
:DISPlay:EVM[:VIEW][:SELect]:TRACe[n]?
```

Response

```
<mode>
```

Parameter

<n>	Trace position
1	Trace 1
2	Trace 2
3	Trace 3
4	Trace 4
5	Trace 5
6	Trace 6
7	Trace 7
8	Trace 8
When omitted	Trace 1
<mode>	Trace Mode
CONS	Constellation
EVSY	EVM vs Symbol
MESY	Mag. Error vs Symbol
PESY	Phase Error vs Symbol
TREL	Trellis
EYED	Eye Diagram
NUM	Numeric
IQSY	I and Q vs Symbol
MGSY	Magnitude vs Symbol
PHSY	Phase vs Symbol
FRSY	Frequency vs Symbol
SMON	Signal Monitor
SYMB	Symbol Table
EQAM	Equalizer Amplitude
EQP	Equalizer Phase
EQG	Equalizer Group Delay
EQI	Equalizer Impulse Response
FSSY	FSK Error vs Symbol
FISY	Modulation Fidelity vs Symbol

HIST	Histogram
CNUM	Custom Numeric
EVS	EVM vs Subcarrier

Example of Use

To query Trace Mode of Trace 2 to Phase Error vs Time.

```
DISP:EVM:TRAC2?
> PESY
```

2.7.3 Scale (Vertical) – EVM vs Symbol

:DISPlay:EVM[:VIEW]:WINDow2:TRACe[1]|2|3|4|5|6|7|8:Y[:SCALe]:RLEVel 5|10|20|50

Scale (Vertical) – EVM vs Symbol

Function

This command sets the vertical scale of the EVM vs Symbol graph. This command can be executed regardless of the selected Trace Mode type.

Command

```
:DISPlay:EVM[:VIEW]:WINDow2:TRACe[n]:Y[:SCALe]:RLEVel
<mode>
```

Parameter

<mode>	Vertical axis scale
5	5% (default)
10	10%
20	20%
50	50%

Example of Use

To set the vertical scale of the EVM vs Symbol graph to 10%.

```
DISP:EVM:WIND2:TRAC:Y:RLEV 10
```

:DISPlay:EVM[:VIEW]:WINDow2:TRACe[1]|2|3|4|5|6|7|8:Y[:SCALe]:RLEVel?

Scale (Vertical) – EVM vs Symbol Query

Function

This command queries the setting of the vertical scale of the EVM vs Symbol graph. This command can be executed regardless of the selected Trace Mode type.

Query

```
:DISPlay:EVM[:VIEW]:WINDow2:TRACe[n]:Y[:SCALe]:RLEVel?
```

Response

```
<mode>
```

Parameter

<mode>	Vertical axis scale
5	5%
10	10%
20	20%
50	50%

Example of Use

To query the setting of the vertical scale of the EVM vs Symbol graph.

```
DISP:EVM:WIND2:TRAC:Y:RLEV?
> 10
```

2.7.4 Scale (Vertical) – Mag. Error vs Symbol

:DISPlay:EVM[:VIEW]:WINDow3:TRACe[1]|2|3|4|5|6|7|8:Y[:SCALe]:RLEVel 5|10|20|50

Scale (Vertical) – Mag. Error vs Symbol

Function

This command sets the vertical scale of the Mag. Error vs Symbol graph. This command can be executed regardless of the selected Trace Mode type.

Command

```
:DISPlay:EVM[:VIEW]:WINDow3:TRACe[n]:Y[:SCALe]:RLEVel
<mode>
```

Parameter

<mode>	Vertical axis scale
5	±5% (default)
10	±10%
20	±20%
50	±50%

Example of Use

Mag. To set the vertical scale of the Error vs Symbol graph to 10%.

```
DISP:EVM:WIND3:TRAC:Y:RLEV 10
```

:DISPlay:EVM[:VIEW]:WINDow3:TRACe[1]|2|3|4|5|6|7|8:Y[:SCALe]:RLEVel?

Scale (Vertical) – Mag. Error vs Symbol Query

Function

This command queries the setting of the vertical scale of the Mag. Error vs Symbol graph. This command can be executed regardless of the selected Trace Mode type.

Query

```
:DISPlay:EVM[:VIEW]:WINDow3:TRACe[n]:Y[:SCALe]:RLEVel?
```

Response

```
<mode>
```

Parameter

<mode>	Vertical axis scale
5	±5%
10	±10%
20	±20%
50	±50%

Example of Use

To query the setting of the vertical scale of the Mag. Error vs Symbol graph.

```
DISP:EVM:WIND3:TRAC:Y:RLEV?
> 10
```

2.7.5 Scale (Vertical) – Phase Error vs Symbol

:DISPlay:EVM[:VIEW]:WINDow4:TRACe[1]|2|3|4|5|6|7|8:Y[:SCALe]:RLEVel 5|10|20|50

Scale (Vertical) – Phase Error vs Symbol

Function

This command sets the vertical scale of the Phase Error vs Symbol graph. This command can be executed regardless of the selected Trace Mode type.

Command

```
:DISPlay:EVM[:VIEW]:WINDow4:TRACe[n]:Y[:SCALe]:RLEVel
<mode>
```

Parameter

<mode>	Vertical axis scale
5	±5 degree (default)
10	±10 degree
20	±20 degree
50	±50 degree

Example of Use

To set the vertical axis scale of the Phase Error vs Symbol graph to ±10 degree.

```
DISP:EVM:WIND4:TRAC:Y:RLEV 10
```

:DISPlay:EVM[:VIEW]:WINDow4:TRACe[1]|2|3|4|5|6|7|8:Y[:SCALe]:RLEVel?

Scale (Vertical) – Phase Error vs Symbol Query

Function

This command queries the setting of the vertical scale of the Phase Error vs Symbol graph. This command can be executed regardless of the selected Trace Mode type.

Query

```
:DISPlay:EVM[:VIEW]:WINDow4:TRACe[n]:Y[:SCALe]:RLEVel?
```

Response

```
<mode>
```

Parameter

<mode>	Vertical axis scale
5	±5 degree
10	±10 degree
20	±20 degree
50	±50 degree

Example of Use

To query the setting of the vertical scale of the Phase Error vs Symbol graph.

```
DISP:EVM:WIND4:TRAC:Y:RLEV?
> 10
```

2.7.6 Scale (Interpolation) – Constellation

:DISPlay:EVM[:VIEW]:WINDow[1]:TRACe[1]|2|3|4|5|6|7|8:INTerpolation OFF|ON|0|1

Scale (Interpolation) – Constellation

Function

This command switches On/Off interpolation display between symbols in the Constellation graph. This command can be executed regardless of the selected Trace Mode type.

Command

```
:DISPlay:EVM[:VIEW]:WINDow[1]:TRACe[n]:INTerpolation
<switch>
```

Parameter

`<switch>`	Interpolation display enable/disable
`OFF|0`	Disable (default)
`ON|1`	Enable

Example of Use

To switch on interpolation display between symbols in the Constellation graph.

```
DISP:EVM:WIND:TRAC:INT ON
```

Details

The parameter is fixed to OFF when the Measuring Object is SCBT.

:DISPlay:EVM[:VIEW]:WINDow[1]:TRACe[1]|2|3|4|5|6|7|8:INTerpolation?

Scale (Interpolation) – Constellation Query

Function

This command queries On/Off of interpolation display between symbols of the Constellation graph. This command can be executed regardless of the selected Trace Mode type.

Query

```
:DISPlay:EVM[:VIEW]:WINDow[1]:TRACe[n]:INTerpolation?
```

Response

```
<switch>
```

Parameter

`<switch>`	Interpolation display enable/disable
`0`	Disable
`1`	Enable

Example of Use

To query interpolation display between symbols of the Constellation graph.

```
DISP:EVM:WIND:TRAC:INT?
> 1
```

2.7.7 Points/Symbol Number – Constellation

:DISPlay:EVM[:VIEW]:WINDow[1]:TRACe[1]|2|3|4|5|6|7|8:INTerpolation:POINts 1|2|8

Points/Symbol Number – Constellation

Function

This command sets how many splits are allowed for the interpolation display between symbols in the Constellation graph. This command can be executed regardless of the selected Trace Mode type.

Command

```
:DISPlay:EVM[:VIEW]:WINDow[1]:TRACe[n]:INTerpolation:POINts <number>
```

Parameter

<number>	Number of splits for the interpolation display
1	1
2	2
8	8 (default)

Example of Use

To set a number of interpolation between symbols in the Constellation graph to 1.

```
DISP:EVM:WIND:TRAC:INT:POIN 1
```

Details

The parameter is fixed to 1 when the Measuring Object is SCBT.

:DISPlay:EVM[:VIEW]:WINDow[1]:TRACe[1]|2|3|4|5|6|7|8:INTerpolation:POINts?

Points/Symbol Number – Constellation Query

Function

This command queries how many splits are allowed for the interpolation display between symbols in the Constellation graph. This command can be executed regardless of the selected Trace Mode type.

Query

```
:DISPlay:EVM[:VIEW]:WINDow[1]:TRACe[n]:INTerpolation:POINts?
```

Response

```
<number>
```

Parameter

<number>	Number of splits for the interpolation display
1	1
2	2
8	8

Example of Use

To query a number of interpolation between symbols in the Constellation graph.

```
DISP:EVM:WIND:TRAC:INT:POIN?
> 1
```

2.7.8 Scale (Unit) – Numeric

:DISPlay:EVM[:VIEW]:WINDow2:TRACe[1]|2|3|4|5|6|7|8:Y[:SCALe]:UNIT:POWer DBM|W

Scale (Unit) – Numeric

Function

This command selects the unit of measurement from dBm or W. Only the numeric displays changes. This affects all traces within the same trace mode (numeric).

Command

```
:DISPlay:EVM[:VIEW]:WINDow2:TRACe[1]|2|3|4|5|6|7|8:Y[:SCALe]:UNIT:POWer <unit>
```

Parameters

<unit>	Display unit
DBM	dBm (default)
W	W

Example of Use

To set the numeric unit of display measurement to dBm.

```
DISP:EVM:WIND2:TRAC:Y:UNIT:POW DBM
```

:DISPlay:EVM[:VIEW]:WINDow2:TRACe[1]|2|3|4|5|6|7|8:Y[:SCALe]:UNIT:POWer?

Scale (Unit) – Numeric Query

Function

This command queries the numeric unit of display measurement.

Query

```
:DISPlay:EVM[:VIEW]:WINDow2:TRACe[1]|2|3|4|5|6|7|8:Y[:SCALe]:UNIT:POWer?
```

Response

```
<unit>
```

Parameters

<unit>	Display unit
DBM	dBm
W	W

Example of Use

To query the numeric unit of display measurement.

```
DISP:EVM:WIND2:TRAC:Y:UNIT:POW?
> DBM
```

2.7.9 Scale (Unit) – Symbol Rate Error

:DISPlay:EVM[:VIEW]:WINDow2:TRACe[1]|2|3|4|5|6|7|8:Y[:SCALe]:UNIT:SRATe PPM|mHZ|HZ

Scale (Unit) – Symbol Rate Error

Function

Selects either ppm or Hz as a unit of Symbol Rate Error. Only numeric display is changed. It is available for all traces in Trace Mode (Numeric).

Command

```
:DISPlay:EVM[:VIEW]:WINDow2:TRACe[1]|2|3|4|5|6|7|8:Y[:SCALe]:UNIT:SRATe <unit>
```

Parameters

<unit>	Display unit
PPM	ppm (default)
HZ	Hz

Example of Use

To set the unit of Symbol Rate Error to Hz.

```
DISP:EVM:WIND2:TRAC:Y:UNIT:SRAT HZ
```

:DISPlay:EVM[:VIEW]:WINDow2:TRACe[1]|2|3|4|5|6|7|8:Y[:SCALe]:UNIT:SRATe?

Scale (Unit) – Symbol Rate Error Query

Function

Queries the unit of Symbol Rate Error

Query

```
:DISPlay:EVM[:VIEW]:WINDow2:TRACe[1]|2|3|4|5|6|7|8:Y[:SC
ALe]:UNIT:SRATe?
```

Response

```
<unit>
```

Parameters

<unit>	Display unit
PPM	ppm
HZ	Hz

Example of Use

To query the unit of Symbol Rate Error.

```
DISP:EVM:WIND2:TRAC:Y:UNIT:SRAT?
> HZ
```

2.7.10 Scale (Unit) – Symbol Table

:DISPlay:EVM[:VIEW]:WINDow2:TRACe[1]|2|3|4|5|6|7|8:SYMBol:FORMat BIN|HEX

Scale (Unit) – Symbol Table

Function

This command selects a display unit of the Symbol Table from Binary or Hex. Only the Symbol Table display changes. This affects all traces within the same Trace Mode (Symbol Table).

Command

```
:DISPlay:EVM[:VIEW]:WINDow2:TRACe[1]|2|3|4|5|6|7|8:SYMBo
l:FORMat <unit>
```

Parameter

<unit>	Display unit
BIN	Binary (default)
HEX	Hex

Example of Use

To set the display unit of Symbol Table to Hex.

```
DISP:EVM:WIND2:TRAC:SYMB:FORM HEX
```

:DISPlay:EVM[:VIEW]:WINDow2:TRACe[1]|2|3|4|5|6|7|8:SYMBol:FORMat?

Scale (Unit) – Symbol Table Query

Function

This command queries the display unit of Symbol Table.

Query

```
:DISPlay:EVM[:VIEW]:WINDow2:TRACe[1]|2|3|4|5|6|7|8:SYMBo
l:FORMat?
```

Response

```
<unit>
```

Parameter

<unit>	Display unit
BIN	Binary
HEX	Hex

Example of Use

To query the display unit of Symbol Table.

```
DISP:EVM:WIND2:TRAC:SYMB:FORM?
> HEX
```

2.7.11 Scale (Vertical) – Equalizer Amplitude

:DISPlay:EVM[:VIEW]:WINDow14:TRACe[1]|2|3|4|5|6|7|8:Y[:SCALe]:RLEVel <real>

Scale (Vertical) – Equalizer Amplitude

Function

This command sets the vertical scale of Equalizer Amplitude graph. This command can be executed regardless of the selected Trace Mode type.

Command

```
:DISPlay:EVM[:VIEW]:WINDow14:TRACe[1]|2|3|4|5|6|7|8:Y[:SCALe]:RLEVel <real>
```

Parameter

<real>	Vertical scale
Range	±1 dB to ±50 dB
Resolution	0.1 dB
Suffix code	None (treated as dB)

Example of Use

To set the vertical scale of Equalizer Amplitude graph to 2 dB.

```
DISP:EVM:WIND14:TRAC:Y:RLEV 2
```

:DISPlay:EVM[:VIEW]:WINDow14:TRACe[1]|2|3|4|5|6|7|8:Y[:SCALe]:RLEVel?

Scale (Vertical) – Equalizer Amplitude Query

Function

This command queries the vertical scale of Equalizer Amplitude graph. This command can be executed regardless of the selected Trace Mode type.

Query

```
:DISPlay:EVM[:VIEW]:WINDow14:TRACe[1]|2|3|4|5|6|7|8:Y[:SCALe]:RLEVel?
```

Response

```
<real>
```

Parameter

<real>		Vertical scale
	Range	±1 dB to ±50 dB
	Resolution	0.1 dB

Example of Use

To query the vertical scale of Equalizer Amplitude graph.

```
DISP:EVM:WIND14:TRAC:Y:RLEV?
> 2.0
```

2.7.12 Scale (Vertical) – Equalizer Phase

:DISPlay:EVM[:VIEW]:WINDow15:TRACe[1]|2|3|4|5|6|7|8:Y[:SCALe]:RLEVel <real>

Scale (Vertical) – Equalizer Phase

Function

This command sets the vertical scale of Equalizer Phase graph. This command can be executed regardless of the selected Trace Mode type.

Command

```
:DISPlay:EVM[:VIEW]:WINDow15:TRACe[1]|2|3|4|5|6|7|8:Y[:SCALe]:RLEVel <real>
```

Parameter

<real>	Vertical scale
Range	±1 degree to ±180 degree
Resolution	1 degree
Suffix code	None (treated as degree)

Example of Use

To set the vertical scale of Equalizer Amplitude graph to 10 degree.

```
DISP:EVM:WIND15:TRAC:Y:RLEV 10
```

:DISPlay:EVM[:VIEW]:WINDow15:TRACe[1]|2|3|4|5|6|7|8:Y[:SCALe]:RLEVel?

Scale (Vertical) – Equalizer Phase Query

Function

This command queries the vertical scale of Equalizer Phase graph. This command can be executed regardless of the selected Trace Mode type.

Query

```
:DISPlay:EVM[:VIEW]:WINDow15:TRACe[1]|2|3|4|5|6|7|8:Y[:SCALe]:RLEVel?
```

Response

```
<real>
```

Parameter

<real>		Vertical scale
	Range	±1 degree to ±180 degree
	Resolution	1 degree

Example of Use

To query the vertical scale of Equalizer Phase graph.

```
DISP:EVM:WIND15:TRAC:Y:RLEV?
> 10
```

2.7.13 Scale (Vertical) – Equalizer Group Delay

:DISPlay:EVM[:VIEW]:WINDow16:TRACe[1]|2|3|4|5|6|7|8:Y[:SCALe]:RLEVel <real>

Scale (Vertical) – Equalizer Group Delay

Function

This command sets the vertical scale of Equalizer Group Delay graph. This command can be executed regardless of the selected Trace Mode type.

Command

```
:DISPlay:EVM[:VIEW]:WINDow16:TRACe[1]|2|3|4|5|6|7|8:Y[:SCALe]:RLEVel <real>
```

Parameter

<real>	Vertical scale
Range	±100 ns to ±1 ms
Resolution	1 ns
Suffix code	NS, US, MS, S Second is used when omitted.

Example of Use

To set the vertical scale of Equalizer Group Delay graph to 100 ns.

```
DISP:EVM:WIND16:TRAC:Y:RLEV 100NS
```

:DISPlay:EVM[:VIEW]:WINDow16:TRACe[1]|2|3|4|5|6|7|8:Y[:SCALe]:RLEVel?

Scale (Vertical) – Equalizer Group Delay Query

Function

This command queries the vertical scale of Equalizer Group Delay graph. This command can be executed regardless of the selected Trace Mode type.

Query

```
:DISPlay:EVM[:VIEW]:WINDow16:TRACe[1]|2|3|4|5|6|7|8:Y[:SCALe]:RLEVel?
```

Response

```
<real>
```

Parameter

<real>		Vertical scale
	Range	±100 ns to ±1 ms
	Resolution	1 ns
		Value is returned in seconds.

Example of Use

To query the vertical scale of Equalizer Group Delay graph.

```
DISP:EVM:WIND16:TRAC:Y:RLEV?
> 0.000000100
```

2.7.14 Scale (Vertical) – Equalizer Impulse

:DISPlay:EVM[:VIEW]:WINDow17:TRACe[1]|2|3|4|5|6|7|8:Y[:SCALe]:RLEVel 20|50|100

Scale (Vertical) – Equalizer Impulse

Function

This command sets the vertical scale of Equalizer Impulse graph. This command can be executed regardless of the selected Trace Mode type.

Command

```
:DISPlay:EVM[:VIEW]:WINDow17:TRACe[1]|2|3|4|5|6|7|8:Y[:SCALe]:RLEVel 20|50|100
```

Parameter

<mode>	Vertical scale
20	±20 dB
50	±50 dB
100	±100 dB

Example of Use

To set the vertical scale of Equalizer Impulse graph to 50 dB.

```
DISP:EVM:WIND17:TRAC:Y:RLEV 50
```

:DISPlay:EVM[:VIEW]:WINDow17:TRACe[1]|2|3|4|5|6|7|8:Y[:SCALe]:RLEVel?

Scale (Vertical) – Equalizer Impulse Query

Function

This command queries the vertical scale of Equalizer Impulse graph. This command can be executed regardless of the selected Trace Mode type.

Query

```
:DISPlay:EVM[:VIEW]:WINDow17:TRACe[1]|2|3|4|5|6|7|8:Y[:SCALe]:RLEVel?
```

Response

```
<mode>
```

Parameter

<mode>	Vertical scale
20	±20 dB
50	±50 dB
100	±100 dB

Example of Use

To query the vertical scale of Equalizer Impulse graph.

```
DISP:EVM:WIND17:TRAC:Y:RLEV?
> 50
```

2.7.15 Scale (Vertical) – FSK Error vs Symbol

:DISPlay:EVM[:VIEW]:WINDow18:TRACe[1]|2|3|4|5|6|7|8:Y[:SCALe]:RLEVel 5|10|20|50

Scale (Vertical) – FSK Error vs Symbol

Function

This command sets the vertical scale of the FSK Error vs Symbol graph. This command can be executed regardless of the selected Trace Mode type.

Command

```
:DISPlay:EVM[:VIEW]:WINDow18:TRACe[1]|2|3|4|5|6|7|8:Y[:SCALe]:RLEVel 5|10|20|50
```

Parameter

<mode>	Vertical scale
5	±5%
10	±10%
20	±20%
50	±50%

Example of Use

To set the vertical scale of FSK Error vs Symbol graph to 10%.

```
DISP:EVM:WIND18:TRAC:Y:RLEV 10
```

:DISPlay:EVM[:VIEW]:WINDow18:TRACe[1]|2|3|4|5|6|7|8:Y[:SCALe]:RLEVel?

Scale (Vertical) – FSK Error vs Symbol Query

Function

This command queries the vertical scale of the FSK Error vs Symbol graph. This command can be executed regardless of the selected Trace Mode type.

Query

```
:DISPlay:EVM[:VIEW]:WINDow18:TRACe[1]|2|3|4|5|6|7|8:Y[:SCALe]:RLEVel?
```

Response

```
<mode>
```

Parameter

<mode>	Vertical scale
5	±5%
10	±10%
20	±20%
50	±50%

Example of Use

To query the vertical scale of the FSK Error vs Symbol graph.

```
DISP:EVM:WIND18:TRAC:Y:RLEV?
> 10
```

2.7.16 Scale (Vertical) – Fidelity vs Symbol

:DISPlay:EVM[:VIEW]:WINDow19:TRACe[1]|2|3|4|5|6|7|8:Y[:SCALe]:RLEVel 5|10|20|50

Scale (Vertical) – Fidelity vs Symbol

Function

This command sets the vertical scale of the Fidelity vs Symbol graph. This command can be executed regardless of the selected Trace Mode type.

Command

```
:DISPlay:EVM[:VIEW]:WINDow18:TRACe[1]|2|3|4|5|6|7|8:Y[:S
CALe]:RLEVel 5|10|20|50
```

Parameter

<mode>	Vertical axis scale
5	±5%
10	±10%
20	±20%
50	±50%

Example of Use

To set the vertical scale of the Fidelity vs Symbol graph to 10%.

```
DISP:EVM:WIND19:TRAC:Y:RLEV 10
```

:DISPlay:EVM[:VIEW]:WINDow19:TRACe[1]|2|3|4|5|6|7|8:Y[:SCALe]:RLEVel?

Scale (Vertical) – Fidelity vs Symbol Query

Function

This command queries the setting of the vertical scale of the Fidelity vs Symbol graph. This command can be executed regardless of the selected Trace Mode type.

Query

```
:DISPlay:EVM[:VIEW]:WINDow19:TRACe[1]|2|3|4|5|6|7|8:Y[:SCALe]:RLEVel?
```

Response

```
<mode>
```

Parameter

<mode>	Vertical axis scale
5	±5%
10	±10%
20	±20%
50	±50%

Example of Use

To query the setting of the vertical scale of the Fidelity vs Symbol graph.

DISP:EVM:WIND19:TRAC:Y:RLEV?

```
> 10
```

2.7.17 Scale (Vertical) – EVM vs Subcarrier

:DISPlay:EVM[:VIEW]:WINDow22:TRACe[1]|2|3|4|5|6|7|8:Y[:SCALe]:RLEVel 5|10|20|50

Scale (Vertical) – EVM vs Subcarrier

Function

This command sets the vertical scale on the EVM vs Subcarrier graph.
This command can be executed regardless of the selected Trace Mode type.

Command

```
:DISPlay:EVM[:VIEW]:WINDow22:TRACe[1]|2|3|4|5|6|7|8:Y[:S
CALe]:RLEVel 5|10|20|50
```

Parameter

<mode>	Vertical axis scale
5	±5%
10	±10%
20	±20%
50	±50%

Example of Use

To set the vertical scale of the EVM vs Subcarrier graph to 10%.

```
DISP:EVM:WIND22:TRAC:Y:RLEV 10
```

:DISPlay:EVM[:VIEW]:WINDow22:TRACe[1]|2|3|4|5|6|7|8:Y[:SCALe]:RLEVel?

Scale (Vertical) – EVM vs Subcarrier Query

Function

This command queries the vertical scale of the EVM vs Subcarrier graph.
This command can be executed regardless of the selected Trace Mode type.

Query

```
:DISPlay:EVM[:VIEW]:WINDow22:TRACe[1]|2|3|4|5|6|7|8:Y[:S
CALe]:RLEVel?
```

Response

```
<mode>
```

Parameter

<mode>	Vertical axis scale
5	±5%
10	±10%
20	±20%
50	±50%

Example of Use

To query the setting of the vertical scale of the EVM vs Symbol graph.

```
DISP:EVM:WIND22:TRAC:Y:RLEV?
> 10
```

2.7.18 Storage Mode

[:SENSe]:EVM:AVERage[:STATe] OFF|ON|AMAXimum|0|1|2

Storage Mode

Function

This command sets the storage mode.

Command

```
[:SENSe]:EVM:AVERage[:STATe] <mode>
```

Parameter

<mode>	Storage Mode
OFF|0	Off (default)
ON|1	Average
AMAXimum|2	Average & Max

Example of Use

To set the storage mode to Average.

```
EVM:AVER ON
```

[:SENSe]:EVM:AVERage[:STATe]?

Storage Mode Query

Function

This command queries the setting of the storage mode.

Query

```
[:SENSe]:EVM:AVERage[:STATe]?
```

Response

```
<mode>
```

Parameter

<mode>	Storage Mode
0	Off
1	Average
2	Average & Max

Example of Use

To query the setting of the storage mode.

```
EVM:AVER?
> 1
```

2.7.19 Storage Count

[:SENSe]:EVM:AVERage:COUNt <integer>

Storage Count

Function

This command sets the storage count.

Command

```
[:SENSe]:EVM:AVERage:COUNt <integer>
```

Parameter

<integer>	Storage Count
Range	2 to 9999
Resolution	1
Default	10

Example of Use

To set the storage count to 10.

```
EVM:AVER:COUN 10
```

[:SENSe]:EVM:AVERage:COUNt?

Storage Count Query

Function

This command queries the setting of the Storage Count.

Query

```
[:SENSe]:EVM:AVERage:COUNt?
```

Response

```
<integer>
```

Parameter

<integer>	Storage Count
Range	2 to 9999
Resolution	1

Example of Use

To query the setting of Storage Count.

```
EVM:AVER:COUN?
> 10
```

2.7.20 Select Trace

:DISPlay:TRACe[:SELect] TRACe1|TRACe2|TRACe3|TRACe4|TRACe5|TRACe6|TRACe7|TRACe8

Select Trace

Function

This command selects the Trace number to focus.

Command

```
:DISPlay:TRACe[:SELect] <trace>
```

Parameter

`<trace>`	Trace number to focus
`TRACe1`	Trace 1 (default)
`TRACe2`	Trace 2
`TRACe3`	Trace 3
`TRACe4`	Trace 4
`TRACe5`	Trace 5
`TRACe6`	Trace 6
`TRACe7`	Trace 7
`TRACe8`	Trace 8

Example of Use

To focus Trace 1.

```
DISP:TRAC TRAC1
```

:DISPlay:TRACe[:SELect]?

Select Trace Query

Function

This command queries the Trace number that is focused.

Query

```
:DISPlay:TRACe[:SELect]?
```

Response

```
<trace>
```

Parameter

`<trace>`	Trace number that is focused
`TRAC1`	Trace 1
`TRAC2`	Trace 2
`TRAC3`	Trace 3
`TRAC4`	Trace 5
`TRAC6`	Trace 6
`TRAC7`	Trace 7
`TRAC8`	Trace 8

Example of Use

To query the trace that is focused.

```
DISP:TRAC?
> TRAC1
```

2.7.21 Zoom In

:DISPlay:TRACe:ZOOM

Zoom In

Function

This command sets the trace display to 1 screen.

Command

```
:DISPlay:TRACe:ZOOM
```

Example of Use

To set the trace display to 1 screen.

```
DISP:TRAC:ZOOM
```

2.7.22 Zoom Out

:DISPlay:TRACe:ZOUT

Zoom Out

Function

This command sets the trace display to 4 screens.

Command

```
:DISPlay:TRACe:ZOUT
```

Example of Use

To set the trace display to 4 screens.

```
DISP:TRAC:ZOUT
```

2.7.23 Next Trace

:DISPlay:TRACe:NEXT

Next Trace

Function

This command switches the trace focused to the next trace.
The trace focus is switched in the following order: Trace 1 → Trace 2 → Trace 3 → ... → Trace 8 → Trace 1

Command

```
:DISPlay:TRACe:NEXT
```

Example of Use

To switch the trace focus to the next trace.

```
DISP:TRAC:NEXT
```

2.7.24 Next View

:DISPlay:VIEW:NEXT

Next View

Function

This command switches the display trace when 4 screens are selected between Trace 1-4 and Trace 5-8.

Command

```
:DISPlay:VIEW:NEXT
```

Details

This function is enabled when the trace display is 4 screens.

Example of Use

To switch the trace display when the trace display is 4 screens.

```
DISP:VIEW:NEXT
```

2.7.25 Target Slot Number

:CALCulate:EVM[:VIEW]:SLOT <integer>

Target Slot Number

Function

This command selects the Slot number for which the analysis result is to be displayed.

Command

```
:CALCulate:EVM[:VIEW]:SLOT <integer>
```

Parameter

<integer>		Slot number for which analysis result is to be displayed
	Range	0 to 19
	Resolution	1
	Default	Minimum Slot number set to ON in Measurement Slot

Details

This function is available when Frame Formatted is selected for Measuring Object.

The <integer> argument can be set only to a Slot number set to ON in Measurement Slot.

Example of Use

To set the Slot number for which the analysis result is to be displayed to 3.

```
CALC:EVM:SLOT 3
```

:CALCulate:EVM[:VIEW]:SLOT?

Target Slot Number Query

Function

This command queries the Slot number for which the analysis result is to be displayed.

Command

```
:CALCulate:EVM[:VIEW]:SLOT?
```

Command

```
<integer>
```

Parameter

<integer>	Slot number for which analysis result is to be displayed
Range	0 to 19
Resolution	1

Example of Use

To query the Slot number for which the analysis result is to be displayed.

```
CALC:EVM:SLOT?
> 3
```

2.7.26 Marker On/Off – Constellation

:CALCulate:EVM:WINDow[1]:TRACe[1]|2|3|4|5|6|7|8:MARKer[:STATe] OFF|ON|0|1

Marker On/Off – Constellation

Function

This command sets whether to turn on marker display for the Constellation graph. This command can be executed regardless of the selected Trace Mode type.

Command

```
:CALCulate:EVM:WINDow[1]:TRACe[n]:MARKer[:STATe] <switch>
```

Parameter

`<switch>`	Marker
`OFF|0`	Off
`ON|1`	On (default)

Example of Use

To turn on the marker display for the Constellation graph.

```
CALC:EVM:WIND:TRAC:MARK ON
```

:CALCulate:EVM:WINDow[1]:TRACe[1]|2|3|4|5|6|7|8:MARKer[:STATe]?

Marker On/Off – Constellation Query

Function

This command queries the marker display status for the Constellation graph. This command can be executed regardless of the selected Trace Mode type.

Query

```
:CALCulate:EVM:WINDow[1]:TRACe[n]:MARKer[:STATe]?
```

Response

```
<switch>
```

Parameter

<switch>	Marker
0	Off
1	On

Example of Use

To query the marker display status for the Constellation graph.

```
CALC:EVM:WIND:TRAC:MARK?
> 1
```

2.7.27 Marker On/Off – EVM vs Symbol

:CALCulate:EVM:WINDow2:TRACe[1]|2|3|4|5|6|7|8:MARKer[:STATe] OFF|ON|0|1

Marker On/Off – EVM vs Symbol

Function

This command sets whether to turn on marker display for the EVM vs Symbol graph. This command can be executed regardless of the selected Trace Mode type.

Command

```
:CALCulate:EVM:WINDow2:TRACe[n]:MARKer[:STATe] <switch>
```

Parameter

`<switch>`	Marker
`OFF|0`	Off
`ON|1`	On (default)

Example of Use

To turn on the marker display for the EVM vs Symbol graph.

```
CALC:EVM:WIND2:TRAC:MARK ON
```

:CALCulate:EVM:WINDow2:TRACe[1]|2|3|4|5|6|7|8:MARKer[:STATe]?

Marker On/Off – EVM vs Symbol Query

Function

This command queries the marker display status for the EVM vs Symbol graph. This command can be executed regardless of the selected Trace Mode type.

Query

```
:CALCulate:EVM:WINDow2:TRACe[n]:MARKer[:STATe]?
```

Response

```
<switch>
```

Parameter

<switch>	Marker
0	Off
1	On

Example of Use

To query the marker display status for the EVM vs Symbol graph.

```
CALC:EVM:WIND2:TRAC:MARK?
> 1
```

2.7.28 Marker On/Off – Mag. Error vs Symbol

:CALCulate:EVM:WINDow3:TRACe[1]|2|3|4|5|6|7|8:MARKer[:STATe] OFF|ON|0|1

Marker On/Off – Mag. Error vs Symbol

Function

This command sets whether to turn on marker display for the Mag. Error vs Symbol graph. This command can be executed regardless of the selected Trace Mode type.

Command

```
:CALCulate:EVM:WINDow3:TRACe[n]:MARKer[:STATe] <switch>
```

Parameter

`<switch>`	Marker
`OFF|0`	Off
`ON|1`	On (default)

Example of Use

To turn on the marker display for the Mag. Error vs Symbol graph.

```
CALC:EVM:WIND3:TRAC:MARK ON
```

:CALCulate:EVM:WINDow3:TRACe[1]|2|3|4|5|6|7|8:MARKer[:STATe]?

Marker On/Off – Mag. Error vs Symbol Query

Function

This command queries the marker display status for the Mag. Error vs Symbol graph. This command can be executed regardless of the selected Trace Mode type.

Query

```
:CALCulate:EVM:WINDow3:TRACe[n]:MARKer[:STATe]?
```

Response

```
<switch>
```

Parameter

<switch>	Marker
0	Off
1	On

Example of Use

To query the marker display status for the Mag. Error vs Symbol graph.

```
CALC:EVM:WIND3:TRAC:MARK?
> 1
```

2.7.29 Marker On/Off – Phase Error vs Symbol

:CALCulate:EVM:WINDow4:TRACe[1]|2|3|4|5|6|7|8:MARKer[:STATe] OFF|ON|0|1

Marker On/Off – Phase Error vs Symbol

Function

This command sets whether to turn on marker display for the Phase Error vs Symbol graph. This command can be executed regardless of the selected Trace Mode type.

Command

```
:CALCulate:EVM:WINDow4:TRACe[n]:MARKer[:STATe] <switch>
```

Parameter

`<switch>`	Marker
`OFF|0`	Off
`ON|1`	On (default)

Example of Use

To turn on the marker display for the Phase Error vs Symbol graph.

```
CALC:EVM:WIND4:TRAC:MARK ON
```

:CALCulate:EVM:WINDow4:TRACe[1]|2|3|4|5|6|7|8:MARKer[:STATe]?

Marker On/Off – Phase Error vs Symbol Query

Function

This command queries the marker display status for the Phase Error vs Symbol graph. This command can be executed regardless of the selected Trace Mode type.

Query

```
:CALCulate:EVM:WINDow4:TRACe[n]:MARKer[:STATe]?
```

Response

```
<switch>
```

Parameter

<switch>	Marker
0	Off
1	On

Example of Use

To query the marker display status for the Phase Error vs Symbol graph.

```
CALC:EVM:WIND4:TRAC:MARK?
> 1
```

2.7.30 Marker On/Off – I and Q vs Symbol

:CALCulate:EVM:WINDow8:TRACe[1]|2|3|4|5|6|7|8:MARKer[:STATe] OFF|ON|0|1

Marker On/Off – I and Q vs Symbol

Function

This command sets whether to turn on marker display for the I and Q vs Symbol graph. This command can be executed regardless of the selected Trace Mode type.

Command

```
:CALCulate:EVM:WINDow8:TRACe[n]:MARKer[:STATe] <switch>
```

Parameter

`<switch>`	Marker
`OFF|0`	Off
`ON|1`	On (default)

Example of Use

To turn on the marker display for the I and Q vs Symbol graph.

```
CALC:EVM:WIND8:TRAC:MARK ON
```

:CALCulate:EVM:WINDow8:TRACe[1]|2|3|4|5|6|7|8:MARKer[:STATe]?

Marker On/Off – I and Q vs Symbol Query

Function

This command queries the marker display status for the I and Q vs Symbol graph. This command can be executed regardless of the selected Trace Mode type.

Query

```
:CALCulate:EVM:WINDow8:TRACe[n]:MARKer[:STATe]?
```

Response

```
<switch>
```

Parameter

<switch>	Marker
0	Off
1	On

Example of Use

To query the marker display status for the I and Q vs Symbol graph.

```
CALC:EVM:WIND8:TRAC:MARK?
> 1
```

2.7.31 Marker On/Off – Magnitude vs Symbol

:CALCulate:EVM:WINDow9:TRACe[1]|2|3|4|5|6|7|8:MARKer[:STATe] OFF|ON|0|1

Marker On/Off – Magnitude vs Symbol

Function

This command sets whether to turn on marker display for the Magnitude vs Symbol graph. This command can be executed regardless of the selected Trace Mode type.

Command

```
:CALCulate:EVM:WINDow9:TRACe[n]:MARKer[:STATe] <switch>
```

Parameter

`<switch>`	Marker
`OFF|0`	Off
`ON|1`	On (default)

Example of Use

To turn on the marker display for the Magnitude vs Symbol graph.

```
CALC:EVM:WIND9:TRAC:MARK ON
```

:CALCulate:EVM:WINDow9:TRACe[1]|2|3|4|5|6|7|8:MARKer[:STATe]?

Marker On/Off – Magnitude vs Symbol Query

Function

This command queries the marker display status for the Magnitude vs Symbol graph. This command can be executed regardless of the selected Trace Mode type.

Query

```
:CALCulate:EVM:WINDow9:TRACe[n]:MARKer[:STATe]?
```

Response

```
<switch>
```

Parameter

<switch>	Marker
0	Off
1	On

Example of Use

To query the marker display status for the Magnitude vs Symbol graph.

```
CALC:EVM:WIND9:TRAC:MARK?
> 1
```

2.7.32 Marker On/Off – Phase vs Symbol

:CALCulate:EVM:WINDow10:TRACe[1]|2|3|4|5|6|7|8:MARKer[:STATe] OFF|ON|0|1

Marker On/Off – Phase vs Symbol

Function

This command sets whether to turn on marker display for the Phase vs Symbol graph. This command can be executed regardless of the selected Trace Mode type.

Command

```
:CALCulate:EVM:WINDow10:TRACe[n]:MARKer[:STATe] <switch>
```

Parameter

`<switch>`	Marker
`OFF|0`	Off
`ON|1`	On (default)

Example of Use

To turn on the marker display for the Phase vs Symbol graph.

```
CALC:EVM:WIND10:TRAC:MARK ON
```

:CALCulate:EVM:WINDow10:TRACe[1]|2|3|4|5|6|7|8:MARKer[:STATe]?

Marker On/Off – Phase vs Symbol Query

Function

This command queries the marker display status for the Phase vs Symbol graph. This command can be executed regardless of the selected Trace Mode type.

Query

```
:CALCulate:EVM:WINDow10:TRACe[n]:MARKer[:STATe]?
```

Response

```
<switch>
```

Parameter

<switch>	Marker
0	Off
1	On

Example of Use

To query the marker display status for the Phase vs Symbol graph.

```
CALC:EVM:WIND10:TRAC:MARK?
> 1
```

2.7.33 Marker On/Off – Frequency vs Symbol

:CALCulate:EVM:WINDow11:TRACe[1]|2|3|4|5|6|7|8:MARKer[:STATe] OFF|ON|0|1

Marker On/Off – Frequency vs Symbol

Function

This command sets whether to turn on marker display for the Frequency vs Symbol graph. This command can be executed regardless of the selected Trace Mode type.

Command

```
:CALCulate:EVM:WINDow11:TRACe[n]:MARKer[:STATe] <switch>
```

Parameter

`<switch>`	Marker
`OFF|0`	Off
`ON|1`	On (default)

Example of Use

To turn on the marker display for the Frequency vs Symbol graph.

```
CALC:EVM:WIND11:TRAC:MARK ON
```

:CALCulate:EVM:WINDow11:TRACe[1]|2|3|4|5|6|7|8:MARKer[:STATe]?

Marker On/Off – Frequency vs Symbol Query

Function

This command queries the marker display status for the Frequency vs Symbol graph. This command can be executed regardless of the selected Trace Mode type.

Query

```
:CALCulate:EVM:WINDow11:TRACe[n]:MARKer[:STATe]?
```

Response

```
<switch>
```

Parameter

<switch>	Marker
0	Off
1	On

Example of Use

To query the marker display status for the Frequency vs Symbol graph.

```
CALC:EVM:WIND11:TRAC:MARK?
> 1
```

2.7.34 Marker On/Off – EVM vs Subcarrier

:CALCulate:EVM:WINDow22:TRACe[1]|2|3|4|5|6|7|8:MARKer[:STATe] OFF|ON|0|1

Marker On/Off – EVM vs Subcarrier

Function

This command turns On/Off the marker of the EVM vs Subcarrier graph. This command can be executed regardless of the selected Trace Mode type.

Command

```
:CALCulate:EVM:WINDow22:TRACe[n]:MARKer[:STATe] <switch>
```

Parameter

`<switch>`	Marker
`OFF|0`	Off
`ON|1`	On (Default)

Example of Use

To turn On the marker of the EVM vs Subcarrier graph.

```
CALC:EVM:WIND22:TRAC:MARK ON
```

:CALCulate:EVM:WINDow22:TRACe[1]|2|3|4|5|6|7|8:MARKer[:STATe]?

Marker On/Off – EVM vs Subcarrier Query

Function

This command queries the On/Off status of the marker on the EVM vs Subcarrier graph. This command can be executed regardless of the selected Trace Mode type.

Query

```
:CALCulate:EVM:WINDow22:TRACe[n]:MARKer[:STATe]?
```

Response

```
<switch>
```

Parameter

`<switch>`	Marker
`0`	Off
`1`	On

Example of Use

To query the On/Off status of the marker of the EVM vs Subcarrier graph.

```
CALC:EVM:WIND22:TRAC:MARK?
> 1
```

2.7.35 Marker Number – Constellation

:CALCulate:EVM:WINDow[1]:TRACe[1]|2|3|4|5|6|7|8:MARKer:SYMBol <real>

Marker Number – Constellation

Function

This command sets the marker position of the Constellation graph. This command can be executed regardless of the selected Trace Mode type.

Command

```
:CALCulate:EVM:WINDow[1]:TRACe[n]:MARKer:SYMBol <real>
```

Parameter

<real>		Marker display position
	Minimum value	0.000
	Maximum value	Measurement Interval – 1 Symbol number defined in Subcarrier MAP – 1 (Measuring Object is SCBT)
	Resolution	0.001
	Unit	Symbol
	Default	0.000

Example of Use

To set the marker position of the Constellation graph to 10 symbol.

```
CALC:EVM:WIND:TRAC:MARK:SYMB 10
```

:CALCulate:EVM:WINDow[1]:TRACe[1]|2|3|4|5|6|7|8:MARKer:SYMBol?

Marker Number – Constellation Query

Function

This command queries the marker position of the Constellation graph. This command can be executed regardless of the selected Trace Mode type.

Query

```
:CALCulate:EVM:WINDow[1]:TRACe[n]:MARKer:SYMBol?
```

Response

```
<real>
```

Parameter

`<real>`		Marker display position
	Minimum value	0.000
	Maximum value	Measurement Interval – 1 Symbol number defined in Subcarrier MAP – 1 (Measuring Object is SCBT)
	Resolution	0.001
	Unit	Symbol

Example of Use

To query the marker position of the Constellation graph.

```
CALC:EVM:WIND:TRAC:MARK:SYMB?
> 10.000
```

2.7.36 Marker Number – EVM vs Symbol

:CALCulate:EVM:WINDow2:TRACe[1]|2|3|4|5|6|7|8:MARKer:SYMBol <real>

Marker Number – EVM vs Symbol

Function

This command sets the marker position of the EVM vs Symbol graph. This command can be executed regardless of the selected Trace Mode type.

Command

```
:CALCulate:EVM:WINDow2:TRACe[n]:MARKer:SYMBol <real>
```

Parameter

<real>	Marker display position
Minimum value	0
Maximum value	Measurement Interval – 1 (other than O-QPSK) Measurement Interval – 0.5 (O-QPSK) Symbol number defined in Subcarrier MAP – 1 (Measuring Object is SCBT)
Resolution	0.5
Unit	Symbol
Default	0

Example of Use

To set the marker position of the EVM vs Symbol graph to 10 symbol.

```
CALC:EVM:WIND2:TRAC:MARK:SYMB 10
```

:CALCulate:EVM:WINDow2:TRACe[1]|2|3|4|5|6|7|8:MARKer:SYMBol?

Marker Number – EVM vs Symbol Query

Function

This command queries the marker position of the EVM vs Symbol graph. This command can be executed regardless of the selected Trace Mode type.

Query

```
:CALCulate:EVM:WINDow2:TRACe[n]:MARKer:SYMBol?
```

Response

```
<real>
```

Parameter

<real>		Marker display position
	Minimum value	0
	Maximum value	Measurement Interval – 1 (other than O-QPSK) Measurement Interval – 0.5 (O-QPSK) Symbol number defined in Subcarrier MAP – 1 (Measuring Object is SCBT)
	Resolution	0.5
	Unit	Symbol

Example of Use

To query the marker position of the EVM vs Symbol graph.

```
CALC:EVM:WIND2:TRAC:MARK:SYMB?
> 10.0
```

2.7.37 Marker Number – Mag. Error vs Symbol

:CALCulate:EVM:WINDow3:TRACe[1]|2|3|4|5|6|7|8:MARKer:SYMBol <real>

Marker Number – Mag. Error vs Symbol

Function

Mag. This command sets the marker position of the Error vs Symbol graph. This command can be executed regardless of the selected Trace Mode type.

Command

```
:CALCulate:EVM:WINDow3:TRACe[n]:MARKer:SYMBol <real>
```

Parameter

<real>	Marker display position
Minimum value	0
Maximum value	Measurement Interval – 1 (other than O-QPSK) Measurement Interval – 0.5 (O-QPSK)
Resolution	0.5
Unit	Symbol
Default	0

Example of Use

To set the marker position of the Mag. Error vs Symbol graph to 10 symbol.

```
CALC:EVM:WIND3:TRAC:MARK:SYMB 10
```

:CALCulate:EVM:WINDow3:TRACe[1]|2|3|4|5|6|7|8:MARKer:SYMBol?

Marker Number – Mag. Error vs Symbol Query

Function

This command queries the marker position of the Mag. Error vs Symbol graph. This command can be executed regardless of the selected Trace Mode type.

Query

```
:CALCulate:EVM:WINDow3:TRACe[n]:MARKer:SYMBol?
```

Response

```
<real>
```

Parameter

<real>		Marker display position
	Minimum value	0
	Maximum value	Measurement Interval – 1 (other than O-QPSK) Measurement Interval – 0.5 (O-QPSK)
	Resolution	0.5
	Unit	Symbol

Example of Use

To query the marker position of the Mag. Error vs Symbol graph.

```
CALC:EVM:WIND3:TRAC:MARK:SYMB?
> 10.0
```

2.7.38 Marker Number – Phase Error vs Symbol

:CALCulate:EVM:WINDow4:TRACe[1]|2|3|4|5|6|7|8:MARKer:SYMBol <real>

Marker Number – Phase Error vs Symbol

Function

This command sets the marker position of the Phase Error vs Symbol graph. This command can be executed regardless of the selected Trace Mode type.

Command

```
:CALCulate:EVM:WINDow4:TRACe[n]:MARKer:SYMBol <real>
```

Parameter

<real>	Marker display position
Minimum value	0
Maximum value	Measurement Interval – 1 (other than O-QPSK) Measurement Interval – 0.5 (O-QPSK)
Resolution	0.5
Unit	Symbol
Default	0

Example of Use

To set the marker position of the Phase Error vs Symbol graph to 10 symbol.

```
CALC:EVM:WIND4:TRAC:MARK:SYMB 10
```

:CALCulate:EVM:WINDow4:TRACe[1]|2|3|4|5|6|7|8:MARKer:SYMBol?

Marker Number – Phase Error vs Symbol Query

Function

This command queries the marker position of the Phase Error vs Symbol graph. This command can be executed regardless of the selected Trace Mode type.

Query

```
:CALCulate:EVM:WINDow4:TRACe[n]:MARKer:SYMBol?
```

Response

```
<real>
```

Parameter

<real>	Marker display position
Minimum value	0
Maximum value	Measurement Interval – 1 (other than O-QPSK) Measurement Interval – 0.5 (O-QPSK)
Resolution	0.5
Unit	Symbol

Example of Use

To query the marker position of the Phase Error vs Symbol graph.

```
CALC:EVM:WIND4:TRAC:MARK:SYMB?
> 10.0
```

2.7.39 Marker Number – I and Q vs Symbol

:CALCulate:EVM:WINDow8:TRACe[1]|2|3|4|5|6|7|8:MARKer:SYMBol <real>

Marker Number – I and Q vs Symbol

Function

This command sets the marker position of the I and Q vs Symbol graph. This command can be executed regardless of the selected Trace Mode type.

Command

```
:CALCulate:EVM:WINDow8:TRACe[n]:MARKer:SYMBol <real>
```

Parameter

<real>	Marker display position
Minimum value	0.000
Maximum value	Measurement Interval – 1
Resolution	0.001
Unit	Symbol
Default	0.000

Example of Use

To set the marker position of the I and Q vs Symbol graph to 10 symbol.

```
CALC:EVM:WIND8:TRAC:MARK:SYMB 10
```

:CALCulate:EVM:WINDow8:TRACe[1]|2|3|4|5|6|7|8:MARKer:SYMBol?

Marker Number – I and Q vs Symbol Query

Function

This command queries the marker position of the I and Q vs Symbol graph. This command can be executed regardless of the selected Trace Mode type.

Query

```
:CALCulate:EVM:WINDow8:TRACe[n]:MARKer:SYMBol?
```

Response

```
<real>
```

Parameter

<real>	Marker display position
Minimum value	0.000
Maximum value	Measurement Interval – 1
Resolution	0.001
Unit	Symbol

Example of Use

To query the marker position of the I and Q vs Symbol graph.

```
CALC:EVM:WIND8:TRAC:MARK:SYMB?
> 10.000
```

2.7.40 Marker Number – Magnitude vs Symbol

:CALCulate:EVM:WINDow9:TRACe[1]|2|3|4|5|6|7|8:MARKer:SYMBol <real>

Marker Number – Magnitude vs Symbol

Function

This command sets the marker position of the Magnitude vs Symbol graph. This command can be executed regardless of the selected Trace Mode type.

Command

```
:CALCulate:EVM:WINDow9:TRACe[n]:MARKer:SYMBol <real>
```

Parameter

<real>	Marker display position
Minimum value	0.000
Maximum value	Measurement Interval – 1
Resolution	0.001
Unit	Symbol
Default	0.000

Example of Use

To set the marker position of the Magnitude vs Symbol graph to 10 symbol.

```
CALC:EVM:WIND9:TRAC:MARK:SYMB 10
```

:CALCulate:EVM:WINDow9:TRACe[1]|2|3|4|5|6|7|8:MARKer:SYMBol?

Marker Number – Magnitude vs Symbol Query

Function

This command queries the marker position of the Magnitude vs Symbol graph. This command can be executed regardless of the selected Trace Mode type.

Query

```
:CALCulate:EVM:WINDow9:TRACe[n]:MARKer:SYMBol?
```

Response

```
<real>
```

Parameter

<real>		Marker display position
	Minimum value	0.000
	Maximum value	Measurement Interval – 1
	Resolution	0.001
	Unit	Symbol

Example of Use

To query the marker position of the Magnitude vs Symbol graph.

```
CALC:EVM:WIND9:TRAC:MARK:SYMB?
> 10.000
```

2.7.41 Marker Number – Phase vs Symbol

:CALCulate:EVM:WINDow10:TRACe[1]|2|3|4|5|6|7|8:MARKer:SYMBol <real>

Marker Number – Phase vs Symbol

Function

This command sets the marker position of the Phase vs Symbol. This command can be executed regardless of the selected Trace Mode type.

Command

```
:CALCulate:EVM:WINDow10:TRACe[n]:MARKer:SYMBol <real>
```

Parameter

<real>	Marker display position
Minimum value	0.000
Maximum value	Measurement Interval – 1
Resolution	0.001
Unit	Symbol
Default	0.000

Example of Use

To set the marker position of the Phase vs Symbol graph to 10 symbol.

```
CALC:EVM:WIND10:TRAC:MARK:SYMB 10
```

:CALCulate:EVM:WINDow10:TRACe[1]|2|3|4|5|6|7|8:MARKer:SYMBol?

Marker Number – Phase vs Symbol Query

Function

This command queries the marker position of the Phase vs Symbol. This command can be executed regardless of the selected Trace Mode type.

Query

```
:CALCulate:EVM:WINDow10:TRACe[n]:MARKer:SYMBol?
```

Response

```
<real>
```

Parameter

<real>		Marker display position
	Minimum value	0.000
	Maximum value	Measurement Interval – 1
	Resolution	0.001
	Unit	Symbol

Example of Use

To query the marker position of the Phase vs Symbol.

```
CALC:EVM:WIND10:TRAC:MARK:SYMB?
> 10.000
```

2.7.42 Marker Number – Frequency vs Symbol

:CALCulate:EVM:WINDow11:TRACe[1]|2|3|4|5|6|7|8:MARKer:SYMBol <real>

Marker Number – Frequency vs Symbol

Function

This command sets the marker position of the Frequency vs Symbol. This command can be executed regardless of the selected Trace Mode type.

Command

```
:CALCulate:EVM:WINDow11:TRACe[n]:MARKer:SYMBol <real>
```

Parameter

<real>	Marker display position
Minimum value	0.000
Maximum value	Measurement Interval – 1
Resolution	0.001
Unit	Symbol
Default	0.000

Example of Use

To set the marker position of the Frequency vs Symbol graph to 10 symbol.

```
CALC:EVM:WIND11:TRAC:MARK:SYMB 10
```

:CALCulate:EVM:WINDow11:TRACe[1]|2|3|4|5|6|7|8:MARKer:SYMBol?

Marker Number – Frequency vs Symbol Query

Function

This command queries the marker position of the Frequency vs Symbol. This command can be executed regardless of the selected Trace Mode type.

Command

```
:CALCulate:EVM:WINDow11:TRACe[n]:MARKer:SYMBol?
```

Query

```
<real>
```

Parameter

`<real>`		Marker display position
	Minimum value	0.000
	Maximum value	Measurement Interval – 1
	Resolution	0.001
	Unit	Symbol

Example of Use

To query the marker position of the Frequency vs Symbol.

```
CALC:EVM:WIND11:TRAC:MARK:SYMB?
> 10.000
```

2.7.43 Marker Number – Constellation (Subcarrier)

:CALCulate:EVM:WINDow[1]:TRACe[1]|2|3|4|5|6|7|8:MARKer:SUBCarrier <integer>

Marker Subcarrier Number – Constellation

Function

This command sets the marker subcarrier position of the Constellation graph. This command can be executed regardless of the selected Trace Mode type.

Command

```
:CALCulate:EVM:WINDow[1]:TRACe[n]:MARKer:SUBCarrier
<integer>
```

Parameter

<integer>	Marker subcarrier position
Minimum value	0
Maximum value	Subcarrier number defined in Subcarrier MAP – 1
Resolution	1
Unit	Subcarrier
Default	0

Details

This function is valid when the Measuring Object is SCBT.

Example of Use

To set the marker position of the Constellation graph to 10 th subcarrier.

```
CALC:EVM:WIND:TRAC:MARK:SUBC 10
```

:CALCulate:EVM:WINDow[1]:TRACe[1]|2|3|4|5|6|7|8:MARKer:SUBCarrier?

Marker Subcarrier Number – Constellation Query

Function

This command queries the marker position of the Constellation graph. This command can be executed regardless of the selected Trace Mode type.

Query

```
:CALCulate:EVM:WINDow[1]:TRACe[n]:MARKer:SUBCarrier?
```

Response

```
<integer>
```

Parameter

`<integer>`	Marker subcarrier position
Minimum value	0
Maximum value	Subcarrier number defined in Subcarrier MAP – 1
Resolution	1
Unit	Subcarrier

Example of Use

To query the marker subcarrier position of the Constellation graph.

```
CALC:EVM:WIND:TRAC:MARK:SUBC?
> 10
```

2.7.44 Marker Number – EVM vs Subcarrier

:CALCulate:EVM:WINDow22:TRACe[1]|2|3|4|5|6|7|8:MARKer:SUBCarrier <integer>

Marker Subcarrier Number – EVM vs Subcarrier

Function

This command sets the marker subcarrier position of the Constellation graph. This command can be executed regardless of the selected Trace Mode type.

Command

```
:CALCulate:EVM:WINDow22:TRACe[n]:MARKer:SUBCarrier
<integer>
```

Parameter

<integer>	Marker subcarrier position
Minimum value	0
Maximum value	Subcarrier number defined in Subcarrier MAP – 1
Resolution	1
Unit	Subcarrier
Default	0

Details

This function is valid when the Measuring Object is SCBT.

Example of Use

To set the marker positon of the EVM vs Subcarrier graph to 10 th subcarrier.

```
CALC:EVM:WIND22:TRAC:MARK:SUBC 10
```

:CALCulate:EVM:WINDow22:TRACe[1]|2|3|4|5|6|7|8:MARKer:SUBCarrier?

Marker Subcarrier Number – EVM vs Subcarrier Query

Function

This command queries the marker subcarrier position of the EVM vs Subcarrier graph. This command can be executed regardless of the selected Trace Mode type.

Query

```
:CALCulate:EVM:WINDow22:TRACe[n]:MARKer:SUBCarrier?
```

Response

```
<integer>
```

Parameter

<integer>	Marker subcarrier position
Minimum value	0
Maximum value	Subcarrier number defined in Subcarrier MAP – 1
Resolution	1
Unit	Subcarrier

Example of Use

To query the marker subcarrier position of the Constellation graph.

```
CALC:EVM:WIND22:TRAC:MARK:SUBC?
> 10
```

2.7.45 Marker Result – Constellation

:CALCulate:EVM:WINDow[1]:TRACe[1]|2|3|4|5|6|7|8:MARKer:X?

Marker Result – Constellation (I)

Function

This command queries the I-phase marker result of the Constellation graph. This command can be executed regardless of the selected Trace Mode type.

Query

```
:CALCulate:EVM:WINDow[1]:TRACe[n]:MARKer:X?
```

Response

```
<real>
```

Parameter

<real>	Marker result
Minimum value	–99.9999
Maximum value	99.9999
Resolution	0.0001

Details

This function is available when Modulation Type is other than 2FSK or 4FSK.

Example of Use

To query the I-phase marker result of the Constellation graph.

```
CALC:EVM:WIND:TRAC:MARK:X?
> 0.1323
```

:CALCulate:EVM:WINDow[1]:TRACe[1]|2|3|4|5|6|7|8:MARKer:Y?

Marker Result – Constellation (Q)

Function

This command queries the Q-phase marker result of the Constellation graph. This command can be executed regardless of the selected Trace Mode type.

Query

```
:CALCulate:EVM:WINDow[1]:TRACe[n]:MARKer:Y?
```

Response

```
<real>
```

Parameter

<real>		Marker result
	Minimum value	–99.9999
	Maximum value	99.9999
	Resolution	0.0001

Details

This function is available when Modulation Type is other than 2FSK or 4FSK.

Example of Use

To query the Q-phase marker result of the Constellation graph.

```
CALC:EVM:WIND:TRAC:MARK:Y?
> 0.1323
```

2.7.46 Marker Result – EVM vs Symbol

:CALCulate:EVM:WINDow2:TRACe[1]|2|3|4|5|6|7|8:MARKer:Y?

Marker Result – EVM vs Symbol

Function

This command queries the marker result of the EVM vs Symbol graph. This command can be executed regardless of the selected Trace Mode type.

Command

```
:CALCulate:EVM:WINDow2:TRACe[n]:MARKer:Y?
```

Query

```
<real>
```

Parameter

<real>	Marker result
Minimum value	0.00
Maximum value	999.99
Resolution	0.01
Unit	%

Details

This function is available when Modulation Type is other than 2FSK or 4FSK.

Example of Use

To query the marker result of the EVM vs Symbol graph.

```
CALC:EVM:WIND2:TRAC:MARK:Y?
> 1.21
```

2.7.47 Marker Result – Mag. Error vs Symbol

:CALCulate:EVM:WINDow3:TRACe[1]|2|3|4|5|6|7|8:MARKer:Y?

Marker Result – Mag. Error vs Symbol

Function

This command queries the marker result of the Mag. Error vs Symbol graph. This command can be executed regardless of the selected Trace Mode type.

Query

```
:CALCulate:EVM:WINDow3:TRACe[n]:MARKer:Y?
```

Response

```
<real>
```

Parameter

<real>		Marker result
	Minimum value	–99.00
	Maximum value	99.99
	Resolution	0.01
	Unit	%

Example of Use

To query the marker result of the Mag. Error vs Symbol graph.

```
CALC:EVM:WIND3:TRAC:MARK:Y?
> 1.21
```

2.7.48 Marker Result – Phase Error vs Symbol

:CALCulate:EVM:WINDow4:TRACe[1]|2|3|4|5|6|7|8:MARKer:Y?

Marker Result – Phase Error vs Symbol

Function

This command queries the marker result of the Phase Error vs Symbol graph. This command can be executed regardless of the selected Trace Mode type.

Query

```
:CALCulate:EVM:WINDow4:TRACe[n]:MARKer:Y?
```

Response

```
<real>
```

Parameter

<real>	Marker result
Minimum value	0.00
Maximum value	999.99
Resolution	0.01
Unit	degree

Details

This function is available when Modulation Type is other than 2FSK or 4FSK.

Example of Use

To query the marker result of the Phase Error vs Symbol graph.

```
CALC:EVM:WIND4:TRAC:MARK:Y?
> 1.21
```

2.7.49 Marker Result – I and Q vs Symbol

:CALCulate:EVM:WINDow8:TRACe[1]|2|3|4|5|6|7|8:MARKer:I:Y?

Marker Result – I and Q vs Symbol (I)

Function

This command queries the I-phase marker result of the I and Q vs Symbol graph. This command can be executed regardless of the selected Trace Mode type.

```
Query:CALCulate:EVM:WINDow8:TRACe[n]:MARKer:I:Y?
```

Response

```
<real>
```

Parameter

<real>		Marker result
	Minimum value	–1.0000
	Maximum value	1.0000
	Resolution	0.0001

Details

This function is available when Modulation Type is other than 2FSK or 4FSK.

Example of Use

To query the I-phase marker result of the I and Q vs Symbol graph.

```
CALC:EVM:WIND8:TRAC:MARK:I:Y?
> 0.6254
```

:CALCulate:EVM:WINDow8:TRACe[1]|2|3|4|5|6|7|8:MARKer:Q:Y?

Marker Result – I and Q vs Symbol (Q)

Function

This command queries the Q-phase marker result of the I and Q vs Symbol graph. This command can be executed regardless of the selected Trace Mode type.

Query

```
:CALCulate:EVM:WINDow8:TRACe[n]:MARKer:Q:Y?
```

Response

```
<real>
```

Parameter

<real>	Marker result
Minimum value	–1.0000
Maximum value	1.0000
Resolution	0.0001

Details

This function is available when Modulation Type is other than 2FSK or 4FSK.

Example of Use

To query the Q-phase marker result of the I and Q vs Symbol graph.

```
CALC:EVM:WIND8:TRAC:MARK:Q:Y?
> 0.625376
```

2.7.50 Marker Result – Magnitude vs Symbol

:CALCulate:EVM:WINDow9:TRACe[1]|2|3|4|5|6|7|8:MARKer:Y?

Marker Result – Magnitude vs Symbol

Function

This command queries the marker result of the Magnitude vs Symbol graph. This command can be executed regardless of the selected Trace Mode type.

Query

```
:CALCulate:EVM:WINDow9:TRACe[n]:MARKer:Y?
```

Response

```
<real>
```

Parameter

<real>	Marker result
Minimum value	0.01 pV
Maximum value	22.360 MV
Resolution	0.01 pV
Unit	Volt

Example of Use

To query the marker result of the Magnitude vs Symbol graph.

```
CALC:EVM:WIND9:TRAC:MARK:Y?
> 1.21000000000000
```

2.7.51 Marker Result – Phase vs Symbol

:CALCulate:EVM:WINDow10:TRACe[1]|2|3|4|5|6|7|8:MARKer:Y?

Marker Result – Phase vs Symbol

Function

This command queries the marker result of the Phase vs Symbol graph. This command can be executed regardless of the selected Trace Mode type.

Query

```
:CALCulate:EVM:WINDow10:TRACe[n]:MARKer:Y?
```

Response

```
<real>
```

Parameter

<real>	Marker result
Minimum value	–180.00
Maximum value	179.99
Resolution	0.01
Unit	degree

Details

This function is available when Modulation Type is other than 2FSK or 4FSK.

Example of Use

To query the marker result of the Phase vs Symbol graph.

```
CALC:EVM:WIND10:TRAC:MARK:Y?
> 1.21
```

2.7.52 Marker Result – Frequency vs Symbol

:CALCulate:EVM:WINDow11:TRACe[1]|2|3|4|5|6|7|8:MARKer:Y?

Marker Result – Frequency vs Symbol

Function

This command queries the marker result of the Frequency vs Symbol graph. This command can be executed regardless of the selected Trace Mode type.

Query

```
:CALCulate:EVM:WINDow11:TRACe[n]:MARKer:Y?
```

Response

```
<real>
```

Parameter

<real>		Marker result
	Resolution	0.00000000001 GHz
	Unit	GHz

Details

This function is available when Modulation Type is 2FSK or 4FSK.

Example of Use

To query the marker result of the Frequency vs Symbol graph.

```
CALC:EVM:WIND11:TRAC:MARK:Y?
> 3.47264798000
```

2.7.53 Marker Result – EVM vs Subcarrier

:CALCulate:EVM:WINDow22:TRACe[1]|2|3|4|5|6|7|8:MARKer:Y?

Marker Result – EVM vs Subcarrier

Function

This command queries the marker value of the EVM vs Subcarrier graph. This command can be executed regardless of the selected Trace Mode type.

Query

```
:CALCulate:EVM:WINDow22:TRACe[n]:MARKer:Y?
```

Response

```
<integer>
```

Parameter

<integer>	Marker subcarrier position
Minimum value	0
Maximum value	Subcarrier number defined in Subcarrier MAP – 1
Resolution	1
Unit	Subcarrier
Default	0

Details

This function is valid when the Measuring Object is SCBT.

Example of Use

To query the marker value of the EVM vs Subcarrier graph.

```
CALC:EVM:WIND22:TRAC:MARK:Y?
> 1.21
```

2.8 Power vs Time

Table 2.8-1 lists device messages for Power vs Time.

Table 2.8-1 Device Messages for executing Power vs Time and reading result

Parameter	Device Message
Configure	`:CONFigure:PVTime`
Initiate	`:INITiate:PVTime`
Fetch	`:FETCh:PVTime[n]?`
Read	`:READ:PVTime[n]?`
Measure	`:MEASure:PVTime[n]?`

Table 2.8-2 lists responses to the parameter n on Table 2.8-1.
–999.0 is returned when Result Mode is set to B.

Table 2.8-2 Responses to Power vs Time result

n	Result Mode	Response
1 or omitted	A	Responses are returned with comma separated value format in the following order. 0 indicates “Pass”, 1 indicates “Failure”, and 2 indicates “Not judged”. 1. Judgment result for the masks (in all the slots) 2. Slot #0 State (0 = On, 1 = Off, 2 = Disabled) 3. Slot #0 Average Power [dBm] 4. Slot #0 Judgment result for mask … 59. Slot #19 State (0 = On, 1 = Off, 2 = Disabled) 60. Slot #19 Average Power [dBm] 61. Slot #19 Judgment result for mask [0.01 dBm resolution]
2	A	Average Power at the measurement point to the selected slot is returned with comma separated value format. The data numbers are as follows. The unit of the return value depends on the value set by Unit. Data numbers : (Slot Length + BurstGapSize × 2) × 8 + 1
3	A	Maximum Power at the measurement point is returned with comma separated value format. The data numbers are as follows. The unit of the return value depends on the value set by Unit. –999.0 is returned if no value is displayed. Data numbers : (Slot Length + BurstGapSize × 2) × 8 + 1
4	A	Minimum Power at the measurement point is returned with comma separated value format. The data numbers are as follows. The unit of the return value depends on the value set by Unit. –999.0 is returned if no value is displayed. Data numbers : (Slot Length + BurstGapSize × 2) × 8 + 1

Table 2.8-2 Responses to Power vs Time result (Cont'd)

n	Result Mode	Response
5	A	Responses are returned with comma separated value format in the following order. 1. On Slot Power [dBm] [0.01 dBm resolution] 2. On Slot Power [W] [0.000 000 000 001 W resolution] 3. Off Slot Power [dBm]* [0.01 dBm resolution] 4. Off Slot Power [W]* [0.000 000 000 001 W resolution] 5. On / Off Ratio [dB]* [0.01 dBm resolution] 6. Rise Time [s] [0.000000001 (s) resolution] 7. Fall Time [s] [0.000000001 (s) resolution] *: When all slot states are "On", and Off Slot Power Range is not set to User, the invalid value (–999.0) is returned.
6	A	Responses are returned with comma separated value format in the following order. 1. Slot#0 Rise Time [0.000000001 (s) resolution] 2. Slot#0 Fall Time [0.000000001 (s) resolution] … 39. Slot#19 Rise Time [0.000000001 (s) resolution] 40. Slot#19 Fall Time [0.000000001 (s) resolution] When one of the following conditions is met, the invalid value (–999.0) is returned. ● Burst waveform is not detected. ● The measured value does not fall below Rise/Fall Time Off Detect Level. ● The search fails to measure rise or fall within the specified time.

Table 2.8-3 list device messages for setting Power vs Time parameters.

Table 2.8-3 Device Messages for Setting Power vs Time Parameters

Parameter	Device Message
Trace Mode	:DISPlay:PVTime[:VIEW][:SELect] RAFall|SLOT|FRAMe
	:DISPlay:PVTime[:VIEW][:SELect]?
Unit	:DISPlay:PVTime[:VIEW]:WINDow[1]:TRACe:Y[:SCALe]:UNIT DB|DBM
	:DISPlay:PVTime[:VIEW]:WINDow[1]:TRACe:Y[:SCALe]:UNIT?
Display Item	:DISPlay:PVTime[:VIEW]:WINDow[1]:TRACe:Y:DITem AVERage|ALL
	:DISPlay:PVTime[:VIEW]:WINDow[1]:TRACe:Y:DITem
Slot	:DISPlay:PVTime[:VIEW]:WINDow[1]:TRACe:X[:SCALe]:SLOT <integer>
	:DISPlay:PVTime[:VIEW]:WINDow[1]:TRACe:X[:SCALe]:SLOT?
Load Mask Setting – Select Mask	[:SENSe]:PVTime:MASK:LOAD:PRESet <filename>
Mask Setup – Upper limits – Rise – Time	[:SENSe]:PVTime:MASK:LIST:UPPer:RISE:TIME <time>,<time>,<time>,<time>,<time>,<time>,<time>,<time>, <time>,<time>,<time>
	[:SENSe]:PVTime:MASK:LIST:UPPer:RISE:TIME?
Mask Setup – Upper – Rise – Absolute limits	[:SENSe]:PVTime:MASK:LIST:UPPer:RISE:ABSolute <real>,<real>,<real>,<real>,<real>,<real>,<real>,<real>, <real>,<real>,<real>
	[:SENSe]:PVTime:MASK:LIST:UPPer:RISE:ABSolute?
Mask Setup – Upper – Rise – Relative limits	[:SENSe]:PVTime:MASK:LIST:UPPer:RISE:RELative <rel_ampl>,<rel_ampl>,<rel_ampl>,<rel_ampl>,<rel_ampl>, <rel_ampl>,<rel_ampl>,<rel_ampl>,<rel_ampl>,<rel_ampl>, <rel_ampl>
	[:SENSe]:PVTime:MASK:LIST:UPPer:RISE:RELative?
Mask Setup – Upper – Rise – Fail Logic	[:SENSe]:PVTime:MASK:LIST:UPPer:RISE:FLOGic ABSolute|RELative|OR|OFF, ABSolute|RELative|OR|OFF, ABSolute|RELative|OR|OFF, ABSolute|RELative|OR|OFF, ABSolute|RELative|OR|OFF, ABSolute|RELative|OR|OFF, ABSolute|RELative|OR|OFF, ABSolute|RELative|OR|OFF, ABSolute|RELative|OR|OFF, ABSolute|RELative|OR|OFF
	[:SENSe]:PVTime:MASK:LIST:UPPer:RISE:FLOGic?

Table 2.8-3 Device messages for setting Power vs Time parameters (Cont'd)

Parameter	Device Message
Mask Setup – Upper limits – Fall – Time	[:SENSe]:PVTime:MASK:LIST:UPPer:FALL:TIME <time>,<time>,<time>,<time>,<time>,<time>,<time>,<time>, <time>,<time>,<time>
	[:SENSe]:PVTime:MASK:LIST:UPPer:FALL:TIME?
Mask Setup – Upper – Fall – Absolute limits	[:SENSe]:PVTime:MASK:LIST:UPPer:FALL:ABSolute <real>,<real>,<real>,<real>,<real>,<real>,<real>,<real>, <real>,<real>,<real>
	[:SENSe]:PVTime:MASK:LIST:UPPer:FALL:ABSolute?
Mask Setup – Upper – Fall – Relative limits	[:SENSe]:PVTime:MASK:LIST:UPPer:FALL:RELative <rel_ampl>,<rel_ampl>,<rel_ampl>,<rel_ampl>,<rel_ampl>, <rel_ampl>,<rel_ampl>,<rel_ampl>,<rel_ampl>,<rel_ampl>, <rel_ampl>
	[:SENSe]:PVTime:MASK:LIST:UPPer:FALL:RELative?
Mask Setup – Upper – Fall – Fail Logic	[:SENSe]:PVTime:MASK:LIST:UPPer:FALL:FLOGic ABSolute|RELative|OR|OFF, ABSolute|RELative|OR|OFF, ABSolute|RELative|OR|OFF, ABSolute|RELative|OR|OFF, ABSolute|RELative|OR|OFF, ABSolute|RELative|OR|OFF, ABSolute|RELative|OR|OFF, ABSolute|RELative|OR|OFF, ABSolute|RELative|OR|OFF, ABSolute|RELative|OR|OFF
	[:SENSe]:PVTime:MASK:LIST:UPPer:FALL:FLOGic?
Mask Setup – Lower – Rise – Time	[:SENSe]:PVTime:MASK:LIST:LOWer:RISE:TIME <time>,<time>,<time>,<time>,<time>,<time>,<time>,<time>, <time>,<time>,<time>
	[:SENSe]:PVTime:MASK:LIST:LOWer:RISE:TIME?
Mask Setup – Lower limits – Rise – Absolute limits	[:SENSe]:PVTime:MASK:LIST:LOWer:RISE:ABSolute <real>,<real>,<real>,<real>,<real>,<real>,<real>, <real>,<real>,<real>,<real>
	[:SENSe]:PVTime:MASK:LIST:LOWer:RISE:ABSolute?
Mask Setup – Lower – Rise – Relative limits	[:SENSe]:PVTime:MASK:LIST:LOWer:RISE:RELative <rel_ampl>,<rel_ampl>,<rel_ampl>,<rel_ampl>,<rel_ampl>, <rel_ampl>,<rel_ampl>,<rel_ampl>,<rel_ampl>,<rel_ampl>, <rel_ampl>
	[:SENSe]:PVTime:MASK:LIST:LOWer:RISE:RELative?
Mask Setup – Lower – Rise – Fail Logic	[:SENSe]:PVTime:MASK:LIST:LOWer:RISE:FLOGic ABSolute|RELative|OR|OFF, ABSolute|RELative|OR|OFF, ABSolute|RELative|OR|OFF, ABSolute|RELative|OR|OFF, ABSolute|RELative|OR|OFF, ABSolute|RELative|OR|OFF, ABSolute|RELative|OR|OFF, ABSolute|RELative|OR|OFF, ABSolute|RELative|OR|OFF, ABSolute|RELative|OR|OFF
	[:SENSe]:PVTime:MASK:LIST:LOWer:RISE:FLOGic?

Table 2.8-3 Device messages for setting Power vs Time parameters (Cont'd)

Parameter	Device Message
Mask Setup – Lower limits – Fall – Time	[:SENSe]:PVTime:MASK:LIST:LOWer:FALL:TIME <time>,<time>,<time>,<time>,<time>,<time>,<time>,<time>, <time>,<time>,<time>
	[:SENSe]:PVTime:MASK:LIST:LOWer:FALL:TIME?
Mask Setup – Lower – Fall – Absolute limits	[:SENSe]:PVTime:MASK:LIST:LOWer:FALL:ABSolute <real>,<real>,<real>,<real>,<real>,<real>,<real>,<real>, <real>,<real>,<real>
	[:SENSe]:PVTime:MASK:LIST:LOWer:FALL:ABSolute?
Mask Setup – Lower – Fall – Relative limits	[:SENSe]:PVTime:MASK:LIST:LOWer:FALL:RELative <rel_ampl>,<rel_ampl>,<rel_ampl>,<rel_ampl>,<rel_ampl>, <rel_ampl>,<rel_ampl>,<rel_ampl>,<rel_ampl>,<rel_ampl>, <rel_ampl>
	[:SENSe]:PVTime:MASK:LIST:LOWer:FALL:RELative?
Mask Setup – Lower – Fall – Fail Logic	[:SENSe]:PVTime:MASK:LIST:LOWer:FALL:FLOGic ABSolute|RELative|OR|OFF, ABSolute|RELative|OR|OFF, ABSolute|RELative|OR|OFF, ABSolute|RELative|OR|OFF, ABSolute|RELative|OR|OFF, ABSolute|RELative|OR|OFF, ABSolute|RELative|OR|OFF, ABSolute|RELative|OR|OFF, ABSolute|RELative|OR|OFF
	[:SENSe]:PVTime:MASK:LIST:LOWer:FALL:FLOGic?
Storage Mode	[:SENSe]:PVTime:AVERage[:STATe] OFF|ON|0|1
	[:SENSe]:PVTime:AVERage[:STATe]?
Storage Count	[:SENSe]:PVTime:AVERage:COUNt <integer>
	[:SENSe]:PVTime:AVERage:COUNt?
Average Type	[:SENSe]:PVTime:AVERage:TYPE POWer|LOGPower
	[:SENSe]:PVTime:AVERage:TYPE?
Filter Type	[:SENSe]:PVTime:TYPE <type>
	[:SENSe]:PVTime:TYPE?
Filter Bandwidth	[:SENSe]:PVTime:BANDwidth[:RESolution] <bandwidth>
	[:SENSe]:PVTime:BANDwidth[:RESolution]?
Filter Roll-off Factor	[:SENSe]:PVTime:ROFF <real>
	[:SENSe]:PVTime:ROFF?
Wide Dynamic Range	[:SENSe]:PVTime:WDRange <switch>
	[:SENSe]:PVTime:WDRange?
Mask Table Title	[:SENSe]:PVTime:MASK:TITLe?

Table 2.8-4 lists device messages for setting Power vs Time markers and reading out the marker position values.

Table 2.8-4 Device messages for Power vs Time markers

Parameter	Device Message
Marker – On/Off	:CALCulate:PVTime:MARKer[:STATe] OFF|ON|0|1
	:CALCulate:PVTime:MARKer[:STATe]?
Marker – Active Trace	:CALCulate:PVTime:MARKer:ACTive RISE|FALL
	:CALCulate:PVTime:MARKer:ACTive?
Marker X Axis	:CALCulate:PVTime:MARKer[1]|2:X[:POINt] <real>
	:CALCulate:PVTime:MARKer[1]|2:X[:POINt]?
Marker Y Axis Value – Average	:CALCulate:PVTime:MARKer[1]|2:Y[:AVERage]?
Marker Y Axis Value – Maximum	:CALCulate:PVTime:MARKer[1]|2:Y:MAXimum?
Marker Y Axis Value – Minimum	:CALCulate:PVTime:MARKer[1]|2:Y:MINimum?
Marker to Modana Area	:CALCulate:PVTime:MARKer:MOD
Marker Tx Power – Query	:CALCulate:PVTime:MARKer:TXPower?
Log Scale	:DISPlay:PVTime[:VIEW]:WINDow[1]:TRACe:Y[:SCALe]:PDIVision[:LOGarithmic] <rel_ampl>
	:DISPlay:PVTime[:VIEW]:WINDow[1]:TRACe:Y[:SCALe]:PDIVision[:LOGarithmic]?
Log Scale Line	:DISPlay:PVTime[:VIEW]:WINDow[1]:TRACe:Y[:SCALe]:LINE[:LOGarithmic] <line>
	:DISPlay:PVTime[:VIEW]:WINDow[1]:TRACe:Y[:SCALe]:LINE[:LOGarithmic]?
Scale Range (Horizontal) – Rise	:DISPlay:PVTime[:VIEW]:WINDow2:TRACe:X[:SCALe]:RANGe <val>
	:DISPlay:PVTime[:VIEW]:WINDow2:TRACe:X[:SCALe]:RANGe?
Scale Range (Horizontal) – Fall	:DISPlay:PVTime[:VIEW]:WINDow3:TRACe:X[:SCALe]:RANGe <val>
	:DISPlay:PVTime[:VIEW]:WINDow3:TRACe:X[:SCALe]:RANGe?
Scale Offset (Horizontal) – Rise	:DISPlay:PVTime[:VIEW]:WINDow2:TRACe:X[:SCALe]:OFFSet <val>
	:DISPlay:PVTime[:VIEW]:WINDow2:TRACe:X[:SCALe]:OFFSet?
Scale Offset (Horizontal) – Fall	:DISPlay:PVTime[:VIEW]:WINDow3:TRACe:X[:SCALe]:OFFSet <val>
	:DISPlay:PVTime[:VIEW]:WINDow3:TRACe:X[:SCALe]:OFFSet?

2.8.1 Measure

:CONFigure:PVTime

Power vs Time

Function

This command selects Power vs Time.

Command

```
:CONFigure:PVTime
```

Details

No measurement is performed.

Example of Use

To select Power vs Time.

```
CONF:PVT
```

:INITiate:PVTime

Power vs Time

Function

This command executes Power vs Time.

Command

```
:INITiate:PVTime
```

Example of Use

To execute Power vs Time.

```
INIT:PVT
```

:FETCh:PVTime [n]?

Power vs Time Query

Function

This command reads out the measurement result of Power vs Time.

Query

```
:FETCh:PVTime[n]?
```

Response

Refer to Table 2.8-2.

Example of Use

To read out the measurement result of Power vs Time.

```
FETC:PVT?
```

:READ:PVTime [n]?

Power vs Time Query

Function

This command reads out the measurement result after the single measurement for Power vs Time has been executed by the current setting value.

Query

```
:READ:PVTime[n]?
```

Response

Refer to Table 2.8-2.

Example of Use

To execute Power vs Time so that the measurement result is read out.

```
READ:PVT?
```

Related Command

This command has the same function as the following.

```
:MEASure:PVTime[n]?
```

:MEASure:PVTime [n]?

Power vs Time Query

Function

This command reads out the measurement result after the single measurement for Power vs Time has been executed by the current setting value.

Query

```
:MEASure:PVTime[n]?
```

Response

Refer to Table 2.8-2.

Example of Use

To execute Power vs Time so that the measurement result is read out.

```
MEAS:PVT?
```

Related Command

This command has the same function as the following.

```
:READ:PVTime[n]?
```

2.8.2 Trace Mode

:DISPlay:PVTime[:VIEW][:SELect] RAFall|SLOT|FRAMe

Trace Mode

Function

This command sets the graph type on the graph window when Power vs Time is selected.

Command

```
:DISPlay:PVTime[:VIEW][:SELect] <mode>
```

Parameter

<mode>	Trace Mode
RAFall	Rise and Fall
SLOT	Slot (Initial value)
FRAMe	Frame

Example of Use

To set Trace Mode to Rise and Fall.

```
DISP:PVT RAF
```

:DISPlay:PVTime[:VIEW][:SELect]?

Trace Mode Query

Function

This command reads out the graph type on the graph window when Power vs Time is selected.

Query

```
:DISPlay:PVTime[:VIEW][:SELect]?
```

Response

```
<mode>
```

Parameter

<mode>	Trace Mode
RAF	Rise and Fall
SLOT	Slot
FRAM	Frame

Example of Use

To read out the Trace Mode setting.

```
DISP:PVT?
> RAF
```

2.8.3 Unit

:DISPlay:PVTime[:VIEW]:WINDow[1]:TRACe:Y[:SCALe]:UNIT DB|DBM

Unit

Function

This command sets the Y-axis unit on the graph when Power vs Time is selected.

Command

```
:DISPlay:PVTime[:VIEW]:WINDow[1]:TRACe:Y[:SCALe]:UNIT
<mode>
```

Parameter

<mode>	Unit
DB	dB (Initial value)
DBM	dBm

Example of Use

To set the unit to dB.

```
DISP:PVT:WIND:TRAC:Y:UNIT DB
```

:DISPlay:PVTime[:VIEW]:WINDow[1]:TRACe:Y[:SCALe]:UNIT?

Unit Query

Function

This command reads out the Y-axis unit setting on the graph when Power vs Time is selected.

Query

```
:DISPlay:PVTime[:VIEW]:WINDow[1]:TRACe:Y[:SCALe]:UNIT?
```

Response

```
<mode>
```

Parameter

<mode>	Unit
DB	dB
DBM	dBm

Example of Use

To read out the unit setting.

```
DISP:PVT:WIND:TRAC:Y:UNIT?
> DB
```

2.8.4 Display Item

:DISPlay:PVTime[:VIEW]:WINDow[1]:TRACe:Y:DITem AVERage|ALL

Display Item

Function

This command sets the measurement result type on the Power vs Time graph.

Command

```
:DISPlay:PVTime[:VIEW]:WINDow[1]:TRACe:Y:DITem <mode>
```

Parameter

<mode>	Display Item
AVERage	Average
ALL	All (Initial value)

Example of Use

To set the display item to All.

```
DISP:PVT:WIND:TRAC:Y:DIT ALL
```

:DISPlay:PVTime[:VIEW]:WINDow[1]:TRACe:Y:DITem?

Display Item Query

Function

This command reads out the setting of the measurement result type on the Power vs Time graph.

Query

```
:DISPlay:PVTime[:VIEW]:WINDow[1]:TRACe:Y:DITem?
```

Response

```
<mode>
```

Parameter

<mode>	Unit
AVER	Average
ALL	All

Example of Use

To read out the setting of the display item.

```
DISP:PVT:WIND:TRAC:Y:DIT?
> ALL
```

2.8.5 Slot

:DISPlay:PVTime[:VIEW]:WINDow[1]:TRACe:X[:SCALe]:SLOT <integer>

Slot

Function

This command sets the slot number on the Power vs Time graph.

Command

```
:DISPlay:PVTime[:VIEW]:WINDow[1]:TRACe:X[:SCALe]:SLOT
<integer>
```

Parameter

<integer>	Slot
Range	0 to Slots per Frame - 1
Resolution	1
Initial value	0

Example of Use

To set Slot to 1.

```
DISP:PVT:WIND:TRAC:X:SLOT 1
```

:DISPlay:PVTime[:VIEW]:WINDow[1]:TRACe:X[:SCALe]:SLOT?

Slot Query

Function

This command reads out the setting of the slot number on the Power vs Time graph.

Query

```
:DISPlay:PVTime[:VIEW]:WINDow[1]:TRACe:X[:SCALe]:SLOT?
```

Response

```
<integer>
```

Parameter

<integer>	Slot
Range	0 to Slots per Frame - 1
Resolution	1

Example of Use

To read out the Slot setting.

```
DISP:PVT:WIND:TRAC:X:SLOT?
> 1
```

2.8.6 Load Mask Setting

[:SENSe]:PVTime:MASK:LOAD:PRESet <filename>

Load Mask Setting – Select Mask

Function

This command loads the Mask template file for setting the value on the user established mask.

Command

```
[:SENSe]:PVTime:MASK:LOAD:PRESet <filename>
```

Parameter

`<filename>`	Template file name Specify as string of up to 32 characters enclosed by either double (" ") or single (' ') quotation marks. The following characters cannot be used: `\ / : * ? " " ' ' < > |`

Details

Template files are in the following directory.

<u>When the OS on MS2690A/MS2691A/MS2692A/MS2830A/MS2840A/MS2850A is Windows Embedded Standard 7 or Windows 10.</u>

C:\Anritsu\SignalAnalyzer\Applications\VMA Common\Template\Mask

<u>When the OS is other than the above mentioned</u>

C:\Program Files\Anritsu Corpolation\SignalAnalyzer\Applications\VMA Common\Template\Mask

Example of Use

To load the template file "ABCDEF".

```
PVT:MASK:LOAD:PRES "ABCDEF"
```

2.8.7 Upper – Rise – Time

[:SENSe]:PVTime:MASK:LIST:UPPer:RISE:TIME <time>,<time>,<time>,<time>,<time>,<time>,<time>,<time>,<time>,<time>,<time>

Mask Setup – Upper limits – Rise – Time

Function

This command sets the time point for the upper limit line of the power-rising part on the user-established mask.

Command

```
[:SENSe]:PVTime:MASK:LIST:UPPer:RISE:TIME
<time>,<time>,<time>,<time>,<time>,<time>,<time>,<time>,
<time>,<time>,<time>
```

Parameter

<time>	Time point
Range	–999.99 to 999.99
Resolution	0.01
Suffix code	None

The value to set actually is a value set for <time> multiplied by the ratio of the corresponding Symbol Rate range as below.

100 sps ≤ Symbol Rate < 1 ksps	Time point×10 ms
1 ksps ≤ Symbol Rate < 10 ksps	Time point×1 ms
10 ksps ≤ Symbol Rate < 100 ksps	Time point×100 µs
100 ksps ≤ Symbol Rate < 1 Msps	Time point×10 µs
1 Msps ≤ Symbol Rate < 10 Msps	Time point×1 µs
10 Msps ≤ Symbol Rate < 100 Msps	Time point×100 ns
100 Msps ≤ Symbol Rate ≤ 140 Msps	Time point×10 ns

Example of Use

To set the time point of the user-established mask.

```
PVT:MASK:LIST:UPP:RISE:TIME
-48,-28,-28,-18,-18,-10,-10,0,0,0,0
```

[:SENSe]:PVTime:MASK:LIST:UPPer:RISE:TIME?

Mask Setup – Upper limits – Rise – Time Query

Function

This command reads out the setting value of the time point for the upper limit line of the power-rising part on the user-established mask.

Query

```
[:SENSe]:PVTime:MASK:LIST:UPPer:RISE:TIME?
```

Parameter

<time>	Time point
Range	–999.99 to 999.99
Resolution	0.01
Suffix code	None

The value to set actually is a value set for <time> multiplied by the ratio of the corresponding Symbol Rate range as below.

100 sps ≤ Symbol Rate < 1 ksps	Time point×10 ms
1 ksps ≤ Symbol Rate < 10 ksps	Time point×1 ms
10 ksps ≤ Symbol Rate < 100 ksps	Time point×100 µs
100 ksps ≤ Symbol Rate < 1 Msps	Time point×10 µs
1 Msps ≤ Symbol Rate < 10 Msps	Time point×1 µs
10 Msps ≤ Symbol Rate < 100 Msps	Time point×100 ns
100 Msps ≤ Symbol Rate ≤ 140 Msps	Time point×10 ns

Example of Use

To read out the time point of the user-established mask.

```
PVT:MASK:LIST:UPP:RISE:TIME?
> -48.00,-28.00,-28.00,-18.00,-18.00,-10.00,-10.00,0.00,
0.00,0.00,0.00
```

2.8.8 Upper – Rise – Absolute limits

[:SENSe]:PVTime:MASK:LIST:UPPer:RISE:ABSolute <real>,<real>,<real>,<real >,<real >,<real >,<real >,<real>,<real>,<real>, <real>

Mask Setup – Upper – Rise – Absolute limits

Function

This command sets the absolute reference level for the upper limit line of the power-rising part on the user-established mask.

Command

```
[:SENSe]:PVTime:MASK:LIST:UPPer:RISE:ABSolute
<real>,<real>,<real>,<real>,<real>,<real>,<real>,<real>,
<real>,<real>,<real>
```

Parameter

<real>	Absolute reference level
Range	–99.99 to 99.99
Resolution	0.01 dB
Unit	dBm
Suffix code	DBM
	dBm is used when omitted.

Example of Use

To set the absolute reference level of the user-established mask.

```
PVT:MASK:LIST:UPP:RISE:ABS
99.99,99.99,99.99,99.99,99.99,99.99,99.99,99.99,99.99,
99.99,99.99
```

[:SENSe]:PVTime:MASK:LIST:UPPer:RISE:ABSolute?

Mask Setup – Upper – Rise – Absolute limits Query

Function

This command reads out the setting value of the absolute reference level for the upper limit line of the power-rising part on the user-established mask.

Query

```
[:SENSe]:PVTime:MASK:LIST:UPPer:RISE:ABSolute?
```

Parameter

<real>	Absolute reference level
Range	–99.99 to 99.99
Resolution	0.01 dB
Unit	dBm

Example of Use

To read out the setting value of the absolute reference level of the user-established mask.

```
PVT:MASK:LIST:UPP:RISE:ABS?
> 99.99,99.99,99.99,99.99,99.99,99.99,99.99,99.99,99.99,
99.99,99.99
```

2.8.9 Upper – Rise – Relative limits

[:SENSe]:PVTime:MASK:LIST:UPPer:RISE:RELative <rel_amp>,<rel_amp>,<rel_amp>,<rel_amp>,<rel_amp>,<rel_amp>, <rel_amp>,<rel_amp>,<rel_amp>,<rel_amp>,<rel_amp>

Mask Setup – Upper – Rise – Relative limits

Function

This command sets the relative reference level for the upper limit line of the power-rising part on the user-established mask.

Command

```
[:SENSe]:PVTime:MASK:LIST:UPPer:RISE:RELative <rel_amp>,
<rel_amp>,<rel_amp>,<rel_amp>,<rel_amp>,<rel_amp>,
<rel_amp>,<rel_amp>,<rel_amp>,<rel_amp>,<rel_amp>
```

Parameter

`<rel_amp>`	Relative reference level
Range	–99.99 to 99.99
Resolution	0.01 dB
Unit	dB
Suffix code	`DB`
	dB is used when omitted.

Example of Use

To set the relative reference level of the user-established mask.

```
PVT:MASK:LIST:UPP:RISE:REL
-30.00,-30.00,-30.00,-30.00,-6.00,-6.00,4.00,4.00,1.00,
1.00,1.00
```

[:SENSe]:PVTime:MASK:LIST:UPPer:RISE:RELative?

Mask Setup – Upper – Rise – Relative limits Query

Function

This command reads out the setting value of the relative reference level for the upper limit line of the power- rising part on the user-established mask.

Query

```
[:SENSe]:PVTime:MASK:LIST:UPPer:RISE:RELative?
```

Parameter

<rel_amp>	Absolute reference level
Range	–99.99 to 99.99
Resolution	0.01 dB
Unit	dB

Example of Use

To read out the setting value of the relative reference level of the user-established mask.

```
PVT:MASK:LIST:UPP:RISE:REL?
> -30.00,-30.00,-30.00,-30.00,-6.00,-6.00,4.00,4.00,1.00,
1.00,1.00
```

2.8.10 Upper – Rise – Fail Logic

[:SENSe]:PVTime:MASK:LIST:UPPer:RISE:FLOGic ABSolute|RELative|OR|OFF, ABSolute|RELative|OR|OFF, ABSolute|RELative|OR|OFF, ABSolute|RELative|OR|OFF, ABSolute|RELative|OR|OFF, ABSolute|RELative|OR|OFF, ABSolute|RELative|OR|OFF, ABSolute|RELative|OR|OFF, ABSolute|RELative|OR|OFF, ABSolute|RELative|OR|OFF, ABSolute|RELative|OR|OFF

Mask Setup – Upper – Rise – Fail Logic

Function

This command sets the criterion for Pass/Fail judgment for the upper limit line of the power-rising part on the user-established mask.

Command

```
[:SENSe]:PVTime:MASK:LIST:UPPer:RISE:FLOGic <mode>,
<mode>,<mode>,<mode>,<mode>,<mode>,<mode>,<mode>,
<mode>,<mode>,<mode>
```

Parameter

`<mode>`	Criterion for judgment
`ABSolute`	Absolute
`RELative`	Relative
`OR`	Relative or Absolute
`OFF`	Off

Example of Use

To set the judgment criterion for the user-established mask.

```
PVT:MASK:LIST:UPP:RISE:FLOG
REL,REL,REL,REL,REL,REL,REL,REL,REL,REL,REL
```

[:SENSe]:PVTime:MASK:LIST:UPPer:RISE:FLOGic?

Mask Setup – Upper – Rise – Fail Logic Query

Function

This command reads out the setting value of the criterion for Pass/Fail judgment for the upper limit line of the power-rising part on the user-established mask.

Query

```
[:SENSe]:PVTime:MASK:LIST:UPPer:RISE:FLOGic?
```

Parameter

<mode>	Criterion for judgment
ABS	Absolute
REL	Relative
OR	Relative or Absolute
OFF	Off

Example of Use

To read the setting value of the judgment criterion for the user-established mask.

```
PVT:MASK:LIST:UPP:RISE:FLOG?
> REL,REL,REL,REL,REL,REL,REL,REL,REL,REL,REL
```

2.8.11 Upper – Fall – Time

[:SENSe]:PVTime:MASK:LIST:UPPer:FALL:TIME<time>,<time>,<time>,<time>,<time>,<time>,<time>,<time>,<time>,<time>,<time>,<time>

Mask Setup – Upper limits – Fall – Time

Function

This command sets the time point for the upper limit line of the power-falling part on the user-established mask.

Command

```
[:SENSe]:PVTime:MASK:LIST:UPPer:FALL:TIME
<time>,<time>,<time>,<time>,<time>,<time>,<time>,<time>,
<time>,<time>,<time>
```

Parameter

<time>	Time point
Range	–999.99 to 999.99
Resolution	0.01
Suffix code	None

The value to set actually is a value set for <time> multiplied by the ratio of the corresponding Symbol Rate range as below.

100 sps ≤ Symbol Rate < 1 ksps	Time point×10 ms
1 ksps ≤ Symbol Rate < 10 ksps	Time point×1 ms
10 ksps ≤ Symbol Rate < 100 ksps	Time point×100 μs
100 ksps ≤ Symbol Rate < 1 Msps	Time point×10 μs
1 Msps ≤ Symbol Rate < 10 Msps	Time point×1 μs
10 Msps ≤ Symbol Rate < 100 Msps	Time point×100 ns
100 Msps ≤ Symbol Rate ≤ 140 Msps	Time point×10 ns

Example of Use

To set the time point of the user-established mask.

```
PVT:MASK:LIST:UPP:FALL:TIME 0,0,0,0,10,10,18,18,28,28,48
```

[:SENSe]:PVTime:MASK:LIST:UPPer:FALL:TIME?

Mask Setup – Upper limits – Fall – Time Query

Function

This command reads out the setting value of the time point for the upper limit line of the power-falling part on the user-established mask.

Query

```
[:SENSe]:PVTime:MASK:LIST:UPPer:FALL:TIME?
```

Parameter

<time>	Time point
Range	–48.00 to 48.00
Resolution	0.01 µs
Suffix code	None

The value to set actually is a value set for <time> multiplied by the ratio of the corresponding Symbol Rate range as below.

100 sps ≤ Symbol Rate < 1 ksps	Time point×10 ms
1 ksps ≤ Symbol Rate < 10 ksps	Time point×1 ms
10 ksps ≤ Symbol Rate < 100 ksps	Time point×100 µs
100 ksps ≤ Symbol Rate < 1 Msps	Time point×10 µs
1 Msps ≤ Symbol Rate < 10 Msps	Time point×1 µs
10 Msps ≤ Symbol Rate < 100 Msps	Time point×100 ns
100 Msps ≤ Symbol Rate ≤ 140 Msps	Time point×10 ns

Example of Use

To read out the time point of the user-established mask.

```
PVT:MASK:LIST:UPP:FALL:TIME?
> 0.00,0.00,0.00,0.00,10.00,10.00,18.00,18.00,
28.00,28.00,48.00
```

2.8.12 Upper – Fall – Absolute limits

[:SENSe]:PVTime:MASK:LIST:UPPer:FALL:ABSolute <real>,<real>,<real>,<real>,<real>,<real>,<real>,<real>,<real>,<real>,<real>

Mask Setup – Upper – Fall – Absolute limits

Function

This command sets the absolute reference level for the upper limit line of the power-falling part on the user-established mask.

Command

```
[:SENSe]:PVTime:MASK:LIST:UPPer:FALL:ABSolute
<real>,<real>,<real>,<real>,<real>,<real>,<real>,<real>,
<real>,<real>,<real>
```

Parameter

`<real>`	Absolute reference level
Range	–99.99 to 99.99
Resolution	0.01 dB
Unit	dBm
Suffix code	`DBM`
	dBm is used when omitted.

Example of Use

To set the absolute reference level of the user-established mask.

```
PVT:MASK:LIST:UPP:FALL:ABS
99.99,99.99,99.99,99.99,99.99,99.99,99.99,99.99,99.99,
99.99,99.99
```

[:SENSe]:PVTime:MASK:LIST:UPPer:FALL:ABSolute?

Mask Setup – Upper – Fall – Absolute limits Query

Function

This command reads out the setting value of the absolute reference level for the upper limit line of the power-falling part on the user-established mask.

Query

```
[:SENSe]:PVTime:MASK:LIST:UPPer:FALL:ABSolute?
```

Parameter

<real>	Absolute reference level
Range	–99.99 to 99.99
Resolution	0.01 dB
Unit	dBm

Example of Use

To read out the setting value of the absolute reference level.

```
PVT:MASK:LIST:UPP:FALL:ABS?
> 99.99,99.99,99.99,99.99,99.99,99.99,99.99,99.99,99.99,
99.99,99.99
```

2.8.13 Upper – Fall – Relative limits

[:SENSe]:PVTime:MASK:LIST:UPPer:FALL:RELative <rel_amp>,<rel_amp>,<rel_amp>,<rel_amp>,<rel_amp>,<rel_amp>, <rel_amp>,<rel_amp>,<rel_amp>,<rel_amp>,<rel_amp>

Mask Setup – Upper – Fall – Relative limits

Function

This command sets the relative reference level for the upper limit line of the power-falling part on the user-established mask.

Command

```
[:SENSe]:PVTime:MASK:LIST:UPPer:FALL:RELative <rel_amp>,
<rel_amp>,<rel_amp>,<rel_amp>,<rel_amp>,<rel_amp>,
<rel_amp>,<rel_amp>,<rel_amp>,<rel_amp>,<rel_amp>
```

Parameter

`<rel_amp>`	Relative reference level
Range	–99.99 to 99.99
Resolution	0.01 dB
Unit	dB
Suffix code	`DB`
	dB is used when omitted.

Example of Use

To set the relative reference level of the user setting mask.

```
PVT:MASK:LIST:UPP:FALL:REL
1.00,1.00,1.00,1.00,1.00,-6.00,-6.00,-30.00,-30.00,
-30.00,-30.00
```

[:SENSe]:PVTime:MASK:LIST:UPPer:FALL:RELative?

Mask Setup – Upper – Fall – Relative limits Query

Function

This command reads out the setting value of the relative reference level for the upper limit line of the power-falling part on the user-established mask.

Query

```
[:SENSe]:PVTime:MASK:LIST:UPPer:FALL:RELative?
```

Parameter

<rel_amp>	Absolute reference level
Range	–99.99 to 99.99
Resolution	0.01 dB
Unit	dB

Example of Use

To read out the setting value of the relative reference level of the user setting mask.

```
PVT:MASK:LIST:UPP:FALL:REL?
> 1.00,1.00,1.00,1.00,1.00,-6.00,-6.00,-30.00,-30.00,
-30.00,-30.00
```

2.8.14 Upper – Fall – Fail Logic

[:SENSe]:PVTime:MASK:LIST:UPPer:FALL:FLOGic ABSolute|RELative|OR|OFF, ABSolute|RELative|OR|OFF, ABSolute|RELative|OR|OFF, ABSolute|RELative|OR|OFF, ABSolute|RELative|OR|OFF, ABSolute|RELative|OR|OFF, ABSolute|RELative|OR|OFF, ABSolute|RELative|OR|OFF, ABSolute|RELative|OR|OFF, ABSolute|RELative|OR|OFF

Mask Setup – Upper – Fall – Fail Logic

Function

This command sets the criterion for Pass/Fail judgment for the upper limit line of the power-falling part on the user-established mask.

Command

```
[:SENSe]:PVTime:MASK:LIST:UPPer:FALL:FLOGic <mode>,
<mode>,<mode>,<mode>,<mode>,<mode>,<mode>,<mode>,
<mode>,<mode>
```

Parameter

`<mode>`	Criterion for judgment
`ABSolute`	Absolute
`RELative`	Relative
`OR`	Relative or Absolute
`OFF`	Off

Example of Use

To set the judgment criterion for the user-established mask.

```
PVT:MASK:LIST:UPP:FALL:FLOG
REL,REL,REL,REL,REL,REL,REL,REL,REL,REL
```

[:SENSe]:PVTime:MASK:LIST:UPPer:FALL:FLOGic?

Mask Setup – Upper – Fall – Fail Logic Query

Function

This command reads out the setting value of the criterion for Pass/Fail judgment for the upper limit line of the power-falling part on the user-established mask.

Query

```
[:SENSe]:PVTime:MASK:LIST:UPPer:FALL:FLOGic?
```

Parameter

<mode>	Criterion for judgment
ABS	Absolute
REL	Relative
OR	Relative or Absolute
OFF	Off

Example of Use

To read out the setting value of the judgment criterion for the user-established mask.

```
PVT:MASK:LIST:UPP:FALL:FLOG?
> REL,REL,REL,REL,REL,REL,REL,REL,REL,REL
```

2.8.15 Lower – Rise – Time

[:SENSe]:PVTime:MASK:LIST:LOWer:RISE:TIME <time>,<time>,<time>,<time>,<time>,<time>,<time>,<time>,<time>,<time>,<time>

Mask Setup – Lower limits – Rise – Time

Function

This command sets the time point the lower limit line of the power-rising part on the user-established mask.

Command

```
[:SENSe]:PVTime:MASK:LIST:LOWer:RISE:TIME
<time>,<time>,<time>,<time>,<time>,<time>,<time>,<time>,
<time>,<time>,<time>
```

Parameter

<time>	Time point
Range	–999.99 to 999.99
Resolution	0.01
Suffix code	None

The value to set actually is a value set for <time> multiplied by the ratio of the corresponding Symbol Rate range as below.

100 sps ≤ Symbol Rate < 1 ksps	Time point×10 ms
1 ksps ≤ Symbol Rate < 10 ksps	Time point×1 ms
10 ksps ≤ Symbol Rate < 100 ksps	Time point×100 µs
100 ksps ≤ Symbol Rate < 1 Msps	Time point×10 µs
1 Msps ≤ Symbol Rate < 10 Msps	Time point×1 µs
10 Msps ≤ Symbol Rate < 100 Msps	Time point×100 ns
100 Msps ≤ Symbol Rate ≤ 140 Msps	Time point×10 ns

Example of Use

To set the time point of the user-established mask.

```
PVT:MASK:LIST:LOW:RISE:TIME
-48,-28,-28,-18,-18,-10,-10,0,0,0,0
```

[:SENSe]:PVTime:MASK:LIST:LOWer:RISE:TIME?

Mask Setup – Lower limits – Rise – Time Query

Function

This command reads out the setting value of the time point for the lower limit line of the power-rising part on the user-established mask.

Query

```
[:SENSe]:PVTime:MASK:LIST:LOWer:RISE:TIME?
```

Parameter

<time>	Time point
Range	–8.00 to 8.00
Resolution	0.01
Suffix code	None

The value to set actually is a value set for <time> multiplied by the ratio of the corresponding Symbol Rate range as below.

100 sps ≤ Symbol Rate < 1 ksps	Time point×10 ms
1 ksps ≤ Symbol Rate < 10 ksps	Time point×1 ms
10 ksps ≤ Symbol Rate < 100 ksps	Time point×100 µs
100 ksps ≤ Symbol Rate < 1 Msps	Time point×10 µs
1 Msps ≤ Symbol Rate < 10 Msps	Time point×1 µs
10 Msps ≤ Symbol Rate < 100 Msps	Time point×100 ns
100 Msps ≤ Symbol Rate ≤ 140 Msps	Time point×10 ns

Example of Use

To read out the time point of the user-established mask.

```
PVT:MASK:LIST:LOW:RISE:TIME?
> -48.00,-28.00,-28.00,-18.00,-18.00,-10.00,-10.00,0.00,
0.00,0.00,0.00
```

2.8.16 Lower – Rise – Absolute limits

[:SENSe]:PVTime:MASK:LIST:LOWer:RISE:ABSolute <real>,<real>,<real>,<real >,<real >,<real >,<real >,<real>,<real>,<real>, <real>

Mask Setup – Lower – Rise – Absolute limits

Function

This command sets the absolute reference level for the lower limit line of the power-rising part on the user-established mask.

Command

```
[:SENSe]:PVTime:MASK:LIST:LOWer:RISE:ABSolute
<real>,<real>,<real>,<real>,<real>,<real>,<real>,<real>,
<real>,<real>,<real>
```

Parameter

<real>	Absolute reference level
Range	–99.99 to 99.99
Resolution	0.01 dB
Unit	dBm
Suffix code	DBM
	dBm is used when omitted.

Example of Use

To set the absolute reference level of the user-established mask.

```
PVT:MASK:LIST:LOW:RISE:ABS
99.99,99.99,99.99,99.99,99.99,99.99,99.99,99.99,99.99,
99.99,99.99
```

[:SENSe]:PVTime:MASK:LIST:LOWer:RISE:ABSolute?

Mask Setup – Lower – Rise – Absolute limits Query

Function

This command reads out the setting value of the absolute reference level for the lower limit line of the power-rising part on the user-established mask.

Query

```
[:SENSe]:PVTime:MASK:LIST:LOWer:RISE:ABSolute?
```

Parameter

<real>	Absolute reference level
Range	–99.99 to 99.99
Resolution	0.01 dB
Unit	dBm

Example of Use

To read out the setting of the absolute reference level of the user-established mask.

```
PVT:MASK:LIST:LOW:RISE:ABS?
> 99.99,99.99,99.99,99.99,99.99,99.99,99.99,99.99,99.99,
99.99,99.99
```

2.8.17 Lower – Rise – Relative limits

[:SENSe]:PVTime:MASK:LIST:LOWer:RISE:RELative <rel_amp>,<rel_amp>,<rel_amp>,<rel_amp>,<rel_amp>,<rel_amp>, <rel_amp>,<rel_amp>,<rel_amp>,<rel_amp>,<rel_amp>

Mask Setup – Lower – Rise – Relative limits

Function

This command sets the relative reference level for the lower limit line of the power-rising part on the user-established mask.

Command

```
[:SENSe]:PVTime:MASK:LIST:LOWer:RISE:RELative <rel_amp>,
<rel_amp>,<rel_amp>,<rel_amp>,<rel_amp>,<rel_amp>,
<rel_amp>,<rel_amp>,<rel_amp>,<rel_amp>,<rel_amp>
```

Parameter

`<rel_amp>`		Relative reference level
	Range	–99.99 to 99.99
	Resolution	0.01 dB
	Unit	dB
	Suffix code	`DB`
		dB is used when omitted.

Example of Use

To set the relative reference level of the user-established mask.

```
PVT:MASK:LIST:LOW:RISE
-30.00,-30.00,-30.00,-30.00,-6.00,-6.00,4.00,4.00,1.00,
1.00,1.00
```

[:SENSe]:PVTime:MASK:LIST:LOWer:RISE[:RELative]?

Mask Setup – Lower – Rise – Relative limits Query

Function

This command reads out the setting value of the relative reference level for the lower limit line of the power-rising part on the user-established mask.

Query

```
[:SENSe]:PVTime:MASK:LIST:LOWer:RISE:RELative?
```

Parameter

<rel_amp>	Relative reference level
Range	–99.99 to 99.99
Resolution	0.01 dB
Unit	dB

Example of Use

To read out the setting value of the relative reference level of the user-established mask.

```
PVT:MASK:LIST:LOW:RISE
> -30.00,-30.00,-30.00,-30.00,-6.00,-6.00,4.00,4.00,1.00,
1.00,1.00
```

2.8.18 Lower – Rise – Fail Logic

[:SENSe]:PVTime:MASK:LIST:LOWer:RISE:FLOGic ABSolute|RELative|OR|OFF, ABSolute|RELative|OR|OFF, ABSolute|RELative|OR|OFF, ABSolute|RELative|OR|OFF, ABSolute|RELative|OR|OFF, ABSolute|RELative|OR|OFF, ABSolute|RELative|OR|OFF, ABSolute|RELative|OR|OFF, ABSolute|RELative|OR|OFF, ABSolute|RELative|OR|OFF, ABSolute|RELative|OR|OFF

Mask Setup – Lower – Rise – Fail Logic

Function

This command sets the criterion for Pass/Fail judgment for the lower limit line of the power-rising part on the user-established mask.

Command

```
[:SENSe]:PVTime:MASK:LIST:LOWer:RISE:FLOGic <mode>,
<mode>,<mode>,<mode>,<mode>,<mode>,<mode>,<mode>,
<mode>,<mode>,<mode>
```

Parameter

<mode>	Criterion for judgment
ABSolute	Absolute
RELative	Relative
OR	Relative or Absolute
OFF	Off

Example of Use

To set the judgment criterion for the user-established mask.

```
PVT:MASK:LIST:LOW:RISE:FLOG
REL,REL,REL,REL,REL,REL,REL,REL,REL,REL,REL
```

[:SENSe]:PVTime:MASK:LIST:LOWer:RISE:FLOGic?

Mask Setup – Lower – Rise – Fail Logic Query

Function

This command reads out the setting value of the criterion for Pass/Fail judgment for the lower limit line of the power-rising part on the user-established mask.

Query

```
[:SENSe]:PVTime:MASK:LIST:LOWer:RISE:FLOGic?
```

Parameter

<mode>	Criterion for judgment
ABS	Absolute
REL	Relative
OR	Relative or Absolute
OFF	Off

Example of Use

To read out the setting value of the judgment criterion for the user-established mask.

```
PVT:MASK:LIST:LOW:RISE:FLOG?
> REL,REL,REL,REL,REL,REL,REL,REL,REL,REL,REL
```

2.8.19 Lower – Fall – Time

[:SENSe]:PVTime:MASK:LIST:LOWer:FALL:TIME <time>,<time>,<time>,<time>,<time>,<time>,<time>,<time>,<time>,<time>,<time>

Mask Setup – Lower limits – Fall – Time

Function

This command sets the time point for the lower limit line of the power-falling part on the user-established mask.

Command

```
[:SENSe]:PVTime:MASK:LIST:LOWer:FALL:TIME
<time>,<time>,<time>,<time>,<time>,<time>,<time>,<time>,
<time>,<time>,<time>
```

Parameter

<time>	Time point
Range	–999.99 to 999.99
Resolution	0.01
Suffix code	None

The value to set actually is a value set for <time> multiplied by the ratio of the corresponding Symbol Rate range as below.

100 sps ≤ Symbol Rate < 1 ksps	Time point×10 ms
1 ksps ≤ Symbol Rate < 10 ksps	Time point×1 ms
10 ksps ≤ Symbol Rate < 100 ksps	Time point×100 μs
100 ksps ≤ Symbol Rate < 1 Msps	Time point×10 μs
1 Msps ≤ Symbol Rate < 10 Msps	Time point×1 μs
10 Msps ≤ Symbol Rate < 100 Msps	Time point×100 ns
100 Msps ≤ Symbol Rate ≤ 140 Msps	Time point×10 ns

Example of Use

To set the time point of the user-established mask.

```
PVT:MASK:LIST:LOW:FALL:TIME 0,0,0,0,10,10,18,18,28,28,48
```

[:SENSe]:PVTime:MASK:LIST:LOWer:FALL:TIME?

Mask Setup – Lower limits – Fall – Time Query

Function

This command reads out the setting value of the time point for the lower limit line of the power-falling part on the user-established mask.

Query

```
[:SENSe]:PVTime:MASK:LIST:LOWer:FALL:TIME?
```

Parameter

<time>	Time point
Range	–8.00 to 8.00
Resolution	0.01
Suffix code	None

The value to set actually is a value set for <time> multiplied by the ratio of the corresponding Symbol Rate range as below.

100 sps ≤ Symbol Rate < 1 ksps	Time point×10 ms
1 ksps ≤ Symbol Rate < 10 ksps	Time point×1 ms
10 ksps ≤ Symbol Rate < 100 ksps	Time point×100 µs
100 ksps ≤ Symbol Rate < 1 Msps	Time point×10 µs
1 Msps ≤ Symbol Rate < 10 Msps	Time point×1 µs
10 Msps ≤ Symbol Rate < 100 Msps	Time point×100 ns
100 Msps ≤ Symbol Rate ≤ 140 Msps	Time point×10 ns

Example of Use

To read out the time point of the user-established mask.

```
PVT:MASK:LIST:LOW:FALL:TIME?
> 0.00,0.00,0.00,0.00,10.0,10.00,18.00,18.00,
28.00,28.00,48.00
```

2.8.20 Lower – Fall – Absolute limits

[:SENSe]:PVTime:MASK:LIST:LOWer:FALL:ABSolute <real>,<real>,<real>,<real>,<real>,<real>,<real>,<real>,<real>,<real>,<real>

Mask Setup – Lower – Fall – Absolute limits

Function

This command sets the absolute reference level for the lower limit line of the power-falling part on the user-established mask.

Command

```
[:SENSe]:PVTime:MASK:LIST:LOWer:FALL:ABSolute
<real>,<real>,<real>,<real>,<real>,<real>,<real>,<real>,
<real>,<real>,<real>
```

Parameter

`<real>`	Absolute reference level
Range	–99.99 to 99.99
Resolution	0.01 dB
Unit	dBm
Suffix code	`DBM`
	dBm is used when omitted.

Example of Use

To set the absolute reference level of the user setting mask.

```
PVT:MASK:LIST:LOW:FALL:ABS
99.99,99.99,99.99,99.99,99.99,99.99,99.99,99.99,99.99,
99.99,99.99
```

[:SENSe]:PVTime:MASK:LIST:LOWer:FALL:ABSolute?

Mask Setup – Lower – Fall – Absolute limits Query

Function

This command reads out the setting value of the absolute reference level for the lower limit line of the power-falling part on the user-established mask.

Query

```
[:SENSe]:PVTime:MASK:LIST:LOWer:FALL:ABSolute?
```

Parameter

<real>	Absolute reference level
Range	–99.99 to 99.99
Resolution	0.01 dB
Unit	dBm

Example of Use

To read out the setting value of the absolute reference level of the user setting mask.

```
PVT:MASK:LIST:LOW:FALL:ABS?
> 99.99,99.99,99.99,99.99,99.99,99.99,99.99,99.99,99.99,
99.99,99.99
```

2.8.21 Lower – Fall – Relative limits

[:SENSe]:PVTime:MASK:LIST:LOWer:FALL[:RELative] <rel_amp>,<rel_amp>,<rel_amp>,<rel_amp>,<rel_amp>,<rel_amp>, <rel_amp>,<rel_amp>,<rel_amp>,<rel_amp>,<rel_amp>

Mask Setup – Lower – Fall – Relative limits

Function

This command sets the relative reference level for the lower limit line of the power-falling part on the user-established mask.

Command

```
[:SENSe]:PVTime:MASK:LIST:LOWer:FALL:RELative <rel_amp>,
<rel_amp>,<rel_amp>,<rel_amp>,<rel_amp>,<rel_amp>,
<rel_amp>,<rel_amp>,<rel_amp>,<rel_amp>,<rel_amp>
```

Parameter

`<rel_amp>`		Relative reference level
	Range	–99.99 to 99.99
	Resolution	0.01 dB
	Unit	dB
	Suffix code	`DB`
		dB is used when omitted.

Example of Use

To set the relative reference level of the user setting mask.

```
PVT:MASK:LIST:LOW:FALL
1.00,1.00,1.00,1.00,1.00,-6.00,-6.00,-30.00,-30.00,
-30.00,-30.00
```

[:SENSe]:PVTime:MASK:LIST:LOWer:FALL[:RELative]?

Mask Setup – Lower – Fall – Relative limits Query

Function

This command reads out the setting value of the relative reference level for the lower limit line of the power-falling part on the user-established mask.

Query

```
[:SENSe]:PVTime:MASK:LIST:LOWer:FALL:RELative?
```

Parameter

<rel_amp>	Relative reference level
Range	–99.99 to 99.99
Resolution	0.01 dB
Unit	dB

Example of Use

To read out the setting of the relative reference level of the user-established mask.

```
PVT:MASK:LIST:LOW:FALL:REL?
> 1.00,1.00,1.00,1.00,1.00,-6.00,-6.00,-30.00,-30.00,
-30.00,-30.00
```

2.8.22 Lower – Fall – Fail Logic

[:SENSe]:PVTime:MASK:LIST:LOWer:FALL:FLOGic
ABSolute|RELative|OR|OFF, ABSolute|RELative|OR|OFF,
ABSolute|RELative|OR|OFF, ABSolute|RELative|OR|OFF,
ABSolute|RELative|OR|OFF, ABSolute|RELative|OR|OFF,
ABSolute|RELative|OR|OFF, ABSolute|RELative|OR|OFF,
ABSolute|RELative|OR|OFF, ABSolute|RELative|OR|OFF

Mask Setup – Lower – Fall – Fail Logic

Function

This command sets the criterion for Pass/Fail judgment for the lower limit line of the power-falling part on the user-established mask

Command

```
[:SENSe]:PVTime:MASK:LIST:LOWer:FALL:FLOGic <mode>,
<mode>,<mode>,<mode>,<mode>,<mode>,<mode>,<mode>,
<mode>,<mode>
```

Parameter

<mode>	Criterion for judgment
ABSolute	Absolute
RELative	Relative (Initial value)
OR	Relative or Absolute
OFF	Off

Example of Use

To set the judgment criterion for the user-established mask.

```
PVT:MASK:LIST:LOW:FALL:FLOG
REL,REL,REL,REL,REL,REL,REL,REL,REL,REL
```

[:SENSe]:PVTime:MASK:LIST:LOWer:FALL:FLOGic?

Mask Setup – Lower – Fall – Fail Logic Query

Function

This command reads out the setting value of the criterion for Pass/Fail judgment for the lower limit line of the power-falling part on the user-established mask.

Command

```
[:SENSe]:PVTime:MASK:LIST:LOWer:FALL:FLOGic?
```

Parameter

<mode>	Criterion for judgment
ABS	Absolute
REL	Relative
OR	Relative or Absolute
OFF	Off

Example of Use

To read out the setting value of the judgment criterion for the user-established mask.

```
PVT:MASK:LIST:LOW:FALL:FLOG?
> REL,REL,REL,REL,REL,REL,REL,REL,REL,REL
```

2.8.23 Storage Mode

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

Storage Mode

Function

This command sets Storage Mode.

Command

```
[:SENSe]:PVTime:AVERage[:STATe] <mode>
```

Parameter

<mode>	Storage Mode
OFF|0	Off (Initial value)
ON|1	On

Example of Use

To set the storage mode to On.

```
PVT:AVER ON
```

[:SENSe]:PVTime:AVERage[:STATe]?

Storage Mode Query

Function

This command reads out the Storage Mode setting.

Query

```
[:SENSe]:PVTime:AVERage[:STATe]?
```

Response

```
<mode>
```

Parameter

<mode>	Storage Mode
0	Off
1	On

Example of Use

To read out the Storage Mode setting.

```
PVT:AVER?
> 1
```

2.8.24 Storage Count

[:SENSe]:PVTime:AVERage:COUNt <integer>

Storage Count

Function

This command sets the Storage Count.

Command

```
[:SENSe]:PVTime:AVERage:COUNt <integer>
```

Parameter

<integer>	Storage Count
Range	2 to 9999
Resolution	1
Initial value	2

Example of Use

To set the storage count to 10.

```
PVT:AVER:COUN 10
```

[:SENSe]:PVTime:AVERage:COUNt?

Storage Count Query

Function

This command reads out the setting of the Storage Count.

Query

```
[:SENSe]:PVTime:AVERage:COUNt?
```

Response

```
<integer>
```

Parameter

<integer>	Storage Count
Range	2 to 9999
Resolution	1

Example of Use

To read out the Storage Count setting.

```
PVT:AVER:COUN?
> 10
```

2.8.25 Average Type

[:SENSe]:PVTime:AVERage:TYPE POWer|LOGPower

Average Type

Function

This command sets Average Type.

Command

```
[:SENSe]:PVTime:AVERage:TYPE <mode>
```

Parameter

<mode>	Average Type
POWer	Power (Initial value)
LOGPower	Log-Power

Example of Use

To set Average Type to Power.

```
PVT:AVER:TYPE POW
```

[:SENSe]: PVTime:AVERage:TYPE?

Average Type Query

Function

This command reads out the Average Type setting.

Query

```
[:SENSe]:PVTime:AVERage:TYPE?
```

Response

```
<mode>
```

Parameter

<mode>	Average Type
POW	Power
LOGP	Log-Power

Example of Use

To read out the Average Type setting.

```
PVT:AVER:TYPE?
> POW
```

2.8.26 Filler Type

[:SENSe]:PVTime:TYPE <type>

Filter Type

Function

This command sets the Filter Type for Power vs Time measurement.

Command

```
[:SENSe]:PVTime:TYPE <type>
```

Parameter

<mode>	Filter Type
LOWPass	Low Pass filter
GAUSsian	Gaussian filter
RNYQuist	Root Nyquist filter
NYQuist	Nyquist filter
OFF	No filtering

Example of Use

To set Filter Type to Root Nyquist filter.

```
PVT:TYPE:RNYQ
```

[:SENSe]:PVTime:TYPE?

Filter Type Query

Function

This command reads out the Filter Type setting.

Query

```
[:SENSe]:PVTime:TYPE?
```

Response

<type>	Filter Type
LOWPass	Low Pass filter
GAUSsian	Gaussian filter
RNYQuist	Root Nyquist filter
NYQuist	Nyquist filter
OFF	No filtering

Example of Use

To read out the Filter Type setting.

```
PVT:TYPE?
> RNYQ
```

2.8.27 Filler Bandwidth

[:SENSe]:PVTime:BANDwidth[:RESolution] <Bandwidth>

Filter Bandwidth

Function

This command sets the Filter Bandwidth for Power vs Time measurement.

Command

```
[:SENSe]:PVTime:BANDwidth[:RESolution] <bandwidth>
```

Parameter

<bandwidth> Filter Bandwidth

Range

SPAN (Minimum)*	SPAN (Maximum)	Filter Bandwidth	
		Minimum value	Maximum value
1 kHz	10 kHz	100 Hz	4 kHz
2.5 kHz	25 kHz	100 Hz	10 kHz
5 kHz	50 kHz	1.001 kHz	20 kHz
10 kHz	100 kHz	2.001 kHz	40 kHz
25 kHz	250 kHz	4.001 kHz	100 kHz
50 kHz	500 kHz	10.001 kHz	200 kHz
100 kHz	1 MHz	20.001 kHz	400 kHz
250 kHz	2.5 MHz	40.001 kHz	1 MHz
500 kHz	5 MHz	100.001 kHz	2 MHz
1 MHz	10 MHz	200.001 kHz	4 MHz
2.5 MHz	25 MHz	400.001 kHz	10 MHz
5 MHz	31.25 MHz	1.000 001 MHz	12.5 MHz
10 MHz	50 MHz	2.000 001 MHz	20 MHz
31.25 MHz	100 MHz	10.000 001 MHz	40 MHz
62.5 MHz	255 MHz	20.000 001 MHz	102 MHz
125 MHz	1 GHz	40.000 001 MHz	400 MHz
255 MHz	1 GHz	50.000 001 MHz	400 MHz
510 MHz	1 GHz	102.000 001 MHz	400 MHz
1 GHz	1 GHz	204.000 001 MHz	400 MHz

*: Frequency Span when Modulation Analysis is performed.

Resolution 1 Hz

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

Initial value 400 Hz

Details

Note the setting range shall be limited according to the installed options.

Example of Use

To set the Filter Bandwidth to 500 kHz.

```
PVT:BAND 500KHz
```

[:SENSe]:PVTime:BANDwidth[:RESolution]?

Filter Bandwitdh Query

Function

This command queries the Filter Bandwidth for Power vs Time measurement.

Query

```
[:SENSe]:PVTime:BANDwidth[:RESolution]?
```

Response

```
<bandwidth>
```

Parameter

<bandwidth> Filter Bandwidth

Range

SPAN (Minimum)*	SPAN (Maximum)	Filter Bandwidth	
		Minimum value	Maximum value
1 kHz	10 kHz	100 Hz	4 kHz
2.5 kHz	25 kHz	100 Hz	10 kHz
5 kHz	50 kHz	1.001 kHz	20 kHz
10 kHz	100 kHz	2.001 kHz	40 kHz
25 kHz	250 kHz	4.001 kHz	100 kHz
50 kHz	500 kHz	10.001 kHz	200 kHz
100 kHz	1 MHz	20.001 kHz	400 kHz
250 kHz	2.5 MHz	40.001 kHz	1 MHz
500 kHz	5 MHz	100.001 kHz	2 MHz
1 MHz	10 MHz	200.001 kHz	4 MHz
2.5 MHz	25 MHz	400.001 kHz	10 MHz
5 MHz	31.25 MHz	1.000 001 MHz	12.5 MHz
10 MHz	50 MHz	2.000 001 MHz	20 MHz
31.25 MHz	100 MHz	10.000 001 MHz	40 MHz
62.5 MHz	255 MHz	20.000 001 MHz	102 MHz
125 MHz	1 GHz	40.000 001 MHz	400 MHz
255 MHz	1 GHz	50.000 001 MHz	400 MHz
510 MHz	1 GHz	102.000 001 MHz	400 MHz
1 GHz	1 GHz	204.000 001 MHz	400 MHz

*: Frequency Span when Modulation Analysis is performed.

Resolution 1 Hz

Value is returned in Hz units.

Details

Note the setting range shall be limited according to the installed options.

Example of Use

To query the filter Bandwidth.

```
PVT:BAND?
> 500000
```

2.8.28 Filler Roll-off Factor

[:SENSe]:PVTime:ROFF <real>

Filter Roll-off Factor

Function

This command sets the Filter Roll-off Factor for Power vs Time measurement.

Command

```
[:SENSe]:PVTime:ROFF <real>
```

Parameter

<real>		Roll-off Factor
	Range	0.1 to 1
	Resolution	0.01
	Default	1

Example of Use

To set Filter Roll-off Factor to 0.35.

```
PVT:ROFF 0.35
```

[:SENSe]:PVTime:ROFF?

Filter Roll-off Factor Query

Function

This command reads out the Filter Roll-off Factor setting for Power vs Time measurement.

Query

```
[:SENSe]:PVTime:ROFF?
```

Response

```
<real>
```

Parameter

<real>		Roll-off Factor
	Range	0.1 to 1
	Resolution	0.01

Example of Use

To read out the Filter Roll-off Factor setting.

```
PVT:ROFF?
> 0.35
```

2.8.29 Marker – On/Off

:CALCulate:PVTime:MARKer[:STATe] OFF|ON|0|1

Marker – On/Off

Function

This command sets Marker On/Off when Power vs Time is selected.

Command

```
:CALCulate:PVTime:MARKer[:STATe] <switch>
```

Parameter

<switch>	Marker
0|OFF	Off
1|ON	On (Initial value)

Example of Use

To display the marker.

```
CALC:PVT:MARK 1
```

:CALCulate:PVTime:MARKer[:STATe]?

Marker – On/Off Query

Function

This command reads out the setting of Marker On/Off when Power vs Time is selected.

Query

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

Response

```
<switch>
```

Parameter

<switch>	Marker
0	Off
1	On

Example of Use

To read out the marker setting.

```
CALC:PVT:MARK?
> 1
```

2.8.30 Active Trace

:CALCulate:PVTime:MARKer:ACTive RISE|FALL

Active Trace

Function

This command sets the setting target of the marker when Trace Mode is Rise and Fall.

Command

```
:CALCulate:PVTime:MARKer:ACTive <mode>
```

Parameter

<mode>	Active Trace
RISE	Rise Select (Initial value)
FALL	Fall Select

Example of Use

To operate the marker displayed in Rise.

```
CALC:PVT:MARK:ACT RISE
```

:CALCulate:PVTime:MARKer:ACTive?

Active Trace Query

Function

This command reads out the setting target of the marker when Trace Mode is Rise and Fall.

Query

```
:CALCulate:PVTime:MARKer:ACTive?
```

Response

```
<mode>
```

Parameter

<mode>	Active Trace
RISE	Rise Select
FALL	Fall Select

Example of Use

To read out the Active Trace setting.

```
CALC:PVT:MARK:ACT?
> RISE
```

2.8.31 Marker Position

:CALCulate:PVTime:MARKer[1]|2:X[:POINt] <real>

Marker X Axis

Function

This command sets the marker position on the graph in symbol units.

Query

```
:CALCulate:PVTime:MARKer[1]|2:X[:POINt] <real>
```

Response

```
<real>
```

Parameter

<real>	Marker position
Range	–20 to (Slot Length×All Slot Number) + 20 [symbol]
Resolution	0.125
Suffix code	None
Initial value	0.00

Example of Use

To set the graph marker 2 position to 0 point.

```
CALC:PVT:MARK2:X 0
```

:CALCulate:PVTime:MARKer[1]|2:X[:POINt]?

Marker X Axis Position Query

Function

This command reads out the marker position on the graph in symbol units.

Query

```
:CALCulate:PVTime:MARKer[1]|2:X[:POINt]?
```

Response

```
<real>
```

Parameter

`<real>` Marker position

Refer to `:CALCulate:PVTime:MARKer[1]|2:X[:POINt]`

Example of Use

To read out the setting of the graph marker 2 position.

```
CALC:PVT:MARK2:X?
> 0.000
```

2.8.32 Marker Value

:CALCulate:PVTime:MARKer[1]|2:Y[:AVERage]?

Marker Y Axis Average Value – Query

Function

This command reads out Y axis average on the current graph marker.

Query

```
:CALCulate:PVTime:MARKer[1]|2:Y[:AVERage]?
```

Response

```
<real>
```

Parameter

<real>		Y coordinate at marker on graph
	Resolution	0.01 dB
	Unit	dB or dBm
		A value in the unit for setting the current Y axis.

Example of Use

To read out the average among the Y coordinates at the marker 2.

```
CALC:PVT:MARK2:Y?
> 0.12
```

:CALCulate:PVTime:MARKer[1]|2:Y:MAXimum?

Marker Y Axis Maximum Value – Query

Function

This command reads out the maximum value among the Y coordinates at the markers on the currently displayed graph.

Query

```
:CALCulate:PVTime:MARKer[1]|2:Y:MAXimum?
```

Response

```
<real>
```

Parameter

`<real>`	Y coordinate at marker on graph
Resolution	0.01 dB
Unit	dB or dBm A value in the unit for setting the current Y axis.

Example of Use

To read out the maximum value among the Y coordinates at the marker 2.

```
CALC:PVT:MARK2:Y:MAX?
> 0.12
```

:CALCulate:PVTime:MARKer[1]|2:Y:MINimum?

Marker Y Axis Minimum Value – Query

Function

This command reads out the minimum value among the Y coordinates at the markers on the currently displayed graph.

Query

```
:CALCulate:PVTime:MARKer[1]|2:Y:MINimum?
```

Response

```
<real>
```

Parameter

<real>	Y coordinate at marker on graph
Resolution	0.01 dB
Unit	dB or dBm The value is returned in the unit currently set for the Y axis.

Example of Use

To read out the minimum value among the Y coordinates at the marker 2.

```
CALC:PVT:MARK2:Y:MIN?
> 0.12
```

2.8.33 Marker to Modana (Modulation Analysis) Area

:CALCulate:PVTime:MARKer:MOD

Marker to Modana (Modulation Analysis) Area

Function

This command executes Marker to Modana (Modulation Analysis) Area function.

Command

`:CALCulate:PVTime:MARKer:MOD`

Details

The area that is currently under the modulation analysis is indicated by Marker 1 and Marker 2 in the graph.

Note:

Marker function is not turned On automatically when remote-controlling, although it is turned On when operating from the control panel.

Example of Use

To indicate the modulation analysis area by Marker 1 and Marker 2.

```
CALC:PVT:MARK:MOD
```

2.8.34 Marker Tx Power

:CALCulate:PVTime:MARKer:TXPower?

Marker Tx Power – Query

Function

This command queries the average power measured during the interval indicated by Marker 1 and Marker 2.
The waveform data when Trace Mode is set to Frame is used for calculating the average power.

Query

```
:CALCulate:PVTime:MARKer:TXPower?
```

Response

```
<real>,<realW>
```

Parameter

<real>		Average power between markers [dBm]
	Resolution	0.01 dB
	Unit	dBm
<realW>		Average power between markers [W]
	Resolution	0.000 000 000 001 W
	Unit	W

Example of Use

To query the average power between markers.

```
CALC:PVT:MARK:TXP?
> -10.42,0.000095906760
```

2.8.35 Log Scale

:DISPlay:PVTime[:VIEW]:WINDow[1]:TRACe:Y[:SCALe]:PDIVision[:LOGarithmic] <rel_ampl>

Log Scale

Function

This command sets the log scale of Y-axis.

Command

```
:DISPlay:PVTime[:VIEW]:WINDow[1]:TRACe:Y[:SCALe]:PDIVision[:LOGarithmic] <rel_ampl>
```

Parameter

<rel_ampl>	Y-axis scale
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 (Default)
15	15 dB/Div
20	20 dB/Div

Example of Use

To set the Y-axis scale to 0.5 dB/Div.

```
DISP:PVT:WIND:TRAC:Y:PDIV 0.5
```

:DISPlay:PVTime[:VIEW]:WINDow[1]:TRACe:Y[:SCALe]:PDIVision[:LOGarithmic]?

Log Scale Query

Function

This command queries a log scale of Y-axis.

Query

```
:DISPlay:PVTime[:VIEW]:WINDow[1]:TRACe:Y[:SCALe]:PDIVision[:LOGarithmic]?
```

Response

```
<rel_ampl>
```

Parameter

<rel_ampl>	Y-axis scale
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
15	15 dB/Div
20	20 dB/Div

Example of Use

To query the Y-axis scale.

```
DISP:PVT:WIND:TRAC:Y:PDIV?
> 0.5
```

2.8.36 Log Scale Line

:DISPlay:PVTime[:VIEW]:WINDow[1]:TRACe:Y[:SCALe]:LINE[:LOGarithmic] <line>

Log Scale Line

Function

This command sets the division number of Y-axis in log scale.

Command

```
:DISPlay:PVTime[:VIEW]:WINDow[1]:TRACe:Y[:SCALe]:LINE[:L
OGarithmic] <line>
```

Parameter

<line>	Division number of Y-axis scale
2	Divided into 2
4	Divided into 4
10	Divided into 10 (Default)
12	Divided into 12

Example of Use

To set the division number of Y-axis scale to 12.

```
DISP:PVT:WIND:TRAC:Y:LINE 12
```

:DISPlay:PVTime[:VIEW]:WINDow[1]:TRACe:Y[:SCALe]:LINE[:LOGarithmic]?

Log Scale Line Query

Function

This command sets the division number of Y-axis in log scale.

Query

```
:DISPlay:PVTime[:VIEW]:WINDow[1]:TRACe:Y[:SCALe]:LINE[:L
OGarithmic]?
```

Response

```
<line>
```

Parameter

<line>	Division number of Y-axis scale
2	Divided into 2
4	Divided into 4
10	Divided into 10
12	Divided into 12

Example of Use

To query the division number of Y-axis scale.

```
DISP:PVT:WIND:TRAC:Y:LINE?
> 12
```

2.8.37 Wide Dynamic Range

[:SENSe]:PVTime:WDRange OFF|ON|0|1

Wide Dynamic Range

Function

This command sets whether to use Wide Dynamic Range.

Command

```
[:SENSe]PVTime:WDRange <switch>
```

Parameter

<switch>	Wide Dynamic Range
OFF|0	Off (Default)
ON|1	On

Example of Use

To turn On Wide Dynamic Range.

```
PVT:WDR ON
```

[:SENSe]:PVTime:WDRange?

Wide Dynamic Range Query

Function

This command queries whether to use Wide Dynamic Range.

Query

```
[:SENSe]PVTime:WDRange?
```

Response

```
<switch>
```

Parameter

<switch>	Wide Dynamic Range
0	Off
1	On

Example of Use

To query the setting of Wide Dynamic Range.

```
PVT:WDR?
> 1
```

2.8.38 Scale Range (Horizontal) – Rise

:DISPlay:PVTime[:VIEW]:WINDow2:TRACe:X[:SCALe]:RANGe <val>

Scale Range (Horizontal) - Rise value

Function

This command sets the scale range of time axis at rising in the Rise and Fall graph.

Command

```
:DISPlay:PVTime[:VIEW]:WINDow2:TRACe:X[:SCALe]:RANGe
<val>
```

Parameter

<val>		Scale Range
	Range	5 to Burst Gap Size
	Resolution	1 [symbol]
	Default	10

Example of Use

To set the scale range of time axis at rising in the Rise and Fall graph to 20.

```
DISP:PVT:WIND2:TRAC:X:RANG 20
```

:DISPlay:PVTime[:VIEW]:WINDow2:TRACe:X[:SCALe]:RANGe?

Scale Range (Horizontal) - Rise value Query

Function

This command queries the scale range of time axis at rising in the Rise and Fall graph.

Query

```
:DISPlay:PVTime[:VIEW]:WINDow2:TRACe:X[:SCALe]:RANGe?
```

Response

```
<val>
```

Parameter

<val>		Scale Range
	Range	5 to Burst Gap Size
	Resolution	1 [symbol]

Example of Use

To query the scale range of time axis at rising in the Rise and Fall graph.

```
DISP:PVT:WIND2:TRAC:X:RANG?
> 20
```

2.8.39 Scale Range (Horizontal) – Fall

:DISPlay:PVTime[:VIEW]:WINDow3:TRACe:X[:SCALe]:RANGe <val>

Scale Range (Horizontal) - Fall value

Function

This command sets the scale range of time axis at falling in the Rise and Fall graph.

Command

```
:DISPlay:PVTime[:VIEW]:WINDow3:TRACe:X[:SCALe]:RANGe
<val>
```

Parameter

<val>		Scale Range
	Range	5 to Burst Gap Size
	Resolution	1 [symbol]
	Default	10

Example of Use

To set the scale range of time axis at falling in the Rise and Fall graph to 20.

```
DISP:PVT:WIND3:TRAC:X:RANG 20
```

:DISPlay:PVTime[:VIEW]:WINDow3:TRACe:X[:SCALe]:RANGe?

Scale Range (Horizontal) - Fall value Query

Function

This command queries the scale range of time axis at falling in the Rise and Fall graph.

Query

```
:DISPlay:PVTime[:VIEW]:WINDow3:TRACe:X[:SCALe]:RANGe?
```

Response

```
<val>
```

Parameter

<val>		Scale Range
	Range	5 to Burst Gap Size
	Resolution	1 [symbol]

Example of Use

To query the scale range of time axis at falling in the Rise and Fall graph.

```
DISP:PVT:WIND3:TRAC:X:RANG?
> 20
```

2.8.40 Scale Offset (Horizontal) – Rise

:DISPlay:PVTime[:VIEW]:WINDow2:TRACe:X[:SCALe]:OFFSet <val>

Scale Offset (Horizontal) - Raise value

Function

This command sets the scale offset of time axis at rising in the Rise and Fall graph.

Command

```
:DISPlay:PVTime[:VIEW]:WINDow2:TRACe:X[:SCALe]:OFFSet
<val>
```

Parameter

<val>		Scale Offset
	Range	– (Burst Gap Size – Scale Range) to Burst Gap Size – Scale Range
	Resolution	1
	Default	0

Example of Use

To set the scale offset of time axis at rising in the Rise and Fall graph to 20.

```
DISP:PVT:WIND2:TRAC:X:OFFS 20
```

:DISPlay:PVTime[:VIEW]:WINDow2:TRACe:X[:SCALe]:OFFSet?

Scale Offset (Horizontal) - Rise value Query

Function

This command queries the scale offset of time axis at rising in the Rise and Fall graph.

Query

```
:DISPlay:PVTime[:VIEW]:WINDow2:TRACe:X[:SCALe]:OFFSet?
```

Response

```
<val>
```

Parameter

<val>		Scale Offset
	Range	– (Burst Gap Size – Scale Range) to Burst Gap Size – Scale Range
	Resolution	1

Example of Use

To query the scale offset of time axis at rising in the Rise and Fall graph.

```
DISP:PVT:WIND2:TRAC:X:OFFS?
> 20
```

2.8.41 Scale Offset (Horizontal) – Fall

:DISPlay:PVTime[:VIEW]:WINDow3:TRACe:X[:SCALe]:OFFSet <val>

Scale Offset (Horizontal) - Fall value

Function

This command sets the scale offset of time axis at falling in the Rise and Fall graph.

Command

```
:DISPlay:PVTime[:VIEW]:WINDow3:TRACe:X[:SCALe]:OFFSet
<val>
```

Parameter

<val>		Scale Offset
	Range	– (Burst Gap Size – Scale Range) to Burst Gap Size – Scale Range
	Resolution	1
	Default	0

Example of Use

To set the scale offset of time axis at falling in the Rise and Fall graph to 20.

```
DISP:PVT:WIND3:TRAC:X:OFFS 20
```

:DISPlay:PVTime[:VIEW]:WINDow3:TRACe:X[:SCALe]:OFFSet?

Scale Offset (Horizontal) - Fall value Query

Function

This command queries the scale offset of time axis at falling in the Rise and Fall graph.

Query

```
:DISPlay:PVTime[:VIEW]:WINDow3:TRACe:X[:SCALe]:OFFSet?
```

Response

```
<val>
```

Parameter

<val>		Scale Offset
	Range	– (Burst Gap Size – Scale Range) to Burst Gap Size – Scale Range
	Resolution	1

Example of Use

To query the scale offset of time axis at falling in the Rise and Fall graph.

```
DISP:PVT:WIND3:TRAC:X:OFFS?
> 20
```

2.8.42 Mask Table Title

[:SENSe]:PVTime:MASK:TITLe?

Mask Table Title Query

Function

This command queries the currently loaded mask table title.

Query

```
[:SENSe]:PVTime:MASK:TITLe?
```

Response

```
<name>
```

Parameter

<name>	Currently Loaded Mask Table Title

Example of Use

To query the currently loaded mask table title.

```
PVT:MASK:TITL?
> STD39,T79 Direct Channel
```

2.9 Capture

Table 2.9-1 lists the device messages corresponding to the Capture function settings.

Table 2.9-1 Capture Function

Parameter	Device Message
Save Captured Data	:MMEMory:STORe:IQData <filename>,<device>
Cancel Execute Save Captured Data	:MMEMory:STORe:IQData:CANCel
Capture Time Auto/Manual	[:SENSe]:SWEep:TIME:AUTO ON|OFF|1|0
	[:SENSe]:SWEep:TIME:AUTO?
Capture Time Length	[:SENSe]:SWEep:TIME <time>
	[:SENSe]:SWEep:TIME?
Capture Interval	[:SENSe]:SWEep:TIME:INTVal 1FRame|10FRame
	[:SENSe]:SWEep:TIME:INTVal?

2.9.1 Saving Captured Waveform Data to File

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

Save Captured Data

Function

This command saves a captured waveform data to a file.

Command

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

Parameter

<filename> Name of the file to be saved
Specify as string of up to 32 characters enclosed by either double (" ") or single (' ') quotation marks.
The following characters cannot be used:
\ / : * ? " " ' ' < > |

<device> Name of the drive to be saved
Drive name: A, B, D, E

Details

Files are saved to the following directory in the specified drive.
\Anritsu Corporation\Signal Analyzer\User Data\Digitized Data\Vector Modulation Analysis
Up to 1000 files can be saved in a folder.

Example of Use

To save waveform data into drive D using the file name "DATA".

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

2.9.2 Canceling Saving of Waveform Data

:MMEMory:STORe:IQData:CANCel

Cancel Execute Save Captured Data

Function

This command cancels the saving of a waveform data file.

Command

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

Example of Use

Canceling Saving of Waveform Data

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

2.9.3 Selecting Auto or Manual Waveform Capture Time

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

Capture Time Auto/Manual

Function

This command selects whether the waveform capture time (Capture Time) is automatically or manually specified.

Command

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

Parameter

<switch>	Auto/Manual waveform capture time
OFF|0	Manual setting
ON|1	Automatic setting (default)

Details

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

Example of Use

To configure an automatic setting for the capture time.

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

[:SENSe]:SWEep:TIME:AUTO?

Capture Time Auto/Manual Query

Function

This command queries whether the waveform capture time (Capture Time) is automatically or manually specified.

Query

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

Response

```
<switch>
```

Parameter

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

Example of Use

To query the setting of the capture time.

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

2.9.4 Setting Waveform Capture Time

[:SENSe]:SWEep:TIME <time>

Capture Time Length

Function

This command sets the capture time of the waveform.

Command

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

Parameter

<time>		Waveform Capture Time
	Range	Dependent on the common setting value.
	Resolution	1 ms
	Suffix code	MS, S Second is used when omitted.

Details

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

Example of Use

To set the waveform capture time 2 s.

```
SWE:TIME 2S
```

[:SENSe]:SWEep:TIME?

Capture Time Length Query

Function

This command queries the capture time of the waveform.

Query

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

Response

```
<time>
```

Parameter

<time>		Waveform capture time (ms units)
	Range	Dependent on the common setting value.

Example of Use

To query the capture time of the waveform.

```
SWE:TIME?
> 2.000000000
```

2.9.5 Setting Waveform Capture Interval

[:SENSe]:SWEep:TIME:INTVal 1FRame|10FRame

Capture Interval

Function

This command sets waveform capture interval used for one analysis.

Command

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

Parameter

<switch>	Waveform capture interval (in frames)
1FRame	1 Frame (default)
10FRame	10 Frame

Details

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

This parameter is automatically changed in the following cases.

- When the Measuring Object is changed to Frame Formatted and Sync Word Search to On, this parameter is set to 10 Frame.
- When the Measuring Object is changed to Non-Formatted or Sync Word Search to Off, this parameter is set to 1 Frame.

Example of Use

To set the waveform capture interval used for one analysis to 10 Frame.

```
SWE:TIME:INTV 10FR
```

[:SENSe]:SWEep:TIME:INTVal?

Capture Interval Query

Function

This command queries waveform capture interval used for one analysis.

Query

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

Response

```
<switch>
```

Parameter

<switch>	Waveform capture interval (in frames)
1FR	1 Frame
10FR	10 Frame

Example of Use

To query the capture interval of the waveform.

```
SWE:TIME:INTV?
> 10FR
```

2.10 Replay Function

The device messages corresponding to the Replay function settings are listed in Table 2.8-1.

Note:

The Replay function is available for Modulation Analysis only.

Table 2.10-1 Replay Function

Parameter	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 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	:MMEMory:LOAD:IQData:INFormation:ROSCillator?
Analysis Offset Time	:MMEMory:LOAD:IQData:TIME:OFFSet <time>
Analysis Offset Time Query	:MMEMory:LOAD:IQData:TIME:OFFSet?

:MMEMory:LOAD:IQData:STOP

Stop Replay

Function

This command stops the Replay function.

Command

```
:MMEMory:LOAD:IQData:STOP
```

Details

This command is available only while 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. Set a file, a drive, and an application to select the target IQ data.

Command

```
:MMEMory:LOAD:IQData <filename>,<device>,<application>
```

Parameter

<filename>	Target file name Character string within 32 characters enclosed by double quotes (" ") or single quotes (' ') (excluding extension) The following characters cannot be used: ¥ / : * ? " " ' ' < > |
<device>	Drive name A,B,D,E,F,...
<application>	Application to load IQ data file
VMA	Vector Modulation Analysis software
SIGANA	Signal Analyzer

Example of Use

To load the IQ data file named TEST in D drive and to execute the Replay function.

```
MMEM:LOAD:IQD "TEST",D, VMA
```

:MMEMory:LOAD:IQData:INFormation?

Replay File Information Query

Function

This command queries the information of the file for which the Replay function is executed.

Query

```
:MMEMory:LOAD:IQData:INFormation?
```

Response

```
<filename>,<time_length>
```

Parameter

<filename>	File name Character string within 32 characters (excluding extension) *** is returned when the Replay function is not executed.
<time_length>	Time length of analyzable IQ data
Resolution	1 ms
Suffix code	None. Value is returned in frame units. –999999999999 is returned when the Replay function is not executed.

Example of Use

To query the information of the file for which the Replay function is executed.

```
MMEM:LOAD:IQD:INF?
> TEST,1260000
```

: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	Replay function is being executed.
0	Off

Example of Use

To query whether the Replay function is being 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 32 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?
> TEST
```

: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 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?
> D
```

: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
`VMA`	Vector Modulation Analysis software

Example of Use

To query the name of the application for which the Replay function is executed.

```
MMEM:LOAD:IQD:INF:APPL?
> VMA
```

: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 when the Replay function is not 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 the 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 when the Replay function is not executed.

Example of Use

To query whether the 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 while the Replay function is being 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 Off. –999.0 is returned when the Replay function is not executed.

Example of Use

To query the Correction value while the Replay function is being executed.

```
MMEM:LOAD:IQD:INF:CORR?
> 0.000
```

:MMEMory:LOAD:IQData:INFormation:ROSCillator?

Replay External Reference Query

Function

This command queries the frequency reference signal source while the Replay function is being 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 when the Replay function is not executed.

Example of Use

To query the frequency reference signal source while the Replay function is being executed.

```
MMEM:LOAD:IQD:INF:ROSC?
> INT
```

:MMEMory:LOAD:IQData:TIME:OFFSet <time>

Analysis Offset Time

Function

This command sets the position to start analysis during replay, by the offset from the reference position.
This command is available only while the Replay function is being executed.

Command

```
:MMEMory:LOAD:IQData:TIME:OFFSet <time>
```

Parameter

<time>		Offset
	Range	Lower limit: 0
		Upper limit: Refer to "Details" below.
	Resolution	1 / Sampling Rate [Hz]
	Suffix code	NS, US, MS, S
		Second is used when omitted.
	Default	0 s

Details

This command is available only while the Replay function is being executed.

The range depends on the size of the replayed file, Common Setting parameters, Capture Time Length, Storage Count, etc.

Sampling Rate [Hz] is changed according to Span.
For the relation between Span and Sampling Rate, refer to Table 2.2.2-1 "Frequency span and sampling rate" in the *MS2830A/MS2840A/MS2850A Signal Analyzer Operation Manual Signal Analyzer Function Operation*.

For more information about "Span", refer to Section 3.4.6 "Modulation" in the *MX269017A Vector Modulation Analysis Software Operation Manual*.

If the value set for the offset doesn't match the resolution, the set value is rounded up.

Example of Use

To set the offset of the analysis start position, by 1 ms after the reference position.

```
MMEM:LOAD:IQD:TIME:OFFS 1MS
```

:MMEMory:LOAD:IQData:TIME:OFFSet?

Analysis Offset Time

Function

This command queries the position to start analysis during replay. This command is available only while the Replay function is being executed.

Query

```
:MMEMory:LOAD:IQData:TIME:OFFSet?
```

Parameter

<time>		Offset
	Range	Lower limit: 0 Upper limit: Refer to ":MMEMory:LOAD:IQData:TIME:OFFSet <time>".
	Resolution	1 / Sampling Rate [Hz]
	Unit	s
	Default	0 s

Details

This command is available only while the Replay function is being executed.

Example of Use

To query the offset of the analysis start position.

```
MMEM:LOAD:IQD:TIME:OFFS?
> 0.001
```

2.11 Saving Measurement Results

Table 2.11-1 lists device messages for saving measurement results.

Table 2.11-1 Measurement Result Saving Function

Parameter	Device Message
Save All Results	`:MMEMory:STORe:RESult [<filename>[,<device>]]`
Save as Type	`:MMEMory:STORe:RESult:MODE XML|CSV`
	`:MMEMory:STORe:RESult:MODE?`

2.11.1 Saving a measurement result in a file

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

Save All Results Data

Function

This command saves a measurement result in a file.

Command

```
:MMEMory:STORe:RESult [<filename>[,<device>]]
```

Parameter

<filename>	Target file name Character string within 32 characters enclosed by double quotes (" ") or single quotes (' ') (excluding extension) The following characters cannot be used: ¥ / : * ? " " ' ' < > | VMA20160110_00.xml
<device>	Drive name A,B,D,E,F,... D drive is used when omitted.

Details

A number from 00 to 99 is sequentially affixed to the name if the file name is omitted. 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\Measurement Results\Vector Modulation Analysis

Up to 1000 files can be saved in a folder.

Example of Use

To save a measurement result with the file name "TEST" to the internal hard disk.

```
MMEM:STOR:RES "TEST",D
```

2.11.2 Setting the saving file type

:MMEMory:STORe:RESult:MODE XML|CSV

Save as Type

Function

This command sets the type of file to save.

Command

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

Parameter

<mode>	File type
XML	xml format (default)
CSV	csv format

Example of Use

To set the type of the file to be saved to csv format.

```
MMEM:STOR:RES:MODE CSV
```

:MMEMory:STORe:RESult:MODE?

Save as Type Query

Function

This command queries the type of the file to be saved.

Query

```
:MMEMory:STORe:RESult:MODE?
```

Response

```
<mode>
```

Parameter

<mode>	File type
XML	xml format (default)
CSV	csv format

Example of Use

To query the type of the file to be saved.

```
MMEM:STOR:RES:MODE?
> CSV
```

Chapter 3 SCPI Status Register

This chapter describes the SCPI commands and the Status register for querying application statuses.

3.1 Querying Measurement Status 3-2
:STATus:ERRor?..... 3-2
3.2 STATus:QUEStionable Register..... 3-3
:STATus:QUEStionable[:EVENt]?..... 3-5
:STATus:QUEStionable:CONDition? 3-5
:STATus:QUEStionable:ENABle <integer>..... 3-6
:STATus:QUEStionable:ENABle?..... 3-6
:STATus:QUEStionable:NTRansition <integer> 3-7
:STATus:QUEStionable:NTRansition?..... 3-7
:STATus:QUEStionable:PTRansition <integer> 3-8
:STATus:QUEStionable:PTRansition?..... 3-8
:STATus:QUEStionable:MEASure[:EVENt]? 3-9
:STATus:QUEStionable:MEASure:CONDition?..... 3-9
:STATus:QUEStionable:MEASure:ENABle <integer>
..... 3-10
:STATus:QUEStionable:MEASure:ENABle? 3-10
:STATus:QUEStionable:MEASure:NTRansition
<integer> 3-11
:STATus:QUEStionable:MEASure:NTRansition? 3-11
:STATus:QUEStionable:MEASure:PTRansition
<integer> 3-12
:STATus:QUEStionable:MEASure:PTRansition? 3-12
3.3 STATus:OPERation Register 3-13
:STATus:OPERation[:EVENt]? 3-14
:STATus:OPERation:CONDition?..... 3-14
:STATus:OPERation:ENABle <integer> 3-15
:STATus:OPERation:ENABle?..... 3-15
:STATus:OPERation:NTRansition <integer> 3-16
:STATus:OPERation:NTRansition? 3-16
:STATus:OPERation:PTRansition <integer> 3-17
:STATus:OPERation:PTRansition?..... 3-18

3.1 Querying Measurement Status

:STATus:ERRor?

Measurement Status Query

Function

This command queries the measurement status.

Query

```
:STATus:ERRor?
```

Response

```
<status>
```

Parameter

`<status>`	Measurement status	
Value	= bit0 + bit1 + bit2 + bit3 + bit4 + bit5 + bit6 + bit7 + bit8 + bit9 + bit10 + bit11 + bit12 + bit13 + bit14 + bit15	
	bit0 : 2^0 = 1	Not measured
	bit1 : 2^1 = 2	Level over
	bit2 : 2^2 = 4	Signal abnormal
	bit3 : 2^3 = 8	(Not used)
	bit4 : 2^4 = 16	(Not used)
	bit5 : 2^5 = 32	Signal Level Too Low
	bit6 : 2^6 = 64	(Not used)
	bit7 : 2^7 = 128	(Not used)
	bit8 : 2^8 = 256	(Not used)
	bit9 : 2^9 = 512	(Not used)
	bit10 : 2^{10} = 1024	(Not used)
	bit11 : 2^{11} = 2048	(Not used)
	bit12 : 2^{12} = 4096	(Not used)
	bit13 : 2^{13} = 8192	(Not used)
	bit14 : 2^{14} = 16384	(Not used)
	bit15 : 2^{15} = 32768	(Not used)
Range	0 to 65535	

Details

Bit 0 is cleared if the measurement is completed without error.

Example of Use

To query the measurement status.

```
:STAT:ERR?
> 0
```

3.2 STATus:QUEStionable Register

Figure 3.2-1, Table 3.2-1, Figure 3.2-2, and Table 3.2-2 show the layer structure of the QUEStionable Status register.

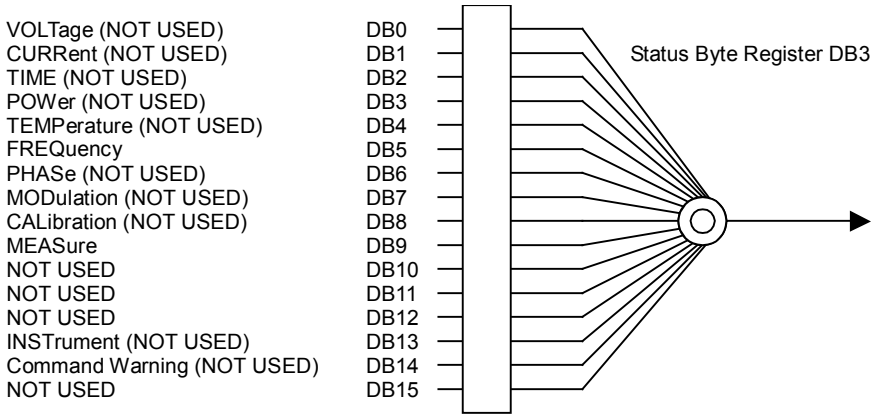


Figure 3.2-1 QUEStionable Status Register

Table 3.2-1 Definitions of Bits in QUEStionable Status Register

Bit	Definition
DB5	Reference clock unlock
DB9	QUEStionable Measure register summary

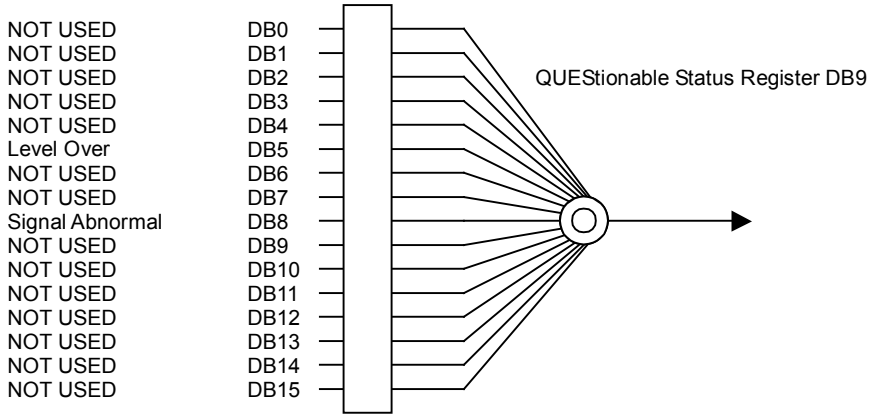


Figure 3.2-2 QUEStionable Measure Register

Table 3.2-2 Bit Definition of QUEStionable Status Register

Bit	Definition
DB5	Level over
DB8	Signal abnormal
DB11	Signal Level Too Low

Table 3.2-3 lists device messages for the QUEStionable Status Register.

Table 3.2-3 Device messages 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>	Byte summation of Event Register
Resolution	1
Range	0 to 65535

Example of Use

To query the event register content 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>	Byte summation of Condition Register
Resolution	1
Range	0 to 65535

Example of Use

To query 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>	Bit summation of Event Enable Register
Resolution	1
Range	0 to 65535

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>	Bit summation 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>		Bit summation of Transition Filter (negative transition)
	Resolution	1
	Range	0 to 65535

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>		Bit summation 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>		Bit summation of Transition Filter (positive transition)
	Resolution	1
	Range	0 to 65535

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>		Bit summation of Transition Filter (positive transition)
	Resolution	1
	Range	0 to 65535

Example of Use

To query the content of the event register of the QUEStionable Measure 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:MEASure[:EVENt]?
```

Response

```
<integer>
```

Parameter

<integer>	Byte summation of Event Register
Resolution	1
Range	0 to 65535

Example of Use

To query the event register content of the QUEStionable Measure Register.

```
:STAT:QUES:MEAS?
> 0
```

:STATus:QUEStionable:MEASure:CONDition?

Questionable Measure Register Condition

Function

This command queries the condition register of the QUEStionable Measure Register.

Query

```
:STATus:QUEStionable:MEASure:CONDition?
```

Response

```
<integer>
```

Parameter

<integer>	Byte summation of Condition Register
Resolution	1
Range	0 to 65535

Example of Use

To query the content of the condition register of QUEStionable Measure register.

```
:STAT:QUES:MEAS: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:MEASure:ENABle <integer>
```

Parameter

<integer>	Bit summation of Event Enable Register
Resolution	1
Range	0 to 65535

Example of Use

To set the event enable register of the QUEStionable Measure Register to 16.

```
:STAT:QUES:MEAS: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:MEASure:ENABle?
```

Response

```
<integer>
```

Parameter

<integer>	Bit summation 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:MEAS: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:MEASure:NTRansition <integer>
```

Parameter

<integer>		Bit summation of Transition Filter (negative transition)
	Resolution	1
	Range	0 to 65535

Example of Use

To set the transition filter (negative transition) of the QUEStionable Measure Register to 16.

```
:STAT:QUES:MEAS: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:MEASure:NTRansition?
```

Response

```
<integer>
```

Parameter

<integer>		Bit summation 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:MEAS: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:MEASure:PTRansition <integer>
```

Parameter

<integer>		Bit summation of Transition Filter (positive transition)
	Resolution	1
	Range	0 to 65535

Example of Use

To set the transition filter (positive transition) of the QUEStionable Measure Register to 16.

```
:STAT:QUES:MEAS: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:MEASure:PTRansition?
```

Response

```
<integer>
```

Parameter

<integer>		Bit summation 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:MEAS:PTR?
> 16
```

3.3 STATus:OPERation Register

Figure 3.3-1 and Table 3.3-1 show the layer structure of the OPERation Status Register.

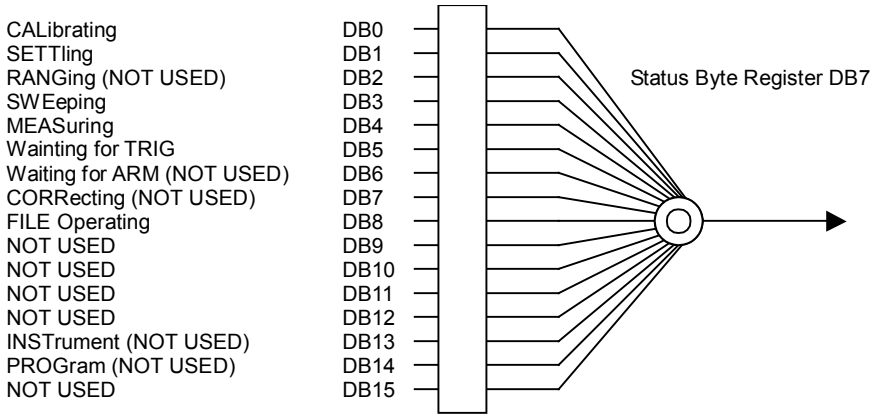


Figure 3.3-1 OPERation Status register

Table 3.3-1 Definition of OPERation Status register

Bit	Definition
DB0	Executing calibration
DB1	Warm Up message is being displayed.
DB3	Performing measurement (including trigger signal waiting status; always 1 during Continuous measurement)
DB4	Waiting for trigger signal
DB8	Operating on file

Table 3.3-2 lists device messages for the OPERation Status Register.

Table 3.3-2 Device messages for the 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 content of the event enable register of the OPERation status register.

Query

```
:STATus:OPERation[:EVENt]?
```

Response

```
<integer>
```

Parameter

<integer>	Byte summation of Event Register
Resolution	1
Range	0 to 65535

Example of Use

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

```
:STAT:OPER?
> 0
```

:STATus:OPERation:CONDition?

Operation Status Register Condition

Function

This command queries the content of the condition register of the OPERation status register.

Query

```
:STATus:OPERation:CONDition?
```

Response

```
<integer>
```

Parameter

<integer>	Byte summation of Condition Register
Resolution	1
Range	0 to 65535

Example of Use

To query the content 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>	Bit summation of Event Enable Register
Resolution	1
Range	0 to 65535

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>	Bit summation 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>		Bit summation of Transition Filter (negative transition)
	Resolution	1
	Range	0 to 65535

Example of Use

To set the transition filter (negative transition) of the OPERation status register to 16.

```
:STAT:OPER:NTR 16
```

:STATus:OPERation:NTRansition?

Operation Status Register Negative Transition Query

Function

This command queries the transition filter (negative transition) of the OPERation status register.

Query

```
:STATus:OPERation:NTRansition?
```

Response

```
<integer>
```

Parameter

<integer>		Bit summation 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>		Bit summation of Transition Filter (positive transition)
	Resolution	1
	Range	0 to 65535

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>`		Bit summation 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
```