MX269017A
Vector Modulation Analysis Software
Operation Manual
Remote Control

25th 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.

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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.
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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”).

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Chapter 1 Overview

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 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](image)

(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](image)

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

![1.2.2 Setting Basic Parameter](image)
Chapter 1  Overview

(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.
1.2 Basic Flow of Control

Overview

Start

1. Initializing communication interface

2. Setting language mode and response format
   - INST CONFIG
   - SYST:LANG SCPI
   - SYST:RES:MODE A

Start the application

- SYST:APPL:LOAD VMA
- SYST:APPL:LOAD SIGANA
- SYST:APPL:LOAD SPECT

Selecting the application

- INST VMA

Initialization

- *RST
- *CLS

Setting the measurement mode

- INIT:CONT OFF

End

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](image-url)
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
1.2 Basic Flow of Control

![Flowchart](image)

- **Selecting the measurement function**
  - CONF:EVM

- **Setting the measurement parameter**
  - EVM:AVER ON
  - EVM:AVER:COUN 10
  - CALC:EVM:SLOT 0

- **Executing the measurement and reading out the measurement result**
  - READ:EVM?
  - STAT:ERR?

- **Setting the display (if necessary)**
  - DISP:EVM:TRAC2 EVSY
  - DISP:EVM:WIND2:TRAC:Y:RLEV 10
  - CALC:EVM:WIND2:TRAC:MARK:SYMBOL 0
  - CALC:EVM:WIND2:TRAC:MARK:Y?

**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
1.2 Basic Flow of Control

Start

Selecting the measurement function
CONF:PVT

Setting the measurement parameter
MMEM:LOAD:COMM 'C:\Program Files\Anritsu Corporation\Signal Analyzer\Applications\VMA Common\Template\RCR39-T79_DC-CH.xml'
FREQ:CENT 260000000
DISP:WIND:TRAC:Y:RLEV:OFFS 30.00
POW:RANG:ILEV 30.00
PVT:AVER:COUN 10
PVT:AVER ON
PVT:WDR ON

Executing the measurement and reading out the measurement result
READ:PVT?
STAT:ERR?

Setting the display (if necessary)
DISP:PVT RAF
DISP:PVT:WIND2:TRAC:X:RANG 8
DISP:PVT:WIND3:TRAC:X:RANG 8
DISP:PVT:WIND3:TRAC:X:OFFS 3
CALC:PVT:MARK:MOD

End

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`.

![SCPI and Native modes](image_url)
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>
**Chapter 1  Overview**

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.

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2.1 Selecting applications

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

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Device Message</th>
</tr>
</thead>
<tbody>
<tr>
<td>Load Application</td>
<td>:SYSTem:APPLication:LOAD VMA</td>
</tr>
<tr>
<td>Unload Application</td>
<td>:SYSTem:APPLication:UNLoad VMA</td>
</tr>
<tr>
<td>Application Switch</td>
<td>:INSTRument[:SE lect] VMA</td>
</tr>
<tr>
<td></td>
<td>:INSTRument[:SE lect]?</td>
</tr>
<tr>
<td>Application Status</td>
<td>:INSTRument:SYSTem VMA, [ACTive]</td>
</tr>
<tr>
<td></td>
<td>:INSTRument:SYSTem? VMA</td>
</tr>
<tr>
<td>Initialization</td>
<td>:INSTRument:DEFault</td>
</tr>
<tr>
<td></td>
<td>:SYSTem:PRESet</td>
</tr>
</tbody>
</table>
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
2.1 Selecting applications

: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
  - SIGANA
  - SPECT
  - 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
Chapter 2  SCPI Device Message Details

: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.

Command
:SYSTem:PRESet

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>
<thead>
<tr>
<th>Parameter</th>
<th>Device Message</th>
</tr>
</thead>
<tbody>
<tr>
<td>Carrier Frequency</td>
<td>[:SENSe]:FREQuency:CENTer &lt;freq&gt;</td>
</tr>
<tr>
<td></td>
<td>[:SENSe]:FREQuency:CENTer?</td>
</tr>
<tr>
<td>RF Spectrum</td>
<td>[:SENSe]:EVM:SPECTrum NORMAL</td>
</tr>
<tr>
<td></td>
<td>[:SENSe]:EVM:SPECTrum?</td>
</tr>
<tr>
<td>Input Level</td>
<td>[:SENSe]:POWer[:RF]:RANGe:ILEvel &lt;real&gt;</td>
</tr>
<tr>
<td></td>
<td>[:SENSe]:POWer[:RF]:RANGe:ILEvel?</td>
</tr>
<tr>
<td>Level Offset</td>
<td>:DISPlay:WINDow[1]:TRACe:Y[:SCALe]:RLEVel:OFFSet &lt;rel_power&gt;</td>
</tr>
<tr>
<td></td>
<td>:DISPlay:WINDow[1]:TRACe:Y[:SCALe]:RLEVel:OFFSet?</td>
</tr>
<tr>
<td>Level Offset State</td>
<td>:DISPlay:WINDow[1]:TRACe:Y[:SCALe]:RLEVel:OFFSet:STATE OFF</td>
</tr>
<tr>
<td></td>
<td>:DISPlay:WINDow[1]:TRACe:Y[:SCALe]:RLEVel:OFFSet:STATE?</td>
</tr>
<tr>
<td>Pre-Amp State</td>
<td>[:SENSe]:POWer[:RF]:GAIN[:STATE] OFF</td>
</tr>
<tr>
<td></td>
<td>[:SENSe]:POWer[:RF]:GAIN[:STATE]?</td>
</tr>
<tr>
<td>Frequency Band Mode</td>
<td>[:SENSe]:FREQuency:BAND:MODE NORMal</td>
</tr>
<tr>
<td></td>
<td>[:SENSe]:FREQuency:BAND:MODE?</td>
</tr>
<tr>
<td>Pre-selector Auto Tune</td>
<td>:CALibration:YTF</td>
</tr>
<tr>
<td></td>
<td>:CALibration:YTF?</td>
</tr>
<tr>
<td>Pre-selector Tune</td>
<td>[:SENSe]:POWer[:RF]:PADJust &lt;freq&gt;</td>
</tr>
<tr>
<td></td>
<td>[:SENSe]:POWer[:RF]:PADJust?</td>
</tr>
<tr>
<td>Micro Wave</td>
<td>[:SENSe]:POWer[:RF]:MW:PRESelector[:STATE] ON</td>
</tr>
<tr>
<td>Preselector Bypass</td>
<td>[:SENSe]:POWer[:RF]:MW:PRESelector[:STATE]?</td>
</tr>
</tbody>
</table>
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>  
NORM  Disables the Spectrum Reverse function.  
(REV)  (default)  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>  
NORM  Disables the Spectrum Reverse function.  
(REV)  (default)  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.
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

<table>
<thead>
<tr>
<th>&lt;switch&gt;</th>
<th>Pre-Amp On/Off</th>
</tr>
</thead>
<tbody>
<tr>
<td>OFF</td>
<td>0</td>
</tr>
<tr>
<td>ON</td>
<td>1</td>
</tr>
</tbody>
</table>

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]:FREQ:uency: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]:FREQ:uency: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 Opt-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.

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

 Parameter | Description |
-------------|-------------|
 <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]:PADJJust?
Pre-selector Tune Query

Function
This command queries the preselector peaking bias value.

Query
[:SENSe]:POWer[:RF]:PADJJust?

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>
<thead>
<tr>
<th>Parameter</th>
<th>Device Message</th>
</tr>
</thead>
<tbody>
<tr>
<td>Common Setting Recall</td>
<td>:MMEMory:LOAD:COMMOn &lt;filename&gt;</td>
</tr>
<tr>
<td>Common Setting File Name Query</td>
<td>[:SENSe]:COMMOn:FNAMe?</td>
</tr>
<tr>
<td>Frame Formatted/Non-Formatted</td>
<td>:CALCulate:EVM FRAME</td>
</tr>
<tr>
<td>Select</td>
<td>:CALCulate:EVM?</td>
</tr>
<tr>
<td>Modulation Type</td>
<td>:CALCulate:EVM:FRAME</td>
</tr>
<tr>
<td></td>
<td>BFSK</td>
</tr>
<tr>
<td></td>
<td>16Qam</td>
</tr>
<tr>
<td></td>
<td>4FSK</td>
</tr>
<tr>
<td></td>
<td>:CALCulate:EVM:FRAME</td>
</tr>
<tr>
<td>2FSK Auto Select</td>
<td>:CALCulate:EVM:FRAME</td>
</tr>
<tr>
<td>Modulation Index</td>
<td>:CALCulate:EVM:FRAME</td>
</tr>
<tr>
<td></td>
<td>:CALCulate:EVM:FRAME</td>
</tr>
<tr>
<td>4FSK Auto Select</td>
<td>:CALCulate:EVM:FRAME</td>
</tr>
<tr>
<td>Maximum Frequency Deviation</td>
<td>:CALCulate:EVM:FRAME</td>
</tr>
<tr>
<td></td>
<td>:CALCulate:EVM:FRAME</td>
</tr>
<tr>
<td>Mapping Edit</td>
<td>:CALCulate:EVM:FRAME</td>
</tr>
<tr>
<td></td>
<td>:CALCulate:EVM:FRAME</td>
</tr>
<tr>
<td>Symbol Rate</td>
<td>:CALCulate:EVM:FRAME</td>
</tr>
<tr>
<td></td>
<td>:CALCulate:EVM:FRAME</td>
</tr>
<tr>
<td>Span Up</td>
<td>:CALCulate:EVM:FRAME</td>
</tr>
<tr>
<td></td>
<td>:CALCulate:EVM:FRAME</td>
</tr>
</tbody>
</table>
### Table 2.3-1  System Parameter Settings (Cont’d)

<table>
<thead>
<tr>
<th>Function</th>
<th>Device Message</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Measurement Filter</strong></td>
<td>:CALCulate:EVM:FRAME</td>
</tr>
<tr>
<td></td>
<td>:CALCulate:EVM:FRAME</td>
</tr>
<tr>
<td><strong>2nd Measurement Filter</strong></td>
<td>:CALCulate:EVM:FRAME</td>
</tr>
<tr>
<td></td>
<td>:CALCulate:EVM:FRAME</td>
</tr>
<tr>
<td></td>
<td>:CALCulate:EVM:FRAME</td>
</tr>
<tr>
<td><strong>2nd Reference Filter</strong></td>
<td>:CALCulate:EVM:FRAME</td>
</tr>
<tr>
<td></td>
<td>:CALCulate:EVM:FRAME</td>
</tr>
<tr>
<td><strong>Roll Off/BT</strong></td>
<td>:CALCulate:EVM:FRAME</td>
</tr>
<tr>
<td></td>
<td>:CALCulate:EVM:FRAME</td>
</tr>
<tr>
<td><strong>2nd Roll Off/BT</strong></td>
<td>:CALCulate:EVM:FRAME</td>
</tr>
<tr>
<td></td>
<td>:CALCulate:EVM:FRAME</td>
</tr>
<tr>
<td></td>
<td>:CALCulate:EVM:FRAME</td>
</tr>
<tr>
<td></td>
<td>:CALCulate:EVM:FRAME</td>
</tr>
<tr>
<td><strong>Frame Format</strong></td>
<td>:CALCulate:EVM:FRAME</td>
</tr>
<tr>
<td></td>
<td>:CALCulate:EVM:FRAME</td>
</tr>
<tr>
<td><strong>Slot Length</strong></td>
<td>:CALCulate:EVM:FRAME</td>
</tr>
<tr>
<td></td>
<td>:CALCulate:EVM:FRAME</td>
</tr>
<tr>
<td><strong>Measurement Offset</strong></td>
<td>:CALCulate:EVM:FRAME</td>
</tr>
<tr>
<td></td>
<td>:CALCulate:EVM:FRAME</td>
</tr>
<tr>
<td><strong>Measurement Interval</strong></td>
<td>:CALCulate:EVM:FRAME</td>
</tr>
<tr>
<td></td>
<td>:CALCulate:EVM:FRAME</td>
</tr>
<tr>
<td><strong>Sync Word Search</strong></td>
<td>:CALCulate:EVM:FRAME</td>
</tr>
<tr>
<td></td>
<td>:CALCulate:EVM:FRAME</td>
</tr>
<tr>
<td><strong>Burst Search</strong></td>
<td>:CALCulate:EVM:FRAME</td>
</tr>
<tr>
<td></td>
<td>:CALCulate:EVM:FRAME</td>
</tr>
<tr>
<td>Function</td>
<td>Device Message</td>
</tr>
<tr>
<td>-------------------------------</td>
<td>-------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>2nd Word Enable</td>
<td>:CALCulate:EVM:FRAME:SEARCH:2NDWord OFF</td>
</tr>
<tr>
<td></td>
<td>:CALCulate:EVM:FRAME:SEARCH:2NDWord?</td>
</tr>
<tr>
<td>Search Slot</td>
<td>:CALCulate:EVM:FRAME:SEARCH:1STWord</td>
</tr>
<tr>
<td></td>
<td>:CALCulate:EVM:FRAME:SEARCH:1STWord</td>
</tr>
<tr>
<td>Sync Word Length</td>
<td>:CALCulate:EVM:FRAME:SEARCH:1STWord</td>
</tr>
<tr>
<td></td>
<td>:CALCulate:EVM:FRAME:SEARCH:1STWord</td>
</tr>
<tr>
<td>Sync Word (HEX)</td>
<td>:CALCulate:EVM:FRAME:SEARCH:1STWord</td>
</tr>
<tr>
<td></td>
<td>:CALCulate:EVM:FRAME:SEARCH:1STWord</td>
</tr>
<tr>
<td>Sync Word Offset</td>
<td>:CALCulate:EVM:FRAME:SEARCH:1STWord</td>
</tr>
<tr>
<td></td>
<td>:CALCulate:EVM:FRAME:SEARCH:1STWord</td>
</tr>
<tr>
<td>Equalizer Adaptive</td>
<td>:CALCulate:EVM:FRAME</td>
</tr>
<tr>
<td></td>
<td>:CALCulate:EVM:FRAME</td>
</tr>
<tr>
<td>Equalizer Convergence</td>
<td>:CALCulate:EVM:FRAME</td>
</tr>
<tr>
<td></td>
<td>:CALCulate:EVM:FRAME</td>
</tr>
<tr>
<td>Equalizer Length</td>
<td>:CALCulate:EVM:FRAME</td>
</tr>
<tr>
<td></td>
<td>:CALCulate:EVM:FRAME</td>
</tr>
<tr>
<td>Deviation Calculation</td>
<td>:CALCulate:EVM:FRAME</td>
</tr>
<tr>
<td></td>
<td>:CALCulate:EVM:FRAME</td>
</tr>
<tr>
<td>Deviation RMS Reference</td>
<td>:CALCulate:EVM:FRAME</td>
</tr>
<tr>
<td></td>
<td>:CALCulate:EVM:FRAME</td>
</tr>
<tr>
<td>H-CPM Decode Method</td>
<td>:CALCulate:EVM:FRAME</td>
</tr>
<tr>
<td></td>
<td>:CALCulate:EVM:FRAME</td>
</tr>
<tr>
<td>Origin Offset Cancel</td>
<td>:CALCulate:EVM:FRAME</td>
</tr>
<tr>
<td></td>
<td>:CALCulate:EVM:FRAME</td>
</tr>
<tr>
<td></td>
<td>:CALCulate:EVM:FRAME</td>
</tr>
<tr>
<td>BER Mode</td>
<td>:CALCulate:EVM[:VIEW]:BER OFF</td>
</tr>
<tr>
<td></td>
<td>:CALCulate:EVM[:VIEW]:BER?</td>
</tr>
<tr>
<td>BER Slot Number</td>
<td>:CALCulate:EVM[:VIEW]:BER:SLOT &lt;number&gt;</td>
</tr>
<tr>
<td></td>
<td>:CALCulate:EVM[:VIEW]:BER:SLOT?</td>
</tr>
<tr>
<td>BER Pattern</td>
<td>:CALCulate:EVM[:VIEW]:BER:PArrTern &lt;pattern name&gt;</td>
</tr>
<tr>
<td></td>
<td>:CALCulate:EVM[:VIEW]:BER:PArrTern?</td>
</tr>
<tr>
<td>Method of Symbol Rate Error</td>
<td>:CALCulate:EVM:FRAME</td>
</tr>
<tr>
<td></td>
<td>:CALCulate:EVM:FRAME</td>
</tr>
<tr>
<td>Numeric Only</td>
<td>:CALCulate:EVM:NUMonly OFF</td>
</tr>
<tr>
<td></td>
<td>:CALCulate:EVM:NUMonly?</td>
</tr>
<tr>
<td>Droop Cancel</td>
<td>:CALCulate:EVM:FRAME</td>
</tr>
<tr>
<td></td>
<td>:CALCulate:EVM:FRAME</td>
</tr>
</tbody>
</table>
### Table 2.3-1  System Parameter Settings (Cont’d)

<table>
<thead>
<tr>
<th>Function</th>
<th>Device Message</th>
</tr>
</thead>
<tbody>
<tr>
<td>Capture OSR</td>
<td>:CALCulate:EVM:FRAME</td>
</tr>
<tr>
<td></td>
<td>:CALCulate:EVM:FRAME</td>
</tr>
<tr>
<td>Capture Interval</td>
<td>:CALCulate:EVM:FRAME</td>
</tr>
<tr>
<td></td>
<td>:CALCulate:EVM:FRAME</td>
</tr>
<tr>
<td>APSK Ring Ratio (R2/R1)</td>
<td>:CALCulate:EVM:FRAME</td>
</tr>
<tr>
<td></td>
<td>:CALCulate:EVM:FRAME</td>
</tr>
<tr>
<td>APSK Ring Ratio (R3/R1)</td>
<td>:CALCulate:EVM:FRAME</td>
</tr>
<tr>
<td></td>
<td>:CALCulate:EVM:FRAME</td>
</tr>
<tr>
<td>EVM Reference</td>
<td>:CALCulate:EVM:FRAME</td>
</tr>
<tr>
<td></td>
<td>:CALCulate:EVM:FRAME</td>
</tr>
<tr>
<td>Burst Gap Size</td>
<td>:CALCulate:PVTime:FRAME</td>
</tr>
<tr>
<td></td>
<td>:CALCulate:PVTime:FRAME</td>
</tr>
<tr>
<td>Off Slot Power Range</td>
<td>:CALCulate:PVTime:OFFPower:RANGE &lt;val&gt;</td>
</tr>
<tr>
<td></td>
<td>:CALCulate:PVTime:OFFPower:RANGE?</td>
</tr>
<tr>
<td></td>
<td>:CALCulate:PVTime:OFFPower:USER:START?</td>
</tr>
<tr>
<td></td>
<td>:CALCulate:PVTime:OFFPower:USER:STOP?</td>
</tr>
<tr>
<td>Rise / Fall Off Detect Level</td>
<td>:CALCulate:PVTime:RIFall:OFFLevel &lt;val&gt;</td>
</tr>
<tr>
<td></td>
<td>:CALCulate:PVTime:RIFall:OFFLevel?</td>
</tr>
<tr>
<td>Rise / Fall Off Detect Level Unit</td>
<td>:CALCulate:PVTime:RIFall:OFFLevel:UNIT &lt;val&gt;</td>
</tr>
<tr>
<td></td>
<td>:CALCulate:PVTime:RIFall:OFFLevel:UNIT?</td>
</tr>
<tr>
<td>Subcarrier Spacing</td>
<td>:CALCulate:EVM:SCBT:MODulation:SUBCarrier:SPACING &lt;real&gt;</td>
</tr>
<tr>
<td>FFT Size</td>
<td>:CALCulate:EVM:SCBT:MODulation:FFTSize &lt;size&gt;</td>
</tr>
<tr>
<td></td>
<td>:CALCulate:EVM:SCBT:MODulation:FFTSize?</td>
</tr>
<tr>
<td>GI Size</td>
<td>:CALCulate:EVM:SCBT:MODulation:GI &lt;size&gt;</td>
</tr>
<tr>
<td></td>
<td>:CALCulate:EVM:SCBT:MODulation:GI?</td>
</tr>
<tr>
<td>Signal Type</td>
<td>:CALCulate:EVM:SCBT:MODulation:SIGNAL &lt;type&gt;</td>
</tr>
<tr>
<td></td>
<td>:CALCulate:EVM:SCBT:MODulation:SIGNAL?</td>
</tr>
</tbody>
</table>
## Table 2.3-1  System Parameter Settings (Cont'd)

<table>
<thead>
<tr>
<th>Function</th>
<th>Device Message</th>
</tr>
</thead>
<tbody>
<tr>
<td>Subcarrier MAP</td>
<td>:CALCulate:EVM:SCBT:SCMap &lt;filename&gt;</td>
</tr>
<tr>
<td></td>
<td>:CALCulate:EVM:SCBT:SCMap?</td>
</tr>
<tr>
<td>Pilot IQ MAP</td>
<td>:CALCulate:EVM:SCBT:PMAP &lt;filename&gt;</td>
</tr>
<tr>
<td></td>
<td>:CALCulate:EVM:SCBT:PMAP?</td>
</tr>
<tr>
<td>Multicarrier Filter</td>
<td>:CALCulate:EVM:SCBT:FILTter:MULTicarrier &lt;select&gt;</td>
</tr>
<tr>
<td></td>
<td>:CALCulate:EVM:SCBT:FILTter:MULTicarrier?</td>
</tr>
</tbody>
</table>
2.3 System Parameter Settings

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 System Parameter Settings

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

<table>
<thead>
<tr>
<th>&lt;format&gt;</th>
<th>Signal format</th>
</tr>
</thead>
<tbody>
<tr>
<td>FRAMe</td>
<td>Frame formatted (default)</td>
</tr>
<tr>
<td>NOFormatted</td>
<td>Non-formatted</td>
</tr>
<tr>
<td>SCBT</td>
<td>Single Carrier Block Transmission</td>
</tr>
</tbody>
</table>

Details
An option is required for using SCBT.

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

<table>
<thead>
<tr>
<th>&lt;format&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td>FRAM</td>
</tr>
<tr>
<td>NOF</td>
</tr>
<tr>
<td>SCBT</td>
</tr>
</tbody>
</table>

Example of Use
To query the format of the signal to be measured.
CALC:EVM?
> FRAM
### 2.3.4 Modulation Type

This command sets the Modulation Type.

**Command**

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

**Parameter**

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

**Details**

The options are required to select the following modulation types.

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

Only the following modulation types can be set for SCBT.

- QPSK, 16QAM, 64QAM, 256QAM

1.2.2 “Options” in the *MX269017A Vector Modulation Analysis Software Operation Manual Operation*
**2.3 System Parameter Settings**

**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**

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

**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

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
2.3 System Parameter Settings

: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, k, MHz, M, GHz, G  
  - 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
2.3 System Parameter Settings

: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 "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?
> 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 ksp to 125 Msp
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 Msp.
CALC:EVM:NOF:MOD:SRAT 5000000
Chapter 2  SCPI Device Message Details

: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

\(:\text{CALCulate:EVM:FRAMe|NOF|MODulation:SPANup} \, \text{OFF|ON|0|1} \)

Span Up

Function

This command sets the span up.

Command

\(:\text{CALCulate:EVM:FRAMe|NOF|MODulation:SPANup} \, \text{ON|0|1} \)

Parameter

<table>
<thead>
<tr>
<th>&lt;switch&gt;</th>
<th>Enable/disable span up</th>
</tr>
</thead>
<tbody>
<tr>
<td>OFF</td>
<td>0</td>
</tr>
<tr>
<td>ON</td>
<td>1</td>
</tr>
</tbody>
</table>

Example of Use

To enable the span up.
CALC:EVM:OFF:MOD:SPAN ON

\(:\text{CALCulate:EVM:FRAMe|NOF|MODulation:SPANup?} \)

Span Up Query

Function

This command queries the state of the span up.

Query

\(:\text{CALCulate:EVM:FRAMe|NOF|MODulation:SPANup?} \)

Response

<switch>

Parameter

<table>
<thead>
<tr>
<th>&lt;switch&gt;</th>
<th>Enable/disable span up</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Disabled</td>
</tr>
<tr>
<td>1</td>
<td>Enabled</td>
</tr>
</tbody>
</table>

Example of Use

To query the state of the span up.
CALC:EVM:OFF:MOD:SPAN?
>1
2.3.12 Measurement Filter

:\texttt{CALCulate:EVM:FRAMe|NOFormattted:FILTer:MEASurement}  
\texttt{NONE|RNYQuist|NYQuist|GАUSsian|STDТ98|RECT|IRECt|IGAus|HCPM|USERdefined}

Measurement Filter

Function

This command selects the Measurement Filter.

Command

:\texttt{CALCulate:EVM:FRAMe|NOFormattted:FILTer:MEASurement}  
<select>

Parameter

<select>  
\texttt{NONE} No filter  
\texttt{RNYQuist} Root Nyquist filter (default)  
\texttt{NYQuist} Nyquist filter  
\texttt{GАUSsian} Gaussian filter  
\texttt{STDТ98} Filter conforming to ARIB STD-T98 specifications  
\texttt{RECT} RECT filter. Filter that executes addition processing during 1 symbol interval in time axis.  
\texttt{IRECt} Inverse Rectangular filter  
\texttt{IGAus} Inverse Gaussian filter  
\texttt{HCPM} Measurement filter for P25 Phase2 Inbound (H-CPM_P25) specified in TIA102.BBAB.  
\texttt{USERdefined} User defined filter

Example of Use

To set the reception filter of Frame-formatted to Gaussian.
\texttt{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.
USERdefined  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
2.3  System Parameter Settings

: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:2ND:MEAS?
> IGA
### 2.3.14 Reference Filter

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

**Function**

This command selects the Reference Filter.

**Command**

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

**Parameter**

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

**Example of Use**

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

```
CALC:EVM:NOF:FILT:REF NYQ
```
System Parameter Settings

: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

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:2ND:REF HSIN
2.3 System Parameter Settings

: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|NOFormated:2NDFilter:ROFFbt <real>

2nd Roll Off/BT

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

Command
:CALCulate:EVM:FRAME|NOFormated: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|NOFormated:2NDFilter:ROFFbt?

2nd Roll Off/BT Query

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

Query
:CALCulate:EVM:FRAME|NOFormated: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:FILTeredit <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:FILT:MEAS: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:FILT:MEAS:FILTERedit?

Response
<filename>

Parameter
<filename> Filter definition file used in Measurement Edit

Example of Use
To query filter definition file name used in Measurement Edit.
> 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:FILTeredit <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:FILTeredit?

Response

<filename>

Parameter

<filename>  Filter definition file used in Reference Edit

Example of Use

To query filter definition file name used in Reference Edit.


> 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[0],…,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:FORM 5,1,0,0,0
: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[0],…,n[k–1]>

Parameter

<k>
Slots per Frame
Range 1 to 20
Resolution 1
Default 1

<n[0],…,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:SLENgh <n>**

**Slot Length**

**Function**

This command sets Slots Length per one slot.

**Command**

**:CALCulate:EVM:FRAME:SLOT:SLENgh <n>**

**Parameter**

<table>
<thead>
<tr>
<th>&lt;n&gt;</th>
<th>Slots per Frame</th>
</tr>
</thead>
<tbody>
<tr>
<td>Range</td>
<td>10 to 4096</td>
</tr>
<tr>
<td>Resolution</td>
<td>1</td>
</tr>
<tr>
<td>Default</td>
<td>10</td>
</tr>
</tbody>
</table>

**Example of Use**

To set the Slot Length to 100.

```
CALC:EVM:FRAME:SLOT:SLEN 100
```

**:CALCulate:EVM:FRAME:SLOT:SLENgh?**

**Slot Length Query**

**Function**

This command queries Slots Length per one slot.

**Query**

**:CALCulate:EVM:FRAME:SLOT:SLENgh?**

**Response**

<n>

**Parameter**

<table>
<thead>
<tr>
<th>&lt;n&gt;</th>
<th>Slots per Frame</th>
</tr>
</thead>
<tbody>
<tr>
<td>Range</td>
<td>10 to 4096</td>
</tr>
<tr>
<td>Resolution</td>
<td>1</td>
</tr>
<tr>
<td>Default</td>
<td>10</td>
</tr>
</tbody>
</table>

**Example of Use**

To query the Slot Length.

```
CALC:EVM:FRAME: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:FRAME:SLOT:OFFSet <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:FRAME: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:FRAME: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 System Parameter Settings

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

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

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

<table>
<thead>
<tr>
<th>&lt;switch&gt;</th>
<th>Sync Word Search</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Parameter

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

Example of Use

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

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

> 1
2.3.25  Burst Search

:BNCaLc:EVM:FRAM:e:SEARch:BURSearch OFF|ON|0|1

Burst Search

Function

This command sets whether to conduct Burst Search.

Command


Parameter

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

Example of Use

To conduct Burst Search.
CALC:EVM:FRAM:SEAR:BURS ON


Burst Search Query

Function

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

Query


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:FRAME:SEARCH: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

<table>
<thead>
<tr>
<th>Range</th>
<th>Refer to Table 2.3.28-1, Table 2.3.28-2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Resolution</td>
<td>1</td>
</tr>
<tr>
<td>Default</td>
<td>1</td>
</tr>
</tbody>
</table>

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

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

Table 2.3.28-2 Setting Range of Sync Word Length

(Number of characters of Sync Word (HEX))

<table>
<thead>
<tr>
<th>Item</th>
<th>Value [symbol]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maximum</td>
<td>(Number of characters of Sync Word (HEX)) × 4 / (Bits per symbol)</td>
</tr>
<tr>
<td>Minimum</td>
<td>{((Number of characters of Sync Word (HEX) − 1) × 4 / (Bits per symbol)) + 1}</td>
</tr>
</tbody>
</table>

Note:

The decimal point is suppressed.
### System Parameter Settings

#### Table 2.3.28-3 Bits per Symbol of Modulation Type

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

**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

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

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**

**Function**

This command sets Equalizer Mode.

**Command**

**:CALCulate:EVM:FRAME|NOFormatted:EQUalizer:ADPTive**

**Parameter**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;select&gt;</td>
<td>Equalizer mode</td>
</tr>
<tr>
<td>ON</td>
<td>Enables Equalizer (with factor update).</td>
</tr>
<tr>
<td>HOLD</td>
<td>Enables Equalizer (without factor update).</td>
</tr>
<tr>
<td>OFF</td>
<td>Disables Equalizer (default).</td>
</tr>
</tbody>
</table>

**Example of Use**

To set Equalizer mode to ON.

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

**:CALCulate:EVM:FRAME|NOFormatted:EQUalizer:ADPTive?**

**Function**

This command queries Equalizer Mode.

**Query**

**:CALCulate:EVM:FRAME|NOFormatted:EQUalizer:ADPTive?**

**Response**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;select&gt;</td>
<td>Equalizer mode</td>
</tr>
<tr>
<td>ON</td>
<td>Enables Equalizer (with factor update).</td>
</tr>
<tr>
<td>HOLD</td>
<td>Enables Equalizer (without factor update).</td>
</tr>
<tr>
<td>OFF</td>
<td>Disables Equalizer</td>
</tr>
</tbody>
</table>

**Example of Use**

To query Equalizer Mode.

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

> `ON`
2.3 System Parameter Settings

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

Parameter

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

Example of Use

To set Deviation rms Reference of Frame-Formatted to Ideal average.
CALE:V: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>
IDE   Deviation RMS Reference
NOM   Ideal average
          Nominal settings

Example of Use

To query reference value to calculate Deviation rms Reference.
CALE:V: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 Decode Method of Frame Formatted to Type1.

CALC:EVM:FRAME:DECode: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:FRAME:DECode: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

Parameter

<table>
<thead>
<tr>
<th>select</th>
<th>Origin Offset Cancel</th>
</tr>
</thead>
<tbody>
<tr>
<td>OFF</td>
<td>Does not cancel Origin Offset.</td>
</tr>
<tr>
<td>ON</td>
<td>Cancels Origin Offset (default).</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>select</th>
</tr>
</thead>
<tbody>
<tr>
<td>Origin Offset Cancel</td>
</tr>
<tr>
<td>0</td>
</tr>
<tr>
<td>1</td>
</tr>
</tbody>
</table>

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

\[ \text{:CALCulate:EVM:FRAME|NOFormated:ORIGINoffset:REFerence} \]

**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**

\[ \text{:CALCulate:EVM:FRAME|NOFormated:ORIGINoffset:REFerence} \]

**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

\[ \text{:CALCulate:EVM:FRAME|NOFormated:ORIGINoffset:REFerence?} \]

**Origin Offset Reference Query**

**Function**

This command queries the parameters for Origin Offset Reference.

**Query**

\[ \text{:CALCulate:EVM:FRAME|NOFormated:ORIGINoffset:REFerence?} \]

**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
## System Parameter Settings

### :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**

<table>
<thead>
<tr>
<th>&lt;number&gt;</th>
<th>Slot</th>
</tr>
</thead>
<tbody>
<tr>
<td>Range</td>
<td>0 to 19</td>
</tr>
<tr>
<td>Resolution</td>
<td>1</td>
</tr>
<tr>
<td>Initial value</td>
<td>0</td>
</tr>
</tbody>
</table>

**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**

<table>
<thead>
<tr>
<th>&lt;number&gt;</th>
<th>Slot</th>
</tr>
</thead>
<tbody>
<tr>
<td>Range</td>
<td>0 to 19</td>
</tr>
<tr>
<td>Resolution</td>
<td>1</td>
</tr>
</tbody>
</table>

**Example of Use**

To query the Slot number for BER measurement.

CALC:EVM:BER:SLOT?  
> 3
:CALCulate:EVM[:VIEW]:BER:PA\TTern <pattern name>

BER Pattern

Function

This command loads the pattern for BER measurement.

Command

:CALCulate:EVM[:VIEW]:BER:PA\TTern <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
When the OS on
MS2690A/MS2691A/MS2692A/MS2830A/MS2840A/MS2850A is Windows Embedded Standard 7
C:\Anritsu\SignalAnalyzer\Applications\VMA Common\Template\BER

When the OS is other than the above mentioned
C:\Program Files\Anritsu Corporation\SignalAnalyzer\Applications\VMA Common\Template\BER

Example of Use

To load the pattern "P25 Tone".
CALC:EVM:BER:PA\TT  "P25_TONE"
:CALCulate:EVM[:VIEW]:BER:PATTern?
BER Pattern Query

Function

This command queries the pattern 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

<table>
<thead>
<tr>
<th>Function</th>
<th>This command sets the Symbol Rate Error measurement mode.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Command</td>
<td>:CALCulate:EVM:FRAME</td>
</tr>
<tr>
<td>Parameter</td>
<td>&lt;select&gt; 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.</td>
</tr>
</tbody>
</table>

Example of Use

To set the Symbol Rate Error measurement mode to FTFRame:
CALC:EVM:FRAME|METH:SRER FTFR

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

Method of Symbol Rate Error Query

<table>
<thead>
<tr>
<th>Function</th>
<th>This command queries the Symbol Rate Error measurement mode.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Query</td>
<td>:CALCulate:EVM:FRAME</td>
</tr>
<tr>
<td>Response</td>
<td>&lt;select&gt;</td>
</tr>
<tr>
<td>Parameter</td>
<td>&lt;select&gt; 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.</td>
</tr>
</tbody>
</table>

Example of Use

To query the Symbol Rate Error measurement mode:
CALC:EVM:FRAME|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>  

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

:DALCulate: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
Chapter 2  SCPI Device Message Details

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**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;real&gt;</td>
<td>R2/R1</td>
</tr>
<tr>
<td>Range</td>
<td>2.000 to 4.000</td>
</tr>
<tr>
<td>Resolution</td>
<td>0.001</td>
</tr>
<tr>
<td>Default</td>
<td>3.150</td>
</tr>
</tbody>
</table>

**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**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;real&gt;</td>
<td>R2/R1</td>
</tr>
<tr>
<td>Range</td>
<td>2.000 to 4.000</td>
</tr>
<tr>
<td>Resolution</td>
<td>0.001</td>
</tr>
</tbody>
</table>

**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:FRAME: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
CON
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:FRAME: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

<table>
<thead>
<tr>
<th>&lt;val&gt;</th>
<th>Burst Gap Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>20</td>
<td>20 symbol (Default)</td>
</tr>
<tr>
<td>40</td>
<td>40 symbol</td>
</tr>
<tr>
<td>60</td>
<td>60 symbol</td>
</tr>
<tr>
<td>80</td>
<td>80 symbol</td>
</tr>
<tr>
<td>100</td>
<td>100 symbol</td>
</tr>
</tbody>
</table>

Example of Use

To set Burst Gap Size to 60.
CALC:PVT:FRAM:BGAP 60

:BCALCulate: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

:BCALCulate:PVTIme:FRAMe:BGAPsize?

Response

<val>

Parameter

<table>
<thead>
<tr>
<th>&lt;val&gt;</th>
<th>Burst Gap Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>20</td>
<td>20 symbol</td>
</tr>
<tr>
<td>40</td>
<td>40 symbol</td>
</tr>
<tr>
<td>60</td>
<td>60 symbol</td>
</tr>
<tr>
<td>80</td>
<td>80 symbol</td>
</tr>
<tr>
<td>100</td>
<td>100 symbol</td>
</tr>
</tbody>
</table>

Example of Use

To query Burst Gap Size.
CALC:PVT:FRAM:BGAP?
> 60
2.3.49 Off Slot Power Range

:CALCulate:PVTme:OFFPower:RANGe <val>

Off Slot Power Range

Function

This command sets the calculation range of Off Slot Power.

Command

:CALCulate:PVTme: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


Off Slot Power User Stop

Function

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

Command


Parameter

<br>\(<val>\) 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 position of Off Slot Power.

Query

:CALCulate:PVTime:OFFPower:USER:STOP?

Response

<br>\(<val>\)

Parameter

<br>\(<val>\) 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**

<table>
<thead>
<tr>
<th>Function</th>
<th>This command sets the subcarrier spacing for single carrier block transmissions to measure.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Command</td>
<td>:CALCulate:EVM:SCBT:MODulation:SUBCarrier:SPACing &lt;real&gt;</td>
</tr>
<tr>
<td>Parameter</td>
<td><code>&lt;real&gt;</code> Subcarrier Spacing&lt;br&gt;Range 10 to 18 kHz&lt;br&gt;Resolution 0.5 kHz&lt;br&gt;Suffix code HZ, KHZ, MHZ, MZ, GHZ, GZ&lt;br&gt;Hz is used when omitted.&lt;br&gt;Default 10 kHz</td>
</tr>
</tbody>
</table>

**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**

<table>
<thead>
<tr>
<th>Function</th>
<th>This command queries the subcarrier spacing for single carrier block transmissions to measure.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Query</td>
<td>:CALCulate:EVM:SCBT:MODulation:SUBCarrier:SPACing?</td>
</tr>
<tr>
<td>Response</td>
<td><code>&lt;real&gt;</code> Subcarrier Spacing&lt;br&gt;Range 10 to 18 kHz&lt;br&gt;Resolution 0.5 kHz&lt;br&gt;Value is returned in Hz units.</td>
</tr>
<tr>
<td>Parameter</td>
<td><code>&lt;real&gt;</code> Subcarrier Spacing&lt;br&gt;Range 10 to 18 kHz&lt;br&gt;Resolution 0.5 kHz&lt;br&gt;Value is returned in Hz units.</td>
</tr>
</tbody>
</table>

**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


**Lower Guard Subcarrier**

**Function**

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

**Command**


**Parameter**

<size> Number of Lower Guard Subcarriers

<table>
<thead>
<tr>
<th>Range</th>
<th>10 to 30</th>
</tr>
</thead>
<tbody>
<tr>
<td>Resolution</td>
<td>1</td>
</tr>
<tr>
<td>Default</td>
<td>10</td>
</tr>
</tbody>
</table>

**Example of Use**

To set the number of lower guard subcarriers to 10.


**Lower Guard Subcarrier Query**

**Function**

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

**Query**


**Response**

<size>

**Parameter**

<size> Number of Lower Guard Subcarriers

<table>
<thead>
<tr>
<th>Range</th>
<th>10 to 30</th>
</tr>
</thead>
<tbody>
<tr>
<td>Resolution</td>
<td>1</td>
</tr>
</tbody>
</table>

**Example of Use**

To query the number of lower guard subcarriers.
> 10
2.3.58 Upper Guard Subcarrier


Function

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

Command


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.


: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.

> 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**

<table>
<thead>
<tr>
<th>&lt;type&gt;</th>
<th>Signal Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>CONTinuous</td>
<td>Continuous (Default)</td>
</tr>
<tr>
<td>BURSt</td>
<td>Burst</td>
</tr>
</tbody>
</table>

**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**

<table>
<thead>
<tr>
<th>&lt;type&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td>CONTinuous</td>
</tr>
<tr>
<td>BURSt</td>
</tr>
</tbody>
</table>

**Example of Use**

To query the signal type.

CALC:EVM:SCBT:MOD:SIGN?

> BURS
2.3.60 Burst Period


Burst Period

Function

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

Command


Parameter

<time> Burst Period

  Range 1 ms to 1 s
  Resolution 0.1 ms
  Suffix code NS, US, MS, S
  S 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


Burst Period Query

Function

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

Query


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.
> 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 System Parameter Settings

#### 2.3.63 Multicarrier Filter

**:CALCulate:EVM:SCBT:FILT:ERT: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:FILT:ERT: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.

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

**Remarks**

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

**:CALCulate:EVM:SCBT:FILT:ERT: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:FILT:ERT: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.

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

**Remarks**

This function is available only when MX269017A-072 is installed.
2.3.64 Multicarrier Filter Edit


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


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:FILTER:MULT:FILTER
"E:\MyFolder\MulticarrierFilter"

Remarks

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

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>
<thead>
<tr>
<th>Parameter</th>
<th>Device Message</th>
</tr>
</thead>
<tbody>
<tr>
<td>Erase Warm Up Message</td>
<td>:DISPlay:ANNotation:WUP:ERASe</td>
</tr>
<tr>
<td>Display Title</td>
<td>:DISPlay:ANNotation:TITle[:STATe] OFF</td>
</tr>
<tr>
<td></td>
<td>:DISPlay:ANNotation:TITle[:STATe]?</td>
</tr>
<tr>
<td>Title Entry</td>
<td>:DISPlay:ANNotation:TITle:DATA &lt;string&gt;</td>
</tr>
<tr>
<td></td>
<td>:DISPlay:ANNotation:TITle:DATA?</td>
</tr>
</tbody>
</table>

2.4.1 Erase Warm Up Message

:EISPlay:ANNotation:WUP:ERASe

Erase Warm Up Message

Function

This command erases the warmup message displayed immediately after startup.

Command

:EISPlay:ANNotation:WUP:ERASe

Example of Use

To erase the warmup message

DISP:ANN:WUP:ERAS
2.4 Utility Functions

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>
<thead>
<tr>
<th>Parameter</th>
<th>Device Message</th>
</tr>
</thead>
<tbody>
<tr>
<td>Continuous Measurement</td>
<td>:INITiate:CONTinuous OFF</td>
</tr>
<tr>
<td></td>
<td>:INITiate:CONTinuous?</td>
</tr>
<tr>
<td></td>
<td>:INITiate:MODE:CONTinuous</td>
</tr>
<tr>
<td>Single Measurement</td>
<td>:INITiate:MODE:SINGle</td>
</tr>
<tr>
<td>Initiate</td>
<td>:INITiate[:IMMediate]</td>
</tr>
<tr>
<td>Reanalysis</td>
<td>:INITiate:CALCulate</td>
</tr>
<tr>
<td>Configure</td>
<td>:CONFigure?</td>
</tr>
<tr>
<td>Trigger Switch</td>
<td>:TRIGger[:SEQUence][:STATE] OFF</td>
</tr>
<tr>
<td></td>
<td>:TRIGger[:SEQUence][:STATE]?</td>
</tr>
<tr>
<td>Trigger Source</td>
<td>:TRIGger[:SEQUence]:SOURce EXTernal</td>
</tr>
<tr>
<td></td>
<td>:TRIGger[:SEQUence]:SOURce?</td>
</tr>
<tr>
<td>Trigger Slope</td>
<td>:TRIGger[:SEQUence]:SLOPe POSitive</td>
</tr>
<tr>
<td></td>
<td>:TRIGger[:SEQUence]:SLOPe?</td>
</tr>
<tr>
<td>Trigger Delay</td>
<td>:TRIGger[:SEQUence]:DELay &lt;time&gt;</td>
</tr>
<tr>
<td></td>
<td>:TRIGger[:SEQUence]:DELay?</td>
</tr>
<tr>
<td>Wide IF Trigger Level</td>
<td>:TRIGger[:SEQUence]:WIF</td>
</tr>
<tr>
<td></td>
<td>:TRIGger[:SEQUence]:WIF</td>
</tr>
<tr>
<td>Log Scale Video Trigger Level</td>
<td>:TRIGger[:SEQUence]:VID eo:LEV el [:LOGarithmic] &lt;level&gt;</td>
</tr>
<tr>
<td></td>
<td>:TRIGger[:SEQUence]:VID eo:LEV el [:LOGarithmic]?</td>
</tr>
<tr>
<td>Frame Trigger Period Auto</td>
<td>:TRIGger[:SEQUence]:FRAME:PERiod:AUTO OFF</td>
</tr>
<tr>
<td></td>
<td>:TRIGger[:SEQUence]:FRAME:PERiod:AUTO?</td>
</tr>
<tr>
<td>Frame Trigger Period</td>
<td>:TRIGger[:SEQUence]:FRAME:PERiod &lt;time&gt;</td>
</tr>
<tr>
<td></td>
<td>:TRIGger[:SEQUence]:FRAME:PERiod?</td>
</tr>
</tbody>
</table>
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
2.5 Common Measurement Function

: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
Common Measurement Function

: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[:SEQ]ue[:STATe] OFF|ON|0|1

Trigger Switch

Function
This command sets the trigger wait state On/Off.

Command
:TRIGger[:SEQ]ue[: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[:SEQ]ue[:STATe]?

Trigger Switch Query

Function
This command queries the trigger wait state On/Off.

Query
:TRIGger[:SEQ]ue[: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|RF Burst|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|RF Burst 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.

TRI格: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

<table>
<thead>
<tr>
<th>Symbol Rate Setting Values [symbol/s]</th>
<th>Trigger Delay Resolution [microseconds]</th>
</tr>
</thead>
<tbody>
<tr>
<td>100 to 500</td>
<td>500</td>
</tr>
<tr>
<td>501 to 1250</td>
<td>200</td>
</tr>
<tr>
<td>1251 to 2500</td>
<td>100</td>
</tr>
<tr>
<td>2501 to 5000</td>
<td>50</td>
</tr>
<tr>
<td>5001 to 12500</td>
<td>20</td>
</tr>
<tr>
<td>12501 to 25000</td>
<td>10</td>
</tr>
<tr>
<td>25001 to 50000</td>
<td>5</td>
</tr>
<tr>
<td>50001 to 125000</td>
<td>2</td>
</tr>
<tr>
<td>125001 to 250000</td>
<td>1</td>
</tr>
<tr>
<td>250001 to 500000</td>
<td>0.5</td>
</tr>
<tr>
<td>500001 to 1250000</td>
<td>0.2</td>
</tr>
<tr>
<td>12500001 to 2500000</td>
<td>0.1</td>
</tr>
<tr>
<td>25000001 to 5000000</td>
<td>0.05</td>
</tr>
<tr>
<td>50000001 to 12500000</td>
<td>0.02</td>
</tr>
</tbody>
</table>

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
Chapter 2  SCPI Device Message Details

2.5.6 Wide IF Trigger Level

:TRIGger[:SEQUence]:WIF|:RF Burst: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|:RF Burst: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
2.5 Common Measurement Function

: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

<amp1>

Parameter

<amp1> 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:PER iod: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:PER iod: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:PER iod:AUTO?

Frame Trigger Period Auto Query

Function

This command queries whether to set the frame trigger period automatically.

Query

:TRIGger[:SEQuence]:FRAMe:PER iod: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

<table>
<thead>
<tr>
<th>&lt;time&gt;</th>
<th>Frame Trigger Period</th>
</tr>
</thead>
<tbody>
<tr>
<td>Range</td>
<td>0.0000002 to 2.6843545 s</td>
</tr>
<tr>
<td>Resolution</td>
<td>100 ns</td>
</tr>
<tr>
<td>Suffix code</td>
<td>NS, US, MS, S</td>
</tr>
<tr>
<td>Default</td>
<td>100.0000 ms</td>
</tr>
</tbody>
</table>

Second is used when omitted.

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

<table>
<thead>
<tr>
<th>&lt;time&gt;</th>
<th>Frame Trigger Period</th>
</tr>
</thead>
<tbody>
<tr>
<td>Range</td>
<td>0.0000002 to 2.6843545 s</td>
</tr>
<tr>
<td>Resolution</td>
<td>100 ns</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Device Message</th>
</tr>
</thead>
<tbody>
<tr>
<td>Configure – Power Meter</td>
<td>:CONFigure:PMETer:POWer</td>
</tr>
</tbody>
</table>

: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>
<thead>
<tr>
<th>Parameter</th>
<th>Device Message</th>
</tr>
</thead>
<tbody>
<tr>
<td>Configure</td>
<td>:CONFigure:EVM</td>
</tr>
<tr>
<td>Initiate</td>
<td>:INITiate:EVM</td>
</tr>
<tr>
<td>Equalizer Reset</td>
<td>:INITiate:EVM:EQUalizer</td>
</tr>
<tr>
<td>Re-measurement mode</td>
<td>[:SENSe]:EVM:REMeasure OFF</td>
</tr>
<tr>
<td>Re-measurement mode Query</td>
<td>[:SENSe]:EVM:REMeasure?</td>
</tr>
<tr>
<td>Re-measurement Threshold</td>
<td>[:SENSe]:EVM:REMeasure:THReshold &lt;real&gt;</td>
</tr>
<tr>
<td>Re-measurement Threshold Query</td>
<td>[:SENSe]:EVM:REMeasure:THReshold?</td>
</tr>
<tr>
<td>Signal Level Too Low Display</td>
<td>[:SENSe]:EVM:SIGDisplay OFF</td>
</tr>
<tr>
<td>Signal Level Too Low Display Query</td>
<td>[:SENSe]:EVM:SIGDisplay?</td>
</tr>
<tr>
<td>Fetch</td>
<td>:FETCh:EVM[n]?</td>
</tr>
<tr>
<td>Read</td>
<td>:READ:EVM[n]?</td>
</tr>
<tr>
<td>Measure</td>
<td>:MEASure:EVM[n]?</td>
</tr>
</tbody>
</table>
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**

<table>
<thead>
<tr>
<th>n</th>
<th>Result Mode</th>
<th>Response</th>
</tr>
</thead>
</table>
| 1 or omitted | A           | Returns with comma-separated value formats in the following order: \*8 <br>1. Frequency Error [Hz] \*8 (Average value for Storage Count) \*8  \*8 <br>2. Frequency Error [Hz] \*8 (Maximum value for Storage Count) \*8  \*8 <br>3. Frequency Error [ppm] \*8 (Average value for Storage Count) \*8  \*8 <br>4. Frequency Error [ppm] \*8 (Maximum value for Storage Count) \*8  \*8 <br>5. Tx Power [dBm] \*8 (Average value for Storage Count) \*8  \*8 <br>6. Tx Power [dBm] \*8 (Maximum value for Storage Count) \*8  \*8 <br>7. Filtered Power [dBm] (Average value for Storage Count) \*8  \*8 <br>8. Filtered Power [dBm] (Maximum value for Storage Count) \*8  \*8 <br>9. Phase Error (RMS) [degree] \*1 (Average value for Storage Count) \*1  \*1 <br>10. Phase Error (RMS) [degree] \*1 (Maximum value for Storage Count) \*1  \*1 <br>11. Phase Error (Peak) [degree] \*1 (Average value for Storage Count) \*1  \*1 <br>12. Phase Error (Peak) [degree] \*1 (Maximum value for Storage Count) \*1  \*1 <br>13. Origin Offset [dB] \*1 (Average value for Storage Count) \*1  \*1 <br>14. Origin Offset [dB] \*1 (Maximum value for Storage Count) \*1  \*1 <br>15. EVM (RMS) [%] \*1 \*8 (Average value for Storage Count) \*1 \*8 <br>16. EVM (RMS) [%] \*1 \*8 (Maximum value for Storage Count) \*1 \*8 <br>17. EVM (Peak) [%] \*1 \*8 (Average value for Storage Count) \*1 \*8 <br>18. EVM (Peak) [%] \*1 \*8 (Maximum value for Storage Count) \*1 \*8 <br>19. Magnitude Error (RMS) [%] (Average value for Storage Count) \*1 \*1 \*1 \*1 <br>20. Magnitude Error (RMS) [%] (Maximum value for Storage Count) \*1 \*1 \*1 \*1 <br>21. Magnitude Error (Peak) [%] (Average value for Storage Count) \*1 \*1 \*1 \*1 <br>22. Magnitude Error (Peak) [%] (Maximum value for Storage Count) \*1 \*1 \*1 \*1 <br>23. Droop Factor [dB/Symbol] \*2 (Average value for Storage Count) \*2 \*2 <br>24. Droop Factor [dB/Symbol] \*2 (Maximum value for Storage Count) \*2 \*2 <br>25. Deviation [Hz] \*3 (Average value for Storage Count) \*3  \*3 <br>26. Deviation [Hz] \*3 (Maximum value for Storage Count) \*3  \*3 <br>27. IQ Gain Imbalance [dB] \*4 (Average value for Storage Count) \*4 \*4 <br>28. IQ Gain Imbalance [dB] \*4 (Maximum value for Storage Count) \*4 \*4 <br>29. Quadrature Error [degree] \*4 (Average value for Storage Count) \*4 \*4 <br>30. Quadrature Error [degree] \*4 (Maximum value for Storage Count) \*4 \*4 <br>31. FSK Error (RMS) [%] \*3 (Average value for Storage Count) \*3 \*3 <br>32. FSK Error (RMS) [%] \*3 (Maximum value for Storage Count) \*3 \*3 <br>33. FSK Error (peak) [%] \*3 (Average value for Storage Count) \*3 \*3 <br>34. FSK Error (peak) [%] \*3 (Maximum value for Storage Count) \*3 \*3
### Table 2.7-2  Responses of Modulation Analysis Result (Cont’d)

<table>
<thead>
<tr>
<th>n</th>
<th>Result Mode</th>
<th>Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 or omitted Cont’d</td>
<td>A</td>
<td>Returns with comma-separated value formats in the following order:</td>
</tr>
<tr>
<td>35.</td>
<td>Tx Power [W] (Average value for Storage Count)</td>
<td></td>
</tr>
<tr>
<td>36.</td>
<td>Tx Power [W] (Maximum value for Storage Count)</td>
<td></td>
</tr>
<tr>
<td>37.</td>
<td>Filtered Power [W] (Average value for Storage Count)</td>
<td></td>
</tr>
<tr>
<td>38.</td>
<td>Filtered Power [W] (Maximum value for Storage Count)</td>
<td></td>
</tr>
<tr>
<td>39.</td>
<td>Origin Offset [%]*1,*8 (Average value for Storage Count)</td>
<td></td>
</tr>
<tr>
<td>40.</td>
<td>Origin Offset [%]*1,*8 (Maximum value for Storage Count)</td>
<td></td>
</tr>
<tr>
<td>41.</td>
<td>Symbol Rate Error [ppm]*7 (Average value for Storage Count)</td>
<td></td>
</tr>
<tr>
<td>42.</td>
<td>Symbol Rate Error [ppm]*7 (Maximum value for Storage Count)</td>
<td></td>
</tr>
<tr>
<td>43.</td>
<td>Jitter P-P Min [%]*3 (Average value for Storage Count)</td>
<td></td>
</tr>
<tr>
<td>44.</td>
<td>Jitter P-P Min [%]*3 (Maximum value for Storage Count)</td>
<td></td>
</tr>
<tr>
<td>45.</td>
<td>Jitter P-P Max [%]*3 (Average value for Storage Count)</td>
<td></td>
</tr>
<tr>
<td>46.</td>
<td>Jitter P-P Max [%]*3 (Maximum value for Storage Count)</td>
<td></td>
</tr>
<tr>
<td>47.</td>
<td>MER (RMS) [dB]*1 (Average value for Storage Count)</td>
<td></td>
</tr>
<tr>
<td>48.</td>
<td>MER (RMS) [dB]*1 (Maximum value for Storage Count)</td>
<td></td>
</tr>
<tr>
<td>49.</td>
<td>MER (Peak) [dB]*1 (Average value for Storage Count)</td>
<td></td>
</tr>
<tr>
<td>50.</td>
<td>MER (Peak) [dB]*1 (Maximum value for Storage Count)</td>
<td></td>
</tr>
<tr>
<td>51.</td>
<td>Deviation +Peak [Hz]*3 (Average value for Storage Count)</td>
<td></td>
</tr>
<tr>
<td>52.</td>
<td>Deviation +Peak [Hz]*3 (Maximum value for Storage Count)</td>
<td></td>
</tr>
<tr>
<td>53.</td>
<td>Deviation –Peak [Hz]*3 (Average value for Storage Count)</td>
<td></td>
</tr>
<tr>
<td>54.</td>
<td>Deviation –Peak [Hz]*3 (Maximum value for Storage Count)</td>
<td></td>
</tr>
<tr>
<td>55.</td>
<td>Deviation (Peak-Peak)/2 [Hz]*3 (Average value for Storage Count)</td>
<td></td>
</tr>
<tr>
<td>56.</td>
<td>Deviation (Peak-Peak)/2 [Hz]*3 (Maximum value for Storage Count)</td>
<td></td>
</tr>
<tr>
<td>57.</td>
<td>Offset EVM (RMS) [%]*5 (Average value for Storage Count)</td>
<td></td>
</tr>
<tr>
<td>58.</td>
<td>Offset EVM (RMS) [%]*5 (Maximum value for Storage Count)</td>
<td></td>
</tr>
<tr>
<td>59.</td>
<td>Offset EVM (Peak) [%]*5 (Average value for Storage Count)</td>
<td></td>
</tr>
<tr>
<td>60.</td>
<td>Offset EVM (Peak) [%]*5 (Maximum value for Storage Count)</td>
<td></td>
</tr>
<tr>
<td>61.</td>
<td>Modulation Fidelity (RMS) [%]*3(Average value for Storage Count)</td>
<td></td>
</tr>
<tr>
<td>62.</td>
<td>Modulation Fidelity (RMS) [%]*3(Maximum value for Storage Count)</td>
<td></td>
</tr>
<tr>
<td>63.</td>
<td>Modulation Fidelity (Peak) [%]*3(Average value for Storage Count)</td>
<td></td>
</tr>
<tr>
<td>64.</td>
<td>Modulation Fidelity (Peak) [%]*3(Maximum value for Storage Count)</td>
<td></td>
</tr>
<tr>
<td>65.</td>
<td>Deviation Rms [%]*6(Average value for Storage Count)</td>
<td></td>
</tr>
<tr>
<td>66.</td>
<td>Deviation Rms [%]*6(Maximum value for Storage Count)</td>
<td></td>
</tr>
<tr>
<td>67.</td>
<td>TimingOffset Rms [us]*8 (Average value for Storage Count)</td>
<td></td>
</tr>
<tr>
<td>68.</td>
<td>TimingOffset Rms [us]*8 (Maximum value for Storage Count)</td>
<td></td>
</tr>
</tbody>
</table>
### Table 2.7-2  Responses of Modulation Analysis Result (Cont’d)

<table>
<thead>
<tr>
<th>n</th>
<th>Result Mode</th>
<th>Response</th>
</tr>
</thead>
</table>
| 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 Subcarrier + Upper Guard Subcarrier))  
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)

<table>
<thead>
<tr>
<th>n</th>
<th>Result Mode</th>
<th>Response</th>
</tr>
</thead>
</table>
| 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 specified 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  

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Table 2.7-2  Responses of Modulation Analysis Result (Cont’d)

<table>
<thead>
<tr>
<th>n</th>
<th>Result Mode</th>
<th>Response</th>
</tr>
</thead>
</table>
| 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 (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>
<thead>
<tr>
<th>n</th>
<th>Result Mode</th>
<th>Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>21.</td>
<td>Deviation [Hz], +1:+Min. Peak (Average value for Storage Count)</td>
<td></td>
</tr>
<tr>
<td>22.</td>
<td>Deviation [Hz], +1:+Min. Peak (Maximum value for Storage Count)</td>
<td></td>
</tr>
<tr>
<td>23.</td>
<td>Deviation [Hz], +1:–Max. Peak (Average value for Storage Count)</td>
<td></td>
</tr>
<tr>
<td>24.</td>
<td>Deviation [Hz], +1:–Max. Peak (Maximum value for Storage Count)</td>
<td></td>
</tr>
<tr>
<td>25.</td>
<td>Deviation [Hz], +1:–Min. Peak (Average value for Storage Count)</td>
<td></td>
</tr>
<tr>
<td>26.</td>
<td>Deviation [Hz], +1:–Min. Peak (Maximum value for Storage Count)</td>
<td></td>
</tr>
<tr>
<td>27.</td>
<td>Deviation [Hz], +1: (Peak to Peak)/2 (Average value for Storage Count)</td>
<td></td>
</tr>
<tr>
<td>28.</td>
<td>Deviation [Hz], +1: (Peak to Peak)/2 (Maximum value for Storage Count)</td>
<td></td>
</tr>
<tr>
<td>29.</td>
<td>Deviation [%], +1:+Max. Peak (Average value for Storage Count)</td>
<td></td>
</tr>
<tr>
<td>30.</td>
<td>Deviation [%], +1:+Max. Peak (Maximum value for Storage Count)</td>
<td></td>
</tr>
<tr>
<td>31.</td>
<td>Deviation [%], +1:–Max. Peak (Average value for Storage Count)</td>
<td></td>
</tr>
<tr>
<td>32.</td>
<td>Deviation [%], +1:–Max. Peak (Maximum value for Storage Count)</td>
<td></td>
</tr>
<tr>
<td>33.</td>
<td>Deviation [Hz], –1:+Average (Average value for Storage Count)</td>
<td></td>
</tr>
<tr>
<td>34.</td>
<td>Deviation [Hz], –1:+Average (Maximum value for Storage Count)</td>
<td></td>
</tr>
<tr>
<td>35.</td>
<td>Deviation [Hz], –1:+Max. Peak (Average value for Storage Count)</td>
<td></td>
</tr>
<tr>
<td>36.</td>
<td>Deviation [Hz], –1:+Max. Peak (Maximum value for Storage Count)</td>
<td></td>
</tr>
<tr>
<td>37.</td>
<td>Deviation [Hz], –1:–Min. Peak (Average value for Storage Count)</td>
<td></td>
</tr>
<tr>
<td>38.</td>
<td>Deviation [Hz], –1:–Min. Peak (Maximum value for Storage Count)</td>
<td></td>
</tr>
<tr>
<td>39.</td>
<td>Deviation [Hz], –1:–Max. Peak (Average value for Storage Count)</td>
<td></td>
</tr>
<tr>
<td>40.</td>
<td>Deviation [Hz], –1:–Max. Peak (Maximum value for Storage Count)</td>
<td></td>
</tr>
<tr>
<td>41.</td>
<td>Deviation [Hz], –1: (Peak to Peak)/2 (Average value for Storage Count)</td>
<td></td>
</tr>
<tr>
<td>42.</td>
<td>Deviation [Hz], –1: (Peak to Peak)/2 (Maximum value for Storage Count)</td>
<td></td>
</tr>
</tbody>
</table>
### Table 2.7-2  Responses of Modulation Analysis Result (Cont’d)

<table>
<thead>
<tr>
<th>n</th>
<th>Result Mode</th>
<th>Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>12</td>
<td>A</td>
<td>45. Deviation [%], –1:+Max. Peak (Average value for Storage Count)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>46. Deviation [%], –1:+Max. Peak (Maximum value for Storage Count)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>47. Deviation [%], –1:–Max. Peak (Average value for Storage Count)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>48. Deviation [%], –1:–Max. Peak (Maximum value for Storage Count)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>49. Deviation [Hz], –3:Average (Average value for Storage Count)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>50. Deviation [Hz], –3:Average*1 (Maximum value for Storage Count)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>51. Deviation [Hz], –3:+Max. Peak*1 (Average value for Storage Count)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>52. Deviation [Hz], –3:+Max. Peak*1 (Maximum value for Storage Count)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>53. Deviation [Hz], –3:+Min. Peak*1 (Average value for Storage Count)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>54. Deviation [Hz], –3:+Min. Peak*1 (Maximum value for Storage Count)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>55. Deviation [Hz], –3:–Max. Peak*1 (Average value for Storage Count)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>56. Deviation [Hz], –3:–Max. Peak*1 (Maximum value for Storage Count)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>57. Deviation [Hz], –3:–Min. Peak*1 (Average value for Storage Count)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>58. Deviation [Hz], –3:–Min. Peak*1 (Maximum value for Storage Count)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>59. Deviation [Hz], –3: (Peak to Peak)/2*1 (Average value for Storage Count)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>60. Deviation [Hz], –3: (Peak to Peak)/2*1 (Maximum value for Storage Count)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>61. Deviation [%], –3:+Max. Peak*1 (Average value for Storage Count)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>62. Deviation [%], –3:+Max. Peak*1 (Maximum value for Storage Count)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>63. Deviation [%], –3:–Max. Peak*1 (Average value for Storage Count)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>64. Deviation [%], –3:–Max. Peak*1 (Maximum value for Storage Count)</td>
</tr>
</tbody>
</table>

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)

<table>
<thead>
<tr>
<th>n</th>
<th>Result Mode</th>
<th>Response</th>
</tr>
</thead>
</table>
| 13 | A           | The Symbol Table graph display data is returned with comma-separated value formats.  
|    |             | Number of output data items  
|    |             | Measurement Interval [symbol] \( \times \) Bits per Symbol  
|    |             | When Modulation type is PI4DQPSK,  
|    |             | \((\text{Measurement Interval} - 1)\) [symbol] \( \times \) 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)

<table>
<thead>
<tr>
<th>n</th>
<th>Result Mode</th>
<th>Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>19</td>
<td>A</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>1. BER [%]*1 (Average value for Storage Count)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2. BER [%]*1 (Maximum value for Storage Count)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>*1: If BER measurement is invalid: –999.0</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Returns the measurement result data of ASK Deviation with comma-separated value formats in the following order:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1. Frequency Error [Hz], (Average value for Storage Count)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2. Frequency Error [Hz], (Maximum value for Storage Count)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3. Frequency Error [ppm], (Average value for Storage Count)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>4. Frequency Error [ppm], (Maximum value for Storage Count)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>5. Tx Power [dBm] (Average value for Storage Count)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>6. Tx Power [dBm] (Maximum value for Storage Count)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>7. –999.0</td>
</tr>
<tr>
<td></td>
<td></td>
<td>8. –999.0</td>
</tr>
<tr>
<td></td>
<td></td>
<td>9. Modulation Index (RMS) [no unit] (Average value for Storage Count)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>10. Modulation Index (RMS) [no unit] (Maximum value for Storage Count)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>11. Eye Opening (X-Time) [%] (Average value for Storage Count)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>12. Eye Opening (X-Time) [%] (Maximum value for Storage Count)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>13. Eye Opening (Y-Amplitude) [%] (Average value for Storage Count)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>14. Eye Opening (Y-Amplitude) [%] (Maximum value for Storage Count)</td>
</tr>
<tr>
<td>20</td>
<td>A</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Returns the equalizer coefficient data separated by commas (,) in the order of I, Q, I, Q,...</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Output data number Equalizer Tap × 2</td>
</tr>
<tr>
<td></td>
<td></td>
<td>–999.0 for the number of times equal to that of output data items (when not measured)</td>
</tr>
<tr>
<td>21</td>
<td>A</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>The EVM vs Subcarrier graph display data is returned with comma-separated value formats.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Number of output data FFT Size – (Lower Guard Subcarrier + Upper Guard Subcarrier)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>–999.0 for the number of times equal to that of output data items (when not measured)</td>
</tr>
</tbody>
</table>
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

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Device Message</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Trace Mode</strong></td>
<td>:DISPlay:EVM[:VIEW][:SELect]:TRACe[1]</td>
</tr>
<tr>
<td><strong>Scale (Vertical)</strong></td>
<td>:DISPlay:EVM[:VIEW]:WINDow2:TRACe[1]</td>
</tr>
<tr>
<td><strong>Scale (Vertical)</strong></td>
<td>:DISPlay:EVM[:VIEW]:WINDow3:TRACe[1]</td>
</tr>
<tr>
<td><strong>Scale (Vertical)</strong></td>
<td>:DISPlay:EVM[:VIEW]:WINDow4:TRACe[1]</td>
</tr>
<tr>
<td>– Phase Error vs Symbol</td>
<td>:DISPlay:EVM[:VIEW]:WINDow4:TRACe[1]</td>
</tr>
<tr>
<td><strong>Scale (Interpolation)</strong></td>
<td>:DISPlay:EVM[:VIEW]:WINDow1:TRACe[1]</td>
</tr>
<tr>
<td>– Constellation</td>
<td>:DISPlay:EVM[:VIEW]:WINDow1:TRACe[1]</td>
</tr>
<tr>
<td><strong>Points/Symbol Number</strong></td>
<td>:DISPlay:EVM[:VIEW]:WINDow1:TRACe[1]</td>
</tr>
<tr>
<td>– Constellation</td>
<td>:DISPlay:EVM[:VIEW]:WINDow1:TRACe[1]</td>
</tr>
<tr>
<td><strong>Scale (Unit)</strong></td>
<td>:DISPlay:EVM[:VIEW]:WINDow2:TRACe[1]</td>
</tr>
<tr>
<td>– Numeric</td>
<td>:DISPlay:EVM[:VIEW]:WINDow2:TRACe[1]</td>
</tr>
<tr>
<td><strong>Scale (Unit)</strong></td>
<td>:DISPlay:EVM[:VIEW]:WINDow2:TRACe[1]</td>
</tr>
<tr>
<td>– Symbol Rate Error</td>
<td>:DISPlay:EVM[:VIEW]:WINDow2:TRACe[1]</td>
</tr>
<tr>
<td><strong>Scale (Unit)</strong></td>
<td>:DISPlay:EVM[:VIEW]:WINDow2:TRACe[1]</td>
</tr>
<tr>
<td>– Symbol Table</td>
<td>:DISPlay:EVM[:VIEW]:WINDow2:TRACe[1]</td>
</tr>
</tbody>
</table>
### Device Messages for Parameter Settings of Modulation Analysis (Cont’d)

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Device Message</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scale (Vertical) – Equalizer Amplitude</td>
<td>:DISPlay:EVM[:VIEW]:WINDow14:TRACe[1]</td>
</tr>
<tr>
<td></td>
<td>:DISPlay:EVM[:VIEW]:WINDow14:TRACe[1]</td>
</tr>
<tr>
<td>Scale (Vertical) – Equalizer Phase</td>
<td>:DISPlay:EVM[:VIEW]:WINDow15:TRACe[1]</td>
</tr>
<tr>
<td></td>
<td>:DISPlay:EVM[:VIEW]:WINDow15:TRACe[1]</td>
</tr>
<tr>
<td>Scale (Vertical) – Equalizer Group Delay</td>
<td>:DISPlay:EVM[:VIEW]:WINDow16:TRACe[1]</td>
</tr>
<tr>
<td></td>
<td>:DISPlay:EVM[:VIEW]:WINDow16:TRACe[1]</td>
</tr>
<tr>
<td>Scale (Vertical) – Equalizer Impulse</td>
<td>:DISPlay:EVM[:VIEW]:WINDow17:TRACe[1]</td>
</tr>
<tr>
<td></td>
<td>:DISPlay:EVM[:VIEW]:WINDow17:TRACe[1]</td>
</tr>
<tr>
<td>Scale (Vertical) – FSK Error vs Symbol</td>
<td>:DISPlay:EVM[:VIEW]:WINDow18:TRACe[1]</td>
</tr>
<tr>
<td></td>
<td>:DISPlay:EVM[:VIEW]:WINDow18:TRACe[1]</td>
</tr>
<tr>
<td>Scale (Vertical) – Fidelity vs Symbol</td>
<td>:DISPlay:EVM[:VIEW]:WINDow19:TRACe[1]</td>
</tr>
<tr>
<td></td>
<td>:DISPlay:EVM[:VIEW]:WINDow19:TRACe[1]</td>
</tr>
<tr>
<td>Scale (Vertical) – EVM vs Subcarrier</td>
<td>:DISPlay:EVM[:VIEW]:WINDow22:TRACe[1]</td>
</tr>
<tr>
<td></td>
<td>:DISPlay:EVM[:VIEW]:WINDow22:TRACe[1]</td>
</tr>
<tr>
<td>Storage Mode</td>
<td>[:SENSe]:EVM:AVERage[:STATe] OFF</td>
</tr>
</tbody>
</table>
|                            | [: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?                                           |
Chapter 2  SCPI Device Message Details

Table 2.7-4 lists device messages for setting Modulation Analysis and reading marker settings and position values.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Device Message</th>
</tr>
</thead>
</table>
| Marker On/Off                  | :CALCulate:EVM:WINDow[1]:TRACe[1]|2|3|4|5|6|7|8
| – Constellation                | :MARKer[:STATe] OFF|ON|0|1                                                                 |
|                                | :CALCulate:EVM:WINDow[1]:TRACe[1]|2|3|4|5|6|7|8
|                                | :MARKer[:STATe]?                                                            |
| Marker On/Off                  | :CALCulate:EVM:WINDow[2]:TRACe[1]|2|3|4|5|6|7|8
| – EVM vs Symbol                | :MARKer[:STATe] OFF|ON|0|1                                                                 |
|                                | :CALCulate:EVM:WINDow[2]:TRACe[1]|2|3|4|5|6|7|8
|                                | :MARKer[:STATe]?                                                            |
| Marker On/Off                  | :CALCulate:EVM:WINDow[3]:TRACe[1]|2|3|4|5|6|7|8
| – Mag. Error vs Symbol         | :MARKer[:STATe] OFF|ON|0|1                                                                 |
|                                | :CALCulate:EVM:WINDow[3]:TRACe[1]|2|3|4|5|6|7|8
|                                | :MARKer[:STATe]?                                                            |
| Marker On/Off                  | :CALCulate:EVM:WINDow[4]:TRACe[1]|2|3|4|5|6|7|8
| – Phase Error vs Symbol        | :MARKer[:STATe] OFF|ON|0|1                                                                 |
|                                | :CALCulate:EVM:WINDow[4]:TRACe[1]|2|3|4|5|6|7|8
|                                | :MARKer[:STATe]?                                                            |
| Marker On/Off                  | :CALCulate:EVM:WINDow[8]:TRACe[1]|2|3|4|5|6|7|8
| – I and Q vs Symbol            | :MARKer[:STATe] OFF|ON|0|1                                                                 |
|                                | :CALCulate:EVM:WINDow[8]:TRACe[1]|2|3|4|5|6|7|8
|                                | :MARKer[:STATe]?                                                            |
| Marker On/Off                  | :CALCulate:EVM:WINDow[9]:TRACe[1]|2|3|4|5|6|7|8
| – Magnitude vs Symbol          | :MARKer[:STATe] OFF|ON|0|1                                                                 |
|                                | :CALCulate:EVM:WINDow[9]:TRACe[1]|2|3|4|5|6|7|8
<p>|                                | :MARKer[:STATe]?                                                            |
| Marker On/Off                  | :CALCulate:EVM:WINDow[10]:TRACe[1]|2|3|4|5|6|7|8 |
| – Phase vs Symbol              | :MARKer[:STATe] OFF|ON|0|1                                                                 |
|                                | :CALCulate:EVM:WINDow[10]:TRACe[1]|2|3|4|5|6|7|8 |
|                                | :MARKer[:STATe]?                                                            |
| – Frequency vs Symbol          | :MARKer[:STATe] OFF|ON|0|1                                                                 |
|                                | :MARKer[:STATe]?                                                            |
| Marker On/Off                  | :CALCulate:EVM:WINDow[22]:TRACe[1]|2|3|4|5|6|7|8 |
| – EVM vs Subcarrier            | :MARKer[:STATe] OFF|ON|0|1                                                                 |
|                                | :CALCulate:EVM:WINDow[22]:TRACe[1]|2|3|4|5|6|7|8 |
|                                | :MARKer[:STATe]?                                                            |</p>
<table>
<thead>
<tr>
<th>Parameter</th>
<th>Device Message</th>
</tr>
</thead>
</table>
| 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: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:WINDow1:TRACe[1]|2|3|4|5|6|7|8  
|                                         | :MARKer:SUBCarrier <integer>                                                 |
|                                         | :CALCulate:EVM:WINDow1:TRACe[1]|2|3|4|5|6|7|8  
|                                         | :MARKer:SUBCarrier?                                                           |
### Table 2.7-4  Device Message for Markers of Modulation Analysis (Cont’d)

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Device Message</th>
</tr>
</thead>
<tbody>
<tr>
<td>Marker Result</td>
<td></td>
</tr>
<tr>
<td>– Constellation</td>
<td>:CALCulate:EVM:WINDow[1]:TRACe[1]</td>
</tr>
<tr>
<td></td>
<td>:MARKer:X?</td>
</tr>
<tr>
<td></td>
<td>:CALCulate:EVM:WINDow[1]:TRACe[1]</td>
</tr>
<tr>
<td></td>
<td>:MARKer:Y?</td>
</tr>
<tr>
<td>Marker Result</td>
<td></td>
</tr>
<tr>
<td>– EVM vs Symbol</td>
<td>:CALCulate:EVM:WINDow2:TRACe[1]</td>
</tr>
<tr>
<td></td>
<td>:MARKer:Y?</td>
</tr>
<tr>
<td>Marker Result</td>
<td></td>
</tr>
<tr>
<td></td>
<td>:MARKer:Y?</td>
</tr>
<tr>
<td>Marker Result</td>
<td></td>
</tr>
<tr>
<td>– Phase Error vs Symbol</td>
<td>:CALCulate:EVM:WINDow4:TRACe[1]</td>
</tr>
<tr>
<td></td>
<td>:MARKer:Y?</td>
</tr>
<tr>
<td>Marker Result</td>
<td></td>
</tr>
<tr>
<td>– I and Q vs Symbol</td>
<td>:CALCulate:EVM:WINDow8:TRACe[1]</td>
</tr>
<tr>
<td></td>
<td>:MARKer:I:Y?</td>
</tr>
<tr>
<td></td>
<td>:CALCulate:EVM:WINDow8:TRACe[1]</td>
</tr>
<tr>
<td></td>
<td>:MARKer:Q:Y?</td>
</tr>
<tr>
<td>Marker Result</td>
<td></td>
</tr>
<tr>
<td></td>
<td>:MARKer:Y?</td>
</tr>
<tr>
<td>Marker Result</td>
<td></td>
</tr>
<tr>
<td>– Phase vs Symbol</td>
<td>:CALCulate:EVM:WINDow10:TRACe[1]</td>
</tr>
<tr>
<td></td>
<td>:MARKer:Y?</td>
</tr>
<tr>
<td>Marker Result</td>
<td></td>
</tr>
<tr>
<td>– Frequency vs Symbol</td>
<td>:CALCulate:EVM:WINDow11:TRACe[1]</td>
</tr>
<tr>
<td></td>
<td>:MARKer:Y?</td>
</tr>
<tr>
<td>Marker Result</td>
<td></td>
</tr>
<tr>
<td></td>
<td>:MARKer:Y?</td>
</tr>
</tbody>
</table>
2.7 Modulation Analysis

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**

<table>
<thead>
<tr>
<th>&lt;real&gt;</th>
<th>Threshold</th>
</tr>
</thead>
<tbody>
<tr>
<td>Range</td>
<td>0.5% to 10%</td>
</tr>
<tr>
<td>Resolution</td>
<td>0.01%</td>
</tr>
<tr>
<td>Suffix code</td>
<td>None</td>
</tr>
</tbody>
</table>

**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**

<table>
<thead>
<tr>
<th>&lt;real&gt;</th>
<th>Threshold</th>
</tr>
</thead>
<tbody>
<tr>
<td>Range</td>
<td>0.5% to 10%</td>
</tr>
<tr>
<td>Resolution</td>
<td>0.01%</td>
</tr>
</tbody>
</table>

**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
2.7  Modulation Analysis

: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.
FETCH: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

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
NUMerical  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
Chapter 2  SCPI Device Message Details

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

<table>
<thead>
<tr>
<th>Trace Position</th>
<th>Trace Mode Initial Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trace 1</td>
<td>Numeric</td>
</tr>
<tr>
<td>Trace 2</td>
<td>Constellation</td>
</tr>
<tr>
<td>Trace 3</td>
<td>EVM vs Symbol</td>
</tr>
<tr>
<td>Trace 4</td>
<td>Mag. Error vs Symbol</td>
</tr>
<tr>
<td>Trace 5</td>
<td>Signal Monitor</td>
</tr>
<tr>
<td>Trace 6</td>
<td>I and Q vs Symbol</td>
</tr>
<tr>
<td>Trace 7</td>
<td>Eye Diagram</td>
</tr>
<tr>
<td>Trace 8</td>
<td>Trellis</td>
</tr>
</tbody>
</table>

Example of Use

To set Trace Mode of Trace 2 to Phase Error vs Symbol.

DISP:EVM:TRAC2  PESY
### Trace Mode Query

This command queries the graph type on the graph window when Modulation Analysis is selected.

#### Query

:\( \text{DISPlay:EVM[:VIEW][:SELect]:TRACe[n]?} \)

#### Response

\(<\text{mode}>\)

#### Parameter

<table>
<thead>
<tr>
<th>(&lt;n&gt;)</th>
<th>Trace position</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Trace 1</td>
</tr>
<tr>
<td>2</td>
<td>Trace 2</td>
</tr>
<tr>
<td>3</td>
<td>Trace 3</td>
</tr>
<tr>
<td>4</td>
<td>Trace 4</td>
</tr>
<tr>
<td>5</td>
<td>Trace 5</td>
</tr>
<tr>
<td>6</td>
<td>Trace 6</td>
</tr>
<tr>
<td>7</td>
<td>Trace 7</td>
</tr>
<tr>
<td>8</td>
<td>Trace 8</td>
</tr>
</tbody>
</table>

When omitted Trace 1

<table>
<thead>
<tr>
<th>(&lt;\text{mode}&gt;)</th>
<th>Trace Mode</th>
</tr>
</thead>
<tbody>
<tr>
<td>CONS</td>
<td>Constellation</td>
</tr>
<tr>
<td>EVSY</td>
<td>EVM vs Symbol</td>
</tr>
<tr>
<td>MESY</td>
<td>Mag. Error vs Symbol</td>
</tr>
<tr>
<td>PESY</td>
<td>Phase Error vs Symbol</td>
</tr>
<tr>
<td>TREL</td>
<td>Trellis</td>
</tr>
<tr>
<td>EYED</td>
<td>Eye Diagram</td>
</tr>
<tr>
<td>NUM</td>
<td>Numeric</td>
</tr>
<tr>
<td>IQSY</td>
<td>I and Q vs Symbol</td>
</tr>
<tr>
<td>MGSY</td>
<td>Magnitude vs Symbol</td>
</tr>
<tr>
<td>PHSY</td>
<td>Phase vs Symbol</td>
</tr>
<tr>
<td>FRSY</td>
<td>Frequency vs Symbol</td>
</tr>
<tr>
<td>SMON</td>
<td>Signal Monitor</td>
</tr>
<tr>
<td>SYMB</td>
<td>Symbol Table</td>
</tr>
<tr>
<td>EQAM</td>
<td>Equalizer Amplitude</td>
</tr>
<tr>
<td>EQP</td>
<td>Equalizer Phase</td>
</tr>
<tr>
<td>EQG</td>
<td>Equalizer Group Delay</td>
</tr>
<tr>
<td>EQI</td>
<td>Equalizer Impulse Response</td>
</tr>
<tr>
<td>FSSY</td>
<td>FSK Error vs Symbol</td>
</tr>
<tr>
<td>FISY</td>
<td>Modulation Fidelity vs Symbol</td>
</tr>
</tbody>
</table>
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]:RLE Vel
<mode>

Parameter

<table>
<thead>
<tr>
<th>&lt;mode&gt;</th>
<th>Vertical axis scale</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>5% (default)</td>
</tr>
<tr>
<td>10</td>
<td>10%</td>
</tr>
<tr>
<td>20</td>
<td>20%</td>
</tr>
<tr>
<td>50</td>
<td>50%</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>&lt;mode&gt;</th>
<th>Vertical axis scale</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>5%</td>
</tr>
<tr>
<td>10</td>
<td>10%</td>
</tr>
<tr>
<td>20</td>
<td>20%</td>
</tr>
<tr>
<td>50</td>
<td>50%</td>
</tr>
</tbody>
</table>

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[n]: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
Chapter 2  SCPI Device Message Details

: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

<table>
<thead>
<tr>
<th>&lt;mode&gt;</th>
<th>Vertical axis scale</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>±5 degree (default)</td>
</tr>
<tr>
<td>10</td>
<td>±10 degree</td>
</tr>
<tr>
<td>20</td>
<td>±20 degree</td>
</tr>
<tr>
<td>50</td>
<td>±50 degree</td>
</tr>
</tbody>
</table>

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

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

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.
Chapter 2  SCPI Device Message Details

: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

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

<table>
<thead>
<tr>
<th>&lt;unit&gt;</th>
<th>Display unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>DBM</td>
<td>dBm (default)</td>
</tr>
<tr>
<td>W</td>
<td>W</td>
</tr>
</tbody>
</table>

Example of Use

To set the numeric unit of display measurement to dBm.

\Display:EVM:WIND2:TRAC:Y:UNIT:POW DBM
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

<table>
<thead>
<tr>
<th>&lt;unit&gt;</th>
<th>Display unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>PPM</td>
<td>ppm (default)</td>
</tr>
<tr>
<td>HZ</td>
<td>Hz</td>
</tr>
</tbody>
</table>

Example of Use

To set the unit of Symbol Rate Error to 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[:SCALe]:UNIT:SRATe?

Response
<unit>

Parameters
<unit> Display unit
   FPM 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

<table>
<thead>
<tr>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>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).</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th align="center">Command</th>
</tr>
</thead>
<tbody>
<tr>
<td align="center">:DISPlay:EVM[:VIEW]:WINDow2:TRACe[1]</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Parameter</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;unit&gt;</td>
</tr>
<tr>
<td>BIN</td>
</tr>
<tr>
<td>HEX</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Example of Use</th>
</tr>
</thead>
<tbody>
<tr>
<td>To set the display unit of Symbol Table to Hex.</td>
</tr>
<tr>
<td>DISP:EVM:WIND2:TRAC:SYMB:FORM HEX</td>
</tr>
</tbody>
</table>
: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:WIN2: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>

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
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[: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

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;real&gt;</td>
<td>Vertical scale</td>
</tr>
<tr>
<td>Range</td>
<td>±100 ns to ±1 ms</td>
</tr>
<tr>
<td>Resolution</td>
<td>1 ns</td>
</tr>
<tr>
<td>Suffix code</td>
<td>NS, US, MS, S</td>
</tr>
<tr>
<td></td>
<td>second is used when omitted.</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>&lt;mode&gt;</th>
<th>Vertical scale</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>±5%</td>
</tr>
<tr>
<td>10</td>
<td>±10%</td>
</tr>
<tr>
<td>20</td>
<td>±20%</td>
</tr>
<tr>
<td>50</td>
<td>±50%</td>
</tr>
</tbody>
</table>

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

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]:WINDow9:TRACe[1]|2|3|4|5|6|7|8:Y[:SCALe]:RLEVel 5|10|20|50

Parameter

<table>
<thead>
<tr>
<th>&lt;mode&gt;</th>
<th>Vertical axis scale</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>±5%</td>
</tr>
<tr>
<td>10</td>
<td>±10%</td>
</tr>
<tr>
<td>20</td>
<td>±20%</td>
</tr>
<tr>
<td>50</td>
<td>±50%</td>
</tr>
</tbody>
</table>

Example of Use

To set the vertical scale of the Fidelity vs Symbol graph to 10%.

DISP:EVM:WIND19:TRAC:Y:RLEV 10
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::YRLEV?
> 10
2.7.17 Scale (Vertical) – EVM vs Subcarrier

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[:SCALe]:RLEVel 5|10|20|50
```

Example of Use:
To set the vertical scale of the EVM vs Subcarrier graph to 10%.
```
```

Scale (Vertical) – EVM vs Subcarrier Query

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[:SCALe]:RLEVel?
```

Response:
```
<mode>
```

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 Modulation Analysis

2.7.19 Storage Count

[:SENSe]:EVM:AVERage:COUNt <integer>

**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?

**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

<table>
<thead>
<tr>
<th>&lt;trace&gt;</th>
<th>Trace number to focus</th>
</tr>
</thead>
<tbody>
<tr>
<td>TRACe1</td>
<td>Trace 1 (default)</td>
</tr>
<tr>
<td>TRACe2</td>
<td>Trace 2</td>
</tr>
<tr>
<td>TRACe3</td>
<td>Trace 3</td>
</tr>
<tr>
<td>TRACe4</td>
<td>Trace 4</td>
</tr>
<tr>
<td>TRACe5</td>
<td>Trace 5</td>
</tr>
<tr>
<td>TRACe6</td>
<td>Trace 6</td>
</tr>
<tr>
<td>TRACe7</td>
<td>Trace 7</td>
</tr>
<tr>
<td>TRACe8</td>
<td>Trace 8</td>
</tr>
</tbody>
</table>

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
Chapter 2  SCPI Device Message Details

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?

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
**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:MARKe[r]:STAt[e]?

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]:MARKe[r]:STAt[e]?

Response

<switch>

Parameter

<switch> Marker

<table>
<thead>
<tr>
<th>0</th>
<th>Off</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>On</td>
</tr>
</tbody>
</table>

Example of Use

To query the marker display status for the Mag. Error vs Symbol graph.

```
CALC:EVM:WIN3: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[n]:MARKer[:STATE] <switch>

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:WINDOW8:TRACE:MARK ON
2.7 Modulation Analysis

: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
**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>`

<table>
<thead>
<tr>
<th>Marker</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Off</td>
<td>0</td>
</tr>
<tr>
<td>On</td>
<td>1</td>
</tr>
</tbody>
</table>

**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

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:WND10: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
2.7 Modulation Analysis

: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
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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[n]: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
Chapter 2  SCPI Device Message Details

:`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
Symbol
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
Chapter 2  SCPI Device Message Details

: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


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

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;real&gt;</td>
<td>Marker display position</td>
</tr>
<tr>
<td>Minimum value</td>
<td>0</td>
</tr>
<tr>
<td>Maximum value</td>
<td>Measurement Interval – 1 (other than O-QPSK)</td>
</tr>
<tr>
<td></td>
<td>Measurement Interval – 0.5 (O-QPSK)</td>
</tr>
<tr>
<td>Resolution</td>
<td>0.5</td>
</tr>
<tr>
<td>Unit</td>
<td>Symbol</td>
</tr>
<tr>
<td>Default</td>
<td>0</td>
</tr>
</tbody>
</table>

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
Chapter 2  SCPI Device Message Details

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:EV:MIND3: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
**Chapter 2  SCPI Device Message Details**

:**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:WIND: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
Chapter 2  SCPI Device Message Details

: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


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
Chapter 2  SCPI Device Message Details

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
Chapter 2  SCPI Device Message Details

: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
Chapter 2  SCPI Device Message Details

: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]:MARRk: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

<table>
<thead>
<tr>
<th>&lt;integer&gt;</th>
<th>Marker subcarrier position</th>
</tr>
</thead>
<tbody>
<tr>
<td>Minimum value</td>
<td>0</td>
</tr>
<tr>
<td>Maximum value</td>
<td>Subcarrier number defined in Subcarrier MAP – 1</td>
</tr>
<tr>
<td>Resolution</td>
<td>1</td>
</tr>
<tr>
<td>Unit</td>
<td>Subcarrier</td>
</tr>
<tr>
<td>Default</td>
<td>0</td>
</tr>
</tbody>
</table>

Details

This function is valid when the Measuring Object is SCBT.

Example of Use

To set the marker position of the Constellation graph to 10th subcarrier.

CALC:EVM:WIND:TRAC:MARK:SUBC 10
Chapter 2  SCPI Device Message Details

: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[n]: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 position of the EVM vs Subcarrier graph to 10th subcarrier.

Chapter 2  SCPI Device Message Details

:CALCulate:EVM:WINDow22:TRACe[n]: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.
> 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  
Maximum value  
Resolution

99.9999

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


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


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


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


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
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.
> 0.625376
2.7.50 Marker Result – Magnitude vs Symbol


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


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


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


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.
> 1.21
2.8 Power vs Time

Table 2.8-1 lists device messages for Power vs Time.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Device Message</th>
</tr>
</thead>
<tbody>
<tr>
<td>Configure</td>
<td>:CONFigure:PVTime</td>
</tr>
<tr>
<td>Initiate</td>
<td>:INITiate:PVTime</td>
</tr>
<tr>
<td>Fetch</td>
<td>:FETCh:PVTime[n]?</td>
</tr>
<tr>
<td>Read</td>
<td>:REAd:PVTime[n]?</td>
</tr>
<tr>
<td>Measure</td>
<td>:MEASure:PVTime[n]?</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>n</th>
<th>Result Mode</th>
<th>Response</th>
</tr>
</thead>
</table>
| 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)

<table>
<thead>
<tr>
<th>n</th>
<th>Result Mode</th>
<th>Response</th>
</tr>
</thead>
</table>
| 5  | A           | Responses are returned with comma separated value format in the following order.  
1. On Slot Power [dBm]  
2. On Slot Power [W]  
3. Off Slot Power [dBm]*  
4. Off Slot Power [W]*  
5. On / Off Ratio [dB]*  
6. Rise Time [s]  
7. Fall Time [s]  

*: 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  
2. Slot#0 Fall Time  
...  
39. Slot#19 Rise Time  
40. Slot#19 Fall Time  

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>
<thead>
<tr>
<th>Parameter</th>
<th>Device Message</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trace Mode</td>
<td>:DISPlay:PVTime[:VIEW][:SElec] RAFall</td>
</tr>
<tr>
<td>Unit</td>
<td>:DISPlay:PVTime[:VIEW]:WINDow[1]:TRACe:Y[:SCALe]</td>
</tr>
<tr>
<td>Display Item</td>
<td>:DISPlay:PVTime[:VIEW]:WINDow[1]:TRACe:Y[:SCALe]</td>
</tr>
<tr>
<td>Slot</td>
<td>:DISPlay:PVTime[:VIEW]:WINDow[1]:TRACe:Y[:SCALe]</td>
</tr>
<tr>
<td>Load Mask Setting – Select Mask</td>
<td>[:SENSe]:PVTime:MASK:LOAD:PRESet &lt;filename&gt;</td>
</tr>
<tr>
<td>Mask Setup – Upper limits – Rise – Time</td>
<td>[:SENSe]:PVTime:MASK:LIST:UPPer:RISE:TIME &lt;time&gt;,&lt;time&gt;,&lt;time&gt;,&lt;time&gt;,&lt;time&gt;,&lt;time&gt;,&lt;time&gt;,&lt;time&gt;,&lt;time&gt;,&lt;time&gt;,&lt;time&gt;,&lt;time&gt;,&lt;time&gt;,&lt;time&gt;</td>
</tr>
<tr>
<td>Mask Setup – Upper – Rise – Absolute limits</td>
<td>[:SENSe]:PVTime:MASK:LIST:UPPer:RISE:ABSolute &lt;real&gt;,&lt;real&gt;,&lt;real&gt;,&lt;real&gt;,&lt;real&gt;,&lt;real&gt;,&lt;real&gt;,&lt;real&gt;,&lt;real&gt;,&lt;real&gt;,&lt;real&gt;,&lt;real&gt;</td>
</tr>
<tr>
<td>Mask Setup – Upper – Rise – Fail Logic</td>
<td>[:SENSe]:PVTime:MASK:LIST:UPPer:RISE:FLOGic ABSolute</td>
</tr>
<tr>
<td></td>
<td>[:SENSe]:PVTime:MASK:LIST:UPPer:RISE:FLOGic?</td>
</tr>
</tbody>
</table>
### Table 2.8-3 Device messages for setting Power vs Time parameters (Cont’d)

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Device Message</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mask Setup – Upper limits – Fall – Time</td>
<td>[:SENSe]:PVTime:MASK:LIST:UPPer:FALL:TIME &lt;time&gt;,&lt;time&gt;,&lt;time&gt;,&lt;time&gt;,&lt;time&gt;,&lt;time&gt;,&lt;time&gt;,&lt;time&gt;,&lt;time&gt;,&lt;time&gt;</td>
</tr>
<tr>
<td>Mask Setup – Upper – Fall – Absolute limits</td>
<td>[:SENSe]:PVTime:MASK:LIST:UPPer:FALL:ABSolute &lt;real&gt;,&lt;real&gt;,&lt;real&gt;,&lt;real&gt;,&lt;real&gt;,&lt;real&gt;,&lt;real&gt;,&lt;real&gt;</td>
</tr>
<tr>
<td>Mask Setup – Upper – Fall – Fail Logic</td>
<td>[:SENSe]:PVTime:MASK:LIST:UPPer:FALL:FLOGic ABSolute</td>
</tr>
<tr>
<td>Mask Setup – Lower – Rise – Time</td>
<td>[:SENSe]:PVTime:MASK:LIST:LOWer:RISE:TIME &lt;time&gt;,&lt;time&gt;,&lt;time&gt;,&lt;time&gt;,&lt;time&gt;,&lt;time&gt;,&lt;time&gt;,&lt;time&gt;,&lt;time&gt;,&lt;time&gt;</td>
</tr>
<tr>
<td>Mask Setup – Lower – Rise – Fail Logic</td>
<td>[:SENSe]:PVTime:MASK:LIST:LOWer:RISE:FLOGic ABSolute</td>
</tr>
</tbody>
</table>
Table 2.8-3  Device messages for setting Power vs Time parameters (Cont’d)

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Device Message</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mask Setup – Lower limits – Fall – Time</td>
<td>[:SENSe]:PVTime:MASK:LIST:LOWer:FALL:TIME &lt;time&gt;,&lt;time&gt;,&lt;time&gt;,&lt;time&gt;,</td>
</tr>
<tr>
<td></td>
<td>&lt;time&gt;,&lt;time&gt;,&lt;time&gt;,&lt;time&gt;,&lt;time&gt;,&lt;time&gt;,&lt;time&gt;,&lt;time&gt;,&lt;time&gt;,&lt;time&gt;,</td>
</tr>
<tr>
<td></td>
<td>[:SENSe]:PVTime:MASK:LIST:LOWer:FALL:TIME?</td>
</tr>
<tr>
<td>Mask Setup – Lower – Fall – Absolute limits</td>
<td>[:SENSe]:PVTime:MASK:LIST:LOWer:FALL:ABSolute &lt;real&gt;,&lt;real&gt;,&lt;real&gt;,&lt;real&gt;,</td>
</tr>
<tr>
<td></td>
<td>&lt;real&gt;,&lt;real&gt;,&lt;real&gt;,&lt;real&gt;,&lt;real&gt;,&lt;real&gt;,&lt;real&gt;,&lt;real&gt;</td>
</tr>
<tr>
<td></td>
<td>[:SENSe]:PVTime:MASK:LIST:LOWer:FALL:ABSolute?</td>
</tr>
<tr>
<td></td>
<td>&lt;rel_ampl&gt;,&lt;rel_ampl&gt;,&lt;rel_ampl&gt;,&lt;rel_ampl&gt;,&lt;rel_ampl&gt;,&lt;rel_ampl&gt;,&lt;rel_ampl&gt;</td>
</tr>
<tr>
<td></td>
<td>[:SENSe]:PVTime:MASK:LIST:LOWer:FALL:RELative?</td>
</tr>
<tr>
<td>Mask Setup – Lower – Fall – Fail Logic</td>
<td>[:SENSe]:PVTime:MASK:LIST:LOWer:FALL:FLOGic ABSolute</td>
</tr>
<tr>
<td></td>
<td>ABSolute</td>
</tr>
<tr>
<td></td>
<td>ABSolute</td>
</tr>
<tr>
<td></td>
<td>ABSolute</td>
</tr>
<tr>
<td></td>
<td>ABSolute</td>
</tr>
<tr>
<td></td>
<td>ABSolute</td>
</tr>
<tr>
<td></td>
<td>ABSolute</td>
</tr>
<tr>
<td></td>
<td>[:SENSe]:PVTime:MASK:LIST:LOWer:FALL:FLOGic?</td>
</tr>
<tr>
<td>Storage Mode</td>
<td>[:SENSe]:PVTime:AVERage[:STATe] OFF</td>
</tr>
<tr>
<td></td>
<td>[:SENSe]:PVTime:AVERage[:STATe]?</td>
</tr>
<tr>
<td>Storage Count</td>
<td>[:SENSe]:PVTime:AVERage:COUNt &lt;integer&gt;</td>
</tr>
<tr>
<td></td>
<td>[:SENSe]:PVTime:AVERage:COUNt?</td>
</tr>
<tr>
<td>Average Type</td>
<td>[:SENSe]:PVTime:AVERage:TYPE Power</td>
</tr>
<tr>
<td></td>
<td>[:SENSe]:PVTime:AVERage:TYPE?</td>
</tr>
<tr>
<td>Filter Type</td>
<td>[:SENSe]:PVTime:TYPE &lt;type&gt;</td>
</tr>
<tr>
<td></td>
<td>[:SENSe]:PVTime:TYPE?</td>
</tr>
<tr>
<td>Filter Bandwidth</td>
<td>[:SENSe]:PVTime:BANDwidth[:RESolution] &lt;bandwidth&gt;</td>
</tr>
<tr>
<td></td>
<td>[:SENSe]:PVTime:BANDwidth[:RESolution]?</td>
</tr>
<tr>
<td>Filter Roll-off Factor</td>
<td>[:SENSe]:PVTime:ROFF &lt;real&gt;</td>
</tr>
<tr>
<td></td>
<td>[:SENSe]:PVTime:ROFF?</td>
</tr>
<tr>
<td>Wide Dynamic Range</td>
<td>[:SENSe]:PVTime:WDRange &lt;switch&gt;</td>
</tr>
<tr>
<td></td>
<td>[:SENSe]:PVTime:WDRange?</td>
</tr>
<tr>
<td>Mask Table Title</td>
<td>[:SENSe]:PVTime:MASK:TITLe?</td>
</tr>
</tbody>
</table>
Table 2.8-4 lists device messages for setting Power vs Time markers and reading out the marker position values.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Device Message</th>
</tr>
</thead>
<tbody>
<tr>
<td>Marker – On/Off</td>
<td>:CALCulate:PVTime:MARKer[:STATe] OFF</td>
</tr>
<tr>
<td>Marker – Active Trace</td>
<td>:CALCulate:PVTime:MARKer:ACTive RISE</td>
</tr>
<tr>
<td>Marker to Modana Area</td>
<td>:CALCulate:PVTime:MARKer:MOD</td>
</tr>
<tr>
<td>Marker Tx Power – Query</td>
<td>:CALCulate:PVTime:MARKer:TXPower?</td>
</tr>
<tr>
<td>Log Scale</td>
<td>:DISPlay:PVTime[:VIEW]:WINDow[1]:TRACe:Y[:SCALE]:PDIVision[ :LOGarithmic] &lt;rel_ampl&gt;</td>
</tr>
<tr>
<td>Log Scale Line</td>
<td>:DISPlay:PVTime[:VIEW]:WINDow[1]:TRACe:Y[:SCALE]:LINE[:LOGarithmic]?</td>
</tr>
<tr>
<td>Scale Range (Horizontal) – Rise</td>
<td>:DISPlay:PVTime[:VIEW]:WINDow2:TRACe:X[:SCALE]:RANGe &lt;val&gt;</td>
</tr>
<tr>
<td>Scale Range (Horizontal) – Fall</td>
<td>:DISPlay:PVTime[:VIEW]:WINDow3:TRACe:X[:SCALE]:RANGe &lt;val&gt;</td>
</tr>
<tr>
<td>Scale Offset (Horizontal) – Fall</td>
<td>:DISPlay:PVTime[:VIEW]:WINDow3:TRACe:X[:SCALE]:OFFSet &lt;val&gt;</td>
</tr>
</tbody>
</table>
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.
CON:FVT

:INITiate:PVTime
Power vs Time

Function
This command executes Power vs Time.

Command
:INITiate:PVTime

Example of Use
To execute Power vs Time.
INIT:FVT

: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:FVT?
Chapter 2  SCPI Device Message Details

: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>

<table>
<thead>
<tr>
<th>Trace Mode</th>
<th>Parameter</th>
</tr>
</thead>
<tbody>
<tr>
<td>RAFAll</td>
<td>Rise and Fall</td>
</tr>
<tr>
<td>SLOT</td>
<td>Slot (Initial value)</td>
</tr>
<tr>
<td>FRAMe</td>
<td>Frame</td>
</tr>
</tbody>
</table>

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>

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

**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**

<table>
<thead>
<tr>
<th>&lt;mode&gt;</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>DB</td>
<td>dB (Initial value)</td>
</tr>
<tr>
<td>DBM</td>
<td>dBm</td>
</tr>
</tbody>
</table>

**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**

<table>
<thead>
<tr>
<th>&lt;mode&gt;</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>DB</td>
<td>dB</td>
</tr>
<tr>
<td>DBM</td>
<td>dBm</td>
</tr>
</tbody>
</table>

**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:FVT: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:FVT: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>

**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.  
When the OS on MS2690A/MS2691A/MS2692A/MS2830A/MS2840A/MS2850A is Windows Embedded Standard 7  
C:\Anritsu\SignalAnalyzer\Applications\VMA Common\Template\Mask

When the OS is other than the above mentioned  
C:\Program Files\Anritsu Corporation\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>,<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>,<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 \( \leq \) Symbol Rate \( < \) 1 kbps \hspace{1cm} \text{Time point} \times 10 \text{ ms}

1 kbps \( \leq \) Symbol Rate \( < \) 10 kbps \hspace{1cm} \text{Time point} \times 1 \text{ ms}

10 kbps \( \leq \) Symbol Rate \( < \) 100 kbps \hspace{1cm} \text{Time point} \times 100 \mu s

100 kbps \( \leq \) Symbol Rate \( < \) 1 Mbsp \hspace{1cm} \text{Time point} \times 10 \mu s

1 Mbsp \( \leq \) Symbol Rate \( < \) 10 Mbsp \hspace{1cm} \text{Time point} \times 1 \mu s

10 Mbsp \( \leq \) Symbol Rate \( < \) 100 Mbsp \hspace{1cm} \text{Time point} \times 100 \text{ ns}

100 Mbsp \( \leq \) Symbol Rate \( \leq \) 140 Mbsp \hspace{1cm} \text{Time point} \times 10 \text{ 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 kbps Time point×10 ms
- 1 kbps ≤ Symbol Rate < 10 kbps Time point×1 ms
- 10 kbps ≤ Symbol Rate < 100 kbps Time point×100 µs
- 100 kbps ≤ Symbol Rate < 1 Msp Time point×10 µs
- 1 Msp ≤ Symbol Rate < 10 Msp Time point×1 µs
- 10 Msp ≤ Symbol Rate < 100 Msp Time point×100 ns
- 100 Msp ≤ Symbol Rate ≤ 140 Msp 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,
2.8.8 Upper – Rise – Absolute limits

[:SENSe]:PVTime:MASK:LIST:UPPer:RISE:ABSolute

<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
[: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

<table>
<thead>
<tr>
<th>&lt;real&gt;</th>
<th>Absolute reference level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Range</td>
<td>–99.99 to 99.99</td>
</tr>
<tr>
<td>Resolution</td>
<td>0.01 dB</td>
</tr>
<tr>
<td>Unit</td>
<td>dBm</td>
</tr>
</tbody>
</table>

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?
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:UPPPer: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:UPPPer:RISE:RELative?

Parameter

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Range</th>
<th>Resolution</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;rel_amp&gt;</td>
<td>Absolute reference level</td>
<td>–99.99 to 99.99</td>
<td>0.01 dB</td>
<td>dB</td>
</tr>
</tbody>
</table>

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, 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
[: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
2.8.11 Upper – Fall – Time

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>,<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.

<table>
<thead>
<tr>
<th>Symbol Rate Range</th>
<th>Time point Multiplication</th>
</tr>
</thead>
<tbody>
<tr>
<td>100 sps ≤ Symbol Rate &lt; 1 kbps</td>
<td>Time point×10 ms</td>
</tr>
<tr>
<td>1 kbps ≤ Symbol Rate &lt; 10 kbps</td>
<td>Time point×1 ms</td>
</tr>
<tr>
<td>10 kbps ≤ Symbol Rate &lt; 100 kbps</td>
<td>Time point×100 µs</td>
</tr>
<tr>
<td>100 kbps ≤ Symbol Rate &lt; 1 Mps</td>
<td>Time point×10 µs</td>
</tr>
<tr>
<td>1 Mps ≤ Symbol Rate &lt; 10 Mps</td>
<td>Time point×1 µs</td>
</tr>
<tr>
<td>10 Mps ≤ Symbol Rate &lt; 100 Mps</td>
<td>Time point×100 ns</td>
</tr>
<tr>
<td>100 Mps ≤ Symbol Rate ≤ 140 Mps</td>
<td>Time point×10 ns</td>
</tr>
</tbody>
</table>

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 ksp: Time point×10 ms
- 1 ksp ≤ Symbol Rate < 10 ksp: Time point×1 ms
- 10 ksp ≤ Symbol Rate < 100 ksp: Time point×100 µs
- 100 ksp ≤ Symbol Rate < 1 Msp: Time point×10 µs
- 1 Msp ≤ Symbol Rate < 10 Msp: Time point×1 µs
- 10 Msp ≤ Symbol Rate < 100 Msp: Time point×100 ns
- 100 Msp ≤ Symbol Rate ≤ 140 Msp: 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>,<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.
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?
2.8.13 Upper – Fall – Relative limits

[:SENSe]:PVT: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]:PVT: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.
1.00,1.00,1.00,1.00,1.00,-6.00,-6.00,-30.00,-30.00,
-30.00,-30.00
[:SENSe]:PVT: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]:PVT: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,-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>,

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
[: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>,
<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>,
<time>

Parameter

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;time&gt;</td>
<td>Time point</td>
</tr>
<tr>
<td>Range</td>
<td>–999.99 to 999.99</td>
</tr>
<tr>
<td>Resolution</td>
<td>0.01</td>
</tr>
<tr>
<td>Suffix code</td>
<td>None</td>
</tr>
</tbody>
</table>

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 ksp  Time point×10 ms
1 ksp ≤ Symbol Rate < 10 ksp  Time point×1 ms
10 ksp ≤ Symbol Rate < 100 ksp Time point×100 µs
100 ksp ≤ Symbol Rate < 1 Msp  Time point×10 µs
1 Msp ≤ Symbol Rate < 10 Msp  Time point×1 µs
10 Msp ≤ Symbol Rate < 100 Msp Time point×100 ns
100 Msp ≤ Symbol Rate ≤ 140 Msp 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]:PVT: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]:PVT: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 kbps  
  Time point×10 ms
- 1 kbps ≤ Symbol Rate < 10 kbps  
  Time point×1 ms
- 10 kbps ≤ Symbol Rate < 100 kbps  
  Time point×100 µs
- 100 kbps ≤ Symbol Rate < 1 Mbsp  
  Time point×10 µs
- 1 Mbsp ≤ Symbol Rate < 10 Mbsp  
  Time point×1 µs
- 10 Mbsp ≤ Symbol Rate < 100 Mbsp  
  Time point×100 ns
- 100 Mbsp ≤ Symbol Rate ≤ 140 Mbsp  
  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
2.8.16 Lower – Rise – Absolute limits

[:SENSe]:PVTime:MASK:LIST:LOWer:RISE:ABSolute
<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
[: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.
FVT:MASK:LIST:LOW:RISE:ABS?
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
[: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

<table>
<thead>
<tr>
<th>&lt;mode&gt;</th>
<th>Criterion for judgment</th>
</tr>
</thead>
<tbody>
<tr>
<td>ABS</td>
<td>Absolute</td>
</tr>
<tr>
<td>REL</td>
<td>Relative</td>
</tr>
<tr>
<td>OR</td>
<td>Relative or Absolute</td>
</tr>
<tr>
<td>OFF</td>
<td>Off</td>
</tr>
</tbody>
</table>

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
2.8.19 Lower – Fall – Time

[:SENSe]:PVTime:MASK:LIST:LOWer:FALL:TIME
<time>,<time>,<time>,<time>,<time>,<time>,<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>,<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 kbps Time point×10 ms
- 1 kbps ≤ Symbol Rate < 10 kbps Time point×1 ms
- 10 kbps ≤ Symbol Rate < 100 kbps Time point×100 μs
- 100 kbps ≤ Symbol Rate < 1 Mps Time point×10 μs
- 1 Mps ≤ Symbol Rate < 10 Mps Time point×1 μs
- 10 Mps ≤ Symbol Rate < 100 Mps Time point×100 ns
- 100 Mps ≤ Symbol Rate ≤ 140 Mps 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.

<table>
<thead>
<tr>
<th>Symbol Rate Range</th>
<th>Time Point Multiplier</th>
</tr>
</thead>
<tbody>
<tr>
<td>100 sps ≤ Symbol Rate &lt; 1 kbps</td>
<td>Time point×10 ms</td>
</tr>
<tr>
<td>1 kbps ≤ Symbol Rate &lt; 10 kbps</td>
<td>Time point×1 ms</td>
</tr>
<tr>
<td>10 kbps ≤ Symbol Rate &lt; 100 kbps</td>
<td>Time point×100 μs</td>
</tr>
<tr>
<td>100 kbps ≤ Symbol Rate &lt; 1 Msp</td>
<td>Time point×10 μs</td>
</tr>
<tr>
<td>1 Msp ≤ Symbol Rate &lt; 10 Msp</td>
<td>Time point×1 μs</td>
</tr>
<tr>
<td>10 Msp ≤ Symbol Rate &lt; 100 Msp</td>
<td>Time point×100 ns</td>
</tr>
<tr>
<td>100 Msp ≤ Symbol Rate ≤ 140 Msp</td>
<td>Time point×10 ns</td>
</tr>
</tbody>
</table>

Example of Use

To read out the time point of the user-established mask.

PVT:MASK:LIST:LOW:FALL:TIME?

> 0.00,0.00,0.00,0.00,10.0,10.0,18.00,18.00,28.00,28.00,48.00
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>,<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
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?

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>,
<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>,
<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
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>

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
[: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
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

<table>
<thead>
<tr>
<th>&lt;mode&gt;</th>
<th>Average Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>POWer</td>
<td>Power (Initial value)</td>
</tr>
<tr>
<td>LOGPower</td>
<td>Log-Power</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>&lt;mode&gt;</th>
<th>Average Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>POW</td>
<td>Power</td>
</tr>
<tr>
<td>LOGP</td>
<td>Log-Power</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>SPAN (Minimum)*</th>
<th>SPAN (Maximum)</th>
<th>Filter Bandwidth</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 kHz</td>
<td>10 kHz</td>
<td>100 Hz</td>
</tr>
<tr>
<td>2.5 kHz</td>
<td>25 kHz</td>
<td>100 Hz</td>
</tr>
<tr>
<td>5 kHz</td>
<td>50 kHz</td>
<td>1.001 kHz</td>
</tr>
<tr>
<td>10 kHz</td>
<td>100 kHz</td>
<td>2.001 kHz</td>
</tr>
<tr>
<td>25 kHz</td>
<td>250 kHz</td>
<td>4.001 kHz</td>
</tr>
<tr>
<td>50 kHz</td>
<td>500 kHz</td>
<td>10.001 kHz</td>
</tr>
<tr>
<td>100 kHz</td>
<td>1 MHz</td>
<td>20.001 kHz</td>
</tr>
<tr>
<td>250 kHz</td>
<td>2.5 MHz</td>
<td>40.001 kHz</td>
</tr>
<tr>
<td>500 kHz</td>
<td>5 MHz</td>
<td>100.001 kHz</td>
</tr>
<tr>
<td>1 MHz</td>
<td>10 MHz</td>
<td>200.001 kHz</td>
</tr>
<tr>
<td>2.5 MHz</td>
<td>25 MHz</td>
<td>400.001 kHz</td>
</tr>
<tr>
<td>5 MHz</td>
<td>31.25 MHz</td>
<td>1.000 001 MHz</td>
</tr>
<tr>
<td>10 MHz</td>
<td>50 MHz</td>
<td>2.000 001 MHz</td>
</tr>
<tr>
<td>31.25 MHz</td>
<td>100 MHz</td>
<td>10.000 001 MHz</td>
</tr>
<tr>
<td>62.5 MHz</td>
<td>255 MHz</td>
<td>20.000 001 MHz</td>
</tr>
<tr>
<td>125 MHz</td>
<td>1 GHz</td>
<td>40.000 001 MHz</td>
</tr>
<tr>
<td>255 MHz</td>
<td>1 GHz</td>
<td>50.000 001 MHz</td>
</tr>
<tr>
<td>510 MHz</td>
<td>1 GHz</td>
<td>102.000 001 MHz</td>
</tr>
<tr>
<td>1 GHz</td>
<td>1 GHz</td>
<td>204.000 001 MHz</td>
</tr>
</tbody>
</table>

*: 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
Filter Bandwidth Query

This command queries the Filter Bandwidth for Power vs Time measurement.

```
[:SENSe]:PVTime:BANDwidth[:RESolution]?
```

### Query

```
[:SENSe]:PVTime:BANDwidth[:RESolution]?
```

### Response

```
<bandwidth>
```

### Parameter

```
<bandwidth>  Filter Bandwidth
```

<table>
<thead>
<tr>
<th>SPAN (Minimum)*</th>
<th>SPAN (Maximum)</th>
<th>Filter Bandwidth</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Minimum value</td>
</tr>
<tr>
<td>1 kHz</td>
<td>10 kHz</td>
<td>100 Hz</td>
</tr>
<tr>
<td>2.5 kHz</td>
<td>25 kHz</td>
<td>100 Hz</td>
</tr>
<tr>
<td>5 kHz</td>
<td>50 kHz</td>
<td>1.001 kHz</td>
</tr>
<tr>
<td>10 kHz</td>
<td>100 kHz</td>
<td>2.001 kHz</td>
</tr>
<tr>
<td>25 kHz</td>
<td>250 kHz</td>
<td>4.001 kHz</td>
</tr>
<tr>
<td>50 kHz</td>
<td>500 kHz</td>
<td>10.001 kHz</td>
</tr>
<tr>
<td>100 kHz</td>
<td>1 MHz</td>
<td>20.001 kHz</td>
</tr>
<tr>
<td>250 kHz</td>
<td>2.5 MHz</td>
<td>40.001 kHz</td>
</tr>
<tr>
<td>500 kHz</td>
<td>5 MHz</td>
<td>100.001 kHz</td>
</tr>
<tr>
<td>1 MHz</td>
<td>10 MHz</td>
<td>200.001 kHz</td>
</tr>
<tr>
<td>2.5 MHz</td>
<td>25 MHz</td>
<td>400.001 kHz</td>
</tr>
<tr>
<td>5 MHz</td>
<td>31.25 MHz</td>
<td>1.000 001 MHz</td>
</tr>
<tr>
<td>10 MHz</td>
<td>50 MHz</td>
<td>2.000 001 MHz</td>
</tr>
<tr>
<td>31.25 MHz</td>
<td>100 MHz</td>
<td>10.000 001 MHz</td>
</tr>
<tr>
<td>62.5 MHz</td>
<td>255 MHz</td>
<td>20.000 001 MHz</td>
</tr>
<tr>
<td>125 MHz</td>
<td>1 GHz</td>
<td>40.000 001 MHz</td>
</tr>
<tr>
<td>255 MHz</td>
<td>1 GHz</td>
<td>50.000 001 MHz</td>
</tr>
<tr>
<td>510 MHz</td>
<td>1 GHz</td>
<td>102.000 001 MHz</td>
</tr>
<tr>
<td>1 GHz</td>
<td>1 GHz</td>
<td>204.000 001 MHz</td>
</tr>
</tbody>
</table>

* 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
1 | ON

Off
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>  
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>  
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


Marker X Axis

Function

This command sets the marker position on the graph in symbol units.

Query


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
Chapter 2  SCPI Device Message Details

:CALCulate:PVT: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:PVT:MARKer[1]|2:X[:POINt]?

Response

<real>

Parameter

<real>  Marker position
        Refer to :CALCulate:PVT: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

Marker Y Axis Average Value – Query

Function

This command reads out Y axis average on the current graph marker.

Query


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
**Chapter 2  SCPI Device Message Details**


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**


**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
2.8 Power vs Time

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

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

This command sets the log scale of Y-axis.

Command

:DISPlay:PVTime[:VIEW]:WINDow[1]:TRACe:Y[:SCALe]:PDIVision[:LOGarithmic] <rel_ampl>

Parameter

<table>
<thead>
<tr>
<th>&lt;rel_ampl&gt;</th>
<th>Y-axis scale</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.1</td>
<td>0.1 dB/Div</td>
</tr>
<tr>
<td>0.2</td>
<td>0.2 dB/Div</td>
</tr>
<tr>
<td>0.5</td>
<td>0.5 dB/Div</td>
</tr>
<tr>
<td>1</td>
<td>1 dB/Div</td>
</tr>
<tr>
<td>2</td>
<td>2 dB/Div</td>
</tr>
<tr>
<td>5</td>
<td>5 dB/Div</td>
</tr>
<tr>
<td>10</td>
<td>10 dB/Div (Default)</td>
</tr>
<tr>
<td>15</td>
<td>15 dB/Div</td>
</tr>
<tr>
<td>20</td>
<td>20 dB/Div</td>
</tr>
</tbody>
</table>

Example of Use

To set the Y-axis scale to 0.5 dB/Div.

DISP:PVT:WIND:TRAC:Y:PDIV 0.5
:DISPlay:PVT ime[:VIEW]:WINDow[1]:TRACe:Y[:SCALe]:PDIvision[:LOGarithmic]?

Log Scale Query

Function

This command queries a log scale of Y-axis.

Query

:DISPlay:PVT ime[: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:PV T:WIND:TRAC:Y:PDIV?
> 0.5
2.8.36 Log Scale Line

:DISPlay:PVTim[:VIEW]:WINDo1:TRACe:Y[:SCALe]:LINE[:LOGarithmic]

Log Scale Line

Function

This command sets the division number of Y-axis in log scale.

Command

:DISPlay:PVTim[:VIEW]:WINDo1:TRACe:Y[:SCALe]:LINE[:LOGarithmic] <line>

Parameter

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:WIN:TRAC:Y:LINE 12

:DISPlay:PVTim[:VIEW]:WINDo1:TRACe:Y[:SCALe]:LINE[:LOGarithmic]?

Log Scale Line Query

Function

This command sets the division number of Y-axis in log scale.

Query

:DISPlay:PVTim[:VIEW]:WINDo1:TRACe:Y[:SCALe]:LINE[:LOGarithmic]?

Response

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:WIN: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:PVT:VIEW:WNDow2: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:PVT:VIEW:WNDow2: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:WND2:TRAC:X:OFFS 20

:DISPlay:PVT:VIEW:WNDow2: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:PVT:VIEW:WNDow2: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:WND2: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>
<thead>
<tr>
<th>Parameter</th>
<th>Device Message</th>
</tr>
</thead>
<tbody>
<tr>
<td>Save Captured Data</td>
<td>:MMEMory:STORE:IQData &lt;filename&gt;,&lt;device&gt;</td>
</tr>
<tr>
<td>Cancel Execute Save Captured Data</td>
<td>:MMEMory:STORE:IQData:CANCEL</td>
</tr>
<tr>
<td>Capture Time Auto/Manual</td>
<td>[:SENSe]:SWEep:TIME:AUTO ON</td>
</tr>
<tr>
<td></td>
<td>[:SENSe]:SWEep:TIME:AUTO?</td>
</tr>
<tr>
<td>Capture Time Length</td>
<td>[:SENSe]:SWEep:TIME &lt;time&gt;</td>
</tr>
<tr>
<td></td>
<td>[:SENSe]:SWEep:TIME?</td>
</tr>
<tr>
<td>Capture Interval</td>
<td>[:SENSe]:SWEep:TIME:INTVal 1Frame</td>
</tr>
<tr>
<td></td>
<td>[:SENSe]:SWEep:TIME:INTVal?</td>
</tr>
</tbody>
</table>

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>
<thead>
<tr>
<th>Parameter</th>
<th>Device Message</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stop Replay</td>
<td>:MMEMory:LOAD:IQData:STOP</td>
</tr>
<tr>
<td>Execute Replay</td>
<td>:MMEMory:LOAD:IQData &lt;filename&gt;,&lt;device&gt;,&lt;application&gt;</td>
</tr>
<tr>
<td>Replay File Information Query</td>
<td>:MMEMory:LOAD:IQData:INFormation?</td>
</tr>
<tr>
<td>Replay Execute Query</td>
<td>:MMEMory:LOAD:IQData:INFormation:STATE?</td>
</tr>
<tr>
<td>Replay Filename Query</td>
<td>:MMEMory:LOAD:IQData:INFormation:FILE?</td>
</tr>
<tr>
<td>Replay Device Query</td>
<td>:MMEMory:LOAD:IQData:INFormation:DEVICE?</td>
</tr>
<tr>
<td>Replay Application Query</td>
<td>:MMEMory:LOAD:IQData:INFormation:APPLICATION?</td>
</tr>
<tr>
<td>Replay Level Over Query</td>
<td>:MMEMory:LOAD:IQData:INFormation:CONDITION?</td>
</tr>
<tr>
<td>Replay Error Icon Query</td>
<td>:MMEMory:LOAD:IQData:INFormation:ERROR?</td>
</tr>
<tr>
<td>Replay Correction Query</td>
<td>:MMEMory:LOAD:IQData:INFormation:CORRection?</td>
</tr>
<tr>
<td>Analysis Offset Time</td>
<td>:MMEMory:LOAD:IQData:TIME:OFFSet &lt;time&gt;</td>
</tr>
<tr>
<td>Analysis Offset Time Query</td>
<td>:MMEMory:LOAD:IQData:TIME:OFFSet?</td>
</tr>
</tbody>
</table>
: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
Replay File Information Query

Function

This command queries the information of the file for which the Replay function is executed.

Query

:MEMory:LOAD:IQData:INFormation?

Response

<filename>,<time_length>

Parameter

<table>
<thead>
<tr>
<th>&lt;filename&gt;</th>
<th>File name</th>
</tr>
</thead>
<tbody>
<tr>
<td>Character string within 32 characters (excluding extension)</td>
<td></td>
</tr>
<tr>
<td>*** is returned when the Replay function is not executed.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>&lt;time_length&gt;</th>
<th>Time length of analyzable IQ data</th>
</tr>
</thead>
<tbody>
<tr>
<td>Resolution</td>
<td>1 ms</td>
</tr>
<tr>
<td>Suffix code</td>
<td>None. Value is returned in frame units. -999999999999 is returned when the Replay function is not executed.</td>
</tr>
</tbody>
</table>

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
2.10 Replay Function

: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
Chapter 2 SCPI Device Message Details

: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>
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
**Chapter 2  SCPI Device Message Details**

: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**

<table>
<thead>
<tr>
<th>&lt;time&gt;</th>
<th>Offset</th>
</tr>
</thead>
<tbody>
<tr>
<td>Range</td>
<td>Lower limit: 0</td>
</tr>
<tr>
<td></td>
<td>Upper limit: Refer to “Details” below.</td>
</tr>
<tr>
<td>Resolution</td>
<td>1 / Sampling Rate [Hz]</td>
</tr>
<tr>
<td>Suffix code</td>
<td>NS, US, MS, S</td>
</tr>
<tr>
<td></td>
<td>S is used when omitted.</td>
</tr>
<tr>
<td>Default</td>
<td>0 s</td>
</tr>
</tbody>
</table>

**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* and *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

<table>
<thead>
<tr>
<th>&lt;time&gt;</th>
<th>Offset</th>
</tr>
</thead>
<tbody>
<tr>
<td>Range</td>
<td>Lower limit: 0</td>
</tr>
<tr>
<td></td>
<td>Upper limit: Refer to “:MMEMory:LOAD:IQData:TIME:OFFSet &lt;time&gt;”</td>
</tr>
<tr>
<td>Resolution</td>
<td>1 / Sampling Rate [Hz]</td>
</tr>
<tr>
<td>Unit</td>
<td>s</td>
</tr>
<tr>
<td>Default</td>
<td>0 s</td>
</tr>
</tbody>
</table>

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>
<thead>
<tr>
<th>Parameter</th>
<th>Device Message</th>
</tr>
</thead>
<tbody>
<tr>
<td>Save All Results</td>
<td>:MMEMory:STORe:RESult [&lt;filename&gt;[,&lt;device&gt;]]</td>
</tr>
<tr>
<td>Save as Type</td>
<td>:MMEMory:STORe:RESult:MODE XML</td>
</tr>
<tr>
<td></td>
<td>:MMEMory:STORe:RESult:MODE?</td>
</tr>
</tbody>
</table>
2.11 Saving Measurement Results

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

<m-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: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

:\texttt{STATus:ERRor?}

Measurement Status Query

Function

This command queries the measurement status.

Query

:\texttt{STATus:ERRor?}

Response

<\texttt{status}>

Parameter

<\texttt{status}>

\begin{itemize}
  \item \texttt{Measurement status} = bit0 + bit1 + bit2 + bit3 + bit4 + bit5 + bit6 + bit7 + bit8 + bit9 + bit10 + bit11 + bit12 + bit13 + bit14 + bit15
\end{itemize}

\begin{itemize}
  \item bit0 : $2^0 = 1$ \quad \text{Not measured}
  \item bit1 : $2^1 = 2$ \quad \text{Level over}
  \item bit2 : $2^2 = 4$ \quad \text{Signal abnormal}
  \item bit3 : $2^3 = 8$ \quad \text{Not used}
  \item bit4 : $2^4 = 16$ \quad \text{Not used}
  \item bit5 : $2^5 = 32$ \quad \text{Signal Level Too Low}
  \item bit6 : $2^6 = 64$ \quad \text{Not used}
  \item bit7 : $2^7 = 128$ \quad \text{Not used}
  \item bit8 : $2^8 = 256$ \quad \text{Not used}
  \item bit9 : $2^9 = 512$ \quad \text{Not used}
  \item bit10 : $2^{10} = 1024$ \quad \text{Not used}
  \item bit11 : $2^{11} = 2048$ \quad \text{Not used}
  \item bit12 : $2^{12} = 4096$ \quad \text{Not used}
  \item bit13 : $2^{13} = 8192$ \quad \text{Not used}
  \item bit14 : $2^{14} = 16384$ \quad \text{Not used}
  \item bit15 : $2^{15} = 32768$ \quad \text{Not used}
\end{itemize}

\begin{itemize}
  \item \textbf{Range} 0 to 65535
\end{itemize}

Details

Bit 0 is cleared if the measurement is completed without error.

Example of Use

To query the measurement status.

:\texttt{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.

VOLTage (NOT USED)  DB0
CURRent (NOT USED)  DB1
TIME (NOT USED)  DB2
POWer (NOT USED)  DB3
TEMPerature (NOT USED)  DB4
FREQuency  DB5
PHASe (NOT USED)  DB6
MODulation (NOT USED)  DB7
CALibration (NOT USED)  DB8
MEASure  DB9
NOT USED  DB10
NOT USED  DB11
NOT USED  DB12
INSTrument (NOT USED)  DB13
Command Warning (NOT USED)  DB14
NOT USED  DB15

Figure 3.2-1 QUESTionable Status Register

<table>
<thead>
<tr>
<th>Bit</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>DB5</td>
<td>Reference clock unlock</td>
</tr>
<tr>
<td>DB9</td>
<td>QUESTionable Measure register summary</td>
</tr>
</tbody>
</table>

Table 3.2-1 Definitions of Bits in QUESTionable Status Register

VOLTage (NOT USED)  DB0
CURRent (NOT USED)  DB1
TIME (NOT USED)  DB2
POWer (NOT USED)  DB3
TEMPerature (NOT USED)  DB4
FREQuency  DB5
PHASe (NOT USED)  DB6
MODulation (NOT USED)  DB7
CALibration (NOT USED)  DB8
MEASure  DB9
NOT USED  DB10
NOT USED  DB11
NOT USED  DB12
INSTrument (NOT USED)  DB13
Command Warning (NOT USED)  DB14
NOT USED  DB15

Figure 3.2-2 QUESTionable Measure Register

<table>
<thead>
<tr>
<th>Bit</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>DB5</td>
<td>Level over</td>
</tr>
<tr>
<td>DB8</td>
<td>Signal abnormal</td>
</tr>
<tr>
<td>DB11</td>
<td>Signal Level Too Low</td>
</tr>
</tbody>
</table>

Table 3.2-2 Bit Definition of QUESTionable Status Register
Chapter 3  SCPI Status Register

Table 3.2-3 lists device messages for the QUEStionable Status Register.

<table>
<thead>
<tr>
<th>Function</th>
<th>Device Message</th>
</tr>
</thead>
<tbody>
<tr>
<td>Questionable Status Register Event</td>
<td>:STATus:QUEStionable[:EVENt]?</td>
</tr>
<tr>
<td>Questionable Status Register Condition</td>
<td>:STATus:QUEStionable:CONDition?</td>
</tr>
<tr>
<td>Questionable Status Register Enable</td>
<td>:STATus:QUEStionable:ENABLE &lt;integer&gt;</td>
</tr>
<tr>
<td></td>
<td>:STATus:QUEStionable:ENABLE?</td>
</tr>
<tr>
<td>Questionable Status Register Negative Transition</td>
<td>:STATus:QUEStionable:NTRansition &lt;integer&gt;</td>
</tr>
<tr>
<td></td>
<td>:STATus:QUEStionable:NTRansition?</td>
</tr>
<tr>
<td>Questionable Status Register Positive Transition</td>
<td>:STATus:QUEStionable:PTRansition &lt;integer&gt;</td>
</tr>
<tr>
<td></td>
<td>:STATus:QUEStionable:PTRansition?</td>
</tr>
<tr>
<td>Questionable Measure Register Event</td>
<td>:STATus:QUEStionable:MEASure[:EVENt]?</td>
</tr>
<tr>
<td>Questionable Measure Register Condition</td>
<td>:STATus:QUEStionable:MEASure:CONDition?</td>
</tr>
<tr>
<td>Questionable Measure Register Enable</td>
<td>:STATus:QUEStionable:MEASure:ENABLE &lt;integer&gt;</td>
</tr>
<tr>
<td></td>
<td>:STATus:QUEStionable:MEASure:ENABLE?</td>
</tr>
<tr>
<td>Questionable Measure Register Negative Transition</td>
<td>:STATus:QUEStionable:MEASure:NTRansition &lt;integer&gt;</td>
</tr>
<tr>
<td></td>
<td>:STATus:QUEStionable:MEASure:NTRansition?</td>
</tr>
<tr>
<td>Questionable Measure Register Positive Transition</td>
<td>:STATus:QUEStionable:MEASure:PTRansition &lt;integer&gt;</td>
</tr>
<tr>
<td></td>
<td>:STATus:QUEStionable:MEASure:PTRansition?</td>
</tr>
</tbody>
</table>
3.2 \texttt{STATus:QUEStionable Register}

\texttt{:STATus:QUEStionable[:EVENt]?}

Questionable Status Register Event

Function

This command queries the event register of the QUEStionable Status Register.

Query

\texttt{: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.

\texttt{:STAT:QUES?}

> 0

\texttt{:STATus:QUEStionable:CONDition?}

Questionable Status Register Condition

Function

This command queries the condition register of the QUEStionable Status Register.

Query

\texttt{: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.

\texttt{:STAT:QUES:COND?}

> 0
Chapter 3  SCPI Status Register

: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
Chapter 3  SCPI Status Register

: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
Chapter 3  SCPI Status Register

: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
3.2 STATus:QUESTionable Register

: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.

<table>
<thead>
<tr>
<th>Bit</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>DB0</td>
<td>Executing calibration</td>
</tr>
<tr>
<td>DB1</td>
<td>Warm Up message is being displayed.</td>
</tr>
<tr>
<td>DB3</td>
<td>Performing measurement (including trigger signal waiting status: always 1 during Continuous measurement)</td>
</tr>
<tr>
<td>DB4</td>
<td>Waiting for trigger signal</td>
</tr>
<tr>
<td>DB8</td>
<td>Operating on file</td>
</tr>
</tbody>
</table>

Table 3.3-2 lists device messages for the OPERation Status Register.

<table>
<thead>
<tr>
<th>Function</th>
<th>Device Message</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operation Status Register Event</td>
<td>:STATus:OPERation[:EVENT]?</td>
</tr>
<tr>
<td>Operation Status Register Condition</td>
<td>:STATus:OPERation:CONDition?</td>
</tr>
<tr>
<td>Operation Status Register Enable</td>
<td>:STATus:OPERation:ENABLE &lt;integer&gt;</td>
</tr>
<tr>
<td></td>
<td>:STATus:OPERation:ENABLE?</td>
</tr>
<tr>
<td>Operation Status Register Negative Transition</td>
<td>:STATus:OPERation:NTRansition &lt;integer&gt;</td>
</tr>
<tr>
<td></td>
<td>:STATus:OPERation:NTRansition?</td>
</tr>
<tr>
<td>Operation Status Register Positive Transition</td>
<td>:STATus:OPERation:PTRansition &lt;integer&gt;</td>
</tr>
<tr>
<td></td>
<td>:STATus:OPERation:PTRansition?</td>
</tr>
</tbody>
</table>
Chapter 3  SCPI Status Register

: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