MX269011A
W-CDMA/HSPA Downlink
Measurement Software
Operation Manual
Remote Control

Seventh 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) or MS2830A Signal Analyzer Operation Manual (Mainframe operation) and MX269011A W-CDMA/HSPA Downlink Measurement Software Operation Manual (Operation). Please also refer to these documents before using the equipment.**
- **Keep this manual with the equipment.**

ANRITSU CORPORATION

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

These indicate that the marked part should be recycled.

MX269011A
W-CDMA/HSPA Downlink Measurement Software
Operation Manual Remote Control

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- Adding software
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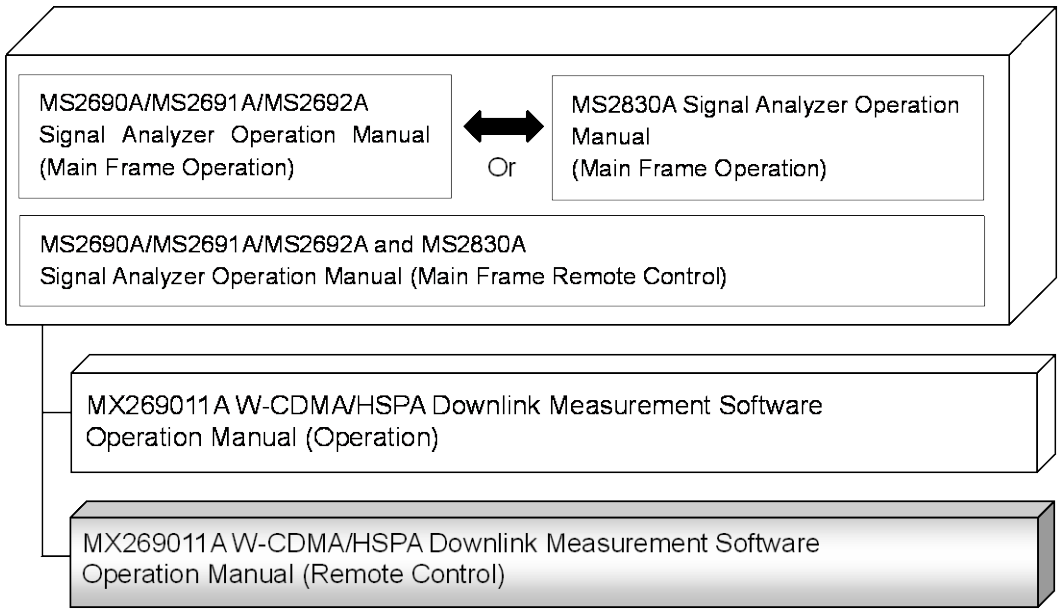
- Network connections
  Ensure that the network has sufficient anti-virus security protection in place.

About This Manual

■ Organization of Operation Manuals

The operation manuals for the MX269011A W-CDMA/HSPA Downlink Measurement Software are organized as shown below.



- Mainframe Operation
- Mainframe Remote Control

These manuals describe the basic operating methods, maintenance procedures, common functions, and common remote control of the signal analyzer mainframe.

- MX269011A W-CDMA/HSPA Downlink Measurement Software Operation Manual (Operation)

This manual describes the operating methods of the MX269011A W-CDMA/HSPA Downlink Software.

- MX269011A W-CDMA/HSPA Downlink Measurement Software Operation Manual (Remote Control) <This document>

This manual describes remote control of the MX269011A W-CDMA/HSPA Downlink Measurement Software.

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IV.

Chapter 1 Overview

This chapter provides an overview of the remote control of the MX269011A W-CDMA/HSPA Downlink Measurement Software (hereinafter, referred to as "this application").

1.1 Outline

This application can be controlled from an external controller (PC) by remote control commands using the MS2690/MS2691/MS2692A or MS2830A Signal Analyzer (hereafter referred to as "this instrument"). Remote control commands for this application are in the SCPI format defined by the SCPI Consortium.

1.1.1 Interface

This instrument has GPIB, Ethernet, and USB interfaces for remote control. Only one interface can be used at a time.

The interface is determined automatically when a command is received at the start of communication. The interface enters the remote state when a remote command is detected from the external controller (PC). At remote-interface operation, the front panel Remote lamp lights; the lamp is off at local-interface operation.

Refer to the "MS2690A/MS2691A/MS2692A and MS2830A Signal Analyzer manual (Mainframe Remote Control)" for more details about remote control and interface setting.

1.1.2 Controlled Application

Two kinds of remote control commands can be used with this instrument: commands that are common to all applications (hereafter common commands), and 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, when a command unique to a specific application is executed at another application, the command is not executed and 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 performs a measurement for 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. In order to execute a function unique to the application by using remote control, you need to select this application while it has been loaded. Furthermore, this application can be executed at the same time as another application that uses by itself a resource not used by this application, such as the Vector Signal Generator Option.

1.2 Basic Flow of Control

This section explains the basic remote control command programming for measuring a W-CDMA Downlink signal.

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 change).

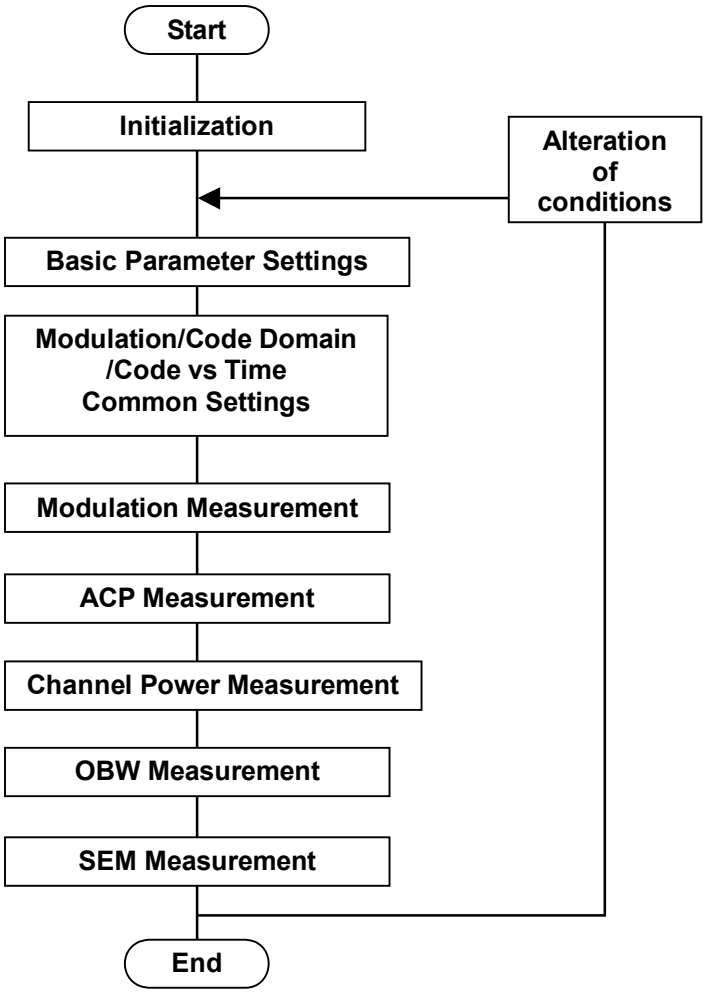

Figure 1.2-1 Basic Test Flow

(1) Initialization
The communication interface is initialized, the communication mode is set, the application is activated/selected, and the parameters are initialized.

1.2.1 Initialization

(2) Basic Parameter Settings
The carrier frequency, input level and all other measurement parameters are set.

1.2.2 Basic Parameter Settings

(3) Modulation/Code Domain/Code vs Time Common Settings
Parameters common to the functions that this application executes, such as Modulation, Code Domain, and Code vs Time, are set. The parameters include the trigger and Scrambling Code settings.

1.2.3 Modulation/Code Domain/Code vs Time Common Settings

(4) Modulation/Code Domain/Code vs Time measurement
Execute the measurement functions to be executed in this application in order. First, select a measurement function. Next, 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 Measurement
1.2.5 Code Domain Measurement
1.2.6 Code vs Time Measurement

(5) ACP/Channel Power/OBW/SEM measurement
Execute in order the measurement functions to be executed in Signal Analyzer or Spectrum Analyzer. First, set the parameters applied in common to each of the measurement functions. Next, set the applications used for each measurement, select the measurement function, set parameters used in the measurement such as trigger/storage mode, BW, analysis/sweep time, and trace point, execute the measurement, and query the measurement results.

1.2.7 ACP Measurement
1.2.8 Channel Power Measurement
1.2.9 OBW Measurement
1.2.10 SEM Measurement

1.2.1 Initialization

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) Initialization of Communication Interface
The remote control interface to be used is initialized so sending and receiving of commands can start. Refer to the "MS2690A/MS2691A/MS2692A and MS2830A Signal Analyzer manual (Mainframe Remote Control)" for details about the remote control interface.

(2) Setting Language Mode and Response Format
The language mode and the response format used to communicate are set. Refer to the "MS2690/MS2691/MS2692A and MS2830A Signal Analyzer manual (Mainframe Remote Control)" for details about the language mode and response format.

(3) Loading Application
The application is loaded. The signal analyzer and spectrum analyzer applications should be loaded too.

(4) Selecting 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 mode. To select single measurement mode, switch to the single measurement mode.

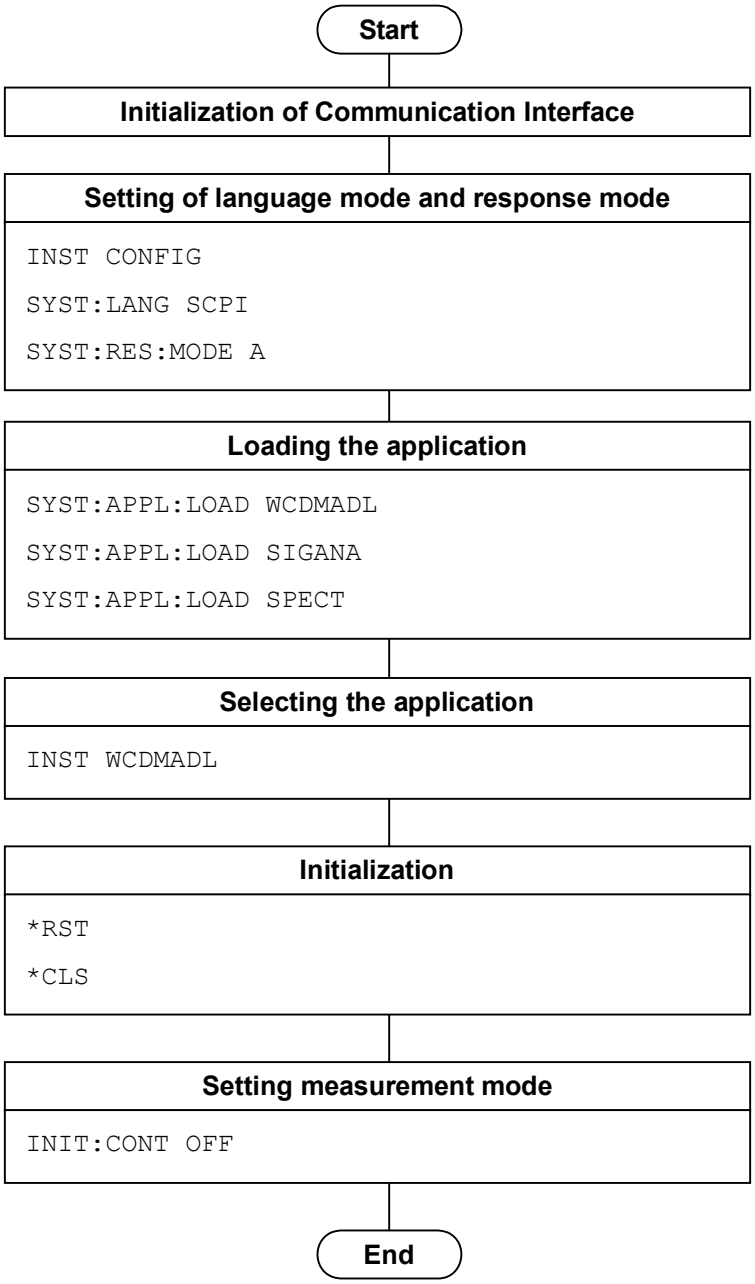

Figure 1.2.1-1 Initialization Flow and Command Example

1.2.2 Basic Parameter Settings

Set the parameters used in common for to all measurements using this application, the Signal Analyzer, and the Spectrum Analyzer. The basic parameters include the following.

(1) Carrier Frequency
(2) Input Level (Reference Level/Attenuator)
(3) Level Offset
(4) Pre-Amp (option)

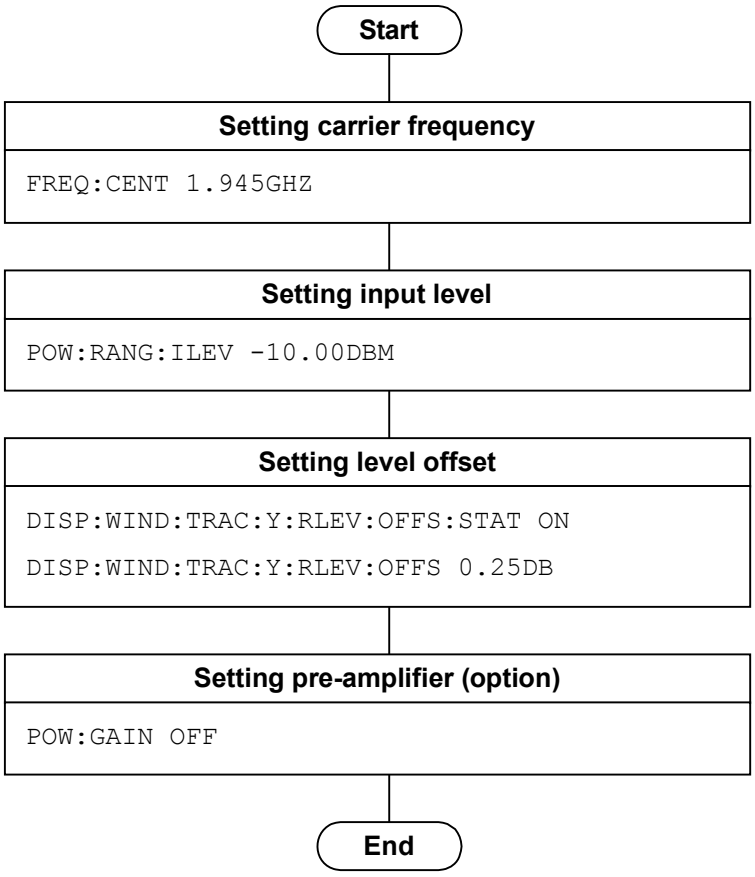

Figure 1.2.2-1 Basic Parameter Setting Flow and Examples of Commands

1.2.3 Modulation/Code Domain/Code vs Time Common Settings

Set the parameters used in common for the Modulation/Code Domain /Code vs Time measurement functions executed in this application. Unless specified, there is no specific parameter setting order.

(1) Trigger
  (a) Trigger Switch
  (b) Trigger Source
  (c) Trigger Slope
  (d) Trigger Delay
(2) Scrambling Code Synchronization
(3) Scrambling Code
  (when Scrambling Code Synchronization is set to User Defined)
(4) Frame Sync Code Type
(5) Frame Sync Spreading Factor
  (when Frame Sync Code Type is set to User Defined)
(6) Frame Sync Code Number
  (when Frame Sync Code Type is set to User Defined)
(7) Channel Detection
(8) Origin Offset
(9) Active Code Threshold
(10) PICH CH Number

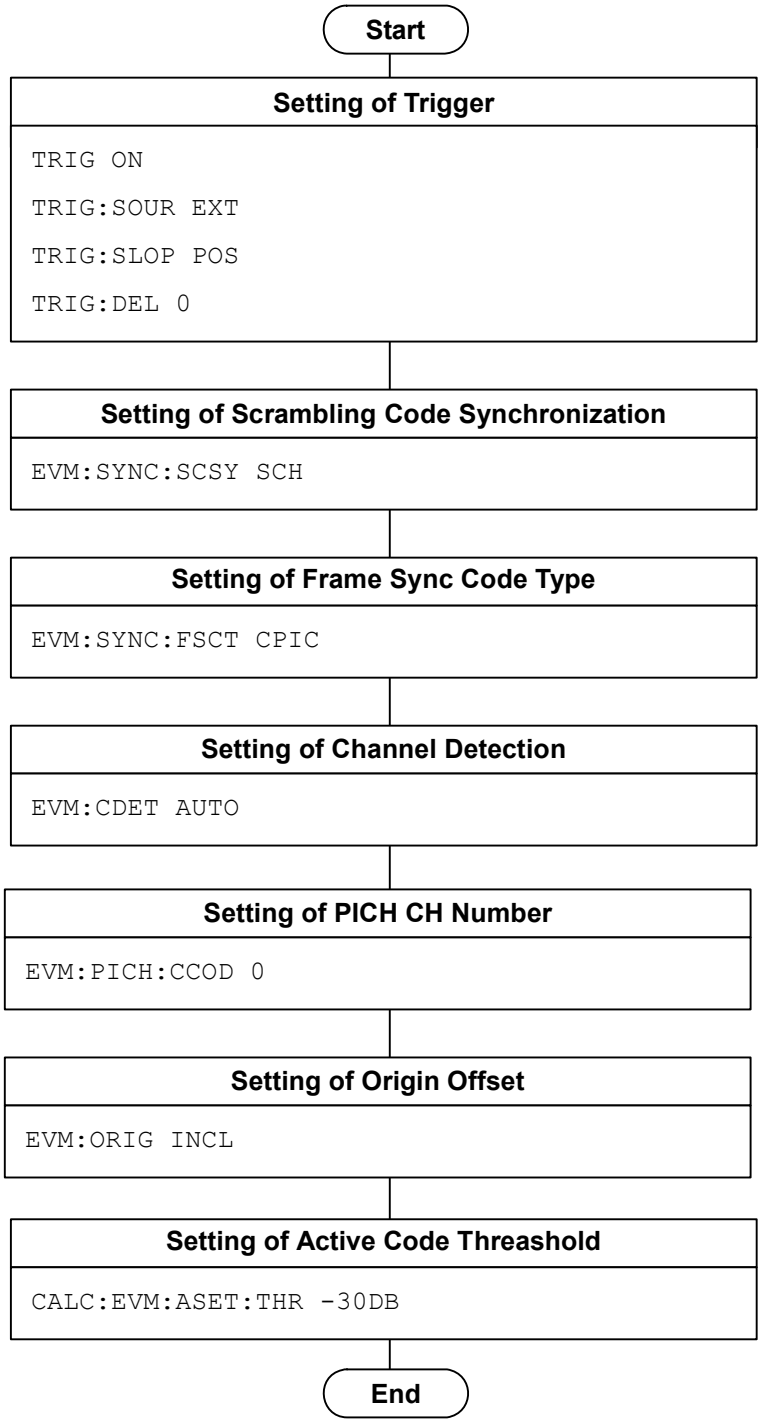

Figure 1.2.3-1 Flow of Common Settings for Modulation/Code Domain and Examples of Commands

1.2.4 Modulation Measurement

This executes the Modulation analysis function as follows:

(1) Select the measurement function.

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

  (a) Starting Slot Number

  (b) Measurement Interval

  (c) Storage

(3) Execute measurement and query the result.

(4) Setting the display contents
This setting is required when displaying measured results on the screen or when querying specific data.

  (a) Trace Mode

  (b) Scale

  (c) Marker

  (d) Target Slot Number

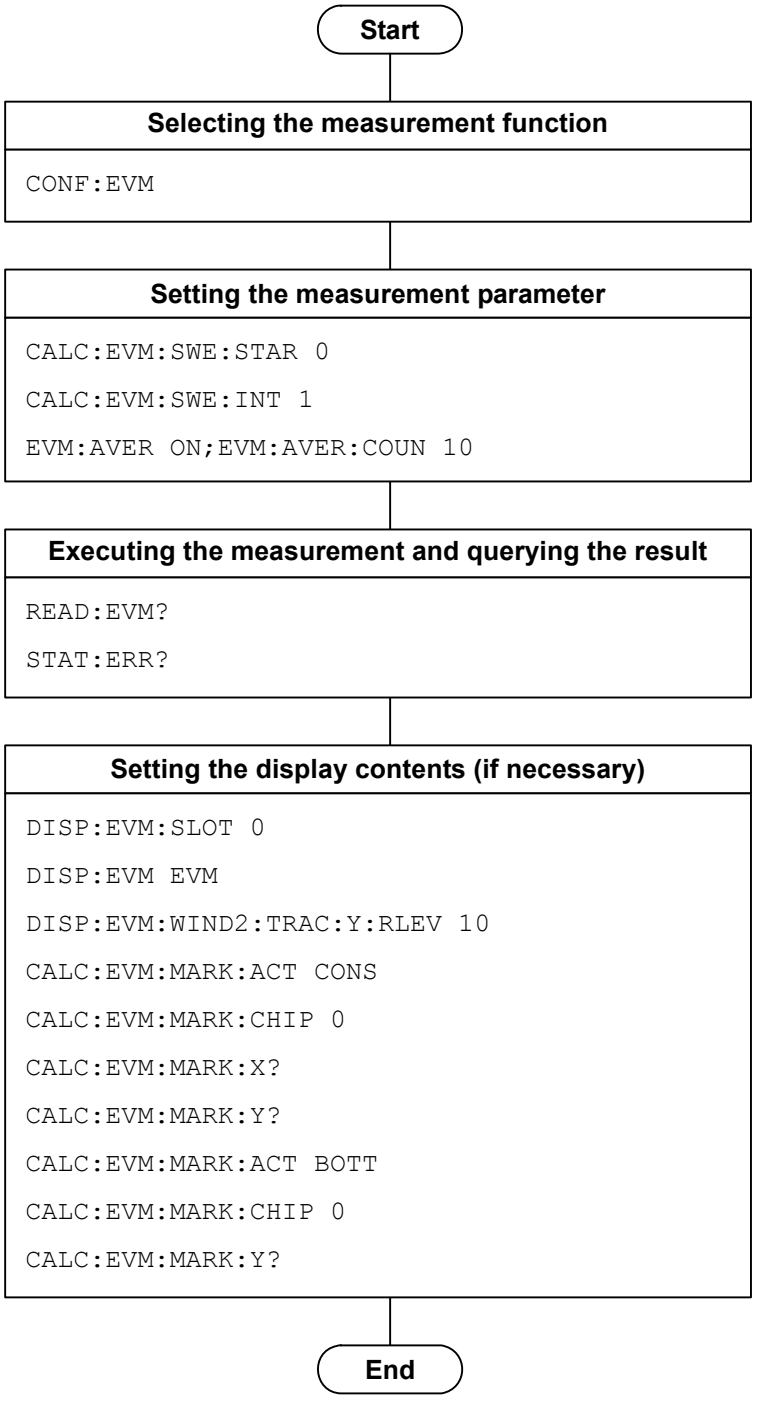

Figure 1.2.4-1 Flow of Modulation Measurement and Command Example

1.2.5 Code Domain Measurement

This executes the Code Domain measurement as follows:

(1) Select the measurement function.

(2) Set the measurement parameter.
The following parameters are only applied to Code Domain measurement:

  (a) Starting Slot Number

  (b) Measurement Interval

(3) Execute the measurement and query the result.

(4) Setting the display contents
(Required when displaying measured results on the screen or when querying specific data.)

  (a) Code Number

  (b) Target Slot Number

  (c) Trace Mode

  (d) Scale

  (e) Marker

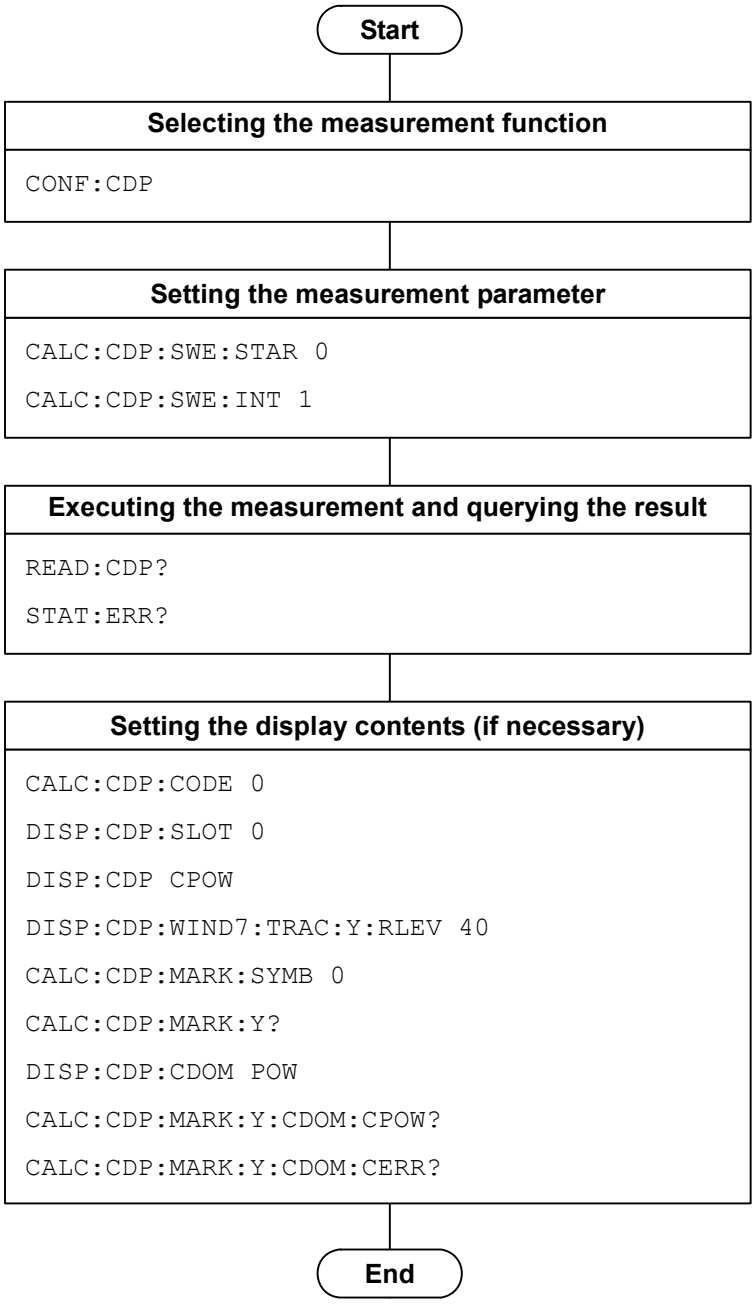

Figure 1.2.5-1 Flow of Code Domain Measurement and Command Example

1.2.6 Code vs Time Measurement

This executes the Code vs Time measurement as follows:

(1) Select the measurement function.

(2) Set the measurement parameter.
The following parameters are only applied to Code vs Time measurement:

  (a) Measurement Interval

(3) Execute the measurement and query the result.

(4) Setting the display contents
This setting is required when displaying measured results on the screen or when querying specific data.

  (a) Trace Mode

  (b) Scale

  (c) Marker

  (d) Code vs Time Target Code

  (e) Code vs Time Slot Number

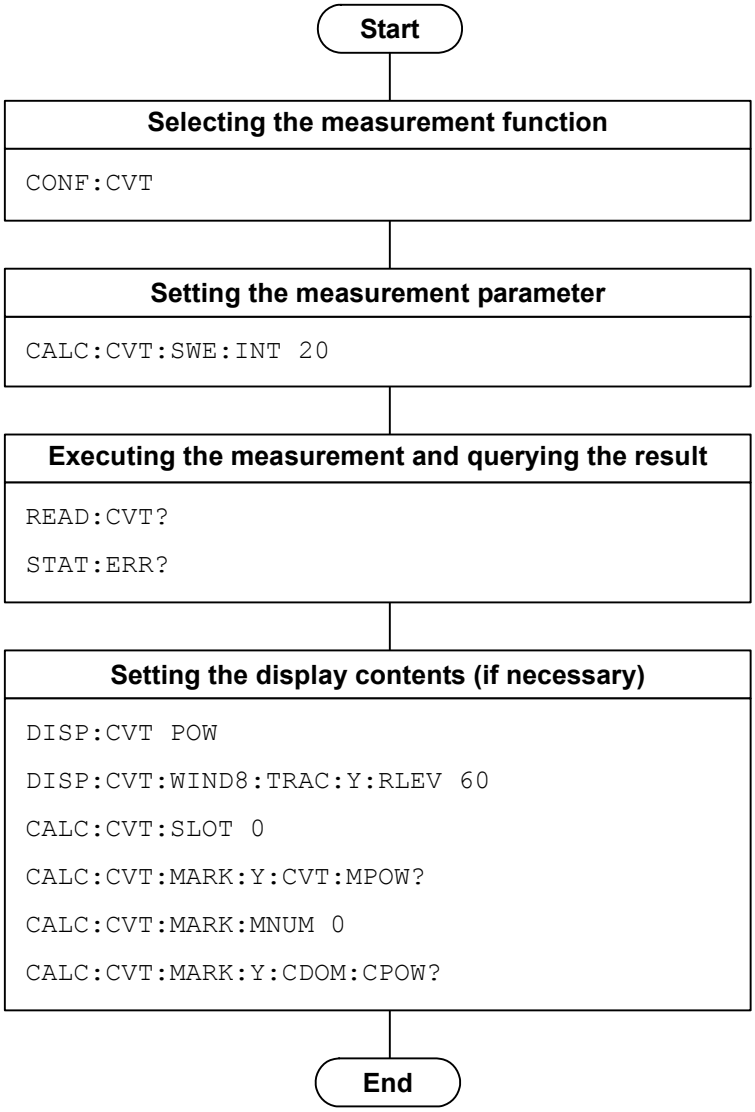

Figure 1.2.6-1 Flow of Code vs Time Measurement and Command Example

1.2.7 ACP (Adjacent Channel Power) Measurement

ACP measurement is basically executed in the following order:

(1) Selecting application and the measurement function
Select either Signal Analyzer or Spectrum Analyzer as the application to execute the ACP measurement function. The application is switched to the selected one if the ACP measurement function is selected.
The basic parameter values are applied to the selected application. Subsequently, only the command/query available in the selected application can be used.

(2) Setting measurement parameters
The following parameters apply only to the specific application selected.

(a) Trigger

(b) Time Length/Filter Type/Storage, etc. (in Signal Analyzer)

(c) Sweep Time/Filter Type/Storage, etc. (in Spectrum Analyzer)

(3) Executing the measurement and querying the result

(4) Setting the display contents
This setting is for displaying the result on the screen. However, you do not need to perform the setting if you only query the result through remote control.

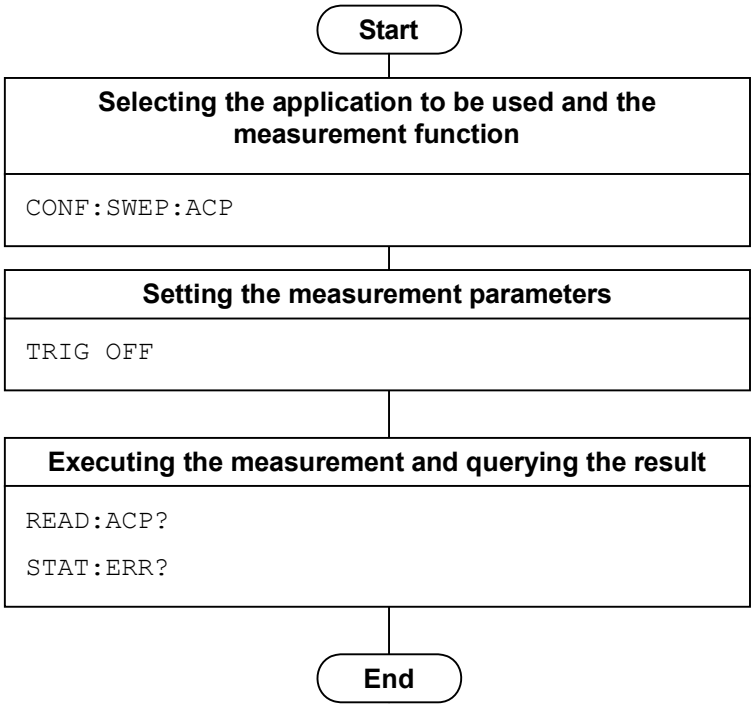

Figure 1.2.7-1 Flow of ACP Measurement using Spectrum Analyzer and Command Example

1.2.8 Channel Power Measurement

The Channel Power measurement is basically executed in the following order:

(1) Selecting the application and measurement function
Select either Signal Analyzer or Spectrum Analyzer as the application to execute the Channel Power measurement function. The application is switched to the selected one if the Channel Power measurement function is selected. The basic parameter values are applied to the selected application. Subsequently, only the commands/queries available in the selected application can be used.

(2) Setting the measurement parameters
The following parameters apply only to the specific application selected.

(a) Trigger

(b) Time Length/Filter Type/Storage, etc. (in Signal Analyzer)

(c) Sweep Time/Filter Type/Storage, etc. (in Spectrum Analyzer)

(3) Executing the measurement and querying the result

(4) Setting the display contents
This setting is for displaying the result on the screen. However, you do not need to perform the setting if you only query the result through remote control.

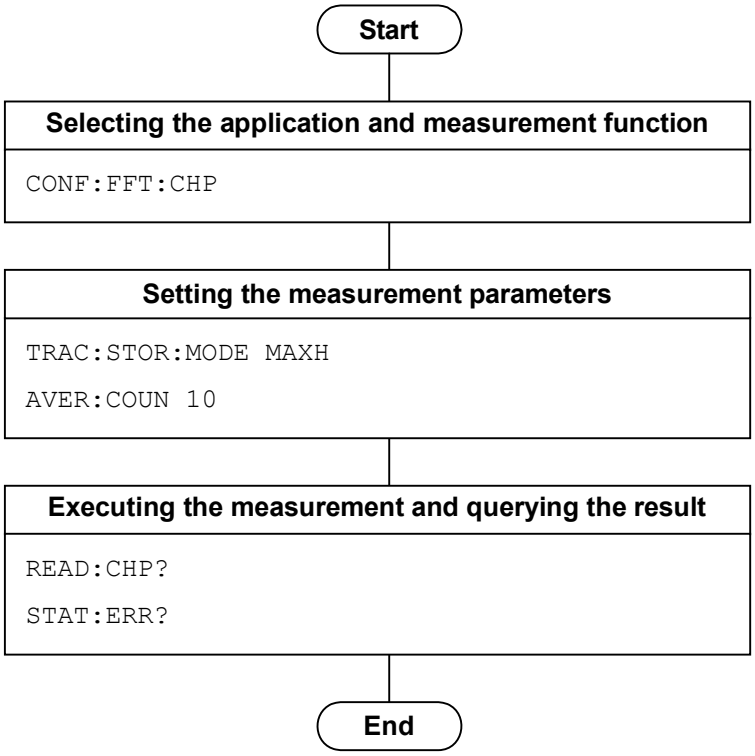

Figure 1.2.8-1 Flow of Channel Power Measurement using Signal Analyzer and Command Example

1.2.9 OBW (Occupied Bandwidth) Measurement

The OBW measurement is basically executed in the following order:

(1) Selecting the application and measurement function
Select either Signal Analyzer or Spectrum Analyzer as the application to execute the OBW measurement function. The application is switched to the selected one if the OBW measurement function is selected. The basic parameter values are applied to the selected application. Subsequently, only the commands/queries available in the selected application can be used.

(2) Setting the measurement parameters
The following parameters apply only to the specific application selected.

(a) Trigger

(b) Method/N% Ratio/XdB Value, etc.

(3) Executing the measurement and querying the result

(4) Setting the display contents
This setting is for displaying the result on the screen. However, you do not need to perform the setting if you only query the result through remote control.

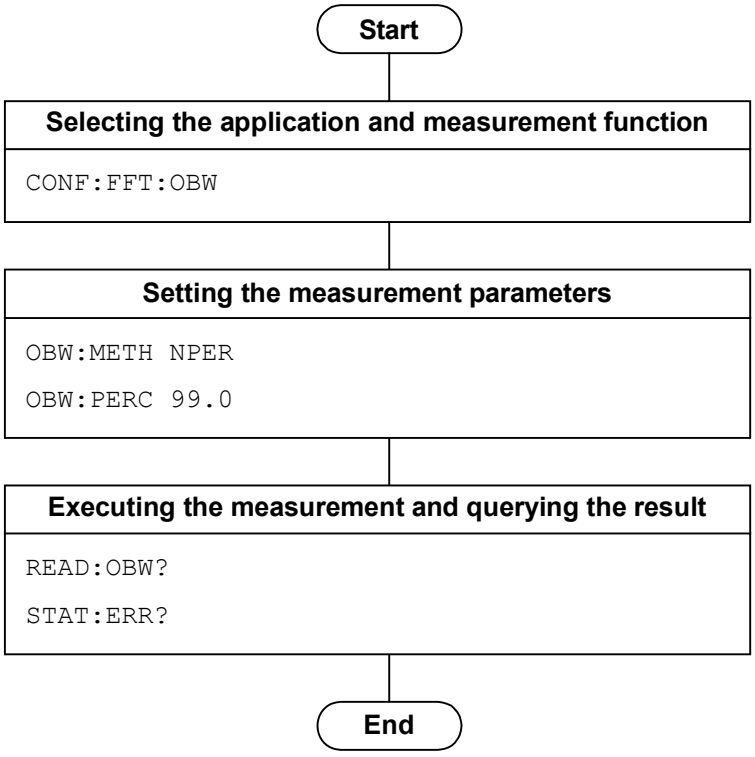

Figure 1.2.9-1 Flow of OBW Measurement using Signal Analyzer and Command Example

1.2.10 SEM (Spectrum Emission Mask) Measurement

The SEM measurement is basically executed in the following order:

(1) Selecting the measurement function
The application is switched to the selected one if the SEM measurement function is selected. The basic parameter values are applied to the spectrum analyzer. Subsequently, only the commands/queries available in the selected application can be used.

Note:

The SEM measurement function is enabled only in the Spectrum Analyzer.

(2) Setting the measurement parameters
The following parameters apply only to the specific application selected.

(a) Trigger

(b) Storage, etc.

(3) Executing the measurement and querying the result

(4) Setting the display contents
This setting is for displaying the result on the screen. However, you do not need to perform the setting if you only query the result through remote control.

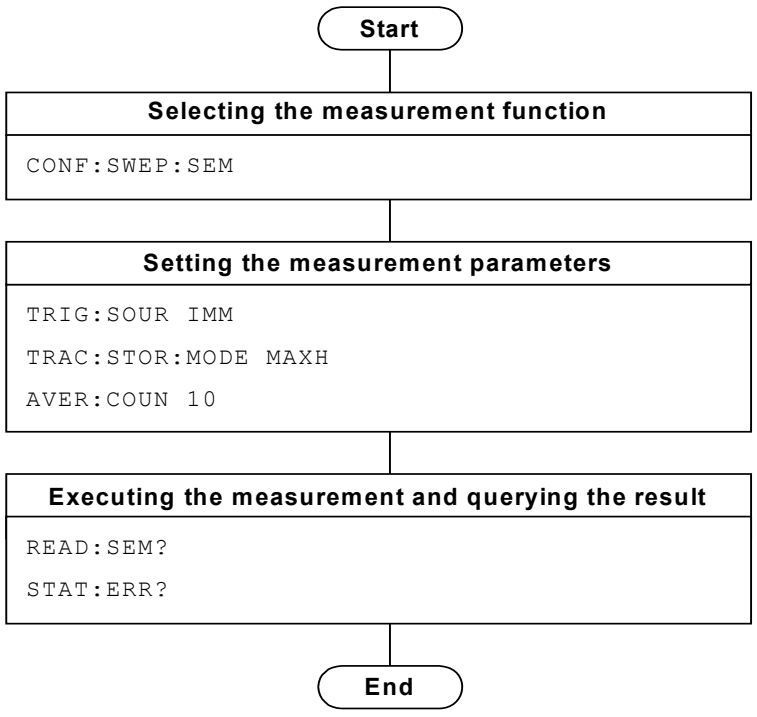

Figure 1.2.10-1 Flow of SEM Measurement using Spectrum Analyzer and Command Example

1.2.11 Signal Analyzer/Spectrum Analyzer Switching

There are the following two methods for switching from this application to Signal Analyzer/Spectrum Analyzer during remote control.

Note:
For MS2830A: To switch to signal analyzer, the analysis bandwidth option 31.25 MHz or greater is required.

(1) Execute `CONFigure[:FFT|SWEPt]:<measure>`
Basic parameters such as carrier frequency and input level (reference level) are applied to the selected application. Furthermore, a template is automatically set depending on the state of this application. There is no limitation on control of the selected application.

Note:
This may be impossible depending on the application used and the selected measurement function.

Also, you can switch between Signal Analyzer and Spectrum Analyzer by using `CONFigure:FFT|SWEPt:<measure>`. In the same way, basic parameters such as carrier frequency and input level (reference level) and templates are applied.

When switching back to control of the measurement application using `CONFigure:<measure>`, the basic parameters changed in Signal Analyzer and Spectrum Analyzer such as carrier frequency and input level (reference level) are also applied.

Compared with method (2), you can shorten the execution time of the program, since you do not need to reset the basic parameter per a measurement function.

(2) Execute `:INSTrument[:SELect] SIGANA|SPECT`
With this method, the parameter and template changes are not applied.

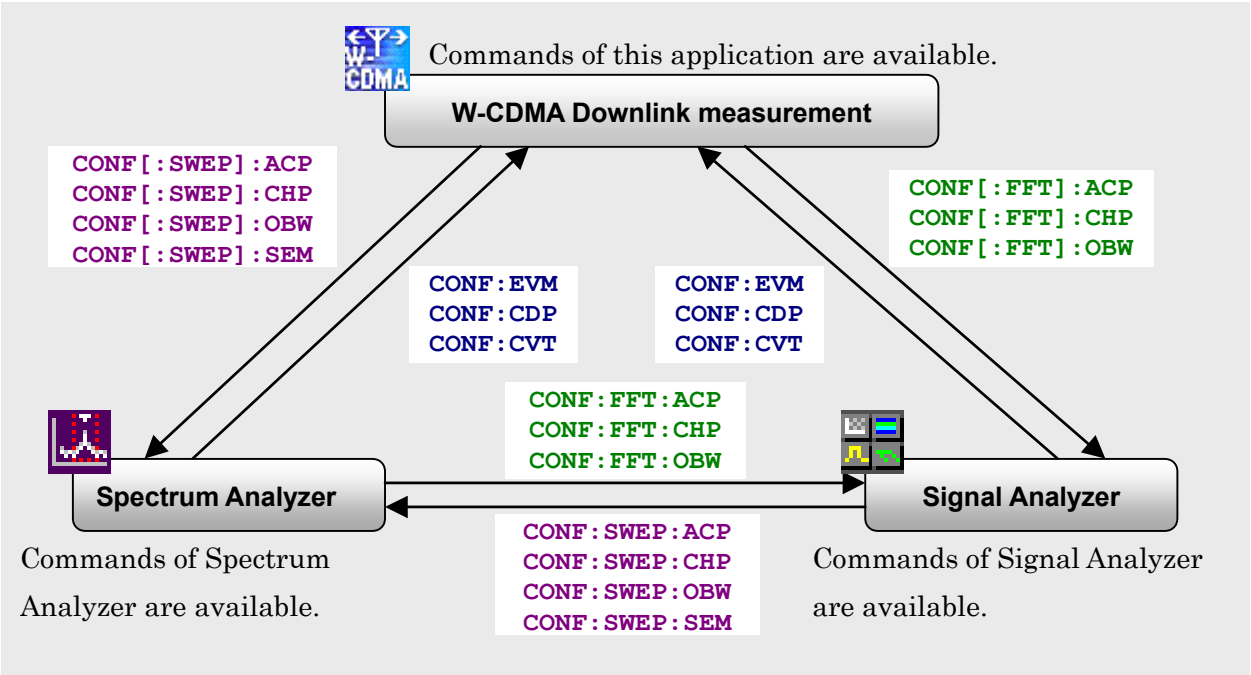

Figure 1.2.11-1 Switching of Measurement Functions among Applications

Figure 1.2.11-1 shows the measurement functions offered by each application and the switching commands. For example, you need to program `CONF:SWEP:ACP`, in order to invoke the ACP measurement function of Spectrum Analyzer from this application. You can write `CONF:ACP` without writing `SWEP` since it is set to use Spectrum Analyzer for the ACP measurement function if `ACP:INST SWEP` is transmitted in advance. `CONF[:SWEP]:<measure>` in Figure 1.2.11-1 means that SWEP can be omitted if `<measure>:INST SWEP` is transmitted in advance.

If you switch the measurement function from Spectrum Analyzer to Signal Analyzer, or in the opposite way, you need to program `CONF:FFT:<measure>` or `CONF:SWEP:<measure>`. If `FFT` or `SWEP` is omitted, the measurement functions are selected by the presently selected application.

1.3 How to use the Native Mode

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

(1) SCPI Mode
Processes commands conforming to the grammar/document format defined in SCPI (ver1999.0). In the SCPI mode, 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
Processes commands that are in this instrument's own definition type. Unless otherwise specified, the character string of a command header is fixed. If a command of the application is only defined by SCPI mode, the character string converted by the conversion rule is a command in the Native mode. For programming, you cannot use the grammar of SCPI mode, such as character string in long/short form format and cannot omit any angled bracket ([ ]) definition character strings.

Note:

The `STATus:QUEStionable` and `STATus:OPERation` registers cannot be used in the Native mode, 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 the command `SYST:LANG NAT`.

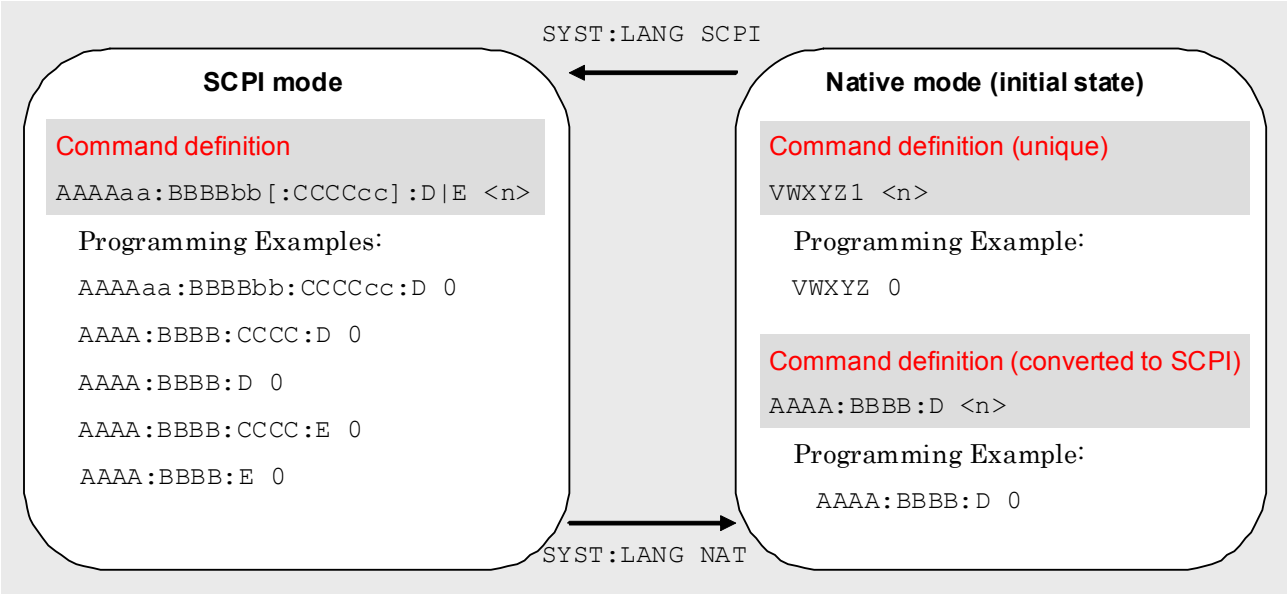

Figure 1.3-1 SCPI mode and Native mode

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

Conversion rule

[1] Delete the numeric parameter in the program header of an SCPI command, and describe the argument corresponding to the numeric parameter as the first argument. If the argument can have only one numeric value and the argument can be omitted, omit it. Describe the argument if it cannot be omitted.

[2] Use the first one if multiple nodes can be selected.

[3] Delete those layers which can be deleted.

[4] Alter all long forms into short forms.

[5] Delete the colon mark (":") at the head.

Example 1

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

[1] Move the numeric parameter in the program header to the head of the argument.

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

(`<integer>` indicates an argument to which 1 or 2 is assigned.)

[2] Delete the layers that can be deleted.

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

[3] Alter all long forms into short forms.

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

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

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

Example 2

Convert [:SENSe]:BPOWer|:TXPower[:STATe]?
into a Native command.

[1] Use the first node if multiple ones can be selected.

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

[2] Delete the layers that can be deleted.

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

[3] Alter all long forms into short forms.

:BPOWer?
↓
:BPOW?

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

:BPOW?
↓
BPOW?

Example 3

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

[1] Move the numeric parameter in the program header to the head of the argument.

```
:FETCh:EVM[n]?
↓
:FETCh:EVM? <integer>
```

(<integer> indicates a numeric value.)

[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>
```

Set a numeric value to the argument.

```
:FETC:EVM? <integer>
↓
FETC:EVM? 1
```

1.4 Character Programs Available for Setting Numeric Program Data

The following character programs can be used for setting numeric program data (numeric parameter) and are applicable only when using the SCPI mode.

(1) `DEFault`
When `DEFault` is specified for numeric program data, the initial value is set for the target parameter.

(2) `MINimum`
When `MINimum` is specified for numeric program data, the minimum value is set for the target parameter.

(3) `MAXimum`
When `MAXimum` is specified for numeric program data, the maximum value is set for the target parameter.

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

`<freq>`

`<real>`

`<integer>`

`<rel_power>`

`<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 "MS2690/MS2691/MS2692A and MS2830A Signal Analyzer Operation Manual (Mainframe Remote Control)" for detailed specifications of the IEEE488.2 common device messages and application common device messages.

2.1 Selecting applications

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

Table 2.1-1 Selecting applications

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

2.1.1 Loading applications

:SYSTem:APPLication:LOAD WCDMADL

Load Application

Function

This command loads the application.

Command

```
:SYSTem:APPLication:LOAD WCDMADL
```

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 the application.

```
INST CONFIG
SYST:APPL:LOAD WCDMADL
```

:SYSTem:APPLication:UNLoad WCDMADL

Unload Application

Function

This command exits the application.

Command

```
:SYSTem:APPLication:UNLoad WCDMADL
```

Details

This function exits the active 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 the application.

```
INST CONFIG
SYST:APPL:UNL WCDMADL
```

2.1.2 Selecting applications

:INSTrument[:SELect] WCDMADL|CONFIG

Application Switch

Function

This command selects the controlled application.

Command

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

Parameter

<apl_name>	Application
WCDMADL	This application
CONFIG	Config

Details

To select a measurement function of Signal Analyzer or Spectrum Analyzer from this application, use the following commands:

```
:CONFigure[:FFT|SWEPt]:ACP
:CONFigure[:FFT|SWEPt]:CHPower
:CONFigure[:FFT|SWEPt]:OBWidth
:CONFigure[:SWEPt]:SEMask
```

Example of Use

To switch the control target to this application.

```
INST WCDMADL
```

:INSTrument[:SELect]?

Application Switch Query

Function

This command queries the controlled application.

Query

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

Response

```
<apl_name>
```

Parameter

<apl_name>Application

WCDMADL	This application
SIGANA	Signal Analyzer
SPECT	Spectrum Analyzer
CONFIG	Config

Details

WCDMADL is returned when a measurement function of this application, such as Modulation or Code Domain, is selected.

SIGANA or SPECT is returned when a measurement function of Signal Analyzer or Spectrum Analyzer, such as ACP, Channel Power, OBW, or SEM, is selected.

Example of Use

To query the controlled application.

```
INST?
> WCDMADL
```

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

Application Switch And Window Status

Function

This command selects the application to be controlled by specifying the window status.

Command

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

Parameter

`<apl_name>`		Application
	`WCDMADL`	This application
	`SIGANA`	Signal Analyzer
	`SPECT`	Spectrum Analyzer
	`CONFIG`	Config

`<window>`		Window status
	`ACTive`	Active
	`INACtive`	Inactive
	`MINimum`	Minimized
	When omitted	Active

Example of Use

To select this application with the window active.

```
INST:SYST WCDMADL,ACT
```

:INSTrument:SYSTem? WCDMADL

Application Switch And Window Status Query

Function

This command queries the status of the specified application.

Query

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

Response

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

Parameter

<apl_name>	Application
WCDMADL	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? WCDMADL
> 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
```

Details

The parameter of Signal Analyzer/Spectrum Analyzer is initialized, when the ACP/Channel Power/OBW/SEM measurement function is selected by the following commands after :INST:DEF has been sent by this application.
:CONFigure[:FFT|SWEPt]:ACP
:CONFigure[:FFT|SWEPt]:CHPower
:CONFigure[:FFT|SWEPt]:OBWidth
:CONFigure[:SWEPt]:SEMask

Example of Use

To initialize the settings and status of the currently selected application.

```
INST:DEF
```

:SYSTem:PRESet

Preset Current Application

Function

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

Refer to :INSTrument:DEFault

Example of Use

To initialize the settings and status of the currently selected application.

```
SYST:PRES
```

2.2 Settings parameters

Table 2.2-1 lists device messages for setting the parameters commonly applied to this application, such as frequency and level.

Table 2.2-1 Settings parameters

Parameter	Device Message
Carrier Frequency	[:SENSe]:FREQuency:CENTer <freq>
	[:SENSe]:FREQuency:CENTer?
Input Level	[:SENSe]:POWer[:RF]:RANGe:ILEVel <real>
	[:SENSe]:POWer[:RF]:RANGe:ILEVel?
Reference Level (Remote only)	:DISPlay:WINDow[1]:TRACe:Y[:SCALe]:RLEVel <real>
	:DISPlay:WINDow[1]:TRACe:Y[:SCALe]:RLEVel?
Level Offset	:DISPlay:WINDow[1]:TRACe:Y[:SCALe]:RLEVel:OFFSet <rel_power>
	:DISPlay:WINDow[1]:TRACe:Y[:SCALe]:RLEVel:OFFSet?
Level Offset State	:DISPlay:WINDow[1]:TRACe:Y[:SCALe]:RLEVel:OFFSet:STATe OFF|ON|0|1
	:DISPlay:WINDow[1]:TRACe:Y[:SCALe]:RLEVel:OFFSet:STATe?
Pre-Amp State	[:SENSe]:POWer[:RF]:GAIN[:STATe] OFF|ON|0|1
	[:SENSe]:POWer[:RF]:GAIN[:STATe]?
Auto Range	[:SENSe]:POWer[:RF]:RANGe:AUTO ONCE

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	30 MHz to the upper limit of the main unit
	Resolution	1 Hz
	Suffix codes	`HZ,KHZ,KZ,MHZ,MZ,GHZ,GZ`
		Hz is used when omitted.
	Default value	2110 MHz

Example of Use

To set the carrier frequency to 1.945 GHz.

```
FREQ:CENT 1.945GHZ
```

[: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	30 MHz 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?
> 1920000000
```

2.2.2 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	(–60.00 + Level Offset) to (30.00 + Level Offset) dBm (when Pre Amp is Off) (–80.00 + Level Offset) to (10.00 + Level Offset) dBm (when Pre Amp is On)
	Resolution	0.01 dB
	Suffix codes	DBM dBm is used when omitted.
	Default value	–10.00 dBm

Details

The setting range when Pre Amp is Off is applied if the MS2690A/MS2691A/MS2692A Option 008/108 6 GHz Preamplifier or MS2830A Option 008 Preamplifier (hereinafter referred to as “Option 008”) 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?
```

Parameter

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

Example of Use

To query the input level.

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

2.2.3 Reference Level

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

Reference Level

Function

This command sets the reference level for ACP, Channel Power, OBW, and SEM measurements.

Command

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

Parameter

`<real>`		Reference level value
	Range	(Minimum input level +10) to (Maximum input level +10) dBm
	Resolution	0.01 dB
	Suffix codes	DBM dBm is used when omitted.
	Default value	0.00 dBm

Details

Reference Level indicates the peak level of the input signal by using the internal parameter which is automatically calculated to Input Level and is not shown on the screen. This Reference level value is applied to the measurement function when fetching ACP/Channel Power/OBW/SEM measurement functions. The Input Level value is also changed when the Reference Level is changed.

Example of Use

To set the reference level to 0.00 dBmV

```
DISP:WIND:TRAC:Y:RLEV 0.00DBM
```

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

Reference Level Query

Function

This command queries the reference level for ACP/Channel Power/OBW/SEM measurements.

Query

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

Parameter

<real>		Reference level value
	Range	(Minimum input level +10) to (Maximum input level +10) dBm
	Resolution	0.01 dB Value is returned in dBm units.

Example of Use

To query the reference level.

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

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 codes	DB
		dB is used when omitted.
	Default value	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?
```

Parameter

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

Example of Use

To set 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>	Input level offset On/Off
OFF|0	Disabled (Default value)
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?
```

Parameter

<switch>	Input level offset On/Off
0	Disabled
1	Enabled

Example of Use

To query the state of the input level offset function.

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

2.2.6 Pre Amp

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

Pre Amp

Function

This command sets Pre-Amp to On/Off.

Command

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

Parameter

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

Details

This command is invalid when the Option 008 is not installed.

Example of Use

To set Pre-Amp to On.

```
POW:GAIN ON
```

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

Pre Amp 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 the Option 008 is not installed.

Example of Use

To query the setting of Pre-Amp.

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

2.0.1 Auto Range

[:SENSe]:POWer[:RF]:RANGe:AUTO ONCE

Auto Range

Function

This command executes Auto Range and adjust input level.

Command

```
[:SENSe]:POWer[:RF]:RANGe:AUTO ONCE
```

Details

This command is not available when the Replay function is executed.

Example of Use

To execute Auto Range.

```
POW:RANG:AUTO ONCE
```

2.3 Setting of System Parameters

Table 2.3-1 lists device messages for setting the parameters of the communication system to be measured. These parameters are commonly applied to Modulation, Code Domain, and Code vs Time measurements.

Table 2.3-1 Setting of System Parameters

Parameter	Device Message
Scrambling Code	[:SENSe]:EVM:SYNC:SCRamble <integer>
	[:SENSe]:EVM:SYNC:SCRamble?
	[:SENSe]:RHO:SYNC:SCRamble[:BTS] <integer>
	[:SENSe]:RHO:SYNC:SCRamble[:BTS]?
	[:SENSe]:CDPower:SYNC:SCRamble[:BTS] <integer>
	[:SENSe]:CDPower:SYNC:SCRamble[:BTS]?
	[:SENSe]:PCONtrol:SYNC:SCRamble[:BTS] <integer>
	[:SENSe]:PCONtrol:SYNC:SCRamble[:BTS]?
Origin Offset	[:SENSe]:EVM:ORIGin INCLude|EXCLude
	[:SENSe]:EVM:ORIGin?
	:CALCulate:RHO:IQOFfset:INCLude OFF|ON|0|1
	:CALCulate:RHO:IQOFfset:INCLude?
Active Code Threshold	:CALCulate:EVM:ASET:THReshold <rel_ampl>
	:CALCulate:EVM:ASET:THReshold?
	:CALCulate:RHO:ASET:THReshold <rel_ampl>
	:CALCulate:RHO:ASET:THReshold?
	:CALCulate:CDPower:ASET:THReshold <rel_ampl>
	:CALCulate:CDPower:ASET:THReshold?

Table 2.3-1 Setting of System Parameters (Cont'd)

Parameter	Device Message
Scrambling Code Synchronization	[:SENSe]:EVM:SYNC:SCSYnc SCH|UDEFined
	[:SENSe]:EVM:SYNC:SCSYnc?
Frame Sync Code Type	[:SENSe]:EVM:SYNC:FSCType CPICh|UDEFined
	[:SENSe]:EVM:SYNC:FSCType?
Frame Sync Spreading Factor	[:SENSe]:EVM:SYNC:FSSFactor 4|8|16|32|64|128|256|512
	[:SENSe]:EVM:SYNC:FSSFactor?
Frame Sync Code Number	[:SENSe]:EVM:SYNC:FSCNumber <integer>
	[:SENSe]:EVM:SYNC:FSCNumber?
Channel Detection	[:SENSe]:EVM:CDETection[:BTS] AUTO|TM1D16|TM1D32|TM1D64|TM2|TM3D16|TM3D32|TM4|TM4CP|TM5H2|TM5H4|TM5H8|TM6|UDEF|UDEF2
	[:SENSe]:EVM:CDETection[:BTS]?
	[:SENSe]:RHO:SBOundary[:BTS] AUTO|TM1D16|TM1D32|TM1D64|TM2|TM3D16|TM3D32|TM4|TM4CP|TM5H2|TM5H4|TM5H8|TM6|UDEF|UDEF2
	[:SENSe]:RHO:SBOundary[:BTS]?
User Defined Select File	[:SENSe]:EVM:CDETection:UDEFined:FSELect <filename>
User Defined2 For Remote	[:SENSe]:EVM:CDETection:UDEFined2:LIST[:BTS] <SF1>,<CH1>,<Modulation Scheme1>,[<SF2>,<CH2>,<Modulation Scheme2>],,,,,,[<SF256>,<CH256>,<Modulation Scheme256>]
Move Channel Configuration File (HDD to Device)	:MMEMory:MOVE:CCONfiguration <filename>,<apl_name>,<device>
Copy Channel Configuration File (Device to HDD)	:MMEMory:COPY:CCONfiguration <filename>,<apl_name>,<device>
Delete Channel Configuration File	:MMEMory:DELete:CCONfiguration <filename>,<apl_name>,<device>
Protect Channel Configuration File	:MMEMory:PROTection:CCONfiguration[:STATe] <filename>,ON|OFF|0|1,<apl_name>,<device>
	:MMEMory:PROTection:CCONfiguration[:STATe]? <filename>, <apl_name>,<device>
Channel Configuration File List Query	MMEMory:CATalog:CCONfiguration?
PICH CH Number	[:SENSe]:EVM:PICH:CCODe <integer>
	[:SENSe]:EVM:PICH:CCODe?
Peak Relative CDE Detection Mode	[:SENSe]:EVM:PRDM SLOT|MINT
	[:SENSe]:EVM:PRDM?

2.3.1 Scrambling Code

[:SENSe]:EVM:SYNC:SCRamble <integer>

Scrambling Code

Function

This command sets the Scrambling Code when Scrambling Code Synchronization is set to User Defined.

Command

```
[:SENSe]:EVM:SYNC:SCRamble <integer>
```

Parameter

<integer>		Scrambling Code
	Range	0 to 8191 (0x0 to 0x1FFF)
	Resolution	1
	Default value	0

Details

Values with the prefix "#H" are settings value input hexadecimal.

Example of Use

To set Scrambling Code to 1FFF.

```
EVM:SYNC:SCR #H1FFF
```

Related Command

This command has the same function as the following commands.

```
[:SENSe]:RHO:SYNC:SCRamble[:BTS] <integer>
[:SENSe]:CDPower:SYNC:SCRamble[:BTS] <integer>
[:SENSe]:PCONtrol:SYNC:SCRamble[:BTS] <integer>
```

[:SENSe]:EVM:SYNC:SCRamble?

Scrambling Code Query

Function

This command queries the Scrambling Code. The response is always returned in a decimal value.

Query

```
[:SENSe]:EVM:SYNC:SCRamble?
```

Response

```
<integer>
```

Parameter

`<integer>`		Scrambling Code
	Range	0 to 8191 (Decimal)
	Resolution	1

Example of Use

To query the Scrambling Code.

```
EVM:SYNC:SCR?
> 8191
```

Related Command

This command has the same function as the following commands.

```
[:SENSe]:RHO:SYNC:SCRamble[:BTS]?
[:SENSe]:CDPower:SYNC:SCRamble[:BTS]?
[:SENSe]:PCONtrol:SYNC:SCRamble[:BTS]?
```

[:SENSe]:RHO:SYNC:SCRamble[:BTS] <integer>

Scrambling Code

Function

This command sets the Scrambling Code.

Refer to `[:SENSe]:EVM:SYNC:SCRamble <integer>`

Related Command

This command has the same function as the following commands.

```
[:SENSe]:EVM:SYNC:SCRamble <integer>
[:SENSe]:CDPower:SYNC:SCRamble[:BTS] <integer>
[:SENSe]:PCONtrol:SYNC:SCRamble[:BTS] <integer>
```

[:SENSe]:RHO:SYNC:SCRamble[:BTS]?

Scrambling Code Query

Function

This command queries the Scrambling Code.

Refer to `[:SENSe]:EVM:SYNC:SCRamble?`

Related Command

This command has the same function as the following commands.

```
[:SENSe]:EVM:SYNC:SCRamble?
[:SENSe]:CDPower:SYNC:SCRamble[:BTS]?
[:SENSe]:PCONtrol:SYNC:SCRamble[:BTS]?
```

[:SENSe]:CDPower:SYNC:SCRamble[:BTS] <integer>

Scrambling Code

Function

This command sets the Scrambling Code.

Refer to `[:SENSe]:EVM:SYNC:SCRamble <integer>`

Related Command

This command has the same function as the following commands.

```
[:SENSe]:EVM:SYNC:SCRamble <integer>
[:SENSe]:RHO:SYNC:SCRamble[:BTS] <integer>
[:SENSe]:PCONtrol:SYNC:SCRamble[:BTS] <integer>
```

[:SENSe]:CDPower:SYNC:SCRamble[:BTS]?

Scrambling Code Query

Function

This command queries the Scrambling Code.

Refer to `[:SENSe]:EVM:SYNC:SCRamble?`

Related Command

This command has the same function as the following commands.

```
[:SENSe]:EVM:SYNC:SCRamble?
[:SENSe]:RHO:SYNC:SCRamble[:BTS]?
[:SENSe]:PCONtrol:SYNC:SCRamble[:BTS]?
```

[:SENSe]:PCONtrol:SYNC:SCRamble[:BTS] <integer>

Scrambling Code

Function

This command sets the Scrambling Code.

Refer to `[:SENSe]:EVM:SYNC:SCRamble <integer>`

Related Command

This command has the same function as the following commands.

```
[:SENSe]:EVM:SYNC:SCRamble <integer>
[:SENSe]:RHO:SYNC:SCRamble[:BTS] <integer>
[:SENSe]:CDPower:SYNC:SCRamble[:BTS] <integer>
```

[:SENSe]:PCONtrol:SYNC:SCRamble[:BTS]?

Scrambling Code Query

Function

This command queries the Scrambling Code.

Refer to `[:SENSe]:EVM:SYNC:SCRamble?`

Related Command

This command has the same function as the following commands.

```
[:SENSe]:EVM:SYNC:SCRamble?
[:SENSe]:RHO:SYNC:SCRamble[:BTS]?
[:SENSe]:CDPower:SYNC:SCRamble[:BTS]?
```

2.3.2 Origin Offset

[:SENSe]:EVM:ORIGin INCLude|EXCLude

Origin Offset

Function

This is used to set whether or not to include Origin Offset at EVM calculation.

Command

```
[:SENSe]:EVM:ORIGin INCLude|EXCLude
```

Parameter

<mode>	Origin Offset
INCLude	Includes Origin Offset (Default value)
EXCLude	Does not include Origin Offset

Example of Use

To include Origin Offset at EVM calculation.

```
EVM:ORIG INCL
```

[:SENSe]:EVM:ORIGin?

Origin Offset Query

Function

This command queries the Origin Offset.

Query

```
[:SENSe]:EVM:ORIGin?
```

Parameter

<mode>	Origin Offset
INCL	Includes Origin Offset
EXCL	Does not include Origin Offset

Example of Use

To query the Origin Offset.

```
EVM:ORIG?
> INCL
```

:CALCulate:RHO:IQOFfset:INCLude OFF|ON|0|1

Origin Offset

Function

This is used to set whether or not to include Origin Offset at EVM calculation.

Command

```
:CALCulate:RHO:IQOFfset:INCLude OFF|ON|0|1
```

Parameter

<mode>	Origin Offset
OFF|0	Does not include Origin Offset
ON|1	Includes Origin Offset (Default value)

Example of Use

To set whether or not to include Origin Offset at EVM calculation.

```
CALC:RHO:IQOF:INCL ON
```

:CALCulate:RHO:IQOFfset:INCLude?

Origin Offset Query

Function

This command queries the Origin Offset.

Query

```
[:SENSe]:EVM:ORIGin?
```

Parameter

<mode>	Origin Offset
0	Does not include Origin Offset
1	Includes Origin Offset

Example of Use

To query the Origin Offset.

```
CALC:RHO:IQOF:INCL?
> 1
```

2.3.3 Active Code Threshold

:CALCulate:EVM:ASET:THReshold <rel_ampl>

Active Code Threshold

Function

This command sets the Active Code Threshold.

This command can be set when Channel Detection is set to Auto.

Command

```
:CALCulate:EVM:ASET:THReshold <rel_ampl>
```

Parameter

<rel_ampl>		Active Code Threshold
	Range	–40.0 to –10.0 dB
	Resolution	0.1 dB
	Suffix codes	DB dB is used when omitted.
	Default value	–30.0 dB

Example of Use

To set the Active Code Threshold to –20.0 dB.

```
CALC:EVM:ASET:THR -20.0
```

Related Command

This command has the same function as the following command.

```
:CALCulate:RHO:ASET:THReshold <rel_ampl>
```

:CALCulate:EVM:ASET:THReshold?

Active Code Threshold Query

Function

This command queries the Active Code Threshold.

Query

```
:CALCulate:EVM:ASET:THReshold?
```

Parameter

`<rel_ampl>`		Active Code Threshold
	Range	–40.0 to –10.0 dB
	Resolution	0.1 dB
		Value is returned in dB units.

Example of Use

To query the Active Code Threshold.

```
CALC:EVM:ASET:THR?
> -20.0
```

Related Command

This command has the same function as the following command.

```
:CALCulate:RHO:ASET:THReshold?
```

:CALCulate:RHO:ASET:THReshold <rel_ampl>

Active Code Threshold

Function

This command sets Active Code Threshold.

Refer to :CALCulate:EVM:ASET:THReshold <rel_ampl>

Related Command

This command has the same function as the following command.
:CALCulate:EVM:ASET:THReshold <rel_ampl>

:CALCulate:RHO:ASET:THReshold?

Active Code Threshold Query

Function

This command queries the Active Code Threshold.

Refer to :CALCulate:EVM:ASET:THReshold?

Related Command

This command has the same function as the following command.
:CALCulate:EVM:ASET:THReshold?

:CALCulate:CDPower:ASET:THReshold <rel_ampl>

Active Code Threshold

Function

This command sets the Active Code Threshold.

Refer to :CALCulate:EVM:ASET:THReshold <rel_ampl>

Related Command

This command has the same function as the following command.
:CALCulate:EVM:ASET:THReshold <rel_ampl>

:CALCulate:CDPower:ASET:THReshold?

Active Code Threshold Query

Function

This command queries the Active Code Threshold.

Refer to :CALCulate:EVM:ASET:THReshold?

Related Command

This command has the same function as the following command.
:CALCulate:EVM:ASET:THReshold?

2.3.4 Scrambling Code Synchronization

[:SENSe]:EVM:SYNC:SCSYnc SCH|UDEFined

Scrambling Code Synchronization

Function

This command sets Scrambling Code Synchronization.

Command

```
[:SENSe]:EVM:SYNC:SCSYnc SCH|UDEFined
```

Parameter

<mode>	Scrambling Code Synchronization
SCH	Scrambling Code is deduced from SCH information.
UDEFined	User-specified Scrambling Code is used.

Example of Use

To set Scrambling Code Synchronization to SCH.

```
EVM:SYNC:SCSY SCH
```

[:SENSe]:EVM:SYNC:SCSYnc?

Scrambling Code Synchronization Query

Function

This command queries the Scrambling Code Synchronization.

Query

```
[:SENSe]:EVM:SYNC:SCSYnc?
```

Parameter

<mode>	Scrambling Code Synchronization
SCH	Scrambling Code is deduced from SCH information.
UDEF	User-specified Scrambling Code is used.

Example of Use

To query Scrambling Code Synchronization.

```
EVM:SYNC:SCSY?
> SCH
```

2.3.5 Frame Sync Code Type

[:SENSe]:EVM:SYNC:FSCType CPICh|UDEFined

Frame Sync Code Type

Function

This command sets the Frame Sync Code Type.

This command can be set when Channel Detection is set to Auto.

Command

```
[:SENSe]:EVM:SYNC:FSCType CPICh|UDEFined
```

Parameter

<mode>	Frame Sync Code Type
CPICh	P-CPICH is used for synchronization.
UDEFined	User-specified channel is used for synchronization.

Example of Use

To set Frame Sync Code Type to P-CPICH.

```
EVM:SYNC:FSCT CPIC
```

[:SENSe]:EVM:SYNC:FSCType?

Frame Sync Code Type Query

Function

This command queries the Frame Sync Code Type.

Command

```
[:SENSe]:EVM:SYNC:FSCType?
```

Parameter

<mode>	Frame Sync Code Type
CPIC	P-CPICH is used for synchronization.
UDEF	User-specified channel is used for synchronization.

Example of Use

To query the Frame Sync Code Type.

```
EVM:SYNC:FSCT?
> CPIC
```

2.3.6 Frame Sync Spreading Factor

[:SENSe]:EVM:SYNC:FSSFactor 4|8|16|32|64|128|256|512

Frame Sync Spreading Factor

Function

This command sets the Frame Sync Spreading Factor when Frame Sync Code Type is set to User Defined.

This command can be set when Channel Detection is set to Auto.

Command

```
[:SENSe]:EVM:SYNC:FSSFactor 4|8|16|32|64|128|256|512
```

Parameter

<mode>	Frame Sync Spreading Factor
4	Synchronization detection is executed for channels whose SF is 4.
8	Synchronization detection is executed for channels whose SF is 8.
16	Synchronization detection is executed for channels whose SF is 16.
32	Synchronization detection is executed for channels whose SF is 32.
64	Synchronization detection is executed for channels whose SF is 64.
128	Synchronization detection is executed for channels whose SF is 128.
256	Synchronization detection is executed for channels whose SF is 256 (Default value).
512	Synchronization detection is executed for channels whose SF is 512.

Example of Use

To set the Frame Sync Spreading Factor to 256.

```
1: EVM:SYNC:FSCT UDEF
2: EVM:SYNC:FSSF 256
```

[:SENSe]:EVM:SYNC:FSSFactor?

Frame Sync Spreading Factor Query

Function

This command queries the Frame Sync Spreading Factor.

Command

```
[:SENSe]:EVM:SYNC:FSSFactor?
```

Parameter

<mode>	Frame Sync Spreading Factor
4	Synchronization detection is executed for channels whose SF is 4.
8	Synchronization detection is executed for channels whose SF is 8.
16	Synchronization detection is executed for channels whose SF is 16.
32	Synchronization detection is executed for channels whose SF is 32.
64	Synchronization detection is executed for channels whose SF is 64.
128	Synchronization detection is executed for channels whose SF is 128.
256	Synchronization detection is executed for channels whose SF is 256.
512	Synchronization detection is executed for channels whose SF is 512.

Example of Use

To query the Frame Sync Spreading Factor.

```
EVM:SYNC:FSSF?
> 256
```

2.3.7 Frame Sync Code Number

[:SENSe]:EVM:SYNC:FSCNumber <integer>

Frame Sync Code Number

Function

This command sets the Frame Sync Code Number when Frame Sync Code Type is set to User Defined.

This command can be set when Channel Detection is set to Auto.

Command

```
[:SENSe]:EVM:SYNC:FSCNumber <integer>
```

Parameter

<integer>		Frame Sync Code Number
	Range	0 to Frame Sync Spreading Factor –1
	Resolution	1
	Suffix codes	None
	Default value	0

Example of Use

To set the Frame Sync Code Number to 16.

```
1: EVM:SYNC:FSCT UDEF
2: EVM:SYNC:FSCN 16
```

[:SENSe]:EVM:SYNC:FSCNumber?

Frame Sync Code Number Query

Function

This command queries the Frame Sync Code Number.

Command

```
[:SENSe]:EVM:SYNC:FSCNumber?
```

Parameter

<integer>		Frame Sync Code Number
	Range	0 to Frame Sync Spreading Factor –1
	Resolution	1

Example of Use

To query the Frame Sync Code Number.

```
EVM:SYNC:FSCN?
> 16
```

2.3.8 Channel Detection

[:SENSe]:EVM:CDETection[:BTS]
AUTO|TM1D16|TM1D32|TM1D64|TM2|TM3D16|TM3D32|TM4|TM4CP|TM5H2|TM5H4|TM5H8|TM6|UDEF|UDEF2

Channel Detection

Function

This command sets the Channel Detection.

Command

```
[:SENSe]:EVM:CDETection[:BTS]
AUTO|TM1D16|TM1D32|TM1D64|TM2|TM3D16|TM3D32|TM4|TM4CP|TM5H2|TM5H4|TM5H8|TM6|UDEF|UDEF2
```

Parameter

<mode>	Channel Detection
AUTO	TestModel is not specified (Default value).
TM1D16	Signals of TestModel1, 16DCH are measured.
TM1D32	Signals of TestModel1, 32DCH are measured.
TM1D64	Signals of TestModel1, 64DCH are measured.
TM2	Signals of TestModel2 are measured.
TM3D16	Signals of TestModel3, 16DCH are measured.
TM3D32	Signals of TestModel3, 32DCH are measured.
TM4	Signals of TestModel4, without P-CPICH are measured.
TM4CP	Signals of TestModel4, with P-CPICH are measured.
TM5H2	Signals of TestModel5, 2HS-PDSCH+6DPCH are measured.
TM5H4	Signals of TestModel5, 4HS-PDSCH+14DPCH are measured.
TM5H8	Signals of TestModel5, 8HS-PDSCH+30DPCH are measured.
TM6	Signals of TestModel6 are measured.
UDEF	Conducts analysis with the channel configuration specified in the User Defined file.
UDEF2	Conducts analysis with the channel configuration specified in the remote-controlled User Defined file.

Example of Use

To set the Channel Detection to TM6.

```
EVM:CDET TM6
```

[:SENSe]:EVM:CDETection[:BTS]?

Channel Detection Query

Function

This command queries the Channel Detection.

Command

```
[:SENSe]:EVM:CDETection[:BTS]?
```

Parameter

<mode>		Channel Detection
	AUTO	TestModel is not specified.
	TM1D16	Signals of TestModel1, 16DCH are measured.
	TM1D32	Signals of TestModel1, 32DCH are measured.
	TM1D64	Signals of TestModel1, 64DCH are measured.
	TM2	Signals of TestModel2 are measured.
	TM3D16	Signals of TestModel3, 16DCH are measured.
	TM3D32	Signals of TestModel3, 32DCH are measured.
	TM4	Signals of TestModel4, without P-CPICH are measured.
	TM4CP	Signals of TestModel4, with P-CPICH are measured.
	TM5H2	Signals of TestModel5, 2HS-PDSCH+6DPCH are measured.
	TM5H4	Signals of TestModel5, 4HS-PDSCH+14DPCH are measured.
	TM5H8	Signals of TestModel5, 8HS-PDSCH+30DPCH are measured.
	TM6	Signals of TestModel6 are measured.
	UDEF	Conducts analysis with the channel configuration specified in the User Defined file.
	UDEF2	Conducts analysis with the channel configuration specified in the remote-controlled User Defined file.

Example of Use

To query the Channel Detection.

```
EVM:CDET?
> TM6
```

[:SENSe]:RHO:SBOundary[:BTS] AUTO|TM1D16|TM1D32|TM1D64|TM2|TM3D16|TM3D32|TM4|TM4CP|TM5H2|TM5H4|TM5H8|TM6|UDEF|UDEF2

Channel Detection

Function

This command sets the Channel Detection.

Command

```
[:SENSe]:RHO:SBOundary[:BTS]
AUTO|TM1D16|TM1D32|TM1D64|TM2|TM3D16|TM3D32|TM4|TM4CP|TM5H2|TM5H4|TM5H8|TM6|UDEF|UDEF2
```

Parameter

<mode>	Channel Detection
AUTO	Does not specify TestModel (Default value).
TM1D16	Measures signals of TestModel1, 16DCH.
TM1D32	Measures signals of TestModel1, 32DCH.
TM1D64	Measures signals of TestModel1, 64DCH.
TM2	Measures signals of TestModel2.
TM3D16	Measures signals of TestModel3, 16DCH.
TM3D32	Measures signals of TestModel3, 32DCH.
TM4	Measures signals of TestModel4, without P-CPICH.
TM4CP	Measures signals of TestModel4, with P-CPICH.
TM5H2	Measures signals of TestModel5, 2HS-PDSCH+6DPCH.
TM5H4	Measures signals of TestModel5, 4HS-PDSCH+14DPCH.
TM5H8	Measures signals of TestModel5, 8HS-PDSCH+30DPCH.
TM6	Measures signals of TestModel6.
UDEF	Conducts analysis with the channel configuration specified in the User Defined file.
UDEF2	Conducts analysis with the channel configuration specified in the remote-controlled User Defined file.

Example of Use

To set the Channel Detection to TM6.

```
RHO:SBO TM6
```

[:SENSe]:RHO:SBOundary[:BTS]?

Channel Detection Query

Function

This command queries the Channel Detection.

```
[:SENSe]:RHO:SBOundary[:BTS]?
```

Parameter

<mode>		Channel Detection
	AUTO	TestModel is not specified.
	TM1D16	Signals of TestModel1, 16DCH are measured.
	TM1D32	Signals of TestModel1, 32DCH are measured.
	TM1D64	Signals of TestModel1, 64DCH are measured.
	TM2	Signals of TestModel2 are measured.
	TM3D16	Signals of TestModel3, 16DCH are measured.
	TM3D32	Signals of TestModel3, 32DCH are measured.
	TM4	Signals of TestModel4, without P-CPICH are measured.
	TM4CP	Signals of TestModel4, with P-CPICH are measured.
	TM5H2	Signals of TestModel5, 2HS-PDSCH+6DPCH are measured.
	TM5H4	Signals of TestModel5, 4HS-PDSCH+14DPCH are measured.
	TM5H8	Signals of TestModel5, 8HS-PDSCH+30DPCH are measured.
	TM6	Signals of TestModel6 are measured.
	UDEF	Conducts analysis with the channel configuration specified in the User Defined file.
	UDEF2	Conducts analysis with the channel configuration specified in the remote-controlled User Defined file.

Example of Use

To query the Channel Detection.

```
RHO:SBO?
> TM6
```

[:SENSe]:EVM:CDETection:UDEFined:FSELect

User Defined Select File

Function

This command selects the file that contains the channel configuration to be used when User Defined is selected for Channel Detection.

Command

```
[:SENSe]:EVM:CDETection:UDEFined:FSELect <filename>
```

Parameter

`<filename>`	Channel configuration file name Specify with any character string enclosed by double quotes (“ ”) or single quotes (‘ ’)

Details

The channel configuration file must be stored in the following directory:
D:\Anritsu Corporation\Signal Analyzer\User Data\Channel Configuration\W-CDMA Downlink

Example of Use

To load the channel configuration file

```
EVM:CDET:UDEF:FSEL “Sample”
```

Channel configuration list file format

The table below shows the example of channel configuration list file.

Table 2.3.8-1 Channel Configuration List File Example

```
<?xml version="1.0" encoding="utf-8"?>
<!-- AutoDetection UserDefine XML Parameter-->
<WCDMA_DL_Channel_Configuration FileFormatVersion="0.1">
        <Description Text="Default"/>
        <!-- Measurement Settings -->
        <MeasurementSettings>
                <MeasSettings CodeType="UserDefined" />
                <MeasSettings SyncSf="256" />
                <MeasSettings SyncCh="0" />
                <MeasSettings PichInfoCH="16" />
        </MeasurementSettings>
        <ChannelConfiguration>
                <!-- Channel Table -->
                <!-- Modulation="QPSK"or"16QAM"or"64QAM" -->
                <Channel SF="256" CH="0"    Modulation="QPSK" />
                <Channel SF="256" CH="1"    Modulation="QPSK" />
                <Channel SF="256" CH="16"   Modulation="QPSK" />
                <Channel SF="256" CH="3"    Modulation="QPSK" />
                <Channel SF="128" CH="2"    Modulation="QPSK"/>
                <Channel SF="128" CH="11"   Modulation="QPSK"/>
                <Channel SF="128" CH="17"   Modulation="QPSK"/>
                <Channel SF="128" CH="23"   Modulation="QPSK"/>
                <Channel SF="128" CH="31"   Modulation="QPSK"/>
                <Channel SF="128" CH="38"   Modulation="QPSK"/>
                <Channel SF="128" CH="47"   Modulation="QPSK"/>
                <Channel SF="128" CH="55"   Modulation="QPSK"/>
                <Channel SF="128" CH="62"   Modulation="QPSK"/>
        </ChannelConfiguration>
</WCDMA_DL_Channel_Configuration>
```

The parameters are specified in the portion enclosed by the “MeasurementSettings” and “ChannelConfiguration” element.Refer to Table 2.3.8-2, and enter the value described in “Value Setting” column for the corresponding “Name Setting”. <“Name” = “Value”>

The bold portion in Table 2.3.8-1 is the actual example. The rest of the table must be specified as is.

Because settings are used in order, be careful of the order when specifying parameters that are dependent on each other. If values that

are outside the valid range or unusable values are entered, the settings are ignored.

Table 2.3.8-2 Channel Configuration List File Example

Parameter	Name Setting	Value Setting
Frame Sync Code Type	"MeasSettings CodeType"	"UserDefined":Off "P-CPICH":On
Frame Sync Spreading Factor	"MeasSettings SyncSf"	"4": Detects sync with SF=4 channel "8": Detects sync with SF=8 channel "16": Detects sync with SF=16 channel "32": Detects sync with SF=32 channel "64": Detects sync with SF=64 channel "128": Detects sync with SF=128 channel "256": Detects sync with SF=256 channel "512": Detects sync with SF=512 channel
Frame Sync Code Number	"MeasSettings SyncCh"	"0" to ("Frame Sync Spreading Factor set value − 1")
PICH CH Number	"MeasSettings PichInfoCH"	"0" to "255"
Each Spreading Factor, Code, Modulation Method of channel that comprises signal	"Channel SF"	Spreading factor of channel that comprises signal "4": SF=4 "8": SF=8 "16": SF=16 "32": SF=32 "64": SF=64 "128": SF=128 "256": SF=256 "512": SF=512
	"CH"	Code of channel that comprises signal "0" to ("Channel SF set value − 1")
	"Modulation"	Modulation method of channel that comprises signal "QPSK": Modulation Method=QPSK "16QAM": Modulation Method=16QAM "64QAM": Modulation Method=64QAM

[:SENSe]:EVM:CDETection:UDEFined:FSELect?

User Defined Select File Query

Function

This command queries the file that contains the channel configuration to be used when User Defined is selected for Channel Detection.

Query

```
[:SENSe]:EVM:CDETection:UDEFined:FSELect?
```

Response

```
<filename>
```

Parameter

<fielname>	Channel configuration file name

Example of Use

To query the file that contains the channel configuration to be used when User Defined is selected for Channel Detection.

```
EVM:CDET:UDEF:FSEL?
> Sample
```

[:SENSe]:EVM:CDETection:UDEFined2:LIST[:BTS] <SF1>,<CH1>,<Modulation Scheme1>,[<SF2>,<CH2>,<Modulation Scheme2>],,,,,,[<SF256>,<CH256>,<Modulation Scheme256>]

User Defined2 For Remote

Function

This command defines, via remote control, the file that contains the channel configuration to be used when User Defined2 is selected for Channel Detection.

Command

```
[:SENSe]:EVM:CDETection:UDEFined2:LIST[:BTS]
<SF1>,<CH1>,<Modulation Scheme1>,[<SF2>,<CH2>,<Modulation
Scheme2>],,,,,,[<SF256>,<CH256>,<Modulation Scheme256>]
```

Parameter

`<SFn>`	Spread factor of channel n
Range	4, 8, 16, 32, 64, 128, 256, 512
Suffix code	None
`<CHn>`	Code of channel n
Range	0 to (Spread factor of channel n – 1)
Suffix code	None
`<Modulation Scheme>`	Modulation scheme of channel n
`QPSK`	Analyzes channel n in the QPSK modulation mode
`16Qam`	Analyzes channel n in the 16QAM modulation mode
`64Qam`	Analyzes channel n in the 64QAM modulation mode

Details

User Defined2 option is not available unless channel configuration is specified using this command.

Example of Use

To specify channel configuration via remote control

```
EVM:CDET:UDEF2:LIST 256,0,QPSK
```

[:SENSe]:EVM:CDETection:UDEFined2:LIST[:BTS]?

User Defined2 For Remote Query

Function

This command queries the file that contains the channel configuration to be used when User Defined2 is selected for Channel Detection.

Query

```
[:SENSe]:EVM:CDETection:UDEFined2:LIST[:BTS]?
```

Response

```
<SF1>,<CH1>,<Modulation Scheme1>,…,
<SFn>,<CHn>,<Modulation Scheme>
```

Parameter

<SFn>	Spread factor of channel n
Range	4, 8, 16, 32, 64, 128, 256, 512
<CHn>	Code of channel n
Range	0 to (Spread factor of channel n – 1)
<Modulation Scheme>	Modulation scheme of channel n
QPSK	Analyzes channel n in the QPSK modulation mode
16Q	Analyzes channel n in the 16QAM modulation mode
64Q	Analyzes channel n in the 64QAM modulation mode

Example of Use

To query the file that contains the channel configuration to be used when User Defined2 is selected for Channel Detection.

```
EVM:CDET:UDEF2:LIST?
> 256,0,QPSK
```

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

Move Channel Configuration File (HDD to Device)

Function

This command moves a channel configuration file saved in the internal hard disk to the specified device.

Command

```
:MMEMory:MOVE:CCONfiguration
<filename>,<apl_name>,<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:
`\ / : * ? " < > |`

`<apl_name>` Target application name
`WCDMADL` W-CDMA/HSPA Downlink

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

Details

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

This command is the Config function device message. Make sure to turn on the Config function.

Example of Use

To move the "Default" channel configuration file to drive E

```
MMEM:MOVE:CCON "Default",WCDMADL,e
```

:MMEMory:COPY:CCONfiguration <filename>,<apl_name>,<device>

Copy Channel Configuration File (Device to HDD)

Function

This command copies a channel configuration file from the specified storage device to the internal hard disk.

Command

```
:MMEMory:COPY:CCONfiguration
<filename>,<apl_name>,<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: \ / : * ? " ″ ` ′ < > |
<apl_name>	Target application name
WCDMADL	W-CDMA/HSPA Downlink
<device>	Drive name A,B,E,F,...

Details

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

This command is the Config function device message. Make sure to turn on the Config function.

Example of Use

To copy the "Default" channel configuration file in drive E to the internal hard disk

```
MMEM:COPY:CCON "Default",WCDMADL,e
```

:MMEMory:DELete:CCONfiguration <filename>,<apl_name>,<device>

Delete Channel Configuration File

Function

This command deletes a channel configuration file from the specified storage device.

Command

```
:MMEMory:DELete:CCONfiguration
<filename>,<apl_name>,<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: `\ / : * ? " ″ ` ′ < > |`
`<apl_name>`	Target application name
`WCDMADL`	W-CDMA/HSPA Downlink
`<device>`	Drive name `A,B,E,F,...`

Details

This command is the Config function device message. Make sure to turn on the Config function.

Example of Use

To delete the channel configuration file “Default” saved in drive E

```
MMEM:DEL:CCON "Default",WCDMADL,e
```

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

Protect Channel Configuration File

Function

This command protects a channel configuration file saved in the specified drive. Protected files cannot be deleted.

Command

```
:MMEMory:PROTection:CCONfiguration[:STATe]
<filename>,<switch>,<apl_name>,<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: `\ / : * ? " ″ ` ′ < > |`
`<switch>`	Protection ON/OFF
`ON|1`	Protects the file.
`OFF|0`	Does not protect the file.
`<apl_name>`	Target application name
`WCDMADL`	W-CDMA/HSPA Downlink
`<device>`	Drive name `A,B,D,E,F,...`

Details

This command is the Config function device message. Make sure to turn on the Config function.

Example of Use

To protect the channel configuration file “Default” saved in drive E

```
MMEM:PROT:CCON "Default",ON,WCDMADL,e
```

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

Protect Channel Configuration File Query

Function

This command queries the protection status of a channel configuration file saved in the specified drive.

Query

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

Response

```
<switch>
```

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: \ / : * ? " ″ ` ′ < > |
`<apl_name>`	Target application name
`WCDMADL`	W-CDMA/HSPA Downlink
`<device>`	Drive name A,B,D,E,F,...
`<switch>`	Protection ON/OFF
`1`	Protects the file.
`0`	Does not protect the file.

Details

This command is the Config function device message. Make sure to turn on the Config function.

Example of Use

To query the protection status of the channel configuration file “Default” saved in drive E

```
MMEM:PROT:CCON? "Default",WCDMADL,e
> 1
```

MMEMory:CATalog:CCONfiguration? <apl_name>,<device>

Channel Configuration File List Query

Function

This command queries a list of channel configuration files saved in the specified device.

Query

```
MMEMory:CATalog:CCONfiguration? <apl_name>,<device>
```

Response

```
<number>,<filename_1>,<filename_2>…
```

Parameter

<device>	Drive name A,B,D,E,F,...
<apl_name>	Target application name
WCDMADL	W-CDMA/HSPA Downlink
<number>	Number of files
Range	0 to 1000
<filename>	File name When files more than 1000 exist, the command sorts them by file name and returns the top 1000 files.

Details

This command is the Config function device message. Make sure to turn on the Config function.

Example of Use

To query the list of channel configuration files saved in drive E

```
MMEM:CAT:CCON? WCDMADL,e
>3,Param_00,Param_01,Param_02
```

2.3.9 PICH CH Number

[:SENSe]:EVM:PICH:CCODe <integer>

PICH CH Number

Function

This command sets the PICH Channelization Code Number.

This command can be set when Channel Detection is set to Auto.

Command

```
[:SENSe]:EVM:PICH:CCODe <integer>
```

Parameter

<integer>		PICH CH Number
	Range	0 to 255
	Resolution	1
	Suffix codes	None
	Default value	16

Example of Use

To set the PICH Channelization Code Number to 0.

```
EVM:PICH:CCOD 0
```

[:SENSe]:EVM:PICH: CCODe?

PICH CH Number Query

Function

This command queries the PICH Channelization Code Number.

Command

```
[:SENSe]:EVM:PICH:CCODe?
```

Parameter

<integer>		PICH CH Number
	Range	0 to 255
	Resolution	1

Example of Use

To query the PICH Channelization Code Number.

```
EVM:PICH:CCOD?
> 0
```

2.3.10 SCH Interference of Relative CDE

[:SENSe]:EVM:SINTerference INCLude|EXCLude

SCH Interference of Relative CDE

Function

This command sets whether to include or exclude the Relative CDE of the beginning 256 chips of each slot for analysis.

Command

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

Parameter

<mode>		SCH Interference of Relative CDE
	INCLude	Measures Relative CDE including the beginning 256 chips of each slot.
	EXCLude	Measures Relative CDE excluding the beginning 256 chips of each slot. (Default).

Example of Use

To set SCH Interference of Relative CDE to Include.

```
EVM:SINT INCL
```

[:SENSe]:EVM:SINTerference?

SCH Interference of Relative CDE Query

Function

This command queries the SCH Interference of Relative CDE setting.

Query

```
[:SENSe]:EVM:SINTerference?
```

Response

```
<mode>
```

Parameter

<mode>		SCH Interference of Relative CDE
	INCL	Measures Relative CDE including the beginning 256 chips of each slot
	EXCL	Measures Relative CDE excluding the beginning 256 chips of each slot.

Example of Use

To query the SCH Interference of Relative CDE setting.

```
EVM:SINT?
>INCL
```

2.3.11 Peak Relative CDE Detection Mode

[:SENSe]:EVM:PRDM SLOT|MINT

Peak Relative CDE Detection Mode

Function

This command sets a segment for Calculating Peak Relative CDE

Command

```
[:SENSe]:EVM:PRDM SLOT|MINT
```

Parameter

<mode>	Peak Relative CDE Detection Mode
SLOT	slot (Default)
MINT	Measurement Interval

Example of Use

To set Peak Relative CDE Detection Mode to Measurement Interval.

```
EVM:PRDM MINT
```

[:SENSe]:EVM:PRDM?

Peak Relative CDE Detection Mode Query

Function

This command queries a segment for Calculating Peak Relative CDE.

Query

```
[:SENSe]:EVM:PRDM?
```

Response

```
<mode>
```

Parameter

<mode>	Peak Relative CDE Detection Mode
SLOT	slot
MINT	Measurement Interval

Example of Use

To query the settings of Peak Relative CDE Detection Mode.

```
EVM:PRDM?
> MINT
```

2.4 Utility Functions

Table 2.4-1 lists device messages for utility functions to be measured.

Table 2.4-1 Utility Functions

Function	Device Message
Erase Warm Up Message	:DISPlay:ANNotation:WUP:ERASe
Display Title	:DISPlay:ANNotation:TITLe[:STATe] ON|OFF|1|0
	:DISPlay:ANNotation:TITLe[:STATe]?
Title Entry	:DISPlay:ANNotation:TITLe:DATA <string>
	:DISPlay:ANNotation:TITLe:DATA?

2.4.1 Erase Warm Up Message

:DISPlay:ANNotation:WUP:ERASe

Erase Warm Up Message

Function

This command hides the warm-up messages that are displayed right after activation.

Command

```
:DISPlay:ANNotation:WUP:ERASe
```

Example of Use

To delete the warm-up message.

```
DISP:ANN:WUP:ERAS
```

2.4.2 Display Title

:DISPlay:ANNotation:TITLe[:STATe] OFF|ON|0|1

Display Title

Function

This command sets the title display On/Off.

Command

```
:DISPlay:ANNotation:TITLe[:STATe] <switch>
```

Parameter

<switch>	Title display On/Off
OFF|0	Off
ON|1	On (Default value)

Example of Use

To display the title.

```
DISP:ANN:TITL ON
```

:DISPlay:ANNotation:TITLe[:STATe]?

Display Title Query

Function

This command queries the title display On/Off.

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.

```
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.

```
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>	Character string within 32 characters enclosed by double quotes (“ ”) or single quotes (‘ ’)

Example of Use

To query the title character string.

```
DISP:ANN:TITL:DATA?
> TEST
```

2.5 Common Measurement Function

Table 2.5-1 lists device messages for performing operations common to all the measurement functions.

Table 2.5-1 Common Measurement Function

Function	Device Message
Continuous Measurement	:INITiate:CONTinuous OFF|ON|0|1
	:INITiate:CONTinuous?
	:INITiate:MODE:CONTinuous
Single Measurement	:INITiate:MODE:SINGle
Initiate	:INITiate[:IMMediate]
Configure	:CONFigure?
Trigger Switch	:TRIGger[:SEQuence][:STATe] OFF|ON|0|1
	:TRIGger[:SEQuence][:STATe]?
Trigger Source	:TRIGger[:SEQuence]:SOURce EXTernal[1]|IMMediate|SG
	:TRIGger[:SEQuence]:SOURce?
	:TRIGger:RHO[:SEQuence]:SOURce EXTernal[1]|IMMediate|SG
	:TRIGger:RHO[:SEQuence]:SOURce?
	:TRIGger:CDPower[:SEQuence]:SOURce EXTernal[1]|IMMediate|SG
	:TRIGger:CDPower[:SEQuence]:SOURce?
Trigger Slope	:TRIGger[:SEQuence]:SLOPe POSitive|NEGative
	:TRIGger[:SEQuence]:SLOPe?
	:TRIGger[:SEQuence]:EXTernal[1]:SLOPe POSitive|NEGative
	:TRIGger[:SEQuence]:EXTernal[1]:SLOPe?
Trigger Delay	:TRIGger[:SEQuence]:DELay <time>
	:TRIGger[:SEQuence]:DELay?
	:TRIGger[:SEQuence]:EXTernal[1]:DELay <time>
	:TRIGger[:SEQuence]:EXTernal[1]:DELay?

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>	Measure mode
0|OFF	Single measurement mode
1|ON	Continuous measurement mode (Default value)

Details

Continuous measurement starts when On is set, while Single measurement mode is set and no measurement starts when Off is set.

Example of Use

To execute continuous measurement.

```
INIT:CONT ON
```

:INITiate:CONTinuous?

Continuous Measurement Query

Function

This command queries the measurement mode.

Query

```
:INITiate:CONTinuous?
```

Response

```
<switch>
```

Parameter

<switch>	Capture mode
0	Single measurement mode
1	Continuous measurement mode

Example of Use

To query the measurement mode.

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

:INITiate:MODE:CONTinuous

Continuous Measurement

Function

This command starts continuous measurement.

Command

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

Example of Use

To start 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 single measurement.

```
INIT:MODE:SING
```

:INITiate[:IMMediate]

Initiate

Function

This command starts measurement in the current measurement mode.

Command

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

Example of Use

To start measurement.

```
INIT
```

:CONFigure?

Configure Query

Function

This command queries the current measurement function.

Query

```
:CONFigure?
```

Response

```
<mode>
```

Parameter

<mode>	Measurement function
EVM	Modulation Measurement
CDP	Code Domain Measurement
CVT	Code vs Time Measurement
ACP	ACP Measurement
CHP	Channel Power Measurement
OBW	OBW Measurement
SEM	SEM Measurement

Example of Use

To query the measurement function.

```
CONF?
> EVM
```

2.5.2 Trigger Switch

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

Trigger Switch

Function

This command enables/disables the trigger wait.

Command

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

Parameter

<switch>	Trigger wait On/Off
OFF|0	Off (Default value)
ON|1	On

Example of Use

To enable the trigger wait.

```
TRIG ON
```

:TRIGger[:SEQuence][:STATe]?

Trigger Switch Query

Function

This command queries On/Off of the trigger wait.

Query

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

Response

```
<switch>
```

Parameter

<switch>	Trigger wait On/Off
0	Off
1	On

Example of Use

To query the trigger wait setting.

```
TRIG?
> 0
```

2.5.3 Trigger Source

:TRIGger[:SEQuence]:SOURce EXTernal[1]|IMMediate|SG

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)
IMMediate	Free run
SG	SG Marker

Details

SG Marker can be selected only when Vector Signal Generator option is installed.

Example of Use

To set the trigger signal source to external input.

```
TRIG:SOUR EXT
```

Related Command

This command has the same function as the following commands.

```
:TRIGger:RHO[:SEQuence]:SOURce EXTernal[1]|IMMediate|SG
:TRIGger:CDPower[:SEQuence]:SOURce
EXTernal[1]|IMMediate|SG
```

: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)
IMM	Free run
SG	SG Marker

Details

SG marker can be returned only when Vector Signal Generator option is installed.

Example of Use

To query the trigger signal source.

```
TRIG:SOUR?
> EXT
```

Related Command

This command has the same function as the following commands.

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

:TRIGger:RHO[:SEQuence]:SOURce EXTernal[1]|IMMediate|SG

Trigger Source

Function

This command selects the trigger signal source.

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

Related Command

This command has the same function as the following commands.

`:TRIGger[:SEQuence]:SOURce EXTernal[1]|IMMediate|SG`

`:TRIGger:CDPower[:SEQuence]:SOURce EXTernal[1]|IMMediate|SG`

:TRIGger:RHO[:SEQuence]:SOURce?

Trigger Source Query

Function

This command queries the trigger signal source.

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

Related Command

This command has the same function as the following commands.

`:TRIGger[:SEQuence]:SOURce?`

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

:TRIGger:CDPower[:SEQuence]:SOURce EXTernal[1]|IMMediate|SG

Trigger Source

Function

This command selects the trigger signal source.

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

Related Command

This command has the same function as the following commands.

`:TRIGger[:SEQuence]:SOURce EXTernal[1]|IMMediate|SG`

`:TRIGger:RHO[:SEQuence]:SOURce EXTernal[1]|IMMediate|SG`

:TRIGger:CDPower[:SEQuence]:SOURce?

Trigger Source Query

Function

This command queries the trigger signal source.

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

Related Command

This command has the same function as the following commands.

`:TRIGger[:SEQuence]:SOURce?`

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

2.5.4 Trigger Slope

:TRIGger[:SEQuence]:SLOPe POSitive|NEGative

Trigger Slope

Function

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

Command

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

Parameter

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

Example of Use

To detect a trigger at the rising edge.

```
TRIG:SLOP POS
```

Related Command

This command has the same function as the following command.

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

:TRIGger[:SEQuence]:SLOPe?

Trigger Slope Query

Function

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

Query

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

Response

```
<mode>
```

Parameter

<mode>		Trigger detection mode
	POS	Trigger is detected at the rising edge.
	NEG	Trigger is detected at the falling edge.

Example of Use

To query the trigger detection mode.

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

Related Command

This command has the same function as the following command.

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

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

Trigger Slope

Function

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

Refer to `:TRIGger[:SEQuence]:SLOPe`

Related Command

This command has the same function as the following command.
`:TRIGger[:SEQuence]:SLOPe POSitive|NEGative`

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

Trigger Slope Query

Function

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

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

Related Command

This command has the same function as the following command.
`:TRIGger[:SEQuence]:SLOPe?`

2.5.5 Trigger Delay

:TRIGger[:SEQuence]:DELay <time>

Trigger Delay

Function

This command sets the delay time from the trigger generation point to the frame starting position.

Command

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

Parameter

`<time>`		Delay time from trigger generation point to frame starting position
	Range	–2 to +2 s
	Resolution	20 nanoseconds
	Suffix codes	`NS,US,MS,S` Seconds are used when omitted.
	Default value	0 s

Example of Use

To set the trigger delay time to 20 ms.

```
TRIG:DEL 20MS
```

Related Command

This command has the same function as the following command.

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

:TRIGger[:SEQuence]:DELay?

Trigger Delay Query

Function

This command queries the delay time from the trigger generation point to the frame starting position.

Query

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

Response

```
<time>
```

Parameter

`<time>`		Delay time from trigger generation point to frame starting position
	Range	–2 to +2 s
	Resolution	20 nanoseconds Value is returned in s units.

Example of Use

To query the trigger delay time.

```
TRIG:DEL?
> 0.02
```

Related Command

This command has the same function as the following command.

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

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

Trigger Delay

Function

This command sets the delay time from the trigger generation point to the frame starting position.

Refer to :TRIGger[:SEQuence]:DELay

Related Command

This command has the same function as the following command.
:TRIGger[:SEQuence]:DELay <time>

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

Trigger Delay Query

Function

This command queries the delay time from the trigger generation point to the frame starting position.

Refer to :TRIGger[:SEQuence]:DELay?

Related Command

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

2.6 ACP/Channel Power/OBW/SEM measurement function

Table 2.6-1 lists device messages to fetch the ACP, Channel Power, OBW, and SEM measurement functions. The application to be used (Signal Analyzer or Spectrum Analyzer) must be activated before executing these device messages.

For details on the commands and queries used for control after these measurement functions are fetched, refer to the "MS2690/MS2691/MS2692A and MS2830A Signal Analyzer Operation Manual (Signal Analyzer Function Remote Control)" or "MS2690/MS2691/MS2692A and MS2830A Signal Analyzer Operation Manual (Spectrum Analyzer Function Remote Control)".

Table 2.6-1 Fetching ACP/Channel Power/OBW/SEM Measurement Functions

Function	Device Message
Configure - ACP	`:CONFigure[:FFT|SWEPt]:ACP`
Configure - Channel Power	`:CONFigure[:FFT|SWEPt]:CHPower`
Configure - OBW	`:CONFigure[:FFT|SWEPt]:OBWidth`
Configure - SEM	`:CONFigure[:SWEPt]:SEMask`
Using application for ACP	`[:SENSe]:ACPower:INSTrument[:SELect] FFT|SWEPt`
	`[:SENSe]:ACPower:INSTrument[:SELect]?`
Using application for Channel Power	`[:SENSe]:CHPower:INSTrument[:SELect] FFT|SWEPt`
	`[:SENSe]:CHPower:INSTrument[:SELect]?`
Using application for OBW	`[:SENSe]:OBWidth:INSTrument[:SELect] FFT|SWEPt`
	`[:SENSe]:OBWidth:INSTrument[:SELect]?`
Coupled Ref & ATT in Swept & FFT	`[:SENSe]:ASETting:CATT OFF|ON|0|1`

***Note*:**

With the exception of the Modulation, Code Domain, and Code vs Time measurements, `FETCh:<measure>`, `INITiate:<measure>`, `READ:<measure>`, and `MEASure:<measure>` cannot be used when this application is selected. These commands and queries can be used when Signal Analyzer or Spectrum Analyzer is selected after `CONFigure:<measure>` is executed.

:CONFigure[:FFT|SWEPt]:ACP

ACP

Function

This command selects the ACP measurement function.

When FFT or SWEPt is omitted, the measurement mode to be used can be set by [:SENSe]:ACPower:INSTrument[:SELect] FFT|SWEPt.

Command

```
:CONFigure[:FFT|SWEPt]:ACP
```

Details

No measurement is made.

For MS2830A: To perform FFT measurement using the Signal Analyzer function with this command, the analysis bandwidth option 31.25 MHz or greater is required in all cases.

Example of Use

To select the ACP measurement function of Spectrum Analyzer.

```
CONF:SWEP:ACP
```

:CONFigure[:FFT|SWEPt]:CHPower

Channel Power

Function

This command selects the Channel Power measurement function.

When `FFT` or `SWEPt` is omitted, the measurement mode to be used can be set by `[:SENSe]:CHPower:INSTrument[:SELect] FFT|SWEPt`.

Command

```
:CONFigure[:FFT|SWEPt]:CHPower
```

Details

No measurement is made.

For MS2830A: To perform FFT measurement using the Signal Analyzer function with this command, the analysis bandwidth option 31.25 MHz or greater is required in all cases.

Example of Use

To select the Channel Power measurement function of Spectrum Analyzer.

```
CONF:SWEP:CHP
```

:CONFigure[:FFT|SWEPt]:OBWidth

OBW

Function

This command selects the OBW measurement function.

When FFT or SWEPt is omitted, the measurement mode to be used can be set by [:SENSe]:OBWidth:INSTrument[:SELect] FFT|SWEPt.

Command

```
:CONFigure[:FFT|SWEPt]:OBWidth
```

Details

No measurement is made.

For MS2830A: To perform FFT measurement using the Signal Analyzer function with this command, the analysis bandwidth option 31.25 MHz or greater is required in all cases.

Example of Use

To select the OBW measurement function of Spectrum Analyzer.

```
CONF:SWEP:OBW
```

:CONFigure[:SWEPt]:SEMask

SEM

Function

This command selects the SEM measurement function.

Command

```
:CONFigure[:SWEPt]:SEMask
```

Details

No measurement is made.
The SEM measurement function is available only with Spectrum Analyzer.

Example of Use

To select the SEM measurement function of Spectrum Analyzer.

```
CONF:SEM
```

[:SENSe]:ACPower:INSTrument[:SELect] FFT|SWEPt

Measurement Method for ACP

Function

This command sets the measurement mode to be applied when `:CONFigure:ACP` is executed.

Command

```
[:SENSe]:ACPower:INSTrument[:SELect] <mode>
```

Parameter

`<mode>`	Measurement mode
`FFT`	Signal Analyzer function
`SWEPt`	Spectrum Analyzer function (Default value)

Details

FFT can be set with MS2830A, however, to execute with CONFigure command, the analysis bandwidth option 31.25 MHz or greater is required.

Example of Use

To use the Signal Analyzer function during ACP measurement.

```
ACP:INST SWEP
```

[:SENSe]:ACPower:INSTrument[:SELect]?

Measurement Method for ACP Query

Function

This command queries the measurement mode to be applied when `:CONFigure:ACP` is executed.

Query

```
[:SENSe]:ACPower:INSTrument[:SELect]?
```

Response

```
<mode>
```

Parameter

`<mode>`	Measurement mode
`FFT`	Signal Analyzer function
`SWEP`	Spectrum Analyzer function

Details

FFT can be set with MS2830A, however, to execute with CONFigure command, the analysis bandwidth option 31.25 MHz or greater is required.

Example of Use

To query the measurement mode used during ACP measurement.

```
ACP:INST?
> FFT
```

[:SENSe]:CHPower:INSTrument[:SELect] FFT|SWEPt

Measurement Method for Channel Power

Function

This command sets the measurement mode to be applied when `:CONFigure:CHPower` is executed.

Command

```
[:SENSe]:CHPower:INSTrument[:SELect] <mode>
```

Parameter

`<mode>`	Measurement mode
`FFT`	Signal Analyzer function
`SWEPt`	Spectrum Analyzer function (Default value)

Details

FFT can be set with MS2830A, however, to execute with CONFigure command, the analysis bandwidth option 31.25 MHz or greater is required.

Example of Use

To use the Signal Analyzer function during Channel Power measurement.

```
CHP:INST SWEP
```

[:SENSe]:CHPower:INSTrument[:SELect]?

Measurement Method for Channel Power Query

Function

This command queries the measurement mode to be applied when :CONFigure:CHPower is executed.

Query

```
[:SENSe]:CHPower:INSTrument[:SELect]?
```

Response

```
<mode>
```

Parameter

<mode>	Measurement mode
FFT	Signal Analyzer function
SWEP	Spectrum Analyzer function

Details

FFT can be set with MS2830A, however, to execute with CONFigure command, the analysis bandwidth option 31.25 MHz or greater is required.

Example of Use

To query the measurement mode used during Channel Power measurement.

```
CHP:INST?
> FFT
```

[:SENSe]:OBWidth:INSTrument[:SELect] FFT|SWEPt

Measurement Method for OBW

Function

This command sets the measurement mode to be applied when `:CONFigure:OBWidth` is executed.

Command

```
[:SENSe]:OBWidth:INSTrument[:SELect] <mode>
```

Parameter

`<mode>`	Measurement mode
`FFT`	Signal Analyzer function
`SWEPt`	Spectrum Analyzer function (Default value)

Details

FFT can be set with MS2830A, however, to execute with CONFigure command, the analysis bandwidth option 31.25 MHz or greater is required.

Example of Use

To use the Signal Analyzer function during OBW measurement.

```
OBW:INST SWEP
```

[:SENSe]:OBWidth:INSTrument[:SELect]?

Measurement Method for OBW Query

Function

This command queries the measurement mode to be applied when :CONFigure: OBWidth is executed.

Query

```
[:SENSe]:OBWidth:INSTrument[:SELect]?
```

Response

```
<mode>
```

Parameter

<mode>	Measurement mode
FFT	Signal Analyzer function
SWEP	Spectrum Analyzer function

Details

FFT can be set with MS2830A, however, to execute with CONFigure command, the analysis bandwidth option 31.25 MHz or greater is required.

Example of Use

To query the measurement mode used during OBW measurement.

```
OBW:INST?
> FFT
```

[:SENSe]:ASETting:CATT OFF|ON|0|1

Coupled Ref & ATT in Swept & FFT

Function

This command sets whether to inherit ATT setting when switching function among the followings:

ACP (Swept), ACP (FFT), Channel Power (Swept), Channel Power (FFT), OBW (FFT), OBW (Swept), Spectrum Emission Mask (Swept)

Command

```
[:SENSe]:ASETting:CATT <switch>
```

Parameter

<switch>

0|OFF	Does not inherit the setting (Default)
1|ON	Inherits the setting

Details

If switching function via other Measure functions or other applications, the ATT setting will not be inherited.

Example of Use

To inherit the ATT setting when switching among Measure function (Swept/FFT).

```
ASET:CATT ON
```

[:SENSe]:ASETting:CATT?

Coupled Ref & ATT in Swept & FFT Query

Function

This command queries the setting of whether to inherit ATT setting when switching function among the followings:

ACP (Swept), ACP (FFT), Channel Power (Swept), Channel Power (FFT), OBW (FFT), OBW (Swept), Spectrum Emission Mask (Swept)

Query

```
[:SENSe]:ASETting:CATT?
```

Response

```
<switch>
```

Parameter

<switch>

0	Does not inherit the setting
1	Inherits the setting

Details

If switching function via other Measure functions or other applications, the ATT setting will not be inherited.

Example of Use

To query the setting of whether to inherit the ATT setting when switching among Measure function (Swept/FFT).

```
ASET:CATT?
>1
```

2.7 Modulation Measurement Function

This section describes device messages for the Modulation measurement.

Table 2.7-1 lists device messages for executing the Modulation measurement and for querying the results.

Table 2.7-1 Modulation Measurement Mode

Function	Device Message
Configure	:CONFigure:EVM
	:CONFigure:RHO
Initiate	:INITiate:EVM
	:INITiate:RHO
Fetch	:FETCh:EVM[n]?
	:FETCh:RHO[n]?
Read/Measure	:READ:EVM[n]?
	:READ:RHO[n]?
	:MEASure:EVM[n]?
	:MEASure:RHO[n]?

Table 2.7-2 lists the responses to parameter n in Table 2.7-1.

Table 2.7-2 Responses to Modulation Measurement Results

n	Result Mode	Response
1 or omitted	A	Returns the measurement results with comma separated value in the following order: 1. RMS EVM [%] (Average value for Storage Count) 2. Peak EVM [%] (Maximum value for Storage Count) 3. Magnitude Error [%] (Average value for Storage Count) 4. Phase Error [degree] (Average value for Storage Count) 5. I/Q Origin Offset [dB] (Average value for Storage Count) 6. Frequency Error [Hz] (Average value for Storage Count) 7. Frequency Error [ppm] (Average value for Storage Count) 8. Peak CDE [dB] (Maximum value for Storage Count) 9. Code number at Peak CDE 10. –999.0 11. Time Offset [chips] (Average value for Storage Count) Note: When trigger Switch is Off: –999.0 12. P–CPICH Power[dB] (Average value for Storage Count) 13. Mean Power [dBm] (Average value for Storage Count) 14. Peak Active CDE [dB] (Maximum value for Storage Count) 15. Code number at Peak Active CDE 16. Spreading Factor at Peak Active CDE (Maximum value for Storage Count) 17. –999.0 18. Peak Relative CDE[dB] (Maximum value for Storage Count) 19. Code number at Peak Relative CDE
	B	Returns the measurement results with comma separated value in the following order: 1. EVM (RMS) [%] (Average value for Storage Count) 2. EVM (Peak) [%] (Maximum value for Storage Count) 3. Magnitude Error [%] (Average value for Storage Count) 4. Phase Error [degree] (Average value for Storage Count) 5. I/Q Origin Offset [dB] (Average value for Storage Count) 6. Frequency Error [Hz] (Average value for Storage Count) 7. –999.0 8. Peak CDE [dB] (Maximum value for Storage Count) 9. Code number at Peak CDE 10. –999.0 11. Time Offset [chips] (Average value for Storage Count) Note: When trigger Switch is Off: –999.0 12. P–CPICH Power[dB] (Average value for Storage Count) 13. Mean Power [dBm] (Average value for Storage Count)

Table 2.7-2 Responses to Modulation Measurement Results (Cont'd)

n	Result Mode	Response
2	A/B	Returns the EVM graph display data from the 0th to the 2559th chips in comma-separated value format. Unit: %
3	A/B	Returns the Magnitude Error graph display data from the 0th to the 2559th chips in comma-separated value format. Unit: %
4	A/B	Returns the Phase Error graph display data from the 0th to the 2559th chips in comma-separated value format. Unit: degree
5	A/B	Returns the Constellation display data from the 0th to the 2559th chips in comma-separated value formats, alternating IQs. No unit

Table 2.7-2 Responses to Modulation Measurement Results (Cont'd)

n	Result Mode	Response
14	A	Returns the average values for Storage Count in comma-separated value format, in the following order. 1. EVM(RMS) [%] 2. EVM(Peak) [%] 3. Magnitude Error [%] 4. Phase Error [degree] 5. I/Q Origin Offset [dB] 6. Frequency Error [Hz] 7. Frequency Error [ppm] 8. Peak CDE [dB] 9. Code number at Peak CDE 10. –999.0 11. Time Offset [chips] (when trigger Switch is Off: –999.0) 12. P–CPICH Power [dB] 13. Mean Power [dBm] 14. Peak Active CDE [dB] 15. Code number at Peak Active CDE 16. Spreading Factor at Peak Active CDE 17. –999.0 18. Peak Relative CDE [dB] 19. Code number at Peak Relative CDE
	B	Returns the measurement results with comma separated value in the following order: 1. EVM(RMS) [%] 2. EVM(Peak) [%] 3. Magnitude Error [%] 4. Phase Error [degree] 5. I/Q Origin Offset [dB] 6. Frequency Error [Hz] 7. –999.0 8. Peak CDE [dB] 9. Code number at Peak CDE 10. –999.0 11. Time Offset [chips] 12. P–CPICH Power [dB] 13. Mean Power [dBm]

Table 2.7-2 Responses to Modulation Measurement Results (Cont'd)

n	Result Mode	Response
15	A	Returns the maximum values for Storage Count in comma-separated value format, in the following order. 1. EVM(RMS) [%] 2. EVM(Peak) [%] 3. Magnitude Error [%] 4. Phase Error [degree] 5. I/Q Origin Offset [dB] 6. Frequency Error [Hz] 7. Frequency Error [ppm] 8. Peak CDE [dB] 9. Code number at Peak CDE 10. –999.0 11. Time Offset [chips] (when trigger Switch is Off: –999.0) 12. P–CPICH Power [dB] 13. Mean Power [dBm] 14. Peak Active CDE [dB] 15. Code number at Peak Active CDE 16. Spreading Factor at Peak Active CDE 17. –999.0 18. Peak Relative CDE [dB] 19. Code number at Peak Relative CDE
	B	Returns the measurement results with comma separated value in the following order: 1. EVM(RMS) [%] 2. EVM(Peak) [%] 3. Magnitude Error [%] 4. Phase Error [degree] 5. I/Q Origin Offset [dB] 6. Frequency Error [Hz] 7. –999.0 8. Peak CDE [dB] 9. Code number at Peak CDE 10. –999.0 11. Time Offset [chips] 12. P–CPICH Power [dB] 13. Mean Power [dBm]

Table 2.7-2 Responses to Modulation Measurement Results (Cont'd)

n	Result Mode	Response
16	A	Returns the Relative CDE measurement results on the Summary screen. The measurement results when Storage Mode is set to Off or the average values for Storage Count are returned for channels whose SF is 16, in order from CH0 to CH15. For channels whose modulation mode has never been detected as 64QAM, –999.0 is returned.
	B	–999.0
17	A	Returns the Relative CDE measurement results on the Summary screen. The maximum values for Storage Count are returned for channels whose SF is 16, in order from CH0 to CH15. For channels whose modulation mode has never been detected as 64QAM, –999.0 is returned.
	B	–999.0

Table 2.7-2 Responses to Modulation Measurement Results (Cont'd)

n	Result Mode	Response
18	A	Returns the modulation analysis measurement results on the Summary screen. Responses are returned with comma-separated value formats in the following order: 1. RMS EVM [%](Average value for Storage Count) 2. Peak EVM [%] (Maximum value for Storage Count) 3. Magnitude Error [%] (Average value for Storage Count) 4. Phase Error [degree] (Average value for Storage Count) 5. I/Q Origin Offset [dB] (Average value for Storage Count) 6. Frequency Error [Hz] (Average value for Storage Count) 7. Frequency Error [ppm] (Average value for Storage Count) 8. Peak CDE [dB] (Maximum value for Storage Count) 9. Code number at Peak CDE 10. −999.0 11. Time Offset [chips] (Average value for Storage Count) *Note:* When Trigger Switch is Off: −999.0 12. P–CPICH Power[dB] (Average value for Storage Count) 13. Mean Power [dBm] (Average value for Storage Count) 14. Peak Active CDE [dB] (Maximum value for Storage Count) 15. Code number at Peak Active CDE 16. Spreading Factor at Peak Active CDE (Maximum value for Storage Count) 17. Average Relative CDE [dB] (Average value for Storage Count)* 18. Peak Relative CDE[dB] (Maximum value for Storage Count) 19. Code number at Peak Relative CDE 20. –999.0 21. I/Q Imbalance[%] (Average value for Storage Count) 22.to 50. –999.0
	B	–999.0

*: Average Relative CDE is not displayed on the Summary screen.

Table 2.7-2 Responses to Modulation Measurement Results (Cont'd)

n	Result Mode	Response
19	A	Returns the modulation analysis measurement results on the Summary screen. Returns the average values for Storage Count in comma-separated value format, in the following order: 1. EVM (RMS)[%] 2. EVM (Peak)[%] 3. Magnitude Error [%] 4. Phase Error [degree] 5. I/Q Origin Offset [dB] 6. Frequency Error [Hz] 7. Frequency Error [ppm] 8. Peak CDE [dB] 9. Code number at Peak CDE 10. –999.0 11. Time Offset [chips] (When Trigger Switch is Off: –999.0) 12. P–CPICH Power[dB] 13. Mean Power [dBm] 14. Peak Active CDE [dB] 15. Code number at Peak Active CDE 16. Spreading Factor at Peak Active CDE 17. Average Relative CDE [dB]* 18. Peak Relative CDE[dB] 19. Code number at Peak Relative CDE 20. –999.0 21. I/Q Imbalance[%] 22.to 50. –999.0
	B	–999.0

*: Average Relative CDE is not displayed on the Summary screen.

Table 2.7-2 Responses to Modulation Measurement Results (Cont'd)

n	Result Mode	Response
20	A	Returns the modulation analysis measurement results on the Summary screen. Returns the maximum values for Storage Count in comma-separated value format, in the following order: 1. EVM (RMS)[%] 2. EVM (Peak)[%] 3. Magnitude Error [%] 4. Phase Error [degree] 5. I/Q Origin Offset [dB] 6. Frequency Error [Hz] 7. Frequency Error [ppm] 8. Peak CDE [dB] 9. Code number at Peak CDE 10. –999.0 11. Time Offset [chips] (When Trigger Switch is Off: –999.0) 12. P–CPICH Power[dB] 13. Mean Power [dBm] 14. Peak Active CDE [dB] 15. Code number at Peak Active CDE 16. Spreading Factor at Peak Active CDE 17. Average Relative CDE[dB] * 18. Peak Relative CDE[dB] 19. Code number at Peak Relative CDE 20. –999.0 21. I/Q Imbalance[%] 22. to 50. –999.0
	B	–999.0

*: Average Relative CDE is not displayed on the Summary screen.

Table 2.7-2 Responses to Modulation Measurement Results (Cont'd)

n	Result Mode	Response
21	A	Returns the EVM (RMS) measurement results for each slot. Returns the measurement results when Storage Mode is Off or the average value for Count per slot in order from slot0 to slot14. Returns –999.0 for the result of the slot other than the measurement target.
	B	–999.0
22	A	Returns the EVM (RMS) measurement results for each slot. Returns the maximum value for Storage Count per slot, in order from slot0 to slot14. Returns –999.0 for the result of the slot other than the measurement target.
	B	–999.0
23	A	Returns the Frequency Error (%) measurement results for each slot. Returns the measurement results when Storage Mode is Off or the average value for Storage Count per slot in order from slot0 to slot14. Returns –999.0 for the result of the slot other than the measurement target.
	B	–999.0
24	A	Returns the Frequency Error (%) measurement results for each slot. Returns the maximum value for Storage Count per slot, in order from slot0 to slot14. Returns –999.0 for the result of the slot other than the measurement target.
	B	–999.0
25	A	Returns the Frequency Error (ppm)measurement results for each slot. Returns the measurement results when Storage Mode is Off or the average value for Storage Count per slot in order from slot0 to slot14. Returns –999.0 for the result of the slot other than the measurement target.
	B	–999.0
26	A	Returns the Frequency Error (ppm)measurement results for each slot. Returns the maximum value for Storage Count per slot, in order from slot0 to slot14. Returns –999.0 for the result of the slot other than the measurement target.
	B	–999.0

Table 2.7-2 Responses to Modulation Measurement Results (Cont'd)

n	Result Mode	Response
27	A	Returns the PeakCDE measurement results for each slot. Returns the measurement results when Storage Mode is Off or the average value for Storage Count per slot in order from slot0 to slot14. Returns −999.0 for the result of the slot other than the measurement target.
	B	–999.0
28	A	Returns the PeakCDE measurement results for each slot. Returns the maximum value for Storage Count per slot, in order from slot0 to slot14. Returns −999.0 for the result of the slot other than the measurement target.
	B	–999.0
29	A	Returns the Average Relative CDE measurement results for each slot. Average Relative CDE is the average value calculated by all active code Relative CDE as SF16 and 64QAM in the target slot. Returns the measurement results when Storage Mode is Off or the average value for Storage Count per slot in order from slot0 to slot14. Returns −999.0 for the result of the slot other than the measurement target.
	B	–999.0
30	A	Returns the Average Relative CDE measurement results for each slot. Average Relative CDE is the average value calculated by all active code Relative CDE as SF16 and 64QAM in the target slot. Returns the maximum value for Storage Count per slot, in order from slot0 to slot14. Returns −999.0 for the result of the slot other than the measurement target.
	B	–999.0
31	A	Returns the Average Relative CDE measurement results Average Relative CDE is the average value calculated by all active code Relative CDE as SF16 and 64QAM in all slot set at Measurement Interval. Returns the measurement result when Storage Mode is Off or the average value for Storage Count.
	B	–999.0
32	A	Returns the Average Relative CDE measurement results. Average Relative CDE is the average value calculated by all active code Relative CDE as SF16 and 64QAM in all slot set at Measurement Interval. Returns the maximum value for Storage Count.
	B	–999.0

Table 2.7-3 lists the device messages for setting parameters of Modulation measurement.

Table 2.7-3 Setting Parameters of Modulation Measurement

Parameter	Device Message
Starting Slot Number	:CALCulate:EVM:SWEep:STARt: <integer>
	:CALCulate:EVM:SWEep:STARt?
	:CALCulate:RHO:SWEep:OFFSet <integer>
	:CALCulate:RHO:SWEep:OFFSet?
Measurement Interval	:CALCulate:EVM:SWEep:INTerval <integer>
	:CALCulate:EVM:SWEep:INTerval?
Trace Mode	:DISPlay:EVM[:VIEW][:SELect] EVM|MAGNitude|PHASe
	:DISPlay:EVM[:VIEW][:SELect]?
Target Slot Number	:DISPlay:EVM[:VIEW]:SLOT <integer>
	:DISPlay:EVM[:VIEW]:SLOT?
Scale–EVM	:DISPlay:EVM[:VIEW]:WINDow2:TRACe:Y[:SCALe]:RLEVel 5|10|20|50
	:DISPlay:EVM[:VIEW]:WINDow2:TRACe:Y[:SCALe]:RLEVel?
Scale–Magnitude Error	:DISPlay:EVM[:VIEW]:WINDow3:TRACe:Y[:SCALe]:RLEVel 5|10|20|50
	:DISPlay:EVM[:VIEW]:WINDow3:TRACe:Y[:SCALe]:RLEVel?
Scale–Phase Error	:DISPlay:EVM[:VIEW]:WINDow4:TRACe:Y[:SCALe]:RLEVel 5|10|20|50
	:DISPlay:EVM[:VIEW]:WINDow4:TRACe:Y[:SCALe]:RLEVel?
Storage Mode	[:SENSe]:EVM:AVERage[:STATe] OFF|ON|AMAXimum|0|1|2
	[:SENSe]:EVM:AVERage[:STATe]?
	[:SENSe]:RHO:AVERage[:STATe] OFF|ON|AMAXimum|0|1|2
	[:SENSe]:RHO:AVERage[:STATe]?
Storage Count	[:SENSe]:EVM:AVERage:COUNt <integer>
	[:SENSe]:EVM:AVERage:COUNt?
	[:SENSe]:RHO:AVERage:COUNt <integer>
	[:SENSe]:RHO:AVERage:COUNt?
Summary Page	:DISPlay:EVM[:VIEW]:WINDow7:PAGE:NUMBer <integer>
	:DISPlay:EVM[:VIEW]:WINDow7:PAGE:NUMBer?

Table 2.7-4 lists device messages for setting the marker and querying the value at the marker position during Modulation measurement.

Table 2.7-4 Setting Marker for Modulation Measurement

Parameter	Device Message
Marker–On/Off	:CALCulate:EVM:MARKer[:STATe] OFF|ON|0|1
	:CALCulate:EVM:MARKer[:STATe]?
Active Trace	:CALCulate:EVM:MARKer:ACTive CONStellation|BOTTom
	:CALCulate:EVM:MARKer:ACTive?
Chip Number for Constellation/Bottom Graph	:CALCulate:EVM:MARKer:CHIP <integer>
	:CALCulate:EVM:MARKer:CHIP?
Marker X axis Value for Constellation	:CALCulate:EVM:MARKer:X?
Marker Y axis Value for Constellation/Bottom Graph	:CALCulate:EVM:MARKer:Y?

2.7.1 Measure

:CONFigure:EVM

Modulation

Function

This command selects the Modulation measurement function.

Command

```
:CONFigure:EVM
```

Details

No measurement is made.

Example of Use

To select the Modulation measurement function.

```
CONF:EVM
```

Related Command

This command has the same function as the following command.

```
:CONFigure:RHO
```

:CONFigure:RHO

Modulation

Function

This command selects the Modulation measurement function.

Command

```
:CONFigure:RHO
```

Details

No measurement is made.

Example of Use

To select the Modulation measurement function.

```
CONF:RHO
```

Related Command

This command has the same function as the following command.

```
:CONFigure:EVM
```

:INITiate:EVM

Modulation

Function

This command executes the Modulation measurement.

Command

```
:INITiate:EVM
```

Example of Use

To execute the Modulation measurement.

```
INIT:EVM
```

Related Command

This command has the same function as the following command.

```
:INITiate:RHO
```

:INITiate:RHO

Modulation

Function

This command executes the Modulation measurement.

Command

```
:INITiate:RHO
```

Example of Use

To execute Modulation measurement.

```
INIT:RHO
```

Related Command

This command has the same function as the following command.

```
:INITiate:EVM
```

:FETCh:EVM[n]?

Modulation Query

Function

This command queries the Modulation measurement results.

Query

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

Response

Refer to Table 2.7-2.

Example of Use

To query the Modulation measurement results.

```
FETC:EVM?
```

Related Command

This command has the same function as the following command.

```
:FETCh:RHO[n]?
```

:FETCh:RHO[n]?

Modulation Query

Function

This command queries the Modulation measurement results.

Query

```
:FETCh:RHO[n]?
```

Response

Refer to Table 2.7-2.

Example of Use

To query the Modulation measurement results.

```
FETC:RHO?
```

Related Command

This command has the same function as the following command.

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

:READ:EVM[n]?

Modulation Query

Function

This command queries the results after executing single Modulation measurement with the current setting values.

Query

```
:READ:EVM[n]?
```

Response

Refer to Table 2.7-2.

Example of Use

To query the results of single Modulation measurement.

```
READ:EVM?
```

Related Command

This command has the same function as the following commands.

```
:MEASure:EVM[n]?
:READ:RHO[n]?
:MEASure:RHO[n]?
```

:READ:RHO[n]?

Modulation Query

Function

This command queries the results after executing single Modulation measurement with the current setting values.

Query

```
:READ:RHO[n]?
```

Response

Refer to Table 2.7-2.

Example of Use

To query the results of single Modulation measurement.

```
READ:RHO?
```

Related Command

This command has the same function as the following commands.

```
:READ:EVM[n]?
:MEASure:EVM[n]?
:MEASure:RHO[n]?
```

:MEASure:EVM[n]?

Modulation Query

Function

This command queries the results after executing single Modulation measurement with the current setting values.

Query

```
:MEAS:EVM[n]?
```

Response

Refer to Table 2.7-2.

Example of Use

To query the results of single Modulation measurement.

```
MEAS:EVM?
```

Related Command

This command has the same function as the following commands.

```
:READ:EVM[n]?
:READ:RHO[n]?
:MEASure:RHO[n]?
```

:MEASure:RHO[n]?

Modulation Query

Function

This command queries the results after executing single Modulation measurement with the current setting values.

Query

```
:MEAS:RHO[n]?
```

Response

Refer to Table 2.7-2.

Example of Use

To query the results of single Modulation measurement.

```
MEAS:RHO?
```

Related Command

This command has the same function as the following commands.

```
:READ:EVM[n]?
:MEASure:EVM[n]?
:READ:RHO[n]?
```

2.7.2 Starting Slot Number

:CALCulate:EVM:SWEep:STARt <integer>

Starting Slot Number

Function

This command sets the slot position for starting the Modulation measurement.

Command

```
:CALCulate:EVM:SWEep:STARt <integer>
```

Parameter

`<integer>`		Starting Slot Number
	Range	0 to 14
	Resolution	1
	Default value	1

Example of Use

To set the Starting Slot Number to 0.

```
CALC:EVM:SWE:STAR 0
```

Related Command

This command has the same function as the following command.

```
:CALCulate:RHO:SWEep:OFFSet <integer>
```

:CALCulate:EVM:SWEep:STARt?

Starting Slot Number Query

Function

This command queries the Starting Slot Number.

Query

```
:CALCulate:EVM:SWEep:STARt?
```

Response

```
<integer>
```

Parameter

`<integer>`		Starting Slot Number
	Range	0 to 14
	Resolution	1

Example of Use

To query the Starting Slot Number.

```
CALC:EVM:SWE:STAR?
> 0
```

Related Command

This command has the same function as the following command.

```
:CALCulate:RHO:SWEep:OFFSet?
```

:CALCulate:RHO:SWEep:OFFSet <integer>

Starting Slot Number

Function

This command sets the slot position for starting the Modulation measurement.

Refer to `:CALCulate:EVM:SWEep:STARt <integer>`

Related Command

This command has the same function as the following command.
`:CALCulate:EVM:SWEep:STARt <integer>`

:CALCulate:RHO:SWEep:OFFSet?

Starting Slot Number Query

Function

This command queries the Starting Slot Number.

Refer to `:CALCulate:EVM:SWEep:STARt?`

Related Command

This command has the same function as the following command.
`:CALCulate:EVM:SWEep:STARt?`

2.7.3 Measurement Interval

:CALCulate:EVM:SWEep:INTerval <integer>

Measurement Interval

Function

This command sets the consecutive measurement intervals of the Modulation measurement in slot units.

Command

```
:CALCulate:EVM:SWEep:INTerval <integer>
```

Parameter

<integer>		Measurement Interval
	Range	1 to 15 – Starting Slot Number
	Resolution	1
	Default value	1

Example of Use

To set the Measurement Interval to 15.

```
CALC:EVM:SWE:INT 15
```

:CALCulate:EVM:SWEep:INTerval?

Measurement Interval Query

Function

This command queries the Measurement Interval.

Query

```
:CALCulate:EVM:SWEep:INTerval?
```

Response

```
<integer>
```

Parameter

<integer>		Measurement Interval
	Range	1 to 15 – Starting Slot Number
	Resolution	1

Example of Use

To query the Measurement Interval.

```
CALC:EVM:SWE:INT?
> 15
```

2.7.4 Trace Mode

:DISPlay:EVM[:VIEW][:SELect] EVM|MAGNitude|PHASe|SUMMary

Trace Mode

Function

This command sets the type of the graph displayed in the bottom graph window when Modulation measurement is selected.

Command

```
:DISPlay:EVM[:VIEW][:SELect] <mode>
```

Parameter

<mode>	Trace Mode
EVM	EVM vs Chip (Default value)
MAGNitude	Mag. Error vs Chip
PHASe	Phase Error vs Chip
SUMMary	Summary

Example of Use

To set the Trace Mode to Phase Error vs Chip.

```
DISP:EVM PHAS
```

:DISPlay:EVM[:VIEW][:SELect]?

Trace Mode Query

Function

This command queries the type of the graph displayed in the bottom graph window when Modulation measurement is selected.

Query

```
:DISPlay:EVM[:VIEW][:SELect]?
```

Parameter

<mode>	Trace Mode
EVM	EVM vs Chip
MAGN	Mag. Error vs Chip
PHAS	Phase Error vs Chip
SUMM	Summary

Example of Use

To query the setting of Trace Mode.

```
DISP:EVM?
> PHAS
```

2.7.5 Target Slot Number

:DISPlay:EVM[:VIEW]:SLOT <integer>

Target Slot Number

Function

This command sets the slot number of the measured signal to be displayed on the graph.

Command

```
:DISPlay:EVM[:VIEW]:SLOT <integer>
```

Parameter

<integer>		Target Slot Number
	Range	Starting Slot Number to Starting Slot Number + Measurement Interval – 1
	Resolution	1
	Default value	0

Example of Use

To set the Target Slot Number to 1.

```
DISP:EVM:SLOT 1
```

:DISPlay:EVM[:VIEW]:SLOT?

Target Slot Number Query

Function

This command queries the slot number of the measured signal displayed on the graph.

Query

```
:DISPlay:EVM[:VIEW]:SLOT?
```

Response

```
<integer>
```

Parameter

`<integer>`		Target Slot Number
	Range	Starting Slot Number to Starting Slot Number + Measurement Interval – 1
	Resolution	1

Example of Use

To query the Target Slot Number.

```
DISP:EVM:SLOT?
> 1
```

2.7.6 Scale – EVM

:DISPlay:EVM[:VIEW]:WINDow2:TRACe:Y[:SCALe]:RLEVel 5|10|20|50

Scale – EVM

Function

This command sets the vertical scale of the EVM vs Chip graph. This command can be executed regardless of the selected Trace Mode type.

Command

```
:DISPlay:EVM[:VIEW]:WINDow2:TRACe:Y[:SCALe]:RLEVel <mode>
```

Parameter

<mode>	Scale range
5	0 to 5%
10	0 to 10% (Default value)
20	0 to 20%
50	0 to 50%

Example of Use

To set the vertical scale of the EVM vs Chip graph to 10%.

```
DISP:EVM:WIND2:TRAC:Y:RLEV 10
```

:DISPlay:EVM[:VIEW]:WINDow2:TRACe:Y[:SCALe]:RLEVel?

Scale – EVM Query

Function

This command queries the setting of the vertical scale of the EVM vs Chip graph. This query can be executed regardless of the selected Trace Mode type.

Query

```
:DISPlay:EVM[:VIEW]:WINDow2:TRACe:Y[:SCALe]:RLEVel?
```

Response

```
<mode>
```

Parameter

<mode>	Scale range
5	0 to 5%
10	0 to 10%
20	0 to 20%
50	0 to 50%

Example of Use

To query the setting of the vertical scale of the EVM vs Chip graph.

```
DISP:EVM:WIND2:TRAC:Y:RLEV?
> 10
```

2.7.7 Scale – Magnitude Error

:DISPlay:EVM[:VIEW]:WINDow3:TRACe:Y[:SCALe]:RLEVel 5|10|20|50

Scale – Magnitude Error

Function

This command sets the vertical scale of the Magnitude Error vs Chip graph. This command can be executed regardless of the selected Trace Mode type.

Command

```
:DISPlay:EVM[:VIEW]:WINDow3:TRACe:Y[:SCALe]:RLEVel <mode>
```

Parameter

<mode>	Scale range
5	–5 to 5% (Default value)
10	–10 to 10%
20	–20 to 20%
50	–50 to 50%

Example of Use

To set the vertical scale of the Magnitude Error vs Chip graph to 10%.

```
DISP:EVM:WIND3:TRAC:Y:RLEV 10
```

:DISPlay:EVM[:VIEW]:WINDow3:TRACe:Y[:SCALe]:RLEVel?

Scale – Magnitude Error Query

Function

This command queries the setting of the vertical scale of the Magnitude Error vs Chip graph. This query can be executed regardless of the selected Trace Mode type.

Query

```
:DISPlay:EVM[:VIEW]:WINDow3:TRACe:Y[:SCALe]:RLEVel?
```

Response

```
<mode>
```

Parameter

<mode>	Scale range
5	–5 to 5%
10	–10 to 10%
20	–20 to 20%
50	–50 to 50%

Example of Use

To query the setting of the vertical scale of the Magnitude Error vs Chip graph.

```
DISP:EVM:WIND3:TRAC:Y:RLEV?
> 10
```

2.7.8 Scale – Phase Error

:DISPlay:EVM[:VIEW]:WINDow4:TRACe:Y[:SCALe]:RLEVel 5|10|20|50

Scale – Phase Error

Function

This command sets the vertical scale of the Phase Error vs Chip graph. This command can be executed regardless of the selected Trace Mode type.

Command

```
:DISPlay:EVM[:VIEW]:WINDow4:TRACe:Y[:SCALe]:RLEVel <mode>
```

Parameter

<mode>	Scale range
5	–5 to 5 degree (Default value)
10	–10 to 10 degree
20	–20 to 20 degree
50	–50 to 50 degree

Example of Use

To set the vertical scale of the Phase Error vs Chip graph to 10 degree.

```
DISP:EVM:WIND4:TRAC:Y:RLEV 10
```

:DISPlay:EVM[:VIEW]:WINDow4:TRACe:Y[:SCALe]:RLEVel?

Scale – Phase Error Query

Function

This command queries the setting of the vertical scale of the Phase Error vs Chip graph. This query can be executed regardless of the selected Trace Mode type.

Query

```
:DISPlay:EVM[:VIEW]:WINDow4:TRACe:Y[:SCALe]:RLEVel?
```

Response

```
<mode>
```

Parameter

<mode>	Scale range
5	–5 to 5 degree
10	–10 to 10 degree
20	–20 to 20 degree
50	–50 to 50 degree

Example of Use

To query the setting of the vertical scale of the Phase Error vs Chip graph.

```
DISP:EVM:WIND4:TRAC:Y:RLEV?
> 10
```

2.7.9 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 value)
	ON|1	Average
	AMAXimum|2	Average & Max

Example of Use

To set the Storage Mode to Average.

```
EVM:AVER ON
```

Related Command

This command has the same function as the following command.

```
[:SENSe]:RHO:AVERage[:STATe] OFF|ON|AMAXimum|0|1|2
```

[:SENSe]:EVM:AVERage[:STATe]?

Storage Mode Query

Function

This command queries the setting of 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 Storage Mode.

```
EVM:AVER?
> 1
```

Related Command

This command has the same function as the following command.

```
[:SENSe]:RHO:AVERage[:STATe]?
```

[:SENSe]:RHO:AVERage[:STATe] OFF|ON|AMAXimum|0|1|2

Storage Mode

Function

This commands set the Storage Mode.

Refer to `[:SENSe]:EVM:AVERage[:STATe] OFF|ON|AMAXimum|0|1|2`

Related Command

This command has the same function as the following command.
`[:SENSe]:EVM:AVERage[:STATe] OFF|ON|AMAXimum|0|1|2`

[:SENSe]:RHO:AVERage[:STATe]?

Storage Mode Query

Function

This command queries the setting of Storage Mode.

Refer to `[:SENSe]:EVM:AVERage[:STATe]?`

Related Command

This command has the same function as the following command.
`[:SENSe]:EVM:AVERage[:STATe]?`

2.7.10 Storage Count

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

Storage Count

Function

This command sets the number of averaging times (Storage Count) for the Modulation measurement.

Command

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

Parameter

<integer>		Storage Count
	Range	2 to 9999
	Resolution	1
	Default value	2

Example of Use

To set the Storage Count to 10.

```
EVM:AVER:COUN 10
```

Related Command

This command has the same function as the following command.

```
[:SENSe]:RHO:AVERage:COUNt <integer>
```

[:SENSe]:EVM:AVERage:COUNt?

Storage Count Query

Function

This command queries the Storage Count of the Modulation measurement.

Query

```
[:SENSe]:EVM:AVERage:COUNt?
```

Response

```
<integer>
```

Parameter

`<integer>`		Storage Count
	Range	2 to 9999
	Resolution	1

Example of Use

To query the Storage Count.

```
EVM:AVER:COUN?
> 10
```

Related Command

This command has the same function as the following command.

```
[:SENSe]:RHO:AVERage:COUNt?
```

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

Storage Count

Function

This command sets the number of averaging times (Storage Count) for the Modulation measurement.

Refer to `[:SENSe]:EVM:AVERage:COUNt <integer>`

Related Command

This command has the same function as the following command.
`[:SENSe]:EVM:AVERage:COUNt <integer>`

[:SENSe]:RHO:AVERage:COUNt?

Storage Count Query

Function

This command queries the Storage Count of the Modulation measurement.

Refer to `[:SENSe]:EVM:AVERage:COUNt?`

Related Command

This command has the same function as the following command.
`[:SENSe]:EVM:AVERage:COUNt?`

2.7.11 Display Page

:DISPlay:EVM[:VIEW]:WINDow7:PAGE:NUMBer <integer>

Target Page Number

Function

This command sets the page number of the displayed Summary.

Command

```
:DISPlay:EVM[:VIEW]:WINDow7:PAGE:NUMBer <integer>
```

Parameter

<integer>	Page number
Range	1 to 2
Resolution	1
Suffix code	None
Default value	0

Example of Use

To set the page number of the displayed Summary to 1.

```
DISP:EVM:WIND7:PAGE:NUMB 1
```

:DISPlay:EVM[:VIEW]:WINDow7:PAGE:NUMBer?

Target Page Number Query

Function

This command queries the page number of the displayed Summary.

Query

```
:DISPlay:EVM[:VIEW]:WINDow7:PAGE:NUMBer?
```

Response

```
<integer>
```

Parameter

<integer>	Page number
Range	1 to 2
Resolution	1

Example of Use

To query the page number of the displayed Summary.

```
DISP:EVM:WIND7:PAGE:NUMB?
> 1
```

2.7.12 Marker – On/Off

:CALCulate:EVM:MARKer[:STATe] OFF|ON|0|1

Marker – On/Off

Function

This command sets the marker display On/Off when Modulation measurement is selected.

Command

```
:CALCulate:EVM:MARKer[:STATe] <switch>
```

Parameter

<switch>	Marker
0|OFF	Off
1|ON	On (Default value)

Example of Use

To display the marker.

```
CALC:EVM:MARK 1
```

:CALCulate:EVM:MARKer[:STATe]?

Marker – On/Off Query

Function

This command queries the marker display On/Off when Modulation measurement is selected.

Query

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

Response

```
<switch>
```

Parameter

<switch>	Marker
0	Off
1	On

Example of Use

To query the setting of Marker.

```
CALC:EVM:MARK?
> 1
```

2.7.13 Active Trace

:CALCulate:EVM:MARKer:ACTive CONStellation|BOTTom

Active Trace

Function

This command sets the graph (position) of the marker setting target.

Command

```
:CALCulate:EVM:MARKer:ACTive CONStellation|BOTTom
```

Parameter

<switch>		Marker setting target
	CONStellation	Upper Graph window
	BOTTom	Bottom Graph window (Default value)

Example of Use

To set the marker setting target to the upper graph window.

```
CALC:EVM:MARK:ACT CONS
```

:CALCulate:EVM:MARKer:ACTive?

Active Trace Query

Function

This command queries the setting of Active Trace.

Query

```
:CALCulate:EVM:MARKer:ACTive?
```

Response

```
<mode>
```

Parameter

<mode>		Active Trace
	CONS	Upper Graph window
	BOTT	Bottom Graph window

Example of Use

To query the setting of Active Trace.

```
CALC:EVM:MARK:ACT?
> CONS
```

2.7.14 Chip Number

:CALCulate:EVM:MARKer:CHIP <integer>

Chip Number

Function

This command sets in chip units the marker position on the graph displayed in the upper or bottom graph window. The setting target graph can be set by Active Trace.

Command

```
:CALCulate:EVM:MARKer:CHIP <integer>
```

Parameter

<integer>		Chip number
	Range	0 to 2559
	Resolution	1
	Default value	0

Example of Use

To set the marker position to 10.

```
CALC:EVM:MARK:CHIP 10
```

:CALCulate:EVM:MARKer:CHIP?

Chip Number Query

Function

This command queries in chip units the marker position on the graph displayed in the upper or bottom graph window. The querying target graph can be set by Active Trace.

Query

```
:CALCulate:EVM:MARKer:CHIP?
```

Response

```
<integer>
```

Parameter

<integer>		Chip number
	Range	0 to 2559
	Resolution	1

Example of Use

To query the setting of Marker Number.

```
CALC:EVM:MARK:CHIP?
> 10
```

2.7.15 Marker Value

:CALCulate:EVM:MARKer:X?

Marker X Axis Value – Query

Function

This command queries the X-coordinate at the marker position when Active Trace is Constellation.

Query

```
:CALCulate:EVM:MARKer:X?
```

Response

```
<real>
```

Parameter

`<real>`	X-coordinate at marker position in Constellation

Example of Use

To query the X-coordinate at the marker position in Constellation.

```
CALC:EVM:MARK:X?
> 0.1234
```

:CALCulate:EVM:MARKer:Y?

Marker Y Axis Value – Query

Function

This command queries the Y-coordinate at the marker position in the graph targeted for Active Trace setting.

Query

```
:CALCulate:EVM:MARKer:Y?
```

Response

```
<real>
```

Parameter

<real>	Y-coordinate at marker position in graph When Active Trace is Constellation: Constellation No unit When Active Trace is Bottom and Trace Mode is EVM vs Chip: EVM Unit: % When Active Trace is Bottom and Trace Mode is Mag.Error vs Chip: Magnitude Error Unit: % When Active Trace is Bottom and Trace Mode is Phase Error vs Chip: Phase Error Unit: degree

Example of Use

To query the Y-coordinate at the marker position.

```
CALC:EVM:MARK:Y?
> 0.12
```

2.8 Code Domain measurement function

This section describes device messages for the Code Domain measurement functions.

Table 2.8-1 lists device messages to execute the Code Domain measurement and to query the result.

Table 2.8-1 Code Domain Measurement Function

Function	Device Message
Configure	:CONFigure:CDPower
Initiate	:INITiate:CDPower
Fetch	:FETCh:CDPower[n]?
Read	:READ:CDPower[n]?
Measure	:MEASure:CDPower[n]?

Table 2.8-2 lists the responses to parameter n in Table 2.8-1.

Table 2.8-2 Responses to Code Domain Measurement Results

n	Result Mode	Response
1 or omitted	A	Returns the measurement results with comma separated value in the following order: 1. EVM(RMS) [%] 2. EVM(Peak) [%] 3. Magnitude Error [%] 4. Phase Error [%] 5. Code Power [dB] 6. Number of detected SF 7. Number of channelization code number for detected SF 8. Modulation type for detected SF `QPSK` QPSK `16Q` 16QAM `64Q` 64QAM `NONE` Inactive channel 9. Mean Power [dBm] 10. P–CPICH Power [dB] 11. P–SCH Power [dB] 12. S–SCH Power [dB] 13. Total Active Power [dB]
	B	Returns the measurement results with comma separated value in the following order: 1. EVM(RMS) [%] 2. EVM(Peak) [%] 3. Magnitude Error [%] 4. Phase Error [%] 5. Mean Power [dBm] 6. Code Power [dB] 7. to 10. –999.0 11. Total Active Power [dB] 12. P–CPICH Power [dB] 13. to 27. –999.0 28. P–SCH Power [dB] 29. S–SCH Power [dB] 30. to 44. –999.0

Table 2.8-2 Responses to Code Domain Measurement Results (Cont'd)

n	Result Mode	Response
2	A / B	Returns the Code Domain Power for each of the 512 codes in comma-separated value format. When the active channel is occupying multiple codes, each of the occupied codes returns the Code Domain Power of the active channel. Unit: dB 1. Code Domain Power of the 1st code 2. Code Domain Power of the 2nd code • • • 511. Code Domain Power of the 511th code 512. Code Domain Power of the 512th code
4	A / B	Returns the active or inactive state for each of the 512 codes in comma-separated value format. 1 is returned when the code is active and 0 when inactive. When the active channel is occupying multiple codes, each of the occupied codes is returned as active. 1. Active state of the 1st code 2. Active state of the 2nd code • • • 511. Active state of the 511th code 512. Active state of the 512th code
5	A / B	Returns the EVM vs Symbol graph display data for the selected code in comma-separated value format, for each symbol. Unit: %
6	A / B	Returns the Magnitude Error vs Symbol graph display data for the selected code in comma-separated value format, for each symbol. Unit: %
7	A / B	Returns the Phase Error vs Symbol graph display data for the selected code in comma-separated value format, for each symbol. Unit: %
8	A / B	Returns the Constellation vs Symbol graph display data for the selected code in comma-separated value format, alternating IQs for each symbol.
9	A / B	Returns the Code Power vs Symbol graph display data for the selected code in comma-separated value format, for each symbol. Unit: dB
13	A / B	Returns the Code Domain Error for each of the 512 codes in comma-separated value format. Unit: dB When the active channel is occupying multiple codes, each of the occupied codes returns the Code Domain Error of the active channel. 1. Code Domain Error of the 1st code 2. Code Domain Error of the 2nd code • • • 511. Code Domain Error of the 511th code 512. Code Domain Error of the 512th code

Table 2.8-2 Responses to Code Domain Measurement Results (Cont'd)

n	Result Mode	Response
21	A	Returns the Spread Factor for each of the 512 codes in comma-separated value format. When the active channel is occupying multiple codes, each of the occupied codes returns the Spread Factor of the active channel. 1. Spread Factor of the 1st code 2. Spread Factor of the 2nd code • • • 511. Spread Factor of the 511th code 512. Spread Factor of the 512th code
	B	Returns –999.0.
22	A	Returns the Channelization Code Number for each of the 512 codes in comma-separated value format. When the active channel is occupying multiple codes, each of the occupied codes returns the Channelization Code Number of the active channel. 1. Channelization Code Number of the 1st code 2. Channelization Code Number of the 2nd code • • • 511. Channelization Code Number of the 511th code 512. Channelization Code Number of the 512th code
	B	Returns –999.0.
23	A	Returns the modulation method for each of the 512 codes in comma-separated value format. When the active channel is occupying multiple codes, each of the occupied codes returns the modulation method of the active channel. The relationships between the responses and the modulation methods are as follows. QPSK QPSK 16Q 16QAM 64Q 64QAM NONE Inactive channel 1. Modulation method of the first code 2. Modulation method of the second code • • • 511. Modulation method of the 511th code 512. Modulation method of the 512th code
	B	Returns –999.0.

Table 2.8-2 Responses to Code Domain Measurement Results (Cont'd)

n	Result Mode	Response
24	A	Returns the total number of active channels per frame. For unmeasured slots, –999.0 is returned. 1. Total Active CH of the first slot 2. Total Active CH of the second slot • • • 14. Total Active CH of the 14th slot 15. Total Active CH of the 15th slot
	B	Returns –999.0.

Table 2.8-3 lists device messages for setting parameters of Code Domain measurement.

Table 2.8-3 Device Messages for Setting Parameters of Code Domain Measurement

Parameter	Device Message
Starting Slot Number	:CALCulate:CDPower:SWEep:STARt|OFFSet <integer>
	:CALCulate:CDPower:SWEep:STARt|OFFSet?
Measurement Interval	:CALCulate:CDPower:SWEep:INTerval|TIME <integer>
	:CALCulate:CDPower:SWEep:INTerval|TIME?
Code Number	:CALCulate:CDPower:CODE <integer>
	:CALCulate:CDPower:CODE?
Trace Mode	:DISPlay:CDPower[:VIEW][:SELect] CONStellation|EVM|MAGNitude|PHASe|CPOWer
	:DISPlay:CDPower[:VIEW][:SELect]?
Code Domain Trace	:DISPlay:CDPower[:VIEW]:CDOMain[:SELect] POWer|ERRor
	:DISPlay:CDPower[:VIEW]:CDOMain[:SELect]?
Target Slot Number	:DISPlay:CDPower[:VIEW]:SLOT <integer>
	:DISPlay:CDPower[:VIEW]:SLOT?
Scale – Code Domain Power	:DISPlay:CDPower[:VIEW]:WINDow5:TRACe:Y[:SCALe]:RLEVel 20|40|60|80
	:DISPlay:CDPower[:VIEW]:WINDow5:TRACe:Y[:SCALe]:RLEVel?
Scale – Code Domain Error	:DISPlay:CDPower[:VIEW]:WINDow6:TRACe:Y[:SCALe]:RLEVel 20|40|60|80
	:DISPlay:CDPower[:VIEW]:WINDow6:TRACe:Y[:SCALe]:RLEVel?
Scale – EVM vs Symbol	:DISPlay:CDPower[:VIEW]:WINDow2:TRACe:Y[:SCALe]:RLEVel 5|10|20|50
	:DISPlay:CDPower[:VIEW]:WINDow2:TRACe:Y[:SCALe]:RLEVel?
Scale – Magnitude Error vs Symbol	:DISPlay:CDPower[:VIEW]:WINDow3:TRACe:Y[:SCALe]:RLEVel 5|10|20|50
	:DISPlay:CDPower[:VIEW]:WINDow3:TRACe:Y[:SCALe]:RLEVel?
Scale – Phase Error vs Symbol	:DISPlay:CDPower[:VIEW]:WINDow4:TRACe:Y[:SCALe]:RLEVel 5|10|20|50
	:DISPlay:CDPower[:VIEW]:WINDow4:TRACe:Y[:SCALe]:RLEVel?
Scale – Code Power vs Symbol	:DISPlay:CDPower[:VIEW]:WINDow7:TRACe:Y[:SCALe]:RLEVel 20|40|60|80
	:DISPlay:CDPower[:VIEW]:WINDow7:TRACe:Y[:SCALe]:RLEVel?

Table 2.8-4 lists device messages for setting the marker and querying the value at the marker position during Code Domain measurement.

Table 2.8-4 Setting Marker for Code Domain Measurement

Parameter	Device Message
Marker – On/Off	:CALCulate:CDPower:MARKer[:STATe] OFF|ON|0|1
	:CALCulate:CDPower:MARKer[:STATe]?
Marker Number	:CALCulate:CDPower:MARKer:SYMBol <integer>
	:CALCulate:CDPower:MARKer:SYMBol?
Marker X axis Value for Constellation	:CALCulate:CDPower:MARKer:X?
Marker Y axis Value for Bottom Graph	:CALCulate:CDPower:MARKer:Y?
Marker Y axis Value for Active Code Domain Trace	:CALCulate:CDPower:MARKer:Y:CDOMain?
Marker Y axis Value for Code Domain Power	:CALCulate:CDPower:MARKer:Y:CDOMain:CPOWer?
Marker Y axis Value for Code Domain Error	:CALCulate:CDPower:MARKer:Y:CDOMain:CERRor?
Spreading Factor for Code Domain Trace	:CALCulate:CDPower:MARKer:Y:CDOMain:SFACtor?
Channelization Code Number for Code Domain Trace	:CALCulate:CDPower:MARKer:Y:CDOMain:CCODe?
Modulation for Code Domain Graph	:CALCulate:CDPower:MARKer:Y:CDOMain:MODulation?

2.8.1 Measure

:CONFigure:CDPower

Code Domain

Function

This command selects the Code Domain measurement function.

Command

```
:CONFigure:CDPower
```

Details

No measurement is made.

Example of Use

To select the Code Domain measurement function.

```
CONF:CDP
```

:INITiate:CDPower

Code Domain

Function

This command executes the Code Domain measurement.

Command

```
:INITiate:CDPower
```

Example of Use

To execute the Code Domain measurement.

```
INIT:CDP
```

:FETCh:CDPower[n]?

Code Domain Query

Function

This command queries the Code Domain measurement results.

Query

```
:FETCh:CDPower[n]?
```

Response

Refer to Table 2.8-2.

Example of Use

To query the Code Domain measurement results.

```
FETC:CDP?
```

:READ:CDPower[n]?

Code Domain Query

Function

This command queries the results after executing single Code Domain measurement with the current setting values.

Query

```
:READ:CDPower[n]?
```

Response

Refer to Table 2.8-2.

Example of Use

To query the results of single Code Domain measurement.

```
READ:CDP?
```

Related Command

This command has the same function as the following command.

```
:MEASure:CDPower[n]?
```

:MEASure:CDPower[n]?

Code Domain Query

Function

This command queries the results after executing single Code Domain measurement with the current setting values.

Refer to :READ:CDPower[n]?

Related Command

This command has the same function as the following command.
:READ:CDPower[n]?

2.8.2 Starting Slot Number

:CALCulate:CDPower:SWEep:STARt|OFFSet <integer>

Starting Slot Number

Function

This command sets the slot position for starting the Code Domain measurement.

Command

```
:CALCulate:CDPower:SWEep:STARt|OFFSet <integer>
```

Parameter

<integer>		Starting Slot Number
	Range	0 to 14
	Resolution	1
	Default value	1

Example of Use

To set the Starting Slot Number to 14.

```
CALC:CDP:SWE:STAR 14
```

:CALCulate:CDPower:SWEep:STARt|OFFSet?

Starting Slot Number Query

Function

This command queries the Starting Slot Number.

Query

```
:CALCulate:CDPower:SWEep:STARt|OFFSet?
```

Response

```
<integer>
```

Parameter

<integer>		Starting Slot Number
	Range	0 to 14
	Resolution	1

Example of Use

To query the Starting Slot Number.

```
CALC:CDP:SWE:STAR?
> 14
```

2.8.3 Measurement Interval

:CALCulate:CDPower:SWEep:INTerval|TIME <integer>

Measurement Interval

Function

This command sets the consecutive measurement intervals of the Code Domain measurement in slot units.

Command

```
:CALCulate:CDPower:SWEep:INTerval|TIME <integer>
```

Parameter

<integer>		Measurement Interval
	Range	1 to 15 – Starting Slot Number
	Resolution	1
	Default value	1

Example of Use

To set the Measurement Interval to 15.

```
CALC:CDP:SWE:INT 15
```

:CALCulate:CDPower:SWEep:INTerval|TIME?

Measurement Interval Query

Function

This command queries the Measurement Interval.

Query

```
:CALCulate:CDPower:SWEep:INTerval|TIME?
```

Response

```
<integer>
```

Parameter

<integer>		Measurement Interval
	Range	1 to 15 – Starting Slot Number
	Resolution	1

Example of Use

To query the Measurement Interval.

```
CALC:CDP:SWE:INT?
> 15
```

2.8.4 Code Number

:CALCulate:CDPower:CODE <integer>

Code Number

Function

This command sets the code number targeted for analysis and display.

Command

```
:CALCulate:CDPower:CODE <integer>
```

Parameter

<integer>		Code Number
	Range	0 to 511
	Resolution	1
	Default value	0

Example of Use

To set the Code Number to 16.

```
CALC:CDP:CODE 16
```

:CALCulate:CDPower:CODE?

Code Number – Query

Function

This command queries the code number targeted for analysis and display.

Query

```
:CALCulate:CDPower:CODE?
```

Parameter

<integer>		Code Number
	Range	0 to 511
	Resolution	1

Example of Use

To query the Code Number.

```
CALC:CDP:CODE?
> 16
```

2.8.5 Trace Mode

:DISPlay:CDPower[:VIEW][:SELect] CONStellation|EVM|MAGNitude|PHASe|CPOWer

Trace Mode

Function

This command sets the type of the graph displayed in the bottom graph window when Code Domain measurement is selected.

Command

```
:DISPlay:CDPower[:VIEW][:SELect] <mode>
```

Parameter

<mode>		Trace Mode
	CONStellation	Constellation
	EVM	EVM vs Symbol
	MAGNitude	Magnitude Error vs Symbol
	PHASe	Phase Error vs Symbol
	CPOWer	Code Power vs Symbol (Default value)

Example of Use

To set the Trace Mode to Code Power vs Symbol.

```
DISP:CDP CPOW
```

:DISPlay:CDPower[:VIEW][:SELect]?

Trace Mode Query

Function

This command queries the type of the graph displayed in the bottom graph window when Code Domain measurement is selected.

Query

```
:DISPlay:CDPower[:VIEW][:SELect]?
```

Response

```
<mode>
```

Parameter

`<mode>`	Trace Mode
`CONS`	Constellation
`EVM`	EVM vs. Symbol
`MAGN`	Magnitude Error vs Symbol
`PHAS`	Phase Error vs Symbol
`CPOW`	Code Power vs Symbol

Example of Use

To query the Trace Mode.

```
DISP:CDP?
> CPOW
```

2.8.6 Code Domain Trace

:DISPlay:CDPower[:VIEW]:CDOMain[:SELect] POWer|ERRor

Code Domain Trace

Function

This command sets the type of the graph displayed in the upper graph window when Code Domain measurement is selected.

Command

```
:DISPlay:CDPower[:VIEW]:CDOMain[:SELect] <mode>
```

Parameter

<mode>		Trace Mode
	POWer	Code Domain Power (Default value)
	ERRor	Code Domain Error

Example of Use

To set the Trace Mode to Code Domain Error.

```
DISP:CDP:CDOM ERR
```

:DISPlay:CDPower[:VIEW]:CDOMain[:SELect]?

Code Domain Trace Query

Function

This command queries the type of the graph displayed in the upper graph window when Code Domain measurement is selected.

Query

```
:DISPlay:CDPower[:VIEW]:CDOMain[:SELect]?
```

Response

```
<mode>
```

Parameter

<mode>		Trace Mode
	POW	Code Domain Power
	ERR	Code Domain Error

Example of Use

To query the Trace Mode.

```
DISP:CDP:CDOM?
> ERR
```

2.8.7 Target Slot Number

:DISPlay:CDPower[:VIEW]:SLOT <integer>

Target Slot Number

Function

This command sets the slot number of the measured signal to be displayed on the graph.

Command

```
:DISPlay:CDPower[:VIEW]:SLOT <integer>
```

Parameter

<integer>		Target Slot Number
	Range	Starting Slot Number to Starting Slot Number + Measurement Interval – 1
	Resolution	1
	Default value	0

Example of Use

To set the Target Slot Number to 1.

```
DISP:CDP:SLOT 1
```

:DISPlay:CDPower[:VIEW]:SLOT?

Target Slot Number Query

Function

This command queries the slot number of the measured signal displayed on the graph.

Query

```
:DISPlay:CDPower[:VIEW]:SLOT?
```

Response

```
<integer>
```

Parameter

<integer>		Target Slot Number
	Range	Starting Slot Number to Starting Slot Number + Measurement Interval – 1
	Resolution	1

Example of Use

To query the Target Slot Number.

```
DISP:CDP:SLOT?
> 1
```

2.8.8 Scale – Code Domain Power

:DISPlay:CDPower[:VIEW]:WINDow5:TRACe:Y[:SCALe]:RLEVel 20|40|60|80

Scale – Code Domain Power

Function

This command sets the vertical scale of the Code Domain Power graph. The reference position (uppermost scale) is always 0 dB. This command can be executed regardless of the selected Trace Mode type.

Command

```
:DISPlay:CDPower[:VIEW]:WINDow5:TRACe:Y[:SCALe]:RLEVel
<mode>
```

Parameter

<mode>	Scale range
20	–20 to 0 dB
40	–40 to 0 dB
60	–60 to 0 dB
80	–80 to 0 dB (Default value)

Example of Use

To set the vertical scale of the Code Domain Power graph to 60 dB.

```
DISP:CDP:WIND5:TRAC:Y:RLEV 60
```

:DISPlay:CDPower[:VIEW]:WINDow5:TRACe:Y[:SCALe]:RLEVel?

Scale – Code Domain Power Query

Function

This command queries the setting of the vertical scale of the Code Domain Power graph. The reference position (uppermost scale) is always 0 dB. This query can be executed regardless of the selected Trace Mode type.

Query

```
:DISPlay:CDPower[:VIEW]:WINDow5:TRACe:Y[:SCALe]:RLEVel?
```

Response

```
<mode>
```

Parameter

<mode>	Scale range
20	–20 to 0 dB
40	–40 to 0 dB
60	–60 to 0 dB
80	–80 to 0 dB

Example of Use

To query the setting of the vertical scale of the Code Domain Power graph.

```
DISP:CDP:WIND5:TRAC:Y:RLEV?
> 60
```

2.8.9 Scale – Code Domain Error

:DISPlay:CDPower[:VIEW]:WINDow6:TRACe:Y[:SCALe]:RLEVel 20|40|60|80

Scale – Code Domain Error

Function

This command sets the vertical scale of the Code Domain Error graph. The reference position (lowermost scale) is always –80 dB. This command can be executed regardless of the selected Trace Mode type.

Command

```
:DISPlay:CDPower[:VIEW]:WINDow6:TRACe:Y[:SCALe]:RLEVel
<mode>
```

Parameter

<mode>	Scale range
20	–80 to –60 dB
40	–80 to –40 dB
60	–80 to –20 dB
80	–80 to 0 dB (Default value)

Example of Use

To set the vertical scale of the Code Domain Error graph to 20 dB.

```
DISP:CDP:WIND6:TRAC:Y:RLEV 20
```

:DISPlay:CDPower[:VIEW]:WINDow6:TRACe:Y[:SCALe]:RLEVel?

Scale – Code Domain Error Query

Function

This command queries the setting of the vertical scale of the Code Domain Error graph. The reference position (lowermost scale) is always –80 dB. This query can be executed regardless of the selected Trace Mode type.

Query

```
:DISPlay:CDPower[:VIEW]:WINDow6:TRACe:Y[:SCALe]:RLEVel?
```

Response

```
<mode>
```

Parameter

<mode>	Scale range
20	–80 to –60 dB
40	–80 to –40 dB
60	–80 to –20 dB
80	–80 to 0 dB

Example of Use

To query the setting of the vertical scale of the Code Domain Error graph.

```
DISP:CDP:WIND6:TRAC:Y:RLEV?
> 20
```

2.8.10 Scale – EVM vs Symbol

:DISPlay:CDPower[:VIEW]:WINDow2:TRACe:Y[:SCALe]:RLEVel 5|10|20|50

Scale – 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:CDPower[:VIEW]:WINDow2:TRACe:Y[:SCALe]:RLEVel
<mode>
```

Parameter

<mode>	Scale range
5	0 to 5% (Default value)
10	0 to 10%
20	0 to 20%
50	0 to 50%

Example of Use

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

```
DISP:CDP:WIND2:TRAC:Y:RLEV 10
```

:DISPlay:CDPower[:VIEW]:WINDow2:TRACe:Y[:SCALe]:RLEVel?

Scale – EVM vs Symbol Query

Function

This command queries the setting of the vertical scale of the EVM vs Symbol graph. This query can be executed regardless of the selected Trace Mode type.

Query

```
:DISPlay:CDPower[:VIEW]:WINDow2:TRACe:Y[:SCALe]:RLEVel?
```

Response

```
<mode>
```

Parameter

<mode>	Scale range
5	0 to 5%
10	0 to 10%
20	0 to 20%
50	0 to 50%

Example of Use

To query the setting of the vertical scale of the EVM vs Symbol graph.

```
DISP:CDP:WIND2:TRAC:Y:RLEV?
> 10
```

2.8.11 Scale – Magnitude Error vs Symbol

:DISPlay:CDPower[:VIEW]:WINDow3:TRACe:Y[:SCALe]:RLEVel 5|10|20|50

Scale – Magnitude Error vs Symbol

Function

This command sets the vertical scale of the Magnitude Error vs Symbol graph. This command can be executed regardless of the selected Trace Mode type.

Command

```
:DISPlay:CDPower[:VIEW]:WINDow3:TRACe:Y[:SCALe]:RLEVel
<mode>
```

Parameter

<mode>	Scale range
5	–5 to 5% (Default value)
10	–10 to 10%
20	–20 to 20%
50	–50 to 50%

Example of Use

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

```
DISP:CDP:WIND3:TRAC:Y:RLEV 10
```

:DISPlay:CDPower[:VIEW]:WINDow3:TRACe:Y[:SCALe]:RLEVel?

Scale – Magnitude Error vs Symbol Query

Function

This command queries the setting of the vertical scale of the Magnitude Error vs Symbol graph. This query can be executed regardless of the selected Trace Mode type.

Query

```
:DISPlay:CDPower[:VIEW]:WINDow3:TRACe:Y[:SCALe]:RLEVel?
```

Response

```
<mode>
```

Parameter

<mode>	Scale range
5	–5 to 5%
10	–10 to 10%
20	–20 to 20%
50	–50 to 50%

Example of Use

To query the setting of the vertical scale of the Magnitude Error vs Symbol graph.

```
DISP:CDP:WIND3:TRAC:Y:RLEV?
> 10
```

2.8.12 Scale – Phase Error vs Symbol

:DISPlay:CDPower[:VIEW]:WINDow4:TRACe:Y[:SCALe]:RLEVel 5|10|20|50

Scale – 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:CDPower[:VIEW]:WINDow4:TRACe:Y[:SCALe]:RLEVel
<mode>
```

Parameter

<mode>	Scale range
5	–5 to 5 deg (Default value)
10	–10 to 10 deg
20	–20 to 20 deg
50	–50 to 50 deg

Example of Use

To set the vertical scale of the Phase Error vs Symbol graph to 10 deg.

```
DISP:CDP:WIND4:TRAC:Y:RLEV 10
```

:DISPlay:CDPower[:VIEW]:WINDow4:TRACe:Y[:SCALe]:RLEVel?

Scale – Phase Error vs Symbol Query

Function

This command queries the setting of the vertical scale of the Phase Error vs Symbol graph. This query can be executed regardless of the selected Trace Mode type.

Query

```
:DISPlay:CDPower[:VIEW]:WINDow4:TRACe:Y[:SCALe]:RLEVel?
```

Response

```
<mode>
```

Parameter

<mode>	Scale range
5	–5 to 5 deg
10	–10 to 10 deg
20	–20 to 20 deg
50	–50 to 50 deg

Example of Use

To query the setting of the vertical scale of the Phase Error vs Symbol graph.

```
DISP:CDP:WIND4:TRAC:Y:RLEV?
> 10
```

2.8.13 Scale – Code Power vs Symbol

:DISPlay:CDPower[:VIEW]:WINDow7:TRACe:Y[:SCALe]:RLEVel 20|40|60|80

Scale – Code Power vs Symbol

Function

This command sets the vertical scale of the Code Power vs Symbol graph. The reference position (uppermost scale) is always 0 dB. This command can be executed regardless of the selected Trace Mode type.

Command

```
:DISPlay:CDPower[:VIEW]:WINDow7:TRACe:Y[:SCALe]:RLEVel
<mode>
```

Parameter

<mode>	Scale range
20	–20 to 0 dB
40	–40 to 0 dB (Default value)
60	–60 to 0 dB
80	–80 to 0 dB

Example of Use

To set the vertical scale of the Code Power vs Symbol graph to 20 dB.

```
DISP:CDP:WIND7:TRAC:Y:RLEV 20
```

:DISPlay:CDPower[:VIEW]:WINDow7:TRACe:Y[:SCALe]:RLEVel?

Scale – Code Power vs Symbol Query

Function

This command queries the setting of the vertical scale of the Code Power vs Symbol graph. The reference position (uppermost scale) is always 0 dB. This query can be executed regardless of the selected Trace Mode type.

Query

```
:DISPlay:CDPower[:VIEW]:WINDow7:TRACe:Y[:SCALe]:RLEVel?
```

Response

```
<mode>
```

Parameter

<mode>	Scale range
20	–20 to 0 dB
40	–40 to 0 dB
60	–60 to 0 dB
80	–80 to 0 dB

Example of Use

To query the setting of the vertical scale of the Code Power vs Symbol graph.

```
DISP:CDP:WIND7:TRAC:Y:RLEV?
> 20
```

2.8.14 Marker – On/Off

:CALCulate:CDPower:MARKer[:STATe] OFF|ON|0|1

Marker – On/Off

Function

This command sets the marker display On/Off when Code Domain measurement is selected.

Command

```
:CALCulate:CDPower:MARKer[:STATe] <switch>
```

Parameter

<switch>	Marker
0|OFF	Off
1|ON	On (Default value)

Example of Use

To display the marker.

```
CALC:CDP:MARK 1
```

:CALCulate:CDPower:MARKer[:STATe]?

Marker – On/Off Query

Function

This command queries the marker display On/Off when Code Domain measurement is selected.

Query

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

Response

```
<switch>
```

Parameter

<switch>	Marker
0	Off
1	On

Example of Use

To query the setting of Marker.

```
CALC:CDP:MARK?
> 1
```

2.8.15 Marker Number

:CALCulate:CDPower:MARKer:SYMBol <integer>

Marker Number

Function

This command sets in symbol units the marker position of the Constellation, EVM, Magnitude Error, Phase Error, and Code Power graphs. The setting range differs depending on the measurement result.

Command

```
:CALCulate:CDPower:MARKer:SYMBol <integer>
```

Parameter

<integer>		Marker Number
	Range	0 to (2560/SF) –1
	Resolution	1
	Default value	0

Example of Use

To set the marker position to the 10th symbol.

```
CALC:CDP:MARK:SYMB 10
```

:CALCulate:CDPower:MARKer:SYMBol?

Marker Number Query

Function

This command queries in symbol units the marker position of the Constellation, EVM, Magnitude Error, Phase Error, and Code Power graphs.

Query

```
:CALCulate:CDPower:MARKer:SYMBol?
```

Response

```
<integer>
```

Parameter

<integer>		Marker Number
	Range	0 to (2560/SF) –1
	Resolution	1

Example of Use

To query the marker position.

```
CALC:CDP:MARK:SYMB?
> 10
```

2.8.16 Marker Value

:CALCulate:CDPower:MARKer:X?

Marker X Axis Value for Constellation – Query

Function

This command queries the I-phase value at the marker position when the Constellation is displayed in the bottom graph window.

Query

```
:CALCulate:CDPower:MARKer:X?
```

Response

```
<real>
```

Parameter

`<real>`	I-phase at marker position in Constellation

Example of Use

To query the I-phase value at the marker position in the Constellation.

```
CALC:CDP:MARK:X?
> 1.0014
```

:CALCulate:CDPower:MARKer:Y?

Marker Y Axis Value for Bottom Graph – Query

Function

This command queries the Y-coordinate at the marker position in the graph displayed in the bottom graph window.

Query

```
:CALCulate:CDPower:MARKer:Y?
```

Response

```
<real>
```

Parameter

`<real>` Y-coordinate at marker position in graph

Constellation (Q phase)	No unit
EVM vs Symbol	Unit: %
Magnitude Error vs Symbol	Unit: %
Phase Error vs Symbol	Unit: degree
Code Power vs Symbol	Unit: dB

Example of Use

To query the Y-coordinate at the marker position.

```
CALC:CDP:MARK:Y?
> 0.9998
```

:CALCulate:CDPower:MARKer:Y:CDOMain?

Marker Y axis Value for Code Domain Trace – Query

Function

This command queries the Y-coordinate at the marker position in the selected Code Domain Trace (Code Domain Power or Code Domain Error).

Query

```
:CALCulate:CDPower:MARKer:Y:CDOMain?
```

Response

```
<real>
```

Parameter

`<real>`		Y-coordinate at marker position in graph
	Unit	dB

Example of Use

To query the Y-coordinate at the marker position.

```
CALC:CDP:MARK:Y:CDOM?
> -10.12
```

:CALCulate:CDPower:MARKer:Y:CDOMain:CPOWer?

Marker Y axis value for Code Domain Power – Query

Function

This command queries the Code Power at the marker position in the Code Domain Power graph.

Query

```
:CALCulate:CDPower:MARKer:Y:CDOMain:CPOWer?
```

Response

```
<1>
```

Parameter

`<real>`		Code Power at marker position in graph
	Unit	dB

Example of Use

To query the Code Power at the marker position.

```
CALC:CDP:MARK:Y:CDOM:CPOW?
> -10.12
```

:CALCulate:CDPower:MARKer:Y:CDOMain:CERRor?

Marker Y axis value for Code Domain Error – Query

Function

This command queries the Code Error at the marker position in the Code Domain Error graph.

Query

```
:CALCulate:CDPower:MARKer:Y:CDOMain:CERRor?
```

Response

```
<real>
```

Parameter

`<real>`		Code Error at marker position in graph
	Unit	dB

Example of Use

To query the Code Error at the marker position.

```
CALC:CDP:MARK:Y:CDOM:CERR?
> -50.12
```

:CALCulate:CDPower:MARKer:Y:CDOMain:SFACtor?

Spreading Factor Value for Code Domain Graph – Query

Function

This command queries the Spreading Factor at the marker in the Code Domain Trace.

Query

```
:CALCulate:CDPower:MARKer:Y:CDOMain:SFACtor?
```

Response

```
<integer>
```

Parameter

`<integer>`	Spreading Factor at marker position in graph

Example of Use

To query the Spreading Factor at the marker position.

```
CALC:CDP:MARK:Y:CDOM:SFAC?
> 64
```

:CALCulate:CDPower:MARKer:Y:CDOMain:CCODe?

Channelization Code Number for Code Domain Trace – Query

Function

This command queries the Channelization Code Number at the marker position in the Code Domain Trace.

Query

```
:CALCulate:CDPower:MARKer:Y:CDOMain:CCODe?
```

Response

```
<integer>
```

Parameter

<integer>	Channelization Code Number at marker position in graph

Example of Use

To query the Channelization Code Number at the marker position.

```
CALC:CDP:MARK:Y:CDOM:CCOD?
> 16
```

:CALCulate:CDPower:MARKer:Y:CDOMain:MODulation?

Modulataion for Code Domain Trace – Query

Function

This command queries the Modulation at the marker position in the Code Domain Trace.

Query

```
:CALCulate:CDPower:MARKer:Y:CDOMain:MODulation?
```

Response

```
<mode>
```

Parameter

<mode>	Modulation at marker position in graph
QPSK	QPSK
16Q	16QAM
64Q	64QAM
NONE	None (inactive)

Example of Use

To query the Modulation at the marker position.

```
CALC:CDP:MARK:Y:CDOM:MOD?
> QPSK
```

2.9 Code vs Time measurement function

This section describes device messages for the Code vs Time measurement function.

Table 2.9-1 lists device messages for executing the Code vs Time measurement and for querying the results.

Table 2.9-1 Code vs Time measurement function

Function	Device Message
Configure	:CONFigure:CVTime
Initiate	:INITiate:CVTime
Fetch	:FETCh:CVTime[n]?
Read	:READ:CVTime[n]?
Measure	:MEASure:CVTime[n]?

Table 2.9-2 lists the responses to parameter n in Table 2.9-1.

Table 2.9-2 Responses to Code vs Time Measurement Results

n	Result Mode	Response
1 or omitted	A	Returns the values below for the selected code and slot in comma-separated value format, in the following order. 1. EVM(RMS) [%] 2. EVM(Peak) [%] 3. Magnitude Error [%] 4. Phase Error [%] 5. Code Power [dB] 6. Number of detected SF 7. Number of code number for detected SF 8. Modulation type for detected SF `QPSK` QPSK `16Q` 16QAM `64Q` 64QAM `NONE` Inactive channel 9. Mean Power [dBm] 10. P–CPICH Power [dB] 11. P–SCH Power [dB] 12. S–SCH Power [dB] 13. Total Active Power [dB]
	B	Returns the values below for the selected code and slot in comma-separated value format, in the following order. 1. EVM(RMS) [%] 2. EVM(Peak) [%] 3. Magnitude Error [%] 4. Phase Error [%] 5. Mean Power [dBm] 6. Code Power [dB] 7. to 10. –999.0 11. Total Active Power [dB] 12. P–CPICH Power [dB] 13. to 27. –999.0 28. P–SCH Power [dB] 29. S–SCH Power [dB] 30. to 44. –999.0

Table 2.9-2 Responses to Code vs Time Measurement Results (Cont'd)

n	Result Mode	Response
2	A	Returns the Code Domain Power for each of the 512 codes in the slot specified by Slot Number in comma-separated value format. When the active channel is occupying multiple codes, each of the occupied codes returns the Code Domain Power of the active channel. Unit: dB 1. Code Domain Power of the 1st code 2. Code Domain Power of the 2nd code • • • 511. Code Domain Power of the 511th code 512. Code Domain Power of the 512th code
	B	Returns –999.0.
3	A / B	Returns the active or inactive state for each of the 512 codes in the slot specified by Slot Number in comma-separated value format. 1 is returned when the code is active and 0 when inactive. When the active channel is occupying multiple codes, each of the occupied codes is returned as active. 1. Active state of the 1st code 2. Active state of the 2nd code • • • 511. Active state of the 511th code 512. Active state of the 512th code
	B	Returns –999.0.
4	A	Returns the Mean Power display data of the Code vs Time graph in comma-separated value format, for the number set by Measurement Interval. Unit: dBm
	B	Returns –999.0.
5	A	Returns the Code Power display data of the Code vs Time graph for the code specified by Target Code in comma-separated value format, for the number set by Measurement Interval. Unit: dB
	B	Returns –999.0.
6	A	Returns the EVM (rms) of each slot for the code specified by Target Code in comma-separated value format. Unit: % 1. EVM (rms) of the 1st slot 2. EVM (rms) of the 2nd slot • • • n–1. EVM (rms) of the (n – 1)th slot n. EVM (rms) of the nth slot
	B	Returns –999.0.

Table 2.9-2 Responses to Code vs Time Measurement Results (Cont'd)

n	Result Mode	Response
7	A	Returns the Spreading Factor of each slot for the code specified by Target Code in comma-separated value format. n is the setting value of Measurement Interval. Unit: None 1. Spreading Factor of the 1st slot 2. Spreading Factor of the 2nd slot • • • n–1. Spreading Factor of the (n – 1)th slot n. Spreading Factor of the nth slot
	B	Returns –999.0.
8	A	Returns the Channelization Code Number of each slot for the code specified by Target Code in comma-separated value format. n is the setting value of Measurement Interval. Unit: None 1. Channelization Code Number of the 1st slot 2. Channelization Code Number of the 2nd slot • • • n–1. Channelization Code Number of the (n – 1)th slot n. Channelization Code Number of the nth slot
	B	Returns –999.0.
9	A	Returns the modulation method of each slot for the code specified by Target Code in comma-separated value format. n is the setting value of Measurement Interval. The relationships between the responses and the modulation methods are as follows. `QPSK` QPSK `16Q` 16QAM `64Q` 64QAM `NONE` Inactive channel 1. Modulation method of the 1st slot 2. Modulation method of the 2nd slot • • • n–1. Modulation method of the (n – 1)th slot n. Modulation method of the nth slot
	B	Returns –999.0.
13	A	Returns the Code Domain Error for each of the 512 codes in the slot specified by Slot Number in comma-separated value format. Unit: dB When the active channel is occupying multiple codes, each of the occupied codes returns the Code Domain Error of the active channel. 1. Code Domain Power of the 1st code 2. Code Domain Power of the 2nd code • • • 511. Code Domain Power of the 511th code 512. Code Domain Power of the 512th code
	B	Returns –999.0.

Table 2.9-2 Responses to Code vs Time Measurement Results (Cont'd)

n	Result Mode	Response
21	A	Returns the Spreading Factor for each of the 512 codes in the slot specified by Slot Number in comma-separated value format. Unit: dB When the active channel is occupying multiple codes, each of the occupied codes returns the Spreading Factor of the active channel. 1. Spreading Factor of the 1st code 2. Spreading Factor of the 2nd code • • • 511. Spreading Factor of the 511th code 512. Spreading Factor of the 512th code
	B	Returns –999.0.
22	A	Returns the Channelization Code Number for each of the 512 codes in the slot specified by Slot Number in comma-separated value format. When the active channel is occupying multiple codes, each of the occupied codes returns the Channelization Code Number of the active channel. 1. Channelization Code Number of the 1st code 2. Channelization Code Number of the 2nd code • • • 511. Channelization Code Number of the 511th code 512. Channelization Code Number of the 512th code
	B	Returns –999.0.
23	A	Returns the modulation method for each of the 512 codes in the slot specified by Slot Number in comma-separated value format. When the active channel is occupying multiple codes, each of the occupied codes returns the modulation method of the active channel. The relationships between the responses and the modulation methods are as follows. `QPSK` QPSK `16Q` 16QAM `64Q` 64QAM `NONE` Inactive channel 1. Modulation method of the 1st code 2. Modulation method of the 2nd code • • • 511. Modulation method of the 511th code 512. Modulation method of the 512th code
	B	Returns –999.0.

Table 2.9-2 Responses to Code vs Time Measurement Results (Cont'd)

n	Result Mode	Response
24	A	Returns the number of active channels at the interval specified with Measurement Interval (n). For unmeasured slots, –999.0 is returned. 1. Total Active CH of the first slot 2. Total Active CH of the second slot • • • n–1. Total Active CH of the (n–1)th slot n. Total Active CH of the Nth slot.
	B	Returns –999.0.

Table 2.9-3 lists device messages for setting parameters of Code vs Time measurement.

Table 2.9-3 Device Messages for Setting Parameters of Code vs Time Measurement

Parameter	Device Message
Measurement Interval	:CALCulate:CVTime:SWEep:INTerval <integer>
	:CALCulate:CVTime:SWEep:INTerval?
Code vs Time Target Code	:CALCulate:CVTime:CODE <integer>
	:CALCulate:CVTime:CODE?
Set Marker Number to Tareget Code	:CALCulate:CVTime:STCode
Trace Mode	:DISPlay:CVTime[:VIEW][:SELect] POWer|ERRor
	:DISPlay:CVTime[:VIEW][:SELect]?
Scale – Code vs Time	:DISPlay:CVTime[:VIEW]:WINDow8:TRACe:Y[:SCALe]:RLEVel 20|40|60|80
	:DISPlay:CVTime[:VIEW]:WINDow8:TRACe:Y[:SCALe]:RLEVel?
Scale – Code Domain Power	:DISPlay:CVTime[:VIEW]:WINDow5:TRACe:Y[:SCALe]:RLEVel 20|40|60|80
	:DISPlay:CVTime[:VIEW]:WINDow5:TRACe:Y[:SCALe]:RLEVel?
Scale – Code Domain Error	:DISPlay:CVTime[:VIEW]:WINDow6:TRACe:Y[:SCALe]:RLEVel 20|40|60|80
	:DISPlay:CVTime[:VIEW]:WINDow6:TRACe:Y[:SCALe]:RLEVel?
Scale – Code vs Time Scale Offset	:DISPlay:CVTime[:VIEW]:WINDow8:TRACe:Y[:SCALe]:RLEVel:OFFSet <rel_power>
	:DISPlay:CVTime[:VIEW]:WINDow8:TRACe:Y[:SCALe]:RLEVel:OFFSet?

Table 2.9-4 lists device messages for setting the marker and querying the value at the marker position during Code vs Time measurement.

Table 2.9-4 Setting Marker for Code vs Time Measurement

Parameter	Device Message
Marker – On/Off	:CALCulate:CVTime:MARKer[:STATe] OFF|ON|0|1
	:CALCulate:CVTime:MARKer[:STATe]?
Active Trace	:CALCulate:CVTime:MARKer:ACTive CVTime|BOTTom
	:CALCulate:CVTime:MARKer:ACTive?
Code vs Time Slot Number	:CALCulate:CVTime:SLOT <integer>
	:CALCulate:CVTime:SLOT?
Marker Y axis - Mean Power Value for Code vs Time Graph	:CALCulate:CVTime:MARKer:Y:CVTime:MPOWer?
Marker Y axis - Code Power Value for Code vs Time Graph	:CALCulate:CVTime:MARKer:Y:CVTime:CPOWer?
Marker Y axis - Spreading Factor for Code vs Time Graph	:CALCulate:CVTime:MARKer:Y:CVTime:SFACtor?
Marker Y axis - Channelization Code Number for Code vs Time Graph	:CALCulate:CVTime:MARKer:Y:CVTime:CCODe?
Marker Y axis - Modulation for Code vs Time Graph	:CALCulate:CVTime:MARKer:Y:CVTime:MODulation?
Bottom Graph Marker Number	:CALCulate:CVTime:MARKer:MNUMber <integer>
	:CALCulate:CVTime:MARKer:MNUMber?
Marker Y axis Value for Code Domain Graph	:CALCulate:CVTime:MARKer:Y:CDOMain?
Marker Y axis Code Power for Code Domain Power	:CALCulate:CVTime:MARKer:Y:CDOMain:CPOWer?
Marker Y axis Code Error for Code Domain Error	:CALCulate:CVTime:MARKer:Y:CDOMain:CERRor?
Marker Y axis Spreading Factor for Code Domain Graph	:CALCulate:CVTime:MARKer:Y:CDOMain:SFACtor?
Marker Y axis Channelization Code for Code Domain Graph	:CALCulate:CVTime:MARKer:Y:CDOMain:CCODe?
Marker Y axis Modulation for Code Domain Graph	:CALCulate:CVTime:MARKer:Y:CDOMain:MODulation?

2.9.1 Measure

:CONFigure:CVTime

Code vs Time

Function

This command selects the Code vs Time measurement function.

Command

```
:CONFigure:CVTime
```

Details

No measurement is made.

Example of Use

To select the Code vs Time measurement function.

```
CONF:CVT
```

:INITiate:CVTime

Code vs Time

Function

This command executes the Code vs Time measurement.

Command

```
:INITiate:CVTime
```

Example of Use

To execute the Code vs Time measurement.

```
INIT:CVT
```

:FETCh:CVTime[n]?

Code vs Time Query

Function

This command queries the Code vs Time measurement results.

Query

```
:FETCh:CVTime[n]?
```

Response

Refer to Table 2.9-2.

Example of Use

To query the Code vs Time measurement results.

```
FETC:CVT?
```

:READ:CVTime[n]?

Code vs Time Query

Function

This command queries the results after executing single Code vs Time measurement with the current setting values.

Query

```
:READ:CVTime[n]?
```

Response

Refer to Table 2.9-2.

Example of Use

To query the results of single Code vs Time measurement.

```
READ:CVT?
```

Related Command

This command has the same function as the following command.

```
:MEASure:CVTime[n]?
```

:MEASure:CVTime[n]?

Code vs Time Query

Function

This command queries the results after executing single Code vs Time measurement with the current setting values.

Refer to `:READ:CVTime[n]?`

Related Command

This command has the same function as the following command.
`:READ:CVTime[n]?`

2.9.2 Measurement Interval

:CALCulate:CVTime:SWEep:INTerval <integer>

Measurement Interval

Function

This command sets the consecutive measurement intervals of the Code vs Time measurement in slot units.

Command

```
:CALCulate:CVTime:SWEep:INTerval <integer>
```

Parameter

<integer>	Measurement Interval
Range	15 to 300
Resolution	1
Default value	1

Example of Use

To set the Measurement Interval to 150.

```
CALC:CVT:SWE:INT 150
```

:CALCulate:CVTime:SWEep:INTerval?

Measurement Interval Query

Function

This command queries the Measurement Interval.

Query

```
:CALCulate:CVTime:SWEep:INTerval?
```

Response

```
<integer>
```

Parameter

<integer>	Measurement Interval
Range	15 to 300
Resolution	1

Example of Use

To query the Measurement Interval.

```
CALC:CVT:SWE:INT?
> 150
```

2.9.3 Code vs Time Target Code

:CALCulate:CVTime:CODE <integer>

Code vs Time Target Code

Function

This command sets the code number targeted for analysis and display.

Command

```
:CALCulate:CVTime:CODE <integer>
```

Parameter

<integer>		Code vs Time Target Code
	Range	0 to 511
	Resolution	1
	Default value	0

Example of Use

To set the Code vs Time Target Code to 16.

```
CALC:CVT:CODE 16
```

:CALCulate:CVTime:CODE?

Code vs Time Target Code – Query

Function

This command queries the code number targeted for analysis and display.

Command

```
:CALCulate:CVTime:CODE?
```

Parameter

<integer>		Code vs Time Target Code
	Range	0 to 511
	Resolution	1

Example of Use

To query the setting of Code vs Time Target Code.

```
CALC:CDP:CODE?
> 16
```

2.9.4 Set Marker Number to Target Code

:CALCulate:CVTime:STCode

Set Marker Number to Target Code

Function

This command sets the marker value (code) in the bottom graph window (Code Domain graph) as the code number targeted for analysis and display.

Command

```
:CALCulate:CVTime:STCode
```

Example of Use

To set the marker value in the bottom graph window as the Code vs Time Target Code.

```
CALC:CVT:STC
```

2.9.5 Trace Mode

:DISPlay:CVTime[:VIEW][:SELect] CDPower|CDError

Trace Mode

Function

This command sets the type of the graph displayed in the bottom graph window when Code vs Time measurement is selected.

Command

```
:DISPlay:CVTime[:VIEW][:SELect] <mode>
```

Parameter

<mode>		Trace Mode
	POWer	Code Domain Power
	ERRor	Code Domain Error

Example of Use

To set the Trace Mode to Code Domain Power.

```
DISP:CVT POW
```

:DISPlay:CVTime[:VIEW][:SELect]?

Trace Mode Query

Function

This command queries the type of the graph displayed in the bottom graph window when Code vs Time measurement is selected.

Query

```
:DISPlay:CVTime[:VIEW][:SELect]?
```

Response

```
<mode>
```

Parameter

<mode>		Trace Mode
	POW	Code Domain Power
	ERR	Code Domain Error

Example of Use

To query the setting of Trace Mode.

```
DISP:CVT?
> POW
```

2.9.6 Scale – Code vs Time

:DISPlay:CVTime[:VIEW]:WINDow8:TRACe:Y[:SCALe]:RLEVel 20|40|60|80

Scale – Code vs Time

Function

This command sets the vertical scale of the Code vs Time graph. This command can be executed regardless of the selected Trace Mode type.

Details

The reference position is set as follows:
Reference position dBm = Input Level dBm + Code vs Time Scale Offset dB + 10 dB (in 5 dB steps, rounding up fractions less than 5 dB)

Command

```
:DISPlay:CVTime[:VIEW]:WINDow8:TRACe:Y[:SCALe]:RLEVel
<mode>
```

Parameter

<mode>	Scale range
20	Reference position –20 dB to reference position
40	Reference position –40 dB to reference position
60	Reference position –60 dB to reference position
80	Reference position –80 dB to reference position (Default value)

Example of Use

To set the vertical scale of the Code vs Time graph to 60 dB.

```
DISP:CVT:WIND8:TRAC:Y:RLEV 60
```

:DISPlay:CVTime[:VIEW]:WINDow8:TRACe:Y[:SCALe]:RLEVel?

Scale – Code vs Time Query

Function

This command queries the setting of the vertical scale of the Code vs Time graph. This query can be executed regardless of the selected Trace Mode type.

Details

The reference position is set as follows:
Reference position dBm = Input Level dBm + Code vs Time Scale Offset dB + 10 dB (in 5 dB steps, rounding up fractions less than 5 dB)

Query

```
:DISPlay:CVTime[:VIEW]:WINDow8:TRACe:Y[:SCALe]:RLEVel?
```

Response

```
<mode>
```

Parameter

<mode>	Scale range
20	Reference position –20 dB to reference position
40	Reference position –40 dB to reference position
60	Reference position –60 dB to reference position
80	Reference position –80 dB to reference position

Example of Use

To query the setting of the vertical scale of the Code vs Time graph.

```
DISP:CVT:WIND8:TRAC:Y:RLEV?
> 60
```

2.9.7 Scale – Code Domain Power

:DISPlay:CVTime[:VIEW]:WINDow5:TRACe:Y[:SCALe]:RLEVel 20|40|60|80

Scale – Code Domain Power

Function

This command sets the vertical scale of the Code Domain Power graph. This command can be executed regardless of the selected Trace Mode type.

Command

```
:DISPlay:CVTime[:VIEW]:WINDow5:TRACe:Y[:SCALe]:RLEVel
<mode>
```

Parameter

<mode>	Scale range
20	–20 to 0 dB
40	–40 to 0 dB
60	–60 to 0 dB
80	–80 to 0 dB (Default value)

Example of Use

To set the vertical scale of the Code Domain Power graph to 60 dB.

```
DISP:CVT:WIND5:TRAC:Y:RLEV 60
```

:DISPlay:CVTime[:VIEW]:WINDow5:TRACe:Y[:SCALe]:RLEVel?

Scale – Code Domain Power Query

Function

This command queries the setting of the vertical scale of the Code Domain Power graph. This query can be executed regardless of the selected Trace Mode type.

Query

```
:DISPlay:CVTime[:VIEW]:WINDow5:TRACe:Y[:SCALe]:RLEVel?
```

Response

```
<mode>
```

Parameter

<mode>	Scale range
20	–20 to 0 dB
40	–40 to 0 dB
60	–60 to 0 dB
80	–80 to 0 dB

Example of Use

To query the setting of the vertical scale of the Code Domain Power graph.

```
DISP:CVT:WIND5:TRAC:Y:RLEV?
> 60
```

2.9.8 Scale – Code Domain Error

:DISPlay:CVTime[:VIEW]:WINDow6:TRACe:Y[:SCALe]:RLEVel 20|40|60|80

Scale – Code Domain Error

Function

This command sets the vertical scale of the Code Domain Error graph. This command can be executed regardless of the selected Trace Mode type.

Command

```
:DISPlay:CVTime[:VIEW]:WINDow6:TRACe:Y[:SCALe]:RLEVel
<mode>
```

Parameter

<mode>	Scale range
20	–80 to –60 dB
40	–80 to –40 dB
60	–80 to –20 dB
80	–80 to 0 dB (Default value)

Example of Use

To set the vertical scale of the Code Domain Error graph to 20 dB.

```
DISP:CVT:WIND6:TRAC:Y:RLEV 20
```

:DISPlay:CVTime[:VIEW]:WINDow6:TRACe:Y[:SCALe]:RLEVel?

Scale – Code Domain Error Query

Function

This command queries the setting of the vertical scale of the Code Domain Error graph. This query can be executed regardless of the selected Trace Mode type.

Query

```
:DISPlay:CVTime[:VIEW]:WINDow6:TRACe:Y[:SCALe]:RLEVel?
```

Response

```
<mode>
```

Parameter

<mode>	Scale range
20	–80 to –60 dB
40	–80 to –40 dB
60	–80 to –20 dB
80	–80 to 0 dB

Example of Use

To query the setting of the vertical scale of the Code Domain Error graph.

```
DISP:CDP:WIND6:TRAC:Y:RLEV?
> 20
```

2.9.9 Scale – Code vs Time Scale Offset

:DISPlay:CVTime[:VIEW]:WINDow8:TRACe:Y[:SCALe]:RLEVel:OFFSet <rel_power>

Scale – Code vs Time Scale Offset

Function

This command sets the offset setting of the vertical scale of the Code vs Time graph. This command can be executed regardless of the selected Trace Mode type.

Details

The reference position is set as follows:
Reference position dBm = Input Level dBm + Code vs Time Scale Offset dB + 10 dB (in 5 dB steps, rounding up fractions less than 5 dB)

Command

```
:DISPlay:CVTime[:VIEW]:WINDow8:TRACe:Y[:SCALe]:RLEVel:OFFSet <rel_power>
```

Parameter

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

Example of Use

To set the vertical scale offset value of the Code vs Time graph to 10 dB.

```
DISP:CVT:WIND8:TRAC:Y:RLEV:OFFS 10
```

:DISPlay:CVTime[:VIEW]:WINDow8:TRACe:Y[:SCALe]:RLEVel:OFFSet?

Scale – Code vs Time Scale Offset

Function

This command queries the offset setting of the vertical scale of the Code vs Time graph. This command can be executed regardless of the selected Trace Mode type.

Details

The reference position is set as follows:
Reference position dBm = Input Level dBm + Code vs Time Scale Offset dB + 10 dB (in 5 dB steps, rounding up fractions less than 5 dB)

Command

```
:DISPlay:CVTime[:VIEW]:WINDow8:TRACe:Y[:SCALe]:RLEVel:OFFSet?
```

Parameter

< rel_power >		Scale range offset value
	Range	−99.99 to 99.99 dB
	Resolution	0.01 dB

Example of Use

To query the offset setting of the vertical scale of the Code vs Time graph.

```
DISP:CVT:WIND8:TRAC:Y:RLEV:OFFS?
> 10.00
```

2.9.10 Marker – On/Off

:CALCulate:CVTime:MARKer[:STATe] OFF|ON|0|1

Marker – On/Off

Function

This command sets the marker display On/Off when Code vs Time measurement is selected.

Command

```
:CALCulate:CVTime:MARKer[:STATe] <switch>
```

Parameter

<switch>	Marker
0|OFF	Off
1|ON	On (Default value)

Example of Use

To display the marker.

```
CALC:CDP:MARK 1
```

:CALCulate:CVTime:MARKer[:STATe]?

Marker – On/Off Query

Function

This command queries the marker display On/Off when Code vs Time measurement is selected.

Query

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

Response

```
<switch>
```

Parameter

<switch>	Marker
0	Off
1	On

Example of Use

To query the setting of Marker.

```
CALC:CVT:MARK?
> 1
```

2.9.11 Active Trace

:CALCulate:CVTime:MARKer:ACTive CVTime|BOTTom

Active Trace

Function

This command sets the graph (position) of the marker setting target.

Command

```
:CALCulate:CVTime:MARKer:ACTive CVTime|BOTTom
```

Parameter

<switch>	Marker Setting Target
CVTime	Upper Graph Window
BOTTom	Bottom Graph window (Default value)

Example of Use

To set the marker setting target to the upper graph window.

```
CALC:CVT:MARK:ACT CVT
```

:CALCulate:CVTime:MARKer:ACTive?

Active Trace Query

Function

This command queries the setting of Active Trace.

Query

```
:CALCulate:CVTime:MARKer:ACTive?
```

Response

```
<mode>
```

Parameter

<mode>	Active Trace
CVT	Upper Graph window
BOTT	Bottom Graph window

Example of Use

To query the setting of Active Trace.

```
CALC:CVT:MARK:ACT?
> CVT
```

2.9.12 Code vs Time Slot Number

:CALCulate:CVTime:SLOT <integer>

Code vs Time Slot Number

Function

This command sets the marker position of the Code vs Time graph in slot units.

Command

```
:CALCulate:CVTime:SLOT <integer>
```

Parameter

<integer>		Code vs Time Slot Number
	Range	0 to Measurement Interval – 1
	Resolution	1
	Default value	0

Example of Use

To set the marker position to the 10th slot.

```
CALC:CVT:SLOT 10
```

:CALCulate:CVTime:SLOT?

Code vs Time Slot Number Query

Function

This command queries the marker position of the Code vs Time graph in slot units.

Query

```
:CALCulate:CVTime:SLOT?
```

Response

```
<integer>
```

Parameter

<integer>		Code vs Time Slot Number
	Range	0 to MeasurementInterval – 1
	Resolution	1

Example of Use

To query the marker position.

```
CALC:CVT:SLOT?
> 10
```

2.9.13 Marker Value

:CALCulate:CVTime:MARKer:Y:CVTime:MPOWer?

Marker Y axis - Mean Power Value for Code vs Time Graph – Query

Function

This command queries the Mean Power at the marker position in the Code vs Time graph.

Query

```
:CALCulate:CVTime:MARKer:Y:CVTime:MPOWer?
```

Response

```
<real>
```

Parameter

`<real>`		Mean Power at marker position in graph
	Unit	dBm

Example of Use

To query the Mean Power at the marker position.

```
CALC:CVT:MARK:Y:CVT:MPOW?
> -10.51
```

:CALCulate:CVTime:MARKer:Y:CVTime:CPOWer?

Marker Y axis - Code Power Value for Code vs Time Graph – Query

Function

This command queries the Code Power at the marker position in the Code vs Time graph.

Query

```
:CALCulate:CVTime:MARKer:Y:CVTime:CPOWer?
```

Response

```
<real>
```

Parameter

`<real>`		Code Power at marker position in graph
	Unit	dB

Example of Use

To query the Code Power at the marker position.

```
CALC:CVT:MARK:Y:CVT:CPOW?
> -10.12
```

:CALCulate:CVTime:MARKer:Y:CVTime:SFACtor?

Marker Y axis Spreading Factor for Code vs Time Graph – Query

Function

This command queries the Spreading Factor at the marker position in the Code vs Time graph.

Query

```
:CALCulate:CVTime:MARKer:Y:CVTime:SFACtor?
```

Response

```
<integer>
```

Parameter

<integer>	Spreading Factor at marker position in graph

Example of Use

To query the Spreading Factor at the marker position.

```
CALC:CVT:MARK:Y:CVT:SFAC?
> 256
```

:CALCulate:CVTime:MARKer:Y:CVTime:CCODe?

Marker Y axis Channelization Code Number for Code vs Time Graph – Query

Function

This command queries the Channelization Code Number at the marker position in the Code vs Time graph.

Query

```
:CALCulate:CVTime:MARKer:Y:CVTime:CCODe?
```

Response

```
<integer>
```

Parameter

<integer>	Channelization Code Number at marker position in graph

Example of Use

To query the Channelization Code Number at the marker position.

```
CALC:CVT:MARK:Y:CVT:CCOD?
> 16
```

:CALCulate:CVTime:MARKer:Y:CVTime:MODulation?

Marker Y axis Modulataion for Code vs Time Graph – Query

Function

This command queries the Modulation at the marker position in the Code vs Time graph.

Query

```
:CALCulate:CVTime:MARKer:Y:CVTime:MODulation?
```

Response

```
<mode>
```

Parameter

`<mode>`	Modulation at marker position in graph
`QPSK`	QPSK
`16Q`	16QAM
`64Q`	64QAM
`NONE`	None (inactive)

Example of Use

To query the Modulation at the marker position.

```
CALC:CVT:MARK:Y:CVT:MOD?
> QPSK
```

2.9.14 Bottom Graph Marker Number

:CALCulate:CVTime:MARKer:MNUMber <integer>

Bottom Graph Marker Number

Function

This command sets the marker position on the graph displayed in the bottom graph window.

Command

```
:CALCulate:CVTime:MARKer:MNUMber <integer>
```

Parameter

<integer>		Bottom Graph Marker Number
	Range	0 to 511
	Resolution	1
	Default value	0

Example of Use

To set the marker position to 10.

```
CALC:CVT:MARK:MNUM 10
```

:CALCulate:CVTime:MARKer:MNUMber?

Bottom Graph Marker Number Query

Function

This command queries the marker position on the graph displayed in the bottom graph window.

Query

```
:CALCulate:CVTime:MARKer:MNUMber?
```

Response

```
<integer>
```

Parameter

<integer>		Bottom Graph Marker Number
	Range	0 to 511
	Resolution	1

Example of Use

To query the marker position.

```
CALC:CVT:MARK:MNUM?
> 10
```

2.9.15 Marker Value

:CALCulate:CVTime:MARKer:Y:CDOMain?

Marker Y axis Value for Code Domain Graph – Query

Function

This command queries the Y-coordinate at the marker position in the graph displayed in the bottom graph window.

Query

```
:CALCulate:CVTime:MARKer:Y:CDOMain?
```

Response

```
<real>
```

Parameter

`<real>`		Y-coordinate at marker position in graph
	Unit	dB

Example of Use

To query the Y-coordinate at the marker position.

```
CALC:CVT:MARK:Y:CDOM?
> -10.12
```

:CALCulate:CVTime:MARKer:Y:CDOMain:CPOWer?

Marker Y axis Code Power for Code Domain Power – Query

Function

This command queries the Code Power at the marker position in the Code Domain Power graph.

Query

```
:CALCulate:CVTime:MARKer:Y:CDOMain:CPOWer?
```

Response

```
<real>
```

Parameter

`<real>`		Code Power at marker position in graph
	Unit	dB

Example of Use

To query the Code Power at the marker position.

```
CALC:CVT:MARK:Y:CDOM:CPOW?
> -10.12
```

:CALCulate:CVTime:MARKer:Y:CDOMain:CERRor?

Marker Y axis Code Error for Code Domain Error – Query

Function

This command queries the Code Error at the marker position in the Code Domain Error graph.

Query

```
:CALCulate:CVTime:MARKer:Y:CDOMain:CERRor?
```

Response

```
<real>
```

Parameter

`<real>`		Code Error at marker position in graph
	Unit	dB

Example of Use

To query the Code Error at the marker position.

```
CALC:CVT:MARK:Y:CDOM:CERR?
> -50.12
```

:CALCulate:CVTime:MARKer:Y:CDOMain:SFACtor?

Marker Y axis Spreading Factor for Code Domain Graph – Query

Function

This command queries the Spreading Factor at the marker position on the graph displayed in the bottom graph window.

Query

```
:CALCulate:CVTime:MARKer:Y:CDOMain:SFACtor?
```

Response

```
<integer>
```

Parameter

`<integer>`	Spreading Factor at marker position in graph

Example of Use

To query the Spreading Factor at the marker position.

```
CALC:CVT:MARK:Y:CDOM:SFAC?
> 64
```

:CALCulate:CVTime:MARKer:Y:CDOMain:CCODe?

Marker Y axis Channelization Code Number for Code Domain Graph – Query

Function

This command queries the Channelization Code Number at the marker position on the graph displayed in the bottom graph window.

Query

```
:CALCulate:CVTime:MARKer:Y:CDOMain:CCODe?
```

Response

```
<integer>
```

Parameter

`<integer>`	Channelization Code Number at marker position in graph

Example of Use

To query the Channelization Code Number at the marker position.

```
CALC:CVT:MARK:Y:CDOM:CCOD?
> 16
```

:CALCulate:CVTime:MARKer:Y:CDOMain:MODulation?

Marker Y axis Modulataion for Code Domain Graph – Query

Function

This command queries the Modulation at the marker position on the graph displayed in the bottom graph window.

Query

```
:CALCulate:CVTime:MARKer:Y:CDOMain:MODulation?
```

Response

```
<mode>
```

Parameter

<mode>		Modulation at marker position in graph
	QPSK	QPSK
	16Q	16QAM
	64Q	64QAM
	NONE	None (inactive)

Example of Use

To query the Modulation at the marker position.

```
CALC:CVT:MARK:Y:CDOM:MOD?
> QPSK
```

Chapter 3 SCPI Status Register

This chapter describes the SCPI commands and the Status register for querying application statuses.

3.1 Querying Measurement Status

:STATus:ERRor?

Measurement Status Query

Function

This command queries the measurement status.

Query

```
:STATus:ERRor?
```

Response

```
<status>
```

Parameter

`<status>` Measurement status

Value = bit0 + bit1 + bit2 + bit3 + bit4 + bit5 + bit6 + bit7 + bit8 + bit9 + bit10 + bit11 + bit12 + bit13 + bit14 + bit15

bit0 : 2^0 = 1	Not measured
bit1 : 2^1 = 2	Exceeded the level.
bit2 : 2^2 = 4	Signal abnormal
bit3 : 2^3 = 8	(Unused)
bit4 : 2^4 = 16	(Unused)
bit5 : 2^5 = 32	(Unused)
bit6 : 2^6 = 64	(Unused)
bit7 : 2^7 = 128	(Unused)
bit8 : 2^8 = 256	(Unused)
bit9 : 2^9 = 512	(Unused)
bit10 : 2^{10} = 1024	(Unused)
bit11 : 2^{11} = 2048	(Unused)
bit12 : 2^{12} = 4096	(Unused)
bit13 : 2^{13} = 8192	(Unused)
bit14 : 2^{14} = 16384	(Unused)
bit15 : 2^{15} = 32768	(Unused)

Range 0 to 65535

Details

0 is returned when terminated normally.

Example of Use

To query the measurement status.

```
:STAT:ERR?
> 0
```

3.2 STATus:QUEStionable Register

Figure 3.2-1, Table 3.2-1, Figure 3.2-2, and Table 3.2-2 show the layer structure of the QUEStionable Status register.

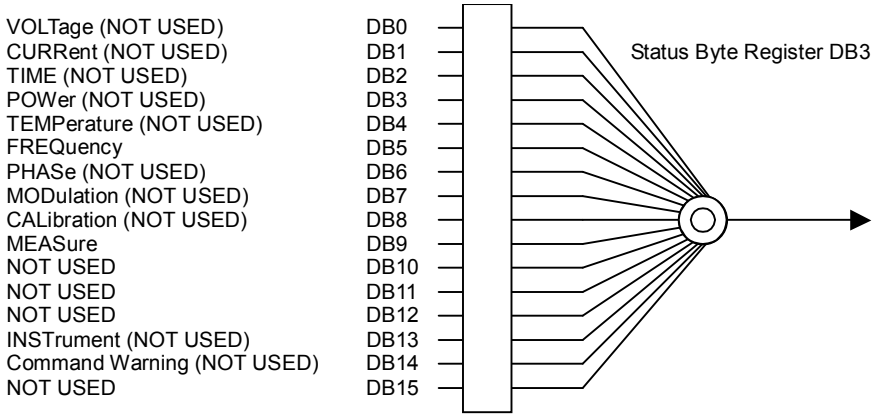

Figure 3.2-1 QUEStionable Status Register

Table 3.2-1 Bit Definition of QUEStionable Status Register

Bit	Definition
DB5	Unlock Reference Clock
DB9	QUEStionable Measure Register Summary

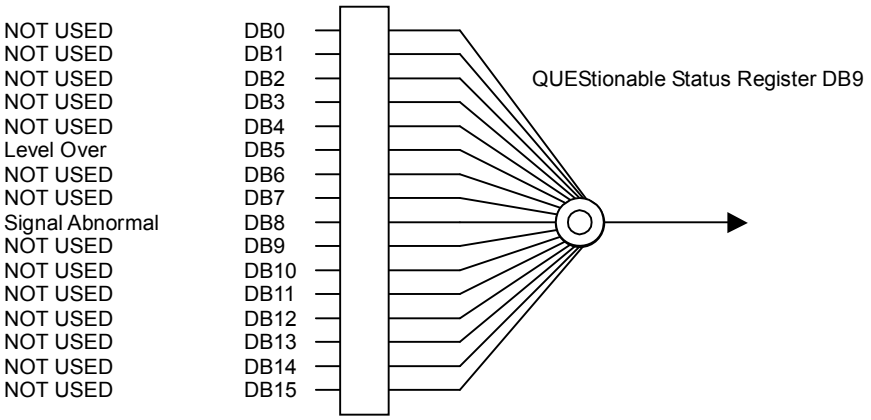

Figure 3.2-2 QUEStionable Measure Register

Table 3.2-2 Bit Definition of QUEStionable Measure Register

Bit	Definition
DB5	Exceeded the level.
DB8	Signal abnormal

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

Table 3.2-3 Device Messages for QUEStionable Status Register

Function	Device Message
Questionable Status Register Event	`:STATus:QUEStionable[:EVENt]?`
Questionable Status Register Condition	`:STATus:QUEStionable:CONDition?`
Questionable Status Register Enable	`:STATus:QUEStionable:ENABle <integer>`
	`:STATus:QUEStionable:ENABle?`
Questionable Status Register Negative Transition	`:STATus:QUEStionable:NTRansition <integer>`
	`:STATus:QUEStionable:NTRansition?`
Questionable Status Register Positive Transition	`:STATus:QUEStionable:PTRansition <integer>`
	`:STATus:QUEStionable:PTRansition?`
Questionable Measure Register Event	`:STATus:QUEStionable:MEASure[:EVENt]?`
Questionable Measure Register Condition	`:STATus:QUEStionable:MEASure:CONDition?`
Questionable Measure Register Enable	`:STATus:QUEStionable:MEASure:ENABle <integer>`
	`:STATus:QUEStionable:MEASure:ENABle?`
Questionable Measure Register Negative Transition	`:STATus:QUEStionable:MEASure:NTRansition <integer>`
	`:STATus:QUEStionable:MEASure:NTRansition?`
Questionable Measure Register Positive Transition	`:STATus:QUEStionable:MEASure:PTRansition <integer>`
	`:STATus:QUEStionable:MEASure:PTRansition?`

:STATus:QUEStionable[:EVENt]?

Questionable Status Register Event

Function

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

Query

```
:STATus:QUEStionable[:EVENt]?
```

Response

```
<integer>
```

Parameter

`<integer>`		Byte summation of event register
	Resolution	1
	Range	0 to 65535

Example of Use

To query the contents of the event register of the QUEStionable Status register.

```
:STAT:QUES?
> 0
```

:STATus:QUEStionable:CONDition?

Questionable Status Register Condition

Function

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

Query

```
:STATus:QUEStionable:CONDition?
```

Response

```
<integer>
```

Parameter

`<integer>`		Byte summation of condition register
	Resolution	1
	Range	0 to 65535

Example of Use

To query the content of the condition register of the QUEStionable Status register.

```
:STAT:QUES:COND?
> 0
```

:STATus:QUEStionable:ENABle <integer>

Questionable Status Register Enable

Function

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

Command

```
:STATus:QUEStionable:ENABle <integer>
```

Parameter

<integer>		Byte 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>		Byte 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>	Byte 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>	Byte summation of transition filter (negative transition)
Resolution	1
Range	0 to 65535

Example of Use

To query the transition filter (negative transition) of the QUEStionable Status register.

```
:STAT:QUES:NTR?
> 16
```

:STATus:QUEStionable:PTRansition <integer>

Questionable Status Register Positive Transition

Function

This command sets the transition filter (positive transition) of the QUEStionable Status register.

Command

```
:STATus:QUEStionable:PTRansition <integer>
```

Parameter

<integer>		Byte 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>		Byte 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 Status Register.

```
:STAT:QUES:PTR?
> 16
```

:STATus:QUEStionable:MEASure[:EVENt]?

Questionable Measure Register Event

Function

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

Query

```
:STATus:QUEStionable:MEASure[: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 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 the QUEStionable Measure register.

```
:STAT:QUES:MEAS:COND?
> 0
```

:STATus:QUEStionable:MEASure:ENABle <integer>

Questionable Measure Register Enable

Function

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

Command

```
:STATus:QUEStionable:MEASure:ENABle <integer>
```

Parameter

<integer>		Byte 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>		Byte summation of event enable register
	Resolution	1
	Range	0 to 65535

Example of Use

To query the event enable register of the QUEStionable Measure Register.

```
:STAT:QUES:MEAS:ENAB?
> 16
```

:STATus:QUEStionable:MEASure:NTRansition <integer>

Questionable Measure Register Negative Transition

Function

This command sets the transition filter (negative transition) of the QUEStionable Measure register.

Command

```
:STATus:QUEStionable:MEASure:NTRansition <integer>
```

Parameter

<integer>		Byte 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>		Byte 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>		Byte 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>		Byte summation of transition filter (positive transition)
	Resolution	1
	Range	0 to 65535

Example of Use

To query the transition filter (positive transition) of the QUEStionable Measure register.

```
:STAT:QUES:MEAS:PTR?
> 16
```

3.3 STATus:OPERation Register

Figure 3.3-1 and Table 3.3-1 show the layer structure of the OPERation Status register.

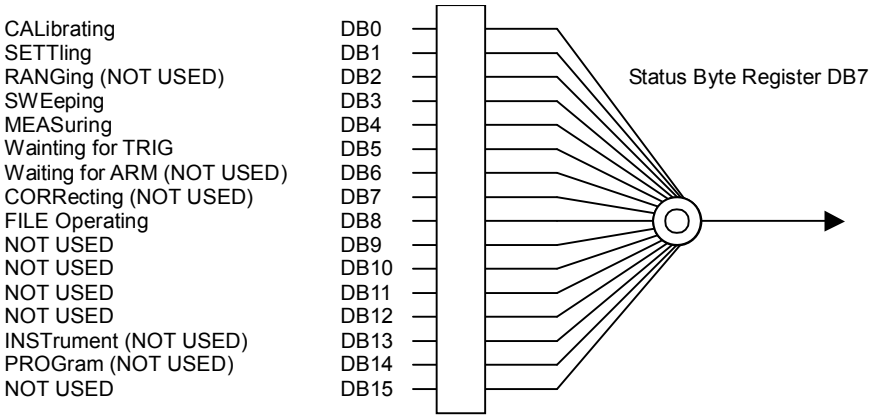

Figure 3.3-1 OPERation Status Register

Table 3.3-1 Bit Definition of OPERation Status Register

Bit	Definition
DB0	Executing CAL
DB1	Displaying Warm Up
DB4	Performing measurement (including trigger wait, always 1 in Continuous measurement mode)
DB5	Waiting for trigger
DB8	Manipulating file

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

Table 3.3-2 Device Messages for OPERation Status Register

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

:STATus:OPERation[:EVENt]?

Operation Status Register Event

Function

This command queries the event register of the OPERation Status register.

Query

```
:STATus:OPERation[:EVENt]?
```

Response

```
<integer>
```

Parameter

<integer>		Byte summation of event register
	Resolution	1
	Range	0 to 65535

Example of Use

To query the content of the event register of OPERation Status register.

```
:STAT:OPER?
> 0
```

:STATus:OPERation:CONDition?

Operation Status Register Condition

Function

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

Query

```
:STATus:OPERation:CONDition?
```

Response

```
<integer>
```

Parameter

`<integer>`		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>		Byte 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>		Byte 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>	Byte 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>	Byte 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>		Byte 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>		Byte 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
```