MX285051A-001
Pre-Standard CP-OFDM Downlink
MX285051A-051
Pre-Standard CP-OFDM Uplink
Operation Manual
Remote Control

Second 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 MS2850A Signal Analyzer Operation Manual (Mainframe Operation), MX285051A 5G Standard Measurement Software (Base License) Operation Manual, and MX285051A-001 Pre-Standard CP-OFDM Downlink MX285051A-051 Pre-Standard CP-OFDM Uplink Operation Manual (Operation). Please also refer to these documents before using the equipment.**
- **Keep this manual with the equipment.**

ANRITSU CORPORATION

Document No.: M-W3925AE-2.0

Safety Symbols

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

Symbols used in manual

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

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

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

Safety Symbols Used on Equipment and in Manual

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

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

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

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

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

These indicate that the marked part should be recycled.

MX285051A-001 Pre-Standard CP-OFDM Downlink
MX285051A-051 Pre-Standard CP-OFDM Uplink
Operation Manual Remote Control

28 April 2017 (First Edition)
30 October 2017 (Second Edition)

Notes On Export Management

This product and its manuals may require an Export License/Approval by the Government of the product's country of origin for re-export from your country.

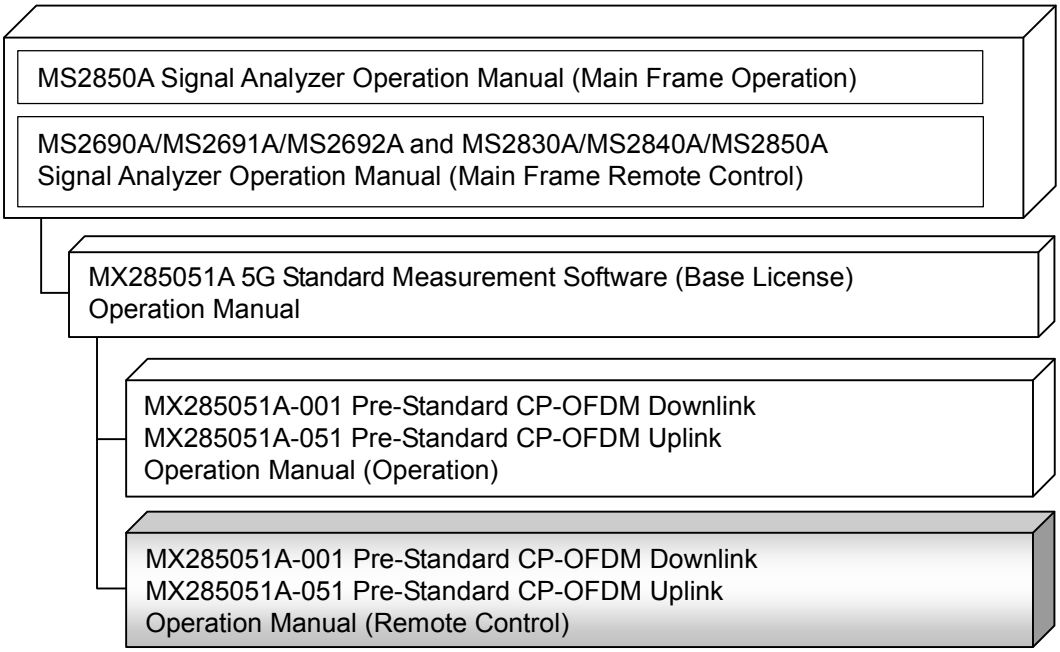
Before re-exporting the product or manuals, please contact us to confirm whether they are export-controlled items or not.

When you dispose of export-controlled items, the products/manuals need to be broken/shredded so as not to be unlawfully used for military purpose.

About This Manual

■ Composition of Operation Manuals

The operation manuals for the MX285051A-001 Pre-Standard CP-OFDM Downlink / MX285051A-051 Pre-Standard CP-OFDM Uplink are comprised as shown in the figure below.



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

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

- 5G Standard Measurement Software (Base License) Operation Manual

This manual describes operating methods of the 5G Standard (Base License) Measurement Software.

- MX285051A-001 Pre-Standard CP-OFDM Downlink
  MX285051A-051 Pre-Standard CP-OFDM Uplink
  Operation Manual (Operation)

This manual describes basic operating methods, and functions of the MX285051A-001 Pre-Standard CP-OFDM Downlink / MX285051A-051 Pre-Standard CP-OFDM Uplink.
As for signal analyzer hardware and its basic functions and operation outline, refer to *MS2850A Signal Analyzer Operation Manual (Mainframe Operation)*.

- MX285051A-001 Pre-Standard CP-OFDM Downlink
  MX285051A-051 Pre-Standard CP-OFDM Uplink
  Operation Manual (Remote Control) <This document>

This manual describes remote control of the MX285051A-001 Pre-Standard CP-OFDM Downlink / MX285051A-051 Pre-Standard CP-OFDM Uplink.
As for signal analyzer application's basic remote control functions and its definitions of common commands, refer to *MS2690A/MS2691A/MS2692A and MS2830A/MS2840A/MS2850A Signal Analyzer Operation Manual (Mainframe Remote Control)*.

Table of Contents

IV.

Chapter 1 Outline

This chapter provides an overview of the remote control of the MX285051A-001 Pre-Standard CP-OFDM Downlink and MX285051A-051 Pre-Standard CP-OFDM Uplink (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 MS2850A 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/MS2840A /MS2850A Signal Analyzer Operation 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 once it has been activated. 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 part explains the basic remote control command programming for measuring a Pre-Standard CP-OFDM Downlink and Pre-Standard CP-OFDM Uplink 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).

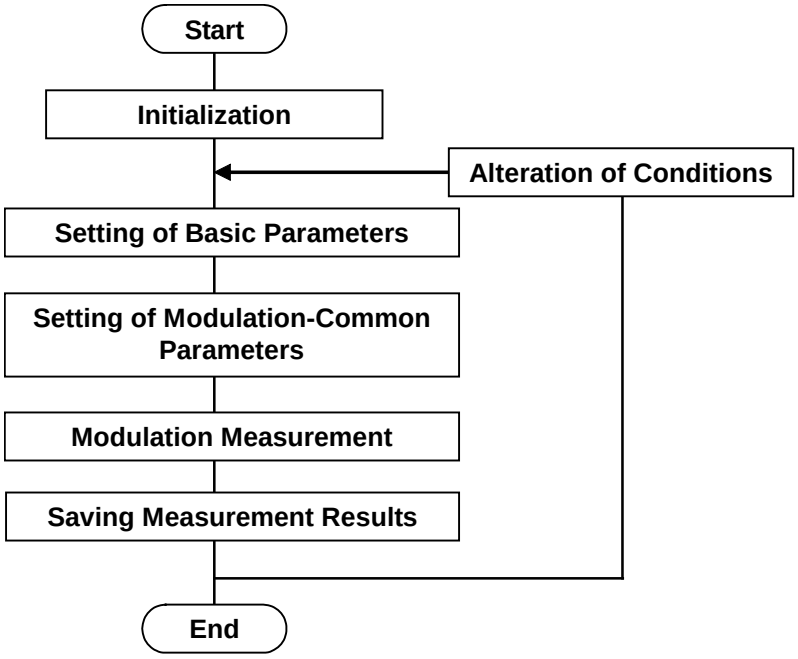


Figure 1.2-1 Flow of Basic Test

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

Refer to 1.2.1 “Initialization”

(2) Setting of Basic Parameters
The parameters used in common by all measurement functions to be executed in this application are set, including the carrier frequency and input level.

Refer to 1.2.2 “Setting of Basic Parameters”

(3) Setting of Modulation-Common Parameters

The parameters used in common by the modulation measurement function to be executed in this application are set. These parameters are used to set a trigger, modulation mode, bandwidth, and other items.

Refer to 1.2.3 “Setting of Modulation-Common Parameters”

(4) Modulation Measurement

The measurement functions to be executed in this application are executed. First, the modulation measurement function is selected. Next, the trace mode, storage mode, and other items are set for each measurement function, and then the measurement is executed and the measurement results are read.

Refer to 1.2.4 “Modulation 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 operation manual of the interface used, for details about the remote control interface.

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

(3) Starting Application
The application is started. In addition to this application, the Signal Analyzer and Spectrum Analyzer applications are also started.

(4) Selecting Application
The 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.

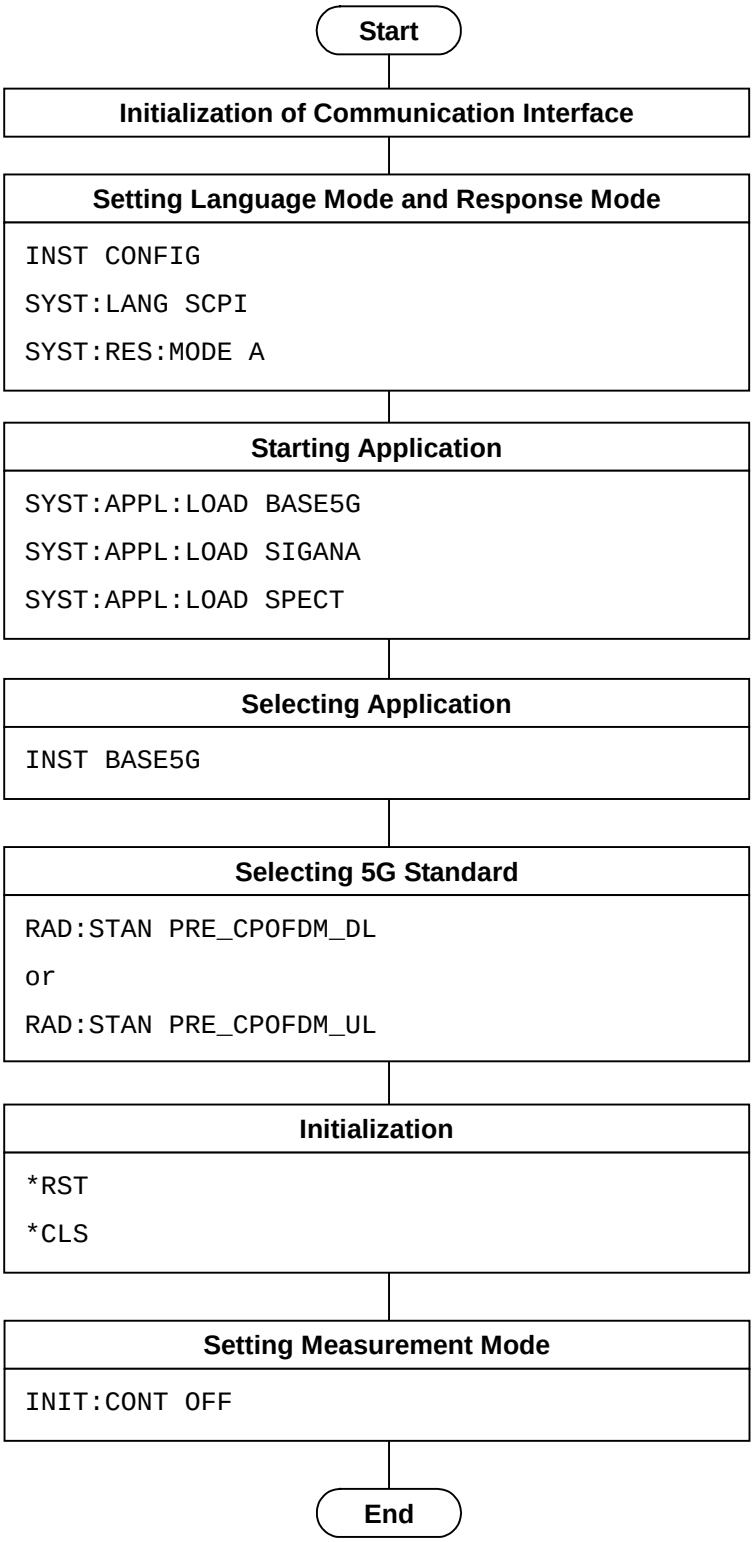


Figure 1.2.1-1 Initialization Flow and Command Example

1.2.2 Setting of Basic Parameters

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) Center Frequency
(2) Input Level (Reference Level/Attenuator)
(3) Level Offset
(4) Pre-Amp (Option)

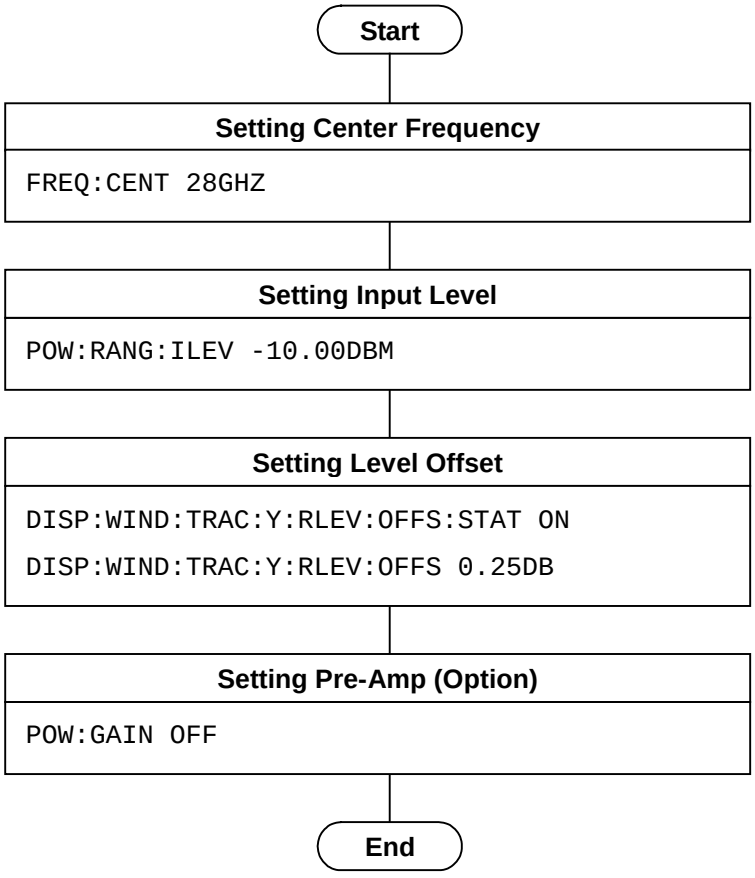


Figure 1.2.2-1 Flow of Basic Parameter Setting and Command Example

1.2.3 Setting of Modulation-Common Parameters

Set the parameters used in common for the Modulation measurement functions executed in this application. **Standard** should be set first, and after that, there is no specific parameter setting order unless specified.

Set the following parameters to analyze single carrier signal when Standard is Pre-Standard CP-OFDM Downlink.

(1) Trigger
  (a) Trigger Switch
  (b) Trigger Source
  (c) Trigger Slope
  (d) Trigger Delay
(2) Number of Antenna Port
(3) Subframe Type
  (a) Subframe Type
(4) xPDCCH/UE-Specific RS
  (a) Number of xPDCCH symbols
(5) xPDSCH/UE-Specific RS
  (a) Modulation Scheme
(6) xPBCH / xPDCCH
  (a) On/Off

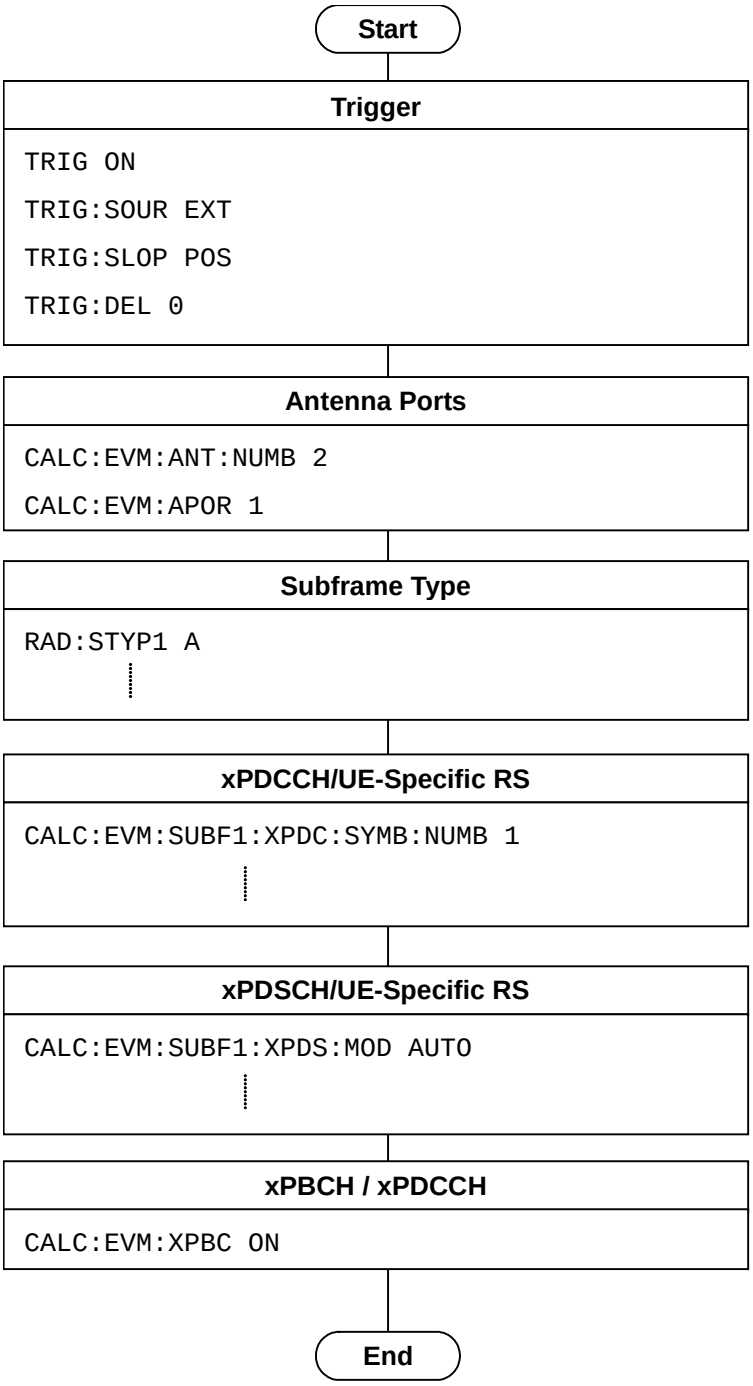


Figure 1.2.3-1 Flow of Common Settings for Modulation and Command Example

Set the following parameters to analyze multi carrier signal when Standard is Pre-Standard CP-OFDM Downlink.

(1) Trigger
  (a) Trigger Switch
  (b) Trigger Source
  (c) Trigger Slope
  (d) Trigger Delay
(2) Carrier Spacing
(3) Number of Carriers
(4) Reference Carrier
(5) Number of Antenna Port
(6) Subframe Type
  (a) Subframe Type
(7) xPDCCH/UE-Specific RS
  (a) Number of xPDCCH symbols
(8) xPDSCH/UE-Specific RS
  (a) Modulation Scheme
(9) xPBCH / xPDCCH
  (a) On/Off

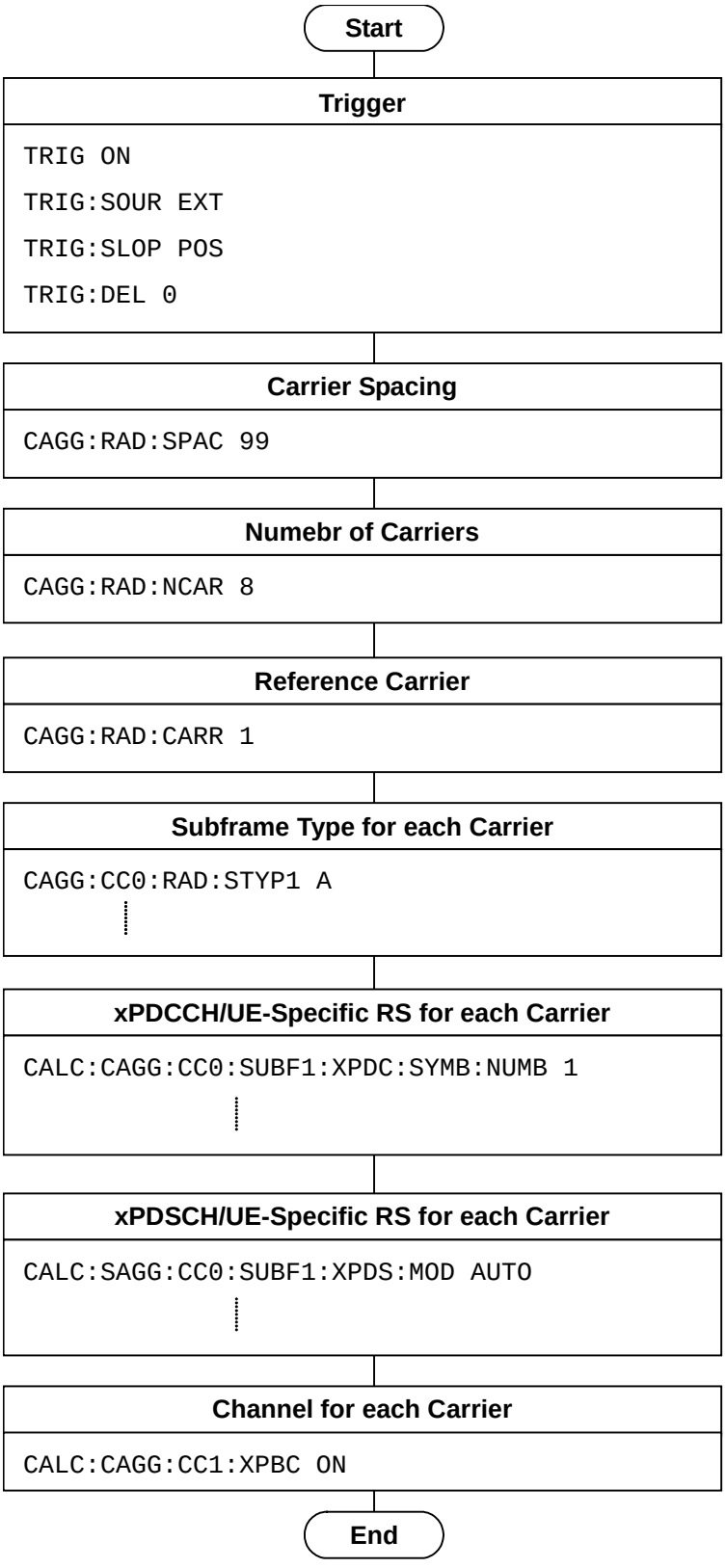


Figure 1.0.0-2 Flow of Common Settings for Modulation and Command Example

Set the following parameters when Standard is Pre-Standard CP-OFDM Uplink.

(1) Trigger

  (a) Trigger Switch

  (b) Trigger Source

  (c) Trigger Slope

  (d) Trigger Delay

(2) Number of Antenna Port

(3) Cell ID

(4) RE Mapping Index

(5) Subframe Type

  (a) Subframe Type

(6) xPUSCH/DM-RS

  (a) Modulation Scheme

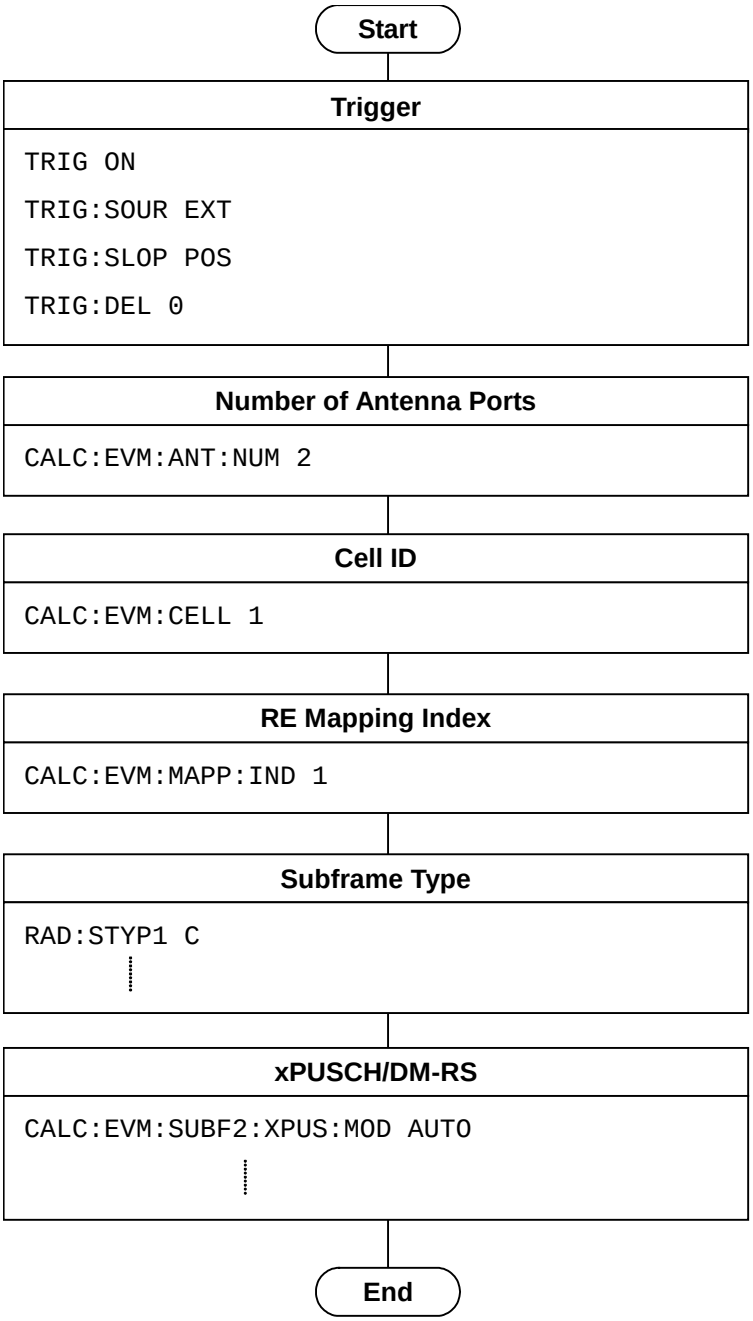


Figure 1.0.0-3 Flow of Common Settings for Modulation and Command Example

1.2.4 Modulation Measurement

The Modulation measurement is executed in the following order:

(1) Selecting measurement function

(2) Setting measurement parameters
The following parameters are only applied to Modulation measurement:

  (a) Storage

(3) Measuring and reading results

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

  (a) Trace Mode

  (b) Scale

  (c) Marker

  (d) Constellation Display Range

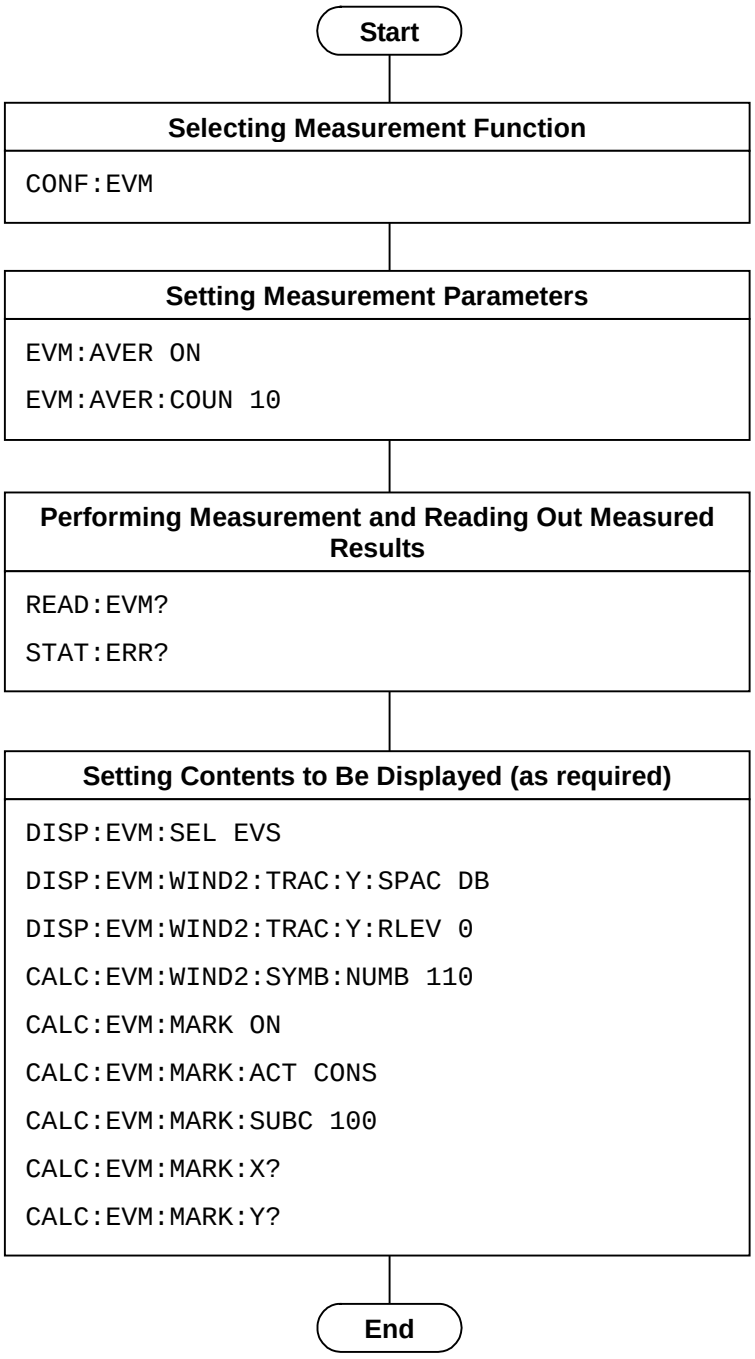


Figure 1.2.4-1 Flow of Modulation Measurement and Command Example

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 the command header is fix. If a command of the application is only defined by SCPI mode, the character string converted by the conversion rule will be the 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` register command and `STATus:OPERation` command cannot be used in the Native mode, even if they are converted following the conversion rule described below.

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

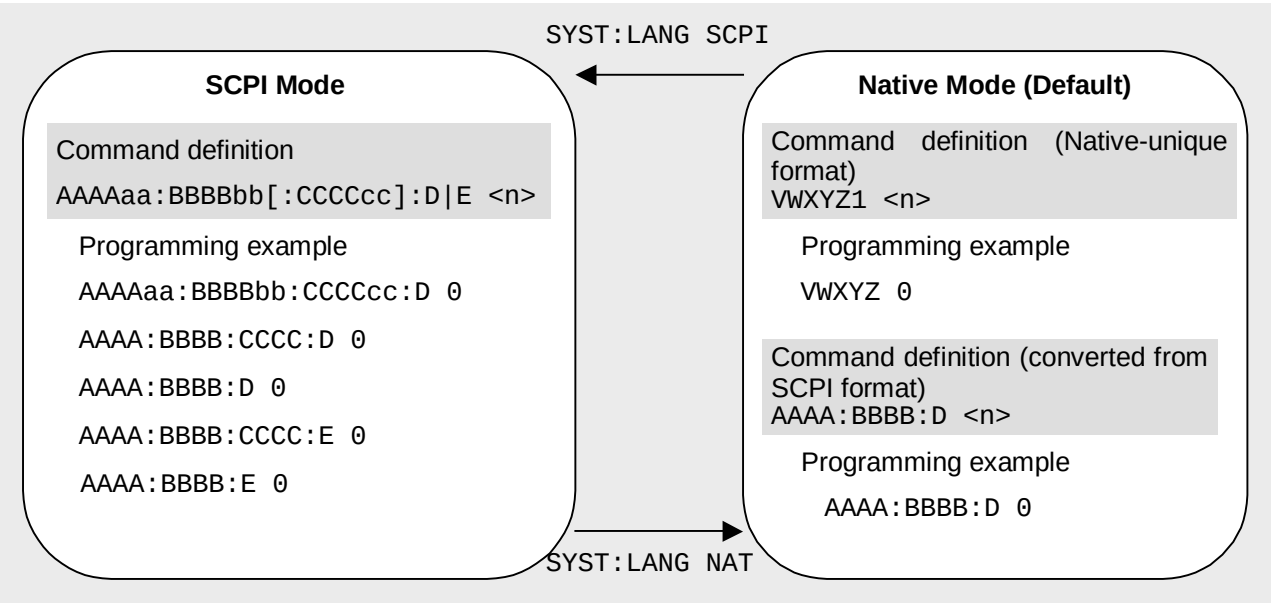


Figure 1.3-1 SCPI mode and Native mode

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 mode, 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 mode.

1. Put a numeric parameter of the program header at the head of the argument.
   :CALCulate:MARKer**[1]|2**[:SET]:CENTer
   ↓
   :CALCulate:MARKer[:SET]:CENTer **<integer>**
   (the argument <integer> represents the numeric value 1 or 2)
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 mode.

1. Use the leading one if multiple nodes can be selected.
   [:SENSe]**:BPOWer|:TXPower**[:STATe]?
   ↓
   [:SENSe]**:BPOWer**[:STATe]?
2. Delete the layers that can be deleted.
   [:SENSe]:BPOWer**[:STATe]**?
   ↓
   :BPOWer?
3. Alter all long forms into short forms.
   :**BPOWer**?
   ↓
   :**BPOW**?
4. Delete the colon mark (":") at the head.
   :BPOW?
   ↓
   BPOW?

Example 3
:Convert FETCh|:EVM[n]? into a Native mode command.

1. Put a numeric parameter of the program header at the head of the argument.
   :FETCh:EVM**[n]**?
   ↓
   :FETCh:EVM? <integer>
2. Alter all the long forms into the short ones.
   :**FETCh:EVM?** <integer>
   ↓
   :**FETC:EVM?** <integer>
3. Omit the colon (":") at the head of the command.
   :FETCh:EVM? <integer>
   ↓
   FETC:EVM? <integer>
4. Set the value of arguments.
   FETCh: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 is 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>`

`<rel_power>`

`<integer>`

`<time>`

Chapter 2 SCPI Device Message Details

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

2.1 Selecting Application

Table 2.1-1 lists the device messages used for setup applications, such as activation, selection, and initialization of the application.

Table 2.1-1 Device Messages for Selecting Application

Function	Device Message
Load Application	:SYSTem:APPLication:LOAD BASE5G
Unload Application	:SYSTem:APPLication:UNLoad BASE5G
Application Switch	:INSTrument[:SELect] BASE5G|CONFIG
	:INSTrument[:SELect]?
Application Status	:INSTrument:SYSTem BASE5G,[ACTive]|INACtive|MINimum
	:INSTrument:SYSTem? BASE5G
Initialization	:INSTrument:DEFault
	:SYSTem:PRESet

2.1.1 Loading application

:SYSTem:APPLication:LOAD BASE5G

Load Application

Function

This command loads this application.

Command

```
:SYSTem:APPLication:LOAD BASE5G
```

Details

This function loads the installed application and registers it in the Application Switch menu.

Example of Use

To load this application.

```
SYST:APPL:LOAD BASE5G
```

:SYSTem:APPLication:UNLoad BASE5G

Unload Application

Function

This command exits this application.

Command

```
:SYSTem:APPLication:UNLoad BASE5G
```

Details

This function exits the application being loaded, and removes it from the Application Switch menu.

Example of Use

To exit this application.

```
SYST:APPL:UNL BASE5G
```

2.1.2 Selecting application

:INSTrument[:SELect] BASE5G|CONFIG

Application Switch

Function

This command selects the application to be controlled.

Command

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

Parameter

<apl_name>	Application name
BASE5G	This application
CONFIG	Config

Example of Use

To switch the control target to this application.

```
INST BASE5G
```

:INSTrument[:SELect]?

Application Switch Query

Function

This command queries the application being controlled currently.

Query

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

Response

```
<apl_name>
```

Parameter

<apl_name>	Application name
BASE5G	This application
SIGANA	Signal Analyzer
SPECT	Spectrum Analyzer
CONFIG	Config

Details

`BASE5G` is returned when a measurement function of this application is selected.

Example of Use

To query the application being controlled.

```
INST?
> BASE5G
```

:INSTrument:SYSTem BASE5G,[ACTive]|INACtive|MINimum

Application Switch And Window Status

Function

This command selects the window status of this application.

Command

```
:INSTrument:SYSTem BASE5G,<window>
```

Parameter

<window>	Window status
ACTive	Active
INACtive	Inactive
MINimum	Minimized

When omitted Active

Example of Use

To set the window status of this application to be active.

```
INST:SYST BASE5G,ACT
```

:INSTrument:SYSTem? BASE5G

Application Switch And Window Status Query

Function

This command queries the window status of this application.

Query

```
:INSTrument:SYSTem? BASE5G
```

Response

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

Parameter

<status>	Application status
CURR	Activated and controlled
RUN	Activated but not controlled
IDLE	Loaded but not activated
UNL	Unloaded

<window>	Window status
ACTive	Active
INACtive	Inactive
MINimum	Minimized
NON	Not displayed

Example of Use

To query the window status of this application.

```
INST:SYST? BASE5G
> CURR,ACT
```

2.1.3 Initialization

:INSTrument:DEFault

Preset Current Application

Function

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

Command

```
:INSTrument:DEFault
```

Example of Use

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

```
INST:DEF
```

:SYSTem:PRESet

Preset Current Application

Function

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

See the description of `:INSTrument:DEFault`.

Example of Use

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

```
SYST:PRES
```

2.2 Setting Basic Parameters

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

Table 2.2-1 Device Messages for Setting Basic Parameters

Parameter	Device Message
Center Frequency	[:SENSe]:FREQuency:CENTer <freq>
	[:SENSe]:FREQuency:CENTer?
RF Spectrum	[:SENSe]:SPECtrum NORMal|REVerse
	[:SENSe]:SPECtrum?
Input Level	[:SENSe]:POWer[:RF]:RANGe:ILEVel <real>
	[:SENSe]:POWer[:RF]:RANGe:ILEVel?
Auto Range	[:SENSe]:POWer[:RF]:RANGe:AUTO ONCE
Attenuator	[:SENSe]:POWer[:RF]:ATTenuation:AUTO ON|OFF|1|0
	[:SENSe]:POWer[:RF]:ATTenuation:AUTO?
Attenuator Value	[:SENSe]:POWer[:RF]:ATTenuation <rel_ampl>
	[:SENSe]:POWer[:RF]:ATTenuation?
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]?
Standard	[:SENSe]:RADio:STANdard PRE_CPOFDM_DL|PRE_CPOFDM_UL
	[:SENSe]:RADio:STANdard?

2.2.1 Center Frequency

[:SENSe]:FREQuency:CENTer <freq>

Center Frequency

Function

This command sets the center frequency for the signal to be measured.

Command

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

Parameter

<freq>		Center frequency
	Range	800 MHz to the upper limit of the main unit
	Resolution	1 Hz
	Suffix code	HZ, KHZ, KZ, MHZ, MZ, GHZ, GZ
		Hz is used when omitted.
	Default	28 GHz

Details

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

Example of Use

To set the center frequency to 28.000 GHz.

```
FREQ:CENT 28.000GHZ
```

[:SENSe]:FREQuency:CENTer?

Center Frequency Query

Function

This command queries the center frequency of the measured signal.

Query

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

Response

```
<freq>
```

Parameter

<freq>		Center frequency
	Range	800 MHz to the upper limit of the main unit
	Resolution	1 Hz
		Value is returned in Hz units.

Example of Use

To query the center frequency.

```
FREQ:CENT?
> 28000000000
```

2.2.2 RF Spectrum

[:SENSe]:SPECtrum NORMal|REVerse

RF Spectrum

Function

This command sets whether to perform Spectrum Reverse.

Command

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

Parameter

<mode>	Spectrum reverse
NORMal	Measures without IQ spectrum reverse. (Default)
REVerse	Measures with IQ spectrum reverse.

Example of Use

To enable the Spectrum Reverse function.

```
SPEC NORM
```

[:SENSe]:SPECtrum?

RF Spectrum Query

Function

This command queries the spectrum reverse function of the input signal spectrum.

Query

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

Response

```
<mode>
```

Parameter

<mode>	Spectrum reverse
NORM	Measures without IQ spectrum reverse.
REV	Measures with IQ spectrum reverse.

Example of Use

To query the spectrum reverse function setting.

```
SPEC?
> NORM
```

2.2.3 Input Level

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

Input Level

Function

This command sets the input level of RF signals.

Command

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

Parameter

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

Details

The setting range when Pre Amp is Off is applied if the MS2850A-068/168 Microwave Preamplifier is not installed.
This command is not available when the Replay function is executed.

Example of Use

To set the input level to 0 dBm.

```
:POW:RANG:ILEV 0
```

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

Input Level Query

Function

This command queries the input level of RF signals.

Query

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

Response

```
<real>
```

Parameter

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

Example of Use

To query the input level.

```
POW:RANG:ILEV?
> –15.00
```

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

Auto Range

Function

This command automatically sets the optimum input level and attenuator according to the input signal.

Command

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

Details

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

Example of Use

To adjust the input level and attenuator automatically.

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

2.2.4 Attenuator

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

RF Attenuator Auto/Manual

Function

This command enables/disables the automatic attenuation setting function.

Command

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

Parameter

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

Details

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

Example of Use

To enable the automatic attenuation setting function.

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

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

RF Attenuator Auto/Manual Query

Function

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

Query

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

Response

```
<switch>
```

Parameter

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

Example of Use

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

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

2.2.5 Attenuator Value

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

RF Attenuator

Function

This command sets the attenuator.

Command

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

Parameter

<rel_ampl>	Attenuator value
Range	0 to 60 dB
Resolution	2 dB
Suffix code	DB, dB is used when omitted.
Default value	10 dB

Details

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

Example of Use

To set the attenuator to 10 dB.

```
POW:ATT 10
```

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

RF Attenuator Query

Function

This command queries the attenuator value.

Query

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

Response

```
<rel_ampl>
```

Parameter

<rel_ampl>	Attenuator value
Range	0 to 60 dB
Resolution	2 dB
Suffix code	None. Value is returned in dB units.
Default value	10 dB

Example of Use

To query the attenuator value.

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

2.2.6 Level Offset

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

Level Offset Value

Function

This command sets the offset value for the input level.

Command

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

Parameter

<rel_power>	Offset value
Range	–99.99 to +99.99 dB
Resolution	0.01 dB
Suffix code	DB dB is used when omitted.
Default	0 dB

Example of Use

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

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

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

Level Offset Value Query

Function

This command queries the offset value of the input level.

Query

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

Response

```
<rel_power>
```

Parameter

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

Example of Use

To query the offset value of the input level.

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

2.2.7 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 input level offset function.

Command

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

Parameter

<switch>	Enables/disables input level offset function
OFF|0	Disables the input level offset function (Default).
ON|1	Enables the input level offset function.

Example of Use

To enable the input level offset function.

```
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 whether the input level offset function is enabled.

Query

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

Response

```
<switch>
```

Parameter

<switch>	Enables/disables input level offset function
0	The input level offset function is disabled.
1	The input level offset function is enabled.

Example of Use

To query whether the input level offset function is enabled.

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

2.2.8 Pre Amp

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

Pre Amp

Function

This command sets Pre-amp On/Off.

Command

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

Parameter

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

Details

This command is not available in the following situations:

- When Option 008 is not installed.
- When the Replay function is executed.

Example of Use

To set Pre-amp On.

```
POW:GAIN ON
```

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

Pre Amp Query

Function

This command queries the Pre-amp On/Off state.

Query

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

Response

```
<switch>
```

Parameter

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

Details

When Option 008 is not installed, 0 (Pre-amp Off) is returned.

Example of Use

To query the Pre-amp On/Off state.

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

2.2.9 Standard

[:SENSe]:RADio:STANdard PRE_CPOFDM_DL|PRE_CPOFDM_UL

Standard

Function

This command sets the 5G Standard.

Command

```
[:SENSe]:RADio:STANdard <mode>
```

Parameter

<mode>	5G Standard
PRE_CPOFDM_DL	Pre-Standard CP-OFDM Downlink
PRE_CPOFDM_UL	Pre-Standard CP-OFDM Uplink

Details

Pre-Standard CP-OFDM Downlink is available only when MX285051A-001 is installed.

Pre-Standard CP-OFDM Uplink is available only when MX285051A-051 is installed.

Example of Use

To set the 5G Standard to Pre-Standard CP-OFDM Downlink.

```
RAD:STAN PRE_CPOFDM_DL
```

[:SENSe]:RADio:STANdard?

Standard Query

Function

This command queries the 5G Standard setting.

Query

```
[:SENSe]:RADio:STANdard?
```

Response

```
<switch>
```

Parameter

<mode>	5G Standard
PRE_CPOFDM_DL	Pre-Standard CP-OFDM Downlink
PRE_CPOFDM_UL	Pre-Standard CP-OFDM Uplink

Example of Use

To query the 5G Standard setting.

```
RAD:STAN?
> PRE_CPOFDM_DL
```

2.3 Setting System Parameters (MX285051A-001 Modulation Analysis)

Table 2.3-1 lists the device messages used for the communication system targeted for measurement.

Table 2.3-1 Device Messages for Setting System Parameters

Parameter	Device Message
Number of Antenna Ports	:CALCulate:EVM:ANTenna:NUMBer 1|2|4|8
	:CALCulate:EVM:ANTenna:NUMBer?
Antenna Port	:CALCulate:EVM:APORt <integer>
	:CALCulate:EVM:APORt?
Subframe Type	[:SENSe]:RADio:STYPe [0]|1|2|3|4|5|6|7|8|9|10|11|12|13|14|15|16|17|18|19|20|21 |22|23|24|25|26|27|28|29|30|31|32|33|34|35|36|37|38|39|40 |41|42|43|44|45|46|47|48|49 OFF|A
	[:SENSe]:RADio:STYPe [0]|1|2|3|4|5|6|7|8|9|10|11|12|13|14|15|16|17|18|19|20|21 |22|23|24|25|26|27|28|29|30|31|32|33|34|35|36|37|38|39|40 |41|42|43|44|45|46|47|48|49?
Number of xPDCCH Symbols	CALCulate:EVM:SUBFrame [0]|1|2|3|4|5|6|7|8|9|10|11|12|13|14|15|16|17|18|19|20|21 |22|23|24|25|26|27|28|29|30|31|32|33|34|35|36|37|38|39|40 |41|42|43|44|45|46|47|48|49:XPDCch:SYMBol:NUMBer <mode>
	CALCulate:EVM:SUBFrame [0]|1|2|3|4|5|6|7|8|9|10|11|12|13|14|15|16|17|18|19|20|21 |22|23|24|25|26|27|28|29|30|31|32|33|34|35|36|37|38|39|40 |41|42|43|44|45|46|47|48|49:XPDCch:SYMBol:NUMBer?
xPDSCH Modulation Scheme	:CALCulate:EVM:SUBFrame [0]|1|2|3|4|5|6|7|8|9|10|11|12|13|14|15|16|17|18|19|20|21 |22|23|24|25|26|27|28|29|30|31|32|33|34|35|36|37|38|39|40 |41|42|43|44|45|46|47|48|49:XPDSch:MODulation QPSK|16Qam|64Qam|AUTO
	:CALCulate:EVM:SUBFrame [0]|1|2|3|4|5|6|7|8|9|10|11|12|13|14|15|16|17|18|19|20|21 |22|23|24|25|26|27|28|29|30|31|32|33|34|35|36|37|38|39|40 |41|42|43|44|45|46|47|48|49:XPDSch:MODulation?

Table 2.3-1 Device Messages for Setting System Parameters (Cont'd)

Parameter	Device Message
xPBCH On/Off	:CALCulate:EVM:XPBCh[:STATe] OFF|ON|0|1
	:CALCulate:EVM:XPBCh[:STATe]?
Carrier Spacing	[:SENSe]:EVM:RADio:SPACing <mode>
	[:SENSe]:EVM:RADio:SPACing?
Number of Carriers	[:SENSe]:EVM:RADio:NCARrier <integer>
	[:SENSe]:EVM:RADio:NCARrier?
Reference Carrier	[:SENSe]:EVM:RADio:CARRier <integer>
	[:SENSe]:EVM:RADio:CARRier?
Synchronization Mode	[:SENSe]:RADio:SYNChronization:MODE SS|RS
	[:SENSe]:RADio:SYNChronization:MODE?
Cell ID	:CALCulate:EVM:CELLid <integer>
	:CALCulate:EVM:CELLid?
P-SS On/Off	:CALCulate:EVM:PSS[:STATe] 0|1|ON|OFF
	:CALCulate:EVM:PSS[:STATe]?
S-SS On/Off	:CALCulate:EVM:SSS[:STATe] 0|1|ON|OFF
	:CALCulate:EVM:SSS[:STATe]?
E-SS On/Off	:CALCulate:EVM:ESS[:STATe] 0|1|ON|OFF
	:CALCulate:EVM:ESS[:STATe]?
PCRS AP On/Off	[:SENSe]:EVM:PCRS:AP60|61[:STATe] 0|1|ON|OFF
	[:SENSe]:EVM:PCRS:AP60|61[:STATe]?
Equalizer Use Data	[:SENSe]:EVM:RADio:EQUalizer:DATA 0|1|ON|OFF
	[:SENSe]:EVM:RADio:EQUalizer:DATA?

2.3.1 Number of Antenna Ports

:CALCulate:EVM:ANTenna:NUMBer 1|2|4|8

Number of Antenna Ports

Function

This command sets the number of antennas.

Command

```
:CALCulate:EVM:ANTenna:NUMBer <mode>
```

Parameter

<mode>	Number of antennas
1	Uses 1 antenna for transmission (Default).
2	Uses 2 antenna for transmission
4	Uses 4 antenna for transmission
8	Uses 8 antenna for transmission

Example of Use

To set 2 for the number of antennas.

```
CALC:EVM:ANT:NUMB 2
```

:CALCulate:EVM:ANTenna:NUMBer?

Number of Antenna Port Query

Function

This command queries the number of antennas.

Query

```
:CALCulate:EVM:ANTenna:NUMBer?
```

Response

```
<mode>
```

Parameter

<mode>	Number of antennas
1	Uses 1 antenna for transmission.
2	Uses 2 antenna for transmission.
4	Uses 2 antenna for transmission.
8	Uses 2 antenna for transmission.

Example of Use

To query the number of antennas.

```
CALC:EVM:ANT:NUMB?
> 2
```

2.3.2 Antenna Port

:CALCulate:EVM:APORt <integer>

Antenna Port

Function

This command sets the antenna to be measured.

Command

```
:CALCulate:EVM:APORt <integer>
```

Parameter

<integer>		Antenna to be measured
	Range	0 to (Number of Antenna Ports – 1)
	Resolution	1
	Suffix code	None
	Default	0

Example of Use

To set the antennas to be measured to 2.

```
CALC:EVM:APOR 2
```

:CALCulate:EVM:APORt?

Antenna Port Query

Function

This command queries the antenna to be measured.

Query

```
:CALCulate:EVM:APORt?
```

Response

```
<integer>
```

Parameter

<integer>		Antenna to be measured
	Range	0 to (Number of Antenna Ports – 1)
	Resolution	1

Example of Use

To query the antenna to be measured.

```
CALC:EVM:APOR?
> 2
```

2.3.3 Subframe Type

[:SENSe]:RADio:STYPe
[0]|1|2|3|4|5|6|7|8|9|10|11|12|13|14|15|16|17|18|19|20|21|22|23|24|25|26|27
|28|29|30|31|32|33|34|35|36|37|38|39|40|41|42|43|44|45|46|47|48|49 OFF|A

Subframe Type

Function

This command sets the subframe type for each subframe.

Command

```
[:SENSe]:RADio:STYPe[0]|1|2|3|4|5|6|7|8|9|10|11|12|13
|14|15|16|17|18|19|20|21|22|23|24|25|26|27|28|29|30|31
|32|33|34|35|36|37|38|39|40|41|42|43|44|45|46|47|48|49
 OFF|A
```

Parameter

<mode>	Subframe Type
OFF	Sets the subframe type to off the measurement target.
A	Sets the subframe type to Type a for analysis. (Default)
B	Sets the subframe type to Type b for analysis.

Example of Use

To set the Subframe 2 to Type a.

```
RAD:STYP2 A
```

[:SENSe]:RADio:STYPe [0]|1|2|3|4|5|6|7|8|9|10|11|12|13|14|15|16|17|18|19|20|21|22|23|24|25|26|27|28|29|30|31|32|33|34|35|36|37|38|39|40|41|42|43|44|45|46|47|48|49?

Subframe Type Query

Function

This command queries the subframe type for each subframe.

Query

```
[:SENSe]:RADio:STYPe[0]|1|2|3|4|5|6|7|8|9|10|11|12|13
|14|15|16|17|18|19|20|21|22|23|24|25|26|27|28|29|30|31
|32|33|34|35|36|37|38|39|40|41|42|43|44|45|46|47|48|49?
```

Response

```
<mode>
```

Parameter

<mode>	Subframe Type
OFF	Subframe is off the measurement target.
A	Subframe Type a
B	Subframe Type b

Example of Use

To query the subframe type for Subframe 2.

```
RAD:STYP2?
> A
```

2.3.4 Number of xPDCCH Symbols

CALCulate:EVM:SUBFrame
[0]|1|2|3|4|5|6|7|8|9|10|11|12|13|14|15|16|17|18|19|20|21|22|23|24|25|26|27
|28|29|30|31|32|33|34|35|36|37|38|39|40|41|42|43|44|45|46|47|48|49
:XPDCch:SYMBol:NUMBer <mode>

Number of xPDCCH Symbols

Function

This command sets the number of xPDCCH symbols for each subframe.

Command

```
CALCulate:EVM:SUBFrame[0]|1|2|3|4|5|6|7|8|9|10|11|12|13
|14|15|16|17|18|19|20|21|22|23|24|25|26|27|28|29|30|31
|32|33|34|35|36|37|38|39|40|41|42|43|44|45|46|47|48|49
:XPDCch:SYMBol:NUMBer <mode>
```

Parameter

<mode>	Number of xPDCCH symbols
1	1 symbol
2	2 symbols (Default)

Example of Use

To set the number of xPDCCH symbols for Subframe 2 to 1.

```
CALC:EVM:SUBF2:XPDC:SYMB:NUMB 1
```

CALCulate:EVM:SUBFrame [0]|1|2|3|4|5|6|7|8|9|10|11|12|13|14|15|16|17|18|19|20|21|22|23|24|25|26|27|28|29|30|31|32|33|34|35|36|37|38|39|40|41|42|43|44|45|46|47|48|49 :XPDCch:SYMBol:NUMBer?

Number of xPDCCH Symbols Query

Function

This command queries the number of xPDCCH symbols for each subframe.

Query

```
CALCulate:EVM:SUBFrame[0]|1|2|3|4|5|6|7|8|9|10|11|12|13
|14|15|16|17|18|19|20|21|22|23|24|25|26|27|28|29|30|31
|32|33|34|35|36|37|38|39|40|41|42|43|44|45|46|47|48|49
:XPDCch:SYMBol:NUMBer?
```

Response

```
<mode>
```

Parameter

<mode>	Number of xPDCCH symbols
1	1 symbol
2	2 symbols

Example of Use

To query the number of xPDCCH symbols for Subframe 2.

```
CALC:EVM:SUBF2:XPDC:SYMB:NUMB?
> 1
```

2.3.5 xPDSCH Modulation Scheme

CALCulate:EVM:SUBFrame
[0]|1|2|3|4|5|6|7|8|9|10|11|12|13|14|15|16|17|18|19|20|21|22|23|24|25|26|27
|28|29|30|31|32|33|34|35|36|37|38|39|40|41|42|43|44|45|46|47|48|49
:XPDSch:MODulation QPSK|16Qam|64Qam|AUTO

xPDSCH Modulation Scheme

Function

This command sets the Modulation Scheme of xPDSCH for each subframe.

Command

```
CALCulate:EVM:SUBFrame[0]|1|2|3|4|5|6|7|8|9|10|11|12|13
|14|15|16|17|18|19|20|21|22|23|24|25|26|27|28|29|30|31
|32|33|34|35|36|37|38|39|40|41|42|43|44|45|46|47|48|49
:XPDSch:MODulation QPSK|16Qam|64Qam|AUTO
```

Parameter

<mode>	Modulation Scheme of xPDSCH
QPSK	Sets QPSK modulation scheme for analysis.
16Qam	Sets 16QAM modulation scheme for analysis.
64Qam	Sets 64QAM modulation scheme for analysis.
AUTO	Analyzes an input signal after judging its modulation scheme automatically. (Default)

Example of Use

To set the xPDSCH modulation scheme for subframe 2 to AUTO.

```
CALC:EVM:SUBF2:XPDS:MOD AUTO
```

CALCulate:EVM:SUBFrame [0]|1|2|3|4|5|6|7|8|9|10|11|12|13|14|15|16|17|18|19|20|21|22|23|24|25|26|27|28|29|30|31|32|33|34|35|36|37|38|39|40|41|42|43|44|45|46|47|48|49 :XPDSch:MODulation?

xPDSCH Modulation Scheme Query

Function

This command queries the Modulation Scheme of xPDSCH for each subframe.

Query

```
CALCulate:EVM:SUBFrame[0]|1|2|3|4|5|6|7|8|9|10|11|12|13
|14|15|16|17|18|19|20|21|22|23|24|25|26|27|28|29|30|31
|32|33|34|35|36|37|38|39|40|41|42|43|44|45|46|47|48|49
:XPDSch:MODulation?
```

Response

```
<mode>
```

Parameter

<mode>	Modulation Scheme of xPDSCH
QPSK	Sets QPSK modulation scheme for analysis.
16Q	Sets 16QAM modulation scheme for analysis.
64Q	Sets 64QAM modulation scheme for analysis.
AUTO	Analyzes an input signal after judging its modulation scheme automatically.

Example of Use

To query the xPDSCH modulation scheme for Subframe 2.

```
CALC:EVM:SUBF2:XPDS:MOD?
> AUTO
```

2.3.6 xPBCH

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

xPBCH On/Off

Function

This command sets whether to include (On) or exclude (Off) xPBCH as the measurement target.

Command

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

Parameter

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

Example of Use

To configure a setting to include xPBCH.

```
CALC:EVM:XPBC ON
```

:CALCulate:EVM:XPBCh[:STATe]?

xPBCH On/Off Query

Function

This command queries whether to include (On) or exclude (Off) xPBCH as the measurement target.

Query

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

Response

```
<switch>
```

Parameter

<switch>	xPBCH On/Off
0	Off
1	On

Example of Use

To query the setting for xPBCH.

```
CALC:EVM:XPBC?
> 1
```

2.3.7 Carrier Spacing

[:SENSe]:EVM:RADio:SPACing <mode>

Carrier Spacing

Function

This command sets the carrier frequency spacing for the signal to be measured.

Command

```
[:SENSe]:EVM:RADio:SPACing <mode>
```

Parameter

<mode>	Carrier frequency spacing for the signal to be measured
99	Sets the carrier frequency spacing to 99 MHz for analysis. (Default)
100	Sets the carrier frequency spacing to 100 MHz for analysis.

Example of Use

To set the carrier frequency spacing to 99 MHz.

```
EVM:RAD:SPAC 99
```

[:SENSe]:EVM:RADio:SPACing?

Carrier Spacing Query

Function

This command queries the carrier frequency spacing for the signal to be measured.

Query

```
[:SENSe]:EVM:RADio:SPACing?
```

Response

```
<mode>
```

Parameter

<mode>	Carrier frequency spacing for the signal to be measured
99	Carrier frequency spacing is 99 MHz for analysis.
100	Carrier frequency spacing is 100 MHz for analysis.

Example of Use

To query the carrier frequency spacing for the signal to be measured .

```
EVM:RAD:SPAC?
> 99
```

2.3.8 Number of Carriers

[:SENSe]:EVM:RADio:NCARrier <integer>

Number of Carriers

Function

This command sets the number of carriers for the signal to be measured.

Command

```
[:SENSe]:EVM:RADio:NCARrier <integer>
```

Parameter

<integer>	Number of carriers for the signal to be measured	
Range	1 to 2	(MS2850A-032)
	1 to 5	(MS2850A-033/133)
	1 to 8	(MS2850A-034/134)
Resolution	1	
Suffix code	None	
Default	1	

Example of Use

To set the number of carriers to 8.

```
EVM:RAD:NCAR 8
```

[:SENSe]:EVM:RADio:NCARrier?

Number of Carriers Query

Function

This command queries the number of carriers for the signal to be measured.

Query

```
[:SENSe]:EVM:RADio:NCARrier?
```

Response

```
<integer>
```

Parameter

<integer>	Number of carriers for the signal to be measured	
Range	1 to 8	
Resolution	1	

Example of Use

To query the number of carriers for the signal to be measured.

```
EVM:RAD:NCAR?
> 8
```

2.3.9 Reference Carrier

[:SENSe]:EVM:RADio:CARRier <integer>

Reference Carrier

Function

This command sets the reference carrier number for the Carrier Aggregation measurement.

Command

```
[:SENSe]:EVM:RADio:CARRier <integer>
```

Parameter

<integer>	Reference carrier number
Range	0 to (Number of Carriers – 1)
Resolution	1
Suffix codes	None
Default	0

Example of Use

To set the reference carrier number for the Carrier Aggregation measurement to 1.

```
EVM:RAD:CARR 1
```

[:SENSe]:EVM:RADio:CARRier?

Reference Carrier Query

Function

This command queries the reference carrier number for the Carrier Aggregation measurement.

Query

```
[:SENSe]:EVM:RADio:CARRier?
```

Response

```
<integer>
```

Parameter

<integer>	Reference carrier number
Range	0 to (Number of Carriers – 1)
Resolution	1

Example of Use

To query the reference carrier number for the Carrier Aggregation measurement.

```
EVM:RAD:CARR?
> 1
```

2.3.10 Synchronization Mode

[:SENSe]:RADio:SYNChronization:MODE SS|RS

Synchronization Mode

Function

This command sets the Synchronization Mode for Modulation Analysis.

Command

```
[:SENSe]:RADio:SYNChronization:MODE <mode>
```

Parameter

<mode>	Synchronization Mode
SS	Synchronization Signal (Default)
RS	Reference Signal

Example of Use

To set the Synchronization Mode to SS.

```
RAD:SYNC:MODE SS
```

[:SENSe]:RADio:SYNChronization:MODE?

Synchronization Mode Query

Function

This command queries the Synchronization Mode for Modulation Analysis.

Query

```
[:SENSe]:RADio:SYNChronization:MODE?
```

Response

```
<mode>
```

Parameter

<mode>	Synchronization Mode
SS	Synchronization Signal
RS	Reference Signal

Example of Use

To query the Synchronization Mode.

```
RAD:SYNC:MODE?
> SS
```

2.3.11 Cell ID

CALCulate:EVM:CELLid <integer>

Cell ID

Function

This command sets the Cell ID for Modulation Analysis.

Command

```
CALCulate:EVM:CELLid <integer>
```

Parameter

<integer>	Cell ID
Range	0 to 503
Resolution	1
Suffix code	None
Default	0

Details

This command is not available when the Synchronization Mode is Synchronization Signal.

Example of Use

To set the Cell ID to 1.

```
CALC:EVM:CELL 1
```

CALCulate:EVM:CELLid?

Cell ID Query

Function

This command queries the Cell ID for Modulation Analysis.

Query

```
CALCulate:EVM:CELLid?
```

Response

```
<integer>
```

Parameter

<integer>	Cell ID
Range	0 to 503
Resolution	1

Example of Use

To query the Cell ID.

```
CALC:EVM:CELL?
> 1
```

2.3.12 P-SS

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

P-SS On/Off

Function

This command sets the P-SS to On/Off for Modulation Analysis.

Command

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

Parameter

<switch>	P-SS On/Off
0|OFF	Off
1|ON	On (Default)

Details

This command is not available when the Synchronization Mode is Synchronization Signal.

Example of Use

To set the P-SS to On for Modulation Analysis.

```
CALC:EVM:PSS ON
```

:CALCulate:EVM:PSS[:STATe]?

P-SS On/Off Query

Function

This command queries the P-SS On/Off state for Modulation Analysis.

Query

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

Response

```
<switch>
```

Parameter

<switch>	P-SS On/Off
0	Off
1	On

Example of Use

To query the P-SS On/Off state.

```
CALC:EVM:PSS?
> 1
```

2.3.13 S-SS

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

S-SS On/Off

Function

This command sets the S-SS to On/Off for Modulation Analysis.

Command

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

Parameter

<switch>	S-SS On/Off
0|OFF	Off
1|ON	On (Default)

Details

This command is not available when the Synchronization Mode is Synchronization Signal.

Example of Use

To set the S-SS to On for Modulation Analysis.

```
CALC:EVM:SSS ON
```

:CALCulate:EVM:SSS[:STATe]?

S-SS On/Off Query

Function

This command queries the S-SS On/Off state for Modulation Analysis.

Query

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

Response

```
<switch>
```

Parameter

<switch>	S-SS On/Off
0	Off
1	On

Example of Use

To query the S-SS On/Off state.

```
CALC:EVM:SSS?
> 1
```

2.3.14 E-SS

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

E-SS On/Off

Function

This command sets the E-SS to On/Off for Modulation Analysis.

Command

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

Parameter

<switch>	E-SS On/Off
0|OFF	Off
1|ON	On (Default)

Details

This command is not available when the Synchronization Mode is Synchronization Signal.

Example of Use

To set the E-SS to On for Modulation Analysis.

```
CALC:EVM:ESS ON
```

:CALCulate:EVM:ESS[:STATe]?

E-SS On/Off Query

Function

This command queries the E-SS On/Off state for Modulation Analysis.

Query

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

Response

```
<switch>
```

Parameter

<switch>	E-SS On/Off
0	Off
1	On

Example of Use

To query the E-SS On/Off state.

```
CALC:EVM:ESS?
> 1
```

2.3.15 PCRS AP 60, 61

[:SENSe]:EVM:PCRS:AP60|61[:STATe] OFF|ON|0|1

PCRS AP On/Off

Function

This command sets the PCRS to On/Off for Modulation Analysis.

Command

```
[:SENSe]:EVM:PCRS:AP60|61[:STATe]  <switch>
```

Parameter

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

Example of Use

To set the AP60 PCRS to On for Modulation Analysis.

```
EVM:PCRS:AP60 ON
```

[:SENSe]:EVM:PCRS:AP60|61[:STATe]?

PCRS AP On/Off Query

Function

This command queries the PCRS On/Off state for Modulation Analysis.

Query

```
[:SENSe]:EVM:PCRS:AP60|61[:STATe]?
```

Response

```
<switch>
```

Parameter

<switch>	PCRS On/Off
0	Off
1	On

Example of Use

To query the AP60 PCRS On/Off state.

```
EVM:PCRS:AP60?
> 1
```

2.3.16 Equalizer Use Data

[:SENSe]:EVM:RADio:EQUalizer:DATA 0|1|ON|OFF

Equalizer Use Data

Function

This command sets whether to include data subcarriers in the calculation of Channel Estimation for Modulation Analysis.

Command

```
[:SENSe]:EVM:RADio:EQUalizer:DATA <switch>
```

Parameter

<switch>	On/Off
0|OFF	Does not include data subcarriers in the calculation. (Default)
1|ON	Includes data subcarriers in the calculation.

Example of Use

To turn On Equalizer Use Data to include data subcarriers in the calculation of Channel Estimation for Modulation Analysis.

```
EVM:RAD:EQU:DATA ON
```

[:SENSe]:EVM:RADio:EQUalizer:DATA?

Equalizer Use Data Query

Function

This command queries the Equalizer Use Data setting for Modulation Analysis.

Query

```
[:SENSe]:EVM:RADio:EQUalizer:DATA?
```

Response

```
<switch>
```

Parameter

<switch>	On/Off
0	Does not include data subcarriers in the calculation.
1	Includes data subcarriers in the calculation.

Example of Use

To query whether to include data subcarriers in the calculation of Channel Estimation for Modulation Analysis.

```
EVM:RAD:EQU:DATA?
> 1
```

2.4 Setting System Parameters (MX285051A-001 Carrier Aggregation Analysis)

Table 2.4-1 lists the device messages used for the communication system targeted for measurement.

Table 2.4-1 Device Messages for Setting System Parameters

Parameter	Device Message
Carrier Spacing	[:SENSe]:CAGG:RADio:NCARrier <integer>
	[:SENSe]:CAGG:RADio:NCARrier?
Number of Carriers	[:SENSe]:CAGG:RADio:CARRier <integer>
	[:SENSe]:CAGG:RADio:CARRier?
Reference Carrier	[:SENSe]:CAGG:RADio:CARRier <integer>
	[:SENSe]:CAGG:RADio:CARRier?
State	[:SENSe]:CAGG:CC[0]|1|2|3|4|5|6|7:STATe 0|1|OFF|ON
	[:SENSe]:CAGG:CC[0]|1|2|3|4|5|6|7:STATe?
Reference Carrier	[:SENSe]:CAGG:CC[0]|1|2|3|4|5|6|7:RADio:STYPe [0]|1|2|3|4|5|6|7|8|9|10|11|12|13|14|15|16|17|18|19|20|21 |22|23|24|25|26|27|28|29|30|31|32|33|34|35|36|37|38|39|40 |41|42|43|44|45|46|47|48|49 OFF|A
	[:SENSe]:CAGG:CC[0]|1|2|3|4|5|6|7:RADio:STYPe [0]|1|2|3|4|5|6|7|8|9|10|11|12|13|14|15|16|17|18|19|20|21 |22|23|24|25|26|27|28|29|30|31|32|33|34|35|36|37|38|39|40 |41|42|43|44|45|46|47|48|49?
Subframe Type	:CALCulate:CAGG:CC[0]|1|2|3|4|5|6|7:SUBFrame [0]|1|2|3|4|5|6|7|8|9|10|11|12|13|14|15|16|17|18|19|20|21 |22|23|24|25|26|27|28|29|30|31|32|33|34|35|36|37|38|39|40 |41|42|43|44|45|46|47|48|49:XPDCch:SYMBol:NUMBer <mode>
	:CALCulate:CAGG:CC[0]|1|2|3|4|5|6|7:SUBFrame [0]|1|2|3|4|5|6|7|8|9|10|11|12|13|14|15|16|17|18|19|20|21 |22|23|24|25|26|27|28|29|30|31|32|33|34|35|36|37|38|39|40 |41|42|43|44|45|46|47|48|49:XPDCch:SYMBol:NUMBer?
Number of xPDCCH Symbols	:CALCulate:CAGG:CC[0]|1|2|3|4|5|6|7:SUBFrame [0]|1|2|3|4|5|6|7|8|9|10|11|12|13|14|15|16|17|18|19|20|21 |22|23|24|25|26|27|28|29|30|31|32|33|34|35|36|37|38|39|40 |41|42|43|44|45|46|47|48|49:XPDSch:MODulation QPSK|16Qam|64Qam|AUTO
	:CALCulate:CAGG:CC[0]|1|2|3|4|5|6|7:SUBFrame [0]|1|2|3|4|5|6|7|8|9|10|11|12|13|14|15|16|17|18|19|20|21 |22|23|24|25|26|27|28|29|30|31|32|33|34|35|36|37|38|39|40 |41|42|43|44|45|46|47|48|49:XPDSch:MODulation?
xPBCH On/Off	:CALCulate:CAGG:CC[0]|1|2|3|4|5|6|7:XPBCh[:STATe] OFF|ON|0|1
	:CALCulate:CAGG:CC[0]|1|2|3|4|5|6|7:XPBCh[:STATe]?

Table 2.4-1 Device Messages for Setting System Parameters (Cont'd)

Parameter	Device Message
Synchronization Mode	[:SENSe]:CAGG:CC[0]|1|2|3|4|5|6|7|:SYNChronization SS|RS
	[:SENSe]:CAGG:CC[0]|1|2|3|4|5|6|7|:SYNChronization?
Cell ID	:CALCulate:CAGG:CC[0]|1|2|3|4|5|6|7|:CELLid <integer>
	:CALCulate:CAGG:CC[0]|1|2|3|4|5|6|7|:CELLid?
P-SS On/Off	:CALCulate:CAGG:CC[0]|1|2|3|4|5|6|7|:PSS[:STATe] 0|1|ON|OFF
	:CALCulate:CAGG:CC[0]|1|2|3|4|5|6|7|:PSS[:STATe]?
S-SS On/Off	:CALCulate:CAGG:CC[0]|1|2|3|4|5|6|7|:SSS[:STATe] 0|1|ON|OFF
	:CALCulate:CAGG:CC[0]|1|2|3|4|5|6|7|:SSS[:STATe]?
E-SS On/Off	:CALCulate:CAGG:CC[0]|1|2|3|4|5|6|7|:ESS[:STATe] 0|1|ON|OFF
	:CALCulate:CAGG:CC[0]|1|2|3|4|5|6|7|:ESS[:STATe]?
PCRS AP On/Off	[:SENSe]:CAGG:CC[0]|1|2|3|4|5|6|7|:PCRS:AP60|61[:STATe] 0|1|ON|OFF
	[:SENSe]:CAGG:CC[0]|1|2|3|4|5|6|7|:PCRS:AP60|61[:STATe]?
Equalizer Use Data	[:SENSe]:CAGG:RADio:EQUalizer:DATA 0|1|ON|OFF
	[:SENSe]:CAGG:RADio:EQUalizer:DATA?

2.4.1 Carrier Spacing

[:SENSe]:CAGG:RADio:SPACing <mode>

Carrier Spacing

Function

This command sets the carrier frequency spacing for the signal to be measured.

Command

```
[:SENSe]:CAGG:RADio:SPACing <mode>
```

Parameter

<mode>	Carrier frequency spacing for the signal to be measured
99	Sets carrier frequency spacing to 99 MHz for analysis. (Default)
100	Sets carrier frequency spacing to 100 MHz for analysis.

Example of Use

To set the carrier frequency spacing to 99 MHz.

```
CAGG:RAD:SPAC 99
```

[:SENSe]:CAGG:RADio:SPACing?

Carrier Spacing Query

Function

This command queries the carrier frequency spacing for the signal to be measured.

Query

```
[:SENSe]:CAGG:RADio:SPACing?
```

Response

```
<mode>
```

Parameter

<mode>	Carrier frequency spacing for the signal to be measured
99	Carrier frequency spacing is 99 MHz for analysis.
100	Carrier frequency spacing is 100 MHz for analysis.

Example of Use

To query the carrier frequency spacing for the signal to be measured .

```
CAGG:RAD:SPAC?
> 99
```

2.4.2 Number of Carriers

[:SENSe]:CAGG:RADio:NCARrier <integer>

Number of Carriers

Function

This command sets the number of carriers for the signal to be measured.

Command

```
[:SENSe]:CAGG:RADio:NCARrier <integer>
```

Parameter

<integer>	Number of carriers for the signal to be measured	
Range	1 to 2	(MS2850A-032)
	1 to 5	(MS2850A-033/133)
	1 to 8	(MS2850A-034/134)
Resolution	1	
Suffix code	None	
Default	1	

Example of Use

To set the number of carriers to 8.

```
CAGG:RAD:NCAR 8
```

[:SENSe]:CAGG:RADio:NCARrier?

Number of Carriers Query

Function

This command queries the number of carriers for the signal to be measured.

Query

```
[:SENSe]:CAGG:RADio:NCARrier?
```

Response

```
<integer>
```

Parameter

<integer>	Number of carriers for the signal to be measured	
Range	1 to 8	
Resolution	1	

Example of Use

To query the number of carriers for the signal to be measured.

```
CAGG:RAD:NCAR?
> 8
```

2.4.3 Reference Carrier

[:SENSe]:CAGG:RADio:CARRier <integer>

Reference Carrier

Function

This command sets the reference carrier number for the Carrier Aggregation measurement.

Command

```
[:SENSe]:CAGG:RADio:CARRier <integer>
```

Parameter

<integer>	Reference carrier number
Range	0 to (Number of Carriers – 1)
Resolution	1
Suffix codes	None
Default	0

Example of Use

To set the reference carrier number for the Carrier Aggregation measurement to 1.

```
CAGG:RAD:CARR 1
```

[:SENSe]:CAGG:RADio:CARRier?

Reference Carrier Query

Function

This command queries the reference carrier number for the Carrier Aggregation measurement.

Query

```
[:SENSe]:CAGG:RADio:CARRier?
```

Response

```
<integer>
```

Parameter

<integer>	Reference carrier number
Range	0 to (Number of Carriers – 1)
Resolution	1

Example of Use

To query the reference carrier number for the Carrier Aggregation measurement.

```
CAGG:RAD:CARR?
> 1
```

2.4.4 State

[:SENSe]:CAGG:CC[0]|1|2|3|4|5|6|7:STATe 0|1|OFF|ON

State

Function

This command sets whether to include (On) or exclude (Off) Component Carrier as the measurement target.

Command

```
[:SENSe]:CAGG:CC[0]|1|2|3|4|5|6|7:STATe <switch>
```

Parameter

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

Example of Use

To configure a setting to include Component Carrier 1.

```
CAGG:CC1 OFF
```

[:SENSe]:CAGG:CC[0]|1|2|3|4|5|6|7:STATe?

State Query

Function

This command queries whether to include (On) or exclude (Off) Component Carrier as the measurement target.

Query

```
[:SENSe]:CAGG:CC[0]|1|2|3|4|5|6|7:STATe?
```

Response

```
<switch>
```

Parameter

<switch>	Component Carrier On/Off
0	Off
1	On

Example of Use

To query the setting for Component Carrier 1.

```
CAGG:CC1?
> 0
```

2.4.5 Subframe Type

[:SENSe]:CAGG:CC[0]|1|2|3|4|5|6|7:RADio:STYPe
[0]|1|2|3|4|5|6|7|8|9|10|11|12|13|14|15|16|17|18|19|20|21|22|23|24|25|26|27
|28|29|30|31|32|33|34|35|36|37|38|39|40|41|42|43|44|45|46|47|48|49 OFF|A

Subframe Type

Function

This command sets the subframe type for each subframe of component carrier.

Command

```
[:SENSe]:CAGG:CC[0]|1|2|3|4|5|6|7:RADio:STYPe
[0]|1|2|3|4|5|6|7|8|9|10|11|12|13|14|15|16|17|18|19|20
|21|22|23|24|25|26|27|28|29|30|31|32|33|34|35|36|37|38
|39|40|41|42|43|44|45|46|47|48|49 OFF|A
```

Parameter

<mode>	Subframe Type
OFF	Sets the subframe type to off the measurement target.
A	Sets the subframe type to Type a for analysis. (Default)
B	Sets the subframe type to Type b for analysis.

Example of Use

To set Subframe 2 of Component Carrier 1 to Type a.

```
CAGG:CC1:RAD:STYP2 A
```

[:SENSe]:CAGG:CC[0]|1|2|3|4|5|6|7:RADio:STYPe [0]|1|2|3|4|5|6|7|8|9|10|11|12|13|14|15|16|17|18|19|20|21|22|23|24|25|26|27|28|29|30|31|32|33|34|35|36|37|38|39|40|41|42|43|44|45|46|47|48|49?

Subframe Type Query

Function

This command queries the subframe type for each subframe of component carrier.

Query

```
[:SENSe]:CAGG:CC[0]|1|2|3|4|5|6|7:RADio:STYPe
[0]|1|2|3|4|5|6|7|8|9|10|11|12|13|14|15|16|17|18|19|20
|21|22|23|24|25|26|27|28|29|30|31|32|33|34|35|36|37|38
|39|40|41|42|43|44|45|46|47|48|49?
```

Response

```
<mode>
```

Parameter

`<mode>`	Subframe Type
`OFF`	Subframe is off the measurement target.
`A`	Subframe Type a
`B`	Subframe Type b

Example of Use

To query the subframe type of Subframe 2 of Component Carrier 1.

```
CAGG:CC1:RAD:STYP2?
> A
```

2.4.6 Number of xPDCCH Symbols

:CALCulate:CAGG:CC[0]|1|2|3|4|5|6|7:SUBFrame
[0]|1|2|3|4|5|6|7|8|9|10|11|12|13|14|15|16|17|18|19|20|21|22|23|24|25|26|27
|28|29|30|31|32|33|34|35|36|37|38|39|40|41|42|43|44|45|46|47|48|49
:XPDCch:SYMBol:NUMBer <mode>

Number of xPDCCH Symbols

Function

This command sets the number of xPDCCH symbols for each subframe of component carrier.

Command

```
:CALCulate:CAGG:CC[0]|1|2|3|4|5|6|7:SUBFrame
[0]|1|2|3|4|5|6|7|8|9|10|11|12|13|14|15|16|17|18|19|20
|21|22|23|24|25|26|27|28|29|30|31|32|33|34|35|36|37|38
|39|40|41|42|43|44|45|46|47|48|49:XPDCch:SYMBol:NUMBer
<mode>
```

Parameter

<mode>	Number of symbols for xPDCCH
1	1 symbol
2	2 symbols (Default)

Example of Use

To set the number of xPDCCH symbols for subframe 2 of component carrier 1.

```
CALC:CAGG:CC1:SUBF2:XPDC:SYMB:NUMB 1
```

:CALCulate:CAGG:CC[0]|1|2|3|4|5|6|7:SUBFrame [0]|1|2|3|4|5|6|7|8|9|10|11|12|13|14|15|16|17|18|19|20|21|22|23|24|25|26|27|28|29|30|31|32|33|34|35|36|37|38|39|40|41|42|43|44|45|46|47|48|49 :XPDCch:SYMBol:NUMBer?

Number of xPDCCH Symbols Query

Function

This command queries the number of xPDCCH symbols for each subframe of component carrier.

Query

```
:CALCulate:CAGG:CC[0]|1|2|3|4|5|6|7:SUBFrame
[0]|1|2|3|4|5|6|7|8|9|10|11|12|13|14|15|16|17|18|19|20
|21|22|23|24|25|26|27|28|29|30|31|32|33|34|35|36|37|38
|39|40|41|42|43|44|45|46|47|48|49:XPDCch:SYMBol:NUMBer?
```

Response

```
<mode>
```

Parameter

`<mode>`	Number of symbols for xPDCCH
1	1 symbol
2	2 symbols

Example of Use

To query the number of xPDCCH symbols for Subframe 2 of Component Carrier 1.

```
CALC:CAGG:CC1:SUBF2:XPDC:SYMB:NUMB?
> 1
```

2.4.7 xPDSCH Modulation Scheme

:CALCulate:CAGG:CC[0]|1|2|3|4|5|6|7:SUBFrame
[0]|1|2|3|4|5|6|7|8|9|10|11|12|13|14|15|16|17|18|19|20|21|22|23|24|25|26|27
|28|29|30|31|32|33|34|35|36|37|38|39|40|41|42|43|44|45|46|47|48|49
:XPDSch:MODulation QPSK|16Qam|64Qam|AUTO

xPDSCH Modulation Scheme

Function

This command sets the xPDSCH modulation scheme for each subframe of component carrier.

Command

```
:CALCulate:CAGG:CC[0]|1|2|3|4|5|6|7:SUBFrame
[0]|1|2|3|4|5|6|7|8|9|10|11|12|13|14|15|16|17|18|19|20
|21|22|23|24|25|26|27|28|29|30|31|32|33|34|35|36|37|38
|39|40|41|42|43|44|45|46|47|48|49:XPDSch:MODulation
QPSK|16Qam|64Qam|AUTO
```

Parameter

<mode>	Modulation Scheme of xPDSCH
QPSK	Sets QPSK modulation scheme for analysis.
16Qam	Sets 16QAM modulation scheme for analysis.
64Qam	Sets 64QAM modulation scheme for analysis.
AUTO	Analyzes an input signal after judging its modulation scheme automatically. (Default)

Example of Use

To set the xPDSCH modulation scheme for Subframe 2 of Component Carrier 1 to AUTO.

```
CALC:SAGG:CC1:SUBF2:XPDS:MOD AUTO
```

:CALCulate:CAGG:CC[0]|1|2|3|4|5|6|7:SUBFrame [0]|1|2|3|4|5|6|7|8|9|10|11|12|13|14|15|16|17|18|19|20|21|22|23|24|25|26|27|28|29|30|31|32|33|34|35|36|37|38|39|40|41|42|43|44|45|46|47|48|49 :XPDSch:MODulation?

xPDSCH Modulation Scheme Query

Function

This command queries the xPDSCH modulation scheme for each subframe of component carrier.

Query

```
:CALCulate:CAGG:CC[0]|1|2|3|4|5|6|7:SUBFrame
[0]|1|2|3|4|5|6|7|8|9|10|11|12|13|14|15|16|17|18|19|20
|21|22|23|24|25|26|27|28|29|30|31|32|33|34|35|36|37|38
|39|40|41|42|43|44|45|46|47|48|49:XPDSch:MODulation?
```

Response

```
<mode>
```

Parameter

`<mode>`	Modulation Scheme of xPDSCH
`QPSK`	Sets QPSK modulation scheme for analysis.
`16Q`	Sets 16QAM modulation scheme for analysis.
`64Q`	Sets 64QAM modulation scheme for analysis.
`AUTO`	Analyzes an input signal after judging its modulation scheme automatically.

Example of Use

To query the xPDSCH modulation scheme of Subframe 2 of Component Carrier 1.

```
CALC:CAGG:CC1:SUBF2:XPDS:MOD?
> AUTO
```

2.4.8 xPBCH

:CALCulate:CAGG:CC[0]|1|2|3|4|5|6|7:XPBCh[:STATe] OFF|ON|0|1

xPBCH On/Off

Function

This command sets whether to include (On) or exclude (Off) xPBCH as the measurement target for each Component Carrier.

Command

```
:CALCulate:CAGG:CC[0]|1|2|3|4|5|6|7:XPBCh[:STATe]
<switch>
```

Parameter

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

Example of Use

To configure a setting to include xPBCH for Component Carrier 1.

```
CALC:CAGG:CC1:XPBC ON
```

:CALCulate:CAGG:CC[0]|1|2|3|4|5|6|7:EVM:XPBCh[:STATe]?

xPBCH On/Off Query

Function

This command queries whether to include (On) or exclude (Off) xPBCH as the measurement target for each Component Carrier.

Query

```
:CALCulate:CAGG:CC[0]|1|2|3|4|5|6|7:EVM:XPBCh[:STATe]?
```

Response

```
<switch>
```

Parameter

<switch>	xPBCH On/Off
0	Off
1	On

Example of Use

To query the setting for xPBCH of Component Carrier 1.

```
CALC:CAGG:CC1:XPBC?
> 1
```

2.4.9 Synchronization Mode

[:SENSe]:CAGG:CC[0]|1|2|3|4|5|6|7|:SYNChronization SS|RS

Synchronization Mode

Function

This command sets the Synchronization Mode for Carrier Aggregation Measurement.

Command

```
[:SENSe]:CAGG:CC[0]|1|2|3|4|5|6|7|:SYNChronization <mode>
```

Parameter

<mode>	Synchronization Mode
SS	Synchronization Signal (Default)
RS	Reference Signal

Example of Use

To set the Synchronization Mode of Component Carrier 1 to SS.

```
CAGG:CC1:SYNC SS
```

[:SENSe]:CAGG:CC[0]|1|2|3|4|5|6|7|:SYNChronization?

Synchronization Mode Query

Function

This command queries the Synchronization Mode for Carrier Aggregation Measurement.

Query

```
[:SENSe]:CAGG:CC[0]|1|2|3|4|5|6|7|:SYNChronization?
```

Response

```
<mode>
```

Parameter

<mode>	Synchronization Mode
SS	Synchronization Signal
RS	Reference Signal

Example of Use

To query the Synchronization Mode of Component Carrier 1.

```
CAGG:CC1:SYNC?
> SS
```

2.4.10 Cell ID

:CALCulate:CAGG:CC[0]|1|2|3|4|5|6|7|:CELLid <integer>

Cell ID

Function

This command sets the Cell ID for Carrier Aggregation measurement.

Command

```
CALCulate:EVM:CELLid <integer>
```

Parameter

<integer>	Cell ID
Range	0 to 503
Resolution	1
Suffix code	None
Default	0

Details

This command is not available when the Synchronization Mode is Synchronization Signal.

Example of Use

To set the Cell ID of Component Carrier 1 to 1.

```
CALC:CAGG:CC1:CELL 1
```

:CALCulate:CAGG:CC[0]|1|2|3|4|5|6|7|:CELLid?

Cell ID Query

Function

This command queries the Cell ID for Carrier Aggregation Measurement.

Query

```
CALCulate:EVM:CELLid?
```

Response

```
<integer>
```

Parameter

<integer>	Cell ID
Range	0 to 503
Resolution	1

Example of Use

To query the Cell ID of Component Carrier 1.

```
CALC:CAGG:CC1:CELL?
> 1
```

2.4.11 P-SS

:CALCulate:CAGG:CC[0]|1|2|3|4|5|6|7|:PSS[:STATe] 0|1|ON|OFF

P-SS On/Off

Function

This command queries the P-SS On/Off state for Carrier Aggregation Measurement.

Command

```
:CALCulate:CAGG:CC[0]|1|2|3|4|5|6|7|:PSS[:STATe]
<switch>
```

Parameter

<switch>	P-SS On/Off
0|OFF	Off
1|ON	On (Default)

Details

This command is not available when the Synchronization Mode is Synchronization Signal.

Example of Use

To set the P-SS On/Off of Component Carrier 1 to On.

```
CALC:CAGG:CC1:PSS ON
```

:CALCulate:CAGG:CC[0]|1|2|3|4|5|6|7|:PSS[:STATe]?

P-SS On/Off Query

Function

This command queries the P-SS On/Off state for Carrier Aggregation Measurement.

Query

```
:CALCulate:CAGG:CC[0]|1|2|3|4|5|6|7|:PSS[:STATe]?
```

Response

```
<switch>
```

Parameter

<switch>	P-SS On/Off
0	Off
1	On

Example of Use

To query the P-SS On/Off of Component Carrier 1.

```
CALC:CAGG:CC1:PSS?
> 1
```

2.4.12 S-SS

:CALCulate:CAGG:CC[0]|1|2|3|4|5|6|7|:SSS[:STATe] 0|1|ON|OFF

S-SS On/Off

Function

This command sets the S-SS to On/Off for Carrier Aggregation Measurement.

Command

```
:CALCulate:CAGG:CC[0]|1|2|3|4|5|6|7|:SSS[:STATe]
<switch>
```

Parameter

<switch>	S-SS On/Off
0|OFF	Off
1|ON	On (Default)

Details

This command is not available when the Synchronization Mode is Synchronization Signal.

Example of Use

To set the S-SS of Component Carrier 1 to On.

```
CALC:CAGG:CC1:SSS ON
```

:CALCulate:CAGG:CC[0]|1|2|3|4|5|6|7|:SSS[:STATe]?

S-SS On/Off Query

Function

This command queries the S-SS On/Off state for Carrier Aggregation Measurement.

Query

```
:CALCulate:CAGG:CC[0]|1|2|3|4|5|6|7|:SSS[:STATe]?
```

Response

```
<switch>
```

Parameter

<switch>	S-SS On/Off
0	Off
1	On

Example of Use

To query the S-SS On/Off state of Component Carrier 1.

```
CALC:CAGG:CC1:SSS?
> 1
```

2.4.13 E-SS

:CALCulate:CAGG:CC[0]|1|2|3|4|5|6|7|:ESS[:STATe] 0|1|ON|OFF

E-SS On/Off

Function

This command sets the E-SS to On/Off for Carrier Aggregation measurement.

Command

```
:CALCulate:CAGG:CC[0]|1|2|3|4|5|6|7|:ESS[:STATe]
<switch>
```

Parameter

<switch>	E-SS On/Off
0|OFF	Off
1|ON	On (Default)

Details

This command is not available when the Synchronization Mode is Synchronization Signal.

Example of Use

To set the E-SS of Component Carrier 1 to On.

```
CALC:CAGG:CC1:ESS ON
```

:CALCulate:CAGG:CC[0]|1|2|3|4|5|6|7|:ESS[:STATe]?

E-SS On/Off Query

Function

This command queries the E-SS On/Off state for Carrier Aggregation Measurement.

Query

```
:CALCulate:CAGG:CC[0]|1|2|3|4|5|6|7|:ESS[:STATe]?
```

Response

```
<switch>
```

Parameter

<switch>	E-SS On/Off
0	Off
1	On

Example of Use

To query the E-SS On/Off state of Component Carrier 1.

```
CALC:CAGG:CC1:ESS?
> 1
```

2.4.14 PCRS AP 60, 61

[:SENSe]:CAGG:CC[0]|1|2|3|4|5|6|7|:PCRS:AP60|61[:STATe] OFF|ON|0|1

PCRS AP On/Off

Function

This command sets the PCRS to On/Off for Carrier Aggregation Measurement.

Command

```
[:SENSe]:CAGG:CC[0]|1|2|3|4|5|6|7|:PCRS:AP60|61[:STATe]
<switch>
```

Parameter

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

Example of Use

To set the AP60 PCRS of Component Carrier 1 to On.

```
CAGG:CC1:PCRS:AP60 ON
```

[:SENSe]:CAGG:CC[0]|1|2|3|4|5|6|7|:PCRS:AP60|61[:STATe]?

PCRS AP On/Off Query

Function

This command queries the PCRS On/Off state for Carrier Aggregation Measurement.

Query

```
[:SENSe]:CAGG:CC[0]|1|2|3|4|5|6|7|:PCRS:AP60|61[:STATe]?
```

Response

```
<switch>
```

Parameter

<switch>	PCRS On/Off
0	Off
1	On

Example of Use

To query the AP60 PCRS On/Off state of Component Carrier 1.

```
CAGG:CC1:PCRS:AP60?
> 1
```

2.4.15 Equalizer Use Data

[:SENSe]:CAGG:RADio:EQUalizer:DATA 0|1|ON|OFF

Equalizer Use Data

Function

This command sets whether to include data subcarriers in the calculation of Channel Estimation for Carrier Aggregation Analysis.

Command

```
[:SENSe]:CAGG:RADio:EQUalizer:DATA <switch>
```

Parameter

<switch>	On/Off
0|OFF	Does not include data subcarriers in the calculation. (Default)
1|ON	Includes data subcarriers in the calculation.

Example of Use

To turn On Equalizer Use Data to include data subcarriers in the calculation of Channel Estimation for Carrier Aggregation Analysis.

```
CAGG:RAD:EQU:DATA ON
```

[:SENSe]:CAGG:RADio:EQUalizer:DATA?

Equalizer Use Data Query

Function

This command queries the Equalizer Use Data setting for Carrier Aggregation Analysis.

Query

```
[:SENSe]:CAGG:RADio:EQUalizer:DATA?
```

Response

```
<switch>
```

Parameter

<switch>	On/Off
0	Does not include data subcarriers in the calculation.
1	Includes data subcarriers in the calculation.

Example of Use

To query whether to include data subcarriers in the calculation of Channel Estimation for Carrier Aggregation Analysis.

```
CAGG:RAD:EQU:DATA?
> 1
```

2.5 Setting System Parameters (MX285051A-051 Modulation Analysis)

Table 2.5-1 lists the device messages used for the communication system targeted for measurement.

Table 2.5-1 Device Messages for Setting System Parameters

Parameter	Device Message
Number of Antenna Ports	:CALCulate:EVM:ANTenna:NUMBer 1|2
	:CALCulate:EVM:ANTenna:NUMBer?
RE Mapping Index	CALCulate:EVM:MAPPing:INDex <integer>
	CALCulate:EVM:MAPPing:INDex?
Cell ID	CALCulate:EVM:CELLid <integer>
	CALCulate:EVM:CELLid?
Subframe Type	[:SENSe]:RADio:STYPe [0]|1|2|3|4|5|6|7|8|9|10|11|12|13|14|15|16|17|18|19|20|21 |22|23|24|25|26|27|28|29|30|31|32|33|34|35|36|37|38|39|40 |41|42|43|44|45|46|47|48|49 OFF|C
	[:SENSe]:RADio:STYPe [0]|1|2|3|4|5|6|7|8|9|10|11|12|13|14|15|16|17|18|19|20|21 |22|23|24|25|26|27|28|29|30|31|32|33|34|35|36|37|38|39|40 |41|42|43|44|45|46|47|48|49?
xPUSCH Modulation Scheme	:CALCulate:EVM:SUBFrame [0]|1|2|3|4|5|6|7|8|9|10|11|12|13|14|15|16|17|18|19|20|21 |22|23|24|25|26|27|28|29|30|31|32|33|34|35|36|37|38|39|40 |41|42|43|44|45|46|47|48|49:XPDSch:MODulation QPSK|16Qam|64Qam|AUTO
	:CALCulate:EVM:SUBFrame [0]|1|2|3|4|5|6|7|8|9|10|11|12|13|14|15|16|17|18|19|20|21 |22|23|24|25|26|27|28|29|30|31|32|33|34|35|36|37|38|39|40 |41|42|43|44|45|46|47|48|49:XPDSch:MODulation?
Carrier Spacing	[:SENSe]:EVM:RADio:SPACing <mode>
	[:SENSe]:EVM:RADio:SPACing?
Number of Carriers	[:SENSe]:EVM:RADio:NCARrier <integer>
	[:SENSe]:EVM:RADio:NCARrier?
Reference Carrier	[:SENSe]:EVM:RADio:CARRier <integer>
	[:SENSe]:EVM:RADio:CARRier?
PCRS On/Off	[:SENSe]:EVM:PCRS[:STATe] 0|1|ON|OFF
	[:SENSe]:EVM:PCRS[:STATe]?
Equalizer Use Data	[:SENSe]:EVM:RADio:EQUalizer:DATA 0|1|ON|OFF
	[:SENSe]:EVM:RADio:EQUalizer:DATA?

2.5.1 Number of Antenna ports

:CALCulate:EVM:ANTenna:NUMBer 1|2

Number of Antenna Ports

Function

This command sets the number of antennas.

Command

```
:CALCulate:EVM:ANTenna:NUMBer <mode>
```

Parameter

<mode>	Number of antennas
1	Uses 1 antenna for transmission (Default).
2	Uses 2 antenna for transmission

Example of Use

To set 2 for the number of antennas.

```
CALC:EVM:ANT:NUMB 2
```

:CALCulate:EVM:ANTenna:NUMBer?

Number of Antenna Port Query

Function

This command queries the number of antennas.

Query

```
:CALCulate:EVM:ANTenna:NUMBer?
```

Response

```
<mode>
```

Parameter

<mode>	Number of antennas
1	Uses 1 antenna for transmission.
2	Uses 2 antenna for transmission.

Example of Use

To query the number of antennas.

```
CALC:EVM:ANT:NUMB?
> 2
```

2.5.2 RE Mapping Index

CALCulate:EVM:MAPPing:INDex <integer>

RE Mapping Index

Function

This command sets the RE Mapping Index.

Command

```
CALCulate:EVM:MAPPing:INDex <integer>
```

Parameter

<integer>	RE Mapping Index
Range	0 to 3
Resolution	1
Suffix code	None
Default	0

Example of Use

To set the RE Mapping Index to 1.

```
CALC:EVM:MAPP:IND 1
```

CALCulate:EVM:MAPPing:INDex?

RE Mapping Index Query

Function

This command queries the RE Mapping Index.

Query

```
CALCulate:EVM:MAPPing:INDex?
```

Response

```
<integer>
```

Parameter

<integer>	RE Mapping Index
Range	0 to 3
Resolution	1

Example of Use

To queries the RE Mapping Index.

```
CALC:EVM:MAPP:IND?
> 1
```

2.5.3 Cell ID

CALCulate:EVM:CELLid <integer>

Cell ID

Function

This command sets the Cell ID.

Command

```
CALCulate:EVM:CELLid <integer>
```

Parameter

<integer>	Cell ID
Range	0 to 503
Resolution	1
Suffix code	None
Default	0

Example of Use

To set the Cell ID to 1.

```
CALC:EVM:CELL 1
```

CALCulate:EVM:CELLid?

Cell ID Query

Function

This command queries the Cell ID.

Query

```
CALCulate:EVM:CELLid?
```

Response

```
<integer>
```

Parameter

<integer>	Cell ID
Range	0 to 503
Resolution	1

Example of Use

To query the Cell ID.

```
CALC:EVM:CELL?
> 1
```

2.5.4 Subframe Type

[:SENSe]:RADio:STYPe
[0]|1|2|3|4|5|6|7|8|9|10|11|12|13|14|15|16|17|18|19|20|21|22|23|24|25|26|27
|28|29|30|31|32|33|34|35|36|37|38|39|40|41|42|43|44|45|46|47|48|49 OFF|C

Subframe Type

Function

This command sets the subframe type for each subframe.

Command

```
[:SENSe]:RADio:STYPe[0]|1|2|3|4|5|6|7|8|9|10|11|12|13
|14|15|16|17|18|19|20|21|22|23|24|25|26|27|28|29|30|31
|32|33|34|35|36|37|38|39|40|41|42|43|44|45|46|47|48|49
 OFF|C
```

Parameter

<mode>	Subframe Type
OFF	Sets the subframe type to off the measurement target.
C	Sets the subframe type to Type c for analysis. (Default)

Example of Use

To set the Subframe 2 to Type c.

```
RAD:STYP2 C
```

[:SENSe]:RADio:STYPe [0]|1|2|3|4|5|6|7|8|9|10|11|12|13|14|15|16|17|18|19|20|21|22|23|24|25|26|27|28|29|30|31|32|33|34|35|36|37|38|39|40|41|42|43|44|45|46|47|48|49?

Subframe Type Query

Function

This command queries the subframe type for each subframe.

Query

```
[:SENSe]:RADio:STYPe[0]|1|2|3|4|5|6|7|8|9|10|11|12|13
|14|15|16|17|18|19|20|21|22|23|24|25|26|27|28|29|30|31
|32|33|34|35|36|37|38|39|40|41|42|43|44|45|46|47|48|49?
```

Response

```
<mode>
```

Parameter

<mode>	Subframe Type
OFF	Subframe is off the measurement target.
C	Subframe Type c

Example of Use

To query the subframe type for Subframe 2.

```
RAD:STYP2?
> C
```

2.5.5 xPUSCH Modulation Scheme

CALCulate:EVM:SUBFrame
[0]|1|2|3|4|5|6|7|8|9|10|11|12|13|14|15|16|17|18|19|20|21|22|23|24|25|26|27
|28|29|30|31|32|33|34|35|36|37|38|39|40|41|42|43|44|45|46|47|48|49
:XPUSch:MODulation QPSK|16Qam|64Qam|AUTO

xPUSCH Modulation Scheme

Function

This command sets the Modulation Scheme of xPUSCH for each subframe.

Command

```
CALCulate:EVM:SUBFrame[0]|1|2|3|4|5|6|7|8|9|10|11|12|13
|14|15|16|17|18|19|20|21|22|23|24|25|26|27|28|29|30|31
|32|33|34|35|36|37|38|39|40|41|42|43|44|45|46|47|48|49
:XPUSch:MODulation QPSK|16Qam|64Qam|AUTO
```

Parameter

<mode>	Modulation Scheme of xPUSCH
QPSK	Sets QPSK modulation scheme for analysis.
16Qam	Sets 16QAM modulation scheme for analysis.
64Qam	Sets 64QAM modulation scheme for analysis.
AUTO	Analyzes an input signal after judging its modulation scheme automatically. (Default)

Example of Use

To set the xPUSCH modulation scheme for subframe 2 to AUTO.

```
CALC:EVM:SUBF2:XPUS:MOD AUTO
```

CALCulate:EVM:SUBFrame [0]|1|2|3|4|5|6|7|8|9|10|11|12|13|14|15|16|17|18|19|20|21|22|23|24|25|26|27|28|29|30|31|32|33|34|35|36|37|38|39|40|41|42|43|44|45|46|47|48|49 :XPUSch:MODulation?

xPUSCH Modulation Scheme Query

Function

This command queries the Modulation Scheme of xPUSCH for each subframe.

Query

```
CALCulate:EVM:SUBFrame[0]|1|2|3|4|5|6|7|8|9|10|11|12|13
|14|15|16|17|18|19|20|21|22|23|24|25|26|27|28|29|30|31
|32|33|34|35|36|37|38|39|40|41|42|43|44|45|46|47|48|49
:XPUSch:MODulation?
```

Response

```
<mode>
```

Parameter

<mode>	Modulation Scheme of xPUSCH
QPSK	Sets QPSK modulation scheme for analysis.
16Q	Sets 16QAM modulation scheme for analysis.
64Q	Sets 64QAM modulation scheme for analysis.
AUTO	Analyzes an input signal after judging its modulation scheme automatically.

Example of Use

To query the xPUSCH modulation scheme for subframe 2.

```
CALC:EVM:SUBF2:XPUS:MOD?
> AUTO
```

2.5.6 Carrier Spacing

[:SENSe]:EVM:RADio:SPACing <mode>

Carrier Spacing

Function

This command sets the carrier frequency spacing for the signal to be measured.

Command

```
[:SENSe]:EVM:RADio:SPACing <mode>
```

Parameter

<mode>	Carrier frequency spacing for the signal to be measured
99	Sets the carrier frequency spacing to 99 MHz for analysis. (Default)
100	Sets the carrier frequency spacing to 100 MHz for analysis.

Example of Use

To set the carrier frequency spacing to 99 MHz.

```
EVM:RAD:SPAC 99
```

[:SENSe]:EVM:RADio:SPACing?

Carrier Spacing Query

Function

This command queries the carrier frequency spacing for the signal to be measured.

Query

```
[:SENSe]:EVM:RADio:SPACing?
```

Response

```
<mode>
```

Parameter

<mode>	Carrier frequency spacing for the signal to be measured
99	Carrier frequency spacing is 99 MHz for analysis.
100	Carrier frequency spacing is 100 MHz for analysis.

Example of Use

To query the carrier frequency spacing for the signal to be measured .

```
EVM:RAD:SPAC?
> 99
```

2.5.7 Number of Carriers

[:SENSe]:EVM:RADio:NCARrier <integer>

Number of Carriers

Function

This command sets the number of carriers for the signal to be measured.

Command

```
[:SENSe]:EVM:RADio:NCARrier <integer>
```

Parameter

<integer>	Number of carriers for the signal to be measured	
Range	1 to 2	(MS2850A-032)
	1 to 5	(MS2850A-033/133)
	1 to 8	(MS2850A-034/134)
Resolution	1	
Suffix code	None	
Default	1	

Example of Use

To set the number of carriers to 8.

```
EVM:RAD:NCAR 8
```

[:SENSe]:EVM:RADio:NCARrier?

Number of Carriers Query

Function

This command queries the number of carriers for the signal to be measured.

Query

```
[:SENSe]:EVM:RADio:NCARrier?
```

Response

```
<integer>
```

Parameter

<integer>	Number of carriers for the signal to be measured	
Range	1 to 8	
Resolution	1	

Example of Use

To query the number of carriers for the signal to be measured.

```
EVM:RAD:NCAR?
> 8
```

2.5.8 Reference Carrier

[:SENSe]:EVM:RADio:CARRier <integer>

Reference Carrier

Function

This command sets the reference carrier number for the Carrier Aggregation measurement.

Command

```
[:SENSe]:EVM:RADio:CARRier <integer>
```

Parameter

<integer>	Reference carrier number
Range	0 to (Number of Carriers – 1)
Resolution	1
Suffix code	None
Default	0

Example of Use

To set the reference carrier number for the Carrier Aggregation measurement to 1.

```
EVM:RAD:CARR 1
```

[:SENSe]:EVM:RADio:CARRier?

Reference Carrier Query

Function

This command queries the reference carrier number for the Carrier Aggregation measurement.

Query

```
[:SENSe]:EVM:RADio:CARRier?
```

Response

```
<integer>
```

Parameter

<integer>	Reference carrier number
Range	0 to (Number of Carriers – 1)
Resolution	1

Example of Use

To query the reference carrier number for the Carrier Aggregation measurement.

```
EVM:RAD:CARR?
> 1
```

2.5.9 PCRS

[:SENSe]:EVM:PCRS[:STATe] 0|1|ON| OFF

PCRS On/Off

Function

This command sets the PCRS to On/Off for Modulation Analysis.

Command

```
[:SENSe]:EVM:PCRS[:STATe] <switch>
```

Parameter

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

Example of Use

To set the PCRS to On for Modulation Analysis.

```
EVM:PCRS ON
```

[:SENSe]:EVM:PCRS[:STATe]?

PCRS On/Off Query

Function

This command queries the PCRS On/Off state for Modulation Analysis.

Query

```
[:SENSe]:EVM:PCRS[:STATe]?
```

Response

```
<switch>
```

Parameter

<switch>	PCRS On/Off
0	Off
1	On

Example of Use

To query the PCRS On/Off state for Modulation Analysis.

```
EVM:PCRS?
> 1
```

2.5.10 Equalizer Use Data

[:SENSe]:EVM:RADio:EQUalizer:DATA 0|1|ON|OFF

Equalizer Use Data

Function

This command sets whether to include data subcarriers in the calculation of Channel Estimation for Modulation Analysis.

Command

```
[:SENSe]:EVM:RADio:EQUalizer:DATA <switch>
```

Parameter

<switch>	On/Off
0|OFF	Does not include data subcarriers in the calculation. (Default)
1|ON	Includes data subcarriers in the calculation.

Example of Use

To turn On Equalizer Use Data to include data subcarriers in the calculation of Channel Estimation for Modulation Analysis.

```
EVM:RAD:EQU:DATA ON
```

[:SENSe]:EVM:RADio:EQUalizer:DATA?

Equalizer Use Data Query

Function

This command queries the Equalizer Use Data setting for Modulation Analysis.

Query

```
[:SENSe]:EVM:RADio:EQUalizer:DATA?
```

Response

```
<switch>
```

Parameter

<switch>	On/Off
0	Does not include data subcarriers in the calculation.
1	Includes data subcarriers in the calculation.

Example of Use

To query whether to include data subcarriers in the calculation of Channel Estimation for Modulation Analysis.

```
EVM:RAD:EQU:DATA?
> 1
```

2.6 Setting System Parameters (MX285051A-051 Carrier Aggregation Analysis)

Table 2.6-1 lists the device messages used for the communication system targeted for measurement.

Table 2.6-1 Device Messages for Setting System Parameters

Parameter	Device Message
Carrier Spacing	[:SENSe]:CAGG:RADio:SPACing <mode>
	[:SENSe]:CAGG:RADio:SPACing?
Number of Carriers	[:SENSe]:CAGG:RADio:NCARrier <integer>
	[:SENSe]:CAGG:RADio:NCARrier?
Reference Carrier	[:SENSe]:CAGG:RADio:CARRier <integer>
	[:SENSe]:CAGG:RADio:CARRier?
Number of Antenna Port	:CALCulate:CAGG:CC[0]|1|2|3|4|5|6|7:ANTenna:NUMBer 1|2
	:CALCulate:CAGG:CC[0]|1|2|3|4|5|6|7:ANTenna:NUMBer?
Subframe Type	[:SENSe]:CAGG:CC[0]|1|2|3|4|5|6|7:RADio:STYPe [0]|1|2|3|4|5|6|7|8|9|10|11|12|13|14|15|16|17|18|19|20|21 |22|23|24|25|26|27|28|29|30|31|32|33|34|35|36|37|38|39|40 |41|42|43|44|45|46|47|48|49 OFF|C
	[:SENSe]:CAGG:CC[0]|1|2|3|4|5|6|7:RADio:STYPe [0]|1|2|3|4|5|6|7|8|9|10|11|12|13|14|15|16|17|18|19|20|21 |22|23|24|25|26|27|28|29|30|31|32|33|34|35|36|37|38|39|40 |41|42|43|44|45|46|47|48|49?
Cell ID	:CALCulate:CAGG:CC[0]|1|2|3|4|5|6|7|:CELLid <integer>
	:CALCulate:CAGG:CC[0]|1|2|3|4|5|6|7|:CELLid?
RE Mapping Index	:CALCulate:CAGG:CC[0]|1|2|3|4|5|6|7:MAPPing:INDex <integer>
	:CALCulate:CAGG:CC[0]|1|2|3|4|5|6|7:MAPPing:INDex?
xPUSCH Modulation Scheme	:CALCulate:CAGG:CC[0]|1|2|3|4|5|6|7:SUBFrame [0]|1|2|3|4|5|6|7|8|9|10|11|12|13|14|15|16|17|18|19|20|21 |22|23|24|25|26|27|28|29|30|31|32|33|34|35|36|37|38|39|40 |41|42|43|44|45|46|47|48|49:XPUSch:MODulation QPSK|16Qam|64Qam|AUTO
	:CALCulate:CAGG:CC[0]|1|2|3|4|5|6|7:SUBFrame [0]|1|2|3|4|5|6|7|8|9|10|11|12|13|14|15|16|17|18|19|20|21 |22|23|24|25|26|27|28|29|30|31|32|33|34|35|36|37|38|39|40 |41|42|43|44|45|46|47|48|49:XPUSch:MODulation?
PCRS On/Off	[:SENSe]:CAGG:PCRS[:STATe] 0|1|ON| OFF
	[:SENSe]:CAGG:PCRS[:STATe]?

Table 2.6-1 Device Messages for Setting System Parameters (Cont'd)

Parameter	Device Message
Equalizer Use Data	[:SENSe]:CAGG:RADio:EQUalizer:DATA 0|1|ON|OFF
	[:SENSe]:CAGG:RADio:EQUalizer:DATA?

2.6.1 Carrier Spacing

[:SENSe]:CAGG:RADio:SPACing <mode>

Carrier Spacing

Function

This command sets the carrier frequency spacing for the signal to be measured.

Command

```
[:SENSe]:CAGG:RADio:SPACing <mode>
```

Parameter

<mode>	Carrier frequency spacing for the signal to be measured
99	Sets the carrier frequency spacing to 99 MHz for analysis. (Default)
100	Sets the carrier frequency spacing to 100 MHz for analysis.

Example of Use

To set the carrier frequency spacing to 99 MHz.

```
CAGG:RAD:SPAC 99
```

[:SENSe]:CAGG:RADio:SPACing?

Carrier Spacing Query

Function

This command queries the carrier frequency spacing for the signal to be measured.

Query

```
[:SENSe]:CAGG:RADio:SPACing?
```

Response

```
<mode>
```

Parameter

<mode>	Carrier frequency spacing for the signal to be measured
99	Carrier frequency spacing is 99 MHz for analysis.
100	Carrier frequency spacing is 100 MHz for analysis.

Example of Use

To query the carrier frequency spacing for the signal to be measured .

```
CAGG:RAD:SPAC?
> 99
```

2.6.2 Number of Carriers

[:SENSe]:CAGG:RADio:NCARrier <integer>

Number of Carriers

Function

This command sets the number of carriers for the signal to be measured.

Command

```
[:SENSe]:CAGG:RADio:NCARrier <integer>
```

Parameter

<integer>		Number of carriers for the signal to be measured
	Range	1 to 8
	Resolution	1
	Suffix code	None
	Default	1

Example of Use

To set the number of carriers to 8.

```
CAGG:RAD:NCAR 8
```

[:SENSe]:CAGG:RADio:NCARrier?

Number of Carriers Query

Function

This command queries the number of carriers for the signal to be measured.

Query

```
[:SENSe]:CAGG:RADio:NCARrier?
```

Response

```
<integer>
```

Parameter

<integer>		Number of carriers for the signal to be measured
	Range	1 to 8
	Resolution	1
	Suffix code	None
	Default	1

Example of Use

To query the number of carriers for the signal to be measured.

```
CAGG:RAD:NCAR?
> 8
```

2.6.3 Reference Carrier

[:SENSe]:CAGG:RADio:CARRier <integer>

Reference Carrier

Function

This command sets the reference carrier number for the Carrier Aggregation measurement.

Command

```
[:SENSe]:CAGG:RADio:CARRier <integer>
```

Parameter

<integer>	Reference carrier number
Range	0 to (Number of Carriers – 1)
Resolution	1
Suffix code	None
Default	0

Example of Use

To set the reference carrier number for the Carrier Aggregation measurement to 1.

```
CAGG:RAD:CARR 1
```

[:SENSe]:CAGG:RADio:CARRier?

Reference Carrier Query

Function

This command queries the reference carrier number for the Carrier Aggregation measurement.

Query

```
[:SENSe]:CAGG:RADio:CARRier?
```

Response

```
<integer>
```

Parameter

<integer>	Reference carrier number
Range	0 to (Number of Carriers – 1)
Resolution	1
Suffix code	None
Default	0

Example of Use

To query the reference carrier number for the Carrier Aggregation measurement.

```
CAGG:RAD:CARR?
> 1
```

2.6.4 Number of Antenna Port

:CALCulate:CAGG:CC[0]|1|2|3|4|5|6|7:ANTenna:NUMBer 1|2

Number of Antenna Port

Function

This command sets the number of antennas for each Component Carrier.

Command

```
:CALCulate:CAGG:CC[0]|1|2|3|4|5|6|7:ANTenna:NUMBer
<mode>
```

Parameter

<mode>	Number of antennas
1	Uses 1 antenna for transmission (Default).
2	Uses 2 antennas for transmission

Example of Use

To set the antenna number of Component Carrier 1 to 2.

```
CALC:CAGG:CC1:ANT:NUMB 2
```

:CALCulate:CAGG:CC[0]|1|2|3|4|5|6|7:ANTenna:NUMBer?

Number of Antenna Port Query

Function

This command queries the number of antennas for each Component Carrier.

Query

```
:CALCulate:CAGG:CC[0]|1|2|3|4|5|6|7:ANTenna:NUMBer?
```

Response

```
<mode>
```

Parameter

<mode>	Number of antennas
1	Uses 1 antenna for transmission
2	Uses 2 antenna for transmission

Example of Use

To query the antenna number of Component Carrier 1.

```
CALC:CAGG:CC1:ANT:NUMB?
> 2
```

2.6.5 Subframe Type

[:SENSe]:CAGG:CC[0]|1|2|3|4|5|6|7:RADio:STYPe
[0]|1|2|3|4|5|6|7|8|9|10|11|12|13|14|15|16|17|18|19|20|21|22|23|24|25|26|27
|28|29|30|31|32|33|34|35|36|37|38|39|40|41|42|43|44|45|46|47|48|49
OFF|C

Subframe Type

Function

This command sets the subframe type for each subframe of Component Carriers.

Command

```
[:SENSe]:CAGG:CC[0]|1|2|3|4|5|6|7:RADio:STYPe
[0]|1|2|3|4|5|6|7|8|9|10|11|12|13|14|15|16|17|18|19|20
|21|22|23|24|25|26|27|28|29|30|31|32|33|34|35|36|37|38
|39|40|41|42|43|44|45|46|47|48|49
<mode>
```

Parameter

<mode>	Subframe Type
OFF	Sets the subframe type to off the measurement target.
C	Sets the subframe type to Type c for analysis (Default).

Example of Use

To set the Subframe 2 of Component Carrier 1 to Type c.

```
CAGG:CC1:RAD:STYP2 C
```

[:SENSe]:CAGG:CC[0]|1|2|3|4|5|6|7:RADio:STYPe [0]|1|2|3|4|5|6|7|8|9|10|11|12|13|14|15|16|17|18|19|20|21|22|23|24|25|26|27|28|29|30|31|32|33|34|35|36|37|38|39|40|41|42|43|44|45|46|47|48|49?

Subframe Type Query

Function

This command queries the subframe type for each subframe of Component Carriers.

Query

```
[:SENSe]:CAGG:CC[0]|1|2|3|4|5|6|7:RADio:STYPe
[0]|1|2|3|4|5|6|7|8|9|10|11|12|13|14|15|16|17|18|19|20
|21|22|23|24|25|26|27|28|29|30|31|32|33|34|35|36|37|38
|39|40|41|42|43|44|45|46|47|48|49?
```

Response

```
<mode>
```

Parameter

<mode>	Subframe Type
OFF	Subframe is off the measurement target.
C	Subframe Type c

Example of Use

To query the subframe type for Subframe 2 of Component Carrier 1.

```
CAGG:CC1:RAD:STYP2?
> C
```

2.6.6 Cell ID

:CALCulate:CAGG:CC[0]|1|2|3|4|5|6|7:CELLid <integer>

Cell ID

Function

This command sets the Cell ID of Component Carrier.

Command

```
:CALCulate:CAGG:CC[0]|1|2|3|4|5|6|7:CELLid <integer>
```

Parameter

<integer>	Cell ID
Range	0 to 503
Resolution	1
Suffix code	None
Default	0

Example of Use

To set the Cell ID of Component Carrier 1 to 1.

```
CAGG:CC1:CELL 1
```

:CALCulate:CAGG:CC[0]|1|2|3|4|5|6|7:CELLid?

Cell ID Query

Function

This command queries the Cell ID of Component Carrier.

Query

```
:CALCulate:CAGG:CC[0]|1|2|3|4|5|6|7:CELLid?
```

Response

```
<integer>
```

Parameter

<integer>	Cell ID
Range	0 to 503
Resolution	1
Suffix code	None
Default	0

Example of Use

To query the Cell ID of Component Carrier 1.

```
CAGG:CC1:CELL?
> 1
```

2.6.7 RE Mapping Index

:CALCulate:CAGG:CC[0]|1|2|3|4|5|6|7:MAPPing:INDex <integer>

RE Mapping Index

Function

This command sets the RE Mapping Index of Component Carrier.

Command

```
:CALCulate:CAGG:CC[0]|1|2|3|4|5|6|7:MAPPing:INDex
<integer>
```

Parameter

<integer>	RE Mapping Index
Range	0 to 3
Resolution	1
Suffix code	None
Default	0

Example of Use

To set the RE Mapping Index of Component Carrier 1 to 1.

```
CAGG:CC1:MAPP:IND 1
```

:CALCulate:CAGG:CC[0]|1|2|3|4|5|6|7:MAPPing:INDex?

RE Mapping Index Query

Function

This command queries the RE Mapping Index of Component Carrier.

Query

```
:CALCulate:CAGG:CC[0]|1|2|3|4|5|6|7:MAPPing:INDex?
```

Response

```
<integer>
```

Parameter

<integer>	RE Mapping Index
Range	0 to 3
Resolution	1

Example of Use

To queries the RE Mapping Index of Component Carrier 1.

```
CAGG:CC1:MAPP:IND?
> 1
```

2.6.8 xPUSCH Modulation Scheme

:CALCulate:CAGG:CC[0]|1|2|3|4|5|6|7:SUBFrame
[0]|1|2|3|4|5|6|7|8|9|10|11|12|13|14|15|16|17|18|19|20|21|22|23|24|25|26|27
|28|29|30|31|32|33|34|35|36|37|38|39|40|41|42|43|44|45|46|47|48|49
:XPUSch:MODulation QPSK|16Qam|64Qam|AUTO

xPUSCHs Modulation Scheme

Function

This command sets the Modulation Scheme of xPUSCH for each subframe of Component Carriers.

Command

```
:CALCulate:CAGG:CC[0]|1|2|3|4|5|6|7:SUBFrame
[0]|1|2|3|4|5|6|7|8|9|10|11|12|13|14|15|16|17|18|19|20
|21|22|23|24|25|26|27|28|29|30|31|32|33|34|35|36|37|38
|39|40|41|42|43|44|45|46|47|48|49:XPUSch:MODulation
<mode>
```

Parameter

<mode>	Modulation Scheme of xPUSCH
QPSK	Sets QPSK modulation scheme for analysis.
16Qam	Sets 16QAM modulation scheme for analysis.
64Qam	Sets 64QAM modulation scheme for analysis.
AUTO	Analyzes an input signal after judging its modulation scheme automatically. (Default)

Example of Use

To set the xPUSCH modulation scheme for subframe 2 of Component Carrier 1 to AUTO.

```
CALC:CAGG1:SUBF2:XPUS:MOD AUTO
```

:CALCulate:CAGG:CC[0]|1|2|3|4|5|6|7:SUBFrame [0]|1|2|3|4|5|6|7|8|9|10|11|12|13|14|15|16|17|18|19|20|21|22|23|24|25|26|27|28|29|30|31|32|33|34|35|36|37|38|39|40|41|42|43|44|45|46|47|48|49 :XPUSch:MODulation?

xPUSCHs Modulation Scheme Query

Function

This command queries the Modulation Scheme of xPUSCH for each subframe of Component Carriers.

Query

```
:CALCulate:CAGG:CC[0]|1|2|3|4|5|6|7:SUBFrame
[0]|1|2|3|4|5|6|7|8|9|10|11|12|13|14|15|16|17|18|19|20
|21|22|23|24|25|26|27|28|29|30|31|32|33|34|35|36|37|38
|39|40|41|42|43|44|45|46|47|48|49:XPUSch:MODulation?
```

Response

```
<mode>
```

Parameter

<mode>	Modulation Scheme of xPUSCH
QPSK	Sets QPSK modulation scheme for analysis.
16Qam	Sets 16QAM modulation scheme for analysis.
64Qam	Sets 64QAM modulation scheme for analysis.
AUTO	Analyzes an input signal after judging its modulation scheme automatically.

Example of Use

To query the xPUSCH modulation scheme for subframe 2 of Component Carrier 1.

```
CALC:CAGG1:SUBF2:XPUS:MOD?
> ATUO
```

2.6.9 PCRS

[:SENSe]:CAGG:PCRS[:STATe] 0|1|ON|OFF

PCRS On/Off

Function

This command sets the PCRS to On/Off for Carrier Aggregation Analysis.

Command

```
[:SENSe]:CAGG:PCRS[:STATe] <switch>
```

Parameter

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

Example of Use

To set the PCRS to On for Carrier Aggregation Analysis.

```
CAGG:PCRS ON
```

[:SENSe]:CAGG:PCRS[:STATe]?

PCRS On/Off Query

Function

This command queries the PCRS On/Off state for Carrier Aggregation Analysis.

Query

```
[:SENSe]:CAGG:PCRS[:STATe]?
```

Response

```
<switch>
```

Parameter

<switch>	PCRS On/Off
0	Off
1	On

Example of Use

To query the PCRS On/Off state for Carrier Aggregation Analysis.

```
CAGG:PCRS?
> 1
```

2.6.10 Equalizer Use Data

[:SENSe]:CAGG:RADio:EQUalizer:DATA 0|1|ON|OFF

Equalizer Use Data

Function

This command sets whether to include data subcarriers in the calculation of Channel Estimation for Carrier Aggregation Analysis.

Command

```
[:SENSe]:CAGG:RADio:EQUalizer:DATA <switch>
```

Parameter

<switch>	On/Off
0|OFF	Does not include data subcarriers in the calculation. (Default)
1|ON	Includes data subcarriers in the calculation.

Example of Use

To turn On Equalizer Use Data to include data subcarriers in the calculation of Channel Estimation for Carrier Aggregation Analysis.

```
CAGG:RAD:EQU:DATA ON
```

[:SENSe]:CAGG:RADio:EQUalizer:DATA?

Equalizer Use Data Query

Function

This command queries the Equalizer Use Data setting for Carrier Aggregation Analysis.

Query

```
[:SENSe]:CAGG:RADio:EQUalizer:DATA?
```

Response

```
<switch>
```

Parameter

<switch>	On/Off
0	Does not include data subcarriers in the calculation.
1	Includes data subcarriers in the calculation.

Example of Use

To query whether to include data subcarriers in the calculation of Channel Estimation for Carrier Aggregation Analysis.

```
CAGG:RAD:EQU:DATA?
> 1
```

2.7 Utility Function

Table 2.7-1 lists the device messages used for the utility function.

Table 2.7-1 Device Messages for Utility Function

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?

2.7.1 Erase Warm Up Message

:DISPlay:ANNotation:WUP:ERASe

Erase Warm Up Message

Function

This command cancels the warm up message display immediately after activation.

Command

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

Example of Use

To cancel the warm up message display.

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

2.7.2 Display Title

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

Display Title

Function

This command sets title display On/Off.

Command

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

Parameter

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

Example of Use

To display the title.

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

:DISPlay:ANNotation:TITLe[:STATe]?

Display Title Query

Function

This command queries the title display On/Off state.

Query

```
:DISPlay:ANNotation:TITLe[:STATe]?
```

Response

```
<switch>
```

Parameter

<switch>	Title display On/Off
0	Off
1	On

Example of Use

To query whether the title is displayed.

```
DISP:ANN:TITL?
> 1
```

2.7.3 Title Entry

:DISPlay:ANNotation:TITLe:DATA <string>

Title Entry

Function

This command sets a title character string.

Command

```
:DISPlay:ANNotation:TITLe:DATA <string>
```

Parameter

<string>	A character string within 32 characters, enclosed in double quotations (" ") or single quotations (' ')

Example of Use

To set a 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>	A character string within 32 characters, enclosed in double quotations (" ") or single quotations (' ')

Example of Use

To query the title character string.

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

2.8 Common Measurement Function

Table 2.8-1 lists the device messages used for performing operations common to measurement functions.

Table 2.8-1 Device Messages for Operations Common to Measurement Functions

Function	Device Message
Continuous Measurement	:INITiate:CONTinuous OFF|ON|0|1
	:INITiate:CONTinuous?
	:INITiate:MODE:CONTinuous
Single Measurement	:INITiate:MODE:SINGle
Initiate	:INITiate[:IMMediate]
Calculate	:INITiate:CALCulate
Configure	:CONFigure?
Save Captured Data	:MMEMory:STORe:IQData <filename>,<device>
Cancel Execute Save Captured Data	:MMEMory:STORe:IQData:CANCel
Output Rate for Save Captured Data	:MMEMory:STORe:IQData:RATE <freq>
	:MMEMory:STORe:IQData:RATE?
Capture Time Auto	[:SENSe]:SWEep:TIME:AUTO ON|OFF|1|0
	[:SENSe]:SWEep:TIME:AUTO?
Capture Time	[:SENSe]:SWEep:TIME <time>
	[:SENSe]:SWEep:TIME?
Trigger Switch	:TRIGger[:SEQuence][:STATe] ON|OFF|1|0
	:TRIGger[:SEQuence][:STATe]?
Trigger Source	:TRIGger[:SEQuence]:SOURce EXTernal[1|2]|IMMediate
	:TRIGger[:SEQuence]:SOURce?
Trigger Slope	:TRIGger[:SEQuence]:SLOPe POSitive|NEGative
	:TRIGger[:SEQuence]:SLOPe?
Trigger Delay	:TRIGger[:SEQuence]:DELay <time>
	:TRIGger[:SEQuence]:DELay?

Note:

The trigger setting is separately saved for each application, and is commonly applied to the measurement functions of each application.

2.8.1 Measurement and control

:INITiate:CONTinuous OFF|ON|0|1

Continuous Measurement

Function

This command sets the measurement mode.

Command

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

Parameter

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

Details

When On is set, the Continuous measurement mode is set and measurement is started. When set to Off, the Single measurement mode is set but measurement does not start at that time.

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

Example of Use

To perform continuous measurement.

```
INIT:CONT ON
```

:INITiate:CONTinuous?

Continuous Measurement Query

Function

This command queries the measurement mode.

Query

```
:INITiate:CONTinuous?
```

Response

```
<switch>
```

Parameter

<switch>	Measurement mode
0	Single measurement
1	Continuous measurement

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
```

Details

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

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
```

Details

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

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]
```

Details

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

Example of Use

To start measurement in the current measurement mode.

```
INIT
```

:INITiate:CALCulate

Calculate

Function

This command executes analysis without capturing waveforms. This command is used when executing analysis for the same captured waveform by changing parameters.

Command

```
:INITiate:CALCulate
```

Details

This command is available only when the waveform capture time (Capture Time) is set to Manual.

If a waveform is not captured or if a parameter that requires waveform recapturing is changed, the waveform is captured before analysis is executed.

Another command or query can be accepted even if this function is being executed. Note, however, if a command that requires waveform recapturing or trace recalculation is received, this function is stopped and the received command is executed.

To query the measurement results after executing this command, use the *WAI command to control synchronization.

Note that synchronization control during the Continuous mode is not supported.

Example of Use

To start the measurement in the current measurement mode.

```
INIT:CALC
```

:CONFigure?

Configure Query

Function

This command queries the current measurement function.

Query

```
:CONFigure?
```

Response

```
<mode>
```

Parameter

<mode>	Measurement function
EVM	Modulation measurement
CA	Carrier Aggregation measurement

Example of Use

To query the current measurement function.

```
CONF?
> EVM
```

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

Save Captured Data

Function

This command saves the captured waveform data in a file.

Command

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

Parameter

<filename>	Name of the file to be saved. Specify a character string enclosed by single (‘ ’) or double (“ ”) quotation marks.
<device>	Name of the drive to be saved. Drive name such as A, B, D or E.

Details

Files are saved to the following directory in the specified drive.
\Anritsu Corporation\Signal Analyzer\User Data\Digitized Data\5GMeasurement
Up to 1000 files can be saved in a folder.

Example of Use

To save waveform data into drive D using the file name “DATA”.

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

:MMEMory:STORe:IQData:CANCel

Cancel Execute Save Captured Data

Function

This command cancels saving of the waveform data file.

Command

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

Example of Use

To cancel digitizing.

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

:MMEMory:STORe:IQData:RATE?

Output Rate for Save Captured Data

Function

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

Query

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

Response

```
<freq>
```

Parameter

`<freq>`		Output rate
	Range	325 to 1300 MHz

No suffix code. Value is returned in Hz units.

Example of Use

To query the output rate.

```
MMEM:STOR:IQD:RATE?
> 1300000000
```

2.8.2 Trigger Switch

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

Trigger Switch

Function

This command sets the trigger wait state On/Off.

Command

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

Parameter

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

Details

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

Example of Use

To set the trigger wait state On.

```
TRIG ON
```

:TRIGger[:SEQuence][:STATe]?

Trigger Switch Query

Function

This command queries the trigger wait state On/Off.

Query

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

Response

```
<switch>
```

Parameter

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

Example of Use

To query the trigger wait state On/Off.

```
TRIG?
> 1
```

2.8.3 Trigger Source

:TRIGger[:SEQuence]:SOURce EXTernal[1|2]|IMMediate

Trigger Source

Function

This command selects the trigger signal source.

Command

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

Parameter

<mode>		Trigger signal source
	EXTernal[1]	External input (External) (Default)
	EXTernal2	External input 2 (External 2)
	IMMediate	Free run

Details

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

Example of Use

To set the trigger signal source to external input.

```
TRIG:SOUR EXT
```

:TRIGger[:SEQuence]:SOURce?

Trigger Source Query

Function

This command queries the trigger signal source.

Query

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

Response

```
<mode>
```

Parameter

<mode>		Trigger signal source
	EXT	External input (External)
	EXT2	External input 2 (External 2)
	IMM	Free run

Example of Use

To query the trigger signal source.

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

2.8.4 Trigger Slope

:TRIGger[:SEQuence]:SLOPe POSitive|NEGative

Trigger Slope

Function

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

Command

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

Parameter

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

Details

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

Example of Use

To detect a trigger at the rising edge.

```
TRIG:SLOP POS
```

:TRIGger[:SEQuence]:SLOPe?

Trigger Slope Query

Function

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

Query

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

Response

```
<mode>
```

Parameter

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

Example of Use

To query the trigger detection mode.

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

2.8.5 Trigger Delay

:TRIGger[:SEQuence]:DELay <time>

Trigger Delay

Function

This command sets the trigger delay time from generation of a trigger to start of a capture operation.

Command

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

Parameter

<time>	Trigger delay time	
Range	–6.4 to 6.4 s	(MS2850A-032)
	–3.2 to 3.2 s	(MS2850A-033/133)
	–1.6 to 1.6 s	(MS2850A-034/134)
Resolution	40 ns	(MS2850A-032)
	20 ns	(MS2850A-033/133)
	10 ns	(MS2850A-034/134)
Suffix code	NS, US, MS, S	
	S is used when omitted.	
Default	0 s	

Details

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

Example of Use

To set the trigger delay time to 20 ms.

```
TRIG:DEL 20MS
```

:TRIGger[:SEQuence]:DELay?

Trigger Delay Query

Function

This command queries the trigger delay time from generation of a trigger to start of a capture operation.

Query

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

Response

```
<time>
```

Parameter

<time>	Trigger delay time	
Range	–6.4 to 6.4 s	(MS2850A-032)
	–3.2 to 3.2 s	(MS2850A-033/133)
	–1.6 to 1.6 s	(MS2850A-034/134)
Resolution	40 ns	(MS2850A-032)
	20 ns	(MS2850A-033/133)
	10 ns	(MS2850A-034/134)
	Value is returned in second units.	

Example of Use

To query the trigger delay time.

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

2.9 Modulation Measurement Function

This section describes the device messages related to Modulation measurement.

Table 2.9-1 lists the device messages used for execution and result query of Modulation measurement.

Table 2.9-1 Device Messages for Modulation Measurement Functions

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

Table 2.9-2 (MX285051A-001) or Table 2.9-3 (MX285051A-051) list the responses to parameter [n] of the device messages in Table 2.9-1.

Table 2.9-2 Responses to MX285051A-001 Modulation Measurement Results

n	Result Mode	Response
1 or omitted	A/B	Responses are returned with comma-separated value formats in the following order: 1. Frequency Error (Average) [Hz] 2. Frequency Error (Maximum) [Hz] 3. Transmit Power (Average) [dBm] 4. Transmit Power (Maximum) [dBm] 5. EVM rms (Average) 6. EVM rms (Maximum) 7. EVM peak (Average) 8. EVM peak (Maximum) 9. EVM peak Symbol Number 10. EVM peak Subcarrier Number 11. Origin Offset (Average) [dB] 12. Origin Offset (Maximum) [dB] 13. Time Offset (Average) [second] 14. Time Offset (Maximum) [second] 15. Frequency Error PPM (Average) [ppm] 16. Frequency Error PPM (Maximum) [ppm] 17. Symbol Clock Error (Average) [ppm] 18. Symbol Clock Error (Maximum) [ppm] 19. IQ Skew (Average) [second] 20. IQ Skew (Maximum) [second] 21. IQ Imbalance (Average) [dB] 22. IQ Imbalance (Maximum) [dB] 23. IQ Quadrature Error (Average) [degree] 24. IQ Quadrature Error (Maximum) [degree]

Table 2.9-2 Responses to MX285051A-001 Modulation Measurement Results (Cont'd)

n	Result Mode	Response
2	A/B	Responses are returned with comma-separated value formats in the following order: 1. Total EVM result valid (1 = valid/0 = invalid) 2. Total EVM rms (Average) 3. Total EVM rms (Maximum) 4. Total EVM peak (Average) 5. Total EVM peak (Maximum) 6. Total EVM peak Symbol Number 7. Total EVM peak Subcarrier Number 8. xPDSCH ALL EVM result valid (1 = valid/0 = invalid) 9. xPDSCH ALL EVM rms (Average) 10. xPDSCH ALL EVM rms (Maximum) 11. xPDSCH ALL EVM peak (Average) 12. xPDSCH ALL EVM peak (Maximum) 13. xPDSCH ALL EVM peak Symbol Number 14. xPDSCH ALL EVM peak Subcarrier Number 15. xPDSCH QPSK EVM result valid (1 = valid/0 = invalid) 16. xPDSCH QPSK EVM rms (Average) 17. xPDSCH QPSK EVM rms (Maximum) 18. xPDSCH QPSK EVM peak (Average) 19. xPDSCH QPSK EVM peak (Maximum) 20. xPDSCH QPSK EVM peak Symbol Number 21. xPDSCH QPSK EVM peak Subcarrier Number 22. xPDSCH 16QAM EVM result valid (1 = valid/0 = invalid) 23. xPDSCH 16QAM EVM rms (Average) 24. xPDSCH 16QAM EVM rms (Maximum) 25. xPDSCH 16QAM EVM peak (Average) 26. xPDSCH 16QAM EVM peak (Maximum) 27. xPDSCH 16QAM EVM peak Symbol Number 28. xPDSCH 16QAM EVM peak Subcarrier Number 29. xPDSCH 64QAM EVM result valid (1 = valid/0 = invalid) 30. xPDSCH 64QAM EVM rms (Average) 31. xPDSCH 64QAM EVM rms (Maximum) 32. xPDSCH 64QAM EVM peak (Average) 33. xPDSCH 64QAM EVM peak (Maximum) 34. xPDSCH 64QAM EVM peak Symbol Number 35. xPDSCH 64QAM EVM peak Subcarrier Number

Table 2.9-2 Responses to MX285051A-001 Modulation Measurement Results (Cont'd)

n	Result Mode	Response
2	A/B	36. xPDCCH EVM result valid (1 = valid/0 = invalid) 37. xPDCCH EVM rms (Average) 38. xPDCCH EVM rms (Maximum) 39. xPDCCH EVM peak (Average) 40. xPDCCH EVM peak (Maximum) 41. xPDCCH EVM peak Symbol Number 42. xPDCCH EVM peak Subcarrier Number 43. UE-RS(xPDSCH) EVM result valid (1 = valid/0 = invalid) 44. UE-RS(xPDSCH) EVM rms (Average) 45. UE-RS(xPDSCH) EVM rms (Maximum) 46. UE-RS(xPDSCH) EVM peak (Average) 47. UE-RS(xPDSCH) EVM peak (Maximum) 48. UE-RS(xPDSCH) EVM peak Symbol Number 49. UE-RS(xPDSCH) EVM peak Subcarrier Number 50. UE-RS(xPDCCH) EVM result valid (1 = valid/0 = invalid) 51. UE-RS(xPDCCH) EVM rms (Average) 52. UE-RS(xPDCCH) EVM rms (Maximum) 53. UE-RS(xPDCCH) EVM peak (Average) 54. UE-RS(xPDCCH) EVM peak (Maximum) 55. UE-RS(xPDCCH) EVM peak Symbol Number 56. UE-RS(xPDCCH) EVM peak Subcarrier Number

Table 2.9-2 Responses to MX285051A-001 Modulation Measurement Results (Cont'd)

n	Result Mode	Response
2	A/B	57. P-SS EVM result valid (1 = valid / 0 = invalid) 58. P-SS EVM rms (Average) 59. P-SS EVM rms (Maximum) 60. P-SS EVM peak (Average) 61. P-SS EVM peak (Maximum) 62. P-SS EVM peak Symbol Number 63. P-SS EVM peak Subcarrier Number 64. S-SS EVM result valid (1 = valid / 0 = invalid) 65. S-SS EVM rms (Average) 66. S-SS EVM rms (Maximum) 67. S-SS EVM peak (Average) 68. S-SS EVM peak (Maximum) 69. S-SS EVM peak Symbol Number 70. S-SS EVM peak Subcarrier Number 71. E-SS EVM result valid (1 = valid / 0 = invalid) 72. E-SS EVM rms (Average) 73. E-SS EVM rms (Maximum) 74. E-SS EVM peak (Average) 75. E-SS EVM peak (Maximum) 76. E-SS EVM peak Symbol Number 77. E-SS EVM peak Subcarrier Number 78. BRS EVM result valid (1 = valid / 0 = invalid) 79. BRS EVM rms (Average) 80. BRS EVM rms (Maximum) 81. BRS EVM peak (Average) 82. BRS EVM peak (Maximum) 83. BRS EVM peak Symbol Number 84. BRS EVM peak Subcarrier Number 85. xPBCH EVM result valid (1 = valid/0 = invalid) 86. xPBCH EVM rms (Average) 87. xPBCH EVM rms (Maximum) 88. xPBCH EVM peak (Average) 89. xPBCH EVM peak (Maximum) 90. xPBCH EVM peak Symbol Number 91. xPBCH EVM peak Subcarrier Number ***Note:*** When Result Valid is invalid, the measurement result is regarded as an unmeasured result.

Table 2.9-2 Responses to MX285051A-001 Modulation Measurement Results (Cont'd)

n	Result Mode	Response
3	A/B	Responses are returned with comma-separated value formats in the following order: 1 to 2 × N Constellation 1. I-phase data of the 0th subcarrier 2. Q-phase data of the 0th subcarrier 3. I-phase data of the 1st subcarrier 4. Q-phase data of the 1st subcarrier … 2 × N–1. I-phase data of the (N–1)th subcarrier 2 × N. Q-phase data of the (N–1)th subcarrier The constellation data for the symbol set by Symbol Number is returned.
4	A/B	Responses are returned with comma-separated value formats in the following order: 1 to N EVM vs Subcarrier (rms) 1. EVM (rms) of the 0th subcarrier 2. EVM (rms) of the 1st subcarrier … N. EVM (rms) of the (N–1)th subcarrier ***Note:*** Executable even when EVM vs Subcarrier is not selected for Graph window.
5	A/B	Responses are returned with comma-separated value formats in the following order: 1 to N EVM vs Subcarrier (peak) 1. EVM (peak) of the 0th subcarrier 2. EVM (peak) of the 1st subcarrier … N. EVM (peak) of the (N–1)th subcarrier ***Note:*** Executable even when EVM vs Subcarrier is not selected for Graph window.
6	A/B	Responses are returned with comma-separated value formats in the following order: 1 to M EVM vs Symbol (rms) 1. EVM (rms) of the 0th symbol 2. EVM (rms) of the 1st symbol … M. EVM (rms) of the (M–1)th symbol ***Note:*** Executable even when EVM vs Symbol is not selected for Graph window.

Table 2.9-2 Responses to MX285051A-001 Modulation Measurement Results (Cont'd)

n	Result Mode	Response
7	A/B	Responses are returned with comma-separated value formats in the following order: 1 to M EVM vs Symbol (peak) 1. EVM (peak) of the 0th symbol 2. EVM (peak) of the 1st symbol … M. EVM (peak) of the (M–1)th symbol ***Note:*** Executable even when EVM vs Symbol is not selected for Graph window.
8	A/B	Responses are returned with comma-separated value formats in the following order: 1 to N Spectral flatness amplitude 1. Spectral flatness amplitude of the 0th subcarrier 2. Spectral flatness amplitude of the 1st subcarrier … N. Spectral flatness amplitude of the (N–1)th subcarrier ***Note:*** Executable even when Spectral Flatness Amplitude is not selected for Graph window.
10	A/B	Responses are returned with comma-separated value formats in the following order: 1 to N Spectral flatness phase 1. Spectral flatness phase of the 0th subcarrier 2. Spectral flatness phase of the 1st subcarrier … N. Spectral flatness phase of the (N–1)th subcarrier ***Note:*** Executable even when Spectral Flatness Phase is not selected for Graph window.

Table 2.9-2 Responses to MX285051A-001 Modulation Measurement Results (Cont'd)

n	Result Mode	Response
13	A/B	Responses are returned with comma-separated value formats in the following order: EVM (rms) vs Resource Block x = 100 y = 0 z = 49 1. EVM (rms) of resource block 0 in subframe y 2. EVM (rms) of resource block 1 in subframe y … x. EVM (rms) of resource block (x – 1) in subframe y x + 1. EVM (rms) of resource block 0 in subframe (y + 1) … 2 × x. EVM (rms) of resource block (x – 1) in subframe (y + 1) … m. EVM (rms) of resource block (x – 1) in subframe (y + z) ***Note:*** The units of the response are determined to be % or dB according to the EVM Unit setting. Measurement is not performed for the resource blocks for which Resource Block Result Valid is invalid. If Storage Mode is Average or Average&Max, the result of the last measurement is returned.

Table 2.9-2 Responses to MX285051A-001 Modulation Measurement Results (Cont'd)

n	Result Mode	Response
14	A/B	Responses are returned with comma-separated value formats in the following order: 1 to m (= x × y) Power vs Resource Block x = 100 y = 0 z = 49 1. Power of the 0th resource block in Subframe y 2. Power of the 1st resource block in Subframe y … x. Power of the (x–1)th resource block in Subframe y x+1. Power of the 0th resource block in Subframe y+1 … 2 × x. Power of the (x–1)th resource block in Subframe y+1 … m. Power of the (x–1)th resource block in Subframe y+z ***Note:*** The unit of the response is always dBm. The value of Resource Block for which Resource Block Result Valid is invalid is regarded as an unmeasured result. If Storage Mode is set to Average or Average&Max, the result of the last measurement is returned.
22	A/B	1. Cell ID 2. P-SS Power (Average) [dBm] 3. S-SS Power (Average) [dBm] 4. E-SS Power (Average) [dBm] 5. BRS Power (Average) [dBm] 6. xPBCH Power (Average) [dBm] 7. xPDSCH Power (Average) [dBm] 8. xPDCCH Power (Average) [dBm] 9. UE-RS(xPDSCH) Power (Average) [dBm] 10. UE-RS(xPDCCH) Power (Average) [dBm]

Table 2.9-3 Responses to MX285051A-051 Modulation Measurement Results

n	Result Mode	Response
1 or omitted	A/B	Responses are returned with comma-separated value formats in the following order: 1. Frequency Error (Average) [Hz] 2. Frequency Error (Maximum) [Hz] 3. Transmit Power (Average) [dBm] 4. Transmit Power (Maximum) [dBm] 5. EVM rms (Average) 6. EVM rms (Maximum) 7. EVM peak (Average) 8. EVM peak (Maximum) 9. EVM peak Symbol Number 10. EVM peak Subcarrier Number 11. Origin Offset (Average) [dB] 12. Origin Offset (Maximum) [dB] 13. Time Offset (Average) [second] 14. Time Offset (Maximum) [second] 15. Frequency Error PPM (Average) [ppm] 16. Frequency Error PPM (Maximum) [ppm] 17. Symbol Clock Error (Average) [ppm] 18. Symbol Clock Error (Maximum) [ppm] 19. IQ Skew (Average) [second] 20. IQ Skew (Maximum) [second] 21. IQ Imbalance (Average) [dB] 22. IQ Imbalance (Maximum) [dB] 23. IQ Quadrature Error (Average) [degree] 24. IQ Quadrature Error (Maximum) [degree]

Table 2.9-3 Responses to MX285051A-051 Modulation Measurement Results (Cont'd)

n	Result Mode	Response
2	A/B	Responses are returned with comma-separated value formats in the following order: 1. Total EVM result valid (1 = Valid/0 = Invalid) 2. Total EVM rms (Average) 3. Total EVM rms (Maximum) 4. Total EVM peak (Average) 5. Total EVM peak (Maximum) 6. Total EVM peak Symbol Number 7. Total EVM peak Subcarrier Number 8. xPUSCH ALL EVM result valid (1 = Valid/0 = Invalid) 9. xPUSCH ALL EVM rms (Average) 10. xPUSCH ALL EVM rms (Maximum) 11. xPUSCH ALL EVM peak (Average) 12. xPUSCH ALL EVM peak (Maximum) 13. xPUSCH ALL EVM peak Symbol Number 14. xPUSCH ALL EVM peak Subcarrier Number 15. xPUSCH QPSK EVM result valid (1 = Valid/0 = Invalid) 16. xPUSCH QPSK EVM rms (Average) 17. xPUSCH QPSK EVM rms (Maximum) 18. xPUSCH QPSK EVM peak (Average) 19. xPUSCH QPSK EVM peak (Maximum) 20. xPUSCH QPSK EVM peak Symbol Number 21. xPUSCH QPSK EVM peak Subcarrier Number 22. xPUSCH 16QAM EVM result valid (1 = Valid/0 = Invalid) 23. xPUSCH 16QAM EVM rms (Average) 24. xPUSCH 16QAM EVM rms (Maximum) 25. xPUSCH 16QAM EVM peak (Average) 26. xPUSCH 16QAM EVM peak (Maximum) 27. xPUSCH 16QAM EVM peak Symbol Number 28. xPUSCH 16QAM EVM peak Subcarrier Number 29. xPUSCH 64QAM EVM result valid (1 = Valid/0 = Invalid) 30. xPUSCH 64QAM EVM rms (Average) 31. xPUSCH 64QAM EVM rms (Maximum) 32. xPUSCH 64QAM EVM peak (Average) 33. xPUSCH 64QAM EVM peak (Maximum) 34. xPUSCH 64QAM EVM peak Symbol Number 35. xPUSCH 64QAM EVM peak Subcarrier Number 36. DM-RS(xPUSCH) EVM result valid (1 = Valid/0 = Invalid) 37. DM-RS(xPUSCH) EVM rms (Average) 38. DM-RS(xPUSCH) EVM rms (Maximum) 39. DM-RS(xPUSCH) EVM peak (Average) 40. DM-RS(xPUSCH) EVM peak (Maximum) 41. DM-RS(xPUSCH) EVM peak Symbol Number 42. DM-RS(xPUSCH) EVM peak Subcarrier Number

Table 2.9-3 Responses to MX285051A-051 Modulation Measurement Results (Cont'd)

n	Result Mode	Response
3	A/B	Responses are returned with comma-separated value formats in the following order: 1 to 2 × N Constellation 1. I-phase data of the 0th subcarrier 2. Q-phase data of the 0th subcarrier 3. I-phase data of the 1st subcarrier 4. Q-phase data of the 1st subcarrier … 2 × N–1. I-phase data of the (N–1)th subcarrier 2 × N. Q-phase data of the (N–1)th subcarrier The constellation data for the symbol set by Symbol Number is returned.
4	A/B	Responses are returned with comma-separated value formats in the following order: 1 to N EVM vs Subcarrier (rms) 1. EVM (rms) of the 0th subcarrier 2. EVM (rms) of the 1st subcarrier … N. EVM (rms) of the (N–1)th subcarrier ***Note:*** Executable even when EVM vs Subcarrier is not selected for Graph window.
5	A/B	Responses are returned with comma-separated value formats in the following order: 1 to N EVM vs Subcarrier (peak) 1. EVM (peak) of the 0th subcarrier 2. EVM (peak) of the 1st subcarrier … N. EVM (peak) of the (N–1)th subcarrier ***Note:*** Executable even when EVM vs Subcarrier is not selected for Graph window.
6	A/B	Responses are returned with comma-separated value formats in the following order: 1 to M EVM vs Symbol (rms) 1. EVM (rms) of the 0th symbol 2. EVM (rms) of the 1st symbol … M. EVM (rms) of the (M–1)th symbol ***Note:*** Executable even when EVM vs Symbol is not selected for Graph window.

Table 2.9-3 Responses to MX285051A-051 Modulation Measurement Results (Cont'd)

n	Result Mode	Response
7	A/B	Responses are returned with comma-separated value formats in the following order: 1 to M EVM vs Symbol (peak) 1. EVM (peak) of the 0th symbol 2. EVM (peak) of the 1st symbol … M. EVM (peak) of the (M–1)th symbol ***Note:*** Executable even when EVM vs Symbol is not selected for Graph window.
8	A/B	Responses are returned with comma-separated value formats in the following order: 1 to N Spectral flatness amplitude 1. Spectral flatness amplitude of the 0th subcarrier 2. Spectral flatness amplitude of the 1st subcarrier … N. Spectral flatness amplitude of the (N–1)th subcarrier ***Note:*** Executable even when Spectral Flatness Amplitude is not selected for Graph window.
10	A/B	Responses are returned with comma-separated value formats in the following order: 1 to N Spectral flatness phase 1. Spectral flatness phase of the 0th subcarrier 2. Spectral flatness phase of the 1st subcarrier … N. Spectral flatness phase of the (N–1)th subcarrier ***Note:*** Executable even when Spectral Flatness Phase is not selected for Graph window.

Table 2.9-3 Responses to MX285051A-051 Modulation Measurement Results (Cont'd)

n	Result Mode	Response
13	A/B	Responses are returned with comma-separated value formats in the following order: EVM (rms) vs Resource Block x = 100 y = 0 z = 49 1. EVM (rms) of resource block 0 in subframe y 2. EVM (rms) of resource block 1 in subframe y … x. EVM (rms) of resource block (x – 1) in subframe y x + 1. EVM (rms) of resource block 0 in subframe (y + 1) … 2 × x. EVM (rms) of resource block (x – 1) in subframe (y + 1) … m. EVM (rms) of resource block (x – 1) in subframe (y + z) ***Note:*** The units of the response are determined to be % or dB according to the EVM Unit setting. Measurement is not performed for the resource blocks for which Resource Block Result Valid is invalid. If Storage Mode is Average or Average&Max, the result of the last measurement is returned.

Table 2.9-3 Responses to MX285051A-051 Modulation Measurement Results (Cont'd)

n	Result Mode	Response
14	A/B	Responses are returned with comma-separated value formats in the following order: 1 to m (= x × y) Power vs Resource Block x = 100 y = 0 z = 49 1. Power of the 0th resource block in Subframe y 2. Power of the 1st resource block in Subframe y … x. Power of the (x–1)th resource block in Subframe y x + 1. Power of the 0th resource block in Subframe y+1 … 2 × x. Power of the (x–1)th resource block in Subframe y+1 … m. Power of the (x–1)th resource block in Subframe y+z ***Note:*** The unit of the response is always dB. The value of Resource Block for which Resource Block Result Valid is invalid is regarded as an unmeasured result. If Storage Mode is set to Average or Average&Max, the result of the last measurement is returned.
22	A/B	1. xPUSCH Power (Average) [dBm] 2. DM-RS(xPUSCH) Power (Average) [dBm]

For details on Result Mode, refer to the description of the `:SYSTem:RESult:MODE` command in the *MS2690A/MS2691A/MS2692A and MS2830A/MS2840A/MS2850A Signal Analyzer Operation Manual (Mainframe Remote Control)*.

Table 2.9-4 lists device messages for setting parameters for Modulation measurement.

Table 2.9-4 Device Messages for Setting Parameters for Modulation Measurement

Parameter	Device message
Storage Mode	[:SENSe]:EVM:AVERage[:STATe] OFF|ON|AMAXimum|0|1|2
	[:SENSe]:EVM:AVERage[:STATe]?
Storage Count	[:SENSe]:EVM:AVERage:COUNt <integer>
	[:SENSe]:EVM:AVERage:COUNt?
Scale–EVM Unit	:DISPlay:EVM[:VIEW]:WINDow2|3|5|6|7:TRACe:Y[:SCALe]:SPACing LINear|LOGarithmic|PERCent|DB
	:DISPlay:EVM[:VIEW]:WINDow2|3|5|6|7:TRACe:Y[:SCALe]:SPACing?
Scale–EVM	:DISPlay:EVM[:VIEW]:WINDow2|3|6:TRACe:Y[:SCALe]:RLEVel <scale>
	:DISPlay:EVM[:VIEW]:WINDow2|3|6:TRACe:Y[:SCALe]:RLEVel?
Scale–Flatness	:DISPlay:EVM[:VIEW]:WINDow4:TRACe:Y[:SCALe]:RLEVel <scale>
	:DISPlay:EVM[:VIEW]:WINDow4:TRACe:Y[:SCALe]:RLEVel?
Trace Mode	:DISPlay:EVM[:VIEW]:SELect EVSubcarrier|EVSYmbol|FLATness|PVRB|EVRB|SUMMary
	:DISPlay:EVM[:VIEW]:SELect?
Flatness Type	:CALCulate:EVM:WINDow4:TYPE AMPLitude|PHASe
	:CALCulate:EVM:WINDow4:TYPE?

Table 2.9-4 Device Messages for Setting Parameters for Modulation Measurement (Cont'd)

Parameter	Device Message
Graph View Setting	:CALCulate:EVM:WINDow2:MODE EACH|AVERage
	:CALCulate:EVM:WINDow2:MODE?
	:CALCulate:EVM:WINDow2:GVIew RMS|RPEak
	:CALCulate:EVM:WINDow2:GVIew?
	:CALCulate:EVM:WINDow3:MODE EACH|AVERage
	:CALCulate:EVM:WINDow3:MODE?
	:CALCulate:EVM:WINDow3:GVIew RMS|RPEak
	:CALCulate:EVM:WINDow3:GVIew?
Marker - Symbol Number	:CALCulate:EVM:WINDow|2:SYMBol:NUMBer <integer>
	:CALCulate:EVM:WINDow|2:SYMBol:NUMBer?
Marker - Subcarrier Number	:CALCulate:EVM:WINDow3:SUBCarrier:NUMBer <integer>
	:CALCulate:EVM:WINDow3:SUBCarrier:NUMBer?
Subframe Number	:CALCulate:EVM:WINDow5:SUBFrame:NUMBer <integer>
	:CALCulate:EVM:WINDow5:SUBFrame:NUMBer?
Resource Block Number	:CALCulate:EVM:WINDow5|6:RBLock:NUMBer <integer>
	:CALCulate:EVM:WINDow5|6:RBLock:NUMBer?

Table 2.9-5 lists the device messages for setting the marker and reading out the value at the marker position for Modulation measurement.

Table 2.9-5 Device Messages Related to Marker for Modulation Measurement

Parameter	Device Message
Marker Position Number	:CALCulate:EVM:MARKer:SUBCarrier <integer>
	:CALCulate:EVM:MARKer:SUBCarrier?
	:CALCulate:EVM:MARKer:SYMBol <integer>
	:CALCulate:EVM:MARKer:SYMBol?
	:CALCulate:EVM:MARKer:RELement <integer>
	:CALCulate:EVM:MARKer:RELement?
Marker Value	:CALCulate:EVM:MARKer:X?
	:CALCulate:EVM:MARKer:Y[:RMS]?
	:CALCulate:EVM:MARKer:Y:PEAK?
	:CALCulate:EVM:MARKer:EVM[:RMS]?
	:CALCulate:EVM:MARKer:EVM:PEAK?
	:CALCulate:EVM:MARKer:POWer[:RELative]?
	:CALCulate:EVM:MARKer:POWer:ABSolute?
Peak Search	:CALCulate:MARKer:MAXimum
Next Peak Search	:CALCulate:MARKer:MAXimum:NEXT
Dip Search	:CALCulate:MARKer:MINimum
Next Dip Search	:CALCulate:MARKer:MINimum:NEXT

2.9.1 Measure

:CONFigure:EVM

Modulation

Function

This command selects the Modulation measurement function.

Command

```
:CONFigure:EVM
```

Details

This command only selects the measurement function and does not start measurement.

Example of Use

To select the Modulation measurement function.

```
CONF:EVM
```

:INITiate:EVM

Modulation

Function

This command starts Modulation measurement.

Command

```
:INITiate:EVM
```

Example of Use

To start Modulation measurement.

```
INIT:EVM
```

:FETCh:EVM[n]?

Modulation Query

Function

This command queries the result of Modulation measurement.

Query

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

Response

See Table 2.9-2 or Table 2.9-3.

Details

–999.0 is returned when measurement is not performed or an error has occurred. Note, however, that "999999999999" is returned in the case of Frequency Error.

The unit of the read EVM value depends on the setting of EVM Unit.

Example of Use

To query the result of Modulation measurement.

```
FETC:EVM?
> 5.20,1.03,1,0.53,38,3,2.34,…
```

:READ:EVM[n]?

Modulation Query

Function

This command performs Modulation measurement once (single measurement) with the current settings, and then queries the measured result.

Query

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

Response

See Table 2.9-2 or Table 2.9-3.

Example of Use

To perform Modulation measurement and queries the measured result.

```
READ:EVM?
```

Related Command

This command functions the same as the following command.

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

:MEASure:EVM[n]?

Modulation Query

Function

This command performs Modulation measurement once (single measurement) with the current settings, and then queries the measured result.

Query

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

Response

See Table 2.9-2 or Table 2.9-3.

Example of Use

To perform Modulation measurement and query the measurement result.

```
MEAS:EVM?
```

Related Command

This command functions the same as the following command.

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

2.9.2 Storage Mode

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

Storage Mode

Function

This command sets the storage mode.

Command

```
[:SENSe]:EVM:AVERage[:STATe] mode
```

Parameter

<mode>	Storage Mode
OFF|0	Off (Default)
ON|1	Average
AMAXimum|2	Average & Max

Details

When Capture Time Auto is set to Off, the capture time length must be 2 frames or more to perform measurement in Storage mode.

Example of Use

To set the storage mode to Average.

```
EVM:AVER ON
```

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

Storage Mode Query

Function

This command queries the 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 storage mode.

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

2.9.3 Storage Count

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

Storage Count

Function

This command sets the storage count.

Command

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

Parameter

<integer>	Storage Count
Range	2 to 9999
Resolution	1
Default	10

Example of Use

To set the storage count to 10.

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

[:SENSe]:EVM:AVERage:COUNt?

Storage Count Query

Function

This command queries the storage count.

Query

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

Response

```
<integer>
```

Parameter

<integer>	Storage Count
Range	2 to 9999
Resolution	1

Example of Use

To query the storage count.

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

2.9.4 Scale – EVM Unit

:DISPlay:EVM[:VIEW]:WINDow2|3|5|6|7:TRACe:Y[:SCALe]:SPACing LINear|LOGarithmic|PERCent|DB

Scale EVM Unit

Function

This command sets the unit for EVM of measurement results.

Command

```
:DISPlay:EVM[:VIEW]:WINDow2|3|5|6|7:TRACe:Y[:SCALe]:SPACing <mode>
```

Parameter

<mode>	Scale mode
LINear	% scale
LOGarithmic	dB scale
PERCent	% scale (Default)
DB	dB scale

Details

This command is not available when Trace Mode is set to Spectral Flatness.

Example of Use

To set the unit for EVM to dB scale.

```
DISP:EVM:WIND2:TRAC:Y:SPAC DB
```

:DISPlay:EVM[:VIEW]:WINDow2|3|5|6|7:TRACe:Y[:SCALe]:SPACing?

Scale EVM Unit Query

Function

This command queries the scale unit for EVM.

Query

```
:DISPlay:EVM[:VIEW]:WINDow2|3|5|6|7:TRACe:Y[:SCALe]:SPACing?
```

Response

```
<mode>
```

Parameter

<mode>	Scale mode
PERC	% scale
DB	dB scale

Example of Use

To query the unit for EVM.

```
DISP:EVM:WIND2:TRAC:Y:SPAC?
> DB
```

2.9.5 Scale – EVM

:DISPlay:EVM[:VIEW]:WINDow2|3|6:TRACe:Y[:SCALe]:RLEVel 2|5|10|20|-40|-20|0

Scale-EVM

Function

This command sets the vertical axis scale of the graph in which the vertical axis (Y) indicates EVM. The unit depends on the setting of EVM Unit.

Command

```
:DISPlay:EVM[:VIEW]:WINDow2|3|6:TRACe:Y[:SCALe]:RLEVel
<scale>
```

Parameter

Range of vertical axis scale when EVM Unit = %

20	0 to 20%
10	0 to 10%
5	0 to 5% (Default)
2	0 to 2%

Range of vertical axis scale when EVM Unit = dB

–40	–80 dB to –40 dB (Default)
–20	–80 dB to –20 dB
0	–80 dB to 0 dB

Details

The selectable arguments depend on the setting of EVM Unit.

Example of Use

To set the vertical axis scale of the result graph to 10%.

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

:DISPlay:EVM[:VIEW]:WINDow2|3|6:TRACe:Y[:SCALe]:RLEVel?

Scale–EVM Query

Function

This command queries the vertical axis scale of the graph in which the vertical axis (Y) indicates EVM. The unit of the readout value depends on the setting of EVM Unit.

Query

```
:DISPlay:EVM[:VIEW]:WINDow2|3|6:TRACe:Y[:SCALe]:RLEVel?
```

Response

```
<integer>
```

Parameter

Range of vertical axis scale when EVM Unit = %

20	0 to 20%
10	0 to 10%
5	0 to 5%
2	0 to 2%

Range of vertical axis scale when EVM Unit = dB

–40	–80 to –40 dB
–20	–80 to –20 dB
0	–80 to 0 dB

Example of Use

To query the vertical axis scale of the result graph.

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

2.9.6 Scale – Flatness

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

Scale–Flatness

Function

This command sets the vertical axis scale of the Flatness graph. The unit depends on the setting of Flatness Type.

Command

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

Parameter

Range of vertical axis scale when Flatness Type = Amplitude

Range	1, 3, 10
Suffix code	None
Default	10

Range of vertical axis scale when Flatness Type = Phase

Range	6, 20, 60
Suffix code	None
Default	20

Example of Use

To set the vertical axis scale of the result graph to 10 dB.

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

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

Scale–Flatness Query

Function

This command queries the vertical axis scale of the Flatness graph. The unit of the readout value depends on the setting of Flatness Type.

Query

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

Response

```
<integer>
```

Parameter

Range of vertical axis scale when Flatness Type = Amplitude

Range	1, 3, 10

Range of vertical axis scale when Flatness Type = Phase

Range	6, 20, 60

Example of Use

To query the vertical axis scale of the result graph.

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

2.9.7 Trace Mode

:DISPlay:EVM[:VIEW]:SELect EVSubcarrier|EVSYmbol|FLATness|PVRB|EVRB|SUMMary

Trace Mode

Function

This command sets the result type to be displayed on the graph window.

Command

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

Parameter

<mode>	Displayed result type
EVSubcarrier	Displays EVM vs Subcarrier (Default)
EVSYmbol	Displays EVM vs Symbol.
FLATness	Displays Spectral Flatness.
PVRB	Displays Power vs Resource Block.
EVRB	Displays EVM vs Resource Block.
SUMMary	Displays Summary.

Example of Use

To display the Spectral Flatness to the graph window.

```
DISP:EVM:SEL FLAT
```

:DISPlay:EVM[:VIEW]:SELect?

Trace Mode Query

Function

This command queries the result type displayed on the graph window.

Command

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

Response

```
<mode>
```

Parameter

<mode>	Displayed result type
EVS	EVM vs Subcarrier is displayed.
EVSY	EVM vs Symbol is displayed.
FLAT	Spectral Flatness is displayed.
PVRB	Displays Power vs Resource Block.
EVRB	Displays EVM vs Resource Block.
SUMM	Displays Summary.

Example of Use

To query the result type displayed on the graph window.

```
DISP:EVM:SEL?
> FLAT
```

2.9.8 Flatness Type

:CALCulate:EVM:WINDow4:TYPE AMPLitude|PHASe

Spectral Flatness Type

Function

This command sets the display type for the spectral flatness graph.

Command

```
:CALCulate:EVM:WINDow4:TYPE <mode>
```

Parameter

<mode>	Display type of spectral flatness graph
AMPLitude	Displays Amplitude (Default).
PHASe	Displays Phase.

Example of Use

To set the display type of the spectral flatness graph to Amplitude.

```
CALC:EVM:WIND4:TYPE AMPL
```

:CALCulate:EVM:WINDow4:TYPE?

Spectral Flatness Type Query

Function

This command queries the display type of the spectral flatness graph.

Query

```
:CALCulate:EVM:WINDow4:TYPE?
```

Response

```
<mode>
```

Parameter

<mode>	Display type of spectral flatness graph
AMPL	Amplitude is displayed.
PHAS	Phase is displayed.

Example of Use

To query the display type of the spectral flatness graph.

```
CALC:EVM:WIND4:TYPE?
> AMPL
```

2.9.9 Graph View Setting

:CALCulate:EVM:WINDow2:MODE EACH|AVERage

EVM vs Subcarrier View

Function

This command sets whether to display the averaged or unaveraged EVM vs Subcarrier.

Command

```
:CALCulate:EVM:WINDow2:MODE <mode>
```

Parameter

<mode>	Averaging of EVM vs Subcarrier
EACH	Displays the unaveraged EVM vs Subcarrier.
AVERage	Displays the averaged EVM vs Subcarrier (Default).

Example of Use

To display the averaged EVM vs Subcarrier.

```
CALC:EVM:WIND2:MODE AVER
```

:CALCulate:EVM:WINDow2:MODE?

EVM vs Subcarrier View Query

Function

This command queries whether the EVM vs Subcarrier is averaged.

Query

```
:CALCulate:EVM:WINDow2:MODE?
```

Response

```
<mode>
```

Parameter

<mode>	Averaging of EVM vs Subcarrier
EACH	Unaveraged EVM vs Subcarrier is displayed.
AVER	Averaged EVM vs Subcarrier is displayed.

Example of Use

To query whether the EVM vs Subcarrier is averaged.

```
CALC:EVM:WIND2:MODE?
> AVER
```

:CALCulate:EVM:WINDow2:GVIew RMS|RPEak

EVM vs Subcarrier View Graph View

Function

This command sets the display type for the EVM vs Subcarrier graph.

Command

```
:CALCulate:EVM:WINDow2:GVIew <mode>
```

Parameter

<mode>	Display type of EVM vs Subcarrier graph
RMS	Displays the average value.
RPEak	Displays the average and peak values (Default).

Example of Use

To display the average value in the EVM vs Subcarrier graph.

```
CALC:EVM:WIND2:GVI RMS
```

:CALCulate:EVM:WINDow2:GVIew?

EVM vs Subcarrier View Graph View Query

Function

This command queries the display type of the EVM vs Subcarrier graph.

Query

```
:CALCulate:EVM:WINDow2:GVIew?
```

Response

```
<mode>
```

Parameter

<mode>	Display type of EVM vs Subcarrier graph
RMS	The average value is displayed.
RPE	The average and peak values are displayed.

Example of Use

To query the display type of the EVM vs Subcarrier graph.

```
CALC:EVM:WIND2:GVI?
> RMS
```

:CALCulate:EVM:WINDow3:MODE EACH|AVERage

EVM vs Symbol View

Function

This command sets whether to display the averaged or unaveraged EVM vs Symbol.

Command

```
:CALCulate:EVM:WINDow3:MODE <mode>
```

Parameter

<mode>	Averaging of EVM vs Symbol
EACH	Displays the unaveraged EVM vs Symbol.
AVERage	Displays the averaged EVM vs Symbol (Default).

Example of Use

To display the averaged EVM vs Symbol.

```
CALC:EVM:WIND3:MODE AVER
```

:CALCulate:EVM:WINDow3:MODE?

EVM vs Symbol View Query

Function

This command queries whether the displayed EVM vs Symbol is averaged.

Query

```
:CALCulate:EVM:WINDow3:MODE?
```

Response

```
<mode>
```

Parameter

<mode>	Averaging of EVM vs Symbol
EACH	Unaveraged EVM vs Symbol is displayed.
AVER	Averaged EVM vs Symbol is displayed.

Example of Use

To query whether the displayed EVM vs Symbol is averaged.

```
CALC:EVM:WIND3:MODE?
> EACH
```

:CALCulate:EVM:WINDow3:GVIew RMS|RPEak

EVM vs Symbol View Graph View

Function

This command sets the display type for the EVM vs Symbol graph.

Command

```
:CALCulate:EVM:WINDow3:GVIew <mode>
```

Parameter

<mode>	Display type of EVM vs Symbol graph
RMS	Displays the average value.
RPEak	Displays the average and peak values (Default).

Example of Use

To display the average value of the EVM vs Symbol graph.

```
CALC:EVM:WIND3:GVI RMS
```

:CALCulate:EVM:WINDow3:GVIew?

EVM vs Symbol View Graph View Query

Function

This command queries the display type of the EVM vs Symbol graph.

Query

```
:CALCulate:EVM:WINDow3:GVIew?
```

Response

```
<mode>
```

Parameter

<mode>	Display type of EVM vs Symbol graph
RMS	Average value is displayed.
RPE	Average and peak values are displayed.

Example of Use

To query the display type of the EVM vs Symbol graph.

```
CALC:EVM:WIND3:GVI?
> RMS
```

2.9.10 Marker - Symbol Number

:CALCulate:EVM:WINDow[1]|2:SYMBol:NUMBer <integer>

Marker - Symbol Number

Function

This command sets the symbol number to be displayed in a constellation of graph.

Command

```
:CALCulate:EVM:WINDow[1]|2:SYMBol:NUMBer <integer>
```

Parameter

<integer>	Symbol number
Range	0 to 699
Resolution	1
Suffix code	None
Default	0

Example of Use

To set the display symbol number to 110.

```
CALC:EVM:WIND1:SYMB:NUMB 110
```

:CALCulate:EVM:WINDow[1]|2:SYMBol:NUMBer?

Marker - Symbol Number Query

Function

This command queries the symbol number displayed in a constellation of graph.

Query

```
:CALCulate:EVM:WINDow[1]|2:SYMBol:NUMBer?
```

Response

```
<integer>
```

Parameter

<integer>	Symbol number
Range	0 to 699
Resolution	1

Details

Use `:CALCulate:EVM:MARKer:SYMBol?` to query the symbol number to be displayed in a Power vs RB or EVM vs RB constellation.

Example of Use

To query the display symbol number.

```
CALC:EVM: WIND:SYMB:NUMB?
> 110
```

2.9.11 Marker - Subcarrier Number

:CALCulate:EVM:WINDow3:SUBCarrier:NUMBer <integer>

Marker - Subcarrier Number

Function

This command sets the subcarrier number of the displayed constellation and graph.

Command

```
:CALCulate:EVM:WINDow3:SUBCarrier:NUMBer <integer>
```

Parameter

<integer>		Subcarrier number
	Range	0 to 1199
	Resolution	1
	Suffix code	None
	Default	0

Example of Use

To set the display subcarrier number to 110.

```
CALC:EVM:WIND3:SUBC:NUMB 110
```

:CALCulate:EVM:WINDow3:SUBCarrier:NUMBer?

Marker - Subcarrier Number Query

Function

This command queries the subcarrier number of displayed constellation and graph.

Query

```
:CALCulate:EVM:WINDow3:SUBCarrier:NUMBer?
```

Response

```
<integer>
```

Parameter

<integer>		Subcarrier number
	Range	0 to 1199
	Resolution	1

Example of Use

To query the display subcarrier number.

```
CALC:EVM:WIND3:SUBC:NUMB?
> 110
```

2.9.12 Subframe Number

:CALCulate:EVM:WINDow5|6:SUBFrame:NUMBer <integer>

Subframe Number

Function

This command sets the subframe number to be displayed for Power vs Resource Block and EVM vs Resource Block.

Command

```
:CALCulate:EVM:WINDow5|6:SUBFrame:NUMBer <integer>
```

Parameter

<integer>	Subframe number to be displayed
Range	0 to 49
Resolution	1
Suffix code	None
Default	0

Example of Use

To set the subframe number to be displayed for Power vs Resource Block to 1.

```
CALC:EVM:WIND5:SUBF:NUMB 1
```

:CALCulate:EVM:WINDow5|6:SUBFrame:NUMBer?

Subframe Number Query

Function

This command queries the subframe number displayed for Power vs Resource Block and EVM vs Resource Block.

Query

```
:CALCulate:EVM:WINDow5|6:SUBFrame:NUMBer?
```

Response

```
<integer>
```

Parameter

<integer>	Subframe number to be displayed
Range	0 to 49
Resolution	1

Example of Use

To query the subframe number displayed for Power vs Resource Block.

```
CALC:EVM:WIND5:SUBF:NUMB?
> 1
```

2.9.13 Resource Block Number

:CALCulate:EVM:WINDow5|6:RBLock:NUMBer <integer>

Resource Block Number

Function

This command sets the Resource Block number to be displayed for Power vs Resource Block and EVM vs Resource Block.

Command

```
:CALCulate:EVM:WINDow5|6:RBLock:NUMBer <integer>
```

Parameter

<integer>	Resource Block number to be displayed
Range	0 to 99
Resolution	1
Suffix code	None
Default	0

Example of Use

To set the Resource Block number to be displayed for Power vs Resource Block to 10.

```
CALC:EVM:WIND5:RBL:NUMB 10
```

:CALCulate:EVM:WINDow5|6:RBLock:NUMBer?

Resource Block Number Query

Function

This command queries the Resource Block number displayed for Power vs Resource Block and EVM vs Resource Block.

Query

```
:CALCulate:EVM:WINDow5|6:RBLock:NUMBer?
```

Response

```
<integer>
```

Parameter

<integer>	Resource Block number to be displayed
Range	0 to 99
Resolution	1

Example of Use

To query the Resource Block number displayed for Power vs Resource Block.

```
CALC:EVM:WIND5:RBL:NUMB?
> 10
```

2.9.14 Marker Position Number

:CALCulate:EVM:MARKer:SUBCarrier <integer>

Marker Subcarrier Number

Function

This command sets the marker position on the Constellation or on the graph window, in subcarrier number. The target graph is set by Active Trace.

Command

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

Parameter

<integer>	Subcarrier number
Range	0 to 1199
Resolution	1
Suffix code	None
Default	0

Details

The marker position specified by this command does not apply to the subcarrier number of the constellation displayed on Power vs RB and EVM vs RB.

Example of Use

To set the marker position to 100.

```
CALC:EVM:MARK:SUBC 100
```

:CALCulate:EVM:MARKer:SUBCarrier?

Marker Subcarrier Number Query

Function

This command queries the marker position on the Constellation or on the graph window, in subcarrier number.

Command

```
:CALCulate:EVM:MARKer:SUBCarrier?
```

Response

```
<integer>
```

Parameter

`<integer>`	Subcarrier number
Range	0 to 1199
Resolution	1

Details

For Power vs Resource Block and EVM vs Resource Block, the marker position on the constellation is returned as a subcarrier number.

Example of Use

To query the marker position in subcarrier number.

```
CALC:EVM:MARK:SUBC?
> 100
```

:CALCulate:EVM:MARKer:SYMBol <integer>

Marker Symbol Number

Function

This command sets the marker position on the constellation or in the graph window as a symbol number.

Command

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

Parameter

<integer>	Symbol number
Range	0 to 699
Resolution	1
Suffix code	None
Default	0

Example of Use

To set the marker position to 100.

```
CALC:EVM:MARK:SYMB 100
```

:CALCulate:EVM:MARKer:SYMBol?

Marker Symbol Number Query

Function

This command queries the marker position on the constellation or in the graph window as a symbol number.

Command

```
:CALCulate:EVM:MARKer:SYMBol?
```

Response

```
<integer>
```

Parameter

<integer>	Symbol number
Range	0 to 699
Resolution	1

Details

For Power vs Resource Block and EVM vs Resource Block, the marker position of Constellation is returned in a symbol number.

Example of Use

To query the marker position.

```
CALC:EVM:MARK:SYMB?
> 100
```

:CALCulate:EVM:MARKer:RELement <integer>

Marker Resource Element Number

Function

This command sets the marker position of Constellation in a source element number when Trace Mode is set to Power vs Resource Block or EVM vs Resource Block.

Command

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

Parameter

<integer>	Resource element number	
Range	0 to Number of resource elements detected as xPDSCH or xPUSCH.	
Resolution	1	
Suffix code	None	
Default	0	

Example of Use

To set the marker target of Constellation to 100.

```
CALC:EVM:MARK:REL 100
```

:CALCulate:EVM:MARKer:RELement?

Marker Resource Element Number Query

Function

This command queries the marker position of Constellation in a resource element number when Trace Mode is set to Power vs Resource Block or EVM vs Resource Block.

Command

```
:CALCulate:EVM:MARKer:RELement?
```

Response

```
<integer>
```

Parameter

<integer>	Resource element number	
Range	0 to Number of resource elements detected as xPDSCH or xPUSCH.	
Resolution	1	

Example of Use

To query the marker target of Constellation.

```
CALC:EVM:MARK:REL?
> 100
```

2.9.15 Marker Value

:CALCulate:EVM:MARKer:X?

Marker X Axis Value Query

Function

This command queries the X-coordinate value at the marker on the Constellation.

Query

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

Response

```
<real>
```

Parameter

<real>	X-coordinate value at the marker on the Constellation

Details

This command is available when Trace Mode is set to Summary. –999.0 is returned when measurement is not made or an error has occurred.

Example of Use

To query the X-coordinate value at the marker on the Constellation.

```
CALC:EVM:MARK:X?
> 0.12345
```

:CALCulate:EVM:MARKer:Y[:RMS]?

Marker Y Axis Value (RMS) Query

Function

This command queries the RMS value on the Y coordinate at the marker on the target graph.

Query

```
:CALCulate:EVM:MARKer:Y[:RMS]?
```

Response

```
<real>
```

Parameter

`<real>` RMS value on Y coordinate at maker on target graph

When Active Trace = Constellation:
- Constellation: No unit

When Active Trace = Graph window and Trace Mode = EVM vs Subcarrier:
- When EVM Unit = %: In % units
- When EVM Unit = dB: In dB units

When Active Trace = Graph window and Trace Mode = EVM vs Symbol:
- When EVM Unit = %: In % units
- When EVM Unit = dB: In dB units

When Active Trace = Graph window and Trace Mode = Spectral Flatness:
- For Amplitude: In dB units
- For Phase: In degree units

When Active Trace = Graph window and Trace Mode = Power vs Resource Block:
- Power In dB units

When Active Trace = Graph window and Trace Mode = EVM vs Resource Block:
- When EVM Unit = % In % units
- When EVM Unit = dB In dB units

Details

–999.0 is returned if Trace Mode is Summary.
–999.0 is returned when measurement is not performed or an error has occurred.
Execute the following command to specify whether to query the Q coordinate of Constellation or the value at the marker at the bottom of the screen.

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

Example of Use

To query the RMS value on the Y coordinate at the marker on the target graph.

```
CALC:EVM:MARK:Y?
> –20.00
```

:CALCulate:EVM:MARKer:Y:PEAK?

Marker Y Axis Value (Peak) Query

Function

This command queries the peak value on the Y coordinate at the marker on the graph window.

Query

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

Response

```
<real>
```

Parameter

`<real>` Peak value on Y coordinate at maker on target graph

When EVM Unit = %: % units

When EVM Unit = dB: dB units

Details

–999.0 is returned if Trace Mode is not EVM vs Subcarrier or EVM vs Symbol. –999. 0 is returned when measurement is not made or an error has occurred.

Example of Use

To query the peak value on the Y coordinate at the marker on the target graph.

```
CALC:EVM:MARK:Y:PEAK?
> –20.00
```

:CALCulate:EVM:MARKer:EVM[:RMS]?

Marker EVM Value (RMS) Query

Function

This command queries the RMS value of EVM at the marker position in the corresponding graph.

Query

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

Response

```
<real>
```

Parameter

<real> RMS value of EVM at the marker position in the corresponding graph

When EVM Unit is set to %: Unit:%

When EVM Unit is set to dB: Unit: dB

Details

–999.0 is returned if Trace Mode is not EVM vs Subcarrier, EVM vs Symbol, Power vs RB, or EVM vs RB.

–999.0 is returned when no measurement is made or an error occurs.

Example of Use

To query the RMS value of EVM at the marker position.

```
CALC:EVM:MARK:EVM?
> -20.00
```

:CALCulate:EVM:MARKer:EVM:PEAK?

Marker EVM Value (Peak) Query

Function

This command queries the Peak value of EVM at the marker position in the graph window.

Query

```
:CALCulate:EVM:MARKer:EVM:PEAK?
```

Response

```
<real>
```

Parameter

`<real>` Peak value of EVM at the marker position in the corresponding graph

When EVM Unit is set to %: Unit: %

When EVM Unit is set to dB: Unit: dB

Details

–999.0 is returned if Trace Mode is not EVM vs Subcarrier, EVM vs Symbol, Power vs RB, or EVM vs RB.

–999.0 is returned when no measurement is made or an error occurs.

Example of Use

To query the Peak value of EVM at the marker position.

```
CALC:EVM:MARK:EVM:PEAK?
> -20.00
```

:CALCulate:EVM:MARKer:POWer[:RELative]?

Marker Relative Power Value (RMS) Query

Function

This command queries the relative power value at the marker position in the corresponding graph.

Query

```
:CALCulate:EVM:MARKer:POWer[:RELative]?
```

Response

```
<real>
```

Parameter

<real> Relative power value at the marker position in the corresponding graph

When Trace Mode is set to EVM vs Resource Block or Power vs Resource Block:

Unit dB

Details

–999.0 is returned if Trace Mode is not Power vs RB or EVM vs RB.
–999.0 is returned when no measurement is made or an error occurs.

Example of Use

To query the relative power value at the marker position.

```
CALC:EVM:MARK:POW?
> -20.00
```

:CALCulate:EVM:MARKer:POWer:ABSolute?

Marker Absolute Power Value (Peak) Query

Function

This command queries the absolute power value at the marker position in the graph window.

Query

```
:CALCulate:EVM:MARKer:POWer:ABSolute?
```

Response

```
<real>
```

Parameter

`<real>`		Absolute power value at the marker position in the corresponding graph
	Unit	dBm

Details

–999.0 is returned if Trace Mode is not Power vs RB or EVM vs RB.
–999.0 is returned when no measurement is made or an error occurs.

Example of Use

To query the absolute power value at the marker position.

```
CALC:EVM:MARK:POW:ABS?
> -20.00
```

2.9.16 Peak Search

:CALCulate:MARKer:MAXimum

Peak Search

Function

This command searches for the maximum level point of the active trace and moves the marker point.

Command

```
:CALCulate:MARKer:MAXimum
```

Details

This function is available on the following traces:

- EVM vs Subcarrier
- EVM vs Symbol
- Spectral flatness
- Power vs Resource Block
- EVM vs Resource Block

When reading out a marker value after executing this command, use the `*WAI` command and execute synchronization control.

Note that synchronization control during the Continuous mode is not supported.

Example of Use

To move the marker to the maximum level point and query the marker value.

```
CALC:MARK:MAX
*WAI
CALC:EVM:MARK:Y?
```

:CALCulate:MARKer:MAXimum:NEXT

Next Peak Search

Function

This command searches for the feature point on the active trace and moves the marker point to the peak point of a level that is lower than the current marker level.

Command

```
:CALCulate:MARKer:MAXimum:NEXT
```

Details

This function is available on the following traces:

- EVM vs Subcarrier
- EVM vs Symbol
- Spectral flatness
- Power vs Resource Block
- EVM vs Resource Block

When reading out a marker value after executing this command, use the `*WAI` command and execute synchronization control.

Note that synchronization control during the Continuous mode is not supported.

Example of Use

To move the marker to the next peak point and query the marker value.

```
CALC:MARK:MAX:NEXT
*WAI
CALC:EVM:MARK:Y?
```

:CALCulate:MARKer:MINimum

Dip Search

Function

This command searches for the minimum level point of the active trace and moves the marker point.

Command

```
:CALCulate:MARKer:MINimum
```

Details

This function is available when the following traces are active:

- EVM vs Subcarrier
- EVM vs Symbol
- Spectral flatness
- Power vs Resource Block
- EVM vs Resource Block

When reading out a marker value after executing this command, use the `*WAI` command and execute synchronization control.

Note that synchronization control during the Continuous mode is not supported.

Example of Use

To move the marker to the minimum level point and query the marker value.

```
CALC:MARK:MIN
*WAI
CALC:EVM:MARK:Y?
```

:CALCulate:MARKer:MINimum:NEXT

Next Dip Search

Function

This command searches for the feature point on the active trace and moves the marker point to the peak point in which the marker value of a level that is lower than the current marker level is minimum.

Command

```
:CALCulate:MARKer:MINimum:NEXT
```

Details

This function is available when the following traces are active:

- EVM vs Subcarrier
- EVM vs Symbol
- Spectral flatness
- Power vs Resource Block
- EVM vs Resource Block

When reading out a marker value after executing this command, use the `*WAI` command and execute synchronization control.

Note that synchronization control during the Continuous mode is not supported.

Example of Use

To move the marker to the next minimum peak point and query the marker value.

```
CALC:MARK:MIN:NEXT
*WAI
CALC:EVM:MARK:Y?
```

2.10 Carrier Aggregation Measurement Function

This section describes the device messages related to Carrier Aggregation measurement.

Table 2.10-1 lists the device messages used for execution and result query of Carrier Aggregation measurement.

Table 2.10-1 Device Messages for Carrier Aggregation Measurement Functions

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

Table 2.10-2 lists the responses to parameter [n] of the device messages in Table 2.10-1.

Table 2.10-2 Responses to MX285051A-001 Carrier Aggregation Measurement Results

n	Result Mode	Response
1 or omitted	A/B	Responses are returned with comma-separated value formats in the following order: 1. CC#0 Measurement status 2. Frequency Error [Hz] 3. Transmit Power [dBm] 4. EVM (rms) 5. EVM (peak) 6. Time Difference [ns] 7. CC#1 Measurement status 8. Frequency Error [Hz] 9. Transmit Power [dBm] 10. EVM (rms) 11. EVM (peak) 12. Time Difference [ns] 13. CC#2 Measurement status 14. Frequency Error [Hz] 15. Transmit Power [dBm] 16. EVM (rms) 17. EVM (peak) 18. Time Difference [ns] 19. CC#3 Measurement status 20. Frequency Error [Hz] 21. Transmit Power [dBm] 22. EVM (rms) 23. EVM (peak) 24. Time Difference [ns] 25. CC#4 Measurement status 26. Frequency Error [Hz] 27. Transmit Power [dBm] 28. EVM (rms) 29. EVM (peak) 30. Time Difference [ns] 31. CC#5 Measurement status 32. Frequency Error [Hz] 33. Transmit Power [dBm] 34. EVM (rms) 35. EVM (peak) 36. Time Difference [ns]

Table 2.10-2 Responses to MX285051A-001 Carrier Aggregation Measurement Results (Cont'd)

n	Result Mode	Response
1 or omitted	A/B	Responses are returned with comma-separated value formats in the following order: 37. CC#6 Measurement status 38. Frequency Error [Hz] 39. Transmit Power [dBm] 40. EVM (rms) 41. EVM (peak) 42. Time Difference [ns] 43. CC#7 Measurement status 44. Frequency Error [Hz] 45. Transmit Power [dBm] 46. EVM (rms) 47. EVM (peak) 48. Time Difference [ns] 49. Total Tx Power [dBm] 50. Tx Power Flatness [dB]

Table 2.10-2 Responses to MX285051A-001 Carrier Aggregation Measurement Results (Cont'd)

n	Result Mode	Response
2	A/B	Responses are returned with comma-separated value formats in the following order: 1. CC#0 Total EVM result valid (1 = valid/0 = invalid) 2. Total EVM rms 3. Reserved 4. Total EVM peak (Average) 5. Reserved 6. Total EVM peak symbol position 7. Total EVM peak subcarrier position 8. xPDSCH ALL EVM result valid (1 = valid/0 = invalid) 9. xPDSCH ALL EVM rms (Average) 10. Reserved 11. xPDSCH ALL EVM peak (Average) 12. Reserved 13. xPDSCH ALL EVM peak symbol position 14. xPDSCH ALL EVM peak subcarrier position 15. xPDSCH QPSK EVM result valid (1 = valid/0 = invalid) 16. xPDSCH QPSK EVM rms (Average) 17. Reserved 18. xPDSCH QPSK EVM peak (Average) 19. xPDSCH QPSK EVM peak (max) 20. xPDSCH QPSK EVM peak symbol position 21. xPDSCH QPSK EVM peak subcarrier position 22. xPDSCH 16QAM EVM result valid (1 = valid/0 = invalid) 23. xPDSCH 16QAM EVM rms (Average) 24. Reserved 25. xPDSCH 16QAM EVM peak (Average) 26. Reserved 27. xPDSCH 16QAM EVM peak symbol position 28. xPDSCH 16QAM EVM peak subcarrier position 29. xPDSCH 64QAM EVM result valid (1 = valid/0 = invalid) 30. xPDSCH 64QAM EVM rms (Average) 31. Reserved 32. xPDSCH 64QAM EVM peak (Average) 33. Reserved 34. xPDSCH 64QAM EVM peak symbol position 35. xPDSCH 64QAM EVM peak subcarrier position 36. to 91. Reserved

Table 2.10-2 Responses to MX285051A-001 Carrier Aggregation Measurement Results (Cont'd)

n	Result Mode	Response
2	A/B	Responses are returned with comma-separated value formats in the following order: 92. CC#1 Total EVM result valid (1 = valid/0 = invalid) 93. Total EVM rms 94. Reserved 95. Total EVM peak (Average) 96. Reserved 97. Total EVM peak symbol position 98. Total EVM peak subcarrier position 99. xPDSCH ALL EVM result valid (1 = valid/0 = invalid) 100. xPDSCH ALL EVM rms (Average) 101. Reserved 102. xPDSCH ALL EVM peak(Average) 103. Reserved 104. xPDSCH ALL EVM peak symbol position 105. xPDSCH ALL EVM peak subcarrier position 106. xPDSCH QPSK EVM result valid (1 = valid/0 = invalid) 107. xPDSCH QPSK EVM rms (Average) 108. Reserved 109. xPDSCH QPSK EVM peak (Average) 110. xPDSCH QPSK EVM peak (max) 111. xPDSCH QPSK EVM peak symbol position 112. xPDSCH QPSK EVM peak subcarrier position 113. xPDSCH 16QAM EVM result valid (1 = valid/0 = invalid) 114. xPDSCH 16QAM EVM rms (Average) 115. Reserved 116. xPDSCH 16QAM EVM peak (Average) 117. Reserved 118. xPDSCH 16QAM EVM peak symbol position 119. xPDSCH 16QAM EVM peak subcarrier position 120. xPDSCH 64QAM EVM result valid (1 = valid/0 = invalid) 121. xPDSCH 64QAM EVM rms (Average) 122. Reserved 123. xPDSCH 64QAM EVM peak (Average) 124. Reserved 125. xPDSCH 64QAM EVM peak symbol position 126. xPDSCH 64QAM EVM peak subcarrier position 127. to 182. Reserved

Table 2.10-2 Responses to MX285051A-001 Carrier Aggregation Measurement Results (Cont'd)

n	Result Mode	Response
2	A/B	Responses are returned with comma-separated value formats in the following order: 183. CC#2 Total EVM result valid (1 = valid/0 = invalid) 184. Total EVM rms 185. Reserved 186. Total EVM peak (Average) 187. Reserved 188. Total EVM peak symbol position 189. Total EVM peak subcarrier position 190. xPDSCH ALL EVM result valid (1 = valid/0 = invalid) 191. xPDSCH ALL EVM rms (Average) 192. Reserved 193. xPDSCH ALL EVM peak (Average) 194. Reserved 195. xPDSCH ALL EVM peak symbol position 196. xPDSCH ALL EVM peak subcarrier position 197. xPDSCH QPSK EVM result valid (1 = valid/0 = invalid) 198. xPDSCH QPSK EVM rms (Average) 199. Reserved 200. xPDSCH QPSK EVM peak (Average) 201. xPDSCH QPSK EVM peak (max) 202. xPDSCH QPSK EVM peak symbol position 203. xPDSCH QPSK EVM peak subcarrier position 204. xPDSCH 16QAM EVM result valid (1 = valid/0 = invalid) 205. xPDSCH 16QAM EVM rms (Average) 206. Reserved 207. xPDSCH 16QAM EVM peak (Average) 208. Reserved 209. xPDSCH 16QAM EVM peak symbol position 210. xPDSCH 16QAM EVM peak subcarrier position 211. xPDSCH 64QAM EVM result valid (1 = valid/0 = invalid) 212. xPDSCH 64QAM EVM rms (Average) 213. Reserved 214. xPDSCH 64QAM EVM peak (Average) 215. Reserved 216. xPDSCH 64QAM EVM peak symbol position 217. xPDSCH 64QAM EVM peak subcarrier position 218. to 273. Reserved

Table 2.10-2 Responses to MX285051A-001 Carrier Aggregation Measurement Results (Cont'd)

n	Result Mode	Response
2	A/B	Responses are returned with comma-separated value formats in the following order: 274. CC#3 Total EVM result valid (1 = valid/0 = invalid) 275. Total EVM rms 276. Reserved 277. Total EVM peak (Average) 278. Reserved 279. Total EVM peak symbol position 280. Total EVM peak subcarrier position 281. xPDSCH ALL EVM result valid (1 = valid/0 = invalid) 282. xPDSCH ALL EVM rms (Average) 283. Reserved 284. xPDSCH ALL EVM peak (Average) 285. Reserved 286. xPDSCH ALL EVM peak symbol position 287. xPDSCH ALL EVM peak subcarrier position 288. xPDSCH QPSK EVM result valid (1 = valid/0 = invalid) 289. xPDSCH QPSK EVM rms (Average) 290. Reserved 291. xPDSCH QPSK EVM peak (Average) 292. xPDSCH QPSK EVM peak (max) 293. xPDSCH QPSK EVM peak symbol position 294. xPDSCH QPSK EVM peak subcarrier position 295. xPDSCH 16QAM EVM result valid (1 = valid/0 = invalid) 296. xPDSCH 16QAM EVM rms (Average) 297. Reserved 298. xPDSCH 16QAM EVM peak (Average) 299. Reserved 300. xPDSCH 16QAM EVM peak symbol position 301. xPDSCH 16QAM EVM peak subcarrier position 302. xPDSCH 64QAM EVM result valid (1 = valid/0 = invalid) 303. xPDSCH 64QAM EVM rms (Average) 304. Reserved 305. xPDSCH 64QAM EVM peak (Average) 306. Reserved 307. xPDSCH 64QAM EVM peak symbol position 308. xPDSCH 64QAM EVM peak subcarrier position 309. to 273. Reserved

Table 2.10-2 Responses to MX285051A-001 Carrier Aggregation Measurement Results (Cont'd)

n	Result Mode	Response
2	A/B	Responses are returned with comma-separated value formats in the following order: 365. CC#4 Total EVM result valid (1 = valid/0 = invalid) 366. Total EVM rms 367. Reserved 368. Total EVM peak (Average) 369. Reserved 370. Total EVM peak symbol position 371. Total EVM peak subcarrier position 372. xPDSCH ALL EVM result valid (1 = valid/0 = invalid) 373. xPDSCH ALL EVM rms (Average) 374. Reserved 375. xPDSCH ALL EVM peak (Average) 376. Reserved 377. xPDSCH ALL EVM peak symbol position 378. xPDSCH ALL EVM peak subcarrier position 379. xPDSCH QPSK EVM result valid (1 = valid/0 = invalid) 380. xPDSCH QPSK EVM rms (Average) 381. Reserved 382. xPDSCH QPSK EVM peak (Average) 383. xPDSCH QPSK EVM peak (max) 384. xPDSCH QPSK EVM peak symbol position 385. xPDSCH QPSK EVM peak subcarrier position 386. xPDSCH 16QAM EVM result valid (1 = valid/0 = invalid) 387. xPDSCH 16QAM EVM rms (Average) 388. Reserved 389. xPDSCH 16QAM EVM peak (Average) 390. Reserved 391. xPDSCH 16QAM EVM peak symbol position 392. xPDSCH 16QAM EVM peak subcarrier position 393. xPDSCH 64QAM EVM result valid (1 = valid/0 = invalid) 394. xPDSCH 64QAM EVM rms (Average) 395. Reserved 396. xPDSCH 64QAM EVM peak (Average) 397. Reserved 398. xPDSCH 64QAM EVM peak symbol position 399. xPDSCH 64QAM EVM peak subcarrier position 400. to 455. Reserved

Table 2.10-2 Responses to MX285051A-001 Carrier Aggregation Measurement Results (Cont'd)

n	Result Mode	Response
2	A/B	Responses are returned with comma-separated value formats in the following order: 456. CC#5 Total EVM result valid (1 = valid/0 = invalid) 457. Total EVM rms 458. Reserved 459. Total EVM peak (Average) 460. Reserved 461. Total EVM peak symbol position 462. Total EVM peak subcarrier position 463. xPDSCH ALL EVM result valid (1 = valid/0 = invalid) 464. xPDSCH ALL EVM rms (Average) 465. Reserved 466. xPDSCH ALL EVM peak (Average) 467. Reserved 468. xPDSCH ALL EVM peak symbol position 469. xPDSCH ALL EVM peak subcarrier position 470. xPDSCH QPSK EVM result valid (1 = valid/0 = invalid) 471. xPDSCH QPSK EVM rms (Average) 472. Reserved 473. xPDSCH QPSK EVM peak (Average) 474. xPDSCH QPSK EVM peak (max) 475. xPDSCH QPSK EVM peak symbol position 476. xPDSCH QPSK EVM peak subcarrier position 477. xPDSCH 16QAM EVM result valid (1 = valid/0 = invalid) 478. xPDSCH 16QAM EVM rms (Average) 479. Reserved 480. xPDSCH 16QAM EVM peak (Average) 481. Reserved 482. xPDSCH 16QAM EVM peak symbol position 483. xPDSCH 16QAM EVM peak subcarrier position 484. xPDSCH 64QAM EVM result valid (1 = valid/0 = invalid) 485. xPDSCH 64QAM EVM rms (Average) 486. Reserved 487. xPDSCH 64QAM EVM peak (Average) 488. Reserved 489. xPDSCH 64QAM EVM peak symbol position 490. xPDSCH 64QAM EVM peak subcarrier position 491. to 546. Reserved

Table 2.10-2 Responses to MX285051A-001 Carrier Aggregation Measurement Results (Cont'd)

n	Result Mode	Response
2	A/B	Responses are returned with comma-separated value formats in the following order: 547. CC#6 Total EVM result valid (1 = valid/0 = invalid) 548. Total EVM rms 549. Reserved 550. Total EVM peak (Average) 551. Reserved 552. Total EVM peak symbol position 553. Total EVM peak subcarrier position 554. xPDSCH ALL EVM result valid (1 = valid/0 = invalid) 555. xPDSCH ALL EVM rms (Average) 556. Reserved 557. xPDSCH ALL EVM peak (Average) 558. Reserved 559. xPDSCH ALL EVM peak symbol position 560. xPDSCH ALL EVM peak subcarrier position 561. xPDSCH QPSK EVM result valid (1 = valid/0 = invalid) 562. xPDSCH QPSK EVM rms (Average) 563. Reserved 564. xPDSCH QPSK EVM peak (Average) 565. xPDSCH QPSK EVM peak (max) 566. xPDSCH QPSK EVM peak symbol position 567. xPDSCH QPSK EVM peak subcarrier position 568. xPDSCH 16QAM EVM result valid (1 = valid/0 = invalid) 569. xPDSCH 16QAM EVM rms (Average) 570. Reserved 571. xPDSCH 16QAM EVM peak(Average) 572. Reserved 573. xPDSCH 16QAM EVM peak symbol position 574. xPDSCH 16QAM EVM peak subcarrier position 575. xPDSCH 64QAM EVM result valid (1 = valid/0 = invalid) 576. xPDSCH 64QAM EVM rms (Average) 577. Reserved 578. xPDSCH 64QAM EVM peak (Average) 579. Reserved 580. xPDSCH 64QAM EVM peak symbol position 581. xPDSCH 64QAM EVM peak subcarrier position 582. to 637. Reserved

Table 2.10-2 Responses to MX285051A-001 Carrier Aggregation Measurement Results (Cont'd)

n	Result Mode	Response
2	A/B	Responses are returned with comma-separated value formats in the following order: 638. CC#7 Total EVM result valid (1 = valid/0 = invalid) 639. Total EVM rms 640. Reserved 641. Total EVM peak (Average) 642. Reserved 643. Total EVM peak symbol position 644. Total EVM peak subcarrier position 645. xPDSCH ALL EVM result valid (1 = valid/0 = invalid) 646. xPDSCH ALL EVM rms (Average) 647. Reserved 648. xPDSCH ALL EVM peak(Average) 649. Reserved 650. xPDSCH ALL EVM peak symbol position 651. xPDSCH ALL EVM peak subcarrier position 652. xPDSCH QPSK EVM result valid (1 = valid/0 = invalid) 653. xPDSCH QPSK EVM rms (Average) 654. Reserved 655. xPDSCH QPSK EVM peak (Average) 656. xPDSCH QPSK EVM peak (max) 657. xPDSCH QPSK EVM peak symbol position 658. xPDSCH QPSK EVM peak subcarrier position 659. xPDSCH 16QAM EVM result valid (1 = valid/0 = invalid) 660. xPDSCH 16QAM EVM rms (Average) 661. Reserved 662. xPDSCH 16QAM EVM peak (Average) 663. Reserved 664. xPDSCH 16QAM EVM peak symbol position 665. xPDSCH 16QAM EVM peak subcarrier position 666. xPDSCH 64QAM EVM result valid (1 = valid/0 = invalid) 667. xPDSCH 64QAM EVM rms (Average) 668. Reserved 669. xPDSCH 64QAM EVM peak (Average) 670. Reserved 671. xPDSCH 64QAM EVM peak symbol position 672. xPDSCH 64QAM EVM peak subcarrier position 673. to 728. Reserved

Table 2.10-2 Responses to MX285051A-001 Carrier Aggregation Measurement Results (Cont'd)

n	Result Mode	Response
10	A/B	CC#0 Measurement Results are returned with comma-separated value formats in the following order: EVM (rms) vs Resource Block x = 100 y = 0 z = 49 1. EVM (rms) of resource block 0 in subframe y 2. EVM (rms) of resource block 1 in subframe y … x. EVM (rms) of resource block (x – 1) in subframe y x + 1. EVM (rms) of resource block 0 in subframe (y + 1) … 2 × x. EVM (rms) of resource block (x – 1) in subframe (y + 1) … m. EVM (rms) of resource block (x – 1) in subframe (y + z) ***Note:*** Data is returned within the range that is determined by the Starting Subframe Number and Measurement Interval settings. The units of the response are determined to be % or dB according to the EVM Unit setting. Measurement is not performed for the resource blocks for which Resource Block Result Valid is invalid.

Table 2.10-2 Responses to MX285051A-001 Carrier Aggregation Measurement Results (Cont'd)

n	Result Mode	Response
11	A/B	CC#1 Measurement Results are returned with comma-separated value formats in the following order: EVM (rms) vs Resource Block x = 100 y = 0 z = 49 1. EVM (rms) of resource block 0 in subframe y 2. EVM (rms) of resource block 1 in subframe y … x. EVM (rms) of resource block (x – 1) in subframe y x + 1. EVM (rms) of resource block 0 in subframe (y + 1) … 2 × x. EVM (rms) of resource block (x – 1) in subframe (y + 1) … m. EVM (rms) of resource block (x – 1) in subframe (y + z) ***Note:*** Data is returned within the range that is determined by the Starting Subframe Number and Measurement Interval settings. The units of the response are determined to be % or dB according to the EVM Unit setting. Measurement is not performed for the resource blocks for which Resource Block Result Valid is invalid.

Table 2.10-2 Responses to MX285051A-001 Carrier Aggregation Measurement Results (Cont'd)

n	Result Mode	Response
12	A/B	CC#2 Measurement Results are returned with comma-separated value formats in the following order: EVM (rms) vs Resource Block x = 100 y = 0 z = 49 1. EVM (rms) of resource block 0 in subframe y 2. EVM (rms) of resource block 1 in subframe y … x. EVM (rms) of resource block (x – 1) in subframe y x + 1. EVM (rms) of resource block 0 in subframe (y + 1) … 2 × x. EVM (rms) of resource block (x – 1) in subframe (y + 1) … m. EVM (rms) of resource block (x – 1) in subframe (y + z) ***Note:*** Data is returned within the range that is determined by the Starting Subframe Number and Measurement Interval settings. The units of the response are determined to be % or dB according to the EVM Unit setting. Measurement is not performed for the resource blocks for which Resource Block Result Valid is invalid.

Table 2.10-2 Responses to MX285051A-001 Carrier Aggregation Measurement Results (Cont'd)

n	Result Mode	Response
13	A/B	CC#3 Measurement Results are returned with comma-separated value formats in the following order: EVM (rms) vs Resource Block x = 100 y = 0 z = 49 1. EVM (rms) of resource block 0 in subframe y 2. EVM (rms) of resource block 1 in subframe y … x. EVM (rms) of resource block (x – 1) in subframe y x + 1. EVM (rms) of resource block 0 in subframe (y + 1) … 2 × x. EVM (rms) of resource block (x – 1) in subframe (y + 1) … m. EVM (rms) of resource block (x – 1) in subframe (y + z) ***Note:*** Data is returned within the range that is determined by the Starting Subframe Number and Measurement Interval settings. The units of the response are determined to be % or dB according to the EVM Unit setting. Measurement is not performed for the resource blocks for which Resource Block Result Valid is invalid.

Table 2.10-2 Responses to MX285051A-001 Carrier Aggregation Measurement Results (Cont'd)

n	Result Mode	Response
14	A/B	CC#4 Measurement Results are returned with comma-separated value formats in the following order: EVM (rms) vs Resource Block x = 100 y = 0 z = 49 1. EVM (rms) of resource block 0 in subframe y 2. EVM (rms) of resource block 1 in subframe y … x. EVM (rms) of resource block (x – 1) in subframe y x + 1. EVM (rms) of resource block 0 in subframe (y + 1) … 2 × x. EVM (rms) of resource block (x – 1) in subframe (y + 1) … m. EVM (rms) of resource block (x – 1) in subframe (y + z) ***Note:*** Data is returned within the range that is determined by the Starting Subframe Number and Measurement Interval settings. The units of the response are determined to be % or dB according to the EVM Unit setting. Measurement is not performed for the resource blocks for which Resource Block Result Valid is invalid.

Table 2.10-2 Responses to MX285051A-001 Carrier Aggregation Measurement Results (Cont'd)

n	Result Mode	Response
15	A/B	CC#5 Measurement Results are returned with comma-separated value formats in the following order: EVM (rms) vs Resource Block x = 100 y = 0 z = 49 1. EVM (rms) of resource block 0 in subframe y 2. EVM (rms) of resource block 1 in subframe y … x. EVM (rms) of resource block (x – 1) in subframe y x + 1. EVM (rms) of resource block 0 in subframe (y + 1) … 2 × x. EVM (rms) of resource block (x – 1) in subframe (y + 1) … m. EVM (rms) of resource block (x – 1) in subframe (y + z) ***Note:*** Data is returned within the range that is determined by the Starting Subframe Number and Measurement Interval settings. The units of the response are determined to be % or dB according to the EVM Unit setting. Measurement is not performed for the resource blocks for which Resource Block Result Valid is invalid.

Table 2.10-2 Responses to MX285051A-001 Carrier Aggregation Measurement Results (Cont'd)

n	Result Mode	Response
16	A/B	CC#6 Measurement Results are returned with comma-separated value formats in the following order: EVM (rms) vs Resource Block x = 100 y = 0 z = 49 1. EVM (rms) of resource block 0 in subframe y 2. EVM (rms) of resource block 1 in subframe y … x. EVM (rms) of resource block (x – 1) in subframe y x + 1. EVM (rms) of resource block 0 in subframe (y + 1) … 2 × x. EVM (rms) of resource block (x – 1) in subframe (y + 1) … m. EVM (rms) of resource block (x – 1) in subframe (y + z) ***Note:*** Data is returned within the range that is determined by the Starting Subframe Number and Measurement Interval settings. The units of the response are determined to be % or dB according to the EVM Unit setting. Measurement is not performed for the resource blocks for which Resource Block Result Valid is invalid.

Table 2.10-2 Responses to MX285051A-001 Carrier Aggregation Measurement Results (Cont'd)

n	Result Mode	Response
17	A/B	CC#7 Measurement Results are returned with comma-separated value formats in the following order: EVM (rms) vs Resource Block x = 100 y = 0 z = 49 1. EVM (rms) of resource block 0 in subframe y 2. EVM (rms) of resource block 1 in subframe y … x. EVM (rms) of resource block (x – 1) in subframe y x + 1. EVM (rms) of resource block 0 in subframe (y + 1) … 2 × x. EVM (rms) of resource block (x – 1) in subframe (y + 1) … m. EVM (rms) of resource block (x – 1) in subframe (y + z) ***Note:*** Data is returned within the range that is determined by the Starting Subframe Number and Measurement Interval settings. The units of the response are determined to be % or dB according to the EVM Unit setting. Measurement is not performed for the resource blocks for which Resource Block Result Valid is invalid.

Table 2.10-2 Responses to MX285051A-001 Carrier Aggregation Measurement Results (Cont'd)

n	Result Mode	Response
20	A/B	CC#0 Measurement Results are returned with comma-separated value formats in the following order: 1 to m (=x × y) Power vs Resource Block x = 100 y = 0 z = 49 1. Power of the 0th resource block in Subframe y 2. Power of the 1st resource block in Subframe y … x. Power of the (x–1)th resource block in Subframe y x + 1. Power of the 0th resource block in Subframe y+1 … 2 × x. Power of the (x–1)th resource block in Subframe y+1 … m. Power of the (x–1)th resource block in Subframe y+z ***Note:*** Returns data within the range determined by Starting Subframe Number and Measurement Interval. The unit of the response is always dB. The value of Resource Block for which Resource Block Result Valid is invalid is regarded as an unmeasured result.

Table 2.10-2 Responses to MX285051A-001 Carrier Aggregation Measurement Results (Cont'd)

n	Result Mode	Response
21	A/B	CC#1 Measurement Results are returned with comma-separated value formats in the following order: 1 to m (= x × y) Power vs Resource Block x = 100 y = 0 z = 49 1. Power of the 0th resource block in Subframe y 2. Power of the 1st resource block in Subframe y … x. Power of the (x–1)th resource block in Subframe y x + 1. Power of the 0th resource block in Subframe y+1 … 2 × x. Power of the (x–1)th resource block in Subframe y+1 … m. Power of the (x–1)th resource block in Subframe y+z ***Note:*** Returns data within the range determined by Starting Subframe Number and Measurement Interval. The unit of the response is always dB. The value of Resource Block for which Resource Block Result Valid is invalid is regarded as an unmeasured result.

Table 2.10-2 Responses to MX285051A-001 Carrier Aggregation Measurement Results (Cont'd)

n	Result Mode	Response
22	A/B	CC#2 Measurement Results are returned with comma-separated value formats in the following order: 1 to m (= x × y) Power vs Resource Block x = 100 y = 0 z = 49 1. Power of the 0th resource block in Subframe y 2. Power of the 1st resource block in Subframe y … x. Power of the (x–1)th resource block in Subframe y x + 1. Power of the 0th resource block in Subframe y+1 … 2 × x. Power of the (x–1)th resource block in Subframe y+1 … m. Power of the (x–1)th resource block in Subframe y+z ***Note:*** Returns data within the range determined by Starting Subframe Number and Measurement Interval. The unit of the response is always dB. The value of Resource Block for which Resource Block Result Valid is invalid is regarded as an unmeasured result.

Table 2.10-2 Responses to MX285051A-001 Carrier Aggregation Measurement Results (Cont'd)

n	Result Mode	Response
23	A/B	CC#3 Measurement Results are returned with comma-separated value formats in the following order: 1 to m (= x × y) Power vs Resource Block x = 100 y = 0 z = 49 1. Power of the 0th resource block in Subframe y 2. Power of the 1st resource block in Subframe y … x. Power of the (x–1)th resource block in Subframe y x + 1. Power of the 0th resource block in Subframe y+1 … 2 × x. Power of the (x–1)th resource block in Subframe y+1 … m. Power of the (x–1)th resource block in Subframe y+z ***Note:*** Returns data within the range determined by Starting Subframe Number and Measurement Interval. The unit of the response is always dB. The value of Resource Block for which Resource Block Result Valid is invalid is regarded as an unmeasured result.

Table 2.10-2 Responses to MX285051A-001 Carrier Aggregation Measurement Results (Cont'd)

n	Result Mode	Response
24	A/B	CC#4 Measurement Results are returned with comma-separated value formats in the following order: 1 to m (= x × y) Power vs Resource Block x = 100 y = 0 z = 49 1. Power of the 0th resource block in Subframe y 2. Power of the 1st resource block in Subframe y … x. Power of the (x–1)th resource block in Subframe y x + 1. Power of the 0th resource block in Subframe y+1 … 2 × x. Power of the (x–1)th resource block in Subframe y+1 … m. Power of the (x–1)th resource block in Subframe y+z ***Note:*** Returns data within the range determined by Starting Subframe Number and Measurement Interval. The unit of the response is always dB. The value of Resource Block for which Resource Block Result Valid is invalid is regarded as an unmeasured result.

Table 2.10-2 Responses to MX285051A-001 Carrier Aggregation Measurement Results (Cont'd)

n	Result Mode	Response
25	A/B	CC#5 Measurement Results are returned with comma-separated value formats in the following order: 1 to m (= x × y) Power vs Resource Block x = 100 y = 0 z = 49 1. Power of the 0th resource block in Subframe y 2. Power of the 1st resource block in Subframe y … x. Power of the (x–1)th resource block in Subframe y x + 1. Power of the 0th resource block in Subframe y+1 … 2 × x. Power of the (x–1)th resource block in Subframe y+1 … m. Power of the (x–1)th resource block in Subframe y+z ***Note:*** Returns data within the range determined by Starting Subframe Number and Measurement Interval. The unit of the response is always dB. The value of Resource Block for which Resource Block Result Valid is invalid is regarded as an unmeasured result.

Table 2.10-2 Responses to MX285051A-001 Carrier Aggregation Measurement Results (Cont'd)

n	Result Mode	Response
26	A/B	CC#6 Measurement Results are returned with comma-separated value formats in the following order: 1 to m (= x × y) Power vs Resource Block x = 100 y = 0 z = 49 1. Power of the 0th resource block in Subframe y 2. Power of the 1st resource block in Subframe y … x. Power of the (x–1)th resource block in Subframe y x + 1. Power of the 0th resource block in Subframe y+1 … 2 × x. Power of the (x–1)th resource block in Subframe y+1 … m. Power of the (x–1)th resource block in Subframe y+z ***Note:*** Returns data within the range determined by Starting Subframe Number and Measurement Interval. The unit of the response is always dB. The value of Resource Block for which Resource Block Result Valid is invalid is regarded as an unmeasured result.

Table 2.10-2 Responses to MX285051A-001 Carrier Aggregation Measurement Results (Cont'd)

n	Result Mode	Response
27	A/B	CC#7 Measurement Results are returned with comma-separated value formats in the following order: 1 to m (= x × y) Power vs Resource Block x = 100 y = 0 z = 49 1. Power of the 0th resource block in Subframe y 2. Power of the 1st resource block in Subframe y … x. Power of the (x–1)th resource block in Subframe y x + 1. Power of the 0th resource block in Subframe y+1 … 2 × x. Power of the (x–1)th resource block in Subframe y+1 … m. Power of the (x–1)th resource block in Subframe y+z ***Note:*** Returns data within the range determined by Starting Subframe Number and Measurement Interval. The unit of the response is always dB. The value of Resource Block for which Resource Block Result Valid is invalid is regarded as an unmeasured result.

Table 2.10-3 Responses to MX285051A-051 Carrier Aggregation Measurement Results

n	Result Mode	Response
1 or omitted	A/B	Responses are returned with comma-separated value formats in the following order: 1. CC#0 Measurement status 2. Frequency Error [Hz] 3. Transmit Power [dBm] 4. EVM (rms) 5. EVM (peak) 6. Time Difference [ns] 7. CC#1 Measurement status 8. Frequency Error [Hz] 9. Transmit Power [dBm] 10. EVM (rms) 11. EVM (peak) 12. Time Difference [ns] 13. CC#2 Measurement status 14. Frequency Error [Hz] 15. Transmit Power [dBm] 16. EVM (rms) 17. EVM (peak) 18. Time Difference [ns] 19. CC#3 Measurement status 20. Frequency Error [Hz] 21. Transmit Power [dBm] 22. EVM (rms) 23. EVM (peak) 24. Time Difference [ns] 25. CC#4 Measurement status 26. Frequency Error [Hz] 27. Transmit Power [dBm] 28. EVM (rms) 29. EVM (peak) 30. Time Difference [ns] 31. CC#5 Measurement status 32. Frequency Error [Hz] 33. Transmit Power [dBm] 34. EVM (rms) 35. EVM (peak) 36. Time Difference [ns]

Table 2.10-3 Responses to MX285051A-051 Carrier Aggregation Measurement Results (Cont'd)

n	Result Mode	Response
1 or omitted	A/B	Responses are returned with comma-separated value formats in the following order: 37. CC#6 Measurement status 38. Frequency Error [Hz] 39. Transmit Power [dBm] 40. EVM (rms) 41. EVM (peak) 42. Time Difference [ns] 43. CC#7 Measurement status 44. Frequency Error [Hz] 45. Transmit Power [dBm] 46. EVM (rms) 47. EVM (peak) 48. Time Difference [ns] 49.Total Tx Power [dBm] 50.Tx Power Flatness [dB]

Table 2.10-3 Responses to MX285051A-051 Carrier Aggregation Measurement Results (Cont'd)

n	Result Mode	Response
2	A/B	Responses are returned with comma-separated value formats in the following order: 1. CC#0のTotal EVM result valid (1 = valid/0 = invalid) 2. Total EVM rms (Average) 3. Reserved 4. Total EVM peak (Average) 5. Reserved 6. Total EVM peak Symbol Number 7. Total EVM peak Subcarrier Number 8. xPUSCH ALL EVM result valid (1 = valid/0 = invalid) 9. xPUSCH ALL EVM rms (Average) 10. Reserved 11. xPUSCH ALL EVM peak (Average) 12. Reserved 13. xPUSCH ALL EVM peak Symbol Number 14. xPUSCH ALL EVM peak Subcarrier Number 15. xPUSCH QPSK EVM result valid (1 = valid/0 = invalid) 16. xPUSCH QPSK EVM rms (Average) 17. Reserved 18. xPUSCH QPSK EVM peak (Average) 19. Reserved 20. xPUSCH QPSK EVM peak Symbol Number 21. xPUSCH QPSK EVM peak Subcarrier Number 22. xPUSCH 16QAM EVM result valid (1 = valid/0 = invalid) 23. xPUSCH 16QAM EVM rms (Average) 24. Reserved 25. xPUSCH 16QAM EVM peak (Average) 26. Reserved 27. xPUSCH 16QAM EVM peak Symbol Number 28. xPUSCH 16QAM EVM peak Subcarrier Number 29. xPUSCH 64QAM EVM result valid (1 = valid/0 = invalid) 30. xPUSCH 64QAM EVM rms (Average) 31. Reserved 32. xPUSCH 64QAM EVM peak (Average) 33. Reserved 34. xPUSCH 64QAM EVM peak Symbol Number 35. xPUSCH 64QAM EVM peak Subcarrier Number 36. to 42. Reserved

Table 2.10-3 Responses to MX285051A-051 Carrier Aggregation Measurement Results (Cont'd)

n	Result Mode	Response
2	A/B	Responses are returned with comma-separated value formats in the following order: 43. CC#1のTotal EVM result valid (1 = valid/0 = invalid) 44. Total EVM rms (Average) 45. Reserved 46. Total EVM peak (Average) 47. Reserved 48. Total EVM peak Symbol Number 49. Total EVM peak Subcarrier Number 50. xPUSCH ALL EVM result valid (1 = valid/0 = invalid) 51. xPUSCH ALL EVM rms (Average) 52. Reserved 53. xPUSCH ALL EVM peak (Average) 54. Reserved 55. xPUSCH ALL EVM peak Symbol Number 56. xPUSCH ALL EVM peak Subcarrier Number 57. xPUSCH QPSK EVM result valid (1 = valid/0 = invalid) 58. xPUSCH QPSK EVM rms (Average) 59. Reserved 60. xPUSCH QPSK EVM peak (Average) 61. Reserved 62. xPUSCH QPSK EVM peak Symbol Number 63. xPUSCH QPSK EVM peak Subcarrier Number 64. xPUSCH 16QAM EVM result valid (1 = valid/0 = invalid) 65. xPUSCH 16QAM EVM rms (Average) 66. Reserved 67. xPUSCH 16QAM EVM peak (Average) 68. Reserved 69. xPUSCH 16QAM EVM peak Symbol Number 70. xPUSCH 16QAM EVM peak Subcarrier Number 71. xPUSCH 64QAM EVM result valid (1 = valid/0 = invalid) 72. xPUSCH 64QAM EVM rms (Average) 73. Reserved 74. xPUSCH 64QAM EVM peak (Average) 75. Reserved 76. xPUSCH 64QAM EVM peak Symbol Number 77. xPUSCH 64QAM EVM peak Subcarrier Number 78. to 84. Reserved

Table 2.10-3 Responses to MX285051A-051 Carrier Aggregation Measurement Results (Cont'd)

n	Result Mode	Response
2	A/B	Responses are returned with comma-separated value formats in the following order: 85. CC#2のTotal EVM result valid (1 = valid/0 = invalid) 86. Total EVM rms (Average) 87. Reserved 88. Total EVM peak (Average) 89. Reserved 90. Total EVM peak Symbol Number 91. Total EVM peak Subcarrier Number 92. xPUSCH ALL EVM result valid (1 = valid/0 = invalid) 93. xPUSCH ALL EVM rms (Average) 94. Reserved 95. xPUSCH ALL EVM peak (Average) 96. Reserved 97. xPUSCH ALL EVM peak Symbol Number 98. xPUSCH ALL EVM peak Subcarrier Number 99. xPUSCH QPSK EVM result valid (1 = valid/0 = invalid) 100. xPUSCH QPSK EVM rms (Average) 101. Reserved 102. xPUSCH QPSK EVM peak (Average) 103. Reserved 104. xPUSCH QPSK EVM peak Symbol Number 105. xPUSCH QPSK EVM peak Subcarrier Number 106. xPUSCH 16QAM EVM result valid (1 = valid/0 = invalid) 107. xPUSCH 16QAM EVM rms (Average) 108. Reserved 109. xPUSCH 16QAM EVM peak (Average) 110. Reserved 111. xPUSCH 16QAM EVM peak Symbol Number 112. xPUSCH 16QAM EVM peak Subcarrier Number 113. xPUSCH 64QAM EVM result valid (1 = valid/0 = invalid) 114. xPUSCH 64QAM EVM rms (Average) 115. Reserved 116. xPUSCH 64QAM EVM peak (Average) 117. Reserved 118. xPUSCH 64QAM EVM peak Symbol Number 119. xPUSCH 64QAM EVM peak Subcarrier Number 120. to 126. Reserved

Table 2.10-3 Responses to MX285051A-051 Carrier Aggregation Measurement Results (Cont'd)

n	Result Mode	Response
2	A/B	Responses are returned with comma-separated value formats in the following order: 127. CC#3のTotal EVM result valid (1 = valid/0 = invalid) 128. Total EVM rms (Average) 129. Reserved 130. Total EVM peak (Average) 131. Reserved 132. Total EVM peak Symbol Number 133. Total EVM peak Subcarrier Number 134. xPUSCH ALL EVM result valid (1 = valid/0 = invalid) 135. xPUSCH ALL EVM rms (Average) 136. Reserved 137. xPUSCH ALL EVM peak (Average) 138. Reserved 139. xPUSCH ALL EVM peak Symbol Number 140. xPUSCH ALL EVM peak Subcarrier Number 141. xPUSCH QPSK EVM result valid (1 = valid/0 = invalid) 142. xPUSCH QPSK EVM rms (Average) 143. Reserved 144. xPUSCH QPSK EVM peak (Average) 145. Reserved 146. xPUSCH QPSK EVM peak Symbol Number 147. xPUSCH QPSK EVM peak Subcarrier Number 148. xPUSCH 16QAM EVM result valid (1 = valid/0 = invalid) 149. xPUSCH 16QAM EVM rms (Average) 150. Reserved 151. xPUSCH 16QAM EVM peak (Average) 152. Reserved 153. xPUSCH 16QAM EVM peak Symbol Number 154. xPUSCH 16QAM EVM peak Subcarrier Number 155. xPUSCH 64QAM EVM result valid (1 = valid/0 = invalid) 156. xPUSCH 64QAM EVM rms (Average) 157. Reserved 158. xPUSCH 64QAM EVM peak (Average) 159. Reserved 160. xPUSCH 64QAM EVM peak Symbol Number 161. xPUSCH 64QAM EVM peak Subcarrier Number 162. to 168. Reserved

Table 2.10-3 Responses to MX285051A-051 Carrier Aggregation Measurement Results (Cont'd)

n	Result Mode	Response
2	A/B	Responses are returned with comma-separated value formats in the following order: 169. CC#4のTotal EVM result valid (1 = valid/0 = invalid) 170. Total EVM rms (Average) 171. Reserved 172. Total EVM peak (Average) 173. Reserved 174. Total EVM peak Symbol Number 175. Total EVM peak Subcarrier Number 176. xPUSCH ALL EVM result valid (1 = valid/0 = invalid) 177. xPUSCH ALL EVM rms (Average) 178. Reserved 179. xPUSCH ALL EVM peak (Average) 180. Reserved 181. xPUSCH ALL EVM peak Symbol Number 182. xPUSCH ALL EVM peak Subcarrier Number 183. xPUSCH QPSK EVM result valid (1 = valid/0 = invalid) 184. xPUSCH QPSK EVM rms (Average) 185. Reserved 186. xPUSCH QPSK EVM peak (Average) 187. Reserved 188. xPUSCH QPSK EVM peak Symbol Number 189. xPUSCH QPSK EVM peak Subcarrier Number 190. xPUSCH 16QAM EVM result valid (1 = valid/0 = invalid) 191. xPUSCH 16QAM EVM rms (Average) 192. Reserved 193. xPUSCH 16QAM EVM peak (Average) 194. Reserved 195. xPUSCH 16QAM EVM peak Symbol Number 196. xPUSCH 16QAM EVM peak Subcarrier Number 197. xPUSCH 64QAM EVM result valid (1 = valid/0 = invalid) 198. xPUSCH 64QAM EVM rms (Average) 199. Reserved 200. xPUSCH 64QAM EVM peak (Average) 201. Reserved 202. xPUSCH 64QAM EVM peak Symbol Number 203. xPUSCH 64QAM EVM peak Subcarrier Number 204. to 210. Reserved

Table 2.10-3 Responses to MX285051A-051 Carrier Aggregation Measurement Results (Cont'd)

n	Result Mode	Response
2	A/B	Responses are returned with comma-separated value formats in the following order: 211. CC#5のTotal EVM result valid (1 = valid/0 = invalid) 212. Total EVM rms (Average) 213. Reserved 214. Total EVM peak (Average) 215. Reserved 216. Total EVM peak Symbol Number 217. Total EVM peak Subcarrier Number 218. xPUSCH ALL EVM result valid (1 = valid/0 = invalid) 219. xPUSCH ALL EVM rms (Average) 220. Reserved 221. xPUSCH ALL EVM peak (Average) 222. Reserved 223. xPUSCH ALL EVM peak Symbol Number 224. xPUSCH ALL EVM peak Subcarrier Number 225. xPUSCH QPSK EVM result valid (1 = valid/0 = invalid) 226. xPUSCH QPSK EVM rms (Average) 227. Reserved 228. xPUSCH QPSK EVM peak (Average) 229. Reserved 230. xPUSCH QPSK EVM peak Symbol Number 231. xPUSCH QPSK EVM peak Subcarrier Number 232. xPUSCH 16QAM EVM result valid (1 = valid/0 = invalid) 233. xPUSCH 16QAM EVM rms (Average) 234. Reserved 235. xPUSCH 16QAM EVM peak (Average) 236. Reserved 237. xPUSCH 16QAM EVM peak Symbol Number 238. xPUSCH 16QAM EVM peak Subcarrier Number 239. xPUSCH 64QAM EVM result valid (1 = valid/0 = invalid) 240. xPUSCH 64QAM EVM rms (Average) 241. Reserved 242. xPUSCH 64QAM EVM peak (Average) 243. Reserved 244. xPUSCH 64QAM EVM peak Symbol Number 245. xPUSCH 64QAM EVM peak Subcarrier Number 246. to 252. Reserved

Table 2.10-3 Responses to MX285051A-051 Carrier Aggregation Measurement Results (Cont'd)

n	Result Mode	Response
2	A/B	Responses are returned with comma-separated value formats in the following order: 253. CC#6のTotal EVM result valid (1 = valid/0 = invalid) 254. Total EVM rms (Average) 255. Reserved 256. Total EVM peak (Average) 257. Reserved 258. Total EVM peak Symbol Number 259. Total EVM peak Subcarrier Number 260. xPUSCH ALL EVM result valid (1 = valid/0 = invalid) 261. xPUSCH ALL EVM rms (Average) 262. Reserved 263. xPUSCH ALL EVM peak (Average) 264. Reserved 265. xPUSCH ALL EVM peak Symbol Number 266. xPUSCH ALL EVM peak Subcarrier Number 267. xPUSCH QPSK EVM result valid (1 = valid/0 = invalid) 268. xPUSCH QPSK EVM rms (Average) 269. Reserved 270. xPUSCH QPSK EVM peak (Average) 271. Reserved 272. xPUSCH QPSK EVM peak Symbol Number 273. xPUSCH QPSK EVM peak Subcarrier Number 274. xPUSCH 16QAM EVM result valid (1 = valid/0 = invalid) 275. xPUSCH 16QAM EVM rms (Average) 276. Reserved 277. xPUSCH 16QAM EVM peak (Average) 278. Reserved 279. xPUSCH 16QAM EVM peak Symbol Number 280. xPUSCH 16QAM EVM peak Subcarrier Number 281. xPUSCH 64QAM EVM result valid (1 = valid/0 = invalid) 282. xPUSCH 64QAM EVM rms (Average) 283. Reserved 284. xPUSCH 64QAM EVM peak (Average) 285. Reserved 286. xPUSCH 64QAM EVM peak Symbol Number 287. xPUSCH 64QAM EVM peak Subcarrier Number 288. to 294. Reserved

Table 2.10-3 Responses to MX285051A-051 Carrier Aggregation Measurement Results (Cont'd)

n	Result Mode	Response
2	A/B	Responses are returned with comma-separated value formats in the following order: 295. CC#7のTotal EVM result valid (1 = valid/0 = invalid) 296. Total EVM rms (Average) 297. Reserved 298. Total EVM peak (Average) 299. Reserved 300. Total EVM peak Symbol Number 301. Total EVM peak Subcarrier Number 302. xPUSCH ALL EVM result valid (1 = valid/0 = invalid) 303. xPUSCH ALL EVM rms (Average) 304. Reserved 305. xPUSCH ALL EVM peak (Average) 306. Reserved 307. xPUSCH ALL EVM peak Symbol Number 308. xPUSCH ALL EVM peak Subcarrier Number 309. xPUSCH QPSK EVM result valid (1 = valid/0 = invalid) 310. xPUSCH QPSK EVM rms (Average) 311. Reserved 312. xPUSCH QPSK EVM peak (Average) 313. Reserved 314. xPUSCH QPSK EVM peak Symbol Number 315. xPUSCH QPSK EVM peak Subcarrier Number 316. xPUSCH 16QAM EVM result valid (1 = valid/0 = invalid) 317. xPUSCH 16QAM EVM rms (Average) 318. Reserved 319. xPUSCH 16QAM EVM peak (Average) 320. Reserved 321. xPUSCH 16QAM EVM peak Symbol Number 322. xPUSCH 16QAM EVM peak Subcarrier Number 323. xPUSCH 64QAM EVM result valid (1 = valid/0 = invalid) 324. xPUSCH 64QAM EVM rms (Average) 325. Reserved 326. xPUSCH 64QAM EVM peak (Average) 327. Reserved 328. xPUSCH 64QAM EVM peak Symbol Number 329. xPUSCH 64QAM EVM peak Subcarrier Number 330. to 336. Reserved

Table 2.10-3 Responses to MX285051A-051 Carrier Aggregation Measurement Results (Cont'd)

n	Result Mode	Response
10	A/B	CC#0 Measurement Results are returned with comma-separated value formats in the following order: EVM (rms) vs Resource Block x = 100 y = 0 z = 49 1. EVM (rms) of resource block 0 in subframe y 2. EVM (rms) of resource block 1 in subframe y … x. EVM (rms) of resource block (x – 1) in subframe y x + 1. EVM (rms) of resource block 0 in subframe (y + 1) … 2 × x. EVM (rms) of resource block (x – 1) in subframe (y + 1) … m. EVM (rms) of resource block (x – 1) in subframe (y + z) ***Note:*** Data is returned within the range that is determined by the Starting Subframe Number and Measurement Interval settings. The units of the response are determined to be % or dB according to the EVM Unit setting. Measurement is not performed for the resource blocks for which Resource Block Result Valid is invalid.

Table 2.10-3 Responses to MX285051A-051 Carrier Aggregation Measurement Results (Cont'd)

n	Result Mode	Response
11	A/B	CC#1 Measurement Results are returned with comma-separated value formats in the following order: EVM (rms) vs Resource Block x = 100 y = 0 z = 49 1. EVM (rms) of resource block 0 in subframe y 2. EVM (rms) of resource block 1 in subframe y … x. EVM (rms) of resource block (x – 1) in subframe y x + 1. EVM (rms) of resource block 0 in subframe (y + 1) … 2 × x. EVM (rms) of resource block (x – 1) in subframe (y + 1) … m. EVM (rms) of resource block (x – 1) in subframe (y + z) ***Note:*** Data is returned within the range that is determined by the Starting Subframe Number and Measurement Interval settings. The units of the response are determined to be % or dB according to the EVM Unit setting. Measurement is not performed for the resource blocks for which Resource Block Result Valid is invalid.

Table 2.10-3 Responses to MX285051A-051 Carrier Aggregation Measurement Results (Cont'd)

n	Result Mode	Response
12	A/B	CC#2 Measurement Results are returned with comma-separated value formats in the following order: EVM (rms) vs Resource Block x = 100 y = 0 z = 49 1. EVM (rms) of resource block 0 in subframe y 2. EVM (rms) of resource block 1 in subframe y … x. EVM (rms) of resource block (x – 1) in subframe y x + 1. EVM (rms) of resource block 0 in subframe (y + 1) … 2 × x. EVM (rms) of resource block (x – 1) in subframe (y + 1) … m. EVM (rms) of resource block (x – 1) in subframe (y + z) ***Note:*** Data is returned within the range that is determined by the Starting Subframe Number and Measurement Interval settings. The units of the response are determined to be % or dB according to the EVM Unit setting. Measurement is not performed for the resource blocks for which Resource Block Result Valid is invalid.

Table 2.10-3 Responses to MX285051A-051 Carrier Aggregation Measurement Results (Cont'd)

n	Result Mode	Response
13	A/B	CC#3 Measurement Results are returned with comma-separated value formats in the following order: EVM (rms) vs Resource Block x = 100 y = 0 z = 49 1. EVM (rms) of resource block 0 in subframe y 2. EVM (rms) of resource block 1 in subframe y … x. EVM (rms) of resource block (x – 1) in subframe y x + 1. EVM (rms) of resource block 0 in subframe (y + 1) … 2 × x. EVM (rms) of resource block (x – 1) in subframe (y + 1) … m. EVM (rms) of resource block (x – 1) in subframe (y + z) ***Note:*** Data is returned within the range that is determined by the Starting Subframe Number and Measurement Interval settings. The units of the response are determined to be % or dB according to the EVM Unit setting. Measurement is not performed for the resource blocks for which Resource Block Result Valid is invalid.

Table 2.10-3 Responses to MX285051A-051 Carrier Aggregation Measurement Results (Cont'd)

n	Result Mode	Response
14	A/B	CC#4 Measurement Results are returned with comma-separated value formats in the following order: EVM (rms) vs Resource Block x = 100 y = 0 z = 49 1. EVM (rms) of resource block 0 in subframe y 2. EVM (rms) of resource block 1 in subframe y … x. EVM (rms) of resource block (x – 1) in subframe y x + 1. EVM (rms) of resource block 0 in subframe (y + 1) … 2 × x. EVM (rms) of resource block (x – 1) in subframe (y + 1) … m. EVM (rms) of resource block (x – 1) in subframe (y + z) ***Note:*** Data is returned within the range that is determined by the Starting Subframe Number and Measurement Interval settings. The units of the response are determined to be % or dB according to the EVM Unit setting. Measurement is not performed for the resource blocks for which Resource Block Result Valid is invalid.

Table 2.10-3 Responses to MX285051A-051 Carrier Aggregation Measurement Results (Cont'd)

n	Result Mode	Response
15	A/B	CC#5 Measurement Results are returned with comma-separated value formats in the following order: EVM (rms) vs Resource Block x = 100 y = 0 z = 49 1. EVM (rms) of resource block 0 in subframe y 2. EVM (rms) of resource block 1 in subframe y … x. EVM (rms) of resource block (x – 1) in subframe y x + 1. EVM (rms) of resource block 0 in subframe (y + 1) … 2 × x. EVM (rms) of resource block (x – 1) in subframe (y + 1) … m. EVM (rms) of resource block (x – 1) in subframe (y + z) ***Note:*** Data is returned within the range that is determined by the Starting Subframe Number and Measurement Interval settings. The units of the response are determined to be % or dB according to the EVM Unit setting. Measurement is not performed for the resource blocks for which Resource Block Result Valid is invalid.

Table 2.10-3 Responses to MX285051A-051 Carrier Aggregation Measurement Results (Cont'd)

n	Result Mode	Response
16	A/B	CC#6 Measurement Results are returned with comma-separated value formats in the following order: EVM (rms) vs Resource Block x = 100 y = 0 z = 49 1. EVM (rms) of resource block 0 in subframe y 2. EVM (rms) of resource block 1 in subframe y … x. EVM (rms) of resource block (x – 1) in subframe y x + 1. EVM (rms) of resource block 0 in subframe (y + 1) … 2 × x. EVM (rms) of resource block (x – 1) in subframe (y + 1) … m. EVM (rms) of resource block (x – 1) in subframe (y + z) ***Note:*** Data is returned within the range that is determined by the Starting Subframe Number and Measurement Interval settings. The units of the response are determined to be % or dB according to the EVM Unit setting. Measurement is not performed for the resource blocks for which Resource Block Result Valid is invalid.

Table 2.10-3 Responses to MX285051A-051 Carrier Aggregation Measurement Results (Cont'd)

n	Result Mode	Response
17	A/B	CC#7 Measurement Results are returned with comma-separated value formats in the following order: EVM (rms) vs Resource Block x = 100 y = 0 z = 49 1. EVM (rms) of resource block 0 in subframe y 2. EVM (rms) of resource block 1 in subframe y … x. EVM (rms) of resource block (x – 1) in subframe y x + 1. EVM (rms) of resource block 0 in subframe (y + 1) … 2 × x. EVM (rms) of resource block (x – 1) in subframe (y + 1) … m. EVM (rms) of resource block (x – 1) in subframe (y + z) ***Note:*** Data is returned within the range that is determined by the Starting Subframe Number and Measurement Interval settings. The units of the response are determined to be % or dB according to the EVM Unit setting. Measurement is not performed for the resource blocks for which Resource Block Result Valid is invalid.

Table 2.10-3 Responses to MX285051A-051 Carrier Aggregation Measurement Results (Cont'd)

n	Result Mode	Response
20	A/B	CC#0 Measurement Results are returned with comma-separated value formats in the following order: 1 to m (= x × y) Power vs Resource Block x = 100 y = 0 z = 49 1. Power of the 0th resource block in Subframe y 2. Power of the 1st resource block in Subframe y … x. Power of the (x – 1)th resource block in Subframe y x + 1. Power of the 0th resource block in Subframe y + 1 … 2 × x. Power of the (x – 1)th resource block in Subframe y + 1 … m. Power of the (x – 1)th resource block in Subframe y + z ***Note:*** Returns data within the range determined by Starting Subframe Number and Measurement Interval. The unit of the response is always dB. The value of Resource Block for which Resource Block Result Valid is invalid is regarded as an unmeasured result.

Table 2.10-3 Responses to MX285051A-051 Carrier Aggregation Measurement Results (Cont'd)

n	Result Mode	Response
21	A/B	CC#1 Measurement Results are returned with comma-separated value formats in the following order: 1 to m (= x × y) Power vs Resource Block x = 100 y = 0 z = 49 1. Power of the 0th resource block in Subframe y 2. Power of the 1st resource block in Subframe y … x. Power of the (x – 1)th resource block in Subframe y x + 1. Power of the 0th resource block in Subframe y + 1 … 2 × x. Power of the (x – 1)th resource block in Subframe y + 1 … m. Power of the (x – 1)th resource block in Subframe y + z ***Note:*** Returns data within the range determined by Starting Subframe Number and Measurement Interval. The unit of the response is always dB. The value of Resource Block for which Resource Block Result Valid is invalid is regarded as an unmeasured result.

Table 2.10-3 Responses to MX285051A-051 Carrier Aggregation Measurement Results (Cont'd)

n	Result Mode	Response
22	A/B	CC#2 Measurement Results are returned with comma-separated value formats in the following order: 1 to m (= x × y) Power vs Resource Block x = 100 y = 0 z = 49 1. Power of the 0th resource block in Subframe y 2. Power of the 1st resource block in Subframe y … x. Power of the (x – 1)th resource block in Subframe y x + 1. Power of the 0th resource block in Subframe y + 1 … 2 × x. Power of the (x – 1)th resource block in Subframe y + 1 … m. Power of the (x – 1)th resource block in Subframe y + z ***Note:*** Returns data within the range determined by Starting Subframe Number and Measurement Interval. The unit of the response is always dB. The value of Resource Block for which Resource Block Result Valid is invalid is regarded as an unmeasured result.

Table 2.10-3 Responses to MX285051A-051 Carrier Aggregation Measurement Results (Cont'd)

n	Result Mode	Response
23	A/B	CC#3 Measurement Results are returned with comma-separated value formats in the following order: 1 to m (= x × y) Power vs Resource Block x = 100 y = 0 z = 49 1. Power of the 0th resource block in Subframe y 2. Power of the 1st resource block in Subframe y … x. Power of the (x – 1)th resource block in Subframe y x + 1. Power of the 0th resource block in Subframe y + 1 … 2 × x. Power of the (x – 1)th resource block in Subframe y + 1 … m. Power of the (x – 1)th resource block in Subframe y + z ***Note:*** Returns data within the range determined by Starting Subframe Number and Measurement Interval. The unit of the response is always dB. The value of Resource Block for which Resource Block Result Valid is invalid is regarded as an unmeasured result.

Table 2.10-3 Responses to MX285051A-051 Carrier Aggregation Measurement Results (Cont'd)

n	Result Mode	Response
24	A/B	CC#4 Measurement Results are returned with comma-separated value formats in the following order: 1 to m (= x × y) Power vs Resource Block x = 100 y = 0 z = 49 1. Power of the 0th resource block in Subframe y 2. Power of the 1st resource block in Subframe y … x. Power of the (x – 1)th resource block in Subframe y x + 1. Power of the 0th resource block in Subframe y + 1 … 2 × x. Power of the (x – 1)th resource block in Subframe y + 1 … m. Power of the (x – 1)th resource block in Subframe y + z ***Note:*** Returns data within the range determined by Starting Subframe Number and Measurement Interval. The unit of the response is always dB. The value of Resource Block for which Resource Block Result Valid is invalid is regarded as an unmeasured result.

Table 2.10-3 Responses to MX285051A-051 Carrier Aggregation Measurement Results (Cont'd)

n	Result Mode	Response
25	A/B	CC#5 Measurement Results are returned with comma-separated value formats in the following order: 1 to m (= x × y) Power vs Resource Block x = 100 y = 0 z = 49 1. Power of the 0th resource block in Subframe y 2. Power of the 1st resource block in Subframe y … x. Power of the (x – 1)th resource block in Subframe y x + 1. Power of the 0th resource block in Subframe y + 1 … 2 × x. Power of the (x – 1)th resource block in Subframe y + 1 … m. Power of the (x – 1)th resource block in Subframe y + z ***Note:*** Returns data within the range determined by Starting Subframe Number and Measurement Interval. The unit of the response is always dB. The value of Resource Block for which Resource Block Result Valid is invalid is regarded as an unmeasured result.

Table 2.10-3 Responses to MX285051A-051 Carrier Aggregation Measurement Results (Cont'd)

n	Result Mode	Response
26	A/B	CC#6 Measurement Results are returned with comma-separated value formats in the following order: 1 to m (= x × y) Power vs Resource Block x = 100 y = 0 z = 49 1. Power of the 0th resource block in Subframe y 2. Power of the 1st resource block in Subframe y … x. Power of the (x – 1)th resource block in Subframe y x + 1. Power of the 0th resource block in Subframe y + 1 … 2 × x. Power of the (x – 1)th resource block in Subframe y + 1 … m. Power of the (x – 1)th resource block in Subframe y + z ***Note:*** Returns data within the range determined by Starting Subframe Number and Measurement Interval. The unit of the response is always dB. The value of Resource Block for which Resource Block Result Valid is invalid is regarded as an unmeasured result.

Table 2.10-3 Responses to MX285051A-051 Carrier Aggregation Measurement Results (Cont'd)

n	Result Mode	Response
27	A/B	CC#7 Measurement Results are returned with comma-separated value formats in the following order: 1 to m (= x × y) Power vs Resource Block x = 100 y = 0 z = 49 1. Power of the 0th resource block in Subframe y 2. Power of the 1st resource block in Subframe y … x. Power of the (x – 1)th resource block in Subframe y x + 1. Power of the 0th resource block in Subframe y + 1 … 2 × x. Power of the (x – 1)th resource block in Subframe y + 1 … m. Power of the (x – 1)th resource block in Subframe y + z ***Note:*** Returns data within the range determined by Starting Subframe Number and Measurement Interval. The unit of the response is always dB. The value of Resource Block for which Resource Block Result Valid is invalid is regarded as an unmeasured result.

Table 2.10-4 lists device messages for setting parameters for Carrier Aggregation measurement.

Table 2.10-4 Device Messages for Setting Parameters for Carrier Aggregation Measurement

Function	Device message
Scale–EVM Unit	:DISPlay:CAGG[:VIEW]:WINDow5|6|7:TRACe:Y[:SCALe]:SPACing LINear|LOGarithmic|PERCent|DB
	:DISPlay:CAGG[:VIEW]:WINDow5|6|7:TRACe:Y[:SCALe]:SPACing?
Scale–EVM	:DISPlay:CAGG[:VIEW]:WINDow6:TRACe:Y[:SCALe]:RLEVel <scale>
	:DISPlay:CAGG[:VIEW]:WINDow6:TRACe:Y[:SCALe]:RLEVel?
Trace Mode	:DISPlay:CAGG[:VIEW]:SELect PVRB|EVRB|SUMMary
	:DISPlay:CAGG[:VIEW]:SELect?
Marker - Carrier Number	:CALCulate:CAGG:WINDow5|6:CARRier:NUMBer <integer>
	:CALCulate:CAGG:WINDow5|6:CARRier:NUMBer?
Subframe Number	:CALCulate:CAGG:WINDow5|6:SUBFrame:NUMBer <integer>
	:CALCulate:CAGG:WINDow5|6:SUBFrame:NUMBer?
Resource Block Number	:CALCulate:CAGG:WINDow5|6:RBLock:NUMBer <integer>
	:CALCulate:CAGG:WINDow5|6:RBLock:NUMBer?

Table 2.10-5 lists the device messages for setting the marker and reading out the value at the marker position for Carrier Aggregation measurement.

Table 2.10-5 Device Messages Related to Marker for Carrier Aggregation Measurement

Function	Device message
Marker Position Number	:CALCulate:CAGG:MARKer:SUBFrame <integer>
	:CALCulate:CAGG:MARKer:SUBFrame?
	:CALCulate:EVM:MARKer:RELement <integer>
	:CALCulate:EVM:MARKer:RELement?
Marker Value	:CALCulate:EVM:MARKer:EVM[:RMS]?
	:CALCulate:EVM:MARKer:POWer:ABSolute?
Peak Search	:CALCulate:MARKer:MAXimum
Next Peak Search	:CALCulate:MARKer:MAXimum:NEXT
Dip Search	:CALCulate:MARKer:MINimum
Next Dip Search	:CALCulate:MARKer:MINimum:NEXT

2.10.1 Measure

:CONFigure:CAGG

Modulation

Function

This command selects the Carrier Aggregation measurement function.

Command

```
:CONFigure:CAGG
```

Details

This command only selects the measurement function and does not start measurement.

Example of Use

To select the Carrier Aggregation measurement function.

```
CONF:CAGG
```

:INITiate:CAGG

Modulation

Function

This command starts Carrier Aggregation measurement.

Command

```
:INITiate:CAGG
```

Example of Use

To start Carrier Aggregation measurement.

```
INIT:CAGG
```

:FETCh:CAGG[n]?

Modulation Query

Function

This command queries the result of Carrier Aggregation measurement.

Query

```
:FETCh:CAGG[n]?
```

Response

See Table 2.10-2.

Details

–999.0 is returned when measurement is not performed or an error has occurred. Note, however, that "999999999999" is returned in the case of Frequency Error.
The unit of the read EVM value depends on the setting of EVM Unit.

Example of Use

To query the result of Carrier Aggregation measurement.

```
FETC:CAGG?
> 5.20,1.03,1,0.53,38,3,2.34,…
```

:READ:CAGG[n]?

Modulation Query

Function

This command performs Carrier Aggregation measurement once (single measurement) with the current settings, and then queries the measured result.

Query

```
:READ:CAGG[n]?
```

Response

See Table 2.10-2.

Example of Use

To perform Carrier Aggregation measurement and queries the measured result.

```
READ:CAGG?
```

Related Command

This command functions the same as the following command.

```
:MEASure:CAGG[n]?
```

:MEASure:CAGG[n]?

Modulation Query

Function

This command performs Carrier Aggregation measurement once (single measurement) with the current settings, and then queries the measured result.

Query

```
:MEASure:CAGG[n]?
```

Response

See Table 2.10-2.

Example of Use

To perform Carrier Aggregation measurement and query the measurement result.

```
MEAS:CAGG?
```

Related Command

This command functions the same as the following command.

```
READ:CAGG[n]?
```

2.10.2 Scale – EVM Unit

:DISPlay:CAGG[:VIEW]:WINDow5|6|7:TRACe:Y[:SCALe]:SPACing LINear|LOGarithmic|PERCent|DB

Scale EVM Unit

Function

This command sets the unit for EVM of measurement results.

Command

```
:DISPlay:CAGG[:VIEW]:WINDow5|6|7:TRACe:Y[:SCALe]:SPACin
g <mode>
```

Parameter

<mode>	Scale mode
LINear	% scale
LOGarithmic	dB scale
PERCent	% scale (Default)
DB	dB scale

Details

This command is not available when Trace Mode is set to Spectral Flatness.

Example of Use

To set the unit for EVM to dB scale.

```
DISP:CAGG:WIND7:TRAC:Y:SPAC DB
```

:DISPlay:CAGG[:VIEW]:WINDow5|6|7:TRACe:Y[:SCALe]:SPACing?

Scale EVM Unit Query

Function

This command queries the scale unit for EVM.

Query

```
:DISPlay:CAGG[:VIEW]:WINDow5|6|7:TRACe:Y[:SCALe]:SPACing
?
```

Response

<mode>

Parameter

<mode>	Scale mode
PERC	% scale
DB	dB scale

Example of Use

To query the unit for EVM.

```
DISP:CAGG:WIND7:TRAC:Y:SPAC?
> DB
```

2.10.3 Scale – EVM

:DISPlay:CAGG[:VIEW]:WINDow6:TRACe:Y[:SCALe]:RLEVel <scale>

Scale-EVM

Function

This command sets the vertical axis scale of the graph in which the vertical axis (Y) indicates EVM. The unit depends on the setting of EVM Unit.

Command

```
:DISPlay:CAGG[:VIEW]:WINDow6:TRACe:Y[:SCALe]:RLEVel
<scale>
```

Parameter

Range of vertical axis scale when EVM Unit = %

20	0 to 20%
10	0 to 10%
5	0 to 5% (Default)
2	0 to 2%

Range of vertical axis scale when EVM Unit = dB

–40	–80 to –40 dB (Default)
–20	–80 to –20 dB
0	–80 to 0 dB

Details

The selectable arguments depend on the setting of EVM Unit.

Example of Use

To set the vertical axis scale of the result graph to 10%.

```
DISP:CAGG:WIND6:TRAC:Y:RLEV 10
```

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

Scale–EVM Query

Function

This command queries the vertical axis scale of the graph in which the vertical axis (Y) indicates EVM. The unit of the readout value depends on the setting of EVM Unit.

Query

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

Response

<integer>

Parameter

Range of vertical axis scale when EVM Unit = %

20	0 to 20%
10	0 to 10%
5	0 to 5% (Default)
2	0 to 2%

Range of vertical axis scale when EVM Unit = dB

–40	–80 to –40 dB (Default)
–20	–80 to –20 dB
0	–80 to 0 dB

Example of Use

To query the vertical axis scale of the result graph.

```
DISP:CAGG:WIND6:TRAC:Y:RLEV?
> 10
```

2.10.4 Trace Mode

:DISPlay:CAGG[:VIEW]:SELect PVRB|EVRB|SUMMary

Trace Mode

Function

This command sets the result type to be displayed on the graph window.

Command

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

Parameter

<mode>	Displayed result type
PVRB	Displays Power vs Resource Block.
EVRB	Displays EVM vs Resource Block.
SUMMary	Displays Summary.

Example of Use

To display the EVM vs Resource Block to the graph window.

```
DISP:CAGG:SEL EVRB
```

:DISPlay:CAGG[:VIEW]:SELect?

Trace Mode Query

Function

This command queries the result type displayed on the graph window.

Command

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

Response

<mode>

Parameter

<mode>	Displayed result type
PVRB	Displays Power vs Resource Block.
EVRB	Displays EVM vs Resource Block.
SUMM	Displays Summary.

Example of Use

To query the result type displayed on the graph window.

```
DISP:CAGG:SEL?
> EVRB
```

2.10.5 Carrier Number

:CALCulate:CAGG:WINDow5|6:CARRier:NUMBer <integer>

Carrier Number

Function

This command sets the Component Carrier number to be displayed for Power vs Resource Block and EVM vs Resource Block.

Command

```
:CALCulate:CAGG:WINDow5|6:CARRier:NUMBer <integer>
```

Parameter

<integer>	Component Carrier number to be displayed
Range	0 to (Number of Carriers – 1)
Resolution	1
Suffix code	None
Default	0

Example of Use

To set the Component Carrier number to be displayed for Power vs Resource Block to 1.

```
CALC:CAGG:WIND5:CARR:NUMB 1
```

:CALCulate:CAGG:WINDow5|6:CARRier:NUMBer?

Carrier Number Query

Function

This command queries the Component Carrier number displayed for Power vs Resource Block and EVM vs Resource Block.

Query

```
:CALCulate:CAGG:WINDow5|6:CARRier:NUMBer?
```

Response

```
<integer>
```

Parameter

<integer>	Component Carrier number to be displayed
Range	0 to (Number of Carriers – 1)
Resolution	1

Example of Use

To query the Component Carrier number displayed for Power vs Resource Block.

```
CALC:CAGG:WIND5:CARR:NUMB?
> 1
```

2.10.6 Subframe Number

:CALCulate:CAGG:WINDow5|6:SUBFrame:NUMBer <integer>

Subframe Number

Function

This command sets the subframe number to be displayed for Power vs Resource Block and EVM vs Resource Block.

Command

```
:CALCulate:CAGG:WINDow5|6:SUBFrame:NUMBer <integer>
```

Parameter

<integer>	Subframe number to be displayed
Range	0 to 49
Resolution	1
Suffix code	None
Default	1

Example of Use

To set the subframe number to be displayed for Power vs Resource Block to 1.

```
CALC:CAGG:WIND5:SUBF:NUMB 1
```

:CALCulate:CAGG:WINDow5|6:SUBFrame:NUMBer?

Subframe Number Query

Function

This command queries the subframe number displayed for Power vs Resource Block and EVM vs Resource Block.

Query

```
:CALCulate:CAGG:WINDow5|6:SUBFrame:NUMBer?
```

Response

```
<integer>
```

Parameter

<integer>	Subframe number to be displayed
Range	0 to 49
Resolution	1

Example of Use

To query the subframe number displayed for Power vs Resource Block.

```
CALC:CAGG:WIND5:SUBF:NUMB?
> 1
```

2.10.7 Resource Block Number

:CALCulate:CAGG:WINDow5|6:RBLock:NUMBer <integer>

Resource Block Number

Function

This command sets the Resource Block number to be displayed for Power vs Resource Block and EVM vs Resource Block.

Command

```
:CALCulate:CAGG:WINDow5|6:RBLock:NUMBer <integer>
```

Parameter

<integer>	Resource Block number to be displayed
Range	0 to 99
Resolution	1
Suffix code	None
Default	0

Example of Use

To set the Resource Block number to be displayed for Power vs Resource Block to 10.

```
CALC:CAGG:WIND5:RBL:NUMB 10
```

:CALCulate:CAGG:WINDow5|6:RBLock:NUMBer?

Resource Block Number Query

Function

This command queries the Resource Block number displayed for Power vs Resource Block and EVM vs Resource Block.

Query

```
:CALCulate:CAGG:WINDow5|6:RBLock:NUMBer?
```

Response

```
<integer>
```

Parameter

<integer>	Resource Block number to be displayed
Range	0 to 99
Resolution	1

Example of Use

To query the Resource Block number displayed for Power vs Resource Block.

```
CALC:CAGG:WIND5:RBL:NUMB?
> 10
```

2.10.8 Marker Position Number

:CALCulate:CAGG:MARKer:SUBFrame <integer>

Marker Subframe Number

Function

This command sets the marker position on the graph window in subframe number.

Command

```
:CALCulate:CAGG:MARKer:SUBFrame <integer>
```

Parameter

<integer>	Subframe number
Range	0 to 49
Resolution	1
Suffix code	None
Default	1

Example of Use

To set the marker position to 10.

```
CALC:CAGG:MARK:SUBF 10
```

:CALCulate:CAGG:MARKer:SUBFrame?

Marker Subframe Number Query

Function

This command queries the marker position on the graph window in subframe number.

Command

```
:CALCulate:CAGG:MARKer:SUBFrame?
```

Response

<integer>

Parameter

<integer>	Subframe number
Range	0 to 49
Resolution	1

Example of Use

To query the marker position in subframe number.

```
CALC:CAGG:MARK:SUBF?
> 10
```

:CALCulate:CAGG:MARKer:RBLock <integer>

Marker Resource Block Number

Function

This command sets the marker position in the resource block number.

Command

```
:CALCulate:CAGG:MARKer:RBLock <integer>
```

Parameter

<integer>		Resource Block Number
	Range	0 to 99
	Resolution	1
	Suffix code	None
	Default	0

Example of Use

To set the marker position to 10.

```
CALC:CAGG:MARK:RBL 10
```

:CALCulate:CAGG:MARKer:RBLock?

Marker Resource Block Number Query

Function

This command queries the marker position in the resource block number.

Command

```
:CALCulate:CAGG:MARKer:RBLock?
```

Response

<integer>

Parameter

<integer>		Resource Block Number
	Range	0 to 99
	Resolution	1

Example of Use

To query the marker position.

```
CALC:CAGG:MARK:RBL?
> 10
```

2.10.9 Marker Value

:CALCulate:EVM:MARKer:EVM[:RMS]?

Marker EVM Value (RMS) Query

Function

This command queries the RMS value of EVM at the marker position in the corresponding graph.

Query

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

Response

```
<real>
```

Parameter

`<real>` RMS value of EVM at the marker position in the corresponding graph

When EVM Unit is set to %: Unit: %

When EVM Unit is set to dB: Unit: dB

Details

–999.0 is returned if Trace Mode is not EVM vs Subcarrier, EVM vs Symbol, Power vs RB, or EVM vs RB.

–999.0 is returned when no measurement is made or an error occurs.

Example of Use

To query the RMS value of EVM at the marker position.

```
CALC:EVM:MARK:EVM?
> -20.00
```

:CALCulate:EVM:MARKer:POWer:ABSolute?

Marker Absolute Power Value (Peak) Query

Function

This command queries the absolute power value at the marker position in the graph window.

Query

```
:CALCulate:EVM:MARKer:POWer:ABSolute?
```

Response

```
<real>
```

Parameter

<real>		Absolute power value at the marker position in the corresponding graph
	Unit	dBm

Details

–999.0 is returned if Trace Mode is not Power vs RB or EVM vs RB.
–999.0 is returned when no measurement is made or an error occurs.

Example of Use

To query the absolute power value at the marker position.

```
CALC:EVM:MARK:POW:ABS?
> -20.00
```

2.10.10 Peak Search

:CALCulate:MARKer:MAXimum

Peak Search

Function

This command searches for the maximum level point of the active trace and moves the marker point.

Command

```
:CALCulate:MARKer:MAXimum
```

Details

This function is available on the following traces:

- Power vs Resource Block
- EVM vs Resource Block

When reading out a marker value after executing this command, use the `*WAI` command and execute synchronization control.

Note that synchronization control during the Continuous mode is not supported.

Example of Use

To move the marker to the maximum level point and query the marker value.

```
CALC:MARK:MAX
*WAI
CALC:EVM:MARK:Y?
```

:CALCulate:MARKer:MAXimum:NEXT

Next Peak Search

Function

This command searches for the feature point on the active trace and moves the marker point to the peak point of a level that is lower than the current marker level.

Command

```
:CALCulate:MARKer:MAXimum:NEXT
```

Details

This function is available on the following traces:

- Power vs Resource Block
- EVM vs Resource Block

When reading out a marker value after executing this command, use the `*WAI` command and execute synchronization control.

Note that synchronization control during the Continuous mode is not supported.

Example of Use

To move the marker to the next peak point and query the marker value.

```
CALC:MARK:MAX:NEXT
*WAI
CALC:EVM:MARK:Y?
```

:CALCulate:MARKer:MINimum

Dip Search

Function

This command searches for the minimum level point of the active trace and moves the marker point.

Command

```
:CALCulate:MARKer:MINimum
```

Details

This function is available when the following traces are active:

- Power vs Resource Block
- EVM vs Resource Block

When reading out a marker value after executing this command, use the `*WAI` command and execute synchronization control.

Note that synchronization control during the Continuous mode is not supported.

Example of Use

To move the marker to the minimum level point and query the marker value.

```
CALC:MARK:MIN
*WAI
CALC:EVM:MARK:Y?
```

:CALCulate:MARKer:MINimum:NEXT

Next Dip Search

Function

This command searches for the feature point on the active trace and moves the marker point to the peak point in which the marker value of a level that is lower than the current marker level is minimum.

Command

```
:CALCulate:MARKer:MINimum:NEXT
```

Details

This function is available when the following traces are active:

- Power vs Resource Block
- EVM vs Resource Block

When reading out a marker value after executing this command, use the `*WAI` command and execute synchronization control.

Note that synchronization control during the Continuous mode is not supported.

Example of Use

To move the marker to the next minimum peak point and query the marker value.

```
CALC:MARK:MIN:NEXT
*WAI
CALC:EVM:MARK:Y?
```

2.11 Replay Function

Table 2.11-1 lists the device messages for the Replay function.

Table 2.11-1 Device message for setting Replay function

Function	Device message
Stop Replay	:MMEMory:LOAD:IQData:STOP
Execute Replay	:MMEMory:LOAD:IQData filename>,<device>,<application>
Replay File Information Query	:MMEMory:LOAD:IQData:INFormation?
Replay Execute Query	:MMEMory:LOAD:IQData:INFormation:STATe?
Replay Filename Query	:MMEMory:LOAD:IQData:INFormation:FILE?
Replay Device Query	:MMEMory:LOAD:IQData:INFormation:DEVice?
Replay Application Query	:MMEMory:LOAD:IQData:INFormation:APPLication?
Replay Level Over Query	:MMEMory:LOAD:IQData:INFormation:CONDition?
Replay Error Icon Query	:MMEMory:LOAD:IQData:INFormation:ERRor?
Replay Correction Query	:MMEMory:LOAD:IQData:INFormation:CORRection?
Replay External Reference Query	:MMEMory:LOAD:IQData:INFormation:ROSCillator?

:MMEMory:LOAD:IQData:STOP

Stop Replay

Function

This command stops the Replay function.

Command

```
:MMEMory:LOAD:IQData:STOP
```

Details

This command is available only when the Replay function is executed.

Example of Use

To stop the Replay function.

```
MMEM:LOAD:IQD:STOP
```

:MMEMory:LOAD:IQData <filename>,<device>,<application>

Execute Replay

Function

This command executes the Replay function. Set a file, a drive, and an application to select the target IQ data.

Command

```
:MMEMory:LOAD:IQData <filename>,<device>,<application>
```

Parameter

`<filename>`	Target file name Character string within 32 characters enclosed by double quotes (“ ”) or single quotes (‘ ’) (excluding extension) The following characters cannot be used: \ / : * ? “ ” ‘ ’ < > |
`<device>`	Drive name `A,B,D,E,F,...`
`<application>`	Application to load IQ data file
`BASE5G`	5G measurement software
`SIGANA`	Signal Analyzer

Example of Use

To load the IQ data file “TEST” from drive D and execute the replay function.

```
MMEM:LOAD:IQD "TEST",D,BASE5G
```

:MMEMory:LOAD:IQData:INFormation?

Replay File Information Query

Function

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

Query

```
:MMEMory:LOAD:IQData:INFormation?
```

Response

```
<filename>,<time_length>
```

Parameter

`<filename>`	File name Character string within 32 characters (excluding extension) *** is returned when the Replay function is not executed.
`<time_length>` Resolution	Time length of analyzable IQ data 1 frame No suffix code. Value is returned in frame units. –999999999999 is returned when the Replay function is not executed.

Example of Use

To query the information of the file for which the Replay function is executed.

```
MMEM:LOAD:IQD:INF?
> TEST,38.838771500
```

:MMEMory:LOAD:IQData:INFormation:STATe?

Replay Execute Query

Function

This command queries whether the Replay function is executed.

Query

```
:MMEMory:LOAD:IQData:INFormation:STATe?
```

Response

```
<switch>
```

Parameter

<switch>	Replay On/Off
1	On
0	Off

Example of Use

To query whether the Replay function is executed.

```
MMEM:LOAD:IQD:INF:STAT?
> 1
```

:MMEMory:LOAD:IQData:INFormation:FILE?

Replay Filename Query

Function

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

Query

```
:MMEMory:LOAD:IQData:INFormation:FILE?
```

Response

```
<filename>
```

Parameter

<filename>	File name Character string within 32 characters (excluding extension) *** is returned when the Replay function is not executed.

Example of Use

To query the name of the file for which the Replay function is executed.

```
MMEM:LOAD:IQD:INF:FILE?
```

:MMEMory:LOAD:IQData:INFormation:DEVice?

Replay Device Query

Function

This command queries the name of the drive for which the Replay function is executed.

Query

```
:MMEMory:LOAD:IQData:INFormation:DEVice?
```

Response

```
<device>
```

Parameter

`<device>`	Drive name `A,B,D,E,F,...` *** is returned when the Replay function is not executed.

Example of Use

To query the name of the drive for which the Replay function is executed.

```
MMEM:LOAD:IQD:INF:DEV?
```

:MMEMory:LOAD:IQData:INFormation:APPLication?

Replay Application Query

Function

This command queries the name of the application for which the Replay function is executed.

Query

```
:MMEMory:LOAD:IQData:INFormation:APPLication?
```

Response

```
<application>
```

Parameter

`<application>`	Application to load IQ data file
`BASE5G`	5G measurement software
	*** is returned when the Replay function is not executed.

Example of Use

To query the name of the application for which the Replay function is executed.

```
MMEM:LOAD:IQD:INF:APPL?
```

:MMEMory:LOAD:IQData:INFormation:CONDition?

Replay Level Over Query

Function

This command queries whether Level Over is displayed while the replay function is executed.

Query

```
:MMEMory:LOAD:IQData:INFormation:CONDition?
```

Response

<switch>

1	Level Over is displayed.
0	Normal
	–999.0 is returned when the Replay function is not executed.

Example of Use

To query whether Level Over is displayed while the replay function is executed.

```
MMEM:LOAD:IQD:INF:COND?
> 0
```

:MMEMory:LOAD:IQData:INFormation:ERRor?

Replay Error Icon Query

Function

This command queries whether the Replay Error Info. icon is displayed while the replay function is executed.

Query

```
:MMEMory:LOAD:IQData:INFormation:ERRor?
```

Response

<switch>

1	Replay Error Info. icon is displayed.
0	Normal
	–999.0 is returned when the Replay function is n or executed.

Details

The Replay Error Info. icon is displayed if the loaded xml file contains error information.

Example of Use

To query whether Level Over is displayed while the replay function is executed.

```
MMEM:LOAD:IQD:INF:ERR?
> 0
```

:MMEMory:LOAD:IQData:INFormation:CORRection?

Replay Correction Query

Function

This command queries the Correction value while the Replay function is executed.

Query

```
:MMEMory:LOAD:IQData:INFormation:CORRection?
```

Response

```
<real>
```

Parameter

`<real>`	Correction level
Range	–100 to +100 dB 0.000 is returned when Correction is Off. –999.0 is returned when the Replay function is not executed.

Example of Use

To query the Correction value while the Replay function is executed.

```
MMEM:LOAD:IQD:INF:CORR?
```

:MMEMory:LOAD:IQData:INFormation:ROSCillator?

Replay External Reference Query

Function

This command queries the frequency reference signal source when the Replay function is executed.

Query

```
:MMEMory:LOAD:IQData:INFormation:ROSCillator?
```

Response

```
<source>
```

Parameter

`<source>`	Frequency reference signal source
`INT`	Internal reference signal source
`INTU`	Internal reference signal source (Unlock state)
`EXT`	External reference signal source
`EXTU`	External reference signal source (Unlock state)
	*** is returned when the Replay function is not executed.

Example of Use

To query the frequency reference signal source when the Replay function is executed.

```
MMEM:LOAD:IQD:INF:ROSC?
```

Chapter 3 SCPI Status Register

This chapter explains the SCPI commands used to read the state of the application and the status register.

3.1 Reading Measurement Status

:STATus:ERRor?

Measurement Status Error Query

Function

This command queries a measurement error.

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	No measurement
bit1: 2^1 = 2	Level Over
bit2: 2^2 = 4	Signal Abnormal
bit3: 2^3 = 8	(Not Used)
bit4: 2^4 = 16	(Not Used)
bit5: 2^5 = 32	(Not Used)
bit6: 2^6 = 64	(Not Used)
bit7: 2^7 = 128	(Not Used)
bit8: 2^8 = 256	(Not Used)
bit9: 2^9 = 512	(Not Used)
bit10: 2^{10} = 1024	(Not Used)
bit11: 2^{11} = 2048	(Not Used)
bit12: 2^{12} = 4096	(Not Used)
bit13: 2^{13} = 8192	(Not Used)
bit14: 2^{14} = 16384	(Not Used)
bit15: 2^{15} = 32768	(Not Used)

Range 0 to 65535

Details

0 is returned at normal termination.

Usage Example

To query a measurement error.

```
STAT:ERR?
> 0
```

3.2 STATus:QUEStionable Register

The hierarchical structure of the QUEStionable Status register is described in Figures 3.2-1 and 3.2-2, and Tables 3.2-1 and 3.2-2.

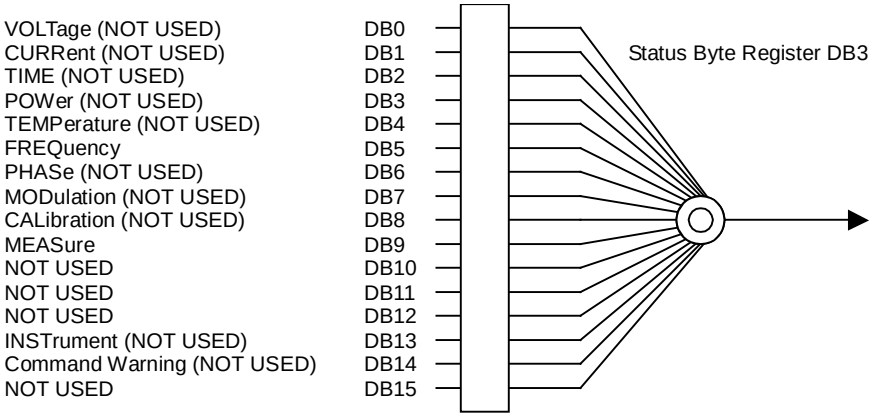


Figure 3.2-1 QUEStionable Status Register

Table 3.2-1 Bit Definition of QUEStionable Status Register

Bit	Definition
DB5	Reference Clock Unlock
DB9	QUEStionable Measure Register Summary

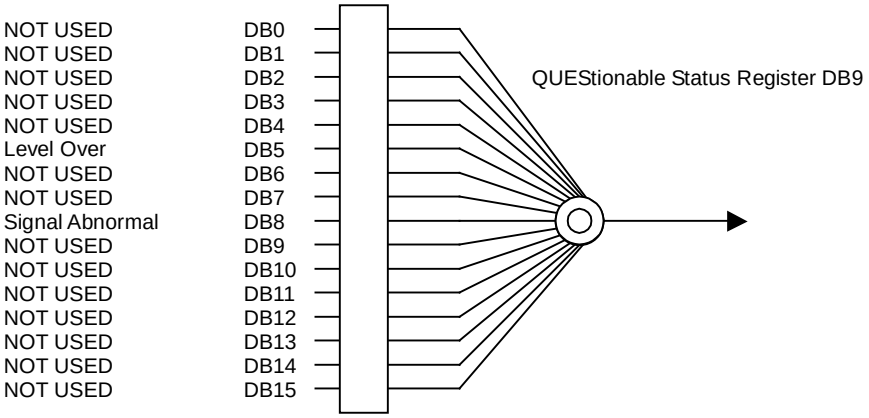


Figure 3.2-2 QUEStionable Measure Register

Table 3.2-2 Bit Definition of QUEStionable Measure Register

Bit	Definition
DB5	Level Over
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 Event register of QUEStionable Status register.

Query

```
:STATus:QUEStionable[:EVENt]?
```

Response

```
<integer>
```

Parameter

`<integer>`		Bit Sum Total of Event Register
	Resolution	1
	Range	0 to 65535

Usage Example

To query event register of QUEStionable Status register.

```
STAT:QUES?
> 0
```

:STATus:QUEStionable:CONDition?

Questionable Status Register Condition

Function

This command queries Condition register of QUEStionable Status register

Query

```
:STATus:QUEStionable:CONDition?
```

Response

```
<integer>
```

Parameter

`<integer>`		Bit Sum Total of Condition Register
	Resolution	1
	Range	0 to 65535

Usage Example

To query Condition register of QUEStionable Status register.

```
STAT:QUES:COND?
> 0
```

:STATus:QUEStionable:ENABle <integer>

Questionable Status Register Enable

Function

This command sets Event Enable register of QUEStionable Status register.

Command

```
:STATus:QUEStionable:ENABle <integer>
```

Parameter

`<integer>`		Bit Sum Total of Event Enable Register
	Resolution	1
	Range	0 to 65535

Usage Example

To set value of Event Enable register of QUEStionable Status register to 16.

```
STAT:QUES:ENAB 16
```

:STATus:QUEStionable:ENABle?

Questionable Status Register Enable Query

Function

This command queries Event Enable register of QUEStionable Status register.

Query

```
:STATus:QUEStionable:ENABle?
```

Response

```
<integer>
```

Parameter

`<integer>`		Bit Sum Total of Event Enable Register
	Resolution	1
	Range	0 to 65535

Usage Example

To query Event Enable register of QUEStionable Status register.

```
STAT:QUES:ENAB?
> 16
```

:STATus:QUEStionable:NTRansition <integer>

Questionable Status Register Negative Transition

Function

This command sets transition filter (Negative Transition) of QUEStionable Status register.

Command

```
:STATus:QUEStionable:NTRansition <integer>
```

Parameter

<integer>		Bit Sum Total of Transition Filter (Negative Transition)
	Resolution	1
	Range	0 to 65535

Usage Example

To set transition filter (Negative Transition) of QUEStionable Status register to 16.

```
STAT:QUES:NTR 16
```

:STATus:QUEStionable:NTRansition?

Questionable Status Register Negative Transition Query

Function

This command queries transition filter (Negative Transition) of QUEStionable Status register.

Query

```
:STATus:QUEStionable:NTRansition?
```

Response

```
<integer>
```

Parameter

<integer>		Bit Sum Total of Transition Filter (Negative Transition)
	Resolution	1
	Range	0 to 65535

Usage Example

To query transition filter (Negative Transition) of QUEStionable Status register.

```
STAT:QUES:NTR?
> 16
```

:STATus:QUEStionable:PTRansition <integer>

Questionable Status Register Positive Transition

Function

This command sets transition filter (Positive Transition) of QUEStionable Status register.

Command

```
:STATus:QUEStionable:PTRansition <integer>
```

Parameter

`<integer>`		Bit Sum Total of Transition Filter (Positive Transition)
	Resolution	1
	Range	0 to 65535

Usage Example

To set transition filter (Positive Transition) of QUEStionable Status register to 16.

```
STAT:QUES:PTR 16
```

:STATus:QUEStionable:PTRansition?

Questionable Status Register Positive Transition Query

Function

This command queries transition filter (Positive Transition) of QUEStionable Status register.

Query

```
:STATus:QUEStionable:PTRansition?
```

Response

```
<integer>
```

Parameter

`<integer>`		Bit Sum Total of Transition Filter (Positive Transition)
	Resolution	1
	Range	0 to 65535

Usage Example

To query transition filter (Positive Transition) of QUEStionable Status register.

```
STAT:QUES:PTR?
> 16
```

:STATus:QUEStionable:MEASure[:EVENt]?

Questionable Measure Register Event

Function

This command queries Event register of QUEStionable Measure register.

Query

```
:STATus:QUEStionable:MEASure[:EVENt]?
```

Response

```
<integer>
```

Parameter

`<integer>`		Bit Sum Total of Event Register
	Resolution	1
	Range	0 to 65535

Usage Example

To query Event register of QUEStionable Measure register.

```
STAT:QUES:MEAS?
> 0
```

:STATus:QUEStionable:MEASure:CONDition?

Questionable Measure Register Condition

Function

This command queries Condition register of QUEStionable Measure register.

Query

```
:STATus:QUEStionable:MEASure:CONDition?
```

Response

```
<integer>
```

Parameter

`<integer>`		Bit Sum Total of Condition Register
	Resolution	1
	Range	0 to 65535

Usage Example

To query Condition register of QUEStionable Measure register.

```
STAT:QUES:MEAS:COND?
> 0
```

:STATus:QUEStionable:MEASure:ENABle <integer>

Questionable Measure Register Enable

Function

This command sets Event Enable register of QUEStionable Measure register.

Command

```
:STATus:QUEStionable:MEASure:ENABle <integer>
```

Parameter

`<integer>`		Bit Sum Total of Event Enable Register
	Resolution	1
	Range	0 to 65535

Usage Example

To set a value of Event Enable register of QUEStionable Measure register to 16.

```
STAT:QUES:MEAS:ENAB 16
```

:STATus:QUEStionable:MEASure:ENABle?

Questionable Measure Register Enable Query

Function

This command queries Event Enable register of QUEStionable Measure register.

Query

```
:STATus:QUEStionable:MEASure:ENABle?
```

Response

```
<integer>
```

Parameter

`<integer>`		Bit Sum Total of Event Enable Register
	Resolution	1
	Range	0 to 65535

Usage Example

To query Event Enable register of QUEStionable Measure register.

```
STAT:QUES:MEAS:ENAB?
> 16
```

:STATus:QUEStionable:MEASure:NTRansition <integer>

Questionable Measure Register Negative Transition

Function

This command sets transition filter (Negative Transition) of QUEStionable Measure register.

Command

```
:STATus:QUEStionable:MEASure:NTRansition <integer>
```

Parameter

<integer>		Bit Sum Total of Transition Filter (Negative Transition)
	Resolution	1
	Range	0 to 65535

Usage Example

To set transition filter (Negative Transition) of QUEStionable Measure register to 16.

```
STAT:QUES:MEAS:NTR 16
```

:STATus:QUEStionable:MEASure:NTRansition?

Questionable Measure Register Negative Transition Query

Function

This command queries transition filter (Negative Transition) of QUEStionable Measure register.

Query

```
:STATus:QUEStionable:MEASure:NTRansition?
```

Response

```
<integer>
```

Parameter

<integer>		Bit Sum Total of Transition Filter (Negative Transition)
	Resolution	1
	Range	0 to 65535

Usage Example

To query transition filter (Negative Transition) of QUEStionable Measure register.

```
STAT:QUES:MEAS:NTR?
> 16
```

:STATus:QUEStionable:MEASure:PTRansition <integer>

Questionable Measure Register Positive Transition

Function

This command sets transition filter (Positive Transition) of QUEStionable Measure register.

Command

```
:STATus:QUEStionable:MEASure:PTRansition <integer>
```

Parameter

`<integer>`		Bit Sum Total of Transition Filter (Positive Transition)
	Resolution	1
	Range	0 to 65535

Usage Example

To set transition filter (Positive Transition) of QUEStionable Measure register to 16.

```
STAT:QUES:MEAS:PTR 16
```

:STATus:QUEStionable:MEASure:PTRansition?

Questionable Measure Register Positive Transition Query

Function

This command queries transition filter (Positive Transition) of QUEStionable Measure register.

Query

```
:STATus:QUEStionable:MEASure:PTRansition?
```

Response

```
<integer>
```

Parameter

`<integer>`		Bit Sum Total of Transition Filter (Positive Transition)
	Resolution	1
	Range	0 to 65535

Usage Example

To query transition filter (Positive Transition) of QUEStionable Measure register.

```
STAT:QUES:MEAS:PTR?
> 16
```

3.3 STATus:OPERation Register

The hierarchical structure of the OPERation Status register is described in Figure 3.3-1 and Table 3.3-1.

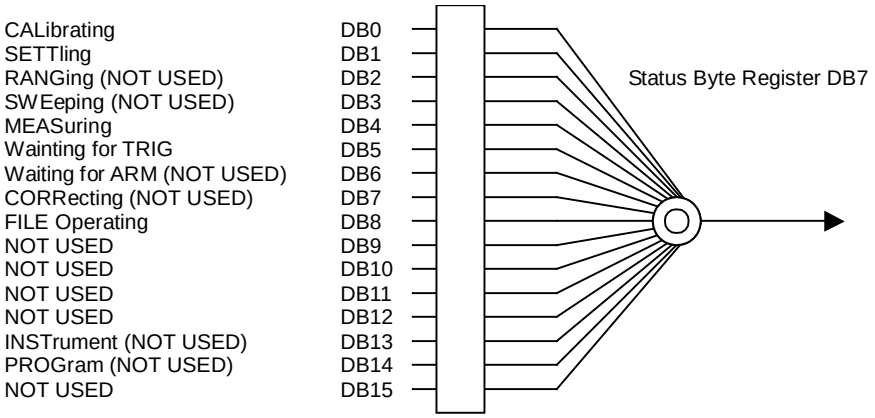


Figure 3.3-1 OPERation Status Register

Table 3.3-1 Bit Definition for OPERation Status Register

Bit	Definition
DB0	CAL Executed
DB1	Warm-up displayed
DB4	Capture executed (Always 1 at Continuous measurement)
DB5	Waiting for trigger signal
DB8	Operating on 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 Event register of OPERation Status register.

Query

```
:STATus:OPERation[:EVENt]?
```

Response

```
<integer>
```

Parameter

`<integer>`		Bit Sum Total of Event Register
	Resolution	1
	Range	0 to 65535

Usage Example

To query Event register of OPERation Status register.

```
STAT:OPER?
> 0
```

:STATus:OPERation:CONDition?

Operation Status Register Condition

Function

This command queries Event register of OPERation Condition register.

Query

```
:STATus:OPERation:CONDition?
```

Response

```
<integer>
```

Parameter

`<integer>`		Bit Sum Total of Condition Register
	Resolution	1
	Range	0 to 65535

Usage Example

To query Event register of OPERation Condition register.

```
STAT:OPER:COND?
> 0
```

:STATus:OPERation:ENABle <integer>

Operation Status Register Enable

Function

This command sets Event Enable register of OPERation Status register.

Command

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

Parameter

<integer>		Bit Sum Total of Event Enable Register
	Resolution	1
	Range	0 to 65535

Usage Example

To set Event Enable register of OPERation Status register to 16.

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

:STATus:OPERation:ENABle?

Operation Status Register Enable Query

Function

This command queries Event Enable register of OPERation Status register.

Query

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

Response

```
<integer>
```

Parameter

<integer>		Bit Sum Total of Event Enable Register
	Resolution	1
	Range	0 to 65535

Usage Example

To query Event Enable register of OPERation Status register.

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

:STATus:OPERation:NTRansition <integer>

Operation Status Register Negative Transition

Function

This command sets transition filter (Negative Transition) of OPERation Status register.

Command

```
:STATus:OPERation:NTRansition <integer>
```

Parameter

`<integer>`		Bit Sum Total of Transition Filter (Negative Transition)
	Resolution	1
	Range	0 to 65535

Usage Example

To set transition filter (Negative Transition) of OPERation Status register to 16.

```
STAT:OPER:NTR 16
```

:STATus:OPERation:NTRansition?

Operation Status Register Negative Transition Query

Function

This command queries transition filter (Negative Transition) of OPERation Status register.

Query

```
:STATus:OPERation:NTRansition?
```

Response

```
<integer>
```

Parameter

`<integer>`		Bit Sum Total of Transition Filter (Negative Transition)
	Resolution	1
	Range	0 to 65535

Usage Example

To query transition filter (Negative Transition) of OPERation Status register.

```
STAT:OPER:NTR?
> 16
```

:STATus:OPERation:PTRansition <integer>

Operation Status Register Positive Transition

Function

This command sets transition filter (Positive Transition) of OPERation Status register.

Command

```
:STATus:OPERation:PTRansition <integer>
```

Parameter

<integer>		Bit Sum Total of Transition Filter (Positive Transition)
	Resolution	1
	Range	0 to 65535

Usage Example

To set transition filter (Positive Transition) of OPERation Status register to 16.

```
STAT:OPER:PTR 16
```

:STATus:OPERation:PTRansition?

Operation Status Register Positive Transition Query

Function

This command queries transition filter (Positive Transition) of OPERation Status register.

Query

```
:STATus:OPERation:PTRansition?
```

Response

```
<integer>
```

Parameter

<integer>		Bit Sum Total of Transition Filter (Positive Transition)
	Resolution	1
	Range	0 to 65535

Usage Example

To query transition filter (Positive Transition) of OPERation Status register.

```
STAT:OPER:PTR?
> 16
```