

**MX269018A**  
**Analog Measurement Software**  
**Operation Manual**  
**Remote Control**

**11th 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 MS2830A Signal Analyzer Operation Manual (Mainframe operation) and MX269018A Analog Measurement Software / MS2830A Signal Analyzer Analog Signal Generator Operation Manual (Operation). Please also refer to these documents before using the equipment.
- Keep this manual with the equipment.

**ANRITSU CORPORATION**

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## Symbols used in manual



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



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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

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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.

MX269018A  
Analog Measurement Software  
Operation Manual Remote Control

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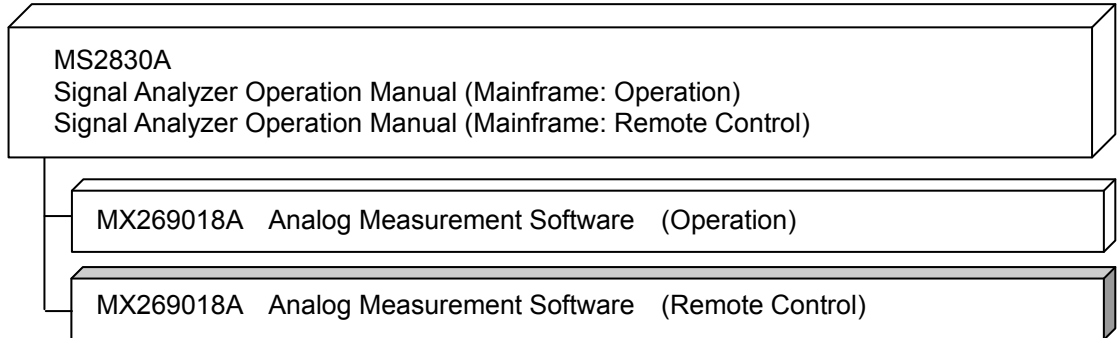
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# About This Manual

## ■ About this document

This operation manual is for MX269018A Analog Measurement Software (Remote Control).



- Mainframe: Operation
- Mainframe: Remote Control

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

- MX269018A Analog Measurement Software Operation Manual (Operation)  
This document describes the operation of MX269018A Analog Measurement Software.

- MX269018A Analog Measurement Software Operation Manual (Remote Control: This document)  
This document describes the remote control of MX269018A Analog Measurement Software Operation Manual.

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# Chapter 1 Overview

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This chapter outlines the remote control operation of the MX269018A Analog Measurement Software (hereinafter referred to as “this application” or “MX269018A”).


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## 1.1 Product Overview

This application can be controlled from an external controller (PC) by remote control commands using the MS2830A Signal Analyzer (hereafter referred to as “this instrument”). The remote control commands are defined using the SCPI format and original format.

### 1.1.1 Interface

This instrument has GPIB, Ethernet, and USB interfaces for remote control. Only one of these can be used at once.

The interface is automatically determined when a command is received at the start of communication. This instrument enters the remote state after the interface has been determined.  on the front panel goes off in Local status and lights up in Remote status.

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

### 1.1.2 Controlled Application

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

In this instrument, multiple applications can be loaded at the same time. Only one application resource can be executed per piece of hardware at one time. This application measures by using the resource of RF Input/Output. Thus, this application cannot be executed at the same time with another application using the same resource such as the signal analyzer function. In order to execute a function unique to the application by using the remote control, you need to select this application while it has been running. Unlike other applications, this application uses the resources of the MS2830A-020/021 3.6/6 GHz Vector Signal Generator Option (hereafter “Option 020/021”). Note that this application and Option 020/021 cannot be used at the same time.

## 1.2 Basic Flow of Control

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

Figure 1.2-1 shows the flow of the basic control process.

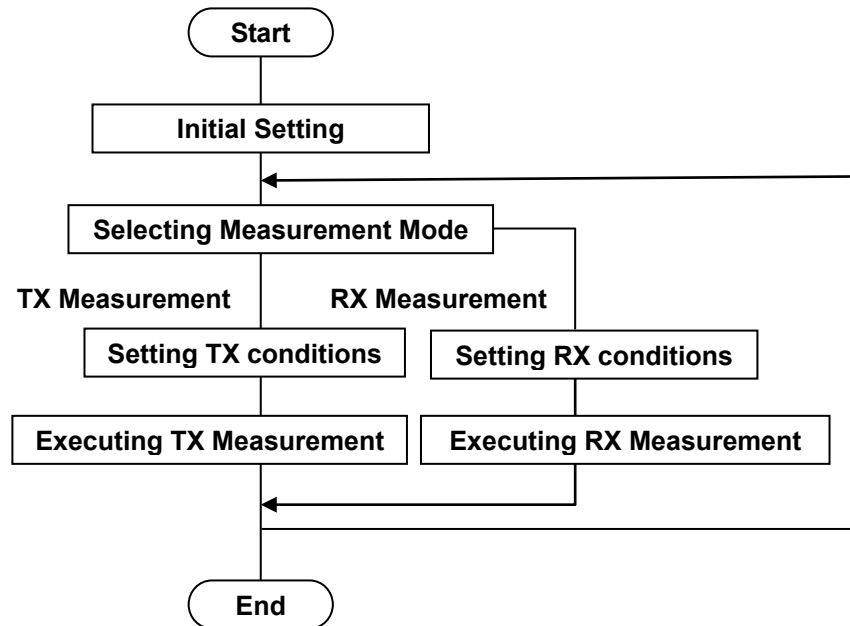


Figure 1.2-1 Basic Flow of Control


(1) Initial Setting

Initialize the communication interface and the parameters, set the communication mode, load applications, and select applications.

 1.2.1 Default Setting


(2) Selecting Measurement Mode

Set the measurement mode to TX measurement or RX measurement.

 1.2.2 Selecting measurement mode

(3) Setting TX measurement

Set the parameters necessary for execution of TX measurement such as the modulation method, measurement frequency, and input level.

 1.2.3 Setting TX measurement


(4) Executing TX Measurement

Execute the TX measurement.

 1.2.4 Executing TX measurement

(5) Setting RX measurement

Set the parameters for signals to be output for RX measurement such as the output frequency, output level, and AF signal settings.

 1.2.5 Setting RX measurement

(6) Executing RX Measurement

Execute the RX measurement.

 1.2.6 Executing RX measurement

## 1.2.1 Default Setting

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

(1) Initializing Communication Interface

The remote control interface to be used is initialized so sending and receiving of commands can start. Refer to the operation manual of the interface used, for details about the remote control interface.

(2) Setting Language Mode and Response Format

The language mode and the response format used to communicate are set. For details, refer to *MS2690A/MS2691A/MS2692A and MS2830A Signal Analyzer manual (Mainframe Remote Control)*.

(3) Starting the application

The application is loaded.

(4) Selecting Application

The target application is selected.

(5) Initialization

All parameters and statuses are reset at initialization.

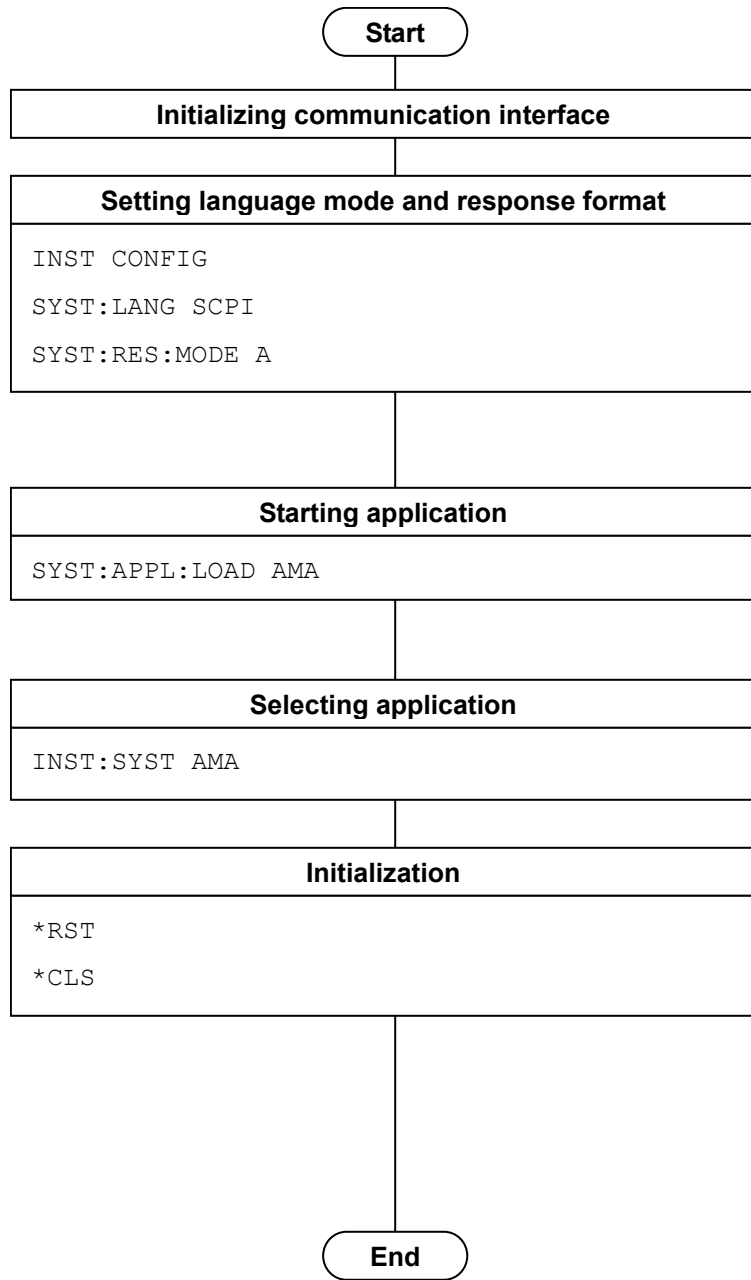


Figure 1.2.1-1 Initialization Flow and Command Example

## 1.2.2 Selecting measurement mode

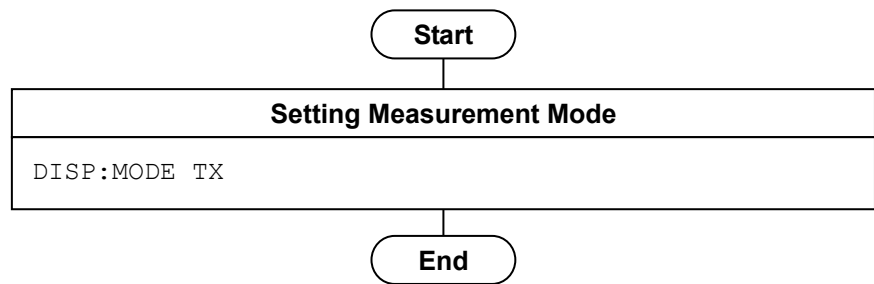
Set the measurement mode to the TX measurement mode or RX measurement mode. Switch to the TX measurement mode for the transmission test. Switch to the RX measurement mode for the reception test.

(1) Setting the measurement mode

Set the measurement mode.

In the TX measurement mode, TX measurement setting, TX measurement execution, and measurement result display are performed.

In the RX measurement mode, signal settings for the RX measurement are performed.



**Figure 1.2.2-1 Measurement Mode Selection Flow and Command Example**

### 1.2.3 Setting TX measurement

Execute signal settings for TX measurement as required.  
There is no restriction in the order of parameter settings.

- (1) RF parameter
  - Measurement frequency
  - Input Level
  - Input Level offset
- (2) AF parameter
  - Modulation scheme
  - Modulation Distortion Factor
  - High Pass Filter
  - Low Pass Filter
  - De-Emphasis Filter
  - Band Pass Filter

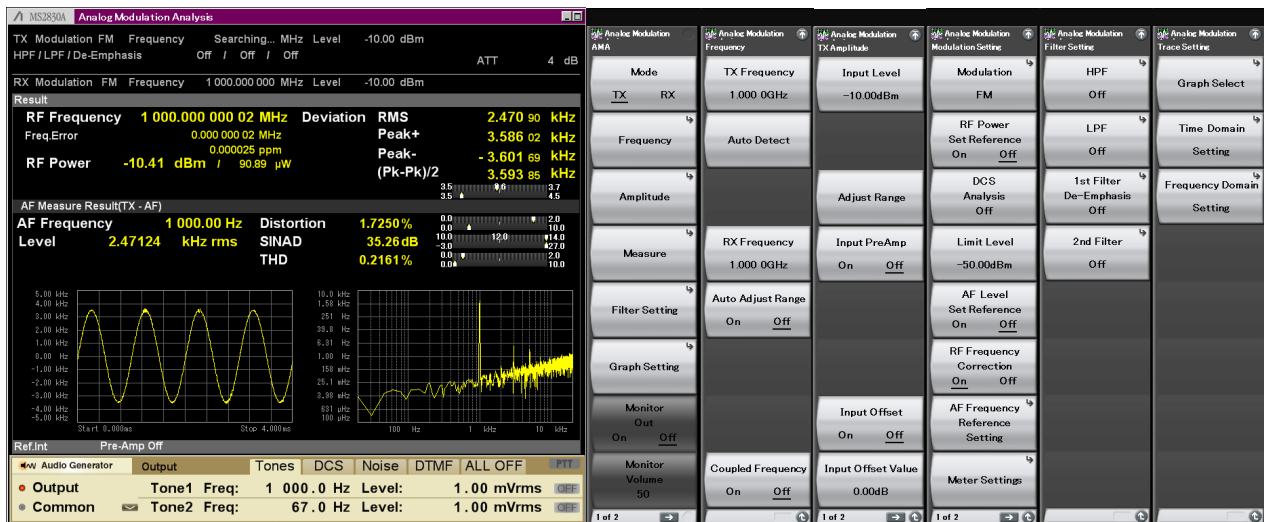


Figure 1.2.3-1 TX Measurement Mode Function Menu

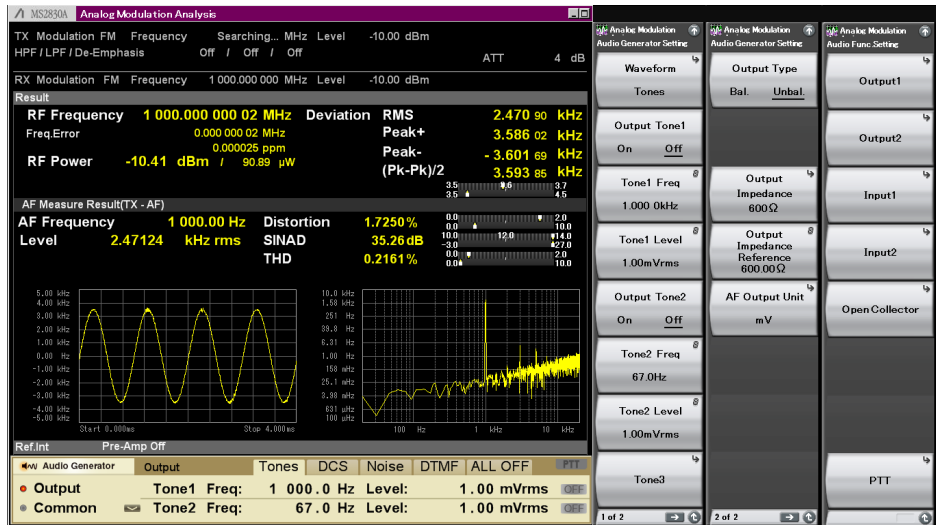


Figure 1.2.3-2 Audio Generator Function Menu

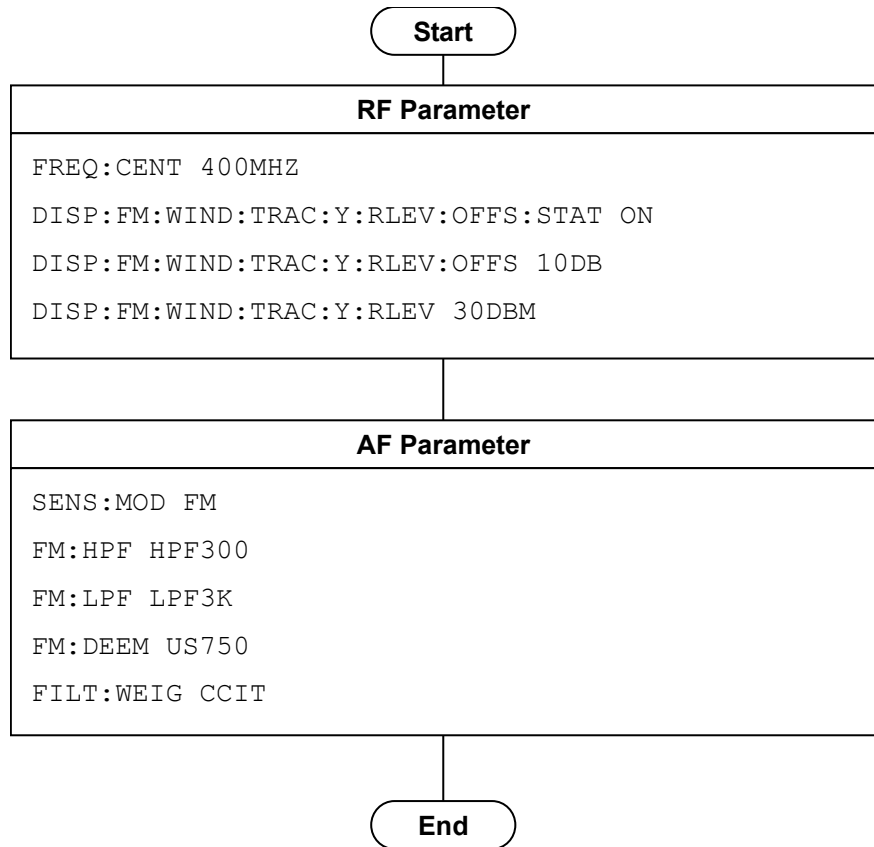


Figure 1.2.3-3 TX Measurement Setting Flow and Command Example



## 1.2.4 Executing TX measurement

TX measurement is executed according to the TX measurement settings.

- (1) Radio transmission setting  
Radio signal output is started.
- (2) Measurement execution  
The measurement execution command is issued.
- (3) Measurement result querying  
Measurement error status and measurement results are queried.

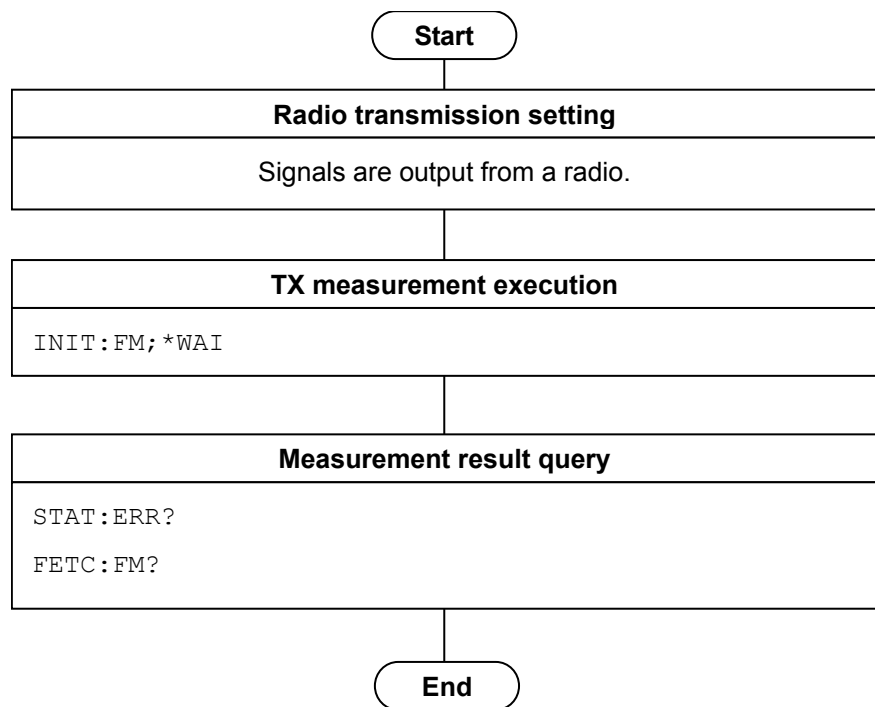


Figure 1.2.4-1 Measurement Execution (TX Measurement Mode) Flow and Command Example

## 1.2.5 Setting RX measurement

Signal setting for RX measurement is executed.

- (1) RF parameter
  - Output frequency
  - Output level
  - Output level offset
  - Modulation ON
  - Output On
- (2) AF parameter
  - Modulation method
  - On/Off/User waveform of AF1/AF2/AF3 output
  - AF1/AF2/AF3 Tone frequency
  - AF1/AF2/AF3 modulation index
  - DCS output On/Off
  - DCS Code
  - DCS modulation index
  - User waveform file selection

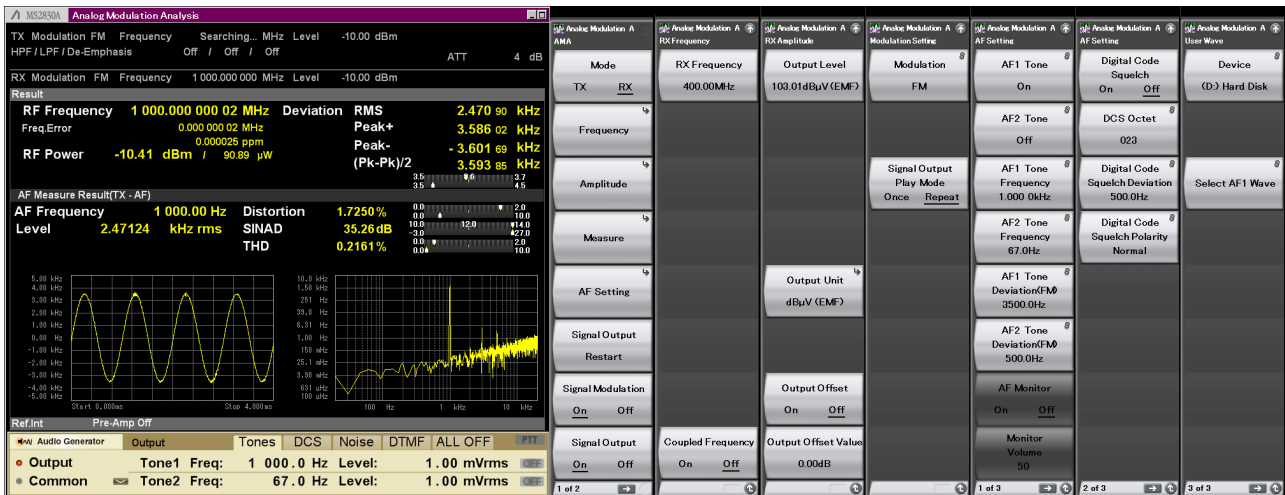


Figure 1.2.5-1 RX Measurement Mode Function Menu



TX mode window when the SG application (MS2830A-088/018 or MS2830A-029) is installed.

TX mode window when the SG application is not installed.

Figure 1.2.5-2 Audio Analyzer Function Menu

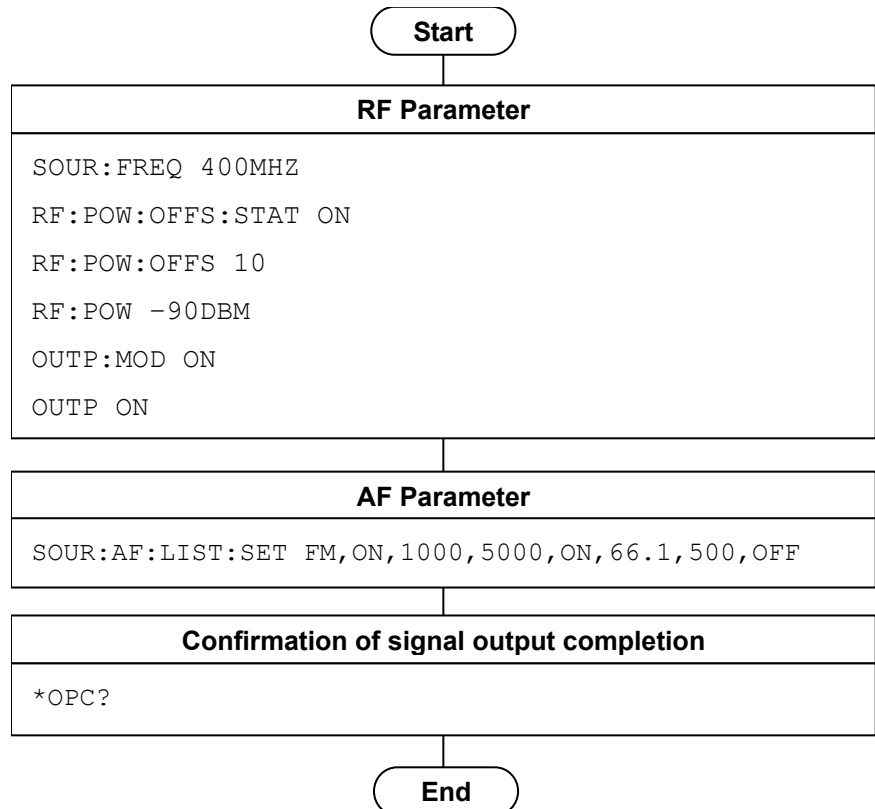


Figure 1.2.5-3 RX Measurement Setting Flow and Command Example

## 1.2.6 Executing RX measurement

Necessary signal settings for RX measurement have been completed in Section 1.2.5 “Setting RX measurement”.

With the RX measurement, the sensitivity point is found during RF level setting.

(1) RX sensitivity measurement result

When the MS2830A-018 is not installed:

SINAD measurement is executed for radio AF output with external Audio Analyzer.

When the MS2830A-018 is installed:

The MS2830A executes SINAD, AF frequency, AF level, and distortion factor measurement.

(2) Output level setting change

Output level setting is changed with RX sensitivity test measurement result.

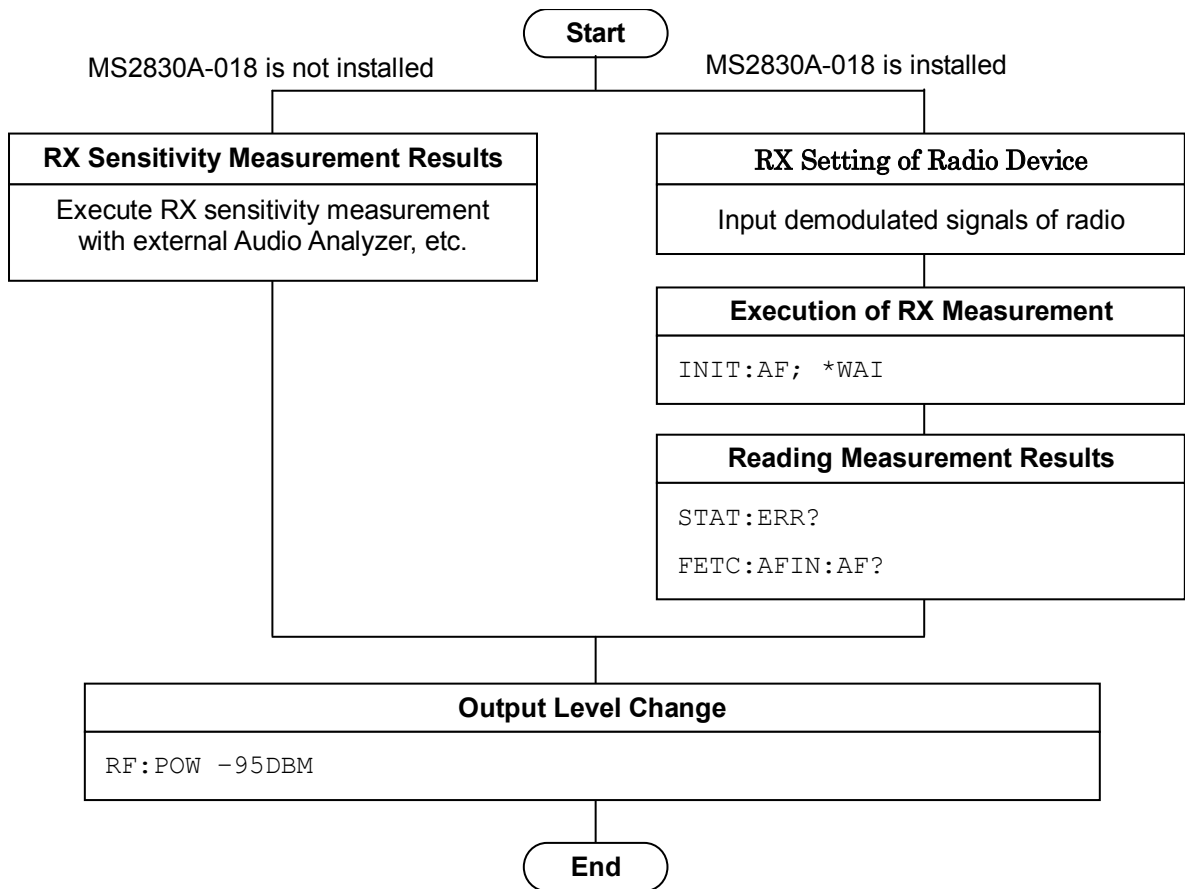


Figure 1.2.6-1 RX Measurement Execution Flow and Command Example

## 1.3 How to use Native Mode

This instrument defines the syntax/format types of the remote control commands as “Language mode”. The language mode has two modes: SCPI and Native.

### (1) SCPI mode

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

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

### (2) Native mode

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

#### Note:

In the Native mode, you cannot use `STATus:QUEStionable` and `STATus:OPERation` registers. Neither can you use them by converting to Native mode according to the conversion rules.

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

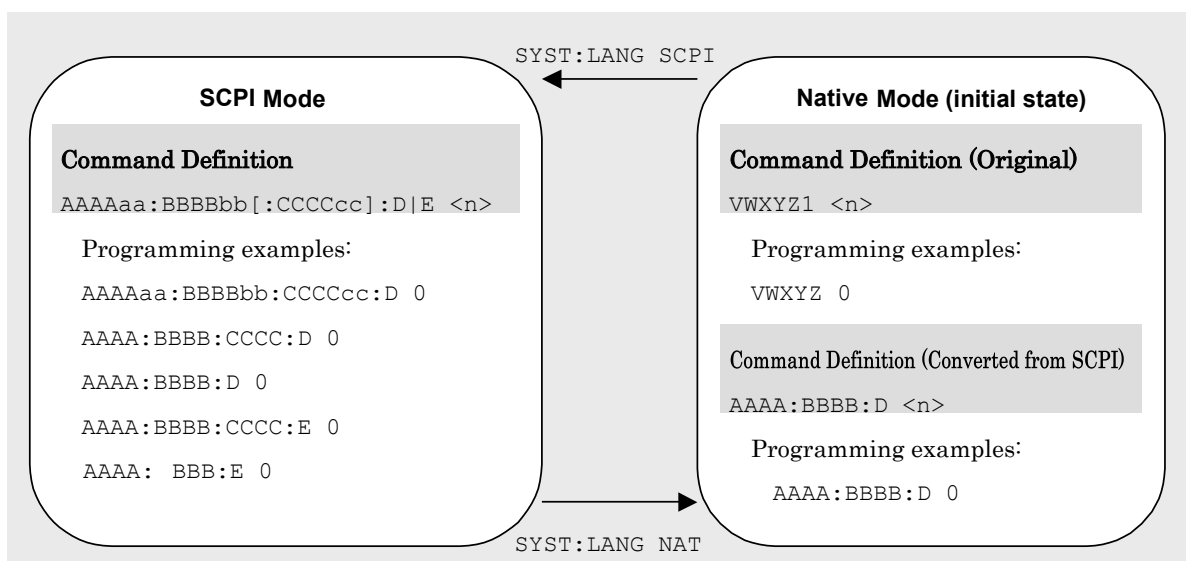


Figure 1.3-1 SCPI Mode and Native Mode

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

The below 1 to 5 indicates the conversion rules.

#### Conversion Rules

1. Move the numeric parameters in the SCPI mode program header to the head of the arguments. Omit a numeric parameter, which only has one value.
2. Use the first node if multiple ones can be selected.
3. Delete layers that can be deleted.
4. Alter all the long forms into the short ones.
5. Omit the colon (":") at the head of the command.

#### Example 1

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

1. Put a numeric parameter of the program header at the head of the argument.

```
:CALCulate:MARKer[1]|2[:SET]:CENTer  
↓  
ENTCALCulate:MARKer[:SET]:CENTer <integer>  
(A numeric value (1 or 2) is put <integer>.)
```

2. Delete layers that can be deleted.

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

3. Alter all the long forms into the short ones.

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

4. Omit the colon (":") at the head of the command.

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

## 1.4 Setting Numeric Program Data

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

(1) `DEFault`

After `DEFault` has been set to numeric program data, the target parameter is set to the default value.

(2) `MINimum`

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

(3) `MAXimum`

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

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

`<numeric_value>`

`<integer>`





## 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 Signal Analyzer Operation Manual (Mainframe Remote Control)* for detailed specifications of the IEEE488.2 common device messages and application common device messages.

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## 2.1 Config Function Device Messages

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

**Table 2.1-1 Device Messages for Selecting Application**

Parameter	Device Messages
Load Application	:SYSTem:APPLication:LOAD <apl_name>
Unload Application	:SYSTem:APPLication:UNLoad <apl_name>

**:SYSTem:APPLication:LOAD <apl\_name>**

Load Application

Function

This command loads an application.

Command

`:SYSTem:APPLication:LOAD <apl_name>`

Parameter

<code>&lt;apl_name&gt;</code>	Target application name
<code>SIGANA</code>	Signal Analyzer
<code>SPECT</code>	Spectrum Analyzer
<code>SG</code>	Signal Generator
<code>AMA</code>	Analog Measurement Software

Details

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

For parameters to specify an application other than the standard ones, refer to the operation manual (remote control) for each application.

Example of Use

To load the Signal Analyzer application:  
`SYST:APPL:LOAD SIGANA`

## **:SYSTem:APPLication:UNLoad <apl\_name>**

Unload Application

Function

This command exits an application.

Command

```
:SYSTem:APPLication:UNLoad <apl_name>
```

Parameter

<apl_name>	Target application name
SIGANA	Signal Analyzer
SPECT	Spectrum Analyzer
SG	Signal Generator
AMA	Analog Measurement Software

Details

This function exits an activated application and deletes it from the Application Switch menu.

For parameters to specify an application other than the standard ones, refer to the operation manual (remote control) for each application.

Example of Use

To exit the Signal Analyzer application.

```
SYST:APPL:UNL SIGANA
```

## 2.2 Application Common Device Messages

Application common device messages available in this application are shown in Table 2.2-1.

**Table 2.2-1 Application Common Device Messages**

Parameter	Device Messages
Application Switch	:INSTrument[:SElect] SIGANA SPECT SG CONFIG AMA
	:INSTrument[:SElect]?
Application Status	:INSTrument:SYSTem SIGANA SPECT SG CONFIg AMA, [ACTive] INACTive MINimum
	:INSTrument:SYSTem?
Select Measurement Mode	:DISPlay:MODE TX RX
	:DISPlay:MODE?
RF Frequency Couple State	:DISPlay:RF:COUPled:FREQuency ON OFF 1 0
	:DISPlay:RF:COUPled:FREQuency?

**:INSTrument[:SElect] SIGANA|SPECT|SG|CONFIG|AMA**

Application Switch

Function

This command switches the target application for operation/control.

Command

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

Parameter

<apl_name>	Target application name
SIGANA	Signal Analyzer
SPECT	Spectrum Analyzer
SG	Signal Generator
CONFIG	Config
AMA	Analog Measurement Software

Details

This function is used to switch the operation/control target application. An application whose status is `CURRENT` is a remote control target.

Example of Use

To switch the operation target application to the Signal Analyzer.  
`INST SIGANA`

**:INSTrument[:SElect]?**

Application Switch Query

## Function

This command queries the reading for the target application for operation/control.

## Query

```
:INSTrument[:SElect]?
```

## Response

```
<apl_name>
```

## Parameter

<apl_name>	Target application name
SIGANA	Signal Analyzer
SPECT	Spectrum Analyzer
SG	Signal Generator
CONFIG	Config
AMA	Analog Measurement Software

## Details

This function is used to switch the operation/control target application.

An application whose status is `CURRENT` is a remote control target.

## Example of Use

```
To query the operation target application.
INST?
> AMA
```

**:INSTrument:SYSTem SIGANA|SPECT|SG|CONFIg|AMA,[ACTive]|INACTive|MINimum**

Application Status

Function

This command sets the status of the specified application.

Command

:INSTrument:SYSTem <apl\_name>,<window>

Parameter

<apl_name>	Target application name
SIGANA	Signal Analyzer
SPECT	Spectrum Analyzer
SG	Signal Generator
CONFIg	Config
AMA	Analog Measurement Software
<window>	Application window status
ACTive	Operation enabled (displayed on top screen)
INACTive	Inactive
MINimum	Minimized
When omitted	Same as ACT

Details

This function is used to switch the operation/control target application.

Example of Use

To switch the window status of the Spectrum Analyzer to Active.

INST:SYST SPECT,ACT



**:INSTrument:SYSTem?**

Application Status Query

Function

This command queries the status of the specified application.

Query

:INSTrument:SYSTem? <apl\_name>

Response

<status>,<window>

Parameter

<apl_name>	Target application name
SIGANA	Signal Analyzer
SPECT	Spectrum Analyzer
SG	Signal Generator
CONFIG	Config
AMA	Analog Measurement Software
<status>	Application status
CURR	Executed and targeted for operation
RUN	Executed but not targeted for operation
IDLE	Loaded but not executed
UNL	Not loaded
<window>	Application window status
ACT	Operation enabled (displayed on top screen)
INAC	Inactive
MIN	Minimized
NON	Not displayed

Details

This function is used to switch the operation/control target application.

Example of Use

To query the status of the Spectrum Analyzer.  
INST:SYST? SPECT  
> CURR,ACT

### **:DISPlay:MODE TX|RX**

Select Measurement Mode

Function

This command switches the measurement mode to the TX measurement mode or RX measurement mode.

Command

```
:DISPlay:MODE <mode>
```

Parameter

<mode>	Measurement mode
TX	TX measurement mode
RX	RX measurement mode
Default	TX

Details

Set the measurement mode to TX when executing the transmission measurement.

Set the measurement mode to RX when executing the reception measurement.

Example of Use

To set the measurement mode to TX measurement mode.  
DISP:MODE TX

### **:DISPlay:MODE?**

Select Measurement Mode Query

Function

This command queries the measurement mode.

Query

```
:DISPlay:MODE?
```

Response

```
<mode>
```

Parameter

<mode>	Measurement mode
TX	TX measurement mode
RX	RX measurement mode

Example of Use

To query the measurement mode.  
DISP:MODE?  
> TX

**:DISPlay:RF:COUPled:FREQuency ON|OFF|1|0**

RF Frequency Couple State

## Function

This command synchronizes the frequency setting for TX with the one for RX.

## Command

```
:DISPlay:RF:COUPled:FREQuency <switch>
```

## Parameter

<switch>	Frequency synchronization for TX and RX On/Off
OFF 0	Synchronization Off
ON 1	Synchronization On
Default	OFF

## Details

When this setting is ON, setting the frequency of TX or RX changes the frequency setting value of TX or RX to be the same.

When this setting is changed from OFF to ON, the frequency setting value of TX is changed to the frequency setting value of RX.

## Example of Use

To set the frequency setting synchronization to ON.  
 DISP:RF:COUP:FREQ ON

## **:DISPlay:RF:COUPled:FREQuency?**

RF Frequency Couple State Query

### Function

This command queries the synchronization setting for TX and RX frequency setting.

### Query

`:DISPlay:RF:COUPled:FREQuency?`

### Response

`<switch>`

### Parameter

<code>&lt;switch&gt;</code>	Frequency synchronization for TX and RX On/Off
0	Synchronization setting Off
1	Synchronization setting On

### Example of Use

To query the synchronization setting for frequency setting.

```
DISP:RF:COUP:FREQ?  
> 1
```

## 2.3 Measurement Common Device Messages

TX/RX measurement common device messages available in this application are shown in Table 2.3-1.

**Table 2.3-1 Measurement Common Device Messages**

Parameter	Device Messages
Measurement Mode	<code>:INITiate:CONTinuous OFF ON 0 1</code>
	<code>:INITiate:CONTinuous?</code>
Continuous Measurement	<code>:INITiate:MODE:CONTinuous</code>
Single Measurement	<code>:INITiate:MODE:SINGLE</code>
Initiate	<code>:INITiate[:IMMediate]</code>
Wave Pattern Reproduction Mode	<code>[ :SOURce]:OUTPut:WAVEform:PLAYmode &lt;mode&gt;</code>
	<code>[ :SOURce]:OUTPut:WAVEform:PLAYmode?</code>
Wave Pattern Reproduction Restart	<code>[ :SOURce]:OUTPut:WAVEform:REStart</code>
AF Frequency Reference State	<code>[ :SENSe]:AF:FREQuency:REFeRence:STATe ON OFF 1 0</code>
	<code>[ :SENSe]:AF:FREQuency:REFeRence:STATe?</code>
AF Reference Frequency	<code>[ :SENSe]:AF:FREQuency:REFeRence &lt;freq&gt;</code>
	<code>[ :SENSe]:AF:FREQuency:REFeRence?</code>
Unit of AF Frequency Reference	<code>[ :SENSe]:AF:FREQuency:REFeRence:UNIT PPM PERCent DELTA</code>
	<code>[ :SENSe]:AF:FREQuency:REFeRence:UNIT?</code>
AF Level Set Reference	<code>[ :SENSe]:AF:LEVel:REFeRence:STATe &lt;switch&gt;</code>
	<code>[ :SENSe]:AF:LEVel:REFeRence:STATe?</code>
AF Level Mode	<code>[ :SENSe]:AF:LEVel:MODE TONE TOTAl</code>
	<code>[ :SENSe]:AF:LEVel:MODE?</code>

### **:INITiate:CONTInuous OFF|ON|0|1**

Measurement Mode

Function

This command sets continuous or single measurement mode.

Command

```
:INITiate:CONTInuous <switch>
```

Parameter

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

Details

When ON is set, continuous measurement starts. When Off is set, the single measurement mode is engaged and measurement does not start.

Example of Use

To make a continuous measurement.  
INIT:CONT ON

### **:INITiate:CONTInuous?**

Measurement Mode Query

Function

This command queries the measurement mode.

Command

```
:INITiate:CONTInuous?
```

Response

```
<switch>
```

Parameter

<switch>	Measurement mode
OFF 0	Single measurement
ON 1	Continuous measurement mode

Example of Use

To query the measurement mode.  
INIT:CONT?  
> 1

**:INITiate:MODE:CONTinuous**

Continuous Measurement

Function

This command starts a continuous measurement.

Command

`:INITiate:MODE:CONTinuous`

Example of Use

To make a continuous measurement.

`INIT:MODE:CONT`**:INITiate:MODE:SINGle**

Single Measurement

Function

This command starts a single measurement.

Command

`:INITiate:MODE:SINGle`

Example of Use

To start a single measurement.

`INIT:MODE:SING`**:INITiate[:IMMediate]**

Initiate

Function

This command starts measurement with the current mode.

Command

`:INITiate[:IMMediate]`

Example of Use

To start measurement

`INIT`

### **[:SOURce]:OUTPut:WAVeform:PLAYmode <mode>**

Wave Pattern Reproduction Mode

Function

This command sets wave pattern reproduction mode.

Command

```
[ :SOURce ] :OUTPut :WAVeform :PLAYmode <mode>
```

Parameter

<mode>	Wave pattern reproduction mode
ONCE	Plays once.
REPeat	Repeat playback (default)

Details

This is available only for MS2830A.

Example of Use

To set the wave pattern reproduction mode to ONCE.  
OUTP:WAV:PLAY ONCE

### **[:SOURce]:OUTPut:WAVeform:PLAYmode?**

Wave Pattern Reproduction Mode Query

Function

This command queries the wave pattern reproduction mode.

Query

```
[ :SOURce ] :OUTPut :WAVeform :PLAYmode?
```

Response

```
<mode>
```

Parameter

<mode>	Wave pattern reproduction mode
ONCE	Plays once.
REP	Repeat playback

Example of Use

To query the wave pattern reproduction mode.  
OUTP:WAV:PLAY?  
> ONCE



## **[ :SOURce ] :OUTPut :WAVeform :REStArt**

Wave Pattern Reproduction Restart

Function

This command restarts wave pattern reproduction.

Command

```
[ :SOURce ] :OUTPut :WAVeform :REStArt
```

Details

This is available only for MS2830A.

Example of Use

To restart wave pattern reproduction.

```
OUTP :WAV :REST
```

### **[[:SENSE]:AF:FREQUENCY:REFERENCE:STATE ON|OFF|1|0**

AF Frequency Reference State

Function

This command enables or disables AF Frequency Reference.

Command

```
[[:SENSE]:AF:FREQUENCY:REFERENCE:STATE <switch>
```

Parameter

<switch>	Enable/disable AF Frequency Reference
OFF 0	Disabled (default)
ON 1	Enabled

Example of Use

To enable AF Frequency Reference.  
AF:FREQ:REF:STAT ON

### **[[:SENSE]:AF:FREQUENCY:REFERENCE:STATE?**

AF Frequency Reference State Query

Function

This command queries enabling or disabling of AF Frequency Reference.

Query

```
[[:SENSE]:AF:FREQUENCY:REFERENCE:STATE?
```

Response

```
<switch>
```

Parameter

<switch>	Enable/disable AF Frequency Reference
0	Disabled
1	Enabled

Example of Use

To query the status of AF Frequency Reference.  
AF:FREQ:REF:STAT?  
> 1

**[[:SENSE]:AF:FREQUENCY:REFERENCE <freq>**

AF Reference Frequency

## Function

This command sets AF Reference Frequency.

## Command

[:SENSE]:AF:FREQUENCY:REFERENCE &lt;freq&gt;

## Parameter

<freq>	Frequency
Range	20 Hz to 60 kHz
Resolution	0.1 Hz
Suffix code	HZ, KHZ, KZ Hz is used when omitted.
Default	1 kHz

## Details

It can be set when AF Frequency Reference is On.

## Example of Use

To set AF Reference Frequency to 400 Hz.  
AF:FREQ:REF 400HZ

**[[:SENSE]:AF:FREQUENCY:REFERENCE?**

AF Reference Frequency Query

## Function

This command queries AF Reference Frequency.

## Query

[:SENSE]:AF:FREQUENCY:REFERENCE?

## Response

&lt;freq&gt;

## Parameter

<freq>	Frequency
Range	20 kHz to 60 kHz
Resolution	1 Hz
Suffix code	None Value is returned in Hz units.

## Example of Use

To query AF Reference Frequency.  
AF:FREQ:REF?  
> 400.0

### **[[:SENSE]:AF:FREQUENCY:REFERENCE:UNIT PPM|PERCENT|DELTA**

Unit of AF Frequency Reference

Function

This command sets the AF Frequency Reference units.

Command

```
[[:SENSE]:AF:FREQUENCY:REFERENCE:UNIT <unit>
```

Parameter

<unit>	Unit
PPM	ppm (default)
PERCENT	%
DELTA	Difference (Hz)

Details

It can be set when AF Frequency Reference is On.

Example of Use

To set the AF Frequency Reference units as %.  
AF:FREQ:REF:UNIT PERC

### **[[:SENSE]:AF:FREQUENCY:REFERENCE:UNIT?**

Unit of AF Frequency Reference Query

Function

This command queries the AF Frequency Reference units.

Query

```
[[:SENSE]:AF:FREQUENCY:REFERENCE:UNIT?
```

Response

```
<unit>
```

Parameter

<unit>	Unit
PPM	ppm
PERC	%
DELTA	Difference (Hz)

Example of Use

To query the AF Frequency Reference units.  
AF:FREQ:REF:UNIT?  
> PERC

**[[:SENSE]:AF:LEVel:REFerence:STATe <switch>**

AF Level Set Reference

## Function

This command shows/hides the relative value of AF Level.

## Command

[:SENSe]:AF:LEVel:REFerence:STATe &lt;switch&gt;

## Parameter

<switch>	Relative value of AF Level On/Off
OFF 0	Relative value of AF Level Off
ON 1	Relative value of AF Level On
Default	OFF

## Details

Saves the AF Level measurement value when set to On, and displays in relative value from then on.

When the measurement is not completed, this command is invalid.

## Example of Use

To set the relative value of AF Level to On.

AF:LEV:REF:STAT ON

**[[:SENSe]:AF:LEVel:REFerence:STATe?**

AF Level Set Reference Query

## Function

This command queries the show/hide setting of the relative value of AF Level.

## Query

[:SENSe]:AF:LEVel:REFerence:STATe?

## Response

&lt;switch&gt;

## Parameter

<switch>	Relative value of AF Level On/Off
0	Relative value of AF Level Off
1	Relative value of AF Level On

## Example of Use

To query the show/hide setting of the relative value of AF Level.

AF:LEV:REF:STAT?

&gt; 0

## **[[:SENSE]:AF:LEVel:MODE TONE|TOTAl**

AF Level Mode

Function

This function sets the measurement mode for AF Level.

Command

```
[[:SENSE]:AF:LEVel:MODE <switch>
```

Parameter

<switch>	Measurement mode for AF Level
TONE	Displays the peak frequency level.
TOTAl	Displays the total band level.
Default	TONE

Details

When set to TONE, AF Level of the frequency in AF Frequency is displayed. When set to TOTAl, AF Frequency is not displayed.

Example of Use

To set the measurement mode for AF Level to displaying the total band level.

```
AF:LEV:MODE TOT
```

## **[[:SENSE]:AF:LEVel:MODE?**

AF Level Mode Query

Function

This command queries the measurement mode for AF Level.

Query

```
[[:SENSE]:AF:LEVel:MODE?
```

Response

```
<switch>
```

Parameter

<switch>	Measurement mode for AF Level
TONE	Displays the peak frequency level.
TOT	Displays the total band level.

Example of Use

To query the measurement mode for AF Level.

```
AF:LEV:MODE?
```

```
> TOT
```

## 2.4 TX Measurement

Device messages for TX measurement are enabled when the measurement mode is the TX measurement mode.

**Note:**

This section describes the commands according to the modulation schemes in TX measurement.

To remote-control, specify the modulation scheme before performing command control of TX measurement.

### 2.4.1 TX Measurement Result

Table 2.4.1-1 lists device messages for the TX measurement result.

**Table 2.4.1-1 Device Messages for TX Measurement Result**

Function	Device Messages
Fetch	:FETCh:AM FM PM[n]?
Read	:READ:AM FM PM[n]?
Measure	:MEASure:AM FM PM[n]?

Table 2.4.1-2 lists the responses to parameter [n] of the device messages in Table 2.4.1-1.

**Table 2.4.1-2 Responses to TX Measurement Results**

N	Device Messages
(1 or when omitted)	<p>Returns the measurement results with comma separated value in the following order. Note that the measurement result differs depending on modulation scheme.</p> <p>For FM modulation:</p> <ol style="list-style-type: none"> <li>1. RF frequency [Hz]</li> <li>2. RF frequency error [Hz]</li> <li>3. TX Power [dBm]/ TX Power [dB] *<sup>1</sup></li> <li>4. TX power [W]/ TX Power [%] *<sup>1</sup></li> <li>5. TX Power (Reference) [dBm]</li> <li>6. Deviation (Peak+) [Hz]</li> <li>7. Deviation (Peak-) [Hz]</li> <li>8. Deviation (Pk-Pk)/2 [Hz]</li> <li>9. Deviation (RMS) [Hz]</li> <li>10. AF Frequency [Hz]</li> <li>11. AF Level (Tone) [Hz rms]/ AF Level (Tone) [dBr] *<sup>2</sup></li> <li>12. AF Level (Reference) [Hz rms]</li> <li>13. Distortion [%]</li> <li>14. Distortion [dB]</li> <li>15. DCS Code</li> <li>16. DCS Code</li> <li>17. DCS Code</li> <li>18. DCS Code</li> <li>19. DCS Code</li> <li>20. DCS Code</li> <li>21. DCS Code</li> <li>22. RF frequency error [ppm]</li> <li>23. AF frequency error [Hz]</li> <li>24. AF frequency error [%]</li> <li>25. AF frequency error [ppm]</li> <li>26. AF Level (Total) [Hz rms]/ AF Level(Total) [dBr] *<sup>2</sup></li> <li>27. SINAD [%]</li> <li>28. SINAD [dB]</li> <li>29. THD [%]</li> <li>30. THD [dB]</li> <li>31. Deviation (Peak+) Max. Hold [Hz] *<sup>3</sup></li> <li>32. Deviation (Peak-) Max. Hold [Hz] *<sup>3</sup></li> <li>33. Deviation (Pk-Pk)/2 Max. Hold [Hz] *<sup>3</sup></li> <li>34. Deviation(RMS) Max. Hold [Hz] *<sup>3</sup></li> </ol>

\*1: When RF Power Set Reference is set to Off, the result of “3. TX Power [dBm]” and “4 TX power [W]” returns. When RF Power Set Reference



is set to On, the result of “3. TX Power [dB] ” and “4 TX Power [%]” returns.

\*2: When AF Level Set Reference is set to Off, the result of “AF Level [Hz rms]” returns. When set to On, the result of relative value (AF Level [dBr]) returns.

\*3: When Average is set to Off in TX Mode, the result value is invalid.

**Table 2.4.1-2 Responses to TX Measurement Results (Cont'd)**

N	Device Messages
(1 or when omitted)	For AM modulation: 1. RF frequency [Hz] 2. RF frequency error [Hz] 3. TX Power [dBm]/ TX Power [dB] * <sub>1</sub> 4. TX power [W]/ TX Power [%] * <sub>1</sub> 5. TX Power (Reference) [dBm] 6. Modulation Depth (Peak+) [%] 7. Modulation Depth (Peak-) [%] 8. Modulation Depth (Pk-Pk)/2 [%] 9. Modulation Depth (RMS) [%] 10. AF Frequency [Hz] 11. AF Level (Tone) [% rms] / AF Level(Tone) [dBr]* <sub>2</sub> 12. Distortion [%] 13. Distortion [dB] 14. DCS Code 15. DCS Code 16. DCS Code 17. DCS Code 18. DCS Code 19. DCS Code 20. DCS Code 21. RF frequency error [ppm] 22. AF frequency error [Hz] 23. AF frequency error [%] 24. AF frequency error [ppm] 25. AF Level (Total)[% rms] / AF Level(Total) [dBr]* <sub>2</sub> 26. SINAD [%] 27. SINAD [dB] 28. THD [%] 29. THD [dB] 30. Modulation Depth (Peak+) Max. Hold [%] * <sub>3</sub> 31. Modulation Depth (Peak-) Max. Hold [%] * <sub>3</sub> 32. Modulation Depth (Pk-Pk)/2 Max. Hold [%] * <sub>3</sub> 33. Modulation Depth (RMS) Max. Hold [%] * <sub>3</sub>

Table 2.4.1-2 Responses to TX Measurement Results (Cont'd)

N	Device Messages
(1 or when omitted)	For $\phi$ M modulation: <ol style="list-style-type: none"> <li>1. RF frequency [Hz]</li> <li>2. RF frequency error [Hz]</li> <li>3. TX Power [dBm]/ TX Power [dB] *</li> <li>4. TX power [W]/ TX Power [%] *</li> <li>5. TX Power (Reference) [dBm]</li> <li>6. Radian (Peak+) [rad]</li> <li>7. Radian (Peak-) [rad]</li> <li>8. Radian (Pk-Pk)/2 [rad]</li> <li>9. Radian (RMS) [rad]</li> <li>10. AF Frequency [Hz]</li> <li>11. AF Level Level (Tone)[rad rms] / AF Level (Tone) [dBr]*2</li> <li>12. Distortion [%]</li> <li>13. Distortion [dB]</li> <li>14. DCS Code</li> <li>15. DCS Code</li> <li>16. DCS Code</li> <li>17. DCS Code</li> <li>18. DCS Code</li> <li>19. DCS Code</li> <li>20. DCS Code</li> <li>21. RF frequency error [ppm]</li> <li>22. AF frequency error [Hz]</li> <li>23. AF frequency error [%]</li> <li>24. AF frequency error [ppm]</li> <li>25. AF Level (Total)[ rad rms]/ AF Level(Total) [dBr]*2</li> <li>26. SINAD [%]</li> <li>27. SINAD [dB]</li> <li>28. THD [%]</li> <li>29. THD [dB]</li> <li>30. Radian (Peak+) Max. Hold [rad] *3</li> <li>31. Radian (Peak-) Max. Hold [rad] *3</li> <li>32. Radian (Pk-Pk)/2 Max. Hold [rad] *3</li> <li>33. Radian (RMS) Max. Hold [rad] *3</li> </ol>
6	Returns the Time Domain graph data with comma-separated values. Number of data: (128 × setting value of Time Range [ms]) + 1 For FM or Wide FM modulation, the data unit is Hz. For AM modulation, the data unit is %. For $\phi$ M modulation, the data unit is rad.

**Table 2.4.1-2 Responses to TX Measurement Results (Cont'd)**

N	Device Messages
7	Returns the Frequency Domain graph data with comma-separated values. Number of data: 4096/16384 For FM or Wide FM modulation, the data unit is Hz. For AM modulation, the data unit is %. For φM modulation, the data unit is rad.
9	Returns the measurement results with comma separated value in the following order. Note that the measurement result differs depending on modulation scheme. For FM modulation: 1. Distortion Deflection Judge*4 2. Distortion Deflection Count*5 3. Distortion Deflection Minimum [%] 4. Distortion Deflection Minimum [dB] 5. Distortion Deflection Maximum [%] 6. Distortion Deflection Maximum [dB] 7. SINAD Deflection Judge*4 8. SINAD Deflection Count*5 9. SINAD Deflection Minimum [%] 10. SINAD Deflection Minimum [dB] 11. SINAD Deflection Maximum [%] 12. SINAD Deflection Maximum [dB] 13. THD Deflection Judge*4 14. THD Deflection Count*5 15. THD Deflection Minimum [%] 16. THD Deflection Minimum [dB] 17. THD Deflection Maximum [%] 18. THD Deflection Maximum [dB] 19. Deviation Deflection Judge*4 20. Deviation Deflection Count*5 21. Deviation Deflection Minimum [%] 22. Deviation Deflection Minimum [Hz] 23. Deviation Deflection Maximum [%] 24. Deviation Deflection Maximum [Hz]

\*4: Returns 1 for OK, and returns -1 for NG. Returns 0 when fails to reach the count set by Deflection Count. It is disabled when Deflection View is Off.

\*5: Returns the measurement count used for calculating Deflection. It is disabled when Deflection View is Off.

Table 2.4.1-2 Responses to TX Measurement Results (Cont'd)

N	Device Messages
9	For AM modulation or $\phi$ M modulation: 1. Distortion Deflection Judge* <sup>4</sup> 2. Distortion Deflection Count* <sup>5</sup> 3. Distortion Deflection Minimum [%] 4. Distortion Deflection Minimum [dB] 5. Distortion Deflection Maximum [%] 6. Distortion Deflection Maximum [dB] 7. SINAD Deflection Judge* <sup>4</sup> 8. SINAD Deflection Count* <sup>5</sup> 9. SINAD Deflection Minimum [%] 10. SINAD Deflection Minimum [dB] 11. SINAD Deflection Maximum [%] 12. SINAD Deflection Maximum [dB] 13. THD Deflection Judge* <sup>4</sup> 14. THD Deflection Count* <sup>5</sup> 15. THD Deflection Minimum [%] 16. THD Deflection Minimum [dB] 17. THD Deflection Maximum [%] 18. THD Deflection Maximum [dB]

**:FETCh:AM|FM|PM[n]?**

Measurement Result Query

Function

This command fetches the TX measurement result.

Query

:FETCh:AM|FM|PM[n]?

Response

Refer to Table 2.4.1-2.

Example of Use

To query the TX measurement result for FM modulation.

FETC:FM?

**:READ:AM|FM|PM[n]?**

Measurement Result Query

Function

This command performs the Single measurement once with the current settings, and then queries the TX measurement result.

Query

:READ:AM|FM|PM[n]?

Response

Refer to Table 2.4.1-2.

Example of Use

To perform the measurement and query the TX measurement result for FM modulation.

READ:FM?

**:MEASure:AM|FM|PM[n]?**

Measurement Result Query

## Function

This command performs the Single measurement once with the current settings, and then queries the TX measurement result.

## Query

```
:MEASure:AM|FM|PM[n]?
```

## Response

Refer to Table 2.4.1-2.

## Example of Use

To perform the measurement and query the TX measurement result for FM modulation.

```
MEAS:FM?
```

## 2.4.2 TX Measurement Parameter

Table 2.4.2-1 lists device messages for parameter settings for TX measurement.

**Table 2.4.2-1 Device Messages for Parameter Settings of TX Measurement**

Parameter	Device Messages
Center Frequency of TX Measurement	<code>[ :SENSe ] :FREQuency:CENTer &lt;freq&gt;</code>
	<code>[ :SENSe ] :FREQuency:CENTer?</code>
Auto detect Center Frequency of TX Measurement	<code>[ :SENSe ] :FREQuency:AUTOdetect</code>
Auto Adjust Range after find RF signal by Auto Detect	<code>[ :SENSe ] :FREQuency:AUTOdetect:ADJustrange &lt;switch&gt;</code>
	<code>[ :SENSe ] :FREQuency:AUTOdetect:ADJustrange?</code>
Preamp	<code>[ :SENSe ] :POWer [ :RF ] :GAIN [ :STATe ] &lt;switch&gt;</code>
	<code>[ :SENSe ] :POWer [ :RF ] :GAIN [ :STATe ] ?</code>
Input Level	<code>:DISPlay:AM FM PM:WINDow[1]:TRACe:Y[:SCALe]:RLEVel &lt;real&gt;</code>
	<code>:DISPlay:AM FM PM:WINDow[1]:TRACe:Y[:SCALe]:RLEVel?</code>
Input Level(W) Query	<code>:DISPlay:AM FM PM:WINDow[1]:TRACe:Y[:SCALe]:RLEVel:WATT?</code>
Input Level Offset State	<code>:DISPlay:AM FM PM:WINDow[1]:TRACe:Y[:SCALe]:RLEVel:OFFSet:ST ATe ON OFF 1 0</code>
	<code>:DISPlay:AM FM PM:WINDow[1]:TRACe:Y[:SCALe]:RLEVel:OFFSet:ST ATe?</code>
Input Level Offset	<code>:DISPlay:AM FM PM:WINDow[1]:TRACe:Y[:SCALe]:RLEVel:OFFSet &lt;real&gt;</code>
	<code>:DISPlay:AM FM PM:WINDow[1]:TRACe:Y[:SCALe]:RLEVel:OFFSet?</code>
AF Measure Time Domain Graph State	<code>:DISPlay:AM FM PM:WINDow[1]:TRACe:ANALySis:MODE:TIME ON OFF 1 0</code>
	<code>:DISPlay:AM FM PM:WINDow[1]:TRACe:ANALySis:MODE:TIME?</code>
AF Measure Frequency Domain Graph State	<code>:DISPlay:AM FM PM:WINDow[1]:TRACe:ANALySis:MODE:FREQuency ON OFF 1 0</code>
	<code>:DISPlay:AM FM PM:WINDow[1]:TRACe:ANALySis:MODE:FREQuency?</code>



Table 2.4.2-1 Device Messages for Parameter Settings of TX Measurement (Cont'd)

Parameter	Device Messages
Y Axis Scale Mode of AF Measure Graph	:DISPlay:FM:WINDow[1]:TRACe:Y[:SCALe]:MODE AUTO FIXed
	:DISPlay:FM:WINDow[1]:TRACe:Y[:SCALe]:MODE?
Minimum Y Axis Scale Range of AF Measure Graph	:DISPlay:FM:WINDow[1]:TRACe:Y[:SCALe]:AUTO:MINimumrange 500 5K 10K 50K 100K 500K
	:DISPlay:FM:WINDow[1]:TRACe:Y[:SCALe]:AUTO:MINimumrange?
Y Axis Scale Range of AF Measure Graph	:DISPlay:FM:WINDow[1]:TRACe:Y[:SCALe]:FIXed:RANGe 500 1K 2_5K 5K 10K 25K 50K 100K 250K 500K 1M
	:DISPlay:FM:WINDow[1]:TRACe:Y[:SCALe]:FIXed:RANGe?
Y Axis Top Level of Frequency Domain Graph	:DISPlay:AM FM PM:WINDow[1]:TRACe:FREQdomain:Y[:SCALe]:TOP:LOG <level>
	:DISPlay:AM FM PM:WINDow[1]:TRACe:FREQdomain:Y[:SCALe]:TOP:LOG?
Y Axis Bottom Level of Frequency Domain Graph	:DISPlay:AM FM PM:WINDow[1]:TRACe:FREQdomain:Y[:SCALe]:BOTTo m:LOG <level>
	:DISPlay:AM FM PM:WINDow[1]:TRACe:FREQdomain:Y[:SCALe]:BOTTo m:LOG?
Window Function of Frequency Domain Graph	:DISPlay:AM FM PM:WINDow[1]:TRACe:FREQdomain:WINDowfunction RECTangular HANN BLACKmanharris HAMMING FLATtop
	:DISPlay:AM FM PM:WINDow[1]:TRACe:FREQdomain:WINDowfunction?
X Axis Scale of Frequency Domain Graph	:DISPlay:AM FM PM:WINDow[1]:TRACe:FREQdomain:X[:SCALe]:UNIT LINear LOG
	:DISPlay:AM FM PM:WINDow[1]:TRACe:FREQdomain:X[:SCALe]:UNIT?
X Axis (Linear) Min. Frequency of Frequency Domain Graph	:DISPlay:AM FM PM:WINDow[1]:TRACe:FREQdomain:X[:SCALe]:START freq:LINear <freq>
	:DISPlay:AM FM PM:WINDow[1]:TRACe:FREQdomain:X[:SCALe]:START freq:LINear?
X Axis (Log) Min. Frequency of Frequency Domain Graph	:DISPlay:AM FM PM:WINDow[1]:TRACe:FREQdomain:X[:SCALe]:START freq:LOG <range>
	:DISPlay:AM FM PM:WINDow[1]:TRACe:FREQdomain:X[:SCALe]:START freq:LOG?
X Axis (Linear) Max. Frequency of Frequency Domain Graph	:DISPlay:AM FM PM:WINDow[1]:TRACe:FREQdomain:X[:SCALe]:STOPf req:LINear <freq>
	:DISPlay:AM FM PM:WINDow[1]:TRACe:FREQdomain:X[:SCALe]:START freq:LINear?
X Axis (Log) Max. Frequency of Frequency Domain Graph	:DISPlay:AM FM PM:WINDow[1]:TRACe:FREQdomain:X[:SCALe]:STOPf req:LOG <range>
	:DISPlay:AM FM PM:WINDow[1]:TRACe:FREQdomain:X[:SCALe]:STOPf req:LOG?

**Table 2.4.2-1 Device Messages for Parameter Settings of TX Measurement (Cont'd)**

Parameter	Device Messages
Modulation scheme of TX Measurement	<code>:SENSe:MODulation FM WFM AM PM</code>
	<code>:SENSe:MODulation?</code>
High Pass Filter	<code>[ :SENSe ] :AM FM PM:HPFilter OFF HPF50 HPF300 HPF400 HPF30K</code>
	<code>[ :SENSe ] :AM FM PM:HPFilter?</code>
Low Pass Filter	<code>[ :SENSe ] :AM FM PM:LPFfilter OFF LPF300 LPF3K LPF15K LPF20K</code>
	<code>[ :SENSe ] :AM FM PM:LPFfilter?</code>
De-Emphasis Filter	<code>[ :SENSe ] :FM:DEEMphasis OFF US750 US500 US75 US50 US25</code>
	<code>[ :SENSe ] :FM:DEEMphasis?</code>
Band Pass Filter	<code>[ :SENSe ] :FILTer:WEIGHting OFF CCITt CMESsage 468 ARM AWEight</code>
	<code>[ :SENSe ] :FILTer:WEIGHting?</code>
Average Mode	<code>[ :SENSe ] :AM FM PM:AVERage [ :STATe ] ON OFF 1 0</code>
	<code>[ :SENSe ] :AM FM PM:AVERage [ :STATe ] ?</code>
Average Count	<code>[ :SENSe ] :AM FM PM:AVERage:COUNT &lt;integer&gt;</code>
	<code>[ :SENSe ] :AM FM PM:AVERage:COUNT?</code>
Maker Mode	<code>:CALCulate:AM FM PM:MARKer:MODE DELTa NORMal OFF</code>
	<code>:CALCulate:AM FM PM:MARKer:MODE?</code>
Maker X Axis Position	<code>:CALCulate:AM FM PM:MARKer [1]  2:X &lt;time&gt;</code>
	<code>:CALCulate:AM FM PM:MARKer [1]  2:X?</code>
Maker Mode of Frequency Domain Graph	<code>:CALCulate:AM FM PM:MARKer:FREQuency:MODE DELTa NORMal OFF</code>
	<code>:CALCulate:AM FM PM:MARKer:FREQuency:MODE?</code>
Maker X Axis Position of Frequency Domain Graph	<code>:CALCulate:AM FM PM:MARKer [1]  2:FREQuency:X &lt;freq&gt;</code>
	<code>:CALCulate:AM FM PM:MARKer [1]  2:FREQuency:X?</code>
Peak Search of Frequency Domain Graph	<code>:CALCulate:AM FM PM:MARKer [1]  2:FREQuency:X:PEAK</code>
Next Peak Search of Frequency Domain Graph	<code>:CALCulate:AM FM PM:MARKer [1]  2:FREQuency:X:NEXTpeak</code>
Graph Indication Range	<code>:CALCulate:AM FM PM:RANGe [1] :X &lt;time&gt;</code>
	<code>:CALCulate:AM FM PM:RANGe [1] :X?</code>

Table 2.4.2-1 Device Messages for Parameter Settings of TX Measurement (Cont'd)

Parameter	Device Messages
RF Power Set Reference	<code>[ :SENSe]:RF:POWer:REFEreNce:StAte &lt;switch&gt;</code>
	<code>[ :SENSe]:RF:POWer:REFEreNce:StAte?</code>
Set Reference Query	<code>[ :SENSe]:RF:POWer:REFEreNce?</code>
DCS Code Analysis	<code>[ :SENSe]:FM:DCSQuelch:CODe:ANALySis INVerted ON NORMAl OFF 2 1 0</code>
	<code>[ :SENSe]:FM:DCSQuelch:CODe:ANALySis?</code>
Input Level Adjustment	<code>[ :SENSe]:POWer[:RF]:RANge:AUTO ONCE</code>
Set Reference Query	<code>[ :SENSe]:AF:LEVel:REFEreNce?</code>
RF Frequency Correction	<code>[ :SENSe]:FREQuency:CORection &lt;switch&gt;</code>
	<code>[ :SENSe]:FREQuency:CORection?</code>
Measurement RF Power Limit	<code>[ :SENSe]:RF:POWer:REFEreNce:LImit &lt;real&gt;</code>
	<code>[ :SENSe]:RF:POWer:REFEreNce:LImit?</code>
Distortion Meter State	<code>:DISPlay:AM FM PM:MEter:DISTortion ON OFF 1 0</code>
	<code>:DISPlay:AM FM PM:MEter:DISTortion?</code>
SINAD Meter State	<code>:DISPlay:AM FM PM:MEter:SINad ON OFF 1 0</code>
	<code>:DISPlay:AM FM PM:MEter:SINad?</code>
THD Meter State	<code>:DISPlay:AM FM PM:MEter:THD ON OFF 1 0</code>
	<code>:DISPlay:AM FM PM:MEter:THD?</code>
Deviation Meter State	<code>:DISPlay:FM:MEter:DVPP ON OFF 1 0</code>
	<code>:DISPlay:FM:MEter:DVPP?</code>
Distortion Deflection Judge	<code>:DISPlay:AM FM PM:MEter:DISTortion:JUDGE ON OFF 1 0</code>
	<code>:DISPlay:AM FM PM:MEter:DISTortion:JUDGE?</code>
SINAD Deflection Judge	<code>:DISPlay:AM FM PM:MEter:SINad:JUDGE ON OFF 1 0</code>
	<code>:DISPlay:AM FM PM:MEter:SINad:JUDGE?</code>
THD Deflection Judge	<code>:DISPlay:AM FM PM:MEter:THD:JUDGE ON OFF 1 0</code>
	<code>:DISPlay:AM FM PM:MEter:THD:JUDGE?</code>
Deviation Deflection Judge	<code>:DISPlay:FM:MEter:DVPP:JUDGE ON OFF 1 0</code>
	<code>:DISPlay:FM:MEter:DVPP:JUDGE?</code>

**Table 2.4.2-1 Device Messages for Parameter Settings of TX Measurement (Cont'd)**

Parameter	Device Messages
Reference of Distortion Meter (dB)	:DISPlay:AM FM PM:MEter:DISTortion:REFeRence:DB MINimum CENTer MAXimum
	:DISPlay:AM FM PM:MEter:DISTortion:REFeRence:DB?
Reference of Distortion Meter (%)	:DISPlay:AM FM PM:MEter:DISTortion:REFeRence:PERCent MINimum CENTer MAXimum
	:DISPlay:AM FM PM:MEter:DISTortion:REFeRence:PERCent?
Reference of SINAD Meter (dB)	:DISPlay:AM FM PM:MEter:SINad:REFeRence:DB MINimum CENTer MAXimum
	:DISPlay:AM FM PM:MEter:SINad:REFeRence:DB?
Reference of SINAD Meter (%)	:DISPlay:AM FM PM:MEter:SINad:REFeRence:PERCent MINimum CENTer MAXimum
	:DISPlay:AM FM PM:MEter:SINad:REFeRence:PERCent?
Reference of THD Meter (dB)	:DISPlay:AM FM PM:MEter:THD:REFeRence:DB MINimum CENTer MAXimum
	:DISPlay:AM FM PM:MEter:THD:REFeRence:DB?
Reference of THD Meter (%)	:DISPlay:AM FM PM:MEter:THD:REFeRence:PERCent MINimum CENTer MAXimum
	:DISPlay:AM FM PM:MEter:THD:REFeRence:PERCent?
Reference of Deviation Meter (Hz)	:DISPlay:FM:MEter:DVPP:REFeRence:HZ MINimum CENTer MAXimum
	:DISPlay:FM:MEter:DVPP:REFeRence:HZ?
Reference of Deviation Meter (%)	:DISPlay:FM:MEter:DVPP:REFeRence:PERCent MINimum CENTer MAXimum
	:DISPlay:FM:MEter:DVPP:REFeRence:PERCent?
Reference Value of Distortion Meter (dB)	:DISPlay:AM FM PM:MEter:DISTortion:REFeRence:VALue:DB <ref_val>
	:DISPlay:AM FM PM:MEter:DISTortion:REFeRence:VALue:DB?
Reference Value of Distortion Meter (%)	:DISPlay:AM FM PM:MEter:DISTortion:REFeRence:VALue:PERCent <ref_val>
	:DISPlay:AM FM PM:MEter:DISTortion:REFeRence:VALue:PERCent?
Reference Value of SINAD Meter (dB)	:DISPlay:AM FM PM:MEter:SINad:REFeRence:VALue:DB <ref_val>
	:DISPlay:AM FM PM:MEter:SINad:REFeRence:VALue:DB?
Reference Value of SINAD Meter (%)	:DISPlay:AM FM PM:MEter:SINad:REFeRence:VALue:PERCent <ref_val>
	:DISPlay:AM FM PM:MEter:SINad:REFeRence:VALue:PERCent?

Table 2.4.2-1 Device Messages for Parameter Settings of TX Measurement (Cont'd)

Parameter	Device Messages
Reference Value of THD Meter (dB)	:DISPlay:AM FM PM:MEter:THD:REFeRence:VALue:DB <ref_val>
	:DISPlay:AM FM PM:MEter:THD:REFeRence:VALue:DB?
Reference Value of THD Meter (%)	:DISPlay:AM FM PM:MEter:THD:REFeRence:VALue:DB <ref_val>
	:DISPlay:AM FM PM:MEter:THD:REFeRence:VALue:DB?
Reference Value of Deviation Meter (Hz)	:DISPlay:FM:MEter:DVPP:REFeRence:VALue:HZ <ref_val>
	:DISPlay:FM:MEter:DVPP:REFeRence:VALue:HZ?
Reference Value of Deviation Meter (%)	:DISPlay:FM:MEter:DVPP:REFeRence:VALue:PERCent <ref_val>
	:DISPlay:FM:MEter:DVPP:REFeRence:VALue:PERCent?
Range1 of Distortion Meter (dB)	:DISPlay:AM FM PM:MEter:DISTortion:RNG1:DB <val>
	:DISPlay:AM FM PM:MEter:DISTortion:RNG1:DB?
Range1 of Distortion Meter (%)	:DISPlay:AM FM PM:MEter:DISTortion:RNG1:PERCent <val>
	:DISPlay:AM FM PM:MEter:DISTortion:RNG1:PERCent?
Range2 of Distortion Meter (dB)	:DISPlay:AM FM PM:MEter:DISTortion:RNG2:DB <val>
	:DISPlay:AM FM PM:MEter:DISTortion:RNG2:DB?
Range2 of Distortion Meter (%)	:DISPlay:AM FM PM:MEter:DISTortion:RNG2:PERCent <val>
	:DISPlay:AM FM PM:MEter:DISTortion:RNG2:PERCent?
Pass Range of Distortion Meter (dB)	:DISPlay:AM FM PM:MEter:DISTortion:JUDGe:RANGe:DB <val>
	:DISPlay:AM FM PM:MEter:DISTortion:JUDGe:RANGe:DB?
Pass Range of Distortion Meter (%)	:DISPlay:AM FM PM:MEter:DISTortion:JUDGe:RANGe:PERCent <val>
	:DISPlay:AM FM PM:MEter:DISTortion:JUDGe:RANGe:PERCent?
Range1 of SINAD Meter (dB)	:DISPlay:AM FM PM:MEter:SINad:RNG1:DB <val>
	:DISPlay:AM FM PM:MEter:SINad:RNG1:DB?
Range1 of SINAD Meter (%)	:DISPlay:AM FM PM:MEter:SINad:RNG1:PERCent <val>
	:DISPlay:AM FM PM:MEter:SINad:RNG1:PERCent?
Range2 of SINAD Meter (dB)	:DISPlay:AM FM PM:MEter:SINad:RNG2:DB <val>
	:DISPlay:AM FM PM:MEter:SINad:RNG2:DB?
Range2 of SINAD Meter (%)	:DISPlay:AM FM PM:MEter:SINad:RNG2:PERCent <val>
	:DISPlay:AM FM PM:MEter:SINad:RNG2:PERCent?

**Table 2.4.2-1 Device Messages for Parameter Settings of TX Measurement (Cont'd)**

Parameter	Device Messages
Pass Range of SINAD Meter (dB)	:DISPlay:AM FM PM:MEter:SINad:JUDGE:RANGe:DB <val>
	:DISPlay:AM FM PM:MEter:SINad:JUDGE:RANGe:DB?
Pass Range of SINAD Meter (%)	:DISPlay:AM FM PM:MEter:SINad:JUDGE:RANGe:PERCent <val>
	:DISPlay:AM FM PM:MEter:SINad:JUDGE:RANGe:PERCent?
Range1 of THD Meter (dB)	:DISPlay:AM FM PM:MEter:THD:RNG1:DB <val>
	:DISPlay:AM FM PM:MEter:THD:RNG1:DB?
Range1 of THD Meter (%)	:DISPlay:AM FM PM:MEter:THD:RNG1:PERCent <val>
	:DISPlay:AM FM PM:MEter:THD:RNG1:PERCent?
Range2 of THD Meter (dB)	:DISPlay:AM FM PM:MEter:THD:RNG2:DB <val>
	:DISPlay:AM FM PM:MEter:THD:RNG2:DB?
Range2 of THD Meter (%)	:DISPlay:AM FM PM:MEter:THD:RNG2:PERCent <val>
	:DISPlay:AM FM PM:MEter:THD:RNG2:PERCent?
Pass Range of THD Meter (dB)	:DISPlay:AM FM PM:MEter:THD:JUDGE:RANGe:DB <val>
	:DISPlay:AM FM PM:MEter:THD:JUDGE:RANGe:DB?
Pass Range of THD Meter (%)	:DISPlay:AM FM PM:MEter:THD:JUDGE:RANGe:PERCent <val>
	:DISPlay:AM FM PM:MEter:THD:JUDGE:RANGe:PERCent?
Range1 of Deviation Meter (Hz)	:DISPlay:FM:MEter:DVPP:RNG1:HZ <val>
	:DISPlay:FM:MEter:DVPP:RNG1:HZ?
Range1 of Deviation Meter (%)	:DISPlay:FM:MEter:DVPP:RNG1:PERCent <val>
	:DISPlay:FM:MEter:DVPP:RNG1:PERCent?
Range2 of Deviation Meter (Hz)	:DISPlay:FM:MEter:DVPP:RNG2:HZ <val>
	:DISPlay:FM:MEter:DVPP:RNG2:HZ?
Range2 of Deviation Meter (%)	:DISPlay:FM:MEter:DVPP:RNG2:PERCent <val>
	:DISPlay:FM:MEter:DVPP:RNG2:PERCent?
Pass Range of Deviation Meter (Hz)	:DISPlay:FM:MEter:DVPP:JUDGE:RANGe:HZ <val>
	:DISPlay:FM:MEter:DVPP:JUDGE:RANGe:HZ?
Pass Range of Deviation Meter (%)	:DISPlay:FM:MEter:DVPP:JUDGE:RANGe:PERCent <val>
	:DISPlay:FM:MEter:DVPP:JUDGE:RANGe:PERCent?

Table 2.4.2-1 Device Messages for Parameter Settings of TX Measurement (Cont'd)

Parameter	Device Messages
Deviation Reference of Deviation Meter	:DISPlay:FM:MEter:DVPP:REfERENCE <val>
	:DISPlay:FM:MEter:DVPP:REfERENCE?
Deflection View of Distortion Meter	:DISPlay:AM FM PM:MEter:DISTortion:DEFLection ON OFF 1 0
	:DISPlay:AM FM PM:MEter:DISTortion:DEFLection?
Deflection View of SINAD Meter	:DISPlay:AM FM PM:MEter:SINad:DEFLection ON OFF 1 0
	:DISPlay:AM FM PM:MEter:SINad:DEFLection?
Deflection View of THD Meter	:DISPlay:AM FM PM:MEter:THD:DEFLection ON OFF 1 0
	:DISPlay:AM FM PM:MEter:THD:DEFLection?
Deflection View of Deviation Meter	:DISPlay:FM:MEter:DVPP:DEFLection ON OFF 1 0
	:DISPlay:FM:MEter:DVPP:DEFLection?
Deflection Count of Distortion Meter	:DISPlay:AM FM PM:MEter:DISTortion:DEFLection:COUNT <count>
	:DISPlay:AM FM PM:MEter:DISTortion:DEFLection:COUNT?
Deflection Count of SINAD Meter	:DISPlay:AM FM PM:MEter:SINad:DEFLection:COUNT <count>
	:DISPlay:AM FM PM:MEter:SINad:DEFLection:COUNT?
Deflection Count of THD Meter	:DISPlay:AM FM PM:MEter:THD:DEFLection:COUNT <count>
	:DISPlay:AM FM PM:MEter:THD:DEFLection:COUNT?
Deflection Count of Deviation Meter	:DISPlay:FM:MEter:DVPP:DEFLection:COUNT <count>
	:DISPlay:FM:MEter:DVPP:DEFLection:COUNT?
Unit of Distortion Meter	:DISPlay:AM FM PM:MEter:DISTortion:UNIT DB PERCent
	:DISPlay:AM FM PM:MEter:DISTortion:UNIT?
Unit of SINAD Meter	:DISPlay:AM FM PM:MEter:SINad:UNIT DB PERCent
	:DISPlay:AM FM PM:MEter:SINad:UNIT?
Unit of THD Meter	:DISPlay:AM FM PM:MEter:THD: UNIT DB PERCent
	:DISPlay:AM FM PM:MEter:THD:UNIT?
Unit of Deviation Meter	:DISPlay:FM:MEter:DVPP:UNIT HZ PERCent
	:DISPlay:FM:MEter:DVPP:UNIT?
Type of Deviation Meter	:DISPlay:FM:MEter:DVPP:TYPE RMS PLUS MINus P2P
	:DISPlay:FM:MEter:DVPP:TYPE?

**Table 2.4.2-1 Device Messages for Parameter Settings of TX Measurement (Cont'd)**

Parameter	Device Messages
Signal Frequency of Distortion	[ :SENSE]:AM FM PM:DISToRtion:DISToRtion:FREQuency:SIGNal PEAK MANual GENerator
	[ :SENSE]:AM FM PM:DISToRtion:DISToRtion:FREQuency:SIGNal?
Manual Frequency of Distortion	[ :SENSE]:AM FM PM:DISToRtion:DISToRtion:FREQuency:SIGNal:MANual <freq>
	[ :SENSE]:AM FM PM:DISToRtion:DISToRtion:FREQuency:SIGNal:MANual?
Start Frequency of Distortion	[ :SENSE]:AM FM PM:DISToRtion:DISToRtion:FREQuency:STARt <freq>
	[ :SENSE]:AM FM PM:DISToRtion:DISToRtion:FREQuency:STARt?
Stop Frequency of Distortion	[ :SENSE]:AM FM PM:DISToRtion:DISToRtion:FREQuency:STOP <freq>
	[ :SENSE]:AM FM PM:DISToRtion:DISToRtion:FREQuency:STOP?
Signal Frequency of SINAD	[ :SENSE]:AM FM PM:DISToRtion:SINad:FREQuency:SIGNal PEAK MANual GENerator
	[ :SENSE]:AM FM PM:DISToRtion:SINad:FREQuency:SIGNal?
Manual Frequency of SINAD	[ :SENSE]:AM FM PM:DISToRtion:SINad:FREQuency:SIGNal:MANual <freq>
	[ :SENSE]:AM FM PM:DISToRtion:SINad:FREQuency:SIGNal:MANual?
Start Frequency of SINAD	[ :SENSE]:AM FM PM:DISToRtion:SINad:FREQuency:STARt <freq>
	[ :SENSE]:AM FM PM:DISToRtion:SINad:FREQuency:STARt?
Stop Frequency of SINAD	[ :SENSE]:AM FM PM:DISToRtion:SINad:FREQuency:STOP <freq>
	[ :SENSE]:AM FM PM:DISToRtion:SINad:FREQuency:STOP?
Signal Frequency of THD	[ :SENSE]:AM FM PM:DISToRtion:THD:FREQuency:SIGNal PEAK MANual GENerator
	[ :SENSE]:AM FM PM:DISToRtion:THD:FREQuency:SIGNal?
Manual Frequency of THD	[ :SENSE]:AM FM PM:DISToRtion:THD:FREQuency:SIGNal:MANual <freq>
	[ :SENSE]:AM FM PM:DISToRtion:THD:FREQuency:SIGNal:MANual?
Start Frequency of THD	[ :SENSE]:AM FM PM:DISToRtion:THD:FREQuency:STARt <freq>
	[ :SENSE]:AM FM PM:DISToRtion:THD:FREQuency:STARt?
Stop Frequency of THD	[ :SENSE]:AM FM PM:DISToRtion:THD:FREQuency:STOP <freq>
	[ :SENSE]:AM FM PM:DISToRtion:THD:FREQuency:STOP?



Table 2.4.2-1 Device Messages for Parameter Settings of TX Measurement (Cont'd)

Parameter	Device Messages
Demodulation Monitor	<code>[[:SENSE]:SPEaker[:STATe] &lt;switch&gt;</code>
	<code>[[:SENSE]:SPEaker[:STATe]?]</code>
Speaker/ Headphone Output	<code>[[:SENSe]:SPNHeadphone[:STATe] ON OFF 1 0]</code>
	<code>[[:SENSe]:SPNHeadphone[:STATe]?]</code>
Demodulation Monitor Volume	<code>[[:SENSE]:SPEaker:VOLume &lt;vol&gt;</code>
	<code>[[:SENSe]:SPEaker:VOLume?]</code>
Initiate FM	<code>:INITiate:FM</code>
Initiate Wide FM	<code>:INITiate:WFM</code>
Initiate AM	<code>:INITiate:AM</code>
Initiate $\phi$ M	<code>:INITiate:PM</code>

## **[[:SENSE]:FREQUENCY:CENTER <freq>**

Center Frequency of TX Measurement

### Function

This command sets the center frequency for TX measurement.

### Command

```
[[:SENSE]:FREQUENCY:CENTER <freq>
```

### Parameter

<freq>	Frequency
Range	100 kHz to 3.7 GHz (Option 040) 100 kHz to 6.1 GHz (Option 041) 100 kHz to 13.6 GHz (Option 043)
Resolution	1 Hz
Suffix code	HZ, KHZ, KZ, MHZ, MZ, GHZ, GZ
Default	1 GHz

### Details

Sets a RF frequency for TX measurement.

### Example of Use

To set the center frequency for TX measurement to 400 MHz.  
FREQ:CENT 400MHZ

**[ :SENSe ] :FREQuency:CENTer?**

Center Frequency of TX Measurement Query

## Function

This command queries the center frequency for TX measurement.

## Query

`[ :SENSe ] :FREQuency:CENTer?`

## Response

`<freq>`

## Parameter

<code>&lt;freq&gt;</code>	Frequency
Range	100 kHz to 3.7 GHz (Option 040) 100 kHz to 6.1 GHz (Option 041) 100 kHz to 13.6 GHz (Option 043)
Resolution	1 Hz
Suffix code	None
	Value is returned in Hz units.

## Example of Use

```
To query the center frequency for TX measurement.
FREQ:CENT?
> 400000000
```

## **[[:SENSE]:FREQUENCY:AUTOdetect**

Auto detect Center Frequency of TX Measurement

### Function

This command detects the peak-level frequency of the input signal and sets it to the center frequency for TX Measurement.

### Command

```
[[:SENSE]:FREQUENCY:AUTOdetect
```

### Details

After frequency detection, measurement is performed. If this command is executed when a continuous measurement is in progress, the measurement continues even after the execution.

### Example of Use

To set the peak-level frequency of the input signal as the center frequency for TX Measurement.

```
FREQ:AUTO
```

**[[:SENSE]:FREQUENCY:AUTOdetect:ADJustrange <switch>**

Auto Adjust Range after find RF signal by Auto Detect

## Function

This command turns On/Off the Auto Adjust Range.

## Command

[:SENSE]:FREQUENCY:AUTOdetect:ADJustrange &lt;switch&gt;

## Parameter

<switch>	Auto Adjust Range On/Off
ON 1	Enables Auto Adjust Range.
OFF 0	Disables Auto Adjust Range.
Default	OFF

## Details

After searching signals by Auto Detect, Adjust Range is executed automatically.

## Example of Use

To set the Auto Adjust Range to ON.  
 FREQ:AUTO:ADJ ON

**[[:SENSe]:FREQUENCY:AUTOdetect:ADJustrange?**

Auto Adjust Range after find RF signal by Auto Detect Query

## Function

This command queries the On/Off status of the Auto Adjust Range.

## Query

[:SENSe]:FREQUENCY:AUTOdetect:ADJustrange?

## Response

&lt;switch&gt;

## Parameter

<switch>	Adjust Range On/Off
1	Enables Adjust Range.
0	Disables Adjust Range.

## Example of Use

To query the On/Off status of the Auto Adjust Range.  
 FREQ:AUTO:ADJ?  
 > 1

### **[[:SENSE]:POWer[:RF]:GAIN[:STATe] <switch>**

Preamp

Function

This command enables/disables Preamp.

Command

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

Parameter

<switch>	Preamp On/Off
ON 1	Enables Preamp.
OFF 0	Disables Preamp.
Default	OFF

Details

This command is turned off and thus invalid when Option 008/108 Preamplifier is NOT installed.

Example of Use

To enable Preamp.  
POW:GAIN ON

### **[[:SENSE]:POWer[:RF]:GAIN[:STATe]?**

Preamp Query

Function

This command queries the On/Off status of Preamp.

Query

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

Response

```
<switch>
```

Parameter

<switch>	Preamp On/Off
1	Enables Preamp.
0	Disables Preamp.

Example of Use

To query the On/Off status of Preamp.  
POW:GAIN?  
> 1

**:DISPlay:AM|FM|PM:WINDow[1]:TRACe:Y[:SCALe]:RLEVel <real>**

Input Level

Function

This command sets the input level of RF signals.

Command

```
:DISPlay:AM|FM|PM:WINDow[1]:TRACe:Y[:SCALe]:RLEVel <real>
```

Parameter

<real>	Input level
Range	When Pre Amp is Off: (-60.0 + Level Offset) to (30.0 dBm + Level Offset) When Pre Amp is On: (-80.0 + Level Offset) to (10.0 dBm + Level Offset)
Resolution	0.01 dB
Unit	1 dBm
Suffix code	DBM dBm is used when the suffix code is omitted.
Default	-10.00 dBm

Details

This command sets the input level of RF signals to be input to this instrument on TX measurement. The attenuator is automatically set according to the input level setting.

This setting is common for AM, FM, and PM.

Example of Use

To set the input level to 10 dBm.

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

**:DISPlay:AM|FM|PM:WINDow[1]:TRACe:Y[:SCALe]:RLEVel?**

Input Level Query

Function

This command queries the input level of RF signals.

Query

:DISPlay:AM|FM|PM:WINDow[1]:TRACe:Y[:SCALe]:RLEVel?

Response

<real>

Parameter

<real>	Input level
Range	When Pre Amp is Off: (-60.0 + Level Offset) to (30.0 dBm + Level Offset) When Pre Amp is On: (-80.0 + Level Offset) to (10.0 dBm + Level Offset)
Resolution	0.01 dB
Suffix code	None
	Value is returned in dBm units.

Example of Use

To query the input level.  
DISP:FM:WIND:TRAC:Y:RLEV?  
> 10.00



**:DISPlay:AM|FM|PM:WINDow[1]:TRACe:Y[:SCALe]:RLEVel:WATT?**

Input Level (W) Query

## Function

This command queries the input level (W) of RF signals.

## Query

```
:DISPlay:AM|FM|PM:WINDow[1]:TRACe:Y[:SCALe]:RLEVel:WATT?
```

## Response

```
<real>
```

## Parameter

<code>&lt;real&gt;</code>	Input level
Range	0.031 to 1000 mW
Suffix code	None
	Value is returned in W units.

## Example of Use

```
To query the input level (W).
DISP:FM:WIND:TRAC:Y:RLEV:WATT?
> 0.00100000000000000000000000000000
```

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

Input Level Offset State

Function

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

Command

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

Parameter

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

Details

This setting is common for AM, FM, and PM.

Example of Use

To enable the input level offset value.  
DISP:FM:WIND:TRAC:Y:RLEV:OFFS:STAT ON

**:DISPlay:AM|FM|PM:WINDow[1]:TRACe:Y[:SCALe]:RLEVel:OFFSet:STATe?**

Input Level Offset Query

Function

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

Query

```
:DISPlay:AM|FM|PM:WINDow[1]:TRACe:Y[:SCALe]:RLEVel:OFFSet:STATe?
```

Response

```
<switch>
```

Parameter

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

Example of Use

To query the input level offset value.  
DISP:FM:WIND:TRAC:Y:RLEV:OFFS:STAT?  
> 1

**:DISPlay:AM|FM|PM:WINDow[1]:TRACe:Y[:SCALe]:RLEVel:OFFSet <real>**

Input Level Offset

## Function

This command sets the input level offset value.

## Command

```
:DISPlay:AM|FM|PM:WINDow[1]:TRACe:Y[:SCALe]:RLEVel:OFFSet <real>
```

## Parameter

<real>	Offset value
Range	-100.00 to 100.00 dB
Resolution	0.01 dB
Suffix code	DB
	dB is used when the suffix code is omitted.
Default	0.00 dB

## Details

The value is set when the power loss is to be corrected which is due to the connection between the measurement target and this instrument.

This setting is common for AM, FM, and PM.

## Example of Use

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

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

**:DISPlay:AM|FM|PM:WINDow[1]:TRACe:Y[:SCALe]:RLEVel:OFFSet?**

Input Level Offset Query

Function

This command queries the input level offset value.

Query

```
:DISPlay:AM|FM|PM:WINDow[1]:TRACe:Y[:SCALe]:RLEVel:OFFSet?
```

Response

```
<real>
```

Parameter

<real>	Offset value
Range	-100.00 to 100.00 dB
Resolution	0.01 dB
Suffix code	None
	Value is returned in dB units.

Example of Use

```
To query the input level offset value.  
DISP:FM:WIND:TRAC:Y:RLEV:OFFS?  
> 10.00
```

**:DISPlay:AM|FM|PM:WINDow[1]:TRACe:ANALysis:MODE:TIME ON|OFF|1|0**

AF Measure Time Domain Graph State

## Function

This command enables/disables the AF Measure results Time Domain graph display.

## Command

```
DISPlay:AM|FM|PM:WINDow[1]:TRACe:ANALysis:MODE:TIME
<switch>
```

## Parameter

<switch>	Time Domain Graph Display On/Off
ON 1	On (default)
OFF 0	Off

## Example of Use

To enable the Time Domain Graph Display.

```
DISP:FM:WIND:TRAC:ANAL:MODE:TIME ON
```

**:DISPlay:AM|FM|PM:WINDow[1]:TRACe:ANALysis:MODE:TIME?**

AF Measure Time Domain Graph State Query

## Function

This command queries the AF Measure results Time Domain graph display On/Off status.

## Query

```
:DISPlay:AM|FM|PM:WINDow[1]:TRACe:ANALysis:MODE:TIME?
```

## Response

```
<switch>
```

## Parameter

<switch>	Time Domain Graph Display On/Off
1	On
0	Off

## Example of Use

To query the Time Domain graph display status.

```
DISP:FM:WIND:TRAC:ANAL:MODE:TIME?
> 1
```

**:DISPlay:AM|FM|PM:WINDow[1]:TRACe:ANALysis:MODE:FREQuency ON|OFF|1|0**

AF Measure Frequency Domain Graph State

Function

This command enables/disables the AF Measure results Frequency Domain graph display.

Command

```
DISPlay:AM|FM|PM:WINDow[1]:TRACe:ANALysis:MODE:FREQuency  
<switch>
```

Parameter

<switch>	Frequency Domain Graph Display On/Off
OFF 0	Off (default)
ON 1	On

Example of Use

To enable the Frequency Domain Graph Display.  
DISP:FM:WIND:TRAC:ANAL:MODE:FREQ ON

**:DISPlay:AM|FM|PM:WINDow[1]:TRACe:ANALysis:MODE:FREQuency?**

AF Measure Frequency Domain Graph State Query

Function

This command queries the AF Measure results Frequency Domain graph display On/Off status.

Query

```
:DISPlay:AM|FM|PM:WINDow[1]:TRACe:ANALysis:MODE:FREQuenc  
y?
```

Response

```
<switch>
```

Parameter

<switch>	Frequency Domain Graph Display On/Off
1	On
0	Off

Example of Use

To query the Frequency Domain graph display status.  
DISP:FM:WIND:TRAC:ANAL:MODE:FREQ?  
> 1

**:DISPlay:FM:WINDow[1]:TRACe:Y[:SCALe]:MODE AUTO|FIXed**

Y Axis Scale Mode of AF Measure Graph

## Function

This command sets the Y-axis (vertical) scale mode for displaying a graph of AF Measurement results to Auto scale or Fixed scale.

## Command

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

## Parameter

<mode>	Y Axis Scale Mode
AUTO	Auto scale (default)
FIXed	Fixed scale

## Details

Enabled when the Time Domain graph display is On.

This can be set only when the modulation scheme is FM or WFM.

## Example of Use

To set the Y-axis (vertical) scale mode for displaying a graph of AF Measurement results to Fixed scale.

```
DISP:FM:WIND:TRAC:Y:MODE FIX
```

**:DISPlay:FM:WINDow[1]:TRACe:Y[:SCALe]:MODE?**

Y Axis Scale Mode of AF Measure Graph Query

## Function

This command queries the setting of the Y-axis (vertical) scale mode for displaying a graph of AF Measurement results.

## Query

```
:DISPlay:FM:WINDow[1]:TRACe:Y[:SCALe]:MODE?
```

## Response

```
<mode>
```

## Parameter

<mode>	Y Axis Scale Mode
AUTO	Auto scale
FIXed	Fixed scale

## Example of Use

To query the setting of the Y-axis scale mode for displaying a graph of AF Measurement result.

```
DISP:FM:WIND:TRAC:Y:MODE?
```

```
> FIX
```

**:DISPlay:FM:WINDow[1]:TRACe:Y[:SCALe]:AUTO:MINimumrange**

**500|5K|10K|50K|100K|500K**

Minimum Y Axis Scale Range of AF Measure Graph

Function

This command sets the minimum Y-axis (vertical) scale range for displaying a graph of AF Measurement results.

Command

```
:DISPlay:FM:WINDow[1]:TRACe:Y[:SCALe]:AUTO:MINimumrange  
<range>
```

Parameter

<range>	Minimum Y-axis scale range
500	±500 Hz
5K	±5 kHz (default)
10K	±10 kHz
50K	±50 kHz
100K	±100 kHz
500K	±500 kHz

Detail

Enabled when the Time Domain graph display is On.

This can be set only when the modulation scheme is FM or WFM.

Example of Use

To set the minimum Y-axis scale range for displaying a graph of AF Measurement results to 500 Hz.

```
DISP:FM:WIND:TRAC:Y:AUTO:MIN 500
```



**:DISPlay:FM:WINDow[1]:TRACe:Y[:SCALe]:AUTO:MINimumrange?**

Minimum Y Axis Scale Range of AF Measure Graph Query

## Function

This command queries the setting of the minimum Y-axis (vertical) scale range for displaying a graph of AF Measurement results.

## Query

```
:DISPlay:FM:WINDow[1]:TRACe:Y[:SCALe]:AUTO:MINimumrange?
```

## Response

```
<range>
```

## Parameter

<range>	Minimum Y-axis scale range
500	±500 Hz
5K	±5 kHz
10K	±10 kHz
50K	±50 kHz
100K	±100 kHz
500K	±500 kHz

## Example of Use

To query the setting of the minimum Y-axis scale range for displaying a graph of AF Measurement results.

```
DISP:FM:WIND:TRAC:Y:AUTO:MIN?
> 500
```

**:DISPlay:FM:WINDow[1]:TRACe:Y[:SCALe]:FIXed:RANGe**

**500|1K|2\_5K|5K|10K|25K|50K|100K|250K|500K|1M**

Y Axis Scale Range of AF Measure Graph

Function

This command sets the Y-axis (vertical) scale range for displaying a graph of AF Measurement results when Y Axis Scale Mode is fixed.

Command

:DISPlay:FM:WINDow[1]:TRACe:Y[:SCALe]:FIXed:RANGe <range>

Parameter

<range>	Y-axis scale range
500	±500 Hz
1K	±1 kHz
2_5K	±2.5 kHz
5K	±5 kHz (default)
10K	±10 kHz
25K	±25 kHz
50K	±50 kHz
100K	±100 kHz
250K	±250 kHz
500K	±500 kHz
1M	±1 MHz

Details

Enabled when the Frequency Domain graph display is On.  
This can be set only when the modulation scheme is FM or WFM.

Example of Use

To set the Y-axis (vertical) scale range for displaying a graph of AF Measurement results to 500 Hz.

DISP:FM:WIND:TRAC:Y:FIX:RANG 500

**:DISPlay:FM:WINDow[1]:TRACe:Y[:SCALe]:FIXed:RANGe?**

Y Axis Scale Range of AF Measure Graph Query

## Function

This command queries the setting of the Y-axis (vertical) scale range for displaying a graph of AF Measurement results.

## Query

```
:DISPlay:FM:WINDow[1]:TRACe:Y[:SCALe]:FIXed:RANGe?
```

## Response

```
<range>
```

## Parameter

<range>	Y-axis scale range
500	±500 Hz
1K	±1 kHz
2_5K	±2.5 kHz
5K	±5 kHz
10K	±10 kHz
25K	±25 kHz
50K	±50 kHz
100K	±100 kHz
250K	±250 kHz
500K	±500 kHz
1M	±1 MHz

## Example of Use

To query the setting of the Y-axis scale range for displaying a graph of AF Measurement results.

```
DISP:FM:WIND:TRAC:Y:FIX:RANG?
> 500
```

**:DISPlay:AM|FM|PM:WINDow[1]:TRACe:FREQdomain:Y[:SCALE]:TOP:LOG <level>**

Y Axis Top Level of Frequency Domain Graph

Function

This command sets the upper limit value of the Frequency Domain graph Y-axis.

Command

```
:DISPlay:AM|FM|PM:WINDow[1]:TRACe:FREQdomain:Y[:SCALE]:TOP:LOG <level>
```

Parameter

<code>&lt;level&gt;</code>	Top Level
Range	For FM modulation: (Setting value of Bottom Level × 1.4125375) to 1000 kHz For AM modulation: (Setting value of Bottom Level × 1.4125375) to 1000% For φM modulation: (Setting value of Bottom Level × 1.4125375) to 1000 rad
Resolution	For FM modulation: 0.0001 kHz For AM modulation: 0.0001% For φM modulation: 0.0001 rad
Default	For FM modulation: 5 kHz For AM modulation: 100% For φM modulation: 5 rad
Suffix code	%, HZ, RAD

Details

Enabled when the Frequency Domain graph display is On.  
The setting range of Top Level should meet the following conditions.

- Top Level ≥ (Bottom Level × 1.4125375)
- (Top Level - Bottom Level) ≥ 3 dB

Example of Use

To set the upper limit value of the FM modulation Frequency Domain graph Y-axis to 1 kHz.

```
DISP:FM:WIND:TRAC:FREQ:Y:TOP:LOG 1000
```

**:DISPlay:AM|FM|PM:WINDow[1]:TRACe:FREQdomain:Y[:SCALe]:TOP:LOG?**

Y Axis Top Level of Frequency Domain Graph Query

## Function

This command queries the upper limit value of the Frequency Domain graph Y-axis.

## Query

```
:DISPlay:AM|FM|PM:WINDow[1]:TRACe:FREQdomain:Y[:SCALe]:TOP:LOG?
```

## Response

```
<level>
```

## Parameter

<level>	Top Level
Range	For FM modulation: 0.0001 Hz to 1000 kHz For AM modulation: 0.0001 to 1000% For $\phi$ M modulation: 0.0001 to 1000 rad
Resolution	For FM modulation: 0.0001 Hz For AM modulation: 0.0001% For $\phi$ M modulation: 0.0001 rad

## Example of Use

To query the upper limit value of the FM modulation Frequency Domain graph Y-axis.

```
DISP:FM:WIND:TRAC:FREQ:Y:TOP:LOG?
> 1000.0
```

**:DISPlay:AM|FM|PM:WINDow[1]:TRACe:FREQdomain:Y[:SCALe]:BOTTom:LOG**

**<level>**

Y Axis Bottom Level of Frequency Domain Graph

Function

This command sets the lower limit value of the Frequency Domain graph Y-axis.

Command

```
:DISPlay:AM|FM|PM:WINDow[1]:TRACe:FREQdomain:Y[:SCALe]:BOTTom:LOG <level>
```

Parameter

<level>	Bottom Level
Range	For FM modulation: 0.0001 Hz to (setting value of Top Level / 1.4125375) kHz For AM modulation: 0.0001 to (setting value of Top Level / 1.4125375) % For $\phi$ M modulation: 0.0001 to (setting value of Top Level / 1.4125375) rad
Resolution	For FM modulation: 0.0001 Hz For AM modulation: 0.0001% For $\phi$ M modulation: 0.0001 rad
Default	For FM modulation: 0.0001 Hz For AM modulation: 0.0001% For $\phi$ M modulation: 0.0001 rad
Suffix code	%, HZ, RAD

Details

Enabled when the Frequency Domain graph display is On.  
The setting range of Bottom Level should meet the following conditions.

- Bottom Level  $\leq$  (Top Level  $\times$  1.4125375)
- (Top Level - Bottom Level)  $\geq$  3 dB

Example of Use

To set the lower limit value of the FM modulation Frequency Domain graph Y-axis to 0.001 kHz.

```
DISP:FM:WIND:TRAC:FREQ:Y:BOTT:LOG 1
```

**:DISPlay:AM|FM|PM:WINDow[1]:TRACe:FREQdomain:Y[:SCALe]:BOTTom:LOG?**

Y Axis Bottom Level of Frequency Domain Graph Query

## Function

This command queries the lower limit value of the Frequency Domain graph Y-axis.

## Query

```
:DISPlay:AM|FM|PM:WINDow[1]:TRACe:FREQdomain:Y[:SCALe]:BOTTom:LOG?
```

## Response

```
<level>
```

## Parameter

<level>	Bottom Level
Range	For FM modulation: 0.0001 Hz to (setting value of Top Level / 1.4125375) kHz For AM modulation: 0.0001 to (setting value of Top Level / 1.4125375) % For $\phi$ M modulation: 0.0001 to (setting value of Top Level / 1.4125375) rad
Resolution	For FM modulation: 0.0001 Hz For AM modulation: 0.0001% For $\phi$ M modulation: 0.0001 rad

## Example of Use

To query the lower limit value of the FM modulation Frequency Domain graph Y-axis.

```
DISP:FM:WIND:TRAC:FREQ:Y:BOTT:LOG?
> 1.0
```

**:DISPlay:AM|FM|PM:WINDow[1]:TRACe:FREQdomain:WINDowfunction  
RECTangular|HANN|BLACkmanharris|HAMMING|FLATtop**

Window Function of Frequency Domain Graph

Function

This command sets the Frequency Domain graph window function.

Command

```
DISPlay:AM|FM|PM:WINDow[1]:TRACe:FREQdomain:WINDowfunction <window>
```

Parameter

<window>	Window function
RECTangular	Rectangular window
HANN	Hann window
BLACkmanharris	Blackman-Harris window
HAMMING	Hamming window
FLATtop	Flat-top window
Default	HANN

Details

Enabled when the Frequency Domain graph display is On.

Example of Use

To set the Frequency Domain graph window function to Rectangular.

```
DISP:FM:WIND:TRAC:FREQ:WIND RECT
```



**:DISPlay:AM|FM|PM:WINDow[1]:TRACe:FREQdomain:WINDowfunction?**

Window Function of Frequency Domain Graph Query

## Function

This command queries the Frequency Domain graph window function.

## Query

```
:DISPlay:AM|FM|PM:WINDow[1]:TRACe:FREQdomain:WINDowfunction?
```

## Response

```
<window>
```

## Parameter

<window>	Window function
RECT	Rectangular window
HANN	Hann window
BLAC	Blackman-Harris window
HAMM	Hamming window
FLAT	Flat-top window
Default	HANN

## Example of Use

```
To query the Frequency Domain graph window function.
DISP:FM:WIND:TRAC:FREQ:WIND?
> RECT
```

**:DISPlay:AM|FM|PM:WINDow[1]:TRACe:FREQdomain:X[:SCALE]:UNIT LINear|LOG**

X Axis Scale of Frequency Domain Graph

Function

This command sets the Frequency Domain graph X-axis (horizontal axis) to a linear or log scale.

Command

```
:DISPlay:AM|FM|PM:WINDow[1]:TRACe:FREQdomain:X[:SCALE]:UNIT <mode>
```

Parameter

<mode>	X Axis Scale
LINear	Linear scale
LOG	Log scale (default)

Details

Enabled when the Frequency Domain graph display is On.

Example of Use

To set the Frequency Domain graph X-axis scale to a linear scale.  
DISP:FM:WIND:TRAC:FREQ:X:UNIT LIN

**:DISPlay:AM|FM|PM:WINDow[1]:TRACe:FREQdomain:X[:SCALE]:UNIT?**

X Axis Scale of Frequency Domain Graph Query

Function

This command queries the Frequency Domain graph X-axis (vertical axis) scale mode.

Query

```
:DISPlay:AM|FM|PM:WINDow[1]:TRACe:FREQdomain:X[:SCALE]:UNIT?
```

Response

```
<mode>
```

Parameter

<mode>	X Axis Scale
LIN	Linear scale
LOG	Log scale

Example of Use

To query the Frequency Domain graph X-axis scale.  
DISP:FM:WIND:TRAC:FREQ:X:UNIT?  
> LIN

**:DISPlay:AM|FM|PM:WINDow[1]:TRACe:FREQdomain:X[:SCALe]:STARtfreq:LINear  
<freq>**

X Axis (Linear) Minimum Frequency of Frequency Domain Graph

Function

This command sets the Frequency Domain graph X-axis (linear scale) minimum value (frequency).

Command

```
:DISPlay:AM|FM|PM:WINDow[1]:TRACe:FREQdomain:X[:SCALe]:S  
TARtfreq:LINear <freq>
```

Parameter

<freq>	Minimum frequency of X axis
Range	100 to 49950 Hz
Resolution	1 Hz
Suffix code	HZ
	Hz is used when the suffix code is omitted.
Default	10 Hz

Details

Enabled when the Frequency Domain graph display is On and the X-axis is Linear scale.

Example of Use

To set the Frequency Domain graph X-axis (linear scale) minimum value to 100 Hz.

```
DISP:FM:WIND:TRAC:FREQ:X:STAR:LIN 100
```

**:DISPlay:AM|FM|PM:WINDow[1]:TRACe:FREQdomain:X[:SCALe]:STARtfreq:LINear?**

X Axis (Linear) Min. Frequency of Frequency Domain Graph Query

Function

This command queries the Frequency Domain graph X-axis (linear scale) minimum value (frequency).

Query

```
:DISPlay:AM|FM|PM:WINDow[1]:TRACe:FREQdomain:X[:SCALe]:S  
TARtfreq:LINear?
```

Response

```
<freq>
```

Parameter

<freq>	Minimum frequency of X axis
Range	10 to 49950 Hz
Resolution	1 Hz
Suffix code	None

Value is returned in Hz units.

Example of Use

To query the Frequency Domain graph X-axis (linear scale) minimum value.

```
DISP:FM:WIND:TRAC:FREQ:X:STAR:LIN?  
> 100
```

**:DISPlay:AM|FM|PM:WINDow[1]:TRACe:FREQdomain:X[:SCALe]:STARtfreq:LOG****<range>**

X Axis (Log) Min. Frequency of Frequency Domain Graph

## Function

Sets the minimum value (frequency) of the X-axis (log scale) in the Frequency Domain graph.

## Command

```
:DISPlay:AM|FM|PM:WINDow[1]:TRACe:FREQdomain:X[:SCALe]:S
TARtfreq:LOG <range>
```

## Parameter

<range>	Minimum frequency of X-axis
10HZ	10 Hz (default)
20HZ	20 Hz
30HZ	30 Hz
50HZ	50 Hz
100HZ	100 Hz
200HZ	200 Hz
300HZ	300 Hz
500HZ	500 Hz
1KHZ	1 kHz
2KHZ	2 kHz
3KHZ	3 kHz
5KHZ	5 kHz
10KHZ	10 kHz
20KHZ	20 kHz
30KHZ	30 kHz

## Details

Enabled when the Frequency Domain graph display is On and the X-axis is Log scale.

## Example of Use

Sets the minimum value of the X-axis (log scale) in the Frequency Domain graph to 100 Hz.

```
DISP:FM:WIND:TRAC:FREQ:X:STAR:LOG 100HZ
```

**:DISPlay:AM|FM|PM:WINDow[1]:TRACe:FREQdomain:X[:SCALe]:STARtfreq:LOG?**

X Axis (Log) Min. Frequency of Frequency Domain Graph Query

Function

Queries the minimum value (frequency) of the X-axis (log scale) in the Frequency Domain graph.

Query

```
:DISPlay:AM|FM|PM:WINDow[1]:TRACe:FREQdomain:X[:SCALe]:S  
TARtfreq:LOG?
```

Response

<range>

Parameter

<range>	Minimum frequency of X-axis
10HZ	10 Hz
20HZ	20 Hz
30HZ	30 Hz
50HZ	50 Hz
100HZ	100 Hz
200HZ	200 Hz
300HZ	300 Hz
500HZ	500 Hz
1KHZ	1 kHz
2KHZ	2 kHz
3KHZ	3 kHz
5KHZ	5 kHz
10KHZ	10 kHz
20KHZ	20 kHz
30KHZ	30 kHz

Example of Use

To query the minimum value of the X-axis (log scale) in the Frequency Domain graph.

```
DISP:FM:WIND:TRAC:FREQ:X:STAR:LOG?  
> 100HZ
```

**:DISPlay:AM|FM|PM:WINDow[1]:TRACe:FREQdomain:X[:SCALe]:STOPfreq:LINear  
<freq>**

X Axis (Linear) Max. Frequency of Frequency Domain Graph

#### Function

This command sets the Frequency Domain graph X-axis (linear scale) maximum value (frequency).

#### Command

```
:DISPlay:AM|FM|PM:WINDow[1]:TRACe:FREQdomain:X[:SCALe]:S  
TOPfreq:LINear <freq>
```

#### Parameter

<freq>	Maximum frequency of X axis
Range	60 to 50000 Hz
Resolution	1 Hz
Suffix code	HZ
	Hz is used when the suffix code is omitted.
Default	20000 Hz

#### Details

Enabled when the Frequency Domain graph display is On and the X-axis is linear scale.

#### Example of Use

To set the Frequency Domain graph X-axis (linear scale) maximum value to 10,000 Hz.

```
DISP:FM:WIND:TRAC:FREQ:X:STOP:LIN 10000
```

**:DISPlay:AM|FM|PM:WINDow[1]:TRACe:FREQdomain:X[:SCALe]:STOPfreq:LINear?**

X Axis (Linear) Max. Frequency of Frequency Domain Graph Query

Function

This command queries the Frequency Domain graph X-axis (linear scale) maximum value (frequency).

Query

```
:DISPlay:AM|FM|PM:WINDow[1]:TRACe:FREQdomain:X[:SCALe]:STOPfreq:LINear?
```

Response

```
<freq>
```

Parameter

<freq>	Maximum frequency of X axis
Range	60 to 50000 Hz
Resolution	1 Hz
Suffix code	None

Value is returned in Hz units.

Example of Use

To query the Frequency Domain graph X-axis (linear scale) maximum value.

```
DISP:FM:WIND:TRAC:FREQ:X:STOP:LIN?  
> 10000
```



**:DISPlay:AM|FM|PM:WINDow[1]:TRACe:FREQdomain:X[:SCALe]:STOPfreq:LOG****<range>**

X Axis (Log) Max. Frequency of Frequency Domain Graph

## Function

Sets the maximum value (frequency) of the X-axis (log scale) in the Frequency Domain graph.

## Command

```
:DISPlay:AM|FM|PM:WINDow[1]:TRACe:FREQdomain:X[:SCALe]:S
TOPfreq:LOG <range>
```

## Parameter

<range>	Maximum frequency of X-axis
20HZ	20 Hz
30HZ	30 Hz
50HZ	50 Hz
100HZ	100 Hz
200HZ	200 Hz
300HZ	300 Hz
500HZ	500 Hz
1KHZ	1 kHz
2KHZ	2 kHz
3KHZ	3 kHz
5KHZ	5 kHz
10KHZ	10 kHz
20KHZ	20 kHz (default)
30KHZ	30 kHz
50KHZ	50 kHz

## Details

Enabled when the Frequency Domain graph display is On and the X-axis is log scale.

## Example of Use

To set the maximum value of the X-axis (log scale) in the Frequency Domain graph to 1 kHz.

```
DISP:FM:WIND:TRAC:FREQ:X:STOP:LOG 1KHZ
```

**:DISPlay:AM|FM|PM:WINDow[1]:TRACe:FREQdomain:X[:SCALe]:STOPfreq:LOG?**

X Axis (Log) Max. Frequency of Frequency Domain Graph Query

Function

Queries the maximum value (frequency) of the X-axis (log scale) in the Frequency Domain graph.

Query

:DISPlay:AM|FM|PM:WINDow[1]:TRACe:FREQdomain:X[:SCALe]:STOPfreq:LOG?

Response

<range>

Parameter

<range>	Minimum frequency of the X-axis
20HZ	20 Hz
30HZ	30 Hz
50HZ	50 Hz
100HZ	100 Hz
200HZ	200 Hz
300HZ	300 Hz
500HZ	500 Hz
1KHZ	1 kHz
2KHZ	2 kHz
3KHZ	3 kHz
5KHZ	5 kHz
10KHZ	10 kHz
20KHZ	20 kHz
30KHZ	30 kHz
50KHZ	50 kHz

Example of Use

To query the maximum value of the X-axis (log scale) in the Frequency Domain graph.

```
DISP:FM:WIND:TRAC:FREQ:X:STOP:LOG?  
> 1KHZ
```

**:SENSe:MODulation FM|WFM|AM|PM**

Modulation Scheme of TX Measurement

## Function

This command sets the modulation scheme for TX measurement.

## Command

`:SENSe:MODulation <mod>`

## Parameter

<mod>	Modulation scheme for TX measurement
FM	FM modulation
WFM	FM modulation (Wide FM measurement)
AM	AM modulation
PM	$\phi$ M Modulation
Default	FM

## Example of Use

To set the modulation scheme for TX measurement to  $\phi$ M.  
`SENS:MOD PM`

**:SENSe:MODulation?**

Modulation Scheme of TX Measurement Query

## Function

This command queries the modulation scheme for TX measurement.

## Query

`:SENSe:MODulation?`

## Response

&lt;mod&gt;

## Parameter

<mod>	Modulation scheme for TX measurement
FM	FM modulation
WFM	FM modulation (Wide FM measurement)
AM	AM modulation
PM	$\phi$ M Modulation

## Example of Use

To query the modulation scheme for TX measurement.  
`SENS:MOD?`  
`> PM`

**[[:SENSE]:AM|FM|PM:HPFilter OFF|HPF50|HPF300|HPF400|HPF30K**

High Pass Filter

Function

This command sets the High Pass Filter used for TX measurement.

Command

```
[[:SENSE]:AM|FM|PM:HPFilter <filter>
```

Parameter

<filter>	HPF for TX measurement
OFF	No filter
HPF50	50 Hz
HPF300	300 Hz
HPF400	400 Hz
HPF30K	30 kHz
Default	OFF

Details

The band filtering is executed with High Pass Filter for the AF signal demodulated according to the modulation method for the transmission measurement.

This setting is common for AM, FM, and PM.

Example of Use

To set High Pass Filter for TX measurement to 300 Hz.  
FM:HPF HPF300

**[[:SENSE]:AM|FM|PM:HPFilter?**

High Pass Filter Query

## Function

This command queries the High Pass Filter used for TX measurement.

## Query

```
[[:SENSE]:AM|FM|PM:HPFilter?
```

## Response

```
<filter>
```

## Parameter

<filter>	HPF for TX measurement
OFF	No filter
HPF50	50 Hz
HPF300	300 Hz
HPF400	400 Hz
HPF30K	30 kHz

## Example of Use

To query the High Pass Filter setting value used for TX measurement.

```
FM:HPF?
> HPF300
```

**[[:SENSE]:AM|FM|PM:LPFilter OFF|LPF300|LPF3K|LPF15K|LPF20K**

Low Pass Filter

Function

This command sets the Low Pass Filter used for TX measurement.

Command

```
[[:SENSE]:AM|FM|PM:LPFilter <filter>
```

Parameter

<filter>	LPF for TX measurement
OFF	No filter
LPF300	300 Hz
LPF3K	3 kHz
LPF15K	15 kHz
LPF20K	20 kHz
Default	OFF

Details

The band filtering is executed with Low Pass Filter for the AF signal demodulated according to the modulation method for TX measurement.

This setting is common for AM, FM, and PM.

Example of Use

To set Low Pass Filter for TX measurement to 3 kHz.

```
FM:LPF LPF3K
```

**[[:SENSE]:AM|FM|PM:LPFilter?**

Low Pass Filter Query

## Function

This command queries the Low Pass Filter used for TX measurement.

## Query

```
[[:SENSE]:AM|FM|PM:LPFilter?
```

## Response

```
<filter>
```

## Parameter

<filter>	LPF for TX measurement
OFF	No filter
LPF300	300 Hz
LPF3K	3 kHz
LPF15K	15 kHz
LPF20K	20 kHz

## Example of Use

To query the Low Pass Filter setting value used for TX measurement.

```
FM:LPF?
> LPF3K
```

**[[:SENSE]:FM:DEEMphasis OFF|US750|US500|US75|US50|US25**

De-Emphasis Filter

Function

This command sets the De-Emphasis Filter used for TX measurement.

Command

```
[[:SENSE]:FM:DEEMphasis <filter>
```

Parameter

<filter>	De-emphasis filter for TX measurement
OFF	No filter
US750	750 $\mu$ s de-emphasis filter
US500	500 $\mu$ s de-emphasis filter
US75	75 $\mu$ s de-emphasis filter
US50	50 $\mu$ s de-emphasis filter
US25	25 $\mu$ s de-emphasis filter
Default	OFF

Details

De-Emphasis is executed for the demodulated AF signal on FM modulation measurement of the TX measurement. This setting is enabled on FM modulation measurement.

Example of Use

To set De-Emphasis Filter to 750  $\mu$ s.  
FM:DEEM US750



**[ :SENSe ] : FM : DEEMphasis ?**

De-Emphasis Filter Query

Function

This command queries the De-Emphasis Filter used for TX measurement.

Query

`[ :SENSe ] : FM : DEEMphasis ?`

Response

`<filter>`

Parameter

<code>&lt;filter&gt;</code>	De-emphasis filter for TX measurement
OFF	No filter
US750	750 $\mu$ s de-emphasis filter
US500	500 $\mu$ s de-emphasis filter
US75	75 $\mu$ s de-emphasis filter
US50	50 $\mu$ s de-emphasis filter
US25	25 $\mu$ s de-emphasis filter

Example of Use

To query the De-Emphasis Filter setting value.

`FM : DEEM ?``> US750`

## **[[:SENSE]:FILTer:WEIGhting OFF|CCITt|CMESsage|468|ARM|AWEight**

Band Pass Filter

Function

This command sets the Band Pass Filter used for TX measurement.

Command

```
[[:SENSE]:FILTer:WEIGhting <filter>
```

Parameter

<filter>	Band Pass Filter for TX measurement
OFF	No filter
CCITt	CCITT (ITU-T P.53/O.41)
CMESsage	C-Message
468	CCIR 468
ARM	CCIR ARM
AWEight	A weighting
Default	OFF

Details

Band Pass Filter is applied for the AF signal demodulated according to the modulation method for the TX measurement.

Example of Use

To set the Band Pass Filter for TX measurement to CCITT.

```
FILT:WEIG CCIT
```

**[[:SENSE]:FILTer:WEIGHting?**

Band Pass Filter Query

## Function

This command queries the Band Pass Filter used for TX measurement.

## Query

[:SENSE]:FILTer:WEIGHting?

## Response

&lt;filter&gt;

## Parameter

<filter>	Band Pass Filter for TX measurement
OFF	No filter
CCIT	CCITT (ITU-T P.53/O.41)
CMES	C-Message
468	CCIR 468
ARM	CCIR ARM
AWEight	A weighting

## Example of Use

```
To query the Band Pass Filter used for TX measurement
FILT:WEIG?
> CCIT
```

**[[:SENSE]:AM|FM|PM:AVERAge[:STATe] ON|OFF|1|0**

Average Mode

Function

This command enables/disables averaging when performing TX measurement.

Command

[[:SENSE]:AM|FM|PM:AVERAge[:STATe] <switch>

Parameter

<switch>	Averaging On/Off
ON 1	Enables averaging
OFF 0	Disables averaging
Default	OFF

Details

When the averaging of measured values is enabled, measurements for the number of times set with Average Count are executed, and the average of the measured values will be the measurement result.

This setting is common for AM, FM, and PM.

Example of Use

To set averaging when performing TX measurement.  
FM:AVER ON

**[[:SENSE]:AM|FM|PM:AVERage[:STATe]?**

Average Mode Query

## Function

This command queries averaging On/Off status when performing TX measurement.

## Query

```
[[:SENSe]:AM|FM|PM:AVERage[:STATe]?
```

## Response

```
<switch>
```

## Parameter

<switch>	Averaging On/Off
1	Enables averaging
0	Disables averaging

## Example of Use

To query the averaging On/Off status when performing TX measurement.

```
FM:AVER?
> 1
```

**[[:SENSE]:AM|FM|PM:AVERage:COUNT <integer>**

Average Count

Function

This command sets the averaging count when performing TX measurement.

Command

[[:SENSE]:AM|FM|PM:AVERage:COUNT <integer>

Parameter

<integer>	Averaging count
Range	2 to 9999
Resolution	1
Default	10

Details

This command sets the measurement count for averaging when averaging for TX measurement has been set.

This setting is common for AM, FM, and PM.

Example of Use

To set the averaging count to 10.

FM:AVER:COUN 10

**[[:SENSe]:AM|FM|PM:AVERage:COUNT?**

Average Count Query

Function

This command queries the averaging count when performing TX measurement.

Query

[[:SENSe]:AM|FM|PM:AVERage:COUNT?

Response

<integer>

Parameter

<integer>	Averaging count
Range	2 to 9999
Resolution	1

Example of Use

To query the averaging count.

FM:AVER:COUN?

> 10

**:CALCulate:AM|FM|PM:MARKer:MODE DELTA|NORMal|OFF**

Marker Mode

Function

This command sets whether to display TX measurement Time Domain graph markers.

Command

```
:CALCulate:AM|FM|PM:MARKer:MODE <mode>
```

Parameter

<mode>	Marker mode
DELTA	Displays delta marker.
NORMal	Displays normal marker.
OFF	Hides marker.
Default	OFF

Details

This setting is common for AM, FM, and PM.  
It can be set when the Time Domain graph display is On.

Example of Use

To set the marker mode of Marker1 to Normal marker.  
CALC:FM:MARK:MODE NORM

## **:CALCulate:AM|FM|PM:MARKer:MODE?**

Marker Mode Query

Function

This command queries the TX measurement Time Domain graph marker display status.

Query

```
:CALCulate:AM|FM|PM:MARKer:MODE?
```

Response

```
<mode>
```

Parameter

<mode>	Marker mode
DELTA	Displays delta marker.
NORM	Displays normal marker.
OFF	Hides marker.

Example of Use

```
To query the marker mode of Marker1.  
CALC:FM:MARK:MODE?  
> NORM
```



**:CALCulate:AM|FM|PM:MARKer[1]|2:X <time>**

Maker X Axis Position

## Function

This command sets the TX measurement Time Domain graph marker positions specified in units of time.

## Command

```
:CALCulate:AM|FM|PM:MARKer[1]|2:X <time>
```

## Parameter

<time>	Marker position
Range	0 to setting value of Time range for TX measurement
Resolution	0.0078125 ms
Suffix code	None
Default	0 ms

## Details

This setting is common for AM, FM, and PM.

The setting for Marker1 is enabled when Time Domain graph marker is displayed.

The setting for Marker2 is enabled when Time Domain graph delta marker is displayed.

## Example of Use

To set the marker position on the Marker1 graph to 1 ms.

```
CALC:FM:MARK:X 1
```

## **:CALCulate:AM|FM|PM:MARKer[1]|2:X?**

Marker X Axis Position Query

### Function

This command queries the TX measurement Time Domain graph marker positions.

### Query

```
:CALCulate:AM|FM|PM:MARKer[1]|2:X?
```

### Response

```
<time>,<level>
```

### Parameter

<time>	Marker position
Range	0 to setting value of Time range for TX measurement
Resolution	0.0078125 ms
Suffix code	None
	Value is returned in second units.
<level>	Level
Suffix code	None
	AM: Value is returned in % units.
	FM: Value is returned in Hz units.
	PM: Value is returned in Radian units.

### Example of Use

To query the marker position on the graph.

```
CALC:FM:MARK:X?  
> 0.0010000,-10
```

**:CALCulate:AM|FM|PM:MARKer:FREQuency:MODE DELTA|NORMal|OFF**

Marker Mode of Frequency Domain Graph

## Function

This command sets whether to display TX measurement Frequency Domain graph markers.

## Command

```
:CALCulate:AM|FM|PM:MARKer:FREQuency:MODE <mode>
```

## Parameter

<mode>	Marker mode
DELTA	Displays delta marker.
NORMal	Displays normal marker.
OFF	Hides marker.
Default	OFF

## Details

This setting is common for AM, FM, and PM.  
It can be set when the Frequency Domain graph display is On.

## Example of Use

To set the Frequency Domain graph marker to normal marker display mode.

```
CALC:FM:MARK:FREQ:MODE NORM
```

## **:CALCulate:AM|FM|PM:MARKer:FREQuency:MODE?**

Marker Mode of Frequency Domain Graph Query

### Function

This command queries the TX measurement Frequency Domain graph marker status.

### Query

`:CALCulate:AM|FM|PM:MARKer:FREQuency:MODE?`

### Response

`<mode>`

### Parameter

<code>&lt;mode&gt;</code>	Marker mode
<code>DELTA</code>	Displays delta marker.
<code>NORM</code>	Displays normal marker.
<code>OFF</code>	Hides marker.

### Example of Use

To query the Frequency Domain graph marker mode status.

```
CALC:FM:MARK:FREQ:MODE?  
> NORM
```

**:CALCulate:AM|FM|PM:MARKer[1]|2:FREQuency:X <freq>**

Maker X Axis Position of Frequency Domain Graph

## Function

This command sets the TX measurement Frequency Domain graph marker positions specified in units of frequency.

## Command

```
:CALCulate:AM|FM|PM:MARKer[1]|2:FREQuency:X <freq>
```

## Parameter

<freq>	Marker position
Range	Dependent on the X-axis range and resolution
Resolution	For (setting range of Time Range) ≤ 20ms: 15.625 Hz For (setting range of Time Range) > 20ms: 3.90625 Hz
Suffix code	None
Default	15.625 Hz

## Details

This setting is common for AM, FM, and PM.

It can be set when the Frequency Domain graph marker display is enabled.

## Example of Use

To set the marker position on the graph to 100 Hz\*.

\*: The actual value is rounded up or down in resolution.

```
CALC:FM:MARK:FREQ:X 100
```

**:CALCulate:AM|FM|PM:MARKer[1]|2:FREQuency:X?**

Marker X Axis Position of Frequency Domain Graph Query

Function

This command queries the TX measurement Frequency Domain graph marker positions.

Query

:CALCulate:AM|FM|PM:MARKer[1]|2:FREQuency:X?

Response

<freq>,<level>

Parameter

<freq>	Marker position
Range	Dependent on the X-axis range and resolution
Resolution	For (setting range of Time Range) ≤ 20ms: 15.625 Hz For (setting range of Time Range) > 20ms: 3.90625 Hz
Suffix code	None Value is returned in Hz units.
<level>	Level
Suffix code	None AM: Value is returned in % units. FM: Value is returned in Hz units. PM: Value is returned in Radian units.

Example of Use

To query the marker position on the graph.

CALC:FM:MARK:FREQ:X?

> 109.375000,0.0031

**:CALCulate:AM|FM|PM:MARKer[1]|2:FREQuency:X:PEAK**

Peak Search of Frequency Domain Graph

## Function

This command detects the maximum level on the Frequency Domain graph Y-axis of TX measurement and moves the marker to the maximum level position.

## Command

```
:CALCulate:AM|FM|PM:MARKer[1]|2:FREQuency:X:PEAK
```

## Details

It can be set when the Frequency Domain graph marker display is enabled.

## Example of Use

To move the marker to the maximum level position on the Frequency Domain graph Y-axis.

```
CALC:FM:MARK:FREQ:X:PEAK
```

**:CALCulate:AM|FM|PM:MARKer[1]|2:FREQuency:X:NEXTpeak**

Next Peak Search of Frequency Domain Graph

## Function

This command moves the marker to the next peak to the current value in the TX measurement Frequency Domain graph.

## Command

```
:CALCulate:AM|FM|PM:MARKer[1]|2:FREQuency:X:NEXTpeak
```

## Details

It can be set when the Frequency Domain graph marker display is enabled.

## Example of Use

To move Marker1 to the next peak to the current value in the Frequency Domain graph.

```
CALC:FM:MARK:FREQ:X:NEXT
```

**:CALCulate:AM|FM|PM:RANGe[1]:X <time>**

Graph Indication Range

Function

This command sets the display range for the TX measurement graph in time unit.

Command

:CALCulate:AM|FM|PM:RANGe[1]:X <time>

Parameter

<time>	Display range
Range	0 to setting value of Time range for TX measurement
Resolution	0.1 ms
Suffix code	None
Default	ms

Details

This setting is common for AM, FM, and PM.  
Enabled when the Time Domain graph display is On.

Example of Use

To set the display range for the TX measurement graph to 1 ms.  
CALC:FM:RANG:X 1



**:CALCulate:AM|FM|PM:RANGe[1]:X?**

Graph Indication Range Query

## Function

This command queries the display range on the graph for TX measurement.

## Query

```
:CALCulate:AM|FM|PM:RANGe[1]:X?
```

## Response

```
<time>
```

## Parameter

<time>	Display range
Range	0 to setting value of Time range for TX measurement
Resolution	0.1 ms
Suffix code	None
	Value is returned in ms units.

## Example of Use

To query the display range on the graph for TX measurement.

```
CALC:FM:RANG:X?
```

```
> 4
```

### **[[:SENSE]:RF:POWER:REFERENCE:STATE <switch>**

RF Power Set Reference

Function

This command sets whether to display RF Power Set Reference.

Command

```
[[:SENSE]:RF:POWER:REFERENCE:STATE <switch>
```

Parameter

<switch>	RF Power display On/Off
OFF 0	RF Power display Off
ON 1	RF Power display On
Default	OFF

Details

The RF Power setting value when this setting is On is stored, and after that relative values are displayed.

Example of Use

To set the RF Power display to On.  
RF:POW:REF:STAT ON

### **[[:SENSE]:RF:POWER:REFERENCE:STATE?**

RF Power Set Reference Query

Function

This command queries the On/Off status of RF Power Set Reference display.

Query

```
[[:SENSE]:RF:POWER:REFERENCE:STATE?
```

Response

```
<switch>
```

Parameter

<switch>	RF Power Set Reference display On/Off
0	RF Power display Off
1	RF Power display On

Example of Use

To query the On/Off status of RF Power Set Reference display.  
RF:POW:REF:STAT?  
> 0

**[ :SENSE ] : RF : POWer : REFerence ?**

Set Reference Query

## Function

This command queries the value of RF Power when RF Power Set Reference is being displayed.

## Query

```
[ :SENSE ] : RF : POWer : REFerence ?
```

## Response

```
<level>
```

## Example of Use

To query the value of RF Power when RF Power Set Reference is being displayed.

```
RF : POW : REF ?  
> -91.52
```

**[[:SENSE]:FM:DCSQuelch:CODE:ANALysis INVerted|ON|NORMAl|OFF|2|1|0**

DCS Code Analysis

Function

This command enables/disables DCS Code Analysis and sets the polarity.

Command

```
[[:SENSE]:FM:DCSQuelch:CODE:ANALysis <switch>
```

Parameter

<switch>	DCS Code Analysis On/Off polarity
OFF 0	DCS Code Analysis Off
ON NORMAl 1	DCS Code Analysis On (Polarity: Normal)
INVerted 2	DCS Code Analysis On (Polarity: Inverted)
Default	OFF

Example of Use

To enable DCS Code Analysis.  
FM:DCSQ:CODE:ANAL ON

**[[:SENSe]:FM:DCSQuelch:CODE:ANALysis?**

DCS Code Analysis Query

Function

This command queries the On/Off status and the polarity of DCS Code Analysis.

Query

```
[[:SENSe]:FM:DCSQuelch:CODE:ANALysis?
```

Response

<switch>	DCS Code Analysis On/Off
0	DCS Code Analysis On
1	DCS Code Analysis Off (Polarity: Normal)
2	DCS Code Analysis On (Polarity: Inverted)

Example of Use

To query the On/Off status of DCS Code Analysis.  
FM:DCSQ:CODE:ANAL?  
> 1

**[[:SENSE]:POWER[:RF]:RANGE:AUTO ONCE**

Input Level Adjustment

## Function

This command adjusts Input Level based on signals.

## Command

```
[[:SENSE]:POWER[:RF]:RANGE:AUTO ONCE
```

## Example of Use

To adjust Input Level based on signals.

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

**[[:SENSE]:AF:LEVEL:REFERENCE?**

Set Reference Query

## Function

This command queries the value of which retains the AF Level, when AF Level Set Reference is displayed.

## Query

```
[[:SENSE]:AF:LEVEL:REFERENCE?
```

## Response

```
<level>
```

## Details

Enabled only when AF Level Set Reference is ON.

The invalid value (-999.0) is returned when it is Off.

## Example of Use

To query the value of which retains the AF Level, when AF Level Set Reference is displayed.

```
AF:LEV:REF?  
> -5.00
```

### **[[:SENSE]:FREQUENCY:CORRECTION <switch>**

RF Frequency Correction

#### Function

Sets whether to output carrier frequency deviation as DC offset for AF demodulation while measuring FM or Wide FM.

#### Command

```
[[:SENSE]:FREQUENCY:CORRECTION <switch>
```

#### Parameter

<switch>	Enables/disables RF Frequency
OFF 0	Disables RF Frequency Correction.
ON 1	Enables RF Frequency Correction.
Default	ON

#### Details

Saves the AF Level measurement value when set to On, and displays in relative value from then on.

#### Example of Use

To set the RF Frequency Correction to On.  
FREQ:CORR ON

### **[[:SENSE]:FREQUENCY:CORRECTION?**

RF Frequency Correction Query

#### Function

This command queries the setting of RF Frequency Correction.

#### Query

```
[[:SENSE]:FREQUENCY:CORRECTION?
```

#### Response

```
<switch>
```

#### Parameter

<switch>	RF Frequency Correction On/Off
0	RF Frequency Correction Off
1	RF Frequency Correction On

#### Example of Use

To query the setting of RF Frequency Correction.  
FREQ:CORR?  
> 0

**[[:SENSE]:RF:POWer:REFerence:LIMit <real>**

Measurement RF Power Limit

## Function

This command sets the lowest limit of RF signal level to display the demodulated signals measurement result.

## Command

```
[[:SENSE]:RF:POWer:REFerence:LIMit <real>
```

## Parameter

<real>	The lowest limit of RF signal level
Range	-60.0 to 30.0 dBm (Preamplifier Off) -80.0 to 10.0 dBm (Preamplifier On)
Resolution	0.01 dBm
Suffix code	None
Default	-50.0 dBm

## Details

When the input signal level is less than the setting value, the demodulated signals measurement result is hidden.

## Example of Use

To set the lowest limit of the level to -40 dBm.  

```
RF:POW:REF:LIM -40
```

## **[[:SENSE]:RF:POWer:REFerence:LIMit?**

Measurement RF Power Limit Query

### Function

This command queries the lowest limit of RF signal level to display the demodulated signals measurement result.

### Query

```
[[:SENSE]:RF:POWer:REFerence:LIMit?
```

### Response

<real>	The lowest limit of RF signal level
Range	-60.0 to 30.0 dBm (Preamp Off) -80.0 to 10.0 dBm (Preamp On)
Resolution	0.01 dBm
Suffix code	None

### Example of Use

```
To query the lowest limit of the level.  
RF:POW:REF:LIM?  
> -40.0
```



**:DISPlay:AM|FM|PM:METer:DISTortion ON|OFF|1|0**

Distortion Meter State

## Function

This command sets whether to display the Distortion meter.

## Command

```
:DISPlay:AM|FM|PM:METer:DISTortion <switch>
```

## Parameter

<switch>	Meter display On/Off
ON 1	Meter display On
OFF 0	Meter display Off
Default	OFF

## Details

This setting is common for AM, FM, and PM.

## Example of Use

To set the Distortion meter display to On.  
 DISP:FM:MET:DIST ON

**:DISPlay:AM|FM|PM:METer:DISTortion?**

Distortion Meter State Query

## Function

This command queries the Distortion meter status.

## Query

```
:DISPlay:AM|FM|PM:METer:DISTortion?
```

## Response

```
<switch>
```

## Parameter

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

## Example of Use

To query the Distortion meter status.  
 DISP:FM:MET:DIST?  
 > 1

### **:DISPlay:AM|FM|PM:METer:SINad ON|OFF|1|0**

SINAD Meter State

#### Function

This command sets whether to display the SINAD (Signal-to-Noise and Distortion Ratio) meter.

#### Command

```
:DISPlay:AM|FM|PM:METer:SINad <switch>
```

#### Parameter

<switch>	Meter display On/Off
ON 1	Meter display On
OFF 0	Meter display Off
Default	OFF

#### Details

This setting is common for AM, FM, and PM.

#### Example of Use

To set the SINAD meter display to On.  
DISP:FM:MET:SIN ON

### **:DISPlay:AM|FM|PM:METer:SINad?**

SINAD Meter State Query

#### Function

This command queries the SINAD meter status.

#### Query

```
:DISPlay:AM|FM|PM:METer:SINad?
```

#### Response

```
<switch>
```

#### Parameter

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

#### Example of Use

To query the SINAD meter status.  
DISP:FM:MET:SIN?  
> 1

**:DISPlay:AM|FM|PM:METer:THD ON|OFF|1|0**

THD Meter State

## Function

This command sets whether to display the THD (Total Harmonic Distortion) meter.

## Command

```
:DISPlay:AM|FM|PM:METer:THD <switch>
```

## Parameter

<switch>	Meter display On/Off
ON 1	Meter display On
OFF 0	Meter display Off
Default	OFF

## Details

This setting is common for AM, FM, and PM.

## Example of Use

To set the THD meter display to On.  
 DISP:FM:MET:THD ON

**:DISPlay:AM|FM|PM:METer:THD?**

THD Meter State Query

## Function

This command queries the THD meter status.

## Query

```
:DISPlay:AM|FM|PM:METer:THD?
```

## Response

```
<switch>
```

## Parameter

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

## Example of Use

To query the THD meter status.  
 DISP:FM:MET:THD?  
 > 1

### **:DISPlay:FM:METer:DVPP ON|OFF|1|0**

Deviation Meter State

Function

This command sets whether to display the Deviation meter.

Command

```
:DISPlay:FM:METer:DVPP <switch>
```

Parameter

<switch>	Meter display On/Off
ON 1	Meter display On
OFF 0	Meter display Off
Default	ON

Details

It can be set only for FM modulation.

Example of Use

To set whether to display the Deviation meter.  
DISP:FM:MET:DVPP ON

### **:DISPlay:FM:METer:DVPP?**

Deviation Meter State Query

Function

This command queries the Deviation meter status.

Query

```
:DISPlay:FM:METer:DVPP?
```

Response

```
<switch>
```

Parameter

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

Example of Use

To query the Deviation meter status.  
DISP:FM:MET:DVPP?  
> 1

**:DISPlay:AM|FM|PM:METer:DISTortion:JUDGe ON|OFF|1|0**

Distortion Deflection Judge

## Function

This command enables/disables Distortion Deflection Judge.

## Command

`:DISPlay:AM|FM|PM:METer:DISTortion:JUDGe <switch>`

## Parameter

<code>&lt;switch&gt;</code>	Deflection Judge On/Off
<code>ON 1</code>	On
<code>OFF 0</code>	Off
Default	OFF

## Details

This setting is common for AM, FM, and PM.

It can be set when the Distortion meter is On and Deflection View is On.

## Example of Use

To set the Distortion Deflection Judge to On.

`DISP:FM:MET:DIST:JUDG ON`**:DISPlay:AM|FM|PM:METer:DISTortion:JUDGe?**

Distortion Deflection Judge Query

## Function

This command queries the Distortion Deflection Judge on/off status.

## Query

`:DISPlay:AM|FM|PM:METer:DISTortion:JUDGe?`

## Response

`<switch>`

## Parameter

<code>&lt;switch&gt;</code>	Deflection Judge On/Off
<code>1</code>	On
<code>0</code>	Off

## Example of Use

To query the Distortion Deflection Judge status.

`DISP:FM:MET:DIST:JUDG?``> 1`

**:DISPlay:AM|FM|PM:METer:SINad:JUDGE ON|OFF|1|0**

SINAD Deflection Judge

Function

This command enables/disables SINAD Deflection Judge.

Command

:DISPlay:AM|FM|PM:METer:SINad:JUDGE <switch>

Parameter

<switch>	Deflection Judge On/Off
ON 1	On
OFF 0	Off
Default	OFF

Details

This setting is common for AM, FM, and PM.  
It can be set when the SINAD meter is On and Deflection View is On.

Example of Use

To set the SINAD Deflection Judge to On.  
DISP:FM:MET:SIN:JUDG ON

**:DISPlay:AM|FM|PM:METer:SINad:JUDGE?**

SINAD Deflection Judge Query

Function

This command queries the SINAD Deflection Judge on/off status.

Query

:DISPlay:AM|FM|PM:METer:SINad:JUDGE?

Response

<switch>

Parameter

<switch>	Deflection Judge On/Off
1	On
0	Off

Example of Use

To query the SINAD Deflection Judge status.  
DISP:FM:MET:SIN:JUDG?  
> 1

**:DISPlay:AM|FM|PM:METer:THD:JUDGe ON|OFF|1|0**

THD Deflection Judge

## Function

This command enables/disables THD Deflection Judge.

## Command

```
:DISPlay:AM|FM|PM:METer:THD:JUDGe <switch>
```

## Parameter

<switch>	Deflection Judge On/Off
ON 1	On
OFF 0	Off
Default	OFF

## Details

This setting is common for AM, FM, and PM.  
It can be set when the THD meter is On and Deflection View is On.

## Example of Use

To set the THD Deflection Judge to On.  
DISP:FM:MET:THD:JUDG ON

**:DISPlay:AM|FM|PM:METer:THD:JUDGe?**

THD Deflection Judge Query

## Function

This command queries the THD Deflection Judge on/off status.

## Query

```
:DISPlay:AM|FM|PM:METer:THD:JUDGe?
```

## Response

```
<switch>
```

## Parameter

<switch>	Deflection Judge On/Off
1	On
0	Off

## Example of Use

To query the THD Deflection Judge status.  
DISP:FM:MET:THD:JUDG?  
> 1

### **:DISPlay:FM:METer:DVPP:JUDGe ON|OFF|1|0**

Deviation Deflection Judge

Function

This command enables/disables Deviation Deflection Judge.

Command

```
:DISPlay:FM:METer:DVPP:JUDGe <switch>
```

Parameter

<switch>	Deflection Judge On/Off
ON 1	On
OFF 0	Off
Default	OFF

Details

It can be set only for FM modulation.

It can be set when the Deviation meter is On and Deflection View is On.

Example of Use

To set the Deviation Deflection Judge to On.

```
DISP:FM:MET:DVPP:JUDG ON
```

### **:DISPlay:FM:METer:DVPP:JUDGe?**

Deviation Deflection Judge Query

Function

This command queries the Deviation Deflection Judge on/off status.

Query

```
:DISPlay:FM:METer:DVPP:JUDGe?
```

Response

```
<switch>
```

Parameter

<switch>	Deflection Judge On/Off
1	On
0	Off

Example of Use

To query the Deviation Deflection Judge status.

```
DISP:FM:MET:DVPP:JUDG?
```

```
> 1
```



**:DISPlay:AM|FM|PM:METer:DISTortion:REFerence:DB MINimum|CENTer|MAXimum**

Reference of Distortion Meter (dB)

## Function

This command sets the Distortion meter reference (in dB units).

## Command

`:DISPlay:AM|FM|PM:METer:DISTortion:REFerence:DB <mode>`

## Parameter

<code>&lt;mode&gt;</code>	Reference of meter
<code>MINimum</code>	Minimum
<code>CENTer</code>	Center (default)
<code>MAXimum</code>	Maximum

## Details

It can be set when the Distortion meter is On and the unit is dB.

## Example of Use

To set the Distortion meter reference to Center.

`DISP:FM:MET:DIST:REF:DB CENT`**:DISPlay:AM|FM|PM:METer:DISTortion:REFerence:DB?**

Reference of Distortion Meter (dB) Query

## Function

This command queries the Distortion meter reference (in dB units).

## Query

`:DISPlay:AM|FM|PM:METer:DISTortion:REFerence:DB?`

## Response

`<mode>`

## Parameter

<code>&lt;mode&gt;</code>	Reference of meter
<code>MIN</code>	Minimum
<code>CENT</code>	Center
<code>MAX</code>	Maximum

## Example of Use

To query the Distortion meter reference.

`DISP:FM:MET:DIST:REF:DB?``> CENT`

**:DISPlay:AM|FM|PM:METer:DISTortion:REFerence:PERCent  
MINimum|CENTer|MAXimum**

Reference of Distortion Meter (%)

Function

This command sets the Distortion meter reference (in % units).

Command

```
:DISPlay:AM|FM|PM:METer:DISTortion:REFerence:PERCent  
<mode>
```

Parameter

<mode>	Reference of meter
MINimum	Minimum (default)
CENTer	Center
MAXimum	Maximum

Details

It can be set when the Distortion meter is On and the unit is %.

Example of Use

To set the Distortion meter reference to Center.  
DISP:FM:MET:DIST:REF:PERC CENT

**:DISPlay:AM|FM|PM:MEter:DISTortion:REFerence:PERCent?**

Reference of Distortion Meter (%) Query

## Function

This command queries the Distortion meter reference (in % units).

## Query

`:DISPlay:AM|FM|PM:MEter:DISTortion:REFerence:PERCent?`

## Response

`<mode>`

## Parameter

<code>&lt;mode&gt;</code>	Reference of meter
MIN	Minimum
CENT	Center
MAX	Maximum

## Example of Use

To query the Distortion meter reference.

```
DISP:FM:MET:DIST:REF:PERC?
> CENT
```

**:DISPlay:AM|FM|PM:METer:SINad:REFerence:DB MINimum|CENTer|MAXimum**

Reference of SINAD Meter (dB)

Function

This command sets the SINAD meter reference (in dB units).

Command

```
:DISPlay:AM|FM|PM:METer:SINad:REFerence:DB <mode>
```

Parameter

<mode>	Reference of meter
MINimum	Minimum (default)
CENTer	Center
MAXimum	Maximum

Details

It can be set when the SINAD meter is On and the unit is dB.

Example of Use

To set the SINAD meter reference to Center.

```
DISP:FM:MET:SIN:REF:DB CENT
```

**:DISPlay:AM|FM|PM:METer:SINad:REFerence:DB?**

Reference of SINAD Meter (dB) Query

Function

This command queries the SINAD meter reference (in dB units).

Query

```
:DISPlay:AM|FM|PM:METer:SINad:REFerence:DB?
```

Response

```
<mode>
```

Parameter

<mode>	Reference of meter
MIN	Minimum
CENT	Center
MAX	Maximum

Example of Use

To query the SINAD meter reference.

```
DISP:FM:MET:SIN:REF:DB?
```

```
> CENT
```

**:DISPlay:AM|FM|PM:MEter:SINad:REference:PERCent MINimum|CENTer|MAXimum**

Reference of SINAD Meter (%)

## Function

This command sets the SINAD meter reference (in % units).

## Command

`:DISPlay:AM|FM|PM:MEter:SINad:REference:PERCent <mode>`

## Parameter

<code>&lt;mode&gt;</code>	Reference of meter
<code>MINimum</code>	Minimum (default)
<code>CENTer</code>	Center
<code>MAXimum</code>	Maximum

## Details

It can be set when the SINAD meter is On and the unit is %.

## Example of Use

To set the SINAD meter reference to Center.

`DISP:FM:MET:SIN:REF:PERC CENT`**:DISPlay:AM|FM|PM:MEter:SINad:REference:PERCent?**

Reference of SINAD Meter (%) Query

## Function

This command queries the SINAD meter reference (in % units).

## Query

`:DISPlay:AM|FM|PM:MEter:SINad:REference:PERCent?`

## Response

`<mode>`

## Parameter

<code>&lt;mode&gt;</code>	Reference of meter
<code>MIN</code>	Minimum
<code>CENT</code>	Center
<code>MAX</code>	Maximum

## Example of Use

To query the SINAD meter reference.

`DISP:FM:MET:SIN:REF:PERC?``> CENT`

**:DISPlay:AM|FM|PM:METer:THD:REFerence:DB MINimum|CENTer|MAXimum**

Reference of THD Meter (dB)

Function

This command sets the THD meter reference (in dB units).

Command

`:DISPlay:AM|FM|PM:METer:THD:REFerence:DB <mode>`

Parameter

<code>&lt;mode&gt;</code>	Reference of meter
<code>MINimum</code>	Minimum
<code>CENTer</code>	Center (default)
<code>MAXimum</code>	Maximum

Details

It can be set when the THD meter is On and the unit is dB.

Example of Use

To set the THD meter reference to Center.

`DISP:FM:MET:THD:REF:DB CENT`

**:DISPlay:AM|FM|PM:METer:THD:REFerence:DB?**

Reference of THD Meter (dB) Query

Function

This command queries the THD meter reference (in dB units).

Query

`:DISPlay:AM|FM|PM:METer:THD:REFerence:DB?`

Response

`<mode>`

Parameter

<code>&lt;mode&gt;</code>	Reference of meter
<code>MIN</code>	Minimum
<code>CENT</code>	Center
<code>MAX</code>	Maximum

Example of Use

To query the THD meter reference.

`DISP:FM:MET:THD:REF:DB?`

`> CENT`

**:DISPlay:AM|FM|PM:MEter:THD:REference:PERCent MINimum|CENTer|MAXimum**

Reference of THD Meter (%)

## Function

This command sets the THD meter reference (in % units).

## Command

```
:DISPlay:AM|FM|PM:MEter:THD:REference:PERCent <mode>
```

## Parameter

<mode>	Reference of meter
MINimum	Minimum (default)
CENTer	Center
MAXimum	Maximum

## Details

It can be set when the THD meter is On and the unit is %.

## Example of Use

To set the THD meter reference to Center.  
 DISP:FM:MET:THD:REF:PERC CENT

**:DISPlay:AM|FM|PM:MEter:THD:REference:PERCent?**

Reference of THD Meter (%) Query

## Function

This command queries the THD meter reference (in % units).

## Query

```
:DISPlay:AM|FM|PM:MEter:THD:REference:PERCent?
```

## Response

```
<mode>
```

## Parameter

<mode>	Reference of meter
MIN	Minimum
CENT	Center
MAX	Maximum

## Example of Use

To query the THD meter reference.  
 DISP:FM:MET:THD:REF:PERC?  
 > CENT

**:DISPlay:FM:METer:DVPP:REFErence:HZ MINimum|CENTer|MAXimum**

Reference of Deviation Meter (Hz)

Function

This command sets the Deviation meter reference (in Hz units).

Command

```
:DISPlay:FM:METer:DVPP:REFErence:HZ <mode>
```

Parameter

<mode>	Reference of meter
MINimum	Minimum
CENTer	Center (default)
MAXimum	Maximum

Details

It can be set only for FM modulation.

It can be set when the Deviation meter is On and the unit is Hz.

Example of Use

To set the Deviation meter reference to Center.

```
DISP:FM:MET:DVPP:REF:HZ CENT
```



**:DISPlay:FM:METer:DVPP:REFerence:HZ?**

Reference of Deviation Meter (Hz) Query

## Function

This command queries the Deviation meter reference (in Hz units).

## Query

`:DISPlay:FM:METer:DVPP:REFerence:HZ?`

## Response

`<mode>`

## Parameter

<code>&lt;mode&gt;</code>	Reference of meter
MIN	Minimum
CENT	Center
MAX	Maximum

## Example of Use

To query the Deviation meter reference.

```
DISP:FM:MET:DVPP:REF:HZ?
> CENT
```

**:DISPlay:FM:METer:DVPP:REFErence:PERCent MINimum|CENTer|MAXimum**

Reference of Deviation Meter (%)

Function

This command sets the Deviation meter reference (in % units).

Command

```
:DISPlay:FM:METer:DVPP:REFErence:PERCent <mode>
```

Parameter

<mode>	Reference of meter
MINimum	Minimum
CENTer	Center (default)
MAXimum	Maximum

Details

It can be set only for FM modulation.

It can be set when the Deviation meter is On and the unit is %.

Example of Use

To set the Deviation meter reference to Center.

```
DISP:FM:MET:DVPP:REF:PERC CENT
```

**:DISPlay:FM:MEter:DVPP:REference:PERCent?**

Reference of Deviation Meter (%) Query

## Function

This command queries the Deviation meter reference (in % units).

## Query

`:DISPlay:FM:MEter:DVPP:REference:PERCent?`

## Response

`<mode>`

## Parameter

<code>&lt;mode&gt;</code>	Reference of meter
MIN	Minimum
CENT	Center
MAX	Maximum

## Example of Use

To query the Deviation meter reference.

```
DISP:FM:MET:DVPP:REF:PERC?
> CENT
```

**:DISPlay:AM|FM|PM:MEter:DISTortion:REFerence:VALue:DB <ref\_val>**

Reference Value of Distortion Meter (dB)

Function

This command sets the Distortion meter reference value (in dB units).

Command

```
:DISPlay:AM|FM|PM:MEter:DISTortion:REFerence:VALue:DB  
<ref_val>
```

Parameter

<ref_val>	Reference value of meter
Range	-100.0 to 100.0 dB
Resolution	0.1 dB
Suffix code	DB
	dB is used when the suffix code is omitted.
Default	-40.0 dB

Details

It can be set when the Distortion meter is On and the unit is dB.

Example of Use

To set the Distortion meter reference value to 10 dB.  
DISP:FM:MET:DIST:REF:VAL:DB 10

**:DISPlay:AM|FM|PM:MEter:DISTortion:REFerence:VALue:DB?**

Reference Value of Distortion Meter (dB) Query

## Function

This command queries the Distortion meter reference value (in dB units).

## Query

`:DISPlay:AM|FM|PM:MEter:DISTortion:REFerence:VALue:DB?`

## Response

`<ref_val>`

## Parameter

<code>&lt;ref_val&gt;</code>	Reference value of meter
Range	-100.0 to 100.0 dB
Resolution	0.1 dB
Suffix code	None

Value is returned in dB units.

## Example of Use

To query the Distortion meter reference value.

```
DISP:FM:MET:DIS:REF:VAL:DB?
> 10.0
```

**:DISPlay:AM|FM|PM:MEter:DISTortion:REFerence:VALue:PERCent <ref\_val>**

Reference Value of Distortion Meter (%)

Function

This command sets the Distortion meter reference value (in % units).

Command

```
:DISPlay:AM|FM|PM:MEter:DISTortion:REFerence:VALue:PERCent <ref_val>
```

Parameter

<ref_val>	Reference value of meter
Range	0.00 to 10000.00%
Resolution	0.01%
Default	0.00%

Details

It can be set when the Distortion meter is On and the unit is %.

Example of Use

To set the Distortion meter reference value to 10%.  
DISP:FM:MET:DIS:REF:VAL:PERC 10

**:DISPlay:AM|FM|PM:MEter:DISTortion:REFerence:VALue:PERCent?**

Reference Value of Distortion Meter (%) Query

Function

This command queries the Distortion meter reference value (in % units).

Query

```
:DISPlay:AM|FM|PM:MEter:DISTortion:REFerence:VALue:PERCent?
```

Response

```
<ref_val>
```

Parameter

<ref_val>	Reference value of meter
Range	0.00 to 10000.00%
Resolution	0.01%

Example of Use

To query the Distortion meter reference value.  
DISP:FM:MET:DIS:REF:VAL:PERC?  
> 10.00

**:DISPlay:AM|FM|PM:MEtEr:SiNAd:REFEreNce:VALue:DB <ref\_val>**

Reference Value of SINAD Meter (dB)

## Function

This command sets the SINAD meter reference value (in dB units).

## Command

```
:DISPlay:AM|FM|PM:MEtEr:SiNAd:REFEreNce:VALue:DB
<ref_val>
```

## Parameter

<ref_val>	Reference value of meter
Range	–100.0 to 100.0 dB
Resolution	0.1 dB
Suffix code	DB
	dB is used when the suffix code is omitted.
Default	20.0 dB

## Details

It can be set when the SINAD meter is On and the unit is dB.

## Example of Use

To set the SINAD meter reference value to 10 dB.

```
DISP:FM:MET:SiN:REF:VAL:DB 10
```

**:DISPlay:AM|FM|PM:METer:SINad:REFerence:VALue:DB?**

Reference Value of SINAD Meter (dB) Query

Function

This command queries the SINAD meter reference value (in dB units).

Query

:DISPlay:AM|FM|PM:METer:SINad:REFerence:VALue:DB?

Response

<ref\_val>

Parameter

<ref_val>	Reference value of meter
Range	-100.0 to 100.0 dB
Resolution	0.1 dB
Suffix code	None

Value is returned in dB units.

Example of Use

To query the SINAD meter reference value.

```
DISP:FM:MET:SIN:REF:VAL:DB?  
> 10.0
```



**:DISPlay:AM|FM|PM:METer:SINad:REFerence:VALue:PERCent <ref\_val>**

Reference Value of SINAD Meter (%)

## Function

This command sets the SINAD meter reference value (in % units).

## Command

```
:DISPlay:AM|FM|PM:METer:SINad:REFerence:VALue:PERCent
<ref_val>
```

## Parameter

<ref_val>	Reference value of meter
Range	0.00 to 10000.00%
Resolution	0.01%
Default	0.00%

## Details

It can be set when the SINAD meter is On and the unit is %.

## Example of Use

To set the SINAD meter reference value to 10%.

```
DISP:FM:MET:SIN:REF:VAL:PERC 10
```

**:DISPlay:AM|FM|PM:METer:SINad:REFerence:VALue:PERCent?**

Reference Value of SINAD Meter (%) Query

## Function

This command queries the SINAD meter reference value (in % units).

## Query

```
:DISPlay:AM|FM|PM:METer:SINad:REFerence:VALue:PERCent?
```

## Response

```
<ref_val>
```

## Parameter

<ref_val>	Reference value of meter
Range	0.00 to 10000.00%
Resolution	0.01%

## Example of Use

To query the SINAD meter reference value.

```
DISP:FM:MET:SIN:REF:VAL:PERC?
> 10.00
```

**:DISPlay:AM|FM|PM:METer:THD:REFerence:VALue:DB <ref\_val>**

Reference Value of THD Meter (dB)

Function

This command sets the THD meter reference value (in dB units).

Command

```
:DISPlay:AM|FM|PM:METer:THD:REFerence:VALue:DB <ref_val>
```

Parameter

<ref_val>	Reference value of meter
Range	-100.0 to 100.0 dB
Resolution	0.1 dB
Suffix code	DB
	dB is used when the suffix code is omitted.
Default	-40.0 dB

Details

It can be set when the THD meter is On and the unit is dB.

Example of Use

To set the THD meter reference value to 10 dB.  
DISP:FM:MET:THD:REF:VAL:DB 10

**:DISPlay:AM|FM|PM:METer:THD:REFerence:VALue:DB?**

Reference Value of THD Meter (dB) Query

## Function

This command queries the THD meter reference value (in dB units).

## Query

`:DISPlay:AM|FM|PM:METer:THD:REFerence:VALue:DB?`

## Response

`<ref_val>`

## Parameter

<code>&lt;ref_val&gt;</code>	Reference value of meter
Range	–100.0 to 100.0 dB
Resolution	0.1 dB
Suffix code	None

Value is returned in dB units.

## Example of Use

To query the THD meter reference value.

```
DISP:FM:MET:THD:REF:VAL:DB?
> 10.0
```

**:DISPlay:AM|FM|PM:METer:THD:REFerence:VALue:PERCent <ref\_val>**

Reference Value of THD Meter (%)

Function

This command sets the THD meter reference value (in % units).

Command

```
:DISPlay:AM|FM|PM:METer:THD:REFerence:VALue:PERCent  
<ref_val>
```

Parameter

<ref_val>	Reference value of meter
Range	0.00 to 10000.00%
Resolution	0.01%
Default	0.00%

Details

It can be set when the THD meter is On and the unit is %.

Example of Use

To set the THD meter reference value to 10%.  
DISP:FM:MET:THD:REF:VAL:PERC 10

**:DISPlay:AM|FM|PM:METer:THD:REFerence:VALue:PERCent?**

Reference Value of THD Meter (%) Query

Function

This command queries the THD meter reference value (in % units).

Query

```
:DISPlay:AM|FM|PM:METer:THD:REFerence:VALue:PERCent?
```

Response

```
<ref_val>
```

Parameter

<ref_val>	Reference value of meter
Range	0.00 to 10000.00%
Resolution	0.01%
Suffix code	None
	Value is returned in % units.

Example of Use

To query the THD meter reference value.  
DISP:FM:MET:THD:REF:VAL:PERC?  
> 10.00

**:DISPlay:FM:METer:DVPP:REFerence:VALue:HZ <ref val>**

Reference Value of Deviation Meter (Hz)

## Function

This command sets the Deviation meter reference value (in Hz units).

## Command

`:DISPlay:FM:METer:DVPP:REFerence:VALue:HZ <ref val>`

## Parameter

<code>&lt;ref_val&gt;</code>	Reference value of meter
Range	0 to 1000 kHz
Resolution	0.1 Hz
Suffix code	HZ
	Hz is used when omitted.
Default	3.5 kHz

## Details

It can be set only for FM modulation.

It can be set when the Deviation meter is On and the unit is Hz.

## Example of Use

To set the Deviation meter reference value to 5 kHz.

`DISP:FM:MET:DVPP:REF:VAL:HZ 5000`

**:DISPlay:FM:METer:DVPP:REFerence:VALue:HZ?**

Reference Value of Deviation Meter (Hz) Query

Function

This command queries the Deviation meter reference value (in Hz units).

Query

```
:DISPlay:FM:METer:DVPP:REFerence:VALue:HZ?
```

Response

```
<ref_val>
```

Parameter

<ref_val>	Reference value of meter
Range	0 to 1000 kHz
Resolution	0.1 Hz
Suffix code	None

Value is returned in Hz units.

Example of Use

To query the Deviation meter reference value.

```
DISP:FM:MET:DVPP:REF:VAL:HZ?  
> 5000.0
```

**:DISPlay:FM:METer:DVPP:REFeRence:VALue:PERCent <ref val>**

Reference Value of Deviation Meter (%)

## Function

This command sets the Deviation meter reference value (in % units).

## Command

```
:DISPlay:FM:METer:DVPP:REFeRence:VALue:PERCent <ref val>
```

## Parameter

<ref_val>	Reference value of meter
Range	0.00 to 10000.00%
Resolution	0.01%
Default	0.00%

## Details

It can be set only for FM modulation.

It can be set when the Deviation meter is On and the unit is %.

## Example of Use

To set the Deviation meter reference value to 10%.

```
DISP:FM:MET:DVPP:REF:VAL:PERC 10
```

**:DISPlay:FM:MEter:DVPP:REference:VALue:PERCent?**

Reference Value of Deviation Meter (%) Query

Function

This command queries the Deviation meter reference value (in % units).

Query

:DISPlay:FM:MEter:DVPP:REference:VALue:PERCent?

Response

<ref\_val>

Parameter

<ref_val>	Reference value of meter
Range	0.00 to 10000.00%
Resolution	0.01%

Example of Use

To query the Deviation meter reference value.

DISP:FM:MET:DVPP:REF:VAL:PERC?

> 10.00



**:DISPlay:AM|FM|PM:MEter:DISTortion:RNG1:DB <val>**

Range1 of Distortion Meter (dB)

## Function

This command sets the Distortion meter Range1 (in dB units).

## Command

```
:DISPlay:AM|FM|PM:MEter:DISTortion:RNG1:DB <val>
```

## Parameter

<val>	Range of meter
Range	0.0 to 100.0 dB
Resolution	0.1 dB
Suffix code	DB
	dB is used when the suffix code is omitted.
Default	20.0 dB

## Details

It can be set when the Distortion meter is On and the unit is dB.

## Example of Use

To set the Distortion meter Range1 to 10 dB.  
 DISP:FM:MET:DIST:RNG1:DB 10

**:DISPlay:AM|FM|PM:MEter:DISTortion:RNG1:DB?**

Range1 of Distortion Meter (dB) Query

Function

This command queries the Distortion meter Range1 (in dB units).

Query

:DISPlay:AM|FM|PM:MEter:DISTortion:RNG1:DB?

Response

<val>

Parameter

<val>	Range of meter
Range	0.0 to 100.0 dB
Resolution	0.1 dB
Suffix code	None

Value is returned in dB units.

Example of Use

To query the Distortion meter Range1.

```
DISP:FM:MET:DIST:RNG1:DB?
```

```
> 10.0
```

**:DISPlay:AM|FM|PM:MEter:DISTortion:RNG1:PERCent <val>**

Range1 of Distortion Meter (%)

## Function

This command sets the Distortion meter Range1 (in % units).

## Command

`:DISPlay:AM|FM|PM:MEter:DISTortion:RNG1:PERCent <val>`

## Parameter

<val>	Range of meter
Range	0.0 to 10000.0%
Resolution	0.1%
Default	2.0%

## Details

It can be set when the Distortion meter is On and the unit is %.

## Example of Use

To set the Distortion meter Range1 to 10%.

`DISP:FM:MET:DIST:RNG1:PERC 10`**:DISPlay:AM|FM|PM:MEter:DISTortion:RNG1:PERCent?**

Range1 of Distortion Meter (%) Query

## Function

This command queries the Distortion meter Range1 (in % units).

## Query

`:DISPlay:AM|FM|PM:MEter:DISTortion:RNG1:PERCent?`

## Response

&lt;val&gt;

## Parameter

<val>	Range of meter
Range	0.0 to 10000.0%
Resolution	0.1%

## Example of Use

To query the Distortion meter Range1.

`DISP:FM:MET:DIST:RNG1:PERC?``> 10.0`

**:DISPlay:AM|FM|PM:METer:DISToRtion:RNG2:DB <val>**

Range2 of Distortion Meter (dB)

Function

This command sets the Distortion meter Range2 (in dB units).

Command

:DISPlay:AM|FM|PM:METer:DISToRtion:RNG2:DB <val>

Parameter

<val>	Range of meter
Range	0.0 to 100.0 dB
Resolution	0.1 dB
Suffix code	DB
	dB is used when the suffix code is omitted.
Default	40.0 dB

Details

It can be set when the Distortion meter is On and the unit is dB.

Example of Use

To set the Distortion meter Range2 to 10 dB.

DISP:FM:MET:DIST:RNG2:DB 10

**:DISPlay:AM|FM|PM:METer:DISTortion:RNG2:DB?**

Range2 of Distortion Meter (dB) Query

## Function

This command queries the Distortion meter Range2 (in dB units).

## Query

`:DISPlay:AM|FM|PM:METer:DISTortion:RNG2:DB?`

## Response

`<val>`

## Parameter

<code>&lt;val&gt;</code>	Range of meter
Range	0.0 to 100.0 dB
Resolution	0.1 dB
Suffix code	None

Value is returned in dB units.

## Example of Use

To query the Distortion meter Range2.

```
DISP:FM:MET:DIST:RNG2:DB?
> 10.0
```

**:DISPlay:AM|FM|PM:METer:DISTortion:RNG2:PERCent <val>**

Range2 of Distortion Meter (%)

Function

This command sets the Distortion meter Range2 (in % units).

Command

```
:DISPlay:AM|FM|PM:METer:DISTortion:RNG2:PERCent <val>
```

Parameter

<val>	Range of meter
Range	0.0 to 10000.0%
Resolution	0.1%
Default	10.0%

Details

It can be set when the Distortion meter is On and the unit is %.

Example of Use

To set the Distortion meter Range2 to 10%.

```
DISP:FM:MET:DIST:RNG2:PERC 10
```

**:DISPlay:AM|FM|PM:METer:DISTortion:RNG2:PERCent?**

Range2 of Distortion Meter (%) Query

Function

This command queries the Distortion meter Range2 (in % units).

Query

```
:DISPlay:AM|FM|PM:METer:DISTortion:RNG2:PERCent?
```

Response

```
<val>
```

Parameter

<val>	Range of meter
Range	0.0 to 10000.0%
Resolution	0.1%

Example of Use

To query the Distortion meter Range2.

```
DISP:FM:MET:DIST:RNG1:PERC?
```

```
> 10.0
```

**:DISPlay:AM|FM|PM:METer:DISToRtion:JUDGe:RANGe:DB <val>**

Pass Range of Distortion Meter (dB)

## Function

This command sets the Distortion meter Pass Range (in dB units).

## Command

`:DISPlay:AM|FM|PM:METer:DISToRtion:JUDGe:RANGe:DB <val>`

## Parameter

<val>	Range of meter
Range	0.0 to 100.0 dB
Resolution	0.1 dB
Suffix code	DB
	dB is used when the suffix code is omitted.
Default	2.0 dB

## Details

It can be set when the Distortion meter is On, the Distortion meter Deflection View is On, and the unit is dB.

## Example of Use

To set the Distortion meter Pass Range to 10 dB.  
`DISP:FM:MET:DIST:JUDG:RANG:DB 10`

**:DISPlay:AM|FM|PM:METer:DISTortion:JUDGe:RANGe:DB?**

Pass Range of Distortion Meter (dB) Query

Function

This command queries the Distortion meter Pass Range (in dB units).

Query

:DISPlay:AM|FM|PM:METer:DISTortion:JUDGe:RANGe:DB?

Response

<val>

Parameter

<val>	Range of meter
Range	0.0 to 100.0 dB
Resolution	0.1 dB
Suffix code	None

Value is returned in dB units.

Example of Use

To query the Distortion meter Pass Range.

```
DISP:FM:MET:DIST:JUDG:RANG:DB?  
> 10.0
```



**:DISPlay:AM|FM|PM:METer:DISTortion:JUDGe:RANGe:PERCent <val>**

Pass Range of Distortion Meter (%)

## Function

This command sets the Distortion meter Pass Range (in % units).

## Command

```
:DISPlay:AM|FM|PM:METer:DISTortion:JUDGe:RANGe:PERCent
<val>
```

## Parameter

<val>	Range of meter
Range	0.0 to 10000.0%
Resolution	0.1%
Default	1.0%

## Details

It can be set when the Distortion meter is On, the Distortion meter Deflection View is On, and the unit is %.

## Example of Use

To set the Distortion meter Pass Range to 10%.

```
DISP:FM:MET:DIST:JUDG:RANG:PERC 10
```

**:DISPlay:AM|FM|PM:MEtEr:DISToRtion:JUDGe:RANGe:PERCent?**

Pass Range of Distortion Meter (%) Query

Function

This command queries the Distortion meter Pass Range (in % units).

Query

:DISPlay:AM|FM|PM:MEtEr:DISToRtion:JUDGe:RANGe:PERCent?

Response

<val>

Parameter

<val>	Range of meter
Range	0.0 to 10000.0%
Resolution	0.1%

Example of Use

To query the Distortion meter Pass Range.  
DISP:FM:MET:DIST:JUDG:RANG:PERC?  
> 10.0

**:DISPlay:AM|FM|PM:MEtEr:SiNAd:RNG1:DB <val>**

Range1 of SINAD Meter (dB)

## Function

This command sets the SINAD meter Range1 (in dB units).

## Command

`:DISPlay:AM|FM|PM:MEtEr:SiNAd:RNG1:DB <val>`

## Parameter

<val>	Range of meter
Range	0.0 to 100.0 dB
Resolution	0.1 dB
Suffix code	DB
	dB is used when the suffix code is omitted.
Default	8.0 dB

## Details

It can be set when the SINAD meter is On and the unit is dB.

## Example of Use

To set the SINAD meter Range1 to 10 dB.

```
DISP:FM:MET:SiN:RNG1:DB 10
```

**:DISPlay:AM|FM|PM:METer:SINad:RNG1:DB?**

Range1 of SINAD Meter (dB) Query

Function

This command queries the SINAD meter Range1 (in dB units).

Query

:DISPlay:AM|FM|PM:METer:SINad:RNG1:DB?

Response

<val>

Parameter

<val>	Range of meter
Range	0.0 to 100.0 dB
Resolution	0.1 dB
Suffix code	None

Value is returned in dB units.

Example of Use

To query the SINAD meter Range1.  
DISP:FM:MET:SIN:RNG1:DB?  
> 10.0

**:DISPlay:AM|FM|PM:METer:SINad:RNG1:PERCent <val>**

Range1 of SINAD Meter (%)

## Function

This command sets the SINAD meter Range1 (in % units).

## Command

`:DISPlay:AM|FM|PM:METer:SINad:RNG1:PERCent <val>`

## Parameter

<val>	Range of meter
Range	0.0 to 10000.0%
Resolution	0.1%
Default	2000.0%

## Details

It can be set when the SINAD meter is On and the unit is %.

## Example of Use

To set the SINAD meter Range1 to 10%.

```
DISP:FM:MET:SIN:RNG1:PERC 10
```

**:DISPlay:AM|FM|PM:METer:SINad:RNG1:PERCent?**

Range1 of SINAD Meter (%) Query

## Function

This command queries the SINAD meter Range1 (in % units).

## Query

`:DISPlay:AM|FM|PM:METer:SINad:RNG1:PERCent?`

## Response

&lt;val&gt;

## Parameter

<val>	Range of meter
Range	0.00 to 10000.0%
Resolution	0.1%

## Example of Use

To query the SINAD meter Range1.

```
DISP:FM:MET:SIN:RNG1:PERC?
> 10.0
```

**:DISPlay:AM|FM|PM:MEtEr:SiNad:RNG2:DB <val>**

Range2 of SINAD Meter (dB)

Function

This command sets the SINAD meter Range2 (in dB units).

Command

```
:DISPlay:AM|FM|PM:MEtEr:SiNad:RNG2:DB <val>
```

Parameter

<val>	Range of meter
Range	0.0 to 100.0 dB
Resolution	0.1 dB
Suffix code	DB
	dB is used when the suffix code is omitted.
Default	20.0 dB

Details

It can be set when the SINAD meter is On and the unit is dB.

Example of Use

To set the SINAD meter Range2 to 10 dB.

```
DISP:FM:MET:SiN:RNG2:DB 10
```

**:DISPlay:AM|FM|PM:METer:SINad:RNG2:DB?**

Range2 of SINAD Meter (dB) Query

## Function

This command queries the SINAD meter Range2 (in dB units).

## Query

`:DISPlay:AM|FM|PM:METer:SINad:RNG2:DB?`

## Response

`<val>`

## Parameter

<code>&lt;val&gt;</code>	Range of meter
Range	0.0 to 100.0 dB
Resolution	0.1 dB
Suffix code	None

Value is returned in dB units.

## Example of Use

To query the SINAD meter Range2.

```
DISP:FM:MET:SIN:RNG2:DB?
> 10.0
```

**:DISPlay:AM|FM|PM:MEter:SINad:RNG2:PERCent <val>**

Range2 of SINAD Meter (%)

Function

This command sets the SINAD meter Range2 (in % units).

Command

:DISPlay:AM|FM|PM:MEter:SINad:RNG2:PERCent <val>

Parameter

<val>	Range of meter
Range	0.0 to 10000.0%
Resolution	0.1%
Default	10000.0%

Details

It can be set when the SINAD meter is On and the unit is %.

Example of Use

To set the SINAD meter Range2 to 10%.  
DISP:FM:MET:SIN:RNG2:PERC 10

**:DISPlay:AM|FM|PM:MEter:SINad:RNG2:PERCent?**

Range2 of SINAD Meter (%) Query

Function

This command queries the SINAD meter Range2 (in % units).

Query

:DISPlay:AM|FM|PM:MEter:SINad:RNG2:PERCent?

Response

<val>

Parameter

<val>	Range of meter
Range	0.00 to 10000.0%
Resolution	0.1%

Example of Use

To query the SINAD meter Range2.  
DISP:FM:MET:SIN:RNG1:PERC?  
> 10.0



**:DISPlay:AM|FM|PM:METer:SINad:JUDGe:RANGe:DB <val>**

Pass Range of SINAD Meter (dB)

## Function

This command sets the SINAD meter Pass Range (in dB units).

## Command

`:DISPlay:AM|FM|PM:METer:SINad:JUDGe:RANGe:DB <val>`

## Parameter

<code>&lt;val&gt;</code>	Range of meter
Range	0.0 to 100.0 dB
Resolution	0.1 dB
Suffix code	DB
	dB is used when the suffix code is omitted.
Default	2.0 dB

## Details

It can be set when the SINAD meter is On, the SINAD meter Deflection View is On, and the unit is dB.

## Example of Use

To set the SINAD meter Pass Range to 10 dB.  
`DISP:FM:MET:SIN:JUDG:RANG:DB 10`

**:DISPlay:AM|FM|PM:METer:SINad:JUDGe:RANGe:DB?**

Pass Range of SINAD Meter (dB) Query

Function

This command queries the SINAD meter Pass Range (in dB units).

Query

:DISPlay:AM|FM|PM:METer:SINad:JUDGe:RANGe:DB?

Response

<val>

Parameter

<val>	Range of meter
Range	0.0 to 100.0 dB
Resolution	0.1 dB
Suffix code	None

Value is returned in dB units.

Example of Use

To query the SINAD meter Pass Range.  
DISP:FM:MET:SIN:JUDG:RANG:DB?  
> 10.0

**:DISPlay:AM|FM|PM:METer:SINad:JUDGe:RANGe:PERCent <val>**

Pass Range of SINAD Meter (%)

## Function

This command sets the SINAD meter Pass Range (in % units).

## Command

`:DISPlay:AM|FM|PM:METer:SINad:JUDGe:RANGe:PERCent <val>`

## Parameter

<val>	Range of meter
Range	0.0 to 10000.0%
Resolution	0.1%
Default	2000.0%

## Details

It can be set when the SINAD meter is On, the SINAD meter Deflection View is On, and the unit is %.

## Example of Use

To set the SINAD meter Pass Range to 10%.  
`DISP:FM:MET:SIN:JUDG:RANG:PERC 10`

**:DISPlay:AM|FM|PM:METer:SINad:JUDGe:RANGe:PERCent?**

Pass Range of SINAD Meter (%) Query

## Function

This command queries the SINAD meter Pass Range (in % units).

## Query

`:DISPlay:AM|FM|PM:METer:SINad:JUDGe:RANGe:PERCent?`

## Response

&lt;val&gt;

## Parameter

<val>	Range of meter
Range	0.00 to 10000.0%
Resolution	0.1%

## Example of Use

To query the SINAD meter Pass Range.  
`DISP:FM:MET:SIN:JUDG:RANG:PERC?`  
`> 10.0`

**:DISPlay:AM|FM|PM:METer:THD:RNG1:DB <val>**

Range1 of THD Meter (dB)

Function

This command sets the THD meter Range1 (in dB units).

Command

:DISPlay:AM|FM|PM:METer:THD:RNG1:DB <val>

Parameter

<val>	Range of meter
Range	0.0 to 100.0 dB
Resolution	0.1 dB
Suffix code	DB
	dB is used when the suffix code is omitted.
Default	20.0 dB

Details

It can be set when the THD meter is On and the unit is dB.

Example of Use

To set the THD meter Range1 to 10 dB.

DISP:FM:MET:THD:RNG1:DB 10

**:DISPlay:AM|FM|PM:METer:THD:RNG1:DB?**

Range1 of THD Meter (dB) Query

## Function

This command queries the THD meter Range1 (in dB units).

## Query

`:DISPlay:AM|FM|PM:METer:THD:RNG1:DB?`

## Response

`<val>`

## Parameter

<code>&lt;val&gt;</code>	Range of meter
Range	0.0 to 100.0 dB
Resolution	0.1 dB
Suffix code	None

Value is returned in dB units.

## Example of Use

To query the THD meter Range1.

```
DISP:FM:MET:THD:RNG1:DB?
> 10.0
```

**:DISPlay:AM|FM|PM:MEter:THD:RNG1:PERCent <val>**

Range1 of THD Meter (%)

Function

This command sets the THD meter Range1 (in % units).

Command

:DISPlay:AM|FM|PM:MEter:THD:RNG1:PERCent <val>

Parameter

<val>	Range of meter
Range	0.0 to 10000.0%
Resolution	0.1%
Default	2.0%

Details

It can be set when the THD meter is On and the unit is %.

Example of Use

To set the THD meter Range1 to 10%.

```
DISP:FM:MET:THD:RNG1:PERC 10
```

**:DISPlay:AM|FM|PM:MEter:THD:RNG1:PERCent?**

Range1 of THD Meter (%) Query

Function

This command queries the THD meter Range1 (in % units).

Query

:DISPlay:AM|FM|PM:MEter:THD:RNG1:PERCent?

Response

<val>

Parameter

<val>	Range of meter
Range	0.0 to 10000.0%
Resolution	0.1%

Example of Use

To query the THD meter Range1.

```
DISP:FM:MET:THD:RNG1:PERC?
```

```
> 10.0
```

**:DISPlay:AM|FM|PM:MEter:THD:RNG2:DB <val>**

Range2 of THD Meter (dB)

## Function

This command sets the THD meter Range2 (in dB units).

## Command

```
:DISPlay:AM|FM|PM:MEter:THD:RNG2:DB <val>
```

## Parameter

<val>	Range of meter
Range	0.0 to 100.0 dB
Resolution	0.1 dB
Suffix code	DB
	dB is used when the suffix code is omitted.
Default	40.0 dB

## Details

It can be set when the THD meter is On and the unit is dB.

## Example of Use

To set the THD meter Range2 to 10 dB.

```
DISP:FM:MET:THD:RNG2:DB 10
```

**:DISPlay:AM|FM|PM:METer:THD:RNG2:DB?**

Range2 of THD Meter (dB) Query

Function

This command queries the THD meter Range2 (in dB units).

Query

:DISPlay:AM|FM|PM:METer:THD:RNG2:DB?

Response

<val>

Parameter

<val>	Range of meter
Range	0.0 to 100.0 dB
Resolution	0.1 dB
Suffix code	None

Value is returned in dB units.

Example of Use

To query the THD meter Range2.  
DISP:FM:MET:THD:RNG2:DB?  
> 10.0



**:DISPlay:AM|FM|PM:METer:THD:RNG2:PERCent <val>**

Range2 of THD Meter (%)

## Function

This command sets the THD meter Range2 (in % units).

## Command

`:DISPlay:AM|FM|PM:METer:THD:RNG2:PERCent <val>`

## Parameter

<val>	Range of meter
Range	0.0 to 10000.0%
Resolution	0.1%
Default	10.0%

## Details

It can be set when the THD meter is On and the unit is %.

## Example of Use

To set the THD meter Range2 to 10%.

```
DISP:FM:MET:THD:RNG2:PERC 10
```

**:DISPlay:AM|FM|PM:METer:THD:RNG2:PERCent?**

Range2 of THD Meter (%) Query

## Function

This command queries the THD meter Range2 (in % units).

## Query

`:DISPlay:AM|FM|PM:METer:THD:RNG2:PERCent?`

## Response

&lt;val&gt;

## Parameter

<val>	Range of meter
Range	0.0 to 10000.0%
Resolution	0.1%

## Example of Use

To query the THD meter Range2.

```
DISP:FM:MET:THD:RNG1:PERC?
> 10.0
```

**:DISPlay:AM|FM|PM:METer:THD:JUDGe:RANGe:DB <val>**

Pass Range of THD Meter (dB)

Function

This command sets the THD meter Pass Range (in dB units).

Command

:DISPlay:AM|FM|PM:METer:THD:JUDGe:RANGe:DB <val>

Parameter

<val>	Range of meter
Range	0.0 to 100.0 dB
Resolution	0.1 dB
Suffix code	DB
	dB is used when the suffix code is omitted.
Default	2.0 dB

Details

It can be set when the THD meter is On, the THD meter Deflection View is On, and the unit is dB.

Example of Use

To set the THD meter Pass Range to 10 dB.

```
DISP:FM:MET:THD:JUDG:RANG:DB 10
```

**:DISPlay:AM|FM|PM:METer:THD:JUDGe:RANGe:DB?**

Pass Range of THD Meter (dB) Query

## Function

This command queries the THD meter Pass Range (in dB units).

## Query

`:DISPlay:AM|FM|PM:METer:THD:JUDGe:RANGe:DB?`

## Response

`<val>`

## Parameter

<code>&lt;val&gt;</code>	Range of meter
Range	0.0 to 100.0 dB
Resolution	0.1 dB
Suffix code	None

Value is returned in dB units.

## Example of Use

To query the THD meter Pass Range.

```
DISP:FM:MET:THD:JUDG:RANG:DB?
> 10.0
```

**:DISPlay:AM|FM|PM:METer:THD:JUDGe:RANGe:PERCent <val>**

Pass Range of THD Meter (%)

Function

This command sets the THD meter Pass Range (in % units).

Command

:DISPlay:AM|FM|PM:METer:THD:JUDGe:RANGe:PERCent <val>

Parameter

<val>	Range of meter
Range	0.0 to 10000.0%
Resolution	0.1%
Default	2.0%

Details

It can be set when the THD meter is ON, the THD meter Deflection View is On, and the unit is %.

Example of Use

To set the THD meter Pass Range to 10%.  
DISP:FM:MET:THD:JUDG:RANG:PERC 10

**:DISPlay:AM|FM|PM:METer:THD:JUDGe:RANGe:PERCent?**

Pass Range of THD Meter (%) Query

Function

This command queries the THD meter Pass Range (in % units).

Query

:DISPlay:AM|FM|PM:METer:THD:JUDGe:RANGe:PERCent?

Response

<val>

Parameter

<val>	Range of meter
Range	0.0 to 10000.0%
Resolution	0.1%

Example of Use

To query the THD meter Pass Range.  
DISP:FM:MET:THD:JUDG:RANG:PERC?  
> 10.0

**:DISPlay:FM:METer:DVPP:RNG1:HZ <val>**

Range1 of Deviation Meter (Hz)

## Function

This command sets the Deviation meter Range1 (in Hz units).

## Command

`:DISPlay:FM:METer:DVPP:RNG1:HZ <val>`

## Parameter

<val>	Range of meter
Range	0 to 1000 kHz
Resolution	0.1 Hz
Suffix code	HZ
	Hz is used when omitted.
Default	200 Hz

## Details

It can be set only for FM modulation.

It can be set when the Deviation meter is On and the unit is Hz.

## Example of Use

To set the Deviation meter Range1 to 500 Hz.

`DISP:FM:MET:DVPP:RNG1:HZ 500`

**:DISPlay:FM:METer:DVPP:RNG1:HZ?**

Range1 of Deviation Meter (Hz) Query

Function

This command queries the Deviation meter Range1 (in Hz units).

Query

:DISPlay:FM:METer:DVPP:RNG1:HZ?

Response

<val>

Parameter

<val>	Range of meter
Range	0 to 1000 kHz
Resolution	0.1 Hz
Suffix code	None

Value is returned in Hz units.

Example of Use

To query the Deviation meter Range1.

```
DISP:FM:MET:DVPP:RNG1:HZ?
```

```
> 500.0
```

**:DISPlay:FM:METer:DVPP:RNG1:PERCent <val>**

Range1 of Deviation Meter (%)

## Function

This command sets the Deviation meter Range1 (in % units).

## Command

`:DISPlay:FM:METer:DVPP:RNG1:PERCent <val>`

## Parameter

<val>	Range of meter
Range	0.0 to 10000.0%
Resolution	0.1%
Default	2.0%

## Details

It can be set only for FM modulation.

It can be set when the Deviation meter is On and the unit is %.

## Example of Use

To set the Deviation meter Range1 to 10%.

`DISP:FM:MET:DVPP:RNG1:PERC 10`

**:DISPlay:FM:METer:DVPP:RNG1:PERCent?**

Range1 of Deviation Meter (%) Query

Function

This command queries the Deviation meter Range1 (in % units).

Query

:DISPlay:FM:METer:DVPP:RNG1:PERCent?

Response

<val>

Parameter

<val>	Range of meter
Range	0.0 to 10000.0%
Resolution	0.1%

Example of Use

To query the Deviation meter Range1.  
DISP:FM:MET:DVPP:RNG1:PERC?  
> 10.0



**:DISPlay:FM:METer:DVPP:RNG2:HZ <val>**

Range2 of Deviation Meter (Hz)

## Function

This command sets the Deviation meter Range2 (in Hz units).

## Command

`:DISPlay:FM:METer:DVPP:RNG2:HZ <val>`

## Parameter

<val>	Range of meter
Range	0 to 1000 kHz
Resolution	0.1 Hz
Suffix code	HZ
	Hz is used when omitted.
Default	1000 Hz

## Details

It can be set only for FM modulation.

It can be set when the Deviation meter is On and the unit is Hz.

## Example of Use

To set the Deviation meter Range2 to 500 Hz.

`DISP:FM:MET:DVPP:RNG2:HZ 500`

### **:DISPlay:FM:METer:DVPP:RNG2:HZ?**

Range2 of Deviation Meter (Hz) Query

Function

This command queries the Deviation meter Range2 (in Hz units).

Query

```
:DISPlay:FM:METer:DVPP:RNG2:HZ?
```

Response

```
<val>
```

Parameter

<val>	Range of meter
Range	0 to 1000 kHz
Resolution	0.1 Hz
Suffix code	None

Value is returned in Hz units.

Example of Use

To query the Deviation meter Range2.

```
DISP:FM:MET:DVPP:RNG2:HZ?  
> 500.0
```

**:DISPlay:FM:METer:DVPP:RNG2:PERCent <val>**

Range2 of Deviation Meter (%)

## Function

This command sets the Deviation meter Range2 (in % units).

## Command

`:DISPlay:FM:METer:DVPP:RNG2:PERCent <val>`

## Parameter

<val>	Range of meter
Range	0.0 to 10000.0%
Resolution	0.1%
Default	10.0%

## Details

It can be set only for FM modulation.

It can be set when the Deviation meter is On and the unit is %.

## Example of Use

To set the Deviation meter Range2 to 10%.

`DISP:FM:MET:DVPP:RNG2:PERC 10`

**:DISPlay:FM:MEter:DVPP:RNG2:PERCent?**

Range2 of Deviation Meter (%) Query

Function

This command queries the Deviation meter Range2 (in % units).

Query

:DISPlay:FM:MEter:DVPP:RNG2:PERCent?

Response

<val>

Parameter

<val>	Range of meter
Range	0.0 to 10000.0%
Resolution	0.1%

Example of Use

To query the Deviation meter Range2.  
DISP:FM:MET:DVPP:RNG1:PERC?  
> 10.0

**:DISPlay:FM:METer:DVPP:JUDGe:RANGe:HZ <val>**

Pass Range of Deviation Meter (Hz)

## Function

This command sets the Deviation meter Pass Range (in Hz units).

## Command

`:DISPlay:FM:METer:DVPP:JUDGe:RANGe:HZ <val>`

## Parameter

<val>	Range of meter
Range	0 to 1000 kHz
Resolution	0.1 Hz
Suffix code	HZ
	Hz is used when omitted.
Default	100 Hz

## Details

It can be set only for FM modulation.

It can be set when the Deviation meter Deflection View is On and the unit is Hz.

## Example of Use

To set the Deviation meter Pass Range to 500 Hz.

`DISP:FM:MET:DVPP:JUDG:RANG:HZ 500`

**:DISPlay:FM:METer:DVPP:JUDGe:RANGe:HZ?**

Pass Range of Deviation Meter (Hz) Query

Function

This command queries the Deviation meter Pass Range (in Hz units).

Query

:DISPlay:FM:METer:DVPP:JUDGe:RANGe:HZ?

Response

<val>

Parameter

<val>	Range of meter
Range	0 to 1000 kHz
Resolution	0.1 Hz
Suffix code	None

Value is returned in Hz units.

Example of Use

To query the Deviation meter Pass Range.

```
DISP:FM:MET:DVPP:JUDG:RANG:HZ?
```

```
> 500.0
```

**:DISPlay:FM:METer:DVPP:JUDGe:RANGe:PERCent <val>**

Pass Range of Deviation Meter (%)

## Function

This command sets the Deviation meter Pass Range (in % units).

## Command

`:DISPlay:FM:METer:DVPP:JUDGe:RANGe:PERCent <val>`

## Parameter

<val>	Range of meter
Range	0.0 to 10000.0%
Resolution	0.1%
Default	1.0%

## Details

It can be set only for FM modulation.

It can be set when the Deviation meter Deflection View is On and the unit is %.

## Example of Use

To set the Deviation meter Pass Range to 10%.

`DISP:FM:MET:DVPP:JUDG:RANG:PERC 10`

**:DISPlay:FM:METer:DVPP:JUDGe:RANGe:PERCent?**

Pass Range of Deviation Meter (%) Query

Function

This command queries the Deviation meter Pass Range (in % units).

Query

:DISPlay:FM:METer:DVPP:JUDGe:RANGe:PERCent?

Response

<val>

Parameter

<val>	Range of meter
Range	0.0 to 10000.0%
Resolution	0.1%

Example of Use

To query the Deviation meter Pass Range.  
DISP:FM:MET:DVPP:JUDG:RANG:PERC?  
> 10.0



**:DISPlay:FM:METer:DVPP:REFeRence <val>**

Deviation Reference of Deviation Meter

## Function

This command sets the Deviation meter Deviation Reference.

## Command

`:DISPlay:FM:METer:DVPP:REFeRence <val>`

## Parameter

<val>	Range of meter
Range	10 to 1000 kHz
Resolution	1 Hz
Suffix code	HZ
	Hz is used when omitted.
Default	3500 Hz

## Details

It can be set only for FM modulation.

It can be set when the Deviation meter Deflection View is On and the unit is %.

## Example of Use

To set the Deviation meter Deviation Reference to 1500 Hz.

`DISP:FM:MET:DVPP:REF 1500`

## **:DISPlay:FM:METer:DVPP:REFerence?**

Deviation Reference of Deviation Meter Query

### Function

This command queries the Deviation meter Deviation Reference.

### Query

```
:DISPlay:FM:METer:DVPP:REFerence?
```

### Response

```
<val>
```

### Parameter

<val>	Range of meter
Range	0 to 1000 kHz
Resolution	0.1 Hz
Suffix code	None

Value is returned in Hz units.

### Example of Use

To query the Deviation meter Deviation Reference.

```
DISP:FM:MET:DVPP:REF?  
> 1500
```

**:DISPlay:AM|FM|PM:METer:DISTortion:DEFLection ON|OFF|1|0**

Deflection View of Distortion Meter

## Function

This command sets whether to display the Distortion meter Deflection View.

## Command

```
:DISPlay:AM|FM|PM:METer:DISTortion:DEFLection <switch>
```

## Parameter

<switch>	Deflection View display On/Off
ON 1	Deflection View display On
OFF 0	Deflection View display Off
Default	OFF

## Details

It can be set when the Distortion meter is On.

## Example of Use

To set the Distortion meter Deflection View display to On.  
 DISP:FM:MET:DIST:DEFL ON

**:DISPlay:AM|FM|PM:METer:DISTortion:DEFLection?**

Deflection View of Distortion Meter Query

## Function

This command queries the Distortion meter Deflection View status.

## Query

```
:DISPlay:AM|FM|PM:METer:DISTortion:DEFLection?
```

## Response

```
<switch>
```

## Parameter

<switch>	Deflection View display On/Off
1	Deflection View display On
0	Deflection View display Off

## Example of Use

To query the Distortion meter Deflection View status.  
 DISP:FM:MET:DIST:DEFL?  
 > 1

### **:DISPlay:AM|FM|PM:MEter:SINad:DEFLection ON|OFF|1|0**

Deflection View of SINAD Meter

#### Function

This command sets whether to display the SINAD meter Deflection View.

#### Command

```
:DISPlay:AM|FM|PM:MEter:SINad:DEFLection <switch>
```

#### Parameter

<switch>	Deflection View display On/Off
ON 1	Deflection View display On
OFF 0	Deflection View display Off
Default	OFF

#### Details

It can be set when the SINAD meter is On.

#### Example of Use

To set the SINAD meter Deflection View display to On.

```
DISP:FM:MET:SIN:DEFL ON
```

### **:DISPlay:AM|FM|PM:MEter:SINad:DEFLection?**

Deflection View of SINAD Meter Query

#### Function

This command queries the SINAD meter Deflection View status.

#### Query

```
:DISPlay:AM|FM|PM:MEter:SINad:DEFLection?
```

#### Response

```
<switch>
```

#### Parameter

<switch>	Deflection View display On/Off
1	Deflection View display On
0	Deflection View display Off

#### Example of Use

To query the SINAD meter Deflection View status.

```
DISP:FM:MET:SIN:DEFL?
```

```
> 1
```

**:DISPlay:AM|FM|PM:METer:THD:DEFLection ON|OFF|1|0**

Deflection View of THD Meter

## Function

This command sets whether to display the THD meter Deflection View.

## Command

`:DISPlay:AM|FM|PM:METer:THD:DEFLection <switch>`

## Parameter

<code>&lt;switch&gt;</code>	Deflection View display On/Off
<code>ON 1</code>	Deflection View display On
<code>OFF 0</code>	Deflection View display Off
Default	OFF

## Details

It can be set when the THD meter is On.

## Example of Use

To set the THD meter Deflection View display to On.

`DISP:FM:MET:THD:DEFL ON`**:DISPlay:AM|FM|PM:METer:THD:DEFLection?**

Deflection View of THD Meter Query

## Function

This command queries the THD meter Deflection View status.

## Query

`:DISPlay:AM|FM|PM:METer:THD:DEFLection?`

## Response

`<switch>`

## Parameter

<code>&lt;switch&gt;</code>	Deflection View display On/Off
<code>1</code>	Deflection View display On
<code>0</code>	Deflection View display Off

## Example of Use

To query the THD meter Deflection View status.

`DISP:FM:MET:THD:DEFL?``> 1`

### **:DISPlay:FM:METer:DVPP:DEFLection ON|OFF|1|0**

Deflection View of Deviation Meter

Function

This command sets whether to display the Deviation meter Deflection View.

Command

```
:DISPlay:FM:METer:DVPP:DEFLection <switch>
```

Parameter

<switch>	Deflection View display On/Off
ON 1	Deflection View display On
OFF 0	Deflection View display Off
Default	OFF

Details

It can be set only for FM modulation.  
It can be set when the Deviation meter is On.

Example of Use

To set the Deviation meter Deflection View display to On.  
DISP:FM:MET:DVPP:DEFL ON

### **:DISPlay:FM:METer:DVPP:DEFLection?**

Deflection View of Deviation Meter Query

Function

This command queries the Deviation meter Deflection View status.

Query

```
:DISPlay:FM:METer:DVPP:DEFLection?
```

Response

```
<switch>
```

Parameter

<switch>	Deflection View display On/Off
1	Deflection View display On
0	Deflection View display Off

Example of Use

To query the Deviation meter Deflection View status.  
DISP:FM:MET:DVPP:DEFL?  
> 1

**:DISPlay:AM|FM|PM:MEter:DISTortion:DEFLection:COUNt <count>**

Deflection Count of Distortion Meter

## Function

This command sets the Distortion meter Deflection Count (the count of past measurements included in Deflection View).

## Command

```
:DISPlay:AM|FM|PM:MEter:DISTortion:DEFLection:COUNt
<count>
```

## Parameter

<count>	Count of past measurements
Range	2 to 100
Resolution	1
Suffix code	None
Default	10

## Details

It can be set when the Distortion meter is On and Deflection View is On.

## Example of Use

To set the Distortion meter Deflection Count to 5.  
 DISP:FM:MET:DIST:DEFL:COUN 5

**:DISPlay:AM|FM|PM:MEtEr:DIStOrtion:DEFLection:COUNt?**

Deflection Count of Distortion Meter Query

Function

This command queries the Distortion meter Deflection Count (the count of past measurements included in Deflection View).

Query

:DISPlay:AM|FM|PM:MEtEr:DIStOrtion:DEFLection:COUNt?

Response

<count>

Parameter

<count>	Count of past measurements
Range	2 to 100
Resolution	1
Suffix code	None

Example of Use

To query the Distortion meter Deflection Count.  
DISP:FM:MET:DIST:DEFL:COUN?  
> 5



**:DISPlay:AM|FM|PM:METer:SINad:DEFLection:COUNT <count>**

Deflection Count of SINAD Meter

## Function

This command sets the SINAD meter Deflection Count (the count of past measurements included in Deflection View).

## Command

```
:DISPlay:AM|FM|PM:METer:SINad:DEFLection:COUNT <count>
```

## Parameter

<count>	Count of past measurements
Range	2 to 100
Resolution	1
Suffix code	None
Default	10

## Details

It can be set when the SINAD meter is On and Deflection View is On.

## Example of Use

To set the SINAD Deflection Count to 5.

```
DISP:FM:MET:SIN:DEFL:COUNT 5
```

**:DISPlay:AM|FM|PM:MEtEr:SINad:DEFLection:COUNt?**

Deflection Count of SINAD Meter Query

Function

This command queries the SINAD meter Deflection Count (the count of past measurements included in Deflection View).

Query

:DISPlay:AM|FM|PM:MEtEr:SINad:DEFLection:COUNt?

Response

<count>

Parameter

<count>	Count of past measurements
Range	2 to 100
Resolution	1
Suffix code	None

Example of Use

To query the SINAD meter Deflection Count.  
DISP:FM:MET:SIN:DEFL:COUN?  
> 5

**:DISPlay:AM|FM|PM:MEter:THD:DEFLection:COUNT <count>**

Deflection Count of THD Meter

## Function

This command sets the THD meter Deflection Count (the count of past measurements included in Deflection View).

## Command

```
:DISPlay:AM|FM|PM:MEter:THD:DEFLection:COUNT <count>
```

## Parameter

<count>	Count of past measurements
Range	2 to 100
Resolution	1
Suffix code	None
Default	10

## Details

It can be set when the THD meter is On and Deflection View is On.

## Example of Use

To set the THD meter Deflection Count to 5.

```
DISP:FM:MET:THD:DEFL:COUN 5
```

**:DISPlay:AM|FM|PM:MEtEr:THD:DEFLection:COUNt?**

Deflection Count of THD Meter Query

Function

This command queries the THD meter Deflection Count (the count of past measurements included in Deflection View).

Query

:DISPlay:AM|FM|PM:MEtEr:THD:DEFLection:COUNt?

Response

<count>

Parameter

<count>	Count of past measurements
Range	2 to 100
Resolution	1
Suffix code	None

Example of Use

To query the THD meter Deflection Count.  
DISP:FM:MET:THD:DEFL:COUN?  
> 5

**:DISPlay:FM:METer:DVPP:DEFLection:COUNT <count>**

Deflection Count of Deviation Meter

## Function

This command sets the Deviation meter Deflection Count (the count of past measurements included in Deflection View).

## Command

```
:DISPlay:FM:METer:DVPP:DEFLection:COUNT <count>
```

## Parameter

<count>	Count of past measurements
Range	2 to 100
Resolution	1
Suffix code	None
Default	10

## Details

It can be set only for FM modulation.

It can be set when the Deviation meter is On and Deflection View is On.

## Example of Use

To set the Deviation meter Deflection Count to 5.

```
DISP:FM:MET:DVPP:DEFL:COUN 5
```

## **:DISPlay:FM:METer:DVPP:DEFLection:COUNT?**

Deflection Count of Deviation Meter Query

### Function

This command queries the Deviation meter Deflection Count (the count of past measurements included in Deflection View).

### Query

```
:DISPlay:FM:METer:DVPP:DEFLection:COUNT?
```

### Response

```
<count>
```

### Parameter

<count>	Count of past measurements
Range	2 to 100
Resolution	1
Suffix code	None

### Example of Use

To query the Deviation meter Deflection Count.

```
DISP:FM:MET:DVPP:DEFL:COUN?
```

```
> 5
```

**:DISPlay:AM|FM|PM:METer:DISTortion:UNIT DB|PERCent**

Unit of Distortion Meter

## Function

This command sets the Distortion meter display units.

## Command

`:DISPlay:AM|FM|PM:METer:DISTortion:UNIT <unit>`

## Parameter

<unit>	Unit
DB	dB (default)
PERCent	%

## Example of Use

To set the Distortion meter display units to dB.

```
DISP:FM:MET:DIST:UNIT DB
```

**:DISPlay:AM|FM|PM:METer:DISTortion:UNIT?**

Unit of Distortion Meter Query

## Function

This command queries the Distortion meter display units.

## Query

`:DISPlay:AM|FM|PM:METer:DISTortion:UNIT?`

## Response

&lt;unit&gt;

## Parameter

<unit>	Unit
DB	dB
PERC	%

## Example of Use

To query the Distortion meter display units.

```
DISP:FM:MET:DIST:UNIT?
> DB
```

### **:DISPlay:AM|FM|PM:METER:SINad:UNIT DB|PERCent**

Unit of SINAD Meter

Function

This command sets the SINAD meter display units.

Command

```
:DISPlay:AM|FM|PM:METER:SINad:UNIT <unit>
```

Parameter

<unit>	Unit
DB	dB (default)
PERCent	%

Example of Use

To set the SINAD meter display units to dB.  
DISP:FM:MET:SIN:UNIT DB

### **:DISPlay:AM|FM|PM:METER:SINad:UNIT?**

Unit of SINAD Meter Query

Function

This command queries the SINAD meter display units.

Query

```
:DISPlay:AM|FM|PM:METER:SINad:UNIT?
```

Response

```
<unit>
```

Parameter

<unit>	Unit
DB	dB
PERCent	%

Example of Use

To query the SINAD meter display units.  
DISP:FM:MET:SIN:UNIT?  
> DB



**:DISPlay:AM|FM|PM:METer:THD: UNIT DB|PERCent**

Unit of THD Meter

Function

This command sets the THD meter display units.

Command

`:DISPlay:AM|FM|PM:METer:THD:UNIT <unit>`

Parameter

<unit>	Unit
DB	dB
PERCent	% (default)

Example of Use

To set the THD meter display units to dB.

```
DISP:FM:MET:THD:UNIT DB
```

**:DISPlay:AM|FM|PM:METer:THD:UNIT?**

Unit of THD Meter Query

Function

This command queries the THD meter display units.

Query

`:DISPlay:AM|FM|PM:METer:THD:UNIT?`

Response

`<unit>`

Parameter

<unit>	Unit
DB	dB
PERC	%

Example of Use

To query the THD meter display units.

```
DISP:FM:MET:THD:UNIT?
> DB
```

### **:DISPlay:FM:METer:DVPP:UNIT HZ|PERCent**

Unit of Deviation Meter

Function

This command sets the Deviation meter display units.

Command

```
:DISPlay:FM:METer:DVPP:UNIT <unit>
```

Parameter

<unit>	Unit
HZ	Hz (default)
PERCent	%

Example of Use

To set the Deviation meter display units to Hz.  
DISP:FM:MET:DVPP:UNIT HZ

### **:DISPlay:FM:METer:DVPP:UNIT?**

Unit of Deviation Meter Query

Function

This command queries the Deviation meter display units.

Query

```
:DISPlay:FM:METer:DVPP:UNIT?
```

Response

```
<unit>
```

Parameter

<unit>	Unit
HZ	Hz
PERCent	%

Example of Use

To query the Deviation meter display units.  
DISP:FM:MET:DVPP:UNIT?  
> HZ

**:DISPlay:FM:METer:DVPP:TYPE RMS|PLUS|MINus|P2P**

Type of Deviation Meter

Function

This command sets the Deviation type displayed on the deviation meter.

Command

`:DISPlay:FM:METer:DVPP:TYPE <type>`

Parameter

<type>	Type of Deviation
RMS	RMS
PLUS	Peak+
MINus	Peak-
P2P	(Pk-Pk)/2 (default)

Example of Use

To set the Deviation type displayed on the deviation meter to Peak+.

`DISP:FM:MET:DVPP:TYPE PLUS`**:DISPlay:FM:METer:DVPP:TYPE?**

Type of Deviation Meter Query

Function

This command queries the Deviation type displayed on the deviation meter.

Query

`:DISPlay:FM:METer:DVPP:TYPE?`

Response

`<type>`

Parameter

<type>	Type of Deviation
RMS	RMS
PLUS	Peak+
MINus	Peak-
P2P	(Pk-Pk)/2

Example of Use

To query the Deviation type displayed on the deviation meter.

`DISP:FM:MET:DVPP:TYPE?``> PLUS`

**[[:SENSE]:AM|FM|PM:DISTortion:DIS TORTion:FREQUency:SIGNal  
PEAK|MANual|GENerator**

Signal Frequency of Distortion

Function

This command selects the reference signal frequency for distortion measurement.

Command

```
[[:SENSE]:AM|FM|PM:DIS TORTion:DIS TORTion:FREQUency:SIGNal  
<mode>
```

Parameter

<mode>	Reference frequency
PEAK	Peak frequency (default)
MANual	Frequency set for Manual Frequency
GENerator	Frequency set for Tone1 Frequency

Example of Use

To set the distortion measurement reference frequency to Peak frequency.  
FM:DIS T:DIS T:FREQ:SIGN PEAK

**[[:SENSE]:AM|FM|PM:DIS TORTion:DIS TORTion:FREQUency:SIGNal?]**

Signal Frequency of Distortion Query

## Function

This command queries the reference signal frequency for distortion measurement.

## Query

```
[[:SENSE]:AM|FM|PM:DIS TORTion:DIS TORTion:FREQUency:SIGNal?]
```

## Response

```
<mode>
```

## Parameter

<mode>	Reference frequency
PEAK	Peak frequency
MAN	Frequency set for Manual Frequency
GEN	Frequency set for Tone1 Frequency

## Example of Use

```
To query the distortion measurement reference frequency.
FM:DIS TORT:DIS TORT:FREQ:SIGN?
> PEAK
```

**[[:SENSE]:AM|FM|PM:DISTortion:DIS TORTion:FREQUency:SIGNal:MANual <freq>**

Manual Frequency of Distortion

Function

This command sets the Manual Frequency for distortion measurement.

Command

```
[[:SENSE]:AM|FM|PM:DIS TORTion:DIS TORTion:FREQUency:SIGNal  
:MANual <freq>
```

Parameter

<freq>	Frequency
Range	10 to 60000 Hz
Resolution	1 Hz
Suffix code	HZ
	Hz is used when omitted.
Default	1 kHz

Details

This command is enabled when Signal Frequency is set to Manual. An error will result if Manual Frequency, Start Frequency, Stop Frequency do not satisfy the following conditions.

$$\text{Start Frequency} \leq \text{Manual Frequency} \leq \text{Stop Frequency}$$

Example of Use

To set the Manual Frequency for distortion measurement to 5 kHz.  
FM:DIS TORTion:DIS TORTion:FREQUency:SIGNal:MAN 5000

**[[:SENSE]:AM|FM|PM:DIS TORTion:DIS TORTion:FREQUency:SIGNal:MANual?**

Manual Frequency of Distortion Query

## Function

This command queries the Manual Frequency for distortion measurement.

## Query

```
[[:SENSE]:AM|FM|PM:DIS TORTion:DIS TORTion:FREQUency:SIGNal:MANual?
```

## Response

```
<freq>
```

## Parameter

<freq>	Frequency
Range	10 to 60000 Hz
Resolution	1 Hz
Suffix code	None
	Value is returned in Hz units.

## Example of Use

```
To query the Manual Frequency for distortion measurement.
FM:DIS TORT:DIS TORT:FREQ:SIGN:MAN?
> 5000
```

**[[:SENSE]:AM|FM|PM:DISTortion:DIS TORTion:FREQUency:STARt <freq>**

Start Frequency of Distortion

Function

This command sets the Start Frequency for distortion measurement.

Command

```
[[:SENSE]:AM|FM|PM:DIS TORTion:DIS TORTion:FREQUency:STARt  
<freq>
```

Parameter

<freq>	Frequency
Range	10 Hz to setting value of Manual Frequency for Distortion measurement
Resolution	1 Hz
Suffix code	HZ Hz is used when omitted.
Default	10 Hz

Details

An error will result if Manual Frequency, Start Frequency, and Stop Frequency do not satisfy the following conditions.

$$\text{Start Frequency} \leq \text{Manual Frequency} \leq \text{Stop Frequency}$$

Example of Use

To set the Start Frequency for distortion measurement to 5 kHz.

```
FM:DIS TORTion:DIS TORTion:FREQUency:STARt 5000
```



**[[:SENSE]:AM|FM|PM:DISToRTion:DISToRTion:FREQUency:STARt?**

Start Frequency of Distortion Query

## Function

This command queries the Start Frequency for distortion measurement.

## Query

```
[[:SENSE]:AM|FM|PM:DISToRTion:DISToRTion:FREQUency:STARt?
```

## Response

```
<freq>
```

## Parameter

<code>&lt;freq&gt;</code>	Frequency
Range	10 Hz to setting value of Manual Frequency for Distortion measurement
Resolution	1 Hz
Suffix code	None
	Value is returned in Hz units.

## Example of Use

```
To query the Start Frequency for distortion measurement.
FM:DIST:DIST:FREQ:STAR?
> 5000
```

## **[[:SENSE]:AM|FM|PM:DISTortion:DIS TORTion:FREQuency:STOP <freq>**

Stop Frequency of Distortion

### Function

This command sets the Stop Frequency for distortion measurement.

### Command

```
[[:SENSe]:AM|FM|PM:DIS TORTion:DIS TORTion:FREQuency:STOP  
<freq>
```

### Parameter

<freq>	Frequency
Range	Setting value of Manual Frequency for Distortion measurement to 60000 Hz
Resolution	1 Hz
Suffix code	HZ Hz is used when omitted.
Default	60000 Hz

### Details

An error will result if Manual Frequency, Start Frequency, and Stop Frequency do not satisfy the following conditions.

Start Frequency  $\leq$  Manual Frequency  $\leq$  Stop Frequency

### Example of Use

To set the Stop Frequency for distortion measurement to 5 kHz.

```
FM:DIS T:DIS T:FREQ:STOP 5000
```

**[[:SENSE]:AM|FM|PM:DISTortion:DISTortion:FREQUENCY:STOP?**

Stop Frequency of Distortion Query

## Function

This command queries the Stop Frequency for distortion measurement.

## Query

```
[[:SENSe]:AM|FM|PM:DISToRtion:DISToRtion:FREQUency:STOP?
```

## Response

```
<freq>
```

## Parameter

```
<freq>
```

Frequency

Range

Setting value of Manual Frequency for Distortion measurement to 60000 Hz

Resolution

1 Hz

Suffix code

None

Value is returned in Hz units.

## Example of Use

To query the Stop Frequency for distortion measurement.

```
FM:DIST:DIST:FREQ:STOP?
```

```
> 5000
```

## **[[:SENSE]:AM|FM|PM:DISTortion:SINad:FREQUENCY:SIGNal PEAK|MANual|GENerator**

Signal Frequency of SINAD

### Function

This command selects the reference signal frequency for SINAD measurement.

### Command

```
[[:SENSE]:AM|FM|PM:DISTortion:SINad:FREQUENCY:SIGNal  
<mode>
```

### Parameter

<mode>	Reference frequency
PEAK	Peak frequency (default)
MANual	Frequency set for Manual Frequency
GENerator	Frequency set for Tone1 Frequency

### Example of Use

To set the SINAD measurement reference frequency to Peak frequency.  
FM:DIST:SIN:FREQ:SIGN PEAK

## **[[:SENSe]:AM|FM|PM:DISToRtion:SINad:FREQUENCY:SIGNal?**

Signal Frequency of SINAD Query

### Function

This command queries the reference signal frequency for SINAD measurement.

### Query

```
[[:SENSe]:AM|FM|PM:DISToRtion:SINad:FREQUENCY:SIGNal?
```

### Response

```
<mode>
```

### Parameter

<mode>	Reference frequency
PEAK	Peak frequency
MAN	Frequency set for Manual Frequency
GEN	Frequency set for Tone1 Frequency

### Example of Use

To query the SINAD measurement reference frequency.  
FM:DIST:SIN:FREQ:SIGN?  
> PEAK

**[[:SENSE]:AM|FM|PM:DIS TORTion:SINad:FREQuency:SIGNal:MANual <freq>**

Manual Frequency of SINAD

## Function

This command sets the Manual Frequency for SINAD measurement.

## Command

```
[[:SENSE]:AM|FM|PM:DIS TORTion:SINad:FREQuency:SIGNal:MANual <freq>
```

## Parameter

<freq>	Frequency
Range	10 to 60000 Hz
Resolution	1 Hz
Suffix code	HZ
	Hz is used when omitted.
Default	1 kHz

## Details

This command is enabled when Signal Frequency is set to Manual. An error will result if Manual Frequency, Start Frequency, and Stop Frequency do not satisfy the following conditions.

$$\text{Start Frequency} \leq \text{Manual Frequency} \leq \text{Stop Frequency}$$

## Example of Use

To set the Manual Frequency for SINAD measurement to 5 kHz.

```
FM:DIS TORTion:SIN:FREQ:SIGN:MAN 5000
```

## **[[:SENSE]:AM|FM|PM:DISTortion:SINad:FREQUENCY:SIGNal:MANual?**

Manual Frequency of SINAD Query

### Function

This command queries the Manual Frequency for SINAD measurement.

### Query

```
[[:SENSE]:AM|FM|PM:DISTortion:SINad:FREQUENCY:SIGNal:MANual?
```

### Response

```
<freq>
```

### Parameter

<freq>	Frequency
Range	10 to 60000 Hz
Resolution	1 Hz
Suffix code	None

Value is returned in Hz units.

### Example of Use

```
To query the Manual Frequency for SINAD measurement.  
FM:DIST:SIN:FREQ:SIGN:MAN?  
> 5000
```

**[[:SENSE]:AM|FM|PM:DISTortion:SINad:FREQuency:STARt <freq>**

Start Frequency of SINAD

## Function

This command sets the Start Frequency for SINAD measurement.

## Command

```
[[:SENSE]:AM|FM|PM:DISTortion:SINad:FREQuency:STARt <freq>
```

## Parameter

<freq>	Frequency
Range	10 Hz to setting value of Manual Frequency for SINAD measurement (TX)
Resolution	1 Hz
Suffix code	HZ
	Hz is used when omitted.
Default	10 Hz

## Details

An error will result if Manual Frequency, Start Frequency, and Stop Frequency do not satisfy the following conditions.

$$\text{Start Frequency} \leq \text{Manual Frequency} \leq \text{Stop Frequency}$$

## Example of Use

To set the Start Frequency for SINAD measurement to 5 kHz.

```
FM:DIST:SIN:FREQ:STAR 5000
```

### **[[:SENSE]:AM|FM|PM:DISTortion:SINad:FREQuency:STARt?**

Start Frequency of SINAD Query

Function

This command queries the Start Frequency for SINAD measurement.

Query

```
[[:SENSE]:AM|FM|PM:DISTortion:SINad:FREQuency:STARt?
```

Response

```
<freq>
```

Parameter

<freq>	Frequency
Range	10 Hz to setting value of Manual Frequency for SINAD measurement (TX)
Resolution	1 Hz
Suffix code	None

Value is returned in Hz units.

Example of Use

To query the Start Frequency for SINAD measurement.

```
FM:DIST:SIN:FREQ:STAR?  
> 5000
```



**[[:SENSE]:AM|FM|PM:DISTortion:SINad:FREQuency:STOP <freq>**

Stop Frequency of SINAD

## Function

This command sets the Stop Frequency for SINAD measurement.

## Command

```
[[:SENSE]:AM|FM|PM:DISTortion:SINad:FREQuency:STOP <freq>
```

## Parameter

<freq>	Frequency
Range	Setting value of Manual Frequency for SINAD measurement (TX) to 10 Hz
Resolution	1 Hz
Suffix code	HZ
	Hz is used when omitted.
Default	60000 Hz

## Details

An error will result if Manual Frequency, Start Frequency, and Stop Frequency do not satisfy the following conditions.

$$\text{Start Frequency} \leq \text{Manual Frequency} \leq \text{Stop Frequency}$$

## Example of Use

To set the Stop Frequency for SINAD measurement to 5 kHz.

```
FM:DIST:SIN:FREQ:STOP 5000
```

## **[[:SENSE]:AM|FM|PM:DISTortion:SINad:FREQuency:STOP?**

Stop Frequency of SINAD Query

### Function

This command queries the Stop Frequency for SINAD measurement.

### Query

```
[[:SENSE]:AM|FM|PM:DISTortion:SINad:FREQuency:STOP?
```

### Response

```
<freq>
```

### Parameter

<freq>	Frequency
Range	Setting value of Manual Frequency for SINAD measurement (TX) to 10 Hz
Resolution	1 Hz
Suffix code	None
	Value is returned in Hz units.

### Example of Use

```
To query the Stop Frequency for SINAD measurement.  
FM:DIST:SIN:FREQ:STOP?  
> 5000
```

**[[:SENSe]:AM|FM|PM:DISToRtion:THD:FREQUency:SIGNal PEAK|MANual|GENerator**

Signal Frequency of THD

## Function

This command selects the reference signal frequency for THD measurement.

## Command

```
[[:SENSe]:AM|FM|PM:DISToRtion:THD:FREQUency:SIGNal <mode>
```

## Parameter

<mode>	Reference frequency
PEAK	Peak frequency (default)
MANual	Frequency set for Manual Frequency
GENerator	Frequency set for Tone1 Frequency

## Example of Use

To set the THD measurement reference frequency to Peak frequency.  
 FM:DIS:THD:FREQ:SIGN PEAK

**[[:SENSe]:AM|FM|PM:DISToRtion:THD:FREQUency:SIGNal?**

Signal Frequency of THD Query

## Function

This command queries the reference signal frequency for THD measurement.

## Query

```
[[:SENSe]:AM|FM|PM:DISToRtion:THD:FREQUency:SIGNal?
```

## Response

```
<mode>
```

## Parameter

<mode>	Reference frequency
PEAK	Peak frequency
MAN	Frequency set for Manual Frequency
GEN	Frequency set for Tone1 Frequency

## Example of Use

To query the THD measurement reference frequency.  
 FM:DIS:THD:FREQ:SIGN?  
 > PEAK

**[[:SENSE]:AM|FM|PM:DISTortion:THD:FREQUENCY:SIGNal:MANual <freq>**

Manual Frequency of THD

Function

This command sets the Manual Frequency for THD measurement.

Command

```
[[:SENSE]:AM|FM|PM:DISTortion:THD:FREQUENCY:SIGNal:MANual  
<freq>
```

Parameter

<freq>	Frequency
Range	10 to 60000 Hz
Resolution	1 Hz
Suffix code	HZ
	Hz is used when omitted.
Default	1 kHz

Details

This command is enabled when Signal Frequency is set to Manual. An error will result if Manual Frequency, Start Frequency, and Stop Frequency do not satisfy the following conditions.

$$\text{Start Frequency} \leq \text{Manual Frequency} \leq \text{Stop Frequency}$$

Example of Use

To set the Manual Frequency for THD measurement to 5 kHz.

```
FM:DIST:THD:FREQ:SIGN:MAN 5000
```

**[ :SENSe]:AM|FM|PM:DISToRtion:THD:FREQUency:SIGNal:MANual?**

Manual Frequency of THD Query

## Function

This command queries the Manual Frequency for THD measurement.

## Query

```
[ :SENSe]:AM|FM|PM:DISToRtion:THD:FREQUency:SIGNal:MANual
?
```

## Response

```
<freq>
```

## Parameter

<code>&lt;freq&gt;</code>	Frequency
Range	10 to 60000 Hz
Resolution	1 Hz
Suffix code	None
	Value is returned in Hz units.

## Example of Use

```
To query the Manual Frequency for THD measurement.
FM:DIS:THD:FREQ:SIGN:MAN?
> 5000
```

**[[:SENSE]:AM|FM|PM:DISTortion:THD:FREQUENCY:STARt <freq>**

Start Frequency of THD

Function

This command sets the Start Frequency for THD measurement.

Command

[[:SENSE]:AM|FM|PM:DISTortion:THD:FREQUENCY:STARt <freq>

Parameter

<freq>	Frequency
Range	10 Hz to setting value of Manual Frequency for THD measurement (TX)
Resolution	1 Hz
Suffix code	HZ
	Hz is used when omitted.
Default	10 Hz

Details

An error will result if Manual Frequency, Start Frequency, and Stop Frequency do not satisfy the following conditions.

Start Frequency  $\leq$  Manual Frequency  $\leq$  Stop Frequency

Example of Use

To set the Start Frequency for THD measurement to 5 kHz.

FM:DIST:THD:FREQ:STAR 5000

**[[:SENSE]:AM|FM|PM:DISTortion:THD:FREQUENCY:STARt?**

Start Frequency of THD Query

## Function

This command queries the Start Frequency for THD measurement.

## Query

```
[[:SENSE]:AM|FM|PM:DISTortion:THD:FREQUENCY:STARt?
```

## Response

```
<freq>
```

## Parameter

<freq>	Frequency
Range	10 Hz to setting value of Manual Frequency for THD measurement (TX)
Resolution	1 Hz
Suffix code	None
	Value is returned in Hz units.

## Example of Use

```
To query the Start Frequency for THD measurement.
FM:DIST:THD:FREQ:STAR?
> 5000
```

**[[:SENSE]:AM|FM|PM:DISTortion:THD:FREQUENCY:STOP <freq>**

Stop Frequency of THD

Function

This command sets the Stop Frequency for THD measurement.

Command

```
[[:SENSE]:AM|FM|PM:DISTortion:THD:FREQUENCY:STOP <freq>
```

Parameter

<freq>	Frequency
Range	Setting value of Manual Frequency for THD measurement (TX) to 60000 Hz
Resolution	1 Hz
Suffix code	HZ
	Hz is used when omitted.
Default	60000 Hz

Details

An error will result if Manual Frequency, Start Frequency, and Stop Frequency do not satisfy the following conditions.

Start Frequency  $\leq$  Manual Frequency  $\leq$  Stop Frequency

Example of Use

To set the Stop Frequency for THD measurement to 5 kHz.

```
FM:DIST:THD:FREQ:STOP 5000
```



**[[:SENSE]:AM|FM|PM:DISTortion:THD:FREQUENCY:STOP?**

Stop Frequency of THD Query

## Function

This command queries the Stop Frequency for THD measurement.

## Query

```
[[:SENSE]:AM|FM|PM:DISTortion:THD:FREQUENCY:STOP?
```

## Response

```
<freq>
```

## Parameter

<code>&lt;freq&gt;</code>	Frequency
Range	Setting value of Manual Frequency for THD measurement (TX) to 60000 Hz
Resolution	1 Hz
Suffix code	None
	Value is returned in Hz units.

## Example of Use

```
To query the Stop Frequency for THD measurement.
FM:DIST:THD:FREQ:STOP?
> 5000
```

### **[[:SENSE]:SPEaker[:STATe] <switch>**

Demodulation Monitor

Function

This command turns On/Off the demodulation monitor output.

Command

```
[[:SENSE]:SPEaker[:STATe] <switch>
```

Parameter

<switch>	Demodulation monitor output On/Off
ON 1	Demodulation monitor output On
OFF 0	Demodulation monitor output Off
Default	OFF

Details

This command is valid when USB Audio equipment is connected.

Example of Use

To turn on the demodulation monitor output.

```
SPE ON
```

### **[[:SENSe]:SPEaker[:STATe]?**

Demodulation Monitor Query

Function

This command queries the On/Off status of the demodulation monitor output.

Query

```
[[:SENSe]:SPEaker[:STATe]?
```

Response

<switch>	Demodulation monitor output On/Off
1	Demodulation monitor output On
0	Demodulation monitor output Off

Example of Use

To query the On/Off status of the demodulation monitor output.

```
SPE?
```

```
> 1
```

**[[:SENSE]:SPNHeadphone[:STATE] ON|OFF|1|0**

Speaker/Headphone Output

## Function

This command sets the output to the speakers or headphones On/Off.

## Command

```
[[:SENSE]:SPNHeadphone[:STATE] <switch>
```

## Parameter

<switch>	Output On/Off
ON 1	On
OFF 0	Off
Default	OFF

## Details

This command is available only with MS2830A-018/118.  
It is valid only when using FM modulation.

## Example of Use

To set the output to the speakers or headphones to On.  
SPNH ON

**[[:SENSE]:SPNHeadphone[:STATE]?**

Speaker/Headphone Output Query

## Function

This command queries the output On/Off status to the speakers or headphones.

## Query

```
[[:SENSE]:SPNHeadphone[:STATE]?
```

## Response

<switch>	Output On/Off
1	On
0	Off

## Example of Use

To query the output On/Off status to the speakers or headphones.  
SPNH?  
> 1

### **[[:SENSE]:SPEaker:VOLume <vol>**

Demodulation Monitor Volume

Function

This command sets the demodulation monitor volume.

Command

```
[[:SENSE]:SPEaker:VOLume <vol>
```

Parameter

<vol>	Demodulation monitor volume
Range	0 to 100
Resolution	1
Suffix code	None
Default	50

Details

This command is valid when USB Audio equipment, speakers, or headphones are connected.

Without MS2830A-018/118, this command is enabled when the modulation monitor is On.

Example of Use

To set the demodulation monitor volume.  
SPE:VOL 100

### **[[:SENSE]:SPEaker:VOLume?**

Demodulation Monitor Volume Query

Function

This command queries the demodulation monitor volume.

Query

```
[[:SENSE]:SPEaker:VOLume?
```

Response

<vol>	Demodulation monitor volume
Range	0 to 100
Resolution	1
Suffix code	None

Example of Use

To query the demodulation monitor volume.  
SPE:VOL?  
> 100

**:INITiate:FM**

Initiate FM

Function

This command switches the modulation scheme for TX measurement to FM modulation to start the single measurement.

Command

```
:INITiate:FM
```

Example of Use

To switch the modulation scheme for TX measurement to FM modulation to start the measurement.

```
INIT:FM
```

**:INITiate:WFM**

Initiate Wide FM

Function

This command switches the modulation scheme for TX measurement to FM modulation (wide FM measurement) to start the single measurement.

Command

```
:INITiate:WFM
```

Example of Use

To switch the modulation scheme for TX measurement to FM modulation (wide FM measurement) to start the measurement.

```
INIT:WFM
```

**:INITiate:AM**

Initiate AM

Function

This command switches the modulation scheme for TX measurement to AM modulation to start the single measurement.

Command

```
:INITiate:AM
```

Example of Use

To switch the modulation scheme for TX measurement to AM modulation to start the measurement.

```
INIT:AM
```

**:INITiate:PM**

Initiate  $\phi$ M

Function

This command switches the modulation scheme for TX measurement to  $\phi$ M modulation to start the single measurement.

Command

:INITiate:PM

Example of Use

To switch the modulation scheme for TX measurement to  $\phi$ M modulation to start the measurement.

INIT:PM

### 2.4.3 Audio Generator Function

This function displays device messages when an AF signal is output from the device for TX measurement.

The device messages described in this section apply only with MS2830A-018/118.

**Table 2.4.3-1 Device Messages for Audio Generator Function**

Parameter	Device Messages
AF Output Type	:AF:OUTPut[1]:TYPE BALance UNBalance
	:AF:OUTPut[1]:TYPE?
AF Output Impedance	:AF:OUTPut[1]:IMPedance 50 100 600
	:AF:OUTPut[1]:IMPedance?
AF Output Impedance Reference	:AF:SOURce[1]:REFerence:IMPedance <impedance>
	:AF:SOURce[1]:REFerence:IMPedance?
AF Output Level Unit	:AF:SOURce[1]:LEVel:UNIT MV V DBM
	:AF:SOURce[1]:LEVel:UNIT?
AF Output Waveform	:AF:OUTPut[1]:WAVeform TONes DCS NOISE DTMF
	:AF:OUTPut[1]:WAVeform?
AF Output Tone1/Tone2/Tone3	:AF:SOURce[1]:TONeE1 2 3[:STATe] ON OFF 1 0
	:AF:SOURce[1]:TONE[1] 2 3[:STATe]?
AF Output Tone1/Tone2/Tone3 Frequency	:AF:SOURce[1]:TONE[1] 2 3:FREQuency <freq>
	:AF:SOURce[1]:TONE[1] 2 3:FREQuency?
AF Output Tone1/Tone2/Tone3 Level	:AF:SOURce[1]:TONE[1] 2 3:LEVel <level>
	:AF:SOURce[1]:TONE[1] 2 3:LEVel?
AF Output DCS	:AF:SOURce[1]:DCSQuelch[:STATe] ON OFF 1 0
	:AF:SOURce[1]:DCSQuelch[:STATe]?
AF Output DCS Code	:AF:SOURce[1]:DCSQuelch:CODE <code>
	:AF:SOURce[1]:DCSQuelch:CODE?
AF Output DCS Polarity	:AF:SOURce[1]:DCSQuelch:POLarity NORMal Inverted 0 1
	:AF:SOURce[1]:DCSQuelch:POLarity?
AF Output DCS Level	:AF:SOURce[1]:DCSQuelch:LEVel <level>
	:AF:SOURce[1]:DCSQuelch:LEVel?

**Table 2.4.3-1 Device Messages for Audio Generator Function (Cont'd)**

Parameter	Device Messages
AF Output Noise Signal Type	:AF:SOURce[1]:NOISE:TYPE 1K 1_25K NOISE
	:AF:SOURce[1]:NOISE:TYPE?
AF Output Noise Filter	:AF:SOURce[1]:NOISE:FILTer ON OFF 1 0
	:AF:SOURce[1]:NOISE:FILTer?
AF Output Noise Level	:AF:SOURce[1]:NOISE:LEVel <level>
	:AF:SOURce[1]:NOISE:LEVel?
AF Output Noise Level Offset State	:AF:SOURce[1]:NOISE:LEVel:OFFSet ON OFF 1 0
	:AF:SOURce[1]:NOISE:LEVel:OFFSet?
AF Output Noise State	:AF:SOURce[1]:NOISE[:STATe] ON OFF 1 0
	:AF:SOURce[1]:NOISE[:STATe]?
AF Output Noise Level Offset	:AF:SOURce[1]:NOISE:LEVel:OFFSet:DB <level>
	:AF:SOURce[1]:NOISE:LEVel:OFFSet:DB?
AF Output DTMF Code	:AF:SOURce[1]:DTMF:CODE 1 2 3 4 5 6 7 8 9 0 A B C D
	:AF:SOURce[1]:DTMF:CODE?
AF Output DTMF Level	:AF:SOURce[1]:DTMF:LEVel <level>
	:AF:SOURce[1]:DTMF:LEVel?
AF Output DTMF Length	:AF:SOURce[1]:DTMF:LENGth <length>
	:AF:SOURce[1]:DTMF:LENGth?
AF Output DTMF Send Once	:AF:SOURce[1]:DTMF:PUSH
Switch Application with Audio Generator	:SWITCh:APPLIcation
Back to AMA	:BACK:AMA



**:AF:OUTPut[1]:TYPE BALance|UNBalance**

AF Output Type

Function

This command selects the AF Output Type.

Command

`:AF:OUTPut [1] :TYPE <type>`

Parameter

<code>&lt;type&gt;</code>	AF Output Type
<code>BALance</code>	Balanced output for AF Output.
<code>UNBalance</code>	Unbalanced output for AF Output.
<code>Default</code>	UNBalance

Example of Use

To select Balanced output for AF Output.  
`AF:OUTP:TYPE BAL`

**:AF:OUTPut[1]:TYPE?**

AF Output Type Query

Function

This command queries the AF Output type.

Query

`:AF:OUTPut [1] :TYPE?`

Response

`<type>`

Parameter

<code>&lt;type&gt;</code>	AF Output Type
<code>BAL</code>	Balanced output
<code>UNB</code>	Unbalanced output

Example of Use

Queries AF Output state.  
`AF:OUTP:TYPE?`  
`> BAL`

### **:AF:OUTPut[1]:IMPedance 50|100|600**

AF Output Impedance

Function

This command sets the AF Output impedance.

Command

```
:AF:OUTPut [1] :IMPedance <mode>
```

Parameter

<mode>	AF Output Impedance
50	50 $\Omega$ (with Unbalanced AF Output)
100	100 $\Omega$ (with Balanced AF Output)
600	600 $\Omega$
Default	600

Example of Use

To set the AF Output impedance to 600  $\Omega$ .

```
AF:OUTP:IMP 600
```

### **:AF:OUTPut[1]:IMPedance?**

AF Output Impedance Query

Function

This command queries the AF Output impedance.

Query

```
:AF:OUTPut [1] :IMPedance?
```

Response

```
<mode>
```

Parameter

<mode>	AF Output Impedance
50	50 $\Omega$
100	100 $\Omega$
600	600 $\Omega$

Example of Use

To query the AF Output impedance.

```
AF:OUTP:IMP?
```

```
> 600
```

**:AF:SOURce[1]:REFerence:IMPedance <impedance>**

AF Output Impedance Reference

## Function

This command sets the impedance reference used in power conversion calculations.

## Command

```
:AF:SOURce[1]:REFerence:IMPedance <impedance>
```

## Parameter

<impedance>	Impedance Reference for AF Output
Range	0.01 to 1000000000.00 $\Omega$
Resolution	0.01 $\Omega$
Suffix code	None
Default	600 $\Omega$

## Example of Use

To set the AF Output impedance reference to 100  $\Omega$ .  
 AF:SOUR:REF:IMP 100

**:AF:SOURce[1]:REFerence:IMPedance?**

AF Output Impedance Reference Query

## Function

This command queries the impedance reference used in power conversion calculations.

## Query

```
:AF:SOURce[1]:REFerence:IMPedance?
```

## Response

```
<impedance>
```

## Parameter

<impedance>	Impedance Reference for AF Output
Range	0.01 to 1000000000.00 $\Omega$
Resolution	0.01 $\Omega$
Suffix code	None
	Value is returned in $\Omega$ units.

## Example of Use

To query the AF Output impedance reference.  
 AF:SOUR:REF:IMP?  
 > 100

### **:AF:SOURce[1]:LEVel:UNIT MV|V|DBM**

AF Output Level Unit

Function

This command sets the AF signal output level units.

Command

```
:AF:SOURce[1]:LEVel:UNIT <unit>
```

Parameter

<unit>	Unit
MV	mV (default)
V	V
DBM	dBm

Example of Use

To set the AF signal output level units to dBm.  
AF:SOUR:LEV:UNIT DBM

### **:AF:SOURce[1]:LEVel:UNIT?**

AF Output Level Unit Query

Function

This command queries the AF signal output level units.

Query

```
:AF:SOURce[1]:LEVel:UNIT?
```

Response

```
<unit>
```

Parameter

<unit>	Unit
MV	mV
V	V
DBM	dBm

Example of Use

To query the AF signal output level units.  
AF:SOUR:LEV:UNIT?  
> DBM

**:AF:OUTPut[1]:WAVeform TONes|DCS|NOISe|DTMF**

AF Output Waveform

## Function

This command sets the AF signal output mode.

## Command

`:AF:OUTPut [1]:WAVeform <mode>`

## Parameter

<mode>	Signal mode
TONes	Tone signal (default)
DCS	Tone signal + DCS (Digital Code Squelch) signal
NOISe	Tone Signal + Noise (pseudo voice) signal
DTMF	DTMF (Dual Tone Multiple Frequency) signal

## Example of Use

To set the AF signal output to DCS.

`AF:OUTP:WAV DCS`**:AF:OUTPut[1]:WAVeform?**

AF Output Waveform Query

## Function

This command queries the AF signal output mode.

## Query

`:AF:OUTPut [1]:WAVeform?`

## Response

`<mode>`

## Parameter

<mode>	Signal mode
TON	Tone signal
DCS	Tone signal + DCS (Digital Code Squelch) signal
NOIS	Tone signal + Noise (pseudo voice) signal
DTMF	DTMF (Dual Tone Multiple Frequency) signal

## Example of Use

To query the AF signal output.

`AF:OUTP:WAV?``> DCS`

### **:AF:SOURce[1]:TONE[1]|2|3[:STATe] ON|OFF|1|0**

AF Output Tone1/Tone2/Tone3

#### Function

This command enables/disables Tone1, Tone2, or Tone3.

#### Command

```
:AF:SOURce[1]:TONE[1]|2|3[:STATe] <switch>
```

#### Parameter

<switch>	Tone signal On/Off
OFF 0	Disables the Tone signal. (default)
ON 1	Enables the Tone signal.

#### Details

Tone1 can be set when the AF signal mode is TONes or DCS.  
Tone2 and Tone3 can be set only when the AF signal mode is TONes.

#### Example of Use

To enable Tone2.  
AF:SOUR:TONE2 ON

### **:AF:SOURce[1]:TONE[1]|2|3[:STATe]?**

AF Output Tone1/Tone2/Tone3 Query

#### Function

This command queries the Tone1, Tone2, or Tone3 On/Off status.

#### Query

```
:AF:SOURce[1]:TONE[1]|2|3[:STATe]?
```

#### Response

```
<switch>
```

#### Parameter

<switch>	Tone signal On/Off
0	Tone signal Off
1	Tone signal On

#### Example of Use

To query the Tone2 status.  
AF:SOUR:TONE2?  
> 1

**:AF:SOURce[1]:TONE[1]|2|3:FREQuency <freq>**

AF Output Tone1/Tone2/Tone3 Frequency

## Function

This command sets the Tone1, Tone2, or Tone3 Tone frequency.

## Command

`:AF:SOURce[1]:TONE[1]|2|3:FREQuency <freq>`

## Parameter

<freq>	Frequency
Range	10.0 to 50000.0 Hz
Resolution	0.1 Hz
Suffix code	HZ, KHZ
	Hz is used when omitted.
Default	Tone1: 1000.0 Hz Tone2: 67.0 Hz Tone3: 88.0 Hz

## Details

Tone1 can be set when the AF signal mode is `TONes` or `DCS`.  
Tone2 and Tone3 can be set only when the AF signal mode is `TONes`.

## Example of Use

To set the Tone2 Tone frequency to 800 Hz.  
`AF:SOUR:TONE2:FREQ 800`

### **:AF:SOURce[1]:TONE[1]|2|3:FREQuency?**

AF Output Tone1/Tone2/Tone3 Frequency Query

Function

This command queries the Tone1, Tone2, or Tone3 Tone frequency.

Query

`:AF:SOURce[1]:TONE[1]|2|3:FREQuency?`

Response

`<freq>`

Parameter

<code>&lt;freq&gt;</code>	Frequency
Range	10.0 to 50000.0 Hz
Resolution	0.1 Hz
Suffix code	None

Value is returned in Hz units.

Example of Use

To query the Tone2 Tone frequency.

```
AF:SOUR:TONE2:FREQ?  
> 800.0
```



**:AF:SOURce[1]:TONE[1]|2|3:LEVel <level>**

AF Output Tone1/Tone2/Tone3 Level

## Function

This command sets the Tone1, Tone2, or Tone3 Tone level.

## Command

`:AF:SOURce[1]:TONE[1]|2|3:LEVel <level>`

## Parameter

<level>	Tone level
Range	When AF Output is balanced: 0.001 to 12.4 Vrms When AF Output is unbalanced: 0.001 to 6.2 Vrms
Resolution	0.01 mV
Suffix code	MVRMS, VRMS, DBM mV is used when omitted.
Default	1 mV

## Details

Tone1 can be set when the AF signal mode is TONes or DCS.  
Tone2 and Tone3 can be set only when the AF signal mode is TONes.

## Example of Use

To set the Tone2 Tone level to 0.1 V.  
`AF:SOUR:TONE2:LEV 100`

**:AF:SOURce[1]:TONE[1]|2|3:LEVel?**

AF Output Tone1/Tone2/Tone3 Level Query

Function

This command queries the Tone1, Tone2, or Tone3 Tone level.

Query

:AF:SOURce[1]:TONE[1]|2|3:LEVel?

Response

<level>

Parameter

<level>	Tone level
Range	When AF Output is balanced: 0.001 to 12.4 Vrms When AF Output is unbalanced: 0.001 to 6.2 Vrms
Resolution	0.01 mV
Suffix code	None

Example of Use

To query the Tone2 Tone level.  
AF:SOUR:TONE2:LEV?  
> 100.00000

**:AF:SOURce[1]:DCSQuelch[:STATe] ON|OFF|1|0**

AF Output DCS

## Function

This command enables/disables the DCS signal output.

## Command

```
:AF:SOURce[1]:DCSQuelch[:STATe] <switch>
```

## Parameter

<switch>	DCS signal On/Off
OFF 0	Disables the DCS signal. (default)
ON 1	Enables the DCS signal.

## Details

This can be set only when the AF signal mode is DCS.

## Example of Use

To enable the DCS signal output.

```
AF:SOUR:DCSQ ON
```

**:AF:SOURce[1]:DCSQuelch[:STATe]?**

AF Output DCS Query

## Function

This command queries the On/Off status of the DCS signal output.

## Query

```
:AF:SOURce[1]:DCSQuelch[:STATe]?
```

## Response

```
<switch>
```

## Parameter

<switch>	DCS signal On/Off
0	DCS signal Off
1	DCS signal On

## Example of Use

To query the On/Off status of the DCS signal.

```
AF:SOUR:DCSQ?
> 1
```

### **:AF:SOURce[1]:DCSQuelch:CODE <code>**

AF Output DCS Code

#### Function

This command sets the DCS Code.

#### Command

```
:AF:SOURce[1]:DCSQuelch:CODE <code>
```

#### Parameter

<code>	DCS code
Range	0 to 777 (three-digit octal notation)
Resolution	1
Suffix code	None
Default	023

#### Details

Repeated signals are output with a 23-bit DCS pattern created according to the DCS code setting.

This can be set only when the AF signal mode is DCS.

#### Example of Use

To set the DCS code to 026.  
AF:SOUR:DCSQ:CODE 026

### **:AF:SOURce[1]:DCSQuelch:CODE?**

AF Output DCS Code Query

#### Function

This command queries the DCS Code.

#### Query

```
:AF:SOURce[1]:DCSQuelch:CODE?
```

#### Response

```
<code>
```

#### Parameter

<code>	DCS code
Range	000 to 777 (three-digit octal notation)
Resolution	1
Suffix code	None

#### Example of Use

To query the DCS code setting value.  
AF:SOUR:DCSQ:CODE?  
> 026

**:AF:SOURce[1]:DCSQuelch:POLarity NORMal|Inverted|0|1**

AF Output DCS Polarity

## Function

This command sets the DCS polarity.

## Command

`:AF:SOURce[1]:DCSQuelch:POLarity <switch>`

## Parameter

<switch>	Polarity
NORMal 0	Does not invert polarity. (default)
INVerted 1	Inverts polarity.

## Details

This can be set only when the AF signal mode is DCS.

## Example of Use

To invert the DCS polarity.

```
AF:SOUR:DCSQ:POL INV
```

**:AF:SOURce[1]:DCSQuelch:POLarity?**

AF Output DCS Polarity Query

## Function

This command queries the DCS polarity setting.

## Query

`:AF:SOURce[1]:DCSQuelch:POLarity?`

## Response

`<switch>`

## Parameter

<switch>	Polarity
0	Does not invert polarity.
1	Inverts polarity.

## Example of Use

To query the DCS polarity setting.

```
AF:SOUR:DCSQ:POL?
> 1
```

**:AF:SOURce[1]:DCSQuelch:LEVel <level>**

AF Output DCS Level

Function

This command sets the DCS level.

Command

`:AF:SOURce[1]:DCSQuelch:LEVel <level>`

Parameter

<level>	DCS level
Range	When AF Output is balance: 0.001 to 7 Vp When AF Output is unbalanced: 0.001 to 3.5 Vp
Resolution	0.01 mV
Suffix code	VP, MVP mVp is used when omitted.
Default	1 mV

Details

This can be set only when the AF signal mode is DCS.

Example of Use

To set the DCS level to 100 mVp.  
`AF:SOUR:DCSQ:LEV 100`

**:AF:SOURce[1]:DCSQuelch:LEVel?**

AF Output DCS Level Query

## Function

This command queries the DCS level.

## Query

`:AF:SOURce[1]:DCSQuelch:LEVel?`

## Response

`<level>`

## Parameter

<code>&lt;level&gt;</code>	DCS level
Range	When AF Output is balanced: 0.001 to 7 Vp When AF Output is unbalanced: 0.001 to 3.5 Vp
Resolution	0.01 mV
Suffix code	None

## Example of Use

```
To query the DCS level.
AF:SOUR:DCSQ:LEV?
> 100.00000
```

### **:AF:SOURce[1]:NOISe:TYPe 1K|1\_25K|NOISe**

AF Output Noise Signal Type

Function

This command sets the Noise mode signal type.

Command

```
:AF:SOURce[1]:NOISe:TYPe <type>
```

Parameter

<type>	Signal type
1K	1k Tone signal
1_25k	1.25k Tone signal
NOISe	Noise (pseudo voice) signal (default)

Details

This can be set only when the AF signal mode is NOISe.

Example of Use

To set the Noise mode signal type to Noise.  
AF:SOUR:NOIS:TYP NOIS

### **:AF:SOURce[1]:NOISe:TYPe?**

AF Output Noise Signal Type Query

Function

This command queries the Noise mode signal type.

Query

```
:AF:SOURce[1]:NOISe:TYPe?
```

Response

```
<type>
```

Parameter

<type>	Signal type
1K	1k Tone signal
1_25	1.25k Tone signal
NOIS	Noise (pseudo voice) signal

Example of Use

To query the Noise mode signal type.  
AF:SOUR:NOIS:TYP?  
> NOIS



**:AF:SOURce[1]:NOISe:FILTer ON|OFF|1|0**

AF Output Noise Filter

## Function

This command enables/disables the Noise mode pseudo voice filter (G.227).

## Command

```
:AF:SOURce[1]:NOISe:FILTer <switch>
```

## Parameter

<switch>	Filter On/Off
OFF 0	Off
ON 1	On (default)

## Details

This can be set only when the AF signal mode is NOISe.

## Example of Use

To enable the Noise mode pseudo voice filter.

```
AF:SOUR:NOIS:FILT ON
```

**:AF:SOURce[1]:NOISe:FILTer?**

AF Output Noise Filter Query

## Function

This command queries the Noise mode pseudo voice filter (G.227) status.

## Query

```
:AF:SOURce[1]:NOISe:FILTer?
```

## Response

```
<switch>
```

## Parameter

<switch>	Filter On/Off
0	Off
1	On

## Example of Use

To query the Noise mode pseudo voice filter status.

```
AF:SOUR:NOIS:FILT?
> 1
```

**:AF:SOURce[1]:NOISe:LEVel <level>**

AF Output Noise Level

Function

This command sets the Noise level.

Command

```
:AF:SOURce[1]:NOISe:LEVel <level>
```

Parameter

<level>	Noise level
Range	When AF Output is balanced: 0.001 to 12.4 Vrms When AF Output is unbalanced: 0.001 to 6.2 Vrms
Resolution	0.01 mV
Suffix code	V, MVRMS, VRMS, DBM mVrms is used when omitted.
Default	1 mVrms

Details

This can be set only when the AF signal mode is NOISe.

Example of Use

To set the Noise level to 100 mVrms.  
AF:SOUR:NOIS:LEV 100

**:AF:SOURce[1]:NOISe:LEVel?**

AF Output Noise Level Query

## Function

This command queries the Noise level.

## Query

`:AF:SOURce[1]:NOISe:LEVel?`

## Response

`<level>`

## Parameter

<code>&lt;level&gt;</code>	Noise level
Range	When AF Output is balanced: 0.001 to 12.4 Vrms When AF Output is unbalanced: 0.001 to 6.2 Vrms
Resolution	0.01 mV
Suffix code	None

## Example of Use

```
To query the Noise level.
AF:SOUR:NOIS:LEV?
> 100.00000
```

**:AF:SOURce[1]:NOISe:LEVel:OFFSet ON|OFF|1|0**

AF Output Noise Level Offset State

Function

This command enables/disables the Noise level offset function.

Command

`:AF:SOURce[1]:NOISe:LEVel:OFFSet <switch>`

Parameter

<code>&lt;switch&gt;</code>	Offset function Enabled/Disabled
<code>OFF 0</code>	Disabled (default)
<code>ON 1</code>	Enabled

Details

This can be set only when the AF signal mode is `NOISe`.

Example of Use

To enable the Noise level offset function.

`AF:SOUR:NOIS:LEV:OFFS ON`

**:AF:SOURce[1]:NOISe:LEVel:OFFSet?**

AF Output Noise Level Offset State Query

Function

This command queries the Noise level offset function status.

Query

`:AF:SOURce[1]:NOISe:LEVel:OFFSet?`

Response

`<switch>`

Parameter

<code>&lt;switch&gt;</code>	Offset function Enabled/Disabled
<code>0</code>	Disabled
<code>1</code>	Enabled

Example of Use

To query the Noise level offset function status.

`AF:SOUR:NOIS:LEV:OFFS?`

`> 1`

**:AF:SOURce[1]:NOISe[:STATe] ON|OFF|1|0**

AF Output Noise State

## Function

This command enables/disables signal output in Noise mode.

## Command

```
:AF:SOURce[1]:NOISe[:STATe] <switch>
```

## Parameter

<switch>	Output signal Enabled/Disabled
OFF 0	Disabled (default)
ON 1	Enabled

## Details

This can be set only when the AF signal mode is NOISe.

## Example of Use

To enable signal output in Noise mode.

```
AF:SOUR:NOIS ON
```

**:AF:SOURce[1]:NOISe[:STATe]?**

AF Output Noise State Query

## Function

This command queries whether the signal output is enabled or disabled in Noise mode.

## Query

```
:AF:SOURce[1]:NOISe[:STATe]?
```

## Response

```
<switch>
```

## Parameter

<switch>	Output signal Enabled/Disabled
0	Disabled (default)
1	Enabled

## Example of Use

To query whether the signal output is enabled/disabled in Noise mode.

```
AF:SOUR:NOIS?
```

```
> 1
```

### **:AF:SOURce[1]:NOISe:LEVel:OFFSet:DB <level>**

AF Output Noise Level Offset

#### Function

This command sets the Noise level offset value.

#### Command

```
:AF:SOURce[1]:NOISe:LEVel:OFFSet:DB <level>
```

#### Parameter

<level>	Offset value
Range	-20 to 20 dB
Resolution	0.1 dB
Suffix code	DB
	dB is used when the suffix code is omitted.
Default	10.0 dB

#### Details

This can be set only when the AF signal mode is NOISe.

#### Example of Use

To set the Noise level offset value to 1 dB.

```
AF:SOUR:NOIS:LEV:OFFS:DB 1
```

### **:AF:SOURce[1]:NOISe:LEVel:OFFSet:DB?**

AF Output Noise Level Offset Query

#### Function

This command queries the RF signal output level offset value.

#### Query

```
:AF:SOURce[1]:NOISe:LEVel:OFFSet:DB?
```

#### Response

```
<level>
```

#### Parameter

<level>	Offset value
Range	-20 to 20 dB
Resolution	0.1 dB
Suffix code	None
	Value is returned in dB units.

#### Example of Use

To query the Noise level offset value.

```
AF:SOUR:NOIS:LEV:OFFS:DB?
```

```
> 1.0
```

**:AF:SOURce[1]:DTMF:CODE 1|2|3|4|5|6|7|8|9|0|A|B|C|D|\*|#**

AF Output DTMF Code

## Function

This command selects the DTMF code.

## Command

`:AF:SOURce[1]:DTMF:CODE <code>`

## Parameter

<code>&lt;code&gt;</code>	DTMF code
Range	0 to 9, A to D, *, # (Select one code from the above.)
Default	0

## Details

This can be set only when the AF signal mode is DTMF.

## Example of Use

To select the DTMF code to A.

```
AF:SOUR:DTMF:CODE A
```

**:AF:SOURce[1]:DTMF:CODE?**

AF Output DTMF Code Query

## Function

This command queries the DTMF code.

## Query

`:AF:SOURce[1]:DTMF:CODE?`

## Response

`<code>`

## Parameter

<code>&lt;code&gt;</code>	DTMF code
Range	0 to 9, A to D, *, #

## Example of Use

To query the DTMF code.

```
AF:SOUR:DTMF:CODE?
> A
```

**:AF:SOURce[1]:DTMF:LEVel <level>**

AF Output DTMF Level

Function

This command sets the DTMF level.

Command

`:AF:SOURce[1]:DTMF:LEVel <level>`

Parameter

<level>	DTMF level
Range	When AF Output is balanced: 0.001 to 3 Vp When AF Output is unbalanced: 0.001 to 1.5 Vp
Resolution	0.01 mV
Suffix code	MVP, VP mVp is used when omitted.
Default	1 mVp

Details

This can be set only when the AF signal mode is `DTMF`.

Example of Use

To set the DTMF level to 100 mVp.  
`AF:SOUR:DTMF:LEV 100`



**:AF:SOURce[1]:DTMF:LEVel?**

AF Output DTMF Level Query

## Function

This command queries the DTMF level.

## Query

`:AF:SOURce[1]:DTMF:LEVel?`

## Response

`<level>`

## Parameter

<code>&lt;level&gt;</code>	DTMF level
Range	When AF Output is balanced: 0.001 to 3 Vp When AF Output is unbalanced: 0.001 to 1.5 Vp
Resolution	0.01 mV
Suffix code	None

## Example of Use

To query the DTMF level.  
`AF:SOUR:DTMF:LEV?`  
`> 100.00000`

**:AF:SOURce[1]:DTMF:LENGth <length>**

AF Output DTMF Length

Function

This command sets the DTMF signal length.

Command

`:AF:SOURce[1]:DTMF:LENGth <length>`

Parameter

<length>	DCS code length
Range	1 to 2000 ms
Resolution	1 ms
Suffix code	MS, S
	When omitted ms is used.
Default	30 ms

Details

This can be set only when the AF signal mode is DTMF.

Example of Use

To set the DTMF signal length to 100 ms.  
`AF:SOUR:DTMF:LENG 100`

**:AF:SOURce[1]:DTMF:LENGth?**

AF Output DTMF Length Query

Function

This command queries the DTMF signal length.

Query

`:AF:SOURce[1]:DTMF:LENGth?`

Response

<length>

Parameter

<length>	DCS code
Range	1 to 2000 ms
Resolution	1 ms
Suffix code	None
	Value is returned in ms units.

Example of Use

To query the DTMF signal length.  
`AF:SOUR:DTMF:LENG?`  
> 100

**:AF:SOURce[1]:DTMF:PUSH**

AF Output DTMF Send Once

## Function

This command outputs the DTMF signal once.

## Command

```
:AF:SOURce[1]:DTMF:PUSH
```

## Details

This can be executed only when the AF signal mode is `DTMF`.

## Example of Use

To output the DTMF signal once.

```
AF:SOUR:DTMF:PUSH
```

## **:SWITCh:APPLication**

Switch Application with Audio Generator

### Function

This command sets the mode to operate only Audio Generator with the minimized application window of this software.

### Command

`:SWITCh:APPLication`

### Details

Set when using Audio Generator at the same time as other applications. Used to display the occupied bandwidth and spurious using the spectrum analyzer by inputting an audio signal into DUT. Using this command temporarily prevents functions other than Audio Generator from being used.

This command is invalid when the Audio Generator window is already minimized.

### Example of Use

To set Audio Generator window minimization to On.  
`SWIT:APPL`

## **:BACK:AMA**

Back to AMA

### Function

This command restores the application window to the original size and enables the functions other than Audio Generator.

### Command

`:BACK:AMA`

### Details

Sending this command while functions other than Audio Generator have been suspended using the `:SWITCh:APPLication` command restores those suspended functions.

This command is valid only when the Audio Generator window is minimized.

### Example of Use

To restore an application window to its original size.  
`:BACK:AMA`

## 2.5 RX Measurement

Device messages for RX measurement are enabled when the measurement mode is the RX measurement mode.

### 2.5.1 RX Measurement Result

Table 2.5.1-1 lists device messages for the RX measurement result.

**Table 2.5.1-1 Device Messages for RX Measurement Result**

Function	Device Messages
Fetch	:FETCh:AFIN[1]:AF[n]?
Read	:READ:AFIN[1]:AF[n]?
Measure	:MEASure:AFIN[1]:AF[n]?

Table 2.5.1-2 lists the responses to parameter [n] of the device messages in Table 2.5.1-1.

**Table 2.5.1-2 Responses to RX Measurement Results**

N	Device Messages
1 or when omitted	Returns the measurement results with comma separated value in the following order. <ol style="list-style-type: none"> <li>1. AF frequency [Hz]</li> <li>2. AF frequency error [Hz]</li> <li>3. AF frequency error [%]</li> <li>4. AF frequency error [ppm]</li> <li>5. AF Input Level (Tone) / AF Input Level (Tone) [dBr]*1</li> <li>6. AF Input Level (Total) / AF Input Level (Total) [dBr]*1</li> <li>7. Reserved</li> <li>8. THD + N [%]</li> <li>9. THD + N [dB]</li> <li>10. THD [%]</li> <li>11. THD [dB]</li> <li>12. SINAD [%]</li> <li>13. SINAD [dB]</li> </ol>
6	Returns the AF Input Level Time Domain graph data with comma-separated values. Time: ms AF Level: mV
7	Returns the AF Input Level Frequency Domain graph data with comma-separated values. Frequency: Hz AF Level: mV

**Table 2.5.1-2 Responses to RX Measurement Results (Cont'd)**

N	Device Messages
9	<p>Returns the Meter evaluation results with comma separated value in the following order.</p> <ol style="list-style-type: none"> <li>1. THD + N Deflection Judge*2,*3</li> <li>2. THD + N Deflection Count*3</li> <li>3. THD + N Deflection Minimum [%]</li> <li>4. THD + N Deflection Minimum [dB]</li> <li>5. THD + N Deflection Maximum [%]</li> <li>6. THD + N Deflection Maximum [dB]</li> <li>7. THD Deflection Judge*2,*3</li> <li>8. THD Deflection Count*3</li> <li>9. THD Deflection Minimum [%]</li> <li>10. THD Deflection Minimum [dB]</li> <li>11. THD Deflection Maximum [%]</li> <li>12. THD Deflection Maximum [dB]</li> <li>13. SINAD Deflection Judge*2,*3</li> <li>14. SINAD Deflection Count*3</li> <li>15. SINAD Deflection Minimum [%]</li> <li>16. SINAD Deflection Minimum [dB]</li> <li>17. SINAD Deflection Maximum [%]</li> <li>18. SINAD Deflection Maximum [dB]</li> <li>19. AF Level Deflection Judge</li> <li>20. AF Level Deflection Count</li> <li>21. AF Level Deflection Minimum [%]</li> <li>22. AF Level Deflection Maximum [AFLU]</li> <li>23. AF Level Deflection Minimum [%]</li> <li>24. AF Level Deflection Maximum [AFLU]</li> </ol>

\*1: When AF Level Set Reference is set to Off, the result is returned in the unit set by the AF Level Input Unit setting. When AF Level Set Reference is set to On, the result of relative value [dBr] is returned.

\*2: 1 is returned if the evaluation results are Pass, -1 is returned if the results are Fail, and 0 is returned if the Deflection Count has not reached the maximum value.

\*3: Invalid (-999) is returned if Deflection View is disabled (Off).

**:FETCh:AFIN[1]:AF[n]?**

Measurement Result Query

Function

This command fetches the RX measurement result.

Query

`:FETCh:AFIN[1]:AF[n]?`

Response

Refer to Table 2.5.1-2.

Example of Use

To query the RX measurement result.

`FETC:AFIN:AF?`**:READ:AFIN[1]:AF[n]?**

Measurement Result Query

Function

This command performs the Single measurement once with the current settings, and then queries the RX measurement result.

Query

`:READ:AFIN[1]:AF[n]?`

Response

Refer to Table 2.5.1-2.

Example of Use

To perform the measurement and query the RX measurement result.

`READ:AFIN:AF?`

**:MEASure:AFIN[1]:AF[n]?**

Measurement Result Query

Function

This command performs the Single measurement once with the current settings, and then queries the RX measurement result.

Query

:MEASure:AFIN[1]:AF[n]?

Response

Refer to Table 2.5.1-2.

Example of Use

To perform the measurement and query the RX measurement result.

MEAS:AFIN:AF?



## 2.5.2 Audio Analyzer Function

This function displays device messages when an AF signal is input to the device from DUT for RX measurement.

The device messages described in this section apply only with MS2830A-018/118.

**Table 2.5.2-1 Device Messages for Audio Analyzer Function**

Parameter	Device Messages
Signal Frequency of SINAD	<code>[ :SENSe]:AF:DISToRtion:SINad:FREQuency:SIGNal PEAK MANual GENerator</code>
	<code>[ :SENSe]:AF:DISToRtion:SINad:FREQuency:SIGNal?</code>
Manual Frequency of SINAD	<code>[ :SENSe]:AF:DISToRtion:SINad:FREQuency:SIGNal:MANual &lt;freq&gt;</code>
	<code>[ :SENSe]:AF:DISToRtion:SINad:FREQuency:SIGNal:MANual?</code>
Start Frequency of SINAD	<code>[ :SENSe]:AF:DISToRtion:SINad:FREQuency:START &lt;freq&gt;</code>
	<code>[ :SENSe]:AF:DISToRtion:SINad:FREQuency:START?</code>
Stop Frequency of SINAD	<code>[ :SENSe]:AF:DISToRtion:SINad:FREQuency:STOP &lt;freq&gt;</code>
	<code>[ :SENSe]:AF:DISToRtion:SINad:FREQuency:STOP?</code>
Signal Frequency of THD	<code>[ :SENSe]:AF:DISToRtion:THD:FREQuency:SIGNal PEAK MANual GENerator</code>
	<code>[ :SENSe]:AF:DISToRtion:THD:FREQuency:SIGNal?</code>
Manual Frequency of THD	<code>[ :SENSe]:AF:DISToRtion:THD:FREQuency:SIGNal:MANual &lt;freq&gt;</code>
	<code>[ :SENSe]:AF:DISToRtion:THD:FREQuency:SIGNal:MANual?</code>
Start Frequency of THD	<code>[ :SENSe]:AF:DISToRtion:THD:FREQuency:START &lt;freq&gt;</code>
	<code>[ :SENSe]:AF:DISToRtion:THD:FREQuency:START?</code>
Stop Frequency of THD	<code>[ :SENSe]:AF:DISToRtion:THD:FREQuency:STOP &lt;freq&gt;</code>
	<code>[ :SENSe]:AF:DISToRtion:THD:FREQuency:STOP?</code>
Signal Frequency of THD+N	<code>[ :SENSe]:AF:DISToRtion:THDN:FREQuency:SIGNal PEAK MANual GENerator</code>
	<code>[ :SENSe]:AF:DISToRtion:THDN:FREQuency:SIGNal?</code>
Manual Frequency of THD+N	<code>[ :SENSe]:AF:DISToRtion:THDN:FREQuency:SIGNal:MANual &lt;freq&gt;</code>
	<code>[ :SENSe]:AF:DISToRtion:THDN:FREQuency:SIGNal:MANual?</code>
Start Frequency of THD+N	<code>[ :SENSe]:AF:DISToRtion:THDN:FREQuency:START &lt;freq&gt;</code>
	<code>[ :SENSe]:AF:DISToRtion:THDN:FREQuency:START?</code>
Stop Frequency of THD+N	<code>[ :SENSe]:AF:DISToRtion:THDN:FREQuency:STOP &lt;freq&gt;</code>
	<code>[ :SENSe]:AF:DISToRtion:THDN:FREQuency:STOP?</code>

Table 2.5.2-1 Device Messages for Audio Analyzer Function (Cont'd)

Parameter	Device Messages
High Pass Filter	<code>[ :SENSE]:AF:HPFilter</code> <code>OFF HPF20 HPF50 HPF100 HPF300 HPF400 HPF30K</code>
	<code>[ :SENSE]:AF:HPFilter?</code>
Low Pass Filter	<code>[ :SENSE]:AF:LPFilter</code> <code>OFF LPF3K LPF15K LPF20K LPF30K LPF50K</code>
	<code>[ :SENSE]:AF:LPFilter?</code>
Weighting	<code>[ :SENSE]:AF:FILTer:WEIGHting</code> <code>OFF CCITt CMESsage 468 ARM AWEight</code>
	<code>[ :SENSE]:AF:FILTer:WEIGHting?</code>
AF Measure Time Domain Graph State	<code>:DISPlay:AF:WINDow[1]:TRACe:ANALySis:MODE:TIME ON OFF 1 0</code>
	<code>:DISPlay:AF:WINDow[1]:TRACe:ANALySis:MODE:TIME?</code>
AF Measure Frequency Domain Graph State	<code>:DISPlay:AF:WINDow[1]:TRACe:ANALySis:MODE:FREQuency</code> <code>ON OFF 1 0</code>
	<code>:DISPlay:AF:WINDow[1]:TRACe:ANALySis:MODE:FREQuency?</code>
Y Axis Scale Mode of AF Measure Graph (Time Domain)	<code>:DISPlay:AF:WINDow[1]:TRACe:TIMedomain:Y[:SCALE]:MODE</code> <code>AUTO FIXed</code>
	<code>:DISPlay:AF:WINDow[1]:TRACe:TIMedomain:Y[:SCALE]:MODE?</code>
Minimum Y Axis Scale Range of AF Measure Graph (Time Domain)	<code>:DISPlay:AF:WINDow[1]:TRACe:TIMedomain:Y[:SCALE]:AUTO:MIN</code> <code>imumrange 0_5MV 1MV 5MV 10MV 50MV 100MV 500MV 1V</code>
	<code>:DISPlay:AF:WINDow[1]:TRACe:TIMedomain:Y[:SCALE]:AUTO:MIN</code> <code>imumrange?</code>
Y Axis Scale Range of AF Measure Graph (Time Domain)	<code>:DISPlay:AF:WINDow[1]:TRACe:TIMedomain:Y[:SCALE]:FIXed:RA</code> <code>NGe 0_5MV 1MV 5MV 10MV 50MV 100MV 500MV 1V 5V 10V 20V</code>
	<code>:DISPlay:AF:WINDow[1]:TRACe:TIMedomain:Y[:SCALE]:FIXed:RA</code> <code>NGe?</code>
X Axis Range of Time Domain Graph	<code>:CALCulate:AF:RANGe[1]:X &lt;time&gt;</code>
	<code>:CALCulate:AF:RANGe[1]:X?</code>
Y Axis Top Level of Frequency Domain Graph	<code>:DISPlay:AF:WINDow[1]:TRACe:FREQdomain:Y[:SCALE]:TOP:LOG</code> <code>&lt;level&gt;</code>
	<code>:DISPlay:AF:WINDow[1]:TRACe:FREQdomain:Y[:SCALE]:TOP:LOG?</code>
Y Axis Bottom Level of Frequency Domain Graph	<code>:DISPlay:AF:WINDow[1]:TRACe:FREQdomain:Y[:SCALE]:BOTTom:L</code> <code>OG &lt;level&gt;</code>
	<code>:DISPlay:AF:WINDow[1]:TRACe:FREQdomain:Y[:SCALE]:BOTTom:L</code> <code>OG?</code>
X Axis Scale of Frequency Domain Graph	<code>:DISPlay:AF:WINDow[1]:TRACe:FREQdomain:X[:SCALE]:UNIT</code> <code>LINear LOG</code>
	<code>:DISPlay:AF:WINDow[1]:TRACe:FREQdomain:X[:SCALE]:UNIT?</code>

Table 2.5.2-1 Device Messages for Audio Analyzer Function (Cont'd)

Parameter	Device Messages
X Axis (Linear) Min. Frequency of Frequency Domain Graph	<code>:DISPlay:AF:WINDow[1]:TRACe:FREQdomain:X[:SCALE]:STARTfreq:LINear &lt;freq&gt;</code>
	<code>:DISPlay:AF:WINDow[1]:TRACe:FREQdomain:X[:SCALE]:STARTfreq:LINear?</code>
X Axis (Log) Min. Frequency of Frequency Domain Graph	<code>:DISPlay:AF:WINDow[1]:TRACe:FREQdomain:X[:SCALE]:STARTfreq:LOG &lt;range&gt;</code>
	<code>:DISPlay:AF:WINDow[1]:TRACe:FREQdomain:X[:SCALE]:STARTfreq:LOG?</code>
X Axis (Linear) Max. Frequency of Frequency Domain Graph	<code>:DISPlay:AF:WINDow[1]:TRACe:FREQdomain:X[:SCALE]:STOPfreq:LINear &lt;freq&gt;</code>
	<code>:DISPlay:AF:WINDow[1]:TRACe:FREQdomain:X[:SCALE]:STOPfreq:LINear?</code>
X Axis (Log) Max. Frequency of Frequency Domain Graph	<code>:DISPlay:AF:WINDow[1]:TRACe:FREQdomain:X[:SCALE]:STOPfreq:LOG &lt;range&gt;</code>
	<code>:DISPlay:AF:WINDow[1]:TRACe:FREQdomain:X[:SCALE]:STOPfreq:LOG?</code>
Window Function of Frequency Domain Graph	<code>:DISPlay:AF:WINDow[1]:TRACe:FREQdomain:WINDowfunction RECTangular HANN BLACKmanharris HAMming FLATtop</code>
	<code>:DISPlay:AF:WINDow[1]:TRACe:FREQdomain:WINDowfunction?</code>
Maker Mode of Time Domain Graph	<code>:CALCulate:AF:MARKer[1] 2:MODE DELTa NORMal OFF</code>
	<code>:CALCulate:AF:MARKer[1] 2:MODE?</code>
Maker X Axis Position of Time Domain Graph	<code>:CALCulate:AF:MARKer[1] 2:X &lt;time&gt;</code>
	<code>:CALCulate:AF:MARKer[1] 2:X?</code>
Maker Mode of Frequency Domain Graph	<code>:CALCulate:AF:MARKer:FREQuency:MODE DELTa NORMal OFF</code>
	<code>:CALCulate:AF:MARKer:FREQuency:MODE?</code>
Maker X Axis Position of Frequency Domain Graph	<code>:CALCulate:AF:MARKer[1] 2:FREQuency:X &lt;freq&gt;</code>
	<code>:CALCulate:AF:MARKer[1] 2:FREQuency:X?</code>
Peak Search of Frequency Domain Graph	<code>:CALCulate:AF:MARKer[1] 2:FREQuency:X:PEAK</code>
Next Peak Search of Frequency Domain Graph	<code>:CALCulate:AF:MARKer[1] 2:FREQuency:X:NEXTpeak</code>

Table 2.5.2-1 Device Messages for Audio Analyzer Function (Cont'd)

Parameter	Device Messages
Input Range of AF Input	:SENSe[1]:VOLTagE:RANGe[:UPPer] 50MVP 500MVP 5VP 50V
	:SENSe[1]:VOLTagE:RANGe[:UPPer]?
AF Input Type	:SENSe[1]:TYPE BALance UNBalance
	:SENSe[1]:TYPE?
AF Input Impedance Reference	:SENSe[1]:REFerence:IMPedance <impedance>
	:SENSe[1]:REFerence:IMPedance?
AF Level Unit	:SENSe[1]:AF:LEVel:UNIT VRMS DBU DBV W DBM
	:SENSe[1]:AF:LEVel:UNIT?
AF Level Meter State	:DISPlay:AF:METer:AFLevel ON OFF 1 0
	:DISPlay:AF:METer:AFLevel?
SINAD Meter State	:DISPlay:AF:METer:SINad ON OFF 1 0
	:DISPlay:AF:METer:SINad?
THD+N Meter State	:DISPlay:AF:METer:THDN ON OFF 1 0
	:DISPlay:AF:METer:THDN?
THD Meter State	:DISPlay:AF:METer:THD ON OFF 1 0
	:DISPlay:AF:METer:THD?
AF Level Deflection Judge	:DISPlay:AF:METer:AFLevel:JUDGe ON OFF 1 0
	:DISPlay:AF:METer:AFLevel:JUDGe?
SINAD Deflection Judge	:DISPlay:AF:METer:SINad:JUDGe ON OFF 1 0
	:DISPlay:AF:METer:SINad:JUDGe?
THD+N Deflection Judge	:DISPlay:AF:METer:THDN:JUDGe ON OFF 1 0
	:DISPlay:AF:METer:THDN:JUDGe?
THD Deflection Judge	:DISPlay:AF:METer:THD:JUDGe ON OFF 1 0
	:DISPlay:AF:METer:THD:JUDGe?

Table 2.5.2-1 Device Messages for Audio Analyzer Function (Cont'd)

Parameter	Device Messages
Reference of AF Level Meter (AFLU)	:DISPlay:AF:MEter:AFLevel:REference:AFLU MINimum CENTer MAXimum
	:DISPlay:AF:MEter:AFLevel:REference:AFLU?
Reference of AF Level Meter (%)	:DISPlay:AF:MEter:AFLevel:REference:PERCent MINimum CENTer MAXimum
	:DISPlay:AF:MEter:AFLevel:REference:PERCent?
Reference of SINAD Meter (dB)	:DISPlay:AF:MEter:SINad:REference:DB MINimum CENTer MAXimum
	:DISPlay:AF:MEter:SINad:REference:DB?
Reference of SINAD Meter (%)	:DISPlay:AF:MEter:SINad:REference:PERCent MINimum CENTer MAXimum
	:DISPlay:AF:MEter:SINad:REference:PERCent?
Reference of THD+N Meter (dB)	:DISPlay:AF:MEter:THDN:REference:DB MINimum CENTer MAXimum
	:DISPlay:AF:MEter:THDN:REference:DB?
Reference of THD+N Meter (%)	:DISPlay:AF:MEter:THDN:REference:PERCent MINimum CENTer MAXimum
	:DISPlay:AF:MEter:THDN:REference:PERCent?
Reference of THD Meter (dB)	:DISPlay:AF:MEter:THD:REference:DB MINimum CENTer MAXimum
	:DISPlay:AF:MEter:THD:REference:DB?
Reference of THD Meter (%)	:DISPlay:AF:MEter:THD:REference:PERCent MINimum CENTer MAXimum
	:DISPlay:AF:MEter:THD:REference:PERCent?

Table 2.5.2-1 Device Messages for Audio Analyzer Function (Cont'd)

Parameter	Device Messages
Reference Value of AF Level Meter (AFLU)	:DISPlay:AF:MEter:AFLevel:REference:VALue:AFLU <ref_val>
	:DISPlay:AF:MEter:AFLevel:REference:VALue:AFLU?
Reference Value of AF Level Meter (%)	:DISPlay:AF:MEter:AFLevel:REference:VALue:PERCent <ref_val>
	:DISPlay:AF:MEter:AFLevel:REference:VALue:PERCent?
Reference Value of SINAD Meter (dB)	:DISPlay:AF:MEter:SINad:REference:VALue:DB <ref_val>
	:DISPlay:AF:MEter:SINad:REference:VALue:DB?
Reference Value of SINAD Meter (%)	:DISPlay:AF:MEter:SINad:REference:VALue:PERCent <ref_val>
	:DISPlay:AF:MEter:SINad:REference:VALue:PERCent?
Reference Value of THD+N Meter (dB)	:DISPlay:AF:MEter:THDN:REference:VALue:DB <ref_val>
	:DISPlay:AF:MEter:THDN:REference:VALue:DB?
Reference Value of THD+N Meter (%)	:DISPlay:AF:MEter:THDN:REference:VALue:PERCent <ref_val>
	:DISPlay:AF:MEter:THDN:REference:VALue:PERCent?
Reference Value of THD Meter (dB)	:DISPlay:AF:MEter:THD:REference:VALue:DB <ref_val>
	:DISPlay:AF:MEter:THD:REference:VALue:DB?
Reference Value of THD Meter (%)	:DISPlay:AF:MEter:THD:REference:VALue:PERCent <ref_val>
	:DISPlay:AF:MEter:THD:REference:VALue:PERCent?
Range1 of AF Level Meter (AFLU)	:DISPlay:AF:MEter:AFLevel:RNG1:AFLU <val>
	:DISPlay:AF:MEter:AFLevel:RNG1:AFLU?
Range1 of AF Level Meter (%)	:DISPlay:AF:MEter:AFLevel:RNG1:PERCent <val>
	:DISPlay:AF:MEter:AFLevel:RNG1:PERCent?
Range2 of AF Level Meter (AFLU)	:DISPlay:AF:MEter:AFLevel:RNG2:AFLU <val>
	:DISPlay:AF:MEter:AFLevel:RNG2:AFLU?
Range2 of AF Level Meter (%)	:DISPlay:AF:MEter:AFLevel:RNG2:PERCent <val>
	:DISPlay:AF:MEter:AFLevel:RNG2:PERCent?
Pass Range of AF Level Meter (AFLU)	:DISPlay:AF:MEter:AFLevel:JUDGe:RANGe:AFLU <val>
	:DISPlay:AF:MEter:AFLevel:JUDGe:RANGe:AFLU?
Pass Range of AF Level Meter (%)	:DISPlay:AF:MEter:AFLevel:JUDGe:RANGe:PERCent <val>
	:DISPlay:AF:MEter:AFLevel:JUDGe:RANGe:PERCent?

Table 2.5.2-1 Device Messages for Audio Analyzer Function (Cont'd)

Parameter	Device Messages
Range1 of SINAD Meter (dB)	:DISPlay:AF:MEter:SINad:RNG1:DB <val>
	:DISPlay:AF:MEter:SINad:RNG1:DB?
Range1 of SINAD Meter (%)	:DISPlay:AF:MEter:SINad:RNG1:PERCent <val>
	:DISPlay:AF:MEter:SINad:RNG1:PERCent?
Range2 of SINAD Meter (dB)	:DISPlay:AF:MEter:SINad:RNG2:DB <val>
	:DISPlay:AF:MEter:SINad:RNG2:DB?
Range2 of SINAD Meter (%)	:DISPlay:AF:MEter:SINad:RNG2:PERCent <val>
	:DISPlay:AF:MEter:SINad:RNG2:PERCent?
Pass Range of SINAD Meter (dB)	:DISPlay:AF:MEter:SINad:JUDGe:RANGe:DB <val>
	:DISPlay:AF:MEter:SINad:JUDGe:RANGe:DB?
Pass Range of SINAD Meter (%)	:DISPlay:AF:MEter:SINad:JUDGe:RANGe:PERCent <val>
	:DISPlay:AF:MEter:SINad:JUDGe:RANGe:PERCent?
Range1 of THD+N Meter (dB)	:DISPlay:AF:MEter:THDN:RNG1:DB <val>
	:DISPlay:AF:MEter:THDN:RNG1:DB?
Range1 of THD+N Meter (%)	:DISPlay:AF:MEter:THDN:RNG1:PERCent <val>
	:DISPlay:AF:MEter:THDN:RNG1:PERCent?
Range2 of THD+N Meter (dB)	:DISPlay:AF:MEter:THDN:RNG2:DB <val>
	:DISPlay:AF:MEter:THDN:RNG2:DB?
Range2 of THD+N Meter (%)	:DISPlay:AF:MEter:THDN:RNG2:PERCent <val>
	:DISPlay:AF:MEter:THDN:RNG2:PERCent?
Pass Range of THD+N Meter (dB)	:DISPlay:AF:MEter:THDN:JUDGe:RANGe:DB <val>
	:DISPlay:AF:MEter:THDN:JUDGe:RANGe:DB?
Pass Range of THD+N Meter (%)	:DISPlay:AF:MEter:THDN:JUDGe:RANGe:PERCent <val>
	:DISPlay:AF:MEter:THDN:JUDGe:RANGe:PERCent?
Range1 of THD Meter (dB)	:DISPlay:AF:MEter:THD:RNG1:DB <val>
	:DISPlay:AF:MEter:THD:RNG1:DB?
Range1 of THD Meter (%)	:DISPlay:AF:MEter:THD:RNG1:PERCent <val>
	:DISPlay:AF:MEter:THD:RNG1:PERCent?
Range2 of THD Meter (dB)	:DISPlay:AF:MEter:THD:RNG2:DB <val>
	:DISPlay:AF:MEter:THD:RNG2:DB?
Range2 of THD Meter (%)	:DISPlay:AF:MEter:THD:RNG2:PERCent <val>
	:DISPlay:AF:MEter:THD:RNG2:PERCent?
Pass Range of THD Meter (dB)	:DISPlay:AF:MEter:THD:JUDGe:RANGe:DB <val>
	:DISPlay:AF:MEter:THD:JUDGe:RANGe:DB?
Pass Range of THD Meter (%)	:DISPlay:AF:MEter:THD:JUDGe:RANGe:PERCent <val>
	:DISPlay:AF:MEter:THD:JUDGe:RANGe:PERCent?

Table 2.5.2-1 Device Messages for Audio Analyzer Function (Cont'd)

Parameter	Device Messages
Deflection View of AF Level Meter	:DISPlay:AF:MEter:AFLevel:DEFLection ON OFF 1 0
	:DISPlay:AF:MEter:AFLevel:DEFLection?
Deflection View of SINAD Meter	:DISPlay:AF:MEter:SINad:DEFLection ON OFF 1 0
	:DISPlay:AF:MEter:SINad:DEFLection?
Deflection View of THD+N Meter	:DISPlay:AF:MEter:THDN:DEFLection ON OFF 1 0
	:DISPlay:AF:MEter:THDN:DEFLection?
Deflection View of THD	:DISPlay:AF:MEter:THD:DEFLection ON OFF 1 0
	:DISPlay:AF:MEter:THD:DEFLection?
Deflection Count of AF Level Meter	:DISPlay:AF:MEter:AFLevel:DEFLection:COUNT <count>
	:DISPlay:AF:MEter:AFLevel:DEFLection:COUNT?
Deflection Count of SINAD Meter	:DISPlay:AF:MEter:SINad:DEFLection:COUNT <count>
	:DISPlay:AF:MEter:SINad:DEFLection:COUNT?
Deflection Count of THD+N Meter	:DISPlay:AF:MEter:THDN:DEFLection:COUNT <count>
	:DISPlay:AF:MEter:THDN:DEFLection:COUNT?
Deflection Count of THD Meter	:DISPlay:AF:MEter:THD:DEFLection:COUNT <count>
	:DISPlay:AF:MEter:THD:DEFLection:COUNT?
Unit of AF Level Meter	:DISPlay:AF:MEter:AFLevel:UNIT AFLU PERCent
	:DISPlay:AF:MEter:AFLevel:UNIT?
Unit of SINAD Meter	:DISPlay:AF:MEter:SINad:UNIT DB PERCent
	:DISPlay:AF:MEter:SINad:UNIT?
Unit of THD+N Meter	:DISPlay:AF:MEter:THDN:UNIT DB PERCent
	:DISPlay:AF:MEter:THDN:UNIT?
Unit of THD Meter	:DISPlay:AF:MEter:THD: UNIT DB PERCent
	:DISPlay:AF:MEter:THD:UNIT?
AF Level Reference of AF Level Meter	:DISPlay:AF:MEter:AFLevel:REFerence <val>
	:DISPlay:AF:MEter:AFLevel:REFerence?



**[[:SENSe]:AF:DISToRtion:SINad:FREQUency:SIGNal PEAK|MANual|GENerator**

Signal Frequency of SINAD

## Function

This command selects the setting of reference signal frequency for SINAD measurement (RX).

## Command

```
[[:SENSe]:AF:DISToRtion:SINad:FREQUency:SIGNal <mode>
```

## Parameter

<mode>	Reference frequency
PEAK	Peak frequency (default)
MANual	Frequency set for Manual Frequency
GENerator	Frequency set for Tone1 Frequency

## Example of Use

To set the SINAD measurement reference frequency to Peak frequency.  
 AF:DIST:SIN:FREQ:SIGN PEAK

**[[:SENSe]:AF:DISToRtion:SINad:FREQUency:SIGNal?**

Signal Frequency of SINAD Query

## Function

This command queries the setting of reference signal frequency for SINAD measurement (RX).

## Query

```
[[:SENSe]:AF:DISToRtion:SINad:FREQUency:SIGNal?
```

## Response

```
<mode>
```

## Parameter

<mode>	Reference frequency
PEAK	Peak frequency
MAN	Frequency set for Manual Frequency
GEN	Frequency set for Tone1 Frequency

## Example of Use

To query the setting of SINAD measurement reference frequency.  
 AF:DIST:SIN:FREQ:SIGN?  
 > PEAK

**[[:SENSE]:AF:DISTortion:SINad:FREQuency:SIGNal:MANual <freq>**

Manual Frequency of SINAD

Function

This command sets the Manual Frequency for SINAD measurement (RX).

Command

```
[[:SENSE]:AF:DISTortion:SINad:FREQuency:SIGNal:MANual  
<freq>
```

Parameter

<freq>	Frequency
Range	10 to 60000 Hz
Resolution	1 Hz
Suffix code	HZ
	Hz is used when omitted.
Default	1 kHz

Details

An error will result if Manual Frequency, Start Frequency, and Stop Frequency do not satisfy the following conditions.

Start Frequency  $\leq$  Manual Frequency  $\leq$  Stop Frequency

Example of Use

To set the Manual Frequency for SINAD measurement to 5 kHz.

```
AF:DIST:SIN:FREQ:SIGN:MAN 5000
```

**[ :SENSE ] : AF : DISTortion : SINad : FREQuency : SIGNal : MANual ?**

Manual Frequency of SINAD Query

## Function

This command queries the Manual Frequency for SINAD measurement (RX).

## Query

```
[ :SENSE ] : AF : DISTortion : SINad : FREQuency : SIGNal : MANual ?
```

## Response

```
<freq>
```

## Parameter

<code>&lt;freq&gt;</code>	Frequency
Range	10 to 60000 Hz
Resolution	1 Hz
Suffix code	None
	Value is returned in Hz units.

## Example of Use

```
To query the Manual Frequency for SINAD measurement.
AF : DIST : SIN : FREQ : SIGN : MAN ?
> 5000
```

**[[:SENSE]:AF:DISTortion:SINad:FREQUENCY:STARt <freq>**

Start Frequency of SINAD

Function

This command sets the Start Frequency for SINAD measurement (RX).

Command

```
[[:SENSE]:AF:DISTortion:SINad:FREQUENCY:STARt <freq>
```

Parameter

<freq>	Frequency
Range	10 Hz to setting value of Manual Frequency for SINAD measurement (RX)
Resolution	1 Hz
Suffix code	HZ
	Hz is used when omitted.
Default	10 Hz

Details

An error will result if Manual Frequency, Start Frequency, and Stop Frequency do not satisfy the following conditions.

Start Frequency  $\leq$  Manual Frequency  $\leq$  Stop Frequency

Example of Use

To set the Start Frequency for SINAD measurement to 5 kHz.

```
AF:DIST:SIN:FREQ:STAR 5000
```

**[ :SENSe]:AF:DISToRtion:SiNad:FREQuency:STARt?**

Start Frequency of SINAD Query

## Function

This command queries the Start Frequency for SINAD measurement (RX).

## Query

```
[ :SENSe]:AF:DISToRtion:SiNad:FREQuency:STARt?
```

## Response

```
<freq>
```

## Parameter

<code>&lt;freq&gt;</code>	Frequency
Range	10 Hz to setting value of Manual Frequency for SINAD measurement (RX)
Resolution	1 Hz
Suffix code	None
	Value is returned in Hz units.

## Example of Use

```
To query the Start Frequency for SINAD measurement.
AF:DIS:SiN:FREQ:STAR?
> 5000
```

**[[:SENSE]:AF:DISTortion:SINad:FREQUENCY:STOP <freq>**

Stop Frequency of SINAD

Function

This command sets the Stop Frequency for SINAD measurement (RX).

Command

```
[[:SENSE]:AF:DISTortion:SINad:FREQUENCY:STOP <freq>
```

Parameter

<freq>	Frequency
Range	Setting value of Manual Frequency for SINAD measurement (RX) to 60000 Hz
Resolution	1 Hz
Suffix code	HZ
	Hz is used when omitted.
Default	60000 Hz

Details

An error will result if Manual Frequency, Start Frequency, and Stop Frequency do not satisfy the following conditions.

Start Frequency  $\leq$  Manual Frequency  $\leq$  Stop Frequency

Example of Use

To set the Stop Frequency for SINAD measurement to 5 kHz.

```
AF:DIST:SIN:FREQ:STOP 5000
```

**[[:SENSE]:AF:DISTortion:SINad:FREQUENCY:STOP?**

Stop Frequency of SINAD Query

## Function

This command queries the Stop Frequency for SINAD measurement (RX).

## Query

[:SENSE]:AF:DISTortion:SINad:FREQUENCY:STOP?

## Response

&lt;freq&gt;

## Parameter

<freq>	Frequency
Range	Setting value of Manual Frequency for SINAD measurement (RX) to 60000 Hz
Resolution	1 Hz
Suffix code	None
	Value is returned in Hz units.

## Example of Use

To query the Stop Frequency for SINAD measurement.

```
AF:DIST:SIN:FREQ:STOP?
> 5000
```

### **[[:SENSE]:AF:DISTortion:THD:FREQUENCY:SIGNal PEAK|MANual|GENerator**

Signal Frequency of THD

#### Function

This command selects the setting of reference signal frequency for THD measurement (RX).

#### Command

```
[[:SENSe]:AF:DISToRtion:THD:FREQuency:SIGNal <mode>
```

#### Parameter

<mode>	Reference frequency
PEAK	Peak frequency (default)
MANual	Frequency set for Manual Frequency
GENerator	Frequency set for Tone1 Frequency

#### Example of Use

To set the THD measurement reference frequency to Peak frequency.  
AF:DIS:THD:FREQ:SIGN PEAK

### **[[:SENSe]:AF:DISToRtion:THD:FREQUENCY:SIGNal?**

Signal Frequency of THD Query

#### Function

This command queries the setting of reference signal frequency for THD measurement (RX).

#### Query

```
[[:SENSe]:AF:DISToRtion:THD:FREQuency:SIGNal?
```

#### Response

```
<mode>
```

#### Parameter

<mode>	Reference frequency
PEAK	Peak frequency
MAN	Frequency set for Manual Frequency
GEN	Frequency set for Tone1 Frequency

#### Example of Use

To query the setting of THD measurement reference frequency.  
AF:DIS:THD:FREQ:SIGN?  
> PEAK



**[[:SENSE]:AF:DISTortion:THD:FREQUENCY:SIGNal:MANual <freq>**

Manual Frequency of THD

## Function

This command sets the Manual Frequency for THD measurement (RX).

## Command

```
[[:SENSE]:AF:DISTortion:THD:FREQUENCY:SIGNal:MANual <freq>
```

## Parameter

<freq>	Frequency
Range	10 to 60000 Hz
Resolution	1 Hz
Suffix code	HZ
	Hz is used when omitted.
Default	1 kHz

## Details

This command is enabled when Signal Frequency is set to Manual. An error will result if Manual Frequency, Start Frequency, and Stop Frequency do not satisfy the following conditions.

$$\text{Start Frequency} \leq \text{Manual Frequency} \leq \text{Stop Frequency}$$

## Example of Use

To set the Manual Frequency for THD measurement to 5 kHz.

```
AF:DIST:THD:FREQ:SIGN:MAN 5000
```

## **[ :SENSE ] : AF : DISTortion : THD : FREQuency : SIGNal : MANual ?**

Manual Frequency of THD Query

### Function

This command queries the Manual Frequency for THD measurement (RX).

### Query

```
[ :SENSE ] : AF : DISTortion : THD : FREQuency : SIGNal : MANual ?
```

### Response

```
<freq>
```

### Parameter

<code>&lt;freq&gt;</code>	Frequency
Range	10 to 60000 Hz
Resolution	1 Hz
Suffix code	None

Value is returned in Hz units.

### Example of Use

```
To query the Manual Frequency for THD measurement.  
AF : DIST : THD : FREQ : SIGN : MAN ?  
> 5000
```

**[[:SENSE]:AF:DISTortion:THD:FREQuency:STARt <freq>**

Start Frequency of THD

## Function

This command sets the Start Frequency for THD measurement (RX).

## Command

```
[[:SENSE]:AF:DISTortion:THD:FREQuency:STARt <freq>
```

## Parameter

<freq>	Frequency
Range	10 Hz to setting value of Manual Frequency for THD measurement (RX)
Resolution	1 Hz
Suffix code	HZ
	Hz is used when omitted.
Default	10 Hz

## Details

An error will result if Manual Frequency, Start Frequency, and Stop Frequency do not satisfy the following conditions.

$$\text{Start Frequency} \leq \text{Manual Frequency} \leq \text{Stop Frequency}$$

## Example of Use

To set the Start Frequency for THD measurement to 5 kHz.

```
AF:DIST:THD:FREQ:STAR 5000
```

### **[[:SENSE]:AF:DISTortion:THD:FREQuency:STARt?**

Start Frequency of THD Query

Function

This command queries the Start Frequency for THD measurement (RX).

Query

```
[[:SENSE]:AF:DISTortion:THD:FREQuency:STARt?
```

Response

```
<freq>
```

Parameter

<freq>	Frequency
Range	10 Hz to setting value of Manual Frequency for THD measurement (RX)
Resolution	1 Hz
Suffix code	None
	Value is returned in Hz units.

Example of Use

```
To query the Start Frequency for THD measurement.  
AF:DIST:THD:FREQ:STAR?  
> 5000
```

**[[:SENSE]:AF:DISTortion:THD:FREQUENCY:STOP <freq>**

Stop Frequency of THD

## Function

This command sets the Stop Frequency for THD measurement (RX).

## Command

```
[[:SENSE]:AF:DISTortion:THD:FREQUENCY:STOP <freq>
```

## Parameter

<freq>	Frequency
Range	Setting value of Manual Frequency for THD measurement (RX) to 60000 Hz
Resolution	1 Hz
Suffix code	HZ
	Hz is used when omitted.
Default	60000 Hz

## Details

An error will result if Manual Frequency, Start Frequency, and Stop Frequency do not satisfy the following conditions.

$$\text{Start Frequency} \leq \text{Manual Frequency} \leq \text{Stop Frequency}$$

## Example of Use

To set the Stop Frequency for THD measurement to 5 kHz.

```
AF:DIST:THD:FREQ:STOP 5000
```

### **[[:SENSE]:AF:DISTortion:THD:FREQUENCY:STOP?**

Stop Frequency of THD Query

Function

This command queries the Stop Frequency for THD measurement (RX).

Query

```
[[:SENSE]:AF:DISTortion:THD:FREQUENCY:STOP?
```

Response

```
<freq>
```

Parameter

<freq>	Frequency
Range	Setting value of Manual Frequency for THD measurement (RX) to 60000 Hz
Resolution	1 Hz
Suffix code	None
	Value is returned in Hz units.

Example of Use

```
To query the Stop Frequency for THD measurement.  
AF:DIST:THD:FREQ:STOP?  
> 5000
```

**[[:SENSE]:AF:DISTortion:THDN:FREQUENCY:SIGNal PEAK|MANual|GENerator**

Signal Frequency of THD+N

## Function

This command selects the setting of reference signal frequency for THD+N (Total Harmonic Distortion plus Noise) measurement (RX).

## Command

```
[[:SENSE]:AF:DISTortion:THDN:FREQUENCY:SIGNal <mode>
```

## Parameter

<mode>	Reference frequency
PEAK	Peak frequency (default)
MANual	Frequency set for Manual Frequency
GENerator	Frequency set for Tone1 Frequency

## Example of Use

To set the THD+N measurement reference frequency to Peak frequency.

```
AF:DIST:THDN:FREQ:SIGN PEAK
```

**[[:SENSe]:AF:DISTortion:THDN:FREQUENCY:SIGNal?**

Signal Frequency of THD+N Query

## Function

This command queries the setting of reference signal frequency for THD+N measurement (RX).

## Query

```
[[:SENSe]:AF:DISTortion:THDN:FREQUENCY:SIGNal?
```

## Response

```
<mode>
```

## Parameter

<mode>	Reference frequency
PEAK	Peak frequency
MAN	Frequency set for Manual Frequency
GEN	Frequency set for Tone1 Frequency

## Example of Use

To query the setting of THD+N measurement reference frequency.

```
AF:DIST:THDN:FREQ:SIGN?
```

```
> PEAK
```

**[[:SENSE]:AF:DISTortion:THDN:FREQUENCY:SIGNal:MANual <freq>**

Manual Frequency of THD+N

Function

This command sets the Manual Frequency for THD+N measurement (RX).

Command

```
[[:SENSE]:AF:DISTortion:THDN:FREQUENCY:SIGNal:MANual  
<freq>
```

Parameter

<freq>	Frequency
Range	10 to 60000 Hz
Resolution	1 Hz
Suffix code	HZ
	Hz is used when omitted.
Default	1 kHz

Details

This command is enabled when Signal Frequency is set to Manual. An error will result if Manual Frequency, Start Frequency, and Stop Frequency do not satisfy the following conditions.

$$\text{Start Frequency} \leq \text{Manual Frequency} \leq \text{Stop Frequency}$$

Example of Use

To set the Manual Frequency for THD+N measurement to 5 kHz.  
AF:DIS:THDN:FREQ:SIGN:MAN 5000



**[ :SENSE ] : AF : DISTortion : THDN : FREQuency : SIGNal : MANual ?**

Manual Frequency of THD+N Query

## Function

This command queries the Manual Frequency for THD+N measurement (RX).

## Query

```
[ :SENSE ] : AF : DISTortion : THDN : FREQuency : SIGNal : MANual ?
```

## Response

```
<freq>
```

## Parameter

<code>&lt;freq&gt;</code>	Frequency
Range	10 to 60000 Hz
Resolution	1 Hz
Suffix code	None
	Value is returned in Hz units.

## Example of Use

To query the Manual Frequency for THD+N measurement.

```
AF : DIST : THDN : FREQ : SIGN : MAN ?
> 5000
```

**[[:SENSE]:AF:DISTortion:THDN:FREQUENCY:STARt <freq>**

Start Frequency of THD+N

Function

This command sets the Start Frequency for THD+N measurement (RX).

Command

[[:SENSE]:AF:DISTortion:THDN:FREQUENCY:STARt <freq>

Parameter

<freq>	Frequency
Range	10 Hz to setting value of Manual Frequency for THD+N measurement (RX)
Resolution	1 Hz
Suffix code	HZ
	Hz is used when omitted.
Default	10 Hz

Details

An error will result if Manual Frequency, Start Frequency, and Stop Frequency do not satisfy the following conditions.

Start Frequency  $\leq$  Manual Frequency  $\leq$  Stop Frequency

Example of Use

To set the Start Frequency for THD+N measurement to 5 kHz.

AF:DIS:THDN:FREQ:STAR 5000

**[ :SENSe]:AF:DISToRtion:THDN:FREQuency:STARt?**

Start Frequency of THD+N Query

## Function

This command queries the Start Frequency for THD+N measurement (RX).

## Query

```
[ :SENSe]:AF:DISToRtion:THDN:FREQuency:STARt?
```

## Response

```
<freq>
```

## Parameter

<code>&lt;freq&gt;</code>	Frequency
Range	10 Hz to setting value of Manual Frequency for THD+N measurement (RX)
Resolution	1 Hz
Suffix code	None
	Value is returned in Hz units.

## Example of Use

```
To query the Start Frequency for THD+N measurement.
AF:DIS:THDN:FREQ:STAR?
> 5000
```

**[[:SENSE]:AF:DISTortion:THDN:FREQUENCY:STOP <freq>**

Stop Frequency of THD+N

Function

This command sets the Stop Frequency for THD+N measurement (RX).

Command

[[:SENSE]:AF:DISTortion:THDN:FREQUENCY:STOP <freq>

Parameter

<freq>	Frequency
Range	Setting value of Manual Frequency for THD+N measurement (RX) to 60000 Hz
Resolution	1 Hz
Suffix code	HZ
	Hz is used when omitted.
Default	60000 Hz

Details

An error will result if Manual Frequency, Start Frequency, and Stop Frequency do not satisfy the following conditions.

Start Frequency  $\leq$  Manual Frequency  $\leq$  Stop Frequency

Example of Use

To set the Stop Frequency for THD+N measurement to 5 kHz.

AF:DIST:THDN:FREQ:STOP 5000

**[[:SENSE]:AF:DISTortion:THDN:FREQUENCY:STOP?**

Stop Frequency of THD+N Query

## Function

This command queries the Stop Frequency for THD+N measurement (RX).

## Query

```
[[:SENSe]:AF:DISToRtion:THDN:FREQuency:STOP?
```

## Response

```
<freq>
```

## Parameter

<code>&lt;freq&gt;</code>	Frequency
Range	Setting value of Manual Frequency for THD+N measurement (RX) to 60000 Hz
Resolution	1 Hz
Suffix code	None
	Value is returned in Hz units.

## Example of Use

```
To query the Stop Frequency for THD+N measurement.
AF:DIS:THDN:FREQ:STOP?
> 5000
```

**[[:SENSe]:AF:HPFilter OFF|HPF20|HPF50|HPF100|HPF300|HPF400|HPF30K**

High Pass Filter

Function

This command sets the High Pass Filter used for RX measurement.

Command

```
:SENSe]:AF:HPFilter <filter>
```

Parameter

<filter>	HPF for RX measurement
OFF	No filter
HPF20	20 Hz
HPF50	50 Hz
HPF100	100 Hz
HPF300	300 Hz
HPF400	400 Hz
HPF30K	30 kHz
Default	OFF

Details

The band filtering is executed with High Pass Filter for the AF signal .

Example of Use

To set High Pass Filter for RX measurement to 300 Hz.

```
AF:HPF HPF300
```

**[[:SENSE]:AF:HPFilter?**

High Pass Filter Query

## Function

This command queries the High Pass Filter used for RX measurement.

## Query

```
[[:SENSE]:AF:HPFilter?
```

## Response

```
<filter>
```

## Parameter

<filter>	HPF for RX measurement
OFF	No filter
HPF20	20 Hz
HPF50	50 Hz
HPF100	100 Hz
HPF300	300 Hz
HPF400	400 Hz
HPF30K	30 kHz

## Example of Use

To query the High Pass Filter setting value used for RX measurement.

```
AF:HPF?
> HPF300
```

**[[:SENSe]:AF:LPFilter OFF|LPF3K|LPF15K|LPF20K|LPF30K|LPF50K**

Low Pass Filter

Function

This command sets the Low Pass Filter used for RX measurement.

Command

```
[[:SENSe]:AF:LPFilter <filter>
```

Parameter

<filter>	LPF for RX measurement
OFF	No filter
LPF3K	3 kHz
LPF15K	15 kHz
LPF20K	20 kHz
LPF30K	30 kHz
LPF50K	50 kHz
Default	OFF

Details

The band filtering is executed with Low Pass Filter for the AF signal.

Example of Use

To set Low Pass Filter for RX measurement to 3 kHz.  
AF:LPF LPF3K



**[[:SENSE]:AF:LPFilter?**

Low Pass Filter Query

## Function

This command queries the Low Pass Filter used for RX measurement.

## Query

```
[[:SENSE]:AF:LPFilter?
```

## Response

```
<filter>
```

## Parameter

<filter>	LPF for RX measurement
OFF	No filter
LPF3K	3 kHz
LPF15K	15 kHz
LPF20K	20 kHz
LPF30K	30 kHz
LPF50K	50 kHz

## Example of Use

To query the Low Pass Filter setting value used for RX measurement.

```
AF:LPF?
> LPF3K
```

**[[:SENSE]:AF:FILTer:WEIGHting OFF|CCITt|CMESsage|468|ARM|AWEight**

Weighting

Function

This command sets the weighting used in RX measurement.

Command

```
[[:SENSE]:AF:FILTer:WEIGHting <filter>
```

Parameter

<filter>	Weighting for RX measurement
OFF	No filter
CCITt	CCITT (ITU-T P.53/O.41)
CMESsage	C-Message
468	CCIR 468
ARM	CCIR ARM
AWEight	A-Weight
Default	OFF

Details

Weighting is applied to the AF signal.

Example of Use

To set the weighting for RX measurement to CCITT.  
AF:FILT:WEIG CCIT

**[[:SENSe]:AF:FILTer:WEIGHting?**

Weighting Query

Function

This command queries the weighting set for use in RX measurement.

Query

`[[:SENSe]:AF:FILTer:WEIGHting?`

Response

`<filter>`

Parameter

<code>&lt;filter&gt;</code>	Weighting for RX measurement
OFF	No filter
CCIT	CCITT (ITU-T P.53/O.41)
CMES	C-Message
468	CCIR 468
ARM	CCIR ARM
AWE	A-Weight

Example of Use

To query the weighting for RX measurement.

```
AF:FILT:WEIG?
> CCIT
```

**:DISPlay:AF:WINDow[1]:TRACe:ANALysis:MODE:TIME ON|OFF|1|0**

AF Measure Time Domain Graph State

Function

This command enables/disables the AF Measure results (RX) Time Domain graph display.

Command

DISPlay:AF:WINDow[1]:TRACe:ANALysis:MODE:TIME <switch>

Parameter

<switch>	Time Domain Graph Display On/Off
ON 1	On (default)
OFF 0	Off

Example of Use

To enable the Time Domain Graph Display.  
DISP:AF:WIND:TRAC:ANAL:MODE:TIME ON

**:DISPlay:AF:WINDow[1]:TRACe:ANALysis:MODE:TIME?**

AF Measure Time Domain Graph State Query

Function

This command queries the AF Measure results (RX) Time Domain graph display On/Off status.

Query

:DISPlay:AF:WINDow[1]:TRACe:ANALysis:MODE:TIME?

Response

<switch>

Parameter

<switch>	Time Domain Graph Display On/Off
1	On
0	Off

Example of Use

To query the Time Domain graph display status.  
DISP:AF:WIND:TRAC:ANAL:MODE:TIME?  
> 1

**:DISPlay:AF:WINDow[1]:TRACe:ANALysis:MODE:FREQuency ON|OFF|1|0**

AF Measure Frequency Domain Graph State

## Function

This command enables/disables the AF Measure results (RX) Frequency Domain graph display.

## Command

```
DISPlay:AF:WINDow[1]:TRACe:ANALysis:MODE:FREQuency
<switch>
```

## Parameter

<switch>	Frequency Domain Graph Display On/Off
ON 1	On
OFF 0	Off (default)

## Example of Use

To enable the Frequency Domain Graph Display.  
 DISP:AF:WIND:TRAC:ANAL:MODE:FREQ ON

**:DISPlay:AF:WINDow[1]:TRACe:ANALysis:MODE:FREQuency?**

AF Measure Frequency Domain Graph State Query

## Function

This command queries the AF Measure results (RX) Frequency Domain graph display On/Off status.

## Query

```
:DISPlay:AF:WINDow[1]:TRACe:ANALysis:MODE:FREQuency?
```

## Response

```
<switch>
```

## Parameter

<switch>	Frequency Domain Graph Display On/Off
1	On
0	Off

## Example of Use

To query the Frequency Domain graph display status.  
 DISP:AF:WIND:TRAC:ANAL:MODE:FREQ?  
 > 1

**:DISPlay:AF:WINDow[1]:TRACe:TIMedomain:Y[:SCALe]:MODE AUTO|FIXed**

Y Axis Scale Mode of AF Measure Graph (Time Domain)

Function

This command sets the AF Measure results graph (RX, Time Domain) Y-axis (vertical axis) scale mode to Auto scale or Fixed scale.

Command

```
:DISPlay:AF:WINDow[1]:TRACe:TIMedomain:Y[:SCALe]:MODE  
<mode>
```

Parameter

<mode>	Y Axis Scale Mode
AUTO	Auto scale (default)
FIXed	Fixed scale

Details

It can be set when the Time Domain graph display is On.

Example of Use

To set the AF Measure results graph (RX, Time Domain) Y-axis scale to Fixed scale.

```
DISP:AF:WIND:TRAC:TIM:Y:MODE FIX
```

**:DISPlay:AF:WINDow[1]:TRACe:TIMedomain:Y[:SCALe]:MODE?**

Y Axis Scale Mode of AF Measure Graph (Time Domain) Query

Function

This command queries the AF Measure results graph (RX, Time Domain) Y-axis (vertical axis) scale mode.

Query

```
:DISPlay:AF:WINDow[1]:TRACe:TIMedomain:Y[:SCALe]:MODE?
```

Response

```
<mode>
```

Parameter

<mode>	Y Axis Scale Mode
AUTO	Auto scale
FIX	Fixed scale

Example of Use

To query the AF Measure results graph (RX, Time Domain) Y-axis setting.

```
DISP:AF:WIND:TRAC:TIM:Y:MODE?  
> FIX
```

## **:DISPlay:AF:WINDow[1]:TRACe:TIMedomain:Y[:SCALe]:AUTO:MINimumrange 0\_5MV|1MV|5MV|10MV|50MV|100MV|500MV|1V**

Minimum Y Axis Scale Range of AF Measure Graph (Time Domain)

### Function

This command sets the AF Measure results graph (RX, Time Domain) Y-axis (vertical axis) scale minimum range.

### Command

```
:DISPlay:AF:WINDow[1]:TRACe:TIMedomain:Y[:SCALe]:AUTO:MI  
Nimumrange <range>
```

### Parameter

<range>	Minimum Y-axis scale range
0_5MV	±0.5 mV
1MV	±1 mV
5MV	±5 mV (default)
10MV	±10 mV
50MV	±50 mV
100MV	±100 mV
500MV	±500 mV
1V	±1 V

### Details

This command is enabled when the Time Domain graph is On and Y-axis (vertical) scale mode of the AF Measure result graph (RX, Time Domain) is Auto scale.

### Example of Use

To set the AF Measure results graph (RX, Time Domain) Y-axis scale minimum range to 500 mV.

```
DISP:AF:WIND:TRAC:TIM:Y:AUTO:MIN 500MV
```

**:DISPlay:AF:WINDow[1]:TRACe:TIMedomain:Y[:SCALe]:AUTO:MINimumrange?**

Minimum Y Axis Scale Range of AF Measure Graph (Time Domain) Query

Function

This command queries the AF Measure results graph (RX, Time Domain) Y-axis (vertical axis) scale minimum range setting.

Query

:DISPlay:AF:WINDow[1]:TRACe:TIMedomain:Y[:SCALe]:AUTO:MINimumrange?

Response

<range>

Parameter

<range>	Minimum Y-axis scale range
0_5MV	±0.5 mV
1MV	±1 mV
5MV	±5 mV
10MV	±10 mV
50MV	±50 mV
100M	±100 mV
500M	±500 mV
1V	±1 V

Example of Use

To query the AF Measure results graph (RX, Time Domain) Y-axis minimum range setting.

```
DISP:AF:WIND:TRAC:TIM:Y:AUTO:MIN?  
> 500MV
```



**:DISPlay:AF:WINDow[1]:TRACe:TIMedomain:Y[:SCALe]:FIXed:RANGe****0\_5MV|1MV|5MV|10MV|50MV|100MV|500MV|1V|5V|10V|20V**

Y Axis Scale Range of AF Measure Graph (Time Domain)

## Function

This command sets the AF Measure results graph (RX, Time Domain) Y-axis (vertical axis) scale range width for Fixed scale mode.

## Command

```
:DISPlay:AF:WINDow[1]:TRACe:TIMedomain:Y[:SCALe]:FIXed:RANGe <range>
```

## Parameter

<range>	Y-axis scale range
0_5MV	±0.5 mV
1MV	±1 mV
5MV	±5 mV
10MV	±10 mV
50MV	±50 mV
100MV	±100 mV
500MV	±500 mV
1V	±1 V (default)
5V	±5 V
10V	±10 V
20V	±20 V

## Details

This command is enabled when the Time Domain graph is On and Y-axis (vertical) scale mode of the AF Measure result graph (RX, Time Domain) is Fixed scale.

## Example of Use

To set the AF Measure results graph (RX, Time Domain) Y-axis scale range width to 500 mV.

```
DISP:AF:WIND:TRAC:TIM:Y:FIX:RANG 500MV
```

**:DISPlay:AF:WINDow[1]:TRACe:TIMedomain:Y[:SCALe]:FIXed:RANGe?**

Y Axis Scale Range of AF Measure Graph (Time Domain) Query

Function

This command queries the AF Measure results graph (RX, Time Domain) Y-axis (vertical axis) scale range width for Fixed scale mode.

Query

```
:DISPlay:AF:WINDow[1]:TRACe:TIMedomain:Y[:SCALe]:FIXed:RANGe?
```

Response

```
<range>
```

Parameter

<range>	Y-axis scale range
0_5MV	±0.5 mV
1MV	±1 mV
5MV	±5 mV
10MV	±10 mV
50MV	±50 mV
100MV	±100 mV
500MV	±500 mV
1V	±1 V
5V	±5 V
10V	±10 V
20V	±20 V

Example of Use

To query the AF Measure results graph (RX, Time Domain) Y-axis scale range width.

```
DISP:AF:WIND:TRAC:TIM:Y:FIX:RANG?  
> 500MV
```

**:CALCulate:AF:RANGe[1]:X <time>**

X Axis Range of Time Domain Graph

## Function

This command sets the RX measurement Time Domain graph display time range (X-axis range).

## Command

```
:CALCulate:AF:RANGe[1]:X <time>
```

## Parameter

<time>	Graph display time range
Range	1 to 200 ms
Resolution	1 ms
Suffix code	No suffix code, ms (unit)
Default	4 ms

## Details

It can be set when the Time Domain graph display is On.

## Example of Use

To set the Time Domain graph display time range to 100 ms.  
 CALC:AF:RANG:X 100

### **:CALCulate:AF:RANGe[1]:X?**

X Axis Range of Time Domain Graph Query

Function

This command queries the RX measurement Time Domain graph display time range (X-axis range).

Query

:CALCulate:AF:RANGe[1]:X?

Response

<time>

Parameter

<time>	Graph display time range
Range	1 to 200 ms
Resolution	1 ms
Suffix code	None

Value is returned in ms units.

Example of Use

To query the Time Domain graph display time range.  
CALC:AF:RANG:X?  
> 100

**:DISPlay:AF:WINDow[1]:TRACe:FREQdomain:Y[:SCALe]:TOP:LOG <level>**

Y Axis Top Level of Frequency Domain Graph

## Function

This command sets the upper limit value of the RX measurement Frequency Domain graph Y-axis.

## Command

```
:DISPlay:AF:WINDow[1]:TRACe:FREQdomain:Y[:SCALe]:TOP:LOG
<level>
```

## Parameter

<level>	Top Level
Range	(Setting value of Bottom Level +3) to 50 dBV
Resolution	1 dB
Default	0 dBV
Suffix code	dBV

## Details

It can be set when the Frequency Domain graph display is On.

## Example of Use

To set the Frequency Domain graph Y-axis upper limit to 1 dBV.  
 DISP:AF:WIND:TRAC:FREQ:Y:TOP:LOG 1

**:DISPlay:AF:WINDow[1]:TRACe:FREQdomain:Y[:SCALe]:TOP:LOG?**

Y Axis Top Level of Frequency Domain Graph Query

Function

This command queries the upper limit value of the RX measurement Frequency Domain graph Y-axis.

Query

```
:DISPlay:AF:WINDow[1]:TRACe:FREQdomain:Y[:SCALe]:TOP:LOG?  
?
```

Response

```
<level>
```

Parameter

<level>	Top Level
Range	(Setting value of Bottom Level +3) to 50 dBV
Resolution	1 dB
Default	0 dBV
Suffix code	None

Value is returned in dBV units.

Example of Use

To query the Frequency Domain graph Y-axis upper limit value.  
DISP:AF:WIND:TRAC:FREQ:Y:TOP:LOG?  
> 1

**:DISPlay:AF:WINDow[1]:TRACe:FREQdomain:Y[:SCALe]:BOTTom:LOG <level>**

Y Axis Bottom Level of Frequency Domain Graph

## Function

This command sets the lower limit value of the RX measurement Frequency Domain graph Y-axis.

## Command

```
:DISPlay:AF:WINDow[1]:TRACe:FREQdomain:Y[:SCALe]:BOTTom:LOG <level>
```

## Parameter

<level>	Bottom Level
Range	-200 to (setting value of Top Level -3) dBV
Resolution	1 dB
Default	-150 dBV
Suffix code	dBV

## Details

It can be set when the Frequency Domain graph display is On.

## Example of Use

To set the Frequency Domain graph Y-axis lower limit to 1 dBV.  
 DISP:AF:WIND:TRAC:FREQ:Y:BOTT:LOG 1

**:DISPlay:AF:WINDow[1]:TRACe:FREQdomain:Y[:SCALe]:BOTTom:LOG?**

Y Axis Bottom Level of Frequency Domain Graph Query

Function

This command queries the lower limit value of the RX measurement Frequency Domain graph Y-axis.

Query

:DISPlay:AF:WINDow[1]:TRACe:FREQdomain:Y[:SCALe]:BOTTom:LOG?

Response

<level>

Parameter

<level>	Bottom Level
Range	-200 to (setting value of Top Level -3) dBV
Resolution	1 dB
Suffix code	None

Value is returned in dBV units.

Example of Use

To query the Frequency Domain graph Y-axis lower limit value.  
DISP:AF:WIND:TRAC:FREQ:Y:BOTT:LOG?  
> 1



**:DISPlay:AF:WINDow[1]:TRACe:FREQdomain:X[:SCALe]:UNIT LINear|LOG**

X Axis Scale of Frequency Domain Graph

## Function

This command sets the RX measurement Frequency Domain graph X-axis (horizontal axis) to a linear or log scale.

## Command

```
:DISPlay:AF:WINDow[1]:TRACe:FREQdomain:X[:SCALe]:UNIT
<mode>
```

## Parameter

<mode>	X Axis Scale
LINear	Linear scale
LOG	Log scale (default)

## Details

It can be set when the Frequency Domain graph display is On.

## Example of Use

To set the Frequency Domain graph X-axis scale to a linear scale.  
 DISP:AF:WIND:TRAC:FREQ:X:UNIT LIN

**:DISPlay:AF:WINDow[1]:TRACe:FREQdomain:X[:SCALe]:UNIT?**

X Axis Scale of Frequency Domain Graph Query

## Function

This command queries the RX measurement Frequency Domain graph X-axis (horizontal axis) scale mode.

## Query

```
:DISPlay:AF:WINDow[1]:TRACe:FREQdomain:X[:SCALe]:UNIT?
```

## Response

```
<mode>
```

## Parameter

<mode>	X Axis Scale
LIN	Linear scale
LOG	Log scale

## Example of Use

To query the Frequency Domain graph X-axis scale.  
 DISP:AF:WIND:TRAC:FREQ:X:UNIT?  
 > LIN

**:DISPlay:AF:WINDow[1]:TRACe:FREQdomain:X[:SCALe]:STARtfreq:LINear <freq>**

X Axis (Linear) Min. Frequency of Frequency Domain Graph

Function

This command sets the RX measurement Frequency Domain graph X-axis (linear scale) minimum value (frequency).

Command

```
:DISPlay:AF:WINDow[1]:TRACe:FREQdomain:X[:SCALe]:STARtfreq:LINear <freq>
```

Parameter

<freq>	Minimum frequency of X axis
Range	10 to 49950 Hz
Resolution	1 Hz
Suffix code	HZ
	Hz is used when the suffix code is omitted.
Default	10 Hz

Details

Enabled when the Frequency Domain graph display is On and the X-axis is linear scale.

Example of Use

To set the Frequency Domain graph X-axis (linear scale) minimum value to 100 Hz.

```
DISP:AF:WIND:TRAC:FREQ:X:STAR:LIN 100
```

**:DISPlay:AF:WINDow[1]:TRACe:FREQdomain:X[:SCALE]:STARtfreq:LINear?**

X Axis (Linear) Min. Frequency of Frequency Domain Graph Query

## Function

This command queries the RX measurement Frequency Domain graph X-axis (linear scale) minimum value (frequency).

## Query

```
:DISPlay:AF:WINDow[1]:TRACe:FREQdomain:X[:SCALE]:STARtfreq:LINear?
```

## Response

```
<freq>
```

## Parameter

<freq>	Minimum frequency of X axis
Range	10 to 49950 Hz
Resolution	1 Hz
Suffix code	None
	Value is returned in Hz units.

## Example of Use

To query the Frequency Domain graph X-axis (linear scale) minimum value.

```
DISP:AF:WIND:TRAC:FREQ:X:STAR:LIN?
> 100
```

**:DISPlay:AF:WINDow[1]:TRACe:FREQdomain:X[:SCALe]:STARtfreq:LOG <range>**

X Axis (Log) Min. Frequency of Frequency Domain Graph

Function

This command sets the X-axis (log scale) minimum value (frequency) in the RX measurement Frequency Domain graph.

Command

```
:DISPlay:AF:WINDow[1]:TRACe:FREQdomain:X[:SCALe]:STARtfreq:LOG <range>
```

Parameter

<range>	Minimum frequency of the x-axis
10HZ	10 Hz (default)
20HZ	20 Hz
30HZ	30 Hz
50HZ	50 Hz
100HZ	100 Hz
200HZ	200 Hz
300HZ	300 Hz
500HZ	500 Hz
1KHZ	1 kHz
2KHZ	2 kHz
3KHZ	3 kHz
5KHZ	5 kHz
10KHZ	10 kHz
20KHZ	20 kHz
30KHZ	30 kHz

Details

Enabled when the Frequency Domain graph display is On and the X-axis is Log scale.

Example of Use

Sets the minimum value of the X-axis (Log scale) in the Frequency Domain graph to 100 Hz.

```
DISP:AF:WIND:TRAC:FREQ:X:STAR:LOG 100HZ
```

**:DISPlay:AF:WINDow[1]:TRACe:FREQdomain:X[:SCALe]:STARtfreq:LOG?**

X Axis (Log) Min. Frequency of Frequency Domain Graph Query

## Function

This command queries the minimum value (frequency) of the X-axis (log scale) in the Frequency Domain graph.

## Query

```
:DISPlay:AF:WINDow[1]:TRACe:FREQdomain:X[:SCALe]:STARtfreq:LOG?
```

## Response

```
<range>
```

## Parameter

<range>	Minimum frequency of the X-axis
10HZ	10 Hz
20HZ	20 Hz
30HZ	30 Hz
50HZ	50 Hz
100HZ	100 Hz
200HZ	200 Hz
300HZ	300 Hz
500HZ	500 Hz
1KHZ	1 kHz
2KHZ	2 kHz
3KHZ	3 kHz
5KHZ	5 kHz
10KHZ	10 kHz
20KHZ	20 kHz
30KHZ	30 kHz

## Example of Use

To query the minimum value of the X-axis (Log scale) in the Frequency Domain graph.

```
DISP:AF:WIND:TRAC:FREQ:X:STAR:LOG?
> 100HZ
```

**:DISPlay:AF:WINDow[1]:TRACe:FREQdomain:X[:SCALe]:STOPfreq:LINear <freq>**

X Axis (Linear) Max. Frequency of Frequency Domain Graph

Function

This command sets the RX measurement Frequency Domain graph X-axis (linear scale) maximum value (frequency).

Command

```
:DISPlay:AF:WINDow[1]:TRACe:FREQdomain:X[:SCALe]:STOPfreq:LINear <freq>
```

Parameter

<freq>	Maximum frequency of X axis
Range	60 to 50000 Hz
Resolution	1 Hz
Suffix code	HZ
	Hz is used when the suffix code is omitted.
Default	20000 Hz

Details

Enabled when the Frequency Domain graph display is On and the X-axis is linear scale.

Example of Use

To set the Frequency Domain graph X-axis (linear scale) maximum value to 10,000 Hz.

```
DISP:AF:WIND:TRAC:FREQ:X:STOP:LIN 10000
```

**:DISPlay:AF:WINDow[1]:TRACe:FREQdomain:X[:SCALE]:STOPfreq:LINear?**

X Axis (Linear) Max. Frequency of Frequency Domain Graph Query

## Function

This command queries the RX measurement Frequency Domain graph X-axis (linear scale) maximum value (frequency).

## Query

```
:DISPlay:AF:WINDow[1]:TRACe:FREQdomain:X[:SCALE]:STOPfreq:LINear?
```

## Response

```
<freq>
```

## Parameter

<freq>	Maximum frequency of X axis
Range	60 to 50000 Hz
Resolution	1 Hz
Suffix code	None
	Value is returned in Hz units.

## Example of Use

To query the Frequency Domain graph X-axis (linear scale) maximum value.

```
DISP:AF:WIND:TRAC:FREQ:X:STOP:LIN?
> 10000
```

**:DISPlay:AF:WINDow[1]:TRACe:FREQdomain:X[:SCALe]:STOPfreq:LOG <range>**

X Axis (Log) Max. Frequency of Frequency Domain Graph

Function

This command sets the X-axis (log scale) minimum value (frequency) in the RX measurement Frequency Domain graph.

Command

```
:DISPlay:AF:WINDow[1]:TRACe:FREQdomain:X[:SCALe]:STOPfreq:LOG <range>
```

Parameter

<range>	Maximum frequency of the X-axis
20HZ	20 Hz
30HZ	30 Hz
50HZ	50 Hz
100HZ	100 Hz
200HZ	200 Hz
300HZ	300 Hz
500HZ	500 Hz
1KHZ	1 kHz
2KHZ	2 kHz
3KHZ	3 kHz
5KHZ	5 kHz
10KHZ	10 kHz
20KHZ	20 kHz (default)
30KHZ	30 kHz
50KHZ	50 kHz

Details

Enabled when the Frequency Domain graph display is On and the X-axis is Log scale.

Example of Use

To set the maximum value of the X-axis (log scale) in the Frequency Domain graph to 1 kHz.

```
DISP:AF:WIND:TRAC:FREQ:X:STOP:LOG 1KHZ
```



**:DISPlay:AF:WINDow[1]:TRACe:FREQdomain:X[:SCALe]:STOPfreq:LOG?**

X Axis (Log) Max. Frequency of Frequency Domain Graph Query

## Function

This command queries the maximum value (frequency) of the X-axis (log scale) in the RX measurement Frequency Domain graph.

## Query

```
:DISPlay:AF:WINDow[1]:TRACe:FREQdomain:X[:SCALe]:STOPfreq:LOG?
```

## Response

```
<range>
```

## Parameter

<range>	Minimum frequency of the x-axis
20HZ	20 Hz
30HZ	30 Hz
50HZ	50 Hz
100HZ	100 Hz
200HZ	200 Hz
300HZ	300 Hz
500HZ	500 Hz
1KHZ	1 kHz
2KHZ	2 kHz
3KHZ	3 kHz
5KHZ	5 kHz
10KHZ	10 kHz
20KHZ	20 kHz
30KHZ	30 kHz
50KHZ	50 kHz

## Example of Use

To query the maximum value of the X-axis (Log scale) in the Frequency Domain graph.

```
DISP:AF:WIND:TRAC:FREQ:X:STOP:LOG?
> 1KHZ
```

## **:DISPlay:AF:WINDow[1]:TRACe:FREQdomain:WINDowfunction**

### **RECTangular|HANN|BLACkmanharris|HAMMING|FLATtop**

Window Function of Frequency Domain Graph

#### Function

This command sets the RX measurement Frequency Domain graph window function.

#### Command

```
:DISPlay:AF:WINDow[1]:TRACe:FREQdomain:WINDowfunction  
<window>
```

#### Parameter

<window>	Window function
RECTangular	Rectangular window
HANN	Hann window
BLACkmanharris	Blackman-Harris window
HAMMING	Hamming window
FLATtop	Flat-top window
Default	HANN

#### Details

It can be set when the Frequency Domain graph display is On.

#### Example of Use

To set the Frequency Domain graph window function to Rectangular.  
DISP:AF:WIND:TRAC:FREQ:WIND RECT

**:DISPlay:AF:WINDow[1]:TRACe:FREQdomain:WINDowfunction?**

Window Function of Frequency Domain Graph Query

## Function

This command queries the RX measurement Frequency Domain graph window function.

## Query

```
:DISPlay:AF:WINDow[1]:TRACe:FREQdomain:WINDowfunction?
```

## Response

```
<window>
```

## Parameter

<window>	Window function
RECT	Rectangular window
HANN	Hann window
BLAC	Blackman-Harris window
HAMM	Hamming window
FLAT	Flat-top window
Default	HANN

## Example of Use

To query the Frequency Domain graph (RX) window function.

```
DISP:AF:WIND:TRAC:FREQ:WIND?
> RECT
```

**:CALCulate:AF:MARKer[1]|2:MODE DELTa|NORMal|OFF**

Marker Mode of Time Domain Graph

Function

This command sets the marker mode of the RX measurement Time Domain graph.

Command

```
:CALCulate:AF:MARKer[1]|2:MODE <mode>
```

Parameter

<mode>	Marker mode
DELTA	Displays delta marker.
NORMAL	Displays normal marker.
OFF	Hides marker.
Default	OFF

Details

It can be set when the Time Domain graph display is On.

Example of Use

To set the Time Domain graph marker to normal marker display mode.  
CALC:AF:MARK:MODE NORM

**:CALCulate:AF:MARKer[1]|2:MODE?**

Marker Mode of Time Domain Graph Query

## Function

This command queries the marker mode of the RX measurement Time Domain graph.

## Query

```
:CALCulate:AF:MARKer[1]|2:MODE?
```

## Response

```
<mode>
```

## Parameter

<mode>	Marker mode
DELTA	Displays delta marker.
NORM	Displays normal marker.
OFF	Hides marker.

## Example of Use

To query the Time Domain graph marker mode status.

```
CALC:AF:MARK:MODE?
> NORM
```

**:CALCulate:AF:MARKer[1]|2:X <time>**

Marker X Axis Position of Time Domain Graph

Function

This command sets the RX measurement Time Domain graph marker positions.

Command

:CALCulate:AF:MARKer[1]|2:X <time>

Parameter

<time>	Marker position
Range	0 to setting value of Time range for RX measurement
Resolution	1/192 ms
Suffix code	None, ms (unit)
Default	0 ms

Details

The marker position setting is rounded up or down in resolution.

Example of Use

To set the marker position on the graph to 1 ms.

CALC:AF:MARK:X 1

**:CALCulate:AF:MARKer[1]|2:X?**

Marker X Axis Position of Time Domain Query

## Function

This command queries the RX measurement Time Domain graph marker position and level.

## Query

```
:CALCulate:AF:MARKer[1]|2:X?
```

## Response

```
<time>,<level>
```

## Parameter

<time>	Marker position
Range	0 to setting value of Time range for RX measurement
Resolution	1/192 ms
Suffix code	None
	Value is returned in ms units.
<level>	Level
Suffix code	None
	Value is returned in V units.

## Example of Use

To query the marker position on the graph.  
 CALC:AF:MARK:X?  
 > 0.9999999,0.532

**:CALCulate:AF:MARKer:FREQuency:MODE DELTa|NORMal|OFF**

Marker Mode of Frequency Domain Graph

Function

This command sets the marker mode of the RX measurement Frequency Domain graph.

Command

:CALCulate:AF:MARKer:FREQuency:MODE <mode>

Parameter

<mode>	Marker mode
DELTA	Displays delta marker.
NORMAL	Displays normal marker.
OFF	Hides marker.
Default	OFF

Details

It can be set when the Frequency Domain graph display is On.

Example of Use

To set the Frequency Domain graph marker to normal marker display mode.

CALC:AF:MARK:FREQ:MODE NORM



**:CALCulate:AF:MARKer:FREQuency:MODE?**

Marker Mode of Frequency Domain Graph Query

## Function

This command queries the marker mode of the RX measurement Frequency Domain graph.

## Query

```
:CALCulate:AF:MARKer:FREQuency:MODE?
```

## Response

```
<mode>
```

## Parameter

<mode>	Marker mode
DELTA	Displays delta marker.
NORM	Displays normal marker.
OFF	Hides marker.

## Example of Use

To query the marker mode of the Frequency Domain graph.

```
CALC:AF:MARK:FREQ:MODE?
> NORM
```

**:CALCulate:AF:MARKer[1]|2:FREQuency:X <freq>**

Marker X Axis Position of Frequency Domain Graph

Function

This command sets the RX measurement Frequency Domain graph marker positions specified in units of frequency.

Command

:CALCulate:AF:MARKer[1]|2:FREQuency:X <freq>

Parameter

<freq>	Marker position
Range	Dependent on the X-axis range
Resolution	(Setting value of Time range for RX measurement) ≤ 20: (192000/8192) Hz (Setting value of Time range for RX measurement) > 20: (192000/32768) Hz
Suffix code	None
Default	23.437500 Hz

Details

The setting for Marker1 is enabled when Frequency Domain graph marker is displayed.

The setting for Marker2 is enabled when Frequency Domain graph delta marker is displayed.

Example of Use

To set the marker position on the graph to 100 Hz\*.

\*: The actual value is rounded up or down in resolution.

CALC:AF:MARK:FREQ:X 100

**:CALCulate:AF:MARKer[1]|2:FREQuency:X?**

Marker X Axis Position of Frequency Domain Graph Query

## Function

This command queries the RX measurement Frequency Domain graph marker position and level.

## Query

```
:CALCulate:AF:MARKer[1]|2:FREQuency:X?
```

## Response

```
<freq>,<level>
```

## Parameter

<freq>	Marker position
Range	Dependent on the X-axis range
Resolution	(Setting value of Time range for RX measurement) ≤ 20: (192000/8192) Hz (Setting value of Time range for RX measurement) > 20: (192000/32768) Hz
Suffix code	None Value is returned in Hz units.
<level>	Level
Suffix code	None Value is returned in dBV units.

## Example of Use

To query the marker position on the graph.

```
CALC:AF:MARK:FREQ:X?  
> 117.187500,-136.42
```

### **:CALCulate:AF:MARKer[1]|2:FREQuency:X:PEAK**

Peak Search of Frequency Domain Graph

Function

This command detects the maximum level on the RX measurement Frequency Domain graph Y-axis and moves the marker to the maximum level position.

Command

```
:CALCulate:AF:MARKer[1]|2:FREQuency:X:PEAK
```

Details

It can be set when the Frequency Domain graph marker display is enabled.

Example of Use

To move the marker to the maximum level position on the Frequency Domain graph Y-axis.

```
CALC:AF:MARK:FREQ:X:PEAK
```

### **:CALCulate:AF:MARKer[1]|2:FREQuency:X:NEXTpeak**

Next Peak Search of Frequency Domain Graph

Function

This command moves the marker to the next peak to the current value in the RX measurement Frequency Domain graph.

Command

```
:CALCulate:AF:MARKer[1]|2:FREQuency:X:NEXTpeak
```

Details

It can be set when the Frequency Domain graph marker is displayed.

Example of Use

To move Marker1 to the next peak to the current value in the Frequency Domain graph.

```
CALC:AF:MARK:FREQ:X:NEXT
```

**:SENSe[1]:VOLTage:RANGe[:UPPer] 50MVP|500MVP|5VP|50VP**

Input Range of AF Input

## Function

This command selects the AF Input terminal input range.

## Command

:SENSe[1]:VOLTage:RANGe[:UPPer] &lt;range&gt;

## Parameter

<range>	Input Range
50MVP	0.5 mVp
500MVP	500 mVp
5VP	5 Vp (default)
50VP	10 Vp

## Example of Use

To set the AF Input terminal input range to 50 Vp.

SENS:VOLT:RANG:UPP 50VP

**:SENSe[1]:VOLTage:RANGe[:UPPer]?**

Input Range of AF Input Query

## Function

This command queries the AF Input terminal input range setting.

## Query

:SENSe[1]:VOLTage:RANGe[:UPPer]?

## Response

&lt;range&gt;

## Parameter

<range>	Input Range
50MVP	0.5 mVp
500MVP	500 mVp
5VP	5 Vp
50VP	10 Vp

## Example of Use

To query the AF Input terminal input range setting.

SENS:VOLT:RANG?

&gt; 50VP

### **:SENSe[1]:TYPE BALance|UNBalance**

AF Input Type

Function

This command selects the AF Input Type.

Command

```
:SENSe[1]:TYPE <type>
```

Parameter

<type>	AF Input Type
BALance	Balanced input for AF Input.
UNBalance	Unbalanced input for AF Input.
Default	UNBalance

Example of Use

To select balanced input for AF Input.  
SENS:TYPE BAL

### **:SENSe[1]:TYPE?**

AF Input Type Query

Function

This command queries the AF Input type.

Query

```
:SENSe[1]:TYPE?
```

Response

```
<type>
```

Parameter

<type>	AF Input Type
BAL	Balanced input
UNB	Unbalanced input

Example of Use

To query the AF Input status.  
SENS:TYPE?  
> BAL

**:SENSe[1]:REFerence:IMPedance <impedance>**

AF Input Impedance Reference

## Function

This command sets the impedance reference used in power conversion calculations.

## Command

```
:AF:SOURce[1]:REFerence:IMPedance <impedance>
```

## Parameter

<impedance>	Impedance Reference for AF Input
Range	0.01 to 1000000000.00 $\Omega$
Resolution	0.01 $\Omega$
Suffix code	None
Default	600 $\Omega$

## Example of Use

To set the AF Input impedance reference to 8  $\Omega$ .  
 SENS:REF:IMP 8

**:SENSe[1]:REFerence:IMPedance?**

AF Input Impedance Reference Query

## Function

This command queries the impedance reference used in power conversion calculations.

## Query

```
:AF:SOURce[1]:REFerence:IMPedance?
```

## Response

```
<impedance>
```

## Parameter

<impedance>	Impedance Reference for AF Input
Range	0.01 to 1000000000.00 $\Omega$
Resolution	0.01 $\Omega$
Suffix code	None
	Value is returned in $\Omega$ units.

## Example of Use

To query the AF Input impedance reference.  
 SENS:REF:IMP?  
 > 8.00

### **:SENSe[1]:AF:LEVel:UNIT VRMS|DBU|DBV|W|DBM**

AF Level Unit

Function

This command sets the unit of the AF Input Level measurement result.

Command

```
:AF:SOURce[1]:LEVel:UNIT <unit>
```

Parameter

<unit>	Unit
VRMS	Vrms (default)
DBU	dBu
DBV	dBV
W	W
DBM	dBm

Details

This is not available when AF Set Reference is On.

Example of Use

To set the unit of the AF Input Level measurement result to dBm.  
SENS:AF:LEV:UNIT DBM

### **:SENSe[1]:AF:LEVel:UNIT?**

AF Level Unit Query

Function

This command queries the unit of the AF Input Level measurement result.

Query

```
:AF:SOURce[1]:LEVel:UNIT?
```

Response

```
<unit>
```

Parameter

<unit>	Unit
VRMS	Vrms
DBU	dBu
DBV	dBV
W	W
DBM	dBm

Example of Use

To query the unit of the AF Input Level measurement result  
SENS:AF:LEV:UNIT?  
> DBM



**:DISPlay:AF:METer:AFLevel ON|OFF|1|0**

AF Level Meter State

## Function

This command sets whether to display the AF Level meter in RX measurement.

## Command

```
:DISPlay:AF:METer:AFLevel <switch>
```

## Parameter

<switch>	Meter display On/Off
ON 1	Meter display On
OFF 0	Meter display Off
Default	ON

## Example of Use

To set the AF Level meter display to On.  
 DISP:AF:MET:AFL ON

**:DISPlay:AF:METer:AFLevel?**

AF Level Meter State Query

## Function

This command queries the AF Level meter status in RX measurement.

## Query

```
:DISPlay:AF:METer:AFLevel?
```

## Response

```
<switch>
```

## Parameter

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

## Example of Use

To query the AF Level meter status.  
 DISP:AF:MET:AFL?  
 > 1

**:DISPlay:AF:MEter:SINad ON|OFF|1|0**

SINAD Meter State

Function

This command sets whether to display the SINAD meter in RX measurement.

Command

:DISPlay:AF:MEter:SINad <switch>

Parameter

<switch>	Meter display On/Off
ON 1	Meter display On
OFF 0	Meter display Off
Default	ON

Example of Use

To set the SINAD meter display to On.  
DISP:AF:MET:SIN ON

**:DISPlay:AF:MEter:SINad?**

SINAD Meter State Query

Function

This command queries the SINAD meter status in RX measurement.

Query

:DISPlay:AF:MEter:SINad?

Response

<switch>

Parameter

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

Example of Use

To query the SINAD meter status.  
DISP:AF:MET:SIN?  
> 1

**:DISPlay:AF:MEter:THDN ON|OFF|1|0**

THD+N Meter State

## Function

This command sets whether to display the THD+N meter in RX measurement.

## Command

```
:DISPlay:AF:MEter:THDN <switch>
```

## Parameter

<switch>	Meter display On/Off
ON 1	Meter display On
OFF 0	Meter display Off
Default	OFF

## Example of Use

To set the THD+N meter display to On.  
 DISP:AF:MET:THDN ON

**:DISPlay:AF:MEter:THDN?**

THD+N Meter State Query

## Function

This command queries the THD+N meter status in RX measurement.

## Query

```
:DISPlay:AF:MEter:THDN?
```

## Response

```
<switch>
```

## Parameter

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

## Example of Use

To query the THD+N meter status.  
 DISP:AF:MET:THDN?  
 > 1

**:DISPlay:AF:MEter:THD ON|OFF|1|0**

THD Meter State

Function

This command sets whether to display the THD meter in RX measurement.

Command

:DISPlay:AF:MEter:THD <switch>

Parameter

<switch>	Meter display On/Off
ON 1	Meter display On
OFF 0	Meter display Off
Default	OFF

Example of Use

To set the THD meter display to On.  
DISP:AF:MET:THD ON

**:DISPlay:AF:MEter:THD?**

THD Meter State Query

Function

This command queries the THD meter status in RX measurement.

Query

:DISPlay:AF:MEter:THD?

Response

<switch>

Parameter

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

Example of Use

To query the THD meter status.  
DISP:AF:MET:THD?  
> 1

**:DISPlay:AF:MEter:AFLevel:JUDGe ON|OFF|1|0**

AF Level Deflection Judge

## Function

This command enables/disables AF Level Deflection Judge in RX measurement.

## Command

```
:DISPlay:AF:MEter:AFLevel:JUDGe <switch>
```

## Parameter

<switch>	Deflection Judge On/Off
ON 1	On
OFF 0	Off
Default	OFF

## Details

It can be set when the AF Level meter is On and Deflection View is On.

## Example of Use

To set the AF Level Deflection Judge to On.

```
DISP:AF:MET:AFL:JUDG ON
```

**:DISPlay:AF:MEter:AFLevel:JUDGe?**

AF Level Deflection Judge Query

## Function

This command queries the On/Off status of AF Level Deflection Judge in RX measurement.

## Query

```
:DISPlay:AF:MEter:AFLevel:JUDGe?
```

## Response

```
<switch>
```

## Parameter

<switch>	Deflection Judge On/Off
1	On
0	Off

## Example of Use

To query the status of AF Level Deflection Judge.

```
DISP:AF:MET:AFL:JUDG?
```

```
> 1
```

### **:DISPlay:AF:MEter:SINad:JUDGe ON|OFF|1|0**

SINAD Deflection Judge

Function

This command enables/disables the SINAD Deflection Judge in RX measurement.

Command

`:DISPlay:AF:MEter:SINad:JUDGe <switch>`

Parameter

<code>&lt;switch&gt;</code>	Deflection Judge On/Off
<code>ON 1</code>	On
<code>OFF 0</code>	Off
Default	OFF

Details

It can be set when the SINAD meter is On and Deflection View is On.

Example of Use

To set the SINAD Deflection Judge to On.

`DISP:AF:MET:SIN:JUDG ON`

### **:DISPlay:AF:MEter:SINad:JUDGe?**

SINAD Deflection Judge Query

Function

This command queries the SINAD Deflection Judge on/off status in RX measurement.

Query

`:DISPlay:AF:MEter:SINad:JUDGe?`

Response

`<switch>`

Parameter

<code>&lt;switch&gt;</code>	Deflection Judge On/Off
<code>1</code>	On
<code>0</code>	Off

Example of Use

To query the SINAD Deflection Judge status.

`DISP:AF:MET:SIN:JUDG?`

`> 1`

**:DISPlay:AF:MEter:THDN:JUDGe ON|OFF|1|0**

THD+N Deflection Judge

## Function

This command enables/disables the THD+N Deflection Judge in RX measurement.

## Command

```
:DISPlay:AF:MEter:THDN:JUDGe <switch>
```

## Parameter

<switch>	Deflection Judge On/Off
ON 1	On
OFF 0	Off
Default	OFF

## Details

It can be set when the THD+N meter is On and Deflection View is On.

## Example of Use

To set the THD+N Deflection Judge to On.  
 DISP:AF:METN:THD:JUDG ON

**:DISPlay:AF:MEter:THDN:JUDGe?**

THD+N Deflection Judge Query

## Function

This command queries the THD+N Deflection Judge on/off status in RX measurement.

## Query

```
:DISPlay:AF:MEter:THDN:JUDGe?
```

## Response

```
<switch>
```

## Parameter

<switch>	Deflection Judge On/Off
1	On
0	Off

## Example of Use

To query the THD+N Deflection Judge status.  
 DISP:AF:METN:THD:JUDG?  
 > 1

### **:DISPlay:AF:MEter:THD:JUDGe ON|OFF|1|0**

THD Deflection Judge

#### Function

This command enables/disables the THD Deflection Judge in RX measurement.

#### Command

`:DISPlay:AF:MEter:THD:JUDGe <switch>`

#### Parameter

<code>&lt;switch&gt;</code>	Deflection Judge On/Off
<code>ON 1</code>	On
<code>OFF 0</code>	Off
Default	OFF

#### Details

It can be set when the THD meter is On and Deflection View is On.

#### Example of Use

To set the THD Deflection Judge to On.

```
DISP:AF:MET:THD:JUDG ON
```

### **:DISPlay:AF:MEter:THD:JUDGe?**

THD Deflection Judge Query

#### Function

This command queries the THD Deflection Judge on/off status in RX measurement.

#### Query

`:DISPlay:AF:MEter:THD:JUDGe?`

#### Response

`<switch>`

#### Parameter

<code>&lt;switch&gt;</code>	Deflection Judge On/Off
<code>1</code>	On
<code>0</code>	Off

#### Example of Use

To query the THD Deflection Judge status.

```
DISP:AF:MET:THD:JUDG?
```

```
> 1
```



**:DISPlay:AF:METer:AFLevel:REFerence:AFLU MINimum|CENTer|MAXimum**

Reference of AF Level Meter (AFLU)

## Function

This command sets the AF Level meter reference in RX measurement (in AFLU).

## Command

```
:DISPlay:AF:METer:AFLevel:REFerence:AFLU <mode>
```

## Parameter

<mode>	Reference of meter
MINimum	Minimum
CENTer	Center (default)
MAXimum	Maximum

## Details

It can be set when the AF Level meter is On and the unit is AFLU.

## Example of Use

To set the AF Level meter reference to Center.

```
DISP:AF:MET:AFL:REF:AFLU CENT
```

**:DISPlay:AF:METer:AFLevel:REFerence:AFLU?**

Reference of AF Level Meter (AFLU) Query

## Function

This command queries the AF Level meter reference in RX measurement (in AFLU).

## Query

```
:DISPlay:AF:METer:AFLevel:REFerence:AFLU?
```

## Response

```
<mode>
```

## Parameter

<mode>	Reference of meter
MIN	Minimum
CENT	Center
MAX	Maximum

## Example of Use

To query the AF Level meter reference.

```
DISP:AF:MET:AFL:REF:AFLU?
```

```
> CENT
```

**:DISPlay:AF:MEter:AFLevel:REference:PERCent MINimum|CENTer|MAXimum**

Reference of AF Level Meter (%)

Function

This command sets the AF Level meter reference in RX measurement (in % units).

Command

`:DISPlay:AF:MEter:AFLevel:REference:PERCent <mode>`

Parameter

<code>&lt;mode&gt;</code>	Reference of meter
<code>MINimum</code>	Minimum (default)
<code>CENTer</code>	Center
<code>MAXimum</code>	Maximum

Details

It can be set when the AF Level meter is On and the unit is %.

Example of Use

To set the AF Level meter reference to Center.  
`DISP:AF:MET:AFL:REF:PERC CENT`

**:DISPlay:AF:MEter:AFLevel:REference:PERCent?**

Reference of AF Level Meter (%) Query

Function

This command queries the AF Level meter reference in RX measurement (in % units).

Query

`:DISPlay:AF:MEter:AFLevel:REference:PERCent?`

Response

`<mode>`

Parameter

<code>&lt;mode&gt;</code>	Reference of meter
<code>MIN</code>	Minimum
<code>CENT</code>	Center
<code>MAX</code>	Maximum

Example of Use

To query the AF Level meter reference.  
`DISP:AF:MET:AFL:REF:PERC?`  
`> CENT`

**:DISPlay:AF:MEter:SINad:REference:DB MINimum|CENTer|MAXimum**

Reference of SINAD Meter (dB)

## Function

This command sets the SINAD meter reference in RX measurement (in dB units).

## Command

```
:DISPlay:AF:MEter:SINad:REference:DB <mode>
```

## Parameter

<mode>	Reference of meter
MINimum	Minimum
CENTer	Center (default)
MAXimum	Maximum

## Details

It can be set when the SINAD meter is On and the unit is dB.

## Example of Use

To set the SINAD meter reference to Center.

```
DISP:AF:MET:SIN:REF:DB CENT
```

**:DISPlay:AF:MEter:SINad:REference:DB?**

Reference of SINAD Meter (dB) Query

## Function

This command queries the SINAD meter reference in RX measurement (in dB units).

## Query

```
:DISPlay:AF:MEter:SINad:REference:DB?
```

## Response

```
<mode>
```

## Parameter

<mode>	Reference of meter
MIN	Minimum
CENT	Center
MAX	Maximum

## Example of Use

To query the SINAD meter reference.

```
DISP:AF:MET:SIN:REF:DB?
```

```
> CENT
```

**:DISPlay:AF:MEter:SINad:REference:PERCent MINimum|CENTer|MAXimum**

Reference of SINAD Meter (%)

Function

This command sets the SINAD meter reference in RX measurement (in % units).

Command

`:DISPlay:AF:MEter:SINad:REference:PERCent <mode>`

Parameter

<mode>	Reference of meter
MINimum	Minimum (default)
CENTer	Center
MAXimum	Maximum

Details

It can be set when the SINAD meter is On and the unit is %.

Example of Use

To set the SINAD meter reference to Center.

`DISP:AF:MET:SIN:REF:PERC CENT`

**:DISPlay:AF:MEter:SINad:REference:PERCent?**

Reference of SINAD Meter (%) Query

Function

This command queries the SINAD meter reference in RX measurement (in % units).

Query

`:DISPlay:AF:MEter:SINad:REference:PERCent?`

Response

<mode>

Parameter

<mode>	Reference of meter
MIN	Minimum
CENT	Center
MAX	Maximum

Example of Use

To query the SINAD meter reference.

`DISP:AF:MET:SIN:REF:PERC?`

`> CENT`

**:DISPlay:AF:MEter:THDN:REference:DB MINimum|CENTer|MAXimum**

Reference of THD+N Meter (dB)

## Function

This command sets the THD+N meter reference in RX measurement (in dB units).

## Command

```
:DISPlay:AF:MEter:THDN:REference:DB <mode>
```

## Parameter

<mode>	Reference of meter
MINimum	Minimum
CENTer	Center (default)
MAXimum	Maximum

## Details

It can be set when the THD+N meter is On and the unit is dB.

## Example of Use

To set the THD+N meter reference to Center.

```
DISP:AF:MET:THDN:REF:DB CENT
```

**:DISPlay:AF:MEter:THDN:REference:DB?**

Reference of THD+N Meter (dB) Query

## Function

This command queries the THD+N meter reference in RX measurement (in dB units).

## Query

```
:DISPlay:AF:MEter:THDN:REference:DB?
```

## Response

```
<mode>
```

## Parameter

<mode>	Reference of meter
MIN	Minimum
CENT	Center
MAX	Maximum

## Example of Use

To query the THD meter reference.

```
DISP:AF:MET:THDN:REF:DB?
```

```
> CENT
```

**:DISPlay:AF:MEter:THDN:REference:PERCent MINimum|CENTer|MAXimum**

Reference of THD+N Meter (%)

Function

This command sets the THD+N meter reference in RX measurement (in % units).

Command

`:DISPlay:AF:MEter:THDN:REference:PERCent <mode>`

Parameter

<mode>	Reference of meter
MINimum	Minimum (default)
CENTer	Center
MAXimum	Maximum

Details

It can be set when the THD+N meter is On and the unit is %.

Example of Use

To set the THD+N meter reference to Center.

`DISP:AF:MET:THDN:REF:PERC CENT`

**:DISPlay:AF:MEter:THDN:REference:PERCent?**

Reference of THD+N Meter (%) Query

Function

This command queries the THD+N meter reference in RX measurement (in % units).

Query

`:DISPlay:AF:MEter:THDN:REference:PERCent?`

Response

<mode>

Parameter

<mode>	Reference of meter
MIN	Minimum
CENT	Center
MAX	Maximum

Example of Use

To query the THD+N meter reference.

`DISP:AF:MET:THDN:REF:PERC?`

`> CENT`

**:DISPlay:AF:METer:THD:REFerence:DB MINimum|CENTer|MAXimum**

Reference of THD Meter (dB)

## Function

This command sets the THD meter reference in RX measurement (in dB units).

## Command

```
:DISPlay:AF:METer:THD:REFerence:DB <mode>
```

## Parameter

<mode>	Reference of meter
MINimum	Minimum
CENTer	Center (default)
MAXimum	Maximum

## Details

It can be set when the THD meter is On and the unit is dB.

## Example of Use

To set the THD meter reference to Center.  
 DISP:AF:MET:THD:REF:DB CENT

**:DISPlay:AF:METer:THD:REFerence:DB?**

Reference of THD Meter (dB) Query

## Function

This command queries the THD meter reference in RX measurement (in dB units).

## Query

```
:DISPlay:AF:METer:THD:REFerence:DB?
```

## Response

```
<mode>
```

## Parameter

<mode>	Reference of meter
MIN	Minimum
CENT	Center
MAX	Maximum

## Example of Use

To query the THD meter reference.  
 DISP:AF:MET:THD:REF:DB?  
 > CENT

### **:DISPlay:AF:MEter:THD:REFerence:PERCent MINimum|CENTer|MAXimum**

Reference of THD Meter (%)

Function

This command sets the THD meter reference in RX measurement (in % units).

Command

```
:DISPlay:AF:MEter:THD:REFerence:PERCent <mode>
```

Parameter

<mode>	Reference of meter
MINimum	Minimum (default)
CENTer	Center
MAXimum	Maximum

Details

It can be set when the THD meter is On and the unit is %.

Example of Use

To set the THD meter reference to Center.  
DISP:AF:MET:THD:REF:PERC CENT

### **:DISPlay:AF:MEter:THD:REFerence:PERCent?**

Reference of THD Meter (%) Query

Function

This command queries the THD meter reference in RX measurement (in % units).

Query

```
:DISPlay:AF:MEter:THD:REFerence:PERCent?
```

Response

```
<mode>
```

Parameter

<mode>	Reference of meter
MIN	Minimum
CENT	Center
MAX	Maximum

Example of Use

To query the THD meter reference.  
DISP:AF:MET:THD:REF:PERC?  
> CENT



**:DISPlay:AF:MEter:AFLevel:REference:VALue:AFLU <ref\_val>**

Reference Value of AF Level Meter (AFLU)

## Function

This command sets the AF Level meter reference value in RX measurement (in AFLU).

## Command

```
:DISPlay:AF:MEter:AFLevel:REference:VALue:AFLU <ref_val>
```

## Parameter

<ref_val>	Reference value of meter
Range	0.0 to 1000.0
Resolution	0.1
Suffix code	None
Default	0

## Details

It can be set when the SINAD meter is On and the unit is AFLU.

## Example of Use

To set the AF Level meter reference value to 0.

```
DISP:AF:MET:AFL:REF:VAL:AFLU 0
```

**:DISPlay:AF:MEter:AFLevel:REference:VALue:AFLU?**

Reference Value of AF Level Meter (AFLU) Query

## Function

This command queries the AF Level meter reference value in RX measurement (in AFLU).

## Query

```
:DISPlay:AF:MEter:AFLevel:REference:VALue:AFLU?
```

## Response

```
<ref_val>
```

## Parameter

<ref_val>	Reference value of meter
Range	0.0 to 1000.0
Resolution	0.1
Suffix code	None

## Example of Use

To query the AF Level meter reference value.

```
DISP:AF:MET:AFL:REF:VAL:AFLU?
```

```
> 0.0
```

**:DISPlay:AF:MEtEr:AFLevel:REfErence:VALue:PERCent <ref\_val>**

Reference Value of AF Level Meter (%)

Function

This command sets the AF Level meter reference value in RX measurement (in % units).

Command

```
:DISPlay:AF:MEtEr:AFLevel:REfErence:VALue:PERCent  
<ref_val>
```

Parameter

<ref_val>	Reference value of meter
Range	0.00 to 10000.00%
Resolution	0.01%
Default	0.00%

Details

It can be set when the AF Level meter is On and the unit is %.

Example of Use

To set the AF Level meter reference value to 10%.  
DISP:AF:MET:AFL:REF:VAL:PERC 10

**:DISPlay:AF:MEtEr:AFLevel:REfErence:VALue:PERCent?**

Reference Value of AF Level Meter (%) Query

Function

This command queries the AF Level meter reference value in RX measurement (in % units).

Query

```
:DISPlay:AF:MEtEr:AFLevel:REfErence:VALue:PERCent?
```

Response

```
<ref_val>
```

Parameter

<ref_val>	Reference value of meter
Range	0.00 to 10000.00%
Resolution	0.01%

Example of Use

To query the AF Level meter reference value.  
DISP:AF:MET:AFL:REF:VAL:PERC?  
> 10.00

**:DISPlay:AF:MEter:SINad:REference:VALue:DB <ref\_val>**

Reference Value of SINAD Meter (dB)

## Function

This command sets the SINAD meter reference value in RX measurement (in dB units).

## Command

```
:DISPlay:AF:MEter:SINad:REference:VALue:DB <ref_val>
```

## Parameter

<ref_val>	Reference value of meter
Range	-100.0 to 100.0 dB
Resolution	0.1 dB
Suffix code	DB
	dB is used when the suffix code is omitted.
Default	12.0 dB

## Details

It can be set when the SINAD meter is On and the unit is dB.

## Example of Use

To set the SINAD meter reference value to 10 dB.  
 DISP:AF:MET:SIN:REF:VAL:DB 10

**:DISPlay:AF:METer:SINad:REFerence:VALue:DB?**

Reference Value of SINAD Meter (dB) Query

Function

This command queries the SINAD meter reference value in RX measurement (in dB units).

Query

:DISPlay:AF:METer:SINad:REFerence:VALue:DB?

Response

<ref\_val>

Parameter

<ref_val>	Reference value of meter
Range	-100.0 to 100.0 dB
Resolution	0.1 dB
Suffix code	None

Value is returned in dB units.

Example of Use

To query the SINAD meter reference value.  
DISP:AF:MET:SIN:REF:VAL:DB?  
> 10.0

**:DISPlay:AF:MEter:SINad:REference:VALue:PERCent <ref\_val>**

Reference Value of SINAD Meter (%)

## Function

This command sets the SINAD meter reference value in RX measurement (in % units).

## Command

```
:DISPlay:AF:MEter:SINad:REference:VALue:PERCent <ref_val>
```

## Parameter

<ref_val>	Reference value of meter
Range	0.00 to 10000.00%
Resolution	0.01%
Default	0.00%

## Details

It can be set when the SINAD meter is On and the unit is %.

## Example of Use

To set the SINAD meter reference value to 10%.  
 DISP:AF:MET:SIN:REF:VAL:PERC 10

**:DISPlay:AF:MEter:SINad:REference:VALue:PERCent?**

Reference Value of SINAD Meter (%) Query

## Function

This command queries the SINAD meter reference value in RX measurement (in % units).

## Query

```
:DISPlay:AF:MEter:SINad:REference:VALue:PERCent?
```

## Response

```
<ref_val>
```

## Parameter

<ref_val>	Reference value of meter
Range	0.00 to 10000.00%
Resolution	0.01%

## Example of Use

To query the SINAD meter reference value.  
 DISP:AF:MET:SIN:REF:VAL:PERC?  
 > 10.00

**:DISPlay:AF:MEter:THDN:REFerence:VALue:DB <ref\_val>**

Reference Value of THD+N Meter (dB)

Function

This command sets the THD+N meter reference value in RX measurement (in dB units).

Command

`:DISPlay:AF:MEter:THDN:REFerence:VALue:DB <ref_val>`

Parameter

<code>&lt;ref_val&gt;</code>	Reference value of meter
Range	-100.0 to 100.0 dB
Resolution	0.1 dB
Suffix code	DB
	dB is used when the suffix code is omitted.
Default	-30.0 dB

Details

It can be set when the THD+N meter is On and the unit is dB.

Example of Use

To set the THD+N meter reference value to 10 dB.  
`DISP:AF:MET:THDN:REF:VAL:DB 10`

**:DISPlay:AF:METer:THDN:REFerence:VALue:DB?**

Reference Value of THD+N Meter (dB) Query

## Function

This command queries the THD+N meter reference value in RX measurement (in dB units).

## Query

```
:DISPlay:AF:METer:THDN:REFerence:VALue:DB?
```

## Response

```
<ref_val>
```

## Parameter

<code>&lt;ref_val&gt;</code>	Reference value of meter
Range	–100.0 to 100.0 dB
Resolution	0.1 dB
Suffix code	None
	Value is returned in dB units.

## Example of Use

To query the THD+N meter reference value.

```
DISP:AF:MET:THDN:REF:VAL:DB?
> 10.0
```

**:DISPlay:AF:MEtEr:THDN:REfErence:VALue:PERCent <ref\_val>**

Reference Value of THD+N Meter (%)

Function

This command sets the THD+N meter reference value in RX measurement (in % units).

Command

`:DISPlay:AF:MEtEr:THDN:REfErence:VALue:PERCent <ref_val>`

Parameter

<code>&lt;ref_val&gt;</code>	Reference value of meter
Range	0.00 to 10000.00%
Resolution	0.01%
Default	0.00%

Details

It can be set when the THD+N meter is On and the unit is %.

Example of Use

To set the THD+N meter reference value to 10%.

`DISP:AF:MET:THDN:REF:VAL:PERC 10`

**:DISPlay:AF:MEtEr:THDN:REfErence:VALue:PERCent?**

Reference Value of THD+N Meter (%) Query

Function

This command queries the THD+N meter reference value in RX measurement (in % units).

Query

`:DISPlay:AF:MEtEr:THDN:REfErence:VALue:PERCent?`

Response

`<ref_val>`

Parameter

<code>&lt;ref_val&gt;</code>	Reference value of meter
Range	0.00 to 10000.00%
Resolution	0.01%

Example of Use

To query the THD+N meter reference value.

`DISP:AF:MET:THDN:REF:VAL:PERC?`

`> 10.00`



**:DISPlay:AF:MEter:THD:REFerence:VALue:DB <ref\_val>**

Reference Value of THD Meter (dB)

## Function

This command sets the THD meter reference value in RX measurement (in dB units).

## Command

```
:DISPlay:AF:MEter:THD:REFerence:VALue:DB <ref_val>
```

## Parameter

<ref_val>	Reference value of meter
Range	-100.0 to 100.0 dB
Resolution	0.1 dB
Suffix code	DB
	dB is used when the suffix code is omitted.
Default	-30.0 dB

## Details

It can be set when the THD meter is On and the unit is dB.

## Example of Use

To set the THD meter reference value to 10 dB.  
 DISP:AF:MET:THD:REF:VAL:DB 10

### **:DISPlay:AF:MEter:THD:REFerence:VALue:DB?**

Reference Value of THD Meter (dB) Query

Function

This command queries the THD meter reference value in RX measurement (in dB units).

Query

`:DISPlay:AF:MEter:THD:REFerence:VALue:DB?`

Response

`<ref_val>`

Parameter

<code>&lt;ref_val&gt;</code>	Reference value of meter
Range	–100.0 to 100.0 dB
Resolution	0.1 dB
Suffix code	None
	Value is returned in dB units.

Example of Use

To query the THD meter reference value.  
`DISP:AF:MET:THD:REF:VAL:DB?`  
> 10.0

**:DISPlay:AF:METer:THD:REFerence:VALue:PERCent <ref\_val>**

Reference Value of THD Meter (%)

## Function

This command sets the THD meter reference value in RX measurement (in % units).

## Command

```
:DISPlay:AF:METer:THD:REFerence:VALue:PERCent <ref_val>
```

## Parameter

<ref_val>	Reference value of meter
Range	0.00 to 10000.00%
Resolution	0.01%
Default	0.00%

## Details

It can be set when the THD meter is On and the unit is %.

## Example of Use

To set the THD meter reference value to 10%.  
 DISP:AF:MET:THD:REF:VAL:PERC 10

**:DISPlay:AF:METer:THD:REFerence:VALue:PERCent?**

Reference Value of THD Meter (%) Query

## Function

This command queries the THD meter reference value in RX measurement (in % units).

## Query

```
:DISPlay:AF:METer:THD:REFerence:VALue:PERCent?
```

## Response

```
<ref_val>
```

## Parameter

<ref_val>	Reference value of meter
Range	0.00 to 10000.00%
Resolution	0.01%

## Example of Use

To query the THD meter reference value.  
 DISP:AF:MET:THD:REF:VAL:PERC?  
 > 10.00

**:DISPlay:AF:MEter:AFLevel:RNG1:AFLU <val>**

Range1 of AF Level Meter (AFLU)

Function

This command sets the AF Level meter Range1 in RX measurement (in AFLU).

Command

:DISPlay:AF:MEter:AFLevel:RNG1:AFLU <val>

Parameter

<val>	Range of meter
Range	0.0 to 1000.0
Resolution	0.1
Suffix code	None
Default	2.0

Details

It can be set when the AF Level meter is On and the unit is AFLU.

Example of Use

To set the AF Level meter Range1 to 5.

DISP:AF:MET:AFL:RNG1:AFLU 5

**:DISPlay:AF:MEter:AFLevel:RNG1:AFLU?**

Range1 of AF Level Meter (AFLU) Query

Function

This command queries the AF Level meter Range1 in RX measurement (in AFLU).

Query

:DISPlay:AF:MEter:AFLevel:RNG1:AFLU?

Response

<val>

Parameter

<val>	Range of meter
Range	0.00 to 1000.0
Resolution	0.1
Suffix code	None

Example of Use

To query the AF Level meter Range1.

DISP:AF:MET:AFL:RNG1:AFLU?

> 5.0

**:DISPlay:AF:MEter:AFLevel:RNG1:PERCent <val>**

Range1 of AF Level Meter (%)

## Function

This command sets the AF Level meter Range1 in RX measurement (in % units).

## Command

```
:DISPlay:AF:MEter:AFLevel:RNG1:PERCent <val>
```

## Parameter

<val>	Range of meter
Range	0.0 to 10000.0%
Resolution	0.1%
Default	10.0%

## Details

It can be set when the AF Level meter is On and the unit is %.

## Example of Use

To set the AF Level meter Range1 to 10%.

```
DISP:AF:MET:AFL:RNG1:PERC 10
```

**:DISPlay:AF:MEter:AFLevel:RNG1:PERCent?**

Range1 of AF Level Meter (%) Query

## Function

This command queries the AF Level meter Range1 in RX measurement (in % units).

## Query

```
:DISPlay:AF:MEter:AFLevel:RNG1:PERCent?
```

## Response

```
<val>
```

## Parameter

<val>	Range of meter
Range	0.0 to 10000.0%
Resolution	0.1%

## Example of Use

To query the AF Level meter Range1.

```
DISP:AF:MET:AFL:RNG1:PERC?
> 10.0
```

**:DISPlay:AF:MEter:AFLevel:RNG2:AFLU <val>**

Range2 of AF Level Meter (AFLU)

Function

This command sets the AF Level meter Range2 in RX measurement (in AFLU).

Command

:DISPlay:AF:MEter:AFLevel:RNG2:AFLU <val>

Parameter

<val>	Range of meter
Range	0.0 to 1000.0
Resolution	0.1
Suffix code	None
Default	5.0

Details

It can be set when the AF Level meter is On and the unit is AFLU.

Example of Use

To set the AF Level meter Range2 to 10.

```
DISP:AF:MET:AFL:RNG2:AFLU 10
```

**:DISPlay:AF:MEter:AFLevel:RNG2:AFLU?**

Range2 of AF Level Meter (AFLU) Query

Function

This command queries the AF Level meter Range2 in RX measurement (in AFLU).

Query

:DISPlay:AF:MEter:AFLevel:RNG2:AFLU?

Response

<val>

Parameter

<val>	Range of meter
Range	0.0 to 1000.0
Resolution	0.1
Suffix code	None

Example of Use

To query the AF Level meter Range2.

```
DISP:AF:MET:AFL:RNG2:AFLU?
```

```
> 10.0
```

**:DISPlay:AF:MEter:AFLevel:RNG2:PERCent <val>**

Range2 of AF Level Meter (%)

## Function

This command sets the AF Level meter Range2 in RX measurement (in % units).

## Command

```
:DISPlay:AF:MEter:AFLevel:RNG2:PERCent <val>
```

## Parameter

<val>	Range of meter
Range	0.0 to 10000.0%
Resolution	0.1%
Default	20.0%

## Details

It can be set when the AF Level meter is On and the unit is %.

## Example of Use

To set the AF Level meter Range2 to 10%.

```
DISP:AF:MET:AFL:RNG2:PERC 10
```

**:DISPlay:AF:MEter:AFLevel:RNG2:PERCent?**

Range2 of AF Level Meter (%) Query

## Function

This command queries the AF Level meter Range2 in RX measurement (in % units).

## Query

```
:DISPlay:AF:MEter:AFLevel:RNG2:PERCent?
```

## Response

```
<val>
```

## Parameter

<val>	Range of meter
Range	0.0 to 10000.0%
Resolution	0.1%

## Example of Use

To query the AF Level meter Range2.

```
DISP:AF:MET:AFL:RNG1:PERC?
> 10.0
```

**:DISPlay:AF:METer:AFLevel:JUDGe:RANGe:AFLU <val>**

Pass Range of AF Level Meter (AFLU)

Function

This command sets the AF Level meter Pass Range in RX measurement (in AFLU).

Command

:DISPlay:AF:METer:AFLevel:JUDGe:RANGe:AFLU <val>

Parameter

<val>	Range of meter
Range	0.0 to 100.000
Resolution	0.001
Suffix code	None
Default	3.000

Details

It can be set when the AF Level Meter meter is On, the AF Level Meter meter Deflection View is On, and the unit is AFLU.

Example of Use

To set the AF Level meter Pass Range to 10.  
DISP:AF:MET:AFL:JUDG:RANG:AFLU 10

**:DISPlay:AF:METer:AFLevel:JUDGe:RANGe:AFLU?**

Pass Range of AF Level Meter (AFLU) Query

Function

This command queries the AF Level meter Pass Range in RX measurement (in AFLU).

Query

:DISPlay:AF:METer:AFLevel:JUDGe:RANGe:AFLU?

Response

<val>

Parameter

<val>	Range of meter
Range	0.0 to 100.000
Resolution	0.001
Suffix code	None

Example of Use

To query the AF Level meter Pass Range.  
DISP:AF:MET:AFL:JUDG:RANG:AFLU?  
> 10.0



**:DISPlay:AF:METer:AFLevel:JUDGe:RANGe:PERCent <val>**

Pass Range of AF Level Meter (%)

## Function

This command sets the AF Level meter Pass Range in RX measurement (in % units).

## Command

```
:DISPlay:AF:METer:AFLevel:JUDGe:RANGe:PERCent <val>
```

## Parameter

<val>	Range of meter
Range	0.0 to 10000.0%
Resolution	0.1%
Default	5.0%

## Details

It can be set when the AF Level meter is On, the AF Level meter Deflection View is On, and the unit is %.

## Example of Use

To set the AF Level meter Pass Range to 10%.  
 DISP:AF:MET:AFLevel:JUDGe:RANGe:PERC 10

**:DISPlay:AF:METer:AFLevel:JUDGe:RANGe:PERCent?**

Pass Range of AF Level Meter (%) Query

## Function

This command queries the AF Level meter Pass Range in RX measurement (in % units).

## Query

```
:DISPlay:AF:METer:AFLevel:JUDGe:RANGe:PERCent?
```

## Response

```
<val>
```

## Parameter

<val>	Range of meter
Range	0.0 to 10000.0%
Resolution	0.1%

## Example of Use

To query the AF Level meter Pass Range.  
 DISP:AF:MET:AFLevel:JUDGe:RANGe:PERC?  
 > 10.0

**:DISPlay:AF:MEter:SINad:RNG1:DB <val>**

Range1 of SINAD Meter (dB)

Function

This command sets the SINAD meter Range1 in RX measurement (in dB units).

Command

:DISPlay:AF:MEter:SINad:RNG1:DB <val>

Parameter

<val>	Range of meter
Range	0.0 to 100.0 dB
Resolution	0.1 dB
Suffix code	DB
	dB is used when the suffix code is omitted.
Default	8.0 dB

Details

It can be set when the SINAD meter is On and the unit is dB.

Example of Use

To set the SINAD meter Range1 to 10 dB.  
DISP:AF:MET:SIN:RNG1:DB 10

**:DISPlay:AF:METer:SINad:RNG1:DB?**

Range1 of SINAD Meter (dB) Query

## Function

This command queries the SINAD meter Range1 in RX measurement (in dB units).

## Query

```
:DISPlay:AF:METer:SINad:RNG1:DB?
```

## Response

```
<val>
```

## Parameter

<val>	Range of meter
Range	0.0 to 100.0 dB
Resolution	0.1 dB
Suffix code	None
	Value is returned in dB units.

## Example of Use

```
To query the SINAD meter Range1.
DISP:AF:MET:SIN:RNG1:DB?
> 10.0
```

### **:DISPlay:AF:MEter:SINad:RNG1:PERCent <val>**

Range1 of SINAD Meter (%)

#### Function

This command sets the SINAD meter Range1 in RX measurement (in % units).

#### Command

```
:DISPlay:AF:MEter:SINad:RNG1:PERCent <val>
```

#### Parameter

<val>	Range of meter
Range	0.0 to 10000.0%
Resolution	0.1%
Default	2000.0%

#### Details

It can be set when the SINAD meter is On and the unit is %.

#### Example of Use

To set the SINAD meter Range1 to 10%.  
DISP:AF:MET:SIN:RNG1:PERC 10

### **:DISPlay:AF:MEter:SINad:RNG1:PERCent?**

Range1 of SINAD Meter (%) Query

#### Function

This command queries the SINAD meter Range1 in RX measurement (in % units).

#### Query

```
:DISPlay:AF:MEter:SINad:RNG1:PERCent?
```

#### Response

```
<val>
```

#### Parameter

<val>	Range of meter
Range	0.0 to 10000.0%
Resolution	0.1%

#### Example of Use

To query the SINAD meter Range1.  
DISP:AF:MET:SIN:RNG1:PERC?  
> 10.0

**:DISPlay:AF:MEter:SINad:RNG2:DB <val>**

Range2 of SINAD Meter (dB)

## Function

This command sets the SINAD meter Range2 in RX measurement (in dB units).

## Command

```
:DISPlay:AF:MEter:SINad:RNG2:DB <val>
```

## Parameter

<val>	Range of meter
Range	0.0 to 100.0 dB
Resolution	0.1 dB
Suffix code	DB
	dB is used when the suffix code is omitted.
Default	24.0 dB

## Details

It can be set when the SINAD meter is On and the unit is dB.

## Example of Use

To set the SINAD meter Range2 to 10 dB.  
 DISP:AF:MET:SIN:RNG2:DB 10

### **:DISPlay:AF:METer:SINad:RNG2:DB?**

Range2 of SINAD Meter (dB) Query

Function

This command queries the SINAD meter Range2 in RX measurement (in dB units).

Query

`:DISPlay:AF:METer:SINad:RNG2:DB?`

Response

`<val>`

Parameter

<code>&lt;val&gt;</code>	Range of meter
Range	0.0 to 100.0 dB
Resolution	0.1 dB
Suffix code	None

Value is returned in dB units.

Example of Use

To query the SINAD meter Range2.  
`DISP:AF:MET:SIN:RNG2:DB?`  
`> 10.0`

**:DISPlay:AF:MEter:SINad:RNG2:PERCent <val>**

Range2 of SINAD Meter (%)

## Function

This command sets the SINAD meter Range2 in RX measurement (in % units).

## Command

```
:DISPlay:AF:MEter:SINad:RNG2:PERCent <val>
```

## Parameter

<val>	Range of meter
Range	0.0 to 10000.0%
Resolution	0.1%
Default	5000.0%

## Details

It can be set when the SINAD meter is On and the unit is %.

## Example of Use

To set the SINAD meter Range2 to 10%.  
 DISP:AF:MET:SIN:RNG2:PERC 10

**:DISPlay:AF:MEter:SINad:RNG2:PERCent?**

Range2 of SINAD Meter (%) Query

## Function

This command queries the SINAD meter Range2 in RX measurement (in % units).

## Query

```
:DISPlay:AF:MEter:SINad:RNG2:PERCent?
```

## Response

```
<val>
```

## Parameter

<val>	Range of meter
Range	0.0 to 10000.0%
Resolution	0.1%

## Example of Use

To query the SINAD meter Range2.  
 DISP:AF:MET:SIN:RNG1:PERC?  
 > 10.0

**:DISPlay:AF:METer:SINad:JUDGe:RANGe:DB <val>**

Pass Range of SINAD Meter (dB)

Function

This command sets the SINAD meter Pass Range in RX measurement (in dB units).

Command

`:DISPlay:AF:METer:SINad:JUDGe:RANGe:DB <val>`

Parameter

<val>	Range of meter
Range	0.0 to 100.0 dB
Resolution	0.1 dB
Suffix code	DB
	dB is used when the suffix code is omitted.
Default	3.0 dB

Details

It can be set when the SINAD meter is On, the SINAD meter Deflection View is On, and the unit is dB.

Example of Use

To set the SINAD meter Pass Range to 10 dB.  
`DISP:AF:MET:SIN:JUDG:RANG:DB 10`



**:DISPlay:AF:METer:SINad:JUDGe:RANGe:DB?**

Pass Range of SINAD Meter (dB) Query

## Function

This command queries the SINAD meter Pass Range in RX measurement (in dB units).

## Query

```
:DISPlay:AF:METer:SINad:JUDGe:RANGe:DB?
```

## Response

```
<val>
```

## Parameter

<val>	Range of meter
Range	0.0 to 100.0 dB
Resolution	0.1 dB
Suffix code	None
	Value is returned in dB units.

## Example of Use

```
To query the SINAD meter Pass Range.
DISP:AF:MET:SIN:JUDG:RANG:DB?
> 10.0
```

**:DISPlay:AF:METer:SINad:JUDGe:RANGe:PERCent <val>**

Pass Range of SINAD Meter (%)

Function

This command sets the SINAD meter Pass Range in RX measurement (in % units).

Command

`:DISPlay:AF:METer:SINad:JUDGe:RANGe:PERCent <val>`

Parameter

<val>	Range of meter
Range	0.0 to 10000.0%
Resolution	0.1%
Default	2000.0%

Details

It can be set when the SINAD meter is On, the SINAD meter Deflection View is On, and the unit is %.

Example of Use

To set the SINAD meter Pass Range to 10%.  
`DISP:AF:MET:SIN:JUDG:RANG:PERC 10`

**:DISPlay:AF:METer:SINad:JUDGe:RANGe:PERCent?**

Pass Range of SINAD Meter (%) Query

Function

This command queries the SINAD meter Pass Range in RX measurement (in % units).

Query

`:DISPlay:AF:METer:SINad:JUDGe:RANGe:PERCent?`

Response

<val>

Parameter

<val>	Range of meter
Range	0.0 to 10000.0%
Resolution	0.1%

Example of Use

To query the SINAD meter Pass Range.  
`DISP:AM:MET:SIN:JUDG:RANG:PERC?`  
> 10.0

**:DISPlay:AF:MEter:THDN:RNG1:DB <val>**

Range1 of THD+N Meter (dB)

## Function

This command sets the THD+N meter Range1 in RX measurement (in dB units).

## Command

```
:DISPlay:AF:MEter:THDN:RNG1:DB <val>
```

## Parameter

<val>	Range of meter
Range	0.0 to 100.0 dB
Resolution	0.1 dB
Suffix code	DB
	dB is used when the suffix code is omitted.
Default	10.0 dB

## Details

It can be set when the THD+N meter is On and the unit is dB.

## Example of Use

To set the THD+N meter Range1 to 10 dB.  
 DISP:AF:MET:THDN:RNG1:DB 10

**:DISPlay:AF:MEter:THDN:RNG1:DB?**

Range1 of THD+N Meter (dB) Query

Function

This command queries the THD+N meter Range1 in RX measurement (in dB units).

Query

:DISPlay:AF:MEter:THDN:RNG1:DB?

Response

<val>

Parameter

<val>	Range of meter
Range	0.0 to 100.0 dB
Resolution	0.1 dB
Suffix code	None

Value is returned in dB units.

Example of Use

To query the THD+N meter Range1.  
DISP:AF:MET:THDN:RNG1:DB?  
> 10.0

**:DISPlay:AF:MEter:THDN:RNG1:PERCent <val>**

Range1 of THD+N Meter (%)

## Function

This command sets the THD+N meter Range1 in RX measurement (in % units).

## Command

```
:DISPlay:AF:MEter:THDN:RNG1:PERCent <val>
```

## Parameter

<val>	Range of meter
Range	0.0 to 10000.0%
Resolution	0.1%
Default	10.0%

## Details

It can be set when the THD+N meter is On and the unit is %.

## Example of Use

To set the THD+N meter Range1 to 10%.  
 DISP:AF:MET:THDN:RNG1:PERC 10

**:DISPlay:AF:MEter:THDN:RNG1:PERCent?**

Range1 of THD+N Meter (%) Query

## Function

This command queries the THD+N meter Range1 in RX measurement (in % units).

## Query

```
:DISPlay:AF:MEter:THDN:RNG1:PERCent?
```

## Response

```
<val>
```

## Parameter

<val>	Range of meter
Range	0.0 to 10000.0%
Resolution	0.1%

## Example of Use

To query the THD+N meter Range1.  
 DISP:AF:MET:THDN:RNG1:PERC?  
 > 10.0

**:DISPlay:AF:METer:THDN:RNG2:DB <val>**

Range2 of THD+N Meter (dB)

Function

This command sets the THD+N meter Range2 in RX measurement (in dB units).

Command

`:DISPlay:AF:METer:THDN:RNG2:DB <val>`

Parameter

<val>	Range of meter
Range	0.0 to 100.0 dB
Resolution	0.1 dB
Suffix code	DB
	dB is used when the suffix code is omitted.
Default	20.0 dB

Details

It can be set when the THD+N meter is On and the unit is dB.

Example of Use

To set the THD+N meter Range2 to 10 dB.

`DISP:AF:MET:THDN:RNG2:DB 10`

**:DISPlay:AF:METer:THDN:RNG2:DB?**

Range2 of THD+N Meter (dB) Query

## Function

This command queries the THD+N meter Range2 in RX measurement (in dB units).

## Query

```
:DISPlay:AF:METer:THDN:RNG2:DB?
```

## Response

```
<val>
```

## Parameter

<val>	Range of meter
Range	0.0 to 100.0 dB
Resolution	0.1 dB
Suffix code	None
	Value is returned in dB units.

## Example of Use

```
To query the THD+N meter Range2.
DISP:AF:MET:THDN:RNG2:DB?
> 10.0
```

**:DISPlay:AF:MEter:THDN:RNG2:PERCent <val>**

Range2 of THD+N Meter (%)

Function

This command sets the THD+N meter Range2 in RX measurement (in % units).

Command

`:DISPlay:AF:MEter:THDN:RNG2:PERCent <val>`

Parameter

<val>	Range of meter
Range	0.0 to 10000.0%
Resolution	0.1%
Default	20.0%

Details

It can be set when the THD+N meter is On and the unit is %.

Example of Use

To set the THD+N meter Range2 to 10%.

`DISP:AF:MET:THDN:RNG2:PERC 10`

**:DISPlay:AF:MEter:THDN:RNG2:PERCent?**

Range2 of THD+N Meter (%) Query

Function

This command queries the THD+N meter Range2 in RX measurement (in % units).

Query

`:DISPlay:AF:MEter:THDN:RNG2:PERCent?`

Response

<val>

Parameter

<val>	Range of meter
Range	0.0 to 10000.0%
Resolution	0.1%

Example of Use

To query the THD+N meter Range2.

`DISP:AF:MET:THDN:RNG2:PERC?`

`> 10.0`



**:DISPlay:AF:MEter:THDN:JUDGe:RANGe:DB <val>**

Pass Range of THD+N Meter (dB)

## Function

This command sets the THD+N meter Pass Range in RX measurement (in dB units).

## Command

```
:DISPlay:AF:MEter:THDN:JUDGe:RANGe:DB <val>
```

## Parameter

<val>	Range of meter
Range	0.0 to 100.0 dB
Resolution	0.1 dB
Suffix code	DB
	dB is used when the suffix code is omitted.
Default	2.0 dB

## Details

It can be set when the THD+N meter is On, the THD+N meter Deflection View is On, and the unit is dB.

## Example of Use

To set the THD+N meter Pass Range to 10 dB.  
 DISP:AF:MET:THDN:JUDG:RANG:DB 10

**:DISPlay:AF:MEter:THDN:JUDGe:RANGe:DB?**

Pass Range of THD+N Meter (dB) Query

Function

This command queries the THD+N meter Pass Range in RX measurement (in dB units).

Query

`:DISPlay:AF:MEter:THDN:JUDGe:RANGe:DB?`

Response

`<val>`

Parameter

<code>&lt;val&gt;</code>	Range of meter
Range	0.0 to 100.0 dB
Resolution	0.1 dB
Suffix code	None

Value is returned in dB units.

Example of Use

To query the THD+N meter Pass Range.  
`DISP:AF:MET:THDN:JUDG:RANG:DB?`  
> 10.0

**:DISPlay:AF:MEter:THDN:JUDGE:RANGE:PERCent <val>**

Pass Range of THD+N Meter (%)

## Function

This command sets the THD+N meter Pass Range in RX measurement (in % units).

## Command

```
:DISPlay:AF:MEter:THDN:JUDGE:RANGE:PERCent <val>
```

## Parameter

<val>	Range of meter
Range	0.0 to 10000.0%
Resolution	0.1%
Default	5.0%

## Details

It can be set when the THD+N meter is On, THD+N meter Deflection View is On, and the unit is %.

## Example of Use

To set the THD+N meter Pass Range to 10%.  
 DISP:AF:MET:THDN:JUDG:RANG:PERC 10

**:DISPlay:AF:MEter:THDN:JUDGE:RANGE:PERCent?**

Pass Range of THD+N Meter (%) Query

## Function

This command queries the THD+N meter Pass Range in RX measurement (in % units).

## Query

```
:DISPlay:AF:MEter:THDN:JUDGE:RANGE:PERCent?
```

## Response

```
<val>
```

## Parameter

<val>	Range of meter
Range	0.0 to 10000.0%
Resolution	0.1%

## Example of Use

To query the THD+N meter Pass Range.  
 DISP:AF:MET:THDN:JUDG:RANG:PERC?  
 > 10.0

**:DISPlay:AF:METer:THD:RNG1:DB <val>**

Range1 of THD Meter (dB)

Function

This command sets the THD meter Range1 in RX measurement (in dB units).

Command

`:DISPlay:AF:METer:THD:RNG1:DB <val>`

Parameter

<val>	Range of meter
Range	0.0 to 100.0 dB
Resolution	0.1 dB
Suffix code	dB
	dB is used when the suffix code is omitted.
Default	10.0 dB

Details

It can be set when the THD meter is On and the unit is dB.

Example of Use

To set the THD meter Range1 to 10 dB.  
`DISP:AF:MET:THD:RNG1:DB 10`

**:DISPlay:AF:METer:THD:RNG1:DB?**

Range1 of THD Meter (dB) Query

## Function

This command queries the THD meter Range1 in RX measurement (in dB units).

## Query

```
:DISPlay:AF:METer:THD:RNG1:DB?
```

## Response

```
<val>
```

## Parameter

<val>	Range of meter
Range	0.0 to 100.0 dB
Resolution	0.1 dB
Suffix code	None
	Value is returned in dB units.

## Example of Use

```
To query the THD meter Range1.
DISP:AF:MET:THD:RNG1:DB?
> 10.0
```

**:DISPlay:AF:MEter:THD:RNG1:PERCent <val>**

Range1 of THD Meter (%)

Function

This command sets the THD meter Range1 in RX measurement (in % units).

Command

:DISPlay:AF:MEter:THD:RNG1:PERCent <val>

Parameter

<val>	Range of meter
Range	0.0 to 10000.0%
Resolution	0.1%
Default	10.0%

Details

It can be set when the THD meter is On and the unit is %.

Example of Use

To set the THD meter Range1 to 10%.

DISP:AF:MET:THD:RNG1:PERC 10

**:DISPlay:AF:MEter:THD:RNG1:PERCent?**

Range1 of THD Meter (%) Query

Function

This command queries the THD meter Range1 in RX measurement (in % units).

Query

:DISPlay:AF:MEter:THD:RNG1:PERCent?

Response

<val>

Parameter

<val>	Range of meter
Range	0.0 to 10000.0%
Resolution	0.1%

Example of Use

To query the THD meter Range1.

DISP:AF:MET:THD:RNG1:PERC?

> 10.0

**:DISPlay:AF:MEter:THD:RNG2:DB <val>**

Range2 of THD Meter (dB)

## Function

This command sets the THD meter Range2 in RX measurement (in dB units).

## Command

```
:DISPlay:AF:MEter:THD:RNG2:DB <val>
```

## Parameter

<val>	Range of meter
Range	0.0 to 100.0 dB
Resolution	0.1 dB
Suffix code	DB
	dB is used when the suffix code is omitted.
Default	20.0 dB

## Details

It can be set when the THD meter is On and the unit is dB.

## Example of Use

To set the THD meter Range2 to 10 dB.  
 DISP:AF:MET:THD:RNG2:DB 10

**:DISPlay:AF:MEter:THD:RNG2:DB?**

Range2 of THD Meter (dB) Query

Function

This command queries the THD meter Range2 in RX measurement (in dB units).

Query

`:DISPlay:AF:MEter:THD:RNG2:DB?`

Response

`<val>`

Parameter

<code>&lt;val&gt;</code>	Range of meter
Range	0.0 to 100.0 dB
Resolution	0.1 dB
Suffix code	None

Value is returned in dB units.

Example of Use

To query the THD meter Range2.  
`DISP:AF:MET:THD:RNG2:DB?`  
> 10.0



**:DISPlay:AF:MEter:THD:RNG2:PERCent <val>**

Range2 of THD Meter (%)

## Function

This command sets the THD meter Range2 in RX measurement (in % units).

## Command

```
:DISPlay:AF:MEter:THD:RNG2:PERCent <val>
```

## Parameter

<val>	Range of meter
Range	0.0 to 10000.0%
Resolution	0.1%
Default	20.0%

## Details

It can be set when the THD meter is On and the unit is %.

## Example of Use

To set the THD meter Range2 to 10%.  
 DISP:AF:MET:THD:RNG2:PERC 10

**:DISPlay:AF:MEter:THD:RNG2:PERCent?**

Range2 of THD Meter (%) Query

## Function

This command queries the THD meter Range2 in RX measurement (in % units).

## Query

```
:DISPlay:AF:MEter:THD:RNG2:PERCent?
```

## Response

```
<val>
```

## Parameter

<val>	Range of meter
Range	0.0 to 10000.0%
Resolution	0.1%

## Example of Use

To query the THD meter Range2.  
 DISP:AF:MET:THD:RNG2:PERC?  
 > 10.0

**:DISPlay:AF:MEter:THD:JUDGe:RANGe:DB <val>**

Pass Range of THD Meter (dB)

Function

This command sets the THD meter Pass Range in RX measurement (in dB units).

Command

`:DISPlay:AF:MEter:THD:JUDGe:RANGe:DB <val>`

Parameter

<val>	Range of meter
Range	0.0 to 100.0 dB
Resolution	0.1 dB
Suffix code	DB
	dB is used when the suffix code is omitted.
Default	2.0 dB

Details

It can be set when the THD meter is On, the THD meter Deflection View is On, and the unit is dB.

Example of Use

To set the THD meter Pass Range to 10 dB.  
`DISP:AF:MET:THD:JUDG:RANG:DB 10`

**:DISPlay:AF:MEter:THD:JUDGe:RANGe:DB?**

Pass Range of THD Meter (dB) Query

## Function

This command queries the THD meter Pass Range in RX measurement (in dB units).

## Query

```
:DISPlay:AF:MEter:THD:JUDGe:RANGe:DB?
```

## Response

```
<val>
```

## Parameter

<val>	Range of meter
Range	0.0 to 100.0 dB
Resolution	0.1 dB
Suffix code	None
	Value is returned in dB units.

## Example of Use

```
To query the THD meter Pass Range.
DISP:AF:MET:THD:JUDG:RANG:DB?
> 10.0
```

**:DISPlay:AF:MEter:THD:JUDGE:RANGe:PERCent <val>**

Pass Range of THD Meter (%)

Function

This command sets the THD meter Pass Range in RX measurement (in % units).

Command

`:DISPlay:AF:MEter:THD:JUDGE:RANGe:PERCent <val>`

Parameter

<val>	Range of meter
Range	0.0 to 10000.0%
Resolution	0.1%
Default	5.0%

Details

It can be set when the THD meter is On, the THD meter Deflection View is On, and the unit is %.

Example of Use

To set the THD meter Pass Range to 10%.  
`DISP:AF:MET:THD:JUDG:RANG:PERC 10`

**:DISPlay:AF:MEter:THD:JUDGE:RANGe:PERCent?**

Pass Range of THD Meter (%) Query

Function

This command queries the THD meter Pass Range in RX measurement (in % units).

Query

`:DISPlay:AF:MEter:THD:JUDGE:RANGe:PERCent?`

Response

<val>

Parameter

<val>	Range of meter
Range	0.0 to 10000.0%
Resolution	0.1%

Example of Use

To query the THD meter Pass Range.  
`DISP:AF:MET:THD:JUDG:RANG:PERC?`  
> 10.0

**:DISPlay:AF:MEter:AFLevel:DEFLection ON|OFF|1|0**

Deflection View of AF Level Meter

## Function

This command sets whether to display the AF Level meter Deflection View in RX measurement.

## Command

```
:DISPlay:AF:MEter:AFLevel:DEFLection <switch>
```

## Parameter

<switch>	Deflection View display On/Off
ON 1	Deflection View display On
OFF 0	Deflection View display Off
Default	OFF

## Details

It can be set when the AF Level meter is On.

## Example of Use

To set the AF Level meter Deflection View display to On.

```
DISP:AF:MET:AFL:DEFL ON
```

**:DISPlay:AF:MEter:AFLevel:DEFLection?**

Deflection View of AF Level Meter Query

## Function

This command queries the AF Level meter Deflection View status in RX measurement.

## Query

```
:DISPlay:AF:MEter:AFLevel:DEFLection?
```

## Response

```
<switch>
```

## Parameter

<switch>	Deflection View display On/Off
1	Deflection View display On
0	Deflection View display Off

## Example of Use

To query the AF Level meter Deflection View status.

```
DISP:AF:MET:AFL:DEFL?
```

```
> 1
```

### **:DISPlay:AF:MEter:SINad:DEFLection ON|OFF|1|0**

Deflection View of SINad Meter

Function

This command sets whether to display the SINAD meter Deflection View in RX measurement.

Command

```
:DISPlay:AF:MEter:SINad:DEFLection <switch>
```

Parameter

<switch>	Deflection View display On/Off
ON 1	Deflection View display On
OFF 0	Deflection View display Off
Default	OFF

Details

It can be set when the SINAD meter is On.

Example of Use

To set the SINAD meter Deflection View display to On.  
DISP:AF:MET:SIN:DEFL ON

### **:DISPlay:AF:MEter:SINad:DEFLection?**

Deflection View of SINAD Meter Query

Function

This command queries the SINAD meter Deflection View status in RX measurement.

Query

```
:DISPlay:AF:MEter:SINad:DEFLection?
```

Response

```
<switch>
```

Parameter

<switch>	Deflection View display On/Off
1	Deflection View display On
0	Deflection View display Off

Example of Use

To query the SINAD meter Deflection View status.  
DISP:AF:MET:SIN:DEFL?  
> 1

**:DISPlay:AF:MEter:THDN:DEFLection ON|OFF|1|0**

Deflection View of THD+N Meter

## Function

This command sets whether to display the THD+N meter Deflection View in RX measurement.

## Command

```
:DISPlay:AF:MEter:THDN:DEFLection <switch>
```

## Parameter

<switch>	Deflection View display On/Off
ON 1	Deflection View display On
OFF 0	Deflection View display Off
Default	OFF

## Details

It can be set when the THD+N meter is On.

## Example of Use

To set the THD+N meter Deflection View display to On.  
 DISP:AF:MET:THDN:DEFL ON

**:DISPlay:AF:MEter:THDN:DEFLection?**

Deflection View of THD+N Meter Query

## Function

This command queries the THD+N meter Deflection View status in RX measurement.

## Query

```
:DISPlay:AF:MEter:THDN:DEFLection?
```

## Response

```
<switch>
```

## Parameter

<switch>	Deflection View display On/Off
1	Deflection View display On
0	Deflection View display Off

## Example of Use

To query the THD+N meter Deflection View status.  
 DISP:AF:MET:THDN:DEFL?  
 > 1

### **:DISPlay:AF:MEter:THD:DEFLection ON|OFF|1|0**

Deflection View of THD Meter

Function

This command sets whether to display the THD meter Deflection View in RX measurement.

Command

```
:DISPlay:AF:MEter:THD:DEFLection <switch>
```

Parameter

<switch>	Deflection View display On/Off
ON 1	Deflection View display On
OFF 0	Deflection View display Off
Default	OFF

Details

It can be set when the THD meter is On.

Example of Use

To set the THD meter Deflection View display to On.  
DISP:AF:MET:THD:DEFL ON

### **:DISPlay:AF:MEter:THD:DEFLection?**

Deflection View of THD Meter Query

Function

This command queries the THD meter Deflection View status in RX measurement.

Query

```
:DISPlay:AF:MEter:THD:DEFLection?
```

Response

```
<switch>
```

Parameter

<switch>	Deflection View display On/Off
1	Deflection View display On
0	Deflection View display Off

Example of Use

To query the THD meter Deflection View status.  
DISP:AF:MET:THD:DEFL?  
> 1



**:DISPlay:AF:METer:AFLevel:DEFLection:COUNT <count>**

Deflection Count of AF Level Meter

## Function

This command sets the AF Level meter Deflection Count in RX measurement (the count of past measurements included in Deflection View).

## Command

```
:DISPlay:AF:METer:AFLevel:DEFLection:COUNT <count>
```

## Parameter

<count>	Count of past measurements
Range	2 to 100
Resolution	1
Suffix code	None
Default	30

## Details

It can be set when the AF Level meter is On and Deflection View is On.

## Example of Use

To set the AF Level Deflection Count to 5.  
 DISP:AF:MET:AFLevel:DEFLection:COUNT 5

**:DISPlay:AF:METer:AFLevel:DEFLection:COUNT?**

Deflection Count of AF Level Meter Query

## Function

This command queries the AF Level meter Deflection Count in RX measurement (the count of past measurements included in Deflection View).

## Query

```
:DISPlay:AF:METer:AFLevel:DEFLection:COUNT?
```

## Response

```
<count>
```

## Parameter

<count>	Count of past measurements
Range	2 to 100
Resolution	1
Suffix code	None

## Example of Use

To query the AF Level meter Deflection Count.  
 DISP:AF:MET:AFLevel:DEFLection:COUNT?  
 > 5

**:DISPlay:AF:MEtEr:SINad:DEFLection:COUNt <count>**

Deflection Count of SINAD Meter

Function

This command sets the SINAD meter Deflection Count in RX measurement (the count of past measurements included in Deflection View).

Command

`:DISPlay:AF:MEtEr:SINad:DEFLection:COUNt <count>`

Parameter

<code>&lt;count&gt;</code>	Count of past measurements
Range	2 to 100
Resolution	1
Suffix code	None
Default	30

Details

It can be set when the SINAD meter is On and Deflection View is On.

Example of Use

To set the SINAD Deflection Count to 5.  
`DISP:AF:MET:SIN:DEFL:COUN 5`

**:DISPlay:AF:MEter:SINad:DEFLection:COUNT?**

Deflection Count of SINAD Meter Query

## Function

This command queries the SINAD meter Deflection Count in RX measurement (the count of past measurements included in Deflection View).

## Query

```
:DISPlay:AF:MEter:SINad:DEFLection:COUNT?
```

## Response

```
<count>
```

## Parameter

<code>&lt;count&gt;</code>	Count of past measurements
Range	2 to 100
Resolution	1
Suffix code	None

## Example of Use

To query the SINAD meter Deflection Count.

```
DISP:AF:MET:SIN:DEFL:COUN?
> 5
```

**:DISPlay:AF:MEtEr:THDN:DEFLection:COUNt <count>**

Deflection Count of THD+N Meter

Function

This command sets the THD+N meter Deflection Count in RX measurement (the count of past measurements included in Deflection View).

Command

```
:DISPlay:AF:MEtEr:THDN:DEFLection:COUNt <count>
```

Parameter

<count>	Count of past measurements
Range	2 to 100
Resolution	1
Suffix code	None
Default	10

Details

It can be set when the THD+N meter is On and Deflection View is On.

Example of Use

To set the THD+N meter Deflection Count to 5.  
DISP:AF:MET:THDN:DEFL:COUN 5

**:DISPlay:AF:METer:THDN:DEFLection:COUNT?**

Deflection Count of THD+N Meter Query

## Function

This command queries the THD+N meter Deflection Count in RX measurement (the count of past measurements included in Deflection View).

## Query

```
:DISPlay:AF:METer:THDN:DEFLection:COUNT?
```

## Response

```
<count>
```

## Parameter

<code>&lt;count&gt;</code>	Count of past measurements
Range	2 to 100
Resolution	1
Suffix code	None

## Example of Use

To set the THD+N meter Deflection Count to 5.

```
DISP:AF:MET:THDN:DEFL:COUN?  
> 5
```

**:DISPlay:AF:MEter:THD:DEFLection:COUNT <count>**

Deflection Count of THD Meter

Function

This command sets the THD meter Deflection Count in RX measurement (the count of past measurements included in Deflection View).

Command

:DISPlay:AF:MEter:THD:DEFLection:COUNT <count>

Parameter

<count>	Count of past measurements
Range	2 to 100
Resolution	1
Suffix code	None
Default	10

Details

It can be set when the THD meter is On and Deflection View is On.

Example of Use

To set the THD meter Deflection Count to 5.  
DISP:AF:MET:THD:DEFL:COUN 5

**:DISPlay:AF:MEter:THD:DEFLection:COUNT?**

Deflection Count of THD Meter Query

Function

This command queries the THD meter Deflection Count in RX measurement (the count of past measurements included in Deflection View).

Query

:DISPlay:AF:MEter:THD:DEFLection:COUNT?

Response

<count>

Parameter

<count>	Count of past measurements
Range	2 to 100
Resolution	1
Suffix code	None

Example of Use

To query the THD meter Deflection Count.  
DISP:AF:MET:THD:DEFL:COUN?  
> 5

**:DISPlay:AF:METer:AFLevel:UNIT AFLU|PERCent**

Unit of AF Level Meter

## Function

This command sets the AF Level meter display units in RX measurement.

## Command

`:DISPlay:AF:METer:AFLevel:UNIT <unit>`

## Parameter

<unit>	Unit
AFLU	AFLU:AF Level Unit (default)
PERCent	%

## Example of Use

To set the AF Level meter display units to AFLU.  
`DISP:AF:MET:AFLevel:UNIT AFLU`

**:DISPlay:AF:METer:AFLevel:UNIT?**

Unit of AF Level Meter Query

## Function

This command queries the AF Level meter display units in RX measurement.

## Query

`:DISPlay:AF:METer:AFLevel:UNIT?`

## Response

`<unit>`

## Parameter

<unit>	Unit
AFLU	AFLU
PERC	%

## Example of Use

To query the AF Level meter display units.  
`DISP:AF:MET:AFLevel:UNIT?`  
`> AFLU`

### **:DISPlay:AF:MEter:SINad:UNIT DB|PERCent**

Unit of SINAD Meter

Function

This command sets the SINAD meter display units in RX measurement.

Command

```
:DISPlay:AF:MEter:SINad:UNIT <unit>
```

Parameter

<unit>	Unit
DB	dB (default)
PERCent	%

Example of Use

To set the SINAD meter display units to dB.  
DISP:AF:MET:SIN:UNIT DB

### **:DISPlay:AF:MEter:SINad:UNIT?**

Unit of SINAD Meter Query

Function

This command queries the SINAD meter display units in RX measurement.

Query

```
:DISPlay:AF:MEter:SINad:UNIT?
```

Response

```
<unit>
```

Parameter

<unit>	Unit
DB	dB
PERC	%

Example of Use

To query the SINAD meter display units.  
DISP:AF:MET:SIN:UNIT?  
> DB



**:DISPlay:AF:MEter:THDN:UNIT DB|PERCent**

Unit of THD+N Meter

## Function

This command sets the THD+N meter display units in RX measurement.

## Command

`:DISPlay:AF:MEter:THDN:UNIT <unit>`

## Parameter

<unit>	Unit
DB	dB
PERCent	% (default)

## Example of Use

To set the THD+N meter display units to dB.  
`DISP:AF:MET:THDN:UNIT DB`

**:DISPlay:AF:MEter:THDN:UNIT?**

Unit of THD+N Meter Query

## Function

This command queries the THD+N meter display units in RX measurement.

## Query

`:DISPlay:AF:MEter:THDN:UNIT?`

## Response

`<unit>`

## Parameter

<unit>	Unit
DB	dB
PERC	%

## Example of Use

To query the THD+N meter display units.  
`DISP:AF:MET:THDN:UNIT?`  
`> DB`

### **:DISPlay:AF:MEter:THD: UNIT DB|PERCent**

Unit of THD Meter

Function

This command sets the THD meter display units in RX measurement.

Command

```
:DISPlay:AF:MEter:THD:UNIT <unit>
```

Parameter

<unit>	Unit
DB	dB
PERCent	% (default)

Example of Use

To set the THD meter display units to dB.  
DISP:AF:MET:THD:UNIT DB

### **:DISPlay:AF:MEter:THD:UNIT?**

Unit of THD Meter Query

Function

This command queries the THD meter display units in RX measurement.

Query

```
:DISPlay:AF:MEter:THD:UNIT?
```

Response

```
<unit>
```

Parameter

<unit>	Unit
DB	dB
PERC	%

Example of Use

To query the THD meter display units.  
DISP:AF:MET:THD:UNIT?  
> DB

**:DISPlay:AF:METer:AFLevel:REFerence <val>**

AF Level Reference of AF Level Meter

## Function

This command sets the AF Level meter AF Level Reference in RX measurement.

## Command

```
:DISPlay:AF:METer:AFLevel:REFerence <val>
```

## Parameter

<val>	Range of meter
Range	-1000.000 to 1000.000
Resolution	0.001
Suffix code	None
Default	2

## Details

It can be set when the AF Level meter is On and AF Level meter unit is %.

## Example of Use

To set the AF Level meter AF Level Reference to 2.  
 DISP:AF:MET:AFLevel:REF 2

**:DISPlay:AF:METer:AFLevel:REFerence?**

AF Level Reference of AF Level Meter Query

## Function

This command queries the AF Level meter AF Level Reference in RX measurement.

## Query

```
:DISPlay:AF:METer:AFLevel:REFerence?
```

## Response

```
<val>
```

## Parameter

<val>	Range of meter
Range	-1000.000 to 1000.000
Resolution	0.001
Suffix code	None

## Example of Use

To query the AF Level meter AF Level Reference.  
 DISP:AF:MET:AFLevel:REF?  
 > 2

### 2.5.3 RX Measurement Parameter

Table 2.5.3-1 lists device messages for parameter settings for RX measurement.

**Table 2.5.3-1 Device Messages for Parameter Settings of RX Measurement**

Parameter	Device Messages
Output	:OUTPut[:STATe] ON OFF 1 0
	:OUTPut[:STATe]?
Modulation	:OUTPut:MODulation[:STATe] ON OFF 1 0
	:OUTPut:MODulation[:STATe]?
Frequency of RX Measurement	:SOURce:FREQuency[:FIXed] <freq>
	:SOURce:FREQuency[:FIXed]?
Output Level	[[:SOURce]:RF:POWer[:LEVel]][:IMMediate]][:AMPLitude] <level>
	[[:SOURce]:RF:POWer[:LEVel]][:IMMediate]][:AMPLitude]?
Output Level (W) Query	[[:SOURce]:RF:POWer[:LEVel]][:IMMediate]][:AMPLitude]:WATT?
Output Level Offset State	[[:SOURce]:RF:POWer[:LEVel]][:IMMediate]:OFFSet:STATe ON OFF 1 0
	[[:SOURce]:RF:POWer[:LEVel]][:IMMediate]:OFFSet:STATe?
Output Level Offset	[[:SOURce]:RF:POWer[:LEVel]][:IMMediate]:OFFSet <level>
	[[:SOURce]:RF:POWer[:LEVel]][:IMMediate]:OFFSet?
Output Level Unit	[[:SOURce]:UNIT:POWer <unit>
	[[:SOURce]:UNIT:POWer?
AF Modulation Scheme	:SOURce:MODulation FM AM PM
	:SOURce:MODulation?
AF1/AF2/AF3 Output	:OUTPut:AF[1] 2 3[:STATe] ON OFF USER
	:OUTPut:AF[1] 2 3[:STATe]?
AF1/AF2/AF3 Tone Frequency	[[:SOURce]:AF[1] 2 3:FREQuency <freq>
	[[:SOURce]:AF[1] 2 3:FREQuency?

Table 2.5.3-1 Device Messages for Parameter Settings of RX Measurement (Continued)

Parameter	Device Messages
AF1/AF2/AF3 FM Deviation	<code>[ :SOURce ] : AF [ 1 ]   2   3 : DEViation &lt;freq&gt;</code>
	<code>[ :SOURce ] : AF [ 1 ]   2   3 : DEViation ?</code>
AF1/AF2/AF3 AM Depth	<code>[ :SOURce ] : AF [ 1 ]   2   3 : DEPT h &lt;per&gt;</code>
	<code>[ :SOURce ] : AF [ 1 ]   2   3 : DEPT h ?</code>
AF1/AF2/AF3 $\phi$ M Radian	<code>[ :SOURce ] : AF [ 1 ]   2   3 : RADian &lt;radian&gt;</code>
	<code>[ :SOURce ] : AF [ 1 ]   2   3 : RADian ?</code>
File Load	<code>[ :SOURce ] : USER : AF [ 1 ] : LOAD &lt;filename&gt; [, &lt;device&gt;]</code>
	<code>[ :SOURce ] : USER : AF [ 1 ] : LOAD ?</code>
AF Monitor	<code>[ :SOURce ] : AF : MONitor [ :STATe ] &lt;switch&gt;</code>
	<code>[ :SOURce ] : AF : MONitor [ :STATe ] ?</code>
DCS	<code>[ :SOURce ] : DCSQuelch [ :STATe ] ON   OFF   1   0</code>
	<code>[ :SOURce ] : DCSQuelch [ :STATe ] ?</code>
DCS Code Custom Mode	<code>[ :SOURce ] : DCSQuelch : CODE : CUSTom : MODE ON   OFF   1   0</code>
	<code>[ :SOURce ] : DCSQuelch : CODE : CUSTom : MODE ?</code>
DCS Code (Octal)	<code>[ :SOURce ] : DCSQuelch : CODE &lt;code&gt;</code>
	<code>[ :SOURce ] : DCSQuelch : CODE ?</code>
DCS Code (Binary)	<code>[ :SOURce ] : DCSQuelch : CODE : CUSTom : BINary &lt;code&gt;</code>
	<code>[ :SOURce ] : DCSQuelch : CODE : CUSTom : BINary ?</code>
DCS Deviation	<code>[ :SOURce ] : DCSQuelch : DEViation &lt;freq&gt;</code>
	<code>[ :SOURce ] : DCSQuelch : DEViation ?</code>
DCS Polarity	<code>[ :SOURce ] : DCSQuelch : POLarity &lt;switch&gt;</code>
	<code>[ :SOURce ] : DCSQuelch : POLarity ?</code>
Low Pass Filter for DCS Signal	<code>[ :SOURce ] : DCSQuelch : LPF &lt;switch&gt;</code>
	<code>[ :SOURce ] : DCSQuelch : LPF ?</code>
AF Setting Suite	<code>:SOURce:AF:LIST:SET &lt;mod_set&gt;, &lt;af1_sw&gt;, &lt;af1_freq&gt;, &lt;af1_mod&gt;, &lt;af2_sw&gt;, &lt;af2_freq&gt;, &lt;af2_mod&gt; [, &lt;dcs_sw&gt; [, &lt;dcs_code&gt;, &lt;dcs_mod&gt;]]</code>
Average Mode	<code>[ :SENSe ] : AF : AVERage [ :STATe ] ON   OFF   1   0</code>
	<code>[ :SENSe ] : AF : AVERage [ :STATe ] ?</code>
Average Count	<code>[ :SENSe ] : AF : AVERage : COUNT &lt;integer&gt;</code>
	<code>[ :SENSe ] : AF : AVERage : COUNT ?</code>

### **:OUTPut[:STATe] ON|OFF|1|0**

Output

Function

This command turns On/Off the RF signal output.

Command

```
:OUTPut[:STATe] <switch>
```

Parameter

<switch>	RF output On/Off
OFF 0	RF output Off (default)
ON 1	RF output On

Details

When the RF signal output is set to ON, the signal output is started from the SG Output port.

Example of Use

To set the RF signal output to ON.  
OUTP ON

### **:OUTPut[:STATe]?**

Output Query

Function

This command queries the On/Off status of the RF signal output.

Query

```
:OUTPut[:STATe]?
```

Response

```
<switch>
```

Parameter

<switch>	RF output On/Off
0	RF output Off
1	RF output On

Example of Use

To query the On/Off status of the RF signal output.  
OUTP?  
> 1

**:OUTPut:MODulation[:STATe] ON|OFF|1|0**

Modulation

Function

This command turns On/Off the RF signal modulation.

Command

`:OUTPut:MODulation[:STATe] <switch>`

Parameter

<code>&lt;switch&gt;</code>	Modulation On/Off
<code>OFF 0</code>	Unmodulated wave output (default)
<code>ON 1</code>	Modulated wave output

Details

When the modulation is set to OFF, Unmodulated Wave (CW) is output.  
To output modulated waves, set it to ON.

Example of Use

To set the RF signal modulation to ON.  
`OUTP:MOD ON`

**:OUTPut:MODulation[:STATe]?**

Modulation Query

Function

This command turns On/Off the RF signal modulation.

Query

`:OUTPut:MODulation[:STATe]?`

Response

`<switch>`

Parameter

<code>&lt;switch&gt;</code>	Modulation On/Off
<code>0</code>	Unmodulated wave output
<code>1</code>	Modulated wave output

Example of Use

To query the RF signal modulation setting.  
`OUTP:MOD?`  
`> 1`

**:SOURce:FREQuency[:FIXed] <freq>**

Frequency of RX Measurement

Function

This command sets the RF signal output frequency for RX measurement.

Command

`:SOURce:FREQuency[:FIXed] <freq>`

Parameter

<freq>	Frequency
Range	100 kHz to 3 GHz
Resolution	1 Hz
Suffix code	HZ, KHZ, KZ, MHZ, MZ, GHZ, GZ Hz is used when omitted.
Default	1 GHz

Example of Use

To set the RF signal output frequency to 400 MHz.  
`SOUR:FREQ 400MHZ`

**:SOURce:FREQuency[:FIXed]?**

Frequency of RX Measurement Query

Function

This command queries the RF signal output frequency setting value for RX measurement.

Query

`:SOURce:FREQuency[:FIXed]?`

Response

<freq>

Parameter

<freq>	Frequency
Range	100 kHz to 3 GHz
Resolution	1 Hz

Example of Use

To query the RF signal output frequency setting value.  
`SOUR:FREQ?`  
> 400000000



**[ :SOURce ] : RF : POWer [ : LEVel ] [ : IMMEDIATE ] [ : AMPLitude ] < level >**

Output Level

Function

This command sets the RF signal output level for RX measurement.

Command

```
[ :SOURce ] : RF : POWer [ : LEVel ] [ : IMMEDIATE ] [ : AMPLitude ]
< level >
```

Parameter

<level>	Output level
Range	When unit is dBm: –127 to +15 dBm (RX frequency > 25 MHz) –127 to –3 dBm (RX frequency < 25 MHz) When unit is dB $\mu$ V (EMF): –13.99 dB $\mu$ V to +128.01 dB $\mu$ V (RX frequency > 25 MHz) –13.99 to +110.01 dB $\mu$ V (RX frequency < 25 MHz) When unit is dB $\mu$ V (Term): –20.01 to +121.99 dB $\mu$ V (RX frequency > 25 MHz) –20.01 to +103.99 dB $\mu$ V (RX frequency < 25 MHz)
Resolution	0.01 dB
Suffix code	DBM, DBUV, DBUVEMF The unit set with Unit is used when the suffix code is omitted.
Default	–13.99 dB $\mu$ V (EMF) (–127 dBm)

Details

This command sets the RF signal output level for RX measurement. When the suffix code is added to the setting value as the unit, the Unit setting is changed to the set unit.

Example of Use

To set the RF signal output level to –90 dBm.  
 RF:POW –90DBM

### **[[:SOURce]:RF:POWer[:LEVel]][:IMMediate]][:AMPLitude]?**

Output Level Query

Function

This command queries the RF signal output level setting value for RX measurement.

Query

`[[:SOURce]:RF:POWer[:LEVel]][:IMMediate]][:AMPLitude]?`

Response

`<level>`

Parameter

`<level>`

Range

Output level

When unit is dBm:

-127 to +15 dBm

When unit is dB $\mu$ V (EMF):

-13.99 to +128.01 dB $\mu$ V

When unit is dB $\mu$ V (Term):

-20.01 to +121.99 dB $\mu$ V

Resolution

0.01 dB

Suffix code

None

The unit value set with Unit is returned.

Example of Use

To query the RF signal output level setting value.

`RF:POW?`

`> -90.00`

**[ :SOURce ] :RF :POWer [ :LEVel ] [ :IMMediate ] [ :AMPLitude ] :WATT?**

Output Level (W) Query

## Function

This command queries the RF signal output level setting value for RX measurement in Watts.

## Query

```
[ :SOURce ] :RF :POWer [ :LEVel ] [ :IMMediate ] [ :AMPLitude ] :WATT?
```

## Response

```
<level>
```

## Parameter

<pre>&lt;level&gt;</pre>	Output level
Range	1.00 aW to 0.32 mW (1 aW = $10^{-18}$ W)

## Example of Use

To query the RF signal output level setting value in Watts.

```
RF : POW : WATT?
```

```
> 0.000000000000000000199500000000
```

### **[:SOURce]:RF:POWer[:LEVel][:IMMediate]:OFFSet:STATe ON|OFF|1|0**

Output Level Offset State

Function

This command enables/disables the offset function of the RF signal output level.

Command

```
[ :SOURce ] :RF:POWer [ :LEVel ] [ :IMMediate ] :OFFSet:STATe  
<switch>
```

Parameter

<switch>	Offset function On/Off
OFF 0	Disabled (default)
ON 1	Enabled

Example of Use

To enable the RF signal output level offset.  
RF:POW:OFFS:STAT ON

### **[:SOURce]:RF:POWer[:LEVel][:IMMediate]:OFFSet:STATe?**

Output Level Offset State Query

Function

This command queries the offset function setting value for the RF signal output level.

Query

```
[ :SOURce ] :RF:POWer [ :LEVel ] [ :IMMediate ] :OFFSet:STATe?
```

Response

```
<switch>
```

Parameter

<switch>	Offset function On/Off
0	Disabled
1	Enabled

Example of Use

To query the RF signal output level offset setting value.  
RF:POW:OFFS:STAT?  
> 1

**[[:SOURce]:RF:POWer[:LEVel]][:IMMediate]:OFFSet <level>**

Output Level Offset

## Function

This command sets the RF signal output level offset value.

## Command

[:SOURce]:RF:POWer[:LEVel]][:IMMediate]:OFFSet &lt;level&gt;

## Parameter

<level>	Offset value
Range	-100 to 100 dB
Resolution	0.01 dB
Suffix code	dB
	dB is used when the suffix code is omitted.
Default	0.00 dB

## Details

The value is set when the power loss is to be corrected which is due to the connection between the measurement target and this instrument.

## Example of Use

To set the RF signal output level offset to 10 dB.  
 RF:POW:OFFS 10

**[[:SOURce]:RF:POWer[:LEVel]][:IMMediate]:OFFSet?**

Output Level Offset Query

## Function

This command queries the RF signal output level offset value.

## Query

[:SOURce]:RF:POWer[:LEVel]][:IMMediate]:OFFSet?

## Response

&lt;level&gt;

## Parameter

<level>	Offset value
Range	-100 to 100 dB
Resolution	0.01 dB
Suffix code	None
	Value is returned in dB units.

## Example of Use

To query the RF signal output level offset setting value.  
 RF:POW:OFFS?  
 > 10.00

### **[ :SOURce ] :UNIT :POWer <unit>**

Output Level Unit

Function

This command sets the RF signal output level unit.

Command

```
[ :SOURce ] :UNIT :POWer <unit>
```

Parameter

<unit>	Unit
DBUVEMF	dB $\mu$ V (EMF) (default)
DBUV	dB $\mu$ V (Term)
DBM	dBm

Example of Use

To set the RF signal output level unit to dBm.  
UNIT :POW DBM

### **[ :SOURce ] :UNIT :POWer?**

Output Level Unit Query

Function

This command queries the RF signal output level unit.

Query

```
[ :SOURce ] :UNIT :POWer?
```

Response

```
<unit>
```

Parameter

<unit>	Unit
DBUVEMF	dB $\mu$ V (EMF)
DBUV	dB $\mu$ V (Term)
DBM	dBm

Example of Use

To query the RF signal output level unit.  
UNIT :POW?  
> DBM

**:SOURce:MODulation FM|AM|PM**

AF Modulation Scheme

## Function

This command sets the AF modulation scheme.

## Command

```
:SOURce:MODulation <mod>
```

## Parameter

<mod>	Modulation scheme
FM	FM modulation
AM	AM modulation
PM	$\phi$ M Modulation
Default	FM

## Details

This command sets the modulation scheme for signals output for RX measurement.

## Example of Use

To set the AF signal modulation scheme to AM.  
 SOUR:MOD AM

**:SOURce:MODulation?**

AF Modulation Scheme Query

## Function

This command queries the AF modulation scheme.

## Query

```
:SOURce:MODulation?
```

## Response

```
<mod>
```

## Parameter

<mod>	Modulation scheme
FM	FM modulation
AM	AM modulation
PM	$\phi$ M Modulation

## Example of Use

To query the AF modulation scheme.  
 SOUR:MOD?  
 > FM

**:OUTPut:AF[1]|2|3[:STATe] ON|OFF|USER**

AF1/AF2/AF3 Output

Function

This command sets On/Off for AF1/AF2/AF3 output.

Command

:OUTPut:AF[1]|2|3[:STATe] <switch>

Parameter

<switch>	AF output On/Off
OFF	Sets output to Off. (default)
ON	Sets output to On.
USER	Outputs to User-selected file (only supported by AF1)

Details

AF3 can be set only with MS2830A-018/118.

Example of Use

To set the AF2 output to ON.

OUTP:AF2 ON

**:OUTPut:AF[1]|2|3[:STATe]?**

AF1/AF2/AF3 Output Query

Function

This command queries the AF1/AF2/AF3 output setting value.

Query

:OUTPut:AF[1]|2|3[:STATe]?

Response

<switch>

Parameter

<switch>	AF output On/Off
OFF	Output Off
ON	Output On
USER	Output to User-selected file (only supported by AF1)

Example of Use

To query the AF2 output setting.

OUTP:AF2?

> ON



**[ :SOURce ] : AF [ 1 ] | 2 | 3 : FREQuency <freq>**

AF1/AF2/AF3 Tone Frequency

## Function

This command sets the Tone frequency of AF1/AF2/AF3.

## Command

`[ :SOURce ] : AF [ 1 ] | 2 | 3 : FREQuency <freq>`

## Parameter

<freq>	Frequency
Range	20.0 to 40000.0 Hz
Resolution	0.1 Hz
Suffix code	HZ, KHZ, KZ, MHZ, MZ, GHZ, GZ Hz is used when omitted.
Default	AF1: 1000.0 Hz AF2: 67.0 Hz AF3: 67.0 Hz

## Details

AF3 can be set only with MS2830A-018/118.

## Example of Use

To set the Tone frequency of AF2 to 800 Hz.  
`AF2:FREQ 800`

## **[ :SOURce ] : AF [ 1 ] | 2 | 3 : FREQuency ?**

AF1/AF2/AF3 Tone Frequency Query

### Function

This command queries the Tone frequency setting value of AF1/AF2/AF3.

### Query

```
[ :SOURce ] : AF [ 1 ] | 2 | 3 : FREQuency ?
```

### Response

```
<freq>
```

### Parameter

<freq>	Frequency
Range	20.0 to 40000.0 Hz
Resolution	0.1 Hz
Suffix code	None

Value is returned in Hz units.

### Example of Use

```
To query the Tone frequency setting value of AF2.  
AF2 : FREQ?  
> 800.0
```

**[ :SOURce ] : AF [ 1 ] | 2 | 3 : DEViation <freq>**

AF1/AF2/AF3 FM Deviation

## Function

This command sets the FM Deviation of AF1/AF2/AF3.

## Command

`[ :SOURce ] : AF [ 1 ] | 2 | 3 : DEViation <freq>`

## Parameter

<freq>	FM Deviation
Range	0.0 to 100000.0 Hz
Resolution	0.1 Hz
Suffix code	HZ, KHZ, KZ, MHZ, MZ, GHZ, GZ Hz is used when omitted.
Default	AF1: 3500.0 Hz AF2: 500.0 Hz AF3: 500.0 Hz

## Details

When the AF signal modulation scheme is FM, the setting value is valid.  
AF3 can be set only WITH MS2830A-018/118.

## Example of Use

To set the FM Deviation of AF2 to 5,000 Hz.

```
AF2:DEV 5000
```

### **[ :SOURce]:AF[1]|2|3:DEVIation?**

AF1/AF2/AF3 FM Deviation Query

Function

This command queries the FM Deviation setting value of AF1/AF2/AF3.

Query

```
[ :SOURce]:AF[1]|2|3:DEVIation?
```

Response

```
<freq>
```

Parameter

<freq>	FM Deviation
Range	0.0 to 100000.0 Hz
Resolution	0.1 Hz
Suffix code	None
	Value is returned in Hz units.

Example of Use

```
To query the FM Deviation setting value of AF2.  
AF2:DEV?  
> 5000.0
```

**[ :SOURce ] : AF [ 1 ] | 2 | 3 : DEPT h < per >**

AF1/AF2/AF3 AM Depth

## Function

This command sets the AM modulation index of AF1/AF2/AF3.

## Command

```
[ :SOURce ] : AF [ 1 ] | 2 | 3 : DEPT h < per >
```

## Parameter

<per>	AM Depth
Range	0 to 100%
Resolution	1%
Suffix code	None
Default	30%

## Details

When the AF signal modulation scheme is AM, the setting value is valid. AF3 can be set only with MS2830A-018/118.

## Example of Use

To set the AM Depth of AF2 to 70%.

```
AF2 : DEPT 70
```

### **[ :SOURce ] : AF [ 1 ] | 2 | 3 : DEPT h ?**

AF1/AF2/AF3 AM Depth Query

Function

This command queries the AM modulation index setting value of AF1/AF2/AF3.

Query

[ :SOURce ] : AF [ 1 ] | 2 | 3 : DEPT h ?

Response

<per>

Parameter

<per>	AM Depth
Range	0 to 100%
Resolution	1%
Suffix code	None

Value is returned in % units.

Example of Use

To query the AM Depth setting value of AF2.  
AF2 : DEPT ?  
> 70

**[ :SOURce]:AF[1]|2|3:RADian <radian>**AF1/AF2/AF3 $\phi$ M Radian

## Function

This command sets the  $\phi$ M Radian of AF1/AF2/AF3.

## Command

`[ :SOURce]:AF[1]|2|3:RADian <radian>`

## Parameter

<radian>	$\phi$ M Radian
Range	0.0 to 50.0 rad
Resolution	0.01 rad
Suffix code	None
Default	AF1: 3.50 rad AF2: 7.46 rad AF3: 7.46 rad

## Details

When the AF signal modulation scheme is  $\phi$ M, the setting value is valid.  
AF3 can be set only with MS2830A-018/118.

## Example of Use

To set the  $\phi$ M Radian of AF2 to 1.00 rad.  
`AF2:RAD 1.00`

### **[ :SOURce ] : AF [ 1 ] | 2 | 3 : RADian ?**

AF1/AF2/AF3  $\phi$ M Radian Query

Function

This command queries the  $\phi$ M Radian setting value of AF1/AF2/AF3.

Query

[ :SOURce ] : AF [ 1 ] | 2 | 3 : RADian ?

Response

<radian>

Parameter

<radian>	$\phi$ M Radian
Range	0.0 to 50.00 rad
Resolution	0.01 rad
Suffix code	None

Value is returned in radian units.

Example of Use

To query the  $\phi$ M Radian setting value of AF2.  
AF2 : RAD ?  
> 1.00



**[[:SOURce]:USER:AF[1]:LOAD <filename>[,<device>]**

File Load

Function

This command loads the wav file selected by User.

Command

`[[:SOURce]:USER:AF[1]:LOAD <filename>[,<device>]`

Parameter

<code>&lt;filename&gt;</code>	<p>Target file name</p> <p>Character string within 32 characters enclosed by double quotes ( " ") or single quotes ( ' ') (excluding extension)</p> <p>The following characters cannot be used:            \ / : * ? " ' &lt; &gt;  </p>
<code>wav file name</code>	
<code>&lt;device&gt;</code>	<p>Drive name</p> <p>A, B, D, E, F, . . .</p> <p>D when omitted.</p>

Details

This command loads the wav file selected by User.

Example of Use

To load Test.wav.

```
USER:AF:LOAD "Test",D
```

## **[:SOURce]:USER:AF[1]:LOAD?**

File Load Query

Function

This command queries the wav file name loaded.

Query

```
[ :SOURce ] :USER:AF [ 1 ] :LOAD?
```

Response

```
<filename>
```

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:

```
\ / : * ? " ' < > |
```

Example of Use

To query the wav file name loaded.

```
USER:AF:LOAD?
```

```
> "Test",D
```

**[ :SOURce ] : AF : MONitor [ : STATE ] < switch >**

AF Monitor

Function

This command enables/disables AF Monitor output.

Command

`[ :SOURce ] : AF : MONitor [ : STATE ] < switch >`

Parameter

<code>&lt; switch &gt;</code>	AF Monitor output On/Off
<code>OFF   0</code>	Output OFF (default)
<code>ON   1</code>	Output ON

Details

This turns on AF Monitor output.

This is available only when USB Audio is effective.

Example of Use

To turn on AF Monitor output.

```
AF : MON ON
```

**[ :SOURce ] : AF : MONitor [ : STATE ] ?**

AF Monitor Query

Function

This command queries the On/Off status of AF Monitor output.

Query

`[ :SOURce ] : AF : MONitor [ : STATE ] ?`

Response

`< switch >`

Parameter

<code>&lt; switch &gt;</code>	AF Monitor output On/Off
<code>0</code>	Output OFF
<code>1</code>	Output ON

Example of Use

To query the On/Off status of AF Monitor output.

```
AF : MON ?
> 1
```

### **[ :SOURce ] :DCSQuelch [ :STATe ] ON|OFF|1|0**

DCS

Function

This command enables/disables DCS (Digital Code Squelch) output.

Command

```
[ :SOURce ] :DCSQuelch [ :STATe ] <switch>
```

Parameter

<switch>	DCS output On/Off
OFF 0	Output OFF (default)
ON 1	Output ON

Details

This is not available when AF1 Output is set to USER.

Example of Use

To set DCS output to ON.  
DCSQ ON

### **[ :SOURce ] :DCSQuelch [ :STATe ] ?**

DCS Query

Function

This command queries the On/Off status of DCS output.

Query

```
[ :SOURce ] :DCSQuelch [ :STATe ] ?
```

Response

```
<switch>
```

Parameter

<switch>	DCS output On/Off
0	Output Off
1	Output On

Example of Use

To query the On/Off status of DCS output.  
DCSQ?  
> 1

**[ :SOURce ] :DCSQuelch :CODE :CUSTom :MODE ON|OFF|1|0**

DCS Code Custom Mode

## Function

This command sets the DCS code setting method (binary/octal).

## Command

`[ :SOURce ] :DCSQuelch :CODE :CUSTom :MODE <switch>`

## Parameter

<code>&lt;switch&gt;</code>	DCS code setting method
<code>OFF 0</code>	Octal DCS code
<code>ON 1</code>	Binary DCS code

## Example of Use

To set the DCS code in binary notation.  
`DCSQ : CODE : CUST : MODE ON`

**[ :SOURce ] :DCSQuelch :CODE :CUSTom :MODE ?**

DCS Code Custom Mode Query

## Function

This command queries the DCS code setting method (binary/octal).

## Query

`[ :SOURce ] :DCSQuelch :CODE :CUSTom :MODE ?`

## Response

`<switch>`

## Parameter

<code>&lt;switch&gt;</code>	DCS code setting method
<code>0</code>	Octal DCS code
<code>1</code>	Binary DCS code

## Example of Use

To query the DCS code setting method in octal notation.  
`DCSQ : CODE : CUST : MODE ?`  
`> 1`

**[[:SOURce]:DCSQuelch:CODE <code>**

DCS Code (Octal)

Function

This command sets the DCS code in octal notation.

Command

[[:SOURce]:DCSQuelch:CODE <code>

Parameter

<code>	DCS code
Range	0 to 777 (three-digit octal notation)
Resolution	1
Suffix code	None
Default	023

Details

Repeated signals are output which have 23-bit DCS pattern created according to DCS code setting. When DCS is set to ON and DCS Custom Mode is Off, the setting is enabled.

Example of Use

To set the DCS code to 026 in octal notation.  
DCSQ:CODE 026

**[[:SOURce]:DCSQuelch:CODE?**

DCS Code (Octal) Query

Function

This command queries the DCS code in octal notation.

Query

[[:SOURce]:DCSQuelch:CODE?

Response

<code>

Parameter

<code>	DCS code
Range	0 to 777 (three-digit octal notation)
Resolution	1
Suffix code	None

Example of Use

To query the DCS code setting value in octal notation.  
DCSQ:CODE?  
> 026

**[:SOURce]:DCSQuelch:CODE:CUSTom:BINary <code>**

DCS Code (Binary)

## Function

This command sets the DCS code in binary notation.

## Command

```
[ :SOURce ] :DCSQuelch :CODE :CUSTom :BINary <code>
```

## Parameter

<code>	DCS code
Range	000000000000000000000000 to 111111111111111111111111 (23-digit binary notation)
Resolution	1
Suffix code	None
Default	11101100011100000010011

## Details

Repeated signals are output which have 23-bit DCS pattern created according to DCS code setting. When DCS is set to ON and DCS Custom Mode is ON, the setting is enabled.

## Example of Use

To set the DCS code (Binary) to 101010101010101010101.  
`DCSQ:CODE:CUST:BIN `101010101010101010101``

**[:SOURce]:DCSQuelch:CODE:CUSTom:BINary?**

DCS Code (Binary) Query

## Function

This command queries the DCS code in binary notation.

## Query

```
[ :SOURce ] :DCSQuelch :CODE :CUSTom :BINary?
```

## Response

```
<code>
```

## Parameter

<code>	DCS code
Range	000000000000000000000000 to 111111111111111111111111 (23-digit binary number)
Resolution	1
Suffix code	None

## Example of Use

To query the DCS code setting value in binary notation.  
`DCSQ:CODE:CUST:BIN?`  
`> 101010101010101010101`

### **[:SOURce]:DCSQuelch:DEVIation <freq>**

DCS Deviation

Function

This command sets the Deviation of DCS.

Command

```
[:SOURce]:DCSQuelch:DEVIation <freq>
```

Parameter

<freq>	Deviation
Range	0.0 to 100000.0 Hz
Resolution	0.1 Hz
Suffix code	HZ, KHZ Hz is used when omitted.
Default	500.0 Hz

Details

When DCS is set to ON, the setting is enabled.

Example of Use

To set the Deviation of DCS to 500 Hz.  
DCSQ:DEV 500

### **[:SOURce]:DCSQuelch:DEVIation?**

DCS Deviation Query

Function

This command queries the DCS Deviation setting value.

Query

```
[:SOURce]:DCSQuelch:DEVIation?
```

Response

```
<freq>
```

Parameter

<freq>	Deviation
Range	0.0 to 100000.0 Hz
Resolution	0.1 Hz
Suffix code	None Value is returned in Hz units.

Example of Use

To query the DCS Deviation setting value.  
DCSQ:DEV?  
> 500.0



**[:SOURce]:DCSQuelch:POLarity <switch>**

DCS Polarity

Function

Sets polarity of DCS.

Command

`[:SOURce]:DCSQuelch:POLarity <switch>`

Parameter

<code>&lt;switch&gt;</code>	Polarity
<code>NORMal 0</code>	Polarity is not inverted.
<code>INVerted 1</code>	Polarity is inverted.
Default	<code>NORMal</code>

Details

When DCS is set to ON, the setting is enabled.

Example of Use

To set the polarity of DCS to Invert.

```
DCSQ:POL INV
```

**[:SOURce]:DCSQuelch:POLarity?**

DCS Polarity Query

Function

Queries set value of DCS polarity.

Query

`[:SOURce]:DCSQuelch:POLarity?`

Response

`<switch>`

Parameter

<code>&lt;switch&gt;</code>	Polarity
<code>0</code>	Polarity is not inverted.
<code>1</code>	Polarity is inverted.

Example of Use

To query the DCS polarity setting value.

```
DCSQ:POL?
> 1
```

### **[[:SOURce]:DCSQuelch:LPF <switch>**

Low Pass Filter for DCS Signal

Function

This command enables/disables the band filtering with Low Pass Filter for DCS signal.

Command

```
[[:SOURce]:DCSQuelch:LPF <switch>
```

Parameter

<switch>

OFF|0

Disable the band filtering with Low Pass Filter.

ON|1

Enable the band filtering with Low Pass Filter.

Default

OFF

Details

This setting is enabled when DCS is ON.

Example of Use

To enable the band filtering with Low Pass Filter.

```
DCSQ:LPF ON
```

### **[[:SOURce]:DCSQuelch:LPF?**

Low Pass Filter for DCS Signal Query

Function

This command queries the On/Off status of the band filtering with Low Pass Filter for the DCS signal.

Query

```
[[:SOURce]:DCSQuelch:LPF?
```

Response

<switch>

Parameter

<switch>

0

The band filtering with Low Pass Filter is Off.

1

The band filtering with Low Pass Filter is On.

Example of Use

To query the On/Off status of the band filtering with Low Pass Filter.

```
DCSQ:LPF?
```

```
> 0
```

**:SOURce:AF:LIST:SET <mod\_set>,<af1\_sw>,<af1\_freq>,<af1\_mod>,<af2\_sw>,<af2\_freq>,<af2\_mod>[,<dc\_s\_w>[,<dc\_s\_code>,<dc\_s\_mod>]]**

AF Setting Suite

Function

This command collectively sets the AF signal settings.

Command

```
:SOURce:AF:LIST:SET
<mod_set>,<af1_sw>,<af1_freq>,<af1_mod>,<af2_sw>,
<af2_freq>,<af2_mod>[,<dc_s_w>[,<dc_s_code>,<dc_s_mod>]]
```

Parameter

<mod_set>	AF modulation method setting
<af1_sw>	AF1 output On/Off
<af1_freq>	AF1 Tone frequency
<af1_mod>	AF1 modulation index according to AF modulation method setting
<af2_sw>	AF2 output On/Off
<af2_freq>	AF2 Tone frequency
<af2_mod>	AF2 modulation index according to AF modulation method setting
<dc_s_w>	DCS On/Off
<dc_s_code>	DCS code
<dc_s_mod>	DCS Deviation

Details

For details of each parameter, see the parameter of the corresponding setting command.

Example of Use

To set AF to FM modulation, AF1 (On, Tone = 1000Hz, Deviation = 5000Hz), AF2 (On, Tone = 66.1Hz, Deviation = 500Hz), and DCS (On, Code = 026, Deviation = 200Hz).

```
SOUR:AF:LIST:SET FM,ON,1000,5000,ON,66.1,500,ON,026,200
```

### **[[:SENSE]:AF:AVERAge[:STATe] ON|OFF|1|0**

Average Mode

Function

This command enables/disables averaging when performing RX measurement.

Command

```
[ :SENSe ] :AF:AVERAge [ :STATe ] <switch>
```

Parameter

<switch>	Averaging On/Off
ON 1	Enables averaging
OFF 0	Disables averaging (default)

Details

When the averaging of measured values is enabled, measurements for the number of times set with Average Count are executed, and the average of the measured values will be the measurement result.

Example of Use

To set averaging when performing RX measurement.  
AF:AVER ON

### **[[:SENSe]:AF:AVERAge[:STATe]?**

Average Mode Query

Function

This command queries averaging On/Off status when performing RX measurement.

Query

```
[ :SENSe ] :AF:AVERAge [ :STATe ] ?
```

Response

```
<switch>
```

Parameter

<switch>	Averaging On/Off
1	Enables averaging
0	Disables averaging

Example of Use

To query the averaging On/Off status when performing RX measurement.  
AF:AVER?  
> 1

**[[:SENSE]:AF:AVERAge:COUNT <integer>**

Average Count

Function

This command sets the averaging count when performing RX measurement.

Command

```
[[:SENSE]:AF:AVERAge:COUNT <integer>
```

Parameter

<integer>	Averaging count
Range	2 to 9999
Resolution	1
Default	10

Details

This command sets the measurement count for averaging when averaging for RX measurement has been set.

Example of Use

To set the averaging count to 10.  
AF:AVER:COUN 10

**[[:SENSe]:AF:AVERAge:COUNT?**

Average Count Query

Function

This command queries the averaging count when performing RX measurement.

Query

```
[[:SENSe]:AF:AVERAge:COUNT?
```

Response

```
<integer>
```

Parameter

<integer>	Averaging count
Range	2 to 9999
Resolution	1

Example of Use

To query the averaging count.  
AF:AVER:COUN?  
> 10

## 2.6 External Device Control Connectors

Table 2.6-1 lists the device messages related to the external device control connectors (PTT (Push To Talk), GPIO (General Purpose Input/Output), Open Collector).

The device messages described in this section apply only with MS2830A-018.

**Table 2.6-1 External device control connector device messages**

Parameter	Device Messages
PTT	:PTT[1]:STATE ON OFF 1 0
	:PTT[1]:STATE?
PTT Logic	:PTT[1]:LOGic POSitive NEGative
	:PTT[1]:LOGic?
GPIO Out1/Out2	:GPIO:OUTPut[1] 2:STATE ON OFF 1 0
	:GPIO:OUTPut[1] 2:STATE?
GPIO Out1/Out2 Logic	:GPIO:OUTPut[1] 2:LOGic POSitive NEGative
	:GPIO:OUTPut[1] 2:LOGic?
GPIO In1/In2 Query	:GPIO:INPut[1] 2:STATE?
GPIO In1/In2 Logic	:GPIO:INPut[1] 2:LOGic POSitive NEGative
	:GPIO:INPut[1] 2:LOGic?
Open Collector State	:OPENcollector[1]:STATE SHORt OPEN
	:OPENcollector[1]:STATE?

**:PTT[1]:STATE ON|OFF|1|0**

PTT

Function

This command enables/disables the PTT connector.

Command

`:PTT[1]:STATE <switch>`

Parameter

<code>&lt;switch&gt;</code>	PTT connector On/Off
<code>OFF 0</code>	Disables the PTT connector. (default)
<code>ON 1</code>	Enables the PTT connector.

Details

This is available only for TX mode.

Example of Use

To enable the PTT connector.

```
PTT:STAT ON
```

**:PTT[1]:STATE?**

PTT Query

Function

This command queries the PTT connector status.

Query

`:PTT[1]:STATE?`

Response

`<switch>`

Parameter

<code>&lt;switch&gt;</code>	PTT connector On/Off
<code>0</code>	PTT connector Off
<code>1</code>	PTT connector On

Example of Use

To query the PTT connector status.

```
PTT:STAT?
> 1
```

### **:PTT[1]:LOGic POSitive|NEGative**

PTT Logic

Function

Selects the PTT connector logic.

Command

```
:PTT[1]:LOGic <mode>
```

Parameter

<mode>	Logic for PTT connector
POSitive	Positive logic (default)
NEGative	Negative logic

Details

This is available only for TX mode.

Example of Use

To set the PTT connector to negative logic.

```
PTT:LOG NEG
```

### **:PTT[1]:LOGic?**

PTT Logic Query

Function

This command queries the PTT connector logic.

Query

```
:PTT[1]:LOGic?
```

Response

```
<mode>
```

Parameter

<mode>	Logic for PTT connector
POS	Positive logic
NEG	Negative logic

Example of Use

To query the PTT connector logic.

```
PTT:LOG?
```

```
> NEG
```



**:GPIO:OUTPut[1]|2:STATe ON|OFF|1|0**

GPIO Out1/Out2

## Function

This command enables/disables GPIO Out1 or Out2.

## Command

`:GPIO:OUTPut [1] | 2:STATe <switch>`

## Parameter

<code>&lt;switch&gt;</code>	GPIO Output On/Off
<code>OFF 0</code>	Disables the GPIO output. (default)
<code>ON 1</code>	Enables the GPIO output.

## Example of Use

To enable GPIO Out1.  
`GPIO:OUTP:STAT ON`

**:GPIO:OUTPut[1]|2:STATe?**

GPIO Out1/Out2 Query

## Function

This command queries the GPIO Out1 or Out2 status.

## Query

`:GPIO:OUTPut [1] | 2:STATe?`

## Response

`<switch>`

## Parameter

<code>&lt;switch&gt;</code>	GPIO Output On/Off
<code>0</code>	GPIO Output Off
<code>1</code>	GPIO Output On

## Example of Use

To query the GPIO Out1 status.  
`GPIO:OUTP:STAT?`  
`> 1`

### **:GPIO:OUTPut[1]|2:LOGic POSitive|NEGative**

GPIO Out1/Out2 Logic

Function

This command selects the GPIO Out1 or Out2 logic.

Command

```
:GPIO:OUTPut [1] | 2:LOGic <mode>
```

Parameter

<mode>	Logic for GPIO Output
POSitive	Positive Logic (default)
NEGative	Negative Logic

Example of Use

To set GPIO Out1 to negative logic.  
GPIO:OUTP:LOG NEG

### **:GPIO:OUTPut[1]|2:LOGic?**

GPIO Out1/Out2 Logic Query

Function

This command queries the GPIO Out1 or Out2 logic.

Query

```
:GPIO:OUTPut [1] | 2:LOGic?
```

Response

```
<mode>
```

Parameter

<mode>	Logic for GPIO Output
POS	Positive Logic
NEG	Negative Logic

Example of Use

To query the GPIO Out1 logic.  
GPIO:OUTP:LOG?  
> NEG

**:GPIO:INPut[1]|2:STATe?**

GPIO In1/In2 Query

## Function

This command queries the GPIO In1 or In2 status.

## Query

`:GPIO:INPut [1] | 2:STATe?`

## Response

`<switch>`

## Parameter

<code>&lt;switch&gt;</code>	GPIO Input On/Off
0	GPIO Input Off
1	GPIO Input On

## Example of Use

To query the GPIO In1 status.

`GPIO:INP:STAT?``> 1`**:GPIO:INPut[1]|2:LOGic POSitive|NEGative**

GPIO In1/In2 Logic

## Function

This command selects the GPIO In1 or In2 logic.

## Command

`:GPIO:INPut [1] | 2:LOGic <mode>`

## Parameter

<code>&lt;mode&gt;</code>	Logic for GPIO Input
POSitive	Positive Logic (default)
NEGative	Negative Logic

## Example of Use

To set GPIO In1 to negative logic.

`GPIO:INP:LOG NEG`

### **:GPIO:INPut[1]|2:LOGic?**

GPIO In1/In2 Logic Query

Function

This command queries the GPIO In1 or In2 logic.

Query

```
:GPIO:INPut [1] | 2:LOGic?
```

Response

```
<mode>
```

Parameter

<mode>	Logic for GPIO Input
POS	Positive Logic
NEG	Negative Logic

Example of Use

To query the GPIO In1 logic.

```
GPIO:INP:LOG?
```

```
> NEG
```

### **:OPENcollector[1]:STATe SHORt|OPEN**

Open Collector State

Function

This command selects Short or Open for the Open Collector connector.

Command

```
:OPENcollector[1]:STATe <switch>
```

Parameter

<switch>	State of Open Collector terminal
SHORt	Short
OPEN	Open (default)

Example of Use

To set the Open Collector connector to Short.

```
OPEN:STAT SHOR
```

**:OPENcollector[1]:STATe?**

Open Collector State Query

## Function

This command queries the Open Collector connector state.

## Command

`:OPENcollector[1]:STATe?`

## Parameter

<code>&lt;switch&gt;</code>	State of Open Collector terminal
<code>SHOR</code>	Short
<code>OPEN</code>	Open

## Example of Use

```
To query the Open Collector connector state.  
OPEN:STAT?  
> SHOR
```



## Chapter 3 SCPI Status Register

This chapter explains the SCPI commands used to read the state of the application and the status register.

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	:STATus:QUEStionable[:EVENT]? .....	3-6
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	:STATus:QUEStionable:MEASure:PTRansition <integer> .....	3-13
	:STATus:QUEStionable:MEASure:PTRansition? .....	3-13
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	:STATus:OPERation[:EVENT]? .....	3-15
	:STATus:OPERation:CONDition?.....	3-15
	:STATus:OPERation:ENABle <integer> .....	3-16
	:STATus:OPERation:ENABle? .....	3-16
	:STATus:OPERation:NTRansition <integer> .....	3-17
	:STATus:OPERation:NTRansition? .....	3-17
	:STATus:OPERation:PTRansition <integer> .....	3-18
	:STATus:OPERation:PTRansition? .....	3-18

## 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 (RF Input)
bit2: $2^2 = 4$	Timeout
bit3: $2^3 = 8$	Level Over (AF Input)
bit4: $2^4 = 16$	Clipping Audio Generator
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 Figure 3.2-1 and Figure 3.2-2, and Table 3.2-1 and Table 3.2-2.

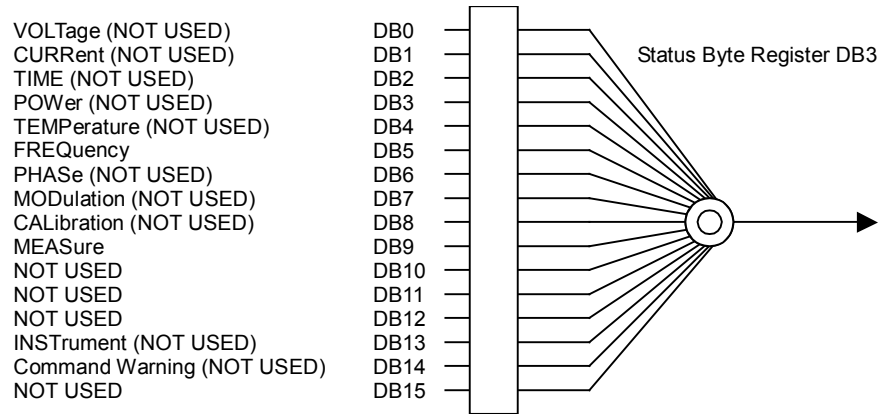


Figure 3.2-1 QUEStionable Status Register

Table 3.2-1 Bit Definition of QUEStionable Status Register

Bit	Definition
DB5	Reference Clock Unlock
DB9	QUEStionable Measure Register Summary

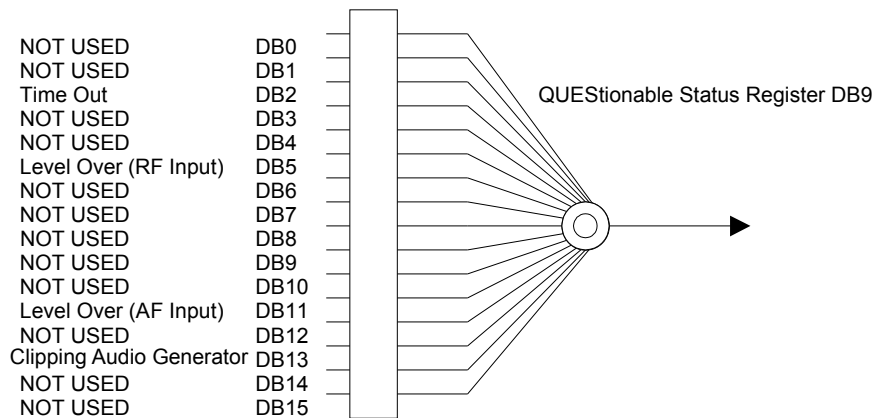


Figure 3.2-2 QUEStionable Measure Register

Table 3.2-2 Bit Definition of QUESTIONABLE Measure Register

Bit	Definition
DB2	Timeout
DB5	Level Over (RF Input)
DB11	Level Over (AF Input)
DB13	Clipping Audio Generator

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

<code>&lt;integer&gt;</code>	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

<code>&lt;integer&gt;</code>	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.

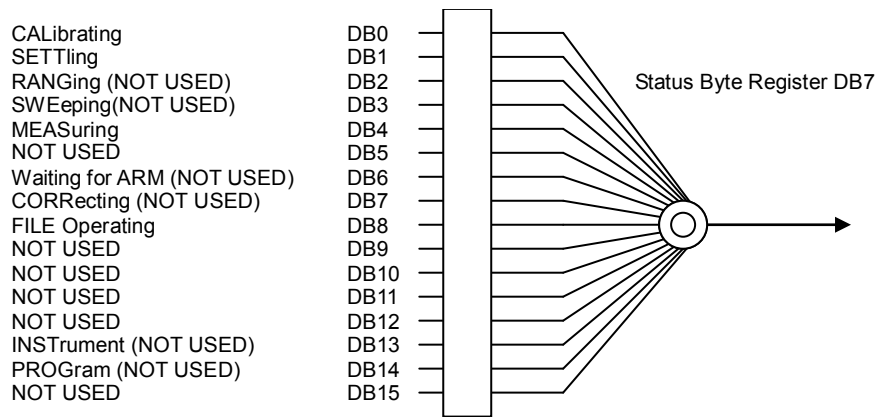


Figure 3.3-1 OPERation Status Register

Table 3.3-1 Bit Definition for OPERation Status Register

Bit	Definition
DB0	CAL Executed
DB1	Warm-up displayed
DB4	Capture executed

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

<code>&lt;integer&gt;</code>	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

<code>&lt;integer&gt;</code>	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
```