

A large, abstract graphic on the right side of the page. It features a light gray trapezoidal shape at the top, which tapers down to a point. Below this, a large blue triangle points upwards, overlapping the gray shape. The bottom of the graphic is a dark purple gradient that tapers to a point at the bottom right.

**3900 Series**  
**Digital Radio Test Set**  
HPD® Remote Programming Manual

# **3900 Series**

## **Digital Radio Test Set**

### **HPD® Remote Programming Manual**

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# Preface

## ABOUT THIS MANUAL

This manual identifies Remote Commands for the 3900 Series HPD® Software Options. Refer to the 3900 Series Remote Programming Manual for additional information about 3900 Remote Commands and commands for 3900 Test Instruments. The remote commands identified in this manual are only valid when HPD® Option(s) is installed in the Test Set. Refer to the 3900 Series Operation Manual for information pertaining to Test Set operation.

<b>NOTE</b>
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The remote commands listed in this manual include remote commands for the HPD® Advanced Analysis Package. These commands are only valid when the HPD® Advanced Analysis Package Option (R2092A) is installed in the Test Set.
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## NOMENCLATURE STATEMENT

The 3901, 3902 and 3920"x" Digital Radio Test Set is the official nomenclature for the test sets currently included in the 3900 Digital Radio Test Set Series. In this manual, 3900, unit or Test Set, refers to the 3901, 3902 and 3920"x" Digital Radio Test Sets unless otherwise indicated.

## INTENDED AUDIENCE

This manual is intended for personnel familiar with the use of remote command language and Test Set operation. Refer to the 3900 Series Operation Manual for information pertaining to Test Set operation. Refer to the 3900 Series Remote Programming Manual for additional information pertaining to 3900 Remote Commands structure.

## TEST SET REQUIREMENTS

Refer to the 3900 Series Operation Manual for information on the following:

- Safety Precautions
- Power Requirements
- Platform Performance Data Specifications
- Repacking / Shipping Test Set

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Chapter describes parameters found in Rx Meter returned data string.

### **CHAPTER 2 HPD® TRANSMIT AND RECEIVE REMOTE COMMANDS**

Chapter describes commands that define Transmit and Receive parameters.

### **CHAPTER 3 HPD® RX METER REMOTE COMMANDS**

Chapter describes commands that configure and return Rx Meter measurement data.

### **CHAPTER 4 MODULATION ACCURACY AND POWER REMOTE COMMANDS**

Chapter describes commands that configure and return Modulation Accuracy and Power measurements.

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# Chapter 1 - HPD® Rx Meter Return Data

## 1.1 INTRODUCTION

This chapter contains general information about HPD® Rx Meter return data. Refer to the 3900 Series Digital Radio Test Set Remote Programming Manual for detailed information about 3900 system remote commands.

### NOTE

Upper range value of 2.71 GHz applies to the 3902, 3920 and 3920x with 2.71 GHz Frequency Range option (390XOPT058) installed. The upper range value for the 3901 and standard 3920 and \*3920x is 1.05 GHz.

\*Refer to product specifications for additional information.

## 1.2 RX METER STATUS RETURN VALUE

HPD® Rx Meters return data is reported in the form of a data string. The data string includes the following data:

<statusbyte>,<failbyte>,<precision>,<%>,<avg>,<max>,<min>,<units>,<message response>

### 1.2.1 Statusbyte (Bitmask)

Statusbyte returns measurement reading status where:

- 0x0 = Valid
- 0x1 = Invalid
- 0x2 = Inaccurate
- 0x4 = Settling
- 0x8 = Squelch

### 1.2.2 Failbyte (Bitmask)

Failbyte indicates Pass/Fail status of defined upper and lower limits where:

- 0x80 = Worst Case Lower Limit
- 0x40 = Worst Case Upper Limit
- 0x20 = Average Lower Limit
- 0x10 = Average Upper Limit
- 0x08 = Maximum Lower Limit
- 0x04 = Maximum Upper Limit
- 0x02 = Minimum Lower Limit
- 0x01 = Minimum Upper Limit

### 1.2.3 Precision (Numeric)

Precision value indicates the number of numerals that follow the decimal point in the returned average, maximum and minimum readings.

**1.2.4 Percentage (Numeric)**

Percentage value indicates the percentage of averaging completed when remote command was issued. For example, if the over *n* burst field is set to 1000 bursts, and only 500 bursts have been obtained when the STATus command is issued, the returned Percentage value is 50.

**1.2.5 Average (Numeric)**

Value indicates average measurement reading.

**1.2.6 Maximum (Numeric)**

Value indicates maximum measurement reading.

**1.2.7 Minimum (Numeric)**

Value indicates minimum measurement reading.

**1.2.8 Unit of Measurement (Numeric)**

Returned value indicates the readings unit of measurement.

0 = No Units	5 = dB	10 = dB $\mu$ V	15 = Vrms
1 = %	6 = dBm	11 = W	16 = dBr
2 = Hz	7 = V	12 = mW	17 = dBV
3 = kHz	8 = mV	13 = $\mu$ W	18 = mHz
4 = MHz	9 = $\mu$ V	14 = dBW	19 = $\mu$ s

**1.2.9 Message Responses**

A message response is not always included at the end of the data string. The following are valid Message Responses which may be received when a remote command is sent.

“signal not acquired\n”

“timed out waiting for TraceMutex\n”

“timed out waiting for data\n”

---

## Chapter 2 - HPD® Transmit and Receive Remote Commands

### Introduction

This chapter describes the Remote Commands for configuring HPD® Transmit and Receive System Parameters. Commands are listed alphabetically under Transmit and Receiver headings.

### 2.1 TRANSMIT (GENERATOR) CONFIGURATION

#### 2.1.1 RF Control Settings - TDM Synchronization Enable

**:TRANsmit:TDMsyn:ENABLE**  
**:TRANsmit:TDMsyn:ENABLE?**

**Description:** Set command Enables/Disables Transmit TDM Synchronization.  
Query command returns parameter setting.

**Parameter:** OFF | ON | 0 | 1

**Default Value:** OFF

**Set/Query Format:** NR1

**Example:** :TRANsmit:TDMsyn:ENABLE 1  
Enables TDM Synchronization on the Transmit signal.

**Query Response:** :TRANsmit:TDMsyn:ENABLE?  
1

**NOTE**

Command only valid when Transmit Burst Type is Outbound.

#### 2.1.2 RF Control Settings - Transmit Burst Type

**:TRANsmit:BURST**  
**:TRANsmit:BURST?**

**Description:** Set command defines RF Generator Burst Type.  
Query command returns parameter setting.

**Parameter:** 0 = Outbound  
1 = Inbound Random  
2 = Inbound Reserved

**Default Value:** 0 (Outbound)

**Set/Query Format:** NR1

**Example:** :TRANsmit:BURST 1  
Sets Transmit Burst Type to Inbound Random.

**Query Response:** :TRANsmit:BURST?  
1

### 2.1.3 RF Control Settings - Transmit Frequency Drift

**:TRANsmit:FREQuency:DRIFt**

**:TRANsmit:FREQuency:DRIFt?**

**Description:** Set command defines RF Generator Frequency drift.  
Query command returns parameter setting.

**Range:** -10.0 to +10.0 Hz/sec

**Units:** Hz[/sec]

**Default Value:** 0.0 Hz/sec

**Set/Query Format:** NRf | NR2 (Hz)

**Example:** :TRANsmit:FREQuency:DRIFt 2.5Hz  
Sets Transmit Frequency Drift to 2.5 Hz.

**Query Response:** :TRANsmit:FREQuency:DRIFt?  
2.5000000000

### 2.1.4 RF Control Settings - Transmit Frequency Profile

**:TRANsmit:FREQuency:PROFile**

**:TRANsmit:FREQuency:PROFile?**

**Description:** Set command defines RF Generate Frequency Profile.  
Query command returns parameter setting.

**Range:** 1.0 to 1000.0 seconds

**Units:** seconds

**Default Value:** 1.0 sec

**Set/Query Format:** NRf | NR2

**Example:** :TRANsmit:FREQuency:PROFile 500  
Sets Transmit Frequency Profile to 500 seconds.

**Query Response:** :TRANsmit:FREQuency:PROFile?  
500.0000000000

### 2.1.5 RF Control Settings - Transmit HPD® Signal

**:TRANsmit:ENABle**

**:TRANsmit:ENABle?**

**Description:** Set command Enables/Disables signal transmission.  
Query command returns parameter setting.

**Parameter:** OFF | ON | 0 | 1

**Default Value:** OFF

**Set/Query Format:** NR1

**Example:** :TRANsmit:ENABle 1  
Enables transmission of HPD® signal.

**Query Response:** :TRANsmit:ENABle?  
1

### 2.1.6 RF Control Settings - Transmit Modulation Type

#### **:TRANsmit:MODulation**

#### **:TRANsmit:MODulation?**

**Description:** Set command defines RF Generator Modulation type.  
Query command returns parameter setting.

**Parameter:** 0 = QPSK  
1 = 16 QAM  
2 = 64 QAM

**Default Value:** 0 (QPSK)

**Set/Query Format:** NR1

**Example:** :TRANsmit:MODulation 2  
Sets Receive Modulation type to 64 QAM.

**Query Response:** :TRANsmit:MODulation?  
2

### 2.1.7 RF Control Settings - Transmit Pattern

#### **:TRANsmit:PATtern**

#### **:TRANsmit:PATtern?**

**Description:** Set command selects RF Generator Signal Pattern.  
Query command returns parameter setting.

**Parameter:** 0 = O.153 Standard  
1 = O.153 Standard with 1% BER

**Default Value:** 0 (O.153 Standard)

**Set/Query Format:** NR1

**Example:** :TRANsmit:PATtern 1  
Sets Transmit Pattern to O.153 Standard with 1% BER.

**Query Response:** :TRANsmit:PATtern?  
1

### 2.1.8 RF Control Settings - Transmit Pilot Sync Code (PSC)

#### **:TRANsmit:PHASe**

#### **:TRANsmit:PHASe?**

**Description:** Set command defines RF Generator Pilot Sync Code.  
Query command returns parameter setting.

**Range:** 0 to 6

**Default Value:** 0

**Set/Query Format:** NR1

**Example:** :TRANsmit:PHASe 2  
Sets Transmit PSC to 2.

**Query Response:** :TRANsmit:PHASe?  
2

### 2.1.9 RF Control Settings - Transmit Sync Mode

**:TRANsmit:SYNCmode**

**:TRANsmit:SYNCmode?**

**Description:** Set command defines RF Generator Sync mode of operation.  
Query command returns parameter setting.

**Parameter:** Burst Type Specific

**Outbound:** 0 = Free Running

**Inbound Random:** 0 = Free Running

**Inbound Reserved:** 0 = Free Running  
1 = TDO

**Default Value:** 0 (Free Running)

**Set/Query Format:** NR1

**Example:** :TRANsmit:SYNCmode 1  
Sets Transmit Sync Mode to TDO.

**Query Response:** :TRANsmit:SYNCmode?  
1

**NOTE**

TDO Parameter is only valid when Transmit Burst Type is set to Inbound Reserved.

### 2.1.10 RF Generator - Enable

**:RF:GENErator:ENABle**

**:RF:GENErator:ENABle?**

**Description:** Set command Enables/Disables RF Generator.  
Query command returns parameter setting.

**Parameter:** OFF | ON | 0 | 1

**Default Value:** ON

**Set/Query Format:** NR1

**Example:** :RF:GENErator:ENABle ON  
Enables RF Generator.

**Query Response:** :RF:GENErator:ENABle?  
1

### 2.1.11 RF Generator - Frequency

**:RF:GENErator:FREQuency**

**:RF:GENErator:FREQuency?**

**Description:** Set command defines RF Generator Frequency.  
Query command returns parameter setting.

**Range:** 100.0 kHz to 2.71 GHz

**Units:** Hz | kHz | MHz | GHz

**Default Value:** 150.0 MHz

**Set/Query Format:** NRf | NR1 (Hz)

**Example:** :RF:GENErator:FREQuency 850MHz  
Sets RF Generator Frequency to 850.0 MHz.

**Query Response:** :RF:GENErator:FREQuency?  
850000000

### 2.1.12 RF Generator - Level

**:RF:GENerator:LEVel**

**:RF:GENerator:LEVel?**

**Description:** Set command defines RF Generator Level.  
Query command returns parameter setting.

**Range:** **TR:** -138.0 to -40.0 dBm

**GEN:** -130.0 to 0.0 dBm

**Units:** dBm

**Default Value:** -80.0 dBm

**Set/Query Format:** NRf | NR2

**Example:** :RF:GENerator:LEVel -75dBm  
Set RF Generator Level to -75.0 dBm.

**Query Response:** :RF:GENerator:LEVel?  
-75.0

### 2.1.13 RF Generator - Output Connector

**:RF:GENerator:PORT**

**:RF:GENerator:PORT?**

**Description:** Set command selects the RF Output connector.  
Query command returns parameter setting.

**Parameter:** TR | GEN

**Default Value:** TR

**Set/Query Format:** CPD | CRD

**Example:** :RF:GENerator:PORT GEN  
Selected Generator Connector as RF Output Connector.

**Query Response:** :RF:GENerator:PORT?  
GEN

## 2.2 RECEIVER (ANALYZER) CONFIGURATION

### 2.2.1 Duplex Frequency - Offset Enable

**:CONFigure:OFFSet:DUPLex:LOCK**

**:CONFigure:OFFSet:DUPLex:LOCK?**

**Description:** Set command defines the Duplex Offset mode of operation.  
Query command returns parameter setting.

**Parameter:** OFF | ON | 0 | 1

**Default Value:** OFF (Unlocked)

**Set/Query Format:** Boolean

**Example:** :CONFigure:OFFSet:DUPLex:LOCK ON  
Locks Duplex Frequency Offset to RF Analyzer Frequency.

**Query Response:** :CONFigure:OFFSet:DUPLex:LOCK?  
1

**NOTE**

Offset value defaults to 0.0 unless defined by user.

### 2.2.2 Duplex Frequency - Offset Value

**:CONFigure:OFFSet:DUPLex:VALue**

**:CONFigure:OFFSet:DUPLex:VALue?**

**Description:** Set command defines the Duplex Offset Value.  
Query command returns parameter setting.

**Range:** 100.0 kHz to 2.71 GHz

**Units:** Hz | kHz | MHz | GHz

**Default Value:** 0.00000 MHz

**Set/Query Format:** NRf | NR1 (Hz)

**Example:** :CONFigure:OFFSet:DUPLex:VALue 15MHz  
Sets Duplex Offset to 15.0 MHz.

**Query Response:** :CONFigure:OFFSet:DUPLex:VALue?  
15000000 (Hz)

### 2.2.3 RF Analyzer - Input Connector

**:RF:ANALyzer:PORT**

**:RF:ANALyzer:PORT?**

**Description:** Set command selects the RF Input Connector.  
Query command returns parameter setting.

**Parameter:** TR | ANT

**Default Value:** TR

**Set/Query Format:** CPD | CRD

**Example:** :RF:ANALyzer:PORT ANT  
Selects Antenna Connector as RF Input connector.

**Query Response:** :RF:ANALyzer:PORT?  
ANT

**NOTE**

Refer to 3900 Platform Specifications for maximum input values.



### 2.2.4 RF Analyzer - Pre-Amplifier Enable

**:RF:ANALyzer:RECeiver:AMP**

**:RF:ANALyzer:RECeiver:AMP?**

**Description:** Set command Enables/Disables Receiver Pre-Amplifier.  
Query command returns parameter setting.

**Parameter:** OFF | ON | 0 | 1

**Default Value:** OFF

**Set/Query Format:** Boolean

**Example:** :RF:ANALyzer:RECeiver:AMP ON  
Enables Receive Pre-Amplifier.

**Query Response:** :RF:ANALyzer:RECeiver:AMP?  
1

### 2.2.5 RF Analyzer - Receive Frequency

**:RF:ANALyzer:FREQuency**

**:RF:ANALyzer:FREQuency?**

**Description:** Set command defines the RF Analyzer Frequency when in Manual Mode of operation.  
Query command returns parameter setting.

**Range:** 100.0 kHz to 2.71 GHz

**Units** Hz | kHz | MHz | GHz

**Default Value:** 150.0 MHz

**Set/Query Format:** NRF | NR1 (Hz)

**Example:** :RF:ANALyzer:FREQuency 650MHz  
Sets RF Analyzer Frequency to 650.0 MHz.

**Query Response:** :RF:ANALyzer:FREQuency?  
650000000

### 2.2.6 RF Control Settings - Header Block Format Query

**:HEADer:BKF?**

**Description:** Command returns Received BKF value.

**Query Data:** 3 Bits (NR1)

**Query Response:** :HEADer:BKF?  
2

### 2.2.7 RF Control Settings - Header Coding Scheme Query

**:HEADer:COs?**

**Description:** Command returns Received COS value.

**Query Data:** 2 Bits (NR1)

**Query Response:** :HEADer:COs?  
0

### 2.2.8 RF Control Settings - Header Logical Channel Multiplexing Query

#### **:HEADer:LCM?**

**Description:** Command returns Received LCM value.

**Query Data:** 3 Bits (NR1)

**Query Response:** :HEADer:LCM?  
0

### 2.2.9 RF Control Settings - Header Subscriber Access Code Query

#### **:HEADer:SAC?**

**Description:** Command returns Received SAC value.

**Query Data:** 12 Bits (NR1)

**Query Response:** :HEADer:SAC?  
4095

### 2.2.10 RF Control Settings - Receive Burst Type

#### **:RECEive:BURST**

#### **:RECEive:BURST?**

**Description:** Set command defines Receive Burst type.  
Query command returns parameter setting.

**Parameter:** 0 = Outbound  
1 = Inbound Random  
2 = Inbound Reserved

**Default Value:** 0 (Outbound)

**Set/Query Format:** NR1

**Example:** :RECEive:BURST 1  
Sets Received Burst Type to Inbound Random.

**Query Response:** :RECEive:BURST?  
1

### 2.2.11 RF Control Settings - Receive IF Bandwidth Filter

**:RECEive:IFFilter**  
**:RECEive:IFFilter?**

**Description:** Set command defines Receiver IF Bandwidth Filter.  
Query command returns parameter setting.

**Parameter:** 0 = Cabled (Wideband)  
1 = Off Air (Narrowband)

**Default Value:** 0 (Cabled)

**Set/Query Format:** NR1

**Example:** :RECEive:IFFilter 1  
Sets Received IF Filter to Off Air (Narrowband).

**Query Response:** :RECEive:IFFilter?  
1

<b>NOTE</b>
-------------

Wideband filter is appropriate for test setup in which UUT is connected to Test Set via test cable.

Narrowband filter is appropriate when UUT is being tested in an over the air scenario.

### 2.2.12 RF Control Settings - Receive Mode

**:RECEive:MODE**  
**:RECEive:MODE?**

**Description:** Set command defines Receive mode of operation.  
Query command returns parameter setting.

**Parameter:** 0 = Manual  
1 = Automatic

**Default Value:** 1 (Automatic)

**Set/Query Format:** NR1

**Example:** :RECEive:MODE 0  
Sets Receive mode of operation to Manual.

**Query Response:** :RECEive:MODE?  
0

<b>NOTE</b>
-------------

When Manual Mode is selected, Receive Modulation must be defined.

### 2.2.13 RF Control Settings - Receive Modulation Type

#### **:RECEive:MODulation**

#### **:RECEive:MODulation?**

**Description:** Set command defines Receive Modulation type.  
Query command returns parameter setting.

**Parameter:** 0 = QPSK  
1 = 16 QAM  
2 = 64 QAM

**Default Value:** 0 (QPSK)

**Set/Query Format:** NR1

**Example:** :RECEive:MODulation 2  
Sets Receive Modulation type to 64 QAM.

**Query Response:** :RECEive:MODulation?  
2

**NOTE**

Receive Mode must be set to Manual for command to be valid.

### 2.2.14 RF Control Settings - Receive Pilot Sync Code (PSC)

#### **:RECEive:PHASe**

#### **:RECEive:PHASe?**

**Description:** Set command defines Receive Pilot Sync Code.  
Query command returns parameter setting.

**Range:** 0 to 6

**Default Value:** 0

**Set/Query Format:** NR1

**Example:** :RECEive:PHASe 2  
Sets Receive PSC to 2.

**Query Response:** :RECEive:PHASe?  
2

### 2.2.15 RF Control Settings - Receive Sync Mode

**:RECEIVE:SYNCmode**

**:RECEIVE:SYNCmode?**

**Description:** Set command defines Receive Sync mode of operation.  
Query command returns parameter setting.

**Parameter:** Burst Type Specific

**Outbound:** 0 = Free Running

**Inbound Random:** 0 = Free Running

**Inbound Reserved:** 0 = Free Running  
1 = TDO

**Default Value:** 0 (Free Running)

**Set/Query Format:** NR1

**Example:** :RECEIVE:SYNCmode 1  
Sets Receive Sync Mode to TDO.

**Query Response:** :RECEIVE:SYNCmode?  
1

**NOTE**

TDO Parameter is only valid when Receive Burst Type is set to Inbound Reserved.

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## Chapter 3 - HPD® Rx Meter Remote Commands

### 3.1 INTRODUCTION

This chapter describes the Remote Commands used for configuring and obtaining HPD® Rx Meter data. Remote Commands are listed alphabetically under meter names.

### 3.2 RESET METERS

#### 3.2.1 Reset Signal Acquisition

##### **:RECEive:RESET:ACQuisition**

**Description:** Command resets signal acquisition.

**Parameter/Query:** none

### 3.3 AMPLITUDE IMBALANCE

#### 3.3.1 Amplitude Imbalance - Averages

##### **:METERs:AMPImb:AVERaging**

##### **:METERs:AMPImb:AVERaging?**

**Description:** Set command defines number of readings taken to calculate Average Amplitude Imbalance measurement.

Query command returns parameter setting.

**Range:** 1 to 100,000

**Default Value:** 20

**Set/Query Format:** NR1

**Example:** :METERs:AMPImb:AVERaging 100

Sets the number of readings taken to calculate Average Amplitude Imbalance measurement to 100.

**Query Response:** :METERs:AMPImb:AVERaging?  
100

#### 3.3.2 Amplitude Imbalance - Average Measurement Reset

##### **:METERs:AMPImb:CLEAR:AVG**

**Description:** Command clears and resets Average Amplitude Imbalance measurement.

**Parameter/Query:** none

### 3.3.3 Amplitude Imbalance - Lower Limit Enable

**:LIMits:AMPImb:LLIMit:ENABLE**

**:LIMits:AMPImb:LLIMit:ENABLE?**

**Description:** Set command Enables/Disables Lower Limit for Amplitude Imbalance measurement.

Query command returns parameter setting.

**Parameter:** OFF | ON | 0 | 1

**Default Value:** OFF

**Set/Query Format:** NR1

**Example:** :LIMits:AMPImb:LLIMit:ENABLE 1

Enables Lower Limit for Amplitude Imbalance measurement.

**Query Response:** :LIMits:AMPImb:LLIMit:ENABLE?

1

### 3.3.4 Amplitude Imbalance - Lower Limit Value

**:LIMits:AMPImb:LLIMit:VALue**

**:LIMits:AMPImb:LLIMit:VALue?**

**Description:** Set command defines Lower Limit Value for Amplitude Imbalance measurement.

Query command returns parameter setting.

**Range:** -10.00 to +10.00 dB

**Units:** dB

**Default Value:** 0.0 dB

**Set/Query Format:** NRf | NR2

**Example:** :LIMits:AMPImb:LLIMit:VALue 5dB

Sets Lower Limit Value for Amplitude Imbalance measurement to 5.0 dB.

**Query Response:** :LIMits:AMPImb:LLIMit:VALue?

5.00



### 3.3.5 Amplitude Imbalance - Measurement Query

#### **:METERs:AMPImb:STATUs?**

**Description:** Command returns Amplitude Imbalance measurement data.

**Query Data:** <statusbyte>,<failbyte>,<precision>,<percentage>,<avg>,<max>,<min>,<units>

**statusbyte (NR1):** Bitmask  
 0x0 = Valid  
 0x1 = Invalid  
 0x2 = Inaccurate  
 0x4 = Settling  
 0x8 = Squelch

**failbyte (NR1):** Bitmask  
 0x80 = WC Lower Limit  
 0x40 = WC Upper Limit  
 0x20 = Avg Lower Limit  
 0x10 = Avg Upper Limit  
 0x08 = Max Lower Limit  
 0x04 = Max Upper Limit  
 0x02 = Min Lower Limit  
 0x01 = Min Upper Limit

**precision (NR1):** Value indicates number of numerals that follow the decimal point in returned average, maximum and minimum readings.

**percentage (NR1):** Percentage value indicates the percentage of averaging completed when remote command was issued.

**avg,max,min (NR2):** <units>

<b>units (NR1):</b>	0 = No Units	5 = dB	10 = dBµV	15 = Vrms
	1 = %	6 = dBm	11 = W	16 = dBr
	2 = Hz	7 = V	12 = mW	17 = dBV
	3 = kHz	8 = mV	13 = µW	18 = mHz
	4 = MHz	9 = µV	14 = dBW	19 = µs

**status messages:** when present:  
 signal not acquired\n  
 timed out waiting for TraceMutex\n  
 timed out waiting for data\n

**Query Response:** :METERs:AMPImb:STATUs?  
 0,0,3, 100.000, -0.068, 0.029, -0.156,5

### 3.3.6 Amplitude Imbalance - Peak Measurement Reset

#### **:METERs:AMPImb:CLEAR:PEAK**

**Description:** Command clears and resets Peak Amplitude Imbalance measurement.

**Parameter/Query:** none

### 3.3.7 Amplitude Imbalance - Upper Limit Enable

**:LIMits:AMPImb:ULIMit:ENABle**

**:LIMits:AMPImb:ULIMit:ENABle?**

**Description:** Set command Enables/Disables Upper Limit for Amplitude Imbalance measurement.

Query command returns parameter setting.

**Parameter:** OFF | ON | 0 | 1

**Default Value:** OFF

**Set/Query Format:** NR1

**Example:** :LIMits:AMPImb:ULIMit:ENABle 1

Enables Upper Limit for Amplitude Imbalance measurement.

**Query Response:** :LIMits:AMPImb:ULIMit:ENABle?

1

### 3.3.8 Amplitude Imbalance - Upper Limit Value

**:LIMits:AMPImb:ULIMit:VALue**

**:LIMits:AMPImb:ULIMit:VALue?**

**Description:** Set command defines Upper Limit Value for Amplitude Imbalance measurement.

Query command returns parameter setting.

**Range:** -10.00 to +10.00 dB

**Units:** dB

**Default Value:** 0.0 dB

**Set/Query Format:** NRf | NR2

**Example:** :LIMits:AMPImb:ULIMit:VALue -5dB

Sets Upper Limit Value for Amplitude Imbalance measurement to -5.0 dB.

**Query Response:** :LIMits:AMPImb:ULIMit:VALue?

-5.00

### 3.4 BIT ERROR RATE (BER)

#### 3.4.1 Bit Error Rate - Averages

**:METERs:BER:AVERaging**  
**:METERs:BER:AVERaging?**

**Description:** Set command defines the number of readings taken to calculate Average Bit Error Rate measurement.  
 Query command returns parameter setting.

**Range:** 1 to 100,000

**Default Value:** 20

**Set/Query Format:** NR1

**Example:** :METERs:BER:AVERaging 100  
 Sets the number of readings taken to calculate Average Bit Error Rate measurement to 100.

**Query Response:** :METERs:BER:AVERaging?  
 100

#### 3.4.2 Bit Error Rate - Average Measurement Reset

**:METERs:BER:CLEAR:AVG**

**Description:** Command clears and resets Average Bit Error Rate measurements.

**Parameter/Query:** none

#### 3.4.3 Bit Error Rate - Lower Limit Enable

**:LIMits:BER:LLIMit:ENABLE**  
**:LIMits:BER:LLIMit:ENABLE?**

**Description:** Set command Enables/Disables Lower Limit for Bit Error Rate measurement.  
 Query command returns parameter setting.

**Parameter:** OFF | ON | 0 | 1

**Default Value:** OFF

**Set/Query Format:** NR1

**Example:** :LIMits:BER:LLIMit:ENABLE 1  
 Enables Lower Limit for Bit Error Rate measurement.

**Query Response:** :LIMits:BER:LLIMit:ENABLE?  
 1

### 3.4.4 Bit Error Rate - Lower Limit Value

**:LIMits:BER:LLIMit:VALue**  
**:LIMits:BER:LLIMit:VALue?**

**Description:** Set command defines Lower Limit Value for Bit Error Rate measurement.  
 Query command returns parameter setting.

**Range:** 0.0 to 1.0%

**Units:** % (percent)

**Default Value:** 0.0%

**Set/Query Format:** NRf | NR2

**Example:** :LIMits:BER:LLIMit:VALue .05

Sets Lower Limit Value for Bit Error Rate measurement to 0.05%.

**Query Response:** :LIMits:BER:LLIMit:VALue?  
 0.0500000000

### 3.4.5 Bit Error Rate - Measurement Query

**:METERs:BER:STATUs?**

**Description:** Command returns Bit Error Rate measurement data.

**Query Data:** <statusbyte>,<failbyte>,<precision>,<percentage>,<avg>,<max>,<min>,<units>

**statusbyte (NR1):** (Bitmask)

0x0 = Valid
0x1 = Invalid
0x2 = Inaccurate
0x4 = Settling
0x8 = Squelch

**failbyte (NR1):** (Bitmask)

0x80 = WC Lower Limit	0x08 = Max Lower Limit
0x40 = WC Upper Limit	0x04 = Max Upper Limit
0x20 = Avg Lower Limit	0x02 = Min Lower Limit
0x10 = Avg Upper Limit	0x01 = Min Upper Limit

**precision (NR1):** Value indicates number of numerals that follow the decimal point in returned average, maximum and minimum readings.

**percentage (NR1):** Percentage value indicates the percentage of averaging completed when remote command was issued.

**avg,max,min (NR2):** <units>

**units (NR1):**

0 = No Units	5 = dB	10 = dBµV	15 = Vrms
1 = %	6 = dBm	11 = W	16 = dBr
2 = Hz	7 = V	12 = mW	17 = dBV
3 = kHz	8 = mV	13 = µW	18 = mHz
4 = MHz	9 = µV	14 = dBW	19 = µs

**status messages:** when present:  
 signal not acquired\n  
 timed out waiting for TraceMutex\n  
 timed out waiting for data\n

**Query Response:** :METERs:BER:STATUs?  
 0,0,10, 100.000, 0.0099751540,0.0100574717,0.0000000000,0

### 3.4.6 Bit Error Rate - Peak Measurement Reset

**:METERs:BER:CLEAR:PEAK**

**Description:** Command clears and resets Peak Bit Error Rate measurement.

**Parameter/Query:** none

### 3.4.7 Bit Error Rate - Top of Scale (Range) Setting

**:METERs:BER:TOS**

**:METERs:BER:TOS?**

**Description:** Set command defines Bit Error Rate top of scale (range) value.  
Query command returns parameter setting.

**Range:** 0 to 6

**where:** 0 = Auto  
1 = 1.0  
2 = 0.1  
3 = 0.01  
4 = 0.001  
5 = 0.0001  
6 = 0.00001

**Default Value:** 0 (Auto)

**Set/Query Format:** NR1

**Example:** :METERs:BER:TOS 2  
Sets Bit Error Rate top of scale (range) to 0.1.

**Query Response:** :METERs:BER:TOS?  
2

### 3.4.8 Bit Error Rate - Upper Limit Enable

**:LIMits:BER:ULIMit:ENABLE**

**:LIMits:BER:ULIMit:ENABLE?**

**Description:** Set command Enables/Disables Upper Limit for Bit Error Rate measurement.  
Query command returns parameter setting.

**Parameter:** OFF | ON | 0 | 1

**Default Value:** OFF

**Set/Query Format:** NR1

**Example:** :LIMits:BER:ULIMit:ENABLE 1  
Enables Upper Limit for Bit Error Rate measurement.

**Query Response:** :LIMits:BER:ULIMit:ENABLE?  
1

### 3.4.9 Bit Error Rate - Upper Limit Value

**:LIMits:BER:ULIMit:VALue**

**:LIMits:BER:ULIMit:VALue?**

**Description:** Set command defines Upper Limit Value for Bit Error Rate measurement.  
Query command returns parameter setting.

**Range:** 0.0 to 1.0%

**Units:** % (percent)

**Default Value:** 0.0%

**Set/Query Format:** NRf | NR2

**Example:** :LIMits:BER:ULIMit:VALue .75

Sets Upper Limit Value for Bit Error Rate measurement to 0.75%.

**Query Response:** :LIMits:BER:ULIMit:VALue?

0.7500000000

### 3.5 BURST TIMING ERROR

#### 3.5.1 Burst Timing Error - Averages

**:METERs:BTE:AVERaging**  
**:METERs:BTE:AVERaging?**

**Description:** Set command defines number of readings taken to calculate Average Burst Timing Error measurement.  
 Query command returns parameter setting.

**Range:** 1 to 100,000

**Default Value:** 20

**Set/Query Format:** NR1

**Example:** :METERs:BTE:AVERaging 100

Sets the number of readings taken to calculate Burst Timing Error measurement to 100.

**Query Response:** :METERs:BTE:AVERaging?  
 100

#### 3.5.2 Burst Timing Error - Average Measurement Reset

**:METERs:BTE:CLEAR:AVG**

**Description:** Command clears and resets Average Burst Timing Error measurement.

**Parameter/Query:** none

#### 3.5.3 Burst Timing Error - Lower Limit Enable

**:LIMits:BTE:LLIMit:ENABLE**  
**:LIMits:BTE:LLIMit:ENABLE?**

**Description:** Set command Enables/Disables Lower Limit for Burst Timing Error measurement.  
 Query command returns parameter setting.

**Parameter:** OFF | ON | 0 | 1

**Default Value:** OFF

**Set/Query Format:** NR1

**Example:** :LIMits:BTE:LLIMit:ENABLE 1

Enables Lower Limit for Burst Timing Error measurement.

**Query Response:** :LIMits:BTE:LLIMit:ENABLE?  
 1

### 3.5.4 Burst Timing Error - Lower Limit Value

**:LIMits:BTE:LLIMit:VALue**  
**:LIMits:BTE:LLIMit:VALue?**

**Description:** Set command defines Lower Limit Value for Burst Timing Error measurement. Query command returns parameter setting.

**Range:** -1500.0 to +1500.0  $\mu$ s

**Units:**  $\mu$ s

**Default Value:** 0.0  $\mu$ s

**Set/Query Format:** NRf | NR2

**Example:** :LIMits:BTE:LLIMit:VALue -500 $\mu$ s  
 Sets Lower Limit Value for Burst Timing Error measurements to -500.0  $\mu$ s.

**Query Response:** :LIMits:BTE:LLIMit:VALue?  
 -500.000000

### 3.5.5 Burst Timing Error - Measurement Query

**:METERs:BTE:STATus?**

**Description:** Command returns Burst Timing Error measurement data.

**Query Data:** <statusbyte>, <failbyte>, <precision>, <percentage>, <avg>, <max>, <min>, <units>

**statusbyte (NR1):** Bitmask  
 0x0 = Valid  
 0x1 = Invalid  
 0x2 = Inaccurate  
 0x4 = Settling  
 0x8 = Squelch

**failbyte (NR1):** Bitmask  
 0x80 = WC Lower Limit  
 0x40 = WC Upper Limit  
 0x20 = Avg Lower Limit  
 0x10 = Avg Upper Limit  
 0x08 = Max Lower Limit  
 0x04 = Max Upper Limit  
 0x02 = Min Lower Limit  
 0x01 = Min Upper Limit

**precision (NR1):** Value indicates number of numerals that follow the decimal point in returned average, maximum and minimum readings.

**percentage (NR1):** Percentage value indicates the percentage of averaging completed when remote command was issued.

**avg,max,min (NR2):** <units>

<b>units (NR1):</b>	0 = No Units	5 = dB	10 = dB $\mu$ V	15 = Vrms
	1 = %	6 = dBm	11 = W	16 = dBr
	2 = Hz	7 = V	12 = mW	17 = dBV
	3 = kHz	8 = mV	13 = $\mu$ W	18 = mHz
	4 = MHz	9 = $\mu$ V	14 = dBW	19 = $\mu$ s

**status messages:** signal not acquired\n  
**(when present)** timed out waiting for TraceMutex\n  
 timed out waiting for data\n

**Query Response:** :METERs:BTE:STATus?  
 5,0,3 0.000, 0.000, 0.000, 0.000,19

**NOTE**

Receive Sync Mode must be set to TDO for command to be valid.



### 3.5.6 Burst Timing Error - Peak Measurement Reset

#### **:METERs:BTE:CLEAR:PEAK**

**Description:** Command clears and resets Peak Burst Timing Error measurement.

**Parameter/Query:** none

### 3.5.7 Burst Timing Error - Top of Scale (Range) Setting

#### **:METERs:BTE:TOS**

#### **:METERs:BTE:TOS?**

**Description:** Set command defines Burst Timing Error top of scale (range) value.  
Query command returns parameter setting.

**Range:** 0 to 8

**where:** 0 = Auto  
1 = 2000  $\mu$ s  
2 = 1000  $\mu$ s  
3 = 500  $\mu$ s  
4 = 200  $\mu$ s  
5 = 100  $\mu$ s  
6 = 50  $\mu$ s  
7 = 20  $\mu$ s  
8 = 10  $\mu$ s

**Default Value:** 0 (Auto)

**Set/Query Format:** NR1

**Example:** :METERs:BTE:TOS 2

Sets Burst Timing Error top of scale (range) to 100  $\mu$ s.

**Query Response:** :METERs:BTE:TOS?

2

### 3.5.8 Burst Timing Error - Upper Limit Enable

#### **:LIMits:BTE:ULIMit:ENABLE**

#### **:LIMits:BTE:ULIMit:ENABLE?**

**Description:** Set command Enables/Disables Upper Limit for Burst Timing Error measurement.

Query command returns parameter setting.

**Parameter:** OFF | ON | 0 | 1

**Default Value:** OFF

**Set/Query Format:** NR1

**Example:** :LIMits:BTE:ULIMit:ENABLE 1

Enables Upper Limit for Burst Timing Error measurement.

**Query Response:** :LIMits:BTE:ULIMit:ENABLE?

1

### 3.5.9 Burst Timing Error - Upper Limit Value

**:LIMits:BTE:ULIMit:VALue**

**:LIMits:BTE:ULIMit:VALue?**

**Description:** Set command defines Upper Limit Value for Burst Timing Error measurement.  
Query command returns parameter setting.

**Range:** -1500.0 to +1500.0  $\mu$ s

**Units:**  $\mu$ s

**Default Value:** 0.0  $\mu$ s

**Set/Query Format:** NRf | NR1

**Example:** :LIMits:BTE:ULIMit:VALue 500 $\mu$ s

Sets Upper Limit Value for Burst Timing Error measurements to 500.0  $\mu$ s.

**Query Response:** :LIMits:BTE:ULIMit:VALue?  
500.000000

## 3.6 CARRIER FEEDTHROUGH

### 3.6.1 Carrier Feedthrough - Averages

**:METERs:CARRft:AVERaging**

**:METERs:CARRft:AVERaging?**

**Description:** Set command defines number of readings taken to calculate Average Carrier Feedthrough measurement.  
Query command returns parameter setting.

**Range:** 1 to 100,000

**Default Value:** 20

**Set/Query Format:** NR1

**Example:** :METERs:CARRft:AVERaging 100  
Sets the number of readings taken to calculate Carrier Feedthrough measurement to 100.

**Query Response:** :METERs:CARRft:AVERaging?  
100

### 3.6.2 Carrier Feedthrough - Average Measurement Reset

**:METERs:CARRft:CLEAR:AVG**

**Description:** Command clears and resets Average Carrier Feedthrough measurement.

**Parameter/Query:** none

### 3.6.3 Carrier Feedthrough - Lower Limit Enable

**:LIMits:CARRft:LLIMit:ENABLE**

**:LIMits:CARRft:LLIMit:ENABLE?**

**Description:** Set command Enables/Disables Lower Limit for Carrier Feedthrough measurement.  
Query command returns parameter setting.

**Parameter:** OFF | ON | 0 | 1

**Default Value:** OFF

**Set/Query Format:** NR1

**Example:** :LIMits:CARRft:LLIMit:ENABLE 1  
Enables Lower Limit for Carrier Feedthrough measurement.

**Query Response:** :LIMits:CARRft:LLIMit:ENABLE?  
1

### 3.6.4 Carrier Feedthrough - Lower Limit Value

**:LIMits:CARRft:LLIMit:VALue**

**:LIMits:CARRft:LLIMit:VALue?**

**Description:** Set command defines Lower Limit Value for Carrier Feedthrough measurement. Query command returns parameter setting.

**Range:** -1000.00 to 0.0 dB

**Units:** dB

**Default Value:** 0.0 dB

**Set/Query Format:** NRf | NR2

**Example:** :LIMits:CARRft:LLIMit:VALue -250dB  
Sets Lower Limit Value for Carrier Feedthrough measurement to -250.0 dB.

**Query Response:** :LIMits:CARRft:LLIMit:VALue?  
250.00

### 3.6.5 Carrier FeedThrough - Measurement Query

**:METERs:CARRft:STATUs?**

**Description:** Command returns Carrier FeedThrough measurement data.

**Query Data:** <statusbyte>,<failbyte>,<precision>,<percentage>,<avg>,<max>,<min>,<units>

**statusbyte (NR1):** Bitmask  
0x0 = Valid  
0x1 = Invalid  
0x2 = Inaccurate  
0x4 = Settling  
0x8 = Squelch

**failbyte (NR1):** Bitmask  
0x80 = WC Lower Limit  
0x40 = WC Upper Limit  
0x20 = Avg Lower Limit  
0x10 = Avg Upper Limit  
0x08 = Max Lower Limit  
0x04 = Max Upper Limit  
0x02 = Min Lower Limit  
0x01 = Min Upper Limit

**precision (NR1):** Value indicates number of numerals that follow the decimal point in returned average, maximum and minimum readings.

**percentage (NR1):** Percentage value indicates the percentage of averaging completed when remote command was issued.

**avg,max,min (NR2):** <units>

<b>units (NR1):</b>	0 = No Units	5 = dB	10 = dBµV	15 = Vrms
	1 = %	6 = dBm	11 = W	16 = dBr
	2 = Hz	7 = V	12 = mW	17 = dBV
	3 = kHz	8 = mV	13 = µW	18 = mHz
	4 = MHz	9 = µV	14 = dBW	19 = µs

**status messages:** when present:  
signal not acquired\n  
timed out waiting for TraceMutex\n  
timed out waiting for data\n

**Query Response:** :METERs:CARRft:STATUs?  
0,0,3, 100.000, -29.948, -22.834, -48.997,5

### 3.6.6 Carrier Feedthrough - Peak Measurement Reset

**:METERs:CARRft:CLEAR:PEAK**

**Description:** Command clears and resets Peak Carrier Feedthrough measurement.

**Parameter/Query:** none

### 3.6.7 Carrier Feedthrough - Upper Limit Enable

**:LIMits:CARRft:ULIMit:ENABLE**

**:LIMits:CARRft:ULIMit:ENABLE?**

**Description:** Set command Enables/Disables Upper Limit for Carrier Feedthrough measurement.

Query command returns parameter setting.

**Parameter:** OFF | ON | 0 | 1

**Default Value:** OFF

**Set/Query Format:** NR1

**Example:** :LIMits:CARRft:ULIMit:ENABLE 1

Enables Upper Limit for Carrier Feedthrough measurement.

**Query Response:** :LIMits:CARRft:ULIMit:ENABLE?

1

### 3.6.8 Carrier Feedthrough - Upper Limit Value

**:LIMits:CARRft:ULIMit:VALue**

**:LIMits:CARRft:ULIMit:VALue?**

**Description:** Set command defines Upper Limit Value for Carrier Feedthrough measurement.

Query command returns parameter setting.

**Range:** -1000.00 to 0.0 dB

**Units:** dB

**Default Value:** 0.0 dB

**Set/Query Format:** NRf | NR2

**Example:** :LIMits:CARRft:ULIMit:VALue -500dB

Sets Upper Limit Value for Carrier Feedthrough measurement to -500.00 dB.

**Query Response:** :LIMits:CARRft:ULIMit:VALue?

500.00

## 3.7 ERROR VECTOR MAGNITUDE

### 3.7.1 Error Vector Magnitude - Averages

**:METERs:EVM:AVERaging**

**:METERs:EVM:AVERaging?**

**Description:** Set command defines number of readings taken to calculate Average Error Vector Magnitude measurement.

Query command returns parameter setting.

**Range:** 1 to 100,000

**Default Value:** 20

**Set/Query Format:** NR1

**Example:** :METERs:EVM:AVERaging 100

Sets the number of readings taken to calculate Error Vector Magnitude measurement to 100.

**Query Response:** :METERs:EVM:AVERaging?  
100

### 3.7.2 Error Vector Magnitude - Average Measurement Reset

**:METERs:EVM:CLEAR:AVG**

**Description:** Command clears and resets Average Error Vector Magnitude measurement.

**Parameter/Query:** none

### 3.7.3 Error Vector Magnitude - Lower Limit Enable

**:LIMits:EVM:LLIMit:ENABLE**

**:LIMits:EVM:LLIMit:ENABLE?**

**Description:** Set command Enables/Disables Lower Limit for Error Vector Magnitude measurement.

Query command returns parameter setting.

**Parameter:** OFF | ON | 0 | 1

**Default Value:** OFF

**Set/Query Format:** NR1

**Example:** :LIMits:EVM:LLIMit:ENABLE 1

Enables Lower Limit for EVM measurement.

**Query Response:** :LIMits:EVM:LLIMit:ENABLE?  
1

### 3.7.4 Error Vector Magnitude - Lower Limit Value

**:LIMits:EVM:LLIMit:VALue**

**:LIMits:EVM:LLIMit:VALue?**

**Description:** Set command defines Lower Limit Value for Error Vector Magnitude measurement.

Query command returns parameter setting.

**Range:** 0.0 to 200.0%

**Units:** % (percent)

**Default Value:** 0.0%

**Set/Query Format:** NRf | NR2

**Example:** :LIMits:EVM:LLIMit:VALue 2.5

Sets Limit Value for Error Vector Magnitude measurement to 2.5%.

**Query Response:** :LIMits:EVM:LLIMit:VALue?

2.5

### 3.7.5 Error Vector Magnitude - Measurement Query

**:METERs:EVM:CHn:STATus?**

**Description:** Command returns EVM measurement data for specified Channel.

**Query Data:** <statusbyte>,<failbyte>,<precision>,<percentage>,<avg>,<max>,<min>,<units>

**statusbyte (NR1):** Bitmask

0x0 = Valid
0x1 = Invalid
0x2 = Inaccurate
0x4 = Settling
0x8 = Squelch

**failbyte (NR1):** Bitmask

0x80 = WC Lower Limit	0x08 = Max Lower Limit
0x40 = WC Upper Limit	0x04 = Max Upper Limit
0x20 = Avg Lower Limit	0x02 = Min Lower Limit
0x10 = Avg Upper Limit	0x01 = Min Upper Limit

**precision (NR1):** Value indicates number of numerals that follow the decimal point in returned average, maximum and minimum readings.

**percentage (NR1):** Percentage value indicates the percentage of averaging completed when remote command was issued.

**avg,max,min (NR2):** <units>

**units (NR1):**

0 = No Units	5 = dB	10 = dBµV	15 = Vrms
1 = %	6 = dBm	11 = W	16 = dBr
2 = Hz	7 = V	12 = mW	17 = dBV
3 = kHz	8 = mV	13 = µW	18 = mHz
4 = MHz	9 = µV	14 = dBW	19 = µs

**status messages:** signal not acquired\n  
**(when present)** timed out waiting for TraceMutex\n  
 timed out waiting for data\n

**Query Response:** :METERs:EVM:CH1:STATus?  
 0,0,3 100.00, 5.465, 8.264, 0.526,1

**NOTE**

CHn = 1, 2, 3 or 4 (Channel 1, 2, 3 or 4)  
 Trace must be Enabled to return valid data.

### 3.7.6 Error Vector Magnitude - Measurement Query (All Channels)

#### **:METERs:EVM:COMBined:STATus?**

**Description:** Command returns EVM measurement data for all channels.

**Query Data:** <statusbyte>,<failbyte>,<precision>,<percentage>,<avg>,<max>,<min>,<units>

**statusbyte (NR1):** Bitmask  
 0x0 = Valid  
 0x1 = Invalid  
 0x2 = Inaccurate  
 0x4 = Settling  
 0x8 = Squelch

**failbyte (NR1):** Bitmask  
 0x80 = WC Lower Limit  
 0x40 = WC Upper Limit  
 0x20 = Avg Lower Limit  
 0x10 = Avg Upper Limit  
 0x08 = Max Lower Limit  
 0x04 = Max Upper Limit  
 0x02 = Min Lower Limit  
 0x01 = Min Upper Limit

**precision (NR1):** Value indicates number of numerals that follow the decimal point in returned average, maximum and minimum readings.

**percentage (NR1):** Percentage value indicates the percentage of averaging completed when remote command was issued.

**avg,max,min (NR2):** <units>

<b>units (NR1):</b>	0 = No Units	5 = dB	10 = dBµV	15 = Vrms
	1 = %	6 = dBm	11 = W	16 = dBr
	2 = Hz	7 = V	12 = mW	17 = dBV
	3 = kHz	8 = mV	13 = µW	18 = mHz
	4 = MHz	9 = µV	14 = dBW	19 = µs

**status messages:** signal not acquired\n  
 (when present) timed out waiting for TraceMutex\n  
 timed out waiting for data\n

**Query Response:** :METERs:EVM:COMBined:STATus?  
 0,0,2, 100.000, 6.089, 12.920, 0.990,1

### 3.7.7 Error Vector Magnitude - Peak Measurement Reset

#### **:METERs:EVM:CLEAR:PEAK**

**Description:** Command clears and resets Peak Error Vector Magnitude measurement.

**Parameter/Query:** none



### 3.7.8 Error Vector Magnitude - Top of Scale (Range) Setting

**:METERs:EVM:TOS**

**:METERs:EVM:TOS?**

**Description:** Set command defines Error Vector Magnitude top of scale (range) value.  
Query command returns parameter setting.

**Range:** 0 to 7

**where:** 0 = Auto  
1 = 200 %  
2 = 100 %  
3 = 50 %  
4 = 20 %  
5 = 10 %  
6 = 5 %  
7 = 2 %

**Default Value:** 0 (Auto)

**Set/Query Format:** NR1

**Example:** :METERs:EVM:TOS 2

Sets Error Vector Magnitude top of scale (range) to 100%.

**Query Response:** :METERs:EVM:TOS?

2

### 3.7.9 Error Vector Magnitude - Upper Limit Enable

**:LIMits:EVM:ULIMit:ENABLE**

**:LIMits:EVM:ULIMit:ENABLE?**

**Description:** Set command Enables/Disables Upper Limit for Error Vector Magnitude measurement.  
Query command returns parameter setting.

**Parameter:** OFF | ON | 0 | 1

**Default Value:** OFF

**Set/Query Format:** NR1

**Example:** :LIMits:EVM:ULIMit:ENABLE 1

Enables Upper Limit for EVM measurement.

**Query Response:** :LIMits:EVM:ULIMit:ENABLE?

1

### 3.7.10 Error Vector Magnitude - Upper Limit Value

**:LIMits:EVM:ULIMit:VALue**

**:LIMits:EVM:ULIMit:VALue?**

**Description:** Set command defines Upper Limit Value for Error Vector Magnitude measurement.

Query command returns parameter setting.

**Range:** 0.0 to 200.0%

**Units:** % (percent)

**Default Value:** 0.0%

**Set/Query Format:** NRf | NR2

**Example:** :LIMits:EVM:ULIMit:VALue 5

Sets Upper Limit Value for Error Vector Magnitude measurement to 5.0%.

**Query Response:** :LIMits:EVM:ULIMit:VALue?

5.00

### 3.8 FREQUENCY ERROR

#### 3.8.1 Frequency Error - Averages

**:METERs:FCR:AVERaging**  
**:METERs:FCR:AVERaging?**

**Description:** Set command defines the number of readings taken to calculate Average Frequency Error measurement.  
 Query command returns parameter setting.

**Range:** 1 to 100,000

**Default Value:** 20

**Set/Query Format:** NR1

**Example:** :METERs:FCR:AVERaging 100

Sets the number of readings taken to calculate Frequency Error measurement to 100.

**Query Response:** :METERs:FCR:AVERaging?  
 100

#### 3.8.2 Frequency Error - Average Measurement Reset

**:METERs:FCR:CLEAR:AVG**

**Description:** Command clears and resets Average Frequency Error measurement.

**Parameter/Query:** none

#### 3.8.3 Frequency Error - Lower Limit Enable

**:LIMits:FCR:LLIMit:ENABLE**  
**:LIMits:FCR:LLIMit:ENABLE?**

**Description:** Set command Enables/Disables Lower Limit for Frequency Error measurement.  
 Query command returns parameter setting.

**Parameter:** OFF | ON | 0 | 1

**Default Value:** OFF

**Set/Query Format:** NR1

**Example:** :LIMits:FCR:LLIMit:ENABLE 1

Enables Lower Limit for Frequency Error measurement.

**Query Response:** :LIMits:FCR:LLIMit:ENABLE?  
 1

### 3.8.4 Frequency Error - Lower Limit Value

**:LIMits:FCR:LLIMit:VALue**  
**:LIMits:FCR:LLIMit:VALue?**

**Description:** Set command defines Lower Limit Value for Frequency Error measurement. Query command returns parameter setting.

**Range:** -2000.0 to +2000.0 Hz

**Units:** Hz

**Default Value:** 0.0 Hz

**Set/Query Format:** NRf | NR2

**Example:** :LIMits:FCR:LLIMit:VALue 250Hz  
 Sets Lower Limit Value for Frequency Error measurement to 250.0 Hz.

**Query Response:** :LIMits:FCR:LLIMit:VALue?  
 250.00

### 3.8.5 Frequency Error - Measurement Query

**:METERs:FCR:STATUs?**

**Description:** Command returns Frequency Error measurement data.

**Query Data:** <statusbyte>,<failbyte>,<precision>,<percentage>,<avg>,<max>,<min>,<units>

**statusbyte (NR1):** Bitmask  
 0x0 = Valid  
 0x1 = Invalid  
 0x2 = Inaccurate  
 0x4 = Settling  
 0x8 = Squelch

**failbyte (NR1):** Bitmask  
 0x80 = WC Lower Limit  
 0x40 = WC Upper Limit  
 0x20 = Avg Lower Limit  
 0x10 = Avg Upper Limit  
 0x08 = Max Lower Limit  
 0x04 = Max Upper Limit  
 0x02 = Min Lower Limit  
 0x01 = Min Upper Limit

**precision (NR1):** Value indicates number of numerals that follow the decimal point in returned average, maximum and minimum readings.

**percentage (NR1):** Percentage value indicates the percentage of averaging completed when remote command was issued.

**avg,max,min (NR2):** <units>

<b>units (NR1):</b>	0 = No Units	5 = dB	10 = dBµV	15 = Vrms
	1 = %	6 = dBm	11 = W	16 = dBr
	2 = Hz	7 = V	12 = mW	17 = dBV
	3 = kHz	8 = mV	13 = µW	18 = mHz
	4 = MHz	9 = µV	14 = dBW	19 = µs

**status messages:** signal not acquired\n  
 (when present) timed out waiting for TraceMutex\n  
 timed out waiting for data\n

**Query Response:** :METERs:FCR:STATUs?  
 0,0,3 100.00, -0.044, 0.204, -16.907,2

### 3.8.6 Frequency Error - Peak Measurement Reset

#### **:METERs:FCR:CLEAR:PEAK**

**Description:** Command clears and resets Peak Frequency Error measurement.

**Parameter/Query:** none

### 3.8.7 Frequency Error - Top of Scale (Range) Setting

#### **:METERs:FCR:TOS**

#### **:METERs:FCR:TOS?**

**Description:** Set command defines Frequency Error top of scale (range) value.  
Query command returns parameter setting.

**Range:** 0 to 10

**where:** 0 = Auto  
1 = 2000 Hz  
2 = 1000 Hz  
3 = 500 Hz  
4 = 200 Hz  
5 = 100 Hz  
6 = 50 Hz  
7 = 20 Hz  
8 = 10 Hz  
9 = 5 Hz  
10 = 2 Hz

**Default Value:** 0 (Auto)

**Set/Query Format:** NR1

**Example:** :METERs:FCR:TOS 2  
Sets Frequency Error top of scale (range) to 1000 Hz.

**Query Response:** :METERs:FCR:TOS?  
2

### 3.8.8 Frequency Error - Upper Limit Enable

#### **:LIMits:FCR:ULIMit:ENABLE**

#### **:LIMits:FCR:ULIMit:ENABLE?**

**Description:** Set command Enables/Disables Upper Limit for Frequency Error measurement.  
Query command returns parameter setting.

**Parameter:** OFF | ON | 0 | 1

**Default Value:** OFF

**Set/Query Format:** NR1

**Example:** :LIMits:FCR:ULIMit:ENABLE 1  
Enables Upper Limit for Frequency Error measurement.

**Query Response:** :LIMits:FCR:ULIMit:ENABLE?  
1

### 3.8.9 Frequency Error - Upper Limit Value

**:LIMits:FCR:ULIMit:VALue**

**:LIMits:FCR:ULIMit:VALue?**

**Description:** Set command defines Upper Limit Value for Frequency Error measurement.  
Query command returns parameter setting.

**Range:** -2000.0 to +2000.0 Hz

**Units:** Hz

**Default Value:** 0.0 Hz

**Set/Query Format:** NRf | NR2

**Example:** :LIMits:FCR:ULIMit:VALue 500Hz

Sets Upper Limit Value for Frequency Error measurement to 500.0 Hz

**Query Response:** :LIMits:FCR:ULIMit:VALue?

500.00

## 3.9 OCCUPIED BANDWIDTH

### 3.9.1 Occupied Bandwidth - Averages

**:METERs:OCB:AVERaging**

**:METERs:OCB:AVERaging?**

**Description:** Set command defines the number of readings taken to calculate Average Occupied Bandwidth measurement.  
Query command returns parameter setting.

**Range:** 1 to 100,000

**Default Value:** 20

**Set/Query Format:** NR1

**Example:** :METERs:OCB:AVERaging 100

Sets the number of readings taken to calculate Occupied Bandwidth measurement to 100.

**Query Response:** :METERs:OCB:AVERaging?  
100

### 3.9.2 Occupied Bandwidth - Average Measurement Reset

**:METERs:OCB:CLEAR:AVG**

**Description:** Command clears and resets Average Occupied Bandwidth measurement.

**Parameter/Query:** none

### 3.9.3 Occupied Bandwidth - Lower Limit Enable

**:LIMits:OCB:LLIMit:ENABLE**

**:LIMits:OCB:LLIMit:ENABLE?**

**Description:** Set command Enables/Disables Lower Limit for Occupied Bandwidth measurement.  
Query command returns parameter setting.

**Parameter:** OFF | ON | 0 | 1

**Default Value:** OFF

**Set/Query Format:** NR1

**Example:** :LIMits:OCB:LLIMit:ENABLE 1

Enables Lower Limit for Occupied Bandwidth measurement.

**Query Response:** :LIMits:OCB:LLIMit:ENABLE?  
1

### 3.9.4 Occupied Bandwidth - Lower Limit Value

**:LIMits:OCB:LLIMit:VALue**

**:LIMits:OCB:LLIMit:VALue?**

**Description:** Set command defines Lower Limit Value for Occupied Bandwidth measurement. Query command returns parameter setting.

**Range:** 0.0 to 30,000.0 Hz

**Units:** Hz

**Default Value:** 0.0 Hz

**Set/Query Format:** NRf | NR2

**Example:** :LIMits:OCB:LLIMit:VALue 1000Hz

Sets Lower Limit Value for Occupied Bandwidth measurement to 1000.0 Hz.

**Query Response:** :LIMits:OCB:LLIMit:VALue?  
1000.00

### 3.9.5 Occupied Bandwidth - Measurement Query

**:METERs:OCB:STATus?**

**Description:** Command returns Occupied Bandwidth measurement data.

**Query Data:** <statusbyte>,<failbyte>,<precision>,<percentage>,<avg>,<max>,<min>,<units>

**statusbyte (NR1):** Bitmask  
 0x0 = Valid  
 0x1 = Invalid  
 0x2 = Inaccurate  
 0x4 = Settling  
 0x8 = Squelch

**failbyte (NR1):** Bitmask  
 0x80 = WC Lower Limit  
 0x40 = WC Upper Limit  
 0x20 = Avg Lower Limit  
 0x10 = Avg Upper Limit  
 0x08 = Max Lower Limit  
 0x04 = Max Upper Limit  
 0x02 = Min Lower Limit  
 0x01 = Min Upper Limit

**precision (NR1):** Value indicates number of numerals that follow the decimal point in returned average, maximum and minimum readings.

**percentage (NR1):** Percentage value indicates the percentage of averaging completed when remote command was issued.

**avg,max,min (NR2):** <units>

<b>units (NR1):</b>	0 = No Units	5 = dB	10 = dBµV	15 = Vrms
	1 = %	6 = dBm	11 = W	16 = dBr
	2 = Hz	7 = V	12 = mW	17 = dBV
	3 = kHz	8 = mV	13 = µW	18 = mHz
	4 = MHz	9 = µV	14 = dBW	19 = µs

**status messages:** signal not acquired\n  
**(when present)** timed out waiting for TraceMutex\n  
 timed out waiting for data\n

**Query Response:** :METERs:OCB:STATus?  
0,0,3 100.00, 17257.105, 17751.000, 16963.873,2



### 3.9.6 Occupied Bandwidth - Receive Bandwidth Percentage

**:RECeive:BANDwidth**

**:RECeive:BANDwidth?**

**Description:** Set command defines Receive Frequency Bandwidth percentage for OCB Meter.  
Query command returns parameter setting.

**Range:** 0 to 99.5%

**Units:** % (percent)

**Default Value:** 97%

**Set/Query Format:** NRf | NR2

**Example:** :RECeive:BANDwidth 99  
Sets Occupied Bandwidth to 99.0%.

**Query Response:** :RECeive:BANDwidth?  
99.0

### 3.9.7 Occupied Bandwidth - Peak Measurement Reset

**:METERs:OCB:CLEAR:PEAK**

**Description:** Command clears and resets Peak Occupied Bandwidth measurement.

**Parameter/Query:** none

### 3.9.8 Occupied Bandwidth - Top of Scale (Range) Setting

**:METERs:OCB:TOS**

**:METERs:OCB:TOS?**

**Description:** Set command defines Occupied Bandwidth top of scale (range) value.  
Query command returns parameter setting.

**Range:** 0 to 6

**where:** 0 = Auto  
1 = 30000 Hz  
2 = 20000 Hz  
3 = 15000 Hz  
4 = 10000 Hz  
5 = 5000 Hz  
6 = 1000 Hz

**Default Value:** 0 (Auto)

**Set/Query Format:** NR1

**Example:** :METERs:OCB:TOS 2  
Sets Occupied Bandwidth top of scale (range) to 20000 Hz.

**Query Response:** :METERs:OCB:TOS?  
2

### 3.9.9 Occupied Bandwidth - Upper Limit Enable

**:LIMits:OCB:ULIMit:ENABLE**

**:LIMits:OCB:ULIMit:ENABLE?**

**Description:** Set command Enables/Disables Upper Limit for Occupied Bandwidth measurement.

Query command returns parameter setting.

**Parameter:** OFF | ON | 0 | 1

**Default Value:** OFF

**Set/Query Format:** NR1

**Example:** :LIMits:OCB:ULIMit:ENABLE 1

Enables Upper Limit for Occupied Bandwidth measurement.

**Query Response:** :LIMits:OCB:ULIMit:ENABLE?

1

### 3.9.10 Occupied Bandwidth - Upper Limit Value

**:LIMits:OCB:ULIMit:VALue**

**:LIMits:OCB:ULIMit:VALue?**

**Description:** Set command defines Upper Limit Value for Occupied Bandwidth measurement.

Query command returns parameter setting.

**Range:** 0.0 to 30,000.0 Hz

**Units:** Hz

**Default Value:** 0.0 Hz

**Set/Query Format:** NRf | NR2

**Example:** :LIMits:OCB:ULIMit:VALue 5000Hz

Sets Upper Limit Value for Occupied Bandwidth measurement to 5000.0 Hz.

**Query Response:** :LIMits:OCB:ULIMit:VALue?

5000.00

### 3.10 PHASE MISMATCH

#### 3.10.1 Phase Mismatch - Averages

**:METERs:PHSMis:AVERaging**

**:METERs:PHSMis:AVERaging?**

**Description:** Set command defines the number of readings taken to calculate Average Phase Mismatch measurement.  
Query command returns parameter setting.

**Range:** 1 to 100,000

**Default Value:** 20

**Set/Query Format:** NR1

**Example:** :METERs:PHSMis:AVERaging 100

Sets the number of readings taken to calculate Phase Mismatch measurement to 100.

**Query Response:** :METERs:PHSMis:AVERaging?  
100

#### 3.10.2 Phase Mismatch - Average Measurement Reset

**:METERs:PHSMis:CLEAR:AVG**

**Description:** Command clears and resets Average Phase Mismatch measurement.

**Parameter/Query:** none

#### 3.10.3 Phase Mismatch - Lower Limit Enable

**:LIMits:PHSMis:LLIMit:ENABLE**

**:LIMits:PHSMis:LLIMit:ENABLE?**

**Description:** Set command Enables/Disables Lower Limit for Phase Mismatch measurement.  
Query command returns parameter setting.

**Parameter:** OFF | ON | 0 | 1

**Default Value:** OFF

**Set/Query Format:** NR1

**Example:** :LIMits:PHSMis:LLIMit:ENABLE 1

Enables Lower Limit for Phase Mismatch measurement.

**Query Response:** :LIMits:PHSMis:LLIMit:ENABLE?  
1



### 3.10.6 Phase Mismatch - Peak Measurement Reset

**:METERs:PHSMis:CLEAR:PEAK**

**Description:** Command clears and resets Peak Phase Mismatch measurement.

**Parameter/Query:** none

### 3.10.7 Phase Mismatch - Upper Limit Enable

**:LIMits:PHSMis:ULIMit:ENABLE**

**:LIMits:PHSMis:ULIMit:ENABLE?**

**Description:** Set command Enables/Disables Upper Limit for Phase Mismatch measurements  
Query command returns parameter setting.

**Parameter:** OFF | ON | 0 | 1

**Default Value:** OFF

**Set/Query Format:** NR1

**Example:** :LIMits:PHSMis:ULIMit:ENABLE 1  
Enables Upper Limit for Phase Mismatch measurement.

**Query Response:** :LIMits:PHSMis:ULIMit:ENABLE?  
1

### 3.10.8 Phase Mismatch - Upper Limit Value

**:LIMits:PHSMis:ULIMit:VALue**

**:LIMits:PHSMis:ULIMit:VALue?**

**Description:** Set command defines Upper Limit Value for Phase Mismatch measurement.  
Query command returns parameter setting.

**Range:** -180.0 to +180.0 degrees

**Units:** degrees

**Default Value:** 0.0 degrees

**Set/Query Format:** NRf | NR2

**Example:** :LIMits:PHSMis:ULIMit:VALue 45  
Sets Upper Limit Value for Phase Mismatch measurement to 45 degrees.

**Query Response:** :LIMits:PHSMis:ULIMit:VALue?  
-45.00

## 3.11 SIGNAL POWER

### 3.11.1 Signal Power - Averages

**:METERs:POWer:AVERaging**  
**:METERs:POWer:AVERaging?**

**Description:** Set command defines the number of readings taken to calculate Average Signal Power measurement.

Query command returns parameter setting.

**Range:** 1 to 100,000

**Default Value:** 20

**Set/Query Format:** NR1

**Example:** :METERs:POWer:AVERaging 100

Sets the number of readings taken to calculate Signal Power measurement to 100.

**Query Response:** :METERs:POWer:AVERaging?  
100

### 3.11.2 Signal Power - Average Measurement Reset

#### **:METERs:POWer:CLear:AVG**

**Description:** Command clears and resets Average Signal Power measurement.

**Parameter/Query:** none

### 3.11.3 Signal Power - Lower Limit Enable

#### **:LIMits:POWer:LLIMit:ENABle**

#### **:LIMits:POWer:LLIMit:ENABle?**

**Description:** Set command Enables/Disables Lower Limit for Signal Power measurement.  
Query command returns parameter setting.

**Parameter:** OFF | ON | 0 | 1

**Default Value:** OFF

**Set/Query Format:** NR1

**Example:** :LIMits:POWer:LLIMit:ENABle 1  
Enables Lower Limit for Signal Power measurement.

**Query Response:** :LIMits:POWer:LLIMit:ENABle?  
1

### 3.11.4 Signal Power - Lower Limit Value

#### **:LIMits:POWer:LLIMit:VALue**

#### **:LIMits:POWer:LLIMit:VALue?**

**Description:** Set command defines Lower Limit Value for Signal Power measurement.  
Query command returns parameter setting.

**Range:** -130.0 to +60.0 dBm

**Units:** dBm

**Default Value:** 0.0 dBm

**Set/Query Format:** NRf | NR2

**Example:** :LIMits:POWer:LLIMit:VALue -60dBm  
Sets Lower Limit Value for Signal Power measurement to -60.0 dBm.

**Query Response:** :LIMits:POWer:LLIMit:VALue?  
-60.00

### 3.11.5 Signal Power - Measurement Query

#### **:METERs:POWer:STATus?**

**Description:** Command returns Signal Power measurement data.

**Query Data:** <statusbyte>,<failbyte>,<precision>,<percentage>,<avg>,<max>,<min>,<units>

**statusbyte (NR1):** Bitmask  
 0x0 = Valid  
 0x1 = Invalid  
 0x2 = Inaccurate  
 0x4 = Settling  
 0x8 = Squelch

**failbyte (NR1):** Bitmask  
 0x80 = WC Lower Limit  
 0x40 = WC Upper Limit  
 0x20 = Avg Lower Limit  
 0x10 = Avg Upper Limit  
 0x08 = Max Lower Limit  
 0x04 = Max Upper Limit  
 0x02 = Min Lower Limit  
 0x01 = Min Upper Limit

**precision (NR1):** Value indicates number of numerals that follow the decimal point in returned average, maximum and minimum readings.

**percentage (NR1):** Percentage value indicates the percentage of averaging completed when remote command was issued.

**avg,max,min (NR2):** <units>

<b>units (NR1):</b>	0 = No Units	5 = dB	10 = dBµV	15 = Vrms
	1 = %	6 = dBm	11 = W	16 = dBr
	2 = Hz	7 = V	12 = mW	17 = dBV
	3 = kHz	8 = mV	13 = µW	18 = mHz
	4 = MHz	9 = µV	14 = dBW	19 = µs

**status messages:** signal not acquired\n  
 (when present) timed out waiting for TraceMutex\n  
 timed out waiting for data\n

**Query Response:** :METERs:POWer:STATus?  
 0,0,3 100.00, -30.183, -30.140, -30.241,6

### 3.11.6 Signal Power - Peak Measurement Reset

#### **:METERs:POWer:CLEAR:PEAK**

**Description:** Command clears and resets Peak Signal Power measurement.

**Parameter/Query:** none



### 3.11.7 Signal Power - Top of Scale (Range) Setting

**:METERs:POWer:TOS**

**:METERs:POWer:TOS?**

**Description:** Set command defines Signal Power top of scale (range) value.  
Query command returns parameter setting.

**Range:** 0 to 6

**where:** 0 = Auto

1 = 60 dBm

2 = 30 dBm

3 = 0 dBm

4 = -30 dBm

5 = -60 dBm

6 = -90 dBm

**Default Value:** 0 (Auto)

**Set/Query Format:** NR1

**Example:** :METERs:POWer:TOS 2

Sets Signal Power top of scale (range) to 30 dBm.

**Query Response:** :METERs:POWer:TOS?

2

### 3.11.8 Signal Power - Upper Limit Enable

**:LIMits:POWer:ULIMit:ENABLE**

**:LIMits:POWer:ULIMit:ENABLE?**

**Description:** Set command Enables/Disables Upper Limit for Signal Power measurement.  
Query command returns parameter setting.

**Parameter:** OFF | ON | 0 | 1

**Default Value:** OFF

**Set/Query Format:** NR1

**Example:** :LIMits:POWer:ULIMit:ENABLE 1

Enables Upper Limit for Signal Power measurement.

**Query Response:** :LIMits:POWer:ULIMit:ENABLE?

1

### 3.11.9 Signal Power - Upper Limit Value

**:LIMits:POWer:ULIMit:VALue**

**:LIMits:POWer:ULIMit:VALue?**

**Description:** Set command defines Upper Limit Value for Signal Power measurement.  
Query command returns parameter setting.

**Range:** -130.0 to +60.0 dBm

**Units:** dBm

**Default Value:** 0.0 dBm

**Set/Query Format:** NRf | NR2

**Example:** :LIMits:POWer:ULIMit:VALue -10dBm

Sets Upper Limit Value for Signal Power measurement to -10.0 dBm.

**Query Response:** :LIMits:POWer:ULIMit:VALue?

-10.00

## 3.12 SYMBOL CLOCK ERROR

### 3.12.1 Symbol Clock Error - Averages

**:METERs:SCE:AVERaging**

**:METERs:SCE:AVERaging?**

**Description:** Set command defines the number of readings taken to calculate Average Symbol Clock Error measurement.  
Query command returns parameter setting.

**Range:** 1 to 100,000

**Default Value:** 20

**Set/Query Format:** NR1

**Example:** :METERs:SCE:AVERaging 100

Sets the number of readings taken to calculate Average Symbol Clock Error measurement to 100.

**Query Response:** :METERs:SCE:AVERaging?  
100

### 3.12.2 Symbol Clock Error - Average Measurement Reset

**:METERs:SCE:CLEAR:AVG**

**Description:** Command clears and resets Average Symbol Clock Error measurement.

**Parameter/Query:** none

### 3.12.3 Symbol Clock Error - Lower Limit Enable

**:LIMits:SCE:LLIMit:ENABLE**

**:LIMits:SCE:LLIMit:ENABLE?**

**Description:** Set command Enables/Disables Lower Limit for Symbol Clock Error measurement.  
Query command returns parameter setting.

**Parameter:** OFF | ON | 0 | 1

**Default Value:** OFF

**Set/Query Format:** NR1

**Example:** :LIMits:SCE:LLIMit:ENABLE 1

Enables Lower Limit for Symbol Clock Error measurement.

**Query Response:** :LIMits:SCE:LLIMit:ENABLE?  
1

### 3.12.4 Symbol Clock Error - Lower Limit Value

**:LIMits:SCE:LLIMit:VALue**  
**:LIMits:SCE:LLIMit:VALue?**

**Description:** Set command defines Lower Limit Value for Symbol Clock Error measurement. Query command returns parameter setting.

**Range:** -1000.0 to +1000.0 mHz

**Units:** mHz

**Default Value:** 0.0 mHz

**Set/Query Format:** NRf | NR2

**Example:** :LIMits:SCE:LLIMit:VALue -500mHz  
 Sets Lower Limit Value for Symbol Clock Error measurement to -500.0 mHz.

**Query Response:** :LIMits:SCE:LLIMit:VALue?  
 -500.00

### 3.12.5 Symbol Clock Error - Measurement Query

**:METERs:SCE:STATUs?**

**Description:** Command returns Symbol Clock Error measurement data.

**Query Data:** <statusbyte>,<failbyte>,<precision>,<percentage>,<avg>,<max>,<min>,<units>

**statusbyte (NR1):** Bitmask  
 0x0 = Valid  
 0x1 = Invalid  
 0x2 = Inaccurate  
 0x4 = Settling  
 0x8 = Squelch

**failbyte (NR1):** Bitmask  
 0x80 = WC Lower Limit  
 0x40 = WC Upper Limit  
 0x20 = Avg Lower Limit  
 0x10 = Avg Upper Limit  
 0x08 = Max Lower Limit  
 0x04 = Max Upper Limit  
 0x02 = Min Lower Limit  
 0x01 = Min Upper Limit

**precision (NR1):** Value indicates number of numerals that follow the decimal point in returned average, maximum and minimum readings.

**percentage (NR1):** Percentage value indicates the percentage of averaging completed when remote command was issued.

**avg,max,min (NR2):** <units>

<b>units (NR1):</b>	0 = No Units	5 = dB	10 = dBµV	15 = Vrms
	1 = %	6 = dBm	11 = W	16 = dBr
	2 = Hz	7 = V	12 = mW	17 = dBV
	3 = kHz	8 = mV	13 = µW	18 = mHz
	4 = MHz	9 = µV	14 = dBW	19 = µs

**status messages:** signal not acquired\n  
**(when present)** timed out waiting for TraceMutex\n  
 timed out waiting for data\n

**Query Response:** :METERs:SCE:STATUs?  
 0,0,3 100.00, -2.487, -0.346, -6.642,18

### 3.12.6 Symbol Clock Error - Peak Measurement Reset

**:METERs:SCE:CLEAR:PEAK**

**Description:** Command clears and resets Peak Symbol Clock Error measurement.

**Parameter/Query:** none

### 3.12.7 Symbol Clock Error - Top of Scale (Range) Setting

**:METERs:SCE:TOS**

**:METERs:SCE:TOS?**

**Description:** Set command defines Symbol Clock Error top of scale (range) value.  
Query command returns parameter setting.

**Range:** 0 to 7

**where:** 0 = Auto  
1 = 1000 mHz  
2 = 500 mHz  
3 = 200 mHz  
4 = 100 mHz  
5 = 50 mHz  
6 = 20 mHz  
7 = 10 Hz

**Default Value:** 0 (Auto)

**Set/Query Format:** NR1

**Example:** :METERs:SCE:TOS 2

Sets Symbol Clock Error top of scale (range) to 500 mHz.

**Query Response:** :METERs:SCE:TOS?

2

### 3.12.8 Symbol Clock Error - Upper Limit Enable

**:LIMits:SCE:ULIMit:ENABLE**

**:LIMits:SCE:ULIMit:ENABLE?**

**Description:** Set command Enables/Disables Upper Limit for Symbol Clock Error measurement.

Query command returns parameter setting.

**Parameter:** OFF | ON | 0 | 1

**Default Value:** OFF

**Set/Query Format:** NR1

**Example:** :LIMits:SCE:ULIMit:ENABLE 1

Enables Upper Limit for Symbol Clock Error measurement.

**Query Response:** :LIMits:SCE:ULIMit:ENABLE?

1

### 3.12.9 Symbol Clock Error - Upper Limit Value

**:LIMits:SCE:ULIMit:VALue**

**:LIMits:SCE:ULIMit:VALue?**

**Description:** Set command defines Upper Limit Value for Symbol Clock Error measurement.  
Query command returns parameter setting.

**Range:** -1000.0 to +1000.0 mHz

**Units:** mHz

**Default Value:** 0.0 mHz

**Set/Query Format:** NRf | NR2

**Example:** :LIMits:SCE:ULIMit:VALue 500mHz

Sets Upper Limit Value for Symbol Clock Error measurement to 500.0 mHz.

**Query Response:** :LIMits:SCE:ULIMit:VALue?  
500.00

---

## Chapter 4 - Modulation Accuracy and Power Remote Commands

### 4.1 INTRODUCTION

This chapter describes the Remote Commands for configuring and returning HPD® Modulation Accuracy and Power measurement data.

### 4.2 CONSTELLATION GRAPH

#### 4.2.1 Constellation - Channel Enable

**:CONStellation:TRACe:CHn:ENABLE**  
**:CONStellation:TRACe:CHn:ENABLE?**

**Description:** Set command Enables/Disables Constellation trace for specified Channel.  
Query command returns parameter setting.

**Parameter:** OFF | ON | 0 | 1

**Default Value:** OFF

**Set/Query Format:** NR1

**Example:** :CONStellation:TRACe:CH1:ENABLE 1  
Enables Constellation trace for Channel 1.

**Query Response:** :CONStellation:TRACe:CH1:ENABLE?  
1

**NOTE**

CHn = 1, 2, 3 or 4 (Channel 1, 2, 3 or 4)

#### 4.2.2 Constellation - Decimation

**:CONFigure:DECIimation:CONStellation**  
**:CONFigure:DECIimation:CONStellation?**

**Description:** Set command defines Decimation rate for Constellation graph.  
Query command returns parameter setting.

**Range:** 10 to 10,000

**Default Value:** 11

**Set/Query Format:** NR1

**Example:** :CONFigure:DECIimation:CONStellation 5000  
Sets Constellation Graph Decimation rate to 5000.

**Query Response:** :CONFigure:DECIimation:CONStellation?  
5000

### 4.2.3 Constellation - Persistence

**:CONStellation:TRACe:PERSiStence**  
**:CONStellation:TRACe:PERSiStence?**

**Description:** Set command sets Persistence on Constellation graph.  
 Query command returns parameter setting.

**Range:** 1 to 10

**Default Value:** 1

**Set/Query Format:** NR1

**Example:** :CONStellation:TRACe:PERSiStence 5  
 Sets Constellation Graph Persistence to 5.

**Query Response:** :CONStellation:TRACe:PERSiStence?  
 5

### 4.2.4 Constellation - Symbol Type

**:CONStellation:TRACe:SYMBols**  
**:CONStellation:TRACe:SYMBols?**

**Description:** Set command Enables/Disables symbols on Constellation graph.  
 Query command returns parameter setting.

**Parameter:** Bitmask  
 0x01 = Sync  
 0x02 = Pilot  
 0x04 = Data

**Default Value:** 7

**Set/Query Format:** NR1

**Example:** :CONStellation:TRACe:SYMBols 5  
 Enables Sync and Pilot symbols.

**Query Response:** :CONStellation:TRACe:SYMBols?  
 5

### 4.2.5 Constellation - Trace Enable

**:CONStellation:TRACe:START**  
**:CONStellation:TRACe:START?**

**Description:** Set command Enables/Disables Constellation trace.  
 Query command returns parameter setting.

**Parameter:** OFF | ON | 0 | 1

**Default Value:** OFF

**Set/Query Format:** NR1

**Example:** :CONStellation:TRACe:START 1  
 Enables Constellation Trace.

**Query Response:** :CONStellation:TRACe:START?  
 1

**NOTE**

Trace must be Enabled to return valid data.



#### 4.2.6 Constellation - Trace Query

##### **:CONStellation:TRACe:CHn:FETCh?**

**Description:** Command returns graph coordinates of Channel.

**Query Data:** <statusbyte>,<#pairs>,<x data>,<y data>

**statusbyte (NR1):** 0 = Invalid

1 = Valid

2 = Inaccurate

**#pairs (NR1):** Number of x,y coordinate pairs to follow

**x, y data (NR2):** coordinate value

**Query Response:** :CONStellation:TRACe:CH1:FETCh?

1,120,-3.94,1.80,-0.30,4.19,-3.55,-2.38,-2.83,-3.04,-3.08,3.03,2.89,-3.18,-2.92,  
 -3.11,-2.95,-3.07,3.03,3.07,-3.17,2.94,-3.05,3.10,3.06,-3.02,2.95,3.12,3.13,  
 2.89,2.95,-2.94,-2.98,3.01,3.06,-2.97,3.04,-3.03,3.00,3.11,-2.99,3.01,-3.01,  
 -3.06,-1.09,-4.06,-2.94,2.91,2.98,-2.95,2.95,3.08,2.96,-2.91,3.09,-3.03,-3.02,  
 -3.04,-2.84,-3.01,0.88,-4.17,-2.93,-2.99,2.94,2.95,2.91,3.16,-2.97,2.89,-3.19,  
 3.13,3.19,-2.96,2.92,-3.02,0.39,4.28,-3.11,2.86,-3.08,2.96,-3.11,2.80,3.09,  
 -2.85,-2.97,3.03,2.99,-3.02,-2.96,3.04,-3.88,1.40,2.82,3.00,3.01,3.01,2.88,  
 -2.91,3.01,2.94,-3.05,-2.99,3.00,3.01,-2.89,2.89,4.08,0.66,-2.87,-2.95,-2.98,  
 3.06,2.94,2.94,-2.98,-3.00,-2.95,-3.01,-2.96,2.99,-2.95,2.96,-4.17,0.04,-3.02,  
 2.86,2.89,3.01,3.05,-2.90,-3.04,.....

**NOTE**

CHn = 1, 2, 3 or 4 (Channel 1, 2, 3 or 4)

Returned data includes Sync, Pilot and Data values.

Trace must be Enabled to return valid data.

## 4.3 ERROR VECTOR MAGNITUDE GRAPH

### 4.3.1 Error Vector Magnitude Graph - Marker Enable

**:EVM:TRACe:MARKERn:ENABLE**

**:EVM:TRACe:MARKERn:ENABLE?**

**Description:** Set command Enables/Disables Marker on EVM graph.  
Query command returns parameter setting.

**Parameter:** OFF | ON | 0 | 1

**Default Value:** OFF

**Set/Query Format:** NR1

**Example:** :EVM:TRACe:MARKER1:ENABLE 1  
Enables Marker 1 on EVM Graph.

**Query Response:** :EVM:TRACe:MARKER1:ENABLE?  
1

**NOTE**

MARKERn = 1 or 2 (Marker 1 or 2)

### 4.3.2 Error Vector Magnitude Graph - Marker Position

**:EVM:TRACe:MARKERn:XPOS**

**:EVM:TRACe:MARKERn:XPOS?**

**Description:** Set command defines Marker position on EVM graph.  
Query command returns parameter setting.

**Range:** Symbol Span Outbound: 1 to 102  
Symbol Span Inbound Random: 1 to 20  
Symbol Span Inbound Reserved: 1 to 92

**Default Value:** 1

**Set/Query Format:** NR1

**Example:** :EVM:TRACe:MARKER1:XPOS 50  
Positions Marker 1 on EVM Graph at 50 symbol point.

**Query Response:** :EVM:TRACe:MARKER1:XPOS?  
50

**NOTE**

MARKERn = 1 or 2 (Marker 1 or 2)

### 4.3.3 Error Vector Magnitude Graph - Marker Y Value Query

#### **:EVM:TRACe:CHn:MARKERn:YVALue?**

**Description:** Command returns Error Vector Magnitude Y value for Marker.

**Query Data:** <statusbyte>,<value>

**statusbyte (NR1):** 0 = Invalid  
1 = Valid  
2 = Inaccurate

**value (NR2):** % (percent)

**Query Response:** :EVM:TRACe:CH1:MARKER1:YVALue?  
1,8.14

**NOTE**

MARKERn = 1 or 2 (Marker 1 or 2)  
Marker must be enabled to return valid data.

### 4.3.4 Error Vector Magnitude Graph - Trace Enable

#### **:EVM:TRACe:CHn:ENABLE**

#### **:EVM:TRACe:CHn:ENABLE?**

**Description:** Set command Enables/Disables EVM Channel.  
Query command returns parameter setting.

**Parameter:** OFF | ON | 0 | 1

**Default Value:** OFF

**Set/Query Format:** NR1

**Example:** :EVM:TRACe:CH1:ENABLE 1  
Enables Error Vector Magnitude trace for Channel 1.

**Query Response:** :EVM:TRACe:CH1:ENABLE?  
1

**NOTE**

CHn = 1, 2, 3 or 4 (Channel 1, 2, 3 or 4)  
Trace must be Enabled to return valid data.

### 4.3.5 Error Vector Magnitude Graph - Trace Query

#### **:EVM:TRACe:CHn:FETCh?**

**Description:** Command returns EVM graph coordinates for specified Channel.

**Query Data:** <statusbyte>,<#pairs>,<x data>,<y data>

**statusbyte (NR1):** 0 = Invalid

1 = Valid

2 = Inaccurate

**#pairs (NR1):** Number of x,y coordinate pairs to follow

**x, y data (NR2):** coordinate value

**Query Response:** EVM:TRACe:CH1:FETCh?

1,102,1.00,7.01,2.00,6.70,3.00,7.04,4.00,6.50,5.00,5.93,6.00,4.63,7.00,2.74,8.00,2.33,9.00,3.36,10.00,5.61,11.00,6.46,12.00,7.46,13.00,6.73,14.00,7.31,15.00,7.19,16.00,6.95,17.00,7.29,18.00,6.23,19.00,5.58,20.00,5.47,21.00,5.28,22.00,3.83,23.00,3.19,24.00,2.08,25.00,3.28,26.00,3.66,27.00,4.02,28.00,4.25,29.00,5.08,30.00,5.55,31.00,6.78,32.00,7.66,33.00,7.23,34.00,8.59,35.00,8.19,36.00,7.46,37.00,7.45,38.00,7.83,39.00,6.75,40.00,6.16,41.00,5.34,42.00,2.98,43.00,3.04,44.00,3.59,45.00,5.72,46.00,6.79,47.00,7.80,48.00,7.88,49.00,7.49,50.00,7.71,51.00,7.92,52.00,7.38,53.00,6.68,54.00,5.75,55.00,5.81,56.00,5.10,57.00,4.25,58.00,3.18,59.00,2.43,60.00,2.37,61.00,2.93,62.00,3.53,63.00,4.61,64.00,5.06,65.00,5.47,66.00,6.29,67.00,7.51,68.00,7.21,...

**NOTE**

CHn = 1, 2, 3 or 4 (Channel 1, 2, 3 or 4)  
Returned data includes Sync, Pilot and Data values

## 4.4 I & Q TIME DISPLAY GRAPH

### 4.4.1 I & Q Time Display - Decimation

**:CONFigure:DECIimation:IQTA**  
**:CONFigure:DECIimation:IQTA?**

**Description:** Set command defines Decimation rate for I & Q Time Display graph.  
 Query command returns parameter setting.

**Range:** 10 to 10,000

**Default Value:** 11

**Set/Query Format:** NR1

**Example:** :CONFigure:DECIimation:IQTA 5000  
 Sets I & Q Time Display Graph Decimation rate to 5000.

**Query Response:** :CONFigure:DECIimation:IQTA?  
 5000

### 4.4.2 I & Q Time Display - I & Q Trace Enable

**:IQTA:TRACe:I:ENABLE** or **:IQTA:TRACe:Q:ENABLE**  
**:IQTA:TRACe:Q:ENABLE?** or **:IQTA:TRACe:I:ENABLE?**

**Description:** Set command Enables/Disables I or Q pattern trace.  
 Query command returns parameter setting.

**Parameter:** OFF | ON | 0 | 1

**Default Value:** OFF

**Set/Query Format:** NR1

**Example:** :IQTA:TRACe:I:ENABLE 1  
 Enables I & Q Time trace.

**Query Response:** :IQTA:TRACe:I:ENABLE?  
 1

**NOTE**

Trace must be Enabled to return valid data.

### 4.4.3 I & Q Time Display - Marker Enable

**:IQTA:TRACe:MARKERn:ENABLE**  
**:IQTA:TRACe:MARKERn:ENABLE?**

**Description:** Set command Enables/Disables I Marker.  
 Query command returns parameter setting.

**Parameter:** OFF | ON | 0 | 1

**Default Value:** OFF

**Set/Query Format:** NR1

**Example:** :IQTA:TRACe:MARKER1:ENABLE 1  
 Enables Marker 1 on I & Q Time Display Graph.

**Query Response:** :IQTA:TRACe:MARKER1:ENABLE?  
 1

**NOTE**

MARKERn = 1 or 2 (Marker 1 or 2)

#### 4.4.4 I & Q Time Display - Marker Position

**:IQTA:TRACe:MARKERn:XPOS**

**:IQTA:TRACe:MARKERn:XPOS?**

**Description:** Set command defines Marker position on graph.  
Query command returns parameter setting.

**Range:** Symbol Span Outbound: 1 to 30 msec  
Symbol Span Inbound Random: 1 to 10 msec  
Symbol Span Inbound Reserved: 1 to 30 msec

**Units:** msec

**Default Value:** 1 msec

**Set/Query Format:** NRf | NR2

**Example:** :IQTA:TRACe:MARKER1:XPOS 5  
Positions Marker 1 on I & Q Time Display Graph at 5 msec.

**Query Response:** :IQTA:TRACe:MARKER1:XPOS?  
5.00

MARKERn = 1 or 2 (Marker 2 or 2)

**NOTE**

#### 4.4.5 I & Q Time Display - Marker Query I Y Value

**:IQTA:TRACe:I:MARKERn:YVALue?**

**Description:** Command returns I Marker Y value.

**Query Data:** <statusbyte>,<value>

**statusbyte (NR1):** 0 = Invalid  
1 = Valid  
2 = Inaccurate

**value (NR2):**

**Query Response:** :IQTA:TRACe:I:MARKER1:YVALue?  
1,-1.88

**NOTE**

MARKERn = 1 or 2 (Marker 1 or 2)  
Marker and Trace must be enabled to return valid measurement data.

#### 4.4.6 I & Q Time Display - Marker Query Q Y Value

**:IQTA:TRACe:Q:MARKERn:YVALue?**

**Description:** Command returns Q Marker Y value.

**Query Data:** <statusbyte>,<value>

**statusbyte (NR1):** 0 = Invalid  
1 = Valid  
2 = Inaccurate

**value (NR2):**

**Query Response:** :IQTA:TRACe:Q:MARKER1:YVALue?  
1,-1.88

**NOTE**

MARKERn = 1 or 2 (Marker 1 or 2)  
Marker and Trace must be enabled to return valid measurement data.

#### 4.4.7 I & Q Time Display - Persistence

**:IQTA:TRACe:PERSistence**

**:IQTA:TRACe:PERSistence?**

**Description:** Set command sets Persistence on I & Q Time Display graph.  
Query command returns parameter setting.

**Range:** 1 to 10

**Default Value:** 1

**Set/Query Format:** NR1

**Example:** :IQTA:TRACe:PERSistence 5  
Sets I & Q Time Display Graph Persistence to 5.

**Query Response:** :IQTA:TRACe:PERSistence?  
5

#### 4.4.8 I & Q Time Display - Trace Data Acquisition Enable

**:IQTA:TRACe:START**

**:IQTA:TRACe:START?**

**Description:** Set command Enables/Disables IQTA Trace data acquisition.  
Query command returns parameter setting.

**Parameter:** OFF | ON | 0 | 1

**Default Value:** OFF

**Set/Query Format:** NR1

**Example:** :IQTA:TRACe:START 1  
Enables I & Q Time Display Trace.

**Query Response:** :IQTA:TRACe:START?  
1

**NOTE**

Trace must be enabled to return valid data.

#### 4.4.9 I & Q Time Display - Trace Query

**:IQTA:TRACe:I:FETCh?**

**:IQTA:TRACe:Q:FETCh?**

**Description:** Command returns graph coordinates for I or Q trace data.

**Query Data:** <statusbyte>,<#pairs>,<x data>,<y data>

**statusbyte (NR1):** 0 = Invalid  
 1 = Valid  
 2 = Inaccurate

**#pairs (NR1):** Number of x,y coordinate pairs to follow

**x, y data (NR2):** coordinate value

**Query Response:** :IQTA:TRACe:Q:FETCh?

1,1440,0.00,-0.17,0.02,-0.02,0.04,0.17,0.06,-0.11,0.08,-0.43,0.10,-0.50,0.12,  
 -0.08,0.15,0.36,0.17,0.50,0.19,0.16,0.21,-0.07,0.23,-0.04,0.25,0.03,0.27,0.07,  
 0.29,-0.13,0.31,-0.36,0.33,-0.35,0.35,0.01,0.37,0.21,0.40,0.15,0.42,0.06,0.44,  
 -0.05,0.46,0.04,0.48,0.19,0.50,0.09,0.52,-0.11,0.54,-0.36,0.56,-0.40,0.58,  
 -0.30,0.60,-0.31,0.62,-0.50,0.65,-0.47,0.67,-0.08,0.69,0.61,0.71,1.24,0.73,  
 1.46,0.75,1.61,0.77,1.65,0.79,1.89,0.81,1.97,0.83,1.52,0.85,0.49,0.87,-0.55,  
 0.90,-0.77,0.92,-0.12,0.94,0.78,0.96,1.29,0.98,0.92,1.00,-0.21,1.02,-1.18,  
 1.04,-1.48,1.06,-0.90,1.08,0.55,1.10,2.13,1.12,3.10,1.15,2.51,1.17,0.67,1.19,  
 -1.47,1.21,-2.72,1.23,-2.19,1.25,-0.73,1.27,0.56,1.29,0.61,1.31,-0.39,1.33,  
 -1.75,1.35,-2.80,1.37,-3.49,1.40,-3.66,.....

**NOTE**

Trace must be enabled to return valid data.



## 4.5 MAGNITUDE/PHASE ESTIMATION GRAPH

### 4.5.1 Magnitude/Phase Estimation - Decimation

**:CONFigure:DECIimation:MAGNitude**  
**:CONFigure:DECIimation:MAGNitude?**

**Description:** Set command defines Decimation rate for Magnitude Estimation graph.  
 Query command returns parameter setting.

**Range:** 10 to 10,000

**Default Value:** 11

**Set/Query Format:** NR1

**Example:** :CONFigure:DECIimation:MAGNitude 5000  
 Sets Magnitude Estimation Graph Decimation rate to 5000.

**Query Response:** :CONFigure:DECIimation:MAGNitude?  
 5000

### 4.5.2 Magnitude Graph - Marker Position

**:MAGNitude:TRACe:MARKERn:XPOS**  
**:MAGNitude:TRACe:MARKERn:XPOS?**

**Description:** Set command defines Marker position on Magnitude graph.  
 Query command returns parameter setting.

**Range:** 1 to 1440 samples

**Default Value:** 1 sample

**Set/Query Format:** NR1

**Example:** :MAGNitude:TRACe:MARKER1:XPOS 500  
 Positions Marker 1 on Magnitude Graph 500.

**Query Response:** :MAGNitude:TRACe:MARKER1:XPOS?  
 500

**NOTE**

MARKERn = 1 or 2 (Marker 1 or 2)

### 4.5.3 Magnitude Graph - Marker Enable

**:MAGNitude:TRACe:MARKERn:ENABLE**  
**:MAGNitude:TRACe:MARKERn:ENABLE?**

**Description:** Set command Enables/Disables Marker on Magnitude graph.  
 Query command returns parameter setting.

**Parameter:** OFF | ON | 0 | 1

**Default Value:** OFF

**Set/Query Format:** NR1

**Example:** :MAGNitude:TRACe:MARKER1:ENABLE 1  
 Enables Marker 1 on Magnitude Graph.

**Query Response:** :MAGNitude:TRACe:MARKER1:ENABLE?  
 1

**NOTE**

MARKERn = 1 or 2 (Marker 1 or 2)

#### 4.5.4 Magnitude Graph - Marker Query Y Value

##### **:MAGnitude:TRACe:MARKERn:YVALue?**

**Description:** Command returns Y value that corresponds to marker position where it intersects graph.

**Query Data:** <statusbyte>,<value>

**statusbyte (NR1):** 0 = Invalid  
1 = Valid  
2 = Inaccurate

**value (NR2):** dB

**Query Response:** :MAGnitude:TRACe:MARKER1:YVALue?  
1,-0.01

**NOTE**

MARKERn = 1 or 2 (Marker 1 or 2)  
Marker and Trace must be enabled to return valid measurement data.

#### 4.5.5 Magnitude Graph - Persistence

##### **:MAGnitude:TRACe:PERsistence**

##### **:MAGnitude:TRACe:PERsistence?**

**Description:** Set command defines Persistence on Magnitude graph.  
Query command returns parameter setting.

**Range:** 1 to 10

**Default Value:** 1

**Set/Query Format:** NR1

**Example:** :MAGnitude:TRACe:PERsistence 5  
Sets Magnitude Graph Persistence to 5.

**Query Response:** :MAGnitude:TRACe:PERsistence?  
5

#### 4.5.6 Magnitude Graph - Trace Enable

##### **:MAGnitude:TRACe:START**

##### **:MAGnitude:TRACe:START?**

**Description:** Set command Enables/Disables Magnitude Trace data acquisition.  
Query command returns parameter setting.

**Parameter:** OFF | ON | 0 | 1

**Default Value:** OFF

**Set/Query Format:** NR1

**Example:** :MAGnitude:TRACe:START 1  
Enables Magnitude Trace.

**Query Response:** :MAGnitude:TRACe:START?  
1

**NOTE**

Trace must be enabled to return valid data.

#### 4.5.7 Magnitude Graph - Trace Query

##### **:MAGnitude:TRACe:FETCh?**

**Description:** Command returns Magnitude graph coordinates of trace.

**Query Data:** <statusbyte>,<#pairs>,<x data>,<y data>

**statusbyte (NR1):** 0 = Invalid  
 1 = Valid  
 2 = Inaccurate

**#pairs (NR1):** Number of x,y coordinate pairs to follow

**x, y data (NR2):** coordinate value

**Query Response:** :MAGnitude:TRACe:FETCh?

1,1440,1.00,0.07,2.00,0.07,3.00,0.07,4.00,0.07,5.00,0.07,6.00,0.07,7.00,0.07,  
 8.00,0.07,9.00,0.07,10.00,0.07,11.00,0.07,12.00,0.07,13.00,0.07,14.00,0.07,  
 15.00,0.07,16.00,0.07,17.00,0.07,18.00,0.07,19.00,0.06,20.00,0.06,21.00,0.06,  
 22.00,0.06,23.00,0.06,24.00,0.06,25.00,0.06,26.00,0.06,27.00,0.06,28.00,0.06,  
 29.00,0.06,30.00,0.06,31.00,0.06,32.00,0.06,33.00,0.06,34.00,0.06,35.00,0.06,  
 36.00,0.06,37.00,0.06,38.00,0.06,39.00,0.06,40.00,0.06,41.00,0.06,42.00,0.06,  
 43.00,0.06,44.00,0.06,45.00,0.06,46.00,0.05,47.00,0.05,48.00,0.05,49.00,0.05,  
 50.00,0.05,51.00,0.05,52.00,0.05,53.00,0.05,54.00,0.05,55.00,0.05,56.00,0.05,  
 57.00,0.05,58.00,0.05,59.00,0.05,60.00,0.05,61.00,0.05,62.00,0.05,63.00,0.05,  
 64.00,0.05,65.00,0.05,66.00,0.05,67.00,.....

**NOTE**

Trace must be enabled to return valid data.

#### 4.5.8 Phase Graph - Persistence

##### **:PHASe:TRACe:PERStistence**

##### **:PHASe:TRACe:PERStistence?**

**Description:** Set command defines Persistence on Phase graph.  
 Query command returns parameter setting.

**Range:** 1 to 10

**Default Value:** 1

**Set/Query Format:** NR1

**Example:** :PHASe:TRACe:PERStistence 5  
 Sets Phase Graph Persistence to 5.

**Query Response:** :PHASe:TRACe:PERStistence?  
 5

#### 4.5.9 Phase Graph - Marker Enable

**:PHASe:TRACe:MARKERn:ENABle**

**:PHASe:TRACe:MARKERn:ENABle?**

**Description:** Set command Enables/Disables Marker on Phase Estimation graph.  
Query command returns parameter setting.

**Parameter:** OFF | ON | 0 | 1

**Default Value:** OFF

**Set/Query Format:** NR1

**Example:** :PHASe:TRACe:MARKER1:ENABle 1  
Enables Marker 1 on Phase Estimation graph.

**Query Response:** :PHASe:TRACe:MARKER1:ENABle?  
1

**NOTE**

MARKERn = 1 or 2 (Marker 1 or 2)

#### 4.5.10 Phase Graph - Marker Position

**:PHASe:TRACe:MARKERn:XPOS**

**:PHASe:TRACe:MARKERn:XPOS?**

**Description:** Set command defines Marker position on Phase Estimation graph.  
Query command returns parameter setting.

**Range:** 1 to 1440 samples

**Default Value:** 1 sample

**Set/Query Format:** NR1

**Example:** :PHASe:TRACe:MARKER1:XPOS 500  
Positions Marker 1 on Phase Estimation graph to 500.

**Query Response:** :PHASe:TRACe:MARKER1:XPOS?  
500

**NOTE**

MARKERn = 1 or 2 (Marker 1 or 2)

#### 4.5.11 Phase Graph - Marker Query Y Value

**:PHASe:TRACe:MARKERn:YVALue?**

**Description:** Command returns Y value that corresponds to marker position where it intersects graph.

**Query Data:** <statusbyte>,<value>

**statusbyte (NR1):** 0 = Invalid  
1 = Valid  
2 = Inaccurate

**value (NR2):** radians

**Query Response:** :PHASe:TRACe:MARKER1:YVALue?  
1,1.14

**NOTE**

MARKERn = 1 or 2 (Marker 1 or 2)  
Marker and Trace must be enabled to return valid measurement data.

#### 4.5.12 Phase Graph - Trace Enable

**:PHASe:TRACe:START**  
**:PHASe:TRACe:START?**

**Description:** Set command Enables/Disables Phase Trace data acquisition.  
 Query command returns parameter setting.

**Parameter:** OFF | ON | 0 | 1

**Default Value:** OFF

**Set/Query Format:** NR1

**Example:** :PHASe:TRACe:START 1  
 Enables Phase Trace.

**Query Response:** :PHASe:TRACe:START?  
 1

**NOTE**

Trace must be enabled to return valid data.

#### 4.5.13 Phase Graph - Trace Query

**:PHASe:TRACe:FETCh?**

**Description:** Command returns Phase graph coordinates of trace.

**Query Data:** <statusbyte>,<#pairs>,<x data>,<y data>

**statusbyte (NR1):** 0 = Invalid  
 1 = Valid  
 2 = Inaccurate

**#pairs (NR1):** Number of x,y coordinate pairs to follow

**x, y data (NR2):** coordinate value

**Query Response:** :PHASe:TRACe:FETCh?  
 1,1440,1.00,-0.47,2.00,-0.47,3.00,-0.47,4.00,-0.47,5.00,-0.47,6.00,-0.47,  
 7.00,-0.47,8.00,-0.47,9.00,-0.46,10.00,-0.46,11.00,-0.46,12.00,-0.46,  
 13.00,-0.46,14.00,-0.46,15.00,-0.46,16.00,-0.46,17.00,-0.46,18.00,-0.46,  
 19.00,-0.46,20.00,-0.46,21.00,-0.46,22.00,-0.46,23.00,-0.46,24.00,-0.46,  
 25.00,-0.46,26.00,-0.46,27.00,-0.46,28.00,-0.46,29.00,-0.46,30.00,-0.46,  
 31.00,-0.46,32.00,-0.46,33.00,-0.46,34.00,-0.46,35.00,-0.46,36.00,-0.46,  
 37.00,-0.46,38.00,-0.46,39.00,-0.46,40.00,-0.46,41.00,-0.46,42.00,-0.46,  
 43.00,-0.46,44.00,-0.46,45.00,-0.46,46.00,-0.46,47.00,-0.46,48.00,-0.45,  
 49.00,-0.45,50.00,-0.45,51.00,-0.45,52.00,-0.45,53.00,-0.45,54.00,-0.45,  
 55.00,-0.45,56.00,-0.45,57.00,-0.45,58.00,-0.45,59.00,-0.45,60.00,-0.45,.....

**NOTE**

Phase Trace must be enabled to return valid trace data.

## 4.6 POWER PROFILE FULL / RAMPS GRAPHS

### 4.6.1 Power Profile Graph - Averages

**:POWERProfile:TRACe:AVERaging**  
**:POWERProfile:TRACe:AVERaging?**

**Description:** Set command defines the number of readings taken to calculate Average Power Profile measurement.  
 Query command returns parameter setting.

**Range:** 1 to 999

**Default Value:** 50

**Set/Query Format:** NR1

**Example:** :POWERProfile:TRACe:AVERaging 100

Sets the number of readings taken to calculate Power Profile measurement to 100.

**Query Response:** :POWERProfile:TRACe:AVERaging?  
 100

### 4.6.2 Power Profile Graph - Decimation

**:CONFigure:DECIimation:POWERProfile**  
**:CONFigure:DECIimation:POWERProfile?**

**Description:** Set command defines Decimation rate for Power Profile graphs.  
 Query command returns parameter setting.

**Range:** 10 to 10,000

**Default Value:** 11

**Set/Query Format:** NR1

**Example:** :CONFigure:DECIimation:POWERProfile 5000

Sets Power Profile Decimation rate to 5000.

**Query Response:** :CONFigure:DECIimation:POWERProfile?  
 5000

### 4.6.3 Power Profile Graph - Marker Enable

**:POWERProfile:TRACe:MARKERn:ENABLE**  
**:POWERProfile:TRACe:MARKERn:ENABLE?**

**Description:** Set command Enables/Disables Marker on Power Profile graph.  
 Query command returns parameter setting.

**Parameter:** OFF | ON | 0 | 1

**Default Value:** OFF

**Set/Query Format:** NR1

**Example:** :POWERProfile:TRACe:MARKER1:ENABLE 1

Enables Marker 1 on Power Profile Graph.

**Query Response:** :POWERProfile:TRACe:MARKER1:ENABLE?  
 1

**NOTE**

MARKERn = 1 or 2 (Marker 1 or 2)

#### 4.6.4 Power Profile Graph - Marker Position

**:POWERProfile:TRACe:MARKERn:XPOS**  
**:POWERProfile:TRACe:MARKERn:XPOS?**

**Description:** Set command defines Marker position on Power Profile graph.  
 Query command returns parameter setting.

**Range:** 0.0 to 30.0 msec

**Units:** msec

**Default Value:** 0.0 msec

**Set/Query Format:** NRf | NR2

**Example:** :POWERProfile:TRACe:MARKER1:XPOS 0.75  
 Positions Marker 1 on Power Profile Graph to .75 msec.

**Query Response:** :POWERProfile:TRACe:MARKER1:XPOS?  
 0.75

**NOTE** MARKERn = 1 or 2 (Marker 1 or 2)

#### 4.6.5 Power Profile Graph - Marker Query Y Value

**:POWERProfile:TRACe:MARKERn:YVALue?**

**Description:** Command returns Y value that corresponds to marker position where it intersects graph.

**Query Data:** <statusbyte>,<value>

**statusbyte (NR1):** 0 = Invalid  
 1 = Valid  
 2 = Inaccurate

**value (NR2):** radians

**Query Response:** :POWERProfile:TRACe:MARKER1:YVALue?  
 1,-27.82

**NOTE** MARKERn = 1 or 2 (Marker 1 or 2)  
 Marker and Trace must be enabled to return valid measurement data.

#### 4.6.6 Power Profile Graph - Persistence

**:POWERProfile:TRACe:PERSistence**  
**:POWERProfile:TRACe:PERSistence?**

**Description:** Set command defines Persistence setting for Power Profile graph.  
 Query command returns parameter setting.

**Range:** 1 to 10

**Default Value:** 1

**Set/Query Format:** NR1

**Example:** :POWERProfile:TRACe:PERSistence 5  
 Sets Power Profile Graph Persistence to 5.

**Query Response:** :POWERProfile:TRACe:PERSistence?  
 5

#### 4.6.7 Power Profile Graph - Trace Enable

**:POWERProfile:TRACe:START**  
**:POWERProfile:TRACe:START?**

**Description:** Set command Enables/Disables Trace for Power Profile measurements.  
 Query command returns parameter setting.

**Parameter:** OFF | ON | 0 | 1

**Default Value:** OFF

**Set/Query Format:** NR1

**Example:** :POWERProfile:TRACe:START 1  
 Enables Power Profile Trace.

**Query Response:** :POWERProfile:TRACe:START?  
 1

**NOTE**

Trace must be enabled to return valid data.

#### 4.6.8 Power Profile Graph - Trace Query

**:POWERProfile:TRACe:FETCh?**

**Description:** Command returns graph coordinates of trace for Power Profile measurement.

**Query Data:** <statusbyte>,<#pairs>,<x data>,<y data>

**statusbyte (NR1):** 0 = Invalid  
 1 = Valid  
 2 = Inaccurate

**#pairs (NR1):** Number of x,y coordinate pairs to follow

**x, y data (NR2):** coordinate value

**Query Response:** :POWERProfile:TRACe:FETCh?  
 1,1440,0.00,-27.77,0.02,-40.55,0.04,-30.24,0.06,-26.53,0.08,-30.47,0.10,  
 -36.27,0.12,-30.28,0.15,-34.00,0.17,-40.93,0.19,-34.12,0.21,-47.80,0.23,  
 -30.96,0.25,-26.88,0.27,-29.32,0.29,-43.43,0.31,-31.67,0.33,-27.80,0.35,  
 -26.96,0.37,-26.56,0.40,-26.58,0.42,-28.34,0.44,-33.48,0.46,-41.97,0.48,  
 -39.95,0.50,-30.88,0.52,-26.70,0.54,-27.47,0.56,-35.36,0.58,-32.14,0.60,  
 -28.14,0.62,-30.00,0.65,-33.04,0.67,-31.28,0.69,-30.47,0.71,-30.42,0.73,  
 -30.61,0.75,-30.02,0.77,-28.57,0.79,-28.24,0.81,-29.32,0.83,-30.61,0.85,  
 -30.30,0.87,-30.05,0.90,-31.18,0.92,-31.33,0.94,-29.75,0.96,-29.40,0.98,  
 -29.17,1.00,-28.49,1.02,-29.47,1.04,-31.08,1.06,-29.88,1.08,-30.20,1.10,  
 -32.89,1.12,-30.52,1.15,-29.27,1.17,-32.19,.....

**NOTE**

Trace must be enabled to return valid data.



## 4.7 RX BITS GRAPH

### 4.7.1 Rx Bits Graph - Decimation

**:CONFigure:DECIimation:BITS**

**:CONFigure:DECIimation:BITS?**

**Description:** Set command defines Decimation rate for Rx Bits plot.  
Query command returns parameter setting.

**Range:** 10 to 10,000

**Default Value:** 97

**Set/Query Format:** NR1

**Example:** :CONFigure:DECIimation:BITS 5000  
Sets Rx Bits Graph Decimation rate to 5000.

**Query Response:** :CONFigure:DECIimation:BITS?  
5000

### 4.7.2 Rx Bits Graph - Trace Enable

**:BITS:TRACe:START**

**:BITS:TRACe:START?**

**Description:** Set command Enables/Disables acquisition of Rx Bits trace data.  
Query command returns parameter setting.

**Parameter:** OFF | ON | 0 | 1

**Default Value:** OFF

**Set/Query Format:** NR1

**Example:** :BITS:TRACe:START 1  
Enables Rx Bits Trace.

**Query Response:** :BITS:TRACe:START?  
1

**NOTE**

Trace must be enabled to return valid data.



## 4.8 RX TIME DISPLAY GRAPH

### 4.8.1 Rx Time Display Graph - Burst Timing Error Enable Trace

**:RXTime:BTE:TRACe:ENABle**

**:RXTime:BTE:TRACe:ENABle?**

**Description:** Set command Enables/Disables Burst Timing Error trace.  
Query command returns parameter setting.

**Parameter:** OFF | ON | 0 | 1

**Default Value:** OFF

**Set/Query Format:** NR1

**Example:** :RXTime:BTE:TRACe:ENABle 1  
Enables Burst Timing Error trace.

**Query Response:** :RXTime:BTE:TRACe:ENABle?  
1

**NOTE**

Receive Sync Mode must be set to TDO for command to be valid.  
Trace must be enabled to return valid data.

### 4.8.2 Rx Time Display Graph - Burst Timing Error Query

**:RXTime:BTE:TRACe:FETCh?**

**Description:** Command returns Burst Timing Error trace data.

**Query Data:** <statusbyte>,<#pairs>,<x data>,<y data>

**statusbyte (NR1):** 0 = Invalid  
1 = Valid  
2 = Inaccurate

**#pairs (NR1):** Number of x,y coordinate pairs to follow

**x, y data (NR2):** coordinate value

**Query Response:** :RXTime:BTE:TRACe:FETCh?  
0,2,0.00,-1.36,3300.00,-1.36

**NOTE**

Trace must be enabled to return valid data.  
Receive Sync Mode must be set to TDO for command to be valid.

### 4.8.3 Rx Time Display Graph - Decimation

**:CONFigure:DECIimation:METER**

**:CONFigure:DECIimation:METER?**

**Description:** Set command defines Decimation rate for Rx Time Display graph.  
Query command returns parameter setting.

**Range:** 10 to 10,000

**Default Value:** 11

**Set/Query Format:** NR1

**Example:** :CONFigure:DECIimation:METER 5000  
Sets Rx Time Display Decimation rate to 5000.

**Query Response:** :CONFigure:DECIimation:METER?  
5000

#### 4.8.4 Rx Time Display Graph - Frequency Error Trace Enable

**:RXTime:FCR:TRACe:ENABle**

**:RXTime:FCR:TRACe:ENABle?**

**Description:** Set command Enables/Disables Frequency Error trace.  
Query command returns parameter setting.

**Parameter:** OFF | ON | 0 | 1

**Default Value:** OFF

**Set/Query Format:** NR1

**Example:** :RXTime:FCR:TRACe:ENABle 1  
Enables Frequency Error trace.

**Query Response:** :RXTime:FCR:TRACe:ENABle?  
1

**NOTE**

Trace must be enabled to return valid data.

#### 4.8.5 Rx Time Display Graph - Frequency Error Query

**:RXTime:FCR:TRACe:FETCh?**

**Description:** Command returns Frequency Error trace data.

**Query Data:** <statusbyte>,<#pairs>,<x data>,<y data>

**statusbyte (NR1):** 0 = Invalid  
1 = Valid  
2 = Inaccurate

**#pairs (NR1):** Number of x,y coordinate pairs to follow

**x, y data (NR2):** coordinate value

**Query Response:** :RXTime:FCR:TRACe:FETCh?  
1,2,0.00,599.96,330.00,599.95

**NOTE**

Trace must be enabled to return valid data.

#### 4.8.6 Rx Time Display Graph - Marker Position

**:RXTime:TRACe:MARKERn:XPOS**

**:RXTime:TRACe:MARKERn:XPOS?**

**Description:** Set command defines Marker position on Rx Time Display graph.  
Query command returns parameter setting.

**Range:** 0 to 300 msec

**Units:** msec

**Default Value:** 0 msec

**Set/Query Format:** NRf | NR1

**Example:** :RXTime:TRACe:MARKER1:XPOS 100  
Positions Marker 1 on Rx Time Display Graph at 100 msec.

**Query Response:** :RXTime:TRACe:MARKER1:XPOS?  
100

**NOTE**

MARKERn = 1 or 2 (Marker 1 or 2)

#### 4.8.7 Rx Time Display Graph - Marker Enable

**:RXTime:TRACe:MARKERn:ENABle**

**:RXTime:TRACe:MARKERn:ENABle?**

**Description:** Set command Enables/Disables Rx Time Marker.  
Query command returns parameter setting.

**Parameter:** OFF | ON | 0 | 1

**Default Value:** OFF

**Set/Query Format:** NR1

**Example:** :RXTime:TRACe:MARKER1:ENABle 1  
Enables Marker 1 on Rx Time Display Graph.

**Query Response:** :RXTime:TRACe:MARKER1:ENABle?  
1

**NOTE**

MARKERn = 1 or 2 (Marker 1 or 2)

#### 4.8.8 Rx Time Display Graph - Marker Query Y Value

**:RXTime:TRACe:MARKERn:YVALue?**

**Description:** Command returns Y value for Marker.

**Query Data:** <statusbyte>,<value>

**statusbyte (NR1):** 0 = Invalid  
1 = Valid  
2 = Inaccurate

**value (NR2):** mHz

**Query Response:** :RXTime:TRACe:CH1:MARKER1:YVALue?  
1,-2.59

**NOTE**

MARKERn = 1 or 2 (Marker 1 or 2)  
Marker and Trace must be enabled to return valid data.

#### 4.8.9 Rx Time Display Graph - Signal Power Trace Enable

**:RXTime:POWer:TRACe:ENABle**

**:RXTime:POWer:TRACe:ENABle?**

**Description:** Set command Enables/Disables Signal Power measurement Trace.  
Query command returns parameter setting.

**Parameter:** OFF | ON | 0 | 1

**Default Value:** OFF

**Set/Query Format:** NR1

**Example:** :RXTime:POWer:TRACe:ENABle 1  
Enables Signal Power trace.

**Query Response:** :RXTime:POWer:TRACe:ENABle?  
1

**NOTE**

Trace must be enabled to return valid data.

#### 4.8.10 Rx Time Display Graph - Signal Power Query

##### **:RXTime:POWer:TRACe:FETCh?**

**Description:** Command returns Power measurement data.

**Query Data:** <statusbyte>,<#pairs>,<x data>,<y data>

**statusbyte (NR1):** 0 = Invalid  
1 = Valid  
2 = Inaccurate

**#pairs (NR1):** Number of x,y coordinate pairs to follow

**x, y data (NR2):** coordinate value

**Query Response:** :RXTime:POWer:TRACe:FETCh?  
1,2,0.00,-25.16,330.00,-25.16

**NOTE**

Trace must be enabled to return valid data.

#### 4.8.11 Rx Time Display Graph - Span

##### **:RXTime:TRACe:SPAN**

##### **:RXTime:TRACe:SPAN?**

**Description:** Set command defines Time span setting for Rx Time graph.  
Query command returns parameter setting.

**Range:** 300 to 24000 ms

**Units:** ms

**Default Value:** 300 ms

**Set/Query Format:** NRf | NR1

**Example:** :RXTime:TRACe:SPAN 10000  
Sets Rx Time Trace Span to 10,000 ms.

**Query Response:** :RXTime:TRACe:SPAN?  
10000

#### 4.8.12 Rx Time Display Graph - Symbol Clock Error Trace Enable

##### **:RXTime:SCE:TRACe:ENABLE**

##### **:RXTime:SCE:TRACe:ENABLE?**

**Description:** Set command Enables/Disables Symbol Clock Error trace.  
Query command returns parameter setting.

**Parameter:** OFF | ON | 0 | 1

**Default Value:** OFF

**Set/Query Format:** NR1

**Example:** :RXTime:SCE:TRACe:ENABLE 1  
Enables Symbol Clock Error trace.

**Query Response:** :RXTime:SCE:TRACe:ENABLE?  
1

**NOTE**

Trace must be enabled to return valid data.

#### 4.8.13 Rx Time Display Graph - Symbol Clock Error Query

##### **:RXTime:SCE:TRACe:FETCh?**

**Description:** Command returns Symbol Clock Error trace data.

**Query Data:** <statusbyte>,<#pairs>,<x data>,<y data>

**statusbyte (NR1):** 0 = Invalid

1 = Valid

2 = Inaccurate

**#pairs (NR1):** Number of x,y coordinate pairs to follow

**x, y data (NR2):** coordinate value

**Query Response:** :RXTime:SCE:TRACe:FETCh?

1,2,0.00,-1.59,330.00,-1.50

**NOTE**

Trace must be enabled to return valid data.

## 4.9 TRAJECTORY GRAPH

### 4.9.1 Trajectory - Channel Enable

**:TRAJectory:TRACe:CHn:ENABLE**

**:TRAJectory:TRACe:CHn:ENABLE?**

**Description:** Set command Enables/Disables Trajectory Channel.  
Query command returns parameter setting.

**Parameter:** OFF | ON | 0 | 1

**Default Value:** OFF

**Set/Query Format:** NR1

**Example:** :TRAJectory:TRACe:CH1:ENABLE 1  
Enables Trajectory measurements for Channel 1.

**Query Response:** :TRAJectory:TRACe:CH1:ENABLE?  
1

**NOTE**

CHn = 1, 2, 3 or 4 (Channel 1, 2, 3 or 4)  
Channel must be enabled to return valid data.

### 4.9.2 Trajectory - Decimation

**:CONFigure:DECIimation:TRAJectory**

**:CONFigure:DECIimation:TRAJectory?**

**Description:** Set command defines Decimation rate for Trajectory graph.  
Query command returns parameter setting.

**Range:** 10 to 10,000

**Default Value:** 11

**Set/Query Format:** NR1

**Example:** :CONFigure:DECIimation:TRAJectory 5000  
Sets Trajectory Decimation rate to 5000.

**Query Response:** :CONFigure:DECIimation:TRAJectory?  
5000

### 4.9.3 Trajectory - Persistence

**:TRAJectory:TRACe:PERSistence**

**:TRAJectory:TRACe:PERSistence?**

**Description:** Set command sets Persistence on Trajectory graph.  
Query command returns parameter setting.

**Range:** 1 to 10

**Default Value:** 1

**Set/Query Format:** NR1

**Example:** :TRAJectory:TRACe:PERSistence 5  
Sets Trajectory Graph Persistence to 5.

**Query Response:** :TRAJectory:TRACe:PERSistence?  
5



#### 4.9.4 Trajectory - Trace Enable

**:TRAJectory:TRACe:START**  
**:TRAJectory:TRACe:START?**

**Description:** Set command Enables/Disables Trajectory Trace.  
 Query command returns parameter setting.

**Parameter:** OFF | ON | 0 | 1

**Default Value:** OFF

**Set/Query Format:** NR1

**Example:** :TRAJectory:TRACe:START 1  
 Enables Trajectory Trace.

**Query Response:** :TRAJectory:TRACe:START?  
 1

**NOTE** Trace must be enabled to return valid data.

#### 4.9.5 Trajectory - Trace Query

**:TRAJectory:TRACe:CHn:FETCh?**

**Description:** Command returns graph coordinates of specified Channel.

**Query Data:** <statusbyte>,<#pairs>,<x data>,<y data>

**statusbyte (NR1):** 0 = Invalid  
 1 = Valid  
 2 = Inaccurate

**#pairs (NR1):** Number of x,y coordinate pairs to follow

**x, y data (NR2):** coordinate value

**Query Response:** :TRAJectory:TRACe:CH1:FETCh?  
 1,1440,-3.79,1.84,-3.87,2.25,-3.82,2.65,-3.65,3.03,-3.37,3.39,-2.99,3.70,-2.56,  
 3.98,-2.09,4.20,-1.62,4.35,-1.18,4.43,-0.78,4.43,-0.46,4.35,-0.24,4.19,-0.12,  
 3.93,-0.11,3.59,-0.20,3.18,-0.41,2.69,-0.71,2.14,-1.08,1.54,-1.50,0.91,-1.95,  
 0.26,-2.41,-0.39,-2.85,-1.03,-3.26,-1.64,-3.60,-2.20,-3.89,-2.70,-4.09,-3.13,  
 -4.21,-3.48,-4.25,-3.75,-4.23,-3.92,-4.13,-4.00,-3.99,-3.99,-3.81,-3.90,-3.61,  
 -3.73,-3.41,-3.51,-3.23,-3.25,-3.06,-2.96,-2.93,-2.66,-2.84,-2.38,-2.79,-2.12,  
 -2.79,-1.90,-2.82,-1.75,-2.88,-1.67,-2.95,-1.67,-3.03,-1.76,-3.09,-1.93,-3.13,  
 -2.18,-3.12,-2.50,-3.06,-2.87,-2.92,-3.28,-2.71,-3.69,-2.41,-4.09,-2.02,-4.44,  
 -1.55,-4.71,-1.01,-4.88,-0.42,-4.93,0.23,-4.85,0.89,-4.63,1.57,-4.26,2.23,-3.75,  
 2.85,-3.13,3.42,-2.40,3.91,-1.60,.....

**NOTE** CHn = 1, 2, 3 or 4 (Channel 1, 2, 3 or 4)  
 Channel and Trace must be enabled to return valid data.

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