VIAVI

3900 Series
Digital Radio Test Set
ARIB Remote Programming Manual

3900 Series

Digital Radio Test Set

ARIB Remote Programming Manual

PUBLISHED BY
VIAVI Solutions, Inc.

Re-Issued   Jan 2020

10200 West York Street/ Wichita, Kansas 67215 U.S.A. / (316) 522-4981 / FAX (316) 524-2623

Preface

ABOUT THIS MANUAL

This manual identifies Remote Commands for the 3900 Series ARIB Option (390XOPT460). Refer to the 3900 Series Remote Programming Manual for additional information about 3900 Remote Commands and for remote commands for 3900 Test Instruments. The remote commands identified in this manual are only valid when the ARIB Option is installed in the Test Set. Refer to the 3900 Series Operation Manual for information pertaining to Test Set operation.

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.

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

THIS PAGE INTENTIONALLY LEFT BLANK.

Contents

THIS PAGE INTENTIONALLY LEFT BLANK.

Table of Contents

Audio/Demod Signal
Rx Meter Remote Commands . . . . 5 - 1

Modulation Accuracy and Power
Remote Commands . . . . 6 - 1

Chapter 1 - UUT Measurement Return Data

1.1   INTRODUCTION

This chapter contains general information about DPMR UUT Measurement 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 is only valid for some 3900 models/options. Refer to product specifications for valid upper range.

1.2   UUT MEASUREMENT METER RETURN DATA

The information returned in UUT Measurement Meters data strings varies depending on the type of measurement. The following are examples:

 <statusbyte>,<failbyte>,<avgcount>,<avg>,<wc>

<statusbyte>,<failbyte>,<precision>,<percentage>,<avg>,<max>,<min>,<units>

<statusbyte>, <failbyte>, <avgcount>, <avg>, <max>, <min>

1.2.1   Status Byte (Bitmask)

> **NOTE**   Statusbyte may return more than one condition as a bitmask.

Status Byte returned in the following bit position indicates measurement reading status:

       Bit 0 = Invalid

       Bit 1 = Inaccurate

       Bit 2 = Settling

       Bit 3 = Squelch

       Returns 0 when measurement reading is valid.

1.2.2   Fail Byte (Bitmask)

> **NOTE**   Failbyte may return more than one condition as a bitmask.

Returns 0 in the following bit position when limit check has passed.

Returns 1 in the following bit position when limit check has failed.

       Bit 0 = Minimum Upper Limit

       Bit 1 = Minimum Lower Limit

       Bit 2 = Maximum Upper Limit

       Bit 3 = Maximum Lower Limit

       Bit 4 = Average Upper Limit

       Bit 5 = Average Lower Limit

       Bit 6 = Worst Case Upper Limit

Bit 7 = Worst Case Lower 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 query 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   Worst Case (wc)

Value indicates maximum measurement reading.

1.2.9   Peak to Peak/2 (pk-pk/2)

Value indicates FM Peak to Peak/2 measurement reading.

1.2.10   Positive Peak (pospeak)

Value indicates maximum measurement reading.

1.2.11   Negative Peak (negpeak)

Value indicates minimum measurement reading.

1.2.12   Units

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

1.2.13   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 - Generator/Transmit Channel Remote Commands

2.1　　　INTRODUCTION

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

2.2　　　AF GENERATOR CONFIGURATION

2.2.1　　　AF Generators - DCS Code

:AF:GENerator:SOURceN:CODEword "xxx"
:AF:GENerator:SOURceN:CODEword?

Description:	Set command defines the DCS code for specified AF Generator.
	Query command returns parameter setting.
Parameter:	Refer to Appendix A of 3900 Series Remote Programming Manual for supported DCS codes.
Default Value:	023
Set/Query Format:	NR1
Example:	:AF:GENerator:SOURce1:CODEword "071"
	Sets AF Generator 1 DCS Code to 071.
Query Response:	:AF:GENerator:SOURce1:CODEword?
	071

> **NOTE**　AF Generator Waveform must be defined as DCS for command to be valid.
> SourceN = 1, 2 or 3 (AF Generator 1, 2 or 3)

2.2.2　　　AF Generators - DTMF Burst Length

:AF:GENerator:SOURce1:MARK
:AF:GENerator:SOURce1:MARK?

Description:	Set command defines the length of time a DTMF burst is ON for the AF Generator 1.
	Query command returns parameter setting.
Range:	1 to 6,000,000 ms
Units:	ms
Default Value:	100 ms
Set/Query Format:	NRf | NR1
Example:	:AF:GENerator:SOURce1:MARK 5000ms
	Sets length of AF Generator 1 DTMF burst to 5000 milliseconds.
Query Response:	:AF:GENerator:SOURce1:MARK?
	5000

> **NOTE**　DTMF waveform is only supported on AF Generator 1.
> AF Generator 1 Waveform must be defined as DTMF for command to be valid.

2.2.3 AF Generators - DTMF Dead Time

:AF:GENerator:SOURce1:END
:AF:GENerator:SOURce1:END?

Description:	Set command defines the dead time between DTMF tones for AF Generator 1.
	Query command returns parameter setting.
Range:	1 to 6,000,000 ms
Units:	ms
Default Value:	500 ms
Set/Query Format:	NRf | NR1
Example:	:AF:GENerator:SOURce1:END 1000ms
	Sets dead time between DTMF tones to 1000 milliseconds.
Query Response:	:AF:GENerator:SOURce1:END?
	1000

> **NOTE** DTMF waveform is only supported on AF Generator 1.
> AF Generator 1 Waveform must be defined as DTMF for command to be valid.

2.2.4 AF Generators - DTMF Sequence

:AF:GENerator:SOURce1:SEQuence
:AF:GENerator:SOURce1:SEQuence?

Description:	Set command defines DTMF Sequence when DTMF Waveform is selected.
	Query command returns parameter setting.
Parameter:	0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | A | B | C | D | # | *
	maximum of 16 characters encased in double quotes " "
Default Value:	01234567
Set/Query Format:	hex string
Example:	:AF:GENerator:SOURce1:SEQuence "ABCD*1245#5678"
	Sets AF Generator 1 DTMF Sequence to ABCD*1245#5678.
Query Response:	:AF:GENerator:SOURce1:SEQuence?
	ABCD*1245#5678

> **NOTE** DTMF waveform is only supported on AF Generator 1.
> AF Generator 1 Waveform must be defined as DTMF for command to be valid.

2.2.5   AF Generators - DTMF Sequence Mode

:AF:GENerator:SOURce1:SEQMode
:AF:GENerator:SOURce1:SEQMode?

Description:	Set command defines the DTMF sequence mode of operation for the AF Generator 1.
	Query command returns parameter setting.
Parameter:	0 = Single DTMF burst
	1 = Continuous DMTF burst
Default Value:	0 (Single)
Set/Query Format:	NR1
Example:	:AF:GENerator:SOURce1:SEQMode 1
	Sets DTMF Sequence of AF Generator 1 to Continuous.
Query Response:	:AF:GENerator:SOURce1:SEQMode?
	1

NOTE	DTMF waveform is only supported on AF Generator 1.
	AF Generator 1 Waveform must be defined as DTMF for command to be valid.

2.2.6   AF Generators - DTMF Sequence Spacing

:AF:GENerator:SOURce1:SPACe
:AF:GENerator:SOURce1:SPACe?

Description:	Set command defines the length of time a DTMF burst is ON for the AF Generator 1.
	Query command returns parameter setting.
Range:	1 to 6,000,000 ms
Units:	ms
Default Value:	500 ms
Set/Query Format:	NRf | NR1
Example:	:AF:GENerator:SOURce1:SPACe 1000ms
	Sets dead time between DTMF tone sequences to 1000 milliseconds.
Query Response:	:AF:GENerator:SOURce1:SPACe?
	1000

NOTE	DTMF waveform is only supported on AF Generator 1.
	Continuous Sequence Mode must be selected for command to be valid.

2.2.7 AF Generators - Enable

:AF:GENerator:SOURceN:ENABle
:AF:GENerator:SOURceN:ENABle?

Description:	Set command Enables/Disables the specified AF Generator.
	Query command returns parameter setting.
Parameter:	OFF | ON | 0 | 1
Default Value:	OFF
Set/Query Format:	Boolean
Example:	:AF:GENerator:SOURce2:ENABle ON
	Enables AF Generator 2.
Query Response:	:AF:GENerator:SOURce2:ENABle?
	1

NOTE   SourceN = 1, 2 or 3 (AF Generator 1, 2 or 3)

2.2.8 AF Generators - Impedance

:CONFigure:IMPedance:AF:GENerator
:CONFigure:IMPedance:AF:GENerator?

Description:	Set command defines the Impedance of the AF Generator.
	Query command returns parameter setting.
Range:	1 to 10,000 Ohms
Units:	Ohms
Default Value:	600 Ohms
Set/Query Format:	NRf | NR1
Example:	:CONFigure:IMPedance:AF:GENerator 500OHMS
	Sets AF Generator Impedance to 500 Ohms.
Query Response:	:CONFigure:IMPedance:AF:GENerator?
	500

2.2.9 AF Generators - Frequency

:AF:GENerator:SOURceN:FREQuency
:AF:GENerator:SOURceN:FREQuency?

Description:	Set command defines the frequency for the specified AF Generator.
	Query command returns parameter setting.
Range:	1.0 Hz to 40.0 kHz
Units:	Hz | kHz
Default Value:	AF 1: 1.0 kHz
	AF 2: 300.0 Hz
	AF 3: 3.4 kHz
Set/Query Format:	NRf | NR2 (Hz)
Example:	:AF:GENerator:SOURce3:FREQuency 15kHz
	Sets AF Generator 3 Frequency to 15.0 kHz.
Query Response:	:AF:GENerator:SOURce3:FREQuency?
	15000.0

NOTE   SourceN = 1, 2 or 3 (AF Generator 1, 2 or 3)

2.2.10 AF Generators - Level

:AF:GENerator:SOURceN:LEVel
:AF:GENerator:SOURceN:LEVel?

Description:	Set command defines the Level for the specified AF Generator.
	Query command returns parameter setting.
Range:	1.0 mV to 5.0 Vrms
Units:	mV | V
Default Value:	100.0 mV
Set/Query Format:	NRf | NR2 (mV)
Example:	:AF:GENerator:SOURce1:LEVel 5V
	Sets AF Generator 1 Level (Amplitude) to 5.0 V.
Query Response:	:AF:GENerator:SOURce1:LEVel?
	5000.0

> **NOTE** SourceN = 1, 2 or 3 (AF Generator 1, 2 or 3)

2.2.11 AF Generators - Waveform

:AF:GENerator:SOURceN:SHAPe
:AF:GENerator:SOURceN:SHAPe?

Description:	Set command defines the Waveform for the specified AF Generator.
	Query command returns parameter setting.
Parameter:	SINE | SQUare | TRIangle | RAMP | DCS | DCSINV | DTMF
Query Data:	SNR | SINE | SQUare | TRIangle | RAMP | DCS | DCSINV | DTMF | TONESEQ | TONEREM
Default Value:	SINE
Set/Query Format:	CPD | CRD
Example:	:AF:GENerator:SOURce2:SHAPe SQUare
	Sets AF Generator 2 Waveform shape to Square.
Query Response:	:AF:GENerator:SOURce2:SHAPe?
	SQU

> **NOTE** SourceN = 1, 2 or 3 (AF Generator 1, 2 or 3)
>
> DTMF waveform is only valid on AF Generator 1. AF Generator 2 is unavailable when DTMF is selected on AF Generator 1.
>
> DCS and DCSINV are not supported on AF Generator 3.
>
> AF Generator 1 is unavailable as a modulation source when Normal MOD SNR Noise Measurements are defined (:CONFigure:MOD:ANALyzer:SNR:MODE 1) and AF:GENerator:SOURce1:SHAPe? returns SNR.

2.3   AF GENERATOR - TONE ENCODING

2.3.1   AF Generators - Encoding Enable

:AF:GENerator:ENCODE:ENABle
:AF:GENerator:ENCODE:ENABle?

Description:	Set command Enables/Disables (sends) one Tone.
	Query command returns parameter setting.
Parameter:	OFF | ON | 0 | 1
Default Value:	OFF
Set/Query Format:	Boolean
Example:	:AF:GENerator:ENCODE:ENABle ON
	Sends one Tone from Audio Generator.
Query Response:	:AF:GENerator:ENCODE:ENABle?
	1

2.3.2   AF Generators - Encoded Signal Type

:AF:GENerator:ENCODE:TYPE
:AF:GENerator:ENCODE:TYPE?

Description:	Set command defines type of signal being Encoded by the AF Generator.
	Query command returns parameter setting.
Parameter:	TWOTONE | TONESEQ | TONEREM
Default:	TWOTONE
Set/Query Format:	CPD | CRD
Example:	:AF:GENerator:ENCODE:TYPE TWOTONE
	Sets Audio Generator Tone Signaling Type to Two Tone Sequential.
Query Response:	:AF:GENerator:ENCODE:TYPE?
	TWOTONE

2.3.3   AF Generators - Tone Remote Function Duration

:AF:GEN:TONE:REMote:FUNCtion:DURation
:AF:GEN:TONE:REMote:FUNCtion:DURation?

Description:	Set command defines length of single Tone.
	Query command returns parameter setting.
Range:	20 to 500 ms
Units:	ms | s
Default:	40 ms
Set/Query Format:	NRf | NR1 (ms)
Example:	:AF:GEN:TONE:REMote:FUNCtion:DURation 50ms
	Sets length of single Tone to 50 milliseconds.
Query Response:	:AF:GEN:TONE:REMote:FUNCtion:DURation?
	50

2.3.4   AF Generators - Tone Remote Function Frequency

:AF:GEN:TONE:REMote:FUNCtion:FREQuency
:AF:GEN:TONE:REMote:FUNCtion:FREQuency?

Description:	Set command defines the Tone frequency.
	Query command returns parameter setting.
Range:	1.0 Hz to 2.999 kHz
Units:	Hz | kHz
Default Value:	1.050 kHz
Set/Query Format:	NRf | NR2 (Hz)
Example:	:AF:GEN:TONE:REMote:FUNCtion:FREQuency 15Hz
	Sets Tone Frequency to 15.0 Hz.
Query Response:	:AF:GEN:TONE:REMote:FUNCtion:FREQuency?
	15.0

2.3.5   AF Generators - Tone Remote Function Level

:AF:GEN:TONE:REMote:FUNCtion:LEVel
:AF:GEN:TONE:REMote:FUNCtion:LEVel?

Description:	Set command defines the Tone Audio Level.
	Query command returns parameter setting.
Range:	-20.0 to +20.0 dB
Units:	dB
Default Value:	0.0 dB
Set/Query Format:	NRf | NR2
Example:	:AF:GEN:TONE:REMote:FUNCtion:LEVel 5dB
	Sets the Tone Audio Level to 5.0 dB.
Query Response:	:AF:GEN:TONE:REMote:FUNCtion:LEVel?
	5.0

2.3.6   AF Generators - Tone Remote Guard Duration

:AF:GEN:TONE:REMote:GUARD:DURation
:AF:GEN:TONE:REMote:GUARD:DURation?

Description:	Set command defines length of single Tone.
	Query command returns parameter setting.
Range:	1 to 6,000,000 ms
Units:	ms | s | ks
Default:	120 ms
Set/Query Format:	NRf | NR1 (ms)
Example:	:AF:GEN:TONE:REMote:GUARD:DURation 50ms
	Sets length of single Tone 50 milliseconds.
Query Response:	:AF:GEN:TONE:REMote:GUARD:DURation?
	50

2.3.7 AF Generators - Tone Remote Guard Frequency

:AF:GEN:TONE:REMote:GUARD:FREQuency
:AF:GEN:TONE:REMote:GUARD:FREQuency?

Description:	Set command defines the Tone frequency.
	Query command returns parameter setting.
Range:	1.0 Hz to 2.999 kHz
Units:	Hz | kHz
Default Value:	2.175 kHz
Set/Query Format:	NRf | NR2 (Hz)
Example:	:AF:GEN:TONE:REMote:GUARD:FREQuency 15Hz
	Sets Tone Frequency to 15.0 Hz.
Query Response:	:AF:GEN:TONE:REMote:GUARD:FREQuency?
	15.0

2.3.8 AF Generators - Tone Remote Guard Level

:AF:GEN:TONE:REMote:GUARD:LEVel
:AF:GEN:TONE:REMote:GUARD:LEVel?

Description:	Set command defines the Tone Audio Level.
	Query command returns parameter setting.
Range:	-20.0 to +20.0 dB
Units:	dB
Default Value:	-20.0 dB
Set/Query Format:	NRf | NR2
Example:	:AF:GEN:TONE:REMote:GUARD:LEVel 5dB
	Sets the Tone Audio Level to 5.0 dB.
Query Response:	:AF:GEN:TONE:REMote:GUARD:LEVel?
	5.0

2.3.9 AF Generators - Tone Remote Maximum Duration

:AF:GEN:TONE:REMote:MAXimum:DURation
:AF:GEN:TONE:REMote:MAXimum:DURation?

Description:	Set command defines length of single Tone.
	Query command returns parameter setting.
Range:	20 to 500 ms
Units:	ms | s
Default:	120 ms
Set/Query Format:	NRf | NR1 (ms)
Example:	:AF:GEN:TONE:REMote:MAXimum:DURation 50ms
	Sets length of single Tone to 50 milliseconds.
Query Response:	:AF:GEN:TONE:REMote:MAXimum:DURation?
	50

2.3.10 AF Generators - Tone Remote Maximum Frequency

:AF:GEN:TONE:REMote:MAXimum:FREQuency
:AF:GEN:TONE:REMote:MAXimum:FREQuency?

Description:	Set command defines the Tone frequency.
	Query command returns parameter setting.
Range:	1.0 Hz to 2.999 kHz
Units:	Hz | kHz
Default Value:	2.175 kHz
Set/Query Format:	NRf | NR2 (Hz)
Example:	:AF:GEN:TONE:REMote:MAXimum:FREQuency 15Hz
	Sets Tone Frequency to 15.0 Hz.
Query Response:	:AF:GEN:TONE:REMote:MAXimum:FREQuency?
	15.0

2.3.11 AF Generators - Tone Remote Maximum Level

:AF:GEN:TONE:REMote:MAXimum:LEVel
:AF:GEN:TONE:REMote:MAXimum:LEVel?

Description:	Set command defines the Tone Audio Level.
	Query command returns parameter setting.
Range:	-20.0 to +20.0 dB
Units:	dB
Default Value:	10.0 dB
Set/Query Format:	NRf | NR2
Example:	:AF:GEN:TONE:REMote:MAXimum:LEVel 5dB
	Sets the Tone Audio Level to 5.0 dB.
Query Response:	:AF:GEN:TONE:REMote:MAXimum:LEVel?
	5.0

2.3.12 AF Generators - Tone Remote Reference Level

:AF:GEN:TONE:REMote:REFerence:LEVel
:AF:GEN:TONE:REMote:REFerence:LEVel?

Description:	Set command defines the Tone Reference Audio Level.
	Query command returns parameter setting.
Range:	20.0 to 5000.0 mV
Units:	mV | V
Default Value:	1.0 V
Set/Query Format:	NRf | NR2 (mV)
Example:	:AF:GEN:TONE:REMote:REFerence:LEVel 2.5V
	Sets the Tone Reference Audio Level to 2.5 Volts.
Query Response:	:AF:GEN:TONE:REMote:REFerence:LEVel?
	2500

2.3.13 AF Generators - Tone Sequential Audio Level

:AF:GEN:TONE:SEQuential:MASTER:LEVel
:AF:GEN:TONE:SEQuential:MASTER:LEVel?

Description:	Set command defines the Audio Level for Tone Sequential tones.
	Query command returns parameter setting.
Range:	20.0 to 5000.0 mV
Units:	mV | V
Default Value:	1.0 V
Set/Query Format:	NRf | NR2 (mV)
Example:	:AF:GEN:TONE:SEQuential:MASTER:LEVel 2V
	Sets the Audio Level for Tone Sequential tones to 2.0 Volts.
Query Response:	:AF:GEN:TONE:SEQuential:MASTER:LEVel?
	2000.0

2.3.14 AF Generators - Tone Sequential Mode

:AF:GEN:TONE:SEQuential:MODE
:AF:GEN:TONE:SEQuential:MODE?

Description:	Set command selects Tone Mode of operation.
	Query command returns parameter setting.
Parameter:	SINGLE | CONTINUOUS
Default Value:	SINGLE
Set/Query Format:	CPD | CRD
Example:	:AF:GEN:TONE:SEQuential:MODE CONTINUOUS
	Sets Mode of Tone Sequential burst to Continuous.
Query Response:	:AF:GEN:TONE:SEQuential:MODE?
	CONTINUOUS

2.3.15 AF Generators - Tone Sequential Protocol

:AF:GEN:TONE:SEQuential:PROTocol
:AF:GEN:TONE:SEQuential:PROTocol?

Description:	Set command selects protocol of single tone.
	Query command returns parameter setting.
Parameter:	ZVEI1 | ZVEI2 | ZVEI3 | PZVEI | DZVEI | PDZVEI | CCIR1 | CCIR2 | PCCIR |
	EEA | EUROSIG | NATEL | EIA | MODAT
Default Value:	ZVEI1
Set/Query Format:	CPD | CRD
Example:	:AF:GEN:TONE:SEQuential:PROTocol PZVEI
	Sets Protocol for tone to PZVEI.
Query Response:	:AF:GEN:TONE:SEQuential:PROTocol?
	PZVEI

2.3.16   AF Generators - Tone Sequential Sequence

:AF:GEN:TONE:SEQuential:SEQuence
:AF:GEN:TONE:SEQuential:SEQuence?

Description:	Set command defines Sequence of single tone.
	Query command returns parameter setting.
Parameter:	0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | A | B | C | D | E | F
	maximum of 8 characters encased in double quotes " "
Default Value:	01234
Set/Query Format:	hex string
Example:	:AF:GEN:TONE:SEQuential:SEQuence "ABCD1245"
	Sets Tone Sequential Sequence to ABCD1245.
Query Response:	:AF:GEN:TONE:SEQuential:SEQuence?
	ABCD1245

2.3.17   AF Generators - Two Tone Sequential Duration

:AF:GENerator:TTS:nTONE:DURation
:AF:GENerator:TTS:nTONE:DURation?

Description:	Set command defines length of single specified Tone.
	Query command returns parameter setting.
Range:	100 ms to 10 s
Units:	ms | s
Default:	1.0 s
Set/Query Format:	NRf | NR1 (ms)
Example:	:AF:GENerator:TTS:ATONE:DURation 5s
	Sets length of single Tone A burst to 5 seconds.
Query Response:	:AF:GENerator:TTS:ATONE:DURation?
	5000

NOTE	nTone = A or B (Tone A or B)

2.3.18   AF Generators - Two Tone Sequential Frequency

:AF:GENerator:TTS:nTONE:FREQuency
:AF:GENerator:TTS:nTONE:FREQuency?

Description:	Set command defines AF Generator Frequency for specified Tone.
	Query command returns parameter setting.
Range:	1.0 Hz to 2.999 kHz
Units:	Hz | kHz
Default Value:	Tone A: 500.0 Hz
	Tone B: 1.0 kHz
Set/Query Format:	NRf | NR2 (Hz)
Example:	:AF:GENerator:TTS:ATONE:FREQuency 150Hz
	Sets AF Generator Frequency for Tone A to 150.0 Hz.
Query Response:	:AF:GENerator:TTS:ATONE:FREQuency?
	150.00

NOTE	nTone = A or B (Tone A or B)

2.3.19   AF Generators - Two Tone Sequential Level

:AF:GENerator:TTS:LEVel
:AF:GENerator:TTS:LEVel?

Description:	Set command defines the Level for single tone.
	Query command returns parameter setting.
Range:	20.0 mV to 5.0 Vrms
Units:	mV | V
Default Value:	1.0 V
Set/Query Format:	NRf | NR2 (mV)
Example:	:AF:GENerator:TTS:LEVel 3V
	Sets AF Generator Level (Amplitude) to 3.0 Volts.
Query Response:	:AF:GENerator:TTS:LEVel?
	3000.0

2.4   MOD GENERATOR CONFIGURATION

2.4.1   Modulation Generators - Enable

:MOD:GENerator:SOURceN:ENABle
:MOD:GENerator:SOURceN:ENABle?

Description:	Set command Enables/Disables the specified Modulation Generator. Query command returns parameter setting.
Parameter:	OFF | ON | 0 | 1
Default Value:	OFF
Set/Query Format:	Boolean
Example:	:MOD:GENerator:SOURce1:ENABle ON
	Enables Modulation Generator 1.
Query Response:	:MOD:GENerator:SOURce1:ENABle?
	1

NOTE	:RF:MODulatorN:ENABle deprecated in software version 1.7.9.
	SourceN = 1, 2 or 3 (Modulator 1, 2 or 3)

2.4.2   Modulation Generators - Frequency

:MOD:GENerator:SOURceN:FREQuency
:MOD:GENerator:SOURceN:FREQuency?

Description:	Set command defines Frequency for the specified Modulation Generator. Query command returns parameter setting.
Range:	1.0 Hz to 5.0 kHz
Units:	Hz | kHz
Default Value:	Mod 1: 1.0 kHz
	Mod 2: 300.0 Hz
	Mod 3: 3.4 kHz
Set/Query Format:	NRf | NR2 (Hz)
Example:	:MOD:GENerator:SOURce1:FREQuency 2kHz
	Sets Modulation Generator 1 Frequency to 2.0 kHz.
Query Response:	:MOD:GENerator:SOURce1:FREQuency?
	2000.0

NOTE	RF:MODulatorN:FREQuency deprecated in software version 1.7.9.
	SOURceN = 1, 2 or 3 (Mod Generator 1, 2 or 3)

2.4.3 Modulation Generators - Level

:MOD:GENerator:SOURceN:LEVel
:MOD:GENerator:SOURceN:LEVel?

Description:	Set command defines Level for specified Modulation Generator.
	Query command returns parameter setting.
Range:	1.0 Hz to 150.0 kHz
Units:	Hz | kHz
Default Value:	2.5 kHz
Set/Query Format:	NRf | NR2 (Hz)
Example:	:MOD:GENerator:SOURce3:LEVel 3kHz
	Sets Modulation Generator 3 Level to 3.0 kHz.
Query Response:	:MOD:GENerator:SOURce3:LEVel?
	3000.00

> **NOTE**   :RF:MODulatorN:LEVel deprecated in software version 1.7.9.
> SOURceN = 1, 2 or 3 (Modulator 1, 2 or 3)

2.4.4 Modulation Generators - Level as a Percent (%)

:MOD:GENerator:SOURceN:LEVel:PERcent
:MOD:GENerator:SOURceN:LEVel:PERcent?

Description:	Set command defines Level for specified Modulation Generator.
	Query command returns parameter setting.
Range:	0 to 100%
Units:	% (Percent)
Default Value:	1.667%
Set/Query Format:	NRf | NR2 (%)
Example:	:MOD:GENerator:SOURce3:LEVel:PERcent 15
	Sets Modulation Generator 3 Level to 15.0%.
Query Response:	:MOD:GENerator:SOURce3:LEVel:PERcent?
	15.0

> **NOTE**   :RF:MODulatorN:LEVel:PERcent deprecated in software version 1.7.9.
> SOURceN = 1, 2 or 3 (Modulator 1, 2 or 3)

2.4.5　　　　Modulation Generators - Waveform

:MOD:GENerator:SOURceN:SHAPe
:MOD:GENerator:SOURceN:SHAPe?

Description:	Set command defines Waveform Shape for the specified Modulation Generator.
	Query command returns parameter setting.
Set Parameters:	SINE | SQUare | TRIangle | RAMP | DCS | DCSINV | DTMF
Query Data:	SINE | SQUare | TRIangle | RAMP | DCS | DCSINV | DTMF | TRKGEN
Default Value:	SINE
Set/Query Format:	CPD | CRD
Example:	:MOD:GENerator:SOURce2:SHAPe SQUare
	Sets Modulation Generator 2 Waveform Shape to Square.
Query Response:	:MOD:GENerator:SOURce2:SHAPe?
	SQU

> **NOTE**
>
> :RF:MODulatorN:SHAPe deprecated in software version 1.7.9.
>
> SOURceN = 1, 2 or 3 (Mod Generator 1, 2 or 3)
>
> DTMF is not a valid parameter for Modulator 2 and Modulator 3. DMTF may be returned as query data for Modulator 2.

2.5 MODULATION GENERATORS - TONE ENCODING

2.5.1 Modulation Generators - DCS Code

:MOD:GENerator:SOURceN:CODEword "xxx"
:MOD:GENerator:SOURceN:CODEword?

Description:	Set command defines the DCS code for specified Mod Generator Source.
	Query command returns parameter setting.
Parameter:	Refer to Appendix A of 3900 Series Remote Programming Manual for supported DCS codes.
Default Value:	023
Set/Query Format:	NR1
Example:	:MOD:GENerator:SOURce1:CODEword "071"
	Sets Mod Generator 1 DCS Code to 071.
Query Response:	:MOD:GENerator:SOURce1:CODEword?
	071

> **NOTE** Command only valid when Mod Generator Shape (Waveform) is set to DCS.
> SOURceN = 1, 2 or 3 (Mod Generator 1, 2 or 3)

2.5.2 Modulation Generators - DTMF Burst Length

:MOD:GENerator:SOURce1:MARK
:MOD:GENerator:SOURce1:MARK?

Description:	Set command defines length of time a DTMF burst is ON for Mod Generator 1.
	Query command returns parameter setting.
Range:	1 to 6,000,000 ms
Units:	ms
Default Value:	100 ms
Set/Query Format:	NRF	NR1
Example:	:MOD:GENerator:SOURce1:MARK 5000ms
	Sets length of Mod Generator 1 DTMF burst to 5000 milliseconds.
Query Response:	:MOD:GENerator:SOURce1:MARK?
	5000

> **NOTE** DTMF waveform is only supported on Mod Generator 1

2.5.3   Modulation Generators - DTMF Dead Time

:MOD:GENerator:SOURce1:END
:MOD:GENerator:SOURce1:END?

Description:	Set command defines the dead time between DTMF tones for Mod Generator 1.
	Query command returns parameter setting.
Range:	1 to 6,000,000 ms
Units:	ms
Default Value:	500 ms
Set/Query Format:	NRf	NR1
Example:	:MOD:GENerator:SOURce1:END 1000ms
	Sets dead time between DTMF tones to 1000 milliseconds.
Query Response:	:MOD:GENerator:SOURce1:END?
	1000

NOTE	DTMF waveform is only supported on Mod Generator 1.

2.5.4   Modulation Generators - DTMF Sequence

:MOD:GENerator:SOURce1:SEQuence
:MOD:GENerator:SOURce1:SEQuence?

Description:	Set command defines DTMF Sequence when DTMF Waveform is selected.
	Query command returns parameter setting.
Parameter:	0	1	2	3	4	5	6	7	8	9	A	B	C	D	#	*
	maximum of 16 characters encased in double quotes " "
Default Value:	01234567
Set/Query Format:	hex string
Example:	:MOD:GENerator:SOURce1:SEQuence "ABCD*1234#5678"
	Sets Mod Generator DTMF Sequence to ABCD*1245#5678.
Query Response:	:MOD:GENerator:SOURce1:SEQuence?
	ABCD*1245#5678

NOTE	Command only valid when Mod Generator 1 Waveform is set to DTMF.
	DMTF waveform is only supported on Mod Generator 1.

2.5.5 Modulation Generators - DTMF Sequence Mode

:MOD:GENerator:SOURce1:SEQuence:Mode
:MOD:GENerator:SOURce1:SEQuence:Mode?

Description:	Set command defines DTMF sequence mode of operation for Mod Generator 1.
	Query command returns parameter setting.
Parameter:	SINGLE | CONTINUOUS
Default Value:	SINGLE
Set/Query Format:	NR1
Example:	:MOD:GENerator:SOURce1:SEQuence:Mode CONTINUOUS
	Sets DTMF Sequence Mode of Mod Generator 1 to Continuous.
Query Response:	:MOD:GENerator:SOURce1:SEQuence:Mode?
	CONTINUOUS

> **NOTE** Command only valid when Mod Generator 1 Waveform is set to DTMF.
> DMTF waveform is only supported on Mod Generator 1.

2.5.6 Modulation Generators - DTMF Sequence Spacing

:MOD:GENerator:SOURce1:SPACe
:MOD:GENerator:SOURce1:SPACe?

Description:	Set command defines the dead time between DTMF tone sequence when operating in Continuous Sequence mode of operation for RF Mod Generator 1.
	Query command returns parameter setting.
Range:	1 to 6,000,000 ms
Units:	ms
Default Value:	500 ms
Set/Query Format:	NRf | NR1
Example:	:MOD:GENerator:SOURce1:SPACe 1000ms
	Sets dead time between DTMF tone sequences to 1000 milliseconds.
Query Response:	:MOD:GENerator:SOURce1:SPACe?
	1000

> **NOTE** Command only valid when Continuous Sequence Mode is selected.
> DTMF waveform is only supported on Mod Generator 1.

2.5.7 Modulation Generators - Encoding Enable

:MOD:GENerator:ENCODE:ENABle
:MOD:GENerator:ENCODE:ENABle?

Description:	Set command Enables/Disables (sends) one Tone from Modulation Generator.
	Query command returns parameter setting.
Parameter:	OFF | ON | 0 | 1
Default Value:	OFF
Set/Query Format:	Boolean
Example:	:MOD:GENerator:ENCODE:ENABle ON
	Sends one Tone from Modulation Generator.
Query Response:	:MOD:GENerator:ENCODE:ENABle?
	1

2.5.8 Modulation Generators - Encoded Signal Type

:MOD:GENerator:ENCODE:TYPE
:MOD:GENerator:ENCODE:TYPE?

Description:	Set command defines type of signal being Encoded by the Modulation Generator.
	Query command returns parameter setting.
Parameter:	TWOTONE | TONESEQ | TONEREM
Default:	TWOTONE
Set/Query Format:	CPD | CRD
Example:	:MOD:GENerator:ENCODE:TYPE TWOTONE
	Sets Modulation Generator Tone Signaling Type to Two Tone Sequential.
Query Response:	:MOD:GENerator:ENCODE:TYPE?
	TWOTONE

2.5.9 Modulation Generators - Tone Remote Functional Duration

:MOD:GEN:TONE:REMote:FUNCtion:DURation
:MOD:GEN:TONE:REMote:FUNCtion:DURation?

Description:	Set command defines length of single Tone.
	Query command returns parameter setting.
Range:	20 to 500 ms
Units:	ms | s
Default:	40 ms
Set/Query Format:	NRf | NR1 (ms)
Example:	:MOD:GEN:TONE:REMote:FUNCtion:DURation 50ms
	Sets length of single Tone burst to 50 milliseconds.
Query Response:	:MOD:GEN:TONE:REMote:FUNCtion:DURation?
	50

2.5.10 Modulation Generators - Tone Remote Functional Frequency

:MOD:GEN:TONE:REMote:FUNCtion:FREQuency
:MOD:GEN:TONE:REMote:FUNCtion:FREQuency?

Description:	Set command defines the Tone frequency.
	Query command returns parameter setting.
Range:	1.0 Hz to 2.999 kHz
Units:	Hz | kHz
Default Value:	1.050 kHz
Set/Query Format:	NRf | NR2 (Hz)
Example:	:MOD:GEN:TONE:REMote:FUNCtion:FREQuency 15Hz
	Sets Tone Frequency to 15.0 Hz.
Query Response:	:MOD:GEN:TONE:REMote:FUNCtion:FREQuency?
	15.0

2.5.11 Modulation Generators - Tone Remote Functional Level

:MOD:GEN:TONE:REMote:FUNCtion:LEVel
:MOD:GEN:TONE:REMote:FUNCtion:LEVel?

Description:	Set command defines the Tone Level.
	Query command returns parameter setting.
Range:	-20.0 to +20.0 dB
Units:	dB
Default Value:	0.0 dB
Set/Query Format:	NRf | NR2
Example:	:MOD:GEN:TONE:REMote:FUNCtion:LEVel 5dB
	Sets the Tone Level to 5.0 dB.
Query Response:	:MOD:GEN:TONE:REMote:FUNCtion:LEVel?
	5.0

2.5.12 Modulation Generators - Tone Remote Guard Duration

:MOD:GEN:TONE:REMote:GUARD:DURation
:MOD:GEN:TONE:REMote:GUARD:DURation?

Description:	Set command defines length of single Tone Remote burst.
	Query command returns parameter setting.
Range:	1 to 6,000,000 ms
Units:	ms | s | ks
Default:	120 ms
Set/Query Format:	NRf | NR1 (ms)
Example:	:MOD:GEN:TONE:REMote:GUARD:DURation 50ms
	Sets length of single Tone Remote burst to 50 milliseconds.
Query Response:	:MOD:GEN:TONE:REMote:GUARD:DURation?
	50

2.5.13 Modulation Generators - Tone Remote Guard Frequency

:MOD:GEN:TONE:REMote:GUARD:FREQuency
:MOD:GEN:TONE:REMote:GUARD:FREQuency?

Description:	Set command defines Tone Frequency.
	Query command returns parameter setting.
Range:	1.0 Hz to 2.999 kHz
Units:	Hz | kHz
Default Value:	2.175 kHz
Set/Query Format:	NRf | NR2 (Hz)
Example:	:MOD:GEN:TONE:REMote:GUARD:FREQuency 15Hz
	Sets Tone Frequency to 15.0 Hz.
Query Response:	:MOD:GEN:TONE:REMote:GUARD:FREQuency?
	15.0

2.5.14   Modulation Generators - Tone Remote Guard Level

:MOD:GEN:TONE:REMote:GUARD:LEVel
:MOD:GEN:TONE:REMote:GUARD:LEVel?

Description:	Set command defines the Tone Level.
	Query command returns parameter setting.
Range:	-20.0 to +20.0 dB
Units:	dB
Default Value:	-20.0 dB
Set/Query Format:	NRf | NR2
Example:	:MOD:GEN:TONE:REMote:GUARD:LEVel 5dB
	Sets the Tone Level to 5.0 dB.
Query Response:	:MOD:GEN:TONE:REMote:GUARD:LEVel?
	5.0

2.5.15   Modulation Generators - Tone Remote Maximum Duration

:MOD:GEN:TONE:REMote:MAXimum:DURation
:MOD:GEN:TONE:REMote:MAXimum:DURation?

Description:	Set command defines length of single Tone.
	Query command returns parameter setting.
Range:	20 to 500 ms
Units:	ms | s
Default:	120 ms
Set/Query Format:	NRf | NR1 (ms)
Example:	:MOD:GEN:TONE:REMote:MAXimum:DURation 50ms
	Sets length of single Tone burst to 50 milliseconds.
Query Response:	:MOD:GEN:TONE:REMote:MAXimum:DURation?
	50

2.5.16   Modulation Generators - Tone Remote Maximum Frequency

:MOD:GEN:TONE:REMote:MAXimum:FREQuency
:MOD:GEN:TONE:REMote:MAXimum:FREQuency?

Description:	Set command defines the Tone frequency.
	Query command returns parameter setting.
Range:	1.0 Hz to 2.999 kHz
Units:	Hz | kHz
Default Value:	2.175 kHz
Set/Query Format:	NRf | NR2 (Hz)
Example:	:MOD:GEN:TONE:REMote:MAXimum:FREQuency 15Hz
	Sets Tone Frequency to 15.0 Hz.
Query Response:	:MOD:GEN:TONE:REMote:MAXimum:FREQuency?
	15.0

2.5.17   Modulation Generators - Tone Remote Maximum Level

:MOD:GEN:TONE:REMote:MAXimum:LEVel
:MOD:GEN:TONE:REMote:MAXimum:LEVel?

Description:	Set command defines the Tone Level.
	Query command returns parameter setting.
Range:	-20.0 to +20.0 dB
Units:	dB
Default Value:	10.0 dB
Set/Query Format:	NRf | NR2
Example:	:MOD:GEN:TONE:REMote:MAXimum:LEVel 5dB
	Sets the Tone Level to 5.0 dB.
Query Response:	:MOD:GEN:TONE:REMote:MAXimum:LEVel?
	5.0

2.5.18   Modulation Generators - Tone Remote Reference Deviation

:MOD:GEN:TONE:REMote:REFerence:DEViation
:MOD:GEN:TONE:REMote:REFerence:DEViation?

Description:	Set command defines the Tone Reference Deviation.
	Query command returns parameter setting.
Range:	414.0 Hz to 150.0 kHz
Units:	Hz | kHz
Default Value:	2.5 kHz
Set/Query Format:	NRf | NR2 (Hz)
Example:	:MOD:GEN:TONE:REMote:REFerence:DEViation 1.75kHz
	Sets the Tone Reference Deviation to 1.75 kHz.
Query Response:	:MOD:GEN:TONE:REMote:REFerence:DEViation?
	1750.0

2.5.19   Modulation Generators - Tone Sequential FM Deviation

:MOD:GEN:TONE:SEQuential:MASTER:DEViation
:MOD:GEN:TONE:SEQuential:MASTER:DEViation?

Description:	Set command defines the Modulation FM Deviation for Tone Sequential Encoding.
	Query command returns parameter setting.
Range:	414.0 Hz to 150.0 kHz
Units:	Hz | kHz
Default Value:	2.5 kHz
Set/Query Format:	NRf | NR2 (Hz)
Example:	:MOD:GEN:TONE:SEQuential:MASTER:DEViation 1.75kHz
	Sets the Tone FM Deviation to 1.75 kHz.
Query Response:	:MOD:GEN:TONE:SEQuential:MASTER:DEViation?
	1750.0

2.5.20   Modulation Generators - Tone Sequential Mode

:MOD:GEN:TONE:SEQuential:MODE
:MOD:GEN:TONE:SEQuential:MODE?

Description:	Set command selects Tone Mode of operation.
	Query command returns parameter setting.
Parameter:	SINGLE | CONTINUOUS
Default Value:	SINGLE
Set/Query Format:	CPD | CRD
Example:	:MOD:GEN:TONE:SEQuential:MODE CONTINUOUS
	Sets Tone Sequential Mode to Continuous.
Query Response:	:MOD:GEN:TONE:SEQuential:MODE?
	CONTINUOUS

2.5.21   Modulation Generators - Tone Sequential Protocol

:MOD:GEN:TONE:SEQuential:PROTocol
:MOD:GEN:TONE:SEQuential:PROTocol?

Description:	Set command selects Tone protocol.
	Query command returns parameter setting.
Parameter:	ZVEI1 | ZVEI2 | ZVEI3 | PZVEI | DZVEI | PDZVEI | CCIR1 | CCIR2 | PCCIR | EEA | EUROSIG | NATEL | EIA | MODAT
Default Value:	ZVEI1
Set/Query Format:	CPD | CRD
Example:	:MOD:GEN:TONE:SEQuential:PROTocol PZVEI
	Sets Tone Protocol to PZVEI.
Query Response:	:MOD:GEN:TONE:SEQuential:PROTocol?
	PZVEI

2.5.22   Modulation Generators - Two Tone Sequential FM Deviation

:MOD:GENerator:TTS:DEViation
:MOD:GENerator:TTS:DEViation?

Description:	Set command defines the Tone Deviation for Modulation Generator.
	Query command returns parameter setting.
Range:	414.0 Hz to 150.0 kHz
Units:	Hz | kHz
Default Value:	2.5 kHz
Set/Query Format:	NRf | NR2 (Hz)
Example:	:MOD:GENerator:TTS:DEViation 4kHz
	Sets Mod Generator Deviation to 4.0 kHz
Query Response:	:MOD:GENerator:TTS:DEViation?
	4000.0

2.5.23 Modulation Generators - Two Tone Sequential Duration

:MOD:GENerator:TTS:nTONE:DURation
:MOD:GENerator:TTS:nTONE:DURation?

Description:	Set command defines length of single Tone.
	Query command returns parameter setting.
Range:	100 ms to 10 s
Units:	ms | s
Default:	Tone A: 1.0 s
	Tone B: 3.0 s
Set/Query Format:	NRf | NR1 (ms)
Example:	:MOD:GENerator:TTS:ATONE:DURation 5s
	Sets length of single Tone A burst to 5 seconds.
Query Response:	:MOD:GENerator:TTS:ATONE:DURation?
	5000

NOTE	nTone = A or B (Tone A or B)

2.5.24 Modulation Generators - Two Tone Sequential Frequency

:MOD:GENerator:TTS:nTONE:FREQuency
:MOD:GENerator:TTS:nTONE:FREQuency?

Description:	Set command defines Tone frequency for Modulation Generator.
	Query command returns parameter setting.
Range:	1.0 Hz to 2.999 kHz
Units:	Hz | kHz
Default Value:	Tone A: 500.0 Hz
	Tone B: 1.0 kHz
Set/Query Format:	NRf | NR2 (Hz)
Example:	:MOD:GENerator:TTS:ATONE:FREQuency 150Hz
	Sets Mod Generator Frequency for Tone A to 150.0 Hz.
Query Response:	:MOD:GENerator:TTS:ATONE:FREQuency?
	150.00

NOTE	nTone = A or B (Tone A or B)

2.6   EXTERNAL MODULATION GENERATOR

2.6.1   External Modulation Source - Enable

MOD:GENerator:ESOurce:ENABle
MOD:GENerator:ESOurce:ENABle?

Description:	Set command Enables/Disables External Modulation source.
	Query command returns parameter setting.
Parameter:	OFF | ON | 0 | 1
Default Value:	OFF
Set/Query Format:	Boolean
Example:	MOD:GENerator:ESOurce:ENABle ON
	Enables selected External Modulation source.
Query Response:	MOD:GENerator:ESOurce:ENABle?
	1

NOTE	RF:ESOurce:ENABle deprecated in software version 1.7.9.

2.6.2   External Modulation Generator - Impedance

MOD:GENerator:ESOurce:SOURce:LOAD
MOD:GENerator:ESOurce:SOURce:LOAD?

Description:	Set command defines the Impedance of External Modulation source.
	Query command returns parameter setting.
Parameter:	UNBHI | UNB600
Default Value:	UNB600
Set/Query Format:	CPD | CRD
Example:	MOD:GENerator:ESOurce:SOURce:LOAD UNBHI
	Sets Impedance of External Source to Unbalanced Hi-Z.
Query Response:	MOD:GENerator:ESOurce:SOURce:LOAD?
	UNBHI

NOTE	:RF:ESOurce:SOURce:LOAD deprecated in software version 1.7.9.

2.6.3   External Modulation Generator - Level

MOD:GENerator:ESOurce:LEVel
MOD:GENerator:ESOurce:LEVel?

Description:	Set command defines level of the External Modulation Generator.
	Query command returns parameter setting.
Range:	1.0 Hz to 150.0 kHz
Units:	Hz | kHz
Default Value:	2.5 kHz
Set/Query Format:	NR2 <units> | NR1 <Hz>
Example:	MOD:GENerator:ESOurce:LEVel 100kHz
	Sets Level of the External Moduation Generator to 100.0 kHz
Query Response:	MOD:GENerator:ESOurce:LEVel?
	10000

2.6.4 External Modulation Generator - Level in Percent

MOD:GENerator:ESOurce:LEVel:PERcent
MOD:GENerator:ESOurce:LEVel:PERcent?

Description:	Set command defines level of the External Modulation Generator as a percent.
	Query command returns parameter setting.
Range:	0.0% to 100%
Units:	%
Default Value:	1.667%
Set/Query Format:	NR2
Example:	MOD:GENerator:ESOurce:LEVel:PERcent 25
	Sets Level of the External Moduation Generator to 25.0%.
Query Response:	MOD:GENerator:ESOurce:LEVel:PERcent?
	25

2.6.5 External Modulation Generator - Source

MOD:GENerator:ESOurce:SOURce
MOD:GENerator:ESOurce:SOURce?

Description:	Set command defines external source for the Modulation Generator.
	Query command returns parameter setting.
Parameter:	AUD1 | AUD2 | MIC | BAL
Default Value:	AUD1
Set/Query Format:	CPD | CRD
Example:	MOD:GENerator:ESOurce:SOURce MIC
	Select Microphone as the External Modulation Source.
Query Response:	MOD:GENerator:ESOurce:SOURce?
	MIC

NOTE	:RF:ESOurce:SOURce has been deprecated in software version 1.7.9.

2.7   RF GENERATOR/TRANSMIT CHANNEL CONFIGURATION

2.7.1   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:	OFF
Set/Query Format:	Boolean
Example:	:RF:GENerator:ENABle ON
	Enables RF Generator.
Query Response:	:RF:GENerator:ENABle?
	1

2.7.2   RF Generator - Frequency

:RF:GENerator:CH1:FREQuency
:RF:GENerator:CH1: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:CH1:FREQuency 850MHz
	Sets RF Generator Frequency to 850.0 MHz.
Query Response:	:RF:GENerator:CH1:FREQuency?
	850000000

2.7.3   RF Generator - Level

:RF:GENerator:CH1:LEVel
:RF:GENerator:CH1:LEVel?

Description:	Set command defines RF Generator Level.	
	Query command returns parameter setting.	
Range:	**TR:**	-138.0 to -30.0 dBm
	GEN:	-130.0 to +10.0 dBm
Units:	dBm	
Default Value:	-30.0 dBm	
Set/Query Format:	NRf | NR2 (dBm)	
Example:	:RF:GENerator:CH1:LEVel -75dBm	
	Set RF Generator Level to -75.0 dBm.	
Query Response:	:RF:GENerator:CH1:LEVel?	
	-75.0	

2.7.4   RF Generator - Level Mode

:RF:GENerator:CH1:LMODe
:RF:GENerator:CH1:LMODe?

Description:	Set command defines RF Generator Level type.
	Query command returns parameter setting.
Parameter:	0 = PD
	1 = EMF
Default Value:	0 (PD)
Set/Query Format:	NR1
Example:	:RF:GENerator:CH1:LMODe 1
	Set RF Generator Level to Display value in EMF.
Query Response:	:RF:GENerator:CH1:LMODe?
	1

2.7.5   RF Generator - Offset Enable

:CONFigure:OFFSet:GENerator:ENABle
:CONFigure:OFFSet:GENerator:ENABle?

Description:	Set command Enables/Disables RF Generator Offset.
	Query command returns parameter setting.
Parameter:	OFF | ON | 0 | 1
Default Value:	OFF
Set/Query Format:	Boolean
Example:	:CONFigure:OFFSet:GENerator:ENABle ON
	Enables RF Generator Offset.
Query Response:	:CONFigure:OFFSet:GENerator:ENABle?
	1

2.7.6   RF Generator - Offset Value

:CONFigure:OFFSet:GENerator:VALue
:CONFigure:OFFSet:GENerator:VALue?

Description:	Set command defines RF Generator Offset Value.
	Query command returns parameter setting.
Range:	-100.0 to +100.0 dB
Units:	dB
Default Value:	0.0 dB
Set/Query Format:	NRf | NR2 (dB)
Example:	:CONFigure:OFFSet:GENerator:VALue 2.5dB
	Set RF Generator Offset to 2.5 dB.
Query Response:	:CONFigure:OFFSet:GENerator:VALue?
	2.5

2.7.7   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
	Selects the GEN (Generator) Connector as RF Output Connector.
Query Response:	:RF:GENerator:PORT?
	GEN

2.7.8   Transmit Channel - Pattern

:TRANsmit:CH1:PATTern
:TRANsmit:CH1:PATTern?

Description:	Set command defines Pattern for Transmit Channel.
	Query command returns parameter setting.
Parameter:	
ARIB -T98:	STD1031 | STDCAL | STDPN9 | STDPN15
ARIB -T102:	STD1031 | STD511 | FSWPN9
Default Value:	STD1031
Set/Query Format:	CPD | CRD
Example:	:TRANsmit:CH1:PATTern STDPN9
	Sets ARIB STD-T98 Channel to transmit STD PN9 Pattern.
Query Response:	:TRANsmit:CH1:PATTern?
	STDPN9

NOTE   STD PN9 (STD 511) and STD PN15 Patterns are defined per ITU-T definition. Valid parameter depends on defined Tx Protocol (:TRANsmit:CH1:PROTocol ARIB or :TRANsmit:CH1:PROTocol ARIBT102).

2.7.9   Transmit Channel - Protocol

:TRANsmit:CH1:PROTocol
:TRANsmit:CH1:PROTocol?

Description:	Set command selects Transmit Protocol.
	Query command returns parameter setting.
Parameter:	ANALOG | ARIB | ARIBT102
Default Value:	ARIB (ARIB-T98)
Set/Query Format:	CPD | CRD
Example:	:TRANsmit:CH1:PROTocol ANALOG
	Sets Tx Channel Protocol to Analog.
Query Response:	:TRANsmit:CH1:PROTocol?
	ANALOG

2.8   CABLE LOSS MEASUREMENTS

2.8.1   Cable Loss - List of Available Files

CONFigure:OFFSet:FILElist?

Description:	Query command returns list of available Cable Loss files.
Query Data Format:	ascii string, space delimited
Query Response:	CONFigure:OFFSet:FILElist?
	{None} {Cable_1} { Cable_2}

> **NOTE** Command is only valid when the Tracking Generator Option is installed in the Test Set.

2.8.2   Cable Loss - Load RF Generator Reference File

CONFigure:OFFSet:GENerator:FILE filename
CONFigure:OFFSet:GENerator:FILE?

Description:	Set command loads specified Cable Loss file.
	Query command returns parameter setting.
Parameter:	filename
Example:	CONFigure:OFFSet:GENerator:FILE Cable_1
	Loads Cable Loss File titled Cable_1.
Query Response:	CONFigure:OFFSet:GENerator:FILE?
	Cable_1

> **NOTE** Command is only valid when the Tracking Generator Option is installed in the Test Set.

2.8.3   Cable Loss - Load RF Analyzer Reference File

CONFigure:OFFSet:ANALyzer:FILE filename
CONFigure:OFFSet:ANALyzer:FILE?

Description:	Set command loads specified Cable Loss file.
	Query command returns parameter setting.
Parameter:	filename
Example:	CONFigure:OFFSet:ANALyzer:FILE Cable_1
	Loads Cable Loss File titled Cable_1.
Query Response:	CONFigure:OFFSet:ANALyzer:FILE?
	Cable_1

> **NOTE** Command is only valid when the Tracking Generator Option is installed in the Test Set.

2.8.4 Cable Loss - Target File for Offset Query

CABLeloss:TARGet:FILEname parameter

Description:	Set command targets specified Cable Loss file for offset value to be queried.
Parameter:	filename
Example:	CABLeloss:TARGet:FILEname Cable_1
	Targets the Cable Loss File titled Cable_1.
Query Response:	CABLeloss:TARGet:FILEname?
	Cable_1

> **NOTE** Command is only valid when the Tracking Generator Option is installed in the Test Set.
>
> Related commands: CABLeloss:TARGet:FREQuency and CABLeloss:TARGet:OFFSet?

2.8.5 Cable Loss - Frequency for Offset Query

CABLeloss:TARGet:FREQuency
CABLeloss:TARGet:FREQuency?

Description:	Set command defines the frequency in the cable loss file where the offset value is to be returned.
	Query command returns defined frequency value.
Parameter:	100.0 to 1000.0 MHz
Units:	Hz | kHz | MHz
Default Value:	100.00 MHz
Set/Query Format:	NRf | NR2 (MHz)
Example:	CABLeloss:TARGet:FREQuency 650MHz
	Targets 650 MHz for Frequency Offset Query.
Query Response:	CABLeloss:TARGet:FREQuency?
	650.0

> **NOTE** Command is only valid when the Tracking Generator Option is installed in the Test Set.
>
> Target file (CABLeloss:TARGet:FILEname) must be defined before sending this command. Offset value is queried using CABLeloss:TARGet:OFFSet? command.

2.8.6 Cable Loss - Return Offset Value

CABLeloss:TARGet:OFFSet?

Description:	Query command queries defined Cable Loss File and returns Offset value at frequency defined in CABLeloss:TARGet:Frequency command.
Query Response:	CABLeloss:TARGet:OFFSet?
	-0.04

> **NOTE** Command is only valid when the Tracking Generator Option is installed in the Test Set.
>
> Target file (CABLeloss:TARGet:FILEname) and frequency (CABLeloss:TARGet:FREQuency) must be defined before sending this command

THIS PAGE INTENTIONALLY LEFT BLANK.

Chapter 3 - Analyzer/Receive Channel Remote Commands

3.1 INTRODUCTION

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

3.2 ACQUIRE SIGNAL

3.2.1 Reset Signal Acquisition

:RECeive:RESET:ACQuisition

Description: Command resets signal acquisition

Parameter/Query: none

3.3 AUDIO MEASUREMENTS CONFIGURATION

3.3.1 AF Measurements - Filter Type

:AF:ANALyzer:MFILter
:AF:ANALyzer:MFILter?

Description:	Set command selects the Audio Analyzer Post Detection Filter.
	Query command returns parameter setting.
Parameter:	PSOPh | None | LP1 | LP2 | LP3 | LP4 | LP5 | LP6 | LP7 | HP1 | HP2 | HP3 | BP0 | BP1 | BP2 | BP3 | BP4 | BP5 | BP6 | BP7 | BP8 | BP9 | BP10 | BP11 | BP12 | BP13 | BP14 | BP15 | BP16

where:		
NONE = No Filter	BP2 = 0.3 to 5.0 kHz BP
PSOPh = Psoph (CMESS or CCITT)	BP3 = 0.3 to 20.0 kHz BP
LP1 = 300.0 Hz LP	BP4 = 0.3 to 15.0 kHz BP
LP2 = 5.0 kHz LP	BP5 = 20.0 to 300.0 Hz BP
LP3 = 20.0 kHz LP	BP6 = 0.02 to 3.0 kHz BP
LP4 = 15.0 kHz LP	BP7 = 0.02 to 3.4 kHz BP
LP5 = 3.0 kHz LP	BP8 = 0.02 to 5.0 kHz BP
LP6 = 625.0 kHz LP*	BP9 = 0.02 to 15.0 kHz BP
LP7 = 10.0 kHz LP*	BP10 = 0.02 to 20.0 kHz BP
LP8 = 100.0 Hz LP*	BP11 = 0.05 to 300.0 Hz BP
HP1 = 300.0 Hz HP	BP12 = 0.05 to 3.0 kHz BP
HP2 = 20.0 Hz HP	BP13 = 0.05 to 3.4 kHz BP
HP3 = 50.0 Hz HP	BP14 = 0.05 to 5.0 kHz BP
BP0 = 0.3 to 3.0 kHz BP	BP15 = 0.05 to 15.0 kHz BP
BP1 = 0.3 to 3.4 kHz BP	BP16 = 0.05 to 20.0 kHz BP

Default Value:	NONE (No Filter)
Set/Query Format:	CPD | CRD
Example:	:AF:ANALyzer:MFILter LP3
	Selects 20.0 kHz Low Pass Filter for AF measurements.
Query Response:	:AF:ANALyzer:MFILter?
	LP3

> **NOTE**
>
> Filter selected should be appropriate for signal received from UUT.
>
> When PSOPH is selected, Filter weight is defined using :CONFigure:AF:MFILter command.
>
> Test Set does not process any commands following this one until this command is completed.
>
> *LP6, LP7 and LP8 are used by the Audio Analyzer Tracking Generator and can not be defined by user, but may be returned as query data.

3.3.2 AF Measurements - Filter Weight

:CONFigure:AF:MFILter
:CONFigure:AF:MFILter?

Description:	Set command defines the weight of psoph filter for AF Analyzer when Psoph filter is selected.
	Query command returns parameter setting.
Parameter:	CMESs | CCITt
Default Value:	CMES
Set/Query Format:	CPD | CRD
Example:	:CONFigure:AF:MFILter CCITt
	Selects CCITT Psoph Filter for AF measurement.
Query Response:	:CONFigure:AF:MFILter?
	CCIT

> **NOTE** AF Filter type must be defined as Psoph (:AF:ANALyzer:MFILter PSOPH) for this command to be valid.

3.3.3 AF Measurements - Impedance

:CONFigure:AF:ANALyzer:SOURce:LOAD
:CONFigure:AF:ANALyzer:SOURce:LOAD?

Description:	Set command defines the Impedance of selected Audio Frequency (Receiver) source.
	Query command returns parameter setting.
Parameter:	UNBHI | UNB600
Default Value:	Audio Source defined
Set/Query Format:	CPD | CRD
Example:	:CONFigure:AF:ANALyzer:SOURce:LOAD UNBHI
	Sets Impedance of selected Audio Frequency (Receiver) Source to Unbalanced Hi-Z.
Query Response:	:CONFigure:AF:ANALyzer:SOURce:LOAD?
	UNBHI

> **NOTE** Command not valid when AF Analyzer Source is set to Balanced (:CONFigure:AF:ANALyzer:SOURce is set to BAL).

3.3.4 AF Measurements - Impedance External Load

:CONFigure:AF:ANALyzer:SOURce:VARiable:LOAD
:CONFigure:AF:ANALyzer:SOURce:VARiable:LOAD?

Description:	Set command defines the Impedance of selected Audio Frequency Analyzer (Receiver) source.
	Query command returns parameter setting.
Range:	1 to 9999 Ohms
Units:	Ohms
Default Value:	8 Ohms
Set/Query Format:	NRf | NR1
Example:	:CONFigure:AF:ANALyzer:SOURce:VARiable:LOAD 100OHMS
	Sets External Load to 100 Ohms for Audio Frequency Analyzer (Receiver).
Query Response:	:CONFigure:AF:ANALyzer:SOURce:VARiable:LOAD?
	100

> **NOTE** Command only valid when Impedance is set to Unbalanced Hi-Z (:CONFigure:AF:ANALyzer:SOURce:LOAD UNBHI).

3.3.5 AF Measurements - Impedance External Load Enable

:CONFigure:AF:ANALyzer:SOURce:VARiable:LOAD:ENABle
:CONFigure:AF:ANALyzer:SOURce:VARiable:LOAD:ENABle?

Description:	Set command enables External Load for Impedance.
	Query command returns parameter setting.
Parameter:	OFF | ON | 0 | 1
Set/Query Format:	Boolean
Default Value:	OFF
Example:	:CONFigure:AF:ANALyzer:SOURce:VARiable:LOAD:ENABle ON
	Enables and applies defined External Impedance Load.
Query Response:	:CONFigure:AF:ANALyzer:SOURce:VARiable:LOAD:ENABle?
	1

> **NOTE** Command :CONFigure:AF:ANALyzer:SOURce:VARiable:LOAD defines the external load applied when External Load is enabled.

3.4 AF ANALYZER - TONE DECODE

3.4.1 AF Analyzer - Clear Decode Log

:AF:ANALyzer:DECODE:LOGS:CLEAR

Description:	Command clears all AF data logs for Tone Remote, Tone Sequential and Two Tone Sequential signal types.
Parameter/Query:	none

3.4.2 AF Analyzer - DCS Decode Value

:FETCh:AF:ANALyzer:DECODE:DCS:VALue?

Description:	Command returns decode value of received signal.
Query Format:	ascii
Query Response:	:FETCh:AF:ANALyzer:DECODE:DCS:VALue?
	047

3.4.3 AF Analyzer - Decode Protocol

:AF:ANALyzer:DECODE:PROTocol
:AF:ANALyzer:DECODE:PROTocol?

Description:	Set command selects Protocol to be decoded by the AF Analyzer.
	Query command returns parameter setting.
Parameter:	ZVEI1 | ZVEI2 | ZVEI3 | PZVEI | DZVEI | PDZVEI | CCIR1 | CCIR2 | PCCIR | EEA | EUROSIG | NATEL | EIA | MODAT
Default Value:	ZVEI1
Set/Query Format:	CPD | CRD
Example:	:AF:ANALyzer:DECODE:PROTocol PZVEI
	Sets AF Analyzer to decode PZVEI Protocol.
Query Response:	:AF:ANALyzer:DECODE:PROTocol?
	PZVEI

3.4.4 AF Analyzer - DTMF Decode Value

:FETCh:AF:ANALyzer:DECODE:DTMF:VALue?

Description:	Command returns decode value of received signal.
Query Format:	ascii
Query Response:	:FETCh:AF:ANALyzer:DECODE:DTMF:VALue?
	047

3.4.5　　　AF Analyzer - Tone Remote Decode Data

:FETCh:AF:ANALyzer:DECODE:TONEREM:LOG?

Description:	Command returns received Tone Remote data.
Query Data:	\<frequency\>,\<spec frequency\>,\<% error\>,\<freq error\>,\<duration\>
frequency (NR2):	Hz
spec frequency (NR2):	Hz
% error (NR2):	percent (%)
freq error (NR2):	Hz
duration (NR2):	ms
no activity:	returned when no log data is available
Query Response:	:FETCh:AF:ANALyzer:DECODE:TONEREM:LOG?
	2173.8,2175.0,0.054,1.2,1422.9
	1048.8,1050.0,0.112,1.2,1422.9
	2173.8,2175.0,0.054,1.2,1422.9

3.4.6　　　AF Analyzer - Tone Sequential Decode Data

:FETCh:AF:ANALyzer:DECODE:TONESEQ:LOG?

Description:	Command returns received Tone Sequential data.
Query Format:	ascii data string
Query Data:	\<decoded tone\>,\<frequency\>,\<spec frequency\>,\<% error\>,\<freq error\>,\<duration\>
decoded tone (hex):	0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | A | B | C | D | E | F
frequency (NR2):	Hz
spec frequency (NR2):	Hz
% error (NR2):	percent (%)
freq error (NR2):	Hz
duration (NR2):	ms
no activity:	returned when no log data is available
Query Response:	:FETCh:AF:ANALyzer:DECODE:TONESEQ:LOG?
	0,2399.4,2400.0,0.024,0.6,85.3
	1,1060.5,1060.0,0.052,0.5,64.0
	2,1160.2,1160.0,0.013,0.2,74.7
	3,1280.3,1270.0,0.809,10.3,74.7
	4,1400.4,1400.0,0.028,0.4,74.7

3.4.7 AF Analyzer - Two Tone Sequential Decode Data

:FETCh:AF:ANALyzer:DECODE:TWOTONE:LOG?

Description:	Command returns received Two Tone Sequential data.
Query Data:	<frequency>,<duration>
frequency (NR2):	Hz
duration (NR2):	ms
no activity:	returned when no log data is available
Query Response:	:FETCh:AF:ANALyzer:DECODE:TWOTONE:LOG?
	1004.9,7349.3
	501.0,1013.3
	999.0,3008.0
	501.0,1013.3
	999.0,3008.0

3.4.8 AF Analyzer - Decode Signal Type

:AF:ANALyzer:DECODE:TYPE
:AF:ANALyzer:DECODE:TYPE?

Description:	Set command defines type of Signal being Decoded by the Audio Analyzer.
	Query command returns parameter setting.
Parameter:	OFF | DTMF | TONESEQ | TONEREM | TWOTONE
Default:	OFF (Demod)
Set/Query Format:	CPD | CRD
Example:	:AF:ANALyzer:DECODE:TYPE TONESEQ
	Sets type of signal being decoded by Audio Analyzer to Tone Sequential.
Query Response:	:AF:ANALyzer:DECODE:TYPE?
	TONESEQ

NOTE	:AF:ANALyzer:DECODE:TONETYPE was deprecated in software version 1.7.9.

3.5 MODULATION ANALYZER - TONE DECODING

3.5.1 Modulation Analyzers - Clear Decode Log

:MOD:ANALyzer:DECODE:LOGS:CLEAR

Description:	Command clears all modulation data logs for Tone Remote, Tone Sequential and Two Tone Sequential signal types.
Parameter/Query:	none

3.5.2 Modulation Analyzers - DCS Decode Value

:FETCh:MOD:ANALyzer:DECODE:DCS:VALue?

Description:	Command returns decode value of received signal.
Query Format:	ascii
Query Response:	:FETCh:MOD:ANALyzer:DECODE:DCS:VALue?
	047

3.5.3 Modulation Analyzers - Decode Protocol

:MOD:ANALyzer:DECODE:PROTocol
:MOD:ANALyzer:DECODE:PROTocol?

Description:	Set command selects Protocol to be decoded by the Modulation Analyzer. Query command returns parameter setting.
Parameter:	ZVEI1 | ZVEI2 | ZVEI3 | PZVEI | DZVEI | PDZVEI | CCIR1 | CCIR2 | PCCIR | EEA | EUROSIG | NATEL | EIA | MODAT
Default Value:	ZVEI1
Set/Query Format:	CPD | CRD
Example:	:MOD:ANALyzer:DECODE:PROTocol PZVEI
	Sets Modulation Analyzer to decode PZVEI Protocol.
Query Response:	:MOD:ANALyzer:DECODE:PROTocol?
	PZVEI

3.5.4 Modulation Analyzers - Decode Signal Tone

:MOD:ANALyzer:DECODE:TYPE
:MOD:ANALyzer:DECODE:TYPE?

Description:	Set command defines type of Signal being Decoded by the Modulation Analyzer. Query command returns parameter setting.
Parameter:	OFF | DCS | DCSINV | DTMF | TONESEQ | TONEREM | TWOTONE
Default:	OFF (Demod)
Set/Query Format:	CPD | CRD
Example:	:MOD:ANALyzer:DECODE:TYPE DCS
	Sets type of signal being decoded by Modulation Analyzer to DCS.
Query Response:	:MOD:ANALyzer:DECODE:TYPE?
	DCS

NOTE	:MOD:ANALyzer:DECODE:TONETYPE deprecated in software version 1.7.9.

3.5.5   Modulation Analyzers - DTMF Decode Value

:FETCh:MOD:ANALyzer:DECODE:DTMF:VALue?

           Description: Command returns decode value of received signal.

    Query Format: ascii

  Query Response: :FETCh:MOD:ANALyzer:DECODE:DTMF:VALue?

                       047

3.5.6   Modulation Analyzers - Tone Remote Decoded Data

:FETCh:MOD:ANALyzer:DECODE:TONEREM:LOG?

           Description: Command returns received Tone Remote data.

        Query Data: <frequency>,<spec frequency>,<% error>,<freq error>,<duration>

           frequency (NR2):   Hz

    spec frequency (NR2):   Hz

           % error (NR2):   percent (%)

         freq error (NR2):   Hz

          duration (NR2):   ms

             no activity: returned when no log data is available

  Query Response: :FETCh:MOD:ANALyzer:DECODE:TONEREM:LOG?

                       2173.8,2175.0,0.054,1.2,1422.9

                       1051.8,1050.0,0.167,1.8,1422.9

                       2176.8,2175.0,0.081,1.8,1422.9

3.5.7   Modulation Analyzers - Tone Sequential Decoded Data

:FETCh:MOD:ANALyzer:DECODE:TONESEQ:LOG?

           Description: Command returns received Modulation Tone Sequential data.

    Query Format: ascii data string

        Query Data: <decoded tone>,<frequency>,<spec frequency>,<% error>,<freq error>,<duration>

    decoded tone (hex):   0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | A | B | C | D | E | F

           frequency (NR2):   Hz

    spec frequency (NR2):   Hz

           % error (NR2):   percent (%)

         freq error (NR2):   Hz

          duration (NR2):   ms

             no activity: returned when no log data is available

  Query Response: :FETCh:MOD:ANALyzer:DECODE:TONESEQ:LOG?

                       0,2399.4,2400.0,0.024,0.6,74.7

                       1,1057.6,1060.0,0.225,2.4,74.7

                       2,1163.1,1160.0,0.266,3.1,64.0

                       3,1274.4,1270.0,0.348,4.4,74.7

                       4,1400.4,1400.0,0.028,0.4,74.7

3.5.8   Modulation Analyzers - Two Tone Sequential Decoded Data

:FETCh:MOD:ANALyzer:DECODE:TWOTONE:LOG?

Description: Command returns received Two Tone Sequential data.

Query Data: <frequency>,<duration>

frequency (NR2):   Hz

duration (NR2):   ms

no activity: returned when no log data is available

Query Response: :FETCh:MOD:ANALyzer:DECODE:TWOTONE:LOG?

                   501.0,1013.3

                   1002.0,3008.0

3.6 RECEIVER (ANALYZER) CONFIGURATION

3.6.1 Function Generator / Demod Out Connector

:CONFigure:PORT:FGEN
:CONFigure:PORT:FGEN?

Description:	Set command selects Function Generator / Demod Out Connector.
	Query command returns parameter setting.
Parameter:	FGEN | AUDio | DEMod
Default Value:	FGEN
Set/Query Format:	CPD | CRD
Example:	:CONFigure:PORT:FGEN DEMod
	Selects Demod as the Function Generator / Demod Out Connector.
Query Response:	:CONFigure:PORT:FGEN?
	DEM

3.6.2 RF Analyzer - AutoTune Frequency Resolution Value

:CONFigure:RF:ANALyzer:FMODe:FRESolution
:CONFigure:RF:ANALyzer:FMODe:FRESolution?

Description:	Set command defines AutoTune Frequency Resolution value when AutoTune is enabled.
	Query command returns parameter setting.
Parameter:	1 | 10 | 100 | 1000
Units:	Hz
Default Value:	1 Hz
Set/Query Format:	NRf | NR1
Example:	:CONFigure:RF:ANALyzer:FMODe:FRESolution 10
	Sets AutoTune Threshold to 10 Hz.
Query Response:	:CONFigure:RF:ANALyzer:FMODe:FRESolution?
	10

3.6.3 RF Analyzer - AutoTune Mode of Operation

:RF:ANALyzer:FMODe
:RF:ANALyzer:FMODe?

Description:	Set command selects AutoTune Frequency mode of operation.
	Query command returns parameter setting.
Parameter:	AUTo | MANual
Default Value:	Manual
Set/Query Format:	CPD | CRD
Example:	:RF:ANALyzer:FMODe AUTO
	Sets RF Analyzer to Autotune received frequency.
Query Response:	:RF:ANALyzer:FMODe?
	AUT

NOTE	AutoTune must be set to Manual to enter a specific Receive frequency.

3.6.4   RF Analyzer - AutoTune Operating Status

:RF:ANALyzer:FMODe:STATus?

Description:	Command indicates whether AutoTune frequency search is running or complete.
Query Data:	0 = Search complete
	1 = Searching
Query Format:	NR1
Query Response:	:RF:ANALyzer:FMODe:STATus?
	1

> **NOTE** This command has been deprecated in software version 3.7.0. Replace the command with :RF:ANALyzer:FMODe:STATE command to avoid script failures.

3.6.5   RF Analyzer - AutoTune Start Frequency

:RF:ANALyzer:FMODe:START
:RF:ANALyzer:FMODe:START?

Description:	Set command defines Start Frequency of AutoTune range.
	Query command returns parameter setting.
Range:	100.0 kHz to 2.71 GHz
Units:	Hz | kHz | MHz | GHz
Default Value:	10.0 MHz
Set/Query Format:	NRf | NR2 (Hz)
Example:	:RF:ANALyzer:FMODe:START 20kHz
	Sets AutoTune Start Frequency to 20.0 kHz.
Query Response:	:RF:ANALyzer:FMODe:START?
	200000.00 (Hz)

> **NOTE** AutoTune mode must be set to Auto for command to be valid.

3.6.6   RF Analyzer - AutoTune Start Frequency Enable

:RF:ANALyzer:FMODe:START:ENABle
:RF:ANALyzer:FMODe:START:ENABle?

Description:	Set command activates/deactivates AutoTune Start frequency.
	Query command returns parameter setting.
Parameter:	OFF | ON | 0 | 1
Default Value:	OFF
Set/Query Format:	Boolean
Example:	:RF:ANALyzer:FMODe:START:ENABle ON
	Activates AutoTune Start frequency.
Query Response:	:RF:ANALyzer:FMODe:START:ENABle?
	1

> **NOTE** Command only valid when AutoTune mode of operation is set to Auto.

3.6.7   RF Analyzer - AutoTune Stop Frequency

:RF:ANALyzer:FMODe:STOP
:RF:ANALyzer:FMODe:STOP?

Description:	Set command defines the Stop Frequency of AutoTune range.
	Query command returns parameter setting.
Parameter:	100.0 kHz to 2.71 GHz
Units:	Hz | kHz | MHz | GHz
Default Value:	500.0 MHz
Set/Query Format:	NRf | NR2 (Hz)
Example:	:RF:ANALyzer:FMODe:STOP 650MHz
	Sets RF Analyzer AutoTune Stop Frequency to 650.0 MHz.
Query Response:	:RF:ANALyzer:FMODe:STOP?
	650000000.00

NOTE	Command only valid when AutoTune mode of operation is set to Auto.

3.6.8   RF Analyzer - AutoTune Stop Frequency Enable

:RF:ANALyzer:FMODe:STOP:ENABle
:RF:ANALyzer:FMODe:STOP:ENABle?

Description:	Set command enables/disables AutoTune Stop Frequency.
	Query command returns parameter setting.
Parameter:	OFF | ON | 0 | 1
Default Value:	OFF
Set/Query Format:	Boolean
Example:	:RF:ANALyzer:FMODe:STOP:ENABle ON
	Activates AutoTune Stop Frequency.
Query Response:	:RF:ANALyzer:FMODe:STOP:ENABle?
	1

NOTE	Command only valid when AutoTune mode of operation is set to Auto.

3.6.9 RF Analyzer - AutoTune Threshold Value

:RF:ANALyzer:FMODe:THREsh
:RF:ANALyzer:FMODe:THREsh?

Description:	Set command defines the AutoTune Threshold value.
	Query command returns parameter setting.
Range:	-75.0 to +20.0 dBm
Units:	dBm
Default Value:	-30.0 dBm
Set/Query Format:	NRF | NR2
Example:	RF:ANALyzer:FMODe:THREsh -45dBm
	Sets AutoTune Threshold value to -45.0 dBm.
Query Response:	RF:ANALyzer:FMODe:THREsh?
	-45.000000

> **NOTE** :CONFigure:RF:ANALyzer:THREsh command also supported for this function.

3.6.10 RF Analyzer - Frequency

:RF:ANALyzer:CH1:FREQuency
:RF:ANALyzer:CH1:FREQuency?

Description:	Set command defines the RF Analyzer Frequency for signal.
	Query command returns parameter setting.
Range:	20.0 kHz to 2.71 GHz
Units	Hz | kHz | MHz | GHz
Default Value:	150.0 MHz
Set/Query Format:	NRF | NR1 (Hz)
Example:	:RF:ANALyzer:CH1:FREQuency 650MHz
	Sets RF Analyzer Frequency to 650.0 MHz.
Query Response:	:RF:ANALyzer:CH1:FREQuency?
	650000000

3.6.11 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.

3.6.12 RF Analyzer - FM IF Bandwidth

:RF:ANALyzer:FMIF
:RF:ANALyzer:FMIF?

Description:	Set command defines the FM IF Bandwidth.
	Query command returns parameter setting.
Parameter:	12.5 kHz | 30.0 kHz | 100.0 kHz
Default Value:	12.5 kHz
Set/Query Format:	NRf | NR2
Example:	:RF:ANALyzer:FMIF 30kHz
	Sets RF Analyzer FM IF Bandwidth to 30.0 kHz.
Query Response:	:RF:ANALyzer:FMIF?
	30.0kHz

NOTE	IF Bandwidth applies to ANALOG Protocol.

3.6.13 RF Analyzer - Offset Enable

:CONFigure:OFFSet:ANALyzer:ENABle
:CONFigure:OFFSet:ANALyzer:ENABle?

Description:	Set command Enables/Disables the RF Analyzer Offset.
	Query command returns parameter setting.
Parameter:	OFF | ON | 0 | 1
Default Value:	OFF
Set/Query Format:	Boolean
Example:	:CONFigure:OFFSet:ANALyzer:ENABle ON
	Enables RF Analyzer Offset.
Query Response:	:CONFigure:OFFSet:ANALyzer:ENABle?
	1

3.6.14 RF Analyzer - Offset Mode of Operation

:RECeive:CH1:LOCK
:RECeive:CH1:LOCK?

Description:	Set command defines the RF Analyzer Offset mode of operation.
	Query command returns parameter setting.
Parameter:	OFF | ON | 0 | 1
Default Value:	OFF (Unlocked)
Set/Query Format:	Boolean
Example:	:RECeive:CH1:LOCK ON
	Locks Frequency Offset to RF Analyzer Frequency.
Query Response:	:RECeive:CH1:LOCK?
	1

NOTE	Offset value defaults to 0.0 unless defined by user.

3.6.15 RF Analyzer - Offset Value

:CONFigure:OFFSet:ANALyzer:VALue
:CONFigure:OFFSet:ANALyzer:VALue?

Description:	Set command defines the RF Analyzer Offset Value.
	Query command returns parameter setting.
Range:	-40.0 to +40.0 dB
Units:	dB
Default Value:	0.0 dB
Set/Query Format:	NRf | NR2 (Hz)
Example:	:CONFigure:OFFSet:ANALyzer:VALue -10dB
	Sets RF Analyzer Offset to -10.0 dB.
Query Response:	:CONFigure:OFFSet:ANALyzer:VALue?
	-10.00

3.6.16 Receiver - 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:RrECeiver:AMP ON
	Enables Receiver Pre-Amplifier.
Query Response:	:RF:ANALyzer:RECeiver:AMP?
	1

3.6.17

3.6.18 RF Analyzer - Receive Offset

:RF:ANALyzer:CH1:OFFSet
:RF:ANALyzer:CH1:OFFSet?

Description:	Set command defines the Receive Offset Value.
	Query command returns parameter setting.
Range:	-999.0 to +999.0 MHz
Units:	Hz | kHz | MHz | GHz
Default Value:	0.0 MHz
Set/Query Format:	NRf | NR2 (Hz)
Example:	:RF:ANALyzer:CH1:OFFSet -100kHz
	Sets Receive Offset to -100.0 kHz.
Query Response:	:RF:ANALyzer:CH1:OFFSet?
	-100000.00

3.6.19   Receive Channel - Protocol

:RECeive:CH1:PROTocol
:RECeive:CH1:PROTocol?

Description:	Set command selects Receive Channel Protocol.
	Query command returns parameter setting.
Parameter:	ANALOG | ARIB | ARIBT102
Default Value:	ARIB (ARIB-T98)
Set/Query Format:	CPD | CRD
Example:	:RECeive:CH1:PROTocol ANALOG
	Sets Rx Channel Protocol to Analog.
Query Response:	:RECeive:CH1:PROTocol?
	ANALOG

THIS PAGE INTENTIONALLY LEFT BLANK.

Chapter 4 - ARIB Signal Meter Remote Commands

4.1 INTRODUCTION

This chapter describes the Remote Commands used for configuring and obtaining ARIB signal measurement data. Remote Commands are listed alphabetically by meter name.

4.2 RESET MEASUREMENT DATA

4.2.1 Reset Signal Acquisition

:RECeive:RESET:ACQuisition

Description:	Command resets signal acquisition
Parameter/Query:	none

4.3 BIT ERROR RATE (BER)

4.3.1 Bit Error Rate - Averages

:METERs:BER:CH1:AVERaging
:METERs:BER:CH1:AVERaging?

Description:	Set command defines number of readings taken to calculate Average Bit Error Rate measurement. Query command returns parameter setting.
Range:	1 to 250
Default Value:	1
Set/Query Format:	NR1
Example:	:METERs:BER:CH1:AVERaging 100 Sets the number of readings taken to calculate Average Bit Error Rate measurement to 100.
Query Response:	:METERs:BER:CH1:AVERaging? 100

4.3.2 Bit Error Rate - Average Measurement Reset

:METERs:BER:CH1:CLEAR:AVG

Description:	Command clears and resets Average Bit Error Rate measurement.
Parameter/Query:	none

4.3.3 Bit Error Rate - Lower Limit Enable

:LIMits:BER:CH1:LOWer:ENABle
:LIMits:BER:CH1:LOWer: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:	Boolean
Example:	:LIMits:BER:CH1:LOWer:ENABle ON
	Enables Lower Limit for Bit Error Rate measurement.
Query Response:	:LIMits:BER:CH1:LOWer:ENABle?
	1

4.3.4 Bit Error Rate - Lower Limit Value

:LIMits:BER:CH1:LOWer:VALue
:LIMits:BER:CH1:LOWer:VALue?

Description:	Set command defines Lower Limit Value for Bit Error Rate Measurement. Query command returns parameter setting.
Range:	0.0 to 100.0%
Units:	% (percent)
Default Value:	0.0%
Set/Query Format:	NRf | NR2
Example:	:LIMits:BER:CH1:LOWer:VALue 1
	Sets Lower Limit Value for Bit Error Rate Measurement to 1.0%.
Query Response:	:LIMits:BER:CH1:LOWer:VALue?
	1.0000000000

4.3.5 Bit Error Rate - Measurement Query

:METERs:BER:CH1:STATus?

Description:	Command returns Bit Error Rate measurement data.
Query Data:	<statusbyte>,<failbyte>,<precision>,<percentage>,<avg>,<max>,<min>,<units>
NOTE	Refer to Chapter 1 for UUT Measurement Meter Return Data.
Query Response:	:METERs:BER:CH1:STATus?
	0,0,10, 100.000, 0.0099751540,0.0100574717,0.0000000000,0

4.3.6 Bit Error Rate - Peak Measurement Reset

:METERs:BER:CH1:CLEAR:PEAK

Description:	Command clears and resets Peak Bit Error Rate measurement.
Parameter/Query:	none

4.3.7   Bit Error Rate - Receive Pattern

:METERs:BER:PATTern
:METERs:BER:PATTern?

Description:	Set command defines Receive Pattern for Bit Error Rate measurement.
	Query command returns parameter setting.
Parameter:	
ARIB -T98:	STD1031 | STDCAL | STDPN9 | STDPN15
ARIB -T102:	STD1031 | STD511 | FSWPN9
Default Value:	STD1031
Set/Query Format:	CPD | CRD
Example:	:METERs:BER:PATTern STDCAL
	Sets Receive Pattern for Bit Error Rate measurement to STD CAL Pattern.
Query Response:	:METERs:BER:PATTern?
	STDCAL

NOTE	STD PN9 (STD 511) and STD PN15 Patterns are defined per ITU-T definition. Valid parameter depends on defined Rx Protocol (:RECeive:CH1:PROTocol ARIB or :RECeive:CH1:PROTocol ARIBT102).

4.3.8   Bit Error Rate - Upper Limit Enable

:LIMits:BER:CH1:UPPer:ENABle
:LIMits:BER:CH1:UPPer: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:	Boolean
Example:	:LIMits:BER:CH1:UPPer:ENABle ON
	Enables Upper Limit for Bit Error Rate measurement.
Query Response:	:LIMits:BER:CH1:UPPer:ENABle?
	1

4.3.9   Bit Error Rate - Upper Limit Value

:LIMits:BER:CH1:UPPer:VALue
:LIMits:BER:CH1:UPPer:VALue?

Description:	Set command defines Upper Limit Value for Bit Error Rate measurement.
	Query command returns parameter setting.
Range:	0.0 to 100.0%
Units:	% (percent)
Default Value:	0.0%
Set/Query Format:	NRf | NR2
Example:	:LIMits:BER:CH1:UPPer:VALue 5
	Sets Upper Limit Value for Bit Error Rate measurements to 5%.
Query Response:	:LIMits:BER:CH1:UPPer:VALue?
	5.0000000000

4.4 BROADBAND POWER

4.4.1 Broadband Power - Averages

:CONFigure:RF:ANALyzer:TRBPower:AVERage
:CONFigure:RF:ANALyzer:TRBPower:AVERage?

Description:	Set command defines number of readings taken to calculate Average Broadband Power measurement.
	Query command returns parameter setting.
Range:	1 to 250
Default Value:	1
Set/Query Format:	NR1
Example:	:CONFigure:RF:ANALyzer:TRBPower:AVERage 25
	Sets number of readings taken to calculate Average Broadband Power measurement to 25.
Query Response:	:CONFigure:RF:ANALyzer:TRBPower:AVERage?
	25

4.4.2 Broadband Power - Lower Limit Enable

:LIMits:RF:TRBPower:LOWer:ENABle
:LIMits:RF:TRBPower:LOWer:ENABle?

Description:	Set command Enables/Disables Lower Limit for Broadband Power measurement.
	Query command returns parameter setting.
Parameter:	OFF | ON | 0 | 1
Default Value:	OFF
Set/Query Format:	Boolean
Example:	:LIMits:RF:TRBPower:LOWer:ENABle ON
	Enables Lower Limit for Broadband Power measurement.
Query Response:	:LIMits:RF:TRBPower:LOWer:ENABle?
	1

4.4.3 Broadband Power - Lower Limit Value

:LIMits:RF:TRBPower:LOWer:VALue
:LIMits:RF:TRBPower:LOWer:VALue?

Description:	Set command defines Lower Limit Value for Broadband Power measurement.
	Query command returns parameter setting.
Range:	-140.0 to +70.0 dBm
Units:	mW | W | dBW | dBm
Default Value:	100.0 µW
Set/Query Format:	NRf | NR2 (W)
Example:	:LIMits:RF:TRBPower:LOWer:VALue -45dBm
	Sets Lower Limit Value for Broadband measurement to -45.0 dBm.
Query Response:	:LIMits:RF:TRBPower:LOWer:VALue?
	0.0

4.4.4 Broadband Power - Measurement Query

:FETCh:RF:ANALyzer:TRBPower? <units>

Description:	Command returns Broadband Power measurement data.
Query Data:	<statusbyte>,<failbyte>,<avgcount>,<avg>

NOTE	Refer to Chapter 1 for UUT Measurement Meter Return Data.

Units:	W | dBW | dBM
Query Response:	:FETCh:RF:ANALyzer:TRBPower? DBW
	1,5,1,0.0013

NOTE	RF Input must be set to TR to return valid data.

4.4.5 Broadband Power - Peak Measurement Query

:FETCh:RF:ANALyzer:TRBPower:HOLD?

Description:	Command returns Peak Broadband Power measurement data.
Query Data:	<statusbyte>,<failbyte>,<avgcount>,<avg>

NOTE	Refer to Chapter 1 for UUT Measurement Meter Return Data.

Units:	W | dBW | dBM
Query Response:	:FETCh:RF:ANALyzer:TRBPower:HOLD?
	1,5,0.0091

NOTE	RF Input must be set to TR to return valid data.

4.4.6 Broadband Power - Units

:CONFigure:RF:ANALyzer:TRBPower:UNIts
:CONFigure:RF:ANALyzer:TRBPower:UNIts?

Description:	Set command defines the unit of measurement for Broadband Power measurement.
	Query command returns parameter setting.
Parameter:	W | dBW | dBm
Default Value:	W
Set/Query Format:	CPD | CRD
Example:	:CONFigure:RF:ANALyzer:TRBPower:UNIts DBW
	Displays Broadband Power measurement in dBW.
Query Response:	:CONFigure:RF:ANALyzer:TRBPower:UNIts?
	DBW

4.4.7 Broadband Power - Upper Limit Enable

:LIMits:RF:TRBPower:UPPer:ENABle
:LIMits:RF:TRBPower:UPPer:ENABle?

Description:	Set command Enables/Disables Upper Limit for Broadband Power measurement.
	Query command returns parameter setting.
Parameter:	OFF | ON | 0 | 1
Default Value:	OFF
Set/Query Format:	Boolean
Example:	:LIMits:RF:TRBPower:UPPer:ENABle ON
	Enables Upper Limit for Broadband Power measurement.
Query Response:	:LIMits:RF:TRBPower:UPPer:ENABle?
	1

4.4.8 Broadband Power - Upper Limit Value

:LIMits:RF:TRBPower:UPPer:VALue
:LIMits:RF:TRBPower:UPPer:VALue?

Description:	Set command defines Upper Limit Value for Broadband Power measurement.
	Query command returns parameter setting.
Range:	-140.0 to +70.0 dBm
Units:	mW | W | dBW | dBm
Default Value:	100.0 µW
Set/Query Format:	NRf | NR2 (W)
Example:	:LIMits:RF:TRBPower:UPPer:VALue -25dBm
	Sets Upper Limit Value for Broadband Power measurement to -25.0 dBm.
Query Response:	:LIMits:RF:TRBPower:UPPer:VALue?
	0.0

4.5 FREQUENCY CORRECTION

4.5.1 Frequency Error - Average

:METERs:FCR:CH1:AVERaging
:METERs:FCR:CH1:AVERaging?

Description:	Set command defines the number of readings taken to calculate Average Frequency Error measurement.
	Query command returns parameter setting.
Range:	1 to 250
Default Value:	1
Set/Query Format:	NR1
Example:	:METERs:FCR:CH1:AVERaging 100
	Sets the number of readings taken to calculate Average Frequency Error measurement to 100.
Query Response:	:METERs:FCR:CH1:AVERaging?
	100

4.5.2

4.5.3 Frequency Error - Average Measurement Reset

:METERs:FCR:CH1:CLEAR:AVG

Description:	Command clears and resets Average Frequency Correction measurement.
Parameter/Query:	none

4.5.4 Frequency Error - Lower Limit Enable

:LIMits:FCR:CH1:LOWer:ENABle
:LIMits:FCR:CH1:LOWer:ENABle?

Description:	Set command Enables/Disables Lower Limit for Frequency Correction measurement.
	Query command returns parameter setting.
Parameter:	OFF | ON | 0 | 1
Default Value:	OFF
Set/Query Format:	Boolean
Example:	:LIMits:FCR:CH1:LOWer:ENABle ON
	Enables Lower Limit for Frequency Correction measurement.
Query Response:	:LIMits:FCR:CH1:LOWer:ENABle?
	1

4.5.5 Frequency Error - Lower Limit Value

:LIMits:FCR:CH1:LOWer:VALue
:LIMits:FCR:CH1:LOWer:VALue?

Description:	Set command defines Lower Limit Value for Frequency Correction 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:CH1:LOWer:VALue 250Hz
	Sets Lower Limit Value for Frequency Correction measurement to 250.0 Hz.
Query Response:	:LIMits:FCR:CH1:LOWer:VALue?
	250.00

4.5.6 Frequency Error - Measurement Query

:METERs:FCR:CH1:STATus?

Description:	Command returns Frequency Error measurement data.
Query Data:	<statusbyte>,<failbyte>,<precision>,<percentage>,<avg>,<max>,<min>,<units>

NOTE Refer to Chapter 1 for UUT Measurement Meter Return Data.

Query Response:	:METERs:FCR:CH1:STATus?
	0,0,3 100.00, -0.044, 0.204, -16.907,2

4.5.7 Frequency Error - Peak Measurement Reset

:METERs:FCR:CH1:CLEAR:PEAK

Description:	Command clears and resets Peak Frequency Correction measurement.
Parameter/Query:	none

4.5.8 Frequency Error - Upper Limit Enable

:LIMits:FCR:CH1:UPPer:ENABle
:LIMits:FCR:CH1:UPPer:ENABle?

Description:	Set command Enables/Disables Upper Limit for Frequency Correction measurement.
	Query command returns parameter setting.
Parameter:	OFF | ON | 0 | 1
Default Value:	OFF
Set/Query Format:	Boolean
Example:	:LIMits:FCR:CH1:UPPer:ENABle ON
	Enables Upper Limit for Frequency Correction measurement.
Query Response:	:LIMits:FCR:CH1:UPPer:ENABle?
	1

4.5.9   Frequency Error - Upper Limit Value

:LIMits:FCR:CH1:UPPer:VALue
:LIMits:FCR:CH1:UPPer:VALue?

Description:	Set command defines Upper Limit Value for Frequency Correction 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:CH1:UPPer:VALue 500Hz
	Sets Upper Limit Value for Frequency Correction measurements to 500.0 Hz.
Query Response:	:LIMits:FCR:CH1:UPPer:VALue?
	500.00

4.6 FSK ERROR

4.6.1 FSK Error - Averages

:METERs:FSKERR:CH1:AVERaging
:METERs:FSKERR:CH1:AVERaging?

Description:	Set command defines number of readings taken to calculate Average FSK Error measurement.
	Query command returns parameter setting.
Range:	1 to 250
Default Value:	1
Set/Query Format:	NR1
Example:	:METERs:FSKERR:CH1:AVERaging 100
	Sets the number of readings taken to calculate Average FSK Error measurement to 100.
Query Response:	:METERs:FSKERR:CH1:AVERaging?
	100

4.6.2 FSK Error - Average Measurement Reset

:METERs:FSKERR:CH1:CLEAR:AVG

Description:	Command clears and resets Average FSK Error measurement.
Parameter/Query:	none

4.6.3 FSK Error - Lower Limit Enable

:LIMits:FSKERR:CH1:LOWer:ENABle
:LIMits:FSKERR:CH1:LOWer:ENABle?

Description:	Set command Enables/Disables Lower Limit for FSK Error measurement.
	Query command returns parameter setting.
Parameter:	OFF | ON | 0 | 1
Default Value:	OFF
Set/Query Format:	Boolean
Example:	:LIMits:FSKERR:CH1:LOWer:ENABle ON
	Enables Lower Limit for FSK Error measurement.
Query Response:	:LIMits:FSKERR:CH1:LOWer:ENABle?
	1

4.6.4   FSK Error - Lower Limit Value

:LIMits:FSKERR:CH1:LOWer:VALue
:LIMits:FSKERR:CH1:LOWer:VALue?

Description:	Set command defines Lower Limit Value for FSK Error 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:FSKERR:CH1:LOWer:VALue 100
	Sets Lower Limit Value for FSK Error measurement to 100.0%.
Query Response:	:LIMits:FSKERR:CH1:LOWer:VALue?
	100.00

4.6.5   FSK Error - Measurement Query

:METERs:FSKERR:CH1:STATus?

Description:	Command returns FSK Error measurement data.
Query Data:	\<statusbyte>,\<failbyte>,\<precision>,\<percentage>,\<avg>,\<max>,\<min>,\<units>

NOTE	Refer to Chapter 1 for UUT Measurement Meter Return Data.

Query Response:	:METERs:FSKERR:CH1:STATus?
	0,0,3, 100.000, 0.581, 113.982, 0.000,1

4.6.6   FSK Error - Measurement Type

:METERs:FSKERR:CH1:MODE
:METERs:FSKERR:CH1:MODE?

Description:	Set command defines FSK Error measurement type.
	Query command returns parameter setting.
Parameter:	PEAK | AVERage
Default Value:	PEAK
Set/Query Format:	CPD | CRD
Example:	:METERs:FSKERR:CH1:MODE AVERage
	Sets FSK Error measurement to Average.
Query Response:	:METERs:FSKERR:CH1:MODE?
	AVER

4.6.7   FSK Error - Peak Measurement Reset

:METERs:FSKERR:CH1:CLEAR:PEAK

Description:	Command clears and resets Peak FSK Error measurement.
Parameter/Query:	none

4.6.8　　　FSK Error - Upper Limit Enable

:LIMits:FSKERR:CH1:UPPer:ENABle
:LIMits:FSKERR:CH1:UPPer:ENABle?

Description:	Set command Enables/Disables Upper Limit for FSK Error measurement.
	Query command returns parameter setting.
Parameter:	OFF | ON | 0 | 1
Default Value:	OFF
Set/Query Format:	Boolean
Example:	:LIMits:FSKERR:CH1:UPPer:ENABle ON
	Enables Upper Limit for FSK Error measurement.
Query Response:	:LIMits:FSKERR:CH1:UPPer:ENABle?
	1

4.6.9　　　FSK Error - Upper Limit Value

:LIMits:FSKERR:CH1:UPPer:VALue
:LIMits:FSKERR:CH1:UPPer:VALue?

Description:	Set command defines Upper Limit Value for FSK Error 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:FSKERR:CH1:UPPer:VALue 100
	Sets Upper Limit Value for FSK Error measurement to 100.0%.
Query Response:	:LIMits:FSKERR:CH1:UPPer:VALue?
	100.00

4.7 SIGNAL POWER

4.7.1 Signal Power - Averages

:METERs:POWer:CH1:AVERaging
:METERs:POWer:CH1:AVERaging?

Description:	Set command defines the number of readings taken to calculate Average Signal Power measurement.
	Query command returns parameter setting.
Range:	1 to 250
Default Value:	1
Set/Query Format:	NR1
Example:	:METERs:POWer:CH1:AVERaging 100
	Sets the number of readings taken to calculate Average Signal Power measurement to 100.
Query Response:	:METERs:POWer:CH1:AVERaging?
	100

4.7.2 Signal Power - Average Measurement Reset

:METERs:POWer:CH1:CLEAR:AVG

Description:	Command clears and resets Average Signal Power measurement.
Parameter/Query:	none

4.7.3 Signal Power - Lower Limit Enable

:LIMits:POWer:CH1:LOWer:ENABle
:LIMits:POWer:CH1:LOWer: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:	Boolean
Example:	:LIMits:POWer:CH1:LOWer:ENABle ON
	Enables Lower Limit for Signal Power measurement.
Query Response:	:LIMits:POWer:CH1:LOWer:ENABle?
	1

4.7.4   Signal Power - Lower Limit Value

:LIMits:POWer:CH1:LOWer:VALue
:LIMits:POWer:CH1:LOWer:VALue?

Description:	Set command defines Lower Limit Value for Signal Power measurement.
	Query command returns parameter setting.
Range:	-140.0 to +70.0 dBm
Units:	dBm
Default Value:	0.0 dBm
Set/Query Format:	NRf | NR2
Example:	:LIMits:POWer:CH1:LOWer:VALue -90dBm
	Sets Lower Limit Value for Signal Power measurement to -90.0 dBm.
Query Response:	:LIMits:POWer:CH1:LOWer:VALue?
	-90.00

4.7.5   Signal Power - Measurement Query

:METERs:POWer:CH1:STATus?

Description:	Command returns Signal Power measurement data.
Query Data:	<statusbyte>,<failbyte>,<precision>,<percentage>,<avg>,<max>,<min>,<units>

NOTE	Refer to Chapter 1 for UUT Measurement Meter Return Data.

Query Response:	:METERs:POWer:CH1:STATus?
	0,0,3 100.00, -30.183, -30.140, -30.241,6

4.7.6   Signal Power - Measurement Type

:METERs:POWer:TYPE
:METERs:POWer:TYPE?

Description:	Set command defines Signal Power measurement type.
	Query command returns parameter setting.
Parameter:	AVER | MAX | MIN
Default Value:	PEAK
Set/Query Format:	CPD | CRD
Example:	:METERs:POWer:TYPE AVER
	Sets Signal Power measurement to Average.
Query Response:	:METERs:POWer:TYPE?
	AVER

4.7.7   Signal Power - Peak Measurement Reset

:METERs:POWer:CH1:CLEAR:PEAK

Description:	Command clears and resets Peak Signal Power measurement.
Parameter/Query:	none

4.7.8　　　Signal Power - Units

:METERs:POWer:UNIts
:METERs:POWer:UNIts?

Description:	Set command defines the unit of measurement for Signal Power measurement.
	Query command returns parameter setting.
Parameter:	dBm | W | dBW | V | dBµV
Default Value:	dBm
Set/Query Format:	CPD | CRD
Example:	:METERs:POWer:UNIts W
	Displays Signal Power measurement in Watts.
Query Response:	:METERs:POWer:UNIts?
	W

4.7.9　　　Signal Power - Upper Limit Enable

:LIMits:POWer:CH1:UPPer:ENABle
:LIMits:POWer:CH1:UPPer: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:	Boolean
Example:	:LIMits:POWer:CH1:UPPer:ENABle ON
	Enables Upper Limit for Signal Power measurement.
Query Response:	:LIMits:POWer:CH1:UPPer:ENABle?
	1

4.7.10　　　Signal Power - Upper Limit Value

:LIMits:POWer:CH1:UPPer:VALue
:LIMits:POWer:CH1:UPPer:VALue?

Description:	Set command defines Upper Limit Value for Signal Power measurement.
	Query command returns parameter setting.
Range:	-140.0 to +70.0 dBm
Units:	dBm
Default Value:	0.0 dBm
Set/Query Format:	NRf | NR2
Example:	:LIMits:POWer:CH1:UPPer:VALue -80dBm
	Sets Upper Limit Value for Signal Power measurements to -80.0 dBm.
Query Response:	:LIMits:POWer:CH1:UPPer:VALue?
	-80.00

4.8 SYMBOL CLOCK ERROR

4.8.1 Symbol Clock Error - Averages

:METERs:SCE:CH1:AVERaging
:METERs:SCE:CH1: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 250
Default Value:	1
Set/Query Format:	NR1
Example:	:METERs:SCE:CH1:AVERaging 100
	Sets the number of readings taken to calculate Average Symbol Clock Error measurement to 100.
Query Response:	:METERs:SCE:CH1:AVERaging?
	100

4.8.2 Symbol Clock Error - Average Measurement Reset

:METERs:SCE:CH1:CLEAR:AVG

Description:	Command clears and resets Average Symbol Clock Error measurement.
Parameter/Query:	none

4.8.3 Symbol Clock Error - Lower Limit Enable

:LIMits:SCE:CH1:LOWer:ENABle
:LIMits:SCE:CH1:LOWer: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:	Boolean
Example:	:LIMits:SCE:CH1:LOWer:ENABle ON
	Enables Lower Limit for Symbol Clock Error measurement.
Query Response:	:LIMits:SCE:CH1:LOWer:ENABle?
	1

4.8.4 Symbol Clock Error - Lower Limit Value

:LIMits:SCE:CH1:LOWer:VALue
:LIMits:SCE:CH1:LOWer:VALue?

Description:	Set command defines Lower Limit Value for Symbol Clock Error measurement. Query command returns parameter setting.
Range:	0.0 to +1000.0 mHz
Units:	mHz
Default Value:	0.0 mHz
Set/Query Format:	NRf | NR2
Example:	:LIMits:SCE:CH1:LOWer:VALue -500mHz
	Sets Lower Limit Value for Symbol Clock Error measurement to -500.0 mHz.
Query Response:	:LIMits:SCE:CH1:LOWer:VALue?
	-500.00

4.8.5 Symbol Clock Error - Measurement Query

:METERs:SCE:CH1:STATus?

Description:	Command returns Symbol Clock Error measurement data.
Query Data:	<statusbyte>,<failbyte>,<precision>,<percentage>,<avg>,<max>,<min>,<units>
NOTE	Refer to Chapter 1 for UUT Measurement Meter Return Data.
Query Response:	:METERs:SCE:CH1:STATus?
	0,0,3 100.00, -2.487, -0.346, -6.642,18

4.8.6 Symbol Clock Error - Peak Measurement Reset

:METERs:SCE:CH1:CLEAR:PEAK

Description:	Command clears and resets Peak Symbol Clock Error measurement.
Parameter/Query:	none

4.8.7 Symbol Clock Error - Upper Limit Enable

:LIMits:SCE:CH1:UPPer:ENABle
:LIMits:SCE:CH1:UPPer: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:	Boolean
Example:	:LIMits:SCE:CH1:UPPer:ENABle ON
	Enables Upper Limit for Symbol Clock Error measurement.
Query Response:	:LIMits:SCE:CH1:UPPer:ENABle?
	1

4.8.8 Symbol Clock Error - Upper Limit Value

:LIMits:SCE:CH1:UPPer:VALue
:LIMits:SCE:CH1:UPPer:VALue?

Description:	Set command defines Upper Limit Value for Symbol Clock Error measurement. Query command returns parameter setting.
Range:	0.0 to +1000.0 mHz
Units:	mHz
Default Value:	0.0 mHz
Set/Query Format:	NRf | NR2
Example:	:LIMits:SCE:CH1:UPPer:VALue 500mHz
	Sets Upper Limit Value for Symbol Clock Error measurement to 500.0 mHz.
Query Response:	:LIMits:SCE:CH1:UPPer:VALue?
	500.00

4.9 SYMBOL DEVIATION

4.9.1 Symbol Deviation - Averages

:METERs:SYMdev:CH1:AVERaging
:METERs:SYMdev:CH1:AVERaging?

Description:	Set command defines the number of readings taken to calculate Average Symbol Deviation measurement.
	Query command returns parameter setting.
Range:	1 to 250
Default Value:	1
Set/Query Format:	NR1
Example:	:METERs:SYMdev:CH1:AVERaging 100
	Sets the number of readings taken to calculate Average Symbol Deviation measurement to 100.
Query Response:	:METERs:SYMdev:CH1:AVERaging?
	100

4.9.2 Symbol Deviation - Average Measurement Reset

:METERs:SYMdev:CH1:CLEAR:AVG

Description:	Command clears and resets Average Symbol Deviation measurement.
Parameter/Query:	none

4.9.3 Symbol Deviation - Lower Limit Enable

:LIMits:SYMdev:CH1:LOWer:ENABle
:LIMits:SYMdev:CH1:LOWer:ENABle?

Description:	Set command Enables/Disables Lower Limit for Symbol Deviation measurement.
	Query command returns parameter setting.
Parameter:	OFF | ON | 0 | 1
Default Value:	OFF
Set/Query Format:	Boolean
Example:	:LIMits:SYMdev:CH1:LOWer:ENABle ON
	Enables Lower Limit for Symbol Deviation measurement.
Query Response:	:LIMits:SYMdev:CH1:LOWer:ENABle?
	1

4.9.4 Symbol Deviation - Lower Limit Value

:LIMits:SYMdev:CH1:LOWer:VALue
:LIMits:SYMdev:CH1:LOWer:VALue?

Description:	Set command defines Lower Limit Value for Symbol Deviation measurement. Query command returns parameter setting.
Range:	0.0 to 10,000.0 Hz
Units:	Hz
Default Value:	0.0 Hz
Set/Query Format:	NRf | NR2
Example:	:LIMits:SYMdev:CH1:LOWer:VALue 250Hz
	Sets Lower Limit Value for Symbol Deviation measurement to 250.0 Hz.
Query Response:	:LIMits:SYMdev:CH1:LOWer:VALue?
	250.00

4.9.5 Symbol Deviation - Measurement Query

:METERs:SYMdev:CH1:STATus?

Description:	Command returns Symbol Deviation measurement data.
Query Data:	<statusbyte>,<failbyte>,<precision>,<percentage>,<avg>,<max>,<min>,<units>
NOTE	Refer to Chapter 1 for UUT Measurement Meter Return Data.
Query Response:	:METERs:SYMdev:CH1:STATus?
	0,0,2,100.000,1946.569,2046.316,1800.000,2

4.9.6 Symbol Deviation - Peak Measurement Reset

:METERs:SYMdev:CH1:CLEAR:PEAK

Description:	Command clears and resets Peak Symbol Deviation measurement.
Parameter/Query:	none

4.9.7 Symbol Deviation - Upper Limit Enable

:LIMits:SYMdev:CH1:UPPer:ENABle
:LIMits:SYMdev:CH1:UPPer:ENABle?

Description:	Set command Enables/Disables Upper Limit for Symbol Deviation measurement. Query command returns parameter setting.
Parameter:	OFF | ON | 0 | 1
Default Value:	OFF
Set/Query Format:	Boolean
Example:	:LIMits:SYMdev:CH1:UPPer:ENABle ON
	Enables Upper Limit for Symbol Deviation measurement.
Query Response:	:LIMits:SYMdev:CH1:UPPer:ENABle?
	1

4.9.8 Symbol Deviation - Upper Limit Value

:LIMits:SYMdev:CH1:UPPer:VALue
:LIMits:SYMdev:CH1:UPPer:VALue?

Description:	Set command defines Upper Limit Value for Symbol Deviation measurement. Query command returns parameter setting.
Range:	0.0 to 10,000.0 Hz
Units:	Hz
Default Value:	0.0 Hz
Set/Query Format:	NRf | NR2
Example:	:LIMits:SYMdev:CH1:UPPer:VALue 500Hz
	Sets Upper Limit Value for Symbol Deviation measurement to 500.0 Hz.
Query Response:	:LIMits:SYMdev:CH1:UPPer:VALue?
	500.00

THIS PAGE INTENTIONALLY LEFT BLANK.

Chapter 5 - Audio/Demod Signal
Rx Meter Remote Commands

5.1 INTRODUCTION

This chapter describes the Remote Commands used for configuring and obtaining Audio/Demod signal measurement data. Remote Commands are listed alphabetically by meter name.

5.2 AUDIO MEASUREMENT CONFIGURATION

5.2.1 AF Measurements - Audio Source

:CONFigure:AF:ANALyzer:SOURce
:CONFigure:AF:ANALyzer:SOURce?

Description:	Set command defines the Source for Audio Frequency Analyzer (Receiver) and Site Sensitivity Search (Option).
	Query command returns parameter setting.
Parameter:	AUD1 | AUD2 | BAL | MIC
Default Value:	AUD1
Set/Query Format:	CPD | CRD
Example:	:CONFigure:AF:ANALyzer:SOURce MIC
	Selects Microphone as the Audio Frequency Analyzer (Receiver) Source.
Query Response:	:CONFigure:AF:ANALyzer:SOURce?
	MIC

NOTE	Test Set does not process any commands following this one until this command is completed.

5.2.2   AF Measurements - Filter Type

:AF:ANALyzer:MFILter
:AF:ANALyzer:MFILter?

Description:	Set command selects the Audio Analyzer Post Detection Filter.
	Query command returns parameter setting.
Parameter:	PSOPh | None | LP1 | LP2 | LP3 | LP4 | LP5 | LP6 | LP7 | HP1 | HP2 | HP3 | BP0 | BP1 | BP2 | BP3 | BP4 | BP5 | BP6 | BP7 | BP8 | BP9 | BP10 | BP11 | BP12 | BP13 | BP14 | BP15 | BP16

where:

NONE = No Filter	BP2 = 0.3 to 5.0 kHz BP
PSOPh = Psoph (CMESS or CCITT)	BP3 = 0.3 to 20.0 kHz BP
LP1 = 300.0 Hz LP	BP4 = 0.3 to 15.0 kHz BP
LP2 = 5.0 kHz LP	BP5 = 20.0 to 300.0 Hz BP
LP3 = 20.0 kHz LP	BP6 = 0.02 to 3.0 kHz BP
LP4 = 15.0 kHz LP	BP7 = 0.02 to 3.4 kHz BP
LP5 = 3.0 kHz LP	BP8 = 0.02 to 5.0 kHz BP
LP6 = 625.0 kHz LP*	BP9 = 0.02 to 15.0 kHz BP
LP7 = 10.0 kHz LP*	BP10 = 0.02 to 20.0 kHz BP
LP8 = 100.0 Hz LP*	BP11 = 0.05 to 300.0 Hz BP
HP1 = 300.0 Hz HP	BP12 = 0.05 to 3.0 kHz BP
HP2 = 20.0 Hz HP	BP13 = 0.05 to 3.4 kHz BP
HP3 = 50.0 Hz HP	BP14 = 0.05 to 5.0 kHz BP
BP0 = 0.3 to 3.0 kHz BP	BP15 = 0.05 to 15.0 kHz BP
BP1 = 0.3 to 3.4 kHz BP	BP16 = 0.05 to 20.0 kHz BP

Default Value:	NONE (No Filter)
Set/Query Format:	CPD | CRD
Example:	:AF:ANALyzer:MFILter LP3
	Selects 20.0 kHz Low Pass Filter for AF measurements.
Query Response:	:AF:ANALyzer:MFILter?
	LP3

NOTE	Filter selected should be appropriate for signal received from UUT.
	When PSOPH is selected, Filter weight is defined using :CONFigure:AF:MFILter command.
	Test Set does not process any commands following this one until this command is completed.
	*LP6, LP7 and LP8 are used by the Audio Analyzer Tracking Generator and can not be defined by user, but may be returned as query data.

5.2.3   AF Measurements - Filter Weight

:CONFigure:AF:MFILter
:CONFigure:AF:MFILter?

Description:	Set command defines the weight of psoph filter for AF Analyzer when Psoph filter is selected.
	Query command returns parameter setting.
Parameter:	CMESs | CCITt
Default Value:	CMES
Set/Query Format:	CPD | CRD
Example:	:CONFigure:AF:MFILter CCITt
	Selects CCITT Psoph Filter for AF measurement.
Query Response:	:CONFigure:AF:MFILter?
	CCIT

NOTE	AF Filter type must be defined as Psoph (:AF:ANALyzer:MFILter PSOPH) for this command to be valid.

5.2.4   AF Measurements - Impedance

:CONFigure:AF:ANALyzer:SOURce:LOAD
:CONFigure:AF:ANALyzer:SOURce:LOAD?

Description:	Set command defines the Impedance of selected Audio Frequency (Receiver) source.
	Query command returns parameter setting.
Parameter:	UNBHI | UNB600
Default Value:	Audio Source defined
Set/Query Format:	CPD | CRD
Example:	:CONFigure:AF:ANALyzer:SOURce:LOAD UNBHI
	Sets Impedance of selected Audio Frequency (Receiver) Source to Unbalanced Hi-Z.
Query Response:	:CONFigure:AF:ANALyzer:SOURce:LOAD?
	UNBHI

NOTE	Command not valid when AF Analyzer Source is set to Balanced (:CONFigure:AF:ANALyzer:SOURce is set to BAL).

5.2.5 AF Measurements - Impedance External Load

:CONFigure:AF:ANALyzer:SOURce:VARiable:LOAD
:CONFigure:AF:ANALyzer:SOURce:VARiable:LOAD?

Description:	Set command defines the Impedance of selected Audio Frequency Analyzer (Receiver) source.
	Query command returns parameter setting.
Range:	1 to 9999 Ohms
Units:	Ohms
Default Value:	8 Ohms
Set/Query Format:	NRf | NR1
Example:	:CONFigure:AF:ANALyzer:SOURce:VARiable:LOAD 100OHMS
	Sets External Load to 100 Ohms for Audio Frequency Analyzer (Receiver).
Query Response:	:CONFigure:AF:ANALyzer:SOURce:VARiable:LOAD?
	100

> **NOTE**　Command only valid when Impedance is set to Unbalanced Hi-Z (:CONFigure:AF:ANALyzer:SOURce:LOAD UNBHI).

5.2.6 AF Measurements - Impedance External Load Enable

:CONFigure:AF:ANALyzer:SOURce:VARiable:LOAD:ENABle
:CONFigure:AF:ANALyzer:SOURce:VARiable:LOAD:ENABle?

Description:	Set command enables External Load for Impedance.
	Query command returns parameter setting.
Parameter:	OFF | ON | 0 | 1
Set/Query Format:	Boolean
Default Value:	OFF
Example:	:CONFigure:AF:ANALyzer:SOURce:VARiable:LOAD:ENABle ON
	Enables and applies defined External Impedance Load.
Query Response:	:CONFigure:AF:ANALyzer:SOURce:VARiable:LOAD:ENABle?
	1

> **NOTE**　Command :CONFigure:AF:ANALyzer:SOURce:VARiable:LOAD defines the external load applied when External Load is enabled.

5.2.7 Loudspeaker

:CONFigure:PORT:LOUDspeaker
:CONFigure:PORT:LOUDspeaker?

Description:	Set command selects Loudspeaker port.
	Query command returns selected Loudspeaker port.
Parameter:	OFF | AUDio | DEMod
Default Value:	OFF
Set/Query Format:	CPD | CRD
Example:	:CONFigure:PORT:LOUDspeaker AUDio
	Selects Audio as the Loudspeaker port.
Query Response:	:CONFigure:PORT:LOUDspeaker?
	AUD

5.3   MODULATION MEASUREMENT CONFIGURATION

5.3.1   Modulation - Filter Type

:MOD:ANALyzer:MFILter
:MOD:ANALyzer:MFILter?

Description:	Set command selects the Mod Analyzer Post Detection Filter.
	Query command returns parameter setting.
Parameter:	PSOPh | None | LP1 | LP2 | LP3 | LP4 | LP5 | LP6 | LP7 | HP1 | HP2 | HP3 | BP0 | BP1 | BP2 | BP3 | BP4 | BP5 | BP6 | BP7 | BP8 | BP9 | BP10 | BP11 | BP12 | BP13 | BP14 | BP15 | BP16

where:		
NONE = No Filter	BP2 = 0.3 to 5.0 kHz BP
PSOPh = Psoph (CMESS or CCITT)	BP3 = 0.3 to 20.0 kHz BP
LP1 = 300.0 Hz LP	BP4 = 0.3 to 15.0 kHz BP
LP2 = 5.0 kHz LP	BP5 = 20 to 300.0 Hz BP
LP3 = 20.0 kHz LP	BP6 = 0.02 to 3.0 kHz BP
LP4 = 15.0 kHz LP	BP7 = 0.02 to 3.4 kHz BP
LP5 = 3.0 kHz LP	BP8 = 0.02 to 5.0 kHz BP
LP6 = 625.0 kHz LP*	BP9 = 0.02 to 15.0 kHz BP
LP7 = 10.0 kHz LP*	BP10 = 0.02 to 20.0 kHz BP
LP8 = 100.0 Hz LP*	BP11 = 0.05 to 300.0 Hz BP
HP1 = 300.0 Hz HP	BP12 = 0.05 to 3.0 kHz BP
HP2 = 20.0 Hz HP	BP13 = 0.05 to 3.4 kHz BP
HP3 = 50.0 Hz HP	BP14 = 0.05 to 5.0 kHz BP
BP0 = 0.3 to 3.0 kHz BP	BP15 = 0.05 to 15.0 kHz BP
BP1 = 0.3 to 3.4 kHz BP	BP16 = 0.05 to 20.0 kHz BP

Default Value:	NONE (No Filter)
Set/Query Format:	CPD | CRD
Example:	:MOD:ANALyzer:MFILter BP4
	Selects 0.3 to 15.0 kHz band pass filter for receiver signal path.
Query Response:	:MOD:ANALyzer:MFILter?
	BP4

> **NOTE**
>
> Filter selected should be appropriate for signal received from UUT.
>
> When PSOPH is selected, Filter weight is defined using :CONFigure:MOD:MFILter command.
>
> Test Set does not process any commands following this one until this command is completed.
>
> *LP6, LP7 and LP8 are used by the Audio Analyzer Tracking Generator and can not be defined by user, but may be returned as query data.

5.3.2　　　Modulation Measurements - Filter Weight

:CONFigure:MOD:MFILter
:CONFigure:MOD:MFILter?

Description:	Set command defines the weight of psoph filter for Modulation Analyzer when Psoph filter is selected.
	Query command returns parameter setting.
Parameter:	CMESs | CCITt
Default Value:	CMESs
Set/Query Format:	CPD | CRD
Example:	:CONFigure:MOD:MFILter CCITt
	Selects CCITT Psoph Filter for modulation measurement.
Query Response:	:CONFigure:MOD:MFILter?
	CCIT

> NOTE　Filter type must be defined as Psoph (:MOD:ANALyzer:MFILter PSOPH) for this command to be valid.

5.3.3　　　Function Generator / Demod Out Connector

:CONFigure:PORT:FGEN
:CONFigure:PORT:FGEN?

Description:	Set command selects Function Generator / Demod Out Connector.
	Query command returns parameter setting.
Parameter:	FGEN | AUDio | DEMod
Default Value:	FGEN
Set/Query Format:	CPD | CRD
Example:	:CONFigure:PORT:FGEN DEMod
	Selects Demod as the Function Generator / Demod Out Connector.
Query Response:	:CONFigure:PORT:FGEN?
	DEM

5.4   AF DISTORTION MEASUREMENTS

5.4.1   AF Distortion - Averages

:CONFigure:AF:ANALyzer:DISTortion:AVERage
:CONFigure:AF:ANALyzer:DISTortion:AVERage?

Description:	Set command defines the number of readings taken to calculate Average AF Distortion measurement.
	Query command returns parameter setting.
Range:	1 to 250
Default Value:	1
Set/Query Format:	NR1
Example:	:CONFigure:AF:ANALyzer:DISTortion:AVERage 75
	Sets number of readings taken to calculate Average AF Distortion measurements to 75.
Query Response:	:CONFigure:AF:ANALyzer:DISTortion:AVERage?
	75

5.4.2   AF Distortion - Average Measurement Reset

:AF:ANALyzer:DISTortion:CLEAR:AVG

Description:	Command clears and resets Average AF Distortion measurement.
Parameter/Query:	none

5.4.3   AF Distortion - Lower Limit Enable

:LIMits:AF:DISTortion:LOWer:ENABle
:LIMits:AF:DISTortion:LOWer:ENABle?

Description:	Set command Enables/Disables Lower Limit for AF Distortion measurement.
	Query command returns parameter setting.
Parameter:	OFF | ON | 0 | 1
Default Value:	OFF
Set/Query Format:	Boolean
Example:	:LIMits:AF:DISTortion:LOWer:ENABle ON
	Enables Lower Limit for AF Distortion measurement.
Query Response:	:LIMits:AF:DISTortion:LOWer:ENABle?
	1

5.4.4 AF Distortion - Lower Limit Value

:LIMits:AF:DISTortion:LOWer:VALue
:LIMits:AF:DISTortion:LOWer:VALue?

Description:	Set command defines the Lower Limit Value for AF Distortion measurement. Query command returns parameter setting.
Range:	0.0 to 100.0%
Units:	% (percent)
Default Value:	5.0%
Set/Query Format:	NRf | NR2
Example:	:LIMits:AF:DISTortion:LOWer:VALue 1
	Sets Lower Limit Value for AF Distortion measurement to 1.0%.
Query Response:	:LIMits:AF:DISTortion:LOWer:VALue?
	1.00

5.4.5 AF Distortion - Measurement Query

:FETCh:AF:ANALyzer:DISTortion?

Description:	Command returns AF Analyzer Distortion measurement data.
Query Data:	<statusbyte>,<failbyte>,<avgcount>,<avg%>,<wc%>

NOTE	Refer to Chapter 1 for UUT Measurement Meter Return Data.

Query Response:	:FETCh:AF:ANALyzer:DISTortion?
	0,0,1,99.97,99.99

NOTE	Protocol must be set to Analog to return valid AF Distortion measurement data.

5.4.6 AF Distortion - Peak Measurement Reset

:AF:ANALyzer:DISTortion:CLEAR:PEAK

Description:	Command clears and resets Peak AF Distortion measurement.
Parameter/Query:	none

5.4.7 AF Distortion - Upper Limit Enable

:LIMits:AF:DISTortion:UPPer:ENABle
:LIMits:AF:DISTortion:UPPer:ENABle?

Description:	Set command Enables/Disables Upper Limit for AF Distortion measurement. Query command returns parameter setting.
Parameter:	OFF | ON | 0 | 1
Default Value:	OFF
Set/Query Format:	Boolean
Example:	:LIMits:AF:DISTortion:UPPer:ENABle ON
	Enables Upper Limit for AF Distortion measurement.
Query Response:	:LIMits:AF:DISTortion:UPPer:ENABle?
	1

5.4.8 AF Distortion - Upper Limit Value

:LIMits:AF:DISTortion:UPPer:VALue
:LIMits:AF:DISTortion:UPPer:VALue?

Description:	Set command defines the Upper Limit Value for AF Distortion measurement.
	Query command returns parameter setting.
Range:	0.0 to 100.0%
Units:	% (percent)
Default Value:	5.0%
Set/Query Format:	NRf | NR2
Example:	:LIMits:AF:DISTortion:UPPer:VALue 1
	Sets Upper Limit Value for AF Distortion measurement to 1.0%.
Query Response:	:LIMits:AF:DISTortion:UPPer:VALue?
	1.00

5.5   AF FREQUENCY MEASUREMENTS

5.5.1   AF Frequency - Averages

:CONFigure:AF:ANALyzer:FREQuency:AVERage
:CONFigure:AF:ANALyzer:FREQuency:AVERage?

Description:	Set command defines the number of readings taken to calculate Average AF Frequency measurement.
	Query command returns parameter setting.
Range:	1 to 250
Default Value:	1
Set/Query Format:	NR1
Example:	:CONFigure:AF:ANALyzer:FREQuency:AVERage 75
	Sets number of readings taken to calculate Average AF Frequency measurement to 75.
Query Response:	:CONFigure:AF:ANALyzer:FREQuency:AVERage?
	75

5.5.2   AF Frequency - Average Measurement Reset

:AF:ANALyzer:FREQuency:CLEAR:AVG

Description:	Command clears and resets Average AF Frequency measurement.
Parameter/Query:	none

5.5.3   AF Frequency - Lower Limit Enable

:LIMits:AF:FREQuency:LOWer:ENABle
:LIMits:AF:FREQuency:LOWer:ENABle?

Description:	Set command Enables/Disables Lower Limit for AF Frequency measurement.
	Query command returns parameter setting.
Parameter:	OFF | ON | 0 | 1
Set/Query Format:	Boolean
Default Value:	OFF
Example:	:LIMits:AF:FREQuency:LOWer:ENABle ON
	Enables Lower Limit for AF Frequency measurement.
Query Response:	:LIMits:AF:FREQuency:LOWer:ENABle?
	1

5.5.4 AF Frequency - Lower Limit Value

:LIMits:AF:FREQuency:LOWer:VALue
:LIMits:AF:FREQuency:LOWer:VALue?

Description:	Set command defines the Lower Limit Value for AF Frequency measurement. Query command returns parameter setting.
Range:	0.0 Hz to 20.0 kHz
Units:	Hz | kHz
Default Value:	0.0 kHz
Set/Query Format:	NRf | NR2
Example:	:LIMits:AF:FREQuency:LOWer:VALue 1Hz
	Sets Lower Limit Value for AF Frequency measurement to 1.0 Hz.
Query Response:	:LIMits:AF:FREQuency:LOWer:VALue?
	1.0

5.5.5 AF Frequency - Measurement Query

:FETCh:AF:ANALyzer:FREQuency?

Description:	Command returns AF Frequency measurement data.
Query Data:	<statusbyte>, <avgcount>, <avg(Hz)>
NOTE	Refer to Chapter 1 for UUT Measurement Meter Return Data.
Query Response:	:FETCh:AF:ANALyzer:FREQuency?
	0,25,1000.0
NOTE	Protocol must be set to Analog to return valid AF Frequency measurement data.

5.5.6 AF Frequency - Peak Measurement Reset

:AF:ANALyzer:FREQuency:CLEAR:PEAK

Description:	Command clears and resets Peak AF Frequency measurement.
Parameter/Query:	none

5.5.7 AF Frequency - Upper Limit Enable

:LIMits:AF:FREQuency:UPPer:ENABle
:LIMits:AF:FREQuency:UPPer:ENABle?

Description:	Set command Enables/Disables Upper Limit for AF Frequency measurement. Query command returns parameter setting.
Parameter:	OFF | ON | 0 | 1
Set/Query Format:	Boolean
Default Value:	OFF
Example:	:LIMits:AF:FREQuency:UPPer:ENABle ON
	Enables Upper Limit for AF Frequency measurement.
Query Response:	:LIMits:AF:FREQuency:UPPer:ENABle?
	1

5.5.8   AF Frequency - Upper Limit Value

:LIMits:AF:FREQuency:UPPer:VALue
:LIMits:AF:FREQuency:UPPer:VALue?

Description:	Set command defines the Upper Limit Value for AF Frequency measurement. Query command returns parameter setting.
Range:	0.0 Hz to 20.0 kHz
Units:	Hz | kHz
Default Value:	0.0 kHz
Set/Query Format:	NRf | NR2
Example:	:LIMits:AF:FREQuency:UPPer:VALue 2Hz Sets Upper Limit Value for AF Frequency measurement to 2.0 Hz.
Query Response:	:LIMits:AF:FREQuency:UPPer:VALue? 2.0

5.6   AF HUM & NOISE MEASUREMENTS

5.6.1   AF Hum & Noise - Averages

:CONFigure:AF:ANALyzer:HN:AVERage
:CONFigure:AF:ANALyzer:HN:AVERage?

Description:	Set command defines the number of readings taken to calculate Average AF Hum & Noise measurement.
	Query command returns parameter setting.
Range:	1 to 250
Default Value:	1
Set/Query Format:	NR1
Example:	:CONFigure:AF:ANALyzer:HN:AVERage 75
	Sets number of readings being taken to calculate Average AF Hum & Noise measurement to 75.
Query Response:	:CONFigure:AF:ANALyzer:HN:AVERage?
	75

NOTE	AF Analyzer Noise measurement type must be defined as Signal to Noise Ratio (:AF:ANALyzer:NTYPe SN) and SNR measurement defined as Hum & Noise (:CONFigure:AF:ANALyzer:SNR:MODE 0) to obtain valid Hum & Noise measurement.

5.6.2   AF Hum & Noise - Average Measurement Reset

:AF:ANALyzer:HN:CLEAR:AVG

Description:	Command clears and resets Average AF Hum & Noise measurement.
Parameter/Query:	none

5.6.3   AF Hum & Noise - Lower Limit Enable

:LIMits:AF:HN:LOWer:ENABle
:LIMits:AF:HN:LOWer:ENABle?

Description:	Set command Enables/Disables Lower Limit for AF Hum and Noise measurement.
	Query command returns parameter setting.
Parameter:	OFF | ON | 0 | 1
Default Value:	OFF
Set/Query Format:	Boolean
Example:	:LIMits:AF:HN:LOWer:ENABle ON
	Enables Lower Limit for Hum & Noise measurement.
Query Response:	:LIMits:AF:HN:LOWer:ENABle?
	1

NOTE	AF Analyzer Noise measurement type must be defined as Signal to Noise Ratio (:AF:ANALyzer:NTYPe SN) and SNR measurement defined as Hum & Noise (:CONFigure:AF:ANALyzer:SNR:MODE 0) to obtain valid Hum & Noise measurement.

5.6.4   AF Hum & Noise - Lower Limit Value

:LIMits:AF:HN:LOWer:VALue
:LIMits:AF:HN:LOWer:VALue?

Description:	Set command defines Lower Limit Value for AF Hum and Noise measurement. Query command returns parameter setting.
Range:	-100.0 to +100.0 dBr
Units:	dBr
Default Value:	0.0 dBr
Set/Query Format:	NRf | NR2
Example:	:LIMits:AF:HN:LOWer:VALue -50dBr
	Sets Lower Limit Value for AF Hum & Noise measurement to -50.0 dBr.
Query Response:	:LIMits:AF:HN:LOWer:VALue?
	-50.00

> **NOTE**   AF Analyzer Noise measurement type must be defined as Signal to Noise Ratio (:AF:ANALyzer:NTYPe SN) and SNR measurement defined as Hum & Noise (:CONFigure:AF:ANALyzer:SNR:MODE 0) to obtain valid Hum & Noise measurement.

5.6.5   AF Hum & Noise - Measurement Query

:FETCh:AF:ANALyzer:HN?

Description:	Command returns AF Hum and Noise measurement data.
Query Data:	<statusbyte>,<failbyte>,<avgcount>,<avg(dB)>,<wc(dB)>

> **NOTE**   Refer to Chapter 1 for UUT Measurement Meter Return Data.

Query Response:	:FETCh:AF:ANALyzer:HN?
	0,0,10,-8.43,-8.43

> **NOTE**   AF Analyzer Noise measurement type must be defined as Signal to Noise Ratio (:AF:ANALyzer:NTYPe SN) and SNR measurement defined as Hum & Noise (:CONFigure:AF:ANALyzer:SNR:MODE 0) to obtain valid Hum & Noise measurement.

5.6.6   AF Hum & Noise - Peak Measurement Reset

:AF:ANALyzer:HN:CLEAR:PEAK

Description:	Command clears and resets Peak AF Hum & Noise measurement.
Parameter/Query:	none

5.6.7   AF Hum & Noise - Reference Lock

:CONFigure:AF:ANALyzer:HN:REFerence

Description:	Command locks AF Hum and Noise reference to current meter reading.
Parameter/Query:	none

> **NOTE**   SNR measurement must be defined as Hum & Noise to obtain valid Hum & Noise measurement (:CONFigure:AF:ANALyzer:SNR:MODE HN).

5.6.8 AF Hum & Noise - Reference Value

:CONFigure:AF:ANALyzer:HN:REFerence:VALue
:CONFigure:AF:ANALyzer:HN:REFerence:VALue?

Description:	Set command defines the reference value for AF Hum and Noise measurement.
	Query command returns parameter setting.
Range:	-100.0 to +100.0 dB
Units:	dB
Default Value:	12.0 dB
Set/Query Format:	NRf | NR2
Example:	:CONFigure:AF:ANALyzer:HN:REFerence:VALue 1dB
	Sets Hum & Noise Reference value to 1.0 dB.
Query Response:	:CONFigure:AF:ANALyzer:HN:REFerence:VALue?
	1.00

NOTE	Query command returns HN Reference Value using :CONFigure:AF:ANALyzer:HN:REFerence command.

AF Analyzer Noise measurement type must be defined as Signal to Noise Ratio (:AF:ANALyzer:NTYPe SN) and SNR measurement defined as Hum & Noise (:CONFigure:AF:ANALyzer:SNR:MODE 0) to obtain valid Hum & Noise measurement.

5.6.9 AF Hum & Noise - Upper Limit Enable

:LIMits:AF:HN:UPPer:ENABle
:LIMits:AF:HN:UPPer:ENABle?

Description:	Set command Enables/Disables Upper Limit for AF Hum and Noise measurement.
	Query command returns parameter setting.
Parameter:	OFF | ON | 0 | 1
Default Value:	OFF
Set/Query Format:	Boolean
Example:	:LIMits:AF:HN:UPPer:ENABle ON
	Enables Upper Limit for Hum & Noise measurement.
Query Response:	:LIMits:AF:HN:UPPer:ENABle?.
	1

NOTE	AF Analyzer Noise measurement type must be defined as Signal to Noise Ratio (:AF:ANALyzer:NTYPe SN) and SNR measurement defined as Hum & Noise (:CONFigure:AF:ANALyzer:SNR:MODE 0) to obtain valid Hum & Noise measurement.

5.6.10   AF Hum & Noise - Upper Limit Value

:LIMits:AF:HN:UPPer:VALue
:LIMits:AF:HN:UPPer:VALue?

Description:	Set command defines the Upper Limit Value for AF Hum and Noise measurement.
	Query command returns parameter setting.
Range:	-100.0 to +100.0 dBr
Units:	dBr
Default Value:	10.0 dBr
Set/Query Format:	NRf | NR2
Example:	:LIMits:AF:HN:UPPer:VALue 25dBr
	Sets Lower Limit Value for AF Hum & Noise measurement to 25.0 dBr.
Query Response:	:LIMits:AF:HN:UPPer:VALue?
	25

NOTE	AF Analyzer Noise measurement type must be defined as Signal to Noise Ratio (:AF:ANALyzer:NTYPe SN) and SNR measurement defined as Hum & Noise (:CONFigure:AF:ANALyzer:SNR:MODE 0) to obtain valid Hum & Noise measurement.

5.7   AF LEVEL MEASUREMENTS

5.7.1   AF Level - Averages

:CONFigure:AF:ANALyzer:LEVel:AVERage
:CONFigure:AF:ANALyzer:LEVel:AVERage?

Description:	Set command defines the number of readings taken to calculate Average AF Level measurement.
	Query command returns parameter setting.
Range:	1 to 250
Set/Query Format:	NR1
Default Value:	1
Example:	:CONFigure:AF:ANALyzer:LEVel:AVERage 75
	Sets number of readings being taken to calculate Average AF Level measurement to 75.
Query Response:	:CONFigure:AF:ANALyzer:LEVel:AVERage?
	75

5.7.2   AF Level - Average Measurement Reset

:AF:ANALyzer:LEVel:CLEAR:AVG

Description:	Command clears and resets Average AF Level measurement.
Parameter/Query:	none

5.7.3   AF Level - Lower Limit Enable

:LIMits:AF:LEVel:LOWer:ENABle
:LIMits:AF:LEVel:LOWer:ENABle?

Description:	Set command Enables/Disables Lower Limit for AF Level measurement.
	Query command returns parameter setting.
Parameter:	OFF | ON | 0 | 1
Set/Query Format:	Boolean
Default Value:	OFF
Example:	:LIMits:AF:LEVel:LOWer:ENABle ON
	Enables Lower Limit for AF Level measurement.
Query Response:	:LIMits:AF:LEVel:LOWer:ENABle?
	1

5.7.4　　　　AF Level - Lower Limit Value

:LIMits:AF:LEVel:LOWer:VALue
:LIMits:AF:LEVel:LOWer:VALue?

Description:	Set command defines the Lower Limit Value for AF Level measurement.
	Query command returns parameter setting.
Range:	1.0 mV to 30.0 V
Units:	mV | V | dBV | dBr | dBm
Default Value:	1.0 mV
Set/Query Format:	NRf <units>| NR1 <units>
Example:	:LIMits:AF:LEVel:LOWer:VALue 2V
	Sets Lower Limit Value for AF Level measurement to 2 Volts.
Query Response:	:LIMits:AF:LEVel:LOWer:VALue? mV
	2000.0

NOTE	If units is not defined in Set or Query command, value defaults to units specified for AF Level measurements.
	dBV is not valid when Audio Balanced (BAL) is selected as the Audio Input Source.

5.7.5　　　　AF Level - Measurement Query

:FETCh:AF:ANALyzer:LEVel?

Description:	Command return the AF Level measurement data.
Query Data:	<statusbyte>,<failbyte>,<avgcount>,<avg>

NOTE	Refer to Chapter 1 for UUT Measurement Meter Return Data.

Units:	V (Unbalanced)
	dBm (Balanced)
Query Response:	:FETCh:AF:ANALyzer:LEVel?
	0,0,1,3.11

NOTE	Protocol must be set to Analog to return valid measurement data.

5.7.6　　　　AF Level - Peak Measurement Reset

:AF:ANALyzer:LEVel:CLEAR:PEAK

Description:	Command clears and resets Peak AF Level measurement.
Parameter/Query:	none

5.7.7 AF Level - Units

:CONFigure:AF:ANALyzer:LEVel:UNIts
:CONFigure:AF:ANALyzer:LEVel:UNIts?

Description:	Set command defines the unit of measure for AF Level measurement.
	Query command returns parameter setting.
Parameter:	V | dBV | dBm | dBr
Default Value:	dBm
Set/Query Format:	CPD | CRD
Example:	:CONFigure:AF:ANALyzer:LEVel:UNIts dBr
	Displays AF Level measurement in dBr.
Query Response:	:CONFigure:AF:ANALyzer:LEVel:UNIts?
	DBR

5.7.8 AF Level - Upper Limit Enable

:LIMits:AF:LEVel:UPPer:ENABle
:LIMits:AF:LEVel:UPPer:ENABle?

Description:	Set command Enables/Disables Upper Limit for AF Level measurement.
	Query command returns parameter setting.
Parameter:	OFF | ON | 0 | 1
Set/Query Format:	Boolean
Default Value:	OFF
Example:	:LIMits:AF:LEVel:UPPer:ENABle ON
	Enables Upper Limit for AF Level measurement.
Query Response:	:LIMits:AF:LEVel:UPPer:ENABle?
	1

5.7.9 AF Level - Upper Limit Value

:LIMits:AF:LEVel:UPPer:VALue
:LIMits:AF:LEVel:UPPer:VALue?

Description:	Set command define the Upper Limit Value for AF Level measurement.
	Query command returns parameter setting.
Range:	1.0 mV to 30.0 V
Units:	mV | V | dBV | dBr | dBm
Default Value:	10.0 V
Set/Query Format:	NRf <units>| NR1 <units>
Example:	:LIMits:AF:LEVel:UPPer:VALue 5V
	Sets Upper Limit Value for AF Level measurement to 5 Volts
Query Response:	:LIMits:AF:LEVel:UPPer:VALue? mV
	5000.0

NOTE	If units is not defined in Set or Query command, value defaults to units specified for AF Level measurements.
	dBV is not valid when Audio Balanced (BAL) is selected as the Audio Input Source.

5.8   AF SINAD MEASUREMENTS

5.8.1   AF Sinad - Averages

:CONFigure:AF:ANALyzer:SINad:AVERage
:CONFigure:AF:ANALyzer:SINad:AVERage?

Description:	Set command defines the number of readings taken to calculate Average AF Sinad measurement.
	Query command returns parameter setting.
Range:	1 to 250
Default Value:	1
Set/Query Format:	NR1
Example:	:CONFigure:AF:ANALyzer:SINad:AVERage 25
	Sets number of readings taken to calculate Average AF Sinad measurement to 75.
Query Response:	:CONFigure:AF:ANALyzer:SINad:AVERage?
	75

5.8.2   AF Sinad - Average Measurement Reset

:AF:ANALyzer:SINad:CLEAR:AVG

Description:	Command clears and resets Average AF Sinad measurement.
Parameter/Query:	none

5.8.3   AF Sinad - Lower Limit Enable

:LIMits:AF:SINad:LOWer:ENABle
:LIMits:AF:SINad:LOWer:ENABle?

Description:	Set command Enables/Disables Lower Limit for AF Sinad measurement.
	Query command returns parameter setting.
Parameter:	OFF | ON | 0 | 1
Default Value:	OFF
Set/Query Format:	Boolean
Example:	:LIMits:AF:SINad:LOWer:ENABle ON
	Enables Lower Limit for AF Sinad measurement.
Query Response:	:LIMits:AF:SINad:LOWer:ENABle?
	1

5.8.4 AF Sinad - Lower Limit Value

:LIMits:AF:SINad:LOWer:VALue
:LIMits:AF:SINad:LOWer:VALue?

Description:	Set command defines the Lower Limit Value for AF Sinad measurement.
	Query command returns parameter setting.
Range:	0.0 to 100.0 dB
Units:	dB
Default Value:	0.0 dB
Set/Query Format:	NRf | NR1
Example:	:LIMits:AF:SINad:LOWer:VALue 50dB
	Sets Lower Limit Value for AF Sinad measurement to 50 dB.
Query Response:	:LIMits:AF:SINad:LOWer:VALue?
	50

5.8.5 AF Sinad - Measurement Query

:FETCh:AF:ANALyzer:SINad?

Description:	Command returns Sinad measurement data.
Query Data:	<statusbyte>,<failbyte>,<avgcount>,<avg(dB)>,<wc(dB)>

NOTE	Refer to Chapter 1 for UUT Measurement Meter Return Data.

Query Response:	:FETCh:AF:ANALyzer:SINad?
	0,0,25,0.01,0.03

NOTE	Protocol must be set to Analog to return valid AF Sinad measurement data.

5.8.6 AF Sinad - Peak Measurement Reset

:AF:ANALyzer:SINad:CLEAR:PEAK

Description:	Command clears and resets Peak AF Sinad measurement.
Parameter/Query:	none

5.8.7 AF Sinad - Upper Limit Enable

:LIMits:AF:SINad:UPPer:ENABle
:LIMits:AF:SINad:UPPer:ENABle?

Description:	Set command Enables/Disables Upper Limit for AF Sinad measurement.
	Query command returns parameter setting.
Parameter:	OFF | ON | 0 | 1
Default Value:	OFF
Set/Query Format:	Boolean
Example:	:LIMits:AF:SINad:UPPer:ENABle ON
	Enables Upper Limit for AF Sinad measurement.
Query Response:	:LIMits:AF:SINad:UPPer:ENABle?
	1

5.8.8　　　AF Sinad - Upper Limit Value

:LIMits:AF:SINad:UPPer:VALue
:LIMits:AF:SINad:UPPer:VALue?

Description:	Set command defines the Upper Limit Value for AF Sinad measurement.
	Query command returns parameter setting.
Range:	0.0 to 100.0 dB
Units:	dB
Default Value:	0.0 dB
Set/Query Format:	NRf | NR1
Example:	:LIMits:AF:SINad:UPPer:VALue 50dB
	Set Upper Limit Value for AF Sinad measurement to 50 dB.
Query Response:	:LIMits:AF:SINad:UPPer:VALue?
	50

5.9　　　AF SNR MEASUREMENTS

5.9.1　　　AF SNR - Averages

:CONFigure:AF:ANALyzer:SNR:AVERage
:CONFigure:AF:ANALyzer:SNR:AVERage?

Description:	Set command defines the number of readings taken to calculate Average AF SNR measurement.
	Query command returns parameter setting.
Range:	1 to 250
Default Value:	1
Set/Query Format:	NR1
Example:	:CONFigure:AF:ANALyzer:SNR:AVERage 75
	Sets number of readings taken to calculate Average AF SNR measurement to 75.
Query Response:	:CONFigure:AF:ANALyzer:SNR:AVERage?
	75

NOTE	AF Analyzer Noise measurement type must be defined as Signal to Noise Ratio (:AF:ANALyzer:NTYPe SN) and SNR measurement defined as Normal (:CONFigure:AF:ANALyzer:SNR:MODE 1) to obtain valid SNR measurement.

5.9.2　　　AF SNR - Average Measurement Reset

:AF:ANALyzer:SNR:CLEAR:AVG

Description:	Command clears and resets Average AF Signal to Noise Ratio measurement.
Parameter/Query:	none

5.9.3　　　AF SNR - Lower Limit Enable

:LIMits:AF:SNR:LOWer:ENABle
:LIMits:AF:SNR:LOWer:ENABle?

Description:	Set command Enables/Disables Lower Limit for AF Signal to Noise Ratio measurement.
	Query command returns parameter setting.
Parameter:	OFF	ON	0	1
Default Value:	OFF
Set/Query Format:	Boolean
Example:	:LIMits:AF:SNR:LOWer:ENABle ON
	Enables Lower Limit for AF SNR measurement.
Query Response:	:LIMits:AF:SNR:LOWer:ENABle?
	1

NOTE	AF Analyzer Noise measurement type must be defined as Signal to Noise Ratio (:AF:ANALyzer:NTYPe SN) and SNR measurement defined as Normal (:CONFigure:AF:ANALyzer:SNR:MODE 1) to obtain valid SNR measurement.

5.9.4 AF SNR - Lower Limit Value

:LIMits:AF:SNR:LOWer:VALue
:LIMits:AF:SNR:LOWer:VALue?

Description:	Set command defines the Lower Limit Value for AF Signal to Noise Ratio measurement.
	Query command returns parameter setting.
Range:	-100.0 to +100.0 dBr
Units:	dBr
Default Value:	0.0 dBr
Set/Query Format:	NRf | NR1
Example:	:LIMits:AF:SNR:LOWer:VALue 50dBr
	Sets Lower Limit Value for AF SNR measurement to 50.0 dBr.
Query Response:	:LIMits:AF:SNR:LOWer:VALue?
	50

NOTE	AF Analyzer Noise measurement type must be defined as Signal to Noise Ratio (:AF:ANALyzer:NTYPe SN) and SNR measurement defined as Normal (:CONFigure:AF:ANALyzer:SNR:MODE 1) to obtain valid SNR measurement.

5.9.5 AF SNR - Mode

:CONFigure:AF:ANALyzer:SNR:MODE
:CONFigure:AF:ANALyzer:SNR:MODE?

Description:	Set command defines the SNR Meter Mode (Normal or Hum and Noise) when performing Signal to Noise Ratio measurement.
	Query command returns parameter setting.
Parameter:	0 = Hum & Noise
	1 = Normal
Default Value:	0
Set/Query Format:	NR1
Example:	:CONFigure:AF:ANALyzer:SNR:MODE 0
	Sets AF Signal to Noise measurement to Hum & Noise measurement.
Query Response:	:CONFigure:AF:ANALyzer:SNR:MODE?
	0

NOTE	AF Analyzers Noise measurement type must be defined as SN for command to be valid (:AF:ANALyzer:NTYPe SN).

5.9.6 AF SNR - Measurement Query

:FETCh:AF:ANALyzer:SNR?

Description:	Command returns AF Signal to Noise Ratio measurement data.
Query Data:	<statusbyte>,<failbyte>,<avg(dB)>,<wc(dB)>

NOTE	Refer to Chapter 1 for UUT Measurement Meter Return Data.

Query Response:	:FETCh:AF:ANALyzer:SNR?
	0,0,25,-1.99

NOTE	AF Analyzer Noise measurement type must be defined as Signal to Noise Ratio (:AF:ANALyzer:NTYPe SN) and SNR measurement defined as Normal (:CONFigure:AF:ANALyzer:SNR:MODE 1) to obtain valid SNR measurement.
	(*rci meter mode compatible: see :SYSTem:RCI :METER:MODE)

5.9.7 AF SNR - Peak Measurement Reset

:AF:ANALyzer:SNR:CLEAR:PEAK

Description:	Command clears and resets Peak AF Signal to Noise Ratio measurement.
Parameter/Query:	none

5.9.8 AF SNR - Upper Limit Enable

:LIMits:AF:SNR:UPPer:ENABle
:LIMits:AF:SNR:UPPer:ENABle?

Description:	Set command Enables/Disables Upper Limit for AF Signal to Noise Ratio measurement.
	Query command returns parameter setting.
Parameter:	OFF | ON | 0 | 1
Default Value:	OFF
Set/Query Format:	Boolean
Example:	:LIMits:AF:SNR:UPPer:ENABle ON
	Enables Upper Limit for AF SNR measurement.
Query Response:	:LIMits:AF:SNR:UPPer:ENABle?
	1

NOTE	AF Analyzer Noise measurement type must be defined as Signal to Noise Ratio (:AF:ANALyzer:NTYPe SN) and SNR measurement defined as Normal (:CONFigure:AF:ANALyzer:SNR:MODE 1) to obtain valid SNR measurement.

5.9.9 AF SNR - Upper Limit Value

:LIMits:AF:SNR:UPPer:VALue
:LIMits:AF:SNR:UPPer:VALue?

Description:	Set command defines the Upper Limit Value for AF Signal to Noise Ratio measurement.
	Query command returns parameter setting.
Range:	-100.0 to +100.0 dBr
Units:	dBr
Default Value:	10.0 dBr
Set/Query Format:	NRf | NR2
Example:	:LIMits:AF:SNR:UPPer:VALue 50dBr
	Sets Upper Limit Value for AF SNR measurement to 50.0 dBr.
Query Response:	:LIMits:AF:SNR:UPPer:VALue?
	50

NOTE	AF Analyzer Noise measurement type must be defined as Signal to Noise Ratio (:AF:ANALyzer:NTYPe SN) and SNR measurement defined as Normal (:CONFigure:AF:ANALyzer:SNR:MODE 1) to obtain valid SNR measurement.

5.10   BROADBAND POWER

5.10.1   Broadband Power - Averages

:CONFigure:RF:ANALyzer:TRBPower:AVERage
:CONFigure:RF:ANALyzer:TRBPower:AVERage?

Description:	Set command defines number of readings taken to calculate Average Broadband Power measurement.
	Query command returns parameter setting.
Range:	1 to 250
Default Value:	1
Set/Query Format:	NR1
Example:	:CONFigure:RF:ANALyzer:TRBPower:AVERage 25
	Sets number of readings taken to calculate Average Broadband Power measurement to 25.
Query Response:	:CONFigure:RF:ANALyzer:TRBPower:AVERage?
	25

5.10.2   Broadband Power - Lower Limit Enable

:LIMits:RF:TRBPower:LOWer:ENABle
:LIMits:RF:TRBPower:LOWer:ENABle?

Description:	Set command Enables/Disables Lower Limit for Broadband Power measurement.
	Query command returns parameter setting.
Parameter:	OFF | ON | 0 | 1
Default Value:	OFF
Set/Query Format:	Boolean
Example:	:LIMits:RF:TRBPower:LOWer:ENABle ON
	Enables Lower Limit for Broadband Power measurement.
Query Response:	:LIMits:RF:TRBPower:LOWer:ENABle?
	1

5.10.3   Broadband Power - Lower Limit Value

:LIMits:RF:TRBPower:LOWer:VALue
:LIMits:RF:TRBPower:LOWer:VALue?

Description:	Set command defines Lower Limit Value for Broadband Power measurement.
	Query command returns parameter setting.
Range:	-140.0 to +70.0 dBm
Units:	mW | W | dBW | dBm
Default Value:	100.0 µW
Set/Query Format:	NRf | NR2 (W)
Example:	:LIMits:RF:TRBPower:LOWer:VALue -45dBm
	Sets Lower Limit Value for Broadband measurement to -45.0 dBm.
Query Response:	:LIMits:RF:TRBPower:LOWer:VALue?
	0.0

5.10.4 Broadband Power - Measurement Query

:FETCh:RF:ANALyzer:TRBPower? \<units>

Description:	Command returns Broadband Power measurement data.
Query Data:	\<statusbyte>,\<failbyte>,\<avgcount>,\<avg>

> **NOTE** Refer to Chapter 1 for UUT Measurement Meter Return Data.

Units:	W | dBW | dBM
Query Response:	:FETCh:RF:ANALyzer:TRBPower? DBW
	1,5,1,0.0013

> **NOTE** RF Input must be set to TR to return valid data.

5.10.5 Broadband Power - Peak Measurement Query

:FETCh:RF:ANALyzer:TRBPower:HOLD?

Description:	Command returns Peak Broadband Power measurement data.
Query Data:	\<statusbyte>,\<failbyte>,\<avgcount>,\<avg>

> **NOTE** Refer to Chapter 1 for UUT Measurement Meter Return Data.

Units:	W | dBW | dBM
Query Response:	:FETCh:RF:ANALyzer:TRBPower:HOLD?
	1,5,0.0091

> **NOTE** RF Input must be set to TR to return valid data.

5.10.6 Broadband Power - Units

:CONFigure:RF:ANALyzer:TRBPower:UNIts
:CONFigure:RF:ANALyzer:TRBPower:UNIts?

Description:	Set command defines the unit of measurement for Broadband Power measurement.
	Query command returns parameter setting.
Parameter:	W | dBW | dBm
Default Value:	W
Set/Query Format:	CPD | CRD
Example:	:CONFigure:RF:ANALyzer:TRBPower:UNIts DBW
	Displays Broadband Power measurement in dBW.
Query Response:	:CONFigure:RF:ANALyzer:TRBPower:UNIts?
	DBW

5.10.7　　Broadband Power - Upper Limit Enable

:LIMits:RF:TRBPower:UPPer:ENABle
:LIMits:RF:TRBPower:UPPer:ENABle?

Description:	Set command Enables/Disables Upper Limit for Broadband Power measurement.
	Query command returns parameter setting.
Parameter:	OFF | ON | 0 | 1
Default Value:	OFF
Set/Query Format:	Boolean
Example:	:LIMits:RF:TRBPower:UPPer:ENABle ON
	Enables Upper Limit for Broadband Power measurement.
Query Response:	:LIMits:RF:TRBPower:UPPer:ENABle?
	1

5.10.8　　Broadband Power - Upper Limit Value

:LIMits:RF:TRBPower:UPPer:VALue
:LIMits:RF:TRBPower:UPPer:VALue?

Description:	Set command defines Upper Limit Value for Broadband Power measurement.
	Query command returns parameter setting.
Range:	-140.0 to +70.0 dBm
Units:	mW | W | dBW | dBm
Default Value:	100.0 µW
Set/Query Format:	NRf | NR2 (W)
Example:	:LIMits:RF:TRBPower:UPPer:VALue -25dBm
	Sets Upper Limit Value for Broadband Power measurement to -25.0 dBm.
Query Response:	:LIMits:RF:TRBPower:UPPer:VALue?
	0.0

5.11 FM DEVIATION MEASUREMENTS

5.11.1 FM Deviation - Averages

:CONFigure:MOD:ANALyzer:FM:AVERage
:CONFigure:MOD:ANALyzer:FM:AVERage?

Description:	Set command defines number of readings taken to calculate Average FM Deviation measurement.
	Query command returns parameter setting.
Range:	1 to 250
Default Value:	1
Set/Query Format:	NR1
Example:	:CONFigure:MOD:ANALyzer:FM:AVERage 75
	Sets number of readings taken to calculate Average FM Deviation measurement to 75.
Query Response:	:CONFigure:MOD:ANALyzer:FM:AVERage?
	75

5.11.2 FM Deviation - Average Measurement Reset

:MOD:ANALyzer:FM:CLEAR:AVG

Description:	Command clears and resets Average FM Deviation measurement.
Parameter/Query:	none

5.11.3 FM Deviation - Lower Limit Enable

:LIMits:MOD:FM:LOWer:ENABle
:LIMits:MOD:FM:LOWer:ENABle?

Description:	Set command Enables/Disables Lower Limit for FM Deviation measurement.
	Query command returns parameter setting.
Parameter:	OFF | ON | 0 | 1
Default Value:	OFF
Set/Query Format:	Boolean
Example:	:LIMits:MOD:FM:LOWer:ENABle ON
	Enables Lower Limit for FM Deviation measurement.
Query Response:	:LIMits:MOD:FM:LOWer:ENABle?
	1

5.11.4   FM Deviation - Lower Limit Value

:LIMits:MOD:FM:LOWer:VALue
:LIMits:MOD:FM:LOWer:VALue?

Description:	Set command defines Lower Limit Value for FM Deviation measurement. Query command returns parameter setting.
Range:	0.0 Hz to 150.0 kHz
Default Value:	0.0 Hz
Set/Query Format:	NRf | NR2
Example:	:LIMits:MOD:FM:LOWer:VALue 1.0Hz
	Sets Lower Limit Value for FM Deviation measurement to 1.0 Hz.
Query Response:	:LIMits:MOD:FM:LOWer:VALue?
	1.0

NOTE	Units defined by :CONFigure:MOD:ANALyzer:FM:UNIts command.

5.11.5   FM Deviation - Measurement Query

:FETCh:MOD:ANALyzer:FM?

Description:	Command returns FM Deviation measurement data.
Query Data:	<statusbyte>, <failbyte>, <avgcount>, <avg(Hz)>, <max(Hz)>, <min(Hz)>

NOTE	Refer to Chapter 1 for UUT Measurement Meter Return Data.

Query Response:	:FETCh:MOD:ANALyzer:FM?
	0, 0, 1, 30.12, 43.47, 30.12

NOTE	Protocol must be set to Analog to return valid measurement data.

5.11.6   FM Deviation - Peak Measurement Reset

:MOD:ANALyzer:FM:CLEAR:PEAK

Description:	Command clears and resets Peak FM Deviation measurement.
Parameter/Query:	none

5.11.7   FM Deviation - Measurement Type

:CONFigure:MOD:ANALyzer:FM:MTYPe
:CONFigure:MOD:ANALyzer:FM:MTYPe?

Description:	Set command defines measurement type for FM Deviation measurement. Query command returns parameter setting.
Parameter:	PEAK | RMS
Default Value:	PEAK
Set/Query Format:	CPD | CRD
Example:	:CONFigure:MOD:ANALyzer:FM:MTYPe RMS
	Sets Mod Analyzer Distortion measurement to RMS.
Query Response:	:CONFigure:MOD:ANALyzer:FM:MTYPe?
	RMS

5.11.8 FM Deviation - Offset Enable

:CONFigure:MOD:ANALyzer:FM:OFFSet:ENABle
:CONFigure:MOD:ANALyzer:FM:OFFSet:ENABle?

Description:	Set command defines the FM Deviation Offset mode of operation.
	Query command returns parameter setting.
Parameter:	OFF | ON | 0 | 1
Default Value:	ON
Set/Query Format:	Boolean
Example:	:CONFigure:MOD:ANALyzer:FM:OFFSet:ENABle ON
	Locks FM Deviation Frequency Offset to RF Analyzer Frequency.
Query Response:	:CONFigure:MOD:ANALyzer:FM:OFFSet:ENABle?
	1

5.11.9 FM Deviation - Units

:CONFigure:MOD:ANALyzer:FM:UNIts
:CONFigure:MOD:ANALyzer:FM:UNIts?

Description:	Set command defines the unit of measurement for FM Deviation measurement.
	Query command returns parameter setting.
Parameter:	dBr | Hz
Default Value:	Hz
Set/Query Format:	CPD | CRD
Example:	:CONFigure:MOD:ANALyzer:FM:UNIts dBr
	Displays FM Deviation measurements in dBr.
Query Response:	:CONFigure:MOD:ANALyzer:FM:UNIts?
	dBr

NOTE	Command defines unit of measurement for Upper and Lower Limit commands.

5.11.10 FM Deviation - Upper Limit Enable

:LIMits:MOD:FM:UPPer:ENABle
:LIMits:MOD:FM:UPPer:ENABle?

Description:	Set command Enables/Disables Upper Limit for FM Deviation measurement.
	Query command returns parameter setting.
Parameter:	OFF | ON | 0 | 1
Default Value:	OFF
Set/Query Format:	Boolean
Example:	:LIMits:MOD:FM:UPPer:ENABle ON
	Enables Upper Limit for FM Deviation measurement.
Query Response:	:LIMits:MOD:FM:UPPer:ENABle?
	1

5.11.11   FM Deviation - Upper Limit Value

:LIMits:MOD:FM:UPPer:VALue
:LIMits:MOD:FM:UPPer:VALue?

Description:	Set command defines Upper Limit Value for FM Deviation measurement.
	Query command returns parameter setting.
Range:	0.0 Hz to 150.0 kHz
Default Value:	0.0 Hz
Set/Query Format:	NRf | NR2
Example:	:LIMits:MOD:FM:UPPer:VALue 2.0Hz
	Sets Upper Limit Value for FM Deviation measurement to 2.0 Hz.
Query Response:	:LIMits:MOD:FM:UPPer:VALue?
	1.0

NOTE	Units defined by :CONFigure:MOD:ANALyzer:FM:UNIts command.

5.12   INBAND POWER MEASUREMENTS

5.12.1   Inband Power - Averages

:METERs:POWer:CHn:INBand:AVERaging
:METERs:POWer:CHn:INBand:AVERaging?

Description:	Set command defines number of readings taken to calculate Average Inband Power measurement.
	Query command returns parameter setting.
Range:	1 to 250
Default Value:	1
Set/Query Format:	NR1
Example:	:METERs:POWer:CH1:INBand:AVERaging 100
	Sets the number of readings taken to calculate Channel 1 Inband Power measurements to 100.
Query Response:	:METERs:POWer:CH1:INBand:AVERaging?
	100

NOTE	CHn = 1 or 2 (Channel 1 or 2). Channel 2 is option enabled.

5.12.2   Inband Power - Average Measurement Reset

:METERs:POWer:CHn:INBand:CLEAR:AVG

Description:	Command clears and resets Average Inband Power measurement.
Parameter/Query:	none

NOTE	CHn = 1 or 2 (Channel 1 or 2). Channel 2 is option enabled.

5.12.3   Inband Power - Lower Limit Enable

:LIMits:POWer:CHn:INBand:LOWer:ENABle
:LIMits:POWer:CHn:INBand:LOWer:ENABle?

Description:	Set command Enables/Disables Lower Limit for Inband Power measurement.
	Query command returns parameter setting.
Parameter:	OFF | ON | 0 | 1
Default Value:	OFF
Set/Query Format:	Boolean
Example:	:LIMits:POWer:CH1:INBand:LOWer:ENABle ON
	Enables Lower Limit for Channel 1 Inband Power measurement.
Query Response:	:LIMits:POWer:CH1:INBand:LOWer:ENABle?
	1

NOTE	CHn = 1 or 2 (Channel 1 or 2). Channel 2 is option enabled.

5.12.4 Inband Power - Lower Limit Value

:LIMits:POWer:CHn:INBand:LOWer:VALue
:LIMits:POWer:CHn:INBand:LOWer:VALue?

Description:	Set command defines Lower Limit Value for Inband Power measurement.
	Query command returns parameter setting.
Range:	-140.0 to +70.0 dBm
Units:	W | dBW | dBm | V | dBµV
Default Value:	0.0 dBm
Set/Query Format:	NRf | NR2
Example:	:LIMits:POWer:CH1:INBand:LOWer:VALue -45dBm
	Sets Lower Limit for Channel 1 Inband measurements to -45.0 dBm.
Query Response:	:LIMits:POWer:CH1:INBand:LOWer:VALue?
	0.0

NOTE	CHn = 1 or 2 (Channel 1 or 2). Channel 2 is option enabled.

5.12.5 Inband Power - Measurement Query

:METERs:POWer:CHn:INBand:STATus?

Description:	Command returns Inband Power measurement data.
Query Data:	<statusbyte>,<failbyte>,<precision>,<percentage>,<avg>,<max>,<min>,<units>

NOTE	Refer to Chapter 1 for UUT Measurement Meter Return Data.

Query Response:	:METERs:POWer:CH1:INBand:STATus?
	0,0,3 100.00, -30.183, -30.140, -30.241,6

NOTE	CHn = 1 or 2 (Channel 1 or 2). Channel 2 is option enabled.
	Protocol must be defined as ANALOG to return valid measurement data.

5.12.6 Inband Power - Peak Measurement Reset

:METERs:POWer:CHn:INBand:CLEAR:PEAK

Description:	Command clears and resets Peak Inband Power measurement.
Parameter/Query:	none

NOTE	CHn = 1 or 2 (Channel 1 or 2). Channel 2 is option enabled.

5.12.7   Inband Power - Units

:METERs:POWer:INBand:UNIts
:METERs:POWer:INBand:UNIts?

Description:	Set command defines the unit of measurement for Inband Power measurement.
	Query command returns parameter setting.
Parameter:	dBm | W | dBW | V | dBµV
Default Value:	dBm
Set/Query Format:	CPD | CRD
Example:	:METERs:POWer:INBand:UNIts W
	Displays Inband Power measurements in Watts.
Query Response:	:METERs:POWer:INBand:UNIts?
	W

5.12.8   Inband Power - Upper Limit Enable

:LIMits:POWer:CHn:INBand:UPPer:ENABle
:LIMits:POWer:CHn:INBand:UPPer:ENABle?

Description:	Set command Enables/Disables Upper Limit for Inband Power measurement.
	Query command returns parameter setting.
Parameter:	OFF | ON | 0 | 1
Set/Query Format:	Boolean
Default Value:	OFF
Example:	:LIMits:POWer:CH1:INBand:UPPer:ENABle ON
	Enables Upper Limit for Channel 1 Inband Power measurement.
Query Response:	:LIMits:POWer:CH1:INBand:UPPer:ENABle?
	1

NOTE	CHn = 1 or 2 (Channel 1 or 2). Channel 2 is option enabled.

5.12.9   Inband Power - Upper Limit Value

:LIMits:POWer:CHn:INBand:UPPer:VALue
:LIMits:POWer:CHn:INBand:UPPer:VALue?

Description:	Set command defines the Upper Limit Value for Inband Power measurement Upper.
	Query command returns parameter setting.
Range:	-140.0 to +70.0 dBm
Units:	W | dBW | dBm | V | dBµV
Default Value:	0.0 dBm
Set/Query Format:	NRf | NR2
Example:	:LIMits:POWer:CH1:INBand:UPPer:VALue -25dBm
	Sets Upper Limit for Channel 1 Inband Power Measurement to -25.0 dBm.
Query Response:	:LIMits:POWer:CH1:INBand:UPPer:VALue?
	0.0

NOTE	CHn = 1 or 2 (Channel 1 or 2). Channel 2 is option enabled.

5.13 MODULATION DISTORTION MEASUREMENTS

5.13.1 Modulation Distortion - Averages

:CONFigure:MOD:ANALyzer:DISTortion:AVERage
:CONFigure:MOD:ANALyzer:DISTortion:AVERage?

Description:	Set command defines number of readings taken to calculate Average Modulation Distortion measurement.
	Query command returns parameter setting.
Range:	1 to 250
Default Value:	1
Set/Query Format:	NR1
Example:	:CONFigure:MOD:ANALyzer:DISTortion:AVERage 75
	Sets number of readings taken to calculate Average Modulation Distortion measurement to 75.
Query Response:	:CONFigure:MOD:ANALyzer:DISTortion:AVERage?
	75

5.13.2 Modulation Distortion - Average Measurement Reset

:MOD:ANALyzer:DISTortion:CLEAR:AVG

Description:	Command clears and resets Average Modulation Distortion measurement.
Parameter/Query:	none

5.13.3 Modulation Distortion - Lower Limit Enable

:LIMits:MOD:DISTortion:LOWer:ENABle
:LIMits:MOD:DISTortion:LOWer:ENABle?

Description:	Set command Enables/Disables Lower Limit for Modulation Distortion measurement.
	Query command returns parameter setting.
Parameter:	OFF | ON | 0 | 1
Default Value:	OFF
Set/Query Format:	Boolean
Example:	:LIMits:MOD:DISTortion:LOWer:ENABle ON
	Enables Lower Limit for Modulation Distortion measurement.
Query Response:	:LIMits:MOD:DISTortion:LOWer:ENABle?
	1

5.13.4 Modulation Distortion - Lower Limit Value

:LIMits:MOD:DISTortion:LOWer:VALue
:LIMits:MOD:DISTortion:LOWer:VALue?

Description:	Set command defines Lower Limit Value for Modulation Distortion measurement.
	Query command returns parameter setting.
Range:	0.0 to 100.0%
Units:	% (percent)
Default Value:	0.0%
Set/Query Format:	NRf | NR2
Example:	:LIMits:MOD:DISTortion:LOWer:VALue 1.0
	Sets Lower Limit Value for Modulation Distortion measurement to 1.0%.
Query Response:	:LIMits:MOD:DISTortion:LOWer:VALue?
	1.0

5.13.5 Modulation Distortion - Measurement Query

:FETCh:MOD:ANALyzer:DISTortion?

Description:	Command returns Modulation Distortion measurement data.
Query Data:	<statusbyte>,<failbyte>,<avgvount>,<avg%>,<wc%>
NOTE	Refer to Chapter 1 for UUT Measurement Meter Return Data.
Query Response:	:FETCh:MOD:ANALyzer:DISTortion?
	0,0,1,99.59,99.99
NOTE	Protocol must be defined as Analog to obtain valid Modulation Distortion measurements data.

5.13.6 Modulation Distortion - Peak Measurement Reset

:MOD:ANALyzer:DISTortion:CLEAR:PEAK

Description:	Command clears and resets Peak Modulation Distortion measurement.
Parameter/Query:	none

5.13.7 Modulation Distortion - Upper Limit Enable

:LIMits:MOD:DISTortion:UPPer:ENABle
:LIMits:MOD:DISTortion:UPPer:ENABle?

Description:	Set command Enables/Disables Upper Limit for Modulation Distortion measurement.
	Query command returns parameter setting.
Parameter:	OFF | ON | 0 | 1
Default Value:	OFF
Set/Query Format:	Boolean
Example:	:LIMits:MOD:DISTortion:UPPer:ENABle ON
	Enables Upper Limit for Modulation Distortion measurement.
Query Response:	:LIMits:MOD:DISTortion:UPPer:ENABle?
	1

5.13.8   Modulation Distortion - Upper Limit Value

:LIMits:MOD:DISTortion:UPPer:VALue
:LIMits:MOD:DISTortion:UPPer:VALue?

Description:	Set command defines Upper Limit Value for Modulation Distortion measurement.
	Query command returns parameter setting.
Range:	0.0 to 100.0%
Units:	% (percent)
Default Value:	0.0%
Set/Query Format:	NRf | NR2
Example:	:LIMits:MOD:DISTortion:UPPer:VALue 1.0
	Sets Upper Limit Value for Modulation Distortion measurements to 1.0%.
Query Response:	:LIMits:MOD:DISTortion:UPPer:VALue?
	1.0

5.14 MODULATION FREQUENCY MEASUREMENTS

5.14.1 Modulation Frequency - Averages

:CONFigure:MOD:ANALyzer:FREQuency:AVERage
:CONFigure:MOD:ANALyzer:FREQuency:AVERage?

Description:	Set command defines number of readings taken to calculate average Modulation Frequency measurement.
	Query command returns parameter setting.
Range:	1 to 250
Default Value:	1
Set/Query Format:	NR1
Example:	:CONFigure:MOD:ANALyzer:FREQuency:AVERage 75
	Sets number of readings taken to calculate Average Modulation Frequency measurement to 75.
Query Response:	:CONFigure:MOD:ANALyzer:FREQuency:AVERage?
	75

5.14.2 Modulation Frequency - Average Measurement Reset

:MOD:ANALyzer:FREQuency:CLEAR:AVG

Description:	Command clears and resets Average Modulation Frequency measurement.
Parameter/Query:	none

5.14.3 Modulation Frequency - Lower Limit Enable

:LIMits:MOD:FREQuency:LOWer:ENABle
:LIMits:MOD:FREQuency:LOWer:ENABle?

Description:	Set command Enables/Disables Lower Limit for Modulation Frequency measurement.
	Query command returns parameter setting.
Parameter:	OFF | ON | 0 | 1
Set/Query Format:	Boolean
Default Value:	OFF
Example:	:LIMits:MOD:FREQuency:LOWer:ENABle ON
	Enables Lower Limit for Modulation Frequency measurement.
Query Response:	:LIMits:MOD:FREQuency:LOWer:ENABle?
	1

5.14.4   Modulation Frequency - Lower Limit Value

:LIMits:MOD:FREQuency:LOWer:VALue
:LIMits:MOD:FREQuency:LOWer:VALue?

Description:	Set command defines the Lower Limit Value Modulation Frequency measurement.
	Query command returns parameter setting.
Range:	0.0 Hz to 20.0 kHz
Units:	Hz | kHz
Default Value:	0.0 kHz
Set/Query Format:	NRf | NR2
Example:	:LIMits:MOD:FREQuency:LOWer:VALue 1.0Hz
	Sets Lower Limit Value for Modulation Frequency measurement to 1.0 Hz.
Query Response:	:LIMits:MOD:FREQuency:LOWer:VALue?
	1.0

5.14.5   Modulation Frequency - Measurement Query

:FETCh:MOD:ANALyzer:FREQuency?

Description:	Command returns Modulation Frequency measurement data.
Query Data:	<statusbyte>, <avgcount>, <avg(Hz)>

NOTE	Refer to Chapter 1 for UUT Measurement Meter Return Data.

Query Response:	:FETCh:MOD:ANALyzer:FREQuency?
	0,0,2979.00

NOTE	Protocol must be defined as Analog to obtain valid Modulation Frequency measurement data.

5.14.6   Modulation Frequency - Peak Measurement Reset

:MOD:ANALyzer:FREQuency:CLEAR:PEAK

Description:	Command clears and resets Peak Modulation Frequency measurement.
Parameter/Query:	none

5.14.7   Modulation Frequency - Sub-Audible Deviation Filter

:CONFigure:MOD:ANALyzer:SAUDDEV:FILter
:CONFigure:MOD:ANALyzer:SAUDDEV:FILter?

Description:	Set command selects Sub-Audible filter to include in Demod Frequency path.
	Query command returns parameter setting.
Parameter:	HP300HZ | LP300HZ
Default Value:	300 Hz HP
Set/Query Format:	CPD | CRD
Example:	:CONFigure:MOD:ANALyzer:SAUDDEV:FILter LP300HZ
	Selects 300 Hz LP Sub-Audible Filter for Demod Frequency path.
Query Response:	:CONFigure:MOD:ANALyzer:SAUDDEV:FILter?
	LP300HZ

NOTE	This command is only valid for SmartNet™/SmartZone™ protocol when configured for Analog Modulation.

5.14.8   Modulation Frequency - Upper Limit Enable

:LIMits:MOD:FREQuency:UPPer:ENABle
:LIMits:MOD:FREQuency:UPPer:ENABle?

Description:	Set command Enables/Disables Upper Limit for Modulation Frequency measurement.
	Query command returns parameter setting.
Parameter:	OFF | ON | 0 | 1
Set/Query Format:	Boolean
Default Value:	OFF
Example:	:LIMits:MOD:FREQuency:UPPer:ENABle ON
	Enables Upper Limit for Modulation Frequency measurement.
Query Response:	:LIMits:MOD:FREQuency:UPPer:ENABle?
	1

5.14.9   Modulation Frequency - Upper Limit Value

:LIMits:MOD:FREQuency:UPPer:VALue
:LIMits:MOD:FREQuency:UPPer:VALue?

Description:	Set command defines the Upper Limit Value for Modulation Frequency measurement.
	Query command returns parameter setting.
Range:	0.0 Hz to 20.0 kHz
Units:	Hz | kHz
Default Value:	0.0 Hz
Set/Query Format:	NRf | NR2
Example:	:LIMits:MOD:FREQuency:UPPer:VALue 2.0Hz
	Sets Upper Limit Value for Modulation Frequency measurement to 2.0 Hz.
Query Response:	:LIMits:MOD:FREQuency:UPPer:VALue?
	1.0

5.15   MODULATION HUM & NOISE MEASUREMENTS

5.15.1   Mod Hum & Noise - Averages

:CONFigure:MOD:ANALyzer:HN:AVERage
:CONFigure:MOD:ANALyzer:HN:AVERage?

Description:	Set command defines number of readings taken to calculate the Average Mod Hum & Noise measurement.
	Query command returns parameter setting.
Range:	1 to 250
Default Value:	1
Set/Query Format:	NR1
Example:	:CONFigure:MOD:ANALyzer:HN:AVERage 75
	Sets number of readings taken to calculate Average Mod Distortion measurement to 75.
Query Response:	:CONFigure:MOD:ANALyzer:HN:AVERage?
	75

5.15.2

5.15.3   Mod Hum & Noise - Average Measurement Reset

:MOD:ANALyzer:HN:CLEAR:AVG

Description:	Command clears and resets Average Mod Hum & Noise measurement.
Parameter/Query:	none

5.15.4   Mod Hum & Noise - Lower Limit Enable

:LIMits:MOD:HN:LOWer:ENABle
:LIMits:MOD:HN:LOWer:ENABle?

Description:	Set command Enables/Disables Lower Limit for Mod Hum & Noise measurement.
	Query command returns parameter setting.
Parameter:	OFF | ON | 0 | 1
Default Value:	OFF
Set/Query Format:	Boolean
Example:	:LIMits:MOD:HN:LOWer:ENABle ON
	Enables Lower Limit for Mod Hum & Noise measurement.
Query Response:	:LIMits:MOD:HN:LOWer:ENABle?
	1

5.15.5   Mod Hum & Noise - Lower Limit Value

:LIMits:MOD:HN:LOWer:VALue
:LIMits:MOD:HN:LOWer:VALue?

Description:	Set command defines Lower Limit Value for Mod Hum & Noise measurement.
	Query command returns parameter setting.
Range:	-100.0 to +100.0 dBr
Units:	dBr
Default Value:	0.0 dBr
Set/Query Format:	NRf | NR1
Example:	:LIMits:MOD:HN:LOWer:VALue -50dBr
	Sets Lower Limit Value for Mod Hum & Noise measurement to -50.0 dBr.
Query Response:	:LIMits:MOD:HN:LOWer:VALue?
	-50

5.15.6   Mod Hum & Noise - Measurement Query

:FETCh:MOD:ANALyzer:HN?

Description:	Command returns Mod and Noise measurement data.
Query Data:	<statusbyte>,<failbyte>,<avgcount>,<avg(dB)>,<wc(dB)>
NOTE	Refer to Chapter 1 for UUT Measurement Meter Return Data.
Query Response:	:FETCh:MOD:ANALyzer:HN?
	4,4,13,62.35,75.68
NOTE	Mod Analyzer Noise measurement type must be defined as Signal to Noise Ratio (:MOD:ANALyzer:NTYPe SN) and SNR measurement defined as Hum & Noise (:CONFigure:MOD:ANALyzer:SNR:MODE 0) to obtain valid Hum & Noise measurement.

5.15.7   Mod Hum & Noise - Peak Measurement Reset

:MOD:ANALyzer:HN:CLEAR:PEAK

Description:	Command clears and resets Peak Mod Hum & Noise measurement.
Parameter/Query:	none

5.15.8   Mod Hum & Noise - Reference Lock

:CONFigure:MOD:ANALyzer:HN:REFerence

Description:	Command locks Mod Hum and Noise reference to current meter reading.
Parameter/Query:	none
NOTE	SNR measurement must be defined as Hum & Noise to obtain valid Hum & Noise measurement (:CONFigure:MOD:ANALyzer:SNR:MODE HN).

5.15.9　　　Mod Hum & Noise - Reference Value

:CONFigure:MOD:ANALyzer:HN:REFerence:VALue
:CONFigure:MOD:ANALyzer:HN:REFerence:VALue?

Description:	Set command defines the reference for Modulation Analyzer Hum and Noise measurement.
	Query command returns parameter setting.
Range:	-100.0 to +100.0 dB
Units:	dB
Default Value:	12.0 dB
Set/Query Format:	NRf | NR2
Example:	:CONFigure:MOD:ANALyzer:HN:REFerence:VALue 1dB
	Sets Hum & Noise Reference value to 1.0 dB.
Query Response:	:CONFigure:MOD:ANALyzer:HN:REFerence:VALue?
	1

5.15.10　　　Mod Hum & Noise - Upper Limit Enable

:LIMits:MOD:HN:UPPer:ENABle
:LIMits:MOD:HN:UPPer:ENABle?

Description:	Set command Enables/Disables Upper Limit for Mod Hum & Noise measurement.
	Query command returns parameter setting.
Parameter:	OFF | ON | 0 | 1
Default Value:	OFF
Set/Query Format:	Boolean
Example:	:LIMits:MOD:HN:UPPer:ENABle ON
	Enables Upper Limit for Mod Hum & Noise measurement.
Query Response:	:LIMits:MOD:HN:UPPer:ENABle?
	1

5.15.11　　　Mod Hum & Noise - Upper Limit Value

:LIMits:MOD:HN:UPPer:VALue
:LIMits:MOD:HN:UPPer:VALue?

Description:	Set command defines Upper Limit Value for Hum and Noise measurement.
	Query command returns parameter setting.
Range:	-100.0 to +100.0 dBr
Units:	dBr
Default Value:	10.0 dBr
Set/Query Format:	NRf | NR1
Example:	:LIMits:MOD:HN:UPPer:VALue 75dBr
	Sets Upper Limit Value for Mod Hum & Noise measurement to 75.0 dBr.
Query Response:	:LIMits:MOD:HN:UPPer:VALue?
	75

5.16   MODULATION SINAD MEASUREMENTS

5.16.1   Modulation Sinad - Averages

:CONFigure:MOD:ANALyzer:SINad:AVERage
:CONFigure:MOD:ANALyzer:SINad:AVERage?

Description:	Set command defines number of readings taken to calculate the Average Modulation Sinad measurement.
	Query command returns parameter setting.
Range:	1 to 250
Default Value:	1
Set/Query Format:	NR1
Example:	:CONFigure:MOD:ANALyzer:SINad:AVERage 25
	Sets number of readings taken to calculate Average Modulation Sinad measurement to 75.
Query response:	:CONFigure:MOD:ANALyzer:SINad:AVERage?
	75

5.16.2   Modulation Sinad - Average Measurement Reset

:MOD:ANALyzer:SINad:CLEAR:AVG

Description:	Command clears and resets Average Modulation Sinad measurement.
Parameter/Query:	none

5.16.3   Modulation Sinad - Lower Limit Enable

:LIMits:MOD:SINad:LOWer:ENABle
:LIMits:MOD:SINad:LOWer:ENABle?

Description:	Set command Enables/Disables Lower Limit for Modulation Sinad measurement.
	Query command returns parameter setting.
Parameter:	OFF | ON | 0 | 1
Set/Query Format:	Boolean
Default Value:	OFF
Example	:LIMits:MOD:SINad:LOWer:ENABle ON
	Enables Lower Limit for Modulation Sinad measurement.
Query Response:	:LIMits:MOD:SINad:LOWer:ENABle?
	1

5.16.4   Modulation Sinad - Lower Limit Value

:LIMits:MOD:SINad:LOWer:VALue
:LIMits:MOD:SINad:LOWer:VALue?

Description:	Set command defines Lower Limit Value for Modulation Sinad measurement. Query command returns parameter setting.
Range:	0.0 to 100.0 dB
Units:	dB
Default Value:	26.0 dB
Set/Query Format:	NRf | NR1
Example:	:LIMits:MOD:SINad:LOWer:VALue 30dB
	Sets Lower Limit for Modulation Sinad measurement to 30 dB.
Query Response:	:LIMits:MOD:SINad:LOWer:VALue?
	30

5.16.5   Modulation Sinad - Measurement Query

:FETCh:MOD:ANALyzer:SINad?

Description:	Command returns Modulation Sinad measurement data.
Query Data:	<statusbyte>,<failbyte>,<avgcount>,<avg(dB)>,<wc(dB)>
NOTE	Refer to Chapter 1 for UUT Measurement Meter Return Data.
Query Response:	:FETCh:MOD:ANALyzer:SINad?
	0,0,1,0.15,0.19
NOTE	Protocol must be defined as Analog to return valid measurement data.

5.16.6   Modulation Sinad - Peak Measurement Reset

:MOD:ANALyzer:SINad:CLEAR:PEAK

Description:	Command clears and resets Peak Modulation Sinad measurement.
Parameter/Query:	none

5.16.7   Modulation Sinad - Upper Limit Enable

:LIMits:MOD:SINad:UPPer:ENABle
:LIMits:MOD:SINad:UPPer:ENABle?

Description:	Set command Enables/Disables Upper Limit for Modulation Sinad measurement. Query command returns parameter setting.
Parameter:	OFF | ON | 0 | 1
Default Value:	OFF
Set/Query Format:	Boolean
Example	:LIMits:MOD:SINad:UPPer:ENABle ON
	Enables Upper Limit for Modulation Sinad measurement.
Query Response:	:LIMits:MOD:SINad:UPPer:ENABle?
	1

5.16.8   Modulation Sinad - Upper Limit Value

:LIMits:MOD:SINad:UPPer:VALue
:LIMits:MOD:SINad:UPPer:VALue?

Description:	Set command defines the Upper Limit Value for Modulation Sinad measurement. Query command returns parameter setting.
Range:	0.0 to 100.0 dB
Units:	dB
Default Value:	26.0 dB
Set/Query Format:	NRf | NR1
Example:	:LIMits:MOD:SINad:UPPer:VALue 30dB
	Sets Upper Limit Value for Modulation Sinad measurement to 30 dB.
Query Response:	:LIMits:MOD:SINad:UPPer:VALue?
	30

5.17   MODULATION SNR MEASUREMENTS

5.17.1   Mod SNR - Averages

:CONFigure:MOD:ANALyzer:SNR:AVERage
:CONFigure:MOD:ANALyzer:SNR:AVERage?

Description:	Set command defines number of readings taken to calculate Average Mod Signal to Noise Ratio measurement.
	Query command returns parameter setting.
Range:	1 to 250
Default Value:	1
Set/Query Format:	NR1
Example:	:CONFigure:MOD:ANALyzer:SNR:AVERage 75
	Sets number of readings taken to calculate Average Mod SNR measurement to 75.
Query Response:	:CONFigure:MOD:ANALyzer:SNR:AVERage?
	75

5.17.2   Mod SNR - Average Measurement Reset

:MOD:ANALyzer:SNR:CLEAR:AVG

Description:	Command clears and resets Average Mod SNR measurement.
Parameter/Query:	none

5.17.3   Mod SNR - Lower Limit Enable

:LIMits:MOD:SNR:LOWer:ENABle
:LIMits:MOD:SNR:LOWer:ENABle?

Description:	Set command Enables/Disables Lower Limit for Mod SNR measurement.
	Query command returns parameter setting.
Parameter:	OFF | ON | 0 | 1
Default Value:	OFF
Set/Query Format:	Boolean
Example:	:LIMits:MOD:SNR:LOWer:ENABle ON
	Enables Lower Limit for Mod SNR measurement.
Query Response:	:LIMits:MOD:SNR:LOWer:ENABle?
	1

5.17.4 Mod SNR - Lower Limit Value

:LIMits:MOD:SNR:LOWer:VALue
:LIMits:MOD:SNR:LOWer:VALue?

Description:	Set command defines the Lower Limit Value for Mod SNR measurement.
	Query command returns parameter setting.
Range:	-100.0 to +100.0 dBr
Units:	dBr
Default Value:	26.0 dBr
Set/Query Format:	NRf | NR2
Example:	:LIMits:MOD:SNR:LOWer:VALue 50dBr
	Sets Lower Limit for Mod SNR measurement to 50.0 dBr.
Query Response:	:LIMits:MOD:SNR:LOWer:VALue?
	50

5.17.5 Mod SNR - Mode

:CONFigure:MOD:ANALyzer:SNR:MODE
:CONFigure:MOD:ANALyzer:SNR:MODE?

Description:	Set command defines the SNR Meter Mode (Normal or Hum and Noise) when performing Signal to Noise Ratio measurement.
	Query command returns parameter setting.
Parameter:	0 = Hum & Noise
	1 = Normal
Default Value:	0 (Hum & Noise)
Set/Query Format:	NR1
Example:	:CONFigure:MOD:ANALyzer:SNR:MODE 0
	Sets Mod SNR measurement to Hum & Noise.
Query Response:	:CONFigure:MOD:ANALyzer:SNR:MODE?
	0

5.17.6 Mod SNR - Measurement Query

:FETCh:MOD:ANALyzer:SNR?

Description:	Command returns Modulation Signal to Noise Ratio measurement data.
Query Data:	<statusbyte>,<failbyte>,<avg(dB)>,<wc(dB)>
NOTE	Refer to Chapter 1 for UUT Measurement Meter Return Data.
Query Response:	:FETCh:MOD:ANALyzer:SNR?
	0,2,1,-0.00,13.02
NOTE	Mod Analyzer Noise measurement type must be defined as SNR to return valid Mod SNR measurement data (:MOD:ANALyzer:NTYPe SN.)
	(*rci meter mode compatible: see :SYSTem:RCI :METER:MODE)

5.17.7 Mod SNR - Peak Measurement Reset

:MOD:ANALyzer:SNR:CLEAR:PEAK

        Description: Command clears and resets Peak Mod SNR measurement.

  Parameter/Query: none

5.17.8 Mod SNR - Upper Limit Enable

:LIMits:MOD:SNR:UPPer:ENABle
:LIMits:MOD:SNR:UPPer:ENABle?

        Description: Set command Enables/Disables Upper Limit for Mod SNR measurement.
                                Query command returns parameter setting.

         Parameter: OFF | ON | 0 | 1

     Default Value: OFF

  Set/Query Format: Boolean

           Example: :LIMits:MOD:SNR:UPPer:ENABle ON
                                  Enables Upper Limit for Mod SNR measurement.

   Query Response: :LIMits:MOD:SNR:UPPer:ENABle?
                                1

5.17.9 Mod SNR - Upper Limit Value

:LIMits:MOD:SNR:UPPer:VALue
:LIMits:MOD:SNR:UPPer:VALue?

        Description: Set command defines the Upper Limit Value for Mod SNR measurement.
                                  Query command returns parameter setting.

              Range: -100.0 to +100.0 dBr

              Units: dBr

     Default Value: 0.0 dBr

  Set/Query Format: NRf | NR2

           Example: :LIMits:MOD:SNR:UPPer:VALue 50dBr
                                  Sets Upper Limit Value for Mod SNR measurement to 50.0 dBr.

   Query Response: :LIMits:MOD:SNR:UPPer:VALue?
                                50

5.18   RF ERROR MEASUREMENTS

5.18.1   RF Error - Averages

:CONFigure:RF:ANALyzer:RFERRor:AVERage
:CONFigure:RF:ANALyzer:RFERRor:AVERage?

Description:	Set command defines number of readings taken to calculate Average RF Error measurement.
	Query command returns parameter setting.
Range:	1 to 250
Default Value:	1
Set/Query Format:	NR1
Example:	:CONFigure:RF:ANALyzer:RFERRor:AVERage 75
	Sets number of readings taken to calculate Average RF Error measurement to 75.
Query Response:	:CONFigure:RF:ANALyzer:RFERRor:AVERage?
	75

5.18.2   RF Error - Average Measurement Reset

:RF:ANALyzer:RFERRor:CLEAR:AVG

Description:	Command clears and resets Average RF Error measurement.
Parameter/Query:	none

5.18.3   RF Error - Frequency Resolution Value

:CONFigure:RF:ANALyzer:RFERRor:FRESolution
:CONFigure:RF:ANALyzer:RFERRor:FRESolution?

Description:	Set command defines RF Error Frequency Resolution.
	Query command returns parameter setting.
Parameter:	1 | 10
Units:	Hz
Default Value:	1 Hz
Set/Query Format:	NRf | NR1
Example:	:CONFigure:RF:ANALyzer:RFERRor:FRESolution 10
	Sets RF Error Frequency Resolution to 10 Hz.
Query Response:	:CONFigure:RF:ANALyzer:RFERRor:FRESolution?
	10

5.18.4   RF Error - Lower Limit Enable

:LIMits:RF:RFERRor:LOWer:ENABle
:LIMits:RF:RFERRor:LOWer:ENABle?

Description:	Set command Enables/Disables Lower Limit for RF Error measurement.
	Query command returns parameter setting.
Parameter:	OFF | ON | 0 | 1
Default Value:	OFF
Set/Query Format:	Boolean
Example:	:LIMits:RF:RFERRor:LOWer:ENABle ON
	Enables Lower Limit for RF Error measurement.
Query Response:	:LIMits:RF:RFERRor:LOWer:ENABle?
	1

5.18.5   RF Error - Lower Limit Value

:LIMits:RF:RFERRor:LOWer:VALue
:LIMits:RF:RFERRor:LOWer:VALue?

Description:	Set command defines the Lower Limit Value for RF Error measurement.
	Query command returns parameter setting.
Range:	-5000000.0 to +5000000.0 Hz
	PPM: 0 to 1000
Units:	Hz | PPM
Default Value:	0.0 Hz
Set/Query Format:	NRf | NR2 (Hz)
Command Example:	:LIMits:RF:RFERRor:LOWer:VALue 1000Hz
	Sets Lower Limit Value for RF Error measurement to 1000.0 Hz.
Query Response:	:LIMits:RF:RFERRor:LOWer:VALue?
	1000

5.18.6   RF Error - Measurement Query

:FETCh:RF:ANALyzer:RFERRor?

Description:	Command returns RF Error measurement data.
Query Data:	<statusbyte>,<failbyte>,<avgcount>,<avg(dB)>,<max(dB)>
NOTE	Refer to Chapter 1 for UUT Measurement Meter Return Data.
Query Response:	:FETCh:RF:ANALyzer:RFERRor?
	0,0,1,874.77,2437.64

5.18.7   RF Error - Peak Measurement Reset

:RF:ANALyzer:RFERRor:CLEAR:PEAK

Description:	Command clears and resets Peak RF Error measurement.
Parameter/Query:	none

5.18.8   RF Error - Units

:CONFigure:RF:ANALyzer:RFERRor:UNIts
:CONFigure:RF:ANALyzer:RFERRor:UNIts?

Description:	Set command defines the unit of measurement for RF Error measurement.
	Query command returns parameter setting.
Parameter:	Hz | PPM
Default Value:	Hz
Set/Query Format:	CPD | CRD
Example:	:CONFigure:RF:ANALyzer:RFERRor:UNIts PPM
	Displays RF Error measurement in PPM.
Query Response:	:CONFigure:RF:ANALyzer:RFERRor:UNIts?
	PPM

5.18.9   RF Error - Upper Limit Enable

:LIMits:RF:RFERRor:UPPer:ENABle
:LIMits:RF:RFERRor:UPPer:ENABle?

Description:	Set command Enables/Disables Upper Limit for RF Error measurement.
	Query command returns parameter setting.
Parameter:	OFF | ON | 0 | 1
Default Value:	OFF
Set/Query Format:	Boolean
Example:	:LIMits:RF:RFERRor:UPPer:ENABle ON
	Enables Upper Limit for RF Error measurement.
Query Response:	:LIMits:RF:RFERRor:UPPer:ENABle?
	1

5.18.10   RF Error - Upper Limit Value

:LIMits:RF:RFERRor:UPPer:VALue
:LIMits:RF:RFERRor:UPPer:VALue?

Description:	Set command defines the Upper Limit Value for RF Error measurement.
	Query command returns the Upper Limit Value defined for RF Error measurement.
Range:	Hz: -5000000.0 to +5000000.0
	PPM: 0 to 1000
Default Value:	0.0 Hz
Set/Query Format:	NRf | NR2
Example:	:LIMits:RF:RFERRor:UPPer:VALue 1000Hz
	Sets Upper Limit Value for RF Error measurements to 1000.0 Hz.
Query Response:	:LIMits:RF:RFERRor:UPPer:VALue?
	1000

5 - 54

THIS PAGE INTENTIONALLY LEFT BLANK.

Chapter 6 - Modulation Accuracy and Power
Remote Commands

6.1 INTRODUCTION

This chapter describes the Remote Commands used for configuring and obtaining ARIB Modulation Accuracy and Power measurements. Remote Commands are listed alphabetically under Tile headings.

6.2 CONSTELLATION GRAPH

6.2.1 Constellation - Persistence

:CONStellation:PERSistence
:CONStellation: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:PERSistence 5
	Sets Constellation Graph Persistence to 5.
Query Response:	:CONStellation:PERSistence?
	5

6.2.2 Constellation - Trace Enable

:CONStellation:TRACe:ENABle
:CONStellation:TRACe:ENABle?

Description:	Set command Enables/Disables Constellation trace.
	Query command returns parameter setting.
Parameter:	OFF | ON | 0 | 1
Default Value:	OFF
Set/Query Format:	Boolean
Example:	:CONStellation:TRACe:ENABle ON
	Enables Constellation trace.
Query Response:	:CONStellation:TRACe:ENABle?
	1

NOTE Trace must be enabled (ON) to return valid data.

6.2.3 Constellation - Trace Data Query

:CONStellation:TRACe:FETCh?

Description:	Command returns Constellation trace data.
Query Data:	\<statusbyte>,\<#pairs>,\<x data>,\<y data>,\<status message>
statusbyte (NR1):	0 = Invalid
	1 = Valid
	2 = Inaccurate
#pairs (NR1):	Number of x,y coordinate pairs to follow
x, y data (NR2):	coordinate value
statuts message (ascii):	signal not acquired\n
(when present)	timed out waiting for TraceMutex\n
	timed out waiting for data\n
Query Response:	:CONStellation:TRACe:FETCh?

1,1,288,-1871.37,0.00,629.98,0.00,-1796.91,0.00,-619.88,0.00,-574.94,0.00,
-631.87,0.00,-582.26,0.00,586.35,0.00,-1805.57,0.00,-1796.19,0.00,-1803.18,
0.00,-605.25,0.00,-600.47,0.00,599.68,0.00,584.98,0.00,-1794.42,0.00,
-603.39,0.00,-610.97,0.00,-1793.05,0.00,585.14,0.00,-1790.75,0.00,612.04,
0.00,1793.31,0.00,607.42,0.00,1806.40,0.00,1788.95,0.00,-598.09,0.00,
607.93,0.00,592.68,0.00,-590.26,0.00,611.98,0.00,586.29,0.00,617.14,0.00,
593.83,0.00,-598.98,0.00,-605.47,0.00,-1783.44,0.00,585.87,0.00,-1800.64
,0.00,-594.62,0.00,-603.46,0.00,-596.39,0.00,-597.52,0.00,593.43,0.00,
-1803.41,0.00,-1798.85,0.00,-1798.32,0.00,-607.28,0.00,-593.63,0.00,601.10,
0.00,595.16,0.00,-1795.80,0.00,-601.23,.....

NOTE	Returned data includes Sync, Pilot and Data values. Constellation Trace must be enabled to return valid data.

6.3   DISTRIBUTION GRAPH

6.3.1   Distribution - Persistence

:DISTribution:PERSistence
:DISTribution:PERSistence?

Description:	Set command sets Persistence on Distribution graph.
	Query command returns parameter setting.
Range:	1 to 10
Default Value:	1
Set/Query Format:	NR1
Example:	:DISTribution:PERSistence 5
	Sets Distribution Graph Persistence to 5.
Query Response:	:DISTribution:PERSistence?
	5

6.3.2   Distribution - Trace Enable

:DISTribution:TRACe:ENABle
:DISTribution:TRACe:ENABle?

Description:	Set command Enables/Disables Distribution trace.
	Query command returns parameter setting.
Parameter:	OFF | ON | 0 | 1
Default Value:	OFF
Set/Query Format:	Boolean
Example:	:DISTribution:TRACe:ENABle ON
	Enables Distribution trace.
Query Response:	:DISTribution:TRACe:ENABle?
	1

NOTE	Trace must be enabled (ON) to return valid data.

6.3.3   Distribution - Trace Data Query

:DISTribution:TRACe:FETCh?

Description:	Command returns Distribution trace data.
Query Data:	\<statusbyte\>,\<#pairs\>,\<x data\>,\<y data\>,\<status message\>
statusbyte (NR1):	0 = Invalid
	1 = Valid
	2 = Inaccurate
#pairs (NR1):	Number of x,y coordinate pairs to follow
x, y data (NR2):	coordinate value
statuts message (ascii):	signal not acquired\n
(when present)	timed out waiting for TraceMutex\n
	timed out waiting for data\n
Query Response:	:DISTribution:TRACe:FETCh?

1,1,288,-1871.37,0.00,629.98,0.00,-1796.91,0.00,-619.88,0.00,-574.94,0.00,-631.87,0.00,-582.26,0.00,586.35,0.00,-1805.57,0.00,-1796.19,0.00,-1803.18,0.00,-605.25,0.00,-600.47,0.00,599.68,0.00,584.98,0.00,-1794.42,0.00,-603.39,0.00,-610.97,0.00,-1793.05,0.00,585.14,0.00,-1790.75,0.00,612.04,0.00,1793.31,0.00,607.42,0.00,1806.40,0.00,1788.95,0.00,-598.09,0.00,607.93,0.00,592.68,0.00,-590.26,0.00,611.98,0.00,586.29,0.00,617.14,0.00,593.83,0.00,-598.98,0.00,-605.47,0.00,-1783.44,0.00,585.87,0.00,-1800.64,0.00,-594.62,0.00,-603.46,0.00,-596.39,0.00,-597.52,0.00,593.43,0.00,-1803.41,0.00,-1798.85,0.00,-1798.32,0.00,-607.28,0.00,-593.63,0.00,601.10,0.00,595.16,0.00,-1795.80,0.00,-601.23,.....

NOTE	Returned data includes Sync, Pilot and Data values.
	Distribution Trace must be enabled to return valid data.

6.4   POWER OVER TIME

6.4.1   Power Over Time - Marker Enable

:PTIME:TRACe:MARKn:ENABle
:PTIME:TRACe:MARKn:ENABle?

Description:	Set command Enables/Disables Marker for Power Over Time graph.
	Query command returns parameter setting.
Parameter:	OFF | ON | 0 | 1
Default Value:	OFF
Set/Query Format:	Boolean
Example:	:PTIME:TRACe:MARK2:ENABle ON
	Enables Marker 2 for Power Over Time graph.
Query Response:	:PTIME:TRACe:MARK2:ENABle?
	1

NOTE	MARKn = 1 or 2 (Marker 1 or 2)

6.4.2   Power Over Time - Marker Position

:PTIME:TRACe:MARKn:XPOS
:PTIME:TRACe:MARKn:XPOS?

Description:	Set command defines Marker position on Power Over Time graph.
	Query command returns parameter setting.
Range:	0 to Span
Units:	ms
Default Value:	0.0 ms
Set/Query Format:	NRf | NR2
Example:	:PTIME:TRACe:MARK2:XPOS 100ms
	Positions Marker 2 at 100 ms on Power Over Time graph.
Query Response:	:PTIME:TRACe:MARK2:XPOS?
	100

NOTE	MARKn = 1 or 2 (Marker 1 or 2)

6.4.3   Power Over Time - Marker Y Value Query

:PTIME:TRACe:MARKn:YVALue?

Description:	Command returns Power Over Time Y value for Marker.
Query Data:	<statusbyte>,<value>
statusbyte (NR1):	0 = Invalid
	1 = Valid
	2 = Inaccurate
value (NR2):	dBm
Query Response:	:PTIME:TRACe:MARK2:YVALue?
	1,10.45

NOTE	MARKn = 1 or 2 (Marker 1 or 2)
	Marker must be enabled to obtain valid data.

6.4.4   Power Over Time - Span

:PTIME:SPAN
:PTIME:SPAN?

Description:	Set command sets Span of Power Over Time graph.
	Query command returns parameter setting.
Range:	10 to 1800 seconds
Units:	seconds
Default Value:	10 seconds
Set/Query Format:	NRf | NR1
Example:	:PTIME:SPAN 500s
	Sets Power Over Time graph Span to 500 seconds.
Query Response:	:PTIME:SPAN?
	500

6.4.5   Power Over Time - Trace Enable

:PTIME:TRACe:ENABle
:PTIME:TRACe:ENABle?

Description:	Set command Enables/Disables Power Over Time trace.
	Query command returns parameter setting.
Parameter:	OFF | ON | 0 | 1
Default Value:	OFF
Set/Query Format:	Boolean
Example:	:PTIME:TRACe:ENABle ON
	Enables Power Over Time trace.
Query Response:	:PTIME:TRACe:ENABle?
	1

NOTE	Trace must be enabled (ON) to return valid data.

6.4.6   Power Over Time - Trace Data Query

:PTIME:TRACe:LIVE?

Description:	Command returns Power Over Time trace data.
Query Data:	<statusbyte>,<#pairs>,<x data>,<y data>,<status message>
statusbyte (NR1):	0 = Invalid
	1 = Valid
	2 = Inaccurate
#pairs (NR1):	Number of x,y coordinate pairs to follow
x, y data (NR2):	coordinate value
statuts message (ascii):	signal not acquired\n
(when present)	timed out waiting for TraceMutex\n
	timed out waiting for data\n
Query Response:	:PTIME:TRACe:LIVE?
	1,2,0.00,10.45,330.00,10.45

NOTE	Power Over TIme trace must be enabled to return valid data.