3900 Series Digital Radio Test Set

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Preface

ABOUT THIS MANUAL


Some of the remote commands identified in this manual are only valid when specific P25 Options are installed in the Test Set. The commands are noted as option enabled.

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
Contents

CHAPTER 1  UUT MEASUREMENT METER DATA
Chapter describes parameters found in P25 UUT Measurement Meter data.

CHAPTER 2  GENERATOR/TRANSMIT CHANNEL REMOTE COMMANDS
Chapter describes commands that define Generator and Transmit Channel parameters.

CHAPTER 3  ANALYZER/RECEIVE CHANNEL REMOTE COMMANDS
Chapter describes commands that define Analyzer and Receive Channel parameters.

CHAPTER 4  P25 SIGNAL RX METER REMOTE COMMANDS
Chapter describes commands that configure and return P25 UUT Measurement data.

CHAPTER 5  AUDIO/DEMOD SIGNAL RX METER REMOTE COMMANDS
Chapter describes commands that configure and return Audio and Demodulated signal measurement data.

CHAPTER 6  MODULATION ACCURACY AND POWER REMOTE COMMANDS
Chapter describes commands that configure and return Modulation Accuracy and Power measurement data.

CHAPTER 7  SYSTEM AND BANDPLAN REMOTE COMMANDS
Chapter describes commands that configure and return P25 System Plan and SmartNet™/SmartZone™ Bandplan parameters.

CHAPTER 8  PROTOCOL REMOTE COMMANDS
Chapter describes commands that configure and return Protocol parameters.

CHAPTER A  REMOTE COMMAND CHANGES
Lists changes made to previously released P25 Remote Commands.

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Chapter 1 - UUT Measurement Meter Data

1.1 REMOTE COMMANDS FILES

This chapter describes P25 Remote Commands. 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 RETURN VALUES

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

NOTE
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

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<th>Code</th>
<th>Unit</th>
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<td>18</td>
<td>mHz</td>
</tr>
<tr>
<td>19</td>
<td>μs</td>
</tr>
</tbody>
</table>

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 identifies the Remote Commands for configuring P25 Generator / Transmit Channel Parameters. Remote commands are listed alphabetically under the following headings:

2.2 AF GENERATOR CONFIGURATION

2.2.1 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
SourceN = 1, 2 or 3 (AF Generator 1, 2 or 3)

NOTE

2.2.2 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:SOURce2:FREQuency 15kHz Sets AF Generator 3 Frequency to 15.0 kHz.
Query Response: :AF:GENerator:SOURce2:FREQuency? 15000.0
SourceN = 1, 2 or 3 (AF Generator 1, 2 or 3)

NOTE
2.2.3 AF Generators - Impedance

**: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

**NOTE**

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

2.2.4 AF Generators - 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

SourceN = 1, 2 or 3 (AF Generator 1, 2 or 3)
2.2.5 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

:\texttt{AF:GEN:TONE:REMote:MAXimum:FREQuency}  
:\texttt{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

:\texttt{AF:GEN:TONE:REMote:MAXimum:LEVel}  
:\texttt{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

:\texttt{AF:GEN:TONE:REMote:REFerence:LEVel}  
:\texttt{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 | 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

**Note**

**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

nTone = A or B (Tone A or B)

**Note**

**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

nTone = A or B (Tone A or B)

**Note**
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:** NR1 | 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: NR1 | 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.
DTMF 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:** NRI | 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

Example: :MOD:GENerator:ENCODE:TYPE TWOTONE
Sets Modulation Generator Tone Signaling Type to Two Tone Sequential.


2.5.9 Modulation Generators - Tone Remote Functional Duration

:MOD:GEN:TONE:REMeote: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

Sets length of single Tone burst to 50 milliseconds.


2.5.10 Modulation Generators - Tone Remote Functional Frequency

:MOD:GEN:TONE:REMeote:FUNCTION:FREQuency
:MOD:GEN:TONE:REMeote: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

Sets Tone Frequency to 15.0 Hz.

2.5.11 Modulation Generators - Tone Remote Functional Level

:MOD:GEN:TONE:REMote:FUN Ction:LEVel
:MOD:GEN:TONE:REMote:FUN Ction:LE Vel?

**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:FUN Ction:LE Vel 5dB
Sets the Tone Level to 5.0 dB.

**Query Response:**
:MOD:GEN:TONE:REMote:FUN Ction:LE Vel?
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
Default Value: -20.0 dB
Units: 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
Default: 120 ms
Units: ms | s
Set/Query Format: Nrf | NR1 (ms)
Example: :MOD:GEN:TONE:REMote:MAXimum:DURation 50ms
Sets length of single Tone burst to 50 milliseconds.
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
Default Value: 2.175 kHz
Units: Hz | kHz
Set/Query Format: Nrf | NR2 (Hz)
Example: :MOD:GEN:TONE:REMote:MAXimum:FREQuency 15Hz
Sets Tone Frequency to 15.0 Hz.
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: NR1 | 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 Sequential Decode Value

:FETCh:MOD:ANALyzer:DECODE:TONESEQ:VALue?

Description: Command returns decode value of received signal.
Query Format: ascii
047

2.5.19 Modulation Generators - Tone Sequential FM 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: NR1 | NR2 (Hz)

Example: :MOD:GEN:TONE:SEQuential:MASTER:DEViation 1.75kHz
Sets the Tone FM Deviation to 1.75 kHz.
1750.0
2.5.20 Modulation Generators - Tone Sequential Mode

:MOD:GEN:TONE:SEQquential:MODE
:MOD:GEN:TONE:SEQquential: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:SEQquential:MODE CONTINUOUS
Sets Tone Sequential Mode to Continuous.
CONTINUOUS

2.5.21 Modulation Generators - Tone Sequential Protocol

:MOD:GEN:TONE:SEQquential:PROTocol
:MOD:GEN:TONE:SEQquential: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:SEQquential:PROTocol PZVEI
Sets Tone Protocol to PZVEI.
PZVEI

2.5.22 Modulation Generators - Tone Sequential Sequence

:MOD:GEN:TONE:SEQquential:SEQquence
:MOD:GEN:TONE:SEQquential:SEQquence?

Description: Set command defines Sequence of 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: 01234567
Set/Query Format: hex string
Example: :MOD:GEN:TONE:SEQquential:SEQquence "ABCD1245"
Sets Sequence to ABCD1245.
ABCD1245
2.5.23 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

2.5.24 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.

5000

nTone = A or B (Tone A or B)
2.5.25 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

**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 Modulation Generator to 100.0 kHz

**Query Response:** MOD:GENerator:ESOurce:LEVel?

10000

*NOTE*
2.6.4 External Modulation Generator - Level in Percent

**MOD:GENerator:ESOurse:LEVel:PERcent**

**MOD:GENerator:ESOurse: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:ESOurse:LEVel:PERcent 25
Sets Level of the External Modulation Generator to 25.0%.

**Query Response:** MOD:GENerator:ESOurse:LEVel:PERcent?
25

---

2.6.5 External Modulation Generator - Source

**MOD:GENerator:ESOurse:SOURce**

**MOD:GENerator:ESOurse: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:ESOurse:SOURce MIC
Select Microphone as the External Modulation Source.

**Query Response:** MOD:GENerator:ESOurse:SOURce?
MIC

---

**NOTE**

:RF:ESOurse:SOURce has been deprecated in software version 1.7.9.
2.7 RF GENERATOR CONFIGURATION

2.7.1 RF Generator - Channel Enable

:RF:GENerator:CHn:ENABLE
:RF:GENerator:CHn:ENABLE?

Description: Set command Enables/Disables specified RF Channel. Query command returns parameter setting.

Parameter: OFF | ON | 0 | 1

Default Value: OFF

Set/Query Format: Boolean

Example: :RF:GENerator:CH2:ENABLE ON

Enables RF Channel 2.

Query Response: :RF:GENerator:CH2:ENABLE?

1

NOTE
CHn = 1 or 2 (Channel 1 or 2). Channel 2 is option enabled. Return value of 2 indicates channel queried in command string is ±2.5 MHz from primary channel frequency. RF Generator must also be enabled to transmit signal.

2.7.2 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
### 2.7.3 RF Generator - Frequency

**Command:**
- :RF:GENerator:CHn:FREQuency
- :RF:GENerator:CHn:FREQuency?

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

**Range:** 100.0 kHz to 2.71 GHz

**Units:** kHz | MHz

**Default Value:** 150.0 MHz

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

**Example:**
:RF:GENerator:CH2:FREQuency 850MHz
Sets Channel 2 RF Generator Frequency to 850.0 MHz.

**Query Response:**
:RF:GENerator:CH2:FREQuency?
850000000

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

### 2.7.4 RF Generator - Level

**Command:**
- :RF:GENerator:CHn:LEVel
- :RF:GENerator:CHn: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 | μV | mV | V | dBpV

**Default Value:** -80.0 dBm

**Set/Query Format:** NRF | NR2 (dBm)

**Example:**
:RF:GENerator:CH1:LEVel -75dBm
Set RF Generator Level for Channel 1 to -75.0 dBm.

**Query Response:**
:RF:GENerator:CH1:LEVel?
-75.0

**NOTE**
CHn = 1 or 2 (Channel 1 or 2). Channel 2 is option enabled.
2.7.5  RF Generator - Level Mode

:RF:GENerator:CHn:LMODe
:RF:GENerator:CHn: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

NOTE

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

2.7.6  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

2.7.7  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
2.7.8 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
2.8 TRANSMIT CHANNEL PARAMETERS

2.8.1 Transmit Channel - Modulation

:TRANsmit:CHn:MODulation
:TRANsmit:CHn:MODulation?

Description: Set command selects Transmit Modulation type for specified Channel. Query command returns parameter setting.

Parameter:

- **Analog Protocol:** FM
- **Phase 1 Protocol:** C4FM | CQPSK | LSM
- **Phase II Protocol:** HDQPSK | HCPM
- **SNSZ Protocol:** FMFSK | ANALOG
- **X2TDMA Protocol:** C4FM | LSM

Default Value:

- **Analog Protocol:** FM
- **Phase 1 Protocol:** C4FM
- **SNSZ Protocol:** FMFSK
- **X2TDMA Protocol:** C4FM

Set/Query Format: CPD | CRD

Example: :TRANsmit:CH1:MODulation CQPSK
Sets Transmit Channel 1 Modulation to CQPSK.

Query Response: :TRANsmit:CH1:MODulation?
CQPSK

NOTE
HDQPSK, HCPM, CQPSK and LSM are option enabled parameters. CHn = 1 or 2 (Channel 1 or 2). Channel 2 is option enabled.
2.8.2 Transmit Channel - Pattern

:TRANsmit:CHn:PATTern
:TRANsmit:CHn:PATTern?

Description: Set command defines Pattern for specified transmit channel. Query command returns parameter setting.

Parameters: When applicable, available patterns are determined by selected Protocol and Modulation type.

Phase 1:
- STD1011
- STDAFC
- STDCAL
- STDSENCE
- STDINTFR
- STDBUSY
-STDIDLE
- STD511
- STDLDU1TRG
- STDLDU2TRG
- STDSYMRATE
- STOREDSPEECH
- VOICE
- NS1011
- NSSILENCE
- NSLDU1
- NSLDU2

Default Value: STD1011 (all modulation types)

Phase 2: refer to Transmit Channel - Slot Pattern remote command.

X2TDMA: refer to Transmit Channel - Slot Pattern remote command.

Set/Query Format: CPD | CRD

Example: :TRANsmit:CH1:PATTern STDCAL
Sets Transmit Channel 1 to STD CAL Pattern.

Query Response: TRANsmit:CH1:PATTern?
STDCAL

NOTE
CHn = 1 or 2 (Channel 1 or 2). Channel 2 is option enabled.
Phase 2 and X2TDMA parameters are option enabled.
Standard patterns are not valid when AES or DES encryption are selected (:SIMulator:VM1:ALG).

2.8.3 Transmit Channel - Primary

:TRANsmit:PRIMary
:TRANsmit:PRIMary?

Description: Set command defines specified Channel as Primary Transmit channel. Query command returns parameter setting.

Parameters: 1 | 2

Default Value: 1

Set/Query Format: NR1

Example: :TRANsmit:PRIMary 2
Selects Channel 2 as Primary Transmit Channel.

Query Response: :TRANsmit:PRIMary?
2

NOTE
Channel 2 is option enabled.
### 2.8.4 Transmit Channel - Protocol

**:TRANsmit:CHn:PROTocol**

**:TRANsmit:CHn:PROTocol?**

**Description:** Set command selects Transmit Protocol for specified Channel. Query command returns parameter setting.

**Parameter:** ANALOG | PHASE1 | PHASE2 | SNSZ | X2TDMA

**Default Value:** PHASE1

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

**Example:** :TRANsmit:CH2:PROTocol ANALOG

Sets Rx Channel 2 Protocol to Analog.

**Query Response:** :TRANsmit:CH2:PROTocol?

ANALOG

CHn = 1 or 2 (Channel 1 or 2). Channel 2 is option enabled. PHASE2, SNSZ and X2TDMA are option enabled parameters.

---

### 2.8.5 Transmit Channel - Slot Enable

**:TRANsmit:CHn:SLOTn:ENABle**

**:TRANsmit:CHn:SLOTn:ENABle?**

**Description:** Set command Enables/Disables generate signal on specified Slot. Query command returns parameter setting.

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

**Default Value:** OFF

**Set/Query Format:** Boolean

**Example:** :TRANsmit:CH1:SLOT1:ENABle ON

Enables Channel 1, Slot 1 signal transmission.

**Query Response:** :TRANsmit:CH1:SLOT1:ENABle?

1

CHn = 1 or 2 (Channel 1 or 2).

SLOTN = 0 or 1 (Slot 0 or 1).

Command is *option enabled.*

---

**NOTE**
2.8.6 Transmit Channel - Slot Pattern

**:TRANsmit:CHn:SLOTn:PA TTern**

**Description:** Set command defines Slot Pattern for specified transmit channel. When applicable, available patterns are determined by selected Protocol and Modulation type. Query command returns parameter setting.

X2-TDMA Protocol: C4FM Modulation

- **Parameter:** STDIB1031 | STDIBSIL | STDIBCAL | STDODBTEST | STDODB | STOREDSPEECH | VOICE | NS1011
- **Default Value:** STDIB1031

X2-TDMA Protocol: LSM Modulation

- **Parameter:** NS1031 | STDODBTEST | STDODB | STOREDSPEECH | VOICE
- **Default Value:** STDODB1031

Phase2 Protocol: HDQPSK Modulation

- **Parameters:** STDIB1031 | STDIBCAL | STDIBSIL
- **Default Value:** STDIB1031

Phase2 Protocol: HCPM Modulation

- **Parameters:** STDIB1031 | STDIBCAL | STDIBSIL
- **Default Value:** STDIB1031

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

**Example:**

:TRANsmit:CH2:SLOT1:PATTern STDIBCAL

Sets Transmit Channel 2, Slot 1 to STD IB CAL Pattern.

**Query Response:**

TRANsmit:CH2:SLOT1:PATTern?

STDIBCAL

CHn = 1 or 2 (Channel 1 or 2).
SLOTn = 0 or 1 (Slot 0 or 1).
Command is *option enabled.

2.8.7 Transmit Channel - HCPM Sync Mode

**:TRANsmit:CHn:HCPM:MODE**

**Description:** Set command defines Phase II, HCPM modulation mode of operation. Query command returns parameter setting.

**Parameter:** Mode of Operation (synchronized or free-running)

SYNC | FREE

**Default Value:** SYNC

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

**Example:**

:TRANsmit:CH1:HCPM:MODE FREE

Sets HCPM Sync Mode to Free-running

**Query Response:**

:TRANsmit:CH1:HCPM:MODE?

FREE

Command is option enabled. Applies to Phase 2 Protocol.

Sync Mode Parameter is only valid when Protocol is set to Phase2 (:TRANsmit:CH1:PROTocoll PHASE2) and Modulation Type is set to HCPM (:TRANsmit:CH1:MODulation HCPM).
2.8.8 Transmit Channel - Validate Frequency

:TRANsmit:CHn:VALId?

Description: Command indicates if Transmit frequency is within ±2.5 MHz of primary channel.

Query Format: NR1

Query Data: 0 = Invalid (> ±2.5 MHz from primary Channel frequency)
               1 = Valid (within ±2.5 MHz of primary Channel frequency)

Query Response: :TRANsmit:CH1:VALId?
               0

NOTE

CHn = 1 or 2 (Channel 1 or 2). Channel 2 is option enabled.
2.9 CABLE LOSS MEASUREMENTS

2.9.1 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: {None} {Cable_1} {Cable_2}
NOTE Command is only valid when the Tracking Generator Option is installed in the Test Set.

2.9.2 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.

2.9.3 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.
2.9.4 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

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

2.9.5 Cable Loss - Frequency for Offset Query

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

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?

2.9.6 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

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.
Chapter 3 - Analyzer/Receive Channel
Remote Commands

3.1  INTRODUCTION

This chapter identifies the Remote Commands for configuring P25 Analyzer and Receive Channel Parameters.

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
- PSOPh = Psoph (CMESS or CCITT)
- LP1 = 300.0 Hz LP
- LP2 = 5.0 kHz LP
- LP3 = 20.0 kHz LP
- LP4 = 15.0 kHz LP
- LP5 = 3.0 kHz LP
- LP6 = 625.0 kHz LP*
- LP7 = 10.0 kHz LP*
- LP8 = 100.0 Hz LP*
- HP1 = 300.0 Hz HP
- HP2 = 20.0 Hz HP
- HP3 = 50.0 Hz HP
- BP0 = 0.3 to 3.0 kHz BP
- BP1 = 0.3 to 3.4 kHz BP
- BP2 = 0.3 to 5.0 kHz BP
- BP3 = 0.3 to 20.0 kHz BP
- BP4 = 0.3 to 15.0 kHz BP
- BP5 = 20.0 to 300.0 Hz BP
- BP6 = 0.02 to 3.0 kHz BP
- BP7 = 0.02 to 3.4 kHz BP
- BP8 = 0.02 to 5.0 kHz BP
- BP9 = 0.02 to 15.0 kHz BP
- BP10 = 0.02 to 20.0 kHz BP
- BP11 = 0.05 to 300.0 Hz BP
- BP12 = 0.05 to 3.0 kHz BP
- BP13 = 0.05 to 3.4 kHz BP
- BP14 = 0.05 to 5.0 kHz BP
- BP15 = 0.05 to 15.0 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 cannot be defined by user, but may be returned as query data.
3.3.2 AF Measurements - Filter Weight

**: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**

**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

**Default Value:** OFF

**Set/Query Format:** Boolean

**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:ENABle` defines the external load applied when External Load is enabled.
3.4 AUTOTUNE SETUP REMOTE COMMANDS

3.4.1 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

3.4.2 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. Autotune is not supported for non-continuous time signals (i.e., Phase 2 and X2-TMDA).
3.4.3 RF Analyzer - AutoTune State

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

Description: Set command prepares AutoTune to provide status of the currently running or next initiated frequency search. Query Command returns state of AutoTune search.

Parameters: SET

Set/Query Format: CPD | CRD

Query Data: SET = Search has not yet been triggered or is not yet complete.
ACQ = Search has found a frequency (acquired).
FAIL = Search did not find a frequency.

Example: :RF:ANALyzer:FMODe:STATE SET
Prepares AutoTune to provide search status.

Query Response: :RF:ANALyzer:FMODe:STATE?
ACQ

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

3.4.4 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.

3.4.5 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.
3.4.6 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.

3.4.7 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.

3.4.8 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.
3.4.9 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

:CONFigure:RF:ANALyzer:THREsh command also supported for this function.
3.5  **AF ANALYZER - TONE DECODE**

3.5.1  **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

3.5.2  **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

3.5.3  **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

3.5.4  **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
3.5.5  AF Analyzer - Tone Remote Decode Data

:FETCh:AFLANalyzer: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

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

3.5.6  AF Analyzer - Tone Sequential Decode Data

:FETCh:AFLANalyzer:DECODE:TONSEQ: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

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
3.5.7 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
  1004.9,7349.3
  501.0,1013.3
  999.0,3008.0
  501.0,1013.3
  999.0,3008.0

3.5.8 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.
3.6 MODULATION ANALYZER - TONE DECODING

3.6.1 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

3.6.2 Modulation Analyzers - DCS Decode Value

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

  Description: Command returns decode value of received signal.
  Query Format: ascii
  047

3.6.3 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

3.6.4 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.
  DCS

  NOTE

3.6.5 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

3.6.6 Modulation Analyzers - Tone Remote Decoded Data

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

**Description:** Command returns received Tone Remote data.

<table>
<thead>
<tr>
<th>Query Data</th>
<th>meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;frequency&gt;,&lt;spec frequency&gt;,&lt;% error&gt;,&lt;freq error&gt;,&lt;duration&gt;</td>
<td>frequency (NR2), spec frequency (NR2), % error (NR2), freq error (NR2), duration (NR2)</td>
</tr>
</tbody>
</table>

**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

3.6.7 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>

<table>
<thead>
<tr>
<th>decoded tone (hex)</th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>frequency (NR2)</td>
<td>Hz</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>spec frequency (NR2)</td>
<td>Hz</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>% error (NR2)</td>
<td>percent (%)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>freq error (NR2)</td>
<td>Hz</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>duration (NR2)</td>
<td>ms</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**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
3.6.8  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


501.0,1013.3
1002.0,3008.0
3.7 RF ANALYZER CONFIGURATION

3.7.1 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

3.7.2 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
3.7.3 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.

3.7.4

3.7.5 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.

3.7.6 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.
3.7.7 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.

1

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

3.7.8 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.

3.7.9 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.

1

NOTE Command only valid when AutoTune mode of operation is set to Auto.
3.7.10 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

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

3.7.11 RF Analyzer - Channel Enable

:RF:ANALyzer:CHn:ENABle
:RF:ANALyzer:CHn:ENABle?

Description: Set command Enables/Disables the specified Receive Channel. Query command returns parameter setting.

Parameter: OFF | ON | 0 | 1

Default Value: OFF

Set/Query Format: Boolean

Example: :RF:ANALyzer:CH2:ENABle ON
Enables Channel 2 Receive channel.

Query Response: :RF:ANALyzer:CH2:ENABle?
1

NOTE

CHn = 1 or 2 (Channel 1 or 2). Channel 2 is option enabled. Return value of 2 indicates channel queried in command string is ±2.5 MHz from primary channel frequency.
3.7.12 RF Analyzer - Channel Offset Value

:RF:ANALyzer:CHn:OFFSet
:RF:ANALyzer:CHn:OFFSet?

Description: Set command defines the Receive Channel 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 5MHz
Sets Receive Channel Offset to 5.0 MHz.

Query Response: :RF:ANALyzer:CH1:OFFSet?
5000000.00

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

3.7.13 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.
3.7.14 RF Analyzer - Frequency

:RF:ANALyzer:CHn:FREQuency
:RF:ANALyzer:CHn:FREQuency?

Description: Set command defines the RF Analyzer frequency for specified channel.
Query command returns parameter setting.

Range: 100.0 kHz to 2.71 GHz
Units: Hz | kHz | MHz | GHz
Default Value: 150.0 MHz

Set/Query Format: NRF | NR1(Hz)

Example: :RF:ANALyzer:CH1:FREQuency 650MHz
Sets RF Analyzer Channel 1 Frequency to 650.0 MHz.

Query Response: :RF:ANALyzer:CH1:FREQuency?
650000000

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

3.7.15 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.

3.7.16 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
### 3.7.17 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
```

### 3.7.18 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:RECeiver:AMP ON
```

Enables Receiver Pre-Amplifier.

**Query Response:**

```
:RF:ANALyzer:RECeiver:AMP?
1
```
3.8 RECEIVE CHANNEL CONFIGURATION

3.8.1 Receive Channel - Direction

:RECeive:CHn:DIRection
:RECeive:CHn:DIRection?

Description: Set command defines if signal is processed as an Inbound or Outbound signal. Query command returns parameter setting.

Parameter: INbound | OUTbound

Default Value: Inbound

Set/Query Format: CPD | CRD

Example: :RECeive:CHn:DIRection OUTbound
Defines Rx Channel as an Outbound channel.

Query Response: :RECeive:CHn:DIRection?
OUT

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

NOTE

3.8.2 Receive Channel - Modulation

:RECeive:CHn:MODulation
:RECeive:CHn:MODulation?

Description: Set command selects Modulation type for Channel. Query command returns parameter setting.

Parameter:

<table>
<thead>
<tr>
<th>Analog</th>
<th>n/a</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phase 1 Protocol</td>
<td>C4FM</td>
</tr>
<tr>
<td>Phase 2 Protocol</td>
<td>HDQPSK, HCPM</td>
</tr>
<tr>
<td>SNSZ Protocol</td>
<td>FMFSK, ANALOG</td>
</tr>
<tr>
<td>X2TDMA Protocol</td>
<td>C4FM</td>
</tr>
</tbody>
</table>

Default Value:

<table>
<thead>
<tr>
<th>Analog</th>
<th>n/a</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phase 1 Protocol</td>
<td>C4FM</td>
</tr>
<tr>
<td>SNSZ Protocol</td>
<td>FMFSK</td>
</tr>
<tr>
<td>X2TDMA Protocol</td>
<td>C4FM</td>
</tr>
</tbody>
</table>

Set/Query Format: CPD | CRD

Example: :RECeive:CH2:MODulation C4FM
Sets Rx Channel 2 Modulation to C4FM.

Query Response: :RECeive:CH2:MODulation?
C4FM

NOTE

HDQPSK, HCPM, CQPSK and LSM are option enabled parameters. CHn = 1 or 2 (Channel 1 or 2). Channel 2 is option enabled.
3.8.3 Receive Channel - Primary

**:RECeive:PRIMary**
****:RECeive:PRIMary?**

- **Description:** Set command defines specified Channel as Primary Receive channel. Query command returns parameter setting.
- **Parameter:** 1 | 2
- **Default Value:** 1
- **Set/Query Format:** NR1
- **Example:** :RECeive:PRIMary 2
  Selects Channel 2 as Primary Receive Channel.
- **Query Response:** :RECeive:PRIMary?
  2
  Channel 2 is option enabled.

**NOTE**

3.8.4 Receive Channel - Protocol

**:RECeive:CHn:PROTocol**
****:RECeive:CHn:PROTocol?**

- **Description:** Set command selects Protocol for specified Channel. Query command returns parameter setting.
- **Parameter:** ANALOG | PHASE1 | PHASE2 | SNSZ | X2TDMA
- **Default Value:** PHASE1
- **Set/Query Format:** CPD | CRD
- **Example:** :RECeive:CH1:PROTocol ANALOG
  Sets Rx Channel 1 Protocol to Analog.
- **Query Response:** :RECeive:CH1:PROTocol?
  ANALOG
  CHn = 1 or 2 (Channel 1 or 2). Channel 2 is option enabled.
  PHASE2, SNSZ and X2TDMA Protocols are option enabled parameters.

**NOTE**

3.8.5 Receive Channel - Speaker

**:RECeive:SPKR**
****:RECeive:SPKR?**

- **Description:** Set command selects Channel that is controlling the speaker. Query command returns parameter setting.
- **Parameter:** 1 | 2
- **Default Value:** 1
- **Set/Query Format:** NR1
- **Example:** :RECeive:SPKR 2
  Selects Channel 2 for Speaker control.
- **Query Response:** :RECeive:SPKR?
  2
  Channel 2 is option enabled.
3.8.6 Receive Channel - Validate Receiver Frequency

:RECeive:CHn:VALId?

**Description:** Command indicates if receive frequency is within +2.5 MHz of primary channel.

**Query Data:**
- 0 = Invalid (> ±2.5 MHz from primary Channel frequency)
- 1 = Valid (within ±2.5 MHz of primary Channel frequency)

**Query Response:**

:RECeive:CHn:VALId?

0

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

3.8.7 Receive Offset - Mode of Operation

:RECeive:CHn:LOCK

:RECeive:CHn:LOCK?

**Description:** Set command Rx Channel 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
Sets Rx Channel 1 Offset Mode to LOCKED.

**Query Response:**

:RECeive:CH1:LOCK?

1

CHn = 1 or 2 (Channel 1 or 2). Channel 2 is option enabled.
Chapter 4 - P25 Signal Rx Meter
Remote Commands

4.1 INTRODUCTION

This chapter describes the Remote Commands for configuring and obtaining P25 Signal measurement data. Remote commands are listed alphabetically under meter names.

4.2 ACQUIRE SIGNAL

4.2.1 Reset Signal Acquisition

:RECeive:RESET:ACQuisition

Description: Command resets signal acquisition
Parameter/Query: none

4.3 ADJACENT CHANNEL POWER CENTER

4.3.1 Adjacent Channel Power Center - Averages

:METERs:ACPC:CHn:AVERaging

Description: Set command defines number of readings taken to calculate Average Adjacent Channel Power Center measurement. Query command returns parameter setting.

Range: 1 to 250
Default Value: 1
Set/Query Format: NR1

Example: :METERs:ACPC:CH1:AVERaging 100
Sets the number of readings taken to calculate Channel 1 Average Adjacent Channel Power Center measurement 1 to 100.

Query Response: :METERs:ACPC:CH1:AVERaging?
100

NOTE

CHn = 1 or 2 (Channel 1 or 2).
Command only valid when Motorola ASTRO® 25 X2-TDMA® option is installed in Test Set.
### 4.3.2 Adjacent Channel Power Center - Average Measurement Reset

**Command:** :METERs:ACPC:CHn:CLEAR:AVG

**Description:** Command clears and resets Average Adjacent Channel Power Center measurement.

**Parameter/Query:** none

**NOTE**

CHn = 1 or 2 (Channel 1 or 2).

Command only valid when Motorola ASTRO® 25 X2-TDMA® option is installed in Test Set.

### 4.3.3 Adjacent Channel Power Center - Lower Limit Enable

**Command:** :LIMits:ACPC:CHn:LOWer:ENABle

**Query Command:** :LIMits:ACPC:CHn:LOWer:ENABle?

**Description:** Set command Enables/Disables Lower Limit for Adjacent Channel Power Center measurement.

Query command returns parameter setting.

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

**Default Value:** OFF

**Set/Query Format:** Boolean

**Example:** :LIMits:ACPC:CH1:LOWer:ENABle ON

Enables Lower Limit for Channel 1 Adjacent Channel Power Center measurement.

**Query Response:** :LIMits:ACPC:CH1:LOWer:ENABle?

1

**NOTE**

CHn = 1 or 2 (Channel 1 or 2).

Command only valid when Motorola ASTRO® 25 X2-TDMA® option is installed in Test Set.

### 4.3.4 Adjacent Channel Power Center - Lower Limit Value

**Command:** :LIMits:ACPC:CHn:LOWer:VALue

**Query Command:** :LIMits:ACPC:CHn:LOWer:VALue?

**Description:** Set command defines Lower Limit Value for Adjacent Channel Power Center measurement.

Query command returns parameter setting.

**Range:** -90.0 to +60.0 dBm

**Units:** dBm

**Default Value:** -90.0 dBm

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

**Example:** :LIMits:ACPC:CH1:LOWer:VALue 0dBm

Sets Lower Limit Value for Channel 1 Adjacent Channel Power Center measurement to 0.0 dBm.

**Query Response:** :LIMits:ACPC:CH1:LOWer:VALue?

0.00

**NOTE**

CHn = 1 or 2 (Channel 1 or 2).

Command only valid when Motorola ASTRO® 25 X2-TDMA® option is installed in Test Set.
4.3.5 Adjacent Channel Power Center - Measurement Query

```
:METERS:ACPC:CHn:STATus?
```

**Description:** Command returns Adjacent Channel Power Center measurement data.

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

Refer to Chapter 1 for UUT Measurement Meter Return Data.

**Query Response:**

```
:METERS:ACPC:CH1:STATus?
0,0,10,100.000,0.0099751540,0.0100574717,0.0000000000,0
```

CHn = 1 or 2 (Channel 1 or 2).

Command only valid when Motorola ASTRO® 25 X2-TDMA® option is installed in Test Set.

4.3.6 Adjacent Channel Power Center - Peak Measurement Reset

```
:METERS:ACPC:CHn:CLEAR:PEAK
```

**Description:** Command clears and resets Peak Adjacent Channel Power Center measurement.

**Parameter/Query:** none

CHn = 1 or 2 (Channel 1 or 2).

Command only valid when Motorola ASTRO® 25 X2-TDMA® option is installed in Test Set.

4.3.7 Adjacent Channel Power Center - Upper Limit Enable

```
:LIMITs:ACPC:CHn:UPPer:ENABle
:LIMITs:ACPC:CHn:UPPer:ENABle?
```

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

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

**Default Value:** OFF

**Set/Query Format:** Boolean

**Example:**

```
:LIMITs:ACPC:CH1:UPPer:ENABle ON
```

Enables Upper Limit for Channel 1 Adjacent Channel Power Center measurement.

**Query Response:**

```
:LIMITs:ACPC:CH1:UPPer:ENABle?
1
```

CHn = 1 or 2 (Channel 1 or 2).

Command only valid when Motorola ASTRO® 25 X2-TDMA® option is installed in Test Set.
### 4.3.8 Adjacent Channel Power Center - Upper Limit Value

**:LIMits:ACPC:CHn:UPPer:VALue**

**:LIMits:ACPC:CHn:UPPer:VALue?**

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

**Range:** -90.0 to +60.0 dBm

**Units:** dBm

**Default Value:** +60.0 dBm

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

**Example:** :LIMits:ACPC:CH1:UPPer:VALue 0dBm
Sets Upper Limit Value for Channel 1 Adjacent Channel Power Center measurement to 0.0 dBm.

**Query Response:** :LIMits:ACPC:CH1:UPPer:VALue?
0.00

**NOTE**
CHn = 1 or 2 (Channel 1 or 2). Command only valid when Motorola ASTRO® 25 X2-TDMA® option is installed in Test Set.
4.4 ADJACENT CHANNEL POWER LOWER

4.4.1 Adjacent Channel Power Lower - Averages

:METEr:s:ACPLC:CHn:AVERaging
:METEr:s:ACPLC:CHn:AVERaging?

Description: Set command defines number of readings taken to calculate Average Adjacent Channel Power Lower measurement. Query command returns parameter setting.

Range: 1 to 250
Default Value: 1
Set/Query Format: NR1

Example: :METEr:s:ACPLC:CH1:AVERaging 100
Sets the number of readings taken to calculate Channel 1 Average Adjacent Channel Power Lower measurement to 100.

100

CHn = 1 or 2 (Channel 1 or 2).
Command only valid when Motorola ASTRO® 25 X2-TDMA® option is installed in Test Set.

4.4.2 Adjacent Channel Power Lower - Average Measurement Reset

:METEr:s:ACPLC:CHn:CLEAR:AVG

Description: Command clears and resets Average Adjacent Channel Power Lower measurement.

Parameter/Query: none

CHn = 1 or 2 (Channel 1 or 2).
Command only valid when Motorola ASTRO® 25 X2-TDMA® option is installed in Test Set.

4.4.3 Adjacent Channel Power Lower - Lower Limit Enable

:LIIMt:s:ACPLC:CHn:LOWer:ENABle
:LIIMt:s:ACPLC:CHn:LOWer:ENABle?

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

Parameter: OFF | ON | 0 | 1
Default Value: OFF
Set/Query Format: Boolean

Example: :LIIMt:s:ACPLC:CH1:LOWer:ENABle ON
Enables Lower Limit for Channel 1 Adjacent Channel Power Lower measurement.

Query Response: :LIIMt:s:ACPLC:CH1:LOWer:ENABle?
1

CHn = 1 or 2 (Channel 1 or 2).
Command only valid when Motorola ASTRO® 25 X2-TDMA® option is installed in Test Set.
4.4.4 Adjacent Channel Power Lower - Lower Limit Value

:LIMITs:ACPLC:CHn:LOWer:VALue
:LIMITs:ACPLC:CHn:LOWer:VALue?

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

Range: -80.0 to -20.0 dBc
Units: dBc
Default Value: -80.0 dBc

Example:
:LIMIts:ACPLC:CH1:LOWer:VALue -35dBc
Sets Lower Limit Value for Channel 1 Adjacent Channel Power Lower measurement to -35.0 dBc.

Query Response: :LIMITs:ACPLC:CH1:LOWer:VALue?
-35.00

CHn = 1 or 2 (Channel 1 or 2).
Command only valid when Motorola ASTRO® 25 X2-TDMA® option is installed in Test Set.

NOTE

4.4.5 Adjacent Channel Power Lower - Measurement Query

:METERS:ACPLC:CHn:STATus?

Description: Command returns Adjacent Channel Power Lower 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:ACPLC:CH1:STATus?
0,0,10, 100.000, 0.0099751540,0.0100574717,0.0000000000,0

CHn = 1 or 2 (Channel 1 or 2).
Command only valid when Motorola ASTRO® 25 X2-TDMA® option is installed in Test Set.

NOTE

4.4.6 Adjacent Channel Power Lower - Peak Measurement Reset

:METERS:ACPLC:CHn:CLEAR:PEAK

Description: Command clears and resets Peak Adjacent Channel Power Lower measurement.

Parameter/Query: none

NOTE
CHn = 1 or 2 (Channel 1 or 2).
Command only valid when Motorola ASTRO® 25 X2-TDMA® option is installed in Test Set.
4.4.7 Adjacent Channel Power Lower - Upper Limit Enable

:LI:Mits:ACPL:C:CH:UPPer:ENABLe
:LI:Mits:ACPL:C:CH:UPPer:ENABLe?

Description: Set command Enables/Disables Upper Limit for Adjacent Channel Power Lower measurement. Query command returns parameter setting.

Parameter: OFF | ON | 0 | 1

Default Value: OFF

Set/Query Format: Boolean

Example: :LI:Mits:ACPL:C:CH:UPPer:ENABLe ON
Enables Upper Limit for Channel 1 Adjacent Channel Power Lower measurement.

1

NOTE
CHn = 1 or 2 (Channel 1 or 2).
Command only valid when Motorola ASTRO® 25 X2-TDMA® option is installed in Test Set.

4.4.8 Adjacent Channel Power Lower - Upper Limit Value

:LI:Mits:ACPL:C:CH:UPPer:VALue
:LI:Mits:ACPL:C:CH:UPPer:VALue?

Description: Set command defines Upper Limit Value for Adjacent Channel Power Lower measurement. Query command returns parameter setting.

Range: -80.0 to -20.0 dBC

Units: dBC

Default Value: -20.0 dBC

Set/Query Format: N/R | N/R2

Sets Upper Limit Value for Channel 1 Adjacent Channel Power Lower measurement to -35.0 dBC.

-35.00

NOTE
CHn = 1 or 2 (Channel 1 or 2).
Command only valid when Motorola ASTRO® 25 X2-TDMA® option is installed in Test Set.
4.5 ADJACENT CHANNEL POWER UPPER

4.5.1 Adjacent Channel Power Upper - Averages

:METERS:ACPUC:CHn:AVERaging
:METERS:ACPUC:CHn:AVERaging?

Description: Set command defines number of readings taken to calculate Average Adjacent Channel Power Upper measurement. Query command returns parameter setting.

Range: 1 to 250
Default Value: 1
Set/Query Format: NR1

Example: :METERS:ACPUC:CH1:AVERaging 100
Sets the number of readings taken to calculate Channel 1 Average Adjacent Channel Power Upper measurement to 100.

Query Response: :METERS:ACPUC:CH1:AVERaging?
100

CHn = 1 or 2 (Channel 1 or 2).
Command only valid when Motorola ASTRO® 25 X2-TDMA® option is installed in Test Set.

4.5.2 Adjacent Channel Power Upper - Average Measurement Reset

:METERS:ACPUC:CHn:CLEAR:AVG

Parameter/Query: none

CHn = 1 or 2 (Channel 1 or 2).
Command only valid when Motorola ASTRO® 25 X2-TDMA® option is installed in Test Set.

4.5.3 Adjacent Channel Power Upper - Lower Limit Enable

:LIMITs:ACPUC:CHn:LOWer:ENABle
:LIMITs:ACPUC:CHn:LOWer:ENABle?

Description: Set command Enables/Disables Lower Limit for Adjacent Channel Power Upper measurement. Query command returns parameter setting.

Parameter: OFF | ON | 0 | 1
Default Value: OFF
Set/Query Format: Boolean

Example: :LIMITs:ACPUC:CH1:LOWer:ENABle ON
Enables Lower Limit for Channel 1 Adjacent Channel Power Upper measurement.

Query Response: :LIMITs:ACPUC:CH1:LOWer:ENABle?
1

CHn = 1 or 2 (Channel 1 or 2).
Command only valid when Motorola ASTRO® 25 X2-TDMA® option is installed in Test Set.
4.5.4 Adjacent Channel Power Upper - Lower Limit Value

**:LIMits:ACPUC:CHn:LOWer:VALue**

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

**Range:** -80.0 to -20.0 dBC

**Units:** dBC

**Default Value:** -80.0 dBC

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

**Example:** :LIMits:ACPUC:CH1:LOWer:VALue -50dBC

Sets Lower Limit Value for Channel 1 Adjacent Channel Power Upper measurement to -50.0 dBC.

**Query Response:** :LIMits:ACPUC:CH1:LOWer:VALue?

-50.00

CHn = 1 or 2 (Channel 1 or 2).

Command only valid when Motorola ASTRO® 25 X2-TDMA® option is installed in Test Set.

4.5.5 Adjacent Channel Power Upper - Measurement Query

**:METERs:ACPUC:CHn:STATus?**

**Description:** Command returns Adjacent Channel Power Upper measurement data.

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

Refer to Chapter 1 for UUT Measurement Meter Return Data.

**Query Response:** :METERs:ACPUC:CH1:STATus?

0,0,10, 100.000, 0.0099751540,0.0100574717,0.0000000000,0

CHn = 1 or 2 (Channel 1 or 2).

Command only valid when Motorola ASTRO® 25 X2-TDMA® option is installed in Test Set.

4.5.6 Adjacent Channel Power Upper - Peak Measurement Reset

**:METERs:ACPUC:CHn:CLEAR:PEAK**

**Description:** Command clears and resets Peak Adjacent Channel Power Upper measurement.

**Parameter/Query:** none

**NOTE**

CHn = 1 or 2 (Channel 1 or 2).

Command only valid when Motorola ASTRO® 25 X2-TDMA® option is installed in Test Set.
4.5.7  Adjacent Channel Power Upper - Upper Limit Enable

:LIInits:ACPUC:CHn:UPPer:ENABle
:LIInits:ACPUC:CHn:UPPer:ENABle?

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

Parameter:  OFF | ON | 0 | 1
Default Value:  OFF

Set/Query Format:  Boolean

Example:  :LIInits:ACPUC:CH1:UPPer:ENABle ON
Enables Upper Limit for Channel 1 Adjacent Channel Power Upper measurement.

Query Response:  :LIInits:ACPUC:CH1:UPPer:ENABle?
1

CHn = 1 or 2 (Channel 1 or 2).
Command only valid when Motorola ASTRO® 25 X2-TDMA® option is installed in Test Set.

4.5.8  Adjacent Channel Power Upper - Upper Limit Value

:LIInits:ACPUC:CHn:UPPer:VALue
:LIInits:ACPUC:CHn:UPPer:VALue?

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

Range:  -80.0 to -20.0 dBC
Units:  dBC
Default Value:  -80.0 dBC

Set/Query Format:  NRf | NR2

Example:  :LIInits:ACPUC:CH1:UPPer:VALue -50dBc
Sets Upper Limit Value for Channel 1 Adjacent Channel Power Upper measurement to -50.0 dBC.

Query Response:  :LIInits:ACPUC:CH1:UPPer:VALue?
1

CHn = 1 or 2 (Channel 1 or 2).
Command only valid when Motorola ASTRO® 25 X2-TDMA® option is installed in Test Set.
4.6 BIT ERROR RATE (RX) MEASUREMENTS

4.6.1 Rx Bit Error Rate - Averages

:METERS:RBER:AVERaging
:METERS:RBER:AVERaging?

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

Range: 1 to 1000
Default Value: 1
Set/Query Format: NR1
Example: :METERS:RBER:AVERaging 100
Sets the number of readings taken to calculate Average Rx Bit Error Rate measurement to 100.

Query Response: :METERS:RBER:AVERaging?
100

4.6.2 Rx Bit Error Rate - Average Measurement Reset

:METERS:RBER:CLEAR:AVG

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

4.6.3 Rx Bit Error Rate - Baud Rate

:CONFigure:RBER:BAUD
:CONFigure:RBER:BAUD?

Description: Set command defines baud rate for Rx Bit Error Rate measurement. Query command returns parameter setting.

Parameter: B300 | B1200 | B2400 | B4800 | B9600 | B19200 | B38400 | B57600 | B115200 | B230400
Default Value: B19200
Set/Query Format: CPD | CRD
Example: :CONFigure:RBER:BAUD B4800
Sets Baud Rate to B4800.

Query Response: :CONFigure:RBER:BAUD?
B4800
4.6.4 Rx Bit Error Rate - Enable Measurements

**:METERS:RBER:ENABLE**

**:METERS:RBER:ENABLE?**

- **Description:** Set command Enables/Disables Rx Bit Error Rate measurements. Query command returns parameter setting.
- **Parameter:** OFF | ON | 0 | 1
- **Default Value:** OFF
- **Set/Query Format:** Boolean
- **Example:** :METERS:RBER:ENABLE ON
  Enables Rx Bit Error Rate measurements.
- **Query Response:** :METERS:RBER:ENABLE?
  1

4.6.5 Rx Bit Error Rate - Lower Limit Enable

**:LIMits:RBER:LOWer:ENABLE**

**:LIMits:RBER:LOWer:ENABLE?**

- **Description:** Set command Enables/Disables Lower Limit for Rx Bit Error Rate measurement. Query command returns parameter setting.
- **Parameter:** OFF | ON | 0 | 1
- **Default Value:** OFF
- **Set/Query Format:** Boolean
- **Example:** :LIMits:RBER:LOWer:ENABLE ON
  Enables Lower Limit for Rx Bit Error Rate measurement.
- **Query Response:** :LIMits:RBER:LOWer:ENABLE?
  1

4.6.6 Rx Bit Error Rate - Lower Limit Value

**:LIMits:RBER:LOWer:VALUe**

**:LIMits:RBER:LOWer:VALUe?**

- **Description:** Set command defines Lower Limit Value for Rx 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:RBER:LOWer:VALUe 1
  Sets Lower Limit Value for Rx BER measurements to 1.0%.
- **Query Response:** :LIMits:RBER:LOWer:VALUe?
  1.0000000000
4.6.7  Rx Bit Error Rate - Measurement Query

:MEfERs:RBER:STATus?
Description: Command returns Rx Bit Error Rate measurement data.
Refer to Chapter 1 for UUT Measurement Meter Return Data.
Query Response: :MEfERs:RBER:STATus?
0,0,10, 100.000, 0.0099751540,0.0100574717,0.0000000000,0
NOTE BER Measurements must be enabled to return valid data.

4.6.8  Rx Bit Error Rate - Peak Measurement Reset

:MEfERs:RBER:CLEAR:PEAK
Description: Command clears and resets Peak Rx Bit Error Rate measurement.
Parameter/Query: none

4.6.9  Rx Bit Error Rate - Port

:CONfigure:RBER:PORT
:CONfigure:RBER:PORT?
Description: Set command selects Port for Rx Bit Error Rate measurement.
Query command returns parameter setting.
Parameter: TTYUSB0 | TTYUSB1 | TTYUSB2 | TTYUSB4 | TTYUSB5 | TTYUSB6 | TTYUSB7 | TTYUSB8 | TTYUSB9 | TTYUSB10 | TTYUSB11 | TTYUSB12 | TTYUSB13 | TTYUSB14 | TTYUSB15 | TTYACM0 | TTYS0
Default Value: TTYUSB0
Set/Query Format: CPD | CRD
Example: :CONfigure:RBER:PORT TTYACM0
Selects TTYACM0 for Bit Error Rate measurement.
Query Response: :CONfigure:RBER:PORT?
TTYACM0

4.6.10 Rx Bit Error Rate - Transmit Pattern

:MEfERs:RBER:PATTern
:MEfERs:RBER:PATTern?
Description: Set command defines Transmit Pattern for Rx Bit Error Rate measurement.
Query command returns parameter setting.
Parameter: STD511 | STD1011 | STDACF | STDBUSY | STDACL | STDIDLE | STDINTFR | STDSSILENCE
Default Value: STD1011
Set/Query Format: CPD
Example: :MEfERs:RBER:PATTern STDCAL
Sets Transmit Pattern for Rx Bit Error Rate measurements to STD CAL Pattern.
Query Response: :MEfERs:RBER:PATTern?
STDCAL
4.6.11 Rx Bit Error Rate - Upper Limit Enable

:LIMITs:RBER:UPPer:ENABle
:LIMITs:RBER:UPPer:ENABle?

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

Parameter: OFF | ON | 0 | 1

Default Value: OFF

Set/Query Format: Boolean

Example: :LIMITs:RBER:UPPer:ENABle ON
Enables Upper Limit for Rx Bit Error Rate measurement.

Query Response: :LIMITs:RBER:UPPer:ENABle?
1

4.6.12 Rx Bit Error Rate - Upper Limit Value

:LIMITs:RBER:UPPer:VALUe
:LIMITs:RBER:UPPer:VALUe?

Description: Set command defines Upper Limit Value for Rx 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:RBER:UPPer:VALUe 2
Sets Upper Limit Value for Rx BER measurements to 2.0%.

Query Response: :LIMITs:RBER:UPPer:VALUe?
2.0000000000
4.7 BIT ERROR RATE (TX) MEASUREMENTS

4.7.1 Tx Bit Error Rate - Averages

:METEr:s:BER:CHn:AVERaging
:METEr:s:BER:CHn:AVERaging?

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

Range: 1 to 1000
Default Value: 1
Set/Query Format: NR1

Example: :METEr:s:BER:CH1:AVERaging 100
Sets the number of readings taken to calculate Channel 1 Average Tx Bit Error Rate measurement to 100.

100

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

NOTE

4.7.2 Tx Bit Error Rate - Average Measurement Reset

:METEr:s:BER:CHn:CLEAR:AVG

Parameter/Query: none

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

NOTE

4.7.3 Tx Bit Error Rate - Lower Limit Enable

:LIMits:BER:CHn:LOWer:ENABLE
:LIMits:BER:CHn:LOWer:ENABLE?

Description: Set command Enables/Disables Lower Limit for Tx 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 Tx Bit Error Rate measurement.

Query Response: :LIMits:BER:CH1:LOWer:ENABLE?
1

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

NOTE
4.7.4  Tx Bit Error Rate - Lower Limit Value

:LIMits:BER:CHn:LOWer:VALue
:LIMits:BER:CHn:LOWer:VALue?

Description: Set command defines Lower Limit Value for Tx 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 Tx Bit Error Rate measurement to 1.0%.
Query Response: :LIMits:BER:CH1:LOWer:VALue?
1.0000000000
CHn = 1 or 2 (Channel 1 or 2). Channel 2 is option enabled.

NOTE

4.7.5  Tx Bit Error Rate - Measurement Query

:METERs:BER:CHn:STATus?

Description: Command returns Tx Bit Error Rate measurement data.
Query Data: <statusbyte>,<failbyte>,<precision>,<percentage>,<avg>,<max>,<min>,<units>
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
CHn = 1 or 2 (Channel 1 or 2). Channel 2 is option enabled.

NOTE

4.7.6  Tx Bit Error Rate - Peak Measurement Reset

:METERs:BER:CHn:CLEAR:PEAK

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

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

NOTE
4.7.7 Tx Bit Error Rate - Receive Pattern

:METERS:BER:CHn:PATTern
:METERS:BER:CHn:PATTern?

Description: Set command defines Receive Pattern for Tx Bit Error Rate measurement. Query command returns parameter setting.

Parameter: STD1011 | STDAFC | STDCAL | STDSILENCE | STDINTFR | STDBUSY | STDIDLE | STD511

Default Value: STD1011

Set/Query Format: CPD | CRD

Example: :METERS:BER:CH1:PATTern STDCAL
Sets Channel 1 Receive Pattern for Bit Error Rate measurements to STD CAL Pattern.

Query Response: :METERS:BER:CH1:PATTern?
STDCAL

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

4.7.8 Tx Bit Error Rate - Upper Limit Enable

:LIMits:BER:CHn:UPPer:ENABLE
:LIMits:BER:CHn:UPPer:ENABLE?

Description: Set command Enables/Disables Upper Limit for Tx 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 Tx Bit Error Rate measurement.

Query Response: :LIMits:BER:CH1:UPPer:ENABLE?
1

NOTE CHn = 1 or 2 (Channel 1 or 2). Channel 2 is option enabled.
4.7.9 Tx Bit Error Rate - Upper Limit Value

:LIMits:BER:CHn:UPPer:VALue
:LIMits:BER:CHn:UPPer:VALue?

Description: Set command defines Upper Limit Value for Tx 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 Tx Bit Error Rate measurement to 5%.

Query Response: :LIMits:BER:CH1:UPPer:VALue?
5.0000000000

CHn = 1 or 2 (Channel 1 or 2). Channel 2 is option enabled.
4.8 BROADBAND POWER MEASUREMENTS

4.8.1 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

4.8.2 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

4.8.3 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
4.8.4 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.

4.8.5 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.

4.8.6 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
4.8.7 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
4.9 CARRIER FEEDTHROUGH

4.9.1 Carrier Feedthrough - Averages

:MEtERs:CARRft:CHn:AVERaging
:MEtERs:CARRft:CHn:AVERaging?

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

Range: 1 to 250
Default Value: 1

Example: :MEtERs:CARRft:CHn:AVERaging 100
Sets the number of readings taken to calculate Average Carrier Feedthrough measurement to 100.

Query Response: :MEtERs:CARRft:CHn:AVERaging?
100
CHn = 1 or 2 (Channel 1 or 2).

NOTE

4.9.2 Carrier Feedthrough - Average Measurement Reset

:MEtERs:CARRft:CHn:CLEAR:AVG

Parameter/Query: none

CHn = 1 or 2 (Channel 1 or 2).

NOTE

4.9.3 Carrier Feedthrough - Lower Limit Enable

:LiMiIts:CARRft:CHn:LOWer:ENABle
:LiMiIts:CARRft:CHn:LOWer:ENABle?

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

Parameter: OFF | ON | 0 | 1
Default Value: OFF

Example: :LiMiIts:CARRft:CH1:LOWer:ENABle ON
Enables Lower Limit for Carrier Feedthrough measurement.

Query Response: :LiMiIts:CARRft:CH1:LOWer:ENABle?
1
CHn = 1 or 2 (Channel 1 or 2).

NOTE
4.9.4  Carrier Feedthrough - Lower Limit Value

:LIMits:CARRft:CHn:LOWer:VALue
:LIMits:CARRft:CHn:LOWer:VALue?

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

Range: -1000.0 to 0.0 dB
Units: dB
Default Value: 0.0 dB
Set/Query Format: NRI | NR2

Example: :LIMits:CARRft:CH1:LOWer:VALue -100dB
    Sets Lower Limit Value for Carrier Feedthrough measurement to -100.0 dB

Query Response: :LIMits:CARRft:CH1:LOWer:VALue?
    -100.00

CHn = 1 or 2 (Channel 1 or 2).

4.9.5  Carrier Feedthrough - Measurement Query

:METERs:CARRft:CHn:STATus?

Description: Command returns Carrier Feedthrough measurement data.

Query Data: <statusbyte>,<failbyte>,<precision>,<percentage>,<avg>,<max>,<min>,<units>
    Refer to Chapter 1 for UUT Measurement Meter Return Data.

Query Response: :METERs:CARRft:CH2:STATus?
    5, 0, 3, 0.000, 0.000, 0.000, 0.000, 0.000, 5

CHn = 1 or 2 (Channel 1 or 2)

4.9.6  Carrier Feedthrough - Peak Measurement Reset

:METERs:CARRft:CHn:CLEAR:PEAK

Description: Command clears and resets Peak Carrier Feedthrough measurement.

Parameter/Query: none

NOTE

CHn = 1 or 2 (Channel 1 or 2).
4.9.7 Carrier Feedthrough - Upper Limit Enable

:LI*Mits:CARRft:CHn:UPPer:ENABle
:LI*Mits:CARRft:CHn:UPPer:ENABle?

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

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

**Default Value:** OFF

**Set/Query Format:** Boolean

**Example:** :LI*Mits:CARRft:CH1:UPPer:ENABle ON Enables Upper Limit for Carrier Feedthrough measurement.

**Query Response:** :LI*Mits:CARRft:CH1:UPPer:ENABle?

1

CHn = 1 or 2 (Channel 1 or 2)

---

**NOTE**

4.9.8 Carrier Feedthrough - Upper Limit Value

:LI*Mits:CARRft:CHn:UPPer:VALue
:LI*Mits:CARRft:CHn:UPPer:VALue?

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

**Range:** -1000.0 to 0.0 dB

**Units:** dB

**Default Value:** 0.0 dB

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

**Example:** :LI*Mits:CARRft:CH1:UPPer:VALue -100dB Sets Upper Limit Value for Carrier Feedthrough measurement to -100.0 dB

**Query Response:** :LI*Mits:CARRft:CH1:UPPer:VALue?

-100.00

CHn = 1 or 2 (Channel 1 or 2).

---

**NOTE**
4.10  ERROR VECTOR MAGNITUDE MEASUREMENTS

4.10.1  Error Vector Magnitude - Averages

:METERS:EVM:CHn:AVERaging
:METERS:EVM:CHn:AVERaging?

Description: Set command defines number of readings used to calculate Average Error Vector Magnitude measurement. Query command returns parameter setting.

Range: 1 to 250
Default Value: 1
Set/Query Format: NR1

Example: :METERS:EVM:CH1:AVERaging 100
Sets the number of readings taken to calculate Channel 1 Error Vector Magnitude measurement to 100.

Query Response: :METERS:EVM:CH1:AVERaging?
100
CHn = 1 or 2 (Channel 1 or 2). Channel 2 is option enabled.
Command only valid when P25 LSM Option is installed in Test Set.

NOTE

4.10.2  Error Vector Magnitude - Average Measurement Reset

:METERS:EVM:CHn:CLEAR:AVG

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

Parameter/Query: none

CHn = 1 or 2 (Channel 1 or 2). Channel 2 is option enabled.
Command only valid when P25 LSM Option is installed in Test Set.

NOTE

4.10.3  Error Vector Magnitude - Lower Limit Enable

:LIMITs:EVM:CHn:LOWer:ENABLE
:LIMITs:EVM:CHn:LOWer:ENABLE?

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

Parameter: OFF | ON | 0 | 1
Default Value: OFF
Set/Query Format: Boolean

Example: :LIMITs:EVM:CH1:LOWer:ENABLE ON
Enables Lower Limit for Channel 1 Error Vector Magnitude measurement.

Query Response: :LIMITs:EVM:CH1:LOWer:ENABLE?
1
CHn = 1 or 2 (Channel 1 or 2). Channel 2 is option enabled.
Command only valid when P25 LSM Option is installed in Test Set.

NOTE
4.10.4 Error Vector Magnitude - Lower Limit Value

:**LIM**its:EVM:CHn:LOWer:VALue

**LIM**its:EVM:CHn:LOWer:VALue?

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

**Range:** 0.0 to 200.0%

**Units:** % (percent)

**Default Value:** 0.0%

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

**Example:**

:LIMits:EVM:CH1:LOWer:VALue 2.5

Sets Lower Limit Value for Channel 1 Error Vector Magnitude measurement to 2.5%.

**Query Response:**

:LIMits:EVM:CH1:LOWer:VALue?

2.5

CHn = 1 or 2 (Channel 1 or 2). Channel 2 is option enabled. Command only valid when P25 LSM Option is installed in Test Set.

**NOTE**

4.10.5 Error Vector Magnitude - Measurement Query

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

**Description:** Command returns EVM measurement data.

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

Refer to Chapter 1 for UUT Measurement Meter Return Data.

**Query Response:**

:METERs:EVM:CH2:STATus?

0,0,3 100.000, 0.643, 79.100, 0.494,1

CHn = 1 or 2 (Channel 1 or 2). Channel 2 is option enabled. Command only valid when P25 LSM Option is installed in Test Set.

**NOTE**

4.10.6 Error Vector Magnitude - Peak Measurement Reset

:**METERs:EVM:CHn:CLEAR:PEAK**

**Description:** Command clears and resets Peak EVM measurement.

**Parameter/Query:** none

CHn = 1 or 2 (Channel 1 or 2). Channel 2 is option enabled. Command only valid when P25 LSM Option is installed in Test Set.
4.10.7  Error Vector Magnitude - Upper Limit Enable

**:LIMits:EVM:CHn:UPPer:ENABle**

****:LIMits:EVM:CHn:UPPer:ENABle?**

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

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

**Default Value:** OFF

**Set/Query Format:** Boolean

**Example:**

```plaintext
:LIMits:EVM:CH1:UPPer:ENABle ON
```

Enables Upper Limit for Channel 1 Error Vector Magnitude measurement.

**Query Response:**

```plaintext
:LIMits:EVM:CH1:UPPer:ENABle?
```

1

**NOTE**

CHn = 1 or 2 (Channel 1 or 2). Channel 2 is option enabled. Command only valid when P25 LSM Option is installed in Test Set.

4.10.8  Error Vector Magnitude - Upper Limit Value

**:LIMits:EVM:CHn:UPPer:VALue**

**:LIMits:EVM:CHn:UPPer:VALue?**

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

**Range:** 0.0 to 200.0%

**Units:** % (percent)

**Default Value:** 0.0%

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

**Example:**

```plaintext
:LIMits:EVM:CH1:UPPer:VALue 5
```

Sets Upper Limit Value for Channel 1 Error Vector Magnitude measurement to 5.0%.

**Query Response:**

```plaintext
:LIMits:EVM:CH1:UPPer:VALue?
```

5.00

**NOTE**

CHn = 1 or 2 (Channel 1 or 2). Channel 2 is option enabled. Command only valid when P25 LSM Option is installed in Test Set.
4.11 FM PK- DEVIATION MEASUREMENTS

4.11.1 FM Peak- Deviation - Averages

[:CONFigure:MOD:ANALyzer:FMNEG:AVERage]
[:CONFigure:MOD:ANALyzer:FMNEG:AVERage?]

Description: Set command defines number of readings taken to calculate Average FM Peak-Deviation measurement.
Query command returns parameter setting.

Range: 1 to 250
Default Value: 1
Set/Query Format: NR1

Example: [:CONFigure:MOD:ANALyzer:FMNEG:AVERage 75]
Sets number of readings taken to calculate Average FM Peak-Deviation measurement to 75.

Query Response: [:CONFigure:MOD:ANALyzer:FMNEG:AVERage?]
75

4.11.2 FM Peak- Deviation - Average Measurement Reset

[:MOD:ANALyzer:FMNEG:CLEAR:AVG]

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

4.11.3 FM Peak- Deviation - Lower Limit Enable

[:LIMits:MOD:FMNEG:LOWer:ENABle]
[:LIMits:MOD:FMNEG:LOWer:ENABle?]

Description: Set command Enables/Disables Lower Limit for FM Peak-Deviation measurement.
Query command returns parameter setting.

Parameter: OFF | ON | 0 | 1
Default Value: OFF
Set/Query Format: Boolean

Example: [:LIMits:MOD:FMNEG:LOWer:ENABle ON]
Enables Lower Limit for FM Peak-Deviation measurement.

Query Response: [:LIMits:MOD:FMNEG:LOWer:ENABle?]
1
4.11.4 FM Peak- Deviation - Lower Limit Value

:\LIMits:MOD:FMNEG:LOWer:VALue
:\LIMits:MOD:FMNEG:LOWer:VALue?

Description: Set command defines Lower Limit Value for FM Peak-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:FMNEG:LOWer:VALue 1.0Hz
Sets Lower Limit Value for FM Peak-Deviation measurement to 1.0 Hz.
Query Response: \LIMits:MOD:FMNEG:LOWer:VALue?
1.0

4.11.5 FM Peak- Deviation - Measurement Query

:\FETCh:MOD:ANALyzer:FMNEG?

Description: Command returns FM Peak-Deviation measurement data.
Query Data: <statusbyte>, <failbyte>, <avgcount>, <avg(Hz)>, <max(Hz)>, <min(Hz)>
Refer to Chapter 1 for UUT Measurement Meter Return Data.

Query Response: \FETCh:MOD:ANALyzer:FMNEG?
0, 0, 1, -18.14,-15.43,-3999.54
Protocol must be set to Analog to return valid measurement data.

4.11.6 FM Peak- Deviation - Peak Measurement Reset

:\MOD:ANALyzer:FMNEG:CLEAR:PEAK

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

4.11.7 FM Peak- Deviation - Upper Limit Enable

:\LIMits:MOD:FMNEG:UPPer:ENABle
:\LIMits:MOD:FMNEG:UPPer:ENABle?

Description: Set command Enables/Disables Upper Limit for FM Peak-Deviation measurement. Query command returns parameter setting.

Parameter: OFF | ON | 0 | 1
Default Value: OFF
Set/Query Format: Boolean
Example: \LIMits:MOD:FMNEG:UPPer:ENABle ON
Enables Upper Limit for FM Peak-Deviation measurement.
Query Response: \LIMits:MOD:FMNEG:UPPer:ENABle?
1
### 4.11.8 FM Peak-Deviation - Upper Limit Value

**{:LIM}its{:MOD}:FMNEG:UPPer:VALue**  
**{:LIM}its{:MOD}:FMNEG:UPPer:VALue?**

**Description:** Set command defines Upper Limit Value for FM Peak-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:**  
{:LIM}its{:MOD}:FMNEG:UPPer:VALue 2.0Hz  
Sets Upper Limit Value for FM Peak-Deviation measurement to 2.0 Hz.

**Query Response:**  
{:LIM}its{:MOD}:FMNEG:UPPer:VALue?  
1.0
4.12 FM PK+ DEVIATION MEASUREMENTS

4.12.1 FM Peak+ Deviation - Averages

**:CONFigure:MOD:ANALyzer:FMPOS:AVERage**

*Description:* Set command defines number of readings taken to calculate Average FM Peak+ Deviation measurement.
Query command returns parameter setting.

*Range:* 1 to 250

*Default Value:* 1

*Set/Query Format:* NR1

*Example:* :CONFigure:MOD:ANALyzer:FMPOS:AVERage 75
Sets number of readings taken to calculate Average FM Peak+ Deviation measurement to 75.

*Query Response:* :CONFigure:MOD:ANALyzer:FMPOS:AVERage?
75

4.12.2 FM Peak+ Deviation - Average Measurement Reset

**:MOD:ANALyzer:FMPOS:CLEAR:AVG**

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

4.12.3 FM Peak+ Deviation - Lower Limit Enable

**:LIMits:MOD:FMPOS:LOWer:ENABle**

*Description:* Set command Enables/Disables Lower Limit for FM Peak+ Deviation measurement.
Query command returns parameter setting.

*Parameter:* OFF | ON | 0 | 1

*Default Value:* OFF

*Set/Query Format:* Boolean

*Example:* :LIMits:MOD:FMPOS:LOWer:ENABle ON
Enables Lower Limit for FM Peak+ Deviation measurement.

*Query Response:* :LIMits:MOD:FMPOS:LOWer:ENABle?
1
4.12.4 FM Peak+ Deviation - Lower Limit Value

:LIMits:MOD:FMPOS:LOWer:VALue
:LIMits:MOD:FMPOS:LOWer:VALue?

Description: Set command defines Lower Limit Value for FM Peak+ 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:FMPOS:LOWer:VALue 1.0Hz
Sets Lower Limit Value for FM Peak+ Deviation measurement to 1.0 Hz.

Query Response: :LIMits:MOD:FMPOS:LOWer:VALue?

1.0

4.12.5 FM Peak+ Deviation - Measurement Query

:FETCh:MOD:ANALyzer:FMPOS?

Description: Command returns FM Peak+ Deviation measurement data.

Query Data: <statusbyte>, <failbyte>, <avgcount>, <avg(Hz)>, <max(Hz)>, <min(Hz)>

Refer to Chapter 1 for UUT Measurement Meter Return Data.

Query Response: :FETCh:MOD:ANALyzer:FMPOS?

0,0,1,18.02,3999.54,15.24

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

4.12.6 FM Peak+ Deviation - Peak Measurement Reset

:MOD:ANALyzer:FMPOS:CLEAR:PEAK

Description: Command clears and resets Peak FM Peak+ Deviation measurement.

Parameter/Query: none

4.12.7 FM Peak+ Deviation - Upper Limit Enable

:LIMits:MOD:FMPOS:UPPer:ENABle
:LIMits:MOD:FMPOS:UPPer:ENABle?

Description: Set command Enables/Disables Upper Limit for FM Peak+ Deviation measurement. Query command returns parameter setting.

Parameter: OFF | ON | 0 | 1

Default Value: OFF

Set/Query Format: Boolean

Example: :LIMits:MOD:FMPOS:UPPer:ENABle ON
Enables Upper Limit for FM Peak+ Deviation measurement.

Query Response: :LIMits:MOD:FMPOS:UPPer:ENABle?

1
4.12.8 FM Peak+ Deviation - Upper Limit Value

:LIMits:MOD:FMPOS:UPPer:VALue
:LIMits:MOD:FMPOS:UPPer:VALue?

- **Description:** Set command defines Upper Limit Value for FM Peak+ 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:FMPOS:UPPer:VALue 2.0Hz
  
  Sets Upper Limit Value for FM Peak+ Deviation measurement to 2.0 Hz.

- **Query Response:**
  
  :LIMits:MOD:FMPOS:UPPer:VALue?
  1.0
4.13 FREQUENCY ERROR MEASUREMENTS

4.13.1 Frequency Error - Averages

:METE罗斯:FCR:CHn:AVERaging
:METE罗斯:FCR:CHn: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: :METE罗斯:FCR:CH1:AVERaging 100
Sets the number of readings taken to calculate Channel 1 Average Frequency Error measurement to 100.

Query Response: :METE罗斯:FCR:CH1:AVERaging?
100

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

4.13.2 Frequency Error - Average Measurement Reset

:METE罗斯:FCR:CHn:CLEAR:AVG

Description: Command clears and resets Average Frequency Error measurement.

Parameter/Query: none

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

4.13.3 Frequency Error - Lower Limit Enable

:LIMits:FCR:CHn:LOWer:ENABLE
:LIMits:FCR:CHn:LOWer:ENABLE?

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

Parameter: OFF | ON | 0 | 1
Default Value: OFF
Set/Query Format: Boolean

Example: :LIMits:FCR:CH1:LOWer:ENABLE ON
Enables Lower Limit for Channel 1 Frequency Error measurement.

1

CHn = 1 or 2 (Channel 1 or 2). Channel 2 is option enabled.
4.13.4 Frequency Error - Lower Limit Value

:LI*Mits:FCR:CHn:LOWer:VALue
:LI*Mits:FCR:CHn:LOWer:VALue?

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

**Range:**
- Hz: -2000.0 to +2000.0
- PPM: 0 to 1000

**Units:** Hz | PPM

**Default Value:** 0.0 Hz

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

**Example:**
.:LI*Mits:FCR:CH1:LOWer:VALue 250Hz
Sets Lower Limit Value for Channel 1 Frequency Error measurements to 250.0 Hz.

**Query Response:**
:LI*Mits:FCR:CH1:LOWer:VALue?
250.00

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

---

4.13.5 Frequency Error - Measurement Query

:ME*TERs:FCR:CHn:STATus?

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

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

Refer to Chapter 1 for UUT Measurement Meter Return Data.

**Query Response:**
:ME*TERs:FCR:CH1:STATus?
0,0,3 100.00, 0.750, 4.273, -10.656, 2

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

---

4.13.6 Frequency Error - Peak Measurement Reset

:ME*TERs:FCR:CHn:CLEAR:PEAK

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

**Parameter/Query:** none

CHn = 1 or 2 (Channel 1 or 2). Channel 2 is option enabled.
4.13.7 Frequency Error - Units

:MEtERs:FCR:UNIts
:MEtERs:FCR:UNIts?

Description: Set command defines the unit of measurement for Frequency Error measurement.
Query command returns parameter setting.

Parameter: Hz | PPM
Default Value: Hz
Set/Query Format: CPD | CRD
Example: :MEtERs:FCR:UNIts PPM
Displays Frequency Error measurement in PPM.
Query Response: :MEtERs:FCR:UNIts?
PPM

4.13.8 Frequency Error - Upper Limit Enable

:LImits:FCR:CHn:UPPer:ENABle
:LImits:FCR:CHn:UPPer:ENABle?

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

Parameter: OFF | ON | 0 | 1
Default Value: OFF
Set/Query Format: Boolean
Example: :LImits:FCR:CH1:UPPer:ENABle ON
Enables Upper Limit for Channel 1 Frequency Error measurement.
Query Response: :LImits:FCR:CH1:UPPer:ENABle?
1

NOTE
CHn = 1 or 2 (Channel 1 or 2). Channel 2 is option enabled.
4.13.9  Frequency Error - Upper Limit Value

:LI:Mits:FCR:CHn:UPPer:VALue
:LI:Mits:FCR:CHn:UPPer:VALue?

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

Range:  Hz: -2000.0 to 2000.0
         PPM: 0 to 1000

Units:  Hz | PPM

Default Value:  0.0 Hz

Set/Query Format:  NRf | NR2

Example:  :LI:Mits:FCR:CH1:UPPer:VALue 500Hz
          Sets Upper Limit Value for Channel 1 Frequency Error measurements to 500.0 Hz.

Query Response:  :LI:Mits:FCR:CH1:UPPer:VALue?
                   500.00

NOTE
CHn = 1 or 2 (Channel 1 or 2). Channel 2 is option enabled.
4.14  HSD DEVIATION MEASUREMENTS

4.14.1  HSD Deviation - Averages

:METEr:s:HSDDEV:CHn:AVERaging
:METEr:s:HSDDEV:CHn:AVERaging?

Description: Set command defines number of readings used to calculate Average HSD Deviation measurement. Query command returns parameter setting.

Range: 1 to 250
Default Value: 1
Set/Query Format: NR1

Example: :METEr:s:HSDDEV:CH1:AVERaging 100
Sets the number of readings taken to calculate Channel 1 Average HSD Deviation measurement to 100.

Query Response: :METEr:s:HSDDEV:CH1:AVERaging?
100
CHn = 1 or 2 (Channel 1 or 2).
Command only valid when SmartNet/SmartZone option is installed in Test Set.

4.14.2  HSD Deviation - Average Measurement Reset


Description: Command clears and resets Average HSD Deviation measurement.

Parameter/Query: none

CHn = 1 or 2 (Channel 1 or 2).
Command only valid when SmartNet/SmartZone option is installed in Test Set.

4.14.3  HSD Deviation - Lower Limit Enable

:LIMits:HSDDEV:CHn:LOWer:ENABLE
:LIMits:HSDDEV:CHn:LOWer:ENABLE?

Description: Set command Enables/Disables Lower Limit for HSD Deviation measurement. Query command returns parameter setting.

Parameter: OFF | ON | 0 | 1
Default Value: OFF
Set/Query Format: Boolean

Example: :LIMits:HSDDEV:CH1:LOWer:ENABLE ON
Enables Lower Limit for Channel 1 HSD Deviation measurement.

Query Response: :LIMits:HSDDEV:CH1:LOWer:ENABLE?
1
CHn = 1 or 2 (Channel 1 or 2).
Command only valid when SmartNet/SmartZone option is installed in Test Set.
4.14.4   **HSD Deviation - Lower Limit Value**

**:LIMits:HSDDEV:CHn:LOWer:VALue**

Description: Set command defines Lower Limit Value for HSD Deviation measurement. Query command returns parameter setting.

Range: 0.0 to 100.0 kHz

Units: kHz

Default Value: 0.0 kHz

Set/Query Format: NRf | NR2

Example: :LIMits:HSDDEV:CH1:LOWer:VALue 50kHz

Sets Lower Limit Value for Channel 1 HSD Deviation measurement to 50.0 kHz.

Query Response: :LIMits:HSDDEV:CH1:LOWer:VALue?

50.00

CHn = 1 or 2 (Channel 1 or 2).

Command only valid when SmartNet/SmartZone option is installed in Test Set.

4.14.5   **HSD Deviation - Measurement Query**

**:METERs:HSDDev:CHn:STATus?**

Description: Command returns HSD Deviation measurement data.

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

Refer to Chapter 1 for UUT Measurement Meter Return Data.

Query Response: :METERs:HSDDev:CH1:STATus?

0,0,3 100.00, 0.054, 10.00, 0.000,3

CHn = 1 or 2 (Channel 1 or 2).

Command only valid when SmartNet/SmartZone option is installed in Test Set.

4.14.6   **HSD Deviation - Peak Measurement Reset**

**:METERs:HSDDev:CHn:CLEAR:PEAK**

Description: Command clears and resets Peak HSD Deviation measurement.

Parameter/Query: none

CHn = 1 or 2 (Channel 1 or 2).

Command only valid when SmartNet/SmartZone option is installed in Test Set.
4.14.7 HSD Deviation - Upper Limit Enable

**:LIMits:HSDDEV:CHn:UPPer:ENABle**
**:LIMits:HSDDEV:CHn:UPPer:ENABle?**

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

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

**Default Value:** OFF

**Set/Query Format:** Boolean

**Example:** :LIMits:HSDDEV:CH1:UPPer:ENABle ON
Enables Upper Limit for Channel 1 HSD Deviation measurement.

**Query Response:** :LIMits:HSDDEV:CH1:UPPer:ENABle?
1

CHn = 1 or 2 (Channel 1 or 2).
Command only valid when SmartNet/SmartZone option is installed in Test Set.

### NOTE

4.14.8 HSD Deviation - Upper Limit Value

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

**Range:** 0.0 to 100.0 kHz

**Units:** kHz

**Default Value:** 0.0 kHz

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

**Example:** :LIMits:HSDDEV:CH1:UPPer:VALue 75kHz
Sets Upper Limit Value for Channel 1 HSD Deviation measurement to 75.0 Hz.

**Query Response:** :LIMits:HSDDEV:CH1:UPPer:VALue?
75.00

CHn = 1 or 2 (Channel 1 or 2).
Command only valid when SmartNet/SmartZone option is installed in Test Set.

### NOTE
4.15 INBAND POWER

4.15.1 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.

100

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

4.15.2 Inband Power - Average Measurement Reset


Parameter/Query: none

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

NOTE

4.15.3 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.

1

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

NOTE
4.15.4 Inband Power - Lower Limit Value

**:LIMits:POWer:CHn:INBand:LOWer:VALue**

**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
```

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

**NOTE**

4.15.5 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>
  
  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
```

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

Protocol must be defined as ANALOG to return valid measurement data.

**NOTE**

4.15.6 Inband Power - Peak Measurement Reset

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

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

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

**NOTE**
4.15.7 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

4.15.8 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
Default Value: OFF
Set/Query Format: Boolean
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?

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

4.15.9 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?

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

4.16.1 Modulation Fidelity - Averages

:METERS:MODFidelity:CHn:AVERaging

:METERS:MODFidelity:CHn:AVERaging?

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

**Range:**
1 to 250

**Default Value:**
1

**Set/Query Format:**
NR1

**Example:**
:METERS:MODFidelity:CHn:AVERaging 100
Sets the number of readings taken to calculate Modulation Fidelity measurement to 100.

**Query Response:**
:METERS:MODFidelity:CHn:AVERaging?
100

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

4.16.2 Modulation Fidelity - Average Measurement Reset

:METERS:MODFidelity:CHn:CLEAR:AVG

**Description:**
Command clears and resets Average Modulation Fidelity measurement.

**Parameter/Query:**
none

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

4.16.3 Modulation Fidelity - Lower Limit Enable

:LIMits:MODFidelity:CHn:LOWer:ENABLE

:LIMits:MODFidelity:CHn:LOWer:ENABLE?

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

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

**Default Value:**
OFF

**Set/Query Format:**
Boolean

**Example:**
:LIMits:MODFidelity:CH1:LOWer:ENABLE ON
Enables Lower Limit for Channel 1 Modulation Fidelity measurement.

**Query Response:**
:LIMits:MODFidelity:CH1:LOWer:ENABLE?
1

CHn = 1 or 2 (Channel 1 or 2). Channel 2 is option enabled.
4.16.4 Modulation Fidelity - Lower Limit Value

:LIMits:MODFidelity:CHn:LOWer:VALue
:LIMits:MODFidelity:CHn:LOWer:VALue?

Description: Set command defines Lower Limit Value for Modulation Fidelity 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:MODFidelity:CH1:LOWer:VALue 100
Sets Lower Limit Value for Channel 1 Modulation Fidelity measurement to 100.0%.

Query Response: :LIMits:MODFidelity:CH1:LOWer:VALue?
100.00

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

4.16.5 Modulation Fidelity - Measurement Query

:METERs:MODFidelity:CHn:STATus?

Description: Command returns Modulation Fidelity measurement data.

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

Refer to Chapter 1 for UUT Measurement Meter Return Data.

Query Response: :METERs:MODFidelity:CH2:STATus?
0,0,3, 100.000, 0.438, 7.048, 0.366,1

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

4.16.6 Modulation Fidelity - Measurement Type

:METERs:MODFidelity:CHn:MODE
:METERs:MODFidelity:CHn:MODE?

Description: Set command defines Modulation Fidelity measurement type. Query command returns parameter setting.

Parameter: PEAK | AVERage

Default Value: PEAK

Set/Query Format: CPD | CRD

Example: :METERs:MODFidelity:CH1:MODE AVERage
Sets Modulation Fidelity measurement to Average.

Query Response: :METERs:MODFidelity:CH1:MODE?
AVER

CHn = 1 or 2 (Channel 1 or 2). Channel 2 is option enabled.
4.16.7  Modulation Fidelity - Peak Measurement Reset

:METERs:MODFidelity:CHn:CLEAR:PEAK

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

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

4.16.8  Modulation Fidelity - Upper Limit Enable

:LIMits:MODFidelity:CHn:UPPer:ENABle
:LIMits:MODFidelity:CHn:UPPer:ENABle?

Description: Set command Enables/Disables Upper Limit for Modulation Fidelity measurement.
Query command returns parameter setting.
Parameter: OFF | ON | 0 | 1
Default Value: OFF
Set/Query Format: Boolean

Example: :LIMits:MODFidelity:CH1:UPPer:ENABle ON
Enables Upper Limit for Channel 1 Modulation Fidelity measurement.
Query Response: :LIMits:MODFidelity:CH1:UPPer:ENABle?
1

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

4.16.9  Modulation Fidelity - Upper Limit Value

:LIMits:MODFidelity:CHn:UPPer:VALue
:LIMits:MODFidelity:CHn:UPPer:VALue?

Description: Set command defines Upper Limit Value for Modulation Fidelity 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:MODFidelity:CH1:UPPer:VALue 100
Sets Upper Limit Value for Channel 1 Modulation Fidelity measurements to 100.0%
Query Response: :LIMits:MODFidelity:CH1:UPPer:VALue?
100.00

CHn = 1 or 2 (Channel 1 or 2). Channel 2 is option enabled.
4.17 OCCUPIED BANDWIDTH

4.17.1 Occupied Bandwidth - Averages

:MEtERS:OCB:CHn:AVERaging
:MEtERS:OCB:CHn:AVERaging?

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

Range: 1 to 250
Default Value: 1
Set/Query Format: NR1

Example: :MEtERS:OCB:CHn:AVERaging 100
Sets the number of readings taken to calculate Average Occupied Bandwidth measurement to 100.

Query Response: :MEtERS:OCB:CHn:AVERaging? 100

CHn = 1 or 2 (Channel 1 or 2). Channel 2 is option enabled.
Command only valid when Occupied Bandwidth Meter Option is installed in Test Set.

NOTE

4.17.2 Occupied Bandwidth - Average Measurement Reset

:MEtERS:OCB:CHn:CLEAR:AVG

Description: Command clears and resets Average Occupied Bandwidth measurement.

Parameter/Query: none

CHn = 1 or 2 (Channel 1 or 2). Channel 2 is option enabled.
Command only valid when Occupied Bandwidth Meter Option is installed in Test Set.

NOTE

4.17.3 Occupied Bandwidth - Lower Limit Enable

:LI MIts:OCB:CHn:LOWer:ENABle
:LI MIts:OCB:CHn:LOWer:ENABle?

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

Parameter: OFF | ON | 0 | 1
Default Value: OFF
Set/Query Format: Boolean

Example: :LI MIts:OCB:CH1:LOWer:ENABle ON
Enables Lower Limit for Channel 1 Occupied Bandwidth measurement.


CHn = 1 or 2 (Channel 1 or 2). Channel 2 is option enabled.
Command only valid when Occupied Bandwidth Meter Option is installed in Test Set.

NOTE
4.17.4 Occupied Bandwidth - Lower Limit Value

:LIMits:OCB:CHn:LOWer:VALue
:LIMits:OCB:CHn:LOWer:VALue?

Description: Set command defines the Lower Limit Value for Occupied Bandwidth measurement.
Query command returns the Lower Limit Value defined for Occupied Bandwidth measurement.

Range: 0.0 to 30000.0 Hz
Units: Hz
Default Value: 0.0 Hz

Set/Query Format: NRf | NR2

Example: :LIMits:OCB:CH1:LOWer:VALue 1000Hz
Sets Lower Limit Value for Channel 1 Occupied Bandwidth measurements to 1000.0 Hz

Query Response: :LIMits:OCB:CH1:LOWer:VALue?
1000

CHn = 1 or 2 (Channel 1 or 2). Channel 2 is option enabled.
Command only valid when Occupied Bandwidth Meter Option is installed in Test Set.

NOTE

4.17.5 Occupied Bandwidth - Measurement Query

:METERs:OCB:CHn:STATus?

Description: Command returns Occupied Bandwidth measurement data.
Query Data: <statusbyte>,<failbyte>,<precision>,<percentage>,<avg>,<max>,<min>,<units>
Refer to Chapter 1 for UUT Measurement Meter Return Data.

Query Response: :METERs:OCB:CH1:STATus?
5, 0, 3, 0.000, 0.000, 0.000, 0.000, 2

CHN = 1 or 2 (Channel 1 or 2). Channel 2 is option enabled.
Command only valid when Occupied Bandwidth Meter Option is installed in Test Set.

NOTE

4.17.6 Occupied Bandwidth - Peak Measurement Reset

:METERs:OCB:CHn:CLEAR:PEAK

Description: Command clears and resets Peak Occupied Bandwidth measurement.
Parameter/Query: none

CHn = 1 or 2 (Channel 1 or 2). Channel 2 is option enabled.
Command only valid when Occupied Bandwidth Meter Option is installed in Test Set.

NOTE
4.17.7 Occupied Bandwidth - Percent

**:METERS:OCB:CHn:PERcent**
**:METERS:OCB:CHn:PERcent?**

**Description:** Set command defines Tx Occupied Bandwidth percentage value.
Query command returns parameter setting.

**Range:** 0.0 to 99.5%
**Units:** % (percent)

**Default Value:** 99.0%

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

**Example:**
**:METERS:OCB:CH1:PERcent 95%**
Sets Channel 1 Occupied Bandwidth percent to 95.0%.

**Query Response:**
**:METERS:OCB:CH1:PERcent? 95.00**

**NOTE**
CHn = 1 or 2 (Channel 1 or 2). Channel 2 is option enabled.
Command only valid when Occupied Bandwidth Meter Option is installed in Test Set.

4.17.8 Occupied Bandwidth - Upper Limit Enable

**:LIMits:OCB:CHn:UPPer:ENABle**
**:LIMits:OCB:CHn:UPPer:ENABle?**

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

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

**Default Value:** OFF

**Set/Query Format:** Boolean

**Example:**
**:LIMits:OCB:CH1:UPPer:ENABle ON**
Enables Upper Limit for Channel 1 Occupied Bandwidth measurement.

**Query Response:**
**:LIMits:OCB:CH1:UPPer:ENABle? 1**

**NOTE**
CHn = 1 or 2 (Channel 1 or 2). Channel 2 is option enabled.
Command only valid when Occupied Bandwidth Meter Option is installed in Test Set.
4.17.9 Occupied Bandwidth - Upper Limit Value

:LI\text{M}its:OCB:CHn:UPPer:VALue

:LI\text{M}its:OCB:CHn:UPPer:VALue?

<table>
<thead>
<tr>
<th>Description</th>
<th>Set command defines the Upper Limit Value for Occupied Bandwidth measurement. Query command returns the Upper Limit Value defined for Occupied Bandwidth measurement.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Range</td>
<td>0.0 to 30000.0 Hz</td>
</tr>
<tr>
<td>Units</td>
<td>Hz</td>
</tr>
<tr>
<td>Default Value</td>
<td>0.0 Hz</td>
</tr>
<tr>
<td>Set/Query Format</td>
<td>NRF</td>
</tr>
</tbody>
</table>

**Example:**

`:LI\text{M}its:OCB:CH1:UPPer:VALue 1000Hz`  
Sets Upper Limit Value for Channel 1 Occupied Bandwidth measurements to 1000.0 Hz.

**Query Response:**

`:LI\text{M}its:OCB:CH1:UPPer:VALue?`  
1000

**NOTE**

CHn = 1 or 2 (Channel 1 or 2). Channel 2 is option enabled. Command only valid when Occupied Bandwidth Meter Option is installed in Test Set.
4.18 SIGNAL POWER MEASUREMENTS

4.18.1 Signal Power - Averages

**:METERS:POWer:CHn:AVEraging**

**Set command** defines number of readings taken to calculate Average Signal Power measurement. Query command returns parameter setting.

**Description**:

- **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 Channel 1 Average Signal Power measurement to 100.

**Query Response**:

```
:METERS:POWer:CH1:AVEraging?
100
```

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

**NOTE**

```

4.18.2 Signal Power - Average Measurement Reset

**:METERS:POWer:CHn:CLEAR:AVG**

**Set/Query Format**: Command clears and resets Average Power measurement.

**Parameter/Query**: None

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

**NOTE**

```

4.18.3 Signal Power - Lower Limit Enable

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

**Description**:

- **Parameter**: OFF | ON | 0 | 1
- **Default Value**: OFF
- **Set/Query Format**: Boolean

**Example**:

```
:LIMits:POWer:CH1:LOWer:ENABle ON
```

Enables Lower Limit for Channel 1 Signal Power measurement.

**Query Response**:

```
:LIMits:POWer:CH1:LOWer:ENABle?
1
```

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

**NOTE**
4.18.4 Signal Power - Lower Limit Value

**:LIMits:POWer:CHn:LOWer:VALue**
**:LIMits:POWer:CHn:LOWer:VALue?**

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

<table>
<thead>
<tr>
<th>Range</th>
<th>-140.0 to +70.0 dBm</th>
</tr>
</thead>
<tbody>
<tr>
<td>Units:</td>
<td>W</td>
</tr>
<tr>
<td>Default Units:</td>
<td>dBm</td>
</tr>
<tr>
<td>Default Value:</td>
<td>0.0 dBm</td>
</tr>
</tbody>
</table>

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

**Example:**

```plaintext
:LIMits:POWer:CH1:LOWer:VALue -80dBm
```
Sets Lower Limit Value for Channel 1 Signal Power measurement to -80.0 dBm.

**Query Response:**

```plaintext
:LIMits:POWer:CH1:LOWer:VALue?
-80.00
```

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

---

4.18.5 Signal Power - Measurement Query

**:METERs:POWer:CHn:STATus?**

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

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

**NOTE**

```
:METEr:s:POWer:CH1:STATus?
0,0,3 100.00, -30.183, -30.140, -30.241,6
```

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

---

4.18.6 Signal Power - Measurement Type

**:METERs:POWer:TYPE**

**:METERs:POWer:TYPE?**

**Description:** Set command defines Signal Power measurement type. Query command returns parameter setting.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>AVER</th>
<th>MAX</th>
<th>MIN</th>
</tr>
</thead>
<tbody>
<tr>
<td>Default Value</td>
<td>PEAK</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Set/Query Format:** CPD

**Example:**

```plaintext
:METERs:POWer:TYPE AVER
```
Sets Signal Power measurement to Average.

**Query Response:**

```plaintext
:METERs:POWer:TYPE?
AVER
```
4.18.7  Signal Power - Peak Measurement Reset

:METERs:POWer:CHn:CLEAR:PEAK

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

**Parameter/Query:** none

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

NOTE

4.18.8  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

**Example:** :METERs:POWer:UNIts W
Displays Signal Power measurement in Watts.

**Query Response:** :METERs:POWer:UNIts? W

4.18.9  Signal Power - Upper Limit Enable

:LIMits:POWer:CHn:UPPer:ENABle

:LIMits:POWer:CHn: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 Channel 1 Signal Power measurement.

**Query Response:** :LIMits:POWer:CH1:UPPer:ENABle? 1

CHn = 1 or 2 (Channel 1 or 2). Channel 2 is option enabled.
4.18.10  Signal Power - Upper Limit Value

:LIMits:POWer:CHn:UPPer:VALue
:LIMits:POWer:CHn:UPPer: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:** W | dBW | dBm | V | dBμV

**Default Units:** dBm

**Default Value:** 0.0 dBm

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

**Example:** :LIMits:POWer:CH1:UPPer:VALue -80dBm
Sets Upper Limit Value for Channel 1 Signal Power measurement to -80.0 dBm.

**Query Response:** :LIMits:POWer:CH1:UPPer:VALue?
-80.00

**NOTE**
CHn = 1 or 2 (Channel 1 or 2). Channel 2 is option enabled.
4.19 SLOT POWER MEASUREMENTS

4.19.1 Slot Power - Averages

:METERS:POWer:CHn:SLOTn:AVERaging
:METERS:POWer:CHn:SLOTn:AVERaging?

Description: Set command defines number of readings taken to calculate Average Slot Power measurement. Query command returns parameter setting.

Range: 1 to 250
Default Value: 1
Set/Query Format: NR1

Example: :METERS:POWer:CH1:SLOT1:AVERaging 100
Sets the number of readings taken to calculate Average Channel 1, Slot 1 Power measurement to 100.

100

CHn = 1 or 2 (Channel 1 or 2).
SLOTn = 0 or 1 (Slot 0 or 1).
Command only valid when Motorola ASTRO® 25 X2-TDMA® option is installed in Test Set.

4.19.2 Slot Power - Average Measurement Reset

:METERS:POWer:CHn:SLOTn:CLEAR:AVG

Description: Command clears and resets Average Power measurement.

Parameter/Query: none

NOTE

CHn = 1 or 2 (Channel 1 or 2).
SLOTn = 0 or 1 (Slot 0 or 1).
Command only valid when Motorola ASTRO® 25 X2-TDMA® option is installed in Test Set.

4.19.3 Slot Power - Lower Limit Enable

:LIMits:POWer:CHn:SLOTn:LOWer:ENABLE
:LIMits:POWer:CHn:SLOTn:LOWer:ENABLE?

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

Parameter: OFF | ON | 0 | 1
Default Value: OFF
Set/Query Format: Boolean

Example: :LIMits:POWer:CH1:SLOT1:ENABLE ON
Enables Lower Limit for Slot Power measurement.

1

CHn = 1 or 2 (Channel 1 or 2).
SLOTn = 0 or 1 (Slot 0 or 1).
Command only valid when Motorola ASTRO® 25 X2-TDMA® option is installed in Test Set.
4.19.4 Slot Power - Lower Limit Value

:LIMits:POWer:CHn:SLOTn:LOWer:VALue
:LIMits:POWer:CHn:SLOTn:LOWer:VALue?

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

Range: -140.0 to +70.0 dBm
Units: W | dBW | dBm | V | dBμV
Default Units: dBm
Default Value: 0.0 dBm
Set/Query Format: NRF | NR2 (dBm)
Example: :LIMits:POWer:CH1:SLOT1:LOWer:VALue -80dBm
Sets Lower Limit Value for Channel 1, Slot 1 Power measurements to -80.0 dBm.
Query Response: :LIMits:POWer:CH1:SLOT1:LOWer:VALue?
-80.00

NOTE
CHn = 1 or 2 (Channel 1 or 2).
SLOTn = 0 or 1 (Slot 0 or 1).
Command only valid when Motorola ASTRO® 25 X2-TDMA® option is installed in Test Set.

4.19.5 Slot Power - Measurement Query

:METERs:POWer:CHn:SLOTn:STATus?

Description: Command returns Slot Power measurement data. Refer to Chapter 1 for UUT Measurement Meter Return Data.

Query Response: :METERs:POWer:CH1:SLOT1:STATus?
0,0,3 100.00, -30.183, -30.140, -30.241,6

NOTE
CHn = 1 or 2 (Channel 1 or 2).
SLOTn = 0 or 1 (Slot 0 or 1).
Command only valid when Motorola ASTRO® 25 X2-TDMA® option is installed in Test Set.

4.19.6 Slot Power - Peak Measurement Reset

:METERs:POWer:CHn:SLOTn:CLEAR:PEAK

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

NOTE
CHn = 1 or 2 (Channel 1 or 2).
SLOTn = 0 or 1 (Slot 0 or 1).
Command only valid when Motorola ASTRO® 25 X2-TDMA® option is installed in Test Set.
4.19.7   Slot Power - Upper Limit Enable

:LI_Mits:POW_er:CHn:SLOTn:UPPer:ENABle
:LI_Mits:POW_er:CHn:SLOTn:UPPer:ENABle?

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

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

**Default Value:** OFF

**Set/Query Format:** Boolean

**Example:**
:LI_Mits:POW_er:CH1:SLOT1:ENABle ON
Enables Upper Limit for Channel 1, Slot 1 Power measurement.

**Query Response:**
:LI_Mits:POW_er:CH1:SLOT1:UPPer:ENABle?
1

**NOTE**

CHn = 1 or 2 (Channel 1 or 2).
SLOTn = 0 or 1 (Slot 0 or 1).
Command only valid when Motorola ASTRO® 25 X2-TDMA® option is installed in Test Set.

4.19.8   Slot Power - Upper Limit Value

:LI_Mits:POW_er:CHn:SLOTn:UPPer:VALue
:LI_Mits:POW_er:CHn:SLOTn:UPPer:VALue?

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

**Range:**
-140.0 to +70.0 dBm

**Units:** W | dBW | dBm | V | dBμV

**Default Units:** dBm

**Default Value:** 0.0 dBm

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

**Example:**
:LI_Mits:POW_er:CH1:SLOT1:UPPer:VALue -80dBm
Sets Upper Limit Value for Channel 1, Slot 1 Power measurements to -80.0 dBm.

**Query Response:**
:LI_Mits:POW_er:CH1:SLOT1:UPPer:VALue?
-80.00

**NOTE**

CHn = 1 or 2 (Channel 1 or 2).
SLOTn = 0 or 1 (Slot 0 or 1).
Command only valid when Motorola ASTRO® 25 X2-TDMA® option is installed in Test Set.
4.20 SLOT POWER RATIO MEASUREMENTS

4.20.1 Slot Power Ratio - Lower Limit Enable

:LI*MIt*POWer:CHn:RATio:LOWer:ENABle
:LI*MIt*POWer:CHn:RATio:LOWer:ENABle?

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

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

**Default Value:** OFF

**Set/Query Format:** Boolean

**Example:** :LI*MIt*POWer:CH1:RATio:LOWer:ENABle ON
Enables Lower Limit for Channel 1 Slot Power Ratio measurement.

**Query Response:**

:LI*MIt*POWer:CH1:RATio:LOWer:ENABle?
1

CHn = 1 or 2 (Channel 1 or 2).

**NOTE**

4.20.2 Slot Power Ratio - Lower Limit Value

:LI*MIt*POWer:CHn:RATio:LOWer:VALue
:LI*MIt*POWer:CHn:RATio:LOWer:VALue?

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

**Default Value:** 0.0 dBr

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

**Example:** :LI*MIt*POWer:CH1:RATio:LOWer:VALue -90
Sets Lower Limit Value for Channel 1 Slot 1 Power measurement to -90.0.

**Query Response:**

:LI*MIt*POWer:CH1:RATio:LOWer:VALue?
-90.00

CHn = 1 or 2 (Channel 1 or 2).

**NOTE**

Units are defined using :METERs:POWer:RATio:UNIts command.

4.20.3 Slot Power Ratio - Measurement Query

:METERs:POWer:CHn:RATio:STATus?

**Description:** Command returns Slot Power Ratio measurement data.

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

Refer to Chapter 1 for UUT Measurement Meter Return Data.

**NOTE**

**status messages:**

signal not acquired

timed out waiting for TraceMutex

timed out waiting for data

**Query Response:**

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

CHn = 1 or 2 (Channel 1 or 2).
4.20.4 Slot Power Ratio - Units

:METERS:POWer:RATio:UNIts
:METERS:POWer:RATio:UNIts?

Description: Set command defines the unit of measurement for Slot Power Ratio measurement. Query command returns parameter setting.

Parameter: W | dBr

Default Value: dBr

Set/Query Format: CPD | CRD

Example: :METERS:POWer:RATio:UNIts W
Displays Signal Power measurement in Watts.


This command defines the unit of measurement for Slot Power Ratio Meter and the Upper and Lower Limit values for Channel 1 and Channel 2 measurements.

NOTE

4.20.5 Slot Power Ratio - Upper Limit Enable

:LIMits:POWer:CHn:RATio:UPPer:ENABle
:LIMits:POWer:CHn:RATio:UPPer:ENABle?

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

Parameter: OFF | ON | 0 | 1

Default Value: OFF

Set/Query Format: Boolean

Example: :LIMits:POWer:CH1:RATio:UPPer:ENABle ON
Enables Upper Limit for Channel 1 Slot Power Ratio measurement.


CHn = 1 or 2 (Channel 1 or 2).

NOTE

4.20.6 Slot Power Ratio - Upper Limit Value

:LIMits:POWer:CHn:RATio:UPPer:VALue
:LIMits:POWer:CHn:RATio:UPPer:VALue?

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

Default Value: 0.0 dBr

Set/Query Format: NRf | NR2

Example: :LIMits:POWer:CH1:RATio:UPPer:VALue -80
Sets Upper Limit Value for Channel 1 Slot Power Ratio measurements to -80.0.


CHn = 1 or 2 (Channel 1 or 2).
Units are defined using :METERS:POWer:RATio:UNIts command.
4.21 SYMBOL CLOCK ERROR MEASUREMENTS

4.21.1 Symbol Clock Error - Averages Value

:MEtEr:sSCE:CHn:AVERaging
:MEtEr:sSCE:CHn:AVERaging?

Description: Set command defines 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:
:MEtEr:sSCE:CH1:AVERaging 100
Sets the number of readings taken to calculate Channel 1 Symbol Clock Error measurements to 100.

Query Response:
:MEtEr:sSCE:CH1:AVERaging?
100
CHn = 1 or 2 (Channel 1 or 2). Channel 2 is option enabled.

NOTE

4.21.2 Symbol Clock Error - Average Measurement Reset

:MEtEr:sSCE:CHn:CLEAR:AVG

Parameter/Query: none

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

NOTE

4.21.3 Symbol Clock Error - Lower Limit Enable

:LIMits:SCE:CHn:LOWer:ENABle
:LIMits:SCE:CHn: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 Channel 1 Symbol Clock Error measurement.

Query Response:
:LIMits:SCE:CH1:LOWer:ENABle?
1
CHn = 1 or 2 (Channel 1 or 2). Channel 2 is option enabled.

NOTE
4.21.4 Symbol Clock Error - Lower Limit Value

:LI\text{M}i\text{t}s:SCE:CHn:LOWer:VALue
:LI\text{M}i\text{t}s:SCE:CHn: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:** NR1 | NR2

**Example:**
:LIMi\text{t}s:SCE:CH\text{n}:LOWer:VALue 50mHz
Sets Lower Limit Value for Channel 1 Symbol Clock Error measurement to 50.0 mHz.

**Query Response:**
:LIMi\text{t}s:SCE:CH\text{n}:LOWer:VALue?
50.00

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

---

4.21.5 Symbol Clock Error - Measurement Query

:METERS:SCE:CHn:STATus?

**Description:** Command returns Symbol Clock Error measurement data. Refer to Chapter 1 for UUT Measurement Meter Return Data.

**Query Response:**
:METERS:SCE:CH\text{n}:STATus?
0,0,3 100.00, -2.487, -0.346, -6.642,18

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

---

4.21.6 Symbol Clock Error - Peak Measurement Reset

:METERS:SCE:CHn:CLEAR:PEAK

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

**Parameter/Query:** none

CHn = 1 or 2 (Channel 1 or 2). Channel 2 is option enabled.
4.21.7 Symbol Clock Error - Units

```plaintext
:METERS:SCE:UNIts
:METERS:SCE:UNIts?
```

**Description:** Set command defines the unit of measurement for Symbol Clock Error measurement. Query command returns parameter setting.

**Parameter:** Hz | PPM

**Default Value:** Hz

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

**Example:** :METERS:SCE:UNIts PPM
Displays Symbol Clock Error measurement in PPM.

**Query Response:** :METERS:SCE:UNIts?
PPM

---

4.21.8 Symbol Clock Error - Upper Limit Enable

```plaintext
:LIMits:SCE:CHn:UPPer:ENABle
:LIMits:SCE:CHn: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 Channel 1 Symbol Clock Error measurement.

**Query Response:** :LIMits:SCE:CH1:UPPer:ENABle?
1

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

---

4.21.9 Symbol Clock Error - Upper Limit Value

```plaintext
:LIMits:SCE:CHn:UPPer:VALue
:LIMits:SCE:CHn: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 100mHz
Sets Upper Limit Value for Channel 1 Symbol Clock Error measurement to 100.0 mHz.

**Query Response:** :LIMits:SCE:CH1:UPPer:VALue?
100.00

CHn = 1 or 2 (Channel 1 or 2). Channel 2 is option enabled.
4.22 SYMBOL DEVIATION MEASUREMENTS

4.22.1 Symbol Deviation - Averages

:MET ER s:SYMDev:CHn:AVERaging
:MET ER s:SYMDev:CHn:AVERaging?

Description: Set command defines number of readings taken for calculating Average Symbol Deviation measurement. Query command returns parameter setting.

Range: 1 to 250
Default Value: 1
Set/Query Format: NR1

Example: :MET ERs:SYMDev:CH1:AVERaging 100
Sets the number of readings taken to calculate Channel 1 Symbol Deviation measurements to 100.


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

4.22.2 Symbol Deviation - Average Measurement Reset

:MET ERs:SYMDev:CHn:CLEAR:AVG

Description: Command clears and resets Average Symbol Deviation measurement.

Parameter/Query: none

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

4.22.3 Symbol Deviation - Lower Limit Enable

:LIMits:SYMdev:CHn:LOWer:ENABle
:LIMits:SYMdev:CHn: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 Channel 1 Symbol Deviation measurement.


CHn = 1 or 2 (Channel 1 or 2). Channel 2 is option enabled.
4.22.4 Symbol Deviation - Lower Limit Value

:LIMits:SYMdev:CHn:LOWer:VALue
:LIMits:SYMdev:CHn: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 Channel 1 Symbol Deviation measurements to 250.0 Hz.

**Query Response:** :LIMits:SYMdev:CH1:LOWer:VALue?
250.00

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

4.22.5 Symbol Deviation - Measurement Query

:METERs:SYMDev:CHn:STATus?

**Description:** Command returns Symbol Deviation measurement data.

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

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

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

4.22.6 Symbol Deviation - Peak Measurement Reset

:METERs:SYMDev:CHn:CLEAR:PEAK

**Description:** Command clears and resets Peak Symbol Deviation measurement.

**Parameter/Query:** none

**NOTE**

CHn = 1 or 2 (Channel 1 or 2). Channel 2 is option enabled.
4.22.7  Symbol Deviation - Upper Limit Enable

:LIMits:SYMdev:CHn:UPPer:ENABle
:LIMits:SYMdev:CHn: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 Channel 1 Symbol Deviation measurement.

**Query Response:** :LIMits:SYMdev:CH1:UPPer:ENABle?
1

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

4.22.8  Symbol Deviation - Upper Limit Value

:LIMits:SYMdev:CHn:UPPer:VALue
:LIMits:SYMdev:CHn: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 Channel 1 Symbol Deviation measurements to 500.0 Hz.

**Query Response:** :LIMits:SYMdev:CH1:UPPer:VALue?
500.00

CHn = 1 or 2 (Channel 1 or 2). Channel 2 is option enabled.
Chapter 5 - Audio/Demod Signal
Rx Meter Remote Commands

5.1 INTRODUCTION
This chapter describes the Remote Commands for configuring and obtaining
Audio/Demod signal measurement data. Remote commands are listed alphabetically
under meter names.

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**

**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
- PSOPh = Psoph (CMESS or CCITT)
- LP1 = 300.0 Hz LP
- LP2 = 5.0 kHz LP
- LP3 = 20.0 kHz LP
- LP4 = 15.0 kHz LP
- LP5 = 3.0 kHz LP
- LP6 = 625.0 kHz LP*
- LP7 = 10.0 kHz LP*
- LP8 = 100.0 Hz LP*
- HP1 = 300.0 Hz HP
- HP2 = 20.0 Hz HP
- HP3 = 50.0 Hz HP
- BP0 = 0.3 to 3.0 kHz BP
- BP1 = 0.3 to 3.4 kHz BP
- BP2 = 0.3 to 5.0 kHz BP
- BP3 = 0.3 to 20.0 kHz BP
- BP4 = 0.3 to 15.0 kHz BP
- BP5 = 20.0 to 300.0 Hz BP
- BP6 = 0.02 to 3.0 kHz BP
- BP7 = 0.02 to 3.4 kHz BP
- BP8 = 0.02 to 5.0 kHz BP
- BP9 = 0.02 to 15.0 kHz BP
- BP10 = 0.02 to 20.0 kHz BP
- BP11 = 0.05 to 300.0 Hz BP
- BP12 = 0.05 to 3.0 kHz BP
- BP13 = 0.05 to 3.4 kHz BP
- BP14 = 0.05 to 5.0 kHz BP
- BP15 = 0.05 to 15.0 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

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 cannot 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

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.

1

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: 300.0 Hz LP
- LP2: 5.0 kHz LP
- LP3: 20.0 kHz LP
- LP4: 15.0 kHz LP
- LP5: 3.0 kHz LP
- LP6: 625.0 kHz LP
- LP7: 10.0 kHz LP
- LP8: 100.0 Hz LP
- HP1: 300.0 Hz HP
- HP2: 20.0 Hz HP
- HP3: 50.0 Hz HP
- BP0: 0.3 to 3.0 kHz BP
- BP1: 0.3 to 3.4 kHz BP
- BP2: 0.3 to 5.0 kHz BP
- BP3: 0.3 to 20.0 kHz BP
- BP4: 0.3 to 15.0 kHz BP
- BP5: 20 to 300.0 Hz BP
- BP6: 0.02 to 3.0 kHz BP
- BP7: 0.02 to 3.4 kHz BP
- BP8: 0.02 to 5.0 kHz BP
- BP9: 0.02 to 15.0 kHz BP
- BP10: 0.02 to 20.0 kHz BP
- BP11: 0.05 to 300.0 Hz BP
- BP12: 0.05 to 3.0 kHz BP
- BP13: 0.05 to 3.4 kHz BP
- BP14: 0.05 to 5.0 kHz BP
- BP15: 0.05 to 15.0 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

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

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 - Measurement Query

:FETCh:AF:ANALyzer:DISTortion?

Description: Command returns AF Analyzer Distortion measurement data.
Query Data: <statusbyte>,<failbyte>,<avgcount>,<avg%>,<wc%>
Refer to Chapter 1 for UUT Measurement Meter Return Data.

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

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

5.4.4 AF Distortion - Peak Measurement Reset

:AF:ANALyzer:DISTortion:CLEAR:PEAK

Description: Command clears and resets Peak AF Distortion measurement.
Parameter/Query: none
5.4.5 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?

5.4.6 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?

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?
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

:LIM:AF:FREQ:LOW:VAL
:LIM:AF:FREQ:LOW:VAL?

  **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:**  :LIM:AF:FREQ:LOW:VAL 1Hz
  Sets Lower Limit Value for AF Frequency measurement to 1.0 Hz.

  **Query Response:**  :LIM:AF:FREQ:LOW:VAL?
  1.0

5.5.5  AF Frequency - Measurement Query

:FETC:AF:ANAL:FREQ?

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

  Refer to Chapter 1 for UUT Measurement Meter Return Data.

  **Query Response:**  :FETC:AF:ANAL:FREQ?
  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:ANAL:FREQ:CLE:PEAK

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

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`

**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 - Peak Measurement Reset

`:AF:ANALyzer:HN:CLEAR:PEAK`

**Description:** Command clears and resets Peak AF Hum & Noise measurement.

**Parameter/Query:** none

5.6.6 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.

5.6.7 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
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

:**L**IMITs:**AF:**HN:**U**PPer:**V**ALue

**:L**IMITs:**AF:**HN:**U**PPer:**V**ALue?**

**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\n**: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\nSets Lower Limit Value for AF Level measurement to 2 Volts.**

**Query Response:**

**:LIMits:AF:LEVel:LOWer:VALue? mV\n2000.0\nIf 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>

Refer to Chapter 1 for UUT Measurement Meter Return Data.

**NOTE**

**Units:** V (Unbalanced)

dBm (Balanced)

**Query Response:**

**:FETCh:AF:ANALyzer:LEVel?\n0,0,1,3.11\nProtocol 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 - 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

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

5.7.8 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 | dB | 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

**:LIMIt:AF:SINad:LOWer:VALue**
**:LIMIt: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)>

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

**:LIMIt:AF:SINad:UPPer:ENABle**
**:LIMIt: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 - Peak Measurement Reset

:AF:ANALyzer:SNR:CLEAR:PEAK

Description:  Command clears and resets Peak AF Signal to Noise Ratio measurement.

Parameter/Query:  none
5.9.7 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)>`

Refer to Chapter 1 for UUT Measurement Meter Return Data.

**Query Response:**

```
0,0,25,-1.99
```

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)

5.9.8 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:**

```
1
```

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:**

```
50
```

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 MEASUREMENTS

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: NR1 | 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>

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>

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.
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.

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.

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 - 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

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

5.11.8 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.

1

5.11.9 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

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

Example: :METERS:POWer:CH1:INBand:AVERaging 100
Sets the number of readings taken to calculate Channel 1 Inband Power measurements to 100.

100

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

NOTE

5.12.2 Inband Power - Average Measurement Reset

:METERS:POWer:CHn:INBand:CLEAR:AVG

Parameter/Query: none

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

NOTE

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

Example: :LIMits:POWer:CH1:INBand:LOWer:ENABLE ON
Enables Lower Limit for Channel 1 Inband Power measurement.

1

CHn = 1 or 2 (Channel 1 or 2). Channel 2 is option enabled.
5.12.4 Inband Power - Lower Limit Value

:LIM:POWer:CHn:INBand:LOWer:VALue
:LIM: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: :LIM:POWer:CH1:INBand:LOWer:VALue -45dBm
Sets Lower Limit for Channel 1 Inband measurements to -45.0 dBm.

0.0

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

NOTE

5.12.5 Inband Power - Peak Measurement Reset

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

Description: Command clears and resets Peak Inband Power measurement.

Parameter/Query: none

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

NOTE

5.12.6 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>
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

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

NOTE
5.12.7 Inband Power - Units

:METrERs:POWer:INBand:UNIts
:METrERs: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: :METrERs:POWer:INBand:UNIts W
Displays Inband Power measurements in Watts.

Query Response: :METrERs: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

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

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

NOTE

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?
-25 dBm

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

NOTE
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.

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%.

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

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.
5.13.8  Modulation Distortion - Upper Limit 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
        Sets Upper Limit Value for Modulation Distortion measurements to 1.0%.
                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.

1

Subject to Export Control, see Cover Page for details.
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 Distortion - Measurement Query

:FETCh:MOD:ANALyzer:DISTortion?

**Description:** Command returns Modulation Distortion measurement data.

**Query Data:** <statusbyte>,<failbyte>,<avgvount>,<avg%>,<wc%>

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.

5.14.6 Modulation Distortion - Peak Measurement Reset

:MOD:ANALyzer:DISTortion:CLEAR:PEAK

**Description:** Command clears and resets Peak Modulation Distortion 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

:LINits:MOD:FREQuency:UPPer:ENABle
:LINits: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: :LINits:MOD:FREQuency:UPPer:ENABle ON
Enables Upper Limit for Modulation Frequency measurement.
Query Response: :LINits:MOD:FREQuency:UPPer:ENABle?
1

5.14.9 Modulation Frequency - Upper Limit Value

:LINits:MOD:FREQuency:UPPer:VALue
:LINits: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: :LINits:MOD:FREQuency:UPPer:VALue 2.0Hz
Sets Upper Limit Value for Modulation Frequency measurement to 2.0 Hz.
Query Response: :LINits: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 Mod Hum & Noise - Average Measurement Reset

:MOD:ANALyzer:HN:CLEAR:AVG

Description: Command clears and resets Average Mod Hum & Noise measurement.

Parameter/Query: none

5.15.3 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.

1
5.15.4  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

5.15.5  Mod Hum & Noise - Peak Measurement Reset

**:MOD:ANALyzer:HN:CLEAR:PEAK**

*Description:* Command clears and resets Peak Mod Hum & Noise measurement.

*Parameter/Query:* none

5.15.6  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)>

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 - 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).
5.15.8 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
```

5.15.9 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
```

5.15.10 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)>

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.

1
5.17.4  Mod SNR - Lower Limit Value

:LI*Mits:MOD:SNR:LOWer:VALue
:LI*Mits: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: NRI | NR2

Sets Lower Limit for Mod SNR measurement to 50.0 dBr.

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 - Peak Measurement Reset

:MOD:ANALyzer:SNR:CLEAR:PEAK

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

5.17.7  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)
5.17.8  Mod SNR - Upper Limit Enable

:LI\{nits\}:MOD:SNR:UP\{er\}:EN\{able\}
:LI\{nits\}:MOD:SNR:UP\{er\}:EN\{able\}?

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: :LI\{nits\}:MOD:SNR:UP\{er\}:EN\{able\} ON
Enables Upper Limit for Mod SNR measurement.

Query Response: :LI\{nits\}:MOD:SNR:UP\{er\}:EN\{able\}?
1

5.17.9  Mod SNR - Upper Limit Value

:LI\{nits\}:MOD:SNR:UP\{er\}:VAL\{ue\}
:LI\{nits\}:MOD:SNR:UP\{er\}:VAL\{ue\}?

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: :LI\{nits\}:MOD:SNR:UP\{er\}:VAL\{ue\} 50dBr
Sets Upper Limit Value for Mod SNR measurement to 50.0 dBr.

Query Response: :LI\{nits\}:MOD:SNR:UP\{er\}:VAL\{ue\}?
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.
  - :CONFigure:RF:ANALyzer:RFERRor:AVERage?
    - 75

- **Query Response:**

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.
  - :CONFigure:RF:ANALyzer:RFERRor:FRESolution?
    - 10

  - **Query Response:**

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)

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)>

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
5.19 SUB-AUDIBLE DEVIATION MEASUREMENTS

5.19.1 Sub Audible Deviation - Averages

**:METERS:SAUDDEV:CHn:AVERaging**

Description: Set command defines number of readings used to calculate Average Sub Audible Deviation measurement. Query command returns parameter setting.

Range: 1 to 250

Default Value: 1

Set/Query Format: NR1

Example:  

**:METERS:SAUDDEV:CH1:AVERaging 100**  
Sets the number of readings taken to calculate Channel 1 Average Sub Audible Deviation measurement to 100.

Query Response:  

**:METERS:SAUDDEV:CH1:AVERaging?**  
100

CHn = 1 or 2 (Channel 1 or 2). Command only valid when SmartNet/SmartZone option is installed in Test Set.

5.19.2 Sub Audible Deviation - Average Measurement Reset

**:METERS:SAUDDEV:CHn:CLEAR:AVG**

Parameter/Query: none

CHn = 1 or 2 (Channel 1 or 2). Command only valid when SmartNet/SmartZone option is installed in Test Set.

5.19.3 Sub Audible Deviation - Lower Limit Enable

**:LIMits:SAUDDev:CHn:LOWer:ENABle**

Description: Set command Enables/Disables Lower Limit for Sub Audible Deviation measurement. Query command returns parameter setting.

Parameter: OFF | ON | 0 | 1

Default Value: OFF

Set/Query Format: Boolean

Example:  

**:LIMits:SAUDDev:CH1:LOWer:ENABle ON**  
Enables Lower Limit for Channel 1 Sub Audible Deviation measurement.

Query Response:  

**:LIMits:SAUDDev:CH1:LOWer:ENABle?**  
1

CHn = 1 or 2 (Channel 1 or 2). Command only valid when SmartNet/SmartZone option is installed in Test Set.
5.19.4 Sub Audible Deviation - Lower Limit Value

:LIMITs:SAUDDEV:CHn:LOWer:VALue
:LIMITs:SAUDDEV:CHn:LOWer:VALue?

**Description:** Set command defines Lower Limit Value for Sub Audible Deviation measurement. Query command returns parameter setting.

**Range:** 0.0 to 100.0 kHz

**Units:** kHz

**Default Value:** 0.0 kHz

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

**Example:** :LIMITs:SAUDDEV:CH1:LOWer:VALue 50kHz
Sets Lower Limit Value for Channel 1 Sub Audible Deviation measurement to 50.0 kHz.

**Query Response:** :LIMITs:SAUDDEV:CH1:LOWer:VALue?
50.00

CHn = 1 or 2 (Channel 1 or 2).

Command only valid when SmartNet/SmartZone option is installed in Test Set.

**NOTE**

5.19.5 Sub Audible Deviation - Measurement Query

:METERS:SAUDDEV:CHn:STATus?

**Description:** Command returns Sub Audible Deviation measurement data.

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

Refer to Chapter 1 for UUT Measurement Meter Return Data.

**Query Response:** :METERS:SAUDDEV:CH1:STATus?
0,0,3 100.00, 0.054, 10.00, 0.000,3

CHn = 1 or 2 (Channel 1 or 2).

Command only valid when SmartNet/SmartZone option is installed in Test Set.

**NOTE**

5.19.6 Sub Audible Deviation - Peak Measurement Reset

:METERS:SAUDDEV:CHn:CLEAR:PEAK

**Description:** Command clears and resets Peak Sub Audible Deviation measurement.

**Parameter/Query:** none

CHn = 1 or 2 (Channel 1 or 2).

Command only valid when SmartNet/SmartZone option is installed in Test Set.

**NOTE**
5.19.7 Sub Audible Deviation - Upper Limit Enable

**:LIMits:SAUDDEV:CHn:UPPer:ENABle**

**:LIMits:SAUDDEV:CHn:UPPer:ENABle?**

**Description:** Set command Enables/Disables Upper Limit for Sub Audible Deviation measurement.
Query command returns parameter setting.

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

**Default Value:** OFF

**Set/Query Format:** Boolean

**Example:**

**:LIMits:SAUDDEV:CH1:UPPer:ENABle ON**

Enables Upper Limit for Channel 1 Sub Audible Deviation measurement.

**Query Response:**

**:LIMits:SAUDDEV:CH1:UPPer:ENABle?**

1

CHn = 1 or 2 (Channel 1 or 2).

Command only valid when SmartNet/SmartZone option is installed in Test Set.

---

**NOTE**

5.19.8 Sub Audible Deviation - Upper Limit Value

**:LIMits:SAUDDEV:CHn:UPPer:VALue**

**:LIMits:SAUDDEV:CHn:UPPer:VALue?**

**Description:** Set command defines Upper Limit Value for Sub Audible Deviation measurement.
Query command returns parameter setting.

**Range:** 0.0 to 100.0 kHz

**Units:** kHz

**Default Value:** 0.0 kHz

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

**Example:**

**:LIMits:SAUDDEV:CH1:UPPer:VALue 75kHz**

Sets Upper Limit Value for Channel 1 Sub Audible Deviation measurement to 75.0 Hz.

**Query Response:**

**:LIMits:SAUDDEV:CH1:UPPer:VALue?**

75.00

CHn = 1 or 2 (Channel 1 or 2).

Command only valid when SmartNet/SmartZone option is installed in Test Set.

---

**NOTE**
Chapter 6 - Modulation Accuracy and Power
Remote Commands

6.1 INTRODUCTION

This chapter describes the Remote Commands for configuring and returning P25 Modulation Accuracy graph data. Remote commands are listed alphabetically under Tile names.

6.2 FREQUENCY CONSTELLATION GRAPH

6.2.1 Frequency Constellation - Persistence

:FREQuency:CONStellation:PERSistance
:FREQuency:CONStellation:PERSistance?

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

Range: 1 to 10
Default Value: 1
Set/Query Format: NR1

Example: :FREQuency:CONStellation:PERSistance 5
Sets Frequency Constellation graph Persistence to 5.

Query Response: :FREQuency:CONStellation:PERSistance?
5

Frequency Constellation on valid when LSM Option is installed in Test Set.

NOTE

6.2.2 Frequency Constellation - Trace Enable

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

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

Parameter: OFF | ON | 0 | 1
Default Value: OFF
Set/Query Format: Boolean

Example: :FREQuency:CONStellation:TRACe:ENABle ON
Enables Constellation and Frequency Constellation trace.

Query Response: :FREQuency:CONStellation:TRACe:ENABle?
1

Frequency Constellation on valid when LSM Option is installed in Test Set.

NOTE
6.2.3 Frequency Constellation - Trace Query

:FREQuency:CONStellation:TRACe:LIVE?

**Description:** Command returns coordinate data for Constellation and Frequency Constellation graph.

**Query Data:** <channel>,<valid slot>,<#pairs>,<coordinate data>

- **channel:** 1 | 2
- **valid slot (NR1):**
  - 0 = Slot 0
  - 1 = Slot 1
  - 2 = Inbound, both slots
  - 3 = Outbound, both slots
- **#pairs (NR1):** Number of x,y coordinate pairs to follow

**Query Response:**

1,1,288,-1871.37,0.00,629.98,0.00,-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,-605.47,0.00,599.68,0.00,584.98,0.00,-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**

Frequency Constellation data is only available when LSM Option is installed in Test Set.

**Number of Pairs Returned: Protocol, Modulation, Signal**

<table>
<thead>
<tr>
<th>Signal</th>
<th>X2-TDMA Modulation Types</th>
<th>Phase 2 Modulation Types</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>C4FM</td>
<td>4FSK</td>
</tr>
<tr>
<td>Single Slot</td>
<td>132 pairs</td>
<td>132 pairs</td>
</tr>
<tr>
<td>Inbound</td>
<td>264 pairs</td>
<td>264 pairs</td>
</tr>
<tr>
<td>Outbound</td>
<td>288 pairs</td>
<td>288 pairs</td>
</tr>
</tbody>
</table>
6.3  IQ CONSTELLATION GRAPH

6.3.1  IQ Constellation - Persistence

:IQ:CONStellation:PERSistence
:IQ:CONStellation:PERSistence?

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

Range: 1 to 10
Default Value: 1

Set/Query Format: NR1

Example: :IQ:CONStellation:PERSistence 5
Sets IQ Constellation graph Persistence to 5.


NOTE Command only valid when LSM Option is installed in Test Set.

6.3.2  IQ Constellation - Trace Enable

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

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

Parameter: OFF | ON | 0 | 1
Default Value: OFF

Set/Query Format: Boolean

Example: :IQ:CONStellation:TRACe:ENABle ON
Enables IQ Constellation trace.

Query Response: :IQ:CONStellation:TRACe:ENABle? 1

NOTE Command only valid when LSM Option is installed in Test Set.
6.3.3 IQ Constellation - Trace Query

:\textbf{IQ:CONStellation:TRACe:LIVE?}

\textbf{Description:} Command returns graph coordinate.

\textbf{Query Data:} <channel>,<valid slot>,<#pairs>,<coordinate data>

- \textbf{channel:} 1 | 2
- \textbf{valid slot (NR1):} 0 = Slot 0
  1 = Slot 1
  2 = Inbound, both slots
  3 = Outbound, both slots
- \textbf{#pairs (NR1):} Number of x,y coordinate pairs to follow

  Number of pairs returned is dependent on Protocol, Modulation and signal type of the received signal (see table below).

- \textbf{x, y data (NR2):} coordinate value

\textbf{Query Response:} :	extbf{IQ:CONStellation:TRACe:LIVE?}

\begin{verbatim}
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,
-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,
-1793.31,0.00,607.42,0.00,1806.40,0.00,1788.95,0.00,-598.09,0.00,
-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,
-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,
-605.16,0.00,-1795.80,0.00,-601.23,.....
\end{verbatim}

Command only valid when LSM Option is installed in Test Set.

\begin{table}[h]
\centering
\begin{tabular}{|c|c|c|c|c|c|}
\hline
\textbf{Signal} & \textbf{C4FM} & \textbf{4FSK} & \textbf{CQPSK} & \textbf{HCPM} & \textbf{HDQPSK} \\
\hline
Single Slot   & 132 pairs & 132 pairs & 288 pairs & 168 pairs & 360 pairs \\
Inbound       & 264 pairs & 264 pairs & 288 pairs & 336 pairs & 360 pairs \\
Outbound      & 288 pairs & 288 pairs & 288 pairs & 360 pairs & 360 pairs \\
\hline
\end{tabular}
\caption{Number of Pairs Returned: Protocol, Modulation, Signal}
\end{table}

\textbf{Number of Pairs Returned:} Protocol, Modulation, Signal

- \textbf{X2-TDMA Modulation Types Phase 2 Modulation Types}
  - C4FM: 132 pairs, 288 pairs
  - 4FSK: 132 pairs, 288 pairs
  - CQPSK: 288 pairs
  - HCPM: 168 pairs, 336 pairs
  - HDQPSK: 360 pairs, 360 pairs

\section*{NOTE}

Subject to Export Control, see Cover Page for details.

6 - 4
6.4 DISTRIBUTION GRAPH

6.4.1 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

6.4.2 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
6.4.3 Distribution - Trace Query

`:DISTribution:TRACe:LIVE?`

**Description:** Command returns graph coordinate.

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

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

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

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

**Query Response:**

```
:DISTribution:TRACe:LIVE?
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,-1799.85,0.00,-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.
6.5 POWER OVER TIME GRAPH

6.5.1 Power Over Time - Marker Enable

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

Description: Set command Enables/Disables Markers 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
MARKn = 1 or 2 (Marker 1 or 2)

NOTE

6.5.2 Power Over Time - Marker Position

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

Description: Set command defines specified Marker position. 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.

Query Response: :PTIME:TRACe:MARK2:XPOS?
100
MARKn = 1 or 2 (Marker 1 or 2)

NOTE

6.5.3 Power Over Time - Marker Query Y Value

:[PTIME:TRACe:MARKn:YVALue?

Description: Query command returns Power Over Time Y value for specified 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
6.5.4 **Power Over Time - Span Value**

**Set command** sets Span on Power Over Time graph.
**Query command** returns parameter setting.

- **Range:** 300 to 240,000 ms
- **Units:** ms
- **Default Value:** 300 ms

<table>
<thead>
<tr>
<th>Set/Query Format</th>
<th>NRf</th>
<th>NR1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Example: :PTIME:SPAN</td>
<td>500 ms</td>
<td></td>
</tr>
</tbody>
</table>

**Example:**

Sets Power Over Time graph Span to 500 ms.

<table>
<thead>
<tr>
<th>Query Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>:PTIME:SPAN?</td>
</tr>
</tbody>
</table>

500

6.5.5 **Power Over Time - Trace Query**

**Command returns Power Over Time graph data.**

- **Query Data:** \(<statusbyte>,<#pairs>,<x data>,<y data>\)
  - **statusbyte (NR1):**
    - 0 = Invalid
    - 1 = Valid
    - 2 = Inaccurate
  - **#pairs (NR1):** Number of x,y coordinate pairs to follow
  - **x, y data (NR2):** coordinate value

<table>
<thead>
<tr>
<th>Query Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>:PTIME:TRACe:LIVE?</td>
</tr>
</tbody>
</table>

1,2,0.00,10.45,330.00,10.45

**NOTE**

Power Over Time trace must be enabled to obtain valid data.

6.5.6 **Power Over Time - Trace Enable**

**Set command** Enables/Disables Power Over Time trace.
**Query command** returns parameter setting.

- **Parameter:** OFF | ON | 0 | 1
- **Default Value:** OFF

<table>
<thead>
<tr>
<th>Set/Query Format</th>
<th>Boolean</th>
</tr>
</thead>
<tbody>
<tr>
<td>Example: :PTIME:TRACe:ENABle</td>
<td>ON</td>
</tr>
</tbody>
</table>

Enables Power Over Time trace.

<table>
<thead>
<tr>
<th>Query Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>:PTIME:TRACe:ENABle?</td>
</tr>
</tbody>
</table>

1
6.6 POWER PROFILE FULL

6.6.1 Power Profile Full - Marker Enable

**:PFULL:TRACe:SLOTn:MARKn:ENABLE**  
**:PFULL:TRACe:SLOTn:MARKn:ENABLE?**  

**Description:** Set command Enables/Disables Marker for specified Slot on Power Profile Full graph. Query command returns parameter setting.

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

**Default Value:** OFF

**Set/Query Format:** Boolean

**Example:**  
**:PFULL:TRACe:SLOT1:MARK2:ENABLE ON**  
Enables Marker 2 for Slot 1 on Power Profile Full graph.

**Query Response:**  
**:PFULL:TRACe:SLOT1:MARK2:ENABLE?**  
1

**NOTE**  
SLOTn = 0 or 1 (Slot 0 or 1).
MARKn = 1 or 2 (Marker 1 or 2).
Command only valid when Motorola ASTRO® 25 X2-TDMA® option is installed in Test Set.

6.6.2 Power Profile Full - Marker Position

**:PFULL:TRACe:SLOTn:MARKn:XPOS**  
**:PFULL:TRACe:SLOTn:MARKn:XPOS?**

**Description:** Set command defines Marker position for specified Slot of Power Profile Full graph. Query command returns parameter setting.

**Range:** 0 to 30 ms

**Units:** ms

**Default Value:** 0.0 ms

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

**Example:**  
**:PFULL:TRACe:SLOT1:MARK2:XPOS 10ms**  
Positions Marker 2 for Slot 1 to 10 ms.

**Query Response:**  
**:PFULL:TRACe:SLOT1:MARK2:XPOS?**  
10.0

**NOTE**  
SLOTn = 0 or 1 (Slot 0 or 1).
MARKn = 1 or 2 (Marker 1 or 2).
Command only valid when Motorola ASTRO® 25 X2-TDMA® option is installed in Test Set.
6.6.3 Power Profile Full - Marker Y Value Query

:PFULL:TRACe:SLOTn:MARKn:YVALue?

Description: Command returns Power Profile Full Y value for Marker.

Query Data: <statusbyte>,<value>
- statusbyte (NR1): 0 = Invalid
  1 = Valid
  2 = Inaccurate
- value (NR2): dBm

Query Response: :PFULL:TRACe:SLOT1:MARK2:YVALue?
1,10.44

NOTE
MARKn = 1 or 2 (Marker 1 or 2). Marker must be enabled to return valid data.
SLOTn = 0 or 1 (Slot 0 or 1).
Command only valid when Motorola ASTRO® 25 X2-TDMA® option is installed in Test Set.

6.6.4 Power Profile Full - Persistence

:PFULL:PERSistence
:PFULL:PERSistence?

Description: Set command sets Persistence on Power Profile Full graph.
Query command returns parameter setting.

Range: 1 to 10
Default Value: 1

Set/Query Format: NR1

Example: :PFULL:PERSistence 5
Sets Power Profile Full Graph Persistence to 5.

Query Response: :PFULL:PERSistence?
5

NOTE
Command only valid when Motorola ASTRO® 25 X2-TDMA® option is installed in Test Set.

6.6.5 Power Profile Full - Trace Enable

:PFULL:TRACe:ENABle
:PFULL:TRACe:ENABle?

Description: Set command Enables/Disables Power Profile Full trace.
Query command returns parameter setting.

Parameter: OFF | ON | 0 | 1
Default Value: OFF

Set/Query Format: Boolean

Example: :PFULL:TRACe:ENABle ON
Enables Power Profile Full trace.

Query Response: :PFULL:TRACe:ENABle?
1

NOTE
Trace must be enabled (ON) to return valid data.
Command only valid when Motorola ASTRO® 25 X2-TDMA® option is installed in Test Set.
6.6.6 Power Profile Full - Trace Query

:PFULL:TRACe:SLOTn:LIVE?

Description: Command returns Power Profile Full graph 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

status message (ascii):
signal not acquired
 timed out waiting for TraceMutex
 timed out waiting for data

Query Response: :PFULL:TRACe:SLOT1:LIVE?

1,-67.26,0.83,-67.80,0.85,-68.57,0.87,-69.46,0.90,-70.29,0.92,-70.87,0.94,
-71.06,0.96,-70.82,0.98,-70.24,1.00,-69.47,1.02,-68.67,1.04,-67.97,1.06,
-67.46,1.08,-67.18,1.10,-67.18,1.12,-67.46,1.15,-68.04,1.17,-68.90,1.19,
-70.01,1.21,-71.31,1.23,-72.66,1.25,-73.89,1.27,-74.80,1.29,-75.26,1.31,
-75.22,1.33,-74.71,1.35,-73.82,1.37,-72.74,1.40,-71.66,1.42,-70.71,1.44,
-69.97,1.46,-69.47,1.48,-69.22,1.50,-69.21,1.52,-69.39,1.54,-69.74,1.56,
-70.17,1.58,-70.63,1.60,-71.01,1.62,-71.25,1.65,-71.29,1.67,-71.15,1.69,
-70.85,1.71,-70.47,1.73,-70.08,1.75,-69.72,1.77,-69.45,1.79,-69.29,1.81,
-69.26,1.83,-69.37,1.85,-69.60,1.87,-69.93,1.90,-70.30,1.92,-70.68,1.94,
-71.00,1.96,-71.21,1.98,-71.29,2.00,-71.22,2.02,.....

NOTE
Trace must be enabled (ON) to return valid data.
Command only valid when Motorola ASTRO® 25 X2-TDMA® option is installed in Test Set.
6.7 POWER PROFILE RAMPS

6.7.1 Power Profile Ramps - Trace Enable

**:PRAMPs:TRACe:ENABle**
**:PRAMPs:TRACe:ENABle?**

**Description:** Set command Enables/Disables Power Profile Ramps trace.
Query command returns parameter setting.

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

**Default Value:** OFF

**Set/Query Format:** Boolean

**Example:** :PRAMPs:TRACe:ENABle ON
Enables Power Profile Ramps trace.

**Query Response:** :PRAMPs:TRACe:ENABle?
1

**NOTE** Command only valid when Motorola ASTRO® 25 X2-TDMA® option is installed in Test Set.

6.7.2 Power Profile Ramps - Marker Enable

**:PRAMPs:TRACe:SLOTn:MARKn:ENABle**
**:PRAMPs:TRACe:SLOTn:MARKn:ENABle?**

**Description:** Set command Enables/Disables Markers for Power Profile Ramps graph.
Query command returns parameter setting.

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

**Default Value:** OFF

**Set/Query Format:** Boolean

**Example:** :PRAMPs:TRACe:SLOT1:MARK2:ENABle ON
Enables Marker 2 for Power Profile Ramps graph.

**Query Response:** :PRAMPs:TRACe:SLOT1:MARK2:ENABle?
1

**NOTE**

MARKn = 1 or 2 (Marker 1 or 2).
SLOTn = 0 or 1 (Slot 0 or 1).
Command only valid when Motorola ASTRO® 25 X2-TDMA® option is installed in Test Set.
6.7.3 Power Profile Ramps - Marker Position

:PRAMPs:TRACE:SLOTn:MARKn:XPOS
:PRAMPs:TRACE:SLOTn:MARKn:XPOS?

Description: Set command defines specified Marker position on Power Profile Ramps graph. Query command returns parameter setting.

Range: 0.0 to 2.0 or 28.0 to 30.0 ms

Units: ms

Default Value: 0.0 | 28.0 ms

Set/Query Format: NRf | NR2

Example: :PRAMPs:TRACE:SLOT1:MARK2:XPOS 29ms
Positions Marker 2 at 29 ms.

Query Response: :PRAMPs:TRACE:SLOT1:MARK2:XPOS?
29

NOTE

MARKn = 1 or 2 (Marker 1 or 2).
SLOTn = 0 or 1 (Slot 0 or 1).
Command only valid when Motorola ASTRO® 25 X2-TDMA® option is installed in Test Set.

6.7.4 Power Profile Ramps - Marker Query Y Value

:PRAMPs:TRACE:SLOTn:MARKn:YVALue?

Description: Query command returns Power Over Time Y value for specified Marker and Slot.

Query Data: <statusbyte>,<value>

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

value (NR2): dBm

Query Response: :PRAMPs:TRACE:SLOT1:MARK2:YVALue?
1,10.45

NOTE

MARKn = 1 or 2 (Marker 1 or 2). Marker must be enabled to return valid data.
SLOTn = 0 or 1 (Slot 0 or 1).
Command only valid when Motorola ASTRO® 25 X2-TDMA® option is installed in Test Set.
6.7.5 Power Profile Ramps - Persistence

**:PRAMPs:PERSistence**

**:PRAMPs:PERSistence?**

**Description:** Set command sets Persistence on Power Profile Ramps graph. Query command returns parameter setting.

**Range:** 1 to 10

**Default Value:** 1

**Set/Query Format:** NR1

**Example:** :PRAMPs:PERSistence 5
Sets Power Profile Ramps Graph Persistence to 5.

**Query Response:** :PRAMPs:PERSistence?
5

**NOTE** Command only valid when Motorola ASTRO® 25 X2-TDMA® option is installed in Test Set.

6.7.6 Power Profile Ramps - Trace Query

**:PRAMPS:TRACe:SLOTn:LIVE?**

**Description:** Command returns Power Profile Ramps 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 data

**statuts message (ascii):** (when present)
- signal not acquired\n
- timed out waiting for TraceMutex\n
- timed out waiting for data\n
**Query Response:** :PRAMPS:TRACe:SLOT1:LIVE?
1,-67.26,0.83,-67.80,0.85,-68.57,0.87,-69.46,0.90,-70.29,0.92,-70.87,0.94,
-71.06,0.96,-70.82,0.98,-70.24,1.00,-69.47,1.02,-68.67,1.04,-67.97,1.06,
-67.46,1.08,-67.18,1.10,-67.18,1.12,-67.46,1.15,-68.04,1.17,-68.90,1.19,
-70.01,1.21,-71.31,1.23,-72.66,1.25,-73.89,1.27,-74.80,1.29,-75.26,1.31,
-75.22,1.33,-74.71,1.35,-73.82,1.37,-72.74,1.40,-71.66,1.42,-70.71,1.44,
-69.97,1.46,-69.47,1.48,-69.22,1.50,-69.21,1.52,-69.39,1.54,-69.74,1.56,
-70.17,1.58,-70.63,1.60,-71.01,1.62,-71.25,1.65,-71.29,1.67,-71.15,1.69,
-70.85,1.71,-70.47,1.73,-70.08,1.75,-69.72,1.77,-69.45,1.79,-69.29,1.81,
-69.26,1.83,-69.37,1.85,-69.60,1.87,-69.93,1.90,-70.30,1.92,-70.68,1.94,
-71.00,1.96,-71.21,1.98,-71.29,2.00,-71.22,2.02,......

**NOTE** SLOTn = 0 or 1 (Slot 0 or 1).
Trace must be enabled (ON) to obtain valid measurement data.
Command only valid when Motorola ASTRO® 25 X2-TDMA® option is installed in Test Set.
Chapter 7 - System and Bandplan
Remote Commands

7.1 INTRODUCTION
This chapter describes the Remote Commands for configuring P25 System Plans and SmartNet™/SmartZone™ Band Plans. Remote commands are listed alphabetically under the following headings:

7.2 SYSTEM PLAN / BAND PLAN COMMANDS

7.2.1 P25 - SmartNet/SmartZone - Plan File Name

:PLAN:NAME "planname"
:PLAN:NAME?

Description: Set command loads an existing System Plan.
Query command returns selected System Plan.
Parameter: maximum 128 characters
spaces allowed in filename
name must be enclosed in quotes

Set/Query Format: ascii string
Example: :PLAN:SAVE "test_filename"
Loads configured System Plan named “test_filename”.
Query Response: :PLAN:SAVE?
test_filename

NOTE
Command only valid when P25 Trunking Option is installed in Test Set.

7.2.2 P25 - SmartNet/SmartZone - Plan List

:PLAN:LIST?

Description: Command returns list of all predefined System Plans and stored Customized System Plans.
Query Format: ascii string
Query Response: :PLAN:LIST?
{Basic 800} {SZ 800 Domestic} {Basic UHF} {Basic VHF} {Basic 700} {test_file}

NOTE
SmartNet/SmartZone Plans only listed when SmartNet/SmartZone option is installed in Test Set.
7.2.3 P25 - SmartNet/SmartZone - Plan Save Configuration

:PLAN:SAVE “planname”

Description: Command saves current System Plan values as a new System Plan under defined plan name

Parameter: maximum 128 characters
spaces allowed in filename
name must be enclosed in quotes

Example: :PLAN:SAVE “test_filename”
Saves configured System Plan as test_filename

Command only valid when P25 Trunking Option is installed in Test Set.

7.2.4 P25 / SmartNet/SmartZone - System Plan Type

:PLAN:TYPE
:PLAN:TYPE?

Description: Set command defines type of plan when configuring a new plan. Query command returns type of plan currently loaded.

Parameter: SNSZ | P25
Default Value: P25

Set/Query Format: CPD | CRD

Example: :PLAN:TYPE SNSZ
Defines System Plan as SmartNet/SmartZone System Plan.

Query Response: :PLAN:TYPE?
SNSZ

Command only valid when P25 Trunking Option is installed in Test Set.
SNSZ Plan Type only valid when SmartNet/SmartZone option is installed in Test Set.

NOTE
Subject to Export Control, see Cover Page for details.
7.3 P25 SYSTEM PLAN COMMANDS

7.3.1 P25 System Plan - Base Active Net Value

:PLAN:BASE:ACTIve
:PLAN:BASE:ACTIve?

Description: Set command defines Base Repeater Active Net value. Query command returns parameter setting.

Parameter: 0 or 1
Default Value: 1

Set/Query Format: NR1
Example: :PLAN:BASE:ACTIve 0
Sets Base Repeater Active Net to 0.

Query Response: :PLAN:BASE:ACTIve?
0

NOTE: Command only valid when P25 Trunking Option is installed in Test Set.

7.3.2 P25 System Plan - Base Announced Group Address

:PLAN:BASE:ADDR
:PLAN:BASE:ADDR?

Description: Set command defines Announced Group Address value. Query command returns parameter setting.

Range: 0 to 65535
Default Value: 1

Set/Query Format: NR1
Example: :PLAN:BASE:ADDR 555
Sets Base Announced Group Address to 555.

Query Response: :PLAN:BASE:ADDR?
555

NOTE: Command only valid when P25 Trunking Option is installed in Test Set.
7.3.3  P25 System Plan - Base Global Affiliation Value

:PLAN:BASE:GAV
:PLAN:BASE:GAV?

Description:  Set command defines Base Repeater Global Affiliation value.
              Query command returns parameter setting.

Parameter:    0 = Accept
              1 = Fail
              2 = Deny
              3 = Refused

Default Value: 0 (Accept)

Set/Query Format: NR1

Example:    :PLAN:BASE:GAV 2
            Sets Base Repeater Global Affiliation Value to 2 (Deny).

Query Response: :PLAN:BASE:GAV?
                2

Command only valid when P25 Trunking Option is installed in Test Set.

7.3.4  P25 System Plan - Base Local/Global Affiliation

:PLAN:BASE:LG
:PLAN:BASE:LG?

Description:  Set command defines Base Repeater Local/Global Affiliation value.
              Query command returns parameter setting.

Parameter:    0 = Local Affiliation
              1 = Global Affiliation

Default Value: 0

Set/Query Format: NR1

Example: :PLAN:BASE:LG 1
          Sets Base Repeater Local/Global Affiliation Value to 1 (Global Affiliation).

Query Response: :PLAN:BASE:LG?
                1

Command only valid when P25 Trunking Option is installed in Test Set.
### 7.3.5 P25 System Plan - Base Local Registration Area

**:PLAN:BASE:LRA**  
**:PLAN:BASE:LRA?**

**Description:** Set command defines Base Repeater Local Registration Area. Query command returns parameter setting.

**Range:** 0 to 255

**Default Value:** 1

**Set/Query Format:** NR1

**Example:**  
:PLAN:BASE:LRA 100  
Sets Base Local Registration Area to 100.

**Query Response:**  
:PLAN:BASE:LRA?  
100

**NOTE**  
Command only valid when P25 Trunking Option is installed in Test Set.

### 7.3.6 P25 System Plan - Base NAC (Network Access Code)

**:PLAN:BASE:NAC**  
**:PLAN:BASE:NAC?**

**Description:** Set command defines Base Network Access Code. Query command returns parameter setting.

**Range:** 0 to 4095

**Default Value:** 320

**Set/Query Format:** NR1

**Example:**  
:PLAN:BASE:NAC 500  
Sets Base Network Access Code to 500.

**Query Response:**  
:PLAN:BASE:NAC?  
500

**NOTE**  
Command only valid when P25 Trunking Option is installed in Test Set.

### 7.3.7 P25 System Plan - Base Protection value

**:PLAN:BASE:PROTected**  
**:PLAN:BASE:PROTected?**

**Description:** Set command defines Base Repeater Global Affiliation value. Query command returns parameter setting.

**Parameter:**  
0 = Clear (Unencrypted)  
1 = Encrypted

**Default Value:** 0 (Clear)

**Set/Query Format:** NR1

**Example:**  
:PLAN:BASE:PROTected 1  
Sets Base Repeater Protection to 1 (Encrypted).

**Query Response:**  
:PLAN:BASE:PROTected?  
1

**NOTE**  
Command only valid when P25 Trunking Option is installed in Test Set.
7.3.8 P25 System Plan - Base Registration Value

:PLAN:BASE:RV
:PLAN:BASE:RV?

**Description:** Set command defines Base Repeater Registration value. Query command returns parameter setting.

**Parameter:**
- 0 = Accept
- 1 = Fail
- 2 = Deny
- 3 = Refused

**Default Value:** 0 (Accept)

**Set/Query Format:** NR1

**Example:**

:PLAN:BASE:RV 2
Sets Base Repeater Registration Value to 2 (Deny).

**Query Response:**

:PLAN:BASE:RV?
2

**NOTE**

Command only valid when P25 Trunking Option is installed in Test Set.

7.3.9 P25 System Plan - Base RF Subsystem Identifier

:PLAN:BASE:RFSS
:PLAN:BASE:RFSS?

**Description:** Set command defines Base Repeater RFSS value. Query command returns parameter setting.

**Range:** 0 to 255

**Default Value:** 1

**Set/Query Format:** NR1

**Example:**

:PLAN:BASE:RFSS 225
Sets Base RFSS value to 225.

**Query Response:**

:PLAN:BASE:RFSS?
225

**NOTE**

Command only valid when P25 Trunking Option is installed in Test Set.
7.3.10 P25 System Plan - Base Service Class

:PLAN:BASE:SVCclass
:PLAN:BASE:SVCclass?

Description: Set command defines Base Repeater Service Class.
Query command returns parameter setting.
Range: 0 to 255
Default Value: 60
Set/Query Format: NR1
Example: :PLAN:BASE:SVCclass 100
Sets Base Service Class to 100.
Query Response: :PLAN:BASE:SVCclass?
100

Command only valid when P25 Trunking Option is installed in Test Set.

7.3.11 P25 System Plan - Base Site Identifier

:PLAN:BASE:SITE
:PLAN:BASE:SITE?

Description: Set command defines Base Repeater Site Identifier value.
Query command returns parameter setting.
Range: 0 to 255
Default Value: 1
Set/Query Format: NR1
Example: :PLAN:BASE:SITE 25
Sets Base Site Identifier to 25.
Query Response: :PLAN:BASE:SITE?
25

Command only valid when P25 Trunking Option is installed in Test Set.

7.3.12 P25 System Plan - Base System Identifier

:PLAN:BASE:SYSid
:PLAN:BASE:SYSid?

Description: Set command defines Base Repeater System Identifier.
Query command returns parameter setting.
Range: 0 to 4095
Default Value: 801
Set/Query Format: NR1
Example: :PLAN:BASE:SYSid 1001
Sets Base System Identifier to 1001.
Query Response: :PLAN:BASE:SYSid?
1001

Command only valid when P25 Trunking Option is installed in Test Set.
7.3.13  P25 System Plan - Base Wide Area Access Network Identifier

:PLAN:BASE:WACN
:PLAN:BASE:WACN?

Description: Set command defines Base Repeater WACN value. Query command returns parameter setting.
Range: 0 to 1,048,575
Default Value: 801
Set/Query Format: NR1
Example: :PLAN:BASE:WACN 5250
Sets Base System WACN Identifier to 5250.
Query Response: :PLAN:BASE:WACN?
5250

Command only valid when P25 Trunking Option is installed in Test Set.

NOTE

7.3.14  P25 System Plan - Base Working Group Identifier

:PLAN:BASE:WGID
:PLAN:BASE:WGID?

Description: Set command defines Base Repeater Working Group Identifier. Query command returns parameter setting.
Parameter: 0 = Reserved for Future Development 1 = Automatically determined
Default Value: 0
Set/Query Format: NR1
Example: :PLAN:BASE:WGID 1
Sets Base Repeater Working Group Identifier to 1.
Query Response: :PLAN:BASE:WGID?
1

Command only valid when P25 Trunking Option is installed in Test Set.
7.3.15 P25 System Plan - Base Working Unit Identifier

:PLAN:BASE:WUID
:PLAN:BASE:WUID?

**Description:** Set command defines Base Repeater Working Unit Identifier. Query command returns parameter setting.

**Parameter:**
- 0 = Reserved for Future Development
- 1 = Automatically determined

**Default Value:** 0

**Set/Query Format:** NR1

**Example:**
:PLAN:BASE:WUID 1
Sets Base Repeater Working Unit Identifier to 1.

**Query Response:**
:PLAN:BASE:WUID?
1

Command only valid when P25 Trunking Option is installed in Test Set.

---

7.3.16 P25 System Plan - Channel Bandwidth

:PLAN:CHANnel:CIDn:BW
:PLAN:CHANnel:CIDn:BW?

**Description:** Set command selects Bandwidth for specified Channel ID. Query command returns parameter setting.

**Parameter:**
- 0 = 6.25 kHz
- 1 = 12.5 kHz

**Default Value:** 1 (12.5 kHz)

**Set/Query Format:** NR1

**Example:**
:PLAN:CHANnel:CID5:BW 0
Sets Channel 5 Bandwidth to 0 (6.25 kHz).

**Query Response:**
:PLAN:CHANnel:CID5:BW?
0

CIDn = 1 to 16

---

**NOTE**
7.3.17 P25 System Plan - Channel Frequency

:PLAN:CHANnel:CIDn:FREQuency
:PLAN:CHANnel:CIDn:FREQuency?

Description: Set command defines frequency of Channel base frequency. Query command returns parameter setting in Hz.

Range: 136.0 to 870.0 MHz
Default Value: 851.006250 MHz
Set/Query Format: NRf | NR2 (Hz)
Example: :PLAN:CHANnel:CID2:FREQuency 850MHz
Sets Channel ID 2 Frequency to 850.0 MHz.
850000000.00

 CIDn = 1 to 16

7.3.18 P25 System Plan - Channel Frequency Offset

:PLAN:CHANnel:CIDn:OFFSet
:PLAN:CHANnel:CIDn:OFFSet?

Description: Set command defines Channel transmit offset. Query command returns parameter setting in Hz.

Range: -100 to +100 MHz
Units: Hz | kHz | MHz
Default Value: -45.00 MHz
Set/Query Format: NRf | NR2 (Hz)
Example: :PLAN:CHANnel:CID4:OFFSet -50MHz
Sets Frequency Offset for Channel ID 4 to -50.00 MHz.
-50000000

 CIDn = 1 to 16

NOTE
7.3.19 P25 System Plan - Channel Spacing

**:PLAN:CHANnel:CIDn:SPACing**
**:PLAN:CHANnel:CIDn:SPACing?**

**Description:** Set command defines Channel Spacing. Query command returns parameter setting.

**Range:** 1.250 to 1280.0 kHz

**Units:** Hz | kHz

**Default Value:** 6.25 kHz

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

**Example:**

:PLAN:CHANnel:CID1:SPACing 12.5kHz
Sets Channel 1 Channel Spacing to 12.5 kHz.

**Query Response:**

:PLAN:CHANnel:CID1:SPACing?
12500
CIDn = 1 to 16

NOTE

7.3.20 P25 System Plan - Channel Type

**:PLAN:CHANnel:CIDn:TYPE**
**:PLAN:CHANnel:CIDn:TYPE?**

**Description:** Set command selects type of Channel for specified Channel ID. Query command returns parameter setting.

**Parameter:** TDMA | FDMA

**Default Value:** FDMA

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

**Example:**

:PLAN:CHANnel:CID5:TYPE TDMA
Sets Channel 5 to TDMA Channel Type.

**Query Response:**

:PLAN:CHANnel:CID5:TYPE?
TDMA
CIDn = 1 to 16

Command only applies to X2TDMA Protocol.

NOTE
7.4 SMARTNET™/SMARTZONE™ BAND PLAN COMMANDS

7.4.1 SmartNet/SmartZone Band Plan - Base AMSS Flag

:PLAN:BASE:AMSS
:PLAN:BASE:AMSS?

Description: Set command indicates whether or not the AMSS Flag is included in the Band Plan.
Query command returns parameter setting.

Parameter: 0 | 1 | FALSE | TRUE
Default Value: FALSE
Set/Query Format: Boolean
Example: :PLAN:BASE:AMSS TRUE
Includes AMSS Flag in the Band Plan.
Query Response: :PLAN:BASE:AMSS?
1

NOTE Command only valid when SmartNet/SmartZone option is installed in Test Set.
:PLAN:TYPE must be defined as SNSZ for command to be valid.

7.4.2 SmartNet/SmartZone Band Plan - Base All Secure Down Flag

:PLAN:BASE:ASECDown
:PLAN:BASE:ASECDown?

Description: Set command indicates whether or not the All Secure Down Flag is included in the Band Plan.
Query command returns parameter setting.

Parameter: 0 | 1 | FALSE | TRUE
Default Value: TRUE
Set/Query Format: Boolean
Example: :PLAN:BASE:ASECDown FALSE
Excludes All Secure Down Flag from the Band Plan.
Query Response: :PLAN:BASE:ASECDown?
0

NOTE Command only valid when SmartNet/SmartZone option is installed in Test Set.
:PLAN:TYPE must be defined as SNSZ for command to be valid.
7.4.3 SmartNet/SmartZone Band Plan - Base Affiliate Capability Flag

**:PLAN:BASE:AFFiliate**
**:PLAN:BASE:AFFiliate?**

**Description:** Set command indicates whether or not the Affiliate Flag is included in the Band Plan.
Query command returns parameter setting.

**Parameter:** 0 | 1 | FALSE | TRUE

**Default Value:** TRUE

**Set/Query Format:** Boolean

**Example:**
:PLAN:BASE:AFFiliate FALSE
Excludes Affiliate Flag from the Band Plan.

**Query Response:**
:PLAN:BASE:AFFiliate?
0

**NOTE**
Command only valid when SmartNet/SmartZone option is installed in Test Set.
:PLAN:TYPE must be defined as SNSZ for command to be valid.

7.4.4 SmartNet/SmartZone Band Plan - Base Astro Capability Flag

**:PLAN:BASE:ACAPable**
**:PLAN:BASE:ACAPable?**

**Description:** Set command indicates whether or not the Astro Capability Flag is included in the Band Plan.
Query command returns parameter setting.

**Parameter:** 0 | 1 | FALSE | TRUE

**Default Value:** TRUE

**Set/Query Format:** Boolean

**Example:**
:PLAN:BASE:ACAPable FALSE
Excludes Astro Capability Flag from the Band Plan.

**Query Response:**
:PLAN:BASE:ACAPable?
0

**NOTE**
Command only valid when SmartNet/SmartZone option is installed in Test Set.
:PLAN:TYPE must be defined as SNSZ for command to be valid.
7.4.5 SmartNet/SmartZone Band Plan - Base Auto Affiliate Capability Flag

:PLAN:BASE:AAFFiliate
:PLAN:BASE:AAFFiliate?

Description: Set command indicates whether or not the Auto Affiliate Flag is included in the Band Plan. Query command returns parameter setting.

Parameter: 0 | 1 | FALSE | TRUE

Default Value: TRUE

Set/Query Format: Boolean

Example: :PLAN:BASE:AAFFiliate FALSE
Excludes Auto Affiliate Flag from the Band Plan.

Query Response: :PLAN:BASE:AAFFiliate?
0

Command only valid when SmartNet/SmartZone option is installed in Test Set. :PLAN:TYPE must be defined as SNSZ for command to be valid.

NOTE

7.4.6 SmartNet/SmartZone Band Plan - Base Backup Control Channel Flag

:PLAN:BASE:BKPCC
:PLAN:BASE:BKPCC?

Description: Set command indicates whether or not the Backup Control Channel Flag is included in the Band Plan. Query command returns parameter setting.

Parameter: 0 | 1 | FALSE | TRUE

Default Value: FALSE

Set/Query Format: Boolean

Example: :PLAN:BASE:BKPCC TRUE
Includes Backup Control Channel Flag in the Band Plan.

Query Response: :PLAN:BASE:BKPCC?
1

Command only valid when SmartNet/SmartZone option is installed in Test Set. :PLAN:TYPE must be defined as SNSZ for command to be valid.

NOTE
### 7.4.7 SmartNet/SmartZone Band Plan - Base Band Plan

**:PLAN:BASE:BANDPLAN**

**:PLAN:BASE:BANDPLAN?**

**Description:**
Set command selects the SmartNet/SmartZone Band Plan.
Query command returns the selected SmartNet/SmartZone Band Plan.

**Parameter:**
BP_800_INTL_SPLINTER | BP_800_INTL | BP_800_DOMESTIC_SPLINTER | BP_800_DOMESTIC | BP_900 | BP_REBAND | BP_OTHERBAND

**Default Value:**
BP_800_DOMESTIC

**Set/Query Format:**
data string

**Example:**
:PLAN:BASE:BANDPLAN BP_800_INTL
Selects BP_800_INTL as the SmartNet/SmartZone Bandplan.

**Query Response:**
:PLAN:BASE:BANDPLAN?
BP_800_INTL

**NOTE**
Command only valid when SmartNet/SmartZone option is installed in Test Set.

**:PLAN:TYPE** must be defined as SNSZ for command to be valid.

### 7.4.8 SmartNet/SmartZone Band Plan - Base Call Timeout

**:PLAN:BASE:CTIMEout**

**:PLAN:BASE:CTIMEout?**

**Description:**
Set command defines the Call Timeout value.
Query command returns parameter setting.

**Range:**
0 to 1920 ms

**Units:**
ms

**Default Value:**
1890 ms

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

**Example:**
:PLAN:BASE:CTIMEout 1500ms
Sets Call Timeout value to 1500 ms.

**Query Response:**
:PLAN:BASE:CTIMEout?
1500

**NOTE**
Command only valid when SmartNet/SmartZone Option is installed in Test Set.
7.4.9 SmartNet/SmartZone Band Plan - Base Connect Tone

:PLAN:BASE:CTONE
:PLAN:BASE:CTONE?

Description: Set command defines the Connect Tone value. Query command returns parameter setting.

Parameter: 76 Hz | 83 Hz | 90 Hz | 97 Hz | 105 Hz | 116 Hz | 128 Hz | 138 Hz

Units: Hz

Default Value: 105 Hz

Set/Query Format: NRf | NR1

Example: :PLAN:BASE:CTONE 90Hz
Sets Connect Tone value to 90 Hz.

Query Response: :PLAN:BASE:CTONE?
90

Command only valid when SmartNet/SmartZone Option is installed in Test Set.

7.4.10 SmartNet/SmartZone Band Plan - Base Coverage Plus Flag

:PLAN:BASE:CPLUS
:PLAN:BASE:CPLUS:?

Description: Set command identifies whether or not the Coverage Plus Flag is included in the Band Plan. Query command returns parameter setting.

Parameter: 0 | 1 | FALSE | TRUE

Default Value: 0 (TRUE)

Set/Query Format: Boolean

Example: :PLAN:BASE:CPLUS 1
Excludes Coverage Plus Flag from the Band Plan.

Query Response: :PLAN:BASE:CPLUS?
1

Command only valid when SmartNet/SmartZone option is installed in Test Set.
7.4.11 SmartNet/SmartZone Band Plan - Base Data Network Available Flag

**:PLAN:BASE:DATANW**

**:PLAN:BASE:DATANW?**

**Description:** Set command indicates whether or not the Data Network Available Flag is included in the Band Plan.

Query command returns parameter setting.

**Parameter:** 0 | 1 | FALSE | TRUE

**Default Value:** FALSE

**Set/Query Format:** Boolean

**Example:** :PLAN:BASE:DATANW TRUE

Includes Data Network Available Flag in the Band Plan.

**Query Response:** :PLAN:BASE:DATANW?

1

Command only valid when SmartNet/SmartZone option is installed in Test Set. :PLAN:TYPE must be defined as SNSZ for command to be valid.

---

7.4.12 SmartNet/SmartZone Band Plan - Base Dispatch Timeout

**:PLAN:BASE:DTIMEout**

**:PLAN:BASE:DTIMEout:?**

**Description:** Set command defines the Dispatch Timeout value.

Query command returns parameter setting.

**Range:** 0 to 240 ms

**Units:** ms

**Default Value:** 210 ms

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

**Example:** :PLAN:BASE:DTIMEout 120ms

Sets Dispatch Timeout value to 120 ms.

**Query Response:** :PLAN:BASE:DTIMEout?

120

Command only valid when SmartNet/SmartZone Option is installed in Test Set.
7.4.13 SmartNet/SmartZone Band Plan - Base Echo Delay

:PLAN:BASE:ECHODelay
:PLAN:BASE:ECHODelay?

Description: Set command defines the Echo Delay value. Query command returns parameter setting.

Range: 0 to 1472 ms

Units: ms

Default Value: 0 ms

Set/Query Format: NRF | NR1

Example: :PLAN:BASE:ECHODelay 1200ms
Sets Echo Delay value to 1200 ms.

Query Response: :PLAN:BASE:ECHODelay?
1200

Command only valid when SmartNet/SmartZone Option is installed in Test Set.

NOTE

7.4.14 SmartNet/SmartZone Band Plan - Base Fail Soft Flag

:PLAN:BASE:FAILSOft
:PLAN:BASE:FAILSOft?

Description: Set command indicates whether or not the Fail Soft Flag is included in the Band Plan. Query command returns parameter setting.

Parameter: 0 | 1 | FALSE | TRUE

Default Value: FALSE

Set/Query Format: Boolean

Example: :PLAN:BASE:FAILSOft TRUE
Includes Fail Soft Flag in the Band Plan.

Query Response: :PLAN:BASE:FAILSOft?
1

Command only valid when SmartNet/SmartZone option is installed in Test Set.

:PLAN:TYPE must be defined as SNSZ for command to be valid.
7.4.15 SmartNet/SmartZone Band Plan - Base Interconnect Available Flag

**:PLAN:BASE:ICAVAILable**

**:PLAN:BASE:ICAVAILable?**

Description: Set command indicates whether or not the Interconnect Available Flag is included in the Band Plan.
Query command returns parameter setting.

Parameter: 0 | 1 | FALSE | TRUE
Default Value: FALSE
Set/Query Format: Boolean
Example: :PLAN:BASE:ICAVAILable TRUE
Includes Interconnect Available Flag in the Band Plan.

Query Response: :PLAN:BASE:ICAVAILable?
1

Command only valid when SmartNet/SmartZone option is installed in Test Set.
:PLAN:TYPE must be defined as SNSZ for command to be valid.

7.4.16 SmartNet/SmartZone Band Plan - Base Master Toggle Flag

**:PLAN:BASE:MASTOGgle**

**:PLAN:BASE:MASTOGgle?**

Description: Set command indicates whether or not the Master Toggle Flag is included in the Band Plan.
Query command returns parameter setting.

Parameter: 0 | 1 | FALSE | TRUE
Default Value: FALSE
Set/Query Format: Boolean
Example: :PLAN:BASE:MASTOGgle TRUE
Includes Master Toggle Flag in the Band Plan.

Query Response: :PLAN:BASE:MASTOGgle?
1

Command only valid when SmartNet/SmartZone option is installed in Test Set.
:PLAN:TYPE must be defined as SNSZ for command to be valid.
7.4.17 SmartNet/SmartZone Band Plan - Base NAC

:PLAN:BASE:NAC
:PLAN:BASE:NAC?

Description: Set command defines Base Network Access Code.
Query command returns parameter setting.
Range: 0 to 4095
Default Value: 320
Set/Query Format: NR1
Example: :PLAN:BASE:NAC 500
Sets Base Network Access Code to 500.
Query Response: :PLAN:BASE:NAC?
500

NOTE Command only valid when P25 Trunking Option is installed in Test Set.

7.4.18 SmartNet/SmartZone Band Plan - Base Secure Signaling Flag

:PLAN:BASE:SECSIGnaling
:PLAN:BASE:SECSIGnaling?

Description: Set command indicates whether or not the Secure Signaling Flag is included in the Band Plan.
Query command returns parameter setting.
Parameter: 0 | 1 | FALSE | TRUE
Default Value: FALSE
Set/Query Format: Boolean
Example: :PLAN:BASE:SECSIGnaling TRUE
Includes Secure Signaling Flag in the Band Plan.
Query Response: :PLAN:BASE:SECSIGnaling?
1

NOTE Command only valid when SmartNet/SmartZone option is installed in Test Set.
:PLAN:TYPE must be defined as SNSZ for command to be valid.

7.4.19 SmartNet/SmartZone Band Plan - Base Site Identifier

:PLAN:BASE:SITE
:PLAN:BASE:SITE?

Description: Set command defines the Site Identifier value.
Query command returns parameter setting.
Range: 0 to 255
Default Value: 1
Set/Query Format: NR1
Example: :PLAN:BASE:SITE 75
Sets Site Identifier value to 75.
Query Response: :PLAN:BASE:SITE?
75

NOTE Command only valid when SmartNet/SmartZone Option is installed in Test Set.
7.4.20 SmartNet/SmartZone Band Plan - Base Site Trunking Flag

**:PLAN:BASE:SITETRunking**

*Description:* Set command indicates whether or not the Site Trunking Flag is included in the Band Plan.

*Query command returns parameter setting.*

*Parameter:* 0 | 1 | FALSE | TRUE

*Default Value:* TRUE

*Set/Query Format:* Boolean

*Example:* :PLAN:BASE:SITETRunking FALSE

Excludes Site Trunking Flag from the Band Plan.

*Query Response:* :PLAN:BASE:SITETRunking?

0

Command only valid when SmartNet/SmartZone option is installed in Test Set.

*:PLAN:TYPE must be defined as SNSZ for command to be valid.*

---

7.4.21 SmartNet/SmartZone Band Plan - Base System Identifier

**:PLAN:BASE:SYSid**

*Description:* Set command defines the System Identifier value.

*Query command returns parameter setting.*

*Range:* 0 to 4095

*Default Value:* 734

*Set/Query Format:* NR1

*Example:* :PLAN:BASE:SYSid 125

Sets System Identifier value to 125.

*Query Response:* :PLAN:BASE:SYSid?

125

Command only valid when SmartNet/SmartZone Option is installed in Test Set.

---

Subject to Export Control, see Cover Page for details.

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7.4.22 SmartNet/SmartZone Band Plan - Base Trespass Protect Flag

**:PLAN:BASE:TPROTeact**
**:PLAN:BASE:TPROTeact?**

**Description:** Set command indicates whether or not the Trespass Protect Flag is included in the Band Plan. Query command returns parameter setting.

**Parameter:** 0 | 1 | FALSE | TRUE

**Default Value:** FALSE

**Set/Query Format:** Boolean

**Example:**
```
:PLAN:BASE:TPROTeact TRUE
Includes Trespass Protect Flag in the Band Plan.
```

**Query Response:**
```
:PLAN:BASE:TPROTeact?
1
```

**NOTE**
Command only valid when SmartNet/SmartZone option is installed in Test Set.

**:PLAN:TYPE must be defined as SNSZ for command to be valid.**

7.4.23 SmartNet/SmartZone Band Plan - Base Tx Deviation

**:PLAN:BASE:TXDEViation**
**:PLAN:BASE:TXDEViation?**

**Description:** Set command defines the Tx Deviation value. Query command returns parameter setting.

**Range:** 0 to 3499 Hz

**Units:** Hz

**Default Value:** 3125 Hz

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

**Example:**
```
:PLAN:BASE:TXDEViation 125Hz
Sets Tx Deviation value to 125.0 Hz.
```

**Query Response:**
```
:PLAN:BASE:TXDEViation?
125
```

**NOTE**
Command only valid when SmartNet/SmartZone Option is installed in Test Set.
7.4.24 SmartNet/SmartZone Band Plan - Base Upgrade Allowed Flag

:PLAN:BASE:UPGDallowed
:PLAN:BASE:UPGDallowed?

Description: Set command indicates whether or not the Upgrade Allowed Flag is included in the Band Plan. Query command returns parameter setting.

Parameter: 0 | 1 | FALSE | TRUE

Default Value: FALSE

Set/Query Format: Boolean

Example: :PLAN:BASE:UPGDallowed TRUE
Includes Upgrade Allowed Flag in the Band Plan.

Query Response: :PLAN:BASE:UPGDallowed?
1

Command only valid when SmartNet/SmartZone option is installed in Test Set. :PLAN:TYPE must be defined as SNSZ for command to be valid.

7.4.25 SmartNet/SmartZone Band Plan - Base Voice on Control Channel Flag

:PLAN:BASE:VONCC
:PLAN:BASE:VONCC?

Description: Set command indicates whether or not the Voice on Control Channel Flag is included in the Band Plan. Query command returns parameter setting.

Parameter: 0 | 1 | FALSE | TRUE

Default Value: FALSE

Set/Query Format: Boolean

Example: :PLAN:BASE:VONCC TRUE
Includes Voice on Control Channel Flag in the Band Plan.

Query Response: :PLAN:BASE:VONCC?
1

Command only valid when SmartNet/SmartZone option is installed in Test Set. :PLAN:TYPE must be defined as SNSZ for command to be valid.
7.4.26 SmartNet/SmartZone Band Plan - Base Wide Area Flag

:PLAN:BASE:WAREA
:PLAN:BASE:WAREA?

Description: Set command indicates whether or not the Wide Area Flag is included in the Band Plan. Query command returns parameter setting.

Parameter: 0 | 1 | FALSE | TRUE

Default Value: FALSE

Set/Query Format: Boolean

Example: :PLAN:BASE:WAREA TRUE
Includes Wide Area Flag from the Band Plan.

Query Response: :PLAN:BASE:WAREA?
1

Command only valid when SmartNet/SmartZone option is installed in Test Set. :PLAN:TYPE must be defined as SNSZ for command to be valid.

NOTE

7.4.27 SmartNet/SmartZone Band Plan - Base Wide Pulse Flag

:PLAN:BASE:WPULSE
:PLAN:BASE:WPULSE?

Description: Set command indicates whether or not the Wide Pulse Flag is included in the Band Plan. Query command returns parameter setting.

Parameter: 0 | 1 | FALSE | TRUE

Default Value: FALSE

Set/Query Format: Boolean

Example: :PLAN:BASE:WPULSE TRUE
Includes Wide Pulse Flag from the Band Plan.

Query Response: :PLAN:BASE:WPULSE?
1

Command only valid when SmartNet/SmartZone option is installed in Test Set. :PLAN:TYPE must be defined as SNSZ for command to be valid.

NOTE

7.4.28 SmartNet/SmartZone Band Plan - Rx Channel Block Count

:PLAN:CHANnel:BLOCKn:RX:COUNT?

Description: Query command returns the system defined number of channels. The number of channels is determined by the selected Channel Spacing, Start Frequency, Stop Frequency and the total number of channels available (380).

Range: 0 to 380

Query Format: NR1

125

BLOCKn = 1, 2 or 3 (Block 1, 2 or 3)

Command only valid when SmartNet/SmartZone Option is installed in Test Set. Command only valid with BP_OTHERBAND Band plan. Returns "0" when associated Tx/Rx Block is disabled (OFF).

NOTE
### 7.4.29 SmartNet/SmartZone Band Plan - Rx Channel Block State

**:PLAN:CHANnel:BLOCKn:RX:STATE**

**:PLAN:CHANnel:BLOCKn:RX:STATE?**

**Description:** Set command Enables/Disables Rx Channel Block.
Query command returns Channel Block state.

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

**Default Value:** OFF (0)

**Set/Query Format:** Boolean

**Example:**

```
:PLAN:CHANnel:BLOCK2:RX:STATE ON
```

Enables Channel Block 2 Rx Channel.

**Query Response:**

```
:PLAN:CHANnel:BLOCK2:RX:STATE?
```

1

**NOTE**

BLOCKn = 1, 2 or 3 (Block 1, 2 or 3)
Command only valid when SmartNet/SmartZone Option is installed in Test Set.
Command only valid with BP_OTHERBAND Band plan.

### 7.4.30 SmartNet/SmartZone Band Plan - Rx Channel Block Spacing

**:PLAN:CHANnel:BLOCKn:RX:CHSPacing**

**:PLAN:CHANnel:BLOCKn:RX:CHSPacing?**

**Description:** Set command defines Channel Spacing for specified Rx Channel Block.
Query command returns parameter setting.

**Parameter:** 5 kHz | 6.25 kHz | 10 kHz | 12.5 kHz | 15 kHz | 18.75 kHz | 20 kHz | 25 kHz | 30 kHz | 31.25 kHz | 35 kHz | 37.50 kHz | 40 kHz | 43.75 kHz | 50 kHz

**Default Value:** 5 kHz

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

**Example:**

```
:PLAN:CHANnel:BLOCK2:RX:CHSPacing 12.5kHz
```

Sets Rx Channel Spacing for Channel Block 2 to 12.5 kHz.

**Query Response:**

```
:PLAN:CHANnel:BLOCK2:RX:CHSPacing?
```

12500

**NOTE**

BLOCKn = 1, 2 or 3 (Block 1, 2 or 3)
Command only valid when SmartNet/SmartZone Option is installed in Test Set.
Command only valid with BP_OTHERBAND Band plan.
7.4.31 SmartNet/SmartZone Band Plan - Rx Channel Start Frequency

:PLAN:CHANnel:BLOCKn:RX:STARTFreq
:PLAN:CHANnel:BLOCKn:RX:STARTFreq?

Description: Set command defines the Start Frequency of the specified Rx Channel Block. Query command returns parameter setting.

Range: 100.0 kHz to 2710.0 MHz
Units: Hz | kHz | MHz
Default Value: 146.00 MHz

Set/Query Format: NRf | NR1 (Hz)

Example: :PLAN:CHANnel:BLOCK2:RX:STARTFreq 825MHz
Sets Start Frequency on Rx Channel Block 2 to 825.0 MHz.

825000000

NOTE

BLOCKn = 1, 2 or 3 (Block 1, 2 or 3)
Command only valid when SmartNet/SmartZone Option is installed in Test Set.
Command only valid with BP_OTHERBAND Band plan.

7.4.32 SmartNet/SmartZone Band Plan - Rx Channel Stop Frequency

:PLAN:CHANnel:BLOCKn:RX:STOPFreq
:PLAN:CHANnel:BLOCKn:RX:STOPFreq?

Description: Set command defines the Stop Frequency of the specified Rx Channel Block. Query command returns parameter setting.

Range: 100.0 kHz to 2710.0 MHz
Units: Hz | kHz | MHz
Default Value: 146.00 MHz

Set/Query Format: NRf | NR1 (Hz)

Example: :PLAN:CHANnel:BLOCK2:RX:STOPFreq 825MHz
Sets Stop Frequency on Rx Channel Block 2 to 825.0 MHz.

825000000

NOTE

BLOCKn = 1, 2 or 3 (Block 1, 2 or 3)
Command only valid when SmartNet/SmartZone Option is installed in Test Set.
Command only valid with BP_OTHERBAND Band plan.
7.4.33 SmartNet/SmartZone Band Plan - Tx Channel Block Count

**:PLAN:CHANnel:BLOCKn:TX:COUNT?**

**Description:** Query command returns the system defined number of channels. The number of channels is determined by the selected Channel Spacing, Start Frequency, Stop Frequency and the total number of channels available (380).

**Range:** 0 to 380

**Query Format:** NR1

**Query Response:**

```
:PLAN:CHANnel:BLOCK2:TX:COUNT?
125
```

**NOTE**

BLOCKn = 1, 2 or 3 (Block 1, 2 or 3)

Command only valid when SmartNet/SmartZone Option is installed in Test Set.
Command only valid with BP_OTHERBAND Band plan.

Returns “0” when associated Tx/Rx Block is disabled (OFF).

7.4.34 SmartNet/SmartZone Band Plan - Tx Channel Block State

**:PLAN:CHANnel:BLOCKn:TX:STATE**

**:PLAN:CHANnel:BLOCKn:TX:STATE?**

**Description:** Set command Enables/Disables Tx Channel Block. Query command returns Channel Block state.

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

**Default Value:** OFF (0)

**Set/Query Format:** Boolean

**Example:**

```
:PLAN:CHANnel:BLOCK2:TX:STATE ON
```

Enables Channel Block 2 Tx Channel.

**Query Response:**

```
:PLAN:CHANnel:BLOCK2:TX:STATE?
1
```

**NOTE**

BLOCKn = 1, 2 or 3 (Block 1, 2 or 3)

Command only valid when SmartNet/SmartZone Option is installed in Test Set.
Command only valid with BP_OTHERBAND Band plan.

7.4.35 SmartNet/SmartZone Band Plan - Tx Channel Block Spacing

**:PLAN:CHANnel:BLOCKn:TX:CHSPacing**

**:PLAN:CHANnel:BLOCKn:TX:CHSPacing?**

**Description:** Set command defines Channel Spacing for specified Tx Channel Block. Query command returns parameter setting.

**Parameter:** 5 kHz | 6.25 kHz | 10 kHz | 12.5 kHz | 15 kHz | 18.75 kHz | 20 kHz | 25 kHz | 30 kHz | 31.25 kHz | 35 kHz | 37.50 kHz | 40 kHz | 43.75 kHz | 50 kHz

**Default Value:** 5 kHz

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

**Example:**

```
:PLAN:CHANnel:BLOCK2:TX:CHSPacing 12.5kHz
```

Sets Tx Channel Spacing for Channel Block 2 to 12.5 kHz.

**Query Response:**

```
:PLAN:CHANnel:BLOCK2:TX:CHSPacing?
12500
```

**NOTE**

BLOCKn = 1, 2 or 3 (Block 1, 2 or 3)

Command only valid when SmartNet/SmartZone Option is installed in Test Set.
Command only valid with BP_OTHERBAND Band plan.
7.4.36  **SmartNet/SmartZone Band Plan - Tx Channel Start Frequency**

:PLAN:CHANnel:BLOCKn:TX:STARTFreq
:PLAN:CHANnel:BLOCKn:TX:STARTFreq?

**Description:** Set command defines the Start Frequency of the specified Tx Channel Block. Query command returns parameter setting.

**Range:** 100.0 kHz to 2710.0 MHz

**Units:** Hz | kHz | MHz

**Default Value:** 136.00 MHz

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

**Example:**

:PLAN:CHANnel:BLOCK2:TX:STARTFreq 825MHz
Sets Start Frequency on Tx Channel Block 2 to 825.0 MHz.

**Query Response:**

:PLAN:CHANnel:BLOCK2:TX:STARTFreq?
825000000

**NOTE**

BLOCKn = 1, 2 or 3 (Block 1, 2 or 3)
Command only valid when SmartNet/SmartZone Option is installed in Test Set.
Command only valid with BP_OTHERBAND Band plan.

7.4.37  **SmartNet/SmartZone Band Plan - Tx Channel Stop Frequency**

:PLAN:CHANnel:BLOCKn:TX:STOPFreq
:PLAN:CHANnel:BLOCKn:TX:STOPFreq?

**Description:** Set command defines the Stop Frequency of the specified Tx Channel Block. Query command returns parameter setting.

**Range:** 100.0 kHz to 2710.0 MHz

**Units:** Hz | kHz | MHz

**Default Value:** 136.00 MHz

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

**Example:**

:PLAN:CHANnel:BLOCK2:TX:STOPFreq 825MHz
Sets Stop Frequency on Tx Channel Block 2 to 825.0 MHz.

**Query Response:**

:PLAN:CHANnel:BLOCK2:TX:STOPFreq?
825000000

**NOTE**

BLOCKn = 1, 2 or 3 (Block 1, 2 or 3)
Command only valid when SmartNet/SmartZone Option is installed in Test Set.
Command only valid with BP_OTHERBAND Band plan.
Chapter 8 - Protocol Remote Commands

8.1 INTRODUCTION

This chapter describes the Remote Commands for configuring and obtaining P25 Protocol data. Some of the commands described in this chapter are option dependent as noted. Remote commands are listed alphabetically under the following headings:

8.2 DATA LINK PROTOCOL - DIGITAL SIGNAL IDENTIFIER

8.2.1 Data Link - Clear Digital Signal ID

:RECeive:DSID:CLEAR

Description: Command clears Digital Signal ID.
Set/Query Format: none

8.2.2 Data Link - Digital Station Identifier

:RECeive:DSID?

Description: Command returns Digital Station ID found in the data received from UUT Channel.
Query Format: alpha-numeric
Query Response: :RECeive:DSID?
ABCD123

8.3 DATA LINK PROTOCOL - HEADER / VOICE FRAME DATA

8.3.1 Data Link - Algorithmic Identifier (Header)

:DATAlink:CHn:ALG?

Description: Command returns Algorithmic Identifier in Header data received from UUT Channel.
Query Data: 128 = Clear
129 = DES
132 = AES
All other numbers indicate UNKNOWN
Query Format: NR1
Query Response: :DATAlink:CH2:ALG?
129

NOTE

Chn = 1 or 2 (Channel 1 or 2). Channel 2 is option enabled.
8.3.2 Data Link - Clear Header Data

:DATAlink:CLEar:HEADers
Description: Command clears Header data.
Set/Query Format: none

8.3.3 Data Link - Key ID (Header)

:DATAlink:CHn:KEY?
Description: Command returns Key ID in Header data received from UUT Channel.
Query Format: hex string
Query Response: :DATAlink:CH2:KEY?
  00
CHn = 1 or 2 (Channel 1 or 2). Channel 2 is option enabled.

8.3.4 Data Link - Manufacturer ID (Header)

:DATAlink:CHn:MFID?
Description: Command returns Manufacturer ID in Header Data received from UUT Channel.
Query Format: hex string
Query Response: :DATAlink:CH2:MFID?
  00
CHn = 1 or 2 (Channel 1 or 2). Channel 2 is option enabled.

8.3.5 Data Link - Message Identifier (Header)

:DATAlink:CHn:MI?
Description: Command returns Message Identifier in Header Data received from UUT Channel.
Query Format: hex string, 18 characters
Query Response: :DATAlink:CH2:MI?
  012345678901234567
CHn = 1 or 2 (Channel 1 or 2). Channel 2 is option enabled.

8.3.6 Data Link - Talk Group Identifier (Header)

:DATAlink:CHn:TGID?
Description: Command returns Talk Group Identifier in Header data received from UUT Channel.
Query Format: hex string
Query Response: :DATAlink:CH2:TGID?
  0001
CHn = 1 or 2 (Channel 1 or 2). Channel 2 is option enabled.
8.3.7 Data Link - Voice Algorithmic Identifier

:DATAlink:CHn:VOICe:ALG?

Description: Command returns Algorithmic Identifier in Voiceframe received from UUT.

Query Data:
- 128 = Clear
- 129 = DES
- 132 = AES
- All other numbers indicate UNKNOWN

Query Format:
- NR1

Query Response:
- :DATAlink:CH2:VOICe:ALG?
- 129

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

NOTE

8.3.8 Data Link - Voice Data Unit Identifier

:DATAlink:CHn:VOICe:DUID?

Description: Command returns Data Unit Identifier in Voiceframe received from UUT.

Query Format:
- ascii string

Query Response:
- :DATAlink:CH2:VOICe:DUID?
- 10 - LDU2

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

NOTE

8.3.9 Data Link - Voice Frame Number

:DATAlink:CHn:VOICe:FRAMe?

Description: Command returns Frame number assigned by Test Set.

Query Format:
- NR1

Query Response:
- :DATAlink:CH2:VOICe:FRAMe?
- 3473

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

NOTE

8.3.10 Data Link - Voice Key Identifier

:DATAlink:CHn:VOICe:KEY?

Description: Command returns Key Identifier in Voiceframe received from UUT.

Query Format:
- hex string

Query Response:
- :DATAlink:CH2:VOICe:KEY?
- 0

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

NOTE
8.3.11  Data Link - Voice Low Speed Data

:`DATAlink:CHn:VOICe:LSD?`

**Description:** Command returns Low Speed Data in Voiceframe received from UUT.

**Query Format:** hex string, 8 characters

**Query Response:** :DATAlink:CH2:VOICe:LSD?

00000000

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

---

8.3.12  Data Link - Voice Manufacturer Identifier

:`DATAlink:CHn:VOICe:MI?`

**Description:** Command returns Message Identifier in Voiceframe received from UUT.

**Query Format:** hex string, 18 characters

**Query Response:** :DATAlink:CH2:VOICe:MI?

000000000000000000

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

---

8.3.13  Data Link - Voice Network Access Code

:`DATAlink:CHn:VOICe:NAC?`

**Description:** Command returns the Network Access Code in Voiceframe received from UUT.

**Query Format:** hex string, 3 character

**Query Response:** :DATAlink:CH2:VOICe:MI?

293

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

---

8.3.14  Data Link - Voice Status Bit for LDU1 or LDU2

:`DATAlink:CHn:VOICe:STS1?`

:`DATAlink:CHn:VOICe:STS2?`

**Description:** Command returns Status Bit for LDU1 or LDU2 in Voice Data received from UUT.

**Query Format:** hex string, 23 characters

**Query Response:** :DATAlink:CH2:VOICe:STS1?

00000000000000000000000000

CHn = 1 or 2 (Channel 1 or 2). Channel 2 is option enabled.
8.4 DATA LINK PROTOCOL - LAST LINK CONTROL MESSAGE

8.4.1 Data Link Last Link Control - Address Group “X”

:DATAlink:LC:CHn:LLC:GROUP:ADDRESSx?

Description: Query command returns Last Link Control Address Group.
Query Format: Decimal
43981
CHn = 1 or 2 (Channel 1 or 2)
ADDRESSx = A or B

8.4.2 Data Link Last Link Control - Address Source

:DATAlink:LC:CHn:LLC:ADDResS:SRC?

Description: Query command returns Last Link Control Address Source.
Query Format: Decimal
5175
CHn = 1 or 2 (Channel 1 or 2)

8.4.3 Data Link Last Link Control - Bandwidth

:DATAlink:LC:CHn:LLC:BANDWidth?

Description: Query command returns the Last Link Control Bandwidth.
Query Format: NR2 (kHz)
Query Response: :DATAlink:LC:CHn:LLC:FREQuency?
12.50
CHn = 1 or 2 (Channel 1 or 2)
8.4.4 Data Link Last Link Control - CFVA

**:DATAlink:LC:CHn:LLC:CFVA?**

- **Description:** Query command returns the Last Link Control CFVA flag values.
  - **Query Data:**
    - C: Indicates if broadcast is for a Conventional Channel.
    - F: Indicates broadcast Failure Mode
    - V: Indicates if content is valid.
    - A: Indicates if there is an active network connection with the RFSS controller.
  - **C:**
    - 0 = Non-Conventional
    - 1 = Conventional
  - **F:**
    - 0 = Normal Condition
    - 1 = Site in Failure Condition
  - **V:**
    - 0 = Unknown or last reported as Valid (site not responding)
    - 1 = Valid Content
  - **A:**
    - 0 = Inactive
    - 1 = Active
- **Default Value:** 0
- **Query Format:**
  - Binary: query command ends with b
  - Octal: query command ends with q
  - Decimal: default format
  - Hex: query command ends with h
- **Query Response:**
  - :DATAlink:LC:CHn:LLC:CFVA?
  - 0110
  - CHn = 1 or 2 (Channel 1 or 2)
  - Returned binary values drop leading “0”. (i.e., 0010 is returned as 10 in binary format.

8.4.5 Data Link Last Link Control - Channel Identifier

**:DATAlink:LC:CHn:LLC:CHANnel:ID?**

- **Description:** Query command returns the Last Link Control Channel Identifier.
- **Query Format:** Decimal
- **Query Response:**
  - :DATAlink:LC:CHn:LLC:CHANnel:ID?
  - 5
  - CHn = 1 or 2 (Channel 1 or 2)

8.4.6 Data Link Last Link Control - Channel “X” Identifier

**:DATAlink:LC:CHn:LLC:CHANnel:IDx?**

- **Description:** Query command returns the Last Link Control Channel Identifier.
- **Query Format:** Decimal
- **Query Response:**
  - :DATAlink:LC:CHn:LLC:CHANnel:IDA?
  - 5
  - CHn = 1 or 2 (Channel 1 or 2)
  - IDx = A, B, R or T
8.4.7 Data Link Last Link Control - Channel Number

:\texttt{DATAlink:LC:CHn:LLC:CHANnel:NUM?}

\textbf{Description:} Query command returns the Last Link Control Channel Number.

\textbf{Query Format:} Decimal

\textbf{Query Response:} :DATAlink:LC:CHn:LLC:CHANnel:NUM?

420

CHn = 1 or 2 (Channel 1 or 2)

\textbf{NOTE}

8.4.8 Data Link Last Link Control - Channel “X” Number

:\texttt{DATAlink:LC:CHn:LLC:CHANnel:NUMx?}

\textbf{Description:} Query command returns the Last Link Control Channel Number.

\textbf{Query Format:} Decimal

\textbf{Query Response:} :DATAlink:LC:CHn:LLC:CHANnel:NUMA?

420

CHn = 1 or 2 (Channel 1 or 2)

NUMx = A, B, R or T

\textbf{NOTE}

8.4.9 Data Link Last Link Control - Emergency Status

:\texttt{DATAlink:LC:CHn:LLC:EMG}

:\texttt{DATAlink:LC:CHn:LLC:EMG?}

\textbf{Description:} Set command defines the Last Link Control Emergency Status. Query command returns parameter setting.

\textbf{Parameter:} 0 = Normal / non-emergency status

1 = Emergency Status

\textbf{Default Value:} 0

\textbf{Set/Query Format:} NR1

\textbf{Example:} :DATAlink:LC:CHn:LLC:EMG

Sets Last Link Control Emergency Status to 1.

\textbf{Query Response:} :DATAlink:LC:CHn:LLC:EMG?

1

CHn = 1 or 2 (Channel 1 or 2)

\textbf{NOTE}

8.4.10 Data Link Last Link Control - Frequency

:\texttt{DATAlink:LC:CHn:LLC:FREQuency?}

\textbf{Description:} Query command returns the Last Link Control Frequency.

\textbf{Query Format:} NR2 (mHz)

\textbf{Query Response:} :DATAlink:LC:CHn:LLC:FREQuency?

1275.006250

CHn = 1 or 2 (Channel 1 or 2)

\textbf{NOTE}
8.4.11  Data Link Last Link Control - Function

:DATAlink:LC:CHn:LLC:FUNCtion?

Description: Query command returns the Last Link Control Function.
Query Format: Decimal
Query Response: :DATAlink:LC:CHn:LLC:FUNCtion?
1234567890
CHn = 1 or 2 (Channel 1 or 2)

NOTE

8.4.12  Data Link Last Link Control - Local Registration Area

:DATAlink:LC:CHn:LLC:LRA?

Description: Query command returns the Last Link Control Local Registration Area.
Query Format: Decimal
Query Response: :DATAlink:LC:CHn:LLC:LRA?
98
CHn = 1 or 2 (Channel 1 or 2)

NOTE

8.4.13  Data Link Last Link Control - Logic Control Opcode

:DATAlink:LC:CHn:LLC:LCO

Description: Set command defines the Last Link Control Logic Control Opcode. Query command returns parameter setting.
Range: 0 to 63
Default Value: 0
Set/Query Format: Decimal
Example: :DATAlink:LC:CHn:LLC:LCO 25
Sets Last Link Control Logic Control Opcode to 25.
Query Response: :DATAlink:LC:CHn:LLC:LCO?
25
CHn = 1 or 2 (Channel 1 or 2)

NOTE
8.4.14 Data Link Last Link Control - Logic Control Opcode Description

:DATAlink:LC:CHn:LLC:LCODEDESC
:DATAlink:LC:CHn:LLC:LCODEDESC?

Description: Set command defines the Last Link Control Logic Control Opcode Description. Query command returns parameter setting.

Parameter: Refer to TIA-102.AABF Specification for abbreviations

Default Value: 0

Set/Query Format: decimal - TIA Abbreviation in ascii-string format

Example:

:DATAlink:LC:CHn:LLC:LCODEDESC 5 - LC_UU_ANS_REQ
Sets Last Link Control Logic Control Opcode Description to 5 - LC_UU_ANS_REQ.

Query Response:

:DATAlink:LC:CHn:LLC:LCODEDESC?
5 - LC_UU_ANS_REQ

CHn = 1 or 2 (Channel 1 or 2)

NOTE

8.4.15 Data Link Last Link Control - Logic Control Opcode Raw Data

:DATAlink:LC:CHn:LLC:RAWLCO
:DATAlink:LC:CHn:LLC:RAWLCO?

Description: Set command defines the Last Link Control Raw LCO. Query command returns parameter setting.

Parameter: 9 Decimal bytes

Default Value: 00 05 AB CD EF 99 88 77 66

Set/Query Format: 9 Decimal pairs

Example:

:DATAlink:LC:CHn:LLC:RAWLCO 00 05 AB CD EF 99 88 77 66
Sets Last Link Control Raw LCO to 00 05 AB CD EF 99 88 77 66.

Query Response:

:DATAlink:LC:CHn:LLC:RAWLCO?
00 05 AB CD EF 99 88 77 66

CHn = 1 or 2 (Channel 1 or 2)

NOTE

8.4.16 Data Link Last Link Control - Manufacturer Identifier

:DATAlink:LC:CHn:LLC:MFID?

Description: Query command returns the Last Link Control Manufacturer Identifier.

Query Format: Decimal

Query Response:

:DATAlink:LC:CHn:LLC:MFID?
45

CHn = 1 or 2 (Channel 1 or 2)

NOTE
8.4.17 Data Link Last Link Control - Message

:DATAlink:LC:CHn:LLC:MESSage?

Description: Query command returns the Last Link Control Message.
Query Format: Decimal
Query Response: :DATAlink:LC:CHn:LLC:MESSage?

42750
CHn = 1 or 2 (Channel 1 or 2)

8.4.18 Data Link Last Link Control - MFID Format (Implicit/Explicit)

:DATAlink:LC:CHn:LLC:SF
:DATAlink:LC:CHn:LLC:SF?

Description: Set command defines the Last Link Control MFID Format. Query command returns parameter setting.
Parameter: 0 = Explicit
1 = Implicit
Default Value: 0
Set/Query Format: NR1
Example: :DATAlink:LC:CHn:LLC:SF
Sets Last Trunking Command MFID Format to 1 (Implicit).
Query Response: :DATAlink:LC:CHn:LLC:SF?
1
CHn = 1 or 2 (Channel 1 or 2)

8.4.19 Data Link Last Link Control - Network Identifier

:DATAlink:LC:CHn:LLC:NETID?

Description: Query command returns the Last Link Control Network Identifier.
Query Format: Decimal
Query Response: :DATAlink:LC:CHn:LLC:NETID?

5175
CHn = 1 or 2 (Channel 1 or 2)

8.4.20 Data Link Last Link Control - Offset

:DATAlink:LC:CHn:LLC:OFFSet?

Description: Query command returns the Last Link Control Offset.
Query Format: NR2 (MHz)
Query Response: :DATAlink:LC:CHn:LLC:OFFSet?
-45.00
CHn = 1 or 2 (Channel 1 or 2)
8.4.21 Data Link Last Link Control - Priority

```plaintext
:DATAlink:LC:CHn:LLC:PRIORity?

Description: Query command returns the Last Link Control Priority.
Query Format: 4 bit data, hex format
As defined in TIA-102.AABF-F Specification
Query Response: :DATAlink:LC:CHn:LLC:PRIORity?
F
CHn = 1 or 2 (Channel 1 or 2)
```

8.4.22 Data Link Last Link Control - Protection Bit Value

```plaintext
:DATAlink:LC:CHn:LLC:P
:DATAlink:LC:CHn:LLC:P?

Description: Set command defines the Last Link Control Protection Bit Value.
Query command returns parameter setting.
Parameter: 0 = Clear
1 = Encrypted
Default Value: 0
Set/Query Format: NR1
Example: :DATAlink:LC:CHn:LLC:P
Sets Last Link Control Protection Bit Value to 1.
Query Response: :DATAlink:LC:CHn:LLC:P?
1
CHn = 1 or 2 (Channel 1 or 2)
```

8.4.23 Data Link Last Link Control - PSTN

```plaintext
:DATAlink:LC:CHn:LLC:PSTN?

Description: Query command returns the Last Link Control PSTN.
Query Data: 10 characters (0-9, A-D, #*HP)
Query Format: phone number string
1234987650
CHn = 1 or 2 (Channel 1 or 2)
```

8.4.24 Data Link Last Link Control - RF Subsystem Identifier

```plaintext
:DATAlink:LC:CHn:LLC:RFID?

Description: Query command returns the Last Link Control RF Subsystem Identifier.
Query Format: Decimal
Query Response: :DATAlink:LC:CHn:LLC:RFID?
98
CHn = 1 or 2 (Channel 1 or 2)
```
8.4.25 Data Link Last Link Control - S Bit

**:DATAlink:LC:CHn:LLC:S**
**:DATAlink:LC:CHn:LLC:S?**

**Description:** Set command defines the Last Link Control S Bit. Query command returns parameter setting.

**Parameter:** always 0

**Default Value:** 0

**Set/Query Format:** Decimal

**Example:**

:DATAlink:LC:CHn:LLC:S 0
Sets Last Link Control S Bit to 0.

:DATAlink:LC:CHn:LLC:S?
0

CHn = 1 or 2 (Channel 1 or 2)

**NOTE**

8.4.26 Data Link Last Link Control - Service Class

**:DATAlink:LC:CHn:LLC:SSERvice:CLASS?**

**Description:** Query command returns the Last Link Control Service Class.

**Query Format:** Decimal

**Query Response:**

:DATAlink:LC:CHn:LLC:SSERvice:CLASS?
98

CHn = 1 or 2 (Channel 1 or 2)

**NOTE**

8.4.27 Data Link Last Link Control - Service Class “X”

**:DATAlink:LC::DATAlink:LC:CHn:LLC:SSERvice:CLASSx?**

**Description:** Query command returns the Last Link Control Service Class.

**Query Format:** Decimal

**Query Response:**

:DATAlink:LC:CHn:LLC:SSERvice:CLASSA?
98

CHn = 1 or 2 (Channel 1 or 2)
CLASSx = A or B

**NOTE**

8.4.28 Data Link Last Link Control - Service Options

**:DATAlink:LC:CHn:LLC:SOPTIONS?**

**Description:** Query command returns Last Link Control Service Options.

**Query Format:** Decimal

**Query Response:**

:DATAlink:LC:CHn:LLC:SOPTIONS?
1A

CHn = 1 or 2 (Channel 1 or 2)

**NOTE**
8.4.29  Data Link Last Link Control - Services Authorized

:\DATAlink:LC:CHn:LLC:SERVices:AUTHorized?

**Description:** Query command returns the Last Link Control Services Authorized.

**Query Format:** Decimal

**Query Response:** :DATAlink:LC:CHn:LLC:SERVices:AUTHorized? 5175

CHn = 1 or 2 (Channel 1 or 2)

---

8.4.30  Data Link Last Link Control - Services Supported

:\DATAlink:LC:CHn:LLC:SERVices:SUPPored?

**Description:** Query command returns the Last Link Control Services Supported.

**Query Format:** Decimal

**Query Response:** :DATAlink:LC:CHn:LLC:SERVices:SUPPored? 5175

CHn = 1 or 2 (Channel 1 or 2)

---

8.4.31  Data Link Last Link Control - Site Identifier

:\DATAlink:LC:CHn:LLC:SITEID?

**Description:** Query command returns the Last Link Control Site Identifier.

**Query Format:** Decimal

**Query Response:** :DATAlink:LC:CHn:LLC:SITEID? 98

CHn = 1 or 2 (Channel 1 or 2)

---

8.4.32  Data Link Last Link Control - Source Identifier

:\DATAlink:LC:CHn:LLC:SRCID?

**Description:** Query command returns the Last Link Control Source Identifier.

**Query Format:** Decimal

**Query Response:** :DATAlink:LC:CHn:LLC:SRCID? 5175

CHn = 1 or 2 (Channel 1 or 2)
8.4.33 Data Link Last Link Control - Spacing

**:DATAlink:LC:CHn:LLC:SPACING?**

**Description:** Query command returns the Last Link Control Spacing.

**Query Format:** NR2 (kHz)

**Query Response:**

6.25

CHn = 1 or 2 (Channel 1 or 2)

**NOTE**

8.4.34 Data Link Last Link Control - Status

**:DATAlink:LC:CHn:LLC:STATUS?**

**Description:** Query command returns the Last Link Control Status.

**Query Format:** Decimal

**Query Response:**

42750

CHn = 1 or 2 (Channel 1 or 2)

**NOTE**

8.4.35 Data Link Last Link Control - System Identifier

**:DATAlink:LC:CHn:LLC:SYSID?**

**Description:** Query command returns the Last Link Control System Identifier.

**Query Format:** Decimal

**Query Response:**

2525

CHn = 1 or 2 (Channel 1 or 2)

**NOTE**

8.4.36 Data Link Last Link Control - Target Identifier

**:DATAlink:LC:CHn:LLC:TGTID?**

**Description:** Query command returns the Last Link Control Target Identifier.

**Query Format:** Decimal

**Query Response:**

5175

CHn = 1 or 2 (Channel 1 or 2)

**NOTE**
8.5 DATA LINK PROTOCOL - USER VOICE CALL

8.5.1 Data Link User Voice Call - Address Source

:DATAlink:LC:CHn:UVC:ADDRess:SRC?

- Description: Query command returns User Voice Call Address Source.
- Query Format: Decimal
  5175

CHn = 1 or 2 (Channel 1 or 2)

8.5.2 Data Link User Voice Call - Address Source Target

:DATAlink:LC:CHn:UVC:ADDRess:SRCTGT?

- Description: Query command returns User Voice Call Address Source Target.
- Query Format: Decimal
  5175

CHn = 1 or 2 (Channel 1 or 2)

8.5.3 Data Link User Voice Call - Address Target

:DATAlink:LC:CHn:UVC:ADDRess:TGT?

- Description: Query command returns User Voice Call Address Target.
- Query Format: Decimal
  5175

CHn = 1 or 2 (Channel 1 or 2)

8.5.4 Data Link User Voice Call - Address Timer

:DATAlink:LC:CHn:UVC:TIMER?

- Description: Query command returns User Voice Call Address Timer.
- Query Format: Decimal
  1234

CHn = 1 or 2 (Channel 1 or 2)
8.5.5 Data Link User Voice Call - Emergency Status

`:DATAlink:LC:CHn:UVC:EMG
`:DATAlink:LC:CHn:UVC:EMG?`  
Description: Set command defines the User Voice Call Emergency Status. Query command returns parameter setting.  
Parameter: 0 = Normal / non-emergency status  
1 = Emergency Status  
Default Value: 0  
Set/Query Format: NR1  
Example: :DATAlink:LC:CHn:UVC:EMG  
Sets User Voice Call Emergency Status to 1.  
Query Response: :DATAlink:LC:CHn:UVC:EMG?  
1  
CHn = 1 or 2 (Channel 1 or 2)

NOTE

8.5.6 Data Link User Voice Call - Logic Control Opcode

`:DATAlink:LC:CHn:UVC:LCO
`:DATAlink:LC:CHn:UVC:LCO?`  
Description: Set command defines the User Voice Call Logic Control Opcode. Query command returns parameter setting.  
Range: 0 to 63  
Default Value: 0  
Set/Query Format: Decimal  
Example: :DATAlink:LC:CHn:UVC:LCO 25  
Sets User Voice Call Logic Control Opcode to 25.  
Query Response: :DATAlink:LC:CHn:UVC:LCO?  
25  
CHn = 1 or 2 (Channel 1 or 2)

NOTE

8.5.7 Data Link User Voice Call - Logic Control Opcode Description

`:DATAlink:LC:CHn:UVC:LCODESC
`:DATAlink:LC:CHn:UVC:LCODESC?`  
Description: Set command defines the User Voice Call Logic Control Opcode Description. Query command returns parameter setting.  
Parameter: Refer to TIA-102.AABF Specification for abbreviations  
Default Value: 0 - LC_GRP_V_CH_USR  
Set/Query Format: decimal - TIA Abbreviation in ascii-string format  
Example: :DATAlink:LC:CHn:UVC:LCODESC 0 - LC_GRP_V_CH_USR  
Sets User Voice Call Logic Control Opcode Description to 0 - LC_GRP_V_CH_USR.  
Query Response: :DATAlink:LC:CHn:UVC:LCODESC?  
0 - LC_GRP_V_CH_USR  
CHn = 1 or 2 (Channel 1 or 2)

NOTE
8.5.8  
**Data Link User Voice Call - Logic Control Opcode Raw Data**

:DATAlink:LC:CHn:UVC:RAWLCO
:DATAlink:LC:CHn:UVC:RAWLCO?

**Description:**  
Set command defines the User Voice Call Raw LCO.  
Query command returns parameter setting.

**Parameter:** 9 Decimal bytes

**Default Value:** 00 05 AB CD EF 99 88 77 66

**Set/Query Format:** 9 Decimal pairs

**Example:** :DATAlink:LC:CHn:UVC:RAWLCO 00 05 AB CD EF 99 88 77 66  
Sets User Voice Call Raw LCO to 00 05 AB CD EF 99 88 77 66.

**Query Response:** :DATAlink:LC:CHn:UVC:RAWLCO?  
00 05 AB CD EF 99 88 77 66

CHn = 1 or 2 (Channel 1 or 2)

---

8.5.9  
**Data Link User Voice Call - Manufacturer Identifier**

:DATAlink:LC:CHn:UVC:MFID
:DATAlink:LC:CHn:UVC:MFID?

**Description:**  
Set command defines the User Voice Call Manufacturer Identifier.  
Query command returns parameter setting.

**Range:** 0 to 255

**Default Value:** 0

**Set/Query Format:** Decimal

**Example:** :DATAlink:LC:CHn:UVC:MFID 45  
Sets User Voice Call Manufacturer Identifier to 45.

**Query Response:** :DATAlink:LC:CHn:UVC:MFID?  
45

CHn = 1 or 2 (Channel 1 or 2)

---

8.5.10  
**Data Link User Voice Call - MFID Format (Implicit/Explicit)**

:DATAlink:LC:CHn:UVC:SF
:DATAlink:LC:CHn:UVC:SF?

**Description:**  
Set command defines the User Voice Call MFID Format.  
Query command returns parameter setting.

**Parameter:**  
0 = Explicit  
1 = Implicit

**Default Value:** 0

**Set/Query Format:** NR1

**Example:** :DATAlink:LC:CHn:UVC:SF  
Sets User Voice Call MFID Format to 1 (Implicit).

**Query Response:** :DATAlink:LC:CHn:UVC:SF?  
1

CHn = 1 or 2 (Channel 1 or 2)
8.5.11 Data Link User Voice Call - Protection Bit Value

:DATAlink:LC:CHn:UVC:P
:DATAlink:LC:CHn:UVC:P?

Description: Set command defines the User Voice Call Protection Bit Value.
Query command returns parameter setting.

Parameter: 
0 = Clear
1 = Encrypted

Default Value: 0

Set/Query Format: NR1

Example: :DATAlink:LC:CHn:UVC:P
Sets User Voice Call Protection Bit Value to 1.

Query Response: :DATAlink:LC:CHn:UVC:P?
1

CHn = 1 or 2 (Channel 1 or 2)

NOTE

8.5.12 Data Link User Voice Call - S Bit

:DATAlink:LC:CHn:UVC:S
:DATAlink:LC:CHn:UVC:S?

Description: Set command defines the User Voice Call S Bit.
Query command returns parameter setting.

Parameter: Always 0

Default Value: 0

Set/Query Format: NR1

Example: :DATAlink:LC:CHn:UVC:S 0
Sets User Voice Call S Bit to 0.

Query Response: :DATAlink:LC:CHn:UVC:S?
0

CHn = 1 or 2 (Channel 1 or 2)

NOTE

8.5.13 Data Link User Voice Call - Service Options

:DATAlink:LC:CHn:UVC:SOPTIONS?

Description: Query command returns User Voice Call Service Options.

Query Format: Decimal

Query Response: :DATAlink:LC:CHn:UVC:SOPTIONS?
75

CHn = 1 or 2 (Channel 1 or 2)

NOTE
8.6 **ENCRYPTION PROTOCOL**

8.6.1 Encryption - ALG ID

`:ENCryption:ALGId`  
`:ENCryption:ALGId?`

**Description:** Set command defines encryption key algorithm. Query command returns parameter setting.

**Parameter:** AES | CLEAR | DES

**Default Value:** CLEAR

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

**Example:**

```
:ENCryption:ALGId AES
Sets Encryption to AES.
```

**Query Response:**

```
:ENCryption:ALGId?
AES
```

**NOTE**

AES is only valid when AES Option is installed in Test Set.

8.6.2 Encryption - Apply Key ID

`:ENCryption:APPLY`  
`:ENCryption:APPLY?`

**Description:** Set command saves Key ID data for specified slot. Query command indicates if Key ID was successfully saved.

**Range:** 1 to 16

**Set/Query Format:** NR1

**Query Data:**

- 0 = Successful (Saved)
- 1 = Failed (Not saved)

**Example:**

```
:ENCryption:KEYID 8
Saves Key ID to slot 8.
```

**NOTE**

n = 1 to 16

8.6.3 Encryption - File Name

`:ENCryption:NAME`  
`:ENCryption:NAME?`

**Description:** Set command defines the name for the selected encryption key slot. Query command returns name of selected encryption slot.

**Parameter:** 32 character maximum

**Set/Query Format:** ascii string

**Example:**

```
:ENCryption:NAME “test_file”
Names encryption key slot to test_file.
```

**Query Response:**

```
:ENCryption:NAME
test_file
```
8.6.4 Encryption - Key

:ENCRYPTION:KEY

**Description:** Command defines KEY ID. Parameter can not be queried.

**Parameter:**
- DES = 16 character maximum
- AES = 64 character maximum

**Default Value:** 7070707070707070

**Set Format:** Number String

**Example:** :ENCRYPTION:KEY 0123456789012345
Sets Encryption key to 0123456789012345.

8.6.5 Encryption - Key ID

:ENCRYPTION:KEYId

:ENCRYPTION:KEYId?

**Description:**
- Set command defines the key id for the selected encryption key slot.
- Query command returns parameter setting.

**Range:** 0 to 0xFFFF (0 to 65535)

**Default Value:** 0

**Set Format:**
- binary: value begins with #b (#b1111111111111111)
- octal: value begins with #q (#q17777)
- decimal: value is entered as a decimal value (65535)
- hex: value begins with #h (#hFFFF)

**Query Format:**
- binary: query command ends with b
- octal: query command ends with q
- decimal: default format
- hex: query command ends with h

**Example:**
:ENCRYPTION:KEYId 1234
Sets Encryption Key ID to 1234 (4D2 Hex).

**Query Response:**
:ENCRYPTION:KEYId?
1234

8.6.6 Encryption - Slot Number

:ENCRYPTION:SLOTn

:ENCRYPTION:SLOT?

**Description:** Set command defines Encryption Slot number.
Query command returns parameter setting.

**Range:** 1 to 16

**Default Value:** 1

**Set/Query Format:** NR1

**Example:**
:ENCRYPTION:SLOT4
Saves Key ID to Slot 4.

**Query Response:**
:ENCRYPTION:SLOT?
4

**NOTE**
SLOTn = 1 to 16
8.6.7 Encryption - Validate Key

:ENCryption:KEYVALID?

Description: Command verifies length of key for select encryption type.
Query Data: VALID | INVALID
Query Response: :ENCryption:KEYVALID?
               VALID

8.6.8 Encryption - Validate Pair

:ENCryption:PAIRVALID?

Description: Command checks validity of the current Key ID and Algid pair found.
Query Data: VALID = no duplicate Key ID and Algid pair found
           DUPLICATE = duplicate Key ID and Algid found
           INVALIDALGID = Algid value not defined
           INVALIDKEYID = Keyid value not defined
Query Response: :ENCryption:PAIRVALID?
               1
### 8.7 MESSAGE ENCODE

#### 8.7.1 Encode Message - Address Group

:DATAlink:LC:ENC:GROUP:ADDRESS

:DATAlink:LC:ENC:GROUP:ADDRESS?

**Description:** Set command defines Encode Message Address Group. Query command returns Encode Message Address Group.

**Range:** 0 to 65535 (0xFFFF)

**Default Value:** 0

**Set Format:**
- binary: value begins with #b (#b1111111111111111)
- octal: value begins with #q (#q177777)
- decimal: value is entered as a decimal value (65535)
- hex: value begins with #h (#hFFFF)

**Query Format:**
- binary: query command ends with b
- octal: query command ends with q
- decimal: default format
- hex: query command ends with h

**Example:** :DATAlink:LC:ENC:GROUP:ADDRESS #q11064

Sets Encode Message Address Group to 4660 in octal format.

**Query Response:** :DATAlink:LC:ENC:GROUP:ADDRESS?

4660

#### 8.7.2 Encode Message - Address Group “X”

:DATAlink:LC:ENC:GROUP:ADDRESSx

:DATAlink:LC:ENC:GROUP:ADDRESSx?

**Description:** Set command defines Encode Message Address Group. Query command returns Encode Message Address Group.

**Range:** 0 to 65535 (0xFFFF)

**Default Value:** 0

**Set Format:**
- binary: value begins with #b (#b1111111111111111)
- octal: value begins with #q (#q177777)
- decimal: value is entered as a decimal value (65535)
- hex: value begins with #h (#hFFFF)

**Query Format:**
- binary: query command ends with b
- octal: query command ends with q
- decimal: default format
- hex: query command ends with h

**Example:** :DATAlink:LC:ENC:GROUP:ADDRESSA #q11064

Sets Encode Message Address Group A to 4660 in octal format.

**Query Response:** :DATAlink:LC:ENC:GROUP:ADDRESSA?

4660

**NOTE**

where ADDRESSx x = A or B
### 8.7.3 Encode Message - Address Source

**:DATAlink:LC:ENC:ADDRess:SRC**

**:DATAlink:LC:ENC:ADDRess:SRC?**

**Description:** Set command defines Encode Message Address Source. Query command returns Encode Message Address Source.

**Range:** 0 to 16777215 (0xFFFFFFF)

**Default Value:** 0

**Set Format:**
- binary: value begins with #b (#b1111111111111111)
- octal: value begins with #q (#q77777777)
- decimal: value is entered as a decimal value (16777215)
- hex: value begins with #h (#hFFFFFF)

**Query Format:**
- binary: query command ends with b
- octal: query command ends with q
- decimal: default format
- hex: query command ends with h

**Example:**

`:DATAlink:LC:ENC:ADDRess:SRC #h1260B`

Sets Encode Message Address Source to 75275 in hexadecimal format.

**Query Response:**

`:DATAlink:LC:ENC:ADDRess:SRC? 75275`

### 8.7.4 Encode Message - Address Source Target

**:DATAlink:LC:ENC:ADDRess:SRCTGT**

**:DATAlink:LC:ENC:ADDRess:SRCTGT?**

**Description:** Set command defines Encode Message Address Source Target. Query command returns Encode Message Address Source Target.

**Range:** 0 to 16777215 (0xFFFFFFF)

**Default Value:** 0

**Set Format:**
- binary: value begins with #b (#b1111111111111111)
- octal: value begins with #q (#q77777777)
- decimal: value is entered as a decimal value (16777215)
- hex: value begins with #h (#hFFFFFF)

**Query Format:**
- binary: query command ends with b
- octal: query command ends with q
- decimal: default format
- hex: query command ends with h

**Example:**

`:DATAlink:LC:ENC:ADDRess:TGT #h1260B`

Sets Encode Address Source Target to 75275 in hexadecimal format.

**Query Response:**

`:DATAlink:LC:ENC:ADDRess:TGT? 75275`
8.7.5 Encode Message - Address Target

:DATAlink:LC:ENC:ADDRess:TGT
:DATAlink:LC:ENC:ADDRess:TGT?

Description: Set command defines Encode Message Address Target. Query command returns Encode Message Address Target.

Range: 0 to 16777215 (0xFFFFFF)

Default Value: 0

Set Format:
- binary: value begins with #b (#b111111111111111111111111)
- octal: value begins with #q (#q77777777)
- decimal: value is entered as a decimal value (16777215)
- hex: value begins with #h (#FFFFFF)

Query Format:
- binary: query command ends with b
- octal: query command ends with q
- decimal: default format
- hex: query command ends with h

Example: :DATAlink:LC:ENC:ADDRess:TGT #h1260B
Sets Encode Address Target to 75275 in hexadecimal format.

75275

8.7.6 Encode Message - Address Timer

:DATAlink:LC:ENC:TIMER
:DATAlink:LC:ENC:TIMER?

Description: Set command defines Encode Message Address Timer. Query command returns Encode Message Address Timer.

Range: 0 to 65535 (0xFFFF)

Default Value: 0

Set Format:
- binary: value begins with #b (#b1111111111111111)
- octal: value begins with #q (#q17777777)
- decimal: value is entered as a decimal value (65535)
- hex: value begins with #h (#hFFFF)

Query Format:
- binary: query command ends with b
- octal: query command ends with q
- decimal: default format
- hex: query command ends with h

Example: :DATAlink:LC:ENC:TIMER #b1010111010010
Sets Encode Message Address Timer to 1234 in binary format.

Query Response: :DATAlink:LC:ENC:TIMER?
1234
8.7.7 Encode Message - Bandwidth

:DATAlink:LC:ENC:BANDWidth
:DATAlink:LC:ENC:BANDWidth?

- **Description:** Set command defines the Encode Message Bandwidth value. Query command returns the Encode Message Bandwidth.
- **Range:** 0.0 to 63.875 kHz
- **Units:** kHz
- **Default Value:** 12.5 kHz
- **Set/Query Format:** NRf | NR2 (kHz)
- **Example:** :DATAlink:LC:ENC:BANDWidth 7.5
  Sets Encode Message Bandwidth to 7.5 kHz.
- **Query Response:** :DATAlink:LC:ENC:BANDWidth?
  7.50

8.7.8 Encode Message - Bandwidth VU

:DATAlink:LC:ENC:VUBANDWidth
:DATAlink:LC:ENC:VUBANDWidth?

- **Description:** Set command defines the Encode Message Bandwidth VU value. Query command returns current setting.
- **Range:** 0.0 to 63.875 kHz
- **Units:** kHz
- **Default Value:** 12.5 kHz
- **Set/Query Format:** NRf | NR2 (kHz)
- **Example:** :DATAlink:LC:ENC:VUBANDWidth 7.5
  Sets Encode Message Bandwidth VU to 7.5 kHz.
- **Query Response:** :DATAlink:LC:ENC:VUBANDWidth?
  7.50

**NOTE**
This field applies to LCO 25 only.
### 8.7.9 Encode Message - CFVA

**Command:**  
:DATAlink:LC:ENC:CFVA?

**Description:**  
Set command defines Encode Message CFVA flags.  
Query command returns the Encode Message PSTN.

**Query Data:**
- **C:**  
  0 = Broadcast is in Non-Conventional Mode  
  1 = Broadcast is in Conventional Mode
- **F:**  
  0 = Normal Broadcast Condition  
  1 = Site in Broadcast Failure Condition
- **V:**  
  0 = Unknown or last reported as Valid (site not responding)  
  1 = Valid Content
- **A:**  
  0 = Inactive network connection with the RFSS controller  
  1 = Active network connection with the RFSS controller

**Default Value:**  
0

**Set Format:**
- binary: value begins with #b (#b0)
- octal: value begins with #q (#q0)
- decimal: value is entered as a decimal value (0)
- hex: value begins with #h (#h0)

**Query Format:**
- binary: query command ends with b (returned data drops leading 0’s)
- octal: query command ends with q
- decimal: default format
- hex: query command ends with h

**Example:**
:DATAlink:LC:ENC:CFVA #b0110  

**Query Response:**
:DATAlink:LC:ENC:CFVA?b
110

### 8.7.10 Encode Message - Channel Identifier

**Command:**  
:DATAlink:LC:ENC:CHANnel:ID

**Description:**  
Set command defines Encode Message Channel Identifier.  
Query command returns the Encode Message Channel Identifier.

**Range:**  
0 to 15

**Default Value:**  
0

**Set/Query Format:**  
Decimal

**Example:**
:DATAlink:LC:ENC:CHANnel:ID 10  
Sets Encode Message Channel Identifier to 10.

**Query Response:**
:DATAlink:LC:ENC:CHANnel:ID?
10
8.7.11 Encode Message - Channel “X” Identifier

:DATAlink:LC:ENC:CHANnel:IDx
:DATAlink:LC:ENC:CHANnel:IDx?

Description: Set command defines Encode Message Channel Identifier. Query command returns the Encode Message Channel Identifier.

Range: 0 to 15
Default Value: 0
Set/Query Format: Decimal

Example: :DATAlink:LC:ENC:CHANnel:IDA 10
Sets Encode Message Channel A Identifier to 10.

Query Response: :DATAlink:LC:ENC:CHANnel:IDA?
10

NOTE
IDx = A, B, R or T

8.7.12 Encode Message - Channel Number

:DATAlink:LC:ENC:CHANnel:NUM
:DATAlink:LC:ENC:CHANnel:NUM?

Description: Set command defines Encode Message Channel Number. Query command returns the Encode Message Channel Number.

Range: 0 to 4095 (0xFFF)
Default Value: 0
Set Format: binary: value begins with #b (#b111111111111)
          octal: value begins with #q (#q7777)
          decimal: value is entered as a decimal value (4095)
          hex: value begins with #h (#hFFF)

Query Format: binary: query command ends with b
              octal: query command ends with q
              decimal: default format
              hex: query command ends with h

Example: :DATAlink:LC:ENC:CHANnel:NUM #q7215
Sets Encode Message Channel Number to 3725 in octal format.

E8D
8.7.13 Encode Message - Channel “X” Number

:**DATAlink:LC:ENC:CHANnel:NUMx**

**:**DATAlink:LC:ENC:CHANnel:NUMx?**

**Description:** Set command defines Encode Message Channel Number. Query command returns the Encode Message Channel Number.

**Range:** 0 to 4095 (0xFFF)

**Default Value:** 0

**Set Format:**
- binary: value begins with #b (#b11111111111)
- octal: value begins with #q (#q7777)
- decimal: value is entered as a decimal value (4095)
- hex: value begins with #h (#hFFF)

**Query Format:**
- binary: query command ends with b
- octal: query command ends with q
- decimal: default format
- hex: query command ends with h

**Example:**
**:DATAlink:LC:ENC:CHANnel:NUMA #q7215**
Sets Encode Message Channel A Number to 3725 in octal format.

**Query Response:**
**:DATAlink:LC:ENC:CHANnel:NUMA? h E8D**

**NOTE**
NUMx = A, B, R or T.

8.7.14 Encode Message - Emergency Status

:**DATAlink:LC:ENC:EMG**

:**DATAlink:LC:ENC:EMG?**

**Description:** Set command defines the Encode Message Emergency Status. Query command returns parameter setting.

**Parameter:**
- 0 = Normal / non-emergency status
- 1 = Emergency Status

**Default Value:** 0

**Set/Query Format:** NR1

**Example:**
**:DATAlink:LC:ENC:EMG**
Sets Encode Message Emergency Status to 1.

**Query Response:**
**:DATAlink:LC:ENC:EMG? 1**
8.7.15 Encode Message - Frequency

:DATAlink:LC:ENC:FREQuency
:DATAlink:LC:ENC:FREQuency?

**Description:** Set command defines Encode Message Frequency. Query command returns the Encode Message Frequency.

**Range:** 0.0 to 20000.00 mHz

**Units:** mHz

**Default Value:** 1275.006250 mHz

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

**Example:** :DATAlink:LC:ENC:FREQuency 1350
Sets Encode Message Frequency to 1350.00 mHz.

**Query Response:** :DATAlink:LC:ENC:FREQuency?
1350.000000

8.7.16 Encode Message - Function

:DATAlink:LC:ENC:FUNCtion
:DATAlink:LC:ENC:FUNCtion?

**Description:** Set command defines Encode Message Function. Query command returns the Encode Message Function.

**Range:** 0 to 1099511627775 (0xFFFFFFFFFF)

**Default Value:** 0

**Set Format:** binary: value begins with #b
(#b1111111111111111111111111111111111111111)

octal: value begins with #q (#q17777777777777)

decimal: value is entered as a decimal value (1099511627775)

hex: value begins with #h (#hFFFFFFFFFF)

**Query Format:** binary: query command ends with b

octal: query command ends with q

decimal: default format

hex: query command ends with h

**Example:** :DATAlink:LC:ENC:FUNCtion #h499602D2
Sets Encode Message Function to 1234567890 in hexadecimal format.

**Query Response:** :DATAlink:LC:ENC:FUNCtion?
1234567890
8.7.17  Encode Message - Local Registration Area

**:DATAlink:LC:ENC:LRA**
**:DATAlink:LC:ENC:LRA?**

**Description:** Set command defines Encode Message Local Registration Area.
Query command returns the Encode Message Local Registration Area.

**Range:** 0 to 255 (0xFF)
**Default Value:** 0

**Set Format:**
- binary: value begins with #b (#b11111111)
- octal: value begins with #q (#q377)
- decimal: value is entered as a decimal value (255)
- hex: value begins with #h (#hFF)

**Query Format:**
- binary: query command ends with b
- octal: query command ends with q
- decimal: default format
- hex: query command ends with h

**Example:**
**:DATAlink:LC:ENC:LRA 98**
Sets Encode Message Local Registration Area to 98.

**Query Response:**
**:DATAlink:LC:ENC:LRA?h 62**

8.7.18  Encode Message - Logic Control Opcode

**:DATAlink:LC:ENC:LCO**
**:DATAlink:LC:ENC:LCO?**

**Description:** Set command defines the Encode Message Logic Control Opcode.
Query command returns parameter setting.

**Range:** 0 to 63
**Default Value:** 0

**Set/Query Format:** NR1

**Example:**
**:DATAlink:LC:ENC:LCO 25**
Sets Encode Message Logic Control Opcode to 25.

**Query Response:**
**:DATAlink:LC:ENC:LCO? 25**

8.7.19  Encode Message - Logic Control Opcode Description

**:DATAlink:LC:ENC:LCODESC**
**:DATAlink:LC:ENC:LCODESC?**

**Description:** Set command defines the Encode Message Logic Control Opcode Description.
Query command returns parameter setting.

**Parameter:** Refer to TIA-102.AABF Specification for abbreviations

**Default Value:** 0 - LC_GRP_V_CH_USR

**Set/Query Format:** decimal - TIA Abbreviation in ascii-string format

**Example:**
**:DATAlink:LC:ENC:LCODESC 0 - LC_GRP_V_CH_USR**
Sets Encode Message Logic Control Opcode Description to 0 - LC_GRP_V_CH_USR.

**Query Response:**
**:DATAlink:LC:ENC:LCODESC? 0 - LC_GRP_V_CH_USR**
8.7.20 Encode Message - Logic Control Opcode Raw Data

:DATAlink:LC:ENC:RAWLCO
:DATAlink:LC:ENC:RAWLCO?

Description: Set command defines the Encode Message Raw LCO. Query command returns parameter setting.

Parameter: 9 Decimal bytes
Default Value: 05 05 AB CD EF 99 88 77 66
Set/Query Format: 9 Decimal pairs
Example: :DATAlink:LC:ENC:RAWLCO 00 05 AB CD EF 99 88 77 66
Sets Encode Message Raw LCO to 00 05 AB CD EF 99 88 77 66.
Query Response: :DATAlink:LC:ENC:RAWLCO?
00 05 AB CD EF 99 88 77 66
CHn = 1 or 2 (Channel 1 or 2)

NOTE

8.7.21 Encode Message - Manufacturer Identifier

:DATAlink:LC:ENC:MFID
:DATAlink:LC:ENC:MFID?

Description: Set command defines Encode Message Manufacturer Identifier. Query command returns the Encode Message Manufacturer Identifier.

Range: 0 to 255 (0xFF)
Default Value: 0
Set Format: binary: value begins with #b (#b11111111)
octal: value begins with #q (#q377)
decimal: value is entered as a decimal value (255)
hex: value begins with #h (#hFF)
Query Format: binary: query command ends with b
octal: query command ends with q
decimal: default format
hex: query command ends with h

Example: :DATAlink:LC:ENC:MFID 45
Sets Encode Message Manufacturer Identifier to 45.
Query Response: :DATAlink:LC:ENC:MFID?h
2D

8.7.22 Encode Message - MFID Format (Implicit/Explicit)

:DATAlink:LC:ENC:SF?

Description: Query command returns MFID format setting received from UUT.
Query Data: 0 or 1 as defined in TIA-102-AABF-B Specification
Query Format: Decimal
Query Response: :DATAlink:LC:ENC:SF?
1
8.7.23 Encode Message - Message

:DATAlink:LC:ENC:MESSage
:DATAlink:LC:ENC:MESSage?

Description: Set command defines the Encoded Message.
Query command returns the Encoded Message.

Range: 0 to 65535 (0xFFFF)
Default Value: 0

Set Format: binary: value begins with #b (#b1111111111111111)
octal: value begins with #q (#q1777777)
decimal: value is entered as a decimal value (65535)
hex: value begins with #h (#hFFFF)

Query Format: binary: query command ends with b
octal: query command ends with q
decimal: default format
hex: query command ends with h

Example: :DATAlink:LC:ENC:MESSage 4660
Sets Encode Message to 4660.

Query Response: :DATAlink:LC:ENC:MESSage?
4660

8.7.24 Encode Message - Network Identifier

:DATAlink:LC:ENC:NETID
:DATAlink:LC:ENC:NETID?

Description: Set command defines the Encode Message Network Identifier flag.
Query command returns the Encode Message Network Identifier.

Range: 0 to 1048575 (0xFFFFFFFF)
Default Value: 0

Set Format: binary: value begins with #b (#b111111111111111111)
octal: value begins with #q (#q3777777777)
decimal: value is entered as a decimal value (1048575)
hex: value begins with #h (#hFFFFFF)

Query Format: binary: query command ends with b
octal: query command ends with q
decimal: default format
hex: query command ends with h

Example: :DATAlink:LC:ENC:NETID #q177455
Sets Encode Message Network Identifier to 65325 in octal format.

Query Response: :DATAlink:LC:ENC:NETID?
65325
8.7.25 Encode Message - Offset

:DATAlink:LC:ENC:OFFSet
:DATAlink:LC:ENC:OFFSet?

Description: Set command defines the Encode Message Offset value. Query command returns the Encode Message Offset.
Range: -63.875 to +63.875 MHz
Default Value: -45.00 MHz
Set/Query Format: NRf | NR2 (MHz)
Example: :DATAlink:LC:ENC:OFFSet 10.00MHz
Sets Encode Message Offset value to +10.00 MHz.
Query Response: :DATAlink:LC:ENC:OFFSet?
10.00

NOTE
This field applies to LCO 25 only.

8.7.26 Encode Message - Offset VU

:DATAlink:LC:ENC:VUOFFSet
:DATAlink:LC:ENC:VUOFFSet?

Description: Set command defines the Encode Message Offset VU value. Query command returns current setting.
Range: -63.875 to +63.875 MHz
Default Value: -45.00 MHz
Set/Query Format: NRf | NR2 (MHz)
Example: :DATAlink:LC:ENC:VUOFFSet 10.00MHz
Sets Encode Message Offset value to +10.00 MHz.
Query Response: :DATAlink:LC:ENC:VUOFFSet?
10.00
8.7.27 Encode Message - Priority

:DATAlink:LC:ENC:PRIORity
:DATAlink:LC:ENC:PRIORity?

Description: Set command defines the Encode Message Priority flag. Query command returns the Encode Message Priority flag.

Range: 0 to 15
As defined in TIA-102.AABF-F Specification

Default Value: 0

Set Format:
binary: value begins with #b (#b1111)
octal: value begins with #q (#q17)
decimal: value is entered as a decimal value (15)
hex: value begins with #h (#hF)

Query Format:
binary: query command ends with b
octal: query command ends with q
decimal: default format
hex: query command ends with h

Example: :DATAlink:LC:ENC:PRIORity #hB
Sets Encode Message Priority flag to 11 in hexadecimal format.

Query Response: :DATAlink:LC:ENC:PRIORity? q
17

8.7.28 Encode Message - Protection Bit Value

:DATAlink:LC:ENC:P
:DATAlink:LC:ENC:P?

Description: Set command defines the Encode Message Protection Bit Value. Query command returns parameter setting.

Parameter:
0 = Clear
1 = Encrypted

Default Value: 0

Set/Query Format: NR1

Example: :DATAlink:LC:ENC:P
Sets Encode Message Protection Bit Value to 1.

Query Response: :DATAlink:LC:ENC:P?
1
8.7.29  Encode Message - PSTN

:DATAlink:LC:ENC:PSTN
:DATAlink:LC:ENC:PSTN?

Description: Set command defines the Encode Message PSTN. Query command returns the Encode Message PSTN.

Parameter: 10 characters (0-9, A-D, #*HP)

Default Value: 0

Set/Query Format: phone number string

Example: :DATAlink:LC:ENC:PSTN 1234987650
Sets the Encode Message PSTN to 124987650.

Query Response: :DATAlink:LC:ENC:PSTN?
1234987650

8.7.30  Encode Message - RF Subsystem Identifier

:DATAlink:LC:ENC:RFID
:DATAlink:LC:ENC:RFID?

Description: Set command defines the Encode Message RF Subsystem Identifier. Query command returns the Encode Message RF Subsystem Identifier.

Range: 0 to 255 (0xFF)

Default Value: 0

Set Format: binary: value begins with #b (#b11111111) octal: value begins with #q (#q377) decimal: value is entered as a decimal value (255) hex: value begins with #h (#hFF)

Query Format: binary: query command ends with b octal: query command ends with q decimal: default format hex: query command ends with h

Example: :DATAlink:LC:ENC:RFID 98
Sets Encode Message RFID value to 98.

Query Response: :DATAlink:LC:ENC:RFID?h
62

8.7.31  Encode Message - S Bit

:DATAlink:LC:ENC:S
:DATAlink:LC:ENC:S?

Description: Set command defines the Encode Message S Bit. Query command returns parameter setting.

Parameter: always 0

Default Value: 0

Set/Query Format: Decimal

Example: :DATAlink:LC:ENC:S 0
Sets Encode Message S Bit to 0.

Query Response: :DATAlink:LC:ENC:S?
0
8.7.32  **Encode Message - Send Message**  
**:DATAlink:LC:ENC:SEND**

**Description:** Command sends the defined encoded message.

8.7.33  **Encode Message - Service Options**  
**:DATAlink:LC:ENC:SOPTIONS**  
**:DATAlink:LC:ENC:SOPTIONS?**

**Description:**
- Set command defines Encode Message Service Options.
- Query command returns Encode Message Service Options.

**Range:** 0 to 255 (0xFF)

**Default Value:** 0

**Set Format:**
- binary: value begins with #b (#b11111111)
- octal: value begins with #o (#o377)
- decimal: value is entered as a decimal value (255)
- hex: value begins with #h (#hFF)

**Query Format:**
- binary: query command ends with b
- octal: query command ends with q
- decimal: default format
- hex: query command ends with h

**Example:**
**:DATAlink:LC:ENC:SOPTIONS #h4B**  
Sets Encode Message Service Option to 75 in hexadecimal format.

**Query Response:**  
**:DATAlink:LC:ENC:SOPTIONS?**  
75

8.7.34  **Encode Message - Services Authorized**  
**:DATAlink:LC:ENC:SERVices:AUTHorized**  
**:DATAlink:LC:ENC:SERVices:AUTHorized?**

**Description:**
- Set command defines the Encode Message Services Authorized.
- Query command returns the Encode Message Services Authorized.

**Range:** 0 to 1048575 (0xFFFFFF)

**Default Value:** 0

**Set Format:**
- binary: value begins with #b (#b1111111111111111)
- octal: value begins with #o (#o3777777)
- decimal: value is entered as a decimal value (1048575)
- hex: value begins with #h (#hFFFFFF)

**Query Format:**
- binary: query command ends with b
- octal: query command ends with q
- decimal: default format
- hex: query command ends with h

**Example:**
**:DATAlink:LC:ENC:SERVices:AUTHorized #q177455**  
Sets Encode Message Services Authorized to 65325 in octal format.

**Query Response:**  
**:DATAlink:LC:ENC:SERVices:AUTHorized?**  
65325
8.7.35  Encode Message - Services Supported

:DATAlink:LC:ENC:SERVices:SUPPOrted
:DATAlink:LC:ENC:SERVices:SUPPOrted?

Description: Set command defines the Encode Message Services Supported. Query command returns the Encode Message Services Supported.

Range: 0 to 1048575 (0FFFFFF)

Default Value: 0

Set Format: binary: value begins with #b (#b111111111111111111) octal: value begins with #q (#q3777777) decimal: value is entered as a decimal value (1048575) hex: value begins with #h (#hFFFFFF)

Query Format: binary: query command ends with b octal: query command ends with q decimal: default format hex: query command ends with h

Example: :DATAlink:LC:ENC:SERVices:SUPPOrted 65325
Sets Encode Message Services Supported to 65325.

177455

8.7.36  Encode Message - Site Identifier

:DATAlink:LC:ENC:SITEID
:DATAlink:LC:ENC:SITEID?

Description: Set command defines the Encode Message Site Identifier. Query command returns the Encode Message Site Identifier.

Range: 0 to 255 (0xFF)

Default Value: 0

Set Format: binary: value begins with #b (#b11111111) octal: value begins with #q (#q377) decimal: value is entered as a decimal value (255) hex: value begins with #h (#hFF)

Query Format: binary: query command ends with b octal: query command ends with q decimal: default format hex: query command ends with h

Example: :DATAlink:LC:ENC:SITEID 75
Sets Encode Message Site Identifier to 75.

Query Response: :DATAlink:LC:ENC:SITEID?q
4B
8.7.37   Encode Message - Source Identifier

:DATAlink:LC:ENC:SRCID
:DATAlink:LC:ENC:SRCID?

**Description:** Set command defines the Encode Message Source Identifier.
Query command returns the Encode Message Source Identifier.

**Range:** 0 to 16777215 (0xFFFFFFFF)

**Default Value:** 0

**Set Format:**
- binary: value begins with #b (#b1111111111111111111111)
- octal: value begins with #q (#q77777777)
- decimal: value is entered as a decimal value (16777215)
- hex: value begins with #h (#hFFFFFF)

**Query Format:**
- binary: query command ends with b
- octal: query command ends with q
- decimal: default format
- hex: query command ends with h

**Example:**
:DATAlink:LC:ENC:SRCID 75275
Sets Encode Message Source Identifier to 75275.

**Query Response:**
:DATAlink:LC:ENC:SRCID?b
10010011000001011

8.7.38   Encode Message - Spacing

:DATAlink:LC:ENC:SPACing
:DATAlink:LC:ENC:SPACing?

**Description:** Set command defines Encode Message Spacing.
Query command returns the Encode Message Spacing.

**Range:** 0.0 to 128.0 kHz

**Units:** kHz

**Default Value:** 6.25 kHz

**Set/Query Format:** NR2

**Example:**
:DATAlink:LC:ENC:SPACing 6.25
Sets Encode Message Spacing to 6.25 kHz.

**Query Response:**
:DATAlink:LC:ENC:SPACing?
6.25
8.7.39  Encode Message - Status

:DATAlink:LC:ENC:STATUS
:DATAlink:LC:ENC:STATUS?

Description:  Set command defines Encode Message Status.  
               Query command returns Encode Message Status.

Range:  0 to 65535 (0xFFFF)  
Default Value:  0  

Set Format:  
             binary: value begins with #b (#b1111111111111111)  
             octal: value begins with #q (#q177777)  
             decimal: value is entered as a decimal value (65535)  
             hex: value begins with #h (#hFFFF)

Query Format:  
               binary: query command ends with b  
               octal: query command ends with q  
               decimal: default format  
               hex: query command ends with h

Example:  
          :DATAlink:LC:ENC:STATUS #b10110101  
          Sets Encode Message Status to 4660 in binary format.

Query Response:  
                 :DATAlink:LC:ENC:STATUS?  
                 4660

8.7.40  Encode Message - System Identifier

:DATAlink:LC:ENC:SYSID
:DATAlink:LC:ENC:SYSID?

Description:  Set command defined the Encode Message System Identifier.  
               Query command returns the Encode Message System Identifier.

Range:  0 to 4095 (0xFFF)  
Default Value:  0  

Set Format:  
             binary: value begins with #b (#b111111111111)  
             octal: value begins with #q (#q7777)  
             decimal: value is entered as a decimal value (4095)  
             hex: value begins with #h (#hFFF)

Query Format:  
               binary: query command ends with b  
               octal: query command ends with q  
               decimal: default format  
               hex: query command ends with h

Example:  
          :DATAlink:LC:ENC:SYSID #h23F  
          Sets Encode Message System Identifier to 575 in hexadecimal format.

Query Response:  
                 :DATAlink:LC:ENC:SYSID?  
                 575
8.7.41 Encode Message - System Service Class

:DATAlink:LC:ENC:SSErvice:CLASS
:DATAlink:LC:ENC:SSErvice:CLASS?

Description: Set command defines the Encode Message System Service Class. Query command returns the Encode Message System Service Class.

Range: 0 to 255 (0xFF)

Default Value: 0

Set Format: binary: value begins with #b (#b11111111) octal: value begins with #q (#q377) decimal: value is entered as a decimal value (255) hex: value begins with #h (#hFF)

Query Format: binary: query command ends with b octal: query command ends with q decimal: default format hex: query command ends with h

Sets Encode Message System Service Class to 98.

62

8.7.42 Encode Message - System Service Class “X”

:DATAlink:LC:ENC:SSErvice:CLASSx
:DATAlink:LC:ENC:SSErvice:CLASSx?

Description: Set command defines the Encode Message System Service Class. Query command returns the Encode Message System Service Classa.

Range: 0 to 255 (0xFF)

Default Value: 0

Set Format: binary: value begins with #b (#b11111111) octal: value begins with #q (#q377) decimal: value is entered as a decimal value (255) hex: value begins with #h (#hFF)

Query Format: binary: query command ends with b octal: query command ends with q decimal: default format hex: query command ends with h

Example: :DATAlink:LC:ENC:SSErvice:CLASSA #h62
Sets Encode Message System Service Class A to 98 in hexadecimal format.

Query Response: :DATAlink:LC:ENC:SSErvice:CLASSA?
98

NOTE

CLASSx where x = A or B
8.7.43 Encode Message - Target Identifier

:DATAlink:LC:ENC:TGTID
:DATAlink:LC:ENC:TGTID?

**Description:** Set command defines Encode Message Target Identifier. Query command returns Encode Message Target Identifier.

**Range:** 0 to 16777215 (0xFFFFFFF)

**Default Value:** 0

**Set Format:**
- binary: value begins with #b (#b111111111111111111111111)
- octal: value begins with #o (#o77777777)
- decimal: value is entered as a decimal value (16777215)
- hex: value begins with #h (#hFFFFFFF)

**Query Format:**
- binary: query command ends with b
- octal: query command ends with q
- decimal: default format
- hex: query command ends with h

**Example:**
:DATAlink:LC:ENC:TGID #h1260B
Sets Encode Message Target Identifier to 75275 in binary format.

**Query Response:**
:DATAlink:LC:ENC:TGID?
75275
8.8 SIMULATOR PROTOCOL

8.8.1 External Mobile - Call Status

:SIMulator:EMn:STATus?

Description: Command returns Call status for External Mobile.
Query Format: NR1
Query Data: 0 = Mobile is unregistered
1 = External Mobile is registered
2 = External Mobile is affiliated
Query Response: :SIMulator:EM2:STATus?
2
EMn = 1 to 4 (EM1 to EM4).

NOTE

8.8.2 External Mobile - Talk Group Identifier

:SIMulator:EMn:TGID?

Description: Query command returns Talk Group Identifier for External Mobile.
Query Format: binary: query command ends with b
octal: query command ends with q
decimal: default format
hex: query command ends with h
10341
EMn = 1 to 4 (EM1 to EM4).

NOTE
8.8.3 External Mobile - User Identifier

`:SIMulator:EMn:UID`

- **Description:** Set command defines User Identifier for External Mobile. Query command returns parameter setting.
- **Range:** 1 to 16777214
- **Default Value:** 1

**Set Format:**
- binary: value begins with #b (#b11111111111111111111110)
- octal: value begins with #q (#q77777776)
- decimal: value is entered as a decimal value (16777214)
- hex: value begins with #h (#hFFFFFFE)

**Query Format:**
- binary: query command ends with b
- octal: query command ends with q
- decimal: default format
- hex: query command ends with h

**Example:**
`:SIMulator:EMn:UID #h1E240`
Sets External Mobile User Identifier to hex value 1E240.

**Query Response:**
`:SIMulator:EMn:UID? q 361100`

EMn = 1 to 4 (EM1 to EM4).

---

8.8.4 Simulator - Network Access Code

`:SIMulator:NAC`

- **Description:** Set command defines Simulator Network Access Code. Query command returns parameter setting.
- **Range:** 0 to 4095
- **Default Value:** 273 (hex)

**Set Format:**
- binary: value begins with #b (#b111110100)
- octal: value begins with #q (#q764)
- decimal: value is entered as a decimal value (500)
- hex: value begins with #h (#h1F4)

**Query Format:**
- binary: query command ends with b
- octal: query command ends with q
- decimal: default format
- hex: query command ends with h

**Example:**
`:SIMulator:NAC 275`
Sets Simulator Network Access Code to 275.

**Query Response:**
`:SIMulator:NAC? q 423`
8.8.5 Virtual Mobile - Algorithmic Identifier

Set command defines type of Algorithmic Identifier for Virtual Mobile.
Query command returns parameter setting.

Parameter:
- 128 = Clear
- 129 = DES
- 132 = AES
- All other numbers indicate UNKNOWN

Set/Query Format: NR1

Example:
:SIMulator:VM1:ALG 129
Sets Virtual Mobile Algorithmic Identifier to DES.

Query Response: :SIMulator:VM1:ALG?
129

8.8.6 Virtual Mobile - Call Flags

Set command defines Capability Flag for Flags 1 to 8 when X2-TDMA radio type
is selected.
Query command returns parameter settings.

Parameter:
- 0 = OFF
- 1 = ON

Default Value: 0 (OFF)

Set Format: Boolean in binary, decimal, octal or hex format
- binary: flag status begins with #b (#b1010)
- octal: flag status begins with #q (#q12)
- decimal: flag status is entered as a decimal value (10)
- hex: flag status begins with #h (#hA)
(i.e., 1010, where Flag 1 would be (1 ON, Flag 2 would be (0) OFF, Flag 3
would be (1) ON, etc...)

Query Format:
- binary: command string ends with b
- octal: command string ends with q
- decimal: default format
- hex: command string ends with h

Example:
:SIMulator:VM1:CFLAGs #h89
Sets Capability Flags status as follows:
Flag 1 ON | Flag 2 OFF | Flag 3 OFF | Flag 4 OFF | Flag 5 ON | Flag 6 OFF | Flag 7 OFF | Flag 8 ON

Query Response: :SIMulator:VM1:CFLAGs?
10001001

NOTE
Commands only valid when X2-TDMA radio type is selected
(:SIMulator:VM1:RADIOtype X2TDMA).
Capability Flags are defined per APCO TIA-102.AABC messages U_REG_REQ
and LOC_REQ_REQ.
8.8.7 Virtual Mobile - Call Status

:SIMulator:VM1:STATus?

Description: Command returns Call Status of Virtual Mobile.

Query Data: 0 = OFF
1 = Registered
2 = Affiliated
3 = Blank Field
4 = Call

Query Format: NR1

Query Response: :SIMulator:VM1:STATus?

4

8.8.8 Virtual Mobile - Call Type

:SIMulator:VM1:TYPE

:SIMulator:VM1:TYPE?

Description: Set command defines Call Type for Virtual Mobile.
Query command returns parameter setting.

Parameter: GROUP | UNIT
Default Value: GROUP

Set/Query Format: CPD | CRD

Example: :SIMulator:VM1:TYPE UNIT
Sets Virtual Mobile to participate in a Unit to Unit call.

Query Response: :SIMulator:VM1:TYPE?
GROUP

NOTE
UNIT is only valid when P25 Unit to Unit Option (390XOPT213) is installed in Test Set.
8.8.9  Virtual Mobile - Destination Identifier

:**SIMulator:VM1:DESTId**
:**SIMulator:VM1:DESTId?**

**Description:** Set command defines Destination Identifier for Virtual Mobile during Unit to Unit call.
Query command returns parameter setting.

**Range:** 0 to 65535

**Default Value:** 0

**Set Format:**
- binary: value begins with #b (#b1111111111111111)
- octal: value begins with #q (#q177777)
- decimal: value is entered as a decimal value (65535)
- hex: value begins with #h (#hFFFF)

**Query Format:**
- binary: query command ends with b
- octal: query command ends with q
- decimal: default format
- hex: query command ends with h

**Example:**
:**SIMulator:VM1:DESId 595**
Sets Virtual Mobile Destination Identifier to binary value 1001010011.

**Query Response:**
:**SIMulator:VM1:DESTId? q**
1123

**Note:** Command is only valid when **:SIMulator:VM1:TYPE** is set to UNIT.

Command is only valid when P25 Unit to Unit Option (390XOPT213) is installed in Test Set.

8.8.10  Virtual Mobile - Enable

:**SIMulator:VM1:ENABle**
:**SIMulator:VM1:ENABle?**

**Description:** Set command simulates powering a radio on to initiate registration and affiliation.
Query command returns parameter setting.

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

**Default Value:** OFF

**Set/Query Format:** Boolean

**Example:**
:**SIMulator:VM1:ENABle ON**
Enables Virtual Mobile radio power.

**Query Response:**
:**SIMulator:VM1:ENABle?**
1

**Note:** Trunking Simulator must be enabled for command to be valid.
8.8.11 Virtual Mobile - Encryption Key

**:SIMulator:VM1:KEY**

****:SIMulator:VM1:KEY?**

**Description:** Set command defines the encryption key id for Virtual Mobile. Query command returns parameter setting.

**Range:** 0 to 65535

**Default Value:** 0

**Set Format:**
- binary: value begins with #b (#b1111111111111111)
- octal: value begins with #o (#o177777)
- decimal: value is entered as a decimal value (65535)
- hex: value begins with #h (#hFFFF)

**Query Format:**
- binary: query command ends with b
- octal: query command ends with q
- decimal: default format
- hex: query command ends with h

**Example:** :SIMulator:VM1:KEY #FF
Sets Virtual Mobile Encryption Key to hex value FF.

**Query Response:** :SIMulator:VM1:KEY?
265

8.8.12 Virtual Mobile - Pattern

**:SIMulator:VM1:_PATTERN**

**:SIMulator:VM1:_PATTERN?**

**Description:** Set command selects Pattern type for Virtual Mobile. Query command returns parameter setting.

**Parameter:** STOREDSPEECH | VOICE

**Default Value:** STOREDSPEECH

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

**Example:** :SIMulator:VM1:_PATTERN VOICE
Sets Virtual Mobile to transmit VOICE Pattern.

**Query Response:** :SIMulator:VM1:_PATTERN?
VOICE

8.8.13 Virtual Mobile - Push to Talk (PTT) Enable

**:SIMulator:VM1:PTT**

**:SIMulator:VM1:PTT?**

**Description:** Set command Enables/Disables Push to Talk for Virtual Mobile. Query command returns parameter setting.

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

**Default Value:** OFF

**Set/Query Format:** Boolean

**Example:** :SIMulator:VM1:PTT ON
Enables Virtual Mobile Push to Talk functionality.

**Query Response:** :SIMulator:VM1:PTT?
1
8.8.14 Virtual Mobile - Radio Flags (SmartNet™/SmartZone™)

`:SIMulator:VM1:RFLAGs`
`:SIMulator:VM1:RFLAGs?`

**Description:** Set command defines Radio Flag for Flags 1 to 4 when SNSZ radio type is selected.
Query command returns parameter setting.

**Parameter:**
- 0 = OFF
- 1 = ON

**Default Value:** 0 (OFF)

**Flags:** Flag 1 = PCC | Flag 2 = SCC | Flag 3 = DTC | Flag 4 query only returns ATC

**Set Format:**
- Binary: flag status begins with #b (#b1010)
- Octal: flag status begins with #q (#q12)
- Decimal: flag status is entered as a decimal value (10)
- Hex: flag status begins with #h (#hA)
  (i.e., 1010, where Flag 1 would be (1 ON, Flag 2 would be (0) OFF, Flag 3 would be (1) ON)

**Query Format:**
- Binary: command string ends with b
- Octal: command string ends with q
- Decimal: default format
- Hex: command string ends with h

**Example:**
`:SIMulator:VM1:RFLAGs #hE`
Sets Radio Flags status as follows:
Flag 1 ON | Flag 2 ON | Flag 3 ON | Flag 4 OFF

**Query Response:**
`1110`

Commands only valid when SNSZ radio type is selected
`:SIMulator:VM1:RADIOtype SNSZ`

---

8.8.15 Virtual Mobile - Radio Type

`:SIMulator:VM1:RADIOtype`
`:SIMulator:VM1:RADIOtype?`

**Description:** Set command selects type of radio participating in call with Virtual Mobile.
Query command returns parameter setting.

**Parameter:** PHASE1 | SNSZ

**Default Value:** PHASE1

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

**Example:**
`:SIMulator:VM1:RADIOtype SNSZ`
Sets Virtual Mobile to participate in call with a SmartNet/SmartZone radio.

**Query Response:**
`:SIMulator:VM1:RADIOtype?`
SNSZ

---

**NOTE**
SNSZ Radio type only valid when SmartNet/SmartZone option is installed in Test Set.
8.8.16 Virtual Mobile - Talk Group Identifier

:SIMulator:VM1:TGID
:SIMulator:VM1:TGID?

Description: Set command defines Talk Group Identifier for Virtual Mobile. Query command returns parameter setting.

Range: 1 to 4094
Default Value: 1

Set Format: binary: value begins with #b (#b111110100000)
octal: value begins with #o (#o7640)
decimal: value is entered as a decimal value (4000)
hex: value begins with #h (#hFA0)

Query Format: binary: query command ends with b
octal: query command ends with q
decimal: default format
hex: query command ends with h

Example: :SIMulator:VM1:TGID 595
Sets Virtual Mobile Talk Group Identifier to binary value 1001010011.

1123

8.8.17 Virtual Mobile - User Identifier

:SIMulator:VM1:UID
:SIMulator:VM1:UID?

Description: Set command defines User Identifier for Virtual Mobile. Query command returns parameter setting.

Range: 1 to 65534
Default Value: 1

Set Format: binary: value begins with #b (#b1100101100100)
octal: value begins with #o (#o14544)
decimal: value is entered as a decimal value (4000)
hex: value begins with #h (#h1964)

Query Format: binary: query command ends with b
octal: query command ends with q
decimal: default format
hex: query command ends with h

Example: :SIMulator:VM1:UID #hE03
Sets Virtual Mobile User Identifier to hex value E03.

Query Response: :SIMulator:VM1:UID?
3587
8.8.18 Virtual Mobile - Validate Pair

:SIMulator:VM1:PAIRVALID?

Description: Command checks the validity of the current Key ID and Algid pair found.
Query Data: VALID | INVALID
Query Response: :ENCryption:PAIRVALID?
1
8.9 TRUNKING PROTOCOL - SIMULATOR

8.9.1 Trunking Simulator - Enable

:TRUNking:ENABLE
:TRUNking:ENABLE?

**Description:** Set command Enables/Disables Trunking Simulation type. Query command returns parameter setting.

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

**Default Value:** OFF

**Set/Query Format:** Boolean

**Example:**
- :TRUNking:ENABLE ON
  Enables Trunking simulation.

**Query Response:**
- :TRUNking:ENABLE?
  1

**NOTE**
:TRUNking:TYPE command must be defined prior to enabling trunking simulation.
Command only valid when P25 Trunking Option is installed in Test Set.

8.9.2 Trunking Simulator - Base Station 1/2 Level

:TRUNking:BSn:LEVEL
:TRUNking:BSn:LEVEL?

**Description:** Set command defines Base Station Power Level. Query command returns parameter setting.

**Units:** dBm | μV | mV | V | dBμV

**Range:**
- **TR:** -138.0 to -30.0 dBm
- **GEN:** -130.0 to +10.0 dBm

**Default Value:** -80.0 dBm

**Set/Query Format:** NRF | NR2 (dBm)

**Example:**
- :TRUNking:BS1:LEVEL -75dBm
  Set Base Station 1 Power Level to -75.0 dBm.

**Query Response:**
- :TRUNking:BS1:LEVEL?
  -75.0

**NOTE**
BSn = 1 or 2 (Base Station 1 or 2).
Command only valid when Trunking Mode is set to Base (:TRUNking:MODE BASE).
8.9.3 **Trunking Simulator - Base Station 1 Modulation**

*:TRUNking:BS1:MODulation*

*:TRUNking:BS1:MODulation?*

**Description:** Set command selects Modulation type for Base Station 1. Query command returns parameter setting.

**Parameter:**
- Phase 1 Protocol: C4FM | CQPSK | LSM
- SNSZ Protocol: FMFSK

**Default Value:**
- Phase 1 Protocol: C4FM
- SNSZ Protocol: FMFSK

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

**Example:** :TRUNking:BS1:MODulation CQPSK
Sets Base Station 1 Modulation to CQPSK.

**Query Response:**

*:TRUNking:BS1:MODulation?*
CQPSK

**NOTE**
BS1 = Control Channel (CC).
CQPSK and LSM are option enabled parameters.
SNSZ Protocol parameters are only valid when SmartNet/SmartZone Option is installed in Test Set.

---

8.9.4 **Trunking Simulator - Base Station 2 Modulation**

*:TRUNking:BS2:MODulation*

*:TRUNking:BS2:MODulation?*

**Description:** Set command selects Modulation type for Base Station 2. Query command returns parameter setting.

**Parameter:**
- Phase 1 Protocol: C4FM | CQPSK | LSM
- X2TDMA Protocol: C4FM | LSM

**Default Value:**
- Phase 1 Protocol: C4FM
- X2TDMA Protocol: C4FM

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

**Example:** :TRUNking:BS2:MODulation CQPSK
Sets Base Station 2 Modulation to CQPSK.

**Query Response:**

*:TRUNking:BS2:MODulation?*
CQPSK

**NOTE**
BS2 = Voice Channel (VC).
CQPSK and LSM are option enabled parameters.
8.9.5  Trunking Simulator - Base Station 1 Protocol

:TRUNking:BS1:PROTocol
:TRUNking:BS1:PROTocol?

Description: Set command selects Transmit Protocol for Base Station 1.
Query command returns parameter setting.

Parameter: PHASE1 | SNSZ
Default Value: PHASE1

Set/Query Format: CPD | CRD

Example: :TRUNking:BS1:PROTocol PHASE1
Sets Protocol for Base Station 1 to Phase 1.

Query Response: :TRUNking:BS1:PROTocol?
PHASE1

NOTE
BS1 = Control Channel (CC).
SNSZ only valid when SmartNet/SmartZone Bandplan is selected as Plan Type.
SNSZ Protocol is only valid when SmartNet/SmartZone option is installed in Test Set.

8.9.6  Trunking Simulator - Base Station 2 Protocol

:TRUNking:BS2:PROTocol
:TRUNking:BS2:PROTocol?

Description: Set command selects Transmit Protocol for Base Station 2.
Query command returns parameter setting.

Parameter: PHASE1 | X2TDMA
Default Value: PHASE1

Set/Query Format: CPD | CRD

Example: :TRUNking:BS2:PROTocol PHASE1
Sets Protocol for Base Station 2 to Phase 1.

Query Response: :TRUNking:BS2:PROTocol?
PHASE1

NOTE
BS2 = Voice Channel (VC).
X2TDMA only valid when P25 System Plan is selected as Plan Type.
X2TDMA Protocol is only valid when X2-TDMA™ option is installed in Test Set.
8.9.7 Trunking Simulator - Base Station 1/2 Receiver Frequency

TRUNking:BSn:RX:FREQuency
TRUNking:BSn:RX:FREQuency?

Description: Set command defines Receive frequency of Base Station. Query command returns parameter setting.

Range: 100.0 kHz to 2.71 GHz

Units: kHz | MHz

Default Value: 806.006250 MHz (Basic 800)
806.012500 MHz (SZ 800 Domestic)
464.00000 MHz (Basic UHF)
154.00000 MHz (Basic VHF)
759.00000 MHz (Basic 700)

Set/Query Format: NRf | NR1 (Hz)

Example: TRUNking:BS2:RX:FREQuency 850MHz
Sets Base Station 2 Receive frequency to 850.0 MHz.

Query Response: TRUNking:BS2:RX:FREQuency?
850000000

NOTE
BSn = 1 or 2 (Base Station 1 (CC) or 2 (VC)).
Command only valid when P25 Trunking Option is installed in Test Set.

8.9.8 Trunking Simulator - Base Station 1/2 Receiver ID Number

TRUNking:BSn:RX:IDn
TRUNking:BSn:RX:IDn?

Description: Set command defines Receive ID number of Base Station. Query command returns parameter setting.

Range: 1 to 16

Default Value: 1

Set/Query Format: NR1

Example: TRUNking:BS1:RX:ID11
Selects 11 as Receive Base Station 1 ID Number

Query Response: TRUNking:BS1:RX:ID?
11

NOTE
BSn = 1 or 2 (Base Station 1 (CC) or 2 (VC)).
Command only valid when P25 Trunking Option is installed in Test Set.
Valid Channel Plan must be configured on the System Plan Configuration Tile for the specified Channel ID.
Does not apply to SmartNet/SmartZone Bandplans.
8.9.9 Trunking Simulator - Base Station 1/2 Receiver Number

**Set Command:** 
```
:TRUNKing:BSn:RX:NUMber
```

**Query Command:** 
```
:TRUNKing:BSn:RX:NUMber?
```

**Description:**
Set command defines Receive Number of Base Station.
Query command returns parameter setting.

**Range:**
0 to 4095

**Default Value:**
- Base 1 (CC) = 0
- Base 2 (VC) = 20

**Set/Query Format:**
NR1

**Example:**
```
:TRUNKing:BS2:RX:NUMber 2500
```
Selects 2500 as current Base Station 2 Number.

**Query Response:**
```
:TRUNKing:BS2:RX:NUMber?
2500
```

**NOTE**
BSn = 1 or 2 (Base Station 1 (CC) or 2 (VC)).
Command only valid when P25 Trunking Option is installed in Test Set.

8.9.10 Trunking Simulator - Base Station 1/2 Transmit Frequency

**Set Command:** 
```
:TRUNKing:BSn:TX:FREQuency
```

**Query Command:** 
```
:TRUNKing:BSn:TX:FREQuency?
```

**Description:**
Set command defines Transmit frequency of Base Station.
Query command returns parameter setting.

**Range:**
100.0 kHz to 2.71 GHz

**Units:**
kHz | MHz | GHz

**Default Value:**
- 851.006250 MHz (Basic 800)
- 851.012500 MHz (SZ 800 Domestic)
- 462.00000 MHz (Basic UHF)
- 152.00000 MHz (Basic VHF)
- 794.00000 MHz (Basic 700)

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

**Example:**
```
:TRUNKing:BS2:TX:FREQuency 850MHz
```
Sets Base Station 2 RF Generator Frequency to 850.0 MHz.

**Query Response:**
```
:TRUNKing:BS2:TX:FREQuency?
850000000
```

**NOTE**
BSn = 1 or 2 (Base Station 1 (CC) or 2 (VC)).
Command only valid when P25 Trunking Option is installed in Test Set.
8.9.11       Trunking Simulator - Base Station 1/2 Transmit ID Number

:TRUNking:BSn:TX:IDn
:TRUNking:BSn:TX:IDn?

Description: Set command defines Transmit ID number of Base Station. Query command returns parameter setting.
Range: 1 to 16
Default Value: 1
Set/Query Format: NR1
Example: :TRUNking:BS1:TX:ID11
Selects 11 as current Base Station 1 ID Number.
Query Response: :TRUNking:BS1:TX:ID?
11

NOTE
BSn = 1 or 2 (Base Station 1 (CC) or 2 (VC)). Command only valid when P25 Trunking Option is installed in Test Set. Valid Channel Plan must be configured on the System Plan Configuration Tile for the specified Channel ID. Does not apply to SmartNet/SmartZone Bandplans.

8.9.12       Trunking Simulator - Base Station 1/2 Transmit Number

:TRUNking:BSn:TX:NUMber
:TRUNking:BSn:TX:NUMber?

Description: Set command defines Transmit Number of Base Station. Query command returns parameter setting.
Range: 0 to 4095
Default Value: 0
Set/Query Format: NR1
Example: :TRUNking:BS2:TX:NUMber 2500
Selects 2500 as current Base Station 2 Number.
Query Response: :TRUNking:BS2:TX:NUMber?
2500

NOTE
BSn = 1 or 2 (Base Station 1 (CC) or 2 (VC)). Command only valid when P25 Trunking Option is installed in Test Set.
8.9.13 Trunking Simulator - Message Format

**:TRUNking:IMPLicit
**:TRUNking:IMPLicit?**

**Description:** Set command selects Trunking message format. Query command returns parameter setting.

**Parameter:**
- 0 = Explicit (*option enabled)
- 1 = Implicit

**Default Value:** IMPLICIT

**Set/Query Format:** NR1

**Example:**
- :TRUNking:IMPLicit 1
  Selects Implicit Message format.

**Query Response:**
- :TRUNking:IMPLicit?
  1

Explicit Message format is only valid when Explicit Mode Option is installed in Test Set.

8.9.14 Trunking Simulator - Mobile Frequency

**:TRUNking:MS:RX:FREQuency
**:TRUNking:MS:RX:FREQuency?**

**Description:** Set command defines frequency of Mobile. Query command returns parameter setting.

**Range:** 100.0 kHz to 2.71 GHz

**Units:** kHz | MHz | GHz

**Default Value:**
- 851.006250 MHz (Basic 800)
- 806.012500 MHz (SZ 800 Domestic)
- 462.00000 MHz (Basic UHF)
- 152.00000 MHz (Basic VHF)
- 794.00000 MHz (Basic 700)

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

**Example:**
- :TRUNking:MS:RX:FREQuency 850MHz
  Sets Mobile Frequency to 850.0 MHz.

**Query Response:**
- :TRUNking:MS:RX:FREQuency?
  850000000

Command only valid when Trunking Mode is set to Mobile (:TRUNking:MODE MOBILE).
Command only valid when Mobile Simulator Option is installed in Test Set.
8.9.15 Trunking Simulator - Mobile ID

:TRUNking:MS:RX>IDn
:TRUNking:MS:RX>IDn?

Description: Set command defines Transmit ID number of Mobile.
Query command returns parameter setting.

Range: 1 to 16
Default Value: 1

Example: :TRUNking:MS:RX>ID11
Selects 11 as current Mobile ID Number.

Query Response: :TRUNking:MS:RX>ID?
11

NOTE Command only valid when Trunking Mode is set to Mobile (:TRUNking:MODE MOBILE).
Command only valid when Mobile Simulator Option is installed in Test Set.
Valid Channel Plan must be configured on the System Plan Configuration Tile for the specified Channel ID.

8.9.16 Trunking Simulator - Mobile Level

:TRUNking:MS1:LEVel
:TRUNking:MS1:LEVel?

Description: Set command defines Mobile Power Level.
Query command returns parameter setting.

Units: dBm | μV | mV | V | dBμV
Range: TR: -138.0 to -30.0 dBm
GEN: -130.0 to +10.0 dBm

Default Value: -80.0 dBm

Set/Query Format: NRf | NR2 (dBm)

Example: :TRUNking:MS1:LEVel -75dBm
Set Mobile Power Level to -75.0 dBm.

Query Response: :TRUNking:MS1:LEVel?
-75.0

NOTE Command only valid when Trunking Mode is set to Mobile (:TRUNking:MODE MOBILE).
Command only valid when Mobile Simulator Option is installed in Test Set.
8.9.17 Trunking Simulator - Mobile Modulation

**:TRUNking:MS:MODulation**
**:TRUNking:MS:MODulation?**

**Description:** Set command selects Modulation type for Mobile. Query command returns parameter setting.

**Parameter:**
- **Phase 1 Protocol:** C4FM
- **SNSZ Protocol:** FMFSK

**Default Value:**
- **Phase 1 Protocol:** C4FM
- **SNSZ Protocol:** FMFSK

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

**Example:**
:TRUNking:MS:MODulation C4FM
Sets Mobile Modulation to C4FM.

**Query Response:**
:TRUNking:MS:MODulation?
C4FM

**NOTE**
Command only valid when Trunking Mode is set to Mobile (:TRUNking:MODE MOBILE).
CQPSK and LSM are option enabled parameters.
SNSZ Protocol parameters are only valid when SmartNet/SmartZone Option is installed in Test Set.
Command only valid when Mobile Simulator Option is installed in Test Set.

8.9.18 Trunking Simulator - Mobile Number

**:TRUNking:MS:RX:NUMber**
**:TRUNking:MS:RX:NUMber?**

**Description:** Set command defines Receive Number of Mobile. Query command returns parameter setting.

**Range:** 0 to 4095

**Default Value:** 0

**Set/Query Format:** NR1

**Example:**
:TRUNking:MS:RX:NUMber 2500
Selects 2500 as current Mobile Number.

**Query Response:**
:TRUNking:MS:RX:NUMber?
2500

**NOTE**
Command only valid when Trunking Mode is set to Mobile (:TRUNking:MODE MOBILE).
Command only valid when Mobile Simulator Option is installed in Test Set.
8.9.19 Trunking Simulator - Mobile Protocol

:TRUNking:MS:PROTocol
:TRUNking:MS:PROTocol?

Description: Set command selects Transmit Protocol for Mobile.
Query command returns parameter setting.

Parameter: PHASE1 (:PLAN:TYPE P25)
SNSZ (:PLAN:TYPE SNSZ)

Default Value: PHASE1

Set/Query Format: CPD | CRD

Example: :TRUNking:MS:PROTocol PHASE1
Sets Protocol for Mobile to Phase 1.

Query Response: :TRUNking:MS:PROTocol?
PHASE1

NOTE Command only valid when Mobile Simulator Option is installed in Test Set.
SNSZ only valid when SmartNet/SmartZone Option is installed in Test Set.

8.9.20 Trunking Simulator - Simulation Type

:TRUNking:TYPE
:TRUNking:TYPE?

Description: Set command selects type of Trunking Simulation.
Query command returns parameter setting.

Parameter: 0 = Mobile
1 = Base

Default Value: 1 (Base)

Set/Query Format: NR1

Example: :TRUNking:TYPE BASE
Selects Base Mode Trunking Simulation.

Query Response: :TRUNking:TYPE?
1

NOTE Command only valid when P25 Trunking Option is installed in Test Set.
8.10 TRUNKING MESSAGES - ADJACENT STATUS BROADCAST

8.10.1 Trunking Simulator - Adjacent Status Broadcast Connection Status

:TRUNking:ASB:A
:TRUNking:ASB:A?

Description: Set command indicates if Adjacent Status Broadcast has an active network connection with the RFSS controller. Query command returns parameter setting.

Parameter: 0 = Inactive
1 = Active

Default Value: 0

Set Format: NR1
Query Format: NR1

Example: :TRUNking:ASB:A 1
Indicates Site has an active network connection with the RFSS controller.

Query Response: :TRUNking:ASB:A?
1

NOTE
Command only valid when ASB Message Option is installed in Test Set. ASB Messaging must be OFF (:TRUNking:MESSages:ASB:ENABle OFF) for set command to be valid.

8.10.2 Trunking Simulator - Adjacent Channel Type

:TRUNking:ASB:C
:TRUNking:ASB:C?

Description: Set command indicates if Adjacent Status Broadcast is for a Conventional Channel. Query command returns parameter setting.

Parameter: 0 = Non-Conventional
1 = Conventional

Default Value: 0

Set Format: NR1
Query Format: NR1

Example: :TRUNking:ASB:C 1
Indicates Adjacent Status Broadcast is for a Conventional Channel.

Query Response: :TRUNking:ASB:C?
1

NOTE
Command only valid when ASB Message Option is installed in Test Set. ASB Messaging must be OFF (:TRUNking:MESSages:ASB:ENABle OFF) for set command to be valid.
8.10.3  Trunking Simulator - Adjacent Status Broadcast Content Status

**:TRUNking:ASB:V**
**:TRUNking:ASB:V?**

**Description:** Set command indicates if Adjacent Channel Content is valid. Query command returns parameter setting.

**Parameter:**
- 0 = Unknown or last reported as Valid (site not responding)
- 1 = Valid

**Default Value:** 0

**Set Format:** NR1

**Query Format:** NR1

**Example:**
**:TRUNking:ASB:V 1**

Indicates that Adjacent Status Broadcast content is known to be valid.

**Query Response:**
**:TRUNking:ASB:V? 1**

Command only valid when ASB Message Option is installed in Test Set. ASB Messaging must be OFF (:TRUNking:MESSages:ASB:ENABle OFF) for set command to be valid.

---

8.10.4  Trunking Simulator - Adjacent Status Broadcast Enable

**:TRUNking:MESSages:ASB:ENABle**
**:TRUNking:MESSages:ASB:ENABle?**

**Description:** Set command Enables/Disables Adjacent Status Broadcast messaging. Query command returns parameter setting.

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

**Default Value:** OFF

**Set/Query Format:** Boolean

**Example:**
**:TRUNking:MESSages:ASB:ENABle ON**

Enables Adjacent Status Broadcast messaging.

**Query Response:**
**:TRUNking:MESSages:ASB:ENABle? 1**

Command only valid when ASB Message Option is installed in Test Set. ASB Messaging must be OFF (:TRUNking:MESSages:ASB:ENABle OFF) to define ASB Message parameters.
8.10.5  Trunking Simulator - Adjacent Status Broadcast Failure Mode

:TRUNking:ASB:F  
:TRUNking:ASB:F?

Description:  Set command defines Adjacent Status Broadcast Failure mode.  
Query command returns parameter setting.  

Parameter:  
0 = Normal Condition  
1 = Site in Failure Condition  

Default Value:  0  

Set Format:  NR1  
Query Format:  NR1  

Example:  :TRUNking:ASB:F 1  
Sets Adjacent Status Broadcast Channel to Site in Failure Condition.  

Query Response:  :TRUNking:ASB:F?  
1  

NOTE  
Command only valid when ASB Message Option is installed in Test Set.  
ASB Messaging must be OFF (:TRUNking:MESsages:ASB:ENABle OFF) for set command to be valid.

8.10.6  Trunking Simulator - Adjacent Status Broadcast Local Registration Area

:TRUNking:ASB:LRA  
:TRUNking:ASB:LRA?

Description:  Set command defines Adjacent Status Broadcast Local Registration Area.  
Query command returns parameter setting.  

Range:  0 to 255  

Default Value:  0  

Set Format:  binary: value begins with #b (#b11111010)  
octal: value begins with #q (#q372)  
decimal: value is entered as a decimal value (250)  
hex: value begins with #h (#hFA)  

Query Format:  binary: query command ends with b  
octal: query command ends with q  
decimal: default format  
hex: query command ends with h  

Example:  :TRUNking:ASB:LRA #h64  
Sets Adjacent Status Broadcast Local Registration Area to hex value 64.  

1100100  

NOTE  
Command only valid when ASB Message Option is installed in Test Set.  
ASB Messaging must be OFF (:TRUNking:MESsages:ASB:ENABle OFF) for set command to be valid.
8.10.7 Trunking Simulator - Adjacent Status Broadcast RF Subsystem Identifier

:TRUNking:ASB:RFSS
:TRUNking:ASB:RFSS?

**Description:** Set command defines Adjacent Status Broadcast RF Subsystem Identifier. Query command returns parameter setting.

**Range:** 0 to 255

**Default Value:** 0

**Set Format:**
- binary: value begins with #b (#b11111010)
- octal: value begins with #o (#o372)
- decimal: value is entered as a decimal value (250)
- hex: value begins with #h (#hFA)

**Query Format:**
- binary: query command ends with b
- octal: query command ends with q
- decimal: default format
- hex: query command ends with h

**Example:** :TRUNking:ASB:RFSS #h64
Sets Adjacent Status Broadcast RF Subsystem Identifier to hex value 64.

**Query Response:** :TRUNking:ASB:RFSS? b
1100100

**NOTE**
Command only valid when ASB Message Option is installed in Test Set.

ASB Messaging must be OFF (:TRUNking:MESSages:ASB:ENABle OFF) for set command to be valid.

---

8.10.8 Trunking Simulator - Adjacent Status Broadcast Receive Frequency

:TRUNking:ASB:RX:FREQuency
:TRUNking:ASB:RX:FREQuency?

**Description:** Set command defines Receive frequency of Adjacent Status Broadcast. Query command returns parameter setting.

**Range:** 100 kHz to 2.71 GHz

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

**Default Value:** Defined by select System or Bandplan

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

**Example:** :TRUNking:ASB:RX:FREQuency 850MHz
Sets Adjacent Status Broadcast RF Receiver Frequency to 850.0 MHz.

**Query Response:** :TRUNking:ASB:RX:FREQuency? 850000000

**NOTE**
Command only valid when ASB Message Option is installed in Test Set.

ASB Messaging must be OFF (:TRUNking:MESSages:ASB:ENABle OFF) for set command to be valid.

Set command only valid when Explicit Message Format is selected (:TRUNking:IMPLicit 0).
8.10.9  Trunking Simulator - Adjacent Status Broadcast Receiver ID Number

:TRUNking:ASB:RX:ID
:TRUNking:ASB:RX:ID?

Description:  Set command defines Receive ID number of Adjacent Status Broadcast.  
Query command returns parameter setting.

Range:  1 to 16

Default Value:  1

Set/Query Format:  NR1

Example:  :TRUNking:ASB:RX:ID11
Selects 11 as Receive Adjacent Status Broadcast ID Number

Query Response:  :TRUNking:ASB:RX:ID?
11

NOTE  Command only valid when ASB Message Option is installed in Test Set.  
ASB Messaging must be OFF (:TRUNking:MESSages:ASB:ENABle OFF) for set 
command to be valid.  
Set command only valid when Explicit Message Format is selected 
(:TRUNking:IMPLicit 0).  
Valid Channel Plan must be configured on the System Plan Configuration Tile 
for the specified Channel ID.

8.10.10  Trunking Simulator - Adjacent Status Broadcast Receive Number

:TRUNking:ASB:RX:NUMber
:TRUNking:ASB:RX:NUMber?

Description:  Set command defines Receive Number of Adjacent Status Broadcast.  
Query command returns parameter setting.

Range:  0 to 4095

Default Value:  0

Set/Query Format:  NR1

Example:  :TRUNking:ASB:RX:NUMber 2500
Selects 2500 as current Adjacent Status Broadcast Number.

Query Response:  :TRUNking:ASB:RX:NUMber?
2500

NOTE  Command only valid when ASB Message Option is installed in Test Set.  
ASB Messaging must be OFF (:TRUNking:MESSages:ASB:ENABle OFF) for set 
command to be valid.  
Set command only valid when Explicit Message Format is selected 
(:TRUNking:IMPLicit 0).
8.10.11  Trunking Simulator - Adjacent Status Broadcast Service Class

:TRUNking:ASB:SVCclass
:TRUNking:ASB:SVCclass?

Description: Set command defines Adjacent Status Broadcast Service Class. Query command returns parameter setting.

Range: 0 to 255

Default Value: 0

Set Format: binary: value begins with #b (#b11111010)  
octal: value begins with #q (#q372)  
decimal: value is entered as a decimal value (250) 
hex: value begins with #h (#hFA)

Query Format: binary: query command ends with b  
octal: query command ends with q  
decimal: default format  
hex: query command ends with h

Example: :TRUNking:ASB:SVCclass #h64
Sets Adjacent Status Broadcast Service Class to hex value 64.

Query Response: :TRUNking:ASB:SVCclass? b
1100100

NOTE Command only valid when ASB Message Option is installed in Test Set. ASB Messaging must be OFF (:TRUNking:MESSages:ASB:ENABle OFF) for set command to be valid.

8.10.12  Trunking Simulator - Adjacent Status Broadcast Site Identifier

:TRUNking:ASB:SITE
:TRUNking:ASB:SITE?

Description: Set command defines Adjacent Status Broadcast Site Identifier. Query command returns parameter setting.

Range: 0 to 63

Default Value: 0

Set Format: binary: value begins with #b (#b111111)  
octal: value begins with #q (#q77)  
decimal: value is entered as a decimal value (63)  
hex: value begins with #h (#h3F)

Query Format: binary: query command ends with b  
octal: query command ends with q  
decimal: default format  
hex: query command ends with h

Example: :TRUNking:ASB:SITE #h32
Sets Adjacent Status Broadcast Site Identifier to hex value 32.

110010

NOTE Command only valid when ASB Message Option is installed in Test Set. ASB Messaging must be OFF (:TRUNking:MESSages:ASB:ENABle OFF) for set command to be valid.
8.10.13 Trunking Simulator - Adjacent Status Broadcast System Identifier

:PLAN:BASE:SYSid?

**Description:** Query command returns parameter setting.

**Query Format:** NR1

**Query Response:** :PLAN:BASE:SYSid?

1001

Command only valid when P25 Trunking Option is installed in Test Set.

Parameter defined by selected System Plan.

---

8.10.14 Trunking Simulator - Adjacent Status Broadcast Transmit Frequency

:TRUNking:ASB:TX:FREQuency
:TRUNking:ASB:TX:FREQuency?

**Description:** Set command defines Transmit frequency of Adjacent Status Broadcast. Query command returns parameter setting.

**Range:** 100 kHz to 2.71 GHz

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

**Default Value:** Defined by selected System or Band Plan.

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

**Example:** :TRUNking:ASB:TX:FREQuency 850MHz

Sets Adjacent Status Broadcast RF Generator Frequency to 850.0 MHz.

**Query Response:** :TRUNking:ASB:TX:FREQuency?

850000000

Command only valid when ASB Message Option is installed in Test Set. ASB Messaging must be OFF (:TRUNking:MESSages:ASB:ENABle OFF) for set command to be valid.

---

8.10.15 Trunking Simulator - Adjacent Status Broadcast Transmit ID Number

:TRUNking:ASB:TX:ID
:TRUNking:ASB:TX:ID?

**Description:** Set command defines Transmit ID number of Adjacent Status Broadcast. Query command returns parameter setting.

**Range:** 1 to 16

**Default Value:** 1

**Set/Query Format:** NR1

**Example:** :TRUNking:ASB:TX:ID11

Selects 11 as current Adjacent Status Broadcast ID Number.

**Query Response:** :TRUNking:ASB:TX:ID?

11

Command only valid when ASB Message Option is installed in Test Set. ASB Messaging must be OFF (:TRUNking:MESSages:ASB:ENABle OFF) for set command to be valid.

Valid Channel Plan must be configured on the System Plan Configuration Tile for the specified Channel ID.
8.10.16 Trunking Simulator - Adjacent Status Broadcast Transmit Number

:TRUNking:ASB:TX:NUMber
:TRUNking:ASB:TX:NUMber?

**Description:** Set command defines Transmit Number of Adjacent Status Broadcast. Query command returns parameter setting.

**Range:** 0 to 4095

**Default Value:** 0

**Set/Query Format:** NR1

**Example:** :TRUNking:ASB:TX:NUMber 2500
Selects 2500 as current Adjacent Status Broadcast Number.

**Query Response:** :TRUNking:ASB:TX:NUMber?
2500

**NOTE** Command only valid when ASB Message Option is installed in Test Set. ASB Messaging must be OFF (:TRUNking:MESSages:ASB:ENABle OFF) for set command to be valid.
8.11 TRUNKING MESSAGES - SECONDARY CONTROL CHANNEL BROADCAST

8.11.1 Trunking Simulator - Secondary Control Channel Broadcast Enable

**:TRUNking:MESSages:SCCB:ENABLE**

****:TRUNking:MESSages:SCCB:ENABLE?**

**Description:** Set command Enables/Disables Secondary Control Channel Broadcast messaging.
Query command returns parameter setting.

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

**Default Value:** OFF

**Set/Query Format:** Boolean

**Example:**
- :TRUNking:MESSages:SCCB:ENABLE ON
  Enables Secondary Control Channel Broadcast messaging.

**Query Response:**
- :TRUNking:MESSages:SCCB:ENABLE?
  1

**NOTE**
Command only valid when SCCB Message Option is installed in Test Set.
SCCB Messaging must be OFF (:TRUNking:MESSages:SCCB:ENABLE OFF) to define SCCB Message parameters.

8.11.2 Trunking Simulator - Secondary Control Channel Broadcast Receive Frequency

**:TRUNking:SCCBn:RX:FREQuency**

**:TRUNking:SCCBn:RX:FREQuency?**

**Description:** Set command defines Receive frequency of Secondary Control Channel Broadcast.
Query command returns parameter setting.

**Range:**
- 100 kHz to 2.71 GHz

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

**Default Value:** Defined by selected Channel or System Plan

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

**Example:**
- :TRUNking:SCCB2:RX:FREQuency 850MHz
  Sets Secondary Control Channel Broadcast 2 RF Receive Frequency to 850.0 MHz.

**Query Response:**
- :TRUNking:SCCB2:RX:FREQuency?
  850000000

**NOTE**
SCCBn = 1 or 2 (Secondary Control Channel Broadcast 1 or 2).
SCCB Messaging must be OFF (:TRUNking:MESSages:SCCB:ENABLE OFF) for set command to be valid.
Set command only valid when Explicit Message Format is selected (:TRUNking:IMPLicit 0).
Command only valid when SCCB Message Option is installed in Test Set.
8.11.3 Trunking Simulator - Secondary Control Channel Broadcast Receiver ID Number

:TRUNking:SCCBn:RX:ID
:TRUNking:SCCBn:RX:ID?

**Description:** Set command defines Receive ID number of Secondary Control Channel Broadcast.
Query command returns parameter setting.

**Range:** 1 to 16
**Default Value:** 1

**Set/Query Format:** NR1

**Example:** :TRUNking:SCCB1:RX:ID11
Selects 11 as Receive Secondary Control Channel Broadcast 1 ID Number

**Query Response:** :TRUNking:SCCB1:RX:ID?
11

**NOTE**
SCCBn = 1 or 2 (Secondary Control Channel Broadcast 1 or 2).
SCCB Messaging must be OFF (:TRUNking:MESSages:SCCB:ENABle OFF) for set command to be valid.
Set command only valid when Explicit Message Format is selected (:TRUNking:IMPLicit 0).
Command only valid when SCCB Message Option is installed in Test Set.
Valid Channel Plan must be configured on the System Plan Configuration Tile for the specified Channel ID.

8.11.4 Trunking Simulator - Secondary Control Channel Broadcast Receive Number

:TRUNking:SCCBn:RX:NUMber
:TRUNking:SCCBn:RX:NUMber?

**Description:** Set command defines Receive Number of Secondary Control Channel Broadcast.
Query command returns parameter setting.

**Range:** 0 to 4095
**Default Value:** 0

**Set/Query Format:** NR1

**Example:** :TRUNking:SCCB2:RX:NUMber 2500
Selects 2500 as current Secondary Control Channel Broadcast 2 Number.

**Query Response:** :TRUNking:SCCB2:RX:NUMber?
2500

**NOTE**
SCCBn = 1 or 2 (Secondary Control Channel Broadcast 1 or 2).
SCCB Messaging must be OFF (:TRUNking:MESSages:SCCB:ENABle OFF) for set command to be valid.
Set command only valid when Explicit Message Format is selected (:TRUNking:IMPLicit 0).
Command only valid when SCCB Message Option is installed in Test Set.
8.11.5 Trunking Simulator - Secondary Control Channel Broadcast RF Subsystem Identifier

:PLAN:BASE:RFSS?

Description: Query command returns parameter setting.
Query Format: NR1
Query Response: :PLAN:BASE:RFSS?
225

Command only valid when P25 Trunking Option is installed in Test Set. Parameter defined by selected System Plan.

8.11.6 Trunking Simulator - Secondary Control Channel Broadcast Service Class

:TRUNking:SCCBn:SVClass
:TRUNking:SCCBn:SVClass?

Description: Set command defines Secondary Control Channel Broadcast Service Class. Query command returns parameter setting.
Range: 0 to 255
Default Value: 0
Set Format: binary: value begins with #b (#b11111010)
octal: value begins with #q (#q372)
decimal: value entered as a decimal value (250)
hex: value begins with #h (#hFA)
Query Format: binary: query command ends with b
octal: query command ends with q
decimal: default format
hex: query command ends with h
Example: :TRUNking:SCCBn:SVClass #h64
Sets Secondary Control Channel Broadcast Service Class to hex value 64.
1100100

SCCBn = 1 or 2 (Secondary Control Channel Broadcast 1 or 2). SCCB Messaging must be OFF (:TRUNking:MESSages:SCCB:ENABle OFF) for set command to be valid. Command only valid when SCCB Message Option is installed in Test Set.

8.11.7 Trunking Simulator - Secondary Control Channel Broadcast Base Site Identifier

:PLAN:BASE:SITE?

Description: Query command returns parameter setting.
Query Format: NR1
Query Response: :PLAN:BASE:SITE? 
25

Command only valid when P25 Trunking Option is installed in Test Set. Parameter defined by selected System Plan.
8.11.8 Trunking Simulator - Secondary Control Channel Broadcast Transmit Frequency

:TRUNking:SCCBn:TX:FREQuency

:TRUNking:SCCBn:TX:FREQuency?

Description: Set command defines Transmit frequency of Secondary Control Channel Broadcast. Query command returns parameter setting.

Range: 100 kHz to 2.71 GHz

Units: Hz | kHz | MHz | GHz

Default Value: Defined by selected Channel or System Plan

Set/Query Format: NRf | NR1 (Hz)

Example: :TRUNking:SCCB2:TX:FREQuency 850MHz
Sets Secondary Control Channel Broadcast 2 RF Generator Frequency to 850.0 MHz.

Query Response: :TRUNking:SCCB2:TX:FREQuency?
850000000

SCCBn = 1 or 2 (Secondary Control Channel Broadcast 1 or 2).
SCCB Messaging must be OFF (:TRUNking:MESSages:SCCB:ENABle OFF) for set command to be valid.
Command only valid when SCCB Message Option is installed in Test Set.

8.11.9 Trunking Simulator - Secondary Control Channel Broadcast Transmit ID Number

:TRUNking:SCCBn:TX:ID

:TRUNking:SCCBn:TX:ID?

Description: Set command defines Transmit ID number of Secondary Control Channel Broadcast. Query command returns parameter setting.

Range: 1 to 16

Default Value: 1

Set/Query Format: NR1

Example: :TRUNking:SCCB1:TX:ID11
Selects 11 as current Secondary Control Channel Broadcast 1 ID Number.

Query Response: :TRUNking:SCCB1:TX:ID?
11

SCCBn = 1 or 2 (Secondary Control Channel Broadcast 1 or 2).
SCCB Messaging must be OFF (:TRUNking:MESSages:SCCB:ENABle OFF) for set command to be valid.
Command only valid when SCCB Message Option is installed in Test Set.
Valid Channel Plan must be configured on the System Plan Configuration Tile for the specified Channel ID.
8.11.10  Trunking Simulator - Secondary Control Channel Broadcast Transmit Number

**:TRUNking:SCCBn:TX:NUMber**

:TRUNking:SCCBn:TX:NUMber?

**Description:** Set command defines Transmit Number of Secondary Control Channel Broadcast. Query command returns parameter setting.

**Range:** 0 to 4095

**Default Value:** 0

**Set/Query Format:** NR1

**Example:** :TRUNking:SCCB2:TX:NUMber 2500

Selects 2500 as current Secondary Control Channel Broadcast 2 Number.

**Query Response:** :TRUNking:SCCB2:TX:NUMber?

2500

**NOTE**

SCCBn = 1 or 2 (Secondary Control Channel Broadcast 1 or 2).

SCCB Messaging must be OFF (:TRUNking:MESSages:SCCB:ENABle OFF) for set command to be valid.

Command only valid when SCCB Message Option is installed in Test Set.
Appendix A - Remote Command Changes

A.1 COMMAND CHANGES

The following commands have been revised in P25 Software Version 1.3.5.
Parameters included in the returned data stream have changed. Refer to Chapter 1, UUT Measurement Meter Data, for list of returned data string.

:FETCH:MOD:ANALyzer:FM?
:FETCH:RF:ANALyzer:RFERRor?
:METErs:BER:STATus?
:METErs:EVM:STATus?
:METErs:FCR:STATus?
:METErs:HSDDev:STATus?
:METErs:MODFidelity:STATus?
:METErs:POWer:STATus?
:METErs:POWer:INBand:STATus?
:METErs:SCE:STATus?
:METErs:SYMdev:STATus?

Commands now require CH1 | CH2 specification in the command string. Update commands to avoid script failures.

:METErs:BER:STATus? changed to :METErs:BER:CHn:STATus?
:METErs:EVM:STATus? changed to :METErs:EVM:CHn:STATus?
:METErs:FCR:STATus? changed to :METErs:FCR:CHn:STATus?
:METErs:HSDDev:STATus? changed to :METErs:HSDDev:CHn:STATus?
:METErs:MODFidelity:STATus? changed to :METErs:MODFidelity:CHn:STATus?
:METErs:POWer:STATus? changed to :METErs:POWer:CHn:STATus?
:METErs:POWer:INBand:STATus? changed to
:METErs:POWer:CHn:INBand:STATus?
:METErs:SCE:STATus? has been changed to :METErs:SCE:CHn:STATus?
:METErs:SYMdev:STATus? has been changed to
:METErs:SYMdev:CHn:STATus?

Range and Unit of measurement for :PTIME:SPAN command have changed to the following:

Unit of Measure: seconds
Range: 10 to 1800
A.2 DEPRECATED COMMANDS

The following is a list of deprecated P25 Remote Commands.

:CIVFM replaced with :MODFidelity
:CIVFM command will be supported in P25 Software Version 1.3.3.
:CIVFM command will not be supported in later software releases.
All :CIVFM commands should be replaced with :MODFidelity.

:LLIMit was replaced with :LOWer.
:LLIMit command will be supported in P25 Software Version 1.3.3.
:LLIMit command will not be supported in later software releases.
All :LLIMit commands should be replaced with :LOWer.

:ULIMit was replaced with :UPPer.
:ULIMit command will be supported in P25 Software Version 1.3.3.
:ULIMit command will not be supported in later software releases.
All :ULIMit commands should be replaced with :UPPer.

:VOICeframe was replaced with :VOICe.
:VOICeframe command will be supported in P25 Software Version 1.3.3.
:VOICeframe command will not be supported in later software releases.
All :VOICeframe commands should be replaced with :VOICe.

:RECeive:CHn:PATTern replaced with :METERs:BER:CHn:PATTern
:RECeive:CHn:PATTern command will be supported in P25 Software Version 1.3.3.
:RECeive:CHn:PATTern command will not be supported in later software releases.
:RECeive:CHn:PATTern command should be replaced with :METERs:BER:CHn:PATTern.

:TRUNKing:SIMulation commands replaced with :TRUNKing commands
These commands will be supported in P25 Software Version 1.3.3.
These commands will not be supported in later software releases.
Update the following commands to avoid script failures.

:TRUNKing:SIMulation:BSn:LEVel replaced with :TRUNKing:BSn:LEVel
:TRUNKing:SIMulation:BSn:PROTocol replaced with :TRUNKing:BSn:PROTocol
:TRUNKing:SIMulation:BSn:RX:FREQuency replaced with
:TRUNKing:BSn:RX:FREQuency
:TRUNKing:SIMulation:BSn:RX:ID replaced with :TRUNKing:BSn:RX:ID
:TRUNKing:SIMulation:BSn:NUMber replaced with :TRUNKing:RX:NUMber
:TRUNKing:SIMulation:BSn:TX:FREQuency replaced with
:TRUNKing:BSn:TX:FREQuency
:TRUNKing:SIMulation:BSn:TX:ID replaced with :TRUNKing:BSn:TX:ID
:TRUNKing:SIMulation:BSn:TX:NUMber replaced with
:TRUNKing:BSn:TX:NUMber
:TRUNKing:SIMulation:BSn:ENABLE replaced with :TRUNKing:ENABLE
:TRUNKing:SIMulation:BSn:TYPE replaced with :TRUNKing:TYPE
Remote Command Changes

:TRUNKing commands replaced with :DATAlink commands
These commands will be supported in P25 Software Version 1.3.3.
These commands will not be supported in later software releases.
Update the following commands to avoid script failures.

:TRUNKing:CHn:ALG? replaced with :DATAlink:CHn:ALG?
:TRUNKing:CHn:DIRection? replaced with :DATAlink:CHn:DIRection?
:TRUNKing:CHn:KEY? replaced with :DATAlink:CHn:KEY?
:TRUNKing:CHn:MFID? replaced with :DATAlink:CHn:MFID?
:TRUNKing:CHn:MI? replaced with :DATAlink:CHn:MI?
:TRUNKing:CHn:TGID? replaced with :DATAlink:CHn:TGID?
:TRUNKing:CHn:VOICe:DUUID? replaced with :DATAlink:CHn:VOICe:DUUID?
:TRUNKing:CHn:VOICe:FRAME? replaced with :DATAlink:CHn:VOICe:FRAME?
:TRUNKing:CHn:VOICe:KEY? replaced with :DATAlink:CHn:VOICe:KEY?
:TRUNKing:CHn:VOICe:LCO? replaced with :DATAlink:CHn:VOICe:LCO?
:TRUNKing:CHn:VOICe:MI? replaced with :DATAlink:CHn:VOICe:MI?
:TRUNKing:CHn:VOICe:NAC? replaced with :DATAlink:CHn:VOICe:NAC?
:TRUNKing:CHn:VOICe:P? replaced with :DATAlink:CHn:VOICe:P?
:TRUNKing:CHn:VOICe:SF? replaced with :DATAlink:CHn:VOICe:SF?
:TRUNKing:CHn:VOICe:STS1? replaced with :DATAlink:CHn:VOICe:STS1?
:TRUNKing:CHn:VOICe:STS2? replaced with :DATAlink:CHn:VOICe:STS2?
:TRUNKing:CLEar:HEADers replaced with :DATAlink:CLEar:HEADers

:PLAN:CHANnel:BLOCKn:TX:CHSPacing
:PLAN:CHANnel:BLOCKn:TX:STARTFreq
:PLAN:CHANnel:BLOCKn:TX:STOPFreq?
Refer to Obsolete Commands for additional changes to these commands.
These commands will be supported in P25 Software Version 1.3.5.
These commands will not be supported in later software releases.
Update the following commands to avoid script failures.

:PLAN:CHANnel:BLOCKn:TX:CHSPacing update to
:PLAN:CHANnel:BLOCKn:TX:STARTFreq update to
:PLAN:CHANnel:BLOCKn:TX:STOPFreq? update to
A.3 OBSOLETE COMMANDS

The following commands are no longer supported in P25:

Obsolete Patterns

LDU1TRG, LDU2TRG and NOTRG are currently not supported in P25. These pattern types should be removed from any remote command scripts.

:PTF:RECeive:CHn:IFBW
Functionality associated with commands is no longer available.

:PTF:RF:GENerator:CHn:MODulatorn:ENABle
Functionality associated with command is no longer available as of P25 Software Version 1.3.3. Replace these commands with :PTF:RF:MODulatorn:ENABle.

:PTF:RF:GENerator:CHn:EXTernal:ENABle
Functionality associated with command is no longer available as of P25 Software Version 1.3.3. Replace these commands with :PTF:RF:GENerator:EXternal:ENABle.

:PTF:RESET:ACQuisition
Functionality associated with command is no longer available as of P25 Software Version 1.3.3.

:CONStellation:PERSistence
Functionality associated with command is no longer available as of P25 Software Version 1.3.4. Replace this command with :IQ:CONStellation:PERSistence or :FREQuency:CONStellation:PERSistence.

:CONStellation:PERSistence:TRACe:ENABle
Functionality associated with command is no longer available as of P25 Software Version 1.3.4. Replace this command with :IQ:CONStellation:TRACe:ENABle or :FREQuency:CONStellation:TRACe:ENABle.

:CONStellation:PERSistence:TRACe:FETCh?
Functionality associated with command is no longer available as of P25 Software Version 1.3.4. Replace this command with :IQ:CONStellation:TRACe:FETCh? and :FREQuency:CONStellation:TRACe:FETCh?.

Data Link Protocol Remote Commands

The functionality associated with the following commands was modified in version 1.3.5. Refer to revised remote commands documented in Chapter 7, Protocol Remote Commands.

:DATAlink:CHn:DIRection?
:DATAlink:CHn:VOICe:DESTid?
:DATAlink:CHn:VOICe:EMG?
:DATAlink:CHn:VOICe:P?
:DATAlink:CHn:VOICe:RAW?
:DATAlink:CHn:VOICe:SF?
:DATAlink:CHn:VOICe:SID?
:DATAlink:CHn:VOICe:LCO?
:DATAlink:CHn:VOICe:TGID?
:ENCryption:SLOTn:ALGid
This command has been reformatted. Replace command with :ENCryption:ALGID

:ENCryption:SLOTn:IDPAIRValidate
This command has been reformatted. Replace command with :ENCryption:PAIRVALID?

:ENCryption:SLOTn:KEYValidate
This command has been reformatted. Replace command with :ENCryption:KEYVALID?

:ENCryption:SLOTn:KEYVALUE
This command has been reformatted. Replace command with :ENCryption:KEY

:ENCryption:SLOTn:REFname
This command has been reformatted. Replace command with :ENCryption:NAME

:PLAN:CHANnel:BLOCKn:CHSPacing
:PLAN:CHANnel:BLOCKn:STARTFreq
:PLAN:CHANnel:BLOCKn:STOPFreq?
Functionality associated with these commands is no longer available as of P25 Software Version 1.7.7.
Update the following commands to avoid script failures.
  :PLAN:CHANnel:BLOCKn:CHSPacing update to
  :PLAN:CHANnel:BLOCKn:STARTFreq update to
  :PLAN:CHANnel:BLOCKn:STOPFreq? update to
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