# Agilent PXT Wireless Communications Test Set (E6621A)

**Programmer's Reference**

Agilent Technologies

# Notices

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## Statement of Compliance

This product has been designed and tested in accordance with accepted industry standards, and has been supplied in a safe condition. The documentation contains information and warnings that must be followed by the user to ensure safe operation and to maintain the product in a safe condition.

## Manual Part Number

E6621-90007

## Edition

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Documents Software Version 6.5

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## Safety Notices

The following general safety precautions must be observed during all phases of operation of this instrument.   Failure to comply with these precautions or with specific warnings elsewhere in this manual violates safety standards of design, manufacture, and intended use of the instrument. Agilent Technologies Inc. assumes no liability for the customer's failure to comply with these requirements.

## Electrical Rating

Input Voltage Range: 100 to 240 VAC, automatic selection

Input Frequency Range: 50/60Hz

Input Current Rating:

    5A @ 240 VAC (maximum)

    7A @ 100 VAC (maximum)

Mains supply voltage fluctuates up to +/- 10% of the nominal voltage.

Transient over-voltages are typically present on the mains supply.

This instrument has an auto-ranging line voltage input, ensure the supply voltage is within the specified range.

## Where to Find the Latest Information

Agilent will periodically update product documentation. For the latest information about this wireless test set, including software upgrades, operating and application information, and product and accessory information, see the following URL: http://www.agilent.com/find/pxt

## Is your product software up-to-date?

Agilent will periodically release software updates to fix known defects and incorporate product enhancements. To search for software updates for your product, go to the Agilent Technical Support website at

http://www.agilent.com/find/softwaremanager

| IMPORTANT | An active N6050AS software and technical support contract (STSC) is required to access the software manager website (displayed above), together with the login credentials registered by you or your company for activation. See the section on licensing in the *Agilent PXT Wireless Communications Test Set Getting Started Guide* for instructions to activate your STSC. |
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# Table of Contents

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# 1 Using GPIB or the Applications Programming Interface (API).

Remote control of the PXT is accomplished by GPIB and via command strings based on the SCPI (Standard Commands for Programmable Instruments) syntax rules. This document lists all SCPI commands and examples of each command, using the minimum required characters. Although GPIB is the preferred method of programming remotely, below are descriptions of the structure of each request and response command defined for the instrument, when using the API.

| NOTE | Using the GPIB interface does not require the API. You can go directly to the Command List. |
|------|--------------------------------------------------------------------------------------------|

## Downloading and installing the API

The application programming interface for the PXT is provided via a Windows DLL designed for PCs running the Windows XP or Windows 7 operating system. It can be downloaded from www.agilent.com/find/softwaremanager when you have a current Software and Technical Support Contract (STSC). The API download package contains the DLL, header file and library file. Please read the software release notes for the latest product information.

## API Commands

The version of the E6621A Remote API DLL can be obtained by:
■ char* **E6621_LibVersion()**
return value : string with library version information

The connection between E6621 Remote API and E6621 system is established by:
■ int **E6621_Connect**(const char* host, const char* port, int *conn_id)
inputs : IP address(string) of the host (E6621 system) and the port number(string), output parameter "conn_id" will contain the connection ID returned and it should be used in all subsequent commands for the valid connection.
return value: error code (E6621_Error) See API Error Codes (E6621_Error) on page 4 for a    list of possible error codes returned.

The connection between E6621A Remote API and E6621A system is closed by either:
■int **E6621_Close**(int conn_id);
inputs : Connection ID
return : error code (E6621_Error)

■ int **E6621_Close_All()**
inputs : None
return : error code (E6621_Error)

The Serial Number about E6621A system is obtained by:
■int **E6621_GetSerialNumber**(int conn_id, char *serial, int size)
inputs : connection ID and size of Serial Number buffer
outputs parameter: Serial Number (string)
return : error code (E6621_Error)

The programming commands are formatted as a string and transmitted to the connected E6621A system by:

■int **E6621_Write**(int conn_id, const char* msg);
inputs : Connection ID and Message to be written
return : error code (E6621_Error)

The programming command response strings from the connected E6621A system can be obtained by:
■int **E6621_Read**(int conn_id, char* msg, int size)
inputs : Connection ID and Read Buffer size
outputs : Storage location of Read Buffer
return : Read size or error code (E6621_Error)

Timeout for reading strings from the connected E6621A system can be set by: (unit: sec.)
■int **E6621_SetTimeout**(int nid, long timeout);
inputs : Connection ID and Timeout value
return : error code (E6621_Error)

Timeout for reading strings from the connected E6621A system can be queried by: (unit: sec.)
■int **E6621_GetTimeout**(int nid, long* timeout);
inputs : Connection ID
outputs : Timeout value
return : error code (E6621_Error)

Remote terminal can select specific Network Device to connect E6621A system by setting local IP address.
■int **E6621_SetLocalAddr**(const char* addr)
inputs : IP address of local Network Device that communicates with the E6621A system
return : error code (E6621_Error)

Retrieve current local IP address by:
■char* **E6621_GetLocalAddr**();
return : IP address of Network Device used to connect with E6621A system

For Command Syntax and more details see E6621A_API.h

## Command structure

The rules and conventions of the SCPI command structure are available at
http://www.ivifoundation.org/scpi/default.aspx . They are designed to provide programming commands that
are independent of device and programming language for specified functions in programmable test
instrumentation. In the table of Remote Commands on page 5, the row below each command provides
examples. This "short" command form does not always follow those rules outlined by the IVI Foundation. It
is best to copy the command from the table and modify it as needed for your specific application.

### Requests

Setting Command

| Command Name | | | | | | | Space | (Parameter) | | | End |
|---|---|---|---|---|---|---|---|---|---|---|---|
| (:) | Depth 1 | : | Depth 2 | : | Depth 3 | ... | " " | (Value) | (Space) | (Unit) | \r\n |

Query Command

| Command Name | | | | | | | Query | End |
|---|---|---|---|---|---|---|---|---|
| (:) | Depth 1 | : | Depth 2 | : | Depth 3 | ... | ? | \r\n |

### Responses

Reponses to request commands can be one of two formats: response with state message (pass or fail) or
response with value.

| Request Command (···) | State Message ("pass" or "fail") | End (\r\n) |
|---|---|---|

| Request Command (···) | Value (···) | End (\r\n) |
|---|---|---|

## API Error Codes (E6621_Error)

The table below shows the E6621_Error codes with return values and descriptions.

| E6621_Error | Value | Description |
|---|---|---|
| E6621_ALREADY_CLOSED | 2 | "Connection ID" already closed. |
| E6621_ALREADY_CONNECTED | 1 | Address is already open. |
| E6621_OK | 0 | No Error. |
| E6621_ERROR | -1 | Cannot connect to server or Operator with invalid "Connection ID". |
| E6621_NOT_CONNECTED | -2 | Operator with closed "Connection ID". |
| E6621_SMALL_BUFFER | -3 | Insufficient buffer size to read. |
| E6621_LOCAL_BIND_FAILED | -4 | Local bind failed. |

## Parameters

The table below shows type and unit of values used in this document (parameters are case-sensitive).

| Type | Valid Unit | Description | Example |
|---|---|---|---|
| <real> | (dBm) | real number | 10 dBm, −10.00 dBm |
| <integer> | - | integer number | 10, −10 |
| <time> | ns, us, ms, s | time (millisecond, second) | 10 ms, 1 s |
| <ampl> | dBm | absolute Amplitude value | 10 dBm, 0 dBm |
| <rel_ampl> | dB | relative Amplitude value | 10 dB, −10 dB |
| <freq> | Hz | frequency value | 10 Hz, 10 kHz, 10 MHz, 10 GHz |
| <bandwidth> | Hz | frequency's bandwidth value | 10 Hz, 10 kHz, 10 MHz, 10 GHz |
| <per> | % | Percentage | 100 %, 100% |
| <string> | - | Long string or special letters | "string_12 ()" |
| <table> | - | A number of values | "10.11,11.12,12.14" |

# 2  Command List

The following table lists the PXT commands. Instrument functionality depends on the PXT options selected. Commands that attempt to access features that are not available return an error.

| NOTE | Example commands are provided in blue text below each "long" form command and consist of the minimum characters required to issue the command to the instrument. These "short" command forms do not always follow those rules outlined by the IVI Foundation. It is best to copy the command from the table below and modify it as needed for your specific application. |
|---|---|

## *Basic SCPI commands*

| Command | Preset | Range | Unit | Description/Notes |
|---|---|---|---|---|
| *CLS | | | | Clears the Error Queue |
| *VER? | | | | – Returns FW version of the instrument<br>– *IDN? is the preferred way to obtain this information. |
| *MODEL? | | | | – Returns model number of the instrument<br>– *IDN? is the preferred way to obtain this information. |
| *IDN? | | | | Identification Query |
| *OPC? | | | | Operation Complete Query |
| *OPT? | | | | Application Option and License Information |
| SHUTDown | | | | Shuts down the PXT instrument |
| SHUTD | | | | |
| REBOot | | | | Reboots the PXT instrument |
| REBO | | | | |

| Command | Preset | Range | Unit | Description/Notes |
|---|---|---|---|---|
| STATus:PRESet | | | | Resets all parameter values to their respective default value |
| STAT:PRES | | | | |
| SYSTem:ERRor? | | | | See System Error Return Values for possible return values. |
| SYST:ERR? | | | | |
| SYSTem:VERSion? | | | | – System Version Query<br>– *IDN? is the preferred way to obtain this information. |
| SYST:VERS? | | | | |
| SYSTem:INSTrument:OCOLd? | | ON \| OFF | | Queries the state of the O.C. |
| SYST:INST:OCOL? | | | | |
| SYSTem:ROSCillator:TIMebase? | INT | INT \| EXT | | Queries the state of the 10M annunciators. INT or EXT – EXT if the 10M annunciator is on |
| SYST:ROSC:TIM? | | | | |

## System Interface Commands

| Command | Preset | Range | Unit | Description/Notes |
|---|---|---|---|---|
| SYSTem:COMMunicate:GPIB:ADDRess[?] | | 0 to 30 | | GPIB Address |
| SYST:COMM:GPIB:ADDR 10<br>SYST:COMM:GPIB:ADDR? | | | | |
| SYSTem:COMMunicate:LAN:EXTernal:IRAT:SECurity:SYNChronize | | | | SIB8 security Syncronize |
| SYST:COMM:LAN:EXT:IRAT:SEC:SYNC | | | | |
| SYSTem:COMMunicate:LAN:EXTernal:SYNChronize | | | | Force Synchronize SIB8 |
| SYST:COMM:LAN:EXT:SYNC | | | | |

| Command | Preset | Range | Unit | Description/Notes |
|---|---|---|---|---|
| SYSTem:COMMunicate:RUI:CONTrol[?] | | TCPip \| GPIB \| NONE | | RUI control type. |
| SYST:COMM:RUI:CONT GPIB<br>SYST:COMM:RUI:CONT? | | | | |
| SYSTem:COMMunicate:TCPip:PORT[?] | | 1 to 65535 | | TCP port of SCPI over LAN. |
| SYST:COMM:TCP:PORT 5060<br>SYST:COMM:TCP:PORT? | | | | |
| SYSTem:COMMunicate:LAN:ADDRess[?] | | <V4 IP Address as string> | | PXT IP Address |
| SYST:COMM:LAN:ADDR "192.168.1.53"<br>SYST:COMM:LAN:ADDR? | | | | |
| SYSTem:COMMunicate:LAN:DGATeway[?] | | <V4 IP Address as string> | | PXT Default Gateway Address |
| SYST:COMM:LAN:DGAT "192.168.1.100"<br>SYST:COMM:LAN:DGAT? | | | | |
| SYSTem:COMMunicate:LAN:SMASk[?] | | <V4 Subnet Address as string> | | PXT Subnet Address |
| SYST:COMM:LAN:SMAS "255.255.255.0"<br>SYST:COMM:LAN:SMAS? | | | | |
| SYSTem:COMMunicate:LAN:DNS:ADDRess[?] | | <V4 DNS Address as string> | | PXT DNS Address |
| SYST:COMM:LAN:DNS:ADDR "192.168.1.67"<br>SYST:COMM:LAN:DNS:ADDR? | | | | |

## *Amplitude*

| Command | Preset | Range | Unit | Description/Notes |
|---|---|---|---|---|
| AMPLitude:ALL[?] | –57 | –120 dBm to +10 dBm | dBm | Amplitude |
| AMPL:ALL –10dBm<br>AMPL:ALL? | | | | |
| AMPLitude:RF1[?] | –57 | –120 dBm to +10 dBm | dBm | RF1 Amplitude |
| AMPL:RF1 –20dBm<br>AMPL:RF1? | | | | |
| AMPLitude:RF2[?] | –57 | –120 dBm to +10 dBm | dBm | RF2 Amplitude |
| AMPL:RF2 –20dBm<br>AMPL:RF2? | | | | |

| Command | Preset | Range | Unit | Description/Notes |
|---|---|---|---|---|
| AMPLitude:POWer:OFFSet:RF1[?] | 0 | –100 dB to +100 dB | dB | RF1 Output Power Offset<br>Enables you to specify an amplitude offset to compensate for a gain or loss between the RF1 Output and the UE.<br>– Entering a positive value represents an external loss, hence increasing the RF1 output power.<br>– Entering a negative value represents an external loss, hence decreasing the RF1 output power.<br>**Notes:**<br>1. This command has been retained for SCPI backward compatibility purposes only. When creating new programs that require the use of amplitude offsets, and using PXT software releases ≥ 6.4   it is recommended that you use the command: AMPLitude:POWer:CORRection:SGAin[?].<br>2. This command still functions as originally designed.<br>3. For PXT software releases ≥ 6.4 entering a positive value for this command results in a positive value *being displayed on the PXT's front-panel menu-key* (to be consistent with the newer AMPLitude:POWer:CORRection:SGAin[?] command's sense of loss/gain), but still results in an increase of the PXT's RF1 output power. Entering a negative value for the offset decreases the RF1 output power. |
| AMPL:POW:OFFS:RF1 –20dB<br>AMPL:POW:OFFS:RF1? | | | | |

| Command | Preset | Range | Unit | Description/Notes |
|---|---|---|---|---|
| AMPLitude:POWer:OFFSet:RF2[?] | 0 | –100 dB to +100 dB | dB | **RF2 Output Power Offset**<br>Enables you to specify an amplitude offset to compensate for a gain or loss between the RF2 Output and the UE.<br>– Entering a positive value represents an external loss, hence increasing the RF2 output power.<br>– Entering a negative value represents an external loss, hence decreasing the RF2 output power.<br>**Notes:**<br>1. This command has been retained for SCPI backward compatibility purposes only. When creating new programs that require the use of amplitude offsets, and using PXT software releases ≥ 6.4   it is recommended that you use the command: AMPLitude:POWer:CORRection:SGAin[?].<br>2. This command still functions as originally designed.<br>3. For PXT software releases ≥ 6.4 entering a positive value for this command results in a positive value *being displayed on the PXT's front-panel menu-key* (to be consistent with the newer AMPLitude:POWer:CORRection:SGAin[?] command's sense of loss/gain), but still results in an increase of the PXT's RF2 output power. Entering a negative value for the offset decreases the RF2 output power. |
| AMPL:POW:OFFS:RF2 –20dB<br>AMPL:POW:OFFS:RF2? | | | | |
| ATTenuation:REFerence:LEVel:ALL[?] | | –120 dBm to +50 dBm | dBm | Ref Level |
| ATT:REF:LEV:ALL –20dBm<br>ATT:REF:LEV:ALL? | | | | |

| Command | Preset | Range | Unit | Description/Notes |
|---|---|---|---|---|
| AMPLitude:AWGN:CHANnelmode[?] | NORMal | MIMO \| NORMal | | AWGN MIMO Channel Mode |
| AMPL:AWGN:CHAN MIMO<br>AMPL:AWGN:CHAN? | | | | |
| AMPLitude:AWGN:STATe[?] | OFF | ON \| OFF | | Sets or gets AWGN state |
| AMPL:AWGN:STAT ON<br>AMPL:AWGN:STAT? | | | | |
| AMPLitude:AWGN:RF1[?] | | −10 to 30 | dB | Set or get AWGN Signal to noise ratio RF1. Requires parameter AMPLitude:AWGN:STATe set to ON. |
| AMPL:AWGN:RF1 −10<br>AMPL:AWGN:RF1? | | | | |
| AMPLitude:AWGN:RF2[?] | | −10 to 30 | dB | Set or get AWGN Signal to noise ratio RF2. Requires parameter AMPLitude:AWGN:STATe set to ON |
| AMPL:AWGN:RF2 −10<br>AMPL:AWGN:RF2? | | | | |
| AMPLitude:AWGN:RF1:NOC? | | | dBm/15kHz | Noise Amplitude (RF1) − 10 $\log_{10}$(Number Resource Elements in Bandwidth). Requires parameter AMPLitude:AWGN:STATe set to ON |
| AMPL:AWGN:RF1:NOC? | | | | |
| AMPLitude:AWGN:RF2:NOC? | | | dBm/15kHz | Noise Amplitude (RF2) − 10 $\log_{10}$(Number Resource Elements in Bandwidth). Requires parameter AMPLitude:AWGN:STATe set to ON |
| AMPL:AWGN:RF2:NOC? | | | | |

| Command | Preset | Range | Unit | Description/Notes |
|---------|--------|-------|------|-------------------|
| AMPLitude:AWGN:RF1:NAMPlitude? | | | dBm | RF1 Amplitude – Signal to Noise Ratio (RF1). Requires parameter AMPLitude:AWGN:STATe set to ON |
| AMPL:AWGN:RF1:NAMP? | | | | |
| AMPLitude:AWGN:RF2:NAMPlitude? | | | dBm | RF2 Amplitude – Signal to Noise Ratio (RF2). Requires parameter AMPLitude:AWGN:STATe set to ON |
| AMPL:AWGN:RF2:NAMP? | | | | |
| AMPLitude:RF1:RSTP? | | | dBm | RF1 amplitude expressed as an RSTP power level |
| AMPL:RF1:RSTP? | | | | |
| AMPLitude:RF2:RSTP? | | | dBm | RF2 amplitude expressed as an RSTP power level |
| AMPL:RF2:RSTP? | | | | |
| AMPLitude:POWer:CORRection[:STATe][?] | OFF | ON \| OFF | | Amplitude Offset Table State. Amplitude offset settings are preserved during power cycles or instrument Preset. |
| AMPL:POW:CORR ON<br>AMPL:POW:CORR? | | | | |

| Command | Preset | Range | Unit | Description/Notes |
|---|---|---|---|---|
| AMPLitude:POWer:CORRection:SFRequency[?] | 2500000000? | 350000000 to 6000000000 | Hz,MHz | Amplitude Offset Table Frequency List. Amplitude offset settings are preserved during power cycles or instrument preset. The parameter list is a comma-separated list of 1 to 60 frequency values. If units are not specified, Hz is assumed. The resolution is 1MHz. The values entered   overwrite the existing frequency entries in the amplitude offset table, starting from the 1st entry, and extending for as many entries as is specified in the command. The corresponding individual "State" entries in the table are also set to ON, with all other entries set to OFF.   If you have sent a command with duplicate frequencies, then only the first of those entries are set to ON, any duplicates are set to OFF. If you do not enter any amplitude offset values, then the previously set amplitude offset value at that table index (or default value of 0dB if value never set before), is applied. |
| AMPL:POW:CORR:SFR 1710MHz,1805MHz,1785MHz,1710MHz, 1880MHz AMPL:POW:CORR:SFR? | | | | This example updates the 1st five frequency entries in the table to 1710, 1805, 1785, 1710 and 1880 (all MHz) and sets the 1st three state entries in the table to "ON". The fourth state entry is set to "OFF" (1710MHz is duplicated), The fifth state entry to is set to "ON" and the remaining 55 entries in the table are set to "OFF" |

| Command | Preset | Range | Unit | Description/Notes |
|---|---|---|---|---|
| AMPLitude:POWer:CORRection:SGAin[?] | 0 | -100 to 100 | dB | Amplitude Offset Table List.<br><br>Sets the offsets in the amplitude offset table (floating point value). The parameter list is a comma-separated list of 1 to 60 dB offset values. The resolution is 0.01dB . The values entered will overwrite the existing offset entries in the amplitude offset table, starting from the 1st entry, and extending for as many entries as is specified in the command.   In addition, the corresponding individual "State" entries in the table will also be set to ON, with all other entries set to OFF.<br><br>If no frequency values are specified, then the previously set frequency value at that table index (or the default value of 2.5GHz if a frequency value was never set at that table index), will apply.<br><br>Amplitude offset settings are preserved during power cycles or instrument Preset. |
| AMPL:POW:CORR:SGA -2.55,-3.12,-3.68,-4.23<br>AMPL:POW:CORR:SGA? | | | | |

## *Attenuation*

| Command | Preset | Range | Unit | Description/Notes |
|---|---|---|---|---|
| ATTenuation:REFerence:LEVel:RF1[?] | 0 | –120 dBm to +50 dBm | dBm | RF1 Ref Level |
| ATT:REF:LEV:RF1 –10dBm<br>ATT:REF:LEV:RF1? | | | | |
| ATTenuation:REFerence:LEVel:RF2[?] | 0 | –120 dBm to +50 dBm | dBm | RF2 Ref Level |
| ATT:REF:LEV:RF2 –10dBm<br>ATT:REF:LEV:RF2? | | | | |
| ATTenuation:ALL[?] | 48 | 0 to 78 dB | dB | Attenuation |
| ATT:ALL 10dB<br>ATT:ALL? | | | | |

| Command | Preset | Range | Unit | Description/Notes |
|---|---|---|---|---|
| ATTenuation:ALL:MODE[?] | AUTO | AUTO \| MANUal \| ADAPtive | | Attenuation Mode. Adaptive Attenuation automatically adjusts the attenuation when OVF alarm detected.<br>Adaptive mode enables parameters ATT:ADAP:IADJ ATT:ADAP:CADJ, and ATT:ADAP:OADJ. |
| ATT:ALL:MODE AUTO<br>ATT:ALL:MODE? | | | | |
| ATTenuation:RF1[?] | 48 | 0 to 78 dB | dB | RF1 Attenuation |
| ATT:RF1 10 dB<br>ATT:RF1? | | | | |
| ATTenuation:RF1:MODE[?] | AUTO | AUTO \| MANUal | | RF1 Attenuation Mode |
| ATT:RF1:MODE AUTO<br>ATT:RF1:MODE? | | | | |
| ATTenuation:PDIVision[?] | 10 | 1 dB to 20 dB | dB | Scale/Div |
| ATT:PDIV 10 dB<br>ATT:PDIV? | | | | |
| ATTenuation:INPUt:POWer:OFFSet:RF1[?] | 0 | −100 dB to +100 dB | dB | RF1 Input Power Offset |
| ATT:INPU:POW:OFFS:RF1 10 dB<br>ATT:INPU:POW:OFFS:RF1? | | | | |
| ATTenuation:INPUt:POWer:OFFSet:RF2[?] | 0 | −100 dB to +100 dB | dB | RF2 Input Power Offset |
| ATT:INPU:POW:OFFS:RF2 40 dB<br>ATT:INPU:POW:OFFS:RF2? | | | | |
| ATTenuation:OVF? | 0 | 0 \| 1 | | − Return value of 1 Indicates that the input signal is in overflow. This can occur because your device's power is above the maximum input level for the measurement, or because your device's power is too far above the expected power.<br>− Return value of 0 indicates that the input signal is not in overflow. |
| ATT:OVF ? | | | | |
| ATTenuation:ADAPtive:IADJuster[?] | 6 | −30 to 30 | dBm | Attenuation Adaptive mode idle adjuster |
| ATT:ADAP:IADJ -20<br>ATT:ADAP:IADJ? | | | | |

| Command | Preset | Range | Unit | Description/Notes |
|---|---|---|---|---|
| ATTenuation:ADAPtive:CADJuster[?] | 0 | –30 to 30 | dBm | Attenuation Adaptive mode connected adjuster |
| ATT:ADAP:CADJ 18<br>ATT:ADAP:CADJ? | | | | |
| ATTenuation:ADAPtive:OADJuster[?] | 1 | 0 to 10 | dBm | Attenuation Adaptive mode OVF adjuster. If OVF is detected it will be increased by this amount each time. |
| ATT:ADAP:OADJ 2<br>ATT:ADAP:CADJ? | | | | |
| ATTenuation:INPUt:POWer:OFFSet:RF2[?] | 0 | –100 dB to +100 dB | dB | RF2 Input Power Offset |
| ATT:INPU:POW:OFFS:RF2 40 dB<br>ATT:INPU:POW:OFFS:RF2? | | | | |

## *Frequency*

| Command | Preset | Range | Unit | Description/Notes |
|---|---|---|---|---|
| FREQuency:CENTer[?] | 1.950 GHz | 350 MHz to 6 GHz | Hz, kHz, MHz, GHz | Center Frequency is the same for UL and DL<br>TDD only |
| FREQ:CENT 3 GHz<br>FREQ:CENT? | | | | |
| FREQuency:CENTer:UL[?] | 1.950 GHz | 350 MHz to 6 GHz | Hz, kHz, MHz, GHz | Center(UL) Frequency<br>FDD only |
| FREQ:CENT:UL 2.535 GHz<br>FREQ:CENT:UL? | | | | |
| FREQuency:CENTer:DL[?] | 2.140 GHz | 350 MHz to 6 GHz | Hz, kHz, MHz, GHz | Center(DL) Frequency<br>FDD only |
| FREQ:CENT:DL 2.655 GHz<br>FREQ:CENT:DL? | | | | |

| Command | Preset | Range | Unit | Description/Notes |
|---------|--------|-------|------|-------------------|
| FREQuency:SMEThod[?] | EARFcn | EARFcn \| FREQ | | When 'Setting Method' is set to 'EARFCN', the Frequency Band and EARFCN fields will be used to set the frequency used by the PXT. When 'Setting Method' is set to Freq, Setting the DL or UL Frequency fields will have no effect on the EARFCN or Band. |
| FREQ:SMET FREQ<br>FREQ: SMET FREQ? | | | | |
| FREQuency:BAND[?] | FDD : 1<br>TDD: 33 | FDD:   1 - 32<br>TDD: 33 - 63 | | Sets the Frequency Band and if Setting Method is set to EARFCN the EARFCN value updates to the default for the specified Band. |
| FREQ:BAND 7<br>FREQ:BAND? | | | | |

| Command | Preset | Range | Unit | Description/Notes |
|---|---|---|---|---|
| FREQuency:EARFcn:UL[?] | Band 1: 18300<br>Band 2: 18900<br>Band 3: 19575<br>Band 4: 20175<br>Band 5: 20525<br>Band 6: 835<br>Band 7: 21100<br>Band 8: 21625<br>Band 9: 21975<br>Band 10: 22450<br>Band 11: 22850<br>Band 12: 23095<br>Band 13: 23230<br>Band 14: 23330<br>Band 15: 18300<br>Band 16: 18300<br>Band 17: 23790<br>Band 18: 23925<br>Band 19: 24075<br>Band 20: 24300<br>Band 21: 24525<br>Band 22:18300<br>Band 23: 25600<br>Band 24: 25870<br>Band 25: 26365<br>Band 26: 26865<br>Band 27: 27125<br>Band 28: 27360<br>Band 29-32: 18300 | Band 1: 18025 to 18575<br>Band 2: 18607 to 19193<br>Band 3: 19207 to 19943<br>Band 4: 19957 to 20393<br>Band 5: 20407 to 20643<br>Band 6: 2675 to 2725<br>Band 7: 20775 to 21425<br>Band 8: 21457 to 21793<br>Band 9: 21825 to 22125<br>Band 10: 22175 to 22725<br>Band 11: 22775 to 22925<br>Band 12: 23017 to 23173<br>Band 13: 23205 to 23255<br>Band 14: 23305 to 23355<br>Band 15: 18025 to 18575<br>Band 16: 18025 to 18575<br>Band 17: 23755 to 23825<br>Band 18: 23875 to 23975<br>Band 19: 24025 to 24125<br>Band 20: 24175 to 24425<br>Band 21: 24475 to 24575<br>Band 22: 18025 to 18575<br>Band 23: 25525 to 25675<br>Band 24: 25750 to 25989<br>Band 25: 26065 to 26665<br>Band 26: 26690 to 27039<br>Band 27: 27040 to 27209<br>Band 28: 27210 to 27659<br>Band 29-32: 18025 to 18575 | | UL EARFCN<br><br>FDD only |
| FREQ:EARF:UL 23780<br>FREQ:EARF:UL? | | | | |

| Command | Preset | Range | Unit | Description/Notes |
|---|---|---|---|---|
| FREQuency:EARFcn:DL[?] | Band 1: 300<br>Band 2: 900<br>Band 3: 1575<br>Band 4: 2175<br>Band 5: 2525<br>Band 6: 880<br>Band 7: 3100<br>Band 8: 3625<br>Band 9: 3975<br>Band 10: 4450<br>Band 11: 4850<br>Band 12: 5095<br>Band 13: 5230<br>Band 14: 5330<br>Band 15: 300<br>Band 16: 300<br>Band 17: 5790<br>Band 18: 5925<br>Band 19: 6075<br>Band 20: 6300<br>Band 21: 6525<br>Band 22: 300<br>Band 23: 7600<br>Band 24: 7870<br>Band 25: 8365<br>Band 26: 8865<br>Band 27: 9125<br>Band 28: 9360<br>Band 29-32: 300 | Band 1: 25 to 575<br>Band 2: 607 to 1193<br>Band 3: 1207 to 1943<br>Band 4: 1957 to 2393<br>Band 5: 2407 to 2643<br>Band 6: 2675 – 2725<br>Band 7: 2775 to 3425<br>Band 8:3457 to 3793<br>Band 9: 3825 to 4125<br>Band 10: 4175 to 4725<br>Band 11: 4775 to 4925<br>Band 12: 5017 to 5173<br>Band 13: 5205 to 5255<br>Band 14: 5305 to 5355<br>Band 15: 25 to 575<br>Band 16: 25 to 575<br>Band 17: 5755 to 5825<br>Band 18: 5875 to 5975<br>Band 19: 6025 to 6125<br>Band 20: 6175 to 6425<br>Band 21: 6475 to 6575<br>Band 22: 18025 to 575<br>Band 23: 7525 to 7675<br>Band 24: 7750 to 7989<br>Band 25: 8065 to 8665<br>Band 26: 8690 to 9039<br>Band 27: 9040 to 9209<br>Band 28: 9210 to 9659<br>Band 29-32: 25 to 575 | | DL EARFCN<br><br>FDD only |
| FREQ:EARF:DL 5825<br>FREQ:EARF:DL? | | | | |

| Command | Preset | Range | Unit | Description/Notes |
|---|---|---|---|---|
| FREQuency:EARFcn[?] | Band 33 : 36100<br>Band 34 : 36275<br>Band 35 : 36650<br>Band 36 : 37250<br>Band 37 : 37650<br>Band 38 : 38000<br>Band 39 : 38450<br>Band 40 : 39150<br>Band 41 : 40620<br>Band 42 : 42590<br>Band 43 : 44590<br>Band 44 : 46090<br>Band 45-63: 36100 | Band 33 : 36025 to 36175<br>Band 34 : 36225 to 36325<br>Band 35 : 36357 to 36943<br>Band 36 : 36957 to 37543<br>Band 37 : 37575 to 37725<br>Band 38 : 37775 to 38225<br>Band 39 : 38275 to 38625<br>Band 40 : 38675 to 39625<br>Band 41 : 39675 to 41565<br>Band 42 : 41615 to 43565<br>Band 43 : 43615 to 45565<br>Band 44 : 45590 to 46589<br>Band 45-63: 36025 to 36175 | | EARFCN<br><br>TDD only |
| FREQ:EARF 37<br>FREQ:EARF? | | | | |

### Mode Selection – SA/BSE Mode

The PXT Wireless Communication Test Set has two main modes: Base Station Emulation (BSE) and Signal Analyzer (SA). BSE mode is used to setup the core configuration for UE connection setups and Base Station Emulation operation. The SA mode is used to perform SA measurements once connections are configured and established in BSE Mode.

The SIGNal:MODE command is used to set the desired BSE or SA mode (and user interface on the PXT screen). SA Mode has sub modes (SA:MODE) Spectrum, LTE, and VSA that require further setting once in the SA mode. The Spectrum (SA:SPEC:MODE) and LTE (SA:LTE:MODE) sub modes have additional mode (measurement) settings that are required in order to make LTE or SPECtrum measurements such as Channel Power, Occupied Bandwidth, and so forth.

The BSE commands and parameters can be executed in any mode (BSE or SA mode), whereas SA commands require the specific mode and SA sub modes to be set. For example to perform SA LTE Channel Power measurements, from BSE mode, the following commands are required to access the desired LTE Channel Power mode:

> SIGN:MODE SA
>
> SA:MODE LTE
>
> SA:LTE:MODE CHP
>
> LTE:CHP:MEAS:POW:MINT:ALL?
>
> BSE:FUNC:UE:POW:CONT:TARG:PUSC 11
>
> LTE:CHP:MEAS:POW:MINT:ALL?
>
> BSE:FUNC:UE:POW:CONT:TARG:PUSC 15
>
> LTE:CHP:MEAS:POW:MINT:ALL?

Changing the modes additionally changes the PXT screen view to the mode configured last.

Failure to set the desired SA mode for SA measurements results in the measurement returning the error: "Measurement failure", Additionally, failing to set the correct SA mode when configuring the respective SA configuration commands returns the error: -221, "Setting Conflict".

| Command | Preset | Range | Unit | Description/Notes |
|---|---|---|---|---|
| SIGNal:MODE[?] | BSE | SA \| BSE | | Change the operation mode to SA or BSE |
| SIGN:MODE BSE<br>SIGN:MODE? | | | | |

### SA Selection

| Command | Preset | Range | Unit | Description/Notes |
|---|---|---|---|---|
| SA:MODE[?] | SPECtrum | SPECtrum \| LTE \| VSA | | Sets the SA sub-mode of signal analysis. VSA is used to connect to Agilent 89600 Vector Signal Analyzer. |
| SA:MODE LTE<br>SA:MODE? | | | | |

## *BSE Mode Commands*

### BSE Configuration

| Command | Preset | Range | Unit | Description/Notes |
|---|---|---|---|---|
| BSE:SIMULator RUN | STOP | RUN \| STOP | | Starts/Stops Simulator. The desired BSE configuration should be setup prior to running the simulator. |
| BSE:SIMUL RUN | | | | |
| BSE:MEASure:VIEW[?] | MESSAge | MESSAge \| L1L2Status \| ERThroughput \| INFOrmation \| CHANnelstate \| RLC \| PDCP | | Sets the current BSE Measurement View on the front panel. |
| BSE:MEAS:VIEW ERT<br>BSE:MEAS:VIEW? | | | | |

| Command | Preset | Range | Unit | Description/Notes |
|---|---|---|---|---|
| SCENArio:LOAD | | "[\subfolder name\] filename" | | The Call Scenario / Load Scenario function loads the PXT configuration scenario file. Scenario files are created and edited using the N6062A Protocol Editor application. The scenario files contain the base configuration of the PXT, It is mandatory to load a scenario file before UE connections can be established. This command loads scenario files into the PXT from the top-level scenario files folder or a subfolder. **Note**: File and folder names are not case sensitive. Loading a scenario file overwrites all parameter settings specified within the scenario. Therefore, any overwrites you wish to implement must be done after loading the desired scenario. For a full list of scenario overwrite parameters, see Scenario Overwrite Parameters on page 73. The Scenario load is usually the first configuration step to configure the BSE simulator, followed by any BSE overwrite parameters. Once the BSE configuration is setup, the BSE simulator should be run. |
| SCENA:LOAD "\Band7\Scenario_5MHz_SISO_Band7_UM.LBMF" SCENA:LOAD "FDD_Combined_v6.3.LBMF" | | | | |

| Command | Preset | Range | Unit | Description/Notes |
|---|---|---|---|---|
| BSE:SCENario:[ACELI\|BCELI]? | | <Filename as string> | | Returns a string representing the scenario files that are currently loaded (including any subfolders within the main LTE-Scenarios folder) or blank string if none has been loaded. On an instrument that does not have option BB1, an attempt to query the BCELL scenario will cause the RUI to return the error +460,"Hardware failure; Option E6621A-BB1 is not present". |
| BSE:SCEN:ACEL?<br>BSE:SCEN:BCEL? | | | | |
| BSE:CONFig:AOVerwrite | MSG | MSG \| MSCenario | | Overwrites the APN in the message or the APN in the communication scenario as well as the APN in the message. Options are 'MSG' (Message) or "MSCenario" (Message+Scenario). If 'MSG' is selected, the overwrite applies only to the message sent. If 'MSCenario' is selected, the overwrite applies to both the message and the communication scenario. |
| BSE:CONF:AOV MSG | | | | |
| BSE:CONFig:NAS:PTIHandling[?] | AUTO | AUTO \| MANual | | Procedure Transaction Identity (PTI) Handling |
| BSE:CONF:NAS:PTIH MANU<br>BSE:CONF:NAS:PTIH? | | | | |
| BSE:CONFig:NAS:TFTHandling [?] | AUTO | AUTO \| MANual | | Traffic Flow Template (TFT) Handling |
| BSE:CONF:NAS:TFTH MAN<br>BSE:CONF:NAS:TFTH? | | | | |

| Command | Preset | Range | Unit | Description/Notes |
|---|---|---|---|---|
| BSE:CONFig:NAS:ATHandling [?] | AUTO | AUTO \| MANual | | When Combined Attach is set to AUTO, the EPSAttachType sent by the UE is overwritten into the Attach Accept message. It is also overwritten into any Tracking Area Update Accept and Detach Accept message that is transmitted.<br>MANual mode uses Scenario file values for the Attach Accept, TAU Accept and Detach Accept messages. |
| BSE:CONF:NAS:ATH MAN<br>BSE:CONF:NAS:ATH? | | | | |
| BSE:CONFig:NAS:DEFault:EBConfig:COUNt? | 0 (2 are provided when the default shipping scenario files are loaded.) | 0 to 4 | | Returns the number of configured EPS Bearers. This check should be performed to determine how many Bearers are present to reconfigure/overwrite or query. The number of Bearers are determined by the Scenario file. Once the Scenario file is loaded, the current bearer configuration for each may be overwritten with the following EBConfig commands. Bearers that are not configured (loaded from Scenario file) should not be queried or set using RUI. |
| BSE:CONF:NAS:DEF:EBC:COUN? | | | | |
| BSE:CONFig:NAS:DEFault:EBConfig[1]\|2\|3\|4:EBID? | | | | Default Bearer ID. (Default shipping scenario files have Bearer ID 5 and 9 configured as an example). |
| BSE:CONF:NAS:DEF:EBC1:EBID?<br>BSE:CONF:NAS:DEF:EBC2:EBID? | | | | |

| Command | Preset | Range | Unit | Description/Notes |
|---|---|---|---|---|
| BSE:CONFig:NAS:DEFault:EBConfig[1]\|2\|3\|4:ADDRess:TYPE[?] | | IPV4 \| IPV6 \| V4V6 | | Default Bearer IP Address Type. If Type is set to IPV4, only ADDRess:V4 should be configured. If V4V6 specified, both V4 and V6 addresses should be configured. |
| BSE:CONF:NAS:DEF:EBC1 V4V6<br>BSE:CONF:NAS:DEF:EBC1? | | | | |
| BSE:CONFig:NAS:DEFault:EBConfig[1]\|2\|3\|4:ADDRess:V4[?] | | <V4 IP Address as string> | | Default Bearer V4 IP Address |
| BSE:CONF:NAS:DEF:EBC1:ADDR:V4 "10.5.1.10"<br>BSE:CONF:NAS:DEF:EBC1:ADDR:V4? | | | | |
| BSE:CONFig:NAS:DEFault:EBConfig[1]\|2\|3\|4:ADDRess:V6[?] | | <V6 IP Address as string> | | Default Bearer V6 IP Address. Link Local address |
| BSE:CONF:NAS:DEF:EBC1:ADDR:V6 "0202:1F1C:3F2E:0001"<br>BSE:CONF:NAS:DEF:EBC1:ADDR:V6? | | | | |
| BSE:CONFig:NAS:DEFault:EBConfig[1]\|2\|3\|4:DNS[?] | OFF | ON \| OFF | | Default Bearer DNS State. |
| BSE:CONF:NAS:DEF:EBC1:DNS ON<br>BSE:CONF:NAS:DEF:EBC1:DNS? | | | | |
| BSE:CONFig:NAS:DEFault:EBConfig[1]\|2\|3\|4:DNS:ADDRess:TYPE[?] | | IPV4, IPV6, V4V6 | | Default Bearer DNS Address Type. |
| BSE:CONF:NAS:DEF:EBC1:DNS:ADDR:TYPE<br>BSE:CONF:NAS:DEF:EBC1:DNS:ADDR:TYPE? | | | | |
| BSE:CONFig:NAS:DEFault:EBConfig[1]\|2\|3\|4:DNS:ADDRess:V4[?] | | <DNS V4 IP Address as string> | | Default Bearer DNS V4 IP Address |
| BSE:CONF:NAS:DEF:EBC1:DNS:ADDR:V4 "192.168.1.67"<br>BSE:CONF:NAS:DEF:EBC1:DNS:ADDR:V4? | | | | |
| BSE:CONFig:NAS:DEFault:EBConfig[1]\|2\|3\|4:DNS:ADDRess:V6[?] | | <DNS V6 IP Address as string> | | Default Bearer DNS V6 IP Address |
| BSE:CONF:NAS:DEF:EBC1:DNS:ADDR:V6<br>"0202:1234:1234:2345:3456:4567:FF01:0001"<br>BSE:CONF:NAS:DEF:EBC1:DNS:ADDR:V6? | | | | |
| BSE:CONFig:NAS:DEFault:EBConfig[1]\|2\|3\|4:APN[?] | | <APN as string> | | Default Bearer APN |
| BSE:CONF:NAS:DEF:EBC2:APN "Agilent2"<br>BSE:CONF:NAS:DEF:EBC2:APN? | | | | |

| Command | Preset | Range | Unit | Description/Notes |
|---|---|---|---|---|
| BSE:CONFig:NAS:DEFault:EBConfig[1]\|2\|3\|4:PCSCf[?] | OFF | ON \| OFF | | Default Bearer P-CSCF State. Specifies whether to send a P-CSCF address or not. |
| BSE:CONF:NAS:DEF:EBC1:PCSC ON<br>BSE:CONF:NAS:DEF:EBC1:PCSC? | | | | |
| BSE:CONFig:NAS:DEFault:EBConfig[1]\|2\|3\|4:PCSCf:ADDRess:TYPE[?] | IPV4 | IPV4 \|IPV6 \| V4V6 | | Default Bearer P-CSCF Address Type. Specifies the P-CSCF Address Type as either IPV4, IPV6 or both V4V6. |
| BSE:CONF:NAS:DEF:EBC1:PCSC:ADDR:TYPE V6<br>BSE:CONF:NAS:DEF:EBC1:PCSC:ADDR:TYPE? | | | | |
| BSE:CONFig:NAS:DEFault:EBConfig[1]\|2\|3\|4:PCSCf:ADDRess:V4[?] | | <V4 IP Address as string> | | Default Bearer P-CSCF V4 IP Address |
| BSE:CONF:NAS:DEF:EBC1:PCSC:ADDR:V4 "192.168.1.104"<br>BSE:CONF:NAS:DEF:EBC1:PCSC:ADDR:V4? | | | | |
| BSE:CONFig:NAS:DEFault:EBConfig[1]\|2\|3\|4:PCSCf:ADDRess:V6[?] | | <V6 IP Address as string> | | Default Bearer P-CSCF V6 IP Address |
| BSE:CONF:NAS:DEF:EBC1:PCSC:ADDR:V6 "0202:1234:1234:2345:3456:4567:FF01:0002"<br>BSE:CONF:NAS:DEF:EBC1:PCSC:ADDR:V6? | | | | |
| BSE:CONFig:NAS:DEFault:EBConfig[1]\|2\|3\|4:CAUSe[?] | OFF | ON \| OFF | | Default Bearer Cause-Code State. Specifies whether to send a cause code along with the Activate Default EPS Bearer Context Request. |
| BSE:CONF:NAS:DEF:EBC1:CAUS ON<br>BSE:CONF:NAS:DEF:EBC1:CAUS? | | | | |
| BSE:CONFig:NAS:DEFault:EBConfig[1]\|2\|3\|4:CAUSe:CODE[?] | V4Only | V4Only \| V6Only | | Default Bearer Cause Code IP Address Type. |
| BSE:CONF:NAS:DEF:EBC1:CAUS:CODE V6O<br>BSE:CONF:NAS:DEF:EBC1:CAUS:CODE? | | | | |

| Command | Preset | Range | Unit | Description/Notes |
|---|---|---|---|---|
| BSE:CONFig:NAS:PDN:ADDRess1:V4[?] | 0.0.0.0 | | | IPV4 address.– This command is deprecated. Bearer setup should be used for PDN IP address setup. See BSE:CONFig:NAS:DEFault:EBConfig commands, above. |
| BSE:CONFig:NAS:MCC[?] | 1 | 0 to 999 | | Mobile Country Code |
| BSE:CONF:NAS:MCC 400<br>BSE:CONF:NAS:MCC? | | | | |
| BSE:CONFig:NAS:MNC[?] | 1 | 0 to 99<br>0 to 999 | | Mobile Network Code<br>Range is dependent upon MNCDigits |
| BSE:CONF:NAS:MNC 40<br>BSE:CONF:NAS:MNC? | | | | |
| BSE:CONFig:NAS:MNCDigits[?] | 2 | 2 \| 3 | | Number of digits to the Mobile Network Code. |
| BSE:CONF:NAS:MNCD 3<br>BSE:CONF:NAS:MNCD? | | | | |
| BSE:CONFig:PHY:SYMBol:SF:NUMber[?] | 1 | 1 \| 2 | | Number of ServiceFlow (TDD only) |
| BSE:CONF:PHY:SYMB:NUM 2<br>BSE:CONF: PHY:SYMB:NUM? | | | | |

| Command | Preset | Range | Unit | Description/Notes |
|---|---|---|---|---|
| BSE:CONFig:PHY:SASSignment[?] | 1 | 0 to 6 | | UL-DL Configuration. Overwrites RRC settings SIB1. NOTE: Not all UL-DL configurations are supported by the PXT, but this range will grow over time. Range supported in sw revision 6.3 = 1 & 2 Range supported in sw revision 6.4 = 1, 2, 5, 6. Range supported in sw revision 6.5 = 0 – 6 (TDD Only) |
| BSE:CONF:PHY:SASS? BSE:CONF:PHY:SASS 5 | | | | |
| BSE:CONFig:PHY:SSPattern[?] | 6 | 0 to 8 | | Special Subframe Configuration (RRC Settings->SIB1).   NOTE: Not all Special Subframe configurations are supported by the PXT, but this range will grow over time. Range supportd in LTE_3 / LTE_4 IR2 = 4, 5, and 6. Range supported in Sw revision 6.5 = 0 – 8. (TDD Only) |
| BSE:CONF:PHY:SSP 4 BSE:CONF:PHY:SSP? | | | | |
| BSE:CONFig:PROFile[?] | 10MHz | FDD: 1.4MHz \| 3MHz \| 5MHz \|   10MHz \| 15MHz \|20MHz TDD: 5MHz \|   10MHz \| 15MHz \|20MHz | | Channel Bandwidth. Overwrites the Scenario file channel bandwidth. |
| BSE:CONF:PROF 20MHz BSE:CONF:PROF? | | | | |

| Command | Preset | Range | Unit | Description/Notes |
|---|---|---|---|---|
| BSE:CONFig:RRC:ASEM[?] | 1 | 1 to 32 | | Additional Spectrum Emission. Controls how much leakage the UE is allowed into adjacent frequencies. Contained in SIB2. |
| BSE:CONF:RRC:ASEM 15<br>BSE:CONF:RRC:ASEM? | | | | |
| BSE:CONFig:RRC:CDRX:RETRans:Timer | PSF2 | PSF2 \| PSF4 \| PSF6 \| PSF8 \| PSF16 \| PSF24 \| PSF33 | | Requires parameter BSE:CONFig:RRC:CDRX:STATe set to ON.<br>FDD only. |
| BSE:CONF:RRC:ASEM 15<br>BSE:CONF:RRC:ASEM? | | | | |
| BSE:CONFig:RRC:SRCindex | 0 | 0 to 157 | | Sets the scheduling request configuration index in the RRC Connection Setup message and in the Re-establishment message. |
| BSE:CONF:RRC:SRC 100 | | | | |
| BSE:CONFig:RRC:TMode[?] | TM1 | TM1 \| TM2 \| TM3 \| TM4 \| TM6 \| IMPLicit<br>TM7 (TDD only) | | TM1 and IMPLicit available with 1 Antenna.<br>TM2, TM3, TM4, TM6, TM7, and IMPLicit available with 2 Antennas. See "BSE:CONFig:PHY:CELL:NCTantennas" more details. Note: TM7 is available in TDD only. |
| BSE:CONF:RRC:TM TM3<br>BSE:CONF:RRC:TM? | | | | |
| BSE:CONFig:RRC:PMState[?] | OFF | ON \| OFF | | Power Max State |
| BSE:CONF:RRC:PMS ON<br>BSE:CONF:RRC:PMS? | | | | |

| Command | Preset | Range | Unit | Description/Notes |
|---------|--------|-------|------|-------------------|
| BSE:CONFig:RRC:PMAX[?] | 23 | -30 to 33 | | Power Max.<br>Requires BSE:CONFig:RRC:PMState set to ON to set. |
| BSE:CONFig:RRC:PMAX 10<br>BSE:CONFig:RRC:PMAX? | | | | |
| BSE:CONFig:RRC:PZN:PUSCh[?] | −85 | −126 \| 24 | | p0-NominalPUSCH. Contributes towards the power of the PUSCH. Carried in SIB2. |
| BSE:CONF:RRC:PZN:PUSC −40<br>BSE:CONF:RRC:PZN:PUSC? | | | | |
| BSE:CONFig:RRC:PZUE:PUSCh[?] | 0 | −8 to 7 | | p0-UE-PUSCH. Contributes towards PUSCH power. Carried in the RRC Connection Setup |
| BSE:CONF:RRC:PZUE:PUSC 4<br>BSE:CONF:RRC:PZUE:PUSC? | | | | |
| BSE:CONFig:RRC:CDRX:LDCStart[?] | 0 | 0 to 2559 | | longDRX-CycleStartOffset. Requires parameter BSE:CONFig:RRC:CDRX:STATe set to ON |
| BSE:CONF:RRC:CDRX:LDCS 1000<br>BSE:CONF:RRC:CDRX:LDCS? | | | | |
| BSE:CONFig:RRC:CDRX:STATe[?] | OFF | ON \| OFF | | Connected DRX State. Allows configuration of Connected DRX parameters. |
| BSE:CONF:RRC:CDRX:STAT ON<br>BSE:CONF:RRC:CDRX:STAT? | | | | |

| Command | Preset | Range | Unit | Description/Notes |
|---|---|---|---|---|
| BSE:CONFig:RRC:CDRX:LDCYcle[?] | SF40 | SF10 \| SF20 \| SF32 \| SF40 \| SF64 \| SF80 \| SF128 \| SF160 \| SF256 \| SF320 \| SF512 \| SF640 \| SF1024 \| SF1280 \| SF2048 \| SF2560 | | longDRX-Cycle. Requires parameter BSE:CONFig:RRC:CDRX:STATe set to ON |
| BSE:CONF:RRC:CDRX:LDCY SF128<br>BSE:CONF:RRC:CDRX:LDCY? | | | | |
| BSE:CONFig:RRC:CDRX:INACtivity[?] | PSF1920 | PSF1 \| PSF2 \| PSF3 \| PSF4 \| PSF5 \| PSF6 \| PSF8 \| PSF10 \| PSF20 \| PSF30 \| PSF40 \| PSF50 \| PSF60 \| PSF80 \| PSF100 \| PSF200 \| PSF300 \| PSF500 \| PSF750 \| PSF1280 \| PSF1920 \| PSF2560 | | drx-InactivityTime. Requires parameter BSE:CONFig:RRC:CDRX:STATe set to ON |
| BSE:CONF:RRC:CDRX:INAC PSF200<br>BSE:CONF:RRC:CDRX:INAC? | | | | |
| BSE:CONFig:RRC:CDRX:ONDuration[?] | PSF6 | PSF1 \| PSF2 \| PSF3 \| PSF4 \| PSF5 \| PSF6 \| PSF8 \| PSF10 \| PSF20 \| PSF30 \| PSF40 \| PSF50 \| PSF60 \| PSF80 \| PSF100 \| PSF200 | | onDurationTimer. Requires parameter BSE:CONFig:RRC:CDRX:STATe set to ON |
| BSE:CONF:RRC:CDRX:OND PSF40<br>BSE:CONF:RRC:CDRX:OND? | | | | |
| BSE:CONFig:RRC:CDRX:SDCYcle:STATe[?] | OFF | ON \| OFF | | Short DRX Cycle State.<br>Requires parameter BSE:CONFig:RRC:CDRX:STATe set to ON |
| BSE:CONF:RRC:CDRX:SDCY:STAT ON<br>BSE:CONF:RRC:CDRX:SDCY:STAT? | | | | |

| Command | Preset | Range | Unit | Description/Notes |
|---|---|---|---|---|
| BSE:CONFig:RRC:CDRX:SDCYcle:TIMer[?] | 1 | 1 to 16 | | drxShortCycleTimer. Requires parameter BSE:CONFig:RRC:CDRX:STATe set to ON AND BSE:CONFig:RRC:CDRX:SDCYcle:STATe set to ON |
| BSE:CONF:RRC:CDRX:SDCY:TIM 5 BSE:CONF:RRC:CDRX:SDCY:TIM? | | | | |
| BSE:CONFig:RRC:CDRX:SDCYcle:VALue[?] | SF2 | SF2 \| SF5 \| SF8 \| SF10 \| SF16 \| SF20 \| SF32 \| SF40 \| SF64 \| SF80 \| SF128 \| SF160 \| SF256 \| SF320 \| SF512 \| SF640 | | shortDRX-Cycle. Requires parameter BSE:CONFig:RRC:CDRX:STATe set to ON AND BSE:CONFig:RRC:CDRX:SDCYcle:STATe set to ON |
| BSE:CONF:RRC:CDRX:SDCY:VAL SF32 BSE:CONF:RRC:CDRX:SDCY:VAL? | | | | |
| BSE:CONFig:RRC:IDRX:DPCycle[?] | RF32 | RF32 \| RF64 \| RF128 \| RF256 | | Default Paging Cycle. Controls how frequently UE can be paged. Contained in SIB2. |
| BSE:CONF:RRC:IDRX:DPC RF64 BSE:CONF:RRC:IDRX:DPC? | | | | |
| BSE:CONFig:RRC:IDRX:NB[?] | T1 | T4 \| T2 \| T1 \| T1_2 \| T1_4 \| T1_8 \| T1_16 \| T1_32 | | nB is used as one of parameters to derive the Paging Frame and Paging Occasion according to TS 36.304 [4]. Value in multiples of defaultPagingCycle ('T'). A value of T4 (fourT) corresponds to 4 * defaultPagingCycle, a value of T2 (twoT) corresponds to 2 * defaultPagingCycle and so on. |
| BSE:CONF:RRC:IDRX:NB T2 BSE:CONF:RRC:IDRX:NB? | | | | |

| Command | Preset | Range | Unit | Description/Notes |
|---|---|---|---|---|
| BSE:CONFig:RRC:CTIMer:STATus[?] | OFF | ON \| OFF | | Connection Status Monitor state. If enabled, the system checks Cell Connection Status every BSE:CONFig:RRC:CTIMer:LENGth seconds to ensure correct status is updated in both BSE:STATus:ACELL and BSE:STATus:BCELL. |
| BSE:CONF:RRC:CTIM:STAT ON<br>BSE:CONF:RRC:CTIM:STAT? | | | | |
| BSE:CONFig:RRC:CTIMer:LENGth[?] | 5 | 2 to 60 | | Cell Connection Status Monitor status check interval (in seconds). |
| BSE:CONF:RRC:CTIM:LENG 40<br>BSE:CONF:RRC:CTIM:LENG? | | | | |
| BSE:CONFig:RRC:ITIMer:STATus[?] | OFF | ON \| OFF | | Inactivity Status Monitor state. If enabled, the PXT sends an RRC Connection Release to the UE after a period of time (BSE:CONFig:RRS:ITIMer:LENGth seconds) if the UE has neither transmitted nor received any data from the network. Back in the RRC Idle state, the UE will be able to save battery life |
| BSE:CONF:RRC:ITIM:STAT ON<br>BSE:CONF:RRC:ITIM:STAT? | | | | |
| BSE:CONFig:RRC:ITIMer:LENGth[?] | 10 | 1 to 2000 | | Inactivity Status Monitor period of inactivity before PXT sends an RRC Connection Release message (duration in seconds). |
| BSE:CONF:RRC:ITIM:LENG 100<br>BSE:CONF:RRC:ITIM:LENG? | | | | |

| Command | Preset | Range | Unit | Description/Notes |
|---|---|---|---|---|
| BSE:CONFig:RRC:ACALgorithm[?] | EEA0 | EEA0 \| EEA1 \| EEA2 | | AS Ciphering Algorithm. Overwrites the selected Ciphering Algorithm in the RRC Security Mode Command |
| BSE:CONF:RRC:ACAL EEA1<br>BSE:CONF:RRC:ACAL? | | | | |
| BSE:CONFig:NAS:NCALgorithm[?] | EEA0 | EEA0 \| EEA1 \| EEA2 | | NAS Ciphering Algorithm NAS Settings. Overwrites the selected Ciphering Algorithm in the NAS Security Mode Command |
| BSE:CONF:RRC:NCAL EEA1<br>BSE:CONF:RRC:NCAL? | | | | |
| BSE:CONFig:UE:CATEGory[?] | 1 | 1 to 5 | | UE Category |
| BSE:CONF:UE:CATEG 4<br>BSE:CONF:UE:CATEG? | | | | |
| BSE:CONFig:CRNTI[?] | 12 | 10 to 65522 | | CRNTI |
| BSE:CONF:CRNTI 20<br>BSE:CONF:CRNTI? | | | | |
| BSE:EPC[?] | OFF | OFF \| EMBed | | Enables EPC for End to End IP transfer. Successful EPC configuration and connection setup on UE Attach turns EPC Soft LED yellow. Must be enabled prior to UE attach for successful setup. |
| BSE:EPC EMB<br>BSE:EPC? | | | | |
| BSE:CONFig:EPC:LBSe[1]:LAN:ADDRess[?] | | <V4 IP Address as string> | | Master EPC Address |
| BSE:CONF:EPC:LBS1:LAN:ADDR?<br>BSE:CONF:EPC:LBS1:LAN:ADDR "192.168.1.110" | | | | |
| BSE:CONFig:EPC:LBSe[1]:STATe? | DCon | CONN \| DCON | | Queries the connection status of the Slave to the Master EPC |
| BSE:CONF:EPC:LBS1:STAT? | | | | |

| Command | Preset | Range | Unit | Description/Notes |
|---|---|---|---|---|
| BSE:CONFig:EPC:LBSe[1]:CONNect | | | | Connects the Slave to the Master EPC |
| BSE:CONF:EPC:LBS1:CONN | | | | |
| BSE:CONFig:EPC:LBSe[1]:DCONnect | | | | Disconnects the Slave from the Master EPC |
| BSE:CONF:EPC:LBS1:DCON | | | | |
| BSE:CONFig:CONTROLmode[?] | STANDALone | STANDALone \| TTCN | | TTCN = Protocol Conformance Test mode. Standalone = Base Band box mode. |
| BSE:CONF:CONTROL TTCN BSE:CONF:CONTROL? | | | | |
| BSE:FUNCtion:DL:POWer:CONtrol:PDSCH:PA? | 0 | -6 \| -4.77 \| -3 \| -1.77 \| 0 \| 1 \| 2 \| 3 | | DL Power Control – PDSCH channel. Overwrites the parameter in RRC Connection Setup. Also has the effect of changing the derived RA/RB parameters. |
| BSE:FUNC:DL:POW:CON:PDSCH:PA? | | | | |
| BSE:FUNCtion:DL:POWer:CONtrol:PDSCH:PB? | 0 | 0 \| 1 \| 2 \| 3 | | DL Power Control – PDSCH channel. Overwrites the SIB2 parameter. Also has the effect of changing the derived RA/RB parameters. |
| BSE:FUNC:DL:POW:CON:PDSCH:PB? | | | | |
| BSE:FUNCtion:DL:POWer:CONTrol:PHY:PDSCh:RA? | 0.0 | -6 \| -4.77 \| -3 \| -1.77 \| 0.0 \| 1 \| 2 \| 3 | | |
| BSE:FUNC:DL:POW:CONT:PHY:PDSC:RA? | | | | |
| BSE:FUNCtion:DL:POWer:CONTrol:PHY:PDSCh:RB? | 0.0 | -10 to 10 | | |
| BSE:FUNC:DL:POW:CONT:PHY:PDSC:RB? | | | | |
| BSE:FUNCtion:DL:POWer:CONTrol:PHY:OTHer:RA[?] | 0 | -6 \| -4.77 \| -3 \| -1.77 \| 0 \| 1 \| 2 \| 3 | | FDD only |
| BSE:FUNC:DL:POW:CONT:PHY:OTH:RA -4.77 BSE:FUNC:DL:POW:CONT:PHY:OTH:RA? | | | | |

| Command | Preset | Range | Unit | Description/Notes |
|---|---|---|---|---|
| BSE:FUNCtion:DL:POWer:CONTrol:PHY:OTHer:RB[?] | 0 | -6 \| -4.77 \| -3 \| -1.77 \| 0 \| 1 \| 2 \| 3 | | FDD only |
| BSE:FUNC:DL:POW:CONT:PHY:OTH:RB -4.77<br>BSE:FUNC:DL:POW:CONT:PHY:OTH:RB? | | | | |
| BSE:FUNCtion:HANDOver:STARt | | | | Initiates handover |
| BSE:FUNC:HANDO:STAR | | | | |
| BSE:FUNCtion:MAC:TADVance:SEND | | | | Sends a single custom Timing Advance MAC Control Element containing specified value (BSE:FUNCtion:MAC:TADVance:VALue) to the UE. |
| BSE:FUNC:MAC:TADV:SEND | | | | |
| BSE:FUNCtion:MAC:TADVance:VALue | 31 | 0 to 63 | | Timing Advance Value holds the value that is sent to the UE. This value is used for both custom and periodic Timing Advance commands. |
| BSE:FUNC:MAC:TADV:VAL | | | | |
| BSE:FUNCtion:MAC:TADVance:PERiod | 0 | 0 to 10240 | msec | Periodic Timing Advance Frequency. enables timing advance commands to be sent to the UE periodically (automatically sent by the PXT).<br><br>The PXT sends the Timing Advance MAC Control Element message with specified value (BSE:FUNCtion:MAC:TADVance:VALue) every specified freqeuncy (BSE:FUNCtion:MAC:TADVance:PERiod). |
| BSE:FUNC:MAC:TADV:PER | | | | |

| Command | Preset | Range | Unit | Description/Notes |
|---|---|---|---|---|
| BSE:FUNCtion:MAC:TADVance:TAETimer | 0 | 0 to 10240 | msec | Timer Advance Expiry Timer. Applies only when Periodic Timing Advance Frequency is enabled.<br>If the PXT detects that no DL or UL SRB or DRB data has been sent for the period of time specified by this timer (BSE:FUNCtion:MAC:TADVance:TAETimer), the PXT will stop sending periodic TA commands to the UE. Periodic TA commands restart again if DL or UL data start being transferred. This simulates a network feature – if TA commands are always sent to the UE, it may never be able to enter Connected Mode DRX state – as the PDCCH used to send the TA command will continuously restart the drx-InactivityTimer.<br>To Disable the Expiry Timer feature specify a value of 0.<br>Note: Periodic TA commands on their own do not reset this timer. |
| BSE:FUNC:MAC:TADV:TAET | | | | |
| BSE:STATus:ACELL? | UNAV | OFF \| IDLE \| CON \| REG \| LOOP \| REL \| UNAV | | Returns the current Acell connection status |
| BSE:STAT:ACELL? | | | | |
| BSE:STATus:BCELL? | UNAV | OFF \| IDLE \| CON \| REG \| LOOP \| REL \| UNAV | | Returns the current Bcell connection status |
| BSE:STAT:BCELL? | | | | |

### PHY Configuration

| Command | Preset | Range | Unit | Description/Notes |
|---|---|---|---|---|
| BSE:CELL[:SELection] | Acell | Acell \| Bcell | | – Selects the desired Cell for configuration. By default this is Cell A. Some parameters have both Cell A and Cell B values associated with them (see PHY column Preset for list of ACELL/BCELL parameters). This command is used to toggle between the Cells.<br>– To configure CELL B parameters, the Bcell must be selected first.<br>– ACELL must be used as the default cell.<br>– BCELL is available for handover tests.<br>– For single cell tests ACELL should be used as primary default. |
| BSE:CELL B<br>BSE:CELL?<br>BSE:CELL:SEL A<br>BSE:CELL:SEL? | | | | |
| BSE:CONFig:PHY:CELL:ID[?] | ACELL = 0<br>BCELL = 2 | 0 to 503 | | Cell ID |
| BSE:CONF:PHY:CELL:ID 4<br>BSE:CONF:PHY:CELL:ID? | | | | |

| Command | Preset | Range | Unit | Description/Notes |
|---------|--------|-------|------|-------------------|
| BSE:CONFig:PHY:CELL:NCTantennas[?] | 1 | 1 \| 2 \| 4 | | Set or Get number of Antennas. The number of antennas dictates the Transmission mode availablility. See "BSE:CONFig:RRC:TMode" for more information. . |
| BSE:CONF:PHY:CELL:NCT 2<br>BSE:CONF:PHY:CELL:NCT? | | | | |
| BSE:CONFig:PHY:PHICH:RESOUrce[?] | ACELL = 1<br>BCELL = 1 | 1/6 \| 1/2 \| 1 \| 2 | | PHICH Resource |
| BSE:CONF:PHY:PHICH:RESOU 1/2<br>BSE:CONF:PHY:PHICH:RESOU? | | | | |
| BSE:CONFig:PHY:SECurity:REPLay[?] | ON | OFF\|ON | | Security replay option. |
| BSE:CONF:PHY:SEC:REPL OFF<br>BSE:CONF:PHY:SEC:REPL? | | | | |
| BSE:CONFig:PHY:SYMBol:NUMber[?] | ACELL = 2<br>BCELL = 2 | 1 \| 2 \| 3 | | Value of CFI |
| BSE:CONF:PHY:SYMB:NUM 3<br>BSE:CONF:PHY:SYMB:NUM? | | | | |
| BSE:CONFig:PHY:SECurity[:ON][?] | ON | ON \| OFF | | |
| BSE:CONF:PHY:SEC OFF<br>BSE:CONF:PHY:SEC? | | | | |
| BSE:CONFig:PHY:SECurity:ALGOrithm[?] | DUMmy | DUMmy \| MILEnage | | |
| BSE:CONF:PHY:SEC:ALGO MILE<br>BSE:CONF:PHY:SEC:ALGO? | | | | |
| BSE:CONFig:PHY:SECurity:KOPTion[?] | OP | OP \| OPC | | |
| BSE:CONF:PHY:SEC:KOPT OPC<br>BSE:CONF:PHY:SEC:KOPT? | | | | |

| Command | Preset | Range | Unit | Description/Notes |
|---|---|---|---|---|
| BSE:CONFig:PHY:SECurity:KVALue[?] | AGILent | AGILent \| 3GPP \| USER | | |
| BSE:CONF:PHY:SEC:KVAL AGIL<br>BSE:CONF:PHY:SEC:KVAL? | | | | |
| BSE:CONFig:PHY:SECurity:KVALue:USERdefined[?] | There is no Factory Preset / Default | 16 Byte Hex in string format | Hex | User K value. Value is persistent. Requires full 16 bytes being set. |
| BSE:CONF:PHY:SEC:KVAL:USER<br>"01020304050060708090A0B0C0D0E0F10"<br>BSE:CONF:PHY:SEC:KVAL:USER? | | | | |
| BSE:CONFig:PHY:SECurity:OPVALue[?] | There is no Factory Preset / Default | 16 Byte Hex in string format | Hex | OP value. Value is persistent. Requires full 16 bytes being set. |
| BSE:CONF:PHY:SEC:OPVAL<br>"112233445566778899AABBCCDDEEFF00"<br>BSE:CONF:PHY:SEC:OPVAL? | | | | |
| BSE:CONFig:PHY:SECurity:OPCVALue[?] | There is no Factory Preset / Default | 16 Byte Hex in string format | Hex | OPc value. Value is persistent. Requires full 16 bytes being set. |
| BSE:CONF:PHY:SEC:OPCVAL "00000000000000000000000000000000"<br>BSE:CONF:PHY:SEC:OPCVAL? | | | | |
| BSE:CONFig:PHY:SECurity:AMFVALue[?] | "8000" | "0000" to "FFFF" | | |
| BSE:CONF:PHY:SEC:AMFVAL 9C8D<br>BSE:CONF:PHY:SEC:AMFVAL? | | | | |
| BSE:CONFig:PHY:SECurity:IMSIVALue[?] | AGILent | AGILent, 3GPP, USER | | IMSI value |
| BSE:CONF:PHY:SEC:IMSIVAL 3GPP<br>BSE:CONF:PHY:SEC:IMSIVAL? | | | | |

| Command | Preset | Range | Unit | Description/Notes |
|---|---|---|---|---|
| BSE:CONFig:PHY:SECurity:IMSIVALue:USERdefined[?] | There is no Factory Preset / Default | "000000000000000" to "FFFFFFFFFFFFFFF" | | User Defined IMSI value Value is persistent through an instrument power cycle. |
| BSE:CONF:PHY:SEC:IMSIVAL:USER "001010123456789" BSE:CONF:PHY:SEC:IMSIVAL:USER? | | | | |

## Uplink Configuration

| Command | Preset | Range | Unit | Description/Notes |
|---|---|---|---|---|
| BSE:CONFig:PHY:UL:GRANt:MODE[?] | ACELL / BCELL = AUTO | AUTO \| FIXEDMACpadding | | UL Grant - Grant Mode |
| BSE:CONF:PHY:UL:GRAN:MODE FIXEDMAC BSE:CONF:PHY:UL:GRAN:MODE? | | | | |
| BSE:CONFig:PHY:UL:GRANt:IMCS[?] | ACELL / BCELL = 1.4 MHz = 6 3 MHz = 5 5 MHz = 5 10 MHz = 12 15 MHz = 6 20 MHz = 3 | FDD: 0 to 23, 29 TDD: 0 to 20, 29 | | UL Grant - I_MCS I_MCS value changes to Factory Preset "default" value on Channel Bandwidth change (see BSE:CONFig:PROFile). |
| BSE:CONF:PHY:UL:GRAN:IMCS 10 BSE:CONF:PHY:UL:GRAN:IMCS? | | | | |

| Command | Preset | Range | Unit | Description/Notes |
|---------|--------|-------|------|-------------------|
| BSE:CONFig:PHY:UL:GRANt:RB:SIZE[?] | ACELL/ BCELL 1.4 MHz = 4 3 MHz = 10 5 MHz = 20 10 MHz = 30 15 MHz = 50 20 MHz = 75 | 1 to 100 dependant on Channel Bandwidth: 1.4 MHz = 1 to 6 3 MHz = 1 to 15 5 MHz = 1 to 25 10 MHz = 1 to 50 15 MHz = 1 to 75 20 MHz = 1 to 100 | | UL Grant - RB Size RB Size value changes to Factory Preset "default" value on Channel Bandwidth change (see BSE:CONFig:PROFile). |
| BSE:CONF:PHY:UL:GRAN:RB:SIZE 30 BSE:CONF:PHY:UL:GRAN:RB:SIZE? | | | | |
| BSE:CONFig:PHY:UL:GRANt:RB:STARt[?] | ACELL / BCELL = 0 | 0 to (Maximum UL RB Size for Channel Bandwidth – 1) | | UL Grant - RB Start |
| BSE:CONF:PHY:UL:GRAN:RB:STAR 50 BSE:CONF:PHY:UL:GRAN:RB:STAR? | | | | |
| BSE:CONFig:PHY:UL:GRANt:SPS:IMCS[?] | 7 | FDD: 0 to 23 | | Semi-persistent scheduling UL Grant - I_MCS FDD only. |
| BSE:CONF:PHY:UL:GRAN:SPS:IMCS 10 BSE:CONF:PHY:UL:GRAN:SPS:IMCS? | | | | |
| BSE:CONFig:PHY:UL:GRANt:SPS:RB:SIZE[?] | 3 | 1 ~ 100 dependent on Channel Bandwidth: 1.4 MHz: 1 to 6 3 MHz: 1 to 15 5 MHz: 1 to 25 10 MHz: 1 to 50 15 MHz: 1 to 75 20MHz: 1 to 100 | | Semi-persistent scheduling UL Grant - RB Size FDD only |
| BSE:CONF:PHY:UL:GRAN:SPS:RB:SIZE 30 BSE:CONF:PHY:UL:GRAN:SPS:RB:SIZE? | | | | |
| BSE:CONFig:PHY:UL:GRANt:SPS:RB:STARt[?] | ACELL / BCELL = 0 | 0 ~ ([Maximum SPS DL RB Size] - [Current SPS DL RB Size]) | | Semi-persistent scheduling UL Grant - RB Start FDD only. |

| Command | Preset | Range | Unit | Description/Notes |
|---|---|---|---|---|
| BSE:CONF:PHY:UL:GRAN:SPS:RB:STAR 50<br>BSE:CONF:PHY:UL:GRAN:SPS:RB:STAR? | | | | |
| BSE:CONFig:PHY:UL:GRANt:PRACh:IGNore[?] | ACELL /<br>BCELL = OFF | ON \| OFF | | UL Grant - PRACH ignore |
| BSE:CONF:PHY:UL:GRAN:PRAC:IGN ON<br>BSE:CONF:PHY:UL:GRAN:PRAC:IGN? | | | | |
| BSE:CONFig:PHY:UL:GRANt:PATTern[?] | ACELL = All<br>BCELL = All | ALL \| SF2 \| SF0/5 \| SF1/3/5/7<br>\| SF3/8 \| All | | UL Grant - UL Tx Pattern |
| BSE:CONF:PHY:UL:GRAN:PATT SF2<br>BSE:CONF:PHY:UL:GRAN:PATT? | | | | |
| BSE:CONFig:PHY:UL:GRANt:AGGRegationlevel:CRNTI[?] | ACELL = 2<br>BCELL = 2 | 1 \| 2 \| 4 \| 8 | | UL Grant - Aggregation CRNTI<br>FDD Only |
| BSE:CONF:PHY:UL:GRAN:AGGR:CRNTI 2<br>BSE:CONF:PHY:UL:GRAN:AGGR:CRNTI? | | | | |
| BSE:CONFig:PHY:UL:RESOUrce:ALLOc:ACReports:CREP[?] | OFF | ON \| OFF | | |
| BSE:CONF:PHY:UL:RESOU:ALLO:ACR:CREP ON<br>BSE:CONF:PHY:UL:RESOU:ALLO:ACR:CREP? | | | | |
| BSE:CONFig:PHY:UL:RESOUrce:ALLOc:ACReports:FREQuency[?] | 1 (FDD)<br>10 (TDD) | 1 to 10 (FDD)<br>10, 20, 30, 40, 50 (TDD) | | |
| BSE:CONF:PHY:UL:RESOU:ALLO:ACR:FREQ 3<br>BSE:CONF:PHY:UL:RESOU:ALLO:ACR:FREQ? | | | | |
| BSE:CONFig:PHY:UL:TIMing:OFFSet[?] | 0 | -100 us ~ 100 us | | UL Timing Offset |
| BSE:CONF:PHY:UL:TIM:OFFS?<br>BSE:CONF:PHY:UL:TIM:OFFS 100 | | | | |

## DownLink Configuration

| Command | Preset | Range | Unit | Description/Notes |
|---|---|---|---|---|
| BSE:CONFig:PHY:DL:RESOUrce:ALLOc:GRANt:MODE[?] | ACELL / BCELL = AUTO | AUTO \| FIXEDMACpadding | | DL Resource Alloc - Grant Mode |
| BSE:CONF:PHY:DL:RESOU:ALLO:GRAN:MODE AUTO<br>BSE:CONF:PHY:DL:RESOU:ALLO:GRAN:MODE? | | | | |
| BSE:CONFig:PHY:DL:RESOUrce:ALLOc:MCS[?] | ACELL / BCELL = OFF | ON \| OFF | | DL - MCS Based On CQI |
| BSE:CONF:PHY:DL:RESOU:ALLO:MCS ON<br>BSE:CONF:PHY:DL:RESOU:ALLO:MCS? | | | | |
| BSE:CONFig:PHY:DL:RESOUrce:ALLOc:IMCS[?] | ACELL/BCELL:<br>1.4 MHz = 4 & 5 MCS<br>3 to 20 MHz = 5 | 0 to 28 | | DL Resource Alloc - I_MCS.<br>I_MCS value changes to Factory Preset "default" value on Channel Bandwidth change (see BSE:CONFig:PROFile). |
| BSE:CONF:PHY:DL:RESOU:ALLO:IMCS 22<br>BSE:CONF:PHY:DL:RESOU:ALLO:IMCS? | | | | |
| BSE:CONFig:PHY:DL:RESOUrce:ALLOc:SPS:IMCS[?] | 7 | 0 - 28 | | Semi-persistent scheduling DL Resource Alloc - I_MCS.<br>FDD only. |
| BSE:CONF:PHY:DL:RESOU:ALLO:SPS:IMCS 22<br>BSE:CONF:PHY:DL:RESOU:ALLO:SPS:IMCS? | | | | |
| BSE:CONFig:PHY:DL:RESOurce:ALLOc:MCS:MAPPing [?] | DEFault | DEFault \| SPECific | | |
| BSE:CONF:PHY:DL:RESO:ALLO:MCS:MAPP SPEC<br>BSE:CONF:PHY:DL:RESO:ALLO:MCS:MAPP? | | | | |

| Command | Preset | Range | Unit | Description/Notes |
|---|---|---|---|---|
| BSE:CONFig:PHY:DL:RESOurce:ALLOc:MCS:SMAPping [?] | 0, 0, 2, 4, 6, 8, 11, 13, 16, 18, 21, 23, 25, 27, 27 | <0 to 28>, <0 to 28>, <0 to 28>, <0 to 28>, <0 to 28>, <0 to 28>, <0 to 28>, <0 to 28>, <0 to 28>, <0 to 28>, <0 to 28>, <0 to 28>, <0 to 28>, <0 to 28>, <0 to 28> | | Defines the MCS to be used for each CQI value if ALLOC:MCS:MAPPing is set to SPECific.<br><br>Applies in "MCS based on CQI" mode. The BSE sets the MCS value based on the current CQI.<br><br>The CQI value in the mapping is the index number. For example: the last parameter (index 15) is for CQI value 15, and applies MCS value 27 when CQI value is 15. The CQI index range is 1 to 15 based. |
| BSE:CONF:PHY:DL:RESO:ALLO:MCS:SMAP 1,2,2,2,4,6,8,10,12,16,18,20,21,22,24<br>BSE:CONF:PHY:DL:RESO:ALLO:MCS:SMAP? | | | | |
| BSE:CONFig:PHY:DL:RESOUrce:ALLOc:RB:SIZE[?] | ACELL / BCELL:<br>1.4 MHz = 6<br>3 MHz = 15<br>5 MHz = 25<br>10 MHz = 50<br>15 MHz = 75<br>20 MHz = 100 | 1.4 MHz = 1 to 6<br>3 MHz = 1 to 15<br>5 MHz = 1 to 25<br>10 MHz = 1 to 50<br>15 MHz = 1 to 75<br>20 MHz = 1 to 100 | | DL Resource Alloc - RB Size.<br>DL RB Size value changes to Factory Preset "default" value on Channel Bandwidth change (see BSE:CONFig:PROFile). |
| BSE:CONF:PHY:DL:RESOU:ALLO:RB:SIZE 50<br>BSE:CONF:PHY:DL:RESOU:ALLO:RB:SIZE? | | | | |

| Command | Preset | Range | Unit | Description/Notes |
|---|---|---|---|---|
| BSE:CONFig:PHY:DL:RESOUrce:ALLOc:SPS:RB:SIZE[?] | 3 | 1 ~ 100 dependant on Channel Bandwidth:<br>1.4 MHz: 6<br>3 MHz: 15<br>5 MHz: 25<br>10 MHz: 50<br>15 MHz: 75<br>20MHz: 100 | | Semi-persistent scheduling DL SPS Resource Alloc - RB Size.<br>FDD only. |
| BSE:CONF:PHY:DL:RESOU:ALLO:SPS:RB:SIZE 50<br>BSE:CONF:PHY:DL:RESOU:ALLO:SPS:RB:SIZE? | | | | |
| BSE:CONFig:PHY:DL:RESOUrce:ALLOc:RB:STARt[?] | ACELL / BCELL = 0 | 0 to (Maximum DL RB Size for Channel Bandwidth – 1) | | DL Resource Alloc - RB Start |
| BSE:CONF:PHY:DL:RESOU:ALLO:RB:STAR 30<br>BSE:CONF:PHY:DL:RESOU:ALLO:RB:STAR? | | | | |
| BSE:CONFig:PHY:DL:RESOUrce:ALLOc:SPS:RB:STARt[?] | ACELL / BCELL = 0 | 0 ~ ([Maximum SPS DL RB Size] - [Current SPS DL RB Size]) | | Semi-persistent scheduling DL Resource Alloc - RB Start |
| BSE:CONF:PHY:DL:RESOU:ALLO:SPS:RB:STAR 30<br>BSE:CONF:PHY:DL:RESOU:ALLO:SPS:RB:STAR? | | | | |
| BSE:CONFig:PHY:DL:RESOUrce:ALLOc:RVSequence[?] | 0,2,3,1 | <0 to 3>, <0 to 3>, <0 to 3>, <0 to 3> | | DL Resource Alloc - RB Start |
| BSE:CONF:PHY:DL:RESOU:ALLO:RVS 1,2,3,0<br>BSE:CONF:PHY:DL:RESOU:ALLO:RVS? | | | | |
| BSE:CONFig:PHY:DL:RESOUrce:ALLOc:CONTrol:SSFRame | DEFault | DEFault \| NULL | | Special Subframe Control<br>(TDD Only) |
| BSE:CONF:PHY:DL:RESOU:ALLO: CONT:SSFR NULL<br>BSE:CONF:PHY:DL:RESOU:ALLO: CONT:SSFR? | | | | |
| BSE:CONFig:PHY:DL:RESOUrce:ALLOc:CONTrol:SFRame0[?] | DEFault | DEFault \| RCT | | Subframe 0 Control<br>(FDD Only) |
| BSE:CONF:PHY:DL:RESOU:ALLO:CONT:SFR0 RCT<br>BSE:CONF:PHY:DL:RESOU:ALLO:CONT:SFR0? | | | | |

| Command | Preset | Range | Unit | Description/Notes |
|---|---|---|---|---|
| *BSE:CONFig:PHY:DL:RESOUrce:ALLOc:SUBFRM5Ctl[?]*<br>BSE:CONFig:PHY:DL:RESOUrce:ALLOc:CONTrol:SFRame5[?] | ACELL / BCELL = DEFault | DEFault \| MAXTh \| RCT | | Subframe 5 Control.<br>Determines whether subframe 5 is used for data or signaling.<br>The italicised version of this command is not recommended and is planned for deletion in future software releases.<br>MAXTh sets subframe 5 for data, as a result a UE will disconnect after around 3 hours as no signalling has occurred.<br>For long term DTCH / E2E tests, use DEFault setting. |
| BSE:CONF:PHY:DL:RESOU:ALLO:CONT:SFR5 MAXT<br>BSE:CONF:PHY:DL:RESOU:ALLO:CONT:SFR5? | | | | |
| BSE:CONFig:PHY:DL:RESOUrce:ALLOc:TMResource:TYPE[?] | TYPE2 | TYPE0_1 \| TYPE2 | | The previous set value "TYPE0/1" is still enabled in software version 6.3, but when queried, the value returned is "TYPE0_1". It is recommended that you use only those values shown under "Range" as future software versions may not support "TYPE0/1".<br>FDD only. |
| BSE:CONF:PHY:DL:RESOU:ALLO:TMR:TYPE TYPE0_1<br>BSE:CONF:PHY:DL:RESOU:ALLO:TMR:TYPE? | | | | |

| Command | Preset | Range | Unit | Description/Notes |
|---|---|---|---|---|
| BSE:CONFig:PHY:DL:RESOUrce:ALLOc:TYPE0:BITMap[?] | ACELL/ BCELL:Maximum range value for Channel Bandwidth. i.e. 5MHz = 8191 (0x1FFF) | 1.4 MHz = 1 to 63 (0x3F)<br>3 MHz = 1 to 255 (0xFF)<br>5 MHz = 1 to 8191 (0x1FFF)<br>10 MHz = 1 to 131071 (0x1FFFF)<br>15 MHz = 1 to 524287 (0x7FFFF)<br>20 MHz = 1 to 33554431 (0x1FFFFFF) | | DL Resource Alloc - Type#0 Bitmap (Requires TM3/TM4 profile – MIMO to be set in scenario file.). |
| BSE:CONF:PHY:DL:RESOU:ALLO:TYPE0:BITM 8191<br>BSE:CONF:PHY:DL:RESOU:ALLO:TYPE0:BITM? | | | | |
| BSE:CONFig:PHY:DL:RESOUrce:ALLOc:PATTern[?] | CELL / BCELL = All | FDD: ALL \| SF1/6<br>TDD: ALL, SF1/6, SF4/9 | | DL Resource Alloc - DL Tx Pattern |
| BSE:CONF:PHY:DL:RESOU:ALLO:PATT SF1/6<br>BSE:CONF:PHY:DL:RESOU:ALLO:PATT? | | | | |
| BSE:CONFig:PHY:DL:RESOUrce:ALLOc:IMCSSFCont[?] | ACELL / BCELL = OFF | OFF \| ON | | DL Resource Alloc - IMCS Control |
| BSE:CONF:PHY:DL:RESOU:ALLO:IMCSSFC ON<br>BSE:CONF:PHY:DL:RESOU:ALLO:IMCSSFC? | | | | |
| BSE:CONFig:PHY:DL:RESOUrce:ALLOc:IMCS0[?] | ACELL / BCELL = 5 | 0 to 28 | | DL Resource Alloc - IMCS0. Requires IMCSSFCont set on |
| BSE:CONF:PHY:DL:RESOU:ALLO:IMCS0 10<br>BSE:CONF:PHY:DL:RESOU:ALLO:IMCS0? | | | | |

| Command | Preset | Range | Unit | Description/Notes |
|---|---|---|---|---|
| BSE:CONFig:PHY:DL:RESOUrce:ALLOc:IMCSR[?] | ACELL / BCELL = 5 | 0 to 28 | | DL Resource Alloc – IMCSR. Requires IMCSSFCont set on |
| BSE:CONF:PHY:DL:RESOU:ALLO:IMCSR 15<br>BSE:CONF:PHY:DL:RESOU:ALLO:IMCSR? | | | | |
| BSE:CONFig:PHY:DL:RESOUrce:ALLOc:AGGRegationlevel:CRNTI[?] | ACELL = 2<br>BCELL = 2 | 1 \| 2 \| 4 \| 8 | | DL Resource Alloc -<br>Aggregation Level CRNTI<br>FDD Only |
| BSE:CONF:PHY:DL:RESOU:ALLO:AGGR:CRNTI 8<br>BSE:CONF:PHY:DL:RESOU:ALLO:AGGR:CRNTI? | | | | |
| BSE:CONFig:PHY:DL:RESOUrce:ALLOc:AGGREgationlevel:SI[?] | ACELL = 4<br>BCELL = 4 | 4 \| 8 | | DL Resource Alloc -<br>Aggregation Level SI<br>FDD Only |
| BSE:CONF:PHY:DL:RESOU:ALLO:AGGR:SI 8<br>BSE:CONF:PHY:DL:RESOU:ALLO:AGGR:SI? | | | | |
| BSE:CONFig:PHY:DL:RESOUrce:ALLOc:RSUBband[?] | OFF | ON \| OFF | | |
| BSE:CONF:PHY:DL:RESOU:ALLO:RSUB ON<br>BSE:CONF:PHY:DL:RESOU:ALLO:RSUB? | | | | |
| BSE:CONFig:PHY:DL:RESOUrce:ALLOc:RVSequence[?] | 0, 2, 3, 1 | <0 to 3>, <0 to 3>,<br><0 to 3>, <0 to 3> | | |
| BSE:CONF:PHY:DL:RESOU:ALLO:RVS 1<br>BSE:CONF:PHY:DL:RESOU:ALLO:RVS? | | | | |
| BSE:CONFig:PHY:DL:RESOUrce:ALLOc:URTYpe[?]: | WIDeband | WIDeband \|<br>SUBBand | | |
| BSE:CONF:PHY:DL:RESOU:ALLO:URTY SUBB<br>BSE:CONF:PHY:DL:RESOU:ALLO:URTY? | | | | |

## MIMO Configuration

| Command | Preset | Range | Unit | Description/Notes |
|---|---|---|---|---|
| BSE:CONFig:PHY:MIMO:CODEBook[?] | ACELL / BCELL = 0 | 0 to 3 | | MIMO Setting – Codebook |
| BSE:CONF:PHY:MIMO:CODEB 2<br>BSE:CONF:PHY:MIMO:CODEB? | | | | |
| BSE:CONFig:PHY:MIMO:CODebook:MODE[?] | MANual | AUTO \| MANual \| RANDom | | MIMO Setting - Codebook Mode / Preorder Selection |
| BSE:CONF:PHY:MIMO:COD:MODE AUTO<br>BSE:CONF:PHY:MIMO:COD:MODE? | | | | |
| BSE:CONFig:PHY:MIMO:CTIMcs[?] | 5 | 0 to 28 | | |
| BSE:CONF:PHY:MIMO:CTIM 23<br>BSE:CONF:PHY:MIMO:CTIM? | | | | |
| BSE:CONFig:PHY:MIMO:CTMindex[?] | DEFault | DEFault \| SPECified | | |
| BSE:CONF:PHY:MIMO:CTM SPEC<br>BSE:CONF:PHY:MIMO:CTM? | | | | |
| BSE:CONFig:PHY:MIMO:NUMCodewords[?] | ACELL = 2<br>BCELL = 2 | 1 \| 2 | | MIMO Setting Codewords (Requires TM3/TM4 profile – MIMO to be set in scenario file.) |
| BSE:CONF:PHY:MIMO:NUMC 1<br>BSE:CONF:PHY:MIMO:NUMC? | | | | |
| BSE:CONFig:PHY:MIMO:NUMLayer:MODE[?] | MANUal | AUTO \| MANUal | | MIMO Setting - Layer Mode. Requires TM3/TM4 profile loaded or overwrite. |
| BSE:CONF:PHY:MIMO:NUML:MODE AUTO<br>BSE:CONF:PHY:MIMO:NUML:MODE? | | | | |

## MAC Configuration

| Command | Preset | Range | Unit | Description/Notes |
|---|---|---|---|---|
| BSE:CONFig:PHY:MAC:HARQMAXTrans:DL[?] | 1 | 1 to 8 | | DL HARQ Max Trans |
| BSE:CONF:PHY:MAC:HARQMAXT:DL 8 <br> BSE:CONF:PHY:MAC:HARQMAXT:DL? | | | | |
| BSE:CONFig:PHY:MAC:HARQMAXTrans:UL[?] | 1 | 1 to 28 | | UL HARQ Max Trans |
| BSE:CONF:PHY:MAC:HARQMAXT:UL 7 <br> BSE:CONF:PHY:MAC:HARQMAXT:UL? | | | | |

## Measurement Queries

| Command | Preset | Range | Unit | Description/Notes |
|---|---|---|---|---|
| BSE:MAC:INFOrmation:MEASure:TABLe? | | | | See "Base Station Emulator MAC Information Measurement Results". |
| BSE:MAC:INFO:MEAS:TABL? | | | | |
| BSE:ER:THROUghput:MEASure:TABLe? | | | | BLER-Throughput measure result. Shared between DTCH and IP throughput. <br> See "BSE Error Throughput Measurement Results". |
| BSE:ER:THROU:MEAS:TABL? | | | | |

| Command | Preset | Range | Unit | Description/Notes |
|---|---|---|---|---|
| BSE:ER:THROUghput:MEASure:TABLe:CLEar | | | | Resets the BSE Error Throughput Measurement Result Statistics<br>This command clears results from both BSE:ER:THROUghput:MEASure:TABLe and BSE:ER:THROUghput:UL:MEASure:TABLe<br>It does not clear DTCH results. To clear DTCH results stop/start the DTCH test.<br>The DL & UL Average Throughput measurement is reset when a Clear is performed. |
| BSE:ER:THROU:MEAS:TABL:CLE | | | | |
| BSE:ER:THROUghput:UL:MEASure:TABLe? | | | | See "Base Station Emulator Error Throughput UL Measurement Results". This value is reset when BSE:ER:THROUghtput:MEASure:TABLe:CLEar is performed. |
| BSE:ER:THROU:UL:MEAS:TABL? | | | | |
| BSE:L1:INFOrmation:MEASure:TABLe:ALL? | | | | See "Base Station Emulator L1 Information Measurement Results". |
| BSE:L1:INFO:MEAS:TABL:ALL? | | | | |
| BSE:L1:INFOrmation:MEASure:TABLe? | | | | See "Base Station Emulator L1 Information Measurement Results". |
| BSE:L1:INFO:MEAS:TABL? | | | | |
| BSE:L1:INFOrmation:APERiodic:MEASure:TABLe? | | | | See "Base Station Emulator L1 APeriodic Measurement Results". |
| BSE:L1:INFO:PER:MEAS:TABL? | | | | |
| BSE:L1:INFOrmation:PERiodic:MEASure:TABLe? | | | | See "Base Station Emulator L1 Periodic Measurement Results". |
| BSE:L1:INFO:PER:MEAS:TABL? | | | | |

| Command | Preset | Range | Unit | Description/Notes |
|---|---|---|---|---|
| BSE:L1L2status:CLEar | | | | Clears the L1 L2 Status report tables |
| BSE:L1L2:CLE | | | | |
| BSE:RLC:INFOrmation:MEASure:TABLe? | | | | See "Base Station Emulator RLC Information Measurement Results". Note: This report does not include all Bearer information (reports only first two) and is deprecated as a result. Please use BSE:RLC:INFOrmation:MEASure:TABLe:SRB1, BSE:RLC:INFOrmation:MEASure:TABLe:SRB2 and BSE:RLC:INFOrmation:MEASure:TABLe:DRB[1-8] reports that return results for all 8 possible Bearers. |
| BSE:RLC:INFO:MEAS:TABL? | | | | |
| BSE:RLC:INFOrmation:MEASure:TABLe:SRB1? | | | | See "Base Station Emulator RLC Information SRB1 Measurement Results". |
| BSE:RLC:INFO:MEAS:TABL:SRB1? | | | | |
| BSE:RLC:INFOrmation:MEASure:TABLe:SRB2? | | | | See "Base Station Emulator RLC Information SRB2 Measurement Results". |
| BSE:RLC:INFO:MEAS:TABL:SRB2? | | | | |
| BSE:RLC:INFOrmation:MEASure:TABLe:DRB[1-8]? | | | | See "Base Station Emulator RLC Information DRB [1-8] Measurement Results". |
| BSE:RLC:INFO:MEAS:TABL:DRB1? BSE:RLC:INFO:MEAS:TABL:DRB8? | | | | |

| Command | Preset | Range | Unit | Description/Notes |
|---|---|---|---|---|
| BSE:PDCP:INFOrmation:MEASure:TABLe? | | | | See "Base Station Emulator PDCP Information Measurement Results". Note: This report does not include all Bearer information (reports only first two) and is deprecated as a result. Please use BSE:PDCP:INFOrmation:MEASure:TABLe:GENeral, BSE:PDCP:INFOrmation:MEASure:TABLe:SRB1, BSE:PDCP:INFOrmation:MEASure:TABLe:SRB2 and BSE:PDCP:INFOrmation:MEASure:TABLe:DRB[1-8] reports that return results for all 8 possible Bearers. |
| BSE:PDCP:INFO:MEAS:TABL? | | | | |
| BSE:PDCP:INFOrmation:MEASure:TABLe:GENeral? | | | | See "Base Station Emulator PDCP General Information Measurement Results". |
| BSE:PDCP:INFO:MEAS:TABL:GEN? | | | | |
| BSE:PDCP:INFOrmation:MEASure:TABLe:SRB1? | | | | See "Base Station Emulator PDCP SRB1 Information Measurement Results". |
| BSE:PDCP:INFO:MEAS:TABL:SRB1? | | | | |
| BSE:PDCP:INFOrmation:MEASure:TABLe:SRB2? | | | | See "Base Station Emulator PDCP SRB2 Information Measurement Results". |
| BSE:PDCP:INFO:MEAS:TABL:SRB2? | | | | |
| BSE:PDCP:INFOrmation:MEASure:TABLe:DRB[1-8]? | | | | See "Base Station Emulator PDCP DRB [1 – 8] Information Measurement Results". |
| BSE:PDCP:INFO:MEAS:TABL:DRB1? | | | | |

| Command | Preset | Range | Unit | Description/Notes |
|---|---|---|---|---|
| BSE:MEAS:RRC:INFOrmation:CLEar | | | | Clears the measurement report. |
| BSE:MEAS:RRC:INFO:CLE? | | | | |
| BSE:MEAS:RRC:INFOrmation:TABLe? | | | | See "Base Station Emulator RRC Information Measurement Results". |
| BSE:MEAS:RRC:INFO:TABL? | | | | |
| BSE:MEAS:RRC:UECategory? | | <UNAV, 1, 2, 3, 4, 5> | | Returns the category reported by the UE as one of the following values:<br><UNAV, 1, 2, 3, 4, 5> |
| BSE:MEAS:RRC:UEC? | | | | |
| BSE:MEAS:RRC:UECategory:CLEar | | | | Clears the UE Category value |
| BSE:MEAS:RRC:UEC:CLE | | | | |
| BSE:MEAS:RRC:ASRelease? | | < UNAV, Rel 8, Rel 9 > | | Returns the Access Stratum Release as reported by the UE as one of the following values:<br>< UNAV, Rel 8, Rel 9 > |
| BSE:MEAS:RRC:ASR? | | | | |
| BSE:MEAS:RRC:ASRelease:CLEar | | | | Clears the AS Release value |
| BSE:MEAS:RRC:ASR:CLE | | | | |

## BSE Functions

| Command | Preset | Range | Unit | Description/Notes |
|---|---|---|---|---|
| BSE:FUNCtion:DTCH:TRANSfer[?] | OFF | OFF \| ON | | DTCH Transfer Test - Only when connected |
| BSE:FUNC:DTCH:TRANS OFF<br>BSE:FUNC:DTCH:TRANS? | | | | |
| BSE:FUNCtion:DTCH:TRANSfer:IPV4:SETting:SOURce:ADDRess[?] | "0.0.0.0" | | <IP Address> | IPv4 Setting - Source Address Do not use this command over the LAN, only via GPIB. |
| BSE:FUNC:DTCH:TRANS:IPV4:SET:SOUR:ADDR "192.168.1.51"<br>BSE:FUNC:DTCH:TRANS:IPV4:SET:SOUR:ADDR? | | | | |
| BSE:FUNCtion:DTCH:TRANSfer:IPV4:SETting:DESTination:ADDRess[?] | "0.0.0.0" | | <IP Address> | IPv4 Setting - Dest Address Do not use this command over the LAN, only via GPIB. |
| BSE:FUNC:DTCH:TRANS:IPV4:SET:DEST:ADDR "192.168.1.51"<br>BSE:FUNC:DTCH:TRANS:IPV4:SET:DEST:ADDR? | | | | |
| BSE:FUNCtion:DTCH:TRANSfer:UDP:SETting:SOURce:PORT[?] | 10000 | 0 to 65535 | | UDP Setting - Source Port |
| BSE:FUNC:DTCH:TRANS:UDP:SET:SOUR:PORT 20000<br>BSE:FUNC:DTCH:TRANS:UDP:SET:SOUR:PORT? | | | | |
| BSE:FUNCtion:DTCH:TRANSfer:UDP:SETting:DESTination:PORT[?] | 10000 | 0 to 65535 | | UDP Setting - Dest Port |
| BSE:FUNC:DTCH:TRANS:UDP:SET:DEST:PORT 50000<br>BSE:FUNC:DTCH:TRANS:UDP:SET:DEST:PORT? | | | | |
| BSE:FUNCtion:DTCH:TRANSfer:MODE[?] | AUTO | AUTO \| MANUal | | DTCH Parameter - Transfer Mode |
| BSE:FUNC:DTCH:TRANS:MODE AUTO<br>BSE:FUNC:DTCH:TRANS:MODE? | | | | |

| Command | Preset | Range | Unit | Description/Notes |
|---|---|---|---|---|
| BSE:FUNCtion:DTCH:TRANSfer:RATE:MODE[?] | MAXimum | MAXimum \| MANUal | | DTCH Parameter - Transfer Rate<br>When set to MANUal, the value (1 to 50) from using the BSE:FUNCtion:DTCH:TRANSfer:RATE command is used. When set to MAXimum, you can send up to 1000 pps. |
| BSE:FUNC:DTCH:TRANS:RATE:MODE MANU<br>BSE:FUNC:DTCH:TRANS:RATE:MODE? | | | | |
| BSE:FUNCtion:DTCH:TRANSfer:RATE[?] | 1 | 1 to 50 | | DTCH Parameter - Transfer Rate – Sets the value when "MANUal" is set in command above: BSE:FUNCtion:DTCH:TRANSfer:RATE:MODE. |
| BSE:FUNC:DTCH:TRANS:RATE 30<br>BSE:FUNC:DTCH:TRANS:RATE? | | | | |

| Command | Preset | Range | Unit | Description/Notes |
|---|---|---|---|---|
| BSE:FUNCtion:DTCH:FORMat[?] | UDPV4 | RAW \| ICMPV4 \| UDPV4 | | DTCH Parameter – Format of DTCH payload. Sets the DTCH payload format to a specified protocol for simulation. Defaults to UDP V4 protocol messages. DTCH UDP Src Port Destination Port and DTCH IPV4 Source Destination addresses should ideally be configured to simulate valid UDP packets during a DTCH test. Perform a Wireshark capture at the UE to observe DTCH payload as UDPV4 packets. DTCH Default IPv4 SRC and DST ports are 0.0.0.0 and should be configured. |
| BSE:FUNC:DTCH:FORM UDPV4<br>BSE:FUNC:DTCH:FORM? | | | | |
| BSE:FUNCtion:DTCH:PAYLoad:TYPE[?] | RANDom | RANDom \| INC \| MANUal | | DTCH Parameter - Payload Type: Specifies the DTCH payload type. When set to "MANUal" (User Defined) the value from: (BSE:FUNCtion:DTCH:PAYLoad command is used. |
| BSE:FUNC:DTCH:PAYL:TYPE MANU<br>BSE:FUNC:DTCH:PAYL:TYPE? | | | | |

| Command | Preset | Range | Unit | Description/Notes |
|---|---|---|---|---|
| BSE:FUNCtion:DTCH:PAYLoad[?] | 0 | 0 to 65535 | | DTCH Parameter – Payload Specifies the DTCH payload when Payload Type (BSE:FUNCtion:DTCH:PAYLoad:TYPE) is set to MANUal (User Defined). |
| BSE:FUNC:DTCH:PAYL 5000<br>BSE:FUNC:DTCH:PAYL? | | | | |
| BSE:FUNCtion:DTCH:PACKet:SIZE[?] | 576 | 28 to 1400 | | DTCH Parameter - Packet Size |
| BSE:FUNC:DTCH:PACK:SIZE 1000<br>BSE:FUNC:DTCH:PACK:SIZE? | | | | |
| BSE:FUNCtion:DTCH:TOTal:PACKet[?] | 10000000 | 1 to 2147483647 | | DTCH Parameter - Total Packet |
| BSE:FUNC:DTCH:TOT:PACK 2000000000<br>BSE:FUNC:DTCH:TOT:PACK? | | | | |
| BSE:FUNCtion:OCNG1[?] | OFF | ON \| OFF \| 0 \| 1 | | OCNG OP.1<br>FDD only |
| BSE:FUNC:OCNG1 ON<br>BSE:FUNC:OCNG1? | | | | |
| BSE:FUNCtion:OCNG12[?] | OFF | ON \| OFF \| 0 \| 1 | | OCNG OP.12<br>FDD only |
| BSE:FUNC:OCNG12 ON<br>BSE:FUNC:OCNG12? | | | | |
| BSE:FUNCtion:OCNG3[?] | OFF | ON \| OFF \| 0 \| 1 | | OCNG OP.3<br>FDD only |
| BSE:FUNC:OCNG3 ON<br>BSE:FUNC:OCNG3? | | | | |

| Command | Preset | Range | Unit | Description/Notes |
|---|---|---|---|---|
| BSE:FUNCtion:OCNG:RA[?]<br><br>BSE:FUNC:OCNG:RA −3<br>BSE:FUNC:OCNG:RA? | 3 | −6 \| −4.77 \| −3 \| −1.77 \| 0 \| 1 \| 2 \| 3 | | OCNG RA<br>FDD only |
| BSE:FUNCtion:OCNG:RB[?]<br><br>BSE:FUNC:OCNG:RB 3<br>BSE:FUNC:OCNG:RB? | 0 | 0 \| 1 \| 2 \| 3 | | OCNG RB<br>FDD only |
| BSE:FUNCtion:PAGing:APAGing[?]<br><br>BSE:FUNC:PAG:MESSA:APAG ON<br>BSE:FUNC:PAG:MESSA:APAG? | Off | On \| Off \| 1 \| 0 | | Turns on/off the automatic paging of the UE when it is in RRC Idle state and data arrives to be sent to it on the downlink. |
| BSE:FUNCtion:PAGing:MESSAge:COUNt?<br><br>BSE:FUNC:PAG:MESSA:COUN? | | | | Returns the number of PAGING messages available |
| BSE:FUNCtion:PAGing:MESSAge<[1]\|2\|3\|4\|5\|6\|7\|8>?<br><br>BSE:FUNC:PAG:MESSA1? | | | | Returns the name of the specified PAGING message. The SEND PAGING message uses an index, so using the Count and Message name you can find the Paging message index to send. |
| BSE:FUNCtion:PAGing:MESSAge<[1]\|2\|3\|4\|5\|6\|7\|8>:SEND<br><br>BSE:FUNC:PAG:MESSA1:SEND | | | | Sends the specified PAGING message at index location. |

| Command | Preset | Range | Unit | Description/Notes |
|---|---|---|---|---|
| BSE:FUNCtion:PORDer:SEND | | | | PDCCH Order - Send |
| BSE:FUNC:PORD:SEND | | | | |
| BSE:FUNCtion:UE:POWer:CONTrol:MODE[?] | MANual | MANual \| CLPControl | | UE Power Control Mode – Manual – Sets Power Control Mode to Manual operation where Step Up/Step Down power levels may be executed manually. CLPControl – Sets Power Control Mode to Close Loop Power Control. In CLPControl mode, use parameters BSE:FUNCtion:UE:POWer:CONTrol:TARGet:* commands to set desired target power levels and tolerance. Adaptive Power Control could also be used in conjunction to auto adjust the attenuation level. |
| BSE:FUNC:UE:POW:CONT:MODE CLPC <br> BSE:FUNC:UE:POW:CONT:MODE? | | | | |
| BSE:FUNCtion:UE:POWer:CONTrol:TARGet:PUSCh[?] | 0 | -45 to 23 | dBm | UE Power Control PUSCH Target Power level (Closed Loop Power Control Mode operation). To drive PUSCH power measurements, set the PHY UL Resource Allocation to FIXED MAC Padding, and optionally run DTCH or E2E tests in the background. |
| BSE:FUNC:UE:POW:CONT:TARG:PUSC 15 <br> BSE:FUNC:UE:POW:CONT:TARG:PUSC? | | | | |

| Command | Preset | Range | Unit | Description/Notes |
|---|---|---|---|---|
| BSE:FUNCtion:UE:POWer:CONTrol:TARGet:PUCCh[?] | 0 | -45 to 23 | dBm | UE Power Control PUCCH Target Power level (Closed Loop Power Control Mode operation). To drive PUCCH power measurements, set the PHY UL Resource Allocation to AUTO and run DTCH or E2E tests in the background. |
| BSE:FUNC:UE:POW:CONT:TARG:PUCC -10<br>BSE:FUNC:UE:POW:CONT:TARG:PUCC? | | | | |
| BSE:FUNCtion:UE:POWer:CONTrol:TARGet:TOLerance[?] | 1 | 1 to 20 | dB | UE Power Control Target Tolerance (Closed Loop Power Control Mode operation) |
| BSE:FUNC:UE:POW:CONT:TARG:TOL 3<br>BSE:FUNC:UE:POW:CONT:TARG:TOL? | | | | |
| BSE:FUNCtion:UE:POWer:CONtrol:SEND:MESSAge | | | | UE Power Control - Send Message<br>(Manual Mode operation) |
| BSE:FUNC:UE:POW:CON:SEND:MESS | | | | |
| BSE:FUNCtion:UE:POWer:CONtrol:DCI:FORMat[?] | 0 | O \| 1A \| 3 \| 3A | | UE Power Control - DCI Format<br>(Manual Mode operation) |
| BSE:FUNC:UE:POW:CON:DCI:FORM 1A<br>BSE:FUNC:UE:POW:CON:DCI:FORM? | | | | |
| BSE:FUNCtion:UE:POWer:CONtrol:ACCUmulated[?] | 1 | −1 \| 0 \| 1 \| 3 | | UE Power Control - Power Adjust (Accumulated) (Manual Mode operation) |
| BSE:FUNC:UE:POW:CON:ACCU? | | | | |

| Command | Preset | Range | Unit | Description/Notes |
|---|---|---|---|---|
| BSE:FUNCtion:UE:POWer:CONtrol:ABSolute[?] | 1 | −4 \| −1 \| 1 \| 4 | | UE Power Control - Power Adjust (Absolute) (Manual Mode operation) |
| BSE:FUNC:UE:POW:CON:ABS 1<br>BSE:FUNC:UE:POW:CON:ABS? | | | | |
| BSE:FUNCtion:UE:POWer:CONtrol:DCI3A[?] | 1 | −1 \| 1 | | UE Power Control - Power Adjust (DCI3A) (Manual Mode operation) |
| BSE:FUNC:UE:POW:CON:DCI3A 1<br>BSE:FUNC:UE:POW:CON:DCI3A? | | | | |
| BSE:FUNCtion:UE:POWer:CONtrol:ALLUp[?] | OFF | OFF \| ON \| 0 \| 1 | | UE Power Control - Power Adjust (All Up) |
| BSE:FUNC:UE:POW:CON:ALLU OFF<br>BSE:FUNC:UE:POW:CON:ALLU? | | | | |
| BSE:FUNCtion:UE:POWer:CONtrol:ALLDown[?] | OFF | OFF \| ON \| 0 \| 1 | | UE Power Control - Power Adjust (All Down) |
| BSE:FUNC:UE:POW:CON:ALLD OFF<br>BSE:FUNC:UE:POW:CON:ALLD? | | | | |
| BSE:FUNCtion:UE:POWer:CONTrol:PATTern:RBSFCONT[?] | OFF | OFF \| ON \| 0 \| 1 | | UE Power Control - Pattern RBSFCONT |
| BSE:FUNC:UE:POW:CONT:PATT:RBSFCONT ON<br>BSE:FUNC:UE:POW:CONT:PATT:RBSFCONT? | | | | |
| BSE:FUNCtion:UE:POWer:CONTrol:PATTern:RBAlloc<[1]\|2\|3\|4\|5\|6\|7\|8\|9>[?] | 1 | 0 to 100 | | UE Power Control - Pattern RB Allocation |
| BSE:FUNC:UE:POW:CONT:PATT:RBA8 50<br>BSE:FUNC:UE:POW:CONT:PATT:RBA8? | | | | |
| BSE:FUNCtion:UE:POWer:CONTrol:PATTern:SEND | | | | UE Power Control - Pattern Send |
| BSE:FUNC:UE:POW:CONT:PATT:SEND | | | | |

| Command | Preset | Range | Unit | Description/Notes |
|---|---|---|---|---|
| BSE:FUNCtion:UEDETach:MESSAge:COUNt? | | | | Returns number of DETACH messages available |
| BSE:FUNC:UEDET:MESSA:COUN? | | | | |
| BSE:FUNCtion:UEDETach:MESSAge<[1]\|2\|3\|4\|5\|6\|7\|8>? | | | | Returns the name of the specificed DETACH message |
| BSE:FUNC:UEDET:MESSA2? | | | | |
| BSE:FUNCtion:UEDETach:MESSAge<[1]\|2\|3\|4\|5\|6\|7\|8>:SEND | | | | Sends the specified DETACH message. |
| BSE:FUNC:UEDET:MESSA2:SEND | | | | |
| BSE:FUNCtion:CQIMedian:MAXRepsize[?] | 2000 | 1 to 10000 | | Specifies the number of CQI reports to capture. |
| BSE:FUNC:CQIM:MAXR 2200<br>BSE:FUNC:CQIM:MAXR? | | | | |
| BSE:FUNCtion:CQIMedian:TYPE[?] | PERiodic | PERiodic \| APERiodic | | CQI Median Report Type |
| BSE:FUNC:CQIM:TYPE APER<br>BSE:FUNC:CQIM:TYPE? | | | | |
| BSE:FUNCtion:WCMedian:CALCulate[?] | Off | ON \| OFF | | Starts/Stops the Wideband CQI Median Measurement capture. |
| BSE:FUNC:WCM:CALC ON<br>BSE:FUNC: WCM:CALC? | | | | |
| BSE:FUNCtion:FETCh:WCQI<[0]\|1>[:MEDian]? | 9.91E+37 | 0 to 15 | | FDD only<br>Wideband Median CQI for Code 0 or 1. |
| BSE:FUNC:FETC:WCQI1? | | | | |

| Command | Preset | Range | Unit | Description/Notes |
|---|---|---|---|---|
| BSE:FUNCtion:FETCh:WCQI<[0]\|1>:RANGe? | 9.91E+37 | 0 to 100 | | Wideband CQI Code 0/1 in Range +/− 1 (%).  Result is the percentage of CQI values reported from the UE that are in the range of Median CQI −1 to Median CQI +1. If the UE has not reported anything yet then this will be NaN. FDD only |
| BSE:FUNC:FETC:WCQI1:RANG? | | | | |

| Command | Preset | Range | Unit | Description/Notes |
|---|---|---|---|---|
| BSE:FUNCtion:FETCh:SCQI:BAND<[1]\|2\|3\|4\|5\|6\|7\|8\|9\|10\|11\|12\|13>? | | | | – These are the accumulated number of differential CQI values specific for each specified subband reported by the UE.<br><br>– If there are no reports yet, 0,0,0,0 will be returned. If the UE reports 100 CQIs with a value within the range of +1 to – 1 from the Medium CQI, the RUI command will return 100,0,0,0.<br><br>– The number of subbands you can query is dependent upon the system bandwidth:<br><br>**BW** \| **# of Bands**<br>5 MHz \| 7<br>10 MHz \| 9<br>20 MHz \| 13<br><br>FDD only |
| BSE:FUNC:FETC:SCQI:BAND4? | | | | |
| BSE:FUNCtion:CUSTom:MESSAge:COUNt? | | | | Returns number of CUSTOM messages available |
| BSE:FUNC:CUST:MESSA:COUN? | | | | |
| BSE:FUNCtion:CUSTom:MESSAge<[1]\|2\|3\|4\|5\|6\|7\|8>? | | | | Returns the name of the specified CUSTOM message |
| BSE:FUNC:CUST:MESSA2? | | | | |

| Command | Preset | Range | Unit | Description/Notes |
|---|---|---|---|---|
| BSE:FUNCtion:CUSTom:MESSAge<[1]\|2\|3\|4\|5\|6\|7\|8>:SEND | | | | Sends the specified CUSTOM message |
| BSE:FUNC:CUST:MESSA2:SEND | | | | |
| BSE:FUNCtion:CUSTom:TYPE[?] | DEFault | DEFault \| SCM | | Custom Messages Mode (Default or 'Serving Cell'):<br><br>Serving Cell Mode (SCM) overwrites, on the fly - while the simulator is running, the following two fields: The Meas Object Carrier Freq contained in the message is automatically overwritten by the DL EARFCN.<br>The Meas Object BW contained in the message is automatically overwritten by the DL Bandwidth. This allows custom message to be Freq and BW independent.<br><br>DEFault: The Meas Object Carrier Freq and Meas Object BW fields are not overwritten automatically and use the scenario file values. |
| BSE:FUNC:CUST:TYPE SCM<br>BSE:FUNC:CUST:TYPE? | | | | |
| BSE:FUNCtion:HANDover:MESSAge:COUNt? | | | | Returns number of HANDOVER messages available |
| BSE:FUNC:HAND:MESSA:COUN? | | | | |

| Command | Preset | Range | Unit | Description/Notes |
|---|---|---|---|---|
| BSE:FUNCtion:HANDover:MESSAge<[1]\|2\|3\|4\|5\|6\|7\|8>? | | | | Returns the name of the specified HANDOVER message |
| BSE:FUNC:HAND:MESSA2? | | | | |
| BSE:FUNCtion:HANDover:MESSAge<[1]\|2\|3\|4\|5\|6\|7\|8>:SEND | | | | Sends the specified HANDOVER message |
| BSE:FUNC:HAND:MESSA2:SEND | | | | |
| BSE:FUNCtion:HANDover:TYPE[?] | DEFault | DEFault \| BLINd | | Handover Type. |
| BSE:FUNC:HAND:TYPE BLIN | | | | |
| BSE:FUNCtion:HANDover:DESTination:DEARfcn[?] | 0 | 0 to 65535 | | Destination DL-CarrierFreq. |
| BSE:FUNC:HAND:DEST:DEAR? | | | | |
| BSE:FUNCtion:HANDover:DESTination:UEARfcn[?] | 0 | 0 to 65535 | | Destination UL-CarrierFreq. |
| BSE:FUNC:HAND:DEST:UEAR? | | | | |
| BSE:FUNCtion:HANDover:DESTination:PCELlid[?] | 300 | 0 to 503 | | targetPhysCellId . Handover PHY Cell ID. |
| BSE:FUNC:HAND:DEST:PCEL 2<br>BSE:FUNC:HAND:DEST:PCEL? | | | | |
| BSE:FUNCtion:STATistical:CONFidence[?] | OFF | ON \| OFF | | Statistical Throughput - Confidence Level |
| BSE:FUNC:STAT:CONF ON<br>BSE:FUNC:STAT:CONF? | | | | |
| BSE:FUNCtion:STATCqi:THROUghput[?] | | | | Throughput (Kbps) for Codeword1<br>Throughput (Kbps) for Codeword2<br>FDD only |
| BSE:FUNC:STATC:THROU? | | | | |

| Command | Preset | Range | Unit | Description/Notes |
|---|---|---|---|---|
| BSE:FUNCtion:STATistical:TESTRun[?] | OFF | ON \| OFF | | Statistical Throughput - Test Run |
| BSE:FUNC:STAT:TESTR ON<br>BSE:FUNC:STAT:TESTR? | | | | |
| BSE:FUNCtion:STATistical:FETCh:CERRor? | | | | See "Base Station Emulator Statistical Throughput Results" for measurement results tables.<br>This measurement has been deprecated, and the extended version of this measurement report should be used. See BSE:FUNCtion:STATistical:FETCh:ECERror for the new extended report that returns the same information with extended information on expected theoretical bitrates for given configuration. |
| BSE:FUNC:STAT:FETC:CERR? | | | | |
| BSE:FUNCtion:STATistical:FETCh:ECERror? | | | | See "Base Station Emulator Statistical Throughput Extended Results". |
| BSE:FUNC:STAT:FETC:ECER? | | | | |
| BSE:FUNCtion:STATistical:MAXFramesize[?] | 2466 | 1 to 1000000 | | Statistical Throughput - Max Frame Size |
| BSE:FUNC:STAT:MAXF 5000<br>BSE:FUNC:STAT:MAXF? | | | | |

| Command | Preset | Range | Unit | Description/Notes |
|---|---|---|---|---|
| BSE:FUNCtion:STATistical:CQI:FETCh:CERRor? | 0, 0, 0, 0, 0.00000, 0.00000 | | | See "Base Station Emulator CQI Statistical Throughput Results". FDD only |
| BSE:FUNC:STAT:CQI:FETC:CERR? | | | | |
| BSE:FUNCtion:STATistical:CQI:MAXFramesize[?] | 1000 | 1 to 10000000 | | FDD only |
| BSE:FUNC:STAT:CQI:MAXF 12000<br>BSE:FUNC:STAT:CQI:MAXF? | | | | |
| BSE:FUNCtion:STATistical:CQI:TESTrun[?] | OFF | ON \| OFF | | FDD only |
| BSE:FUNC:STAT:CQI:TEST ON<br>BSE:FUNC:STAT:CQI:TEST? | | | | |
| BSE:FUNCtion:STATistical:CQI:THROUghput? | 0.00000, 0.00000 | RF1Th ,RF2Th | | Throughput for RF1 and RF2 FDD only |
| BSE:FUNC:STAT:CQI:THROU? | | | | |
| BSE:FUNCtion:STATistical:PMAN:MAXFramesize[?] | 130752 | 1 to 10000000 | | Statistical Throughput Maximum Frame Size. FDD only |
| BSE:FUNC:STAT:PMAN:MAXF 5000<br>BSE:FUNC:STAT:PMAN:MAXF? | | | | |
| BSE:FUNCtion:STATistical:PMAN:CONFidence[?] | OFF | ON \| OFF | | Statistical Throughput Confidence. FDD only |
| BSE:FUNC:STAT:PMAN:CONF ON<br>BSE:FUNC:STAT:PMAN:CONF? | | | | |
| BSE:FUNCtion:STATistical:PMAN:FETCh:CERRor? | | | | See "Base Station Emulator Pm-an Statistical Throughput Results" FDD only |
| BSE:FUNC:STAT:PMAN:FETC:CERR? | | | | |

| Command | Preset | Range | Unit | Description/Notes |
|---------|--------|-------|------|-------------------|
| BSE:FUNCtion:STATistical:PMAN:TESTRun[?] | OFF | ON \| OFF | | Statistical Throughput - Test Run<br>FDD only |
| BSE:FUNC:STAT:PMAN:TESTR ON<br>BSE:FUNC:STAT:PMAN:TESTR? | | | | |
| BSE:FUNCtion:STATistical:PMDSg:FETCh:CERRor? | 0, 0, 0, 0, 0, 0.00000 | | | See Base Station Emulator Pm-DSG Statistical Throughput Results."<br>FDD only |
| BSE:FUNC:STAT:PMDS:FETC:CERR? | | | | |
| BSE:FUNCtion:STATistical:PMDSg:CONFidence[?] | OFF | ON \| OFF | | FDD only |
| BSE:FUNC:STAT:PMDS:CONF ON<br>BSE:FUNC:STAT:PMDS:CONF? | | | | |
| BSE:FUNCtion:STATistical:PMDSg:MAXFramesize[?] | 12913 | 1 to 10000000 | | FDD only |
| BSE:FUNC:STAT:PMDS:MAXF 300000<br>BSE:FUNC:STAT:PMDS:MAXF? | | | | |
| BSE:FUNCtion:STATistical:PMDSg:TESTRun[?] | OFF | ON \| OFF | | FDD only |
| BSE:FUNC:STAT:PMDS:TESTR ON<br>BSE:FUNC:STAT:PMDS:TESTR? | | | | |
| BSE:FUNCtion:WCMedian:CALCulate[?] | OFF | ON \| OFF | | Starts/Stops the Wideband CQI Median Measurement capture. |
| BSE:FUNC:WCM:CALC ON<br>BSE:FUNC: WCM:CALC? | | | | |

## BSE OBT Scenario Overwrite Facility

The Scenario Load command (SCENArio:LOAD) configures the PXT with the base and core configuration. A number of these key configuration parameters (such as Channel Bandwidth, Frequency Band, Transmission Mode – see below table for full list) can be overwritten directly using the RUI or MUI, effectively overwriting the defined values loaded from the most recently loaded Scenario file. Similarly when you load a scenario file, any "Scenario Overwrite" command parameters are overwritten with those values defined in the scenario file.

All of the "Scenario Overwrite" parameters described below can be overwritten when a scenario file has been loaded and the Simulation mode is stopped. Saving (and recalling later) the register file also preserves the current configured state of any "Scenario Overwrite" parameter. When the PXT Simulation mode is running, it is not be possible to configure the "Scenario Overwrite" parameters.

**An example SCPI command program to overwrite the scenario file parameters:**

Channel Bandwidth and Frequency Band, from 10MHz / Band 17 to 20MHz / Band 4:

SCENA:LOAD "MyDefaultScenario_10MHz_Band17.lbmf"

FREQ:BAND 4

BSE:CONF:PROF 20MHz

BSE:SIMUL RUN

### Scenario Overwrite Parameters

| Scenario File Parameter | SCPI Parameter | PXT Menu Key Path |
|---|---|---|
| **dl-bandwidth** determines the channel bandwidth defined in the Master Information Block (MIB) message. | BSE:CONFig:PROFile | **Mode > BSE > Mode Setup >** *CH Bandwidth* |
| **freqBandindicator** controls which frequency band is transmitted in System Information Block 1 (SIB1). | FREQuency:BAND | **Freq >** *Band* |
| **Max-HARQ-Tx** controls the number of times an UL-SCH transmission is transmitted if it does not receive an ACK. (This parameter appears in the RRC Connection Setup message of the scenario file.) | BSE:CONFig:PHY:MAC:HARQMAXTrans:UL | **BSE > Mode Setup> More >** *MAC Settings* |

| Scenario File Parameter | SCPI Parameter | PXT Menu Key Path |
|---|---|---|
| **transmissionMode** controls the transmission mode assigned in the RRC Connection Setup message. If this value is set to TM3 or TM4, the codebook subset restriction field is also enabled. | BSE:CONFig:RRC:TMode | **BSE > Mode Setup> More >** *RRC Settings >* *Transmission Mode* |
| **additionalSpectrumEmission** controls how much leakage the UE is allowed into adjacent frequencies and is contained in SIB2. | BSE:CONFig:RRC:ASEM | **BSE** > **Mode Setup> More >** *RRC Settings* > *Additional Spectrum Emission* |
| **p-Max On/Off** determines whether the p-Max value is present in the scenario file by controlling whether the Information Element (IE) is present or not. | BSE:CONFig:RRC:PMState | **BSE > Mode Setup> More >** *RRC Settings > p-Max On/Off* |
| **p-Max** is carried in SIB1 and provides a value for the maximum power the UE is allowed to transmit. If this value is not present in the scenario file, the p-Max On/Off setting is overwritten, but this setting is not. | BSE:CONFig:RRC:PMAX | **BSE > Mode Setup> More >** *RRC Settings > p-Max* |
| **p0-NominalPUSCH** contributes towards the power of the PUSCH and is carried in SIB2. | BSE:CONFig:RRC:PZN:PUSCh | **BSE > Mode Setup> More >** *RRC Settings >* *p0-NominalPUSCH* |
| **p0-UE-PUSCH** contributes towards PUSCH power and is carried in the (RRC Connection) Setup message. | BSE:CONFig:RRC:PZUE:PUSCh | **BSE** > **Mode Setup> More >** *RRC Settings > p0-UE-PUSCH* |
| **MNC** is carried in SIB1and also exists in the NAS Attach Accept message, if Globally Unique Temporary Identity (GUTI) is present. This setting overwrites both of these values. | BSE:CONFig:NAS:MNC | **BSE** > **Mode Setup> More >** *RRC Settings > MNC* |
| **MCC** is carried in SIB1 and also exists in the NAS Attach Accept message, if Globally Unique Temporary Identity (GUTI) is present. This setting overwrites both of these values. | BSE:CONFig:NAS:MCC | **BSE > Mode Setup> More >** *RRC Settings > MCC* |

| Scenario File Parameter | SCPI Parameter | PXT Menu Key Path |
|---|---|---|
| This setting controls the number of digits of MNC. It is carried in SIB1and also exists in the NAS Attach Accept message, if Globally Unique Temporary Identity (GUTI) is present. This setting overwrites both of these values. | BSE:CONFig:NAS:MNCDigits | **BSE** > *Mode Setup*> *More* > *RRC Settings   * > *2 or 3 Digit MNC* |
| **defaultPagingCycle** controls how frequently the UE can be paged and is contained in SIB2. | BSE:CONFig:RRC:IDRX:DPCycle | **BSE** > *Mode Setup* > *More* > *RRC Settings   * > *Default Paging Cycle* |
| **nB** controls how frequently the UE can be paged and is contained in SIB2. | BSE:CONFig:RRC:IDRX:NB | **BSE** > *Mode Setup*> *More* > *RRC Settings   * > *NB* |
| **PDNAddressInformation** is the IP Address assigned to the UE in the Activate Default EPS Bearer Context Request message.<br>Since this is #1, it is the IP address that is contained inside the (Non-Access Stratum) NAS Attach Accept message. | None | **BSE** > *Mode Setup*> *More* > *RRC Settings   * > *DUT IP Address #1* |
| **drx-Config** determines if the DRX Config IE in the RRC Connection Reconfiguration message is set to setup or release. | BSE:CONFig:RRC:CDRX:STATe | **BSE** > *Mode Setup*> *More* > *RRC Settings* > *More* > *Connected DRX On/Off* |
| **longDRX-Cycle** is related to Connected Mode DRX and is present in the RRC Connection Reconfiguration message. | BSE:CONFig:RRC:CDRX:LDCYcle | **BSE** > *Mode Setup*> *More* > *RRC Settings* > *More* > *longDRX-Cycle* |
| **longDRX-CycleStartOffset** is related to Connected Mode DRX and is present in the RRC Connection Reconfiguration message. | BSE:CONFig:RRC:CDRX:LDCStart | **BSE** > *Mode Setup*> *More* > *RRC Settings* > *More* > *longDRX-CycleStartOffset* |
| **onDurationTimer** is related to Connected Mode DRX and is present in the RRC Connection Reconfiguration message. | BSE:CONFig:RRC:CDRX:ONDuration | **BSE** > *Mode Setup*> *More* > *RRC Settings* > *More* > *onDurationTimer* |
| **drx-InactivityTimer** is related to Connected Mode DRX and is present in the RRC Connection Reconfiguration message. | BSE:CONFig:RRC:CDRX:INACtivity | **BSE** > *Mode Setup*> *More* > *RRC Settings* > *More   * > *drx-InactivityTime* |

| Scenario File Parameter | SCPI Parameter | PXT Menu Key Path |
|---|---|---|
| **shortDRX** is related to Connected Mode DRX and is present in the RRC Connection Reconfiguration message. This field controls whether shortDRX IE is present or not. | BSE:CONFig:RRC:CDRX:SDCYcle:STATe | **BSE** > **Mode Setup**> **More** > *RRC Settings* > *More* > *Short DRX Cycle On/Off* |
| **shortDRX-Cycle** is related to Connected Mode DRX and is present in the RRC Connection Reconfiguration message. | BSE:CONFig:RRC:CDRX:SDCYcle:VALue | **BSE** > **Mode Setup**> **More** > *RRC Settings* > *More* > *shortDRX-Cycle* |
| **shortDRX-CycleTimer** is related to Connected Mode DRX and is present in the RRC Connection Reconfiguration message. | BSE:CONFig:RRC:CDRX:SDCYcle:TIMer | **BSE** > **Mode Setup**> **More** > *RRC Settings* > *More* > *drxShortCycleTimer* |
| **sr-ConfigIndex** controls the frequency and on which subframe scheduling request messages can be sent. | BSE:CONFig:RRC:SRCindex | **BSE** > **Mode Setup**> **More** > *RRC Settings* > *More* > *More*> *SR Config Index* |
| **UL-DL Configuration**, used only in TDD, controls how many subframes are used for DL transmission, how many for UL transmission and how many are special subframes (used for both). | BSE:CONFig:PHY:SASSignment | **BSE** > **Mode Setup**> **More** > *RRC Settings* >*More* > *More* > *SIB1* >*UL-DL Configuration* |
| **Special Subframe Configuration**, used only in TDD, controls the configuration of the special subframe – how many symbols of the subframe are used for downlink transmission and how many for uplink. | BSE:CONFig:PHY:SSPattern | **BSE** > **Mode Setup**> **More** > *RRC Settings* >*More* > *More* > *SIB1* >*Special Subframe Configuration* |
| **AS Ciphering Algorithm** controls the Ciphering Algorithm selected for use in the Access Stratum. This is signaled in the RRC layer's Security Mode Command. | BSE:CONFig:RRC:ACALgorithm | **BSE** > **Mode Setup**> **More** > *RRC Settings* > *More* > *More* > *SMC* > *AS Ciphering Algorithm* |
| **NAS Ciphering Algorithm** controls the Ciphering Algorithm selected for use in the Non Access Stratum. This is signaled in the EMM layer's Security Mode Command. | BSE:CONFig:NAS:NCALgorithm | **BSE** > **Mode Setup**> **More** > *NAS Settings* |

| Scenario File Parameter | SCPI Parameter | PXT Menu Key Path |
|---|---|---|
| **PA** is one of the parameters that controls the power boosting applied to the PDSCH. It is signaled in the RRC Connection Setup message. | BSE:FUNCtion:DL:POWer:CONtrol:PDSCH:PA | *BSE > Func > More > DL Power Control->PDSCH channel->PA* |
| **PB** is one of the parameters that controls the power boosting applied to the PDSCH. It is signaled in the System Information Block 2 message. | BSE:FUNCtion:DL:POWer:CONtrol:PDSCH:PB | *BSE > Func > More > DL Power Control->PDSCH channel->PB* |
| This enables the EPS Bearer ID associated with each of the configured Default EPS Bearer Contexts in the scenario file to be read back. | BSE:CONFig:NAS:DEFault:EBConfig[1]\|2\|3\|4:EBID | NAS Settings (inside the title of the Default EPS Bearer Config #) Default EPS Bearer ID |
| **IP Address Type** controls what type of IP address is assigned to the UE in the Activate Default EPS Bearer Context Request message. You can assign an IPv4 address, an IPv6 address, or both an IPv4 and IPv6 to the UE. | BSE:CONFig:NAS:DEFault:EBConfig[1]\|2\|3\|4:ADDRess:TYPE | NAS Settings (sub-menus as described above) |
| **V4 Address** controls the IPv4 address that is assigned to the UE in the Activate Default EPS Bearer Context Request message, if the IP Address Type selection has enabled this. | BSE:CONFig:NAS:DEFault:EBConfig[1]\|2\|3\|4:ADDRess:V4 | NAS Settings (sub-menus as described above) |
| **V6 Address** controls the IPv4 address that is assigned to the UE in the Activate Default EPS Bearer Context Request message, if the IP Address Type selection has enabled this. | BSE:CONFig:NAS:DEFault:EBConfig[1]\|2\|3\|4:ADDRess:V6 | NAS Settings (sub-menus as described above) > V6 Address |
| **DNS State** controls whether a DNS address will be assigned to the UE in the Activate Default EPS Bearer Context Request message. | BSE:CONFig:NAS:DEFault:EBConfig[1]\|2\|3\|4:DNS | NAS Settings (sub-menus as described above) > DNS State |
| **DNS Address Type** controls what type of IP address (IPv4, IPv6 or IPv4v6) is assigned as a DNS address in the Activate Default EPS Bearer Context Request message. | BSE:CONFig:NAS:DEFault:EBConfig[1]\|2\|3\|4:DNS:ADDRess:TYPE | NAS Settings (sub-menus as described above) DNS Address Type |

| Scenario File Parameter | SCPI Parameter | PXT Menu Key Path |
|---|---|---|
| **V4 DNS Address** controls the IPv4 address that is assigned as a DNS address in the Activate Default EPS Bearer Context Request message, if the DNS Address Type selection and DNS State have enabled this. | BSE:CONFig:NAS:DEFault:EBConfig[1]\|2\|3\|4:DNS:ADDRess:V4 | NAS Settings (sub-menus as described above)<br><br>V4 DNS Address |
| **V6 DNS Address** controls the IPv4 address that is assigned as a DNS address in the Activate Default EPS Bearer Context Request message, if the DNS Address Type selection and DNS State have enabled this. | BSE:CONFig:NAS:DEFault:EBConfig[1]\|2\|3\|4:DNS:ADDRess:V6 | NAS Settings (sub-menus as described above)<br>V6 DNS Address |
| **APN** selects the value of the APN that is assigned to the UE in the Activate Default EPS Bearer Context Request. It is also (based on the APN Overwrite menu key) used to overwrite the APN in the Communication Scenario – see the *Communication Scenario* section in Chapter 7 of the N6062A Message Editor User's Guide for more information. | BSE:CONFig:NAS:DEFault:EBConfig[1]\|2\|3\|4:APN | NAS Settings (sub-menus as described above)<br>APN |
| **APN Overwrite** controls whether the APN is overwritten only in the Default EPS Bearer Context Request message, or whether the value also overwrites the APN in the Communication Scenario – see the *Communication Scenario* section in Chapter 7 of the N6062A Message Editor User's Guide for more information. | BSE:CONFig:AOVerwite MSG \| MSCenario | NAS Settings (sub-menus as described above)<br>APN Overwrite |
| **P-CSCF State** controls whether the IP address of a Proxy-Call Session Control Function server will be supplied to the UE in the Activate Default EPS Bearer Context Request message. | BSE:CONFig:NAS:DEFault:EBConfig[1]\|2\|3\|4:PCSCf | **BSE** > **Mode Setup> More >** *NAS Settings* > *Default EPS Bearer Config #(1-4)* > **More** |

| Scenario File Parameter | SCPI Parameter | PXT Menu Key Path |
|---|---|---|
| **P-CSCF Address Type** controls what type of IP address (IPv4, IPv6 or IPv4v6) is assigned as the IP address of the P-CSCF server – assuming the P-CSCF State has enabled this. | BSE:CONFig:NAS:DEFault:EBConfig[1]\|2\|3\|4:ADDRess:TYPE | **BSE** > **Mode Setup> More** > *NAS Settings* > *Default EPS Bearer Config #(1-4)* > **More** |
| **V4 P-CSCF Address** controls the IPv4 address that is assigned as the IP address of the P-CSCF server – assuming the P-CSCF State has enabled this. | BSE:CONFig:NAS:DEFault:EBConfig[1]\|2\|3\|4:DNS:ADDRess:V4 | **BSE** > **Mode Setup> More** > *NAS Settings* > *Default EPS Bearer Config #(1-4)* > **More** |
| **V6 P-CSCF Address** controls the IPv6 address that is assigned as the IP address of the P-CSCF server – assuming the P-CSCF State has enabled this. | BSE:CONFig:NAS:DEFault:EBConfig[1]\|2\|3\|4:PCSCf:ADDRess:V6 | **BSE** > **Mode Setup> More** > *NAS Settings* > *Default EPS Bearer Config #(1-4)* > **More** |
| **Cause Code State** controls whether the Activate Default EPS Bearer Context Request message will contain a Cause Code (which usually indicates a requested service is not available) | BSE:CONFig:NAS:DEFault:EBConfig[1]\|2\|3\|4:CAUSe  1 \| 0 \| ON \| OFF | Cause Code State |
| **Cause Code** controls the cause code that will be contained in the Activate Default EPS Bearer Context Request message, assuming the Cause Code State has enabled this. | BSE:CONFig:NAS:DEFault:EBConfig[1]\|2\|3\|4:CAUSe:CODE | NAS Settings (sub-menus as described above) > Cause Code |

## BSE Mode to SA Mode Auto-configuration Facility

This feature enables you to easily make spectrum analyzer measurements on a call in progress by auto configuring the measurements according to the uplink setup of the BSE mode. The remote command for this feature is SA:LTE:AUToconfig and when set to ON (default), the Signal Analyzer settings are configured using the current BSE settings.

There are some important functional details that must be kept in mind when using this feature:

o   When SA:LTE:AUToconfig = On all the parameters listed in the tables below are populated based on the setting of those parameters in BSE Mode.

   ▪   This setting is recommended when you are making measurements on a call.

   ▪   Parameter settings are not configurable by remote command when SA:LTE:AUToconfig = On.

o   When SA:LTE:AUToconfig = Off all the parameters can be overwritten to different values if desired.

   ▪   This setting is used, for example, in a non-call processing test mode setup up in which you know the parameters of the UL transmission and wish to capture the expected signal.

o   The default setting for SA:LTE:AUToconfig is On.

### Call Parmeters/Settings with SCPI and Front-panel Access

| Setting | Key Name/ Key Path | BSE Command | SA Command |
|---------|---------------------|-------------|------------|
| Channel Bandwidth | CH Bandwidth<br>**Mode** > **BSE** > **Mode Setup**<br><br>**Mode** > **SA** > *LTE* > **Mode Setup** | BSE:CONFig:PROFile | LTE:RADio:STANdard:PROFile |
| Cell ID | Cell ID<br>**Mode** > **BSE** > **Mode Setup** > **More** > *PHY Settings*<br><br>**Mode** > **SA** > *LTE* >**Mode Setup** > *Uplink Config* | BSE:CONFig:PHY:CELL:ID | ULConfig:PARAmeters:CELL:ID |

| Setting | Key Name/<br>Key Path | BSE Command | SA Command |
|---------|----------------------|-------------|------------|
| PUSCH | RB Start<br>**Mode** > **BSE** > **Mode Setup** > **More** > *PHY Settings* > *UL Resource Allocation*<br><br>**Mode** > **SA** > *LTE* > **Mode Setup** > *UL Config* > *PUSCH* | BSE:CONFig:PHY:UL:GRANt:RB:STARt | ULConfig:PARAmeters:PUSCH:RB:STARt |
| PUSCH | RB Size<br>**Mode** > **BSE** > **Mode Setup** > **More** > *PHY Settings* > *UL Resource Allocation*<br><br>**Mode** > **SA** > *LTE* > **Mode Setup** > *Uplink Config* > *PUSCH* | BSE:CONFig:PHY:UL:GRANt:RB:SIZE | ULConfig:PARAmeters:PUSCH:RB:SIZE |
| PUSCH | I_MCS<br>**Mode** > **BSE** > **Mode Setup** > **More** > *PHY Settings* > *UL Resource Allocation*<br><br>**Mode** > **SA** > *LTE* > **Mode Setup** > *Uplink Config* > *PUSCH* | BSE:CONFig:PHY:UL:GRANt:IMCS | ULConfig:PARAmeters:PUSCH:IMCS |
| UL Config, pg 2 | C-RNTI (BSE)<br>nRNTI (SA)<br>**Mode** > **BSE** > **Mode Setup**<br><br>**Mode** > **SA** > *LTE* > **Mode Setup** > *UL Config* > **More** | BSE:CONFig:CRNTI. | ULConfig:PARAmeters:NRNTI |

| Setting | Key Name/ Key Path | BSE Command | SA Command |
|---|---|---|---|
| PUSCH | BetaOffset-CQI-Index<br>**Mode > SA > *LTE* > Mode Setup > *UL Config* > *PUSCH*** | | ULConfig:PARAmeters:PUSCH:CQI:OFFSet |
| PUSCH | BetaOffset-RI-Index<br>**Mode > SA > *LTE* > Mode Setup > *UL Config* > *PUSCH*** | | ULConfig:PARAmeters:PUSCH:RI:OFFSet |
| PUCCH | nCS-AN (N1CS)<br>**Mode > SA > *LTE* > Mode Setup > *UL Config* > More > *PUCCH*** | | ULConfig:PARAmeters:PUCCH:N1CS |
| PUCCH | nRB-CQI (N2RB)<br>**Mode > SA > *LTE* > Mode Setup > *UL Config* > More > *PUCCH*** | | ULConfig:PARAmeters:PUCCH:N2RB |
| PUCCH | Delta PUCCH Shift<br>**Mode > SA > *LTE* > Mode Setup > *UL Config* >More > *PUCCH*** | | ULConfig:PARAmeters:PUCCH:DELTa:SHIFt |
| PUCCH | N1PUCCH<br>**Mode > SA > *LTE* > Mode Setup > *UL Config* > More > *PUCCH*** | | ULConfig:PARAmeters:PUCCH:N1[0]|1|2|3|4|5|6|7|8|9 |
| Sounding-RS | Cyclic Shift SRS (n_cs_SRS)<br>**Mode > SA > *LTE* > Mode Setup > *UL Config* > More >*Sounding RS*** | | ULConfig:PARAmeters:SOUNd:RS:CYCLic:SHIFt:SRS |

| Setting | Key Name/ Key Path | BSE Command | SA Command |
|---|---|---|---|
| Sounding-RS | SRS Band Config (C_SRB)* **Mode > SA > *LTE* > Mode Setup > *UL Config* > More >*Sounding RS*** | | ULConfig:PARAmeters:SOUNd:RS:SRS:BAND:CONFig |
| Sounding-RS | SRS Band (B_SRS)* **Mode > SA > *LTE* > Mode Setup > *UL Config* > More > *Sounding RS*** | | ULConfig:PARAmeters:SOUNd:RS:SRS:BAND |
| Sounding-RS | Transmission Comb. (k_TC)* **Mode > SA > *LTE* > Mode Setup > *UL Config* > More > *Sounding RS*** | | ULConfig:PARAmeters:SOUNd:RS:TRANSMission:COMB |
| Sounding-RS | SRS Hopping Bandwidth (b_hop)* **Mode > SA > *LTE* > Mode Setup > *UL Config* > More > *Sounding RS*** | | ULConfig:PARAmeters:SOUNd:RS:SRS:HOPPing:BANDwidth |
| Sounding-RS | FreqDomainPosition (n_rrc) **Mode > SA > *LTE* > Mode Setup > *UL Config* > More > *Sounding RS*** | | ULConfig:PARAmeters:SOUNd:RS:NRRC |
| TDD UL DL configuration | Both softkey and scenario parameter | BSE:CONFig:PHY:SASSignment | ULConfig:PARAmeters:FRAMe:STRucture:CONFig:ULDL |
| TDD Special Subframe Configuration | Both softkey and scenario parameter | BSE:CONFig:PHY:SSPattern | ULConfig:PARAmeters:FRAMe:STRucture:CONFig:SSFRame |

*This parameter can also be accessed via the scenario file.

### Call Parameters/Settings Accessed via Scenario Files

(created by *N6062A Message Editor* software)

| Setting | Message Editor Parameter | BSE Command | SA Command |
|---|---|---|---|
| Sounding RS | **SRS Applying Flag**<br>SIB2 – if soundingRS-UL_ConfigCOmmon = release = Off, otherwise On | | ULConfig:PARAmeters:PUSCH:HOPPing:FLAG |
| Ref Signal | **Sequence Hopping**<br>SIB2->groupHoppingEnabled | | ULConfig:PARAmeters:REFERence:SIGNal:HOPPing:SEQuence |
| Ref Signal | **Group Hopping**<br>SIB2->SequenceHoppingEnabled | | ULConfig:PARAmeters:REFERence:SIGNal:HOPPing:GROUp |
| Ref Signal | **Group Assign PUSCH**<br>SIB2->groupAssignmentPUSCH | | |
| Ref Signal | **nDMRS(1)**<br>SIB2->cyclicShift | | ULConfig:PARAmeters:REFERence:SIGNal:NDMRS1 |
| PUCCH | **nCS-AN**<br>SIB2>nCS-AN | | |
| PUCCH | **nRB-CQI**<br>SIB2->nRB-CQI | | |
| PUCCH | **Delta PUCCH Shift**<br>SIB2->deltaPUCCHShift | | ULConfig:PARAmeters:PUCCH:DELTa:SHIFt |
| PUSCH | **BetaOffsetCQIIndex**<br>RRC Conn Setup->betaOffset-CQI-Index | | |
| PUSCH | **BetaOffset-RI-Index**<br>RRC Conn Setup->betaOffset-CQI-Index | | |

| Setting | Message Editor Parameter | BSE Command | SA Command |
|---|---|---|---|
| PUSCH | **BetaOffset-AckIndex**<br>RRC Conn Setup-><br>betaOffset-CQI-Index | | ULConfig:PARAmeters:PUSCH:HARQ:ACK:OFFSet |
| Sounding RS | **Cyclic Shift SRS**<br>RRC Conn Setup->cyclicShift | | |
| Sounding RS | **SRS Band Config***<br>SIB2->srs-BandwidthConfig | | ULConfig:PARAmeters:SOUNd:RS:SRS:BAND:CONFig |
| Sounding RS | **SRS Band***<br>RRC Conn Setup-><br>srs Bandwidth | | ULConfig:PARAmeters:SOUNd:RS:SRS:BAND |
| Sounding RS | **Transmission Comb***<br>RRC Conn Setup-><br>TransmissionComb | | ULConfig:PARAmeters:SOUNd:RS:TRANSMission:COMB |
| Sounding RS | **SRS Hopping Bandwidth***<br>RRC Conn Setup-><br>srs-HoppingBandwidth | | ULConfig:PARAmeters:SOUNd:RS:SRS:HOPPing:BANDwidth |
| Sounding RS | **Freq Domain Position**<br>RRC Conn Setup-><br>freqDomainPosition | | |
| Sounding RS | **SRS Config Index**<br>RRC Conn Setup-><br>srsConfigIndex | | |

*This parameter can also be accessed via the front-panel.

## LTE Mode Commands

| | | | | |
|---|---|---|---|---|
| SA:LTE:MODE[?] | CHPower | CHPower \| OBWidth\| PVTime \| SEMask \| ACLR \| ULCONStellation \| ULPSPECtrum \| ULIQRECeive \| ULMAPINformation \| ULERRVector \| ULDECINformation \| ULFLATness \| ULMODSummary | | Sets the LTE sub-mode of signal analysis |
| SA:LTE:MODE CHP<br>SA:LTE:MODE? | | | | |
| SA:LTE:AUToconfig[?] | ON | OFF \| ON \| 0 \| 1 | | – To set this value, you must load a scenario file, but do not run the simulator.<br>– When Auto Config = ON, the LTE parameters are updated/synchronised with the BSE parameters.<br>– See BSE SA Auto Configuration Facility for more information. |
| SA:LTE:AUT OFF<br>SA:LTE:AUT? | | | | |

## LTE Uplink Configuration

| Command | Preset | Range | Unit | Description/Notes |
|---|---|---|---|---|
| LTE:RADio:STANdard:PROFile[?] | 10MHz | 5MHz \| 10MHz \| 20MHz | | Channel Bandwidth |
| LTE:RAD:STAN:PROF 20MHz<br>LTE:RAD:STAN:PROF? | | | | |

| Command | Preset | Range | Unit | Description/Notes |
|---------|--------|-------|------|-------------------|
| ULConfig:PARAmeters:CELL:ID[?] | ACELL / BCELL = 0 | 0 to 503 | | Cell ID |
| ULC:PARA:CELL:ID 101<br>ULC:PARA:CELL:ID? | | | | |
| ULConfig:PARAmeters:FRAMe:STRucture:CONFig:SSFRame[?] | 6 | 0 to 8 | | Special Subframe Configuration. Overwrites Scenario file SIB1 SSF Configuration with value specified. TDD Only. |
| ULConfig:PARAmeters:FRAMe:STRucture:CONFig:ULDL[?] | 1 | 0 to 6 | | UL-DL Configuration. Overwrites Scenario file SIB1 UL-DL Configuration with value specified. TDD Only. |
| ULConfig:PARameters:TARGet:SFRame[?] | FDD: 0<br>TDD: 2 | 0 to 9 | | Target Sub frame |
| ULC:PAR:TARG:SFR 8<br>ULC:PAR:TARG:SFR? | | | | |
| ULConfig:PARAmeters:NRNTI[?] | 0 | 0 to 65535 | | N Rnti |
| ULC:PARA:NRNTI 65000<br>ULC:PARA:NRNTI? | | | | |
| ULConfig:PARAmeters:IQ:INVERse[?] | OFF | ON \| OFF | | IQ Inverse |
| ULC:PARA:IQ:INVER ON<br>ULC:PARA:IQ:INVER? | | | | |
| ULConfig:PARAmeters:MEASure:SFRame:STARt[?] | FDD: 0<br>TDD: 2 | 0 to 9 | | Start Sub Frame must be ≤ the Stop Sub Frame value. |
| ULC:PARA:MEAS:SFR:STAR 2<br>ULC:PARA:MEAS:SFR:STAR? | | | | |
| ULConfig:PARameters:MEASure:SFRame:STOP[?] | FDD: 0<br>TDD: 2 | 0 to 9 | | Stop Sub Frame. must be ≥ the Start Sub Frame value. |
| ULC:PAR:MEAS:SFR:STOP 2<br>ULC:PAR:MEAS:SFR:STOP? | | | | |

| Command | Preset | Range | Unit | Description/Notes |
|---|---|---|---|---|
| ULConfig:PARAmeters:PUSCH:HOPPing:TXNB<[0]\|1\|2\|3\|4\|5\|6\|7\|8\|9>[?] | 0 | 0 to 1 | | PUSCH Hopping - Current_Tx_NB |
| ULC:PARA:PUSCH:HOPP:TXNB9 1<br>ULC:PARA:PUSCH:HOPP:TXNB9? | | | | |
| ULConfig:PARAmeters:PUCCH:N1<[0]\|1\|2\|3\|4\|5\|6\|7\|8\|9>[?] | 0 | 1.4 MHz : 0 to 71<br>3 MHz : 0 to 179<br>5 MHz : 0 to 299<br>10 MHz : 0 to 599<br>15 MHz : 0 to 899<br>20 MHz : 0 to 1023 | | n1 PUCCH-AN |
| ULC:PARA:PUCCH:N13 5<br>ULC:PARA:PUCCH:N13? | | | | |
| ULConfig:PARAmeters:PUCCH:N2[?] | 0 | 5 MHz : 0 to 299<br>10 MHz : 0 to 599<br>20 MHz : 0 to 1023 | | N2 PUCCH |
| ULC:PARA:PUCCH:N2 5<br>ULC:PARA:PUCCH:N2? | | | | |
| ULConfig:PARAmeters:PUSCH:RB:STARt[?] | 0 | 0 to 99 | | PUSCH RB Offset |
| ULC:PARA:PUSCH:RB:STAR 50<br>ULC:PARA:PUSCH:RB:STAR? | | | | |
| ULConfig:PARAmeters:PUSCH:RB:SIZE[?] | 30 | 1 to 100 | | Number of RB PUSCH |
| ULC:PARA:PUSCH:RB:SIZE 50<br>ULC:PARA:PUSCH:RB:SIZE? | | | | |
| ULConfig:PARAmeters:PUSCH:IMCS[?] | 12 | 0 to 31 | | I_MCS |
| ULC:PARA:PUSCH:IMCS 20<br>ULC:PARA:PUSCH:IMCS? | | | | |
| ULConfig:PARAmeters:PUSCH:CQI:OFFSet[?] | 0 | 0 to 15 | | CQI Offset |
| ULC:PARA:PUSCH:CQI:OFFS 10<br>ULC:PARA:PUSCH:CQI:OFFS? | | | | |

| Command | Preset | Range | Unit | Description/Notes |
|---|---|---|---|---|
| ULConfig:PARAmeters:PUSCH:CQI:BITLength[?] | 0 | 0 to 64 | | CQI Bit Length |
| ULC:PARA:PUSCH:CQI:BITL 32<br>ULC:PARA:PUSCH:CQI:BITL? | | | | |
| ULConfig:PARAmeters:PUSCH:RI:OFFSet[?] | 0 | 0 to 15 | | RI Offset |
| ULC:PARA:PUSCH:RI:OFFS 10<br>ULC:PARA:PUSCH:RI:OFFS? | | | | |
| ULConfig:PARAmeters:PUSCH:RI:BITLength[?] | 0 | 0 to 2 | | RI Bit Length |
| ULC:PARA:PUSCH:RI:BITL 1<br>ULC:PARA:PUSCH:RI:BITL? | | | | |
| ULConfig:PARAmeters:PUSCH:HARQ:ACK:OFFSet[?] | 0 | 0 to 15 | | PUSCH - HARQ ACK Offset |
| ULC:PARA:PUSCH:HARQ:ACK:OFFS 10<br>ULC:PARA:PUSCH:HARQ:ACK:OFFS? | | | | |
| ULConfig:PARAmeters:PUSCH:HARQ:BITLength[?] | 0 | 0 to 2 | | PUSCH - HARQ Bit Length |
| ULC:PARA:PUSCH:HARQ:BITL 1<br>ULC:PARA:PUSCH:HARQ:BITL? | | | | |
| ULConfig:PARAmeters:PUSCH:UE:CATEgory[?] | 1 | 1 to 5 | | PUSCH - UE Category |
| ULC:PARA:PUSCH:UE:CATE 3<br>ULC:PARA:PUSCH:UE:CATE? | | | | |
| ULConfig:PARAmeters:PUSCH:RV:INDex[?] | 0 | 0 to 3 | | PUSCH - RV Index |
| ULC:PARA:PUSCH:RV:IND 3<br>ULC:PARA:PUSCH:RV:IND? | | | | |
| ULConfig:PARAmeters:PUSCH:HOPPing:TYPE[?] | NOFreq | NOFreq \| TYPE1 \| TYPE2\| | | PUSCH Hopping - PUSCH Hopping Type |
| ULC:PARA:PUSCH:HOPP:TYPE TYPE2<br>ULC:PARA:PUSCH:HOPP:TYPE? | | | | |
| ULConfig:PARAmeters:PUSCH:HOPPing:NHORB[?] | 0 | 0 to 49 | | PUSCH Hopping - N_HO_RB |
| ULC:PARA:PUSCH:HOPP:NHORB 24<br>ULC:PARA:PUSCH:HOPP:NHORB? | | | | |

| Command | Preset | Range | Unit | Description/Notes |
|---|---|---|---|---|
| ULConfig:PARAmeters:PUSCH:HOPPing:NSB[?] | 1 | 1 to 4 | | PUSCH Hopping - N_sb |
| ULC:PARA:PUSCH:HOPP:NSB 4<br>ULC:PARA:PUSCH:HOPP:NSB? | | | | |
| ULConfig:PARAmeters:PUSCH:HOPPing:TXNB[?] | 0 | 0 to 3 | | PUSCH Hopping - Current_Tx_NB |
| ULC:PARA:PUSCH:HOPP:TXNB 3<br>ULC:PARA:PUSCH:HOPP:TXNB? | | | | |
| ULConfig:PARAmeters:PUSCH:HOPPing:FLAG[?] | 0 | 0 to 3 | | PUSCH Hopping - N_UL_Hop |
| ULC:PARA:PUSCH:HOPP:FLAG 3<br>ULC:PARA:PUSCH:HOPP:FLAG? | | | | |
| ULConfig:PARAmeters:PUSCH:HOPPing:MODE[?] | INTRA | INTRA \| INTER | | PUSCH Hopping - Hopping Mode |
| ULC:PARA:PUSCH:HOPP:MODE INTRA<br>ULC:PARA:PUSCH:HOPP:MODE? | | | | |
| ULConfig:PARAmeters:REFERence:SIGNal:HOPPing:SEQuence[?] | DISAble | ENABle \| DISAble | | Reference Signal - Sequence Hopping |
| ULC:PARA:REFER:SIGN:HOPP:SEQ ENAB<br>ULC:PARA:REFER:SIGN:HOPP:SEQ? | | | | |
| ULConfig:PARAmeters:REFERence:SIGNal:HOPPing:GROUp[?] | DISAble | ENABle \| DISAble | | Reference Signal - Group Hopping |
| ULC:PARA:REFER:SIGN:HOPP:GROU ENAB<br>ULC:PARA:REFER:SIGN:HOPP:GROU? | | | | |
| ULConfig:PARAmeters:REFERence:SIGNal:PUSCH:DELTAss[?] | 0 | 0 to 29 | | Reference Signal - PUSCH DeltaSs |
| ULC:PARA:REFER:SIGN:PUSCH:DELTA 25<br>ULC:PARA:REFER:SIGN:PUSCH:DELTA? | | | | |
| ULConfig:PARAmeters:REFERence:SIGNal:NDMRS1[?] | 0 | 0 \| 2 \| 3 \| 4 \| 6 \| 8 \| 9 \| 10 | | Reference Signal - PUSCH CS_Field By_Mac |
| ULC:PARA:REFER:SIGN:NDMRS1 6<br>ULC:PARA:REFER:SIGN:NDMRS1? | | | | |
| ULConfig:PARAmeters:REFERence:SIGNal:NDMRS2[?] | 0 | 0 \| 2 \| 3 \| 4 \| 6 \| 8 \| 9 \| 10 | | Reference Signal - PUSCH CS_Field In_DCI |
| ULC:PARA:REFER:SIGN:NDMRS2 6<br>ULC:PARA:REFER:SIGN:NDMRS2? | | | | |

| Command | Preset | Range | Unit | Description/Notes |
|---|---|---|---|---|
| ULConfig:PARAmeters:PRACh:CONFig:INDex[?] | 0 | 0 to 57 | | PRACH Config Index<br>TDD Only |
| | | | | |
| ULConfig:PARAmeters:PRACh:SEARch:SFRAMe[?] | FDD: 0<br>TDD: 0 | FDD: 0 to 9<br>TDD: Depends upon UL-DL Configuration | | PRACH Search Subframe |
| ULC:PARA:PRACH:SEAR:SFRAM 8<br>ULC:PARA:PRACH:SEAR:SFRAM? | | | | |
| ULConfig:PARAmeters:PRACh:RESource:INDex[?] | 0 | 0 to 5 | | PRACH Resource Index.<br>TDD Only |
| | | | | |
| ULConfig:PARAmeters:PRACh:ROOT:SEQuence[?] | 0 | 0 to 837 | | PRACH Root Sequence |
| ULC:PARA:PRACH:ROOT:SEQ 820<br>ULC:PARA:PRACH:ROOT:SEQ? | | | | |
| ULConfig:PARAmeters:PRACh:PREAMble:FORMat[?] | FDD: 0<br>TDD: Auto | FDD: 0 to 3<br>TDD: Behavior is based on whether Auto config is ON or OFF. | | PRACH Preamble Format |
| ULC:PARA:PRACH:PREAM:FORM 2<br>ULC:PARA:PRACH:PREAM:FORM? | | | | |
| ULConfig:PARAmeters:PRACh:NCS:CONFig[?] | 0 | 0 to 15 | | PRACH Ncs_Config |
| ULC:PARA:PRACH:NCS:CONF 15<br>ULC:PARA:PRACH:NCS:CONF? | | | | |
| ULConfig:PARAmeters:PRACh:HIGH:SPEED:FLAG[?] | UNRESTric | UNRESTric \| RESTric | | PRACH Restric Type |
| ULC:PARA:PRACH:HIGH:SPEED:FLAG REST<br>ULC:PARA:PRACH:HIGH:SPEED:FLAG? | | | | |
| ULConfig:PARAmeters:PRACh:FREQuency:OFFset[?] | 0 | 0 to 44 | | PRACH F_RA |
| ULC:PARA:PRACH:FREQ:OFF 8<br>ULC:PARA:PRACH:FREQ:OFF? | | | | |

| Command | Preset | Range | Unit | Description/Notes |
|---|---|---|---|---|
| ULConfig:PARAmeters:PUCCH:FORMat[?] | 1A | 1 \| 1A \| 1B \| 2 \| 2A \| 2B | | PUCCH Format |
| ULC:PARA:PUCCH:FORM 1A<br>ULC:PARA:PUCCH:FORM? | | | | |
| ULConfig:PARAmeters:PUCCH:N1CS[?] | 0 | 0 to 7 | | PUCCH N 1 cs |
| ULC:PARA:PUCCH:N1CS 7<br>ULC:PARA:PUCCH:N1CS? | | | | |
| ULConfig:PARAmeters:PUCCH:N2RB[?] | 0 | 0 to 98 | | PUCCH N 2 RB |
| ULC:PARA:PUCCH:N2RB 88<br>ULC:PARA:PUCCH:N2RB? | | | | |
| ULConfig:PARAmeters:PUCCH:DELTa:SHIFt[?] | 1 | 1 to 3 | | Delta PUCCH Shift |
| ULC:PARA:PUCCH:DELT:SHIF 2<br>ULC:PARA:PUCCH:DELT:SHIF? | | | | |
| ULConfig:PARAmeters:PUCCH:N1[?] | 0 | 0 to 2047 | | n 1 PUCCH |
| ULC:PARA:PUCCH:N1 1028<br>ULC:PARA:PUCCH:N1? | | | | |
| ULConfig:PARAmeters:PUCCH:N2[?] | 0 | 0 to 2047 | | n 2 PUCCH |
| ULC:PARA:PUCCH:N2 828<br>ULC:PARA:PUCCH:N2? | | | | |
| ULConfig:PARAmeters:PUCCH:CQI:LENGth[?] | 1 | 1 to 13 | | PUCCH CQI Length |
| ULC:PARA:PUCCH:CQI:LENG 10<br>ULC:PARA:PUCCH:CQI:LENG? | | | | |
| ULConfig:PARAmeters:SOUNd:RS:CYCLic:SHIFt:SRS[?] | 1 | 0 to 7 | | Sound RS Cyclic Shift SRS |
| ULC:PARA:SOUN:RS:CYCL:SHIF:SRS 7<br>ULC:PARA:SOUN:RS:CYCL:SHIF:SRS? | | | | |
| ULConfig:PARAmeters:SOUNd:RS:SRS:BAND:CONFig[?] | 0 | 0 to 7 | | Sound RS SRS Band Config |
| ULC:PARA:SOUN:RS:SRS:BAND:CONF 7<br>ULC:PARA:SOUN:RS:SRS:BAND:CONF? | | | | |

| Command | Preset | Range | Unit | Description/Notes |
|---|---|---|---|---|
| ULConfig:PARAmeters:SOUNd:RS:SRS:BAND[?] | 1 | 0 to 3 | | Sound RS SRS Band |
| ULC:PARA:SOUN:RS:SRS:BAND 2<br>ULC:PARA:SOUN:RS:SRS:BAND? | | | | |
| ULConfig:PARAmeters:SOUNd:RS:TRANSMission:COMB[?] | 1 | 0 to 1 | | Sound RS Transmission Comb |
| ULC:PARA:SOUN:RS:TRANSM:COMB 0<br>ULC:PARA:SOUN:RS:TRANSM:COMB? | | | | |
| ULConfig:PARAmeters:SOUNd:RS:SRS:HOPPing:BANDwidth[?] | 0 | 0 to 3 | | Sound RS SRS Hopping Bandwidth |
| ULC:PARA:SOUN:RS:SRS:HOPP:BAND 2<br>ULC:PARA:SOUN:RS:SRS:HOPP:BAND? | | | | |
| ULConfig:PARAmeters:SOUNd:RS:NRRC[?] | 12 | 0 to 23 | | Sound RS N_RRC |
| ULC:PARA:SOUN:RS:NRRC 20<br>ULC:PARA:SOUN:RS:NRRC? | | | | |
| ULConfig:PARAmeters:SOUNd:RS:SYS:FRAMe:NUMber[?] | 1 | 0 to 2147483647 | | Sound RS Sys. Frame Number |
| ULC:PARA:SOUN:RS:SYS:FRAM:NUM 2<br>ULC:PARA:SOUN:RS:SYS:FRAM:NUM? | | | | |
| ULConfig:PARAmeters:SOUNd:RS:SRS:CONFig:INDex[?] | 0 | 0 to 1023 | | Sound RS SRS Config Index |
| ULC:PARA:SOUN:RS:SRS:CONF:IND 50<br>ULC:PARA:SOUN:RS:SRS:CONF:IND? | | | | |
| ULConfig:PARAmeters:SOUNd:RS:SRS:APPly:FLAg[?] | OFF | ON \| OFF | | Sound RS SRS Applying Flag |
| ULC:PARA:SOUN:RS:SRS:APP:FLA ON<br>ULC:PARA:SOUN:RS:SRS:APP:FLA? | | | | |
| ULConfig:PARAmeters:SOUNd:RS:SRS:MAX:UP:PTS[:STATe][?] | OFF | ON \| OFF | | Sound RS SRS Max Up Pts. |
| ULC:PARA:SOUN:RS:SRS:MAX:UP:PTS ON<br>ULC:PARA:SOUN:RS:SRS: MAX:UP:PTS? | | | | |

## Channel Power

| Command | Preset | Range | Unit | Description/Notes |
|---|---|---|---|---|
| LTE:CHPower:FREQuency:SPAN[?] | 20 MHz | 1 MHz (or value of LTE:CHPower:INTegration) to 100 MHz | Hz, kHz, MHz | Set Span - Depends on instrument maximum and frequency value of LTE:CHPower:INTegration . |
| LTE:CHP:FREQ:SPAN 10 MHz<br>LTE:CHP:FREQ:SPAN? | | | | |
| LTE:CHPower:FREQuency:SPAN:FULL | | | | Full Span |
| LTE:CHP:FREQ:SPAN:FULL | | | | |
| LTE:CHPower:FREQuency:SPAN:LAST | | | | Last Span |
| LTE:CHP:FREQ:SPAN:LAST | | | | |
| LTE:CHPower:BANDwidth:MODE[?] | MANUal | AUTO \| MANUal | | RBW Mode |
| LTE:CHP:BAND:MODE AUTO<br>LTE:CHP:BAND:MODE? | | | | |
| LTE:CHPower:BANDwidth[?] | 10 kHz | 1 kHz to 1000 kHz | Hz, kHz | RBW Value |
| LTE:CHP:BAND 15 kHz<br>LTE:CHP:BAND? | | | | |
| LTE:CHPower:AVERage[?] | OFF | OFF \| ON \| 0 \| 1 | | Average state |
| LTE:CHP:AVER ON<br>LTE:CHP:AVER? | | | | |
| LTE:CHPower:AVERage:NUMber[?] | 1 | 1 to 100 | | Average Number |
| LTE:CHP:AVER:NUM 10<br>LTE:CHP:AVER:NUM? | | | | |
| LTE:CHPower:AVERage:TCONtrol[?] | EXPonential | EXPonential \| REPeat | | Average Mode |
| LTE:CHP:AVER:TCON EXP<br>LTE:CHP:AVER:TCON? | | | | |

| Command | Preset | Range | Unit | Description/Notes |
|---|---|---|---|---|
| LTE:CHPower:MAXHold[?] | OFF | OFF \| ON \| 0 \| 1 | | Max Hold |
| LTE:CHP:MAXH OFF<br>LTE:CHP:MAXH? | | | | |
| *LTE:CHPower:INTegration[?]*<br>LTE:CHPower:MINTerval<[0]\|1\|2\|3\|4\|5\|6\|7\|8\|9>:INTegration[?] | 10 MHz | 10 kHz to 22 MHz | Hz, kHz, MHz | – LTE CHP Meas Interval BW. Channel BW dependent ( For example: 20MHz for 20MHz System BW )<br>– The italicised version of this command is not recommended and is planned for deletion in future software releases. |
| LTE:CHP:MINT5:INT 10 MHz<br>LTE:CHP:MINT5:INT? | | | | |
| LTE:CHPower:MINTerval<[0]\|1\|2\|3\|4\|5\|6\|7\|8\|9>:LENGth[?] | 1000 us | 0 to 10 ms | us | LTE CHP Meas Interval Duration |
| LTE:CHP:MINT5:LENG 1100 us<br>LTE:CHP:MINT5:LENG? | | | | |
| LTE:CHPower:MARKer#:MODE | OFF | OFF \| NORMal \| DELTa \| FIXed | | Marker Mode |
| LTE:CHP:MARK4:MODE NORM<br>LTE:CHP:MARK4:MODE? | | | | |
| LTE:CHPower:MARKer#:X[?] | 1.95 GHz | 350 MHz to 6 GHz | Hz, kHz, MHz, GHz | Marker Frequency |
| LTE:CHP:MARK4:X 2.535 GHz<br>LTE:CHP:MARK4:X? | | | | |
| LTE:CHPower:MARKer#:Y[?] | | –120 dBm to 50 dBm | dBm | Fixed Marker Level |
| LTE:CHP:MARK4:Y –10 dBm<br>LTE:CHP:MARK4:Y? | | | | |
| LTE:CHPower:MARKer:AOFF | | | | All Marker Off |
| LTE:CHP:MARK:AOFF | | | | |

| Command | Preset | Range | Unit | Description/Notes |
|---------|--------|-------|------|-------------------|
| LTE:CHPower:MARKer#:CPSearch[?] | OFF | OFF \| ON \| 0 \| 1 | | Continuous Peak Search |
| LTE:CHP:MARK4:CPS ON<br>LTE:CHP:MARK4:CPS? | | | | |
| LTE:CHPower:MARKer#:MAXimum | | | | Peak Search |
| LTE:CHP:MARK4:MAX | | | | |
| LTE:CHPower:MARKer#:MAXimum:NEXT | | | | Next Peak |
| LTE:CHP:MARK4:MAX:NEXT | | | | |
| LTE:CHPower:MARKer#:MAXimum:RIGHt | | | | Next (Low) Right |
| LTE:CHP:MARK4:MAX:RIGH | | | | |
| LTE:CHPower:MARKer#:MAXimum:LEFT | | | | Next (Low) Left |
| LTE:CHP:MARK4:MAX:LEFT | | | | |
| LTE:CHPower:MARKer#:PTPeak | | | | Peak-Peak Search |
| LTE:CHP:MARK4:PTP | | | | |
| LTE:CHPower:MARKer#:MINimum | | | | Min Search |
| LTE:CHP:MARK4:MIN | | | | |
| LTE:CHPower:MARKer#:CENTer | | | | Mkr -> CF |
| LTE:CHP:MARK4:CENT | | | | |
| LTE:CHPower:MARKer#:RLEVel | | | | Mkr -> Ref Lvl |
| LTE:CHP:MARK4:RLEV | | | | |
| LTE:CHPower:MINTerval<[0]\|1\|2\|3\|4\|5\|6\|7\|8\|9>:STATe[?] | ON | ON \| OFF | | LTE Channel Power Measurement Interval State |
| LTE:CHP:MINT4:STAT OFF<br>LTE:CHP:MINT4:STAT? | | | | |
| LTE:CHPower:MINTerval<[0]\|1\|2\|3\|4\|5\|6\|7\|8\|9>:STARt[?] | Subframe boundaries (0ms, 1ms, 2ms, etc.) 9000 us | 0 to 10000 us | us | LTE Channel Power Measurement Interval Start Time |
| LTE:CHP:MINT3:STAR 3000 | | | | |

| Command | Preset | Range | Unit | Description/Notes |
|---|---|---|---|---|
| LTE:CHPower:MINTerval:DEFault | | | | Restore LTE Channel Power Restore Measurement Interval defaults |
| LTE:CHP:MINT:DEF | | | | |
| LTE:CHPower:MEASure:POWer? | | | | – Channel Power Measure / Results are returned in a dBm string.<br>– This command is not recommended and is planned for deletion in future software releases. Use LTE:CHPower:MEASure:POWer:MINTerval commands for access to the full channel power array measurements. |
| LTE:CHP:MEAS:POW? | | | | |
| LTE:CHPower:MEASure:POWer:MINTerval<[0]\|1\|2\|3\|4\|5\|6\|7\|8\|9>? | | 0 to 9 | | Channel Power Measure / Results are returned in a dBm string for the measurement interval |
| LTE:CHP:MEAS:POW:MINT0?<br>LTE:CHP:MEAS:POW:MINT9? | | | | |
| LTE:CHPower:MEASure:POWer:MINTerval:ALL? | | | | Returns string of all ten Channel Power Measurement intervals in dBm. Each result interval separated by comma. |
| LTE:CHP:MEAS:POW:MINT:ALL? | | | | |
| LTE:CHPower:DISPIAYINTerval | FDD: 0<br>TDD: 2 | 0 to 9 | | Displays the specified channel power index on screen. |
| LTE:CHP:DISPLAYINT 8 | | | | |

### Occupied BW

| Command | Preset | Range | Unit | Description/Notes |
|---|---|---|---|---|
| LTE:OBWidth:FREQuency:SPAN[?] | 20 MHz | 1 MHz to 50 MHz | Hz, kHz, MHz | Set Span - Depends on instrument maximum frequency. |
| LTE:OBW:FREQ:SPAN 10 MHz<br>LTE:OBW:FREQ:SPAN? | | | | |
| LTE:OBWidth:FREQuency:SPAN:FULL | | | | Full Span |
| LTE:OBW:FREQ:SPAN:FULL | | | | |
| LTE:OBWidth:FREQuency:SPAN:LAST | | | | Last Span |
| LTE:OBW:FREQ:SPAN:LAST | | | | |
| LTE:OBWidth:BANDwidth:MODE[?] | MANUal | AUTO \| MANUal | | RBW Mode |
| LTE:OBW:BAND:MODE AUTO<br>LTE:OBW:BAND:MODE? | | | | |
| LTE:OBWidth:BANDwidth[?] | 10 kHz | 1 kHz to 1000 kHz | Hz, kHz, MHz | RBW Value |
| LTE:OBW:BAND 100 kHz<br>LTE:OBW:BAND? | | | | |
| LTE:OBWidth:AVERage[?] | OFF | OFF \| ON \| 0 \| 1 | | Average state |
| LTE:OBW:AVER ON<br>LTE:OBW:AVER? | | | | |
| LTE:OBWidth:AVERage:NUMber[?] | 0 | 1 to 100 | | Average Number |
| LTE:OBW:AVER:NUM 10<br>LTE:OBW:AVER:NUM? | | | | |
| LTE:OBWidth:AVERage:TCONtrol[?] | EXPonential | EXPonential \| REPeat | | Average Mode |
| LTE:OBW:AVER:TCON EXP<br>LTE:OBW:AVER:TCON? | | | | |

| Command | Preset | Range | Unit | Description/Notes |
|---|---|---|---|---|
| LTE:OBWidth:MAXHold[?] | OFF | OFF \| ON \| 0 \| 1 | | Max Hold |
| LTE:OBW:MAXH ON<br>LTE:OBW:MAXH? | | | | |
| LTE:OBWidth:POWer[?] | 99 | 10 % to 99% in 0.1% steps | | OBW Power |
| LTE:OBW:POW 20<br>LTE:OBW:POW? | | | | |
| LTE:OBWidth:MARKer#:MODE | OFF | OFF \| NORMal \| DELTa \| FIXed | | Marker Mode |
| LTE:OBW:MARK5:MODE DELT<br>LTE:OBW:MARK5:MODE? | | | | |
| LTE:OBWidth:MARKer#:X[?] | 1.95 GHz | 350 MHz to 6 GHz | Hz, kHz, MHz, GHz | Marker Frequency |
| LTE:OBW:MARK5:X 2.535 GHz<br>LTE:OBW:MARK5:X? | | | | |
| LTE:OBWidth:MARKer#:Y[?] | | –120 dBm to 50 dBm | dBm | Fixed Marker Level |
| LTE:OBW:MARK5:Y –10 dBm<br>LTE:OBW:MARK5:Y? | | | | |
| LTE:OBWidth:MARKer:AOFF | | | | All Marker Off |
| LTE:OBW:MARK:AOFF | | | | |
| LTE:OBWidth:MARKer#:CPSearch[?] | OFF | OFF \| ON \| 0 \| 1 | | Continous Peak Search |
| LTE:OBW:MARK5:CPS ON<br>LTE:OBW:MARK5:CPS? | | | | |
| LTE:OBWidth:MARKer#:MAXimum | | | | Peak Search |
| LTE:OBW:MARK5:MAX | | | | |
| LTE:OBWidth:MARKer#:MAXimum:NEXT | | | | Next Peak |
| LTE:OBW:MARK5:MAX:NEXT | | | | |

| Command | Preset | Range | Unit | Description/Notes |
|---|---|---|---|---|
| LTE:OBWidth:MARKer#:MAXimum:RIGHt | | | | Next (Low) Right |
| LTE:OBW:MARK5:MAX:RIGH | | | | |
| LTE:OBWidth:MARKer#:MAXimum:LEFT | | | | Next (Low) Left |
| LTE:OBW:MARK5:MAX:LEFT | | | | |
| LTE:OBWidth:MARKer#:PTPeak | | | | Peak-Peak Search |
| LTE:OBW:MARK5:PTP | | | | |
| LTE:OBWidth:MARKer#:MINimum | | | | Min Search |
| LTE:OBW:MARK5:MIN | | | | |
| LTE:OBWidth:MARKer#:CENTer | | | | Mkr -> CF |
| LTE:OBW:MARK5:CENT | | | | |
| LTE:OBWidth:MARKer#:RLEVel | | | | Mkr -> Ref Lvl |
| LTE:OBW:MARK5:RLEV | | | | |
| LTE:OBWidth:MEASure? | | | | OBW Measure/Results are returned in MHz as a string. |
| LTE:OBW:MEAS? | | | | |

## Power Vs Time

| Command | Preset | Range | Unit | Description/Notes |
|---|---|---|---|---|
| PVTime:GATE:NUMber[?] | 0 | 0 to 10 | | Gate Number |
| PVT:GATE:NUM 10<br>PVT:GATE:NUM? | | | | |
| PVTime:GATE:DELTa[?] | 1000 us | 0 us to 60 ms | us, ms | Gate Delta |
| PVT:GATE:DELT 1500 us<br>PVT:GATE:DELT? | | | | |
| PVTime:GATE:DELay[?] | 20 us | 0 us to 60 ms | us, ms | Gate Delay |
| PVT:GATE:DEL 10 ms<br>PVT:GATE:DEL? | | | | |

| Command | Preset | Range | Unit | Description/Notes |
|---|---|---|---|---|
| PVTime:GATE:LENGth[?] | 960 us | 1 us to 60 ms | us, ms | Gate Length |
| PVT:GATE:LENG 320 us<br>PVT:GATE:LENG? | | | | |
| LTE:PVTime:MARKer#:MODE | OFF | OFF \| NORMal \| DELTa \| FIXed | | Marker Mode |
| LTE:PVT:MARK5:MODE FIX<br>LTE:PVT:MARK5:MODE? | | | | |
| LTE:PVTime:MARKer#:X[?] | 0 | -60000 to 60000 | us | Marker Frequency |
| LTE:PVT:MARK5:X 60000<br>LTE:PVT:MARK5:X? | | | | |
| LTE:PVTime:MARKer#:Y[?] | 0 | -120 to 50 | | Fixed Marker Level |
| LTE:PVT:MARK5:Y -100<br>LTE:PVT:MARK5:Y? | | | | |
| LTE:PVTime:MARKer:AOFF | | | | All Marker Off |
| LTE:PVT:MARK:AOFF | | | | |
| LTE:PVTime:MARKer#:MAXimum | | | | Peak Search |
| LTE:PVT:MARK:MAX | | | | |
| LTE:PVTime:MARKer#:RLEVel | | | | Mkr -> Ref Lvl |
| LTE:PVT:MARK5:RLEV | | | | |
| PVTime:MEASure:TABLe? | | | | See "Power vs Time Measurement Results". |
| PVT:MEAS:TABL? | | | | |

### Spectrum Emission Mask

| Command | Preset | Range | Unit | Description/Notes |
|---|---|---|---|---|
| SEMask:MASK:SELect[?] | DEFault | DEFault \| MASK1 \| MASK2 \| MASK3 \| MASK4 \| MASK5 \| MASK6 \| MASK7 \| MASK8 \| MASK9 \| MASK10 | | Select Mask |
| SEM:MASK:SEL MASK8<br>SEM:MASK:SEL? | | | | |
| SEMask:MEASure:INTERVal[?] | 1ms | 200 us to 20 ms | us, ms, s | Measure Interval |
| SEM:MEAS:INTERV 10 ms<br>SEM:MEAS:INTERV? | | | | |
| SEMask:FFTOverlap[?] | 0 | 0 \| 25 \| 50 \| 75 | | FFT Overlap |
| SEM:FFTO 50<br>SEM:FFTO? | | | | |
| SEMask:TYPE[?] | PSD | CHP \| PSD \| PEAK | | Edit Mask - Mask Type |
| SEM:TYPE CHP<br>SEM:TYPE? | | | | |
| SEMask:EDIT:SEGMENT[?] | 0 | 0 to 8 | | Edit Mask – Segment. Specifies the edit segment (0-8) that the following Edit Mask commands apply to. |
| SEM:EDIT:SEGMENT 7<br>SEM:EDIT:SEGMENT? | | | | |
| SEMask:EDIT:SEGMENT:STATe[?] | OFF | ON \| OFF | | Edit Mask - Segment State |
| SEM:EDIT:SEGMENT:STAT ON<br>SEM:EDIT:SEGMENT:STAT? | | | | |

| Command | Preset | Range | Unit | Description/Notes |
|---|---|---|---|---|
| SEMask:EDIT:START:FREQuency[?] | 0 | 0 Hz to 35 MHz | Hz, kHz, MHz, GHz | Edit Mask - Start Frequency |
| SEM:EDIT:START:FREQ 25 MHz<br>SEM:EDIT:START:FREQ? | | | | |
| SEMask:EDIT:STOP:FREQuency[?] | 5 Mhz | (SEMask:EDIT:START:FREQuency +1) to 35 MHz | Hz, kHz, MHz, GHz | Edit Mask - Stop Frequency |
| SEM:EDIT:STOP:FREQ 25 MHz<br>SEM:EDIT:STOP:FREQ? | | | | |
| SEMask:EDIT:INTEGration:BW[?] | 30 kHz | 10 kHz to 1 MHz | Hz, kHz, MHz, GHz | Edit Mask - Integration Bandwidth |
| SEM:EDIT:INTEG:BW 100 kHz<br>SEM:EDIT:INTEG:BW? | | | | |
| SEMask:EDIT:SEGMent:SIDE[?] | BOTH | NEGative \| BOTH \| POSitive | | Edit Mask - Segment Side |
| SEM:EDIT:SEGM:SIDE POS<br>SEM:EDIT:SEGM:SIDE? | | | | |
| SEMask:EDIT:FAIL:SOURce[?] | ABSolute | ABSolute \| RELative \| AND \| OR \| NONe | | Edir Mask - File Source |
| SEM:EDIT:FAIL:SOUR REL<br>SEM:EDIT:FAIL:SOUR? | | | | |
| SEMask:EDIT:ABS:START:POWer[?] | | −120 dBm to 50 dBm | dBm | Edit Mask - Abs Start Power |
| SEM:EDIT:ABS:START:POW 10 dBm<br>SEM:EDIT:ABS:START:POW? | | | | |

| Command | Preset | Range | Unit | Description/Notes |
|---|---|---|---|---|
| SEMask:EDIT:ABS:STOP:POWer[?] | | –120 dBm to 50 dBm | dBm | Edit Mask - Abs Stop Power |
| SEM:EDIT:ABS:STOP:POW 20 dBm<br>SEM:EDIT:ABS:STOP:POW? | | | | |
| SEMask:EDIT:REL:START:POWer[?] | | –120 dB to 50 dB | dB | Edit Mask - Rel Start Power |
| SEM:EDIT:REL:START:POW 10 dB<br>SEM:EDIT:REL:START:POW? | | | | |
| SEMask:EDIT:REL:STOP:POWer[?] | | –120 dB to 50 dB | dB | Edit Mask - Rel Stop Power |
| SEM:EDIT:REL:STOP:POW 20 dB<br>SEM:EDIT:REL:STOP:POW? | | | | |
| LTE:SEMask:MARKer#:MODE | OFF | OFF \| NORMal \| DELTa \| FIXed | | Marker Mode |
| LTE:SEM:MARK6:MODE DELT | | | | |
| LTE:SEMask:MARKer#:X[?] | 1.95 GHz | 350 MHz to 6 GHz | Hz, kHz, MHz, GHz | Marker Frequency |
| LTE:SEM:MARK6:X 2.535 GHz<br>LTE:SEM:MARK6:X? | | | | |
| LTE:SEMask:MARKer#:Y[?] | | –120 dBm to 50 dBm | dBm | Fixed Marker Level |
| LTE:SEM:MARK6:Y -101<br>LTE:SEM:MARK6:Y? | | | | |
| LTE:SEMask:MARKer:AOFF | | | | All Marker Off |
| LTE:SEM:MARK:AOFF | | | | |
| LTE:SEMask:MARKer#:CPSearch[?] | OFF | OFF \| ON \| 0 \| 1 | | Continuous Peak Search |
| LTE:SEM:MARK6:CPS ON<br>LTE:SEM:MARK6:CPS? | | | | |
| LTE:SEMask:MARKer#:MAXimum | | | | Peak Search |
| LTE:SEM:MARK6:MAX | | | | |

| Command | Preset | Range | Unit | Description/Notes |
|---|---|---|---|---|
| LTE:SEMask:MARKer#:MAXimum:NEXT | | | | Next Peak |
| LTE:SEM:MARK6:MAX:NEXT | | | | |
| LTE:SEMask:MARKer#:MAXimum:RIGHt | | | | Next (Low) Right |
| LTE:SEM:MARK6:MAX:RIGH | | | | |
| LTE:SEMask:MARKer#:MAXimum:LEFT | | | | Next (Low) Left |
| LTE:SEM:MARK6:MAX:LEFT | | | | |
| LTE:SEMask:MARKer#:PTPeak | | | | Peak-Peak Search |
| LTE:SEM:MARK6:PTP | | | | |
| LTE:SEMask:MARKer#:MINimum | | | | Min Search |
| LTE:SEM:MARK6:MIN | | | | |
| LTE:SEMask:MARKer#:CENTer | | | | Mkr -> CF |
| LTE:SEM:MARK6:CENT | | | | |
| LTE:SEMask:MARKer#:RLEVel | | | | Mkr -> Ref Lvl |
| LTE:SEM:MARK6:RLEV | | | | |
| SEMask:SAVE | | | | Edit Mask Save |
| SEM:SAVE | | | | |
| LTE:SEMask:DEFault | | | | |
| LTE:SEM:DEF | | | | |
| SEMask:MEASure:MAIN:TABLe? | | | | See "SEM Main Measurement Results Table". |
| SEM:MEAS:MAIN:TABL? | | | | |
| SEMask:MEASure:DETAil:TABLe? | | | | See "SEM Detailed Measurement Results Table". |
| SEM:MEAS:DETA:TABL? | | | | |

## ACLR

| Command | Preset | Range | Unit | Description/Notes |
|---|---|---|---|---|
| LTE:ACLR:AVERage[?] | OFF | OFF \| ON | | Average State |
| LTE:ACLR:AVER ON<br>LTE:ACLR:AVER? | | | | |
| LTE:ACLR:AVERage:NUMber[?] | 1 | 1 to 100 | | Average Number |
| LTE:ACLR:AVER:NUM 10<br>LTE:ACLR:AVER:NUM? | | | | |
| LTE:ACLR:AVERage:TCONtrol[?] | EXPonential | EXPonential \| REPeat | | Average Mode |
| LTE:ACLR:AVER:TCON REP<br>LTE:ACLR:AVER:TCON? | | | | |
| LTE:ACLR:BANDwidth:MODE[?] | MANUal | AUTO \| MANUal | | RBW Mode |
| LTE:ACLR:BAND:MODE AUTO<br>LTE:ACLR:BAND:MODE? | | | | |
| LTE:ACLR:BANDwidth[?] | 10000 Hz | 1 kHz to 1 MHz | | RBW Value |
| LTE:ACLR:BAND 2 kHz<br>LTE:ACLR:BAND? | | | | |
| LTE:ACLR:MAXHold[?] | OFF | OFF \| ON \| 0 \| 1 | | Max Hold |
| LTE:ACLR:MAXH ON<br>LTE:ACLR:MAXH? | | | | |
| LTE:ACLR:CARRier:NUMber[?] | 1 | 1 \| 2 | | Carrier Number |
| LTE:ACLR:CARR:NUM 2<br>LTE:ACLR:CARR:NUM? | | | | |
| LTE:ACLR:CARRier:RCARrier[?] | 0 | 0 \| 1 | | Reference Carrier |
| LTE:ACLR:CARR:RCAR 1<br>LTE:ACLR:CARR:RCAR? | | | | |
| LTE:ACLR:CARRier:SELect[?] | 0 | 0 \| 1 | | Select Carrier |
| LTE:ACLR:CARR:SEL 1<br>LTE:ACLR:CARR:SEL? | | | | |

| Command | Preset | Range | Unit | Description/Notes |
|---|---|---|---|---|
| LTE:ACLR:CARRier:WIDth[?] | 0 HZ | –25 MHz to 25 MHz | Hz, kHz, MHz, GHz | Carrier Spacing |
| LTE:ACLR:CARR:WID 1 MHz<br>LTE:ACLR:CARR:WID? | | | | |
| LTE:ACLR:CARRier:BANDWidth[?] | 9 MHz | 10 kHz to 50 MHz | Hz, kHz, MHz, GHz | Carrier Integration Bandwidth |
| LTE:ACLR:CARR:BANDW 1 MHz<br>LTE:ACLR:CARR:BANDW? | | | | |
| LTE:ACLR:OFFSet:NUMber[?] | 2 | 1 to 5 | | Offset Number |
| LTE:ACLR:OFFS:NUM 3<br>LTE:ACLR:OFFS:NUM? | | | | |
| LTE:ACLR:OFFSet:SELect[?] | 0 | 0 to 4 | | Offset Select |
| LTE:ACLR:OFFS:SEL 2<br>LTE:ACLR:OFFS:SEL? | | | | |
| LTE:ACLR:OFFSet:WIDth[?] | 7.5 MHz | 0 Hz to 25 MHz | Hz, kHz, MHz, GHz | Offset Spacing |
| LTE:ACLR:OFFS:WID 15 MHz<br>LTE:ACLR:OFFS:WID? | | | | |
| LTE:ACLR:OFFSet:BANDWidth[?] | 3.84 MHz | 10 kHz to 50 MHz | Hz, kHz, MHz, GHz | Offset Integration Bandwidth |
| LTE:ACLR:OFFS:BANDW 1 MHz<br>LTE:ACLR:OFFS:BANDW? | | | | |
| LTE:ACLR:OFFSet:FSOURce[?] | RELative | ABSolute \| RELative \| NONe | | Offset Fail Source |
| LTE:ACLR:OFFS:FSOUR NON<br>LTE:ACLR:OFFS:FSOUR? | | | | |

| Command | Preset | Range | Unit | Description/Notes |
|---|---|---|---|---|
| LTE:ACLR:OFFSet:ALIMit[?] | 0 | –120 dBm to 50 dBm | dBm | Offset Abs Limit |
| LTE:ACLR:OFFS:ALIM 10 dBm<br>LTE:ACLR:OFFS:ALIM? | | | | |
| LTE:ACLR:OFFSet:RLIMit[?] | –33 | –120 dB to 50 dB | dB | |
| LTE:ACLR:OFFS:RLIM 10 dB<br>LTE:ACLR:OFFS:RLIM? | | | | |
| LTE:ACLR:MARKer#:MODE | OFF | OFF \| NORMal \| DELTa \| FIXed | | Marker Mode |
| LTE:ACLR:MARK1:MODE FIX<br>LTE:ACLR:MARK1:MODE? | | | | |
| LTE:ACLR:MARKer#:X[?] | No preset value defined | Normal, Fixed (0-10 GHz),<br>Delta (–5 GHz to +5 GHz) | Hz, kHz,<br>MHz,<br>GHz | Marker Frequency |
| LTE:ACLR:MARK1:X 2.16 GHz<br>LTE:ACLR:MARK1:X? | | | | |
| LTE:ACLR:MARKer#:Y[?] | No preset value defined | –120 dBm to 50 dBm | dBm | Fixed Marker Level |
| LTE:ACLR:MARK1:Y 10 dBm<br>LTE:ACLR:MARK1:Y? | | | | |
| LTE:ACLR:MARKer:AOFF | | | | All Marker Off |
| LTE:ACLR:MARK1:AOFF | | | | |
| LTE:ACLR:MARKer#:CPSearch[?] | OFF | OFF \| ON \| 0 \| 1 | | Continuous Peak Search |
| LTE:ACLR:MARK1:CPS ON<br>LTE:ACLR:MARK1:CPS? | | | | |
| LTE:ACLR:MARKer#:MAXimum | | | | Peak Search |
| LTE:ACLR:MARK1:MAX | | | | |
| LTE:ACLR:MARKer#:MAXimum:NEXT | | | | Next Peak |
| LTE:ACLR:MARK1:MAX:NEXT | | | | |
| LTE:ACLR:MARKer#:MAXimum:RIGHt | | | | Next (Low) Right |
| LTE:ACLR:MARK1:MAX:RIGH | | | | |

| Command | Preset | Range | Unit | Description/Notes |
|---|---|---|---|---|
| LTE:ACLR:MARKer#:MAXimum:LEFT | | | | Next (Low) Left |
| LTE:ACLR:MARK1:MAX:LEFT | | | | |
| LTE:ACLR:MARKer#:PTPeak | | | | Peak-Peak Search |
| LTE:ACLR:MARK1:PTP | | | | |
| LTE:ACLR:MARKer#:MINimum | | | | Min Search |
| LTE:ACLR:MARK1:MIN | | | | |
| LTE:ACLR:MARKer#:CENTer | | | | Mkr -> CF |
| LTE:ACLR:MARK1:CENT | | | | |
| LTE:ACLR:MARKer#:RLEVel | | | | Mkr -> Ref Lvl |
| LTE:ACLR:MARK1:RLEV | | | | |
| LTE:ACLR:MEASure:TABLe? | | | | See "LTE Adjacent Channel Leakage Ratio (ACLR) Measurement Results". |
| LTE:ACLR:MEAS:TABL? | | | | |

## Constellation

| Command | Preset | Range | Unit | Description/Notes |
|---|---|---|---|---|
| ULMODulation:CONStellation:SCALe[?] | 0.5 | 0.1 to 2.0 in 0.1 steps | | Uplink Constellation Scaling |
| ULMOD:CONS:SCAL .8<br>ULMOD:CONS:SCAL? | | | | |
| ULMODulation:CONStellation:CHANnel:PRACH:STATe[?] | ON | OFF \| ON | | Uplink Constellation Channel PRACH State |
| ULMOD:CONS:CHAN:PRACH:STAT OFF<br>ULMOD:CONS:CHAN:PRACH:STAT? | | | | |
| ULMODulation:CONStellation:CHANnel:PUSCH:STATe[?] | ON | OFF \| ON | | Uplink Constellation Channel PUSCH State |
| ULMOD:CONS:CHAN:PUSCH:STAT OFF<br>ULMOD:CONS:CHAN:PUSCH:STAT? | | | | |

| Command | Preset | Range | Unit | Description/Notes |
|---|---|---|---|---|
| ULMODulation:CONStellation:CHANnel:PUSCH:REF:STATe[?] | ON | OFF \| ON | | Uplink Constellation Channel PUSCH Ref State |
| ULMOD:CONS:CHAN:PUSCH:REF:STAT OFF<br>ULMOD:CONS:CHAN:PUSCH:REF:STAT? | | | | |
| ULMODulation:CONStellation:CHANnel:PUCCH:STATe[?] | ON | OFF \| ON | | Uplink Constellation Channel PUCCH State |
| ULMOD:CONS:CHAN:PUCCH:STAT OFF<br>ULMOD:CONS:CHAN:PUCCH:STAT? | | | | |
| ULMODulation:CONStellation:CHANnel:PUCCH:REF:STATe[?] | ON | OFF \| ON | | Uplink Constellation Channel PUCCH Ref State |
| ULMOD:CONS:CHAN:PUCCH:REF:STAT OFF<br>ULMOD:CONS:CHAN:PUCCH:REF:STAT? | | | | |
| ULMODulation:CONStellation:CHANnel:SOUNDing:REF:STATe[?] | ON | OFF \| ON | | Uplink Constellation Sounding Reference State |
| ULMOD:CONS:CHAN:SOUND:REF:STAT OFF<br>ULMOD:CONS:CHAN:SOUND:REF:STAT? | | | | |
| LTE:ULmodulation:CONStellation:MEASure:TABLe? | | | | See "LTE Uplink Modulation Constellation Measurement Results". |
| LTE:UL:CONS:MEAS:TABL? | | | | |
| ULMODulation:CONStellation:SFRame[?] | FDD: ALL<br>TDD: 2 | 0\|1\|2\|3\|4\|5\|6\|7\|8\|9\|ALL | | Uplink Constellation Selection Subframe |
| ULMOD:CONS:SFR 1<br>ULMOD:CONS:SFR? | | | | |

## Power Spectrum

| Command | Preset | Range | Unit | Description/Notes |
|---|---|---|---|---|
| ULMODulation:PSPECtrum:SYMBol[?] | 2 | 0 to 13 | | Uplink Power Spectrum Symbol |
| ULMOD:PSPEC:SYMB 10<br>ULMOD:PSPEC:SYMB? | | | | |
| ULMODulation:PSPECtrum:SCARrier[?] | 0 | −600 to 599 (20 MHz)<br>−300 to 299 (10 MHz)<br>−150 to 149 (5 MHz) | | |
| ULMOD:PSPEC:SCAR 200<br>ULMOD:PSPEC:SCAR? | | | | |
| ULMODulation:PSPECtrum:SFRame[?] | FDD: 0<br>TDD: 2 | 0 to 9 | | Uplink Power Spectrum Subframe Selection |
| ULMOD:PSPEC:SFR 1<br>ULMOD:PSPEC:SFR? | | | | |
| LTE:ULmodulation:PSPECtrum:MEASure:TABLe? | | | | See "LTE UL Modulation Power Spectrum Measurement Results". |
| LTE:UL:PSPEC:MEAS:TABL? | | | | |

## Received IQ Data

| Command | Preset | Range | Unit | Description/Notes |
|---|---|---|---|---|
| UL:IQRECeived:SCALe[?] | 1.5 | 0.1 to 3.0 | | Uplink Received I/Q Data Scale |
| UL:IQREC:SCAL 2.0<br>UL:IQREC:SCAL? | | | | |
| UL:IQRECeived:SYMBol[?] | 2 | 0 to 13 | | Uplink Received I/Q Data Symbol |
| UL:IQREC:SYMB 4<br>UL:IQREC:SYMB? | | | | |

| Command | Preset | Range | Unit | Description/Notes |
|---|---|---|---|---|
| UL:IQRECeived:SCARrier[?] | −117 | −600 to 599 (20 MHz)<br>−300 to 299 (10 MHz)<br>−150 to 149 (5 MHz) | | Uplink Received I/Q Data Subcarrier |
| UL:IQREC:SCAR 202<br>UL:IQREC:SCAR? | | | | |
| ULMODulation:IQRECeived:SFRame[?] | FDD: 0<br>TDD: 2 | 0 to 9 | | Uplink Received I/Q Data Subframe Selection |
| ULMOD:IQREC:SFR 1<br>ULMOD:IQREC:SFR? | | | | |
| LTE:ULmodulation:IQRECeived:MEASure:TABLe? | | | | See "LTE UL Modulation IQ Data Received Measurement Results". |
| LTE:UL:IQREC:MEAS:TABL? | | | | |

## Error Vector

| Command | Preset | Range | Unit | Description/Notes |
|---|---|---|---|---|
| ULMODulation:ERRVector:SCARrier[?] | 0 | −600 to 599 (20 MHz)<br>−300 to 299 (10 MHz)<br>−150 to 149 (5 MHz) | | Uplink Error Vector Subcarrier |
| ULMOD:ERRV:SCAR 101<br>ULMOD:ERRV:SCAR? | | | | |
| ULMODulation:ERRVector:SCARrier:SCALe[?] | 1 | 0.1% to 10 % in 0.1% steps | | Uplink Error Vector Subcarrier Scale |
| ULMOD:ERRV:SCAR:SCAL 2.1<br>ULMOD:ERRV:SCAR:SCAL? | | | | |
| ULMODulation:ERRVector:SYMBol[?] | 2 | 0 to 13 | | Uplink Error Vector Symbol |
| ULMOD:ERRV:SYMB 10<br>ULMOD:ERRV:SYMB? | | | | |

| Command | Preset | Range | Unit | Description/Notes |
|---|---|---|---|---|
| ULMODulation:ERRVector:SYMBol:SCALe[?] | 1 | 0.1% to 10 % in 0.1% steps | | Uplink Error Vector Symbol Scale |
| ULMOD:ERRV:SYMB:SCAL 2.2<br>ULMOD:ERRV:SYMB:SCAL? | | | | |
| ULMODulation:ERRVector:SFRame[?] | FDD: 0<br>TDD: 2 | 0 to 9 | | Uplink Error Vector Symbol Selection Subframe |
| ULMOD:ERRV:SFR 1<br>ULMOD:ERRV:SFR? | | | | |
| LTE:ULmodulation:ERRVector:MEASure:EV:TABLe? | | | | See "LTE UL Modulation Error Vector Measurement Results". |
| LTE:UL:ERRV:MEAS:EV:TABL? | | | | |

## Decoding Information

| Command | Preset | Range | Unit | Description/Notes |
|---|---|---|---|---|
| LTE:ULmodulation:DECINFOmation:MEASure:TABLe? | | | | See "LTE UL Modulation Decoding Information Measurement Results". |
| LTE:UL:DECINFO:MEAS:TABL? | | | | |

## Flatness

| Command | Preset | Range | Unit | Description/Notes |
|---|---|---|---|---|
| UL:FLATness:SCARrier[?] | 0 | −600 to 599 (20 MHz)<br>−300 to 299 (10 MHz)<br>−150 to 149 (5 MHz) | | Uplink Flatness Subcarrier |
| UL:FLAT:SCAR 299<br>UL:FLAT:SCAR? | | | | |

| Command | Preset | Range | Unit | Description/Notes |
|---|---|---|---|---|
| UL:FLATness:SCALe[?] | 1 | 0.1 dB to 2.0 dB in 0.1 dB steps | dB | |
| UL:FLAT:SCAL 1.9<br>UL:FLAT:SCAL? | | | | |
| UL:FLATness:SLOT[?] | FDD: 0<br>TDD: 4 | 0 to 19 | | Uplink Flatness Selection Slot |
| UL:FLAT:SLOT 5<br>UL:FLAT:SLOT? | | | | |
| UL:FLATness:PWRSUB? | | | | Retrieves the current subcarrier power in the Flatness measurement. You can select any particular subcarrier of the uplink signal and retrieve its power." |
| UL:FLAT:PWRSUB? | | | | |

| Command | Preset | Range | Unit | Description/Notes |
|---|---|---|---|---|
| LTE:ULmodulation:FLATness:MEASure:FLAT:TABLe? | | | | The command is no longer supported in software version 6.3 or greater. Use the "LTE:ULmodulation:FLATness:MEASure:EQFLat:TABLe?" command shown below.<br><br>The measurement algorithm for "FLATness" was changed in order to make it compliant with 3GPP TS 36.521-1 (previously it was not compliant). This change required a new remote command, "LTE:ULmodulation:FLATness:MEASure:EQFLat:TABLe" to replace "LTE:ULmodulation:FLATness:MEASure:FLAT:TABLe".<br>The new compliant version of the measurement does not require definition of the limits that the previous version required and therefore the relevant setting commands have been removed.<br>As a result of this change, the following commands are no longer required to make this measurement.<br>UL:FLATness:ABS:LIMit:OFFSet[?]<br>UL:FLATness:ABS:LIMit:SCARrier:STATe[?]<br>UL:FLATness:ABS:LIMit:SCARrier:STARt[?]<br>UL:FLATness:ABS:LIMit:SCARrier:STOP[?]<br>UL:FLATness:ABS:LIMit:OFFSet:SIDe[?]<br>UL:FLATness:ABS:LIMit:UPPer:STATe[?]<br>UL:FLATness:ABS:LIMit:UPPer:STARt[?]<br>UL:FLATness:ABS:LIMit:UPPer:STOP[?]<br>UL:FLATness:ABS:LIMit:LOWer:STATe[?]<br>UL:FLATness:ABS:LIMit:LOWer:STARt[?]<br>UL:FLATness:ABS:LIMit:LOWer:STOP[?]<br>UL:FLATness:DIFF:LIMit:OFFSet[?]. |

| Command | Preset | Range | Unit | Description/Notes |
|---|---|---|---|---|
| LTE:ULmodulation:FLATness:MEASure:FLAT:TABLe? (cont.) | | | | UL:FLATness:DIFF:LIMit:SCARrier:STATe[?]<br>UL:FLATness:DIFF:LIMit:SCARrier:STARt[?]<br>UL:FLATness:DIFF:LIMit:SCARrier:STOP[?]<br>UL:FLATness:DIFF:LIMit:OFFSet:SIDe[?]<br>UL:FLATness:DIFF:LIMit:UPPer:STATe[?]<br>UL:FLATness:DIFF:LIMit:UPPer:STARt[?]<br>UL:FLATness:DIFF:LIMit:UPPer:STOP[?]<br>UL:FLATness:DIFF:LIMit:LOWer:STATe[?]<br>UL:FLATness:DIFF:LIMit:LOWer:STARt[?]<br>UL:FLATness:DIFF:LIMit:LOWer:STOP[?]<br>LTE:ULmodulation:FLATness:FAIL:TYPe[?]<br><br>Note that the IQ-Offset results that were returned in the previous measurement are not available in the new measurement, but can be obtained from ULMODulation:SLOTs:SUMMary? or ULMODulation:OVERall:SUMMary? |
| LTE:UL:FLAT:MEAS:EQFL:TABL? | | | | |
| LTE:ULmodulation:FLATness:MEASure:EQFLat:TABLe? | | | | See "LTE Uplink Modulation EQ Flatness Measurement Results". |
| LTE:UL:FLAT:MEAS:EQFL:TABL? | | | | |
| UL:MQS:SLOT | FDD: 0<br>TDD: 4 | 0 to 19 | | Uplink Modulation Quality Summary Selection Slot |
| UL:MQS:SLOT 2<br>UL:MQS:SLOT? | | | | |
| ULMODulation:SLOTs:SUMMary? | | | | See "Uplink Modulation Slot Summary Measurement Results". |
| ULMOD:SLOT:SUMM? | | | | |

| Command | Preset | Range | Unit | Description/Notes |
|---|---|---|---|---|
| ULMODulation:OVERall:SUMMary? | | | | See "UL Modulation Quality Overall Summary Measurement Results". |
| ULMOD:OVER:SUMM? | | | | |
| ULMODulation:MAPINformation:XYAXis | X-Y | X-Y \| Y-X | | Map Information X-Y Axis. |
| ULMOD:MAPIN:XYAX Y-X | | | | |
| ULMODulation:MAPINformation:CTABle | Show | Show \| Hide | | Map Information Channel Value Table |
| ULMOD:MAPIN:CTAB Hide | | | | |

## Spectrum Mode Commands

| Command | Preset | Range | Unit | Description/Notes |
|---|---|---|---|---|
| SA:SPECtrum:MODE[?] | SPECtrum | SPECtrum \| CHPower \| OBWidth \| CCDF | | Command to set the SA to spectrum analysis mode. |
| SA:SPEC:MODE SPEC<br>SA:SPEC:MODE? | | | | |

## Spectrum Analysis

| Command | Preset | Range | Unit | Description/Notes |
|---|---|---|---|---|
| SPECtrum[:SPECtrum]:FREQuency:SPAN[?] | 20 MHz | 1 MHz to 100 MHz | Hz, kHz, MHz | Set Span - Depends on instrument maximum frequency. |
| SPEC:FREQ:SPAN 1MHz<br>SPEC:FREQ:SPAN? | | | | |
| SPECtrum[:SPECtrum]:FREQuency:SPAN:FULL | | | | Full Span |
| SPEC:FREQ:SPAN:FULL | | | | |

| Command | Preset | Range | Unit | Description/Notes |
|---------|--------|-------|------|-------------------|
| SPECtrum[:SPECtrum]:FREQuency:SPAN:ZERO | | | | Zero Span |
| SPEC:FREQ:SPAN:ZERO | | | | |
| SPECtrum[:SPECtrum]:FREQuency:SPAN:LAST | | | | Last Span |
| SPEC:FREQ:SPAN:LAST | | | | |
| SPECtrum[:SPECtrum]:BANDwidth:MODE[?] | AUTO | AUTO \| MANUal | | RBW Mode |
| SPEC:BAND:MODE AUTO<br>SPEC:BAND:MODE? | | | | |
| SPECtrum[:SPECtrum]:BANDwidth[?] | 10 kHz | 1 kHz to 1000 kHz | Hz, kHz | RBW Value |
| SPEC:BAND 50 kHz<br>SPEC:BAND? | | | | |
| SPECtrum[:SPECtrum]:AVERage[?] | OFF | OFF \| ON \| 0 \| 1 | | Average state |
| SPEC:AVER ON<br>SPEC:AVER? | | | | |
| SPECtrum[:SPECtrum]:AVERage:NUMber[?] | 1 | 1 to 100 | | Average Number |
| SPEC:AVER:NUM 10<br>SPEC:AVER:NUM? | | | | |
| SPECtrum[:SPECtrum]:AVERage:TCONtrol[?] | EXPonential | EXPonential \| REPeat | | Average Mode |
| SPEC:AVER:TCON EXP<br>SPEC:AVER:TCON? | | | | |
| SPECtrum[:SPECtrum]:MAXHold[?] | OFF | OFF \| ON \| 0 \| 1 | | Max Hold |
| SPEC:MAXH OFF<br>SPEC:MAXH? | | | | |
| SPECtrum[:SPECtrum]:MARKer#:MODE | OFF | OFF \| NORMal \| DELTa \| FIXed | | Marker Mode |
| SPEC:MARK1:MODE NORM<br>SPEC:MARK1:MODE? | | | | |

| Command | Preset | Range | Unit | Description/Notes |
|---|---|---|---|---|
| SPECtrum[:SPECtrum]:MARKer#:X[?] | 1.95 GHz | 350 MHz to 6 GHz | Hz, kHz, MHz, GHz | Marker Frequency |
| SPEC:MARK1:X 2.55 GHz <br> SPEC:MARK1:X? | | | | |
| SPECtrum[:SPECtrum]:MARKer#:Y[?] | | –120 dBm to 50 dBm | dBm | Fixed Marker Level |
| SPEC:MARK1:Y -10 dBm <br> SPEC:MARK1:Y? | | | | |
| SPECtrum[:SPECtrum]:MARKer:AOFF | | | | All Marker Off |
| SPEC:MARK1:AOFF | | | | |
| SPECtrum[:SPECtrum]:MARKer#:CPSearch[?] | OFF | OFF \| ON \| 0 \| 1 | | Continuous Peak Search |
| SPEC:MARK1:CPS? <br> SPEC:MARK1:CPS ON | | | | |
| SPECtrum[:SPECtrum]:MARKer:TABLe | OFF | OFF \| ON \| 0 \| 1 | | View Marker Table |
| SPEC:MARK:TABL ON | | | | |
| SPECtrum[:SPECtrum]:MARKer#:MAXimum | | | | Peak Search |
| SPEC:MARK1:MAX | | | | |
| SPECtrum[:SPECtrum]:MARKer#:MAXimum:NEXT | | | | Next Peak |
| SPEC:MARK1:MAX:NEXT | | | | |
| SPECtrum[:SPECtrum]:MARKer#:MAXimum:RIGHt | | | | Next (Low) Right |
| SPEC:MARK1:MAX:RIGH | | | | |
| SPECtrum[:SPECtrum]:MARKer#:MAXimum:LEFT | | | | Next (Low) Left |
| SPEC:MARK1:MAX:LEFT | | | | |
| SPECtrum[:SPECtrum]:MARKer#:PTPeak | | | | Peak-Peak Search |
| SPEC:MARK1:PTP | | | | |
| SPECtrum[:SPECtrum]:MARKer#:MINimum | | | | Min Search |
| SPEC:MARK1:MIN | | | | |
| SPECtrum[:SPECtrum]:MARKer#:CENTer | | | | Mkr -> CF |
| SPEC:MARK1:CENT | | | | |

| Command | Preset | Range | Unit | Description/Notes |
|---|---|---|---|---|
| SPECtrum[:SPECtrum]:MARKer#:RLEVel | | | | Mkr -> Ref Lvl |
| SPEC:MARK1:RLEV | | | | |

## Channel Power

| Command | Preset | Range | Unit | Description/Notes |
|---|---|---|---|---|
| SPECtrum:CHPower:FREQuency:SPAN[?] | 20 MHz | 1 MHz (or value of SPECtrum:CHPower:INTegration) to 100 MHz | Hz, kHz, MHz | Set Span - Depends on instrument maximum frequency and value of SPECtrum:CHPower:INTegration. |
| SPEC:CHP:FREQ:SPAN 10 MHz<br>SPEC:CHP:FREQ:SPAN? | | | | |
| SPECtrum:CHPower:FREQuency:SPAN:FULL | | | | Full Span |
| SPEC:CHP:FREQ:SPAN:FULL | | | | |
| SPECtrum:CHPower:FREQuency:SPAN:LAST | | | | Last Span |
| SPEC:CHP:FREQ:SPAN:LAST | | | | |
| SPECtrum:CHPower:BANDwidth:MODE[?] | MANUal | AUTO \| MANUal | | RBW Mode |
| SPEC:CHP:BAND:MODE AUTO<br>SPEC:CHP:BAND:MODE? | | | | |
| SPECtrum:CHPower:BANDwidth[?] | 10 kHz | 1 kHz to 1000 kHz | Hz, kHz | RBW Value |
| SPEC:CHP:BAND 100 kHz<br>SPEC:CHP:BAND? | | | | |
| SPECtrum:CHPower:AVERage[?] | OFF | OFF \| ON \| 0 \| 1 | | Average state |
| SPEC:CHP:AVER ON<br>SPEC:CHP:AVER? | | | | |
| SPECtrum:CHPower:AVERage:NUMber[?] | 1 | 1 to 100 | | Average Number |
| SPEC:CHP:AVER:NUM 10<br>SPEC:CHP:AVER:NUM? | | | | |

| Command | Preset | Range | Unit | Description/Notes |
|---|---|---|---|---|
| SPECtrum:CHPower:AVERage:TCONtrol[?] | EXPonential | EXPonential \| REPeat | | Average Mode |
| SPEC:CHP:AVER:TCON EXP<br>SPEC:CHP:AVER:TCON? | | | | |
| SPECtrum:CHPower:MAXHold[?] | OFF | OFF \| ON \| 0 \| 1 | | Max Hold |
| SPEC:CHP:MAXH ON<br>SPEC:CHP:MAXH? | | | | |
| SPECtrum:CHPower:INTegration[?] | 10 MHz | 10 kHz to 22 MHz | Hz, kHz, MHz | Integration BW (Bandwidth) |
| SPEC:CHP:INT 15 MHZ<br>SPEC:CHP:INT? | | | | |
| SPECtrum:CHPower:MARKer#:MODE | OFF | OFF \| NORMal \| DELTa \| FIXed | | Marker Mode |
| SPEC:CHP:MARK2:MODE DELT<br>SPEC:CHP:MARK2:MODE? | | | | |
| SPECtrum:CHPower:MARKer#:X[?] | 1.95 GHz | 350 MHz to 6 GHz | Hz, kHz, MHz, GHz | Marker Frequency |
| SPEC:CHP:MARK2:X 2.535 GHz<br>SPEC:CHP:MARK2:X? | | | | |
| SPECtrum:CHPower:MARKer#:Y[?] | | –120 dBm to 50 dBm | dBm | Fixed Marker Level |
| SPEC:CHP:MARK2:Y -80 dBm<br>SPEC:CHP:MARK2:Y? | | | | |
| SPECtrum:CHPower:MARKer:AOFF | | | | All Marker Off |
| SPEC:CHP:MARK:AOFF | | | | |
| SPECtrum:CHPower:MARKer#:CPSearch[?] | OFF | OFF \| ON \| 0 \| 1 | | Continuous Peak Search |
| SPEC:CHP:MARK2:CPS ON | | | | |
| SPECtrum:CHPower:MARKer#:MAXimum | | | | Peak Search |
| SPEC:CHP:MARK2:MAX | | | | |
| SPECtrum:CHPower:MARKer#:MAXimum:NEXT | | | | Next Peak |
| SPEC:CHP:MARK2:MAX:NEXT | | | | |

| Command | Preset | Range | Unit | Description/Notes |
|---|---|---|---|---|
| SPECtrum:CHPower:MARKer#:MAXimum:RIGHt | | | | Next (Low) Right |
| SPEC:CHP:MARK2:MAX:RIGH | | | | |
| SPECtrum:CHPower:MARKer#:MAXimum:LEFT | | | | Next (Low) Left |
| SPEC:CHP:MARK2:MAX:LEFT | | | | |
| SPECtrum:CHPower:MARKer#:PTPeak | | | | Peak-Peak Search |
| SPEC:CHP:MARK2:PTP | | | | |
| SPECtrum:CHPower:MARKer#:MINimum | | | | Min Search |
| SPEC:CHP:MARK2:MIN | | | | |
| SPECtrum:CHPower:MARKer#:CENTer | | | | Mkr -> CF |
| SPEC:CHP:MARK2:CENT | | | | |
| SPECtrum:CHPower:MARKer#:RLEVel | | | | Mkr -> Ref Lvl |
| SPEC:CHP:MARK2:RLEV | | | | |
| SPECtrum:CHPower:MEASure:POWer? | | | dBm | Channel Power Measure / Results are returned in a dBm string. |
| SPEC:CHP:MEAS:POW? | | | | |

## Occupied Bandwidth

| Command | Preset | Range | Unit | Description/Notes |
|---|---|---|---|---|
| SPECtrum:OBWidth:FREQuency:SPAN[?] | 20MHz | 1 MHz to 100 MHz | Hz, kHz, MHz | Set Span - Depends on instrument maximum frequency. |
| SPEC:OBW:FREQ:SPAN 20 MHz<br>SPEC:OBW:FREQ:SPAN? | | | | |
| SPECtrum:OBWidth:FREQuency:SPAN:FULL | | | | Full Span |
| SPEC:OBW:FREQ:SPAN:FULL | | | | |
| SPECtrum:OBWidth:FREQuency:SPAN:LAST | | | | Last Span |
| SPEC:OBW:FREQ:SPAN:LAST | | | | |

| Command | Preset | Range | Unit | Description/Notes |
|---|---|---|---|---|
| SPECtrum:OBWidth:BANDwidth:MODE[?] | MANUal | AUTO \| MANUal | | RBW Mode |
| SPEC:OBW:BAND:MODE AUTO<br>SPEC:OBW:BAND:MODE? | | | | |
| SPECtrum:OBWidth:BANDwidth[?] | 10kHz | 1 kHz to 1000 kHz | Hz, kHz | RBW Value |
| SPEC:OBW:BAND 100 kHz<br>SPEC:OBW:BAND? | | | | |
| SPECtrum:OBWidth:AVERage[?] | OFF | OFF \| ON \| 0 \| 1 | | Average state |
| SPEC:OBW:AVER OFF<br>SPEC:OBW:AVER? | | | | |
| SPECtrum:OBWidth:AVERage:NUMber[?] | 1 | 1 to 100 | | Average Number |
| SPEC:OBW:AVER:NUM 10<br>SPEC:OBW:AVER:NUM? | | | | |
| SPECtrum:OBWidth:AVERage:TCONtrol[?] | EXPonential | EXPonential \| REPeat | | Average Mode |
| SPEC:OBW:AVER:TCON REP<br>SPEC:OBW:AVER:TCON? | | | | |
| SPECtrum:OBWidth:MAXHold[?] | OFF | OFF \| ON \| 0 \| 1 | | Max Hold |
| SPEC:OBW:MAXH ON<br>SPEC:OBW:MAXH? | | | | |
| SPECtrum:OBWidth:POWer[?] | 99 | 10 % to 99.9 % in 0.1 % steps | % | OBW Power |
| SPEC:OBW:POW 10<br>SPEC:OBW:POW? | | | | |
| SPECtrum:OBWidth:MARKer#:MODE[?] | OFF | OFF \| NORMal \| DELTa \| FIXed | | Marker Mode |
| SPEC:OBW:MARK3:MODE FIX<br>SPEC:OBW:MARK3:MODE? | | | | |
| SPECtrum:OBWidth:MARKer#:X[?] | | Normal/Fixed: 0 to 10GHz<br>Delta:-5GHz to 5GHz | Hz, kHz, MHz, GHz | Marker Frequency |
| SPEC:OBW:MARK3:X 2.535 GHz<br>SPEC:OBW:MARK3:X? | | | | |

| Command | Preset | Range | Unit | Description/Notes |
|---|---|---|---|---|
| SPECtrum:OBWidth:MARKer#:Y[?] | | –120 dBm to 50 dBm | dBm | Fixed Marker Level |
| SPEC:OBW:MARK3:Y –10 dBm<br>SPEC:OBW:MARK3:Y? | | | | |
| SPECtrum:OBWidth:MARKer:AOFF | | | | All Marker Off |
| SPEC:OBW:MARK:AOFF | | | | |
| SPECtrum:OBWidth:MARKer#:CPSearch[?] | OFF | OFF \| ON \| 0 \| 1 | | Continuous Peak Search |
| SPEC:OBW:MARK3:CPS ON<br>SPEC:OBW:MARK3:CPS? | | | | |
| SPECtrum:OBWidth:MARKer#:MAXimum | | | | Peak Search |
| SPEC:OBW:MARK3:MAX | | | | |
| SPECtrum:OBWidth:MARKer#:MAXimum:NEXT | | | | Next Peak |
| SPEC:OBW:MARK3:MAX:NEXT | | | | |
| SPECtrum:OBWidth:MARKer#:MAXimum:RIGHt | | | | Next (Low) Right |
| SPEC:OBW:MARK3:MAX:RIGH | | | | |
| SPECtrum:OBWidth:MARKer#:MAXimum:LEFT | | | | Next (Low) Left |
| SPEC:OBW:MARK3:MAX:LEFT | | | | |
| SPECtrum:OBWidth:MARKer#:PTPeak | | | | Peak-Peak Search |
| SPEC:OBW:MARK3:MAX:PTP | | | | |
| SPECtrum:OBWidth:MARKer#:MINimum | | | | Min Search |
| SPEC:OBW:MARK3:MIN | | | | |
| SPECtrum:OBWidth:MARKer#:CENTer | | | | Mkr -> CF |
| SPEC:OBW:MARK3:CENT | | | | |
| SPECtrum:OBWidth:MARKer#:RLEVel | | | | Mkr -> Ref Lvl |
| SPEC:OBW:MARK3:RLEV | | | | |
| SPECtrum:OBWidth:MEASure? | | | | OBW Power Measure/Results are returned in MHz as a string. |
| SPEC:OBW:MEAS? | | | | |

## CCDF (Complementary Cumulative Distribution Function)

| Command | Preset | Range | Unit | Description/Notes |
|---|---|---|---|---|
| PSTatistic:COUNt[?] | 10 | 0 to 1000 | | Count (Command will be ignored if units are sent.). Settable range depends on Cycles. |
| PST:COUN 500<br>PST:COUN? | | | | |
| PSTatistic:SWEep:CYCLes[?] | No Preset value defined | 1 to 2000000 (Measure Interval dependent) | | Measure Cycle |
| PST:SWE:CYCL 2000<br>PST:SWE:CYCL? | | | | |
| PSTatistic:SWEep:TIME[?] | 1000 us | 10 us to 2 ms in 1 us steps | us, ms | Measure Interval |
| PST:SWE:TIME 2000 us<br>PST:SWE:TIME? | | | | |
| SPECtrum:CCDF:MEASure? | | | | See "CCDF Measurement Results" |
| SPEC:CCDF:MEAS? | | | | |

## VSA Mode Commands

| Command | Preset | Range | Unit | Description/Notes |
|---|---|---|---|---|
| SA:VSA:MODE | | RECord, REALtime | | Sets VSA Mode. Can be set to post capture analysis or real time analysis. |
| SA:VSA:RECord[?] | | STARt \| STOP | | Start/Stop recording for post capture analysis. |
| SA:VSA:RECord:LENGth[?] | | 0.01 to 1.00 | | Length of the continuous record to record. |
| SA:VSA:SAVE | | Filename | | Save recording to a file. |
| SA:VSA:REALtime:IPADdress[?] | 0.0.0.0 | <V4 IP Address as string> | | IP Address of VSA PC (could be PXT IP Address itself if VSA is installed in PXT). |
| SA:VSA:REALtime:PORT[?] | 1234 | 0 to 65535 | | Port of VSA PC. |
| SA:VSA:REALtime:CONNect | | | | Connect to VSA. |
| SA:VSA:REALtime:DISConnect | | | | Disconnect from VSA. |
| SA:VSA:REALtime:SEND | | STARt \| STOP | | Start/Stop sending data to connected to VSA. |

## Sweep

| Command | Preset | Range | Unit | Description/Notes |
|---|---|---|---|---|
| SWEep:TIME[?] | 12000 (LTE) 10000 (SA) | 100 to 60000 (or SWEep:STARt) | us | Sweep Time |
| SWE:TIME 20000 SWE:TIME? | | | | |
| SWEep:STARt[?] | 0 | -60000 to 60000 | us | Sweep Start |
| SWE:STARt 10000 SWE:STAR? | | | | |

## *Trigger*

| Command | Preset | Range | Unit | Description/Notes |
|---------|--------|-------|------|-------------------|
| TRIGger:SOURce[?] | INTernal | FREERun \| EXTernal \| INTernal | | Free Run |
| TRIG:SOUR INT<br>TRIG:SOUR? | | | | |
| TRIGger:EXTernal:SLOPe[?] | POSitive | POSitive \| NEGative | | External Trigger Setup - Trigger Slope |
| TRIG:EXT:SLOP NEG<br>TRIG:EXT:SLOP? | | | | |
| TRIGger:EXTernal:DELay:STATe[?] | OFF | ON \| OFF | | External Trigger Setup - Trigger Delay State |
| TRIG:EXT:DEL:STAT ON<br>TRIG:EXT:DEL:STAT? | | | | |
| TRIGger:EXTernal:DELay[?] | 0 us | –50 ms to 1000 ms | us, ms, s | External Trigger Setup - Trigger Delay |
| TRIG:EXT:DEL 500 ms<br>TRIG:EXT:DEL? | | | | |
| TRIGger:INTernal:SLOPe[?] | POSitive | POSitive \| NEGative | | Internal Trigger Setup - Trigger Slope |
| TRIG:INT:SLOP NEG<br>TRIG:INT:SLOP? | | | | |
| TRIGger:INTernal:DELay:STATe[?] | OFF | ON \| OFF | | Internal Trigger Setup - Trigger Delay State |
| TRIG:INT:DEL:STAT ON<br>TRIG:INT:DEL:STAT? | | | | |
| TRIGger:INTernal:DELay[?] | 2 ms | –50 ms to 1000 ms | us, ms, s | Internal Trigger Setup - Trigger Delay |
| TRIG:INT:DEL 500 ms<br>TRIG:INT:DEL? | | | | |

| Command | Preset | Range | Unit | Description/Notes |
|---|---|---|---|---|
| TRIGger:OUTput[?] | FRAme | FRAme \| EVEnt | | Trigger output type.<br>**NOTE**: All Trigger Output commands require LTE PVT mode set and BSE UE POWer CONTrol PATTern RBSFCONT enabled. |
| TRIG:OUT EVE<br>TRIG:OUT? | | | | |
| TRIGger:OUTput:EVEnt:SLOPe[?] | POSitive | POSitive \| NEGative | | Trigger output event slope. Requires TRIGger:OUTput = EVEnt. |
| TRIG:OUT:EVE:SLOP NEG<br>TRIG:OUT:EVE:SLOP? | | | | |
| TRIGger:OUTput:EVEnt:DELay[?] | 1000 | -10000 us to 10000 us | | Trigger output event delay. Requires TRIGger:OUTput = EVEnt. |
| TRIG:OUT:EVE:DEL 10000<br>TRIG:OUT:EVE:DEL? | | | | |
| TRIGger:OUTput:EVEnt:DELay:STATe[?] | ON | ON \| OFF | | Trigger output event delay state. Requires TRIGger:OUTput = EVEnt. |
| TRIG:OUT:EVE:DEL:STAT OFF<br>TRIG:OUT:EVE:DEL:STAT? | | | | |

## Continue Mode

| Command | Preset | Range | Unit | Description/Notes |
|---|---|---|---|---|
| CONTinue:MODE | | | | |
| CONT:MODE | | | | |

## Single Mode

| Command | Preset | Range | Unit | Description/Notes |
|---|---|---|---|---|
| SINGle:MODE | | | | |
| SING:MODE | | | | |

## Marker

| Command | Preset | Range | Unit | Description/Notes |
|---|---|---|---|---|
| <measurement name>:MARKer#:Y? | | | | See "Marker Measurement Results". <br> There are 14 available markers for LTE measurements: Channel Power, OBW, PVT, SEM, ACLR. For UL demodulation measurements, see "Flatness" section. |
| <measurement name>:MARK2:Y? | | | | |

## RF ON/OFF

| Command | Preset | Range | Unit | Description/Notes |
|---|---|---|---|---|
| RFOutput1:STATe[?] | ON | ON \| OFF \| 1 \| 0 | | RF1 State |
| RFO1:STAT ON <br> RFO1:STAT? | | | | |
| RFOutput2:STATe[?] | ON | ON \| OFF | | RF2 State |
| RFO2:STAT ON <br> RFO2:STAT? | | | | |

## *Modulation ON/OFF*

| Command | Preset | Range | Unit | Description/Notes |
|---|---|---|---|---|
| MODulation1:STATe[?] | ON | ON \| OFF | | MODulation1 State |
| MOD1:STAT ON<br>MOD1:STAT? | | | | |
| MODulation2:STATe[?] | ON | ON \| OFF | | MODulation2 State |
| MOD2:STAT ON<br>MOD2:STAT? | | | | |

## *RF Config*

| Command | Preset | Range | Unit | Description/Notes |
|---|---|---|---|---|
| RFConfig:INPUt:MODE[?] | INTernal | INTernal \|<br>EXTernal | | Input Mode |
| RFC:INPU:MODE INT<br>RFC:INPU:MODE? | | | | |
| RFConfig:INPUt:SOURce[?] | IF | IF \| IQ | | Input Source |
| RFC:INPU:SOUR IQ<br>RFC:INPU:SOUR? | | | | |
| RFConfig:INPUt:SELect[?] | RF1 | RF1 \| RF2 | | RF Select |
| RFConfig:OUTPUt:DL[?] | INTernal | INT \| EXT | | RF1 DL Output |
| RFC:OUTPU:DL INT<br>RFC:OUTPU:DL? | | | | |
| RFConfig:OUTPUt:FRONt:RF1[?] | TRX | TRX \| TX | | RF1 Front Output |
| RFC:OUTPU:FRON:RF1 TRX<br>RFC:OUTPU:FRON:RF1? | | | | |
| RFConfig:OUTPUt:FRONt:RF2[?] | TRX | TRX \| TX | | RF2 Front Output |
| RFC:OUTPU:FRON:RF2 TRX<br>RFC:OUTPU:FRON:RF2? | | | | |

| Command | Preset | Range | Unit | Description/Notes |
|---|---|---|---|---|
| RFConfig:RCLock:SOURce[?] | AUTO | AUTO \| INTernal | | Reference Source selection |
| RFC:RCL:SOUR INT<br>RFC:RCL:SOUR? | | | | |
| RFConfig:OUTPut:EXT:CELL:SELect[?] | Bcell | Acell \| Bcell | | RF Select External Cell |
| RFC:OUTP:EXT:CELL:SEL B<br>RFC:OUTP:EXT:CELL:SEL? | | | | |

## *Cell Setup*

| Command | Preset | Range | Unit | Description/Notes |
|---|---|---|---|---|
| *CELLSetup:AC:RATio[?]*<br>CELLSetup:ACELl:RATio[?] | 1.00 | 0.00 to 1.00 (%) | Double | – Acell ratio<br>– The italicised version of this command is not recommended and is planned for deletion in future software releases. |
| CELLS:ACEL:RAT 0.49<br>CELLS:ACEL:RAT? | | | | |
| *CELLSetup:BC:RATio[?]*<br>CELLSetup:BCELl:RATio[?] | 0.00 | 0.00 to 1.00 (%) | Double | – Bcell ratio<br>– The italicised version of this command is not recommended and is planned for deletion in future software releases. |
| CELLS:BCEL:RAT 0.29<br>CELLS:BCEL:RAT? | | | | |
| CELLSetup:SA:CELL:SELection[?] | Acell | Acell \| Bcell | | SA Cell Selection |
| CELLS:SA:CELL:SEL B<br>CELLS:SA:CELL:SEL? | | | | |

## Save & Recall

| Command | Preset | Range | Unit | Description/Notes |
|---|---|---|---|---|
| DISPlay:SAVE:POSition | | USB \| HDD | | Sets the save screen shot location to either USB or HDD. |
| DISP:SAVE:POS USB | | | | |
| DISPlay:SAVE:FORMat | | PNG \| JPG \| BMP | | Sets the save screen shot picture format. |
| DISP:SAVE:FORM PNG | | | | |
| DISPlay:SAVE | | String | | Saves the current screen shot of the PXT to a file named with the current time and date, using the drive position as defined by [DISPlay:SAVE:POSition] and the image format defined by [DISPlay:SAVE:FORMat].<br><br>Paths are as follows:<br>HDD: C:\Documents and Settings\Administrator\My Documents\E6621A\Screenshots\<br>USB: <USB drive>\E6621A\Screenshots\<br>If folder does not exist, PXT creates folder. |
| DISP:SAVE | | | | |
| REGister:RECall[:INDex] | | 1 to 7 | | – Recalls setting to register.<br>– Optional INDex SCPI node added in software version 6.3. |
| REG:REC:IND 2 | | | | |

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| Command | Preset | Range | Unit | Description/Notes |
|---------|--------|-------|------|-------------------|
| *REGister:SAVe*<br>REGister:SAVE[:INDex] | | 1 to 7 | | – Saves setting to register.<br>– Optional INDex SCPI node added in software version 6.3.<br>– The italicised version of command is not recommended and is planned for deletion in future software releases. |
| REG:SAVE 6 | | | | |
| REGister:RECall:FILE | | String | | Recalls settings to the register from a file you previously created using the "REGister:SAVE:FILE" command. |
| REG:REC:FILE "myregisterfilename" | | | | |
| REGister:SAVE:FILE | | String | | Saves file of settings to the register with a filename you specify. |
| REG:SAVE:FILE "myregisterfilename" | | | | |

## *Technology*

| Command | Preset | Range | Unit | Description/Notes |
|---|---|---|---|---|
| SYSTem:APPLication:FORMat | LTE FDD | LTE FDD to LTE TDD | | Toggles technology application format between FDD and TDD. |
| SYST:APPL:FORM | | | | |

## *Measurement Results*

### CCDF (Complementary Cumulative Distribution Function) Measurement Results

| Query | Result |
|---|---|
| SPECtrum:CCDF:MEASure? | Returns results separated by commas:<br><br>• Current Count<br>• Total Count<br>• Average Power Reference (dBm)<br>• Proportion of samples exceeding average power (%)<br>• 10% Relative Power (dB)<br>• 1% Relative Power (dB)<br>• 0.1% Relative Power (dB)<br>• 0.01% Relative Power (dB)<br>• 0.001% Relative Power (dB)<br>• 0.0001% Relative Power (dB)<br>• Peak Relative Power (dB)<br>• Peak Absolute Power (dBm) |

## Power vs Time Measurement Results

| Query | Result |
|---|---|
| PVTime:MEASure:TABLe? | A quoted string containing a comma separated list of each enabled measurement interval.<br><br>- Measured Power Table [Gate-Pwr] * n (n : number of gate)<br><br>If no measurement intervals are enabled, the string 'fail' is returned. |

## Spectrum Emission Mask Measurement Results

| Query | Result |
|---|---|
| SEM:MEASure:MAIN:TABLe? | Returns three results separated by commas:<br><br>• Channel Power in dBm<br>• Power Spectral Density in dBm/30kHz<br>• Pass (1) / Fail (0) result of Mask Limit Check |
| SEMask:MEASure:DETAil:TABLe? | Returns 81 values separated by commas in a quoted string representing the contents of the results table displayed on the front panel of the PXT. There are nine groups of nine results – one for each segment of the mask. Each group contains the following results:<br><br>• Start Frequency for segment in Hz<br>• Stop Frequency for segment in Hz<br>• Integration BW for segment in Hz<br>• Lower Side worst case frequency point for segment in Hz<br>• Absolute Power at Lower side worst case frequency point for segment in dBm<br>• Delta from limit at Lower side worst case frequency point for segment in dB<br>• Upper Side worst case frequency point for segment in Hz<br>• Absolute Power at Upper side worst case frequency point for segment in dBm<br>• Delta from limit at Upper side worst case frequency point for segment in dB<br><br>If a segment is off, the value 0.00 will be returned for all results in that segment. |

## LTE Adjacent Channel Leakage Ratio (ACLR) Measurement Results

| Query | Result |
|---|---|
| LTE:ACLR:MEASure:TABLe? | Returns results separated by commas. The number of results returned depends on the number of carriers and offsets selected:<br><br>• Total Carrier Power (all carriers) in dBm<br>• Number of Carrier Powers to follow<br>• First Carrier Power in dBm<br>• Second Carrier Power in dBm if selected<br>• Number of Offset Pairs to follow<br>• Results for first Offset Pair if selected<br>    – Pass (1) / Fail (0) for Lower Channel Offset<br>    – Relative Power (dBc) for Lower Channel Offset<br>    – Absolute Power (dBm) for Lower Channel Offset<br>    – Pass (1) / Fail (0) for Upper Channel Offset<br>    – Relative Power (dBc) for Upper Channel Offset<br>    – Absolute Power (dBm) for Upper Channel Offset<br>• Results for second Offset Pair if selected<br>• Results for third Offset Pair if selected<br>• Results for fourth Offset Pair if selected<br>• Results for fifth Offset Pair if selected |

## LTE Uplink Modulation Constellation Measurement Results

| Query | Result |
|-------|--------|
| LTE:ULmodulation:CONStellation:MEASure:TABLe? | Returns results separated by commas:<br><br>• Profile Type (MHz) [int string]<br>• Frequency Offset (Hz) [double]<br>• Sampling Timing Error (us) [Reserved]<br>• PRACH Correlation Accuracy (%) [Reserved]<br>• PRACH Start Time (us) [Reserved]<br>• PRACH Logical Root Sequence Number_(u) [Reserved]<br>• PRACH CS Number (v) [Reserved]<br>• PRACH Preamble ID [Reserved]<br>• UL Analysis Channel Correlation Accuracy (%) [double]<br>• PUCCH Format<br>• PUCCH Early Window DMRS EVM (%) [double]<br>• PUCCH Late Window DMRS EVM (%) [double]<br>• PUCCH Early Window EVM (%) [double]<br>• PUCCH Late Window EVM (%) [double]<br>• PUCCH Start Time (us)<br>• PUCCH Early Window DMRS EVM (%) [double]<br>• PUCCH Late Window DMRS EVM (%) [double]<br>• PUCCH Early Window Data EVM (%) [double]<br>• PUCCH Late Window Data EVM (%) [double]<br>• PUCCH Start Time (us)<br>• SRS Correlation Accuracy (%) [double]<br>• SRS Start Time (us)<br>• SRS EVM (%) [double]<br>• SRS CINR (dB)<br>• Symbol Index [int]<br>• Symbol Tx. Power (dBm) [double]<br><br>Results which do not apply for the channel being measured appear as an empty string for the particular value. |

## LTE Uplink Modulation Power Spectrum Measurement Results

| Query | Result |
|---|---|
| LTE:ULmodulation:PSPECtrum:MEASure:TABLe? | Returns results separated by commas:<br><br>• Profile Type (MHz) [int string]<br>• Frequency Offset (Hz) [double]<br>• Sampling Timing Error (us) [Reserved]<br>• PRACH Correlation Accuracy (%) [Reserved]<br>• PRACH Start Time (us) [Reserved]<br>• PRACH Logical Root Sequence Number_(u) [Reserved]<br>• PRACH CS Number (v) [Reserved]<br>• PRACH Preamble ID [Reserved]<br>• UL Analysis Channel Correlation Accuracy (%) [double]<br>• PUCCH Format<br>• PUCCH Early Window DMRS EVM (%) [double]<br>• PUCCH Late Window DMRS EVM (%) [double]<br>• PUCCH Early Window EVM (%) [double]<br>• PUCCH Late Window EVM (%) [double]<br>• PUCCH Start Time (us)<br>• PUCCH Early Window DMRS EVM (%) [double]<br>• PUCCH Late Window DMRS EVM (%) [double]<br>• PUCCH Early Window Data EVM (%) [double]<br>• PUCCH Late Window Data EVM (%) [double]<br>• PUCCH Start Time (us)<br>• SRS Correlation Accuracy (%) [double]<br>• SRS Start Time (us)<br>• SRS EVM (%) [double]<br>• SRS CINR (dB)<br>• Symbol Index [int]<br>• Symbol Tx. Power (dBm) [double]<br>Results which do not apply for the channel being measured appear as ' an empty string for the particular value. |

## LTE Uplink Modulation Received IQ Data Measurement Results

| Query | Result |
|---|---|
| LTE:ULmodulation:IQRECeived:MEASure:TABLe? | Returns results separated by commas:<br><br>• Profile Type (MHz) [int string]<br>• Frequency Offset (Hz) [double]<br>• Sampling Timing Error (us) [Reserved]<br>• PRACH Correlation Accuracy (%) [Reserved]<br>• PRACH Start Time (us) [Reserved]<br>• PRACH Logical Root Sequence Number_(u) [Reserved]<br>• PRACH CS Number (v) [Reserved]<br>• PRACH Preamble ID [Reserved]<br>• UL Analysis Channel Correlation Accuracy (%) [double]<br>• PUCCH Format<br>• PUCCH Early Window DMRS EVM (%) [double]<br>• PUCCH Late Window DMRS EVM (%) [double]<br>• PUCCH Early Window EVM (%) [double]<br>• PUCCH Late Window EVM (%) [double]<br>• PUCCH Start Time (us)<br>• PUCCH Early Window DMRS EVM (%) [double]<br>• PUCCH Late Window DMRS EVM (%) [double]<br>• PUCCH Early Window Data EVM (%) [double]<br>• PUCCH Late Window Data EVM (%) [double]<br>• PUCCH Start Time (us)<br>• SRS Correlation Accuracy (%) [double]<br>• SRS Start Time (us)<br>• SRS EVM (%) [double]<br>• SRS CINR (dB)<br>• Symbol Index [int]<br>• Symbol Tx. Power (dBm) [double]<br><br>Results which do not apply for the channel being measured appear as an empty string for the particular value. |

## LTE Uplink Modulation Error Vector Measurement Results

| Query | Result |
|---|---|
| LTE:ULmodulation:ERRVector:MEASure:EV:TABLe? | Returns results separated by commas:<br><br>• Symbol Index for Resource Element EVM<br>• Subcarrier Index for Resource Element EVM<br>• EVM of Resource Element (%)<br>• Symbol Index for average EVM<br>• Average EVM for Symbol (%)<br>A null string is returned if the subcarrier index is zero. |

## LTE Uplink Modulation Decoding Information Measurement Results

| Query | Result |
|---|---|
| LTE:ULmodulation:DECINFOrmation:MEASure:TABLe? | Returns results separated by commas:<br><br>• Profile Type (MHz) [int string]<br>• Frequency Offset (Hz) [double]<br>• Sampling Timing Error (us) [Reserved]<br>• PRACH Correlation Accuracy (%) [Reserved]<br>• PRACH Start Time (us) [Reserved]<br>• PRACH Logical Root Sequence Number_(u) [Reserved]<br>• PRACH CS Number (v) [Reserved]<br>• PRACH Preamble ID [Reserved]<br>• UL Analysis Channel Correlation Accuracy (%) [double]<br>• PUCCH Format<br>• PUCCH Early Window DMRS EVM (%) [double]<br>• PUCCH Late Window DMRS EVM (%) [double]<br>• PUCCH Early Window EVM (%) [double]<br>• PUCCH Late Window EVM (%) [double]<br>• PUCCH Start Time (us)<br>• PUCCH Early Window DMRS EVM (%) [double]<br>• PUCCH Late Window DMRS EVM (%) [double]<br>• PUCCH Early Window Data EVM (%) [double]<br>• PUCCH Late Window Data EVM (%) [double]<br>• PUCCH Start Time (us)<br>• SRS Correlation Accuracy (%) [double]<br>• SRS Start Time (us)<br>• SRS EVM (%) [double]<br>• SRS CINR (dB)<br>• Symbol Index [int]<br>• Symbol Tx. Power (dBm) [double]<br><br>Results which do not apply for the channel being measured appear as an empty string for the particular value. |

## LTE Uplink Modulation EQ Flatness Measurement Results

| Query | Result |
|---|---|
| LTE:ULmodulation:FLATness:MEASure:EQFLat:TABLe? | Returns results separated by commas:<br><br>• RP1 start subcarrier<br>• RP1 end subcarrier<br>• RP1 max subcarrier<br>• RP1 max value<br>• RP1 min subcarrier<br>• RP1 min value<br>• RP2 start subcarrier<br>• RP2 end subcarrier<br>• RP2 max subcarrier<br>• RP2 max value<br>• RP2 min subcarrier<br>• RP2 min value<br>• Range1 max peak-to-peak<br>• Range2 max peak-to-peak<br>• RP12<br>• RP21 |

## Uplink Modulation Slot Summary Measurement Results

| Query | Result |
|---|---|
| ULMODulation:SLOTs:SUMMary? | Returns results separated by commas:<br><br>• Slot index<br>• Slot content<br>• Freq carrier error<br>• IQ offset<br>• Early window EVM for PUCCH<br>• Late window EVM for PUSCH<br>• Early window EVM for PUSCH DMRS<br>• Late-window-EVM-for-PUSCH-DMRS |

## UL Modulation Quality Overall Summary Measurement Results

| Query | Result |
|---|---|
| ULMODulation:OVERall:SUMMary? | Returns results separated by commas:<br><br>• Overall frequency error<br>• Overall frequency error slot index<br>• Overall IQ offset<br>• Overall IQ offset-slot-index<br>• Overall PUSCH data evm<br>• Overall PUSCH dmrs evm<br>• Overall PUCCH evm |

## Base Station Emulator MAC Information Measurement Results

| Query | Result |
|---|---|
| BSE:MAC:INFOrmation:MEASure:TABLe? | Returns results separated by commas:<br><br>• ShortBSR (buffer status report)<br>• LongBSR0<br>• LongBSR1<br>• LongBSR2<br>• LongBSR3<br>• PHRIndex (power headroom)<br>• Pmax<br>• TxPower |

## Base Station Emulator Error Throughput Measurement Results

| Query | Result* |
|---|---|
| BSE:ER:THROUghput:MEASure:TABLe? | Returns results separated by commas:<br><br>• RF1Ack (number of Acks received from UE on RF1)<br>• RF1Nak (number of Nacks received from UE on RF1)<br>• RF1Loss (neither Ack nor a Nack was detected when expected on RF1)<br>• RF2Ack (number of Acks received from UE on RF2)<br>• RF2Nak (number of Nacks received from UE on RF2)<br>• RF2Loss (neither Ack nor a Nack was detected when expected on RF1)<br>• TotalAck (total number of Acks received from UE)<br>• TotalNak (total number of Naks received from UE)<br>• TotalLoss (total loss - neither Ack nor a Nack was detected but expected)<br>• PHR (power head room)<br>• TotalEr (total BLER % error rate)<br>• RF1Er (RF1 BLER % error rate)<br>• RF2Er (RF2 BLER % error rate)<br>• TotalTh (Current Total Throughput [Mbps])<br>• RF1Th (Current RF1 Throughput [Mbps])<br>• RF2Th (Current RF2 Throughput [Mbps])<br>• DlMaxTr (Maximum Throughput [Mbps])<br>• DlAvgTr (Average Throughput [Mbps]) |

*All results are reset when BSE:ER:THROUghtput:MEASure:TABLe:CLEar is performed.

## Base Station Emulator Error Throughput UL Measurement Results

| Query | Result* |
|---|---|
| BSE:ER:THROUghput:UL:MEASure:TABLe? | Returns results separated by commas:<br><br>• RF1Ack (number of Acks received from UE)<br>• RF1Nak (number of Nacks received from UE)<br>• RF2Ack<br>• RF2Nak<br>• TotalAck<br>• TotalNak<br>• RF1Er<br>• RF2Er<br>• TotalEr<br>• RF1Th (throughput)<br>• RF2Th<br>• TotalTh<br>• UlMaxTr (throughput)<br>• UlAvgTr |

*All results are reset when BSE:ER:THROUghtput:MEASure:TABLe:CLEar is performed.

## Base Station Emulator L1 Information Measurement Results

| Query | Result |
|---|---|
| BSE:L1:INFOrmation:MEASure:TABLe:ALL? <br> BSE:L1:INFOrmation:MEASure:TABLe? | Returns results separated by commas: <br><br> • UL MCS <br> • UL RB Size <br> • DL MCS <br> • DL RB Size <br> • DL Type0 Bitmap |

## Base Station Emulator L1 APeriodic Measurement Results

| Query | Result |
|---|---|
| BSE:L1:INFOrmation:APERiodic:MEASure:TABLe? | Returns results separated by commas: <br><br> • Wideband CQI 0 <br> • Wideband CQI 1 <br> • PMI <br> • RI <br> • PositionM |

## Base Station Emulator L1 Periodic Measurement Results

| Query | Result |
|---|---|
| BSE:L1:INFOrmation:PERiodic:MEASure:TABLe? | Returns results separated by commas: <br><br> • Wideband CQI 0 <br> • Wideband CQI 1 <br> • Subband CQI 0 <br> • Subband CQI 1 <br> • PMI <br> • RI |

## Base Station Emulator RLC Information Measurement Results

| Query | Result |
|---|---|
| BSE:RLC:INFOrmation:MEASure:TABLe? (Deprecated) | Returns results separated by commas:<br><br>• DL SRB1 Ack Mode {AM\|UM}<br>• DL SRB1 A<br>• DL SRB1 S<br>• DL SRB1 Sequence Number<br>• DL SRB2 Ack Mode {AM\|UM}<br>• DL SRB2 A<br>• DL SRB2 S<br>• DL SRB2 Sequence Number<br>• DL DRB1 Ack Mode {AM\|UM}<br>• DL DRB1 A<br>• DL DRB1 S<br>• DL DRB1 Sequence Number<br>• UL SRB1 Ack Mode {AM\|UM}<br>• UL SRB1 A<br>• UL SRB1 S<br>• UL SRB1 Sequence Number<br>• UL SRB2 Ack Mode {AM\|UM}<br>• UL SRB2 A<br>• UL SRB2 S<br>• UL SRB2 Sequence Number<br>• UL DRB1 Ack Mode {AM\|UM}<br>• UL DRB1 A<br>• UL DRB1 S<br>• UL DRB1 Sequence Number |

## Base Station Emulator RLC Information SRB1 Measurement Results

| Query | Result |
|---|---|
| BSE:RLC:INFOrmation:MEASure:TABLe:SRB1? | Returns results separated by commas:<br><br>• DL SRB1 Ack Mode {AM\|UM}<br>• DL SRB1 0 (A)<br>• DL SRB1 1 (S)<br>• DL SRB1 2 (POLL_SN)<br>• UL SRB1 Ack Mode {AM\|UM}<br>• UL SRB1 0 (R)<br>• UL SRB1 1 (SN)<br>• UL SRB1 2 (H) |

## Base Station Emulator RLC Information SRB2 Measurement Results

| Query | Result |
|---|---|
| BSE:RLC:INFOrmation:MEASure:TABLe:SRB2? | Returns results separated by commas:<br><br>• DL SRB2 Ack Mode {AM\|UM}<br>• DL SRB2 0 (A)<br>• DL SRB2 1 (S)<br>• DL SRB2 2 (POLL_SN)<br>• UL SRB2 Ack Mode {AM\|UM}<br>• UL SRB2 0 (R)<br>• UL SRB2 1 (SN)<br>• UL SRB2 2 (H) |

## Base Station Emulator RLC Information DRB [1-8] Measurement Results

| Query | Result |
|---|---|
| BSE:RLC:INFOrmation:MEASure:TABLe:DRB[1-8]? | Returns results separated by commas:<br><br>• DL DRB# Ack Mode {AM\|UM}<br>• DL DRB# 0 (A)<br>• DL DRB# 1 (S)<br>• DL DRB# 2 (POLL_SN)<br>• UL DRB# Ack Mode {AM\|UM}<br>• UL DRB# 0 (R)<br>• UL DRB# 1 (SN)<br>• UL DRB# 2 (H) |

## Base Station Emulator PDCP Information Measurement Results

| Query | Result |
|---|---|
| BSE:PDCP:INFOrmation:MEASure:TABLe?<br>(Deprecated)<br><br>It is recommended that you use the following:<br><br>BSE:PDCP:INFOrmation:MEASure:TABLe:GENeral?<br><br>BSE:PDCP:INFOrmation:MEASure:TABLe:SRB1?<br><br>BSE:PDCP:INFOrmation:MEASure:TABLe:SRB2?<br><br>BSE:PDCP:INFOrmation:MEASure:TABLe:DRB[1-8]? | Returns results separated by commas:<br><br>• Integrity Algorithm {EIA1\|EIA2\|NULL}<br>• Ciphering Algorithm {EEA0\|EEA1\|EEA2\|NULL}<br>• DL ROHC {On\|Off}<br>• DL Ciphering {On\|Off}<br>• DL Integrity {On\|Off}<br>• DL SRB1 Next Sequence Number<br>• DL SRB1 Hfn<br>• DL SRB2 Next Sequence Number<br>• DL SRB2 Hfn<br>• DL DRB1 Next Sequence Number<br>• DL DRB1 Hfn<br>• UL ROHC {On\|Off}<br>• UL Ciphering {On\|Off}<br>• UL Integrity Algorithm {On\|Off}<br>• UL SRB1 Next Sequence Number<br>• UL SRB1 Hfn<br>• UL SRB2 Next Sequence Number<br>• UL SRB2 Hfn<br>• UL DRB1 Next Sequence Number<br>• UL DRB1 Hfn |

## Base Station Emulator PDCP General Information Measurement Results

| Query | Result |
|---|---|
| BSE:PDCP:INFOrmation:MEASure:TABLe:GENeral? | Returns results separated by commas:<br><br>• Integrity Algorithm { EIA0\|EIA1\|EIA2\|NULL}<br>• Ciphering Algorithm {EEA0\|EEA1\|EEA2\|NULL}<br>• DL Integrity {On\|Off}<br>• DL Ciphering {On\|Off} |

### Base Station Emulator PDCP SRB1 Information Measurement Results

| Query | Result |
|---|---|
| BSE:PDCP:INFOrmation:MEASure:TABLe:SRB1? | Returns results separated by commas:<br><br>• DL SRB1 Next Sequence Number<br>• DL SRB1 Hfn<br>• UL SRB1 Next Sequence Number<br>• UL SRB1 Hfn |

### Base Station Emulator PDCP SRB2 Information Measurement Results

| Query | Result |
|---|---|
| BSE:PDCP:INFOrmation:MEASure:TABLe:SRB2? | Returns results separated by commas:<br><br>• DL SRB2 Next Sequence Number<br>• DL SRB2 Hfn<br>• UL SRB2 Next Sequence Number<br>• UL SRB2 Hfn |

### Base Station Emulator PDCP DRB [1 – 8] Information Measurement Results

| Query | Result |
|---|---|
| BSE:PDCP:INFOrmation:MEASure:TABLe:DRB[1-8]? | Returns results separated by commas:<br><br>• DL DRB# Next Sequence Number<br>• DL DRB# Hfn<br>• UL DRB# Next Sequence Number<br>• UL DRB# Hfn<br>• DRB# ROHC {On\|Off} |

## Base Station Emulator RRC Information Measurement Results

| Query | Result |
|---|---|
| BSE:MEAS:RRC:INFOrmation:TABLe? | Returns results separated by commas:<br><br>• RSRP#1<br>• RSRQ#1<br>• RSRP#2<br>• RSRQ#2<br>• RSRP#3<br>• RSRQ#3<br>• RSRP#4<br>• RSRQ#4 |

## Base Station Emulator Statistical Throughput Results

| Query | Result |
|---|---|
| BSE:FUNCtion:STATistical:FETCh:CERRor? | Returns results separated by commas:<br><br>• max frame size<br>• total packet<br>• rf1 ack<br>• rf1 nack<br>• rf1 loss<br>• rf2 ack<br>• rf2 nack<br>• rf2 loss<br>• total ack<br>• total nack<br>• total loss<br>• PHR<br>• test result<br>• er total<br>• rf1 er<br>• rf2 er<br>• total throughput<br>• rf1 throughput<br>• rf2 throughput |

## Base Station Emulator Statistical Throughput Extended Results

| Query[1] | Returns Results Separated by Commas | Description | Value Type |
|---|---|---|---|
| BSE:FUNCtion:STATistical:FETCh:ECERror? | Max frame size | Maximum number of frame size for current test – as setup through SCPI MAXFramesize parameter | uint or ulong |
| | Total packet | Total packets sent in current test | uint or ulong |
| | Rf1 ack | Number of positive acknowledgements received from UE on RF1/codeword0 | uint or ulong |
| | rf1 nack | Number of negative acknowledgements received from UE on RF1/codeword0 | uint or ulong |
| | rf1statDTX | Number of statDTX (block errors) detected on RF1/codeword0 | uint or ulong |
| | rf2 ack | Number of positive acknowledgements received from UE on RF2/codeword1 | uint or ulong |
| | rf2 nack | Number of negative acknowledgements received from UE on RF2/codeword1 | uint or ulong |
| | rf2statDTX | Number of statDTX (block errors) detected on RF2/codeword1 | uint or ulong |
| | total ack | Total number of negative acknowledgements received from UE on both RF1/codeword 0 and RF2/codeword1 [Sum of rf1 nack and rf2 nack] | uint or ulong |
| | total nack | Total number of negative acknowledgements received from UE on both RF1/codeword 0 and RF2/codeword1 [Sum of rf1 nack and rf2 nack] | uint or ulong |
| | totalstatDTX | Total number of statDTX (block errors) detected on RF1/codeword0 and RF2/codeword1 [sum of rf1 statDTX and rf2 statDTX] | uint or ulong |
| | test result | Test Result returns 0 or 1 | Boolean 0=FAIL 1=PASS |
| | er total | Total BLER % | Double |

### Base Station Emulator Statistical Throughput Extended Results (Continued)

| Query[1] | Returns Results Separated by Commas | Description | Value Type |
|---|---|---|---|
| BSE:FUNCtion:STATistical:FETCh:ECERror? | rf1 er | RF1/codeword0 BLER %) | Double |
| | rf2 er | RF2/codeword1 BLER % | Double |
| | total throughput | Total achieved throughput in Kbps of RF1/codeword0 and RF2/codeword1 | Double |
| | rf1 throughput | Achieved throughput during test in Kbps on RF1/codeword0 | Double |
| | rf2 throughput | Achieved throughput during test in Kbps on RF2/codeword1 | Double |
| | rf1 max theoretical throughput | Maximum theoretical throughput in Kbps expected from RF1/codeword0 | Double |
| | rf2 max theoretical throughput | Maximum theoretical throughput in Kbps expected from RF1/codeword0 | Double |
| | total max theoretical throughput | Total maximum theoretical throughput in Kbps expected from RF1/codeword0 and RF2/codeword1 | Double |
| | rf1 fraction max throughput | Total maximum theoretical throughput in Kbps expected from RF1/codeword0 and RF2/codeword1 | Double |
| | rf2 fraction max throughput | Throughput % achieved - actual achieved throughput during test compared to maximum theoretical throughput | Double |
| | total fraction max throughput | Throughput % achieved – actual achieved throughput during test compared to maximum theoretical value | Double |

## Base Station Emulator Pm-an Statistical Throughput Results

| Query[1] | Result |
|---|---|
| BSE:FUNCtion:STATistical:PMAN:FETCh:CERRor? | Returns results separated by commas:<br><br>• ACK (Number of positive acknowledgements received from UE) uint or ulong<br>• NACK (Number of negative acknowledgements received from UE) uint or ulong<br>• Packet Sent (Number of packets sent) uint or ulong<br>• Test Result (Returns 0 or 1 where 0 = FAIL and 1 = PASS)<br>• Pm-an (% probability of mis-detection) |

## Base Station Emulator Pm-DSG Statistical Throughput Results

| Query[1] | Result |
|---|---|
| BSE:FUNCtion:STATistical:PMDSg:FETCh:CERRor? | Returns results separated by commas:<br><br>• Total ACK (Total number of positive acknowledgements received from UE) uint or ulong<br>• Total NACK (Total number of negative acknowledgements received from UE) uint or ulong<br>• Total StatDTX (Total number of statDTX (block errors) detected) uint or ulong<br>• Total Packet (Number of packets sent) uint or ulong<br>• Test Result (Returns 0 or 1 where 0 = FAIL and 1 = PASS)<br>• Pm-DSG (% probability of mis-detection) |

**NOTE**: This test sends blocks of data to the UE on the downlink, and then monitors the positive acknowledgments (ACKs) and negative acknowledgments (NACKs) sent by the UE on the uplink.

The UE is required to respond to every block of data directed to it with either an ACK or NACK. If it does not respond to a block in its assigned transmission time interval (TTI), the test logs the event as a statistical DTX (statDTX). Also, if the UE responds to a block with data other than all 1s (ACK) or all 0s (NACK), the TTI is treated as a statDTX. StatDTXs are considered block errors, and are included in the BLER calculation.

## Base Station Emulator CQI Statistical Throughput Results

| Query | Result |
|---|---|
| BSE:FUNCtion:STATistical:CQI:FETCh:CERRor? <br><br> BSE:FUNCtion:STATCqi:THROUghput SCPI (This command is deprecated and is not recommended.) | Returns results separated by commas: <br><br> • RF1 ACK (Number of positive acknowledgements received from UE on RF1/codeword0) uint or ulong <br> • RF2 ACK (Number of positive acknowledgements received from UE on RF2/codeword1) uint or ulong <br> • RF1 NACK (Number of negative acknowledgements received from UE on RF1/codeword0) uint or ulong <br> • RF2 NACK (Number of negative acknowledgements received from UE on RF2/codeword1) uint or ulong <br> • RF1 BLER (RF1/codeword0 BLER %) double <br> • RF2 BLER (RF2/codeword1 BLER %) double |

## Marker Measurement Results

Marker values are queried using the following command. This command applies to all marker modes.

The supported values of <meas_name> are SPECtrum[:SPECtrum], SPECtrum:CHPower, SPECtrum:OBWidth, LTE:CHPower, LTE:OBWidth, LTE:PVTime, LTE:SEMask and LTE:ACLR.

| Query | Result |
|---|---|
| <measurement name>:MARKer#:Y? | Power value of active marker. <br><br> Units are dBm for Normal or Fixed Markers. <br><br> Units are dB for Delta Marker. |

## *System Error Return Values*

| Error Number | Description |
|---|---|
| +0,"No error" | Ok |
| +145,"Operation rejected; Feature is not licensed" | You do not have the license required to execute this command. |
| +173, "License installation error; License data is corrupt"<br>+173, "License installation error; Serial number does not match" | The hex data does not make sense – it is corrupt, is an invalid length, or contains invalid characters.<br>The serial number encoded in the hex data does not match the instrument's serial number. |
| +460,"Hardware failure; Hardware doesn't support requested operation" | The command cannot be executed in this hardware version. |
| +700,"LTE measurement failure" | The measurement failed. The most likely cause of the failure is that you attempted to capture a measurement in the wrong mode of operation. |
| -101,"Invalid character" | The parameters in the Input Command contained an invalid character. |
| -108,"Parameter not allowed" | More parameters were received that was expected. |
| -109,"Missing parameter" | Less parameters were received than was expected. |
| -113,"Undefined header" | The command was recognized, or the numeric index is currently out of range due to a dependent parameter. |
| -128,"Numeric data not allowed" | A numeric parameter was received, but a different parameter type was expected. |
| -148,"Character data not allowed" | A character parameter was received, but a different parameter type was expected. |
| -158,"String data not allowed" | A string parameter was received, but a different parameter type was expected. |
| -131,"Invalid Suffix" | The parameter units are incorrect (for example, you specified a MS unit for a frequency setting) |
| -151,"Invalid string data" | The string parameter is too long, or contains an unmatched quote. |
| -200,"Execution error" | There was an unspecified problem executing this command. |
| -220,"Parameter error" | There is an invalid parameter in the last command sent. Check the user documentation for the correct parameter values |

| Error Number | Description |
|---|---|
| -221,"Setting Conflict" | The command cannot be executed. You have attempted to access a setting that is disabled. For example, the PXT is in TDD mode and you have attempted to set a FDD-only parameter |
| -222,"Data out of range" | An invalid numeric value was received or you have sent a Character Data parameter where the value received is not within the valid set. |
| -256," File name not found" | The file referenced cannot be found. |
| -350,"Queue overflow" | There are too many entries in the SYSTem:ERRor queue. This error message has overwritten the last entry on the queue. No more error message will have been captured after this message. |

# 3 Example SCPI Programs

Programming the PXT can be easier if you have examples to start from. Below are included some example programs that will help you get started. There is an example for both GPIB and LAN connections to the PXT.

Another good source of programming information is available through the Agilent IO Libraries. These libraries are available at this location:

www.agilent.com/find/iosuite

After installing these libraries on your PC, access the *Agilent VISA User's Guide for IO Libraries Suite* by right-clicking the blue icon ⬛ in your task bar and selecting **Documentation** > **API Documentation** > **VISA Documentation**. This document includes programming examples using C/C++ and Visual Basic.

| NOTE | The comments in the examples below are prefaced by "//" and in green text to help you understand each section of commands. |
|------|--------------------------------------------------------------------------------------------------------------------------|

## GPIB Sample

```csharp
using System;
using System.Collections.Generic;
using System.Text;
// Dispose VISA Interop Object
// Add Ivi.Visa.Interop.dll as refference. DLL located C:\Program Files\IVI
Foundation\VISA\VisaCom\Primary Interop Assemblies
using Ivi.Visa.Interop;

namespace ConsoleApplicationGPIB
{
    class Program
    {
        static void Main(string[] args)
        {
            // Session to DefaultResource Manager
            Ivi.Visa.Interop.ResourceManager m_IVIResourceManager;
            // Session to instrument
            Ivi.Visa.Interop.FormattedIO488 m_IVIPXT;

            m_IVIResourceManager = new ResourceManager();
            m_IVIPXT = new FormattedIO488Class();

            try
            {
                // Open Session to GPIB device at address 15
                // Note that you must change the address to match with PXT GPIB address.
                m_IVIPXT.IO = (m_IVIResourceManager.Open("GPIB0::15::INSTR",
Ivi.Visa.Interop.AccessMode.NO_LOCK, 2000, "")) as IMessage;
```

```csharp
                    if (m_IVIPXT.IO.LastStatus != 0)
                    {
                        // Report error message
                        Console.WriteLine("Can not open GPIB Device");
                        return;
                    }
                    m_IVIPXT.IO.Timeout = 5000;
                }
                catch (System.Exception ex)
                {
                    // Report error message
                    Console.WriteLine("GPIB Device Error " + ex.Message);
                    return;
                }

                //Initialize device
                m_IVIPXT.IO.WriteString("*rst");
                // Send an *IDN? string to the device
                m_IVIPXT.IO.WriteString("*IDN?");
                // Read results and print to console screen
                Console.WriteLine(m_IVIPXT.IO.ReadString(100));

                // Stop BSE
                m_IVIPXT.IO.WriteString("BSE:SIMULator STOP");
                // Set Amplitude as -50dBm
                m_IVIPXT.IO.WriteString("AMPLitude:ALL -50");
                // Load Scenario
                m_IVIPXT.IO.WriteString("SCENArio:LOAD \"FDD_Combined_v6.3.lbmf\"");
                // Set Uplink RB size as 12
                m_IVIPXT.IO.WriteString("BSE:CONF:PHY:UL:GRAN:RB:SIZE 12");
                // RUN BSE
                m_IVIPXT.IO.WriteString("BSE:SIMULator RUN");

                // Close session
                m_IVIPXT.IO.Close();
            }
        }
    }
```

## *LAN Control Sample*

```csharp
using System;
using System.Collections.Generic;
using System.Text;
// Dispose DLL Interop Object
using System.Runtime.InteropServices;

namespace ConsoleApplicationLAN
{
    public class devE6621A
    {
        // this is a wrapper for E6621A_API.dll
        #region E6621A_API dll
        enum E6621_Status
        {
            SUCCESS = 0,                    // No error
            ALREADY_CONNECTED = 1,          // address is already opened.
            ALREADY_CLOSED = 2,             // "connect id" already closed.
            ERROR = -1,                            // 1. can not connect to server
                                        // 2. operator with invalid "connect id"
            NOT_CONNECTED = -2,             // operator with closed "connect id"
            SMALL_BUFFER = -3               // insufficient buffer size to read
        };

        // Gets a library version.
        // @return value: library version string
        [DllImport("E6621A_API.dll")]
        public static extern string E6621_LibVersion();

        // Connects to a remote device.
        // @ return value: E6621_Error, connect id(if more that 10 means success)
        // @ [IN] host - host IP address or name
        // @ [IN] port - port number
        [DllImport("E6621A_API.dll")]
        //public static extern int E6621_Connect(string host, string port);
        public static extern int E6621_Connect(string host, string port, ref int id);

        // Closes a remote device.
        // @ return value: E6621_Error
        // @ [IN] connId - connect id
        [DllImport("E6621A_API.dll")]
        public static extern int E6621_Close(int connId);

        // Reads data from a remote device.
        // @ return value: read size, error
        // @ [IN] connId - connect id
        // @ [OUT] msg    - storage location for message
```

```csharp
// @ [IN]    size - maximum number of bytes
[DllImport("E6621A_API.dll")]
public static extern int E6621_Read(int connId, [In, Out]char[] msg, int size);

// Writes data to a remote device.
// @ return value: E6621_Error
// @ [IN] connId - connect id
// @ [IN] msg - message to be written
[DllImport("E6621A_API.dll")]
public static extern int E6621_Write(int connId, string msg);

// file send to a remote device.
// @ return value: E6621_Error
// @ [IN] connId - connect id
// @ [IN] filename - file full path
[DllImport("E6621A_API.dll")]
public static extern int E6621_Fwrite(int connId, string filename);

// retrive file list from a remote device.
// @ return value: E6621_Error
// @ [IN] connId - connect id
// @ [IN] dir - directory name
// @ [IN] ext - file extension
// @ [OUT] flist - char buffer for receive file name
[DllImport("E6621A_API.dll")]
public static extern int E6621_FList(int connId, string dir, string ext, [In, Out]char[] flist);

// file send to a remote device.
// @ return value: E6621_Error
// @ [IN] connId - connect id
// @ [IN] filename - file name
[DllImport("E6621A_API.dll")]
public static extern int E6621_FSave(int connId, string filename);

// file receive from a remote device.
// @ return value: E6621_Error
// @ [IN] connId - connect id
// @ [IN] filename - file name
[DllImport("E6621A_API.dll")]
public static extern int E6621_FLoad(int connId, string filename);


// Set Local Ethernet card ip
// @ return value: E6621_Error
// @ [IN] szAddr - ip address
[DllImport("E6621A_API.dll")]
public static extern int E6621_SetLocalAddr(string szAddr);

// Get Local Ethernet card ip
```

```csharp
// @ return value: ip address
// @ none
[DllImport("E6621A_API.dll")]
public static extern string E6621_GetLocalAddr();

// Set timeout when data reading.
// @ return value: E6621_Error
// @ [IN] connId - connect id
// @ [IN] timeout - waiting time when reading (unit :seconds)
[DllImport("E6621A_API.dll")]
public static extern int E6621_SetTimeout(int connId, int timeout);
#endregion

// Variable to contain Connection ID
private int m_nConnectionID;

// Connect function
public int Connect(string ip, string port)
{
    int ret;
    ret = E6621_Connect(ip, port, ref m_nConnectionID);
    E6621_SetTimeout(m_nConnectionID, 5);

    if (m_nConnectionID >= 1 && ret == (int)E6621_Status.SUCCESS)
        return 1;
    else
        return -1;
}

// Disconnect function
public void Disconnect()
{
    int ret = E6621_Close(m_nConnectionID);
}

// Write Command Function
public int Write(string cmd)
{
    int ret = E6621_Write(m_nConnectionID, cmd);

    if (ret != (int)E6621_Status.SUCCESS)
    {
        Console.WriteLine("E6621 Write Error");
    }

    return ret;
}

// Read Function
```

```csharp
        public string Read()
        {

            char[] charBuf = new char[100];
            int ret = E6621_Read(m_nConnectionID, charBuf, 1024);

            if (0 <= ret)
            {
                string buf = new string(charBuf);
                return buf;
            }
            else
            {
                Console.WriteLine("E6621 Read Error..." + ret);
                return "";
            }
        }
    }


    class Program
    {
        static void Main(string[] args)
        {
            devE6621A m_devE6621A = new devE6621A();

            m_devE6621A.Connect("192.168.1.60", "9004");
            m_devE6621A.Write("*rst");
            m_devE6621A.Write("*IDN?");
            // Read results and print to console screen
            Console.WriteLine(m_devE6621A.Read());

            // Stop BSE
            m_devE6621A.Write("BSE:SIMULator STOP");
            // Set Amplitude as -50dBm
            m_devE6621A.Write("AMPLitude:ALL -50");
            // Load Scenario
            m_devE6621A.Write("SCENArio:LOAD \"FDD_Combined_v6.3.lbmf\"");
            // Set Uplink RB size as 12
            m_devE6621A.Write("BSE:CONF:PHY:UL:GRAN:RB:SIZE 12");
            // RUN BSE
            m_devE6621A.Write("BSE:SIMULator RUN");
            // Disconnect
            m_devE6621A.Disconnect();
        }
    }
}
```

# 4 Service and Support

## *Calling Agilent Technologies*

Agilent Technologies has offices around the world to provide you with complete support for your products. For help, to obtain servicing information or to order replacement parts, contact the nearest Agilent Technologies office listed below. In any correspondence or telephone conversations, you will need the product number, full serial number, software revision and Software and Technical Support Contract (STSC) details.

Press the **INFO** front panel key to view the product number (E6621A), serial number, and software revision information and STSC expiry date.

## Locations for Agilent Technologies

Online assistance: http://www.agilent.com/find/assist

If you do not have access to the Internet, one of these centers can direct you to your nearest representative:

If you have a current STSC for the E6621A, you can contact Agilent at the email addresses listed in "Software and Technical Support Contracts" on page .

Should the Declaration of Conformity be required, please contact an Agilent Sales Representative, or the closest Agilent Sales Office. Alternately, contact Agilent at: www.agilent.com.

### Americas

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| United States | | |
| (800) 829 4444 | | |

### Asia Pacific

| | | |
|---|---|---|
| Australia | India | Malaysia |
| 1 800 629 485 | 1 800 112 929 | 1 800 888 848 |
| China | Japan | Singapore |
| 800 810 0189 | 0120 (421) 345 | 1 800 375 8100 |
| Hong Kong | Korea | Taiwan |
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|---|---|---|
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| *0.125 €/minute | | |
| Germany | | |
| 49 (0) 7031 464 6333 | | |

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## *Software and Technical Support Contracts*

Software and Technical Support Contracts (STSC) entitle you to software updates and feature enhancements, as well as direct access to a technical expert for technical support for a fixed period, usually one year.

The STSC gives you direct access to technical product experts to increase your productivity and minimize the software difficulties you encounter. These technical support engineers are experts on the N6070A series Signaling Conformance Test solution, the E6621A PXT test set, and its complementary software products. They have instant access to instruments and software to enable them to resolve your issues as quickly as possible. Agilent will investigate all software defects and operational problems reported through the technical support channel. Upon completion of the investigation, we will advise you on possible solutions and functional alternatives. Where possible, Agilent will provide software releases to address problems caused by defects in the firmware or software.

### STSCs for the Agilent E6621A PXT

The N6050AS STSC covers the N6050A, N6051A and N6052A software applications running on the E6621A PXT wireless communications test set, plus the associated N6061A and N6062A PC software applications.

If you have a Software and Technical Support Contract, there are three methods of accessing your technical support:

- Web-based support: My Support Center

- E-mail support

- Phone support

For fastest response times, we recommend using the web-based or email access methods as these provide the most direct route to your technical support expert. All support cases may be viewed and tracked through the online support center (My Support Center), regardless of how you initially contacted technical support.

### Web-based support

You can directly enter and manage your support requests online via
www.agilent.com/find/mysupportcenter.

The first time you use My Support Center you will be asked to create a profile and provide proof of entitlement. Once your profile is created, you can use the online support center to enter your support request.
Each support request will be given a unique case number which you can use to track the progress of your support case. A technical expert will contact you via phone or email (whichever you have stated as your preferred option) to resolve your issue.

English, Japanese, Korean, and Mandarin local language support is available.

### E-mail support

You can also contact our technical support at the following e-mail addresses:

- wireless_test_support_americas@agilent.com

- wireless_test_support_japan@agilent.com

- wireless_test_support_europe@agilent.com

- wireless_test_support_asia@agilent.com

- wireless_test_support_korea@agilent.com

Your support request will be routed to a technical expert who will contact you via e-mail or phone (whichever you have stated as your preferred option) to help resolve your issue.

English, Japanese, Korean, and Mandarin local language support is available.

### Phone support

If you prefer to speak to someone directly, you can call the Agilent customer contact centers at the numbers given on page of this document.

The customer contact center will route your request to a technical support expert, who will contact you about your support request via phone or email. Local language support is available in many countries.

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**Agilent PXT Wireless Communications Test Set**
**Programmer's Reference**