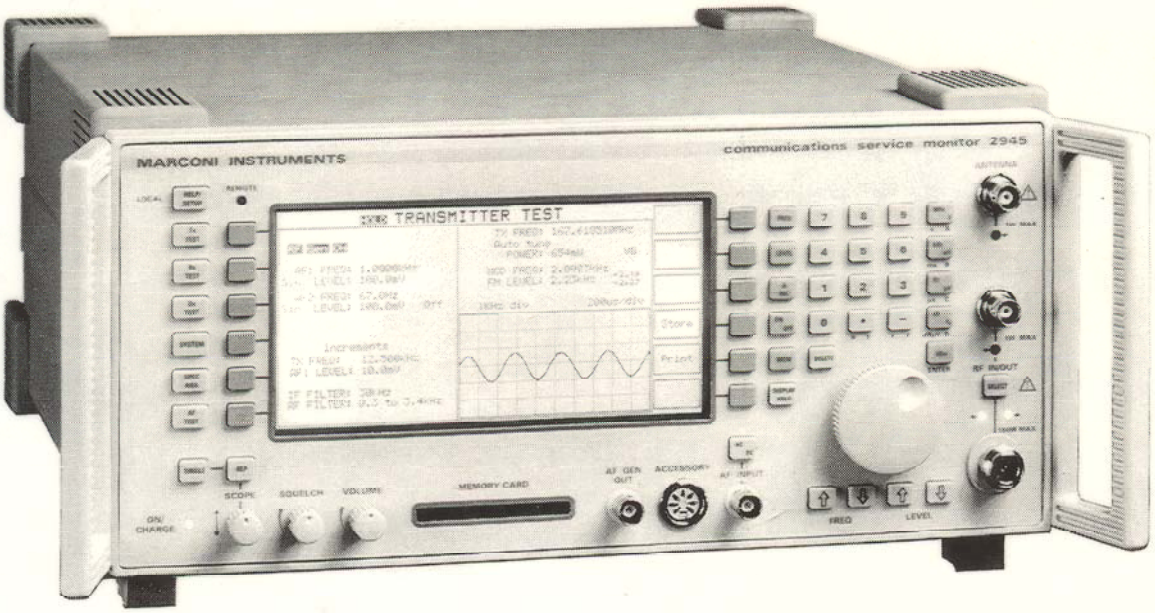
Marconi
Instruments

COMMUNICATION SERVICE MONITOR

2945



Operating Manual

46882-220K

Chapter 4
REMOTE CONTROL

Contents

List of figures

Introduction

The 2945 can be controlled remotely over either the RS232 interface which is a standard feature of the instrument, or over the optional GPIB. The command set used is designed to comply with IEEE488.2-1987 which is a specification for GPIB.

Programs to control the instrument remotely over the two interfaces will have much in common, the main differences being the way in which characters are transmitted.

Control characters are used over the RS232 interface to simulate some of the features of the GPIB interface. A list of these, with their respective actions, is given later in this chapter.

IEEE 488.2 conventions

A simple explanation of the structure of how commands and the data they take or return is presented is given here. For more complete information refer to the latest copy of the IEEE488.2 specification.

Command headers/compound headers

Compound headers allow a complex set of commands to be built up from a smaller set of basic elements in a 'tree' structure. The elements of a compound header are separated by a colon (:).

The use of compound headers brings a number of advantages. Commands are less cryptic compared with a traditional 'flat' instrument command set.

Example:

AFGEN1:FREQ

:LEVEL

:SHAPE

:STATUS

Although it is possible to use the full compound header starting from the tree root every time,

(e.g. AFGEN1:FREQ 1KHZ;AFGEN1:SHAPE SINE),

sequences of <COMMAND MESSAGE UNITS> and <QUERY MESSAGE UNITS> can often be shortened by taking advantage of the special rules which apply to compound headers.

Having 'descended' the tree, (for example to create the <PROGRAM MESSAGE UNIT> AFGEN1:SHAPE SINE), any other elements at that level may be included in the <PROGRAM MESSAGE> without repeating the entire path through the tree.

Example:

AFGEN1:FREQ 1KHZ;SHAPE SINE

is equivalent to the two <PROGRAM MESSAGES>

AFGEN1:FREQ 1KHZ followed by AFGEN1:SHAPE SINE.

Note the use of the <PROGRAM MESSAGE UNIT SEPARATOR> character ";" between <PROGRAM MESSAGE UNITS>.

Here is another example.

MODSCOPE:TBASE SC_500US;TRIG REPEAT

is equivalent to the two <PROGRAM MESSAGES>:

MODSCOPE:TBASE SC_500US and MODSCOPE:TRIG REPEAT

To return to the top of the tree so that another "branch" may be descended, a colon is used.

Example:

MODGEN1:FREQ 10KHZ;LEVEL 100MV;:MODGEN2:FREQ 3KHZ

Abbreviations

In general, header elements can be abbreviated to the shortest unique string at that level and part of the command tree.

Example:

AFGEN1:F is equivalent to AFGEN1:FREQ

Program data

The following program data functional elements are accepted by the instrument:

<CPD> (also known as <CHARACTER PROGRAM DATA>)

<NRf> (also known as <DECIMAL NUMERIC PROGRAM DATA>)

<STRING PROGRAM DATA>

<ARBITRARY BLOCK PROGRAM DATA>

All these functional elements are defined in IEEE 488.2-1987.

<CPD>

Character program data is used to set a parameter to one of a number of states that are best described by short alphanumeric strings.

Example:

ON

OFF and ON are the possible <CPD> elements to set the status of the RF generator. Note that when setting the parameter, the short form (i.e. OF and ON) may be used.

<NRf>

Flexible numeric representation (also known as <DECIMAL NUMERIC PROGRAM DATA>) covers integer and floating point representations.

Examples:

–466	Integer value.
4.91	Explicitly placed decimal point.
59.5E+2	Mantissa and Exponent representation

The format is known as "flexible" because any of the three representations may be used for any type of numeric parameter.

Example:

Where a parameter requires an integer value in the range 1 to 100, and the user needs to set its value to 42, the following values will be accepted by the instrument.

42	Integer
42.0	Floating point.
4.2E1, 4200E-2	Floating point - Mantissa/exponent.
41.5	Rounded up to 42
42.4	Rounded down to 42

<STRING PROGRAM DATA>

String program data consists of a number of ASCII characters enclosed in quotes. Either a pair of single ('ASCII 39') or double ("ASCII 34") quotes may be used. If the quote character chosen to mark the beginning and end of the string also appears within it, it must be doubled.

Example:

'This string contains the word "Hello"'

will be interpreted as the string:

This string contains the word 'Hello'

<ARBITRARY BLOCK PROGRAM DATA>

This format is used for the transmission of large quantities of 8-bit binary data.

Since it is not intended that the user should ever need to compile data of this type for transmission to the instrument, details of the format are not given here.

Note that data received from the instrument as <INDEFINITE LENGTH ARBITRARY BLOCK RESPONSE DATA> is already in a form suitable for transmission back to the instrument as <ARBITRARY BLOCK PROGRAM DATA>.

Also note that since only the indefinite length form is used, the data must be terminated by line feed with EOI asserted. This means that a command requiring <ARBITRARY BLOCK PROGRAM DATA> must be the last <PROGRAM MESSAGE UNIT> of the <PROGRAM MESSAGE>.

Response data

The following response data functional elements are generated by the instrument:

<CRD> (also known as <CHARACTER RESPONSE DATA>)

<NR1>

<NR2>

<NR3>

<STRING RESPONSE DATA>

<INDEFINITE LENGTH ARBITRARY BLOCK RESPONSE DATA>

<ARBITRARY ASCII RESPONSE DATA>

<BOOLEAN RESPONSE DATA>

<CRD>

This type of response is returned when reading the value of a parameter which can take a number of discrete states. States are represented by short alphanumeric strings.

Example:

ON

OFF and ON are the possible <CRD> responses if the parameter which determines the status of the RF frequency generator is queried.

Note that when setting the parameter, the short form (i.e. OF and ON) may be used. When the parameter is queried, the long form is always returned.

<NR1>

This type of numeric response is used when returning the value of integer parameters, such as averaging number or number of measurement points.

Examples:

15

+3

–57

<NR2>

This type of numeric response includes an explicitly placed decimal point, but no exponent.

Examples:

17.91

–18.27

+18.83

<NR3>

This type of numeric response includes an explicitly placed decimal point and an exponent.

Examples:

1.756E+2

182.8E–3

<STRING RESPONSE DATA>

This takes a similar form to <STRING PROGRAM DATA> except that the delimiting character is always a double quote, ("ASCII 34").

<INDEFINITE LENGTH ARBITRARY BLOCK RESPONSE DATA>

This form of response is used when reading blocks of 8-bit binary data from the instrument. Examples include settings and results store contents.

The format comprises a '#' character followed by a '0' followed by the data, followed by a newline character (ASCII 10). EOI is asserted with the terminating newline character.

Because EOI is always used as a terminator, a <QUERY MESSAGE UNIT> which generates data in this form must be the last <QUERY MESSAGE UNIT> in the <PROGRAM MESSAGE>.

<INDEFINITE LENGTH ARBITRARY BLOCK RESPONSE DATA> cannot be used over RS232 remote control.

<ARBITRARY ASCII RESPONSE DATA>

This takes the form of an ASCII string terminated by newline (ASCII 10) with EOI asserted.

Notes on interpreting data returned in this format will be found in the descriptions for the few commands that use it.

Because EOI is always used as a terminator, a <QUERY MESSAGE UNIT> which generates data in this form must be the last <QUERY MESSAGE UNIT> in the <PROGRAM MESSAGE>.

Terminators

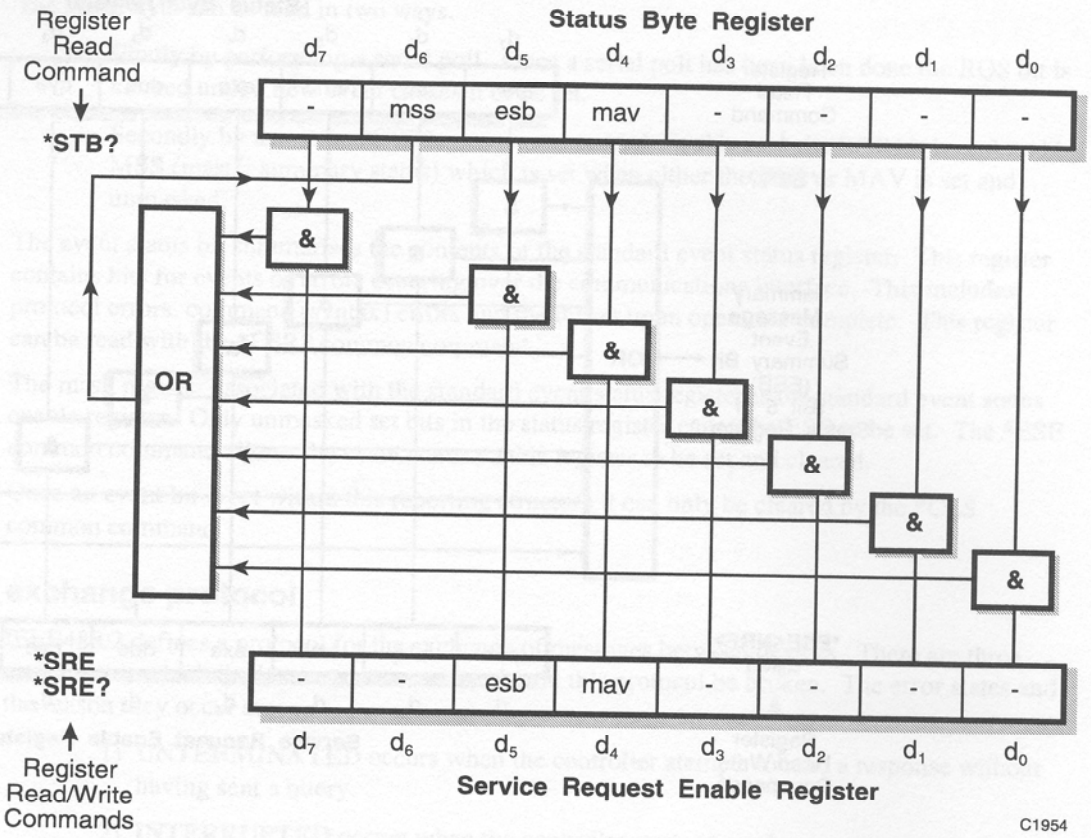
A **<PROGRAM MESSAGE TERMINATOR>** (as defined in IEEE 488.2-1987) can be a newline character (ASCII 10), a newline character with the ^END message asserted at the same time, or an ^END message asserted with the final character of the <PROGRAM MESSAGE>. The terminator may be preceded by any number of "white space" characters - i.e. any single ASII-encoded byte in the range 0 to 9 and 11 to 32 decimal.

A **<RESPONSE MESSAGE TERMINATOR>** (as defined in IEEE 488.2-1987) is a newline character with the ^END message asserted at the same time.

Many GPIB controllers terminate program messages with a newline character and, by default, accept newline as the response message terminator. When transferring binary data - which may contain embedded newline characters - it is necessary to ensure that the controller uses only ^END messages. Usually this requires the controller's GPIB interface to be set up to generate and detect ^END. Refer to the documentation supplied with the controller.

Status reporting

The instrument has a status reporting structure implemented as per IEEE488.2 the purpose of which is to inform the controller/user program of events or errors as they occur within the instrument. Particular events can be ignored by programming mask registers using the common commands. Refer to Fig. 4-1 Status byte when read by *STB and Fig 4-2 Standard events register (as defined in IEE 488.2 1987).

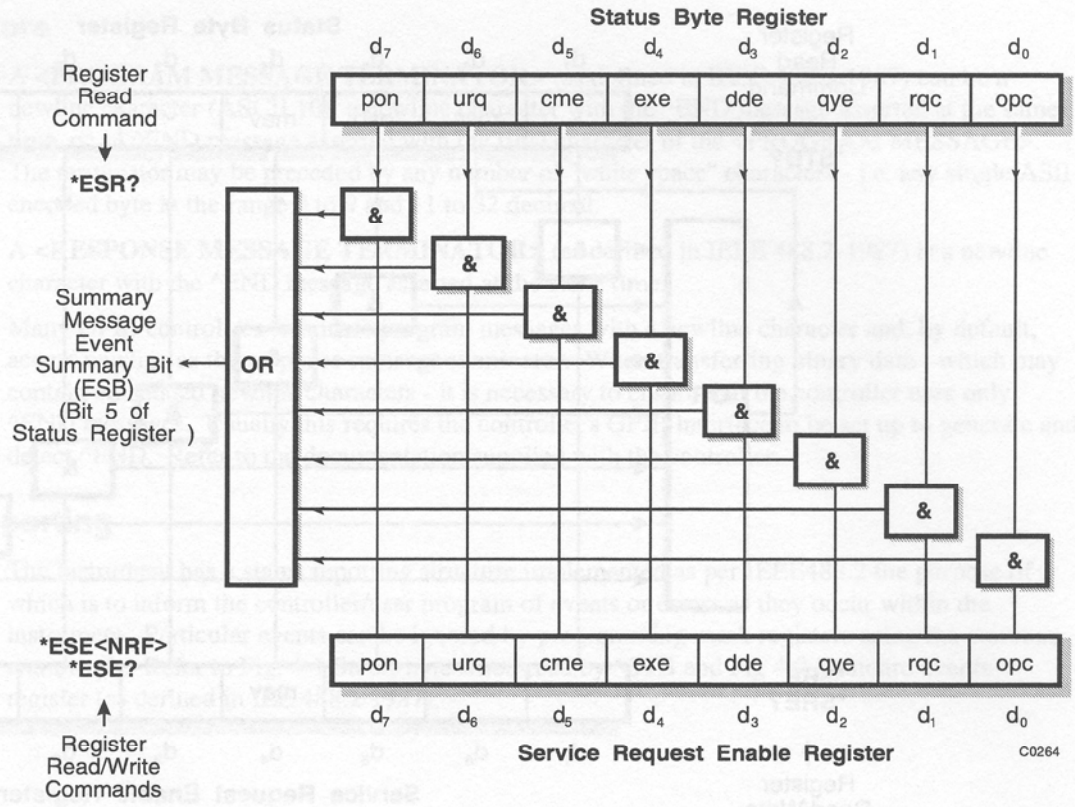


d_0	Not used	
d_1	Not used	
d_2	Not used	
d_3	Not used	
d_4	MAV	Message available in output queue
d_5	ESB	Event Status Register Summary Bit
d_6	MSS	True when (Status Byte > 0) AND (Enable Reg > 0)
d_7	Not used	

Notes...

When read by Serial Poll (rather than *STB?), d_6 contains RQS (Request Service) as defined in IEEE 488.2.

*Fig. 4-1 Status byte when read by *STB*



d_0	**OPC**	**Operation Complete**
d_1	**RQC**	**Request Control - Not implemented in this instrument**
d_2	**QYE**	**Query Error**
d_3	**DDE**	**Device-Specific Error**
d_4	**EXE**	**Execution Error**
d_5	**CME**	**Command Error**
d_6	**URQ**	**User Request - Not implemented in this instrument**
d_7	**PON**	**Power on**

Fig. 4-2 Standard events register (as defined in IEE 488.2 1987)

At the top of the reporting structure is the status byte. Corresponding to the status byte is the service request enable register. When the result of masking the status byte with the service request enable register is non zero then the request for service (RQS) bit is set. Over the GPIB this causes an SRQ (service request) at the controller.

By programming the mask registers appropriately the instrument could be set to produce an SRQ upon a particular error so that a recovery routine could be run in the users program. Similarly an SRQ upon a message being ready in the output buffer is a typical use of the status reporting.

Polling the status reporting registers is just as valid a method of getting information on instrument state.

Only three bits of the status byte are used in the 2945.

Bit 4, the MAV (message available) bit, states that the output buffer is not empty and therefore a message is waiting to be read.

Bit 5 is the ESB or event status bit. It is a summary of the standard event status register, standard event enable register combination.

Bit 6 is the RQS or request service bit.

The status byte can be read in two ways.

Firstly by performing a serial poll. Once a serial poll has been been done the RQS bit is cleared until a new event causes it to be set.

Secondly by using the *STB? common command. In this case the RQS bit is replaced by MSS (master summary status) which is set when either the ESB or MAV is set and unmasked.

The event status bit summarises the contents of the standard event status register. This register contains bits for events or errors occuring over the communications interface. This includes protocol errors, command (syntax) errors and the bit set upon operation complete. This register can be read with the *ESR? common command.

The mask register associated with the standard event status register is the standard event status enable register. Only unmasked set bits in the status register cause the ESB to be set. The *ESE common command allows the event status enable register to be set and cleared.

Once an event bit is set within this reporting structure it can only be cleared by the *CLS common command.

Message exchange protocol

IEEE488.2 defines a protocol for the exchange of messages between devices. There are three errors states which the instrument can enter should this protocol be broken. The error states and the reason they occur are:

1) **UNTERMINATED** occurs when the controller atempts to read a response without having sent a query.
2) **INTERRUPTED** occurs when the controller starts to send a new message before having read the response to a preceeding terminated query.
3) **DEADLOCK** happens if the input and output buffers both become full. This can only occur if the controller having sends an extra long message containing many queries.

The 2945 has input and output buffers of 256 bytes length. The output buffer is effectively full if there is insufficient room for it to contain the next formatted message.

IEEE488.1 Operations and states

Device Clear

Device Clear is an operation defined over the GPIB bus. Upon receiving a **Device Clear** the instrument is sent into the remote state, clears both its input and output buffers and resets the remote software to a known state. It does not alter the state of any flags within the status reporting other than the message available.

The main use of **Device Clear** is to reset the communications and is used when there has been any communication problem. It is good practice to send a **Device Clear** at the beginning of a remote program.

Local Lockout

Over **Remote** the controller can set the instrument into **Local Lockout** state. When **Local Lockout** is set the front panel is disabled and the **LOCAL** key will be made ineffective. Local lockout is often used when the instrument is part of an automatic test system and left unattended. In this state the instrument cannot be effected by operation of the front panel. Sending the instrument local over the remote does not release this state. The keyboard can only be reenabled by releasing **Local Lockout** over the remote interface or by switching the supply off and on.

RS232 Features

Handshaking

Handshaking of communications over the GPIB is automatic but over the RS232 the 2945 implements it in two ways. Firstly by using the handshake characters XOFF - stop transmitting - and XON - start - and secondly by using the DTR and DSR lines. While the DSR line is inactive the instrument does not transmit. If the test set wishes the controller to stop transmitting it deasserts its DTR line.

Control characters

The following list shows the control characters that are used over the RS232 system to simulate certain features of the IEEE 488 interface.

^A (control A 01H) - connect or goto remote

^D (control D 04H) - disconnect or goto local

^T (control T 14H) - device clear

^R (control R 12H) - local lockout

^P (control P 10H) - release local lockout

^Q (control Q 11H) - XON char for software handshake

^S (control S 13H) - XOFF char for software handshake

^X (control X 18H) - serial poll forces transmission of status byte over RS232

Command layout

In the list of commands the end of this chapter, each command is set out as follows:

1. Path from the subsystem root

Example:

```
:AFGEN1
    :FREQ
```

2. Parameters

The first line lists each parameter, stating its <PROGRAM DATA> functional element (as defined in IEEE 488.2-1987).

Subsequent lines explain the meaning of each parameter.

Angle brackets <...> indicate that the enclosed parameter is described in more detail later in the text.

Example:

<CPD> or <NRf>

Status Selection

The first line states that the command takes one parameter. This parameter can be either character program data or a numeric value. The second line, *(Italics)*, describes the parameter.

3. Description

Describes the purpose of the command.

4.Allowed suffices

A list of the suffices or units allowed for numeric values is provided.

Example:

MHZ,KHZ

This would mean that a frequency could be entered with either MHZ or KHZ units.

5.Default suffix

If a command takes a numeric parameter which has a unit then if a value is sent without a suffix it is assumed to be in the units of the default suffix.

Example:

MHZ

A number sent without a suffix for this command is assumed to be in MHz.

6.Example

An example of the use of the command is provided.

7.Response

Query responses follow the same format as parameter definitions. The first line shows the response in terms of its IEEE 488.2 functional elements, and below it is given the semantics of the response.

Example:

<NR2>

Frequency (Hz)

8.Example response

This field gives an example of a typical reponse from a query. Usually this corresponds to the example field.

Getting started

This section provides an introduction to Remote programming of the 2945, including a worked example.

The remote command set

The first point to notice when controlling the 2945 over one of the remote interfaces is that there is not a straightforward mapping between manual front panel operations and their remote equivalents.

Common commands

The IEEE 488.2 common commands all start with a "*" character. Those which are implemented in the 2945 are listed at the end of this chapter.

The most important command is *RST, which places the instrument in a defined state. It is good practice to send *RST at the start of any remote program.

Preparing the 2945 for REMOTE operation

RS232 Serial port

The connections required between the RS232 serial port and the controlling device are described in chapter 2, installation, under remote control connections.

Entering remote for RS232

The *[Remote Control]* key on setup page 2, allows the user to select which of the remote control systems is active.

It is not possible to have RS232 selected as the remote control choice simultaneously with RS232 selected as the printer option.

Serial port parameters

The RS232 serial port of the 2945 is used for connecting to a printer and for the serial remote control. The *[Serial Setup]* key, also on setup page two, gives access to the display shown in Fig. 4-3 Serial set up menu.

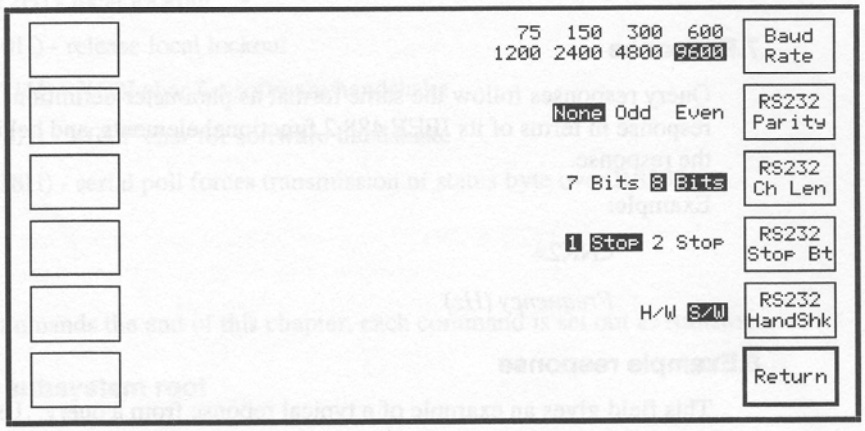


Fig. 4-3 Serial setup menu

The parameters are set by repeated presses of the key toggling through the available options. Under most operating conditions the default settings are the performance optima. These should be used unless the controller device requires a different setting.

Baud Rate. The default setting is 9600. A slower rate may be required if control is via a modem.

RS232 Parity. Default setting, None (no parity bits).

RS232 Channel Length. Default 8 Bits.

RS232 Stop Bits. Default 1 Stop (one stop bit).

RS232 Handshake. The default is S/W (software handshaking).

GPIB control port

The connections required between the GPIB interface port and the controlling device are described in chapter 2, installation, under remote control connections.

GPIB address

The 2945 must be given an address code before it can be used by remote control over the GPIB. This address is entered on setup page 2 by using the *[GPIB Addr]* key. Pressing this key allows the required address number to be entered using the data entry keys. The number must be unique on the system to the instrument and within the range 1 to 30.

Example: simple receiver final test

In this example, 2945 Remote commands are stated without making any assumptions about the controller and programming language to be used. These commands, of course, will need to be incorporated into the program language statements of the target controller. Here are some examples of how this would be done in practice, using the reset command, *RST. The instrument address is assumed to be 8.

*RST

Command as printed in the example.

PRINT @8:"*RST"

Controller using TBASICR programming language (TransEra Corporation).

OUTPUT 708;"*RST"

Controller using HTBASICTM programming language (TransEra Corporation).

It may sometimes be necessary to send a DEVICE CLEAR command, if the GPIB system fails to respond to *RST or appears to lock up. Examples of this command are as follows:

DEVICE CLEAR	Command as printed in the example.
WRITE GPIB CMD_SDC(8)	Controller using TBASICR.
CLEAR 708	Controller using HTBASICTM

Step 1. Preset the Instrument to a Known State

DEVICE CLEAR

***RST**

Preset the instrument:

Step 2. Select the instument mode for the test

TEST RX

Select Receiver test mode

Remember that IEEE 488.2 requires a single space character between the command header and its parameter(s).

Step 3. Set Rf output port, frequency and level

GENSW GEN_N

Select the N-type output port

RFGEN:FREQ 470.0

Set the instrument signal generator frequency to 470MHz

RFGEN:LEV -110DBM

Set the signal generator level to -110dBm.

Step 4. Set Mod type, Mod gen level

MODTYPE FM

Generate frequency modulation

MODGEN2:FMDEVN 6KHZ

Set mod gen 2 deviation to 6kHz

Step 5. Set distortion measurement type

RXDISTN SINAD

Select the measurement of receiver distortion to be SINAD. A requested measurement of SINAD will cause an error if the correct measurement type is not selected.

Step 6. Turn off instrument measure cycle

MEASCYCL OFF

Measurements within the instrument are taken sequentially in a loop. If the current measurement is valid when requested remotely and this measurement cycle is running then the current value is returned immediately. When the cycle is stopped then a remote measurement request forces a new measurement to be taken.

Step 7. Measure audio level

MEASU:AFLEVEL?

Take a measurement of audio level at the front panel AF input.

Step 8. Measure audio frequency

MEASU:AFFREQ?

Measure the frequency of the audio signal.

Step 9. Measure audio SINAD

MEASU:RXSINAD?

Request a measurement of receiver sinad (at the AF input).

Step 10. Turn on the measure cycle

MEASC ON

Restore the measure cycle to a running state. Sending the instrunment local would do this automatically.

List of common commands

*CLS

Parameters: N/A
Description: Clear Status Command. Clears all the Status Event registers . Does not affect the Enable Registers. Note...The IEEE 488.2 Device Clear function only affects the GPIB functions. The input and output buffers are cleared and the instrument put into a state to accept new Messages. It does not put the instrument functions into a defined state, this is performed by the *RST common command.
Allowed suffices: N/A
Default suffix: N/A
Example: *CLS

*ESE

Parameters: <NRf>
Description: Standard Event Status Enable Command. Sets the Standard Event Enable Register.
Allowed suffices: N/A
Default suffix: N/A
Example: *ESE 255

*ESE?

Parameters: N/A
Description: Standard Event Status Enable Query. Returns the value of the Standard Event Status Enable Register as NR1.
Response: <NR1>
Example response: 255

*ESR?

Parameters: N/A
Response: <NR1>
Example response: 8

*IDN?

Parameters: N/A
Description: Identification Query. Returns an arbitrary ASCII response comprising four data fields in the format: <Manufacturer>,<type number>,<serial number>,<firmware version number>:<option firmware version><EOM>. Option firmware version refers to the analog systems card. If this is not fitted 00.00 will be returned in this field.
Response: <Arbitrary ASCII response data>, <Arbitrary ASCII response data>, <Arbitrary ASCII response data>, <Arbitrary ASCII response data>.
Example response: `MARCONI INSTRUMENTS,2945, 132637-001,01.02:00.00<EOM>`

*OPC

Parameters: N/A
Description: Operation Complete Command. Sets the Operation Complete bit in the Standard Event Status Register when execution of the preceding operation is complete.
Allowed suffices: N/A
Default suffix: N/A
Example: *OPC

*OPC?

Parameters: N/A
Description: Operation Complete Query. Returns a '1' when the preceding operation has been completed.
Response: <NR1>
Example response: 1

*RST

Parameters: N/A
Description: Reset Command. Sets the instrument functions to the factory default power up state.
Allowed suffices: N/A
Default suffix: N/A
Example: *RST

*SRE

Parameters: <NRf>
Description: Service Request Enable Command. Sets the Service Request Enable Register.
Allowed suffices: N/A
Default suffix: N/A
Example: *SRE 32

*SRE?

Parameters: N/A
Description: Service Request Enable Query. Returns the value of the Service Request Enable Register as NR1. (Elaborate).
Response: <NR1>
Example response: 32

*STB?

Parameters: N/A
Description: Read Status Byte Query. Returns the value of the Status Byte.
Response: <NR1>
Example response: 32

*TST?

*TST?

Parameters: N/A
Description: Self Test Query. Returns a '0' if the instrument passed all self tests.
Response: <NR1>
Example response: 0

*WAI

Parameters: N/A
Description: Wait to Continue Command. Inhibits execution of an overlapped command until the execution of the preceding operation has been completed.
Allowed suffices: N/A
Default suffix: N/A
Example: *WAI

List of instrument specific commands

:Accessories

Control the accessories including the directional power head.

:Accessories

:Dpowertype

Parameters: <CPD> or <NRf>
Power measurement selection
Description: Control how the directional power head accessory takes measurement of power. Carrier wave or Peak envelope power
Allowed suffices: N/A
Default suffix: N/A
Valid data: 0 or CW
1 or PEP
Example: ACCESS:DPOWER PEP

:Dpowertype?

Parameters: N/A
Response: <CRD>
Current selection.
Example response: PEP

:Accessories

:LOGIC0(:LOGIC1,:LOGIC2,:LOGIC3)

Parameters: <CPD> or <NRf>
Logic line state
Description: Control the state of the accessory logic lines on the Parallel printer option.
Allowed suffices: N/A
Default suffix: N/A
Valid data: 0 or LOW
1 or HIGH
Example: ACCESS:LOGIC2 HIGH

:LOGIC0?(:LOGIC1?,:LOGIC2?,:LOGIC3?)

Parameters: N/A
Response: <CRD>
Current selection.
Example response: HIGH

:Accessories

:MODE0

Parameters: <CPD> or <NRf>
Logic line mode
Description: Control the operation mode of accessory logic line 0 on the Parallel printer option.
Allowed suffices: N/A
Default suffix: N/A
Valid data: 0 or AS_SETTING
1 or CLOSE_ON_TX
Example: ACCESS:MODE0 AS_SETTING

:MODE0?

Parameters: N/A
Response: <CRD>
Current selection.
Example response: AS_SETTING

:Accessories

:MODE1

Parameters: <CPD> or <NRf>
Logic line mode
Description: Control the operation mode of accessory logic line 1 on the Parallel printer option.
Allowed suffices: N/A
Default suffix: N/A
Valid data: 0 or AS_SETTING
1 or CLOSE_ON_SQ
Example: ACCESS:MODE1 AS_SETTING

:MODE1?

Parameters: N/A
Response: <CRD>
Current selection.
Example response: AS_SETTING

:Accessories?

Parameters: N/A
Description: Queries the status of all the accessories. Produces the combined return values of the sub commands of ACCESSORIES. These responses are separated by semi-colons.
Response: <CRD>;<CRD>;<CRD>;<CRD>;<CRD>;<CRD>;<CRD>
Example response: PEP;LOW;HIGH;HIGH;LOW;AS_SETTING;AS_SETTING

:AFGEN1(:AFGEN2)

Control audio generator 1 (audio generator 2)

Not used alone.

:AFGEN1(:AFGEN2)

:Freq

Parameters: <NRf>
Frequency (kHz)
Description: Set Audio Generator 1 Frequency (Set Audio Generator 2 Frequency)
Allowed suffices: KHZ or HZ
Default suffix: KHZ
Example: :AFGEN1:FREQ 10.000KHZ
Set Audio gen 1 frequency to 10kHz

:Freq?

Parameters: N/A
Response: <NR2>
Frequency in kHz to 0.1Hz resolution
Example response: 5.0000
Frequency currently set to 5kHz

:AFGEN1(:AFGEN2)

:Level

Parameters: <NRf>
Description: Set Audio Generator 1 Level (Set Audio Generator 2 Level)
Allowed suffices: MV, V, DBM
Default suffix: MV
Example: :AFGEN1:LEVEL 100MV
Set Audio gen 1 level to 100mV

:Level?

Parameters: N/A
Response: <NR2>
Audio level in mV to 0.1mV resolution
Example response: 99.0

:AFGEN1(:AFGEN2)

:SHape

Parameters: <CPD> or <NRf>
Shape selection
Description: Set Audio Generator 1 Shape (Set Audio Generator 2 Shape)
Allowed suffices: N/A
Default suffix: N/A
Valid data: 0 or SINE
1 or SQUARE
Example: AFGEN1:SHAPE SQUARE
Set audio gen 1 shape to square

:SHape?

Parameters: N/A
Response: <CRD>
Current shape
Example response: SINE
Audio gen shape is currently set to sine

:AFGEN1(:AFGEN2)

:STatus

Parameters: <CPD> or <NRf>
Status selection
Description: Set Audio Generator 1 Status (Set Audio Generator 2 Status)
Allowed suffices: N/A
Default suffix: N/A
Valid data: 0 or OFF
1 or ON
Example: AFGEN1:STATUS OFF
Set audio gen 1 off

:STatus?

Paramters: N/A
Response: <CRD>
Current selection
Example Response: OFF

:AFGEN1? (:AFGEN2?)

Parameters: N/A
Description: Queries the status of Audio Generator 1 (Query the status of Audio Generator 2).Produces the combined return values of the sub commands of AFGEN1 (AFGEN2). These responses are separated by semi-colons.
Response: <NR2>;<NR2>;<CRD>;<CRD>
Example response: 10.0000;100.0;SINE;OFF

:AFInput

Parameters: <CPD> or <NRf>
Audio input selection
Description: Controls the coupling of the audio input socket
Allowed suffices: N/A
Default suffix: N/A
Valid data: 0 or AC 1 or DC
Example: AFI AC
Set Audio input coupling to AC

:AFInput?

Parameters: N/A
Response: <CRD>
Current selection
Example response: AC

:AUDIoif

Control the 600 Ohm Audio interface option.

Not used alone.

:AUDIoif

:Inputimp

Parameters: <CPD> or <NRf>
Input impedance selection
Description: Controls the audio input impedance when the 600 Ohm interface is fitted.
Allowed suffices: N/A
Default suffix: N/A
Valid data: 0 or HIGH
1 or OHMS600
Example: AUDIOIF:INPUT HIGH

:Inputimp?

Parameters: N/A
Response: <CRD>
Current selection
Example response: HIGH

:AUDIoif

:Outputimp

Parameters: <CPD> or <NRf>
Output impedance selection
Description: Controls the audio output impedance when the 600 Ohm interface is fitted.
Allowed suffices: N/A
Default suffix: N/A
Valid data: 0 or LOW
1 or OHMS600
Example: AUDIOIF:OUT LOW

:Outputimp?

Parameters: N/A
Response: <CRD>
Current selection
Example response: LOW

:AUDIoif

:Pad

Parameters: <CPD> or <NRf>
Output attenuator selection
Description: Controls the audio output attenuator when the 600 Ohm interface is fitted.
Allowed suffices: N/A
Default suffix: N/A
Valid data: 0 or OUT
1 or IN
Example: AUDIOIF:PAD IN

:Pad?

Parameters: N/A
Response: <CRD>
Current selection
Example response: IN

:AUDIoif?

Parameters: N/A
Description: Queries the entire status of the audio impedance interface by producing the combined return values of the sub commands of AUDIOIF
These responses are separated by semi-colons.
Response: <CRD>;<CRD>;<CRD>
Example response: HIGH;LOW;OUT

:AUDScope

Control the audio oscilloscope - RX and AF test modes.

Not used alone

:AUDScope

:Afrange

Parameters: <CPD> or <NRf>
Vertical range selection
Description: Control the vertical range of the audio oscilloscope
Allowed suffices: N/A
Default suffix: N/A
Valid data: 0 or SC_10MV
1 or SC_20MV
2 or SC_50MV
3 or SC_100MV
4 or SC_200MV
5 or SC_500MV
6 or SC_1V
7 or SC_2V
8 or SC_5V
9 or SC_10V
10 or SC_20V
Example: :AU:AFR SC_1V
Set audio scope range to 1V per division

:Afrange?

Parameters: N/A
Response: <CRD>
Current selection
Example response: SC_10V

:AUDScope

:TBase

Parameters: <CPD> or <NRf>
Time base selection
Description: Control the time base of the audio oscilloscope
Allowed suffices: N/A
Default suffix: N/A
Valid data: 0 or SC_50US
1 or SC_100US
2 or SC_200US
3 or SC_500US
4 or SC_1MS
5 or SC_2MS
6 or SC_5MS
7 or SC_10MS
8 or SC_20MS
9 or SC_50MS
10 or SC_100MS
11 or SC_200MS
12 or SC_500MS
13 or SC_1S
14 or SC_2S
15 or SC_5S
Example: AU:TB SC_10MS
Set audio oscilloscope time base to 10ms per division

:TBase?

Parameters: N/A
Response: <CRD>
Current audio oscilloscope time base
Example response: SC_2MS
Time base is set to 2ms per div

:AUDScope

:TRig

Parameters: <CPD> or <NRf>
Trigger selection
Description: Control the trigger of the audio oscilloscope
Allowed suffices: N/A
Default suffix: N/A
Valid data: 0 or SINGLE
1 or REPEAT
Example: :AU:TR REPEAT
Set audio oscilloscope to repeat

:TRig?

Parameters: N/A
Response: <CRD>
Current trigger selection
Example response: REPEAT
Audio scope trigger is set to repeat

:AUDScope?

Parameters: N/A
Description: Queries the entire status of the audio oscilloscope by producing the coombined return values of the sub commands of AUDSCOPE These responses are separated by semi-colons.
Response: <CRD>;<CRD>;<CRD>
Example response: SC_1V;SC_100MS;REPEAT
Audio scope settings are 1V per div, 100ms per div, repeat trigger

:Barchart

Control the ranges of all the barcharts within the instrument.

Not used alone.

:Barchart

:AFDistn

Parameters: <CPD> or <NRf>
Range selection
Description: Control the range of the audio distortion barchart
Allowed suffices: N/A
Default suffix: N/A
Valid data: 0 or AUTO
1 or AD_10PC
2 or AD_30PC
Example: :BARCH:AFD 1
Set barchart range to 10 percent

:AFDistn?

Parameters: N/A
Response: <CRD>
Current range
Example response: AUTO

:Barchart

:AFLevel

Parameters: <CPD> or <NRf>
Range selection
Description: Control the range of the audio level barchart
Allowed suffices: N/A
Default suffix: N/A
Valid data: 0 or AUTO
1 or AL_100MV
2 or AL_300MV
3 or AL_1V
4 or AL_3V
5 or AL_10V
6 or AL_30V
7 or AL_100V
Example: :BARCH:AFL AL_30V

:AFLevel?

Parameters: N/A
Response: <CRD>
Current range
Example response: AL_300MV

:Barchart

:AFSInad

Parameter: <CPD> or <NRf>
Range selection
Description: Control the range of the audio sinad barchart
Allowed suffices: N/A
Default suffix: N/A
Valid data: 0 or AUTO
1 or ASI_18DB
2 or ASI_50DB
Example: :BARCH:AFSI ASI_18DB

:AFSInad?

Parameters: N/A
Response: <CRD>
Current selection
Example response: AUTO

:Barchart

:AFSN

Parameters: <CPD> or <NRf>
Range selection
Description: Control the range of the audio signal to noise barchart
Allowed suffices: N/A
Default suffix: N/A
Valid data: 0 or AUTO
1 or ASN_30DB
2 or ASN_100DB
Example: :BARCH:AFSN ASN_100DB

:AFSN?

Parameters: N/A
Response: <CRD>
Current selection
Example response: ASN_100DB

:Barchart

:TXAmmod

Parameters: <CPD> or <NRf>
Range selection
Description: Control the range of the amplitude modulation level barchart
Allowed suffices: N/A
Default suffix: N/A
Valid data: 0 or AUTO
1 or AML_20PC
2 or AML_100PC
Example: BARCH:TXAM AUTO

TXAmmod?

Parameters: N/A
Response: <CRD>
Current selection
Example response: AML_20PC

:Barchart

:TXDistn

Parameters: <CPD> or <NRF>
Range selection
Description: Control the range of the mod signal distortion barchart
Allowed suffices: N/A
Default suffix: N/A
Valid data: 0 or AUTO
1 or MD_10PC
2 or MD_30PC
Example: :BARCH:TXD MD_10PC

:TXDistn?

Parameters: N/A
Response: <CRD>
Current selection
Example response: AUTO

:Barchart

:TXFmmod

Parameters: <CPD> or <NRf>
Range selection
Description: Control the range of the frequency modulation level barchart
Allowed suffices: N/A
Default suffix: N/A
Valid data: 0 or AUTO
1 or FML_10KHZ
2 or FML_30KHZ
3 or FML_100KHZ
Example: BARCH:TXFM FML_100KHZ

:TXFmmod?

Parameters: N/A
Response: <CRD>
Example response: FML_30KHZ

:Barchart

:TXPower

Parameters: <CPD> or <NRf>
Range selection
Description: Control the range of the transmitter level (power or voltage) barchart
Allowed suffices: N/A
Default suffix: N/A
Valid data:

0 or AUTO	16 or PWR_3KV
1 or PWR_100UV	17 or PWR_10MW
2 or PWR_300UV	18 or PWR_30MW
3 or PWR_1MV	19 or PWR_100MW
4 or PWR_3MV	20 or PWR_300MW
5 or PWR_10MV	21 or PWR_1W
6 or PWR_30MV	22 or PWR_3W
7 or PWR_100MV	23 or PWR_10W
8 or PWR_300MV	24 or PWR_30W
9 or PWR_1V	25 or PWR_100W
10 or PWR_3V	26 or PWR_300W
11 or PWR_10V	27 or PWR_1KW
12 or PWR_30V	28 or PWR_3KW
13 or PWR_100V	29 or PWR_10KW
14 or PWR_300V	30 or PWR_30KW
15 or PWR_1KV	31 or PWR_100KW

Example: BARCH.TXP PWR_1W

:TXPower?

Parameters: N/A
Current selection
Response: <CRD>
Example response: PWR_1W

:Barchart

:TXSInad

Parameter: <CPD> or <NRf>
Range selection
Description: Control the range of the modulation SINAD level barchart
Allowed suffices: N/A
Default suffix: N/A
Valid data: 0 or AUTO
1 or MSI_18DB
2 or MSI_50DB
Example: BARCH:TXSI 1

:TXSInad?

Parameters: N/A
Response: <CRD>
Current selection
Example response: MSI_18DB

:Barchart

:TXSN

Parameter: <CPD> or <NRf>
Range selection
Description: Control the range of the modulation signal to noise level barchart
Allowed suffices: N/A
Default suffix: N/A
Valid data: 0 or AUTO
1 or MSN_30DB
2 or MSN_100DB
Example: BARCH:TXSN 1

:TXSN?

Parameters: N/A
Response: <CRD>
Current selection
Example response: MSN_30DB

:Barchart?

Parameters: N/A
Description: Produces the combined return values of the sub commands of BARCHART
These responses are separated by semi-colons.
Response: <CRD>;<CRD>;<CRD>;<CRD>;<CRD>;<CRD>;<CRD>;<CRD>
Example response: AUTO;AUTO;AUTO;AUTO;AUTO;AUTO;AUTO;AUTO.

:COMmerror?

Parameters: N/A
Description: Returns the last command error generated by the remote parser
Response: <NR1>
Last error
Responses: 0 corresponds to 'No Error'
1 'Illegal * Command'
2 'Parameter not allowed'
3 'Unrecognised mnemonic' The command received was not one recognised by the parser
4 'Mnemonic not unique' An abbreviated command mnemonic was received which was too short to uniquely identify one command. e.g.:AFGEN1:S 1
5 'Write not allowed' A command was received which could only be a query and attempted to set some parameter
e.g.:COMMERROR 1
6 'Read not allowed' A command was received which could only be an action and tried to query some state or other
7 'Syntax error' Some part of the command did not meet the parser specification

:DEModtype

Parameters: <CPD> or <NRf>
Demod selection
Description: Set the type of demodulation used on the received signal
Allowed suffices: N/A
Default suffix: N/A
Valid data: 0 or AM
1 or FM
2 or SSB
Example: DEMOD FM

:DEModtype?

Parameters: N/A
Response: <CRD>
Current selection
Example response: FM

:DEVerror?

Parameters: N/A
Description: Returns the last device error generated by the instrument
Response: <NR1>
Last error
Responses: 0 corresponds to 'No Error'
1 corresponds to 'Value out of range'
Some parameter received with a command was too large or small for the instrument to be able to set

:Execerror?

Parameters: N/A
Description: Returns the type of the last error generated by the execution control routine
Response: <NR1>
Last error
Responses: 0 corresponds to 'No Error'
1 corresponds to 'Num option data out of range' A command which takes <CPD> or <NRf> in a one of few form has been sent with a number larger than that recognised as the highest possible. e.g. :AUDSCOPE:TRIG 5
2 corresponds to 'Excess data' More data was received with the command than was expected e.g. :AFGEN1:FR 10.000,15.000
3 corresponds to 'Insufficient data' The command had fewer data fields than expected
4 corresponds to 'Data required'
No data came with the command when some was definitely required e.g. :AFGEN1:FREQ
5 corresponds to 'Unrecognised text option'
<CPD> was received which did not tally with the allowed character data strings for
that data field e.g.:AUDSCOPE:AFRANGE GARBLE
6 corresponds to 'Alpha text not unique' The abbreviated <CPD> received was too short to be uniquely recognised e.g.
:AUDSCOPE:AFRANGE SC_2
7 corresponds to 'Unrecognised suffix'
The suffix received with a particular data field was not one allowed for that command e.g. :AFGEN1:FREQ 10.000DBM
8 corresponds to 'Suffix not allowed' A suffix was sent with a numeric data field when one was not allowed e.g.
:AUDSCOPE:AFRANGE 5KHZ

:Genswitch

Parameters: <CPD> or <NRf>
Output selection
Description: Controls the routeing of the RF output signal.
Allowed suffices: N/A
Default suffix: N/A
Valid Data: 0 or GEN_N
1 or GEN_BNC
Example: GENSW GEN_BNC

:Genswitch?

Parameters: N/A
Response: <CRD>
Current selection
Example response: GEN_BNC

:MEASCycl

Parameters: <CPD> or <NRf>
Measure cycle status
Description: Controls whether or not the measure cycle within the instrument is running
Allowed suffices: N/A
Default suffix: N/A
Valid Data: 0 or OFF
1 or ON
Example: MEASCYCL OFF

:MEASCycl?

Parameters: N/A
Response: <CRD>
Current status
Example response: OFF

:MEASUre

:AFFreq?

Parameters: N/A
Description: Returns current measurement of audio frequency in kHz to a resolution of 0.1Hz
Response: <NR2>
Frequency (kHz)
Example Response: 1.0000

:MEASUre

:AFLevel?

Parameters: N/A
Description: Returns measured value of audio input level in mV
Response: <NR2>
level (mV)
Example Response: 101.1

:MEASUre

:AMdepth?

Parameters: N/A
Description: Returns measured value of transmitter amplitude modulation depth in percent to a resolution of 0.1 percent
Response: <NR2>
Depth (%)
Example Response: 31.5

:MEASUre

:FMdevn?

Parameters: N/A
Description: Returns measured value of transmitter deviation in kHz to a resolution of 1Hz
Response: <NR2>
Deviation (kHz)
Example Response: 25.025

:MEASUre

:FWdpwr?

Parameters: N/A
Response: <NR2>
Forward power (dBm)
Description: Returns current value of reading from the directional power accessory in units of dBm
Example response: 48.2

:MEASUre

:HARM2?

Parameters: N/A
Response: <NR2>
Second harmonic level (dBc)
Description: Returns current value of reading in units of dBc.
Example response: -50.3

:MEASUre

:HARM3?

Parameters: N/A
Response: <NR2>
Third harmonic level (dBc)
Description: Returns current value of reading in units of dBc.
Example response: -50.3

:MEASUre

:HARM4?

Parameters: N/A
Response: <NR2>
Fourth harmonic level (dBc)
Description: Returns current value of reading in units of dBc.
Example response: -50.3

:MEASUre

:HARM5?

Parameters: N/A
Response: <NR2>
Fifth harmonic level (dBc)
Description: Returns current value of reading in units of dBc.
Example response: -50.3

:MEASUre

:MKr1?

Parameters: N/A
Description: Returns value of level at marker on spectrum analyzer in units of dBm to a resolution of 0.1dB
Response: <NR2>
Level (dBm)
Example Response: 10.1

:MEASUre

:MOdfreq?

Parameters: N/A
Description: Returns current value of modulation frequency in kHz to a resolution of 0.1Hz
Response: <NR2>
Frequency (kHz)
Example Response: 0.9999

:MEASUre

:REvpwr?

Parameters: N/A
Response: <NR2>
Reverse power (dBm)
Description: Returns current value of reading from the directional power accessory in units of dBm
Example response: 40.5

:MEASUre

:RXDistn?

Parameters: N/A
Description: Returns measured value of audio input distortion in percent to a resolution of 0.1 percent
Response: <NR2>
Distortion (%)
Example Response: 3.2

:MEASUre

:RXSInad?

Parameters: N/A
Description: Returns measured value of audio input distortion in dB to a resolution of 0.1dB
Response: <NR2>
SINAD (dB)
Example Response: 34.4

:MEASUre

:RXSN?

Parameters: N/A
Description: Returns measured value of audio sigal to noise in dB to a resolution of 0.1dB
Response: <NR2>
S/N (dB)
Example Response: 28.2

:MEASUre

:TXDistn?

Parameters: N/A
Description: Returns current value of transmitter distortion in percent to a resolution of 0.1 %
Response: <NR2>
Distortion (%)
Example Response: 2.0

:TXFreq?

Parameters: N/A
Description: Returns current value of reading from RF counter in MHz to a resolution of 1Hz
Response: <NR2>
Frequency(MHz)
Example Response: 101.537123

:MEASUre

:TXLevel?

Parameters: N/A
Description: Returns current value of reading from RF power meter in currently selected units
Response: <NR2>
Level (dBm)
Example Response: 31.2

:MEASUre

:TXOffset?

Parameters: N/A
Description: Returns current reading of offset from the currently set receiver frequency in kHz to a resolution of 1Hz
Response: <NR2>
Frequency (kHz)
Example Response: –1.300

:MEASUre

:TXSInad?

Parameters: N/A
Description: Returns current value of transmitter SINAD in dB to a resolution of 0.1dB
Response: <NR2>
SINAD (dB)
Example Response: 26.0

:MEASUre

:TXSN?

Parameters: N/A
Description: Returns current value of transmitter signal-noise ratio in dB to a resolution of 0.1dB
Response: <NR2>
S/N (dB)
Example Response: 20.1

:MEASUre

:Vswr?

Parameters: N/A
Response: <NR2>
Description: Returns current value of reading from Directional power accessory.
Example response: 2.11

:MODType

Parameters: <CPD> or <NRf>
Modulation type
Description: Set the type of modulation used on the rf signal generator
Allowed suffices: N/A
Default suffix: N/A
Valid Data 0 or AM
1 or FM
Example: MODTYPE FM

:MODType?

Parameters: N/A
Response: <CRD>
Current mod type
Example response: FM

:MODGEN1(:MODGEN2)

Control modulation generator 1 (modulation generator 2).

Not used alone.

:MODGEN1(:MODGEN2)

:Amdepth

Parameters: <NRf>
depth
Desription: Set Modulation Generator 1 AM Depth (Set Modulation Generator 2 AM Depth)
Allowed suffices: PCT
Default suffix: PCT
Example: MODGEN1:AMD 30PCT

:Amdepth?

Parameters: N/A
Response: <NR2>
AM depth (%)
Example response: 30.0

:MODGEN1(:MODGEN2)

:FMdevn

Parameters: <NRf>
Deviation
Desription: Set Modulation Generator 1 FM Deviation (Set Modulation Generator 2 FM Deviation)
Allowed suffices: KHZ, HZ
Default suffix: KHZ
Example: MODGEN1:FM 2.4KHZ

:FMdevn?

Parameters: N/A
Response: <NR2>
Deviation (kHz)
Example response: 2.400

:MODGEN1(:MODGEN2)

:FReq

Parameters: <NRf>
Frequency (kHz)
Description: Set modulation generator 1 frequency (Set modulation generator 2 frequency)
Allowed suffices: KHZ,HZ
Default suffix: KHZ
Example: MODGEN1:FR 2KHZ

:FReq?

Parameters: N/A
Response: <NR2>
Frequency (kHz)
Example response: 2.0000

:MODGEN1(:MODGEN2)

:SHape

Parameters: <CPD> or <NRf>
shape selection
Description: Set Modulation Generator 1 Shape (Set Modulation Generator 2 Shape)
Allowed suffices: N/A
Default suffix: N/A
Valid data: 0 or SINE
1 or SQUARE
Example: MODGEN1:SHAPE 0

:SHape?

Parameters: N/A
Response: <CRD>
Current selection
Example response: SINE

:MODGEN1(:MODGEN2)

:STatus

Parameters: <CPD> or <NRf>
Status selection
Description: Set Modulation Generator 1 Status (Set Modulation Generator 2 Status)
Allowed suffices: N/A
Default suffix: N/A
Valid data: 0 or OFF
1 or ON
Example: MODGEN1:STAT ON

:STatus?

Parameters: N/A
Response: <CRD>
Current status
Example response: ON

:MODGEN1? (:MODGEN2?)

Parameters: N/A
Description: Queries the status of Modulation Generator 1 (Query the status of Modulation Generator 2).Produces the combined return values of the sub commands of MODGEN1 (MOdGEN2). These responses are separated by semi-colons.
Response: <NR2>;<NR2>;<NR2>;<CRD>;<CRD>

Example response: 30.0;2.400;2.000;SINE;OFF

:MODGENX

Control the external modulation source.

Not used alone.

:MODGENX

:Amdepth

Parameters: <NRf>
Desription: Set External Modulation Generator AM Depth
Allowed suffices: PCT
Default suffix: PCT
Example: MODGENX:AM 10PCT

:Amdepth?

Parameters: N/A
Response: <NR2>
AM depth (%)
Example response: 10.0

:MODGENX

:Coupling

Parameters: <CPD> or <NRf>
Coupling selection
Description: Set External Modulation coupling
Allowed suffices: N/A
Default suffix: N/A
Valid data: 0 or AC
1 or DC
Example: MODGENX:COUPLING DC

:Coupling?

Parameters: N/A
Response: <CRD>
Selected ext mod coupling
Example response: AC

:MODGENX

:Fmdevn

Parameters: <NRf>
Deviation
Desription: Set External Modulation Generator FM Deviation
Allowed suffices: KHZ, HZ
Default suffix: KHZ
Example: MODGENX:FM 1.0

:Fmdevn?

Parameters: N/A
Response: <NR2>
Deviation (kHz)
Example response: 1.000

:MODGENX

:SOurce

Parameters: <CPD> or <NRf>
Source selection
Description: Set External Modulation source
Allowed suffices: N/A
Default suffix: N/A
Valid data: 0 or EXT_MOD_IP
1 or MICROPHONE
Example: MODGENX:SOURCE 0

:SOurce?

Parameters: N/A
Response: <CRD>
Selected source
Example response: EXT_MOD_IP

:MODGENX

:STatus

Parameters: <CPD> or <NRf>
Status selection
Description: Set External Modulation Generator Status
Allowed suffices: N/A
Default suffix: N/A
Valid data: 0 or OFF
1 or ON
Example: MODGENX:STAT ON

:STatus?

Parameters: N/A
Response: <CRD>
Current status
Example response: ON

:MODGENX?

Parameters: N/A
Description: Queries the status of the External Modulation Generator. Produces the combined return values of the sub commands of MODGENX. These responses are separated by semi-colons.
Response: <NR2>;<CR0>;<NR2>;<CRD>;<CRD>

Example response: 10.0;AC;1.000;EXT_MOD_IP;ON

:MODScope

Control the modulation oscilloscope - TX test mode.

Not used alone.

:MODScope

:Amrange

Parameters: <CPD> or <NRf>
Range selection
Description: Control the range of Y Sensitivity of the oscilloscope(Tx AM test mode)
Allowed suffices: N/A
Default suffix: N/A
Valid Data: 0 or SC_5PC
1 or SC_10PC
2 or SC_20PC
Example: MODSC:AMR SC_10PC

:Amrange?

Parameters: N/A
Response: <CRD>
Current selection
Example response: SC_5PC

:MODScope

:Fmrange

Parameters: <CPD> or <NRf>
Range selection
Description: Control the range of Y Sensitivity of the oscilloscope(Tx FM test mode)
Allowed suffices: N/A
Default suffix: N/A
Valid Data: 0 or SC_200HZ
1 or SC_500HZ
2 or SC_1KHZ
3 or SC_2KHZ
4 or SC_5KHZ
5 or SC_10KHZ
6 or SC_25KHZ
Example: MODSC:FMR SC_1KHZ

:Fmrange?

Parameters: N/A
Response: <CRD>
Current selection
Example response: SC_1KHZ

:MODScope

:TBase

Parameters: <CPD> or <NRf>
Range selection
Description: Control the timebase of the oscilloscope in Tx test mode
Allowed suffices: N/A
Default suffix: N/A
Valid Data: 0 or SC_50US
1 or SC_100US
2 or SC_200US
3 or SC_500US
4 or SC_1MS
5 or SC_2MS
6 or SC_5MS
7 or SC_10MS
8 or SC_20MS
9 or SC_50MS
10 or SC_100MS
11 or SC_200MS
12 or SC_500MS
13 or SC_1S
14 or SC_2S
15 or SC_5S
Example: MODSC:TBASE 4

:TBase?

Parameters: N/A
Response: <CRD>
Current selection
Example response: SC_1MS

:MODScope

:TRig

Parameters: <CPD> or <NRf>
Trigger selection
Description: Control the trigger of the oscilloscope in TX test mode
Allowed suffices: N/A
Default suffix: N/A
Valid data: 0 or SINGLE
1 or REPEAT
Example: MODSC:TRIG REPEAT

:TRig?

Parameters: N/A
Response: <CRD>
Trigger selection
Example response: REPEAT

:MODScope?

Parameters: N/A
Description: Queries the entire status of the modulation oscilloscope by producing the coombined return values of the sub commands of MODSCOPE.
These responses are separated by semi-colons.
Response: <CRD>;<CRD>;<CRD>;<CRD>
Example response: SC_5PC;SC_1KHZ;SC_100MS;REPEAT
Audio scope settings are 1V per div, 100ms per div, repeat trigger

:MODType

Parameters: <CPD> or <NRf>
Modulation type selection
Description: Set the type of modulation used on the signal generator
Allowed suffices: N/A
Default suffix: N/A
Valid data: 0 or AM
1 or FM
Example: MODT FM

:MODType?

Parameters: N/A
Response: <CRD>
Current selection
Example response: FM

:PREemph

Parameters: <CPD> or <NRf>
Pre-emphasis selection
Description: Control whether frequency modulation is routed through the preemphasis filter
Allowed suffices: N/A
Default suffix: N/A
Valid Data: 0 or OFF
1 or ON
Example: PREEMPH ON

:PREemph?

Parameters: N/A
Response: <CRD>
Preemphasis status
Example response: ON

:Qerror?

Parameters: N/A
Description: Returns the last Queue error generated by the Message Exchange Protocol Enforcer
Response: <NR1>
Last error
Responses: 0 corresponds to 'No Error'
1 corresponds to 'Interrupted'
2 corresponds to 'Unterminated'
3 corresponds to 'Deadlocked'

:RECEiver

Control the instrument's receiver.

Not used alone.

:RECEiver

:Autotune

Parameters: <CPD> or <NRf>
Description: Controls the autotune function of the receiver
Allowed suffices: N/A
Default suffix: N/A
Valid Data: 0 or OFF
1 or ON
Example: RECE:AUTO OFF

:Autotune?

Parameters: N/A
Response: <CRD>
Autotune status
Example response: OFF

:RECEiver

:Deemph

Parameters: <CPD> or <NRf>
Description: Controls the de-emphasis filter of the receiver
Allowed suffices: N/A
Default suffix: N/A
Valid Data: 0 or OFF
1 or ON
Example: RECE:DEEMPH OFF

:Deemph?

Parameters: N/A
Response: <CRD>
De-emphasis status
Example response: OFF

:RECEiver

:FIlter

Parameters: <CPD> or <NRf>
Filter selection
Description: Controls the IF bandwidth of receiver
Allowed suffices: N/A
Default suffix: N/A
Valid Data: 0 or FIL_3KHZ
1 or FIL_30KHZ
2 or FIL_300KHZ
Example: RECE:FILT 1

:FIlter?

Parameters: N/A
Response: <CRD>
Current selection
Example response: FIL_30KHZ

:RECEiver

:FREQ

Parameters: <NRf>
Frequency
Description: Sets the frequency of the test sets receiver
Allowed suffices: MHZ,KHZ
Default suffix: MHZ
Example: RECE:FREQ 890.0625MHZ

:FREQ?

Parameters: N/A
Response: <NR2>
Frequency (MHz)
Example response: 890.062500

:RECEiver

:FRESn

Parameters: <CPD> or <NRf>
Resolution selection
Description Controls the frequency resolution of the rf counter
Allowed suffices: N/A
Default suffix: N/A
Valid Data 0 or RESN_1HZ
1 or RESN_10HZ
Example: RECE:FRESN 1

:FRESn?

Parameters: N/A
Response: <CRD>
Current selection
Example response: RESN_10HZ

:RECEiver

:Harmonics

Parameters: <CPD> or <NRf>
Harmonic measurement mode selection
Description Controls whether harmonics are measured in TX test mode
Allowed suffices: N/A
Default suffix: N/A
Valid Data 0 or OFF
1 or ON
Example: RECE:HARM 1

:Harmonics?

Parameters: N/A
Response: <CRD>
Current selection
Example response: ON

:RECEiver

:Powerbw

Parameters: <CPD> or <NRf>
Power measurement selection
Description Controls whether power measurements are taken with the broadband power meter or with the narrow band meter
Allowed suffices: N/A
Default suffix: N/A
Valid Data 0 or BROADBAND
1 or INBAND
Example: RECE:POWERBW BROAD

:Powerbw?

Parameters: N/A
Response: <CRD>
Current selection
Example response: BROADBAND

:RECEiver

:Ssbsens

Parameters: <CPD> or <NRf>
Receiver sensitivity selection
Description Controls the receiver sensitivity when in SSB demodulation mode
Allowed suffices: N/A
Default suffix: N/A
Valid Data 0 or LOW
1 or MEDIUM
2 or HIGH
Example: RECE:SSB LOW

:Ssbsens?

Parameters: N/A
Response: <CRD>
Current selection
Example response: LOW

:RECEiver?

Parameters: N/A
Description: Queries the entire status of the receiver by producing the combined return values of the sub commands of RECEIVER. These responses are separated by semi-colons.
Response: <CRD>;<CRD>;<CRD>;<NR2>;<CRD>;<CRD>;<CRD>;<CRD>
Example response: OFF;OFF;FIL_30KHZ;890.062500;RESN_1HZ;OFF;BROADBAND;LOW

:RECSwitch

Parameters: <CPD> or <NRf>
Input selection
Description: Controls the routeing of the RF input from the transmitter under test.
Allowed suffices: N/A
Default suffix: N/A
Valid Data: 0 or REC_N
1 or REC_ANT
Example: RECSW 0

:RECSwitch?

Parameters: N/A
Response: <CRD>
Current selection
Example response: REC_N

:RESponse

Control some advanced features of the response formatter.

Not used alone.

:RESponse

:Header

Parameters: <CPD> or <NRf>
Response header selection
Description: Control whether or not the response formatter returns the command header and if so to what extent
Allowed suffices: N/A
Default suffix: N/A
Valid Data: 0 or OFF
1 or MINIMUM
2 or FULL
3 or DEFAULT
Example: :RESP:HEAD FULL

:Header?

Parameters: N/A
Response: <CRD>
Current selection
Example response: :RESPONSE:HEADER FULL

:RESponse

:Format

Parameters: <CPD> or <NRf>
Response format selection
Description: Controls whether or not the response formatter includes CR,LF in the output for better presentation
Allowed suffices: N/A
Default suffix: N/A
Valid Data: 0 or OFF
1 or ON
2 or MINIMUM
Example: RESP:FORM OFF

:Format?

Parameters: N/A
Response: <CRD>
Current selection
Example response: OFF

:RESponse?

Parameters: N/A
Description: Queries the status of the response formatter by producing the combined return values of the sub commands of RESPONSE. These responses are separated by semi-colons.
Response: <CRD>;<CRD>
Example response: OFF;OFF

:RFgen

Control the instrument's RF signal generator.

Not used alone.

:RFgen

:Freq

Parameters: <NRf>
Frequency
Description: Sets the frequency of the RF generator for receiver testing
Allowed suffices: MHZ,KHZ
Default suffix: MHZ
Example: :RFGEN:FREQ 98.8MHZ

:Freq?

Parameters: N/A
Response: <NR2>
Frequency (MHz)
Example response: 98.800000

:RFgen

:Level

Parameters: <NRf>
Level
Description: Sets the level of the RF generator for receiver testing
Allowed suffices: DBM,UV,MV
Default suffix: DBM
Example: RFGEN:LEV -80DBM

:Level?

Parameters: N/A
Response: <NR2>
Level (dBm)
Example response: -80.0

:RFgen

:Status

Parameters: <CPD> or <NRf>
Status selection
Description: Controls the status of the RF generator for receiver testing
Allowed suffices: N/A
Default suffix: N/A
Valid Data: 0 or OFF
1 or ON
Example: RFGEN:STAT ON

:Status?

Parameters: N/A
Response: <CRD>
Current status
Example response: ON

:RFgen?

Parameters: N/A
Description: Queries the status of the RF signal generator by producing the combined return values of the sub commands of RFGEN. These responses are separated by semi-colons.
Response: <NR2>;<NR2>;<CRD>
Example response: 98.800000;-80.0;ON

:RXDIsp

Parameters: <CPD> or <NRf>
Display selection
Description: Controls the type of data display in RX and AF test modes
Allowed suffices: N/A
Default suffix: N/A
Valid Data: 0 or BARCHARTS
1 or SCOPE
Example: RXDISP BARCHARTS

:RXDIsp?

Parameters: N/A
Response: <CRD>
Current selection
Example response: BARCHARTS

:RXDType

Parameters: <CPD> or <NRf>
Distortion measurement type
Description: Controls the audio distortion measurement type
Allowed suffices: N/A
Default suffix: N/A
Valid Data: 0 or OFF
1 or DISTN
2 or SINAD
3 or SN
Example: RXDTYPE SINAD

:RXDType?

Parameters: N/A
Response: <CRD>
Current selection
Example response: SINAD

:RXFilt

Parameters: <CPD> or <NRf>
Filter selection
Description: Controls the audio input filter bandwidth
Allowed suffices: N/A
Default suffix: N/A
Valid Data: 0 or LP_50KHZ
1 or LP_15KHZ
2 or STD_BP
3 or LP_300HZ
Example: RXFILT 2

:RXFilt?

Parameters: N/A
Response: <CRD>
Current selection
Example response: STD_BP

:SPecana

Control the instrument spectrum analyzer.

Not used alone.

:SPecana

:Center

Parameters: <NRf>
Centre frequency
Description: Sets the centre frequency of the spectrum analyzer scan
Allowed suffices: MHZ,KHZ
Default suffix: MHZ
Example: SPECANA:CENT 500MHZ

:Center?

Parameters: N/A
Response: <NR2>
Frequency (MHz)
Example response: 500.000000

:SPecana

:Filter

Parameters: <CPD> or <NRf>
Filter selection
Description: Controls the resolution bandwidth of the spectrum analyzer
Allowed suffices: N/A
Default suffix: N/A
Valid Data: 0 or AUTO
1 or FIL_300HZ
2 or FIL_3KHZ
3 or FIL_30KHZ
4 or FIL_300KHZ
5 or FIL_3MHZ
Example: SPEC:FILT 0

:Filter?

Parameters: N/A
Response: <CRD>
Current selection
Example: AUTO

:SPecana

:LLFilt

Parameters: <CPD> or <NRf>
Filter selection
Description: Controls the audio filter bandwidth when in the look and listen mode
Allowed suffices: N/A
Default suffix: N/A
Valid Data: 0 or LP_15KHZ
1 or STD_BP
Example: SPEC:LLFILT STD_BP

:LLFilt?

Parameters: N/A
Response: <CRD>
Current selection
Example response: STD_BP

:SPecana

:LLSpan

Parameters: <CPD> or <NRf>
Span selection
Description: Controls the span of the spectrum analyzer sweep when in the look and listen mode
Allowed suffices: N/A
Default suffix: N/A
Valid Data: 0 or LL_1MHZ
1 or LL_500KHZ
2 or LL_200KHZ
3 or LL_100KHZ
Example: SPEC:LLSP LL_1MHZ

:LLSpan?

Parameters: N/A
Response: <CRD>
Current selection
Example response: LL_1MHZ

:SPecana

:MArker

Parameters: <CPD> or <NRf>
Marker status
Description: Controls the status of the spectrum analyzer marker
Allowed suffices: N/A
Default suffix: N/A
Valid Data: 0 or OFF
1 or ON
Example: SPEC:MARK ON

:MArker?

Parameters: N/A
Response: <CRD>
Marker status
Example response: ON

:SPecana

:MKrfreq

Parameters: <NRf>
Marker frequency
Description: Sets the frequency of the marker on the spectrum analyzer display
Allowed suffices: MHZ,KHZ
Default suffix: MHZ
Example: SPEC:MKRF 499.8

:MKrfreq?

Parameters: N/A
Response: <NR2>
Frequency (MHz)
Example response: 499.800000

:SPecana

:MOde

Parameters: <CPD> or <NRf>
Spectum analyzer mode
Description: Controls the operating mode of the spectrum analyzer
Allowed suffices: N/A
Default suffix: N/A
Valid Data: 0 or NORMAL
1 or LOOK_LIST
Example: SPEC:MODE LOOK_LIST

:MOde?

Parameters: N/A
Response: <CRD>
Current selection
Example response: LOOK_LIST

:SPecana

:Reflevel

Parameters: <NRf>
Reference level
Description: Sets the reference level (top of screen) of the spectrum analyzer.
Allowed suffices: DBM
Default suffix: DBM
Example: SPEC:REFLEV 10DBM

:Reflevel?

Parameters: N/A
Response: <NR2>
Reference level (dBm)
Example response: 10.0

:SPecana

:SPan

Parameters: <NRf>
Span
Description: Sets the span of the spectrum analyzer sweep
Allowed suffices: MHZ,KHZ
Default suffix: MHZ
Example: SPEC:SPAN 100MHZ

:SPan?

Parameters: N/A
Response: <NR2>
Span (MHz)
Example response: 100.000000

:SPecana

:STArt

Parameters: <NRf>
Start frequency
Description: Sets the start frequency of the spectrum analyzer sweep
Allowed suffices: MHZ,KHZ
Default suffix: MHZ
Example: SPEC:START 450

:STArt?

Parameters: N/A
Response: <NR2>
Start frequency (MHz)
Example response: 450.000000

:SPecana

:STOp

Parameters: <NRf>
Stop frequency
Description: Sets the stop frequency of the spectrum analyzer sweep
Allowed suffices: MHZ,KHZ
Default suffix: MHZ
Example: SPEC:STOP 550MHZ

:STOp?

Parameters: N/A
Response: <NR2>
Stop frequency (MHz)
Example response: 550.000000

:SPecana

:TGLevel

Parameters: <NRf>
Tracking generator level
Description: Sets the level of the spectrum analyzer tracking generator
Allowed suffices: DBM
Default suffix: DBM
Example: SPEC:TGLEV 0DBM

:TGLevel?

Parameters: N/A
Response: <NR2>
Current level (dBm)
Example response: 0.0

:SPecana

:TGMode

Parameters: <CPD> or <NRf>
Spectum analyzer mode
Description: Controls the operating mode of the rf gen in spectrum analyzer
Allowed suffices: N/A
Default suffix: N/A
Valid Data: 0 or SIG_GEN
1 or TRACK_GEN
Example: SPEC:TGM SIG_GEN

:TGMode?

Parameters: N/A
Response: <CRD>
Current selection
Example response: SIG_GEN

:SPecana

:TGOffset

Parameters: <NRf>
Frequency offset
Description: Sets the frequency offset of the spectrum analyzer tracking generator
Allowed suffices: MHZ,KHZ
Default suffix: MHZ
Example: SPEC:TGOFF -10.7

:TGOffset?

Parameters: N/A
Response: <NR2>
Offset frequency (MHz)
Example response: -10.700000

:SPecana

:TGStatus

Parameters: <CPD> or <NRf>
Status
Description: Controls the status of the spectrum analyzer tracking generator
Allowed suffices: N/A
Default suffix: N/A
Valid Data: 0 or OFF
1 or ON
Example: SPEC:TGSTAT ON

:TGStatus?

Parameters: N/A
Response: <CRD>
Current status
Example response: ON

:SPecana

:Vertscale

Parameters: <CPD> or <NRf>
dB per division
Description: Controls the vertical scale of the spectrum analyzer display
Allowed suffices: N/A
Default suffix: N/A
Valid Data: 0 or TEN_DB_PER
1 or TWO_DB_PER
Example: SPEC:VERTSCALE 0

:Vertscale?

Parameters: N/A
Response: <CRD>
Current selection
Example response: TEN_DB_PER

:SPecana?

Parameters: N/A
Description: Queries the status of the spectrum analyzer by producing the combined return values of the sub commands of SPECANA. These responses are separated by semi-colons.
Response: <NR2>;<CRD>;<CRD>;<CRD>;<CRD>;
<NR2>;<CRD>;<NR2>;<NR2>;<NR2>;
<NR2>;<NR2>;<CRD>;<BR2>;<CRD>;
<CRD>
Example response: 500.00000;AUTO;STD_BP;LL_1MHZ;
OFF;499.800000;LOOK_LIST;10.0;
100.000000;450.000000;550.000000;0.0;SIG_GEN;-10.700000;ON;
TEN_DB_PER

:TEstmode

Parameters: <CPD> or <NRf>
Mode
Description: Controls the basic mode of the communications service monitor.
Allowed suffices: N/A
Default suffix: N/A
Valid Data 0 or RX_TEST
1 or TX_TEST
2 or DX_TEST
3 or SYSTEMS
4 or AF_TEST
5 or SPEC_ANA
6 or TONES_MODE
7 or ACC_PWR_MODE
8 or TRANSIENT_MODE
Example: TEST SPEC_ANA

:TEstmode?

Parameters: N/A
Response: <CRD>
Current mode
Example response: SPEC_ANA

:TOnemode

Parameters: <CPD> or <NRf>
Type of tones
Description: Controls the type of tones in tones mode
Allowed suffices: N/A
Default suffix: N/A
Valid Data: 0 or SEQ
1 or DTMF
2 or POCSAG

Example: TONEMODE POCSAG

:TOnemode?

Parameters: N/A
Response: <CRD>
Type of tones
Example response: SEQ

:TRansient

Control the instrument RF transient recorder.

Not used alone.

:TRansient

:Arm

Parameters: <CPD> or <NRf>
Marker status
Description: Controls the status of the transient analyser marker
Allowed suffices: N/A
Default suffix: N/A
Valid Data: 0 or OFF
1 or ON
Example: TRANS:MARK ON

:TRansient

:MArker

Parameters: <CPD> or <NRf>
Marker status
Description: Controls the status of the transient analyser marker
Allowed suffices: N/A
Default suffix: N/A
Valid Data: 0 or OFF
1 or ON
Example: TRANS:MARK ON

:MArker?

Parameters: N/A
Response: <CRD>
Marker status
Example response: ON

:TRansient

:MKrtime

Parameters: <NRf>
Marker position in time
Description: Sets the marker position on the transient analyser screen relative to the trigger point
Allowed suffices: S,MS,US
Default suffix: US
Example: TRANS:MKRT -10MS

:MKrtime?

Parameters: N/A
Response: <NR2>
Time (uS)
Example response: 500

:TRansient

:POlarity

Parameters: <CPD> or <NRf>
Trigger polarity
Description: Controls the transient analyser trigger polarity
Allowed suffices: N/A
Default suffix: N/A
Valid Data: 0 or NEGATIVE
1 or POSITIVE
Example: TRANS:POL POS

:POlarity?

Parameters: N/A
Response: <CRD>
Trigger polarity
Example response: POSITIVE

:TRansient

:PRetrig

Parameters: <CPD> or <NRf>
Pretrigger selection
Description: Controls the transient analyser pretrigger amount
Allowed suffices: N/A
Default suffix: N/A
Valid Data: 0 or PRE_0
1 or PRE_25
2 or PRE_50
3 or PRE_75
4 or PRE_100
Example: TRANS:PRE PRE_25

:PRetrig?

Parameters: N/A
Response: <CRD>
Pretrigger amount
Example response: PRE_25

:TRansient

:Reflevel

Parameters: <NRf>
Reference level
Description: Sets the reference level (top of screen) of the transient analyser.
Allowed suffices: DBM
Default suffix: DBM
Example: TRANS:REFLEV 10DBM

:Reflevel?

Parameters: N/A
Response: <NR2>
Reference level (dBm)
Example response: 10.0

:TRansient

:State?

Parameters: N/A
Descripion: Return the current state of the transient analyser
Response: <CRD>
Responses: ARMED,TRIGGERED or STORED
Example response: STORED

:TRansient

:TBase

Parameters: <CPD> or <NRf>
Range selection
Description: Control the timebase of the transient analyser
Allowed suffices: N/A
Default suffix: N/A
Valid Data: 0 or TA_50US
1 or TA_100US
2 or TA_200US
3 or TA_500US
4 or TA_1MS
5 or TA_2MS
6 or TA_5MS
7 or TA_10MS
8 or TA_20MS
9 or TA_50MS
10 or TA_100MS
11 or TA_200MS
12 or TA_500MS
13 or TA_1S
14 or TA_2S
15 or TA_5S
Example: TRANS:TBASE 4

:TBase?

Parameters: N/A
Response: <CRD>
Current selection
Example response: TA_1MS

:TRansient

:TRglevel

Parameters: <NRf>
Trigger level
Description: Sets the trigger level (relative to the top of screen) of the transient analyser.
Allowed suffices: DB
Default suffix: DB
Example: TRANS:TRGLEV -10DB

:TRglevel?

Parameters: N/A
Response: <NR2>
Trigger level (dB)
Example response: -10.0

TRansient?

Parameters: N/A
Description: Queries the status of the transient analyzer by producing the combined return values of the sub commands of TRANSIENT. These responses are separated by semi-colons.
Response: <CRD>;<NR2>;<CRD>;<CRD>;<NR2>;
<CRD>;<CRD>;<NR2>
Example response: ON;500;POSITIVE;PRE_25;10.0;STORED;TA_IMS;–10.0

:TXDIsp

Parameters: <CPD> or <NRf>
Display selection
Description Controls the type of data display used in TX test mode
Allowed suffices: N/A
Default suffix: N/A
Valid Data 0 or BARCHARTS
1 or SCOPE
Example: TXDISP SCOPE

:TXDIsp?

Parameters: N/A
Response: <CRD>
Current selection
Example response: SCOPE

:TXDType

Parameters: <CPD> or <NRf>
distortion measurement type
Description: Controls the distortion measuring method when in Transmitter test mode
Allowed suffices: N/A
Default suffix: N/A
Valid Data: 0 or OFF
1 or DISTN
2 or SINAD
3 or SN
Example: TXDTYPE SINAD

:TXDType?

Parameters: N/A
Response: <CRD>
Current selection
Example response: SINAD

:TXFilt

Parameters: <CPD> or <NRf>
Filter selection
Description: Controls the bandwidth filtering when in the transmitter test mode
Allowed suffices: N/A
Default suffix: N/A
Valid Data: 0 or LP_50KHZ
1 or LP_15KHZ
2 or STD_BP
3 or LP_300HZ
Example: TXFILT 1

:TXFilt?

Parameters: N/A
Response: <CRD>
Current selection
Example response: LP_15KHZ

:USeroptions

Control user selections.

Not used alone.

:USeroptions

:PRINTPort

Parameters: <CPD> or <NRf>
Printer port
Description: Controls the current printer port selection
Allowed suffices: N/A
Default suffix: N/A
Valid Data: 0 or PARALLEL
1 or SERIAL
Example: USER_PRINTP SERIAL

:PRINTPort?

Parameters: N/A
Response: <CRD>
Printer port
Example response: SERIAL

:USeroptions

:PRINTType

Parameters: <CPD> or <NRf>
Printer type
Description: Controls the current printer type selection
Allowed suffices: N/A
Default suffix: N/A
Valid Data: 0 or EPSON80
1 or EPSON100
2 or LASER75
3 or LASER100
4 or LASER150
Example: USER:PRINTT LASER75

:PRINTType?

Parameters: N/A
Response: <CRD>
Printer type
Example response: LASER75

:USeroptions

:Rxdavgs

Parameters: <NRf>
Number of averages
Description: Controls the number of measurements over which RX distortion, SINAD and SN are averaged.
Allowed suffices: N/A
Default suffix: N/A
Example: USER:RXDAV 10

:Rxdavgs?

Parameters: N/A
Response: <NR1>
Number of RX distortion measurements averaged
Example response: 10

:USeroptions?

Parameters: N/A
Description: Queries the user selected optoins by producing the combined return values of the sub commands of USEROPTIONS. These responses are separated by semi-colons.
Response: <CRD>;<CRD>;<NR1>
Example response: SERIAL;LASER75;10