Tektronix®

Tektronix
BERTScope

Remote Control Guide

www.tek.com

077-1284-00

Contacting Tektronix

Tektronix, Inc.
14150 SW Karl Braun Drive
P.O. Box 500
Beaverton, OR 97077
USA

For product information, sales, service, and technical support:
- In North America, call 1-800-833-9200.
- Worldwide, visit www.tek.com to find contacts in your area.

Table of Contents

Preface

This document contains a comprehensive listing or remote control commands for the Tektronix BERTScope family of products. It includes commands for the different platforms. Restrictions and separate parameters or ranges are noted for each of those commands.

Theory of operation

The remote control features enable operation of instrument processes remotely via an IEEE-488 communications connection. Remote control is implemented using a text-oriented command protocol that enable you to set and query system parameters, and to operate the analyzer in different modes, including live error analysis and offline playback of previously recorded error data.

The text-oriented commands follow a basic three-part structure, consisting of one word identifying the major feature being addressed, another word identifying a specific operation or parameter within that feature, and optional parameters. The analyzer receives and operates on each command immediately. Command execution sets a status variable that may be queried by the user to determine if the previous command was successful. Alternatively, a mode can be selected in which these statuses are automatically returned after each command execution.

This document describes how to interface with the analyzer using the IEEE-488 connection. The analyzer is an IEEE-488 bus peripheral only; it is not an IEEE-488 bus controller and cannot produce SRQ signals. The IEEE-488 Setup panel. In the System View, touch the Tools tab, then the Remote button, then IEEE Address. Enter the unique address in the GPIB Address field.

For more technical assistance in programming your remote control applications, please contact your local Tektronix representative.

Getting started

Remote control overview

The BERTScope analyzer and any connected BERTScope instruments can be controlled remotely via either an IEEE-488 or a TCP/IP communications connection. The remote control software runs on either a BERTScope anaylyzer, or a host PC.

The remote control software accepts text-oriented commands from a remote computer via either an IEEE-488 or TCP/IP connection. It then routes the commands to one or more BERTScope instruments, connected to the BERTScope analyzer or host PC via USB.

If the local host is a BERTScope, then the BERTScope software gets a chance to handle the command first. Any commands the BERTScope software doesn't understand are sent to the BERTScope instruemnt software, which then controls the BERTScope instruments.

When a BERTScope instrument is connected to a BERTScope, you can inter-mix BERTScope and BERTScope instrument commands in the same script, program, or interactive session. If the host is just an ordinary PC, then the commands are routed to the remote control software directly. In this case, using the BERTScope-specific commands will result in an error.

For most applications, a single BERTScope instrument is connected to a BERTScope or host PC. In this case, the BERTScope instrument is automatically detected and connected when the remote control software is started, and automatically disconnected when the remote control software is stopped. There is no need in this case to use the OPEN or CLOSE commands described later in this section.

If more than one BERTScope instrument is connected (such as one or more Clock Recovery instruments) to the BERTScope or host computer, the remote control software will not connect automatically. In this case, the Remote computer must issue a NAMES? query to discover the IDs of the connected BERTScope instruments, and OPEN the one desired before issuing control commands. If the Remote computer needs to control multiple BERTScope instruments, it would OPEN, control, then CLOSE one, then OPEN, control, and CLOSE another. The device that is OPEN is referred to as the current device throughout this document.

Remote control is implemented using a text-oriented command protocol described in the following pages of this document. These commands enable you to set and query the system parameters of the BERTScope instruments, and to retrieve measurements made by the instrument.

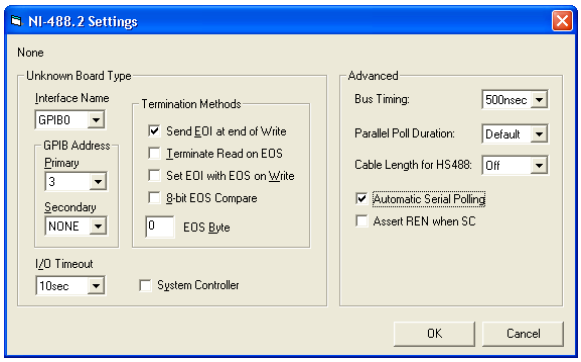
Set up the instrument for remote control operation

Remote setup is accessed from the System View.

1. In the System view, under the Tools tab Utilities heading, click the **Remote** button to access the configuration panel.
2. Before beginning a remote control session, it is necessary to start the Remote Client application, ***RemoteClient.exe,*** on the host computer.

   If the host is a BERTScope, click the **Remote** button from the System View Tools page. If the host computer is a normal PC, then just execute the ***RemoteClient.exe,*** file.
3. If you are using GPIB to control the BERTScope, enable the IEEE Address button.

   If the button is not enabled, click the **Disconnect** button; it might take a few seconds to enable the IEEE Address button.
4. Click the **IEEE Address** button and enter the required information into the NI-488.2 Settings dialog box.



Command description

Remote control communications are exchanged as ASCII strings over a LAN telnet (TCP port 23) between the host computer and the analyzer. Select a communications port to be used for access to the instrument's remote control operations. If the port is set to NONE, then remote control is disabled.

The input values of commands are checked against the same ranges as the user interface. If an input is received that is outside of this legal range, the input will be clipped and recorded in the status queue.

It is recommended that you request the status of a command by sending **SYStemERRor?** after each command. Besides telling you what has happened with the command, this will also synchronize command transmission and handling.

Command syntax

Remote Control Command Lines are defined as ASCII text strings ending with '\r' or '\n'.

The commands follow a basic three-part structure, consisting of one word identifying the feature of the BERTScope instrument being addressed, another word identifying a specific operation within that feature, and optional parameters. The feature and operation are separated by a colon, and the operation and parameter (if any), are separated by a space. The operation can be Double, Integer, or Boolean numbers; a file path name; a special word; or a data type. For a Boolean data type, the input can be ON, OFF, 1, or 0. The returned response will be either 1 for true or 0 for false. A question-mark character (?) is added at the end of a command, without a space, to create a query.

```
FEATURE:OPERATION PARAMETER
```

Commands and parameters are generally case-insensitive, with the notable exception of those requiring a case-sensitive parameter for the Standard names.

Most commands have both a "long version" and "short version," indicated by capitalized versus lowercase letters. For example: `GENerator:PATTern?` can be typed out exactly as shown, or as `GEN:PATT?` The capital letters and the colon (`:`) are required; the lowercase letters are optional – commands are not case-sensitive.

The short form is convenient during interactive control (using a telnet session, for example). You might want to use the long form in scripts or programs, to increase code clarity.

When command setup data uses a string as a parameter (a filename or path name, for instance), enclose the string in double-quotes ("string").

For every command processed, an error code will be returned. If the command has a question mark (a query), the setup information is also returned.

Features

The BERTScope remote control commands are divided into feature groups. The number of features per each group depend on the BERTScope product.

In the first group are commands that handle device discovery and connection. You can use these commands anytime, even if a current device has not been selected yet (with the OPEN command). The NAMES, OPEN, and CLOSE commands are all part of this group.

A second group consists of commands for controlling and monitoring a particular BERTScope instruments. The current device must have been specified (using the OPEN command) before to using any commands in this group.

In addition to the various feature groups, several miscellaneous features exist to control the host computer display (VIEW, PTFILE, GUILOCKOUT), the run state (RSTATE, RDURATION), and the overall program configuration (SCONFIGURATION, RCONFIGURATION, ISSTATUS, RSSTATUS). These commands primarily implement the functionality provided by the GUI Console buttons.

Operations

Read-only properties

Query a readable property by appending a question mark to it (with no space between the command and the question mark). For example:

```
CRS:OPEN?
```

returns the device name of the currently connected BERTScope CR. In most cases, the returned values are all capitalized.

Read-write properties

Query a read-write property by appending a question mark after it.

Set a read-write property by adding an appropriate parameter. For example:

```
CRS:OPEN "CRS_1234"
```

selects the BERTScope Clock Recovery unit with the device name CRS_1234 as the current device, while

```
CRS:OPEN?
```

returns name of the device previously OPENed.

Write-only operation

Question marks are illegal for write-only operation, and parameters may or may not be required, depending upon the particular operation. For example:

```
CRS:CLOSE
```

requires no parameters, but

```
CRC:RCONFIGDISK "D:\BitAlyzer\Configurations\mycfg.cru"
```

requires the complete pathname of the BERTScope CR configuration file.

Parameters

A parameter can be a double or integer number, Boolean (0 or 1), an enumerated data type, or a string.

When a command uses a string as a parameter, the string is enclosed in double quotes ("`string`"). Filenames always require the absolute path, enclosed within double quotes.

Parameters are generally case-insensitive, with the notable exception of case-sensitive Standard names. For example:

`CRC:STANDARD “123abc”`

and

`CRC:DELETESTANDARD “123ABC”`

are specifying different user-defined clock recovery standards.

Command status

The BERTScope instrument receives and operates on each command immediately.

The input values of commands are checked. If an input is received that is outside of the legal range, the input will be clipped and recorded in the status queue.

Command execution sets a status variable that can be queried by the user to determine if the previous command was successful.

Request the status of a command by sending:

`SYSTEM:ERROR?` or `SYST:ERR?`

This command retrieves items listed in the error status queue, in the format:

`< n, “event/string” >`

The status queue is first in, first out. It can contain up to 100 error messages. If the status queue overflows, the last error/event in the queue is replaced with Error `-350, “Queue overflow”`. When all errors/events have been read from the queue, further error/event queries will return `0, “NO ERROR”`.

To clear the status queue all at once, send:

`*CLS`

Command error messages and codes

Error messages

The following error messages might be returned:

- `"TOO MANY PARAMETERS"`
- `"UNRECOGNIZED COMMAND"`
- `"WRONG PARAMETER TYPE"`
- `"TOO LITTLE PARAMETERS"`
- `"WRONG PARAMETER FORMAT"`
- `"WRONG PARAMETER NUMBER"`
- `"WRONG ACTION-ONLY"`

- "WRONG QUERY-ONLY"
- “REQUESTED <QUERY PARAMETER> IS NOT SUPPORTED ON THE PLATFORM”

Error codes

The following error codes might be returned:

```
0 "NO ERROR"
-350 "Queue Overflow"
-10 File transfer error
-20 System error or event
-30 Command error, see list of error messages
-40 No software option
```

Communications timeouts

Most commands issued to the BERTSope are processed quickly and return within immediately. However a handful of commands might require considerable processing and take longer, including the following:

- Detector delay calibration — 8 seconds (approximately)
- Generator delay calibration — 7 seconds
- Detector auto align — 5 seconds
- Generator data signal enabling (BERTScope only) — 7 seconds
- Run state enable (Physical layer tests that perform initial auto-align) — 6 seconds

As a result, programming the communications architecture with a two-second timeout for most command, and a 10-second timeout for the above-listed commands is one approach. Another approach is to set all communication timeouts to be 10 seconds. Of course, commands that don’t require this much time will not be affected by the longer timeout. This ensures that all commands can complete without triggering communications timeouts.

Command listing

Generator

Complete command listing (See page 7, *Command listing*.)

DELAY:GENRecal?

Retrieve the information that indicates whether Generator delay needs recalibration. Query only. Note: Since monitoring for these calibrations is suspended while Physical Layer tests are running, using this command under those circumstances may not return an accurate result.

Returns:	< 1 >	Needs delay recalibration
	< 0 >	Does not need delay recalibration

GENerator:CREFerence <EXTernal | INTernal>
GENerator:CREFerence?

Set or retrieve the Generator input clock reference.

Params:	<EXTernal>	External clock reference
	<INTernal>	Internal clock reference
Returns:	< EXTERNAL | INTERNAL >	

GENerator:CSELect <INTernal | EXTernal>
GENerator:CSELect?

Set or retrieve the clock used by the Generator.

Params:	<INTernal>	Generator uses the internal clock synthesizer
	<EXTernal>	Generator uses the external clock
Returns:	< INTERNAL | EXTERNAL >	

GENerator:CUTOFFKHZ?

Retrieve the frequency at which the Generator switches to the DDR mode. Query only.

GENerator:DDEFs <numeric>
GENerator:DDEFs?

Set or retrieve the Generator data delay in femto-seconds.

Params:	<numeric>	Set Generator data delay in fs
Returns:	<numeric>	

GENerator:DDELay <numeric>
GENerator:DDELay?

Set or retrieve the Generator data delay in picoseconds.

Params:	<numeric>	Generator data delay. Input out of range will be clipped and recorded in the status queue. When the analyzer is operating within range [1,100 to 12,500 MHz], Data Delay is within range [0 to 3,000 ps].
Returns:	<numeric>	

GENerator:DINVert <bool>
GENerator:DINVert?

Set or retrieve data inversion state for the Generator.

Params:	<bool>	On = 1, Off = 0
Returns:	< 1 >	Data inversion is on
	< 0 >	Data inversion is off

GENerator:DRATe?

Retrieve the Generator data rate. Query only.

Returns:	<numeric>	Generator data rate in bits/sec. “0” means “No Clock.”

GENerator:EXTPagmode <SWITCHRISE | SWITCHFALL | AORBRISE | AORBFALL | OFF>
GENerator:EXTPagmode?

Set or retrieve the Generator External Page Select mode.

Params:	<SWITCHRISE>	Switch momentarily to the other page on rising edge
	<SWITCHFALL>	Switch momentarily to the other page on falling edge
	<AORBRISE>	Switch to the other page on a rising edge
	<AORBFALL>	Switch to the other page on a falling edge
	<OFF>	External page select is off
Returns:	< SWITCHRISE | SWITCHFALL | AORBRISE | AORBFALL | OFF >	

GENerator:FULLRATEclock <bool>
GENerator:FULLRATEclock?

Set or retrieve Full Rate Clock property of the Generator.

Returns:	< 1 >	Generator is in Full Rate Clock mode
	< 0 >	Generator is in Half Rate Clock mode

GENerator:ICLock <numeric>
GENerator:ICLock?

Set or retrieve the internal clock synthesizer frequency of the Generator. May require some delay to complete.

Params:	<numeric>	Generator internal clock synthesizer frequency in Hz Input out of range will be clipped and recorded in the status queue.
Returns:	<numeric>	

GENerator:OFfsetfreq <numeric>
GENerator:OFfsetfreq?

Set or retrieve Generator's Frequency Offset in PPM.

Params:	<numeric>	Generator's Frequency Offset in PPM. Range [-500 to +500]
Returns:	<numeric>	

GENerator:PCALibration

Perform Generator delay calibration. Action only. May require some delay to complete.

GENerator:PMMOD:DEViation <numeric>
GENerator:PMMOD:DEViation?

Set or retrieve Phase Modulation Deviation in UI. Range is from 0 to the value dependent on PM.

Frequency:	
250 kHz to ≤4 MHz	Decreasing 30 dB/decade to 12/n UI at 1 MHz and 1.5/n at 4 MHz
2.5 kHz to < 250 KHz	Decreasing 20 dB/decade to 96/n UI at 250 kHz
10 Hz to <2.5 kHz	Fixed 9600/n UI
In the above formulas: n = 0.5 for bit rates ≥11.2 Gbps n = 1 for 6 Gbps ≤ bit rates < 11.2 Gbps n = 2 for 3 Gbps ≤ bit rates < 6 Gbps n = 4 for 1.5 Gbps ≤ bit rates < 3 Gbps n = 8 for 750 Mbps ≤ bit rates < 1.5 Gbps n = 16 for 375 Mbps ≤ bit rates < 750 Mbps n = 32 for 187.5 Mbps ≤ bit rates < 375 Mbps n = 64 for 100 Mbps ≤ bit rates < 187.5 Mbps	

Params:	<numeric>	Range: 0 to the upper limit as dependent on the PM Frequency (see GEN:PMMOD:FREQ)
Returns:	<numeric>	

GENerator:PMMOD:ENABle <bool>
GENerator:PMMOD:ENABle?

Enable or disable Phase Modulation.

Params:	<bool>	On = 1, Off = 0
Returns:	< 1 >	Generator Phase Modulation is enabled
	< 0 >	Generator Phase Modulation is disabled

GENerator:PMMOD:FREQuency <numeric>
GENerator:PMMOD:FREQuency?

Set or retrieve Phase Modulation Frequency.

Params:	<numeric>	Range [10 Hz to 4 MHz]
Returns:	<numeric>	

GENerator:REFIN:ENABLE <bool>
GENerator:REFIN:ENABLE?

Enable or disable the Generator Reference In.

Returns:	< 1 >	Generator Reference In is enabled
	< 0 >	Generator Reference In is disabled

GENerator:REFIN:FREQuency <numeric>
GENerator:REFIN:FREQuency?

Set or retrieve the Generator Reference In Frequency in Hz.

Params:	<numeric>	Generator Reference In frequency in Hz Possible values are: 10,000,000 100,000,000 106,250,000 156,250,000 133,330,000 166,670,000 200,000,000
Returns:	<numeric>	

GENerator:REFOUT:ENABLE <bool>
GENerator:REFOUT:ENABLE?

Enable or disable the Generator Reference Out.

Params:	<bool>	On = 1, Off = 0
Returns:	< 1 >	Generator Reference Out is enabled
	< 0 >	Generator Reference Out is disabled

GENerator:REFOUT:FREQuency <numeric>
GENerator:REFOUT:FREQuency?

Set or retrieve the Generator Reference Out Frequency in Hz.

Params:	<numeric>	Generator Reference Out frequency in Hz Possible values are: 10,000,000 100,000,000 106,250,000 156,250,000 133,330,000 166,670,000 200,000,000
Returns:	<numeric>	

GENerator:SYNFM:PRESent?

Retrieve whether SynFM module is present. Query only.

Params:	<bool>	On = 1, Off = 0
Returns:	< 1 >	SynFM module is present
	< 0 >	SynFM module is not present

Generator Data Generator

Complete command listing (See page 7, *Command listing*.)

GENerator:ISERror

Inject a single error. Action only.

GENerator:LUPFilename?

Retrieve user pattern file that has been loaded to the Generator. Query only.

Returns:	< "filename" >	Filename is enclosed in double quotes.

GENerator:PATTern <PN7 | PN11 | PN15 | PN20 | PN23 | PN31 | USTart | UCYCle | ALLZERO | PASSthrough>
GENerator:PATTern?

Set or retrieve the Generator data type.

Params:	<PN7 | PN11| PN15 | PN20 | PN23 | PN31>	Generator pseudo-random pattern data type.
	<USTart>	User pattern (See GEN:UPLoad command to load a user pattern file)
	<UCYCle>	User pattern cycle
	<ALLZERO>	All-zeros pattern
	<PASSthrough>	When corresponding option is purchased, Detector Pass-Through mode outputs whatever the Detector has just received.
Returns:	< PN7 | PN11 | PN15 | PN20 | PN23 | PN31 | USTART | UCYCLE | ZERO | PASSTHROUGH >	

GENerator:PSELect <A | B>
GENerator:PSELect?

Set or retrieve the selected page of the user pattern loaded to the Generator.

Params:	<A>	User pattern page A
	<B>	User pattern page B
Returns:	< PAGEA | PAGEB >	

GENerator:PSWitch

Switch the page of the user pattern loaded to the Generator. Action only.

GENerator:UPLoad <"filename">

Load user pattern from the specified file. Action only.

Params:	<"filename">	Use the absolute path name and enclose the string in double quotes.

GENerator:UPLPercent?

Retrieve the user pattern loading percentage completion value. Query returns 100 if the loading is complete. Query only.

Returns:	< numeric >	The percentage of user pattern loaded into the Generator

GENerator:UPLTracking<bool>
GENerator:UPLTracking?

Set or retrieve whether the Generator tracks the Detector when loading a user pattern. If the tracking is true, the command GEN:UPL <“filename”> loads the user pattern into both the Generator and Detector.

Params:	<bool>	On = 1, Off = 0
Returns:	< 1 >	Generator tracks Detector when loading
	< 0 >	Generator does not track Detector when loading

GENerator:UPWLen?

Retrieve the word count from the Generator RAM. Query only.

Returns:	< numeric >	The number of words in RAM

Generator Pattern Start

Complete command listing (See page 7, *Command listing*.)

GENerator:PSTart:TMODe <REDGe | FEDGe | DISabled>
GENerator:PSTart:TMODe?

Set or retrieve the trigger mode of the Generator pattern start input.

Params:	<REDGe>	Generator pattern start trigger at the rising edge
	<FEDGe>	Generator pattern start trigger at the falling edge
	<DISabled>	Trigger is disabled.
Returns:	< RisingEdge | FallingEdge| DISABLED >	

Generator Spread Spectrum Clock

Complete command listing (See page 7, *Command listing*.)

GENerator:SSCMOD:DEViation <numeric>
GENerator:SSCMOD:DEViation?

Set or retrieve the SSC modulation deviation. Argument range is different for first generation hardware (Option SSC) and second generation (Option XSSC).

Params:	<numeric>	SSC modulation deviation in ppm. Option SSC: Range [0 to 10,000] in Down spread or Up spread mode; [0 to 5,000] in Center spread mode. **Option XSSC:** Range is a function of data rate.
Returns:	<numeric>	

GENerator:SSCMOD:ENABle <bool>
GENerator:SSCMOD:ENABle?

Set or retrieve whether the SSC/XSSC option is enabled (option must be present in order to enable; see GEN:SSCMOD:PRES command below).

Params:	<bool>	On = 1, Off = 0
Returns:	< 1 >	SSC is enabled
	< 0 >	SSC is disabled

GENerator:SSCMOD:FREQuency <numeric>
GENerator:SSCMOD:FREQuency?

Set or retrieve the SSC modulation frequency. Argument range is different for first generation hardware (Option SSC) and second generation (Option XSSC).

Params:	<numeric>	SSC modulation frequency in Hz. Option SSC: Range [25,000 to 35,000] Option XSSC:Range [20,000 to 160,000]. Note that modulation deviation is uncalibrated for modulation frequencies >40 kHz.
Returns:	<numeric>	

GENerator:SSCMOD:PRESent <bool>
GENerator:SSCMOD:PRESent?

Set or retrieve whether the SSC/XSSC option is present.

Params:	<bool>	On = 1, Off = 0
Returns:	< 1 >	SSC is present
	< 0 >	SSC is not present

GENerator:SSCMOD:SIGnal <TRIANGLE | SINUSOID>
GENerator:SSCMOD:SIGnal?

Set or retrieve the SSC/XSSC modulation signal type.

Params:	<TRIANGLE>	Triangular-shaped modulation
	<SINUSOID>	Sinewave-shaped modulation
Returns:	< TRIANGLE | SINUSOID >	

GENerator:SSCMOD:SIGNALSETTABLE?

Returns whether the SSC/XSSC modulation signal is selectable. First-generation SSC hardware only modulates in TRIANGLE mode. Query only.

Returns:	< 1 >	Modulation is selectable (TRIANGLE or SINUSOID) (XSSC hardware)
	< 0 >	Only modulates in TRIANGLE mode (1st generation SSC hardware)

GENerator:SSCMOD:TYPE<UP | DOWN | CENTER>
GENerator:SSCMOD:TYPE?

Set or retrieve the SSC/XSSC modulation type.

Params:	<UP>	Modulation deviation ranges from the nominal frequency to the nominal frequency plus the deviation amount.
	<DOWN>	Modulation deviation is centered around the nominal frequency.
	<CENTER>	Modulation deviation ranges from the nominal frequency minus the deviation amount to the nominal frequency.
Returns:	< UP | DOWN | CENTER >	

Generator Clock Input

Complete command listing (See page 7, *Command listing*.)

GENerator:CINPut:TAC <bool>
GENerator:CINPut:TAC?

Set or retrieve the termination AC of the Generator Clock input.

Params:	<bool>	On = 1, Off = 0
Returns:	< 1 >	Generator Clock input termination AC is on
	< 0 >	Generator Clock input termination AC is off

GENerator:CINPut:TVOLtage <numeric>
GENerator:CINPut:TVOLtage?

Set or retrieve the termination voltage of the Generator Clock input.

Params:	<numeric>	Generator Clock input termination voltage in mV. Range [–2,000 to +2,000]. Input out of range will be clipped and recorded in the status queue.
Returns:	<numeric>	

GENerator:SUBRatediv <1 | 2 | 4 | 8 | 16 | 32 | 64 | 128>

GENerator:SUBRatediv?

Set or retrieve the sub-rate clock output divider for the Generator's internal clock synthesizer.

Params:	<1 | 2 | 4 | 8 | 16 | 32 | 64 | 128>	1 is full rate
Returns:	< 1 (Full rate) | 2 | 4 | 8 | 16 | 32 | 64 | 128 >	

Generator Clock Output Positive

Complete command listing (See page 7, *Command listing*.)

GENerator:COPositive:CLIPped?

Retrieve whether the Generator Clock+ output setting is clipped. Query only.

Returns:	< 1 >	The Generator Clock+ output setting is clipped
	< 0 >	The Generator Clock+ output setting is not clipped

GENerator:COPositive:ENABle <bool>
GENerator:COPositive:ENABle?

Set or retrieve whether the Generator Clock+ output is enabled. May require some delay to complete.

Params:	<bool>	On = 1, Off = 0
Returns:	< 1 >	Generator Clock+ output is enabled
	< 0 >	Generator Clock+ output is disabled

GENerator:COPositive:IMPedance <numeric>
GENerator:COPositive:IMPedance?

Set or retrieve the impedance of the Generator Clock output positive. May require some delay to complete.

Params:	<numeric>	Generator Clock+ output impedance in Ohms. Range [30 to 100,000]. Input out of range will be clipped and recorded in the status queue.
Returns:	<numeric>	

GENerator:COPositive:LFAMily <CML | ECL | LVPECL | LVDS | SCFL>
GENerator:COPositive:LFAMily?

Set or retrieve the Generator Clock+ output logic family.

Params:	<CML | ECL | LVPECL | LVDS | SCFL>	The Generator Clock+ output logic family
Returns:	<CML | ECL | LVPECL | LVDS | SCFL>	

GENerator:COPositive:SLAMplitude <numeric>
GENerator:COPositive:SLAMplitude?

Set or retrieve the signal level amplitude of the Generator Clock+ output. May require some delay to complete.

Params:	<numeric>	Generator Clock+ output signal level amplitude in mV. Input out of range will be clipped and recorded in the status queue. Range [250 to 1,800]
Returns:	<numeric>	Generator Clock+ output signal level amplitude

GENerator:COPositive:SLOFfset <numeric>
GENerator:COPositive:SLOFfset?

Set or retrieve the signal level offset of the Generator Clock+ output. May require some delay to complete.

Params:	<numeric>	Generator Clock+ output signal level offset in mV. Input out of range will be clipped and recorded in the status queue. Range [–2,000 to +2,000]
Returns:	<numeric>	Generator Clock+ output signal level offset

GENerator:COPositive:SLVHigh <numeric>
GENerator:COPositive:SLVHigh?

Set or retrieve the signal level V_H of the Generator Clock+ output. May require some delay to complete.

Params:	<numeric>	Generator Clock+ output signal level V_H in mV. Range [–1,750 to +3,000]. Input out of range will be clipped and recorded in the status queue.
Returns:	<numeric>	

GENerator:COPositive:SLVLow <numeric>
GENerator:COPositive:SLVLow?

Set or retrieve the signal level V_L of the Generator Clock+ output. May require some delay to complete.

Params:	<numeric>	Generator Clock+ output signal level V_L in mV. Range [–2,250 to +1,000]. Input out of range will be clipped and recorded in the status queue.
Returns:	<numeric>	

GENerator:COPositive:TAC <bool>
GENerator:COPositive:TAC?

Set or retrieve the termination AC of the Generator Clock+ output. May require some delay to complete.

Params:	<bool>	On = 1, Off = 0
Returns:	< 1 >	Generator Clock+ output termination AC is on
	< 0 >	Generator Clock+ output termination AC is off

GENerator:COPositive:TVOLtage <numeric>
GENerator:COPositive:TVOLtage?

Set or retrieve the termination voltage of the Generator Clock output positive. May require some delay to complete.

Params:	<numeric>	Generator Clock+ output signal level offset in mV. Range [–2,000 to +2,000]. Input out of range will be clipped and recorded in the status queue.
Returns:	<numeric>	

Generator Clock Output Negative

Complete command listing (See page 7, *Command listing*.)

GENerator:CONegative:CLIPped?

Retrieve whether the Generator Clock– output setting is clipped. Query only.

Returns:	< 1 >	The Generator Clock– output setting is clipped
	< 0 >	The Generator Clock– output setting is not clipped

GENerator:CONegative:ENABle <bool>
GENerator:CONegative:ENABle?

Set or retrieve whether the Generator Clock– output is enabled. May require some delay to complete.

Params:	<bool>	On = 1, Off = 0
Returns:	< 1 >	Generator Clock– output is enabled
	< 0 >	Generator Clock– output is disabled

GENerator:CONegative:IMPedance <numeric>
GENerator:CONegative:IMPedance?

Set or retrieve the impedance of the Generator Clock– output. May require some delay to complete.

Params:	<numeric>	Generator Clock– output impedance in Ohms. Range [30 to 100,000]. Input out of range will be clipped and recorded in the status queue.
Returns:	<numeric>	

GENerator:CONegative:LFAMily <CML | ECL | LVPECL | LVDS | SCFL>
GENerator:CONegative:LFAMily?

Set or retrieve the Clock– output logic family.

Params:	<CML | ECL | LVPECL | LVDS | SCFL>	The Clock– output logic family
Returns:	<"string">	

GENerator:CONegative:SLAMplitude <numeric>
GENerator:CONegative:SLAMplitude?

Set or retrieve the signal level amplitude of the Generator Clock– output. May require some delay to complete.

Params:	<numeric>	Generator Clock– output signal level amplitude in mV. Range [250 to 1,800]. Input out of range will be clipped and recorded in the status queue.
Returns:	<numeric>	

GENerator:CONegative:SLOFfset <numeric>
GENerator:CONegative:SLOFfset?

Set or retrieve the signal level offset of the Generator Clock– output. May require some delay to complete.

Params:	<numeric>	Generator Clock– output signal level offset in mV. Range [–2,000 to +2,000]. Input out of range will be clipped and recorded in the status queue.
Returns:	<numeric>	

GENerator:CONegative:SLVHigh <numeric>
GENerator:CONegative:SLVHigh?

Set or retrieve the signal level V_H of the Generator Clock– output. May require some delay to complete.

Params:	<numeric>	Generator Clock– output signal level V_H in mV. Range [–1,750 to +3,000]. Input out of range will be clipped and recorded in the status queue.
Returns:	<numeric>	

GENerator:CONegative:SLVLow <numeric>
GEN:CON:SLVL <numeric>

Set or retrieve the signal level V_L of the Generator Clock– output. May require some delay to complete.

Params:	<numeric>	Generator Clock– output signal level V_L in mV. Range [–2,250 to +1,000]. Input out of range will be clipped and recorded in the status queue.
Returns:	<numeric>	

GENerator:CONegative:TAC <bool>
GENerator:CONegative:TAC?

Set or retrieve the termination AC of the Generator Clock– output. May require some delay to complete.

Params:	<bool>	On = 1, Off = 0
Returns:	< 1 >	Generator Clock– output termination AC is on
	< 0 >	Generator Clock– output termination AC is off

GENerator:CONegative:TVOLtage <numeric>
GENerator:CONegative:TVOLtage?

Set or retrieve the termination voltage of the Generator Clock– output. May require some delay to complete.

Params:	<numeric>	Generator Clock– output termination voltage in mV. Range [–2,000 to +2,000]. Input out of range will be clipped and recorded in the status queue.
Returns:	<numeric>	

Generator Clock Output Pos/Neg

Complete command listing (See page 7, *Command listing*.)

GENerator:CLKDIVider <long>
GENerator:CLKDIVider?

Set or retrieve the value of the clock divider.

Params:	< long >	Value of clock divider from the following table
Returns:	< long >	Value of clock divider from the following table; a return value for 1 is 1 (Full-rate).

Data rate (Gb/s)	Ratios for main clock output	Ratios for sub-rate clock output [1]
500-750 Mb/s	1, 2, 4, 5, 6, 7, 8, 9, 10, 12, 14, 16, 18, 20, 24, 32, 36	1, 2, 4
0.75-3 Gb/s	1, 2, 4, 5, 6, 7, 8, 9, 10, 12, 14, 16, 18, 20, 24, 30, 32, 32, 35, 36, 36, 40, 42, 45, 48, 50, 54, 56, 60, 64, 70, 72, 80, 81, 84, 90, 98, 108, 112, 126, 128, 144, 162	1, 2, 4, 8
3-6 Gb/s	1, 2, 4, 5, 6, 7, 8, 9, 10, 12, 14, 16, 18, 20, 24, 30, 32, 32, 35, 36, 36, 40, 42, 45, 48, 50, 54, 56, 60, 64, 70, 72, 80, 81, 84, 90, 98, 100, 108, 112, 120, 126, 128, 140, 144, 160, 162, 168, 180, 192, 196, 216, 224, 252, 256, 288, 324	1, 2, 4, 8, 16, 32
6-11.2 Gb/s	1, 2, 4, 5, 6, 7, 8, 9, 10, 12, 14, 16, 18, 20, 24, 30, 32, 32, 35, 36, 36, 40, 42, 45, 48, 50, 54, 56, 60, 64, 70, 72, 80, 81, 84, 90, 98, 108, 112, 126, 128, 140, 144, 144, 160, 162, 162, 168, 180, 192, 196, 200, 216, 224, 240, 252, 256, 280, 288, 320, 324, 360, 384, 392, 432, 448, 504, 512, 576, 648	1, 2, 4, 8, 16, 32, 64
11.2-12 Gb/s	2, 4, 8, 10, 12, 14, 16, 18, 20, 24, 28, 32, 36, 40, 48, 60, 64, 64, 70, 72, 72, 80, 84, 90, 96, 100, 108, 112, 120, 128, 140, 144, 160, 162, 168, 180, 196, 200, 216, 224, 240, 252, 256, 280, 288, 320, 324, 336, 360, 384, 392, 432, 448, 504, 512, 576, 648	2, 4, 8, 16, 32, 64
12-26 Gb/s	2, 4, 8, 10, 12, 14, 16, 18, 20, 24, 28, 32, 36, 40, 48, 60, 64, 64, 70, 72, 72, 80, 84, 90, 96, 100, 108, 112, 120, 128, 140, 144, 160, 162, 168, 180, 196, 216, 224, 252, 256, 280, 288, 288, 320, 324, 324, 336, 360, 384, 392, 400, 432, 448, 480, 504, 512, 560, 576, 640, 648, 720, 768, 784, 864, 896, 1008, 1024, 1152, 1296	2, 4, 8, 16, 32, 64, 128

[1] Sub-rate clock connector can also output a full-rate stressed clock up to 11.2 Gb/s, or half-rate stressed clock at rates ≥11.2 Gb/s.

GENerator:COUTput:LPNSignals <bool>
GENerator:COUTput:LPNSignals?

Set or retrieve whether the Generator Clock output positive and negative are linked. May require some delay to complete.

Params:	<bool>	On = 1, Off = 0
Returns:	< 1 >	Clock outputs are linked
	< 0 >	Clock outputs are not linked

GENerator:SUBRatediv <1 | 2 | 4 | 8 | 16 | 32 | 64 | 128>

GENerator:SUBRatediv?

Set or retrieve the sub-rate clock output divider for the Generator's internal clock synthesizer.

Params:	<1 | 2 | 4 | 8 | 16 | 32 | 64 | 128>	Generator internal clock synthesizer subrate clock output divider. 1 is full rate.
Returns:	< 1 (Full rate) | 2 | 4 | 8 | 16 | 32 | 64 | 128 >	

GENerator:SUBrate:STRess:CLKMODe <STRessed | SUBRate>
GENerator:SUBrate:STRess:CLKMODe?

Set or retrieve the subrate clock mode.

Params:	<STRessed>	Clock Mode is Stressed
	<SUBRate>	Clock Mode is Subrate
Returns:	< STRESSED | SUBRATE >	

Generator Data Output Positive

Complete command listing (See page 7, *Command listing*.)

GENerator:DOPositive:CLIPped?

Retrieve whether the Generator Data+ output setting is clipped. Query only.

Returns:	< 1 >	The Generator Data+ setting is clipped
	< 0 >	The Generator Data+ setting is not clipped

GENerator:DOPositive:ENABle <bool>
GENerator:DOPositive:ENABle?

Set or retrieve whether the Generator Data+ output is enabled. May require some delay to complete.

Params:	<bool>	On = 1, Off = 0
Returns:	< 1 >	Generator Data+ output is enabled
	< 0 >	Generator Data+ output is disabled

GENerator:DOPositive:IMPedance <numeric>
GENerator:DOPositive:IMPedance?

Set or retrieve the impedance of the Generator Data+ output. May require some delay to complete.

Params:	<numeric>	Generator Data+ output impedance in Ohms. Range [30 to 100,000] Input out of range will be clipped and recorded in the status queue.
Returns:	<numeric>	

GENerator:DOPositive:LFAMily <CML | ECL | LVPECL | LVDS | SCFL>
GENerator:DOPositive:LFAMily?

Set or retrieve the Generator Data+ output logic family.

Params:	<CML | ECL | LVPECL | LVDS | SCFL>	Generator Data+ output logic family
Returns:	<"string">	

GENerator:DOPositive:SLAMplitude <numeric>
GENerator:DOPositive:SLAMplitude?

Set or retrieve the signal level amplitude of the Generator Data+ output. May require some delay to complete.

Params:	<numeric>	Generator Data+ output signal level amplitude in mV. Range [50 to 1800]. Input out of range will be clipped and recorded in the status queue.
Returns:	<numeric>	

GENerator:DOPositive:SLOFfset <numeric>
GENerator:DOPositive:SLOFfset?

Set or retrieve the signal level offset of the Generator Data+ output. May require some delay to complete.

Params:	<numeric>	Generator Data+ output signal level offset in mV. Range [–2000 to +2000]. Input out of range will be clipped and recorded in the status queue.
Returns:	<numeric>	

GENerator:DOPositive:SLVHigh <numeric>
GENerator:DOPositive:SLVHigh?

Set or retrieve the signal level V_H of the Generator Data+ output. May require some delay to complete.

Params:	<numeric>	Generator Data+ output signal level V_H in mV. Range [–1975 to +3000]. Input out of range will be clipped and recorded in the status queue.
Returns:	<numeric>	

GENerator:DOPositive:SLVLow <numeric>
GENerator:DOPositive:SLVLow?

Set or retrieve the signal level V_L of the Generator Data+ output. May require some delay to complete.

Params:	<numeric>	Generator Data+ output signal level V_L in mV. Range [–2025 to +1100]. Input out of range will be clipped and recorded in the status queue.
Returns:	<numeric>	

GENerator:DOPositive:SYMmetry <numeric>
GENerator:DOPositive:SYMmetry?

Set or retrieve the symmetry adjustment of the Generator Data+ output.

Params:	<numeric>	Generator Data+ output symmetry, in percent. Range [30% to 70%]. Input out of range will be clipped and recorded in the status queue.
Returns:	<numeric>	

GENerator:DOPositive:TAC <bool>
GENerator:DOPositive:TAC?

Set or retrieve the termination AC of the Generator Data+ output. May require some delay to complete.

Params:	<bool>	On = 1, Off = 0
Returns:	< 1 >	Generator Data+ output termination AC is on
	< 0 >	Generator Data+ output termination AC is off

GENerator:DOPositive:TVOLtage <numeric>
GENerator:DOPositive:TVOLtage?

Set or retrieve the termination voltage of the Generator Data+ output. May require some delay to complete.

Params:	<numeric>	Generator Data+ output termination voltage in mV. Range [–2000 to +2000]. Input out of range will be clipped and recorded in the status queue.
Returns:	<numeric>	

Generator Data Output Negative

Complete command listing (See page 7, *Command listing*.)

GENerator:DONegative:CLIPped?

Retrieve whether the Generator Data– output setting is clipped. Query only.

Returns:	< 1 >	The Generator Data– output setting is clipped
	< 0 >	The Generator Data– output setting is not clipped

GENerator:DONegative:ENABle <bool>
GENerator:DONegative:ENABle?

Set or retrieve whether the Generator Data– output is enabled. May require some delay to complete.

Params:	<bool>	On = 1, Off = 0
Returns:	< 1 >	Generator Data– output is enabled
	< 0 >	Generator Data– output is disabled

GENerator:DONegative:IMPedance <numeric>
GENerator:DONegative:IMPedance?

Set or retrieve the impedance of the Generator Data– output. May require some delay to complete.

Params:	<numeric>	Generator Data– output impedance in Ohms. Range [30 to 100,000]. Input out of range will be clipped and recorded in the status queue.
Returns:	<numeric>	

GENerator:DONegative:LFAMily <CML | ECL | LVPECL | LVDS | SCFL>
GENerator:DONegative:LFAMily?

Set or retrieve the Generator Data– output logic family.

Params:	<CML | ECL | LVPECL | LVDS | SCFL>	The Generator Data– output logic family
Returns:	< CML | ECL | LVPECL | LVDS | SCFL >	

GENerator:DONegative:SLAMplitude <numeric>
GENerator:DONegative:SLAMplitude?

Set or retrieve the signal level amplitude of the Generator Data– output. May require some delay to complete.

Params:	<numeric>	Generator Data– output signal level amplitude in mV. Range [50 to 1800]. Input out of range will be clipped and recorded in the status queue.
Returns:	<numeric>	

GENerator:DONegative:SLOFfset <numeric>
GENerator:DONegative:SLOFfset?

Set or retrieve the signal level offset of the Generator Data– output. May require some delay to complete.

Params:	<numeric>	Generator Data– output signal level offset in mV. Range [–2000 to +2000]. Input out of range will be clipped and recorded in the status queue.
Returns:	<numeric>	

GENerator:DONegative:SLVHigh <numeric>
GENerator:DONegative:SLVHigh?

Set or retrieve the signal level V_H of the Generator Data– output. May require some delay to complete.

Params:	<numeric>	Generator Data– output signal level V_H in mV. Range [–1975 to +2900]. Input out of range will be clipped and recorded in the status queue.
Returns:	<numeric>	

GENerator:DONegative:SLVLow <numeric>
GENerator:DONegative:SLVLow?

Set or retrieve the signal level V_L of the Generator Data– output. May require some delay to complete.

Params:	<numeric>	Generator Data– output signal level V_L in mV. Range [–2025 to +1100mV]. Input out of range will be clipped and recorded in the status queue.
Returns:	<numeric>	

GENerator:DONegative:SYMmetry <numeric>
GENerator:DONegative:SYMmetry?

Set or retrieve the symmetry adjustment of the Generator Data– output.

Params:	<numeric>	Range [30% to 70%]. Input out of range will be clipped and recorded in the status queue.
Returns:	<numeric>	

GENerator:DONegative:TAC <bool>
GENerator:DONegative:TAC?

Set or retrieve the termination AC of the Generator Data– output. May require some delay to complete.

Params:	<bool>	On = 1, Off = 0
Returns:	< 1 >	Generator Data– output termination AC is on
	< 0 >	Generator Data– output termination AC is off

GENerator:DONegative:TVOLtage <numeric>
GENerator:DONegative:TVOLtage?

Set or retrieve the termination voltage of the Generator Data– output. May require some delay to complete.

Params:	<numeric>	Generator Data– output termination voltage in mV. Range [–2000 to +2000]. Input out of range will be clipped and recorded in the status queue.
Returns:	<numeric>	

Generator Data Output Pos/Neg

Complete command listing (See page 7, *Command listing*.)

GENerator:DOUTput:LPNSignals <bool>
GENerator:DOUTput:LPNSignals?

Set or retrieve whether the Generator Data± outputs are linked. May require some delay to complete.

Params:	<bool>	On = 1, Off = 0
Returns:	< 1 >	Generator Data± outputs are linked
	< 0 >	Generator Data± outputs are not linked

Generator Reference Clock Multiplier

Complete command listing (See page 7, *Command listing*.)

GENerator:RCM:ENable <bool>
GENerator:RCM:ENable?

Enable or disable the reference clock multiplier. The internal clock can specify either RCM mode or Synthesizer mode.

Params:	<bool>	On = 1, Off = 0
Returns:	< 1 >	RCM mode; the reference clock multiplier is enabled.
	< 0>	Synthesizer mode; the reference clock multiplier is disabled and sets the internal clock to Synthesizer mode.

Example: `GEN:RCM:En 1` enables the reference clock multiplier.

GENerator:RCM:GENERAL <long>, <double>

This is a general purpose command used to set the reference frequency and multiplier values of reference clock multiplier. The range of the reference clock frequency multiplied by the multiplier value should be in the range of 1E9 to 32E9. Action only.

Params:	< long >	The reference clock frequency.
	< double >	The multiplier value.

GENerator:RCM:MIPI <long>, <double>

Set the reference frequency and multiplier values of reference clock multiplier of the MIPI M-PHY standard. Action only.

Params:	< long >	The reference clock frequency with one of the following values: 19200000, 26000000, 38400000, 52000000.
	< double >	The multiplier value, dependent on the reference clock frequency; refer to the following table.

Reference clock frequency	Multiplier values
19200000	65, 76, 130, 152, 260, 304
26000000	48, 56, 96, 112, 192, 224
38400000	32.5, 38, 65, 76, 130, 152
52000000	24, 28, 48, 56, 96, 112

Example: `GEN:RCM:MIPI 26000000, 48`

GENerator:RCM:MODE?

Returns the current standard of the reference clock multiplier. Query only.

Returns:	<"string">	PCIE1, PCIE2, PCIE3, PCIE4, MIPI, SDGEN2, GENERAL

GENerator:RCM:MULTIplier?

Returns the current clock multiplier value. Query only.

Returns:	< double >

GENerator:RCM:PCIE1

Set the reference frequency and multiplier values of the reference clock multiplier to the PCIE1 standard. Action only.

GENerator:RCM:PCIE2

Set the reference frequency and multiplier values of the reference clock multiplier to the PCIE2 standard. Action only.

GENerator:RCM:PCIE3

Set the reference frequency and multiplier values of the reference clock multiplier to the PCIE3 standard. Action only.

GENerator:RCM:PCIE4

Set the reference frequency and multiplier values of the reference clock multiplier to the PCIE4 standard. Action only.

GENerator:RCM:SDGEN2 <long>, <double>

Sets the reference frequency and multiplier values of reference clock multiplier of the SD UHS-II Gen 2 standard. Action only.

Params:	< long >	The reference clock frequency as an integer between 52000000 and 104000000
	< double >	The multiplier value of either 30 or 60.
Returns:	< ref frequency > < multiplier >	

Example: `GEN:RCM:SDGEN2 52000000, 60`

Generator Trigger

Complete command listing (See page 7, *Command listing*.)

GENerator:TOFFset <numeric>
GENerator:TOFFset?

Set or retrieve the Generator Trigger offset.

Params:	<numeric>	Generator Trigger offset 128-bit words. Range [0 to (Pattern Size – 1)] for all the PRBS patterns. For others, the range is [0 to 0]. Input out of range will be clipped and recorded in the status queue.
Returns:	<numeric>	

GENerator:TOMethod <PCYCle | CLOCk>
GENerator:TOMethod?

Set or retrieve the Generator Trigger out method.

Params:	<PCYCle>	Generator Trigger out method is pattern cycle
	<CLOCk>	Generator trigger out method is a divided-down clock/256
Returns:	< PatternCycle | Clock/64 >	

Generator Error Inject

Complete command listing (See page 7, *Command listing*.)

GENerator:EIEType <1BIT | 2BITs | 4BITs | 8BITs | 16Bits | 32Bits | 64Bits | 128Bits>
GENerator:EIEType?

Set or retrieve the Generator Error Inject type. May require some delay to complete.

Params:	<1Bit | 2Bits | 4Bits | 8Bits | 16Bits | 32Bits | 64Bits | 128Bits>	Generator error inject type is: 1, 2, 4, 8, 16, 32, 64, or 128 bit(s)
Returns:	< 1BIT | 2BITs | 4BITs | 8BITs | 16Bits | 32Bits | 64Bits | 128Bits >	

GENerator:EIINterval <numeric>
GENerator:EIINterval?

Set or retrieve the Generator Error Inject interval. May require some delay to complete.

Params:	<numeric>	Generator Error Inject interval in bits Range [16,384 to 2,147,483,520]; must be modulo 128. Input out of range will be clipped and recorded in the status queue.
Returns:	<numeric>	

GENerator:EIMode <CONTinuous | MANual | EXTernal | OFF>
GENerator:EIMode?

Set or retrieve the Generator Error Inject mode. May require some delay to complete.

Params:	<CONTinuous>	Generator Error Inject mode is continuous
	<MANual>	Generator Error Inject mode is manual
	<EXTernal>	Generator is set to inject a single error on receipt of an external signal
	<OFF>	Generator Error Inject is off
Returns:	< CONTINUOUS | MANUAL | EXTERNAL | OFF >	

GENerator:IBER?

Retrieve the injected BER of the Generator. Query only.

Returns:	<numeric>	Generator injected bit error rate

Generator Stress Module (GSM) - Stressed Eye

Complete command listing (See page 7, *Command listing*.)

Before using the GSM commands, send **GSM:STRess:ENABle 1** to enable all stress features (see GSM:STRess).

GSM Configure/Enable(See page 39, *GSM - Stressed Eye Configure/Enable*.)

GSM Stress Setup(See page 40, *GSM - Stressed Eye Setup*.)

GSM - Stressed Eye Configure/Enable

Complete command listing (See page 7, *Command listing*.)

Before using the GSM commands, send **GSM:STRess:ENABle 1** to enable all stress features (see **GSM:STRess** below).

GSM:RCONfiguration <"filename">

Restore Stress configuration. Action only.

Params:	<"filename">	Configuration filename enclosed in double quotes.
Returns:	< filename >	

GSM:SCONfiguration <"filename">

Save Stress configuration. Action only.

Params:	<"filename">	Configuration filename enclosed in quotes.
Returns:	< filename >	

GSM:STRess:ENABle <bool>
GSM:STRess:ENABle?

Set or retrieve whether the entire global stress feature is enabled. The entire stress feature includes jitter insertion of sinusoidal jitter (SJ), external sinusoidal jitter (EXSJ), random jitter (RJ), PRBS jitter (BUJ) and external high frequency jitter (EXHF).

There are commands to enable each individual stress insertion, such as GSM:SJitter:ENABle; however, unless the Stress Feature is enabled using this command, those individual jitter insertion enabling commands do not enable any jitter insertion. For example, if one sent a **GSM:SJ:ENAB 1** without enabling the stress feature (query **GSM:STR:ENAB?** returns 0), the system merely caches the SJ Enable value. The next time **GSM:STR:ENAB 1** is sent, the SJ is then enabled. After the stress feature is enabled, one can still enable or disable individual types of jitter insertion by sending the corresponding ENABle command.

This command corresponds to the Clock control's "Jitter Insertion Enabled" menu item in the Generator view.

Params:	<bool>	On = 1, Off = 0
Returns:	< 1 >	All stress enabled
	< 0 >	All stress disabled

GSM - Stressed Eye Setup

Complete command listing (See page 7, *Command listing*.)

GSM:BUJitter:AMPUi <numeric>
GSM:BUJitter:AMPUi?

Set or retrieve the PRBS jitter amplitude in percent of UI.

Params:	<numeric>	Range [0 to 50%]. The amplitude limits change with regard to the analyzer's operating frequency.
Returns:	< double %UI>	Returns PRBS jitter amplitude in percent of UI.

GSM:BUJitter:ENABle <bool>
GSM:BUJitter:ENABle?

Set or retrieve whether the PRBS jitter on the clock is enabled.

Params:	<bool>	On = 1, Off = 0
Returns:	< 1 >	PRBS jitter on the clock is enabled
	< 0 >	PRBS jitter on the clock is disabled

GSM:BUJitter:FREQuency <numeric>
GSM:BUJitter:FREQuency?

Set or retrieve the PRBS jitter frequency in Hz.

Params:	<numeric>	Range [100,000,000 to 2,000,000,000]
Returns:	< numeric >	

GSM:BUJitter:TYPE <PRBS7 | PRBS10 | PRBS11>
GSM:BUJitter:TYPE?

Set or retrieve the PRBS jitter type.

Params:	<PRBS7>	Insert PRBS7 jitter
	<PRBS10>	Insert PRBS10 jitter
	<PRBS11>	Insert PRBS11 jitter
Returns:	< PRBS7 | PRBS10 | PRBS11 >	

GSM:EXHFrequency:ENABle <bool>
GSM:EXHFrequency:ENABle?

Set or retrieve whether the external high frequency jitter is enabled.

Params:	<bool>	On = 1, Off = 0
Returns:	< 1 >	External high frequency jitter is enabled
	< 0 >	External high frequency jitter is disabled

GSM:EXSJitter:AMPUi <numeric>
GSM:EXSJitter:AMPUi?

Set or retrieve the external sinusoidal jitter amplitude in percent of UI.

Params:	<numeric>	Range [0 to Maximum allowed %UI]. The amplitude limits change with regard to the analyzer operating frequency.
Returns:	< numeric >	

GSM:EXSJitter:MODE

Command is obsolete; see GSM:EXSJitter:INVErt and GSM:EXSJitter:ENABle.

GSM:EXSJitter:ENABle <bool>
GSM:EXSJitter:ENABle?

Enable/disable External Sinusoidal Jitter.

Params:	<bool>	On = 1, Off = 0
Returns:	< 1 >	EXS Jitter is enabled
	< 0 >	EXS Jitter is disabled

GSM:EXSJitter:INVErt <bool>
GSM:EXSJitter:INVErt?

Set or retrieve invert state of EXS Jitter.

Params:	<bool>	On = 1, Off = 0
Returns:	< 1 >	EXS Jitter is inverted
	< 0 >	EXS Jitter is not inverted

GSM:F2Jitter:AMPUi <numeric>
GSM:F2Jitter:AMPUi?

Set or retrieve the F/2 Jitter amplitude.

Params:	<numeric>	F/2 Jitter amplitude in %UI
Returns:	< numeric >	

GSM:F2Jitter:AVAilable?

Checks to see if the F/2 Jitter option is available. Query only.

Returns:	< 1 >	F/2 Jitter is available
	< 0 >	F/2 Jitter is not available

GSM:F2Jitter:ENABle <bool>
GSM:F2Jitter:ENABle?

Set or retrieve whether F/2 Jitter is enabled.

Params:	<bool>	On = 1, Off = 0
Returns:	< 1 >	F/2 Jitter is enabled
	< 0 >	F/2 Jitter is disabled

GSM:F2Jitter:MAXAmpui?

Returns the maximum %UI for the current F/2 Jitter synthesizer frequency. Query only.

Returns	<numeric>	Maximum %UI for F/2 Jitter synthesizer frequency

GSM:LFRJ:AMPUI <numeric>
GSM:LFRJ:AMPUI?

Set or retrieve the low frequency random jitter amplitude in percent of UI.

Params:	<numeric>	LFR Jitter amplitude in %UI
Returns:	< numeric >	

GSM:LFRJ:ENABLE <bool>
GSM:LFRJ:ENABLE?

Set or retrieve whether low frequency random jitter is enabled.

Params:	<bool>	On = 1, Off = 0
Returns:	< 1 >	LFR Jitter is enabled
	< 0 >	LFR Jitter is disabled

GSM:LFSJ:AMPPS <numeric>
GSM:LFSJ:AMPPS?

Set or retrieve the low frequency sinusoidal jitter amplitude in picoseconds.

Params:	<numeric>	LFS Jitter amplitude in ps
Returns:	< numeric >	

GSM:LFSJ:ENABLE <bool>
GSM:LFSJ:ENABLE?

Set or retrieve whether low frequency sinusoidal jitter is enabled.

Params:	<bool>	On = 1, Off = 0
Returns:	< 1 >	LFS Jitter is enabled
	< 0 >	LFS Jitter is disabled

GSM:LFSJ:FREQ <numeric>
GSM:LFSJ:FREQ?

Set or retrieve the low frequency sinusoidal jitter frequency in Hz.

Params:	<numeric>	LFSJ frequency in Hz
Returns:	< numeric >	

GSM:MMDLYENable <bool>
GSM:MMDLYENable?

Enable or disable the DAC-based delay function. This command is required before starting to adjust the delay. By enabling this function, the sinusoidal jitter (SJ), with the 220 ps range, and the random jitter (RJ) will automatically be turned on. This command will not work if the bit rate is not within the DAC range (<10 Gb/s).

Params:	<bool>	On = 1, Off = 0
	< 1 >	Enable the DAC function to adjust the delay..
	< 0 >	Disable the DAC function to adjust the delay.
Returns:	< 1 >	DAC function is enabled.
	< 0 >	DAC function is disabled.

GSM:MMDAC <value>
GSM:MMDAC?

Set or retrieve the DAC value when it is enabled. The maximum value can be set to 2400, which is approximately a 180 ps delay.

Params:	<value>	An integer in the range from 0 to 2400
Returns:	< value >	Range [0 to 2400] if the DAC function is enabled -1 if the DAC function is not enabled

GSM:RCONfiguration <"filename">

Restore Stress configuration. Action only.

Params:	<"filename">	Configuration filename enclosed in double quotes
Returns:	< filename >	

GSM:RJitter:AMPUi <numeric>
GSM:RJitter:AMPUi?

Set or retrieve the random jitter amplitude in percent of UI.

Params:	<numeric>	Range [0 to 50%]. The amplitude limits change with regard to the analyzer operating frequency.
Returns:	< numeric >	

GSM:RJitter:ENABle <bool>
GSM:RJitter:ENABle?

Set or retrieve whether random jitter on the clock is enabled.

Params:	<bool>	On = 1, Off = 0
Returns:	< 1 >	Random jitter on the clock is enabled
	< 0 >	Random jitter on the clock is disabled

GSM:RJ:TYPE <1GHZ | 100MHZ>
GSM:RJ:TYPE?

Set or retrieve the random jitter bandwidth type.

Params:	<1GHZ>	RJ bandwidth type 1 GHz
	<100MHZ>	RJ bandwidth type 100 MHz
Returns:	< 1GHZ | 100MHZ >	

GSM:SCONfiguration <“filename”>

Save Stress configuration. Action only.

Params:	<“filename”>	Configuration filename enclosed in quotes
Returns:	< filename >	

GSM:SJitter:AMPUi <numeric>
GSM:SJitter:AMPUi?

Set or retrieve the sinusoidal jitter amplitude in percent of UI.

Params:	<numeric>	Range [0 to Maximum allowed %UI]. The amplitude limits change with regard to the analyzer operating frequency.
Returns:	< numeric >	

GSM:SJitter:ENABle <bool>
GSM:SJitter:ENABle?

Set or retrieve whether sinusoidal jitter on the clock is enabled.

Params:	<bool>	On = 1, Off = 0
Returns:	< 1 >	Sinusoidal jitter on the clock is enabled
	< 0 >	Sinusoidal jitter on the clock is disabled

GSM:SJitter:FREQuency <numeric>
GSM:SJitter:FREQuency?

Set or retrieve the sinusoidal jitter frequency in Hz.

Params:	<numeric>	Range [1,000 to 100,000,000]
Returns:	< numeric >	

GSM:SJRaNGe <value>
GSM:SJRaNGe?

Set or retrieve the sinusoidal jitter modulation range in picoseconds.

Params:	<value>	130PS, 220PS, 270PS, 1100PS
Returns:	< value >	

GSM:SI1:AMPLitude <numeric>
GSM:SI1:AMPLitude?

Set or retrieve the value of the sinusoidal interference in mV on the channel 1 output.

Params:	<numeric>	Range [0 to 3000]. The amplitude limits change with regard to the analyzer operating frequency. Amplitude values between 0 and 2000 mV are calibrated; amplitude values above 2000 mV are not calibrated.
Returns:	< numeric >	

GSM:SI2:AMPLitude <numeric>
GSM:SI2:AMPLitude?

Set or retrieve the value of the sinusoidal interference in mV on the channel 2 output.

Params:	<numeric>	Range [0 to 400]. The amplitude limits change with regard to the analyzer operating frequency. Amplitude values between 0 and 2000 mV are calibrated; amplitude values above 2000 mV are not calibrated.
Returns:	< numeric >	

GSM:SI1:ENABle <bool>
GSM:SI1:ENABle?

Set or retrieve whether sinusoidal interference is enabled on the channel 1 output.

Params:	<bool>	On = 1, Off = 0
Returns:	< 1 >	Sinusoidal interference is enabled
	< 0 >	Sinusoidal interference is disabled

GSM:SI2:ENABle <bool>
GSM:SI2:ENABle?

Set or retrieve whether sinusoidal interference is enabled on the channel 2 output.

Params:	<bool>	On = 1, Off = 0
Returns:	< 1 >	Sinusoidal interference is enabled
	< 0 >	Sinusoidal interference is disabled

GSM:SI1:FREQuency <numeric>
GSM:SI1:FREQuency?

Set or retrieve the sinusoidal interference frequency in Hz on the channel 1 output.

Params:	<numeric>	Sinusoidal interference frequency in Hz. Range [200,000,000 to 6,000,000,000]
Returns:	< numeric >	

GSM:SI2:FREQuency <numeric>
GSM:SI2:FREQuency?

Set or retrieve the sinusoidal interference frequency in Hz on the channel 2 output.

Params:	<numeric>	Sinusoidal interference frequency in Hz. Range [200,000,000 to 6,000,000,000]
Returns:	< numeric >	

GSM:SI1:MODE <INPhase | OUTPhase | SINGle>
GSM:SI1:MODE?

Set or retrieve the internal sinusoidal interference mode on the channel 1 output.

Params:	<INPhase>	Sinusoidal interference is in phase
	<OUTPhase>	Sinusoidal interference is out of phase
	<SINGle>	Sinusoidal interfrence is single-ended (+ only)
Returns:	< INPHASE | OUTPHASE | SINGLE >	

GSM:SI2:MODE <INPhase | OUTPhase | SINGle>
GSM:SI2:MODE?

Set or retrieve the internal sinusoidal interference mode on the channel 2 output.

Params:	<INPhase>	Sinusoidal interference is in phase
	<OUTPhase>	Sinusoidal interference is out of phase
	<SINGle>	Sinusoidal interfrence is single-ended (– only)
Returns:	< INPHASE | OUTPHASE | SINGLE >	

GSM:STRess:ENABle <bool>
GSM:STRess:ENABle?

Set or retrieve whether the entire global stress feature is enabled. The entire stress feature includes jitter insertion of sinusoidal jitter (SJ), external sinusoidal jitter (EXSJ), random jitter (RJ), PRBS jitter (BUJ) and external high frequency jitter (EXHF).

There are commands to enable each individual stress insertion, such as GSM:SJitter:ENABle; however, unless the Stress Feature is enabled using this command, those individual jitter insertion enabling commands do not enable any jitter insertion. For example, if one sent a “GSM:SJ:ENAB 1” without enabling the stress feature (query “GSM:STR:ENAB?” returns 0), the system merely caches the SJ Enable value. The next time “GSM:STR:ENAB 1” is sent, the SJ is then enabled. After the stress feature is enabled, one can still enable or disable individual types of jitter insertion by sending the corresponding ENABle command.

This command corresponds to the Clock control “Jitter Insertion Enabled” menu item in the Generator view.

Params:	<bool>	On = 1, Off = 0
Returns:	< 1 >	All stress enabled
	< 0 >	All stress disabled

Detector

Complete command listing (See page 7, *Command listing*.)

DETector:ATTENFactor <numeric>
DETector:ATTENFactor?

Set or retrieve the Detector Data Input Attenuation Factor.

NOTE. *The format used for parameter and return value is determined by the current attenuation factor mode setting. See the DET:ATTENFM command.*

Params:	<numeric>	Valid ranges: 0.001:1 to 1000:1 or –60 dB to +60 dB
Returns:	<numeric>	

DETector:ATTENFactorMode <DECIBEL | RATIO>
DETector:ATTENFactorMode?

Set or retrieve Detector attenuation factor mode: Decibel or Ratio.

Params:	<DECIBEL>	The analyzer interprets and displays the Detector Data Input Attenuation Factor in dB. (Example: 20 dB)
	<RATIO>	The analyzer interprets and displays the Detector Data Input Attenuation Factor as a ratio. (Example: 20:1)
Returns:	< DECIBEL | RATIO >	

DETector:BINVert <bool>
DETector:BINVert?

Set or retrieve the blank invert of the Detector.

Params:	<bool>	On = 1, Off = 0
Returns:	< 1 >	Detector Blank is inverted
	< 0 >	Detector Blank is not inverted

DETector:BRM <numeric>
DETector:BRM?

Set or retrieve the Bit Rate Multiplier.

Params:	<numeric>	Range [1 to 8]. A value of –1 calculates the Bit Rate Multiplier value automatically.
Returns:	<numeric>	

DETector:CINVert <bool>
DET:CINV <bool>
DETector:CINVert?
DET:CINV?

Set or retrieve the clock invert of the Detector.

Params:	<bool>	On = 1, Off = 0
Returns:	< 1 >	Detector Clock is inverted
	< 0 >	Detector Clock is not inverted

DETector:DDEFs <numeric>
DETector:DDEFs?

Set or retrieve the Detector data delay in femto-seconds.

Params:	<numeric>	Set Detector data delay in fs
Returns:	<numeric>	

DETector:DDELay <numeric>
DETector:DDELay?

Set or retrieve the data delay of the Detector (in picoseconds).

Params:	<numeric>	Detector Data delay. When the analyzer is operating within the range [500 to 1,000 MHz], the Detector Data Delay is within a range [0 to 32,000 ps]. Input out of range will be clipped and recorded in the status queue. When the analyzer is operating within the range [1,100 to 12,500 MHz], the Detector Data Delay is within a range [0 to 3,000 ps].
Returns:	<numeric>	

DELAY:DETRecal?

Retrieve the information that indicates whether Detector delay needs recalibration. Query only.

NOTE. *Since monitoring for these calibrations is suspended while Physical Layer tests are running, using this command under those circumstances may not return an accurate result.*

Returns:	< 1 >	Needs Delay Recalibration
	< 0 >	Does not need a Delay Recalibration

DETector:DINVert <bool>
DETector:DINVert?

Set or retrieve the data invert of the Detector.

Params:	<bool>	On = 1, Off = 0
Returns:	< 1 >	Detector Data is inverted
	< 0 >	Detector Data is not inverted

DETector:DRATe?

Retrieve the data rate of the Detector. Query only.

Returns:	<numeric>	Detector Data rate in Bits/s. 0 = No Clock.

DETector:FULLRATEclock <bool>
DETector:FULLRATEclock?

Set or retrieve the Full Rate Clock property of the Detector.

Params:	<bool>	On = 1, Off = 0
Returns:	< 1 >	Detector is in Full Rate Clock mode
	< 0 >	Detector is in Half Rate Clock mode

DETector:OPERmode <ELEC | OPTIC>
DETector:OPERmode?

Set or retrieve Detector operating mode, Electrical or Optical.

Params:	<ELEC>	Analyzer operates in Electrical mode
	<OPTIC>	Analyzer operates in Optical mode
Returns:	< ELEC | OPTIC >	

DETector:PCALibration

Perform Detector delay calibration. Action only. May require some delay to complete.

DETector:RSNumber?

Retrieve the result serial number of the Detector. Query only.

Returns:	<numeric>	Detector's result serial number

DETector:USEPROTstream <bool>
DETector:USEPROTstream?

Set or retrieve whether the Detector Protocol Filtering option is enabled.

Params:	<bool>	On = 1, Off = 0
Returns:	< 1 >	Detector Protocol Filtering is on
	< 0 >	Detector Protocol Filtering is off

Detector Error Detector

Complete command listing (See page 7, *Command listing*.)

DETector:ARENable <bool>
DET:AREN <bool>

Set or retrieve the automatic resync setting of the Detector.

Params:	<bool>	On = 1, Off = 0
Returns:	< 1 >	Detector automatic resync is on
	< 0 >	Detector automatic resync is off

DETector:ARTHreshold <numeric>
DETector:ARTHreshold?

Set or retrieve the threshold of the Detector automatic resync.

Params:	<numeric>	Detector automatic resync threshold in number of errors. Range [3 to 100,000]. Input out of range will be clipped and recorded in the status queue.
Returns:	<numeric>	

DETector:DPATtern?

Retrieve detected pattern of the Detector.

Returns:		
	GRABNGO	Grab and Go
	NO_CLOCK	No clock
	NONE	No pattern
	NOT_AVAILABLE	Detector is in Live Data mode
	ONE	All ones
	IPN7 | IPN11 | IPN15 | IPN20 | IPN23 | IPN31	Pseudo-random pattern: PRBS-7, PRBS-11, PRBS-15, PRBS-20, PRBS-23, or PRBS-31
	RAM_SHIFTNSYNC	Shift and Sync
	RAM_TRIGGER	Trigger
	IGRABNGO	Inverted Grab and Go
	IPN7 | IPN11 | IPN15 | IPN20 | IPN23 | IPN31	Inverted pseudo-random pattern: PRBS-7, PRBS-11, PRBS-15, PRBS-20, PRBS-23, or PRBS-31
	IRAM_SHIFTNSYNC	Inverted Shift and Sync
	IRAM_TRIGGER	Inverted Trigger
	ZERO	All zeros

DETector:GLENgth <integer>
DETector:GLENgth?

Set or retrieve the Detector capture length. The action causes the machine to capture the input number of words into the Detector. The query returns the amount of captured RAM in words.

Params:	<integer>	Number of words to capture
Returns:	< integer >	Number of words captured

DETector:ISYNc?

Retrieve whether the Detector is in sync. Query only.

Returns:	< 1 >	Detector is in sync
	< 0 >	Detector is not in sync

DETector:LUPFilename?

Retrieve user pattern file that has been loaded to the Detector. Query only.

Returns:	< filename >	User pattern file that has been loaded to the Detector.

DETector:NALArm?

Retrieve the negative input protection alarm. Query only.

Returns:	< 1 >	Negative input protection alarm is on
	< 0 >	No negative input protection alarm

DETector:PALArm?

Retrieve the positive input protection alarm state. Query only.

Returns:	< 1 >	Positive input protection alarm is on
	< 0 >	No positive input protection alarm

DETector:PATTern <PN7 | PN11 | PN15 | PN20 | PN23 | PN31 | UGRab | USHift | AUTomatic | ALLZERO>
DETector:PATTern?

Set or retrieve the data type of the Detector.

Params:	<PN7 | PN11 | PN15 | PN20 | PN23 | PN31>	Pseudo-random data types: PRBS-7, PRBS-11, PRBS-15, PRBS-20, PRBS-23, PRBS-31
	<UGRab>	Grab and Go
	<USHift>	Shift and Sync
	<AUTomatic>	Automatic detection
	<ALLZERO>	All-zeros pattern
Returns:	< PN7 | PN11 | PN15 | PN20 | PN23 | PN31 | USTart | UGRab | USHift | AUTomatic | ZERO >	

DETector:RESEtall

Reset the Detector results AND Error Analysis results. Action only.

DETector:RRESults

Reset the Detector results. Action only.

DETector:SETHreshold <integer>
DETector:SETHreshold?

Set or retrieve the Detector Shift Error Tolerance. This action causes the machine to capture the input number of words into the detector.

Params:	<integer>	Number of errors permitted for synchronizing
Returns:	< integer >	

DETector:UPLoad<“filename”>

Load user pattern from the specified file. Action only.

Params:	<"filename">	Use the absolute path name and enclose the string in quotes.

DETector:UPLPercent?

Retrieve the user pattern loading percentage completion value. It returns 100 if the loading is complete. Query only.

Returns:	< numeric >	The percentage of user pattern loaded into the Detector

DETector:UPWLen?

Retrieve the word count from the Generator RAM. Query only.

Returns:	< numeric >	The number of words in RAM

Detector Start Detect

Complete command listing (See page 7, *Command listing*.)

DETector:SDETect:TMODe <REDGe | FEDGe | DISabled>
DETector:SDETect:TMODe?

Set or retrieve the trigger mode of the Detector Start Detect.

Params:	<REDGe>	Trigger at the rising edge
	<FEDGe>	Trigger at the falling edge
	<DISabled>	Trigger disabled
Returns:	< RisingEdge | FallingEdge | DISABLED >	

Detector Clock Input

Complete command listing (See page 7, *Command listing*.)

DETector:CINPut:TAC <bool>
DETector:CINPut:TAC?

Set or retrieve the termination AC of the Detector Clock input. May require some delay to complete.

Params:	<bool>	On = 1, Off = 0
Returns:	< 1 >	Detector Clock input termination AC is on
	< 0 >	Detector Clock input termination AC is off

DETector:CINPut:TVOLtage <numeric>
DETector:CINPut:TVOLtage?

Set or retrieve the termination voltage of the Detector Clock input in mV. May require some delay to complete.

Params:	<numeric>	Range [–2,000 to +2,000]. Input out of range will be clipped and recorded in the status queue.
Returns:	<numeric>	

Detector Data Input

Complete command listing (See page 7, *Command listing*.)

DETector:ATTENFactor <numeric>
DETector:ATTENFactor?

Set or retrieve the Detector Data Input Attenuation Factor.

NOTE. *The format used for parameter and return value is determined by the current attenuation factor mode setting.*

Params:	<numeric>	Valid ranges [0.001:1 to 1000:1] or [–60 dB to +60 dB]
Returns:	<numeric>	

DETector:ATTENFactorMode <DECIBEL | RATIO>
DETector:ATTENFactorMode?

Set or retrieve Detector attenuation factor mode, Decibel or Ratio.

Params:	<DECIBEL>	The analyzer interprets and displays the Detector Data Input Attenuation Factor in dB. (Example: 20 dB)
	<RATIO>	The analyzer interprets and displays the Detector Data Input Attenuation Factor as a ratio. (Example: 20:1)
Returns:	< DECIBEL | RATIO >	

DETector:DINPut:CLIPped?

Retrieve whether the Detector Data input setting is clipped. Query only.

Returns:	< 1 >	Detector Data input setting is clipped
	< 0 >	Detector Data input setting is not clipped

DETector:DINPut:IMODe <DIFFerential | SENDed | ISENded>
DETector:DINPut:IMODe?

Set or retrieve the interface mode of the Detector Data input. May require some delay to complete.

Params:	<DIFFerential>	Differential interface
	<SENDed>	Single-ended interface
	<ISENded>	Inverted single-ended interface
Returns:	< Differential | SingleEnded | SingleEndedInverted >	

DETector:DINPut:LFAMily <LVTTL | CML | ECL | LVPECL | LVDS | SCFL | DLVTTL | DCML | DECL | DLVPECL | DLVDS | DSCFL>
DETector:DINPut:LFAMily?

Set or retrieve the Data input logic family.

Params:	<LVTTL | CML | ECL | LVPECL | LVDS | SCFL | DLVTTL | DCML | DECL | DLVPECL | DLVDS | DSCFL>	The data input logic family
Returns:	< LVTTL | CML | ECL | LVPECL | LVDS | SCFL | DIFF-LVTTL | DIFF-CML/SCFL | DIFF-ECL | DIFF-LVPECL | DIFF-LVDS | DIFF-CML/SCFL>	

DETector:DINPut:THReshold <numeric>
DETector:DINPut:THReshold?

Set or retrieve the threshold of the Detector Data input in mV. May require some delay to complete.

Params:	<numeric>	Range [–2,400 to +2,500]. Input out of range will be clipped and recorded in the status queue.
Returns:	<numeric>	

DETector:DINPut:TVOLtage <numeric>
DETector:DINPut:TVOLtage?

Set or retrieve the termination voltage of the Detector Data input in mV. May require some delay to complete.

Params:	<numeric>	Range [–2,000 to +3,100]. Input out of range will be clipped and recorded in the status queue.
Returns:	<numeric>	

Detector Blank Input

Complete command listing (See page 7, *Command listing*.)

DETector:BINPut:CDBLank <bool>
DETector:BINPut:CDBLank?

Set or retrieve the “Count during blank” setting of the Detector Blank input.

Params:	<bool>	On = 1, Off = 0
Returns:	< 1 >	Detector blank input count during blank is on
	< 0 >	Detector blank input count during blank is off

DETector:BINPut:ROENd <bool>
DETector:BINPut:ROENd?

Set or retrieve the “Resync on end” setting of the Detector Blank input.

Params:	<bool>	On = 1, Off = 0
Returns:	< 1 >	Detector blank input resync on end is on
	< 0 >	Detector blank input resync on end is off

Detector Trigger

Complete command listing (See page 7, *Command listing*.)

DETector:TOFFset <numeric>
DETector:TOFFset?

Set or retrieve the Detector Trigger offset.

Params:	<numeric>	Detector Trigger offset. In 128-bit words. Range [0 to (Pattern Size –1)] if the detected pattern is one of the PRBS patterns. For others, the range is [0 to 0]. Input out of range will be clipped and recorded in the status queue.
Returns:	<numeric>	

DETector:TOMethod <PCYCle | CLOCk>
DETector:TOMethod?

Set or retrieve the Detector Trigger out method.

Params:	<PCYCle>	Detector Trigger out method is pattern cycle
	<CLOCk>	
Returns:	< PATTERNCYCLE | CLOCK/64 >	

Detector Results

Complete command listing (See page 7, *Command listing*.)

DETector:BDMode <TACCumulation | INTerval>
DETector:BDMode?

Set or retrieve the Detector BER display mode.

Params:	<TACCumulation>	Display the total accumulation BER
	<INTerval>	Display the BER of the interval
Returns:	< ACCUMULATION | INTERVAL >	

DETector:BEDFormat <DECimal | SCIentific>
DETector:BEDFormat?

Set or retrieve the Detector's display format for bits and errors.

Params:	<DECimal>	Display the bits and errors as decimal
	<SCIentific>	Display the bits and errors in scientific format
Returns:	< DECIMAL | SCIENTIFIC >	

DETector:BER?

Retrieve the current bit error rate. Query only.

DETector:BITS?

Retrieve how many bits the Detector has received. Query only.

DETector:EFBits?

Retrieve the latest count of error free bits. Query only.

DETector:EFTime?

Retrieve the latest error free time. Query only.

DETector:ETIMe?

Retrieve the elapsed time since last reset. Query only.

DETector:ERRors?

Retrieve how many errors the Detector has detected. Query only.

DETector:RESEtall

Reset the Detector AND Error Analysis results. Action only.

DETector:RRESults

Reset the Detector results. Action only.

DETector:RESYncs?

Retrieve how many resyncs the Detector has tried. Query only.

DETector:RUINterval <numeric>
DETector:RUINterval?

Set or retrieve the Detector's results update interval.

Params:	<numeric>	Detector results update interval in seconds. Range [1 to 3,600]. Input out of range will be clipped and recorded in the status queue.
Returns:	<numeric>	

Detector Symbol Filtering

Complete command listing (See page 7, *Command listing*.)

DETector:SYMbolFILtering:ENABle <bool>
DETector:SYMbolFILtering:ENABle?

Set or retrieve whether Detector Symbol Filtering option is enabled (the corresponding option must be purchased).

Params:	<bool>	On = 1, Off = 0
Returns:	< 1 >	Detector Symbol Filtering is on
	< 0 >	Detector Symbol Filtering is off

DETector:SYMbolFILtering:PRESET <USB3 | SATA | PCIE | PCIESWITCH | SASALIGN | SASPRIMITIVES>

Sets Detector Symbol Filtering according to a preset. The presets are equivalent to setting the symbols as shown below. Action only

Params:	<USB3 >	Set symbols to: K28.1, K28.1
	<SATA>	Set symbols to: K28.1, D10.2, D10.2, D27.3
	<PCIE>	Set symbols to: K28.0, K28.0
	<PCIESWITCH>	Set symbols to: K28.0
	<SASALIGN>	
	<SASPRIMITIVES>	
Returns:	< USB3 | SATA | PCIE | PCIESWITCH | SASALIGN | SASPRIMITIVES >	

DETector:SYMbolFILtering:SYMBOLS <sym0>[,<sym1>[,<sym2>[,<sym3>]]]
DETector:SYMbolFILtering:SYMBOLS?

Set or retrieve symbol sequence for Detector Symbol Filtering. User can specify up to four symbols to be filtered. Usage examples:

```
DET:SYMFIL:SYMBOLS K28.1,K28.1
DET:SYMFIL:SYMBOLS K28.1,D10.2,D10.2,D27.3
```

Params:	<sym0>[,<sym1>[,<sym2>[,<sym3>]]]>	Set up to 4 symbols to be filtered
Returns:	< sym0 >[,< sym1 >[,< sym2 >[,< sym3 >]]] >	

Detector Convenience

Complete command listing (See page 7, *Command listing*.)

DETector:PDCenter

Perform Data Centering. This command is equivalent to the Auto Align function on the local control interface. May require some delay to complete. Action only.

DETector:MRESync

Perform manual resync. Action only.

Detector Auto Align Results

Complete command listing (See page 7, *Command listing*.)

DETector:DCAMv?
DET:DCAM?

Retrieve the data center amplitude in mV. Query only.

DETector:DCHMv?
DET:DCHM?

Retrieve the data center height in mV. Query only.

DETector:DCSuccess?
DET:DCS?

Retrieve whether Detector Data Centering (Auto Align) succeeds or not. Query only.

Returns:		
	< 1 >	Data centering is successful
	< 0 >	Data centering is not successful

DETector:DCTime?

DET:DCT?

Retrieve the data center time. Query only.

DETector:DCUinterval?

DET:DCU?

Retrieve the data center unit interval. Query only.

DETector:DCUMv?

DET:DCUM?

Retrieve the data center Ua in mV. Query only.

DETector:DCWidth?

DET:DCW?

Retrieve the data center width. Query only.

DETector:IVALue?

DET:IVAL?

Retrieve the illegal value. Query only. Before data centering is successful, all the result queries will return this illegal value. The user can read the value to know what it is.

Detector Optical Mode

Complete command listing (See page 7, *Command listing*.)

NOTE. *In Electrical mode, values are displayed in mV or percent of amplitude. In Optical mode, choose between mW or dBm.*

DETector:OPERmode <ELEC | OPTIC>
DETector:OPERmode?

Set or retrieve Detector operating mode, Electrical or Optical.

Params:	<ELEC>	The analyzer operates in Electrical mode
	<OPTIC>	The analyzer operates in Optical mode
Returns:	< ELEC | OPTIC >	

OPTIC:ADDRcv <"string",long,double,double,bool>

Add a new optical Receiver. Action only

Params:	<"Name">	String of (maximum) 15 characters. String is enclosed in double quotes.
	<Wavelength>	Range [500 to 2000]
	<Gain>	Range [1 to 3000]
	<Offset>	Range [500 to 2000]
	<ACCoupled>	Boolean: True (1) for AC Coupled, False (0) for DC Coupled

OPTIC:DELRcv <“string”>

Delete an optical Receiver.

Params:	<“Name”>	String of (maximum) 15 characters. String is enclosed in double quotes. There should be at least one valid optical receiver.

OPTIC:PIKRcv <“string”>

OPTIC:PIKRcv?

Select or retrieve the selected optical Receiver.

Params:	<“Name”>	String of (maximum) 15 characters. String is enclosed in double quotes. There should be at least one valid optical receiver.
Returns:	<"string">	

Clock Recovery Option

Complete command listing (See page 7, *Command listing*.)

Software is available to control the BERTScope Clock Recovery instrument through the BERTScope Analyzer interface. The following commands apply only to a BERTScope Analyzer with the Clock Recovery Option capability installed.

Clock Recovery command summary (See page 69, *Clock recovery command summary*.)

Clock Recovery Service (See page 72, *CRService : Clock Recovery Service*.)

Clock Recovery Control (See page 73, *CRControl : Clock Recovery Control*.)

CR Loop Response (See page 82, *Clock Recovery Loop Response*.)

SSC Waveform (See page 84, *Clock Recovery SSC Waveform*.)

CR Jitter Spectrum – CRJ (See page 87, *Clock Recovery Jitter Spectrum*.)

CR Miscellaneous (See page 91, *Clock Recovery Miscellaneous*.)

Sample Program for Clock Recovery Remote Control (See page 94, *Clock Recovery: Sample Program*.)

The characteristics that define a standard are:

- Standard Name (up to 11 characters; may contain spaces)
- Nominal Frequency (150 MHz to 12.5 GHz)
- Loop Bandwidth (0.02 MHz to 12 MHz)
- Peaking (0.0 dB to 6.0 dB)
- Lock Range (10 MHz to 500 MHz)
- Nominal Edge Density (10.0% to 100%)

The following industry standards are pre-programmed as defined at this time. Note that the definitions of the standards are subject to change by the establishing committees.

All parameters can be manually adjusted, and custom configurations can be created. This provision also makes it possible to delete a predefined standard — if this happens, you will have to manually re-create its settings.

Standard	Nominal Frequency	Loop Bandwidth	Peaking	Lock Range	Nominal Edge Density
	Hz	Hz	dB	Hz	Percent
FBDIMM1 3.2	3.20000E+09	1.10000E+07	1	5.00E+07	50
FBDIMM1 4.0	4.00000E+09	1.10000E+07	1	5.00E+07	50
FBDIMM1 4.8	4.80000E+09	1.10000E+07	1	5.00E+07	50
FBDIMM2 4.8	4.80000E+09	1.10000E+07	1	5.00E+07	50
FBDIMM2 6.4	6.40000E+09	1.10000E+07	1	5.00E+07	50
FBDIMM2 8.0	8.00000E+09	1.10000E+07	1	5.00E+07	50
FBDIMM2 9.6	9.60000E+09	1.10000E+07	1	5.00E+07	50
FC1X	1.06250E+09	6.38000E+05	0.1	5.00E+07	50
FC2X	2.12500E+09	1.27500E+06	0.1	5.00E+07	50
FC4X	4.25000E+09	2.55000E+06	0.1	5.00E+07	50
FC8X	8.50000E+09	5.10000E+06	0.1	5.00E+07	50
GbE1	1.25000E+09	6.37000E+05	0.1	5.00E+07	50
GbE10	1.03125E+10	4.00000E+06	0.1	5.00E+07	50
OC12	6.22000E+08	2.50000E+05	0.1	5.00E+07	50
OC48	2.48800E+09	1.00000E+06	0.1	5.00E+07	50
OC192	9.95000E+09	4.00000E+06	0.1	5.00E+07	50
OIF CEI 6G+	6.00000E+09	4.00000E+06	0.1	5.00E+07	50
OIF CEI 11G+	1.10000E+10	8.00000E+06	0.1	5.00E+07	50
PCIe-1(2.5)	2.50000E+09	2.50000E+06	1.5	5.00E+07	50
PCIe-1(10.0)	2.50000E+09	10.0000E+06	2.2	5.00E+07	50
PCIe-2(6.0)	5.00000E+09	6.00000E+06	0.5	5.00E+07	50
PCIe-2(10.0)	5.00000E+09	10.0000E+06	2.2	5.00E+07	50
PCIe-3(2.5)	8.00000E+09	2.50000E+06	1.5	5.00E+07	50
PCIe-3(4.5)	8.00000E+09	4.50000E+06	0.5	5.00E+07	50
SATA1(0.9)	1.50000E+09	9.00000E+05	2.09	5.00E+07	50
SATA1(1.98)	1.50000E+09	1.98000E+06	0	5.00E+07	100
SATA1(6.0)	1.50000E+09	6.00000E+06	2.09	5.00E+07	100
SATA2(1.8)	3.00000E+09	1.80000E+06	2.09	5.00E+07	50
SATA2(1.98)	3.00000E+09	1.98000E+06	0	5.00E+07	100

SATA2(6.0)	3.00000E+09	6.00000E+06	2.09	5.00E+07	100
XAUI	3.12500E+09	1.87500E+06	0.1	5.00E+07	50
XFP/XFI RX	9.95000E+09	8.00000E+06	0.1	5.00E+07	50
XFP/XFI TX	9.95000E+09	4.00000E+06	0.1	5.00E+07	50

Clock recovery command summary

Complete command listing (See page 7, *Command listing*.)

CRService Commands RC CRService Clock Recovery Service(See page 72, *CRService : Clock Recovery Service*.) (usablebefore OPEN)

Dynamic Read-Only Properties

TOTALDEVCOUNT or TDCT
ATTACHDEVCOUNT or ADCT
ATTACHDEVNAMES or NAMES

Read-Write Settings

OPEN

Write-Only Operations

CLOSE

CRControl Commands (requires prior OPEN)

Static Read-Only Identification and Capabilities

SERIALNUM or SN
DEVICENAME or DN
SWREV or SW
HWREV or HW
FPGAREV or FPGA
EXPREV or EXP
STANDARDLIST or STANDARDS
SUBCLOCKDIVLIST or SUBDIVS

Dynamic Read-Only Properties

CONNECTED or CONN
BUSY
LOCKSTATE or LOCKST
LOCKCOUNT or LOCKCT
DATARATE
DUTYCYCLEDISTORTION or DCD
EDGEDENSITY or EDGED
MAXLBW or MAXCALLOOPBWIDTH
MINLBW or MINCALLOOPBWIDTH
PHASEERRP2P or PHERR
PHASEERRRMS or PHERMS

Read-Write Settings

STANDARD
NOMFREQUENCY or NOMFREQ
LOCKRANGE or RANGE
LOOPBANDWIDTH or LOOPBW
PEAKING
LOCKMODE
EDGEDENSITYMODE or EDGEDMODE
NOMEDGEDENSITY or NOMEDGED
PHASEERRLIMIT or PHERRLMT
CLOCKOUTPUT or CLKOUT
CLOCKAMPLITUDE or CLKAMPL
SUBCLOCKOUTPUT or SUBOUT
SUBCLOCKAMPLITUDE or SUBAMPL
SUBCLOCKDIV or SUBDIV
AUTOSCONFIGDEVICE or AUTOSDEV

Write-Only Operations

RELOCK or LOCK
RESETLOCKCOUNT or RESETLOCKCT
SCONFIGDISK or SDISK
RCONFIGDISK or RDISK
RCONFIGURATION or RCONFIG
SCONFIGDEVICE or SDEV
SCONFIGURATION or SCONFIG
RCONFIGDEVICE or RDEV
CREATESTANDARD
DELETESTANDARD

CRLoopResponse Commands Clock Recovery Loop Response (See page 82, *Clock Recovery Loop Response*.) (requires prior OPEN)

Read-Write Settings

AVGSETTING or AVGS
CHARTTYPE
DERIVATIVEDELTA
MBARSEL
PLOTTYPE
SHIFT

Dynamic Read-Only Measurements

BANDWIDTH
MTHREEDBCAL
PEAKING
PEAKFREQ
MTHREEDBCAL

crSSCWaveform Commands Clock Recovery SSC Waveform (See page 84, *Clock Recovery SSC Waveform*.) (requires prior OPEN)

Dynamic Read-Only Properties and Measurements

AVGCOUNT or AVGC
NUMSCANS or SCANS
NUMHISTOGRAMS or HISTOS
HISTOGRAMPOINTS or HISTOPTS
DEVMIN_PPM or DEVMIN
DEVMIN_HZ
DEVMAX_PPM or DEVMAX
DEVMAX_HZ
MAXDER
MODFREQ
NOMFREQ

CRService : Clock Recovery Service

Complete command listing (See page 7, *Command listing*.)

CRService:AttachDevCounT?

Retrieves the number of unique BERTScope CRs (unique serial numbers) that are currently communicating with the Clock Recovery Service, whether or not the remote computer has OPENed a session to any of them. Query only.

Returns:	<numeric>	Number of CRs found

CRService:attachdevNAMES?

Retrieves a comma-separated list of all BERTScope CRs currently communicating with the Clock Recovery Service, whether or not the remote computer has OPENed a session to any of them. Query only.

Each BERTScope CR is identified by its user-assignable device name.

Returns:	<"string">	Comma-separated list of BERTScope CRs found, or "" if none

CRService:CLOSE

Close the communication connection to the current BERTScope CR. Action only.

Note that closing the current BERTScope CR requires that a new current BERTScope CR be selected (or opened) prior to issuing any more device-specific commands.

CRService:OPEN <"string">
CRService:OPEN?

Selects or Returns the device name of the current BERTScope CR.

The user-assigned device name or serial number string may be passed to select a particular BERTScope CR. An empty string may be passed to select the first (usually only) BERTScope CR found. A BERTScope CR can be opened by multiple clients.

Params:	<"string">	Serial number, device name, or "" if none
Returns:	<"string">	Current device name, or "NONE"

CRService:TotalDevCounT?

Retrieves the total number of unique BERTScope CRs (unique serial numbers) that the Clock Recovery Service has encountered since last restarted. Query only.

NOTE. *This number may include devices that are no longer connected to the host computer, or are powered off.*

Returns:	<numeric>	Number of CRs encountered

CRControl : Clock Recovery Control

Complete command listing (See page 7, *Command listing*.)

CRControl:AUTOSconfigDEVice <bool>
CRControl:AUTOSconfigDEVice?

Sets or retrieves the "Setup Auto-Save" flag state.

This flag determines whether or not the BERTScope CR restores its shutdown state at power-on.

Params:	<bool>	0 or 1
Returns:	< 0 >	Off – Shutdown state is not restored at power-on
	< 1 >	On – Shutdown state is restored at power-on

CRControl:BUSY?

Retrieves the busy status of the currently selected BERTScope CR. Query only.

Returns:	< 0 >	Device is for available for communication
	< 1 >	Device is temporarily unavailable for communication

CRControl:CLocKOUTput <bool>
CRControl:CLocKOUTput?

Sets or retrieves whether the clock output is enabled.

Params:	<bool>	0 or 1
Returns:	< 0 >	Clock output disabled
	< 1 >	Clock output enabled

CRControl:CLocKAMPLitude <numeric>
CRControl:CLocKAMPLitude?

Sets or retrieves the clock output amplitude in mV.

Params:	<numeric>	Range [250 mV to 900 mV]
Returns:	<numeric>	Current clock output amplitude in mV

CRControl:CONNected?

Retrieves the connection status of the currently selected BERTScope CR. Query only.

Returns:	< 0 >	Device is opened, but not found by the host computer
	< 1 >	Device is opened and available for communication

CRControl:CREATESTANDARD <"string">

Saves a new Clock Recovery Standard to the non-volatile memory of the BERTScope CR, using the current settings for NOMFREQUENCY, LOCKRANGE, LOOPBANDWIDTH, PEAKING, and NOMEDGEDENSITY. Action only.

NOTE. *The Standard name parameter is case-sensitive, and may contain space characters.*

Params:	<"string">	Name of the Standard to select

CRControl:DATARATE?

Retrieves the measured data rate in Hertz. Query only.

Returns:	<numeric>	Measured data rate in Hz

CRControl:DELETESTANDARD <"string">

Removes a Clock Recovery Standard from the BERTScope CR's non-volatile memory. Action only.

NOTE. *The Standard name parameter is case-sensitive, and may contain space characters.*

NOTE. *The factory-supplied Standards are treated no differently than user-created Standards, and can be deleted. If accidentally deleted, a Standard can be manually re-created by pre-setting the desired values for NOMFREQUENCY, LOCKRANGE, LOOPBANDWIDTH, PEAKING, and NOMEDGEDENSITY, then sending CRC:CREATESTANDARD with the desired Standard name.*

Params:	<"string">	Name of the Standard to delete

CRControl:DeviceName <"string">
CRControl:DeviceName?

Changes or retrieves the device name of the currently selected BERTScope CR. A device name can be from 1 to 11 characters in length. Note that the BERTScope CR device name is saved in non-volatile memory.

Params:	<"string">	New device name
Returns:	<"string">	Device name of current device

CRControl:DutyCycleDistortion?

Retrieves the Duty Cycle Distortion measurement in % Unit Interval. Query only.

Note: The DCD measurement is only valid for the period of acquisition, so a new "CRC:MDCD" should be called prior to each "CRC:DCD?" query.

Returns:	<numeric>	DCD measurement in %UI

CRControl:EDGEDensity?

Retrieves the measured edge density in percent. Query only.

Returns:	<numeric>	Measured edge density in %

CRControl:EDGEDensityMODE <enum>
CRControl:EDGEDENSITYMODE?

Sets or retrieves the edge density mode.

Params:	<NOMINAL>	Use NOMEDGEDENSITY setting
	<ON_LOCK>	Use edge density found when first locked
Returns:	< NOMINAL | ON_LOCK >	

CRControl:EQUALization <numeric>
CRControl: EQUALization?

Sets or retrieves the equalization value.

Params:	<numeric>	Range [0 to 10]
Returns:	<numeric>	Current setting

CRControl:EXPrev?

Retrieves the expansion board revision string of the currently selected BERTScope CR. Query only.

Note that if no expansion board is installed in the BERTScope CR, then "XXXX" is returned.

Returns:	<"string">	Expansion board revision string

CRControl:FPGArev?

Retrieves the FPGA revision string of the currently selected BERTScope CR. Query only.

Returns:	<"string">	FPGA revision string

CRControl:HWrev?

Retrieves the hardware revision string of the currently selected BERTScope CR. Query only.

Returns:	<"string">	Hardware revision string

CRControl:LOCKCounT?

Retrieves the number of times the device has relocked since last reset. Query only.

Returns:	<numeric>	Number of times the device has relocked

CRControl:LOCKMODE <enum>
CRControl:LOCKMODE?

Sets or retrieves the lock mode of the currently selected BERTScope CR.

Params:	<MANUAL>	Lock mode is manual
	<AUTOMATIC>	Lock mode is automatic
	<NARROW>	Lock mode is narrow
Returns:	< MANUAL | AUTOMATIC | NARROW >	

CRControl:lockRANGE <numeric>
CRControl:lockRANGE?

Sets or retrieves the +/- lock range in Hertz, about the nominal frequency.

Params:	<numeric>	Range [10E6. Hz to 500E6. Hz]
Returns:	<numeric>	Current lock range setting in Hz

CRControl:LOCKSTate?

Retrieves the lock state of the currently selected BERTScope CR. Query only.

Returns:	< UNLOCKED >	Unlocked
	< ACQUIRINGLOCK >	Acquiring lock
	< LOCKED >	Locked
	< HIGHJITTER >	High jitter locked

CRControl:LOOPBandWidth <numeric>
CRControl:LOOPBandWidth?

Sets or retrieves the loop bandwidth in Hz.

Params:	<numeric>	Range is 100E3 Hz to 12E6 Hz
Returns:	<numeric>	Current setting in Hz

CRControl:MAXcalLoopBWidth?

Retrieves the maximum calibrated loop bandwidth in Hz. Query only.

Returns:	<numeric>	Maximum calibrated Loop Bandwidth in Hz

CRControl:MeasureDCD

Initiate the Duty Cycle Distortion measurement. Action only.

Notes:

- The measurement takes approximately 1 second.
- The CRJ will lose lock during the measurement.
- An application should poll until the CRC:BUSY? query returns 0, before attempting to read the DCD value.
- The DCD measurement is only valid for the period of acquisition, so a new CRC:MDCD should be called prior to each CRC:DCD? query.

CRControl:MINcalLoopBWidth?

Retrieves the minimum calibrated loop bandwidth in Hz. Query only.

Returns:	<numeric>	Minimum calibrated Loop Bandwidth in Hz

CRControl:NOMEDGEDensity <numeric>
CRControl:NOMEDGEDensity?

Sets or retrieves the nominal edge density in percent.

Params:	<numeric>	Range [10% to 100%]
Returns:	<numeric>	Current edge density setting in %

CRControl:NOMFREQuency <numeric>
CRControl:NOMFREQuency?

Sets or retrieves the nominal frequency in Hz.

Params:	<numeric>	Range is 150E6 Hz to 12.5E9 Hz
Returns:	<numeric>	Current setting in Hz

CRControl:PEAKING <numeric>
CRControl:PEAKING?

Sets or retrieves the peaking in dB.

Params:	<numeric>	Range is to 0 dB to 6 dB
Returns:	<numeric>	Current setting in dB

CRControl:PHaseERRLiMiT <numeric>
CRControl:PHaseERRLiMiT?

Sets or retrieves the the phase error limit in percent unit interval.

Params:	<numeric>	Range is 10 %UI to 90 %UI
Returns:	<numeric>	Current setting in %UI

CRControl:PHASEERRP2P?

Retrieves the phase error peak-to-peak measurement in percent unit interval. Query only.

Returns: <numeric>

CRControl:PHASEERRRMS?

Retrieves the phase error RMS measurement in percent unit intervals. Query only.

Returns: <numeric>

CRControl:RconfigDEVice <enum>

Restores BERTScope CR settings from a non-volatile Setup location in the BERTScope CR. Action only.

Params:		
	<POWER_ON>	Configuration used at power-on
	<SETUP_1>	
	<SETUP_2>	
	<SETUP_3>	
	<SETUP_4>	
	<FACTORY>	Restore to the “factory default” configuration

CRControl:RconfigDISK <"string">

Restores BERTScope CR settings from a file. The complete path must be specified in the parameter string. The path must be accessible to the host computer or BERTScope CR running the remote control software. Use the file extension “.cru” and enclose the path name in quotes. Action only.

Example: `CRC:RDISK “D:\BitAlyzer\Configurations\mycfg.cru”`

Params:		
	<“string.cru”>	Path name of the configuration file

CRControl:reLOCK

Initiates a search for the data rate. Action only.

.

NOTE. *This command may take some time to complete. An application program would typically call this, then repeatedly query LOCKSTATE until lock is achieved.*

CRControl:RESETLOCKCounT

Resets the lock count to zero. Action only.

CRControl:SconfigDEVice <enum>

Saves the current BERTScope CR settings to a non-volatile Setup location in the BERTScope CR. Action only.

Params:	<POWER_ON>	Configuration used at power-on
	<SETUP_1>	
	<SETUP_2>	
	<SETUP_3>	
	<SETUP_4>	

CRControl:SconfigDISK <"string">

Saves the current BERTScope CR settings to a file. The complete path must be specified in the parameter string. The path must be accessible to the host computer or BERTScope running the remote control software. Use the file extension ".cru" and enclose the path name in quotes. Action only.

Example: `CRC:SDISK "D:\BitAlyzer\Configurations\mycfg.cru"`

Params:	<"string.cru">	Path name of the configuration file

CRControl:SerialNum?

Retrieves the serial number string of the currently selected BERTScope CR. Query only.

Returns:	<"string">	Serial number string of current device

CRControl:STANDARD <"string">
CRControl:STANDARD?

Changes or retrieves the name of the Clock Recovery Standard. Selecting a new Standard will change the BERTScope CR's settings for NOMFREQUENCY, LOCKRANGE, LOOPBANDWIDTH, PEAKING, and NOMEDGEDENSITY.

NOTE. *The Standard name parameter is case-sensitive, and may contain space characters.*

Params:	<"string">	Name of the Standard to select
Returns:	<"string">	Currently selected Standard, or "None"

CRControl:STANDARDliSt?

Retrieves a comma-separated list of the available Standards. Query only.

NOTE. *The Standard names are case-sensitive, and may contain space characters.*

Returns:	<"string">	Standards are comma-separated in the string

CRControl:SWrev?

Retrieves the firmware revision string of the currently selected BERTScope CR. Query only.

Returns:	<"string">	Firmware revision string

CRControl:SUBclockAMPLitude <numeric>
CRControl:SUBclockAMPLitude?

Sets or retrieves the sub-rate clock amplitude in mV.

Params:	<numeric>	Range is 250 mV to 900 mV
Returns:	<numeric>	Current sub-rate clock output amplitude in mV

CRControl:SUBclockDIV <numeric>
CRControl:SUBclockDIV?

Sets or retrieves the sub-rate clock divisor.

Params:	<numeric>	The divisor used by the sub-rate clock. (Full rate = 1) 1, 2, 4, 5, 6, 7, 8, 9, 10,12, 14, 16, 18, 20, 24, 25, 28, 30, 32, 35, 36, 40, 42, 45, 48, 49, 50, 54, 56, 60, 63, 64, 70, 72, 80, 81, 90, 100, 108, 112, 120, 126, 128, 140, 144, 160, 162, 168, 180, 192, 196, 200, 216, 224, 240, 252, 256, 280, 288, 320, 324, 336, 360, 384, 392, 432, 448, 504, 512, 576, 648
Returns:	<numeric>	Current sub-rate clock divisor setting

CRControl:SUBclockDIVliSt?

Retrieves a comma-separated list of available sub-rate clock divisors. Query only.

Returns:	<"string">	Divisors are comma-separated in the string

CRControl:SUBclockOUTput<bool>
CRControl:SUBclockOUTput?

Sets or retrieves sub-rate clock output enable state.

Params:	<bool>	0 or 1
Returns:	< 0 >	Disabled
	< 1 >	Enabled

Clock Recovery Loop Response

Complete command listing (See page 7, *Command listing*.)

CRLoopresponse:BANDWIDTH?

Retrieves the measured Loop Response Bandwidth (Amplitude chart type only). Query only.

Returns:	<numeric>	Bandwidth in Hz

CRLoopresponse:CHARTTYPE <enum>
CRLoopresponse:CHARTTYPE?

Sets or retrieves the Loop Response Chart Type.

Params:	<AMPLITUDE>	Amplitude chart type
	<PHASE>	Phase chart type
Returns:	< AMPLITUDE | PHASE >	

CRLoopresponse:MBARSEL <enum>
CRLoopresponse:MBARSEL?

Set or retrieve the CR Loop Response Sidebar selection.

Params:	<OFF>	No Sidebar
	<MEASUREMENTS>	Show Measurement Sidebar
	<GENERATOR>	Show Generator Sidebar
	<STRESS>	Show Stress Sidebar (if Stress Option is enabled)
	<CRU>	Show CRU Sidebar
	<DETECTOR>	Show Detector Sidebar
	<TXEQ>	Show TX Equalizer Sidebar
Returns:	< OFF | MEASUREMENTS | GENERATOR | STRESS | CRU | DETECTOR | TXEQ>	

CRLoopresponse:MTHREEDBCAL?

Retrieves the measured Jitter transfer function frequency at which it crosses –3 dB (Amplitude chart type only). Query only.

Returns:.	<numeric>	Frequency in Hz

CRLoopresponse:PEAKFREQ?

Retrieves the measured Loop Response Peak Frequency (Amplitude chart type only). Query only.

Returns:	<numeric>	Peak Frequency in Hz

CRLoopresponse:PEAKING?

Retrieves the measured Loop Response Peaking (Amplitude chart type only). Query only

Returns:	<numeric>	Peaking in dB

Clock Recovery SSC Waveform

Complete command listing (See page 7, *Command listing*.)

crSSCWaveform:AVGCount?

Retrieves the number of averages completed. Query only

Returns:	<numeric>	Averages completed

crSSCWaveform:AVGSetting <numeric>
crSSCWaveform:AVGSetting?

Sets or retrieves the number of running averages to perform.

Params:	<numeric>	Range [1 to 20]
Returns:	<numeric>	Current average setting

crSSCWaveform:AXISYUNITS <enum>
crSSCWaveform:AXISYUNITS?

Sets or retrieves the Y axis units for the SSC plot.

Params:	<PPM>	Y axis units are ppm
	<HZ>	Y axis units are Hz
Returns:	< PPM | HZ >	

crSSCWaveform:DERIVATIVEDELTA <numeric>
crSSCWaveform:DERIVATIVEDELTA?

Sets or retrieves the time step size used to plot dF/dt.

Params:	<numeric>	Range [0.1 µs to 10 µs]
Returns:	<numeric>	Current setting

crSSCWaveform:DEVMAX_HZ?

Retrieves the measured average of maximum frequency relative to the CR Nominal Frequency. Query only.

Returns:	<numeric>	Frequency deviation in Hz

crSSCWaveform:DEVMAX_ppm?

Retrieves the measured average of maximum frequency relative to the CR Nominal Frequency. Query only.

Returns:	<numeric>	Frequency deviation in parts per million

crSSCWaveform:DEVMIN_HZ?

The measured average of minimum frequency relative to the CR Nominal Frequency. Query only.

Returns:	<numeric>	Frequency deviation in Hz

crSSCWaveform:DEVMIN_ppm?

Retrieves the measured average of minimum frequency relative to the CR Nominal Frequency. Query only.

Returns:	<numeric>	Frequency deviation in parts per million (PPM)

crSSCWaveform:HISTOgramPoinTS?

Retrieves the number of points per histogram used when computing the average. Query only.

Returns:	<numeric>	Number of points per histogram

crSSCWaveform:MAXDER?

Retrieves the maximum absolute value of the dF/dt plot. Query only.

Returns:	<numeric>	Current maximum value

crSSCWaveform:MODFREQ?

Retrieves the measured modulation frequency of the SSC waveform. Query only.

Returns:	<numeric>	Frequency in Hz

crSSCWaveform:NOMFREQ?

Retrieves the measured nominal clock frequency in Hertz. Query only.

Returns:	<numeric>	Frequency in Hz

crSSCWaveform:numHISTOgramS?

Retrieves the number of histograms to use when computing the average. Query only.

Returns:	<numeric>	Number of histograms

crSSCWaveform:numSCANS?

Retrieves the total number of scans completed. Query only.

Returns:	<numeric>	Scans completed

crSSCWaveform:PLOTTYPE <enum>
crSSCWaveform:PLOTTYPE?

Sets or retrieves the SSC plot type

Params:	<FT>	Plot F(t)
	<DFDT>	Plot dF/dt
Returns:	< FT | DFDT >	

crSSCWaveform:RCONFIGuration <"string">

Restores the SSC Waveform settings from a file. The complete path must be specified in the parameter string. The path must be accessible to the host computer or BERTScope running the remote control software. Use the file extension ".ssc" and enclose the path name in quotes. Action only.

Example: `SSCW:RCONFIG "D:\BitAlyzer\Configurations\mycfg.ssc"`

Params:	<"string">	Path name of the configuration file

crSSCWaveform:SCONFIGuration <"string">

Saves the current SSC Waveform settings to a file. The complete path must be specified in the parameter string. The path must be accessible to the host computer or BERTScope running the remote control software. Use the file extension ".ssc" and enclose the path name in quotes. Action only.

Example: `SSCW:SCONFIG "D:\BitAlyzer\Configurations\mycfg.ssc"`

Params:	<"string">	Path name of the configuration file

Clock Recovery Jitter Spectrum

Complete command listing (See page 7, *Command listing*.)

crJitterSpectrum:AVGCount?

Retrieves the number of averages completed. Query only.

Returns:	<numeric>	Averages completed

crJitterSpectrum:AVGSetting <numeric>
crJitterSpectrum:AVGSetting?

Sets or retrieves the number of running averages to perform.

Params:	<numeric>	Range [1 to 16]
Returns:	<numeric>	Current average setting

crJitterSpectrum:CRINITmode <enum>
crJitterSpectrum:CRINITmode?

Sets or retrieves the way the BERTScope CR is initialized prior to a Jitter Spectrum session.

Params:	<AUTO>	First tries to use NO_SSC, then SSC_CAPABLE settings
	<NO_SSC>	Default Settings for signals without SSC
	<SSC_CAPABLE>	Settings that will accommodate input signals with SSC
Returns:	< AUTO | NO_SSC| SSC_CAPABLE >	

crJitterSpectrum:IJMAXHZ_1 <double>
crJitterSpectrum:IJMAXHZ_1?

Sets or retrieves the upper modulation frequency boundary for Integrated Jitter range 1.

Params:	< double >	Upper modulation frequency boundary in Hz
Returns:	Current upper modulation frequency boundary in Hz	

crJitterSpectrum:IJMAXHZ_2 <double>
crJitterSpectrum:IJMAXHZ_2?

Sets or retrieves the upper modulation frequency boundary for Integrated Jitter range 2.

Params:	< double >	Upper modulation frequency boundary in Hz
Returns:	Current upper modulation frequency boundary in Hz	

crJitterSpectrum:IJMAXHZ_3 <double>
crJitterSpectrum:IJMAXHZ_3?

Sets or retrieves the upper modulation frequency boundary for Integrated Jitter range 3.

Params:	< double >	Upper modulation frequency boundary in Hz
Returns:	Current upper modulation frequency boundary in Hz	

crJitterSpectrum:IJMINHZ_1 <double>
crJitterSpectrum:IJMINHZ_1?

Sets or retrieves the lower modulation frequency boundary for Integrated Jitter range 1.

Params:	< double >	Lower modulation frequency boundary in Hz
Returns:	Current lower modulation frequency boundary in Hz	

crJitterSpectrum:IJMINHZ_2 <double>
crJitterSpectrum:IJMINHZ_2?

Sets or retrieves the lower modulation frequency boundary for Integrated Jitter range 2.

Params:	< double >	Lower modulation frequency boundary in Hz
Returns:	Current lower modulation frequency boundary in Hz	

crJitterSpectrum:IJMINHZ_3 <double>
crJitterSpectrum:IJMINHZ_3?

Sets or retrieves the lower modulation frequency boundary for Integrated Jitter range 3.

Params:	< double >	Lower modulation frequency boundary in Hz
Returns:	Current lower modulation frequency boundary in Hz	

crJitterSpectrum:IJMODE_1 <enum>
crJitterSpectrum:IJMODE_1?

Sets or retrieves the RMS mode to be used for IJ measurements in IJ range 1.

Params:	<PK-PK>	Peak-to-Peak measurement mode
	<RMS>	Root-Mean-Squared measurement mode
Returns:	< PK-PK | RMS >	

crJitterSpectrum:IJMODE_2 <enum>
crJitterSpectrum:IJMODE_2?

Sets or retrieves the measurement mode to be used for IJ measurements in IJ range 2.

Params:	<PK-PK>	Peak-to-Peak measurement mode
	<RMS>	Root-Mean-Squared measurement mode
Returns:	< PK-PK | RMS >	

crJitterSpectrum:IJMODE_3 <enum>
crJitterSpectrum:IJMODE_3?

Sets or retrieves the mode to be used for IJ measurements in IJ range 3.

Params:	<PK-PK>	Peak-to-Peak measurement mode
	<RMS>	Root-Mean-Squared measurement mode
Returns:	< PK-PK | RMS >	

crJitterSpectrum:IJUNITS <enum>
crJitterSpectrum:IJUNITS?

Sets or retrieves the units to be used for Jitter Spectrum Amplitude and IJ measurements.

Params:	<PERCENTUI>	Percent of Unit Interval
	<MILLIUI>	1/1000 of Unit Interval
	<UI>	Unit Interval
	<PICOSECS>	Pico-seconds
Returns:	< PERCENTUI | MILLIUI | UI | PICOSECS >	

crJitterSpectrum:IntegratedJitter_1?

Retrieves the integrated jitter measurement for IJ range 1. Query only.

Returns:	<numeric>	Either %UI, milliUI, UI, or ps, depending upon JS:IJUNITS setting; either p-p or rms, depending on JS:IJMODE_1

crJitterSpectrum:IntegratedJitter_2?

Retrieves the integrated jitter measurement for IJ range 2. Query only.

Returns:	<numeric>	Either %UI, milliUI, UI, or ps, depending upon JS:IJUNITS setting; either p-p or rms, depending on JS:IJMODE_2

crJitterSpectrum:IntegratedJitter_3?

Retrieves the integrated jitter measurement for IJ range 3. Query only.

Returns:	<numeric>	Either %UI, milliUI, UI, or ps, depending upon JS:IJUNITS setting; either p-p or rms, depending on JS:IJMODE_3

crJitterSpectrum:numSCANS?

Retrieves the total number of scans completed. Query only.

Returns:	<numeric>	Scans completed

crJitterSpectrum:RCONFIGuration <"string">

Restores the Jitter Spectrum settings from a file. The complete path must be specified in the parameter string. The path must be accessible to the host computer or BERTScope running the remote control software. Use the file extension ".cjs" and enclose the path name in quotes. Action only.

Example: `JS:RCONFIG "D:\BitAlyzer\Configurations\mycfg.cjs"`

Params:	<"string.cjs">	Path name of the configuration file

crJitterSpectrum:SCANRESmode <enum>
crJitterSpectrum:SCANRESmode?

Sets or retrieves the scan resolution for the Jitter Spectrum session.

Params:	<AUTO>	Chooses the NORMAL res if USB 1.x, HIGHRES if USB 2.0
	<NORMAL>	Suitable for peak detection but not IJ measurement
	<HIGHRES>	4x the resolution of NORMAL mode
Returns:	< AUTO | NORMAL | HIGHRES >	

crJitterSpectrum:SCONFIGuration <“string”>

Saves the current Jitter Spectrum settings to a file. The complete path must be specified in the parameter string. The path must be accessible to the host computer or BERTScope running the remote control software. Use the file extension “.cjs” and enclose the path name in quotes. Action only.

Example: `JS:SCONFIG “D:\BitAlyzer\Configurations\mycfg.cjs”`

Params:	<“string.cjs”>	Path name of the configuration file

Clock Recovery Miscellaneous

Complete command listing (See page 7, *Command listing*.)

***CLR>**

Clear the system status queue. Action only.

***IDN?**

Retrieves a string identifying the Host computer. Query only.

Returns:	<"string">	Host computer identity

GUILockout <bool>
GUILockout?

Sets or retrieves the “GUI Lock-out” flag state. The user interface of the BERTScope CR software will not respond to input if this flag is set On.

Params:	<bool>	0 or 1
Returns:	< 0 >	GUI is not locked
	< 1 >	GUI is locked

ISSTatus?

Retrieves a string identifying the version of the BERTScope CR software running on the Host computer or BERTScope. Query only.

Returns:	<"string">	“Instrument Server Version MM.mm”
		where:
		MM is the Major version number
		mm is the minor version number

PTFile <“string”>

Save a screen capture of the BERTScope CR software to a file. The complete path must be specified in the parameter string. The path must be accessible to the Host computer or BERTScope running the remote control software. Use the file extension “.jpg” and enclose the path name in quotes. Action only.

Example: `RCON “C:\mycfg.jpg”`

Params:	<“string.jpg”>	Path name of the screen capture image file

RCONfiguration <“string”>

Restores the complete BERTScope CR state from a file. The complete path must be specified in the parameter string. The path must be accessible to the Host computer or BERTScope running the remote control software. Use the file extension “.cfg” and enclose the filename in quotes. Action only.

Example: `RCON “D:\BitAlyzer\Configurations\mycfg.cfg”`

Params:	<“string.cfg”>	Path name of the configuration file

RCSTatus?

Retrieves a string identifying the version of the RemoteClient software running on the Host computer or BERTScope. Query only.

Returns:	<"string">	“Remote Client Version MM.mm” where :
		MM is the Major version number
		mm is the minor version number

RDURation <long>
RDURation?

Set or retrieve the run duration of the BERTScope.

Setting to ‘0’ allows the run to go on ‘forever.’

Params:	< long >	Range [1to 36E6]. Zero (0) sets an infinite duration.
Returns:	< long >	System run duration in seconds

RSTate<bool>
RSTate?

Sets or retrieves the run state of the BERTScope CR software.

Params:	<bool>	0 or 1
Returns:	< 0 >	System is not running
	< 1 >	System is running

SCONfiguration <"string">

Saves the complete state of the BERTScope CR to a file. The complete path must be specified in the parameter string. The path must be accessible to the host computer or BERTScope running the remote control software. Use the file extension ".cfg" and enclose the path name in quotes. Action only.

Example: `SCON "D:\BitAlyzer\Configurations\mycfg.cfg"`

Params:	<"string.cfg">	Path name of the configuration file

SYSTem:ERRor?

Retrieve errors listed in the system status queue. Action only.

This command will not show in the list of trace messages displayed on the remote control client user interface. The status queue is first in, first out. It can contain up to 100 error messages. If the queue overflows, the last error/event in the queue is replaced with Error –350, "Queue overflow". When all errors/events have been read from the queue, further error/event queries will return 0, "NO error".

Returns:	< n, string >	n, "event/string"

VIEW <enum>
VIEW?

Sets or retrieves the current view displayed by the BERTScope CR software.

NOTE. *The choices below assume the Host computer is not a BERTScope. If the Host computer is a BERTScope, many more views are available.*

Params:	<CRControl> or <CRC>	Clock Recovery Control View
	<CRLoopResponse> or <CRLR>	Clock Recovery Loop Response View
	<crSSCWaveform> or <SSCW>	SSC Waveform View
	<crJitterSpectrum> or <JS>	Jitter Spectrum View (CRJ only)
Returns:	< CRControl> or <CRC>	
	< CRLoopResponse > or <CRLR>	
	< crSSCWaveform > or <SSCW>	
	< crJitterSpectrum > or <JS> (CRJ only)	

Clock Recovery: Sample Program

Complete command listing (See page 7, *Command listing*.)

```
// CR_RC.c : Commandline program to execute single command over TCP/IP

#include <windows.h>

#include <winsock.h>

#include <stdio.h>

#define PORTNUM 23 // Port number

#define HOSTNAME "localhost" // Server name string

SOCKET ServerSock = INVALID_SOCKET; // Socket bound to the
server

SOCKADDR_IN destination_sin; // Server socket address

PHOSTENT phostent = NULL; // HOSTENT structure of server

WSADATA WSAData; // Contains details of the

// Winsocket implementation

static BOOL OpenSocket();

static BOOL CloseSocket();

static BOOL SendCommand( TCHAR * pszCmd );

static BOOL GetReply( TCHAR * pszReply );

int main( int argc, char* argv[] )

{

char szCmd[1024];

char szReply[1024];

memset( szCmd, 0, sizeof(szCmd) );

memset( szReply, 0, sizeof(szReply) );

if ( argc > 1 )

{

int i;

BOOL retval = FALSE;
```

```
for ( i = 1; i < argc; i++ )
{
strcat( szCmd, argv[i] );
if ( i+1 < argc )
strcat( szCmd, " " );
}
if ( !OpenSocket() )
return FALSE;
if ( !SendCommand( "*CLS" ) ) // clear error queue
goto Exit;
if ( !SendCommand( szCmd ) )
goto Exit;
if ( strchr( szCmd, '?'  )  != NULL )
{
if ( !GetReply( szReply ) )
goto Exit;
else
{
printf( "%s", szReply );
retval = TRUE;
}
}
else // not query, so check command status
{
BOOL bErrs = FALSE;
while(1)
{
if ( !SendCommand( "system:err?" ) )
goto Exit;
if ( !GetReply( szReply ) )
goto Exit;
```

```
else
{
if ( strstr( szReply, "NO ERROR" ) == NULL )
{
printf( "%s", szReply );
bErrs = TRUE;
}
else // no more errors in queue
{
retval = !bErrs;
break;
}
}
}
}
Exit:
CloseSocket();
return retval;
}
else // help
{
printf( "Expecting 'feature:operation parameter'\n" );
printf( "or 'feature:operation?'\n" );
}
return TRUE;
}
```

```
static BOOL OpenSocket()
{
// Initialize Winsocket.
if (WSAStartup (MAKEWORD(1,1), &WSAData) != 0)
{
printf( "WSAStartup failed.  Error:  %d\n",
WSAGetLastError() );
return FALSE;
}
// Create a TCP/IP socket that is bound to the server.
if ( (ServerSock = socket(AF_INET, SOCK_STREAM, 0) )
== INVALID_SOCKET )
{
printf( "Allocating socket failed.  Error:  %d\n",
WSAGetLastError() );
return FALSE;
}
// Fill out the server socket address information.
destination_sin.sin_family = AF_INET;
// Retrieve the host information corresponding to the host
name.
if ((phostent = gethostbyname (HOSTNAME)) == NULL)
{
printf( "Unable to get the host name.  Error:  %d\n",
WSAGetLastError() );
closesocket (ServerSock);
return FALSE;
}
// Assign the socket IP address.
memcpy( (char FAR *)&(destination_sin.sin_addr),
phostent->h_addr,
```

```
phostent->h_length);
// Convert to network ordering.
destination_sin.sin_port = htons (PORTNUM);
// Establish a connection to the server socket.
if ( connect( ServerSock,
(PSOCKADDR)&destination_sin,
sizeof(destination_sin)
) == SOCKET_ERROR )
{
printf( "Connecting to the server failed.  Error:  %d\n",
WSAGetLastError() );
closesocket (ServerSock);
return FALSE;
}
return TRUE;
}
static BOOL CloseSocket()
{
shutdown (ServerSock, 0x01); // Disable sending
shutdown (ServerSock, 0x00); // Disable receiving
closesocket (ServerSock);
WSACleanup ();
return TRUE;
}
static BOOL SendCommand( TCHAR * pszCmd )
{
// Send a string to the server.
if ( send( ServerSock, pszCmd, strlen(pszCmd) + 1, 0
) == SOCKET_ERROR )
{
printf( "Sending data to the server failed.  Error:  %d\n",
```

```
WSAGetLastError() );

return FALSE;

}

else

return TRUE;

}

static BOOL GetReply( TCHAR * pszReply )

{

// Receive data from the server socket.

int iReturn = recv( ServerSock, pszReply, 1024, 0 );

if ( iReturn == SOCKET_ERROR )

sprintf( pszReply, "No data is received, recv failed.
Error:  %d",

WSAGetLastError() );

return iReturn != SOCKET_ERROR;

}
```

Transmitter Equalization (TXEQ) Option

Complete command listing (See page 7, *Command listing*.)

Previous models of the BERTScope product family implemented transmitter equalization (TXEQ) through an external 3 or 4 tap de-emphasis module (DPP125B or DPP125C) that was controlled through the BERTScope remote interface. The BSX series BERTScope now includes, as an option, an internal TXEQ 4-tap de-emphasis capability, replacing the external module. Remote commands related to setup of the four taps, PCIe presets, and gain/loss remain largely unchanged on the BSX series. These commands are described in the following section.

These commands use the DPP prefix. There is no separate TXEQ command prefix.

NOTE. *If Option TXEQ is not installed on the instrument, all of the commands will report the following error message:*

```
DPP/TXEQ option is unavailable or not installed.
```

TXEQ command summary

Complete command listing (See page 7, *Command listing*.)

Operations

CLEAR or CLR
DPP:EQ:CALIBRATION or EQ:CAL
EQ:DEEMPHASIS, or EQ:DEEMPH
IMPORTFREQ or IMPFREQ
IMPORTIFREQ or IMPIFREQ
IMPORTTAP or IMPTAP
SETPREDEEMPH or SETPH

Read-Write Settings

DEEMPHASIS or DEEMPH
DISPLAY or DISP
FIRCARTOON
FIRBITAMPLFMT or BAFMT
FIRBITAMPL0 or BA0
FIRBITAMPL1 or BA1
FIRBITAMPL2 or BA2
FIRBITAMPL3 or BA3
FIRTAP0 or TAP0
FIRTAP1 or TAP1
FIRTAP2 or TAP2
FIRTAP3 or TAP3
GAINLOSS, GAIN, or GN
PCIEPRESET, PPRESET, or PPRE
PRESHOOT or PRESH
STAGE or STG

TXEQ remote control commands

NOTE. *All of the commands in this subsection use the DPP: prefix; there is no separate TXEQ command prefix for these commands.*

Complete command listing (See page 7, *Command listing*.)

DPP:CLEaR

Clears the BERTScope TXEQ data. Action only.

DPP:DEEMPHasis <double>
DPP:DEEMPHasis?

Sets or retrieves the deemphasis value in dB.

Params:	< double >	Demphasis value in dB (range –20.00 to 0.00)
Returns:	< double >	

DPP:DISPlay<enum>
DPP:DISPlay?

Sets or retrieves the TXEQ display setting.

Params:	< GRAPHICAL>	Graphical display mode
	< NUMERIC >	Numeric display mode
Returns:	< GRAPHICAL | NUMERIC >	

DPP:EQ:CALibration <bool>
DPP:EQ:CALibration?

Sets or determines if the equalizer is in calibration mode.

Params:	< bool >	On = 1, off = 0
Returns:	< 1 >	Equalizer is in calibration mode
	< 0 >	Equalizer is not in calibration mode

DPP:EQ:DEEMPHasisDB <value>
DPP:EQ:DEEMPHasis?

Sets or retrieves the equalizer deemphasis value in dB; “value” is enclosed in double quotes.

Params:	< “value”>	Deemphasis value in dB. Possible values are: “0.0DB“, “1.5DB“, “3.5DB“, “5.0DB“, “6.0DB“, “8.0DB“, “9.0DB“, “12.0DB“, “20DB”
Returns:	< “value”>	

DPP:FIRCARTOON<STEPRESP | TAPVALS>
DPP:FIRCARTOON?

Sets or retrieves the method to be used to depict the FIR filter settings.

Params:	<STEPRESP>	Shows computed bit amplitudes
	<TAPVALS>	Shows tap values
Returns:	< STEPRESP | TAPVALS >	

DPP:firBitAmplFMT<PERCENT | DECIBEL>
DPP:firBitAmplFMT?

Sets or retrieves the bit amplitude units.

Params:	<PERCENT>	Units are in %
	<DECIBEL>	Units are in dB
Returns:	< PERCENT | DECIBEL >	

DPP:firBitAmpl0 ... DPP:firBitAmpl#
DPP:firBitAmpl0? ... DPP:firBitAmpl#?

Sets or retrieves the normalized amplitude of the bit (bit0 ... bit#), where # = (DPP:NUMTAPS -1)

NOTE. *Value must be specified, and is retrieved, in the units specified with DPP:firBitAmplFMT*

Bit Amplitudes and Taps values are interdependent and normalized! Retrieve all bit amplitudes and tap values after changing any one of them!

Params:	<numeric>	% (0 to 200%) dB (-75 to 75) NOTE: negative sign denotes bit inversion
Returns:	<numeric>	% (0 to 200%) dB (-75 to 75) NOTE: negative sign denotes bit inversion

DPP:firTAP0 ... DPP:firTAP3 <numeric>
DPP:firTAP0? ... DPP:firTAP3?

Sets or retrieves the normalized tap value (TAP0, TAP2, TAP3).

NOTE. *DPP:TAP1 is not allowed.*

NOTE. *Bit amplitudes and tap values are interdependent and normalized! Retrieve all bit amplitudes and tap values after changing any one of them!*

Params:	<numeric>	-1.0 to 1.0 NOTE: 0 turns tap off
Returns:	<numeric>	-1.0 to 1.0 NOTE: 0 means tap is turned off

DPP:GAINloss <double>
DPP:GAINloss?

Sets or retrieves the gain or loss value

Params:	< numeric >	Gain or loss value (range –12 to 12)
Returns:	< numeric >	

DPP:IMPortTAP <fullpath>

Sets the import tap path name. The tap file is an ASCII contains the specific tap values in a comma-separated-vector (CSV) format. Action only.

NOTE. *If the TapCount or DataRate specified in the file do not match the current device settings a warning message displays and the numbers from the file will be ignored.*

Params:	<"string">	Use the absolute path name and enclose the string in double quotes

The tap file format is as follows:

- Any characters after a backslash "\" on a line are ignored.
- Each entry is a Key-Comma-Value.

  The keys are: Version, TapCount, DataRate, t0, t1, t2, t3. The t3 is optional; if it isn't specified 0.0 is assumed. The Version is currently set to 1, but can change as needed.

- A sample file is shown below:

```
\ This is an example
\ File.

Version, 1
TapCount, 4
DataRateHz, 5e9
t0, 0.0
t1, 1.0
t2, 0.0
t3, 0.0 \ (optional, if not present, 0.0 is assumed)
```

DPP:IMPortFREQ <fullpath>

Sets the import frequency path name. Action only.

Requires S2P or S4P Touchstone file format

Params:	<"string">	Use the absolute path name and enclose the string in double quotes

DPP:IMPortIFREQ <fullpath>

Sets the import inverted frequency path name. Action only.

Requires S2P or S4P Touchstone file format

Params:	<"string">	Use the absolute path name and enclose the string in double quotes

DPP:NUMTAPS?

Retrieves the number of taps supported by the currently selected BERTScope. Query only.

Returns:	<numeric>	Number of taps

DPP:PciePREset<preset>
DPP:PciePREset?

Sets or retrieves the PCIe pressets.

Params:	< preset >	P0 P1 P2 P3 P4 P5 P6 P7 P8 P9
Returns:	< preset >	May also return UNKNOWN

DPP:PRESHoot<double>
DPP:PRESHoot?

Sets or retrieves the preshoot value in dB.

Params:	< numeric >	Preshoot value in dB (range 0 to 12)
Returns:	< numeric >	

DPP:SETPreDeemph <double>, <double>

Sets the preshoot and deemphasis vaules in dB. Action only.

The comma is required between the two <double> values.

Params:	< PreshootDB >	Preshoot value in dB (range 0.0 to 12.0)
	< DeemphasisDB >	Deemphasis value in dB (range –12.0 to 0.0)

DPP:STaGe <enum>
DPP:STaGe?

Sets or retrieves the stage settings.

Params:	BASELINE USERTAPS DEEMPH PRESHOOT GAINLOSS TOTAL	Stage settings
Returns:	< BASELINE | USERTAPS | DEEMPH | PRESHOOT | GAINLOSS | TOTAL >	

Analysis Engine

Complete command listing (See page 7, *Command listing*.)

The following commands apply to bit error rate testing and analysis.

Error Free Interval (See page 122, *Error Free Interval*.)

Basic BER(See page 113, *Basic BER*.)

Block Errors (See page 114, *Block Errors*.)

Burst Length (See page 117, *Burst Length*.)

Correlation (See page 119, *Correlation*.)

2D Error Map (See page 124, *Error Map*.)

FEC Emulation (See page 127, *FEC Emulation*.)

Pattern Sensitivity (See page 133, *Pattern Sensitivity*.)

Strip Chart (See page 136, *Strip Chart*.)

EANalysis:BEFThreshold <long>
EANalysis:BEFThreshold?

Set or retrieve Burst Error Free Threshold.

Params:	< long >	Range [1 to 1,000,000]
Returns:	< long >	Burst Error Free Threshold

EANalysis:BMLength <long>
EANalysis:BMLength?

Set or retrieve Burst Minimum Length.

Params:	< long >	Burst Minimum Length. Range [2 to 1,000,000]
Returns:	< long >	Burst Minimum Length

EANalysis:BRANalysis?

Returns Analysis Bit Rate. Query only.

EANalysis:BSBLanking <bool>
EANalysis:BSBLanking?

Set or retrieve whether Bursts should span Blanking.

Params:	<bool>	On = 1, Off = 0
Returns:	< 1 >	Turn on Bursts Span Blanking
	< 0 >	Turn off Bursts Span Blanking

EANalysis:BSIPeriod <bool>
EANalysis:BSIPeriod?

Set or retrieve whether Bursts should span Integration Periods.

Params:	<bool>	On = 1, Off = 0
Returns:	< 1 >	Turn on Bursts Span Integration Period
	< 0 >	Turn off Bursts Span Integration Period

EANalysis:BSMarker <bool>
EANalysis:BSMarker?

Set or retrieve whether Bursts should span Markers.

Params:	<bool>	On = 1, Off = 0
Returns:	< 1 >	Turn on Bursts Span Markers
	< 0 >	Turn off Bursts Span Markers

EANalysis:BRACquisition?

Returns Acquisition Bit Rate. Query only.

EANalysis:CAResults

Clear all Error Analysis results. Action only.

EANalysis:CDBLanking <bool>
EANalysis:CDBLanking?

Set or retrieve whether to Count During Blanking.

Params:	<bool>	On = 1, Off = 0
Returns:	< 1 >	Count During Blanking
	< 0 >	Do not Count During Blanking

EANalysis:CPUFile

Cancel Playback of UER File. Action only.

EANalysis:EPSecond?

Returns Events Per Second. Query only.

EANalysis:IBLanking <bool>
EANalysis:IBLanking?

Set or retrieve whether to Invert Blanking.

Params:	<bool>	On = 1, Off = 0
Returns:	< 1 >	Invert Blanking
	< 0 >	Do not Invert Blanking

EANalysis:IMODe <BLANk | DATA | MARKer>
EANalysis:IMODe?

Set or retrieve Integration Mode to define the Integration Period boundary.

Params:	<BLANk>	Select Blank signal as the boundary
	<DATA>	Set the number of bits as the boundary
	<MARKer>	Select Marker signal as the boundary
Returns:	< BLANK | DATA | MARKER >	

EANalysis:IPERiod <double>
EANalysis:IPERiod?

Set or retrieve the number of bits in an Integration Period.

Params:	< long >	Integration Period in bits. Range [10,000,000 to 1.00E+20]
Returns:	< long >	Integration Period

EANalysis:MPSecond?

Returns Markers Per Second. Query only.

EANalysis:OUFile <bool>
EANalysis:OUFile?

Set or retrieve whether it is OK To Overwrite UER File.

Params:	<bool>	On = 1, Off = 0
Returns:	< 1 >	OK to Overwrite UER File
	< 0 >	Do not Overwrite UER File

EANalysis:PUPRogress?

Returns Playback UER Progress. Query only.

EANalysis:RAPRoperties<“filename”>

Restore All Properties. Action only.

Params:	<“filename”>	Use the absolute path name and enclose the string in double quotes.

EANalysis:RFPathname <“string”>
EANalysis:RFPathname?

Set or retrieve Record File Path name.

Params:	<“string”>	Use the absolute path name and enclose the string in double quotes.
Returns:	<"string">	The path name to the Record File

EANalysis:RFSLimit <long>
EANalysis:RFSLimit?

Set or retrieve Record File Size Limit

Params:	< long >	Range [100 kB to 500 MB]
Returns:	< long >	Record file size limit

EANalysis:RPATtern?

Returns Recognized Pattern. Query only.

EANalysis:SADefaults

Set All Defaults. Action only.

EANalysis:SANalyzer?

Returns analyzer state. Query only.

EANalysis:SAPRoperties<"string">

Save All Properties. Action only.

Params:	<"string">	Use absolute path name, enclose string in double quotes.

EANalysis:SECount?

Returns Squelch Event Count. Query only.

EANalysis:SMODe <BLANk | MARKer | NONE | PATTern>
EANalysis:SMODe?

Set or retrieve Synchronization Mode.

Params:	<BLANk>	Select Blank signal as the cue for resync
	<MARKer>	Select Marker signal as the cue for resync
	<NONE>	No auto-resync
	<PATTern>	Select Pattern Cycle as the cue for resync
Returns:	< BLANK | MARKER | NONE | PATTERN >	

EANalysis:SPUFile

Start Playback of UER File. Action only.

EANalysis:SSTate?

Returns Squelch State. Query only.

EANalysis:SSYNchronization?

Returns Synchronization State. Query only.

EANalysis:UFPathname <“string”>
EANalysis:UFPathname?

Set or retrieve UER File path name

Params:	<“string”>	Use absolute path name, enclose string in double quotes.
Returns:	<"string">	UER File path name

EANalysis:UFSize?

Returns UER File Size. Query only.

Basic BER

Complete command listing (See page 7, *Command listing*.)

EANalysis:BBER:BERate?

Retrieve Burst Error Rate. Query only.

EANalysis:BBER:BERRors?

Retrieve Burst Errors. Query only.

EANalysis:BBER:BEVents?

Retrieve Burst Events. Query only.

EANalysis:BBER:IPCount?

Retrieve Integration Period Count. Query only.

EANalysis:BBER:MCOunt?

Retrieve Marker Count. Query only.

EANalysis:BBER:NAValue?

Retrieve “Not Available” value. Query only.

EANalysis:BBER:NBERate?

Retrieve Non-Burst Error Rate. Query only.

EANalysis:BBER:SCOunt?

Retrieve Squelched Count. Query only.

EANalysis:BBER:STATistics?

Retrieve Total Bit Count, Total Error Count, and Total Squelched Count. Query only.

EANalysis:BBER:TBERate?

Retrieve Total Error Rate. Query only.

EANalysis:BBER:TCOunt?

Retrieve Total Bit Count. Query only.

EANalysis:BBER:TERRors?

Retrieve Total Errors. Query only.

EANalysis:BBER:TSCOunt?

Retrieve Total Squelched Count. Query only.

Block Errors

Complete command listing (See page 7, *Command listing*.)

EANalysis:BLOCk:ACENter

Auto Center Block Errors view. Action only.

EANalysis:BLOCk:BCOunt?

Retrieve Block Errors chart Bin Count. Query only.

EANalysis:BLOCk:BDATa?

Retrieve Block Errors binary Bin Data. Query only. The binary query should return `#1nnbbb...b` where:

`1` is a number from 1 to 9 (tells number of digits for block length)
`nn` is the block length (number of bytes to follow)
`b` is a byte of binary data

EANalysis:BLOCk:BMAPping <int, int>
EANalysis:BLOCk:BMAPping?

Set or retrieve Block Errors chart Bin Mapping (start, end).

Params:	<int>	Bin Map Start value. Range [0 to 998]
	<int>	Bin Map End value. Range [1 to 32,767]
Returns:	< int, int >	

EANalysis:BLOCk:BMODe <BLANking | MARKer | PATTern | USERquantity>
EANalysis:BLOCk:BMODe?

Set or retrieve mode used to define the Block Errors view Block boundary.

Params:	<BLANking>	Select Blank signal as the boundary
	<MARKer>	Select Marker signal as the boundary
	<PATTern>	Select Pattern Cycle as the boundary
	<USERquantity>	Select a user-specified quantity of bits as the boundary
Returns:	< BLANKING | MARKER | PATTERN | USERQUANTITY >	

EANalysis:BLOCk:BRESolution?

Retrieve Block Errors view Bin Resolution. Query only.

EANalysis:BLOCk:BQUantity?

Retrieve quantity of bits set as the Block boundary. Query only.

EANalysis:BLOCk:CEXTents <Xmin, Xmax, Ymin, Ymax>
EANalysis:BLOCk:CEXTents?

Set or retrieve Block Errors view Chart Extents

Params:	<Xmin>	X-Axis minimum, double
	<Xmax>	X-Axis maximum, double
	<Ymin>	Y-Axis minimum, double
	<Ymax>	Y-Axis maximum, double
Returns:	< Xmin, Xmax, Ymin, Ymax >	

EANalysis:BLOCk:ECOunt?

Retrieve Block Errors Element Count. Query only.

EANalysis:BLOCk:FCURsors

Fit Block Errors Cursors. Action only.

EANalysis:BLOCk:HCURsors <bool>
EANalysis:BLOCk:HCURsors?

Enable/disable Block Errors Horizontal Cursors.

Params:	<bool>	On = 1, Off = 0
Returns:	< 1 >	Enable horizontal cursors
	< 0 >	Disable horizontal cursors

EANalysis:BLOCk:LSCale <bool>
EANalysis:BLOCk:LSCale?

Enable/disable Block Errors Log Scale.

Params:	<bool>	On = 1, Off = 0
Returns:	< 1 >	Enable Log scale on chart
	< 0 >	Disable Log scale on chart

EANalysis:BLOCk:UQUantity <double>
EANalysis:BLOCk:UQUantity?

Set or retrieve Block Errors view Block Mode User Quantity, if BLOCk:BMODe (above) is set to USERquantity.

Params:	< UQUantity >	Range [1 to 1,073,741,823] (Upper limit is 2E30–1)
Returns:	< double >	Quantity of bits defining a Block

EANalysis:BLOCk:VCURsors <bool>
EANalysis:BLOCk:VCURsors?

Enable/disable Block Errors Vertical Cursors.

Params:	<bool>	On = 1, Off = 0
Returns:	< 1 >	Enable Block Errors vertical cursors
	< 0 >	Disable Block Errors vertical cursors

Burst Length

Complete command listing (See page 7, *Command listing*.)

EANalysis:BLENgth:ACENter

Auto Center the Burst Length view. Action only.

EANalysis:BLENgth:BCOunt?

Retrieve Burst Length view Bin Count. Query only.

EANalysis:BLENgth:BDATa?

Retrieve Burst Length binary Bin Data. Query only. The binary query should return `#1nnbbb...b` where:

`1` is a number from 1 to 9 (tells number of digits for block length)
`nn` is the block length (number of bytes to follow)

`b` is a byte of binary data

EANalysis:BLENgth:BMAPping <int, int>
EANalysis:BLENgth:BMAPping?

Set or retrieve Burst Length Bin Mapping (start, end)

Params:	<int>	Bin Map Start value. Range [0 to 998]
	<int>	Bin Map End value. Range [1 to 32,767]
Returns:	< int, int >	

EANalysis:BLENgth:BRESolution?

Retrieve Burst Length bin resolution. Query only.

EANalysis:BLENgth:CEXTents <Xmin, Xmax, Ymin, Ymax>
EANalysis:BLENgth:CEXTents?

Set or retrieve Burst Length Chart Extents.

Params:	<Xmin>	X-Axis minimum, double
	<Xmax>	X-Axis maximum, double
	<Ymin>	Y-Axis minimum, double
	<Ymax>	Y-Axis maximum, double
Returns:	< Xmin, Xmax, Ymin, Ymax >	

EANalysis:BLENgth:ECOunt?

Retrieve Block Errors Element Count. Query only.

EANalysis:BLENgth:FCURsors

Fit Burst Length Cursors. Action only.

EANalysis:BLENgth:HCURsors <bool>
EANalysis:BLENgth:HCURsors?

Enable/disable horizontal cursors on Burst Length view.

Params:	<bool>	On = 1, Off = 0
Returns:	< 1 >	Enable horizontal cursors
	< 0 >	Disable horizontal cursors

EANalysis:BLENgth:LSCale <bool>
EANalysis:BLENgth:LSCale?

Enable/disable Log scale on Burst Length View.

Params:	<bool>	On = 1, Off = 0
Returns:	< 1 >	Enable Log scale on chart
	< 0 >	Disable Log scale on chart

EANalysis:BLENgth:VCURsors <bool>
EANalysis:BLENgth:VCURsors?

Enable/disable vertical cursors on Burst Length view.

Params:	<bool>	On = 1, Off = 0
Returns:	< 1 >	Enable vertical cursors
	< 0 >	Disable vertical cursors

Correlation

Complete command listing (See page 7, *Command listing*.)

EANalysis:CORRelation:ACENter

Auto Center Correlation View. Action only.

EANalysis:CORRelation:BCOunt?

Retrieve Correlation Bin Count. Query only.

EANalysis:CORRelation:BDATa?

Retrieve Correlation binary Bin Data. Query only. The binary query should return `#1nnbbb...b`, where:

`1` is a number from 1 to 9 (tells number of digits for block length)
`nn` is the block length (number of bytes to follow)
`b` is a byte of binary data

EANalysis:CORRelation:BMAPping <int, int>
EANalysis:CORRelation:BMAPping?

Set or retrieve Bin Mapping (start, end) values.

Params:	<int>	Bin Map Start value. Range [0 to 998]
	<int>	Bin Map End value. Range [1 to 37,767]
Returns:	< int, int >	

EANalysis:CORRelation:BRESolution?

Retrieve Correlation Bin Resolution. Query only.

EANalysis:CORRelation:CMODe <BLANking | MARKer | PATTern | USERquantity>
EANalysis:CORRelation:CMODe?

Set or retrieve Correlation Mode to define the Correlation Cycle boundary.

Params:	<BLANking>	Select Blank signal as the boundary
	<MARKer>	Select Marker signal as the boundary
	<PATTern>	Select Pattern Cycle as the boundary
	<USERquantity>	Select a user-specified quantity of bits as the boundary
Returns:	< BLANKING | MARKER | PATTERN | USERQUANTITY >	

EANalysis:CORRelation:CEXTents <Xmin, Xmax, Ymin, Ymax>
EANalysis:CORRelation:CEXTents?

Set or retrieve Correlation Chart Extents.

Params:	<Xmin>	X-Axis minimum, double
	<Xmax>	X-Axis maximum, double
	<Ymin>	Y-Axis minimum, double
	<Ymax>	Y-Axis maximum, double
Returns:	< Xmin, Xmax, Ymin, Ymax >	

EANalysis:CORRelation:CQUantity?

Retrieve Correlation Quantity. Query only.

EANalysis:CORRelation:ECOunt?

Retrieve Correlation Element Count. Query only.

EANalysis:CORRelation:FCURsors

Fit Correlation Cursors. Action only.

EANalysis:CORRelation:HCURsors <bool>
EANalysis:CORRelation:HCURsors?

Enable/disable horizontal cursors on Correlation view.

Params:	<bool>	On = 1, Off = 0
Returns:	< 1 >	Enable horizontal cursors
	< 0 >	Disable horizontal cursors

EANalysis:CORRelation:LSCale <bool>
EANalysis:CORRelation:LSCale?

Enable/disable Log scale on Correlation chart.

Params:	<bool>	On = 1, Off = 0
Returns:	< 1 >	Enable Log scale on chart
	< 0 >	Disable Log scale on chart

EANalysis:CORRelation:UQUantity <double>
EANalysis:CORRelation:UQUantity?

Set or retrieve User Quantity used to define the Correlation Cycle boundary.

Params:	< USERquantity >	Range [1 to 1,073,741,823] (Upper limit is 2E30–1)
Returns:	< double >	Quantity of bits defining a Correlation Cycle

EANalysis:CORRelation:VCURsors <bool>
EANalysis:CORRelation:VCURsors?

Enable/disable vertical cursors on Correlation view.

Params:	<bool>	On = 1, Off = 0
Returns:	< 1 >	Enable Correlation vertical cursors
	< 0 >	Disable Correlation vertical cursors

Error Free Interval

Complete command listing (See page 7, *Command listing*.)

EANalysis:EFINterval:ACENter

Auto Center the Error Free Interval view. Action only.

EANalysis:EFINterval:BCOunt?

Retrieve Bin Count on EFI Analysis view. Query only.

EANalysis:EFINterval:BDATa?

Retrieve binary Bin Data on EFI Analysis view. Query only. The binary query should return `#1nnbbb...b`, where:

`1` is a number from 1 to 9 (tells number of digits for block length)
`nn` is the block length (number of bytes to follow)
`b` is a byte of binary data

EANalysis:EFINterval:BMAPping <int, int>
EANalysis:EFINterval:BMAPping?

Set or retrieve Bin Mapping (start, end) values on EFI Analysis view.

Params:	<int>	Bin Map Start value. Range [1 to 999]
	<int>	Bin Map End value. Range [2 to 32,767]
Returns:	< int, int >	

EANalysis:EFINterval:BRESolution?

Retrieve Bin Resolution on EFI Analysis view. Query only.

EANalysis:EFINterval:CEXTents <Xmin, Xmax, Ymin, Ymax>
EANalysis:EFINterval:CEXTents?

Set or retrieve Chart Extents on EFI Analysis view.

Params:	<Xmin>	X-Axis minimum, double
	<Xmax>	X-Axis maximum, double
	<Ymin>	Y-Axis minimum, double
	<Ymax>	Y-Axis maximum, double
Returns:	< Xmin, Xmax, Ymin, Ymax >	

EANalysis:EFINterval:ECOunt?

Retrieve Element Count. Query only.

EANalysis:EFINterval:FCURsors

Fit Cursors. Action only.

EANalysis:EFINterval:HCURsors <bool>
EANalysis:EFINterval:HCURsors?

Enable/disable horizontal cursors on EFI Analysis view.

Params:	<bool>	On = 1, Off = 0
Returns:	< 1 >	Enable horizontal cursors
	< 0 >	Disable horizontal cursors

EANalysis:EFINterval:LSCale <bool>
EANalysis:EFINterval:LSCale?

Enable/disable Log scale on EFI Analysis view.

Params:	<bool>	On = 1, Off = 0
Returns:	< 1 >	Enable Log scale on chart
	< 0 >	Disable Log scale on chart

EANalysis:EFINterval:VCURsors <bool>
EANalysis:EFINterval:VCURsors?

Enable/disable vertical cursors on EFI Analysis view.

Params:	<bool>	On = 1, Off = 0
Returns:	< 1 >	Enable EFI Analysis vertical cursors
	< 0 >	Disable EFI Analysis vertical cursors

Error Map

Complete command listing (See page 7, *Command listing*.)

EANalysis:EMAP:ACENter

Auto Center 2-D Error Map View. Action only.

EANalysis:EMAP:CEXTents <Xmin, Xmax, Ymin, Ymax>
EANalysis:EMAP:CEXTents?

Set or retrieve 2-D Error Map Chart Extents.

Params:	<Xmin>	X-Axis minimum, double
	<Xmax>	X-Axis maximum, double
	<Ymin>	Y-Axis minimum, double
	<Ymax>	Y-Axis maximum, double
Returns:	< Xmin, Xmax, Ymin, Ymax >	

EANalysis:EMAP:CMODe <NONE | SEGMent | SLENgth | SINGle>
EANalysis:EMAP:CMODe?

Set or retrieve the 2-D Error Map View Cursor Mode.

Params:	<NONE>	No cursors are displayed
		Segment axis cursor displayed
	<SLENgth>	Length axis cursor displayed
	<SINGle>	Single cursor is displayed
Returns:	< NONE | SEGMENT | SLENGTH | SINGLE >	

EANalysis:EMAP:DATa?

Error Map Data. Query only.

EANalysis:EMAP:DBCount?

Retrieve 2-D Error Map Database Burst Count. Query only.

EANalysis:EMAP:DMCount?

Retrieve 2-D Error Map Database Marker Count. Query only.

EANalysis:EMAP:DSCount?

Retrieve 2-D Error Map Database Squelch Count. Query only.

EANalysis:EMAP:FCURsors

Fit 2-D Error Map Cursors. Action only.

EANalysis:EMAP:FGRaph

Fit 2-D Error Map Graph. Action only.

EANalysis:EMAP:HCURsors <bool>
EANalysis:EMAP:HCURsors?

Enable/disable horizontal cursors on 2-D Error Map.

Params:	<bool>	On = 1, Off = 0
Returns:	< 1 >	Enable horizontal cursors
	< 0 >	Disable horizontal cursors

EANalysis:EMAP:LSCale <bool>
EANalysis:EMAP:LSCale?

Enable/disable Log scale on 2-D Error Map.

Params:	<bool>	On = 1, Off = 0
Returns:	< 1 >	Enable Log scale on chart
	< 0 >	Disable Log scale on chart

EANalysis:EMAP:RPRogress?

Retrieve 2-D Error Map Rendering Progress. Query only.

EANalysis:EMAP:SBURsts <bool>
EANalysis:EMAP:SBURsts?

Choose whether to show bursts on 2-D Error Map.

Params:	<bool>	On = 1, Off = 0
Returns:	< 1 >	Enable Show Bursts
	< 0 >	Disable Show Bursts

EANalysis:EMAP:SCOunt?

Retrieve 2-D Error Map Segment Count. Query only.

EANalysis:EMAP:SERRors <bool>
EANalysis:EMAP:SERRors?

Choose whether to show errors on 2-D Error Map.

Params:	<bool>	On = 1, Off = 0
Returns:	< 1 >	Enable Show Errors
	< 0 >	Disable Show Errors

EANalysis:EMAP:SLENgth?

Retrieve 2-D Error Map Segment Length. Query only.

EANalysis:EMAP:SMODe <MARKers | QUANtity | SEConds>
EANalysis:EMAP:SMODe?

Set or retrieve mode used to define Error Map Segment.

Params:	<MARKers>	Use marker signal to define Segment
	<QUANtity>	Use quantity of bits to define Segment
	<SEConds>	Use quantity of seconds to define Segment
Returns:	< MARKERS | QUANTITY | SECONDS >	

EANalysis:EMAP:SSECOnds <double>
EANalysis:EMAP:SSECOnds?

Set or retrieve the number of seconds used to define a 2-D Error Map Segment if mode is set to SEConds.

Params:	< SEConds >	Number of seconds to define a Segment. Range [1 to 3,600]
Returns:	< double >	Number of seconds defining a Segment

EANalysis:EMAP:SQUantity <double>
EANalysis:EMAP:SQUantity?

Set or retrieve the number of bits used to define a 2-D Error Map Segment if mode is set to QUANtity.

Params:	< QUANtity >	Range [1 to 2147483647]
Returns:	< double >	Number of bits defining a Segment.

EANalysis:EMAP:SSQuelches <bool>
EANalysis:EMAP:SSQuelches?

Choose whether to show squelches on 2-D Error Map.

Params:	< bool >	On = 1, Off = 0
Returns:	< 1 >	Enable Show Squelches
	< 0 >	Disable Show Squelches

EANalysis:EMAP:VCURsors <bool>
EANalysis:EMAP:VCURsors?

Enable or disable vertical cursors on 2-D Error Map.

Params:	<bool>	On = 1, Off = 0
Returns:	< 1 >	Enable 2-D Error Map vertical cursors
	< 0 >	Disable 2-D Error Map vertical cursors

FEC Emulation

Complete command listing (See page 7, *Command listing*.)

EANalysis:FEC:CNAMe?

Retrieve Forward Error Correction Analysis Configuration filename. Query only.

See the *EANalysis:FEC:SCONfiguration* command.

Returns:	<"filename">	"filename" is the name of the FEC configuration.

EANalysis:FEC:DTAB <CINTerval | PROCessing | TACCumulation>
EANalysis:FEC:DTAB?

Set or retrieve FEC Display Tab.

Params:	<CINTerval>	Current Interval
	<PROCessing>	Processing
	<TACCumulation>	Total Accumulation
Returns:	< CINTERVAL | PROCESSING | TACCUMULATION >	

EANalysis:FEC:EMODe <DISabled | FULL | IAOuter | IONLy>
EANalysis:FEC:EMODe?

Set or retrieve FEC Emulation Mode.

Params:	<DISabled>	Disable FEC Emulation
	<FULL>	Emulation Mode to Full: all stages engaged.
	<IAOuter>	Emulation Mode to Inner and Outer (2-D code), erasure deactivated
	<IONLy>	Emulation Mode to Inner Only (one-dimensional).Outer code and erasure are disabled.
Returns:	< DISABLED | FULL | IAOUTER | IONLY >	

EANalysis:FEC:IMODe <BIT | SYMBol>
EANalysis:FEC:IMODe?

Set or retrieve FEC Interleave Mode.

Params:	<BIT>	On = 1, Off = 0
	<SYMBol>	On = 1, Off = 0
Returns:	< BIT | SYMBol >	

EANalysis:FEC:KINNer <long>
EANalysis:FEC:KINNer?

Set or retrieve Inner (or one-dimensional code) k value (output block size).

Params:	< long >	Range [1 to 255]
Returns:	< long >	

EANalysis:FEC:KOUTer <long>
EANalysis:FEC:KOUTer?

Set or retrieve a two-dimensional code Outer k value (output block size).

Params:	< long >	Range [1 to 1.00E+00]
Returns:	< long >	

EANalysis:FEC:NINNer <long>
EANalysis:FEC:NINNer?

Set or retrieve Inner (or one-dimensional code) n value (input block size).

Params:	< long >	Range [1 to 65,536]
Returns:	< long >	

EANalysis:FEC:NOUTer <long>
EANalysis:FEC:NOUTer?

Set or retrieve a two-dimensional code Outer n value (input block size).

Params:	< long >	Range [1 to 65,536]
Returns:	< long >	

EANalysis:FEC:RINTerval <double>
EANalysis:FEC:RINTerval?

Set or retrieve Report Interval in seconds.

Params:	< double >	Range [1 to 300]
Returns:	< double >	

EANalysis:FEC:RITables?

Retrieve the number of FEC Emulation Tables during the Report Interval. Query only.

EANalysis:FEC:SFEC <bool>
EANalysis:FEC:SFEC?

Enable/disable Strip FEC Overhead.

Params:	<bool>	On = 1, Off = 0
Returns:	< 1 >	Enable Strip FEC Overhead
	< 0 >	Disable Strip FEC Overhead

EANalysis:FEC:SPINterval?

Retrieve FEC Emulation Symbols Per Interval. Query only.

EANalysis:FEC:SSIZe <long>
EANalysis:FEC:SSIZe?

Set or retrieve FEC (Forward Error Correction) symbol size.

Params:	< long >	Range [1 to 32]
Returns:	< long >	

EANalysis:FEC:TDFLag <bool>
EANalysis:FEC:TDFLag?

Enable/disable Two Dimensional Flag.

Params:	<bool>	On = 1, Off = 0
Returns:	< 1 >	Enable Two-Dimensional flag
	< 0 >	Disable Two-Dimensional flag

EANalysis:FEC:TERasure <long>
EANalysis:FEC:TERasure?

Set or retrieve a two-dimensional code Erasure t value (erasure strength).

Params:	< long >	Range [0 to 1.00]
Returns:	< long >	

EANalysis:FEC:TINNer <long>
EANalysis:FEC:TINNer?

Set or retrieve Inner (or one-dimensional code) t value (correction strength).

Params:	< long >	Range [0 to 255]
Returns:	< long >	

EANalysis:FEC:TOUTer <long>
EANalysis:FEC:TOUTer?

Set or retrieve two-dimensional code Outer t value (correction strength).

Params:	< long >	Range [0 to 1.00]
Returns:	< long >	

EANalysis:FEC:AABCount?

Retrieve total accumulated Bit Count after FEC Emulation. Query only.

EANalysis:FEC:AAECount?

Retrieve total accumulated Error Count after FEC Emulation. Query only.

EANalysis:FEC:AAERate?

Retrieve total accumulated Error Rate after FEC Emulation. Query only.

EANalysis:FEC:ABBCount?

Retrieve total accumulated Bit Count before FEC Emulation. Query only.

EANalysis:FEC:ABECount?

Retrieve total accumulated Error Count before FEC Emulation. Query only.

EANalysis:FEC:ABERate?

Retrieve total accumulated Error Rate before FEC Emulation. Query only.

EANalysis:FEC:AICorrections?

Retrieve total accumulated Inner Corrections. Query only.

EANalysis:FEC:AIFailures?

Retrieve total accumulated Inner Failures. Query only.

EANalysis:FEC:AOCorrections?

Retrieve total accumulated Outer Corrections. Query only.

EANalysis:FEC:AOFailures?

Retrieve total accumulated Outer Failures. Query only.

EANalysis:FEC:AECorrections?

Retrieve total accumulated Erasure Corrections. Query only.

EANalysis:FEC:AEFailures?

Retrieve total accumulated Erasure Failures. Query only.

EANalysis:FEC:ADRate?

Retrieve Data Rate after FEC Emulation. Query only.

EANalysis:FEC:BDRate?

Retrieve Data Rate before FEC Emulation. Query only.

EANalysis:FEC:IABCount?

Retrieve current interval Bit Count after FEC Emulation. Query only.

EANalysis:FEC:IAECount?

Retrieve current interval Error Count after FEC Emulation. Query only.

EANalysis:FEC:IAERate?

Retrieve current interval Error Rate after FEC Emulation. Query only.

EANalysis:FEC:IBBCount?

Retrieve current interval Bit Count before FEC Emulation. Query only.

EANalysis:FEC:IBECount?

Retrieve current interval Error Count before FEC Emulation. Query only.

EANalysis:FEC:IBERate?

Retrieve current interval Error Rate before FEC Emulation. Query only.

EANalysis:FEC:IECorrections?

Retrieve interval Erasure Corrections. Query only.

EANalysis:FEC:IEFailures?

Retrieve current interval Erasure Failures. Query only.

EANalysis:FEC:IICorrections?

Retrieve current interval Inner Corrections. Query only.

EANalysis:FEC:IIFailures?

Retrieve current interval Inner Failures. Query only.

EANalysis:FEC:IOCorrections?

Retrieve current interval Outer Corrections. Query only.

EANalysis:FEC:IOFailures?

Retrieve current interval Outer Failures. Query only.

EANalysis:FEC:MINPut?

Retrieve FEC Emulation Markers Input. Query only.

EANalysis:FEC:MOUTput?

Retrieve FEC Emulation Markers output. Query only.

EANalysis:FEC:OVERhead?

Retrieve FEC Emulation FEC Overhead. Query only.

EANalysis:FEC:RCONfiguration<"filename">

Restore FEC Configuration. Action only.

Params:	<"filename">	Configuration filename used for restore the configuration (see SCONfiguration). Enclose the filename in double quotes.

EANalysis:FEC:SCONfiguration<"filename">

Save FEC Configuration. Action only.

Params:	<"filename">	Configuration filename used to save the configuration (see RCONfiguration). Enclose the filename in double quotes.

EANalysis:FEC:TBLanked?

Retrieve FEC Emulation Tables Blanked. Query only.

EANalysis:FEC:TOVerrun?

Retrieve FEC Emulation Tables Overrun. Query only.

EANalysis:FEC:TPRocessed?

Retrieve FEC Emulation Tables Processed. Query only.

EANalysis:FEC:TSQuelched?

Retrieve FEC Emulation Tables Squelched. Query only.

Pattern Sensitivity

Complete command listing (See page 7, *Command listing*.)

EANalysis:PSENsitivity:ACENter

Auto Center Pattern Sensitivity View. Action only.

EANalysis:PSENsitivity:BCOunt?

Retrieve Pattern Sensitivity Bin Count. Query only.

EANalysis:PSENsitivity:BDATa?

Retrieve binary Pattern Sensitivity Bin Data. Query only. The binary query should return `#1nnbbb...b` where:

`1` is a number from 1 to 9 (tells number of digits for block length)
`nn` is the block length (number of bytes to follow)
`b` is a byte of binary data

EANalysis:PSENsitivity:BMAPping <int, int>
EANalysis:PSENsitivity:BMAPping?

Set or retrieve Pattern Sensitivity Bin Mapping (start, end) values.

Params:	<int>	Bin Map Start value. Range [1 to 999]
	<int>	Bin Map End value. Range [1 to 32,767]
Returns:	< int, int >	

EANalysis:PSENsitivity:BRESolution?

Retrieve Bin Resolution. Query only.

EANalysis:PSENsitivity:CEXTents <Xmin, Xmax, Ymin, Ymax>
EANalysis:PSENsitivity:CEXTents?

Set or retrieve Pattern Sensitivity Chart Extents.

Params:	<Xmin>	X-Axis minimum, double
	<Xmax>	X-Axis maximum, double
	<Ymin>	Y-Axis minimum, double
	<Ymax>	Y-Axis maximum, double
Returns:	< Xmin, Xmax, Ymin, Ymax >	

EANalysis:PSENsitivity:ECOunt?

Retrieve Element Count. Query only

EANalysis:PSENsitivity:FCURsors

Fit Cursors. Action only.

EANalysis:PSENsitivity:HCURsors <bool>
EANalysis:PSENsitivity:HCURsors?

Enable/disable horizontal cursors on Pattern Sensitivity view.

Params:	<bool>	On = 1, Off = 0
Returns:	< 1 >	Enable horizontal cursors
	< 0 >	Disable horizontal cursors

EANalysis:PSENsitivity:LSCale <bool>
EANalysis:PSENsitivity:LSCale?

Enable/disable Log scale on Pattern Sensitivity view.

Params:	<bool>	On = 1, Off = 0
Returns:	< 1 >	Enable Log scale on chart
	< 0 >	Disable Log scale on chart

EANalysis:PSENsitivity:PFOund?

Pattern found. Read-only result; query only.

EANalysis:PSENsitivity:PMODe <PRBS | FILE>
EANalysis:PSENsitivity:PMODe?

Set or retrieve the Pattern Sensitivity Pattern Mode; a pre-defined PRBS pattern, or a User Pattern contained in the named file.

Params:	<PRBS>	Pseudo-Random Pattern used in Pattern Sensitivity analysis.
	<"filename">	The filename specified by the EAN:PSEN:UPF command will be used.
Returns:	< PRBS | filename >	

EANalysis:PSENsitivity:UPFile <"filename">
EANalysis:PSENsitivity:UPFile?

Set or retrieve Pattern Sensitivity User Pattern filename

Params:	<"filename">	Filename of the User Pattern File, enclosed in double quotes.
Returns:	< filename >	

EANalysis:PSENsitivity:VCURsors <bool>
EANalysis:PSENsitivity:VCURsors?

Enable/disable vertical cursors on Pattern Sensitivity view.

Params:	<bool>	On = 1, Off = 0
Returns:	< 1 >	Enable Pattern Sensitivity vertical cursors
	< 0 >	Disable Pattern Sensitivity vertical cursors

Strip Chart

Complete command listing (See page 7, *Command listing*.)

EANalysis:SCHart:ACENter

Auto Center Strip Chart View. Action only.

EANalysis:SCHart:ASCRoll <bool>
EANalysis:SCHart:ASCRoll?

Enable/disable Strip Chart auto scroll.

Params:	<bool>	On = 1, Off = 0
Returns:	< 1 >	Enable Strip Chart auto scroll
	< 0 >	Disable Strip Chart auto scroll

EANalysis:SCHart:CEXTents <Xmin, Xmax, Ymin, Ymax>
EANalysis:SCHart:CEXTents?

Set or retrieve Strip Chart chart extents.

Params:	<Xmin>	X-Axis minimum, double
	<Xmax>	X-Axis maximum, double
	<Ymin>	Y-Axis minimum, double
	<Ymax>	Y-Axis maximum, double
Returns:	< Xmin, Xmax, Ymin, Ymax >	

EANalysis:SCHart:FCURsors

Fit Cursors. Action only.

EANalysis:SCHart:HCURsors <bool>
EANalysis:SCHart:HCURsors?

Enable/disable horizontal cursors on Strip Chart.

Params:	<bool>	On = 1, Off = 0
Returns:	< 1 >	Enable horizontal cursors
	< 0 >	Disable horizontal cursors

EANalysis:SCHart:VCURsors <bool>
EANalysis:SCHart:VCURsors?

Enabl/disable vertical cursors on Strip Chart.

Params:	<bool>	On = 1, Off = 0
Returns:	< 1 >	Enable Strip Chart vertical cursors
	< 0 >	Disable Strip Chart vertical cursors

Physical Layer Test

Complete command listing (See page 7, *Command listing*.)

The following commands apply to the physical layer testing aspects of the analyzers. Eye Diagram and Mask Test are available as a part of the standard testing suite. The Physical Layer Test may include the optional BER Contour, Jitter Peak, Jitter Tolerance, and Q-Factor.

Eye Diagram (See page 138, *Eye Diagram*.)

- CleanEye (See page 149, *Eye: CleanEye*.)
- Single Value Waveform (See page 169, *Eye: Single Value Waveform*.)
- Data Collecting (See page 168, *Eye: Data Collecting*.)
- Optical Mode (See page 170, *Eye: Optical Mode*.)
- Read Eye Measurement (See page 174, *Eye: Read Eye Measurement*.)

Mask Test (See page 210, *Mask Test*.)

BER Contour (See page 177, *BER Contour*.)

Contour Optical Mode (See page 183, *BER Contour: Optical Mode*.)

Jitter Map (See page 184, *Jitter Map*.)

Jitter Peak (See page 197, *Jitter Peak*.)

Jitter Tolerance (See page 205, *Jitter Tolerance*.)

Q-Factor (See page 216, *Q-Factor*.)

Eye Diagram

Complete command listing (See page 7, *Command listing*.)

EYE:AMPPf <UW | DBM>
EYE:AMPPf?

Optical mode. Set or retrieve the Auto Center optical power format.

Params:	<UW>	Value displayed in µW
	<DBM>	Value displayed in dBm
Returns:	< MW | DBM >	

EYE:ASMode <EOPening | TRANsition>
EYE:ASMode?

Set or retrieve the Auto Center mode of the Eye view.

Params:	<EOPening>	Auto center at the eye opening
	<TRANsition>	Auto center at the transition
Returns:	`< EYEOPENING | TRANSITION >`	

EYE:AVGPwrPf <UW | DBM>
EYE:AVGPwrPf?

Set or retrieve Optical Mode Average Power format.

Params:	<UW>	Value displayed in µW
	<DBM>	Value displayed in dBm
Returns:	< UW | DBM >	

EYE:CMODe <NONE | TIME | VOLT | TVOL | SINGle>
EYE:CMODe?

Set or retrieve the cursor mode of the Eye view.

Params:	<NONE>	No cursor is displayed
	<TIME>	Only two time cursors are displayed
	<VOLT>	Only two voltage cursors are displayed
	<TVOL>	Two time cursors and two voltage cursors are displayed
	<SINGle>	Single cursor is displayed
Returns:	`< NONE | TIME | VOLTAGE | TIME&VOLTAGE | SINGLE >`	

EYE:CN0Pf <UW | DBM>
EYE:CN0Pf?

Optical mode. Set or retrieve Cross Noise 0 optical power format.

Params:	<UW>	Value displayed in µW
	<DBM>	Value displayed in dBm
Returns:	`< UW | DBM >`	

EYE:CN1Pf <UW | DBM>
EYE:CN1Pf?

Optical mode. Set or retrieve Cross Noise 1 optical power format.

Params:	<UW>	Value displayed in µW
	<DBM>	Value displayed in dBm
Returns:	`< UW | DBM >`	

EYE:CRAPf <UW | DBM>
EYE:CRAPf?

Optical mode. Set or retrieve Cross Amplitude optical power format.

Params:	<UW>	Value displayed in µW
	<DBM>	Value displayed in dBm
Returns:	`< MW | DBM >`	

EYE:CVFOrmat <MV | %>
EYE:CVFOrmat?

Set or retrieve Crossing Voltage power format.

Params:	<MV>	Value displayed in mV
	<%>	Value displayed in %UI
Returns:	< MV | % >	

EYE:CVPF <UW | DBM>
EYE:CVPF?

Optical mode. Set or retrieve Crossing Voltage optical power format.

Params:	<UW>	Value displayed in µW
	<DBM>	Value displayed in dBm
Returns:	< UW | DBM >	

EYE:EHFOrmat <MV | %>
EYE:EHFOrmat?

Set or retrieve the Eye Height measurement value format.

Params:	<MV>	Value displayed in mV
	<%>	Value displayed in %UI
Returns:	< MV | % >	

EYE:EHPF <UW | DBM>
EYE:EHPF?

Optical mode. Set or retrieve Eye Height optical power format.

Params:	<UW>	Value displayed in µW
	<DBM>	Value displayed in dBm
Returns:	< UW | DBM >	

EYE:EMODe <8020 | 9010>
EYE:EMODe?

Set or retrieve the edge mode of the Eye view.

Params:	<8020>	Use 80%–20% edge
	<9010>	Use 90%–10% edge
Returns:	< 8020 | 9010 >	

EYE:ERFO <dB | %>
EYE:ERFO?

Set or retrieve the Extinction Ratio measurement value format.

Params:	<dB>	Value displayed in dB
	<%>	Value displayed in %
Returns:	< dB | % >	

EYE:ESAV <"filename">

Save Eye diagram matrix data to a CSV file. Full path name should be given. Action only.

Params:	<"filename">	Filename in double quotes, include full path

EYE:EWFO <TIME | %UI>
EYE:EWFO?

Set or retrieve the Eye Width measurement value format.

Params:	<TIME>	Value displayed in ps
	<%UI>	Value displayed in %UI
Returns:	< TIME | %UI >	

EYE:EXPFileopt
EYE:EXPFileopt?

Set or retrieve the file format for exporting single-value waveform data to a .csv file.

Params:	<YVAL>	Export Y values
	<YVALVERB>	Export Y values with header information
	<XYVAL>	Export X and Y values
	<XYVALVERB>	Export X and Y values with header information
Returns:	< YVAL | YVALVERB | XYVAL | XYVALVERB >	

EYE:EYEOper <CLASSIC | CLEAN>
EYE:EYEOper?

Set or retrieve the Eye diagram operating mode.

Params:	<CLASSIC>	Classic Eye mode
	<CLEAN>	CleanEye mode
Returns:	< CLASSIC | CLEAN >	

EYE:GENable <bool>
EYE:GENable?

Enable/disable Eye display graticule (grid).

Params:	<bool>	On = 1, Off = 0
Returns:	< 1 >	Eye graticule is on
	< 0 >	Eye graticule is off

EYE:JPFOrmat <TIME | %UI>
EYE:JPFOrmat?

Set or retrieve the Eye Jitter P-P measurement value format.

Params:	<TIME>	Value displayed in ps
	<%UI>	Value displayed in %UI
Returns:	< TIME | %UI >	

EYE:JRFOrmat <TIME | %UI>
EYE:JRFOrmat?

Set or retrieve the Eye Jitter RMS measurement value format.

Params:	<TIME>	Value displayed in ps
	<%UI>	Value displayed in %UI
Returns:	< TIME | %UI >	

EYE:L0PF <UW | DBM>
EYE:L0PF?

Optical mode. Set or retrieve Level 0 optical power format.

Params:	<UW>	Value displayed in µW
	<DBM>	Value displayed in dBm
Returns:	< UW | DBM >	

EYE:L1PF <UW | DBM>
EYE:L1PF?

Optical mode. Set or retrieve Level 1 optical power format.

Params:	<UW>	Value displayed in µW
	<DBM>	Value displayed in dBm
Returns:	< UW | DBM >	

EYE:LCRTHresh <numeric>
EYE:LCRTHresh?

Set or retrieve the threshold level (in mV or µW, depending on the mode) for the Rising or Falling Level Crossing measurement.

Params:	<numeric>	The threshold value in mV or µW that defines the level at which the 80/20 or 90/10 rising or falling edge crosses to set the Rising or Falling Level Crossing in ps. Limits vary depending on the signal, and must be between the 80/20 or 90/10 points on the rising or falling edges, depending on the edge mode configuration.
Returns:	<numeric>	

EYE:MBARsel <OFF | MEASUREMENTS | STRESS>
EYE:MBARsel?

Set or retrieve the Sidebar selection in the Eye Diagram.

Params:	<OFF>	No Sidebar
	<MEASUREMENTS>	Show Measurement Sidebar
	<STRESS>	Show Stress Sidebar (if Stress Option is enabled)
Returns:	< OFF | MEASUREMENTS | STRESS >	

EYE:MDENable <bool>
EYE:MDENable?

Enable/disable display of Eye measurements.

Params:	<bool>	On = 1, Off = 0
Returns:	< 1 >	Eye measurements display enabled
	< 0 >	Eye measurements display disabled

EYE:NL0Pf <UW | DBM>
EYE:NL0Pf?

Optical mode. Set or retrieve Noise Level 0 optical power format.

Params:	<UW>	Value displayed in µW
	<DBM>	Value displayed in dBm
Returns:	< UW | DBM >	

EYE:NL1Pf <UW | DBM>
EYE:NL1Pf?

Optical mode. Set or retrieve Noise Level 1 optical power format.

Params:	<UW>	Value displayed in µW
	<DBM>	Value displayed in dBm
Returns:	< UW | DBM >	

EYE:NLPF <UW | DBM>
EYE:NLPF?

Optical mode. Set or retrieve Noise Level optical power format.

Params:	<UW>	Value displayed in µW
	<DBM>	Value displayed in dBm
Returns:	< UW | DBM >	

EYE:OMAPf <UW | DBM>
EYE:OMAPf?

Optical mode. Set or retrieve OMA optical power format.

Params:	<UW>	Value displayed in µW
	<DBM>	Value displayed in dBm
Returns:	< UW | DBM >	

EYE:OVerSHoot1FOrmat <MV | %>
EYE:OVerSHoot1FOrmat?

Set or retrieve the Eye Overshoot1 measurement format.

Params:	<MV>	Value displayed in mV
	<%>	Value displayed in %UA
Returns:	< MV | % >	

EYE:OVerSHoot0FOrmat <MV | %>
EYE:OVerSHoot0FOrmat?

Set or retrieve the Eye Overshoot0 measurement format.

Params:	<MV>	Value displayed in mV
	<%>	Value displayed in %UA
Returns:	< MV | % >	

EYE:PERSistence <numeric>
EYE:PERSistence?

Set or retrieve the persistence of the Eye view.

Params:	<numeric>	Eye persistence as a number of images being persisted. Range [0 to 5]. Input out of range will be clipped and recorded in the status queue. A value of –1 runs the Eye diagram with infinite persistence.
Returns:	<numeric>	

EYE:SDEPth <numeric>
EYE:SDEPth?

Set or retrieve the Eye Sample Depth in bits.

Params:	<numeric>	Range [2,000 to 1,000,000]. Input out of range will be clipped and recorded in the status queue. A value of –1 runs the Eye diagram in the 'Auto' mode with a sample depth of 10,000 bits.
Returns:	<numeric>	

EYE:SSAV <"filename">

Save Single Value Eye diagram data to a CSV file. Full path name should be given. Action only.

Params:	<"filename">	Filename in double quotes, include full path

EYE:TCOFfset <numeric>
EYE:TCOFfset?

Set or retrieve the Eye center time offset of the Eye view.

Params:	<numeric>	Eye center time offset in ps. The range of the input is the same as described in the numeric keypad if you click the volt Center button in the Eye view. Range [0 to 33,000]
Returns:	<numeric>	

EYE:TEXTent <numeric>
EYE:TEXTent?

Set or retrieve the time extent of the Eye view.

Params:	<numeric>	Eye time extent in ps. Range [200 to 33,000]. Input out of range will be clipped and recorded in the status queue.
Returns:	<numeric>	

EYE:TOFFset <numeric>
EYE:TOFFset?

Set or retrieve the time offset of the Eye view.

Params:	<numeric>	Eye time offset in ps. Range [–16,500 to +16,500]. Input out of range will be clipped and recorded in the status queue.
Returns:	<numeric>	An integer. Range [–16,500 to +16,500]

EYE:VCOFfset <numeric>
EYE:VCOFfset?

Set or retrieve the Eye center voltage offset of the Eye view.

Params:	<numeric>	Eye center voltage offset in mV. The range of the input is the same as described in the numeric keypad if you click the time Center button in the Eye view. Range [–2000 to +4000]
Returns:	<numeric>	

EYE:VEXTent <numeric>
EYE:VEXTent?

Set or retrieve the voltage extent of the Eye view.

Params:	<numeric>	Eye voltage extent in mV. Range [160 to 6,000]. Input out of range will be clipped and recorded in the status queue.
Returns:	<numeric>	

EYE:VMAPf <UW | DBM>
EYE:VMAPf?

Optical mode. Set or retrieve Maximum voltage power format.

Params:	<UW>	Value displayed in µW
	<DBM>	Value displayed in dBm
Returns:	< UW | DBM >	

EYE:VMIPf <UW | DBM>
EYE:VMIPf?

Optical mode. Set or retrieve Minimum voltage power format.

Params:	<UW>	Value displayed in µW
	<DBM>	Value displayed in dBm
Returns:	< UW | DBM >	

EYE:VOFFset <numeric>
EYE:VOFFset?

Set or retrieve the voltage offset of the Eye view.

Params:	<numeric>	Eye voltage offset in mV. Range [–2000 to 4000]. Input out of range will be clipped and recorded in the status queue.
Returns:	<numeric>	

EYE:VOFPf <UW | DBM>
EYE:VOFPf?

Optical mode. Set or retrieve Voltage Offset power format.

Params:	<UW>	Value displayed in µW
	<DBM>	Value displayed in dBm
Returns:	< UW | DBM >	

EYE:VPPPf <UW | DBM>
EYE:VPPPf?

Optical mode. Set or retrieve Peak-to-Peak power format.

Params:	<UW>	Value displayed in µW
	<DBM>	Value displayed in dBm
Returns:	< UW | DBM >	

Eye: CleanEye

Complete command listing (See page 7, *Command listing*.)

EYE:AMPLitude:CleanEye:CONFIG?

Retrieve configuration data of the CleanEye Amplitude measurement. Query only. The data is returned in the following format (in one line, shown here as multiline for clarity):

Max point: <from>%UI-<to>%UI(<method>),
Min point: <from>%UI-<to>%UI(<method>)

Example:

```
Max point:  30%UI-70%UI(Average), Min point:
40%UI-55%UI(Min)
```

In this example, the “from”, “to”, and “method” values correspond to the current settings. “Method” could be either “ Average”, “ Mode” or “ Max” for the Max point and “ Average”, “ Mode” or “ Min” for the Min point. These parameters are set using the EYE:AMPL:CEYE:POINT command.

EYE:AMPLitude:CleanEye:ENABle <bool>
EYE:AMPLitude:CleanEye:ENABle?

Set or retrieve whether CleanEye amplitude measurement is enabled.

Params:	<bool>	On = 1, Off = 0
Returns:	< 1 >	CleanEye amplitude measurement is enabled
	< 0 >	CleanEye amplitude measurement is not enabled

EYE:AMPLitude:CleanEye:POINT <0 | 1>, <numeric>, <numeric>, <AVERAGE | MODE | MIN | MAX>

Set an individual point for CleanEye Amplitude measurement. Action only.

Params:	<0 | 1>	Point Number (0 for Max point, 1 for Min point)
	<numeric>	From: (integer value in %UI)
	<numeric>	To: (integer value in %UI)
	<method>	AVERAGE, MODE, or MAX for Max point AVERAGE, MODE, or MIN for Min point
Returns:	< 0 | 1 >, <numeric>, <numeric>, < AVERAGE | MODE | MIN | MAX >	

EYE:AMPLitude:CleanEye:PROTOCOL <protocol>
EYE:AMPLitude:CleanEye:PROTOCOL?

Set a protocol preset for CleanEye Amplitude measurement. The preset affects "from", "to", and "method" values for both measurement points. If no protocol was set, returns "None".

Params:	<protocol>	PCIE SATA_minamp SATA_maxamp SAS DPORT10 DPORT11 USB3 None
Returns:	< protocol >	

EYE:CLRSamdep <long>
EYE:CLRSamdep?

Set or retrieve CleanEye sample depth.

Params:	< numeric >	Range [2,000 to 1,000,000].
Returns:	< numeric >	

EYE:CLRPtlen <numeric>
EYE:CLRPtlen?

Set or retrieve CleanEye Pattern length in bits.

Params:	<numeric>	Range [64 to 1,048,576]. A value of –1 calculates pattern length automatically based on input detector pattern.
Returns:	<numeric>	

EYE:DEEMphasisRatio:CleanEye:CONFIG?

Retrieve configuration data of the CleanEye Deemphasis Ratio measurement. Query only. The data is returned in the following format (in one line, shown here as multiline for clarity):

Full 1 point: <from>%UI-<to>%UI(<method>),
Deemp 1 point: <from>%UI-<to>%UI(<method>),
Full 0 point: <from>%UI-<to>%UI(<method>),
Deemp 0 point: <from>%UI-<to>%UI(<method>)

Example:

Full 1 point: 30%UI-70%UI(Average), Deemp 1 point: 120%UI-350%UI(Mode),

Full 0 point: 120%UI-450%UI(Min), Deemp 0 point: 40%UI-55%UI(Mode)

In this example, the “from”, “to”, and “method” values correspond to the current settings. “Method” could be either “ Average”, “ Mode” or “ Max” for the “1” points and “ Average”, “ Mode” or “ Min” for the “0” points. These parameters are set using the EYE:DEEM:CEYE:POINT command.

EYE:DEEMphasisRatio:CleanEye:ENABle <bool>
EYE:DEEMphasisRatio:CleanEye:ENABle?

Set or retrieve whether CleanEye de-emphasis ratio measurement is enabled.

Params:	<bool>	On = 1, Off = 0
Returns:	< 1 >	CleanEye de-emphasis ratio measurement is enabled
	< 0 >	CleanEye de-emphasis ratio measurement is not enabled

EYE:DEEMphasisRatio:CleanEye:POINT <0 | 1 | 2 | 3>, <numeric>, <numeric>, <AVERAGE | MODE | MIN | MAX>

Set an individual point for CleanEye Deemphasis Ratio measurement. Action only.

Params:	<0 | 1 | 2 | 3>	Point Number 0: Full 1 point 1: De-emphasized 1 point 2: Full 0 point 3: De-emphasized 0 point)
	<from>	From: (integer value in %UI)
	<to>	To: (integer value in %UI)
	<method>	AVERAGE MODE, or MAX for Max point AVERAGE, MODE, or MIN for Min point
Returns:	< 0 | 1 | 2 | 3 >, <numeric>, <numeric>, < AVERAGE | MODE | MIN | MAX >	

EYE:DEEMphasisRatio:CleanEye:PROTOCOL <protocol>
EYE: DEEMphasisRatio:CleanEye:PROTOCOL?

Set a protocol preset for CleanEye De-Emphasis Ratio measurements. When setting, the preset affects “from”, “to”, and “method” values for all 4 measurement points. If no protocol was set, returns “None”.

Params:	<protocol>	PCIE_dsfs PCIE_dsds PCIE_fsfs PCIE_fsds SAS DPORT10 DPORT11 USB3 None
Returns:	< protocol >	

EYE:EXPFileopt
EYE:EXPFileopt?

Set or retrieve the file format for exporting Single Value Waveform data to a .csv file.

Params:	<YVAL>	Export Y values
	<YVALVERB>	Export Y values with header information
	<XYVAL>	Export X and Y values
	<XYVALVERB>	Export X and Y values with header information
Returns:	< YVAL | YVALVERB | XYVAL | XYVALVERB >	

EYE:EYEOper <CLASSIC | CLEAN>
EYE:EYEOper?

Set or retrieve the Eye diagram operating mode.

Params:	<CLASSIC>	Classic Eye mode
	<CLEAN>	CleanEye mode
Returns:	< CLASSIC | CLEAN >	

EYE:FIREnab <bool>
EYE:FIREnab?

Enable/disable FIR filter.

Params:	<bool>	On = 1, Off = 0
Returns:	< 1 >	FIR filter is enabled
	< 0 >	FIR filter is disabled

EYE:FIRTpspac <double>
EYE:FIRTpspac?

Set or retrieve FIR filter spacing in UI.

Params:	< double >	Range [10 to 100]
Returns:	< double >	

EYE:FIRLoad <"filename">

Load the FIR filter parameters specified in the file. Full path name should be given. Action only.

Params:	<"filename">	Filename in double quotes, include full path.

EYE:FIRSave <"filename">

Save the current FIR filter parameters in the file specified. Full path name should be given. Action only.

Params:	<"filename">	Filename in double quotes, include full path.

EYE:FIRDetails?

Retrieve the current FIR filter parameters. Query only.

Returns:	< TapCount(TapCoeff) >	Example: 2(0.1) (0.2)

EYE:FTIMe:CleanEye:CONFIG?

Retrieve configuration data of the CleanEye Fall Time measurement. Query only. The data is returned in the following format (in one line, shown here as multiline for clarity):
Edge Mode: <mode>,

```
Max point:  <from>%UI-<to>%UI(<method>),
Min point:  <from>%UI-<to>%UI(<method>)
```

Example:

```
Edge Mode:  8020, Max point:  30%UI-70%UI(Average), Min
point:  40%UI-55%UI(Min)
```

In this example, the "edge mode", "from", "to", and "method" values correspond to the current settings. "Edge Mode" could be either " 8020" or " 9010". "Method" could be either " Average", " Mode" or " Max" for the Max point and " Average", " Mode" or " Min" for the Min point. These parameters are set using the EYE:FTIME:CEYE:POINT command.

EYE:FTIMe:CleanEye:ENABle <bool>
EYE:FTIMe:CleanEye:ENABle?

Set or retrieve whether CleanEye Fall Time measurement is enabled.

Params:	<bool>	On = 1, Off = 0
Returns:	< 1 >	CleanEye fall time measurement is enabled
	< 0 >	CleanEye fall time measurement is not enabled

EYE:FTIME:CleanEye:POINT <0 | 1>, <numeric>, <numeric>, <AVERAGE | MODE | MIN | MAX>

Set an individual point for CleanEye Fall Time measurement.

Params:	<0 | 1>	Point Number 0: Max point 1: Min point
	<from>	From: (integer value in %UI)
	<to>	To: (integer value in %UI)
	<method>	AVERAGE MODE, or MAX for Max point AVERAGE, MODE, or MIN for Min point
Returns:	< 0 | 1 >, <numeric>, <numeric>, < AVERAGE | MODE | MIN | MAX >	

EYE:FTIME:CleanEye:PROTOCOL <protocol>
EYE:FTIME:CleanEye:PROTOCOL?

Retrieve a protocol preset for CleanEye Fall Time measurement. If no protocol was set, returns “None”.

Params:	<protocol>	PCIE SATA SAS DPORT10 None
Returns:	< protocol >	

EYE:LRMBits <numeric>
EYE:LRMBits?

Set or retrieve number of bits to Single Value Waveform export.

Params:	<numeric>	Range [1 to length of input pattern]
Returns:	<numeric>	

EYE:LRMSAmperbit <numeric>
EYE:LRMSAmperbit?

Set or retrieve samples per bit for Single Value Waveform export.

Params:	<numeric>	Samples per bit to export, a numeric value. Range [1 to 1,000]
Returns:	<numeric>	

EYE:LRMSTartbit <numeric>

EYE:LRMSTartbit?

Set or retrieve Single Value Waveform start bit.

Params:	<numeric>	Range [0 to pattern length]
Returns:	<numeric>	

EYE:LRMExport <"filename">

Export Single Value Waveform data to a CSV file. Full path name should be given. Action only.

Params:	<"filename">	Filename in double quotes, include full path.

EYE:LRMCancel

Cancel the LRM export. Action only.

EYE:LRMPRPcnt?

Retrieve the progress of the LRM export in percentage. Query only.

EYE:LRMPRCnt?

Retrieve the progress of the LRM export in terms of sample count. Query only.

EYE:RTIMe:CleanEye:CONFIG?

Retrieve configuration data of the CleanEye Rise Time measurement. Query only. The data is returned in the following format (in one line, shown here as multiline for clarity):

```
Edge Mode:  <mode>,
Max point:  <from>%UI-<to>%UI(<method>),
Min point:  <from>%UI-<to>%UI(<method>)
```

Example:

```
Edge Mode:  8020, Max point:  30%UI-70%UI(Average), Min
point:  40%UI-55%UI(Min)
```

In this example, the "edge mode", "from", "to", and "method" values correspond to the current settings. "Edge Mode" could be either " 8020" or " 9010". "Method" could be either " Average", " Mode" or " Max" for the Max point and " Average", " Mode" or " Min" for the Min point. These parameters are set using the EYE:RTIM:CEYE:POINT command.

EYE:RTIMe:CleanEye:ENABle <bool>
EYE:RTIMe:CleanEye:ENABle?

Set or retrieve whether CleanEye Rise Time measurement is enabled.

Params:	<bool>	On = 1, Off = 0
Returns:	< 1 >	CleanEye rise time measurement is enabled
	< 0 >	CleanEye rise time measurement is not enabled

EYE:RTIMe:CleanEye:POINT <0 | 1>, <numeric>, <numeric>, <AVERAGE | MODE | MIN | MAX>

Set an individual point for CleanEye Rise Time measurement.

Params:	<0 | 1>	Point Number 0: Max point 1: Min point
	<from>	From: (integer value in %UI)
	<to>	To: (integer value in %UI)
	<method>	AVERAGE, MODE, or MAX for Max point AVERAGE, MODE, or MIN for Min point
Returns:	< 0 | 1 >, <numeric>, <numeric>, < AVERAGE | MODE | MIN | MAX >	

EYE:RTIMe:CleanEye:PROTOCOL <protocol>
EYE:RTIMe:CleanEye:PROTOCOL?

Retrieve a protocol preset for CleanEye Rise Time measurement. If no protocol was set, returns “None”.

Params:	<protocol>	PCIE SATA SAS DPORT10 None
Returns:	< protocol >	

EYE:SSAV <"filename">

Save Single Value Eye diagram data to a CSV file. Full path name should be given. Action only.

Params:	<"filename">	Filename in double quotes, include full path.

Eye: Enable Eye Measurement Overlay

Complete command listing (See page 7, *Command listing*.)

EYE:MCONfig:ADD<0LEV | 1LEV | AMPL | AVGV | CAMP | CAN0 | CAN1 | CVOLt | DCAL | DEEMR | DSNR | EHE | EWID | EXTR | FLCR | FTIM | JITT | JRMS | NLEV | NLV0 | NLV1 | OMA | OVSH0 | OVSH1 | RLCR | RTIM | SCNT | UINT | VECP | VMAX | VMIN | VOFS | VPP>

EYE:MCON:ADD

Add the specified measurement to the Eye measurement list. Action only.

Enables with FLCR/FLCRoss, OVSH0/OVerSHoot0, OVSH1/OVerSHoot1, RLCR/RLCRoss.

Params:		
	<0LEV or 0LEVel>	0 Level
	<1LEV or 1LEVel>	1 Level
	<AMPL or AMPLitude>	Amplitude
	<AVGVP or AVGVoltsPwr>	Average Volts/Power
	<CAMP or CAMPlitude>	Cross Amplitude
	<CAN0>	Cross Amplitude Noise 0
	<CAN1>	Cross Amplitude Noise 1
	<CVOL or CVOLt>	Crossing Voltage
	<DCAL or DCALibration>	Dark Calibration
	<DEEMR or DEEMphasisRatio>	De-Emphasis Ratio
	<DSNR>	DSNR
	<EHE or EHEight>	Eye Height
	<EWID or EWIDth>	Eye Width
	<EXTR or EXTRatio>	Extinction Ratio
	<FLC or FLCRoss>	Falling Level Crossing
	<FTIM or FTIMe>	Fall Time
	<JITT or JITTer>	Jitter Peak-to-Peak

	<JRMS>	Jitter RMS
	<NLEV or NLEVel>	Noise Level
	<NLV0>	Noise Level 0
	<NLV1>	Noise Level 1
	<OMA>	OMA
	<OVSH0 or OVerSHoot0>	Overshoot 0
	<OVSH1 or OVerSHoot1>	Overshoot 1
	<RLC or RLCRoss>	Rising Level Crossing
	<RTIM or RTIMe>	Rise Time
	<SCNT>	Sample Count
	<UNIT or UINTerval>	Unit Interval
	<VECP>	VECP
	<VMAX>	Voltage Maximum
	<VMIN>	Voltage Minimum
	<VOFS or VOFSet>	Voltage Offset
	<VPP>	Voltage Peak-to-Peak

EYE:MCONfig:REM<0LEV | 1LEV | AMPL | AVGV | CAMP | CAN0 | CAN1 | CVOLt | DCAL | DEEMR | DSNR | EHE | EWID | EXTR | FLCR | FTIM | JITT | JRMS | NLEV | NLV0 | NLV1 | OMA | OVSH0 | OVSH1 | RLCR | RTIM | SCNT | UINT | VECP | VMAX | VMIN | VOFS | VPP>

EYE:MCON:REM

Remove the specified measurement from the Eye measurement list. Action only.

Enables with FLCR/FLCRoss, OVSH0/OVerSHoot0, OVSH1/OVerSHoot1, RLCR/RLCRoss.

Params:	<0LEV or 0LEVel>	0 Level
	<1LEV or 1LEVel>	1 Level
	<AMPL or AMPLitude>	Amplitude
	<AVGVP or AVGVoltsPwr>	Average Volts/Power
	<CAMP or CAMPlitude>	Cross Amplitude
	<CAN0>	Cross Amplitude Noise 0
	<CAN1>	Cross Amplitude Noise 1
	<CVOL or CVOLt>	Crossing Voltage
	<DCAL or DCALibration>	Dark Calibration

	<DEEMR or DEEMphasisRatio>	De-Emphasis Ratio
	<DSNR>	DSNR
	<EHE or EHEight>	Eye Height
	<EWID or EWIDth>	Eye Width
	<EXTR or EXTRatio>	Extinction Ratio
	<FLC or FLCross>	Falling Level Crossing
	<FTIM or FTIMe>	Fall Time
	<JITT or JITTer>	Jitter Peak-to-Peak
	<JRMS>	Jitter RMS
	<NLEV or NLEVel>	Noise Level
	<NLV0>	Noise Level 0
	<NLV1>	Noise Level 1
	<OMA>	OMA
	<OVSH0 or OVerSHoot0>	Overshoot 0
	<OVSH1 or OVerSHoot1>	Overshoot 1
	<RLC or RLCross>	Rising Level Crossing
	<RTIM or RTIMe>	Rise Time
	<SCNT>	Sample Count
	<UNIT or UINTerval>	Unit Interval
	<VECP>	VECP
	<VMAX>	Voltage Maximum
	<VMIN>	Voltage Minimum
	<VOFS or VOFSet>	Voltage Offset
	<VPP>	Voltage Peak-to-Peak

EYE:MCONfig:RMAll

Remove all measurements from the Eye measurement list. Action only.

NOTE. *The command is uppercase RMA, optionally followed by two lowercase l's – not capital I's.*

EYE:MOENable:0LEVel <bool>
EYE:MOENable:0LEVel?

Set or retrieve whether Eye 0-Level measurement is overlaid.

Params:	<bool>	On = 1, Off = 0
Returns:	< 1 >	Eye Level 0 measurement is overlaid
	< 0 >	Eye Level 0 measurement is not overlaid

EYE:MOENable:1LEVel <bool>
EYE:MOENable:1LEVel?

Set or retrieve whether Eye Level1 measurement is overlaid.

Params:	<bool>	On = 1, Off = 0
Returns:	< 1 >	Level 1 measurement is overlaid
	< 0 >	Level 1 measurement is not overlaid

EYE:MOENable:AMPLitude <bool>
EYE:MOENable:AMPLitude?

Set or retrieve whether Eye Amplitude measurement is overlaid.

Params:	<bool>	On = 1, Off = 0
Returns:	< 1 >	Amplitude measurement is overlaid
	< 0 >	Amplitude measurement is not overlaid

EYE:MOENable:AVGVoltsPwr <bool>
EYE:MOENable:AVGVoltsPwr?

Set or retrieve whether Avg Volts/Pwr measurement is overlaid

Params:	<bool>	On = 1, Off = 0
Returns:	< 1 >	Avg Volts/Pwr measurement is overlaid
	< 0 >	Avg Volts/Pwr measurement is not overlaid

EYE:MOENable:CAMPlitude <bool>
EYE:MOENable:CAMPlitude?

Set or retrieve whether Cross Amplitude measurement is overlaid.

Params:	<bool>	On = 1, Off = 0
Returns:	< 1 >	Cross Amplitude measurement is overlaid
	< 0 >	Cross Amplitude measurement is not overlaid

EYE:MOENable:CAN0 <bool>
EYE:MOENable:CAN0?

Set or retrieve whether Cross Amplitude Noise Level0 measurement is overlaid.

Params:	<bool>	On = 1, Off = 0
Returns:	< 1 >	Cross Amplitude Noise Level0 measurement is overlaid
	< 0 >	Cross Amplitude Noise Level0 measurement is not overlaid

EYE:MOENable:CAN1 <bool>
EYE:MOENable:CAN1?

Set or retrieve whether Cross Amplitude Noise Level1 measurement is overlaid.

Params:	<bool>	On = 1, Off = 0
Returns:	< 1 >	Cross Amplitude Noise Level1 measurement is overlaid
	< 0 >	Cross Amplitude Noise Level1 measurement is not overlaid

EYE:MOENable:CVOLt <bool>
EYE:MOENable:CVOLt?

Enable/disable Crossing Voltage measurement is overlaid.

Params:	<bool>	On = 1, Off = 0
Returns:	< 1 >	Crossing Voltage measurement is overlaid
	< 0 >	Crossing Voltage measurement is not overlaid

EYE:MOENable:DCALibration <bool>
EYE:MOENable:DCALibration?

Enable/disable Dark Calibration measurement is overlaid.

Params:	<bool>	On = 1, Off = 0
Returns:	< 1 >	Dark Calibration measurement is overlaid
	< 0 >	Dark Calibration measurement is not overlaid

EYE:MOENable:DEEMphasisRatio <bool>
EYE:MOENable:DEEMphasisRatio?

Set or retrieve whether De-Emphasis Ratio measurement is overlaid.

Params:	<bool>	On = 1, Off = 0
Returns:	< 1 >	De-Emphasis Ratio measurement is overlaid
	< 0 >	De-Emphasis Ratio measurement is not overlaid

EYE:MOENable:DSNR <bool>
EYE:MOENable:DSNR?

Enable/disable Eye DSNR measurement is overlaid.

Params:	<bool>	On = 1, Off = 0
Returns:	< 1 >	Eye DSNR measurement is overlaid
	< 0 >	Eye DSNR measurement is not overlaid

EYE:MOENable:EHEight <bool>
EYE:MOENable:EHEight?

Set or retrieve whether Eye height measurement is overlaid.

Params:	<bool>	On = 1, Off = 0
Returns:	< 1 >	Eye height measurement is overlaid
	< 0 >	Eye height measurement is not overlaid

EYE:MOENable:EWIDth <bool>
EYE:MOENable:EWIDth?

Set or retrieve whether Eye Width measurement is overlaid.

Params:	<bool>	On = 1, Off = 0
Returns:	< 1 >	Eye's eye width measurement is overlaid
	< 0 >	Eye's eye width measurement is not overlaid

EYE:MOENable:EXTRatio <bool>
EYE:MOENable:EXTRatio?

Set or retrieve whether Eye Extinction Ratio measurement is overlaid.

Params:	<bool>	On = 1, Off = 0
Returns:	< 1 >	Eye's Extinction Ratio measurement is overlaid
	< 0 >	Eye's Extinction Ratio measurement is not overlaid

EYE:MOENable:FLCRoss <bool>
EYE:MOENable:FLCRoss?

Set or retrieve whether Falling Level Crossing measurement is overlaid.

Params:	<bool>	On = 1, Off = 0
Returns:	< 1 >	Falling Level Crossing measurement is overlaid
	< 0 >	Falling Level Crossing measurement is not overlaid

EYE:MOENable:FTIMe <bool>
EYE:MOENable:FTIMe?

Set or retrieve whether Eye Fall Time measurement is overlaid.

Params:	<bool>	On = 1, Off = 0
Returns:	< 1 >	Eye fall time measurement is overlaid
	< 0 >	Eye fall time measurement is not overlaid

EYE:MOENable:JITTer <bool>
EYE:MOENable:JITTer?

Set or retrieve whether Eye Jitter P-P measurement is overlaid.

Params:	<bool>	On = 1, Off = 0
Returns:	< 1 >	Eye jitter P-P measurement is overlaid
	< 0 >	Eye jitter P-P measurement is not overlaid

EYE:MOENable:JRMS <bool>
EYE:MOENable:JRMS?

Set or retrieve whether Eye Jitter RMS measurement is overlaid.

Params:	<bool>	On = 1, Off = 0
Returns:	< 1 >	Eye jitter RMS measurement is overlaid
	< 0 >	Eye jitter RMS measurement is not overlaid

EYE:MOENable:NLEVel <bool>
EYE:MOENable:NLEVel?

Set or retrieve whether Eye Noise Level measurement is overlaid.

Params:	<bool>	On = 1, Off = 0
Returns:	< 1 >	Eye Noise Level measurement is overlaid
	< 0 >	Eye Noise Level measurement is not overlaid

EYE:MOENable:NLV0 <bool>
EYE:MOENable:NLV0?

Set or retrieve whether Eye Noise Level0 measurement is overlaid.

Params:	<bool>	On = 1, Off = 0
Returns:	< 1 >	Eye Noise Level0 measurement is overlaid
	< 0 >	Eye Noise Level0 measurement is not overlaid

EYE:MOENable:NLV1 <bool>
EYE:MOENable:NLV1?

Set or retrieve whether Eye Noise Level1 measurement is overlaid.

Params:	<bool>	On = 1, Off = 0
Returns:	< 1 >	Eye Noise Level1 measurement is overlaid
	< 0 >	Eye Noise Level1 measurement is not overlaid

EYE:MOENable:OMA <bool>
EYE:MOENable:OMA?

Set or retrieve whether Eye OMA measurement is overlaid.

Params:	<bool>	On = 1, Off = 0
Returns:	< 1 >	Eye OMA measurement is overlaid
	< 0 >	Eye OMA measurement is not overlaid

EYE:MOENable:OVerSHoot0 <bool>
EYE:MOENable:OVerSHoot0?

Set or retrieve whether Overshoot0 measurement is overlaid.

Params:	<bool>	On = 1, Off = 0
Returns:	< 1 >	Eye Overshoot0 measurement is overlaid
	< 0 >	Eye Overshoot0 measurement is not overlaid

EYE:MOENable:OVerSHoot0 <bool>
EYE:MOENable:OVerSHoot0?

Set or retrieve whether Overshoot0 measurement is overlaid.

Params:	<bool>	On = 1, Off = 0
Returns:	< 1 >	Eye Overshoot0 measurement is overlaid
	< 0 >	Eye Overshoot0 measurement is not overlaid

EYE:MOENable:OVerSHoot1 <bool>
EYE:MOENable:OVerSHoot1?

Set or retrieve whether Overshoot1 measurement is overlaid.

Params:	<bool>	On = 1, Off = 0
Returns:	< 1 >	Eye Overshoot1 measurement is overlaid
	< 0 >	Eye Overshoot1 measurement is not overlaid

EYE:MOENable:RLCRoss <bool>
EYE:MOENable:RLCRoss?

Set or retrieve whether Rising Level Crossing measurement is overlaid.

Params:	<bool>	On = 1, Off = 0
Returns:	< 1 >	Rising Level Crossing measurement is overlaid
	< 0 >	Rising Level Crossing measurement is not overlaid

EYE:MOENable:RTIMe <bool>
EYE:MOENable:RTIMe?

Set or retrieve whether Eye Rise Time measurement is overlaid.

Params:	<bool>	On = 1, Off = 0
Returns:	< 1 >	Eye rise time measurement is overlaid
	< 0 >	Eye rise time measurement is not overlaid

EYE:MOENable:SCNT <bool>
EYE:MOENable:SCNT?

Set or retrieve whether Sample Count measurement is overlaid.

Params:	<bool>	On = 1, Off = 0
Returns:	< 1 >	Eye Sample Count measurement is overlaid
	< 0 >	Eye Sample Count measurement is not overlaid

EYE:MOENable:UINTerval <bool>
EYE:MOENable:UINTerval?

Set or retrieve whether Eye Unit Interval measurement is overlaid.

Params:	<bool>	On = 1, Off = 0
Returns:	< 1 >	Eye unit interval measurement is overlaid
	< 0 >	Eye unit interval measurement is not overlaid

EYE:MOENable:VECP <bool>
EYE:MOENable:VECP?

Set or retrieve whether Eye VECP measurement is overlaid.

Params:	<bool>	On = 1, Off = 0
Returns:	< 1 >	Eye VECP measurement is overlaid
	< 0 >	Eye VECP measurement is not overlaid

EYE:MOENable:VMAX <bool>
EYE:MOENable:VMAX?

Set or retrieve whether Voltage Maximum measurement is overlaid.

Params:	<bool>	On = 1, Off = 0
Returns:	< 1 >	Eye V MAX measurement is overlaid
	< 0 >	Eye V MAX measurement is not overlaid

EYE:MOENable:VMIN <bool>
EYE:MOENable:VMIN?

Set or retrieve whether Voltage Minimum measurement is overlaid.

Params:	<bool>	On = 1, Off = 0
Returns:	< 1 >	Eye V MIN measurement is overlaid
	< 0 >	Eye V MIN measurement is not overlaid

EYE:MOENable:VOFS <bool>
EYE:MOENable:VOFS?

Set or retrieve whether Eye V offset measurement is overlaid.

Params:	<bool>	On = 1, Off = 0
Returns:	< 1 >	Eye V offset measurement is overlaid
	< 0 >	Eye V offset measurement is not overlaid

EYE:MOENable:VPP <bool>
EYE:MOENable:VPP?

Set or retrieve whether Eye Voltage Peak-to-Peak measurement is overlaid.

Params:	<bool>	On = 1, Off = 0
Returns:	< 1 >	Eye V PP measurement is overlaid
	< 0 >	Eye V PP measurement is not overlaid

EYE:PDARkcalibration

Perform Dark Calibration. Action only. May require some delay to complete.

Eye: Data Collecting

Complete command listing (See page 7, *Command listing*.)

EYE:ASSuccess?

Retrieve report of whether the auto center is successful or not. Query only.

Returns:	<1>	Eye auto center is successful
	<0>	Eye auto center is not successful

EYE:EPRogress?

Retrieve the progress of the Eye data collection. Query only.

EYE:ISNumber?

Retrieve the serial number of the latest Eye image.

EYE:MSNumber?

Retrieve the serial number of the latest Eye measurements.

EYE:NAVailable?

Retrieve the not-available value of the Eye measurement. Query only.

EYE:STATus?

Retrieve the status of the Eye diagram. Query only.

Returns:	NOTRUNNING	Status codes
	OK	
	NOCLOCK	
	LOWCLOCK	
	DROPCLOCK	
	FREQCHANGE	

Eye: Single Value Waveform

Complete command listing (See page 7, *Command listing*.)

EYE:LRMBits <numeric>
EYE:LRMBits?

Set or retrieve number of bits to Single Value Waveform export.

Params:	<numeric>	Range [1 to length of input pattern]
Returns:	<numeric>	

EYE:LRMSAmperbit <numeric>
EYE:LRMSAmperbit?

Set or retrieve samples per bit for Single Value Waveform export.

Params:	<numeric>	Samples per bit to export, a numeric value. Range [1 to 1,000]
Returns:	<numeric>	

EYE:LRMSTartbit <numeric>
EYE:LRMSTartbit?

Set or retrieve Single Value Waveform start bit.

Params:	<numeric>	Range [0 to pattern length]
Returns:	<numeric>	

EYE:LRMExport <"filename">

Export Single Value Waveform data to a CSV file. Full path name should be given. Action only.

Params:	<"filename">	Filename in double quotes, include full path.

EYE:LRMCancel

Cancel the LRM export. Action only.

EYE:LRMPRPcnt?

Retrieve the progress of the LRM export in percentage. Query only.

EYE:LRMPRCnt?

Retrieve the progress of the LRM export in terms of sample count. Query only.

EYE:SSAV <"filename">

Save Single Value Eye diagram data to a CSV file. Use full path name enclosed in double quotes. Action only.

Params:	<"filename">	CSV file to be saved. Filename in double quotes, include full path.

Eye: Optical Mode

Complete command listing (See page 7, *Command listing*.)

NOTE. *In Electrical mode, choose between mVolts or percent of amplitude for Eye Height, Cross Voltage, and Contour Eye Height measurements. In Optical mode, select a power format of µW or dBm.*

EYE:AMPPf <UW | DBM>
EYE:AMPPf?

Optical mode. Set or retrieve Amplitude power format.

Params:	<UW>	Value displayed in µW
	<DBM>	Value displayed as dBm
Returns:	< UW | DBM >	

EYE:CN0Pf <UW | DBM>
EYE:CN0Pf?

Optical mode. Set or retrieve Cross Noise 0 power format.

Params:	<UW>	Value displayed in µW
	<DBM>	Value displayed in dBm
Returns:	< UW | DBM >	

EYE:CN1Pf <UW | DBM>
EYE:CN1Pf?

Optical mode. Set or retrieve Cross Noise 1 power format.

Params:	<UW>	Value displayed in µW
	<DBM>	Value displayed in dBm
Returns:	< UW | DBM >	

EYE:CRAPf <UW | DBM>
EYE:CRAPf?

Optical mode. Set or retrieve Cross Amplitude power format.

Params:	<UW>	Value displayed in µW
	<DBM>	Value displayed in dBm
Returns:	< UW | DBM >	

EYE:CVPF <UW | DBM>
EYE:CVPF?

Optical mode. Set or retrieve Cross voltage power format.

Params:	<UW>	Value displayed in µW
	<DBM>	Value displayed in dBm
Returns:	< UW | DBM >	

EYE:EHPF <UW | DBM>
EYE:EHPF?

Optical mode. Set or retrieve Eye Height power format.

Params:	<UW>	Value displayed in µW
	<DBM>	Value displayed in dBm
Returns:	< UW | DBM >	

EYE:L0PF <UW | DBM>
EYE:L0PF?

Optical mode. Set or retrieve Level 0 power format.

Params:	<UW>	Value displayed in µW
	<DBM>	Value displayed in dBm
Returns:	< UW | DBM >	

EYE:L1PF <UW | DBM>
EYE:L1PF?

Optical mode. Set or retrieve Level 1 power format.

Params:	<UW>	Value displayed in µW
	<DBM>	Value displayed in dBm
Returns:	< UW | DBM >	

EYE:NL0Pf <UW | DBM>
EYE:NL0Pf?

Optical mode. Set or retrieve Noise Level 0 power format.

Params:	<UW>	Value displayed in µW
	<DBM>	Value displayed in dBm
Returns:	< UW | DBM >	

EYE:NL1Pf <UW | DBM>
EYE:NL1Pf?

Optical mode. Set or retrieve Noise Level 1 power format.

Params:	<UW>	Value displayed in µW
	<DBM>	Value displayed in dBm
Returns:	< UW | DBM >	

EYE:NLPF <UW | DBM>
EYE:NLPF?

Optical mode. Set or retrieve Noise Level power format.

Params:	<UW>	Value displayed in µW
	<DBM>	Value displayed in dBm
Returns:	< UW | DBM >	

EYE:OMAPf <UW | DBM>
EYE:OMAPf?

Optical mode. Set or retrieve OMA power format.

Params:	<UW>	Value displayed in µW
	<DBM>	Value displayed in dBm
Returns:	< UW | DBM >	

EYE:OVSH1Pf <UW | DBM>
EYE:OVSH1Pf?

Optical mode. Set or retrieve Overshoot1 power format.

Params:	<UW>	Value displayed in µW
	<DBM>	Value displayed in dBm
Returns:	< UW | DBM >	

EYE:OVSH0Pf <UW | DBM>
EYE:OVSH0Pf?

Optical mode. Set or retrieve Overshoot0 power format.

Params:	<UW>	Value displayed in µW
	<DBM>	Value displayed in dBm
Returns:	< UW | DBM >	

EYE:VMAPf <UW | DBM>
EYE:VMAPf?

Optical mode. Set or retrieve Maximum voltage power format.

Params:	<UW>	Value displayed in µW
	<DBM>	Value displayed in dBm
Returns:	< UW | DBM >	

EYE:VMIPf <UW | DBM>
EYE:VMIPf?

Optical mode. Set or retrieve Minimum voltage power format.

Params:	<UW>	Value displayed in µW
	<DBM>	Value displayed in dBm
Returns:	< UW | DBM >	

EYE:VOFPf <UW | DBM>
EYE:VOFPf?

Optical mode. Set or retrieve Voltage Offset power format.

Params:	<UW>	Value displayed in µW
	<DBM>	Value displayed in dBm
Returns:	< UW | DBM >	

EYE:VPPPf <UW | DBM>
EYE:VPPPf?

Optical mode. Set or retrieve Peak to Peak power format.

Params:	<UW>	Value displayed in µW
	<DBM>	Value displayed in dBm
Returns:	< UW | DBM >	

Eye: Read Eye Measurement

Complete command listing (See page 7, *Command listing*.)

EYE:ASCale

Auto center the Eye. Action only. May require some delay to complete.

EYE:CLEar

Clear the Eye image and measurements. Action only.

EYE:MVALue:0LEVel?

Retrieve the Eye 0-Level. Query only.

EYE:MVALue:1LEVel?

Retrieve the Eye 1-Level. Query only.

EYE:MVALue:AMPLitude?

Retrieve the Amplitude. Query only.

EYE:MVALue:AVGVoltsPwr?

Retrieve the Eye 0-Level. Query only.

EYE:MVALue:CAMPlitude?

Retrieve Cross Amplitude. Query only.

EYE:MVALue:CAN0?

Retrieve Cross Amplitude Noise Level 0. Query only.

EYE:MVALue:CAN1?

Retrieve Cross Amplitude Noise Level 1. Query only.

EYE:MVALue:CVOLt?

Retrieve the Cross Volt measurement value. Query only.

The return value is a number in the format that is determined by the Cross Volt measurement value format. If the format is MV, the value is in mVolts. If the format is %, the value is in percentage. The format can be queried and set by using EYE:CVFOmat command in the Eye: Enable Eye Measurement Overlay section.

EYE:MVALue:DCALibration?

Retrieve the Dark Calibration. Query only.

EYE:MVALue:DEEMphasisRatio?

Retrieve the current ratio value. Query only.

EYE:MVALue:DSNR?

Retrieve the rise DSNR. Query only.

EYE:MVALue:EHEight?

Retrieve the Eye Height. Query only.

EYE:MVALue:EWIDth?

Retrieve the Eye Width. Query only.

EYE:MVALue:EXTRatio?

Retrieve the Extinction Ratio. Query only.

EYE:MVALue:FLCRoss?

Queries the Falling Level Crossing in ps.

This is the point in time at which the falling edge (the same edge used for the Fall Time measurement) crosses a configurable level crossing threshold in mV or µW (depending on the mode). Either the 80/20 or the 90/10 points of the falling edge are used, based on the configuration.

See EYE:LCRTHresh to set the level crossing threshold and EYE:EdgeMODe <8020 | 9010> to set the amount of edge to use.

EYE:MVALue:FTIMe?

Retrieve the Fall Time. Query only.

EYE:MVALue:JITTer?

Retrieve the Jitter P-P. Query only.

The return value is a number in the format that is determined by the Jitter P-P measurement value format. If the format is in TIME, the value is in picoseconds (ps). If the format is in %UI, the value is in percentage of a Unit Interval. The format can be queried and set using the EYE:JPFOrmat command in the Eye: Enable Eye Measurement Overlay section.

EYE:MVALue:JRMS?

Retrieve the Eye Jitter RMS measurement value. Query only.

The return value is a number in the format that is determined by the Jitter RMS measurement value format. If the format is in TIME, the value is in picoseconds (ps). If the format is in %UI, the value is in percentage of a Unit Interval. The format can be queried or set using the EYE:JRFOrmat command in the Eye: Enable Eye Measurement Overlay section.

EYE:MVALue:NLEVel?

Retrieve the maximum Noise Level. Query only.

EYE:MVALue:NLV0?

Retrieve Noise Level 0. Query only.

EYE:MVALue:NLV1?

Retrieve Noise Level 1. Query only.

EYE:MVALue:OMA?

Retrieve the OMA. Query only.

EYE:MVALue:OVerSHoot0?

Retrieve the Overshoot0 measurement. Query only.

EYE:MVALue:OVerSHoot1?

Retrieve the Overshoot1 measurement. Query only.

EYE:MVALue:RLCRoss?

Queries the Rising Level Crossing in ps.

This is the point in time at which the rising edge (the same edge used for the Rise Time measurement) crosses a configurable level crossing threshold in mV or µW (depending on the mode). Either the 80/20 or the 90/10 points of the rising edge are used, based on the configuration.

See EYE:LCRTHresh to set the level crossing threshold and EYE:EdgeMODe <8020 | 9010> to set the amount of edge to use.

EYE:MVALue:RTIMe?

Retrieve the Rise Time. Query only.

EYE:MVALue:SCNT?

Retrieve the Sample Count. Query only.

EYE:MVALue:UINTerval?

Retrieve the Unit Interval. Query only.

EYE:MVALue:VECP?

Retrieve VECP. Query only.

EYE:MVALue:VMAX?

Retrieve Voltage Maximum. Query only.

EYE:MVALue:VMIN?

Retrieve Voltage Minimum. Query only.

EYE:MVALue:VOFS?

Retrieve the Eye Voffset value. Query only.

EYE:MVALue:VPP?

Retrieve Voltage Peak-to-Peak. Query only.

BER Contour

Complete command listing (See page 7, *Command listing*.)

CONTour:BBER?

Retrieve BER Contour Best BER. Query only.

CONTour:BDELay?

Retrieve BER Contour Best Delay in ps. Query only.

CONTour:BTHReshold?

Retrieve BER Contour Best Threshold in mV. Query only.

CONTour:CBPPf <UW | DBM>
CONTour:CBPPf?

Optical mode. Set or retrieve Contour Best Point Threshold power format.

Params:	<UW>	Value displayed in µW
	< DBM >	Value displayed in dBm
Returns:	< UW | DBM >	

CONTour:CEHPf <UW | DBM>
CONTour:CEHPf?
Optical mode. Set or retrieve Contour Eye Height power format.

Params:	<UW>	Value displayed in µW
	< DBM >	Value displayed in dBm
Returns:	< UW | DBM >	

CONTour:CERate:EM<6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16>?

Retrieve specified Contour's Error Rate. Contour is is EM6, EM7, EM8, ..., EM16. Query only.

NOTE. *Note there is no space before the contour number.*

Params:	<6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16>	Contour is EM6, EM7, EM8, ..., EM16
Returns:	< EMErrRate >	Requested Contour error rate

CONTour:CFG?

Retrieve four configuration parameters for the current BER Contour, including: Unit Interval, Amplitude, Center Time, Center Threshold Voltage. Query only.

Returns:	< UI UA CT CV >	UI is unit interval in ps UA is amplitude in mV CT is center time in ps CV is center threshold voltage in mV.

Example: contour:cfg?

```
93.379 357 167.335 1263
```

CONTour:CLEar

Clear the BER Contour image and measurements.

CONTour:CMFName <"filename">
CONTour:CMFName?

Set or retrieve the BER Contour Mask filename.

Params:	<"filename">	MSK file to load. Filename is enclosed in double quotes.
Returns:	< filename >	

CONTour:CMResult?

Retrieve the Compliance Mask test result as “Pass” or “Fail”. Query only.

CONTour:CSTatus?

Retrieve BER Contour Status. Query only.

Returns:	NOTRUNNING OK NOCLOCK LOWCLOCK NOPATTERN NOTFOUND ACQERROR	Status codes

CONTour:ECONtour:EM<6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16> <bool>
CONTour:ECONtour:EM<6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16>?

Enable or retrieve state of specified Contour. Note that there is *no space before* the contour number.

Params:	<6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16>	Contour is EM6, EM7, EM8, ..., EM16
	<bool>	On = 1, Off = 0
Returns:	< 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 > < 0 | 1 >	

CONTour:ECTFile <layer> <“filename”>

Export Contour to file. Action only.

Params:	<layer>	Layer is EM6, EM7, EM8, ..., EM16
	<“filename”>	Filename is “full path, name and extension” enclosed in double quotes.

CONTour:EMContour <EM6 | EM7 | EM8 | EM9 | EM10 | EM11 | EM12 | EM13 | EM14 | EM15 | EM16>
CONTour:EMContour?

Enable or retrieve state of Eye Measure Contour.

Params:	<EM6 | EM7 | EM8 | EM9 | EM10 | EM11 | EM12 | EM13 | EM14 | EM15 | EM16>	Enable contour, selecting from EM6, EM7, EM8, ..., EM16
Returns:	< EM6 | EM7 | EM8 | EM9 | EM10 | EM11 | EM12 | EM13 | EM14 | EM15 | EM16 >	

CONTour:EMHeight?

Retrieve BER Contour Eye Measure Height in mV. Query only.

CONTour:EMWidth?

Retrieve BER Contour Eye Measure Width in ps. Query only.

CONTour:ERRThr <double>
CONTour:ERRThr?

Set or retrieve BER Contour Jitter Error Threshold.

Params:	< double >	Range [1 to 10,000]
Returns:	< double >	

CONTour:IMEasurement?

Retrieve BER Contour Invalid Measurement. Query only.

CONTour:MBARsel <OFF | MEASUREMENTS | STRESS | ADVANCED | LAYERS>
CONTour:MBARsel?

Set or retrieve the BER Contour Sidebar selection.

Params:	<OFF>	No Sidebar
	<MEASUREMENTS>	Show Measurement Sidebar
	<STRESS>	Show Stress Sidebar (if Stress Option is enabled)
	<ADVANCED>	Show Advanced features Sidebar
	<LAYERS>	Show Contour layers Sidebar
Returns:	< OFF | MEASUREMENTS | STRESS | ADVANCED | LAYERS >	

CONTour:MBDepth?

Measure BER depth. Query only.

CONTour:MERate <double>
CONTour:MERate?

Set or retrieve BER Contour Mask Error Rate.

Params:	< double >	Range [1E-18 to 1E-02]
Returns:	< double >	

CONTour:MFILe <“filename”>
CONTour:MFILe?

Saves current BER Contour to a Mask File. An error will result if BER Contour has not been run yet.

Params:	<“filename”>	MSK file. Filename is enclosed in double quotes.
Returns:	< filename >	Last saved filename of the BER Contour mask file

CONTour:PTS <layered>?

Returns the X,Y coordinates of a specified contour produced by the BER Contour view. The contour must be available when queried; otherwise a SERVER ERROR will be returned. Query only.

Params:	<layered>	Select contour layer from EM6, EM7, EM8, ..., EM16
Returns:	< N (ps1, mv1) (ps2, mv2), ..., (psN, mvN) >	N is the number of points in the contour; ps1 is time of the first point in ps; mv1 is the voltage of the first point in mV. The response is generated on one line of text output. The series of points can be considered a ‘closed polygon,’ where the first point can be connected to the last point.

Example: contour:points em12?

```
32 (167.000, 1106.404) (159.430, 1104.830) (151.122,
1107.907) ...
```

CONTour:REFMode <LIVEdata | DPATtern>

CONTour:REFMode?

Set or retrieve BER Contour Reference mode.

Params:	<LIVEdata>	Live Data mode
	<DPATtern>	Detected Pattern mode
Returns:	< LIVEDATA | DPATTERN >	

CONTour:REFPattern?

Retrieve BER Reference Pattern. Query only.

CONTour:RETime?

Retrieve BER Contour Run Elapsed Time in seconds. Query only.

CONTour:STFile<“filename”>

Save Contour results to named file. Action only.

Params:	<“filename”>	CSV file where Contour analysis results will be saved. Filename is enclosed in double quotes.

CONTour:SUFBits <value>
CONTour:SUFBits?

Set or retrieve BER Contour Sufficient Bits.

Params:	<value>	Range [1,000 to 1E+11] A value of –1 initiates automatic mode.
Returns:	< value >	Numeric Value or Automatic

BER Contour: Optical Mode

Complete command listing (See page 7, *Command listing*.)

NOTE. *In Electrical mode, choose between mV or percent of amplitude for Eye Height, Crossing Voltage, Contour Eye Height measurements. In Optical mode, choose between µW or dBm.*

CONTour:CBPPf <UW | DBM>
CONTour:CBPPf?

Set or retrieve BER Contour Optical Mode Best Point Threshold power format.

Params:	<UW>	Value displayed in µW
	<DBM>	Value displayed in dBm
Returns:	< UW | DBM >	

CONTour:CEHPf <UW | DBM>
CONTour:CEHPf?

Set or retrieve BER Contour Optical Mode Eye Height power format.

Params:	<UW>	Value displayed in µW
	<DBM>	Value displayed in dBm
Returns:	< UW | DBM >	

Jitter Map

Complete command listing (See page 7, *Command listing*.)

JMAP:AVGTT?

Retrieve the average transition time. Query only.

Returns:	<numeric>	Average transition time in %UI, mUI, or ps

JMAP:BUJ?

Retrieve the BUJ. Measurement value. Query only.

Returns:	<numeric>	BUJ in %UI, mUI, or ps

JMAP:BUJLOCKED
JMAP:BUJLOCKED?

Set or retrieve the BUJ locked measurement value in units specified by JUNITS.

Returns:	<numeric>	BUJ in %UI, mUI, or ps

JMAP_BUJ:MBARSEL<OFF | MEASUREMENTS | GENERATOR | STRESS | CLOCKRECOVERY>
JMAP_BUJ:MBARSEL?

Set or retreive the Sidebar state for the JitterMap BUJ view.

Params:	<OFF>	Hide Sidebar
	<MEASUREMENTS>	Show Measurement Sidebar
	<GENERATOR>	Show Generator Sidebar
	<STRESS>	Show Stress Sidebar (if Stress Option is enabled)
	<CLOCKRECOVERY>	Show Clock Recovery Sidebar (if Clock Recovery unit is detected)
Returns:	< OFF | MEASUREM ENTS | GENERATOR | STRESS | CLOCKRECOVERY >	

JMAP:CYCLES?

Retrieve the number of measurement cycles completed during a run (RJPJ + DDJ + SRJ / cycle). Query only.

Returns:	<numeric>	Measurement cycles

JMAP:DCD?

Retrieve the Duty-Cycle Distortion measurement value in units specified by JUNITS. Query only.

Returns:	<numeric>	Duty Cycle Distortion in %UI, mUI, or ps

JMAP:DCDLOCKED
JMAP:DCDLOCKED?

Set or retrieve the Duty Cycle Distortion locked measurement value in units specified by JUNITS.

Returns:	<numeric>	Duty Cycle Distortion in %UI, mUI, or ps

JMAP:DDJ?

Retrieve the Data-Dependent Jitter measurement value in units specified by JUNITS. Query only.

Returns:	<numeric>	Data Dependent Jitter in %UI, mUI, or ps

JMAP:DDPWS?

Retrieve the minimum pulse width measurement value in units specified by JUNITS. Query only.

Returns:	<numeric>	Minimum pulse width in %UI, mUI, or ps

JMAP:DJ?

Retrieve the Deterministic Jitter measurement value in units specified by JUNITS. Query only.

Returns:	<numeric>	Deterministic Jitter, in %UI, mUI, or ps

JMAP:EJ?

Retrieve the Emphasis Jitter measurement value in units specified by JUNITS. Query only.

Returns:	<numeric>	Emphasis Jitter, in %UI, mUI, or ps

JMAP:EJLOCKED
JMAP:EJLOCKED?

Set or retrieve the EJ locked measurement value in units specified by JUNITS.

Returns:	<numeric>	Emphasis Jitter in %UI, mUI, or ps

JMAP_EJ:MBARSEL<OFF | MEASUREMENTS | GENERATOR | STRESS | CLOCKRECOVERY>
JMAP_EJ:MBARSEL?

Set or retreive the Sidebar state for the JitterMap EJ view.

Params:	<OFF>	Hide Sidebar
	<MEASUREMENTS>	Show Measurement Sidebar
	<GENERATOR>	Show Generator Sidebar
	<STRESS>	Show Stress Sidebar (if Stress Option is enabled)
	<CLOCKRECOVERY>	Show Clock Recovery Sidebar (if Clock Recovery unit is detected)
Returns:	< OFF | MEASUREM ENTS | GENERATOR | STRESS | CLOCKRECOVERY >	

JMAP:EJTROF?

Retrieve Emphasis Jitter Transition Offset measurement value in units specified by JUNITS. Query only.

Returns:	<numeric>	Emphasis Jitter Transition Offset in %UI, mUI, or ps

JMAP:EMPRATMODE<OFF | MEASUREMENTS | GENERATOR | STRESS | CLOCKRECOVERY>
JMAP:EMPRATMODE?

Set or retrieve the emphasis ratio mode.

NOTE. *If you select MANUAL, use JMAP:EMPRAT to set or retrieve the value.*

Params:	y	Use Auto-emphasis ratio
	<MANUAL>	Allow manual ratio entry
Returns:	< AUTO | MANUAL >	

JMAP_ETB:MBARSEL<OFF | MEASUREMENTS | GENERATOR | STRESS | CLOCKRECOVERY>
JMAP_ETB:MBARSEL?

Set or retrieve the Sidebar state for the JitterMap Edge Time Per Bit view.

Params:	<OFF>	Hide Sidebar
	<MEASUREMENTS>	Show Measurement Sidebar
	<GENERATOR>	Show Generator Sidebar
	<STRESS>	Show Stress Sidebar (if Stress Option is enabled)
	<CLOCKRECOVERY>	Show Clock Recovery Sidebar (if Clock Recovery unit is detected)
Returns:	< OFF | MEASUREM ENTS | GENERATOR | STRESS | CLOCKRECOVERY >	

JMAP_ETH:MBARSEL <OFF | MEASUREMENTS | GENERATOR | STRESS | CLOCKRECOVERY>

JMAP_ETH:MBARSEL?

Set or retrieve the Sidebar state for the JitterMap Edge Timings histogram view.

Params:	<OFF>	Hide Sidebar
	<MEASUREMENTS>	Show Measurement Sidebar
	<GENERATOR>	Show Generator Sidebar
	<STRESS>	Show Stress Sidebar (if the option is enabled)
	<CLOCKRECOVERY>	Show Clock Recovery Sidebar (if Clock Recovery unit is detected)
Returns:	< OFF | MEASUREM ENTS | GENERATOR | STRESS | CLOCKRECOVERY >	

JMAP:F2J?

Retrieve F2 Jitter measurement value in the units specified by JUNITS. Query only.

Returns:	<numeric>	F2 Jitter in %UI, mUI, or ps

JMAP:INVALIDVALUE?

Retrieve the "magic number" returned if a JitterMap measurement cannot be made. Query only.

Returns:	<numeric>	Invalid value

JMAP:ISI?

Retrieve the Inter-Symbol Interference measurement value in the units specified by JUNITS. Query only.

Returns:	<numeric>	Inter-Symbol Interference in %UI, mUI, or ps

JMAP:JUNITS<PICOSECS | PERCENTUI | MILLIUI>
JMAP:JUNITS?

Set or retrieve the units in which the jitter measurements are reported and displayed.

Params:	<PICOSECS>	Returns jitter in picoseconds
	<PERCENTUI>	Returns jitter in %UI
	<MILLIUI>	Returns jitter in mUI
Returns:	< PICOSECS | PERCENTUI | MILLIUI >	

JMAP:MANUALTHRESH
JMAP:MANUALTHRESH?

Set or retrieve the value used if JMAP:THRESHMODE is set to MANUAL

Params:	<numeric>	In mVolts if Detector is in Electrical mode, in uWatts if in Optical mode
Returns:	<numeric>	

JMAP_MAP:MBARSEL<OFF | MEASUREMENTS | GENERATOR | STRESS | CLOCKRECOVERY>
JMAP_MAP:MBARSEL?

Set or retrieve the Sidebar state for the JitterMap Map view.

Params:	<OFF>	Hide Sidebar
	<MEASUREMENTS>	Show Measurement Sidebar
	<GENERATOR>	Show Generator Sidebar
	<STRESS>	Show Stress Sidebar (if Stress Option is enabled)
	<CLOCKRECOVERY>	Show Clock Recovery Sidebar (if Clock Recovery unit is detected)
Returns:	< OFF | MEASUREM ENTS | GENERATOR | STRESS | CLOCKRECOVERY >	

JMAP:MEASURE_EJ<bool>
JMAP:MEASURE_EJ?

Set or retrieve the ON /OFF state of the EJ measurement category.

Params:	<bool>	On = 1, Off = 0
Returns:	< 1 >	Include EJ measurements in the run
	< 0 >	Do NOT include EJ measurements in the run

JMAP:MEASURE_SRJ<bool>
JMAP:MEASURE_SRJ?

Set or retrieve the ON /OFF state of the SRJ measurement category.

Params:	<bool>	On = 1, Off = 0
Returns:	< 1 >	Include SRJ/NSR measurements in the run
	< 0 >	Do NOT include SRJ/NSR measurements in the run

JMAP:NISI?

Retrieve the Non-ISI (TJ minus ISI) measurement value in the units specified by JUNITS. Query only.

Returns:	<numeric>	Non-ISI, in %UI, mUI, or ps

JMAP:NSR?

Retrieve the Non-Subrate Jitter measurement value in the units specified by JUNITS. Query only.

Returns:	<numeric>	Non-Subrate Jitter, in %UI, mUI, or ps

JMAP:NUMEDGES?

Retrieve the number of edges measured by RJ. Query only.

Returns:	<numeric>	Number of edges

JMAP:PATLEN<numeric>
JMAP:PATLEN?

Set or retrieve the value used if JMAP:PATLENMODE = 'MANUAL'.

Params:	<numeric>	User pattern length, in bits
Returns:	<numeric>	

JMAP:PATLENMODE<FROMFILE | AUTO | MANUAL>
JMAP:PATLENMODE?

Set or retrieve the selection mode for the user pattern length.

NOTE: If 'MANUAL' is selected, use JMAP:PATLEN (above) to set or retrieve the value.

Params:	<FROMFILE>	Use the length specified in the currently selected user pattern file.
	<AUTO>	Determine the pattern length from the signal.
	<MANUAL>	Allow manual specification of the pattern length.
Returns:	< FROMFILE | AUTO | MANUAL >	

JMAP:PPBEr <double>
JMAP:PPBEr?

Set or retrieve the BER where Jitter Map Total Jitter measurements are made.

Params:	< double >	Range [1.00E-16 to 1.00E-02]
Returns:	< double >	

JMAP:RconfigDISK<“filename”>

Restores the JitterMap settings from a file. The complete path must be specified in the parameter string. The path must be accessible to the host computer or analyzer running the remote control software. The file extension should be .CJM. Action only.

Example:

```
JMAP_MAP:RCONFIGDISK “D:\BitAlyzer\Configurations\mycfg.CJM”
```

Params:	<“filename”>	Enclose string in double quotes.

JMAP:RETIME?

Retrieve the elapsed run time, in seconds. Query only.

Returns:	<numeric>	Elapsed run time in seconds

JMAP:RJ?

Retrieve the Random Jitter RMS measurement value in the units specified by JUNITS. Query only.

Returns:	<numeric>	Random Jitter, in %UI-rms, mUI-rms or ps-rms

JMAP:RJLOCKED
JMAP:RJLOCKED?

Sets/Retrieve the RJ locked measurement value in the units specified by JUNITS.

Returns:	<numeric>	RJ in %UI, mUI, or ps

JMAP:RJAVGERLY?

Retrieve the average RJ for the early bits in the units specified by JUNITS. Query only.

Returns:	<numeric>	Random Jitter avg of early bits in %UI rms, mUI rms, or ps rms

JMAP:RJAVGFALL?

Retrieve the average RJ for the falling transitions e in the units specified by JUNITS. Query only.

Returns:	<numeric>	Random Jitter average of falling transitions in %UI rms, mUI rms, or ps rms

JMAP:RJAVGLATE?

Retrieve the average RJ for the late bits v in the units specified by JUNITS. Query only.

Returns:	<numeric>	Random Jitter for late bits in %UI rms, mUI rms, or ps rms

JMAP:RJAVGRISE?

Retrieve the average RJ for the rising edges in the units specified by JUNITS. Query only.

Returns:	<numeric>	Random Jitter for rising bits in %UI rms, mUI rms, or ps rms

JMAP:RJDD?

Retrieve the dirac-delta computed RJ dirac-delta in the units specified by JUNITS. Query only.

Returns:	<numeric>	Random Jitter for dirac-delta RJ in %UI rms, mUI rms, or ps rms

JMAP:RJEVEN?

Retrieve the RJ for even bits in the units specified by JUNITS. Query only.

Returns:	<numeric>	Random Jitter for even bits in %UI rms, mUI rms, or ps rms

JMAP:RJLEFTERLY?

Retrieve the computed RJ left early bits in the units specified by JUNITS. Query only.

Returns:	<numeric>	Random Jitter for left early in %UI rms, mUI rms, or ps rms

JMAP_RJ:MBARSEL<OFF | MEASUREM ENTS | GENERATOR | STRESS | CLOCKRECOVERY>
JMAP_RJ:MBARSEL?

Set or retrieve the Sidebar state for the JitterMap RJ view.

Params:	<OFF>	Hide Sidebar
	<MEASUREMENTS>	Show Measurement Sidebar
	<GENERATOR>	Show Generator Sidebar
	<STRESS>	Show Stress Sidebar (if Stress Option is enabled)
	<CLOCKRECOVERY>	Show Clock Recovery Sidebar (if Clock Recovery unit is detected)
Returns:	< OFF | MEASUREM ENTS | GENERATOR | STRESS | CLOCKRECOVERY >	

JMAP:RJODD?

Retrieve the computed RJ for the odd bits in the units specified by JUNITS. Query only.

Returns:	<numeric>	Random Jitter for odd bits in %UI rms, mUI rms, or ps rms

JMAP:RJRHTAVG?

Retrieve the computed right avg RJ in the units specified by JUNITS. Query only.

Returns:	<numeric>	Avg right Random Jitter in %UI rms, mUI rms, or ps rms

JMAP:RJRHTLATE?

Retrieve the computed right RJ for late bits di in the units specified by JUNITS.

Returns:	<numeric>	Random Jitter for right late bits in %UI rms, mUI rms, or ps rms

JMAP:RUNMODE <NORMAL | LONGPATTERNLOCK>
JMAP:RUNMODE?

Set or retrieve the run mode; Normal, or Long Pattern Lock.

Params:	<NORMAL>	Run in normal mode – long pattern lock off
	<LONGPATTERNLOCK>	Run with long pattern lock on
Returns:	< NORMAL | LONGPATTERNLOCK >	

JMAP:SconfigDISK<"string">
JMAP:SDISK <"string">

Saves the current JitterMap settings to a file. The complete path must be specified in the parameter string. The path must be accessible to the host computer or analyzer running the remote control software. The file extension should be .CJM. Action only.

Example:

```
JMAP:SCONFIGDISK "D:\BitAlyzer\Configurations\mycfg.CJM"
```

Params:	<"string">	The string is enclosed in double quotes

JMAP:SRJ?

Retrieve the computed subrate jitter in the units specified by JUNITS. Query only. Query only.

Returns:	<numeric>	Subrate jitter in %UI-rms, mUI-rms, or ps-rms

JMAP_SRJ:MBARSEL<OFF | MEASUREM ENTS | GENERATOR | STRESS | CLOCKRECOVERY>
JMAP_SRJ:MBARSEL?

Set or retrieve the Sidebar state for the JitterMap SRJ view.

Params:	<OFF>	Hide Sidebar
	<MEASUREMENTS>	Show Measurement Sidebar
	<GENERATOR>	Show Generator Sidebar
	<STRESS>	Show Stress Sidebar (if Stress Option is enabled)
	<CLOCKRECOVERY>	Show Clock Recovery Sidebar (if Clock Recovery unit is detected)
Returns:	<OFF | MEASUREM ENTS | GENERATOR | STRESS | CLOCKRECOVERY>	

JMAP:SUBRATESELECTED_#
JMAP:SUBRATESELECTED_#?

Set or retrieve the ON /OFF state of a subrate.

NOTE. *Replace the # symbol with a valid Subrate: 2, 4, 5, 8, 10, 16, 20, 32, 40, 64, or 128.*

Params:	#	Replace with a valid subrate
	<bool>	On = 1, Off = 0
Returns:	< 1 >	Include this Subrate in the SRJ measurement
	< 0 >	Do NOT include this Subrate in the SRJ measurement

JMAP:THRESHMODE<enum>
JMAP:THRESHMODE?

Set or retrieve the threshold selection mode.

NOTE: If MANUAL is selected, use JMAP:MANUALTHRESH (above to set or retrieve value).

Params:	<enum>	Threshold selection mode
Returns:	< enum >	

JMAP:TJ?

Retrieve the computed TJ in the units specified by JUNITS. Query only.

Returns:	<numeric>	Total Jitter for TJ , in %UI-rms, mUI-rms, or ps-rms

JMAP:TJBERDPTH?

Retrieve the TJ BER Depth. Query only.

Returns:	<numeric>	TJ BER Depth

JMAP:TJJ2?

Returns the computed total jitter (TJ) measured at a BER depth of 0.25 x 10^{-2}. Query only.

Returns:	< double >	Total jitter (TJ) in picoseconds

JMAP:TJJ9?

Returns the computed total jitter (TJ) measured at a BER depth of 0.25 x 10^{-9}. Query only.

Returns:	< double >	Total jitter (TJ) in picoseconds

JMAP_TJ:MBARSEL<OFF | MEASUREM ENTS | GENERATOR | STRESS | CLOCKRECOVERY>
JMAP_TJ:MBARSEL?

Set or retrieve the Sidebar state for the JitterMap TJ view.

Params:	<OFF>	Hide Sidebar
	<MEASUREMENTS>	Show Measurement Sidebar
	<GENERATOR>	Show Generator Sidebar
	<STRESS>	Show Stress Sidebar (if Stress Option is enabled)
	<CLOCKRECOVERY>	Show Clock Recovery Sidebar (if Clock Recovery unit is detected)
Returns:	< OFF | MEASUREM ENTS | GENERATOR | STRESS | CLOCKRECOVERY >	

JMAP:TJSTARTBER
JMAP:TJSTARTBER?

Set or retrieve the starting BER value used during the TJ measurement.

Param:	<numeric>	BER from 1E-10 to 1E-2
Returns:	<numeric>	

JMAP:UJ?

Retrieve the computed UJ in the units specified by JUNITS. Query only.

Returns:	<numeric>	Uncorrelated Jitter in %UI rms, mUI rms, or ps rms

JMAP:UJBERDPTH?

Retrieve the UJ BER Depth. Query only.

Returns:	<numeric>	UJ BER Depth

JMAP:UJRMS?

Retrieve the RMS UJ in the units specified by JUNITS. Query only.

Returns:	<numeric>	UJ rms in %UI rms, mUI rms, or ps rms

JMAP:UJSTARTBER
JMAP:UJSTARTBER?

Set or retrieve the starting BER value used during the UJ measurement.

Param:	<numeric>	BER from 1E-10 to 1E-2
Returns:	<numeric>	

Jitter Peak

Complete command listing (See page 7, *Command listing*.)

JITTer:ASCale <LEDGE | TEDGE | CTIME>

Set Jitter Peak Auto Scale parameters.

Params:	<LEDGE>	Leading Edge
	<TEDGE>	Trailing Edge
	<CTIME>	Center Time

JITTer:BITPos <long>
JITTer:BITPos?

Set or retrieve the bit position the Jitter Peak is to operate on.

Params:	< numeric >	Bit Position, a numeric value. Range [0 to (length of the input pattern 1)]
Returns:	< numeric >	

JITTer:CFG?

Retrieve the auto-align results used to automatically align the Jitter Peak. Query only.

Returns:	<UI UA CT CV>	UI is the Unit Interval in ps UA is amplitude in mV CT is center time in ps CV is center threshold voltage in mV

JITTer:CLEar

Clear the Jitter Peak image and measurements. Action only.

JITTer:DJITter?

Retrieve the Deterministic Jitter. Query only. The return value is a number in the format that is determined by the Deterministic Jitter format of either TIME or %UI. See JITTer:DJFOrmat command above for querying and changing the format.

JITTer:DMODe <COUNt | GRAPh | RDATa>
JITTer:DMODe?

Set or retrieve the Jitter Peak display mode.

Params:	<COUNt>	Counters
	<GRAPh>	Graph
	<RDATa>	Raw data
Returns:	< COUNT | GRAPH | RAWDATA >	

JITTer:EGRaticule <bool>
JITTer:EGRaticule?

Enable/disable the graticule (grid) on the Jitter Peak display.

Params:	<bool>	On = 1, Off = 0
Returns:	< 1 >	Enable Jitter Peak graticule
	< 0 >	Disable Jitter Peak graticule

JITTer:EQSCale <bool>
JITTer:EQSCale?

Enable/disable the Q Scale on the Jitter Peak display.

Params:	<bool>	On = 1, Off = 0
Returns:	< 1 >	Enable Q Scale
	< 0 >	Disable Q Scale

JITTer:ERRThr <double>
JITTer:ERRThr?

Set or retrieve Jitter Peak Error Threshold.

Params:	< double >	Range [1 to 10,000]
Returns:	< double >	

JITTer:IVALue?

Retrieve Jitter Peak Invalid Value. Query only.

JITTer:L0EValue?

Retrieve Jitter Peak Leading Edge error value. Query only.

JITTer:L0Mean?

Retrieve Jitter Peak Leading Edge mean. Query only.

JITTer:L0NPoints?

Retrieve Jitter Peak Leading Edge number of measured points. Query only.

JITTer:L0Sigma?

Retrieve Jitter Peak Leading Edge sigma. Query only.

JITTer:L1EValue?

Retrieve Jitter Peak Trailing Edge error value. Query only.

JITTer:L1Mean?

Retrieve Jitter Peak Trailing Edge mean. Query only.

JITTer:L1NPoints?

Retrieve Jitter Peak Trailing Edge number of measured points. Query only.

JITTer:L1Sigma?

Retrieve Jitter Peak Trailing Edge sigma. Query only.

JITTer:LData?

Retrieve the measured points for the left edge of the Jitter Peak display. Query only.

Returns:	< N (x1, y1) (x2, y2) ... (xN, yN) >	where N is the number of points, the x values are delay values represented in ps, and the y values are BER measurements.

JITTer:LFit?

Retrieve the extrapolated points for the left edge of the Jitter Peak display. Query only.

Returns:	< N (x1, y1) (x2, y2) ... (xN, yN) >	where N is the number of points, the x values are delay values represented in ps, and the y values are BER measurements.

JITTer:MBARsel <OFF | MEASUREMENTS | STRESS | ADVANCED >
JITTer:MBARsel?

Set or retrieve the Jitter Peak Sidebar selection.

Params:	<OFF>	Hide Sidebar
	<MEASUREMENTS>	Show Measurement Sidebar
	<STRESS>	Show Stress Sidebar (if Stress Option is enabled)
	<ADVANCED>	Show Advanced features Sidebar
Returns:	< OFF | MEASUREMENTS | STRESS | ADVANCED >	

JITTer:MBDepth?

Measure Jitter Peak BER Depth. Query only.

JITTer:OBSTring?

Retrieve Jitter Peak Optimum BER String. Query only.

JITTer:OLBer?

Retrieve Jitter Peak Optimum Log BER. Query only.

JITTer:OPERmode <ALLBITS | SINGLEBIT>
JITTer:OPERmode?

Set or retrieve the Jitter Peak operating mode.

Params:	<ALLBITS>	Jitter Peak operates on all bits
	< SINGLEBIT >	Jitter Peak operates on the chosen single bit
Returns:	< ALLBITS | SINGLEBIT >	

JITTer:OTValue?

Retrieve Optimum Jitter Peak threshold value in mV. Query only.

JITTer:PPBEr <double>
JITTer:PPBEr?

Set or retrieve the BER where Jitter Peak measurements are made.

Params:	< double >	Range [1.00E-50 to 1.00E-05]
Returns:	< double >	

JITTer:RData?

Retrieve the measured points for the right edge of the Jitter Peak display.

Returns:	< N (x1, y1) (x2, y2) ... (xN, yN) >	where N is the number of points, the x values are delay values represented in ps, and the y values are BER measurements.

JITTer:REFMode <LIVEdata | DPATtern>
JITTer:REFMode?

Set or retrieve Jitter Peak Reference mode.

Params:	<LIVEdata>	Live Data mode
	<DPATtern>	Detected Pattern mode
Returns:	< LIVEDATA | DPATTERN >	

JITTer:REFPattern?

Retrieve Jitter Peak Reference Pattern. Query only.

JITTer:RETime?

Retrieve Jitter Peak Run Elapsed Time in seconds. Query only.

JITTer:RFit?

Retrieve the measured points for the right edge of the Jitter Peak display.

Returns:	< N (x1, y1) (x2, y2) ... (xN, yN) >	where N is the number of points; the x values are delay values represented in ps, and the y values are BER measurements.

JITTer:RJITter?

Retrieve the Random Jitter. Query only.

The return value is a number in the format that is determined by the Random Jitter format of either TIME or %UI. See the JITTer:RJFOrmat command for querying or changing the format.

JITTer:RJFOrmat <TIME | %UI>
JITTer:RJFOrmat?

Set or retrieve the Jitter Peak Random Jitter measurement value format.

Params:	<TIME>	Value is displayed in psec
	<%UI>	Value is displayed in %UI
Returns:	< TIME | %UI >	

JITTer:SBER<double>
JITTer:SBER?

Set or retrieve the Starting BER for Jitter Peak measurements.

Params:	< double >	Range [1.00E-50. to 1.00E-05]
Returns:	< double >	

JITTer:SCURsors<X1,X2,Y1,Y2>

Set Jitter Peak Cursor positions. Action only.

Params:	<X1>	X1 cursor position, double
	<X2>	X2 cursor position, double
	<Y1>	Y1 cursor position, double
	<Y2>	Y2 cursor position, double
Returns:	< X1,X2,Y1,Y2 >	

JITTer:SDATa? <int>

Retrieve Jitter Peak series data, binary. Query only.

Returns:	<integer>	Range [0 to 14]

JITTer:SDEFaults

Set Defaults. Action only.

JITTer:STFile<“filename”>

Save Jitter Peak results to named file. Action only.

Params:	<“filename”>	File where Jitter Peak results are saved. Enclose filename in double quotes.

JITTer:SUFBits <double>
JITTer:SUFBits?

Set or retrieve Jitter Peak Sufficient Bits.

Params:	< value >	Range [1,000 to 1E+11]. A value of 1 initiates automatic mode
Returns:	< value >	Numeric Value or Automatic

JITTer:SVIew<Xmin, Ymin, Xmax, Ymax>

Set Jitter Peak view axes.

Params:	<Xmin>	X-Axis minimum, double
	<Ymin>	Y-Axis minimum, double
	<Xmax>	X-Axis maximum, double
	<Ymax>	Y-Axis maximum, double
Returns:	< Xmin, Ymin, Xmax, Ymax >	

JITTer:TJITter?

Retrieve the Total Jitter. Query only.

The return value is a number in the format that is determined by the Total Jitter format of either TIME or %UI. See JITTer:TJFOrmat command for querying and changing the format.

JITTer:TJFOrmat <TIME | %UI>

JITTer:TJFOrmat?

Set or retrieve the Jitter Peak Total Jitter measurement value format.

Params:	<TIME>	Value is displayed in psec
	<%UI>	Value is displayed in %UI
Returns:	< TIME | %UI >	

JITTer:THRMODe <AUTOmatic | MANual>
JITTer:THRMODe?

Set or retrieve the threshold mode of the Jitter Peak.

Params:	<AUTOmatic>	Jitter threshold mode is automatic
	< MANual >	Jitter threshold mode is manual
Returns:	< AUTOMATIC | MANUAL >	

JITTer:TSTatus?

Retrieve Jitter Peak Status. Query only.

Returns:	NOTRUNNING	Status codes
	OK	
	NOCLOCK	
	LOWCLOCK	
	NOPATTERN	
	NOTFOUND	
	ACQERROR	
	WAITING	

JITTer:TVALue <double>
JITTer:TVALue?

Set or retrieve Jitter Peak Manual Threshold.

Params:	< double >	Range [–3,000 to +3,000]
Returns:	< double >	

JITTer:X1Cursor <double>
JITTer:X1Cursor?

Set or retrieve Jitter Peak View's X1 Cursor.

Params:	< double >	Position of Jitter Peak Cursor X1
Returns:	< double >	

JITTer:X2Cursor <double>
JITTer:X2Cursor?

Set or retrieve Jitter Peak View's X2 Cursor.

Params:	< double >	Position of Jitter Peak Cursor X2
Returns:	< double >	

JITTer:XMAX <double>
JITTer:XMAX?

Set or retrieve Jitter Peak View's X Maximum value.

Params:	< double >	Jitter Peak X Maximum value
Returns:	< double >	

JITTer:XMIN <double>
JITTer:XMIN?

Set or retrieve Jitter Peak View's X Minimum value.

Params:	< double >	Jitter Peak X Minimum value
Returns:	< double >	

JITTer:Y1Cursor <double>
JITTer:Y1Cursor?

Set or retrieve position of Jitter Peak's Cursor Y1.

Params:	< double >	Position of Jitter Peak Cursor Y1
Returns:	< double >	

JITTer:Y2Cursor <double>

JITTer:Y2Cursor?

Set or retrieve position of Jitter Peak's Cursor Y2.

Params:	< double >	Position of Jitter Peak Cursor Y2
Returns:	< double >	

JITTer:YMAX <double>
JITTer:YMAX?

Set or retrieve Jitter Peak View's Y Maximum value.

Params:	< double >	Jitter Peak Y Maximum value
Returns:	< double >	

JITTer:YMIN <double>
JITTer:YMIN?

Set or retrieve Jitter Peak View's Y Minimum value.

Params:	< double >	Jitter Peak Y Minimum value
Returns:	< double >	

Jitter Tolerance

Complete command listing (See page 7, *Command listing*.)

JTOL:BERThr <double>
JTOL:BERThr?

Set or retrieve BER Threshold.

Params:	< double >	Range [1E-20 to 1E-7]
Returns:	< double >	

JTOL:CHCOrd<XLOGOFS | XLOGEXT | YLOGOFS | YLOGEXT>?

Retrieve the chart coordinates. Query Only.

Params:	<XLOGOFS>	Retrieve X Offset from the chart
	<XLOGEXT>	Retrieve X Extent from the chart
	<YLOGOFS>	Retrieve Y Offset from the chart
	<YLOGEXT>	Retrieve Y Extent from the chart
Returns:	< double >	

JTOL:CHRX <double>
JTOL:CHRX?

Set or retrieve Jitter Tolerance Cursor X position.

Params:	< double >	Position of X Cursor in Chart
Returns:	< double >	

JTOL:CHRY <double>
JTOL:CHRY?

Set or retrieve Jitter Tolerance Cursor Y position.

Params:	< double >	Position of Y Cursor in Chart
Returns:	< double >	

JTOL:CONFdet?

Retrieve the configuration parameters of the current Jitter tolerance template. Query only.

Returns:	< TC(FreqMHz,TemplateUI,Attributes,LimitUI >

Example:

```
2(0.1, 0.5, 0, 0) (0.2, 0.5, 0, 0)
```

JTOL:DIFLg <SJLIMIT | CURSOR, bool>
JTOL:DIFLg<SJLIMIT | CURSOR>?

Shows or hides different cursors on the chart.

Params:	<SJLIMIT, bool>	Shows the SJ limit in the Chart.
	<CURSOR, bool>	Shows the Cursors in the Chart
	<bool>	On = 1, Off = 0
Returns:	< 1 >	SJ Limit/Cursors On
	< 0 >	SJ Limit/Cursors Off

JTOL:DIFMt <CHART | TABLE>
JTOL:DIFMt?

Set or retrieve display format.

Params:	<CHART>	Displays as a Chart
	<TABLE>	Displays as a Table
Returns:	< CHART | TABLE >	

JTOL:ELPSt?

Retrieve elapsed time. Query only.

Returns:	< double >	Elapsed time

JTOL:EXPCSv<"filename">

Export Jitter Tolerance results to a CSV file. Full path name should be given. Action only.

Params:	<"filename">	Filename in quotes; include full path

JTOL:HifsjMODE <Off | BUJ Mode>
JTOL:HifsjMODE?

Sets or returns the Jitter Tolerance high frequency sinusoidal jitter (SJ) mode.

Params:	< OFF >	Turns off the Jitter Tolerance high frequency mode.
	< BUJ Mode>	Enables the high frequency mode in Jitter Tolerance to use BUJ mode.
Returns:	< OFF | BUJ Mode>	

JTOL:LDTPl<"filename">

Load a template file. Full path name should be given. Action only.

Params:	<"filename">	Filename in quotes; include full path

JTOL:MARGui <double>
JTOL:MARGui?

Set or retrieve Margin UI in percentage.

Params:	< double >	Range [-90 to 400]
Returns:	< double >	

JTOL:MBARsel <OFF | GENERATOR | STRESS | CRU>
JTOL:MBARsel?

Set or retrieve Jitter Tolerance Sidebar selection.

Params:	<OFF>	Hide Sidebar
	<GENERATOR>	Show Generator Sidebar
	<STRESS>	Show Stress Sidebar (if Stress Option is enabled)
	<CRU>	Show Clock Recovery Sidebar (If Clock Recovery unit is detected)
Returns:	< OFF | GENERATOR | STRESS | CRU >	

JTOL:PRECui <double>
JTOL:PRECui?

Set or retrieve Precision UI.

Params:	< double >	Range [0.005 to 0.05]
Returns:	< double >	

JTOL:RelaxFLIP <bool>
JTOL:RelaxFLIP?

Enable/disable the relax with Pattern Generator RAM page flip.

Params:	<bool>	On = 1, Off = 0
Returns:	< 1 >	Relax is enabled
	< 0 >	Relax is disabled

JTOL:RelaxMODE<OFF | ABSWITCH | ONESHOT >
JTOL:RelaxMODE?

Set or retrieve the Relax Mode.

Params:	<OFF>	Turn PageSelect off
	<ABSWITCH>	Specify Relax mode to be Page A or Page B
	<ONESHOT>	Specify Relax mode to switch to the other page for a moment and then switch back
Returns:	< OFF | ABSWITCH | ONESHOT >	

JTOL:RELSt?

Retrieve Relax State. Query only.

Returns: < NORELAX | RELAX | NOTRUNNING >

JTOL:RELTme <double>
JTOL:RELTme?

Set or retrieve Relax Time in seconds.

Params: < double > Range [0 to 100]

Returns: < double >

JTOL:RESDet?

Retrieve the Jitter Tolerance test results. Query only.

Returns: <TC(AmpUI, Bits, Errors, BER, Status>
0 = TM_Blank
1 = TM_Skipped
2 = TM_InProgress
3 = TM_Passed
4 = TM_NoSync
5 = TM_FAIL_BER
6 = TM_FAIL_CLKERR
7 = TM_FAIL_DATAERR
8 = TM_LIMIT_REACHED

Example:

```
2(0.1, 1000, 100, 0.1, 1) (0.2, 1000, 100, 0.1, 2)
```

JTOL:RUNSt?

Retrieve Jitter Tolerance Run Status. Query only.

Returns: 0 = TM_READY
1 = TM_SWEEPING
2 = TM_TESTING
3 = TM_RELAXING
4 = TM_AUTOALIGNING
5 = TM_TEST_PASS
6 = TM_TEST_FAIL
7 = TM_RSTATUS_COUNT

JTOL:SJBAse <double>
JTOL:SJBAse?

Set or retrieve SJ Baseline Amplitude UI in percentage.

Params: < double > Range [0 to 100]

Returns: < double >

JTOL:SVTPl<“filename”>

Save the current template in a file. Full path name should be given. Action only.

Params:	<”filename”>	Enclose filename in double quotes and include full path

JTOL:TEND <DURATION | BITSERRS | CONFIDENCE>
JTOL:TEND?

Set or retrieve Test End Mode.

Params:	<DURATION>	Specify Test end mode in Seconds
	<BITSERRS>	Specify Test end mode in Bits and Errors
	<CONFIDENCE>	Specify Test end mode in Confidence Percentage
Returns:	< DURATION | BITSERRS | CONFIDENCE >	

JTOL:TEVAl <DURATION | BITS | ERRORS | CONFIDENCE, double>
JTOL:TEVAl<DURATION | BITS | ERRORS | CONFIDENCE>?

Set or retrieve Test End Value.

Params:	<DURATION, double>	Set duration in seconds. Range [0 to 5000]
	<BITS, double>	Set bits as numeric. Range [1E8 to 1E14]
	<ERRORS, double>	Set errors as numeric. Range [0 to 100]
	<CONFIDENCE, double>	Set confidence in percentage. Range [1 to 99.99]
Returns:	< double >	

JTOL:TMODe <MARGIN | SEARCH >
JTOL:TMODe?

Set or retrieve the Test mode.

Params:	<MARGIN>	Test mode
	<SEARCH>	Search mode
Returns:	< MARGIN | SEARCH >	

JTOL:TolALG <STEP | FMTOP | FMBOT | BINARY | FMBOTFINE>
JTOL:TolALG?

Set or retrieve the algorithm type used in Search mode.

Params:	<STEP>	Refine step algorithm
	<FMTOP>	From top algorithm
	<FMBOT>	From bottom algorithm
	<BINARY>	Binary search algorithm
	<FMBOTFINE>	From bottom fine algorithm
Returns:	< STEP | FMTOP | FMBOT | BINARY | FMBOTFINE >	

JTOL:USEPM <bool>
JTOL:USEPM?

Enable/disable Phase Modulation (PM) in the Template Builder with the Jitter Tolerance measurement.

Params:	<bool>	On = 1, Off = 0
Returns:	< 1 >	Enable PM in the Template Builder
	< 0 >	Disable PM in the Template Builder

Mask Test

Complete command listing (See page 7, *Command listing*.)

MASK:ATOFfset <double>
MASK:ATOFfset?

Adjust Mask Test time offset in ps.

Params:	< double >	Mask Test time offset in ps
Returns:	< double >	

MASK:AVOFfset <double>
MASK:AVOFfset?

Adjust Mask Test voltage offset in millivolts.

Params:	< double >	Mask Test voltage offset in mV
Returns:	< double >	

MASK:CLEar

Clear Mask. Action only.

MASK:CPERrors?

Retrieve Mask Test Center Polygon Errors. Query only.

MASK:EMLayer:COORds <bool>
MASK:EMLayer:COORds?

Enable/disable the Mask Test Coordinates layer.

Params:	<bool>	On = 1, Off = 0
Returns:	< 1 >	Mask Test coordinates layer is enabled
	< 0 >	Mask Test coordinates layer is disabled

MASK:EMLayer:LOAD <bool>
MASK:EMLayer:LOAD?

Enable/disable Mask Test Layer.

Params:	<bool>	On = 1, Off = 0
Returns:	< 1 >	Mask Test layer is enabled
	< 0 >	Mask Test layer is disabled

MASK:EMLayer:PROGress <bool>
MASK:EMLayer:PROGress?

Enable/disable the Mask Test Progress layer.

Params:	<bool>	On = 1, Off = 0
Returns:	< 1 >	Mask Test progress layer is enabled
	< 0 >	Mask Test progress layer is disabled

MASK:EMLayer:RESults <bool>
MASK:EMLayer:RESults?

Enable/disable the Mask Test Results layer.

Params:	<bool>	On = 1, Off = 0
Returns:	< 1 >	Mask Test results layer is enabled
	< 0 >	Mask Test results layer is disabled

MASK:IVALue?

Retrieve Mask Test Invalid Value. Query only.

MASK:LMASk

Load Mask. Action only. To specify a filename, see the MASK:MFName command.

MASK:LPERrors?

Retrieve Mask Test Lower Polygon Errors. Query only.

MASK:MBARsel <OFF | MEASUREMENTS | STRESS | ADVANCED >
MASK:MBARsel?

Set or retrieve the Mask Test Sidebar selection.

Params:	<OFF>	Hide Sidebar
	<MEASUREMENTS>	Show Measurement Sidebar
	<STRESS>	Show Stress Sidebar (if Stress Option is enabled)
	<ADVANCED>	Show Advanced features Sidebar
Returns:	< OFF | MEASUREMENTS | STRESS | ADVANCED >	

MASK:MFName <"filename">
MASK:MFName?

Set or retrieve Mask Filename.

Params:	<"filename">	Mask filename, enclosed in double quotes. To load the mask file, see the MASK:LMASK command.
Returns:	< "filename" >	

MASK:MLCount?

Retrieve Mask Layer Count. Query only.

MASK:MSTatus?

Retrieve Mask Test Status. Query only.

Returns:	NOTRUNNING OK NOCLOCK LOWCLOCK DROPCLOCK FREQCHANGE NOPATTERN	Status codes

MASK:REFMode <LIVEdata | DPATtern>
MASK:REFMode?

Set or retrieve Mask Reference mode.

Params:	<LIVEdata>	Live Data mode
	<DPATtern>	Detected Pattern mode
Returns:	< LIVEDATA | DPATTERN >	

MASK:REFPattern?

Retrieve Mask Test Reference Pattern. Query only.

MASK:RETime?

Retrieve Mask Test Run Elapsed Time in Seconds. Query only.

MASK:RSTate <bool>
MASK:RSTate?

Set or retrieve Mask Test Run State.

Params:	<bool>	On = 1, Off = 0
Returns:	< 1 >	Run
	< 0 >	Stop

MASK:SCOunt?

Retrieve Mask Test Sample Count. Query only.

MASK:SDEPth <numeric>
MASK:SDEPth?

Set or retrieve the Mask test Sample Depth in bits.

Params:	<numeric>	Range [2,000 to 1,000,000]. Input out of range will be clipped and recorded in the status queue. A value of –1 runs the Eye diagram in the 'Auto' mode with a sample depth of 10,000 bits. Setting a value other than –1 runs the Mask test in the Manual mode. Once the specified depth is reached, the Mask testing automatically stops running.
Returns:	<numeric>	

MASK:SLData? <int>

Retrieve Mask Test Sketch Layer Data (binary)

Params:	<integer>	Range [0 to 5]

MASK:SMWadjustments<"filename">

Save Mask with adjustments. Action only.

Params:	<"filename">	Mask filename enclosed in double quotes

MASK:STMArgin <double>
MASK:STMArgin?

Set or retrieve the Mask Time margin.

Params:	< double >	Range [–90% to +100%UI]
Returns:	< double >	

MASK:STVMArgin <double>
MASK:STVMArgin?

Set or retrieve Mask Test Time and Voltage margin.

Params:	< double >	Time and voltage margin as %UI. Range [–90% to +100%UI]
Returns:	< double >	

MASK:SVMArgin <double>
MASK:SVMArgin?

Set or retrieve Mask Test Voltage margin.

Params:	< double >	Range [–90% to +100%UI]
Returns:	< double >	

MASK:TMARgin <double>
MASK:TMARgin?

Set or retrieve Mask Test Time margin

Params:	< double >	Range [–90 to +100]
Returns:	< double >	

MASK:TVMARgin <double>
MASK:TVMARgin?

Set or retrieve Mask Test Time and Voltage margin

Params:	< double >	Range [–90 to +100], default = 0
Returns:	< double >	

MASK:UAMPlitude <double>
MASK:UAMPlitude?

Set or retrieve Mask Test Unit Amplitude in millivolts.

Params:	< double >	Mask Test Unit Amplitude in mV
Returns:	< double >	

MASK:UINTerval <double>
MASK:UINTerval?

Set or retrieve Mask Test Unit Interval in ps.

Params:	< double >	Mask Test Unit Interval in ps
Returns:	< double >	

MASK:UPERrors?

Retrieve Mask Test Upper Polygon errors. Query only.

MASK:VMARgin <double>
MASK:VMARgin?

Set or retrieve Mask Test voltage margin a percentage of Unit Amplitude

Params:	< double >	Range [–90 to +100]
Returns:	< double >	

MASK:WFORms?

Retrieve the number of waveforms tested in the Mask Test. Query only.

Q-Factor

Complete command listing (See page 7, *Command listing*.)

QFACtor:ASCale <LEV0 | LEV1 | MIDLev>

Auto Scale the Q-Factor display to fit data. Action only.

Params:	<LEV0>	0-Level
	<LEV1>	1-Level
	<MIDLev>	Middle (logic threshold) level

QFACtor:CFG?

Retrieve the auto-align results used to automatically align the Q-Factor analysis. Query only.

Returns:	< UI UA CT CV >	UI is the Unit Interval in ps UA is amplitude in mV CT is center time in ps CV is center threshold voltage in mV

QFACtor:CLEar

Clear the Q-Factor image and measurements. Action only.

QFACtor:DLYMODe <AUTOmatic | MANual>
QFACtor:DLYMODe?

Set or retrieve the Q-Factor delay mode.

Params:	< AUTOmatic >	Q-Factor delay mode is automatic
	< MANual >	Q-Factor delay mode is manual
Returns:	< AUTOMATIC | MANUAL >	

QFACtor:DMODe <COUNt | GRAPh | RDATa>
QFACtor:DMODe?

Set or retrieve the Q-Factor display mode.

Params:	<COUNt>	Counters
	<GRAPh>	Graph
	<RDATa>	Raw data
Returns:	< COUNT | GRAPH | RAWDATA >	

QFACtor:EGRaticule <bool>
QFACtor:EGRaticule?

Enable/disable graticule (grid) on the Q-Factor display.

Params:	<bool>	On = 1, Off = 0
Returns:	< 1 >	Enable Q-Factor graticule
	< 0 >	Disable Q-Factor graticule

QFACtor:EQSCale <bool>
QFACtor:EQSCale?

Enable/disable the Q Scale on the Q-Factor display.

Params:	<bool>	On = 1, Off = 0
Returns:	< 1 >	Enable Q-Factor Q Scale
	< 0 >	Disable Q-Factor Q Scale

QFACtor:ERRThr <double>
QFACtor:ERRThr?

Set or retrieve Jitter Error Threshold from Q-Factor analysis.

Params:	< double >	Range [1 to 10,000]
Returns:	< double >	

QFACtor:IVALue?

Retrieve Invalid Value. Query only.

QFACtor:L0Data?

Retrieve the measured points for the Q-Factor display Level0. Query only.

Returns:	< N (x1, y1) (x2, y2) ... (xN, yN) >	N is the number of points, the x values are threshold values represented in mV, and the y values are BER measurements.

QFACtor:L0EValue?

Retrieve Q-Factor Level0 error value. Query only.

QFACtor:L0Fit?

Retrieve the extrapolated points for the Q-Factor display Level0. Query only.

Returns:	< N (x1, y1) (x2, y2) ... (xN, yN) >	N is the number of points, the x values are threshold values represented in mV, and the y values are BER measurements.

QFACtor:L0Mean?

Retrieve Q-Factor Level0 mean. Query only.

QFACtor:L0NPoints?

Retrieve Q-Factor Level0 number of measured points. Query only.

QFACtor:L0Sigma?

Retrieve Q-Factor Level0 sigma. Query only.

QFACtor:L1Data?

Retrieve the measured points for the Q-Factor display Level1. Query only.

Returns:	< N (x1, y1) (x2, y2) ... (xN, yN) >	N is the number of points, the x values are threshold values represented in mV, and the y values are BER measurements.

QFACtor:L1EValue?

Retrieve Q-Factor Level1 error value. Query only.

QFACtor:L1Fit?

Retrieve the extrapolated points for the Q-Factor display Level1. Query only.

Returns:	< N (x1, y1) (x2, y2) ... (xN, yN) >	N is the number of points, the x values are threshold values represented in mV, and the y values are BER measurements.

QFACtor:L1Mean?

Retrieve Q-Factor Level1 mean. Query only.

QFACtor:L1NPoints?

Retrieve Q-Factor Level1 number of measured points. Query only.

QFACtor:L1Sigma?

Retrieve Q-Factor Level1 sigma. Query only.

QFACtor:MBARsel <OFF | MEASUREMENTS | STRESS | ADVANCED>
QFACtor:MBARsel?

Set or retrieve the Q-Factor display Sidebar selection.

Params:	<OFF>	No Sidebar
	<MEASUREMENTS>	Show Measurements
	<STRESS>	Show Stress Sidebar (if Stress Option is enabled)
	<ADVANCED>	Show Advanced features Sidebar
Returns:	< OFF | MEASUREMENTS | STRESS | ADVANCED >	

QFACtor:MBDepth?

Measure Q-Factor BER depth. Query only.

QFACtor:OQ?

Retrieve Q-Factor optimum Q. Query only.

QFACtor:OTValue?

Retrieve optimum Q-Factor value. Query only.

QFACtor:OLBer?

Retrieve Q-Factor optimum log BER. Query only.

QFACtor:OBSTring?

Retrieve Q-Factor optimum BER string. Query only.

QFACtor:REFMode <LIVEdata | DPATtern>
QFACtor:REFMode?

Set or retrieve Q-Factor reference mode.

Params:	<LIVEdata>	Live data mode
	<DPATtern>	Detected pattern mode
Returns:	< LIVEDATA | DPATTERN >	

QFACtor:REFPattern?

Retrieve Q-Factor reference pattern. Query only.

QFACtor:RETime?

Retrieve Q-Factor run elapsed time in seconds. Query only.

QFACtor:SCURsors<X1,X2,Y1,Y2>

Set Q-Factor cursor positions.

Params:	<X1>	X1 cursor position, double
	<X2>	X2 cursor position, double
	<Y1>	Y1 cursor position, double
	<Y2>	Y2 cursor position, double
Returns:	< X1,X2,Y1,Y2 >	

QFACtor:SDATa? <int>

Retrieve Q-Factor series data, binary. Query only.

Returns:	<0>	Range [0 to 14]
	<1>	Range [0 to 14]
	<2>	Range [0 to 14]
	<3>	Range [0 to 14]

QFACtor:SDEFaults

Set Q-Factor Defaults. Action only.

QFACtor:STFile<"filename" >

Save Q-Factor results to named file. Action only.

Params:	<"filename">	File where Q-Factor results are to be saved. Enclose filename in double quotes.

QFACtor:SUFBits<double>
QFACtor:SUFBits?

Set or retrieve Q-Factor sufficient bits.

Params:	< value >	A numeric value with range [1,000 to 1E11]. A value of –1 initiates automatic mode.
Returns:	< value >	Numeric value or automatic

QFACtor:SVIew<Xmin, Ymin, Xmax, Ymax>

Set Q-Factor view axes.

Params:	<Xmin>	X-Axis minimum, double
	<Ymin>	Y-Axis minimum, double
	<Xmax>	X-Axis maximum, double
	<Ymax>	Y-Axis maximum, double
Returns:	< Xmin, Ymin, Xmax, Ymax >	

QFACtor:TSTatus?

Q-Factor analysis status. Query only.

Returns:	NOTRUNNING OK NOCLOCK LOWCLOCK NOPATTERN NOTFOUND ACQERROR WAITING	Status codes

QFACtor:TVALue <double>
QFACtor:TVALue?

Set or retrieve Q-Factor value.

Params:	< double >	Range [0 to 5,000]
Returns:	< double >	

QFACtor:X1Cursor <double>
QFACtor:X1Cursor?

Set or retrieve Q-Factor cursor X1 position.

Params:	< double >	Position of Q-Factor X1 cursor
Returns:	< double >	

QFACtor:X2Cursor <double>
QFACtor:X2Cursor?

Set or retrieve Q-Factor cursor X2 position.

Params:	< double >	Position of Q-Factor X2 cursor
Returns:	< double >	

QFACtor:XMAX <double>
QFACtor:XMAX?

Set or retrieve Q-Factor view X maximum

Params:	< double >	Q-Factor X maximum
Returns:	< double >	

QFACtor:XMIN <double>
QFACtor:XMIN?

Set or retrieve Q-Factor view X minimum

Params:	< double >	Q-Factor X minimum
Returns:	< double >	

QFACtor:Y1Cursor <double>
QFACtor:Y1Cursor?

Set or retrieve Q-Factor cursor Y1 position.

Params:	< double >	Position of Q-Factor Y1 cursor
Returns:	< double >	

QFACtor:Y2Cursor <double>
QFACtor:Y2Cursor?

Set or retrieve Q-Factor cursor Y2 position.

Params:	< double >	Position of Q-Factor Y2 cursor
Returns:	< double >	

QFACtor:YMAX <double>
QFACtor:YMAX?

Set or retrieve Q-Factor view Y maximum

Params:	< double >	Q-Factor Y maximum
Returns:	< double >	

QFACtor:YMIN <double>
QFACtor:YMIN?

Set or retrieve Q-Factor view Y minimum

Params:	< double >	Q-Factor Y minimum
Returns:	< double >	

Complete command listing (See page 7, *Command listing*.)

DELAY:DETRecal?

Retrieve the information that indicates whether Detector delay needs recalibration. Query only.

NOTE. *Because monitoring for these calibrations is suspended while Physical Layer tests are running, using this command under those circumstances might not return an accurate result.*

Returns:	< 1 >	Detector needs delay recalibration
	< 0 >	Detector does not need a delay recalibration

DELAY:GENRecal?

Retrieve the information that indicates whether Generator delay needs recalibration. Query only.

NOTE. *Because monitoring for these calibrations is suspended while Physical Layer tests are running, using this command under those circumstances might not return an accurate result.*

Returns:	< 1 >	Generator needs delay recalibration
	< 0 >	Generator does not need a delay recalibration

FAMILY_1250?

Check if the instrument is a BSX125. Query only.

Returns:	< 1 >	Instrument is a BSX125
	< 0 >	Instrument is not a BSX125

FAMILY_2400?

Check if the instrument is a BSX240. Query only.

Returns:	< 1 >	Instrument is a BSX240
	< 0 >	Instrument is not a BSX240

FAMILY_3200?

Check if the instrument is a BSX320. Query only.

Returns:	< 1 >	Instrument is a BSX320
	< 0 >	Instrument is not a BSX320

PLATFORM?

Retrieve the value of the current device platform. Query only.

Returns:	< 0 | 1 | 2 | 3 | 4 >	0: Unknown 1: BA1500/BA1600 2: BSA750, or BSA125 (models A and B) 3: BSA125C, BSA175C, BSA286CL 4: BSX125, BSX240, BSX320

PRODNAME?

Retrieve the string identifying the product (the “Identity” shown in the Remote Client). Query only.

Returns:	“BERTScope 12500” (BSX125 Analyzer) “BERTScope 2400” (BSX240 Analyzer) “BERTScope 3200” (BSX320 Analzyer) "Unknown Product"

GUILockout <bool>
GUILockout?

Set or retrieve the state of the GUI lockout selection.

Params:	<bool>	On = 1, Off = 0
Returns:	< 1 >	GUI lockout is in effect
	< 0 >	GUI lockout is not in effect

OPT_CE?

Check if the instrument has PatternVu Option enabled. Query only.

Returns:	< 1 >	PatternVu Option is enabled
	< 0 >	PatternVu Option is disabled

OPT_EA_2D_MAP?

Check if the instrument has 2-D Error Map Analyzer Option enabled. Query only.

Returns:	< 1 >	2-D Error Map Option is enabled
	< 0 >	2-D Error Map Option is disabled

OPT_EA_ECC?

Check if the instrument has FEC Emulation Analyzer Option enabled. Query only.

Returns:	< 1 >	FEC Emulation is enabled
	< 0 >	FEC Emulation is disabled

OPT_GSM?

Check if the instrument has a Generator Stress Module installed. Query only.

Returns:	< 1 >	Generator Stress Module is installed
	< 0 >	Generator Stress Module is not installed

OPT_JITTERMAP?

Check if the instrument has the JitterMAP Option enabled. Query only.

Returns:	< 1 >	JitterMAP Option is enabled
	< 0 >	JitterMAP Option is disabled

OPT_JT?

Check if the instrument has Jitter Tolerance Option enabled. Query only.

Returns:	< 1 >	Jitter Tolerance Option is enabled
	< 0 >	Jitter Tolerance Option is disabled

OPT_LIVE_DATA?

Check if the instrument has Live Data Option enabled. Query only.

Returns:	< 1 >	Live Data Option is enabled
	< 0 >	Live Data Option is disabled

OPT_PCI?

Check if the instrument has PCIE Option enabled. Query only.

Returns:	< 1 >	PCIE Option is enabled
	< 0 >	PCIE Option is disabled

OPT_PHY_TEST?

Check if the instrument has Physical Layer Test Option enabled. Query only.

Returns:	< 1 >	Physical Layer Test Option is enabled
	< 0 >	Physical Layer Test Option is disabled

OPT_SSCPLUS?

Retrieve the flag signifying whether SSC PLUS (XSSC) option is enabled. Query only.

Returns:	< 1 >	XSSC Option is enabled
	< 0 >	XSSC Option is disabled

OPT_SLD?

Retrieve the flag signifying whether Option SLD (stressed live data option software) is enabled. Query only.

Returns:	< 1 >	SLD Option is enabled
	< 0 >	SLD Option is disabled

OPT_TXEQ?

Retrieve the flag signifying whether Option TXEQ (4-tap equalization) is enabled. Query only.

Returns:	< 1 >	TXEQ Option is enabled
	< 0 >	TXEQ Option is disabled

OPT_UPM?

Retrieve the flag signifying whether the User-defined detector match option is enabled. Query only.

Returns:	< 1 >	UPM Option is enabled
	< 0 >	UPM Option is disabled

PTFile <“filename”>

Print the current view into a file.

Params:	<“filename”>	Filename is enclosed in double quotes.

RCStatus?

Returns the version information of Remote Control. Query only.

RDURation <long>
RDURation?

Set or retrieve the run duration of the analyzer. Setting to '0' is the equivalent of a GUI 'Clear,' which allows the run (see RSTate command) to go on 'forever.'

Params:	< long >	Range [1 to 36E6]. Zero (0) sets an infinite duration.
Returns:	< long >	

RSTate <bool>
RSTate?

Set or retrieve the run state of the analyzer.

Params:	<bool>	On = 1, Off = 0
Returns:	< 1 >	System is running
	< 0 >	System is not running

SENSor:TEMP?

Retrieve internal temperature in degrees Celsius. Query only. This measurement is not calibrated, and should only be used as a relative indication of temperature.

Returns:	< double >	Positive integer, internal temperature (°C)

SENSor:V12?

Retrieve reading of the internal +12 volt register. Query only.

Returns:	< double >	Interval 12 V register

SENSor:V3P3?

Retrieve reading of the internal +3.3 volt register. Query only.

Returns:	< double >	Internal 3.3 V register

SENSor:V5?

Retrieve reading of the internal +5 volt register. Query only.

Returns:	< double >	Internal 5 V register

SENSor:VM12?

Retrieve reading of the internal –12 volt register. Query only.

Returns:	< double >	Internal –12 V register

SENSor:VM5?

Retrieve reading of the internal –5 volt register. Query only.

Returns:	< double >	Internal –5 V register

VIEW <BBER | BER | BLEN | CONT | CORR | CRC | CRLR | CRS | DET | DPP | EDIT | EFIN | EMAP | EYE | FEC | GEN | HOME | JITT | JMAP_MAP | JS | JTOL | LOG | MASK | PSEN | QFAC | SSCW |SCH | STRESS | SYST>

VIEW?

Set or retrieve the current view of the analyzer.

NOTE. *The View query does not return EDIT, because the EDITor argument is an Action-only argument.*

Params:		
	<BBER>	Basic BER
	<BER or BERror>	Block Error
	<BLEN or BLENgth>	Burst Length
	<CONTour>	BER Contour
	<CORR or CORRelation>	Correlation
	<CRC or CRControl>	Clock Recovery Control
	<CRS or CRService>	Clock Recovery Service
	<CRLR or CRLoopResponse>	Clock Recovery Loop Response
	<DET or DETector>	Detector
	<DPP>	TXEQ Interface (formerly DPP)
	<EDIT or EDITor>	Launch external Pattern Sequencer application
	<EFIN or EFINterval>	Error Free Interval
	<EMAP>	2D Error Map
	<EYE>	Eye Diagram
	<FEC>	FEC Emulation
	<GEN or GENerator>	Generator
	<HOME>	Home
	<JITTer>	Jitter Peak
	<JMAP_MAP>	Jitter Map
	<JS or crJitterSpectrum>	Clock Recovery Jitter Spectrum

	<JTOL or JTOLerance>	Jitter Tolerance Test
	<LOG>	System Event Log
	<MASK>	Mask Test
	<PSEN or PSENsitivity>	Pattern Sensitivity
	<QFAC or QFACtor>	Q-Factor
	<SCH or SCHart>	Strip Chart
	<SSCW or crSSCWaveform>	Clock Recovery SSC Waveform
	<STRESS or STRESSedeye>	Stressed Eye
	<SYST or SYSTem>	System
Returns:	< BBER | BER | BLEN | CONT | CORR | CRC | CRLR | CRS | DET | DPP | EFIN | EMAP | EYE | FEC | GEN | HOME | JITT | JMAP_MAP | JS | JTOL | LOG | MASK | PSEN | QFAC | SSCW | SCH | SSCW | STRESS | SYST >	

System View

Complete command listing (See page 7, *Command listing*.)

DIALog:CDRam <bool>
DIALog:CDRam?

Enable/disable display of a warning if capturing Detector RAM.

Params:	<bool>	On = 1, Off = 0
Returns:	< 1 >	Display warning if capturing Detector RAM
	< 0 >	Do not display warning if capturing Detector RAM

DIALog:RDCalibration <bool>
DIALog:RDCalibration?

Enable/disable display of "Recommend delay calibration" message.

Params:	<bool>	On = 1, Off = 0.
Returns:	< 1 >	Display "Recommend delay calibration" message
	< 0 >	Do not display "Recommend delay calibration" message

DIALog:SRFCapture <bool>
DIALog:SRFCapture?

Enable/disable display of a warning if stop running for capture.

Params:	<bool>	On = 1, Off = 0
Returns:	< 1 >	Display warning if stop running for capture
	< 0 >	Do not display warning if stop running for capture

DIALog:SRView <bool>
DIALog:SRView?

Enable/disable display of a warning if switching running view.

Params:	<bool>	On = 1, Off = 0
Returns:	< 1 >	Display warning if switching running view
	< 0 >	Do not display warning if switching running view

STAB <TOOLs | REGistry | SETTings | ABOut | LOG | SelfTESt>
STAB?

Set or retrieve which tab is being displayed on the System view.

Params:	<TOOLs>	System Tools tab
	<REGistry>	System Registry tab
	<SETTings>	System Settings tab
	<ABOut>	System About tab
	<LOG>	System Log tab
	<SelfTESt>	System Self-Test tab
Returns:	< TOOLS | REGISTRY | SETTINGS| ABOUT| LOG | SELFTEST >	

RAM Capture

Complete command listing (See page 7, *Command listing*.)

CBLength <numeric> , <"filename">

Capture the Detector RAM into a file by the input length.

The captured file is in the D:\BitAlyzer\UserPatterns directory. Action only.

Params:	<numeric>	Number of words to capture into RAM Use a comma to separate this parameter and the next.
	<"filename">	Filename is enclosed in double quotes, should not contain any path, and must have .RAM as extension. For example: "MyPattern.RAM".

CBTrigger <"filename">

Capture the Detector RAM into a file by trigger.

The captured file is in the D:\BitAlyzer\UserPatterns directory. Action only.

Params:	<"filename">	Filename is enclosed in double quotes, should not contain any path, and must have .RAM as extension. For example: "MyPattern.RAM".

CBTriggerlength <numeric> , <"filename">

Capture the Detector RAM into a file by trigger.

The captured file is in the D:\BitAlyzer\UserPatterns directory. Action only.

Params:	<numeric>	Number of words to capture into RAM There must be a comma between the first and second parameters.
	<"filename">	Filename is enclosed in double quotes, should not contain any path, and must have .RAM as extension. For example: "MyPattern.RAM".

RCCancel

Cancel a running Detector RAM capture operation, if capturing was initiated by either CBLength or CBTRigger command. Action only.

RCProgress?

Retrieve the percentage completion of the running Detector RAM capture operation. This command should be used only after either the CBLength or CBTRigger command. Query only.

Returns:	<numeric>	Percentage completion value of the capture operation

System Event Log

Complete command listing (See page 7, *Command listing*.)

SLOG:CFILter:ALL <bool>

Enable/disable all system event log filters. Action only.

Params:	<bool>	On = 1, Off = 0.
Returns:	< 1 >	All log filters are On
	< 0 >	All log filters are Off

SLOG:CFILter:PCHanges <bool>
SLOG:CFILter:PCHanges?

Set or retrieve whether Parameter Changes filter is enabled.

Params:	<bool>	On = 1, Off = 0
Returns:	< 1 >	Parameter Changes filter is enabled
	< 0 >	Parameter Changes filter is disabled

SLOG:CFILter:PRECognition <bool>
SLOG:CFILter:PRECognition?

Set or retrieve whether Pattern Recognition filter is enabled.

Params:	<bool>	On = 1, Off = 0
Returns:	< 1 >	Pattern Recognition filter is enabled
	< 0 >	Pattern Recognition filter is disabled

SLOG:CFILter:SEVents <bool>
SLOG:CFILter:SEVents?

Set or retrieve whether System Events filter is enabled.

Params:	<bool>	On = 1, Off = 0
Returns:	< 1 >	System Events filter is enabled
	< 0 >	System Events filter is disabled

SLOG:CFILter:VCHanges <bool>
SLOG:CFILter:VCHanges?

Set or retrieve whether View Changes filter is enabled.

Params:	<bool>	On = 1, Off = 0
Returns:	< 1 >	View Changes log filter is enabled
	< 0 >	View Changes log filter is disabled

SLOG:CFILter:BATHreshold <bool>
SLOG:CFILter:BATHreshold?

Set or retrieve whether BER Above Threshold filter is enabled.

Params:	<bool>	On = 1, Off = 0
Returns:	< 1 >	BER Above Threshold filter is enabled
	< 0 >	BER Above Threshold filter is disabled

SLOG:CLOG

Clear the system event log. Action only.

SLOG:ENABle <bool>
SLOG:ENABle?

Set or retrieve whether system event logging is enabled.

Params:	<bool>	On = 1, Off = 0
Returns:	< 1 >	System event logging is enabled
	< 0 >	System event logging is disabled

SLOG:LBTHreshold <double>
SLOG:LBTHreshold?

Set or retrieve the Log BER Threshold, when BER Above Threshold log filter is enabled.

Params:	< double >	BER above threshold value, double

SLOG:SLTFile <“filename”>

Save log to a file. Action only.

Params:	<“filename”>	The location where the log file will be saved as a “|” (vertical bar) separated-text fie. Filename is enclosed in double quotes.

Configuration

Complete command listing (See page 7, *Command listing*.)

RCONfiguration <“filename”>

Restores a pre-saved configuration from a file representing the entire state of the instrument.

Params:	<“filename”>	Filename is enclosed in double quotes.

SCONfiguration <“filename”>

Save the current configuration into a file.

Params:	<“filename”>	Filename is enclosed in double quotes.

Status Queries

Complete command listing (See page 7, *Command listing*.)

The following commands retrieve information for each component, such as driver version, H/W availability, and whether a driver is loaded.

BNUMber?

Retrieve the instrument build number. Query only.

Returns:	< Software build number >

DELAY:DETRecal?

Retrieve the information that indicates whether Detector delay needs recalibration. Query only.

NOTE. *Because monitoring for these calibrations is suspended while Physical Layer tests are running, using this command under those circumstances might not return an accurate result.*

Returns:	< 1 >	Yes, Detector needs delay recalibration
	< 0 >	No, Detector does not need a delay recalibration

DELAY:GENRecal?

Retrieve the information that indicates whether Generator delay needs recalibration. Query only.

NOTE. *Because monitoring for these calibrations is suspended while Physical Layer tests are running, using this command under those circumstances might not return an accurate result.*

Returns:	< 1 >	Yes, Generator needs delay recalibration
	< 0 >	No, Generator does not need a delay recalibration

DVERsion? <integer>

Retrieve the <Integer>-th driver version. Query only.

Params:	<Integer>	The number is of the range [0 to (N–1)], where N is the value returned from the NDRIvers? command, above.
Returns:	< Driver name and version number >	

HMSTatus? <CLK | GIO | DIO | DLYM | SRX | STX>

Retrieve the hardware module information. Query only.

Params:	<CLK | GIO | DIO | DLYM | SRX | STX>	Only one parameter is accepted per query.
Returns:	< Hardware module information > If the command is given a non-applicable parameter, the query returns "Requested hardware module is not supported on the platform".	

ISSTatus?

Retrieve the Instrument Server's version info. Query only.

NDRIvers?

Retrieve the number sequence of the software drivers. Query only.

SNUMber?

Retrieve the instrument serial number. Query only.

Returns:	< Instrument serial number >

TREAding? <CAB | GENDELAY | DETDELAY>

Retrieve the internal temperature readings in degrees Celsius. Query only

Params:	<CAB>	Only one parameter is accepted per query.
	<GENDELAY>	
	<DETDELAY>	
Returns:	< Internal temperature reading in ºCelsius > If the command is given a non-applicable parameter, the query returns "Requested temperature reading is not supported on the platform".	

VREAding? < M5P2 | M2 | M12 | 3P3 | 5 | 12 >

Retrieve the internal voltage register reading. Query only.

Params:	<M5P2 | M2 | 3P3_STBY | 3P3 | 5 | 12 | M12 | 2P5 | 1P5 | M5 | M19 | PGM_VREF | PGM_3P3 | PGM_3N3 | PGM_5 | PGM_5A | PGM_5_PGD | PGM_M5 | PGM_M5A | PGM_8 | PGM_11 | PGM_M11 | PGM_12 | PGM_M12 | PGM_M17P5 | PGM_M19 | PDM_3P3 | PDM_5 | PDM_11 | PDM_M3P3 | PDM_M5 | PDM_M11>	Only one parameter is accepted per query.
Returns:	< Internal voltage register reading > If the command is given a non-applicable parameter, the query returns "Requested hardware module is not supported on the platform".	

Common Commands

Complete command listing (See page 7, *Command listing*.)

***CLS**

Clear the status queue. Action only. This command will not show in the list of Trace messages displayed on the remote control client user interface.

***IDN?**

Retrieve the identification of the device. Query only. This command will not show in the list of Trace messages displayed on the remote control client user interface.

SYSTem:ERRor?

Retrieve items listed in the error status queue. Query only. This command will not show in the list of Trace messages displayed on the remote control client user interface.

The status queue is first in, first out. It can contain up to 100 error messages. If the queue overflows, the last error/event in the queue is replaced with Error –350, Queue overflow. When all errors/events have been read from the queue, further error/event queries will return 0, NO ERROR.

Returns: < n, “event/string” >

File Transfer

Complete command listing (See page 7, *Command listing*.)

Transfer files between the analyzer and a remote PC.

The file transfer protocol is shown in the **Send** and **Get** diagrams. File Transfer commands will not show up in the list of Trace messages displayed on the remote control client user interface.

ABORT

Cancels a SEND or GET file operation.

This command will not show in the list of Trace messages displayed on the remote control client user interface.

An ABORT reply indicates that the file transfer operation is being discontinued. This command will not show in the list of Trace messages displayed on the remote control client user interface.

BUFFER <Bytes> <CRC>

During "Get" or "Send" file transfer, indicates size of next buffer to be transferred. Once file transfer is initiated, this command precedes a block transfer of the exact number of Bytes. During transfer of these Bytes, no command processing occurs. These Bytes are transferred in binary form.

Params:	<Bytes>	The number of Bytes in the next block of binary data transfer (unsigned short)
	<CRC>	The 128-bit checksum of the buffer
Returns:	Continue or Abort	

CONTINUE

Acknowledges that a file transfer operation can proceed.

This command will not show in the list of Trace messages displayed on the remote control client user interface.

After each buffer has been transmitted, the receiver replies with this CONTINUE message if the transfer may proceed; otherwise, it replies with an ABORT message.

Returns:	binary data or Abort

DONE

Acknowledgement: Tells the file receiver that all the buffers have been sent out.

File transfer is completed. This command will not show in the list of Trace messages displayed on the remote control client user interface.

FILE:DELETE “full-path-name”

Use to delete a file or a folder.

Enclose the path name in double quotes. Search is not case-sensitive. Spaces are allowed within the string. A file is deleted only if it is not read-only. A folder is deleted only if it is empty. Action only.

FILE:EXISTS? “full-path-name”

Search is not case-sensitive. Spaces are allowed within the string. Enclose in double quotes. Query only.

Returns:	0	File does not exist
	1	File exists

FILE:GET <"filename">

Get a file from the Analyzer. Action only.

This command will not show in the list of Trace messages displayed on the remote control client user interface.

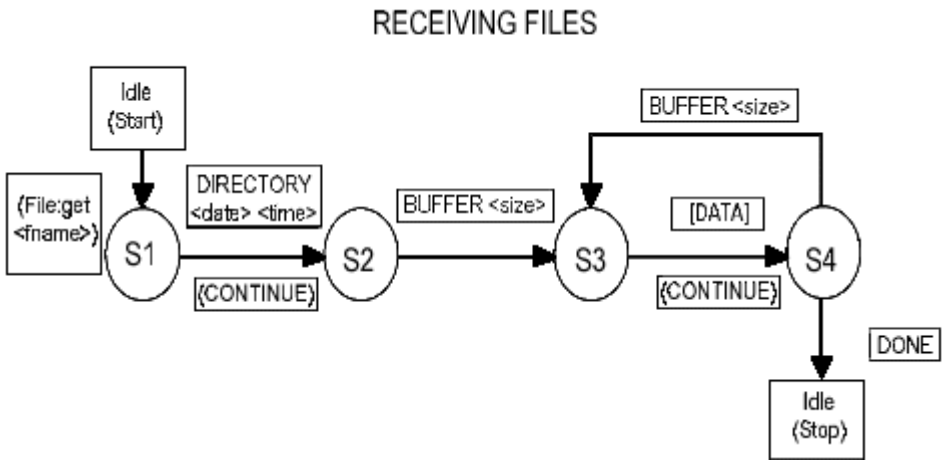
Params:	<"filename">	Name of the file to be sent to the PC.

These commands start the file transfer. The Remote Control program needs to follow a specific protocol in order to complete the transfer (see the GET diagram, below).

The file is separated into packets of up to 4,090 Bytes. For each packet, a BUFFER <Bytes> <CRC> command is sent first. The sender should calculate the CRC value for a packet and send it in the buffer acknowledge. The receiver will recalculate and compare the CRC. If the CRC is incorrect, the receiver will request a retry. Remote Service supports retry up to three times, after which it will assume the session of file transfer is impossible to complete correctly and will issue an ABORT. When it reaches the EOF, the sender should let the receiver know by issuing a DONE.

The acknowledgement of file transfer should be all uppercase: CONTINUE, ABORT, RETRY, DONE, and BUFFER.

From analyzer to remote PC:



FILE:MKDIR “full-folder-name”

Create a folder. Action only.

Enclose the full name in double quotes. The string can include upper and lower case letters, and spaces are allowed.

FILE:SEND <"filename">

Send a file from the remote PC to the analyzer. Action only.

Command will not show in the list of Trace messages displayed on the remote control client user interface.

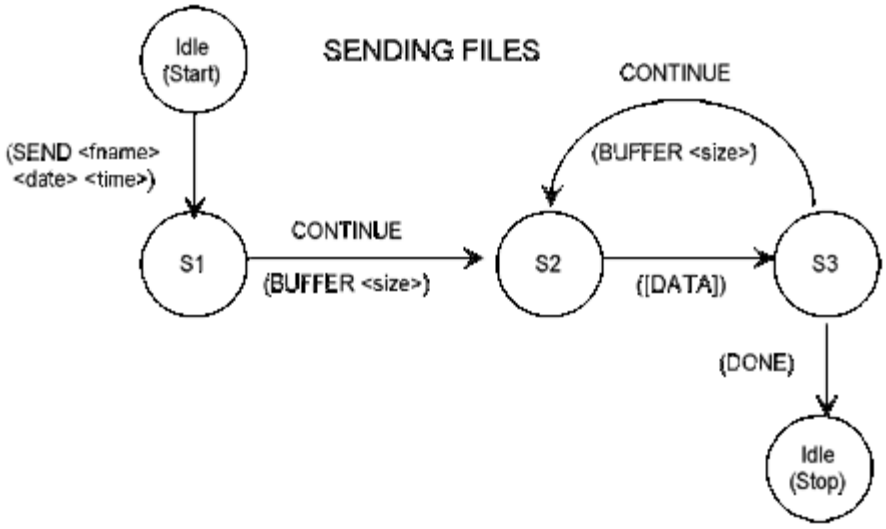
Params:	<"filename">	Name of the PC file to be sent to the analyzer.

This command starts a file transfer from the remote PC to the analyzer. The Remote Control program needs to follow a specific protocol in order to complete the transfer (see the SEND diagram, below).

The file is separated into packets of up to 4,090 Bytes. For each packet, a BUFFER <Bytes> <CRC> command is sent first. The sender should calculate the CRC value for a packet and send it in the buffer acknowledge. The receiver will recalculate and compare the CRC. If the CRC is incorrect, the receiver will request a retry. Remote Service supports retry up to three times, after which it will assume the session of file transfer is impossible to complete correctly and will issue an ABORT. When it reaches the EOF, the sender should let the receiver know by issuing a DONE.

The acknowledgement of file transfer should be all uppercase: CONTINUE, ABORT, RETRY, DONE, and BUFFER.

From remote PC to analyzer:



RETRY

Acknowledgement: Requests the file sender to resend the previous buffer. This command will not show in the list of Trace messages displayed on the remote control client user interface.

The RETRY command is used when the buffer was not received correctly. Retry is supported for up to three attempts.

Appendix A: Sample Remote Programming

This appendix provides an example of running the remote control commands with the BERTScope analyzer.

Connect the cables to the instrument

The hardware setup uses 50 Ω cables to match the 50 Ω output impedance of the data output connectors. All data cables must be the same length.

NOTE. *Assume that the data outputs are already set for 50 Ω output impedance. If not change the instrument setup as needed to get the proper output impedance.*

1. Connect the Generator Clock+ Output to the Dectector Clock Input.
2. Connect the Generator Data+ Output to the Detector Data+ Input.
3. Connect the Generator Data– Output to the Detector Data– Input.

Send commands to the instrument

The following section shows the high-level steps to send the commands to the instrument followed by a list of actual commands.

1. View the Generator.

```
VIEW Generator
```

2. Turn off the Generator Amps.

```
GEN:DOP:ENAB 0      ; Turn off DataP
GEN:DON:ENAB 0      ; Turn off DataN
GEN:COP:ENAB 0      ; Turn off ClockP
GEN:CON:ENAB 0      ; Turn off ClockN
```

3. Send PN7 pattern to both the Generator and Detector.

```
GEN:PATT PN7        ; Use a HW 2^7-1 pattern.  Load in
DET:PATT PN7        ; Generator
                    ; Same pattern loaded into Detector
```

4. View the Detector.

```
VIEW Detector
```

5. Turn the Detector Auto Resync mode off.

```
DET:AREN 0          ; Auto Resync mode off
```

6. Set the Detector to custom levels followed by the Clock, and then the Data.

```
DET:CINP:TAC        ; voltage which Gen ClkP will be
DET:DIMP:IMOD       ; set to AC coupled after the DC
DIFF                ; termination voltage setting
DET:DINP:TVOL 0     ; Detector is expecting differential
                    ; data (both inputs)
                    ; Detector is going to terminate
                    ; inputs to 0 mV DC
                    ; Don't care about threshold voltage
                    ; Auto align will find and set
```

7. Finish setting up the Generator; set the frequency, and set the output amplifier conditions.

```
VIEW Generator      ; Set internal synthesizer to 9.953 GHz
GEN:ICL 9953000000  ; Gate the internal synthesizer to
GEN:CSEL INT        ; the Generator (not an ext syn)

GEN:COP:TVOL 0      ; 0 mV Termination for ClockP
GEN:COP:SLOF 0      ; 0 mV Offset for ClockP
GEN:COP:SLAM 1000   ; 1000 mV (1 V) Amplitude for ClockP

GEN:DOUT:LPNS 1     ; Link DataP & DataN. Only set
GEN:DOP:TVOL 0      ; conditions for one, other follows
GEN:DOP:SLOF 0      ; 0 mV Termination for DataP
GEN:DOP:SLAM 1000   ; 0 mV Offset for DataP
                    ; 1000 mV (1 V) Amplitude for DataP
```

8. Turn the outputs on and query their “on” status; they can take up to three seconds to turn on.

```
GEN:COP:ENAB 1      ; Enable ClockP output
GEN:DOP:ENAB 1      ; Enable DataP output
GEN:DON:ENAB 1      ; Enable DataN output

Loop                ; Is Generator ClockP Enabled yet?
Until = 1
GEN:COP:ENAB?
Wait 0.25
Repeat

Loop                ; Is Detector DataP Enabled yet?
Until = 1
GEN:DOP:ENAB?
Wait 0.25
Repeat

Loop                ; Is Detector DataN Enabled yet?
Until = 1
GEN:DON:ENAB?
Wait 0.25
Repeat
```

9. Calibrate the Generator and Detector delay paths for this frequency at this time and temperature.

```
GEN:PCAL            ; Initiate Generator Delay Calibration
Wait                ; Takes awhile (10 seconds?)
Until reply
RSTATE?

Repeat

DET:PCAL            ; Initiate Detector Delay Calibration
Wait                ; Takes awhile (10 seconds?)
Until reply
RSTATE?

Repeat
```

10. Auto align the Detector (Perform Data Centering).

```
DET:PDC              ; Initiate an Auto Align
Wait Until reply     ; Takes awhile
RSTATE?

Repeat
```

11. Auto Align has completed and the Detector is ready to run (error-free if cabled back-to-back).

```
DET:DCS?             ; Was Auto Align successful?
                     ; Result = 1 if successful

DET:ISYNC?           ; Should be sync'd
                     ; Result = 1 if sync'd
```

12. First query some results from the Auto Align.

```
DET:DCAM?            ; What is the data amplitude in mV?
                     ; Should be about 2 V pp (differential
                     _
                     ; adds the amplitudes of the two
                     ; two out-of-phase inputs)

DET:DCHM?            : What is the data offset voltage
                     ; in mV? Should be about 0 V DC

DET:DCW?             : What is the width of the eye?
                     ; Should be inverse of frequency
```

13. Run bits through the Detector for 20 seconds.

```
DET:RUIN 20          ; Sets the run interval for 20 seconds
RSTATE 1             ; Runs the detector for the set time
                     ; above (20 seconds)

Wait Until Reply

RSTATE?              ; Are we done with the 20-second run
                     ; yet?

Repeat
```

14. Running has stopped. Did errors accumulate along the way? (If your want errors to accumulate, slightly unscrew the data cables during the run time and watch the GUI in the Detector view.)

```
DET:BITS?           ; How many bits passed during the
                    ; 20-second run?  Should be about 20
                    ; seconds x 9.953 Gb/s

DET:ERR?            ; And how many errors in those 20
                    ; seconds?
```

Run a test and read back the measurements

This example runs the Jitter Peak analysis and obtains the total jitter result.

NOTE. *This example assumes that the Detector is in sync.*

```
VIEW JITTER             ; Switch to Jitter Peak View
RSTATE 1                ; Toggle Run state

Wait Until Reply        ; Toggling Run state to 1 does an auto
                        ; align, which will take approximately
                        ; 5 seconds

JITT:TST?               ; Query Jitter Peak Status

If OK Proceed
Else Take
necessary action

JITT:IVALUE?            ; Query Invalid value
JITT:TJIT?              ; Query to retrieve Total Jitter

   ; Run test until Total Jitter value is not the invalid
   ; value returned earlier

RSTATE 0                ; Stop test once we have valid value
```

Index