Keysight D9020DPHC MIPI® D-PHY℠ Compliance Application

KEYSIGHT TECHNOLOGIES

Programmer's Reference

Notices

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CAUTION

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In This Book

This book is your guide to programming the Keysight Technologies D9020DPHC MIPI® D-PHY℠ Compliance Application.

- Chapter 1, “Introduction to Programming,” starting on page 7, describes compliance application programming basics.
- Chapter 2, “Configuration Variables and Values,” starting on page 9, Chapter 3, “Test Names and IDs,” starting on page 55, Chapter 4, “Instruments,” starting on page 71, and Chapter 5, “Message IDs,” starting on page 73 provide information specific to programming the D9020DPHC MIPI® D-PHY℠ Compliance Application.

How to Use This Book

Programmers who are new to compliance application programming should read all of the chapters in order. Programmers who are already familiar with this may review chapters 2, 3, 4, and 5 for changes.

Contents

1 Introduction to Programming

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This chapter introduces the basics for remote programming a compliance/test application. The programming commands provide the means of remote control. Basic operations that you can do remotely with a computer and a compliance/test app running on an oscilloscope include:

- Launching and closing the application.
- Configuring the options.
- Running tests.
- Getting results.
- Controlling when and were dialogs get displayed
- Saving and loading projects.

You can accomplish other tasks by combining these functions.

Remote Programming Toolkit

The majority of remote interface features are common across all the Keysight Technologies, Inc. family of compliance/test applications. Information on those features is provided in the N5452A Compliance Application Remote Programming Toolkit available for download from Keysight here: www.keysight.com/find/rpi. The D9020DPHC MIPI® D-PHY℠ Compliance Application uses Remote Interface Revision 6.21. The help files provided with the toolkit indicate which features are supported in this version.

In the toolkit, various documents refer to "application-specific configuration variables, test information, and instrument information". These are provided in Chapters 2, 3, and 4 of this document, and are also available directly from the application's user interface when the remote interface is enabled (View>Preferences::Remote tab::Show remote interface hints). See the toolkit for more information.

2 Configuration Variables and Values

The following table contains a description of each of the D9020DPHC MIPI® D-PHY℠ Compliance Application options that you may query or set remotely using the appropriate remote interface method. The columns contain this information:

- GUI Location – Describes which graphical user interface tab contains the control used to change the value.
- Label – Describes which graphical user interface control is used to change the value.
- Variable – The name to use with the SetConfig method.
- Values – The values to use with the SetConfig method.
- Description – The purpose or function of the variable.

For example, if the graphical user interface contains this control on the **Set Up** tab:

- Enable Advanced Features

then you would expect to see something like this in the table below:

Table 1 Example Configuration Variables and Values

GUI Location	Label	Variable	Values	Description
Set Up	Enable Advanced Features	EnableAdvanced	True, False	Enables a set of optional features.

and you would set the variable remotely using:

```
ARSL syntax
-----------
arsl -a ipaddress -c "SetConfig 'EnableAdvanced' 'True'"

C# syntax
```

```
---------
remoteAte.SetConfig("EnableAdvanced", "True");
```

Here are the actual configuration variables and values used by this application:

NOTE Some of the values presented in the table below may not be available in certain configurations. Always perform a "test run" of your remote script using the application's graphical user interface to ensure the combinations of values in your program are valid.

NOTE The file, "ConfigInfo.txt", which may be found in the same directory as this help file, contains all of the information found in the table below in a format suitable for parsing.

Table 2 Configuration Variables and Values

GUI Location	Label	Variable	Values	Description
Configure	Bit Error Rate Level	JitterNoiseBERLevel	E6, E7, E8, E9, E10, E11, E12, E13, E14	Select the bit error rate (BER) level for the extrapolation of total jitter or total noise for jitter and noise measurement.
Configure	ClockNWfmFile(Must be hidden)	ClockNWfmFile	(Accepts user-defined text), None	For supporting offline.
Configure	ClockPWfmFile(Must be hidden)	ClockPWfmFile	(Accepts user-defined text), None	For supporting offline.

Table 2 Configuration Variables and Values (continued)

GUI Location	Label	Variable	Values	Description
Configure	Connection Check	ConnectionCheck	0, 1	This is an additional checking to ensure proper connection setup has been established. The checking will be performed for Dp and Dn(Clkp and Clkn) signals. Enable/disable the Connection Checking. Enable: Application will perform additional checking to measure the voltage of Dn(Clkn) at first Dp(Clkp) LP falling edge's position. The measured voltage value will have to be larger than the value specified in "Connection Check Threshold" configuration option. Else, an exception will be thrown as the connection between Dp and Dn(Clkp and Clkn) might be swapped. Disable: Application will NOT perform any signal checking when performing the tests. This config is only applicable for HS tests.
Configure	Connection Check Threshold	ConnectionCheckThreshold	(Accepts user-defined text), 0.65	Specify the threshold used for Connection verification. In order to ensure proper connection setup has been established, the application will perform additional checking to measure the voltage of Dn(Clkn) at first Dp(Clkp) LP falling edge's position. The measured voltage value will have to be larger than the "Connection Check Threshold" value. Else, an exception will be thrown as the connection between Dp and Dn(Clkp and Clkn) might be swapped. This config is only applicable for HS tests.
Configure	DFDT Measure Interval (us) [SSC]	SSC_DFDTMeasureInterval	(Accepts user-defined text), 0.5	Select the measurement window interval for HS Spread Spectrum Clocking dfdt measurement. Unit: us.

Table 2 Configuration Variables and Values (continued)

GUI Location	Label	Variable	Values	Description
Configure	Data Rate Mode	DataRateMode_UIInst	AUTO, SEMI	Specify the data rate mode used for unit interval and data rate measurement. For "Fully Automatic" mode, the data rate is found by searching the waveform for the narrowest data pulse. For "Semi-Autimatic" mode, the data rate algorithm starts by searching around the value specified for "High Speed Data Rate" in Set Up tab and then automatically finds the data rate. This config is only applicable for data rate checking feature and all tests that performing unit interval measurement such as Test 1.4.17 HS Clock Instantaneous (UIinst), Test 1.5.5 Initial HS Skew Calibration Burst, Test 1.5.6 Periodic HS Skew Calibration Burst, Test 1.5.4 Data-to-Clock Skew (TSKEW(TX)), Test HS Data Eye Height (Informative) and Test HS Data Eye Width (Informative) tests.
Configure	DataNWfmFile(Must be hidden)	DataNWfmFile	(Accepts user-defined text), None	For supporting offline.
Configure	DataPWfmFile(Must be hidden)	DataPWfmFile	(Accepts user-defined text), None	For supporting offline.

Table 2 Configuration Variables and Values (continued)

GUI Location	Label	Variable	Values	Description
Configure	De-emphasis Option	DeEmphasisOption	EQTX1, EQTX2	Specify the De-emphasis Option used. The maximum and minimum test limit for Test 1.3.I HS Data TX De-emphasis Level [Continuous Data] will be determined based on the specified De-emphasis Option. For "EQTX1" option, the minimum test limit is 2.5dB and maximum test limit is 4.5dB. For "EQTX2" option, the minimum test limit is 6dB and maximum test limit is 8dB. This config is only applicable for Test 1.3.I HS Data TX De-emphasis Level [Continuous Data].
Configure	DiffClockWfmFile(Must be hidden)	DiffClockWfmFile	(Accepts user-defined text), None	For supporting offline.
Configure	Edges Number [Jitter]	JitterEdges	(Accepts user-defined text), 500000, 600000, 700000, 800000, 900000, 1000000	Select the number of edges used for the analysis of jitter measurement. The application will acquire until reaches the desired number of edges count. For more information about the minimum requirement of the memory depth for jitter measurement, please refer to the Infiniium->Help->Contents->Jitter->Jitter (EZJIT Plus)->RJ/DJ Record Length Requirements.
Configure	Edges Number [Noise]	NoiseEdges	(Accepts user-defined text), 500000, 600000, 700000, 800000, 900000, 1000000	Select the number of edges used for the analysis of noise measurement. The application will acquire until reaches the desired number of edges count. For more information about the minimum requirement of the memory depth for jitter measurement, please refer to the Infiniium->Help->Contents->Jitter->Jitter (EZJIT Plus)->RJ/DJ Record Length Requirements.

Table 2 Configuration Variables and Values (continued)

GUI Location	Label	Variable	Values	Description
Configure	Export Tested Waveform Data	RawDataExport	non, all, bin, wfm	Specifies whether to export waveform data that used in the test. Selecting to export will cause the tests take slightly longer time to complete.
Configure	Eye Height	Eye_Height_limit	(Accepts user-defined text), 0.14	Specifies the limit for the Eye Height value. By default, this value is set to 140mVpp.
Configure	Eye Height [Eye Window Start]	Eye_Height_location	(Accepts user-defined text), 50	Specifies the starting point of the eye window's height. By default,this value is set to 50%.
Configure	Eye Height [Eye Window Stop]	Eye_Height_location_stop	(Accepts user-defined text), 50	Specifies the ending point of the eye window's height. By default,this value is set to 50%.
Configure	Eye Width	Eye_Width_limit	(Accepts user-defined text), 0.5	Specifies the limit for the Eye Width value. By default, this value is 0.5UI. UI value is dependent on selected data rate.
Configure	HS Data Rate Check	HSDataRateCheck	1, 0	Enable this setting to perform HS Data Rate verification when running the HS tests. Select "Disable" to skip the HS data rate verification process. This option only affects HS tests.
Configure	HS Full Dynamic Range	HSFullDynamicRange	YES, NO	To enable/disable the use of full dynamic range when measuring HS data and HS Clock electrical characteristic. LP trigger threshold will be changed when this feature is turned on. This config is not applicable for continuous signal.
Configure	High Threshold [Window Trigger Mode ONLY]	WindowTriggerHighThreshold	(Accepts user-defined text), 0.6	High trigger level used when the "Trigger Method" option is set to "Window".
Configure	High Threshold [Window Trigger Mode ONLY][Direct Connect]	WindowTriggerHighThresholdDirectConnect	(Accepts user-defined text), 0.4	High trigger level used when the "Trigger Method" option is set to "Window". This is only applicable for "Direct Connect" probing method.

Table 2 Configuration Variables and Values (continued)

GUI Location	Label	Variable	Values	Description
Configure	Histogram Result	HistogramMeasResult	MODE, MEAN	Select the histogram statistical result to be used in VOL and VOH tests.
Configure	Hysteresis Level	Hysteresis_Level	(Accepts user-defined text), 0	Specify the value of the hysteresis level voltages used in setting the measurement thresholds. By default, this value is set to 0V. This config is used as - measurement threshold setting for HS Data Rate measurement - measurement threshold setting for explicit clock recovery in Eye Diagram, VOD and VOHHS tests.
Configure	Hysteresis Range	Hysteresis_Range	(Accepts user-defined text), 0.050	Specify the value of the hysteresis range used in setting the measurement thresholds. By default, this value is set to +/-50mV. This config is used as - measurement threshold setting for HS Data Rate measurement - measurement threshold setting for explicit clock recovery in Eye Diagram, VOD and VOHHS tests.
Configure	ISI Filter Lagging Bit [Jitter and Noise]	JitterNoiseISIFilterLag	0.0, 1.0, 2.0, 3.0, 4.0, 5.0, 6.0, 7.0, 8.0, 9.0, 10.0, 11.0, 12.0, 13.0, 14.0, 15.0	Select the number of lagging bits used to calculate the ISI filter for jitter and noise measurement. The lagging bits is greater than or equal to 0. This config only applicable when the "Pattern Length Analysis Mode" config variable is set to "Arbitrary".
Configure	ISI Filter Leading Bit [Jitter and Noise]	JitterNoiseISIFilterLead	0.0, -1.0, -2.0, -3.0, -4.0, -5.0, -6.0, -7.0, -8.0, -9.0, -10.0	Select the number of leading bits used to calculate the ISI filter for jitter and noise measurement. The leading bits is less than or equal to 0. This config only applicable when the "Pattern Length Analysis Mode" config variable is set to "Arbitrary".

Table 2 Configuration Variables and Values (continued)

GUI Location	Label	Variable	Values	Description
Configure	Interpolation	LPInterpolation	OFF, INT1, INT2, INT4, INT8, INT16	This option is used to turn on interpolation for LP tests. This config is only applicable for Test 1.1.1 VOH, Test1.1.2 VOL, Test 1.1.4 TFLP, Test 1.2.1 VOH, Test 1.2.2 VOL and Test 1.2.4 TFLP tests.
Configure	Interpolation Factor	WfmInterpolationFactor	OFF, INT2, INT4, INT8	Specify the interpolation factor to be used when loading waveform file for Test 1.3.4 Differential Voltage(VOD), Test 1.3.6 Single Ended Output Voltage(VOHHS), Test 1.4.4 Differential Voltage(VOD), Test 1.4.6 Single Ended Output Voltage(VOHHS), Test 1.5.4 Data-to-Clock Skew(TSKEW), Test HS Data Eye Height, Test HS Data Eye Width.
Configure	LP Escape Timeout	LPEscapeTimeOut	(Accepts user-defined text), 0	Time in seconds the application will wait for the LP Escape signal to appear in each observation. Select 0 if the DUT is capable of outputting LP escape mode continuously. This option only affects LP tests that need LP Escape signal.
Configure	LP Observations	NumLPElectricalTestObservation	(Accepts user-defined text), 10	Number of LP measurement instances to be observed.
Configure	LP Trigger Threshold	LPTriggerThreshold	(Accepts user-defined text), 0.650	Trigger level for LP edges, set it such that it will not trigger wrongly on HS. Possible values are between 0.200 and 0.880. The D-PHY specification recommends 0.550-0.880.
Configure	LP Trigger Threshold[Direct Connect]	LPTriggerThresholdDirectConnect	(Accepts user-defined text), 0.4	Trigger level for LP edges, set it such that it will not trigger wrongly on HS. This is only applicable for "Direct Connect" probing method.

Table 2 Configuration Variables and Values (continued)

GUI Location	Label	Variable	Values	Description
Configure	LPF Average Interval (us) [SSC]	SSC_LPFAverageInterval	(Accepts user-defined text), 0.222	Select the averaging time interval for HS Spread Spectrum Clocking tests. Unit: us. This config only applicable when the "LPF Type [SSC]" config variable is set to "Moving Average".
Configure	LPF Cutoff Frequency (MHz) [SSC]	SSC_LPFCutoffFrequency	1.80, 1.98, 2.00	Select the cutoff frequency for the low pass filter used for HS Spread Spectrum Clocking tests. Unit: MHz. This config only applicable when the "LPF Type [SSC]" config variable is set to "Butterworth Filter".
Configure	LPF Type [SSC]	SSC_LPFType	ButterworthFilter, MovingAverage	Select the type of low pass filter used for HS Spread Spectrum Clocking tests.
Configure	Low Threshold [Window Trigger Mode ONLY]	WindowTriggerLowThreshold	(Accepts user-defined text), -0.1	Low trigger level used when the "Trigger Method" option is set to "Window".
Configure	Low Threshold [Window Trigger Mode ONLY][Direct Connect]	WindowTriggerLowThresholdDirectConnect	(Accepts user-defined text), -0.1	Low trigger level used when the "Trigger Method" option is set to "Window". This is only applicable for "Direct Connect" probing method.
Configure	Manual Vertical Max voltage level[Burst Mode]	MaxVoltageLevel	(Accepts user-defined text), 1.50	Determine the max voltage level for each channel. This value will be observed only when Signal Scaling Mode[Burst Mode] is MANUAL. The D-PHY specification for VOH recommends 1.10 - 1.30V. This value should be greater than VOH to allow some headroom. Default value is 1.50V. This config is only applicable for burst signal.
Configure	Manual Vertical Max voltage level[Continuous Mode]	ContinuousSignalMaxVoltageLevel	(Accepts user-defined text), 0.4	Determine the max voltage level for each channel. This value will be observed only when Signal Scaling Mode[Continuous Mode] is MANUAL. This config is only applicable for continuous signal.

Table 2 Configuration Variables and Values (continued)

GUI Location	Label	Variable	Values	Description
Configure	Manual Vertical Min voltage level[Burst Mode]	MinVoltageLevel	(Accepts user-defined text), -0.40	Determine the min voltage level for each channel. This value will be observed only when Signal Scaling Mode[Burst Mode] is MANUAL. The D-PHY specification for VOL recommends -0.05 - 0.05V. This value should be greater than VOL to allow some headroom. Default value is -0.40V. This config is only applicable for burst signal.
Configure	Manual Vertical Min voltage level[[Continuous Mode]	ContinuousSignalMinVoltageLevel	(Accepts user-defined text), -0.10	Determine the min voltage level for each channel. This value will be observed only when Signal Scaling Mode[Continuous Mode] is MANUAL. This config is only applicable for continuous signal.
Configure	Mask Shift Horizontal Range (UI) [Eye Diagram]	EyeDiagramMaskShiftHorizontalRange	0.2, 0.4, 0.5, 0.6, 0.7, 0.8	Select the maximum horizontal range allowed for the mask shifting if mask fail for Test 1.5.7 HS Data Eye Diagram test. Unit: UI. This config only applicable when the "Test Method [Eye Diagram]" config variable is set to "Realtime".
Configure	Measurement Mode	DeEmphasisMeasResultMode	MODE, MEAN	Select the histogram statistical result to be used in Test 1.3.I HS Data TX De-emphasis Level [Continuous Data]. This config is only applicable for Test 1.3.I HS Data TX De-emphasis Level [Continuous Data].
Configure	Measurement Time Range(ns)	LPMeasurementTimeRangeInns	(Accepts user-defined text), 160	Specifies the time range in nanoseconds the application will be using when measuring DC and transition time of LP signal. Set it such that only one transition is visible when measuring.

Table 2 Configuration Variables and Values (continued)

GUI Location	Label	Variable	Values	Description
Configure	Minimum THS-PREPARE	MinTHSPrepare	40E-9, 38E-9, 0	This is an additional checking used to avoid glitch problem when finding burst start location. Specify the minimum THS-PREAPRE value in second. By default, this value is set to 0s. This config is applicable for Test 1.3.2 HS Entry: DATA TX THS-PREPARE and Test 1.4.2 HS Entry: CLK TX TCLK-PREPARE.
Configure	Minimum Valid HS Idle State Length	MinValidHSIdleStateLength	(Accepts user-defined text), 60e-9, 500e-9	Specify the minimum valid HS Idle State length which will be used for triggering the repeated HS Idle signal when running the HS-Idle tests. This config is only applicable for Test 1.5.10 THS-IDLE-POST, Test 1.5.10 THS-IDLE-CLKHS0 and Test 1.5.10 THS-IDLE-PRE + THS-ZERO.
Configure	Minimum Valid HS Length	MinValidHSLength	(Accepts user-defined text), 0.0, 500e-9, 1.50e-6	Set this value to avoid extremely short HS stream, default value is 1.5 µs. Set value to 0 to disable this feature.

Table 2 Configuration Variables and Values (continued)

GUI Location	Label	Variable	Values	Description
Configure	Number of Iterations[End of TCLK-PRE]	NumOfIterateCheck_EndOfTCLKPRE	2, 3, 4, 5, 6, 7	This config is used to specify the maximum number of iterations for "End of TCLK-PRE" position searching. By default, maximum of 5 iterations will be excuted before "End Of TCLK-PRE" position is identified. It is useful to avoid glitch problem that appear on single-ended DataP signal at the LP to HS transition. By setting this config to larger value, it will affect the efficiency. This configuration option only applicable for Test 1.5.1 HS Exit: CLK TX TCLK-PRE. The algorithm of TCLK-PRE is as below: "Start of TCLK-PRE" position: The point where the Clock Lane differential waveform crosses below the minimum valid HS-RX differential threshold level of +/-70mV "End of TCLK-PRE" position: The point where the Data Lane single-ended, DataP LP-01 falling edge crosses VIL,MAX (550mV). - If there's no crossing edge at VIL,MAX found on the first burst, the test will fail. - If only one crossing edge at VIL,MAX found within the first burst, this edge will be identified as the "End Of TCLK-PRE" position". - If more than one crossing edge at VIL,MAX found within the first burst, the searching algorithm will iterate until "End Of TCLK-PRE" position is identified. Within the maximum trials, the first crossing edge next to "Start of TCLK-PRE" position found will be identified as the "End Of TCLK-PRE" position". The result of "TCLK-PRE" will be a positive value. Within the maximum trials, if all crossing edges found are less than "Start of TCLK-PRE" position, then the

Table 2 Configuration Variables and Values (continued)

GUI Location	Label	Variable	Values	Description
Configure	Number of Iterations[End of TCLK-PRE]	NumOfIterateCheck_EndOfTCLKPRE (cont'd)	2, 3, 4, 5, 6, 7	last edge found will be identified as "End Of TCLK-PRE" position". This "End of TCLK-PRE" position is less than "Start of TCLK-PRE" position. The result of "TCLK-PRE" will be a negative value and the test will fail. Maximum number of iterations will be based on "Number of Iterations[End of TCLK-PRE]" configuration option.
Configure	Number of ULPS Slew Edge	ULPSSlewEdge	(Accepts user-defined text), 10	Set this value to get number of ULPS slew edge. This value will only affect ULPS Clock Tx Slew Rate test. This value will affect the number of rising/falling edge when performing the measurement. For example: The default value is set to 10. ClockP risng will digitize 10 time and get the average value. ClockP falling will digitize 10 time and get the average value. ClockN risng will digitize 10 time and get the average value. ClockN falling will digitize 10 time and get the average value.
Configure	Pattern Check[VOHHS,VOD]	Pattern_check	1, 0	Enable or disable the pattern check "011111" and "100000" for VOHHS and VOD tests only. This config is only applicable to Test 1.3.4 Differential Voltage(VOD0 Pulse), Test 1.3.4 Differential Voltage(VOD1 Pulse), Test 1.3.5 Differential Voltage Mismatch(Pulse) and Test 1.3.6 Single-Ended Output High Voltage(VOHHS Pulse).

Table 2 Configuration Variables and Values (continued)

GUI Location	Label	Variable	Values	Description
Configure	Pattern Check[tR,tF]	Pattern_check_RiseFallTime	1, 0	Enable or disable the pattern check "000111" and "111000" for tR and tF tests only. If "Pattern Check[tR,tF]" is enabled, minimum of 2 copies of patterns are required to run these tests. This config is only applicable to Test 1.3.11 20%-80% Rise Time(tR) and Test 1.3.12 80%-20% Fall Time(tF).
Configure	Pattern Length Analysis Mode [Jitter and Noise]	JitterNoisePatternLength	AUTO, ARBitrary	Select the pattern length analysis mode for jitter and noise measurement, either "Periodic" or "Arbitrary" mode. "Periodic" mode is only for purely periodic and repetitive patterns. The pattern length would be automatically detected. "Arbitrary" mode is for non-periodic patterns.
Configure	RJ Bandwidth [Jitter]	JitterRJBandwidth	NARRow, WIDE	Select the RJ bandwidth for jitter measurement.
Configure	RJ Separation Method [Jitter]	JitterRJMethod	BOTH, SPECtral	Select the type of method used to separate the RJ component for jitter measurement.
Configure	RN Bandwidth [Noise]	NoiseRNBandwidth	NARRow, WIDE	Select the RN bandwidth for noise measurement.
Configure	RN Separation Method [Noise]	NoiseRNMethod	BOTH, SPECtral	Select the type of method used to separate the RN component for noise measurement.
Configure	Reference Channel [Eye Diagram]	EyeDiagramReferenceChannel	Standard, Short, Long, None	Select the reference channel to be embedded for Test 1.5.7 HS Data Eye Diagram and Test 1.5.7 HS Clock Eye Diagram tests.

Table 2 Configuration Variables and Values (continued)

GUI Location	Label	Variable	Values	Description
Configure	SSC Check	SSCCheck	0, 1	Enable/disable SSC signal checking. Enable: Application will check if the SSC Modulation Rate is lower than 50MHz when performing the SSC tests. An exception will be thrown if condition is not met. Disable: Application will NOT perform any signal checking when performing the SSC tests. This config is only applicable for SSC tests.
Configure	SSC Cycle [SSC]	SSC_SSCCycle	3, 4, 5, 6, 7, 8, 9, 10	Select the number of SSC cycle to be captured and analyzed for HS Spread Spectrum Clocking tests.
Configure	Save ULPS Wfm	SaveULPSWfm	1, 0	Save the waveform when running ULPS mode.
Configure	Scope Sampling Rate	ScopeSampleRate	10e9, 20e9, 40e9, 80e9, 8e9, 16e9, 32e9, 64e9	The scope sampling rate for all HS tests except Test HS Data to Clock Total Jitter [Continuous Data], Test HS Data to Clock Deterministic Jitter [Continuous Data], Test HS Data to Clock Random Jitter [Continuous Data], Test 1.5.7 HS Data Eye Diagram [Continuous Data] and Test 1.5.7 HS Clock Eye Diagram [Continuous Clock] tests. For 90000 Series, 90000 X-Series, 90000 Q-Series, V-Series, Z-Series: Default value is 20GSa/s. For UXR-Series: Default value is 32GSa/s. For MXR-Series: Default value is 16GSa/s.

Table 2 Configuration Variables and Values (continued)

GUI Location	Label	Variable	Values	Description
Configure	Scope Sampling Rate[Jitter and Eye Diagram]	HSJitterEyeDiagramScopeSampleRate	10e9, 20e9, 40e9, 80e9, 8e9, 16e9, 32e9, 64e9, 128e9	The scope sampling rate for Jitter and Eye Diagram tests. For 90000 Series, 90000 X-Series, 90000 Q-Series, V-Series, Z-Series: Default value is 40GSa/s. For UXR-Series: Default value is 64GSa/s. For MXR-Series: Default value is 16GSa/s. This config is only applicable for Test HS Data to Clock Total Jitter [Continuous Data], Test HS Data to Clock Deterministic Jitter [Continuous Data], Test HS Data to Clock Random Jitter [Continuous Data], Test 1.5.7 HS Data Eye Diagram [Continuous Data] tests and Test 1.5.7 HS Clock Eye Diagram [Continuous Clock].
Configure	Scope Sampling Rate[LP]	LPScopeSampleRate	10e9, 20e9, 40e9, 80e9, 8e9, 16e9, 32e9, 64e9	The scope sampling rate for all LP tests. For 90000 Series, 90000 X-Series, 90000 Q-Series, V-Series, Z-Series: Default value is 10GSa/s. For UXR-Series: Default value is 16GSa/s. For MXR-Series: Default value is 16GSa/s.
Configure	Scope Sampling Rate[SSC]	HSSSCScopeSampleRate	10e9, 20e9, 40e9, 80e9, 8e9, 16e9, 32e9, 64e9, 128e9	The scope sampling rate for SSC tests. For 90000 Series, 90000 X-Series, 90000 Q-Series, V-Series, Z-Series: Default value is 40GSa/s. For UXR-Series: Default value is 64GSa/s. For MXR-Series: Default value is 16GSa/s. This config is only applicable for HS Spread Spectrum Clocking(SSC) tests.
Configure	Screenshot	Screenshot	0, 1	Enable/disable screenshot capture. Enable: Application will capture screenshot for some of the tests. Disable: Application will NOT perform any screeshot when performing tests.

Table 2 Configuration Variables and Values (continued)

GUI Location	Label	Variable	Values	Description
Configure	Signal Scaling Mode[Burst Mode]	SignalScalingMode	AUTO, MANUAL	Set signal scaling to AUTO or MANUAL mode. AUTO: Use the scope autoscale to determine the vertical range of each channel. Only for signals with LP and HS intervals less than 60ms. MANUAL: Set the vertical range for each channel based on the manual vertical max and min voltage level settings. "MANUAL" mode is used as default setting for Signal Scaling Mode[Burst Mode] because "AUTO" mode does not work for all test signals. For example, "AUTO" mode does not work for test signal with long HS-burst that is more than 60ms. This config is only applicable for burst signal.
Configure	Signal Scaling Mode[Continuous Mode]	ContinuousSignalScalingMode	AUTO, MANUAL	Set signal scaling to AUTO or MANUAL mode. AUTO: Use the scope autoscale to determine the vertical range of each channel. MANUAL: Set the vertical range for each channel based on the manual vertical max and min voltage level settings. This config is only applicable for continuous signal.
Configure	Single-Ended HS Threshold Level	HSSETriggerThreshold	(Accepts user-defined text), 0.200	Trigger level for Single-Ended HS edges. This is the voltage level that will be used by the application to determine edges of single-ended HS signal. Possible values are between 0 and 0.650.
Configure	Single-Ended HS Threshold Level[Direct Connect]	HSSETriggerThresholdDirectConnect	(Accepts user-defined text), 0.100	Trigger level for Single-Ended HS edges. This is the voltage level that will be used by the application to determine edges of single-ended HS signal. Possible values are between 0 and 0.650. This is only applicable for "Direct Connect" probing method.

Table 2 Configuration Variables and Values (continued)

GUI Location	Label	Variable	Values	Description
Configure	Slew rate test CLoad(pF)	SlewrateCLoad	(Accepts user-defined text), 0, 5, 20, 70	Load capacitance to determine the LP Slew Rate min and max values.
Configure	THS-SKIP(s)	THS_SKIP	(Accepts user-defined text), 0, 40e-9, 55e-9	This config is used to specify the value of THS-SKIP which is useful to avoid glitch problem during THS-TRAIL measurement. Any transition on the Data Lane in THS-SKIP time interval will be ignored when finding last payload data bit of HS transmission burst. The default value of THS-SKIP is set to 0s to prevent invalid THS-TRAIL measurement. For example, in the case of: TREOT = 20e-9s, THS-TRAIL = 10e-9s, THS-SKIP is set to 40e-9s, Some of the payload is within THS-SKIP and since THS-SKIP is set to 40e-9s, all the payload within this time interval will be ignored. This will cause invalid measurement for THS-TRAIL measurement. This config is only applicable to Test 1.3.13.
Configure	THSBurstStart Threshold	THSBurstStartThreshold	(Accepts user-defined text), 0.080, 0.180	Threshold value used to determine the starting location of the HS burst data.
Configure	THSprepareStart Threshold	THSprepareStartThreshold	(Accepts user-defined text), 0.550, 0.080	Threshold value used to determine the starting location of the THSprepare parameter. The D-PHY specification define this value to use the VIL(max) which is 0.550V. When using the default 0.550V as the threshold, the app will not support data signals that are not terminated properly as the differential data level may not cross this voltage level. For debugging purposes, this value can be set to 0.080V to support testing with improper terminated data signals.

Table 2 Configuration Variables and Values (continued)

GUI Location	Label	Variable	Values	Description
Configure	THSprepareStart Threshold[Direct Connect]	THSprepareStartThresholdDirectConnect	(Accepts user-defined text), 0.3, 0.080	Threshold value used to determine the starting location of the THSprepare parameter. For debugging purposes, this value can be set to 0.080V to support testing with improper terminated data signals. This is only applicable for "Direct Connect" probing method.
Configure	TX PPI bus width	PPIBusWidthValueHSIdle	8, 16, 32	Specify the n value(the PPI bus width in bytes) which will be used to determine the test limit for Test 1.5.10 THS-IDLE-POST and Test 1.5.10 THS-IDLE-PRE + THS-ZERO. This config is only applicable for Test 1.5.10 THS-IDLE-POST and Test 1.5.10 THS-IDLE-PRE + THS-ZERO.
Configure	Tedge Hysteresis	TedgeHysteresis	(Accepts user-defined text), 40e-3, 60e-3, 80e-3	This option specify the hysteresis range used in setting the measurement threshold for Tedge measurement. This option is only applicable for Test 1.3.2 HS Entry: DATA TX THS-PREPARE and Test 1.4.2 HS Entry: CLK TX TCLK-PREPARE.
Configure	Test Method [Eye Diagram]	EyeDiagramTestMethod	Realtime, Extrapolated	Select the test method for Test 1.5.7 HS Data Eye Diagram and Test 1.5.7 HS Clock Eye Diagram tests.
Configure	Time Range(ns)	GlobalOperationTimeStep	(Accepts user-defined text), 200, 300, 400, 500	Specify the value of time range(nanoseconds) to be used when perform measurement on the HS exit/entry sequence. This config is only applicable to the tests in Global Operation test group. For example, set it such that the TLPX, THS-PREPARE, THS-ZERO and THS-SYNC are visible on the oscilloscope display when measuring for HS Entry tests. By default, this value is set to 200ns.

Table 2 Configuration Variables and Values (continued)

GUI Location	Label	Variable	Values	Description
Configure	Transition Time Measurement Lower Threshold(%)	HSACLowerThreshold	(Accepts user-defined text), 20	Specifies in percentage the lower measurement threshold for transition time measurement. This config is only applicable to Test 1.3.11 20%-80% Rise Time(tR), Test 1.3.12 80%-20% Fall Time(tF), Test 1.4.11 20%-80% Rise Time(tR) and Test 1.4.12 80%-20% Fall Time(tF).
Configure	Transition Time Measurement Upper Threshold(%)	HSACUpperThreshold	(Accepts user-defined text), 80	Specifies in percentage the upper measurement threshold for transition time measurement. This config is only applicable to Test 1.3.11 20%-80% Rise Time(tR), Test 1.3.12 80%-20% Fall Time(tF), Test 1.4.11 20%-80% Rise Time(tR) and Test 1.4.12 80%-20% Fall Time(tF).
Configure	TrigThreshold Mode	HSIdleTrigThresMode	0, 1	Specify the trigger threshold mode used for triggering the repeated HS Idle signal when running the HS-Idle tests. When this option is set to "Auto", the application will automatically determine the threshold value. When this option is set to "Manual", then the value of the "Trigger Level" option will be used as the trigger threshold. This config is only applicable for Test 1.5.10 THS-IDLE-POST, Test 1.5.10 THS-IDLE-CLKHS0 and Test 1.5.10 THS-IDLE-PRE + THS-ZERO.

Table 2 Configuration Variables and Values (continued)

GUI Location	Label	Variable	Values	Description
Configure	Trigger Check	TriggerCheck	0, 1	Enable/disable valid test signal trigger checking. Enable: Application will check if any valid trigger condition is met by making a dummy test acquisition upon setting up required trigger conditions. An exception will be thrown if NO trigger condition is met within a timeout duration specified in the "Trigger Timeout" configuration option. Disable: Application will NOT perform any signal trigger checking when performing the tests.
Configure	Trigger Level	HSIdleTrigThresLevel	(Accepts user-defined text), 0.1	Specify the value of the trigger level used for triggering the repeated HS Idle signal when running the HS-Idle tests. The value of this option will be used ONLY when the "TrigThreshold Mode" option is set to "Manual". By default, this value is set to 0.1V. This config is only applicable for Test 1.5.10 THS-IDLE-POST, Test 1.5.10 THS-IDLE-CLKHS0 and Test 1.5.10 THS-IDLE-PRE + THS-ZERO.
Configure	Trigger Method	TriggerMethod	0, 1	Set the signal triggering method to find burst data. For "Window" triggering method, the minimum valid HS burst length must greater than the maximum duration between LP edges in LP Escape region. For "Pattern/State with InfiniiScan" triggering method, it is not recommended to use this triggering method to trigger on long HS burst if the signal contain both long HS burst and short HS burst due to efficiency.

Table 2 Configuration Variables and Values (continued)

GUI Location	Label	Variable	Values	Description
Configure	Trigger Timeout [ms]	TriggerTimeout	(Accepts user-defined text), 150000, 25000, 10000	This option is specify as a whole number in mili-seconds (does not accept decimal point values) with a minimum of 1000 ms. This option DOES NOT affect LP tests that need LP Escape signal. For those mentioned tests, please refer to the "LP Escape Timeout" configuration option.
Configure	Tskew Histogram Window	TskewHistogramWindow	0.0, 0.010, 0.020, 0.070	Increase the Tskew histogram window for short HS stream that may not have enough data points for histogram measurement. Default value is ±10mV.
Configure	Ulinst Min	Ulinst_Min_limit	(Accepts user-defined text), 0	Specifies the limit for the Ulinst min value define by the DUT.
Configure	UseWfmFile(Must be hidden)	UseWfmFile	(Accepts user-defined text), 0.0, 1.0	For supporting offline
Configure	VIDTH(max)	VIDTHMax	(Accepts user-defined text), 0.070	VIDTH(max) is used to determine the stop point for THS-PREPARE. Please see D-Phy specification for the allowable value.
Configure	VIH(min)	VIHMin	(Accepts user-defined text), 0.88, 0.74	VIH(min) is used to determine the ending point for CLK TX TEOT. The default value for VIH(min) is 880mV(for HS rate ≤ 1.5Gbps) and 740mV(for HS rate > 1.5Gbps). Please see D-Phy specification for the allowable value.
Configure	VIL(max)	VILMax	(Accepts user-defined text), 0.550	VIL(max) is used to determine the starting point for TLPX and THS-PREPARE. Please see D-Phy specification for the allowable value.

Table 2 Configuration Variables and Values (continued)

GUI Location	Label	Variable	Values	Description
Configure	VOHHS Acquisition Method	VOHHSAcquisitionMethod	Single Acquisition, Separated Acquisition	Specify the acquisition method for Test 1.3.6 HS Data TX Single Ended Output High Voltage(VOHHS) test. Select "Single Acquisition" if the DUT is capable of outputting 011111 symbol pattern on both Dp and Dn in single acqusition. Both VOHHS(DP) and VOHHS(DN) measurement will be verified by running Test 1.3.6 HS Data TX Single Ended Output High Voltage(VOHHS) test. Select "Separated Acquisition" if the DUT is capable of outputting 011111 symbol patterns on either Dp or Dn only in single acqusition. Configure the DUT to output 01111 symbol on DP and run Test 1.3.6 HS Data TX Single Ended Output High Voltage(VOHHS(DP)) test in first trial to verify VOHHS(DP), then configure the DUT to output 01111 symbol on DN and run Test 1.3.6 HS Data TX Single Ended Output High Voltage(VOHHS(DN)) test in second trial. This config is only applicable for Test 1.3.6 HS Data TX Single Ended Output High Voltage(VOHHS), Test 1.3.6 HS Data TX Single Ended Output High Voltage(VOHHS(DP)) and Test 1.3.6 HS Data TX Single Ended Output High Voltage(VOHHS(DN)) tests.
Run Tests	Event	RunEvent	(None), Fail, Margin < N, Pass	Names of events that can be used with the StoreMode=Event or RunUntil RunEventAction options
Run Tests	RunEvent=Margin < N: Minimum required margin %	RunEvent_Margin < N_MinPercent	Any integer in range: 0 <= value <= 99	Specify N using the 'Minimum required margin %' control.

Table 2 Configuration Variables and Values (continued)

GUI Location	Label	Variable	Values	Description
Set Up	AltCalSeq_DatnWfmFile	AltCalSeq_DatnWfmFile	(Accepts user-defined text)	Saved Datn single-ended signal for Test 1.5.8 Alternate Calibration Sequence (TALTCAL-SYNC) and Test 1.5.8 Alternate Calibration Sequence (TALTCAL). This option is applicable only for Offline Mode. Saved Datn single-ended signal for Test 1.5.8 Alternate Calibration Sequence (TALTCAL-SYNC) and Test 1.5.8 Alternate Calibration Sequence (TALTCAL). This option is applicable only for Offline Mode.
Set Up	AltCalSeq_DatpWfmFile	AltCalSeq_DatpWfmFile	(Accepts user-defined text)	Saved Datp single-ended signal for Test 1.5.8 Alternate Calibration Sequence (TALTCAL-SYNC) and Test 1.5.8 Alternate Calibration Sequence (TALTCAL). This option is applicable only for Offline Mode. Saved Datp single-ended signal for Test 1.5.8 Alternate Calibration Sequence (TALTCAL-SYNC) and Test 1.5.8 Alternate Calibration Sequence (TALTCAL). This option is applicable only for Offline Mode.
Set Up	CTSVersion	CTSVersion	v1.0, v1.1, v1.2, v2.0 and v2.1	Select the CTS Version. Select the CTS Version.
Set Up	CalClknInfiniiSim	CalClknInfiniiSim	Off, 2 Port, 4 Port (Clkp and Clkn)	Select to embed/de-embed transfer function file for Clkn prior to N7010A Calibration. Select to embed/de-embed transfer function file for Clkn prior to N7010A Calibration.
Set Up	CalClknTransferFunctionFile	CalClknTransferFunctionFile	(Accepts user-defined text)	Select the transfer function file for embedding/de-embedding for Clkn prior to N7010A Calibration. Select the transfer function file for embedding/de-embedding for Clkn prior to N7010A Calibration.

Table 2 Configuration Variables and Values (continued)

GUI Location	Label	Variable	Values	Description
Set Up	CalClkpInfiniiSim	CalClkpInfiniiSim	Off, 2 Port, 4 Port (Clkp and Clkn)	Select to embed/de-embed transfer function file for Clkp prior to N7010A Calibration. Select to embed/de-embed transfer function file for Clkp prior to N7010A Calibration.
Set Up	CalClkpTransferFunctionFile	CalClkpTransferFunctionFile	(Accepts user-defined text)	Select the transfer function file for embedding/de-embedding for Clkp prior to N7010A Calibration. Select the transfer function file for embedding/de-embedding for Clkp prior to N7010A Calibration.
Set Up	CalClockLaneEnable	CalClockLaneEnable	0.0, 1.0	Enable the Clock Lane for N7010A Calibration. Enable the Clock Lane for N7010A Calibration.
Set Up	CalClockManualZosValue	CalClockManualZosValue	(Accepts user-defined text)	Enter the Zos value for Clock Lane for N7010A Calibration. Enter the Zos value for Clock Lane for N7010A Calibration.
Set Up	CalClockZosValueMethod	CalClockZosValueMethod	Manual Zos, Calculated Zos	Select the method to determine the Zos value for Clock Lane for N7010A Calibration Select the method to determine the Zos value for Clock Lane for N7010A Calibration
Set Up	CalDataLaneEnable	CalDataLaneEnable	0.0, 1.0	Enable the Data Lane for N7010A Calibration. Enable the Data Lane for N7010A Calibration.
Set Up	CalDataManualZosValue	CalDataManualZosValue	(Accepts user-defined text)	Enter the Zos value for Data Lane for N7010A Calibration. Enter the Zos value for Data Lane for N7010A Calibration.
Set Up	CalDataZosValueMethod	CalDataZosValueMethod	Manual Zos, Calculated Zos	Select the method to determine the Zos value for Data Lane for N7010A Calibration Select the method to determine the Zos value for Data Lane for N7010A Calibration

Table 2 Configuration Variables and Values (continued)

GUI Location	Label	Variable	Values	Description
Set Up	CalDnInfiniiSim	CalDnInfiniiSim	Off, 2 Port, 4 Port (Dp and Dn)	Select to embed/de-embed transfer function file for Dn prior to N7010A Calibration. Select to embed/de-embed transfer function file for Dn prior to N7010A Calibration.
Set Up	CalDnTransferFunctionFile	CalDnTransferFunctionFile	(Accepts user-defined text)	Select the transfer function file for embedding/de-embedding for Dn prior to N7010A Calibration. Select the transfer function file for embedding/de-embedding for Dn prior to N7010A Calibration.
Set Up	CalDpInfiniiSim	CalDpInfiniiSim	Off, 2 Port, 4 Port (Dp and Dn)	Select to embed/de-embed transfer function file for Dp prior to N7010A Calibration. Select to embed/de-embed transfer function file for Dp prior to N7010A Calibration.
Set Up	CalDpTransferFunctionFile	CalDpTransferFunctionFile	(Accepts user-defined text)	Select the transfer function file for embedding/de-embedding for Dp prior to N7010A Calibration. Select the transfer function file for embedding/de-embedding for Dp prior to N7010A Calibration.
Set Up	ClkChan	ClkChan	Channel 1, Channel 2, Channel 3, Channel 4	Identifies the oscilloscope channels probing clock(differentially). This value will be used if the Clock Connection Type set to Differential. CAUTION: Differential Clock input will not be able to run ALL clock related tests. Identifies the oscilloscope channels probing clock(differentially). This value will be used if the Clock Connection Type set to Differential. CAUTION: Differential Clock input will not be able to run ALL clock related tests.
Set Up	ClkConnectionType	ClkConnectionType	Single Ended, Differential	Identifies the Clock connection type. Identifies the Clock connection type.

Table 2 Configuration Variables and Values (continued)

GUI Location	Label	Variable	Values	Description
Set Up	ClkLPEscapeMode	ClkLPEscapeMode	0.0, 1.0	Escape Mode in Clock Lane. Check this if the device has LP Escape mode on the clock lane. Escape Mode in Clock Lane. Check this if the device has LP Escape mode on the clock lane.
Set Up	ClkULPSMode	ClkULPSMode	0.0, 1.0	ULPS Mode in Clock Lane. Check this if the device has ULPS mode on the clock lanes. ULPS Mode in Clock Lane. Check this if the device has ULPS mode on the clock lanes.
Set Up	ClockSEChan	ClockSEChan	Channel 1 and Channel 3, Channel 2 and Channel 4	Identifies the oscilloscope channels probing Clkp and Clkn signals. This value will be used if the Clock Connection Type is set to Single Ended. Identifies the oscilloscope channels probing Clkp and Clkn signals. This value will be used if the Clock Connection Type is set to Single Ended.
Set Up	DataSEChan	DataSEChan	Channel 1 and Channel 3, Channel 2 and Channel 4	Identifies the oscilloscope channels probing Dp and Dn signal. Identifies the oscilloscope channels probing Dp and Dn signal.
Set Up	DeEmphasis_Clkn WfmFile	DeEmphasis_ClknWfmFile	(Accepts user-defined text)	Saved Clkn single-ended signal for Test 1.3.I HS Data TX De-emphasis Level [Continuous Data]. This option is applicable only for Offline Mode. Saved Clkn single-ended signal for Test 1.3.I HS Data TX De-emphasis Level [Continuous Data]. This option is applicable only for Offline Mode.

Table 2 Configuration Variables and Values (continued)

GUI Location	Label	Variable	Values	Description
Set Up	DeEmphasis_Clkp WfmFile	DeEmphasis_ClkpWfmFile	(Accepts user-defined text)	Saved Clkp single-ended signal for Test 1.3.I HS Data TX De-emphasis Level [Continuous Data]. This option is applicable only for Offline Mode. Saved Clkp single-ended signal for Test 1.3.I HS Data TX De-emphasis Level [Continuous Data]. This option is applicable only for Offline Mode.
Set Up	DeEmphasis_Datn WfmFile	DeEmphasis_DatnWfmFile	(Accepts user-defined text)	Saved Datn single-ended signal for Test 1.3.I HS Data TX De-emphasis Level [Continuous Data]. This option is applicable only for Offline Mode. Saved Datn single-ended signal for Test 1.3.I HS Data TX De-emphasis Level [Continuous Data]. This option is applicable only for Offline Mode.
Set Up	DeEmphasis_Datp WfmFile	DeEmphasis_DatpWfmFile	(Accepts user-defined text)	Saved Datp single-ended signal for Test 1.3.I HS Data TX De-emphasis Level [Continuous Data]. This option is applicable only for Offline Mode. Saved Datp single-ended signal for Test 1.3.I HS Data TX De-emphasis Level [Continuous Data]. This option is applicable only for Offline Mode.
Set Up	DeEmphasis_DiffCl kWfmFile	DeEmphasis_DiffClkWfmFile	(Accepts user-defined text)	Saved Clock Differential signal for Test 1.3.I HS Data TX De-emphasis Level [Continuous Data]. This option is applicable only for Offline Mode. Saved Clock Differential signal for Test 1.3.I HS Data TX De-emphasis Level [Continuous Data]. This option is applicable only for Offline Mode.
Set Up	DeviceID	DeviceID	(Accepts user-defined text)	Device ID Device ID
Set Up	DeviceID	UserComment	(Accepts user-defined text)	User Comment User Comment

Table 2 Configuration Variables and Values (continued)

GUI Location	Label	Variable	Values	Description
Set Up	ElecHSClk_ClknWfmFile	ElecHSClk_ClknWfmFile	(Accepts user-defined text)	Saved Clkn single-ended signal for all tests in Electrical Characteristics-HS Clock TX test group. This option is applicable only for Offline Mode. Saved Clkn single-ended signal for all tests in Electrical Characteristics-HS Clock TX test group. This option is applicable only for Offline Mode.
Set Up	ElecHSClk_ClknWfmFile	GlobalHSClkEntry_ClknWfmFile	(Accepts user-defined text)	Saved Clkn single-ended signal for all HS-Entry tests in Global Operation-Clock TX test group. This option is applicable only for Offline Mode. Saved Clkn single-ended signal for all HS-Entry tests in Global Operation-Clock TX test group. This option is applicable only for Offline Mode.
Set Up	ElecHSClk_ClknWfmFile	GlobalHSClkExit_ClknWfmFile	(Accepts user-defined text)	Saved Clkn single-ended signal for all HS-Exit tests in Global Operation-Clock TX test group. This option is applicable only for Offline Mode. Saved Clkn single-ended signal for all HS-Exit tests in Global Operation-Clock TX test group. This option is applicable only for Offline Mode.
Set Up	ElecHSClk_ClkpWfmFile	ElecHSClk_ClkpWfmFile	(Accepts user-defined text)	Saved Clkp single-ended signal for all tests in Electrical Characteristics-HS Clock TX test group. This option is applicable only for Offline Mode. Saved Clkp single-ended signal for all tests in Electrical Characteristics-HS Clock TX test group. This option is applicable only for Offline Mode.

Table 2 Configuration Variables and Values (continued)

GUI Location	Label	Variable	Values	Description
Set Up	ElecHSClk_ClkpWfmFile	GlobalHSClkEntry_ClkpWfmFile	(Accepts user-defined text)	Saved Clkp single-ended signal for all HS-Entry tests in Global Operation-Clock TX test group. This option is applicable only for Offline Mode. Saved Clkp single-ended signal for all HS-Entry tests in Global Operation-Clock TX test group. This option is applicable only for Offline Mode.
Set Up	ElecHSClk_ClkpWfmFile	GlobalHSClkExit_ClkpWfmFile	(Accepts user-defined text)	Saved Clkp single-ended signal for all HS-Exit tests in Global Operation-Clock TX test group. This option is applicable only for Offline Mode. Saved Clkp single-ended signal for all HS-Exit tests in Global Operation-Clock TX test group. This option is applicable only for Offline Mode.
Set Up	ElecHSClk_DiffClkWfmFile	ElecHSClk_DiffClkWfmFile	(Accepts user-defined text)	Saved Clock Differential signal for all tests in Electrical Characteristics-HS Clock TX test group. This option is applicable only for Offline Mode. Saved Clock Differential signal for all tests in Electrical Characteristics-HS Clock TX test group. This option is applicable only for Offline Mode.

Table 2 Configuration Variables and Values (continued)

GUI Location	Label	Variable	Values	Description
Set Up	ElecHSClk_InfiniiSimOptionSet	ElecHSClk_InfiniiSimOptionSet	On, Off	Apply InfiniiSim Embedding on Clock Signals. By setting this option as (On), user have to manually configure the Reference Channel [Eye Diagram] in the Configure Tab, under the HS Jitter and Eye Diagram section. This option is targeted only to 1.5.7 HS Clock Eye Diagram [Continuous Clock] test and is applicable only for Offline Mode. Apply InfiniiSim Embedding Clock Signals. By setting this option as (On), user have to manually configure the Reference Channel [Eye Diagram] in the Configure Tab, under the HS Jitter and Eye Diagram section. This option is targeted only to 1.5.7 HS Clock Eye Diagram [Continuous Clock] test and is applicable only for Offline Mode.
Set Up	ElecHSData_ClknWfmFile	ElecHSData_ClknWfmFile	(Accepts user-defined text)	Saved Clkn single-ended signal for all tests in Electrical Characteristics-HS Data TX test group. This option is applicable only for Offline Mode. Saved Clkn single-ended signal for all tests in Electrical Characteristics-HS Data TX test group. This option is applicable only for Offline Mode.
Set Up	ElecHSData_ClkpWfmFile	ElecHSData_ClkpWfmFile	(Accepts user-defined text)	Saved Clkp single-ended signal for all tests in Electrical Characteristics-HS Data TX test group. This option is applicable only for Offline Mode. Saved Clkp single-ended signal for all tests in Electrical Characteristics-HS Data TX test group. This option is applicable only for Offline Mode.

Table 2 Configuration Variables and Values (continued)

GUI Location	Label	Variable	Values	Description
Set Up	ElecHSData_DatnWfmFile	ElecHSData_DatnWfmFile	(Accepts user-defined text)	Saved Datn single-ended signal for all tests in Electrical Characteristics-HS Data TX test group. This option is applicable only for Offline Mode. Saved Datn single-ended signal for all tests in Electrical Characteristics-HS Data TX test group. This option is applicable only for Offline Mode.
Set Up	ElecHSData_DatpWfmFile	ElecHSData_DatpWfmFile	(Accepts user-defined text)	Saved Datp single-ended signal for all tests in Electrical Characteristics-HS Data TX test group. This option is applicable only for Offline Mode. Saved Datp single-ended signal for all tests in Electrical Characteristics-HS Data TX test group. This option is applicable only for Offline Mode.
Set Up	ElecHSData_DiffClkWfmFile	ElecHSData_DiffClkWfmFile	(Accepts user-defined text)	Saved Clock Differential signal for all tests in Electrical Characteristics-HS Data TX test group. This option is applicable only for Offline Mode. Saved Clock Differential signal for all tests in Electrical Characteristics-HS Data TX test group. This option is applicable only for Offline Mode.
Set Up	EyeDiagAndJitter_ClknWfmFile	EyeDiagAndJitter_ClknWfmFile	(Accepts user-defined text)	Saved Clkn single-ended signal for all tests in Eye Diagram And Jitter test group. This option is applicable only for Offline Mode. Saved Clkn single-ended signal for all tests in Eye Diagram And Jitter test group. This option is applicable only for Offline Mode.
Set Up	EyeDiagAndJitter_ClkpWfmFile	EyeDiagAndJitter_ClkpWfmFile	(Accepts user-defined text)	Saved Clkp single-ended signal for all tests in Eye Diagram And Jitter test group. This option is applicable only for Offline Mode. Saved Clkp single-ended signal for all tests in Eye Diagram And Jitter test group. This option is applicable only for Offline Mode.

Table 2 Configuration Variables and Values (continued)

GUI Location	Label	Variable	Values	Description
Set Up	EyeDiagAndJitter_ DatnWfmFile	EyeDiagAndJitter_DatnWfm File	(Accepts user-defined text)	Saved Datn single-ended signal for all tests in Eye Diagram And Jitter test group. This option is applicable only for Offline Mode. Saved Datn single-ended signal for all tests in Eye Diagram And Jitter test group. This option is applicable only for Offline Mode.
Set Up	EyeDiagAndJitter_ DatpWfmFile	EyeDiagAndJitter_DatpWfm File	(Accepts user-defined text)	Saved Datp single-ended signal for all tests in Eye Diagram And Jitter test group. This option is applicable only for Offline Mode. Saved Datp single-ended signal for all tests in Eye Diagram And Jitter test group. This option is applicable only for Offline Mode.
Set Up	EyeDiagAndJitter_ DiffClkWfmFile	EyeDiagAndJitter_DiffClkWf mFile	(Accepts user-defined text)	Saved Clock Differential signal for all tests in Eye Diagram And Jitter test group. This option is applicable only for Offline Mode. Saved Clock Differential signal for all tests in Eye Diagram And Jitter test group. This option is applicable only for Offline Mode.

Table 2 Configuration Variables and Values (continued)

GUI Location	Label	Variable	Values	Description
Set Up	EyeDiagAndJitter_InfiniiSimOptionSet	EyeDiagAndJitter_InfiniiSimOptionSet	On, Off	Apply InfiniiSim Embedding on Data and Clock Signals. By setting this option as (On), user have to manually configure the Reference Channel [Eye Diagram] in the Configure Tab, under the HS Jitter and Eye Diagram section. This option is targeted only to 1.5.7 HS Data Eye Diagram [Continuous Data] test and is applicable only for Offline Mode. Apply InfiniiSim Embedding on Data and Clock Signals. By setting this option as (On), user have to manually configure the Reference Channel [Eye Diagram] in the Configure Tab, under the HS Jitter and Eye Diagram section. This option is targeted only to 1.5.7 HS Data Eye Diagram [Continuous Data] test and is applicable only for Offline Mode.
Set Up	FixtureSetup	FixtureSetup	Auto Load Switching, Manual Load Switching	Auto or Manual Switching Auto or Manual Switching
Set Up	GlobalHSDataEntry_DatnWfmFile	GlobalHSClkEntry_DatnWfmFile	(Accepts user-defined text)	Saved Datn single-ended signal for all HS-Entry tests in Global Operation-Clock TX test group. This option is applicable only for Offline Mode. Saved Datn single-ended signal for all HS-Entry tests in Global Operation-Clock TX test group. This option is applicable only for Offline Mode.

Table 2 Configuration Variables and Values (continued)

GUI Location	Label	Variable	Values	Description
Set Up	GlobalHSDataEntry_DatnWfmFile	GlobalHSClkExit_DatnWfmFile	(Accepts user-defined text)	Saved Datn single-ended signal for all HS-Exit tests in Global Operation-Clock TX test group. This option is applicable only for Offline Mode. Saved Datn single-ended signal for all HS-Exit tests in Global Operation-Clock TX test group. This option is applicable only for Offline Mode.
Set Up	GlobalHSDataEntry_DatnWfmFile	GlobalHSDataEntry_DatnWfmFile	(Accepts user-defined text)	Saved Datn single-ended signal for all HS-Entry tests in Global Operation-Data TX test group. This option is applicable only for Offline Mode. Saved Datn single-ended signal for all HS-Entry tests in Global Operation-Data TX test group. This option is applicable only for Offline Mode.
Set Up	GlobalHSDataEntry_DatpWfmFile	GlobalHSClkEntry_DatpWfmFile	(Accepts user-defined text)	Saved Datp single-ended signal for all HS-Entry tests in Global Operation-Clock TX test group. This option is applicable only for Offline Mode. Saved Datp single-ended signal for all HS-Entry tests in Global Operation-Clock TX test group. This option is applicable only for Offline Mode.
Set Up	GlobalHSDataEntry_DatpWfmFile	GlobalHSClkExit_DatpWfmFile	(Accepts user-defined text)	Saved Datp single-ended signal for all HS-Exit tests in Global Operation-Clock TX test group. This option is applicable only for Offline Mode. Saved Datp single-ended signal for all HS-Exit tests in Global Operation-Clock TX test group. This option is applicable only for Offline Mode.

Table 2 Configuration Variables and Values (continued)

GUI Location	Label	Variable	Values	Description
Set Up	GlobalHSDataEntry_DatpWfmFile	GlobalHSDataEntry_DatpWfmFile	(Accepts user-defined text)	Saved Datp single-ended signal for all HS-Entry tests in Global Operation-Data TX test group. This option is applicable only for Offline Mode. Saved Datp single-ended signal for all HS-Entry tests in Global Operation-Data TX test group. This option is applicable only for Offline Mode.
Set Up	GlobalHSDataExit_DatnWfmFile	GlobalHSDataExit_DatnWfmFile	(Accepts user-defined text)	Saved Datn single-ended signal for all HS-Exit tests in Global Operation-Data TX test group. This option is applicable only for Offline Mode. Saved Datn single-ended signal for all HS-Exit tests in Global Operation-Data TX test group. This option is applicable only for Offline Mode.
Set Up	GlobalHSDataExit_DatpWfmFile	GlobalHSDataExit_DatpWfmFile	(Accepts user-defined text)	Saved Datp single-ended signal for all HS-Exit tests in Global Operation-Data TX test group. This option is applicable only for Offline Mode. Saved Datp single-ended signal for all HS-Exit tests in Global Operation-Data TX test group. This option is applicable only for Offline Mode.
Set Up	HSClkFirstBitAlignment_ClknWfmFile	HSClkFirstBitAlignment_ClknWfmFile	(Accepts user-defined text)	Saved Clkn single-ended signal for Test 1.5.3 HS Clock Rising Edge Alignment to First Payload Bit. This option is applicable only for Offline Mode. Saved Clkn single-ended signal for Test 1.5.3 HS Clock Rising Edge Alignment to First Payload Bit. This option is applicable only for Offline Mode.

Table 2 Configuration Variables and Values (continued)

GUI Location	Label	Variable	Values	Description
Set Up	HSClkFirstBitAlignment_ClkpWfmFile	HSClkFirstBitAlignment_ClkpWfmFile	(Accepts user-defined text)	Saved Clkp single-ended signal for Test 1.5.3 HS Clock Rising Edge Alignment to First Payload Bit. This option is applicable only for Offline Mode. Saved Clkp single-ended signal for Test 1.5.3 HS Clock Rising Edge Alignment to First Payload Bit. This option is applicable only for Offline Mode.
Set Up	HSClkFirstBitAlignment_DatnWfmFile	HSClkFirstBitAlignment_DatnWfmFile	(Accepts user-defined text)	Saved Datn single-ended signal for Test 1.5.3 HS Clock Rising Edge Alignment to First Payload Bit. This option is applicable only for Offline Mode. Saved Datn single-ended signal for Test 1.5.3 HS Clock Rising Edge Alignment to First Payload Bit. This option is applicable only for Offline Mode.
Set Up	HSClkFirstBitAlignment_DatpWfmFile	HSClkFirstBitAlignment_DatpWfmFile	(Accepts user-defined text)	Saved Datp single-ended signal for Test 1.5.3 HS Clock Rising Edge Alignment to First Payload Bit. This option is applicable only for Offline Mode. Saved Datp single-ended signal for Test 1.5.3 HS Clock Rising Edge Alignment to First Payload Bit. This option is applicable only for Offline Mode.
Set Up	HSClkFirstBitAlignment_DiffClkWfmFile	HSClkFirstBitAlignment_DiffClkWfmFile	(Accepts user-defined text)	Saved Clock Differential signal for Test 1.5.3 HS Clock Rising Edge Alignment to First Payload Bit. This option is applicable only for Offline Mode Saved Clock Differential signal for Test 1.5.3 HS Clock Rising Edge Alignment to First Payload Bit. This option is applicable only for Offline Mode
Set Up	HSDataRate	HSDataRate	(Accepts user-defined text), 800	High Speed Data Rate High Speed Data Rate

Table 2 Configuration Variables and Values (continued)

GUI Location	Label	Variable	Values	Description
Set Up	HSIdle_ClknWfmFile	HSIdle_ClknWfmFile	(Accepts user-defined text)	Saved Clkn single-ended signal for Test 1.5.10 THS-IDLE-POST, Test 1.5.10 THS-IDLE-CLKHS0 and Test 1.5.10 THS-IDLE-PRE + THS-ZERO. This option is applicable only for Offline Mode. Saved Clkn single-ended signal for Test 1.5.10 THS-IDLE-POST, Test 1.5.10 THS-IDLE-CLKHS0 and Test 1.5.10 THS-IDLE-PRE + THS-ZERO. This option is applicable only for Offline Mode.
Set Up	HSIdle_ClkpWfmFile	HSIdle_ClkpWfmFile	(Accepts user-defined text)	Saved Clkp single-ended signal for Test 1.5.10 THS-IDLE-POST, Test 1.5.10 THS-IDLE-CLKHS0 and Test 1.5.10 THS-IDLE-PRE + THS-ZERO. This option is applicable only for Offline Mode. Saved Clkp single-ended signal for Test 1.5.10 THS-IDLE-POST, Test 1.5.10 THS-IDLE-CLKHS0 and Test 1.5.10 THS-IDLE-PRE + THS-ZERO. This option is applicable only for Offline Mode.
Set Up	HSIdle_DatnWfmFile	HSIdle_DatnWfmFile	(Accepts user-defined text)	Saved Datn single-ended signal for Test 1.5.10 THS-IDLE-POST, Test 1.5.10 THS-IDLE-CLKHS0 and Test 1.5.10 THS-IDLE-PRE + THS-ZERO. This option is applicable only for Offline Mode. Saved Datn single-ended signal for Test 1.5.10 THS-IDLE-POST, Test 1.5.10 THS-IDLE-CLKHS0 and Test 1.5.10 THS-IDLE-PRE + THS-ZERO. This option is applicable only for Offline Mode.

Table 2 Configuration Variables and Values (continued)

GUI Location	Label	Variable	Values	Description
Set Up	HSIdle_DatpWfmFile	HSIdle_DatpWfmFile	(Accepts user-defined text)	Saved Datp single-ended signal for Test 1.5.10 THS-IDLE-POST, Test 1.5.10 THS-IDLE-CLKHS0 and Test 1.5.10 THS-IDLE-PRE + THS-ZERO. This option is applicable only for Offline Mode. Saved Datp single-ended signal for Test 1.5.10 THS-IDLE-POST, Test 1.5.10 THS-IDLE-CLKHS0 and Test 1.5.10 THS-IDLE-PRE + THS-ZERO. This option is applicable only for Offline Mode.
Set Up	HSIdle_DiffClkWfmFile	HSIdle_DiffClkWfmFile	(Accepts user-defined text)	Saved Clock Differential signal for Test 1.5.10 THS-IDLE-POST, Test 1.5.10 THS-IDLE-CLKHS0 and Test 1.5.10 THS-IDLE-PRE + THS-ZERO. This option is applicable only for Offline Mode. Saved Clock Differential signal for Test 1.5.10 THS-IDLE-POST, Test 1.5.10 THS-IDLE-CLKHS0 and Test 1.5.10 THS-IDLE-PRE + THS-ZERO. This option is applicable only for Offline Mode.
Set Up	HSZIDTermination	HSZIDTermination	80 ohm, 100 ohm, 125 ohm	Select the ZID termination value for HS tests. Select the ZID termination value for HS tests.
Set Up	LPCLoad	LPCLoad	50pF, Without CLoad	Select the CLoad value for all LP tests. Select the CLoad value for all LP tests.
Set Up	LPEscapeMode	LPEscapeMode	0.0, 1.0	Escape Mode in Data Lane. Check this if the device has LP Escape mode on the data lanes. Escape Mode in Data Lane. Check this if the device has LP Escape mode on the data lanes.
Set Up	Lane0	Lane0	0.0, 1.0	Data Lane - Lane0 Data Lane - Lane0
Set Up	Lane1	Lane1	0.0, 1.0	Data Lane - Lane1 Data Lane - Lane1
Set Up	Lane2	Lane2	0.0, 1.0	Data Lane - Lane2 Data Lane - Lane2

Table 2 Configuration Variables and Values (continued)

GUI Location	Label	Variable	Values	Description
Set Up	Lane3	Lane3	0.0, 1.0	Data Lane - Lane3 Data Lane - Lane3
Set Up	OffInterpRatio	OffInterpRatio	Off, On (2pts), On (4pts), On (8pts), On (16pts)	Forced Interp Ratio on Offline Waveform Forced Interp Ratio on Offline Waveform
Set Up	PerformN7010ACalibration	PerformN7010ACalibration	0.0, 1.0	Enable or disable to perform N7010A Calibration. Enable or disable to perform N7010A Calibration.
Set Up	PreambleSeq32UI_DatnWfmFile	PreambleSeq32UI_DatnWfmFile	(Accepts user-defined text)	Saved Datn single-ended signal for Test 1.5.9 Preamble Sequence(TPREAMBLE)[32 UI] and Test 1.5.9 Preamble Sequence(TEXTSYNC). This option is applicable only for Offline Mode. Saved Datn single-ended signal for Test 1.5.9 Preamble Sequence(TPREAMBLE)[32 UI] and Test 1.5.9 Preamble Sequence(TEXTSYNC). This option is applicable only for Offline Mode.
Set Up	PreambleSeq32UI_DatpWfmFile	PreambleSeq32UI_DatpWfmFile	(Accepts user-defined text)	Saved Datp single-ended signal for Test 1.5.9 Preamble Sequence(TPREAMBLE)[32 UI] and Test 1.5.9 Preamble Sequence(TEXTSYNC). This option is applicable only for Offline Mode. Saved Datp single-ended signal for Test 1.5.9 Preamble Sequence(TPREAMBLE)[32 UI] and Test 1.5.9 Preamble Sequence(TEXTSYNC). This option is applicable only for Offline Mode.

Table 2 Configuration Variables and Values (continued)

GUI Location	Label	Variable	Values	Description
Set Up	PreambleSeq512UI_DatnWfmFile	PreambleSeq512UI_DatnWfmFile	(Accepts user-defined text)	Saved Datn single-ended signal for Test 1.5.9 Preamble Sequence(TPREAMBLE)[512 UI]. This option is applicable only for Offline Mode. Saved Datn single-ended signal for Test 1.5.9 Preamble Sequence(TPREAMBLE)[512 UI]. This option is applicable only for Offline Mode.
Set Up	PreambleSeq512UI_DatpWfmFile	PreambleSeq512UI_DatpWfmFile	(Accepts user-defined text)	Saved Datp single-ended signal for Test 1.5.9 Preamble Sequence(TPREAMBLE)[512 UI]. This option is applicable only for Offline Mode. Saved Datp single-ended signal for Test 1.5.9 Preamble Sequence(TPREAMBLE)[512 UI]. This option is applicable only for Offline Mode.
Set Up	PreambleSeq64UI_DatnWfmFile	PreambleSeq64UI_DatnWfmFile	(Accepts user-defined text)	Saved Datn single-ended signal for Test 1.5.9 Preamble Sequence(TPREAMBLE)[64 UI]. This option is applicable only for Offline Mode. Saved Datn single-ended signal for Test 1.5.9 Preamble Sequence(TPREAMBLE)[64 UI]. This option is applicable only for Offline Mode.
Set Up	PreambleSeq64UI_DatpWfmFile	PreambleSeq64UI_DatpWfmFile	(Accepts user-defined text)	Saved Datp single-ended signal for Test 1.5.9 Preamble Sequence(TPREAMBLE)[64 UI]. This option is applicable only for Offline Mode. Saved Datp single-ended signal for Test 1.5.9 Preamble Sequence(TPREAMBLE)[64 UI]. This option is applicable only for Offline Mode.

Table 2 Configuration Variables and Values (continued)

GUI Location	Label	Variable	Values	Description
Set Up	ProbingMethod	ProbingMethod	Active Probe (Differential Probe), Direct Connect (Active Termination Adapter), Direct Connect	Select the probing method. Select the probing method.
Set Up	SSCHSClk_ClknWfmFile	SSCHSClk_ClknWfmFile	(Accepts user-defined text)	Saved Clkn single-ended signal for all tests in Spread Spectrum Clocking-HS Clock TX test group. This option is applicable only for Offline Mode. Saved Clkn single-ended signal for all tests in Spread Spectrum Clocking-HS Clock TX test group. This option is applicable only for Offline Mode.
Set Up	SSCHSClk_ClkpWfmFile	SSCHSClk_ClkpWfmFile	(Accepts user-defined text)	Saved Clkp single-ended signal for all tests in Spread Spectrum Clocking-HS Clock TX test group. This option is applicable only for Offline Mode. Saved Clkp single-ended signal for all tests in Spread Spectrum Clocking-HS Clock TX test group. This option is applicable only for Offline Mode.
Set Up	SSCHSClk_DiffClkWfmFile	SSCHSClk_DiffClkWfmFile	(Accepts user-defined text)	Saved Clock Differential signal for all tests in Spread Spectrum Clocking-HS Clock TX test group. This option is applicable only for Offline Mode. Saved Clock Differential signal for all tests in Spread Spectrum Clocking-HS Clock TX test group. This option is applicable only for Offline Mode.
Set Up	SSCHSData_DatnWfmFile	SSCHSData_DatnWfmFile	(Accepts user-defined text)	Saved Datn single-ended signal for all tests in Spread Spectrum Clocking-HS Data TX test group. This option is applicable only for Offline Mode. Saved Datn single-ended signal for all tests in Spread Spectrum Clocking-HS Data TX test group. This option is applicable only for Offline Mode.

Table 2 Configuration Variables and Values (continued)

GUI Location	Label	Variable	Values	Description
Set Up	SSCHSData_DatpWfmFile	SSCHSData_DatpWfmFile	(Accepts user-defined text)	Saved Datp single-ended signal for all tests in Spread Spectrum Clocking-HS Data TX test group. This option is applicable only for Offline Mode. Saved Datp single-ended signal for all tests in Spread Spectrum Clocking-HS Data TX test group. This option is applicable only for Offline Mode.
Set Up	ShowInfoTest	ShowInfoTest	0.0, 1.0	Show Informative Test. Check this to enable or disable informative test group. Show Informative Test. Check this to enable or disable informative test group.
Set Up	SkewCalInitial_DatnWfmFile	SkewCalInitial_DatnWfmFile	(Accepts user-defined text)	Saved Datn single-ended signal for Test 1.5.5 Initial HS Skew Calibration Burst(TSKEWCAL-SYNC) and Test 1.5.5 Initial HS Skew Calibration Burst(TSKEWCAL). This option is applicable only for Offline Mode. Saved Datn single-ended signal for Test 1.5.5 Initial HS Skew Calibration Burst(TSKEWCAL-SYNC) and Test 1.5.5 Initial HS Skew Calibration Burst(TSKEWCAL). This option is applicable only for Offline Mode.
Set Up	SkewCalInitial_DatpWfmFile	SkewCalInitial_DatpWfmFile	(Accepts user-defined text)	Saved Datp single-ended signal for Test 1.5.5 Initial HS Skew Calibration Burst(TSKEWCAL-SYNC) and Test 1.5.5 Initial HS Skew Calibration Burst(TSKEWCAL). This option is applicable only for Offline Mode. Saved Datp single-ended signal for Test 1.5.5 Initial HS Skew Calibration Burst(TSKEWCAL-SYNC) and Test 1.5.5 Initial HS Skew Calibration Burst(TSKEWCAL). This option is applicable only for Offline Mode.

Table 2 Configuration Variables and Values (continued)

GUI Location	Label	Variable	Values	Description
Set Up	SkewCalPeriodic_DatnWfmFile	SkewCalPeriodic_DatnWfmFile	(Accepts user-defined text)	Saved Datn single-ended signal for Test 1.5.6 Periodic HS Skew Calibration Burst(TSKEWCAL-SYNC) and Test 1.5.6 Periodic HS Skew Calibration Burst(TSKEWCAL). This option is applicable only for Offline Mode. Saved Datn single-ended signal for Test 1.5.6 Periodic HS Skew Calibration Burst(TSKEWCAL-SYNC) and Test 1.5.6 Periodic HS Skew Calibration Burst(TSKEWCAL). This option is applicable only for Offline Mode.
Set Up	SkewCalPeriodic_DatpWfmFile	SkewCalPeriodic_DatpWfmFile	(Accepts user-defined text)	Saved Datp single-ended signal for Test 1.5.6 Periodic HS Skew Calibration Burst(TSKEWCAL-SYNC) and Test 1.5.6 Periodic HS Skew Calibration Burst(TSKEWCAL). This option is applicable only for Offline Mode. Saved Datp single-ended signal for Test 1.5.6 Periodic HS Skew Calibration Burst(TSKEWCAL-SYNC) and Test 1.5.6 Periodic HS Skew Calibration Burst(TSKEWCAL). This option is applicable only for Offline Mode.
Set Up	SwitchMatrixProbeMethod	SwitchMatrixProbeMethod	Active Probe (Differential Probe), Direct Connect (Active Termination Adapter), Direct Connect	Select the probing method. This option is used when the Switch Matrix option is enabled. Select the probing method. This option is used when the Switch Matrix option is enabled.

Table 2 Configuration Variables and Values (continued)

GUI Location	Label	Variable	Values	Description
Set Up	TSkewAndEyeHeightWidth_ClknWfmFile	TSkewAndEyeHeightWidth_ClknWfmFile	(Accepts user-defined text)	Saved Clkn single-ended signal for Test 1.5.4 Data-to-Clock Skew(TSKEW(TX), Test HS Data Eye Height(Informative) and Test HS Data Eye Width(Informative) tests. This option is applicable only for Offline Mode. Saved Clkn single-ended signal for Test 1.5.4 Data-to-Clock Skew(TSKEW(TX), Test HS Data Eye Height(Informative) and Test HS Data Eye Width(Informative) tests. This option is applicable only for Offline Mode.
Set Up	TSkewAndEyeHeightWidth_ClkpWfmFile	TSkewAndEyeHeightWidth_ClkpWfmFile	(Accepts user-defined text)	Saved Clkp single-ended signal for Test 1.5.4 Data-to-Clock Skew(TSKEW(TX), Test HS Data Eye Height(Informative) and Test HS Data Eye Width(Informative) tests. This option is applicable only for Offline Mode. Saved Clkp single-ended signal for Test 1.5.4 Data-to-Clock Skew(TSKEW(TX), Test HS Data Eye Height(Informative) and Test HS Data Eye Width(Informative) tests. This option is applicable only for Offline Mode.
Set Up	TSkewAndEyeHeightWidth_DatnWfmFile	TSkewAndEyeHeightWidth_DatnWfmFile	(Accepts user-defined text)	Saved Datn single-ended signal for Test 1.5.4 Data-to-Clock Skew(TSKEW(TX), Test HS Data Eye Height(Informative) and Test HS Data Eye Width(Informative) tests. This option is applicable only for Offline Mode. Saved Datn single-ended signal for Test 1.5.4 Data-to-Clock Skew(TSKEW(TX), Test HS Data Eye Height(Informative) and Test HS Data Eye Width(Informative) tests. This option is applicable only for Offline Mode.

Table 2 Configuration Variables and Values (continued)

GUI Location	Label	Variable	Values	Description
Set Up	TSkewAndEyeHeightWidth_DatpWfmFile	TSkewAndEyeHeightWidth_DatpWfmFile	(Accepts user-defined text)	Saved Datp single-ended signal for Test 1.5.4 Data-to-Clock Skew(TSKEW(TX), Test HS Data Eye Height(Informative) and Test HS Data Eye Width(Informative) tests. This option is applicable only for Offline Mode. Saved Datp single-ended signal for Test 1.5.4 Data-to-Clock Skew(TSKEW(TX), Test HS Data Eye Height(Informative) and Test HS Data Eye Width(Informative) tests. This option is applicable only for Offline Mode.
Set Up	TSkewAndEyeHeightWidth_DiffClkWfmFile	TSkewAndEyeHeightWidth_DiffClkWfmFile	(Accepts user-defined text)	Saved Clock Differential signal for Test 1.5.4 Data-to-Clock Skew(TSKEW(TX), Test HS Data Eye Height(Informative) and Test HS Data Eye Width(Informative) tests. This option is applicable only for Offline Mode. Saved Clock Differential signal for Test 1.5.4 Data-to-Clock Skew(TSKEW(TX), Test HS Data Eye Height(Informative) and Test HS Data Eye Width(Informative) tests. This option is applicable only for Offline Mode.
Set Up	UseWfmFile	UseWfmFile	0.0, 1.0	Enable Offline Mode Enable Offline Mode
Set Up	pcbClockContinuousMode	pcbClockContinuousMode	0.0, 1.0	For continuos clock. Check this if clock lane has no LP. For continuos clock. Check this if clock lane has no LP.
Set Up	pcbDataContinuousMode	pcbDataContinuousMode	0.0, 1.0	For continuos data. Check this if data lane has no LP. For continuos data. Check this if data lane has no LP.

3 Test Names and IDs

The following table shows the mapping between each test's numeric ID and name. The numeric ID is required by various remote interface methods.

- Name — The name of the test as it appears on the user interface **Select Tests** tab.
- Test ID — The number to use with the RunTests method.
- Description — The description of the test as it appears on the user interface **Select Tests** tab.

For example, if the graphical user interface displays this tree in the **Select Tests** tab:

- All Tests
  - Rise Time
  - Fall Time

then you would expect to see something like this in the table below:

Table 3 Example Test Names and IDs

Name	Test ID	Description
Fall Time	110	Measures clock fall time.
Rise Time	100	Measures clock rise time.

and you would run these tests remotely using:

```
ARSL syntax
-----------
arsl -a ipaddress -c "SelectedTests '100,110'"
arsl -a ipaddress -c "Run"

C# syntax
---------
remoteAte.SelectedTests = new int[]{100,110};
remoteAte.Run();
```

Here are the actual Test names and IDs used by this application. Listed at the end, you may also find:

- Deprecated IDs and their replacements.
- Macro IDs which may be used to select multiple related tests at the same time.

NOTE The file, "TestInfo.txt", which may be found in the same directory as this help file, contains all of the information found in the table below in a format suitable for parsing.

Table 4 Test IDs and Names

Name	TestID	Description
1.1.1 LP TX Thevenin Output High Voltage Level (VOH) (Informative)	821	This test is to verify that the Thevenin Output High Voltage of data lane is between the minimum conformance limit(LPThevenin_VOH_Limit_min) and the maximum conformance limit of 1.3V.\nFor CTS v1.0 and CTS v1.1, the minimum conformance limit(LPThevenin_VOH_Limit_min) is 1.1V.\nFor CTS v1.2, the minimum conformance limit(LPThevenin_VOH_Limit_min) is 1.1V for Datarate ≤ 1.5Gbps, 0.95V for Datarate > 1.5Gbps.\nThis test is an informative test.
1.1.1 LP TX Thevenin Output High Voltage Level (VOH) ESCAPEMODE	8211	This test is to verify that the Thevenin Output High Voltage of data lane using escape mode is between the minimum conformance limit(LPThevenin_VOH_Limit_min) and the maximum conformance limit of 1.3V.\nFor CTS v1.0 and CTS v1.1, the minimum conformance limit(LPThevenin_VOH_Limit_min) is 1.1V.\nFor CTS v1.2, the minimum conformance limit(LPThevenin_VOH_Limit_min) is 1.1V for Datarate ≤ 1.5Gbps, 0.95V for Datarate > 1.5Gbps.
1.1.2 LP TX Thevenin Output Low Voltage Level (VOL) (Informative)	822	This test is to verify that the Thevenin Output Low Voltage of data lane is within the conformance limits.\nThis test is an informative test.
1.1.2 LP TX Thevenin Output Low Voltage Level (VOL) ESCAPEMODE	8221	This test is to verify that the Thevenin Output Low Voltage of data lane using escape mode is within the conformance limits.
1.1.3 LP TX 15%-85% Rise Time (TRLP)	824	15%-85% rise time of LP signal.
1.1.3 LP TX 15%-85% Rise Time (TRLP) ESCAPEMODE	8241	15%-85% rise time of LP signal. (Escape Mode)
1.1.4 LP TX 15%-85% Fall Time (TFLP) (Informative)	825	15%-85% fall time of LP signal.\nThis test is an informative test.
1.1.4 LP TX 15%-85% Fall Time (TFLP) ESCAPEMODE	8251	15%-85% fall time of LP signal in Escape Mode.
1.1.5 LP TX Slew Rate Vs. CLoad (Margin)	8292	Slew rate at different capacitance load condition.\nNote: Please set the value of Cload in the configuration tab before running the test.
1.1.5 LP TX Slew Rate Vs. CLoad (Max)	829	Slew rate at different capacitance load condition.\nNote: Please set the value of Cload in the configuration tab before running the test.

Table 4 Test IDs and Names (continued)

Name	TestID	Description
1.1.5 LP TX Slew Rate Vs. CLoad (Min)	8291	Slew rate at different capacitance load condition.\nNote: Please set the value of Cload in the configuration tab before running the test.
1.1.6 LP Clock TX Pulse Width of LP TX Exclusive-OR Clock (TLP-PULSE-TX)	1827	Pulse width measurement for all pulses of the LP exclusive-OR clock excluding the first pulse and last pulse for clock lane.
1.1.6 LP Clock TX Pulse Width of LP TX Exclusive-OR Clock (TLP-PULSE-TX) [Initial]	18271	Pulse width measurement for first pulse of the LP exclusive-OR clock for clock lane.
1.1.6 LP Clock TX Pulse Width of LP TX Exclusive-OR Clock (TLP-PULSE-TX) [Last]	18272	Pulse width measurement for last pulse of the LP exclusive-OR clock for clock lane.
1.1.6 LP TX Pulse Width of LP TX Exclusive-OR Clock (TLP-PULSE-TX)	827	Pulse width measurement for all pulses of the LP exclusive-OR clock excluding the first pulse and last pulse.
1.1.6 LP TX Pulse Width of LP TX Exclusive-OR Clock (TLP-PULSE-TX) [Initial]	8271	Pulse width measurement for first pulse of the LP exclusive-OR clock.
1.1.6 LP TX Pulse Width of LP TX Exclusive-OR Clock (TLP-PULSE-TX) [Last]	8272	Pulse width measurement for last pulse of the LP exclusive-OR clock.
1.1.7 LP Clock TX Period of LP TX Exclusive-OR Clock (TLP-PER-TX)	1828	Period of the LP exclusive-OR clock for clock lane.
1.1.7 LP TX Period of LP TX Exclusive-OR Clock (TLP-PER-TX)	828	Period of the LP exclusive-OR clock.
1.2.1 LP Clock TX Thevenin Output High Voltage Level (VOH) (Informative)	1821	This test is to verify that the Thevenin Output High Voltage of clock lane is between the minimum conformance limit(LPThevenin_VOH_Limit_min) and the maximum conformance limit of 1.3V.\nFor CTS v1.0 and CTS v1.1, the minimum conformance limit(LPThevenin_VOH_Limit_min) is 1.1V.\nFor CTS v1.2, the minimum conformance limit(LPThevenin_VOH_Limit_min) is 1.1V for Datarate ≤ 1.5Gbps, 0.95V for Datarate > 1.5Gbps.\nThis test is an informative test.
1.2.1 LP Clock TX Thevenin Output High Voltage Level (VOH) ESCAPEMODE	18211	This test is to verify that the Thevenin Output High Voltage of clock lane using escape mode is between the minimum conformance limit(LPThevenin_VOH_Limit_min) and the maximum conformance limit of 1.3V.\nFor CTS v1.0 and CTS v1.1, the minimum conformance limit(LPThevenin_VOH_Limit_min) is 1.1V.\nFor CTS v1.2, the minimum conformance limit(LPThevenin_VOH_Limit_min) is 1.1V for Datarate ≤ 1.5Gbps, 0.95V for Datarate > 1.5Gbps.

Table 4 Test IDs and Names (continued)

Name	TestID	Description
1.2.1 ULPS Clock TX Thevenin Output High Voltage Level (VOH) ULPSMODE	28211	This test is to verify that the Thevenin Output High Voltage of clock lane using ULPS mode is between the minimum conformance limit(LPThevenin_VOH_Limit_min) and the maximum conformance limit of 1.3V.\nFor CTS v1.0 and CTS v1.1, the minimum conformance limit(LPThevenin_VOH_Limit_min) is 1.1V.\nFor CTS v1.2, the minimum conformance limit(LPThevenin_VOH_Limit_min) is 1.1V for Datarate ≤ 1.5Gbps, 0.95V for Datarate > 1.5Gbps.
1.2.2 LP Clock TX Thevenin Output Low Voltage Level (VOL) (Informative)	1822	This test is to verify that the Thevenin Output Low Voltage of clock lane is within the conformance limits.\nThis test is an informative test.
1.2.2 LP Clock TX Thevenin Output Low Voltage Level (VOL) ESCAPEMODE	18221	This test is to verify that the Thevenin Output Low Voltage of clock lane using escape mode is within the conformance limits.
1.2.2 ULPS Clock TX Thevenin Output Low Voltage Level (VOL) ULPSMODE	28221	This test is to verify that the Thevenin Output Low Voltage of clock lane using ULPS mode is within the conformance limits.
1.2.3 LP Clock TX 15%-85% Rise Time (TRLP)	1824	15%-85% rise time of LP signal on clock lane.
1.2.3 LP Clock TX 15%-85% Rise Time (TRLP) ESCAPEMODE	18241	15%-85% rise time of LP signal on clock lane using Escape Mode.
1.2.3 ULPS Clock TX 15%-85% Rise Time (TRLP) ULPSMODE	28241	15%-85% rise time of LP signal on clock lane using Escape Mode.
1.2.4 LP Clock TX 15%-85% Fall Time (TFLP) (Informative)	1825	15%-85% fall time of LP signal for clock lane.\nThis test is an informative test.
1.2.4 LP Clock TX 15%-85% Fall Time (TFLP) ESCAPEMODE	18251	15%-85% fall time of LP signal for clock lane using Escape Mode.
1.2.4 ULPS Clock TX 15%-85% Fall Time (TFLP) ULPSMODE	28251	15%-85% fall time of LP signal for clock lane using Escape Mode.
1.2.5 LP CLK Slew Rate Vs. CLoad (Margin)	18292	Slew rate at different capacitance load condition.\nNote: Please set the value of Cload in the configuration tab before running the test.
1.2.5 LP CLK Slew Rate Vs. CLoad (Min)	18291	Slew rate at different capacitance load condition.\nNote: Please set the value of Cload in the configuration tab before running the test.
1.2.5 LP Clock TX Slew Rate Vs. CLoad (Max)	1829	Slew rate at different capacitance load condition.\nNote: Please set the value of Cload in the configuration tab before running the test.
1.2.5 ULPS CLK Slew Rate Vs. CLoad (Margin) ULPSMODE	28292	Slew rate at different capacitance load condition.\nNote: Please set the value of Cload in the configuration tab before running the test.
1.2.5 ULPS CLK Slew Rate Vs. CLoad (Min) ULPSMODE	28291	Slew rate at different capacitance load condition.\nNote: Please set the value of Cload in the configuration tab before running the test.
1.2.5 ULPS Clock TX Slew Rate Vs. CLoad (Max) ULPSMODE	2829	Slew rate at different capacitance load condition.\nNote: Please set the value of Cload in the configuration tab before running the test.
1.3.1 HS Entry: DATA TLPX	511	Length of any Low-Power state period.

Table 4 Test IDs and Names (continued)

Name	TestID	Description
1.3.10 HS Data TX Common-Level Variations Above 450MHz (VCMTX(HF))	818	Common-level variations above 450MHz.
1.3.11 HS Data TX 20%-80% Rise Time (tR)	8110	This test is to verify that the 20%-80% rise time of the HS Differential signal is greater than the minimum conformance limit(DataRiseTime_LimitMin) and less than the maximum conformance limit(DataRiseTime_LimitMax).\nFor CTS v1.0, the minimum conformance limit(DataRiseTime_LimitMin) is 150ps and the maximum conformance limit(DataRiseTime_LimitMax) is 0.3UI.\nFor CTS v1.1, the minimum conformance limit(DataRiseTime_LimitMin) is 150ps for Datarate ≤ 1Gbps, 100ps for Datarate > 1Gbps. The maximum conformance limit(DataRiseTime_LimitMax) is 0.3*UI for Datarate ≤ 1Gbps, 0.35*UI for Datarate > 1Gbps.\nThe VOD(0) and VOD(1) measured from Data Lane in Test 1.3.4 will be used to calculate 20/80% reference voltage for rise time measurement in this test.
1.3.11 HS Data TX 20%-80% Rise Time (tR)[Burst Data]	81101	This test is to verify that the 20%-80% rise time of the HS Differential signal is less than the maximum conformance limit(DataRiseTime_LimitMax).\nFor CTS v1.2, the maximum conformance limit(DataRiseTime_LimitMax) is 0.3*UI for Datarate ≤ 1Gbps, 0.35*UI for Datarate > 1Gbps and ≤ 1.5Gbps , 0.4*UI for Datarate > 1.5Gbps.\nThis test will measure the rise time based on the reference data patterns(000111) of differential signal.\nThis test is applicable for Burst Data signal only.\nThe VHS_ZERO level measured from Data Lane will be used to calculate 20/80% reference voltage for rise time measurement in this test.
1.3.11 HS Data TX 20%-80% Rise Time (tR)[Burst Data](Min Conformance Limit)(Informative)	81104	This test is an informative test.\nThis test is to verify that the 20%-80% rise time of the HS Differential signal is greater than the minimum conformance limit(DataRiseTime_LimitMin).\nFor CTS v1.2, the minimum conformance limit(DataRiseTime_LimitMin) is for informative purpose only: DataRiseTime_LimitMin is 150ps for Datarate ≤ 1Gbps, 100ps for Datarate > 1Gbps and ≤ 1.5Gbps , 50ps for Datarate > 1.5Gbps.\nThis test will measure the rise time based on the reference data patterns(000111) of differential signal.\nThis test is applicable for Burst Data signal only.\nThe VHS_ZERO level measured from Data Lane will be used to calculate 20/80% reference voltage for rise time measurement in this test.

Table 4 Test IDs and Names (continued)

Name	TestID	Description
1.3.11 HS Data TX 20%-80% Rise Time (tR)[Continuous Data]	81102	This test is to verify that the 20%-80% rise time of the HS Differential signal is less than the maximum conformance limit(DataRiseTime_LimitMax).\nFor CTS v1.2, the maximum conformance limit(DataRiseTime_LimitMax) is 0.3*UI for Datarate ≤ 1Gbps, 0.35*UI for Datarate > 1Gbps and ≤ 1.5Gbps , 0.4*UI for Datarate > 1.5Gbps.\nThis test will measure the rise time based on the reference data patterns(000111) of differential signal.\nThis test is applicable for Continuous Data signal only.\nThe VOD(0) and VOD(1) measured from Data Lane in Test 1.3.4 will be used to calculate 20/80% reference voltage for rise time measurement in this test.
1.3.11 HS Data TX 20%-80% Rise Time (tR)[Continuous Data](Min Conformance Limit)(Informative)	81105	This test is an informative test.\nThis test is to verify that the 20%-80% rise time of the HS Differential signal is greater than the minimum conformance limit(DataRiseTime_LimitMin).\nFor CTS v1.2, the minimum conformance limit(DataRiseTime_LimitMin) is for informative purpose only: DataRiseTime_LimitMin is 150ps for Datarate ≤ 1Gbps, 100ps for Datarate > 1Gbps and ≤ 1.5Gbps , 50ps for Datarate > 1.5Gbps.\nThis test will measure the rise time based on the reference data patterns(000111) of differential signal.\nThis test is applicable for Continuous Data signal only.\nThe VOD(0) and VOD(1) measured from Data Lane in Test 1.3.4 will be used to calculate 20/80% reference voltage for rise time measurement in this test.
1.3.12 HS Data TX 80%-20% Fall Time (tF)	8111	This test is to verify that the 80%-20% fall time of the HS Differential signal is greater than the minimum conformance limit(DataFallTime_LimitMin) and less than the maximum conformance limit(DataFallTime_LimitMax).\nFor CTS v1.0, the minimum conformance limit(DataFallTime_LimitMin) is 150ps and the maximum conformance limit(DataFallTime_LimitMax) is 0.3UI.\nFor CTS v1.1, the minimum conformance limit(DataFallTime_LimitMin) is 150ps for Datarate ≤ 1Gbps, 100ps for Datarate > 1Gbps. The maximum conformance limit(DataFallTime_LimitMax) is 0.3*UI for Datarate ≤ 1Gbps, 0.35*UI for Datarate > 1Gbps.\nThe VOD(0) and VOD(1) measured from Data Lane in Test 1.3.4 will be used to calculate 20/80% reference voltage for fall time measurement in this test.
1.3.12 HS Data TX 80%-20% Fall Time (tF)[Burst Data]	81111	This test is to verify that the 80%-20% fall time of the HS differential signal is less than the maximum conformance limit(DataFallTime_LimitMax).\nFor CTS v1.2, the maximum conformance limit(DataFallTime_LimitMax) is 0.3*UI for Datarate ≤ 1Gbps, 0.35*UI for Datarate > 1Gbps and ≤ 1.5Gbps , 0.4*UI for Datarate > 1.5Gbps.\nThis test will measure the fall time based on the reference data patterns(111000) of differential signal.\nThis test is applicable for Burst Data signal only.\nThe VHS_ZERO level measured from Data Lane will be used to calculate 20/80% reference voltage for fall time measurement in this test.

Table 4 Test IDs and Names (continued)

Name	TestID	Description
1.3.12 HS Data TX 80%-20% Fall Time (tF)[Burst Data](Min Conformance Limit)(Informative)	81114	This test is an informative test.\nThis test is to verify that the 80%-20% fall time of the HS Differential signal is greater than the minimum conformance limit(DataFallTime_LimitMin).\nFor CTS v1.2, the minimum conformance limit(DataFallTime_LimitMin) is for informative purpose only: DataFallTime_LimitMin is 150ps for Datarate ≤ 1Gbps, 100ps for Datarate > 1Gbps and ≤ 1.5Gbps , 50ps for Datarate > 1.5Gbps.\nThis test will measure the fall time based on the reference data patterns(111000) of differential signal.\nThis test is applicable for Burst Data signal only.\nThe VHS_ZERO level measured from Data Lane will be used to calculate 20/80% reference voltage for fall time measurement in this test.
1.3.12 HS Data TX 80%-20% Fall Time (tF)[Continuous Data]	81112	This test is to verify that 80%-20% fall time of the HS differential signal is less than the maximum conformance limit(DataFallTime_LimitMax).\nFor CTS v1.2, the maximum conformance limit(DataFallTime_LimitMax) is 0.3*UI for Datarate ≤ 1Gbps, 0.35*UI for Datarate > 1Gbps and ≤ 1.5Gbps , 0.4*UI for Datarate > 1.5Gbps.\nThis test will measure the fall time based on the reference data patterns(111000) of differential signal.\nThis test is applicable for Continuous Data signal only.\nThe VOD(0) and VOD(1) measured from Data Lane in Test 1.3.4 will be used to calculate 20/80% reference voltage for fall time measurement in this test.
1.3.12 HS Data TX 80%-20% Fall Time (tF)[Continuous Data](Min Conformance Limit)(Informative)	81115	This test is an informative test.\nThis test is to verify that the 80%-20% fall time of the HS Differential signal is greater than the minimum conformance limit(DataFallTime_LimitMin).\nFor CTS v1.2, the minimum conformance limit(DataFallTime_LimitMin) is for informative purpose only: DataFallTime_LimitMin is 150ps for Datarate ≤ 1Gbps, 100ps for Datarate > 1Gbps and ≤ 1.5Gbps , 50ps for Datarate > 1.5Gbps.\nThis test will measure the fall time based on the reference data patterns(111000) of differential signal.\nThis test is applicable for Continuous Data signal only.\nThe VOD(0) and VOD(1) measured from Data Lane in Test 1.3.4 will be used to calculate 20/80% reference voltage for fall time measurement in this test.
1.3.13 HS Exit: DATA TX THS-TRAIL	546	Time to drive flipped differential state after last payload data bit of a HS transmission burst.\nTXTHSTrail_LimitMin is based on 60ns+n*4*UI.\nThe THS-SKIP parameter is useful to avoid glitch problem during THS-TRAIL measurement.\nAny transition on the Data Lane in THS-SKIP time interval will be ignored when finding last payload data bit of HS transmission burst.\nThe default value of THS-SKIP is set to 0s to prevent invalid THS-TRAIL measurement.
1.3.14 HS Exit: DATA TX TREOT	549	30%-85% rise time and fall time
1.3.15 HS Exit: DATA TX TEOT	547	Time from start of THS-TRAIL period to start of LP-11 state.\ nTXTEOT_LimitMax is based on 105ns+n*12*UI.
1.3.16 HS Exit: DATA TX THS-EXIT	548	Time to drive LP-11 after HS burst.

Table 4 Test IDs and Names (continued)

Name	TestID	Description
1.3.2 HS Entry: DATA TX THS-PREPARE	557	Time to drive LP-00 to prepare for HS Transmission.\ nTHSPrepare_LimitMin is based on 40ns+4*UI.\ nTHSPrepare_LimitMax is based on 85ns+6*UI.
1.3.3 HS Entry: DATA TX THS-PREPARE+THS-ZERO	558	THS-PREPARE+Time to drive HS-0 before Sync sequence.\ nTXTHSPrepareTHSZero_LimitMin is based on 145ns+10*UI.
1.3.4 HS Data TX Differential Voltage(VOD0 Pulse)	8131	HS transmit differential voltage.\nThis test will measure the VOD0 based on the reference data patterns(100000) of differential signal.
1.3.4 HS Data TX Differential Voltage(VOD1 Pulse)	8132	HS transmit differential voltage.\nThis test will measure the VOD1 based on the reference data patterns(011111) of differential signal.
1.3.5 HS Data TX Differential Voltage Mismatch (Pulse)	8141	VOD mismatch when output is Differential-1 or Differential-0.
1.3.6 HS Data TX Single Ended Output High Voltage(VOHHS Pulse)	8151	HS Single Ended output high voltage.\nThis test will measure the VOHHS based on the reference pulses(100000) of single-ended Dp and Dn signals.
1.3.6 HS Data TX Single Ended Output High Voltage(VOHHS(DN) Pulse)	8153	HS Single Ended output high voltage.\nThis test will measure the VOHHS based on the reference pulses(100000) of single-ended Dn signals.
1.3.6 HS Data TX Single Ended Output High Voltage(VOHHS(DP) Pulse)	8152	HS Single Ended output high voltage.\nThis test will measure the VOHHS based on the reference pulses(100000) of single-ended Dp signals.
1.3.7 HS Data TX Static Common Mode Voltage(Vcmtx)	811	HS transmit static common-mode voltage.
1.3.8 HS Data TX Vcmtx Mismatch	812	VCMTX mismatch when output is Differential-1 or Differential-0.
1.3.9 HS Data TX Common-Level Variations Between 50-450MHz (VCMTX(LF))	819	Common-level variation between 50-450MHz.
1.3.I HS Data TX De-emphasis Level [Continuous Data]	200300	This is an informative test.
1.4.1 HS Entry: CLK TX TLPX	5510	Length of any Low-Power state period.
1.4.10 HS Clock TX Common-Level Variations Above 450MHz (VCMTX(HF))	1818	Common-level variations above 450MHz.

Table 4 Test IDs and Names (continued)

Name	TestID	Description
1.4.11 HS Clock TX 20%-80% Rise Time (tR)	18110	This test is to verify that the 20%-80% rise time of the HS Differential signal is greater than the minimum conformance limit(CLKRiseTime_LimitMin) and less than the maximum conformance limit(CLKRiseTime_LimitMax).\nFor CTS v1.0, the minimum conformance limit(CLKRiseTime_LimitMin) is 150ps and the maximum conformance limit(CLKRiseTime_LimitMax) is 0.3UI.\nFor CTS v1.1, the minimum conformance limit(CLKRiseTime_LimitMin) is 150ps for Datarate ≤ 1Gbps, 100ps for Datarate > 1Gbps. The maximum conformance limit(CLKRiseTime_LimitMax) is 0.3*UI for Datarate ≤ 1Gbps, 0.35*UI for Datarate > 1Gbps.\nThe VOD(0) and VOD(1) measured from Clock Lane in Test 1.4.4 will be used to calculate 20/80% reference voltage for rise time measurement in this test.
1.4.11 HS Clock TX 20%-80% Rise Time (tR)[Burst Clock]	181101	This test is to verify that the 20%-80% rise time of the HS differential signal is less than the maximum conformance limit(CLKRiseTime_LimitMax).\nFor CTS v1.2, the maximum conformance limit(CLKRiseTime_LimitMax) is 0.3*UI for Datarate ≤ 1Gbps, 0.35*UI for Datarate > 1Gbps and ≤ 1.5Gbps , 0.4*UI for Datarate > 1.5Gbps.\nThis test is applicable for Burst Clock signal only.\nThe VHS_ZERO level measured from Clock Lane will be used to calculate 20/80% reference voltage for rise time measurement in this test.
1.4.11 HS Clock TX 20%-80% Rise Time (tR)[Burst Clock](Min Conformance Limit)(Informative)	181104	This test is an informative test.\nThis test is to verify that the 20%-80% rise time of the HS differential signal is greater than the minimum conformance limit(CLKRiseTime_LimitMin).\nFor CTS v1.2, the minimum conformance limit(CLKRiseTime_LimitMin) is for informative purpose only: CLKRiseTime_LimitMin is 150ps for Datarate ≤ 1Gbps, 100ps for Datarate > 1Gbps and ≤ 1.5Gbps , 50ps for Datarate > 1.5Gbps.\nThis test is applicable for Burst Clock signal only.\nThe VHS_ZERO level measured from Clock Lane will be used to calculate 20/80% reference voltage for rise time measurement in this test.
1.4.11 HS Clock TX 20%-80% Rise Time (tR)[Continuous Clock, Burst Data]	181102	This test is to verify that the 20%-80% rise time of the HS differential signal is less than the maximum conformance limit(CLKRiseTime_LimitMax).\nFor CTS v1.2, the maximum conformance limit(CLKRiseTime_LimitMax) is 0.3*UI for Datarate ≤ 1Gbps, 0.35*UI for Datarate > 1Gbps and ≤ 1.5Gbps , 0.4*UI for Datarate > 1.5Gbps.\nThis test is applicable for Continuous Clock and Burst Data signal only.\nThe VHS_ZERO level measured from Data Lane will be used to calculate 20/80% reference voltage for rise time measurement in this test.

Table 4 Test IDs and Names (continued)

Name	TestID	Description
1.4.11 HS Clock TX 20%-80% Rise Time (tR)[Continuous Clock, Burst Data](Min Conformance Limit)(Informative)	181105	This test is an informative test.\nThis test is to verify that the 20%-80% rise time of the HS differential signal is greater than the minimum conformance limit(CLKRiseTime_LimitMin).\nFor CTS v1.2, the minimum conformance limit(CLKRiseTime_LimitMin) is for informative purpose only: CLKRiseTime_LimitMin is 150ps for Datarate ≤ 1Gbps, 100ps for Datarate > 1Gbps and ≤ 1.5Gbps , 50ps for Datarate > 1.5Gbps.\nThis test is applicable for Continuous Clock and Burst Data signal only.\nThe VHS_ZERO level measured from Data Lane will be used to calculate 20/80% reference voltage for rise time measurement in this test.
1.4.11 HS Clock TX 20%-80% Rise Time (tR)[Continuous Clock, Continuous Data]	181103	This test is to verify that the 20%-80% rise time of the HS differential signal is less than the maximum conformance limit(CLKRiseTime_LimitMax).\nFor CTS v1.2, the maximum conformance limit(CLKRiseTime_LimitMax) is 0.3*UI for Datarate ≤ 1Gbps, 0.35*UI for Datarate > 1Gbps and ≤ 1.5Gbps , 0.4*UI for Datarate > 1.5Gbps.\nThis test is applicable for Continuous Clock and Continuous Data signal only.\nThe VOD(0) and VOD(1) measured from Clock Lane in Test 1.4.4 will be used to calculate 20/80% reference voltage for rise time measurement in this test.
1.4.11 HS Clock TX 20%-80% Rise Time (tR)[Continuous Clock, Continuous Data](Min Conformance Limit)(Informative)	181106	This test is an informative test.\nThis test is to verify that the 20%-80% rise time of the HS differential signal is greater than the minimum conformance limit(CLKRiseTime_LimitMin).\nFor CTS v1.2, the minimum conformance limit(CLKRiseTime_LimitMin) is for informative purpose only: CLKRiseTime_LimitMin is 150ps for Datarate ≤ 1Gbps, 100ps for Datarate > 1Gbps and ≤ 1.5Gbps , 50ps for Datarate > 1.5Gbps.\nThis test is applicable for Continuous Clock and Continuous Data signal only.\nThe VOD(0) and VOD(1) measured from Clock Lane in Test 1.4.4 will be used to calculate 20/80% reference voltage for rise time measurement in this test.
1.4.12 HS Clock TX 80%-20% Fall Time (tF)	18111	This test is to verify that the 80%-20% fall time of the HS Differential signal is greater than the minimum conformance limit(CLKFallTime_LimitMin) and less than the maximum conformance limit(CLKFallTime_LimitMax).\nFor CTS v1.0, the minimum conformance limit(CLKFallTime_LimitMin) is 150ps and the maximum conformance limit(CLKFallTime_LimitMax) is 0.3UI.\nFor CTS v1.1, the minimum conformance limit(CLKFallTime_LimitMin) is 150ps for Datarate ≤ 1Gbps, 100ps for Datarate > 1Gbps. The maximum conformance limit(CLKFallTime_LimitMax) is 0.3*UI for Datarate ≤ 1Gbps, 0.35*UI for Datarate > 1Gbps.\nThe VOD(0) and VOD(1) measured from Clock Lane in Test 1.4.4 will be used to calculate 20/80% reference voltage for fall time measurement in this test.

Table 4 Test IDs and Names (continued)

Name	TestID	Description
1.4.12 HS Clock TX 80%-20% Fall Time (tF)[Burst Clock]	181111	This test is to verify that the 80%-20% fall time of the HS differential signal is less than the maximum conformance limit(CLKFallTime_LimitMax).\nFor CTS v1.2, the maximum conformance limit(CLKFallTime_LimitMax) is 0.3*UI for Datarate ≤ 1Gbps, 0.35*UI for Datarate > 1Gbps and ≤ 1.5Gbps , 0.4*UI for Datarate > 1.5Gbps.\nThis test is applicable for Burst Clock signal only.\nThe VHS_ZERO level measured from Clock Lane will be used to calculate 20/80% reference voltage for fall time measurement in this test.
1.4.12 HS Clock TX 80%-20% Fall Time (tF)[Burst Clock](Min Conformance Limit)(Informative)	181114	This test is an informative test.\nThis test is to verify that the 80%-20% fall time of the HS differential signal is greater than the minimum conformance limit(CLKFallTime_LimitMin).\nFor CTS v1.2, the minimum conformance limit(CLKFallTime_LimitMin) is for informative purpose only: CLKFallTime_LimitMin is 150ps for Datarate ≤ 1Gbps, 100ps for Datarate > 1Gbps and ≤ 1.5Gbps , 50ps for Datarate > 1.5Gbps.\nThis test is applicable for Burst Clock signal only.\nThe VHS_ZERO level measured from Clock Lane will be used to calculate 20/80% reference voltage for fall time measurement in this test.
1.4.12 HS Clock TX 80%-20% Fall Time (tF)[Continuous Clock, Burst Data]	181112	This test is to verify that the 80%-20% fall time of the HS differential signal is less than the maximum conformance limit(CLKFallTime_LimitMax).\nFor CTS v1.2, the maximum conformance limit(CLKFallTime_LimitMax) is 0.3*UI for Datarate ≤ 1Gbps, 0.35*UI for Datarate > 1Gbps and ≤ 1.5Gbps , 0.4*UI for Datarate > 1.5Gbps.\nThis test is applicable for Continuous Clock and Burst Data signal only.\nThe VHS_ZERO level measured from Data Lane will be used to calculate 20/80% reference voltage for fall time measurement in this test.
1.4.12 HS Clock TX 80%-20% Fall Time (tF)[Continuous Clock, Burst Data](Min Conformance Limit)(Informative)	181115	This test is an informative test.\nThis test is to verify that the 80%-20% fall time of the HS differential signal is greater than the minimum conformance limit(CLKFallTime_LimitMin).\nFor CTS v1.2, the minimum conformance limit(CLKFallTime_LimitMin) is for informative purpose only: CLKFallTime_LimitMin is 150ps for Datarate ≤ 1Gbps, 100ps for Datarate > 1Gbps and ≤ 1.5Gbps , 50ps for Datarate > 1.5Gbps.\nThis test is applicable for Continuous Clock and Burst Data signal only.\nThe VHS_ZERO level measured from Data Lane will be used to calculate 20/80% reference voltage for fall time measurement in this test.

Table 4 Test IDs and Names (continued)

Name	TestID	Description
1.4.12 HS Clock TX 80%-20% Fall Time (tF)[Continuous Clock, Continuous Data]	181113	This test is to verify that the 80%-20% fall time of the HS differential signal is less than the maximum conformance limit(CLKFallTime_LimitMax).\nFor CTS v1.2, the maximum conformance limit(CLKFallTime_LimitMax) is 0.3*UI for Datarate ≤ 1Gbps, 0.35*UI for Datarate > 1Gbps and ≤ 1.5Gbps , 0.4*UI for Datarate > 1.5Gbps.\nThis test is applicable for Continuous Clock and Continuous Data signal only.\nThe VOD(0) and VOD(1) measured from Clock Lane in Test 1.4.4 will be used to calculate 20/80% reference voltage for fall time measurement in this test.
1.4.12 HS Clock TX 80%-20% Fall Time (tF)[Continuous Clock, Continuous Data](Min Conformance Limit)(Informative)	181116	This test is an informative test.\nThis test is to verify that the 80%-20% fall time of the HS differential signal is greater than the minimum conformance limit(CLKFallTime_LimitMin).\nFor CTS v1.2, the minimum conformance limit(CLKFallTime_LimitMin) is for informative purpose only: CLKFallTime_LimitMin is 150ps for Datarate ≤ 1Gbps, 100ps for Datarate > 1Gbps and ≤ 1.5Gbps , 50ps for Datarate > 1.5Gbps.\nThis test is applicable for Continuous Clock and Continuous Data signal only.\nThe VOD(0) and VOD(1) measured from Clock Lane in Test 1.4.4 will be used to calculate 20/80% reference voltage for fall time measurement in this test.
1.4.13 HS Exit: CLK TX TCLK-TRAIL	543	Time to drive HS differential state after last payload clock bit of HS transmission burst.
1.4.14 HS Exit: CLK TX TREOT	559	30%-85% rise time and fall time
1.4.15 HS Exit: CLK TX TEOT	544	Time from start of TCLK-TRAIL period to start of LP-11 state. CLKTEOT_LimitMax is based on 105ns+n*12*UI.
1.4.16 HS Exit: CLK TX THS-EXIT	556	Time to drive LP-11 after HS burst.
1.4.17 HS Clock Instantaneous (UIinst)(Max)	911	Maximum UI instantaneous of HS Clock.
1.4.17 HS Clock Instantaneous (UIinst)(Min)	914	Minimum UI instantaneous (Min) of HS Clock.
1.4.18 Clock Lane HS Clock Delta UI (UI variation)	1911	This test is to verify that the Clock lane HS Clock Delta UI is in between the minimum conformance limit(UIVariant_Limit_Min) and the maximum conformance limit(UIVariant_Limit_Max).\nFor CTS v1.1, UIVariant_Limit_Min is -10% and UIVariant_Limit_Max is 10% for Datarate ≤ 1Gbps, UIVariant_Limit_Min is -5% and UIVariant_Limit_Max is 5% for Datarate > 1Gbps.\nFor CTS v1.2, UIVariant_Limit_Min is -10% and UIVariant_Limit_Max is 10% for Datarate ≤ 1Gbps, UIVariant_Limit_Min is -5% and UIVariant_Limit_Max is 5% for Datarate > 1Gbps and ≤ 1.5Gbps .
1.4.18 Clock Lane HS Clock Delta UI (UI variation) [Continuous Clock]	1200300	This test is to verify that the Clock lane HS Clock Delta UI is in between the conformance limits.
1.4.19 HS Clock SSC Deviation (Max) [Continuous Clock]	1200201	SSC Deviation (Max) test

Table 4 Test IDs and Names (continued)

Name	TestID	Description
1.4.19 HS Clock SSC Deviation (Min) [Continuous Clock]	1200202	SSC Deviation (Min) test
1.4.19 HS Clock SSC Modulation Rate [Continuous Clock]	1200200	SSC Modulation Rate test
1.4.19 HS Clock SSC df/dt [Continuous Clock]	1200203	SSC df/dt test
1.4.2 HS Entry: CLK TX TCLK-PREPARE	552	Time to drive LP-00 to prepare for HS clock transmission.
1.4.20 Clock Lane HS Clock Period Jitter [SSC OFF][Continuous Clock]	1200310	This test is to verify that the period jitter is in within the conformance limits.
1.4.20 Clock Lane HS Clock Period Jitter [SSC ON][Continuous Clock]	1200311	This test is to verify that the period jitter is in within the conformance limits.
1.4.3 HS Entry: CLK TX TCLK-PREPARE+TCLK-ZERO	554	TCLK-PREPARE + Time for lead HS-0 drive period before starting Clock.
1.4.4 HS Clock TX Differential Voltage(VOD0 Pulse)	18131	HS clock transmitter differential voltage.
1.4.4 HS Clock TX Differential Voltage(VOD1 Pulse)	18132	HS clock transmitter differential voltage.
1.4.5 HS Clock TX Differential Voltage Mismatch (Pulse)	18141	VOD mismatch when output is Differential-1 or Differential-0.
1.4.6 HS Clock TX Single Ended Output High Voltage(VOHHS Pulse)	18151	HS Single Ended output high voltage.
1.4.7 HS Clock TX Static Common Mode Voltage(Vcmtx)	1811	HS transmit static common-mode voltage for Clock.
1.4.8 HS Clock TX Vcmtx Mismatch	1812	VCMTX mismatch when output is Differential-1 or Differential-0.
1.4.9 HS Clock TX Common-Level Variations Between 50-450MHz (VCMTX(LF))	1819	Common-level variation between 50-450MHz. This test is only available for CTS v1.0 and CTS v1.1.
1.4.9 HS Clock TX Common-Level Variations Between 50-450MHz (VCMTX(LF))	1820	Common-level variation between 50-450MHz. This test is only available for CTS v1.2 and CTS v2.0 and v2.1.
1.5.1 HS Entry: CLK TX TCLK-PRE	551	Time that the HS clock shall be driven prior to any associated Data Lane beginning the transition time from LP to HS mode. TCLKPRE_LimitMin is based on 8*UI.
1.5.10 HS Idle: THS-IDLE-POST Value	200420	THS-IDLE-POST measurement for HS-Idle States. To verify that THS-IDLE-POST is within the range of n*8UI to 512UI.(n is the TX PPI bus width in bytes)
1.5.10 HS-Idle: THS-IDLE-CLKHS0 Value	200421	THS-IDLE-CLKHS0 measurement for HS-Idle States. To verify that THS-IDLE-CLKHS0 is within the range of 60ns to 500ns.

Table 4 Test IDs and Names (continued)

Name	TestID	Description
1.5.10 HS-Idle: THS-IDLE-PRE + THS-ZERO Value	200422	THS-IDLE-PRE + THS-ZERO measurement for HS-Idle States. To verify that THS-IDLE-PRE + THS-ZERO is within the range of n*8UI to 96UI.(n is the TX PPI bus width in bytes)
1.5.2 HS Exit: CLK TX TCLK-POST	555	Time that the transmitter shall continue sending HS clock after the last associated Data Lane has transitioned to LP mode. TCLKPOST_LimitMin is based on 60ns+52*UI.
1.5.3 HS Clock Rising Edge Alignment to First Payload Bit	912	Test will pass when there is a rising edge during the first payload bit.\n"First Payload Bit Alignment" will be set to "PASS" ONLY when a rising edge is detected during the first payload bit.
1.5.4 Data-to-Clock Skew (TSKEW(TX))(Max,Min)	913	Data to Clock Skew [measured at transmitter].
1.5.4 Data-to-Clock Skew (TSKEW(TX))(Mean)	9131	Data to Clock Skew [measured at transmitter].
1.5.5 Initial HS Skew Calibration Burst(TSKEWCAL)	918	TSKEWCAL measurement for repetitive initial HS skew calibration burst on Data Lane. To verify that TSKEWCAL is at least 32768UI.
1.5.5 Initial HS Skew Calibration Burst(TSKEWCAL-SYNC)	917	TSKEWCAL-SYNC measurement for repetitive initial HS skew calibration burst on Data Lane. To verify that TSKEWCAL-SYNC is within the range of (16 ± 0.25UI).
1.5.6 Periodic HS Skew Calibration Burst(TSKEWCAL)	920	TSKEWCAL measurement for repetitive periodic HS skew calibration burst on Data Lane. To verify that TSKEWCAL is at least 4096UI.
1.5.6 Periodic HS Skew Calibration Burst(TSKEWCAL-SYNC)	919	TSKEWCAL-SYNC measurement for repetitive periodic HS skew calibration burst on Data Lane. To verify that TSKEWCAL-SYNC is within the range of (16 ± 0.25UI).
1.5.7 HS Clock Eye Diagram [Continuous Clock]	1200100	Transmitter Eye Diagram test
1.5.7 HS Data Eye Diagram [Continuous Data]	200100	Transmitter Eye Diagram test
1.5.8 Alternate Calibration Sequence(TALTCAL)	200401	TALTCAL measurement for repetitive Alternate Calibration Sequence burst on Data Lane. To verify that TALTCAL is within the range from 32768UI to 100 µs.
1.5.8 Alternate Calibration Sequence(TALTCAL-SYNC)	200400	TALTCAL-SYNC measurement for repetitive Alternate Calibration Sequence burst on Data Lane. To verify that TALTCAL-SYNC contains 0xF0 pattern.
1.5.9 Preamble Sequence(TEXTSYNC)	200413	TEXTSYNC measurement for repetitive Preamble Sequence burst on Data Lane. To verify that TEXTSYNC is within the range of 8 ± 0.25UI.
1.5.9 Preamble Sequence(TPREAMBLE)[32 UI]	200410	TPREAMBLE measurement for repetitive Preamble Sequence burst on Data Lane. To verify that TPREAMBLE is within the range of 32 ± 0.25UI.

Table 4 Test IDs and Names (continued)

Name	TestID	Description
1.5.9 Preamble Sequence(TPREAMBLE)[512 UI]	200412	TPREAMBLE measurement for repetitive Preamble Sequence burst on Data Lane. To verify that TPREAMBLE is within the range of 512 ± 0.25UI.
1.5.9 Preamble Sequence(TPREAMBLE)[64 UI]	200411	TPREAMBLE measurement for repetitive Preamble Sequence burst on Data Lane. To verify that TPREAMBLE is within the range of 64 ± 0.25UI.
HS Data Eye Height (Informative)	915	HS Data Eye Height
HS Data Eye Width (Informative)	916	HS Data Eye Width.
HS Data SSC Deviation (Max) [Continuous Data] (Informative)	200201	SSC Deviation (Max) test. This test is an informative test.
HS Data SSC Deviation (Min) [Continuous Data] (Informative)	200202	SSC Deviation (Min) test. This test is an informative test.
HS Data SSC Modulation Rate [Continuous Data] (Informative)	200200	SSC Modulation Rate test. This test is an informative test.
HS Data SSC df/dt [Continuous Data] (Informative)	200203	SSC df/dt test. This test is an informative test.
HS Data to Clock Deterministic Jitter [Continuous Data]	200111	Transmitter data to clock Deterministic Jitter (DJ).
HS Data to Clock Random Jitter [Continuous Data]	200112	Transmitter data to clock Random Jitter (RJ).
HS Data to Clock Total Jitter [Continuous Data]	200110	Transmitter data to clock Total Jitter (TJ).

4 Instruments

The following table shows the instruments used by this application. The name is required by various remote interface methods.

- Instrument Name — The name to use as a parameter in remote interface commands.
- Description — The description of the instrument.

For example, if an application uses an oscilloscope and a pulse generator, then you would expect to see something like this in the table below:

Table 5 Example Instrument Information

Name	Description
scope	The primary oscilloscope.
Pulse	The pulse generator used for Gen 2 tests.

and you would be able to remotely control an instrument using:

```
ARSL syntax (replace [description] with actual parameter)
------------------------------------------------------------------------
arsl -a ipaddress -c "SendScpiCommandCustom 'Command=[scpi
command];Timeout=100;Instrument=pulsegen'"

arsl -a ipaddress -c "SendScpiQueryCustom 'Command=[scpi
query];Timeout=100;Instrument=pulsegen'"


C# syntax (replace [description] with actual parameter)
------------------------------------------------------------------------
SendScpiCommandOptions commandOptions = new SendScpiCommandOptions();
commandOptions.Command = "[scpi command]";
commandOptions.Instrument = "[instrument name]";
commandOptions.Timeout = [timeout];
remoteAte.SendScpiCommand(commandOptions);

SendScpiQueryOptions queryOptions = new SendScpiQueryOptions();
queryOptions.Query = "[scpi query]";
queryOptions.Instrument = "[instrument name]";
```

```
queryOptions.Timeout = [timeout];
remoteAte.SendScpiQuery(queryOptions);
```

Here are the actual instrument names used by this application:

NOTE The file, "InstrumentInfo.txt", which may be found in the same directory as this help file, contains all of the information found in the table below in a format suitable for parsing.

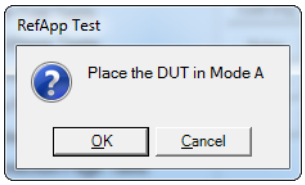
Table 6 Instrument Names

Instrument Name	Description
Infiniium	The primary oscilloscope.
scope	The primary oscilloscope.

5 Message IDs

During the normal course of operation, an application displays multiple message prompts. The application's remote interface exposes a callback capability which enables remote clients to receive the text found in the prompt and to programmatically select the desired response (OK, Cancel, etc.). In order to determine which message is being received, the remote program could parse the message and look for key words. However, because message text is subject to change, a more reliable approach is to use the "message ID" that is attached to the more frequently-seen messages. The following table shows the IDs of the messages that this application may prompt during nominal operation.

For example, if the application may display the following prompt:



then you would expect to see something like this in the table below:

Message	ID	Responses	Usage
DUT mode message	313AEE2F-9EF0-476f-A2EB-29A5C7DE686F	OK=action completed and proceed, Cancel = abort test	App

- Message – A summary of the message in the prompt.
- ID – A unique code that will never change for this prompt, even if the message text changes (assuming the underlying purpose is maintained).
- Responses – The buttons on the prompt and their actions.
- Usage – The scope of the message:
  - "Common" – This message/ID may be used by other apps.

- "App" — This message/ID is unique to this app.
- "<testID>" — This message/ID is unique to this test ID.

A remote client would then structure the code in its message callback handler as shown below to manage message identification:

```
private static void OnSimpleMessage(object sender, MessageEventArgs e)
{
  if (e.ID == "313AEE2F-9EF0-476f-A2EB-29A5C7DE686F")
  {
    // Add code here to set the DUT in Mode A

    e.Response = DialogResult.OK;
  }
}
```

Here are actual message IDs used by this application:

NOTE The file, "MessageInfo.txt", which may be found in the same directory as this help file, contains all of the information found in the table below in a format suitable for parsing.

Table 7 Message IDs

Message	ID	Responses	Usage
Acq Limit: Can't determine minimum bandwidth	25A86458-151E-413D-B890-FC30CFD5ECAA	OK	Instrument
Activating limit will conflict with existing resutls	31A39751-6019-41de-89DF-59DB239DF978	OK=delete conflicting results, Cancel=cancel activation	Instrument
Already running tests	022467B0-6E08-40eb-B4D4-BBB018FBFBC7	OK	Instrument
App startup aborted	C2B67F67-E5D5-4845-8B63-443781223010	OK	Instrument
Can't set memory depth	FFFF1129-BD83-4318-993E-64C94033CEC4	OK=skip step and continue, Cancel=abort test	Instrument
Channel Setup: Unknown scope channel	CDE944EB-F440-4CB1-AFDC-7596461BCD86	OK	Instrument
Compliance/Debug mode change	9C72A970-8D7D-4b37-9787-48AEEA5DC3F1	OK=change mode, Cancel=abort action	Instrument
Confirmation Required	37437505-160C-4cc8-BA06-093C12994C1E	OK=continue, Cancel=abort test	Instrument
Connection change	879629E6-78FA-4a87-B247-A9DB4F0D7330	Abort=abort run, Retry=connection changed - continue run, Ignore=connection not chagned - continue run	Instrument

Table 7 Message IDs (continued)

Message	ID	Responses	Usage
Debug pause (messages vary)	50B66A97-A6A9-413f-8329-76DFAC492FD6	OK=resume, Cancel=abort run	Instrument
End of run summary	602F9866-F975-42b7-842C-D8447E5E3FCB	OK	Instrument
End of run summary (test aborted)	124580E4-4486-42d4-B908-C6D0FB2AEE93	OK	Instrument
Error during CSV file generation	C88B1C64-8334-4b15-8727-81F5E2BA2ED4	OK	Instrument
Error during app exit	81112706-F720-4787-81D3-B22A9B692B41	OK	Instrument
Expected signal not found	86C74779-322E-4585-A07A-26A2C8FAAC84	Abort=abort test, Retry=retry failed action, Ignore=skip failed step	Instrument
Expected signal not found	7957D5B8-E62D-4224-A7DD-70361E816A43	Retry=retry failed action, Cancel=abort test	Instrument
InfiniiSim: Not available because scope default prevented	B8461A2C-9F5F-4AF3-94C1-DF77080D517A	OK	Instrument
InfiniiSim: Scope doesn't support settings found in project	C9BC2205-8041-448b-AF31-CF602183E989	OK	Instrument
InfiniiSim: Unknown scope channel	4E5ECAF6-867C-47B3-982D-5F07E2090703	OK	Instrument
No test selected	B5D233AD-9EB4-4ac2-A443-A30A13643978	OK	Instrument
PrecisionProbe and InfiniiSim controllers turned off after config change	B4477006-D6D1-4375-9FF7-D8177FFC1BF9	OK	Instrument
PrecisionProbe/PrecisionCable: Not available because scope default prevented	6E60C9F8-8FBF-419C-B70A-B666FBDE3677	OK	Instrument
PrecisionProbe/PrecisionCable: Scope doesn't support settings found in project	2FC3B6FA-E28C-4700-9F46-4ABBA86A0D90	OK	Instrument
PrecisionProbe/PrecisionCable: Switch Controller is enabled	22F46DA8-89AE-4370-A57C-571DCF5BB87E	OK	Instrument
PrecisionProbe/PrecisionCable: Unknown scope channel	6788685B-9E88-47E6-BAE6-862F5BF3C9BA	OK	Instrument
Project loaded as read-only (reason)	98C785F8-D24F-4758-A18D-1CCE61F25371	OK	Instrument

Table 7 Message IDs (continued)

Message	ID	Responses	Usage
Project loaded with errors	58AD7A02-1E63-4d77-BC6C-6EF3E37AAD5B	OK	Instrument
Project not loaded	B2615E9C-5ED7-4db7-AEAF-2BC25C62B656	OK	Instrument
Project save failed (unauthorized access)	89DCC194-6254-4902-AE63-B7CCD12C8B2A	OK	Instrument
Run paused	FE2CF871-6D4A-4080-8FF9-770075590D9F	OK=resume, Cancel=abort run	Instrument
Setting change requires result deletion	8732A3AB-142C-47e5-86EA-DB737F415DDE	OK=delete results; Cancel=abort change	Instrument
Store mode change requires result deletion	884CDFDE-605E-4d04-B8FD-9B181E7FA468	OK=delete results, Cancel=abort change	Instrument
Switch Matrix controller turned off after config change	FC95EBAA-F33F-4eae-90BB-6A6A8F16E2DF	OK	Instrument
Switch Matrix: Auto mode unavailable after config change	6E5589DC-E073-4818-9E8A-782A75898475	OK	Instrument
Switch Matrix: Auto mode unavailable for model, all settings will be reset	F78BD2E2-BF29-42e0-98F8-23B6CE565B08	OK=go auto do reset, Cancel=abort action	Instrument
Switch Matrix: Confirm Auto mode	D5E1A12E-6218-4416-8451-5F9415D924BF	OK=go auto, Cancel=stay manual	Instrument
Switch Matrix: Obsolete items in settings discarded	0C45BD20-E0C2-481e-A3B6-9C1A26C2103A	OK	Instrument
Switch Matrix: Reconnect drivers	047FE44F-B251-49fa-B3C7-5590317230CD	Yes=use saved addresses, No=prompt for new addresses, Cancel=reset all settings	Instrument
Switch Matrix: Remove all InfiniiSim settings	C5560182-73BE-4901-941E-3DAEC9F07B33	OK=remove, Cancel=abort action	Instrument
Switch Matrix: User cancelled settings load	50F3FB70-AA6B-488e-8CFA-62CDA756F746	OK	Instrument
SwitchMatrix: Correction reset due to application route change	95FEA629-3BE1-4288-BA34-426516018B07	OK=Accept new routing, Cancel=Reset switch matrix settings	Instrument
SwitchMatrix: Instrument already connected to another driver	08556148-4D63-4edd-B894-22916F39849A	OK	Instrument
SwitchMatrix: Max num drivers exceeded	7D8994AB-FCC2-4294-87B3-19B972BB6510	OK	Instrument

Table 7 Message IDs (continued)

Message	ID	Responses	Usage
SwitchMatrix: Reset after drive reconnect fail	CF3E93B6-77FA-4FD7-B656-D286BE1C7C75	OK	Instrument
SwitchMatrix: Reset after drive reconnect fail	D298A4B8-F077-49BE-9CB2-AE6C14FB4705	OK	Instrument
SwitchMatrix: Unexpected multi-SPDT module	2723591D-55A9-44F3-9318-B732995D9427	OK	Instrument
SwitchMatrix: Unknown current switch state	ECE6535B-5C1A-4688-9E45-FB255435CC92	OK	Instrument
Unknown EEyeLocation parameter	FCA1C61B-D2EA-4671-AD48-9C080A6C6039	OK	Instrument
Upgrade app to open project	794C6148-ADF4-4b24-895D-74D94B76F8AE	OK	Instrument

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