Keysight N1091BSCB IEEE 802.3 bs/cd Test Application

KEYSIGHT

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 N1091BSCB IEEE 802.3 bs/cd Test 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 19, Chapter 4, “Instruments,” starting on page 31, and Chapter 5, “Message IDs,” starting on page 33 provide information specific to programming the N1091BSCB IEEE 802.3 bs/cd Test 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

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 N1091BSCB IEEE 802.3 bs/cd Test Application uses Remote Interface Revision 7.1. 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 N1091BSCB IEEE 802.3 bs/cd Test 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	CDR Source	CKSource	DIFF, AUX, N4877A, N107, User	Select the source used for clock recovery. ***Information For Internal CDR Usage Only*** By selecting "Differential", the signal will be used to recover the clock according to the PLL specs. By selection "Aux", a user supplied clock must be supplied to the Clock Recovery Aux inputs.
Configure	CRE Jitter Optimization	CREState	ON, OFF	Controls state to optimize the standard Jitter-mode RJ measurement. The state will set to OFF if 86108B is detected to run in PAM-4 or N107x CDR is connected with DCA-M.

Table 2 Configuration Variables and Values (continued)

GUI Location	Label	Variable	Values	Description
Configure	Channels for N104x/N1055A	CHANPAIR	DIFF1A, DIFF1C, DIFF2A, DIFF2C	When using the N104x/N1055A, you may use a 2-channel or 4-channel module and install the module in Slot 1 or Slot 2 (not Slots 3 or 4). You may choose one of the four differential pairs above. The default choice is Slot 1, channels A and B. If the application does not find a module in Slot 1, it will search for Slot 2; if found, the default channels will be 2A and 2B unless you have selected 2C and 2D. If there are no choices listed above, multi-lane automation of the N1045A/B/N1055A was selected in the setup tab. These selections will be automated and require an N1045A/B/N1055A is both slot 1 and slot 2. See connection diagram for more info.
Configure	Channels for N109x	CHANPAIR_DCAM	DIFF7A, DIFF7C	When using the N109x, you may use a 2-channel or 4-channel module and install the module in Slot 7. You may choose one of the four differential pairs above.
Configure	Channels for Switch chan1	CHANSWITCH1	1A, 1C, 2A, 2C	Channel 1 for switch
Configure	Channels for Switch chan2	CHANSWITCH2	2A, 1B, 1D, 2B, 2D	Channel 1 for switch
Configure	Disable Linear Fit Prerequisites	DisablePRBS	Enable, Disable	Select "Disable" to disable the the pre-requisites for the tests using Linear Fit. All Linear Fit and equalization tests require RLM to be measured. When the eye is closed, then the measurements cannot be made. By disabling the pre tests, ES1 and ES2 will default to 0.33 and noise for SNDR will default to 500uV. Select "Enable" to run the pre-reqs first.

Table 2 Configuration Variables and Values (continued)

GUI Location	Label	Variable	Values	Description
Configure	Dp	DpVal	(Accepts user-defined text), 2, 3	Set the Dp value used for steady state, linear fit pulse peak, and error calculations.
Configure	Eye Height/Width Probability	EyeProb	1e-3, 1e-4, 1e-5, 1e-6, 1e-15	Select the eye probability to test to for Eye Height and Width tests.
Configure	Fixed Rj for Lane0	RjLane0	(Accepts user-defined text), 1e-12	Allows you to provide a fixed RJ value for use in Eye Mode. Enter the value in seconds using the format 374E-15 or 1.13E-12. The allowable range is 0 to 10 ps.
Configure	Fixed Rj for Lane1	RjLane1	(Accepts user-defined text), 1e-12	Allows you to provide a fixed RJ value for use in Eye Mode. Enter the value in seconds using the format 374E-15 or 1.13E-12. The allowable range is 0 to 10 ps.
Configure	Fixed Rj for Lane2	RjLane2	(Accepts user-defined text), 1e-12	Allows you to provide a fixed RJ value for use in Eye Mode. Enter the value in seconds using the format 374E-15 or 1.13E-12. The allowable range is 0 to 10 ps.
Configure	Fixed Rj for Lane3	RjLane3	(Accepts user-defined text), 1e-12	Allows you to provide a fixed RJ value for use in Eye Mode. Enter the value in seconds using the format 374E-15 or 1.13E-12. The allowable range is 0 to 10 ps.
Configure	Fixed Rj for Lane4	RjLane4	(Accepts user-defined text), 1e-12	Allows you to provide a fixed RJ value for use in Eye Mode. Enter the value in seconds using the format 374E-15 or 1.13E-12. The allowable range is 0 to 10 ps.
Configure	Fixed Rj for Lane5	RjLane5	(Accepts user-defined text), 1e-12	Allows you to provide a fixed RJ value for use in Eye Mode. Enter the value in seconds using the format 374E-15 or 1.13E-12. The allowable range is 0 to 10 ps.
Configure	Fixed Rj for Lane6	RjLane6	(Accepts user-defined text), 1e-12	Allows you to provide a fixed RJ value for use in Eye Mode. Enter the value in seconds using the format 374E-15 or 1.13E-12. The allowable range is 0 to 10 ps.

Table 2 Configuration Variables and Values (continued)

GUI Location	Label	Variable	Values	Description
Configure	Fixed Rj for Lane7	RjLane7	(Accepts user-defined text), 1e-12	Allows you to provide a fixed RJ value for use in Eye Mode. Enter the value in seconds using the format 374E-15 or 1.13E-12. The allowable range is 0 to 10 ps.
Configure	Fixed Rj for Lane8	RjLane8	(Accepts user-defined text), 1e-12	Allows you to provide a fixed RJ value for use in Eye Mode. Enter the value in seconds using the format 374E-15 or 1.13E-12. The allowable range is 0 to 10 ps.
Configure	Fixed Rj for Lane9	RjLane9	(Accepts user-defined text), 1e-12	Allows you to provide a fixed RJ value for use in Eye Mode. Enter the value in seconds using the format 374E-15 or 1.13E-12. The allowable range is 0 to 10 ps.
Configure	Interpolate for Coefficient Tests	Interp	(Accepts user-defined text), ON, OFF	By turning interpolation on, the test will run faster. You can turn it off for true 32 points per bit accumulation. This is for PAM-4 signal type only.
Configure	JSA State	JSAState	ON, OFF	Controls state of Jitter Spectrum Analysis functionality, which is an available option on Megamodules or CDR modules. You may enable or add JSA feature to improve jitter results.
Configure	Jitter Sampling Level	JitSamp	Eye Center, Percent	This option allows the user to change from "Eye Center" to "Percent" for "Jitter Sampling Level". Note: Only change this selection from "Eye Center" (Default) to "Percent" when Jitter Mode fails to measure random noise (RN) and Level parameters due to a severely degraded PAM4 signal (e.g. closed eye). RN and Level measurements are common pre-requisites for other measurements.
Configure	Loop Bandwidth	LoopBW	(Accepts user-defined text), 4e6, 10e6	Select or enter the Loop BW to be used the clock recovery.

Table 2 Configuration Variables and Values (continued)

GUI Location	Label	Variable	Values	Description
Configure	Loop Bandwidth Tuning	LoopBWTune	OFF, ON	Select "ON" to tune loopbandwidth on relock or "OFF" to remain.
Configure	Module Calibration	ModCal	Required, Not Required	Allows measurements to be completed if plug-in modules are not calibrated. Only available in Debug Mode.
Configure	Np	NpVal	(Accepts user-defined text), 8, 12, 13, 14, 16, 200	Set the Np value used for steady state, linear fit pulse peak, and error calculations.
Configure	Number of averages for Coefficient Tests	StepLoop	(Accepts user-defined text), 5, 8, 10, 16, 20	Set the number of averages used for the Coefficient tests. If Interpolation is turned off, the min average value is 16. This is for PAM-4 signal type only.
Configure	Nv	NvVal	(Accepts user-defined text), 8, 12, 13, 14, 16, 200	Set the Nv value used for steady state, linear fit pulse peak, and error calculations.
Configure	Optimize for Rj and Linearity	OptLin	ON, OFF	Controls selection of setting the precision time base to optimize for Rj and Linearity in jitter tests. Results are more consistant with optimization. The test time is several minutes with optimization on. \\You can turn off optimization for quick results.
Configure	Pattern Length	PatternLength	(Accepts user-defined text), 0, 127, 511, 8191	When Auto is set, FlexDCA will automatically determine the pattern length. If FlexDCA is having difficulty auto-detecting the correct pattern length, use this control to manually set the pattern length.
Configure	Pattern Verification	DisablePattern	Enable, Disable	Select "Disable" to disable the pattern verification for square 8 pattern tests and suppress pattern error pop-ups. Select "Enable" to ensure that the correct pattern is being tested as per specification.

Table 2 Configuration Variables and Values (continued)

GUI Location	Label	Variable	Values	Description
Configure	Run Simulation Signals	RunSim	No, Yes	Select Yes to run simulation signals. Set simulation signals to slot 5 (channels 5A and 5B).
Configure	SIRC Bandwidth	SIRCBW	(Accepts user-defined text), 33e9, 40e9	Select or enter the SIRC BW. This will automatically be applied to any pattern lock waveform.
Configure	SIRC Response	SIRCResponse	BESSel, SINC, FLAT, OFF	Select the SIRC response. This will automatically be applied to any pattern lock waveform.
Configure	Samples Taken for Eye Mode	EyeSamples	(Accepts user-defined text), 150e3, 250e3, 500e3, 1e6, 2e6	Select or enter how many samples are collected before calculating eye measurement results. Default is 250,000 samples. The range of allowable values is 100K to 2M samples.
Configure	Save Tested Waveforms	SaveWFM	No, Yes	Select Yes to save the waveform files of the tested signals. Files will be saved to directory set in Select waveform directory.
Configure	Select Waveform Directory	DirWFM	(Accepts user-defined text), C:\Temp\KRwfm	Type in a directory path to save your measured waveforms.
Configure	Signaling Rate	SignalingRate	(Accepts user-defined text in Debug mode), 10.3125e9, 25.78125e9, 26.5625e9	Set the Signaling Rate to be tested. Enter value in the format 10.3125e9.
Configure	Source for Rj	RjSource	JitterMode, User	Select "Option 200 Jitter" to have the DCA measure RJ using Jitter Mode for shorter patterns, such as PRBS9. You will need Option 200 installed for this choice. If you select "User Provided", enter the values that you would like to use for Fixed RJ on the Configure tab for each lane that you'll display.

Table 2 Configuration Variables and Values (continued)

GUI Location	Label	Variable	Values	Description
Configure	Start value for CTLE utility for Eye Opening	StartCTLE	1, 1.5, 2, 2.5, 3, 3.5, 4, 4.5, 5, 5.5, 6, 6.5, 7, 7.5, 8, 8.5, 9	Select the starting CTLE setting to use for the "Find optimal CTLE Eye Opening" test. The test will test the range of settings from this start value, to the stop value set in the next config.
Configure	Start value for Far-end CTLE utility for Eye Opening	StartFarCTLE	1, 1.5, 2, 2.5, 3, 3.5, 4, 4.5, 5, 5.5, 6, 6.5, 7, 7.5, 8, 8.5, 9	Select the starting Far-end CTLE setting to use for the "Find optimal Far-end CTLE Eye Opening" test. The test will test the range of settings from this start value, to the stop value set in the next config.
Configure	Stop value for CTLE utility for Eye Opening	StopCTLE	1, 1.5, 2, 2.5, 3, 3.5, 4, 4.5, 5, 5.5, 6, 6.5, 7, 7.5, 8, 8.5, 9	Select the last CTLE setting to use for the "Find optimal CTLE Eye Opening" test. The test will test the range of settings from start value selected in the previous config, to the stop value set here.
Configure	Stop value for Far-end CTLE utility for Eye Opening	StopFarCTLE	1, 1.5, 2, 2.5, 3, 3.5, 4, 4.5, 5, 5.5, 6, 6.5, 7, 7.5, 8, 8.5, 9	Select the last CTLE setting to use for the "Find optimal Far-end CTLE Eye Opening" test. The test will test the range of settings from start value selected in the previous config, to the stop value set here.
Configure	TX Off Voltage Scale	TXOFFSCALE	(Accepts user-defined text), Auto, 10e-3	Auto will automatically set the voltage scale for tests with the transmitter off. To manually set the scale, enter in the scale per division number (i.e. 10e-3)
Configure	TX On Voltage Scale	TXONSCALE	(Accepts user-defined text), Auto, 200e-3	Auto will automatically set the voltage scale for tests with the transmitter on. To manually set the scale, enter in a scale per division number (i.e. 200e-3).
Configure	Use CTLE Setting for Far-end Eye Opening.	UseFarCTLE	Off, 1, 1.5, 2, 2.5, 3, 3.5, 4, 4.5, 5, 5.5, 6, 6.5, 7, 7.5, 8, 8.5, 9	Select the CTLE setting to use for far-end. Default is 6dB. Far-end test addes cable s4p at ~6.4dB of loss. CTLE is needed to open the eye. Set to reference receiver.

Table 2 Configuration Variables and Values (continued)

GUI Location	Label	Variable	Values	Description
Configure	Use Optimized CTLE for Eye Opening.	UseCTLE	Off, 1, 1.5, 2, 2.5, 3, 3.5, 4, 4.5, 5, 5.5, 6, 6.5, 7, 7.5, 8, 8.5, 9	Select the optimized setting to use. Default is off. Run "Find Optimal CTLE Eye Opening" Test under "Utilities" to find the optimal setting. When the utility is run, it will automatically set the optimal setting. This value will only be automatically set if utility is run any time after app load or if project is loaded with setting. All other instances, the setting will be the default of off and will need to be manually selected.
Configure	Using Switch or N1045A	SWITCH	Yes, No, Other	Only available in Debug Mode.
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.
Set Up	Automate the OK button	Donebtn	1	This button is to perform deskewing of the channels Deskew Channel
Set Up	Channels selection for skew calibration	SkewChan1A1B	0.0, 1.0	Check this channels to run skew calibration
Set Up	Channels selection for skew calibration	SkewChan1A2A	0.0, 1.0	Check this channels to run skew calibration
Set Up	Channels selection for skew calibration	SkewChan1C1D	0.0, 1.0	Check this channels to run skew calibration
Set Up	Channels selection for skew calibration	SkewChan2A2B	0.0, 1.0	Check this channels to run skew calibration
Set Up	Channels selection for skew calibration	SkewChan2C2D	0.0, 1.0	Check this channels to run skew calibration
Set Up	Channels selection for skew calibration	SkewChan7A7B	0.0, 1.0	Check this channels to run skew calibration

Table 2 Configuration Variables and Values (continued)

GUI Location	Label	Variable	Values	Description
Set Up	Channels selection for skew calibration	SkewChan7C7D	0.0, 1.0	Check this channels to run skew calibration
Set Up	automate the done button	Browsebtn	1	Browse the path to load the required ERL file Setup the ERL file

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
AC Common Mode Output Voltage Test	5103	Test the AC common mode voltage. This test can only be tested in dual single ended connection
AC Common Mode Output Voltage Test	206103	Test the AC common mode voltage. This test can only be tested in dual single ended connection. Must be DC coupled.
AC Common Mode Output Voltage Test	306103	Test the AC common mode voltage. This test can only be tested in dual single ended connection. Must be DC coupled.
BUJ	55202	Bounded Uncorrelated Jitter BUJ measurement
Baud Rate	55200	Baud rate of the signal
Coefficient Initialization - Preset 1 for c(-1)	66500	Coefficient Initialization - Preset 1 measurement for Coefficient c(-1)
Coefficient Initialization - Preset 1 for c(-2)	66503	Coefficient Initialization - Preset 1 measurement for Coefficient c(-2)
Coefficient Initialization - Preset 1 for c(0)	66501	Coefficient Initialization - Preset 1 measurement for Coefficient c(0)
Coefficient Initialization - Preset 1 for c(1)	66502	Coefficient Initialization - Preset 1 measurement for Coefficient c(1)
Coefficient Initialization - Preset 2 for c(-1)	66600	Coefficient Initialization - Preset 2 measurement for Coefficient c(-1)
Coefficient Initialization - Preset 2 for c(-2)	66603	Coefficient Initialization - Preset 2 measurement for Coefficient c(-2)
Coefficient Initialization - Preset 2 for c(0)	66601	Coefficient Initialization - Preset 2 measurement for Coefficient c(0)
Coefficient Initialization - Preset 2 for c(1)	66602	Coefficient Initialization - Preset 2 measurement for Coefficient c(1)
Coefficient Initialization - Preset 3 for c(-1)	66700	Coefficient Initialization - Preset 3 measurement for Coefficient c(-1)
Coefficient Initialization - Preset 3 for c(-2)	66703	Coefficient Initialization - Preset 3 measurement for Coefficient c(-2)

Table 4 Test IDs and Names (continued)

Name	TestID	Description
Coefficient Initialization - Preset 3 for c(0)	66701	Coefficient Initialization - Preset 3 measurement for Coefficient c(0)
Coefficient Initialization - Preset 3 for c(1)	66702	Coefficient Initialization - Preset 3 measurement for Coefficient c(1)
Common Mode Noise, RMS	55103	Test the common mode RMS Noise. This test can only be tested in dual single ended connection
Common Mode Noise, RMS	256103	Test the common mode rms noise. This test can only be tested in dual single ended connection
Common Mode Noise, RMS	356103	Test the common mode rms noise. This test can only be tested in dual single ended connection. Must be DC coupled.
Common Mode Voltage - Vcm	256101	Test the DC common mode voltage. This test can only be tested in dual single ended connection
Common Mode Voltage - Vcm	356101	Test the common mode voltage. This test can only be tested in dual single ended connection. Must be DC coupled.
Common-mode Output Return Loss	10001	Common-mode Output Return Loss measurement
Common-mode Output Return Loss	11111	Common-mode Output Return Loss measurement
Common-mode Output Return Loss	15001	Common-mode Output Return Loss measurement
Common-mode to Common-mode Output Return Loss	210001	Common-mode to Common-mode Output Return Loss
Common-mode to Differential Output Return Loss	210003	Common-mode to Differential Output Return Loss measurement
Common-mode to Differential Output Return Loss	210004	Common-mode to Differential Output Return Loss measurement
Common-mode to Differential Output Return Loss	310003	Common-mode to Differential Output Return Loss measurement
Common-mode to Differential Output Return Loss	310004	Common-mode to Differential Output Return Loss measurement
Common-mode to Differential Output Return Loss	310005	Common-mode to Differential Output Return Loss measurement
Common-mode to Differential Output Return Loss	215003	Common-mode to Differential Output Return Loss measurement
Common-mode to Differential Output Return Loss	315003	Common-mode to Differential Output Return Loss measurement
DC Common Mode Output Voltage Test	5101	Test the DC common mode voltage. This test can only be tested in dual single ended connection
DC Common Mode Output Voltage Test	206101	Test the DC common mode voltage. This test can only be tested in dual single ended connection. Must be DC coupled.

Table 4 Test IDs and Names (continued)

Name	TestID	Description
DC Common Mode Voltage	55101	Test the DC common mode voltage. This test can only be tested in dual single ended connection
DC Common Mode Voltage Test	306101	Test the DC common mode voltage. This test can only be tested in dual single ended connection. Must be DC coupled.
Differential Output Return Loss	10000	Differential Output Return Loss measurement
Differential Output Return Loss	210000	Differential Output Return Loss measurement
Differential Output Return Loss	310000	Differential Output Return Loss measurement
Differential Output Return Loss	15000	Differential Output Return Loss measurement
Differential Output Return Loss	215000	Differential Output Return Loss measurement
Differential Output Return Loss	315000	Differential Output Return Loss measurement
Differential Output Voltage Test	306102	Test the maximum voltage with the TX enabled
Differential Peak to Peak Output Voltage Test	5102	Test the maximum voltage with the TX enabled
Differential Peak to Peak Output Voltage Test	206102	Test the maximum voltage with the TX enabled
Differential Peak to Peak Output Voltage Test with TX disabled	5100	Test the maximum voltage with the TX disabled
Differential Peak to Peak Output Voltage Test with TX disabled	206100	Test the maximum voltage with the TX disabled
Differential Voltage pk-pk	256102	Test the maximum voltage with the TX enabled
Differential Voltage, pk-pk	55102	Test the maximum voltage with the TX enabled
Differential Voltage, pk-pk	356102	Test the maximum voltage with the TX enabled
ERL	5399	Calculates ERL.
ERL	5499	Calculates ERL.
ESMW	206603	Measures the Eye symmetry mask width at Host recommended CTLE
Effective bounded uncorrelated jitter	65205	Effective bounded uncorrelated Jitter measurement
Effective total uncorrelated jitter	65206	Effective total uncorrelated Jitter measurement
Even-Odd Jitter	5201	Even-Odd Jitter measurement
Even-Odd Jitter	55201	Even-Odd Jitter measurement
Even-Odd Jitter	65204	Even-Odd Jitter measurement
Eye Height - EH6	256600	Measures the height of each the eye at user selected CTLE at 10-6 probability.

Table 4 Test IDs and Names (continued)

Name	TestID	Description
Eye Height A	206600	Measures the height of each the eye at user selected CTLE
Eye Width	206601	Measures the width of the eye at user CTLE
Eye Width - EW6	256601	Measures the width of the eye at user CTLE at 10-6 probability.
Eye linearity	256603	Measures the Eye linearity
Eye linearity	356603	Measures the eye linearity of each the eye at user selected CTLE
Far-end ESMW	306613	Measures the Far-end ESMW of each the eye at user selected CTLE
Far-end Eye Height	306610	Measures the Far-end height of each the eye at user selected CTLE
Far-end Eye Height - EH6	356610	Measures the Far-end eye height of each the eye at user selected CTLE at 10-6 probability.
Far-end Eye Width	306611	Measures the Far-end width of the eye at user CTLE
Far-end Eye Width - EW6	356611	Measures the Far-end eye width of the eye at user CTLE at 10-6 probability
Far-end pre-cursor ISI ratio	306614	Measures the Far-end pre-cursor ISI ratio at selected CTLE
Find Optimal CTLE Eye Opening	6602	Measures the eye width and height with each CTLE setting and reports the optimal setting to use in Eye Width and Eye Height measurements. The optimal value is automatically set in the configure tab after this test has run.
Find Optimal Far-end CTLE Eye Opening	6603	Measures the eye width and height with each CTLE setting and reports the optimal setting to use in Eye Width and Eye Height measurements. The optimal value is automatically set in the configure tab after this test has run.
J3u	5204	J3u Jitter measurement
J4u	5202	J4u Jitter measurement
JRMS	5203	JRMS Jitter measurement
Level - Linearity pattern	51000	Measures the level for each level in the linearity pattern on UI 7 and 8 of 16
Level - PRBS pattern	2000	Tests the level for each level in the PRBS pattern
Level - PRBS pattern	52000	Tests the level for each level in the PRBS pattern
Level Noise - Linearity pattern	51002	Tests the noise of each level in the linearity pattern
Level Noise - PRBS pattern	2002	Tests the noise of each level in the PRBS pattern
Level Noise - PRBS pattern	52002	Tests the noise of each level in the PRBS pattern
Level RMS - Linearity pattern	51001	Tests the level rms for each level in the linearity pattern on UI 7 and 8 of 16
Level RMS - PRBS pattern	2001	Tests the level rms for each level in the PRBS pattern

Table 4 Test IDs and Names (continued)

Name	TestID	Description
Level RMS - PRBS pattern	52001	Tests the level rms for each level in the PRBS pattern
Level Separation Mismatch Ratio - RLM	2003	Tests the level mismatch ratio
Level Separation Mismatch Ratio - RLM	52003	Tests the level mismatch ratio
Level Separation Mismatch Ratio - RLM	51003	Tests the level mismatch ratio on UI 7 and 8 of 16
Linear Fit Pulse Peak	5301	Linear Fit Pulse Peak
Linear Fit Pulse Peak	55301	Linear Fit Pulse Peak
Minimum Output Fall Time (20%-80%)	206401	Fall Time measurement
Minimum Output Fall Time (20%-80%)	306401	Fall Time measurement
Minimum Output Rise Time (20%-80%)	206400	Rise Time measurement
Minimum Output Rise Time (20%-80%)	306400	Rise Time measurement
Near-end ESMW	306603	Measures the Near-end ESMW of each the eye at user selected CTLE
Near-end Eye Height	306600	Measures the Near-end height of each the eye at user selected CTLE
Near-end Eye Height - EH6	356600	Measures the Near-end eye height of each the eye at user selected CTLE at 10-6 probability.
Near-end Eye Width	306601	Measures the Near-end width of the eye at user CTLE
Near-end Eye Width - EW6	356601	Measures the Near-end eye width of the eye at user CTLE at 10-6 probability
Post-cursor equalization Local_eq_c1(0)	5504	Measures Post-cursor equalization for c(1) weight 0
Post-cursor equalization Local_eq_c1(1)	5505	Measures Post-cursor equalization for c(1) weight 1
Post-cursor equalization Local_eq_c1(2)	5506	Measures Post-cursor equalization for c(1) weight 2
Post-cursor equalization Local_eq_c1(3)	5507	Measures Post-cursor equalization for c(1) weight 3
Post-cursor equalization Local_eq_c1(4)	5508	Measures Post-cursor equalization for c(1) weight 4
Post-cursor equalization Local_eq_c1(5)	5509	Measures Post-cursor equalization for c(1) weight 5
Pre-cursor equalization Local_eq_cm1(0)	5500	Measures Pre-cursor equalization for c(-1) weight 0
Pre-cursor equalization Local_eq_cm1(1)	5501	Measures Pre-cursor equalization for c(-1) weight 1
Pre-cursor equalization Local_eq_cm1(2)	5502	Measures Pre-cursor equalization for c(-1) weight 2

Table 4 Test IDs and Names (continued)

Name	TestID	Description
Pre-cursor equalization Local_eq_cm1(3)	5503	Measures Pre-cursor equalization for c(-1) weight 3
Signal-to-noise-and-distortion ratio	5302	Measures the SNDR
Signal-to-noise-and-distortion ratio	55302	Measures the SNDR
Signaling Rate	5200	Signaling rate of the signal
Signaling Rate	206200	Signaling rate of the signal
Signaling Rate	306200	Signaling rate of the signal
Single-Ended Output Voltage Test	206104	Test the minimum and maximum voltages of the single-ended signals
Steady-State Voltage Vf	5300	Steady-State Voltage Vf measurement
Steady-State Voltage Vf	55300	Steady-State Voltage Vf measurement
Transition Time - Rise Time (20%-80%)	55400	Rise Time measurement
Transition Time - Rise Time (20%-80%)	256400	Rise Time measurement
Transition Time - Fall Time (20%-80%)	55401	Fall Time measurement
Transition Time - Fall Time (20%-80%)	256401	Fall Time measurement
Transition Time - Fall Time (20%-80%)	356401	Fall Time measurement
Transition Time - Rise Time (20%-80%)	356400	Rise Time measurement
Transmitter Output residual ratio SNRISI -0dB(gDC) -0dB(gDC2)	5367	Measures the transmitter residual ratio -0dB(gDC) -0dB(gDC2)
Transmitter Output residual ratio SNRISI -0dB(gDC) -1dB(gDC2)	5351	Measures the transmitter residual ratio -0dB(gDC) -1dB(gDC2)
Transmitter Output residual ratio SNRISI -0dB(gDC) -2dB(gDC2)	5335	Measures the transmitter residual ratio -0dB(gDC) -2dB(gDC2)
Transmitter Output residual ratio SNRISI -0dB(gDC) -3dB(gDC2)	5319	Measures the transmitter residual ratio -0dB(gDC) -3dB(gDC2)
Transmitter Output residual ratio SNRISI -0dB(gDC) -4dB(gDC2)	5303	Measures the transmitter residual ratio -0dB(gDC) -4dB(gDC2)
Transmitter Output residual ratio SNRISI -0dB(gDC) 1dB(gDC2)	5383	Measures the transmitter residual ratio -0dB(gDC) 1dB(gDC2)
Transmitter Output residual ratio SNRISI -10dB(gDC) -0dB(gDC2)	5377	Measures the transmitter residual ratio -10dB(gDC) -0dB(gDC2)
Transmitter Output residual ratio SNRISI -10dB(gDC) -1dB(gDC2)	5361	Measures the transmitter residual ratio -10dB(gDC) -1dB(gDC2)
Transmitter Output residual ratio SNRISI -10dB(gDC) -2dB(gDC2)	5345	Measures the transmitter residual ratio -10dB(gDC) -2dB(gDC2)

Table 4 Test IDs and Names (continued)

Name	TestID	Description
Transmitter Output residual ratio SNRISI -10dB(gDC) -3dB(gDC2)	5329	Measures the transmitter residual ratio -10dB(gDC) -3dB(gDC2)
Transmitter Output residual ratio SNRISI -10dB(gDC) -4dB(gDC2)	5313	Measures the transmitter residual ratio -10dB(gDC) -4dB(gDC2)
Transmitter Output residual ratio SNRISI -10dB(gDC) 1dB(gDC2)	5393	Measures the transmitter residual ratio -10dB(gDC) 1dB(gDC2)
Transmitter Output residual ratio SNRISI -11dB(gDC) -0dB(gDC2)	5378	Measures the transmitter residual ratio -11dB(gDC) -0dB(gDC2)
Transmitter Output residual ratio SNRISI -11dB(gDC) -1dB(gDC2)	5362	Measures the transmitter residual ratio -11dB(gDC) -1dB(gDC2)
Transmitter Output residual ratio SNRISI -11dB(gDC) -2dB(gDC2)	5346	Measures the transmitter residual ratio -11dB(gDC) -2dB(gDC2)
Transmitter Output residual ratio SNRISI -11dB(gDC) -3dB(gDC2)	5330	Measures the transmitter residual ratio -11dB(gDC) -3dB(gDC2)
Transmitter Output residual ratio SNRISI -11dB(gDC) -4dB(gDC2)	5314	Measures the transmitter residual ratio -11dB(gDC) -4dB(gDC2)
Transmitter Output residual ratio SNRISI -11dB(gDC) 1dB(gDC2)	5394	Measures the transmitter residual ratio -11dB(gDC) 1dB(gDC2)
Transmitter Output residual ratio SNRISI -12dB(gDC) -0dB(gDC2)	5379	Measures the transmitter residual ratio -12dB(gDC) -0dB(gDC2)
Transmitter Output residual ratio SNRISI -12dB(gDC) -1dB(gDC2)	5363	Measures the transmitter residual ratio -12dB(gDC) -1dB(gDC2)
Transmitter Output residual ratio SNRISI -12dB(gDC) -2dB(gDC2)	5347	Measures the transmitter residual ratio -12dB(gDC) -2dB(gDC2)
Transmitter Output residual ratio SNRISI -12dB(gDC) -3dB(gDC2)	5331	Measures the transmitter residual ratio -12dB(gDC) -3dB(gDC2)
Transmitter Output residual ratio SNRISI -12dB(gDC) -4dB(gDC2)	5315	Measures the transmitter residual ratio -12dB(gDC) -4dB(gDC2)
Transmitter Output residual ratio SNRISI -12dB(gDC) 1dB(gDC2)	5395	Measures the transmitter residual ratio -12dB(gDC) 1dB(gDC2)
Transmitter Output residual ratio SNRISI -13dB(gDC) -0dB(gDC2)	5380	Measures the transmitter residual ratio -13dB(gDC) -0dB(gDC2)
Transmitter Output residual ratio SNRISI -13dB(gDC) -1dB(gDC2)	5364	Measures the transmitter residual ratio -13dB(gDC) -1dB(gDC2)
Transmitter Output residual ratio SNRISI -13dB(gDC) -2dB(gDC2)	5348	Measures the transmitter residual ratio -13dB(gDC) -2dB(gDC2)
Transmitter Output residual ratio SNRISI -13dB(gDC) -3dB(gDC2)	5332	Measures the transmitter residual ratio -13dB(gDC) -3dB(gDC2)

Table 4 Test IDs and Names (continued)

Name	TestID	Description
Transmitter Output residual ratio SNRISI -13dB(gDC) -4dB(gDC2)	5316	Measures the transmitter residual ratio -13dB(gDC) -4dB(gDC2)
Transmitter Output residual ratio SNRISI -13dB(gDC) 1dB(gDC2)	5396	Measures the transmitter residual ratio -13dB(gDC) 1dB(gDC2)
Transmitter Output residual ratio SNRISI -14dB(gDC) -0dB(gDC2)	5381	Measures the transmitter residual ratio -14dB(gDC) -0dB(gDC2)
Transmitter Output residual ratio SNRISI -14dB(gDC) -1dB(gDC2)	5365	Measures the transmitter residual ratio -14dB(gDC) -1dB(gDC2)
Transmitter Output residual ratio SNRISI -14dB(gDC) -2dB(gDC2)	5349	Measures the transmitter residual ratio -14dB(gDC) -2dB(gDC2)
Transmitter Output residual ratio SNRISI -14dB(gDC) -3dB(gDC2)	5333	Measures the transmitter residual ratio -14dB(gDC) -3dB(gDC2)
Transmitter Output residual ratio SNRISI -14dB(gDC) -4dB(gDC2)	5317	Measures the transmitter residual ratio -14dB(gDC) -4dB(gDC2)
Transmitter Output residual ratio SNRISI -14dB(gDC) 1dB(gDC2)	5397	Measures the transmitter residual ratio -14dB(gDC) 1dB(gDC2)
Transmitter Output residual ratio SNRISI -15dB(gDC) -0dB(gDC2)	5382	Measures the transmitter residual ratio -15dB(gDC) -0dB(gDC2)
Transmitter Output residual ratio SNRISI -15dB(gDC) -1dB(gDC2)	5366	Measures the transmitter residual ratio -15dB(gDC) -1dB(gDC2)
Transmitter Output residual ratio SNRISI -15dB(gDC) -2dB(gDC2)	5350	Measures the transmitter residual ratio -15dB(gDC) -2dB(gDC2)
Transmitter Output residual ratio SNRISI -15dB(gDC) -3dB(gDC2)	5334	Measures the transmitter residual ratio -15dB(gDC) -3dB(gDC2)
Transmitter Output residual ratio SNRISI -15dB(gDC) -4dB(gDC2)	5318	Measures the transmitter residual ratio -15dB(gDC) -4dB(gDC2)
Transmitter Output residual ratio SNRISI -15dB(gDC) 1dB(gDC2)	5398	Measures the transmitter residual ratio -15dB(gDC) 1dB(gDC2)
Transmitter Output residual ratio SNRISI -1dB(gDC) -0dB(gDC2)	5368	Measures the transmitter residual ratio -1dB(gDC) -0dB(gDC2)
Transmitter Output residual ratio SNRISI -1dB(gDC) -1dB(gDC2)	5352	Measures the transmitter residual ratio -1dB(gDC) -1dB(gDC2)
Transmitter Output residual ratio SNRISI -1dB(gDC) -2dB(gDC2)	5336	Measures the transmitter residual ratio -1dB(gDC) -2dB(gDC2)
Transmitter Output residual ratio SNRISI -1dB(gDC) -3dB(gDC2)	5320	Measures the transmitter residual ratio -1dB(gDC) -3dB(gDC2)
Transmitter Output residual ratio SNRISI -1dB(gDC) -4dB(gDC2)	5304	Measures the transmitter residual ratio -1dB(gDC) -4dB(gDC2)

Table 4 Test IDs and Names (continued)

Name	TestID	Description
Transmitter Output residual ratio SNRISI -1dB(gDC) 1dB(gDC2)	5384	Measures the transmitter residual ratio -1dB(gDC) 1dB(gDC2)
Transmitter Output residual ratio SNRISI -2dB(gDC) -0dB(gDC2)	5369	Measures the transmitter residual ratio -2dB(gDC) -0dB(gDC2)
Transmitter Output residual ratio SNRISI -2dB(gDC) -1dB(gDC2)	5353	Measures the transmitter residual ratio -2dB(gDC) -1dB(gDC2)
Transmitter Output residual ratio SNRISI -2dB(gDC) -2dB(gDC2)	5337	Measures the transmitter residual ratio -2dB(gDC) -2dB(gDC2)
Transmitter Output residual ratio SNRISI -2dB(gDC) -3dB(gDC2)	5321	Measures the transmitter residual ratio -2dB(gDC) -3dB(gDC2)
Transmitter Output residual ratio SNRISI -2dB(gDC) -4dB(gDC2)	5305	Measures the transmitter residual ratio -2dB(gDC) -4dB(gDC2)
Transmitter Output residual ratio SNRISI -2dB(gDC) 1dB(gDC2)	5385	Measures the transmitter residual ratio -2dB(gDC) 1dB(gDC2)
Transmitter Output residual ratio SNRISI -3dB(gDC) -0dB(gDC2)	5370	Measures the transmitter residual ratio -3dB(gDC) -0dB(gDC2)
Transmitter Output residual ratio SNRISI -3dB(gDC) -1dB(gDC2)	5354	Measures the transmitter residual ratio -3dB(gDC) -1dB(gDC2)
Transmitter Output residual ratio SNRISI -3dB(gDC) -2dB(gDC2)	5338	Measures the transmitter residual ratio -3dB(gDC) -2dB(gDC2)
Transmitter Output residual ratio SNRISI -3dB(gDC) -3dB(gDC2)	5322	Measures the transmitter residual ratio -3dB(gDC) -3dB(gDC2)
Transmitter Output residual ratio SNRISI -3dB(gDC) -4dB(gDC2)	5306	Measures the transmitter residual ratio -3dB(gDC) -4dB(gDC2)
Transmitter Output residual ratio SNRISI -3dB(gDC) 1dB(gDC2)	5386	Measures the transmitter residual ratio -3dB(gDC) 1dB(gDC2)
Transmitter Output residual ratio SNRISI -4dB(gDC) -0dB(gDC2)	5371	Measures the transmitter residual ratio -4dB(gDC) -0dB(gDC2)
Transmitter Output residual ratio SNRISI -4dB(gDC) -1dB(gDC2)	5355	Measures the transmitter residual ratio -4dB(gDC) -1dB(gDC2)
Transmitter Output residual ratio SNRISI -4dB(gDC) -2dB(gDC2)	5339	Measures the transmitter residual ratio -4dB(gDC) -2dB(gDC2)
Transmitter Output residual ratio SNRISI -4dB(gDC) -3dB(gDC2)	5323	Measures the transmitter residual ratio -4dB(gDC) -3dB(gDC2)
Transmitter Output residual ratio SNRISI -4dB(gDC) -4dB(gDC2)	5307	Measures the transmitter residual ratio -4dB(gDC) -4dB(gDC2)
Transmitter Output residual ratio SNRISI -4dB(gDC) 1dB(gDC2)	5387	Measures the transmitter residual ratio -4dB(gDC) 1dB(gDC2)

Table 4 Test IDs and Names (continued)

Name	TestID	Description
Transmitter Output residual ratio SNRISI -5dB(gDC) -0dB(gDC2)	5372	Measures the transmitter residual ratio -5dB(gDC) -0dB(gDC2)
Transmitter Output residual ratio SNRISI -5dB(gDC) -1dB(gDC2)	5356	Measures the transmitter residual ratio -5dB(gDC) -1dB(gDC2)
Transmitter Output residual ratio SNRISI -5dB(gDC) -2dB(gDC2)	5340	Measures the transmitter residual ratio -5dB(gDC) -2dB(gDC2)
Transmitter Output residual ratio SNRISI -5dB(gDC) -3dB(gDC2)	5324	Measures the transmitter residual ratio -5dB(gDC) -3dB(gDC2)
Transmitter Output residual ratio SNRISI -5dB(gDC) -4dB(gDC2)	5308	Measures the transmitter residual ratio -5dB(gDC) -4dB(gDC2)
Transmitter Output residual ratio SNRISI -5dB(gDC) 1dB(gDC2)	5388	Measures the transmitter residual ratio -5dB(gDC) 1dB(gDC2)
Transmitter Output residual ratio SNRISI -6dB(gDC) -0dB(gDC2)	5373	Measures the transmitter residual ratio -6dB(gDC) -0dB(gDC2)
Transmitter Output residual ratio SNRISI -6dB(gDC) -1dB(gDC2)	5357	Measures the transmitter residual ratio -6dB(gDC) -1dB(gDC2)
Transmitter Output residual ratio SNRISI -6dB(gDC) -2dB(gDC2)	5341	Measures the transmitter residual ratio -6dB(gDC) -2dB(gDC2)
Transmitter Output residual ratio SNRISI -6dB(gDC) -3dB(gDC2)	5325	Measures the transmitter residual ratio -6dB(gDC) -3dB(gDC2)
Transmitter Output residual ratio SNRISI -6dB(gDC) -4dB(gDC2)	5309	Measures the transmitter residual ratio -6dB(gDC) -4dB(gDC2)
Transmitter Output residual ratio SNRISI -6dB(gDC) 1dB(gDC2)	5389	Measures the transmitter residual ratio -6dB(gDC) 1dB(gDC2)
Transmitter Output residual ratio SNRISI -7dB(gDC) -0dB(gDC2)	5374	Measures the transmitter residual ratio -7dB(gDC) -0dB(gDC2)
Transmitter Output residual ratio SNRISI -7dB(gDC) -1dB(gDC2)	5358	Measures the transmitter residual ratio -7dB(gDC) -1dB(gDC2)
Transmitter Output residual ratio SNRISI -7dB(gDC) -2dB(gDC2)	5342	Measures the transmitter residual ratio -7dB(gDC) -2dB(gDC2)
Transmitter Output residual ratio SNRISI -7dB(gDC) -3dB(gDC2)	5326	Measures the transmitter residual ratio -7dB(gDC) -3dB(gDC2)
Transmitter Output residual ratio SNRISI -7dB(gDC) -4dB(gDC2)	5310	Measures the transmitter residual ratio -7dB(gDC) -4dB(gDC2)
Transmitter Output residual ratio SNRISI -7dB(gDC) 1dB(gDC2)	5390	Measures the transmitter residual ratio -7dB(gDC) 1dB(gDC2)
Transmitter Output residual ratio SNRISI -8dB(gDC) -0dB(gDC2)	5375	Measures the transmitter residual ratio -8dB(gDC) -0dB(gDC2)

Table 4 Test IDs and Names (continued)

Name	TestID	Description
Transmitter Output residual ratio SNRISI -8dB(gDC) -1dB(gDC2)	5359	Measures the transmitter residual ratio -8dB(gDC) -1dB(gDC2)
Transmitter Output residual ratio SNRISI -8dB(gDC) -2dB(gDC2)	5343	Measures the transmitter residual ratio -8dB(gDC) -2dB(gDC2)
Transmitter Output residual ratio SNRISI -8dB(gDC) -3dB(gDC2)	5327	Measures the transmitter residual ratio -8dB(gDC) -3dB(gDC2)
Transmitter Output residual ratio SNRISI -8dB(gDC) -4dB(gDC2)	5311	Measures the transmitter residual ratio -8dB(gDC) -4dB(gDC2)
Transmitter Output residual ratio SNRISI -8dB(gDC) 1dB(gDC2)	5391	Measures the transmitter residual ratio -8dB(gDC) 1dB(gDC2)
Transmitter Output residual ratio SNRISI -9dB(gDC) -0dB(gDC2)	5376	Measures the transmitter residual ratio -9dB(gDC) -0dB(gDC2)
Transmitter Output residual ratio SNRISI -9dB(gDC) -1dB(gDC2)	5360	Measures the transmitter residual ratio -9dB(gDC) -1dB(gDC2)
Transmitter Output residual ratio SNRISI -9dB(gDC) -2dB(gDC2)	5344	Measures the transmitter residual ratio -9dB(gDC) -2dB(gDC2)
Transmitter Output residual ratio SNRISI -9dB(gDC) -3dB(gDC2)	5328	Measures the transmitter residual ratio -9dB(gDC) -3dB(gDC2)
Transmitter Output residual ratio SNRISI -9dB(gDC) -4dB(gDC2)	5312	Measures the transmitter residual ratio -9dB(gDC) -4dB(gDC2)
Transmitter Output residual ratio SNRISI -9dB(gDC) 1dB(gDC2)	5392	Measures the transmitter residual ratio -9dB(gDC) 1dB(gDC2)
UUGJ	55203	Uncorrelated Unbounded Gaussian Jitter UUGJ measurement
Vertical Eye Closure	206602	Measures the Vertical Eye Closure at Near-End
Vertical Eye Closure	306602	Measures the Vertical Eye Closure at Near-End
Vertical Eye Closure	356602	Measures the Vertical Eye Closure at Near-End
abs Step Size for c(-1)	66400	abs Coefficient Step Size measurement for Coefficient c(-1)
abs Step Size for c(-2)	66403	abs Coefficient Step Size measurement for Coefficient c(-2)
abs Step Size for c(0)	66401	abs Coefficient Step Size measurement for Coefficient c(0)
abs Step Size for c(1)	66402	abs Coefficient Step Size measurement for Coefficient c(1)
value at max. state for c(-2)	66802	Measures the value of c(-2) at max
value at min. state for c(-1)	66800	Measures the value of c(-1) at min
value at min. state for c(1)	66801	Measures the value of c(1) at min

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.

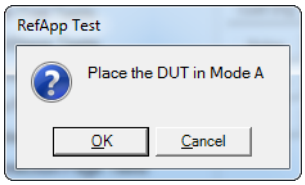
Table 6 Instrument Names

Instrument Name	Description
FlexDca	Primary oscilloscope
N4877A	Clock/Data recovery and Demultiplexer
Keysight PNA	Performance Network Analyzer
Keysight ENA	Economy Network Analyzer

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
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
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
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

Table 7 Message IDs (continued)

Message	ID	Responses	Usage
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: Unknown scope channel	4E5ECAF6-867C-47B3-982D-5F07E2090703	OK	Instrument
Measurement Server no Measure Workers declared	54A8428D-8E22-4286-AC88-7495821ABA77	OK=retry, Cancel=abort run	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
Project loaded as read-only (reason)	98C785F8-D24F-4758-A18D-1CCE61F25371	OK	Instrument
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

Table 7 Message IDs (continued)

Message	ID	Responses	Usage
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
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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