Keysight D9010EBSC IEEE802.3 bs/cd Compliance Application

KEYSIGHT

PROGRAMMER'S REFERENCE

Notices

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In This Book

This book is your guide to programming the Keysight Technologies D9010EBSC IEEE802.3 bs/cd 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 15, and Chapter 4, “Instruments,” starting on page 23 provide information specific to programming the D9010EBSC IEEE802.3 bs/cd 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, and 4 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 D9010EBSC IEEE802.3 bs/cd Compliance Application uses Remote Interface Revision 7.12. 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 D9010EBSC IEEE802.3 bs/cd 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	Bandwidth	BW	(Accepts user-defined text), 50e9	Enter the scope bandwidth.
Configure	Clock Recovery Method	CRMethod	FOPLL, SOPLL	Select the Cock Recovery Method to be used.
Configure	Damping Factor	DFactor	(Accepts user-defined text), 1	Enter the Damping Factor to use for clock recovery. This values is only used for Second Order PLL. You may enter any value.
Configure	Disable Pattern Check	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.
Configure	Disable SNDR Pre-requisites	DisSNDRPre	Enabled, Disabled	Sigma n and ES1/ES2 are pre-requisite measurements to SNDR. If you want to skip these pre-requisites and enter a user sigma-n value, Select "Disable". ES1/ES2 will be set to 0.33.
Configure	Dp	DpVal	(Accepts user-defined text), 2	Set the Dp value used for steady state, linear fit pulse peak, and error calculations.
Configure	Eye Height/Width Probability	NumUI	(Accepts user-defined text), 1e-5, 1e-6, 1e-15	Select the eye probability to test to for Eye Height and Width tests.

Table 2 Configuration Variables and Values (continued)

GUI Location	Label	Variable	Values	Description
Configure	Jitter Edge Count	JitCount	(Accepts user-defined text), 200, 1000, 10000	Set the number of edges for jitter to start measuring results. Note: lower value than the default of 10000 will not be as accurate and consistent. However, will enable quick results.
Configure	Loop Bandwidth	LoopBandwidth	(Accepts user-defined text), 4e6, 10e6, 10.3035e6	Enter the loop bandwidth to use for clock recovery. Value with automatically scale with signaling rate change. Manually set to desired value if different from autoset.
Configure	Nb	NbVal	(Accepts user-defined text), 10, 12, 13, 14, 16	Set the Nb value used for steady state, linear fit pulse peak, and error calculations.
Configure	Np	NpVal	(Accepts user-defined text), 8, 12, 13, 14, 16, 200	Set the Np value used for used for SNDR and SNR_ISI calculations.
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	RLM and RMS Test Pattern	LINMeas	PRBS13Q, Linearity	Enter the pattern to use for RLM and RMS measurements. This allows the user to select the use of the Linearity pattern in making the RLM and RMS measurements. The RMS measurement is used in SNDR and can impact the ratio.
Configure	Sample Rate	SR	(Accepts user-defined text), 80e9	Enter the scope sample rate.
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.

Table 2 Configuration Variables and Values (continued)

GUI Location	Label	Variable	Values	Description
Configure	Scope Response	ScopeResp	BESSEL4, BUTT, WALL	Select the Scope Response. A selection of 4th order Bessel will better represent a reference reciever. A flat response will give a direct look at the exact signal at the test point.
Configure	Scope Response 3dB frequency	ScopeFreq	33e9, 40e9, 43e9, 75, 50e9, 63e9, 80e9	Select the Scope Response 3dB frequency. Note: a selection of 75% of Baud Rate will automatically calculate the valued based on the Baud Rate.
Configure	Select Waveform Directory	DirWFM	(Accepts user-defined text), C:\Temp\KRwfm	Type in a directory path to save your measured waveforms.
Configure	Sigma N	SigmaN	(Accepts user-defined text), 2e-3	Enter the value to use for Sigma N. This value will be used when SNDR pre-req are disabled. Format 0.002 or 2e-3.
Configure	Signal Channels	CHANPAIR	1, 2, Channel 1 and 2, Channel 3 and 4, CHANnel1, CHANnel2, CHANnel3, CHANnel4, 3, 4, WMEMory1, WMEMory2, WMEMory3, WMEMory4, FUNCtion1, FUNCtion2, FUNCtion3, FUNCtion4	Select the oscllloscope input channel pair if connected dual single-ended. Or select the channel used for differential connection. All single channel, waveform memories, or functions that contain the word "differential", must be a single probe or signal that is differential. The channel or waveform memories with two channels are for dual single-ended connections. Note: All functions must be differential.
Configure	Signaling Rate	SignalingRate	(Accepts user-defined text), 10.3125e9, 25.78125e9, 26.5625e9, 50e9	Set the Signaling Rate to be tested. Enter value in the format 10.3125e9.
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.

Table 2 Configuration Variables and Values (continued)

GUI Location	Label	Variable	Values	Description
Configure	Start value for CTLE utility for Far-end 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 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 CTLE utility for Far-end 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	Switch Matrix Scope Channels	CHANPAIR2	3, 4	This configuration variable is automatically set. This is for information purposes, to show the user which channels were selected in the setup tab.
Configure	Tfx Delay for TP0a (ERL)	TfxDelayTP0a	(Accepts user-defined text), 0	Select the value of fixture delay time. This is for ERL measurement. The fixture delay time (Tfx) is twice the propagation delay in ns associated with the test fixture. Please enter value in the format 2e-9.
Configure	Tfx Delay for TP2 (ERL)	TfxDelayTP2	(Accepts user-defined text), 0	Select the value of fixture delay time. This is for ERL measurement. The fixture delay time (Tfx) is twice the propagation delay in ns associated with the test fixture. Please enter value in the format 2e-9.

Table 2 Configuration Variables and Values (continued)

GUI Location	Label	Variable	Values	Description
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.
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	Use Scope Cal	ScopeCal	Y, N	Select Yes to use scope calibrtion. No, to not. This is automatically set to Yes when a scope cal is run on the setup tab.
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.

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	15001	Common-mode Output Return Loss measurement
Common-mode to Differential Output Return Loss	210003	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	10005	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.
DC Common Mode Voltage	55101	Test the DC common mode voltage. This test can only be tested in dual single ended connection

Table 4 Test IDs and Names (continued)

Name	TestID	Description
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
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	206600	Measures the height of each the eye at user selected CTLE
Eye Height - EH6	256600	Measures the height of each the eye at user selected CTLE at 10-6 probability.
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.

Table 4 Test IDs and Names (continued)

Name	TestID	Description
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
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
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

Table 4 Test IDs and Names (continued)

Name	TestID	Description
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
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
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

Table 4 Test IDs and Names (continued)

Name	TestID	Description
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 Gain	5303	Measures the transmitter residual ratio -0dB Gain
Transmitter Output residual ratio SNRISI -10dB Gain	5313	Measures the transmitter residual ratio -10dB Gain
Transmitter Output residual ratio SNRISI -11dB Gain	5314	Measures the transmitter residual ratio -11dB Gain
Transmitter Output residual ratio SNRISI -12dB Gain	5315	Measures the transmitter residual ratio -12dB Gain
Transmitter Output residual ratio SNRISI -13dB Gain	5316	Measures the transmitter residual ratio -13dB Gain
Transmitter Output residual ratio SNRISI -14dB Gain	5317	Measures the transmitter residual ratio -14dB Gain
Transmitter Output residual ratio SNRISI -15dB Gain	5318	Measures the transmitter residual ratio -15dB Gain
Transmitter Output residual ratio SNRISI -1dB Gain	5304	Measures the transmitter residual ratio -1dB Gain
Transmitter Output residual ratio SNRISI -2dB Gain	5305	Measures the transmitter residual ratio -2dB Gain
Transmitter Output residual ratio SNRISI -3dB Gain	5306	Measures the transmitter residual ratio -3dB Gain

Table 4 Test IDs and Names (continued)

Name	TestID	Description
Transmitter Output residual ratio SNRISI -4dB Gain	5307	Measures the transmitter residual ratio -4dB Gain
Transmitter Output residual ratio SNRISI -5dB Gain	5308	Measures the transmitter residual ratio -5dB Gain
Transmitter Output residual ratio SNRISI -6dB Gain	5309	Measures the transmitter residual ratio -6dB Gain
Transmitter Output residual ratio SNRISI -7dB Gain	5310	Measures the transmitter residual ratio -7dB Gain
Transmitter Output residual ratio SNRISI -8dB Gain	5311	Measures the transmitter residual ratio -8dB Gain
Transmitter Output residual ratio SNRISI -9dB Gain	5312	Measures the transmitter residual ratio -9dB Gain
UUGJ	55203	Uncorrelated Unbounded Gaussian Jitter UUGJ measurement
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)	66406	Measures the value of c(-2) at max
value at min. state for c(-1)	66407	Measures the value of c(-1) at min
value at min. state for c(1)	66408	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
Infiniium	The primary oscilloscope
Keysight PNA	Performance Network Analyzer
Keysight ENA	Economy Network Analyzer

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