Keysight N1095BSCA DCA Optical Tx Test Software

KEYSIGHT

PROGRAMMER'S REFERENCE

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In This Book

This book is your guide to programming the Keysight Technologies N1095BSCA DCA Optical Tx Test Software.

- 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 27, and Chapter 5, “Message IDs,” starting on page 29 provide information specific to programming the N1095BSCA DCA Optical Tx Test Software.

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 N1095BSCA DCA Optical Tx Test Software uses Remote Interface Revision 7.2. 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 N1095BSCA DCA Optical Tx Test Software 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	Average Power Measurement Lane 0	PowLane0	(Accepts user-defined text), 0	Set the Average Power for Lane 0. This will be used in Total Average Power calculations.
Configure	Average Power Measurement Lane 1	PowLane1	(Accepts user-defined text), 0	Set the Average Power for Lane 1. This will be used in Total Average Power calculations.
Configure	Average Power Measurement Lane 2	PowLane2	(Accepts user-defined text), 0	Set the Average Power for Lane 2. This will be used in Total Average Power calculations.
Configure	Average Power Measurement Lane 3	PowLane3	(Accepts user-defined text), 0	Set the Average Power for Lane 3. This will be used in Total Average Power calculations.
Configure	Channel Attenuation Lane 0 (Long Fiber)	LongFiberAtten0	(Accepts user-defined text), 0, 3	In units of dB Value of path attenuation from device to measurement receiver. This will adjust the measured amplitude values for the path loss. Allows user to enter desired values.
Configure	Channel Attenuation Lane 0 (Short Fiber)	Atten0	(Accepts user-defined text), 0, 3	In units of dB Value of path attenuation from device to measurement receiver. This will adjust the measured amplitude values for the path loss. Allows user to enter desired values.

Table 2 Configuration Variables and Values (continued)

GUI Location	Label	Variable	Values	Description
Configure	Channel Attenuation Lane 1 (Long Fiber)	LongFiberAtten1	(Accepts user-defined text), 0, 3	In units of dB Value of path attenuation from device to measurement receiver. This will adjust the measured amplitude values for the path loss. Allows user to enter desired values.
Configure	Channel Attenuation Lane 1 (Short Fiber)	Atten1	(Accepts user-defined text), 0, 3	In units of dB Value of path attenuation from device to measurement receiver. This will adjust the measured amplitude values for the path loss. Allows user to enter desired values.
Configure	Channel Attenuation Lane 10 (Long Fiber)	LongFiberAtten10	(Accepts user-defined text), 0, 3	In units of dB Value of path attenuation from device to measurement receiver. This will adjust the measured amplitude values for the path loss. Allows user to enter desired values.
Configure	Channel Attenuation Lane 10 (Short Fiber)	Atten10	(Accepts user-defined text), 0, 3	In units of dB Value of path attenuation from device to measurement receiver. This will adjust the measured amplitude values for the path loss. Allows user to enter desired values.
Configure	Channel Attenuation Lane 11 (Long Fiber)	LongFiberAtten11	(Accepts user-defined text), 0, 3	In units of dB Value of path attenuation from device to measurement receiver. This will adjust the measured amplitude values for the path loss. Allows user to enter desired values.
Configure	Channel Attenuation Lane 11 (Short Fiber)	Atten11	(Accepts user-defined text), 0, 3	In units of dB Value of path attenuation from device to measurement receiver. This will adjust the measured amplitude values for the path loss. Allows user to enter desired values.
Configure	Channel Attenuation Lane 12 (Long Fiber)	LongFiberAtten12	(Accepts user-defined text), 0, 3	In units of dB Value of path attenuation from device to measurement receiver. This will adjust the measured amplitude values for the path loss. Allows user to enter desired values.

Table 2 Configuration Variables and Values (continued)

GUI Location	Label	Variable	Values	Description
Configure	Channel Attenuation Lane 12 (Short Fiber)	Atten12	(Accepts user-defined text), 0, 3	In units of dB Value of path attenuation from device to measurement receiver. This will adjust the measured amplitude values for the path loss. Allows user to enter desired values.
Configure	Channel Attenuation Lane 13 (Long Fiber)	LongFiberAtten13	(Accepts user-defined text), 0, 3	In units of dB Value of path attenuation from device to measurement receiver. This will adjust the measured amplitude values for the path loss. Allows user to enter desired values.
Configure	Channel Attenuation Lane 13 (Short Fiber)	Atten13	(Accepts user-defined text), 0, 3	In units of dB Value of path attenuation from device to measurement receiver. This will adjust the measured amplitude values for the path loss. Allows user to enter desired values.
Configure	Channel Attenuation Lane 14 (Long Fiber)	LongFiberAtten14	(Accepts user-defined text), 0, 3	In units of dB Value of path attenuation from device to measurement receiver. This will adjust the measured amplitude values for the path loss. Allows user to enter desired values.
Configure	Channel Attenuation Lane 14 (Short Fiber)	Atten14	(Accepts user-defined text), 0, 3	In units of dB Value of path attenuation from device to measurement receiver. This will adjust the measured amplitude values for the path loss. Allows user to enter desired values.
Configure	Channel Attenuation Lane 15 (Long Fiber)	LongFiberAtten15	(Accepts user-defined text), 0, 3	In units of dB Value of path attenuation from device to measurement receiver. This will adjust the measured amplitude values for the path loss. Allows user to enter desired values.
Configure	Channel Attenuation Lane 15 (Short Fiber)	Atten15	(Accepts user-defined text), 0, 3	In units of dB Value of path attenuation from device to measurement receiver. This will adjust the measured amplitude values for the path loss. Allows user to enter desired values.

Table 2 Configuration Variables and Values (continued)

GUI Location	Label	Variable	Values	Description
Configure	Channel Attenuation Lane 2 (Long Fiber)	LongFiberAtten2	(Accepts user-defined text), 0, 3	In units of dB Value of path attenuation from device to measurement receiver. This will adjust the measured amplitude values for the path loss. Allows user to enter desired values.
Configure	Channel Attenuation Lane 2 (Short Fiber)	Atten2	(Accepts user-defined text), 0, 3	In units of dB Value of path attenuation from device to measurement receiver. This will adjust the measured amplitude values for the path loss. Allows user to enter desired values.
Configure	Channel Attenuation Lane 3 (Long Fiber)	LongFiberAtten3	(Accepts user-defined text), 0, 3	In units of dB Value of path attenuation from device to measurement receiver. This will adjust the measured amplitude values for the path loss. Allows user to enter desired values.
Configure	Channel Attenuation Lane 3 (Short Fiber)	Atten3	(Accepts user-defined text), 0, 3	In units of dB Value of path attenuation from device to measurement receiver. This will adjust the measured amplitude values for the path loss. Allows user to enter desired values.
Configure	Channel Attenuation Lane 4 (Long Fiber)	LongFiberAtten4	(Accepts user-defined text), 0, 3	In units of dB Value of path attenuation from device to measurement receiver. This will adjust the measured amplitude values for the path loss. Allows user to enter desired values.
Configure	Channel Attenuation Lane 4 (Short Fiber)	Atten4	(Accepts user-defined text), 0, 3	In units of dB Value of path attenuation from device to measurement receiver. This will adjust the measured amplitude values for the path loss. Allows user to enter desired values.
Configure	Channel Attenuation Lane 5 (Long Fiber)	LongFiberAtten5	(Accepts user-defined text), 0, 3	In units of dB Value of path attenuation from device to measurement receiver. This will adjust the measured amplitude values for the path loss. Allows user to enter desired values.

Table 2 Configuration Variables and Values (continued)

GUI Location	Label	Variable	Values	Description
Configure	Channel Attenuation Lane 5 (Short Fiber)	Atten5	(Accepts user-defined text), 0, 3	In units of dB Value of path attenuation from device to measurement receiver. This will adjust the measured amplitude values for the path loss. Allows user to enter desired values.
Configure	Channel Attenuation Lane 6 (Long Fiber)	LongFiberAtten6	(Accepts user-defined text), 0, 3	In units of dB Value of path attenuation from device to measurement receiver. This will adjust the measured amplitude values for the path loss. Allows user to enter desired values.
Configure	Channel Attenuation Lane 6 (Short Fiber)	Atten6	(Accepts user-defined text), 0, 3	In units of dB Value of path attenuation from device to measurement receiver. This will adjust the measured amplitude values for the path loss. Allows user to enter desired values.
Configure	Channel Attenuation Lane 7 (Long Fiber)	LongFiberAtten7	(Accepts user-defined text), 0, 3	In units of dB Value of path attenuation from device to measurement receiver. This will adjust the measured amplitude values for the path loss. Allows user to enter desired values.
Configure	Channel Attenuation Lane 7 (Short Fiber)	Atten7	(Accepts user-defined text), 0, 3	In units of dB Value of path attenuation from device to measurement receiver. This will adjust the measured amplitude values for the path loss. Allows user to enter desired values.
Configure	Channel Attenuation Lane 8 (Long Fiber)	LongFiberAtten8	(Accepts user-defined text), 0, 3	In units of dB Value of path attenuation from device to measurement receiver. This will adjust the measured amplitude values for the path loss. Allows user to enter desired values.
Configure	Channel Attenuation Lane 8 (Short Fiber)	Atten8	(Accepts user-defined text), 0, 3	In units of dB Value of path attenuation from device to measurement receiver. This will adjust the measured amplitude values for the path loss. Allows user to enter desired values.

Table 2 Configuration Variables and Values (continued)

GUI Location	Label	Variable	Values	Description
Configure	Channel Attenuation Lane 9 (Long Fiber)	LongFiberAtten9	(Accepts user-defined text), 0, 3	In units of dB Value of path attenuation from device to measurement receiver. This will adjust the measured amplitude values for the path loss. Allows user to enter desired values.
Configure	Channel Attenuation Lane 9 (Short Fiber)	Atten9	(Accepts user-defined text), 0, 3	In units of dB Value of path attenuation from device to measurement receiver. This will adjust the measured amplitude values for the path loss. Allows user to enter desired values.
Configure	Channels	CHANPAIR	CHAN1A, CHAN1B, CHAN2A, CHAN2B	Install the module in Slot 1 or Slot 2
Configure	Channels for N109x	CHANPAIR_DCAM	CHAN7A, CHAN7B, CHAN7C, CHAN7D	Install the module in Slot 7.
Configure	Clock Recovery	UseCDR	CDR, NoCDR	Choose to select CDR or Explicit Clock
Configure	First DUT Lane (4 Lanes)	Lane1	Lane0, Lane1, Lane2, Lane3	Difference in Launch Power for any two lanes. Lane 0 as default.
Configure	First DUT Lane (8 Lanes)	DUTLane1	Lane0, Lane1, Lane2, Lane3, Lane4, Lane5, Lane6, Lane7	Difference in Launch Power for any two lanes. Lane 0 as default.
Configure	Instrument Calibration	InsCal	Required, Not Required	Allows measurements to be completed if instrument is not calibrated. Only available in Debug Mode.
Configure	Iterative Optimization	IOpt	ON, OFF	Select On to turn on Iterative Optimization for TDECQ measurement.
Configure	Loop Bandwidth Tuning	LoopBWTuning	ON, OFF	Select On to turn on Loop BW Tuning
Configure	Optical CR High Gain	HighGain	ON, OFF	Allows to select Optical CR High Gain setting.
Configure	Second DUT Lane (4 Lanes)	Lane2	Lane0, Lane1, Lane2, Lane3	Difference in Launch Power for any two lanes. Lane 1 as default.
Configure	Second DUT Lane (8 Lanes)	DUTLane2	Lane0, Lane1, Lane2, Lane3, Lane4, Lane5, Lane6, Lane7	Difference in Launch Power for any two lanes. Lane 1 as default.

Table 2 Configuration Variables and Values (continued)

GUI Location	Label	Variable	Values	Description
Configure	Signaling Rate	SignalingRate	(Accepts user-defined text in Debug mode), 26.5625e9, 53.125e9	Set the Signaling Rate to be tested. Enter value in the format 26.5625e9.
Configure	Verify Pattern Length	VerPattLength	1, 0	For compliance, the application verifies the pattern length is the one specified in the Implementation Agreement. In Debug mode, you may disable this feature and set the device to any pattern up to SSPRQ.
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	Browse button	OMABrowse	1	Browse button When task completes, value automatically resets to 0.
Set Up	Browse button	TDECQBrowse	1	Browse button When task completes, value automatically resets to 0.
Set Up	Browse button	TransitionTimeBrowse	1	Browse button When task completes, value automatically resets to 0.
Set Up	Browse button	TxEyeClosureBrowse	1	Browse button When task completes, value automatically resets to 0.
Set Up	Browse button	TxOverShootUnderShootBrowse	1	Browse button When task completes, value automatically resets to 0.
Set Up	Browse button	TxPowerExBrowse	1	Browse button When task completes, value automatically resets to 0.
Set Up	Clear button	OMAClear	1	Clear button When task completes, value automatically resets to 0.

Table 2 Configuration Variables and Values (continued)

GUI Location	Label	Variable	Values	Description
Set Up	Clear button	TDECQClear	1	Clear button When task completes, value automatically resets to 0.
Set Up	Clear button	TransitionTimeClear	1	Clear button When task completes, value automatically resets to 0.
Set Up	Clear button	TxEyeClosureClear	1	Clear button When task completes, value automatically resets to 0.
Set Up	Clear button	TxOverShootUnderShootClear	1	Clear button When task completes, value automatically resets to 0.
Set Up	Clear button	TxPowerExClear	1	Clear button When task completes, value automatically resets to 0.
Set Up	LaneNumOption16Lane	LaneNumOption16Lane	Lane0, Lane1, Lane2, Lane3, Lane4, Lane5, Lane6, Lane7, Lane8, Lane9, Lane10, Lane11, Lane12, Lane13, Lane14, Lane15	This option allows user to select which lane is testing when testing Single Lane.
Set Up	LaneNumOption1Lane	LaneNumOption1Lane	Lane0	This option allows user to select which lane is testing when testing Single Lane.
Set Up	LaneNumOption2Lane	LaneNumOption2Lane	Lane0, Lane1	This option allows user to select which lane is testing when testing Single Lane.
Set Up	LaneNumOption4Lane	LaneNumOption4Lane	Lane0, Lane1, Lane2, Lane3	This option allows user to select which lane is testing when testing Single Lane.
Set Up	LaneNumOption8Lane	LaneNumOption8Lane	Lane0, Lane1, Lane2, Lane3, Lane4, Lane5, Lane6, Lane7	This option allows user to select which lane is testing when testing Single Lane.
Set Up	OMA or OER wav path	OMAOERWav	(Accepts user-defined text)	OMA or OER wav path
Set Up	OfflineEnable	UseOffline	0.0, 1.0	Enable testing using saved waveforms.
Set Up	TDECQ or TDEC wav path	TDECQWav	(Accepts user-defined text)	TDECQ or TDEC wav path

Table 2 Configuration Variables and Values (continued)

GUI Location	Label	Variable	Values	Description
Set Up	Transition Time wav path	TransitionTimeWav	(Accepts user-defined text)	Transition Time wav path
Set Up	Transmitter Eye Closure wav path	TxEyeClosureWav	(Accepts user-defined text)	Transmitter Eye Closure wav path
Set Up	Transmitter OverShoot/UnderShoot wav path	TxOverShootUnderShootWav	(Accepts user-defined text)	Transmitter OverShoot/UnderShoot wav path
Set Up	Transmitter Power Excursion wav path	TxPowerExWav	(Accepts user-defined text)	Transmitter Power Excursion wav path
Set Up	User Comment	txtOverallUserComment	(Accepts user-defined text)	This option allows user to key in related test detail.

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
Average (Optical) Launch Power	3	Average Power of the signal
Average (Optical) Launch Power	13	Average Power of the signal
Average (Optical) Launch Power	23	Average Power of the signal
Average (Optical) Launch Power	33	Average Power of the signal
Average (Optical) Launch Power	43	Average Power of the signal
Average (Optical) Launch Power	53	Average Power of the signal
Average (Optical) Launch Power	63	Average Power of the signal
Average (Optical) Launch Power	73	Average Power of the signal
Average (Optical) Launch Power	83	Average Power of the signal
Average (Optical) Launch Power	93	Average Power of the signal
Average (Optical) Launch Power	103	Average Power of the signal
Average (Optical) Launch Power	121	Average Power of the signal
Average (Optical) Launch Power	142	Average Power of the signal
Average (Optical) Launch Power	162	Average Power of the signal
Average (Optical) Launch Power	182	Average Power of the signal
Average (Optical) Launch Power (TX OFF)	1	Average (Optical) Launch Power (TX OFF)
Average (Optical) Launch Power (TX OFF)	11	Average (Optical) Launch Power (TX OFF)
Average (Optical) Launch Power (TX OFF)	21	Average (Optical) Launch Power (TX OFF)
Average (Optical) Launch Power (TX OFF)	31	Average (Optical) Launch Power (TX OFF)
Average (Optical) Launch Power (TX OFF)	41	Average (Optical) Launch Power (TX OFF)

Table 4 Test IDs and Names (continued)

Name	TestID	Description
Average (Optical) Launch Power (TX OFF)	51	Average (Optical) Launch Power (TX OFF)
Average (Optical) Launch Power (TX OFF)	61	Average (Optical) Launch Power (TX OFF)
Average (Optical) Launch Power (TX OFF)	71	Average (Optical) Launch Power (TX OFF)
Average (Optical) Launch Power (TX OFF)	81	Average (Optical) Launch Power (TX OFF)
Average (Optical) Launch Power (TX OFF)	91	Average (Optical) Launch Power (TX OFF)
Average (Optical) Launch Power (TX OFF)	101	Average (Optical) Launch Power (TX OFF)
Average (Optical) Launch Power (TX OFF)	119	Average (Optical) Launch Power (TX OFF)
Average (Optical) Launch Power (TX OFF)	140	Average (Optical) Launch Power (TX OFF)
Average (Optical) Launch Power (TX OFF)	160	Average (Optical) Launch Power (TX OFF)
Average (Optical) Launch Power (TX OFF)	180	Average (Optical) Launch Power (TX OFF)
Difference in Launch Power for any two lanes	19	Difference in Launch Power for any two lanes
Difference in Launch Power for any two lanes	29	Difference in Launch Power for any two lanes
Difference in Launch Power for any two lanes	39	Difference in Launch Power for any two lanes
Difference in Launch Power for any two lanes	49	Difference in Launch Power for any two lanes
Difference in Launch Power for any two lanes	129	Difference in Launch Power for any two lanes
Difference in Launch Power for any two lanes	150	Difference in Launch Power for any two lanes
Extinction Ratio	55	Extinction Ratio of the optical signal.
Launch power in OMAouter minus TDEC	57	Launch power in OMAouter minus TDEC
Launch power in OMAouter minus TDECQ	7	Launch power in OMAouter minus TDECQ

Table 4 Test IDs and Names (continued)

Name	TestID	Description
Launch power in OMAouter minus TDECQ	17	Launch power in OMAouter minus TDECQ
Launch power in OMAouter minus TDECQ	27	Launch power in OMAouter minus TDECQ
Launch power in OMAouter minus TDECQ	37	Launch power in OMAouter minus TDECQ
Launch power in OMAouter minus TDECQ	47	Launch power in OMAouter minus TDECQ
Launch power in OMAouter minus TDECQ	67	Launch power in OMAouter minus TDECQ
Launch power in OMAouter minus TDECQ	77	Launch power in OMAouter minus TDECQ
Launch power in OMAouter minus TDECQ	87	Launch power in OMAouter minus TDECQ
Launch power in OMAouter minus TDECQ	97	Launch power in OMAouter minus TDECQ
Launch power in OMAouter minus TDECQ	107	Launch power in OMAouter minus TDECQ
Optical Modulation Amplitude (OMA)	54	Optical Modulation Amplitude (OMA) of the optical signal.
Outer Extinction Ratio	5	Outer Extinction Ratio of the optical signal.
Outer Extinction Ratio	15	Outer Extinction Ratio of the optical signal.
Outer Extinction Ratio	25	Outer Extinction Ratio of the optical signal.
Outer Extinction Ratio	35	Outer Extinction Ratio of the optical signal.
Outer Extinction Ratio	45	Outer Extinction Ratio of the optical signal.
Outer Extinction Ratio	65	Outer Extinction Ratio of the optical signal.
Outer Extinction Ratio	75	Outer Extinction Ratio of the optical signal.
Outer Extinction Ratio	85	Outer Extinction Ratio of the optical signal.
Outer Extinction Ratio	95	Outer Extinction Ratio of the optical signal.
Outer Extinction Ratio	105	Outer Extinction Ratio of the optical signal.
Outer Extinction Ratio	123	Outer Extinction Ratio of the optical signal.
Outer Extinction Ratio	144	Outer Extinction Ratio of the optical signal.
Outer Extinction Ratio	164	Outer Extinction Ratio of the optical signal.
Outer Extinction Ratio	184	Outer Extinction Ratio of the optical signal.

Table 4 Test IDs and Names (continued)

Name	TestID	Description
Outer Optical Modulation Amplitude (OMA)	4	Outer Optical Modulation Amplitude (OMA) of the optical signal.
Outer Optical Modulation Amplitude (OMA)	14	Outer Optical Modulation Amplitude (OMA) of the optical signal.
Outer Optical Modulation Amplitude (OMA)	24	Outer Optical Modulation Amplitude (OMA) of the optical signal.
Outer Optical Modulation Amplitude (OMA)	34	Outer Optical Modulation Amplitude (OMA) of the optical signal.
Outer Optical Modulation Amplitude (OMA)	44	Outer Optical Modulation Amplitude (OMA) of the optical signal.
Outer Optical Modulation Amplitude (OMA)	64	Outer Optical Modulation Amplitude (OMA) of the optical signal.
Outer Optical Modulation Amplitude (OMA)	74	Outer Optical Modulation Amplitude (OMA) of the optical signal.
Outer Optical Modulation Amplitude (OMA)	84	Outer Optical Modulation Amplitude (OMA) of the optical signal.
Outer Optical Modulation Amplitude (OMA)	94	Outer Optical Modulation Amplitude (OMA) of the optical signal.
Outer Optical Modulation Amplitude (OMA)	104	Outer Optical Modulation Amplitude (OMA) of the optical signal.
Outer Optical Modulation Amplitude (OMA)	122	Outer Optical Modulation Amplitude (OMA) of the optical signal.
Outer Optical Modulation Amplitude (OMA)	143	Outer Optical Modulation Amplitude (OMA) of the optical signal.
Outer Optical Modulation Amplitude (OMA)	163	Outer Optical Modulation Amplitude (OMA) of the optical signal.
Outer Optical Modulation Amplitude (OMA)	183	Outer Optical Modulation Amplitude (OMA) of the optical signal.
Relative Intensity Noise (RIN12 OMA)	78	Relative Intensity Noise (RIN12 OMA)
Relative Intensity Noise (RIN12 OMA)	116	Relative Intensity Noise (RIN12 OMA)
Relative Intensity Noise (RIN15.5 OMA)	108	Relative Intensity Noise (RIN15.5 OMA)
Relative Intensity Noise (RIN15.6 OMA)	28	Relative Intensity Noise (RIN15.6 OMA)
Relative Intensity Noise (RIN15.6 OMA)	113	Relative Intensity Noise (RIN15.6 OMA)
Relative Intensity Noise (RIN15.6 OMA)	48	Relative Intensity Noise (RIN15.6 OMA)
Relative Intensity Noise (RIN15.6 OMA)	115	Relative Intensity Noise (RIN15.6 OMA)
Relative Intensity Noise (RIN15.6 OMA)	98	Relative Intensity Noise (RIN15.6 OMA)

Table 4 Test IDs and Names (continued)

Name	TestID	Description
Relative Intensity Noise (RIN15.6 OMA)	118	Relative Intensity Noise (RIN15.6 OMA)
Relative Intensity Noise (RIN15.6 OMA)	148	Relative Intensity Noise (RIN15.6 OMA)
Relative Intensity Noise (RIN15.6 OMA)	188	Relative Intensity Noise (RIN15.6 OMA)
Relative Intensity Noise (RIN17.1 OMA)	18	Relative Intensity Noise (RIN17.1 OMA)
Relative Intensity Noise (RIN17.1 OMA)	112	Relative Intensity Noise (RIN17.1 OMA)
Relative Intensity Noise (RIN17.1 OMA)	38	Relative Intensity Noise (RIN17.1 OMA)
Relative Intensity Noise (RIN17.1 OMA)	114	Relative Intensity Noise (RIN17.1 OMA)
Relative Intensity Noise (RIN17.1 OMA)	88	Relative Intensity Noise (RIN17.1 OMA)
Relative Intensity Noise (RIN17.1 OMA)	117	Relative Intensity Noise (RIN17.1 OMA)
Relative Intensity Noise (RIN17.1 OMA)	127	Relative Intensity Noise (RIN17.1 OMA)
Relative Intensity Noise (RIN17.1 OMA)	168	Relative Intensity Noise (RIN17.1 OMA)
Relative Intensity Noise (RIN21.4 OMA)	8	Relative Intensity Noise (RIN21.4 OMA)
Relative Intensity Noise (RIN21.4 OMA)	111	Relative Intensity Noise (RIN21.4 OMA)
Relative Intensity Noise (RIN21.4 OMA)	68	Relative Intensity Noise (RIN21.4 OMA)
Signaling Rate	2	Signaling rate of the signal
Signaling Rate	12	Signaling rate of the signal
Signaling Rate	22	Signaling rate of the signal
Signaling Rate	32	Signaling rate of the signal
Signaling Rate	42	Signaling rate of the signal
Signaling Rate	52	Signaling rate of the signal
Signaling Rate	62	Signaling rate of the signal
Signaling Rate	72	Signaling rate of the signal
Signaling Rate	82	Signaling rate of the signal
Signaling Rate	92	Signaling rate of the signal
Signaling Rate	102	Signaling rate of the signal
Signaling Rate	120	Signaling rate of the signal
Signaling Rate	141	Signaling rate of the signal
Signaling Rate	161	Signaling rate of the signal
Signaling Rate	181	Signaling rate of the signal
TDECQ minus Ceq	79	TDECQ minus Ceq
TDECQ minus Ceq	89	TDECQ minus Ceq

Table 4 Test IDs and Names (continued)

Name	TestID	Description
TDECQ minus Ceq	99	TDECQ minus Ceq
TDECQ minus Ceq	109	TDECQ minus Ceq
TDECQ minus TECQ	125	TDECQ minus TECQ
TDECQ minus TECQ	146	TDECQ minus TECQ
TDECQ minus TECQ	166	TDECQ minus TECQ
TDECQ minus TECQ	186	TDECQ minus TECQ
Total Average Launch Power	134	Total Average Launch Power
Total Average Launch Power	155	Total Average Launch Power
Transmitter Overshoot	130	Transmitter Overshoot
Transmitter Overshoot	151	Transmitter Overshoot
Transmitter Overshoot	170	Transmitter Overshoot
Transmitter Overshoot	190	Transmitter Overshoot
Transmitter Power Excursion	132	Transmitter Power Excursion
Transmitter Power Excursion	153	Transmitter Power Excursion
Transmitter Power Excursion	172	Transmitter Power Excursion
Transmitter Power Excursion	192	Transmitter Power Excursion
Transmitter Undershoot	131	Transmitter Undershoot
Transmitter Undershoot	152	Transmitter Undershoot
Transmitter Undershoot	171	Transmitter Undershoot
Transmitter Undershoot	191	Transmitter Undershoot
Transmitter and dispersion eye closure	56	TDEC of the optical signal.
Transmitter and dispersion eye closure	6	TDECQ of the optical signal.
Transmitter and dispersion eye closure	16	TDECQ of the optical signal.
Transmitter and dispersion eye closure	26	TDECQ of the optical signal.
Transmitter and dispersion eye closure	36	TDECQ of the optical signal.
Transmitter and dispersion eye closure	46	TDECQ of the optical signal.
Transmitter and dispersion eye closure	66	TDECQ of the optical signal.
Transmitter and dispersion eye closure	76	TDECQ of the optical signal.
Transmitter and dispersion eye closure	86	TDECQ of the optical signal.
Transmitter and dispersion eye closure	96	TDECQ of the optical signal.
Transmitter and dispersion eye closure	106	TDECQ of the optical signal.

Table 4 Test IDs and Names (continued)

Name	TestID	Description
Transmitter and dispersion eye closure	124	TDECQ of the optical signal.
Transmitter and dispersion eye closure	145	TDECQ of the optical signal.
Transmitter and dispersion eye closure	165	TDECQ of the optical signal.
Transmitter and dispersion eye closure	185	TDECQ of the optical signal.
Transmitter eye closure	133	Transmitter eye closure
Transmitter eye closure	154	Transmitter eye closure
Transmitter eye closure	173	Transmitter eye closure
Transmitter eye closure	193	Transmitter eye closure
Transmitter transition time	80	Transmitter transition time
Transmitter transition time	90	Transmitter transition time
Transmitter transition time	100	Transmitter transition time
Transmitter transition time	110	Transmitter transition time
Transmitter transition time	128	Transmitter transition time
Transmitter transition time	149	Transmitter transition time
Transmitter transition time	169	Transmitter transition time
Transmitter transition time	189	Transmitter transition time

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.

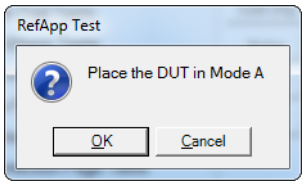
Table 6 Instrument Names

Instrument Name	Description
FlexDca	Primary oscilloscope

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
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
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

Table 7 Message IDs (continued)

Message	ID	Responses	Usage
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
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

Table 7 Message IDs (continued)

Message	ID	Responses	Usage
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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