

Keysight N6474A ONFI-NVDDR2 Compliance Test Application

Notices

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In This Book

This book is your guide to programming the Keysight Technologies N6474A ONFI-NVDDR2 Compliance 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 21, and **Chapter 4**, “Instruments,” starting on page 25, provide information specific to programming the N6474A ONFI-NVDDR2 Compliance 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, and 4 for changes.

Contents

In This Book / 3

1 Introduction to Programming

Remote Programming Toolkit / 8

2 Configuration Variables and Values

3 Test Names and IDs

4 Instruments

Index

1 Introduction to Programming

Remote Programming Toolkit / 8

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

- Launching and closing the application.
- Configuring the options.
- Running tests.
- Getting results.
- Controlling when and where 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 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 N6474A ONFI-NVDDR2 Compliance Test Application uses Remote Interface Revision 5.70. 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 N6474A ONFI-NVDDR2 Compliance 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	Base Ratio	BurstTriggerBaseRatio_CE	(Accepts user-defined text), 0.20	Specify the value of the top ratio used when triggering for the READ/WRITE burst data. The value set here is applicable ONLY when the "Threshold Mode" option is set to "TopBaseRatio".
Configure	Base Ratio	BurstTriggerBaseRatio_DQ	(Accepts user-defined text), 0.20	Specify the value of the base ratio used when triggering for the READ/WRITE burst data. The value set here is applicable ONLY when the "Threshold Mode" option is set to "TopBaseRatio".
Configure	Base Ratio	BurstTriggerBaseRatio_DQS	(Accepts user-defined text), 0.20	Specify the value of the base ratio used when triggering for the READ/WRITE burst data. The value set here is applicable ONLY when the "Threshold Mode" option is set to "TopBaseRatio".
Configure	Base Ratio	BurstTriggerBaseRatio_DQS Minus	(Accepts user-defined text), 0.20	Specify the value of the top ratio used when triggering for the READ/WRITE burst data. The value set here is applicable ONLY when the "Threshold Mode" option is set to "TopBaseRatio".

Table 2 Configuration Variables and Values (continued)

GUI Location	Label	Variable	Values	Description
Configure	Base Ratio	BurstTriggerBaseRatio_DQS Plus	(Accepts user-defined text), 0.20	Specify the value of the top ratio used when triggering for the READ/WRITE burst data. The value set here is applicable ONLY when the "Threshold Mode" option is set to "TopBaseRatio".
Configure	Base Ratio	BurstTriggerBaseRatio_RE	(Accepts user-defined text), 0.20	Specify the value of the base ratio used when triggering for the READ/WRITE burst data. The value set here is applicable ONLY when the "Threshold Mode" option is set to "TopBaseRatio".
Configure	CE Channel	CEChannel	CHANnel1, CHANnel2, CHANnel3, CHANnel4	Identifies the source channel for CE Signal.
Configure	CEHigh_AC (V)	CEHigh_ac	(Accepts user-defined text), 0.500	Single Ended CE high.
Configure	CELow_AC (V)	CELow_ac	(Accepts user-defined text), -0.500	Single Ended CE low.
Configure	Consecutive DQS/RE Cycles	ConsecutiveCycles	(Accepts user-defined text), 200	This Parameter allow to change the consecutive periods for tDSC(avg), tJITper and tJITcc tests
Configure	DQ Channel	DQChannel	CHANnel1, CHANnel2, CHANnel3, CHANnel4	Identifies the source channel for DQ Signal.
Configure	DQS Channel	DQSChannel	CHANnel1, CHANnel2, CHANnel3, CHANnel4	Identifies the source channel for DQS Signal.
Configure	DQS Minus	DQSMinusChannel	CHANnel1, CHANnel2, CHANnel3, CHANnel4	Identifies the source channel for DQS Minus Signal.
Configure	DQS Plus	DQSPlusChannel	CHANnel1, CHANnel2, CHANnel3, CHANnel4	Identifies the source channel for DQS Plus Signal.

Table 2 Configuration Variables and Values (continued)

GUI Location	Label	Variable	Values	Description
Configure	Derated Limit Method	DeratedLimitMethod	0, 1	This option is used to select the method to determine the derating values used in calculation of the dynamic test limit for tests that support derating [tDS-Diff(derate),tDH-Diff(derate)]. When the "Nominal Method" option is selected, the nominal slew rates of the relevant test signal (DQ) will be used to determine the derating value. Otherwise if "Tangent Method" option is selected, the slew rates of a tangent line to the actual test signal (DQ) will be used to determine the derating value instead.
Configure	Lower Threshold (V)	CE_Low_Thresh	(Accepts user-defined text), -0.50	Specify the lower measurement threshold used for ALE Channel. The value set here is applicable ONLY when the "Threshold Mode" option is set to "Custom Threshold".
Configure	Lower Threshold (V)	DQSMinus_Low_Thresh	(Accepts user-defined text), 0.650	Specify the lower measurement threshold used for DQS Minus Channel. The value set here is applicable ONLY when the "Threshold Mode" option is set to "Custom Threshold".
Configure	Lower Threshold (V)	DQSPlus_Low_Thresh	(Accepts user-defined text), 0.650	Specify the lower measurement threshold used for DQS Plus Channel. The value set here is applicable ONLY when the "Threshold Mode" option is set to "Custom Threshold".
Configure	Lower Threshold (V)	DQS_Low_Thresh	(Accepts user-defined text), -0.50	Specify the lower measurement threshold used for DQS Channel. The value set here is applicable ONLY when the "Threshold Mode" option is set to "Custom Threshold".

Table 2 Configuration Variables and Values (continued)

GUI Location	Label	Variable	Values	Description
Configure	Lower Threshold (V)	DQ_Low_Thresh	(Accepts user-defined text), 0.650	Specify the lower measurement threshold used for DQ Channel. The value set here is applicable ONLY when the "Threshold Mode" option is set to "Custom Threshold".
Configure	Lower Threshold (V)	RE_Low_Thresh	(Accepts user-defined text), -0.50	Specify the lower measurement threshold used for RE Channel. The value set here is applicable ONLY when the "Threshold Mode" option is set to "Custom Threshold".
Configure	Max Acquisition Count	MaxAcqCount	(Accepts user-defined text), 5, 10, 20, 50	Determine the maximum number of acquisition that the app will used to try and achieved the required READ/WRITE measurement burst count(as specified in the "Multi Burst Count" option) when performing the tests. *Note: This option is applicable to all READ /WRITE burst related tests in the Electrical Tests group and Timing Tests group.
Configure	Middle Threshold (V)	CE_Mid_Thresh	(Accepts user-defined text), 0.00	Specify the middle measurement threshold used for ALE Channel. The value set here is applicable ONLY when the "Threshold Mode" option is set to "Custom Threshold".
Configure	Middle Threshold (V)	DQSMinus_Mid_Thresh	(Accepts user-defined text), 0.900	Specify the middle measurement threshold used for DQS Minus Channel. The value set here is applicable ONLY when the "Threshold Mode" option is set to "Custom Threshold".
Configure	Middle Threshold (V)	DQSPlus_Mid_Thresh	(Accepts user-defined text), 0.900	Specify the middle measurement threshold used for DQS Plus Channel. The value set here is applicable ONLY when the "Threshold Mode" option is set to "Custom Threshold".

Table 2 Configuration Variables and Values (continued)

GUI Location	Label	Variable	Values	Description
Configure	Middle Threshold (V)	DQS_Mid_Thresh	(Accepts user-defined text), 0.00	Specify the middle measurement threshold used for DQS Channel. The value set here is applicable ONLY when the "Threshold Mode" option is set to "Custom Threshold".
Configure	Middle Threshold (V)	DQ_Mid_Thresh	(Accepts user-defined text), 0.900	Specify the middle measurement threshold used for DQ Channel. The value set here is applicable ONLY when the "Threshold Mode" option is set to "Custom Threshold".
Configure	Middle Threshold (V)	RE_Mid_Thresh	(Accepts user-defined text), 0.00	Specify the middle measurement threshold used for RE Channel. The value set here is applicable ONLY when the "Threshold Mode" option is set to "Custom Threshold".
Configure	Multi Burst Count	MultiBurstCount	(Accepts user-defined text), 1, 10, 100, 1000	Determine the number of READ/WRITE measurement burst(s) that is required when performing the tests. *Note: This option is applicable to all READ /WRITE burst related tests in the Electrical Tests group and Timing Tests group with the exception of VOH(AC), VOH(DC), VOL(AC), VOL(DC), VIHdiff(AC), VILDdiff(AC), VOHDiff(AC) and VOLDiff(AC) tests.
Configure	OfflineDataMode(Must be hidden)	OfflineDataMode	(Accepts user-defined text), 0.0, 1.0	For supporting offline
Configure	Output Slew Rate Requirements	OutputSlewRateRequirements	0, 1	This Parameter allow to change the Output Slew Rate requirements option with ZQ Calibration and without ZQ calibration
Configure	RE Channel	REChannel	CHANnel1, CHANnel2, CHANnel3, CHANnel4	Identifies the source channel for RE Signal.

Table 2 Configuration Variables and Values (continued)

GUI Location	Label	Variable	Values	Description
Configure	REHdiff_AC (V)	REHdiff_ac	(Accepts user-defined text), 0.500	Differential Read Enable high. Affects only differential Read Enable only.
Configure	RELdiff_AC (V)	RELdiff_ac	(Accepts user-defined text), -0.500	Differential Read Enable low. Affects only differential Read Enable only.
Configure	Sampling Points (Pts) Electrical and Timing Tests Only	SamplingPoints	(Accepts user-defined text), 2000000, 1000000, 500000	Specifies the sampling points to be captured in all the tests except Eye Digram tests. Reduce the sampling points if the read/write bursts are occurring very frequently.
Configure	Sampling Points (Pts) For Eye Diagram Tests Only	SamplingPointsNormalEyeDiagram	(Accepts user-defined text), 2000000, 250000, 500000	Specifies the sampling points to be captured in Eye Digram tests. Reduce the sampling points if the read/write bursts are occurring very frequently. The 500000 sample points is recommended for the oscilloscope having Sampling rate between 20G/Sa to 40G/Sa because the slowness performance will happen in setting higher sample points. For the oscilloscope have higher sampling rate like 80G/Sa or above, user require to set the sample points to a higher value.
Configure	Sampling Rate (GSa/s)	SamplingRate	MAX, 80, 40, 20, 10	Specifies the sampling rate for the signal acquisition of all tests except Vref Signal Tests (VREF(DC) Measurement and VREF(AC) Measurement). If the selected sampling rate is higher than oscilloscope capability, application will set maximum sampling rate during runtime.
Configure	Strobe Single Ended High Voltage (V)	InputThreshold_DQS_SE_High	(Accepts user-defined text), 1.15	Identifies the High Voltage for Strobe Single Ended.
Configure	Strobe Single Ended Low Voltage (V)	InputThreshold_DQS_SE_Low	(Accepts user-defined text), 0.650	Identifies the Low Voltage for Strobe Single Ended.

Table 2 Configuration Variables and Values (continued)

GUI Location	Label	Variable	Values	Description
Configure	Threshold Mode	ThreshSetMode	1, 0	By selecting "TopBaseRatio", the system will automatically determine the threshold settings that are used for the READ/WRITE burst triggering and identification using the TopRatio and BaseRatio specified for a particular channel input. Setting "Custom Threshold" allows user to directly set the threshold settings used instead.
Configure	Top Ratio	BurstTriggerTopRatio_CE	(Accepts user-defined text), 0.80	Specify the value of the top ratio used when triggering for the READ/WRITE burst data. The value set here is applicable ONLY when the "Threshold Mode" option is set to "TopBaseRatio".
Configure	Top Ratio	BurstTriggerTopRatio_DQ	(Accepts user-defined text), 0.80	Specify the value of the top ratio used when triggering for the READ/WRITE burst data. The value set here is applicable ONLY when the "Threshold Mode" option is set to "TopBaseRatio".
Configure	Top Ratio	BurstTriggerTopRatio_DQS	(Accepts user-defined text), 0.80	Specify the value of the top ratio used when triggering for the READ/WRITE burst data. The value set here is applicable ONLY when the "Threshold Mode" option is set to "TopBaseRatio".
Configure	Top Ratio	BurstTriggerTopRatio_DQSM inus	(Accepts user-defined text), 0.80	Specify the value of the top ratio used when triggering for the READ/WRITE burst data. The value set here is applicable ONLY when the "Threshold Mode" option is set to "TopBaseRatio".
Configure	Top Ratio	BurstTriggerTopRatio_DQSPI us	(Accepts user-defined text), 0.80	Specify the value of the top ratio used when triggering for the READ/WRITE burst data. The value set here is applicable ONLY when the "Threshold Mode" option is set to "TopBaseRatio".

Table 2 Configuration Variables and Values (continued)

GUI Location	Label	Variable	Values	Description
Configure	Top Ratio	BurstTriggerTopRatio_RE	(Accepts user-defined text), 0.80	Specify the value of the top ratio used when triggering for the READ/WRITE burst data. The value set here is applicable ONLY when the "Threshold Mode" option is set to "TopBaseRatio".
Configure	Upper Threshold (V)	CE_Up_Thresh	(Accepts user-defined text), 0.50	Specify the upper measurement threshold used for ALE Channel. The value set here is applicable ONLY when the "Threshold Mode" option is set to "Custom Threshold".
Configure	Upper Threshold (V)	DQSMinus_Up_Thresh	(Accepts user-defined text), 1.15	Specify the upper measurement threshold used for DQS Minus Channel. The value set here is applicable ONLY when the "Threshold Mode" option is set to "Custom Threshold".
Configure	Upper Threshold (V)	DQSPlus_Up_Thresh	(Accepts user-defined text), 1.15	Specify the upper measurement threshold used for DQS Plus Channel. The value set here is applicable ONLY when the "Threshold Mode" option is set to "Custom Threshold".
Configure	Upper Threshold (V)	DQS_Up_Thresh	(Accepts user-defined text), 0.50	Specify the upper measurement threshold used for DQS Channel. The value set here is applicable ONLY when the "Threshold Mode" option is set to "Custom Threshold".
Configure	Upper Threshold (V)	DQ_Up_Thresh	(Accepts user-defined text), 1.15	Specify the upper measurement threshold used for DQ Channel. The value set here is applicable ONLY when the "Threshold Mode" option is set to "Custom Threshold".
Configure	Upper Threshold (V)	RE_Up_Thresh	(Accepts user-defined text), 0.50	Specify the upper measurement threshold used for RE Channel. The value set here is applicable ONLY when the "Threshold Mode" option is set to "Custom Threshold".

Table 2 Configuration Variables and Values (continued)

GUI Location	Label	Variable	Values	Description
Configure	VCC (V)	InputVCC	(Accepts user-defined text), 1.95, 1.8, 1.7	Identifies the input supply voltage.
Configure	VCCQ (V)	InputVCCQ	(Accepts user-defined text), 1.95, 1.8, 1.7	Identifies the input supply voltage for data signal.
Configure	VIH.DQ_AC (V)	InputThreshold_Vih_ac_DQ	(Accepts user-defined text), 1.15	Identifies the ac input logic HIGH voltage for DQ and DM inputs.
Configure	VIH.DQ_DC (V)	InputThreshold_Vih_dc_DQ	(Accepts user-defined text), 1.05	Identifies the dc input logic HIGH voltage for DQ and DM inputs.
Configure	VIHdiff.DQS_AC (V)	VIHdiff_ac_DQS	(Accepts user-defined text), 0.500	Differential input high. Affects only differential DQS only.
Configure	VIHdiff.DQS_DC (V)	VIHdiff_dc_DQS	(Accepts user-defined text), 0.300	Differential input high. Affects only differential DQS only.
Configure	VIL.DQ_AC (V)	InputThreshold_Vil_ac_DQ	(Accepts user-defined text), 0.650	Identifies the ac input logic LOW voltage for DQ and DM inputs.
Configure	VIL.DQ_DC (V)	InputThreshold_Vil_dc_DQ	(Accepts user-defined text), 0.75	Identifies the dc input logic LOW voltage for DQ and DM inputs.
Configure	VILdiff.DQS_AC (V)	VILdiff_ac_DQS	(Accepts user-defined text), -0.500	Differential input low. Affects only differential DQS only.
Configure	VILdiff.DQS_DC (V)	VILdiff_dc_DQS	(Accepts user-defined text), -0.300	Differential input high. Affects only differential DQS only.
Configure	VOH (V)	InputThreshold_Voh	(Accepts user-defined text), 1.020	Identifies the ac output logic HIGH voltage.
Configure	VOHdiff_AC (V)	VOHdiff_ac	(Accepts user-defined text), 0.540	Differential output high. Affects only differential DQS only.
Configure	VOL (V)	InputThreshold_Vol	(Accepts user-defined text), 0.600	Identifies the dc output logic LOW voltage.

Table 2 Configuration Variables and Values (continued)

GUI Location	Label	Variable	Values	Description
Configure	VOLdiff_AC (V)	VOLdiff_ac	(Accepts user-defined text), -0.540	Differential output low. Affects only differential DQS only.
Configure	VRefQ (V)	InputRefV_VrefQ	(Accepts user-defined text), 0.900	Identifies the input reference voltage for DQ input.
Configure	VTT (V)	InputVTT	(Accepts user-defined text), 1.00, 0.900, 0.800	Identifies the termination voltage.
Configure	Waveform File Type	WfmFileType	.wfm, .h5	By selecting ".wfm", the application will save the waveform in wfm format for measurement. While selecting ".h5", the application will save the waveform in h5 format for measurement.
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	Data rate	pcboSpeedGrade	(Accepts user-defined text), 533, 335	This option allows user to enter specific data rate.
Set Up	Device ID	pcboOverallDeviceID	(Accepts user-defined text)	This option allow user to key in related test details.
Set Up	User Comment	txtOverallUserComment	(Accepts user-defined text)	This option allow user to key in related test detail.
Set Up	User Description	pcboOverallDeviceDescription	(Accepts user-defined text)	This option allow user to key in test detail.

2 Configuration Variables and Values

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:

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
DummyTestToHideOfflineConfigVar	999000	DummyTestToHideOfflineConfigVar
Eye Diagram for Read DQ	240000	DQ eye diagram for Read bursts.
Eye Diagram for Write DQ	241000	DQ eye diagram for Write bursts.
SRlseF	231001	Input signal minimum falling slew rate
SRlseR	231000	Input signal minimum rising slew rate
SROFdiff	230013	Input signal minimum falling slew rate
SRORdiff	230012	Input signal minimum rising slew rate
SROseF	230011	Input signal minimum falling slew rate
SROseR	230010	Input signal minimum rising slew rate
VIH(AC) for DQ	211000	VIH(AC) for DQ
VIH(DC) for DQ	211001	VIH(DC) for DQ
VIH.diff(AC) for DQS	211004	VIH.diff(AC) for DQS
VIH.diff(DC) for DQS	211005	VIH.diff(DC) for DQS
VIL(AC) for DQ	211002	VIL(DC) for DQ
VIL(DC) for DQ	211003	VIL(DC) for DQ
VIL.diff(AC) for DQS	211006	VIL.diff(AC) for DQS
VIL.diff(DC) for DQS	211007	VIL.diff(DC) for DQS
VIX for Strobe	211040	AC differential input cross point voltage(Strobe)
VOH(AC) for DQ	210000	VOH(AC) for DQ
VOH.diff(AC) for DQS	210002	VOH.diff(DC) for DQS
VOL(AC) for DQ	210001	VOL(AC) for DQ
VOL.diff(AC) for DQS	210003	VOL.diff(AC) for DQS
VOX for Strobe	210041	AC differential output cross point voltage(Strobe)
VSEH(AC) for DQS Minus	210032	VSEH(AC)(Strobes Minus)
VSEH(AC) for DQS Plus	210030	VSEH(AC)(Strobes Plus)
VSEL(AC) for DQS Minus	210033	VSEL(AC)(Strobes Minus)
VSEL(AC) for DQS Plus	210031	VSEL(AC) (Strobes Plus)

Table 4 Test IDs and Names (continued)

Name	TestID	Description
tAC	230210	Access window of DQ[7:0] from RE_n (RE_t/RE_c crosspoint)
tCDQSS	231600	DQS setup time for data input start
tDH(derate)	231203	DQ input hold time - Differential. Available for Timing Mode 0 to 3.
tDH_relaxed(derate)	231205	DQ input hold time - Differential. Available for Timing Mode 4 to 10.
tDH_tight(derate)	231204	DQ input hold time - Differential. Available for Timing Mode 4 to 10.
tDQSD	230230	(RE_n low or RE_t/RE_c crosspoint) to DQS/DQ driven by device)
tDQSH	231603	DQS input high pulse width
tDQSL	231604	DQS input low pulse width
tDQSQ	230520	DQS-DQ skew, DQS to last DQ valid, per access
tDQSRE	230211	Access window of DQS from RE_n (RE_t/RE_c)
tDQSRH	230500	DQS hold time after (RE_n low or RE_t/RE_c crosspoint)
tDS(derate)	231200	DQ input setup time - Differential. Available for Timing Mode 0 to 3.
tDSC(abs)	231602	Absolute DQS cycle time
tDSC(avg)	231601	Average DQS cycle time
tDS_relaxed(derate)	231202	DQ input setup time - Differential. Available for Timing Mode 4 to 10.
tDS_tight(derate)	231201	DQ input setup time - Differential. Available for Timing Mode 4 to 10.
tDVW	230232	Output data valid window
tJITcc(DQS)	221051	tjitcc(DQS) - DQS period jitter(Rising Edge)
tJITcc(RE)	220061	tjitcc(RE) - RE period jitter(Rising Edge)
tJITper(DQS)	221050	tjitper(DQS) - DQS period jitter(Rising Edge)
tJITper(RE)	220060	tjitper(RE) - RE period jitter(Rising Edge)
tQH	230300	DQ-DQS hold, DQS to first DQ to go non-valid, per access
tQHL	230311	DQS output Low time
tQHS	230310	DQS output high time

Table 4 Test IDs and Names (continued)

Name	TestID	Description
tRC(abs)	230400	Absolute read cycle period, measured from rising edge to the next consecutive rising edge
tRC(avg)	230401	Average read cycle time, also known as tRC
tREH(abs)	230402	Absolute read cycle period, measured from rising edge to the next consecutive rising edge
tREH(avg)	230403	Average RE_n/RE_t high level width
tRP(abs)	230404	Absolute read cycle period, measured from rising edge to the next consecutive rising edge
tRP(avg)	230405	Average RE_n/RE_t low level width
tRPRE	230450	Read preamble
tRPRE2	230451	Read preamble with ODT Enable
tRPST	230452	Read Postamble
tRPSTH	230453	Read postamble hold time
tWPRE	231450	DQS Write preamble
tWPRE2	231451	DQS Write preamble with ODT enabled
tWPST	231452	Write Postamble
tWPSTH	231453	Write postamble hold 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
Infiniium	Infiniium

Index

C

configuration variables and values, [9](#)
copyright, [2](#)

I

IDs and names of tests, [21](#)
instrument names, [25](#)

N

names and IDs of tests, [21](#)
names of instruments, [25](#)
notices, [2](#)

P

programming, introduction to, [7](#)

R

Remote Programming Toolkit, [8](#)

T

test names and IDs, [21](#)

V

variables and values, configuration, [9](#)

W

warranty, [2](#)

