Keysight D9060GDDC GDDR6 Compliance Application

KEYSIGHT TECHNOLOGIES

Programmer's Reference

Notices

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In This Book

This book is your guide to programming the Keysight Technologies D9060GDDC GDDR6 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 27, and Chapter 4, “Instruments,” starting on page 35 provide information specific to programming the D9060GDDC GDDR6 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.

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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 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 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 D9060GDDC GDDR6 Compliance Application uses Remote Interface Revision 6.12. 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 D9060GDDC GDDR6 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	Acquisition Points(pts)	AcqPoints	(Accepts user-defined text), 1e6, 2e6	Enter the acquisition points. The actual sampling window length when running tests is determined based on this acquisition points value together with the corresponding sampling rate used. Sampling Window = [Acquisition point] / [Sampling Rate] For example; If the acqusition points is set to 1 Mpts and the sampling rate used is 20GSa/s, then the Sampling Window = 50us. By increasing this configurable option's value, the test time will be increased. This configurable option is applicable for ALL tests.
Configure	CA9 InfiniiScan Trigger - Zone End Position(tCK)	CA9InfiniiScanZoneEndPosition	(Accepts user-defined text), 0.125	Select the 'CA9 InfiniiScan Trigger - Zone End Position' prior to CA9 LOW bit start position in terms of tCK. This value will be used to determine the NOT intersect triggering zone for CA9 signals during InfiniiScan - Zone triggering. For example, if CA9 InfiniiScan Trigger - Zone End Position(tCK) = 0.125tCK and CA9 InfiniiScan Trigger - Zone Width(tCK) = 1tCK, the zone will be placed from -1.125tCK to -0.125tCK prior to CA9 LOW bit start position. There must be no transition on CA9 signal within this zone. This configurable option is only applicable for Test tDIPW - Positive and Test tDIPW - Negative.

Table 2 Configuration Variables and Values (continued)

GUI Location	Label	Variable	Values	Description
Configure	CA9 InfiniiScan Trigger - Zone Width(tCK)	CA9InfiniiScanZoneWidth	(Accepts user-defined text), 1	Select the CA9 InfiniiScan Trigger - Zone Width in terms of tCK. This value will be used to determine the NOT intersect triggering zone for CA9 signals during InfiniiScan - Zone triggering. For example, if CA9 InfiniiScan Trigger - Zone End Position(tCK) = 0.125tCK and CA9 InfiniiScan Trigger - Zone Width(tCK) = 1tCK, the zone will be placed from -1.125tCK to -0.125tCK prior to CA9 LOW bit start position. There must be no transition on CA9 signal within this zone. This configurable option is only applicable for Test tDIPW - Positive and Test tDIPW - Negative.
Configure	CK Frequency/WCK Frequency Check	FrequencyCheck	1, 0	Enable this setting to perform CK frequency/WCK frequency verification when running tests to ensure the measured CK frequency/WCK frequency is within(WCK frequency/CK frequency +/-15%) entered by user in Set Up tab. Select "Disable" to skip the CK frequency/WCK frequency verification process. This configurable option is applicable for ALL tests.
Configure	CK Max Slew Rate(V/ns)	MaxSlewRateVIDCKDC	(Accepts user-defined text), 6	Select the maximum slew rate value to be used in VIDCK(DC) test. This value will be used to calculate VIDCK(DC) window for VIDCK(DC) measurement. This configurable option is only applicable for Test VIDCK(DC).

Table 2 Configuration Variables and Values (continued)

GUI Location	Label	Variable	Values	Description
Configure	DQ InfiniiScan Trigger - Zone Width(bit)	DQInfiniiScanZoneWidth	(Accepts user-defined text), 16	Select the DQ InfiniiScan Trigger - Zone Width in terms of bit. This value will be used to determine the intersect triggering zone for DQ signals during InfiniiScan - Zone triggering. This configurable option is only applicable for Test tDIPW - Positive and Test tDIPW - Negative.
Configure	InfiniiScan Trigger - Zone Height(V)	InfiniiScanZoneHeight	(Accepts user-defined text), 0.05	Select the InfiniiScan Trigger - Zone Height. This zone height value will be used to determine the intersect triggering zone for CA8 and DQ signals and NOT intersect triggering zone for CA9 during InfiniiScan - Zone triggering. This configurable option is only applicable for Test tDIPW - Positive and Test tDIPW - Negative.
Configure	Number of Measurement(VIDCK(AC), VIDCK(DC))	NumberOfMeasurementVIDCK	(Accepts user-defined text), 200	Select the number of measurement for VIDCK(AC) and VIDCK(DC) tests. This configurable option is only applicable for Test VIDCK(AC) and Test VIDCK(DC).
Configure	Number of Measurement(VIDWCK(AC), VIDWCK(DC))	NumberOfMeasurementVIDWCK	(Accepts user-defined text), 200	Select the number of measurement for VIDWCK(AC) and VIDWCK(DC) tests. This configurable option is only applicable for Test VIDWCK(AC) and Test VIDWCK(DC).

Table 2 Configuration Variables and Values (continued)

GUI Location	Label	Variable	Values	Description
Configure	Sampling Rate	SamplingRate	MAX, 10e9, 20e9, 40e9, 80e9, 8e9, 16e9, 32e9, 64e9, 128e9	Specify the Sampling Rate to be used for all tests. The actual sampling window length when running tests is determined based on this acquisition points value together with the corresponding sampling rate used. Sampling Window = [Acquisition point] / [Sampling Rate] For example; If the acqusition points is set to 1 Mpts and the sampling rate used is 20GSa/s, then the Sampling Window = 50us. By increasing this configurable option's value, the shorter sampling window length will be acquired. This configurable option is applicable for ALL tests.
Configure	Screenshot Mode	ScreenshotMode	1, 0	Used to enable or disable screenshot capture for applicable measurement in the test report. Setting it to "Off" may improve the overall test execution time. However, the related measurement screenshot information will not be available for that particular test trial run. This configurable option is applicable for ALL tests that report screenshots.
Configure	VIDCK Increment Time Step(s)	VIDCKIncrementTimeStep	(Accepts user-defined text), 5e-12	Select the VIDCK Increment Time Step to be used in VIDCK(AC) and VIDCK(DC) tests. This value will be used to calculate VIDCK(DC) window for VIDCK(DC) measurement where the X Marker will be increased in this increment step's when finding the VIDCK(DC) window. This configurable option is only applicable for Test VIDCK(AC) and Test VIDCK(DC).

Table 2 Configuration Variables and Values (continued)

GUI Location	Label	Variable	Values	Description
Configure	VIDWCK Increment Time Step(s)	VIDWCKIncrementTimeStep	(Accepts user-defined text), 5e-12	Select the VIDWCK Increment Time Step to be used in VIDWCK(AC) and VIDWCK(DC) tests. This value will be used to calculate VIDWCK(DC) window for VIDWCK(DC) measurement where the X Marker will be increased in this increment step's when finding the VIDWCK(DC) window. This configurable option is only applicable for Test VIDWCK(AC) and Test VIDWCK(DC).
Configure	WCK Max Slew Rate(V/ns)	MaxSlewRateVIDWCKDC	(Accepts user-defined text), 6	Select the maximum slew rate value to be used in VIDWCK(DC) test. This value will be used to calculate VIDWCK(DC) window for VIDCK(DC) measurement. This configurable option is only applicable for Test VIDWCK(DC).
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. This configurable option is applicable for ALL tests.
Configure	Write Latency(tCK)	WriteLatency	(Accepts user-defined text), 5, 6, 7, 8	Select the Write Latency value in terms of tCK. This value will be used to find the DQ Write data position. This value must be set according to programmed latency for tDIPW tests to operate. This configurable option is only applicable for Test tDIPW - Positive and Test tDIPW - Negative.
Configure	tCH/tCL(Min)	tCHtCLRatioMin	(Accepts user-defined text), 0.49, 0.48, 0.47, 0.46, 0.45	Select the minimum spec of tCH/tCL. This value will be used to calculate VIDCK(DC) window for VIDCK(DC) measurement. This configurable option is only applicable for Test VIDCK(DC).

Table 2 Configuration Variables and Values (continued)

GUI Location	Label	Variable	Values	Description
Configure	tDIPW Test Mode	tDIPWTestMode	Auto, Manual	Specify the test mode for tDIPW test. For "Auto" mode, the trigger levels will be determined automatically by app. For "Manual" mode, user will configure the trigger levels using CA8, CA9 and DQ Signal Threshold configurable options in Setup tab - Threshold Setup window according to CA8, CA9 and DQ test signals. This configurable option is only applicable for Test tDIPW - Positive and Test tDIPW - Negative.
Configure	tDVAC(s)	TDVAC	(Accepts user-defined text), 0, 5e-12, 10e-12, 15e-12, 20e-12, 25e-12, 50e-12, 100e-12, 400e-12	Select the tDVAC value(Allowed time before ring back of CK/WCK below VIDCK(AC)/VIDWCK(AC)) for Test VIDCK(AC). This value will be used to calculate the VIDCK(AC) window for VIDCK(AC) measurement. This configurable option is only applicable for Test VIDCK(AC) and Test VIDWCK(AC).
Configure	tWCKH/tWCKL (min)	tWCKHtWCKLRatioMin	(Accepts user-defined text), 0.49, 0.48, 0.47, 0.46, 0.45	Select the minimum spec of tWCKH/tWCKL. This value will be used to calculate VIDWCK(DC) window for VIDWCK(DC) measurement. This configurable option is only applicable for Test VIDWCK(DC).
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	App Test Mode	optAppTestMode	Live Signal, Offline	Set the application test mode. Available options include [Live Signal] or [Offline]
Set Up	Clocking Mode	optClockingMode	DDR, QDR	Set the Clocking Mode.

Table 2 Configuration Variables and Values (continued)

GUI Location	Label	Variable	Values	Description
Set Up	Data source for CA live signal	optSignalSrc_Live_CA	Channel1, Channel2, Channel3, Channel4	Data source for CA live signal
Set Up	Data source for CA offline waveform	optSignalSrc_Offline_CA	(Accepts user-defined text)	Data source for CA offline waveform
Set Up	Data source for CA8 live signal	optSignalSrc_Live_CA8	Channel1, Channel2, Channel3, Channel4	Data source for CA8 live signal
Set Up	Data source for CA[y] live signal	optSignalSrc_Live_CA9	Channel1, Channel2, Channel3, Channel4	Data source for CA[y] live signal
Set Up	Data source for CK (Diff) live signal	optSignalSrc_Live_CK_Diff	Channel1, Channel2, Channel3, Channel4	Data source for CK (Diff) live signal
Set Up	Data source for CK (Diff) offline waveform	optSignalSrc_Offline_CK_Diff	(Accepts user-defined text)	Data source for CK (Diff) offline waveform
Set Up	Data source for CKE_n live signal	optSignalSrc_Live_CKE_n	Channel1, Channel2, Channel3, Channel4	Data source for CKE_n live signal
Set Up	Data source for CKE_n offline waveform	optSignalSrc_Offline_CKE_n	(Accepts user-defined text)	Data source for CKE_n offline waveform
Set Up	Data source for CK_c live signal	optSignalSrc_Live_CK_c_SE	Channel1, Channel2, Channel3, Channel4	Data source for CK_c live signal
Set Up	Data source for CK_c offline waveform	optSignalSrc_Offline_CK_c_SE	(Accepts user-defined text)	Data source for CK_c offline waveform
Set Up	Data source for CK_t live signal	optSignalSrc_Live_CK_t_SE	Channel1, Channel2, Channel3, Channel4	Data source for CK_t live signal
Set Up	Data source for CK_t offline waveform	optSignalSrc_Offline_CK_t_SE	(Accepts user-defined text)	Data source for CK_t offline waveform
Set Up	Data source for DQ live signal	optSignalSrc_Live_DQ	Channel1, Channel2, Channel3, Channel4	Data source for DQ live signal
Set Up	Data source for WCK (Diff) live signal	optSignalSrc_Live_WCK_Diff	Channel1, Channel2, Channel3, Channel4	Data source for WCK (Diff) live signal

Table 2 Configuration Variables and Values (continued)

GUI Location	Label	Variable	Values	Description
Set Up	Data source for WCK (Diff) offline waveform	optSignalSrc_Offline_WCK_Diff	(Accepts user-defined text)	Data source for WCK (Diff) offline waveform
Set Up	Data source for WCK_c live signal	optSignalSrc_Live_WCK_c_SE	Channel1, Channel2, Channel3, Channel4	Data source for WCK_c live signal
Set Up	Data source for WCK_c offline waveform	optSignalSrc_Offline_WCK_c_SE	(Accepts user-defined text)	Data source for WCK_c offline waveform
Set Up	Data source for WCK_t live signal	optSignalSrc_Live_WCK_t_SE	Channel1, Channel2, Channel3, Channel4	Data source for WCK_t live signal
Set Up	Data source for WCK_t offline waveform	optSignalSrc_Offline_WCK_t_SE	(Accepts user-defined text)	Data source for WCK_t offline waveform
Set Up	GDDR6 Data Rate - User Defined	optGDDR6DataRate	(Accepts user-defined text), 800, 4000, 12000	Set GDDR6 Data Rate based on user defined values.
Set Up	GDDR6 Signal Source	optDDRSignalSrc	CK (Diff), WCK (Diff), CK_t (SE), CK_c (SE), WCK_t (SE), WCK_c (SE), CK (Diff), CKE_n, CK (Diff), CA, WCK (Diff), CA9, CA8, DQ	Set GDDR6 Signal Source.
Set Up	Lower Threshold [ISim] for CA	optLowerThres_InfiniiSim_CA	(Accepts user-defined text), 0.845, 0.775	Lower Threshold [ISim] for CA
Set Up	Lower Threshold [ISim] for CA8	optLowerThres_InfiniiSim_CA8	(Accepts user-defined text), 0.845, 0.775	Lower Threshold [ISim] for CA8
Set Up	Lower Threshold [ISim] for CA9	optLowerThres_InfiniiSim_CA9	(Accepts user-defined text), 0.845, 0.775	Lower Threshold [ISim] for CA9
Set Up	Lower Threshold [ISim] for CK (Diff)	optLowerThres_InfiniiSim_CK_Diff	(Accepts user-defined text), -0.1	Lower Threshold [ISim] for CK (Diff)

Table 2 Configuration Variables and Values (continued)

GUI Location	Label	Variable	Values	Description
Set Up	Lower Threshold [ISim] for CKE_n	optLowerThres_InfiniiSim_CKE_n	(Accepts user-defined text), 0.845, 0.775	Lower Threshold [ISim] for CKE_n
Set Up	Lower Threshold [ISim] for CK_c (Single Ended)	optLowerThres_InfiniiSim_CK_c_SE	(Accepts user-defined text), 0.845, 0.775	Lower Threshold [ISim] for CK_c (Single Ended)
Set Up	Lower Threshold [ISim] for CK_t (Single Ended)	optLowerThres_InfiniiSim_CK_t_SE	(Accepts user-defined text), 0.845, 0.775	Lower Threshold [ISim] for CK_t (Single Ended)
Set Up	Lower Threshold [ISim] for DQ	optLowerThres_InfiniiSim_DQ	(Accepts user-defined text), 0.845, 0.775	Lower Threshold [ISim] for DQ
Set Up	Lower Threshold [ISim] for WCK (Diff)	optLowerThres_InfiniiSim_WCK_Diff	(Accepts user-defined text), -0.1	Lower Threshold [ISim] for WCK (Diff)
Set Up	Lower Threshold [ISim] for WCK_c (Single Ended)	optLowerThres_InfiniiSim_WCK_c_SE	(Accepts user-defined text), 0.845, 0.775	Lower Threshold [ISim] for WCK_c (Single Ended)
Set Up	Lower Threshold [ISim] for WCK_t (Single Ended)	optLowerThres_InfiniiSim_WCK_t_SE	(Accepts user-defined text), 0.845, 0.775	Lower Threshold [ISim] for WCK_t (Single Ended)
Set Up	Lower Threshold for CA	optLowerThres_CA	(Accepts user-defined text), 0.845, 0.775	Lower Threshold for CA
Set Up	Lower Threshold for CA8	optLowerThres_CA8	(Accepts user-defined text), 0.845, 0.775	Lower Threshold for CA8
Set Up	Lower Threshold for CA9	optLowerThres_CA9	(Accepts user-defined text), 0.845, 0.775	Lower Threshold for CA9
Set Up	Lower Threshold for CK (Diff)	optLowerThres_CK_Diff	(Accepts user-defined text), -0.1	Lower Threshold for CK (Diff)

Table 2 Configuration Variables and Values (continued)

GUI Location	Label	Variable	Values	Description
Set Up	Lower Threshold for CKE_n	optLowerThres_CKE_n	(Accepts user-defined text), 0.845, 0.775	Lower Threshold for CKE_n
Set Up	Lower Threshold for CK_c (Single Ended)	optLowerThres_CK_c_SE	(Accepts user-defined text), 0.845, 0.775	Lower Threshold for CK_c (Single Ended)
Set Up	Lower Threshold for CK_t (Single Ended)	optLowerThres_CK_t_SE	(Accepts user-defined text), 0.845, 0.775	Lower Threshold for CK_t (Single Ended)
Set Up	Lower Threshold for DQ	optLowerThres_DQ	(Accepts user-defined text), 0.845, 0.775	Lower Threshold for DQ
Set Up	Lower Threshold for WCK (Diff)	optLowerThres_WCK_Diff	(Accepts user-defined text), -0.1	Lower Threshold for WCK (Diff)
Set Up	Lower Threshold for WCK_c (Single Ended)	optLowerThres_WCK_c_SE	(Accepts user-defined text), 0.845, 0.775	Lower Threshold for WCK_c (Single Ended)
Set Up	Lower Threshold for WCK_t (Single Ended)	optLowerThres_WCK_t_SE	(Accepts user-defined text), 0.845, 0.775	Lower Threshold for WCK_t (Single Ended)
Set Up	Middle Threshold [ISim] for CA	optMiddleThres_InfiniiSim_CA	(Accepts user-defined text), 0.945, 0.875	Middle Threshold [ISim] for CA
Set Up	Middle Threshold [ISim] for CA8	optMiddleThres_InfiniiSim_CA8	(Accepts user-defined text), 0.945, 0.875	Middle Threshold [ISim] for CA8
Set Up	Middle Threshold [ISim] for CA9	optMiddleThres_InfiniiSim_CA9	(Accepts user-defined text), 0.945, 0.875	Middle Threshold [ISim] for CA9
Set Up	Middle Threshold [ISim] for CK (Diff)	optMiddleThres_InfiniiSim_CK_Diff	(Accepts user-defined text), 0	Middle Threshold [ISim] for CK (Diff)

Table 2 Configuration Variables and Values (continued)

GUI Location	Label	Variable	Values	Description
Set Up	Middle Threshold [ISim] for CKE_n	optMiddleThres_InfiniiSim_CKE_n	(Accepts user-defined text), 0.945, 0.875	Middle Threshold [ISim] for CKE_n
Set Up	Middle Threshold [ISim] for CK_c (Single Ended)	optMiddleThres_InfiniiSim_CK_c_SE	(Accepts user-defined text), 0.945, 0.875	Middle Threshold [ISim] for CK_c (Single Ended)
Set Up	Middle Threshold [ISim] for CK_t (Single Ended)	optMiddleThres_InfiniiSim_CK_t_SE	(Accepts user-defined text), 0.945, 0.875	Middle Threshold [ISim] for CK_t (Single Ended)
Set Up	Middle Threshold [ISim] for DQ	optMiddleThres_InfiniiSim_DQ	(Accepts user-defined text), 0.945, 0.875	Middle Threshold [ISim] for DQ
Set Up	Middle Threshold [ISim] for WCK (Diff)	optMiddleThres_InfiniiSim_WCK_Diff	(Accepts user-defined text), 0	Middle Threshold [ISim] for WCK (Diff)
Set Up	Middle Threshold [ISim] for WCK_c (Single Ended)	optMiddleThres_InfiniiSim_WCK_c_SE	(Accepts user-defined text), 0.945, 0.875	Middle Threshold [ISim] for WCK_c (Single Ended)
Set Up	Middle Threshold [ISim] for WCK_t (Single Ended)	optMiddleThres_InfiniiSim_WCK_t_SE	(Accepts user-defined text), 0.945, 0.875	Middle Threshold [ISim] for WCK_t (Single Ended)
Set Up	Middle Threshold for CA	optMiddleThres_CA	(Accepts user-defined text), 0.945, 0.875	Middle Threshold for CA
Set Up	Middle Threshold for CA8	optMiddleThres_CA8	(Accepts user-defined text), 0.945, 0.875	Middle Threshold for CA8
Set Up	Middle Threshold for CA9	optMiddleThres_CA9	(Accepts user-defined text), 0.945, 0.875	Middle Threshold for CA9
Set Up	Middle Threshold for CK (Diff)	optMiddleThres_CK_Diff	(Accepts user-defined text), 0	Middle Threshold for CK (Diff)

Table 2 Configuration Variables and Values (continued)

GUI Location	Label	Variable	Values	Description
Set Up	Middle Threshold for CKE_n	optMiddleThres_CKE_n	(Accepts user-defined text), 0.945, 0.875	Middle Threshold for CKE_n
Set Up	Middle Threshold for CK_c (Single Ended)	optMiddleThres_CK_c_SE	(Accepts user-defined text), 0.945, 0.875	Middle Threshold for CK_c (Single Ended)
Set Up	Middle Threshold for CK_t (Single Ended)	optMiddleThres_CK_t_SE	(Accepts user-defined text), 0.945, 0.875	Middle Threshold for CK_t (Single Ended)
Set Up	Middle Threshold for DQ	optMiddleThres_DQ	(Accepts user-defined text), 0.945, 0.875	Middle Threshold for DQ
Set Up	Middle Threshold for WCK (Diff)	optMiddleThres_WCK_Diff	(Accepts user-defined text), 0	Middle Threshold for WCK (Diff)
Set Up	Middle Threshold for WCK_c (Single Ended)	optMiddleThres_WCK_c_SE	(Accepts user-defined text), 0.945, 0.875	Middle Threshold for WCK_c (Single Ended)
Set Up	Middle Threshold for WCK_t (Single Ended)	optMiddleThres_WCK_t_SE	(Accepts user-defined text), 0.945, 0.875	Middle Threshold for WCK_t (Single Ended)
Set Up	Set POD Standard value.	optPODStandard	POD135, POD125	Set POD Standard value.
Set Up	Upper Threshold [ISim] for CA	optUpperThres_InfiniiSim_CA	(Accepts user-defined text), 1.045, 0.975	Upper Threshold [ISim] for CA
Set Up	Upper Threshold [ISim] for CA8	optUpperThres_InfiniiSim_CA8	(Accepts user-defined text), 1.045, 0.975	Upper Threshold [ISim] for CA8
Set Up	Upper Threshold [ISim] for CA9	optUpperThres_InfiniiSim_CA9	(Accepts user-defined text), 1.045, 0.975	Upper Threshold [ISim] for CA9
Set Up	Upper Threshold [ISim] for CK (Diff)	optUpperThres_InfiniiSim_CK_Diff	(Accepts user-defined text), 0.1	Upper Threshold [ISim] for CK (Diff)

Table 2 Configuration Variables and Values (continued)

GUI Location	Label	Variable	Values	Description
Set Up	Upper Threshold [ISim] for CKE_n	optUpperThres_InfiniiSim_CKE_n	(Accepts user-defined text), 1.045, 0.975	Upper Threshold [ISim] for CKE_n
Set Up	Upper Threshold [ISim] for CK_c (Single Ended)	optUpperThres_InfiniiSim_CK_c_SE	(Accepts user-defined text), 1.045, 0.975	Upper Threshold [ISim] for CK_c (Single Ended)
Set Up	Upper Threshold [ISim] for CK_t (Single Ended)	optUpperThres_InfiniiSim_CK_t_SE	(Accepts user-defined text), 1.045, 0.975	Upper Threshold [ISim] for CK_t (Single Ended)
Set Up	Upper Threshold [ISim] for DQ	optUpperThres_InfiniiSim_DQ	(Accepts user-defined text), 1.045, 0.975	Upper Threshold [ISim] for DQ
Set Up	Upper Threshold [ISim] for WCK (Diff)	optUpperThres_InfiniiSim_WCK_Diff	(Accepts user-defined text), 0.1	Upper Threshold [ISim] for WCK (Diff)
Set Up	Upper Threshold [ISim] for WCK_c (Single Ended)	optUpperThres_InfiniiSim_WCK_c_SE	(Accepts user-defined text), 1.045, 0.975	Upper Threshold [ISim] for WCK_c (Single Ended)
Set Up	Upper Threshold [ISim] for WCK_t (Single Ended)	optUpperThres_InfiniiSim_WCK_t_SE	(Accepts user-defined text), 1.045, 0.975	Upper Threshold [ISim] for WCK_t (Single Ended)
Set Up	Upper Threshold for CA	optUpperThres_CA	(Accepts user-defined text), 1.045, 0.975	Upper Threshold for CA
Set Up	Upper Threshold for CA8	optUpperThres_CA8	(Accepts user-defined text), 1.045, 0.975	Upper Threshold for CA8
Set Up	Upper Threshold for CA9	optUpperThres_CA9	(Accepts user-defined text), 1.045, 0.975	Upper Threshold for CA9
Set Up	Upper Threshold for CK (Diff)	optUpperThres_CK_Diff	(Accepts user-defined text), 0.1	Upper Threshold for CK (Diff)

Table 2 Configuration Variables and Values (continued)

GUI Location	Label	Variable	Values	Description
Set Up	Upper Threshold for CKE_n	optUpperThres_CKE_n	(Accepts user-defined text), 1.045, 0.975	Upper Threshold for CKE_n
Set Up	Upper Threshold for CK_c (Single Ended)	optUpperThres_CK_c_SE	(Accepts user-defined text), 1.045, 0.975	Upper Threshold for CK_c (Single Ended)
Set Up	Upper Threshold for CK_t (Single Ended)	optUpperThres_CK_t_SE	(Accepts user-defined text), 1.045, 0.975	Upper Threshold for CK_t (Single Ended)
Set Up	Upper Threshold for DQ	optUpperThres_DQ	(Accepts user-defined text), 1.045, 0.975	Upper Threshold for DQ
Set Up	Upper Threshold for WCK (Diff)	optUpperThres_WCK_Diff	(Accepts user-defined text), 0.1	Upper Threshold for WCK (Diff)
Set Up	Upper Threshold for WCK_c (Single Ended)	optUpperThres_WCK_c_SE	(Accepts user-defined text), 1.045, 0.975	Upper Threshold for WCK_c (Single Ended)
Set Up	Upper Threshold for WCK_t (Single Ended)	optUpperThres_WCK_t_SE	(Accepts user-defined text), 1.045, 0.975	Upper Threshold for WCK_t (Single Ended)
Set Up	User Comment	txtOverallUserComment	(Accepts user-defined text)	This option allow user to key in related test detail.
Set Up	VIH_CA_DC	InputThreshold_Vih_dc_CA	(Accepts user-defined text), 1.08, 1	VIH_CA_DC
Set Up	VIH_DQ_DC	InputThreshold_Vih_dc_DQ	(Accepts user-defined text), 1.035, 0.96	VIH_DQ_DC
Set Up	VIHdiff_CK	InputThreshold_VIHdiff_CK	(Accepts user-defined text), 0.1	VIHdiff_CK
Set Up	VIHdiff_WCK	InputThreshold_VIHdiff_WCK	(Accepts user-defined text), 0.1	VIHdiff_WCK
Set Up	VIL_CA_DC	InputThreshold_Vil_dc_CA	(Accepts user-defined text), 0.81, 0.75	VIL_CA_DC
Set Up	VIL_DQ_DC	InputThreshold_Vil_dc_DQ	(Accepts user-defined text), 0.855, 0.79	VIL_DQ_DC

Table 2 Configuration Variables and Values (continued)

GUI Location	Label	Variable	Values	Description
Set Up	VILdiff_CK	InputThreshold_VILdiff_CK	(Accepts user-defined text), -0.1	VILdiff_CK
Set Up	VILdiff_WCK	InputThreshold_VILdiff_WCK	(Accepts user-defined text), -0.1	VILdiff_WCK
Set Up	VREFCVoltage	VREFCVoltage	(Accepts user-defined text), 0.945, 0.875	VREFCVoltage
Set Up	VREFDVoltage	VREFDVoltage	(Accepts user-defined text), 0.945, 0.875	VREFDVoltage
Set Up	VREFdiff_CK	InputThreshold_VREFdiff_CK	(Accepts user-defined text), 0	VREFdiff_CK
Set Up	VREFdiff_WCK	InputThreshold_VREFdiff_WCK	(Accepts user-defined text), 0	VREFdiff_WCK

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
VIDCK(AC)	30020	This test is to measure the Clock input differential voltage of CK_t, CK_c. Construct differential signal of CK_t and CK_c as CK(Diff). Find the crossing point at 0V middle threshold on the CK(Diff) rising edge and denoted it as X1. Find the position of (X1 + 0.5tCK) and denoted it as X6. Measure the maximum voltage of a window X1 to X6 using Infiniium's Histogram feature. This value will be reported as final "VIDCK(AC)" if the value is less than the VIDCK(AC) Compliance test limit. If this value is >= the VIDCK(AC) Compliance test limit, find the first point where the voltage crosses the VIDCK(AC) Compliance test limit, denoted it as X2 position. If tDVAC=0, report final "VIDCK(AC)" result as VIDCK(AC) Compliance test limit. Else, from X2 position, find the first point where the voltage at this position is less than the voltage at previous position and denoted it as X3. Calculate the X position of (X2 + tDVAC) and denoted it as X4. Measure the minimum voltage within X3 and X4 using Infiniium's Histogram feature. Apply the same algorithm for the CK(Diff) falling edge. The minimum voltage measurement obtained will be reported as final "VIDCK(AC)" result.
VIDCK(DC)	30021	This test is to measure the Clock input differential voltage of CK_t, CK_c. Construct differential signal of CK_t and CK_c as CK(Diff). Find the crossing point at 0V middle threshold on the CK(Diff) rising edge and denoted it as X1. Find the position of (X1 + 0.5tCK) and denoted it as X6. Measure the maximum voltage of a window X1 to X6 using Infiniium's Histogram feature. This value will be reported as final "VIDCK(DC)" if the value is less than the VIDCK(DC) Compliance test limit. If this value is >= the VIDCK(DC) Compliance test limit, find the first point where the voltage crosses the VIDCK(AC) Compliance test limit, denoted it as X2 position. From X2 position, find the first point where the voltage at this position is less than the voltage at previous position and denoted it as X3. Calculate X position of (X1 + (tCHtCLRatioMin*tCK) - (VIDCK(DC)ComplianceTestLimit/(CKMaxSlewRateInUnitV/s))) position and denoted it as X5. Measure the minimum voltage within X3 and X5 using Infiniium's Histogram feature. Apply the same algorithm for the CK(Diff) falling edge. The minimum voltage measurement obtained will be reported as final "VIDCK(DC)" result. The "tCHtCLRatioMin" and "CKMaxSlewRate" values are configurable in Configure tab as "tCH/tCL(min)" and "CK Max Slew Rate(V/ns)".

Table 4 Test IDs and Names (continued)

Name	TestID	Description
VIDWCK(AC)	40020	This test is to measure the Clock input differential voltage of WCK_t, WCK_c. Construct differential signal of WCK_t and WCK_c as WCK(Diff). Find the crossing point at 0V middle threshold on the WCK(Diff) rising edge and denoted it as X1. Find the position of (X1 + 0.5tWCK) and denoted it as X6. Measure the maximum voltage of a window X1 to X6 using Infiniium's Histogram feature. This value will be reported as final "VIDWCK(AC)" if the value is less than the VIDWCK(AC) Compliance test limit. If this value is >= the VIDWCK(AC) Compliance test limit, find the first point where the voltage crosses the VIDWCK(AC) Compliance test limit, denoted it as X2 position. If tDVAC=0, report final "VIDWCK(AC)" result as VIDWCK(AC) Compliance test limit. Else, from X2 position, find the first point where the voltage at this position is less than the voltage at previous position and denoted it as X3. Calculate the X position of (X2 + tDVAC) and denoted it as X4. Measure the minimum voltage within X3 and X4 using Infiniium's Histogram feature. Apply the same algorithm for the WCK(Diff) falling edge. The minimum voltage measurement obtained will be reported as final "VIDWCK(AC)" result.
VIDWCK(DC)	40021	This test is to measure the Clock input differential voltage of WCK_t, WCK_c. Construct differential signal of WCK_t and WCK_c as WCK(Diff). Find the crossing point at 0V middle threshold on the WCK(Diff) rising edge and denoted it as X1. Find the position of (X1 + 0.5tWCK) and denoted it as X6. Measure the maximum voltage of a window X1 to X6 using Infiniium's Histogram feature. This value will be reported as final "VIDWCK(DC)" if the value is less than the VIDWCK(DC) Compliance test limit. If this value is >= the VIDWCK(DC) Compliance test limit, find the first point where the voltage crosses the VIDWCK(AC) Compliance test limit, denoted it as X2 position. From X2 position, find the first point where the voltage at this position is less than the voltage at previous position and denoted it as X3. Calculate the X position of (X1 + (tWCKHtWCKLRatioMin*tWCK) - (VIDWCK(DC)ComplianceTestLimit/CKMaxSlewRateInUnitV/s)) position and denoted it as X5. Measure the minimum voltage within X3 and X5 using Infiniium's Histogram feature. Apply the same algorithm for the WCK(Diff) falling edge. The minimum voltage measurement obtained will be reported as final "VIDWCK(DC)" result. The "tWCKHtWCKLRatioMin" and "WCKMaxSlewRate" values are configurable in Configure tab as "tWCKH/tWCKL(min)" and "WCK Max Slew Rate(V/ns)".
VIXCK	30010	This test is to measure the Clock input crossing point voltage of CK_t, CK_c. All CK clock crossing point voltage of CK_t and CK_c will be measured from the CK_t and CK_c. The worst value of the crossing point voltage measurements obtained will be reported as final "VIXCK" result.

Table 4 Test IDs and Names (continued)

Name	TestID	Description
VIXWCK	40010	This test is to measure the Clock input crossing point voltage of WCK_t, WCK_c. All WCK clock crossing point voltage of WCK_t and WCK_c will be measured from the CK_t and CK_c. The worst value of the crossing point voltage measurements obtained will be reported as final "VIXWCK" result.
tAH - Falling	60041	This test is to measure the Command Address (CA) input hold time on CA falling edge. The hold time is measured from CK(Diff) rising and falling edges at 0V middle threshold to CA falling edge at VREFC middle threshold. The minimum value of the hold time measurements obtained will be reported as final "tAH - Falling" result.
tAH - Rising	60040	This test is to measure the Command Address (CA) input hold time on CA rising edge. The hold time is measured from CK(Diff) rising and falling edges at 0V middle threshold to CA rising edge at VREFC middle threshold. The minimum value of the hold time measurements obtained will be reported as final "tAH - Rising" result.
tAS - Falling	60031	This test is to measure the Command Address (CA) input setup time on CA falling edge. The setup time is measured from CA falling edge at VREFC middle threshold to CK(Diff) rising and falling edges at 0V middle threshold. The minimum value of the setup time measurements obtained will be reported as final "tAS - Falling" result.
tAS - Rising	60030	This test is to measure the Command Address (CA) input setup time on CA rising edge. The setup time is measured from CA rising edge at VREFC middle threshold to CK(Diff) rising and falling edges at 0V middle threshold. The minimum value of the setup time measurements obtained will be reported as final "tAS - Rising" result.
tCH	10020	This test is to measure the CK clock HIGH-level width. The CK clock positive pulse width is measured from the CK(Diff) rising edge at 0V middle threshold to the next falling edge at 0V middle threshold. The average value of the positive pulse width measurements obtained will be reported as final "tCH" result.
tCK - Falling edge	10011	This test is to measure the CK clock cycle time from falling edge to falling edge. The CK clock period is measured from the CK(Diff) falling edge at 0V middle threshold to the next falling edge at 0V middle threshold. The average value of the period measurements obtained will be reported as final "tCK - Falling Edge" result.
tCK - Rising Edge	10010	This test is to measure the CK clock cycle time from rising edge to rising edge. The CK clock period is measured from the CK(Diff) rising edge at 0V middle threshold to the next rising edge at 0V middle threshold. The average value of the period measurements obtained will be reported as final "tCK - Rising Edge" result.

Table 4 Test IDs and Names (continued)

Name	TestID	Description
tCKEH - Falling	60021	This test is to measure the CKE_n input hold time on CKE_n falling edge. The hold time is measured from CK(Diff) rising edge at 0V middle threshold to CKE_n falling edge at VREFC middle threshold. The minimum value of the hold time measurements obtained will be reported as final "tCKEH - Falling" result.
tCKEH - Rising	60020	This test is to measure the CKE_n input hold time on CKE_n rising edge. The hold time is measured from CK(Diff) rising edge at 0V middle threshold to CKE_n rising edge at VREFC middle threshold. The minimum value of the hold time measurements obtained will be reported as final "tCKEH - Rising" result.
tCKES - Falling	60011	This test is to measure the CKE_n input setup time on CKE_n falling edge. The setup time is measured from CKE_n falling edge at VREFC middle threshold to CK(Diff) rising edge at 0V middle threshold. The minimum value of the setup time measurements obtained will be reported as final "tCKES - Falling" result.
tCKES - Rising	60010	This test is to measure the CKE_n input setup time on CKE_n rising edge. The setup time is measured from CKE_n rising edge at VREFC middle threshold to CK(Diff) rising edge at 0V middle threshold. The minimum value of the setup time measurements obtained will be reported as final "tCKES - Rising" result.
tCL	10030	This test is to measure the CK clock LOW-level width. The CK clock positive pulse width is measured from the CK(Diff) falling edge at 0V middle threshold to the next rising edge at 0V middle threshold. The average value of the negative pulse width measurements obtained will be reported as final "tCL" result.
tDIPW - Negative	50011	This test is to measure the DQ input negative pulse width. The DQ input negative pulse width is measured from the DQ falling edge at VREFD middle threshold to the next rising edge at at VREFD middle threshold. The minimum value of the negative pulse width measurements obtained will be reported as final "tDIPW - Negative" result.
tDIPW - Positive	50010	This test is to measure the DQ input positive pulse width. The DQ input positive pulse width is measured from the DQ rising edge at VREFD middle threshold to the next falling edge at at VREFD middle threshold. The minimum value of the positive pulse width measurements obtained will be reported as final "tDIPW - Positive" result.
tWCK - Falling Edge	20011	This test is to measure the WCK clock cycle time from falling edge to falling edge. The WCK clock period is measured from the WCK(Diff) falling edge of a cycle at 0V middle threshold to the next falling edge at 0V middle threshold. The average value of the period measurements obtained will be reported as final "tWCK - Falling Edge" result.

Table 4 Test IDs and Names (continued)

Name	TestID	Description
tWCK - Rising Edge	20010	This test is to measure the WCK clock cycle time from rising edge to rising edge. The WCK clock period is measured from the WCK(Diff) rising edge of a cycle at 0V middle threshold to the next rising edge at 0V middle threshold. The average value of the period measurements obtained will be reported as final "tWCK - Rising Edge" result.
tWCKH	20020	This test is to measure the WCK clock HIGH-level width. The WCK clock positive pulse width is measured from the WCK(Diff) rising edge at 0V middle threshold to the next falling edge at 0V middle threshold. The average value of the positive pulse width measurements obtained will be reported as final "tWCKH" result.
tWCKL	20030	This test is to measure the WCK clock HIGH-level width. The WCK clock negative pulse width is measured from the WCK(Diff) falling edge at 0V middle threshold to the next rising edge at 0V middle threshold. The average value of the negative pulse width measurements obtained will be reported as final "tWCKL" result.

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	Primary Oscilloscope

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