M809228CA Receiver Conformance Test Application for OIF-CEI 3.1 - Remote Programming Guide

KEYSIGHT

REMOTE PROGRAMMING GUIDE

Notices

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Remote Programming Guide

1 At a Glance

KEYSIGHT TECHNOLOGIES

Remote Programming Guide

This Guide helps you in programming the Keysight M809228CA Receiver Conformance Test Application for OIF-CEI 3.1 remotely.

Using the N5452A remote interface, you can control the M8070B software's Rx Test Applications from a remote PC. While the remote interface has ready-to-run executable features available, you may also create custom programs using the Microsoft .NET 2.0 Remoting interface.

Introduction to Programming

This chapter introduces the basics that are required for remote programming an Rx Test Application. The programming commands provide the means for remote control. Basic operations that you can perform remotely with a computer and the Rx Test Application, include:

- Launching and closing the application
- Configuring various options
- Running tests
- Getting results
- Controlling the occurrence and appearance of prompts/dialogs
- Saving and loading projects

You may also perform several miscellaneous tasks, which may comprise one or more of the actions listed above.

Remote Programming Toolkit

The majority of the remote interface features are common across the Rx Test Applications that have been developed by Keysight Technologies. Information about those features is provided in the N5452A Compliance Application Remote Programming Toolkit available for download from the Keysight website.

Access the toolkit at www.keysight.com/find/rpi, where a Getting Started Guide, programming documents and working example clients with full source code are available. You can also find references to “application-specific configuration variables, test information, and instrument information”.

The remote programming options that are common to other Rx Test Applications can be found in the documentation provided with the toolkit. However, the remote programming options specific to the Keysight M809228CA Receiver Conformance Test Application for OIF-CEI 3.1 are provided in this guide.

NOTE **The name for the “Keysight M809228CA Receiver Conformance Test Application for OIF-CEI 3.1” used within the application itself is “Compliance Rx Test Automation for OIF CEI-28G” or simply “OIF CEI-28G ValiFrame” for short.**

You can enable **Remote Interface Hints...**, which will appear under various tabs in the Rx Test Application.

To enable the remote interface hints feature in the Rx Test Application, click **View > Preferences...**. In the **Preferences** dialog, select the **Remote** tab. The option **Enable remote interface** is selected, by default. Select the **Show remote interface hints** check-box to activate the Remote Interface Hints... feature for various options in the Rx Test Application.

2 Configuration Variables

This section lists various N5452A Remote Programming configuration options – along with their descriptions – that are available in the Keysight M809228CA Receiver Conformance Test Application for OIF-CEI 3.1 for remote configuration. Using the appropriate remote interface method, you may query or set the options remotely.

In general, you can set the variables remotely using one of the two syntaxes described in this chapter.

NOTE **The name for the "Keysight M809228CA Receiver Conformance Test Application for OIF-CEI 3.1" used within the application itself is "Compliance Rx Test Automation for OIF CEI-28G" or simply "OIF CEI-28G ValiFrame" for short.**

Syntax for Configuration Variables

ARSL

Syntax: `arsl -a <VISA/SICL Address of the M8070B software> -c "<command>"`

Example: `arsl -a TCPIP0::localhost::hislip0::INSTR -c "SetConfig 'TargetErrorRatio' '1e-5'"`

C#

Syntax: `remoteAte.<command>;`

Example: `remoteAte.SetConfig("TargetErrorRatio", "1e-5");`

Values and Descriptions of Configuration Variables

Table 1 shows the values and description of the various configuration variables used specifically in the OIF CEI-28G Rx Test Application. The information contained in each column of the table is:

- **GUI Location** – Describes the specific tab in the OIF CEI-28G Rx Test Application that contains the control to change the value remotely.
- **Label** – Describes the specific option/feature/control within the user interface tab of the OIF CEI-28G Rx Test Application that 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.
- **Availability** – The Standard Options for which the configuration variable is available.

NOTE

Keysight recommends performing a "test run" of your remote script using the application's graphical user interface to ensure that the combinations of values in your program are valid.

The file "*ConfigInfo.txt*", which may be found in the same directory as this guide, contains all of the information found in the table below in a format suitable for parsing.

Table 1 Values and Descriptions of Configuration Variables

GUI Location	Label	Variable	Available Values	Description	Availability with MyTestFilterVar value
Set Up	Standard Option	MyTestFilterVar	VSR Host Input | VSR Module Input | Short Reach | Medium Reach | Long Reach	This option allows you to select the specific standard to test.	–
Configure	Baud Rate	BaudRate	(Accepts user-defined text in Debug mode) | 25.78125e9	Baud Rate for testing device and for all calibrations. Enter value in the format 25.78125e9.	VSR Host Input VSR Module Input Short Reach Medium Reach Long Reach
Configure – Calibrations	Loop Bandwidth	LoopBW	(Accepts user-defined text in Debug mode) | 3882718	Select or enter the Loop BW to be used in the clock recovery.	VSR Host Input VSR Module Input Short Reach Medium Reach Long Reach
Configure – Calibrations	SIRC Response	SIRCResponse	(Accepts user-defined text in Debug mode) | ▪ For VSR Host Input : BESSel | SINC | FLAT ▪ For VSR Module Input, Short Reach, Medium Reach or Long Reach: BESSel | SINC | FLAT | BESSEL4 | WALL | BUTTerworth	Select the SIRC response. This will automatically be applied to any pattern lock waveform.	VSR Host Input VSR Module Input Short Reach Medium Reach Long Reach
Configure – Calibrations	SIRC Bandwidth	SIRCBW	(Accepts user-defined text in Debug mode) | 33e9 | 40e9	Select or enter the SIRC BW. This will automatically be applied to any pattern lock waveform.	VSR Host Input VSR Module Input Short Reach Medium Reach Long Reach
Configure – Calibrations	Eye Height/Width Probability	EyeProb	1e–13 | 1e–14 | 1e–15 | 1e–16	Select the eye probability to which eye height and width are measured in “Stressed Eye Calibration”.	VSR Host Input VSR Module Input
Configure – Crosstalk Calibration	Crosstalk Amplitude	CrosstalkAmplitude	(Accepts user-defined text in Debug mode) | 0.9	Crosstalk Amplitude.	VSR Host Input VSR Module Input

GUI Location	Label	Variable	Available Values	Description	Availability with MyTestFilterVar value
Configure – Crosstalk Calibration	Crosstalk Transition Time	CrosstalkTransitionTime	(Accepts user-defined text in Debug mode) | ▪ For VSR Host Input: 10e–12 ▪ For VSR Module Input: 9.5e–12	Crosstalk Transition Time.	VSR Host Input VSR Module Input
Configure – BUJ Calibration	BUJ	BUJ	(Accepts user-defined text in Debug mode) | 0.08	Controls the amplitude of the BUJ jitter source.	VSR Host Input VSR Module Input Short Reach Medium Reach Long Reach
Configure – Stressed Eye Calibration	Transmitter Equalization	TransmitterEqualization	Auto | Manual	Selects whether the transmitter equalization coefficients should be automatically determined in Stressed Eye Calibration or provided by the user.	VSR Host Input VSR Module Input
Configure – Stressed Eye Calibration	Pre-Cursor2	Cursor0	(Accepts user-defined text) | 0.0	Controls the transmitter equalization coefficient for pre-cursor 2.	VSR Host Input VSR Module Input Short Reach Medium Reach Long Reach
Configure – Stressed Eye Calibration	Pre-Cursor1	Cursor1	(Accepts user-defined text) | 0.0	Controls the transmitter equalization coefficient for pre-cursor 1.	VSR Host Input VSR Module Input Short Reach Medium Reach Long Reach
Configure – Stressed Eye Calibration	Post-Cursor1	Cursor3	(Accepts user-defined text) | 0.0	Controls the transmitter equalization coefficient for post-cursor 1.	VSR Host Input VSR Module Input Short Reach Medium Reach Long Reach
Configure – Stressed Eye Calibration	Post-Cursor2	Cursor4	(Accepts user-defined text) | 0.0	Controls the transmitter equalization coefficient for post-cursor 2.	VSR Host Input VSR Module Input Short Reach Medium Reach Long Reach
Configure – Stressed Eye Calibration	Crosstalk Amplitude	CrosstalkAmplitude	(Accepts user-defined text in Debug mode) | 0.9	Crosstalk Amplitude.	VSR Host Input VSR Module Input

GUI Location	Label	Variable	Available Values	Description	Availability with MyTestFilterVar value
Configure – Stressed Eye Calibration	Crosstalk Transition Time	CrosstalkTransitionTime	(Accepts user-defined text in Debug mode) | ▪ For VSR Host Input: 10e–12 ▪ For VSR Module Input: 9.5e–12	Crosstalk Transition Time.	VSR Host Input VSR Module Input
Configure – Stressed Eye Calibration	SJ	SJ	(Accepts user-defined text in Debug mode) | 0.05	Sinusoidal Jitter at 10x receiver loop bandwidth.	VSR Host Input VSR Module Input Short Reach Medium Reach Long Reach
Configure – Stressed Eye Calibration	UUGJ	UUGJ	(Accepts user-defined text in Debug mode) | 0.15	Unbounded Uncorrelated Gaussian Jitter. This is a peak–peak value and is converted to rms value when it is set on the BERT.	VSR Host Input VSR Module Input Short Reach Medium Reach Long Reach
Configure – Stressed Eye Calibration	BUJ	BUJ	(Accepts user-defined text in Debug mode) | 0.08	Controls the amplitude of the BUJ jitter source.	VSR Host Input VSR Module Input Short Reach Medium Reach Long Reach
Configure – Stressed Eye Calibration	Eye Width	EW15	(Accepts user-defined text in Debug mode) | ▪ For VSR Host Input: 0.57 ▪ For VSR Module Input: 0.46	Eye Width @ 1e-15.	VSR Host Input VSR Module Input
Configure – Stressed Eye Calibration	Eye Height	EH15	(Accepts user-defined text in Debug mode) | ▪ For VSR Host Input: 0.228 ▪ For VSR Module Input: 0.095 | 0.080	Eye Height @ 1e-15.	VSR Host Input VSR Module Input
Configure – Stressed Eye Calibration	Start value for CTLE	StartCTLE	1 | 1.5 | 2 | 2.5 | 3| 3.5 | 4| 4.5 | 5| 5.5 | 6| 6.5 | 7| 7.5 | 8| 8.5 | 9	Select the starting CTLE setting to use for the Auto-Tune. Auto-Tune will use the range of settings from this start value to the stop value set in the StopCTLE config.	VSR Host Input VSR Module Input

GUI Location	Label	Variable	Available Values	Description	Availability with MyTestFilterVar value
Configure – Stressed Eye Calibration	Stop value for CTLE	StopCTLE	1 | 1.5 | 2 | 2.5 | 3| 3.5 | 4| 4.5 | 5| 5.5 | 6| 6.5 | 7| 7.5 | 8| 8.5 | 9	Select the last CTLE setting to use for the Auto-Tune. Auto-Tune will use the range of settings from the start value selected in the StartCTLE configuration to the stop value set here.	VSR Host Input VSR Module Input
Configure – Tests	Victim Analyzer Module	VictimAnalModule	BertAnalyzer | DCI | RED	Selects the victim analyzer module for testing device.	VSR Host Input VSR Module Input Short Reach Medium Reach Long Reach
Configure – Tests	Victim Analyzer Clock Source	VictimAnalClockSource	CDR | ClkIn | ExternalClockRecovery	Selects the clock source for the victim analyzer module. This parameter is only applicable for the BERT analyzer.	VSR Host Input VSR Module Input Short Reach Medium Reach Long Reach
Configure – Tests	Target Error Ratio	TargetErrorRatio	▪ For VSR Host Input or VSR Module Input: 1E–3 | 1E–4 | 1E–5 | 1E–6 | 1E–7 | 1E–8 | 1E–9 | 1E–10 | 1E–11 | 1E–12 | 1E–13 | 1E–14 | 1E–15 ▪ For Short Reach, Medium Reach or Long Reach: 1E–3 | 1E–4 | 1E–5 | 1E–6 | 1E–7 | 1E–8 | 1E–9 | 1E–10 | 1E–11 | 1E–12	Target Error Ratio for deciding if a test is passed or failed.	VSR Host Input VSR Module Input Short Reach Medium Reach Long Reach
Configure – Tests	Target Confidence Level	TargetConfidenceLevel	(Accepts user-defined text in Debug mode) | 95.0	Target Confidence Level for Target Error Ratio to decide if a test is passed or failed.	VSR Host Input VSR Module Input Short Reach Medium Reach Long Reach
Configure – Tests	DUT Control Interface Script File	DCIScriptFile	(Accepts user-defined text) | [Dynamically generated value]	Select the DCI script file to be loaded for receiver tests.	VSR Host Input VSR Module Input Short Reach Medium Reach Long Reach

GUI Location	Label	Variable	Available Values	Description	Availability with MyTestFilterVar value
Configure – Tests	DUT Control Interface Location	DCILocation	(Accepts user-defined text) | Lane0 | Lane1 | Lane2 | Lane3	DCI Location to be used for receiver tests.	VSR Host Input VSR Module Input Short Reach Medium Reach Long Reach
Configure – Tests	Pause before starting Receiver tests	PauseRxTests	true | false	Selects if a pause is made after configuring the error detector modules and before running the alignment to allow for manual changes in the settings.	VSR Host Input VSR Module Input Short Reach Medium Reach Long Reach
Configure – Stressed Input Test	Test Mode	TestMode	Compliance | Characterization	Test just for predefined SJ Frequencies or measure SJ Frequency.	VSR Host Input VSR Module Input Short Reach Medium Reach Long Reach
Configure – Stressed Input Test	Jitter Profile Frequency1	SJ1Frequency	(Accepts user-defined text in Debug mode) | ▪ For VSR Host Input or VSR Module Input: 100000 ▪ For Short Reach, Medium Reach or Long Reach: 38827	Defines the first corner frequency of the jitter profile.	VSR Host Input VSR Module Input Short Reach Medium Reach Long Reach
Configure – Stressed Input Test	Jitter Profile Amplitude1	SJ1Amplitude	(Accepts user-defined text in Debug mode) | 5.0	Defines the jitter amplitude at the first corner frequency of the jitter profile.	VSR Host Input VSR Module Input Short Reach Medium Reach Long Reach
Configure – Stressed Input Test	Jitter Profile Frequency2	SJ2Frequency	(Accepts user-defined text in Debug mode) | ▪ For VSR Host Input or VSR Module Input: 10000000 ▪ For Short Reach, Medium Reach or Long Reach: 3882718	Defines the second corner frequency of the jitter profile.	VSR Host Input VSR Module Input Short Reach Medium Reach Long Reach

GUI Location	Label	Variable	Available Values	Description	Availability with MyTestFilterVar value
Configure – Stressed Input Test	Jitter Profile Amplitude2	SJ2Amplitude	(Accepts user-defined text in Debug mode) | 0.05	Defines the jitter amplitude at the second corner frequency of the jitter profile.	VSR Host Input VSR Module Input Short Reach Medium Reach Long Reach
Configure – Stressed Input Test	Jitter Profile Frequency3	SJ3Frequency	(Accepts user-defined text in Debug mode) | ▪ For VSR Host Input or VSR Module Input: 38827180 ▪ For Short Reach, Medium Reach or Long Reach: 38827184	Defines the third corner frequency of the jitter profile.	VSR Host Input VSR Module Input Short Reach Medium Reach Long Reach
Configure – Stressed Input Test	Jitter Profile Amplitude3	SJ3Amplitude	(Accepts user-defined text in Debug mode) | 0.05	Defines the jitter amplitude at the third corner frequency of the jitter profile.	VSR Host Input VSR Module Input Short Reach Medium Reach Long Reach
Configure – Stressed Input Test	Frequency Mode	FrequencyMode	Auto | Manual	Select between Auto and Manual frequency mode.	VSR Host Input VSR Module Input Short Reach Medium Reach Long Reach
Configure – Stressed Input Test	Start Frequency	StartFrequency	(Accepts user-defined text in Debug mode) | 1e3	Controls the start frequency of the jitter sweep.	VSR Host Input VSR Module Input Short Reach Medium Reach Long Reach
Configure – Stressed Input Test	Stop Frequency	StopFrequency	(Accepts user-defined text in Debug mode) | 15e6	Controls the stop frequency of the jitter sweep.	VSR Host Input VSR Module Input Short Reach Medium Reach Long Reach
Configure – Stressed Input Test	Number of Steps	NumberOfSteps	(Accepts user-defined text in Debug mode) | 5	The number of steps within the jitter sweep.	VSR Host Input VSR Module Input Short Reach Medium Reach Long Reach

GUI Location	Label	Variable	Available Values	Description	Availability with MyTestFilterVar value
Configure – Stressed Input Test	Manual Frequency List	ManualFrequencyList	(Accepts user-defined text in Debug mode) | ▪ For VSR Host Input or VSR Module Input: 100005,10000485, 20000000 ▪ For Short Reach, Medium Reach or Long Reach: 154657,15465657, 20000000	List of Jitter frequencies separated by commas.	VSR Host Input VSR Module Input Short Reach Medium Reach Long Reach
Configure – Voltage Tolerance Test	Minimum Voltage	VoltageMin	(Accepts user-defined text in Debug mode) | ▪ For VSR Host Input or VSR Module Input: 0.9 ▪ For Short Reach, Medium Reach or Long Reach: 0.8	Minimum Voltage the device must operate with.	VSR Host Input VSR Module Input Short Reach Medium Reach Long Reach
Configure	Test Channel Configuration	TestChannelConfiguration	Low Loss | High Loss	Specify test channel configuration that needs to be calibrated to meet COM (3 dB max).	Short Reach Medium Reach Long Reach
Configure	C-1 Normalized Amplitude	C_1	0	Controls the transmitter equalization coefficient for pre-cursor.	Short Reach Medium Reach Long Reach
Configure	C0 Normalized Amplitude	C0	40	Controls the transmitter equalization coefficient for main-cursor.	Short Reach Medium Reach Long Reach
Configure	C1 Normalized Amplitude	C1	0	Controls the transmitter equalization coefficient for post-cursor.	Short Reach Medium Reach Long Reach
Configure	Noise Generator Channel Selection	NoiseGeneratorChannel Selection	DataOut1 | DataOut2 | DataOut3| DataOut4	Selects the location of the Noise Generator that will be used for generating common mode noise.	Short Reach Medium Reach Long Reach
Configure	Noise Generator 2nd Channel Selection	NoiseGenerator2ndChann elSelection	DataOut1 | DataOut2 | DataOut3 | DataOut4	Selects the location of the Noise Generator that will be used for generating common mode noise.	Short Reach Medium Reach Long Reach

GUI Location	Label	Variable	Available Values	Description	Availability with MyTestFilterVar value
Configure – Calibrations	Np	NpVal	(Accepts user-defined text in Debug mode) | 8 | 12 | 13 | 14 | 15 | 16 | 200	Set the Np value used for linear fit pulse peak and error calculations.	Short Reach Medium Reach Long Reach
Configure – Calibrations	Dp	DpVal	(Accepts user-defined text in Debug mode) | 2 | 3	Set the Dp value used for linear fit pulse peak and error calculations.	Short Reach Medium Reach Long Reach
Configure – Calibrations	Transmitter Replica Trace S-Parameter File	TxReplicaTraceSParameterFile	(Accepts user-defined text in Debug mode) | [Dynamically generated value]	S-Parameters of Transmitter Replica Trace for embedding them into the transmitter measurement.	Short Reach Medium Reach Long Reach
Configure – Calibrations	Amplitude	Amplitude	(Accepts user-defined text in Debug mode) | ▪ For VSR Host Input or VSR Module Input: 0.9 ▪ For Short Reach, Medium Reach or Long Reach: 0.8	Victim Differential Amplitude	VSR Host Input VSR Module Input Short Reach Medium Reach Long Reach
Configure – Calibrations	Calculate Cross Talk Noise	CalculateCrossTalkNoiseFromSParameter	(Accepts user-defined text) | Calculate using S-parameter file | Calculate using Insertion Loss Parameter | Use Crosstalk Noise Directly	Calculate the Cross Talk Noise from the S-Parameters. Can be switched off to manually override Cross Talk Noise Value by 'Use Cross Talk Noise Directly' or 'Calculate using Insertion Loss Parameter'.	Short Reach Medium Reach Long Reach
Configure – Calibrations	Insertion Loss at Baud Rate/2	InsertionLossAtFb_2	(Accepts user-defined text) | 5.5	Insertion Loss at Baud Rate/2. Usually calculated from Board S-Parameters, but can be overridden manually.	Short Reach Medium Reach Long Reach
Configure – Calibrations	Cross Talk Noise @ R	CrossTalkNoiseR	(Accepts user-defined text) | 0.010	Cross Talk Noise. Usually calculated from Board S-Parameters, but can be overridden manually.	Short Reach Medium Reach Long Reach

GUI Location	Label	Variable	Available Values	Description	Availability with MyTestFilterVar value
Configure – Calibrations	Victim Channel 1 De-embedding Trace S-Parameter File	VictimCh1DeembeddingFileName	(Accepts user-defined text) | [Dynamically-generated value]	S-Parameters of Victim Channel 1 Trace for De-embedding.	Short Reach Medium Reach Long Reach
Configure – Calibrations	Victim Channel 2 De-embedding Trace S-Parameter File	VictimCh2DeembeddingFileName	(Accepts user-defined text) | [Dynamically-generated value]	S-Parameters of Victim Channel 2 Trace for De-embedding.	Short Reach Medium Reach Long Reach
Configure – Calibrations	C0 Minimum Voltage	C0VoltageMin	(Accepts user-defined text in Debug mode) | ▪ For VSR Host Input or VSR Module Input: 100 ▪ For Short Reach, Medium Reach or Long Reach: 40	Allowed Range according to Table 10-9 of the OIF-CEI-04.0 is 40 ... 100.	VSR Host Input VSR Module Input Short Reach Medium Reach Long Reach
Configure – Calibrations	Maximum Voltage	VoltageMax	(Accepts user-defined text in Debug mode) | ▪ For VSR Host Input or VSR Module Input: 0.9 ▪ For Short Reach, Medium Reach or Long Reach: 1.2	Maximum Voltage device must operate with.	VSR Host Input VSR Module Input Short Reach Medium Reach Long Reach
Configure – Calibrations	C0 Maximum Voltage	C0VoltageMax	(Accepts user-defined text in Debug mode) | 100	Allowed Range according to Table 10-9 of the OIF-CEI-04.0 is 40 ... 100.	VSR Host Input VSR Module Input Short Reach Medium Reach Long Reach

3 Test IDs and Names

This chapter lists the mapping between the test name and the corresponding test numeric ID for each test available in the Keysight M809228CA Receiver Conformance Test Application for OIF-CEI 3.1. The test numeric ID is required for various remote interface methods.

In general, you can select and run calibrations/tests remotely using one of the two syntaxes described in this chapter.

NOTE **The name for the “Keysight M809228CA Receiver Conformance Test Application for OIF-CEI 3.1” used within the application itself is “Compliance Rx Test Automation for OIF CEI-28G” or simply “OIF CEI-28G ValiFrame” for short.**

Syntax for Test IDs and Names

ARSL

Syntax:
```
arsl -a <VISA/SICL Address of the M8070B software> -c "<command>"
```

Example:
```
arsl -a TCPIP0::localhost::hislip0::INSTR -c "SelectedTests '471100,471101'"
```

```
arsl -a TCPIP0::localhost::hislip0::INSTR -c "Run"
```

C#

Syntax:
```
remoteAte.<command>;
```

Example:
```
remoteAte.SelectedTests = new int[]{471100,471101};
```

```
remoteAte.Run();
```

IDs, Names and Descriptions of Calibrations and Tests

In Table 2 and Table 3, the various Test IDs and corresponding test names used specifically in the OIF CEI-28G Rx Test Application, along with descriptions of the calibrations/tests, are listed. The information contained in each column of the tables is:

- **Name** – The calibration/test name as it appears in the **Select Tests** tab of the OIF CEI-28G Rx Test Application.
- **Standard Option** – The standard to which the Test ID corresponds.
- **Test ID** – The calibration/test ID number that must be used with the `RunTests` method.
- **Description** – The calibration/test description.

NOTE

Keysight recommends performing a "test run" of your remote script using the application's graphical user interface to ensure that the combinations of values in your program are valid.

The file "*TestInfo.txt*", which may be found in the same directory as this guide, contains all of the information found in the table below in a format suitable for parsing.

Table 2 Test IDs, Test Names and Descriptions for VSR Host Input and VSR Module Input

Calibration/Test Name	Standard Option	Test ID	Test Description
Calibrations			
Crosstalk Calibration	VSR Host Input VSR Module Input	71100 271100	Calibrates Crosstalk Amplitude and Crosstalk Transition Time.
Amplitude Calibration	VSR Host Input VSR Module Input	71101 271101	Calibrates the Victim Generator Amplitude for the Voltage Tolerance test.
SJ Calibration	VSR Host Input VSR Module Input	71102 271102	Calibrates the Sinusoidal Jitter.
UUGJ Calibration	VSR Host Input VSR Module Input	71103 271103	Calibrates the Uncorrelated Unbounded Gaussian Jitter at TP0a.
BUJ Calibration	VSR Host Input VSR Module Input	71104 271104	Calibrates the Bounded Uncorrelated Jitter.
Stressed Eye Calibration	VSR Host Input VSR Module Input	71105 271105	Calibrates the stressed eye signal for the Single-lane Stressed Input Test.

Calibration/Test Name	Standard Option	Test ID	Test Description
Peak to Peak Amplitude Calibration for Voltage Tolerance Test	VSR Host Input VSR Module Input	71106 271106	Calibrates the voltage amplitude for the Voltage Tolerance Test.
Tests			
Single-lane Stressed Input Test	VSR Host Input VSR Module Input	75100 275100	Validates the ability of the VSR Host Input or VSR Module Input to tolerate sinusoidal jitter with the specified limit.
Voltage Tolerance Test	VSR Host Input VSR Module Input	75101 275101	Validates the acceptance of the differential input peak to peak amplitudes produced by the extreme operating conditions from the transmitter.

Table 3 Test IDs, Test Names and Descriptions for Short Reach, Medium Reach and Long Reach

Calibration/Test Name	Standard Option	Test ID	Test Description
Calibrations			
Amplitude Direct Connection Calibration	Short Reach Medium Reach Long Reach	871100 471100 671100	Calibrates the amplitude of the victim lane for the Voltage Tolerance Test.
Amplitude Calibration	Short Reach Medium Reach Long Reach	871101 471101 671101	Calibrates the amplitude of the victim lane for the Single-lane Stressed Input Test.
SJ Calibration	Short Reach Medium Reach Long Reach	871102 471102 671102	Calibrates the Sinusoidal Jitter.
UUGJ Calibration	Short Reach Medium Reach Long Reach	871103 471103 671103	Calibrates the Uncorrelated Unbounded Gaussian Jitter.
BUJ Calibration	Short Reach Medium Reach Long Reach	871104 471104 671104	Calibrates the Bounded Uncorrelated Jitter.
Transmitter Common Mode Noise Calibration	Short Reach Medium Reach Long Reach	871105 471105 671105	Calibrates the Transmitter Common Mode Noise.
Integrated Crosstalk Noise Calibration	Short Reach Medium Reach Long Reach	871106 471106 671106	Calibrates the Integrated Crosstalk Noise.

Calibration/Test Name	Standard Option	Test ID	Test Description
Tests			
Single-lane Stressed Input Test	Short Reach Medium Reach Long Reach	875100 475100 675100	Validates the ability of the DUT to tolerate the sinusoidal jitter with the specified limit.
Voltage Tolerance Test	Short Reach Medium Reach Long Reach	875101 475101 675101	Validates the acceptance of the differential input peak to peak amplitudes produced by the extreme operating conditions from the transmitter.

4 Instruments

This section lists the instrument names required for various remote interface methods.

In general, you can control the instruments remotely using one of the two syntaxes described in this chapter.

NOTE **The name for the "Keysight M809228CA Receiver Conformance Test Application for OIF-CEI 3.1" used within the application itself is "Compliance Rx Test Automation for OIF CEI-28G" or simply "OIF CEI-28G ValiFrame" for short.**

Syntax for Instruments

ARSL

Replace the content in the square brackets [ ] with actual parameter values.

Syntax for Command:

```
arsl -a <VISA/SICL Address of the M8070B software> -c
"SendScpiCommandCustom 'Command=[scpi
command];Timeout=[timeout
value];Instrument=[instrument name]'"
```

Syntax for Query:

```
arsl -a <VISA/SICL Address of the M8070B software> -c
"SendScpiQueryCustom 'Command=[scpi
query];Timeout=[timeout value];Instrument=[instrument
name]'"
```

C#

Replace the content in the square brackets [ ] with actual parameter values.

Syntax for Command:

```
SendScpiCommandOptions commandOptions = new
SendScpiCommandOptions();

commandOptions.Command = "[scpi command]";

commandOptions.Instrument = "[instrument name]";

commandOptions.Timeout = [timeout value];

remoteAte.SendScpiCommand(commandOptions);
```

Syntax for Query:

```
SendScpiQueryOptions queryOptions = new
SendScpiQueryOptions();

queryOptions.Query = "[scpi query]";

queryOptions.Instrument = "[instrument name]";

queryOptions.Timeout = [timeout value];

remoteAte.SendScpiQuery(queryOptions);
```

Description of Instruments

Table 4 lists the instruments that are used by the OIF CEI-28G Rx Test Application to run tests. The information contained in each column of the table is:

- **Instrument Name** – Instrument name is required as a parameter in remote interface commands.
- **Description** – The description of the instrument.

NOTE

Keysight recommends performing a "test run" of your remote script using the application's graphical user interface to ensure that the combinations of values in your program are valid.

The file "*InstrumentInfo.txt*", which may be found in the same directory as this guide, contains all of the information found in the table below in a format suitable for parsing.

Table 4 Instrument Names and Descriptions

Instrument Name	Description
M8070	M8070B System Software for M8000 Series of BER Test Solutions
FlexDca	FlexDCA N1000-Series System Software
Uxr	UXR Series Oscilloscope, Infiniium software version

5 Appendix: Acronyms and Abbreviations

This chapter lists the acronyms and abbreviations used throughout this guide.

List of Acronyms and Abbreviations

Acronym	Definition
ARSL	Automated Test Engine Remote Scripting Language
BUJ	Bounded Uncorrelated Jitter
BW	Bandwidth
CDR	Clock Data Recovery
CEI	Common Electrical Interface
CTLE	Continuous Time Linear Equalization
DCI	DUT Control Interface
DUT	Device Under Test
GUI	Graphical User Interface
HiSLIP	High-Speed LAN Instrument Protocol
ID	Identification
I/O	Interface
IP	Internet Protocol
LAN	Local Area Network
LR	Long Reach
MR	Medium Reach
OIF	Optical Internetworking Forum
PC	Personal Computer
RED	Real-time Error Detector
rms	root mean squared
Rx	Receiver
SICL	Standard Instrument Control Library
SIRC	System Impulse Response Correction
SR	Short Reach
TCP	Transmission Control Protocol

Acronym	Definition
UUGJ	Uncorrelated Unbounded Gaussian Jitter
VISA	Virtual Instrument Software Architecture
VSR	Very Short Reach

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