



PCIe4.0 (CEM) Rx Test Application Help

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Welcome

Welcome to the PCIe4.0 (CEM) Rx test application. This application performs the test as per the Gen 4 PHY Test Specification Revision 4.0 Version 1.0, CEM Specification Revision 4.0 Version 1.0 and the Base Specification Revision 4.0 Version 1.0.

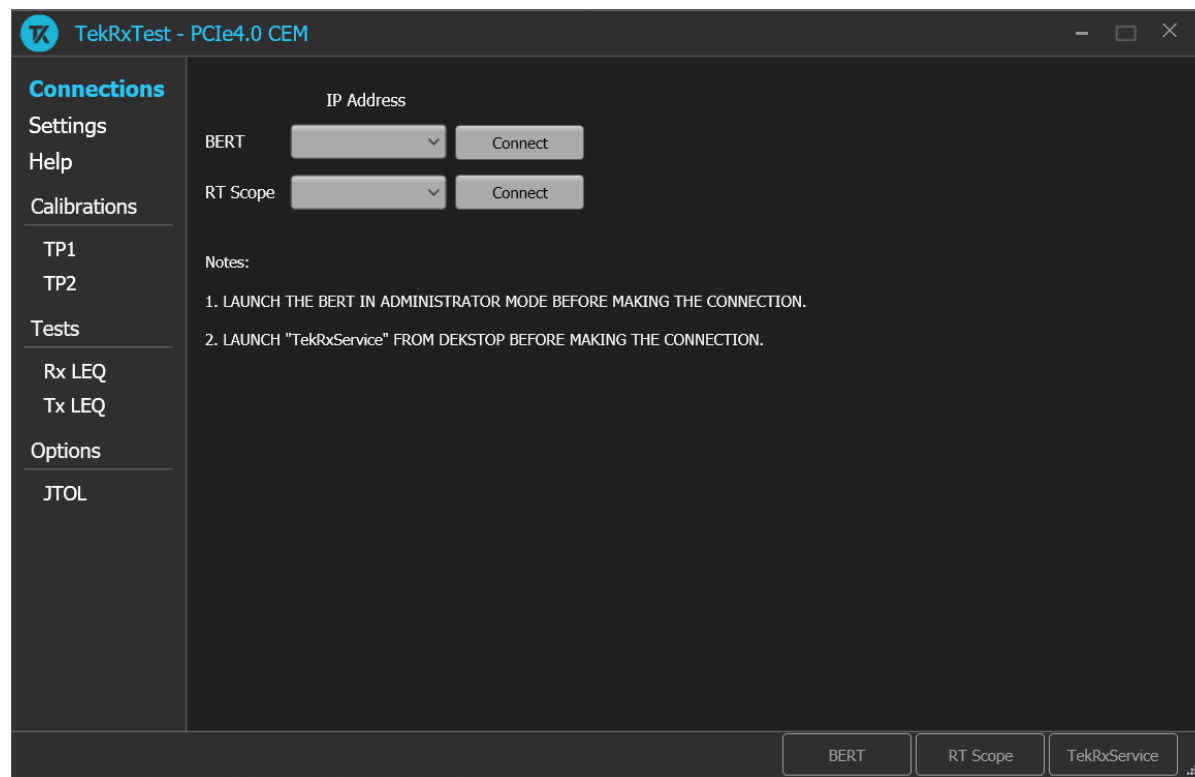


Figure 1: TekRxTest - PCIe4.0 CEM application

Receiver testing is accomplished by connecting the output of BERT PPG (which can produce specific PCIe test patterns) to the input of the DUT through a specialized set of fixtures and cables. The BERT can be programmed to add different amounts of random jitter, sinusoidal jitter, differential, Common mode interference along with variable signal amplitude, pre-shoot, and de-emphasis. Output of the DUT is connected to the BERT error detector to identify bit errors on the DUT Tx traffic, either during loopback or during sweep of one of the stress parameters. Any error detected can be assumed to be generated from the DUT Tx path as a result of either the DUT experiencing a bad bit-decision at its receiver or uncompensated back channel loss at the error detector of the BERT. Additionally, DUT Tx traffic can be analyzed to verify the DUT responses to various requests put forward by the BERT during link training process.

Key features and benefits

- Automated Calibration, Link Training, and Compliance Testing.
- Receiver JTOL test for AIC / System DUT.
- Jointly with Anritsu BERT MP1900A series, the receiver solution provides the tools and flexibility required to visualize and control the impairments, observe real-time eye performance for PCIe Gen4 devices.
- Reliable and accurate results reduce the test execution time and minimize the skill-set required to perform calibration and testing.

Getting help and support

Related documentation

The following documentation is available as part of the **PCIe4.0 (CEM)** test application.

Table 1: Product documentation

Item	Purpose	Location
Application Help	Application operation and User Interface details	Help panel of the application

See also

[Technical support](#) on page 16

Technical support

Tektronix values your feedback on our products. To help us serve you better, please send us your suggestions, ideas, or comments on your application or Real Time Oscilloscope. Contact Tektronix through mail, telephone, or the Web site. See [Contacting Tektronix](#) on page 0 at the front of this document for contact information.

When you contact Tektronix Technical Support, please include the following information (be as specific as possible):

General information

- All instrument model numbers
- Hardware options, if any
- Modules used
- Your name, company, mailing address, phone number, and FAX number
- Please indicate if you would like to be contacted by Tektronix about your suggestion or comments.

Application specific information

- Software version number
- Description of the problem such that technical support can duplicate the problem
- If possible, save the setup files for all the instruments used and the application

Getting started

Required instruments

This section lists the instruments required to perform the tests.

Table 2: Required instruments

Models		Quantity
BERT	Anritsu MP1900A	1
Real-Time oscilloscope	DPO70KDX/SX, Bandwidth >= 25	1

Required accessories

This section lists the accessories and test fixtures required to perform the tests.

Table 3: Required accessories

Equipment	Details	Quantity	Vender
DPOJET Advanced option	DJA (oscilloscope software option)	1	Tektronix
1-m Cable pair (2.92 mm SMA Male - SMP)	174-6659-01 (DUT-BERT Ref clock)	1 pair	Tektronix
1-m Cable (2.92 mm M-M, Straight, 1.5 ps phase - matched, 40 GHz)	PMCABLE1M (Equipment connection to fixtures and DUT)	2 pairs	Tektronix
0.5 m Cable (2.92 mm M-M, Straight, 1.5 ps phase - matched, 40GHz)	174-6663-01 (Signal Connection between scope and BERT for Tx LEQ)	1 pair	Tektronix
0.5 m Cable (SMA M-M, Right Angle - Right Angle)	174-6666-01 (Connection between scope and BERT for Tx LEQ & Trigger)	2 pair	Tektronix
Power Divider (2 way 2.92mm F-F-M)	MPR40M (Split signal from DUT Tx to the scope and Error Detector)	1 pair	Fairview Microwave
Power USB Power Strip	PowerUSB – Basic (Automate DUT power cycle)	1	PowerUSB
SMP 50 Ohm Terminator	50 ohms (Female)	*	Any
Gen 4 CEM Test Fixtures	PCI-SIG	1	PCI-SIG
Equalizer	BSXPCI4EQ	2	Tektronix
Active Gen4 Redriver (Back channel equalization) **	-	1	Texas Instrument
ATX Power Supply for System Board Power	Any	1	Any



Note:

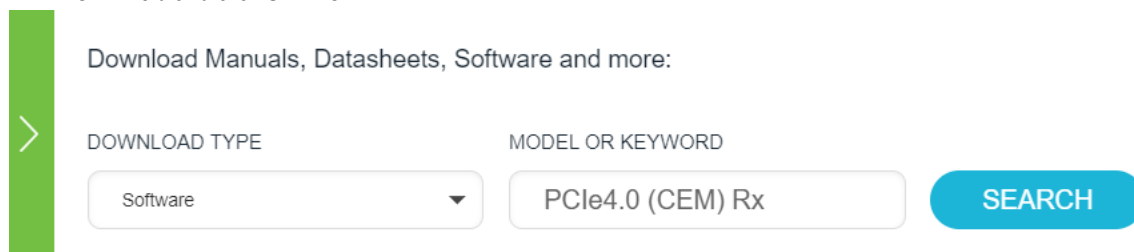
* - The number of SMP terminators needed is based on the number of lanes in the System or Add-in Card under test. i.e., x16 DUT will require 30 SMP terminators ($2 * (\text{Number of unused Lanes} - 1)$)

** - Another matched pair of cables (e.g., 174-6663-xx) will be required if the Active re-driver is used for Rx or Tx LEQ

Installing the software

Complete the following steps to download and install the latest PCIe4.0 (CEM) Rx test application.

1. Go to www.tek.com.
2. Click **Downloads**. In the Download menu, select DOWNLOAD TYPE as Software and enter **PCIe4.0 (CEM)** in the MODEL OR KEYWORD field and click **SEARCH**.



3. Select the latest version of the software and follow the instructions to download.
4. Copy the executable file into the instrument you wish to install the software (Real-time oscilloscope or PC).
5. Follow the installation instruction that is available in the website. The software is installed at `C:\Program Files\Tektronix\BERTScope\RxTest60`
6. Double click the shortcut icon on the desktop to launch the application.

Note:



- The PCIe4.0 (CEM) Rx test application can be installed on a Tektronix real-time oscilloscope or a PC (optional).
- You must install the TekRxService and Sigtest application in the real-time oscilloscope to successfully connect the application with the real-time oscilloscope.

Operating basics


Launch the application

To launch the PCIe4.0 (CEM) test application, double click the shortcut icon **TekRxTest** on the desktop and select **PCIe4.0 (CEM)** in the application window.



Figure 2: TekRxTest application window

Close the application

To exit the application, click  on the application title bar. Follow on-screen instructions to save the unsaved session or test setup.



Note: Using other methods to exit the application may result in abnormal termination of the application.

Launch TekRxService

The PCIe4.0 (CEM) Rx test application interfaces with the oscilloscope for data acquisition, analysis and data retrieval utilizing TekRxService application. This software module should be launched at the time of initiating the Rx test application.

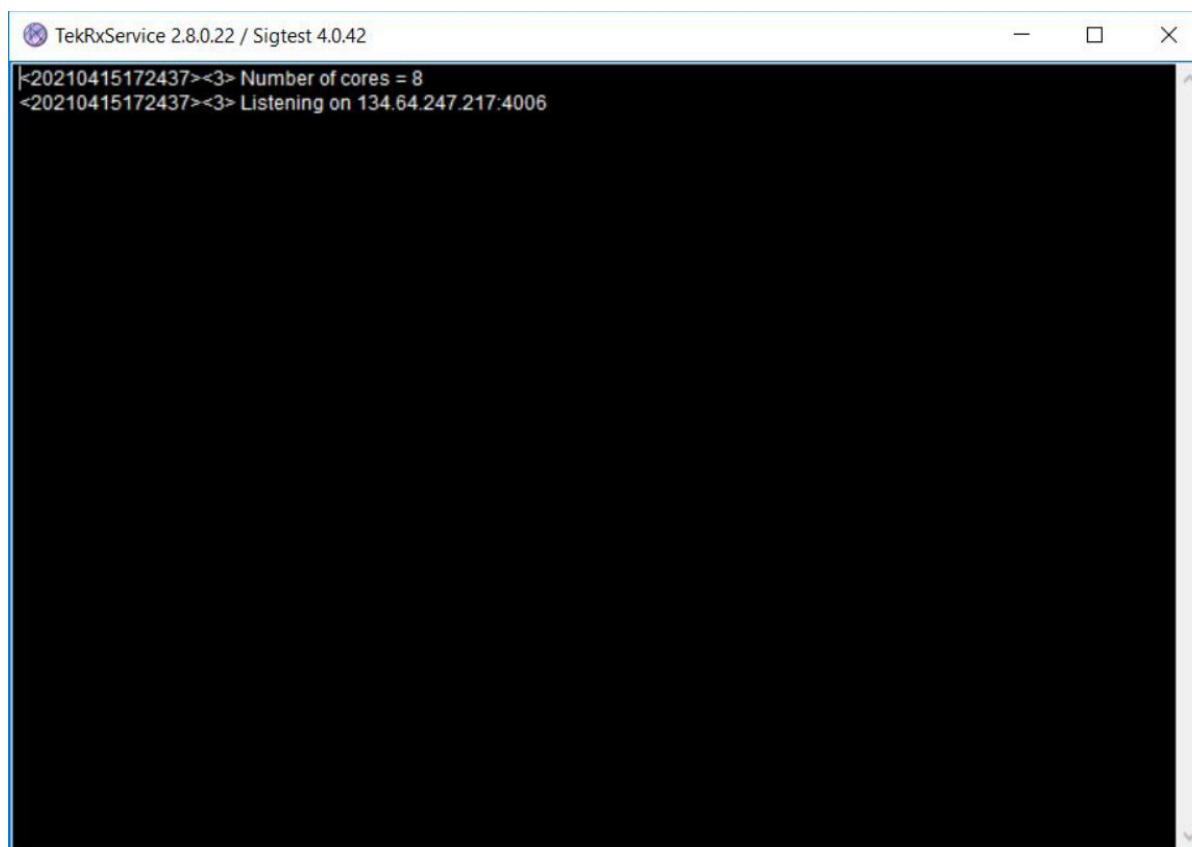


Figure 3: TekRxService application window



Note: To launch the TekRxService application, double click the TekRxService batch file shortcut icon in the desktop of the real-time oscilloscope.

Application panels

Application panels overview

The PCIe4.0 (CEM) Rx test application uses panels to group the configurations and settings. Click on any panel to configure the associated settings. A panel may have one or more tabs that lists the selections available in that panel. Controls in a tab may change depending on the settings made in the same tab or another tab.

Table 4: Application panels overview

Parameter	Description
Connections	This panel displays the real-time oscilloscope and BERT connection settings. You can connect to a real-time oscilloscope and BERT by entering the IP address of the instruments.
Settings	This panel allows configuring various settings for the Components, TP1 and TP2 Calibration.
Help	This panel displays the application help.

Table continued...

Parameter	Description
Calibrations	This panel allows you to configure the calibration parameters for TP1/TP2 and save the results.
Tests	This panel allows you to configure the Rx/Tx LEQ test settings and view the results.
Options	This panel allows you to configure the JTOL test settings and view the results.

Connections panel

The connections panel allows you to connect to a real-time oscilloscope and BERT with the PCIe4.0 (CEM) Rx test application. Enter the IP address of the instruments and click **Connect** to establish the connection.

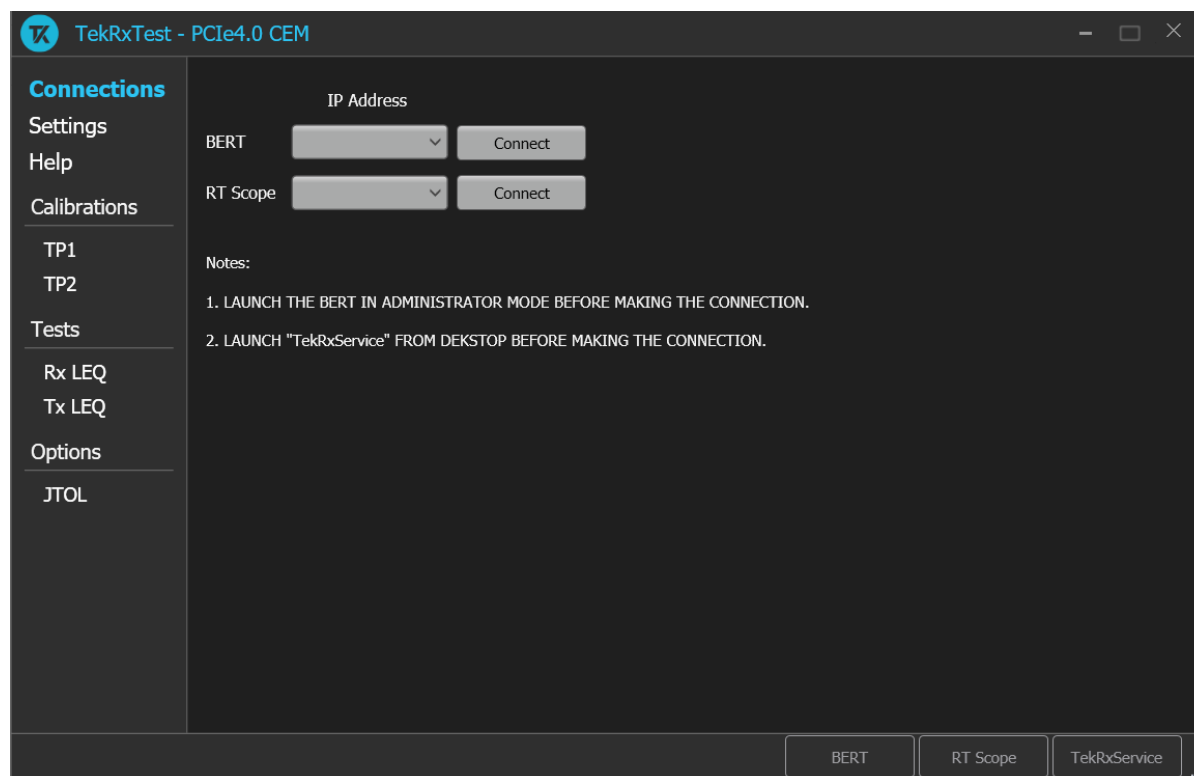


Figure 4: Connections panel

Table 5: Connections panel



Connections	Description
BERT	<p>Enter the BERT IP address in the address field and click Connect. When the BERT is connected successfully, the BERT indicator in the right end corner of the application turns green.</p> <p> Note: It is recommended to launch the MP1900A software in the administrator mode to use the RxTest Application in the BERT.</p>

Table continued...

Connections	Description
RT Scope	<p>Enter the real-time oscilloscope IP address in the address field and click Connect. When the real-time oscilloscope is connected successfully, the RT Scope and TekRxService indicator in the right end corner of the application turns green.</p> <p> Note: Before you click Connect, you must launch the TekRxService in the real-time oscilloscope.</p>

Settings panel

The settings panel allows you to configure the settings for instruments, calibrations, and remote access. Click any tab to configure the associated settings.

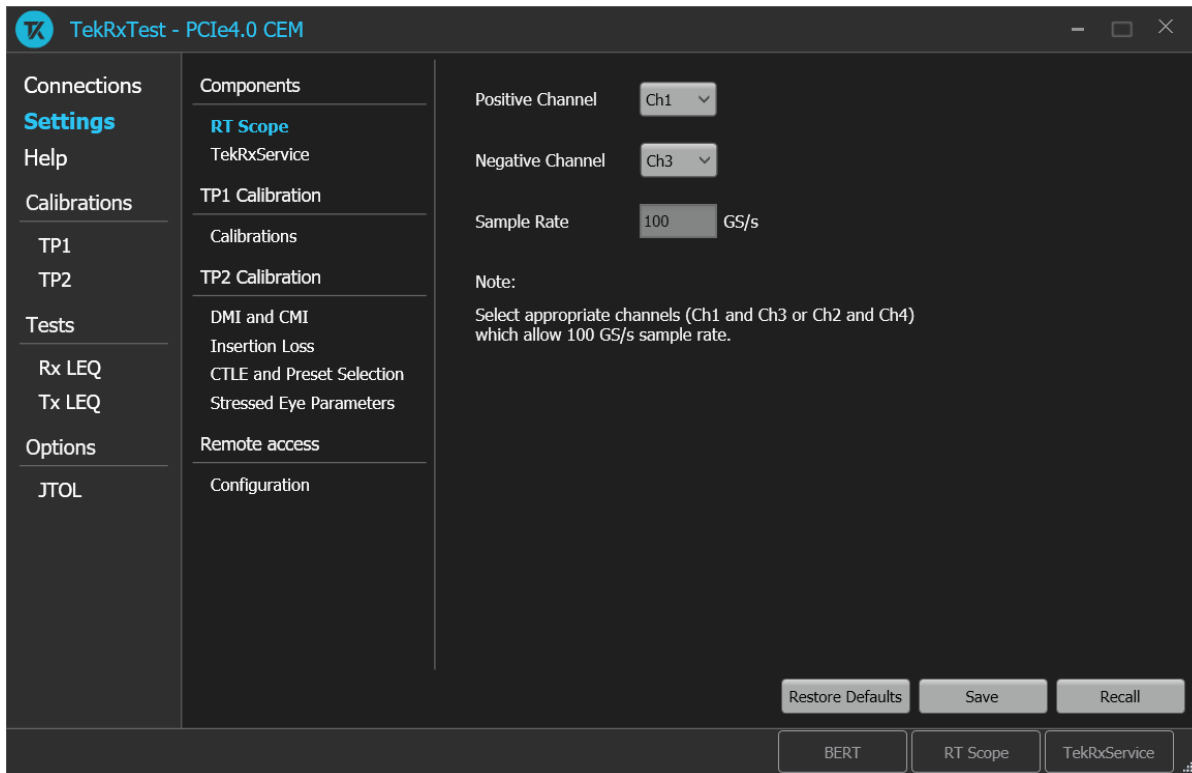


Figure 5: Settings panel

Table 6: Settings panel configurations

Parameter	Description
Restore Defaults	Restores the application with default settings.
Save	Saves the current test setup.
Recall	Recalls the saved test setup.

Components settings

The components settings display the parameters for RT Scope and TekRxService.

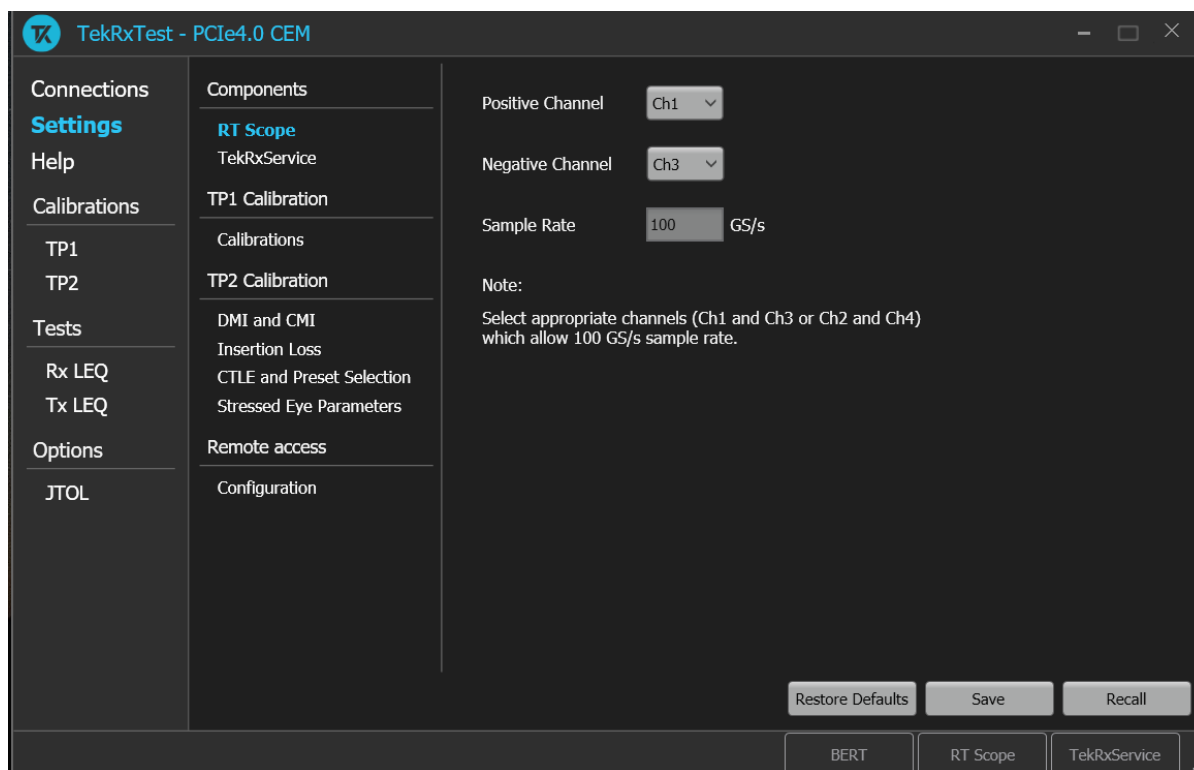


Figure 6: Components: RT Scope

Table 7: Components: RT Scope

Parameter	Description
Positive Channel	Displays the generator data positive channel from BERT.
Negative Channel	Displays the generator data negative channel from BERT.
Sample Rate	Displays the RT Scope sample rate in GS/s.

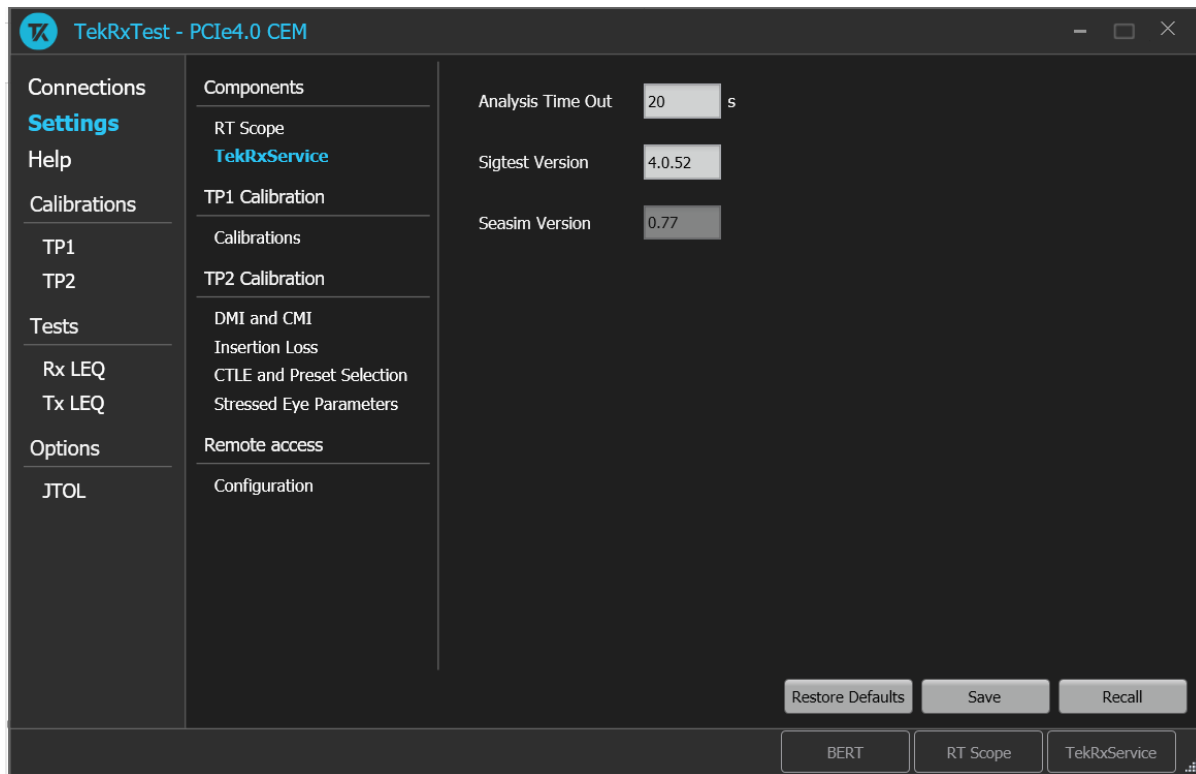


Figure 7: Components: TekRxService

Table 8: Components: TekRxService

Parameter	Description
Analysis Time Out	Enter the timeout value for Sigtest analysis.
Sigtest Version	Enter the Sigtest version.
Seasim Version	Displays the Seasim version.

TP1 Calibration

The TP1 calibration tab allows you to configure the multi-tone calibration settings.

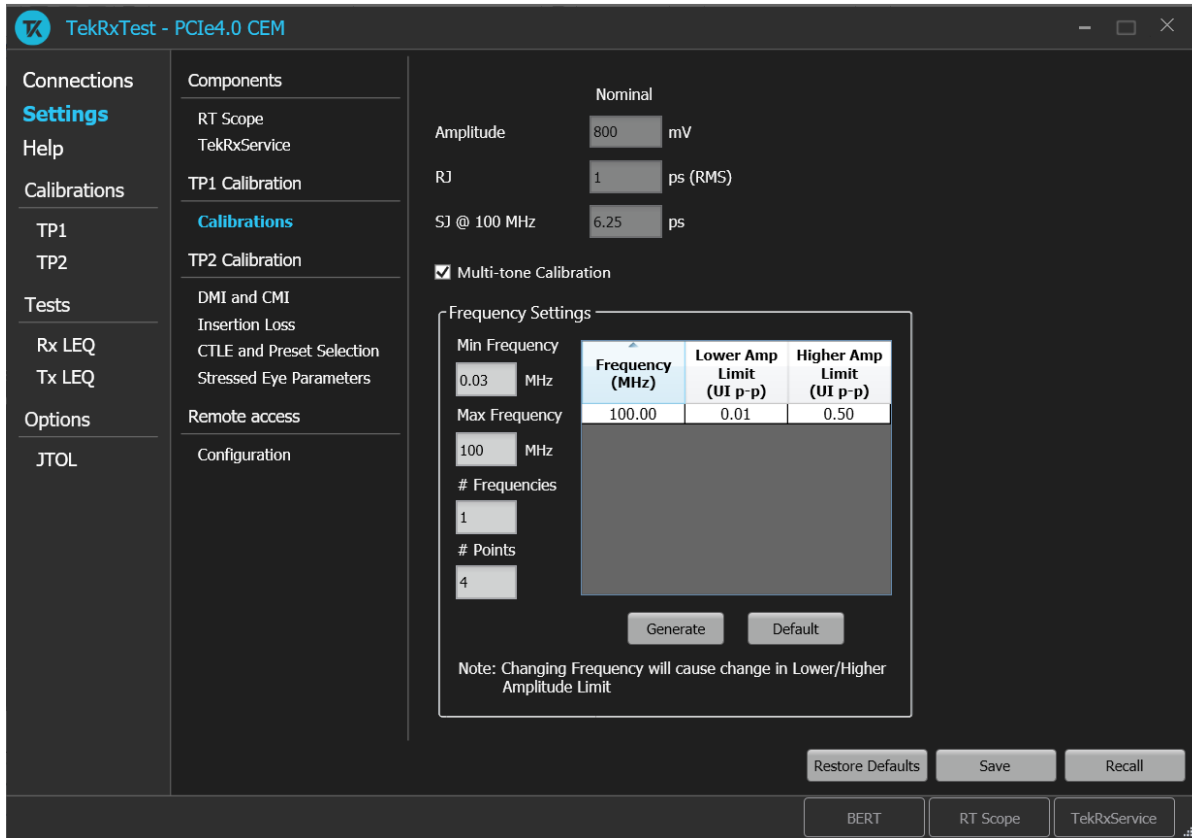


Figure 8: TP1 Calibration: Calibrations

Table 9: TP1 Calibration: Calibrations

Parameter	Description
Amplitude	Displays the calibration target for generator amplitude source.
RJ	Displays the calibration target for random jitter source.
SJ @ 100 MHz	Displays the calibration target for sinusoidal jitter source @ 100 MHz.
Multi-tone Calibration	Select to enable the multi-tone calibration. It displays the calibration settings for multiple tones.
Frequency Settings: Frequencies at which the SJ calibration needs to be performed for JTOL Test.	
Frequency (MHz)	Displays the table of frequencies in MHz for which Multi-tone calibration is to be performed.
Lower Amplitude Limit (UI p-p)	Displays the table of lower amplitude limit values at which SJ calibration starts for that frequency.
Higher Amplitude Limit (UI p-p)	Displays the table of higher amplitude limit values at which SJ calibration ends for that frequency.
Min Frequency	Enter the minimum frequency value.
Max Frequency	Enter the maximum frequency value.
# Frequencies	Enter the desired number of frequencies within the specified range.
# Points	Enter the desired number of points used for calibration.
Generate	Click to view the table populated with the frequencies.
Table continued...	

Parameter	Description
Default	Click to view the table populated with default list of frequencies.

TP2 Calibration

The TP2 calibration tab allows you to configure the DMI/CMI calibration, Insertion Loss, CTLE and Preset Selection, and Stressed Eye Parameters.

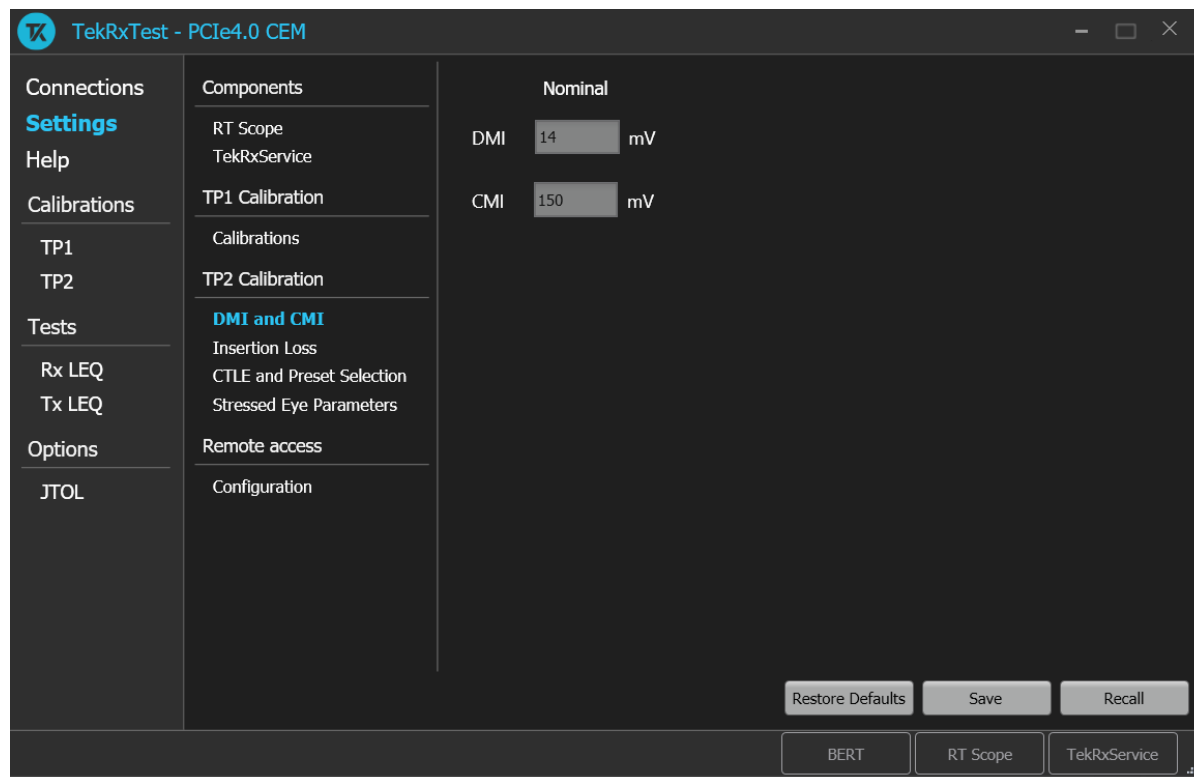


Figure 9: TP2 Calibration: DMI and CMI

Table 10: TP2 Calibration: DMI and CMI

Parameter	Description
DMI	Displays the nominal DMI value in mV.
CMI	Displays the nominal CMI value in mV.

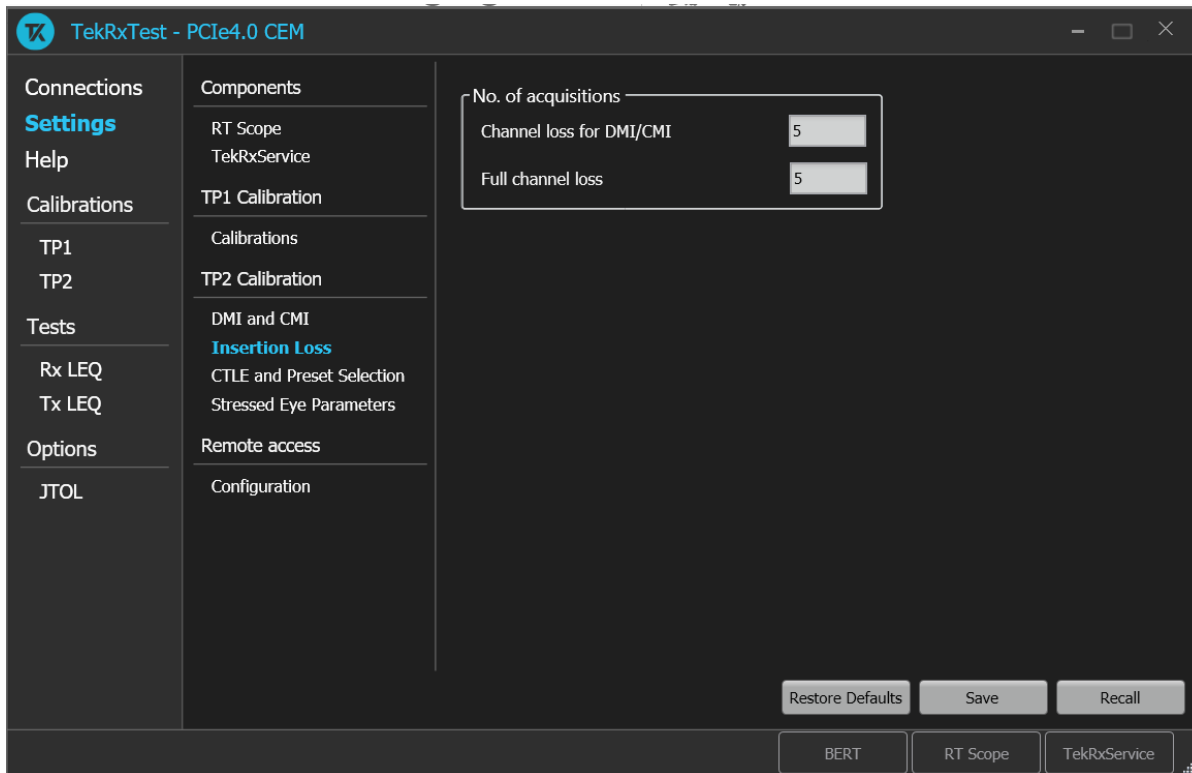


Figure 10: TP2 Calibration: Insertion Loss

Table 11: TP2 Calibration: Insertion Loss

Parameter	Description
No. of acquisitions:	The number of waveforms acquired for averaging before passing for analysis.
Channel loss for DMI/CMI	Enter number of acquisitions for DMI/CMI loss calculation.
Full channel loss	Enter number of acquisitions for Full channel loss calculation.

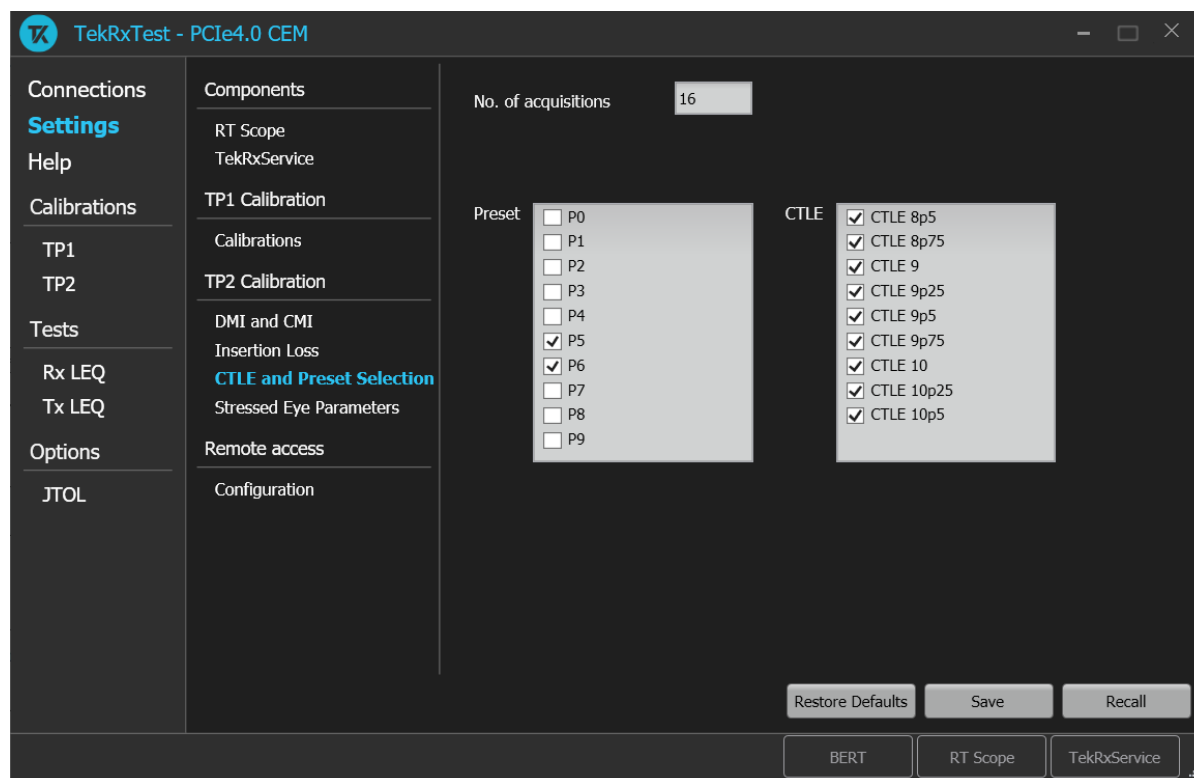


Figure 11: TP2 Calibration: CTLE and Preset Selection

Table 12: TP2 Calibration: CTLE and Preset Selection

Parameter	Description
No. of acquisitions	Enter the number of waveform acquisitions to be carried out for averaging during this measurement.
Preset	Select the presets from which the optimum will be chosen for TP2 calibration.
CTLE	Select the CTLEs from which the optimum will be chosen for TP2 calibration.

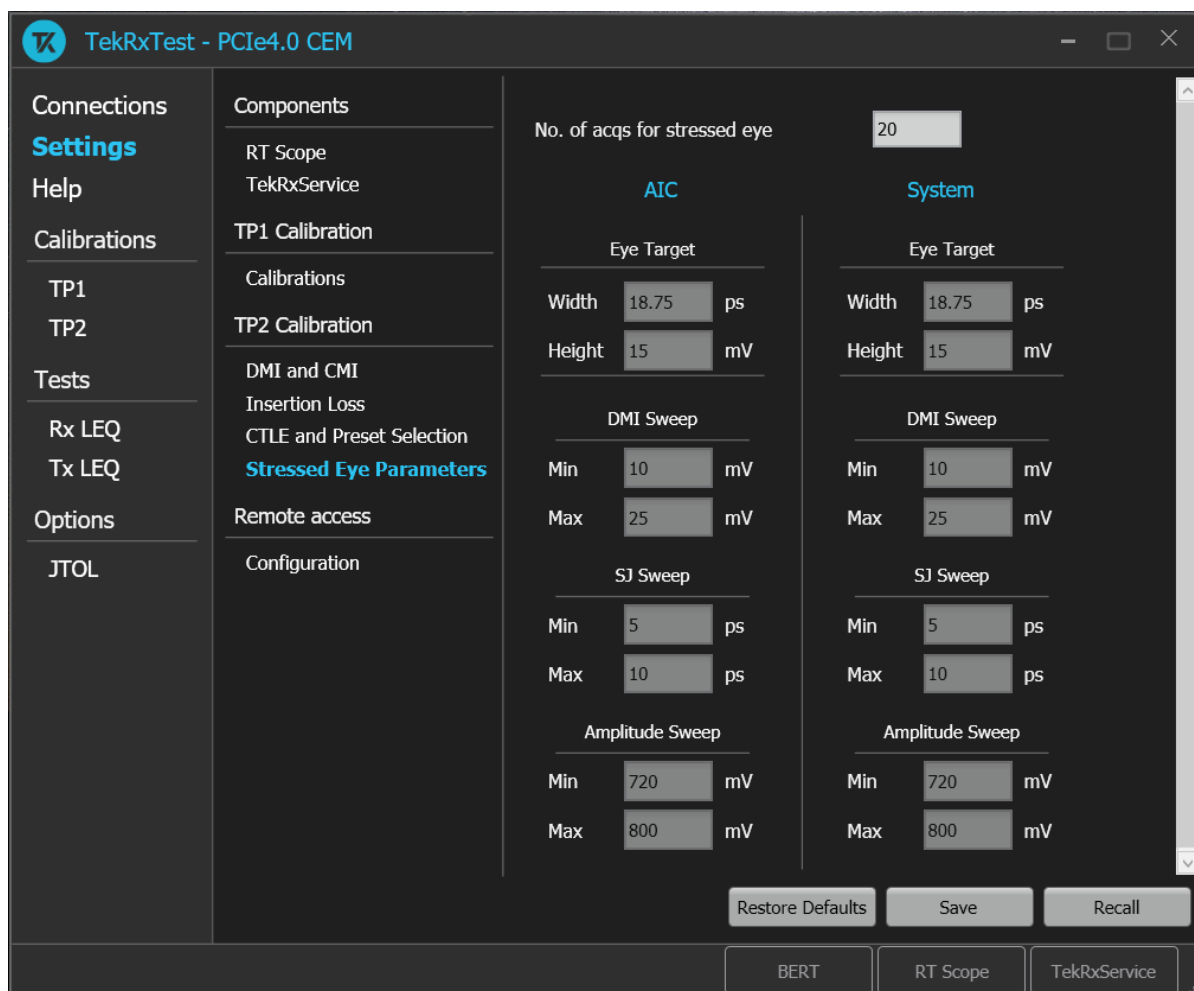


Figure 12: TP2 Calibration: Stressed Eye Parameters

Table 13: TP2 Calibration: Stressed Eye Parameters

Parameter	Description
No. of acqs for stressed eye	Displays the number of acquisitions value for stressed eye.
Eye Target	
Width	Displays the target eye width value as per PCIe specification.
Height	Displays the target eye height value as per PCIe specification.
DMI Sweep	
Min	Displays the minimum value of DMI sweep during stressed eye calibration.
Max	Displays the maximum value of DMI sweep during stressed eye calibration.
SJ Sweep	
Min	Displays the minimum value of SJ sweep during stressed eye calibration.
Max	Displays the maximum value of SJ sweep during stressed eye calibration.

Table continued...

Parameter	Description
Amplitude Sweep	
Min	Displays the minimum value of amplitude sweep during stressed eye calibration.
Max	Displays the maximum value of amplitude sweep during stressed eye calibration.

Remote access: Configuration

The remote access tab allows you to configure the remote setting parameters to access the equipment remotely.

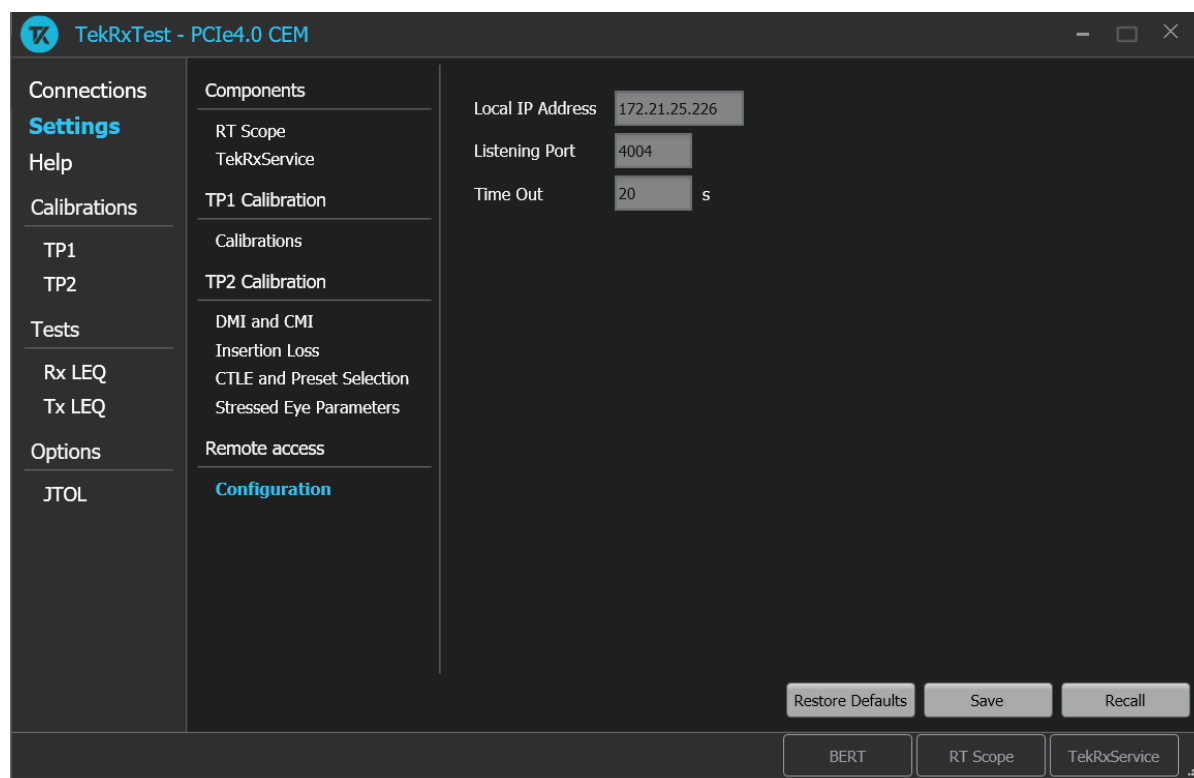


Figure 13: Remote access: Configuration

Table 14: Remote access: Configuration

Parameter	Description
Local IP Address	Displays the IP address for connecting to the application over socket server.
Listening Port	Displays the TCP/IP port number of the port that the socket server is listening. Default Value: 4004
Time Out	Displays the timeout value used when communicating with the socket server. Default Value: 20 Seconds

Help panel

The help panel launches the PCIe4.0 (CEM) Rx test application help document.

Calibrations panel

Complete TP1 and TP2 calibrations before you start the DUT testing using the PCIe4.0 (CEM) test application. Follow the instructions in the calibration wizards to automate the calibration for the test points. After calibrating the test points, you can save the results.


TP1 Calibration

The TP1 calibration panel allows you to perform calibration for TP1 and save the results. You can perform calibration for Signal Amplitude, Preset, Random Jitter (RJ), Sinusoidal Jitter (SJ), SJ@210 MHz, and Multi-tone. Additionally, there is provision to perform AC-DC Balancing.

The PCIe4.0 (CEM) Rx test application calibrates the following at TP1 :

1. Amplitude - The differential voltage swing is required to be within 720 - 800 mV. This is done only after the transition and non-transition bit levels are made equal using de-emphasis.
2. Tx Equalization Presets - The various levels of de-emphasis and pre-shoot are required to be calibrated within the tolerance as specified.
3. RJ - It is calibrated to be 1 ps (RMS value).
4. SJ - The SJ is calibrated over the desired range of 5-10 ps (pk-pk) including the nominal SJ specification of 0.1 UI (or 6.25 ps) at 100 MHz frequency.
5. SJ @ 210 MHz - If the stressed eye calibration requires sinusoidal jitter levels greater than 0.1 UI, then SJ@210 MHz is used during JTOL test.
6. Multi-tone - It is calibrated over the user-defined range of multiple different frequencies.

TP1 Calibration procedure

Click **TP1** under the calibration tab to view the calibration results. Click  at the right end corner of the application to launch the TP1 calibration wizard. This wizard will guide you through the sequential procedure to perform the calibration.

1. **Connection Diagram:** This tab displays the connection diagram for TP1 calibration. The connection diagram is same for AIC / System.

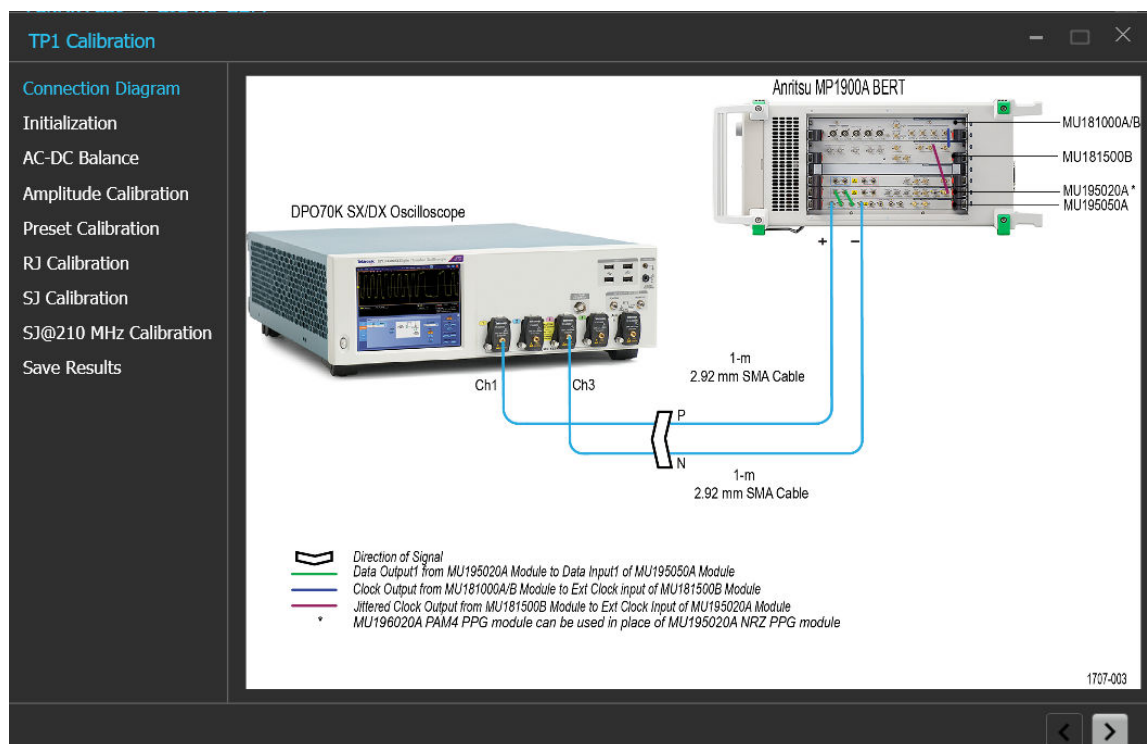



Figure 14: TP1 Calibration: Connection Diagram

Click  to move to the next screen.

2. **Initialization:** This tab displays the description and allows you to initialize the equipment. Click **Initialize Equipment** and complete the initialization process.

You can click **Automatic Calibration** to perform the automatic calibration with the default settings for amplitude, Tx Equalization Presets, RJ, and SJ parameters without user intervention.

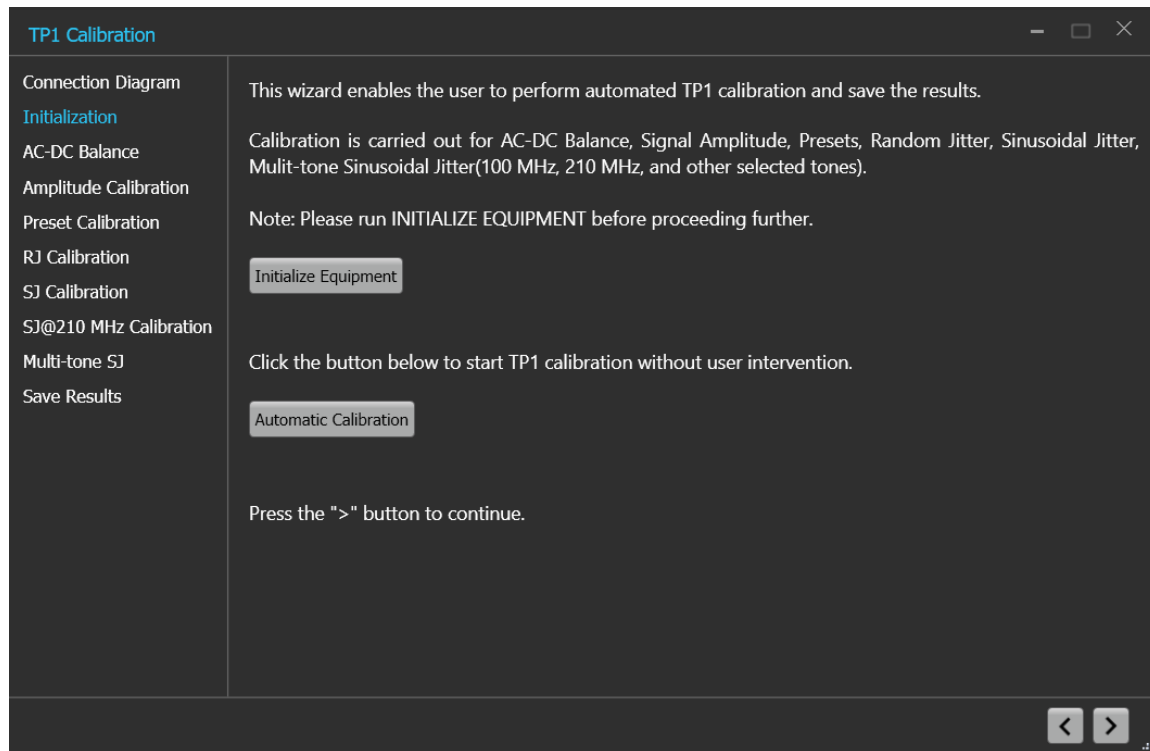



Figure 15: TP1 Calibration: Initialization

Click  to move to the next screen.

3. **AC-DC Balance:** This tab displays the graph plots of AC-DC balance.

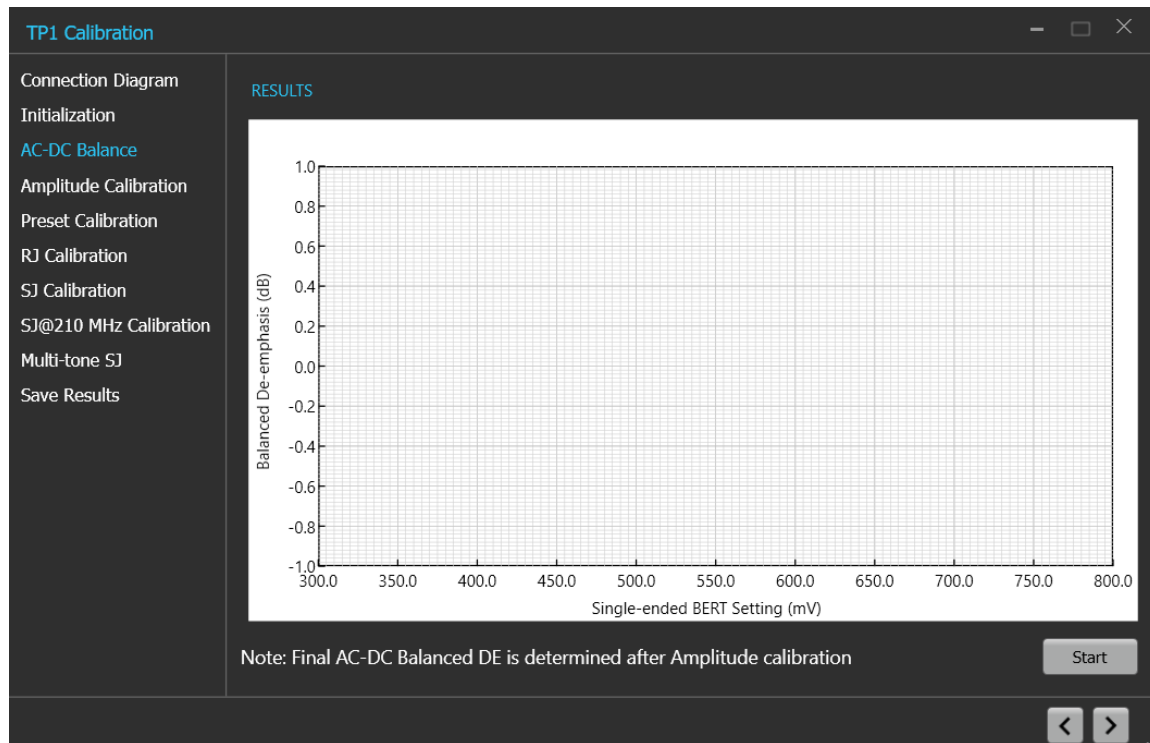



Figure 16: TP1 Calibration: AC-DC Balance

Table 15: TP1 Calibration: AC-DC Balance

Parameter	Description
Start	Click Start to run the measurements.

Click  to move to the next screen.

4. **Amplitude Calibration:** This tab displays the graph plots of amplitude calibration.

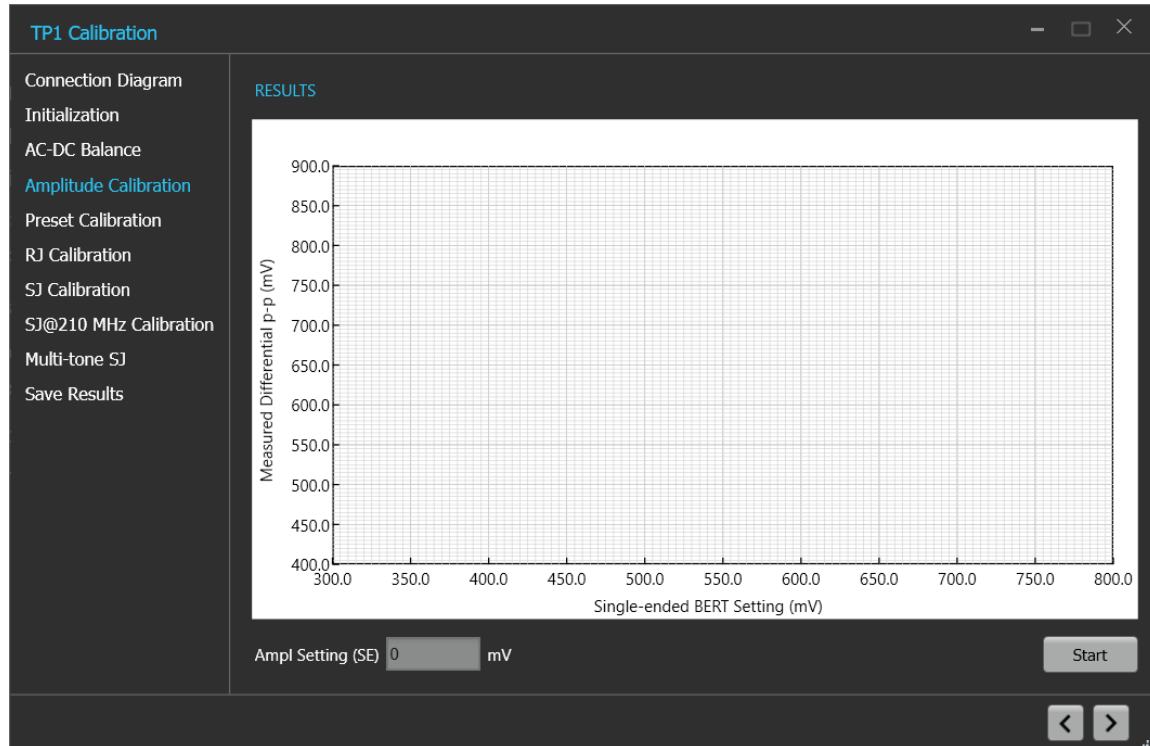



Figure 17: TP1 Calibration: Amplitude Calibration

Table 16: TP1 Calibration: Amplitude Calibration

Parameter	Description
Ampl Setting (SE)	Displays the single-ended calibrated amplitude value corresponding to 800 mV differential.
Start	Click Start to run the measurements.

Click  to move to the next screen.

5. **Preset Calibration:** This tab displays the graph plots of preset calibration.

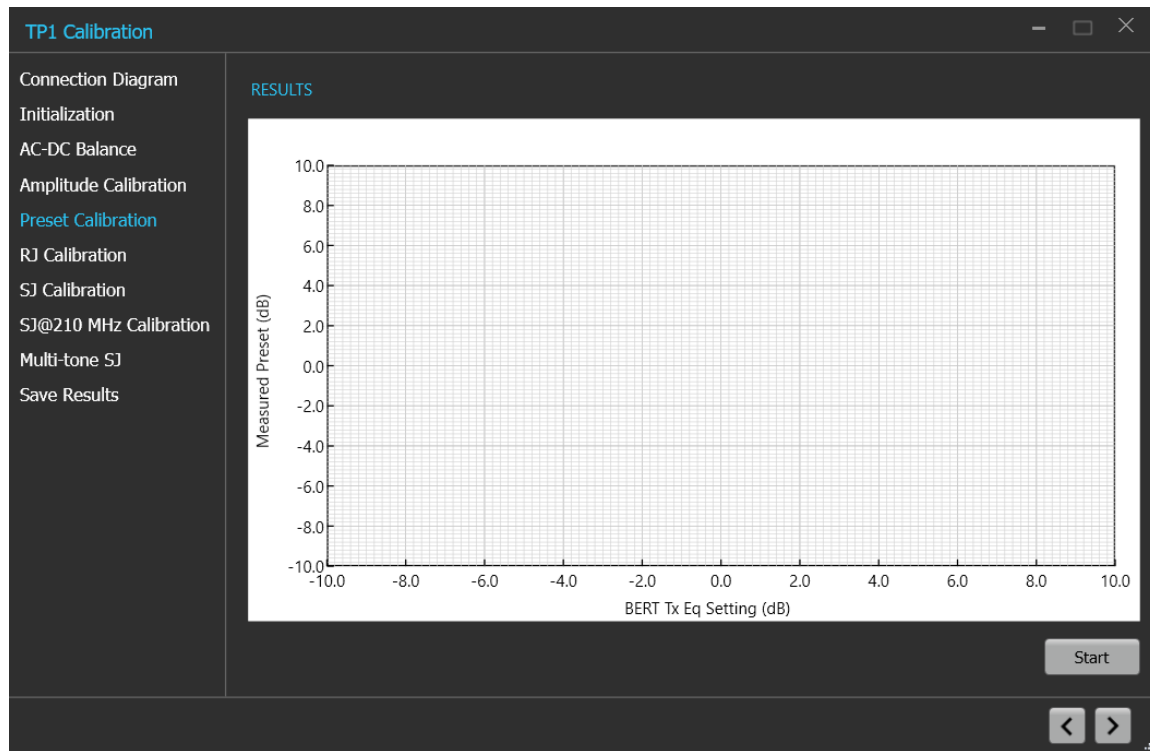



Figure 18: TP1 Calibration: Preset Calibration

Table 17: TP1 Calibration: Preset Calibration

Parameter	Description
Start	Click Start to run the measurements.

Click  to move to the next screen.

- RJ Calibration:** This tab displays the graph plots of RJ calibration.

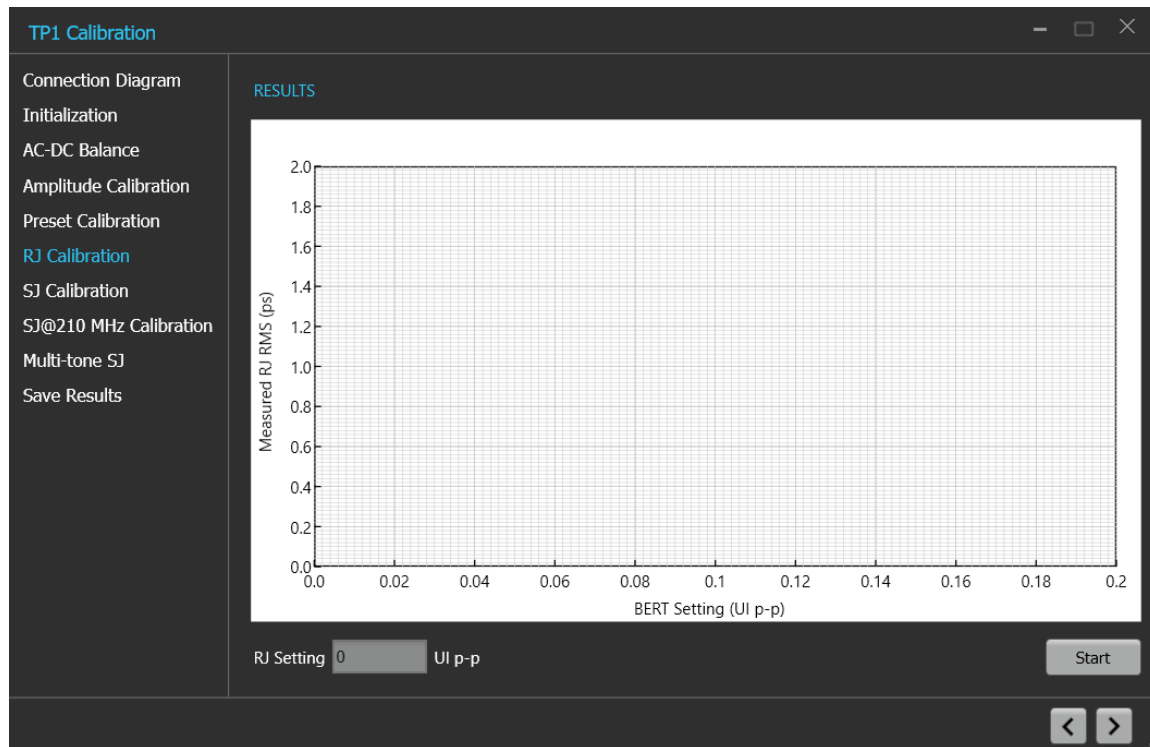



Figure 19: TP1 Calibration: RJ Calibration

Table 18: TP1 Calibration: RJ Calibration

Parameter	Description
RJ Setting	Displays the calibrated RJ setting corresponding to the nominal value.
Start	Click Start to run the measurements.

Click  to move to the next screen.

7. **SJ Calibration:** This tab displays the graph plots of SJ calibration.

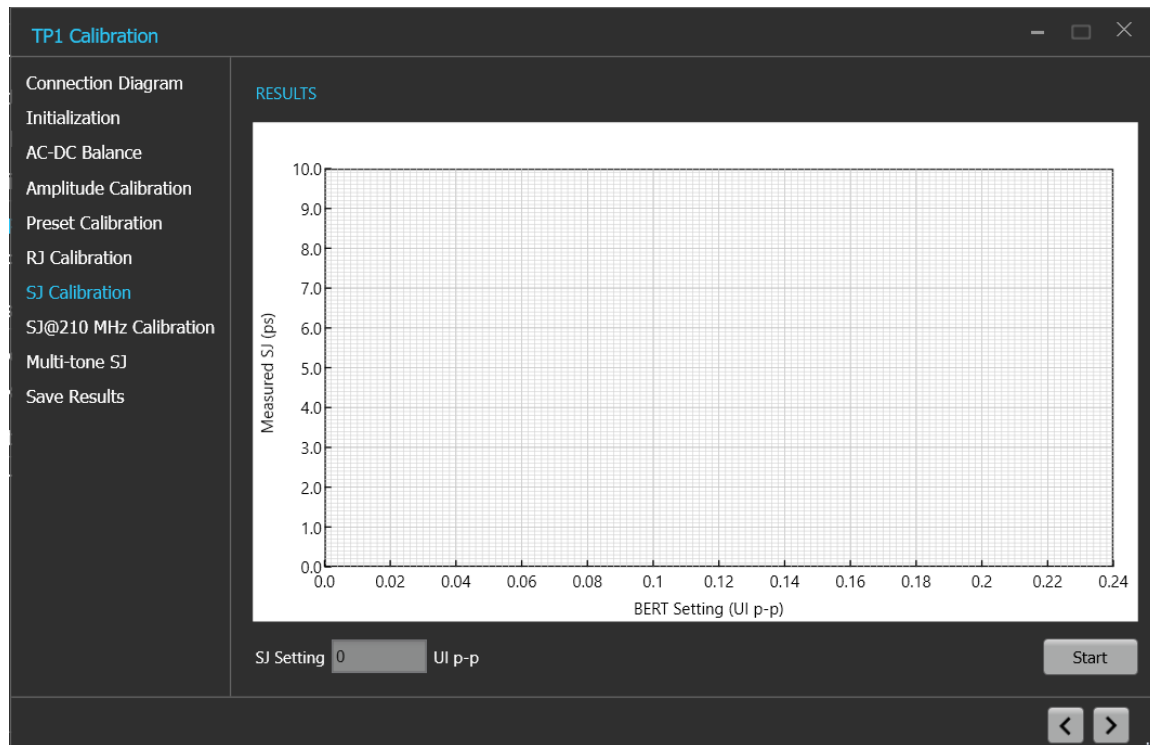



Figure 20: TP1 Calibration: SJ Calibration

Table 19: TP1 Calibration: SJ Calibration

Parameter	Description
SJ Setting	Displays the calibrated SJ setting corresponding to the nominal target value.
Start	Click Start to run the measurements.

Click  to move to the next screen.

8. **SJ@210 MHz Calibration:** This tab displays the graph plots of SJ@210 MHz calibration.

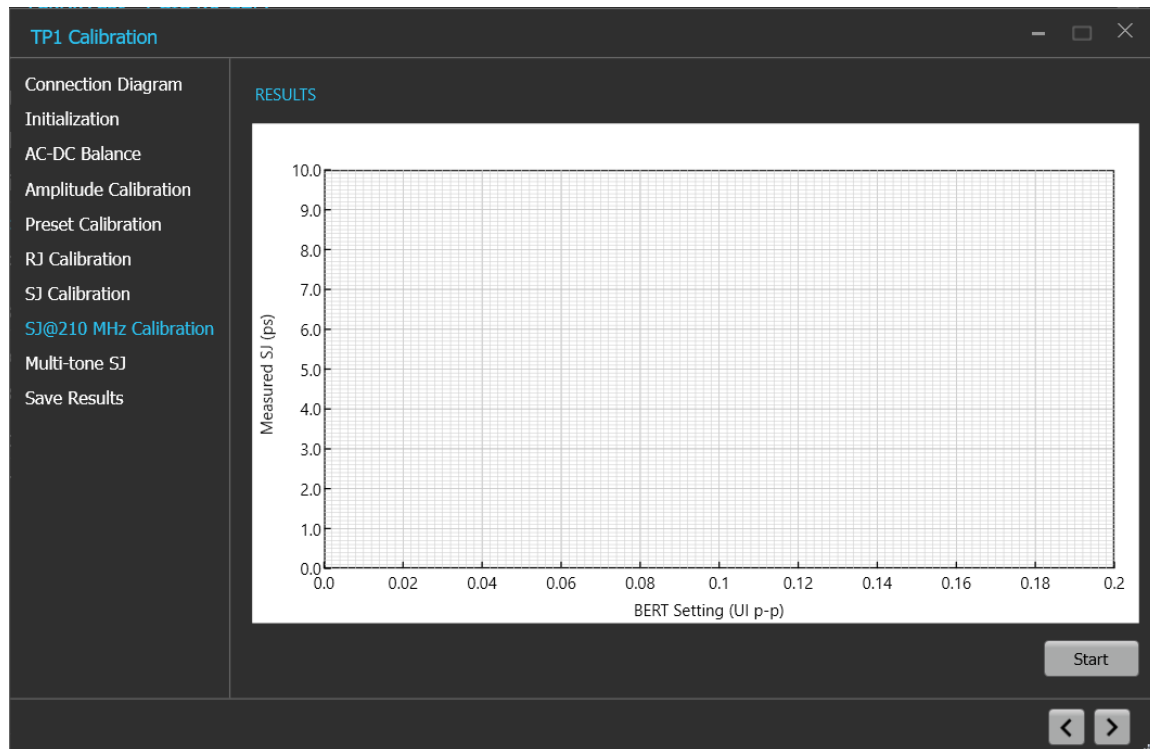


Figure 21: TP1 Calibration: SJ@210 MHz Calibration

Table 20: TP1 Calibration: SJ@210 MHz Calibration

Parameter	Description
Start	Click Start to run the measurements.

9. **Multi-tone SJ:** This tab displays the graph plots of multi-tone SJ calibration.



Note: Enable the multi-tone option in the settings panel to display the Multi-tone SJ calibration panel in the TP1 calibration wizard window.

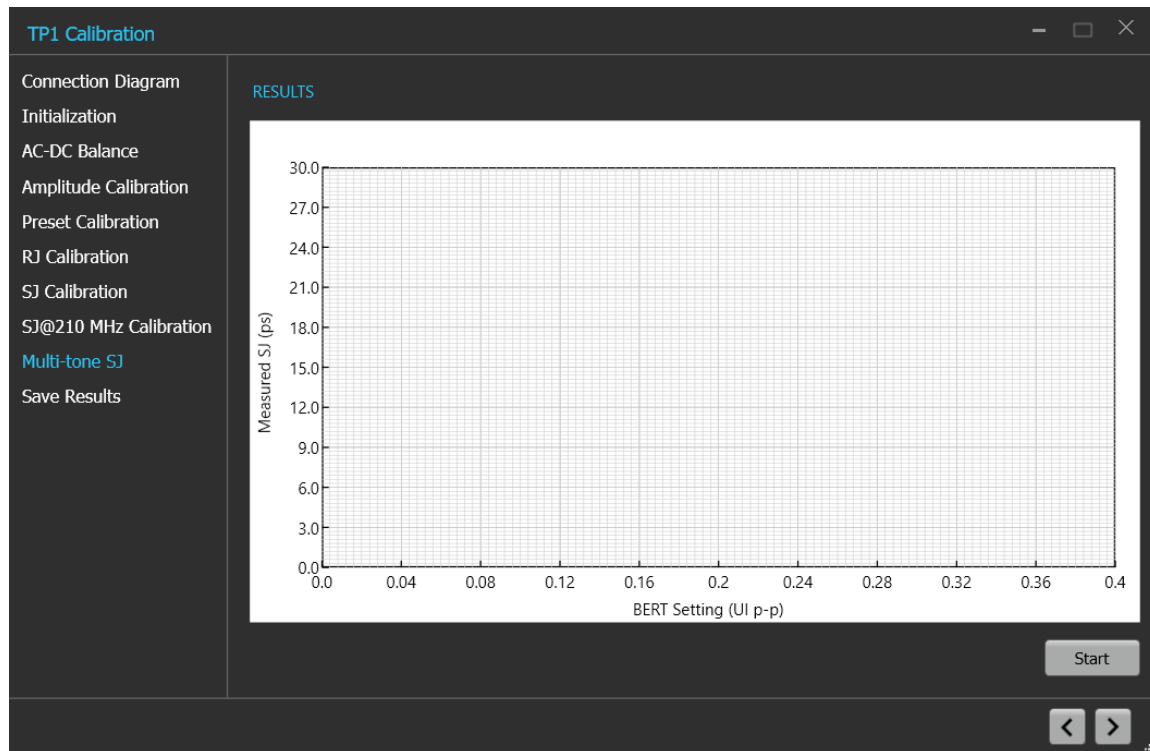


Figure 22: TP1 Calibration: Multi-tone SJ

Table 21: TP1 Calibration: Multi-tone SJ


Parameter	Description
Start	Click Start to run the measurements.

10. **Save Results:** This tab allows you to save all the TP1 calibration results.

Figure 23: TP1 Calibration: Save Results

Table 22: TP1 Calibration: Save Results

Parameter	Description
Unique ID	Enter the Unique ID of the calibrated equipment in the text box.
Generated By	Enter the user name in the text box.
Comments	Enter the required comments in the comment box.
Save	Click to save the results.

Click  to complete the TP1 calibration and close the wizard.



Note: Completion of the TP1 calibration process or in the event of cancellation of the process, the BERT data generator is turned off automatically by the PCIe4.0 (CEM) Rx test application.

TP2 Calibration

The TP2 calibration panel allows you to manually perform calibration for the equipment and save the results. TP2 Calibration is carried out for DMI, CMI, Physical channel loss, CTLE/Preset selection, and Stressed Eye. This procedure sets SJ, DMI, and Amplitude levels to achieve target eye-opening.


You must perform TP1 calibration before you start performing the calibration for TP2.

The PCIe4.0 (CEM) Rx test application calibrates the following at TP2:

1. DMI - The differential mode sinusoidal interference is required to be calibrated within 10 - 25 mV (pk-pk) by capturing the 2.1 GHz sinusoidal output for a duration of at least 125 us.
2. CMI - The common-mode sinusoidal interference is required to be calibrated for a nominal voltage of 150 mV (pk-pk) by capturing the 120 MHz sinusoidal output for a duration of at least 125 us.
3. CTLE and Preset- Tx equalization presets P5 and P6 are used to find the optimal eye area with the optimal CTLE.

4. Stressed Eye calibration - As per the specification, various signal parameters and stress levels are computed to generate a signal that meets the stressed eye targets.

TP2 Calibration procedure

Click TP2 under the calibration tab to view the calibration results. Click  at the right end corner of the application, to launch the TP2 calibration wizard. This wizard will guide you through the sequential procedure to perform the calibration.

You must perform TP1 calibration before you start performing the calibration for TP2.

1. **Description:** This tab displays the description and allows you to select the DUT Type as Non-Root Complex or Root Complex.

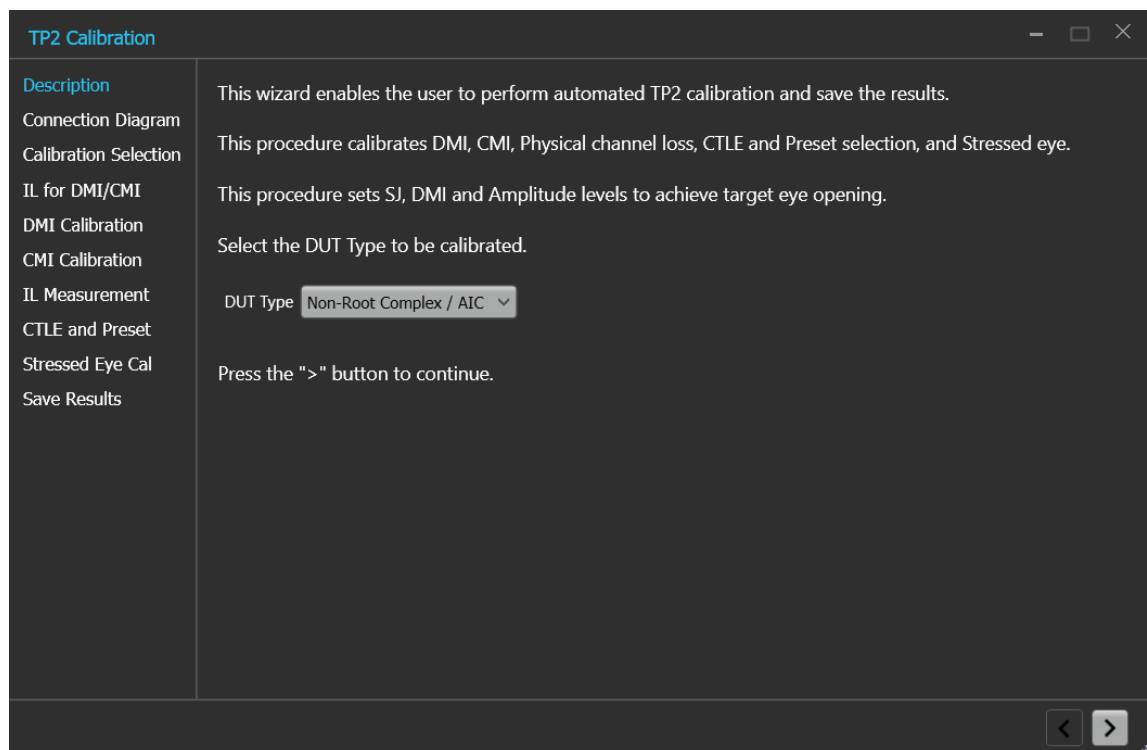



Figure 24: TP2 Calibration: Description

Table 23: TP2 Calibration: Description

Parameter	Description
DUT Type	<ul style="list-style-type: none"> Non-Root Complex / AIC Card Root Complex / System

Click  to move to the next screen.

2. **Connection Diagram:** This tab displays the connection diagram for the DUT Type selected in description screen.

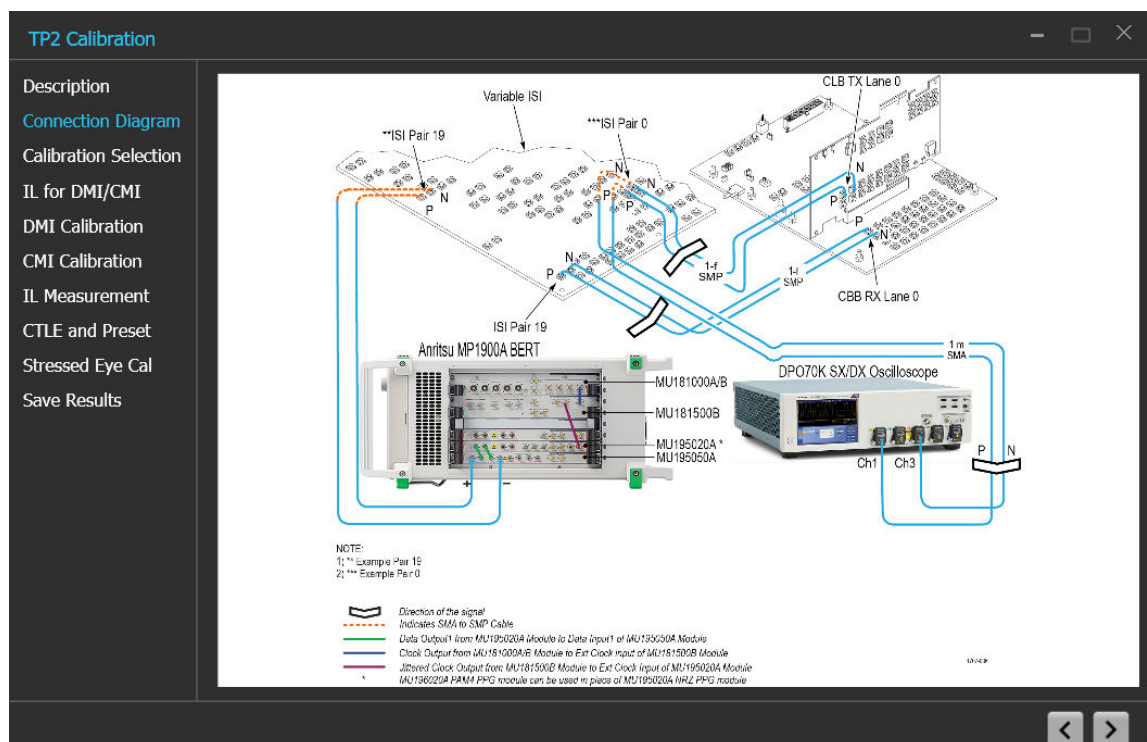



Figure 25: TP2 Calibration: Connection Diagram

Click  to move to the next screen.

3. **Calibration Selection:** This tab allows you to select the TP1 Calibration file from the drop-down list and click **Initialize Equipment**.

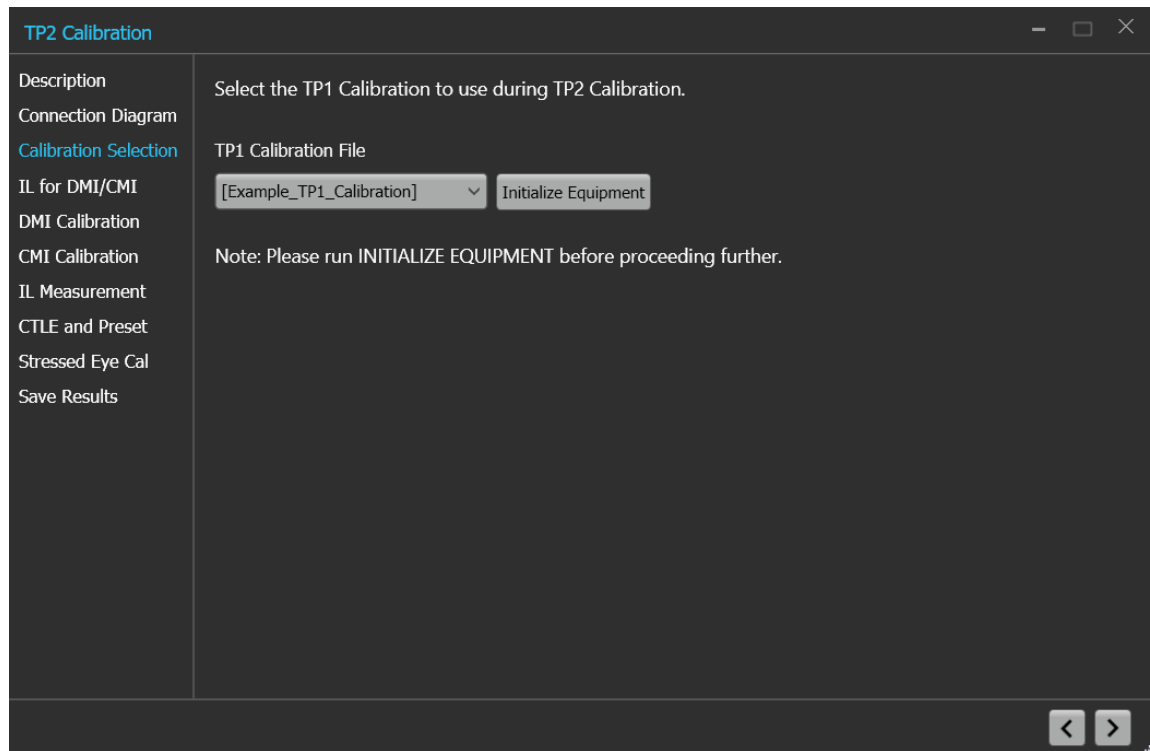



Figure 26: TP2 Calibration: Calibration Selection

Table 24: TP2 Calibration: Calibration Selection

Parameter	Description
TP1 Calibration File	Select the desired TP1 calibration file and initialize the equipment.

Click  to move to the next screen.

4. **IL for DMI/CMI:** This module returns physical channel loss without package embedding for DMI and CMI calibration.

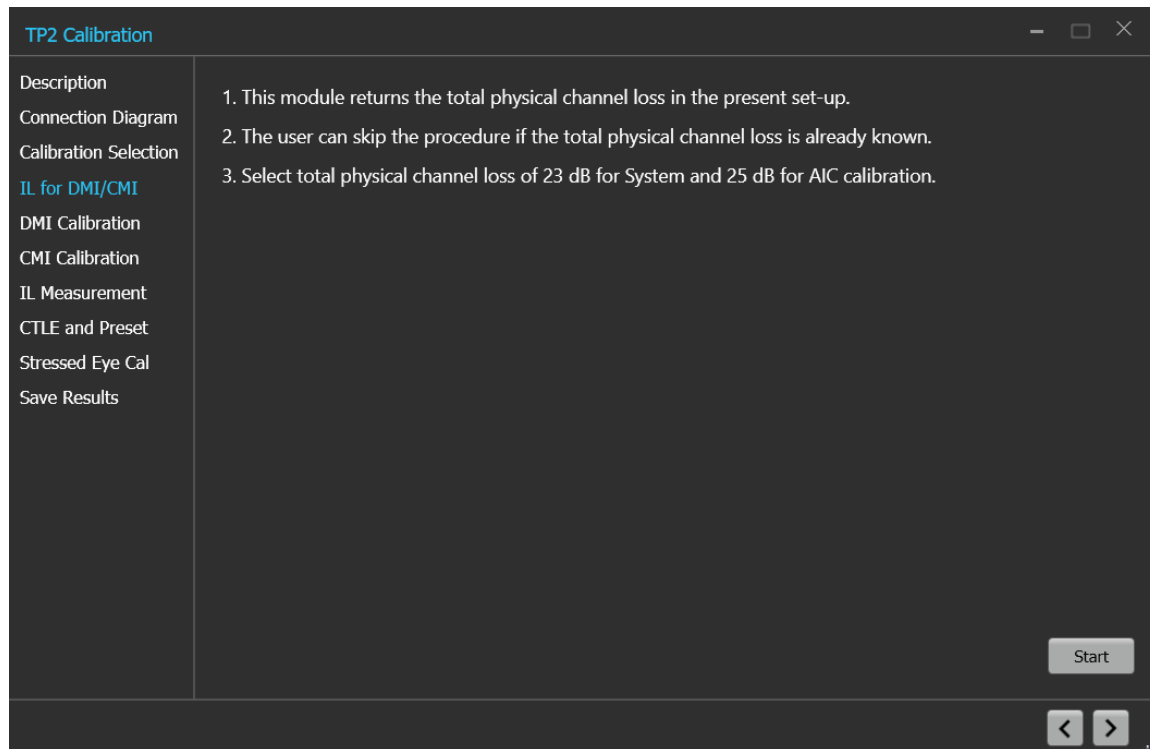



Figure 27: TP2 Calibration: IL for DMI/CMI

Table 25: TP2 Calibration: IL for DMI/CMI

Parameter	Description
Start	Click Start to run the measurements.

Click  to move to the next screen.

5. **DMI Calibration:** This tab displays the graph plots of DMI calibration.

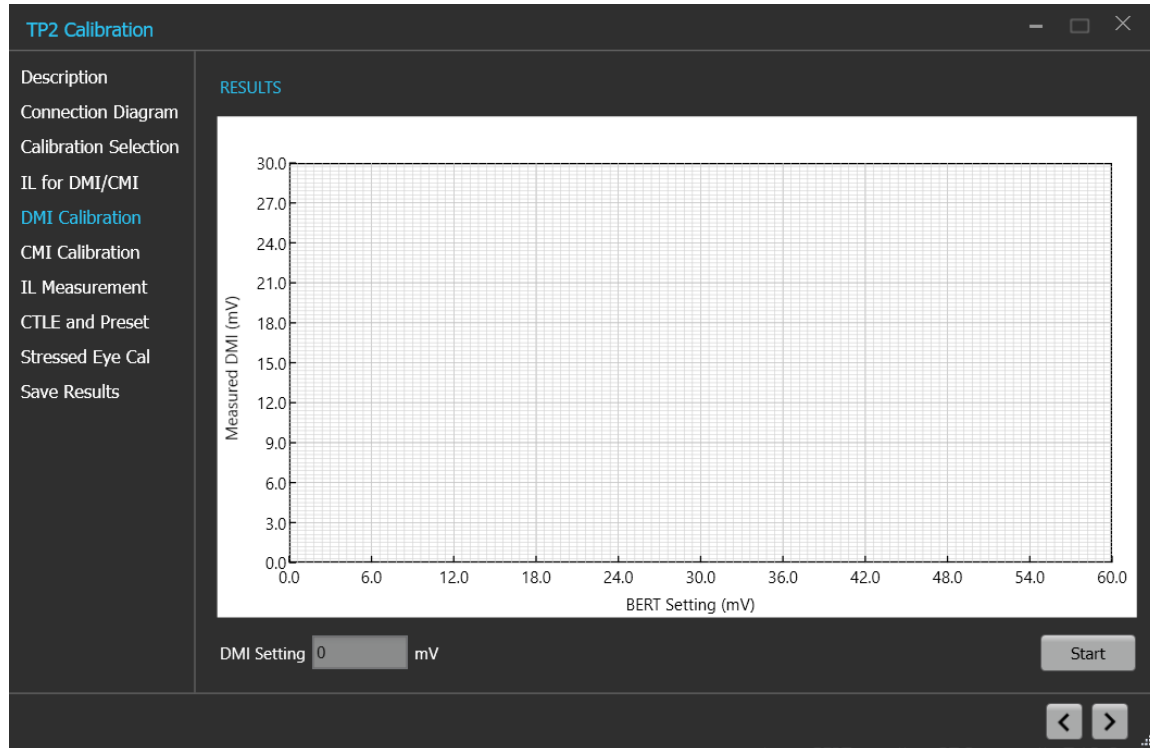



Figure 28: TP2 Calibration: DMI Calibration

Table 26: TP2 Calibration: DMI Calibration

Parameter	Description
DMI Setting	Displays the calibrated DMI setting corresponding to nominal value.
Start	Click Start to run the measurements.

Click  to move to the next screen.

- CMI Calibration:** This tab displays the graph plots of CMI calibration.

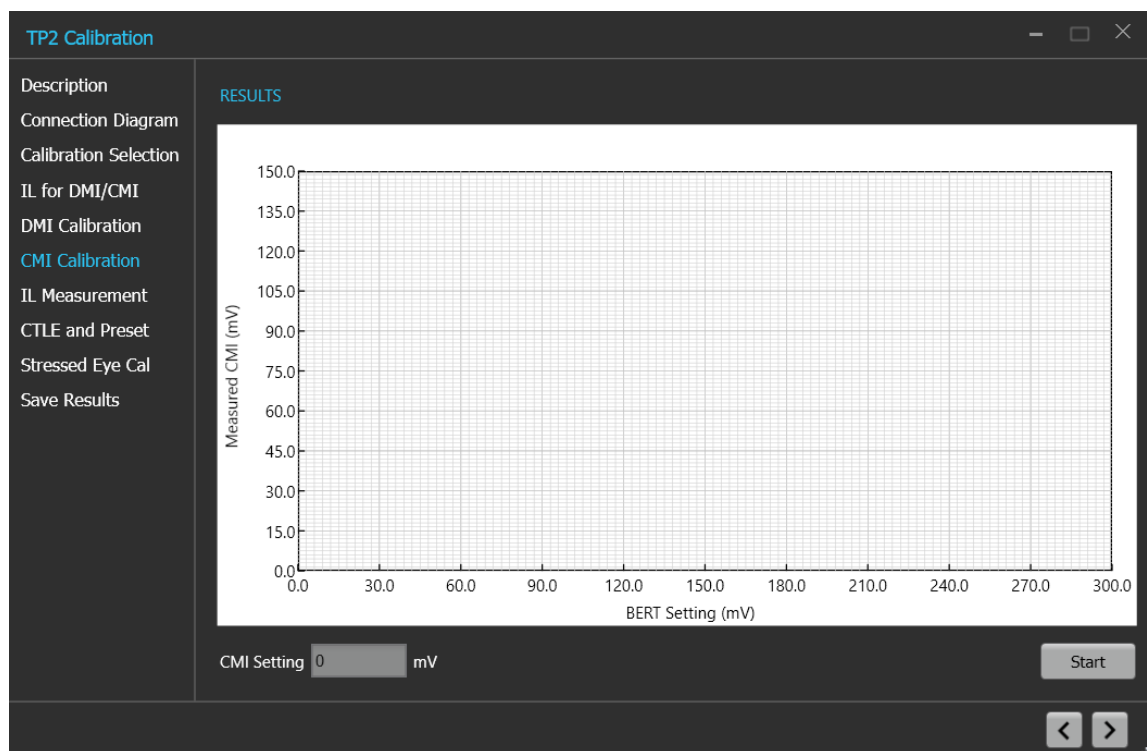



Figure 29: TP2 Calibration: CMI Calibration

Table 27: TP2 Calibration: CMI Calibration

Parameter	Description
CMI Setting	Displays the calibrated CMI setting corresponding to nominal value.
Start	Click Start to run the measurements.

Click  to move to the next screen.

7. IL Measurement:

The Stressed Eye calibration including CTLE selection and optimal preset identification needs to be performed with a full physical channel loss between 27 dB to 30 dB. This includes the package embedding loss.

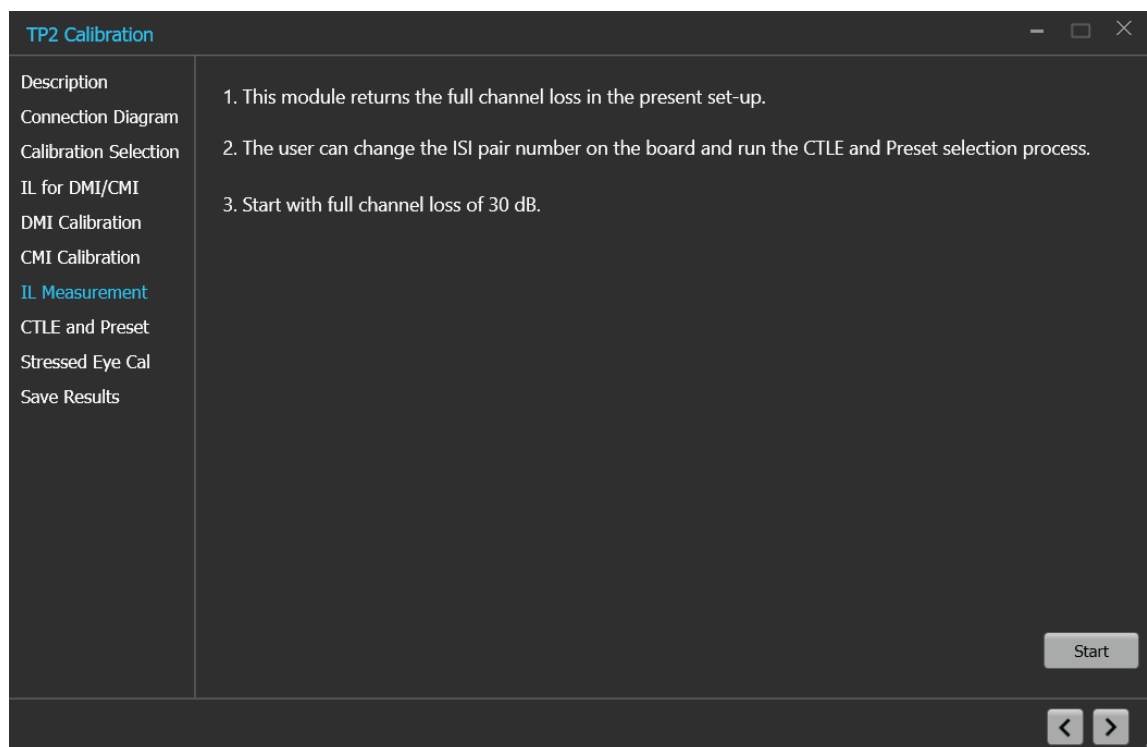



Figure 30: TP2 Calibration: IL Measurement

Table 28: TP2 Calibration: IL Measurement

Parameter	Description
Start	Click Start to run the measurements.

Click  to move to the next screen.

8. CTLE and Preset

The PCIe Gen4 Rx test application provides the facility to automatically compute and present the total physical channel loss in the TP2 set-up. Selection of optimum physical channel loss (obtained by means of changing the ISI pair), optimum CTLE, and Preset is a prerequisite for to obtain the stressed eye as per the specification. While arriving at the optimum combination of the parameters, the Rx test application guides you through the various steps in this process by means of pop-up messages in taking suitable actions.

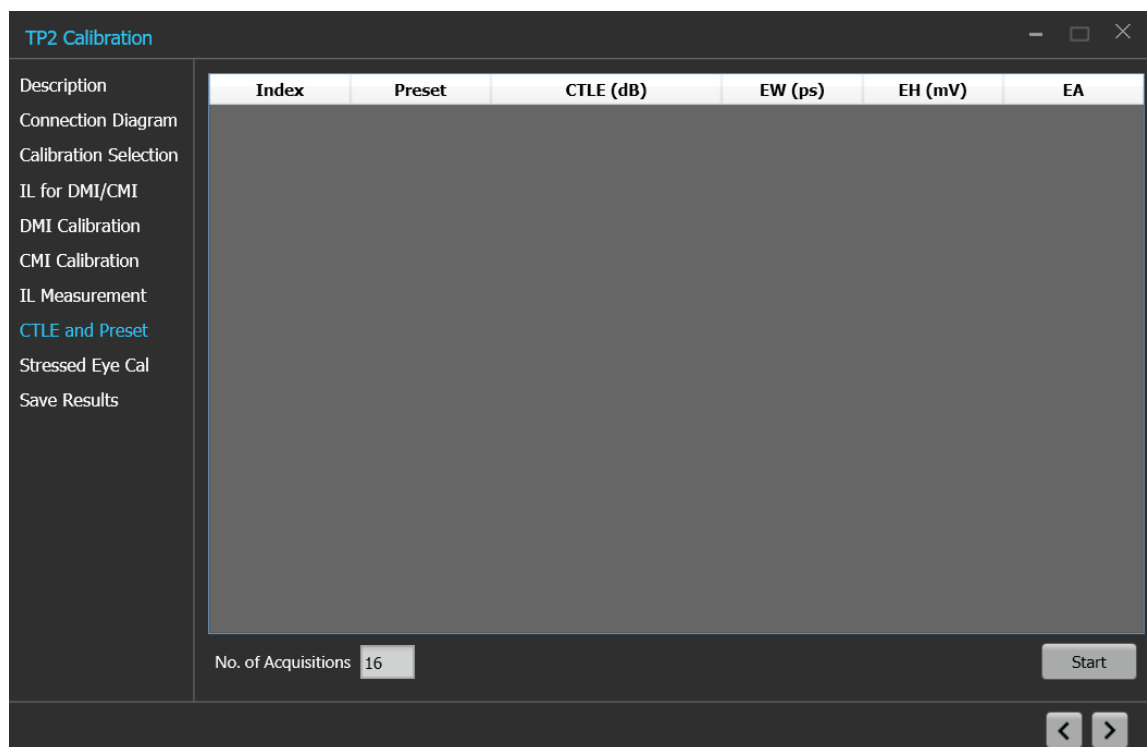



Figure 31: TP2 Calibration: CTLE and Preset

Table 29: TP2 Calibration: CTLE and Preset

Parameter	Description
No. of Acquisitions	Enter the number of waveforms to be acquired for CTLE and Preset.
Start	Click Start to run the measurements.

Click  to move to the next screen.

9. Stressed Eye Cal:


TP2 calibration for stressed eye requires information from the TP1 calibration that is performed for the set-up under consideration or from one of the saved TP1 results. The relevant TP1 calibration file can be chosen from the calibration selection page shown from a drop-down button listing all the TP1 calibration files stored in the PCIe Gen4 Rx-test application repository.



Figure 32: TP2 Calibration: Stressed Eye Cal

Table 30: Stressed Eye Cal

Parameter	Description
Manual Calibration Run	Select to manually enter the SJ, DMI and Amplitude values for Stressed Eye calibration.
SJ	Displays the SJ value at which Eye Width (EW) and Eye height (EH) needs to be computed.
DMI	Displays the DMI value at which Eye Width (EW) and Eye height (EH) needs to be computed.
Amplitude	Displays the amplitude level at which Eye Width (EW) and Eye height (EH) needs to be computed.
No. of Acquisitions	Enter the number of waveforms used to obtain the average EW and EH.
Start	Click Start to run the measurements.


Click  to move to the next screen.

10. **Save Results:** This tab allows you to save all the TP2 calibration results.

Figure 33: TP2 Calibration: Save Results

Table 31: TP2 Calibration: Save Results

Parameter	Description
Unique ID	Enter the Unique ID of the calibrated equipment in the text box.
Generated By	Enter the user name in the text box.
ISI Pair	Enter the ISI pair used during calibration.
Comments	Enter the required comments in the comment box.
Save	Click to save the results.

Click  to complete the TP2 calibration and close the wizard.




Note: Completion of the TP2 calibration process or in the event of cancellation of the process, the BERT data generator is turned off automatically by the PCIe4.0 (CEM) Test Application.

Tests panel

Rx LEQ Test

Rx LEQ Test procedure

Click **Rx LEQ Test** under the Tests panel to view the measurement results. Click  at the right end corner of the application, to launch the Rx LEQ test wizard. This wizard will guide you through the sequential procedure to perform the test.

1. **Calibration Selection:** This tab allows you to select the required DUT type, Clock Architecture, Clock type and TP2 Calibration file from the drop-down list. The drop-down lists all the TP2 calibration files available as per the choice made under DUT Type selection.

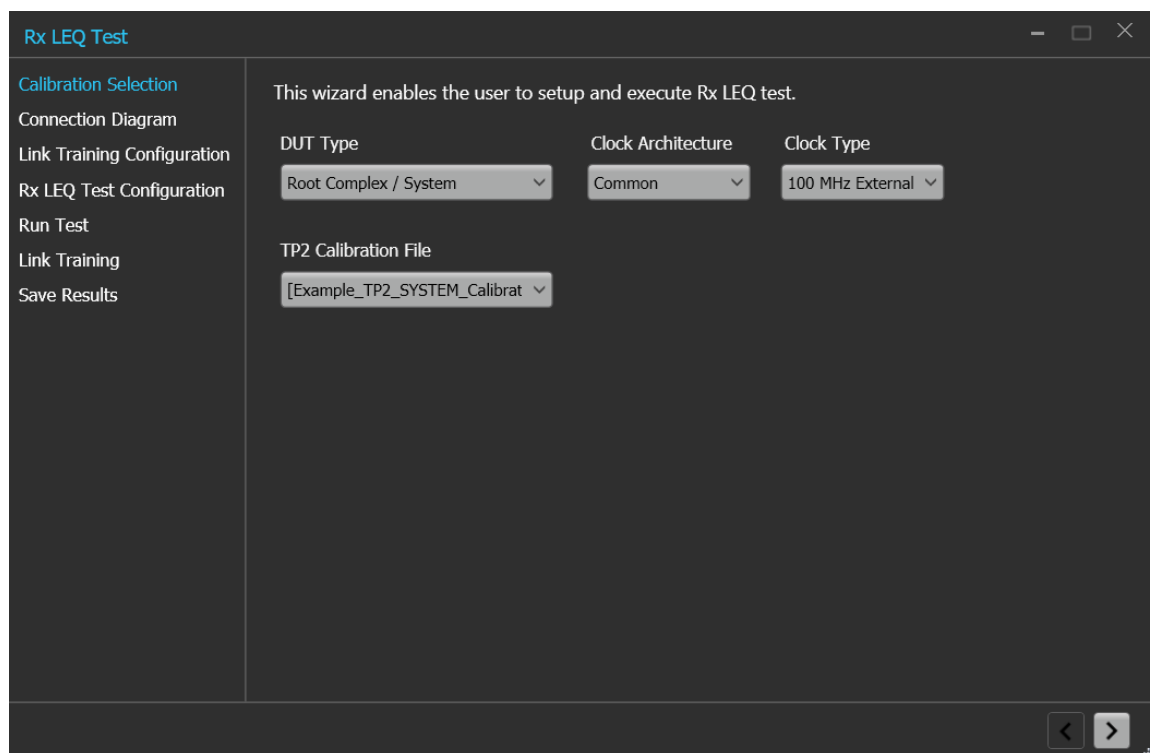



Figure 34: Rx LEQ Test: Calibration Selection

Table 32: Rx LEQ Test: Calibration Selection

Parameter	Description
DUT Type	Select the required DUT type. <ul style="list-style-type: none"> Non-Root Complex / AIC Root Complex / System
Clock Architecture	Select the desired clock architecture.
Clock Type	Select the required DUT clock type.
TP2 Calibration File	Select the required TP2 calibration file.

Click  to move to the next screen.

- 2. Connection Diagram:** This tab displays the connection diagram for the Rx LEQ test. The connection diagram is the different for AIC and System in case of Rx LEQ test.

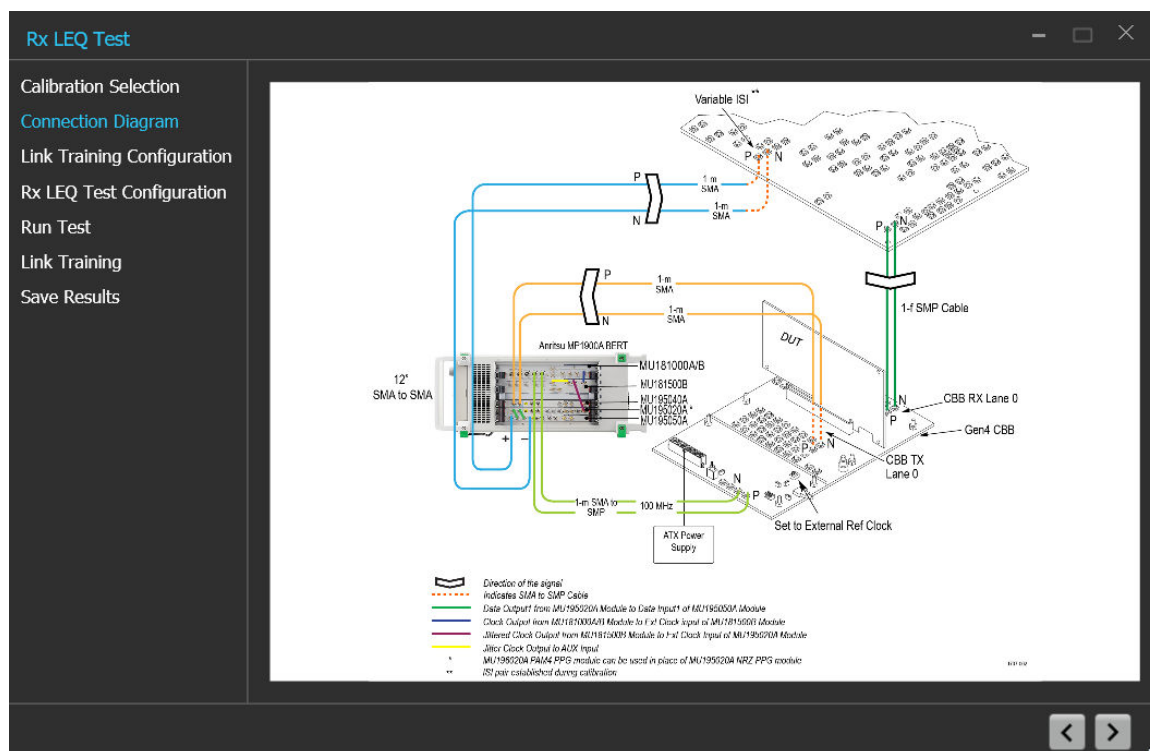


Figure 35: Rx LEQ Test: Connection Diagram(AIC)

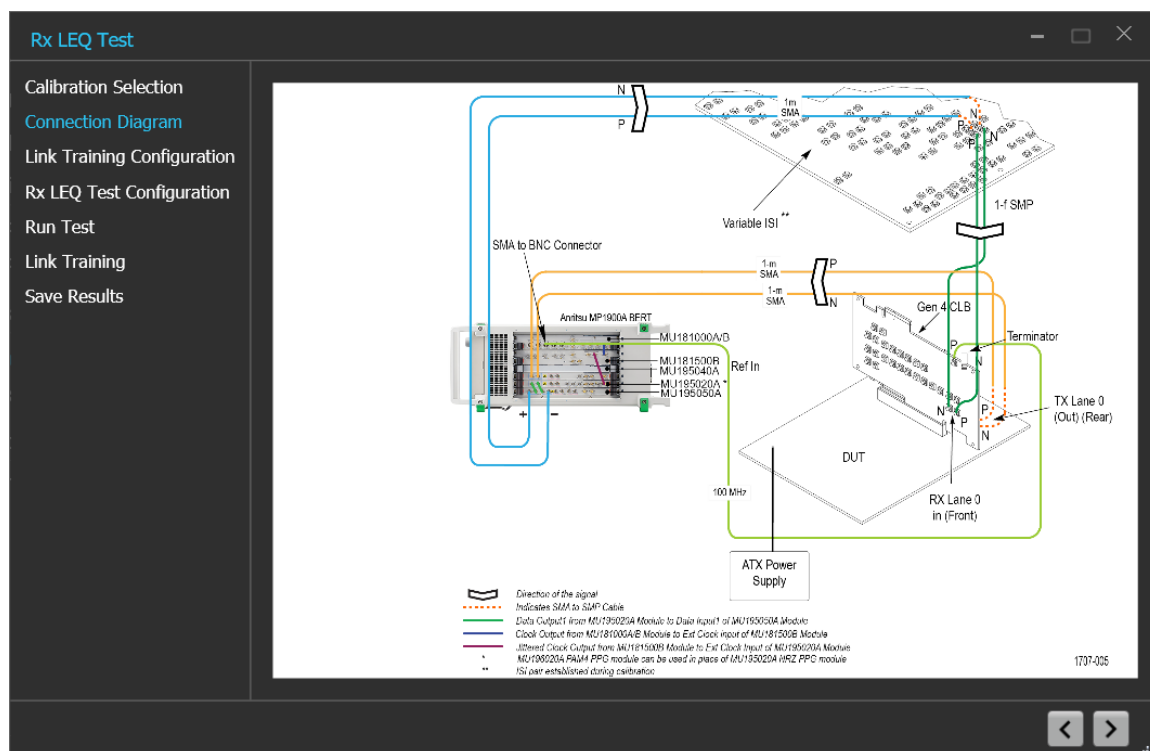



Figure 36: Rx LEQ Test: Connection Diagram(System)

Click  to move to the next screen.

3. Link Training Configuration: This tab allows you to configure the parameters for link training.

Rx LEQ Test

Calibration Selection
 Connection Diagram
Link Training Configuration
 Rx LEQ Test Configuration
 Run Test
 Link Training
 Save Results

Link Training Forced Loopback

Loopback Mode Recovery

BERT Initial Preset P7

DUT Initial Preset P7

DUT Target Preset P7

Lane Number 0

Link Number 0

☒ BERT CTLE 0 dB

Note: Lane and Link Number is for BERT Tx Traffic.

☒ Keep DUT in loopback after test execution is complete

DUT Power Options

External CBB Controller

DUT Power ON Type : ☒ Manual ☐ Pause For Power Cycle ☐ Automatic

Script File Location

Delay 5 s

Figure 37: Rx LEQ Test: Link Training Configuration (Link Training-External)

Rx LEQ Test

Calibration Selection
 Connection Diagram
 Link Training Configuration
 Rx LEQ Test Configuration
 Run Test
 Link Training
 Save Results

Link Training Forced Loopback

Loopback Mode: Recovery

BERT Initial Preset: P7

DUT Initial Preset: P7

DUT Target Preset: P7

Lane Number: 0

Link Number: 0

☒ BERT CTLE: 0 dB

Note: Lane and Link Number is for BERT Tx Traffic.

☒ Keep DUT in loopback after test execution is complete

DUT Power Options

External CBB Controller

Auto Reset : ☒ Power Cycle 3 s ☐ Power Reset 2 s

Waiting Time 3 s

Link Start Start of Power Cycle / Reset End of Power Cycle / Reset Link Training Start Link Training

Power Cycle / Reset Time (s) Waiting Time (s)

Note : PCIe CBB Controller should be connected to the BERT for the control to be functional

Figure 38: Rx LEQ Test: Link Training Configuration (Link Training-CBB Controller)

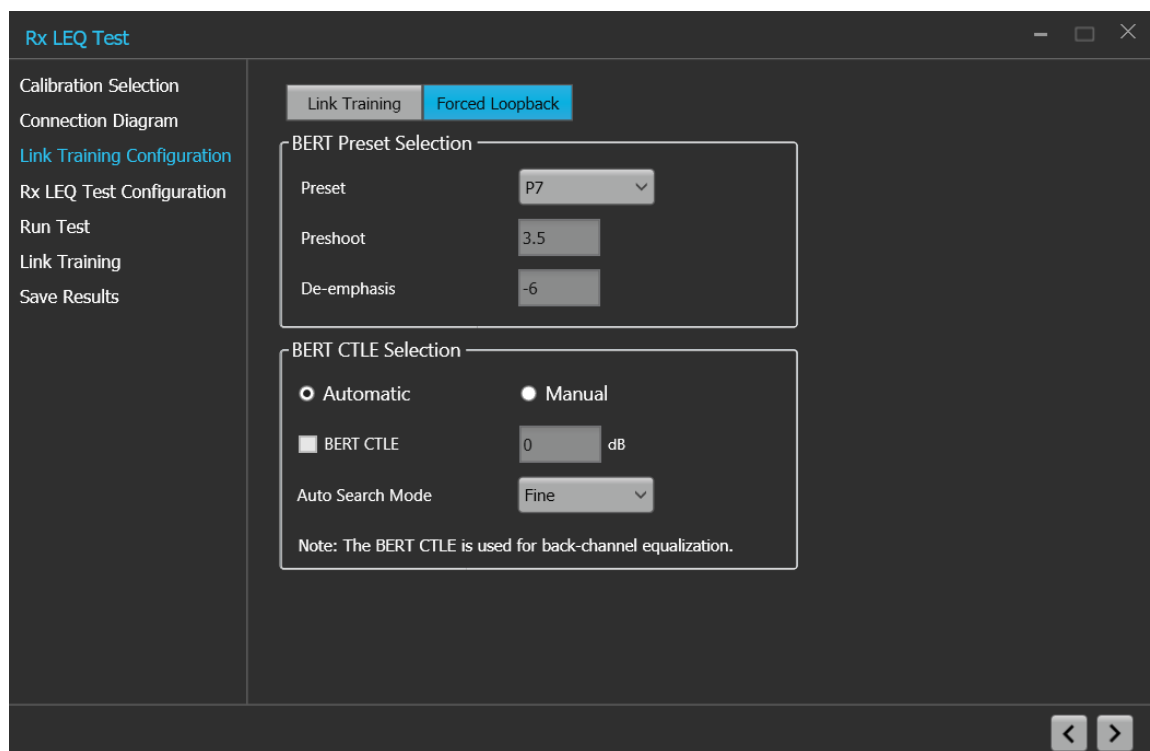


Figure 39: Rx LEQ Test: Link Training Configuration (Forced Loopback)

Table 33: Rx LEQ Test: Link Training Configuration for Link Training

Parameter	Description
Loopback Mode	Select the required loopback mode from the drop-down list.
BERT Initial Preset	Select the Preset to be set on the BERT PPG during loopback from the drop-down list.
DUT Initial Preset	Select the Preset to be set on the DUT Tx during loopback from the drop-down list.
DUT Target Preset	Select the Preset to be set on the DUT Tx as the final preset during link training.
BERT CTLE	Enter the BERT Error Detector CTLE value in dB.
Lane Number	Enter the lane number value.
Link Number	Enter the link number value.
Keep DUT in loopback after test execution is complete	Select this to keep the DUT in the loopback after test execution is complete.
DUT Power options	Select the required DUT power options. <ul style="list-style-type: none"> External CBB Controller
DUT Power ON Type	Select the required DUT power ON type. <ul style="list-style-type: none"> Manual Pause For Power Cycle Automatic

Table continued...




Parameter	Description
Script File Location	Browse and navigate to the path and select the required script file.  Note: Enabled only when Automatic is selected as DUT Power ON Type.
Delay	Enter the delay time in seconds.
Auto Reset	Select the required Auto Reset and enter the values in seconds. <ul style="list-style-type: none"> • Power Cycle • Power Reset • Waiting Time  Note: PCIe CBB Controller should be connected to the BERT for the control to be functional.

Table 34: Rx LEQ Test: Link Training Configuration for Forced Loopback

Parameter	Description
BERT Preset Selection	
Preset	Select the BERT Tx Preset setting from the drop-down list.
Preshoot	Displays the preshoot value corresponding to the choice of preset. Editable for Custom Preset selection.
De-emphasis	Displays the de-emphasis value corresponding to the choice of preset. Editable for P10 and Custom Preset selection.
BERT CTLE Selection	
Automatic	Enables automatic CTLE selection for back-channel equalization in the BERT Error Detector.
Manual	Select to manually choose the BERT CTLE selection.
BERT CTLE	Select to enable and enter the BERT Error Detector CTLE value in dB.
Auto Search Mode	Select the auto search mode from the drop-down. <ul style="list-style-type: none"> • Fine • Coarse

Click  to move to the next screen.

4. Rx LEQ Test Configuration: This tab allows you to configure the Rx LEQ test settings.

Rx LEQ Test

Calibration Selection
Connection Diagram
Link Training Configuration
Rx LEQ Test Configuration
Run Test
Link Training
Save Results

Basic SKP Ordered Set

BER Settings

BER 1 E-12 Error Limit 1

Test Length

Duration 63 s Confidence 26.718 % at 1E+12 Bits

Stress Configuration

Calibrated Customized Un-Calibrated

CMI 150 mV RJ 1 ps (RMS)

DMI 12.5 mV SJ 7.75 ps

Amplitude 800 mV (Diff)

BER Measurement Pattern Modified Compliance

Figure 40: Rx LEQ Test: Rx LEQ Test Configuration (Basic)

Rx LEQ Test

Calibration Selection
Connection Diagram
Link Training Configuration
Rx LEQ Test Configuration
Run Test
Link Training
Save Results

Basic **SKP Ordered Set**

☐ Apply SSC to Data and Clock output

SKP Ordered Set Settings

☒ Insert SKP OS while sending Training Sequences

Generation	Gen 1-2	Gen 3-5
Symbol Length	COM+3	16 Symbols
Insert double SKP in Loopback.Active state	OFF	OFF
SKP Ordered Set interval	1538	375

☒ Filter / Remove the received SKP Ordered Set


Figure 41: Rx LEQ Test: Rx LEQ Test Configuration (SKP Ordered Set)

Table 35: Rx LEQ Test: Rx LEQ Test Configuration (Basic)

Parameter	Description
BER	Number of bits in error that can be tolerated.
Test Length	<ul style="list-style-type: none"> Duration Enter the test length value in second.
Stress Configuration	<ul style="list-style-type: none"> Calibrated Customized Un-Calibrated
CMI	Displays the CMI value in mV. The stress on the waveform is defined by the parameters of CMI.
DMI	Displays the DMI value in mV. The stress on the waveform is defined by the parameters of DMI.
Amplitude	Displays the amplitude value in mV. The stress on the waveform is defined by the parameters of Amplitude.
RJ	Displays the RJ value in ps. The stress on the waveform is defined by the parameters of RJ.
SJ	Displays the SJ value in ps. The stress on the waveform is defined by the parameters of SJ.
BER Measurement Pattern	Select the required BER measurement pattern from the drop-down list.

Table 36: Rx LEQ Test: Rx LEQ Test Configuration (SKP Ordered Set)

Parameter	Description
SKP Ordered Set Settings	
Insert SKP OS while sending Training Sequence	Click to insert SKP OS while sending training sequence.
Symbol Length	Select the required symbol length from the drop-down list for the corresponding generation.
Insert double SKP in Loopback.Active state	Select the required option (ON/OFF) from the drop-down list for the corresponding generation.
SKP Ordered Set interval	Select the required interval value from the drop-down list for the corresponding generation.
Filter/Remove the received SKP Order Set	Select to enable the filter or remove the received SKP ordered set.

Click  to move to the next screen.

5. **Run Test:** This tab allows you to configure the settings to run the test.

The screenshot displays the 'Rx LEQ Test' application window. On the left is a sidebar menu with the following items: 'Calibration Selection', 'Connection Diagram', 'Link Training Configuration', 'Rx LEQ Test Configuration', 'Run Test' (highlighted in blue), 'Link Training', and 'Save Results'. The main area has two tabs: 'Basic' (active) and 'Advanced Debug'. Under the 'Basic' tab, there are two sections: 'Rx LEQ Test Information' and 'Error Detector Information'. The 'Rx LEQ Test Information' section contains: 'Loopback Mode' (dropdown menu set to 'Recovery'), 'BERT Initial Preset' (dropdown menu set to 'p7'), 'DUT Initial Preset' (dropdown menu set to 'p7'), 'DUT Target Preset' (dropdown menu set to 'p7'), 'Stress Type' (dropdown menu set to 'Apply Stress'), and a checked checkbox for 'BERT CTLE' followed by a text input field containing '0' and the unit 'dB'. The 'Error Detector Information' section contains: 'BER' (text field with 'NA'), 'Error Count' (text field with 'NA'), 'Total Bits' (text field with 'NA'), and an 'Add Error' button. At the bottom of the main area, there is an 'Rx LEQ Test Result' text field with 'NA' and a 'Run Test' button. The bottom right corner of the window has navigation arrows and a grid icon.

Rx LEQ Test

Calibration Selection
Connection Diagram
Link Training Configuration
Rx LEQ Test Configuration
Run Test
Link Training
Save Results

Basic Advanced Debug

Rx LEQ Test Information

Loopback Mode: Recovery
BERT Initial Preset: p7
DUT Initial Preset: p7
DUT Target Preset: p7
Stress Type: Apply Stress
☒ BERT CTLE: 0 dB

Error Detector Information

BER: NA Error Count: NA
Total Bits: NA Add Error

Rx LEQ Test Result: NA Run Test

Figure 42: Rx LEQ Test: Run Test (Basic)

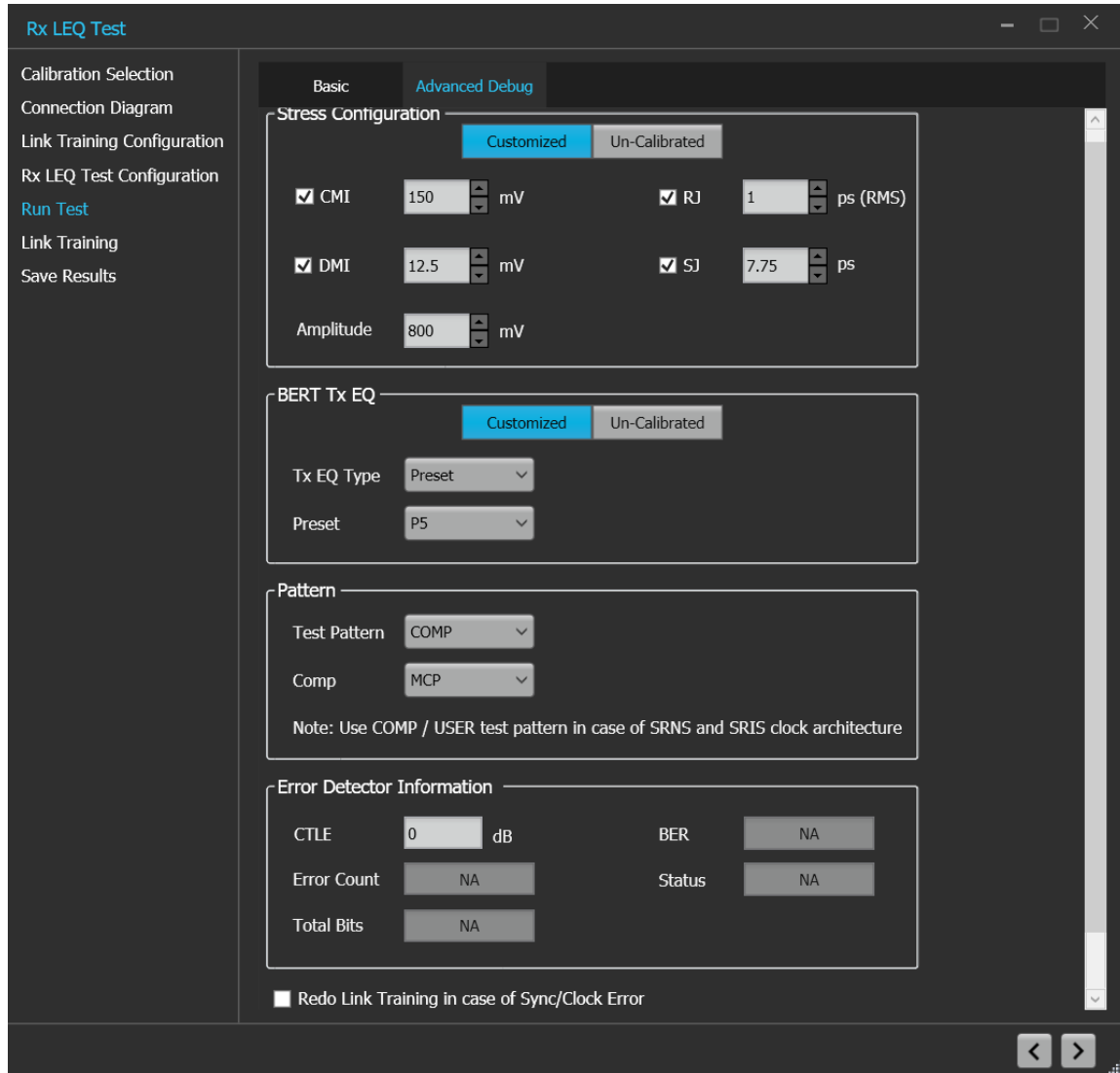


Figure 43: Rx LEQ Test: Run Test (Advanced Debug)


Table 37: Rx LEQ Test: Run Test (Basic)

Parameter	Description
Rx LEQ Test Information	
Loopback Mode	Select the required loopback mode from the drop-down list.
BERT Initial Preset	Select the Preset to be set on the BERT PPG during loopback from the drop-down list.
DUT Initial Preset	Select the Preset to be set on the DUT Tx during loopback from the drop-down list.
DUT Target Preset	Select the Preset to be set on the DUT Tx as the final preset during link training.
Stress Type	Select the required stress type from the drop-down list.
BERT CTLE	Enter the BERT Error Detector CTLE value in dB.
Error Detector Information	
BER	Displays the BER information.
Table continued...	

Parameter	Description
Error Count	Displays the error count information.
Total Bits	Displays the total number of bits.
Rx LEQ Test Result	Displays the Rx LEQ test result.
Run Test	Click to start the test execution.

Table 38: Rx LEQ Test: Run Test (Advanced Debug)

Parameter	Description
Stress Configuration	<ul style="list-style-type: none"> Customized Un-Calibrated
CMI	Click to displays the CMI value in mV. The stress on the waveform is defined by the parameters of CMI.
DMI	Click to displays the DMI value in mV. The stress on the waveform is defined by the parameters of DMI.
Amplitude	Click to displays the amplitude value in mV. The stress on the waveform is defined by the parameters of Amplitude.
RJ	Click to displays the RJ value in ps. The stress on the waveform is defined by the parameters of RJ.
SJ	Click to displays the SJ value in ps. The stress on the waveform is defined by the parameters of SJ.
BERT Tx EQ	<ul style="list-style-type: none"> Customized Un-Calibrated
Tx EQ Type	Select the Tx EQ type from the drop-down list.
Preset	Select the Preset from the drop-down list.
Test Pattern	Select the required test pattern type from the drop-down list.
Comp	Select the required Compliance pattern type from the drop-down list.
Error Detector Information	
CTLE	Displays the CTLE information in dB.
Error Count	Displays the error count information.
Total Bits	Displays the total number of bits.
BER	Displays the BER information.
Status	Displays the status information.
Export	Click to export the Advance debug settings.
Reset	Click to reset the Advance debug settings.
Run Test	Click to start the text execution.
Redo Link Training incase of Sync/Clock Error	Select to enable the redo link training incase of sync or clock error.

Click  to move to the next screen.

6. Link Training: This tab displays the loopback steps with its status in a tabular form

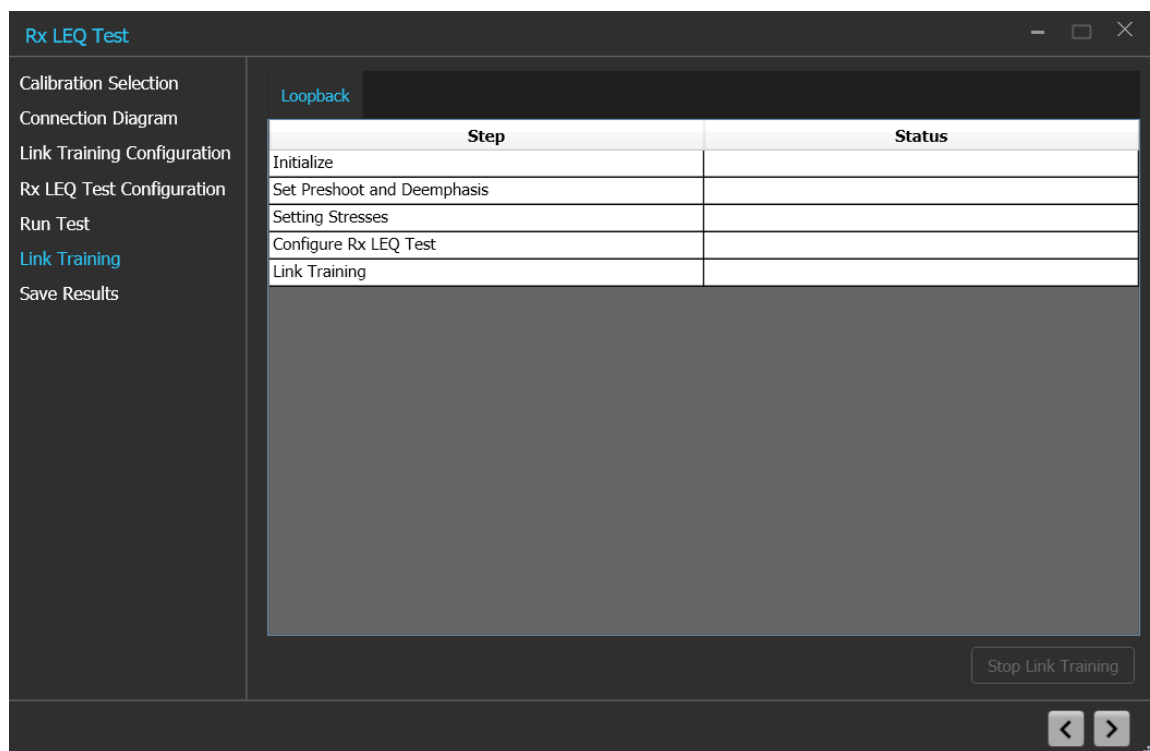



Figure 44: Rx LEQ Test: Link Training

Table 39: Rx LEQ Test: Link Training

Parameter	Description
Step	Lists the different steps that are prerequisite for initiating link training
Status	Indicates the completion status of each activity
Initialize	Initialize the BERT for performing link training
Set Preshoot and Deemphasis	Sets the preset as per BERT Initial Preset in Link Training Configuration wizard It sets all the calibrated Presets on the BERT from P0-P9
Setting Stresses	Sets stresses as per the user selection in Configure Test wizard
Configure JTOL Test	Sets the BERT, DUT initial and Target Presets, Loopback mode (Recovery, Config), Link and Lane number
Link Training	Initiates the link training process in MX 183000A

Click  to move to the next screen.

- 7. Save Results:** This tab allows you to save the Rx LEQ test results.

Figure 45: Rx LEQ Test: Save Results


Table 40: Rx LEQ Test: Save Results

Parameter	Description
Unique ID	Enter the Unique ID of the calibrated equipment in the text box.
Generated By	Enter the user name in the text box.
Comments	Enter the required comments in the comment box.
Save	Click to save the results.

Click  to complete the Rx LEQ Test and close the wizard.

Tx LEQ Test

Tx LEQ Test procedure

Click **Tx LEQ Test** under the Tests panel to view the measurement results. Click  at the right end corner of the application, to launch the Tx LEQ test wizard. This wizard will guide you through the sequential procedure to perform the test.

1. **Calibration Selection:** This tab allows you to select required DUT type, Clock type and TP1 Calibration file from the drop-down list.

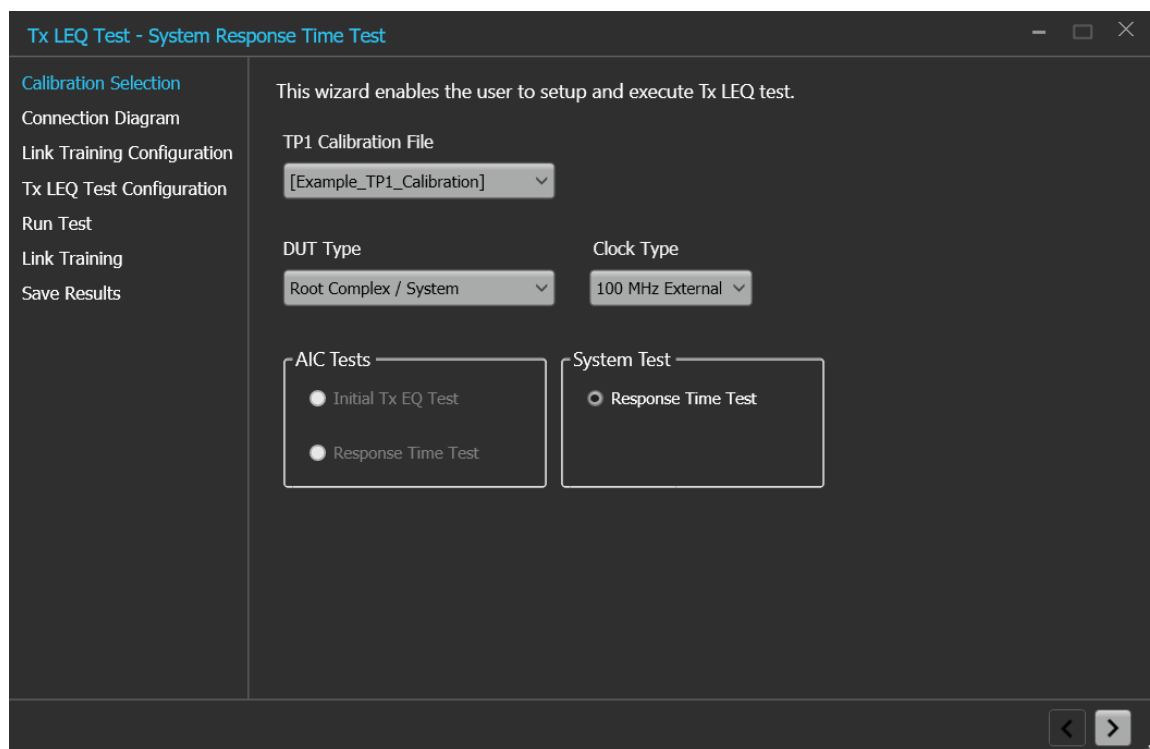



Figure 46: Tx LEQ Test: Calibration Selection

Table 41: Tx LEQ Test: Calibration Selection

Parameter	Description
TP1 Calibration File	Select the required TP1 calibration file.
DUT Type	Select the required DUT type. <ul style="list-style-type: none"> Non-Root Complex / AIC Root Complex / System
Clock Type	Select the required DUT clock type from the drop-down list.
AIC Tests	Select the required AIC test.
System Test	Select the required System test.

Click  to move to the next screen.

- 2. Connection Diagram:** This tab displays the connection diagram for the Tx LEQ test. The connection diagram is the different for AIC and System in case of Tx LEQ test.

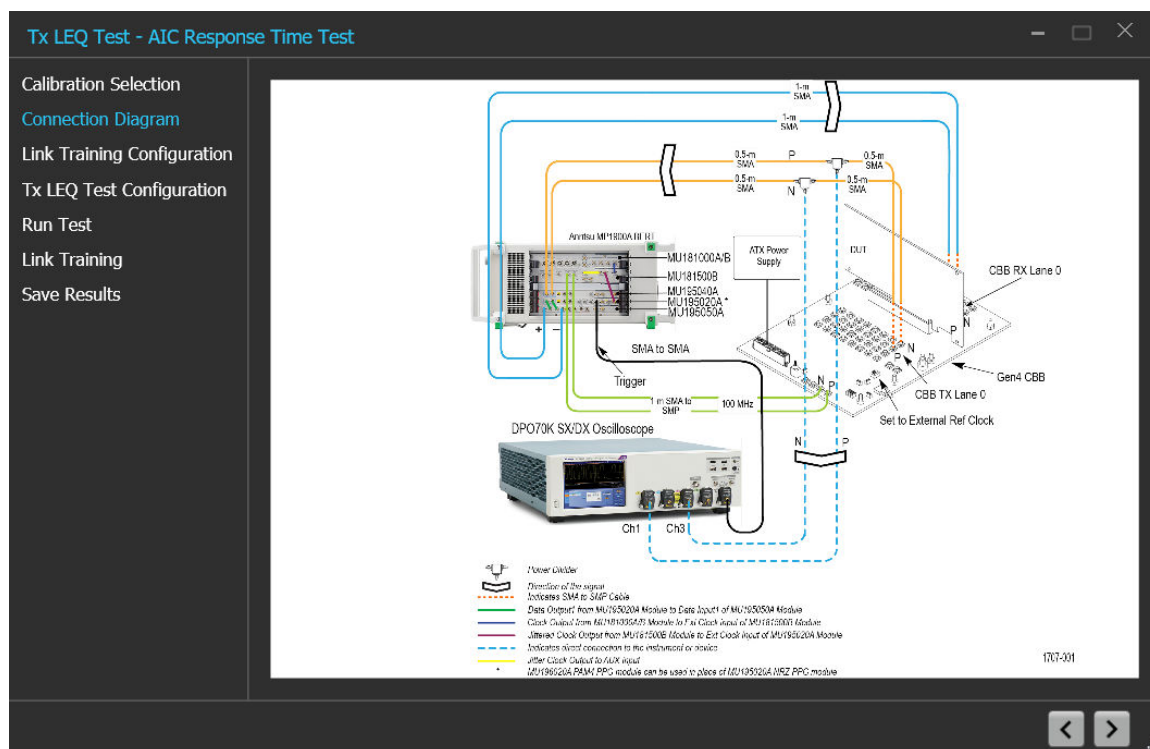


Figure 47: Tx LEQ Test: Connection Diagram(AIC)

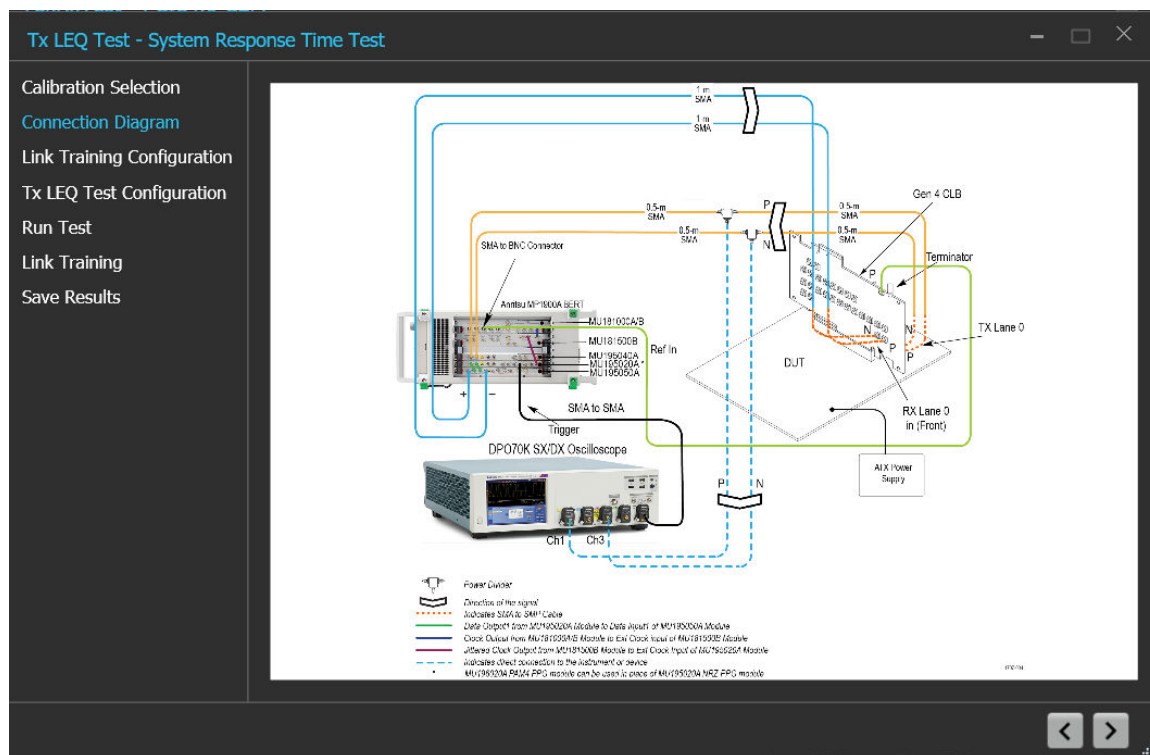



Figure 48: Tx LEQ Test: Connection Diagram(System)

Click  to move to the next screen.

3. **Link Training Configuration:** This tab allows you to configure the parameters for link training.

The screenshot shows a software window titled "Tx LEQ Test - System Response Time Test". On the left is a sidebar with navigation options: "Calibration Selection", "Connection Diagram", "Link Training Configuration" (highlighted in blue), "Tx LEQ Test Configuration", "Run Test", "Link Training", and "Save Results". The main area displays the "Link Training Configuration" settings. It includes a "Loopback Mode" dropdown set to "Recovery", a "BERT Initial Preset" dropdown set to "p7", "Lane Number" and "Link Number" input fields both set to "0", and a checked "BERT CTLE" checkbox with a value of "0" dB. A note states: "Note: Lane and Link Number is for BERT Tx Traffic." Below this is a "DUT Power Options" section with two tabs: "External" (selected) and "CBB Controller". Under the "External" tab, there are radio buttons for "DUT Power ON Type": "Manual" (selected), "Pause For Power Cycle", and "Automatic". There is also a "Script File Location" text field with a browse button "...". At the bottom of this section is a "Delay" input field set to "5" with a unit of "s". The window has standard OS controls (minimize, maximize, close) in the top right and navigation arrows at the bottom right.

Figure 49: Tx LEQ Test: Link Training Configuration (External)

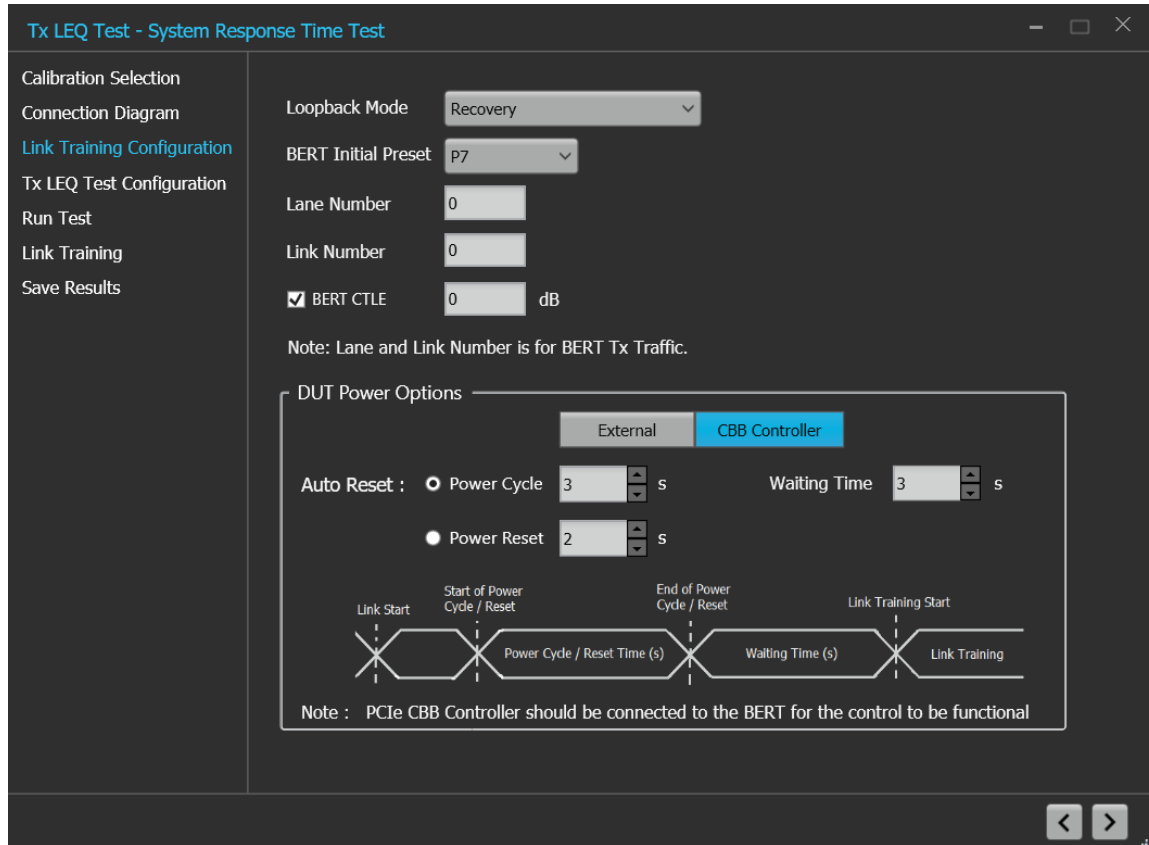



Figure 50: Tx LEQ Test: Link Training Configuration (CBB Controller)

Table 42: Tx LEQ Test: Link Training Configuration

Parameter	Description
Loopback Mode	Select the required loopback mode from the drop-down list.
BERT Initial Preset	Select the Preset to be set on the BERT PPG during loopback from the drop-down list.
BERT CTLE	Enter the BERT Error Detector CTLE value in dB.
Lane Number	Enter the lane number value.
Link Number	Enter the link number value.
DUT Power Options	Select the required DUT power options. <ul style="list-style-type: none"> External CBB Controller
DUT Power ON Type	Select the required DUT power ON type. <ul style="list-style-type: none"> Manual Pause For Power Cycle Automatic
Script File Location	Browse and navigate to the path and select the required script file. Available only when Automatic is selected as DUT Power ON Type.
Delay	Enter the delay time in seconds.

Table continued...

Parameter	Description
Auto Reset	Select the required Auto Reset and enter the values in seconds. <ul style="list-style-type: none"> • Power Cycle • Power Reset • Waiting Time

Click  to move to the next screen.

4. Tx LEQ Test Configuration: This tab allows you to configure the Tx LEQ test settings.

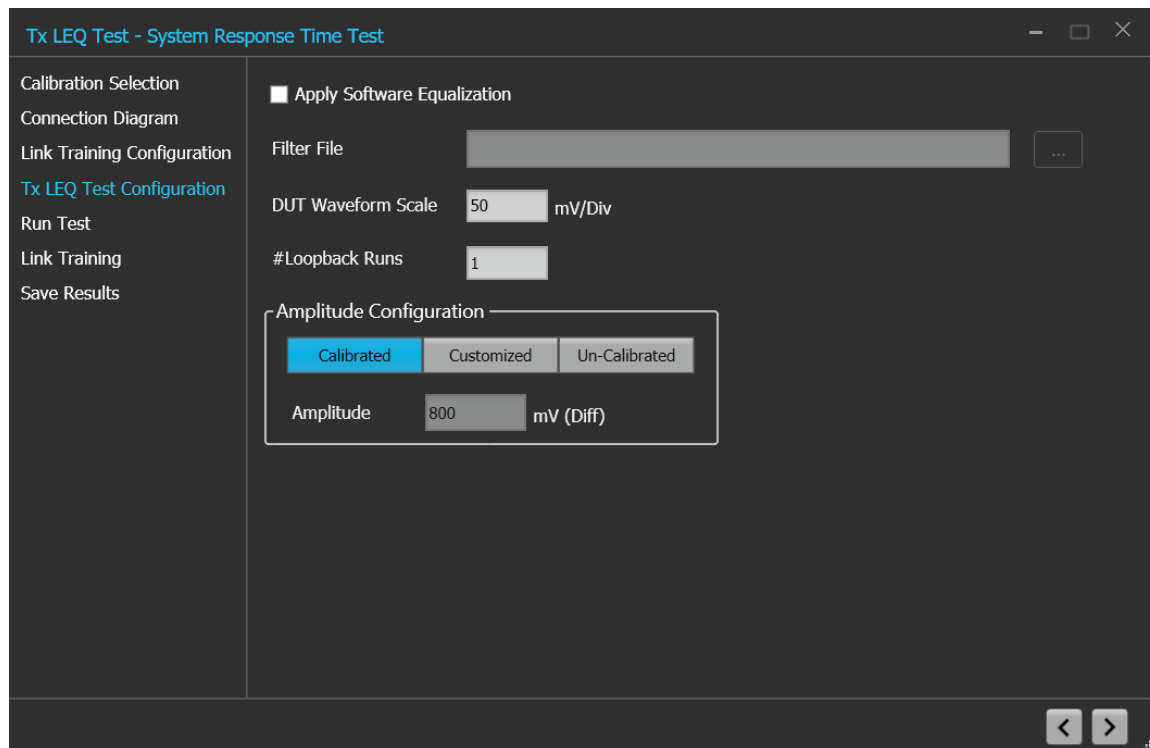



Figure 51: Tx LEQ Test: Tx LEQ Test Configuration

Table 43: Tx LEQ Test: Tx LEQ Test Configuration

Parameter	Description
Apply Software Equalization	Select to enable the apply software equalization.
Filter File	Browse and navigate to the path and select the required filter file. Enabled only when apply software equalization option is enabled.
DUT Waveform Scale	Enter the DUT waveform scale value in mV/Div.
#Loopback Runs	Enter the number of loopback runs.
Amplitude Configuration	Select the required amplitude configuration type. <ul style="list-style-type: none"> • Calibrated • Customized • Un-Calibrated
Amplitude	Enter the amplitude value in mV.

Click  to move to the next screen.

5. **Run Test:** This tab allows you to display all the presets with its details in the tabular format.

Tx LEQ Test - System Response Time Test

Calibration Selection
 Connection Diagram
 Link Training Configuration
 Tx LEQ Test Configuration
Run Test
 Link Training
 Save Results

	Target Preset / Coeff	Preshoot (dB)	De-emphasis (dB)	Vb (mV)	Electrical Response Time (ns)	Protocol Response Time (ns)	Coeff	Result
<input checked="" type="checkbox"/>	P0	-	-	-	-	-	-	-
<input checked="" type="checkbox"/>	P0 (Coeff)	-	-	-	-	-	-	-
<input checked="" type="checkbox"/>	P1	-	-	-	-	-	-	-
<input checked="" type="checkbox"/>	P1 (Coeff)	-	-	-	-	-	-	-
<input checked="" type="checkbox"/>	P2	-	-	-	-	-	-	-
<input checked="" type="checkbox"/>	P2 (Coeff)	-	-	-	-	-	-	-
<input checked="" type="checkbox"/>	P3	-	-	-	-	-	-	-
<input checked="" type="checkbox"/>	P3 (Coeff)	-	-	-	-	-	-	-
<input checked="" type="checkbox"/>	P4	-	-	-	-	-	-	-
<input checked="" type="checkbox"/>	P4 (Coeff)	-	-	-	-	-	-	-
<input checked="" type="checkbox"/>	P5	-	-	-	-	-	-	-
<input checked="" type="checkbox"/>	P5 (Coeff)	-	-	-	-	-	-	-
<input checked="" type="checkbox"/>	P6	-	-	-	-	-	-	-
<input checked="" type="checkbox"/>	P6 (Coeff)	-	-	-	-	-	-	-
<input checked="" type="checkbox"/>	P7	-	-	-	-	-	-	-
<input checked="" type="checkbox"/>	P7 (Coeff)	-	-	-	-	-	-	-
<input checked="" type="checkbox"/>	P8	-	-	-	-	-	-	-
<input checked="" type="checkbox"/>	P8 (Coeff)	-	-	-	-	-	-	-
<input checked="" type="checkbox"/>	P9	-	-	-	-	-	-	-
<input checked="" type="checkbox"/>	P9 (Coeff)	-	-	-	-	-	-	-

DUT ID

Clear All Check All Start



 

Figure 52: Tx LEQ Test: Run Test(System Response Time Test)

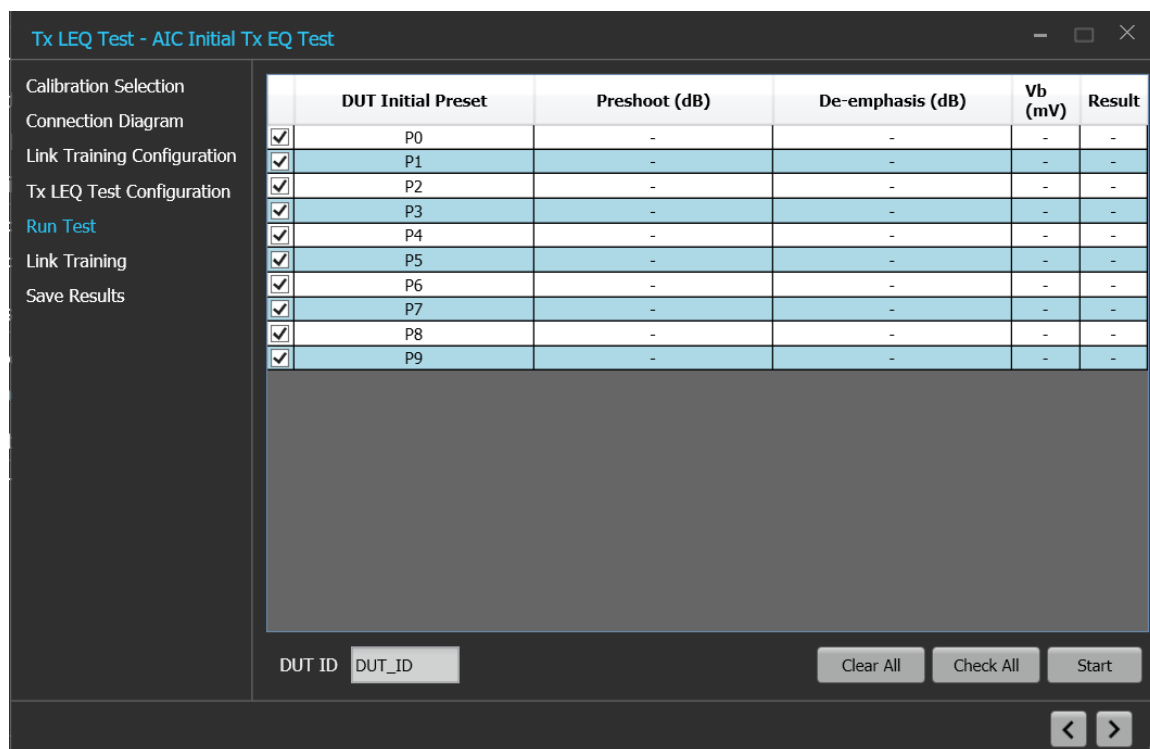


Figure 53: Tx LEQ Test: Run Test(AIC Initial Tx EQ Test)

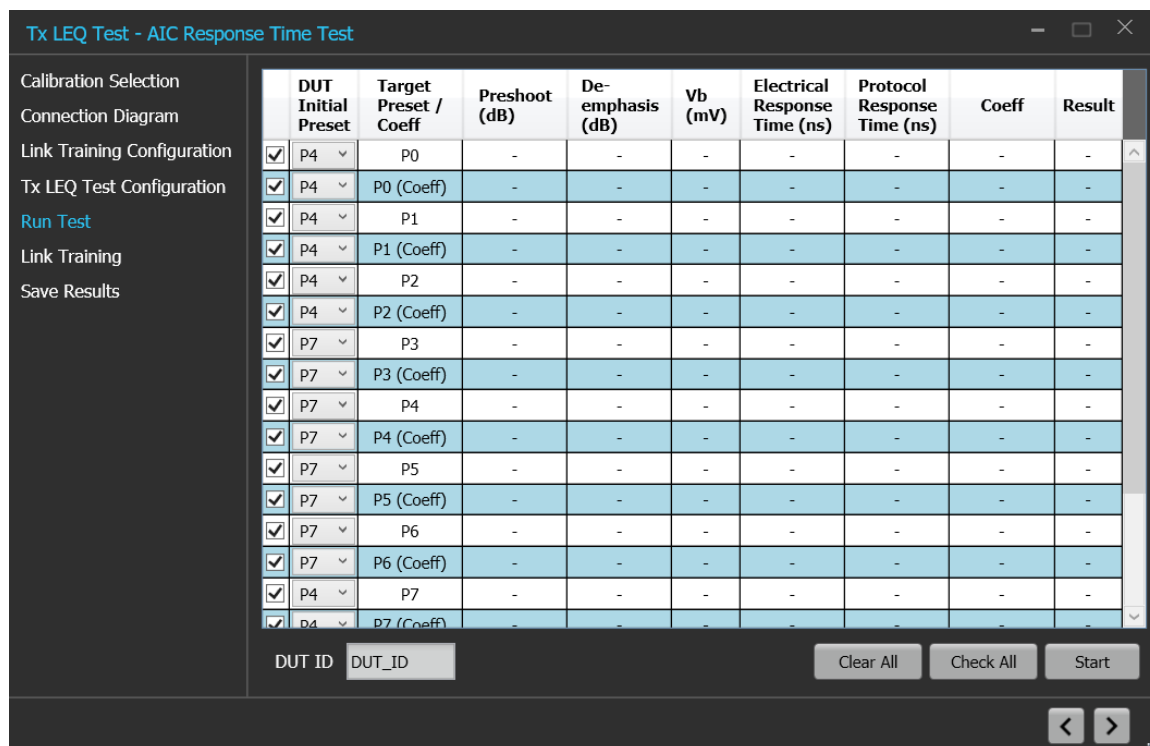



Figure 54: Tx LEQ Test: Run Test(AIC Response Time Test)

Table 44: Tx LEQ Test: Run Test

Parameter	Description
DUT ID	Enter the DUT ID.
Clear All	Unchecks all the presets in the table.
Check All	Checks all the presets in the table.
Start	Click to start the test execution.

Click  to move to the next screen.

6. **Link Training:** This tab displays the loopback steps with its status in a tabular form.

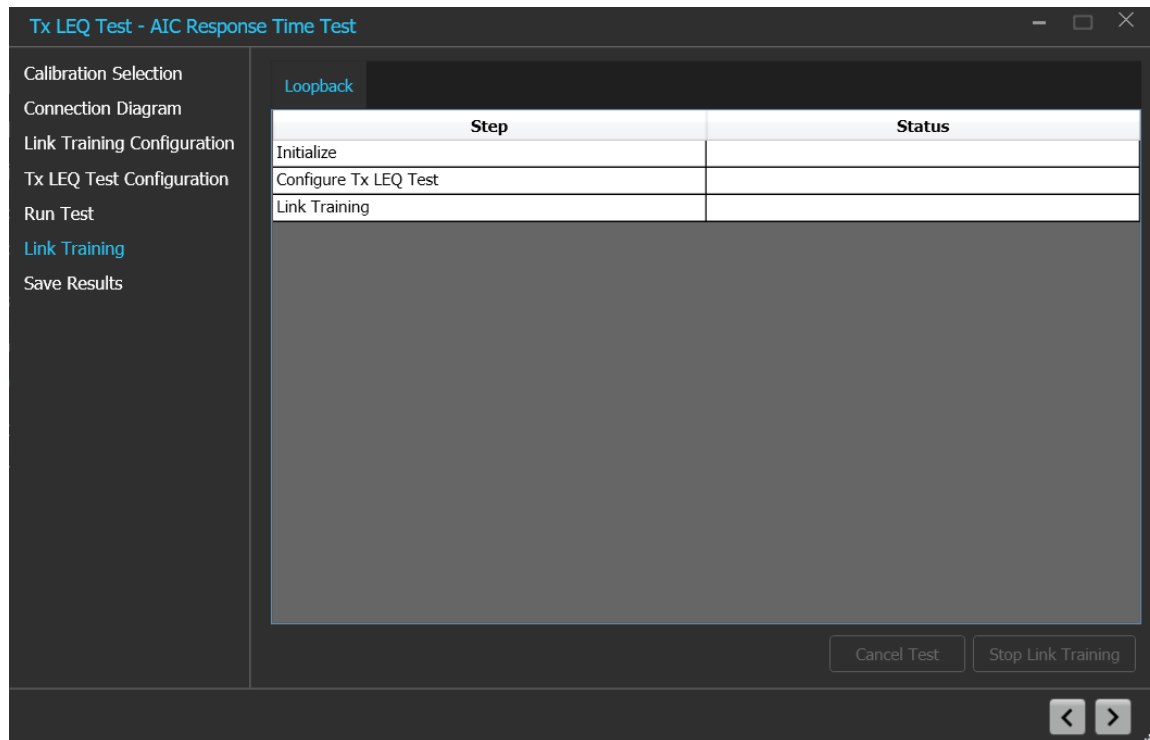



Figure 55: Tx LEQ Test: Link Training

Click  to move to the next screen.

7. **Save Results:** This tab allows you to save the Tx LEQ test results.

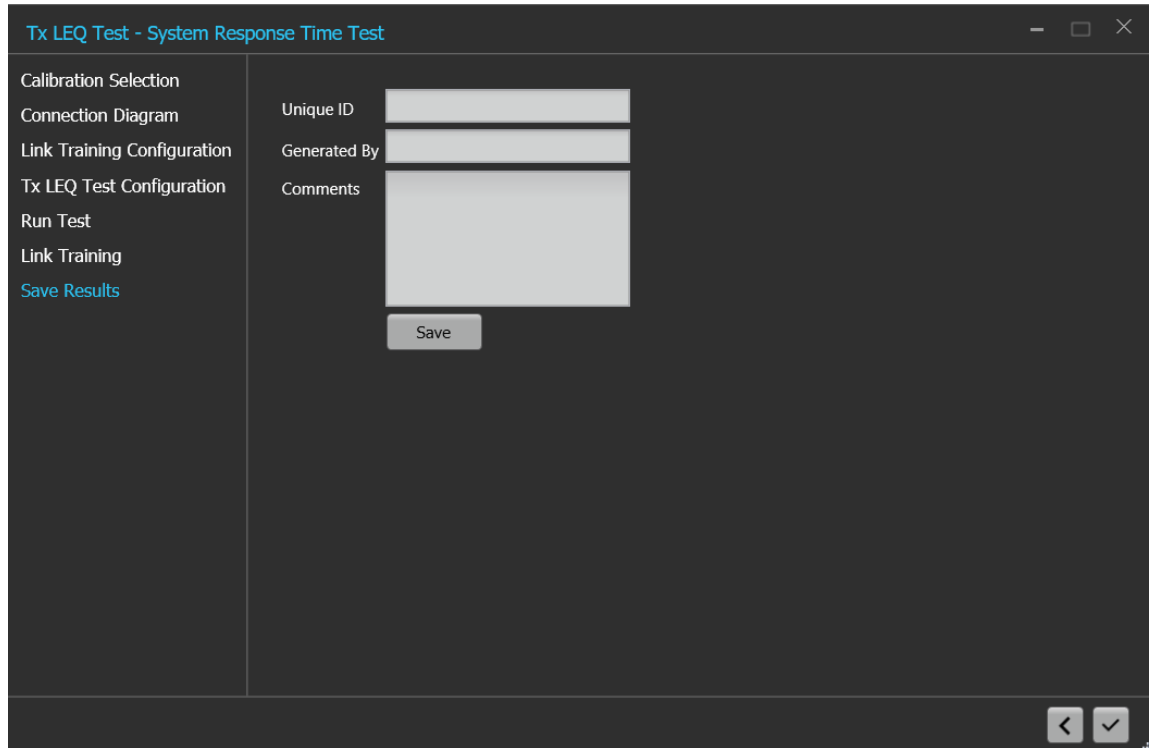



Figure 56: Tx LEQ Test: Save Results

Table 45: Tx LEQ Test: Save Results

Parameter	Description
Unique ID	Enter the Unique ID of the calibrated equipment in the text box.
Generated By	Enter the user name in the text box.
Comments	Enter the required comments in the comment box.
Save	Click to save the results.

Click  to complete the Tx LEQ Test and close the wizard.


Options panel

JTOL Test

To test SJ at multiple frequencies for the JTOL test, you need to perform Multi-tone SJ calibration during TP1 Calibration. You can generate 30 KHz to 100 MHz with a maximum of 14 different frequencies.

The frequency settings table lists the frequencies calibrated during Multi-tone SJ calibration while performing TP1 calibration. If the newly generated frequency doesn't match with the calibrated frequency, then nearby calibrated frequency data will be used for running the JTOL test.

JTOL Test procedure

Click **JTOL Test** under the Tests panel to view the measurement results. Click  at the right end corner of the application, to launch the JTOL test wizard. This wizard will guide you through the sequential procedure to perform the test.

1. **Calibration Selection:** This tab allows you to select the calibration file from the drop-down list. The drop-down lists all the TP2 calibration files available as per the choice made under DUT Type selection.

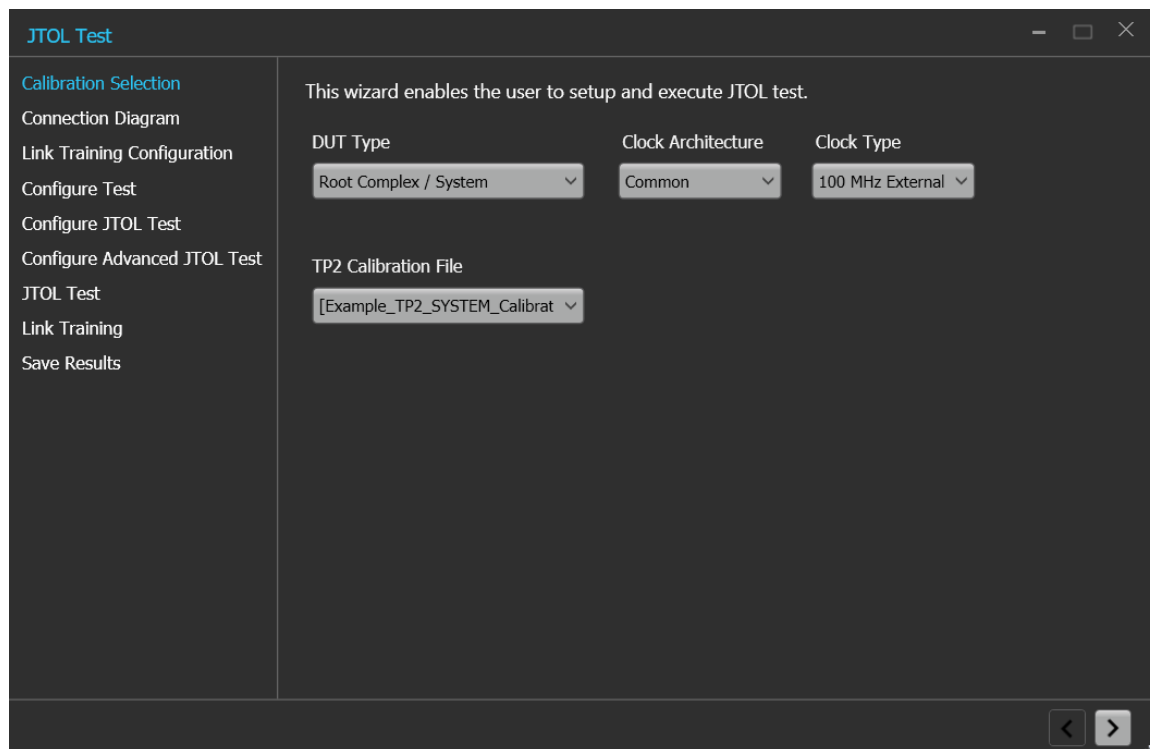



Figure 57: JTOL Test: Calibration Selection

Table 46: JTOL Test: Calibration Selection

Parameter	Description
DUT Type	Select the required DUT type. <ul style="list-style-type: none"> • Non-Root Complex / AIC • Root Complex / System
Clock Architecture	Selects the clock architecture between Common, SRIS and SRNS.
Clock Type	Select the required DUT clock type.
TP2 Calibration File	Select the required TP2 calibration file.

Click  to move to the next screen.

2. **Connection Diagram:** This tab displays the connection diagram for the JTOL test. The connection diagram is the different for AIC and System in case of JTOL test.

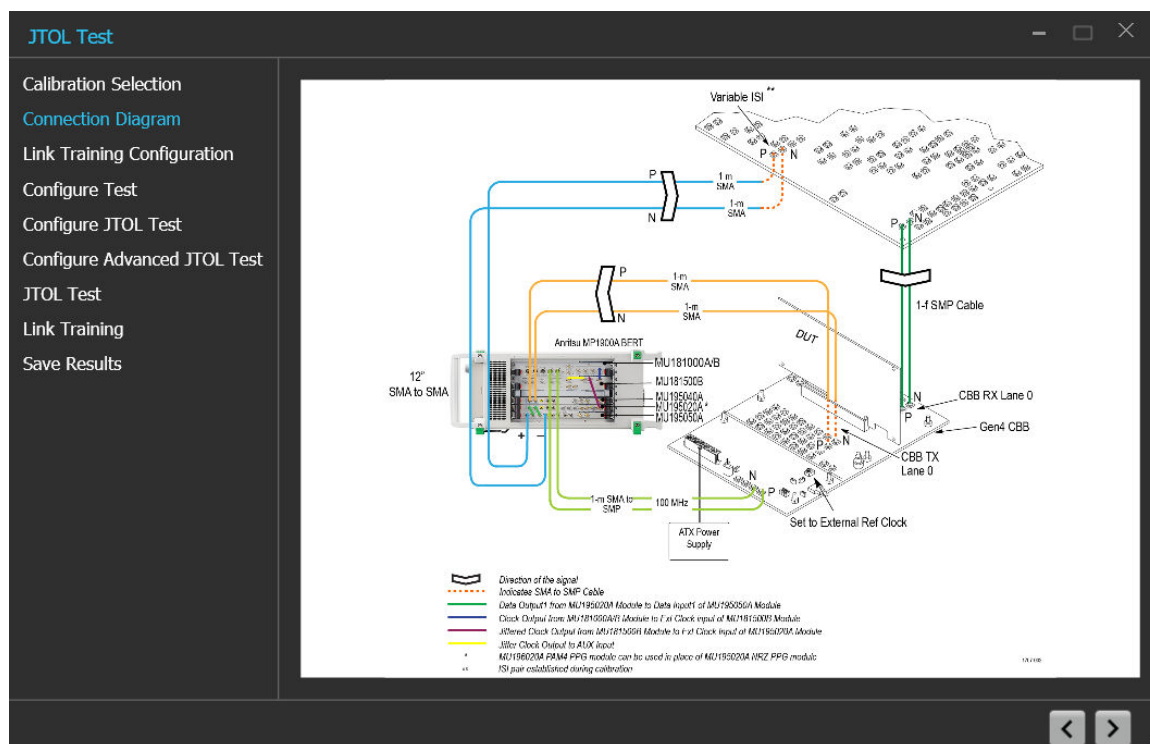


Figure 58: JTOL Test: Connection Diagram(AIC)

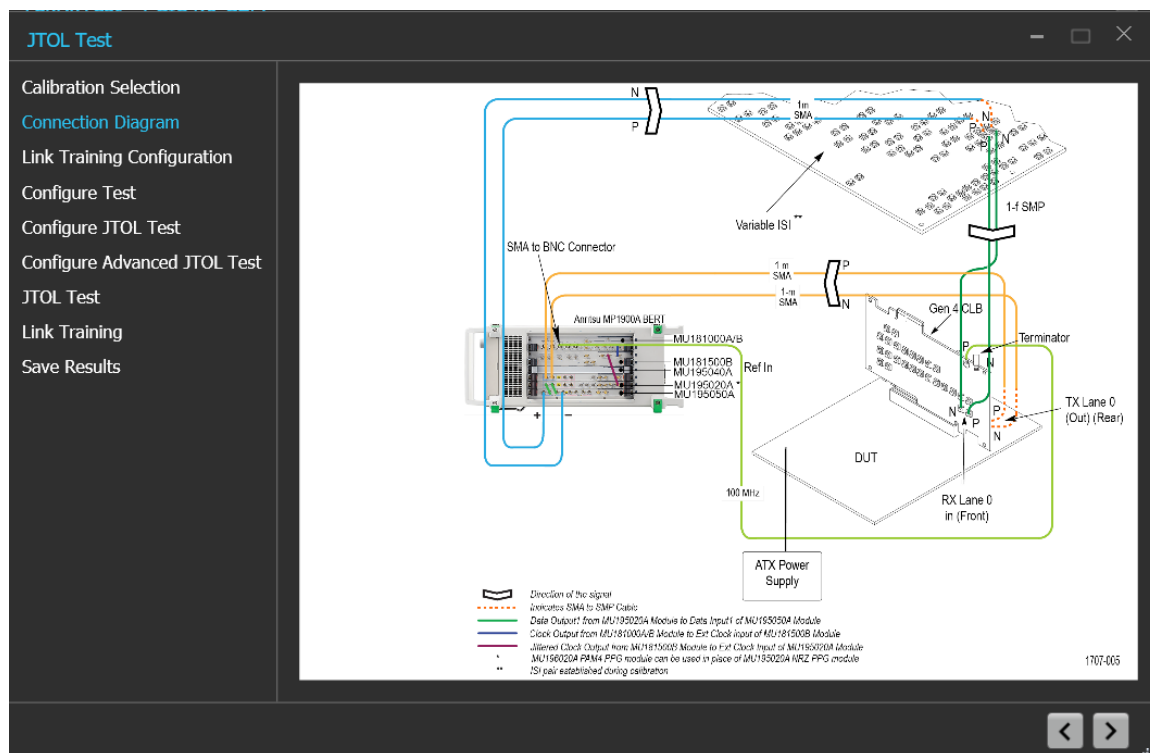



Figure 59: JTOL Test: Connection Diagram(System)

Click  to move to the next screen.

3. Link Training Configuration: This tab allows you to configure the link training and forced loopback settings.

JTOL Test

Calibration Selection
 Connection Diagram
 Link Training Configuration
 Configure Test
 Configure JTOL Test
 Configure Advanced JTOL Test
 JTOL Test
 Link Training
 Save Results

Link Training Forced Loopback

Loopback Mode: Recovery

BERT Initial Preset: p7

DUT Initial Preset: p7

DUT Target Preset: p7

Stress Type: Disable Stress

Lane Number: 0

Link Number: 0

☒ BERT CTLE: 0 dB

Note: Lane and Link Number is for BERT Tx Traffic.

☒ Keep DUT in loopback after test execution is complete

DUT Power Options

External CBB Controller

DUT Power ON Type : ☒ Manual ☐ Pause For Power Cycle ☐ Automatic

Script File Location: [Browse]

Delay: 5 s

Figure 60: JTOL Test: Link Training Configuration (Link Training-External)

JTOL Test

Calibration Selection
 Connection Diagram
 Link Training Configuration
 Configure Test
 Configure JTOL Test
 Configure Advanced JTOL Test
 JTOL Test
 Link Training
 Save Results

Link Training Forced Loopback

Loopback Mode: Recovery

BERT Initial Preset: P7

DUT Initial Preset: P7

DUT Target Preset: P7

Stress Type: Disable Stress

Lane Number: 0

Link Number: 0

☒ BERT CTLE: 0 dB

Note: Lane and Link Number is for BERT Tx Traffic.

☒ Keep DUT in loopback after test execution is complete

DUT Power Options

External CBB Controller

Auto Reset : ☐ Power Cycle 3 s Waiting Time 3 s

☐ Power Reset 2 s

Link Start Start of Power Cycle / Reset End of Power Cycle / Reset Link Training Start Link Training

Power Cycle / Reset Time (s) Waiting Time (s)

Note : PCIe CBB Controller should be connected to the BERT for the control to be functional

Figure 61: JTOL Test: Link Training Configuration (Link Training-CBB Controller)

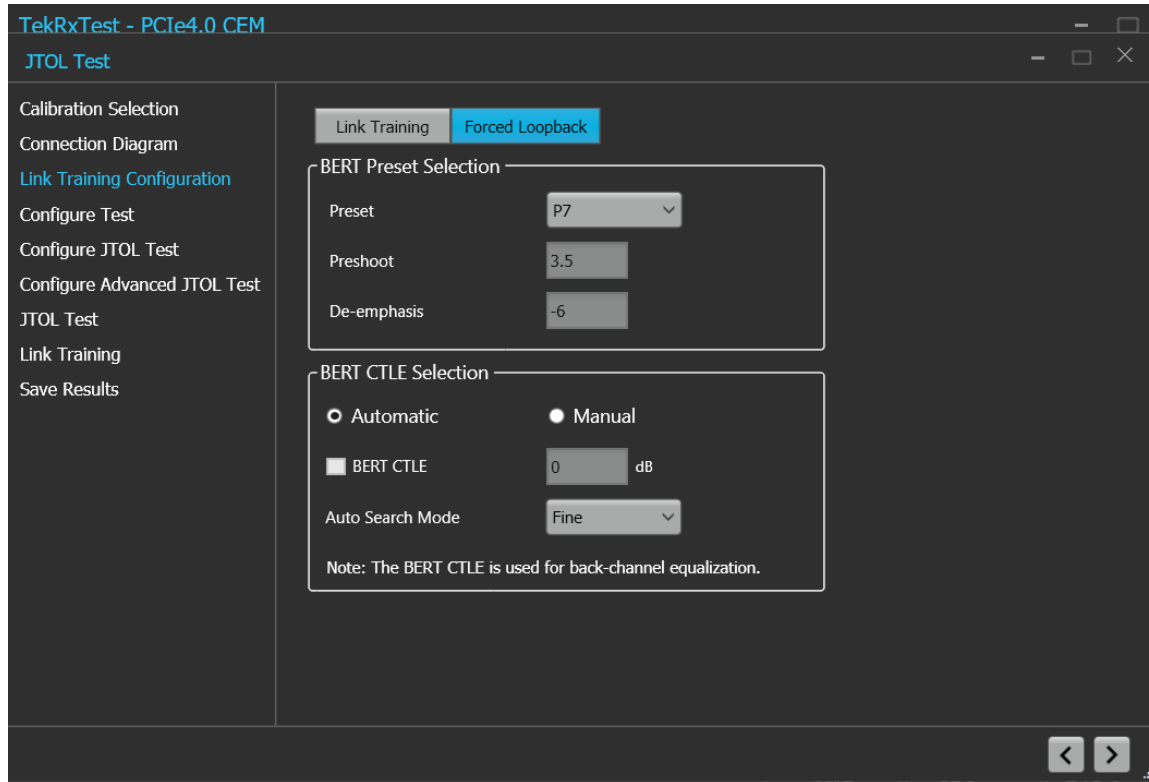


Figure 62: JTOL Test: Link Training Configuration (Forced Loopback)

Table 47: JTOL Test: Link Training Configuration for Link Training


Parameter	Description
Loopback Mode	Select the required loopback mode from the drop-down list.
BERT Initial Preset	Select the Preset to be set on the BERT PPG during loopback from the drop-down list.
DUT Initial Preset	Select the Preset to be set on the DUT Tx during loopback from the drop-down list.
DUT Target Preset	Select the Preset to be set on the DUT Tx during loopback from the drop-down list.
Stress Type	Select the required stress type from the drop-down list.
BERT CTLE	Enter the BERT Error Detector CTLE value in dB.
Lane Number	Enter the lane number value.
Link Number	Enter the link number value.
Keep DUT in loopback after test execution is complete	Select this to keep the DUT in the loopback after test execution is complete.
DUT Power Options	Select the required DUT power options. <ul style="list-style-type: none"> External CBB Controller
DUT Power ON Type	Select the required DUT power ON type for External option. <ul style="list-style-type: none"> Manual Pause For Power Cycle Automatic

Table continued...

Parameter	Description
Script File Location	Browse and navigate to the path and select the required script file. Enabled only when Automatic is selected as DUT Power ON Type.
Delay	Enter the delay time in seconds.
Auto Reset	Select the required CBB Controller and enter the values in seconds. <ul style="list-style-type: none"> Power Cycle Power Reset Waiting Time

Table 48: JTOL Test: Link Training Configuration for Forced Loopback

Parameter	Discription
BERT Preset Selection	
Preset	Select the BERT Tx Preset setting from the drop-down list.
Preshoot	Displays the preshoot value corresponding to the choice of preset. Editable for P10 and Custom Preset selection.
De-emphasis	Displays the de-emphasis value corresponding to the choice of preset. Editable for Custom Preset selection.
BERT CTLE Selection	
Automatic	Enables automatic CTLE selection for back-channel equalization in the BERT Error Detector.
Manual	Select to manually choose the BERT CTLE selection.
BERT CTLE	Select to enable and enter the BERT Error Detector CTLE value in dB.
Auto Search Mode	Select the auto search mode from the drop-down. <ul style="list-style-type: none"> Fine Coarse

Click  to move to the next screen.

4. Configure Test: This tab allows you to configure the test settings.

JTOL Test

Calibration Selection
 Connection Diagram
 Link Training Configuration
Configure Test
 Configure JTOL Test
 Configure Advanced JTOL Test
 JTOL Test
 Link Training
 Save Results

Basic SKP Ordered Set

BER Settings

BER 1 E- 12 Error Limit 1

Test Length

Duration 125 s Confidence 90.842 % at 4E+12 Bits

Stress Configuration

Calibrated Customized Un-Calibrated

CMI 150 mV RJ 0.5 ps (RMS)

DMI 27.5 mV SJ 3.625 ps

Amplitude 800 mV (Diff)

BER Measurement Pattern Modified Compliance

Figure 63: JTOL Test: Configure Test (Basic)

JTOL Test

Calibration Selection
 Connection Diagram
 Link Training Configuration
Configure Test
 Configure JTOL Test
 Configure Advanced JTOL Test
 JTOL Test
 Link Training
 Save Results

Basic SKP Ordered Set

☒ Apply SSC to Data and Clock output

SKP Ordered Set Settings

☒ Insert SKP OS while sending Training Sequences

Generation	Gen 1-2	Gen 3-5
Symbol Length	COM+3	16 Symbols
Insert double SKP in Loopback.Active state	OFF	OFF
SKP Ordered Set interval	1538	375

☒ Filter / Remove the received SKP Ordered Set


Figure 64: JTOL Test: Configure Test (SKP Ordered Set)

Table 49: JTOL Test: Configure Test (Basic)

Parameter	Description
BER	Enter the number of bits in error that can be tolerated.
Test Length	<ul style="list-style-type: none"> Duration Enter the test length value in the text field.
Stress Configuration	<ul style="list-style-type: none"> Calibrated Customized Un-Calibrated
CMI	Displays the CMI value in mV. The stress on the waveform is defined by the parameters of CMI.
DMI	Displays the DMI value in mV. The stress on the waveform is defined by the parameters of DMI.
Amplitude	Displays the Amplitude value in mV. The stress on the waveform is defined by the parameters of Amplitude.
RJ	Displays the RJ value in ps or Ulp-p. The stress on the waveform is defined by the parameters of RJ.
SJ	Displays the SJ value in ps or Ulp-p. The stress on the waveform is defined by the parameters of SJ.
BER Measurement Pattern	Select the required BER measurement pattern from the drop-down list.

Table 50: JTOL Test: Configure Test (SKP Order Set)

Parameter	Description
SKP Ordered Set Settings	
Insert SKP OS while sending Training Sequence	Click to insert SKP OS while sending training sequence.
Symbol Length	Select the required symbol length from the drop-down list for the corresponding generation.
Insert double SKP in Loopback.Active state	Select the required option (ON/OFF) from the drop-down list for the corresponding generation.
SKP Orderd Set interval	Select the required interval value from the drop-down list for the corresponding generation.
Filter/Remove the received SKP Order Set	Select to enable the filter or remove the received SKP ordered set.

Click  to move to the next screen.

5. **Configure JTOL Test:** This tab allows you to configure the JTOL test settings.

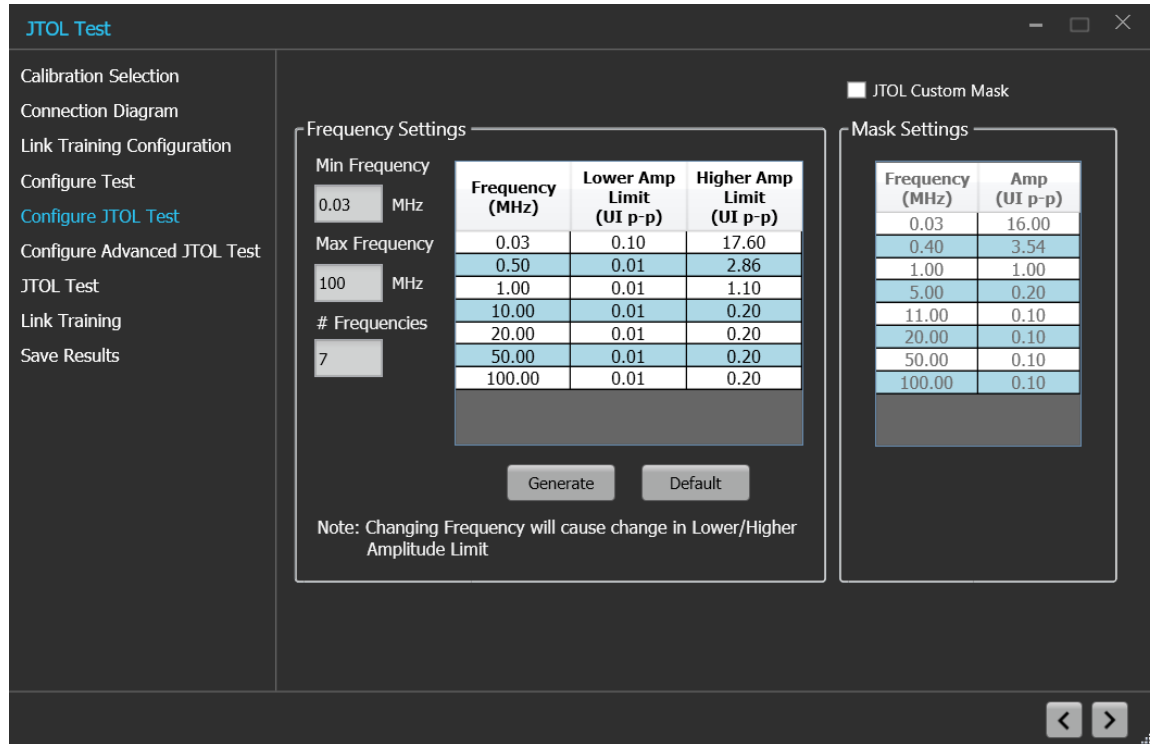



Figure 65: JTOL Test: Configure JTOL Test

Table 51: JTOL Test: Configure JTOL Test

Parameter	Description
Frequency Settings	
Frequency (MHz)	Displays the table of frequencies in MHz for which JTOL test is to be performed.
Lower Amplitude Limit (UI p-p)	Displays the table of lower amplitude limit values at which JTOL test starts for that frequency.
Higher Amplitude Limit (UI p-p)	Displays the table of higher amplitude limit values at which JTOL test ends for that frequency.
Min Frequency	Enter the minimum frequency value.
Max Frequency	Enter the maximum frequency value.
# Frequencies	Enter the desired number of frequencies within the specified range.
Generate	Click to view the table populated with the frequencies.
Default	Click to view the table populated with default list of frequencies.
JTOL Custom Mask	Select to enable the JTOL Custom mask. On JTOL custom mask selection with the defined mask settings, mask will get generated on the plot.

Table continued...

Parameter	Description
Mask Settings	
Frequency (MHz)	Displays the table of knee frequencies for the mask.
Amplitude (UI p-p)	Displays the amplitude of SJ at each knee frequency.

Click  to move to the next screen.

6. Configure Advanced JTOL Test: This tab allows you to configure the advanced JTOL test settings.

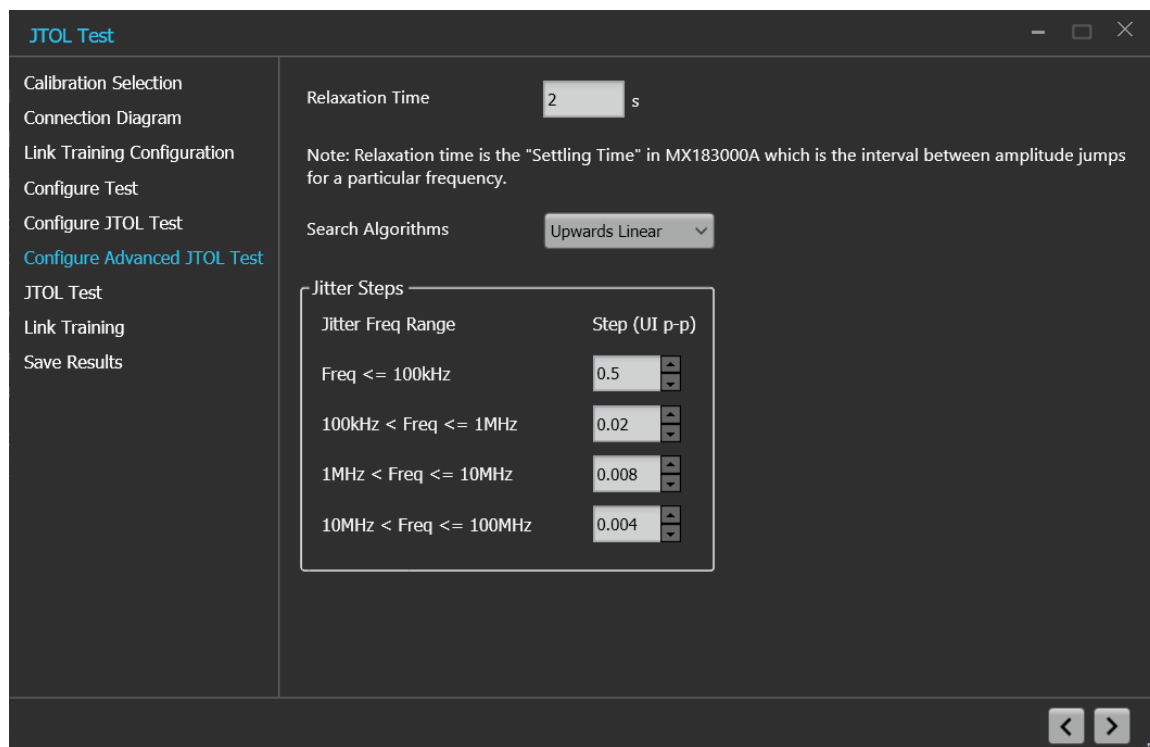



Figure 66: JTOL Test: Configure Advanced JTOL Test

Table 52: JTOL Test: Configure Advanced JTOL Test

Parameter	Description
Relaxation Time	Enter the amount of time BERT needs to relax before running BER for each amplitude point.
Search Algorithms	Select the required search algorithm from the drop-down for JTOL test.
Jitter Steps	
Table continued...	

Parameter	Description
Jitter Freq Range	<p>The different frequency ranges can have different step size for SJ amplitude sweep.</p> <ul style="list-style-type: none"> • Freq \leq 100 KHz • 100KHz < Freq \leq 10 MHz • 1 MHz < Freq \leq 10 MHz • 10 MHz < Freq \leq 100 MHz
Step (UI p-p)	<p>Sets the SJ amplitude step size for different frequency ranges.</p> <p>Sets the ratios for Downward and Upward-Log search algorithms.</p> <p>No step size is defined for Binary + Linear search algorithm.</p>

Click  to move to the next screen.

- JTOL Test:** This tab displays a graphical representation of JTOL test result. It includes the result table tab which displays the JTOL test results in a tabular form.

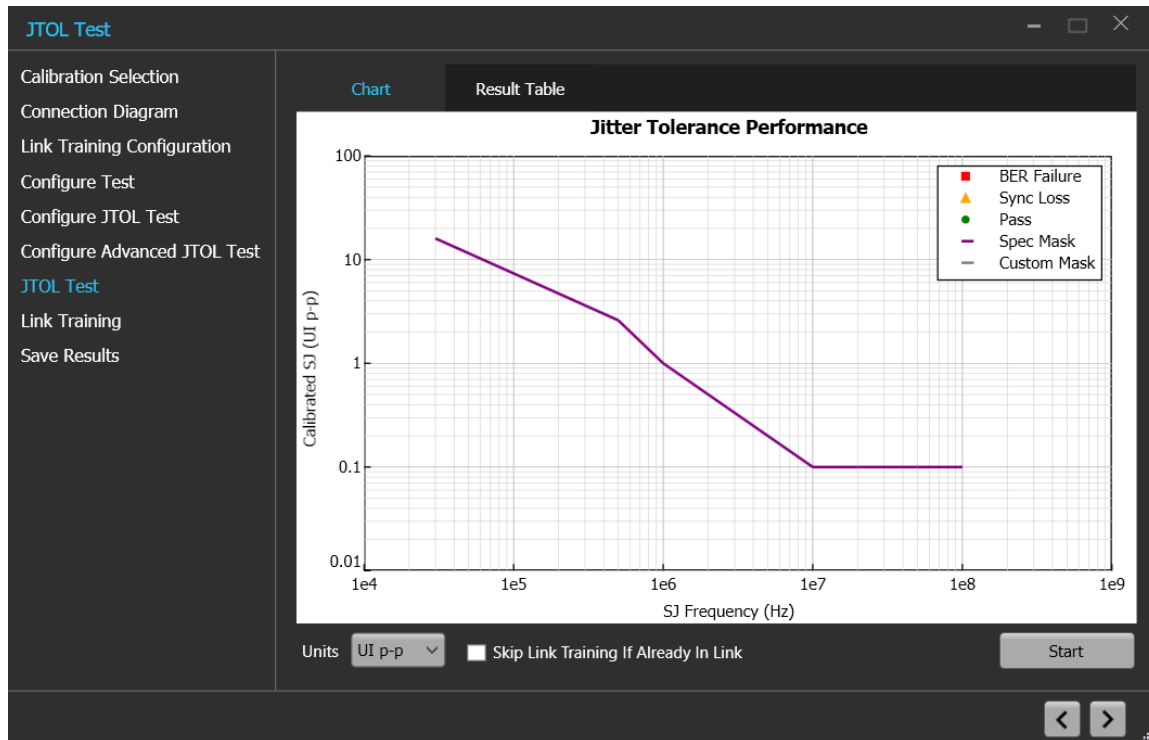



Figure 67: JTOL Test: JTOL Test

Table 53: JTOL Test: JTOL Test

Parameter	Description
Units	Select the required unit from the drop-down list.
Start	Click Start to run the test.

Click  to move to the next screen.

8. **Link Training:** This tab displays the loopback steps with its status in a tabular form.

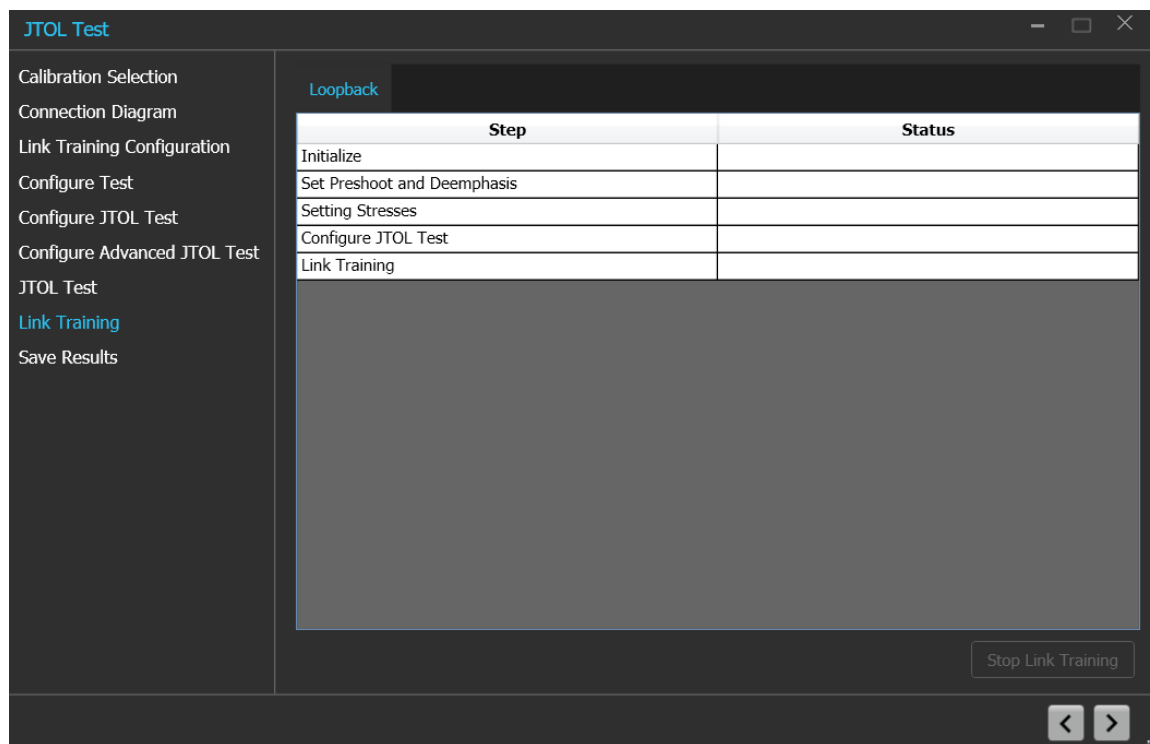



Figure 68: JTOL Test: Link Training

Table 54: JTOL Test: Link Training

Parameter	Description
Step	Lists the different steps that are prerequisite for initiating link training
Status	Indicates the completion status of each activity
Initialize	Initialize the BERT for performing link training
Set Preshoot and deemphasis	Sets the preset as per BERT Initial Preset in Link Training Configuration wizard It sets all the calibrated Presets on the BERT from P0-P9
Setting Stresses	Sets stresses as per the user selection in Configure Test wizard
Configure JTOL Test	Sets the BERT, DUT initial and Target Presets, Loopback mode (Recovery, Config), Link and Lane number
Link Training	Initiates the link training process in MX 183000A

Click  to move to the next screen.

9. **Save Results:** This tab allows you to save the JTOL test results.

Figure 69: JTOL Test: Save Results

Table 55: JTOL Test: Save Results

Parameter	Description
Unique ID	Enter the Unique ID of the calibrated equipment in the text box.
Generated By	Enter the user name in the text box.
Comments	Enter the required comments in the comment box.
Save	Click to save the results.

Click  to complete the JTOL Test and close the wizard.

Programmatic interface commands

PREF:BERT:IP

This command sets or returns the IP address of the BERT used to connect with the PCIe4.0 (CEM) Rx test application.

Syntax

```
PREF:BERT:IP <IP address>
```

```
PREF:BERT:IP?
```

Inputs

<IP address> = <String>

Outputs

<String>

PREF:RTS:IP

This command sets or returns the IP address of the Real Time Oscilloscope used to connect with the PCIe4.0 (CEM) Rx test application.

Syntax

```
PREF:RTS:IP <IP address>
```

```
PREF:RTS:IP?
```

Inputs

<IP address> = <String>

Outputs

<String>

CONN:BERT

This command sets or returns the connection status of the BERT with PCIe4.0 (CEM) Rx test application.

Syntax

```
CONN:BERT <0 | 1>
```

```
CONN:BERT?
```

Inputs

<0 | 1>

0 indicates to disconnect the BERT.

1 indicates to connect the BERT.

Outputs

<0 | 1>

CONN:RTS

This command sets or returns the connection status of the Real Time Oscilloscope with PCIe4.0 (CEM) Rx test application.

Syntax

```
CONN:RTS <0 | 1>
```

```
CONN:RTS?
```

Inputs

<0 | 1>

0 indicates to disconnect the Real Time Oscilloscope.

1 indicates to connect the Real Time Oscilloscope.

Outputs

<0 | 1>

SETTINGS:RTS:POSITIVECHANNEL

This command sets or returns the real time scope channel number for positive channel.

Syntax

```
SETTINGS:RTS:POSITIVECHANNEL <0 | 1 | 2 | 3>
```

```
SETTINGS:RTS:POSITIVECHANNEL?
```

Inputs

<0 | 1 | 2 | 3>

0 - Indicates the CH1.

1 - Indicates the CH2.

2 - Indicates the CH3.

3 - Indicates the CH4.

Outputs

<0 | 1 | 2 | 3>

SETTINGS:RTS:NEGATIVECHANNEL

This command sets or returns the real time scope channel number for negative channel.

Syntax

```
SETTINGS:RTS:NEGATIVECHANNEL <0 | 1 | 2 | 3>
```

```
SETTINGS:RTS:NEGATIVECHANNEL?
```

Inputs

<0 | 1 | 2 | 3>

0 - Indicates the CH1.

1 - Indicates the CH2.

2 - Indicates the CH3.

3 - Indicates the CH4.

Outputs

<0 | 1 | 2 | 3>

SETTINGS:RTS:SAMPLERATE

This command returns the sample rate of Real Time oscilloscope.

Syntax

SETTINGS:RTS:SAMPLERATE?

Inputs

NA

Outputs

<NRf>

SETTINGS:TEKRXSERVICE:ANALYSISTIMEOUT

This command sets or returns TekRxService analysis time out value.

Syntax

SETTINGS:TEKRXSERVICE:ANALYSISTIMEOUT<int>

SETTINGS:TEKRXSERVICE:ANALYSISTIMEOUT?

Inputs

<int> 15 to 1000

Outputs

<int>

SETTINGS:SIGTEST:VERSION

This command sets or returns the sigtest version number.

Syntax

SETTINGS:SIGTEST:VERSION <String>

SETTINGS:SIGTEST:VERSION?

Inputs

<String>

Outputs

<String>

SETTINGS:AMPLITUDE:TARGET

This command returns the nominal amplitude target value.

Syntax

SETTINGS:AMPLITUDE:TARGET?

Inputs

NA

Outputs

<NRf>

SETTINGS:RJ:TARGET

This command returns the nominal RJ target value.

Syntax`SETTINGS:RJ:TARGET?`**Inputs**

NA

Outputs

<NRf>

SETTINGS:SJAT100MHZ:TARGET

This command returns the nominal SJ target value.

Syntax`SETTINGS:SJAT100MHZ:TARGET?`**Inputs**

NA

Outputs

<NRf>

SETTINGS:DMI:TARGET

This command returns the nominal DMI target value.

Syntax`SETTINGS:DMI:TARGET?`**Inputs**

NA

Outputs

<NRf>

SETTINGS:CMI:TARGET

This command returns the nominal CMI target value.

Syntax`SETTINGS:CMI:TARGET?`

Inputs

NA

Outputs

<NRf>

SETTINGS:MULTITONESJCAL:ENABLE

This command sets or returns the enable or disable status of Multi-tone SJ calibration.

Syntax

```
SETTINGS:MULTITONESJCAL:ENABLE {0|1}
```

```
SETTINGS:MULTITONESJCAL:ENABLE?
```

Inputs

{0 | 1}

0 indicates to disable the multi-tone SJ calibration.

1 indicates to enable the multi-tone SJ calibration.

Outputs

{0 | 1}

SETTINGS:MULTITONESJCAL:FREQUENCYCOUNT

This command sets or returns the frequency count value for Multi-tone SJ calibration.

Syntax

```
SETTINGS:MULTITONESJCAL:FREQUENCYCOUNT <NR1>
```

```
SETTINGS:MULTITONESJCAL:FREQUENCYCOUNT?
```

Inputs

<NR1> 1 to 14

Outputs

<NR1>

SETTINGS:MULTITONESJCAL:MAXFREQUENCY

This command sets or returns the maximum frequency value for Multi-tone SJ calibration.

Syntax

```
SETTINGS:MULTITONESJCAL:MAXFREQUENCY <NR1>
```

```
SETTINGS:MULTITONESJCAL:MAXFREQUENCY?
```

Inputs

<NR1> 1 to 100 MHz

Outputs

<NR1>

SETTINGS:MULTITONESJCAL:MINFREQUENCY

This command sets or returns the minimum frequency value for Multi-tone SJ calibration.

Syntax

```
SETTINGS:MULTITONESJCAL:MINFREQUENCY <NR1>
```

```
SETTINGS:MULTITONESJCAL:MINFREQUENCY?
```

Inputs

<NR1> 0.03 to 99 MHz

Outputs

<NR1>

SETTINGS:MULTITONESJCAL:POINTS

This command sets or returns the number of points for Multi-tone SJ calibration.

Syntax

```
SETTINGS:MULTITONESJCAL:POINTS <NR1>
```

```
SETTINGS:MULTITONESJCAL:POINTS?
```

Inputs

<NR1> 2 to 8

Outputs

<NR1>

SETTINGS:ILMEAS:ACQUISITIONSBEFOREDMI

This command sets or returns the acquisitions value for loss measurement before DMI/CMI calibration.

Syntax

```
SETTINGS:ILMEAS:ACQUISITIONSBEFOREDMI <int>
```

```
SETTINGS:ILMEAS:ACQUISITIONSBEFOREDMI?
```

Inputs

<int> 1 to 10

Outputs

<int>

SETTINGS:ILMEAS:ACQUISITIONS

This command sets or returns the number of acquisitions for full channel insertion loss measurement.

Syntax

```
SETTINGS:ILMEAS:ACQUISITIONS <int>
```

```
SETTINGS:ILMEAS:ACQUISITIONS?
```

Inputs

<int> 1 to 10

Outputs

<int>

SETTINGS:CTLE:ACQUISITIONS

This command sets or returns the number of acquisitions for CTLE measurement.

Syntax

```
SETTINGS:CTLE:ACQUISITIONS <int>
```

```
SETTINGS:CTLE:ACQUISITIONS?
```

Inputs

<int> 1 to 20

Outputs

<int>

SETTINGS:EYE:ACQUISITIONS

This command sets or returns the number of acquisitions for stressed eye calibration.

Syntax

```
SETTINGS:EYE:ACQUISITIONS <int>
```

```
SETTINGS:EYE:ACQUISITIONS?
```

Inputs

<int> 1 to 20

Outputs

<int>

SETTINGS:MULTITONESJCAL:DEFAULT

This command sets the SJ Frequencies to its default value for multitone SJ calibration.

Syntax

```
SETTINGS:MULTITONESJCAL:DEFAULT
```

Inputs

NA

Outputs

NA

SETTINGS:MULTITONESJCAL:GENERATE

This command generates the SJ frequencies for multitone SJ calibration.

Syntax

```
SETTINGS:MULTITONESJCAL:GENERATE
```

Inputs

NA

Outputs

NA

SETTINGS:SOCKETSERVER:IP

This command returns the IP address of the socket server.

Syntax

```
SETTINGS:SOCKETSERVER:IP?
```

Inputs

NA

Outputs

<String>

SETTINGS:SOCKETSERVER:LISTENINGPORT

This command returns the listening port of the socket server.

Syntax

```
SETTINGS:SOCKETSERVER:LISTENINGPORT?
```

Inputs

NA

Outputs

<String>

SETTINGS:SOCKETSERVER:TIMEOUT

This command returns the time out value of the socket server.

Syntax

```
SETTINGS:SOCKETSERVER:TIMEOUT?
```

Inputs

NA

Outputs

<int>

SETTINGS:RESTORE

This command resets the application to default settings.

Syntax

```
Settings:Restore
```

Inputs

NA

Outputs

NA

SETTINGS:RECALL

This command recalls the settings as per specified file.

Syntax

```
SETTINGS:RECALL <"File path">
```

Inputs

<"File path"> = <String>

Outputs

NA

SETTINGS:SAVE

This command saves the settings into the specified file.

Syntax

```
Settings:Save <"File path">
```

Inputs

<"File path"> = <String>

Outputs

NA

SETTINGS:RECALL:STATUS

This command returns the status of the recall command execution.

Syntax

```
SETTINGS:RECALL:STATUS?
```

Inputs

NA

Outputs

<String>

SETTINGS:RESTORE:STATUS

This command returns the status of restore command execution.

Syntax

SETTINGS:RESTORE:STATUS?

Inputs

NA

Outputs

<String>

SETTINGS:SAVE:STATUS

This command returns the status of the save command execution.

Syntax

SETTINGS:SAVE:STATUS?

Inputs

NA

Outputs

<String>

TP1CAL:OPEN

This command opens the TP1 calibration panel.

Syntax

TP1CAL:OPEN

Inputs

NA

Outputs

NA

TP1CAL:WIZARD:OPEN

This command opens the TP1 calibration wizard.

Syntax

TP1CAL:WIZARD:OPEN

Inputs

NA

Outputs

NA

TP1CAL:WIZARD:CLOSE

This command closes the TP1 calibration wizard.

Syntax

```
TP1CAL:WIZARD:CLOSE
```

Inputs

NA

Outputs

NA

TP1CAL:DELETE

This command deletes the selected TP1 calibration file.

Syntax

```
TP1CAL:DELETE
```

Inputs

NA

Outputs

NA

TP1CAL:REPORT

This command generates the report for the selected TP1 calibration.

Syntax

```
TP1CAL:REPORT
```

Inputs

NA

Outputs

NA

TP1CAL:SAVE

This command saves the current TP1 Calibration file to the database.

Syntax

```
TP1CAL:SAVE
```

Inputs

NA

Outputs

NA

TP1CAL:EQUIP:INIT

This command sets the equipment initialization run status for TP1 calibration.

Syntax

```
TP1CAL:EQUIP:INIT <0 | 1>
```

Inputs

<0 | 1>

0 - Stop the equipment initialization to run.

1 - Start the equipment initialization to run.

Outputs

NA

TP1CAL:AUTOCAL

This command sets the TP1 automatic calibration run status.

Syntax

```
TP1CAL:AUTOCAL <0 | 1>
```

Inputs

<0 | 1>

0 - Stop the TP1 automatic calibration run.

1 - Start the TP1 automatic calibration run.

Outputs

NA

TP1CAL:AMPLITUDE:RUN

This command sets the Amplitude calibration run status.

Syntax

```
TP1CAL:AMPLITUDE:RUN <0 | 1>
```

Inputs

<0 | 1>

0 - Stop the Amplitude calibration run.

1 - Start the Amplitude calibration run.

Outputs

NA

TP1CAL:PRESET:RUN

This command sets the Preset calibration run status.

Syntax

```
TP1CAL:PRESET:RUN <0 | 1>
```

Inputs

<0 | 1>

0 - Stop the the Preset calibration run.

1 - Start the the Preset calibration run.

Outputs

NA

TP1CAL:RJ:RUN

This command sets the RJ calibration run status.

Syntax

```
TP1CAL:RJ:RUN <0 | 1>
```

Inputs

<0 | 1>

0 - Stop the RJ calibration run.

1 - Start the RJ calibration run.

Outputs

NA

TP1CAL:SJ:RUN

This command sets the SJ calibration run status.

Syntax

```
TP1CAL:SJ:RUN <0 | 1>
```

Inputs

<0 | 1>

0 - Stop the SJ calibration run.

1 - Start the SJ calibration run.

Outputs

NA

TP1CAL:MULTITONESJCAL:RUN

This command sets the Multi-tone SJ calibration run status.

Syntax

```
TP1CAL:MULTITONESJCAL:RUN <0 | 1>
```

Inputs

<0 | 1>

0 - Stop the Multi-tone SJ calibration run.

1 - Start the Multi-tone SJ calibration run.

Outputs

NA

TP1CAL:EQUIP:STATUS

This command returns the equipment initialization run status for TP1 calibration.

Syntax

```
TP1CAL:EQUIP:STATUS?
```

Inputs

NA

Outputs

{InProgress | Done}

TP1CAL:AMPLITUDE:STATUS

This command returns the amplitude calibration run status.

Syntax

```
TP1CAL:AMPLITUDE:STATUS?
```

Inputs

NA

Outputs

{InProgress | Done}

TP1CAL:PRESET:STATUS

This command returns the preset calibration run status.

Syntax

```
TP1CAL:PRESET:STATUS?
```

Inputs

NA

Outputs

{InProgress | Done}

TP1CAL:RJ:STATUS

This command returns the RJ calibration run status.

Syntax

```
TP1CAL:RJ:STATUS?
```

Inputs

NA

Outputs

{InProgress | Done}

TP1CAL:SJ:STATUS

This command returns the SJ calibration run status.

Syntax

```
TP1CAL:SJ:STATUS?
```

Inputs

NA

Outputs

{InProgress | Done}

TP1CAL:MULTITONESJCAL:STATUS

This command returns the Multi-tone SJ calibration run status.

Syntax

```
TP1CAL:MULTITONESJCAL:STATUS?
```

Inputs

NA

Outputs

{InProgress | Done}

TP1CAL:AMPLITUDE:SETTING

This command returns the amplitude value for TP1 calibration.

Syntax

```
TP1CAL:AMPLITUDE:SETTING?
```

Inputs

NA

Outputs

<int>

TP1CAL:RJ:SETTING

This command returns the RJ calibrated value for TP1 calibration.

Syntax

```
TP1CAL:RJ:SETTING?
```

Inputs

NA

Outputs

<float>

TP1CAL:SJ:SETTING

This command returns the SJ calibrated value for TP1 calibration.

Syntax

```
TP1CAL:SJ:SETTING?
```

Inputs

NA

Outputs

<float>

TP1CAL:SAVE:ID

This command sets or returns the unique identifier used as key to save the report in database for TP1 calibration.

Syntax

```
TP1CAL:SAVE:ID <String>
```

```
TP1CAL:SAVE:ID?
```

Inputs

<String>

Outputs

<String>

TP1CAL:SAVE:GENERATEDBY

This command sets or returns the creator name who save the report in database for TP1 calibration.

Syntax

```
TP1CAL:SAVE:GENERATEDBY <String>
```

```
TP1CAL:SAVE:GENERATEDBY?
```

Inputs

<String>

Outputs

<String>

TP1CAL:SAVE:COMMENTS

This command sets or returns the comments given to save the report in database for TP1 calibration.

Syntax

TP1CAL:SAVE:COMMENTS <String>

TP1CAL:SAVE:COMMENTS?

Inputs

<String>

Outputs

<String>

TP1CAL:ACDC:RUN

This command runs the TP1 AC-DC balance calibration process.

Syntax

TP1CAL:ACDC:RUN <0 | 1>

Inputs

<0 | 1>

1 - Start the AC-DC balance calibration run.

0 - Stop the AC-DC balance calibration run.

Outputs

NA

TP1CAL:ACDC:STATUS

This command returns the TP1 AC-DC balance calibration run status.

Syntax

TP1CAL:ACDC:STATUS?

Inputs

NA

Outputs

{InProgress | Done}

TP1CAL:ACDC:SETTING

This command returns the AC-DC balanced value for TP1 calibration.

Syntax

TP1CAL:ACDC:SETTING?

Inputs

NA

Outputs

<float>

TP1CAL:SJ@210MHz:RUN

This command sets the TP1 SJ@210MHz calibration run status.

Syntax

TP1CAL:SJ@210MHz:RUN <0 | 1>

Inputs

<0 | 1>

1 - Start the SJ@210 MHz calibration run.

0 - Stop the SJ@210 MHz calibration run.

Outputs

NA

TP1CAL:SJ@210MHz:STATUS

This command returns the status of SJ@210 MHz Calibration run status.

Syntax

TP1CAL:SJ@210MHz:STATUS?

Inputs

NA

Outputs

{InProgress | Done}

TP2CAL:OPEN

This command opens the TP2 calibration panel.

Syntax

TP2CAL:OPEN

Inputs

NA

Outputs

NA

TP2CAL:WIZARD:OPEN

This command opens the TP2 calibration wizard.

Syntax

```
TP2CAL:WIZARD:OPEN
```

Inputs

NA

Outputs

NA

TP2CAL:WIZARD:CLOSE

This command closes the TP2 calibration wizard.

Syntax

```
TP2CAL:WIZARD:CLOSE
```

Inputs

NA

Outputs

NA

TP2CAL:DUT:TYPE

This command sets or returns the DUT type used for TP2 calibration.

Syntax

```
TP2CAL:DUT:TYPE <0 | 1>
```

```
TP2CAL:DUT:TYPE?
```

Inputs

<0 | 1>

0 - Indicates the DUT type is Non-Root Complex.

1 - Indicates the DUT type is Root Complex.

Outputs

<0 | 1>

TP2CAL:SELECT:TP1

This command sets or returns the selected TP1 calibration file.

Syntax

```
TP2CAL:SELECT:TP1 <String>
```

```
TP2CAL:SELECT:TP1?
```

Inputs

<String>

Outputs

<String>

TP2CAL:DELETE

This command deletes the selected TP2 calibration file.

Syntax`TP2CAL:DELETE`**Inputs**

NA

Outputs

NA

TP2CAL:REPORT

This command generates the report for selected TP2 calibration.

Syntax`TP2CAL:REPORT`**Inputs**

NA

Outputs

NA

TP2CAL:SAVE

This command saves the current TP2 Calibration file to the database.

Syntax`TP2CAL:SAVE`**Inputs**

NA

Outputs

NA

TP2CAL:EQUIP:INIT

This command sets the equipment initialization run status for TP2 calibration.

Syntax`TP2CAL:EQUIP:INIT <0 | 1>`

Inputs

<0 | 1>

0 - Stop the equipment initialization run.

1 - Start the equipment initialization run.

Outputs

NA

TP2CAL:CMI:RUN

This command sets the CMI calibration run status.

Syntax

TP2CAL:CMI:RUN <0 | 1>

Inputs

<0 | 1>

0 - Stop the CMI calibration run.

1 - Start the CMI calibration run.

Outputs

NA

TP2CAL:ILMEAS:RUN

This command sets the channel loss calculation run status.

Syntax

TP2CAL:ILMEAS:RUN <0 | 1>

Inputs

<0 | 1>

0 - Stop the channel loss calculation run.

1 - Start the channel loss calculation run.

Outputs

NA

TP2CAL:CTLEANDPRESET:RUN

This command sets the CTLE and preset selection run status.

Syntax

TP2CAL:CTLEANDPRESET:RUN <0 | 1>

Inputs

<0 | 1>

0 - Stop the CTLE and preset selection run.

1 - Start the CTLE and preset selection run.

Outputs

NA

TP2CAL:STRESSEDEYE:RUN

This command sets the stressed eye calibration run status.

Syntax

TP2CAL:STRESSEDEYE:RUN <0 | 1>

Inputs

<0 | 1>

0 - Stop the stressed eye calibration run.

1 - Start the stressed eye calibration run.

Outputs

NA

TP2CAL:EQUIP:STATUS

This command returns the equipment initialization run status for TP2 calibration.

Syntax

TP2CAL:EQUIP:STATUS?

Inputs

NA

Outputs

{InProgress | Done}

TP2CAL:CMI:STATUS

This command returns the CMI calibration run status for TP2 calibration.

Syntax

TP2CAL:CMI:STATUS?

Inputs

NA

Outputs

{InProgress | Done}

TP2CAL:ILMEAS:STATUS

This command returns the channel loss calculation run status for TP2 calibration.

Syntax

TP2CAL:ILMEAS:STATUS?

Inputs

NA

Outputs

{InProgress | Done}

TP2CAL:CTLEANDPRESET:STATUS

This command returns the CTLe and Preset selection run status for TP2 calibration.

Syntax

TP2CAL:CTLEANDPRESET:STATUS?

Inputs

NA

Outputs

{InProgress | Done}

TP2CAL:STRESSEDEYE:STATUS

This command returns the stressed eye calibration run status for TP2 calibration.

Syntax

TP2CAL:STRESSEDEYE:STATUS?

Inputs

NA

Outputs

{InProgress | Done}

TP2CAL:DMI:SETTING

This command returns the DMI calibrated value for TP2 calibration.

Syntax

TP2CAL:DMI:SETTING?

Inputs

NA

Outputs

<float>

TP2CAL:CMI:SETTING

This command returns the CMI calibrated value for TP2 calibration.

Syntax

TP2CAL:CMI:SETTING?

Inputs

NA

Outputs

<int>

TP2CAL:SAVE:ID

This command sets or returns the unique identifier used as key to save the report in database for TP2 calibration.

Syntax

TP2CAL:SAVE:ID <String>

TP2CAL:SAVE:ID?

Inputs

<String>

Outputs

<String>

TP2CAL:SAVE:GENERATEDBY

This command sets or returns the creator name who save the report in database for TP2 calibration.

Syntax

TP2CAL:SAVE:GENERATEDBY <String>

TP2CAL:SAVE:GENERATEDBY?

Inputs

<String>

Outputs

<String>

TP2CAL:SAVE:COMMENTS

This command sets or returns the comments given to save the report in database for TP2 calibration.

Syntax

TP2CAL:SAVE:COMMENTS <String>

TP2CAL:SAVE:COMMENTS?

Inputs

<String>

Outputs

<String>

TP2CAL:SAVE:ISIPAIR

This command sets or returns ISI Pair stored in Database.

Syntax

```
TP2CAL:SAVE:ISIPAIR <String>
```

```
TP2CAL:SAVE:ISIPAIR?
```

Inputs

<String>

Outputs

<String>

TP2CAL:ILMEASFORDMI:RUN

This command sets the run status for Insertion loss calculation before DMI/CMI in TP2 calibration.

Syntax

```
TP2CAL:ILMEASFORDMI:RUN <0 | 1>
```

Inputs

<0 | 1>

0 - Stop the Insertion loss calculation before DMI/CMI.

1 - Start the Insertion loss calculation before DMI/CMI.

Outputs

NA

TP2CAL:ILMEASFORDMI:STATUS

This command returns the run status of Insertion loss calculation before DMI/CMI in TP2 calibration.

Syntax

```
TP2CAL:ILMEASFORDMI:STATUS?
```

Inputs

NA

Outputs

{InProgress | Done}

TP2CAL:STRESSEDEYE:ACQUISITIONS

This command sets or returns the number of acquisitions value for TP2 stressed eye calibration.

Syntax

```
TP2CAL:STRESSEDEYE:ACQUISITIONS<int>
```

```
TP2CAL:STRESSEDEYE:ACQUISITIONS?
```

Inputs

<int> 1 to 20

Outputs

<int>

TP2CAL:DMI:RUN

This command sets the run status for TP2 DMI calibration.

Syntax

```
TP2CAL:DMI:RUN <0 | 1>
```

Inputs

<0 | 1>

0 - Stop the TP2 DMI calibration.

1 - Start the TP2 DMI calibration.

Outputs

NA

TP2CAL:DMI:STATUS

This command returns the TP2 DMI calibration run status.

Syntax

```
TP2CAL:DMI:STATUS?
```

Inputs

NA

Outputs

{InProgress | Done}

TP2CAL:CTLEANDPRESET:ACQUISITIONS

This command sets or returns the number of acquisitions value for CTLE or Preset selection in TP2 calibration.

Syntax

```
TP2CAL:CTLEANDPRESET:ACQUISITIONS<int>
```

```
TP2CAL:CTLEANDPRESET:ACQUISITIONS?
```

Inputs

<int> 1 to 20

Outputs

<int>

TP2CAL:STRESSEDEYE:SJ

This command sets or returns the SJ stress value for Manual Stressed Eye Calibration run.

Syntax

```
TP2CAL:STRESSEDEYE:SJ <float>
```

```
TP2CAL:STRESSEDEYE:SJ?
```

Inputs

<float> 5 to 10

Outputs

<float>

TP2CAL:STRESSEDEYE:DMI

This command sets or returns the DMI stress value for Manual Stressed Eye Calibration run.

Syntax

```
TP2CAL:STRESSEDEYE:DMI <float>
```

```
TP2CAL:STRESSEDEYE:DMI?
```

Inputs

<float> 10 to 25

Outputs

<float>

TP2CAL:STRESSEDEYE:AMPLITUDE

This command sets or returns the amplitude value for Manual Stressed Eye Calibration run.

Syntax

```
TP2CAL:STRESSEDEYE:AMPLITUDE<int>
```

```
TP2CAL:STRESSEDEYE:AMPLITUDE?
```

Inputs

<int> 720 to 800

Outputs

<int>

TEST:SELECT:TESTDURATION

This command sets or returns the test length duration value.

Syntax

```
TEST:SELECT:TESTDURATION <float>
```

```
TEST:SELECT:TESTDURATION?
```

Inputs

<float> 1 to 1000

Outputs

<float>

TEST:SELECT:STRESSCONFIGTYPE

This command sets or returns the required stress config type.

Syntax

```
TEST:SELECT:STRESSCONFIGTYPE <0 | 1 | 2>
```

```
TEST:SELECT:STRESSCONFIGTYPE?
```

Inputs

0 indicates that stress config type is calibrated.

1 indicates that stress config type is customized

2 indicates that stress config type is un-calibrated.

Outputs

<0 | 1 | 2>

TEST:SELECT:AMP

This command sets or returns the amplitude value used for the test.

Syntax

```
TEST:SELECT:AMP <int>
```

```
TEST:SELECT:AMP?
```

Inputs

<int> 100 to 800 for customized stress selection.

<int> 100 to 650 for un-calibrated stress selection.

Outputs

<int>

TEST:SELECT:DMI

This command sets or returns the DMI value to be used for non-compliance test.

Syntax

```
TEST:SELECT:DMI <float>
```

```
TEST:SELECT:DMI?
```

Inputs

<float> 0 to 200

Outputs

<float>

TEST:SELECT:CMI

This command sets or returns the CMI value to be used for non-compliance test.

Syntax

```
TEST:SELECT:CMI <float>
```

```
TEST:SELECT:CMI?
```

Inputs

<float> 0 to 250

Outputs

<float>

TEST:SELECT:RJ

This command sets or returns the RJ value used for the test.

Syntax

```
TEST:SELECT:RJ <float>
```

```
TEST:SELECT:RJ?
```

Inputs

<float> 0 to 31.25 for customized stress selection.

<float> 0 to 0.5 for un-calibrated stress selection.

Outputs

<float>

TEST:SELECT:SJ

This command sets or returns the SJ value used for the test.

Syntax

```
TEST:SELECT:SJ <float>
```

```
TEST:SELECT:SJ?
```

Inputs

<float> 0 to 31.25 for customized stress selection.

<float> 0 to 0.5 for un-calibrated stress selection.

Outputs

<float>

TEST:SELECT:BER

This command sets or returns the BER value over which the test should be done.

Syntax

```
TEST:SELECT:BER <int>
```

```
TEST:SELECT:BER?
```

Inputs

<int> 9 to 20

Outputs

<int>

TEST:SELECT:ERRORLIMIT

This command sets or returns the maximum errors limit value.

Syntax

```
TEST:SELECT:ERRORLIMIT <int>
```

```
TEST:SELECT:ERRORLIMIT?
```

Inputs

<int> 1 to 1000

Outputs

<int>

LOOPBACK:SELECT:CONFIGURATIONTYPE

This command sets or returns the configuration type for loop back setting.

Syntax

```
LOOPBACK:SELECT:CONFIGURATIONTYPE <0 | 1>
```

```
LOOPBACK:SELECT:CONFIGURATIONTYPE?
```

Inputs

<0 | 1>

0 - Indicates the configuration type is Link training.

1 - Indicates the configuration type is Forced loopback.

Outputs

<0 | 1>

LOOPBACK:SELECT:PRESETSNAME

This command sets or returns the PCIe Preset, controls preshoot and deemphasis values.

Syntax

```
LOOPBACK:SELECT:PRESETSNAME <int>
```

```
LOOPBACK:SELECT:PRESETSNAME?
```

Inputs

<int> 0-11; P0-P10 for Corresponding Preset and 11 for Custom Preset

Outputs

<int>

LOOPBACK:SELECT:PRESETSPRESHOOT

This command sets or returns the preshoot value to be applied during loopback training.

Syntax

```
LOOPBACK:SELECT:PRESETSPRESHOOT <float>
```

```
LOOPBACK:SELECT:PRESETSPRESHOOT?
```

Inputs

<float> 0 to 12

Outputs

<float>

LOOPBACK:SELECT:PRESETSDEEMPHASIS

This command sets or returns the preset deemphasis value to be applied during loopback training.

Syntax

```
LOOPBACK:SELECT:PRESETSDEEMPHASIS <float>
```

```
LOOPBACK:SELECT:PRESETSDEEMPHASIS?
```

Inputs

<float> -20 to 0

Outputs

<float>

LOOPBACK:SELECT:BERTCTLEMODE

This command sets or returns the BERT CTLE mode.

Syntax

```
LOOPBACK:SELECT:BERTCTLEMODE <0 | 1>
```

```
LOOPBACK:SELECT:BERTCTLEMODE?
```

Inputs

<0 | 1>

0 - Indicates BERT CTLE mode is Automatic.

1 - Indicates BERT CTLE mode is Manual.

Outputs

<0 | 1>

LOOPBACK:SELECT:BERTCTLETYPE

This command sets or returns the BERT CTLE Type when loopback configuration type selected is forced loopback.

Syntax

```
LOOPBACK:SELECT:BERTCTLETYPE<0 | 1>
```

```
LOOPBACK:SELECT:BERTCTLETYPE?
```

Inputs

<0 | 1>

0 - Indicates the BERT CTLE type is OFF.

1 - Indicates the BERT CTLE type is ON.

Outputs

<0 | 1>

LOOPBACK:SELECT:BERTCTLEVALUE

This command sets or returns the BERT CTLE value.

Syntax

```
LOOPBACK:SEL:BERTCTLEVALUE <float>
```

```
LOOPBACK:SEL:BERTCTLEVALUE?
```

Inputs

<float> -12 to 0.

Outputs

<float>

LOOPBACK:SELECT:AUTOSEARCHMODE

This command sets or returns the auto search mode when loopback configuration type selected is forced loopback.

Syntax

```
LOOPBACK:SELECT:AUTOSEARCHMODE <0 | 1>
```

```
LOOPBACK:SELECT:AUTOSEARCHMODE?
```

Inputs

<0 | 1>

0 - Indicates the auto search mode is Fine.

1 - Indicates the auto search mode is Coarse.

Outputs

<0 | 1>

JTOLTEST:OPEN

This command opens the JTOL test panel.

Syntax

JTOLTEST:OPEN

Inputs

NA

Outputs

NA

JTOLTEST:WIZARD:OPEN

This command opens the JTOL test wizard.

Syntax

JTOLTEST:WIZARD:OPEN

Inputs

NA

Outputs

NA

JTOLTEST:WIZARD:CLOSE

This command closes the JTOL test wizard.

Syntax

JTOLTEST:WIZARD:CLOSE

Inputs

NA

Outputs

NA

JTOLTEST:SELECT:TP2FILE

This command sets or returns the selected TP2 calibration file for the JTOL test.

Syntax

JTOLTEST:SELECT:TP2FILE <String>

```
JTOLTEST:SELECT:TP2FILE:FILE?
```

Inputs

<String>

Outputs

<String>

JTOLTEST:SELECT:CUSTOM:MASK

This command sets or returns the enable or disable status of configuring user-defined mask for the JTOL test.

Syntax

```
JTOLTEST:SELECT:CUSTOM:MASK {0 | 1}
```

```
JTOLTEST:SELECT:CUSTOM:MASK?
```

Inputs

{0 | 1}

0 - Indicates that custom mask is disabled.

1 - Indicates that custom mask is enabled.

Outputs

{0 | 1}

JTOLTEST:MIN:FREQ

This command sets or returns the minimum frequency value for JTOL test.

Syntax

```
JTOLTEST:MIN:FREQ <float>
```

```
JTOLTEST:MIN:FREQ?
```

Inputs

<float> 0.03 to 99

Outputs

<float>

JTOLTEST:MAX:FREQ

This command sets or returns the maximum frequency value for JTOL test.

Syntax

```
JTOLTEST:MAX:FREQ <float>
```

```
JTOLTEST:MAX:FREQ?
```

Inputs

<float> 1 to 100

Outputs

<float>

JTOLTEST:FREQ:POINTS

This command sets or returns the number of SJ Frequencies for JTOL Test.

Syntax

```
JTOLTEST:FREQ:POINTS <int>
```

```
JTOLTEST:FREQ:POINTS?
```

Inputs

<int> 1 to 14

Outputs

<int>

JTOLTEST:FREQ:GENERATE

This command generates frequency in grid view.

Syntax

```
JTOLTEST:FREQ:GENERATE
```

Inputs

NA

Outputs

NA

JTOLTEST:FREQ:DEFAULT

This command loads the grid with calibrated SJ-tone values.

Syntax

```
JTOLTEST:FREQ:DEFAULT
```

Inputs

NA

Outputs

NA

JTOLTEST:SELECT:RELAXATION

This command sets or returns the relaxation time to ignore the BER bits before running every amplitude points in JTOL test.

Syntax

```
JTOLTEST:SELECT:RELAXATION <int>
```

```
JTOLTEST:SELECT:RELAXATION?
```

Inputs

<int> 1 to 10

Outputs

<int>

JTOLTEST:SEARCH:ALGO

This command sets or returns the selected search algorithm type for JTOL test.

Syntax

```
JTOLTEST:SEARCH:ALGO <0 | 1 | 2 | 3 | 4 | 5>
```

```
JTOLTEST:SEARCH:ALGO?
```

Inputs

0 indicates that search algorithm type is Binary.

1 indicates that search algorithm type is Downwards linear.

2 indicates that search algorithm type is Downwards log.

3 indicates that search algorithm type is Upwards linear.

4 indicates that search algorithm type is Upwards log.

5 indicates that search algorithm type is Binary+Linear.

Outputs

<0 | 1 | 2 | 3 | 4 | 5>

JTOLTEST:RUN

This commands sets the run status of JTOL test.

Syntax

```
JTOLTEST:RUN <0 | 1>
```

Inputs

<0 | 1>

0 - Stop the JTOL test run.

1 - Start the JTOL test run.

Outputs

NA

JTOLTEST:SAVE:ID

This command sets or returns the unique identifier used as key to save the report in database for JTOL test.

Syntax

```
JTOLTEST:SAVE:ID <String>
```

```
JTOLTEST:SAVE:ID?
```

Inputs

<String>

Outputs

<String>

JTOLTEST:SAVE:GENERATEDBY

This command sets or returns the creator name who save the report in database for JTOL test.

Syntax

```
JTOLTEST:SAVE:GENERATEDBY <String>
```

```
JTOLTEST:SAVE:GENERATEDBY?
```

Inputs

<String>

Outputs

<String>

JTOLTEST:SAVE:COMMENTS

This command sets or returns the comments given to save the report in database for JTOL test.

Syntax

```
JTOLTEST:SAVE:COMMENTS <String>
```

```
JTOLTEST:SAVE:COMMENTS?
```

Inputs

<String>

Outputs

<String>

JTOLTEST:SAVE

This command saves the current JTOL test file to the database.

Syntax

```
JTOLTEST:SAVE
```

Inputs

NA

Outputs

NA

JTOLTEST:RUNSTATUS

This command returns the JTOL test run status.

Syntax

JTOLTEST:RUNSTATUS?

Inputs

NA

Outputs

{InProgress | Done}

JTOLTEST:FREQ

This command returns the JTOL test result for the specified frequency.

Syntax

JTOLTEST:FREQ <Freq>?

Inputs

<Freq> = <int> Frequency for which JTOL results need to be shown.

Outputs

<String>

JTOLTEST:PLOT:POINTS

This command returns the number of plotted points in JTOL test plot.

Syntax

JTOLTEST:PLOT:POINTS?

Inputs

NA

Outputs

<int>

JTOLTEST:SELECT:SJAMPUNITS

This command sets or returns the SJ Amplitude unit for JTOL test.

Syntax

JTOLTEST:SELECT:SJAMPUNITS <0 | 1>

JTOLTEST:SELECT:SJAMPUNITS?

Inputs

<0 | 1>

0 - Indicates the unit is ps.

1 - Indicates the unit is UI p-p.

Outputs

<0 | 1>

JTOLTEST:SELECT:CLOCKTYPE

This command sets or returns the clock type used for JTOL test.

Syntax

```
JTOLTEST:SELECT:CLOCKTYPE <0 | 1>
```

```
JTOLTEST:SELECT:CLOCKTYPE?
```

Inputs

<0 | 1>

0 - Indicates the clock type is 100 MHz External.

1 - Indicates the clock type is Internal.

Outputs

<0 | 1>

JTOLTEST:PLOT

This command displays the JTOL test results plot.

Syntax

```
JTOLTEST:PLOT
```

Inputs

NA

Outputs

NA

JTOLTEST:TABLE

This command displays the JTOL test results table.

Syntax

```
JTOLTEST:TABLE
```

Inputs

NA

Outputs

NA

JTOLTEST:SELECT:DUTTYPE

This command sets or returns the DUT Type used for JTOL test.

Syntax

```
JTOLTEST:SELECT:DUTTYPE <0 | 1>
```

```
JTOLTEST:SELECT:DUTTYPE?
```

Inputs

```
<0 | 1>
```

0 - Indicates the DUT type is Non-RootComplex.

1 - Indicates the DUT type is RootComplex.

Outputs

```
<0 | 1>
```

JTOLTEST:LINKTRAINING:LOOPBACKMODEGEN4

This command sets or returns the loopback mode in link training for Gen4 in JTOL test.

Syntax

```
JTOLTEST:LINKTRAINING:LOOPBACKMODEGEN4 <0 | 1>
```

```
JTOLTEST:LINKTRAINING:LOOPBACKMODEGEN4?
```

Inputs

```
<0 | 1>
```

0 - Indicates the loopback mode is Configuration.

1 - Indicates the loopback mode is Recovery.

Outputs

```
<0 | 1>
```

JTOLTEST:LINKTRAINING:BERTINITIALPRESET

This command sets or returns the initial preset set at the BERT in the link training for JTOL test.

Syntax

```
JTOLTEST:LINKTRAINING:BERTINITIALPRESET <0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9>
```

```
JTOLTEST:LINKTRAINING:BERTINITIALPRESET?
```

Inputs

```
<0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9>
```

0 to 9 indicates P0 to P9.

Outputs

```
<0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9>
```

JTOLTEST:LINKTRAINING:DUTINITIALPRESET

This command sets or returns the initial preset for DUT in the link training for JTOL test.

Syntax

```
JTOLTEST:LINKTRAINING:DUTINITIALPRESET <0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9>
JTOLTEST:LINKTRAINING:DUTINITIALPRESET?
```

Inputs

```
<0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9>
```

0 to 9 indicates P0 to P9.

Outputs

```
<0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9>
```

JTOLTEST:LINKTRAINING:DUTTARGETPRESET

This command sets or returns the final preset for DUT in the link training for JTOL test.

Syntax

```
JTOLTEST:LINKTRAINING:DUTTARGETPRESET <0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9>
JTOLTEST:LINKTRAINING:DUTTARGETPRESET?
```

Inputs

```
<0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9>
```

0 to 9 indicates P0 to P9.

Outputs

```
<0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9>
```

JTOLTEST:LINKTRAINING:LANENUMBER

This command sets or returns the lane number for link training in JTOL test.

Syntax

```
JTOLTEST:LINKTRAINING:LANENUMBER <int>
JTOLTEST:LINKTRAINING:LANENUMBER?
```

Inputs

```
<int> 0 to 255
```

Outputs

```
<int>
```

JTOLTEST:LINKTRAINING:LINKNUMBER

This command sets or returns the link number for link training in JTOL test.

Syntax

```
JTOLTEST:LINKTRAINING:LINKNUMBER <int>
JTOLTEST:LINKTRAINING:LINKNUMBER?
```

Inputs

<int> 0 to 255

Outputs

<int>

JTOLTEST:LINKTRAINING:STRESSTYPE

This command sets or returns the type of stress to be used during the JTOL test.

Syntax

```
JTOLTEST:LINKTRAINING:STRESSTYPE <0 | 1 | 2>
```

```
JTOLTEST:LINKTRAINING:STRESSTYPE?
```

Inputs

<0 | 1 | 2>

0 - Indicates the stress type is Apply stress.

1- Indicates the stress type is Inhibit stress during loopback.

2 - Indicates the stress type is Disable stress.

Outputs

<0 | 1 | 2>

JTOLTEST:LINKTRAINING:CTLE

This command sets or returns the CTLE value in link training for JTOL test.

Syntax

```
JTOLTEST:LINKTRAINING:CTLE <float>
```

```
JTOLTEST:LINKTRAINING:CTLE?
```

Inputs

<float> -12 to 0

Outputs

<float>

JTOLTEST:LINKTRAINING:DUTPOWERONTYPE

This command sets or returns the DUT Power ON type in the link training for JTOL test.

Syntax

```
JTOLTEST:LINKTRAINING:DUTPOWERONTYPE <0 | 1 | 2>
```

```
JTOLTEST:LINKTRAINING:DUTPOWERONTYPE?
```

Inputs

<0 | 1 | 2>

0 - Indicates the DUT Power ON type is Manual.

1 - Indicates the DUT Power ON type is Pause for power cycle.

2 - Indicates the DUT Power ON type is Automatic.

Outputs

<0 | 1 | 2>

JTOLTEST:LINKTRAINING:SCRIPTLOCATION

This command sets or returns the script file location for the link training in JTOL test.

Syntax

JTOLTEST:LINKTRAINING:SCRIPTLOCATION <Filepath>

JTOLTEST:LINKTRAINING:SCRIPTLOCATION ?

Inputs

<Filepath> = <String>

Outputs

<String>

JTOLTEST:LINKTRAINING:DUTPOWERDELAY

This command sets or returns the DUT Power ON delay value for link training in JTOL test.

Syntax

JTOLTEST:LINKTRAINING:DUTPOWERDELAY <int>

JTOLTEST:LINKTRAINING:DUTPOWERDELAY?

Inputs

<int> 0 to 300

Outputs

<int>

JTOLTEST:BERMEASUREMENT:PATTERN

This command sets or returns the BER Measurement patterns in JTOL test.

Syntax

JTOLTEST:BERMEASUREMENT:PATTERN <0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11>

JTOLTEST:BERMEASUREMENT:PATTERN?

Inputs

0-11

<0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11>

0 - Indicates BER Measurement pattern is Modified compliance.

1 - Indicates BER Measurement pattern is Clock.

2 - Indicates BER Measurement pattern is Compliance.

- 3 - Indicates BER Measurement pattern is PRBS7.
- 4 - Indicates BER Measurement Pattern is PRBS9.
- 5 - Indicates BER Measurement pattern is PRBS10.
- 6 - Indicates BER Measurement pattern is PRBS11.
- 7 - Indicates BER Measurement pattern is PRBS15.
- 8 - Indicates BER Measurement pattern is PRBS20.
- 9 - Indicates BER Measurement pattern is PRBS23.
- 10 - Indicates BER Measurement pattern is PRBS31.
- 11 - Indicates BER Measurement pattern is User.

Outputs

<0-11>

JTOLTEST:LINKTRAINING:STOP

This command stops the link training process in JTOL test.

Syntax

JTOLTEST:LINKTRAINING:STOP

Inputs

NA

Outputs

NA

JTOLTEST:LINKTRAINING:ENABLEDUTLOOPBACKAFTERTEST

This command sets or returns the enable and disable status to keep the DUT in loopback state even after JTOL test execution is complete.

Syntax

JTOLTEST:LINKTRAINING:ENABLEDUTLOOPBACKAFTERTEST {0 | 1}

JTOLTEST:LINKTRAINING:ENABLEDUTLOOPBACKAFTERTEST?

Inputs

{0 | 1}

0 - Indicates to disable the option to keep DUT in loopback state even after JTOL test execution is complete.

1 - Indicates to enable the option to keep DUT in loopback state even after JTOL test execution is complete.

Outputs

{0 | 1}

JTOLTEST:LINKTRAINING:USERPATTERNLOCATION

This command sets or returns the user pattern location file path for the link training in JTOL test.

Syntax

```
JTOLTEST:LINKTRAINING:USERPATTERNLOCATION <"Filepath">
```

```
JTOLTEST:LINKTRAINING:USERPATTERNLOCATION?
```

Inputs

<Filepath> = <String>

Outputs

<String>

JTOLTEST:JITTERSTEP:VERYLOWFREQ

This command sets or returns the jitter step size/ratio (very low frequency) value for linear and log based search algorithms respectively.

Syntax

```
JTOLTEST:JITTERSTEP:VERYLOWFREQ <int>
```

```
JTOLTEST:JITTERSTEP:VERYLOWFREQ?
```

Inputs

<int> = 0.01 to 1 for log algorithms / 0.004 to 1000 for linear algorithms.

Outputs

<int>

JTOLTEST:JITTERSTEP:LOWFREQ

This command sets or returns the jitter step size/ratio (low frequency) value for linear and log based search algorithms respectively.

Syntax

```
JTOLTEST:JITTERSTEP:LOWFREQ <int>
```

```
JTOLTEST:JITTERSTEP:LOWFREQ?
```

Inputs

<int> = 0.01 to 1 for log algorithms / 0.004 to 75 for linear algorithms.

Outputs

<int>

JTOLTEST:JITTERSTEP:MIDDLEFREQ

This command sets or returns the jitter step size/ratio (middle frequency) value for linear and log based search algorithms respectively.

Syntax

```
JTOLTEST:JITTERSTEP:MIDDLEFREQ <int>
```

```
JTOLTEST:JITTERSTEP:MIDDLEFREQ?
```

Inputs

<int> = 0.01 to 1 for log algorithms / 0.004 to 7.5 for linear algorithms.

Outputs

<int>

JTOLTEST:JITTERSTEP:HIGHFREQ

This command sets or returns the jitter step size/ratio (high frequency) value for linear and log based search algorithms respectively.

Syntax

```
JTOLTEST:JITTERSTEP:HIGHFREQ <int>
```

```
JTOLTEST:JITTERSTEP:HIGHFREQ?
```

Inputs

<int> = 0.01 to 1 for log algorithms / 0.004 to 0.5 for linear algorithms.

Outputs

<int>

JTOLTEST:CLOCK:ARCHITECTURE

This command sets or returns the clock architecture type for the JTOL test.

Syntax

```
JTOLTEST:CLOCK:ARCHITECTURE <0 | 1 | 2>
```

```
JTOLTEST:CLOCK:ARCHITECTURE?
```

Inputs

<0 | 1 | 2>

0 - Indicates the clock architecture type is Common.

1 - Indicates the clock architecture type is SRIS.

2 - Indicates the clock architecture type is SRNS.

Outputs

<0 | 1 | 2>

JTOLTEST:INSERT:SKP

This command sets or returns the enable or disable status to insert the SKP OS while sending training sequences in JTOL test.

Syntax

```
JTOLTEST:INSERT:SKP {0 | 1}
```

```
JTOLTEST:INSERT:SKP?
```

Inputs

{0 | 1}

0 - Disables the option to insert the SKP OS while sending training sequences.

1 - Enables the option to insert the SKP OS while sending training sequences.

Outputs

{0 | 1}

JTOLTEST:FILTER:SKP

This command sets or returns the enable or disable status to filter/remove the received SKP ordered set in JTOL test.

Syntax

```
JTOLTEST:FILTER:SKP {0 | 1}
```

```
JTOLTEST:FILTER:SKP?
```

Inputs

{0 | 1}

0 - Disables the option to filter/remove the received SKP ordered set.

1 - Enables the option to filter/remove the received SKP ordered set.

Outputs

{0 | 1}

JTOLTEST:SKP:GEN12:SYMBOLLENGTH

This command sets or returns the symbol length for Gen1 and Gen2 in JTOL test.

Syntax

```
JTOLTEST:SKP:GEN12:SYMBOLLENGTH <0 | 1 | 2 | 3 | 4>
```

```
JTOLTEST:SKP:GEN12:SYMBOLLENGTH?
```

Inputs

<0 | 1 | 2 | 3 | 4>

0 - Indicates the symbol length is COM+1.

1 - Indicates the symbol length is COM+2.

2 - Indicates the symbol length is COM+3.

3 - Indicates the symbol length is COM+4.

4 - Indicates the symbol length is COM+5.

Outputs

<0 | 1 | 2 | 3 | 4>

JTOLTEST:SKP:GEN345:SYMBOLLENGTH

This command sets or returns the symbol length for Gen3, Gen4 and Gen5 in JTOL test.

Syntax

```
JTOLTEST:SKP:GEN345:SYMBOLLENGTH <0 | 1 | 2 | 3 | 4>
```

```
JTOLTEST:SKP:GEN345:SYMBOLLENGTH?
```

Inputs

<0 | 1 | 2 | 3 | 4>

- 0 - Indicates the symbol length is 8.
- 1 - Indicates the symbol length is 12.
- 2 - Indicates the symbol length is 16.
- 3 - Indicates the symbol length is 20.
- 4 - Indicates the symbol length is 24.

Outputs

<0 | 1 | 2 | 3 | 4>

JTOLTEST:SKP:GEN12:DOUBLESKP

This command sets or returns the ON or OFF status to insert the double SKP in loopback for Gen1 and Gen2 in JTOL test.

Syntax

JTOLTEST:SKP:GEN12:DOUBLESKP {0 | 1}

JTOLTEST:SKP:GEN12:DOUBLESKP?

Inputs

{0 | 1}

- 0 - Indicates the status is OFF.
- 1 - Indicates the status is ON.

Outputs

{0 | 1}

JTOLTEST:SKP:GEN345:DOUBLESKP

This command sets or returns the ON or OFF status to insert the double SKP in loopback for Gen3, Gen4, and Gen5 in JTOL test.

Syntax

JTOLTEST:SKP:GEN345:DOUBLESKP {0 | 1}

JTOLTEST:SKP:GEN345:DOUBLESKP?

Inputs

{0 | 1}

- 0 - Indicates the status is OFF.
- 1 - Indicates the status is ON.

Outputs

{0 | 1}

JTOLTEST:COMMONCLOCK:SKP:GEN12:INTERVAL

This command sets or returns the SKP ordered set interval value for Gen1 and Gen2 in JTOL test.

Syntax

```
JTOLTEST:COMMONCLOCK:SKP:GEN12:INTERVAL <int>
```

```
JTOLTEST:COMMONCLOCK:SKP:GEN12:INTERVAL?
```

Inputs

<int> = 80 to 3076

Outputs

<int>

JTOLTEST:COMMONCLOCK:SKP:GEN345:INTERVAL

This command sets or returns the SKP ordered set interval value for Gen3, Gen4, and Gen5 in JTOL test.

Syntax

```
JTOLTEST:COMMONCLOCK:SKP:GEN345:INTERVAL <int>
```

```
JTOLTEST:COMMONCLOCK:SKP:GEN345:INTERVAL?
```

Inputs

<int> = 20 to 750

Outputs

<int>

JTOLTEST:LINKTRAINING:CTLETYPE

This command sets or returns the enable or disable status of BERT CTLE type during Link training in JTOL test.

Syntax

```
JTOLTEST:LINKTRAINING:CTLETYPE <0 | 1>
```

```
JTOLTEST:LINKTRAINING:CTLETYPE?
```

Inputs

<0 | 1>

0 - Indicates the BERT CTLE type is disabled.

1 - Indicates the BERT CTLE type is enabled.

Outputs

<0 | 1>

JTOLTEST:LINKTRAINING:POWEROPTIONTYPE

This command sets or returns the DUT Power Option for Link Training in JTOL test.

Syntax

```
JTOLTEST:LINKTRAINING:POWEROPTIONTYPE <0 | 1>
```

```
JTOLTEST:LINKTRAINING:POWEROPTIONTYPE?
```

Inputs

<0 | 1>

0 - Indicates the power option is External.

1 - Indicates the power option is CBB Controller.

Outputs

<0 | 1>

JTOLTEST:LINKTRAINING:CBBAUTORESET

This command sets or returns the CBB auto reset method for Link Training in JTOL test.

Syntax

JTOLTEST:LINKTRAINING:CBBAUTORESET <0 | 1>

JTOLTEST:LINKTRAINING:CBBAUTORESET?

Inputs

<0 | 1>

0 - Indicates the CBB auto reset method is Power Reset.

1 - Indicates the CBB auto reset method is Power Cycle.

Outputs

<0 | 1>

JTOLTEST:LINKTRAINING:CBBPOWERCYCLE

This command sets or returns the time value to send a Power OFF signal to CBB during the specified time (seconds).

Syntax

JTOLTEST:LINKTRAINING:CBBPOWERCYCLE <float>

JTOLTEST:LINKTRAINING:CBBPOWERCYCLE?

Inputs

<float> 0.1 to 20.0 seconds

Outputs

<float>

JTOLTEST:LINKTRAINING:CBBPOWERRESET

This command sets or returns the time value to send a Power Reset signal to CBB during the specified time (seconds).

Syntax

JTOLTEST:LINKTRAINING:CBBPOWERRESET <float>

JTOLTEST:LINKTRAINING:CBBPOWERRESET?

Inputs

<float> 0.1 to 20.0 seconds

Outputs

<float>

JTOLTEST:LINKTRAINING:CBBWAITINGTIME

This command sets or returns the waiting time after the DUT is powered ON.

Syntax

JTOLTEST:LINKTRAINING:CBBWAITINGTIME <float>

JTOLTEST:LINKTRAINING:CBBWAITINGTIME?

Inputs

<float> 0.1 to 300 seconds

Outputs

<float>

LEQRXTEST:OPEN

This command opens the LEQRx test panel.

Syntax

LEQRXTEST:OPEN

Inputs

NA

Outputs

NA

LEQRXTEST:WIZARD:OPEN

This command opens the LEQRx test wizard.

Syntax

LEQRXTEST:WIZARD:OPEN

Inputs

NA

Outputs

NA

LEQRXTEST:WIZARD:CLOSE

This command closes the LEQRx test wizard.

Syntax

LEQRXTEST:WIZARD:CLOSE

Inputs

NA

Outputs

NA

LEQRXTEST:DUTTYPE

This command selects the DUT Type for LEQRx test.

Syntax

```
LEQRXTEST:DUTTYPE <0 | 1>
```

```
LEQRXTEST:DUTTYPE?
```

Inputs

<0 | 1>

0 indicates the DUT type is Non-Root Complex/AIC.

1 indicates the DUT type is Root Complex/System.

Outputs

<0 | 1>

LEQRXTEST:CLOCKTYPE

This command selects the Clock Type for LEQRx test.

Syntax

```
LEQRXTEST:CLOCKTYPE <0 | 1>
```

```
LEQRXTEST:CLOCKTYPE?
```

Inputs

<0 | 1>

0 indicates the Clock type is 100 MHz External.

1 indicates the Clock type is Internal.

Outputs

<0 | 1>

LEQRXTEST:SELECT:TP2FILE

This command sets or returns the selected TP2 calibration file for LEQRx test.

Syntax

```
LEQRXTEST:SELECT:TP2FILE <String>
```

```
LEQRXTEST:SELECT:TP2FILE?
```

Inputs

<String>

Outputs

<String>

LEQRXTEST:SHOW:CONNECTIONDIAGRAM

This command displays the connection diagram of the LEQRx test.

Syntax

```
LEQRXTEST:SHOW:CONNECTIONDIAGRAM
```

Inputs

NA

Outputs

NA

LEQRXTEST:LINKTRAINING:BERTINITIALPRESET

This command sets or returns the initial preset set at the BERT end for the link training in LEQRx test.

Syntax

```
LEQRXTEST:LINKTRAINING:BERTINITIALPRESET <0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9>
```

```
LEQRXTEST:LINKTRAINING:BERTINITIALPRESET?
```

Inputs

0 to 9 indicates P0 to P9.

Outputs

<0|1|2|3|4|5|6|7|8|9>

LEQRXTEST:LINKTRAINING:DUTINITIALPRESET

This command sets or returns the initial preset for the DUT in LEQRx test.

Syntax

```
LEQRXTEST:LINKTRAINING:DUTINITIALPRESET <0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9>
```

```
LEQRXTEST:LINKTRAINING:DUTINITIALPRESET?
```

Inputs

0 to 9 indicates P0 to P9.

Outputs

<0|1|2|3|4|5|6|7|8|9>

LEQRXTEST:LINKTRAINING:DUTTARGETPRESET

This command sets or returns the final preset for the DUT in LEQRx test.

Syntax

```
LEQRXTEST:LINKTRAINING:DUTTARGETPRESET <0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9>
```

LEQRXTEST:LINKTRAINING:DUTTARGETPRESET?

Inputs

0 to 9 indicates P0 to P9.

Outputs

<0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9>

LEQRXTEST:LINKTRAINING:LINKNUMBER

This command sets or returns the link number for link training in the LEQRx test.

Syntax

LEQRXTEST:LINKTRAINING:LINKNUMBER <int>

LEQRXTEST:LINKTRAINING:LINKNUMBER?

Inputs

<int> 0 to 255

Outputs

<int>

LEQRXTEST:LINKTRAINING:LANENUMBER

This command sets or returns the lane number for link training in the LEQRx test.

Syntax

LEQRXTEST:LINKTRAINING:LANENUMBER <int>

LEQRXTEST:LINKTRAINING:LANENUMBER?

Inputs

<int> 0 to 255

Outputs

<int>

LEQTXTEST:LINKTRAINING:LOOPBACKMODEGEN4

This command sets or returns the loopback mode in link training for Gen4 in LEQTx test.

Syntax

LEQTXTEST:LINKTRAINING:LOOPBACKMODEGEN4 <0 | 1>

LEQTXTEST:LINKTRAINING:LOOPBACKMODEGEN4?

Inputs

<0 | 1>

0 - Indicates the loopback mode is Configuration.

1 - Indicates the loopback mode is Recovery.

Outputs

<0 | 1>

LEQRXTEST:LINKTRAINING:DUTPOWERONTYPE

This command sets or returns the DUT Power ON type for link training in the LEQRx test.

Syntax

```
LEQRXTEST:LINKTRAINING:DUTPOWERONTYPE <0 | 1 | 2>
```

```
LEQRXTEST:LINKTRAINING:DUTPOWERONTYPE?
```

Inputs

<0 | 1 | 2>

0 indicates the DUT Power On type is Manual.

1 indicates the DUT Power On type is Pause for power cycle.

2 indicates the DUT Power On type is Automatic.

Outputs

<0 | 1 | 2>

LEQRXTEST:LINKTRAINING:DUTPOWERDELAY

This command gets or returns the delay value of the DUT power On for the link training in LEQRx test.

Syntax

```
LEQRXTEST:LINKTRAINING:DUTPOWERDELAY <int>
```

```
LEQRXTEST:LINKTRAINING:DUTPOWERDELAY?
```

Inputs

<int> 0 to 300

Outputs

<int>

LEQRXTEST:LINKTRAINING:SCRIPTLOCATION

This command sets or returns the script file location for the link training in LEQRx test.

Syntax

```
LEQRXTEST:LINKTRAINING:SCRIPTLOCATION <Filepath>
```

```
LEQRXTEST:LINKTRAINING:SCRIPTLOCATION?
```

Inputs

<Filepath> = <string>

Outputs

<string>

LEQRXTEST:BERMEASUREMENT:PATTERN

This command sets or returns the BER measurement patterns selected for the link training in LEQRx test.

Syntax

```
LEQRXTEST:BERMEASUREMENT:PATTERN <0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11>
```

```
LEQRXTEST:BERMEASUREMENT:PATTERN?
```

Inputs

0- 11

<0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11>

0 - Indicates BER Measurement pattern is Modified compliance.

1 - Indicates BER Measurement pattern is Clock.

2 - Indicates BER Measurement pattern is Compliance.

3 - Indicates BER Measurement pattern is PRBS7.

4 - Indicates BER Measurement Pattern is PRBS9.

5 - Indicates BER Measurement pattern is PRBS10.

6 - Indicates BER Measurement pattern is PRBS11.

7 - Indicates BER Measurement pattern is PRBS15.

8 - Indicates BER Measurement pattern is PRBS20.

9 - Indicates BER Measurement pattern is PRBS23.

10 - Indicates BER Measurement pattern is PRBS31.

11 - Indicates BER Measurement pattern is User

Outputs

<0 -11>

LEQRXTEST:LINKTRAINING:STRESSTYPE

This command sets or returns the stress type selected for the link training in LEQRx test.

Syntax

```
LEQRXTEST:LINKTRAINING:STRESSTYPE <0 | 1 | 2>
```

```
LEQRXTEST:LINKTRAINING:STRESSTYPE?
```

Inputs

<0 | 1 | 2>

0 indicates the stress type is Apply stress.

1 indicates the stress type is Inhibit stress during loopback.

2 indicates the stress type is Disable stress.

Outputs

<0 | 1 | 2>

LEQRXTEST:LINKTRAINING:CTLE

This command sets or returns the CTLE value for the link training in LEQRx test.

Syntax

```
LEQRXTEST:LINKTRAINING:CTLE <float>
```

```
LEQRXTEST:LINKTRAINING:CTLE?
```

Inputs

<float> -12 to 0

Outputs

<float>

LEQRXTEST:LINKTRAINING:ENABLEDUTLOOPBACKAFTERTEST

This command sets or returns the enable and disable status to keep the DUT in loopback state even after LEQRx test execution is complete.

Syntax

```
LEQRXTEST:LINKTRAINING:ENABLEDUTLOOPBACKAFTERTEST {0 | 1}
```

```
LEQRXTEST:LINKTRAINING:ENABLEDUTLOOPBACKAFTERTEST?
```

Inputs

{0 | 1}

0 indicates to disable the option to keep DUT in loopback state even after LEQ Rx Test execution is complete.

1 indicates to enable the option to keep DUT in loopback state even after LEQ Rx Test execution is complete.

Outputs

{0 | 1}

LEQRXTEST:LINKTRAINING:USERPATTERNLOCATION

This command sets or returns the user pattern location file path for the link training in LEQRx test.

Syntax

```
LEQRXTEST:LINKTRAINING:USERPATTERNLOCATION <"Filepath">
```

```
LEQRXTEST:LINKTRAINING:USERPATTERNLOCATION?
```

Inputs

<Filepath> = <String>

Outputs

<String>

LEQRXTEST:RUN

This command sets the LEQRx test run status.

Syntax

```
LEQRXTEST:RUN <0 | 1>
```

Inputs

<0 | 1>

0 - Stop the LEQRx test run.

1 - Start the LEQRx test run.

Outputs

<0 | 1>

LEQRXTEST:STATUS

This command returns the run status of LEQRx test.

Syntax

```
LEQRXTEST:STATUS?
```

Inputs

NA

Outputs

{Inprogress | Done}

LEQRXTEST:LINKTRAINING:STATUS

This command returns the result status of link training during LEQRx test.

Syntax

```
LEQRXTEST:LINKTRAINING:STATUS?
```

Inputs

NA

Outputs

{Returns | Success | Fail}

LEQRXTEST:LINKTRAINING:STOP

This command stops the link training process during LEQRx test.

Syntax

```
LEQRXTEST:LINKTRAINING:STOP
```

Inputs

NA

Outputs

NA

LEQRXTEST:TEST:ADDERROR

This command manually add errors during BER run during LEQRx test.

Syntax

```
LEQRXTEST:TEST:ADDERROR
```

Inputs

NA

Outputs

NA

LEQRXTEST:TEST:CURRENTBER

This command returns the current BER value in the DUT.

Syntax

```
LEQRXTEST:TEST:CURRENTBER?
```

Inputs

NA

Outputs

<String>

LEQRXTEST:TEST:CURRENTERRORCOUNT

This command returns the number of errors in the DUT for LEQRx test..

Syntax

```
LEQRXTEST:TEST:CURRENTERRORCOUNT?
```

Inputs

NA

Outputs

<int>

LEQRXTEST:TEST:CURRENTTOTALBITS

This command returns the total number of bits transmitted during test execution in LEQRx test.

Syntax

```
LEQRXTEST:TEST:CURRENTTOTALBITS?
```

Inputs

NA

Outputs

<float>

LEQRXTEST:TEST:RESULT

This command returns the result status of the LEQRx test.

Syntax

```
LEQRXTEST:TEST:RESULT?
```

Inputs

NA

Outputs

{Pass | Fail}

LEQRXTEST:SAVE:ID

This command sets or returns the unique identifier used as key to save the report in database for LEQRx test.

Syntax

```
LEQRXTEST:SAVE:ID <string>
```

```
LEQRXTEST:SAVE:ID?
```

Inputs

<string>

Outputs

<string>

LEQRXTEST:SAVE:GENERATEDBY

This command sets or returns the creator name who save the report in database for LEQRx test.

Syntax

```
LEQRXTEST:SAVE:GENERATEDBY <string>
```

```
LEQRXTEST:SAVE:GENERATEDBY?
```

Inputs

<string>

Outputs

<string>

LEQRXTEST:SAVE:COMMENTS

This command sets or returns the comments given to save the report in database for LEQRx test.

Syntax

```
LEQRXTEST:SAVE:COMMENTS <String>
```

```
LEQRXTEST:SAVE:COMMENTS?
```

Inputs

<string>

Outputs

<string>

LEQRXTEST:SAVE

This command saves the LEQRx test report to the database.

Syntax

```
LEQRXTEST:SAVE
```

Inputs

NA

Outputs

NA

LEQRXTEST:CLOCK:ARCHITECTURE

This command sets or returns the clock architecture type for the LEQRx test.

Syntax

```
LEQRXTEST:CLOCK:ARCHITECTURE <0 | 1 | 2>
```

```
LEQRXTEST:CLOCK:ARCHITECTURE?
```

Inputs

<0 | 1 | 2>

0 - Indicates the clock architecture type is Common.

1 - Indicates the clock architecture type is SRIS.

2 - Indicates the clock architecture type is SRNS.

Outputs

<0 | 1 | 2>

LEQRXTEST:INSERT:SKP

This command sets or returns the enable or disable status to insert the SKP OS while sending training sequences in LEQRx test.

Syntax

```
LEQRXTEST:INSERT:SKP {0 | 1}
```

```
LEQRXTEST:INSERT:SKP?
```

Inputs

{0 | 1}

0 - Disables the option to insert the SKP OS while sending training sequences.

1 - Enables the option to insert the SKP OS while sending training sequences.

Outputs

{0 | 1}

LEQRXTEST:FILTER:SKP

This command sets or returns the enable or disable status to filter/remove the received SKP ordered set in LEQRx test.

Syntax

LEQRXTEST:FILTER:SKP {0 | 1}

LEQRXTEST:FILTER:SKP?

Inputs

{0 | 1}

0 - Disables the option to filter/remove the received SKP ordered set.

1 - Enables the option to filter/remove the received SKP ordered set.

Outputs

{0 | 1}

LEQRXTEST:SKP:GEN12:SYMBOLLENGTH

This command sets or returns the symbol length for Gen1 and Gen2 in LEQRx test.

Syntax

LEQRXTEST:SKP:GEN12:SYMBOLLENGTH <0 | 1 | 2 | 3 | 4>

LEQRXTEST:SKP:GEN12:SYMBOLLENGTH?

Inputs

<0 | 1 | 2 | 3 | 4>

0 - Indicates the symbol length is COM+1.

1 - Indicates the symbol length is COM+2.

2 - Indicates the symbol length is COM+3.

3 - Indicates the symbol length is COM+4.

4 - Indicates the symbol length is COM+5.

Outputs

<0 | 1 | 2 | 3 | 4>

LEQRXTEST:SKP:GEN345:SYMBOLLENGTH

This command sets or returns the symbol length for Gen3, Gen4 and Gen5 in LEQRx test.

Syntax

LEQRXTEST:SKP:GEN345:SYMBOLLENGTH <0 | 1 | 2 | 3 | 4>

LEQRXTEST:SKP:GEN345:SYMBOLLENGTH?

Inputs

<0 | 1 | 2 | 3 | 4>

- 0 - Indicates the symbol length is 8.
- 1 - Indicates the symbol length is 12.
- 2 - Indicates the symbol length is 16.
- 3 - Indicates the symbol length is 20.
- 4 - Indicates the symbol length is 24.

Outputs

<0 | 1 | 2 | 3 | 4>

LEQRXTEST:SKP:GEN12:DOUBLESKP

This command sets or returns the ON or OFF status to insert the double SKP in loopback for Gen1 and Gen2 in LEQRx test.

Syntax

LEQRXTEST:SKP:GEN12:DOUBLESKP {0 | 1}

LEQRXTEST:SKP:GEN12:DOUBLESKP?

Inputs

{0 | 1}

- 0 - Indicates the status is OFF.
- 1 - Indicates the status is ON.

Outputs

{0 | 1}

LEQRXTEST:SKP:GEN345:DOUBLESKP

This command sets or returns the ON or OFF status to insert the double SKP in loopback for Gen3, Gen4, and Gen5 in LEQRx test.

Syntax

LEQRXTEST:SKP:GEN345:DOUBLESKP {0 | 1}

LEQRXTEST:SKP:GEN345:DOUBLESKP?

Inputs

{0 | 1}

- 0 - Indicates the status is OFF.
- 1 - Indicates the status is ON.

Outputs

{0 | 1}

LEQRXTEST:COMMONCLOCK:SKP:GEN12:INTERVAL

This command sets or returns the SKP ordered set interval value for Gen1 and Gen2 in LEQRx test.

Syntax

```
LEQRXTEST:COMMONCLOCK:SKP:GEN12:INTERVAL <int>
```

```
LEQRXTEST:COMMONCLOCK:SKP:GEN12:INTERVAL?
```

Inputs

<int> = 80 to 3076

Outputs

<int>

LEQRXTEST:COMMONCLOCK:SKP:GEN345:INTERVAL

This command sets or returns the SKP ordered set interval value for Gen3, Gen4, and Gen5 in LEQRx test.

Syntax

```
LEQRXTEST:COMMONCLOCK:SKP:GEN345:INTERVAL <int>
```

```
LEQRXTEST:COMMONCLOCK:SKP:GEN345:INTERVAL?
```

Inputs

<int> = 20 to 750

Outputs

<int>

LEQRXTEST:LINKTRAINING:CTLETYPE

This command sets or returns the enable or disable status of BERT CTLE type during Link training in LEQ Rx test.

Syntax

```
LEQRXTEST:LINKTRAINING:CTLETYPE <0 | 1>
```

```
LEQRXTEST:LINKTRAINING:CTLETYPE?
```

Inputs

<0 | 1>

0 - Indicates the BERT CTLE type is disabled.

1 - Indicates the BERT CTLE type is enabled.

Outputs

<0 | 1>

LEQRXTEST:LINKTRAINING:CBBAUTORESET

This command sets or returns the CBB auto reset method for Link Training in LEQ Rx test.

Syntax

```
LEQRXTEST:LINKTRAINING:CBBAUTORESET <0 | 1>
```

```
LEQRXTEST:LINKTRAINING:CBBAUTORESET?
```

Inputs

<0 | 1>

0 - Indicates the CBB auto reset method is Power Reset.

1 - Indicates the CBB auto reset method is Power Cycle.

Outputs

<0 | 1>

LEQRXTEST:LINKTRAINING:CBBPOWERCYCLE

This command sets or returns the time value to send a power OFF signal to CBB during the specified time (seconds).

Syntax

LEQRXTEST:LINKTRAINING:CBBPOWERCYCLE <float>.

LEQRXTEST:LINKTRAINING:CBBPOWERCYCLE?

Inputs

<float> 0.1 to 20.0 seconds

Outputs

<float>

LEQRXTEST:LINKTRAINING:CBBPOWERRESET

This command sets or returns the time value to send a Power Reset signal to CBB during the specified time (seconds).

Syntax

LEQRXTEST:LINKTRAINING:CBBPOWERRESET <float>

LEQRXTEST:LINKTRAINING:CBBPOWERRESET?

Inputs

<float> 0.1 to 20.0 seconds

Outputs

<float>

LEQRXTEST:LINKTRAINING:CBBWAITINGTIME

This command sets or returns the waiting time after the DUT is powered ON.

Syntax

LEQRXTEST:LINKTRAINING:CBBWAITINGTIME <float>

LEQRXTEST:LINKTRAINING:CBBWAITINGTIME?

Inputs

<float> 0.1 to 300 seconds

Outputs

<float>

LEQRXTEST:LINKTRAINING:POWEROPTIONTYPE

This command sets or returns the DUT power option for Link Training in LEQ Rx test.

Syntax

```
LEQRXTEST:LINKTRAINING:POWEROPTIONTYPE <0 | 1>
```

```
LEQRXTEST:LINKTRAINING:POWEROPTIONTYPE?
```

Inputs

<0 | 1>

0 - Indicates the power option is External.

1 - Indicates the power option is CBB Controller.

Outputs

<0 | 1>

LEQTXTEST:OPEN

This command opens LEQTx test panel.

Syntax

```
LEQTXTEST:OPEN
```

Inputs

NA

Outputs

NA

LEQTXTEST:WIZARD:OPEN

This command opens LEQTx test wizard.

Syntax

```
LEQTXTEST:WIZARD:OPEN
```

Inputs

NA

Outputs

NA

LEQTXTEST:WIZARD:CLOSE

This command closes LEQTx test wizard.

Syntax

```
LEQTXTEST:WIZARD:CLOSE
```

Inputs

NA

Outputs

NA

LEQTXTEST:SELECT:TP1FILE

This command selects the TP1 Calibration file for LEQTx test..

Syntax

```
LEQTXTEST:SELECT:TP1FILE <string>
```

```
LEQTXTEST:SELECT:TP1FILE?
```

Inputs

<string>

Outputs

<string>

LEQTXTEST:DUTTYPE

This command sets or returns the DUT type for LEQTx test.

Syntax

```
LEQTXTEST:DUTTYPE <0 | 1>>
```

```
LEQTXTEST:DUTTYPE?
```

Inputs

<0 | 1>

0 - Indicates the DUT type is Non-Root Complex/AIC.

1 - Indicates the DUT type is Root Complex/System.

Outputs

<0 | 1>

LEQTXTEST:CLOCKTYPE

This command sets or returns the Clock type for LEQTx test..

Syntax

```
LEQTXTEST:CLOCKTYPE <0 | 1>
```

```
LEQTXTEST:CLOCKTYPE?
```

Inputs

<0 | 1>

0 - Indicates the Clock type is 100 MHz External.

1 - Indicates the Clock type is Internal.

Outputs

<0 | 1>

LEQTXTEST:SELECT:TEST

This command sets or returns the LEQTx test selected to be executed.

Syntax

LEQTXTEST:SELECT:TEST <0 | 1 | 2>

LEQTXTEST:SELECT:TEST?

Inputs

<0 | 1 | 2>

0 - Indicates the tests are AIC Initial Tx EQ tests.

1 - Indicates the tests is AIC Response Time test.

2 - Indicates the tests is System Response Time test.

Outputs

<0 | 1 | 2>

LEQTXTEST:LINKTRAINING:BERTINITIALPRESET

This command sets or returns the initial preset set at the BERT end for the link training in LEQTx test.

Syntax

LEQTXTEST:LINKTRAINING:BERTINITIALPRESET <0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9>

LEQTXTEST:LINKTRAINING:BERTINITIALPRESET?

Inputs

0 to 9 indicates P0 to P9

Outputs

<0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9>

LEQTXTEST:LINKTRAINING:LINKNUMBER

This command sets or returns the link number for link training in LEQTx test.

Syntax

LEQTXTEST:LINKTRAINING:LINKNUMBER <int>

LEQTXTEST:LINKTRAINING:LINKNUMBER?

Inputs

<int> 0 to 255

Outputs

<int>

LEQTXTEST:LINKTRAINING:LANENUMBER

This command sets or returns the lane number for link training in LEQTx test.

Syntax

LEQTXTEST:LINKTRAINING:LANENUMBER <int>

LEQTXTEST:LINKTRAINING:LANENUMBER?

Inputs

<int> 0 to 255

Outputs

<int>

LEQTXTEST:LINKTRAINING:DUTPOWERONTYPE

This command sets or returns the DUT Power ON type for the link training in LEQTx test.

Syntax

LEQTXTEST:LINKTRAINING:DUTPOWERONTYPE <0 | 1 | 2>

LEQTXTEST:LINKTRAINING:DUTPOWERONTYPE?

Inputs

<0 | 1 | 2>

0 - Indicates the DUT Power ON type is Manual.

1 - Indicates the DUT Power ON type is Pause for power cycle.

2 - Indicates the DUT Power ON type is Automatic.

Outputs

<0 | 1 | 2>

LEQTXTEST:LINKTRAINING:DUTPOWERDELAY

This command sets or returns the DUT Power On delay value for link training in LEQTx test.

Syntax

LEQTXTEST:LINKTRAINING:DUTPOWERDELAY <int>

LEQTXTEST:LINKTRAINING:DUTPOWERDELAY?

Inputs

<int> 0 to 300

Outputs

<int>

LEQTXTEST:LINKTRAINING:SCRIPTLOCATION

This command sets or returns the script file location for the link training in LEQTx test.

Syntax

```
LEQTXTEST:LINKTRAINING:SCRIPTLOCATION <Filepath>
```

```
LEQTXTEST:LINKTRAINING:SCRIPTLOCATION?
```

Inputs

<Filepath> = <string>

Outputs

<string>

LEQTXTEST:LINKTRAINING:CTLE

This command sets or returns the CTLE value for LEQTx test.

Syntax

```
LEQTXTEST:LINKTRAINING:CTLE <float>
```

```
LEQTXTEST:LINKTRAINING:CTLE?
```

Inputs

<float> -12 to 0

Outputs

<float>

LEQTXTEST:LINKTRAINING:LOOPBACKMODEGEN4

This command sets or returns the loopback mode in link training for Gen4 in LEQTx test.

Syntax

```
LEQTXTEST:LINKTRAINING:LOOPBACKMODEGEN4 <0 | 1>
```

```
LEQTXTEST:LINKTRAINING:LOOPBACKMODEGEN4?
```

Inputs

<0 | 1>

0 - Indicates the loopback mode is Configuration.

1 - Indicates the loopback mode is Recovery.

Outputs

<0 | 1>

LEQTXTEST:STRESSTYPE

This command sets or returns the Amplitude Configuration type for the LEQTx test.

Syntax

```
LEQTXTEST:STRESSTYPE <0 | 1 | 2>
```

```
LEQTXTEST:STRESSTYPE?
```

Inputs

<0 | 1 | 2>

0 - Indicates the Amplitude Configuration type is Calibrated.

1 - Indicates the Amplitude Configuration type is Customized.

2 - Indicates the Amplitude Configuration type is Un-calibrated.

Outputs

<0 | 1 | 2>

LEQTXTEST:AMPLITUDE

This command sets or returns the amplitude value for LEQTx test.

Syntax

```
LEQTXTEST:AMPLITUDE <int>
```

```
LEQTXTEST:AMPLITUDE?
```

Inputs

<int>

Outputs

<int>

LEQTXTEST:APPLYSOFT EQ

This command sets or returns the enable or disable status to apply software CTLe to the DUT Waveform in LEQTx test.

Syntax

```
LEQTXTEST:APPLYSOFT EQ {0 | 1}
```

```
LEQTXTEST:APPLYSOFT EQ?
```

Inputs

{0 | 1}

0 - Disables the option to apply software CTLe to the DUT Waveform.

1 - Enables the option to apply software CTLe to the DUT Waveform.

Outputs

{0 | 1}

LEQTXTEST:FILTERFILE

This command sets or returns the filter file name for software CTLE in LEQTx test.

Syntax

```
LEQTXTEST:FILTERFILE <string>
```

```
LEQTXTEST:FILTERFILE?
```

Inputs

<String>

Outputs

<String>

LEQTXTEST:DUTWFMSCALE

This command sets or returns the waveform scale value for the DUT waveform in LEQTx test.

Syntax

```
LEQTXTEST:DUTWFMSCALE <float>
```

```
LEQTXTEST:DUTWFMSCALE?
```

Inputs

<float> 20 to 200

Outputs

<float>

LEQTXTEST:LOOPBACKRUN

This command sets or returns the number of retrials when loopback is failed in LEQTx test.

Syntax

```
LEQTXTEST:LOOPBACLRUN <int>
```

```
LEQTXTEST:LOOPBACLRUN?
```

Inputs

<int>

Outputs

<int>

LEQTXTEST:DUTID

This command sets or returns the DUT ID for creating folder to save the waveforms in LEQTx test.

Syntax

```
LEQTXTEST:DUTID <String>
```

```
LEQTXTEST:DUTID?
```

Inputs

<String>

Outputs

<String>

LEQTXTEST:INITIALPRESET

This command sets the DUT Initial preset for AIC response test in LEQTx test.

Syntax

```
LEQTXTEST:INITIALPRESET <Row index> <0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9>
```

Inputs

<Row index> = <int> 0 to 19

0 = Indicates the DUT initial preset is P0.

1 = Indicates the DUT initial preset is P1.

2 = Indicates the DUT initial preset is P2.

3 = Indicates the DUT initial preset is P3.

4 = Indicates the DUT initial preset is P4.

5 = Indicates the DUT initial preset is P5.

6 = Indicates the DUT initial preset is P6.

7 = Indicates the DUT initial preset is P7.

8 = Indicates the DUT initial preset is P8.

9 = Indicates the DUT initial preset is P9.

Outputs

NA

LEQTXTEST:SELECTPRESET

This command sets the preset or coefficients for LEQTx test execution.

Syntax

```
LEQTXTEST:SELECTPRESET <Row index> {0 | 1}
```

Inputs

<Row index> = <int> 0 to 9 for Initial Tx EQ and 0 to 19 for response time.

0 = Disables the preset checkbox.

1 = Enables the preset checkbox.

Outputs

NA

LEQTXTEST:CLEARALL

This command un-checks all the presets for LEQTx test.

Syntax

```
LEQTXTEST: CLEARALL
```

Inputs

NA

Outputs

NA

LEQTXTEST:CHECKALL

This command checks all the presets for LEQTx test.

Syntax

```
LEQTXTEST: CHECKALL
```

Inputs

NA

Outputs

NA

LEQTXTEST:RUN

This command sets the run status of LEQTx test.

Syntax

```
LEQTXTEST: RUN <0 | 1>
```

```
LEQTXTEST: RUN?
```

Inputs

<0 | 1>

0 - Stops the LEQTx test run.

1 - Starts the LEQTx test run.

Outputs

<0 | 1>

LEQTXTEST:STATUS

This command returns the run status of LEQTx test.

Syntax

```
LEQTXTEST: STATUS?
```


Inputs

NA

Outputs

{InProgress | Done}

LEQTXTEST:LINKTRAINING:STATUS

This command returns the status of linktraining during LEQTx test.

Syntax`LEQTXTEST:LINKTRAINING:STATUS?`**Inputs**

NA

Outputs

{Running | Success | Fail}

LEQTXTEST:LINKTRAINING:STOP

This command stops the link training process.

Syntax`LEQTXTEST:LINKTRAINING:STOP`**Inputs**

NA

Outputs

NA

LEQTXTEST:SAVE:ID

This command sets or returns the unique identifier used as key to save the report in database for LEQTx test.

Syntax`LEQTXTEST:SAVE:ID <String>``LEQTXTEST:SAVE:ID?`**Inputs**

<String>

Outputs

<String>

LEQTXTEST:SAVE:COMMENTS

This command sets or returns the comments given to save the report in database for LEQTx test.

Syntax

```
LEQTXTEST:SAVE:COMMENTS <string>
```

```
LEQTXTEST:SAVE:COMMENTS ?
```

Inputs

```
<string>
```

Outputs

```
<string>
```

LEQTXTEST:SAVE:GENERATEDBY

This command sets or returns the creator name who save the report in database for LEQTx test.

Syntax

```
LEQTXTEST:SAVE:GENERATEDBY <String>
```

```
LEQTXTEST:SAVE:GENERATEDBY?
```

Inputs

```
<String>
```

Outputs

```
<String>
```

LEQTXTEST:SAVE

This command saves the LEQTx test report to the database.

Syntax

```
LEQTXTEST:SAVE
```

Inputs

```
NA
```

Outputs

```
NA
```

LEQTXTEST:LINKTRAINING:CTLETYPE

This command sets or returns the enable or disable status of BERT CTLE type during Link training in LEQ Tx test.

Syntax

```
LEQTXTEST:LINKTRAINING:CTLETYPE <0 | 1>
```

```
LEQTXTEST:LINKTRAINING:CTLETYPE?
```

Inputs

```
<0 | 1>
```

0 - Indicates the BERT CTLE type is disabled.

1 - Indicates the BERT CTLE type is enabled.

Outputs

<0 | 1>

LEQTXTEST:LINKTRAINING:CBBAUTORESET

This command to sets or returns the CBB auto reset method for Link Training in LEQ Tx test.

Syntax

```
LEQTXTEST:LINKTRAINING:CBBAUTORESET <0 | 1>
```

```
LEQTXTEST:LINKTRAINING:CBBAUTORESET?
```

Inputs

<0 | 1>

0 - Indicates the CBB auto reset method is Power Reset.

1 - Indicates the CBB auto reset method is Power Cycle.

Outputs

<0 | 1>

LEQTXTEST:LINKTRAINING:CBBPOWERCYCLE

This command sets or returns the time value to send a power OFF signal to CBB during the specified time (seconds).

Syntax

```
LEQTXTEST:LINKTRAINING:CBBPOWERCYCLE <float>
```

```
LEQTXTEST:LINKTRAINING:CBBPOWERCYCLE?
```

Inputs

<float> 0.1 to 20.0 seconds

Outputs

<float>

LEQTXTEST:LINKTRAINING:CBBPOWERRESET

This command sends a power reset signal to CBB during the specified time (seconds).

Syntax

```
LEQTXTEST:LINKTRAINING:CBBPOWERRESET <float>
```

```
LEQTXTEST:LINKTRAINING:CBBPOWERRESET?
```

Inputs

<float> 0.1 to 20.0 seconds

Outputs

<float>

LEQTXTEST:LINKTRAINING:CBBWAITINGTIME

This command sets or returns the waiting time after the DUT is powered ON.

Syntax

```
LEQTXTEST:LINKTRAINING:CBBWAITINGTIME <float>
```

```
LEQTXTEST:LINKTRAINING:CBBWaitingTime?
```

Inputs

<float> 0.1 to 300 seconds

Outputs

<float>

LEQTXTEST:LINKTRAINING:POWEROPTIONTYPE

This command sets or returns the DUT power option for Link Training in LEQ Tx test.

Syntax

```
LEQTXTEST:LINKTRAINING:POWEROPTIONTYPE <0 | 1>
```

```
LEQTXTEST:LINKTRAINING:POWEROPTIONTYPE?
```

Inputs

<0 | 1>

0 - Indicates the power option is External.

1 - Indicates the power option is CBB Controller.

Outputs

<0 | 1>

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