

PCIe PLL BW Transmitter Test Application Help

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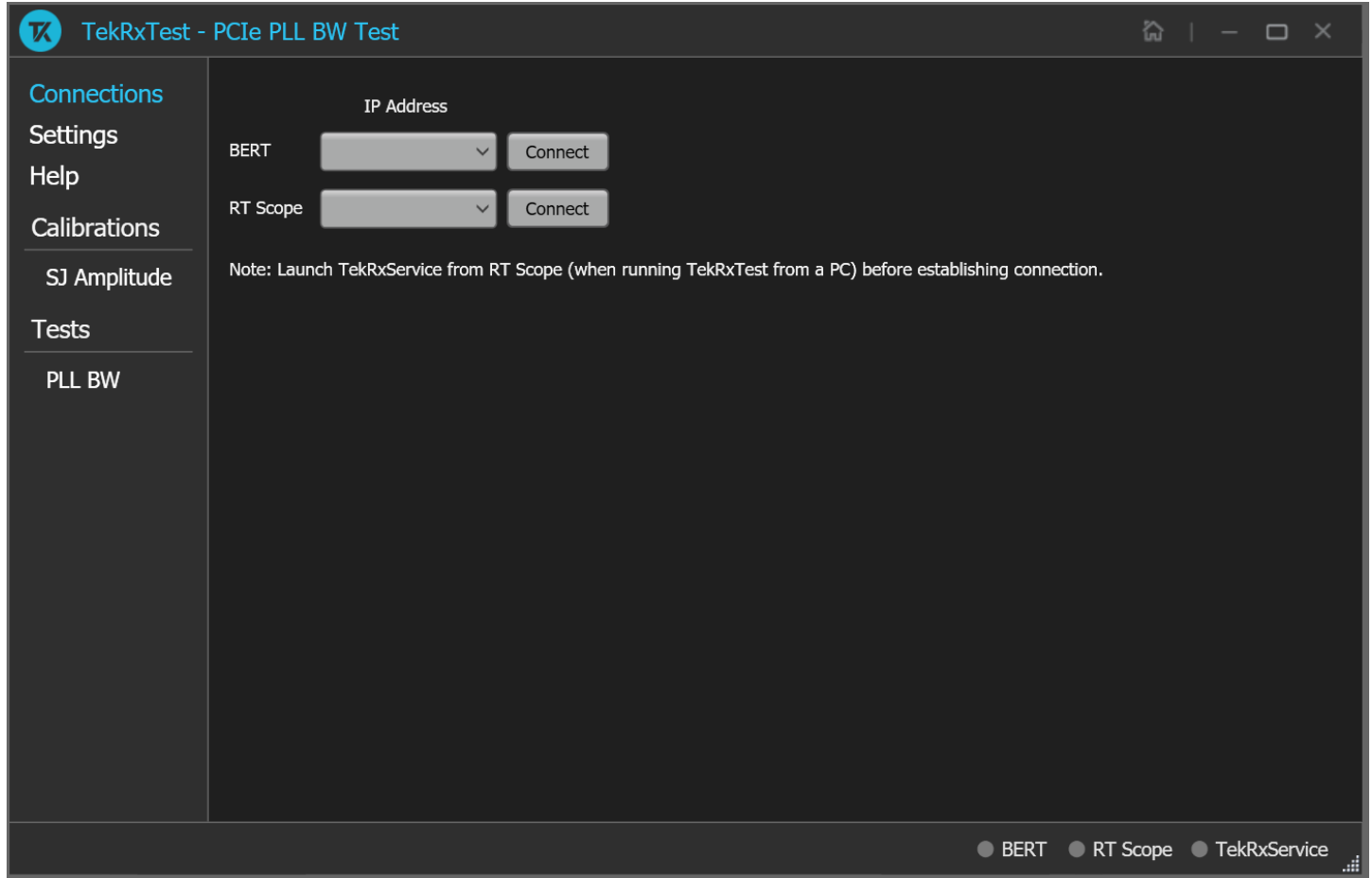
SJAMPCAL:SJAMPLITUDE..... 51

SJAMPCAL:WIZARD:CLOSE..... 51

SJAMPCAL:WIZARD:OPEN..... 51

Welcome

The PCIe PLL BW Tx application performs the test as per the PCI Express Base Specification Revision 5.0.



TekRxTest - PCIe PLL BW Tx application

PCIe PLL Bandwidth and Peaking test is accomplished by connecting the output of BERT PPG (which can produce specific PCIe PLL BW 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 sinusoidal jitter at the configured SJ tones to a reference clock waveform. Output of the DUT is connected to the RT Scope to measure how much SJ passes through the DUT's Tx PLL for a certain SJ tone. Upon performing the process across multiple tones gives us the PLL frequency response indicating the PLL Bandwidth and peaking.

Key features and benefits

- SJ Amplitude Calibration and PLL BW test comes as a part of the receiver solution.
- Jointly with Anritsu BERT MP1900A series, the solution provides the tools and flexibility required to observe real-time performance for PLL BW devices for PCIe Gen3, Gen4, Gen5, and Gen6.
- Reliable and accurate results reduce the test execution time and minimize the skillset required to perform calibration and testing.
- Detailed reports are at one's disposal for the calibration and test modules.

Getting help and support

Related documentation

The following documentation is available as part of the PCIe PLL BW TekRxTest receiver test application.

Product documentation

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

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](#).

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 equipment and accessories

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

Required equipment and accessories

Equipment	Vendor	Type	R/O	Qty	Description
MP1900A	Anritsu	Equipment	Required	1	BERT
DPS73304SX	Tektronix	Equipment	Required	1	Single Stack 33GHz or better (e.g. Dual Stack 50GHz Sx Scope)
DPO7AFP	Tektronix	Accessory	Required	1	Auxiliary Front Panel
DPO7RFK2	Tektronix	Accessory	Optional	2	Attenuator Kit (Only for ATI channels)
103-047-00	Tektronix	Accessory	Optional	2	Connector Savers (1.85mm) (Only for ATI channels)
Adaptor (1.85 mm M – 2.92 mm F)	Tektronix	Accessory	Optional	2	Only for ATI channels
PMCABLE1M	Tektronix	Accessory	Required	2	Cable pair; 2.92-to-2.92mm, Straight, 1.5ps matched, 1000mm, 40GHz
DJA	Tektronix	Software	Required	1	DPOJET Advanced option
TF-PCIE5-CEM-X1	Tektronix or PCI-SIG	Accessory	Required	1	Gen 5 and Gen 6 CEM Test Fixtures
TF-PCIE5-CEM-X16		Accessory	Required		
Z2025A PCIe CBB Controller	Anritsu	Equipment	Optional	1	PCIe CBB Controller

Equipment	Vendor	Type	R/O	Qty	Description
RXSW-NLP-PLLBW-PCEG5 or	Tektronix	Software	Required	1	License; PLLBW Gen 6/5/4/3 automation software for TEK scopes and Anritsu BERT; Perpetual; Node-Locked
RXSW-NL1-PLLBW-PCEG5 or					License; PLLBW Gen 6/5/4/3 Receiver automation software for TEK scopes and Anritsu BERT; 1 year subscription; Node-Locked
RXSW-FLP-PLLBW-PCEG5 or					License; PLLBW Gen 6/5/4/3 Receiver automation software for TEK scopes and Anritsu BERT; Perpetual; Floating
RXSW-FL1-PLLBW-PCEG5					License; PLLBW Gen 6/5/4/3 automation software for TEK scopes and Anritsu BERT; 1 year subscription; Floating

Installing the software

Follow the below steps to download and install the latest PCIe PLL BW TekRxTest application.

1. Go to www.tek.com.
2. Click **Downloads**. In the Download menu, select DOWNLOAD TYPE as Software and enter PCIe PLL BW 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 to install the software (Real-time oscilloscope or PC).
5. Follow the installation instructions that is available in the website. The software is installed at **C:\ProgramFiles\Tektronix\BERTScope\RxTest60**.
6. Click the shortcut icon on the desktop to launch the application.
 - The PCIe PLL BW TekRxTest application can be installed on a Tektronix real-time oscilloscope or a PC (Optional).
 - You must install the TekRxService application in the real-time oscilloscope to successfully connect the application with the real-time oscilloscope.

Operating basics

Launch the application

To launch the PCIe PLL BW TekRxTest application, click the shortcut icon **TekRxTest** on the desktop and select **PCIe PLL BW** in the application window.

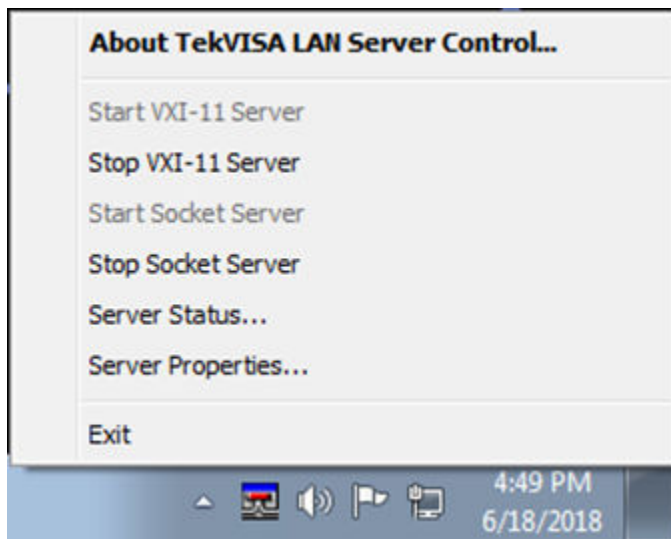
Close the application

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 Real-Time Oscilloscope

The TekVISA Socket Server application on the oscilloscope provides the necessary connectivity between the TekRxTest application and scope. Although it is launched in the background when the scope boots up and the socket is initialized for communication, it is recommended to verify the status by clicking on the **Desktop Tray > TekVISA LAN Server Control** as shown in the image below. If it is ready to exchange data, then a wizard would appear as in the below image.



Launch Real-Time Oscilloscope

Note: In the unlikely event when the socket is not initialized, the process can be started by clicking on “Start Socket Server” which gets enabled during such a scenario.

Launch TekRxService

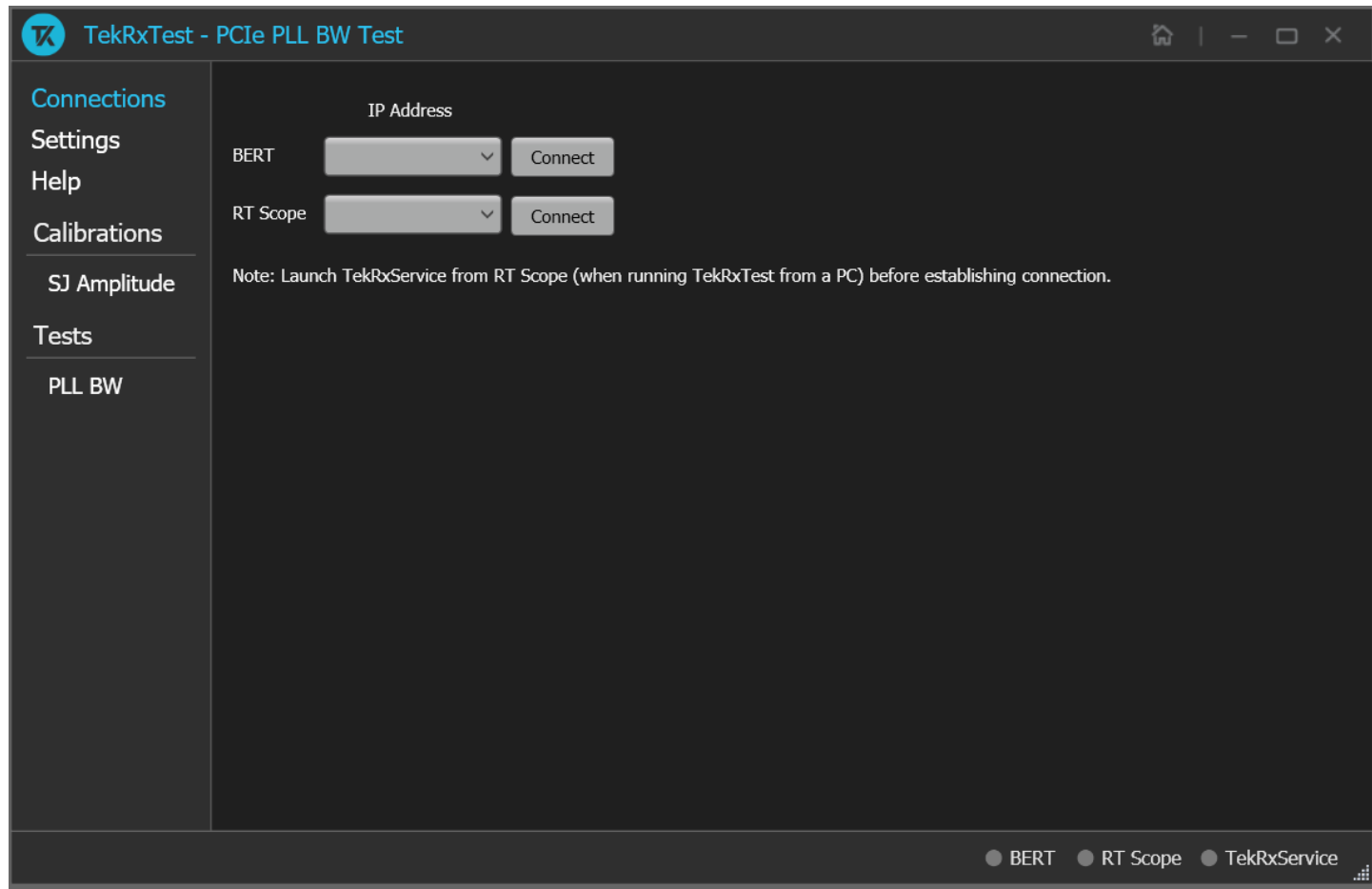
The TekRxTest application interfaces with the oscilloscope for data acquisition, analysis and data retrieval utilizing TekRxService application. This software module should be launched at the time of initiating the TekRxTest application.

NOTE: TekRxService has to be launched if the application is being run on an external PC. To launch the application, double click the TekRxService batch file shortcut icon in the desktop of the real-time oscilloscope.

Application panels

Application panels overview

The PCIe PLL BW receiver 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.



Application panels overview

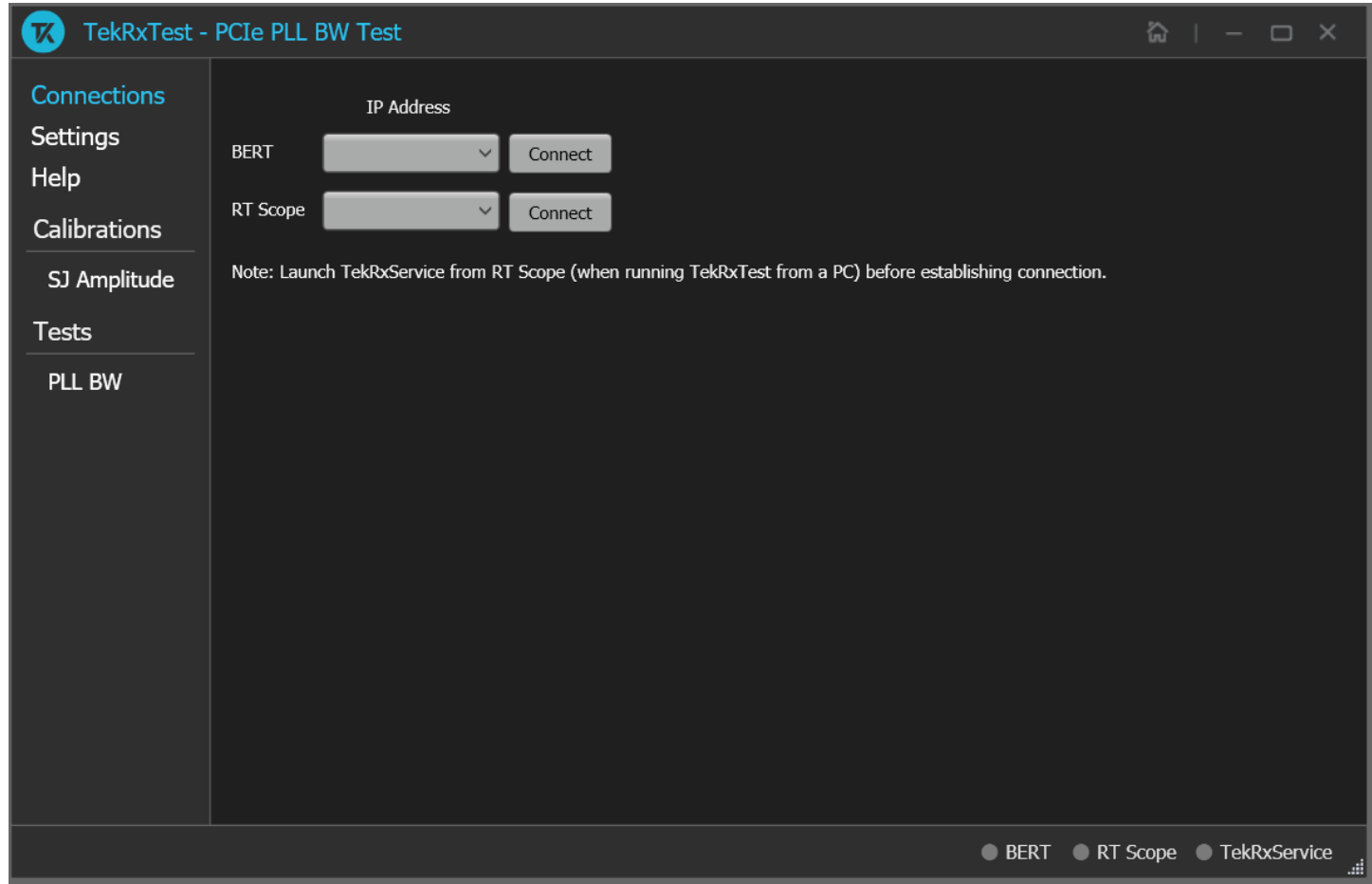
Application panels overview

Parameter	Description
Connections	This panel displays the Real-Time Oscilloscope and Bit Error Rate Tester (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 RT Scope, Analysis Tool, and the Remote Access.
Help	This panel displays the application help.
Calibrations	This panel allows you to configure the calibration parameters for SJ Amplitude and save the results.

Parameter	Description
Tests	This panel allows you to configure the PLL BW test settings and view the results.

Connections panel

The Connections panel allows you to connect to a real-time oscilloscope and BERT with the PCIe PLL BW TekRxTest application. Enter the IP address of these instruments and click **Connect** to establish the connection.



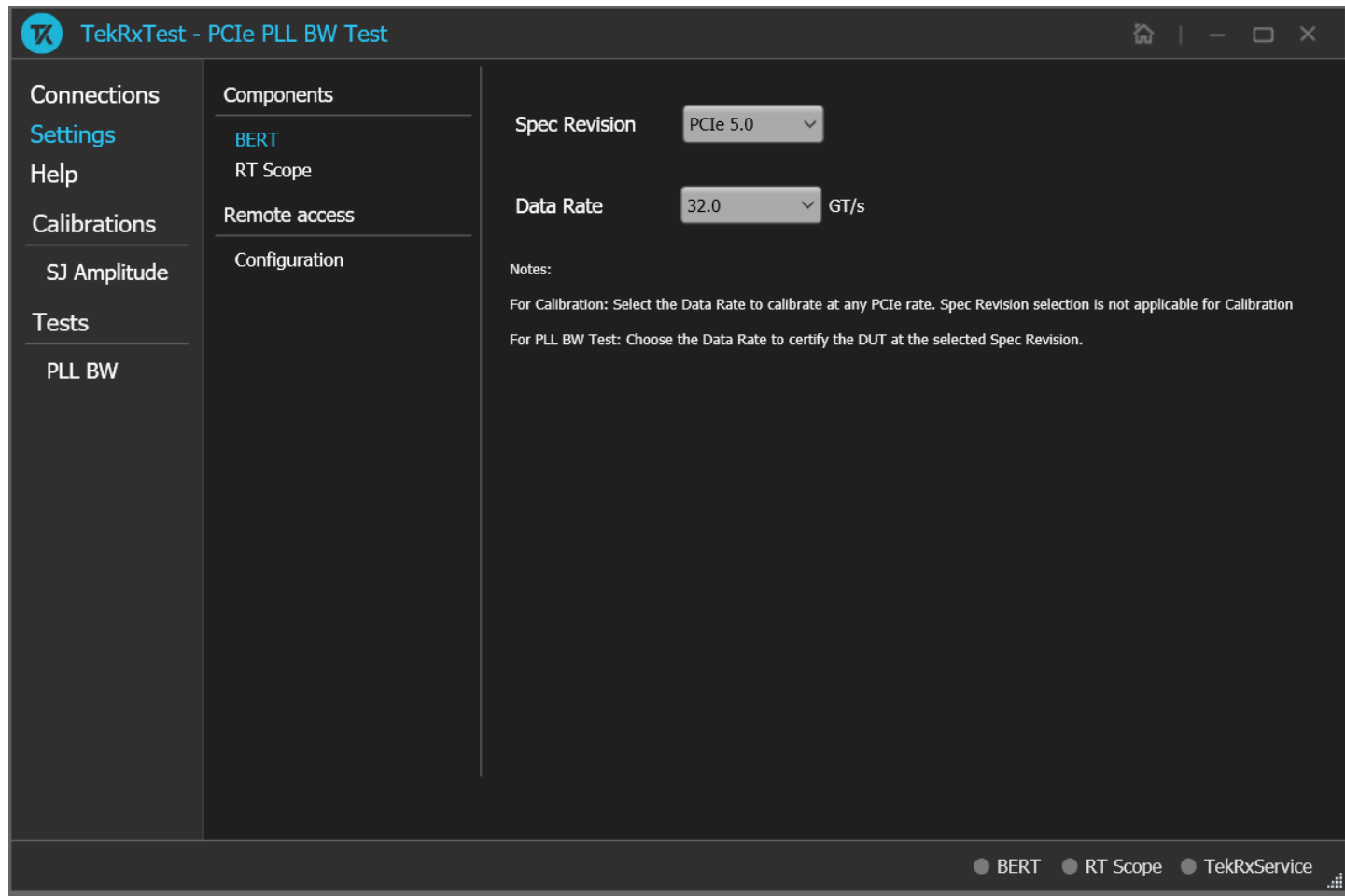
Connection panel

Connections panel

Connections	Description
BERT	Enter the BERT IP address in the address field and click Connect. When the BERT is connected successfully, the circle next to BERT in the right end corner turns green. NOTE: It is recommended to launch the MP1900A software in the administrator mode to use the TekRxTest Application.
RT Scope	Enter the RT Scope IP address in the address field and click Connect. When the RT Scope is connected successfully, the circle next to RT Scope and TekRxService in the right end corner turns green. NOTE: Before you click Connect, you must launch the TekRxService in the real-time oscilloscope.

Settings panel

The Settings panel allows you to configure the settings for instruments, analysis tool, and remote access. Click on any tab to configure the associated settings.



Settings panel

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 basic settings display the parameters for BERT, RT Scope, and Remote access.

Components: BERT

Components - BERT

Parameter	Description
Spec Revision	Select the specification revision for which the DUT (Device Under Test) will be certified. ▪ PCIe 6.0 ▪ PCIe 5.0 ▪ PCIe 4.0
Data Rate	Select the data rate for which SJ Calibration, PLL bandwidth and Peaking test will run. ▪ For PCIe 6.0 - 64.0, 32.0, 16.0, 8.0 GT/s ▪ For PCIe 5.0 - 32.0, 16.0, 8.0 GT/s ▪ For PCIe 4.0 - 16.0, 8.0 GT/s

Tk

TekRxTest - PCIe PLL BW Test

Home

Settings

Help

Calibrations

Tests

Connections

Settings

Help

Calibrations

Tests

SJ Amplitude

PLL BW

Components

BERT

RT Scope

Remote access

Configuration

Spec Revision

PCIe 5.0

Data Rate

32.0

GT/s

Notes:

For Calibration: Select the Data Rate to calibrate at any PCIe rate. Spec Revision selection is not applicable for Calibration

For PLL BW Test: Choose the Data Rate to certify the DUT at the selected Spec Revision.

BERT

RT Scope

TekRxService

Components - BERT Scope

Components: RT Scope

TekRxTest - PCIe PLL BW Test

Connections

Settings

Help

Calibrations

SJ Amplitude

Tests

PLL BW

Components

BERT

RT Scope

Remote access

Configuration

Positive Channel

Ch1

Negative Channel

Ch3

Sample Rate

100

GS/s

Note:

1. Select appropriate channels (Ch1 and Ch3 or Ch2 and Ch4) which allow 100 GS/s sample rate.

2. Set sample rate 200 GS/s for stack setup.

BERT

RT Scope

TekRxService

Components - RT Scope

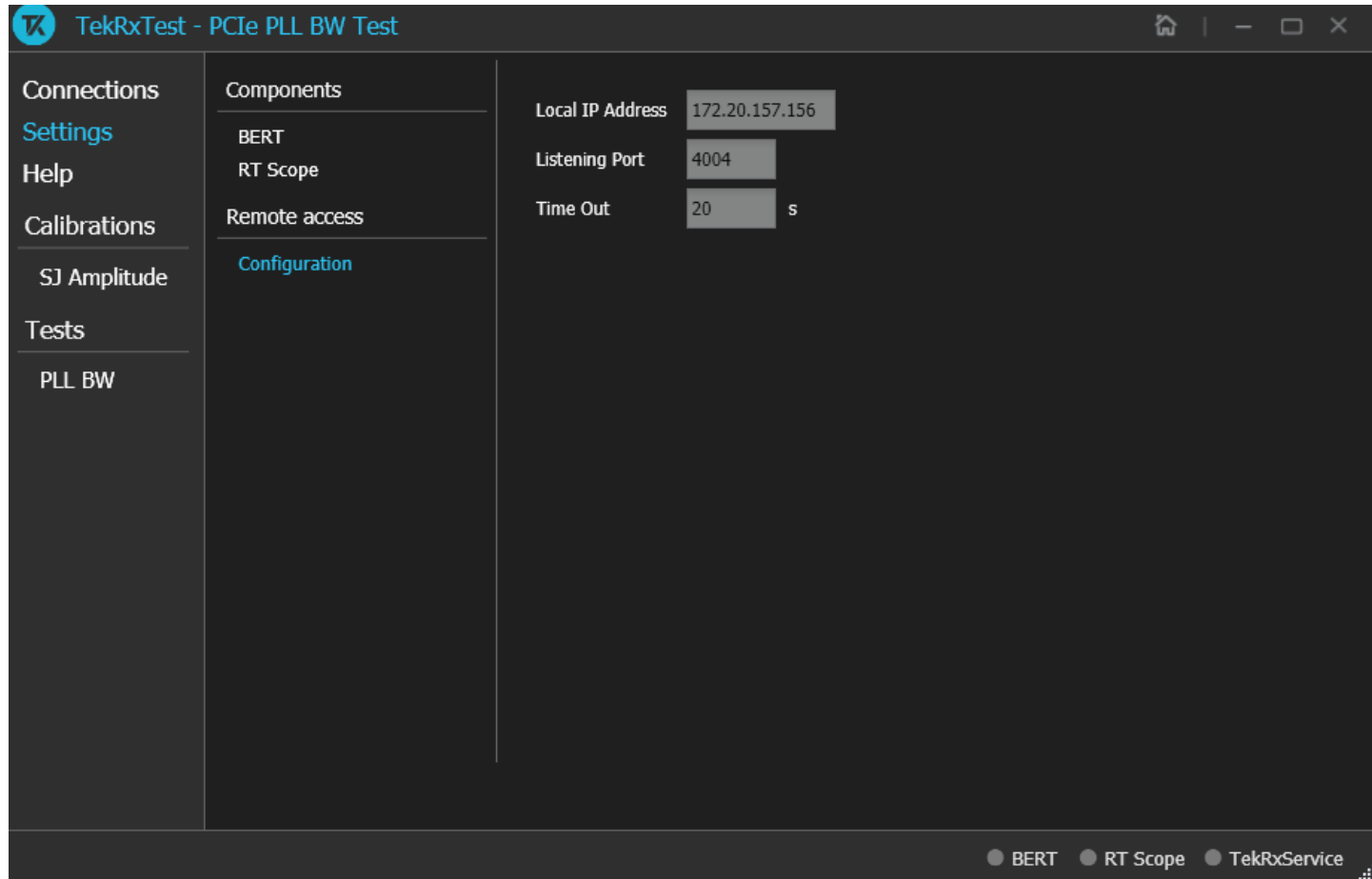
Components - RT Scope

Parameter	Description
Positive Channel	Select the generator data positive channel from BERT.
Negative Channel	Select the generator data negative channel from BERT.

Parameter	Description
Sample Rate	Enter the sample rate in GS/s (Range: 50 to 200 GS/s).

- Select appropriate channels (Ch1 and Ch3 or Ch2 and Ch4) which allow 100 GS/s sample rate.
- Set sample rate as 200 GS/s for stack setup.

Remote access: Configuration



Remote access - Configuration

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 PCIe PLL BW TekRxTest application help document.

Calibrations panel

Complete SJ Amplitude calibration before you start the DUT testing using the PCIe PLL BW TekRxTest application. After calibrating for the SJ tones, you can save the results.

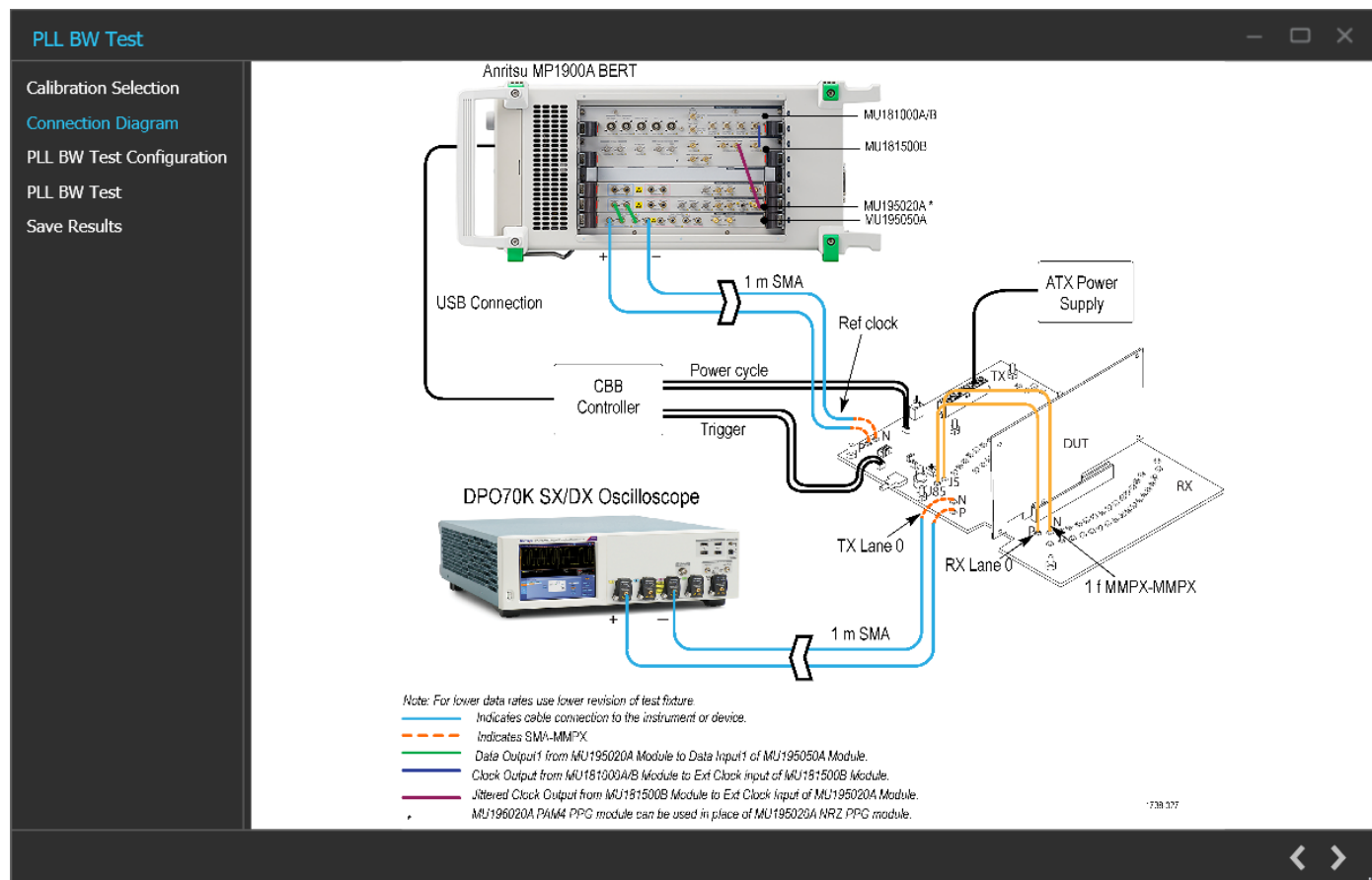
SJ Amplitude

The SJ Amplitude calibration panel allows you to manually perform SJ Amplitude calibration for the DUT and save the results.

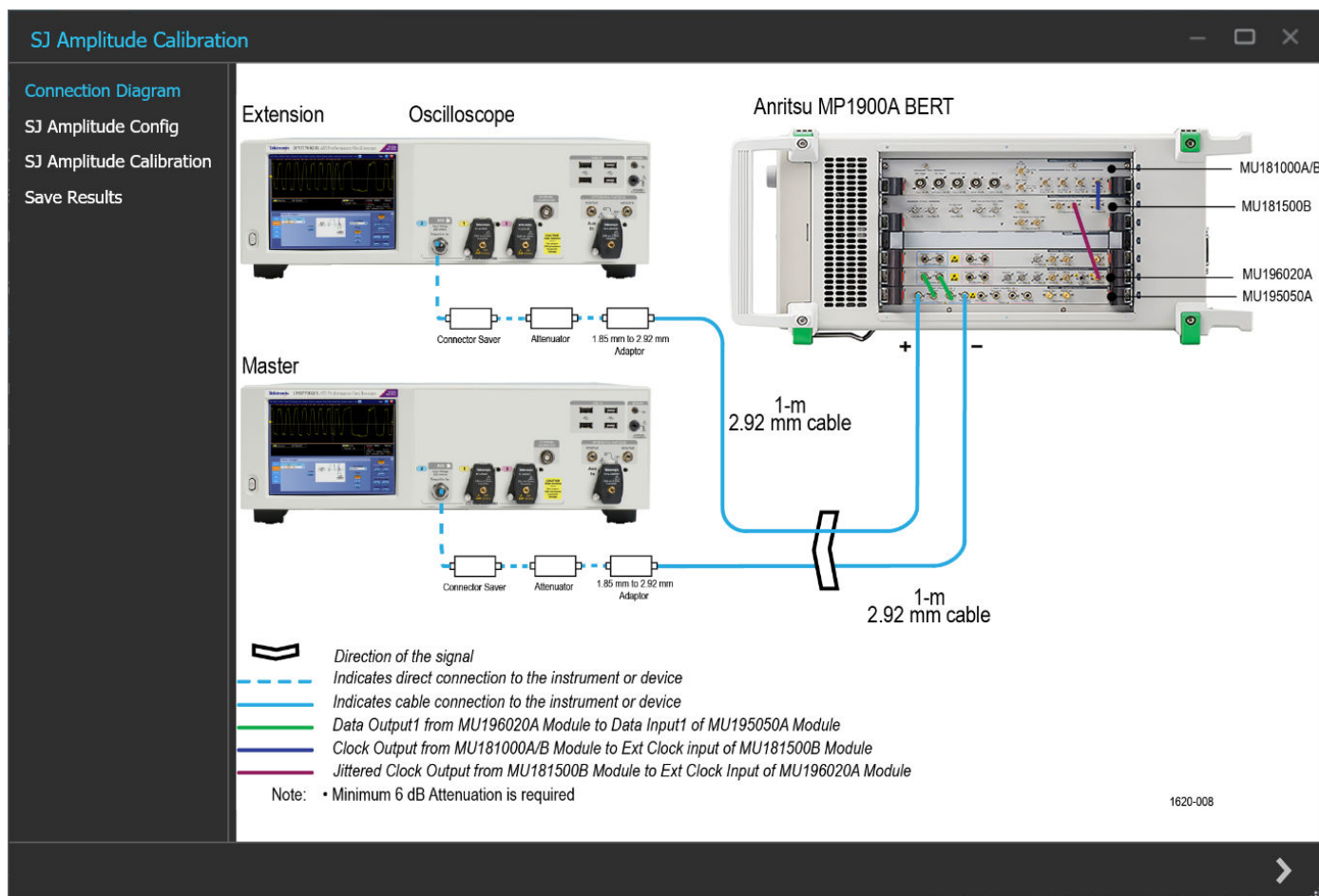
SJ Amplitude Calibration Procedure

Click **SJ Amplitude** under the calibration tab to view the previously run calibration reports. Select the as and click  at the right end corner of the application to launch the SJ Amplitude calibration wizard. This wizard will guide you through the sequential procedure to perform the calibration.

1. **Connection Diagram:** This page displays the connection diagram for the SJ amplitude calibration setup.



SJ Amplitude Calibration - Connection diagram



SJ Amplitude Calibration for 200 GS/s - Connection Diagram

Click  to move to the next screen.

2. **SJ Amplitude Config:** This tab allows you to enter the SJ Amplitude, Samples for Averaging, and No. Of frequency intervals to configure the SJ Amplitude Calibration.

SJ Amplitude Calibration

Connection Diagram
[SJ Amplitude Config](#)
SJ Amplitude Calibration
 Save Results

SJ Amplitude: 0.2 UI p-p

Samples for Averaging: 5

No. of Frequency intervals: 2

Frequency Interval Settings

Frequency Interval #	Start Frequency	Stop Frequency	# Frequencies
1	0.10	1.00	16
2	1.00	10.00	15

Frequency (MHz)

- 0.10
- 0.12
- 0.14
- 0.16
- 0.19
- 0.22
- 0.25
- 0.29
- 0.34
- 0.40
- 0.47
- 0.55

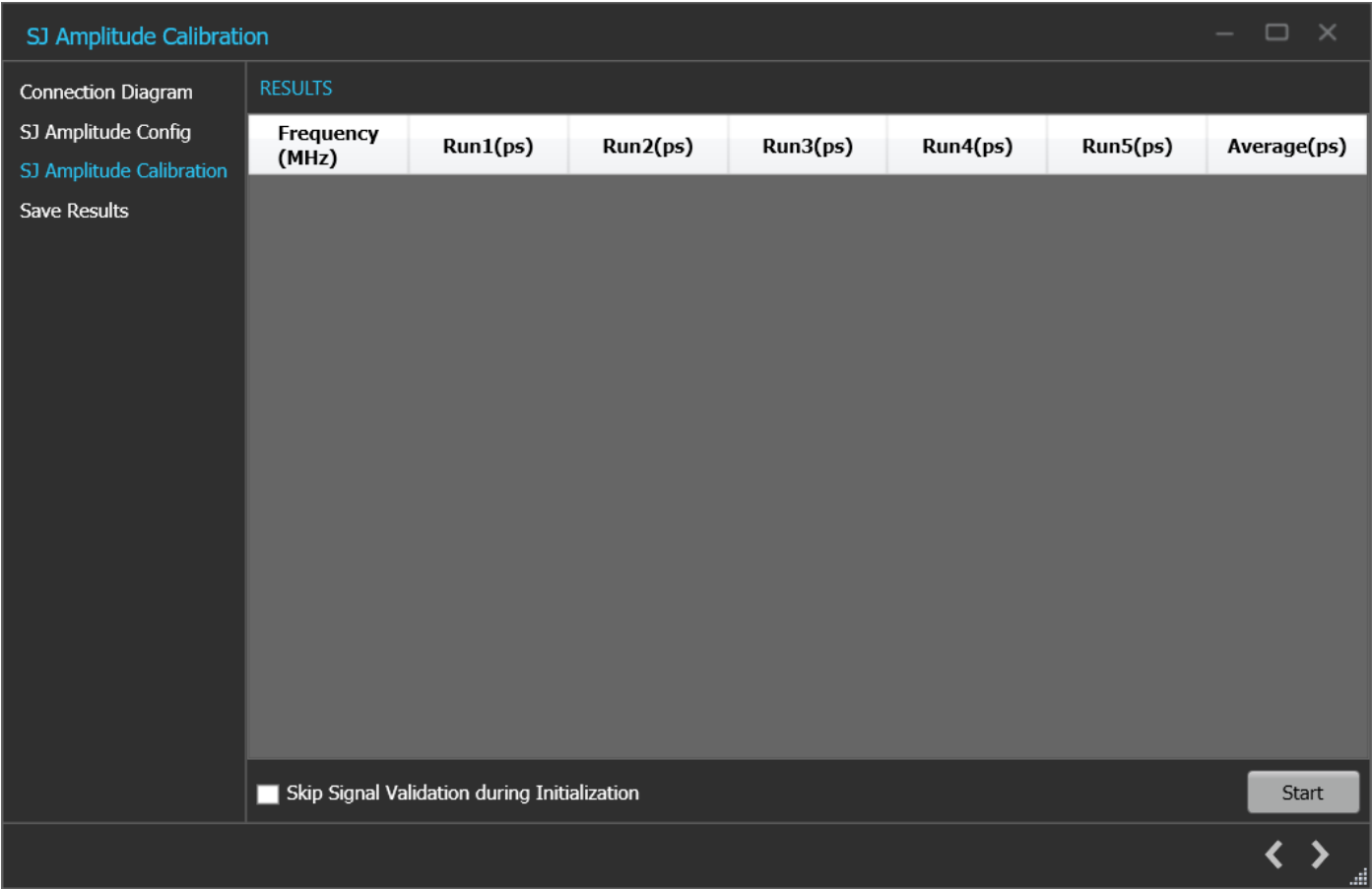
Default

SJ Amplitude Calibration-SJ Amplitude Config

SJ Amplitude Config

Parameter	Description
SJ Amplitude	Enter the amplitude for sinusoidal jitter for chosen tones in UI p-p (Range: 0-1 UI p-p)
Samples for Averaging	Enter the number of runs to be used for averaging (Range: 1-10)
No. of Frequency Intervals	Enter the number of intervals the calibration needs to be performed for (Range: 1-2)
Frequency Interval Settings	
Frequency Interval #	Displays the current frequency interval
Start Frequency	Enter the starting frequency (only applicable for 1st Frequency Interval). From the 2nd interval, it displays the stop frequency for the previous interval
Stop Frequency	Enter the last frequency for a given frequency interval
# Frequencies	Enter the number of frequencies the calibration needs to be performed for the given interval
Frequency (MHz)	Displays the list of all generated frequencies for which the calibration will be performed
Default	Click to recall the default settings

3. SJ Amplitude Calibration:

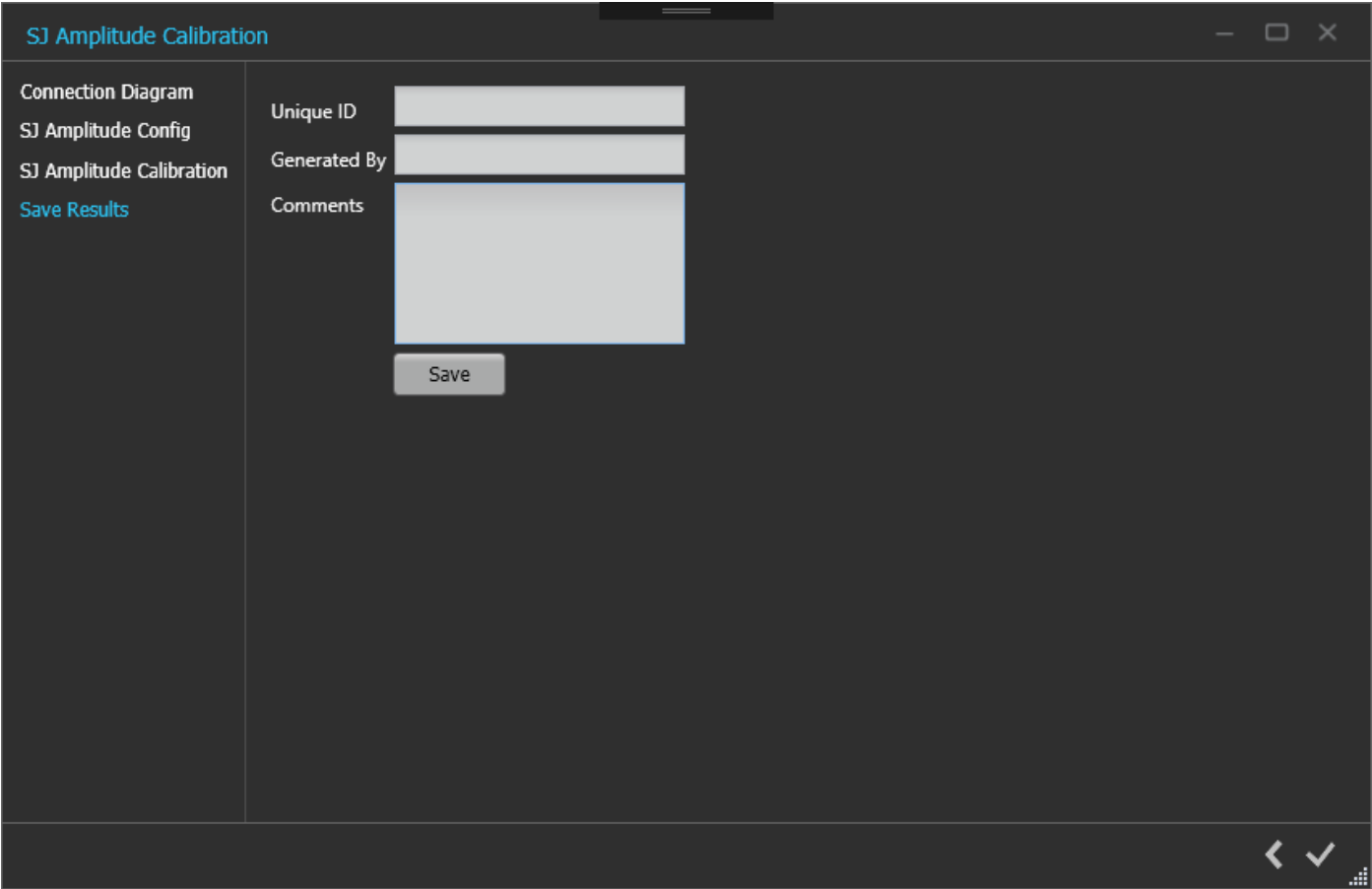


SJ Amplitude Calibration-SJ Amplitude Calibration

SJ Amplitude Calibration

Parameter	Description
Frequency(MHz)	Displays the frequency at which SJ Amplitude calibration was performed
Run#(ps)	Displays the calibrated SJ amplitude for the given frequency
Average(ps)	Displays the average of the calibrated SJ amplitude across all runs

4. **Save Results:** This page allows you to save all the SJ Amplitude calibration results.



SJ Amplitude Calibration-Save Results

SJ Amplitude Calibration: Save Results

Click  to complete the SJ Amplitude calibration and close the wizard.

NOTE: Upon completion of the SJ Amplitude calibration process or in the event of cancellation of the process, the BERT data generator will be turned off automatically by the TekRxTest application.

Tests panel

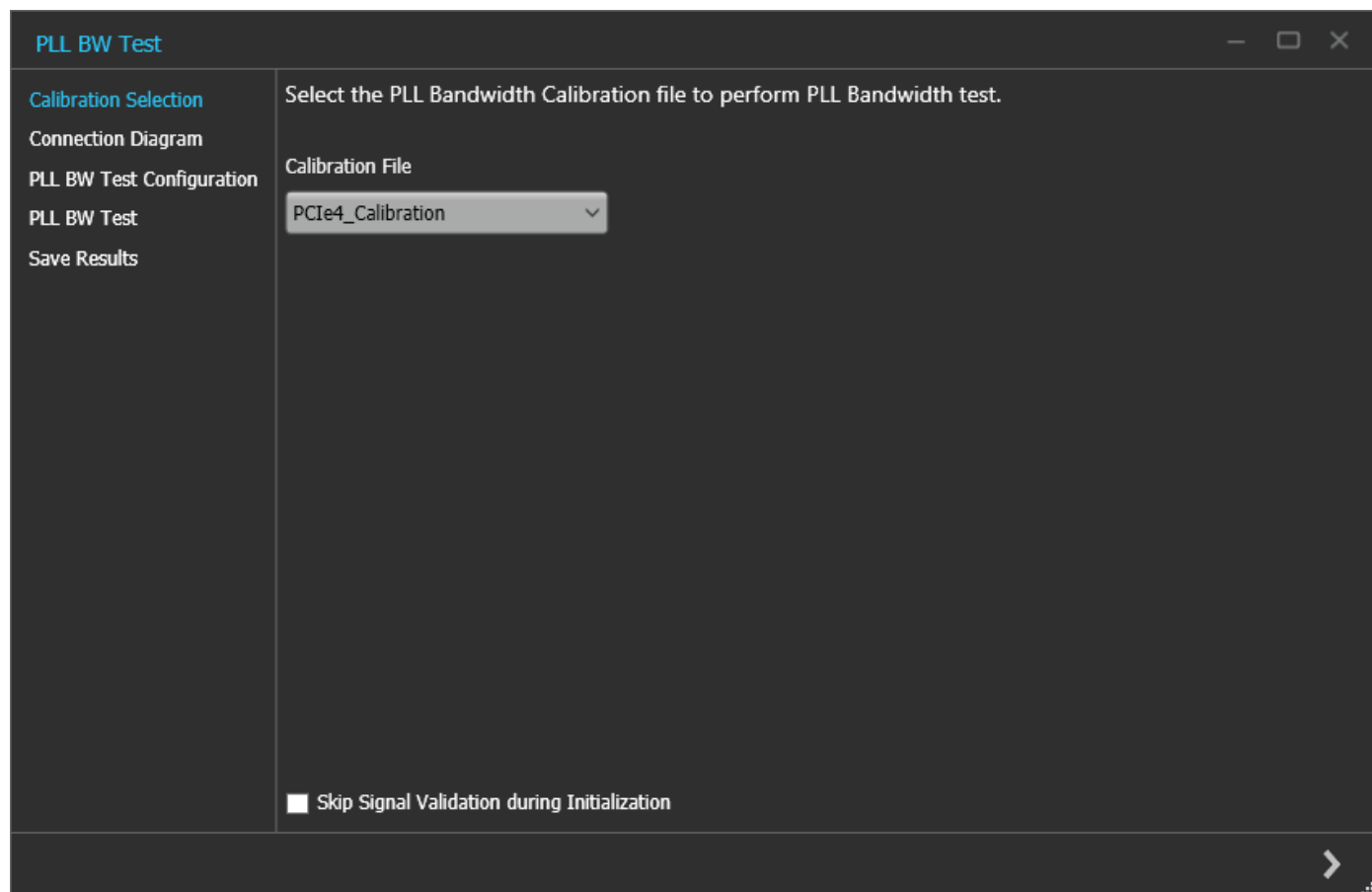
PLL BW Test

To test how much sinusoidal jitter (SJ) passes through the DUT’s Tx PLL for a specific SJ tone, you need to perform the SJ Amplitude calibration for the required tones ranging from 0.04 MHz to 23 MHz, with a maximum of 100 different tones. The Frequency Interval Settings lists the frequencies calibrated during SJ Amplitude Calibration.

PLL BW Test procedure

Click **PLL BW Test** under the Tests panel to view the previously run calibration reports. Click  at the right end corner of the application, to launch the PLL BW test wizard. This wizard will guide you through the sequential procedure to perform the test.

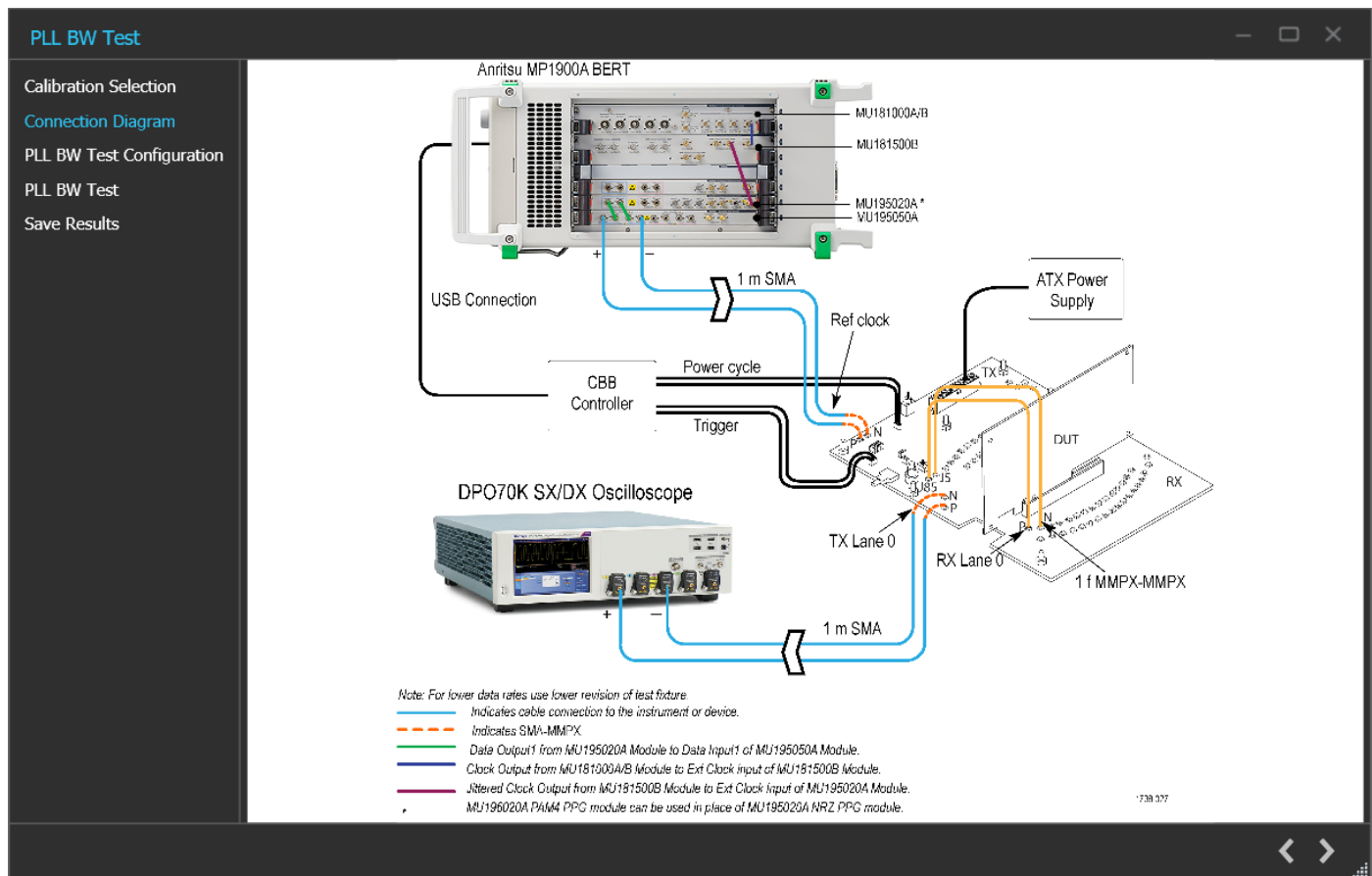
1. **Calibration Selection:** This page allows you to select the calibration file from the drop-down list.



PLL BW Test-Calibration Selection

Click  to move to the next screen.

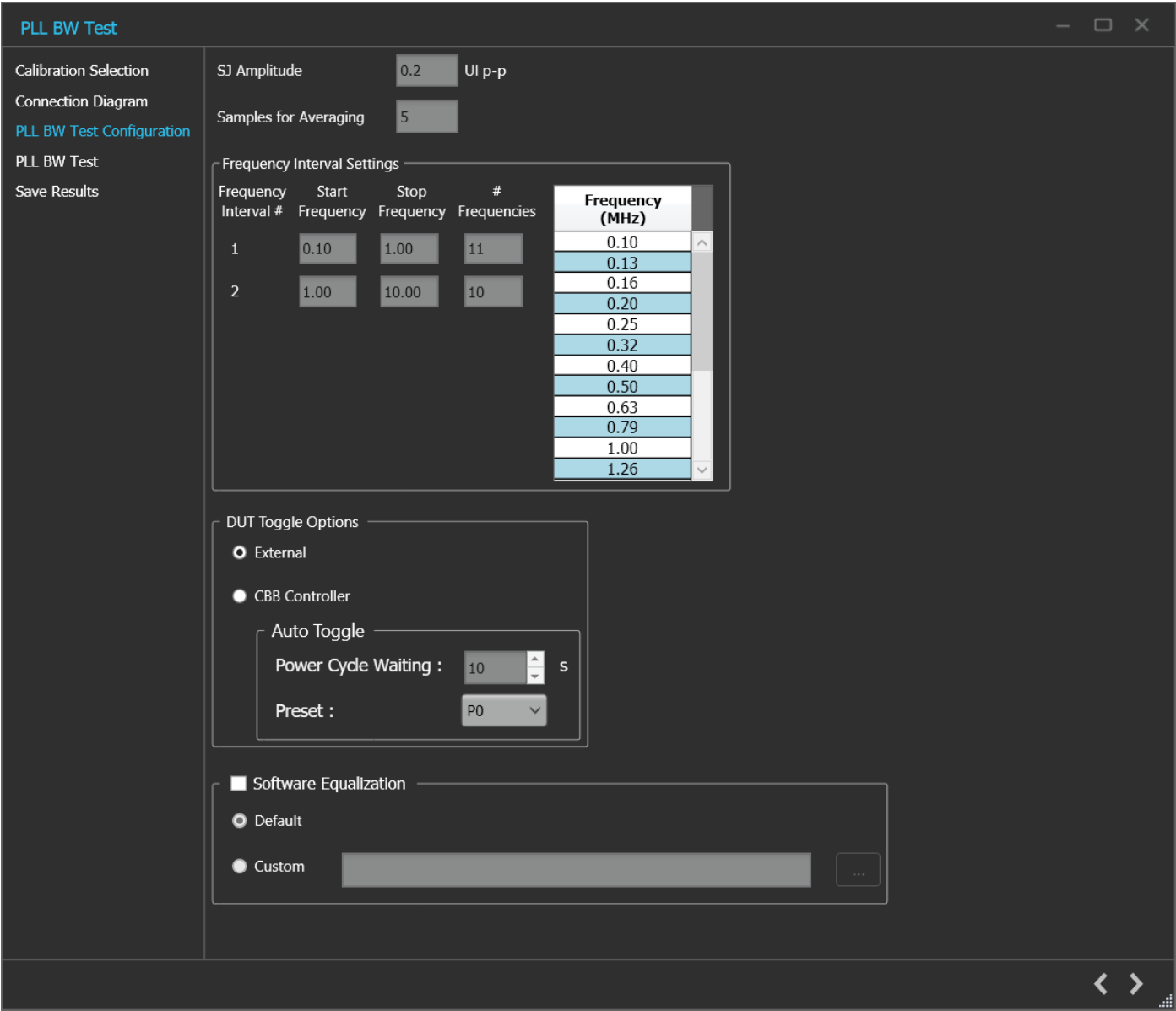
2. **Connection Diagram:** This page displays the connection diagram for the PLL BW test.



PLL BW Test - Connection Diagram

Click  to move to the next screen.

- PLL BW Test Configuration:** This page allows you to view the configurations and tones used during the selected SJ Amplitude calibration. You can also configure the DUT Power upon connecting Z2025A PCIe CBB Controller to BERT.



PLL BW Test-Configure Test

PLL BW Test-Configure Test

Parameter	Description
SJ Amplitude	Displays the amplitude for sinusoidal jitter for chosen tones in UI p-p (Range: 0-1 UI p-p).Displays the number of runs used for averaging in the chosen calibration file.
Samples for Averaging	
Frequency Interval Settings	
Frequency Interval #	Displays the current frequency interval.
Start Frequency	Displays the starting frequency for each interval in the chosen calibration file.
Stop Frequency	Displays the last frequency for a given frequency interval in the chosen calibration file.

Parameter	Description	
# Frequencies	Displays the number of frequencies for which the calibration was performed for the given interval.	
Frequency (MHz)	Displays the list of all generated frequencies for which the calibration was performed.	
DUT Power Options		
External	Click on it to manually configure the DUT transmitter for the desired preset and generation.	
CBB Controller	Click on it to automate the process of transmitting the signal with selected preset for the configured DUT generation	
	Auto Toggle	
	Power Cycle Waiting	Configure the waiting time to power cycle the DUT.
	Preset	Choose the preset for which the PLL BW test will be performed. • P0 - P10 for Gen3 to Gen5 • Q0 - Q10 for Gen6.
Software Equalization	Check on it to apply a CTLE filter on the signal during runtime	
	Default	This will apply a predefined CTLE filter file during waveform acquisition (only applicable for Gen5)
	Custom	User can browse and apply CTLE filter file which will be applied during waveform acquisition

Manual toggle pattern

Toggle Sequence	Compliance Pattern from the DUT	Data Rate (GT/s)
Power ON	Gen1	2.5
1	Gen2-3.5 dB	2.5
2	Gen2-6.0 dB	5
3	Gen3-P0	5
4	Gen3-P1	8
5	Gen3-P2	8
6	Gen3-P3	8
7	Gen3-P4	8
8	Gen3-P5	8

Toggle Sequence	Compliance Pattern from the DUT	Data Rate (GT/s)
9	Gen3-P6	8
10	Gen3-P7	8
11	Gen3-P8	8
12	Gen3-P9	8
13	Gen3-P10	8
14	Gen4-P0	16
15	Gen4-P1	16
16	Gen4-P2	16
17	Gen4-P3	16
18	Gen4-P4	16
19	Gen4-P5	16
20	Gen4-P6	16
21	Gen4-P7	16
22	Gen4-P8	16
23	Gen4-P9	16
24	Gen4-P10	16
25	Jitter Measurement Pattern on all Lanes	16
26	Jitter Measurement Pattern on Lanes 0/8/16/24 and Compliance pattern on all other Lanes	16
27	Jitter Measurement Pattern on Lanes 1/8/16/24 and Compliance pattern on all other Lanes	16
28	Jitter Measurement Pattern on Lanes 2/8/16/24 and Compliance pattern on all other Lanes	16
29	Jitter Measurement Pattern on Lanes 3/8/16/24 and Compliance pattern on all other Lanes	16
30	Jitter Measurement Pattern on Lanes 4/8/16/24 and Compliance pattern on all other Lanes	16

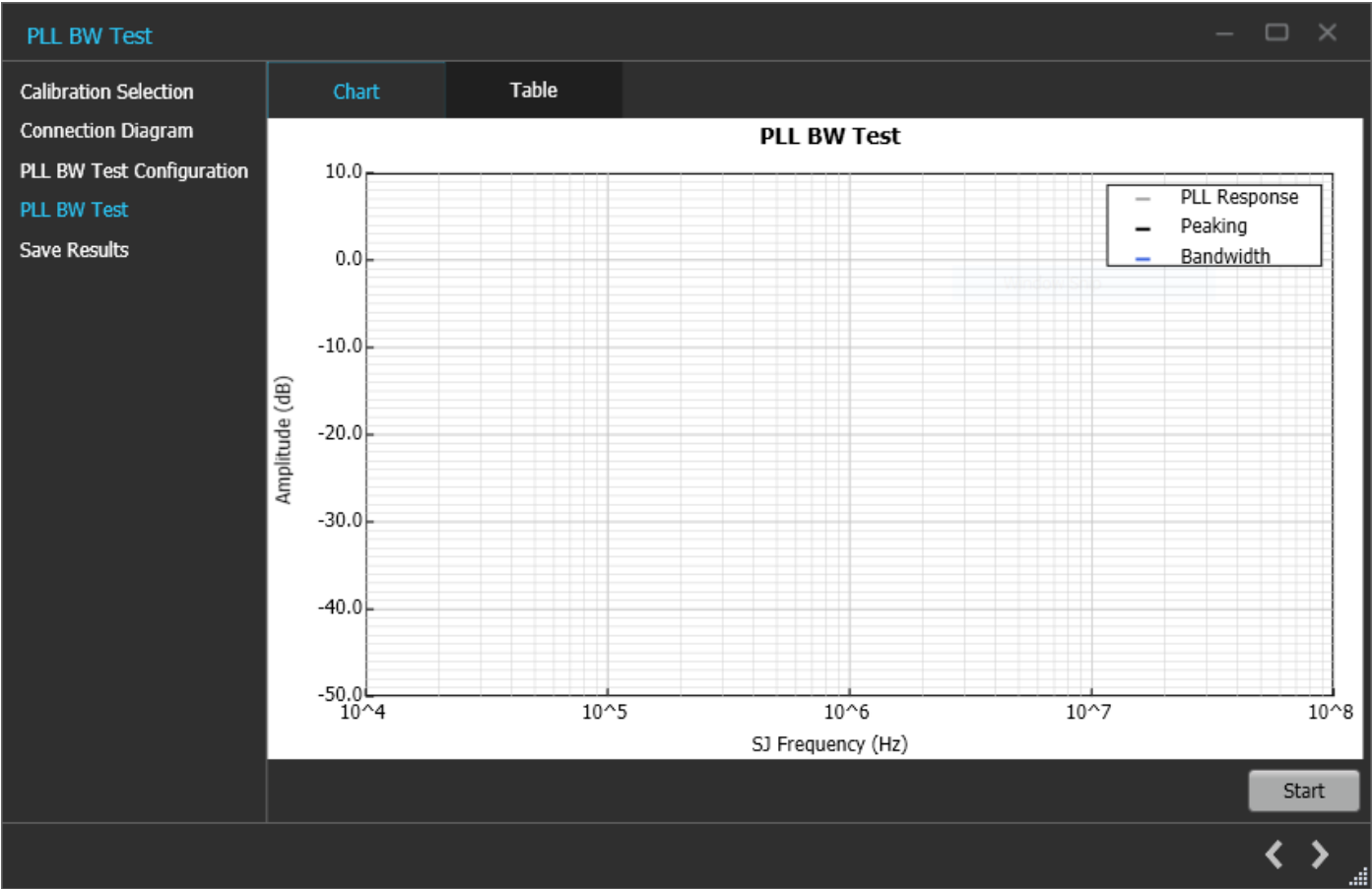
Toggle Sequence	Compliance Pattern from the DUT	Data Rate (GT/s)
31	Jitter Measurement Pattern on Lanes 5/8/16/24 and Compliance pattern on all other Lanes	16
32	Jitter Measurement Pattern on Lanes 6/8/16/24 and Compliance pattern on all other Lanes	16
33	Jitter Measurement Pattern on Lanes 7/8/16/24 and Compliance pattern on all other Lanes	16
34	Gen5-P0	32
35	Gen5-P1	32
36	Gen5-P2	32
37	Gen5-P3	32
38	Gen5-P4	32
39	Gen5-P5	32
40	Gen5-P6	32
41	Gen5-P7	32
42	Gen5-P8	32
43	Gen5-P9	32
44	Gen5-P10	32
55	Gen6-Q0	64
56	Gen6-Q1	64
57	Gen6-Q2	64
58	Gen6-Q3	64
59	Gen6-Q4	64
60	Gen6-Q5	64
61	Gen6-Q6	64
62	Gen6-Q7	64
63	Gen6-Q8	64

Toggle Sequence	Compliance Pattern from the DUT	Data Rate (GT/s)
64	Gen6-Q9	64
65	Gen6-Q10	64
75	Gen6-Clock	64

4. **PLL BW Test:** This page displays a graphical representation of the PLL BW test result. It includes a result table tab which displays the PLL BW test results in a tabular format.

PLLBW Test

Parameter	Description
Frequency(MHz)	Displays the frequency at which SJ Amplitude calibration was performed
Run#(ps)	Displays the calibrated SJ amplitude for the given frequency
CalAverage(ps)	Displays the average of the calibrated SJ amplitude from the chosen calibration file
Average(ps)	Displays the average of the tested SJ amplitude across all runs
Final Value	$20\log(\text{Average}/\text{CalAverage})$
Start	Click Start to run the measurement.
Cancel	Click Cancel to stop the measurement.



PLL BW Test-Run Test

Click  to move to the next screen.

- 5. **Save Results:** This page allows you to save the PLL BW test results.

PLL BW Test

Calibration Selection

Connection Diagram

PLL BW Test Configuration

PLL BW Test

Save Results

Unique ID

Generated By

Comments

Save

PLL BW Test-Save Results

PLL BW 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 (optional).
Save	Click to save the results.

Click  to complete the PLL BW test and close the wizard.

Programmatic interface commands

PLLBWTEST:APPLYSOFTEQ<1/0>

Indicates if Software Equalization has been applied.

Syntax

```
PLLBWTEST:APPLYSOFTEQ<1/0>
```

Inputs

<0|1>

0 - Software Equalization Applied

1 - Software Equalization not Applied

Outputs

<0 | 1>

PLLBWTEST:FILTERFILE <String>

This command sets and queries the file path for the Filter file.

Syntax

```
PLLBWTEST:FILTERFILE <String>
```

Inputs

<String>

Outputs

<String>

PLLBWTEST:WIZARD:OPEN

This command opens the PLL BW test wizard.

Syntax

```
PLLBWTEST:WIZARD:OPEN
```

Inputs

NA

Outputs

NA

PLLBWTEST:WIZARD:CLOSE

This command closes the PLL BW test wizard.

Syntax

```
PLLBWTEST:WIZARD:CLOSE
```

Inputs

NA

Outputs

NA

PLLBWTEST:SJAMPLITUDE

This command queries the SJ Amplitude configured for the PLLBW test.

Syntax

```
PLLBWTEST:SJAMPLITUDE?
```

Inputs

NA

Outputs

<double>

PLLBWTest:SKIPSIGNALVALIDATION

This allows the user to skip signal validation as a part of PLL BW test.

Syntax

```
PLLBWTest:SKIPSIGNALVALIDATION <0 | 1>
```

```
PLLBWTest:SKIPSIGNALVALIDATION?
```

Inputs

<0 | 1>

1- Skip signal validation.

0 - Perform signal validation.

Outputs

<0 | 1>

PLLBWTEST:SHOW:CONNECTIONDIAGRAM

This command navigates to the connection diagram in PLL BW test.

Syntax

Application Help

PLLBWTEST:SHOW:CONNECTIONDIAGRAM

Inputs

NA

Outputs

NA

PLLBWTEST:SAVE:STATUS

This command queries the result's save status.

Syntax

PLLBWTEST:SAVE:STATUS?

Inputs

NA

Outputs

<string>

PLLBWTEST:SAVE:ID

This command sets or queries the Unique Id for saving the result

Syntax

PLLBWTEST:SAVE:ID <string>

PLLBWTEST:SAVE:ID?

Inputs

<string>

Outputs

<string>

PLLBWTEST:SAVE:GENERATEDBY

This command sets or queries the Generated By input for saving the result.

Syntax

PLLBWTEST:SAVE:GENERATEDBY <string>

PLLBWTEST:SAVE:GENERATEDBY?

Inputs

<string>

Outputs

<string>

PLLBWTEST:SAVE:COMMENTS

This command sets or queries the Comments for saving the result.

Syntax

```
PLLBWTEST:SAVE:COMMENTS <string>
```

```
PLLBWTEST:SAVE:COMMENTS?
```

Inputs

<string>

Outputs

<string>

PLLBWTEST:SAVE

This command saves the PLL BW test result.

Syntax

```
PLLBWTEST:SAVE
```

Inputs

NA

Outputs

NA

PLLBWTest:Report

This PI command generates a PLL BW test report for the specified unique ID.

Syntax

```
PLLBWTest:Report <string>
```

Inputs

<string>

Outputs

NA

PLLBWTEST:SAMPLESFORAVERAGE

This command queries the Samples for average configured for the PLLBW test

Syntax

PLLBWTEST:SAMPLESFOR AVERAGE?

Inputs

<int>

Outputs

<int>

PLLBWTest:SOFTWAREQTYPE <0/1>

Indicates the type of Software Equalization applied.

Syntax

PLLBWTest:SOFTWAREQTYPE <0/1>

Inputs

<0|1>

0 - indicates the Software Equalization chosen is Default

1 - indicates the Software Equalization chosen is Custom

Outputs

<0 | 1>

PLLBWTEST:RUNSTATUS

This command queries the PLL BW test run status.

Syntax

PLLBWTEST:RUNSTATUS?

Inputs

NA

Outputs

<InProgress|Done>

PLLBWTEST:RUN

This command starts or cancels the PLL BW test.

Syntax

PLLBWTEST:RUN <0 | 1>

Inputs

<0 | 1>

0 - Starts the PLL BW test

1 - Cancels the PLL BW test

Outputs

NA

PLLBWTEST:RESULT:FINALVALUE

This command queries the FinalValue of the different calibration run results.

Syntax

PLLBWTEST:RESULT:FINALVALUE?

Inputs

NA

Outputs

<string>

PLLBWTEST:RESULT:DISPLAYTYPE

This command sets the result view as Chart or Table.

Syntax

PLLBWTEST:RESULT:DISPLAYTYPE <0 | 1>

PLLBWTEST:RESULT:DISPLAYTYPE?

Inputs

<0 | 1>

0 - Chart view

1 - Table view

Outputs

<0 | 1>

0 - Chart view

1 - Table view

PLLBWTEST:RESULTCAL:AVERAGES

This command queries the CalAverages of the different calibration run results.

Syntax

PLLBWTEST:RESULTCAL:AVERAGES?

Inputs

NA

Outputs

<string>

PLLBWTEST:RESULT:AVERAGES

This command queries the average of the different Calibration run results.

Syntax

PLLBWTEST:RESULT:AVERAGES?

Inputs

NA

Outputs

<string>

PLLBWTEST:OPEN

This command selects the in the Tests tab.

Syntax

PLLBWTEST:OPEN

Inputs

NA

Outputs

NA

PLLBWTEST:FREQUENCY

This command queries the number of frequency value.

Syntax

PLLBWTEST:FREQUENCY <INTERVAL>?

Inputs

<Interval> Frequency Interval #

Outputs

<int>

PLLBWTEST:FREQ:STOP

This command queries the Stop Frequency value.

Syntax

PLLBWTEST:FREQ:STOP <INTERVAL>?

Inputs

<Interval> Frequency Interval #

Outputs

<double>

PLLBWTEST:FREQ:START

This command queries the Start Frequency value.

Syntax

PLLBWTEST:FREQ:START <INTERVAL>?

Inputs

<Interval> Frequency Interval #

Outputs

<double>

PLLBWTEST:DUTPOWERTYPE

This command switches between the DUT power options (CBB or External).

Syntax

PLLBWTEST:DUTPOWERTYPE <0 | 1>

PLLBWTEST:DUTPOWERTYPE?

Inputs

<0 | 1>

0 - External

1 - CBB

Outputs

<0 | 1>

PLLBWTEST:CBBAUTOTOGGLE:WAITTIME

This command sets or queries the Power Cycle waiting time for CBB Auto Toggle.

Syntax

PLLBWTEST:CBBAUTOTOGGLE:WAITTIME <int>

PLLBWTEST:CBBAUTOTOGGLE:WAITTIME?

Inputs

<int>

Outputs

<int>

PLLBWTEST:CBBAUTOTOGGLE:PRESET

This command sets or queries the BER Pattern.

Syntax

PLLBWTEST:CBBAUTOTOGGLE:PRESET <INDEX>

Inputs

<int>

Outputs

<int>

PLLBWTEST:CALSEL

This command sets or queries the calibration file from combo-box.

Syntax

PLLBWTEST:CALSEL <CALNAME>

Inputs

<CALNAME>

Outputs

<CALNAME>

PLLBWTEST:ALLFREQUENCIES

This command queries information for all frequencies.

Syntax

PLLBWTEST:ALLFREQUENCIES?

Inputs

NA

Outputs

<string> returns all frequencies as string

SETTINGS:SPECIFICATION

This command sets or queries the spec revision for PLL Test.

Syntax

SETTINGS:SPECIFICATION <0 | 1 | 2>

SETTINGS:SPECIFICATION?

Inputs

<int> - Range 0 to 2

- 0 - PCIe6
- 1 - PCIe5
- 2 - PCIe4

Outputs

<int> - Range 0 to 2

- 0 - PCIe6
- 1 - PCIe5
- 2 - PCIe4

SETTINGS:DATARATE

This command sets or queries the data rate for PLL Test.

Syntax

SETTINGS:DATARATE <0 | 1 | 2 | 3>

SETTINGS:DATARATE?

Inputs

<int> - Range 0 to 3

- 0 - 8
- 1 - 16
- 2 - 32
- 3 - 64

Outputs

<int> - Range 0 to 3

- 0 - 8
- 1 - 16
- 2 - 32
- 3 - 64

SETTINGS:RTS:SAMPLERATE

This command sets or queries the sample rate of Real Time Oscilloscope.

Syntax

SETTINGS:RTS:SAMPLERATE <int>

SETTINGS:RTS:SAMPLERATE?

Inputs

<int> - Range: 50 to 200 GS/s

Outputs

<int> - Range: 50 to 200 GS/s

SETTINGS:RTS:POSITIVECHANNEL

This command sets or queries the Real Time Oscilloscope setting for positive channel.

Syntax

SETTINGS:RTS:POSITIVECHANNEL <int>

SETTINGS:RTS:POSITIVECHANNEL?

Inputs

<int> - Range: 0 to 3

- 0 - CH1
- 1 - CH2
- 2 - CH3
- 3 - CH4

Outputs

<int> - Range: 0 to 3

- 0 - CH1
- 1 - CH2
- 2 - CH3
- 3 - CH4

SETTINGS:RTS:NEGATIVECHANNEL

This command sets or queries the Real Time Oscilloscope setting for negative channel.

Syntax

SETTINGS:RTS:NEGATIVECHANNEL <int>

SETTINGS:RTS:NEGATIVECHANNEL?

Inputs

<int> - Range: 0 to 3

- 0 - CH1
- 1 - CH2
- 2 - CH3
- 3 - CH4

Outputs

<int> - Range: 0 to 3

- 0 - CH1
- 1 - CH2
- 2- CH3
- 3 - CH4

SJAMPCAL:ALLFREQUENCIES

This command reads all the frequencies.

Syntax

SJAMPCAL:ALLFREQUENCIES?

Inputs

NA

Outputs

<string>

SJAMPCAL:SJAMPLITUDE

This command reads or writes the SJ amplitude value.

Syntax

SJAMPCAL:SJAMPLITUDE <double>

SJAMPCAL:SJAMPLITUDE?

Inputs

<double>

Outputs

<double>

SJAmpCal:SamplesForAverage

This command reads or writes the number of samples to calculate the average value for the SJ Amplitude calibration.

Syntax

SJAmpCal:SamplesForAverage <value>

SJAmpCal:SamplesForAverage?

Inputs

<int>

Outputs

<int>

SJAmpCal:Report

This PI command generates a SJ amplitude calibration report for the specified unique ID.

Syntax

```
SJAmpCal:Report <string>
```

Inputs

<string>

Outputs

NA

SJAMPCAL:FREQ:START

This command reads or writes the start frequency value.

Syntax

```
SJAMPCAL:FREQ:START <INTERVAL> <VALUE>
```

```
SJAMPCAL:FREQ:START <INTERVAL>?
```

Inputs

<Interval> Frequency Interval #

<double>

Outputs

<double>

SJAMPCAL:FREQ:STOP

This command reads or writes the stop frequency value.

Syntax

```
SJAMPCAL:FREQ:STOP <INTERVAL> <VALUE>
```

```
SJAMPCAL:FREQ:STOP <INTERVAL>?
```

Inputs

<Interval> Frequency Interval #

<double>

Outputs

<double>

SJAMPCAL:FREQUENCIES:DEFAULT

This command sets SJ Amplitude to default frequency settings.

Syntax

```
SJAMPCAL:FREQUENCIES:DEFAULT
```

Inputs

NA

Outputs

NA

SJAMPCAL:FREQUENCY

This command reads or writes the number of frequency value.

Syntax

```
SJAMPCAL:FREQUENCY <INTERVAL> <value>
```

```
SJAMPCAL:FREQUENCY <INTERVAL>?
```

Inputs

<Interval> Frequency Interval #

<int>

Outputs

<int>

SJAMPCAL:FREQUENCYINTERVALS

This command reads or writes the number of frequency intervals value.

Syntax

```
SJAMPCAL:FREQUENCYINTERVALS <value>
```

```
SJAMPCAL:FREQUENCYINTERVALS?
```

Inputs

<int>

Outputs

<int>

SJAMPCAL:OPEN

This command opens the SJ Amplitude calibration page.

Syntax

Application Help

SJAMPCAL:OPEN

Inputs

NA

Outputs

NA

SJAMPCAL:RESULT

This command gets the specified calibration run results.

Syntax

SJAMPCAL:RESULT <Index of Run #>?

Inputs

<int> - Index of Run #

Outputs

<double>

SJAMPCAL:RESULT:AVERAGES

This command gets the average of the different Calibration run Results.

Syntax

SJAMPCAL:RESULT:AVERAGES?

Inputs

NA

Outputs

<string>

SJAMPCAL:RESULT:FREQAVG

This command gets the average of the calibration run results for specific frequency.

Syntax

SJAMPCAL:RESULT:FREQAVG <FREQ>?

Inputs

<FREQ>

Outputs

<double>

SJAMPCAL:RUN

This command runs or cancels the PLL BW SJ Amplitude calibration.

Syntax

SJAMPCAL:RUN <0|1>

Inputs

<0|1>

0 - Stop the SJ Amplitude test run.

1 - Start the SJ Amplitude test run.

Outputs

NA

SJAMPCAL:RUNSTATUS

This command gets the PLL BW SJ Amplitude calibration run status.

Syntax

SJAMPCAL:RUNSTATUS?

Inputs

NA

Outputs

{InProgress | Done}

SJAmpCal:SamplesForAverage

This command reads or writes the number of samples to calculate the average value for the SJ Amplitude calibration.

Syntax

SJAmpCal:SamplesForAverage <value>

SJAmpCal:SamplesForAverage?

Inputs

<int>

Outputs

<int>

SJAMPCAL:SAVE

This command saves the calibration result.

Syntax

Application Help

SJAMPCAL:SAVE

Inputs

NA

Outputs

NA

SJAMPCAL:SAVE:COMMENTS

This command sets or gets the save comment.

Syntax

SJAMPCAL:SAVE:COMMENTS <Comments>

SJAMPCAL:SAVE:COMMENTS?

Inputs

<string>

Outputs

<string>

SJAMPCAL:SAVE:GENERATEDBY

This command sets or gets the name of the person who generated the report.

Syntax

SJAMPCAL:SAVE:GENERATEDBY <string>

SJAMPCAL:SAVE:GENERATEDBY?

Inputs

<string>

Outputs

<string>

SJAMPCAL:SAVE:ID

This command sets or gets the save Unique ID.

Syntax

SJAMPCAL:SAVE:ID <string>

SJAMPCAL:SAVE:ID?

Inputs

<string>

Outputs

<string>

SJAMPCAL:SAVE:STATUS

This command gets the save status.

Syntax

SJAMPCAL:SAVE:STATUS?

Inputs

NA

Outputs

<string>

SJAMPCAL:SKIPSIGNALVALIDATION

This allows the user to skip signal validation as a part of SJ amplitude value.

Syntax

SJAMPCAL:SKIPSIGNALVALIDATION <0 | 1>

SJAMPCAL:SKIPSIGNALVALIDATION?

Inputs

<0 | 1>

1- Skip signal validation.

0 - Perform signal validation.

Outputs

<0 | 1>

SJAMPCAL:SHOW:CONNECTIONDIAGRAM

This command opens the connection diagram for SJ Amplitude calibration.

Syntax

SJAMPCAL:SHOW:CONNECTIONDIAGRAM

Inputs

NA

Outputs

NA

SJAMPCAL:SJAMPLITUDE

This command reads or writes the SJ amplitude value.

Syntax

SJAMPCAL:SJAMPLITUDE <double>

SJAMPCAL:SJAMPLITUDE?

Inputs

<double>

Outputs

<double>

SJAMPCAL:WIZARD:CLOSE

This command closes the SJ Amplitude calibration wizard.

Syntax

SJAMPCAL:WIZARD:CLOSE

Inputs

NA

Outputs

NA

SJAMPCAL:WIZARD:OPEN

This command opens the SJ Amplitude calibration wizard.

Syntax

SJAMPCAL:WIZARD:OPEN

Inputs

NA

Outputs

NA