



**TekExpress® Thunderbolt
Automated Test Solution Software
Application Help**



077-1705-02



**TekExpress® Thunderbolt
Automated Test Solution Software
Application Help**

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077-1705-02

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- In North America, call 1-800-833-9200.
- Worldwide, visit to www.tek.com find contacts in your area.

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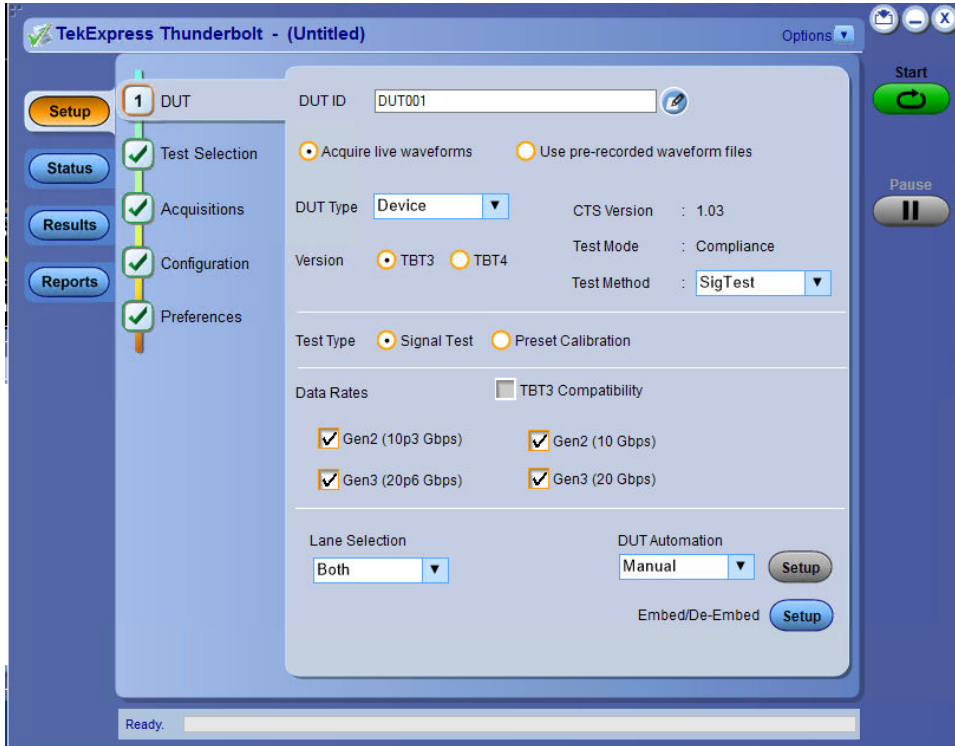
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Welcome

The TekExpress® Thunderbolt Automated Test Solution Software application (referred as Thunderbolt in the rest of the document) provides an automated, simple, and efficient way to test Thunderbolt transmitter interfaces and devices for Thunderbolt compliance through DPOJET for better margin, debugging, and analysis.



Key Features

- Automated solution for Thunderbolt connectors which support Thunderbolt specification and CTS (Gen2 & Gen3).
- SigTest compliance integration for CTS Gen2 and Gen3 device and host.
- Dual lane supports for CTS Gen2 and Gen3 device and host.
- DPOJET plug-in for connectors which support Thunderbolt specification and CTS (Gen2 & Gen3) with setup files and MOI.
- Support embedding channels (2 m and 0.8 m) and their respective filter files for connectors.
- Manual support for compliance to debug with DPOJET Thunderbolt and CIO plug-ins.

Getting help and support

Product documents

Use the product documents for more information on the application functions, understand the theory of operation, how to remotely program or operate the application, and do other tasks.

Table 1: TekExpress Application documents




| To learn about | Use this document |
|--|--|
| How to use the application | TekExpress Thunderbolt Help |
| How to remotely control the instrument | PDF version of this document can be downloaded from www.tek.com/downloads Compiled HTML (CHM) version is integrated with the application. Press F1 key from the keyboard to start the help. Tektronix Part Number: 077-xxxx-xx |

Conventions

This application help uses the following conventions:

- The term "Application," and "Software" refers to the TekExpress Thunderbolt application.
- The term "DUT" is an abbreviation for Device Under Test.
- The term "select" is a generic term that applies to the two methods of choosing a screen item (button control, list item): using a mouse or using the touch screen.
- A **Note** identifies important information.

Table 2: Icons used in the help

| Icon | Description |
|---|--|
|  | This icon identifies important information |
|  | This icon identifies conditions or practices that could result in loss of data. |
|  | This icon identifies additional information that will help you use the application more efficiently. |

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 oscilloscope. Contact Tektronix through mail, telephone, or the Web site. See [Contacting Tektronix](#) 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, 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
- If possible, save the TekExpress setup files, log.xml, *.TekX (session files and folders), and status messages text file

Getting started

Hardware requirements

Minimum system requirements

The following table describes the minimum system requirements for the TekExpress Thunderbolt application.

Table 3: Minimum system requirements

| Instruments | Description |
|------------------|---|
| Oscilloscope | Refer Supported instruments |
| Processor | Same as the oscilloscope |
| Operating System | Same as the oscilloscope: <ul style="list-style-type: none"> Windows 10 (64-bit only) SP1 Windows 10 user account settings |
| Memory | Same as the oscilloscope |
| Hard Disk | Same as the oscilloscope |
| Display | Super VGA resolution or higher video adapter (800 x 600 minimum video resolution for small fonts or 1024 x 768 minimum video resolution for large fonts). The application is best viewed at 96 dpi display settings ¹ |
| Firmware | TekScope 10.12.0 and above (for Windows 10) |
| Software | <ul style="list-style-type: none"> Microsoft .NET 4.0 Framework DPOJET Jitter and Eye Analysis Tool (version 10.3.0 or higher) with Advanced Jitter and Eye analysis (DJA option) installed. Microsoft Internet Explorer or other Web browser for viewing reports. Adobe Reader software 7.0 or later for viewing portable document format (PDF) files. Serial Data Link Analysis (SDLA) software, version 3.0.12 or later, for Channel De-Embed, for custom filter development. SigTest pre-requisites: <ul style="list-style-type: none"> MATLAB runtime compiler MCR 9.11 Set the environment variable after installing MATLAB Runtime 9.11 <ul style="list-style-type: none"> Variable: Path Value: C:\Program Files\MATLAB\MATLAB Runtime\v911\runtime\win64 Copy <i>USB4_SigTest.exe</i> app in the C:\USB4_SigTest location |

¹ If TekExpress is running on an instrument that has a video resolution less than 800x600, connect and configure a second monitor to the instrument.

Supported instruments

Table 4: Required equipment

| Resource | Model supported | |
|------------------------|---|------------------------------------|
| Real-time oscilloscope | Tektronix DPO, DX, and SX series oscilloscopes (Windows 10 OS): | |
| | <ul style="list-style-type: none"> 21 GHz bandwidth is suitable for Gen2 Rounded (10 Gbps), Gen2 Legacy (10.3125 Gbps), Gen3 Rounded (20 Gbps), Gen3 Legacy (20.625 Gbps) measurements | |
| Probes | Two TCA-SMA cables Two SMP-SMA cables | |
| Thunderbolt fixtures | <ul style="list-style-type: none"> Intel approved Wilder-Tech fixtures for Thunderbolt compliance testing. The fixture set includes Tx Host and Device testing. | |
| Connector Type | Type C | Symmetrical connector on both side |
| Ultra sync cable | Supports DPO SX series oscilloscope with bandwidth of 33, 50, 59, and 70 GHz and is only applicable for dual-stack. | |

See also

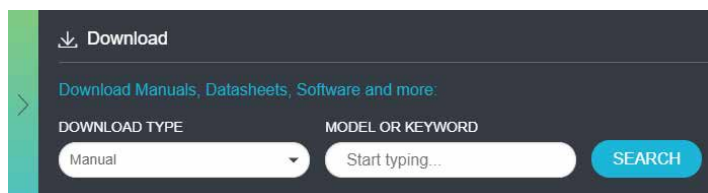
[Minimum system requirements](#)

Software requirements

Downloading and installing the software

Complete the following steps to download and install the latest TekExpress Thunderbolt application.

1. Go to www.tek.com.
2. Click **Downloads**. In the Downloads menu, select DOWNLOAD TYPE as Software and enter the application name in the MODEL OR KEYWORD field and click **SEARCH**.



3. Select the latest version of software and follow the instructions to download the software. Copy the executable file into the oscilloscope.
4. Double-click the executable and follow the on-screen instructions.

The software is installed at C:\Program Files\Tektronix\TekExpress\TekExpress Thunderbolt3.

5. Select **Application > TekExpress Thunderbolt** from the Oscilloscope menu, to open the application.

Activate the license

Activate the license using the **Option Installation** wizard in the TekScope application:

1. In the **TekScope** application menu bar, click **Utilities > Option Installation**. The TekScope Option Installation wizard opens.
2. Push the **F1** key on the oscilloscope keyboard to open the Option Installation help topic.
3. Follow the directions in the help topic to activate the license.

View software version and license key details

To view version information of the application, click **Options > About TekExpress**.

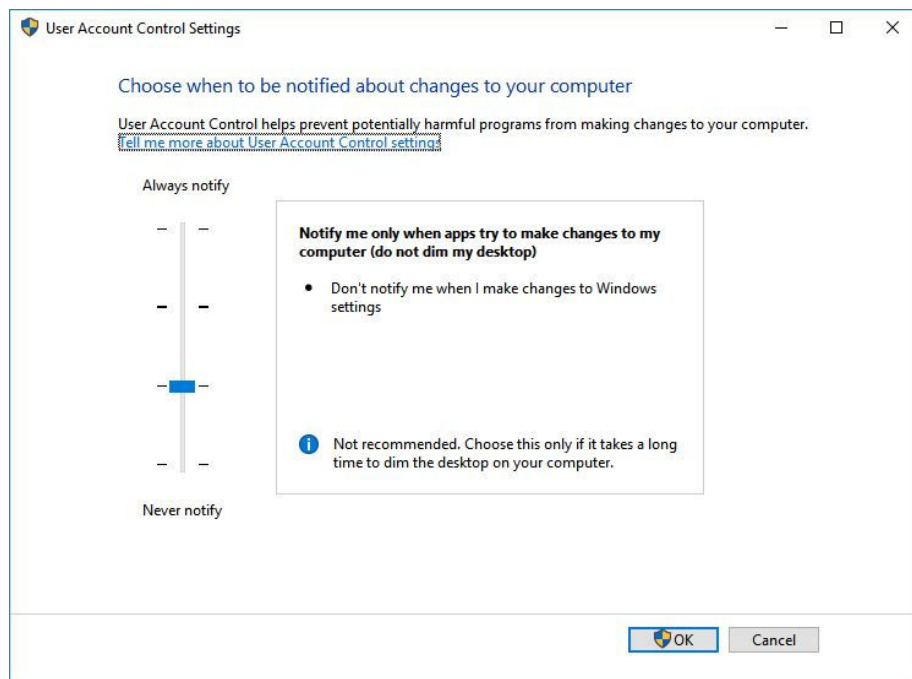


Required windows 10 user account setting

Windows 10 instruments need to have the User Account Control Settings set to **Never Notify**. To set User Account Control Settings:

1. Go to **Control Panel > User Accounts > Change User Account Control settings**.
2. Set the sliding control to **Never Notify** as shown in the image, and click **OK**.

Windows 10



See also

[Supported oscilloscopes](#)

Verify application installation

To verify the installation was successful:

1. Open the TekScope application.
2. Click the **Analyze** menu.
3. Verify that TekExpress Thunderbolt is listed in the Analyze menu.
4. Click **TekExpress Thunderbolt** to open the application.

Verify that the application opens successfully.

See also

[Activate the license](#) on page 13

[Required my TekExpress folder settings](#) on page 14

Required my TekExpress folder settings

Before you run tests for the first time, Refer [Set my TekExpress folder permissions](#) on page 15 for the folder permission.

See also

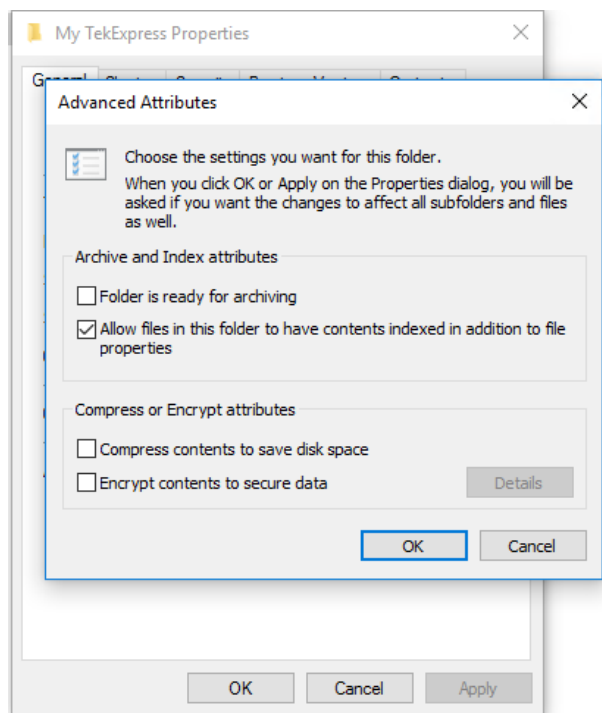
[Application directories](#) on page 105

[File name extensions](#) on page 106

Set my TekExpress folder permissions

Follow the steps to ensure, you have read and write access to the My TekExpress folder and also verify that the folder is not set to be encrypted:

1. Right-click the folder and select **Properties**.
2. Select the **General** tab, and then click **Advanced**.
3. In the Advance Attributes dialog box, ensure that the option **Encrypt contents to secure data** is not selected.



4. Click the **Security** tab and verify that the correct read and write permissions are set.

See also

[Application directories](#) on page 105

[File name extensions](#) on page 106

[View test-related files](#)

Setting up the test environment

Test process flow

Use the following list to set up and performing Thunderbolt tests.

1. Allow test instruments to warm up (~20 minutes).
2. [Deskew the real-time oscilloscope.](#)
3. [Set up test equipment.](#)
4. Verify the required instruments are connected to Thunderbolt (refer [TekExpress instrument control settings](#)).
5. [Set DUT Parameters.](#)
6. [Select tests.](#)
7. [View acquisition settings.](#)
8. Set global signal-related parameters.
9. [Select test notification preferences.](#)
10. [Select report options.](#)
11. [Check the prerun checklist](#)
12. Click **Start** to [Run tests](#).

See also

[Save the configured test setup](#) on page 46

[Running tests](#) on page 18

Deskew real-time oscilloscopes

Use the following procedure to deskew direct input SMA channels on a Real Time Oscilloscope.



Note: DPOJET has an automatic deskew option. Refer to your DPOJET online help for information on how to deskew the channels.

1. Run Signal Path Compensation (SPC) on the oscilloscope.
2. Connect a SMA Power Splitter (preferred) or SMA 50 Ω coaxial “T” connector to the Fast Edge output of the oscilloscope.
3. Connect SMA cables from each of the two channels to be deskewed to the power splitter (or SMA coaxial “T” connector). Use matched cables for high speed serial measurements. **Ensure that, you will use the same cables during deskew that you will use for subsequent measurements.**
4. Select **Default Setup**, and then select **Autoset** on the oscilloscope front panel.
5. Set the oscilloscope for 70% to 90% full screen amplitude on both channels. Center both traces to overlap.
6. For Deskew, Ensure that volts/div, position, and offset should be identical for the two channels.
7. Set the time/div to approximately 100 ps/div or less, with the sample rate at 1 ps/pt. These settings are not critical, but should be close.
8. Set the horizontal acquisition mode to average, which provides a more stable display.
9. Select **Deskew** from the **Vertical** menu.
10. Verify that the reference channel (typically CH1 or CH2) is set to 0 ps deskew.
11. In the deskew control window, select the channel to deskew (typically CH3 or CH4). Adjust the deskew to overlay the rising edge as best as possible.



Note: Typical values are in the 10's of ps or less with cables connected directly from Fast Edge to SMA inputs. If you are using a switch box (for example, Keithley), deskew the complete path from where the test fixture connects, through the switch, and into the oscilloscope. Deskew values in these cases may be as much as 30 ps or more.



Note: There can be significant differences in the skew between two TCA-SMA adapters. If you find that a system requires a very large correction, obtain a pair of TCA-SMA adapters that closely match each other to reduce the amount of correction.



Note: TekExpress retains the user configured Deskew values, and does not override the values during test runs.

Instrument and DUT connection setup

Click the **Setup > Test Selection > Schematic** button to open a PDF file that shows the compliance test setup diagrams (instrument, DUT, and cabling) for supported testing configurations.

See also

[Minimum system requirements](#) on page 11

[TekExpress instrument control settings](#)

Running tests

After selecting and configuring the tests, review the [prerun checklist](#) and then click **Start** to run the tests. While tests are running, you cannot access the Setup or Reports panels. To monitor the test progress, switch back and forth between the Status panel and the Results panel.

The application displays a report when the tests are complete. While the tests are running, other applications may display windows in the background. The TekScope application takes precedence over other applications, but you can switch to other applications by using the **Alt + Tab** key combination. To keep the TekExpress Thunderbolt application on top, select **Keep On Top** from the TekExpress **Options menu**.

See also

[Configuration tab parameters](#)

Prerun checklist

Follow the below steps before you click Start to run a test:



Note: If you are running a test on the application for the first time, Ensure that you have completed the procedures mentioned in [Required My TekExpress folder settings](#) before continuing.

1. Ensure that all the required instruments are properly warmed up (approximately 20 minutes).
2. To perform Signal Path Compensation (SPC):
 - a. On the oscilloscope main menu, select the **Utilities** menu.
 - b. Select **Instrument Calibration**.
 - c. Follow the on-screen instructions.
3. Verify that the correct instruments are connected (oscilloscope and signal sources):
 - a. In TekExpress Thunderbolt, click **Setup > Configuration**.
 - b. Click **Global Settings**.
 - c. In the **Instruments Detected** list, verify that the test setup instruments are listed. If they are not in the list, click the arrow button to list and select from all detected instruments. If the required instrument is still not listed, use the TekExpress Instrument Control Settings dialog box to scan for and detect instruments (refer [TekExpress instrument control settings](#)).

See also

[Instrument and DUT connection setup](#)

Search instruments connected to the application

Use the TekExpress Instrument Control Settings dialog box to search the instruments (resources) connected to the application. The application uses TekVISA to discover the connected instruments.

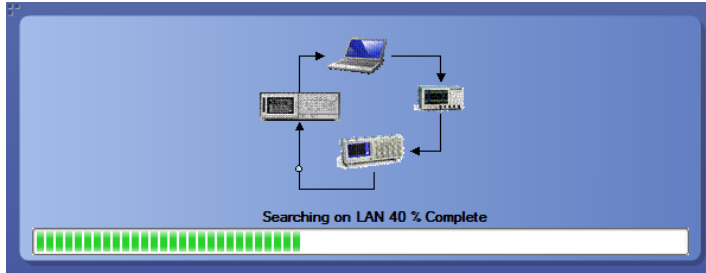


Note: The instruments required for the test setup must be connected and detected by the application, before running the test.

To refresh the list of connected instruments:

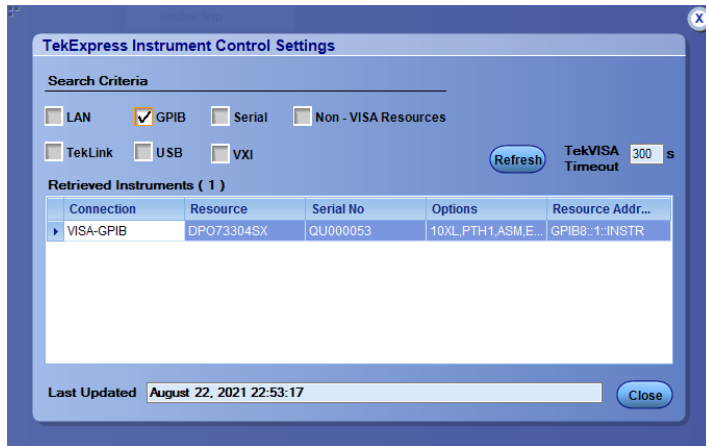
1. Select **Options > Instrument Control Settings**.
2. In the **Search Criteria** section of the **Instrument Control Settings** dialog box, select the connection types of the instruments to search. Instrument search is based on the VISA layer, but different connections determine the resource type, such as LAN, GPIB, and USB. For example, if you choose LAN, the search will include all the instruments supported by the TekExpress that are communicating over the LAN.
3. Click **Refresh**. The TekExpress application searches for the connected instruments.

Search status of the instruments connected to LAN



4. When the search is complete, a dialog box lists the instrument-related details based on the search criteria. For example, for the Search Criteria as GPIB, the application displays all the GPIB instruments connected to the application.

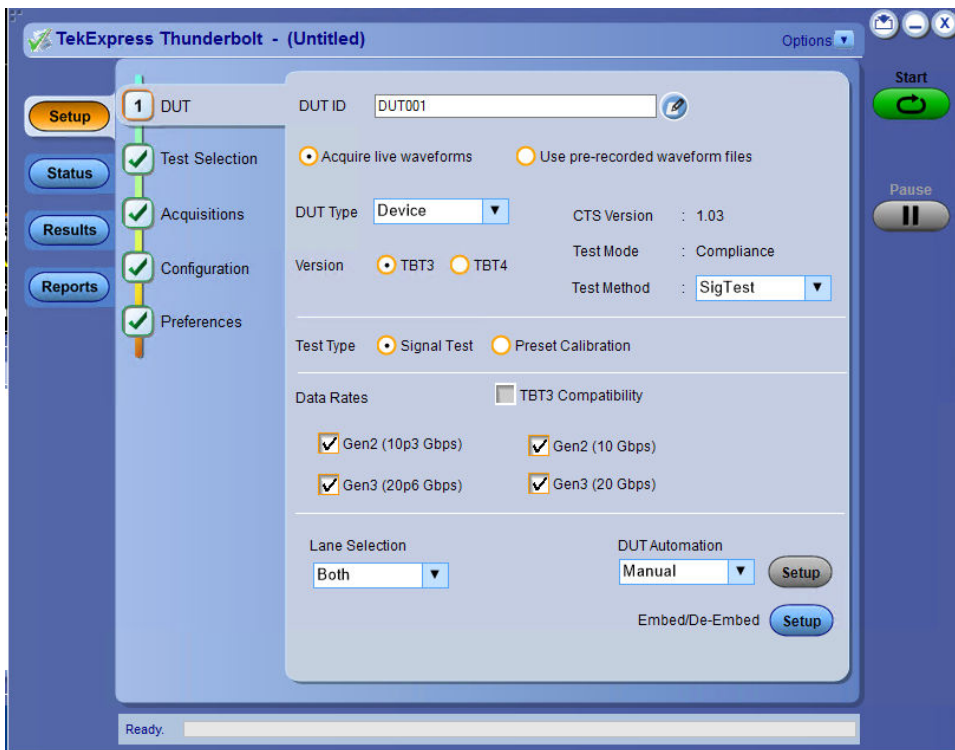
TekExpress Instrument Control Settings window.



The details of the instruments are displayed in the Retrieved Instruments table. The time and date of instrument refresh is displayed in the Last Updated field.

Starting the application

To start the TekExpress Thunderbolt , select from the oscilloscope menu bar **Applications > TekExpress Thunderbolt** .



During start, a "My TekExpress" folder is created in the Documents folder of the current user and gets mapped to "X" drive. When the application is closed properly, the "X" drive gets unmapped. Session files are then stored inside the X:\Thunderbolt folder. If this file is not found, the application runs an instrument discovery program to detect connected instruments before starting TekExpress Thunderbolt.

To keep the TekExpress Thunderbolt application on top of any application, select **Keep On Top** from the *options menu*. If the application goes behind the oscilloscope application, select **Applications > TekExpress Thunderbolt** to bring the application to the front.

Application panels overview

TekExpress Thunderbolt uses panels to group related configuration, test, and results settings. Click a button to open the associated panel. A panel may have one or more tabs that list the selections available in that panel. Controls in a panel can change depending on settings made in that panel or another panel.

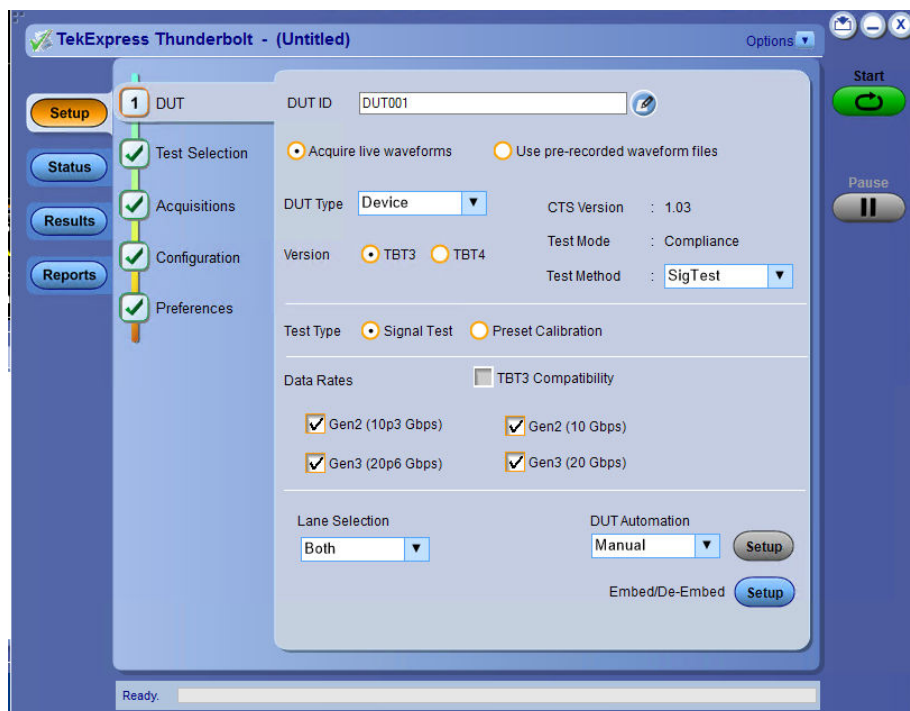


Table 5: Application panels overview

| Panel Name | Purpose |
|-------------------------|---|
| Setup | <p>The Setup panel shows the test setup controls. Click the Setup button to open this panel.</p> <p>Use this panel to:</p> <ul style="list-style-type: none"> • Select DUT settings. • Select the test(s). • Set acquisitions parameters for selected tests. • Set configuration tab preferences. • Select test notification preferences. |
| Status | View the progress and analysis status of the selected tests, and view test logs. |
| Results | View a summary of test results and select result viewing preferences. |
| Reports | Browse for reports, save reports as specific file types, specify report naming conventions, select report content to include (such as summary information, detailed information, user comments, setup configuration, application configuration), and select report viewing options. |

See also

[Application controls](#)

Application controls

This section describes the application controls with functionality and its details.

Table 6: Application control description


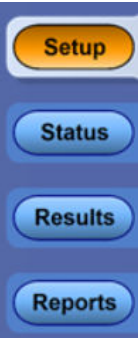








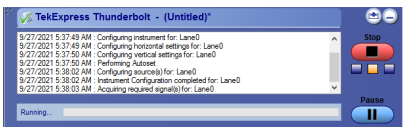
| Item | Description |
|---|---|
| <p><i>Options menu</i></p>  | Menu to display global application controls. |
| <p>Test panel</p>  | Controls that open tabs for configuring test settings and options. |
| <p>Start / Stop button</p>  | Use the Start button to start the test run of the measurements in the selected order. If prior acquired measurements are not cleared, then new measurements are added to the existing set. The button toggles to the Stop mode while tests are running. Use the Stop button to abort the test. |
| <p>Pause / Continue button</p>  | Use the Pause button to pause the acquisition. When a test is paused, this button changes as Continue . |
| <p>Clear button</p>  | <p>Use the Clear button to clear all existing measurement results. Adding or deleting a measurement, or changing a configuration parameter of an existing measurement, also clears measurements. This is to prevent the accumulation of measurement statistics or sets of statistics that are not coherent. This button is available only on <i>Results panel</i>.</p> <p> Note: This button is visible only when there are results data on the panel.</p> |
| <p>Application window move icon</p>  | Place the cursor over the top of the application window to move the application window to the desired location |
| <p>Minimize icon</p>  | Minimizes the application. |
| <p>Close icon</p>  | Close the application. |

Table continued...

| Item | Description |
|--|--|
| Mini view / Normal view  | Mini view displays the run messages with the time stamp, progress bar, Start / Stop button, and Pause / Continue button. The application moves to mini view when you click the Start button.  |

Options menu functions


To access the **Options** menu, click  in the upper-right corner of the application. It has the following selections:

Table 7: Options menu settings

| Menu | Function |
|------------------------------------|--|
| Default Test Setup | Opens a new test setup with default configurations. |
| Open Test Setup | Opens a previously saved test setup. Displays the list of previously saved test setup file names. Make the selection and click OK to open the test setup. |
| Save Test Setup | Saves the current test configurations with the specified file name. |
| Save Test Setup As | Saves the current test setup with a different file name or file type. |
| Open Recent | Displays the recently opened test setup file names. Make the selection and click OK to open the test setup. |
| <i>Instrument Control Settings</i> | Detects, lists, and refreshes the connected instruments found on the specified connections (LAN, GPIB, USB, Serial, Non-VISA Resources, TekLink, and VXI). |
| Keep On Top | Always keeps the TekExpress Thunderbolt application on top of all the applications. |
| <i>Email Settings</i> | Configures email options for test run and result notifications. |
| Help | Displays the TekExpress Thunderbolt help. |
| About TekExpress | Displays the application name, version, and hyperlink to end the user license agreement. |

Configure email settings

Use the **Email Settings** utility to get notified by email when a measurement completes or produces any error condition. Follow the steps to configure email settings:

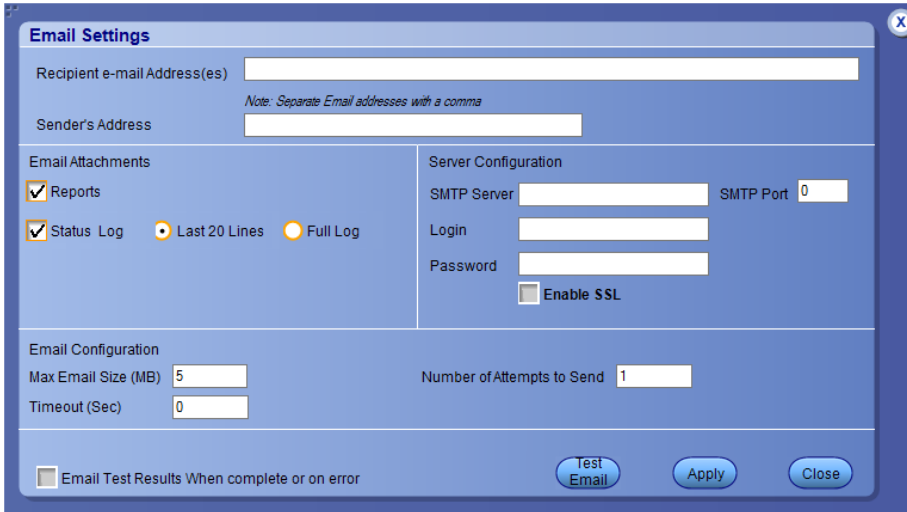


Figure 1: Email settings window

1. Select **Options > Email Settings** to open the Email Settings dialog box.
2. (Required) For **Recipient email Address(es)**, enter one or more recipient email addresses. To include multiple addresses, separate the addresses with commas.
3. (Required) For **Sender's Address**, enter the email address used by the instrument. This address consists of the instrument name, followed by an underscore, followed by the instrument serial number, then the @ symbol, and the email server ID. For example: user@yourcompany.com.
4. (Required) In the **Server Configuration** section, type the SMTP Server address of the Mail server configured at the client location, and the SMTP Port number, in the corresponding fields.

If this server requires password authentication, enter a valid login name, password, and host name in the corresponding fields.



Note: If any of the above required fields are left blank, the settings will not be saved, and email notifications will not be sent.

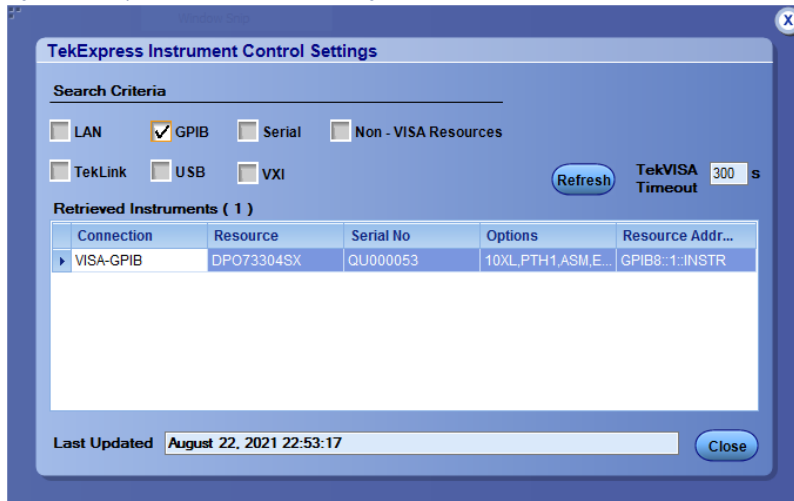
5. In the **Email Attachments** section, select from the following options:
 - **Reports:** Select to receive the test report with the notification email.
 - **Status Log:** Select to receive the test status log with the notification email. If you select this option, then also select whether you want to receive the full log or just the last 20 lines.
6. In the **Email Configuration** section:
 - Enter a maximum file size for the email message. Messages with attachments larger than this limit will not be sent. The default is 5 MB.
 - Enter the number in the Number of Attempts to Send field, to limit the number of attempts that the system makes to send a notification. The default is 1. You can also specify a timeout period.
7. Select the **Email Test Results When complete or on error** check box. Use this check box to quickly enable or disable email notifications.
8. To test your email settings, click **Test Email**.
9. To apply your settings, click **Apply**.
10. Click **Close** when finished.

TekExpress instrument control settings

Use the **TekExpress Instrument Control Settings** dialog box to search the instruments (resources) connected to the application. You can use the **Search Criteria** options to search the connected instruments depending on the connection type. The details of the connected instrument is displayed in the Retrieved Instruments window.

To access, click **Options > Instrument Control Settings**. Select **GPIB** as search criteria for TekExpress application and click **Refresh**. The connected instruments displayed in the Retrieved Instruments window and can be selected for use under Global Settings in the test configuration section.

Figure 2: TekExpress Instrument Control Settings window

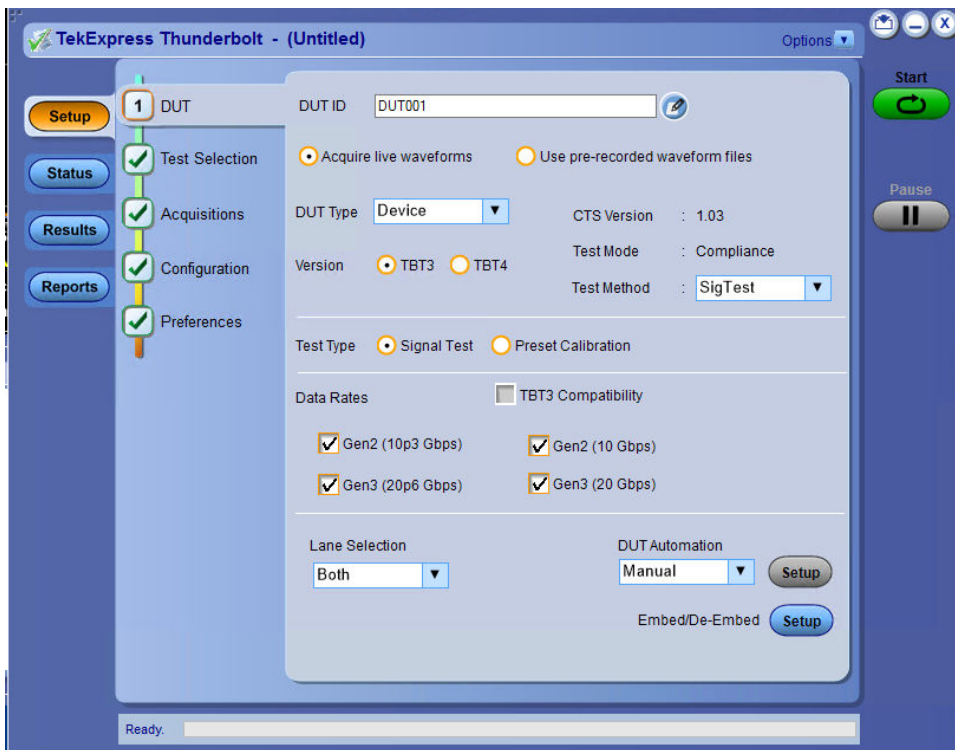


See also

[Options menu functions](#) on page 23

Setup panel: Configure the test setup

The Setup panel contains sequentially ordered tabs that help you guide through the test setup and execution process.



DUT: Set DUT settings

Use the DUT tab to select parameters for the device under test. These settings are global and apply to all tests of current session. DUT settings also affect the list of available tests in the Test Selection tab.

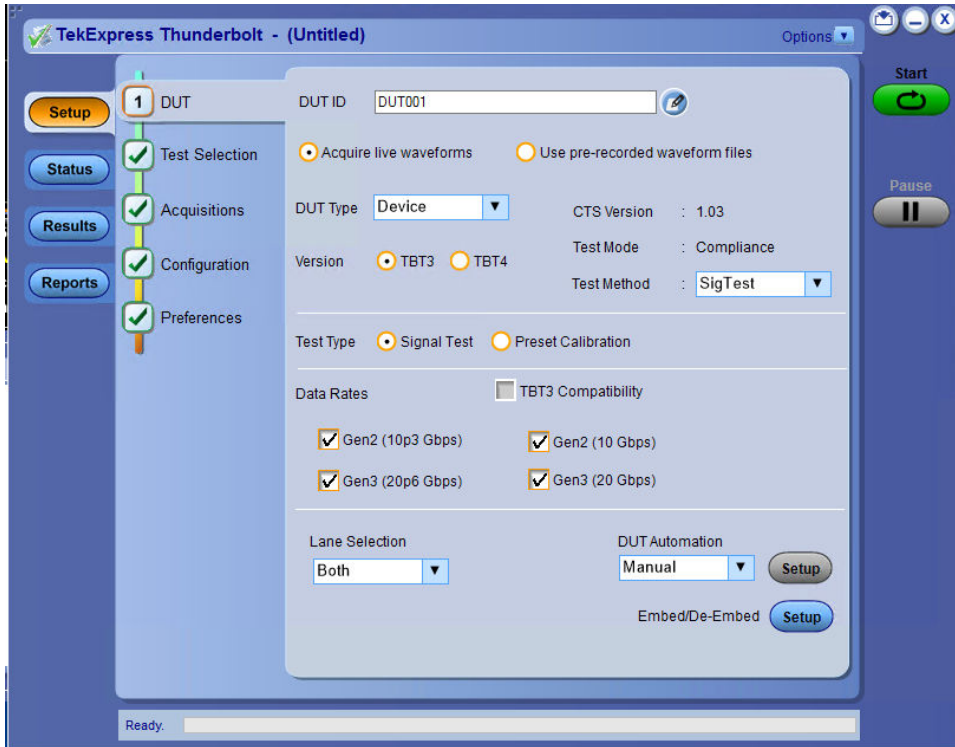


Figure 3: DUT tab

Click **Setup** > **DUT** to access the DUT parameters:

Table 8: DUT tab configuration


| Setting | Description |
|--|---|
| DUT ID | Adds an optional text label for the DUT to reports. The default value is DUT001. The maximum number of characters supported is 32. You cannot use the characters (.,,.,.,.,.,.,./,:?*<> *) in an ID name. |
|  Comments icon (to the right of the DUT ID field) | Opens a comments dialog box which allows you to enter optional text to add to a report. You can enter a maximum number of 256 characters. Refer Configure report view settings to enable or disable comments which displays on the test report. |
| Acquire live waveforms | Acquire active signals from the DUT for measurement and analysis. |
| Use prerecorded waveform files | Run tests on a saved waveform. Also refer Load a saved test setup . |
| DUT Type | Select the DUT type from the drop-down: <ul style="list-style-type: none"> • Device • Host |
| CTS Version | Displays the CTS version. |
| Version | Select a supported TBT version <ul style="list-style-type: none"> • TBT3 |

Table continued...

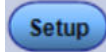
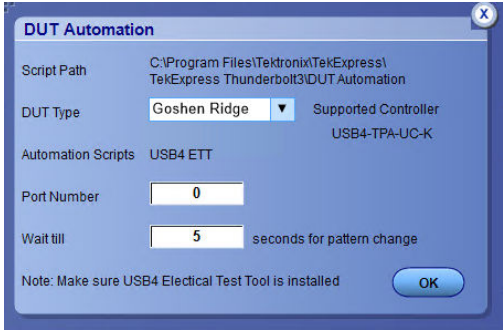
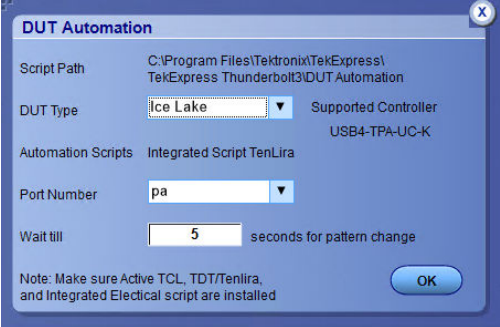


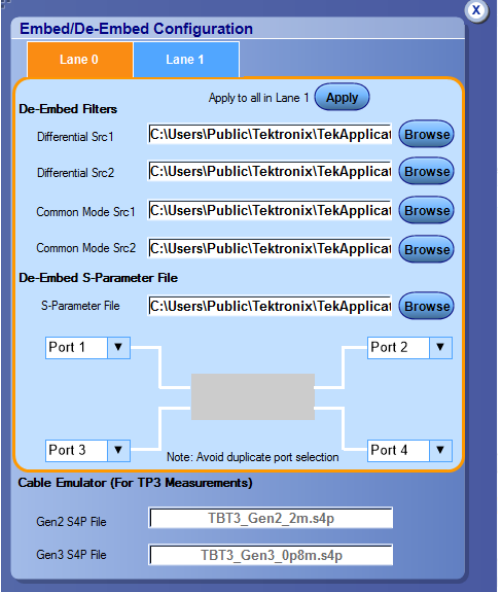
| Setting | Description |
|----------------|--|
| | <ul style="list-style-type: none"> TBT4 |
| Test Mode | <p>Displays the selected test mode. Preselects tests and parameters needed to meet the compliance specifications for the selected device type.</p> <p>When Test mode = compliance, cable emulator in the Embed/De-embed configuration menu cannot be changed by user.</p> |
| Test Method | <p>Displays the selected test method. The selected test method, sets the algorithms used to measure and analyze the signal.</p> <ul style="list-style-type: none"> SigTest: Select to perform measurements implemented in SigTest. DPOJET: Select to perform measurements implemented in DPOJET. |
| Test Type | <p>Select the test type from the drop-down:</p> <ul style="list-style-type: none"> Signal Test: Select to run Unit Interval, Spread Spectrum Clocking, Jitter(TP2 & TP3), Eye (TP2 & TP3), Transmitter Equalization, Preset Calibration and Voltage measurements. Preset calibration: Select to run preset calibration measurements. |
| Data Rates | <p>Sets the test data rate (10 Gbps, 20 Gbps, 10p3 Gbps, and 20p6 Gbps).</p> <ul style="list-style-type: none"> Gen2(10p3 Gbps): Select to include the data rate for Gen2 Legacy. Gen2(10 Gbps): Select to include the data rate for Gen2 Rounded. Gen3(20 Gbps): Select to include the data rate for Gen3 Rounded. Gen2(20p6 Gbps): Select to include the data rate for Gen3 Legacy. <p>When TBT3 compatibility is selected, sets the test data rate at 10p3 Gbps or 20p6 Gbps</p> |
| Lane Selection | <p>Select the Lane Selection from the drop-down:</p> <ul style="list-style-type: none"> Both Lane 0 Lane 1 |
| DUT Automation | <p>There are two options for DUT Automation:</p> <ul style="list-style-type: none"> Manual Automated <p>Click  button. Displays the DUT automation window</p>  |

Table continued...

| Setting | Description |
|------------------------------|--|
| |  <p>In the DUT Automation window, select the appropriate DUT Type from the dropdown:</p> <ul style="list-style-type: none"> • Goshen Ridge • Tiger Lake • Ice Lake • Titan Ridge • Alpine Ridge <p>Set the DUT Port Number.</p> <ul style="list-style-type: none"> • For Goshen Ridge and Tiger Lake value varies from 0 to 63. • For Ice Lake, Titan Ridge, and Alpine Ridge set the value as pa, pb or any user defined value. <p>Set the value for Wait till for an automated pattern change. Default value is 5 seconds.</p> |
| Embed/De-embed configuration |  <p>Click  button to change the Differential de-embed filter files and common mode de-embed filter files. The test mode is fixed to compliance, therefore, cable emulator (for TP3 measurements) files are fixed.</p> <p>The de-embed S parameter file (.s4p) is loaded into the SDLA Equalizer to deembed the cables connected to the fixture. The 4 port index configuration for the chosen file is displayed. Assign the valid port depending on the loaded .s4p file. The two ports on the left are input ports and the two ports on the right are the output ports.</p> |

| Setting | Description |
|---------|--|
| |  <p data-bbox="483 863 672 890"><i>Figure 4: Filter Selection</i></p> |

DUT automation setup

Refer to the manuals provided by Wilder and USB-IF to configure the micro-controller and Electrical Test Tool respectively.

Prerequisites for running USBETT tool

- Download the USBETT tool from USB-IF forum.
- Copy the Electrical Test Tool in the file path C : \USB4ETT

Install Wilder software

- Copy the contents of the included flash drive in the Wilder hardware kit to the oscilloscope.
- Copy Wilder Controller executable in C : \USB4ETT.
- Ensure that the Wilder Controller executable and C : \USB4ETT are associated appropriately in the system environment variable.

Test Selection: Select the tests

Use the Test Selection tab to select the tests. The test measurements available depends on the settings selected in the DUT tab.

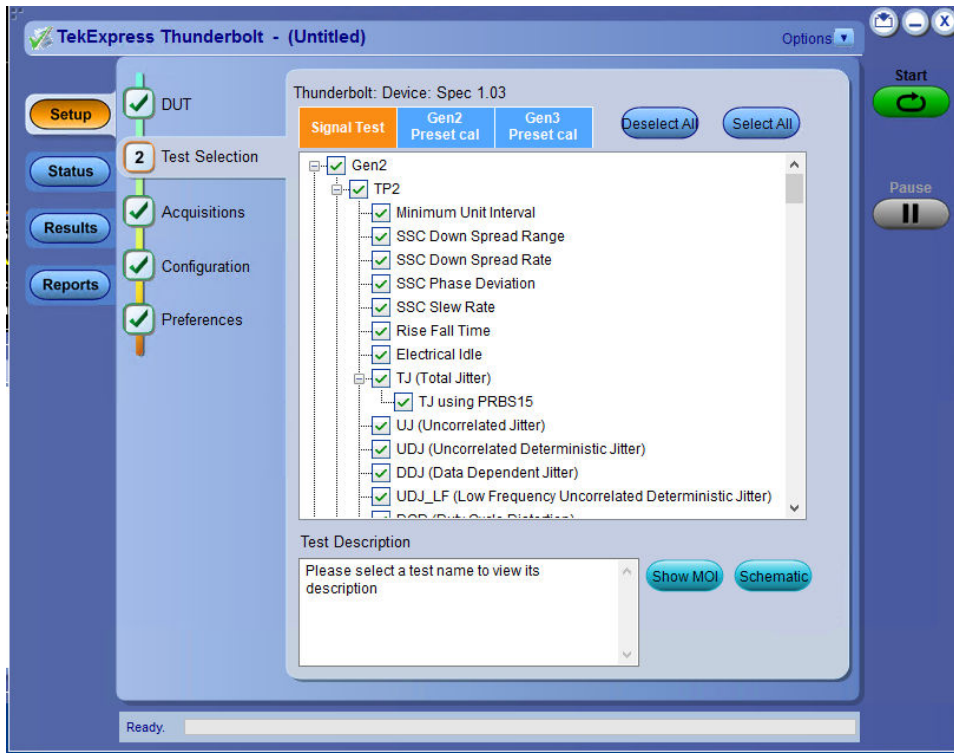


Figure 5: Test selection tab

Table 9: Test Selection tab configuration

| Setting | Description |
|--------------------------|--|
| Deselect All, Select All | Deselect or select all tests in the list. |
| Tests | Click a test to select or deselect. Selecting a test also show details about the selected test in the Test Description pane. All required tests are selected in the Compliance test mode. |
| Schematic | Displays equipment connection setup for the selected measurements. You need to select at least a measurement before you click the Schematic. |
| Show MOI | Displays the MOI (TBT_TX_MOI) |
| Gen2 Preset cal | Select to change the preset values. By selecting or deselecting Legacy or Rounded column header, you can select or deselect all the presets at a single time for the selected data rate, when the Preset calibration in the DUT panel is selected. |
| Gen3 Preset cal | |



Note: All tests are selected by default.



Note: The application does not show the oscilloscope cursor1 and 2 for each burst. The application runs an analysis on the first five bursts of an acquisition and displays the result statistics.

Acquisitions: Set waveform acquisition settings

Use Acquisitions tab to view the test acquisition parameters. The contents displayed on this tab depends on the DUT type and the tests selected.

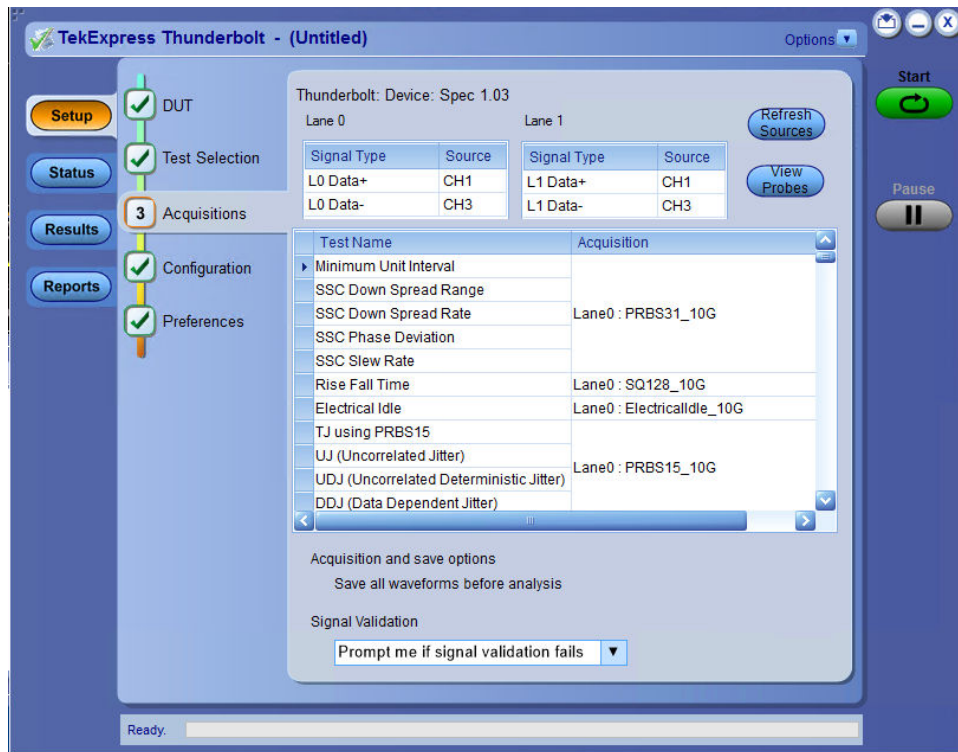
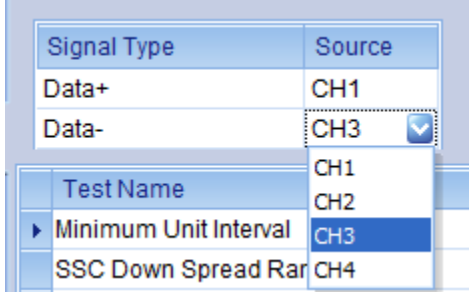



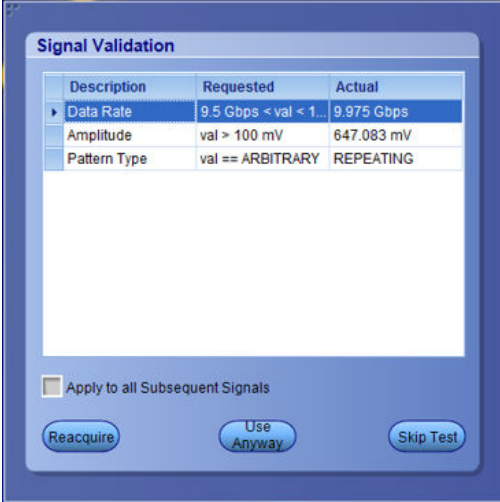
Figure 6: Acquisition tab



Note: Thunderbolt acquires all waveforms required by each test group and data rate being tested (Gen2, Gen3) before performing analysis.

Table 10: Acquisitions tab configuration

| Setting | Description |
|------------------------------|---|
| Source Selection | <p>Lists the signal type and input channel assigned to that type.</p> <p>Click on Source fields to assign a channel source to a signal type.</p>  <p>The (Source) channels are auto selected, based on the probe type used and Lane selected on the DUT tab.</p> <p> Note: When the Test Method is set to SigTest in the DUT panel, the application will not allow you to select the source channels.</p> |
| Refresh sources | Updates the list of available channel sources as used by the Source fields in the Device list. Click this button if you want to change the channel connections in the test setup. |
| View Probes | Displays the Source, Probe Type, and Probe models. |
| Acquisition and save options | Saves all waveforms before the analysis. |
| Table continued... | |

| Setting | Description |
|-------------------|--|
| Signal Validation | <p>Sets the signal validation actions from the drop-down:</p> <ul style="list-style-type: none"> • Prompt me if signal fails • Skip test if signal validation fails • Use signal as is - Don't Check <p>When the signal validation option is set to "Prompt me if signal validation fails", the application validates whether the signal is PRBS31, PRBS15, SQ128, or SQ2 pattern. Additionally, it also validates if the signal is Electrical idle. If the signal is valid, the measurement continues normally. If the signal is invalid, the following window displays:</p>  <p>Note: If Pattern type validation is selected as Use signal as is - Don't Check, then the measurement continues with the acquired waveform.</p> <ul style="list-style-type: none"> • Click Reacquire to start the acquisition again. • Click Use Anyway to continue with the currently acquired waveform. • Click Skip Test to skip all pattern type tests. The rest of the selected measurements continue. |

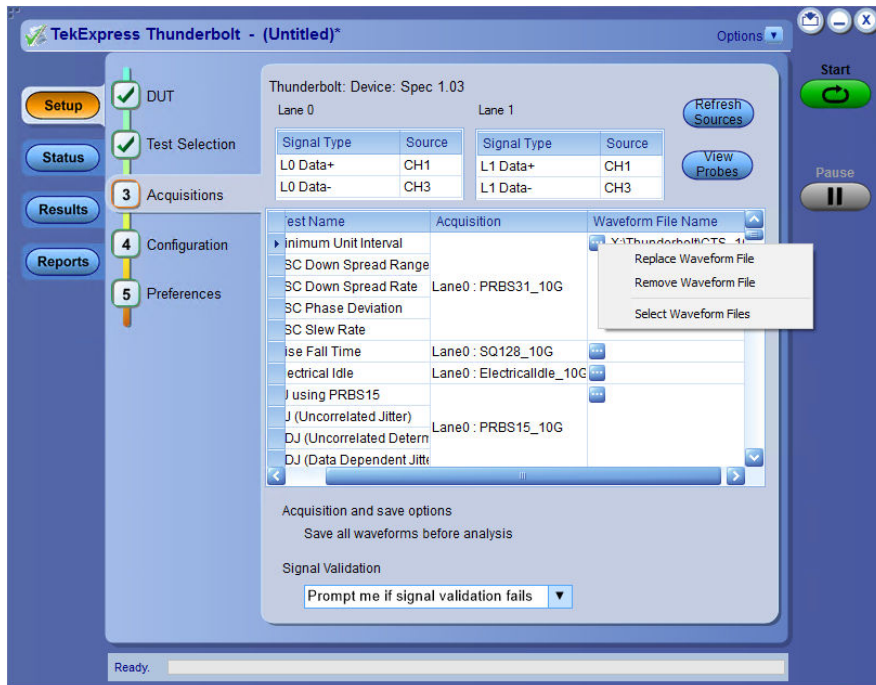
TekExpress Thunderbolt application saves all acquisition waveforms to files by default. Waveforms are saved in a unique folder for each session (a session is started when you click the Start button). The folder path is X:\TekExpress Thunderbolt\Untitled Session\<>dutid>\<date>_<time>. Images created for each analysis, XML files with result values, reports, and other information specific to that particular execution are also saved in this folder.

Saving a session moves the session file contents from the Untitled Session folder to the specified folder name and changes the session name to the specified name.

Running tests on prerecorded (saved) waveforms

To load a saved waveform file:

1. Click **DUT**.
2. Click **Use pre-recorded waveform files**.
3. Click **Acquisitions**. The Waveform Filename column now shows the browse buttons.



4. Click the browse button (⋮) for each test acquisition type PRBS15, PRBS31, SQ128, and SQ2.
5. Navigate to and select the appropriate waveform file(s). You must select all waveforms required for the acquisition type.
6. To change, remove, or add a file to the list, click the browse button next to the file name to change, and use the menu items to replace, remove (delete) or add a file in the list.
7. Click **Start**.

Configuration: Set measurement limits for tests

Use Configuration tab to view and configure the Global Settings and the measurement configurations. The measurement specific configurations available in this tab depends on the selections made in the DUT panel and Test Selection panel.



Note: You cannot change test parameters that are grayed out.

Table 11: Configuration tab: Common parameters

| Settings | Description |
|--------------|--|
| Limit Editor | Displays the upper and lower limits for the applicable measurement using different types of comparisons. |

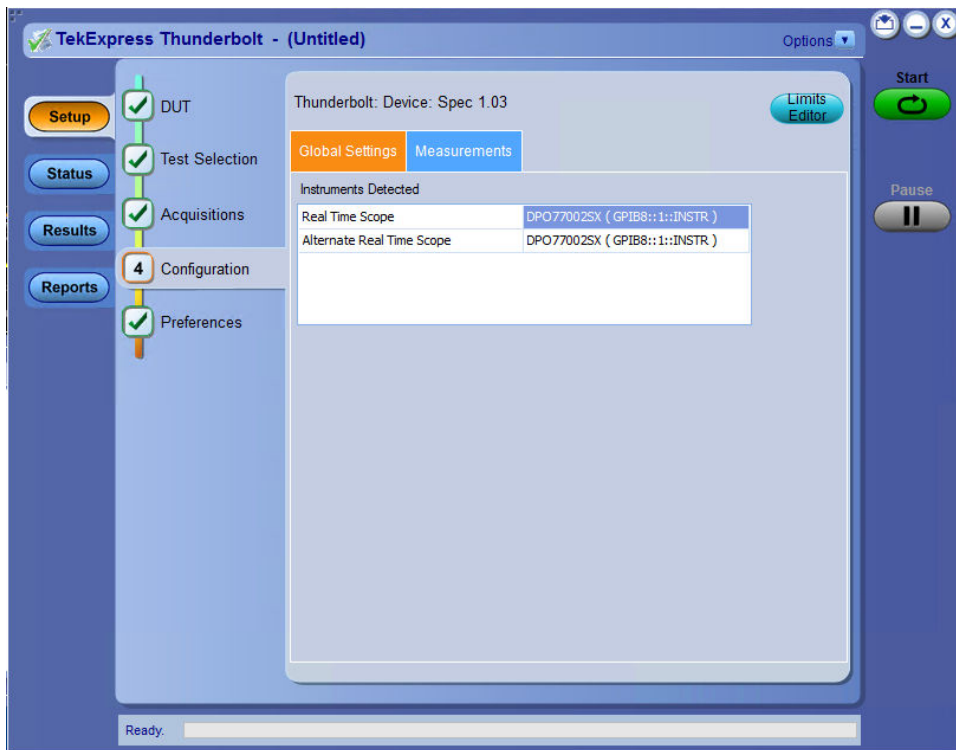


Figure 7: Configuration tab: Global Settings

Table 12: Configuration tab: Global Settings configuration

| Setting | Description |
|------------------------|---|
| Global Settings | |
| Instruments Detected | Displays the instruments connected to this application. Click on the instrument name to open a list of available (detected) instruments. Select Options > Instrument Control Settings to refresh the connected instrument list refer TekExpress instrument control settings . |

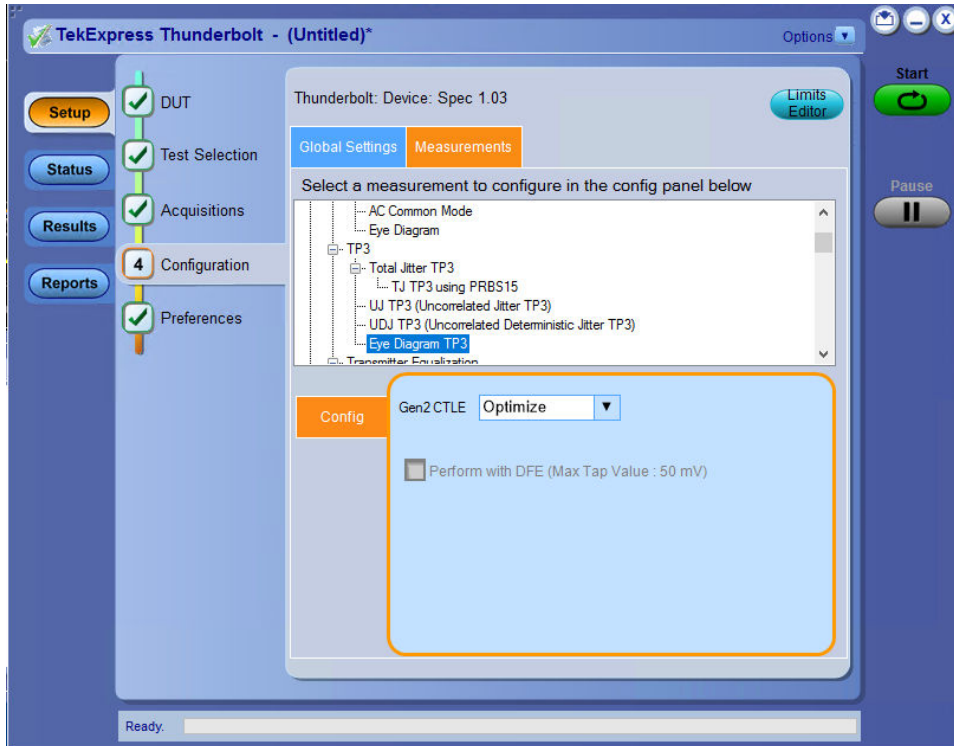




Figure 8: Configuration tab: Measurement

Table 13: Configuration tab: Measurements configuration

| Setting | Description |
|---|--|
| Measurements | |
| Measurements | Displays the list of measurements. |
| Config | Select the configuration for the measurements with TP3. |
| Gen2 and Gen3 CTLE | Select the CTLE filter file for Gen2 and Gen3 from the drop-down: <ul style="list-style-type: none"> Optimize Fixed <p> Note: The option Fixed is not available when the Test Method is set to SigTest in the DUT panel.</p> |
| Perform with DFE (Max Tap Value: 50 mV) | Select to perform the DFE. <p> Note: The option DFE is not available when the Test Method is set to SigTest in the DUT panel.</p> |

Preferences: Set the test run preferences

Use **Preferences** tab to set the application action on completion of a measurement. The **Preferences** tab has the feature to enable or disable certain options related to the measurement execution.

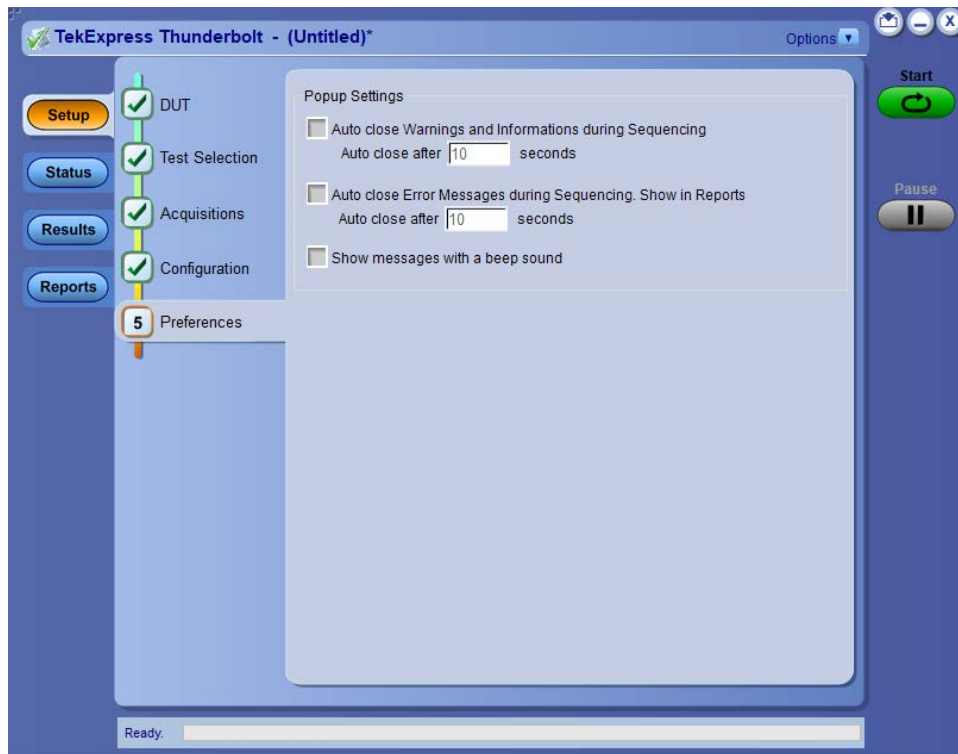


Figure 9: Preferences tab

Refer the below table for the options available in the **Preferences** tab:

Table 14: Preferences tab settings

| Setting | Description |
|---|--|
| Popup Settings | |
| Auto close Warnings and informations during Sequencing Auto close after <no> seconds | Select to close the warnings and information window automatically after the specified amount of time. Specify the time in seconds using the edit box. |
| Auto close Error Messages during Sequencing. Show in Reports Auto close after <no> seconds | Select to close the error message window automatically after the specified amount of time. Specify the time in seconds using the edit box. |
| Show messages with a beep sound | Select to display the messages with the beep sound. |

Status panel: View the test execution status

The Status panel contains the **Test Status** and **Log View** tabs, which provides status on the test acquisition and analysis (Test Status) and listing of test tasks performed (Log View tab). The application opens the **Test Status** tab when you start to execute the test. Select the **Test Status** or the **Log View** tab to view these items while the test execution is in progress.

View test execution status

The tests are grouped and displayed based on the Clock and Data lane. It displays the tests along with the acquisition type, acquire, and analysis status of the tests. In pre-recorded mode, **Acquire Status** is not valid.

The **Test Status** tab presents a collapsible table with information about each test as it is running. Use the symbols to expand (+) and collapse (-) the table rows.

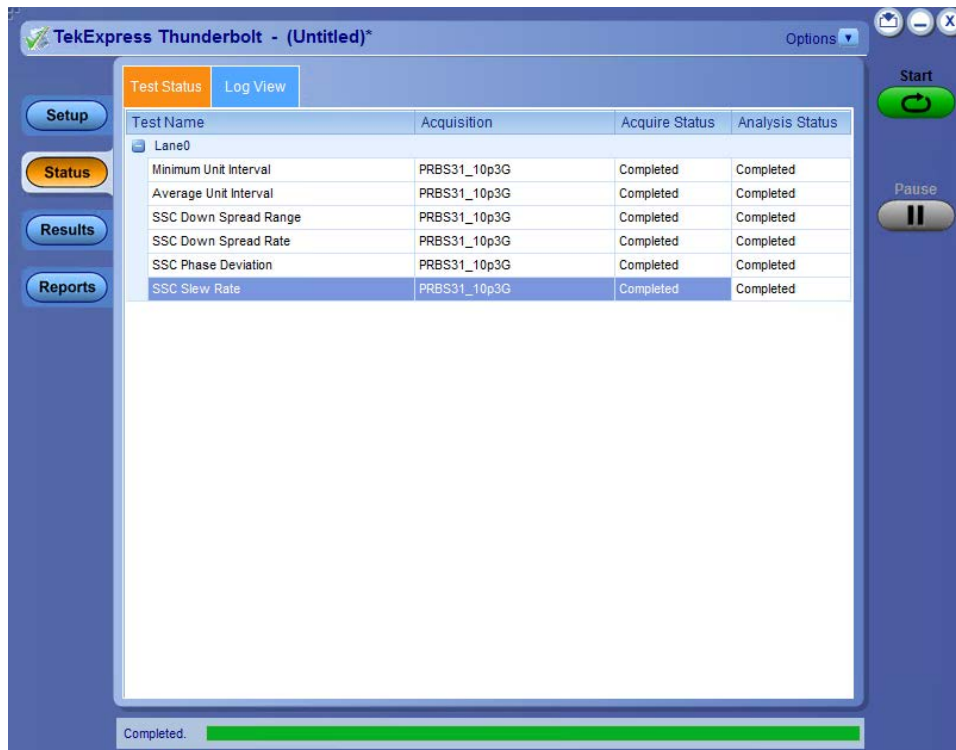


Figure 10: Test execution status view in Status panel

Table 15: Test execution status table headers

| Control | Description |
|----------------|---|
| Test Name | Displays the measurement name. |
| Acquisition | Describes the type of data being acquired. |
| Acquire Status | Displays the progress state of the acquisition: <ul style="list-style-type: none"> To be started In Progress Completed Acquisition |

Table continued...

Status panel: View the test execution status

| Control | Description |
|-----------------|--|
| Analysis Status | <p>Displays the progress state of the analysis:</p> <ul style="list-style-type: none"> To be started In Progress Completed Stopped |

View test execution logs

The Test Status tab displays the detailed execution status of the tests. Also, displays each and every execution step in detail with its timestamp information. The log details can be used to troubleshoot and resolve any issue/bug which is blocking the test execution process.

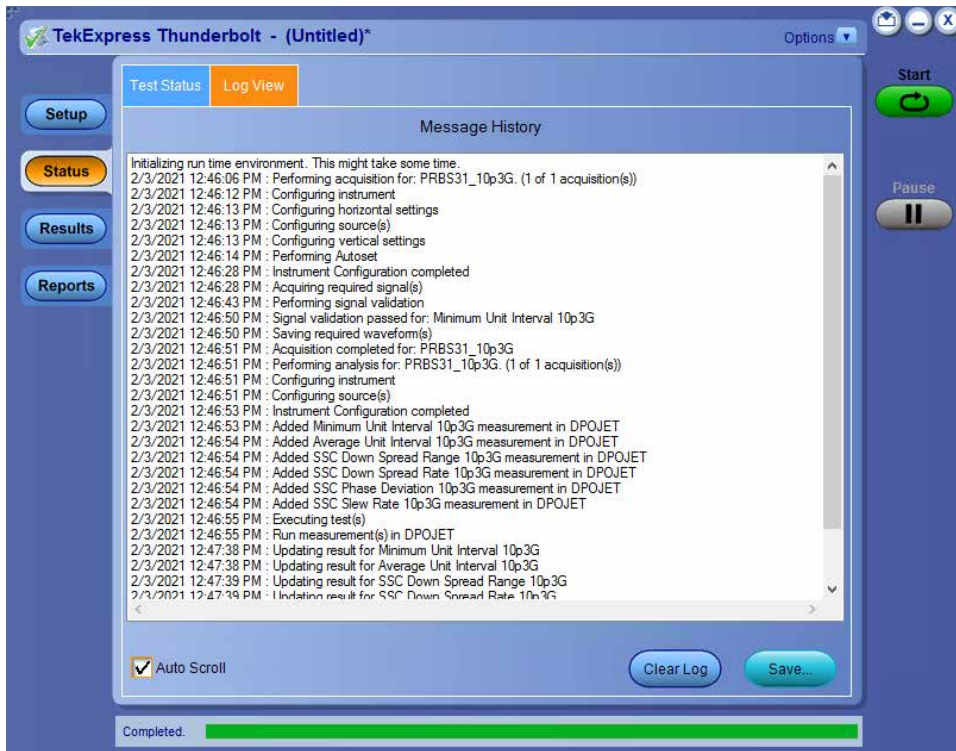


Figure 11: Log view in Status panel

Table 16: Status panel settings

| Control | Description |
|-----------------|---|
| Message History | Lists all the executed test operations and timestamp information. |
| Auto Scroll | Enables automatic scrolling of the log view as information is added to the log during the test execution. |
| Clear Log | Clears all the messages from the log view. |
| Save | Saves the log file into a text file format. Use the standard Save File window to navigate to and specify the folder and file name to save the log text. |

Results panel: View summary of test results

When a test execution is complete, the application automatically opens the **Results** panel to display a summary of test results.

In the Results table, each test result occupies a row. By default, results are displayed in summary format with the measurement details collapsed and with the Pass/Fail column visible.

| Test Name | Pass/Fail | Details | Value | Margin | Data Rates |
|-----------------------|-----------|-------------------------|----------------|-----------------------------|------------|
| Lane 0 | Pass | | | | |
| Minimum Unit Interval | Pass | MinimumUnitInterval Min | 96.989 ps | LL: 48,399 fs, HL: NA | 10p3G |
| Minimum Unit Interval | Pass | MinimumUnitInterval Max | 96.992 ps | LL: NA, HL: 6.726 fs | 10p3G |
| Average Unit Interval | Pass | AverageUnitInterval Min | 97.206 ps | LL: 71.187 fs, HL: NA | 10p3G |
| Average Unit Interval | Pass | AverageUnitInterval Max | 97.213 ps | LL: NA, HL: 29.453 fs | 10p3G |
| SSC Down Spread Range | Pass | SSCDownSpreadRange Min | 0.446 % | LL: 0.046 %, HL: NA | 10p3G |
| SSC Down Spread Range | Pass | SSCDownSpreadRange Max | 0.454 % | LL: NA, HL: 0.046 % | 10p3G |
| SSC Down Spread Rate | Pass | SSCDownSpreadRate Min | 36.347 kHz | LL: 1.347 kHz, HL: NA | 10p3G |
| SSC Down Spread Rate | Pass | SSCDownSpreadRate Max | 36.846 kHz | LL: NA, HL: 154.37 Hz | 10p3G |
| SSC Phase Deviation | Pass | SSCPhaseDeviation p-p | 15.667 ns | LL: 13.167 ns, HL: 2.833 ns | 10p3G |
| SSC Slew Rate | Pass | SSCSlewRate Max | 662.432 ppm/us | LL: NA, HL: 587.568 ppm/us | 10p3G |

Figure 12: Results panel with measurement results

Click **+** icon on each measurement in the row to expand and to display the minimum and maximum parameter values of the measurement.

Filter the test results

Each column in the result table can be customized and displayed by enabling or disabling any column as per your requirement. You can change the view in the following ways:

- To remove or restore the Pass/Fail column, select **Preferences > Show Pass/Fail**.
- To collapse all expanded tests, select **Preferences > View Results Summary**.
- To expand all the listed tests, select **View Results Details** from the **Preferences menu** in the upper right corner.
- To enable or disable the wordwrap feature, select **Preferences > Enable Wordwrap**.
- To view the results grouped by lane or test, select the corresponding item from the **Preferences menu**.
- To expand the width of a column, place the cursor over the vertical line that separates the column from the column to the right. When the cursor changes to a double-ended arrow, hold down the mouse button and drag the column to the desired width.
- To clear all test results displayed, click **Clear**.

Reports panel: Configure report generation settings

Click **Reports** panel to configure the report generation settings and select the test result information to include in the report. You can use the Reports panel to configure report generation settings, select test content to include in reports, generate the report, view the report, browse for reports, name and save reports, and select report viewing options.

Report configuration settings

The Configuration tab describes the report generation settings to configure the Reports panel. Select report settings before running a test or when creating and saving test setups. Report settings configured are included in saved test setups.





Figure 13: Report panel- Configuration tab

Table 17: Report configuration panel settings

| Control | Description |
|------------------------------------|---|
| View | Click to view the most current report. |
| Generate Report | Generates a new report based on the current analysis results. |
| Save As | Specify a name for the report. |
| Report Update Mode Settings | |
| Generate new report | Each time when you click Run and when the test execution is complete, it will create a new report. The report can be in either .mht, .pdf, or .csv file formats. |
| Append with previous run session | Appends the latest test results to the end of the current test results report. Each time when you click this option and run the tests, it will run the previously failed tests and replace the failed test result with the new pass test result in the same report. |
| Include header in appended reports | Select to include header in appended reports. |

Table continued...

| Control | Description |
|---|---|
| Replace current test results | Replaces the previous test results with the latest test results. Results from newly added tests are appended to the end of the report. |
| In previous run, current session | Select to replace current test results in the report with the test result(s) of previous run in the current session. |
| In any run, any session | Select to replace current test results in the report with the test result(s) in the selected run session's report. Click and select test result of any other run session. |
| Report Creation Settings | |
| Report name | <p>Displays the name and path of the <Application Name> report. The default location is at \My Documents>\My TekExpress\<Application Name>\Reports. The report file in this folder gets overwritten each time you run a test unless you specify a unique name or select to auto increment the report name.</p> <p>To change the report name or location, do one of the following:</p> <ul style="list-style-type: none"> In the Report Path field, type the current folder path and name. Double-click in the Report Path field and then make selections from the popup keyboard and click Enter. <p>Be sure to include the entire folder path, the file name, and the file extension. For example: C:\Documents and Settings\your user name\My Documents\My TekExpress\<Application Name> \DUT001.mht.</p> <p> Note: You cannot set the file location using the Browse button.</p> <p>Open an existing report</p> <p>Click Browse, locate and select the report file and then click View at the bottom of the panel.</p> |
| Save as type | <p>Saves a report in the specified file type, selected from the drop-down list. The report is saved in .csv, .pdf, or .mht.</p> <p> Note: If you select a file type different from the default, be sure to change the report file name extension in the Report Name field to match.</p> |
| Auto increment report name if duplicate | Sets the application to automatically increment the name of the report file if the application finds a file with the same name as the one being generated. For example: DUT001, DUT002, DUT003. This option is enabled by default. |
| Create report automatically at the end of the run | Select to create the report with the settings configured, at the end of run. |
| View report after generating | Automatically opens the report in a Web browser when the test execution is complete. This option is selected by default. |

Configure report view settings

The **View Settings** tab describes the report view settings to configure the Reports panel. Select report view settings before running a test or when creating and saving test setups. Report settings configured are included in saved test setups.

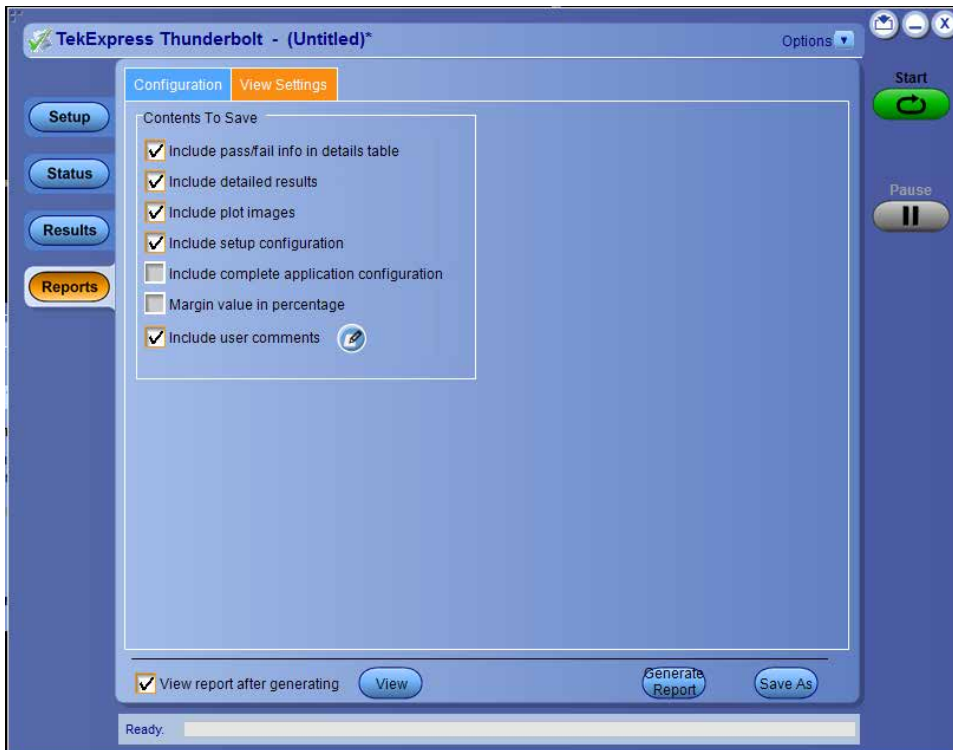


Figure 14: Report panel-View settings tab

Table 18: Report panel view settings

| Control | Description |
|--|--|
| Contents To Save Settings | |
| Include pass/fail info in details table | Select to include pass/fail information in the details table of the report. |
| Include detailed results | Select to include detailed results in the report. |
| Include plot images | Select to include the plot images in the report. |
| Include setup configuration | Sets the application to include hardware and software information in the summary box at the top of the report. Information includes: the oscilloscope model and serial number, the oscilloscope firmware version, and software versions for applications used in the measurements. |
| Include complete application configuration | Select to include the complete application configuration in the report. |
| Margin value in percentage | |
| Include user comments | Select to include any comments about the test that you or another user have added in the DUT tab of the Setup panel. Comments appear in the Comments section, below the summary box at the beginning of each report. |

View a generated report

Sample report and its contents

A report shows detailed results and plots, as set in the Reports panel.

| Setup Information | |
|--|-----------------------|
| DUT ID | DUT001 |
| Date/Time | 11/23/2022 1:12:31 PM |
| Acquisition Mode | Live |
| DUT Control | Automated |
| DUT Type | Device |
| DUT Port Number | 1 |
| Test Method | SigTest |
| Total Acquisition Time | 00:28:07.78 |
| Total Analysis Time | 00:11:24.19 |
| Over All Test Result | Pass |
| DUT COMMENT: General Comment – Thunderbolt Transmitter DUT | |

| Minimum Unit Interval | | | | | | | |
|-------------------------|--------------------------|--------|----------------|-------------|-----------------------|-----------|------------|
| Measurement Details | Data Rates | Lane | Measured Value | Test Result | Margin | Low Limit | High Limit |
| MinimumUnitInterval Min | 10G | Lane 0 | 100.014 ps | Pass | LL: 44.015 fs, HL: NA | 99.97 ps | NA |
| MinimumUnitInterval Max | 10G | Lane 0 | 100.017 ps | Pass | LL: NA, HL: 12.867 fs | NA | 100.03 ps |
| MinimumUnitInterval Min | 10G | Lane 1 | 100.015 ps | Pass | LL: 44.699 fs, HL: NA | 99.97 ps | NA |
| MinimumUnitInterval Max | 10G | Lane 1 | 100.017 ps | Pass | LL: NA, HL: 12.666 fs | NA | 100.03 ps |
| COMMENTS | For Lane0: For Lane1: | | | | | | |

Figure 15: Report

Setup Information

The summary box at the beginning of the report lists setup configuration information. This information includes the oscilloscope model and serial number, optical module model and serial number, and software version numbers of all associated applications.

Test Name Summary Table

The test summary table lists all the tests which are executed with its result status.

Measurement

The measurement table displays the measurement related details with its parameter value.

User comments

If you had selected to include comments in the test report, any comments you added in the DUT tab are shown at the top of the report.

Saving and recalling test setup

Overview

You can save the test setup and recall it later for further analysis. Saved setup includes the selected oscilloscope, general parameters, acquisition parameters, measurement limits, waveforms (if applicable), and other configuration settings. The setup files are saved under the setup name at **X:\TekExpress Thunderbolt**

| Name | Date modified | Type |
|----------------------|--------------------|-------------|
| 1-LP_20210331_210911 | 3/31/2021 9:06 PM | File folder |
| 1-LP_20210331_220738 | 3/31/2021 10:05 PM | File folder |
| 1-LP_20210331_223715 | 3/31/2021 10:35 PM | File folder |
| 1-LP_20210331_224851 | 3/31/2021 10:48 PM | File folder |
| 1-LP_20210331_230337 | 3/31/2021 11:02 PM | File folder |
| 1-LP_20210331_230921 | 3/31/2021 11:08 PM | File folder |

Figure 16: Example of Test Setup File

Use test setups to:

- Recall a saved configuration.
- Run a new session or acquire live waveforms.
- Create a new test setup using an existing one.
- View all the information associated with a saved test, including the log file, the history of the test status as it executed, and the results summary.
- Run a saved test using saved waveforms.

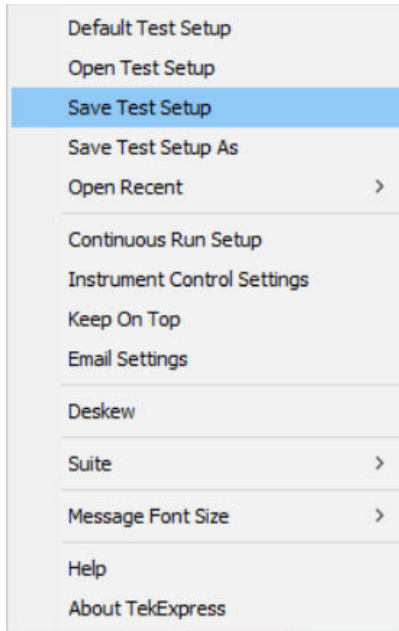


Note: Images that are shown in this Saving and recalling test setup chapter are for illustration purpose only and it may vary depending on the TekExpress application.

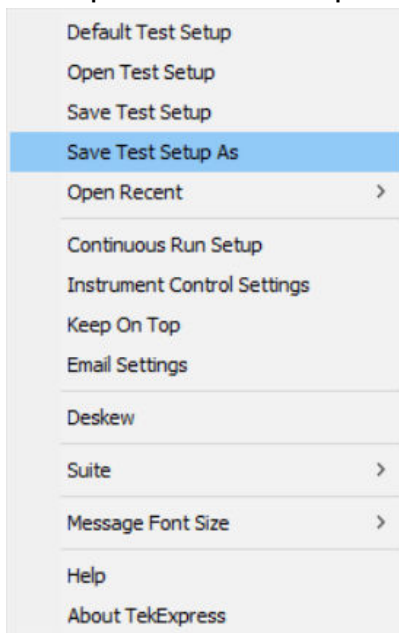
Save the configured test setup

You can save a test setup before or after running a test. You can create a test setup from already created test setup or using a default test setup. When you save a setup, all the parameters, measurement limits, waveform files (if applicable), test selections, and other configuration settings are saved under the setup name. When you select the default test setup, the parameters are set to the application's default value.

- Select **Options > Save Test Setup** to save the opened setup.



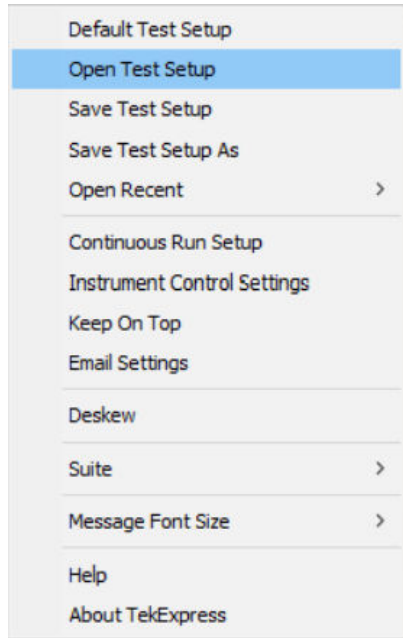
- Select **Options > Save Test Setup As** to save the setup with different name.



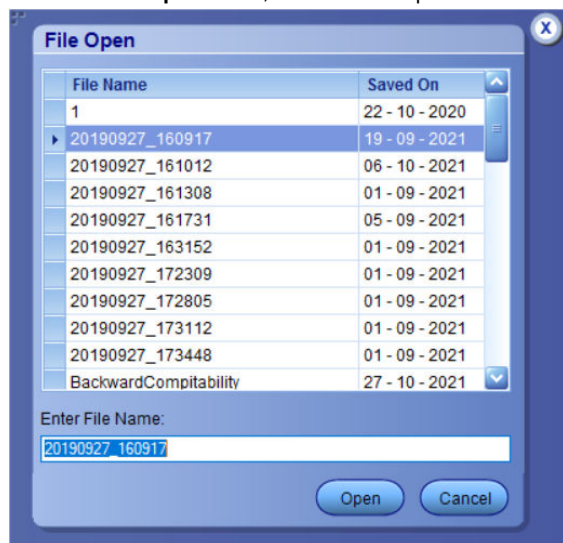
Load a saved test setup

To open (load) a saved test setup, do the following:

- Select **Options > Open Test Setup**.



- From the **File Open** menu, select the setup file name from the list and click **Open**.

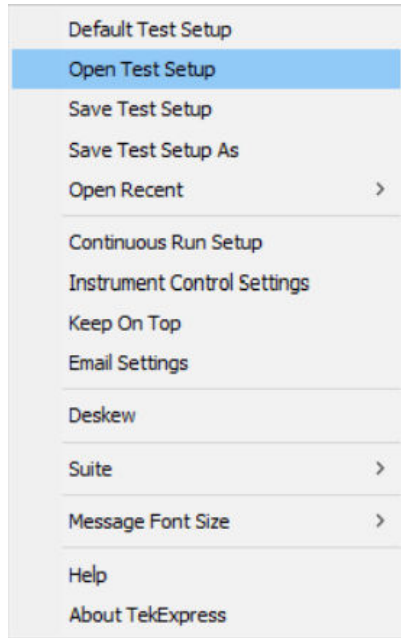


Note: Parameters that are set for the respective test setup will enable after opening the file.

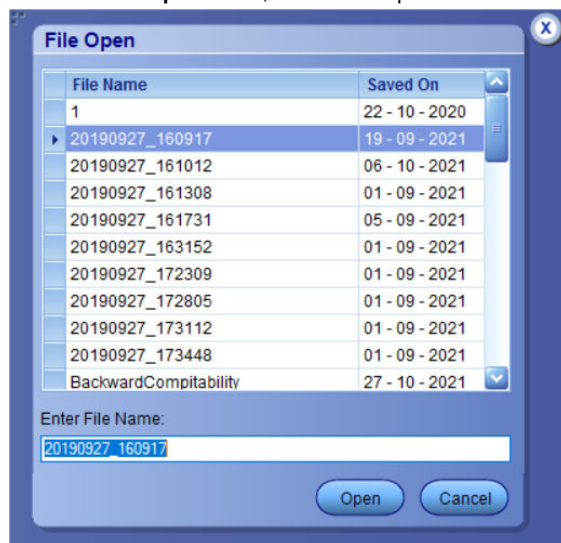
Perform a test using pre-run session files

Complete the following steps to load a test setup from a pre-run session:

1. Select **Options > Open Test Setup**.

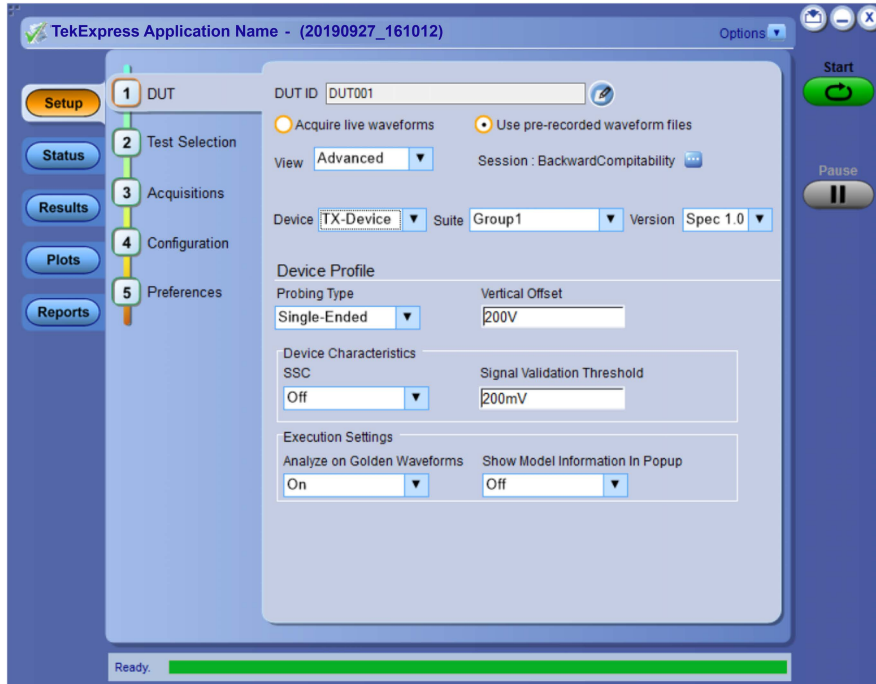


- From the **File Open** menu, select a setup from the list and then click **Open**.

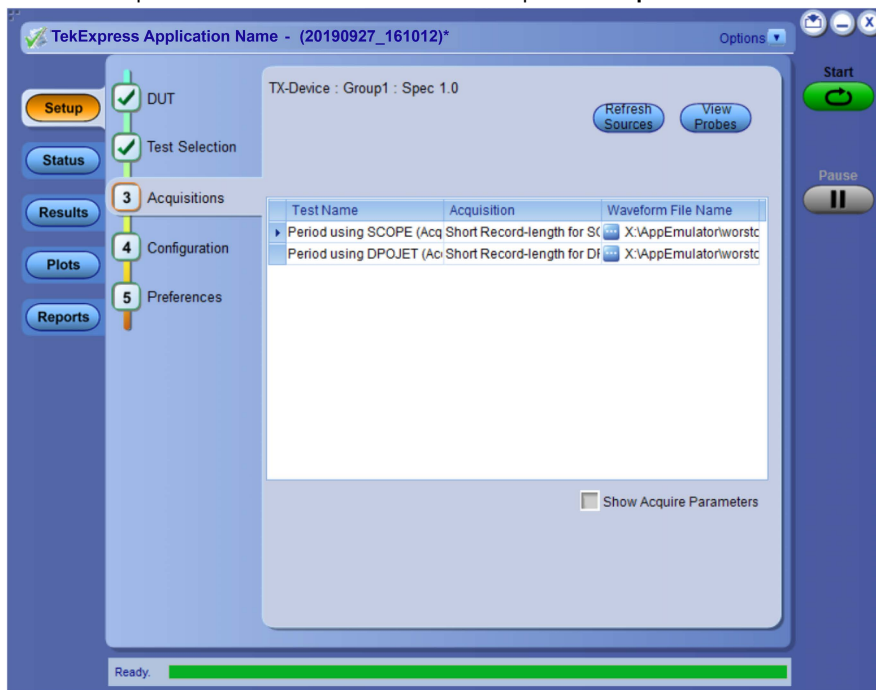



Note: Parameters that are set for the respective test setup will enable after opening the file.

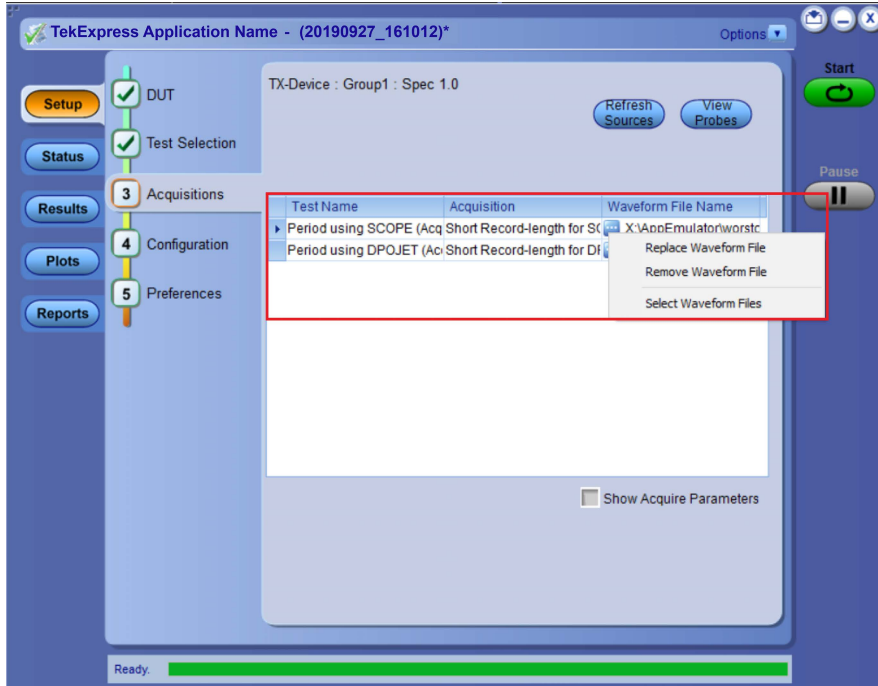
- Switch the mode to **Use Pre-recorded waveform files** in the DUT panel.



4. Select the required waveforms from the selected setup in the **Acquisitions** tab and click **Start**.



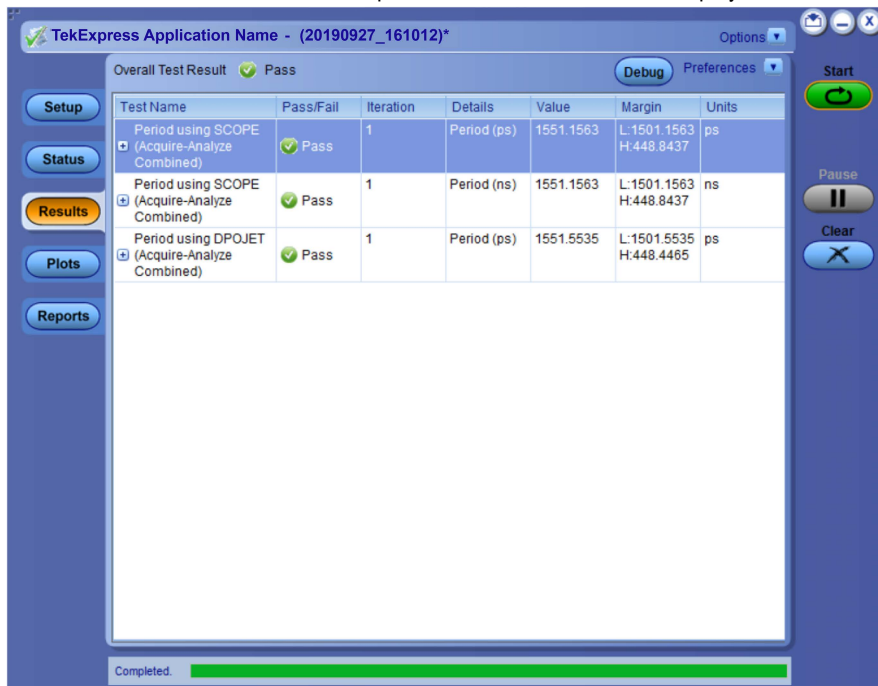
5. The selected waveform file can be removed/replaced by clicking on the () icon.



6. After successful completion of the test, the waveform report files are stored at X:\<Application Name>\Reports.

| Name | Date modified | Type |
|-----------------|--------------------|----------------|
| DUT001_2266.mht | 10/27/2021 4:25 AM | MHTML Document |
| DUT001_2265.mht | 10/27/2021 1:24 AM | MHTML Document |
| DUT001_2264.mht | 10/6/2021 2:58 AM | MHTML Document |
| DUT001_2263.mht | 10/6/2021 2:40 AM | MHTML Document |
| DUT001_2262.mht | 10/6/2021 2:35 AM | MHTML Document |
| DUT001_2261.mht | 10/6/2021 2:23 AM | MHTML Document |

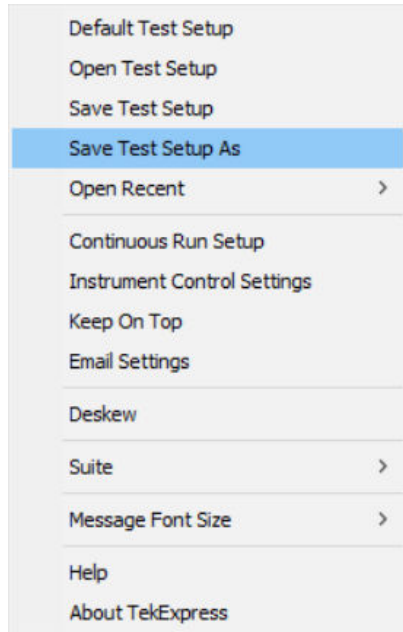
7. The overall test result status after completion of the test execution is displayed in the Results Panel.



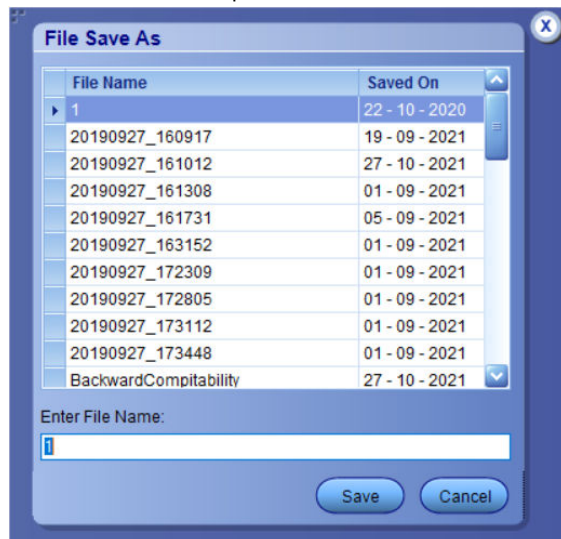
Save the test setup with a different name

To save a test setup with a different name, follow the steps:

1. Select **Options > Save Test Setup As**.



2. Enter the new test setup name and click **Save**.



Run a saved test in prerecorded mode

Use this option to re-run a complete test using just the oscilloscope and the saved test setup files, if you selected to save the captured waveforms when you originally ran the saved test.



Note: When you run a saved test in prerecorded mode and then save it under the same name, the test results are saved in a new session folder named for the date and time of the session. Any test settings that you changed for the session are saved as a new test session file and be paired with a folder of the same name. Example. When you open a test setup that has multiple sessions and you select a session from the Run session list in the DUT tab, the settings associated with that test session are restored.

Each test session folder has a matching test session file that stores the individual test settings for that session.

1. Use the Options menu to [Open a saved test setup file](#)
2. Select **Setup > DUT** and then select **Use pre-recorded waveform files**. A Run session drop-down list appears that displays the previous saved sessions for this test.
3. Select the session to run.



Note: If you select a session for which no waveform files were saved, you will receive an error message. You have selected to use Pre-recorded waveforms. The pre-recorded waveform(s) are not specified for the following Acquisition(s).

4. Click **Start**.
5. To save the test results, session settings, and related files, save the test setup before selecting another test setup or exiting the application.

See also

[About test setups](#)

[Create a new test setup based on an existing one](#)

[Test setups overview](#)

Create a new test setup file based on an existing one

Use this method to create a variation on a test setup without having to create the setup from the beginning.

1. Select **Options > Open Test Setup**.
2. Select a setup from the list and then click **Open**.
3. Use the **Setup** and **Reports** panels to modify the parameters to meet your testing requirements.
4. Select **Options > Save Test Setup As**.
5. Enter a test setup name and click **Save**.

See also

[About test setups](#)

[Set DUT parameters](#)

[Select acquisitions](#)

SCPI Commands

About SCPI command

You can use the Standard Commands for Programmable Instruments (SCPI) to communicate remotely with the TekExpress application. Complete the TCP/IP socket configuration and the TekVISA configuration in the oscilloscope or in the device where you are executing the script.



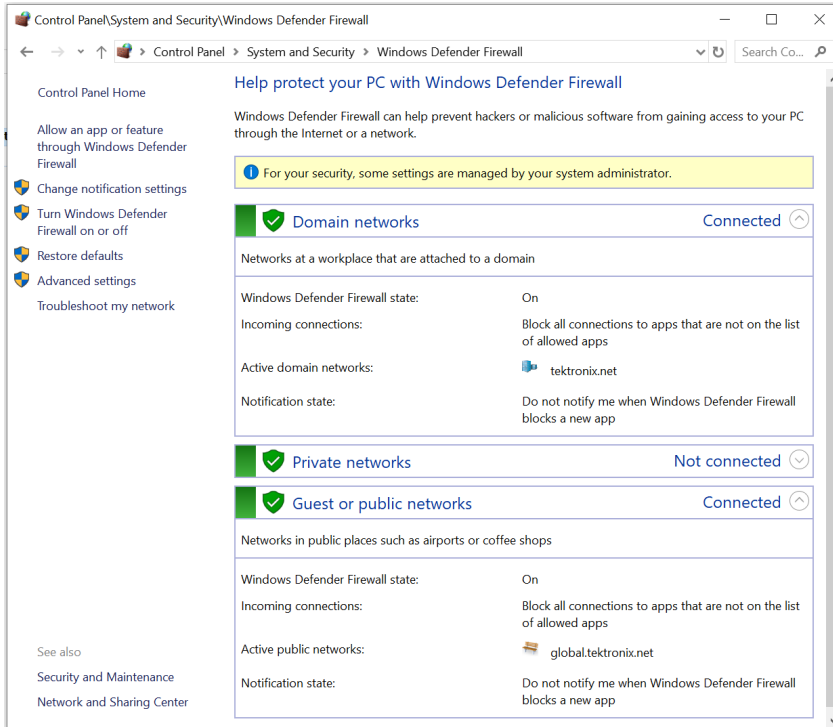
Note: If you are using an external PC to execute the remote interface commands, then install TekVISA in the PC to make the configurations.

Socket configuration for SCPI commands

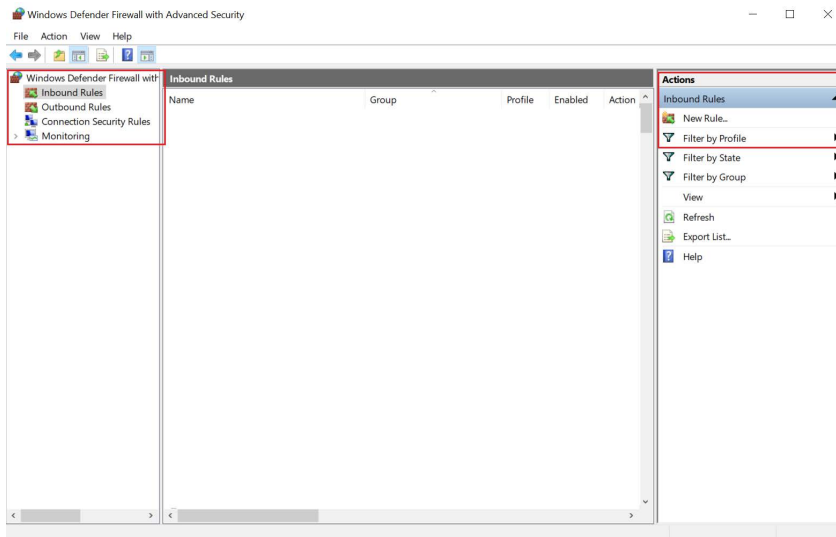
This section describes the steps to configure the TCP/IP socket configuration in your script execution device and the steps to configure the TekVISA configuration in the oscilloscope to execute the SCPI commands.

TCP/IP socket configuration

1. Click **Start > Control Panel > System and Security > Windows Firewall > Advanced settings.**

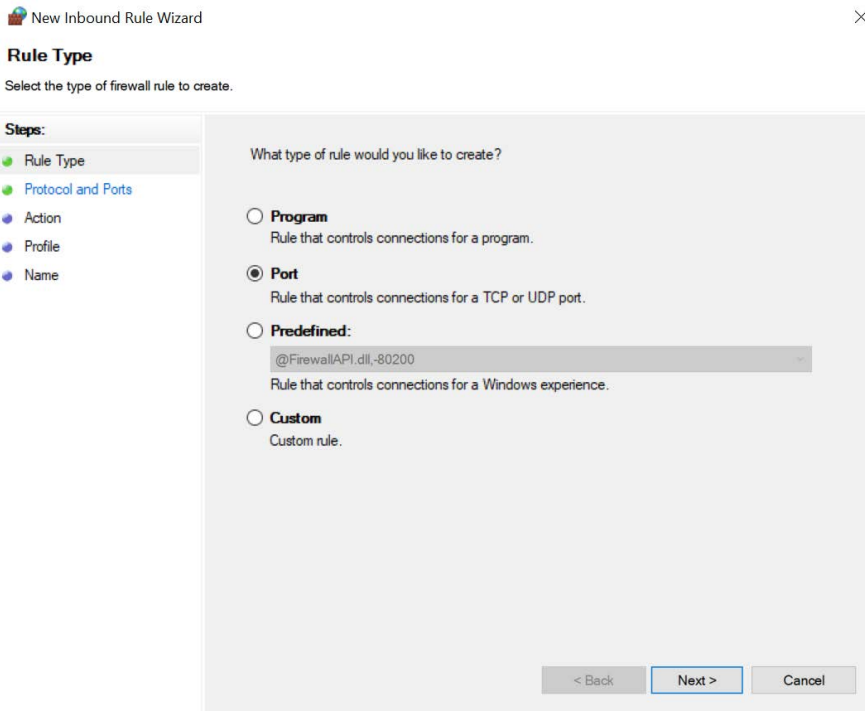


2. In Windows Firewall with Advanced Security menu, select **Windows Firewall with Advanced Security on Local Computer > Inbound Rules** and click **New Rule...**

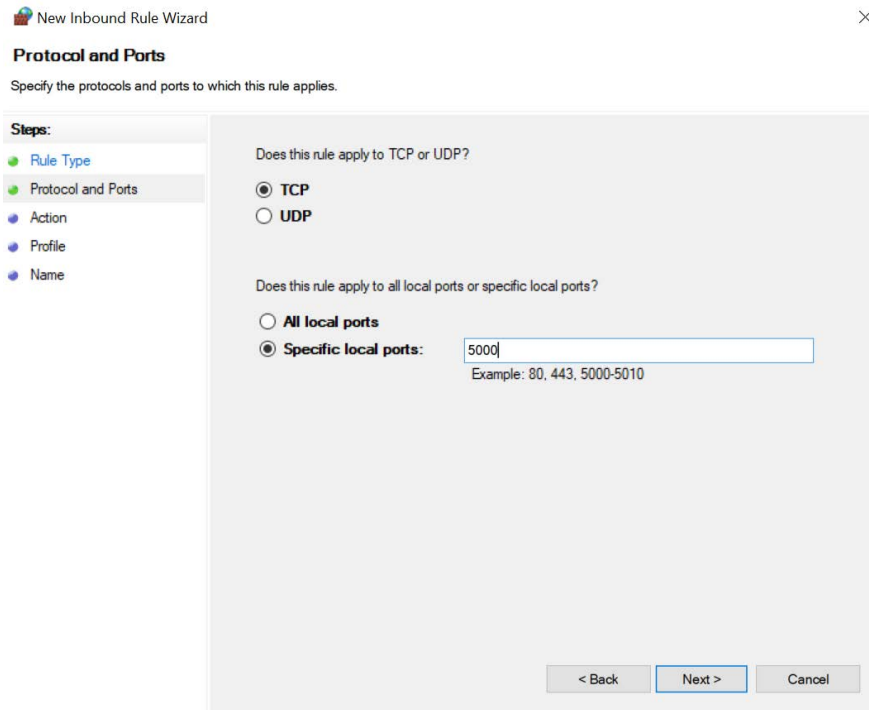


3. In **New Inbound Rule Wizard** menu

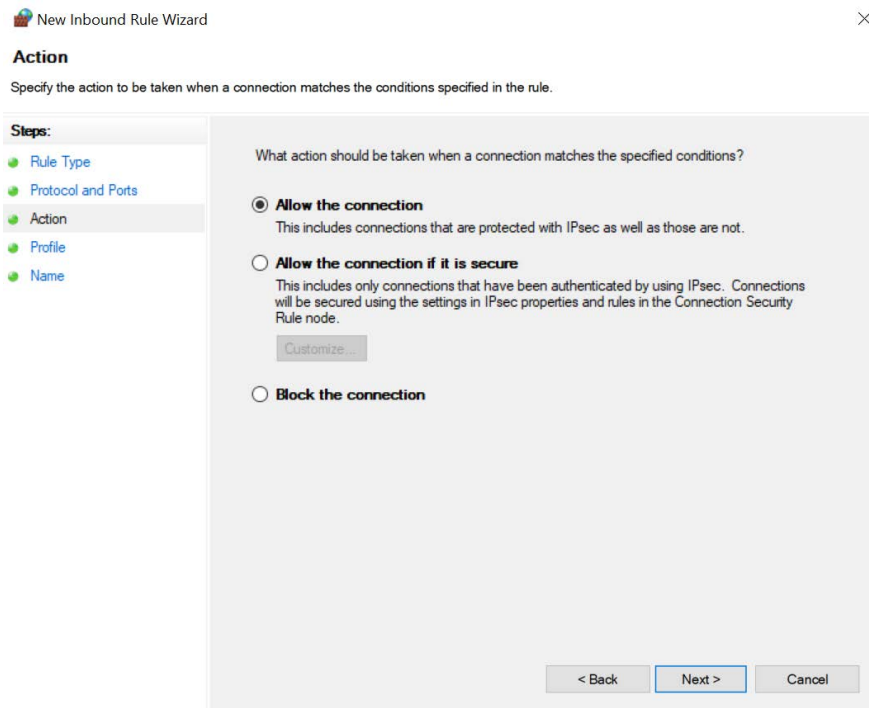
- a. Select **Port** and click **Next**.



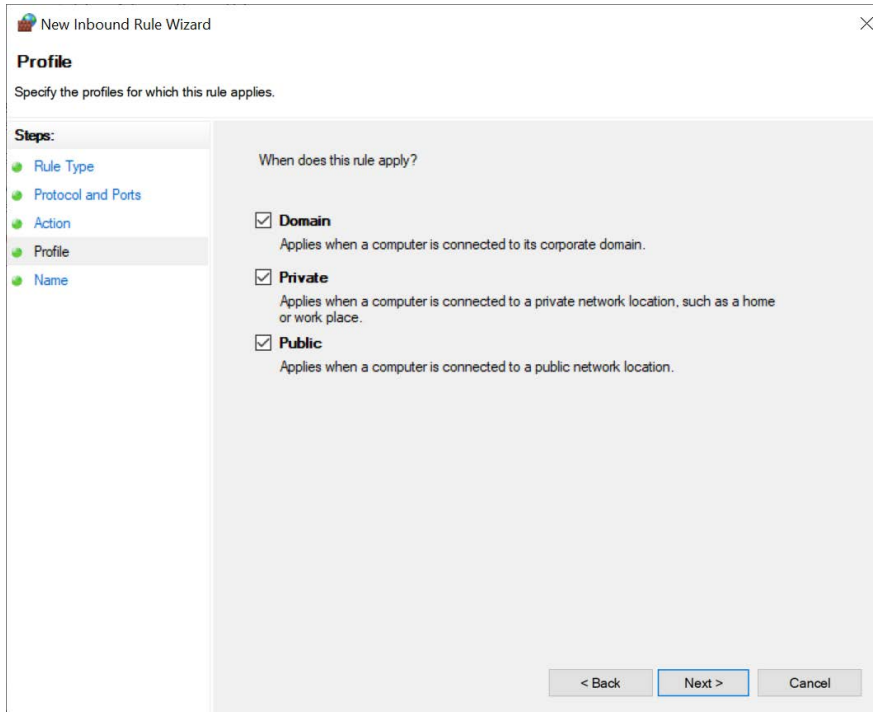
- b. Select **TCP** as rule apply, enter **5000** for **Specific local ports** and click **Next**.



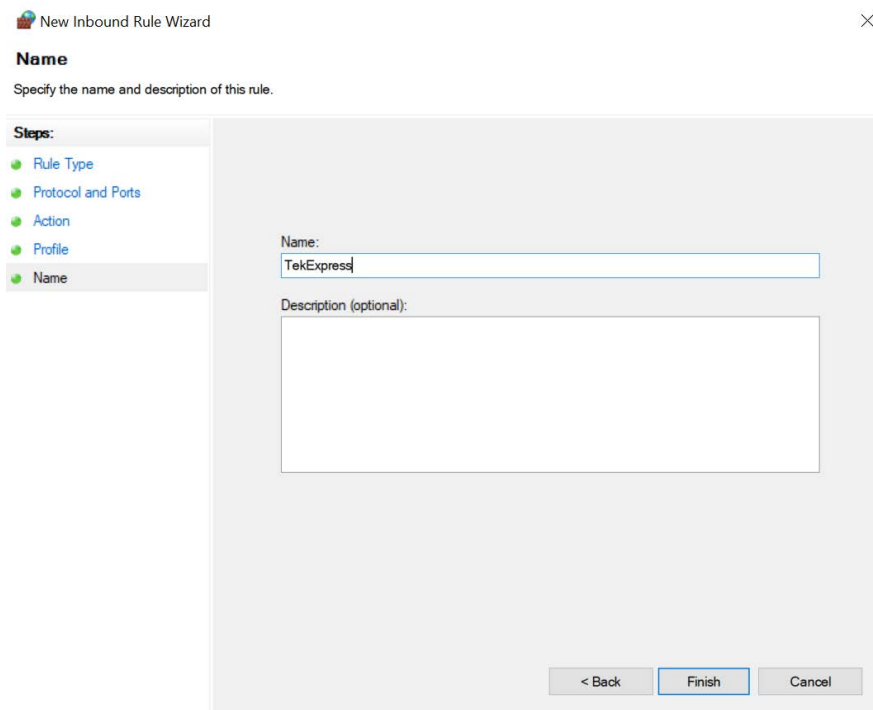
c. Select **Allow the connection** and click **Next**.



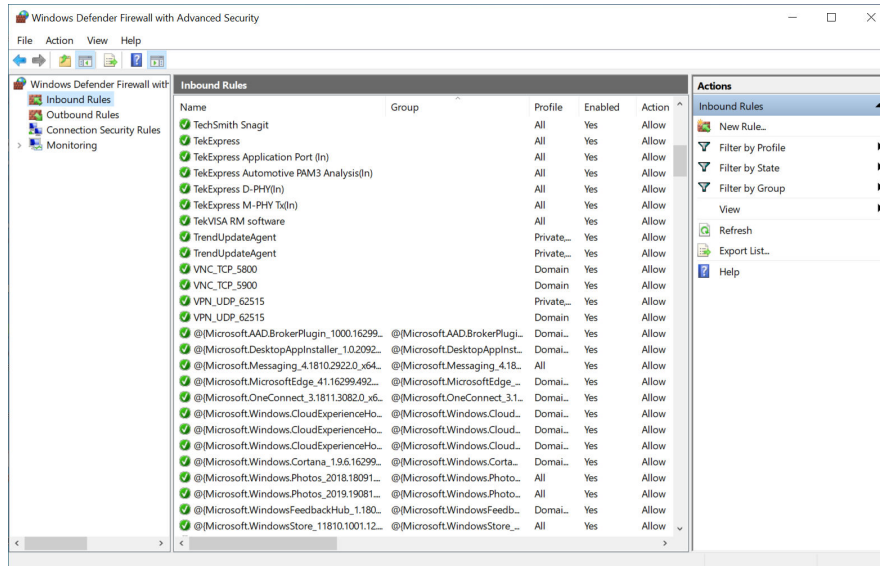
d. Select **Domain, Private, Public** checkbox and click **Next**.



- e. Enter **Name**, Description (optional), and click **Finish**.

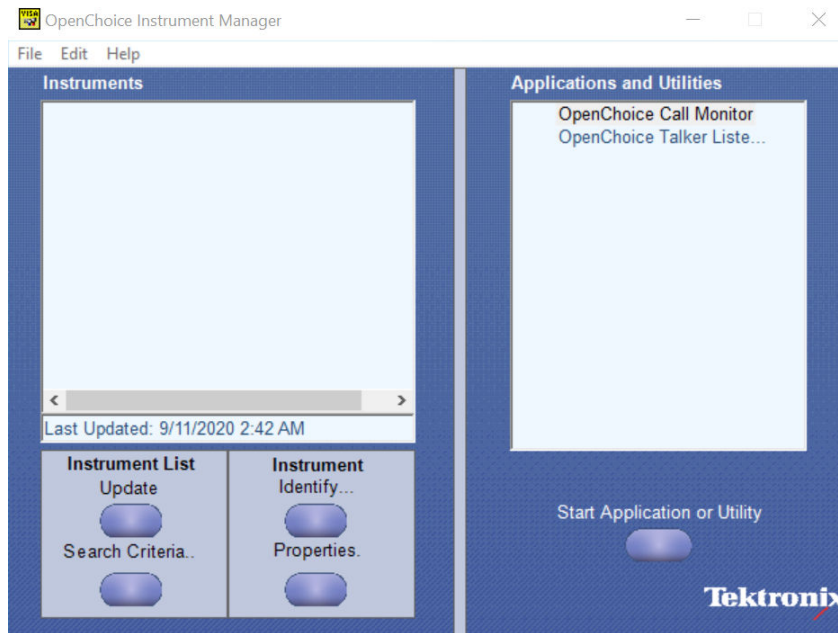


4. Check whether the Rule name is displayed in **Windows Firewall with Advanced Security** menu > **Inbound Rules**.




TekVISA configuration

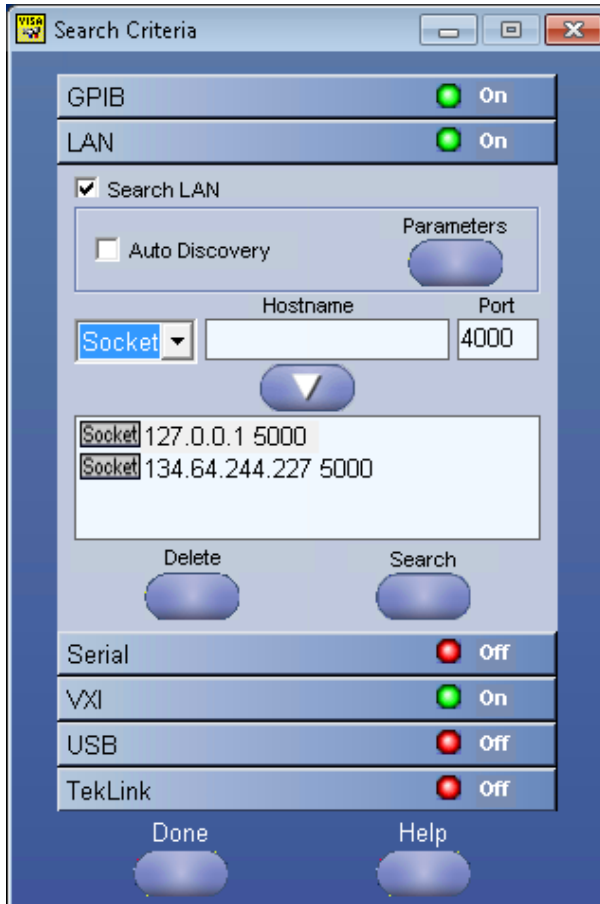
1. Click **Start > All Programs > TekVISA > OpenChoice Instrument Manager**.



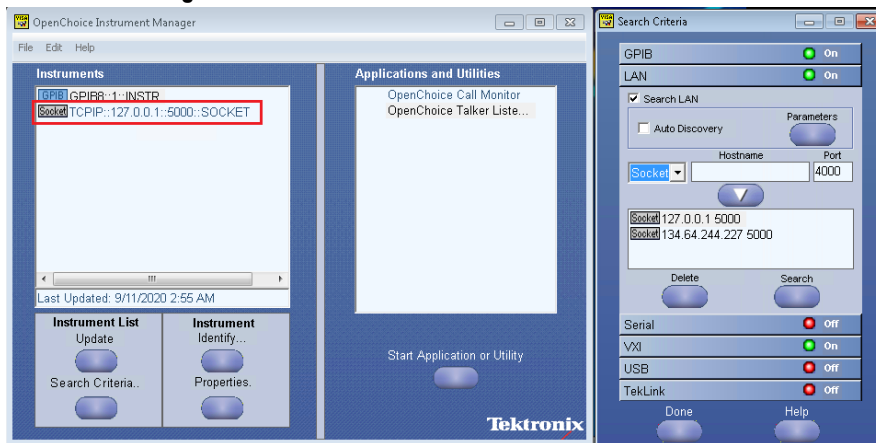
2. Click **Search Criteria**. In **Search Criteria** menu, click **LAN** to Turn-on. Select **Socket** from the drop-down list, enter the IP address of

the TekExpress device in **Hostname** and type **Port** as 5000. Click  to configure the IP address with Port.

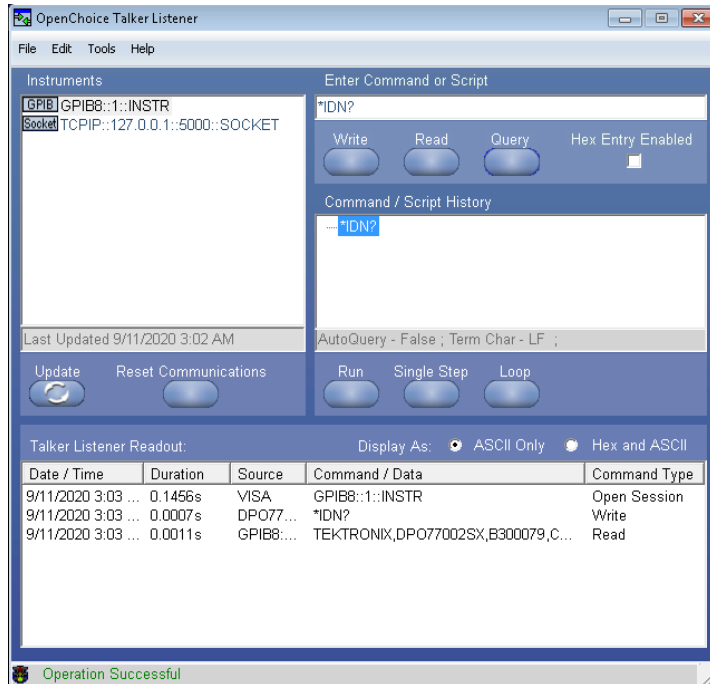
Enter the Hostname as 127.0.0.1 if the TekVISA and TekExpress application are in the same system, else enter the IP address of the oscilloscope where the TekExpress application is running.



3. Click **Search** to setup the TCPIP connection with the host. Check whether the TCPIP host name is displayed in **OpenChoice Instrument Manager > Instruments**.



4. Double-click **OpenChoice Talker Listener** and enter the Command ***IDN?** in command entry field and click **Query**. Check that the Operation is successful and Talker Listener Readout displays the Command / Data.



Set or query the device name of application

This command sets or queries the device name of the application.

Syntax

TEKEXP:SELECT DEVICE, "<DeviceName>" (Set)

TEKEXP:SELECT? DEVICE (Query)

Command arguments

| Argument Name | Argument Type |
|---------------|---------------|
| <DeviceName> | <String> |

Returns

<String>

Examples

TEKEXP:SELECT DEVICE, "<DeviceName>" command sets the device name of the application.

TEKEXP:SELECT? DEVICE command returns the selected device name of the application.

Set or query the suite name of the application

This command sets or queries the suite name of the application.

Syntax

TEKEXP:SELECT SUITE, "<SuiteName>" (Set)

TEKEXP:SELECT? SUITE (Query)

Command arguments

| Argument Name | Argument Type and value | Description |
|---------------|-------------------------|---|
| <SuiteName> | <String> | It is the name of the suite on the DUT panel of the application |

Returns

<String>

Examples

TEKEXP:SELECT SUITE, "<SuiteName>" command sets the suite name of the application.

TEKEXP:SELECT? SUITE command returns the selected suite of the application.

Set or query the test name of the application

This command selects or deselects the specified test name of the application.

Syntax

TEKEXP:SELECT TEST, "<TestName>", <Value> (Set)

TEKEXP:SELECT TEST, "<ALL>" (Set)

TEKEXP:SELECT? TEST (Query)

Command arguments

| TestName | Value |
|--|--|
| <p>TP2</p> <ul style="list-style-type: none"> • Minimum Unit Interval 10G • SSC Down Spread Range 10G • SSC Down Spread Rate 10G • SSC Phase Deviation 10G • SSC Slew Rate 10G • Rise Fall Time 10G • Electrical Idle 10G • TJ (Total Jitter) <ul style="list-style-type: none"> • TJ using PRBS15 10G • TJ using SQ2 10G • UJ (Uncorrelated Jitter) 10G • UDJ (Uncorrelated Deterministic Jitter) 10G • DDJ (Data Dependent Jitter) 10G • UDJ_LF (Low Frequency Uncorrelated Deterministic Jitter) 10G • DCD (Duty Cycle Distortion) 10G • AC Common Mode 10G • Eye Diagram TP2 10G | <p>{True False} or {1 0}</p> <p>It represents selected or unselected.</p> <p>Where,</p> <p>True or 1 - Selected</p> <p>False or 0 - Unselected</p> |
| <p>TP3</p> <ul style="list-style-type: none"> • Total Jitter TP3 <ul style="list-style-type: none"> • TJ TP3 using PRBS15 10G • TJ TP3 using SQ2 10G • UJ TP3 (Uncorrelated Jitter TP3) 10G • UDJ TP3 (Uncorrelated Deterministic Jitter TP3) 10G • Eye Diagram TP3 10G | |
| <p>Table continued...</p> | |

| TestName | Value |
|---|---|
| Transmitter Equalization <ul style="list-style-type: none"> • TXEQ Preset 0 10G • TXEQ Preset 1 10G • TXEQ Preset 2 10G • TXEQ Preset 3 10G • TXEQ Preset 4 10G • TXEQ Preset 5 10G • TXEQ Preset 6 10G • TXEQ Preset 7 10G • TXEQ Preset 8 10G • TXEQ Preset 9 10G • TXEQ Preset 10 10G • TXEQ Preset 11 10G • TXEQ Preset 12 10G • TXEQ Preset 13 10G • TXEQ Preset 14 10G • TXEQ Preset 15 10G | {True False} or {1 0} It represents selected or unselected. Where, True or 1 - Selected False or 0 - Unselected |
| TP2 <ul style="list-style-type: none"> • Minimum Unit Interval 20G • SSC Down Spread Range 20G • SSC Down Spread Rate 20G • SSC Phase Deviation 20G • SSC Slew Rate 20G • Rise Fall Time 20G • Electrical Idle 20G • TJ (Total Jitter) <ul style="list-style-type: none"> • TJ using PRBS15 20G • TJ using SQ2 20G • UJ (Uncorrelated Jitter) 20G • UDJ (Uncorrelated Deterministic Jitter) 20G • DDJ (Data Dependent Jitter) 20G • UDJ_LF (Low Frequency Uncorrelated Deterministic Jitter) 20G • DCD (Duty Cycle Distortion) 20G • AC Common Mode 20G • Eye Diagram TP2 20G | |

Table continued...

| TestName | Value |
|--|--|
| <p>TP3</p> <ul style="list-style-type: none"> • Total Jitter TP3 <ul style="list-style-type: none"> • TJ TP3 using PRBS15 20G • TJ TP3 using SQ2 20G • UJ TP3 (Uncorrelated Jitter TP3) 20G • UDJ TP3 (Uncorrelated Deterministic Jitter TP3) 20G • Eye Diagram TP3 20G | <p>{True False} or {1 0}</p> <p>It represents selected or unselected.</p> <p>Where,</p> <p>True or 1 - Selected</p> <p>False or 0 - Unselected</p> |
| <p>Transmitter Equalization</p> <ul style="list-style-type: none"> • TXEQ Preset 0 20G • TXEQ Preset 1 20G • TXEQ Preset 2 20G • TXEQ Preset 3 20G • TXEQ Preset 4 20G • TXEQ Preset 5 20G • TXEQ Preset 6 20G • TXEQ Preset 7 20G • TXEQ Preset 8 20G • TXEQ Preset 9 20G • TXEQ Preset 10 20G • TXEQ Preset 11 20G • TXEQ Preset 12 20G • TXEQ Preset 13 20G • TXEQ Preset 14 20G • TXEQ Preset 15 20G | |

Table continued...

| TestName | Value |
|--|--|
| <p>TP2</p> <ul style="list-style-type: none"> • Minimum Unit Interval 10p3G • Average Unit Interval 10p3G • SSC Down Spread Range 10p3G • SSC Down Spread Rate 10p3G • SSC Phase Deviation 10p3G • SSC Slew Rate 10p3G • Rise Fall Time 10p3G • Electrical Idle 10p3G • Total Jitter TP3 <ul style="list-style-type: none"> • TJ using PRBS15 10p3G • TJ using SQ2 10p3G • UJ (Uncorrelated Jitter) 10p3G • UDJ (Uncorrelated Deterministic Jitter) 10p3G • DDJ (Data Dependent Jitter) 10p3G • UDJ_LF (Low Frequency Uncorrelated Deterministic Jitter) 10p3G • DCD (Duty Cycle Distortion) 10p3G • AC Common Mode 10p3G • Eye Diagram TP2 10p3G | <p>{True False} or {1 0}</p> <p>It represents selected or unselected.</p> <p>Where,</p> <p>True or 1 - Selected</p> <p>False or 0 - Unselected</p> |
| <p>TP3</p> <ul style="list-style-type: none"> • Total Jitter TP3 <ul style="list-style-type: none"> • TJ TP3 using PRBS15 10p3G • TJ TP3 using SQ2 10p3G • UJ TP3 (Uncorrelated Jitter TP3) 10p3G • UDJ TP3 (Uncorrelated Deterministic Jitter TP3) 10p3G • Eye Diagram TP3 10p3G | |

Table continued...

| TestName | Value |
|---|---|
| Transmitter Equalization <ul style="list-style-type: none"> • TXEQ Preset 0 10p3G • TXEQ Preset 1 10p3G • TXEQ Preset 2 10p3G • TXEQ Preset 3 10p3G • TXEQ Preset 4 10p3G • TXEQ Preset 5 10p3G • TXEQ Preset 6 10p3G • TXEQ Preset 7 10p3G • TXEQ Preset 8 10p3G • TXEQ Preset 9 10p3G • TXEQ Preset 10 10p3G • TXEQ Preset 11 10p3G • TXEQ Preset 12 10p3G • TXEQ Preset 13 10p3G • TXEQ Preset 14 10p3G • TXEQ Preset 15 10p3G | {True False} or {1 0} It represents selected or unselected. Where, True or 1 - Selected False or 0 - Unselected |

Table continued...

| TestName | Value |
|--|--|
| <p>TP2</p> <ul style="list-style-type: none"> • Minimum Unit Interval 20p6G • SSC Down Spread Range 20p6G • SSC Down Spread Rate 20p6G • SSC Phase Deviation 20p6G • SSC Slew Rate 20p6G • Rise Fall Time 20p6G • Electrical Idle 20p6G • TJ (Total Jitter) <ul style="list-style-type: none"> • TJ using PRBS15 20p6G • TJ using SQ2 20p6G • UJ (Uncorrelated Jitter) 20p6G • UDJ (Uncorrelated Deterministic Jitter) 20p6G • DDJ (Data Dependent Jitter) 20p6G • UDJ_LF (Low Frequency Uncorrelated Deterministic Jitter) 20p6G • DCD (Duty Cycle Distortion) 20p6G • AC Common Mode 20p6G • Eye Diagram TP2 20p6G | <p>{True False} or {1 0}</p> <p>It represents selected or unselected.</p> <p>Where,</p> <p>True or 1 - Selected</p> <p>False or 0 - Unselected</p> |
| <p>TP3</p> <ul style="list-style-type: none"> • Total Jitter TP3 <ul style="list-style-type: none"> • TJ TP3 using PRBS15 20p6G • TJ TP3 using SQ2 20p6G • UJ TP3 (Uncorrelated Jitter TP3) 20p6G • UDJ TP3 (Uncorrelated Deterministic Jitter TP3) 20p6G • Eye Diagram TP3 20p6G | |
| <p>Table continued...</p> | |

| TestName | Value |
|--|---|
| Transmitter Equalization | {True False} or {1 0} |
| <ul style="list-style-type: none"> • TXEQ Preset 0 20p6G • TXEQ Preset 1 20p6G • TXEQ Preset 2 20p6G • TXEQ Preset 3 20p6G • TXEQ Preset 4 20p6G • TXEQ Preset 5 20p6G • TXEQ Preset 6 20p6G • TXEQ Preset 7 20p6G • TXEQ Preset 8 20p6G • TXEQ Preset 9 20p6G • TXEQ Preset 10 20p6G • TXEQ Preset 11 20p6G • TXEQ Preset 12 20p6G • TXEQ Preset 13 20p6G • TXEQ Preset 14 20p6G • TXEQ Preset 15 20p6G | <p>It represents selected or unselected.</p> <p>Where,</p> <p>True or 1 - Selected</p> <p>False or 0 - Unselected</p> |

Returns

{True | False} or {1 | 0}

Examples

TEKEXP:SELECT TEST, "<TestName>", 1 command selects the specified test in the Test Panel.

TEKEXP:SELECT TEST, "<ALL>" command select all the tests in the Test Panel.

TEKEXP:SELECT? TEST command returns the list of selected tests.

Set or query the version name of the application

This command sets or queries the version name of the application.

Syntax

TEKEXP:SELECT VERSION, "<VersionName>" (Set)

TEKEXP:SELECT? VERSION (Query)

Command arguments

| Argument Name | Argument Type | Valid Values |
|---------------|---------------|--|
| <VersionName> | <String> | It is the name of the version on the DUT panel of the application. |

Returns

<String>

Examples

TEKEXP:SELECT VERSION,"<VersionName>" command sets the version name of application.

TEKEXP:SELECT? VERSION command returns the version name of application.

Set or query the general parameter values

This command sets or queries the general parameter values of the application.

Syntax

TEKEXP:VALUE GENERAL,"<ParameterName>","<Value>" (Set)

TEKEXP:VALUE? GENERAL,"<ParameterName>" (Query)

Command arguments

Table 19: Command arguments for general settings

| ParameterName | Value | | | | | | | | |
|------------------------------|---|------------------------------|------------|------------------------------|------------|-----------------------------|--|-----------------------------|--|
| Device Type | <ul style="list-style-type: none"> Device Host | | | | | | | | |
| ThunderboltVersion | <ul style="list-style-type: none"> TBT3 TBT4 | | | | | | | | |
| TestMode | Compliance | | | | | | | | |
| Test Method | <ul style="list-style-type: none"> Sigtest DPOJET | | | | | | | | |
| TestType | <ul style="list-style-type: none"> Signal Test Preset Calibration | | | | | | | | |
| Data Rates | <table border="1"> <tr> <td>Rounded 20Gbps Option Button</td> <td>• Included</td> </tr> <tr> <td>Rounded 10Gbps Option Button</td> <td>• Excluded</td> </tr> <tr> <td>Legacy 20Gbps Option Button</td> <td></td> </tr> <tr> <td>Legacy 10Gbps Option Button</td> <td></td> </tr> </table> | Rounded 20Gbps Option Button | • Included | Rounded 10Gbps Option Button | • Excluded | Legacy 20Gbps Option Button | | Legacy 10Gbps Option Button | |
| Rounded 20Gbps Option Button | • Included | | | | | | | | |
| Rounded 10Gbps Option Button | • Excluded | | | | | | | | |
| Legacy 20Gbps Option Button | | | | | | | | | |
| Legacy 10Gbps Option Button | | | | | | | | | |
| TBT3 Compatibility | <ul style="list-style-type: none"> Included Excluded | | | | | | | | |
| Lane Selection | <ul style="list-style-type: none"> Both Lane 0 Lane 1 | | | | | | | | |
| DUT Automation | <ul style="list-style-type: none"> Manual Automated | | | | | | | | |

Table continued...

| ParameterName | Value | |
|--------------------------------|--|--|
| DUT Automation Types | <ul style="list-style-type: none"> • Goshen Ridge • Tiger Lake • Ice Lake • Titan Ridge • Alpine Ridge | |
| PortNumberType | For | 0 to 63 |
| | For | <ul style="list-style-type: none"> • pa • pb • User-Defined |
| UserDefined PortNumber | Enter any port number. | |
| Differential Source1 File Path | C:\Users\Public\Tektronix\TekApplications\Thunderbolt\Filters\sdlATp2DIFFSrc1.ftt | |
| Differential Source2 File Path | C:\Users\Public\Tektronix\TekApplications\Thunderbolt\Filters\sdlATp2DIFFSrc2.ftt | |
| CommonMode Source1 File Path | C:\Users\Public\Tektronix\TekApplications\Thunderbolt\Filters\sdlATp2CMSrc1.ftt | |
| CommonMode Source2 File Path | C:\Users\Public\Tektronix\TekApplications\Thunderbolt\Filters\sdlATp2CMSrc2.ftt | |
| De-embed S-parameter File Path | C:\Users\Public\Tektronix\TekApplications\Thunderbolt\Filters\Gore_SN300670_SN300675_20GHz_36inch.s4p | |
| Gen2S4p File Path | TBT3_Gen2_2m.s4p | |
| Gen3S4p File Path | TBT3_Gen3_0p8m.s4p | |
| Data+ | <ul style="list-style-type: none"> • CH1 • CH2 • CH3 • CH4 | |
| Data- | <ul style="list-style-type: none"> • CH1 • CH2 • CH3 • CH4 | |
| Signal Validation | <ul style="list-style-type: none"> • Prompt me if signal validation fails • Use signal as is - Don't Check • Skip test if signal validation fails | |

Table continued...

| ParameterName | Value |
|------------------|---|
| PresetGen2Legacy | <ul style="list-style-type: none">• P0• P1• P2• P3• P4• P5• P6• P7• P8• P9• P10• P11• P12• P13• P14• P15 |
| PresetGen3Legacy | <ul style="list-style-type: none">• P0• P1• P2• P3• P4• P5• P6• P7• P8• P9• P10• P11• P12• P13• P14• P15 |

Table continued...

| ParameterName | Value |
|--------------------|--|
| PresetGen2Rounded | <ul style="list-style-type: none"> • P0 • P1 • P2 • P3 • P4 • P5 • P6 • P7 • P8 • P9 • P10 • P11 • P12 • P13 • P14 • P15 |
| PresetGen3Rounded | <ul style="list-style-type: none"> • P0 • P1 • P2 • P3 • P4 • P5 • P6 • P7 • P8 • P9 • P10 • P11 • P12 • P13 • P14 • P15 |
| Gen2 Ctle Option | <ul style="list-style-type: none"> • Fixed • Optimize |
| Table continued... | |

| ParameterName | Value |
|---------------------------|--|
| Gen2 Ctle Index | <ul style="list-style-type: none"> • 0 dB • 1 dB • 2 dB • 3 dB • 4 dB • 5 dB • 6 dB • 7 dB • 8 dB • 9 dB |
| Gen2 Perform DFE Checkbox | <ul style="list-style-type: none"> • Included • Excluded |
| Gen3 Ctle Option | <ul style="list-style-type: none"> • Fixed • Optimize |
| Gen3 Ctle Index | <ul style="list-style-type: none"> • 0 dB • 1 dB • 2 dB • 3 dB • 4 dB • 5 dB • 6 dB • 7 dB • 8 dB • 9 dB |
| Gen3 Perform DFE Checkbox | <ul style="list-style-type: none"> • Included • Excluded |
| Gen2 Legacy Ctle Option | <ul style="list-style-type: none"> • Fixed • Optimize |
| Table continued... | |

| ParameterName | Value |
|----------------------------------|--|
| Gen2 Legacy Ctle Index | <ul style="list-style-type: none"> • 0 dB • 1 dB • 2 dB • 3 dB • 4 dB • 5 dB • 6 dB • 7 dB • 8 dB • 9 dB |
| Gen2 Legacy Perform DFE Checkbox | <ul style="list-style-type: none"> • Included • Excluded |
| Gen3 Legacy Ctle Option | <ul style="list-style-type: none"> • Fixed • Optimize |
| Gen3 Legacy Ctle Index | <ul style="list-style-type: none"> • 0 dB • 1 dB • 2 dB • 3 dB • 4 dB • 5 dB • 6 dB • 7 dB • 8 dB • 9 dB |
| Gen3 Legacy Perform DFE Checkbox | <ul style="list-style-type: none"> • Included • Excluded |

Table 20: Command arguments for report settings

| ParameterName | Value |
|--------------------|--|
| Report Update Mode | <ul style="list-style-type: none"> • New • Append • Replace |
| Report Path | X:\Thunderbolt\Reports\DUT001.mht |

Table continued...

| ParameterName | Value |
|---|---|
| Save As Type | <ul style="list-style-type: none"> • Web Archive (*.mht;*.mhtml) • PDF (*.pdf;) • CSV (*.csv;) |
| Auto increment report name if duplicate | <p>{True False} or {1 0}</p> <p>It represents selected or unselected.</p> <p>Where,</p> <ul style="list-style-type: none"> • True or 1 - Selected • False or 0 - Unselected |
| Create report at the end | <p>{True False} or {1 0}</p> <p>It represents selected or unselected.</p> <p>Where,</p> <ul style="list-style-type: none"> • True or 1 - Selected • False or 0 - Unselected |
| Include Pass/Fail Results Summary | <p>{True False} or {1 0}</p> <p>It represents selected or unselected.</p> <p>Where,</p> <ul style="list-style-type: none"> • True or 1 - Selected • False or 0 - Unselected |
| Include Detailed Results | <p>{True False} or {1 0}</p> <p>It represents selected or unselected.</p> <p>Where,</p> <ul style="list-style-type: none"> • True or 1 - Selected • False or 0 - Unselected |
| Include Plot Images | <p>{True False} or {1 0}</p> <p>It represents selected or unselected.</p> <p>Where,</p> <ul style="list-style-type: none"> • True or 1 - Selected • False or 0 - Unselected |
| Include Setup Configuration | <p>{True False} or {1 0}</p> <p>It represents selected or unselected.</p> <p>Where,</p> <ul style="list-style-type: none"> • True or 1 - Selected • False or 0 - Unselected |

Table continued...

| ParameterName | Value |
|--|---|
| Include Complete Application Configuration | {True False} or {1 0} It represents selected or unselected. Where, <ul style="list-style-type: none"> • True or 1 - Selected • False or 0 - Unselected |
| Include User Comments | {True False} or {1 0} It represents selected or unselected. Where, <ul style="list-style-type: none"> • True or 1 - Selected • False or 0 - Unselected |

Returns

<NRf> or <String>

Examples

TEKEXP:VALUE GENERAL, "<ParameterName>", "<Value>" command set the value for the specified general parameter.

TEKEXP:VALUE? GENERAL, "<ParameterName>" command returns the value for the specified general parameter.

Set or query the acquire parameter values

This command sets or queries the acquire parameter values of the application.

Syntax

TEKEXP:VALUE

ACQUIRE, "<TestName>", "<AcquireType>", "<ParameterName>", "<ParameterValue>" (Set)

TEKEXP:VALUE? ACQUIRE, "<TestName>", "<AcquireType>", "<ParameterName>" (Query)

Command arguments

| Argument Name | Argument Type | Valid Values |
|------------------|---------------|------------------------------------|
| <TestName> | <String> | It is the test name. |
| <AcquireType> | <String> | It is the acquire type. |
| <ParameterName> | <String> | It is the acquire parameter name. |
| <ParameterValue> | <NRf> | It is the acquire parameter value. |

Returns

<Nrf>

Examples

TEKEXP:VALUE

ACQUIRE, "<TestName>", "<AcquireType>", "<ParameterName>", "<ParameterValue>" command sets the value for the specified test and its acquire parameter.

TEKEXP:VALUE? ACQUIRE, "<TestName>", "<AcquireType>", "<ParameterName>" command returns the value for the specified test and its acquire parameter.

Set or query the analyze parameter values

This command sets or queries the analyze parameter values of the application.

Syntax

TEKEXP:VALUE ANALYZE, "<TestName>", "<ParameterName>", "<ParameterValue>" (Set)

TEKEXP:VALUE? ANALYZE, "<TestName>", "<ParameterName>" (Query)

Command arguments

| Argument Name | Argument Type | Description |
|------------------|---------------|------------------------------------|
| <TestName> | <String> | It is the test name. |
| <ParameterName> | <String> | It is the Analyze parameter name. |
| <ParameterValue> | <NRf> | It is the Analyze parameter value. |

Returns

<Nrf>

Examples

TEKEXP:VALUE ANALYZE, "<TestName>", "<ParameterName>", "<ParameterValue>" command set the value for the specified test and its analyze parameter.

TEKEXP:VALUE? ANALYZE, "<TestName>", "<ParameterName>" command returns the value for the specified test and its analyze parameter.

Query the available devices in the DUT panel of the application

This command queries the list of available devices on the DUT panel as comma separated values.

This command queries returns Thunderbolt.

Syntax

TEKEXP:LIST? DEVICE (Query)

Command arguments

| Device | Device Type and value | Description |
|----------|--|---|
| <Device> | <String> <ul style="list-style-type: none"> Thunderbolt | It is the name of the device on the DUT panel of the application. |

Returns

<String>

Examples

TEKEXP:LIST? DEVICE command returns the list of available devices.

Query the available suites for the selected device

This command queries the list of available suites for the selected device as comma separated values.

Syntax

TEKEXP:LIST? SUITE (Query)

Returns

<String>

Examples

TEKEXP:LIST? SUITE command returns the list of available suites for the selected device.

Query the list of available tests of the application

This command queries the list of available tests of the application for the selected device as comma separated values.

Syntax

TEKEXP:LIST? TEST (Query)

Command arguments

| TestName | String |
|----------|---|
| Gen2 | |
| TP2 | <ul style="list-style-type: none"> • Minimum Unit Interval 10G • SSC Down Spread Range 10G • SSC Down Spread Rate 10G • SSC Phase Deviation 10G • SSC Slew Rate 10G • Rise Fall Time 10G • Electrical Idle 10G • TJ (Total Jitter) <ul style="list-style-type: none"> • TJ using PRBS15 10G • TJ using SQ2 10G • UJ (Uncorrelated Jitter) 10G • UDJ (Uncorrelated Deterministic Jitter) 10G • DDJ (Data Dependent Jitter) 10G • UDJ_LF (Low Frequency Uncorrelated Deterministic Jitter) 10G • DCD (Duty Cycle Distortion) 10G • AC Common Mode 10G • Eye Diagram TP2 10G |
| TP3 | <ul style="list-style-type: none"> • Total Jitter TP3 <ul style="list-style-type: none"> • TJ TP3 using PRBS15 10G • TJ TP3 using SQ2 10G • UJ TP3 (Uncorrelated Jitter TP3) 10G • UDJ TP3 (Uncorrelated Deterministic Jitter TP3) 10G • Eye Diagram TP3 10G |

Table continued...

| TestName | String |
|--------------------------|---|
| Transmitter Equalization | <ul style="list-style-type: none"> • TXEQ Preset 0 10G • TXEQ Preset 1 10G • TXEQ Preset 2 10G • TXEQ Preset 3 10G • TXEQ Preset 4 10G • TXEQ Preset 5 10G • TXEQ Preset 6 10G • TXEQ Preset 7 10G • TXEQ Preset 8 10G • TXEQ Preset 9 10G • TXEQ Preset 10 10G • TXEQ Preset 11 10G • TXEQ Preset 12 10G • TXEQ Preset 13 10G • TXEQ Preset 14 10G • TXEQ Preset 15 10G |
| Gen2 Legacy | |
| TP2 | <ul style="list-style-type: none"> • Minimum Unit Interval 10p3 • Average Unit Interval 10p3 • SSC Down Spread Range 10p3 • SSC Down Spread Rate 10p3 • SSC Phase Deviation 10p3 • SSC Slew Rate 10p3 • Rise Fall Time 10p3 • Electrical Idle 10p3 • TJ (Total Jitter) <ul style="list-style-type: none"> • TJ using PRBS15 10p3 • TJ using SQ2 10p3 • UJ (Uncorrelated Jitter) 10p3 • UDJ (Uncorrelated Deterministic Jitter) 10p3 • DDJ (Data Dependent Jitter) 10p3 • UDJ_LF (Low Frequency Uncorrelated Deterministic Jitter) 10p3 • DCD (Duty Cycle Distortion) 10p3 • AC Common Mode 10p3 • Eye Diagram TP2 10p3 |
| Table continued... | |

| TestName | String |
|--------------------------|--|
| TP3 | <ul style="list-style-type: none"> • Total Jitter TP3 <ul style="list-style-type: none"> • TJ TP3 using PRBS15 10p3 • TJ TP3 using SQ2 10p3 • UJ TP3 (Uncorrelated Jitter TP3) 10p3 • UDJ TP3 (Uncorrelated Deterministic Jitter TP3) 10p3 • Eye Diagram TP3 10p3 |
| Transmitter Equalization | <ul style="list-style-type: none"> • TXEQ Preset 0 10p3 • TXEQ Preset 1 10p3 • TXEQ Preset 2 10p3 • TXEQ Preset 3 10p3 • TXEQ Preset 4 10p3 • TXEQ Preset 5 10p3 • TXEQ Preset 6 10p3 • TXEQ Preset 7 10p3 • TXEQ Preset 8 10p3 • TXEQ Preset 9 10p3 • TXEQ Preset 10 10p3 • TXEQ Preset 11 10p3 • TXEQ Preset 12 10p3 • TXEQ Preset 13 10p3 • TXEQ Preset 14 10p3 • TXEQ Preset 15 10p3 |
| Gen3 | |
| Table continued... | |

| TestName | String |
|----------|--|
| TP2 | <ul style="list-style-type: none"> • Minimum Unit Interval 20G • SSC Down Spread Range 20G • SSC Down Spread Rate 20G • SSC Phase Deviation 20G • SSC Slew Rate 20G • Rise Fall Time 20G • Electrical Idle 20G • Total Jitter TP3 <ul style="list-style-type: none"> • TJ using PRBS15 20G • TJ using SQ2 20G • UJ (Uncorrelated Jitter) 20G • UDJ (Uncorrelated Deterministic Jitter) 20G • DDJ (Data Dependent Jitter) 20G • UDJ_LF (Low Frequency Uncorrelated Deterministic Jitter) 20G • DCD (Duty Cycle Distortion) 20G • AC Common Mode 20G • Eye Diagram TP2 20G |
| TP3 | <ul style="list-style-type: none"> • Total Jitter TP3 <ul style="list-style-type: none"> • TJ TP3 using PRBS15 20G • TJ TP3 using SQ2 10p3G • UJ TP3 (Uncorrelated Jitter TP3) 20G • UDJ TP3 (Uncorrelated Deterministic Jitter TP3) 20G • Eye Diagram TP3 20G |

Table continued...

| TestName | String |
|--------------------------|---|
| Transmitter Equalization | <ul style="list-style-type: none"> • TXEQ Preset 0 20G • TXEQ Preset 1 20G • TXEQ Preset 2 20G • TXEQ Preset 3 20G • TXEQ Preset 4 20G • TXEQ Preset 5 20G • TXEQ Preset 6 20G • TXEQ Preset 7 20G • TXEQ Preset 8 20G • TXEQ Preset 9 20G • TXEQ Preset 10 20G • TXEQ Preset 11 20G • TXEQ Preset 12 20G • TXEQ Preset 13 20G • TXEQ Preset 14 20G • TXEQ Preset 15 20G |
| Gen3 Legacy | |
| TP2 | <ul style="list-style-type: none"> • Minimum Unit Interval 20p6G • SSC Down Spread Range 20p6G • SSC Down Spread Rate 20p6G • SSC Phase Deviation 20p6G • SSC Slew Rate 20p6G • Rise Fall Time 20p6G • Electrical Idle 20p6G • TJ (Total Jitter) <ul style="list-style-type: none"> • TJ using PRBS15 20p6G • TJ using SQ2 20p6G • UJ (Uncorrelated Jitter) 20p6G • UDJ (Uncorrelated Deterministic Jitter) 20p6G • DDJ (Data Dependent Jitter) 20p6G • UDJ_LF (Low Frequency Uncorrelated Deterministic Jitter) 20p6G • DCD (Duty Cycle Distortion) 20p6G • AC Common Mode 20p6G • Eye Diagram TP2 20p6G |

Table continued...

| TestName | String |
|--------------------------|--|
| TP3 | <ul style="list-style-type: none"> • Total Jitter TP3 <ul style="list-style-type: none"> • TJ TP3 using PRBS15 20p6G • TJ TP3 using SQ2 20p6G • UJ TP3 (Uncorrelated Jitter TP3) 20p6G • UDJ TP3 (Uncorrelated Deterministic Jitter TP3) 20p6G • Eye Diagram TP3 20p6G |
| Transmitter Equalization | <ul style="list-style-type: none"> • TXEQ Preset 0 20p6G • TXEQ Preset 1 20p6G • TXEQ Preset 2 20p6G • TXEQ Preset 3 20p6G • TXEQ Preset 4 20p6G • TXEQ Preset 5 20p6G • TXEQ Preset 6 20p6G • TXEQ Preset 7 20p6G • TXEQ Preset 8 20p6G • TXEQ Preset 9 20p6G • TXEQ Preset 10 20p6G • TXEQ Preset 11 20p6G • TXEQ Preset 12 20p6G • TXEQ Preset 13 20p6G • TXEQ Preset 14 20p6G • TXEQ Preset 15 20p6G |

Returns

<String>

Examples

TEKEXP:LIST? TEST command returns the list of available tests for the selected device.

Query the available version names of the application

This command queries the list of available version names of the application for the selected device as comma separated values.

Syntax

TEKEXP:LIST? VERSION (Query)

Returns

<String>

Examples

TEKEXP:LIST? VERSION command returns the list of version names for the selected device.

Query the list of available instruments based on the specified instrument type

This command queries the list of available instruments based on the specified instrument type.

Syntax

```
TEKEXP:LIST? INSTRUMENT, "<InstrumentType>" (Query)
```

Command argument

| Argument Name | Argument value |
|------------------|----------------|
| <InstrumentType> | <String> |

Returns

<String>

Examples

TEKEXP:LIST? INSTRUMENT, "Real Time Scope" command returns the list of available instruments based on the real time scope type.

Set or query the IP address of the instrument based on the specified instrument type

This command sets or queries the IP address of the instrument based on the specified instrument type.

Syntax

```
TEKEXP:INSTRUMENT? "<InstrumentType>" (Query)
```

```
TEKEXP:INSTRUMENT, "<InstrumentType>", "<Value>" (Set)
```

Command argument

| Argument Name | Argument Type |
|------------------|--|
| <InstrumentType> | <String> |
| <Value> | <String> TCPIP::XXX.XX.XXX.XXX::INSTR |

Returns

<String>

Examples

TEKEXP:INSTRUMENT? "<InstrumentType>" command returns the IP address of the oscilloscope.

TEKEXP:INSTRUMENT, "<InstrumentType>", "<value>" command sets the oscilloscope to the specified IP address.

Query the information of the generated report file

This command queries the information of the generated report file in the format "<FileSize>",<FileName>".

Pre-requisite

A session should be run earlier and the report should be generated to get the information of the report.

Syntax

```
TEKEXP:INFO? REPORT (Query)
```

Returns

<FileSize>:: <String>

<FileName>:: <String>

Examples

TEKEXP:INFO? REPORT command returns the information of the generated report in the format ("1215","DUT001.mht").

Query the information of the generated waveform files

This command queries the information of the generated waveform files in the format.

<File1Size,"File1Name">.

If there are more than one waveform, the waveform file names are displayed with the comma separated values in the format

<File1Size,"File1Name">,<File2Size,"File2Name">.

Syntax

```
TEKEXP:INFO? WFM (Query)
```

Returns

<FileSize>:: <String>

<FileName>:: <String>

Examples

TEKEXP:INFO? WFM command returns the information of the generated waveform in the format (20000858,"X:\Thunderbolt \Untitled Session\DUT001\20200916_041609\Iter1_Short Record-length for SCOPE Period_NoSSC_DIFF.wfm").

Query the information of the generated image files

This command queries the information of the generated image files in the format.

<File1Size,"File1Name">.

If there are more than one image, the image file names are displayed with the comma separated values in the format

<File1Size,"File1Name">,<File2Size,"File2Name">.

Syntax

```
TEKEXP:INFO? IMAGE (Query)
```

Returns

<FileSize>:: <String>

<FileName>:: <String>

Examples

TEKEXP:INFO? IMAGE command returns the information of the generated image in the format (109058, "X:\Thunderbolt \Untitled Session\DUT001\20200916_041609\Iter1_Short Record-length for SCOPE Period_NoSSC_DIFF.png";22794,"X:\Thunderbolt \UntitledSession\DUT001\20 200916_041609\ScopePeriodPlot_Iteration1WithCursor.png").

Query the active TekExpress application name

This command queries the active TekExpress application name running on the oscilloscope.

Syntax

TEKEXP:*IDN? (Query)

Returns

<String>

Examples

TEKEXP:*IDN? command returns the active TekExpress application name running on the oscilloscope.

Set or query the DUTID of application

This command sets or queries the DUTID of the application.

Syntax

TEKEXP:VALUE DUTID, "<Value>" (Set)

TEKEXP:VALUE? DUTID (Query)

Command arguments

| Argument Name | Argument Type |
|---------------|---------------|
| <Value> | <String> |

Returns

<String>

Examples

TEKEXP:VALUE DUTID, "DUT001" command sets the DUTID of the application to DUT001.

TEKEXP:VALUE? DUTID command returns the DUTID of the application.

Sets or query the acquire mode status

This command sets or queries the acquire mode status.

Syntax

TEKEXP:ACQUIRE_MODE <Mode> (Set)

TEKEXP:ACQUIRE_MODE? (Query)

Command arguments

| Argument Name | Argument value |
|---------------|--|
| <Mode> | <ul style="list-style-type: none"> LIVE PRE-RECORDED |

Returns

LIVE | PRE-RECORDED

Examples

TEKEXP:ACQUIRE_MODE LIVE command sets the acquire mode to the Live mode.

TEKEXP:ACQUIRE_MODE? command returns the current acquire mode.

Set or query the execution mode status

This command sets or queries the execution mode status.

Syntax

TEKEXP:MODE <Mode> (Set)

TEKEXP:MODE? (Query)

Command arguments

| Argument Name | Argument value |
|---------------|--|
| <Mode> | <ul style="list-style-type: none"> COMPLIANCE USER-DEFINED |

Returns

COMPLIANCE | USER-DEFINED

Examples

TEKEXP:MODE COMPLIANCE command sets the execution mode to the compliance mode.

TEKEXP:MODE? command returns the current execution mode.

Generate the report for the current session

This command generates the report for the current session.

Syntax

TEKEXP:REPORT GENERATE(Set)

Arguments

N/A

Examples

TEKEXP:REPORT GENERATE command generates the report for the current session.

Query the value of specified report header field in the report

This command queries the value of specified report header field in the report.

Syntax

TEKEXP:REPORT? "<Device Field>" (Query)

Command arguments

| Argument Name | Argument Type |
|---|---------------|
| <Device Field> Device field is the header name of each field in the setup information section of the report. | <String> |

Returns

<String>

Examples

TEKEXP:REPORT? "DUT ID" command returns the value of DUT ID field in the report.

Query the value of specified result detail available in report summary/details table

This command queries the value of specified result detail available in report summary/details table.

Syntax

TEKEXP:RESULT? "<TestName>" (Query)

TEKEXP:RESULT? "<TestName>", "<ColumnName>" (Query)

TEKEXP:RESULT? "<TestName>", "<ColumnName>", <RowNumber> (Query)

Command arguments

| Argument Name | Argument Type |
|--|---------------|
| <TestName> It is the test name of which the details are required in the report. | <String> |

Table continued...

| Argument Name | Argument Type |
|--|---------------|
| <p><ColumnName></p> <p>It is the column header name of which the details are required in the report.</p> | <String> |
| <p><RowNumber></p> <p>It is the row number of which the details are required in the report.</p> | <String> |

Returns

<String>

Examples

TEKEXP:RESULT? "<TestName>" will return the pass fail status of test.

TEKEXP:RESULT? "<TestName>", "<ColumnName>" will return all the row values of specific column for the test with comma separated values.

TEKEXP:RESULT? "<TestName>", "<ColumnName>", <RowNumber> will return the column value of specified row number.

Restore the setup to default settings

This command restores the setup to default settings.

Syntax

TEKEXP:SETUP Default(Set)

Arguments

N/A

Examples

TEKEXP:SETUP Default command restores the setup to default settings.

Save the setup

This command saves the setup.

Syntax

TEKEXP:SETUP Save (Set)

Examples

TEKEXP:SETUP Save command saves the setup.

Save the settings to a specified session

This command saves the settings to a specified session.

Syntax

TEKEXP:SETUP Save, "<SessionName>"

Command arguments

| Argument Name | Argument value |
|---------------|----------------|
| <SessionName> | <String> |

Examples

TEKEXP:SETUP Save, "<SessionName>" command saves the settings to a specified session.

Open the setup from a specified session

This command opens the setup from a specified session.

Syntax

TEKEXP:SETUP Open, "<SessionName>"(Set)

Command arguments

| Argument Name | Argument value |
|---------------|----------------|
| <SessionName> | <String> |

Examples

TEKEXP:SETUP Open, "<SessionName>" command opens the setup from a specified session.

Query the current setup file name

This command queries the current setup file name.

Syntax

TEKEXP:SETUP? CURRENT (Query)

Returns

<String>

Examples

TEKEXP:SETUP? CURRENT command returns the current setup file name.

Run/stop/pause/resume the selected measurements execution in the application

This command run/stop/pause/resume the selected measurements execution in the application.

Syntax

TEKEXP:STATE <operation mode> (Set)

Command arguments

| Argument Name | Argument value |
|------------------|--|
| <operation mode> | <ul style="list-style-type: none"> • RUN • STOP • PAUSE • RESUME |

Returns

RUN | STOP | PAUSE | RESUME

Examples

TEKEXP : STATE RUN command runs the execution for the selected measurements.

Query the current measurement execution status

This command queries the current measurement execution status.

Syntax

TEKEXP : STATE? (Query)

Returns

RUNNING | PAUSED | WAIT | ERROR | READY

Examples

TEKEXP : STATE? command returns the current measurement execution status.

Query whether the current setup is saved or not saved

This command queries whether the current setup is saved or not saved.

Syntax

TEKEXP : STATE? SETUP (Query)

Returns

Saved or Not-Saved

Examples

TEKEXP : STATE? SETUP command returns whether the current setup is saved or not saved.

Exit or close the application

The command exits or close the application

Syntax

TEKEXP : EXIT(Set)

Examples

TEKEXP : EXIT command close the application.

Query the status of the previous command execution

This command queries whether the previous command execution is completed successfully.

Syntax

TEKEXP : *OPC? (Query)

Returns

{0 | 1} or {True | False}

1 or True indicates that command execution is successful.

0 or False indicates that command execution is failed.

Examples

TEKEXP : *OPC? command returns whether the previous command operation is completed successfully.

Query the last error occurred

This command queries the last error occurred.

Syntax

TEKEXP : LASTERROR? (Query)

Returns

<String>

Examples

TEKEXP : LASTERROR? command returns the last error occurred.

Set or query the popup details

This command sets or queries the popup details.

Syntax

TEKEXP : POPUP? (Query)

TEKEXP : POPUP "<PopupResponse>" (Set)

Command arguments

| Argument Name | Argument value |
|-----------------|---|
| <PopupResponse> | <ul style="list-style-type: none"> • Yes • No |

Returns

The pop-up details return in the following format:

"<Title>","<message>","<response1>,<response2>".

Where,

<Title> :: <String>

<message> :: <String>

<response1>,<response2> :: <String>

Examples

TEKEXP:POPOP? command returns the popup details in following format ": "Do you really want to exit TekExpress?";Responses: "Yes, No".

TEKEXP:POPOP "Yes" command sets the popup response to Yes.

Sets or query the limit values in the limits editor window

This command sets or queries the limit values in the limits editor window.

Syntax

TEKEXP:VALUE LIMIT, <TestName>, <LimitHeader>, <Value1>, <CompareString>, <Value2>(Set)

TEKEXP:VALUE? LIMIT, <TestName>, <LimitHeader> (Query)

Returns

<String> or <NRf>

Examples

TEKEXP:VALUE LIMIT, <TestName>, <LimitHeader>, <Value1>, <CompareString>, <Value2> command sets the limits value for the specified testname and limit header.

TEKEXP:VALUE? LIMIT, <TestName>, <LimitHeader> command returns the limits value for the specified testname and limit header.

Set or query the waveform file recalled for the specified test name and acquire type

This command set or queries the waveform file recalled for the specified test name and acquire type.

If there are more than one waveform, the waveform file names are displayed with the symbol "\$" separated values in the format

<WaveformFileName1\$ WaveformFileName2>.

Syntax

TEKEXP:VALUE WFMFILE, <TestName>, <AcquireType>, <WaveformFileName> (Set)

TEKEXP:VALUE? WFMFILE, <TestName>, <AcquireType> (Query)

Returns

<String>

Examples

TEKEXP:VALUE WFMFILE, <TestName>, <AcquireType>, <WaveformFileName> command recalls the specified waveform file for the specified testname and acquire type.

TEKEXP:VALUE? WFMFILE, <TestName>, <AcquireType> command returns the waveform file name recalled for the specified testname and acquire type.

Set or query the enable/disable status of Continuous Run function

This command sets or queries the enable/disable status of Continuous Run function.

Syntax

TEKEXP:VALUE ContinuousRun, "<Value>" (Set)

TEKEXP:VALUE? ContinuousRun (Query)

Arguments

| Argument Name | Argument value |
|---------------|--|
| <Value> | {True False} or {1 0} It represents enabled or disabled. Where, <ul style="list-style-type: none"> • True or 1 - enabled • False or 0 - disabled |

Returns

{True | False} or {0 | 1}

Examples

TEKEXP:VALUE? ContinuousRun command returns the enable or disable status of Continuous run function.

TEKEXP:VALUE ContinuousRun, "<Value>" command enable or disable the Continuous run function.

Query the enable or disable status of Continuous run function.

This command queries the enable or disable status of Continuous run function.

Syntax

TEKEXP:VALUE? GENERAL, "Enable Continuous Run" (Query)

Returns

{True | False} or {0 | 1}

Where,

1 or True indicates that the continuous run function is enabled.

0 or False indicates that the continuous run function is disabled.

Examples

TEKEXP:VALUE? GENERAL, "Enable Continuous Run" command returns the enable or disable status of continuous run function.

Set or query the enable/disable status of Verbose function

This command sets or queries the enable/disable status of Verbose function.

Syntax

TEKEXP:VALUE VERBOSE, "<Value>" (Set)

TEKEXP:VALUE? VERBOSE (Query)

Arguments

| Argument Name | Argument value |
|---------------|--|
| <Value> | {True False} or {1 0} It represents enabled or disabled. Where, <ul style="list-style-type: none"> • True or 1 - enabled • False or 0 - disabled |

Returns

{True | False} or {0 | 1}

Examples

TEKEXP:VALUE VERBOSE, "<Value>" command enable or disable the Verbose function.

TEKEXP:VALUE? VERBOSE command returns the enable or disable status of Verbose function.

Set or query the continuous run duration time value

This command sets or queries the continuous run duration time value.

Syntax

TEKEXP:VALUE? ContinuousRun_Duration (Query)

TEKEXP:VALUE ContinuousRun_Duration, "<Value>" (Set)

Arguments

| Argument Name | Argument value |
|---------------|--|
| <Value> | Infinite hh:mm Infinite sets the radio on button to infinite. hh:mm sets the continuous run duration to the specified time in hours and minutes. The minimum time duration you can set is 00:30. |

Returns

Infinite | hh:mm

Examples

TEKEXP:VALUE? ContinuousRun_Duration command returns the continuous run duration time value.

TEKEXP:VALUE ContinuousRun_Duration, "<Value>" command sets the continuous run duration time value.

Set or query the session create option in the continuous run function

This command sets or queries the option for session creation in the continuous run function.

Syntax

TEKEXP:VALUE? ContinuousRun_RunSessionOptions (Query)

TEKEXP:VALUE ContinuousRun_RunSessionOptions, "Value" (Set)

Arguments

| Argument Name | Argument value |
|---------------|---|
| <Value> | NewSession SameSession_ClearResults NewSession - creates new session for each run. SameSession_ClearResults - Clears the test results of the current session and starts the test execution. The session results will be added in the same session, by erasing the previous run results. |

Returns

NewSession | SameSession_ClearResults

Examples

TEKEXP:VALUE? ContinuousRun_RunSessionOptions command returns the option for session creation in the continuous run function.

TEKEXP:VALUE ContinuousRun_RunSessionOptions, "Value" command sets the option for session creation in the continuous run function.

Set or query the View report after generating option status

This command sets or queries the enable/disable status of the View report after generating function.

Syntax

TEKEXP:VALUE? GENERAL, "View Report After Generating" (Query)

TEKEXP:VALUE GENERAL, "View Report After Generating", <value> (Set)

Arguments

| Argument Name | Argument value |
|---------------|--|
| <Value> | {True False} or {1 0} It represents enabled or disabled. Where, <ul style="list-style-type: none"> • True or 1 - enabled • False or 0 - disabled |

Returns

{True | False} or {0 | 1}

Examples

TEKEXP:VALUE? GENERAL, "View Report After Generating" command returns the enable or disable status of view report after generating option.

TEKEXP:VALUE GENERAL, "View Report After Generating", <value> command enable or disable the view report after generating option.

Returns the report as XML string

This command returns the report as XML string.

Syntax

TEKEXP:REPORTASXML? (Query)

Returns

<String>

Examples

TEKEXP:REPORTASXML? command returns the report XML string.

Copies all the images from current run session to the given destination location

This command copies all the images from current run session to the given destination location.

Syntax

TEKEXP:COPYIMAGES <DestinationPath> (Set)

Command argument

<DestinationPath> :: <String>

Returns

NA

Examples

TEKEXP:COPYIMAGES C:\Temp command copies all the images from current run session to the mentioned location.

Selects the specified test(s) and deselect all other tests

This command selects the specified test(s) and deselect all other tests.

Syntax

TEKEXP:SELECTID <"TestID"> (Set)

Command argument

| Argument Name | Argument value |
|---------------|----------------|
| TestID | String |

Returns

NA

Examples

TEKEXP:SELECTID "11101" This command select the test associated with the ID and deselects all other tests in the application.

TEKEXP:SELECTID "11101, 11102" This command selects the tests associated with the IDs and other tests will be deselected.

Returns the complete information about the selected test

This command returns the complete information about the selected test.

The information includes application name, TestID, Device selected, Suite selected, version, Test name, Test description.

Syntax

TEKEXP:TESTINFO? (Query)

Returns

<String>

Examples

TEKEXP:TESTINFO? This command returns the following details:

<TekExpress> <Test Id="11101" Device="TX-Device" Suite="Group1" Version="Spec 1.0" Name="Algorithm Library Measurement" Description="This is Algorithm Library measurement test. Refer Section-B of TekExpress SampleApp Development Guide for more details.

Set the default session

Sets the application configurations to default value.

Syntax

TEKEXP:SESSION DEFAULT (set)

Examples

TEKEXP:SESSION DEFAULT, sets the application configurations to default value.

Save the run/config sessions

Enter the name to save/config the session.

Syntax

TEKEXP:SESSION SAVE, "Session Name" (set)

Command arguments

| Argument Name | Argument value |
|----------------|----------------|
| <Session Name> | <String> |

Examples

TEKEXP:SESSION SAVE, "Session Name" saves the session.

Load the run/config session

Load the selected config/run session.

Syntax

TEKEXP:SESSION LOAD, "Session Name" (set)

Command arguments

| Argument Name | Argument value |
|----------------|----------------|
| <Session Name> | <String> |

Examples

TEKEXP:SESSION LOAD, "Session Name", load the selected config/run session.

Delete the run/config session

Deletes the selected config/run session.

Syntax

TEKEXP:SESSION DELETE, "Session1, Session2" (set)

Command arguments

| Argument Name | Argument value |
|----------------|----------------|
| <Session Name> | <String> |

Examples

TEKEXP:SESSION DELETE, "Session1, Session2", deletes the selected config/run session.

Run the run/config saved session

Run the selected config/run session.

Syntax

TEKEXP:SESSION RUN, "Session Name's separated by comma" (set)

Command arguments

| Argument Name | Argument value |
|--|----------------|
| <Session Name> | <String> |
| Session Name's separated by comma (to run the multiple run sessions) | <String> |

Examples

TEKEXP:SESSION RUN, "Session Name's separated by comma", runs the selected config/run session.

Query the available list in the run/config session

Returns the list of available config/run session.

Syntax

TEKEXP:SESSION? LIST

Returns

Returns the list of available config/run session.

Examples

TEKEXP:SESSION? LIST, returns the list of available config/run session.

Query the current run/config session

Returns the selected config/run session.

Syntax

TEKEXP:SESSION? CURRENT

Returns

Returns the selected config/run session.

Examples

TEKEXP:SESSION? CURRENT, returns the selected config/run session.

Override the run/config session

Overrides the selected config/run session.

Syntax

TEKEXP:SESSION SAVE, "SessionName", "True" (set)

Command arguments

| Argument Name | Argument Type | Argument Value |
|----------------|---------------|---|
| <Session Name> | <String> | {True False} or {1 0} It represents enabled or disabled. Where, <ul style="list-style-type: none"> • True or 1 - enabled • False or 0 - disabled |

Returns

{True | False} or {0 | 1}

Examples

TEKEXP:SESSION SAVE, "SessionName", "True", overrides the selected config/run session.

Query the statistics value for a test measurement

This query command returns the statistics for test name which is passed as argument.

Syntax

TEKEXP:RESULT:STATISTICS? "Test Name" (Query)

Returns

Returns statistics for test name which is passed as argument.

Examples

TEKEXP:RESULT:STATISTICS? "Test Name", returns measurement results separated by ";" if it has multiple sub measurements. Sample: <Measurement Detail>, Min : <min value>, Max : <max value>, Avg.Value : <avg. value>, Std.Dev : <std.dev>, Units : <unit> for test name which is passed as argument.

Query the statistics value for all test measurements

This query command returns statistics for all tests which are passed as argument.

Syntax

TEKEXP:RESULT:STATISTICS? "ALL" (Query)

Returns

Returns statistics for all tests which are passed as argument.

Examples

TEKEXP:RESULT:STATISTICS? "ALL", returns measurement results separated by ";" if it has multiple sub measurements. Sample: TestName : <Test Name>, Details : <Measurement Detail>, Iter.Count : <Iteration Count>, Min : <min value>, Max : <max value>, Avg.Value : <avg. value>, Std.Dev : <std.dev>, Units : <unit> for all test name which are passed as argument.

Examples

This section provides the examples for the SCPI commands.

| Example | Description |
|---|--|
| TEKEXP:*IDN? | It returns the active TekExpress application name running on the scope. |
| TEKEXP:*OPC? | It returns the last command execution status, if status is executed it returns "1" else "0". |
| TEKEXP:SELECT TEST | It selects the test. |
| TEKEXP:ACQUIRE_MODE PRE-RECORDED | It sets the acquire mode as pre-recorded. |
| TEKEXP:ACQUIRE_MODE? | It returns LIVE when acquire mode is set to live or it returns pre-recorded when acquire mode is set to pre-recorded. |
| TEKEXP:EXPORT REPORT | It returns the report file in bytes. This can be written into another file for further analysis. |
| TEKEXP:INFO? REPORT | It returns "100,"ReportFileName.mht", when 100 is the file size in bytes for the filename ReportFileName. |
| TEKEXP:INFO? WFM | It returns "100,"WfmFileName1.wfm";"200, "WfmFileName2.wfm" when 100 is the file size in bytes for the filename WfmFileName1.wfm and 200 is the file size in bytes for the filename WfmFileName2.wfm. |
| TEKEXP:INSTRUMENT "Real Time Scope",DPO73304SX (GPIB8::1::INSTR) | It sets the instrument value as DPO73304SX(GPIB8::1::INSTR) for the selected instrument type Real Time Scope. |
| TEKEXP:INSTRUMENT? "Real Time Scope" | It returns "DPO73304SX (GPIB8::1::INSTR), when DPO73304SX (GPIB8::1::INSTR)" is the selected instrument for the instrument type Real Time Scope. |
| TEKEXP:LASTERROR? | It returns ERROR: INSTRUMENT_NOT_FOUND, when no instrument is found. |
| TEKEXP:LIST? DEVICE | It returns "Thunderbolt" when TX-Device, RXDevice are the available device. |
| TEKEXP:LIST? INSTRUMENT, "Real Time Scope" | It returns "DPO73304SX (GPIB8::1::INSTR), DPO73304DX (TCPIP::134.64.248.91::INSTR)" when DPO73304SX (GPIB8::1::INSTR), DPO73304DX (TCPIP::134.64.248.91::INSTR) are the list of available instruments. |
| TEKEXP:MODE COMPLIANCE | It sets the execution mode as compliance. |
| TEKEXP:MODE? | It returns COMPLIANCE when the execution mode is compliance or It returns USER-DEFINED when the execution mode is user defined. |
| TEKEXP:POPOP OK | It sets OK as the response to active popup in the application. |
| TEKEXP:POPOP? | It returns "OK", when OK is the active popup information shown in the application. |
| TEKEXP:REPORT GENERATE | It generates report for the current session. |
| TEKEXP:REPORT? "Scope Model Number" | Returns "DPO73304SX" when DPO73304SX is the scope model. |
| TEKEXP:REPORT? DUT ID | It returns "DUT001" when DNI_DUT001 is the DUT ID. |
| TEKEXP:RESULT? "Total Jitter" | It returns Pass when the test result is Pass. |
| TEKEXP:RESULT? "Total Jitter",1 | It returns the 2nd Sub measurements Margin L and H values. |
| TEKEXP:SELECT DEVICE, Thunderbolt, TRUE | It selects Thunderbolt. |













Table continued...

| Example | Description |
|---|---|
| TEKEXP:SELECT? DEVICE | It returns Thunderbolt |
| TEKEXP:SETUP DEFAULT | It restores the application to default setup. |
| TEKEXP:STATE STOP | It stops the test execution. |
| TEKEXP:STATE? | It returns as READY when the application is ready to run next measurement. |
| TEKEXP:STATE? SETUP | It returns as NOT_SAVED when the current setup is not saved else it returns SAVED. |
| TEKEXP:VALUE GENERAL, "Test Method", "DPOJET" | It sets the Test Method parameter value to DPOJET. |
| TEKEXP:VALUE? GENERAL, "Test Method" | It returns "DPOJET" when DPOJET is the Test Method value. |
| TEKEXP:SELECT TEST , "Total Jitter", True | Execute this command to select an individual test. This command will select "Total Jitter" test in the Signal Test tab. |

References

Application directories

You can find the application files at *C:\Program Files\Tektronix\TekExpress Thunderbolt3*. The application directory and associated files are organized as follows:

-  Bin
-  Compliance Suites
-  DUT Automation
-  ICP
-  Images
-  Instructions
-  Lib
-  Licenses
-  Plot Files
-  Plugins
-  Report Generator
-  Tools

The following table lists the default directory names and their usage:

Table 21: Application directories and usage

| Directory names | Usage |
|-------------------|--|
| Bin | Contains application libraries |
| Compliance Suites | Contains test suite specific files |
| DUT Automation | Contains batch files to run DUT in Automated mode |
| ICP | Contains instrument and application specific interface libraries |
| Images | Contains images of the application |
| Lib | Contains utility files specific to the application |
| Licenses | Contains all the license files |
| Plot Files | Contains DPOJET and scope period plots csv |
| Plugins | Contains the dll path for DUT automation |
| Report Generator | Contains style sheets for report generation |
| Tools | Contains instrument and application specific files |

File name extensions

The TekExpress Thunderbolt software uses the following file name extensions:

Table 22: File name extension

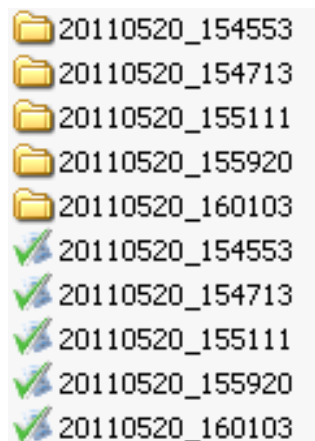
| File name extension | Description |
|---------------------|---|
| *.TekX | Application session files (the extensions may not be displayed) |
| *.py | Python sequence file. |
| *.xml | Test-specific configuration information (encrypted) files. Application log files |
| *.csv | Test result reports Plot data |
| *.mht | Test result reports (default) Test reports can also be saved in HTML format |
| *.pdf | Test result reports Application help document |
| *.xslt | Style sheet used to generate reports |
| *.png | Captured images |
| .wfm | Test waveform file |

View test-related files

Files related to tests are stored in My Documents\TekExpress Thunderbolt\Untitled session folder. Each test setup in this folder has both a test setup file and a test setup folder, both with the test setup name. The test setup file is preceded by the TekExpress icon.

Inside the test setup folder is another folder named for the DUT ID used in the test sessions. The default is DUT001.

Inside the DUT001 folder are the session folders and files. Each session also has a folder and file pair, both named for the test session using the naming convention (date)_(time). Each session file is stored outside its matching session folder:



Each session folder contains image files of any plots generated from running the test session. If you selected to save all waveforms or ran tests using prerecorded waveform files, these are included here.

The first time you run a new, unsaved session, the session files are stored in the Untitled Session folder located at X:\TekExpress Thunderbolt. When you name and save the session, the files are placed in a folder with the name that you specify. A copy of the test files stay in the Untitled Session folder until you run a new test or until you close the application.

Handle error codes

The return value of the remote automations at the server-end is OP_STATUS, which changes to a string value depending on its code, and is returned to the client. The values of OP_STATUS are as follows:

| Code | Value | Description |
|------|-----------|--|
| -1 | FAIL | The operation failed |
| 1 | SUCCESS | The operation succeeded |
| 2 | NOT FOUND | Server not found |
| 3 | LOCKED | The server is locked by another client, so the operation cannot be performed |
| 4 | UNLOCK | The server is not locked; lock the server before performing the operation |
| 0 | NULL | Nothing |



Note: The Fail condition for PI commands occurs in any of the following cases:

If the server is locked, the application displays "Server is locked by another client".

If the session is unlocked, the application displays "Lock session to execute the command".

If the server is not found, the application displays " Server not found-Disconnect!".

If the fail condition is not one of the above types, the application displays "Failed".

DUT Initialization



Note: The following steps are applicable, when there is a change in connections to the DUT Setup or if the DUT and/or Microcontroller is power cycled.



Note: The following steps are applicable only for Ice Lake DUT.

1. Ensure that the connections are made to the DUT and Microcontroller, Click the **Setup > Test Selection > Schematic** to open a PDF file that shows the compliance test setup diagrams.
2. Power ON the DUT and Microcontroller.
3. Login to the DUT.
4. Launch the command prompt by performing a right-click on the CMD icon and selecting the "Run as Administrator" option.
5. Enter the following italicized command

```
cd C:\TBT Electrical\Thunderbolt_Integrated_Electrical_Scripts_ver0.7\Host
tclsh85 Host_Enable_Compliance.tbc <Device ID>
```

Where <Device ID> = 0x8A17 / 0x8A0D / 0x9A1B / 0x9A1D

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