Tektronix[®]

Clarius USB Transmitter Compliance Testing

Application Help

Version 2.0.0

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077-1853-00 December 2024

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Welcome

The Clarius USB Tx Compliance Testing solution provides a simple, automated, and efficient way to test the USB4v2 technology for Compliance Test Specification(CTS).

The Clarius compliance USB Tx solution uses optimized computing and parallel execution methods which reduces the execution time of measurements. It also provides test data management and test data analytics.

The Tektronix DPS75004SX/DPS75904SX/DPS77004SX Series Oscilloscope supports the Tektronix USB4 Compliance.

X	:	Dashboard	Tests	s 👫 s	Manage G	₩ License	Reports			(2) Help		-	Hi admin 🗸
Hi admin													 Run Test
					Sequences			→	Running Te	ests			
					USB4	USB4v2							
		No Notifications to	Show							No Tests Are Running			
	Test Benche		→	Failed Test						Applications	\rightarrow		
	183Scope			Test	TestBer	ich	Scope		ogress	USB4v2			
	183Scope_ma	anual		test_05	Clariu	IS_PC		(00%				
				test_04	Clariu	IS_PC		(00%				
				test_03	183S	соре	Scope, Automato	or (•	00%				
				test_02	183S	cope	Scope, Automato	ər (

Figure 1: Clarius compliance USB Tx

Key features

- The Clarius USB Tx Compliance Testing solution provides a comprehensive toolset for the USB4 Gen4 verification, characterization, and compliance testing.
- The solution is compliant with the USB4 specification v2.0.
- The application uses the SigTest tool to run the measurement, which is available on the usb.org
- · Supports embedding, de-embedding, and custom channel characterization.
- · Pre-recorded mode supports the offline analysis and baseline for future specification changes.
- · Quickly validate test results with comprehensive reporting that details test margin.

Getting help and support

Product documents

Use the product documents for more information about getting started with the Clarius, the application functions, and how to remotely use the application.

Table 1: Clarius automation framework and application documents

To learn about	Use this document
How to install the Clarius	Clarius Automation Framework Getting Started Guide
How to use the application	Clarius Compliance USB Tx Application Help
How to automate using the API and SDK commands	Clarius Automation Framework (API and SDK) Programming Guide

Conventions

This application help uses the following conventions:

- The terms "Application" and "Software" refer to the Clarius compliance USB Tx application.
- The term "target system" refers to the Computer/Laptop where the Clarius automation framework and application is installed.
- · The acronym "DUT" is an abbreviation for Device Under Test.
- · The term "select" refers choosing a screen item (button control or list item) using a mouse.
- A Note identifies important information.
- The acronym "Tx" is an abbreviation for Transmitter.

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 website. See *Contacting Tektronix* for more 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 suggestions or comments.

Application specific information

- Software version number
- · Description of the problem
- If possible, save the log file(s) and share it with the Tektronix support person to understand the problem and get it resolved.

System requirements

This section explains the recommended system requirements to install the Clarius automation framework and the application(s).

Requirement	Recommended requirements
Operating system	Windows 10 Enterprise and Pro (version 21H1 and above) or Windows 11 Enterprise and Pro (version 21H1 and above)
	Language: English (United States) only.
CPU cores	16
RAM	64 GB
Disk space	800 GB HDD/SSD of free disk space
Network speed	50 Mbps
Browser	Microsoft Edge (default) or Google Chrome
Additional software	• Python 3.12.x ¹
	Download the USB4 SigTest Tool.
	Install the 64 bit MATLAB runtime compiler.
	Version R2024a (24.1) for SigTest version 0.95
	Version R2023a (9.14) for SigTest version 0.9
Supported Oscilloscope	DPS75004SX/DPS75904SX/DPS77004SX
Cables	SMA cable pair that supports bandwidth \geq 25 GHz
Attenuator	6 dB that supports bandwidth ≥ 25 GHz
Adaptor	1.85 mm to 2.92 mm that supports bandwidth ≥ 25 GHz
Microcontroller	To configure the DUT, enter the specific test mode using a microcontroller or other methods during testing.
Test fixture	To connect TP2 test point.
DUT	USB4v2 Gen4 DUT

¹ Python installation is required for Clarius SDK and DUT control automator.

Recommended deployment models

This section lists the supported deployment models for setting up Clarius automation framework and run the tests.

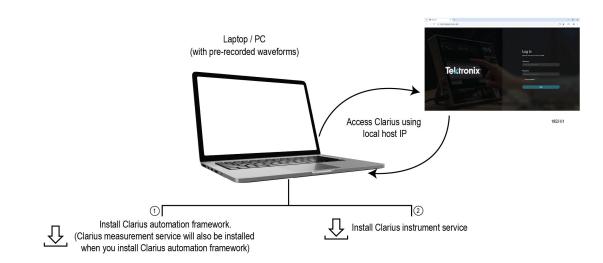


Figure 2: Deployment model 1: Single system deployment

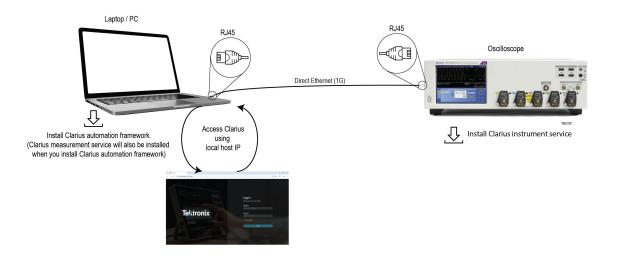


Figure 3: Deployment model 2: Peer to peer connection

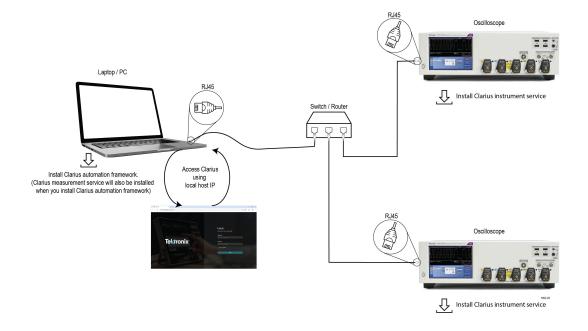


Figure 4: Deployment model 3: Private network setup via standard switch / router / hub

Enable ports to install Clarius automation framework

The installer checks for the first available port within the range incrementally and allocates the port of the services. If no ports are available within the range, installation will prompt user to enter their custom ports.

The following table lists the services and the port ranges.

Port name	Port range
Clarius user interface	4200:4209
Event communication with instruments	5672:5679
Programming interface	8443:8449
SSL certificates download interface	8080:8089
Large objects transfer interface	9001:9009

Dynamic memory and diskspace allocation for the Clarius automation framework virtual machine

Dynamic memory allocation

The minimum RAM required to install the Clarius automation framework is 8 GB.

By default, the installer allocates 12 GB, if the 50% of available RAM is greater than 12 GB. You can also manually allocate RAM from 8 GB up to 50% of total available RAM.

Example

Total RAM available in the target system	64 GB
Minimum RAM required	8 GB
RAM allocated	12 GB (50% of 64 GB = 32 GB, you can choose from 8 GB to 32 GB)

Note: If the 50% of the total available RAM is less than 8 GB, then the installation will fail.

Diskspace allocation

The maximum allocated diskspace for Clarius automation framework installation is 90% of the available diskspace.

Example

Total diskspace available in the target system	300 GB
Minimum diskspace required	20 GB
Maximum diskspace required	90% of available storage

Installing Clarius automation framework

This section describes the instructions for installing the Clarius automation framework in a target system. Follow the steps to complete the installation.

- 1. Enable Virtualization technology in BIOS²
- 2. Enable ports to install Clarius automation framework
- 3. Dynamic memory and diskspace allocation for the Clarius automation framework virtual machine on page 11
- 4. Enable Hyper-V in the target system
- 5. Install Clarius automation framework in the target system
- 6. Install Clarius instrument service

Enable Hyper-V on the target system

Hyper-V is a hardware virtualization tool that allows you to create and run a virtual machine on your system without affecting the host operating system. To enable Hyper-V on your computer, follow these steps:

- 1. Log in to the system with an administrator account.
- 2. Type Control Panel in the search box and press Enter.

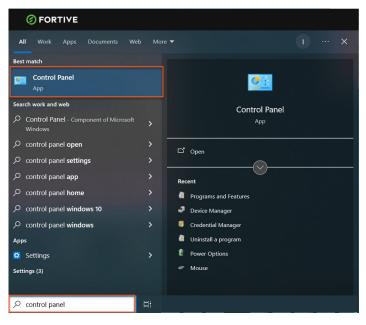


Figure 5: Control Panel

3. Select Control Panel > Programs and Features.

² Contact the IT team of your organization to enable the virtualization technology in your system.

ontrol Panel All Control Panel Items → ✓ ↑ 💷 > Control Panel > Al	I Control Panel Items				- O Search Control Panel
djust your computer's settings					View by: Large icons -
Administrative Tools	AutoPlay	Backup and Restore (Windows 7)	RitLocker Drive Encryption	BitLocker Encryption Options	
👔 Color Management	🧤 Configuration Manager	💓 Credential Manager	Date and Time	Default Programs	
Device Manager	Devices and Printers	🚱 Ease of Access Center	File Explorer Options	💊 File History	
A Fonts	lndexing Options	Internet Options	Java		
Mail (Microsoft Outlook)	🥏 Mouse	Network and Sharing Center	Phone and Modem	Power Options	
Programs and Features	lecovery	Region	RemoteApp and Desktop Connections	💓 Security and Maintenance	
Sound	Speech Recognition	😻 Storage Spaces	🔕 Sync Center	System	
Taskbar and Navigation	Troubleshooting	🍇 User Accounts	Windows Defender Firewall	y Windows Mobility Center	
Work Folders					

Figure 6: Programs and Features dialog

4. Select Turn Windows features on or off.

ontrol Panel (Programs) Progran	is and real lies						- 0
→ ✓ ↑ 🕅 > Control P	anel > Programs > Programs and Features					~ U	Search Programs and Fea
Control Panel Home /iew installed updates	Uninstall or change a program	ክ he list and then click Uninstall, Change, or Repair.					
um Windows features on or ff		ne list and then click Uninstall, Change, or Repair.					
stall a program from the	Organize *	~) = •
twork	Name		Publisher	Installed On Size	Version		
	Currently installed progra	ims Total size:					
	R I						

Figure 7: Turn Windows features on or off dialog

5. Select Hyper-V and its sub features.

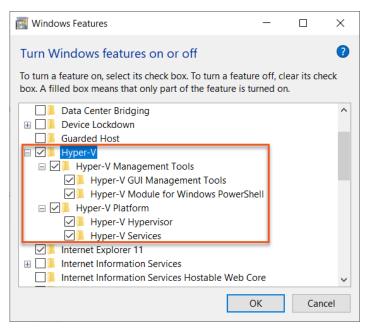


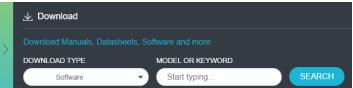
Figure 8: Enabling Hyper-V in the Windows Features dialog box

6. Select OK to install. You must restart the system when prompted.

Install Clarius automation framework

To install the Clarius automation framework in the target system, follow these detailed steps.

- 1. Go to www.tek.com.
- Click Download. 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 compatible version of Clarius automation framework and follow the instructions to download the software. Copy the installer package (.zip) to the target system³ and extract the file.

Note:

- Check the Release Notes for the version compatibility details of Clarius automation framework and application.
- To unzip the package, right-click, select Extract All and select Extract.
- 4. Double-click the Clarius installer (clarius-automation-framework-<<version>>.exe) from the extracted folder and select Yes on the User Account Control.

³ A PC/Laptop/Computer where the Clarius automation framework and application will be installed.

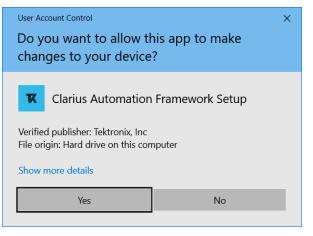
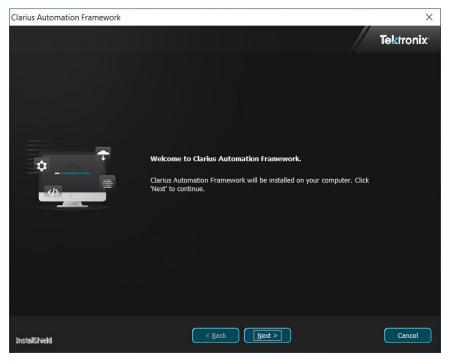


Figure 9: Clarius user account control dialog

5. Read the welcome instructions and select Next.





6. Read the license agreement; accept the terms of the license agreement and select **Next**. Please wait until the prerequisites progress check is complete.

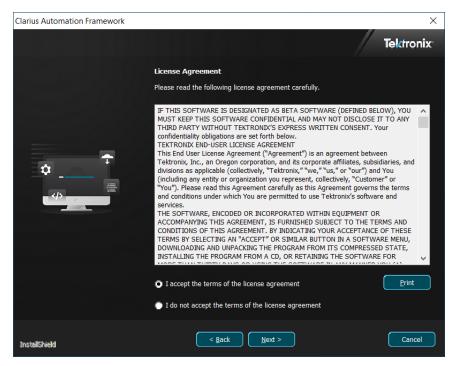


Figure 11: Clarius license agreement

7. Browse to select the install path and select Next. The default path is C:\Program Files\Tektronix\Clarius\.

You can select any local disk drive other than a network drive path for installation.

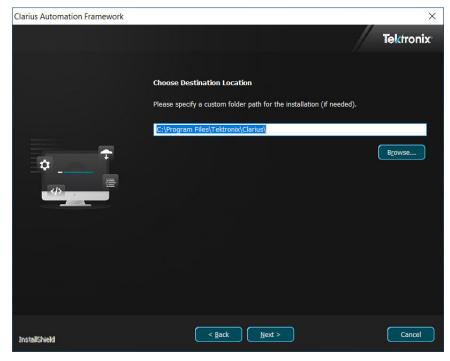


Figure 12: Clarius install path

8. Set the password for the Clarius automation framework matching the criteria and select **Next**.

Clarius Automation Framework			×
			Tektronix
	User Information		
	Username	admin	
	Password		
and a second	Confirm Passwo	rd	
¢		must be 8-20 characters long and must includ case letter, one lower case letter and one spe	
	System Settings		
	Disk Storage [Gi	3] 35 Min: 20 GB Max: 70 GB	
	RAM [GB]	12 Min: 8 GB Max: 15 GB	
nte. Strongskrivenski stalistick	CPU Cores	2 Min: 2 Max: 3	
	configuration. Ye	mended settings are based on your current sy ou can adjust them within the specified limits. efer to the Clarius Automation Framework get	For more
InstallShield		Back Next >	Cancel

Figure 13: Clarius user information

Note:

- For details on Disk Storage allocation, *click here*.
- It is recommended to configure the Disk storage in System Settings as 700 GB.
- For details on RAM allocation, *click here*.
- <u>/!\</u>
- CPU cores allocation example: The minimum logical CPU cores required is 2 and the maximum core is calculated as 75% of total logical CPU cores. By default, a midpoint value between the minimum and maximum cores will be added in the installation wizard field. If the allocated logical CPU cores is in decimal value, then the number after the decimal point will be discarded. For example, value 3.5 will be added as 3.

For details on recommended CPU cores to install, refer System requirements section.

9. Displayed only if the ports required for installation are not available. Refer *Enable ports to install Clarius automation framework* for more information.

Clarius Automation Framework		×
	//	Tektronix
	Port Configuration	
	Clarius user interface 4200	
÷	Event communication with instruments 5672	
* i	Programming interface 8443	
	SSL certificates download interface	
	Large objects transfer interface 9001	
	Info: These port(s) will be used for Clarius internal communication, please enter valid port(s) to proceed, and refer to the Getting Starte guide for more details.	d
InstallShield	< Back	Cancel
Clarius Automatio	on Framework	×
	pecified port is either already in use, invalid, or empty for the ving components. Please enter a valid port:	
- SSL	certificates download interface	
	ОК	

Figure 14: Port configuration

10. Select Yes to install the Instrument Service. This will create a local test bench(Clarius_PC) in the target system for pre-recorded waveform analysis.

Installing instrument service will also install Clarius SDK in an isolated Python environment.



Tip: If you skip the instrument service installation, you can refer *Install Clarius instrument service* section for the installation steps.

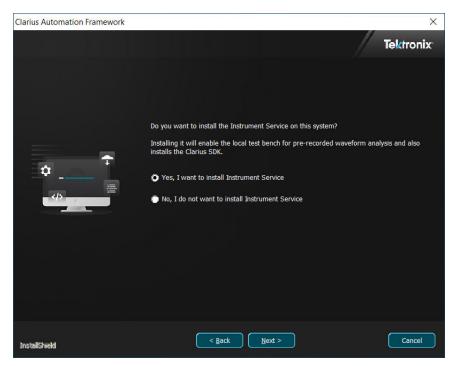


Figure 15: Install instrument service

11. Displayed only if step <u>10</u> on page 18 is selected **No**.

Select the Clarius SDK installation option from the installer wizard and select Next.

You can install Clarius SDK in the following ways:

- Install Python in a global environment and then install SDK in that environment. If a supported Python version is detected, then select to install the SDK in that environment.
- Install Python in an isolated Python environment and install SDK in that environment.⁴

⁴ An isolated Python environment will have its own independent set of Python packages installed in its site directories.

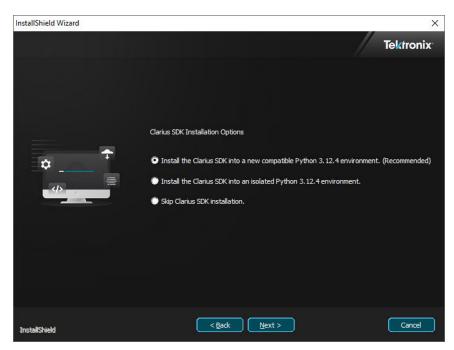


Figure 16: Clarius SDK installation options

Note:

- Clarius SDK requires Python version 3.12.x.
- If you skipped the SDK installation, refer to the Install Clarius SDK section to install.

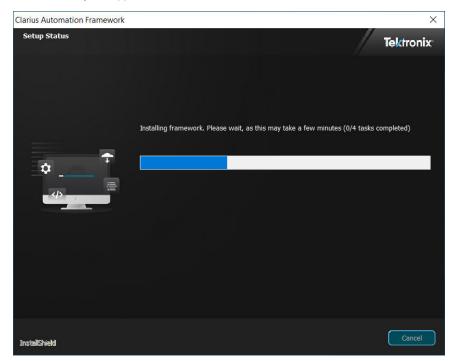


Figure 17: Installing Clarius automation framework

12. Select the Launch Clarius automation framework checkbox once the installation is complete and select **Finish** to exit setup. By default, the Clarius automation framework will be launched in the Microsoft Edge browser.

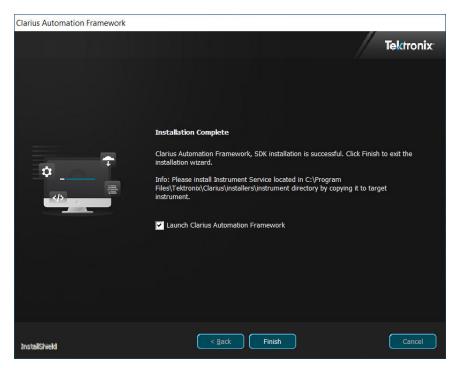


Figure 18: Launch Clarius automation framework

 \triangle

Note: If the installation fails, check the installation logs at (C:\ProgramData\Tektronix\Clarius\logs) for more details about the failure or contact a Tektronix field engineer for support.

The ProgramData folder is hidden by default. Enable Show hidden files, folders, and drives to view the folder path.

13. (Optional) Launch the Clarius automation framework from the desktop.



Note: You can access the Clarius automation framework from the target system using the local host URL $https://127.0.0.1:4200^5$. To remotely access the Clarius automation framework, use the host name or IP address of the Clarius automation framework installed system.

Log in to the Clarius automation framework with the following credentials

- · Username: admin
- Password: Enter the user configured password set during installation.

⁵ The default port allocated is 4200. If this port was not available during the installation, then the first available port within the range of 4200 to 4209 will be checked incrementally and allocated.

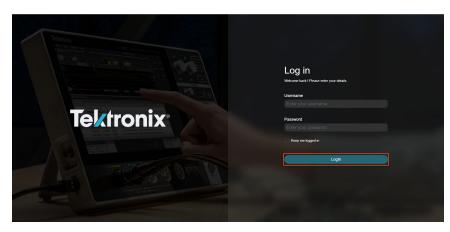


Figure 19: Clarius login page

Note: During installation, if port 4200 was already used, then the first available port within the range of 4200 to 4209 will be checked incrementally and allocated.

By default, no application(s) will be installed and the home screen displays no data. To install the application, refer to *Install USB Tx* application on page 29.

x	Dashboard	🛃 Tests	11 Manage	🖙 License	Reports	a =	vents/Logs	() Невр		😫 Hadmin 🗸
Hi admin										🕞 Run Test
	No Notifications to	Show		No Saved Sequence	s Are Available			No Tests Are Running		
		→ Failed						Applications		
	No TestBenches Are Availat	ble		No Failed Tests A	tre Available			No Applications Are Availabl		

Figure 20: Clarius homepage

Install Clarius instrument service

Clarius instrument service sends the waveforms to the Clarius measurement service⁶ for analysis. Refer to *Network topology* diagram for more information on instrument service.

The instrument service can be installed by the following ways:

- Install instrument service in the target system or remote PC where pre-recorded waveforms are located.
- Install instrument service in the oscilloscope to use pre-recorded waveforms or live acquisitions.

Follow these steps to install the Clarius instrument service:

- 1. Navigate to the Clarius automation framework installation path. The default path is C:\Program Files\Tektronix\Clarius\installers.
- 2. (Optional) Select and copy the Instrument folder and paste in the oscilloscope or computer.
- 3. Open Instrument folder, double-click clarius-instrument-service-<<version>>.exe and follow the steps to complete the installation.

⁶ Measurement service will be installed in the target system where Clarius automation framework is installed.

Clarius instrument service installation path:

- If Clarius instrument service is installed in a computer or oscilloscope, then the installation path is C:\Program Files\Tektronix\Clarius\installers\instrument.
- If Clarius instrument service is installed in the target system, then the installation path will be the same as that of the Clarius automation framework.



Note: Installing instrument service will also install Clarius SDK. If a supported Python version is detected, Clarius SDK will be installed in that environment. Otherwise, Python 3.12.x will be installed in an isolated environment and Clarius SDK will be installed in that environment.

Upgrade Clarius automation framework

This section describes the instructions for upgrading Clarius automation framework.

Table 2: Clarius automation framework version upgrade table

Version	Upgrade Support	Upgradable version(s)			
2.0.0	Yes	1.1.0			

Prerequisite:

• You must have at least 30 GB of free disk storage available in Clarius virtual machine to upgrade the Clarius automation framework. You can check the available free disk storage from the admin console. Refer to *Admin Console and Monitoring* on page 103 section.

To upgrade the Clarius automation framework in the target system, follow these detailed steps.

- 1. Go to www.tek.com.
- 2. Click **Download**. 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 compatible version of Clarius automation framework and follow the instructions to download the software. Copy the install package (.zip) to the target install system and extract the zip file.
- 4. Double-click the installer and select **Yes** on the User Account Control.

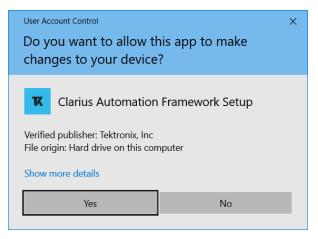


Figure 21: Clarius user account control

5. Displayed only if Clarius automation framework is already installed in the target system.

Select Yes to proceed with upgrade version of the Clarius.

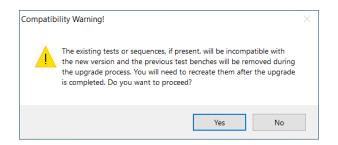


Figure 22: Upgrade pop-up

6. Read the welcome instructions and click **Update**.

Clarius Automation Framework	×
	Tektronix
÷ 	Welcome to Clarius Automation Framework. The setup has detected 1.1.0- already installed. Click 'Update' to install version 2.0.0-
InstallShield	

Figure 23: Upgrade Clarius installer setup

7. Accept the terms of the license agreement and click Next. Please wait until the upgrade process is complete.

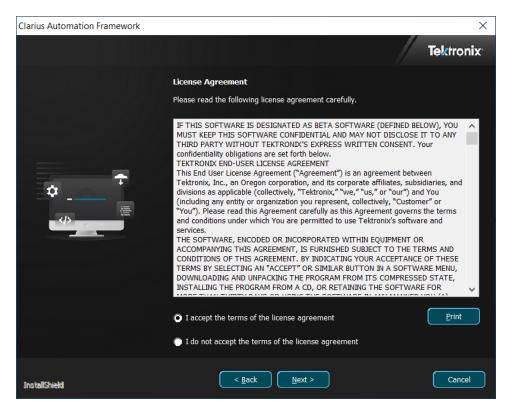


Figure 24: Clarius license agreement

8. Displayed only if Instrument Service is not installed in the previous version.

Select **Yes** to install the Instrument Service. This will create a local test bench in the target system for pre-recorded waveform analysis.

Installing instrument service will also install Clarius SDK in an isolated Python environment.

Tip: If you skip the instrument service installation, you can refer *Install Clarius instrument service* section for the installation steps.

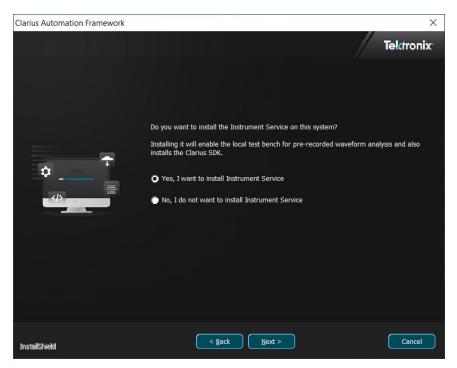
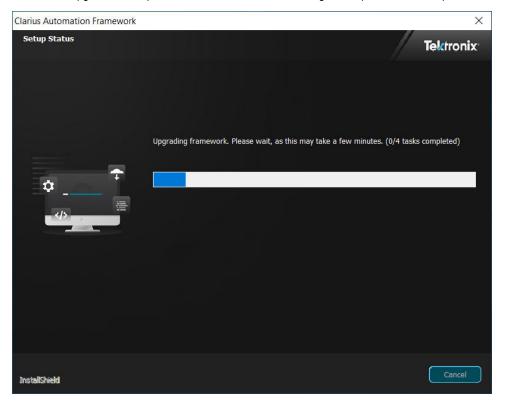


Figure 25: Install instrument service

9. The Clarius upgrade starts, please wait until the tasks and configuration process are complete.





10. The Clarius upgrade is successful. Select the Launch Clarius checkbox to launch the Clarius compliance and click Finish. By default, the application will be launched in the Microsoft Edge browser.

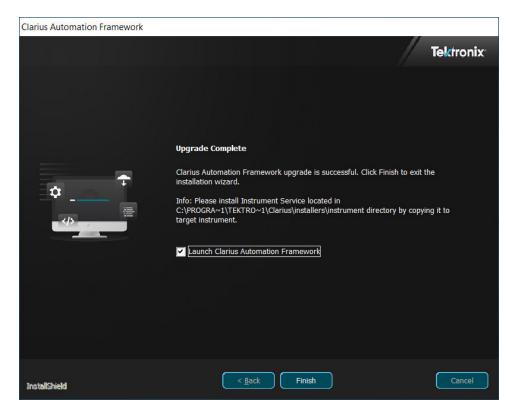


Figure 27: Launch Clarius

- 11. Log in to the Clarius automation framework with the following credentials.
 - Username: admin
 - Password: Enter the user configured password set during installation.

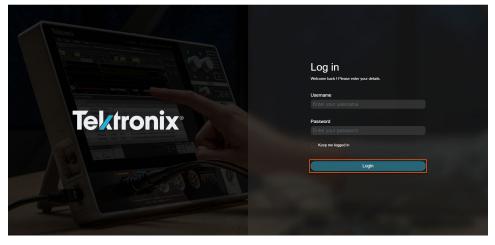


Figure 28: Clarius login page



Note: If the installation fails, please check the installation logs at

(C:ProgramData Tektronix Clarius) for more details about the failure or contact Tektronix field engineer for support.

Installing application in Clarius automation framework

This section describes the instructions for installing a USB Tx application in a target system. Follow the steps to complete the installation.

- 1. Install Clarius USB Tx application
- 2. Install instrument service plug-in of USB Tx

Install USB Tx application

Prerequisite:

Compatible version of Clarius automation framework must be installed. Check *Install Clarius automation framework* section for installation steps.

To install the USB Tx application in the target system, follow the steps:

- 1. Go to www.tek.com.
- 2. Click **Download**. 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. Copy the installer package to the target system⁷.
- 4. Double-click the USB Tx installer and follow the instructions in the installation wizard to complete the installation process.

By default, the application license will not be activated in Clarius compliance and the home screen displays no data. Refer *Activate application license* on page 32 to activate the license.



Note: If the installation fails, check the installation logs (C:\ProgramData\Tektronix\Clarius\logs) for details about the failure or contact a Tektronix field engineer for support.

Install instrument service plug-in of the USB Tx application

Install the instrument service plug-in of the application in the oscilloscope or the computer, where you have installed the Clarius instrument service. To install the Clarius instrument service, *click here*.

Follow the steps to install the USB Tx instrument service plug-in:

- 1. In the target system where the Clarius automation framework is installed, navigate to the installed path. The default path is C:\Program Files\Tektronix\Clarius\installers.
- 2. Select and copy the Instrument folder and paste in the oscilloscope or computer, where you have installed the Clarius instrument service.
- 3. Open the folder, double-click the clarius-compliance-USB-Tx-instrument-service-<<version>>.exe and install the plug-in.

⁷ A PC/Laptop/Computer where the Clarius automation framework is installed.

Clarius SDK

Install Clarius SDK (Software Development Kit) in the target system (where Clarius automation framework is installed) or in the oscilloscope or computer where the Clarius instrument service is installed.

Clarius SDK can be installed in the following ways:

- Install Python in the global environment and then install Clarius SDK in that environment. If a supported Python version is detected, you can select to install the Clarius SDK in that environment.
- Install Python in an isolated Python environment⁸ and install Clarius SDK in that environment.

Install Clarius SDK

If you have skipped Clarius SDK installation during the installation of Clarius automation framework, follow the steps to install.

- 1. In the target system, where the Clarius automation framework is installed, navigate to the installed path. The default path is C:\Program Files\Tektronix\Clarius\installers\sdk.
- 2. Select and copy the sdk folder and paste it to the oscilloscope or computer.
- 3. Open sdk folder, double-click clarius-sdk-<<version>>.exe and follow the steps to complete the installation.

User Account Control Do you want to allow th changes to your device	
Clarius-sdk-< <version Verified publisher: Tektronix, Inc File origin: Hard drive on this corr Show more details</version 	
Yes	No

Figure 29: User account control dialog

⁸ An isolated Python environment will have its own independent set of Python packages installed in its site directories.



Figure 30: SDK installer setup

Activate application license

- 1. Double-click the Clarius icon from the desktop to launch the Clarius automation framework.
- 2. Log in using the Username as admin and the user configured password that was set during the installation.
- **3.** Select the License tab and click **b** to copy the Host ID.

x		🚼 Dashboard 🥔 Tests	Manage 🕞 License	Reports	Events/Logs	(7) Неір		🛕 😫 Hi admin 🗸
Host ID	ATSW-TDJXTN5YJGW6DL			1				+ Add License
Nam	е Туре	Description			nse Expiry	Maintenance Expiry	Applications	
				- 000				
					•			

Figure 31: Copy Host ID for license request

- 4. Send the copied Host ID to the Tektronix application engineer and request for license file.
- 5. In the License tab, click Add License; browse and select the license file and click Activate.

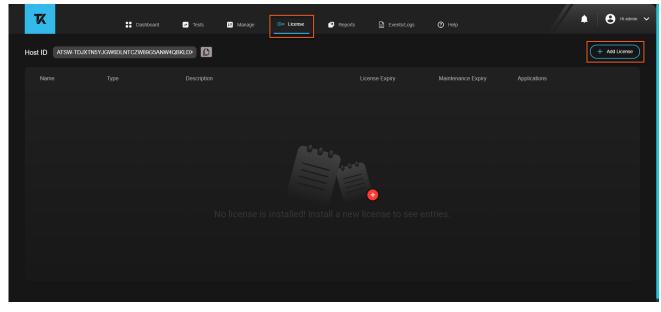


Figure 32: Add License

6. After successful activation, the application license details will be displayed in the license tab.

x	Dashboard	Tests	41 Manage	🖙 License	Reports	Events/Logs	Help		٠	e Hi adm
ost ID ATSW-AF37QD	QYR8QWLJVJJ2LTSMBCRFGT	vxq								+ Add License
Name	Туре	Description				License Expiry	Maintenance Expiry	Applications		
ATSW-ENG-DEV	Fixed Timed SW Support	ENGINEERIN	G LICENSE - Engin	eering License for A	utomated	Tue Mar 04 2025 11:47:	Tue Mar 04 2025 11:47:	ld: USB4, USB4v2	\subset	Uninstall

Figure 33: Installed application license in Clarius automation framework

Run the services

This section lists the services to run before performing tests in the Clarius automation framework. To perform testing within the Clarius automation framework, make sure all the installations are complete and all supporting services are running for the following scenarios.

- The Clarius measurement service must be up and running in the target system.
- The *Clarius instrument service* must be up and running in the system or oscilloscope from where the analysis of the waveform will be done.

Run Clarius measurement service

If the Clarius measurement service is running in the target system where Clarius automation framework is installed, you must see the Measurement service window. If it is not running then double-click the **MeasurementServiceStart.bat** icon from the desktop to run the Clarius measurement service.

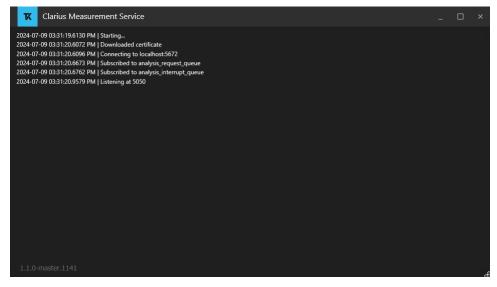


Figure 34: Clarius measurement service window

You can also run the measurement service by navigating to the installation path and double-click the **MeasurementServiceStart.bat**. The default installation path is C:\Program Files\Tektronix\Clarius\lib\analysis\service.

Run Clarius instrument service

Clarius instrument service sends the waveform to the measurement service⁹ for analysis. To check if the instrument service is running, click the **Show hidden icons** arrow in the task bar of Windows and check for Instrument Service.

If the instrument service is not running, double-click the **InstrumentServiceStart.bat** icon from the desktop and run the instrument service. This will run the instrument service and the automator.

⁹ Measurement service will be installed in the target system where Clarius automation framework is installed.

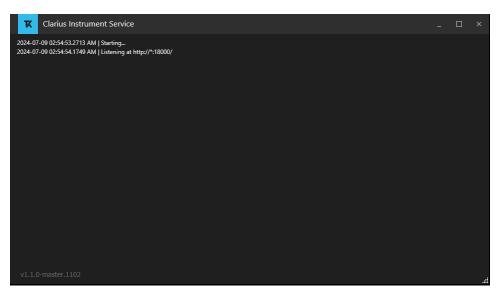


Figure 35: Clarius instrument service window

You can also run the instrument service by navigating to the installation path and double-click the InstrumentServiceStart.bat. The default installation path is C:\Program Files\Tektronix\Clarius\lib\instrument\service.

Application overview

This section describes the steps to log in to the Clarius automation framework, lists of the application controls, and the list of tabs that are in the navigation panel.

Start and log in to the application

1. Double-click the **Clarius** icon from desktop to launch Clarius automation framework.

Note: You can access the Clarius automation framework from the target system using the local host URL https://127.0.0.1:4200. To remotely access the Clarius automation framework, use the host name or IP address of Clarius automation framework installed system.

2. Log in to the application using the credentials.

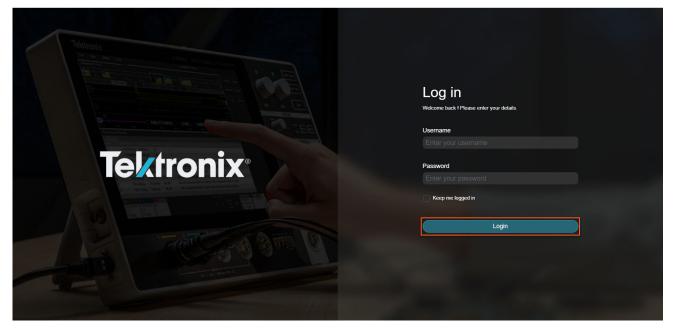


Figure 36: Clarius automation framework login page

After successful log in, you will be navigated to the home page. It displays the activated application(s), saved sequences of the application, test benches status, running tests, failed tests list, and notifications.

x	Dashboard	in Te	sts 👪	Manage Ca	⇒ License	Reports	۵	Events/Logs	() Неір		•	Hi admin 🗸
Hi admin												Run Test
				Sequences			→	Running T	ests			
				USB4	USB4v2		ИСН					
	No Notificatio	ons to Show							No Tests Are Running			
	Test Benches	÷	Failed Te	sts					Applications	÷		
	183Scope		Test	TestBen	sh	Scope	P	rogress	USB4v2			
	183Scope_manual		test_05	Clarius	s_PC			100%				
			test_04	Clarius	s_PC			100%				
			test_03	183Sc	ope	Scope, Automator		100%				
			test_02	183Sc	оре	Scope, Automator		100%				

Figure 37: Clarius automation framework home page

Application controls

The Clarius automation framework uses the menus to group the related configurations, test, result, logs, and report settings. Click the respective menu to open the associated details.

A menu may have one or more tabs and frames that lists the selections available in that panel. Controls in a menu can change based on the settings made in that menu or another menu.

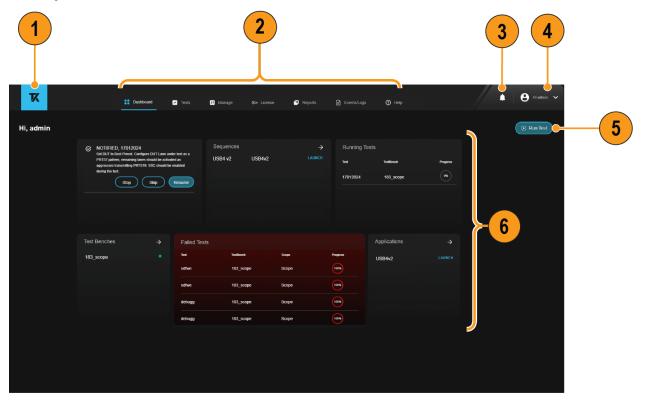


Figure 38: Application controls interface

Identifier	Element	Description
1	Navigation panel	The navigation panel contains list of tabs that allows you to select the application, create and configure tests, create and configure test bench, and generate the test report.
2	Notifications	Displays alerts when an event or action occurs in the application.
3	User profile	Displays the profile information and settings details of the account. You can view the version and user license agreement details in About menu.
4	Run Test	Click to perform a test by entering the required test information.
5	Widgets	An element of a graphical user interface that displays information or provides a specific details to the user to interact with the application.

Navigation panel

The navigation panel contains a list of tabs that allows you to select the application, create and configure tests, test bench, generate the test report, view the logs of the executed test, and the license information. Click the respective tab to open the associated panel.

T									🛕 🙁 🔁 Hi admin 🗸
	Bashboard	Tests	👫 Manag	je C ⇒ License	Reports	Events/Logs	(2) Help		
Hi admin									Run Test
				equences		→ Runnir	ng Tests		
				JSB4 USB4	4v2 LAI				
	No Notifications	to Show					No Tests Are Running		
	Test Benches	\rightarrow	Failed Tests				Applications	\rightarrow	
	183Scope		Test	TestBench	Scope	Progress	USB4v2		
	183Scope_manual		test_05	Clarius_PC		100%			
			test_04	Clarius_PC		100%			
			test_03	183Scope	Scope, Automator	100%			
			test_02	183Scope	Scope, Automator	100%			

Figure 39: Clarius compliance navigation panel

Table 4: Navigation panel and tabs description

Tabs	Description
Dashboard	Displays the test data and test execution summary. It includes test progress, test notifications to view the status of each test, list of active applications, sequences, and test benches.
Tests	Allows you to create, configure, and run a new test. It also analyzes and displays the details of all executed tests.
Manage	Allows you to manage the application, test bench, and sequences that are created for the test execution.
License	Allows you to add license to the application and also view the licenses that are enabled.
Reports	Allows you to generate a test report and/or export a detailed test report for an executed test(s).
Events and logs	Displays the logs and events for a test.
Help	Allows you to open Help window to browse topics and read Help files.

Dashboard: View the test execution details, progress, and results

The dashboard allows you to get quick insight about the test execution summary. The widgets in the dashboard displays the test related information such as applications used, available test benches, test notifications, sequences, and more.

The test execution results displayed here depends on the configurations in the other panels.

x	Dashboard	🥕 Tests	s 👪 I	Manage 🖙 License	Reports	Events/Logs	Help		•	😫 Hi admin 🗸
Hi admin										• Run Test
				Sequences		→ Running T	ests			
				USB4 USB4	V2 LAUNC					
	No Notifications t	to Show					No Tests Are Running			
	Test Benches	÷	Failed Test	S			Applications	\rightarrow		
	183Scope		Test	TestBench	Scope	Progress	USB4v2			
	183Scope_manual		test_05	Clarius_PC		1005				
			test_04	Clarius_PC		100%				
			test_03	183Scope	Scope, Automator	100%				
			test_02	183Scope	Scope, Automator	100%				

Figure 40: Clarius compliance dashboard view

Perform a test

The **Run Test** allows you to perform a test by entering the fields such as the test name, tags, test description, acquisition mode, test bench, and test sequences.

Widgets

A widget is a part of an interface that allows you to perform a task or access a service on the platform.

Running tests

This widget displays the current test execution status with details such as Test Name, Testbench, and Progress. The progress status displays the test status as Running, Failed, or Complete.

If tests are not performed, then the widget displays No Tests Are Running message.

Click the particular test from the Running Test widget to view the test details and progress of the currently running test from the Test tab.

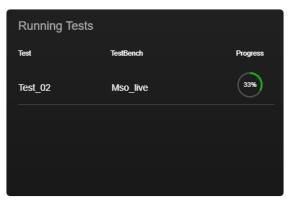


Figure 41: Clarius compliance running tests widget

Test benches

Displays the list of available test benches along with its status. Click D to navigate to the Test benches tab.

Test Benches	\rightarrow
Clarius_Test bench	•

Figure 42: Clarius compliance test benches widget

Applications

Displays the list of activated application(s). Click LAUNCH to start the application.

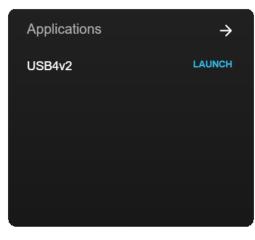


Figure 43: Clarius compliance applications widget

Failed tests

Displays the list of failed tests with details of Test Name, Test bench, Scope, and Progress. Click the particular failed test to navigate to the test details and view the test results from the **Tests** tab.

Failed Tests			
Test	TestBench	Scope	Progress
min UI	169_scope	Scope	100%
IJ	169_scope	Scope	100%
IJ	169_scope	Scope	100%
tx_timing	169_scope	Scope	100%

Figure 44: Clarius compliance failed tests widget

Sequences

Displays the list of available sequence(s). Click LAUNCH to run the sequence.

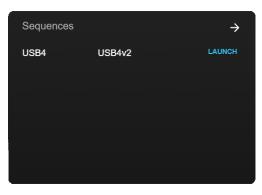


Figure 45: Clarius compliance sequences widget

Notifications

Displays the list of notifications for the active running test. If no tests are performed, the widget displays **No Notification to Show** message.

\otimes	NOTIFIED, Id: 187a2c3e-79c4-478f-b180- c3d5b1610b4d Connect lanes from next lane group.
	Stop Skip Resume

Figure 46: Clarius compliance notifications widget

Tests: Create and run a test, view run statistics and results

The **Tests** tab allows you to create, configure, and run a test. It also displays the name of the test, test mode, application name, execution time stamp, execution duration, and the test execution status. You can delete and view results of the executed test from **Tests** tab.

TK	👯 Dashboard	i 🎽 Tests 👬	Manage G⇔ License 🖸	Reports 📄 Events/Logs	Help	· // ·	Hi admin 🗸
List of Tests						०, Y Delete । •) + Add Test
Select All	Test Name txeq23345877	Test Mode USER	Applications USB4v2	Start Time Nov 22, 11:07:43	Duration 16 mins	Status Passed	View Results
	Test Name txeq2334587	Test Mode USER	Applications USB4v2	Start Time Nov 22, 10:44:34	Duration 20 mins	Status Passed	View Results
	Test Name ACCM_recoded	Test Mode USER	Applications USB4v2	Start Time Nov 21, 13:46:47	Duration 2 mins	Status Passed	View Results
					n	ems per page: <u>30 👻</u> 1 – 15 of 15	к < > »I

Figure 47: Tests tab in Clarius compliance

Select a test or tests and click Delete to delete the test or waveforms from the Test tab.

Create and run a test

The Add Test button allows you to create and configure a test.

Follow the steps to create a test:

1. In the Tests tab, click Add Test.

X	Dashboard	Tests	🔢 Manage 🛛 C🖚 License	🔋 Reports 📄 Events/Log	gs 🕜 Help	🛔 😫 Hi admin 🗸
List of Tests						Q Y Delete V + Add Test
	Test Name txeq23345877	Test Mode USER	Applications USB4v2	Start Time Nov 22, 11:07:43	Duration 16 mins	Status Passed View Results
	Test Name txeq2334587	Test Mode USER	Applications USB4v2	Start Time Nov 22, 10:44:34	Duration 20 mins	Status Passed View Results
	Test Name ACCM_recoded	Test Mode USER	Applications USB4v2	Start Time Nov 21, 13:46:47	Duration 2 mins	Status Passed View Results
						Items per page: $30 - 1 - 15$ of $15 \langle \langle \rangle \rangle > $

Figure 48: Add Test

2. Enter the test details in the respective fields.

X	Bashboard	🛃 Tests	∎ Manage C⇒	License 🎒 Reports	Events/Logs	(?) Help	🛕 😩 Hi admin 🗸
← List of Test / Run Test							
Name *⊘		Tags		Descri	ption		
TEST1_05		DEFAULT ×		1 × • USB	1v2		
Testbench 183_scope							
183_scope		~					
Prepare Sequence Select Technology	✓ Select Application	~					IMPORT SEQUENCE
Tests							

Figure 49: Test Parameters

Menu	Description
Name	Enter a unique test name.
Table continued	

Menu		Description
Tags Tags are used to group the tests. There is a default tag added. You can add the required ta tests and can filter the tests based on the tag value.		Tags are used to group the tests. There is a default tag added. You can add the required tag to the tests and can filter the tests based on the tag value.
Description		Enter the test description.
Acquisition Mode		Select the acquisition mode (Live or Recorded).
Live		 Select Live to run a test measurements on live signal. Select the <i>testbench</i> from the drop-down list.
	Recorded	 Select Recorded to run a test measurements on prerecorded waveforms. Select the oscilloscope or Clarius installed PC from the drop-down to use recorded waveform files. Select the <i>testbench</i> from the drop-down on the Recorded mode. (Enables only when Remote PC/Oscilloscope is selected). Enter waveform folder path from Remote PC/Oscilloscope or Clarius PC.

3. Create and prepare a sequence.

- **4.** Configure the sources and signals.
- 5. Configure the global settings.
- 6. Instrument connection diagram setup.
- 7. Configure the test scenario.
- 8. Click Run to run the measurements with the configured settings.

ᠺ ۵ 😫 Hi admin 🗸 Bashboard 🛃 Tests Reports Events/Logs (?) Help H Mai ← List of Test / Run Test Name * ?? Tags Default X Description 1 × | • USB4v2 Testbench Prepare Sequence ✓ Select Application Select Technology Tests TX USB USB4v2 ٠

Figure 50: Run a test

Create and prepare a sequence

The create and prepare a sequence settings allows you to add a sequence by setting up the required details.

x	B Dashboard	Tests 👭 Mana	ge 🕞 License 🛐	Reports 📄 Events/Logs	🕐 Help	Hi admin
← List of Test / Run Test						
Name * 🕐		Tags		Description		
TEST1_05		DEFAULT X		∽ USB4v2		
Acquisition Mode	O Recorded					
Testbench						
183_scope						
Prepare Sequence						IMPORT SEQUENCE
Select Technology	✓ Select Application					
Tests						
🗹 TX USB						
USB4v2						¢ 🖬 E 🗠 👻
						Save Run

Figure 51: Tests tab: Create and prepare a sequence

Menu	Description
Import Sequence	It allows to import the sequence that is created as a template.
	Click the IMPORT SEQUENCE button and select the desired sequence.
	Click Import.
	Import Sequence ×
	Search ۹
	seq1 USDH2
	seq2 USE4v2
	seq3 USE4v2
	seq4 USBH/2
	Cancel
Select Technology	Select the technology from the drop-down to prepare a sequence.
Select Application	Select the active application from the drop-down to prepare a sequence.
Add Sequence	It allows to add a new sequence in the current test.
Sources and Signals	Select the required sources and signals to run the test.
Global Settings	Select the required global settings to run the test.
Delete sequence	Deletes the created sequence.
Connection Diagram	Shows the connection between the instruments to make the test setup.
Scenarios	It displays the list of scenarios with their Names and Local Settings related to the sequence. You can select and unselect a scenario.
Save	Saves all the sequence settings that are added.

Menu	Description
Run	Run the test when all the settings are added.

Configure the sources and signals

The Sources and Signals allows you to select source and assign signals to the channels.

TK Dashboard	Tests if Manage C⇒ License 🔽	Reports 📄 Events/Logs 🕜 Help	🜲 🤮 Hi admin 💊
← List of Test / Run Test			
Name *⑦	Tags	Description	
TEST1_05	DEFAULT X 1 X	~ USB4v2	
Acquisition Mode Live			
Testbench			
183_scope ~			
Prepare Sequence			IMPORT SEQUENCE
Select Technology ~ Select Application			
Tests			
🗹 TX USB			Ē
USB4v2			🌣 🖹 i 🗠
			Save Run

Figure 52: Tests tab: Configure the sources and signals for a test

To add the sources and signals, do the following:

- **1.** Click **i** to assign the sources and signals for the test setup.
- 2. By default, signals will be added as per the selected technology and application.
- 3. To add additional signal, click + Add Signal.

Sources and Signals					
Definition Grouping					
Source: Select Source					
Lane1 💿 🥫	Lane1			+ Add Signal	
	Transmitter				
				Cancel Apply	

Figure 53: Add Signal for selected source

- 4. Select or unselect the required sources from the drop-down.
- 5. Navigate to the Grouping tab and click + Add Group to add group of sources.
- 6. Click Apply.

Sources	Description			
Definition				
Sources and Signals	×			
Definition Grouping				
Source: Select Source				
Lane1 Lane1 Transmitter Receiver				
Lane2 1 T Keckares				
DATA v Single Ended v Data_Positiv L Lane2 Reversal 1 Data V Data_Negativ L	ane1- Scope V CH1 V			
	Cancel Apply			
Source	Select the required lane from	the drep down		
Source				
	Click + Add Source to add the s	selected lane.		
	Options: Lane1, Lane2, Lane	e1 Reversal, Lane2 Reversal		
	Default: Lane1			
Signal	Select the signal.			
	Default: DATA			
Probe Type	Select the probe type.			
	Default: SINGLE_ENDED			
Name	Displays the source name bas	sed on the probe type selected.		
	Default: Data_Positive, Data_	Negative		
Label	Enter the label of the source i	n the field.		
	Default:			
	Source	Label		
	Lane1	Lane1+ and Lane1-		
	Lane2	Lane2+ and Lane2-		
	Lane1 Reversal	Lane1 Reversal+ and Lane1 Reversal-		
	Lane2 Reversal	Lane2 Reversal+ and Lane2 Reversal-		
Instrument	Select the required instrumen	t from the drop-down.		
	Default: Scope			
Slot/Channel	Select the required slot/chann	nel from the drop-down.		
L	I			

Sources	Description		
	Options: CH1, CH2		
Delete	Removes the added signal source.		
Grouping	Sources and Signals Definition Grouping Defined Lanes Lane1 Lane2 Group2 Lane2 Reversal Group3 Lane1 Reversal Group4 Lane2 Reversal Group5 Reversal Group5 Reversal Group5 Reversal Group5 Reversal Group5 Reversal Group5 Reversal Group5 Reversal Group5 Reversal Group5 Reversal Group		
	"Use Lare Definition tab to add source and configure tanes. Cancol Apply		
	In USB4v2 applications, each group should have only one lane. Acquisitions in each lane occur sequentially. Refer to <i>DUT link type and test fixture lane mapping</i> .		

Configure the global settings

Global settings configured for the application will be applied for all the measurements within the application. These settings are applicable for all the scenarios present in the sequence.

Cashboard	Tests if Manage Cao License	🝳 Reports 📄 Events/Logs	🕐 Неір	🜲 😩 Hi admin 🗸
← List of Test / Run Test				
Name * ⁽²⁾ TEST1_05	Tags	Description		
Acquisition Mode				
Testbench				
183_scope				
Prepare Sequence				IMPORT SEQUENCE
Select Technology v Select Application				
Tests				
🔽 TX USB				
USB4v2			4	
				Save Run

Figure 54: Tests tab: Configure global settings

Follow the steps to add or update the global settings:

- 1. Click from the Tests pane.
- 2. Select or update the respective global settings and click Apply.

SB4v2			
∽ Settings	DUT		১
DUT			
Acquisition	DUT ID*	Link Type*	
	DUT001	Asymmetric	
SigTest			
Cable De-Embed	Lane1 Best Preset*	Lane2 Best Preset*	
	P1	P1	
> Limits			
	Lane1 Reversal Best Preset*	Lane2 Reversal Best Preset*	
	P1	P1	
	DUT Control*	ETT Tool Path on Oscilloscope*	
	Automation	C:\USB4ETT\USB4V2\	
	ETT Tool Version*	Port Number*	
	v2.0.0		
		Cancel	Apply
		Curicer	

Figure 55: Test tab: Global settings

Table 5: Global settings

Configuration Name Details		
5		Reset all settings to default.
DUT		
USB4v2		\times
✓ Settings DUT Acquisition Signest Cable On Embed > Limits	DUT DUT ID' DUT001 Lane1 Best Preset' P1 Lane1 Reversal Best Preset' P1 DUT Control' Automation ETT Tool Version' v2.0.0	S Link Type* Asymmetric Lane2 Best Preset* P1 Lane2 Reversal Best Preset* P1 ETT Tool Path on Oscilloscope* C:UUSB4ETTTUJSB4V2N Port Number 1
DUT ID		Custom field to differentiate the DUT ID. Enter DUT identifier or name in the field. Default: DUT001
Link Type		Select the link type from the drop-down. Options: Symmetric, Asymmetric Default: Symmetric Mote: This setting is displayed when the acquisition mode is set to LIVE.
Table continued		

Configuration Name	Details
Best Preset (Lane1-2)	This setting is used for 3.3.2 Transmitter Timing and Voltage Measurement Subsets. To find the best preset for each DUT link type and its lanes, run 3.3.1 Transmitter Equalization and Calibration.
	Select the required lane best preset of the DUT from the drop-down.
	Options: P0 to P41
	Default: P1
	Note: This setting is displayed when the acquisition mode is set to LIVE.
Reversal Best Preset (Lane1-2)	This setting is used for 3.3.2 Transmitter Timing and Voltage Measurement Subsets. To find the best preset for each DUT link type and its lanes, run 3.3.1 Transmitter Equalization and Calibration.
	Select the required lane reversal best preset of the DUT from the drop-down.
	Options: P0 to P41
	Default: P1
	Note: This setting is displayed when the acquisition mode is set to LIVE.
	Note: The lane1 and lane2 Reversal Best Preset are displayed when the link type is set to Asymmetric .
DUT Control	Select the DUT control from the drop-down.
	Options: Automation, Manual
	Default: Automation
	Note: This setting is displayed when the acquisition mode is set to LIVE.
ETT Tool Path on Oscilloscope	The USB ETT Tool should be installed in this location on the oscilloscope
	Path: C:\USB4ETT\USB4V2\
	Note: This path is not user-editable and is shown for user reference.
	Note: This setting is displayed when the DUT control is set to Automation and the acquisition mode is set to LIVE .
Port Number	Enter the DUT port number.
	Default: 1
	Note: This setting is displayed when the DUT control is set to Automation and the acquisition mode is set to LIVE .
ETT Tool Version	Default: v2.0.0
	Note: This setting is displayed when the acquisition mode is set to LIVE.

Configuration Name)	Details
Acquisition		
USB4v2		×
✓ Settings	Acquisition	٥
DUT Acquisition		External Attenuator(dB)*
SigTest Cable De-Embed	Dual Stack (ATI Mode)	6 Waveform Prefix*
> Limits	User Defined	DUT001_
	Bandwidth* 25	Record Length* ✓ GHz 100 M
	Iterations* 1	De-skew on Tx-* 0 ps
(
		Cancel Apply
Dual Stack (ATI Mode	e)	Use the toggle button to enable or disable.
		Options: Enable, Disable
		Default: Enable
		Note: This setting is displayed when the acquisition mode is set to LIVE.
External Attenuator(d	B)	Enter the connected attenuator value in this field.
		Default: 6
		Note: This setting is displayed only when the Dual Stack (ATI Mode) is enabled and acquisition mode is set to LIVE .
User Defined		Use the toggle button to enable or disable.
		Default: Disable
		Note: This setting is displayed when the acquisition mode is set to LIVE.
Waveform Prefix		Enter the prefix for the waveform name.
		Default: DUT001_
Iterations		Enter the number of iterations.
		Options: 1 to 20
		Default: 1
De-skew on Tx-		User need to measure the oscilloscope de-skew between two channels, which are going to use during the test. Measured value of de-skew with respect to "Tx-" need to configure in this field before running the test.
		Solution use this value and remove the de-skew between configured channels during acquisition.
		Options: -200 to 200
Table continued		

Configuration Name	Details
	Default: 0 ps
	Note: This setting is displayed when the acquisition mode is set to LIVE.
Bandwidth	Select the bandwidth of the instrument from the drop-down.
	Options: 33, 30, 25
	Default: 25 GHz
	Note: This setting is displayed only when User Defined is enabled and acquisition mode is set to LIVE .
Record Length	Enter the record length to acquire the waveform.
	Options: 0.1 to 200
	Default: 100 M
	Note: This setting is displayed only when User Defined is enabled and acquisition mode is set to LIVE .
SigTest	
USB4v2	×
Settings SigTest	¢
DUT CTS Version* Acquisition	Sig Test Version"
SegTest v0.98 (draft under review)	0.95 ~
Cable De-Embed SigTest Path* C:\USB4_SigTest\USB4_SigTest.exe	

USB4v2			×
∽ Settings	SigTest		5
DUT			
Acquisition	CTS Version* v0.98 (draft under review)	SigTest Version* 0.95	
SigTest		0.85	
Cable De-Embed	SigTest Path*		
> Limits	C:\USB4_SigTestfUSB4_SigTest.exe		
		Са	ncel Apply

CTS Version	Compliance Test Specification version.
	Default: v0.98
SigTest Version	Mention the SigTest version which is specified in the "SigTest Path" to get printed in the test report.
	Option: 0.9, 0.95
	Default: 0.95
SigTest Path	To configure the system, install the SigTest tool and specify the path.
	Default: C:\USB4_SigTest\USB4_SigTest.exe
	Note: It is recommended not to use any spaces in the path string.
Table continued	

Table continued...

Configuration Name	Details				
s4p Files Location on Test System	Default: C:\Users\Public\USB\s4p\USB4v2\				
s4p File	Enter the cable s4p file name in the field.				
	Default: PM1MCable.s4p				
Cable De-Embed	USB4v2				
	Settings Cable De-Embed Utr sdp Files Location on Test System" sopted C.USersiPublic/USB4v2i PM1MCable.s4p Limits Limits Cancel Apply				

Limits editor

Displays the lower limit, ideal value, and upper limit for the applicable measurement using different types of comparisons.

SB4v2								
> Settings	Limits Editor							<u>⊾</u> 5
∽ Limits	Measurements	Lower Limit			ldeal Value			Upper Limit
3.3.1 Transmitter Equalization and Calibration	Preset 0 C[-2]	-0.015		~			~	0.015
3.3.2 Transmitter Timing and Voltage Measureme	Preset 0 C[-1]	-0.025		~			~	0.025
3.3.4 Transmitter Electrical Idle Voltage 3.3.5 Transmitter AC common mode	Preset 0 C[0]	0.975		~			~	1.025
	Preset 0 C[1]	-0.025		~			~	0.025
	Preset 0 [DDJ] (UI pp)		N.A.	~		N.A.	~	
	Preset 1 C[-2]	-0.015		~			~	0.015
	Preset 1 C[-1]	-0.025		~			~	0.025
	Preset 1 C[0]	0.925		~			~	0.975
							ncel	

Figure 56: Limits editor

Table 6: Limits Editor for USB

Limits	Description
Measurements	Displays the list of measurements for the selected group.
Lower Limit	Lower limit as defined in the specification.
Ideal Value	Ideal value as defined in the specification.
Upper Limit	Upper limit as defined in the specification.

Instrument connection diagram setup

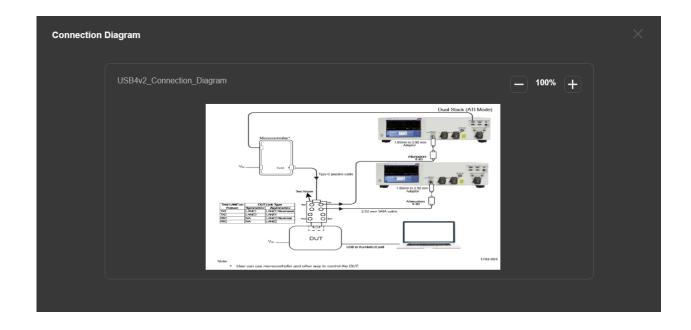
The instrument connection diagram setup shows how to connect the DUT to the oscilloscope for the tests.

Cashboard	Tests if Manage Cao License	🔋 Reports 📄 Events/Logs	🕐 Help	🛕 😫 Hi admin 🕚
← List of Test / Run Test				
Name * ⑦	Tags	Description		
TEST1_05	DEFAULT X	1 ×		
Acquisition Mode Elive Recorded				
Testbench				
183_scope ~				
Prepare Sequence				IMPORT SEQUENCE
Select Technology ~ Select Application				
Tests				
Z TX USB				
USB4v2			4	🕽 📋 📉 👘
				Save Run

Figure 57: Tests tab: Connection diagram setup

Follow the steps to view the test setup connections between the instruments.

- 1. Click
 and then click Connection Diagram.
- 2. Click \leq \geq to view the different connection diagrams that are associated to the test setup.



Configure the test scenarios

The scenarios and their measurements can be configured using the parameters in the scenario frame. Initially the scenarios and measurements are configured to the default values.

Cashboard	Tests If Manage C=> License	e 🍳 Reports 📄 Events/Logs	Help	Hi admin
← List of Test / Run Test				
Name * ⑦	Tags	Description		
TEST1_05	DEFAULT X	1 ×		
Acquisition Mode				
Testbench				
183_scope ~				
Prepare Sequence				IMPORT SEQUENCE
Select Technology				
Tests				
🗹 TX USB				
🗹 USB4v2			•	: ī : 🔽
				Save Run

Figure 58: Tests tab: Configure test scenarios

Follow the steps to configure the scenarios:

1. Click I in the **Tests** frame to view and configure the scenarios settings.

X	Dashboard	🔁 Tests	👪 Manage	C⇔ License	Reports	Events/Logs	⑦ Help		•	😫 Hi admin
List of Test / Run Test										
me *⑦		Tags			Descri	iption				
EST1_05		DEFAULT			1 × • USB4	4v2				
Testbench 183_scope										
TX USB										73
TX USB								۵	i :	
USB4v2	me							¢. Info	Local Settin	
USB4V2 Scenarios Var V v 3.3.1	1 Transmitter Equalization and Calib	ration						into 1	Local Settin	
 ✓ USB4v2 Scenarios ✓ Nar ✓ × 3.11 ✓ × 3.22 	1 Transmitter Equalization and Calib 2 Best Preset Acquisition							Info D	Local Settin	
☑ USB4v2 Scenarios Image: Comparison of the state of t	1 Transmitter Equalization and Calib							into 1	Local Settin	

Figure 59: Configure the measurements

2. Click @ from Local Settings to configure the respective scenario setting.

Item	Description
5	Click to reset the mentioned values to default value.
General	
	3.3.1 Transmitter Equalization and Calibration
Preset Selection	Settings General Prest Selection*
	Select the presets for which the transmitter equalization or preset calibration measurements to run.
	Default: P1, P2, P3, P4, P5, P6, P7, P8, P9, P10, P11, P12, P13, P14, P15, P16, P17, P18, P19, P20, P21, P22, P23, P24, P25, P26, P27, P28, P29, P30, P31, P32, P33, P34, P35, P36, P37, P38, P39, P40, P41
-	By default, all options are selected.
Table continued	

Item	Description
	3.3.2 Transmitter Timing and Voltage Measurement Subsets Settings General Timing and Voltage Parameters Subset* W Seccomm smitub nute (S) (Soc Inuce Dewation (1) (1) (1) (1) (1) (1) (1) (1) (1) (1)
	Image: Control of the control of th
Timing and Voltage Parameters Subset	Cancel
	Select the measurements to run the test.
	Options: UI, SSC DOWN SPREAD RANGE, SSC DOWN SPREAD RATE, SSC PHASE DEVIATION, SSC SLEW RATE, UJ, UDJ, UDJ LF, DCD, V SWING, TX LEVELS MISMATCH, TX SNDR, TX ISI MARGIN
	By default, all options are selected.

- 3. Select the required measurements from the drop-down list.
- 4. Update the parameters with the required values.
- 5. Click Apply.

Run the measurements

Click Run to run the measurements with the configured settings.

T Dashboard	🕶 Tests 👪 Manage 🕞 L	cense 🝳 Reports 📄 Events/Logs	⑦ Help	🜲 😫 Hi admin
← List of Test / Run Test				
Name * ③	Tags	Description		
TEST1_05	DEFAULT X	1 ×		
Acquisition Mode				
Testbench				
183_scope ~				
Prepare Sequence				IMPORT SEQUENCE
Select Technology ~ Select Application				
Tests				
Z TX USB				
USB4v2				¢ 🖬 : 🖂 🗸
				Save Run

Figure 60: Run a test

View test execution status and results

The status and results of each executed test in the Tests tab displays the test status and the result details.

1. Go to Tests tab and click View Results of an executed test.

T		👬 Dashboard	nests 👪	Manage	🖙 License	Reports	Events/Logs	() Help			🗍 😬 Hi admin 🗸
List of Tests									٩	Delete	 Add Test
	Test Name () Test_01	Test Moo USER	le	Application	ins L_name	Start Time		Duration 02 hours 51 mins	Status Passed		View Results
									Nems per page: 30	▼ 1 – 30 of 64	I< < > >I

Figure 61: Tests: View results

2. The test execution details with results, plots, and waveforms are summarized as follows.

∨ USB4v2	Test Name Txeq2334587	Description	Testbench Clarius_PC					TS LOGS Gene	rate Report
Y 3.3.1 Transmitter Equalization and Calib Analysis_1 : Lane1	Results Plots	Waveforms							
TxEq Results : Lane1	USB4v2								
	3.3.1 Transmitte	r Equalization and C	alibration / TxEq Resu	lts					
	Name				Mean			Status	
	Preset 0						Value >= -0.01		
	Preset 0						Value ≻= -0.02		
	Preset 0						Value >= 0.975		
	Preset 0						Value >= -0.02		
	Preset 0 [0.4761 Ulp-p	0.4761 Ulp-p	0.4761 Ulp-p	0.4761 Ulp-p	0 Ulp-p		Informative	

Figure 62: View test execution details

Control	Description
Test Name	Displays the test name that is set.
Description	Displays the test description.
Table continued	

Table continued...

Control	Description
Testbench	Displays the testbench that is used.
Events	View the events of an executed test. Refer <i>Events</i> for more information.
Logs	View the logs of an executed test. Refer Logs for more information.
Generate Report	Generates the report of an executed test.
	Refer Add and Generate New Report for more information.

Test results

The Results tab displays the results of an executed test measurement.

Follow the steps to view the test results:

- 1. Select the required measurement from the left side bar to view the results. The top level selections displays all the results whereas, the lower level displays results for only that particular parameter.
- 2. Click the Results tab to view the acquisition results.

x :	🖁 Dashboard 🛛 🧧	Tests 👫 Mar	nage 🖙 Lio	ense 🍳 Re	ports 📄 Evi		⑦ Help		• 1	😫 Hi admin 🗸
← List of Test / Test Status / Txeq233458	37 (Passed)									
✓ USB4v2	Test Name Txeq2334587	Description	Testbench Clarius_PC						s LOGS Gene	erate Report
3.3.1 Transmitter Equalization and Calib										
Analysis_1 : Lane1	Results Plots	Waveforms								:
TxEq Results : Lane1	USB4v2									
3.3.2 Best Preset Acquisition	030472									
3.3.2 Transmitter Timing and Voltage M	3.3.1 Transmitte	r Equalization and Calib	ration / TxEq Results							:
3.3.4 Transmitter Electrical Idle Voltage	Name	Value			Mean			Limits	Status	Info
3.3.5 Transmitter AC common mode	Preset 0							Value >= -0.01		(i)
	Preset 0							Value >= -0.02		(i)
	Preset 0							Value >= 0.975		(i)
	Preset 0							Value >= -0.02		(i)
	Preset 0 [0.4761 Ulp-p	0.4761 Ulp-p	0.4761 Ulp-p	0.4761 Ulp-p	0 Ulp-p			Informative	G

Figure 63: Test results

Menu	Description
Name	Displays the name of the measurement that is executed.
Value	Displays the measured value.
Min	Displays the minimum measured value.
Max	Displays the maximum measured value.
Mean	Displays the mean measured value.
Std.Dev	Displays the standard deviation of the measured value.
Count	Displays the count value for the measurement.
Table continued	

Table continued...

Menu	Description					
Lower Margin	Displays the lower margin of the measured value.					
	Note: This menu will be displayed only when the required measurement is selected from the left side bar.					
Upper Margin	Displays the upper margin of the measured value.					
	Note: This menu will be displayed only when the required measurement is selected from the left side bar.					
Limits	Displays the measurement limits.					
Status	Displays the measurement status.					
Info	Displays the additional information of the measurement.					

3. Click II and select the sub-menu to customize the columns to display the respective test results data, and click Apply.

X	B Dashboard	i Tests	👬 Manage 🛛 C🛥 License	Reports	Events/Logs	(2) Help		•	😫 Hi admin 🗸
← List of Test / Test Status / Txeq23	34587 (Passed)								
> USB4v2	Test Name Txeq2334587	Descriptio	Choose Column					s LOGS Gene	erate Report
	Results Plot	s Waveforms		✓ Name					
	USB4v2			✓ Value ✓ Min					
	3.3.1 Transr	nitter Equalization		✓ Max ✓ Mean		Count	Limits	Status	E Info
	Preset 0			✓ Count ✓ Std Dev.		1	Value ≻= -0.01		
	Preset 0			I Limits		1 1	Value ≻= -0.02 Value ≻= 0.975		
	Preset 0 Preset 0 [0 0.4761 Ulp		Cancel	Apply		Value ≻= -0.02	Pass	

Figure 64: Customize test results columns

4. Click II and select Download CSV Result or Download waveforms to download the test results.

Test plots

The Plots tab displays the plots of an executed test measurement.

Follow the steps to view the test plots:

- 1. Select the required measurement from the left side bar to view the plots. The top level selections displays all the plots whereas, the lower level displays results for only that particular parameter.
- 2. Click the Plots tab to view the acquisition plots.

X	B Dashboard	Tests 👪 Mar	age 🕞 License	Reports	Events/Logs	(2) Help	🗍 😫 Hi admin 🗸
← List of Test / Test Status / Txeq2334	I587 (Passed)						
✓ USB4v2	Test Name Txeq2334587	Description	Testbench Clarius_PC				Generate Report
 3.3.1 Transmitter Equalization and Calib 							
Analysis_1 : Lane1	Results Pic	ots Waveforms					
TxEq Results : Lane1	2.2.4 Transmit	tter Equalization and Calibr	tion				
3.3.2 Best Preset Acquisition	5.5.1 Hanshi						
3.3.2 Transmitter Timing and Vollage M	EyeDiagram	n - Iteration: 1					
3.3.4 Transmitter Electrical Idle Voltage							
3.3.5 Transmitter AC common mode							
		100 (A)					

Figure 65: Test plots

3. Click II and select Download CSV Result or Download waveforms to download the test plots.

Test waveforms

The Waveforms tab displays the waveforms of an executed measurement.

Follow the steps to view the test waveforms:

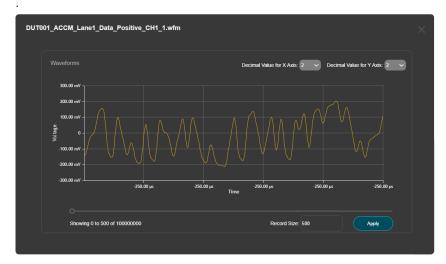
- 1. Select the required measurement from the left side bar for which the waveforms to be viewed.
- 2. Click the Waveforms tab.
- 3. Select the number of iteration and the required waveform name from the drop-down to display the waveform.

← List of Test / Test Status / Txeq233458	Dashboard	😫 Hi admin 🥆
✓ USB4v2	Test Name Description Testionch EVENT 5 LOGS Generate	e Report
3.3.1 Transmitter Equalization and Calib		
Analysis_1 : Lane1	Results Plots Waveforms	
TxEq Results : Lane1		
3.3.2 Best Preset Acquisition	3.3.1 Transmitter Equalization and Calibration Berston Lanet_Data_Post	si 🗸 🗄
3.3.2 Transmitter Timing and Voltage M		
3.3.4 Transmitter Electrical Idle Voltage		
3.3.5 Transmitter AC common mode		
	-200.00 m/ -200.05 200.55 2000 200.55 200.55 200.55 200.55 200.55 200.55 200.55 200.55 200.55	85 -260.85 µ5
	સ લુસ થ થ થ થ થ થ થ થ થ થ થ થ થ થ થ થ થ mill 	

Figure 66: Test waveforms

4. (Optional) Click the icon is to set the view properties for the waveform and click Apply

- Decimal value for Axis: Set the decimal value for units of X Axis and Y Axis.
- **Record Size**: Enter the total record length to view in a single screen.
- Waveform scroll bar: Scroll to view the portion of the waveform.



- 5. To download individual test waveforms, click 💷 of the respective measurement and select Download waveforms.
- 6. Click I and select Download CSV Result or Download Waveforms to download all test waveforms.

Filter tests

The filter by option under Tests tab allows the user to filter the test based on the criteria, such as: Status, Date Executed, and Applications.

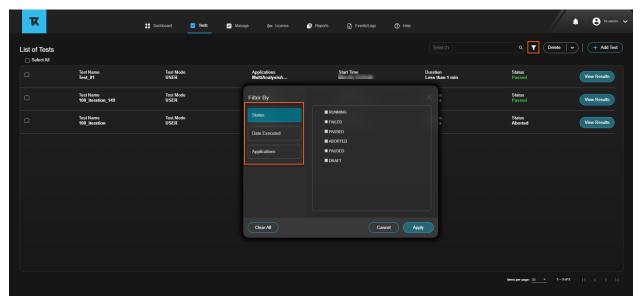


Figure 67: Filter test

Filter By	Description
Status	Displays the test status.
	RUNNING
	• FAILED
	• PASSED
	ABORTED
	• PAUSED
	• DRAFT
Date Executed	Select the From and To date to filter required tests.
Applications	Select the required applications to filter the test.
Clear All	Clear all the filters.
Apply	Applies the filter to a particular test.
Cancel	Click to cancel all the changes.

Manage: Test benches, sequence, and applications

The manage tab allows you to view the list of activated applications, create and configure test benches, and sequences. It also allows you to save the settings for further analysis.

Test Bench: Create and configure the test bench

A test bench is an environment that is used to verify the correctness of a test setup. The Test Benches tab allows you to create a test bench or edit an existing test bench for an application. You can also modify and delete the available test bench.

T	Dashboard 🛛 Tests	🚺 Manage 💿 License 💿	Reports 🖹 Events/Logs (?) H	łelp		🗍 😝 Hi admin 🗸
Test Benches					۹ ۲	4 Add Test Bench
Test Benches						Actions
Sequences	bast_127	http://134.84.244.127:18000	Technology_name	MuliAnalysisApp1		2 1
Applications	test_149_scope	http://134.64.245.149:18000	Technology_name	MultiAnalysisApp1		2 1

Figure 68: Manage test benches tab

Element	Description
Name	The test bench name.
Instrument Service Address	<pre>The instrument service URL. http://<<ip address="" instrument="" of="" service="">>:18000</ip></pre>
Technologies	Active technology.
Applications	Active application.
Connectivity Status	 Shows the testbench availability status. Available Unavailable In Use
Actions	
Modify	Change or modify the existing test bench.
Delete	Delete the test bench.
Table continued	

lable continued...

Element	Description						
Filter By	Technologies	Filter by active technology.					
	Applications	Filter by active application.					
	Connectivity Status	Filter by active connectivity status.					
		Available					
		Unavailable					
		• In use					
	Acquisition Mode	Filter by active acquisition mode.					
		• Live					
		Recorded					
Refresh All	Click the Refresh All to refresh	n the testbench details.					

Create a test bench

Follow the steps to create a test bench:

1. Go to Manage > Test Benches and click + Add Test Bench.

x	B Dashboard	Tests	Manage	⊙æ License	Reports	Events/Logs	Help	🗍 😝 Hiadmin 🗸
Test Benches								Q 🕇 🗘 🕂 Add Test Bench
Test Benches Name								
Sequences								
Contractions								

Figure 69: Create a test bench

2. Enter the test bench details in the respective fields.

x	👬 Dashboard 🔎 Tests 🛄	Manage 💿 License 🔊 Reports	E Events/Logs (?) Help		A B Hiadmin V
← Manage / Test Benches / Add Test Bench					
Test Benches	Test Bench Details				
E Sequences	Name *		Description Enter Description		
Applications	Instrument Service Address * (2)				
	IP Ex: 155:200.254.196 or hostname	18000	Use only for recorded mode ()		
	Technologies *		Applications		0 × ~
			u x v		u × ↓
	Instruments ⑦				
		No instruments adde	dl Select "Technologies" to get the list of instruments		
			ar ourset recumologica to get the list of matumenta		
				Cancel	Save

Figure 70: Test bench details

Menu	Description					
Test Bench Details	ŀ					
Name	Enter the test bench name					
Description	Enter the test bench descr	iption (Optional).				
Instrument Service Address	Enter the instrument service address (IP address/Host id) of the oscilloscope or target system.					
	Check Connection	Enter the instrument address or host name. You can select the to check the status of the instrument. This will be green if the instrument is available and connected.				
Use only for recorded mode	Uploads recorded waveforms from the test bench to the data store. This cannot be used for live testing.					
Technologies	Select the technology. The	test bench will be created for the selected technologies.				
Applications	Select the application. The	test bench will be created for the selected applications. (Optional)				

3. Select the instruments detail.

X	👬 Dashboard 🏼 🎤 Tests	11 Manage	C ⇒ License	Reports		Events/Logs	Help			B Hi admi
← Manage / Test Benches / Modify Tes	st Bench									
Test Benches	Test Bench Details									
	Name *					Description				
5 Sequences	183_scope									
Applications	Instrument Service Ac	Idress * ⑦								
	134.64.245.183		18000			Use only for	recorded mode 🗊			
	Technologies *					Applications				
	TX USB X					USB4v2 ×				
	Instruments (2)									
	Instrument	Category/Type		Address			Details		Activ	in
	Scope*	Real Time Scope		✓ GPIB8::1::	NSTR		TEKTRONIX, DP0770	02SX,B321860,10.14.0 Build 15	Ľ	¢
	ExtensionScopeB	Real Time Scope		TCPIP::10	0.0.2::INSTR		TEKTRONIX,DP0770	02SX,B321860,10.14.0 Build 15	ď	
	Automator	WILDER Microcontrolk		✓ TCPIP::12	.0.0.1::5060::S				Ľ	¢
									ancel	Update

Figure 71: Instrument details

Menu	Description
Instrument	Select the required Instrument to create a new test bench.
	• Scope
	ExtensionScopeB
	Automator
	Note: In ATI dual stack mode, the ExtensionScopeB details appear once you refresh the master Scope .
Category/Type	Select the required instrument category or type with respective to the instrument is selected.
	When the instrument is selected as Scope
	Real Time Scope
	When the instrument is selected as Automator
	WILDER Microcontroller
	Custom
Table continued	I

Menu	Description					
Address	Enter the VISA resource address from the instrument service manager of the oscilloscope.					
	Example:					
	For MSO Scope: GPIB8::1::INSTR					
	For DPO Scope: TCPIP::127.0.0.1::INSTR					
	For DUT Control: TCPIP::127.0.0.1::5060::SOCKET					
	Note:					
	 The scope addresses must be captured from TekVisa Instrument manager. IP address in DUT Control must be of the machine where instrument service is running. 					
Details	Click the Offrom the action panel after entering Address . It will displays the scope and properties details retrieving from the oscilloscope.					
Action	Allows you to Edit and Refresh the instrument properties that are added.					
	Note: To edit the instrument properties, first you need to add address and select refresh icon.					
Scope/Automator Details						
Category/Type	Select the required instrument type from the drop-down.					
	Available options are:					
	Real Time Scope					
	WILDER Microcontroller					
	Custom					
Address	Enter the IP address of the instrument in the field.					
	For Scope: GPIB8::1::INSTR					
	For Automator: TCPIP::127.0.0.1::5060::SOCKET					
Properties	T					
Refresh	Click the 🥝 icon to refresh the instrument properties.					
Manufacturer	Displays the instrument manufacturer details in the field. By default, the manufacturer will be added as TEKTRONIX .					
Model	Displays the model in the field.					
Bandwidth	Displays the bandwidth of the instrument in the field.					
	Note: Available only when the instrument is selected as Scope and ExtensionScopeB .					
Serial Number	Displays the serial number of the instrument in the field.					
	Note: Available only when the instrument is selected as Scope and ExtensionScopeB .					

Menu	Description
Firmware Version	Displays the firmware version of the instrument in the field.
	Note: Available only when the instrument is selected as Scope and ExtensionScopeB .
Artifact Type	Shows the artifact type of the instrument in the field.
	Note: Available only when the instrument is selected as Automator .
Script Name	Enter the python script name of the DUT control that you want to use for automation in the field.
	Note: Available only when the instrument is selected as Automator .

4. Click **Save** to save the test bench.

T	Dashboar	d 🍃 Tests	Manage G	ticense	Reports 🖹 Event	s/Logs 🧿 Help		+	🕒 Hiadmin 🗸
← Manage / Test Benches / Add Test Bench									
Test Benches	Test Bench Details								
5 Sequences	Name *					Description			
	Testbench_01					To create testbench details			
Contractions	Instrument Service Add 134.64.244.246	ress " ()	18000			Use only for recorded mode 💿			
	Technologies *					Applications			
	Instruments ⑦								
	Instrument	Category/Type			ldress		Details	Acto	
	Scope*	Real Time Scope		~ _ 6	PIB8:1:INSTR		TEKTRONIX,DP0770025X,KR200030,10.14.0 Build 15	Ľ	
								Cancel	Save

Figure 72: Save test bench details

5. You can view the saved test bench in the Test Benches tab. You can also edit or delete the existing test bench.

X	Dashboard	 Tests 	1 Manage	⊙≫ License	Reports	Events/Logs	⑦ Help				Hi admin 🗸
Test Benches										۹ ▼ ¢	+ Add Test Bench
Test Benches											
Sequences	Testbench_01		http://134.84.244.2	48:18000		TX Base		EyeDiagram_SigTest			C î
+ Applications											

Figure 73: View test bench details

Sequences

The **Sequences** tab displays the list of created sequences along with the application names. This acts as a test template and can be imported while creating a test. You can also modify or delete the existing sequences.

π	🚼 Dashboard 🗾 Tests	<mark>II Manage</mark> ⊙⇒ License IS R 	eports 📄 Events/Logs 🕜 Help	🛕 🕒 Hi admin 🦄
Sequences				Search Q + Add Sequence
Test Benches				
Sequences	sequence	Application_name		Modify Delete
Applications				

Figure 74: Sequences tab

Add new sequence

Follow the steps to create a sequence:

1. Go to Manage > Sequences and click New Sequence.

x	Dashboard	Tests	Manage	⊙∞ License	Reports	Events/Logs	() Help			e Hiadmin 🗸
Sequences									٩	+ Add Sequence
Test Benches Name										
🔁 Sequences										
++ Applications										
						000				

Figure 75: Add new sequence details

2. Enter Sequence Details in the respective fields; select the Technology and Application from prepare sequence pane and click Add Sequence.

Sequence Details	Description
Name	Enter the name of the sequence.
Description	Enter the description of the sequence.
	Click + Add Sequence to add a test sequence. Refer <i>Create and Prepare a Sequence</i> for more information.

- 3. Check and update the global settings for the respective fields and click **Apply**.
- 4. Configure the scenarios and measurements, and click Apply.
- 5. You can view the saved sequence in the Sequences tab. You can also modify or delete the existing sequence.
- 6. Click Save.

x	🛟 Dashboard 🛃 Tests 🚺 Managa 🐵 Licensie 💕 Reports 🕒 Eiventis-Logs 🧿 He	p 🔒 🗎 😁 Ni Admini 🗸
← Manage / Sequences / Modify Se		
Test Benches	Sequence Details Name * Description	
Sequences	sequence sequence_details	
Applications	Prepare Sequence	
	Select Technology × Select Application ×	
	Tests	
	Technology_Name	
	Application_name	¢ 🗊 🗄 🗸 🗸
		Save

Figure 76: Save sequence details

7. You can view the saved sequence details. You can modify or delete the existing sequence.

x	Dashboard Tests	11 Manage Ga License 🔊 R	teports 🔒 Events/Logs 🕜 Help	A Batania 🗸
Sequences				Search Q + Add Sequence
Test Benches				
Sequences se	equence	Application_name		Modity Delete
++ Applications				

Figure 77: Sequence details

Applications

The **Applications** tab displays the list of activated applications with its name, type, sub-type, and version. You can also filter the applications by selecting the filter options.

x	Dashboard	🛩 Tests	🚹 Manage	C⇔ License	Reports	Events/Logs	Help		+	😫 Hi admin 🗸
Applications										۹ ۲
Test Benches	Name						Sub-type		Version	
Sequences	USB4v2			TX USB			Router Assembly Tx Electrical Comp	liance	2.0.0	
Applications										

Figure 78: Manage application tab

Reports: View, generate, and export report of a test

The **Reports** tab allows you to generate a report, view the report, and export a detailed test report for all the executed tests. It also allows you to search for a specific report using the search bar.

x	👯 Dashboard 🏼 🎴 Tests	11 Manage © License _ Reports	🖹 Events/Logs 🕜 Help		🔶 🙁 Hi admin 🗸
Reports					Q Generate Report
Report Name	Test Name	Applications	Created On		
Test_01	Test_01	MultiAnalysisApp1		•	View
				Nems per page: 10 👻 1 -	

Figure 79: Reports tab

Element	Description
Report Name	Displays the report name.
Test Name	Displays the test name.
Applications	Displays the application name.
Created On	Displays the date and time by when the report is created.
Delete	Click the icon to delete the report.
View	Click to view the report.
Generate Report	You can generate the report of an executed test. Refer <i>Generate Report</i> for more information.

Generate report

The Generate Report allows you to generate a report of an executed test.

Generate report of a particular test

Follow the steps to generate a report of a particular test:

1. Go to Tests tab and click View Results of a particular test.

x	👯 Dashboard 🛛 🔁 Tests	if Manage 🕞 License	🤋 Reports 📑 Events/Logs	⑦ Help		Hi admin
List of Tests					Q Y Dele	te 🗸 🕂 Add Test
Test Name © Test_01	Test Mode USER	Applications Application_name	Start Time	Duration 02 hours 51 mins	Status Passed	View Results

Figure 80: Tests tab: View results

2. Click Generate Report.

T	Dashboard	Z Tests	It Manage C≫	License 🖻 R	eports 🖹 E	vents/Logs	Help		•	8 Hi admin 🗸
← List of Test / Test Status / Txeq233	4587 (Passed)									
✓ USB4v2	Test Name Txeq2334587	Description	Testbench Clarius_PC						LOGS Gene	erate Report
 3.3.1 Transmitter Equalization and Calib. 										
Analysis_1 : Lane1	Results PI	ots Waveforms								
TxEq Results : Lane1	USB4v2									
3.3.2 Best Preset Acquisition	038412									
3.3.2 Transmitter Timing and Vollage M	3.3.1 Tran	smitter Equalization ar	d Calibration / TxEq Resu	ults						
3.3.4 Transmitter Electrical Idle Voltage	Name	Value			Mean			Limits	Status	
3.3.5 Transmitter AC common mode	Preset 0							Value >= -0.01		
	Preset 0							Value >= -0.02		
	Preset 0							Value >= 0.975		
	Preset 0							Value ≻= -0.02		
	Preset 0 [0.4761 Ulp-p	0.4761 Ulp-p	0.4761 Ulp-p	0.4761 Ulp-p	0 Ulp-p			Informative	
										ļ

Figure 81: Generate report of a particular test

3. Select the report template from the drop-down.

Generate Report	×
Template *	
Application_Report	
Customize Reports	
Test Setup Configurations	Test Bench Details
Waveforms	V Plots
Include Custom Logo	
Choose File No file selected	
Comments	
You Can Enter Maximum of 4000 Characters	
	Character Count: 0 / 4000
	Cancel Continue

Figure 82: Generate report: Select template

4. Check the options to customize the reports.

Generate Report		
Template *		
Application_Report		
Customize Reports		
Test Setup Configurations	Test Bench Details	
Waveforms	Plots	
Include Custom Logo		
Choose File No file selected		
Comments		
		Character Count: 0 / 4000
	Canc	el Continue

Figure 83: Generate report: Customize report

5. Click Choose File and browse to add a custom logo to get printed in the test report.

Generate Report		×
Template *		
Application_Report		
Customize Reports		
Test Setup Configurations	Test Bench Details	
Waveforms	V Plots	
Include Custom Logo		
Choose File No file selected		
Comments		
	Character Count: 0	/ 4000
	Cancel	tinue

Figure 84: Generate report: Include custom logo

6. Enter additional comments in the field if required and click Continue.

Generate Report	×
Template *	
Application_Report	
Customize Reports	
Test Setup Configurations	Test Bench Details
Waveforms	V Plots
Include Custom Logo	
Choose File Tektronix logo.PNG	
Comments	
Test report.	
	Character Count: 12 / 4000
	Cancel Continue

Figure 85: Generate report: Add additional comments in the field

Generate report for a group of test

Follow the steps to generate a report for a group of test:

1. Go to Reports tab and click Generate Report.

x	Dashboard	Tests	H Manage	⊙∞ License	Reports	E Events/Logs	Help			Hi admin 🗸
Reports										Generate Report
Report Name	Test Name		Applicati			Created On				
Test_01	Test_01		MultiAna	alysisApp1				•	View	
								Items per page:	10 ▼ 1 – 1 of 1	

Figure 86: Generate report for a group of test

2. Enter the Report Name and click Select Tests.

x	Dashboard 🛃 Tests	👪 Manage 🛛 👦 License	🕒 Reports 📄 Events/Logs	(2) Help	▲	😫 Hi admin 🗸
← Reports / New Report Report Name * Report_01	Select Tests					
Tests		Applications		icenarios	Steps	
					Cance	Generate

Figure 87: Reports tab: Select tests

3. Select the list of tests that needs to be generated and click Continue.

Select Test(s) to generate rep	ports			
List of Tests				۹ ۲
Test Name Test_01	Tag DEFAULT	Applications Application Name	Date Added Sep 22, 00:22:25	Status PASSED
Test Name Test_02	Tag DEFAULT	Applications Application Name	Date Added Sep 21, 22:16:40	Status PASSED
Test Name Test_03	Tag DEFAULT	Applications Application Name	Date Added Sep 21, 20:44:03	Status PASSED
		Items per page: 10	<u>▼</u> 1-3 of 3 K	< > >1
			Cance	Continue

Figure 88: Select list of tests

4. Select the Tests and Applications from the sub menu.

x		Dashboard	Tests 🔐 Manage	Cor License S Reports	Events/Logs	Help		🔶 😫 Hi admin 🗸
← Reports / New	w Report							
Report Name * R	Report_01	Select Tests						
			Applications			Scenarios	Steps	
	Test_01 <		MultiAnalysisApp1	<				
	100_iteration_149							
							Cance	Generate

Figure 89: Reports: Select tests and applications

5. Click Generate. A dialog window appears to customize the report.

X	👯 Dashboard 🛛 🖉 Tests	👬 Manage 🛛 ©> License	Reports	Events/Logs	Help		•	😫 Hi admin 🗸 🗸
← Reports / New Report								
Report Name * Report_01	Select Tests							
Tests		Applications				S	eps	
Test_01 <		MultiAnalysisApp1 <						
100_iteration_149								
							_	
							Cancel	Generate

Figure 90: Reports: Generate the report

6. Select the report template from the drop-down.

Generate Report	
Template *	
Application_Report	
Customize Reports	
Test Setup Configurations	Test Bench Details
Waveforms	V Plots
Include Custom Logo	
Choose File No file selected	
Comments	
	Character Count: 0 / 4000
	Cancel Continue

Figure 91: Generate report: Select template

7. Check the options to customize the reports.

Generate Report		×
Template *		
Application_Report	•	
Customize Reports		
Test Setup Configurations	Test Bench Details	
Waveforms	Plots	
Include Custom Logo		
Choose File No file selected		
Comments		
		Character Count: 0 / 4000
	Canc	el Continue

Figure 92: Generate report: Customize report

8. Click Choose File and browse to add a custom logo to get printed in the report.

Generate Report		
Template *		
Application_Report		
Customize Reports		
Test Setup Configurations	Test Bench Details	
Waveforms	Plots	
Include Custom Logo Choose File No file selected		
Comments		
		Character Count: 0 / 4000
	Cancel	Continue

Figure 93: Generate report: Include custom logo

9. Enter additional comments in the field if required and click Continue.

Generate Report	
Template *	
Application_Report	
Customize Reports	
Test Setup Configurations	Test Bench Details
Waveforms	Plots
Include Custom Logo	
Choose File Tektronix logo. PNG	
Comments	
Test report.	
	Character Count: 12 / 4000
	Cancel

Figure 94: Generate report: Add additional comments in the field

View and export a report

Pre-requisites: Make sure the report is generated after successful execution of a test.

Follow the steps to view and export the generated report:

1. Go to Reports tab and click View of a particular report.

X	Dashboard	M Tests	👯 Manage	⊙ ⇒ License	Reports	Events/Logs	⑦ Help			+ B Hiad	min 🗸
Reports										Generate Report	
Report Name	Test Name		Applicat	ions		ated On					
beq23345877	txeq23345877		USB4v2		Nov	22, 11-23-37		•		tew	
							lte	ms per page: 10 👻	1 – 10 of 11 🛛	< < > > I	

Figure 96: Reports tab: View

2. Enter the title and select the format (PDF) of the report. By default the title will be displayed as the test name.

x	S Dasi	hboard 🔀 Tests	Manage	🖙 License	Reports	Events/Logs	(2) Help		Hi admin
Reports / Report Generation	ated (txeq23345877								
≓ ∀ ~ …		- + ••	1 of 2 6		C	k 🖪 \cdots 🔒	Export		
	Tektronix						Title txeq23345 Format	877	
		Clarius Compliance I	JSB4v2 Tx Test	Report	- 1	· ·	PDF		•
	<								
	Test Name	txeq23345877	Scope Model Number	NA	_			Export	
	DUTID	DUTOD	Scope Serial Number	NA					
	Date and Time	2024-11-22 05:37:43.657	SPC; Factory Calibration	NA					
	Overall Test Result	PASSED	Scope F/W Version	NA	_				
	Overall Execution Time Execution Mode	00:15:07 RECORDED	Clarius Version App Version	2.0.0-master.824	_				
	Recorded Waveform Path	C thempiatoms/waveforms/USB4v2(DUT001	SigTest Version	0.95					
	Test Mode	Compliance Mode	Test Point	Router Assembly TP2 Tx	_				
	DUT Centrel	NA	De-Embedding s4p File	PM1MCable.s4p	_				
	Universal Serial Bus 4 (USB4 ®) Router Assembly Electric al Compliance Test Specifica tion Version	v0.85 (draft under review)							
	Acquisitions Count	1							
		Lanel Te	st Summary						
		3.3.1 Transmitter Equ	alization and Calibration						
		Best	Preset						
	Iteration Measurement D		Test Result Low Lie	nit High Limit		-			
						· · ·			

Figure 97: Reports tab: Enter title and format

3. Click Export.

x	B Das	hboard 🔑 Tests	it Manage	€≂ License	Reports	Events/Logs	Help	🛕 😫 Hi admin 🗸	
← Reports / Report Genera	← Reports / Report Generated (txeq23345877)								
·≔ ∀ ~ …		- + ••	1 of 2 🖓) (B		Q B	Export		
	Tektronix						Title txeq23345877 Format		
		Clarius Compliance L Setup In	JSB4v2 Tx Test I	Report					
	< Test Name DUT ID	txeq23345877 DUT001	Scope Serial Number	NA NA				Export	
	Date and Time Overall Test Result Overall Execution Time	2024-11-22 05:37:43.657 PASSED 00:15:07	SPC; Factory Calibration Scope F/W Version Clarius Version	NA NA 2.0.0-master.824					
	Execution Mode Recorded Waveform Path	RECORDED Citemplatomsiwaveforms/US84v2lDUT001	App Version SigTest Version	1.1.0 0.95					
	Test Mode DUT Control Universal Serial Bus 4 (USB4 ®) Router Assembly Electric al Compliance Test Specifica	Compliance Mode NA v0.85 (draft under review)	Test Point De-Embedding s4p File	Router Assembly TP2 Tx PM1MCable.s4p					
	al Compliance Test Specifica tion Version Acquisitions Count	1							
		3.3.1 Transmitter Equ	st Summary alization and Calibration						
	Iteration Measurement C		Preset Test Result Low Lim	nit High Limit		-			

Figure 98: Reports tab: Export the report

Events and logs

The Events and logs tab displays the overall record of events and logs captured during a test acquisition and analysis.

X	Dashboard	M Tests	11 Manage	c ∞ License	P Reports	Events/Logs	1 Help		Hi admin
Events/Logs									
Events Logs									<u>ب</u> م
11/21/2024 15:05:59	Test execution completed with	status PASSED.							
11/21/2024 15:05:58	Waveform TEST_CASE_2B_5	TATE_Lane0_S1_	_CH1_1.wfm upload to	storage device comple	eted.				
11/21/2024 15:05:58	Uploading waveform TEST_C	ASE_2B_STATE_L	.ane0_S1_CH1_1.wfm						
11/21/2024 15:05:58	Acquisition completed for Scenario : ExecuteOnDEVICE_STATE_SKIP, Step · Acquisition, State : TEST_CASE_28_STATE , Iteration : 1								
11/21/2024 15:05:57	Acquisition started for Scenario : ExecuteOnDEVICE_STATE_SKIP, Step : Acquisition, State : TEST_CASE_28_STATE , Iteration : 1								
11/21/2024 15:05:55	processed Measurement : RJDDMock, Scenario : ExecuteOnDEVICE_STATE, Step : RJDD, Lane : Lane0, State : TEST_CASE_28_STATE, Iteration : 1								
11/21/2024 15:05:54	15:05:54 Analysis started for Measurement : RJDDMock, Scenario : ExecuteOnDEVICE_STATE, Step : RJDD, Lane : Lane0, State : TEST_CASE_28_STATE, Iteration : 1								
11/21/2024 15:05:54	Waveforms downloaded for an	alysis for Iteration							
11/21/2024 15:05:52	Configuring Scope for "AUTOS	SET EXECUTE", "	SYS:DELAY 5000", "HO	DRIZONTAL:MODE M	ianual", "*opc?"				
11/21/2024 15:05:52	Waveform TEST_CASE_2A_S	STATE_Lane0_S1_	_CH1_1.wfm upload to	storage device comple	eted.				
							Items per page: 30	▼ 1 - 30 of 126254 <	< > >i

Figure 99: Events tab

Option	Element	Description
0	Copy Events	Click to copy the events and paste it in the clipboard for further analysis.
2	Download Events	Click to download the events in the target system.

x	Dashboard	🔎 Tests 🔣	Manage C>> License	Reports	Events/Logs	Help		٠	Hi admin
Events/Logs									
Events Logs								Ō	⊥ ▼
11/21/2024 15:05:59	INFO ExecutionEngine		execution of executionId: 21	b5d0ecb-5393-429c-a9	4f-d712c18bdddf comple	ted with status PASSED.			
11/21/2024 15:05:59	WARN EngineService	/execution/resou	rce/ no license acquired to unlo	ck.					
11/21/2024 15:05:59	INFO ExecutionEngine		activity: 310b8b7b-8ecd-40	ice-97bf-9190dd52d9cf	from execution request c	f executionId: 2b5d0ecb-5393-429c-a9	4f-d712c18bdddf complete		
11/21/2024 15:05:59	INFO ExecutionEngine		De-registering activity from	cache, activityId: 310b8	3b7b-8ecd-40ce-97bf-91	90dd52d9cf			
11/21/2024 15:05:59	INFO ExecutionEngine		executing taskId: 1e5ab2f0	8124-43e8-894e-1130	286e8dcb of activityId: 3	10b8b7b-8ecd-40ce-97bf-9190dd52d9c	f using com.tek.atoms.cor		
11/21/2024 15:05:59	INFO ExecutionEngine		Submitting next tasks [Task	<pre>kNode{id='1e5ab2f0-812</pre>	24-43e8-894e-1130286e	3dcb', activityId='310b8b7b-8ecd-40ce-\$	97bf-9190dd52d9cf', name		
11/21/2024 15:05:59	INFO ExecutionEngine		Conditions are not satisfied	I to execute task name:	RJDD with taskId: 64c7c	b4f-da0d-48cd-951a-6bfeebd33457			
11/21/2024 15:05:59	INFO ExecutionEngine		Submitting next tasks [] afte	er completion of current	task: START_NEXT_AC	TIVITY of activity 310b8b7b-8ecd-40ce	-97bf-9190dd52d9cf		
11/21/2024 15:05:59	INFO ExecutionEngine		Submitting next tasks [Task	<pre>kNode{id='64c7cb4f-da0</pre>	d-48cd-951a-6bfeebd33	457°, activityId='310b8b7b-8ecd-40ce-9	7bf-9190dd52d9cf, name		
11/21/2024 15:05:59	INFO ExecutionEngine		executing taskId: b8e67f18	034b-4480-97cf-f58b4	011055a of activityId: 310)b8b7b-8ecd-40ce-97bf-9190dd52d9cf	using com.tek.atoms.core		
						Items per page: 30			> >I

Figure 100: Logs tab

Option	Element	Description
6	Copy Logs	Click to copy logs and paste it in the clipboard for further analysis.
Ł	Download Logs	Click to download the logs in the target system.
0	Filter	Click to filter the logs.

Filter logs

The **Filter By** option under logs tab allows you to filter the logs based on the criteria such as Component, Data Added, Level, Service, and Transaction Type.

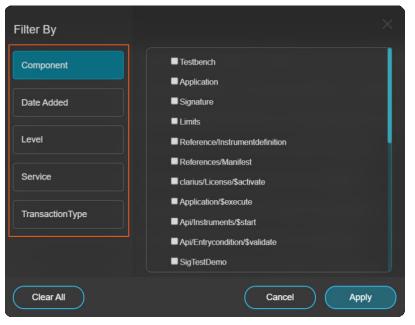


Figure 101: Filter logs

Filter type	Description				
Component	Select the required component(s) to filter the logs.				
	Testbench				
	Application				
	Signature				
	• Limits				
	Reference/Instrumentdefinition				
	References/Manifest				
	Clarius/License/\$activate				
	Application/\$execute				
	Api/Instruments/\$start				
	Api/Entrycondition/\$validate				
	SigTestDemo				
	Build_Catalog				
	Application/SourceNames				
	Application/Source				
	Api/Rules/\$validate				
	Limits/RJ_Mean_Limits				
	Config/Instrument				
	RiseTime				
	• Ui				
	Application/\$execute/Status				
	Sequence				
	Histogram				
	SSCFreqDevPlot				
	TimeTrendPlot				
	EyePlot				
	EyeMaskPlot				
Date Added	Select the date and time range to filter the logs.				
evel	Displays the level of logs.				
	• WARN				
	• ERROR				
	• INFO				

Filter type	Description
Service	Select the required service(s) to filter the logs.
	Measurement_Service
	Instrument_Service
	Reporting-Service
	License_Service
	Gateway-Service
	EngineService
	Pre-Processor-Service
	Constraints_Service
	CatalogService
	CalibrationService
	Infra_Service/Infra-Service
	Monitor_Service/Monitor-Service
	Plots_Service/Plot-Service
	ui_service/ui-service
	UserManagement_Service/UserManagement-Service
	RequestTransformer
	Waveform_Service/Waveform-Service
	ExecutiveEngine
	Blob_Service
Transaction Type	Select the required transaction type(s) to filter the logs.
	• TEST
	• RESOURCE
Clear All	Clear all the filters.
Apply	Applies the filter based on the log criteria selected.
Cancel	Click to cancel all the changes.

USB4v2 Tx compliance measurements

Introduction of the measurements

PRTS7 test pattern is used for all the tests except Electrical Idle Voltage.

AC Common Mode Voltage

The AC Common Mode Voltage refers to the voltage that passes through the differential signal pair. It is important to keep the common mode voltage noise at low level. USB4v2 has set limits to ensure the compliance with transmitter requirements.

Electrical Idle Voltage

The Electrical Idle Voltage refers to the voltage where the DUT does not transmit data on lane. This is expected to be low as defined in the limit table.

Transmitter Timing and Voltage measurements

Transmitter timing and voltage measurement subsets	Sub test	Unit	Description
Timing parameters subset	UI	ps	Minimum unit interval to test DUT baseline Baud rate of 25.6 GB with an uncertainty range of -300 ppm to 300 ppm.
	SSC_DOWN_SPREAD_RANG E	%	Dynamic range of the SSC down-spreading
	SSC_DOWN_SPREAD_RATE	KHz	SSC down-spreading modulation rate
	SSC_PHASE_DEVIATION	ns pp	Phase jitter associated with the SSC modulation.
	SSC_SLEW_RATE	ppm/us	SSC modulation frequency slew rate (df/dt)
	UJ	UI pp	Sum of uncorrelated DJ and RJ components
	UDJ	UI pp	Deterministic jitter that is uncorrelated to the transmitted data.
	UDJ_LF	UI pp	Low frequency Uncorrelated Deterministic Jitter (UDJ)
	DCD	UI pp	Duty Cycle Distortion Jitter (DCD)
Voltage parameters subset	V_SWING	mV p	Peak differential voltage swing
	TX_LEVELS_MISMATCH	NA	Levels separation mismatch ratio
	TX_SNDR	dB	Signal to Noise and Distortion Ratio (SNDR)
	TX_ISI_MARGIN	dB	Signal to Residual ISI Ratio

Transmitter voltage swing

$$V_{SWING} = \frac{\sum_{n=1}^{M-Ntaps} p(n)}{M \cdot \sum_{n=-2}^{1} C[n]}$$

Where,

p is the linear fit pulse response.

M is the number of samples per UI.

Ntaps is the linear fit pulse response length.

C[n] are the normalized values of the transmitter preset taps applied during the measurement.

Transmitter levels mismatch

$$TX \ LEVEL \ MISMATCH = min\left\{\frac{(V_2 - V_1)}{\Delta}, \frac{(V_1 - V_0)}{\Delta}\right\}$$

Where,

 V_0 , V_1 , and V_2 are the mean constellation levels corresponding to PAM3 symbols 0, 1, and 2 (V_0 is the bottom level, V_1 is the middle level, and V_2 is the upper level).

$\Delta = (V_2 - V_0)/2$

Transmitter signal-to-noise and distortion

The transmitter signal-to-noise and distortion ratio (TX_SNDR) is calculated as the ratio between the linear fit pulse peak and the root square sum of the linear fit error (σ_e) and the additive noise (σ_n).

$$TX \, SNDR = 20 \cdot \log 10 \left(\frac{P_{max}}{\sqrt{\sigma_e^2 + \sigma_n^2}} \right)$$

Transmitter ISI margin

The transmitter ISI margin (TX_ISI_MARGIN) is calculated as the ratio between the equalized linear fit pulse peak and the sum of the absolute values of the precursor ISI and the postcursor ISI from tap 13 and above.

$$TX ISI MARGIN = dB\left(\frac{Signal}{\sum_{i=1}^{18} Stored ISI[i]}\right)$$

Transmitter equalization test

A router assembly transmitter supports coefficient based Feed Forward Equalization (FFE) at its output. The equalizer's structure is based on a 4-tap UI-spaced Finite Impulse Response (FIR) filter.

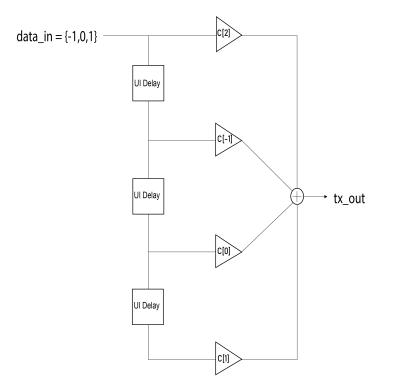


Figure 102: Transmitter Equalizer

Parameter	Description	Value	Units
Ntaps	Linear fit pulse length	200	UI
Npost	Linear fit pulse postcursor length	Ntaps-6	UI
Npre	Linear fit pulse precursor length	5	UI
М	Number of samples per UI	32	

The transmitter supports 42 preset configurations, numbered from 0 to 41. P0 to P39 represents operation mode with full-swing transmitter output, while P0 to P41 defines low swing mode. When one of configurations P40 or P41 is selected, the transmitter's output swing will be attenuated by 6 ± 1 dB compared to its full-swing mode of operation. The default equalization preset of the transmitter will be configured to the setting that obtains the lowest Data Dependent Jitter (DDJ).

TP2 test setup for USB4v2 Tx

Follow the test setup for the USB4v2 Tx TP2.

Steps to connect the hardware

- 1. Connect the DUT to plug test fixture as shown in transmitter TP2 test setup figure.
- 2. Connect the Microcontroller port to the test fixture.
- 3. Connect one end of the SMA cable pair to the TP2 test fixture and the other end of the cable to the oscilloscope.

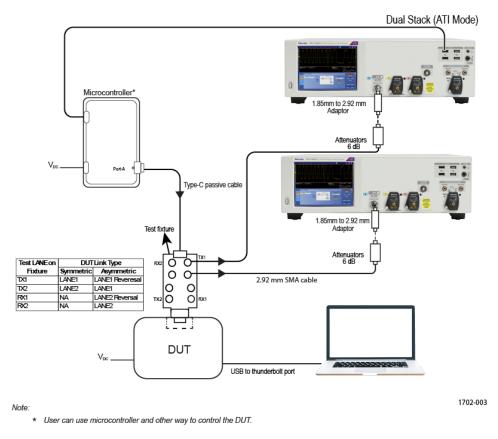


Figure 103: Transmitter TP2 Test setup

The following table shows the test fixture connection for each DUT link type.

Table 7: DUT link type and test fixture

Test LANE on Fixture	DUT Link Type			
	Symmetric	Asymmetric		
TX1	LANE1	LANE1 Reveresal		
TX2	LANE2	LANE1		
RX1	NA	LANE2 Reversal		
RX2	NA	LANE2		

List of test for TP2 USB4v2 Tx

The following tables show the list of supported test and its measurements for USB4v2 software solutions.

Table 8: List of supported tests for USB4v2 software solutions

Test	Sub test	Lower limit	Upper limit	Unit		
Transmitter AC common mode	NA	NA	< 100	mVp-p		
Transmitter Electrical Idle Voltage	NA	NA	≤ 20	mV		
able continued						

Test	Sub test	Lower limit	Upper limit	Unit
Transmitter Timing and Voltage	e measurement subsets			
Timing Parameters subset	UI	39.0508	39.0742	ps
	SSC_DOWN_SPREAD_RANGE	0.2	0.3	%
	SSC_DOWN_SPREAD_RATE	30	33	KHz
	SSC_PHASE_DEVIATION	2.5	15.5	ns pp
	SSC_SLEW_RATE		500	ppm/us
	UJ		0.17	UI pp
	UDJ	NA	0.075	UI pp
	UDJ_LF	UDJ_LF		UI pp
	DCD		0.02	UI pp
Voltage Parameters subset	V_SWING	410	545	mV p
	TX_LEVELS_MISMATCH	0.975		NA
	TX_SNDR	32.5	NA	dB
	TX_ISI_MARGIN	11		dB
Transmitter Equalization and C	alibration		·	
Best Preset		NA		
Coefficient tolerance test		NA		

Table 9: List of sub test for transmitter equalization

Preset number	C(-2)	C(-1)	C(0)	C(1)
P0			1	0
P1		0	0.95	-0.05
P2		0	0.9	-0.1
P3			0.85	-0.15
P4			0.95	0
P5		0.05	0.9	-0.05
P6		-0.05	0.85	-0.1
P7			0.8	-0.15
P8	- 0	-0.1	0.9	0
P9	-		0.85	-0.05
P10			0.8	-0.1
P11			0.75	-0.15
P12			0.85	0
P13			0.8	-0.05
P14			0.75	-0.1
P15		0.45	0.7	-0.15
P16		-0.15	0.825	0
P17	0.005		0.775	-0.05
P18	0.025		0.725	-0.1
P19			0.675	-0.15
P20			0.8	0
P21			0.75	-0.05
P22	- 0		0.7	-0.1
P23			0.65	-0.15
P24			0.775	0
P25	0.005	0.0	0.725	-0.05
P26	0.025	-0.2	0.675	-0.1
P27			0.625	-0.15
P28			0.75	0
P29	0.05		0.7	-0.05
P30	0.05		0.65	-0.1
P31			0.6	-0.15

Preset number	C(-2)	C(-1)	C(0)	C(1)
P32	- 0		0.75	0
P33			0.7	-0.05
P34	0.025		0.725	0
P35	- 0.025	-0.25	0.675	-0.05
P36	0.05	-0.25	0.7	0
P37		-	065	-0.05
P38	0.075		0.675	0
P39	- 0.075		0.625	0.05
P40	- 0	-0.1	0.4	0
P41		0	0.5	

Note:



- For both low and full swing modes, the tolerance of the normalized coefficients should be ±0.015 for C(-2) and ±0.025 for C(-1), C(0), and C(1) coefficients.
- For low swing mode, P40 and P41 the transmitter swing attenuation requirement is 6±1 dB.

Table 10: Transmitter equalization sub test limits

C(-	-2)	C(-1)		C	(0)	C(1)		
Lower	Upper	Lower	Upper	Lower	Upper	Lower	Upper	
Table continued								

C(·	-2)	C(-1)	C	(0)	C(1)		
				0.975	1.025	-0.025	0.025	
		-0.025		0.925	0.975	-0.075		
		-0.025		0.875	0.925	-0.125	-0.075	
			0.025	0.825	0.875	-0.175	-0.125	
			0.025	0.925	0.975	-0.025	0.025	
		-0.075		0.875	0.925	-0.075	-0.025	
		-0.075		0.825	0.875	-0.125	-0.075	
-0.015	0.015			0.775	0.825	-0.175	-0.125	
-0.015	0.015			0.875	0.925	-0.025	0.025	
	-0.125	-0.075	0.825	0.875	-0.075	-0.025		
		-0.123	-0.070	0.775	0.825	-0.125	-0.075	
				0.725	0.825	-0.175	-0.125	
				0.825	0.925	-0.025	0.025	
				0.775	0.875	-0.075	-0.025	
				0.725	0.825	-0.125	-0.075	
		0.175	-0.125	0.675	0.775	-0.175	-0.125	
		0.175	-0.120	0.8	0.725	-0.025	0.025	
			0.75	0.85	-0.075	-0.025		
0.01	0.04			0.7	0.8	-0.125	-0.075	
				0.65	0.75	-0.175	-0.125	

C((-2)	C(-1)	C	(0)	C	C(1)		
				0.775	0.7	-0.025	0.025		
-0.015	0.015			0.725	0.825	-0.075	-0.025		
-0.015	-0.015 0.015			0.675	0.775	-0.125	-0.075		
				0.625	0.725	-0.175	-0.125		
				0.75	0.675	-0.025	0.025		
0.01	0.04		-0.175	0.7	0.8	-0.075	-0.025		
0.01	0.04		-0.175	0.65	0.75	-0.125	-0.075		
				0.6	0.7	-0.175	-0.125		
		-0.225		0.725	0.65	-0.025	0.025		
0.035	0.035 0.065			0.675	0.775	-0.075	-0.025		
0.055				0.625	0.725	-0.125	-0.075		
				0.575	0.675	-0.175	-0.125		
-0.015	0.015			0.725	0.625	-0.025	0.025		
-0.015	0.015			0.675	0.775	-0.075	-0.025		
0.01	0.04			0.7	0.725	-0.125	-0.075		
0.01	0.04		-0.225	0.65	0.75	-0.175	-0.125		
0.035	0.065		-0.225	0.675	0.7	-0.025	0.025		
0.055	0.005			0.625	0.675	-0.075	-0.025		
0.06	0.09			0.65	0.7	-0.025	0.025		
0.00	0.9	-0.275		0.6	0.65	0.025	0.075		
-0.015	0.015	-0.125	-0.075	0.375	0.425	-0.025	0.025		
-0.013	0.013	-0.120	0.025	0.475	0.525				

User profile

The User Profile displays the information about your user account.

x	Dashboard	 Tests 	at Manage	⊙∞ License	Reports	Events/Logs	⑦ Help		+	😫 Hi admin 🗸
User Profile										
	Account Name							Name		
	admin									
\mathbf{e}	User Group usradmingrp							Email		
	Company									
admin										

Figure 104: User profile

Manage accounts (admin only)

The Manage Accounts allows you to create a user account, update the existing user details, and delete an user account. Click Manage Accounts to access the Manage Users page.

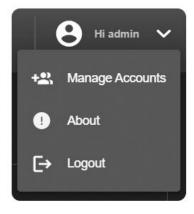


Figure 105: Manage accounts

My profile

My Profile displays information about user account.

	X	Dashboard	M Tests	it Manage	c License	Reports	E Events/Logs	() Help		e	Hi admin 🗸
F	Profile										
	My Profile					Username admin			Name		
	🕰 Manage Users			8		Email Id			Company		
				- admin		Account Type					
						Admin					

Figure 106: Profile details

Manage users

Manage Users allows you to add, modify, delete, lock, or unlock the user account.

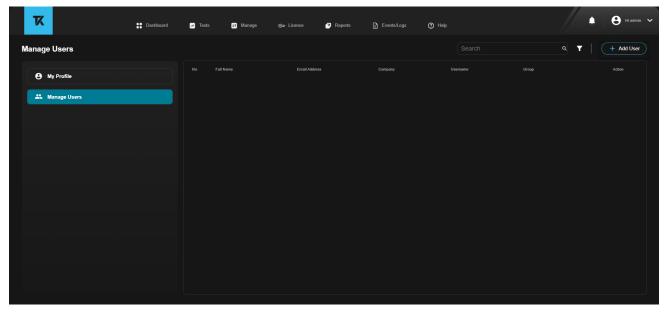


Figure 107: Manage users

Note: In Manage Users, if you reset password for admin (default user), then the password is reset only for Clarius UI login and not for Clarius Virtual machine login. It is recommended to use the *Clarius password reset utility* to reset the admin (default user account) password always.

Add user

The Add User allows you to create a new user account.

Follow the steps to add a user account.

• Select Manage Accounts > Manage Users and click Add User.

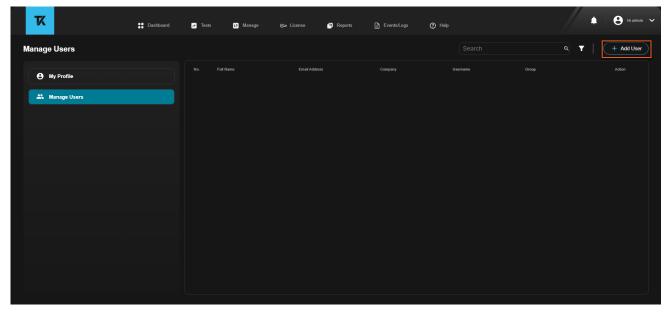


Figure 108: Add user

• Enter the details in the respective fields and click Submit.

	X	Dashboard	Tests	👪 Manage	ເ⊂⇒ License	Reports	Events/Logs	⑦ Help		•	😫 Hi admin 🖌
+	Manage Users/Add User										
	My Profile		Username *			Full Na	ne Full Name				
	👫 Manage Users		Email			Compa	ny				
									Admin User		
			Password *				Password * Password				
										Cancel	Submit

Figure 109: Add user details

Element	Description
Username	Enter the username to login the UI.
Table continued	

Element	Description
Full Name	Enter the full name of the user.
Email	Enter the valid email id of the user.
Company	Enter the organization name of the user.
Admin User	Enable or disable to set the account as admin or non admin account.
Password	Set a password matching the criteria.
Confirm Password	Re-enter the password.
Submit	Click to save the configured details.
Cancel	Click to cancel. All the entered details will be discarded.

Reset admin (default user account) password

This section describes the steps to reset the password of an admin (default user account). A default user is the user account that is created during the installation.

To reset the password, follow the steps:

- 1. Run the command prompt in Administrator mode.
- 2. Execute the command clarius resetpwd -p "new password".

Note:



- It is recommended to use the Clarius password reset utility to reset the admin (default user account) password always.
- Clarius password reset utility will reset the admin (default user account) password. It will also reset the login password of Clarius virtual machine which can be used for debugging purposes.
- · You cannot use this command to reset the password of non-admin/admin user accounts created in Clarius GUI.

Admin Console and Monitoring

The Monitoring and admin console provides a holistic view of the performance of the **Host** (Clarius installed PC) and the Clarius **Platform** (Virtual machine running critical services). This service allows users to monitor CPU load, memory usage, disk and storage status, ensuring optimal performance and facilitates troubleshooting.

Double-click Clarius Admin Console from the desktop to open the monitoring service.

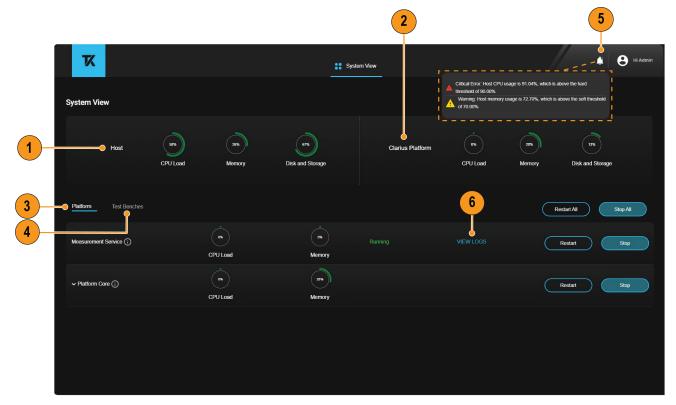


Figure 110: Clarius compliance monitoring service interface

Identifier	Element	Description
1	Host	The Host (Clarius installed PC) provides the hardware resources for the Clarius platform. You can view metrics related to CPU load, memory usage, disk and storage status for the host.
2	Clarius Platform	The Clarius platform is a virtual machine created on the host, running critical services essential for system operations. Metrics for the platform include CPU load, memory usage, disk and storage status.
3	Platform	You can view the real-time status of Clarius services, which include CPU load and memory usage. The available status are Running, Not Running, and Exited.
4	Test Benches	Users can view the real-time status of the test benches, which includes CPU load and memory usage. The available status are <i>Available</i> , <i>Occupied</i> , <i>Unavailable</i> , and <i>Not Reachable</i> .

Table 11: Components of monitoring service

Identifier	Element	Description	
5	Notifications	Warnings and alerts are displayed in the notification icon and Windows system tray, providing real-time updates on the system status.	
		Warning Threshold: An alert is triggered when the metric exceeds the set value (For example, 70%) ¹⁰ .	
		Critical Threshold: A critical alert is triggered when the metric exceeds the set value (For example, 90%).	
6	Logs	The logs screen displays detailed logs for each service.	
		Note: If there is any issue with the service, save the log file and share it with the Tektron support person for troubleshooting.	

Test bench status scenarios

The Test Benches tab in the monitoring service allows you to view the status of the test bench.

Test bench status	Description
Available	If both instrument service and instrument service agent (ClariusISAgent) are running, but no test is executed on the test bench.
	If instrument service is running and instrument service agent (ClariusISAgent) is down; Technical difficulties to Restart or Stop the service.
Occupied	If instrument service and instrument service agent (ClariusISAgent) are running, and a test is being executed on the test bench.
Unavailable	If instrument service is down and instrument service agent (ClariusISAgent) is running; Use Start to bring up the setup.
Not Reachable	If both instrument service and instrument service agent (ClariusISAgent) are not reachable.

The following table explains the scenarios for using the test bench to perform a test.

Note:

• You can check the status of instrument service agent (ClariusISAgent) from the **Services** window. Click **Start** > **Run** and then type services.msc to launch the Services window.



- Clarius Monitoring and Admin console is only accessible from the target system where the Clarius automation framework is installed.
- File Store Create Buckets service operates as an internal start-up service and will cease its operations post-initialization. It is not essential for the ongoing test procedures, and its absence will not affect the test runs or their outcomes.

¹⁰ If the alert is from hard disk, delete old test data from Tests > List of Tests to free up the hard disk space.

Tutorial

Steps to execute a test

This section describes the steps to run a test in the Clarius automation framework.

Prerequisite

- 1. Install Clarius automation framework
- 2. Install Clarius application in the Clarius automation framework
- 3. Activate the license for Clarius application
- 4. Run the services

Steps to execute a test

1. Double-click the Clarius icon from desktop to launch Clarius automation framework.



Note: To remotely access Clarius use the host name or IP address of the Clarius automation framework installed device.

- 2. After successful login, you will be navigated to the home page. It displays the navigation panel and the widgets in the dashboard.
- 3. Create Test Bench. A test bench is an environment that is used to verify the correctness of a test setup. Creating a Test bench:
 - a. Go to Manage > Test Benches and click New Test Bench.
 - b. Enter test bench details in the respective fields.
 - c. Add the required instruments into the test bench.
 - d. Click **Save** and save the test bench
- 4. Create Test. Creating a Test:
 - a. Go to Tests > Add Test.
 - b. Enter the test details in the respective fields.
 - c. Select the acquisition mode as Live or Recorded and select the Test bench or waveforms respectively.
 - d. Select the technology and active application from the drop-down list and click Add Sequence. To import an already created sequence, click Import Sequence.
 - e. Click 🖬 and configure the Sources and Signals for the test setup.
 - f. Click 🗢 and configure the Global Settings for the test setup.
 - g. Click s and to view the Connection Diagram.
 - h. Click 🗹 to view the scenarios. Click 🍄 from Local Settings to configure the settings for the respective scenario or the measurement
- 5. Select Run to run the measurements with the configured settings. You can also save the test and run later.
- 6. Navigate to the Tests tab to view the executed test status and results.
- 7. In Tests tab, click View Results to view the results of a particular test.
- 8. In the Reports page, click Generate Report to generate the report in PDF. You can view the PDF report and download.

References

File name extensions

The USB Tx application uses the following file name extensions:

Table 12: File name extension

File name extension	Description
*.ру	Python files.
*.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
*.flt	Filter files

Error messages

The following error messages may be displayed in the Clarius automation framework and description section helps you understand the error messages and the possible solution.

Table 13: Clarius error messages

Error message	Description
Invalid login credentials, Username or Password cannot be blank	Please enter username and password.
Error, Unrecognized client. Please contact Tektronix support	Configuration error. Please contact Tektronix field engineer for support.
Error, Error connecting to the system. Please contact tek support.	Configuration/Connection error. Access Admin console and check if all services are running. Start the services which are not running and check again. If the issue stills exist, please contact Tektronix field engineer for support.
Error, New user creation failed; Username already exists	Username already exists. Please enter a unique username.
Error, Please select a test bench to configure the sources and signals	Select a test bench to configure the sources and signals.
Table continued	1

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Error message	Description
Failed, <scenario name=""> cannot be unchecked because of the dependent scenarios</scenario>	Uncheck the dependent configurations and then try again.
Error, Please select the instruments and channels for all the defined signals and then click Apply	Validation Error - Select instruments and channels for all defined signals before you select Apply.
Invalid Grouping, 'Duplicate instrument channels configured in ' <channels></channels>	Channels in a group are used to signals in a single acquisition hence multiple occurrence of a channel in a single group is not allowed.
Cannot add new signal, Please select the instruments and channels for all the defined signals before adding new signal.	Please select the instruments and channels for all the defined signals before adding new signal.
Unable to find internal application for technology	Multi-lane grouping is not supported in this technology or the technology is deleted.
Locking application failed, Execution id <execution id=""></execution>	Indicates an error occurred while locking the application, license is already used, try after the completion of the test using license.
Duplicate test name, name <test name=""></test>	Test name already exists. Please enter a unique test name.
Test Bench not available, <test bench="" id=""></test>	Test bench is not available or deleted. Please select an available test bench.
Error, Limits ID already exist	Limits ID already exists. Please enter a unique Limits ID.
Error, Rule catalog already exists	Rule catalog name already exists. Please enter a unique Rule catalog name.
Your account is currently locked. Please login after < <i>remaining</i> > of minute(s) or contact the system administrator.	Account is locked due to 5 incorrect login attempts. Please wait for five minutes and then try again.
Account locks after <remaining> login attempts</remaining>	Account is locked due to 5 incorrect login attempts. Please wait for five minutes and then try again.

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