

Clarius Compliance DisplayPort Transmitter Testing Release Notes

Version 2.0.0

Clarius DisplayPort Transmitter Compliance Testing	<ul style="list-style-type: none">• Version - 2.0.0• Release month: Dec 2024
Compatible version of Clarius Automation Framework	<ul style="list-style-type: none">• Version - 2.0.0• Release month: Dec 2024

Supported models

Oscilloscopes

MSO7000DX and DPO7000DX/SX series oscilloscopes with at least 8 GHz for compliance mode for RBR and HBR, 12.5 GHz for compliance mode for HBR2 and 16 GHz for compliance mode for HBR3.

DPO7000DX/SX series oscilloscopes with bandwidth \geq 21 GHz for UHBR data rates in compliance mode.

DPO/MSO72304DX/72504DX/73304DX

DPO71304SX, DPO71604SX, DPO72304SX, DPO73304SX

DPO75002SX, DPS75004SX, DPO75902SX, DPS75904SX

DPO77002SX, DPS77004SX

Release features

- **Test bench creation enhancements**
 - Simplified test bench creation aligned with user workflows.
 - Capability to create test benches for various acquisition modes, including Live and Recorded.
 - Display of necessary instruments for selected applications/technologies on the Live Test Bench.
 - Capability to fetch the instrument properties of the connected instruments on providing the VISA resource addresses in live setup
 - Functionality to check instrument service connectivity during test bench creation and display connectivity status within the test bench list.
 - Enables flexible instrument control for application-defined instruments. Supports integration with diverse instrument classes (e.g., AFG, AWG) or custom specific controls.
 - Refreshing master oscilloscope properties ensures all extension scopes are visible.
- **Test creation and test run enhancements**
 - Simplified access to acquisition mode selection for a test
 - Recorded tests utilize pre-acquired data from specified waveform folder path. Standardized for the test rather than for individual applications
 - Flexibility to run recorded tests on Recorded and Live test benches, while Live tests are exclusive to Live test benches.
 - Flexibility to run recorded tests with Instrument Service installed on the Clarius installed computer either during the initial installation or added subsequently.



- Notifies the user on start of the test if Clarius disk storage is over 90% capacity or essential Clarius services are not operational.
- Test execution terminates automatically if Clarius disk storage exceeds 90% allocated capacity or the essential Clarius services are not operational.
- **Test and waveform deletion enhancements:**
 - Facilitates efficient storage management and ensures retention of relevant data by enabling users to delete multiple selected tests or waveforms.
- **Bulk waveform download using SDK:**
 - Enables users to download waveforms (exceeding 1GB) using SDK.
- **Notification enhancements:**
 - Critical Error and Warning Indicators as notifications in Clarius UI, upon exceeding thresholds [user-configurable].
 - System Error notification displayed when essential Clarius services are not operational.
- **Clarius Admin Console**
 - Streamlined service management with start, stop, and restart capabilities.
 - User Configurable settings [threshold and alert frequency] for Critical Error and Warning notifications.
- **In-App Help:**
 - A comprehensive in-app help is enabled in the Clarius webpage under Help for immediate user assistance and guidance.
 - Supports "Acquire Only" mode that allows user to only capture the waveforms and analyze them later.
 - Supports Eye Diagram measurement for both TP2 and TP3 test points for UHBR data rates.
 - Improved DUT controller configuration experience from UI.
 - Improved test report to capture more test details with better readability.

DisplayPort SDK change logs

Application	SDK setting name	1.0.0 notation	2.0.0 notation
Custom DP	ClockRecoveryMethod	Custom	PLL Custom
	PLLModel	<ul style="list-style-type: none"> • One • Two 	<ul style="list-style-type: none"> • Type I • Type II



Note: For more information, refer to the API function change logs section in the Clarius Automation Framework API and SDK Programming Guide for functional change logs.

Known limitations

- For SX oscilloscopes operating in standalone mode, AT1 channels are not selectable in **Sources and Signals**. Selection for non-AT1 channels remains unaffected.
- Re-running tests does not accommodate lane changes or the use of multi lane configurations with grouping features.
- Search feature on the Reports & Test List page is confined to the results of the page currently being viewed.
- If user creates a duplicate user name for test, no error is displayed but duplicate user name will not be created.
- **Test tab > View Results > Generate report** generates report only for 30 tests displayed in the current page.
- New notifications are populated at the end of the list within the notification widget.
- Maximum of 10 applications can be added in a single sequence.
- Installation operations cannot be cancelled once they are in progress.
- Pan and zoom capabilities are limited in waveform view.

- The "Fail" status in **Tests > List of Tests** page and in Reports indicates that either the test execution was unsuccessful or the measurements did not meet the specified limits.
- Re-analysis of waveforms captured from a previous test can only be done by downloading waveforms and analyzing them in pre-recorded mode.
- Export/Import of tests from one Clarius VM to another is not supported.
- The progress bar reflects the count of scenarios executed. If certain scenarios require more time, the progress bar will remain in the same status until those scenarios are fully executed.
- When test is configured with multiple sequences; progress bar of individual sequences does not function.
- The functions of starting, restarting, and stopping instances of test benches (instrument service) and monitor remote instances of measurement services are not available.
- In multi-stack oscilloscope scenarios, extension oscilloscope instrument services cannot be monitored.
- When running tests back to back in LIVE acquisition mode, test may have different run times or fail intermittently due to instrument connectivity. User may provide a time delay between test runs to avoid failure or contact Tektronix to update TekVisa.
- In multi-iteration acquisition mode, the software determines overall measurement pass/fail status based solely on the results of the final acquisition. However, the results from all individual acquisition iterations are accessible through the SDK, allowing users to perform custom calculations and determine their own overall measurement status if desired.
- Based on the timeout duration, when Instrument does not respond, test gets aborted and a log message detailing the error is available.
- There is no differentiation between the error icons for critical or system errors in notification.
- Lane change notification does not provide information on the lane that needs to be changed.
- For HBR3 data rates only CTLE (Continuous Time Linear Equalization) is applied to eye and jitter measurements at the TP3_Eq test point; DFE (Decision Feedback Equalization) is not applied.
- In Custom DP, if the total number of measurements for a combination of voltage swing, Pre-emphasis, and Presets exceeds 49, it might interrupt smooth flow of execution.

Known issues

- Hyper-V Default switch issues: Windows updates may cause the default Hyper-V switch used by Clarius Core Services to become unresponsive. This can lead to installation failures or connectivity problems. Refer to the FAQ section in Clarius Getting Started guide for resolution steps.
- Clarius Compliance user interface may become unresponsive due to lack of required resources such as network speed, memory, disk space, and CPU. This can be tracked by using the Monitoring and Admin console under 'Clarius Platform' in your system.
- Uninstalling Clarius instrument service necessitates re-installation of required application instrument service.
- When the test is running, the Events and Logs pages would refresh to the most recent page even if the user selects to view a different page.
- In some cases, due to temporary disruptions in internal services (example: constraint service in admin console) may lead to inconsistent error messages in the UI and SDK.
- DUT control instrument additional properties COM_Port, license_key(DPR100) and serial_number(UCD323) are mandatory. But they are not validated while saving the test bench. User must put these for successful DUT toggling.
- DP-AUX can be tested only on continuous burst signal.
- DP-AUX mask is not supported for the AUX eye diagram.
- DisplayPort 2.1 test schematics are not updated with the latest fixture models.

Version 1.0.0

Clarius Automation Framework	<ul style="list-style-type: none"> Version - 1.1.0 Release: Aug-2024
Clarius DisplayPort Transmitter Compliance Testing	<ul style="list-style-type: none"> Version - 1.0.0 Release: Aug-2024

Supported models

Oscilloscopes

MSO70000DX, DPO70000DX/SX
 DPO/MSO72304DX/72504DX/73304DX
 DPO71304SX, DPO71604SX, DPO72304SX, DPO73304SX
 DPO75002SX, DPS75004SX, DPO75902SX, DPS75904SX
 DPO77002SX, DPS77004SX

Release features

- Fast test completion using state of the art software architecture.
- Automated source device compliance testing of all DisplayPort 2.1 data rates (RBR, HBR, HBR2, HBR3, UHBR10, UHBR13.5, UHBR20).
- Support for AUX channel continuous burst mode tests.
- Supports Custom DisplayPort Non-compliance Application that has flexibility to configure measurements based on user defined settings useful for debug purpose.
- Supports normative and informative measurements as per the latest DisplayPort 2.1 CTS.
- Supports all data rate testing in one go.
- Supports all 4 lane testing in one go.
- Supports P0 to P15 presets for UHBR Data rate signal test.
- Supports preset optimization feature to find out separate optimal presets for TP2 and TP3_EQ Test points for each lane for individual UHBR data rates.
- Supports both TP2 and TP3 EQ test point testing.
- Supports CTLE optimization.
- Supports TX Preset Equalization Tests for all data rates.
- Automatic insertion of modelled channel losses, CTLE equalization and DFE as per the CTS.
- Fixture De-embedding in differential and single-ended mode by creating a custom filter file using SDLA software to leverage the channel modelling and receiver equalization functionality.
- Supports Unigraf DPR-100 and UCD-323 for automated DUT control or any other custom device or script of customer's choice saving hours of manual DUT settings.
- Flexibility to write own toggle automation script using Clarius SDK.
- Supports signal validation option to detect anomalies in the signal before analysis
- Supports quick test automation and execution by writing automation test scripts using Clarius SDK.
- Signal access:

- P7520A, P7516, P7513A, P7720, P7625 (Probe Tips: P76CA292, P76CA292C, P76CASMP, and P76TA), P7633 (Probe Tips: P76CA292, P76CA292C, P76CASMP, and P76TA), P7720-SMA, P7716, P7713, P7713-SMA, and P7720 differential probe based input, which offers the most efficient test configuration by offering inputs for all four differential DisplayPort signals concurrently. This configuration precludes the testing of common mode and skew measurements.
- TCA-based single-ended input supports both differential and single-ended tests including intra-pair skew measurements on up to two concurrent DisplayPort signals.
- For testing AUX measurement are P6245, P6246, P6247, P6248, P6250, and P6251
- Offline and remote analysis:
 - Analyzes live or pre-acquired waveforms
 - Allows remote execution of tests

Known limitations

- In the Manage>Test Bench section, while adding Instruments, the Model field should be set to "default".
- Download and installation operations cannot be cancelled once they are in progress.
- Limits are not shown with explicit units in the Results section and are presented in the same row of individual results indicating they take the same units as Value (measurement result).
- Toggle tool configuration is absent from UI/SDK. Available toggle tool needs to be included in the Automator scripts (C:\Program Files\Tektronix\Clarius\lib\automator\actions\PCIETX\pcie.py) with its corresponding details like name, address.
- DUT Automator changes have to be done in the python scripts and there are no GUI options for those changes today.
- Waveform view controls have limitations with respect to pan and zoom.
- "Fail" status in **Tests > List of Tests** page and in Reports indicates that either the test execution failed or measurements have failed against limits.
- Re-analysis of waveforms captured from a previous test can only be done by downloading waveforms and analyzing them in Pre-Recorded mode.
- Export/Import of tests from one Clarius VM to another is not supported.
- Progress bar only shows progress based on number of scenarios executed. When some scenarios take a long time to run, progress bar will remain in the same status until the scenario is executed completely.
- User account will be locked after three unsuccessful login attempts and cannot be unlocked for an hour.
- The functions of starting, restarting, and stopping instances of test benches (instrument service) and monitor remote instances of measurement services are not available.
- When running tests back to back in LIVE acquisition mode, test may have different run times or fail intermittently due to instrument connectivity. You may provide a time delay between test runs to avoid failure or contact Tektronix to update TekVISA.
- In multi-iteration acquisition mode, the software determines overall measurement pass/fail status based solely on the results of the final acquisition. However, the results from all individual acquisition iterations are accessible through the SDK, allowing users to perform custom calculations and determine their own overall measurement status if desired.
- User input validation in Clarius SDK is not supported. When using the SDK, it is advisable to configure global and step-level settings within the allowable UI range.
- For HBR3 and UHBR data rates, only CTLE (Continuous Time Linear Equalization) is applied to eye and jitter measurements at the TP3_Eq test point; DFE (Decision Feedback Equalization) is not applied.

Known issues

- Occasionally, the default switch in the Windows system becomes unresponsive and the Clarius automation framework installation may fail. Rebooting the system and installing any pending windows updates should fix the issue.
- Clarius Compliance user interface may become unresponsive due to lack of required resources such as network speed, memory, disk space, and CPU. This can be tracked by using the Monitoring and Admin console under 'Clarius Platform' in your system.

- When multiple applications are present in the system or oscilloscope, uninstalling one "application instrument service" necessitates re-installation of the required application instrument service.
- When the test is running, the Events and Logs pages would refresh to the most recent page even if the user selects to view a different page.
- The Generate Report button will not be functional for the test results that are listed after first page under the Tests tab. You can generate results for those tests from the result page of the test.
- Performance issues may be observed for the test with higher record length and higher iteration count.
- DP-AUX can be tested only on continuous burst signal.
- DP-AUX mask is not supported for the AUX eye diagram.
- Unsupported pattern types are seen in application global settings. This is however handled in the execution time and ensured that acquisition and analysis occur for the correct set of patterns based on the selected measurements.
- In Custom DP, if the total number of measurements for a combination of voltage swing, Pre-emphasis, and Presets exceeds 49, it might interrupt smooth flow of execution.