

LinkExpert™

Software Interface for PCI Express®, NVME, CXL and SAS

Key Features

Improves Developer Efficiency

System Level Tests

PCIe 5.0 Compliance Tests

PCIe 4.0 Compliance Tests

PCIe 3.0 Compliance Tests

CXL Compliance Tests

PCIe RAS Error Injection Tests

Supports up PCIe 5.0

NVMe™/NVMe™-MI Conformance Tests

High Level Display of Traffic Information

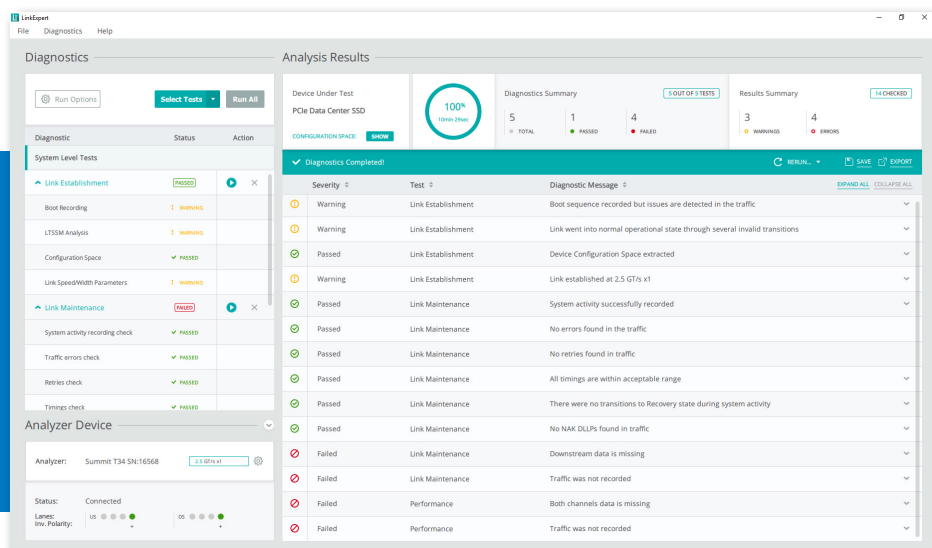
All results can be exported to TraceExpert™ Reports

Intelligent Reporting of Results

Testing Framework for Additional User Defined Tests

System Requirements

Supports Microsoft Windows® 8, 10 or Windows 11



Stop pouring through the spec! Teledyne LeCroy's revolutionary new PCIe® LinkExpert makes it quick and easy for developers of all experience levels to understand, at a glance, whether the host or device is working according to PCIe Specification and user performance parameters.

LinkExpert enables complete control and management of Teledyne LeCroy's family of Protocol Analyzer and Exerciser hardware. LinkExpert provides a convenient interface to run Compliance, Conformance and Validation tests on PCI Express (PCIe) and SAS (Serial Attached SCSI) links.

LinkExpert takes a smart approach to displaying PCIe errors and connectivity problems by using intelligent interpretations of bus traffic without drowning the user in deep technical specification information or requiring deep knowledge of the protocol analyzer tools. It can be used independently from the industry favorite PCIe Protocol Analysis Software to get a quick diagnosis, or in conjunction with it to for more in-depth protocol analysis. The software will support recordings on Teledyne LeCroy PCIe protocol analyzer systems using Microsoft Windows® 8, 10 or Windows 11.

LinkExpert provides protocol analyzer and exerciser hardware control and management while displaying high level diagnostic information about communication between host systems

and devices, also known as Root Complexes and End-Points. It provides easy-to-read information and test results for the following test groups:

- PCI Express 3.0, 4.0 and 5.0 Link and Transaction Layer Tests
- NVMe-MI Conformance Tests
- System Level Tests
- LTSSM Test Arc Tests
- PCIe RAS Error Injection Tests
- SAS Conformance Tests

Each of these test groups when selected and run will report all the information needed to determine a test conclusion that will help identify if there are any issues with the PCIe link and provide information that can lead a user to the root cause of those issues. Results are shown through a graphical display which is updated through a series of protocol analyzer recordings for the device under test (DUT).

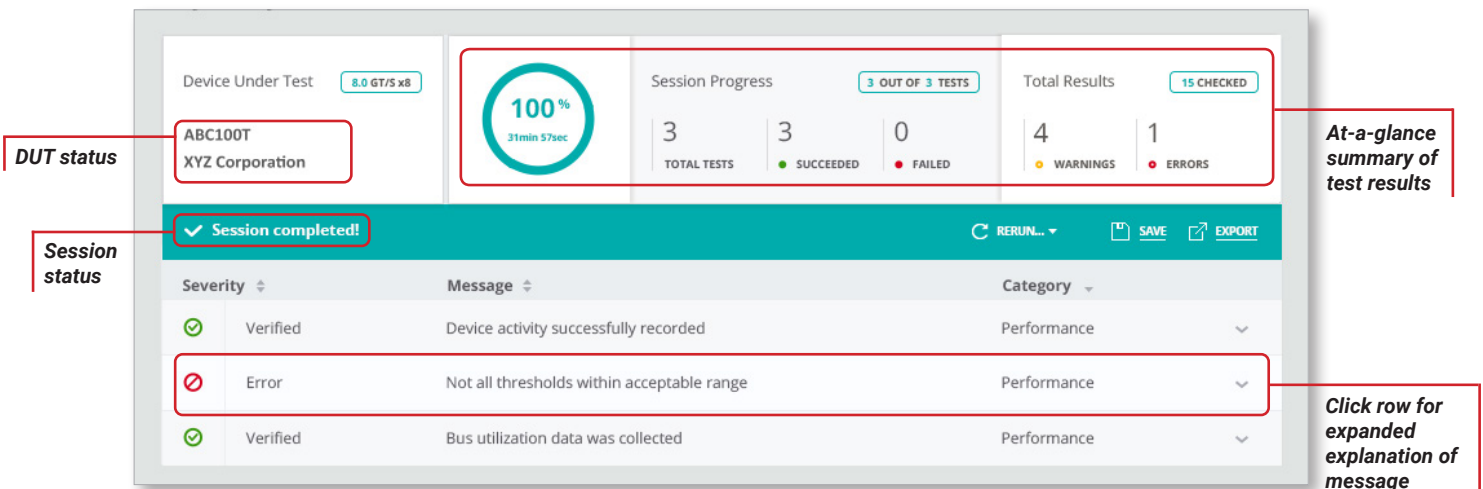
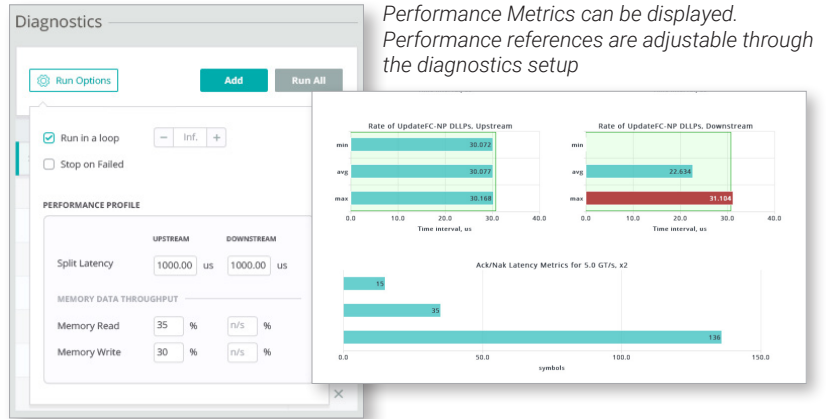
The smart interface for Teledyne LeCroy PCI Express protocol analyzers is LinkExpert, the quickest and easiest way to find problems and understand the operational status of PCI Express Hosts and Devices.

Add/Remove diagnostic tests to run

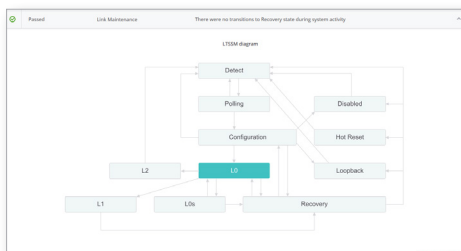
Show Tests Groups: **PCIe** | PCIe 4.0 Compliance Package Tests | 226/226 Tests Selected **Apply** **Close**

Test	Description
PCIe 4.0 Compliance Package Tests Select All Deselect All	
<input checked="" type="checkbox"/> Link 41-20 ReservedFieldsDLLPReceive	The intent of this test is to verify that the DUT truly ignores reserved fields in an ACK DLLP by sending arbitrary data in those fields.
<input checked="" type="checkbox"/> Link S2-100 RetransmitOnNak	The intent of this test is to ensure that a DUT will retransmit a transaction for which a NAK has been issued.
<input checked="" type="checkbox"/> Link S2-100 ReplayTLPOrder	The intent of this test is to verify that the oldest unacknowledged TLP is retransmitted first in replay...
<input checked="" type="checkbox"/> Link S2-111 REPLAY_TIMER	The intent of this test is to ensure that a DUT's REPLAY_TIMER is working properly by not sending...
<input checked="" type="checkbox"/> Link S2-12 REPLAY_NUM	The intent of this test is to ensure that a DUT will keep retransmitting a transaction for which a NAK has been issued on purpose...
<input checked="" type="checkbox"/> Link S2-150 CorruptedCRC_DLLP	The intent of this test is to ensure that a DUT recognizes a DLLP with bad CRC, drops it and logs a BAD_DLLP port error.
<input checked="" type="checkbox"/> Link S2-160 UndefinedDLLPEncoding	The intent of this test is to verify that the DUT silently drops any DLLP with undefined encoding (any pattern for DLLP type that is reserved right now) ...
<input checked="" type="checkbox"/> Link S2-170 WrongSeqNumInAckDLLP	The intent of this test is to verify that the DUT drops any ACK DLLP that doesn't have a sequence number corresponding to an unacknowledged TLP and logs...
<input checked="" type="checkbox"/> Link S2-200 LinkRetrainOnRetryFail	The intent of this test is to ensure that the link connected to the DUT will go into retraining after trying for REPLAY_NUM of times to get a TLP...
<input checked="" type="checkbox"/> Link S3-20 BadLCRC	The intent of this test is to verify that a receiver discards a TLP with bad CRC by NAKing it and...
<input checked="" type="checkbox"/> Link S3-31 DuplicateTLP	The intent of this test is to verify that a receiver discards a TLP with bad CRC by NAKing it and...
<input checked="" type="checkbox"/> Link S3-32 WrongTLPSeqNum	The intent of this test is to verify that out of sequence TLPs (i.e., a TLP with the different sequence number, associated at the link layer, or that out in the last 2048 TLPs...

Official PCI Express 3.0, 4.0 and 5.0 Link and Transaction Compliance testing is run directly from LinkExpert

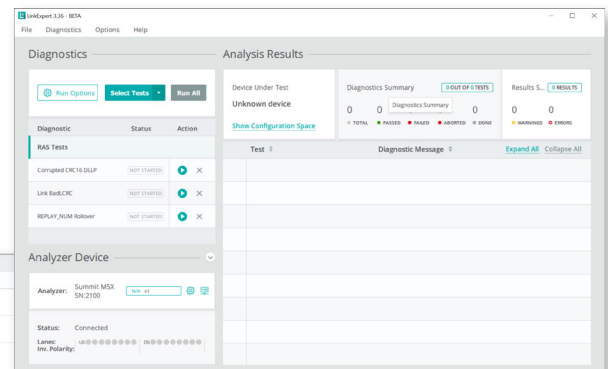
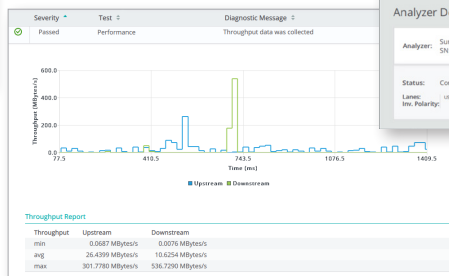


Here multiple tests are run under the Link Establishment Session. Here is a sample of the tests and their results marked with a green icon for a positive indicator and a red icon for a negative indicator. All results are summarized in the top window.



See the LTSSM diagram and check to see how far the device progresses through the initialization setup.

Run PCIe RAS Error Injection tests to validate system error handling using the Summit M5x.



Many charts are available to show device performance in system.



Local sales offices are located throughout the world. Visit our website to find the most convenient location. 1-800-5-LeCroy • teledynelecroy.com



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