



Thunderbolt Test Solutions



Key Features

- Exceptional 20 GHz, 25 GHz or 30 GHz signal integrity performance
- LabMaster oscilloscopes provide up to 20 channels or up to 45 GHz bandwidth
- Superior serial data analysis with SDA II software
- Eye Doctor™ II Advanced Signal Integrity Tools
- The SPARQ™ provides up to 12-port S-paramater measurement with one button push
- Industry's first and only Protocol Aware BER test system
- Capability of cross-interaction and single control of all test equipments
- Upgradeable and expandable solutions

The ultimate in performance: Four channel performance at 20 GHz is pristine with exceptional rise time, overshoot, total and random jitter noise floor, and electrical noise performance.

Thunderbolt® Technology

Thunderbolt is the I/O technology developed by Intel® and runs at 10 Gb/s. Formerly called Light Peak® it is first brought to market by Apple on its latest Macbook Pro®. It is a bidirectional electrical link with packetized traffic containing PCI Express® and DisplayPort protocols.

With the high available bandwidth, Thunderbolt® opens up new avenues for development of high-speed peripherals using a common interface.

LeCroy's Leadership in Thunderbolt

LeCroy's SDA 825Zi-A with 2-channels of 25 GHz real-time bandwidth is ideally suited to capture the fifth harmonic of the 10 Gb/s data rates of Thunderbolt. The SDA 825Zi-A can also be used as four-channel oscilloscope with 20 GHz real-time bandwidth to test the multi-lane architecture of Thunderbolt. Optionally LeCroy also has a 20-channel / 20 GHz or 10-channel / 30 GHz LabMaster which liberates the test engineer from the channel limits imposed by traditional two or four channel oscilloscopes.

THUNDERBOLT TEST SOLUTIONS

World's Highest Bandwidth Real-time Oscilloscopes with Superior Performance

WaveMaster 8 Zi-A combines the highest bandwidth (45 GHz) and sample rate (120 GS/s) with superior signal fidelity performance and 20 GHz on all four input channels. Availability of models from 4 to 45 GHz with complete bandwidth upgradability throughout the entire product range makes it easy and affordable to stay current with emerging high-speed technologies and serial data standards.

The X-Stream™ II architecture maximizes speed in all aspects—10–100 times faster analysis processing on maximum record lengths, instantaneous instrument responsiveness, and 20 times faster



off-line data transfer. Combined with LeCroy's flexible and deep analysis toolbox, the WaveMaster 8 Zi-A Series provides superior performance for the debugging, validation, compliance testing, and analysis of electronic designs.

Freedom from Probing Limitations

High bandwidth differential probes (up to 25 GHz), single-ended active probes,

current probes, high-voltage, and mixed signals all connect to the WaveMaster 8 Zi-A oscilloscope and give you a total system view. All WaveMaster 8 Zi-A oscilloscopes contain selectable 50 Ω and 1 M Ω input capability and can be used with any LeCroy probe—passive or active—without requiring external adapters or power supplies.



Highest Performance—No Compromises

The LabMaster 9 Zi-A represents the pinnacle for bandwidth (45 GHz), sample rate (120 GS/s), channels (up to 5 at 45 GHz, 10 at 30 GHz, or 20 at 20 GHz) and analysis memory (up to 768 Mpts/Ch). For the most demanding research and development applications, such as next-generation optical transmission development, LabMaster 9 Zi-A is the only solution available.

ChannelSync™ Highest Timebase Accuracy

The LabMaster 9 Zi-A utilizes a single, distributed 10 GHz clock for all channels to ensure that timing accuracy amongst all channels is identical to that

provided within a single, standard oscilloscope package. Jitter between channels is, 350 fs_{rms}.

Server-class Multi-core Processor for Fast Acquisition and Analysis

The LabMaster 9 Zi-A utilizes a server-class multi-core processor that is 16 times more powerful than what is normally provided for in a single LeCroy high bandwidth oscilloscope. Combined with LeCroy's X-Stream II technology that is optimized for multi-core processing, the result is the most impressive acquisition and analysis capability possible.



SDA II—Fastest Way to Gain Insight into Your Serial Data Signals

Unleash the power of serial data analysis for understanding and characterizing your design, proving compliance and understanding why a device or host fails compliance. The X-Stream II Architecture provides fast updates and creates eye diagrams 100 times faster than other instruments. Combined with up to 768 Mpts record lengths and more complete jitter decomposition tools, SDA II provides the fastest and most complete understanding of why serial data fails a compliance test. Whether debugging eye pattern or other compliance test failures, the



SDA 8 Zi-A Series rapidly isolates the source of the problem in your design. Advanced jitter decomposition methodologies and tools provide more information about root cause. Tj Analysis, RjBUj Analysis and DDj Analysis is made simple with the deepest toolset dedicated to providing the highest level of insight into your serial data signals.

Two Jitter Methodologies

The SDA II analysis package is the only tool to utilize both the industry standard spectral method and the NQ-Scale method for jitter analysis. Although it is the industry standard, the spectral method has known limitations. For example, the spectral method assumes that anything that does not appear as a peak in the spectrum is Rj. This is not always true, and in these cases the spectral method will return incorrect results. The NQ-Scale method consistently yields correct results even in the cases where the spectral method fails.

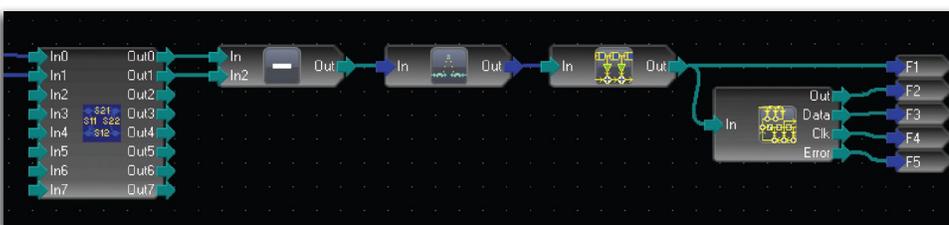


Eye Doctor II—Advanced Signal Integrity Tools

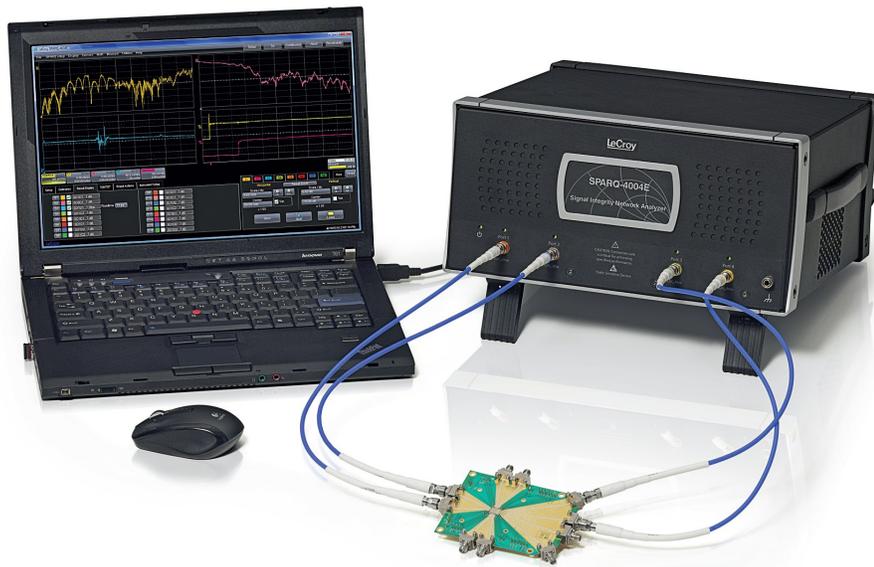
Eye Doctor II Signal Integrity Tools provide the ability to add precision to signal integrity measurements by allowing subtraction of fixture effects and emulation of emphasis, serial data channels and provide for receiver equalization. Advanced modes for true virtual probing are also provided.

Eye Doctor II's Advanced Capabilities

Eye Doctor II's advanced capabilities permit the user to flexibly arrange components to allow any combination of de-embedding or emulation for Virtual Probing™; increase measurement accuracy through the use of a more advanced transmitter and receiver termination model; simulate cross-talk with more than one channel; specify multiple outputs, and much more.



1. Virtual Probe 2. Difference 3. Interpolate 4. Tapped Delay Line Filter 5. Equalized Receiver



SPARQ—High-bandwidth, Multi-port S-parameter Measurements

The SPARQ signal integrity network analyzers connect directly to the device-under-test and to PC-based software through a single USB connection for quick, multi-port S-parameter measurements. SPARQ is the ideal instrument for characterizing multi-port devices common in signal integrity applications at a fraction of the cost of traditional methods.

It is ideal for:

- Development of measurement-based simulation models
- Design validation
- Compliance testing
- High-performance TDR
- PCB testing
- Portable measurement requirement

Ordering Information

Product Description	Product Code	Product Description	Product Code
25 GHz, 80 GS/s, 4 Ch, 64 Mpts/Ch Serial Data Analyzer with 15.3" WXGA Color Display. 50 Ω and 1 MΩ Input (20 GHz, 40 GS/s, 4 Ch, 32 Mpts/Ch)	SDA 825Zi-A	Jitter Tolerance Test Suite	PER-R006-008-A
Eye Doctor Advanced Signal Integrity Tools for WaveMaster 8 Zi/Zi-A Oscilloscopes	WM8Zi-EYEDRII	40 GHz, 4-port, Internal Calibration, Signal Integrity Network Analyzer	SPARQ-4004E
PeRT ³ Phoenix Platform	PER-R008-001-X	40 GHz, 12-port, Internal Calibration, Signal Integrity Network Analyzer (Optional)	SPARQ-4012E

Customer Service

LeCroy oscilloscopes and probes are designed, built, and tested to ensure high reliability. In the unlikely event you experience difficulties, our digital oscilloscopes are fully warranted for three years and our probes are warranted for one year.

This warranty includes: • No charge for return shipping • Long-term 7-year support • Upgrade to latest software at no charge



1-800-5-LeCroy
www.lecroy.com

Local sales offices are located throughout the world.
Visit our website to find the most convenient location.

PeRT³ Test System

The PeRT³ (Protocol-enabled Receiver and Transmitter Tolerance Tester) fills the space between physical layer test and protocol test, providing a new and more intelligent capability for performance testing of receivers and transmitters. Designed to meet the test needs of engineers working with serial data transceivers and other high-speed serial data communication systems, the LeCroy PeRT³ has built-in 3-tap de-emphasis with < 500 ns response time to support Dynamic Equalization response testing. PeRT³ is not just a new instrument, it is an entirely new instrument class.

