

Tektronix Expands 100G Electrical Test Portfolio

Adds Industry's First Multi-Function 32Gbps Linear Equalizers; Enhancements to Multi-Channel BERTs for Receiver Test; Will Release Automated Compliance Test Suite for CEI-28G-VSR Transmitter Test

PR Newswire

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BEAVERTON, Ore., Sept. 23, 2013 /PRNewswire/ -- Tektronix, Inc., the world's leading manufacturer of oscilloscopes, today announced a significant expansion of its portfolio of instrumentation and software to support designers working on the electrical side of 100Gbps communication systems. The introductions include the LE320, a 2 differential channel, 9 tap Linear Equalizer supporting data rates up to 32Gbps as part of a BERTScope receiver test system; new options for the PPG/PED multi-channel BERTs that provide signal impairments and output adjustment at data rates up to 32Gbps, as well as, a new 40Gbps error detector model; and Option CEI-VSR that automates the DSA8300 Sampling Oscilloscope to perform required compliance tests for the CEI-28G-VSR standard.

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The need for 4x25G testing is becoming more important as the industry moves from silicon design to transceiver and system design. Designers are creating innovative network elements that allow up to 100 Gb/s, which will be delivered using four lanes of 25-28 Gb/s. Design challenges emerge when transmitting these high frequencies on printed circuit boards, even for short distances. The LE320 provides test engineers with versatile output signal conditioning and tunable input equalization to create an optimal system for testing four electrical channels operating at 25-28 Gbps each; an ideal complement to the multi-channel capabilities of the enhanced line of PPG/PED pattern generator and error detector products. The Sampling Oscilloscope Option CEI-VSR will ensure efficient and consistent compliance testing support so that design teams can smooth the transition to manufacturing.

"As 100G moves into the mainstream, we are providing two critical additions to our portfolio that address challenges in 4x25G electrical PHY testing for chips, gearboxes, transceivers and systems," said Brian Reich, general manager, Performance Oscilloscopes, Tektronix. "For receiver testing we've enhanced our BERTScope with support for electronic channel modeling and equalization while adding 40 Gbps support to our multi-channel BERT. And for transmitter electrical testing we are providing designers with an automated solution for CEI-28G-VSR."

Compact and Versatile 32 Gb/sec Linear Equalizers for Rx Testing

Designers developing systems that run at 10Gbps or faster need an equalizer in front of Rx inputs or a pre-emphasis module on transmitter Tx outputs. As speeds increase, designers have had a limited selection of instrument-grade signal conditioning products beyond 12Gb/sec for meeting these requirements. The industry-leading [LE320](#) will support signal conditioning on data rates from 8Gbps to 32Gbps in a 9-tap design used to deliver the high-precision error rate testing required by 100G communication standards like CEI-28G-VSR. The innovative remote head design of the LE320 enables designers to minimize cable length in their test system and avoid signal degradation issues which are significant at 25-28Gb/sec. Based on custom microwave silicon from Hittite to reduce component count, the new LE320 delivers breakthrough performance and versatility in an instrument-grade package not much larger than a smartphone at prices of less than one-third that of less capable alternatives.

With instrument-grade programmable equalization, the LE320 can be configured to provide standards specific equalization, permitting bit error rate (BER) analysis on otherwise closed eye signals. For customers working with lower data rates, Tektronix will also offer an LE160 model for systems up to 20Gbps for such applications as 40G-KR4, 14Gbps Fibre-channel and 16GbpsPCI Express 4.0.

Multi-channel BERT capability for 100G testing

Multi-lane, high data rate standards are driving the need for multi-channel Bit Error Rate instruments. Stressed receiver tests, four-channel end-to-end BER testing, and crosstalk tests are now among of the suite of tests driven by the move to multiple high-speed parallel lanes. The Tektronix [PPG/PED](#) line of multi-lane BERTs has now been enhanced to provide expanded jitter impairment capability, new output adjustment flexibility and higher speed error detection capability to better meet the requirement of these standards.

The extended range of jitter insertion options includes option HFJIT which now provides BUJ as well as RJ and SJ; and high amplitude/ low frequency PJ as part of new option LFJIT. Also introduced is option ADJ which adds adjustable outputs with fast rise/fall time and low intrinsic jitter required for 32 Gbps multi-channel pattern generator applications. Data rate margin testing has been enhanced with the introduction of the new PED4000 series of error detector products capable of data rate of up to 40 Gbps, in 1 or 2-channel configurations.

Faster, more confident CEI-28G-VSR Compliance Testing

The Implementation Agreement for Optical Networking Forum Common Electrical Interface (OIF CEI) 3.0 specifies the tests and limits for devices based on OIF standards. CEI-28G-VSR is one of those standards and is intended for use in very short-reach electrical channels in pluggable optical transceivers. It is critical that these electrical interfaces are able to meet system bit error rate (BER) targets and must undergo rigorous testing and debug cycles.

Until now, performing all the required tests for CEI-28G-VSR compliance and isolating problems related to jitter or noise has been difficult and labor intensive. Integration with Tektronix 80SJNB serial data link analysis software enables deeper debug and timing root cause analysis without the need to move to a different instrument or measurement setup.

By using [Option CEI-VSR](#) with their Tektronix DSA8300 Sampling oscilloscope, design engineers can perform compliance measurements in less than 5 minutes, reducing their testing time by approximately 95 percent compared to manual alternatives. In addition, Option CEI-VSR can be used to determine the optimal value for CTLE peaking as required by the CEI-28G-VSR Host-to-Module interface specification. The best CTLE filter is chosen from a given set of filters and used to perform the measurement. Without this capability, design engineers would need to devote time to manually determining the optimal CTLE value, decreasing productivity.

Pricing & Availability

Tektronix 32 Gbps LE320 and 16 Gbps LE160 Linear Equalizers are available for customer evaluation now with worldwide availability starting in Q4. Prices start at \$23,000 US MSRP. Tektronix PPG3000 Options for Jitter Insertion start at \$13,800 and new PED4000 series begins at \$102,000. Both are available in Q4, 2013. Option CEI-VSR will be available in Q4-2013. For pricing information on Option CEI-VSR please contact your local Tektronix account manager.

Wondering what else Tektronix is up to? Check out the Tektronix [Bandwidth Banter blog](#) and stay up to date on the latest news from Tektronix on [Twitter](#) and [Facebook](#).

About Tektronix

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