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Tektronix Develops High-speed Test Solution to Implement PCIe 6.0

Tektronix has developed a PCIe® 6.0 transmitter and receiver test solution that provides fast test times and high-quality measurements, with an intuitive user interface.

Image courtesy of Tektronix

Company expects test solution to provide fastest signaling solution meeting PCIe 6.0 standards.

Spencer Chin | Oct 04, 2022

The electronic industry's insatiable need for high-speed networks is being fueled by an uptick in data-intensive applications such as AI (artificial intelligence), ML (machine learning), cloud, and data centers. To meet these needs, Tektronix, Inc., has collaborated with Anritsu Corporation, to unveil a PCIe® 6.0 Receiver Test Solution that provides cohesive PCIe 6.0 transmitter and receiver test set that delivers fast test times, high-quality measurements, and an intuitive user interface.

The test solution enables test engineers to more easily integrate the latest PCIe interface standard, 6.0, on their devices. PCIe receiver validation is considered challenging difficult due to the sensitivity of calibrating the stressed eye signal across a high loss channel. Tektronix's PCIe receiver test solutions help ensure that designs are thoroughly tested at the required bit error rate (BER) target. The intuitive step-by-step tools provide link training routines for the Anritsu MP1900A BERT to ensure the receiver is tested accurately.

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The PCIe solution will enable backwards compatibility as ever-increasing data throughput needs place even more demands on testing requirements, according to David Bouse, Principal Technology Lead (PCI Express), at Tektronix, in an interview with *Design News*. "There is already talk about a PCI 7 spec," Bouse said. "There is a doubling of bandwidth every three years."

The Tektronix PCIe 6.0 Base Rx Solution includes reportedly the fastest 64 GT/s (PAM4) Rx calibration in the industry. The test solution's algorithms are designed to address the challenge of calibrating the transmitter's additional pre-cursor added to the 6.0 Base specification.

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The Tektronix PAM[ET DSP tool provides critical 64 GT/s jitter and noise measurements with advanced instrument noise compensation. This fully automated solution leverages the first-to-market 6.0 Base Tx solution techniques and enhances the capabilities to address receiver challenges at the latest-data rate introduced by the PCI Special Interest Group (PCI-SIG®).

Intuitive User Experience

The TekRxTest automation software provides a single control panel with the power to manage a Tektronix oscilloscope and Anritsu BERT during receiver calibration. This intuitive software wizard guides users through short- and long-channel calibration steps, resulting in an accurate and repeatable calibration at 64 GT/s.

Building on the success of previous receiver test solutions, Tektronix and Anritsu started collaborating early for PCIe 6.0. In addition, electronics design and automation company Synopsys collaborated with Tektronix on early validation of their PCIe 6.0 DesignWare® IP, providing early-stage prototypes for Tektronix' partnership with Anritsu.

The PCIe 6.0 (64 GT/s) automated test solution runs on the Tektronix DPO70000SX series real-time oscilloscope and the Anritsu MP1900A BERT

Spencer Chin is a Senior Editor for Design News covering the electronics beat. He has many years of experience covering developments in components, semiconductors, subsystems, power, and other facets of electronics from both a business/supply-chain and technology perspective. He can be reached at Spencer.Chin@informa.com.

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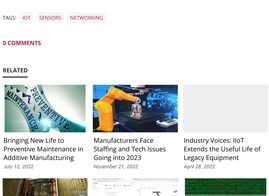

Manufacturers are using algorithms to optimize the work life of machines while reducing downtime and extending uptime.

Rob Spiegel | Jan 04, 2023

This isn't your father's predictive maintenance. When predictive maintenance was first introduced, it was famously the low-hanging fruit of advanced manufacturing. Predictive maintenance was typically the first step in the move to smart manufacturing.

Technology has matured considerably. Now the goal is to gain optimal life for the machines while avoiding failure. If deployed properly, predictive maintenance predicts future machine failures, pinpoints complex equipment problems, and identifies parts that need fixing. With those principles in place, plant operators become more attuned to planning maintenance. They can reduce unplanned downtime while maximizing overall equipment life. This is a bigger bite than simply identifying a motor that's running too hot or sounds funny.

Related: Predictive Maintenance Can Benefit All Manufacturers

According to MathWorks – an AI software company – these desired outcomes won't happen without an algorithm capable of predicting a time window when machines will likely fail. The following four-step workflow is designed to guide manufacturers through the process of developing effective predictive maintenance:

- Assemble raw data that describes systems across several healthy and faulty conditions
- Preprocess it so condition indicators – features that distinguish healthy conditions from faulty ones – can be extracted
- Use these features to train a machine learning model to detect equipment anomalies, classify fault types, and estimate the machine remaining useful life
- Deploy the algorithm and integrate it into systems for machine monitoring and maintenance.

Figure 1_Classification Learner_MathWorks.jpg

Image courtesy of MathWorks

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