New Measurement Solution For Optical Transmitter Compliance Testing Offers the Highest Bandwidth Optical Waveform Analysis and Increased Accuracy

Agilent Technologies introduced a new measurement solution for optical transmitter compliance testing on the Agilent 86100D digital communications analyzer. The solution offers the industry's highest bandwidth optical waveform analysis and increased accuracy.

The DCA provides a new approach, known as system impulse response correction, or SIRC, which enables multimode optical receivers with bandwidths in excess of 25 GHz and single-mode receivers with near 100-GHz bandwidths. Optical reference receivers will have ideal frequency response for testing next-generation storage and telecommunications components and systems.

With these capabilities, R&D engineers can easily visualize and accurately quantify the quality of their latest designs for optical components and systems. Likewise, manufacturing engineers can increase confidence in the accuracy of their optical transceiver compliance testing.

Next-generation optical transmitters compatible with multimode optical fiber are expected to soon operate at data rates in the 25 Gb/sec range. With the large physical size of multimode-compatible photodetectors, optical oscilloscope channels have not been able to provide the bandwidth necessary for accurate waveform analysis.

With SIRC, Agilent now provides an advanced calibration capability that can boost the measurement bandwidth of the 86105D from 20 GHz to more than25 GHz. SIRC also enables the 86105D to be configured as the industry's first multimode reference receiver for standards-based compliance testing at both 25 and 28 Gb/sec rates. The 86115D can now provide the industry's only quad-port reference receiver for 4x25 Gb/sec 100-Gb Ethernet test.

Optical reference receivers, with frequency responses specifically defined by several industry committees, are an essential element in a standardized test method to verify that optical transmitters will interoperate in a communications system. Some deviation from an ideal frequency response is allowed to facilitate production of these receivers at reasonable costs. However, this deviation from ideal can cause some variation in measurement results from test system to test system. By performing an impulse-response analysis, the oscilloscope channel's frequency response is precisely determined. Using this information, the 86100D DCA can correct frequency response deviations and provide waveform results as if

the reference receiver were ideal.

Using the SIRC calibration, the 86100D mainframe can make real-time corrections to the raw waveforms. The displayed signal appears as if it had been acquired with a system that has an ideal frequency response. The SIRC process also enables the possibility of an ideal reference receiver for virtually any data rate within the physical limits of the system. The user has the flexibility of increasing or decreasing the effective bandwidth of the measurement system approximately 50 percent from the nominal hardware capabilities.

A key contribution of the Agilent 86100 SIRC process is that it accurately preserves random signal components such as jitter and noise. General signal processing techniques can incorrectly filter these signal components resulting in an incorrect waveform display.

“The 86100 DCA continues to be the industry standard for optical transceiver design and manufacturing waveform test,” said Jay Alexander, vice president of Agilent’s oscilloscope business. “Higher bandwidth test capability, provided by the DCA, is a key enabler for next-generation designs. Manufacturing test requires accuracy for good process control, and must be flexible to handle varying customer demands. The new SIRC capabilities on the 86100 deliver on those needs and offer the highest value, lowest effective cost for the transceiver vendor.”

U.S. Pricing, Availability and Additional information
The Agilent 86100 family of optical receivers, which includes the 86105C, 86105D, 86115D and 86116C, can be ordered with a special SIRC option to perform the impulse-response calibration. Available July 1, solution prices start at $6,000. These modules, if already deployed in a test system today, can also be upgraded to SIRC capability at Agilent service centers.

This SIRC capability is also available with the 86100C DCA-J when configured with the N1010A Flex-DCA software.

For more information about Agilent please visit, www.agilent.com [1]

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