10GBase-KR Test Solution
QPHY-10GBase-KR

Key Features

- Compliance with IEEE 802.3ap-2007 Specifications
- QPHY-10GBase-KR provides automated setup of test instrument and measurements of required jitter parameters: TJ, RJ, DJ, DCD and Bitrate
- Automated test framework for measuring transmitter equalization levels
- Comprehensive test report generation and stores all waveforms
- Powerful SDA II analysis package helps to find the root cause of failures

The Teledyne LeCroy QPHY-10GBase-KR solution automates testing for 10 Gigabit Ethernet Copper Backplane base on the IEEE 802.3ap specifications. The test framework simplifies the test setup and execution of generic and common test requirements such as jitter separation, rise/fall time and transmitter equalization parameters. The guided wizard prompts the user to send specification required patterns and takes the measurements accordingly. The test report includes pass/fail summary, margins and limits, as well as waveforms and measurements used during the test process.

Transmitter Equalization Measurements

10GBase-KR requires the user to measure specific region of the waveform such as overshoot and de-emphasis levels to determine the transmitter output equalization levels. QPHY-10GBase-KR automates this process using predefined measurements setups gating the specific regions of interest for each equalization setting.

Advanced Debug Capability

If a compliance failure is found, Teledyne LeCroy offers a variety of packages which help find the root cause quickly and easily. Teledyne LeCroy’s SDA II serial data analysis package has the ability to perform Eye and Jitter measurements simultaneously and is fully integrated into the oscilloscope application software.

In addition, SDA II provides insight into the measured Eye and Jitter parameters making it easier to identify the sources of problems. Further Teledyne LeCroy’s SDM can provide eye diagrams.

Comprehensive and Easy-to-read Test Reports

Measurement results often need to be summarized and tabulated to quickly verify specifications. This information, together with instrument and signal acquisition/test condition setups, results in a fully documented record. QPHY-10GBase-KR streamlines this process by incorporating an automatic HTML report generation engine. The created test reports contain tabulated numerical values for each individual test result, including PASS/FAIL and specification limit columns. Reports can also be saved as PDF, HTML or XML.
QPHY-10GBase-KR provides a highly automated and easy-to-use solution for 10GBase-KR transmitter testing in accordance with IEEE 802.3ap. QualiPHY also have many preset compliance configurations and also enables users to create their own configuration and limit sets.

This image is showing the jitter and other timing measurements of a 10.3125 Gbps signal. It is also setup for pass and fail criteria through the QPHY automation commands.

This image is showing voltage measurements on specific regions of the signal to accurately measurement the signal’s equalization parameters.
QualiPHY

QualiPHY is designed to reduce the time, effort, and specialized knowledge needed to perform compliance testing on high-speed serial buses.

- Guides the user through each test setup
- Performs each measurement in accordance with the relevant test procedure
- Compares each measured value with the applicable specification limits
- Fully documents all results
- QualiPHY helps the user perform testing the right way—every time!

Compliance Reports contain all of the tested values, the specific test limits and screen captures. Compliance Reports can be created as HTML, PDF or XML.
### SPECIFICATIONS AND ORDERING INFORMATION

#### QPHY-10GBASE-KR Test Coverage Specifications

<table>
<thead>
<tr>
<th>Measurements</th>
<th>Specification Reference</th>
<th>Test Criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td>Signaling Rate</td>
<td>72.7.1.3</td>
<td>( x = 10.3125 \text{ Gbps} \pm 100 \text{ ppm} )</td>
</tr>
<tr>
<td>Total Jitter</td>
<td>72.7.1.8</td>
<td>( x &lt; 280 \text{ mUI} )</td>
</tr>
<tr>
<td>Random Jitter</td>
<td>72.7.1.8</td>
<td>( x &lt; 10.71 \text{ mUI RMS} )</td>
</tr>
<tr>
<td>Deterministic Jitter</td>
<td>72.7.1.8</td>
<td>( x &lt; 150 \text{ mUI} )</td>
</tr>
<tr>
<td>Duty Cycle Distortion</td>
<td>72.7.1.8</td>
<td>( x &lt; 35 \text{ mUI} )</td>
</tr>
<tr>
<td>Max Differential Output Voltage</td>
<td>72.7.1.4</td>
<td>( x &lt; 1.2 \text{ V} )</td>
</tr>
<tr>
<td>Rise/Fall time (20%-80%)</td>
<td>72.7.1.7</td>
<td>( 24 \text{ ps} &lt; x &lt; 47 \text{ ps} )</td>
</tr>
<tr>
<td>Transmitter Output Waveform</td>
<td>72.7.1.11</td>
<td>Equalizer Parameters</td>
</tr>
</tbody>
</table>

#### Ordering Information

**Product Description**

QPHY SW option for 10GBase-KR

**Product Code**

QPHY-10GBase-KR

**Recommended Oscilloscopes**

- **16 GHz, 40 GS/s, 4 Ch, 20 Mpts/Ch WaveMaster with 15.3” WXGA Color Display. 50 Ω and 1 M Ω Input**
  - WaveMaster 816Zi-A

- **20 GHz, 40 GS/s, 4 Ch, 20 Mpts/Ch WaveMaster with 15.3” WXGA Color Display. 50 Ω and 1 M Ω Input**
  - WaveMaster 820Zi-A

- **25 GHz, 80 GS/s, 2 Ch, 40 Mpts/Ch WaveMaster with 15.3” WXGA Color Display. 50 Ω and 1 M Ω Input (20 GHz, 40 GS/s, 4 Ch, 20 Mpts/Ch)**
  - WaveMaster 825Zi-A