Key Features

Physical layer measurements for MIPI C-PHY signals, including:
- LP-TX Signaling
- HS-TX Signaling
- INIT and ULPS
- Unterminated voltage measurements

C-PHY Triggered Eye Diagram

Conformance testing with QualiPHY
- Fully automated and easy to use
- Report generation including pass/fail results
- Easily switch from automated conformance testing to interactive debugging

Serial decoding of CSI-2 and DSI-2 signals over MIPI C-PHY
- Intuitive, color-coded overlays
- Interactive table summarizes results

Teledyne LeCroy's CPHYbus DMP (Decode, Measure/Graph and Physical Layer) option offers the most intuitive and interactive toolset for validating DSI-2 and CSI-2 interfaces. QPHY-MIPI-CPHY fully automates complex transmitter conformance testing, and seamlessly integrates CPHYbus DMP for easy debugging.

Comprehensive CSI-2 and DSI-2 decode

CPHYbus D and DMP options enable decoding of CSI-2 or DSI-2 interfaces over a C-PHY bus. As with all Teledyne LeCroy serial decoders, decoded data is displayed in two ways: A transparent overlay shows the protocol messaging directly on the display along with the analog waveform data, making correlation and debugging easy. Meanwhile, a separate decode table enables deeper analysis with advanced filtering and export.

Interactive measurement and debug tools

For system bring-up and debug, CPHYbus DMP options add a comprehensive suite of C-PHY electrical measurement parameters, eye diagram creation, and mask testing – enabling CSI-2 or DSI-2 protocol issues to be tracked down to their root cause at the electrical level. Unique measurement and graphic tools also enhance the capabilities of the decode function for even deeper embedded systems analysis.

Simple, intuitive conformance testing

QPHY-MIPI-CPHY adds C-PHY transmitter conformance testing to Teledyne LeCroy’s QualiPHY test automation framework, designed to reduce the time, effort and specialized knowledge needed to perform conformance testing on high-speed serial buses. QualiPHY simplifies test selection, configuration and execution, and performs automatic report generation. For C-PHY testing, QPHY-MIPI-CPHY makes extensive use of CPHYbus DMP, enabling seamless switching between conformance and debug environments.
C-PHYBUS DMP

Intuitive Decode Overlay and Table (“D”)
- Transparent overlay with color-coding for specific portions of the protocol.
- Turn the oscilloscope into a protocol analyzer with a tabular display of decoded information.
- Customize the table to show only the data of interest, and export for offline analysis.
- Touch a message in the table to automatically zoom to it and display it on the screen.
- Up to four different decoded signals of any type may be simultaneously displayed in the table.

Physical Layer Measurements (“P”)
- CPHYbus DMP options add a comprehensive suite of C-PHY electrical conformance measurement parameters.
- Track down CSI-2 or DSI-2 protocol issues to their root cause at the electrical level.
- Unique measurement and graphic tools enhance the capabilities of the decode function for even deeper embedded systems analysis.

Eye Diagrams (“P”)
- Simple creation and visualization of C-PHY eye diagrams.
- CPHYbus DMP option creates a “triggered” eye diagram, as defined in the MIPI C-PHY specification.
Simplified Setup
QualiPHY dialogs help the user configure all aspects of test execution, including:

- Selecting the set of tests to run
- Configuring of test parameters
- Customizing limits
- Options to stop after each test or execute automatically.

Streamlined Test Execution
QualiPHY guides the user through connection and execution of each test, resulting in increased repeatability

- Dialogs explain test execution and required Device Under Test (DUT) settings
- Simple, powerful Host Program Control interface enables complete automation of QualiPHY with external scripting hosts
- QPHY-MIPI-CPHY includes CPHYbus DMP option, for seamless transition from conformance testing to root-cause analysis

Informative Reporting
QualiPHY produces comprehensive reports documenting test results

- Reports can be produced in PDF or HTML format
- Screenshots and tabular results included
- Summary table at the start of the report makes it easy to tell pass/fail results at a glance
**SPECIFICATIONS & ORDERING INFORMATION**

**MIPI C-PHY Test Coverage**

<table>
<thead>
<tr>
<th>Test</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group 1</td>
<td></td>
</tr>
<tr>
<td>1.1.1</td>
<td>Thevenin Output High Level Voltage (VOH)</td>
</tr>
<tr>
<td>1.2.1</td>
<td>LP-TX Thevenin Output Low Level Voltage (VOL)</td>
</tr>
<tr>
<td>1.3.1</td>
<td>LP-TX 15%-85% Rise Time (tRLP)</td>
</tr>
<tr>
<td>1.4.1</td>
<td>LP-TX 15%-85% Fall Time (tFLP)</td>
</tr>
<tr>
<td>1.5.1</td>
<td>LP-TX Slew Rate vs. CLOAD (δV/δtSR)</td>
</tr>
<tr>
<td>1.6.1</td>
<td>LP-TX Pulse Width of Exclusive-OR Clock (tLP-PULSE-TX)</td>
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<tr>
<td>1.7.1</td>
<td>LP-TX Period of Exclusive-OR Clock (tLP-PER-TX)</td>
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<tr>
<td>Group 2</td>
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<td>1.2.8-1.2.9</td>
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</tbody>
</table>

**Ordering Information**

**Product Description**

**Conformance test automation options**
QualiPHY Enabled MIPI C-PHY Conformance Software Option (includes C-PHY DMP)
Requires 8 GHz or higher bandwidth WaveMaster/SDA 8Zi or LabMaster 10 Zi family oscilloscope
and qty 3 differential probes of 8 GHz or higher bandwidth

**Decode, Measure/Graph and Physical layer test options**

*C Requires 4 GHz or higher bandwidth oscilloscope model and qty 3 differential probes of 4 GHz or higher bandwidth

*C-PHY (DSI-2/CSI-2) Decode Option for WaveRunner 9000
C-PHY (DSI-2/CSI-2) Decode, Measure/Graph and Physical Layer Option for WaveRunner 9000
C-PHY (DSI-2/CSI-2) Decode Option for WavePro HD
C-PHY (DSI-2/CSI-2) Decode, Measure/Graph and Physical Layer Option for WavePro HD
C-PHY (DSI-2/CSI-2) Decode Option for WaveMaster/SDA 8Zi/-A/-B
C-PHY (DSI-2/CSI-2) Decode, Measure/Graph and Physical Layer Option for WaveMaster/SDA 8Zi/-A/-B
C-PHY (DSI-2/CSI-2) Decode Option for LabMaster 10 Zi/A
C-PHY (DSI-2/CSI-2) Decode, Measure/Graph and Physical Layer Option for LabMaster 10 Zi/A

**Customer Service**

Teledyne 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