

Universal Serial Bus (USB 2.0) Compliance Test Package



Features & Benefits

- Fully Compliant with USB-IF Tests for USB 2.0 Compliance Testing
- Automated Eye-diagram Analysis Verifies Signal Quality
- Automated Oscilloscope Setups for Various Tests Eliminates Time-consuming Manual Setups
- Comprehensive Test Fixture Enables Quick Setup for a Wide Range of Tests
- High-speed Tests: Signal Quality, Receiver Sensitivity, Chirp, Reset, Resume, Suspend, Packet Parameter, and Monotonicity Test
- Automatic Rise and Fall Time Measurements Simplify Tests
- Automatic Deskew for Accurate Measurements
- Online Help Fully Documents Test Procedures
- User-configurable Report Formats For Customization
- User-configurable Measurement Limits For Tolerance Testing

Applications

- USB 2.0 Physical Layer Verification and Compliance Testing
- Characterize the Quality of USB 2.0 Designs

USB 2.0 Physical Layer Verification and Compliance Test Package

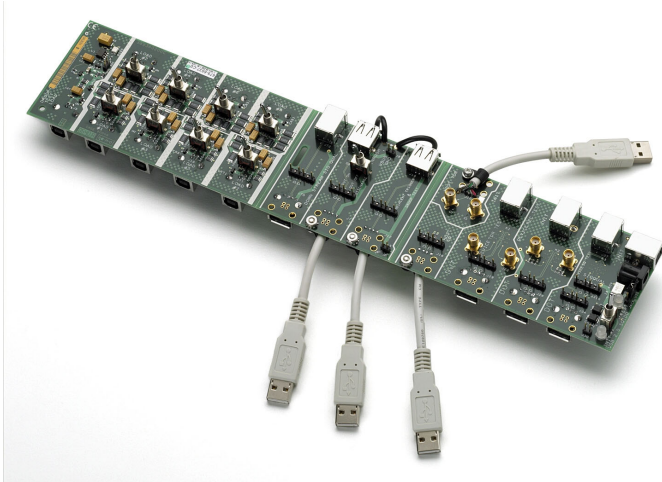
Engineers involved in design, characterization, and validation of USB 2.0 devices face daily pressures to speed new products to the marketplace. USB 2.0 designers need tools to properly characterize their designs and verify compliance to industry standards. Characterization of these electrical signals includes mask testing as well as parametric testing, up to 480 Mbps. TDSUSB2 eliminates the tedium of manually setting up the oscilloscope, by providing predefined oscilloscope setups for various tests. Users can quickly perform all USB-IF recommended tests, such as eye-diagram and parametric testing for low-speed, full-speed, and high-speed hosts, devices, and hubs. The comprehensive test fixture supports a wide range of tests.

Quick Pass/Fail tests substantiated with results make the TDSUSB2 application the preferred solution for USB 2.0 physical layer validation. In-depth analysis is possible with the statistical information about the tests performed. The user-defined measurement limits also help to perform tolerance testing on a design.

TDSUSB2 comes on a DVD and can be easily installed by the user. After installation, the application is accessible from the menu bar of the Tektronix Windows oscilloscopes. The user manual and other documents are copied at the application installation location on the scope's hard drive.

Compliance Test Fixture

A comprehensive compliance test fixture provides a probing solution for the Signal Quality test, Inrush Current check, Drop and Droop test, Receiver Sensitivity and Impedance Measurement test. Connectors are available for the data generator and Tektronix DSA8200 sampling oscilloscope with TDR module. The test fixture is an accessory of TDSUSB2, and is ordered separately. The USB-IF logo-tagged 6-inch AB Cable is shipped along with the test fixture.



USB 2.0 Compliance Test Fixture (TDSUSB2).



Measurement Select menu for the Signal Integrity test.

Characteristics

Specifications

| Characteristic | Description |
|--------------------------|--|
| TDSUSB2 Tests | Host, hubs, and devices |
| Signal Quality Test | Eye-diagram test, jitter (JK, KJ, and consecutive), crossover voltage range, signal rate, end-of-packet width, rising-edge rate, falling-edge rate |
| High-speed Tests | Receiver sensitivity, chirp, reset, resume, suspend, packet parameter, and monotonicity test |
| Inrush Current Check | Data-sufficiency readout. Coulombs and capacitance listed across inrush regions |
| Droop Test | Volts readout |
| Speed Selection | Low-speed (LS), full-speed (FS), and high-speed (HS) |
| Signal Direction | Upstream and downstream |
| Test Point Selection | Near end and far end |
| Report Generation Format | Plug-fest, user-specific, and Tektronix format |

Tektronix Digital Oscilloscopes Required

| Tektronix Windows real-time oscilloscope | Bandwidth Required |
|--|--------------------|
| High-speed | >2.5 GHz |
| Low-speed and Full-speed | >350 MHz |

Tektronix real-time oscilloscope series with these specifications are shown in the Ordering Information section.

USB 2.0 Complete Solution

The following components make up the complete USB 2.0 testing solution for the physical layer measurements and compliance testing.



Universal Serial Bus (USB 2.0)

Ordering Information

TDSUSB2

| | New Instrument Orders | Upgrades |
|-----------------------|--|---|
| | TDS5000B, DPO7000, DPO/DSA70000B Series | TDS5000B*1, TDS6000/B/C, TDS/CSA7000B, DPO7000, DPO/DSA70000B Series |
| Test fixture ONLY | TDSUSBF | TDSUSBF |
| Test software ONLY | Opt. USB | TDS5B/6B/7BUP; CSA7BUP; DPO7UP; Opt. USB |
| Software AND hardware | Opt. USB and TDSUSBF | Opt. USB and TDSUSBF |

*1 TDS5000B Series – Opt. USB is not available for 2-channel oscilloscope models.

TDSUSB2 Recommended Accessories

Signal Source (For Receiver Sensitivity Tests)

| Product | Description |
|--|------------------------------|
| DTG5334 or DTG5274 or DTG5078 with a DTGM 21 Output Module | Data Generator |
| AWG5000 Series (AWG5002) or AWG7000 Series*2 | Arbitrary Waveform Generator |
| TDSUSBF | USB 2.0 test fixture |

*2 X5 attenuators are required when using AWG models.

Probes

| Probe | Description |
|---------------------------|---|
| Voltage Probes | |
| P6248*3, P6330 | High-bandwidth Differential Probe |
| P6245 or P6243 | High-bandwidth Single-ended Active Probe |
| For DPO7000 Series | |
| TDP1500 | Differential Probe |
| TDP3500 | Differential Probe |
| TAP1500 | Requires TPA-BNC Adapter on DPO7000 Series models |
| P6248*3, P6330, or P6245 | Requires TPA-BNC Adapter on DPO7000 Series models |
| Current Probes | |
| TCP0030 | |
| TCP202 | |

*3 The P6248 probe is approved for compliance testing. Higher-performance differential probes may be used for design applications. It is recommended to have an attenuation of divide by 1 for better results.

TDR Measurements (For Impedance Measurement Test)

Tektronix DSA8000 Sampling Oscilloscope with Time Domain Reflectometer (TDR) Sampling Module.

Additional Information

The TDSUSB2 solution updates and up-to-date software upgrades are available at: www.tek.com/Masurement/applications/serial_data/usb2.html.



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For Further Information. Tektronix maintains a comprehensive, constantly expanding collection of application notes, technical briefs and other resources to help engineers working on the cutting edge of technology. Please visit www.tektronix.com



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