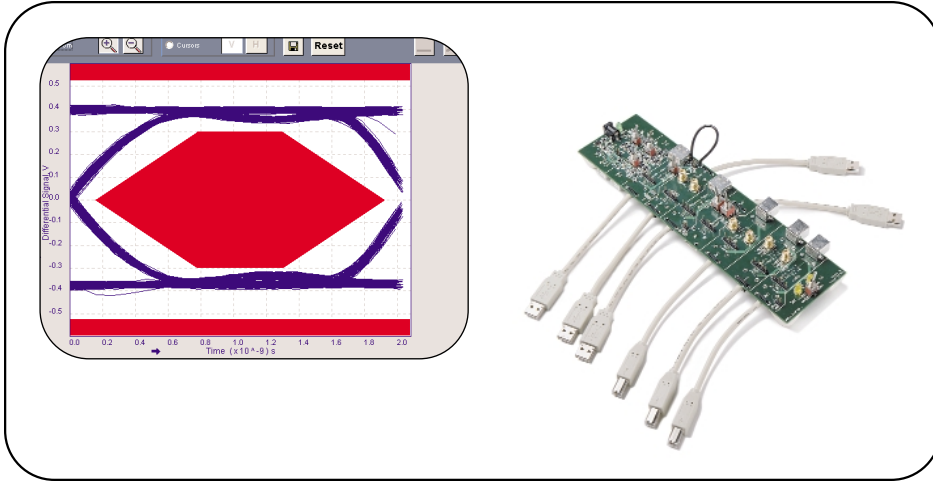# Universal Serial Bus (USB2.0) Compliance Test Package

▶ TDSUSB2

USB2.0 Physical Layer Verification and Compliance Test Package

Engineers involved in design, characterization and validation of USB2.0 devices face daily pressures to speed new products to the marketplace. USB2.0 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 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 USB2.0 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 CD and can be easily installed by the user. After installation, the application is accessible from File> Run Application in the menu bar of the TDS7000 Series oscilloscopes. TDS694C users can load the software on a PC connected to the oscilloscope through GPIB.

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 DG2040 data generator and TDS8000 oscilloscope with TDR sampling module. The test fixture is a standard accessory with TDSUSB2.

▶ Characteristics

Specifications
TDSUSB2 Tests – Host, hubs and devices.

Signal Quality Test – Eye diagram test, jitter (JK, KJ and consecutive), cross over voltage range, signal rate, end of packet width, rise time, fall time.

High Speed Tests – Receiver sensitivity, chirp and monotonicity test.

Inrush Current Check – Coulombs and capacitance readout.

Droop Test – Volts readout.

▶ Features & Benefits

Fully Compliant with USB-IF Tests for USB2.0 Compliance Testing

Automated Eye Diagram Analysis

Automated Oscilloscope Setups for Various Tests Eliminate Time Consuming Manual Setups

Comprehensive Test Fixture Enables Quick Setup for a Wide Range of Tests

High-speed Tests: Receiver Sensitivity, Chirp and Monotonicity Test

Automatic Rise and Fall Time Measurements Increase Test Throughput

Automatic Deskew for Accurate Measurements

Online Help Provides Assistance

User-configurable Report Formats for Customization

User-configurable Measurement Limits for Tolerance Testing

▶ Applications

USB2.0 Physical Layer Verification and Compliance Testing

Characterize the Quality of USB2.0 Designs

Tektronix

Enabling Innovation

Universal Serial Bus (USB2.0) Compliance Test Package

▶ TDSUSB2

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 – Plugfest, user specific and Tektronix format.

Tektronix Digital Oscilloscopes Required

For High-speed – TDS7404, TDS7254, TDS694C, TDS6604 and CSA7404.

For Low-speed and Full-speed – All TDS7000/CSA7000 Series, TDS694C, TDS6604, TDS5054, and TDS5104 oscilloscopes.

▶ Ordering Information

USB2.0 Complete Solution

The following components make up the complete USB2.0 testing solution for the physical layer measurements and compliance testing.

TDS5000*1/TDS7000 Series

For New TDS5000*1/TDS6000/TDS7000/CSA7000 Series Instrument Orders -
For Test Fixture ONLY: TDSUSBF.
For Test Software ONLY: Option USB.
For Software AND Hardware: Option USB and TDSUSBF.

As an Upgrade to Existing TDS5000*1/TDS6000/TDS7000/CSA7000 Series Instrument Orders -
For Test Fixture ONLY: TDSUSBF.
For Test Software ONLY: TDS5/6/7UP; CSA7UP, Option USB.
For Software AND Hardware: TDS5/6/7UP; CSA7UP, Option USB and TDSUSBF.

TDS694C

For New TDS694C Oscilloscope Orders -
For Test Fixture ONLY: TDSUSBF.
For Test Software ONLY: Option USB.
For Software AND Hardware: Option USB and TDSUSBF.

As an Upgrade to Existing TDS694C Oscilloscopes -
For Test Fixture ONLY: TDSUSBF.
For Test Software ONLY: TDSUSBS.
For Software AND Hardware: TDSUSB2.

Please specify power cord when ordering TDSUSBF and TDSUSB2.

Power Plug Options (for TDSUSB2 and TDSUSBF)

Opt. A0 – US Plug, 115 V, 60 Hz.

Opt. A1 – Euro Plug, 220 V, 50 Hz.

Opt. A2 – UK Plug, 240 V, 50 Hz.

Opt. A3 – Australian Plug, 240 V, 50 Hz.

Opt. A99 – No Power Cord.

Opt. AC – China Plug, 50 Hz.

Note: Option USB and TDSUSBS do not include the compliance test fixture. Must be ordered separately as TDSUSBF.

System Requirements for TDSUSB2 Software on Windows-based Oscilloscopes – Runs on the CSA7000, TDS5000*1/TDS6000/TDS7000 Series oscilloscopes. Oscilloscope should have Java Run Time Environment 1.2.2 installed.

System Requirements for TDSUSB2/TDSUSBS – Runs on a stand-alone PC, in conjunction with TDS694C. The PC should have Java Run Time Environment Version 1.2.2, WIN 98/NT/2K, 64 MB (128 MB for WIN 2K) RAM, Pentium II or higher processor and NI GPIB-ENET/100 GPIB card.

TDSUSB2 Recommended Accessories

DG2040 – Data Generator (Receiver Sensitivity or Squelch test).

AWG610 – Arbitrary Waveform Generator.

Probes

High Bandwidth Differential Probes.

High Bandwidth Single-ended Active Probes.

Current Probes – TCP202.

TDS8000 Oscilloscope with 80E04 TDR sampling module (Impedance Measurement test).

High-speed Testing – P6248.

Low- and Full-speed Testing – P6245/P6243.

*1 TDS5000 Series - Option USB can be ordered only for the TDS5404 and TDS5104.

Our most up-to-date product information is available at:
www.tektronix.com

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