

Getting Started with TDSUSB2

You can use this side of the Quick Reference to start taking measurements with the USB2.0 Compliance Test Package (TDSUSB2). The other side contains a complete menu tree for TDSUSB2 software.

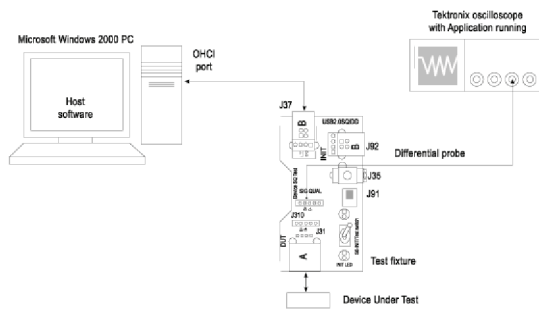
NOTE. For complete operating instructions and General Safety information, refer to the Online Help for the application.

The package includes an application (Universal Serial Bus measurements software) and an optional USB2.0 comprehensive compliance test fixture.

The design of the package helps you to test if USB2.0 devices meet the compliance test requirements of the USB2.0 industry for physical layer measurements. Correlating all results with USB-IF official MATLAB scripts, the package supports these tests: Signal Quality, Inrush current test, Droop test, Chirp and Receiver sensitivity testing, Suspend, Resume, Reset from High Speed, Reset from Suspend, and Packet Parameter tests.

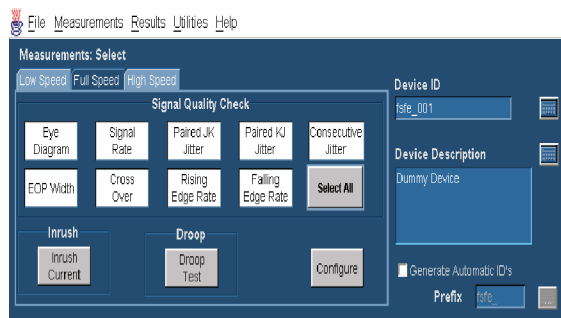
Performing Signal Quality Tests

1. Select File > Run Application > in the oscilloscope menu bar. Then select TDSUSB2.0 Test Package, App > USB2.0 Test Package, or Analyze > USB2.0 Test Package.
2. Connect the device under test (DUT) to the Device SQ section of the test fixture.

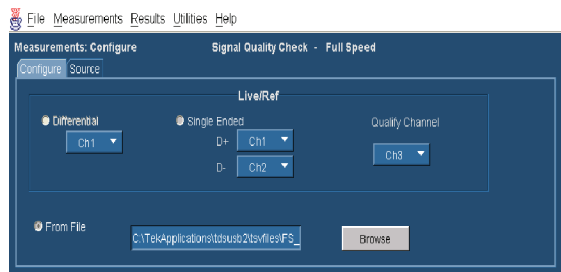
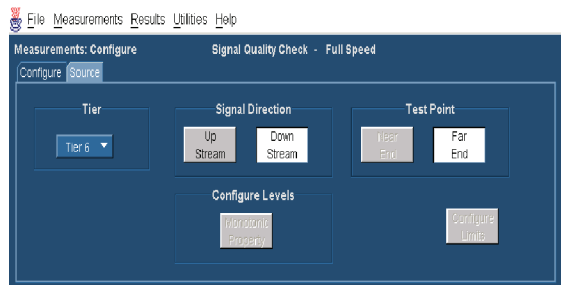


High-Speed Signal Quality Test

3. Select Measurements > Select, choose a test for the appropriate signal speed (Low, Full or High speed).



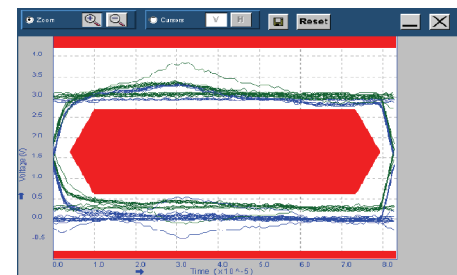
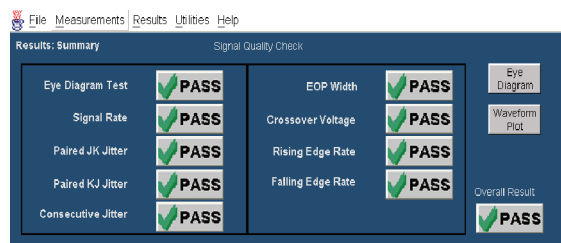
4. Select Measurements > Configure and set up the application in the Configure and Source tabs.



5. Push the “Running Man” button to start taking measurements.



6. The application displays results as a summary and as an eye diagram as shown below.



7. Select Results > Details to view the results in a statistical format.

Measurement	Min	Max	Mean	St
Signal Rate	11.97780Mbps	12.00901Mbps	12.00001Mbps	10.10e
Paired JK Jitter	-101.0493ps	99.95059ps	-14.73915ps	86.69e
Paired KJ Jitter	-99.04684ps	102.1816ps	25.26458ps	88.48e

Overall Result: **PASS**

8. Generating a Compliance Report

To produce a compliance test report, select Utilities > Report Generator.

Test Fixture Test Points (TDSUSBF Rev.B)

Table 1: Test Points

DUT	Test	Position DUT	Position Probe	Test Mode
High-Speed Device	SQ	J34	J310	Upstream
	Packet Parameter	J34	J31	
	Chirp	J34	J31	
	Suspend	J34	J31	
	Resume	J34	J31	
	Reset	J34	J31	
	J	J34		
Full-Speed Device	K	J34		
	SE0_NAK	J34		
	Receiver Sensitivity	J28	J25	
	SQ	J10	J8	Upstream
	Inrush	J10	J8	
	Droop	J5, J1, J2, J12	J6, J13	

TDSUSB2 Ordering Information

Refer to the *Optional Applications Software on Windows-Based Oscilloscopes Installation Manual* for a list of supported oscilloscope models. The applications DVD includes a PDF file of an installation manual.

Table 2: Ordering information

TDSUSB2	For new TDS5000B, DPO7000, DPO/ DSA70000 series instrument orders	As an upgrade to TDS5000*, TDS6000/B/C, TDS/ CSA7000B, DPO7000, DPO/ DSA70000 series instruments
For Test Fixture only	TDSUSBF	TDSUSBF
For Test Software only	Opt.USB	TDS5B/6B/7BUP; CSA7BUP; DPO7UP; Opt.USB
For Software and Hardware	Opts. USB and TDSUSBF	Opts. USB and TDSUSBF

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

Recommended Accessories

Signal Source (for Receiver Sensitivity Tests):

- DTG5334 or DTG5274 or DTG5078 with a DTGM 21 Output module - Data Generator
 - AWG5000 series (AWG5002) or AWG7000 series**
 - TDSUSBF USB2.0 Compliance Test Fixture
- ** X5 attenuators are required when using AWG models.

Voltage Probes:

- P6248*, P6330- High Bandwidth Differential Probe
- P6245 or P6243- High Bandwidth Single-ended Active Probe

* 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.

For DPO7000 series:

- TDP1500 or TDP3500
- TAP1500
- P6248, P6330, or P6245 (these require a TPA-BNC Adapter on DPO7000 series models)

Current Probes:

- TCP0030
- TCP202 (requires a TPA-BNC Adapter on DPO7000 series models)

TDR Measurements (for Impedance Measurement test):

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

NOTE. To test High Speed USB2.0 devices, you can use this application with DPO7254, DPO7354, DPO/DSA70404, DPO/DSA70604, DPO/DSA70804, DPO/DSA72004, DPO/DSA71604, DPO/DSA71254, TDS6404, TDS6804B, TDS6604/B, TDS6804B, TDS6124C, TDS6154C, TDS7404/B, CSA7404/B, TDS7704B, and TDS7254/B oscilloscopes.

References:

1. **TDSUSB2 software upgrades and solution updates at:**
www.tek.com/Masurement/Solutions/usb
www.tek.com/Masurement/applications/serial_data/usb2.html
2. **Setup and Test Procedure Manuals:**
 Online Help
 Tektronix Application DVD
http://www.usb.org/developers/docs#comp_test_procedures
3. **TDSUSBF Test Fixture Manual:**
 Available with the fixture shipment.
4. **Receiver Sensitivity Tests** setup files for AWG and DTG models (AWG5k-HS-USB.zip or DTG_setup.zip):
www.tek.com > Software Downloads > Products > Signal Generators > Arbitrary Waveform/ Function Generator > AWG5000 series
www.tek.com > Software Downloads > Products > Signal Generators > Arbitrary Waveform/ Function Generator > AWG7000 series
5. **Technical Support:**
 Email to techsupport@tek.com

TDSUSB2 Universal Serial Bus Package Reference

www.tektronix.com



TDSUSB2 Menu Tree

