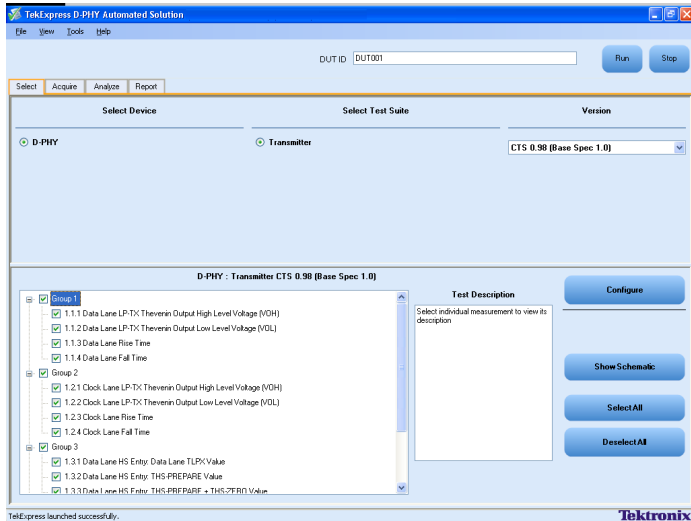


D-PHY Conformance, Characterization, and Verification

TEKEXP, DPO7K, DPO/DSA/MSO70K/B D-PHYTX Data Sheet



Features & Benefits

Automated Testing

- Performs Single-button Fully Automated Testing for Set of Transmitter Measurements
- Does Not Require Operator Intervention to Conduct Time-consuming Testing
- Reduces the Amount of Time Required to Conduct Testing
- Enables Customers to Test Devices Faster
- Allows Selecting Individual Tests or Group-wise Tests through Tree Structure

Setup Customization

- Modify the Test Setup as per the DUT Configuration
- Unit Intervals are Automatically Calculated based on the DUT Data Rates

Characterization/Margin Testing

- Allows Custom Limits or Limit Editing to Perform Margin Testing
- Performs Characterization of Your Design

Detailed Test Reports

- Provides Pass/Fail Summary Table
- Provides Margin Details on Each Test
- Provides "Single Printable" Consolidated Report for All Tests

Reliable Results

- Achieve Accurate and Reliable Results from a Single Run

Offline/Remote Analysis

- Perform Measurements using either Live or Pre-acquired Waveform Sets
- Allows Remote Execution of Tests

Applications

D-PHY Transmitter Testing for:

- D-PHY Interface Design
- System Validation and Integration
- Manufacturing Test

Tektronix
Enabling Innovation

TekExpress Automation Framework
D-PHY Transmitter Signal Characteristics Test Report

DUT ID : DUT001
Date/Time : 5/28/2010 16:21
Device Type : D-PHY
Execution Time : 10 Min
Overall Compliance : Overall Test

Scope Model: (Pre-recorded mode) Scope Serial Number: (Pre-recorded mode) Scope FW Version: (Pre-recorded mode) SPC FactoryC
Probe Model: (Pre-recorded mode) Probe Serial Number: (Pre-recorded mode) TelExpress Version: D-PHY: 0.3.0.33, Framework: 1.3.5.143

Test Name	Measurement Details	Low Limit	Measured value	High Limit	Margin	Units	Test Result	Compliance Mode	Pass/Fail
1.1.1 Data Lane LP-TX Thevenin Output High Level Voltage (VOH)	Data Lane LP-TX Thevenin Output High Level Voltage DP	>= 1.1	1.23E+00	<= 1.3	0.156, 0.044	V	Pass	Yes	<
	Data Lane LP-TX Thevenin Output High Level Voltage DN	>= 1.1	1.23E+00	<= 1.3	0.132, 0.068	V	Pass	Yes	<
1.1.2 Data Lane LP-TX Thevenin Output Low Level Voltage (VOL)	Data Lane LP-TX Thevenin Output Low Level Voltage DP	>= -50	3.20E+01	<= 50	82.18	mV	Pass	Yes	1
	Data Lane LP-TX Thevenin Output Low Level Voltage DN	>= -50	1.60E+01	<= 50	66.34	mV	Pass	Yes	1
1.1.3 Data Lane Rise Time	Data Lane Rise Time DP	-	7.52E+00	< 25	17.48	nS	Pass	Yes	<
	Data Lane Rise Time DN	-	6.67E+00	< 25	16.33	nS	Pass	Yes	<

TelExpress launched successfully.

Single-button Fully Automated D-PHY Testing

The Tektronix TekExpress™ (TEKEXP) Automated Test software is a Windows-based application that runs on any Windows XP*1 computer operating system including Tektronix Windows-based instruments. TekExpress software ordered with Option D-PHYTX provides an automated, simple, and efficient way to test D-PHY Transmitter interfaces and devices consistent to the requirements of the D-PHY Conformance Test Specification Revision 0.98.

Automated Testing – Save Time and Resources

There is no longer a need to be an expert on testing procedures. Remembering the exact steps to take each measurement is time consuming and often requires going back to the D-PHY specifications. D-PHYTX takes the guesswork out of conducting D-PHY Transmitter testing. Even if you remember how to use the test equipment, it is common for even the most experienced operators to forget steps in the procedure or to set up the correct parameters, like applying the correct trigger technique. D-PHYTX allows engineers to simply select the desired tests to run, and then work on other tasks while the tests are being executed.

Simple Setup, Test Execution, and Reporting

Setup and test execution is simple with the TekExpress software. The oscilloscope is controlled through the TekExpress automation framework. The TekExpress software provides a Graphical User Interface (GUI) and provides an intuitive workflow through setup and testing.

Setting Up the Bench

When setting up a test, nothing can be simpler than hooking up the test system by looking at a schematic. View the schematic of the selected test with a push of a button.

Instrument Bench Discovery

TekExpress software automatically (or on demand) scans and detects supported instruments connected in your test bench (both Visa supported and non-Visa supported instruments), whether they are connected through LAN, GPIB, or USB. A quick check of the Instrument Bench menu confirms all instruments are networked correctly.

Pass/Fail Report

The Report tab provides a view of test results along with pass/fail status, test margin, and images supporting the test results.

Powered by NI TestStand™

The TekExpress automated compliance software uses NI (National Instruments) TestStand to manage and execute its test sequences. A Windows user interface is provided in the TekExpress software for simple and complete operation of compliance measurements. However, if your validation and debug needs go beyond the features offered by the TekExpress software, a full version of NI TestStand can be used to develop higher-level automation sequence to control the TekExpress software.

NI TestStand is the de facto industry-standard test management environment for automating test and validation systems. NI TestStand is used to develop, manage, and execute test sequences, to integrate test modules written in any test programming language through an open and flexible architecture. Customers who own NI TestStand and purchase the TekExpress software will be able to write scripts using NI TestStand that call the TekExpress software with a limited command set. The limited command set allows the NI TestStand user to recall and save TekExpress software setups, start execution, query current execution status, and receive measurement results.

For device validation, it's often desirable to make multiple runs of a single device using different operating conditions such as temperature and power supply voltages. This is sometimes referred to as 'four-corners testing', (testing to low-high temperature and low-high supply voltages). For four-corners testing, NI TestStand supports drivers for a wide range of temperature chambers and power supplies. NI TestStand can be used to control the temperature chamber and then call the TekExpress software for a compliance test using the limited command set. For adjusting power supply voltages, the power supply control sequence file within the TekExpress software can be modified using a standard NI TestStand sequence file. So if your company already uses NI TestStand for automation, your test engineers can incorporate commands to run the TekExpress compliance software directly into their test sequences.

*1 See host system requirements in the Ordering Information section.

Characteristics

Characteristic	Description
D-Phy Base Specification	Revision 1.0
D-Phy Conformance Specification	Revision 0.98
Measurements	Both High-speed and Low-power modes
Group 1	Data Lane LP-Tx Signaling
Group 2	Clock Lane LP-Tx Signaling
Group 3	Data Lane HS-Tx Signaling
Group 5	HS-Tx Clock-to-Data Lane Timing
Probing Configuration	Single-ended acquisition
Triggering	Transition trigger
Reports	MHT format

D-PHY Transmitter Testing with D-PHY Essentials or D-PHY Automated Solution Software

TekExpress Software with Option D-PHYTX provides single-button full automation of the Tektronix D-PHY Transmitter measurements. DPOJET software with Option D-PHY provides the essential set of D-PHY Transmitter measurements with greater flexibility in the test setup. The following table outlines the key benefits from the DPOJET Option D-PHY and the TekExpress Option D-PHYTX software solutions.

Key Benefits from D-PHY Essentials and D-PHY Automated Solution

Feature	Option D-PHY (D-PHY Essentials)	Option D-PHYTX (D-PHY Automated Solution)
Prerequisite Tools	DPOJET Timing and Analysis	TEKEXP Automation
Automatic Measurement Selections based on Device ID, Test Group, and Selected Probes		X
Single-button Execution for All Measurements		X
Configurable Setup and Editing of Test Limits	X	X
Detailed or Summary Reports	Detailed Only	Detailed and Summary
Automatically Save Test Reports and Waveforms		X
Re-analyze Prerecorded Waveforms	X	X
D-PHY Specific User Interface		X
Base Specification Revision	V0.9	V1.0
Conformance Test Specification Revision	V0.08	V0.98

Required Equipment for D-PHY Transmitter Testing

For a complete list of required equipment please visit <http://www.tek.com/MIP1>.

Ordering Information

D-PHY Automated

Model	Description
DPO7000 MSO70000 DPO/DSA70000B	DPO (Digital Phosphor Oscilloscope), DSA (Digital Serial Analyzer), or MSO (Mixed Signal Oscilloscope) Oscilloscopes – 3.5 GHz and above is recommended. Where rise time accuracies are not a concern, a 2.5 GHz scope can also be used
DPO7000 MSO70000 DPO/DSA70000B Opt. TEKEXP	TekExpress™ Automated Compliance Test Software. Order this option (TEKEXP) and Opt. D-PHYTX if TekExpress (TEKEXP) is not already owned. The software installs on the Controller PC. A USB key dongle with software key enables the selected option set
DPO7UP/DPO-UP Opt. TEKEXP	TEKEXP
DPO7000 MSO70000 DPO/DSA70000B Opt. D-PHYTX	D-PHY Automated Solution for D-PHY Transmitter Conformance, Characterization, and Verification Includes: Latest TekExpress product software DVD kit (P/N 020-2913-xx) and upgrade SW key. Online documentation and printable manual in PDF format are supplied
DPO7UP/DPO-UP Opt. D-PHYTX	
TEKEXPUP Opt. D-PHYTX	D-PHY Automated Solution for D-PHY Transmitter Conformance, Characterization, and Verification. Order this option if TekExpress (TEKEXP) is already owned. The USB key dongle will be upgraded with Opt. D-PHYTX Includes: Latest TekExpress product software DVD kit (P/N 020-2913-xx) and upgrade SW key. Online documentation and printable manual in PDF format are supplied

D-PHY Essentials

Model	Description
DPO7000 MSO70000 DPO/DSA70000B	DPO (Digital Phosphor Oscilloscope), DSA (Digital Serial Analyzer), or MSO (Mixed Signal Oscilloscope) Oscilloscopes – 3.5 GHz and above is recommended. Where rise time accuracies are not a concern, a 2.5 GHz scope can also be used
DPO7000 MSO70000 DPO/DSA70000B Opt. D-PHY*2	D-PHY Essentials for D-PHY Transmitter Testing
DPO7UP/DPO-UP Opt. D-PHY*2	D-PHY Essentials for D-PHY Transmitter Testing Upgrade
DPOFL-D-PHY*2	D-PHY Essentials for D-PHY Transmitter Testing Upgrade (Floating License version)

*2 Requires DPOJET Jitter and Eye Analysis Tools (Opt. DJA).

Recommended Probes for D-PHY Essentials or D-PHY Automated Solution

Oscilloscope	Probes
DPO7000	4x TAP2500/TAP3500/P6245/P6249
MSO70000	4x P7240/P73xx in single-ended
DPO/DSA70000B	

Prerequisite Host System Software Requirements for D-PHYTX

- Microsoft XP OS with SP2 or later
- Microsoft Excel 2002 or above
- Microsoft Explorer 6.0 SP1 or later
- Adobe Reader 6.0 or equivalent software for viewing Portable Document Format (PDF) files



Product(s) are manufactured in ISO registered facilities.



Product(s) complies with IEEE Standard 488.1-1987, RS-232-C, and with Tektronix Standard Codes and Formats.

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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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