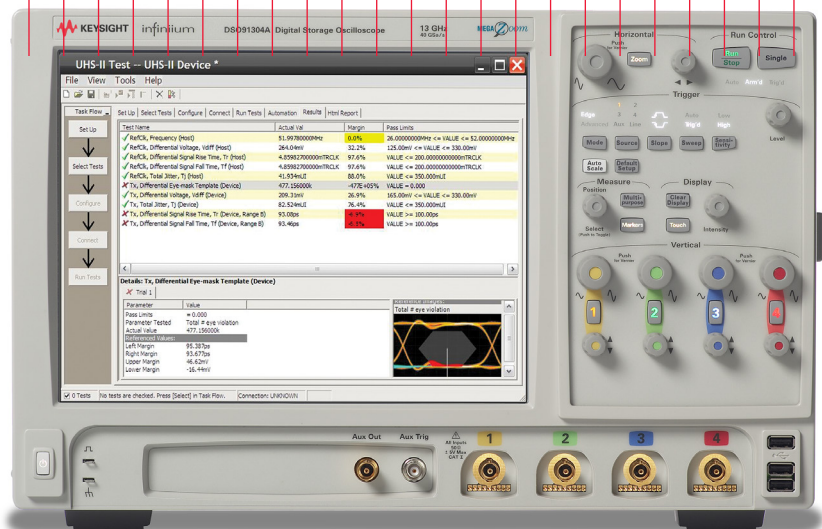


Keysight Technologies N6461A SD UHS-II Compliance Test Application for Infiniium 90000 Series Oscilloscope

Data Sheet



Introduction

The Keysight Technologies, Inc. SD UHS-II compliance test application provides a fast and easy way to test, debug and characterize your SD UHS-II designs. The tests performed by the SD UHS-II compliance test software are based on the SD¹ version 4.0 specifications. The test application offers a user-friendly setup wizard and a comprehensive report that includes margin analysis.

The next-generation SDXC memory card specification with increased bus interface of UHS-II speeds up to 1.56 GB per second or higher, dramatically improves consumers' digital lifestyles by increasing storage capacity to 2 TB. The compliance test offers reference clock tests and host and device transmitter tests. The compliance test covers signal quality and common mode voltage tests for both host and device transmitter tests. The SD UHS-II compliance test application is compatible with Keysight 90000 Series Infiniium oscilloscopes.

Features

The SD UHS-II compliance test application offers several features to simplify the validation of your SD UHS-II designs:

- Setup wizard for quick setup, configuration and test
- Execution speed and proven test algorithm for host and device transmitter tests, which minimizes your compliance test time
- User-selected tests and configurations based on SD version 4.0 specification
- Use with J-BERT N4903B high-performance serial BERT to generate test patterns like the PRBS 2^7-1 pattern that is looped back from the UHS-II device to the oscilloscope for signal integrity test
- Test framework provides powerful characterization through multiple trials that show a full array statistics for each measurement and returns the worst measurement value
- Offline capability to allow user to run the compliance test with saved waveform files from device

1. The SD (Secure Digital) is a set of industry standards and promote Secure Digital (SD) product acceptance in a variety of applications.

Comprehensive test coverage

With the SD UHS-II compliance test application, you can use the same oscilloscope you use for everyday debugging to perform automated testing and margin analysis based on the host and device transmitter physical layer specification. The application automatically configures the oscilloscope for each test and provides informative results. It includes margin analysis indicating how close your device comes to passing or failing the test for each specification. Some of the difficulties in performing the compliance tests are connecting to the target device, configuring the oscilloscope, performing the tests and analyzing the measured results. The SD UHS-II compliance test application does most of this work for you.

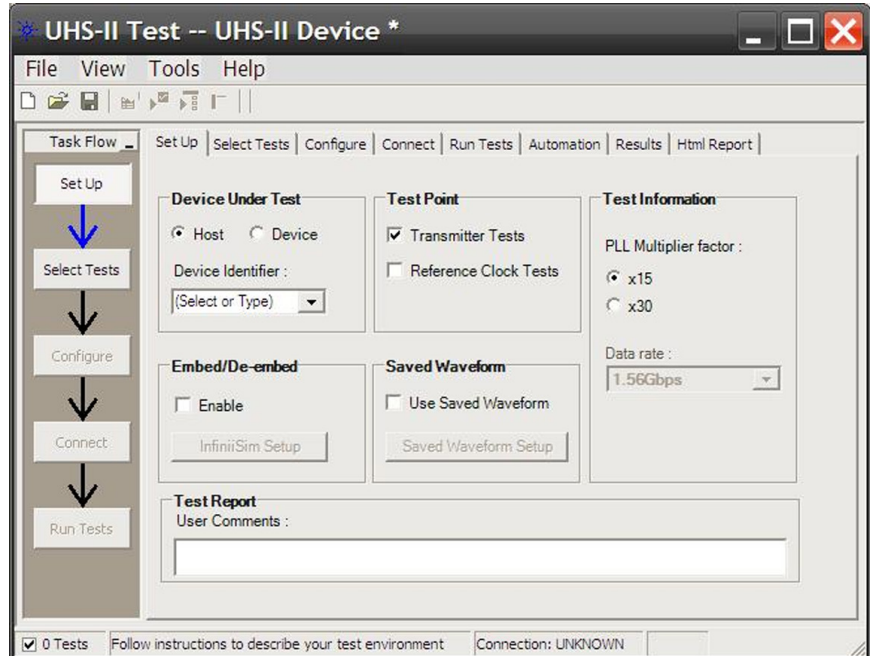


Figure 1. N6461A SD UHS-II card compliance test software application provides both host and device transmitter tests as per SD version 4.0 specification

Easy test definition

The test application enhances the usability of Keysight Infiniium oscilloscopes for testing SD UHS-II devices. The Keysight automated test framework guides you quickly through the steps required to define the setup, perform the tests and view the test results. You can select a category of tests or specify individual tests. The user interface is designed to minimize unnecessary reconnections, which saves time and minimizes potential operator error. You can save the tests and configurations as project files and recall them later for quick testing and review of previous results. Clear menus let you perform tests with minimum mouse clicks.

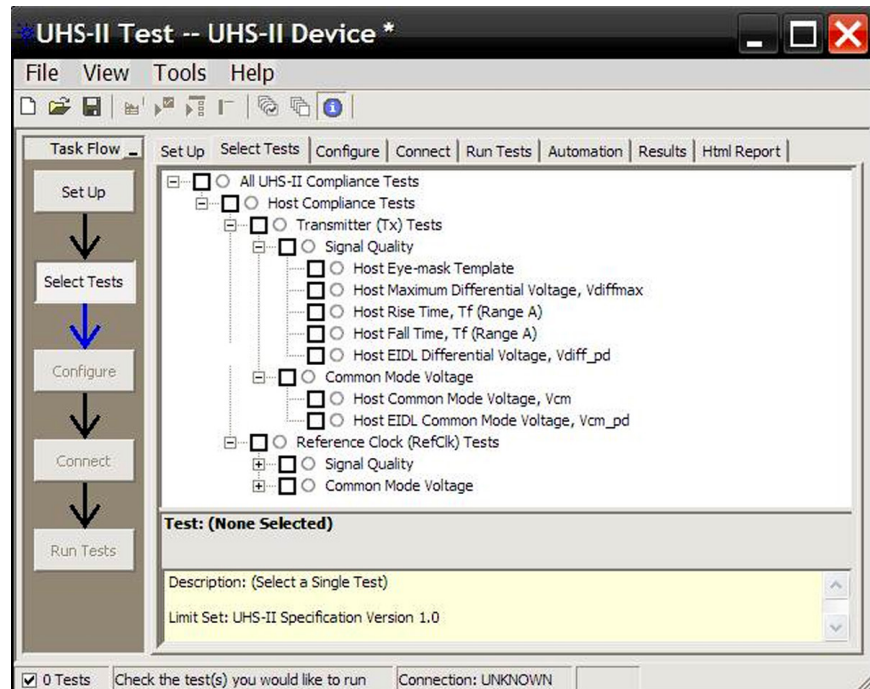


Figure 2. The Keysight automated test engine filters the test selection based on your test setup. You can easily select individual tests or groups of tests with a mouse-click.

Configurability and guided connection

The SD UHS-II compliance test application provides flexibility in your test setup. The SD UHS-II compliance test application provides you with user-defined controls for critical test parameters such as sampling rate, number of UIs used for analysis and setting for single-ended or differential connection types. Once you have configured the tests, the connection page will display the connection diagram for the test you have selected. With the multiple test trial capability, you can extensively characterize the performance of your SD UHS-II devices. You can run the selected tests until the stop condition is met. The application will then save the worst-case conditions and help you track down the anomalies in your signals.

In addition to providing you with measurement results, the N6461A SD UHS-II compliance test application reports how close you are to the specified limit. You can specify the level at which warnings are to be issued. You are provided with a full array of statistics for each measurement, and you can save worst-case conditions to extensively test the performance of your device.

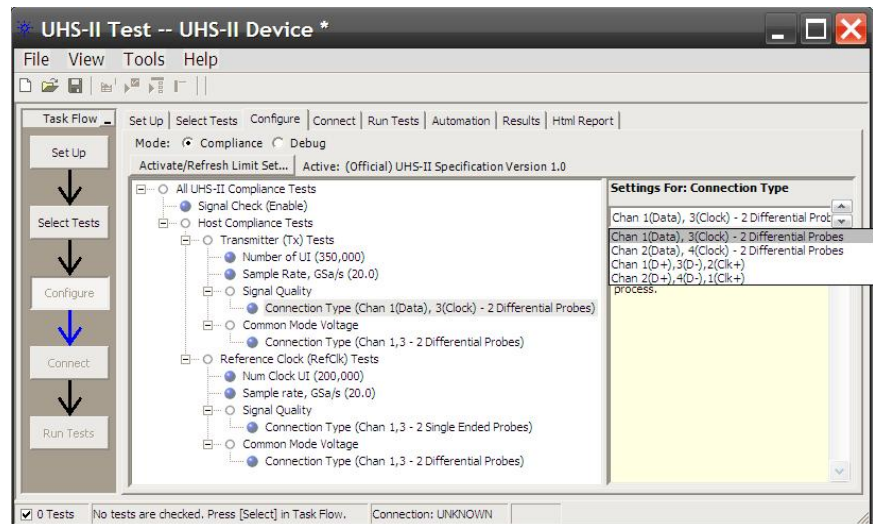


Figure 3. The software provides user-defined controls for test parameters such as sampling rate.

Thorough performance reporting

The SD UHS-II compliance test application generates thorough HTML reports that capture the performance, status and margins of your device. It also captures screen shots of critical measurements for your reference and documentation. This report is suitable for printing and sharing with your vendors, customers or colleagues.

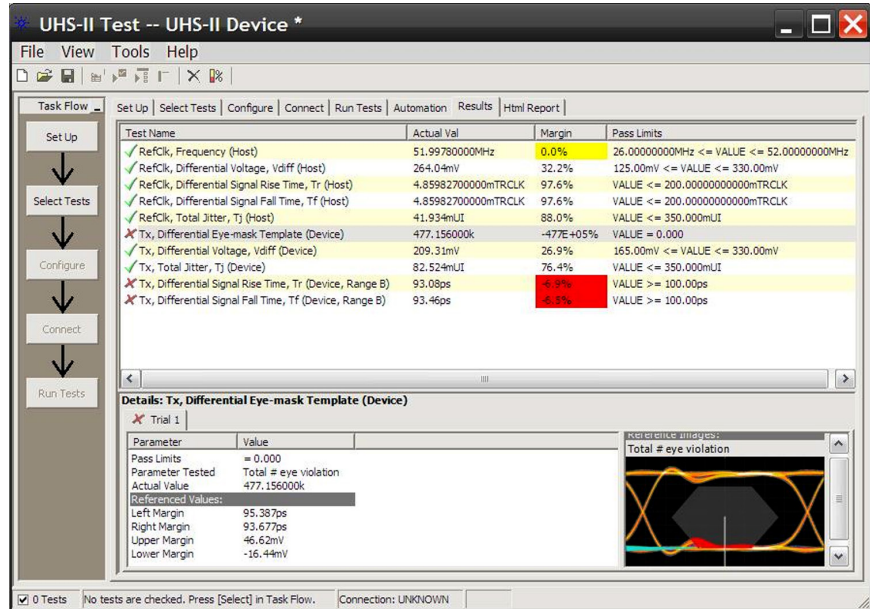


Figure 4. The SD UHS-II test application documents your test parameters, pass or fail status, test specification range, measured values and pass/fail margin.

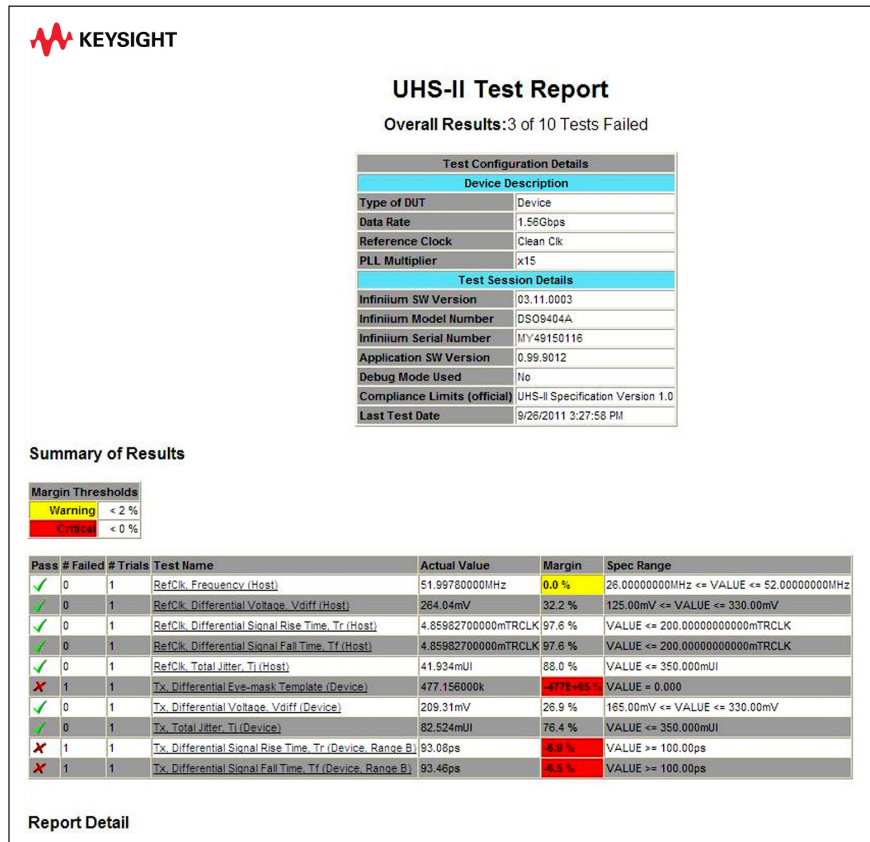


Figure 5. The test application generates a summary report where you can see your device's test results quickly and clearly. Details are available for each test including the test limits, test description and test results. In addition, the pass/fail margin is indicated to give you further insight.

Recommended oscilloscopes

The SD UHS-II card compliance software is compatible with Keysight Infiniium Series oscilloscopes with operating software revision 4.20 or higher. For oscilloscopes with earlier revisions, free upgrade software is available here:

www.keysight.com/find/scope-apps-sw.

Data rate	Minimum bandwidth	Minimum channels	Compatible oscilloscopes
Up to 1.56 GT/s	6 GHz	2	Infiniium 90000 and Z-Series

Ordering information

Software options

Application	License type		Infiniium Z-Series	Infiniium S-Series	Infiniium 90000 Series	Infiniium 9000 Series
SD UHS-II card compliance	Fixed	Factory-installed	–	–	–	–
		User-installed	N6461A-1FP	N6461B-1FP	N6461A-1NL	N6461B-1NL
	Floating	Transportable	N6461A-1TP	N6461B-1TP	N6461A-1TP ^{1,2}	N6461B-1TP ^{1,2}
		Server-based	N5435A-052			
EZJIT Plus jitter analysis software	Fixed	Factory-installed	N5400A-1FP	N5400B-1FP	Option 004	Option 004
		User-installed	N5400A-1FP	N5400B-1FP	N5400A-1NL	N5400B-1NL
	Floating	Transportable	N5400A-1TP	N5400B-1TP	N5400A-1TP ^{1,2}	N5400B-1TP ^{1,2}
		Server-based	N5435A-001			
Serial data analysis software (included in DSA model)	Fixed	Factory-installed	E2688A-1FP	N5384A-1FP	Option 003	Option 003
		User-installed	E2688A-1FP	N5384A-1FP	E2688A-1NL	N5384A-1NL
	Floating	Transportable	E2688A-1TP	N5384A-1TP	E2688A-1TP ^{1,2}	N5384A-1TP ^{1,2}
		Server-based	N5435A-003			

1. Requires software 5.00 and above.

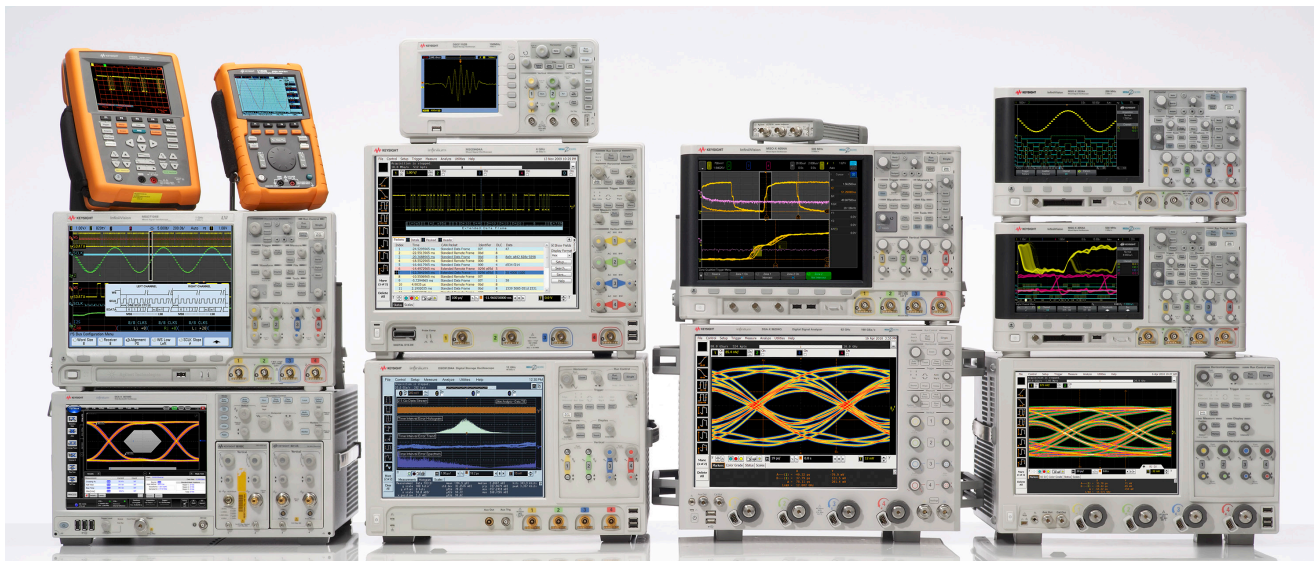
2. Software 4.30 or above requires Windows 7. N2753A Infiniium Windows XP to 7 OS upgrade kit (oscilloscope already has M890 motherboard). N2754A Infiniium Windows XP to 7 OS and M890 motherboard upgrade kit (oscilloscope without M890 motherboard). Verify the M890 motherboard using the procedure found in the Windows 7 upgrade kit data sheet, publication number 5990-8569EN.

Other hardware, probes and accessories

Model number	Description	Quantity
116xA	InfiniiMax II probe amplifier. 1168A 10 GHz InfiniiMax probe head is recommended for 1.56 Gb/s testing	2
E2695A	InfiniiMax differential SMA probe head	2
N4903B	High-performance serial BERT (as BIST generator to provide test patterns to device). Optional if BIST mode capability is available with other equipment or internal test mode	1
A9-UHS2	SD UHS-II test fixture kit. See ordering information here: www.astekcorp.com/test-fixtures/a9-uhs2	1

Related literature

Publication title	Publication type	Publication number
<i>Infiniium DSO/DSA 90000A Series Oscilloscopes and InfiniiMax Series Probes</i>	Data sheet	5989-7819A
<i>E2688A, N5384A High-Speed Serial Data Analysis and Clock Recovery Software for Infiniium Series Oscilloscopes</i>	Date sheet	5989-0108EN
<i>EZJIT and EZJIT Plus Jitter Analysis Software for Infiniium Series Oscilloscope</i>	Data sheet	5989-0109EN
<i>Keysight Oscilloscope Probe and Accessories</i>	Data sheet	5989-6162EN



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