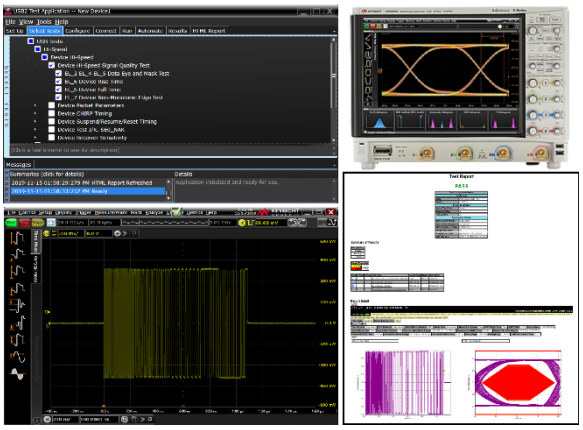
DATA SHEET

D9010USBC USB 2.0 Transmitter Compliance Test Application Software

The D9010USBC USB compliance test software for Infiniium oscilloscopes gives you a fast and reliable way to verify USB electrical specification compliance for your USB 2.0 devices, hosts and hubs. The software executes the official USB-IF software, USBET20 embedded in the oscilloscope.



Easy-to-use interface for fast setup, configuration and automated test Recognized by the USB-IF for USB compliance testing – Award-winning Infiniium ease of use – Test fixtures for USB 1.1 (low- and full-speed), USB 2.0 (high-speed)

With USB compliance test software, you can take the Infiniium oscilloscope you use for everyday debugging and use it to verify USB electrical parameters with the same testing scripts the USB-IF created for official compliance testing at designated workshops. The USB compliance test software has a new setup wizard that allows you to quickly and easily test all facets of electrical compliance of your device, host or hub.

Features

- Setup wizard for quick setup, configuration and test selection
- Comprehensive High Speed, Full Speed and Low Speed Signal tests
- USB V-Bus Inrush and Current tests
- USB V-Bus Droop, Drop and Backdrive Voltage tests
- Incorporates USB-IF USBET Electrical Test Tool
- Automated scope measurement setup
- Test results report generation
- Pass/fail margin analysis
- Test framework that reports multi trial results with full array of statistics for each measurement with worst case measurement result.

KEYSIGHT TECHNOLOGIES

Comprehensive Test Coverage

The D9010USBC USB compliance test application automatically configures the oscilloscope for each test and provides results which includes margin and statistical analysis. The test coverage includes electrical, timing and eye diagram tests as stated in the USB 2.0 specification and test specification. The signal is optimized for most accurate test result and measurement repeatability.

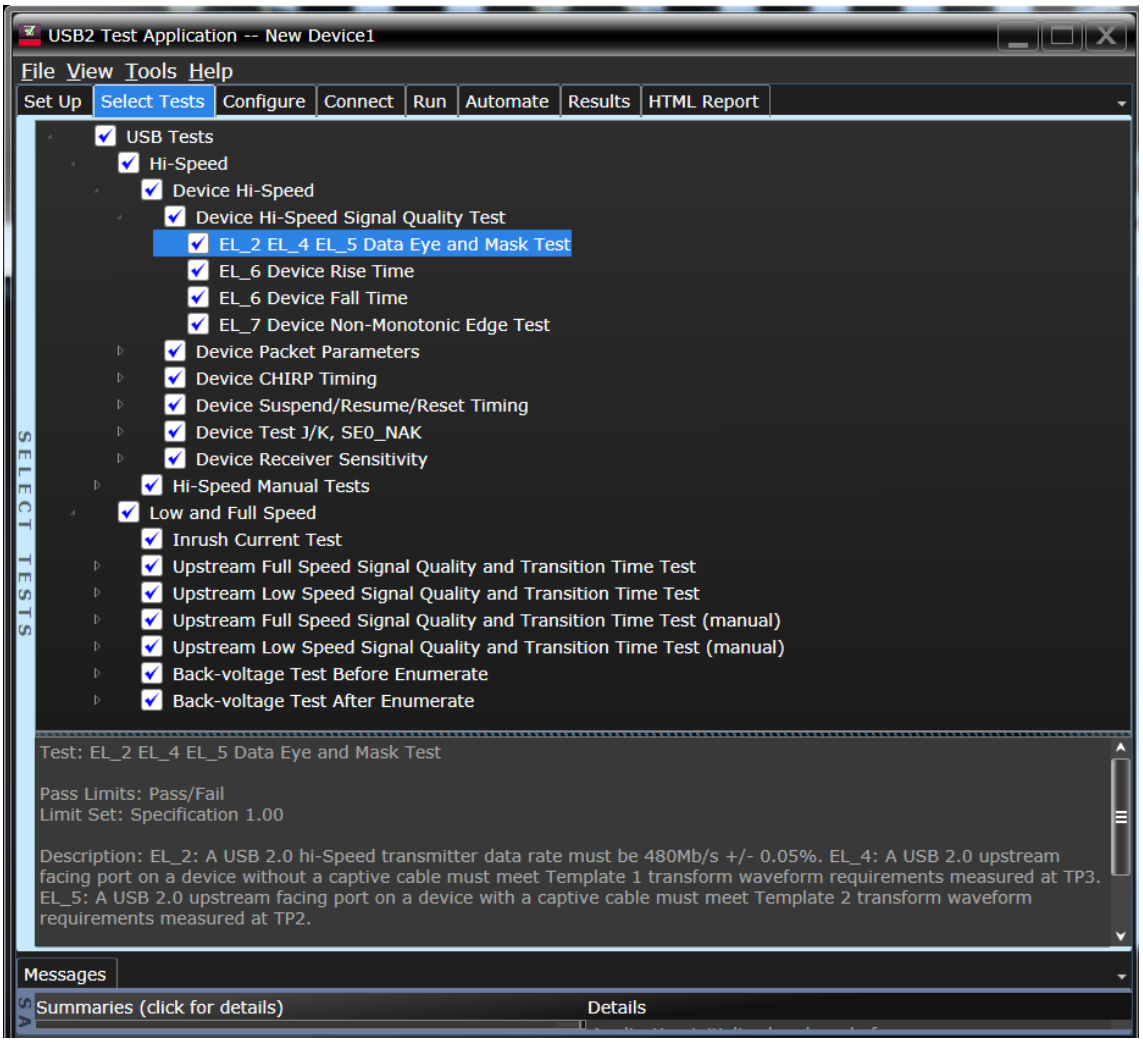


Figure 1. USB test selection setup screen

Easy Test Definition

The test application enhances the usability of Keysight Infiniium oscilloscopes for testing USB products. 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 select an individual test. The user interface is designed to minimize unnecessary reconnections, which will help save test time and minimize potential operator error. You can save the tests and configurations as project files and recall them for quick testing and review previous results.

Configurability and Guided Connection

The USB compliance test application provides flexibility in your test setup. Once you have configured the tests, the connection page will display the connection diagram for the test you have selected.

You can also specify the number of test trials and only stop running selected tests when the stop condition is met. The application will save the worst-case test result to help you track down the anomalies in your signals.

The configuration menu allow customized test setups specific to your product.

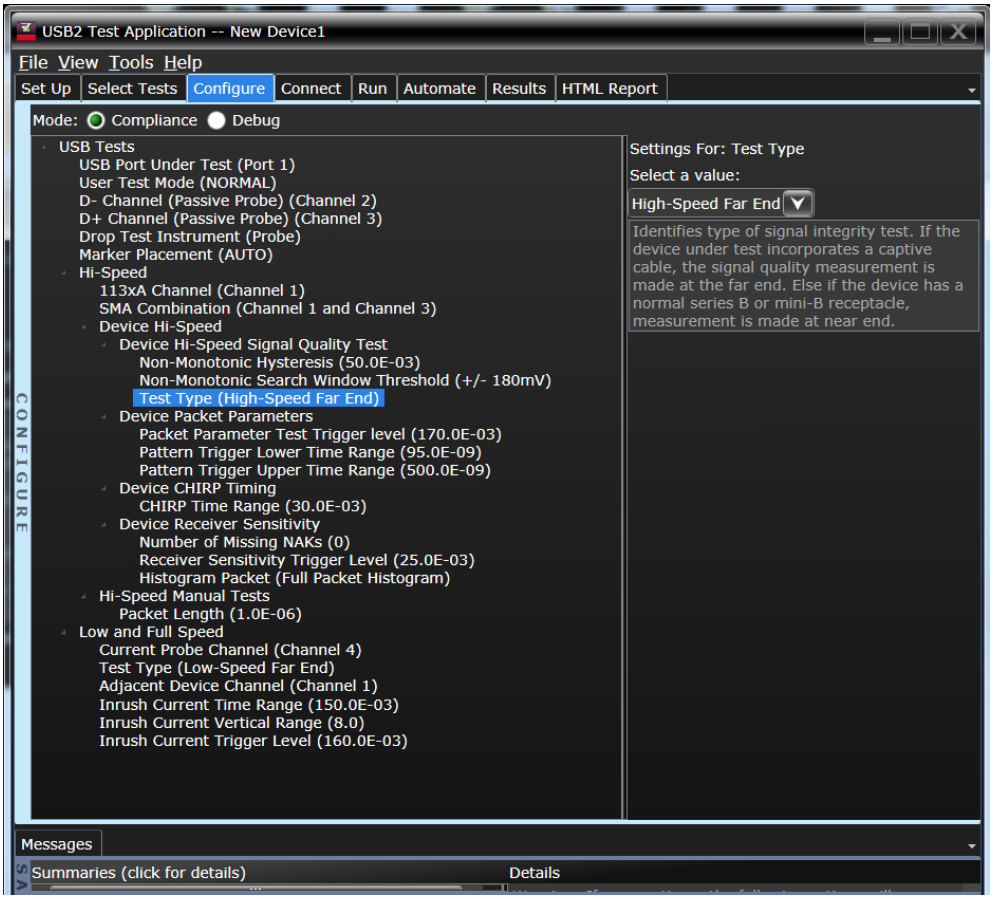
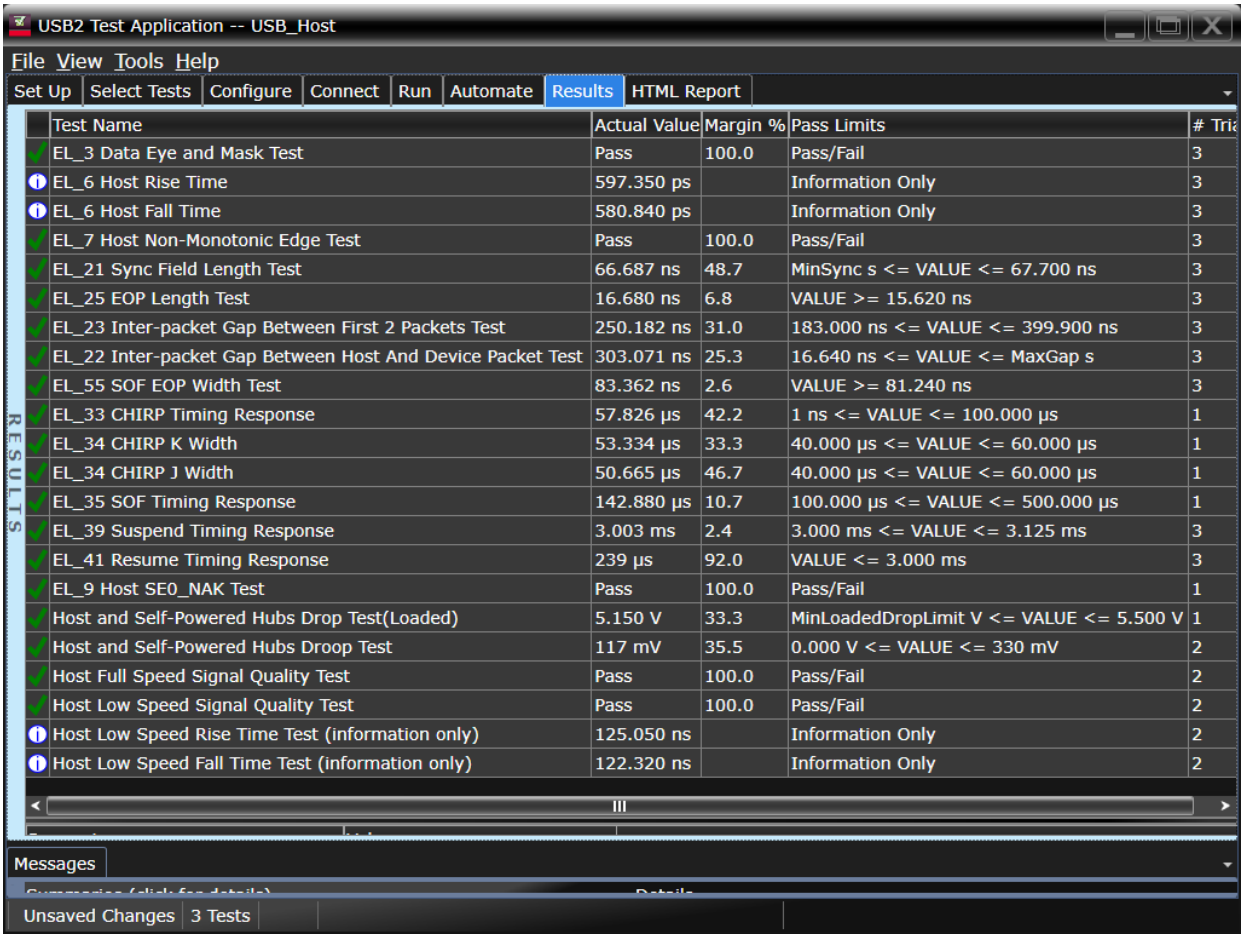


Figure 2. Configuration menu allows for flexible and customized test conditions

Comprehensive Result Analysis

In addition to providing you with measurement results, the compliance test application reports how close your test results are to the specified test limit. You can specify the level at which warnings are to be issued. You are provided a full array of statistics for each measurement.



Test Name	Actual Value	Margin %	Pass Limits	# Tri
EL_3 Data Eye and Mask Test	Pass	100.0	Pass/Fail	3
EL_6 Host Rise Time	597.350 ps		Information Only	3
EL_6 Host Fall Time	580.840 ps		Information Only	3
EL_7 Host Non-Monotonic Edge Test	Pass	100.0	Pass/Fail	3
EL_21 Sync Field Length Test	66.687 ns	48.7	MinSync s <= VALUE <= 67.700 ns	3
EL_25 EOP Length Test	16.680 ns	6.8	VALUE >= 15.620 ns	3
EL_23 Inter-packet Gap Between First 2 Packets Test	250.182 ns	31.0	183.000 ns <= VALUE <= 399.900 ns	3
EL_22 Inter-packet Gap Between Host And Device Packet Test	303.071 ns	25.3	16.640 ns <= VALUE <= MaxGap s	3
EL_55 SOF EOP Width Test	83.362 ns	2.6	VALUE >= 81.240 ns	3
EL_33 CHIRP Timing Response	57.826 µs	42.2	1 ns <= VALUE <= 100.000 µs	1
EL_34 CHIRP K Width	53.334 µs	33.3	40.000 µs <= VALUE <= 60.000 µs	1
EL_34 CHIRP J Width	50.665 µs	46.7	40.000 µs <= VALUE <= 60.000 µs	1
EL_35 SOF Timing Response	142.880 µs	10.7	100.000 µs <= VALUE <= 500.000 µs	1
EL_39 Suspend Timing Response	3.003 ms	2.4	3.000 ms <= VALUE <= 3.125 ms	3
EL_41 Resume Timing Response	239 µs	92.0	VALUE <= 3.000 ms	3
EL_9 Host SE0_NAK Test	Pass	100.0	Pass/Fail	1
Host and Self-Powered Hubs Drop Test(Loaded)	5.150 V	33.3	MinLoadedDropLimit V <= VALUE <= 5.500 V	1
Host and Self-Powered Hubs Droop Test	117 mV	35.5	0.000 V <= VALUE <= 330 mV	2
Host Full Speed Signal Quality Test	Pass	100.0	Pass/Fail	2
Host Low Speed Signal Quality Test	Pass	100.0	Pass/Fail	2
Host Low Speed Rise Time Test (information only)	125.050 ns		Information Only	2
Host Low Speed Fall Time Test (information only)	122.320 ns		Information Only	2

Figure 3. The USB test application documents your test parameters, pass or fail status, test limits and measured values and margin

Thorough Performance Reporting

The USB compliance test application generates HTML reports that captures the performance, status and margins of your device under test. It also captures screenshots of critical measurements of your reference and documentation. This report is suitable for printing and sharing with your test vendors, customers and suppliers.

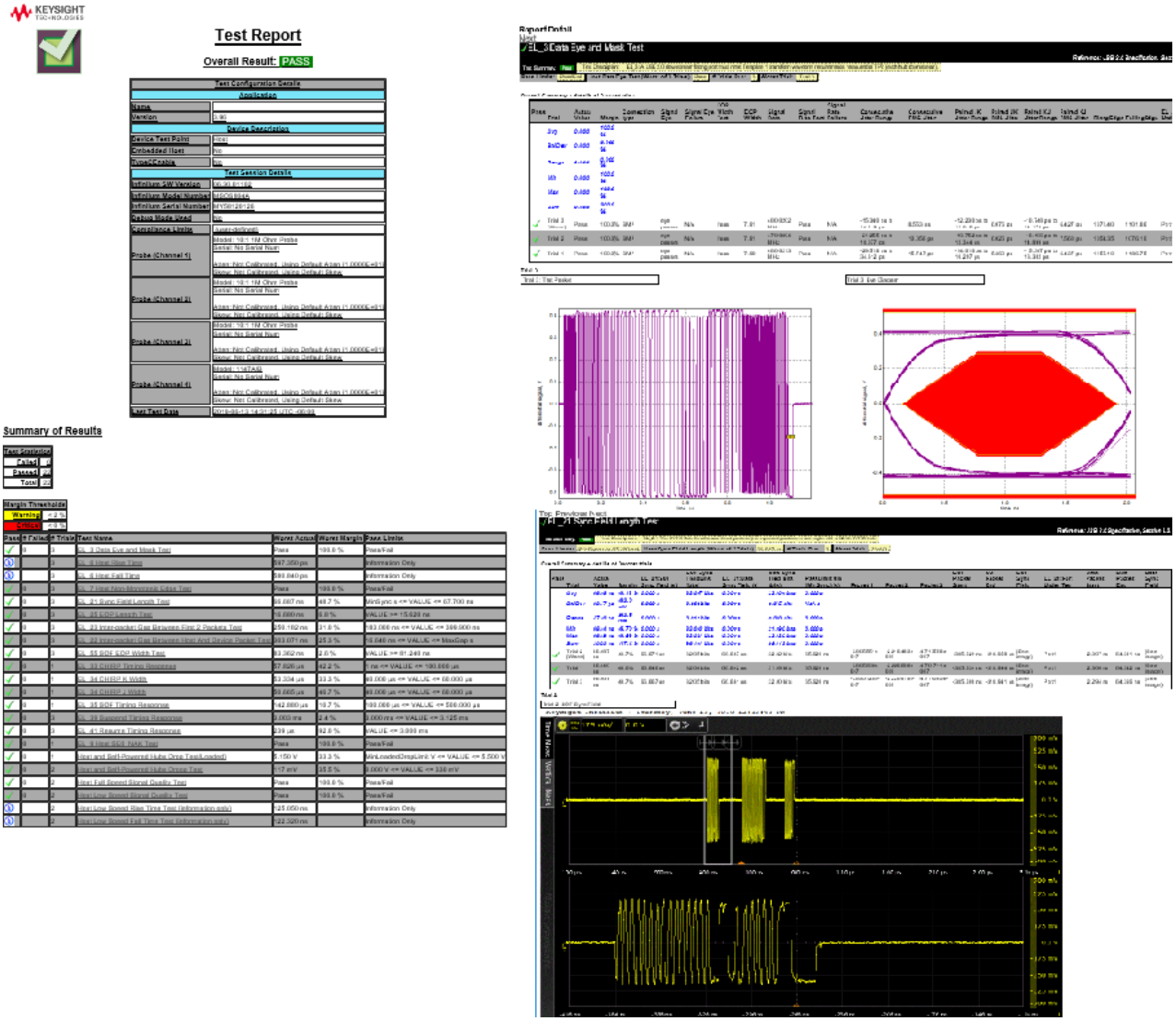


Figure 5. HTML Summary and Detailed Output

Automation

You can completely automate execution of your application's tests and Add-Ins from a separate PC using the included N5452A Remote Interface feature (download free toolkit from https://www.keysight.com/en/pd-1439856/remote-programming-interface?cc=US&lc=eng).

You can even create and execute automation scripts right inside the application using a convenient built-in client. The commands required for each task may be created using a command wizard or from "remote hints" accessible throughout the user interface. Using automation, you can accelerate complex testing scenarios and even automate manual tasks such as: – Opening projects, executing tests and saving results – Executing tests repeatedly while changing configurations – Sending commands to external instruments – Executing tests out of order.

Combine the power of built-in automation and extensibility to transform your application into a complete test suite executive.

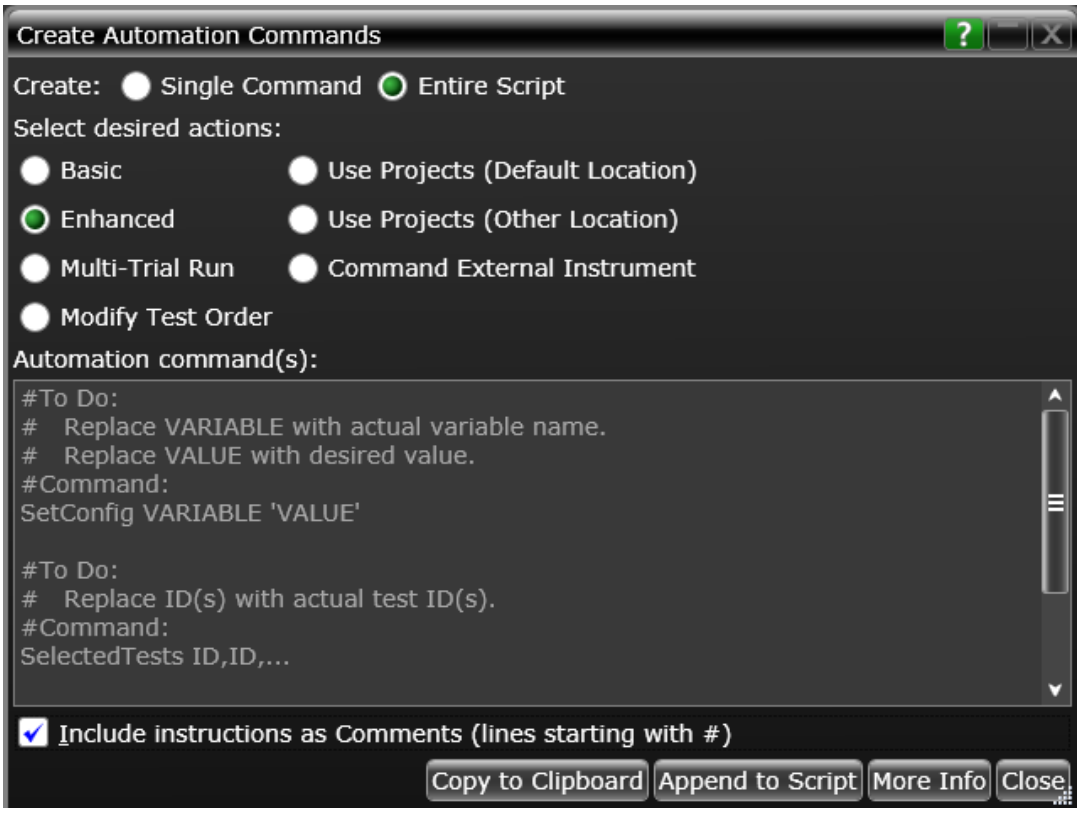


Figure 6. Automation setup screen

Recommended Oscilloscope

The D9010USBC USB software is compatible with the Infiniium series oscilloscopes with operating software revision of 6.40 or higher.

Data Rate	Minimum Bandwidth	Minimum Channel	Description
USB Low speed Full speed High speed	2.5 GHz bandwidth or higher is recommended	4	S-series V- series Z- series UXR oscilloscopes

Ordering Information

Model Number	Description	Note
D9010USBC	USB Compliance Test Software	Required
D9010DMBA or D9020ASIA	De-embedding	Recommended
D9020ASIA	Advanced Signal Integrity Software (EQ, InfiniiSim Advanced, Crosstalk) includes de-embedding capabilities	Recommended
D9010JITA or D9020JITA	Jitter, Vertical and Phase Noise Analysis Software	Required

Flexible Software Licensing and KeysightCare Software Support Subscriptions

Keysight offers a variety of flexible licensing options to fit your needs and budget. Choose your license term, license type, and KeysightCare software support subscription.

License terms

Perpetual – Perpetual licenses can be used indefinitely.

Time-based – Time-based licenses can be used through the term of the license only (6, 12, 24, or 36 months).

License types

Node-locked – License can be used on one specified instrument/computer.
Transportable – License can be used on one instrument/computer at a time but may be transferred to another using Keysight Software Manager (internet connection required).
USB Portable – License can be used on one instrument/computer at a time but may be transferred to another using a certified USB dongle (available for additional purchase with Keysight part number E8900-D10).
Floating (single site) – Networked instruments/computers can access a license from a server one at a time. Multiple licenses can be purchased for concurrent usage.

KeysightCare software support subscriptions

Perpetual licenses are sold with a 12 (default), 24, 36, or 60-month software support subscription. Support subscriptions can be renewed for a fee after that.

Time-based licenses include a software support subscription through the term of the license.

KeysightCare Software Support Subscription provides peace of mind amid evolving technologies.

- Ensure your software is always current with the latest enhancements and measurement standards.
- Gain additional insight into your problems with live access to our team of technical experts.
- Stay on schedule with fast turnaround times and priority escalations when you need support.

Selecting your license:

Step 1. Choose your software product (eg. D9010USBC).
Step 2. Choose your license term: Perpetual or time-based.
Step 3. Choose your license type: Node-locked, transportable, USB portable, or floating.
Step 4. Depending on the license term, choose your support subscription duration.

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