

N6474A ONFI Compliance Test Software

The Keysight Technologies, Inc. N6474A ONFI compliance test application provides a fast and easy way to test, debug and characterize your ONFI designs. The tests performed by the software are based on the ONFI 4.1 Specification.

The ONFI (Open NAND Flash Interface) is a workgroup that consists of companies that design and enable NAND Flash memory. The standard creates a specification that allows for easy integration of NAND flash components into designs. ONFI offers higher speeds at 1066 MT/s with bidirectional source-synchronous DQS (data strobe) and scalable I/O interface.

Features

The ONFI compliance test application offers several features to simplify the validation of your designs.

- Intuitive setup wizard for quick test setup, configuration and test.
- Comprehensive test coverage of NVDDR2 and NVDDR3 electrical, timing, eye diagram and jitter tests as specified in the ONFI 4.1 specification.
- Offline testing capability with saved waveform files from the oscilloscope or ADS simulation tool.
- Easy interface to export the test result to the N8844A Data Analytics data repository.

Comprehensive Test Coverage

With the ONFI compliance test application, you can use the same oscilloscope you use for everyday debugging to perform automated testing and margin analysis based on the ONFI 4.1 specifications. 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. The challenges for R&D engineers in validating their ONFI devices are connecting to the target device, configuring the oscilloscope to make the measurements and analyzing the test results.

The ONFI compliance test application automates the measurements as specified in the specification, saving test time and design cost.



Easy Test Definition

The test application enhances the usability of Keysight Infiniium Oscilloscopes for testing ONFI 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 then select a category of tests or specify an individual test. 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. You can also run the compliance test with saved waveform files from the oscilloscope or the ADS simulation tool on your PC, freeing the oscilloscope for other data acquisition purposes.

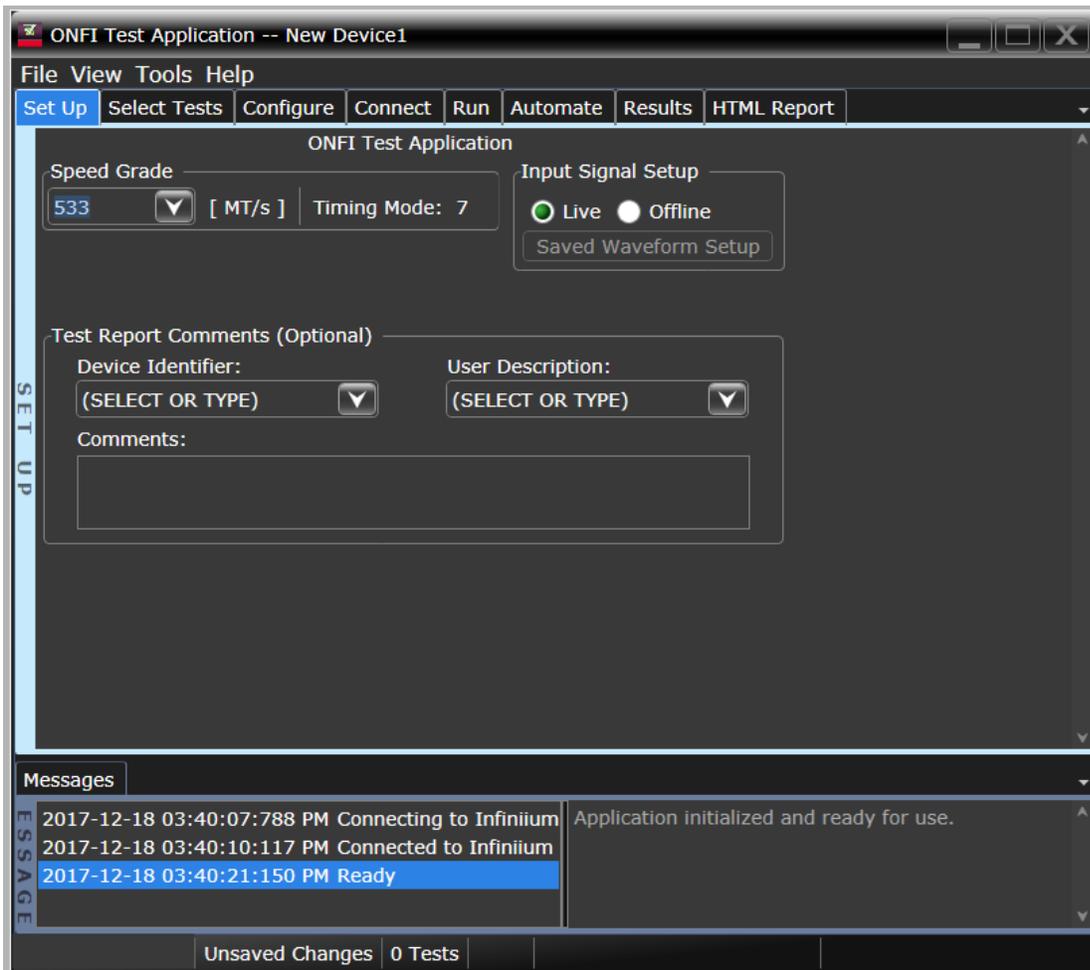


Figure 1 - ONFI application test setup screen. Select the speed grade of your device.

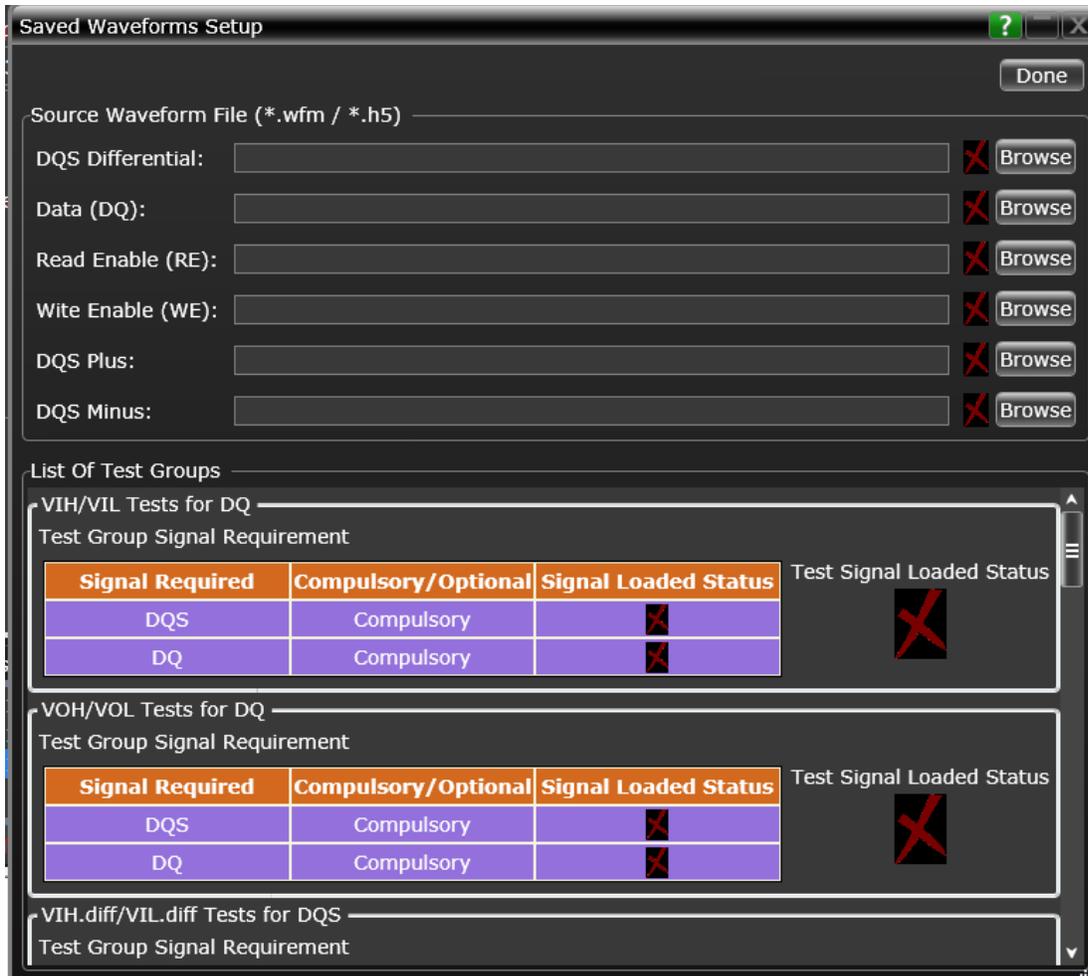


Figure 2 - Offline test setup. Support waveform files in .wfm or .h5 format.

Configurability and Guided Connection

The ONFI compliance test application provides flexibility in your test setup. The application lets you define controls for critical test parameters such as voltage threshold values, number of waveforms used for analysis and customizable violation settings. 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 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.

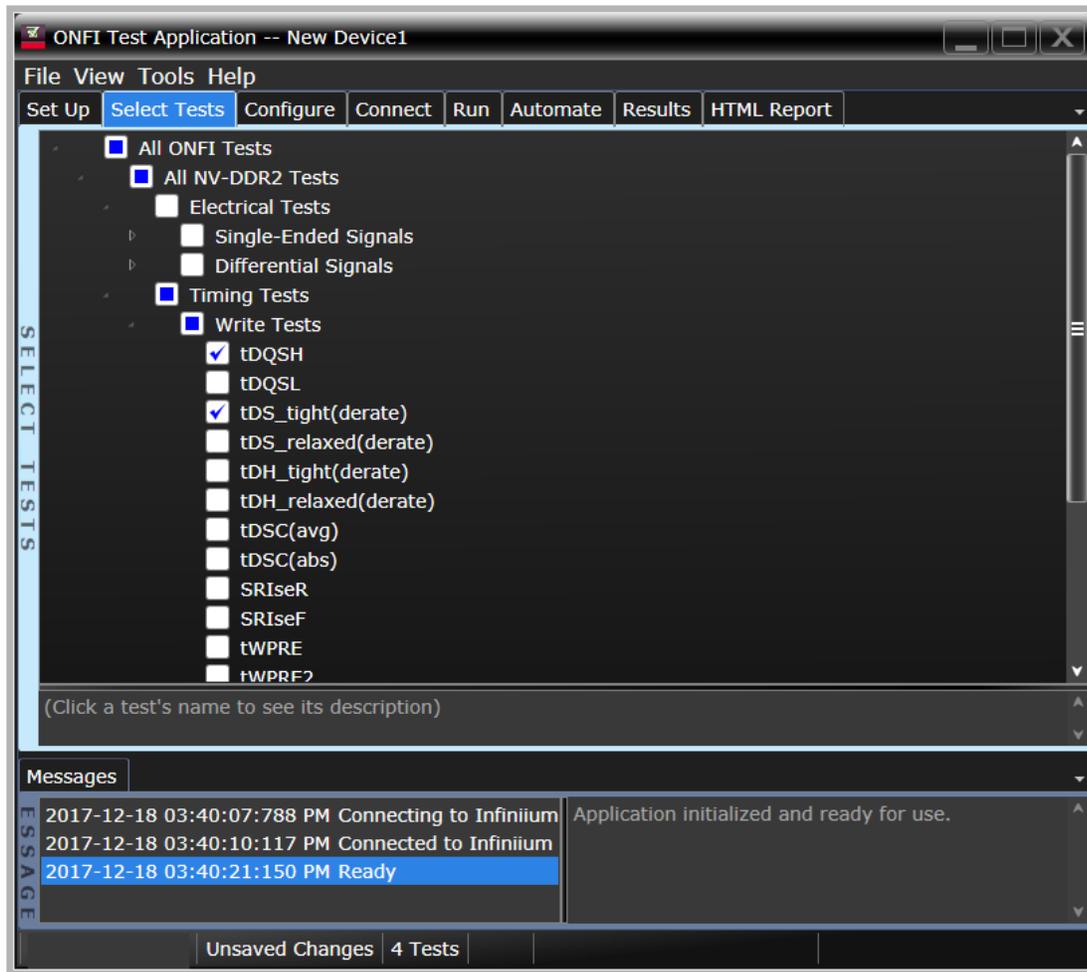


Figure 3 - The Select Tests tab list all the tests available in your setup. You can easily setup the individual test or groups of tests.

Comprehensive Results Analysis

In addition to providing you with measurement results, the ONFI 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.

The N8844A-6FP data analytics web service software provides an interface that allows the user to export their test result directly to the data repository server via a URL. If the test results are deemed valid, the user would export the test result to the data repository via the N8844A Data Analytics Web Service software. The user can then retrieve the aggregated measurement to be viewed using the Visualization Tool included in the N8844A software. Both the results viewer tools provide graphical plots in histogram or line mode that describes the measurements in different kind of properties.

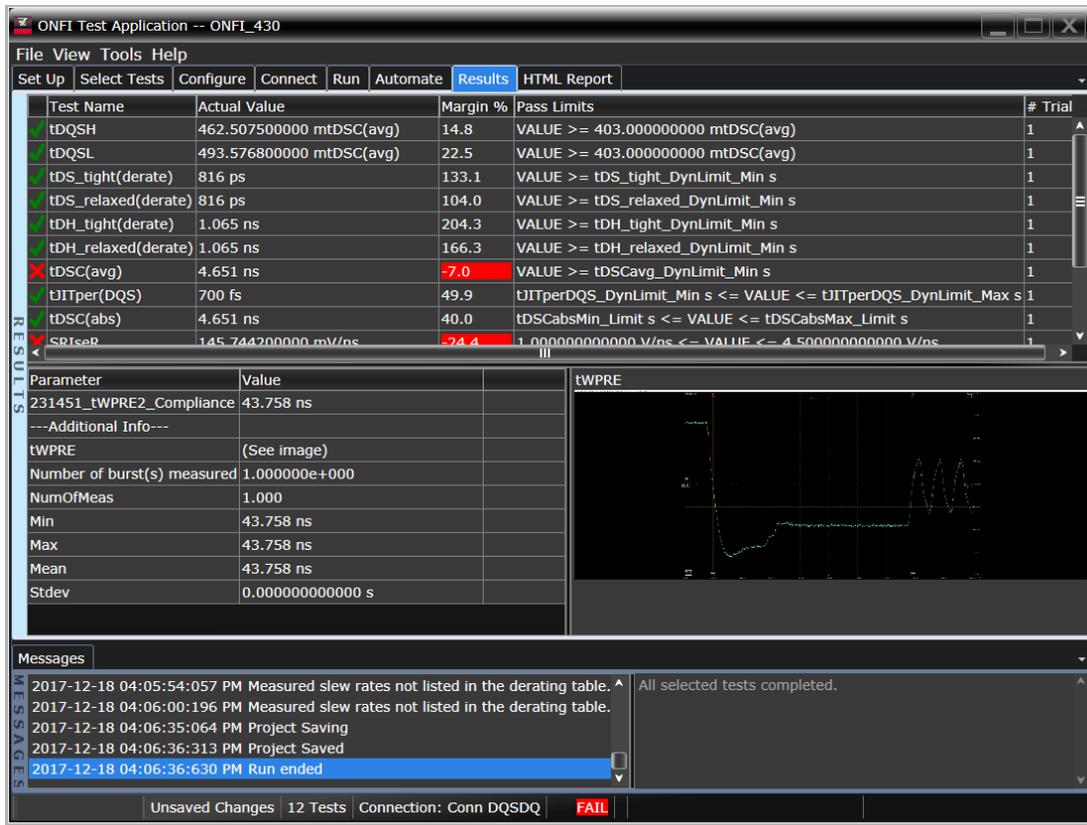
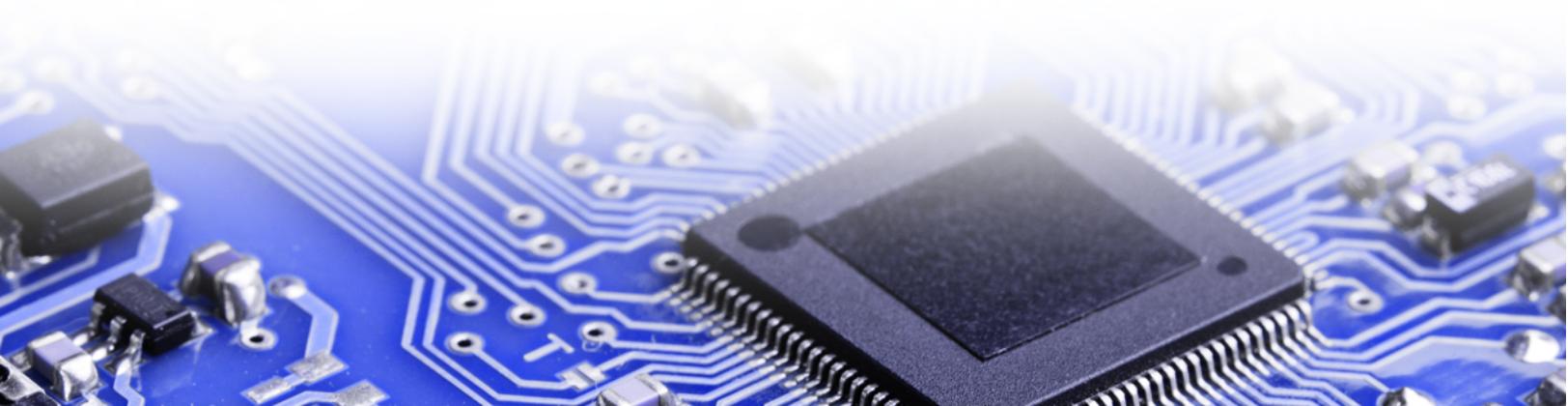


Figure 4 - The ONFI test application documents your test parameters, pass or fail status, test specification range, measured values and pass/fail margin.

Thorough Performance Reporting

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



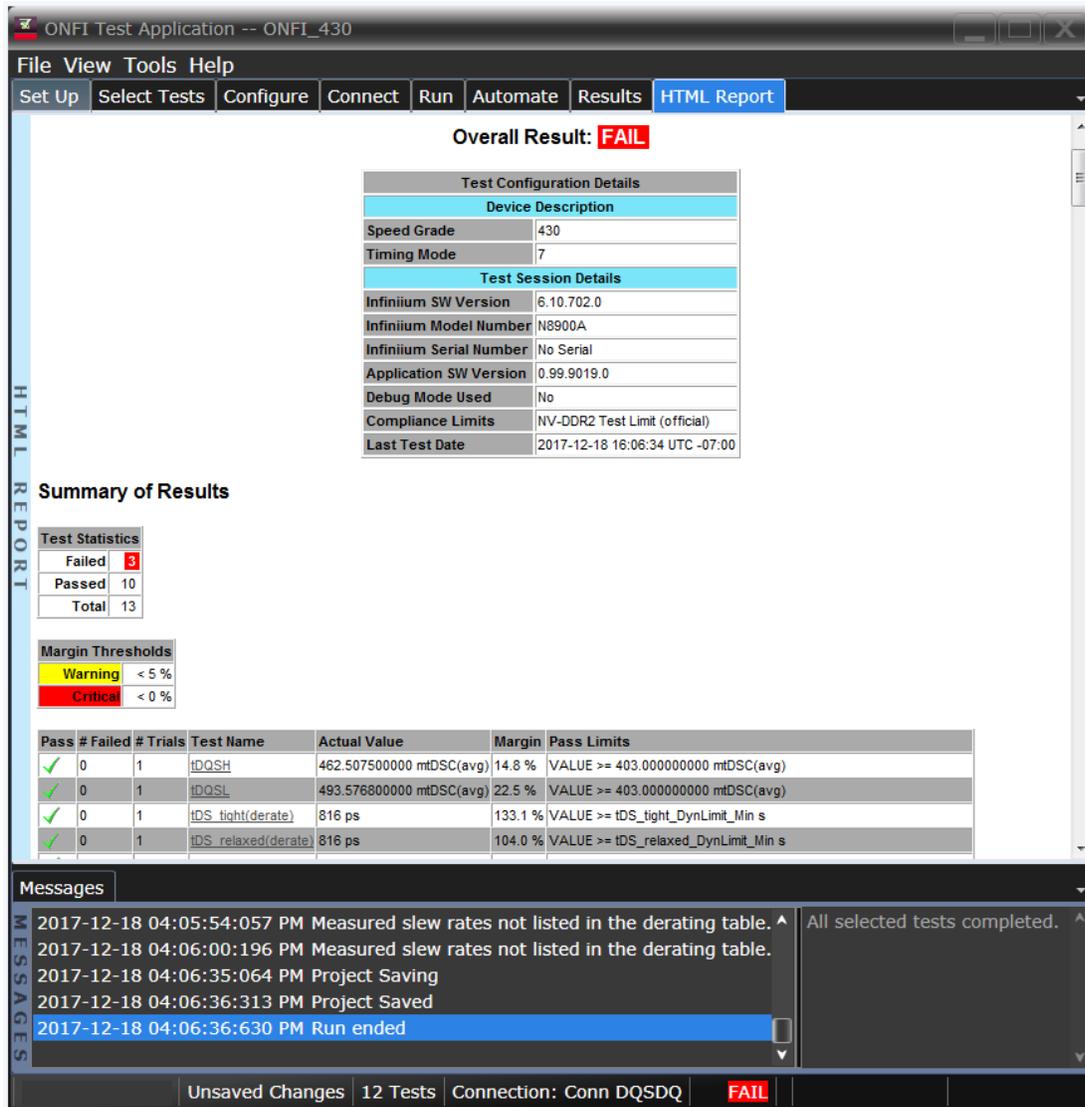


Figure 5 - The ONFI test application generates a summary report for quick results viewing. The report includes details such as test limits, test description and test results.

Extensibility

You may add additional custom tests or steps to your application using the User Defined Application (UDA) development tool (www.keysight.com/find/uda). Use UDA to develop functional “Add-ins” that you can plug into your application.

Add-ins may be designed as:

- Complete custom tests (with configuration variables and connection prompts).
- Any custom steps such as pre or post-processing scripts, external instrument control and your own device control.

Automation

You can completely automate the execution of your application's tests and Add-ins from a separate PC using the included N5452A Remote Interface feature (download the free toolkit from: www.keysight.com/find/scope-apps-sw). 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:

- Interact with your device controller to place it into desired states or test modes before test execution.
- Configure additional instruments used in your test suite such as a pattern generator and probe switch matrix.
- Export data generated by your tests and post-process it using your favorite environment, such as MATLAB, Python, LabVIEW, C, C++, Visual Basic, etc.
- Sequence or repeat the tests and "Add-in" custom steps execution in any order for complete test coverage of the test plan.

Recommended Oscilloscopes

The N6474A ONFI software is compatible with the Infiniium Series Oscilloscopes with operating software revision of 6.10 or higher. The free software upgrade is available at www.keysight.com/find/scope-apps-sw.

Data Rate	Minimum Bandwidth	Minimum Channels	Description
Up to 1066 MT/s	4 GHz	2	Infiniium 90000A Series, S-Series, V-Series and Z-Series oscilloscopes

Ordering Information

Application	License Type		Infiniium Z, V-Series	Infiniium S-Series
ONFI- NVDDR2 compliance	Fixed	Factory-Installed	N6474A-1FP	N6474A-1FP
		User-Installed	N6474A-1FP	N6474A-1FP
	Floating	Transported	N6474A-1TP	N6474A-1TP
		Server Based	N5435A-132	
Serial Data Analysis software (included in DSA model)	Fixed	Factory-Installed	E2688A-1FP	N5384A-1FP
		User-Installed	E2688A-1FP	N5384A-1FP
	Floating	Transported	E2688A-1TP	N5384A-1TP
		Server Based	N5435A-003	
Data Analytics Web Service Software	Fixed	User-Installed	N8844A-6FP	N8844A-6FP
	Floating	Transportable	N8844A-6TP	N8844A-6TP

Learn more at: www.keysight.com

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