

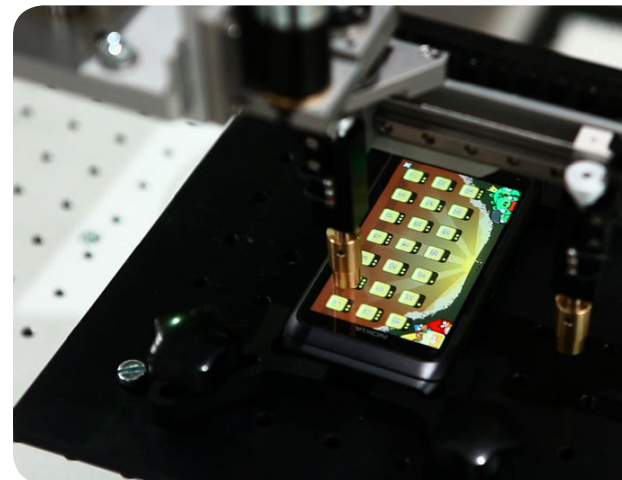
# OptoFidelity

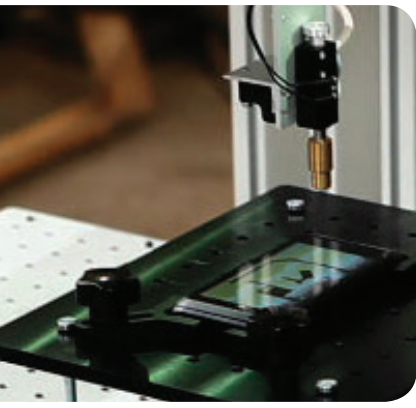
## Touch Panel Performance Test Systems

*Speed up your time to market with OptoFidelity test systems*

### *With OptoFidelity Touch Panel Performance Test Systems you can:*

- Improve the quality of your tests
- Accelerate your R&D and testing periods
- Create benchmark and competitor analysis easily
- Run 24/7 test automation and shorten your testing period
- Minimize testing efforts and get reliable and repeatable results
- Test new kind of control and activation methods
- Measure devices performance without modifications or connection to DUT





***OptoFidelity Touch Panel Performance Test Systems are automated turn-key test systems for device or touch panel/display performance testing.***

***OptoFidelity Touch Panel Performance Test System can also be used for testing touch panel performance from a fully assembled product. This allows testing touch performance in the final hardware and software configuration.***

## Benefits of Touch Panel Performance Test Systems:

- Same tests are possible to execute can be executed for both module level (touch sensor + touch controller) and device level (phones, tablets, computers with touch screen)
- System covers measurements and analyses for accuracy, linearity, delay and hovering
- New test cases can be implemented even during user training and possibility to use own test cases
- Includes data visualization (pass/fail) and reporting
- Test process is fully automatic and the change of activation is also done automatically
- No operator is needed during the test
- System contains SQL database for test result analysis
- System is suitable for testing for Windows 8 requirements
- Touch-controller drivers are easy to insert
- Supports inclined products
- Analyses are based on The Windows Hardware Certification Kit (HCK) specifications

## Touch Panel Performance Test Systems versions:

- **OF-TPPT10-00 OptoFidelity One-finger Desktop robot - Touch Panel Test System for Device Level**
- **OF-TPPT20-00 OptoFidelity Multifinger Desktop robot - Touch Panel Test System for Device Level**
- **OF-TPPT30-00 OptoFidelity Multifinger Desktop robot - Touch Panel Test System for Touch Panels/Modules**
- **OF-TPPT40-00 OptoFidelity Multifinger Desktop robot - Touch Panel Test System for Touch Panel/Device Level**

### Analysis software

A key feature of the system is the software package that executes the testing process accurately and consistently. All touch sensor activation is done automatically, including taps, swipes, zooms and other gestures. System changes activation methods (such as number of activation fingers) automatically, so the complete test process can be executed without operator interaction.

All the measured data is stored on a database for further analysis. The system produces a thorough result report and visualization after the test execution.

The interactive report shows the measured values as well as the requirement limits, and provides pass/fail criteria for each test. Report is HTML-based, and can also be accessed over the network.

The system can be used either to test bare touch sensors or the touch performance of touch-enabled devices, such as smartphones and tablets.

For convenience, test process is divided into separate sections for the separate features that are tested. Different sections exist for single-finger and multifinger testing, as well as testing for coordinate accuracy,

touch latency and gestures.

Test software is highly configurable via test parameters or with optional test application development tools. It is easy to perform a quick test with a small number of test points, as well as extremely thorough test process with high test point count.

### Bare sensor testing

Test system includes OptoFidelity PIT for high accuracy measurements of touch latency directly from the touch controller chip interrupt.

I2C or SPI communication with the controller chip can be freely customized via driver software that can be changed on the fly, so testing panels with virtually any controller chip can be supported.

### Product-level testing

OptoFidelity Touch Panel Performance Test System can also be used for testing touch panel performance from a fully assembled product. This allows the testing of touch performance in the final hardware and software configuration.

Base system supports testing of products with:

- Windows XP, Vista, 7, 8
- Windows phone 7 and 8
- Android
- iOS and OS X
- Ubuntu and other Linux based operating systems

### Windows8 touch requirements testing

The test system software implementation supports touch digitizer performance tests that are specified in "Windows 8 Hardware Requirements".

### Accurate and convenient setup

OptoFidelity Touch Panel Performance Tester includes a convenient and accurate, camera based positioning feature for defining the location of the Device Under Test (DUT). The test system user will be able to set up a test with a new DUT with less time, less possibility of error, and more accuracy. In practice, the positioning accuracy of the DUT is about twice as good when using OptoFidelity Positioning Tool than when doing it manually.

## System features:

### **OF-TPPT10-00 OptoFidelity One-finger Desktop robot** - Touch Panel Test System for Device Level

Test system consists of accurate robotic movements combined with touch sensor actuation for one finger.

#### **System hardware, including:**

- OptoFidelity Desktop Robot
- Measurement PC
- Camera for product positioning
- Generic DUT holder jig
- WLAN connectivity hardware
- Adjustable DUT adapter jig

#### **System software, including:**

- OptoFidelity TnT software suite
- OptoFidelity PPT test application script
- OptoFidelity Result analysis software

#### **Documentation, including:**

- System user manual
- Application script user guide
- Result analysis software user manual

### **OF-TPPT20-00 OptoFidelity Multifinger Desktop robot** - Touch Panel Test System for Device Level

Test system consists of accurate robotic movements combined with touch sensor actuation for one-, two- and multiple fingers.

#### **System hardware, including:**

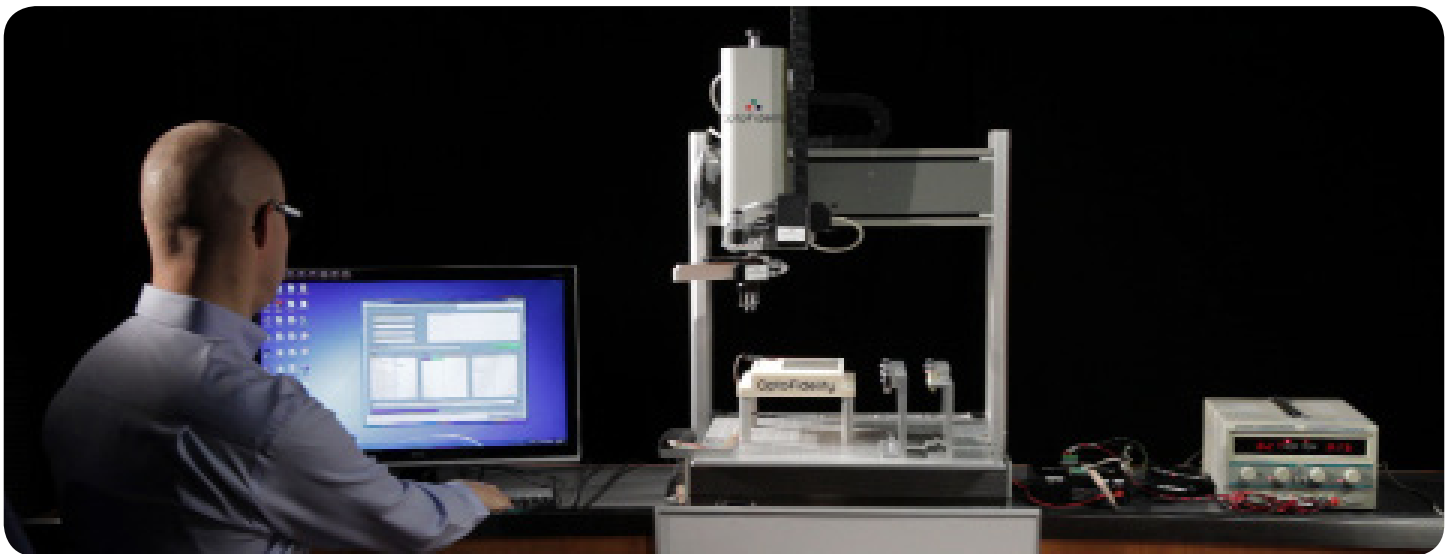
- OptoFidelity Desktop Robot
- 400 x 400 mm test area
- Measurement PC
- Two-finger actuator
- Automatic finger changer for Multifinger tools
- Camera assisted product positioning
- OptoFidelity PIT Timing Measurement instrument
- DC Power Supply
- Generic DUT holder jig

#### **System software, including:**

- OptoFidelity TnT software suite
- OptoFidelity PPT test application script
- OptoFidelity Result analysis software

#### **Documentation, including:**

- System user manual
- Application script user guide
- Result analysis software user manual



### **OF-TPPT30-00 OptoFidelity Multifinger Desktop robot** - Touch Panel Test System for Touch Panels/Modules

Test system consists of accurate robotic movements combined with touch sensor actuation for one-, two- and multiple fingers.

#### **System hardware, including:**

- OptoFidelity Desktop Robot
- 400 x 400 mm test area
- Measurement PC
- Two-finger actuator
- Automatic finger changer for Multifinger tools
- Camera assisted product positioning
- DC Power Supply
- Generic DUT holder jig

#### **System software, including:**

- OptoFidelity TnT software suite
- OptoFidelity PPT test application script
- OptoFidelity Result analysis software

#### **Documentation, including:**

- System user manual
- Application script user guide
- Result analysis software user manual

### **OF-TPPT40-00 OptoFidelity Multifinger Desktop robot** - Touch Panel Test System for Touch Panel/Device Level

OptoFidelity Touch Sensor Performance Test System is a turn-key solution for measuring key performance metrics from a device touch panel automatically. Test system consists of accurate robotic movements combined with touch sensor actuation for one finger.

#### **System Hardware, including:**

- OptoFidelity Desktop Robot
- Measurement PC
- Camera for product positioning
- Generic DUT holder jig
- WLAN connectivity hardware
- Adjustable DUT adapter jig

#### **System software, including:**

- OptoFidelity TnT software suite
- OptoFidelity PPT test application script
- OptoFidelity Result analysis software

#### **Documentation, including:**

- System user manual
- Application script user guide
- Result analysis software user manual

## OptoFidelity TP test script for touch performance analysis

Test includes; timing measurement, touch accuracy, linearity measurements etc. One finger, two finger and multifinger options are available. The system features the test items from Windows Hardware Requirements Specification for touch devices:

### TouchPointMinimum

- DigitizerJitter
- ExtralInputBehavior
- HighResolutionTimestamp
- InputSeparation
- NoiseSuppression
- PhysicalDimension
- PhysicalInputPosition
- PowerStates
- ReportingRate
- ResponseLatency
- TouchResolution

Robot platform, activation methods and other Touch&Test platform components can be selected based on the needs of the test application.

As the system features convenient camera-based positioning tools that adjust for DUT alignment, the test application can be built using DUT coordinate system.

### Most common performance tests implemented

- Windows 8 touch tests cases implemented
- Implementing new test cases is easy

### Fully automated tests

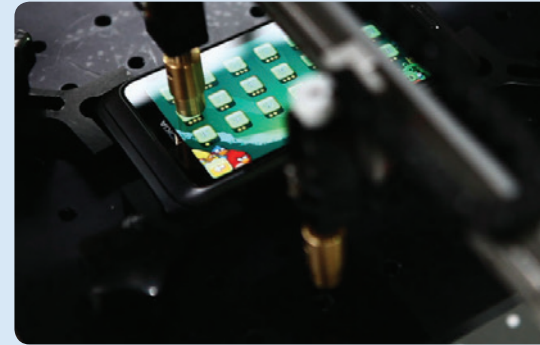
- Operator can start the test and go do something else while the systems will carry out the test

### Synchronized measurements

- Robot arm • DUT • Measurement devices

### Gestures

- Tap • Scroll • Pinch • Spread



## Script-based test development

OptoFidelity TPPT test scripts are provided in a source-code format, so they can be easily modified for any special test purposes. System delivery also includes operator training, as well as development training for customer's own engineers to be able to implement new test cases with the OptoFidelity Touch&Test SW suite and tools. Test application software is implemented in Python, which is an easy to learn and widely used software tool ([www.python.org](http://www.python.org)).

## Win8 specific touch panel HW test script

### TouchPointMinimum

- 5TouchPointMinimum
- DigitizerJitter
- ExtralInputBehavior
- HighResolutionTimestamp
- InputSeparation
- NoiseSuppression
- PhysicalDimension
- PhysicalInputPosition
- PowerStates
- ReportingRate
- ResponseLatency
- TouchResolution

## About OptoFidelity

OptoFidelity is specialized in test automation. Our test selection is versatile from turn-key test systems to custom-designed solutions. OptoFidelity offers also several test instruments which can be used separately or for building a complete, fully automatic tailor made test system. Most of our products are scalable and can also be integrated to customers own test automation system or our partners software testing tools.

Our way of work is customer based, devoted, trustworthy and based on a strong know-how. Our business relies on respect towards our customers.



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