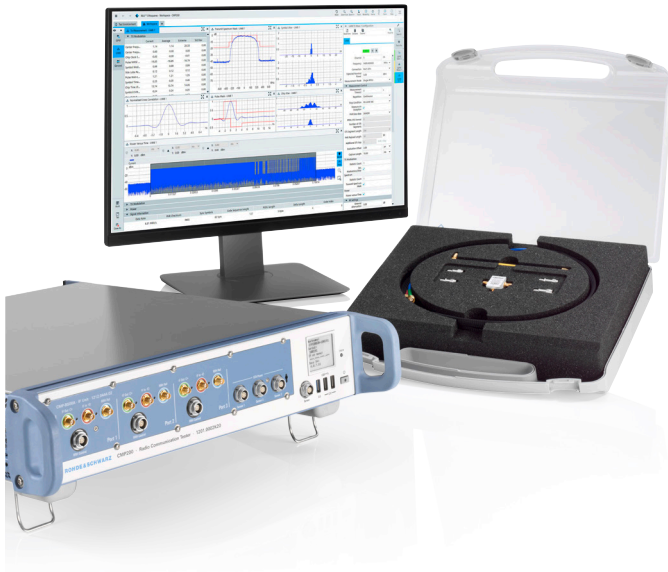


# SIMPLIFY FiRa™ CERTIFICATION FOR YOUR UWB DEVICE



The validated UWB PHY test suite for the R&S®CMP200 radio communication tester simplifies FiRa™ Consortium PHY conformance testing.



## The value of conformance testing for interoperability

Seamless interoperability of UWB devices is of utmost importance for the success of UWB applications such as keyless entry, asset finding, sensing and navigation. It is essential to ensure a safe and effective user experience. The certification program established by the FiRa™ Consortium builds the cornerstone to drive interoperability across the industry.

## FiRa™ conformance testing

The FiRa™ certification program is intended to support interoperability of UWB devices which use secure time of flight (ToF) ranging measurements on different layers.

The certification program includes physical layer conformance testing that needs to be executed by FiRa™ authorized test laboratories (ATL) using FiRa™ validated test tools such as the UWB PHY test suite for the R&S®CMP200.

The physical layer requirements and certification test cases are derived from the related HRP UWB standard specified in IEEE802.15.4 clause 15 and complemented by FiRa™. FiRa™ focuses on enhanced ranging devices (ERDEV) supporting both modes: base pulse repetition frequency (BPRF) and high pulse repetition frequency (HPRF) in the high band (band group 2) for 499.2 MHz channels as specified in the latest standard amendment IEEE802.15.4z. For conformance testing, a couple of transmitter and receiver test cases were specified aimed at improving interoperability, quality and performance.

### FiRa™ PHY test case coverage for BPRF and HPRF includes:

#### Transmitter tests

- ▶ Check of transmitted packet format
- ▶ Power spectral density mask
- ▶ Carrier frequency tolerance
- ▶ Pulse timing
- ▶ Baseband impulse response
- ▶ Transmit signal quality (NRMSE)

#### Receiver tests

- ▶ Packet reception sensitivity
- ▶ Dirty packet test
- ▶ First path dynamic range
- ▶ Check of received packet format

## Rohde & Schwarz solution

The UWB PHY test suite from Rohde & Schwarz is a PHY conformance test tool (PCTT) that supports conformance testing of the UWB PHY layer as specified by the FiRa™ Consortium. This test platform, validated by the FiRa™ Consortium for physical layer certification, is based on the R&S®CMP200 radio communication tester that supports UWB measurements and UWB signal generation via waveform files.

Application Card | Version 01.00

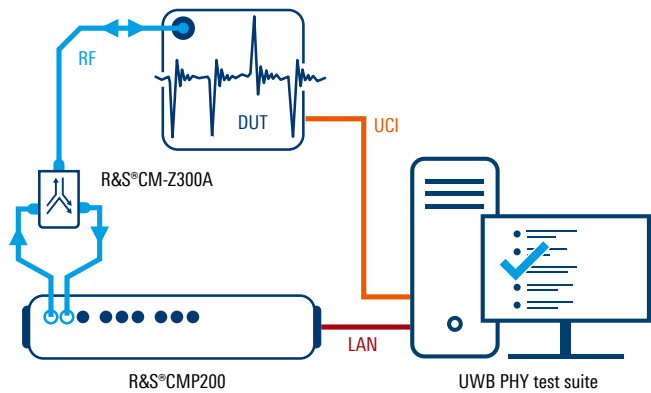
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Make ideas real



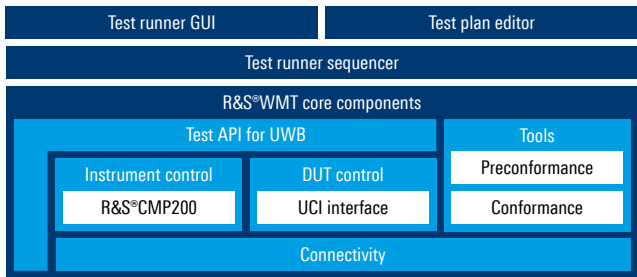
The R&S®CMP200 is connected via an external combiner (included with the R&S®CM-Z300A) to the antenna port of the device under test (DUT). The UWB PHY test suite running on an external PC controls the instrument via LAN and communicates with the DUT over a serial interface using the UWB command interface (UCI) protocol specified by the FiRa™ Consortium.

Test setup for FiRa™ conformance testing



The UWB PHY test suite, which is based on the industry-proven R&S®WMT test automation framework, allows fully automated execution of the FiRa™ test cases as required by authorized test laboratories for FiRa™ certification. At the end of a test run, the tool provides an overall pass/fail verdict and all details about the performed tests. Finally, it generates a tamper-proof test report containing all relevant information required to apply for FiRa™ certification.

UWB PHY test suite based on R&S®WMT



The UWB PHY test suite is especially beneficial for R&D engineers to perform preformance testing. This solution provides the expected flexibility via an easy-to-use graphical user interface (GUI).

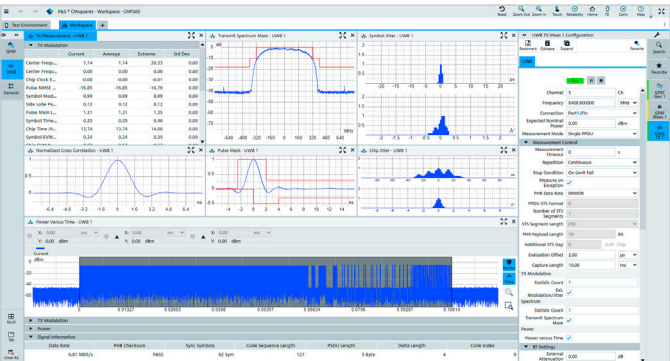


Rohde & Schwarz is an associate member of the FiRa™ Consortium.

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www.rohde-schwarz.com

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With the appropriate R&S®CMP200 options, it is possible to modify the predefined test cases or to create new ones with the help of the integrated test plan editor or to create specific UWB waveforms. The FiRa™ test cases can also be combined with IEEE802.15.4a/z tests, which makes the UWB PHY test suite a universal tool for layer one development. For detailed analysis, the web based GUI of the R&S®CMSquares test software provides deep insight into all test results.



Every measurement at the right place with R&S®CMSquares.

Complete FiRa™ PHY conformance test solution

The Rohde & Schwarz UWB test solution has been validated by the FiRa™ Consortium in line with the PHY conformance test specification.

The test platform can be used by authorized test laboratories for PHY conformance testing and in general for any kind of preformance and RF performance verification.

The validated solution includes the R&S®CMP200 radio communication tester and the R&S®CMP-KC300 UWB FiRa™ conformance test plan option as part of the UWB PHY test suite.

T&M equipment and software to validate FiRa™ conformance

Designation	Type
Radio communication tester	R&S®CMP200
Accessory kit for UWB time of flight (ToF) measurements	R&S®CM-Z300A
UWB FiRa™ conformance test plan	R&S®CMP-KC300
UWB waveforms for FiRa™ conformance test plan	R&S®CMP-KV300
UWB measurements	R&S®CMP-KM300
Additional options for preformance testing	
UWB FiRa™ preformance test plan	R&S®CMP-KT300
UWB R&S®WinIQSIM2 waveforms for ARB generator	R&S®CMP-KW300

See also  
www.rohde-schwarz.com/UWB

