

Test the receiver performance of your WiMAX™ device

The most compact test solution with base station emulation and MIMO fading provides fully controlled network conditions for receiver performance testing of mobile terminals.



The R&S®CMW270 or R&S®CMW500 communication tester in combination with the R&S®AMU200A fading simulator is the ideal solution for in-depth receiver testing of mobile terminals with MIMO.

Your task

Orthogonal frequency division multiple access (OFDMA) along with adaptive modulation and coding (AMC) and multiple input multiple output (MIMO) antenna technologies are the keys to success for mobile broadband communications systems such as WiMAX™. During the development of MIMO terminals, a series of different tests are necessary to prove correct operation and performance. Particularly MIMO requires the testing of mobile terminals under real-world multipath propagation conditions to utilize its full benefits.

The achievable data throughput is an important criterion for network operators when selecting end-user equipment. Moreover, the communications data handling between the base station and the mobile terminal must be carefully evaluated to detect possible throughput limitations. Effects resulting from channel fading have significant impact on the overall performance of the system.

By simulating challenging channel fading scenarios, different implementations can be verified to detect the limits of the design. In general, these tests can only be carried out by means of cost-intensive field measurements. However, the repeatability of the measurements cannot be guaranteed.

To accomplish test cases under lab conditions, a cost-intensive test setup using a base station in combination with an RF fader would be required. However, the servicing, programming and configuration of a base station are especially complex and costly for use in R&D.

Rohde&Schwarz simplifies receiver performance testing under fading by offering a powerful, convenient and cost-effective two-box solution that represents a lab-based alternative to cost-intensive field measurements and complicated RF-faded lab setups.

T & M solution

Rohde&Schwarz offers the most reliable and compact test solution for WiMAX™ devices, consisting of the R&S®CMW270 or R&S®CMW500 communication tester for base station emulation and the R&S®AMU200A baseband signal generator and fading simulator. Equipped with additive white Gaussian noise (AWGN) and realtime fading options, a full range of fading profiles and noise levels are available to reliably simulate real-world transmission conditions for receiver performance testing of MIMO-capable mobile terminals.

The combination of the R&S®CMW270 or R&S®CMW500 and the R&S®AMU200A enables the engineer to test the performance of any modulation and coding scheme as defined in the WiMAX™ specifications. The parameters of the WiMAX™ MIMO configurations, including Matrix A or B operation, are user-adjustable to meet individual needs, which provides maximum flexibility.

Furthermore, the test instruments from Rohde&Schwarz are connected via the digital I/Q interface. This avoids power calibration of multiple RF paths as is required in a setup consisting of a real base station and an RF fading module.

The compact test setup with two instruments enables the emulation of realistic scenarios as defined by ITU (ITU-R M.1225/M.2135). All relevant parameters can be user-adapted to meet individual customer needs. In addition, this setup supports the analysis of the operational radio interface capacity as well as the performance analysis of terminal implementations. This is of particular interest when services such as video streaming are used on top of the underlying air interface technology. Featuring easy end-to-end (E2E) application testing capabilities, the R&S®CMW270 and R&S®CMW500 enable verification under realistic user scenarios. Thus, the effects on the application of interest, resulting from realistic propagation conditions, can be evaluated in detail.

The R&S®CMW270 and R&S®CMW500 provide reproducible results, for example for maximum throughput and RF performance measurements. In contrast to a base station

setup, signaling parameters and channel conditions can be changed during operation, which eases troubleshooting of the device under test (DUT).

Rohde&Schwarz significantly simplifies receiver performance testing under fading conditions for MIMO-capable mobile terminals. The R&S®CMW270 or R&S®CMW500 in combination with the R&S®AMU200A are the ideal choice for this task, providing comparable and detailed results and accomplishing all test needs for a test lab environment. This is the only true test setup for reliable MIMO performance evaluation and receiver performance testing of mobile WiMAX™ terminals, eliminating the need for a costly base station setup in the lab.

See also:

- www.rohde-schwarz.com/technologies
- www.rohde-schwarz.com/product/CMW500
- www.rohde-schwarz.com/product/CMW270
- www.rohde-schwarz.com/product/AMU200A

“WiMAX” is a trademark of the WiMAX Forum.

Compact test solution for performance testing of MIMO-capable WiMAX™ mobile terminals

R&S®CMW500 or R&S®CMW270 provides real-time signaling

R&S®AMU200A for multipath channel emulation in the baseband

MIMO fading: correlation in amplitude, delay, phase

The R&S®CMW500 or R&S®CMW270 in combination with the R&S®AMU200A, for realistic channel emulation, accomplish fully standard-compliant MIMO testing. This two-box solution also supports IP throughput evaluation under realistic user scenarios.

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