R&S®CMW500
Wideband Radio Communication Tester
TD-SCDMA RF testing

The R&S®CMW500 is the universal tester for testing the air interface of wireless devices supporting all common cellular and noncellular wireless technologies. It enables users to test today’s and tomorrow’s wireless communications devices – ranging from basic mobile phones up to the most sophisticated smartphones – quickly and precisely in production and service environments.
**R&S®CMW500 Wideband Radio Communication Tester**

**At a glance**

**Future-ready test platform designed to handle all major technologies**
In the fast-paced world of wireless communications, existing technologies are continuously being optimized and new standards are adopted. A tester designed for the future must therefore be able to handle tomorrow’s requirements today. Owing to its large transmit and receive bandwidths, a frequency range up to 6 GHz, exceptional measurement accuracy and support of a variety of applications, the R&S®CMW500 is clearly a safe investment.

The multitechnology platform supports GSM with EDGE Evolution, WCDMA up to HSPA+, CDMA2000® 1), TD-SCDMA, LTE TDD/FDD and several noncellular standards such as WLAN. Therefore, it is the ideal equipment for mobile phone testing. In the development and production of mobile phones in line with the TD-SCDMA (time division synchronous code division multiple access) standard, the R&S®CMW500 wideband radio communication tester offers comprehensive test and measurement capabilities.

**Designed for high first pass yield**
The R&S®CMW500 has been specially designed for production applications: Top priority was placed on accuracy, repeatability and linearity. These parameters have a direct impact on production yield: The better the instrument’s performance in terms of these parameters, the lower the number of DUTs that are found to be faulty even though they comply with specifications.

**Significant reduction in test time owing to R&S®Multi-Evaluation measurement**
The R&S®CMW500 can perform various measurements (for example, spectrum emission mask, code domain power, error vector magnitude and more) in parallel on the same signal sample. This yields a drastic reduction in measurement time as compared to the conventional sequential approach.

1) CDMA2000® is a registered trademark of the Telecommunications Industry Association (TIA-USA).

**Shortest possible alignment times owing to R&S®Smart Alignment**
In the R&S®CMW500, predefined frequency/power sequences can be stored in list format exactly as done in the mobile phone’s chipset. After being started in sync, the mobile phone and the tester follow the sequence without requiring any further interaction. The calibration time during production can be reduced down to 10% of the original value.

**Reliable receiver test in nonsignaling and signaling mode**
Featuring single-ended BER and loop-based BER analysis, the R&S®CMW500 offers two alternatives for testing receiver quality in the non-signaling mode. Alternatively, the R&S®CMW500 offers a TD-SCDMA base station emulator to verify network entry and functional performance in signaling mode. BLER (block error rate) and BER (bit error rate) tests after connection can be used to verify the receiver performance in signaling mode.

**Dual-channel mode – two in one**
The R&S®CMW500 can be operated in either the single-channel or the dual-channel mode. In the dual-channel mode, two mobile phones can be tested simultaneously yet fully independently of one another, even while applying different standards.

**TX measurements**
The implementation of the transmitter measurements in the R&S®CMW500 is based on the 3GPP TS 25.102 and 3GPP TS 34.122 test specifications. The following transmitter measurements are supported:
- Power measurements
- Spectrum measurements
- Modulation accuracy measurements

The measurements can be performed in nonsignaling mode with any desired TD-SCDMA uplink signal. Plus, the “combined signal path” scenario allows RF measurements with signaling provided by the TD-SCDMA base station emulator to analyze the RF performance of the TD-SCDMA mobile phone in real operation.

**Optimized handling for production test systems**
The R&S®CMW500 unites three basic functions in one box: RF generator, RF analyzer and signaling (network emulation). As a result, it can be flexibly used in all stages of production – from calibration and verification to functional testing. The extreme scalability, test speed and measurement accuracy translate into minimum test costs. The compact tester approach with SCPI remote control concept minimizes the effort involved in planning and upkeeping production test systems.
TD-SCDMA base station emulator for verifying network entry and functional performance under fully controlled network conditions.

Based on data sets of identical signal samples, the R&S®Multi-Evaluation measurement allows the simultaneous evaluation of a variety of signal parameters, such as transmitter output power and spectrum measurements, i.e. spectrum emission mask (SEM) and occupied bandwidth (OBW), as well as modulation accuracy measurements, i.e. error vector magnitude (EVM) and more, in nonsignaling and signaling mode.

Ordering information

Typical configuration of a TD-SCDMA tester used in production and development.

<table>
<thead>
<tr>
<th>Designation</th>
<th>Type</th>
<th>Order No.</th>
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<tr>
<td>Wideband Radio Communication Tester</td>
<td>R&amp;S®CMW500</td>
<td>1201.0002K50</td>
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<tr>
<td>Wideband Radio Communication Tester, Mainframe, Frequency Range 70 MHz to 3.3 GHz</td>
<td>R&amp;S®CMW-PS502</td>
<td>1202.5408.02</td>
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<td>Baseband Interconnection Board (fixed link)</td>
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<td>1202.4801.02</td>
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<td>RF Frontend Module</td>
<td>R&amp;S®CMW-S590A</td>
<td>1202.5108.02</td>
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<td>Selection: Front Panel with Display/Keypad</td>
<td>R&amp;S®CMW-S600B</td>
<td>1201.0102.03</td>
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<td>TD-SCDMA Enhancement, TX Measurement, Uplink</td>
<td>R&amp;S®CMW-KM751</td>
<td>1207.6102.02</td>
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<td>ARB + Realtime Baseband Generator Module</td>
<td>R&amp;S®CMW-B110A</td>
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<td>R&amp;S®CMW-KS750</td>
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Service you can rely on

- Worldwide
- Local and personalized
- Customized and flexible
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- Long-term dependability

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Rohde & Schwarz is an independent group of companies specializing in electronics. It is a leading supplier of solutions in the fields of test and measurement, broadcasting, radiomonitoring and radiolocation, as well as secure communications. Established more than 75 years ago, Rohde & Schwarz has a global presence and a dedicated service network in over 70 countries. Company headquarters are in Munich, Germany.

Environmental commitment
- Energy-efficient products
- Continuous improvement in environmental sustainability
- ISO 14001-certified environmental management system