

# Accelerate the 4G turn T & M solutions for LTE and LTE-Advanced



**ROHDE & SCHWARZ**



# LTE and LTE-Advanced

## Mobile broadband for the next decade

Long term evolution (LTE) is turning UMTS into a high-performance, cellular broadband system that ensures subscribers fast and smooth access to the mobile Internet. The first LTE commercial network was launched at the end of 2009. LTE-Advanced (LTE-A), the next evolutionary step, added significant improvements to further enhance delivery of mobile broadband services.

Rohde&Schwarz was the first supplier on the market to offer LTE and LTE-A test solutions. Powerful signal generators and signal and spectrum analyzers thoroughly test the transmitters and receivers used in base stations and wireless devices and perform measurements on components and power amplifiers. A special highlight is the unique test solutions for MIMO, including a complete, one-box test solution that supports all key MIMO modes and channel simulation.

From RF to end-to-end data, our powerful communications testers support all protocol layers for fully testing the air interface of wireless devices. Based on a scalable platform, the testers can be adapted to cover any test application need in all phases of development, verification and production. Scalable RF test systems reliably cover the verification and conformance test requirements of global certification bodies.

Rohde&Schwarz also provides a complete test portfolio to ensure the performance of mobile networks in all phases, from implementation, launch and operation to optimization, including quality assurance and benchmarking.

The modular and highly flexible solutions from Rohde&Schwarz support all cellular communications and wireless connectivity standards. They can easily be extended to cover the latest LTE-A enhancements – always keeping you one step ahead.

Visit our comprehensive LTE/LTE-A website for detailed information on all essential LTE/LTE-A features and functions. Learn about the latest LTE/LTE-A technology enhancements and the innovative and comprehensive test and measurement solutions from Rohde&Schwarz in white papers, application notes, webinars and videos, for example:

### White papers and application notes

- LTE technology introduction (1MA111)
- LTE (3GPP Rel.9) technology introduction (1MA191)
- LTE-A (3GPP Rel.10) technology introduction (1MA169)
- LTE-A (3GPP Rel.11) technology introduction (1MA232)
- LTE-A (3GPP Rel.12) technology introduction (1MA252)
- Testing LTE Release 9 Features (1MA210)
- Testing LTE-Advanced (1MA166)
- LTE Downlink MIMO Verification with R&S®SMW200A and R&S®FSW (1MA143)
- Voice over LTE (VoLTE) Speech Quality Measurements (1MA204)
- LTE Video Quality Measurements with R&S®CMWrun (1MA253)
- LTE DL Carrier Aggregation RF Measurements with R&S®CMW500 according to 3GPP TS 36.521-1 (1CM103)
- LTE Drive Test – How to benefit from using an R&S®TSMW (1SP17)
- Coexistence Digital TV and LTE (1MA176)

### Webinars

- VoLTE Based on IMS: How to Ensure Voice Quality in the Field
- Carrier Aggregation – (One) Key Enabler for LTE-Advanced
- Wi-Fi Traffic Offload in LTE
- Optimizing the Quality of Experience (QoE) for Mobile Devices Using IP Analysis

**For more white papers, application notes and webinars, see:**

[www.rohde-schwarz.com/technology/LTE](http://www.rohde-schwarz.com/technology/LTE)



R&S®TS8996 RSE test system with R&S®DST200 RF diagnostic chamber.

# Test and measurement solutions

Product	RF and baseband development	Protocol stack development	Verification and conformance tests	Production and service	Network deployment and optimization
<b>Wireless communications testers and systems</b>					
R&S®CMW500 wideband radio communication tester	●	●	●	●	
R&S®CMW-ATE IMS and VoLTE tester		●	●		
R&S®CMW-PQA performance quality analysis	●	●	●		
R&S®TS8980 conformance test systems	●		●		
R&S®TS8991 OTA performance test system			●		
R&S®TS8996 RSE test system			●		
R&S®DST200 RF diagnostic chamber	○				
R&S®TS712x shielded RF test chambers	○			○	
<b>Spectrum and signal analyzers</b>					
R&S®FSW signal and spectrum analyzer	●		●	●	
R&S®FSMR measuring receiver	○		○		
R&S®FSUP signal source analyzer	○				
R&S®FPS signal and spectrum analyzer	●		●	●	
R&S®FSVR real-time spectrum analyzer	●		●	●	●
R&S®FSV signal and spectrum analyzer	●		●	●	●
R&S®FSL portable spectrum analyzer	○			○	○
R&S®FSH handheld spectrum analyzer					●
R&S®ZVH cable and antenna analyzer					○
<b>Signal generators</b>					
R&S®SMW200A vector signal generator, with optional fading simulator	●		●	●	●
R&S®SMBV100A vector signal generator	●			●	●
R&S®SGT100A SGMA vector RF source	●		○	●	●
R&S®SGS100A SGMA RF source	○		○	○	
R&S®SGU100A SGMA upconverter	○				
R&S®SMA100A signal generator	○		○	○	
R&S®SMB100A RF and microwave signal generator	○			○	
R&S®SMC100A signal generator	○			○	
R&S®SMF100A microwave signal generator	○		○	○	
R&S®AFQ100A/B I/Q modulation generator	●			●	
R&S®EX-IQ-Box digital signal interface module	●			●	●
<b>Network analyzers</b>					
R&S®ZVx vector network analyzers	○			○	
<b>Oscilloscopes</b>					
R&S®RTx digital oscilloscopes	○				
<b>Mobile network testing</b>					
R&S®TSMW universal radio network analyzer					●
R&S®TSME ultracompact drive test scanner					●
R&S®ROMES4 drive test software					●
SwissQual Diversity Benchmark					●
SwissQual Diversity Ranger					●
SwissQual QualiPoc Android					●
SwissQual Diversity Optimizer					●
<b>EMC and field strength test solutions</b>					
R&S®TS9975 EMI test system			○		
R&S®TS9982 EMS test system			○		
<b>Power meters</b>					
R&S®NRP power meter	○			○	
R&S®NRP-Zxx power sensors	○			○	
<b>Audio analyzer</b>					
R&S®UPV audio analyzer	○		○	○	
<b>Power supplies</b>					
R&S®NGMO power supplies	○		○	○	

● LTE/LTE-A specific use    ○ General use

## About Rohde & Schwarz

The Rohde & Schwarz electronics group is a leading supplier of solutions in the fields of test and measurement, broadcast and media, secure communications, cybersecurity, and radiomonitoring and radiolocation. Founded more than 80 years ago, this independent global company has an extensive sales network and is present in more than 70 countries. The company is headquartered in Munich, Germany.

## Service you can rely on

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

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