Stay tuned!
Test solutions for wireless connectivity

❙ WLAN
❙ Bluetooth®
❙ UWB
❙ RFID/NFC
❙ ZigBee
❙ GPS/A-GPS

ROHDE & SCHWARZ

The world of wireless connectivity

The trend toward mobility cannot be stopped. In addition to the well-established cellular mobile radio standards, numerous complementary technologies based on radio frequency have evolved. This includes wireless connectivity standards such as Bluetooth® and WLAN that pave the way for personal device-device connectivity, navigation standards such as GPS, etc.

The increasing popularity of the wireless world requires that the different standards work hand in hand, interference-free, maintenance-free and reliably, particularly when various standards are combined in one mobile device. Rohde & Schwarz offers test and measurement solutions for every aspect of wireless communications. From high-end fixed installations to field-portable equipment, from signal generation to signal analysis, and from R&D and production testing to conformance tests on user equipment, our range of instruments covers the requirements of all major cellular mobile radio, wireless connectivity and navigation standards.

Rohde & Schwarz is your single-source supplier for comprehensive test equipment covering any wireless standard. See brochures on LTE, WCDMA, HSPA, WiMAX™, EDGE, CDMA2000® 1xRTT/1xEV-DO, MIMO, etc.

For further information, please visit:
www.rohde-schwarz.com/technologies

Data rate comparison

	1 Mbit/s	10 Mbit/s	100 Mbit/s	1000 Mbit/s
WLAN IEEE 802.11a, b, g			54 Mbit/s	
WLAN IEEE 802.11n				600 Mbit/s
Bluetooth®	1 Mbit/s			
Bluetooth® EDR		3 Mbit/s		
UWB				480 Mbit/s
RFID	848 kbit/s			
ZigBee	250 kbit/s			

Technology parameters

	Wireless connectivity					Satellite navigation	
	WLAN IEEE 802.11a, b, g, n	**Bluetooth®**	**UWB** WiMedia® (MB-OFDM) ECMA-0368	**RFID, NFC*** ISO 14443 (NFC), ISO 15693, ISO 18000 (EPC)	**ZigBee** IEEE 802.15.4	**GPS**	**Galileo**
Frequency range	2.4 GHz to 2.497 GHz (b, g, n) 5.15 GHz to 5.35 GHz (a, n) 5.725 GHz to 5.825 GHz (a, n)	2.4 GHz to 2.4835 GHz	3.1 GHz to 10.6 GHz	0 MHz to 30 MHz, 125 kHz to 134 kHz, 6.7 MHz, 7.4 MHz to 8.8 MHz, 13.56 MHz, 27 MHz, 125 MHz, 433 MHz, 868 MHz to 928 MHz, 2.45 GHz, 5.8 GHz 24.125 GHz	2.4 GHz to 2.4835 GHz (world) 902 MHz to 928 MHz (North America) 868.3 MHz (Europe)	L1 1575.42 MHz L2 1227.60 MHz L5 1176.45 MHz	E5a 1176.45 MHz E5b 1207.14 MHz E6 1278.75 MHz L1 1575.42 MHz
Modulation	BPSK, QPSK, 16QAM, 64QAM (a, b, g, n) DQPSK, CCK, PBCC (a, b, g)	GFSK enhanced data rate (EDR): GFSK for header, π/4 DQPSK, 8DPSK for data	QPSK	FSK, ASK, PSK, PJM, BPSK	BPSK (868 MHz, 915 MHz), OQPSK (MSK) (2.4 GHz)	BPSK	BOC
Multiple access	OFDM, CSMA/CA	FHSS	TFI-OFDM	TDMA, FDMA	CSMA/CA		
Duplex (uplink/ downlink)	TDD	TDD	TDD	TDD, TDM	TDD		
Channel bandwidth	20 MHz (a, b, g) 20 MHz or 40 MHz (n)	1 MHz	528 MHz	typical: 200 kHz / 500 kHz	5 MHz	20.46 MHz	E5a 24 MHz E5b 24 MHz E6 40 MHz L1 32.736 MHz
Number of channels	2.4 GHz: 14 (overlapping) 3 (non-overlapping) 5 GHz: 12 (non-overlapping)	79	6 band groups	as required by local radio regulations (USA: 79 channels)	1 (868 MHz) 10 (915 MHz) 16 (2.4 GHz)	up to 32 satellites	up to 30 satellites
Peak data rate	54 Mbit/s (a, b, g) <600 Mbit/s (n)	1 Mbit/s 3 Mbit/s (EDR)	480 Mbit/s typical	848 kbit/s	20 kbit/s (868 MHz) 40 kbit/s (915 MHz) 250 kbit/s (2.4 GHz)	50 bit/s	E5a 50 sps E5b 250 sps E6 1000 sps L1 250 sps

* Parameters depend on standard.

WLAN
IEEE 802.11a, b, g, n
# Higher data rate with MIMO

WLAN is widely deployed for computer networking in businesses and private homes. Wireless Internet access in the form of hotspots is commonly available in hotels, coffee shops, at airports and numerous other locations. An increasing number of mobile devices already provide both cellular radio access and WLAN technology. The complementary functionality to cellular systems ensures extensive penetration in the wireless market.

Rohde & Schwarz offers a broad range of test and measurement equipment for WLAN. Unique test instruments such as the R&S®SMU200A vector signal generator with integrated realtime fading are available. Solutions for realtime MIMO up to 4 x 2 and 2 x 4 are also supported. Optimized for speed and high data throughput, the R&S®FSV signal and spectrum analyzer offers a 40 MHz signal analysis bandwidth, which is particularly suited for the IEEE 802.11n wideband technology. The R&S®CMW500 and R&S®CMW270 wireless communications testers are prepared for fast and accurate WLAN production testing.

WLAN is a wireless local area network technology that uses OFDM as the multiple access scheme (except 11b). Depending on the specification, the maximum communications distance ranges from a few meters up to 100 meters. WLAN communicates in the ISM bands (2.4 GHz and 5 GHz), available all over the world. WLAN is highly optimized for IP and Ethernet. Therefore, it is ideally suited for wireless Internet access. The IEEE 802.11n standards proposals include MIMO technologies with up to four antennas and a higher bandwidth of 40 MHz for increasing throughput. In addition to higher throughput, many quality of service (QoS) capabilities are being developed such as media independent handover (MIH), which will be specified in IEEE 802.21, or unlicensed mobile access (UMA), which is to increase usability by providing roaming between a 3GPP cellular standard and IEEE 802.11.

Application notes

Description	Number
R&S®NRPView – PC software for R&S®NRP-Zxx sensors	1MA77
DFS analysis tool, dynamic frequency selection in the 5 GHz band	1EF59
Transmitter tests in accordance with the CTIA plan for Wi-Fi mobile converged devices	1MA107
Introduction to MIMO systems	1MA102
Power measurements on WLAN modules with the R&S®CMU200 and with CMUgo	1CM55
WLAN tests in line with the IEEE 802.11a/b/g standard	1MA69

R&S®FSV

R&S®SMU200A
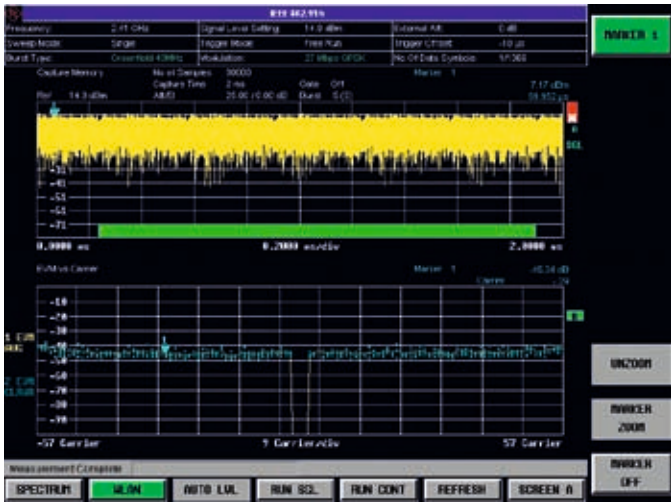
EVM versus carrier of a WLAN IEEE 802.11n signal measured with the R&S®FSQ signal analyzer and the R&S®FSQ-K91n option.
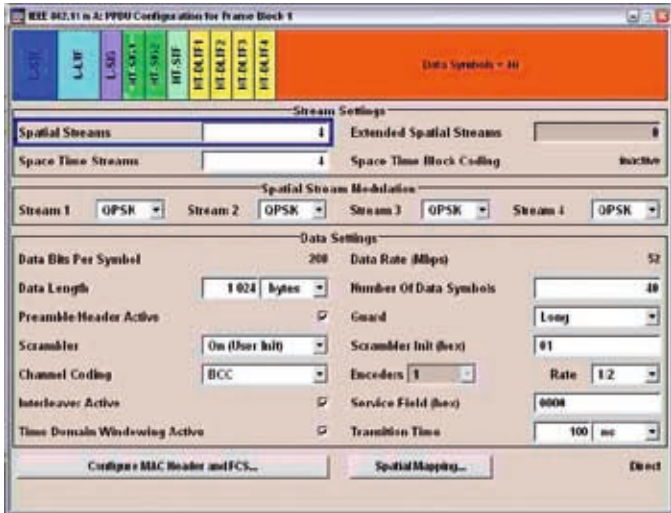
Easy standard-conforming IEEE 802.11n setup is provided by Rohde & Schwarz signal generators.

Up to four TX signals can be generated and added up with complex weighting factors. This enables convenient testing of WLAN IEEE 802.11n receivers with up to four antennas under static fading conditions.

Products for WLAN	Recommended use
Wireless communications testers and systems	
R&S®CMW270 radio communication tester	●
R&S®CMW500 radio communication tester	●
R&S®CMU200 radio communication tester	○
R&S®PTW70 WLAN protocol tester	●
R&S®TS8991 OTA performance test system	●
R&S®TS8996 RSE test system	●
Spectrum and signal analyzers	
R&S®FSU spectrum analyzer	○
R&S®FSQ signal analyzer	●
R&S®FSMR measuring receiver	○
R&S®FSUP signal source analyzer	○
R&S®FMU36 baseband signal analyzer	●
R&S®FSG spectrum analyzer	●
R&S®FSV signal analyzer	●
R&S®FSP spectrum analyzer	○
R&S®FSL portable spectrum analyzer	●
R&S®FSH handheld spectrum analyzer	○
Signal generators	
R&S®SMU200A vector signal generator with optional fading simulator	●
R&S®SMATE200A vector signal generator	●
R&S®SMJ100A vector signal generator	●
R&S®SMBV100A vector signal generator	●
R&S®SMA100A signal generator	○
R&S®SMB100A signal generator	○
R&S®SMF100A microwave signal generator	○
R&S®AMU200A baseband signal generator and fading simulator	●
R&S®AFQ100A I/Q modulation generator	●
R&S®AFQ100B I/Q modulation generator	●
Network analyzers	
R&S®ZVx vector network analyzers	○
Drive test tools	
R&S®ROMES coverage measurement software	●
EMC and field strength test solutions	
R&S®TS9975 EMI test system	○
R&S®TS9982 EMS test system	○
R&S®IMS integrated measurement system	○
Power meters	
R&S®NRP power meter	○
R&S®NRP-Z power sensors	○
Audio analyzers	
R&S®UPV audio analyzer	○
Modular instruments	
R&S®CompactTSVP production test system	○
Power supplies	
R&S®NGMO power supply	○
R&S®NGPQ programmable power supply	○

○ General use ● WLAN-specific use

Bluetooth®
Established short-range radio standard

Bluetooth® is the established wireless communications technology for the short range, facilitating both voice and data transmission to create a personal area network. Bluetooth® is a spread-spectrum frequency-hopping system that works in the internationally available ISM bands at 2.4 GHz. Bluetooth® specification 2.0 implemented an enhanced data rate (EDR) of up to 3 Mbit/s. Future plans call for an increase in the data rate. Therefore, Bluetooth® has chosen ultra-wideband (UWB) from WiMedia® MB-OFDM as a new additional physical layer. UWB allows a data rate of up to 480 Mbit/s to be achieved. Bluetooth® also follows the trend toward lower power consumption. The WiBree standard has been adopted to achieve an ultra-low-power solution.

Bluetooth® is implemented in most mobile phones and laptops to enable wireless headset connectivity or connectivity between mobile phones and other devices for synchronization. Due to the high data rate of UWB, Bluetooth® can address applications such as video streaming in many environments, and it can be used as a wireless USB alternative. The very low power consumption of the WiBree standard addresses the sensor market, for example, which is essential in automation environments.

Rohde&Schwarz supports Bluetooth® with its communications testers such as the R&S®CBT and R&S®CMU200. Bluetooth® test functions are also available for all major Rohde&Schwarz test instruments. The signal generators and signal analyzers support Bluetooth® as well as all significant wireless communications standards. The new R&S®CMW500 wireless communications tester includes options for comprehensive production testing of Bluetooth®-enabled devices.

Application notes

| Description	Number
Measurements on Bluetooth® products in accordance with the test specification (Version 2.0 + EDR)	1MA106
Bluetooth® basics at a glance	1MA108
Measurements on Bluetooth® devices using the R&S®CMU200 and CMUgo	1CM50
Out-of-band spurious measurements on Bluetooth® modules	1MA53
Bluetooth® transmitter measurements without connection setup	1MA49
Transmitter and receiver measurements on Bluetooth® modules with the R&S®CMU200	1MA46

R&S®CMU200
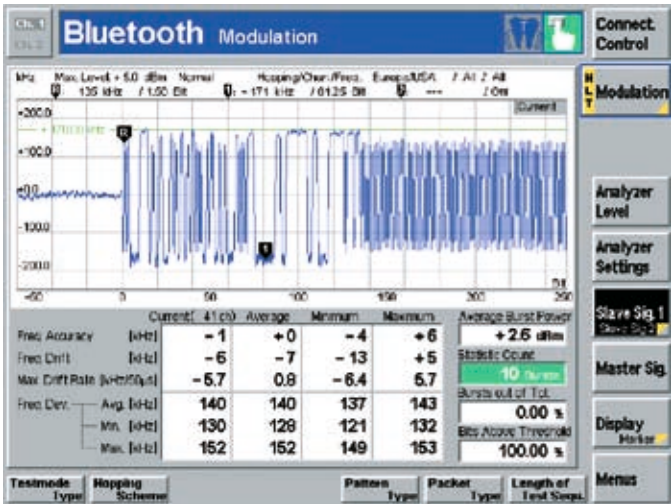
R&S®CBT

Modulation measurement with the R&S®CBT Bluetooth® tester.
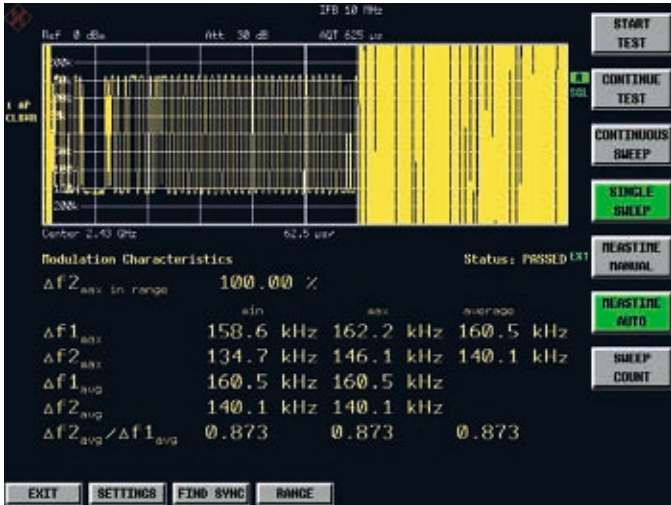
Measurement of the modulation characteristics of a Bluetooth® signal using the R&S®FS-K8 software option for the R&S®FSQ/FSU/FSP analyzers, or the R&S®FSL-K8 option for the R&S®FSL spectrum analyzer.
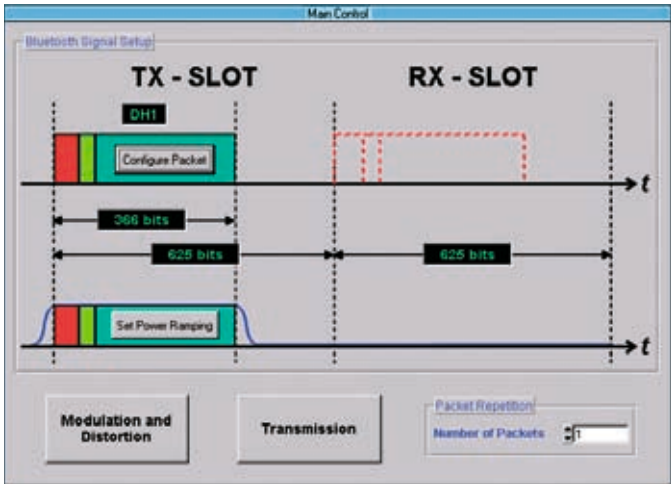
The R&S®SMx-K5 option for the R&S®SMU/SMJ/SMATE signal generators configures the Bluetooth® test signal in no time.

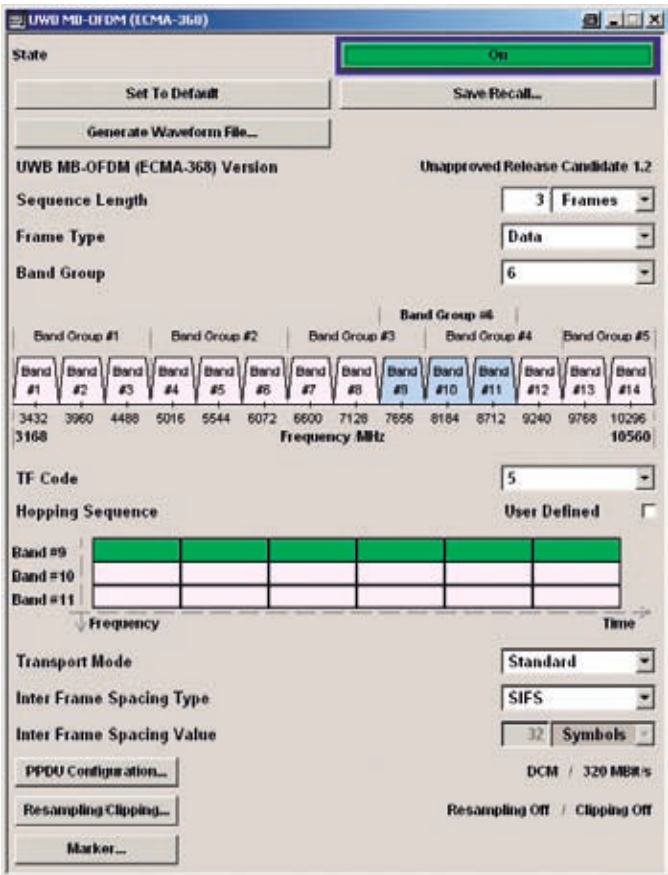| Products for Bluetooth®	Recommended use
Wireless communications testers and systems	
R&S®CMW500 radio communication tester	●
R&S®CMU200 radio communication tester	●
R&S®CBT/CBT32 Bluetooth® tester	●
R&S®TS8991 OTA performance test system	●
R&S®TS8996 RSE test system	●
Spectrum and signal analyzers	
R&S®FSU spectrum analyzer	●
R&S®FSQ signal analyzer	●
R&S®FSMR measuring receiver	●
R&S®FSUP signal source analyzer	●
R&S®FMU36 baseband signal analyzer	●
R&S®FSG spectrum analyzer	●
R&S®FSV signal analyzer	○
R&S®FSP spectrum analyzer	●
R&S®FSL portable spectrum analyzer	●
R&S®FSH handheld spectrum analyzer	○
Signal generators	
R&S®SMU200A vector signal generator	●
R&S®SMATE200A vector signal generator	●
R&S®SMJ100A vector signal generator	●
R&S®SMBV100A vector signal generator	○
R&S®SMA100A signal generator	○
R&S®SMB100A signal generator	○
R&S®SMF100A microwave signal generator	○
R&S®AMU200A baseband signal generator and fading simulator	●
R&S®AFQ100A I/Q modulation generator	○
R&S®AFQ100B I/Q modulation generator	○
Network analyzers	
R&S®ZVx vector network analyzers	○
EMC and field strength test solutions	
R&S®TS9975 EMI test system	○
R&S®TS9982 EMS test system	○
R&S®IMS integrated measurement system	○
Power meters	
R&S®NRP power meter	○
R&S®NRP-Z power sensors	○
Audio analyzers	
R&S®UPV audio analyzer	○
Modular instruments	
R&S®CompactTSVP production test system	○
Power supplies	
R&S®NGMO power supply	○
R&S®NGPQ programmable power supply	○

○ General use   ● Bluetooth®-specific use

UWB
Challenges for conventional test equipment

Ultra-wideband (UWB) permits short-range, high-bandwidth communications at very low energy levels by using a large portion of the radio spectrum. UWB has traditionally been used for radar imaging with pulsed signals. Today's UWB systems for wireless connectivity communications are based on an OFDM system structure. The most important UWB communications system, promoted by WiMedia®, also uses a multiband OFDM (MB-OFDM) structure, which is implemented in the ECMA-368 standard. This standard is optimized for low power consumption at high data rates. WiMedia® UWB technology has been selected by the Bluetooth® SIG for high-speed Bluetooth® and by the USB Implementers Forum for wireless USB.

The R&S®AFQ100B UWB signal and I/Q modulation generator is an excellent choice for generating the baseband signals required in order to develop and test UWB components and receivers. Its 528 MHz RF bandwidth is optimally suited for one WiMedia® UWB band. Additionally, ECMA-368-compliant signals can easily be generated by means of the R&S®WinIQSIM2™ software tool (R&S®AFQ-K264).

To generate UWB signals in the RF, use the new R&S®SMBV100A vector signal generator to upconvert the baseband signal delivered by the R&S®AFQ100B. The R&S®SMBV100A features an I/Q modulator with an RF bandwidth of 528 MHz, which is ideal for signals provided by the R&S®AFQ100B.

R&S®AFQ100B and R&S®SMBV100A

The UWB band and time frequency code are selected with the R&S®AFQ-K264 option.

Easy setup of user-specific and standard-compliant payload data and MAC header also by using R&S®WinIQSIM2™.

Products for UWB	Recommended use
Spectrum and signal analyzers	
R&S®FSU spectrum analyzer	○
R&S®FSQ signal analyzer	○
R&S®FSMR measuring receiver	○
R&S®FSUP signal source analyzer	○
R&S®FSG spectrum analyzer	○
R&S®FSV signal analyzer	○
R&S®FSP spectrum analyzer	○
R&S®FSL portable spectrum analyzer	○
R&S®FSH handheld spectrum analyzer	○
Signal generators	
R&S®SMU200A vector signal generator	○
R&S®SMATE200A vector signal generator	○
R&S®SMJ100A vector signal generator	○
R&S®SMBV100A vector signal generator	●
R&S®SMA100A signal generator	○
R&S®SMB100A signal generator	○
R&S®SMF100A microwave signal generator	○
R&S®AMU200A baseband signal generator and fading simulator	○
R&S®AFQ100A I/Q modulation generator	○
R&S®AFQ100B UWB signal and I/Q modulation generator	●
Network analyzers	
R&S®ZVx vector network analyzers	○
EMC and field strength test solutions	
R&S®TS9975 EMI test system	○
R&S®TS9982 EMS test system	○
R&S®IMS integrated measurement system	○
Power meters	
R&S®NRP power meter	○
R&S®NRP-Z power sensors	○
Audio analyzers	
R&S®UPV audio analyzer	○
Modular instruments	
R&S®CompactTSVP production test system	○
Power supplies	
R&S®NGMO power supply	○
R&S®NGPQ programmable power supply	○

○ General use   ● UWB-specific use

RFID/NFC
Mass production demands precision

Radio frequency identification (RFID) is an automatic identification method that relies on the storage and remote retrieval of data using RFID tags or transponders, which are mainly used for identification. Most RFID tags contain an integrated circuit for storing and processing information, modulating and demodulating radio frequency (RF) signals, and for other special functions such as encryption in an electronic passport. A large variety of tags are available for many different applications.

The combination of the ISO 14443 RFID standard and interconnection technologies builds the basis of the near-field communications (NFC) technology, applicable for the short-range data exchange between consumer devices. A tag and a reader are combined in a single device to enable two-way interaction between electronic NFC devices. The NFC technology is also compatible with today's existing wireless RFID reader infrastructure. NFC will, for example, be implemented in mobile phones for enabling payment transactions, data transfer, access control and many additional functions.

The R&S®FSL spectrum analyzer is ideally suited for the analysis of RFID signals. Specific Rohde & Schwarz filters support the suppression of the carrier from the reader for measuring the load-modulated signal from the tag. A pulse sequencer software for signal generators makes it easy to generate signals for RFID tests.

Application notes

Description	Number
Generation and analysis of RFID signals in line with ISO 15693	RSI01
Measurements on RFID components in line with the ISO/IEC 14443 standard	1MA113
Measuring electromagnetic disturbance during ISO/IEC 14443 chip card data transmission	1MA120
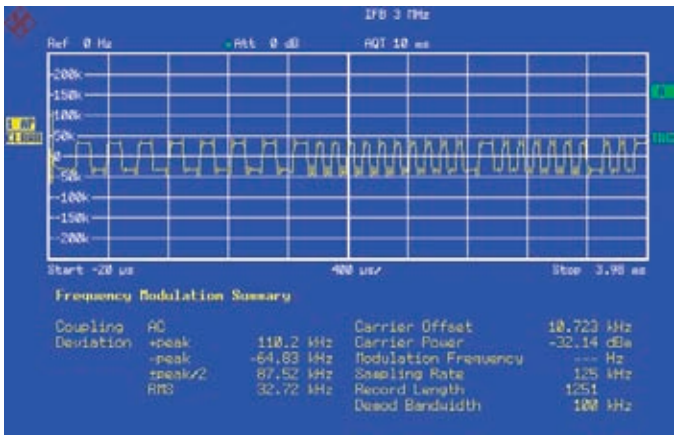
Demodulated data packet of a tire pressure sensor, measured with the R&S®TS7810 system.
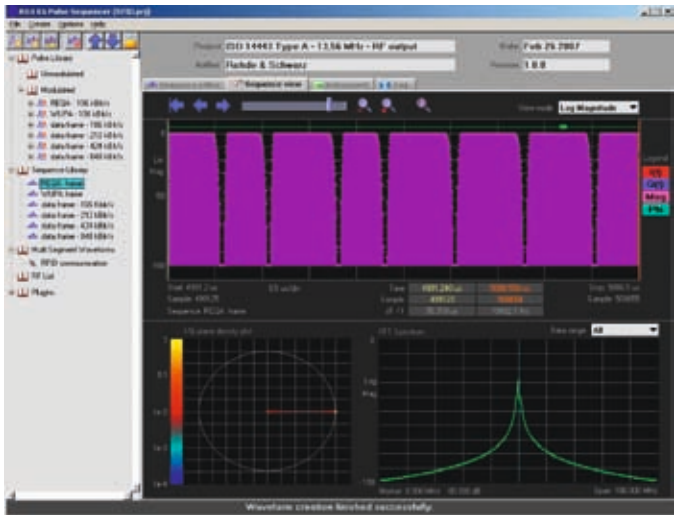
Signals such as ISO/IEC 14443 type A frames are easily generated by means of the external pulse sequencer software and the R&S®SMx-K6 option in the signal generator.

Products for RFID/NFC	Recommended use
Wireless communications testers and systems	
R&S®TS7810 RFID production test system	●
Spectrum and signal analyzers	
R&S®FSU spectrum analyzer	○
R&S®FSQ signal analyzer	○
R&S®FSMR measuring receiver	○
R&S®FSUP signal source analyzer	○
R&S®FMU36 baseband signal analyzer	○
R&S®FSG spectrum analyzer	○
R&S®FSV signal analyzer	○
R&S®FSP spectrum analyzer	○
R&S®FSL portable spectrum analyzer	○
R&S®FSH handheld spectrum analyzer	○
Signal generators	
R&S®SMU200A vector signal generator	●
R&S®SMATE200A vector signal generator	●
R&S®SMJ100A vector signal generator	●
R&S®SMBV100A vector signal generator	●
R&S®SMA100A signal generator	○
R&S®SMB100A signal generator	○
R&S®SMF100A microwave signal generator	○
R&S®AMU200A baseband signal generator and fading simulator	●
R&S®AFQ100A I/Q modulation generator	●
R&S®AFQ100B I/Q modulation generator	●
Network analyzers	
R&S®ZVx vector network analyzers	○
EMC and field strength test solutions	
R&S®TS9975 EMI test system	○
R&S®TS9982 EMS test system	○
R&S®IMS integrated measurement system	○
Power meters	
R&S®NRP power meter	○
R&S®NRP-Z power sensors	○
Modular instruments	
R&S®CompactTSVP production test system	○
Power supplies	
R&S®NGMO power supply	○
R&S®NGPQ programmable power supply	○

○ General use   ● RFID/NFC-specific use

R&S®FSL

R&S®SMJ100A

ZigBee
Widely used
for industrial
applications

ZigBee is a specification for a suite of communications protocols using small, low-power digital radios based on the IEEE 802.15.4 standard for wireless personal area networks. The low power consumption results in battery life cycles of several years or in permanent operation via small solar cells or induction coils, for instance. ZigBee is targeted at RF applications that require low data rate, long battery life, and secure networking, such as for sensors in industrial and home automation application.

Rohde & Schwarz test and measurement instruments support ZigBee signal generation and analysis with high accuracy. A broad product portfolio from high end to mid range is available for ZigBee testing, including the capability to combine ZigBee measurements with any major mobile radio standard measurement. The application notes provide a detailed description of the generation and measurement of signals.

Application notes	
Description	**Number**
Generation and analysis of ZigBee IEEE 802.15.4 signals in the 2.4 GHz band	RSI03
EVM measurements for ZigBee signals in the 2.4 GHz band	1EF55
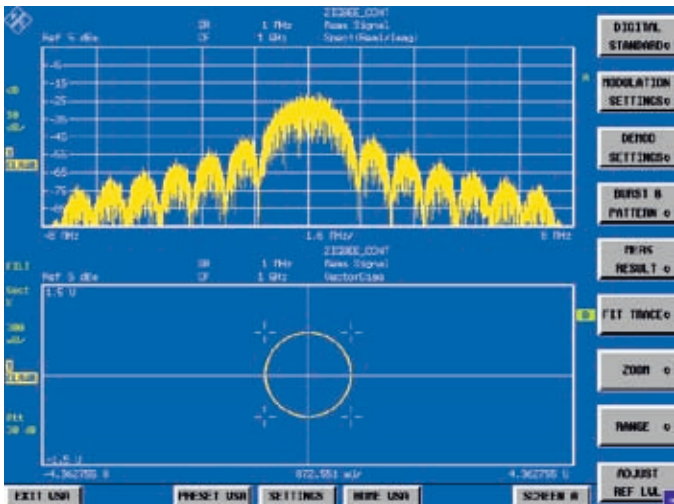
Spectrum and vector diagram of a ZigBee signal, measured with the R&S®FSQ signal analyzer.
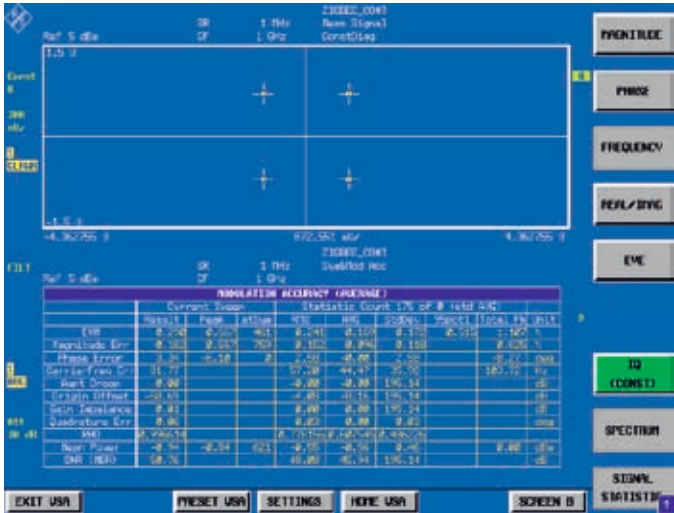
EVM measurement on a ZigBee modulation signal generated by the R&S®SMJ100A signal generator. The very low residual EVM of < 0.3 % is a prerequisite for accurate EVM measurements.

Products for ZigBee	Recommended use
Spectrum and signal analyzers	
R&S®FSU spectrum analyzer	●
R&S®FSQ signal analyzer	●
R&S®FSMR measuring receiver	●
R&S®FSUP signal source analyzer	●
R&S®FMU36 baseband signal analyzer	●
R&S®FSG spectrum analyzer	●
R&S®FSV signal analyzer	○
R&S®FSP spectrum analyzer	○
R&S®FSL portable spectrum analyzer	○
R&S®FSH handheld spectrum analyzer	○
Signal generators	
R&S®SMU200A vector signal generator	●
R&S®SMATE200A vector signal generator	●
R&S®SMJ100A vector signal generator	●
R&S®SMBV100A vector signal generator	●
R&S®SMA100A signal generator	○
R&S®SMB100A signal generator	○
R&S®SMF100A microwave signal generator	○
R&S®AMU200A baseband signal generator and fading simulator	●
R&S®AFQ100A I/Q modulation generator	○
R&S®AFQ100B I/Q modulation generator	○
Network analyzers	
R&S®ZVx vector network analyzers	○
EMC and field strength test solutions	
R&S®TS9975 EMI test system	○
R&S®TS9982 EMS test system	○
R&S®IMS integrated measurement system	○
Power meters	
R&S®NRP power meter	○
R&S®NRP-Z power sensors	○
Modular instruments	
R&S®CompactTSVP production test system	○
Power supplies	
R&S®NGMO power supply	○
R&S®NGPQ programmable power supply	○

○ General use ● ZigBee-specific use

R&S®SMBV100A

R&S®FSQ

GPS/A-GPS
Enhanced functionality in mobile phones

GPS, a satellite-based positioning system, is operated by the United States Department of Defense and was officially put into operation in 1995. Using the difference in the radio signal propagation times of at least three or more of the 32 GPS satellites, a GPS receiver can accurately determine its position worldwide to within a few meters using trilateration. The planned European Galileo system will be largely compatible with GPS.

Assisted GPS (A-GPS) is mainly used in mobile terminals to enhance performance by means of faster localization and higher accuracy. A-GPS uses the coordinates of the base station serving the radio cell in which the mobile terminal is located and transmits this information to the mobile terminal via an assisted channel. An initial approximation of the position of the mobile terminal is possible, thus considerably shortening the time until exact GPS position data is available. The assisted data is transmitted either via a signaling channel as standardized by 3GPP, or via an IP channel (SUPL = secure user plane location) as defined by the Open Mobile Alliance (OMA).

Rohde & Schwarz signal generators provide real-world GPS signals with real navigation data and real almanac data for up to eight satellites. The GPS/A-GPS options enable the simulation not only of fixed positions but also of moving receivers. Any navigation data or satellite track parameter can be modified providing maximum flexibility to custom-build all kinds of GPS scenarios.

For A-GPS in GSM and WCDMA networks and for SUPL, Rohde & Schwarz offers complete solutions that cover all A-GPS test requirements from a single source using the R&S®SMU200A signal generator as the satellite simulator and the R&S®CRTU protocol tester as the system simulator. This configuration provides validated test cases for protocol and conformance tests as defined by the Global Certification Forum (GCF). For SUPL tests, the R&S®CMU200 wireless communications tester can also be used instead of the R&S®CRTU. Rohde & Schwarz offers also GPS signal generation within the R&S®CMW500 wireless communications tester for the production test of mobile terminals.

Application notes

Description	Number
Synchronization for CDMA base stations (GPSOne measurements)	1CM33

R&S®CRTU

R&S®SMU200A

Configuration of a real-world GPS signal with the R&S®SMU200A signal generator.

Products for GPS/A-GPS	Recommended use
Wireless communications testers and systems	
R&S®CMW500 radio communication tester	●
R&S®CMU200 radio communication tester	●
R&S®CRTU protocol tester	●
R&S®TS8991 OTA performance test system	●
Spectrum and signal analyzers	
R&S®FSU spectrum analyzer	○
R&S®FSQ signal analyzer	○
R&S®FSMR measuring receiver	○
R&S®FSUP signal source analyzer	○
R&S®FMU36 baseband signal analyzer	○
R&S®FSG spectrum analyzer	○
R&S®FSV signal analyzer	○
R&S®FSP spectrum analyzer	○
R&S®FSL portable spectrum analyzer	○
R&S®FSH handheld spectrum analyzer	○
Signal generators	
R&S®SMU200A vector signal generator	●
R&S®SMATE200A vector signal generator	●
R&S®SMJ100A vector signal generator	●
R&S®SMBV100A vector signal generator	○
R&S®SMA100A signal generator	○
R&S®SMB100A signal generator	○
R&S®SMF100A microwave signal generator	○
R&S®AMU200A baseband signal generator and fading simulator	●
R&S®AFQ100A I/Q modulation generator	○
R&S®AFQ100B I/Q modulation generator	○
Network analyzers	
R&S®ZVx vector network analyzers	○
EMC and field strength test solutions	
R&S®TS9975 EMI test system	○
R&S®TS9982 EMS test system	○
R&S®IMS integrated measurement system	○
Power meters	
R&S®NRP power meter	○
R&S®NRP-Z power sensors	○
Modular instruments	
R&S®CompactTSVP production test system	○
Power supplies	
R&S®NGMO power supply	○
R&S®NGPQ programmable power supply	○

○ General use   ● GPS-specific use

About Rohde & Schwarz
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, radio-monitoring and radiolocation, as well as secure communications. Established 75 years ago, Rohde & Schwarz has a global presence and a dedicated service network in over 70 countries. Company headquarters are in Munich, Germany.

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