



Working on Bluetooth™ solutions?
Find a complete toolbox inside!



ROHDE & SCHWARZ

Standard instruments



Signal generation and BER measurement with I/Q Modulation Generator AMIQ and Vector Signal Generator SMIQ

- Generation of *Bluetooth* test signals including data structure of physical layer and frequency hopping
- Bit error rate measurement capabilities for PRBS-type user data (continuous PRBS sequence or PRBS user data embedded in physical layer). Control signals for bit clock, mask and restart provided

Signal and spectrum analysis with FSP (incl. option FS-K7)

- Ideal for development and production of *Bluetooth* modules
- Spectrum measurements such as output power, power density/control, Tx output spectrum
- AM/FM demodulator (option FS-K7) for precise measurement of modulation characteristics, initial carrier frequency tolerance and carrier frequency drift
- Wide I/Q memory (2 x 128 ksamples) for analysis of longer packets (DH5)
- Application Note/Software 1MA26: Tx measurements on *Bluetooth* modules

Signal and spectrum analysis with FSIO and FSE (incl. option FSE-B7)

- For development and production of modules to *Bluetooth* and other mobile communication standards
- Spectrum measurements such as output power, power density/control, Tx output spectrum
- AM/FM demodulator (option FS-K7) for precise measurement of modulation characteristics, initial carrier frequency tolerance and carrier frequency drift
- Application Note/Software 1MA26: Tx measurements on *Bluetooth* modules

Communication test sets

Air interface measurements with Universal Radio Communication Tester CMU 200

- Transmitter measurements: power, timing, modulation, frequency accuracy and drift; graphical display of power ramp and demodulated signal
- Receiver measurements (BER, PER) performed in hopping mode using all 79 channels
- Test mode signalling implemented
- Measurements to *Bluetooth* and cellular standards (GSM, AMPS, CDMA, TDMA) in one box



Protocol tests with Test Platform PTW 60

- Reference implementation of layers in master and slave mode
- Option: automatic compilation of official SIG TTCN test cases into executables
- Basic layer (BB, LM, L2CAP) tester, profile tester
- Open programming interface for defining scenarios using C language
- Optimized TTCN editor from DaVinci available



Air interface test systems

Test System TS 8960 for qualification /type approval

- Implementation of *Bluetooth* RF test specification V0.9
- All 16 test cases supported
- Test mode signalling implemented
- Special mode for variation of test case parameters

Test System TS 8965 for prequalification and support of development

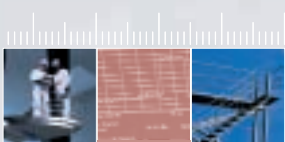
- 12 test cases from test specification V0.9 supported
- Compliant to *Bluetooth* test specification (partly)
- Test mode signalling
- *Bluetooth* protocol tester included
- Upgrade to TS 8960 possible



Production tests

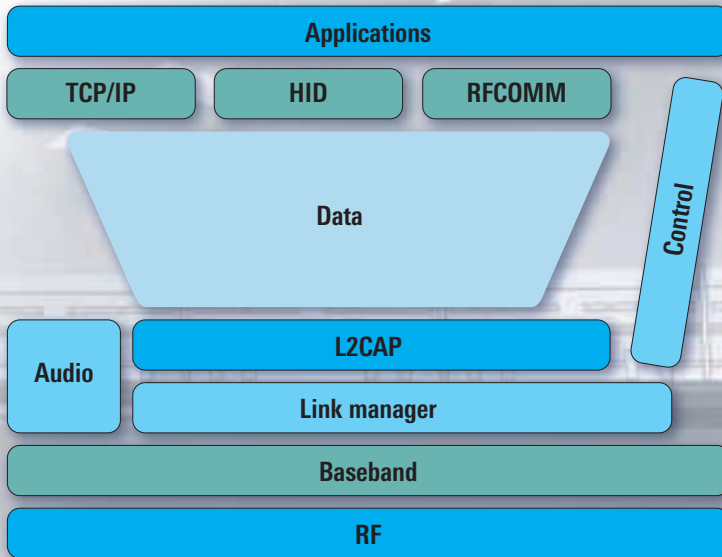
Test Platform TS 7160

- System platform based on CMU 200 and versatile CompactPCI/PXI tester
- For all production steps, e.g. functional board test inside shielded chamber
- Comprehensive modular test library for immediate use or easy customization
- Fast production ramp-up using TS 7160 instrumentation and generic test software or turnkey system solution



Bluetooth technical basics

Bluetooth protocol stack



Bluetooth RF and transmission characteristics

- 2400 MHz to 2483.5 MHz (2.4 GHz ISM band)
- 79 RF channels with 1 MHz spacing
- Gaussian frequency shift keying (GFSK)
- Max. Tx power 20 dBm
- Time division duplex transmission
- Frequency hopping with 1600 hops/s
- 1 Mbit/s communication data rate



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