Bluetooth® (IEEE 802.15.1)

Frequency range	Modulation	Multiple access	Duplex	Channel bandwidth	Number of channels	Peak data rate
2402 MHz to 2480 MHz	GFSK	FHSS	TDD	1 MHz	79	723.2 kbit/s

Bluetooth® measurement solutions

	Recommended products	Features/measurements
Signal generation	• **Signal Generator R&S®SMU 200A** or • **Signal Generator R&S®SMJ 100A** or • **Signal Generator R&S®SMATE 200A** **+ R&S®SMx-K5 software option**	• BER tests • Sensitivity tests for Bluetooth receivers • Carrier-to-interference performance tests • Blocking performance tests • Intermodulation performance tests • Maximum input level performance tests
	• **Signal Generator R&S®SMU 200A** or • **Signal Generator R&S®SMJ 100A** or • **Signal Generator R&S®SMATE 200A** **+ R&S®WinIQSIM software**	• Bluetooth signals including frequency hopping • Multicarrier mixed signals (e.g. Bluetooth + 802.11b/g in the 2.4 GHz ISM band) • Bluetooth EDR signals
Signal analysis	• **Signal Analyzer R&S®FSQ** or • **Spectrum Analyzer R&S®FSU** or • **Spectrum Analyzer R&S®FSP** **+ R&S®FS-K8 software option**	• RF tests to Rev. v0.91 • TX measurements: output power, adjacent channel power, modulation characteristics, initial carrier frequency tolerance, carrier frequency deviation

Signaling measurements	• **Digital Radio Communication Tester R&S®CMU 200**
	  + R&S®CMU-B53 and **R&S®CMU-K53 options**
	  + R&S®CMUGo software
		Transmitter measurements:
		• Power measurements: nominal power, peak power, leakage power
		• Timing measurements: packet timing error
		• Spectrum measurements: 20 dB bandwidth, adjacent channel power
		• Modulation measurements: frequency accuracy, frequency drift, maximum drift rate, average, maximum and minimum frequency deviation
		Receiver measurements:
		• Sensitivity (single-slot/multislot packets)
		• BER: search function, sensitivity level for a predefined BER level
		• Packet error ratio (PER, percentage of packet errors that have occurred within the current statistical cycle)

	• **Bluetooth Tester R&S®CBT** or • **Bluetooth Tester R&S®CBT 32** **+ R&S®CBTGo software**	• Bluetooth characteristics same as the R&S®CMU 200, plus: • Dirty transmitter in line with RF test specification • R&S®CBT 32 optimized for production applications • Very short cycle time for high production throughput • Ready for Bluetooth EDR
Protocol test	• **Bluetooth Protocol Tester R&S®PTW 70-BT**	• Analyzer mode • Sniffer or monitor mode • Graphical and programmable user interface • Analysis of protocol sequences in detail for all operating modes
Conformance test	• **Conformance Test System R&S®TS 8960**	• Validated conformance test system for Bluetooth RF test cases • All test cases in line with Bluetooth RF test specifications 1.1 and 1.2 as automatic test routines, can also be run with variable parameters • Additional test cases
Measurements via air interface	• **Shielded RF Test Fixture R&S®TS 7110**	• Can be connected to any RF measuring instrument • Combination of RF and audio testing • Low reflection inside fixture • Suppression of external sources of interference • Testing of mobile phones, WLAN and Bluetooth devices

Selected products

R&S®CMU 200

All mobile radio standards and Bluetooth in one box: Universal Radio Communication Tester R&S®CMU 200.

R&S®CBT

If you're looking for a tester especially for Bluetooth, the R&S®CBT is the one to choose. Also available without display as the R&S®CBT 32 for production. Compatible with the R&S®CMU 200.
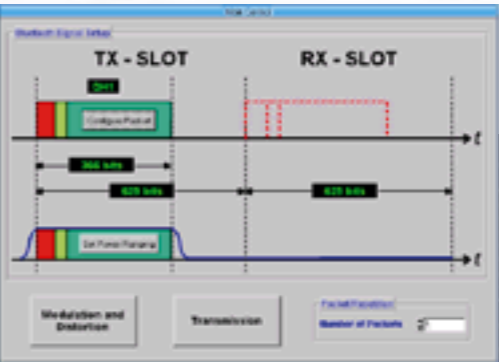

R&S®PTW 70

For conformance testing: Protocol Tester R&S®PTW 70.
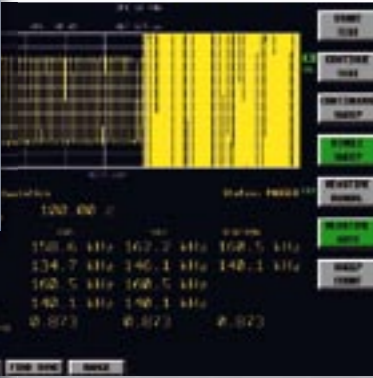

R&S®TS 8960

The validated RF Conformance Test System R&S®TS 8960 rounds out the Rohde & Schwarz T&M portfolio for Bluetooth.

The R&S®SMx-K5 option for the Signal Generators R&S®SMU/SMJ/SMATE configures the Bluetooth test signal in no time at all.

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.
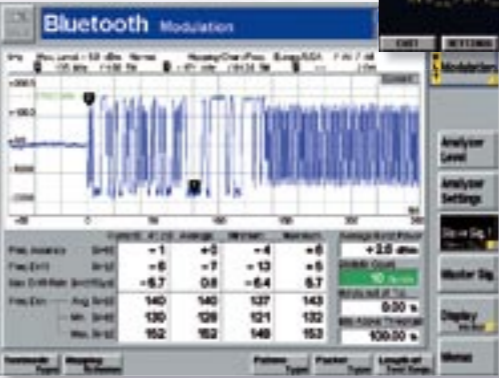
Modulation measurement with the Bluetooth Tester R&S®CBT.

Application notes	
Title	**Designation**
Measurements on Bluetooth Devices using R&S®CMU 200 and R&S®CMUgo	1CM50
Transmitter Measurements on Bluetooth Modules	1MA26
Generating Bluetooth RF Test Signals with R&S®SMIQ Signal Generator	1MA31
Transmitter Measurements on Bluetooth Modules with R&S®FSP	1MA33
Transmitter and Receiver Measurements on Bluetooth Modules with R&S®CMU 200	1MA46
Bluetooth Transmitter Measurements without Connection Setup	1MA49
Out of Band Spurious Measurements for Bluetooth Modules	1MA53