

# Agilent Technologies E1852A Bluetooth Test Set

## Data Sheet



- A low-cost, stand-alone solution
- Prove the performance of Bluetooth™ devices
- Establish a link using standard Bluetooth protocol
- Maximize throughput in manufacturing environments
- PC-based user interface
- Qualified by the Bluetooth SIG as a Bluetooth development tool



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# Functionality

## Test Mode with or without frequency hopping

Ability to act as a Bluetooth Master and establish a PAGED connection in test mode [Bluetooth Specification 1.1] with a Bluetooth device.

**DUT mode:** Transmitter mode or Loopback mode, with or without frequency hopping

**Transmitter measurements:** Provide the following results:

- Average Power
- Peak Power
- Frequency Offset
- Frequency Drift
- Frequency Drift Rate
- Frequency Deviation [OF calibrated]
- Graphical results showing frequency vs. time, power vs. time, power vs. channel number

**Receiver measurement:**

- Number of test bits settable, up to 1.6 million
- Bit Error Rate
- Packet Error Rate

**Measurement summary screen:**

- All Transmitter and Receiver measurements shown, with bar graphs using pass/fail limits
- Link Status window

**Results averaging:** 1 to 200

**Poll period:** 1-255

**Packet types:** DH1, DH3, DH5, HV3, AUX1

**Packet length:** Variable, according to the Bluetooth specifications for each packet type supported

**Packet payload:** 00000000, 11111111, 01010101, 00001111, Pseudo-random (PN9)

**Power control:** Instruct DUT (Device Under Test) to increase/decrease RF output power

## Normal Mode

Ability to act as a Bluetooth Master, and establish a PAGED connection [Bluetooth Specification 1.1] with a Bluetooth device.

**Transmitter measurements:**

- Power & Frequency measurement results based on the use of a zero length payload
- Graphical results showing frequency vs. time, power vs. time, power vs. channel number

**Receiver measurements:**

- Packet Error Rate

**Measurement summary screen:**

- All Transmitter and Receiver measurements shown, with bar graphs using pass/fail limits
- Link Status window

**Results averaging:** 1 to 200

**Poll period:** 1

**Packet payload:** No payload is present in this mode

**Power control:** Instruct DUT (Device Under Test) to increase/decrease RF output power.

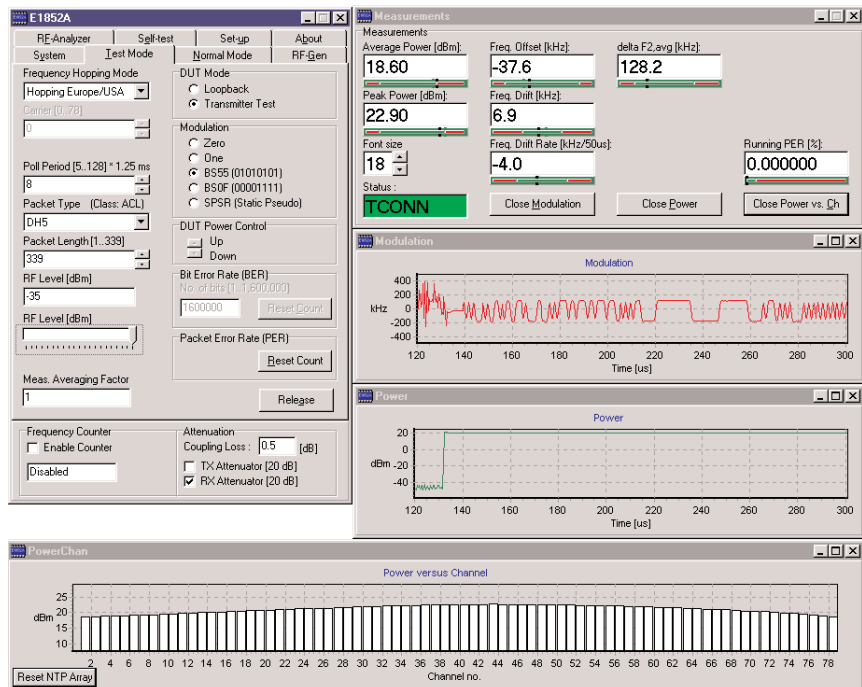
## RF-Analyzer

Transmitter measurements as described in Test Mode, but for use when no link is established. (DH1, DH3 or DH5 packets and 01010101, 00110011 or 00001111 payloads only).

## RF-Generator

Burst or continuous signal on any channel, with selectable power output and frequency offset. 01010101, 00110011, and 00001111 payloads supported.

The PC-based user interface is easy to learn and use.



## Performance

The test set will meet its specification after 2 hours of storage within the stated operating range, 60 minutes after turn on.

### RF-Generator

#### Frequency:

Range	2402MHz - 2480MHz, 79 channels at 1 MHz spacing
Modulation	In accordance with Bluetooth Radio Specification Version 1.1
Offset	±300 kHz in 100 kHz increments

#### Output Power:

Range	-95dBm to -35dBm
Resolution	0.1dB
Level Accuracy <sup>1</sup> at -70 dBm	±0.9 dB at 25 °C ±3 °C (±1.4 dB over full operating temperature)
Level Accuracy <sup>1</sup> at 2442 MHz over the output range -85 to -35 dBm	±1.4 dB at 25 °C ±3 °C (±1.9 dB over full operating temperature)

### RF-Analyzer

#### Frequency:

Range	2402MHz - 2480MHz 79 channels at 1 MHz spacing
Demodulation Error	±400 kHz maximum ±(Timebase error + 5 kHz) (nominal)

#### Power Measurement:

Range	-55 dBm to +23 dBm
Resolution	0.1 dB
Accuracy <sup>2</sup> at 0 dBm	±0.7 dB at 25 °C ±3 °C (±1.3 dB over full operating temperature)
Accuracy <sup>2</sup> at 2442 MHz over the input range -30 to +22 dBm	±0.9 dB at 25 °C ±3 °C (±1.3 dB over full operating temperature)

### Frequency Counter Input

Range	10 kHz to 15 MHz
Frequency Error	±(Timebase error + 5 kHz) (nominal)
Resolution	1 Hz
Sensitivity	0.5V RMS (nominal)

### Frequency Reference

#### Internal Timebase:

Drift due to temperature	±2.0 ppm
Aging	±1.0 ppm / year

#### Frequency Reference input:

Frequency	10 MHz (nominal)
Sensitivity	150 mV into 50 Ω (nominal)

## General Specifications

### Input/output connectors

- RF In/Out N(f), 50 Ω (nominal)
- Counter In BNC(f), high impedance
- Parallel Port 25-pin D-sub(m)
- Serial Port [RS-232] 9-pin D-sub(f) used for firmware downloads
- Frequency reference input, BNC(f), 50 Ω nominal
- Analog Outputs, BNC(f), 50 Ω nominal
  - Bluetooth Slot Clock (625µs interval)
  - Received Data
  - Receive Slot Sync
  - Power Envelope

### Environmental conditions

Operating Temperature	+15°C to +45°C
Operating Humidity	Up to 95% relative humidity to 40°C (non-condensing)

### Power consumption

Supply Voltage	100-120VAC, 200-240VAC 50-60Hz, 30VA maximum
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### Mechanical

Dimensions	92mm(H) x 280mm(D) x 484mm(W) Designed for rack-mounting
Weight	3.5kg

### Computer requirements

The test set requires the use of a PC (not supplied), minimum requirement:

- Pentium® Processor or higher, 32MB RAM or more, 200MB available on hard drive
- Windows® 95, Windows® 98, Windows® 2000, Windows NT® 4.0(SP 3)
- Dedicated bi-directional parallel port
- 1024 x 768 resolution color monitor
- Microsoft Internet Explorer version 4.0 or higher/Netscape Communicator Version 4.0 or higher and internet connection required to download software/firmware upgrades



<sup>1</sup> A measurement uncertainty of 0.4 dB is included in these limits

<sup>2</sup> A measurement uncertainty of 0.35 dB is included in these limits  
These uncertainty values are calculated using ISO TAG4, in line with the 'Guide to the Expression of Uncertainty in Measurement' and are based on a standard uncertainty multiplied by a coverage factor of k = 2, providing a level of confidence of approximately 95%.

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Printed in USA May 31, 2001

5988-1978EN



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