Keysight Technologies
N4017A *Bluetooth*® Graphical Measurement Application
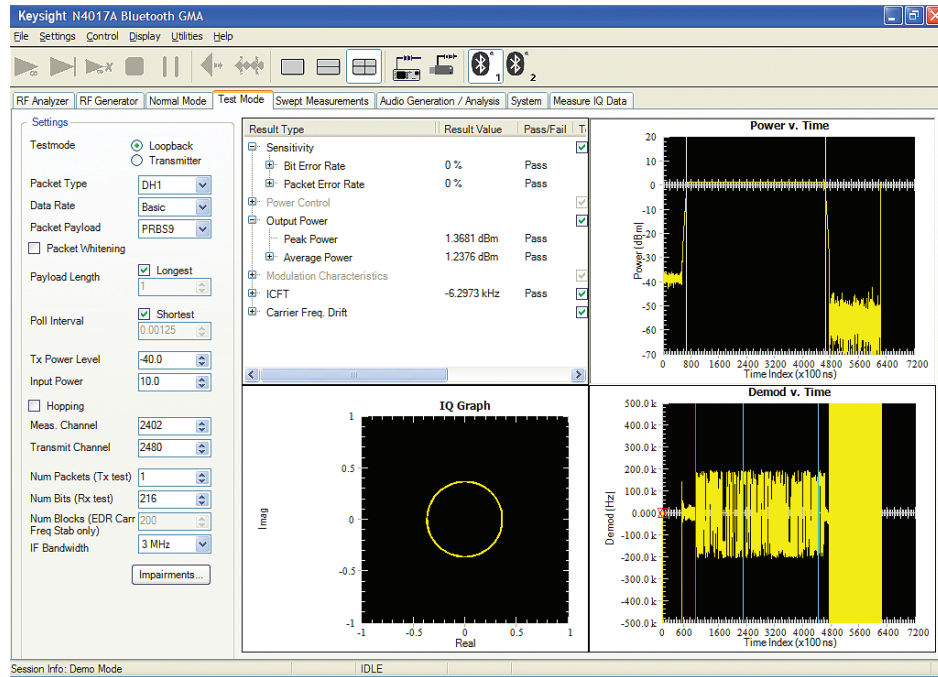
Technical Overview

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Providing the N4010A Wireless Connectivity Test Set with graphical views and additional capabilities

Save time and money with the N4017A *Bluetooth* Graphic Measurement Application. When used with the Keysight Technologies, Inc. N4010A Wireless Connectivity Test Set, this PC-based software tool streamlines the development and testing of your *Bluetooth* products. Incorporating *Bluetooth* signal generator and signal analysis features, the N4017A application performs sensitivity searches and conducts lengthy tests at the touch of a button. The ability to fully-configure the test set, and display both numerical and graphical results, makes the N4017A an ideal development tool for R&D engineers, and a well-designed debug tool for manufacturing test engineers.

Measurements

– Average power
– Delta F2 maximum
– Peak power
– Delta F2 average
– ICFT
– Delta F2/delta F1 ratio
– Carrier frequency drift
– Bit error rate (BER)
– Carrier frequency drift rate
– Packet error rate (PER)
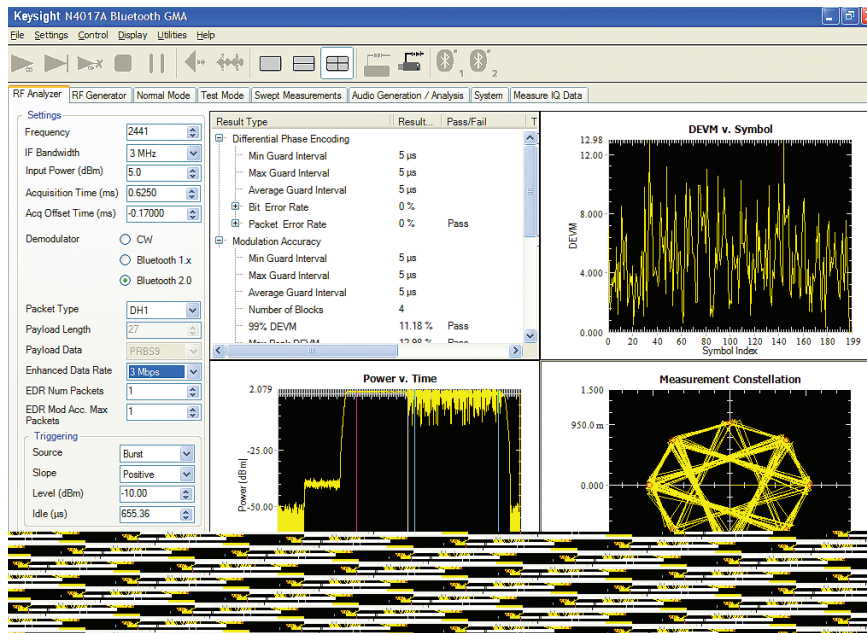– Delta F1 average

Features

– Operates in four different modes: analyzer, generator, test mode and both ACL and SCO normal mode (with swept measurements using a test mode connection and audio analysis using ACL and SCO normal mode)
– Provides PC control of N4010A in RF analyzer and generator modes for CW and BT signals
– Enables swept measurements, including BER versus channel and power versus channel
– Provides graphical views of power versus time, demod versus time, and IQ including zoom capabilities
– Set audio tone parameters and perform audio measurements such as SINAD, distortion, frequency, and level (when N4010A Option 113 is present)
– Numerical view with detailed results
– Export of text-based reports with setup and results data. Ability to save graphs, or copy and paste them into other packages
– Provides the ability to capture IQ data from the EUT and save it as a waveform or a .csv file
– Allows you to manage the arb waveform files in the test set
– Provides a wide range of measurements in analyzer, normal, and test mode

Supports *Bluetooth* Enhanced Data Rate Testing

Bluetooth Enhanced Data Rate (EDR) Option 205

When used in conjunction with the N4010A test set, N4017A Option 205 (N4017A-205) allows the user to supply, measure, and analyze *Bluetooth* EDR signals. EDR allows for a higher data throughput, provides support for multiple *Bluetooth* links, and results in lower power consumption in the *Bluetooth* design. There are a number of new settings and results available when using Option 205 specifically designed for *Bluetooth* EDR.

EDR results

– *Differential phase encoding* shows packet error rate and bit error rate
– *Carrier frequency stability and modulation accuracy* measures over blocks of 50 ms and up to a maximum of 200 blocks
– *Relative transmit power* ensures the difference in average transmit power during GFSK and DPSK portions are within range
– Bit error rate (BER) results for *EDR Rx sensitivity, EDR Rx BER floor performance, and EDR Rx maximum input level test cases*
– *New graphs* include measurement constellation and differential EVM versus symbol
– *Guard interval measurements* are provided

New EDR settings

– Packet type (DH1, DH3, or DH5)
– Data rate: 2 or 3 Mbps

The capability of Keysight's N4010A test set to measure EDR depends upon the option(s) selected.

Option 107 (*Bluetooth* EDR link plus measurements) supports EDR test mode, enabling loopback testing of EDR devices. Six of the eight EDR test cases are built-in to the test set. Key EDR transmitter measurements include relative transmit power, carrier frequency stability, modulation accuracy, differential phase encoding, and guard interval. Receiver measurements include EDR sensitivity, EDR BER floor performance, and EDR maximum input level.

Available at a lower price, N4010A Option 106 enables transmit measurements only, while N4010A Option 105 allows the user to perform both transmitter and receiver measurements but does not support normal or loopback test mode for *Bluetooth* EDR.

The N4017A Graphical Measurement Application Option 205 allows transmitter results to be displayed with Option 105, Option 106, and Option 107, and receiver measurements to be displayed for both Option 105 and Option 107.

RF generator mode for EDR receiver testing is currently only supported for N4010A-105 EDR Tx/Rx solution.

Order Information

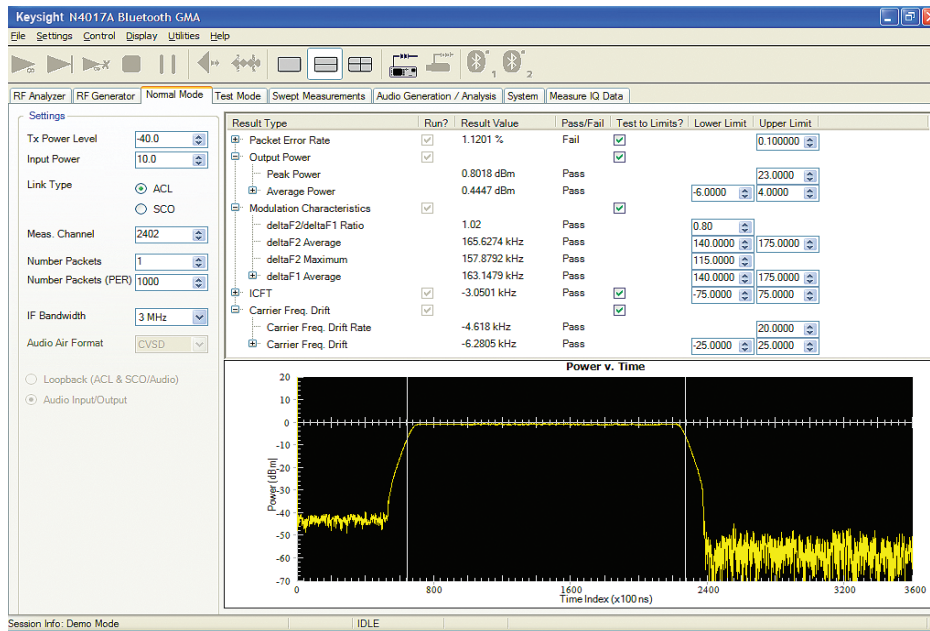| Model number	Description
N4010A	Wireless Connectivity Test Set – required for N4017A operation
N4010A-101	*Bluetooth* test – required for N4017A operation
N4010A-107	*Bluetooth* EDR link plus measurements – works with N4017A-205
N4010A-105	*Bluetooth* EDR transmit and receive – works with N4017A-205
N4010A-106	*Bluetooth* EDR transmit – works with N4017A-205
N4010A-110	Additional input/output connectivity – required for N4017A operation
N4010A-113	*Bluetooth* audio generation and analysis – optional for N4017A operation
N4017A	*Bluetooth* Graphical Measurement Application
N4017A-205	EDR option – requires either N4010A 105, 106, or 107

For More Information

– Learn more about the N4017A application at:
  www.keysight.com/find/n4017a
– For details on the N4010A test set visit:
  www.keysight.com/find/n4010a

Licensing Options

With two licensing options for the N4017A available, select the one that works best for you. Please note your choice is a one-time decision made during the license redemption process and cannot be reversed.

– *Licensed to the N4010A* Recommended for customers that prefer to use the N4017A on a particular instrument
– *Licensed to the PC* Recommended for customers that prefer to use the N4017A on a particular PC
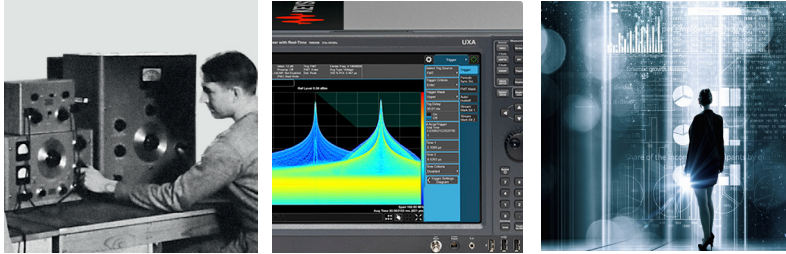

Related Literature

N4010A Wireless Connectivity Test Set, Brochure, **5989-4150EN**
N4010A Wireless Connectivity Test Set, Data Sheet, **5989-4035EN**
N4010A Wireless Connectivity Test Set, Configuration Guide, **5989-3486EN**
Bluetooth Enhanced Data Rate (EDR): The Wireless Evolution, Application Note, **5989-4204EN**

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