

# MT8860C WLAN Test Set

A Fully Integrated WLAN Measurement  
Solution for Design and Production

- 802.11b    - 802.11g
  - 802.11a   - 802.11n
- Qualified for Wi-Fi® CWG  
Certification Testing

The image displays the Anritsu MT8860C WLAN Test Set hardware and its software interface. The hardware is a grey rack-mountable unit with a control panel on the left and ports on the right. The software interface is a multi-window application showing various test parameters and results.

**Hardware Front Panel:**

- Power and System State: On (yellow light), Controller Activity (grey light)
- Input Ports: WLAN Reference 50Ω, Interferer 50Ω
- Test Port: Input/Output 50Ω
- CAUTION: AVOID STATIC DISCHARGE (yellow label)

**Software Interface Windows:**

- Network Setup / Tx Testing:** Standard: 802.11n, Test Mode: Direct, PPDU Type: 40 MHz, Channel #: 10, -1 (2447 MHz), Guard Interval: Short, MCS Index: 7, DUT Tx Pwr: -10 dBm.
- Analysis Configuration:** Input Level Range: Range 2 (-5 to -17 dBm), Pre-Trigger: -0.01 ms, Width: 0.272 ms.
- Measurement Window Configuration:** Window 1: IQ Constellation, Window 2: Spectral Profiles, Window 3: Power Profile.
- 64 QAM Constellation:** A grid plot showing the signal constellation for 64 QAM.
- EVM Results:**

Min	Average	Max	% rms
0.03	3.15	13.77	
-70.40	-30.04	-17.22	dB
- Carrier Leakage:** -37.20 dB
- Symbol Clock Error:** -0.49 Hz, -1.95 ppm
- Frequency Error:** -5.02 kHz, -2.05 ppm
- Spectral Profiles:** A graph showing Gate level (dBm) vs. Frequency (MHz). Two profiles, A and B, are shown. Profile A is a flat line at approximately -73.3 dBm, and Profile B is a flat line at approximately -74.6 dBm.
- Power Profile:** A graph showing Power (dBm) vs. Time (ms). A single peak is shown at approximately 0.21 ms with a power of -8.92 dBm.

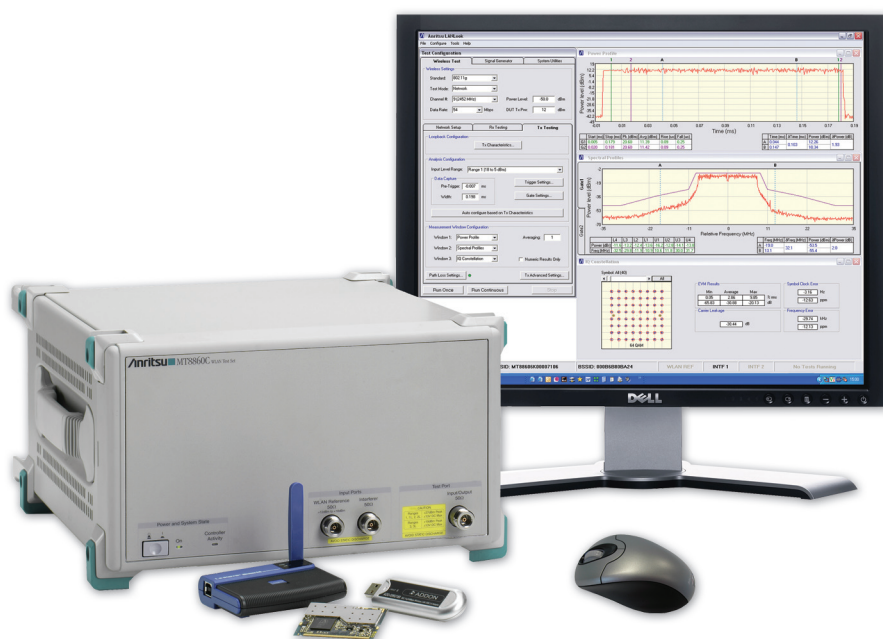
# One Test Set, Two Modes of Testing

**The Anritsu MT8860C is the only WLAN Test Set with Network and Direct modes for testing devices that conform to IEEE 802.11 standards.**

The MT8860C is an integrated one-box test set dedicated to testing 802.11 WLAN devices. It provides a high-speed measurement solution that is ideally suited for design proving and production testing. The MT8860C replaces existing test systems that typically utilize power meters, spectrum analyzers and gold radios with external attenuators. The end result is a test instrument that is easier to integrate into production, provides traceable and repeatable measurements and offers a universal solution for all WLAN chip sets. By being simpler to maintain and calibrate, the MT8860C also reduces test system costs, increases production throughput and delivers the most flexible WLAN test system.

The MT8860C provides two modes of operation: Network and Direct. In “Network” mode, standard WLAN signaling is used to test both the transmitter and receiver of a device under test (DUT). In “Direct” mode, the MT8860C tests the DUT receiver by automatically creating and transmitting WLAN packets, and measures the DUT transmitter by using a built-in transmitter analyzer. In Direct mode, the DUT must be controlled by the test mode software utility from the chipset vendor.

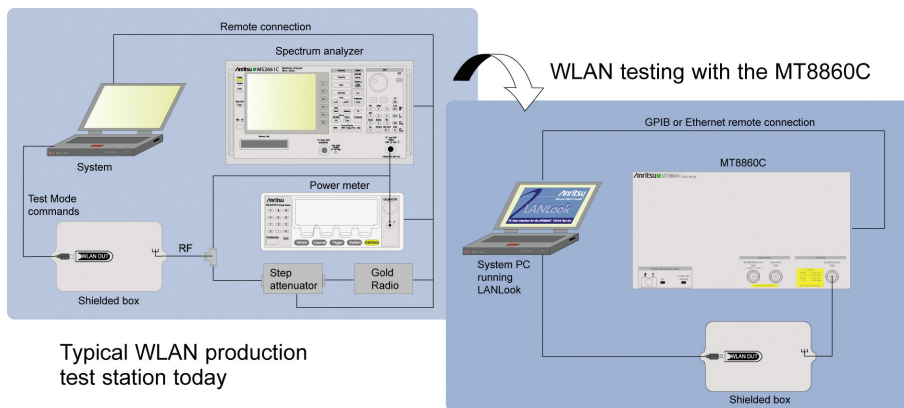
The user interface is implemented through the supplied LANLook software package. LANLook runs on a standard PC and uses a conventional Windows®-based interface for both instrument configuration and control. Measurement results are displayed in clear numerical and graphical formats. LANLook communicates with the MT8860C using remote commands that are sent via a GPIB or Ethernet interface.



# The MT8860C Integrates a Reference 802.11 Transmitter and Receiver

## Key features

- Integrated test set for validating the RF performance of 802.11b/g/n devices operating in the 2.4 GHz and 5 GHz frequency bands
- “Network” mode allows devices to be tested in a connection using standard WLAN signalling.
- “Direct” mode allows WLAN devices to be tested with the support of control software from the chipset vendor
- Built-in reference radio for calibrated Packet Error Rate (PER) measurements
- Built-in TX Analyzer providing high-speed measurements including power, spectral mask and modulation accuracy (EVM)
- Dedicated WLAN signal generator for 802.11b/g/a
- Supports GPIB and Ethernet remote interfaces
- Validated for CTIA and Wi-Fi Alliance CWG Certification testing
- LANLook software for instrument configuration and results display
- CombiTest software for automated production test requirements including 802.11 (with MT8860C) and 802.11/Bluetooth (with MT8860C +MT8852B) combo modules.



Typical WLAN production test station today

## Shortening test system development time and reducing production test time

The integrated test set design of the MT8860C replaces the spectrum analyzer, power meter, gold radio and attenuator of traditional test systems. This eliminates the need for interconnections between all the test system components that have to be calibrated out. The MT8860C provides a single calibrated test port for both transmitter and receiver testing. The integral reference radio does not suffer the drift and variability of existing gold radios, resulting in more stable test systems and improved quality of output.

Programming the MT8860C is also much simpler than creating test programs that have to interface to a number of test instruments, gold radios and attenuators. Logical remote commands can configure the MT8860C for standard WLAN measurements and read back results.

The integrated spectral processor performs transmitter measurements in parallel, significantly reducing measurement times. Peak and average power, spectral mask compliance, spectral flatness and EVM are measured and displayed in typically 500 ms.

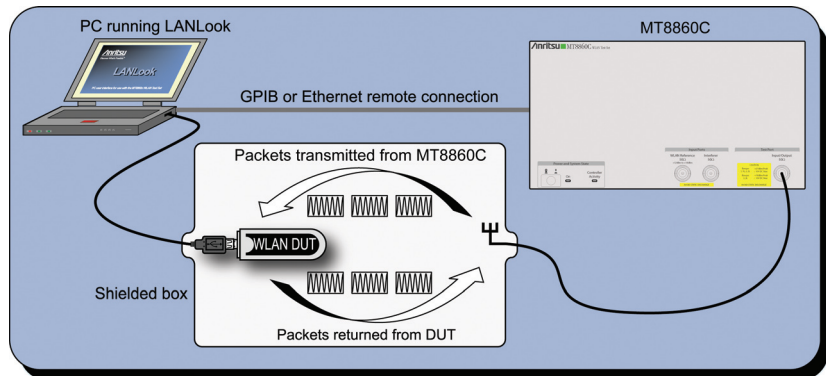
# Perform 802.11b/g/a Measurements in Network Mode

## Network mode measurements

Network mode greatly simplifies the measurement set-up and allows any WLAN device to be tested in a mode that closely reflects its native operation. The MT8860C built-in reference radio simulates both an Access Point (AP) or client device/station (STA), and using standard protocol messaging, establishes a network connection with the DUT. Once a connection is made, both the transmitter and receiver of the DUT can be tested without the need for control software from the chipset vendor.

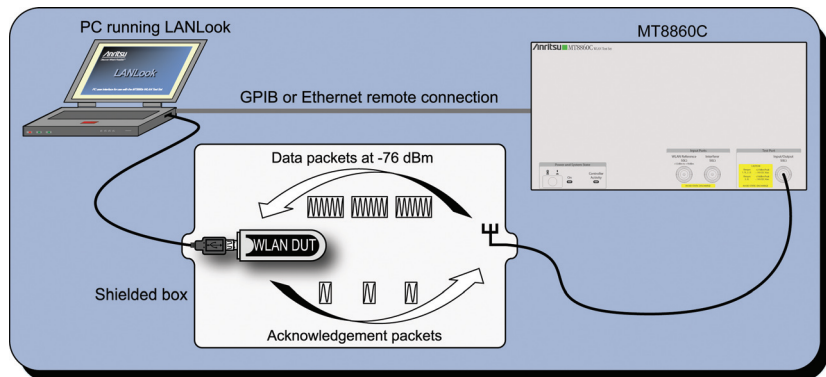
## Network mode transmitter testing

When testing the transmitter characteristics of a WLAN device, data frames containing address information that is specific to the DUT are transmitted by the MT8860C. The DUT responds by transmitting frames back to the MT8860C. The frames returned by the DUT are then captured by the MT8860C built-in transmitter analyzer. The MT8860C can be configured to capture and analyze data or acknowledgement (ACK) frame types.



## Network mode receiver testing

For receiver sensitivity testing, the MT8860C transmits packets at power levels down to  $-100$  dBm. For each packet correctly received, the DUT responds by transmitting an acknowledgement (ACK) packet. By counting the number of ACKs, the MT8860C is able to calculate the Packet Error Rate (PER).



The use of a reference radio allows testing to be performed at different data rates with real-time configuration of the packet structure, including MAC address and payload length.

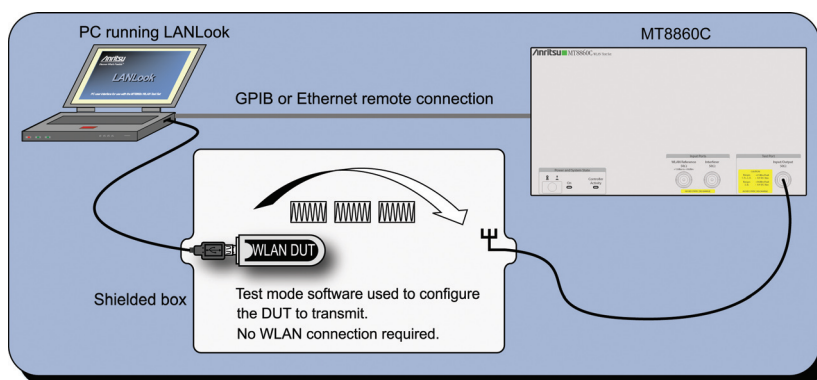
# Perform 802.11b/g/a/n Measurements in Direct Mode

## Direct mode measurements

In Direct mode, the MT8860C acts as a transmitter analyzer and WLAN signal source. This mode of operation is most similar to the test method that uses spectrum analyzers, power meters and gold radios for device testing. Control software supplied by the chipset vendor is used to configure the DUT via a host processor interface. Testing of the WLAN transmitter and receiver is performed by the MT8860C without a network connection being established.

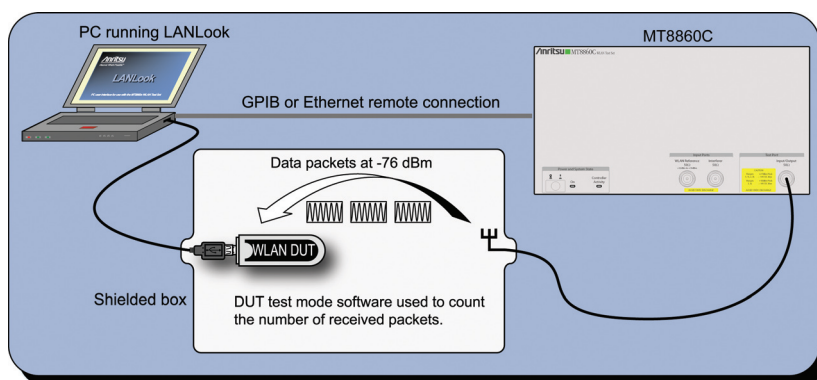
## Direct mode transmitter testing

The WLAN device is configured to continuously transmit packets. The MT8860C built-in transmitter analyzer is configured to trigger on the incoming packets and performs all the selected transmitter measurements in parallel.



## Direct mode receiver testing

When testing the RX sensitivity of a device in Direct mode, the MT8860C is configured to transmit a specified number of data packets. After the final packet has been transmitted, a baseband register (internal to the DUT) is read. This register contains the number of packets received without error. The PER is then calculated from the number of packets sent by the MT8860C and the number received without error.



When testing a receiver in Direct mode, it is not possible to use LANLook for automated PER measurements or receiver sensitivity searches.

# Supported Measurements (802.11b, 802.11g)

## 802.11b

IEEE Std 802.11-2007	Test Parameter	Limit
18.4.7.1	Transmit power levels	Follows national regulatory domain requirements
18.4.7.2	Transmit power level control	Required for radios >100 mW
18.4.7.3	Transmit spectrum mask	Defined limit mask
18.4.7.4	Transmit center frequency tolerance	± 25 ppm
18.4.7.5	Chip clock frequency tolerance	± 25 ppm
18.4.7.6	Transmit power-on and power-down ramp	< 2 µs
18.4.7.7	RF carrier suppression	-15dB, unscrambled 1010 payload
18.4.7.8	Transmit modulation accuracy	< 0.35 EVM peak, DQSK modulation
18.4.8.1	Receiver minimum input sensitivity	PER < 8%, -76 dBm input level, 11 Mbps
18.4.8.2	Receiver maximum input level	PER < 8%, -10 dBm input level, 11Mbps
18.4.8.3	Receiver adjacent channel rejection*	>35 dB, PER < 8%, 25 MHz separation, 11 Mbps

## 802.11g

IEEE Std 802.11-2007 Reference	Test Parameter	Limit
19.4.7.1	Transmit power levels	Follows regional and national regulatory domain requirements
19.4.7.2	Transmit center frequency tolerance	± 25 ppm maximum
19.4.7.3	Symbol clock frequency tolerance	± 25 ppm maximum
19.4.7 (17.3.9.6.1)	Transmitter center frequency leakage	No greater than -15 dB relative to overall transmitted power
19.4.7 (17.3.9.6.2)	Transmitter spectral flatness	± 2 dB maximum deviation, subcarrier 1 to 16; +2 to -4 dB, subcarrier 17 to 26
19.5.4	Transmit spectrum mask	Defined limit mask based on data rate
19.7.2.7 (17.3.9.6.3)	Transmitter constellation error	No greater than -25 dB (5.6 %RMS), 54 Mbps
19.5.1 (17.3.10.1)	Receiver minimum input sensitivity	< 10% PER, -65 dBm, 54 Mbps
19.5.2 (17.3.10.2)	Receiver adjacent channel rejection*	No less than -1 dB, < 10% PER, 54 Mbps
19.5.3	Receiver maximum input level	< 10% PER, -20 dBm

NOTE: IEEE Std 802.11-2007 supersedes IEEE Std 802.11b-1999 and IEEE Std 802.11g-2003

\* Additional signal source required

# Supported Measurements (802.11a, 802.11n)

## 802.11a (20 MHz channels)

IEEE Std 802.11-2007 Reference	Test Parameter	Limit
17.3.9.1	Transmit power levels	Follows regional and national regulatory domain requirements
17.3.9.2	Transmit spectrum mask	Defined limit mask
17.3.9.4	Transmit center frequency tolerance	± 20 ppm maximum
17.3.9.5	Symbol clock frequency tolerance	± 20 ppm maximum
17.3.9.6.1	Transmitter center frequency leakage	No greater than -15 dB relative to overall transmitted power
17.3.9.6.2	Transmitter spectral flatness	± 2 dB maximum deviation, subcarrier 1 to 16; +2 to -4 dB, subcarrier 17 to 26
17.3.9.6.3	Transmitter constellation error	No greater than -25 dB (5.6 %RMS), 54 Mbps
17.3.10.1	Receiver minimum input sensitivity	< 10% PER, -65 dBm, 54 Mbps
17.3.10.2	Receiver adjacent channel rejection*	No less than -1 dB, < 10% PER, 54 Mbps
17.3.10.3	Receiver non-adjacent channel rejection*	No less than 15 dB, <10% PER, 54 Mbps
17.3.10.4	Receiver maximum input level	< 10% PER, -30 dBm

NOTE: IEEE Std 802.11-2007 supersedes IEEE Std 802.11a-1999

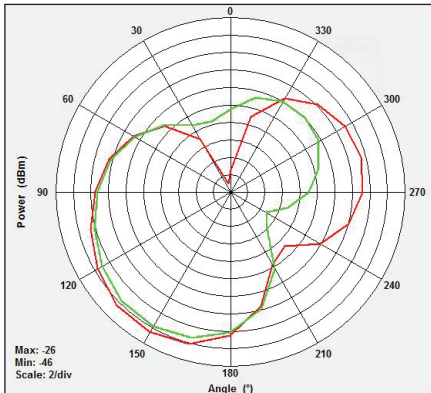
\* Additional signal source required

## 802.11n

IEEE Std 802.11n-2009 Reference	Test Parameter	Limit
20.3.21.1	Transmit spectrum mask	Defined limit mask based on channel bandwidth
20.3.21.2	Transmitter spectral flatness	Defined limits based on channel bandwidth
20.3.21.3	Transmit power	Follows regional and national regulatory domain requirements
20.3.21.4	Transmit center frequency tolerance	± 20 ppm maximum (5 GHz band) ± 25 ppm maximum (2.4 GHz band)
20.3.21.6	Symbol clock frequency tolerance	± 20 ppm maximum (5 GHz band) ± 25 ppm maximum (2.4 GHz band)
20.3.21.7.2	Transmitter center frequency leakage	No greater than -15 dB relative to overall transmitted power (20 MHz channel bandwidth) No greater than -20 dB relative to overall transmitted power (40 MHz channel bandwidth)
20.3.21.7.3	Transmitter constellation error	No greater than -28 dB (3.98 %RMS), 64-QAM with 5/6 coding rate
20.3.22.1	Receiver minimum input sensitivity	<10% PER, -64 dBm, MCS 7, 20 MHz channel bandwidth
20.3.22.2*	Receiver adjacent channel rejection	-2 dB for <10% PER, MCS 7
20.3.22.3*	Receiver non-adjacent channel rejection	14 dB for <10% PER, MCS 7
20.3.22.4	Receiver maximum input level	<10% for -30 dBm input at the receiver, all MCS settings

\* Additional signal source required

# Validated by the Wi-Fi Alliance® for Wi-Fi® CWG Certification Testing



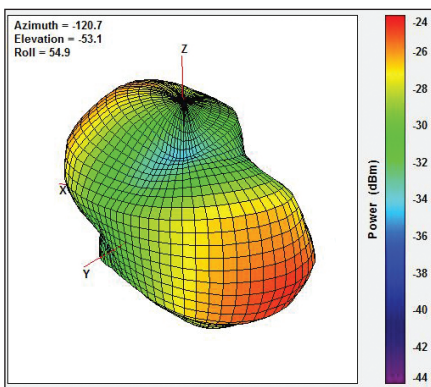
The wireless market is seeing a significant increase in the number of converged handset devices that incorporate both cellular and Wi-Fi functionality. Cellular network operators are becoming one of the largest classes of Wi-Fi service providers and are constantly working to integrate more WLAN support into their overall operations. Due to the many potential applications and deployment scenarios that converged devices may ultimately function in, it is important for network operators and handset vendors to have a consistent method of evaluating and comparing the RF performance of converged devices.

To address this requirement, the CTIA and Wi-Fi Alliance have jointly developed a CWG (Converged Wireless Group) RF Test Plan that;

- Defines the test methodology for the RF performance evaluation of Wi-Fi mobile converged devices
- Specifies the test conditions for each of the conducted and radiated tests defined
- Allows any Wi-Fi mobile converged device to be tested in a mode that closely reflects its native operation

The test methodology requires that a device, using standard WLAN signaling, establish a connection with a ‘Test AP’. Once a connection has been made, both the TX and RX performance of the device is determined from acknowledgement (ACK) control frames that are transmitted by the device in response to Unicast data frames it receives from the ‘Test AP’.

Having successfully passed a set of acceptance tests defined by the Wi-Fi Alliance, MT8860C is now validated as part of the overall test system for Wi-Fi CWG Certification Testing. The testing is mandatory for any handheld device destined for the US market and involves stringent over-the-air (OTA) performance evaluation.



MT8860C qualification was obtained following a joint development program with ETS-Lindgren - an industry expert for OTA radiated performance testing. Their AMS-8000 series of Antenna Measurement Systems provide turnkey solutions for making automated antenna measurements on devices with embedded wireless functionality and consist of;

- Anechoic absorber lined RF enclosure and antenna / waveguide horn
- Positioning controller that sets the orientation of the antenna relative to the device during the test sequence
- Dynamic Range Extender (DRE) that compensates for large signal level losses in the test system. A DRE has been developed for MT8860C
- EMQuest™ EMQ-100 Data Acquisition and Analysis Software with MT8860C instrument driver

Over-the-air performance tests measure the magnitude and direction of radiating energy to determine the performance of a wireless device. This type of testing requires specialized software that not only controls the measurement equipment (MT8860C), but is capable of positioning the antenna relative to the DUT, configuring the DRE for the test being performed and post processing the measurement data to produce 2-D and 3-D antenna patterns. EMQuest™ is best suited to address the unique test system requirements needed when performing OTA measurements.

Additional information about ETS-Lindgren is available at;  
<http://www.ets-lindgren.com>



# Powerful Software Support, CombiTest – for Verification and Production Testing



CombiTest is a PC software application that provides a user with the capability to automate the testing of single and multiple standard devices in either a production or R&D environment. For WLAN testing, an MT8860x Plug-In can be used (from within CombiTest) to define a test plan of measurements, and to use all or part of this to perform both TX and RX testing on 802.11b/g/a/n devices.

The MT8860x Plug-in for CombiTest provides –

- A familiar and intuitive windows interface enabling creation of test plans with ease, speed, and flexibility
- MT8860C remote control using GPIB or Ethernet interfaces
- One-click operation for selection and execution of required tests
- Real time display of test status with pass/fail indication
- Detailed report of test results with data archiving
- Database search functionality for viewing test reports
- The capability to import test plans previously created using LANTest

The Plug-In allows all combinations of channel number and data rate to be tested using a user-defined sequence of transmitter and receiver measurement scripts. A channel number and data rate are specified for each measurement script. One or more measurements can be selected, and for each measurement pass/fail limits can be defined. Graphical data can also be requested where applicable.

**Anritsu CombiTest**  
Discover What's Possible™

**Test Plan Result: Passed**  
Test Plan Status: Complete

Test Plan Name: F02239\_OTA Date: 02 August 2010  
CombiTest Version: 1.0 Start Time: 14:48:50  
User: s0000462 Elapsed Time: 00:00:24  
Test Station Name: STE-XP-0005

**WLAN Test Results**  
WLAN Result: Passed

Test Mode: Network Elapsed Time: 00:00:17  
Instrument: MT8860C DUT S/N: 012345678  
S/N: 0200097112  
Firmware: 11.2 DUT MAC Address: 0047EA61CBE  
MAC Address: 00BB1837FEB DUT IP Address: 1.1.0.20  
IP Address: 1.1.0.10 DUT IP Address: 1.1.0.20  
MT8860x Plug In Version: 1.0.3770.15482

**IEEE 802.11g Test Results**

**FS.4.7.1 (Transmit Power Level)**

Task	Ch	Data rate (Mbps)	GI	Limit	Status
3	11	54	1/2	±0.5dB	PASS

**Task 3 Power Profile**

**FS.4.7.1 (Transmit Spectral Mask)**

Task	Ch	Data rate (Mbps)	GI	Status
3	11	54	PASS	PASS

**Segment**

Segment	L4	L3	L2	L1	U1	U2	U3	U4
GI Power (dB)	-11	-10.4	-7.8	-9.4	-11.2	-9.7	-12.2	-11.3
Frequency (MHz)	-20.1	-19.2	-11.3	-10.7	-10.9	-11	-10.8	-12.4

**Task 3 Spectral Profile (Gate 1)**

**FS.4.6.2 (Transmit Spectral Flatness)**

Task	Ch	Data rate (Mbps)	Result	Status
3	11	54	PASS	PASS

**FS.4.6.3 (Transmit Constellation Error (EVM))**

Task	Ch	Data rate (Mbps)	Result (dB)	Limit	Status
3	11	54	-21.91	< -25.0dB	PASS

## Embedded DUT control in “Direct” mode

The MT8860x Plug-in is designed to support the full test and measurement capabilities of MT8860C with remote control supported by GPIB or Ethernet. Test plans can be created for use in both “Network” and “Direct” modes of operation. With “Network” mode selected, protocol-based messaging is used by the MT8860C to dynamically configure the DUT. As a result, test plans can be created that proceed to completion without manual intervention.

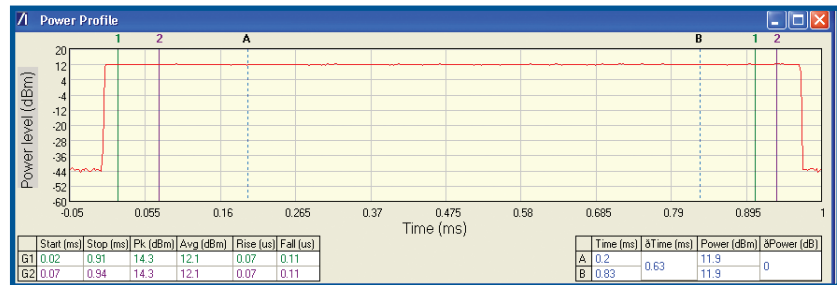
When “Direct” mode is selected, protocol-based messaging is not used. Instead, the DUT must be configured using chipset vendor control software - with configuration commands being sent to the DUT via a host processor interface rather than over the radio layer. In order to provide a fully automated solution, the control software and related configuration commands must be supported within the MT8860x Plug-in.

The Plug-in provides a DUT control interface that allows Dynamic Link Library (DLL) files to be “registered” with CombiTest. Each DLL file contains the configuration commands required for a particular chipset. Once a DUT control DLL is registered, it can be selected as part of the overall test mode setup. When a test plan is executed, the DUT is dynamically configured using commands sent via the host processor interface. As a result, no external control is required and the the test plan can proceed to completion.

In partnership with a number of tier 1 WLAN chipset vendors, a library of DUT control DLL packages for use with the MT8860x Plug-In has been developed. For latest information regarding available control DLL packages, please e-mail [wlan.support@anritsu.com](mailto:wlan.support@anritsu.com).

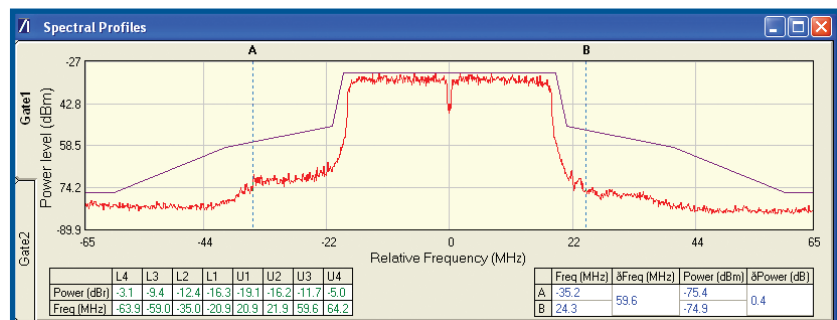
# Evaluate Transmitter Performance with the MT8860C's Power and Spectral Profiles

## Power Profile



Power measurements are displayed against time. Measurement triggers initiate the capture of up to 6 ms of data. Two gates are used to measure peak and average power in any defined section of the trace. This enables the measurement of power in the preamble and payload independently. Power burst rise and fall times are also measured and the trace can be configured to display either maximum and minimum power values or average power. When analyzing OFDM signals, peak and crest factor measurements can be displayed.

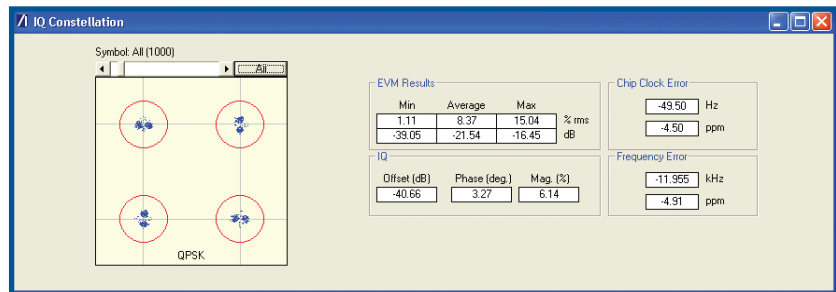
## Spectral Profiles



Using the wireless setting defined, the MT8860C automatically applies the correct spectrum mask, with a results table that displays the pass/fail status of each of the mask elements. The measurement gates in the power profile display are used to define the time period over which the spectrum is calculated. As a result, two spectral displays are provided - one for each measurement gate. These can be used to view the spectrum of clearly defined sections of the power burst. Numeric displays of power spectral density (PSD), occupied bandwidth and carrier suppression (DSSS modulation only) are also available.

# Use the MT8860C's EVM Capability to Check Transmitter Quality

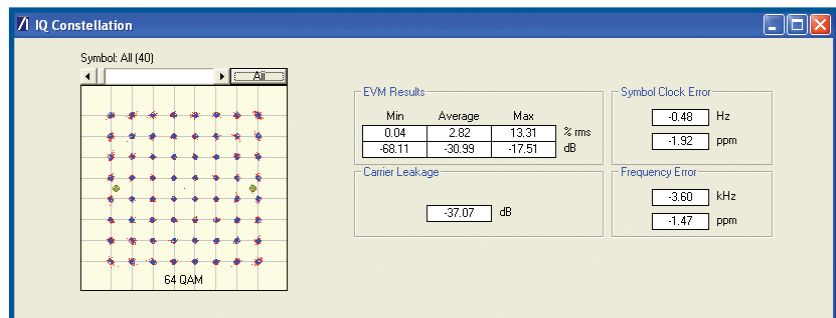
## EVM (DSSS)



Error Vector Magnitude (EVM) is an excellent measurement of the overall transmitter quality. A poor EVM figure will typically result in a high packet error rate (PER) in the WLAN connection.

The MT8860C measures the EVM of DSSS modulated carriers. The IEEE 802.11b standard requires that the peak EVM of 1000 chips does not exceed 35%. The MT8860C measures minimum, average and maximum EVM in terms of %rms and relative dB. In addition to EVM, measurements of IQ offset, rms phase and amplitude error, chip clock error and center frequency error are performed. A graphical display of the IQ constellation diagram is provided.

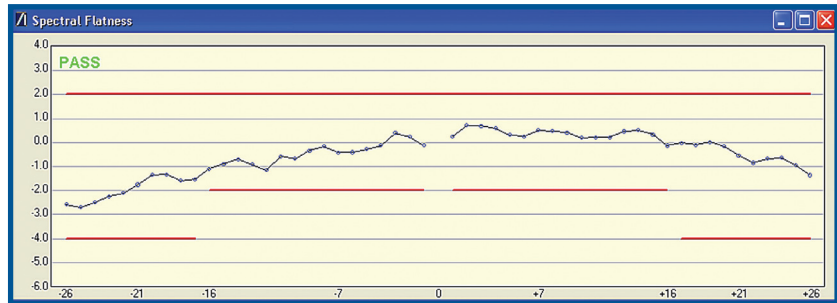
## EVM (OFDM)



The MT8860C measures the EVM of OFDM modulated carriers. Numeric results are given for EVM. Furthermore, graphical displays of the IQ constellation diagram, EVM against subcarrier and EVM against symbol are provided. As a result, detailed analysis of the modulation distortion can be performed. In addition to the EVM results, measurements of carrier leakage, symbol clock error and center frequency error are performed. The MT8860C has a residual EVM figure of < 2% and a measurement refresh rate of typically 300 ms.

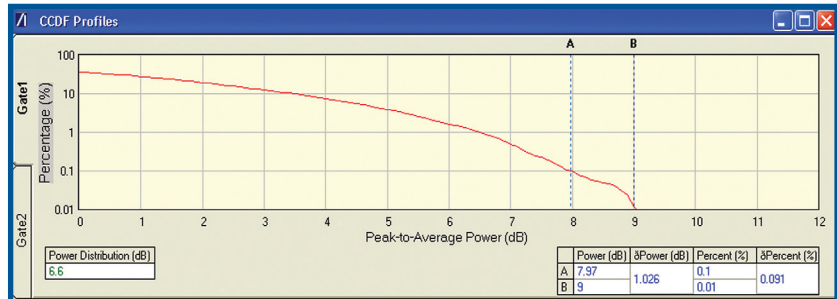
# Use the MT8860C to Verify Spectral Flatness and CCDF

## Spectral Flatness



The spectral flatness measurement requires the test instrument to capture the channel estimation period of the burst. The power in each sub-carrier is measured and displayed as a relative power trace. For signals with a 20 MHz channel bandwidth, the IEEE standards state that subcarriers +16 to -16 (excluding the 0 position sub-carrier) shall not deviate by more than  $\pm 2$  dB relative to the average power over the same 32 sub-carriers. Sub-carriers  $\pm 17$  to  $\pm 26$  shall deviate no more than +2 dB to -4 dB relative to the average power of the center 32 sub-carriers. This test ensures that the receiver of a WLAN device is able demodulate the transmitted packet with acceptable safety margins. The MT8860C measures and displays the spectral flatness results directly in graphical format.

## CCDF Profiles

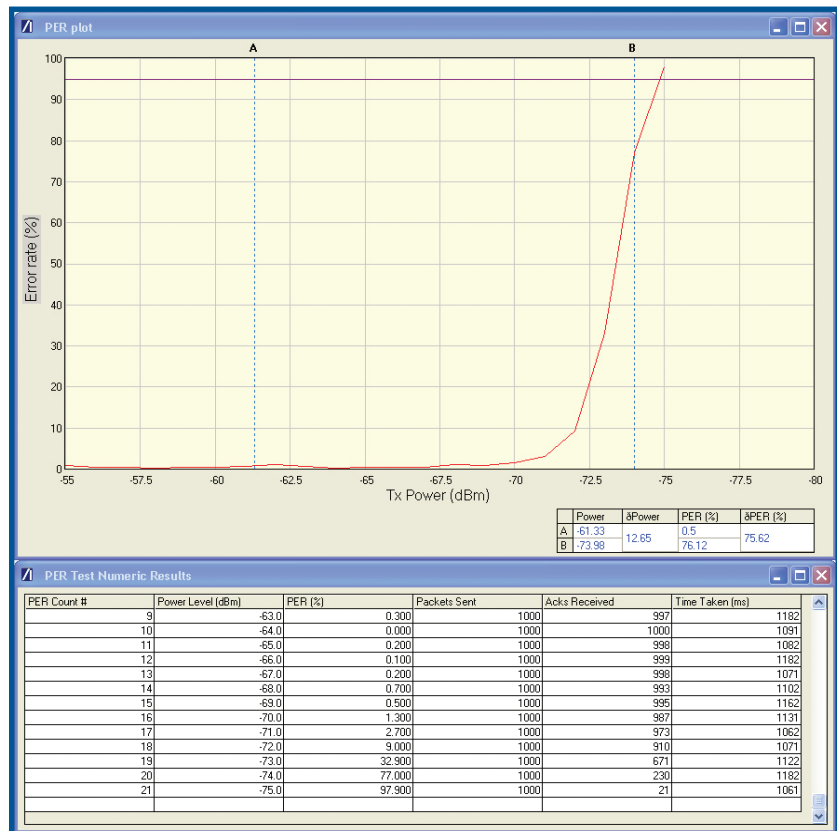


Complimentary Cumulative Distribution Function (CCDF) displays provide an insight into distortions of the transmitted signal at a glance. Any nonlinearity in the DUT transmitter output stages, especially the output power amplifier, will reduce the crest factor resulting in lost packets. 802.11g and 802.11a OFDM signals have a crest factor of typically 8 to 9 dB and a CCDF trace provides a visual indication of any distortion.

# Perform Receiver PER Using Automated Sensitivity Searches

## Receiver PER

In Network mode, the MT8860C has the unique ability to perform automated sensitivity search measurements on any 802.11b/g/a device without the need for proprietary chipset vendor control software. This provides a convenient test solution that can quickly analyze the performance of a device at each data rate and validate conformance with the 802.11 minimum receiver sensitivity test specification. The number of packets to be transmitted at each power level can be defined along with start and stop search levels and step size for a fully flexible solution. Results can be saved in both graphical and tabular numeric formats for later analysis.



As well as sensitivity search measurements, the MT8860C is able to perform strife testing of a DUT by continuously running a fixed level sensitivity test and displaying the results graphically against time. This is a powerful tool to validate the ability of a DUT to maintain good receiver sensitivity under a variety of conditions such as external interferers and extreme temperatures.

# Ordering Information

Part number	Description
MT8860C	WLAN Test Set with 802.11b/g measurements
Supplied Accessories	Power cable Ethernet cable Cat 5E cross-over patch cable N-type termination plug (6 GHz, 50 Ω) fitted to the WLAN Reference Input MT8860C WLAN Test Set Operation manual (printed copy) MT8860C WLAN Test Set Remote programming manual (printed copy) Product CD containing; <ul style="list-style-type: none"> <li>• LANLook software</li> <li>• Source code for LANLook</li> <li>• CombiTest + MT8860x Plug-in Production Test software</li> <li>• Ethernet Communicator software</li> <li>• Source code for Ethernet Communicator</li> <li>• National Instruments VISA Run-Time engine</li> <li>• CombiTest MT8860x Plug-in Operation Manual (pdf)</li> <li>• MT8860C WLAN Test Set Operation manual (pdf)</li> <li>• MT8860C WLAN Test Set Remote programming manual (pdf)</li> </ul>
<b>Options and Accessories</b>	
MT8860C-001 (Option 1)	Rack mount kit (CANNOT be ordered with Option 2)
MT8860C-002 (Option 2)	Front panel handles (CANNOT be ordered with Option 1)
MT8860C-014 (Option 14)	802.11a transmitter and receiver measurements
MT8860C-114 (Option 114)	Retrofit 802.11a transmitter and receiver measurements
MT8860C-017 (Option 17)	802.11n transmitter and receiver measurements (Requires MN8861A Receiver Accessory for 802.11n receiver measurement support, sold separately)
MN8861A	Receiver Accessory for MT8860C
MT8860C-117 (Option 117)	Retrofit 802.11n transmitter and receiver measurements (Requires MN8861A Receiver Accessory for 802.11n receiver measurement support, sold separately)
MT8860C-098 (Option 98)	Standard calibration to ISO 17025 and ANSI/NCSLI Z540-1 (Certificate of calibration only)
MT8860C-099 (Option 99)	Premium calibration to ISO 17025 and ANSI/NCSLI Z540-1 (Certificate of calibration with test report and uncertainty data included)
2000-1613-R	Bluetooth / Dual Band WLAN antenna and adaptor
2000-1548-R	N-type termination plug (6 GHz, 50 Ω)
2100-2	GPIB cable, 2 m
2000-1371-R	Ethernet cable
3-806-152	Cat 5E cross-over patch cable
B0329G	Protective cover (CANNOT be ordered with Option 1 or Option 2)
13000-00258	MT8860C WLAN Test Set Operation Manual
13000-00259	MT8860C WLAN Test Set Remote Programming Manual



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