Product Introduction

Anritsu envision:ensure

Wireless Connectivity Test Set
MT8862A

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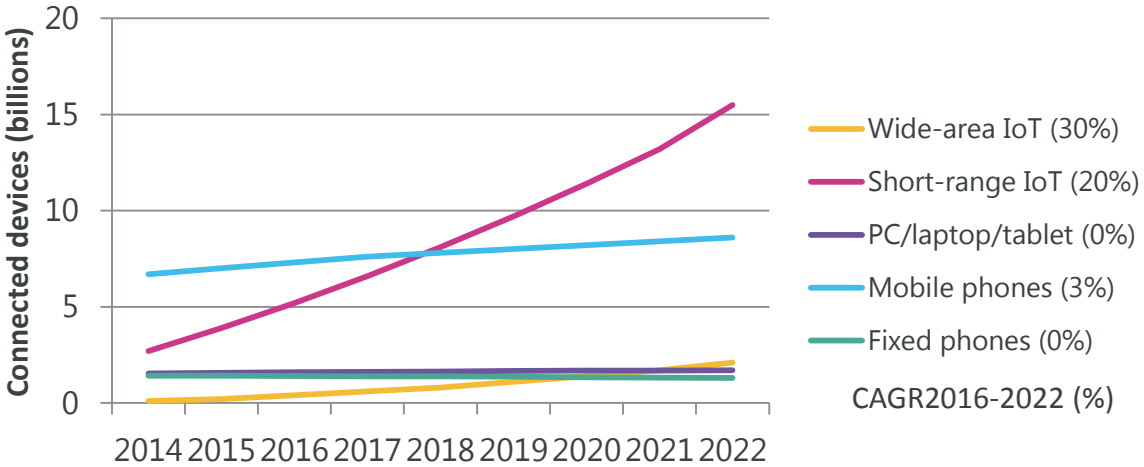
Market Trend & Solutions

Rise of Non-cellular IoT Devices and Diversifying Wireless Standards

Increase in non-cellular IoT devices



Source: ERICSSON MOBILITY REPORT JUNE 2017

The number of Short-range IoT devices is expected to increase in future and will exceed the number of mobile phones. It is assumed that IoT devices will be used for IoT that will expand in the future.

Diversifying wireless standards

[Wireless standards in 2010s]

- Bluetooth Low Energy
- WLAN IEEE802.11ac
- LPWA (LoRaWAN, etc.)
- LTE Cat-M1
- NB-IoT

Bluetooth®

LoRa™

WLAN 11ac

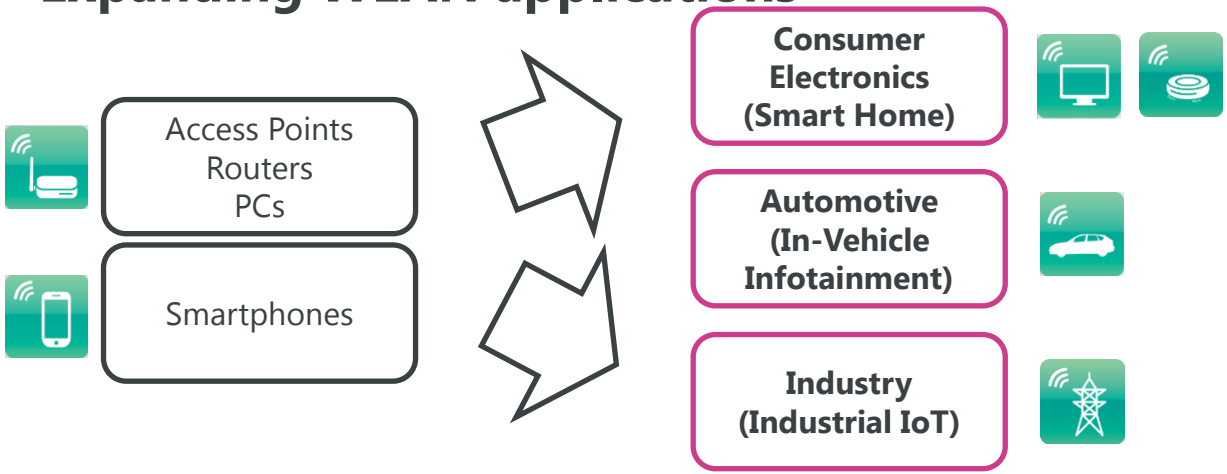
Lte™

3GPP™ A GLOBAL INITIATIVE

Various wireless standards have been released in the 2010s, mainly for low-power-consumption radio, and standards are diversifying. Different standards will be used, depending on the application.

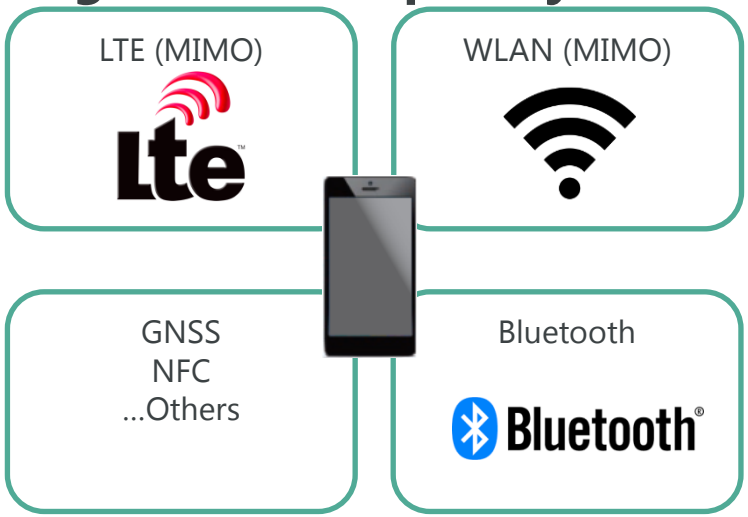
Expanding WLAN Applications & Increasing Device Complexity

Expanding WLAN applications



WLAN applications are expanding, and usage environments and quality requirements are changing.

Increasing device complexity



Devices are using more wireless technologies and antennas year-by-year, increasing device complexity. Therefore, shipping products need evaluation more than ever.

Solutions from Development to Production

	Product Development	Design Verification	Prototyping	Mass-Production
WLAN Devices	 Wireless Connectivity Test Set MT8862A		 Universal Wireless Test Set MT8870A	
Bluetooth Devices	 Bluetooth Test Set MT8852B		 Universal Wireless Test Set MT8870A	

Anritsu has solutions for every stage.

Product Line Tailored to Use

Choices matching measurement use

	Network Mode Wireless Connectivity Test Set MT8862A	Direct Mode Universal Wireless Test Set MT8870A
Advantage	Easy test environment with no DUT control because measured using standard connection	Fast measurement because DUT controlled directly from external PC and optimized for mass production
Disadvantage	Time to establish connection	Requires DUT control
Use	Product development Design validation End-product verification	Prototyping Mass-production

MT8862A Product Introduction

Quality Assurance of Diverse and Complex Devices

The Wireless Connectivity Test Set MT8862A supports an RF performance measurement environment under realistic operation conditions (Network Mode).

Wireless Connectivity Test Set MT8862A

Intuitive GUI

Setup and measurement use a browser GUI with access to Web servers from the PC controller using a Web browser. Control software installation and firmware matching are unnecessary, and there is no dependence on the PC controller OS.

Wide Connectivity Support

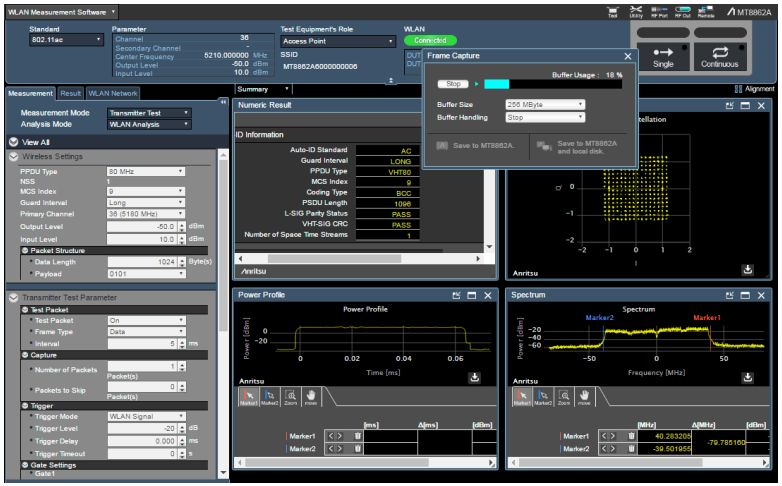
Connections are supported in the IEEE802.11a/b/g/n/ac AP and STA modes. Additionally, supporting securities, WEP, WPA-Personal and WPA2-Personal, makes measuring various devices connect in the Network Mode.

Built-in IP Data Ports

Ethernet ports for IP data are built-in and IP continuity tests, such as ping between the external PC client and DUT can be performed under the same fixed- parameter conditions as at measurement. Tx measurements are also supported during IP data communication.

Advantages of RF Measurement in Network Mode

The MT8862A Network Mode supports configuration of an RF measurement environment without test firmware, chipset control, and hardware modification.



No Test Firmware

Firmware used by commercial products can be tested and RF measurements can be made without needing test firmware. RF control faults which can't be found with test firmware can be analyzed.

No Chipset Control

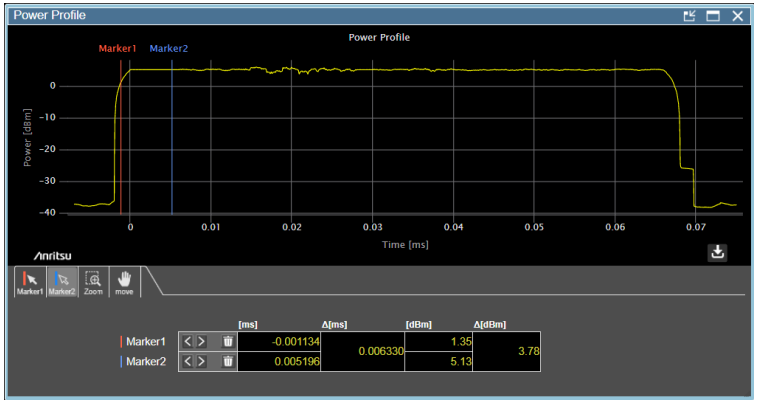
Chipset control required by test firmware is unnecessary and measurement is performed at the required data rate using a unique data rate control algorithm, helping unify the measurement environment for different parts used by chipsets.

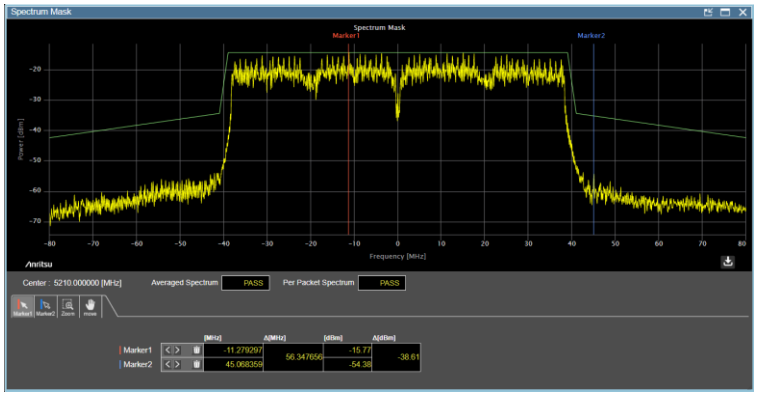
No Hardware Modification

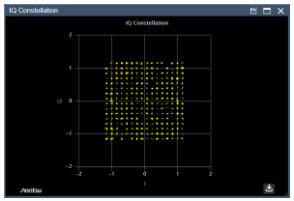
Since no interface is required for chipset control, RF tests can be run without modifying devices. This is ideal for RF measurements of devices without interfaces due to needs for miniaturization, enhanced durability, and cost control.

DUT Tx Test

- At ACK measurement, the MT8862A sends an Test Packet to the DUT; at Data measurement, it sends a ICMP Echo Request packet. Tx measurement is performed when either the ACK or ICMP Echo Reply sent from the DUT is received.
- The header of the packet received from the DUT is analyzed and RF measurements such as power, modulation accuracy, spectrum, etc., are performed to display results.
- Packets sent using the IP data TRx ports can also be measured.

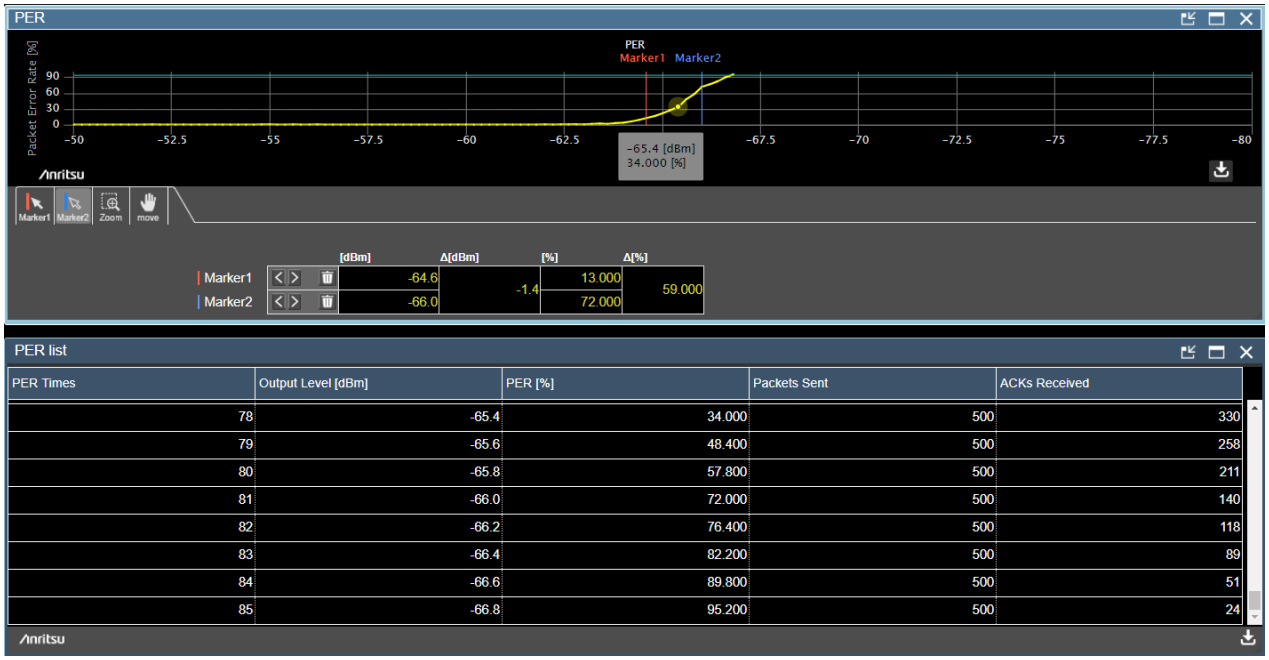






DUT Rx Test

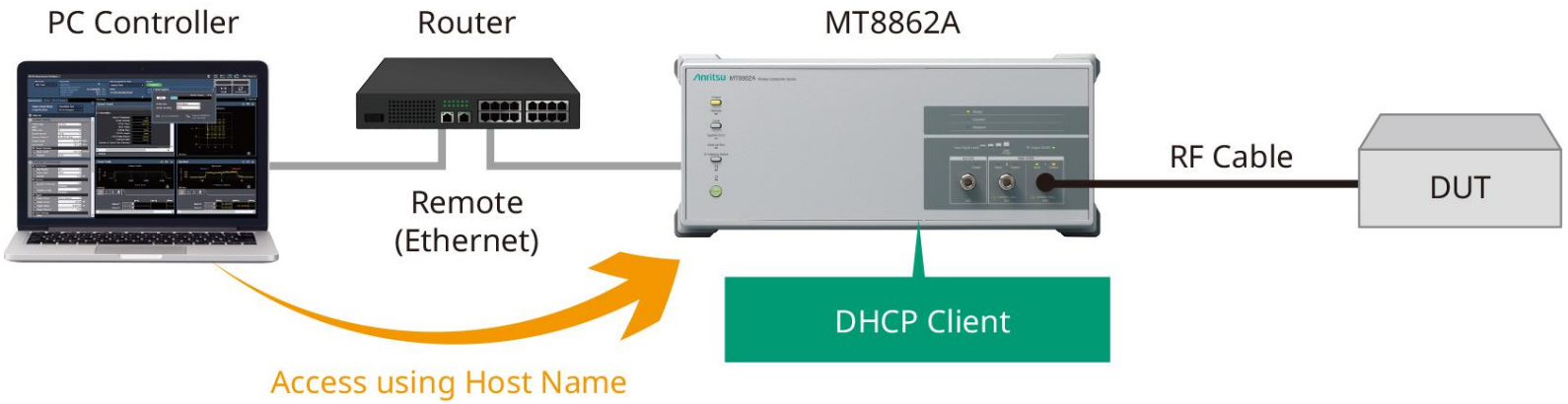
- The MX886200A measures the PER/FRR by counting the ACK frames sent by the DUT in response to the Test Packet. Configuring a measurement environment is easier than using the Direct mode.
- Since tests are made under closer conditions to actual operation, the DUT can also be tested at final shipping for results that are closer to actual usage.
- The PER (Packet Error Rate) standard of the Receiver Blocking test in ETSI EN 300 328 V 2.1.1 released on January 13, 2017 has been added for broadband wireless devices operating in the 2.4 GHz ISM Band, including WLAN. This test is done easily using the PER measurement function of the MT8862A and a signal generator to generate the interference wave.



GUI Control over Ethernet

- Two connection methods between MT8862A and control PC:
  - One-to-one Ethernet connection
  - Connection over Ethernet network

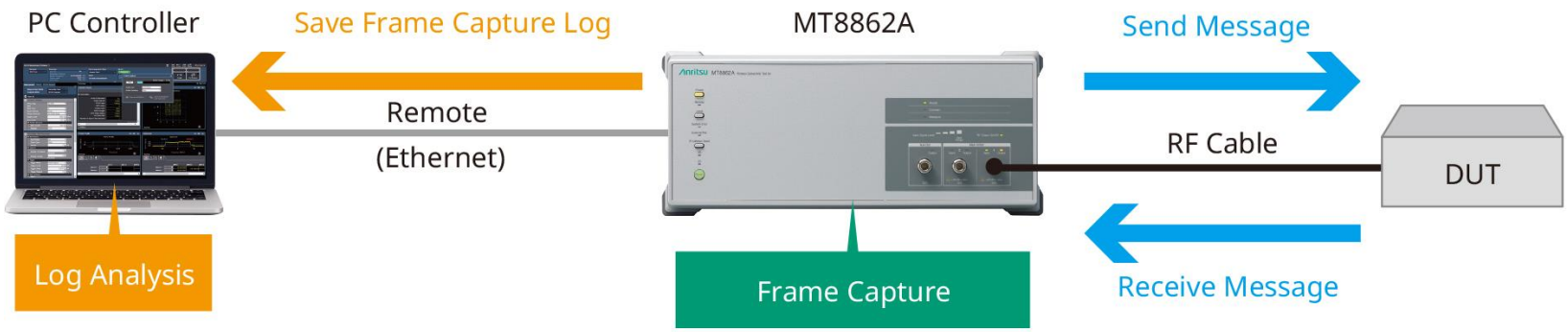
The MT8862A DHCP Client function supports remote network access from an external PC controller for easy remote control and sharing one MT8862A between multiple users.



One-to-one access using static IP also supported

Frame Capture for Troubleshooting DUT Connections

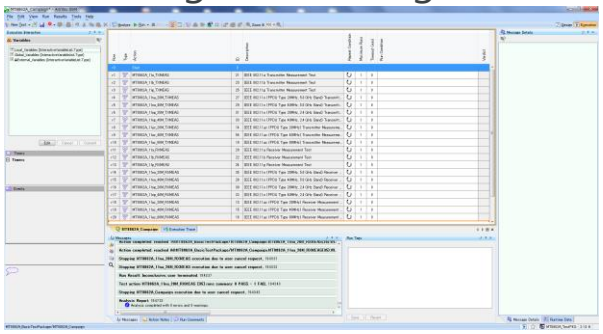
- The MX886200A captures WLAN frames sent to and received from the DUT. Captured logs can be saved by the PC controller in pcap format for analysis by software such as Wireshark. This eliminates the need for a separate packet sniffer to capture WLAN frames and supports troubleshooting of WLAN frames in the RF measurement environment.



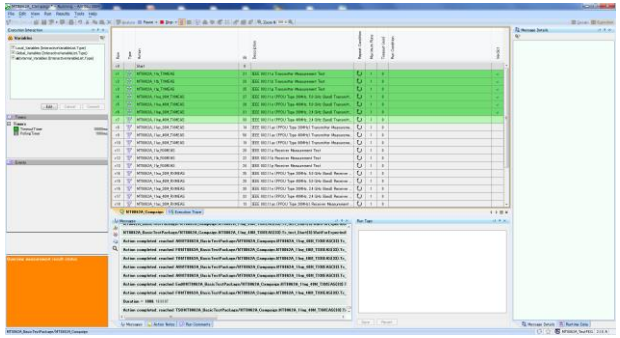
Remote Control Environment

- Using the MT8862A, remote-control protocols, such as HiSLIP, VXI11,etc., for controlling instruments using the general-purpose Raw-Socket connection method, can be selected to match an existing remote-control environment.
- The same remote-control commands are used for the GUI running on the Web browser and the GUI remote control command log can also be captured. Creation times are greatly reduced by using remote-control command sequences.
- In addition, sample sequences are also provided for the Smart Studio Manager MX847503A for the MT8862A.

1. Making & Selecting test items



2. Run

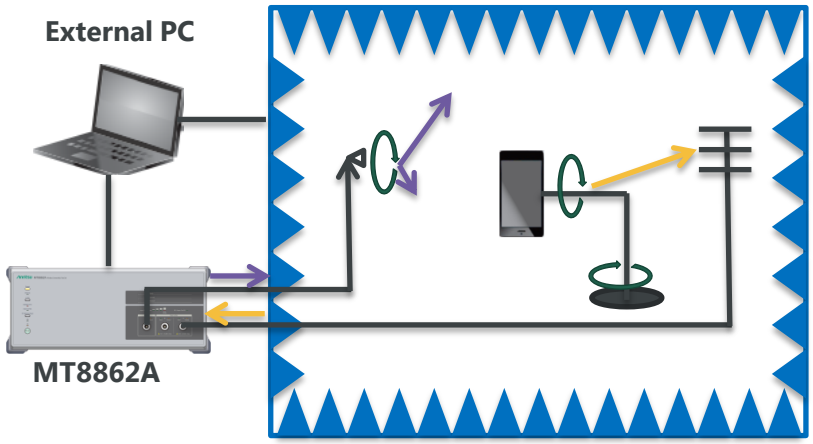


MT8862A Applications

OTA Measurements using OTA Chamber

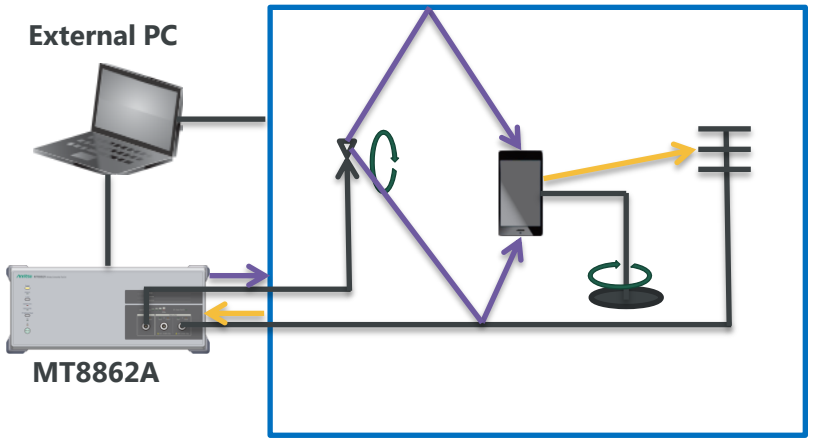
- As WLAN applications diversify, WLAN devices and their usage environment are becoming more complex, resulting in a growing need to quantify and verify that antenna characteristics meet the design specifications by testing antenna characteristics, such as TX power range, receiver sensitivity, etc.
- Anritsu supports an OTA measurement test environment with OTA chamber vendors for measuring the reception power range and receiver sensitivity, such as TRP/TIS, to validate RF performance in WLAN final-use environments.

Anechoic Chamber



Downlink Signal Uplink Signal

Reverberation Chamber



Downlink Signal Uplink Signal

IP Data Transfer

- The Ethernet port on the back panel of the MT8862A can be used for exchanging IP data with an external server.
- IP connections between the client PC connected to the DUT and the external server connected to the MT8862A can be checked using the ping function, etc.
- Connections can be checked and RF measurements can be made under fixed parameter conditions, such as data rate.
- When it is necessary to access a specific server on the Internet at DUT connection, the MT8862A can also be used for connection maintenance purposes.

Appendix

MT8862A – Key Specifications

Connectivity Test Set MT8862A

- RF Input/Output: Main 1, Main 2, Aux (Aux: output only)
- Frequency Range: 2.4 to 2.5 GHz, 5.0 to 6.0 GHz (in 1 Hz steps)
- Input Level Range: –65 to +25 dBm (in 0.1 dB steps)
- Output Level Range: –120 to 0 dBm (in 0.1 dB steps)
- Dimensions: 426 (W) × 177 (H) × 390 (D) mm (excluding protruding parts)
- Mass: 14 kg max.
- Power Supply: 100 to 120 Vac/200 to 240 Vac, 50/60 Hz, ≤ 350 VA
- Environmental Conditions: +5° to +45°C (operating), –20° to +60°C (storage)

WLAN Connectivity

	802.11a	802.11b	802.11g
Frequency Range	5180 MHz to 5825 MHz	2412 MHz to 2484 MHz	2412 MHz to 2484 MHz
Operation Mode	-	-	ERP-OFDM
Modulation	OFDM(BPSK, QPSK, 16QAM, 64 QAM)	DSSS, CCK	OFDM(BPSK, QPSK, 16QAM, 64 QAM)
Data Rate	6, 9, 12, 18, 24, 36, 48, 54 Mbps	1, 2, 5.5, 11 Mbps	6, 9, 12, 18, 24, 36, 48, 54 Mbps
Security*2	WEP, WPA-Personal, WPA2-Personal		

	802.11n	802.11ac*1
Frequency Range	2412 MHz to 2484 MHz 5180 MHz to 5825 MHz	5180 MHz to 5825 MHz
Bandwidth	20 MHz, 40 MHz	20 MHz, 40 MHz, 80 MHz
MCS	MCS0 to MCS7	MCS0 to MCS9
FEC	BCC	BCC
PPDU Format	HT-mixed, HT-greenfield	VHT
Guard Interval	Long, Short	Long, Short
RF Chain	Single (SISO)	Single (SISO)
Security*2	WEP, WPA-Personal, WPA2-Personal	

*1: 802.11ac connection requires MX886200A-001.

*2: Secure connections require the MX886200A-020.

Comparison with MT8860C

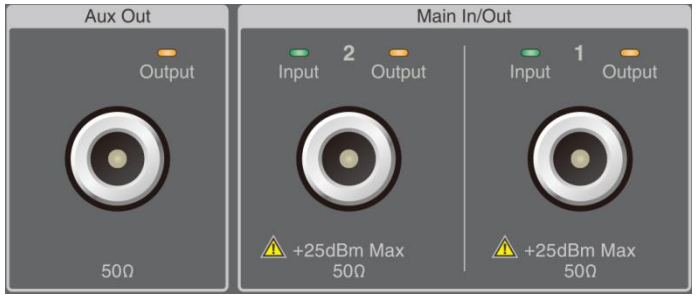
	MT8862A	MT8860C
WLAN Connectivity	802.11a/b/g/**n/ac 80 MHz bandwidth** SISO	802.11a/b/g **20 MHz bandwidth** SISO
Operating Mode	Network mode [AP/STA]	Network mode (AP/STA/**AdHoc**) **Direct mode**
Security	**WEP, WPA-Personal, WPA2-Personal**	-
RF In/Out	Main In/Out (N-Type) **x 2** **Aux Out** (N-Type)	Main In/Out (N-Type) **Interference In, WLAN Ref In** (N-Type)
RF Maximum Output Level	**0 dBm** [2.4/5 GHz band]	**–3 dBm** [2.4 GHz band]/**–8 dBm** [5 GHz band]
Control Software	**Control GUI on web browser**	**LANLook, CombiTest (Windows app)**
Remote Interface	Ethernet (**VXI-11/HiSLIP**/Raw)	**GPIB**, Ethernet
Remote Command	**MT8862A Native**	**MT8860C Native**
IP Data Interface	**Gbit Ethernet**	-
Packet Log	**pcap Output**	-
Size	**1MW** 4U **390 mm**	**3/4MW** 4U **350 mm**

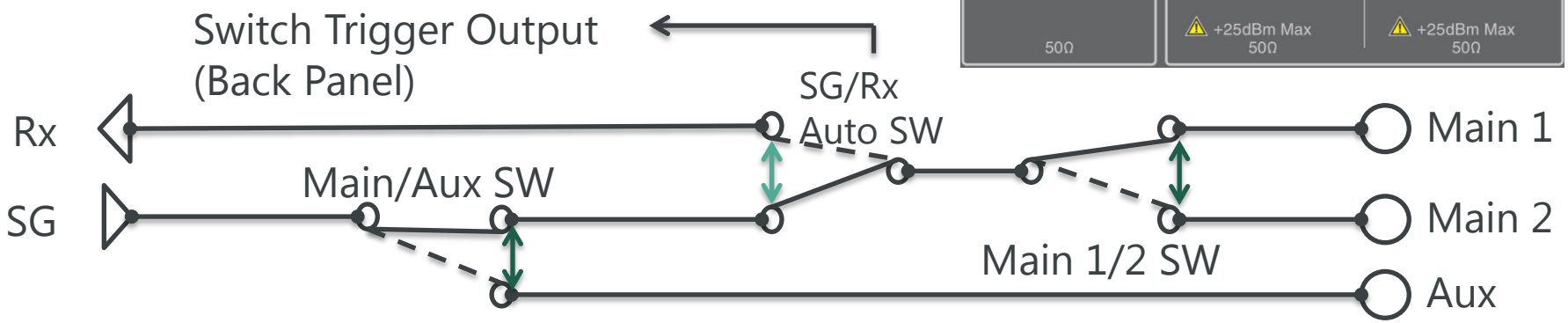
Red: Additional items, **Bold: Changed items**

- Supports 802.11n/ac and AP/STA security connections for more DUT measurements
- Improved usability with separate Tx and Rx RF ports, higher maximum output level, and OTA measurements
- Renewed control software and simpler DUT connection for easier measurement
- Built-in IP data interface for IP continuity tests in reproducible test environment
- Frame capture logs and messaging logging

MT8862A – RF Input/Output Port Specifications

- All ports support output up to 0 dBm for easier configuration of OTA measurement environment.
- A simple system can be configured even when an external amplifier is required by separating Tx/Rx using Aux Output.
- DUTs can be switched during measurement by using the Main 1 and Main 2 ports, supporting automated measurement of multiple DUTs.
- The input level range is –65 to + 25 dBm (Main 1/2).
- The output range is –120 to 0 dBm (Main 1/2 / Aux).

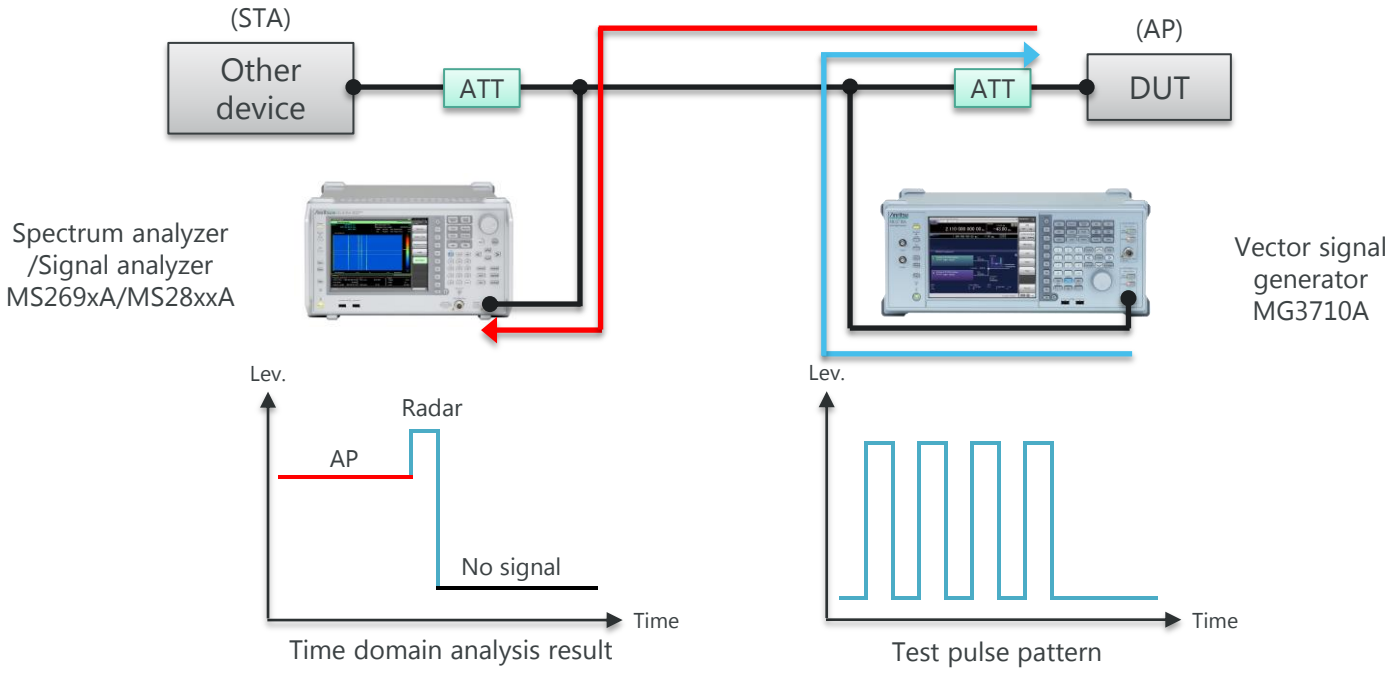




5 GHz Band DFS testing

WLAN, weather radar, marine radar, etc., use the same frequency bands in the 5.3 GHz (Ch52-Ch64[W53/U-NII-2A]) and 5.6 GHz bands (Ch100-Ch140[W56/U-NII-2C]), so the DFS (Dynamic Frequency Selection) technology is used to prevent signal interference when these signals are detected.

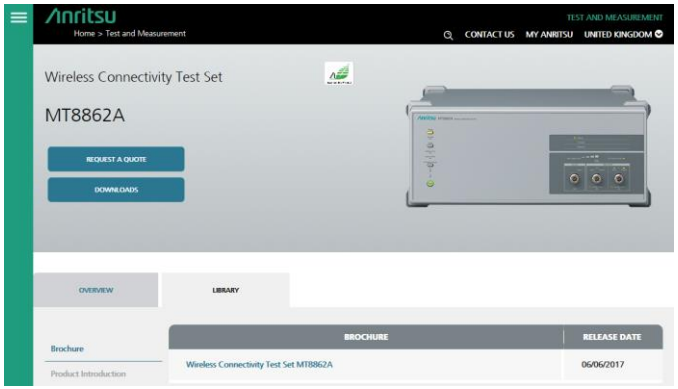
Combining the Vector Signal Generator MG3710A with the waveform pattern product supports the DFS test defined by TELEC, ETSI, and FCC for 5 GHz band WLAN devices.



Documents and Firmware Web Downloads

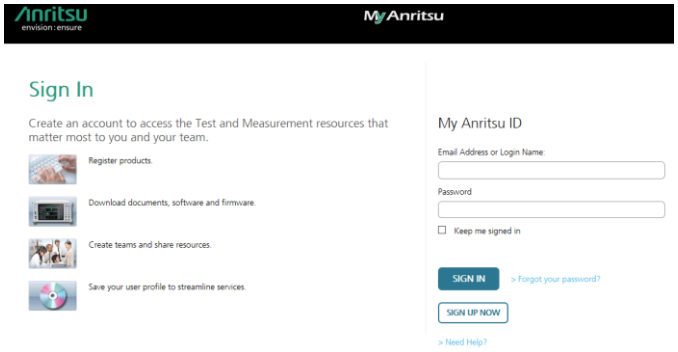
- Anritsu Web Site
  - Download catalogs, product introduction, etc.
  - Open access by anyone

  https://www.anritsu.com/en-GB/test-measurement/products/mt8862a



- My Anritsu
  - Download operation manuals, firmware, tools, etc.
  - Requires creation of My Anritsu account and product registration

  https://login.anritsu.com/signin?



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