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# Do your WLAN products have poor connection / call drop problems?

-Introduction to WLAN Measuring Instruments Digest Edition-

Wireless Connectivity Test Set MT8862A

Until very recently, built-in wireless LAN (WLAN) communications functions were limited to very few products, such as personal computers, smartphones, etc.

However, more recently, WLAN functions are appearing in digital cameras, robotic vacuum cleaners, household white goods, sensors, machinery, etc., and the range is expected to expand as more IoT products appear.

Generally, WLAN communications are realized by "WLAN module" in these equipment and products.

Unfortunately, more customers are complaining to these products build in "WLAN module" about problems, such as

## Poor connection and dropped connection and Narrow Communications Range

"WLAN module" Must be Guaranteed WLAN Transmitter and Receiver Performance But Did you check Tx and Rx performance by your finished WLAN products build in "WLAN module"?

Internal radio interference (intra-EMC) from different parts, such as the power supply, CPU, motor, etc., inside a product can be one cause of increasing product customer complaints

In other words, WLAN Transmitter and Receiver performance can be degraded in finished products.





## What is Intra-EMC?

As products become smaller, the physical separation of parts on circuit boards becomes smaller too, making it difficult to take effective conventional shielding measures against RF interference. In addition, faster CPUs, powersupply inverters, motors in cooling fans, etc., produce more RF interference (noise) to adversely affect WLAN communications. Noise generated in these types of products causes faults in the product's own WLAN communications as a form of "self-intoxication" or Intra-EMC (intra electromagnetic compatibility).



MT8862A

#### **Confirming Finished Product Transmitter and Receiver Performance**

### Under Close-to-Live Operation Conditions (Network Mode)

The MT8862A supports Network Mode for evaluating the wireless quality of finished WLAN products under close-to-live operation conditions. It simulates an access point (AP) or station (STA) to <u>evaluate Transmitter and Receiver performance using simple connections realizing general WLAN communications procedures</u>.





Over The Air (OTA) Connection

Evaluation Items using MT8862A

Tx Performance: Power, Modulation Accuracy (EVM), etc. Rx Performance: Rx Sensitivity (PER\*)

\*PER = Packet Error Rate

#### **Example: How Does Motor Noise Affect Receiver Performance?**



Motor Noise Confirmation Screen The figure on the right shows an example of a spectrum analyzer screen confirming noise generated by a motor. Yellow: Steady State Blue: With Motor Running

Noise generated up

around 300 MHz



Although the frequency of the motor noise (left figure) is lower than the frequency bands used by WLAN (2.4/5 GHz), the receiver sensitivity performance is degraded and errors occur even when the receive signal is sufficiently strong.

At this type of intra-EMC, the various noise frequencies generated within the finished product itself adversely affect the product's WLAN communications. Consequently, it is essential to evaluate the transmitter and receiver performance of finished products with built-in WLAN modules.

As various finished products with WLAN communications functions appear on the market, more customers are complaining about poor connection and dropped connection problems, which adversely affects sales, service times, and brand image.

Improving product quality by confirming finished product transmitter and receiver performance is key to minimizing these risks.

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