

Simple test of the Radio Law and IEEE on ZigBee module

◇System for simple test of the Radio Law and IEEE utilizing a real time spectrum analyzer

Application

RF transmission characteristic test of equipment with built-in antenna, which is regulated in the technical standard conformity certification and IEEE, can be easily measured combining real time spectrum analyzer MSA500 series and anechoic box. By limiting specifications or applications, it is possible to construct an inexpensive system. The physical layer test of ZigBee is regulated in the technical standard conformity certification and IEEE802.15.4-2003.

Solution

■ Test contents of the technical standard conformity certification (reference)

1. Frequency deviation
2. Occupied and spread bandwidth
3. Spurious radiation strength
4. Transmission power
5. Limit on secondary radiated emission
6. Angular width of main radiation of antenna
7. Interference prevention function

■ Test contents of IEEE (reference)

1. Spectrum mask test
2. EVM(Error vector magnitude)
3. Carrier frequency error
4. Spurious radiation strength
5. Transmission power

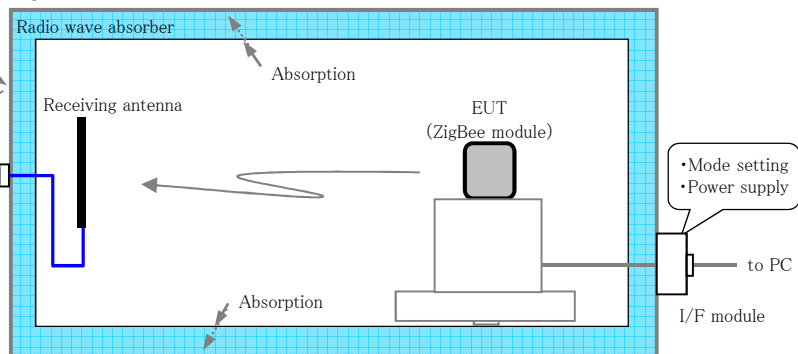
Note. MSA500 series doesn't have the modulation analysis function.

■ Connection example

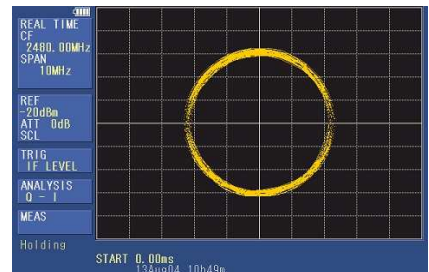
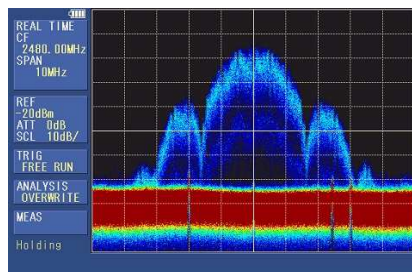
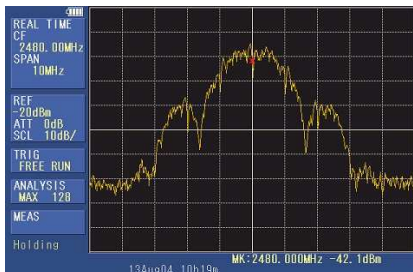
●Real time spectrum analyzer MSA558



●Anechoic box



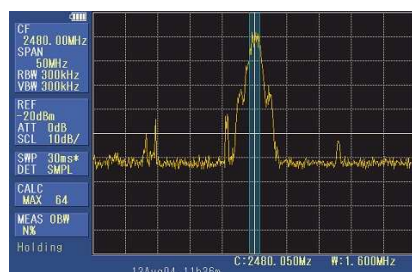
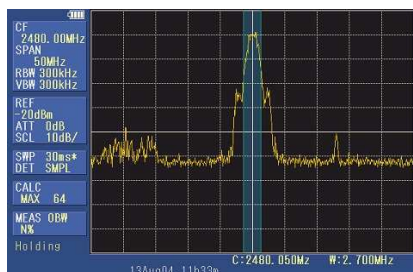
■ Example of Ch15 (2480MHz)



In the measurement of "spurious radiation strength" and "limit on secondary radiated emission", a spectrum analyzer with 12.5GHz or more bandwidth is required. However, MSA500 series is utilizable if limited by third harmonic (7.4 GHz).

"EVM" and "frequency carrier error" can't be measured since the modulation analysis function isn't installed. However, it is possible to observe the raw constellation waveform of Offset-QPSK modulation.

※Measuring frequency range of MSA558:20kHz to 8.5GHz



Example of "Occupied bandwidth" required by the Radio Law

Example of "Spread bandwidth" required by the Radio Law

System configuration

1. Real time spectrum analyzer / MSA558
 2. Anechoic box / MY1530+IF module
- ※. Other: Antenn, cable and adapter