

11. NUMBER OF HOPPING FREQUENCY

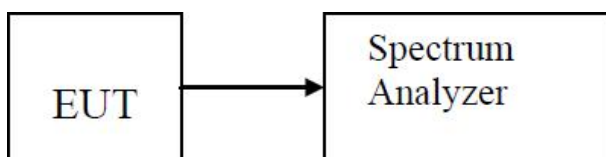
11.1 Test Limit

Frequency hopping systems in the 2400 - 2483.5MHz band shall use at least 15 channels.

11.2 Test Procedure

The transmitter output was connected to the spectrum analyzer through an attenuator. Set spectrum analyzer start 2400MHz to 2483.5MHz with RBW=1MHz and VBW=3MHz.

11.3 Test Setup

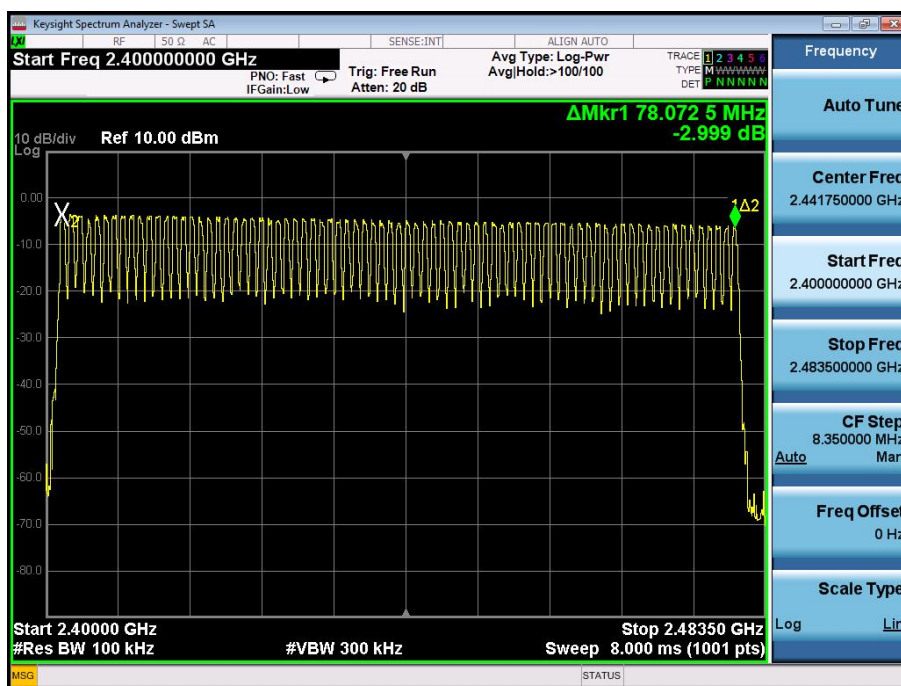


11.4 Test Result

PASS

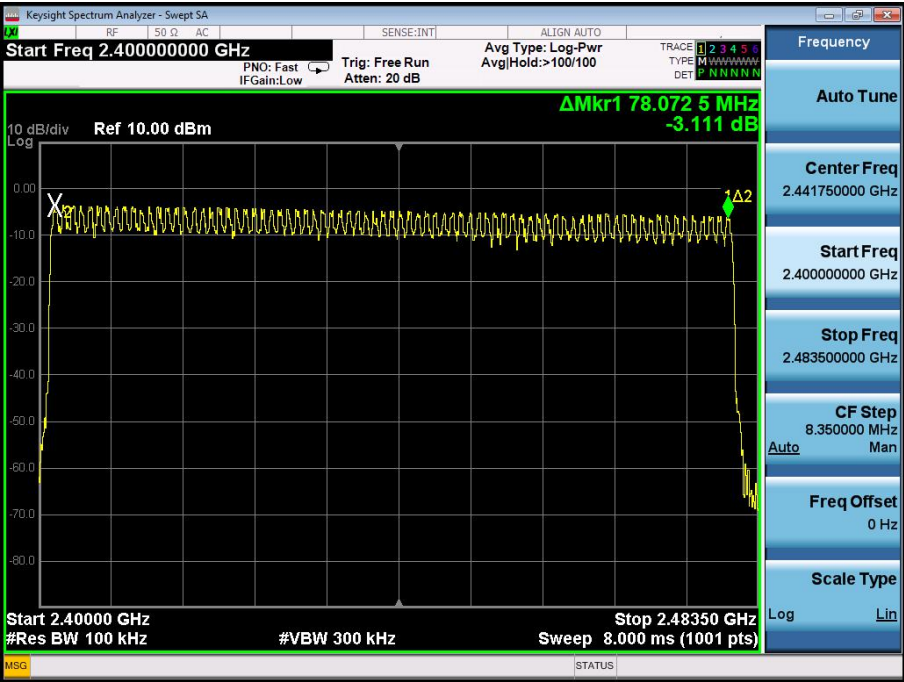
Modulation	Number of Hopping Channel	Limit	Result
GFSK	79	≥15	Pass
$\pi/4$ DQPSK	79		
8DPSK	79		

GFSK

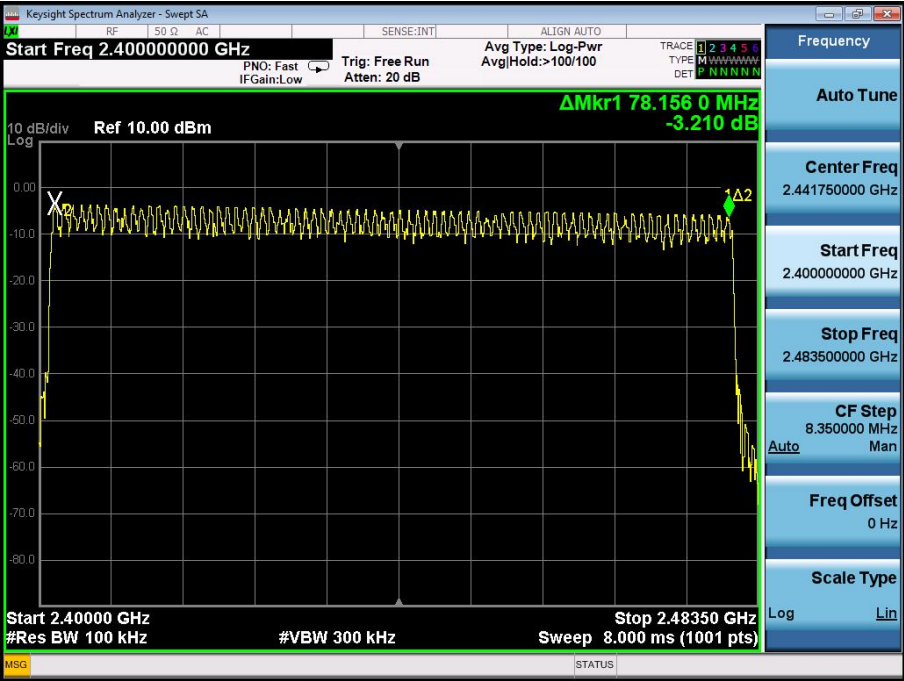


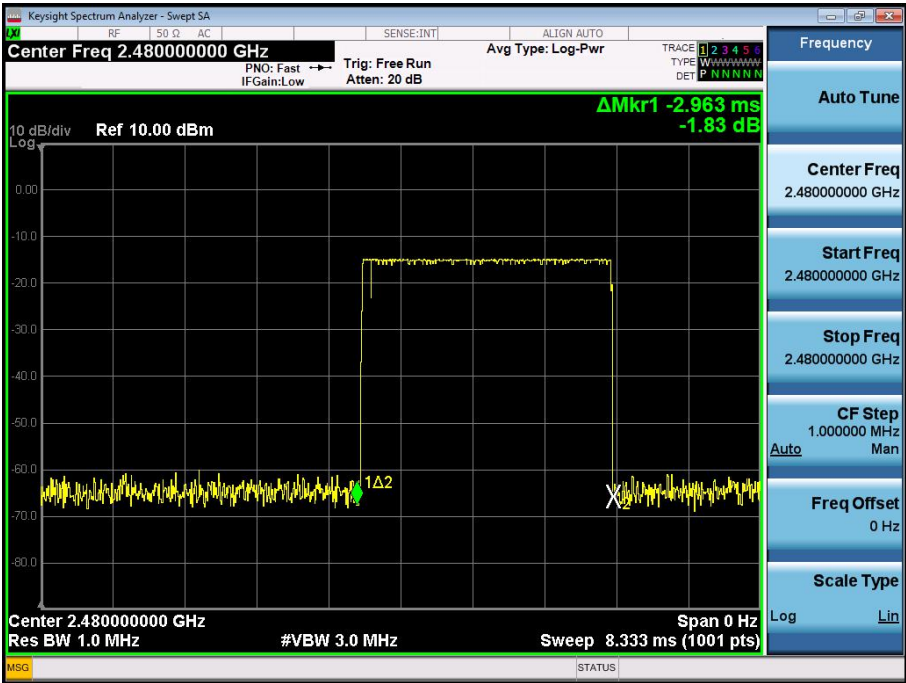
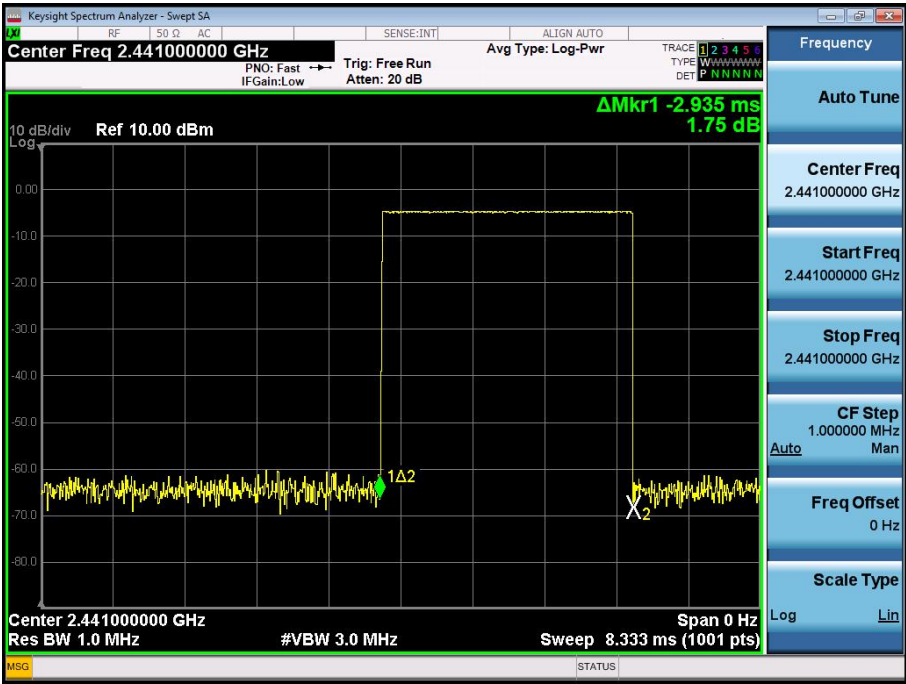
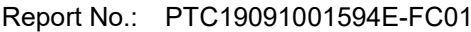


$\pi/4$ DQPSK



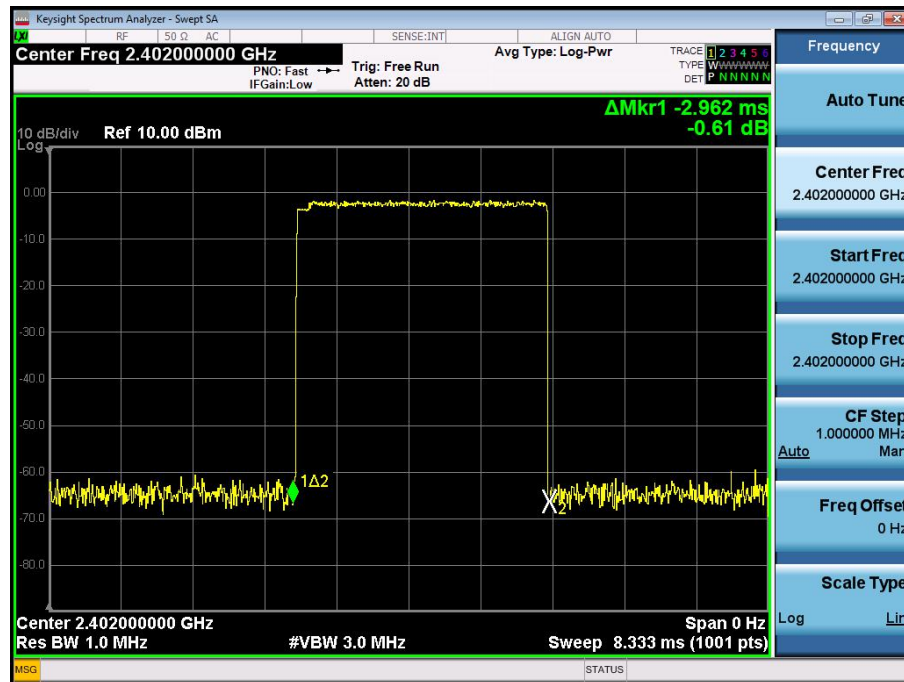
8DPSK



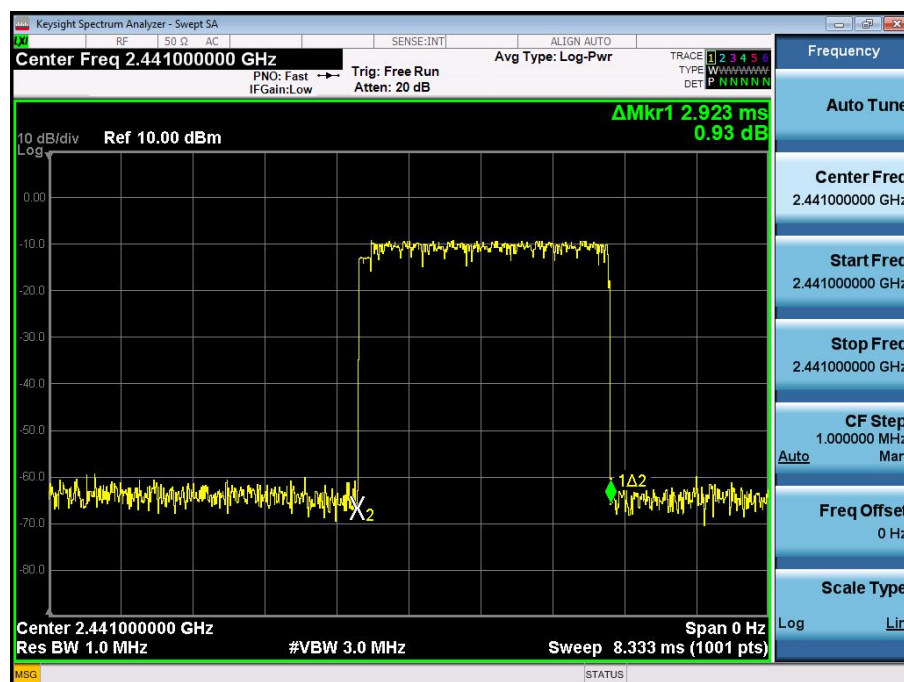


Type	Modulation	CH	Pulse time(ms)	Dwell Time(ms)	Limit(ms)	Result
Dwell Time	$\pi/4$ DQPSK	Low	2.97	316.800	400	Pass
		Mid	2.92	311.467	400	Pass
		High	2.98	317.867	400	Pass
Remark: Dwell Time=Pulse time(ms)×(1600÷6÷79)×31.6						

CH: 2402MHz



CH: 2441MHz





CH: 2480MHz



Type	Modulation	CH	Pulse time(ms)	Dwell Time(ms)	Limit(ms)	Result
Dwell Time	8DPSK	Low	2.98	317.867	400	Pass
		Mid	2.98	317.867	400	Pass
		High	2.96	315.733	400	Pass
Remark: Dwell Time=Pulse time(ms)×(1600÷6÷79)×31.6						

CH: 2402MHz

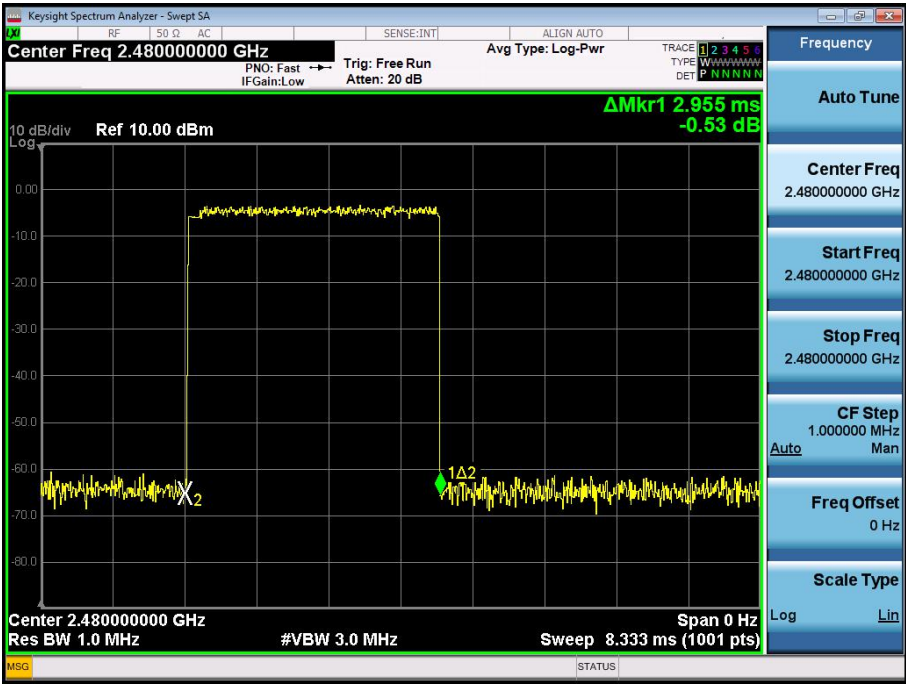




CH: 2441MHz



CH: 2480MHz



13. PSEUDORANDOM FREQUENCY HOPPING SEQUENCE

For 47 CFR Part 15C section 15.247 (a)(1) requirement

Frequency hopping systems shall have hopping channel carrier frequencies separated by a minimum of 25 kHz or the 20 dB bandwidth of the hopping channel, whichever is greater. Alternatively, frequency hopping systems operating in the 2400 – 2483.5 MHz band may have hopping channel carrier frequencies

that are separated by 25 kHz or two-thirds of the 20 dB bandwidth of the hopping channel, whichever is greater, provided the systems operate with an output power no greater than 125 mW. The system shall hop

to channel frequencies that are selected at the system hopping rate from a pseudo randomly ordered list of hopping frequencies. Each frequency must be used equally on the average by each transmitter. The system receivers shall have input bandwidths that match the hopping channel bandwidths of their corresponding transmitters and shall shift frequencies in synchronization with the transmitted signals.

TEUT Pseudorandom Frequency Hopping Sequence Requirement

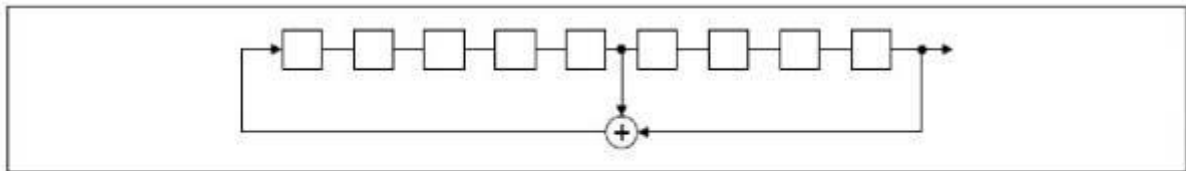
The pseudorandom frequency hopping sequence may be generated in a nine-stage shift register whose 5th and 9th stage outputs are added in a modulo-two addition stage. And the result is fed back to the input of the first stage. The sequence begins with the first one of 9 consecutive ones, for example: the shift register is

initialized with nine ones.

Number of shift register stages: 9

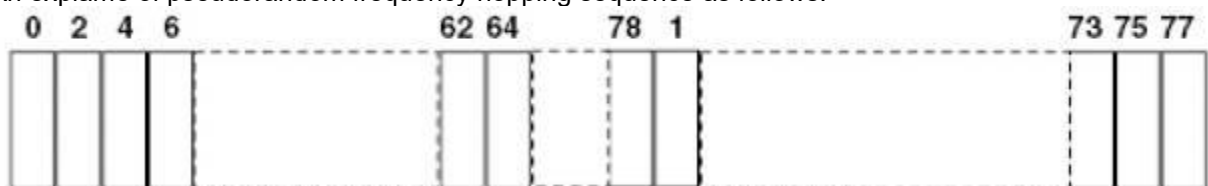
Length of pseudo-random sequence: $2^9 - 1 = 511$ bits

Longest sequence of zeros: 8 (non-inverted signal)



Linear Feedback Shift Register for Generation of the PRBS sequence

An example of pseudorandom frequency hopping sequence as follows:



Each frequency used equally on the average by each transmitter.

The system receiver has input bandwidths that match the hopping channel bandwidths of their corresponding transmitter and shifts frequencies in synchronization with the transmitted signals.

14. ANTENNA REQUIREMENT

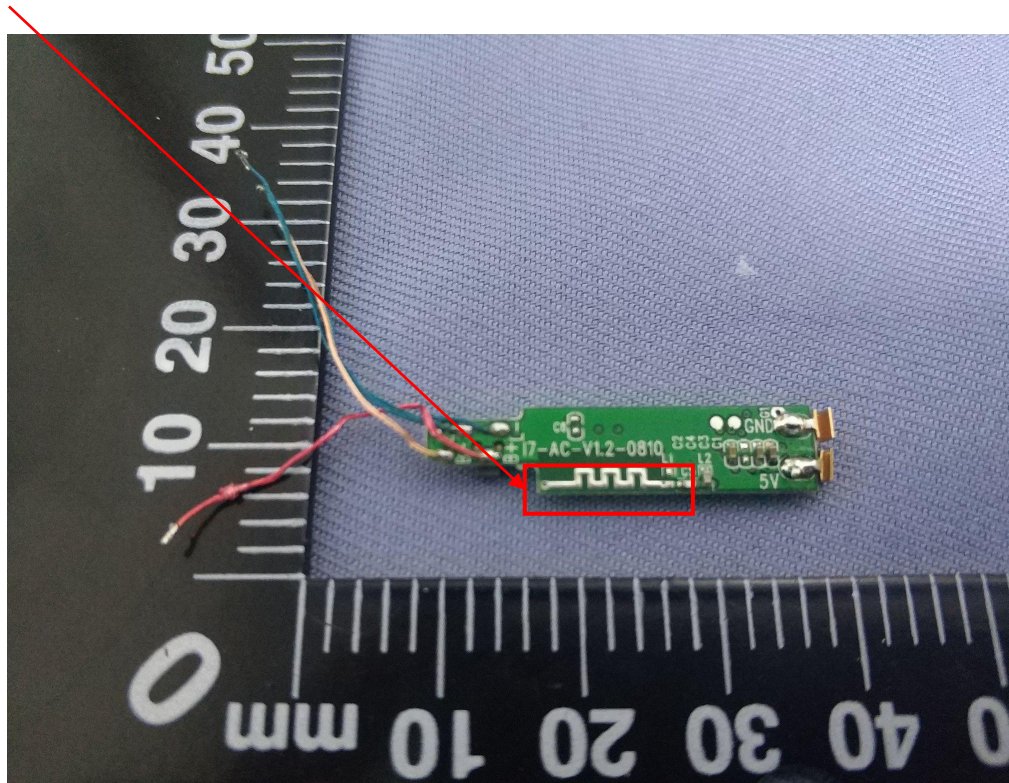
Standard Applicable:

For intentional device, according to FCC 47 CFR Section 15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device.

Antenna Connected Construction

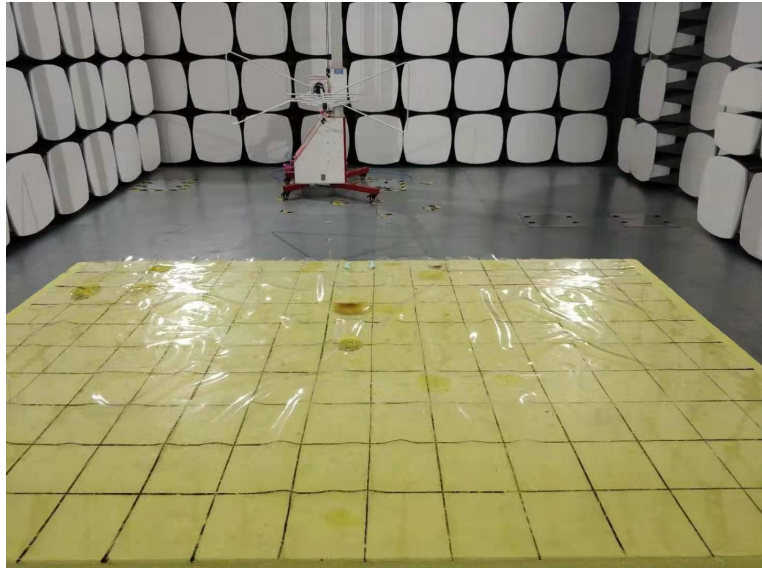
The antenna used in this product is an PCB Antenna, The directional gains of antenna used for transmitting is 2dBi.

ANTENNA:

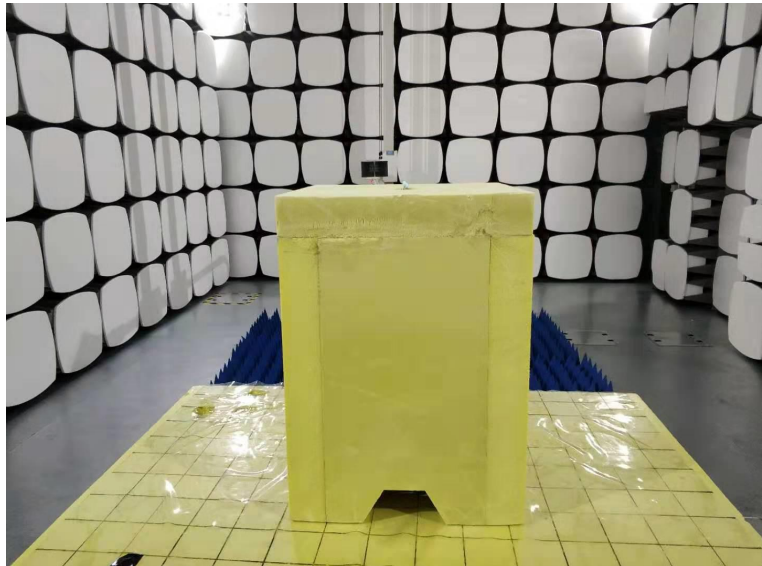


15. PHOTOGRAPH OF TEST

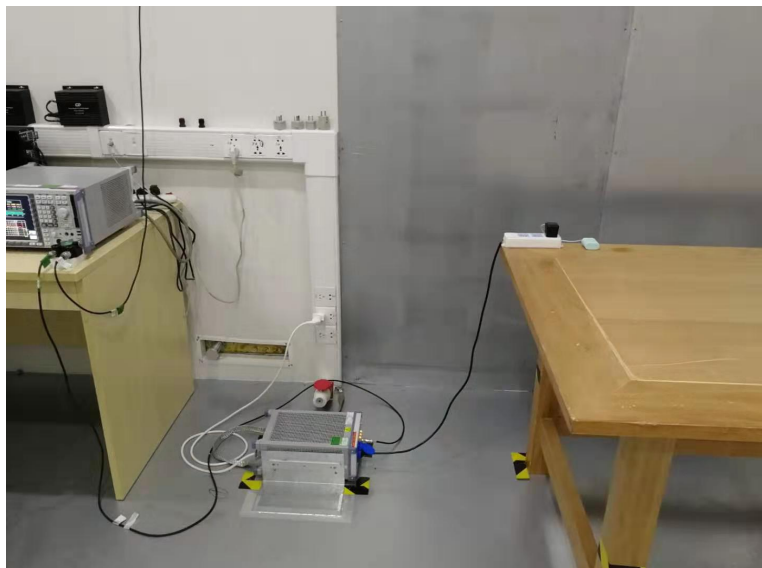
Radiated Emission
(Below 1G)



Radiated Emission
(Above 1G)



Conducted Emission



End of Report