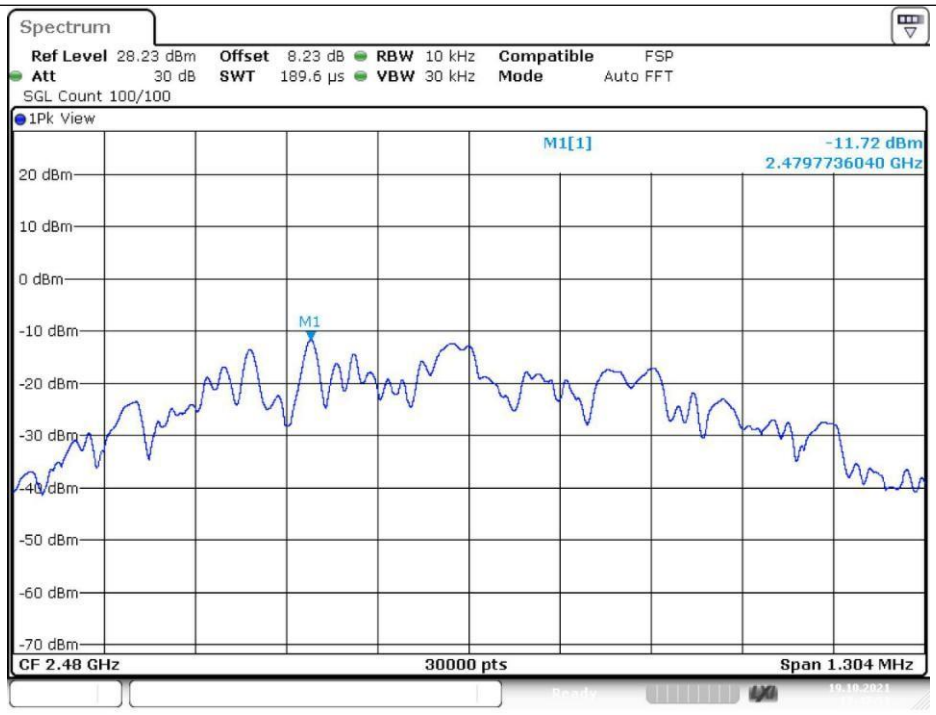
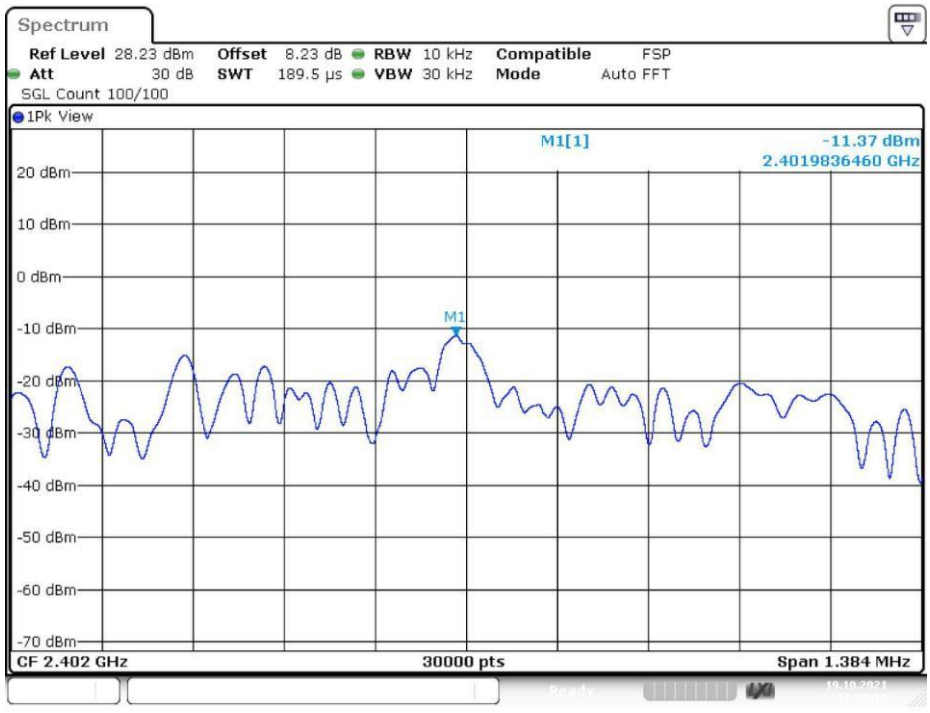
2480 MHz



GFSK-2M：

2402 MHz



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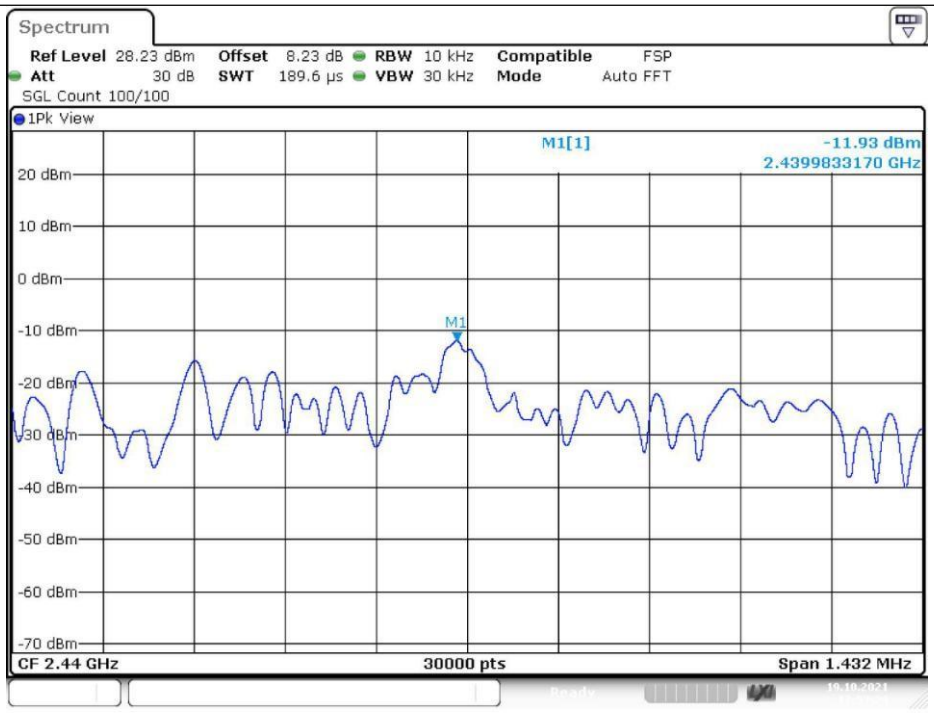
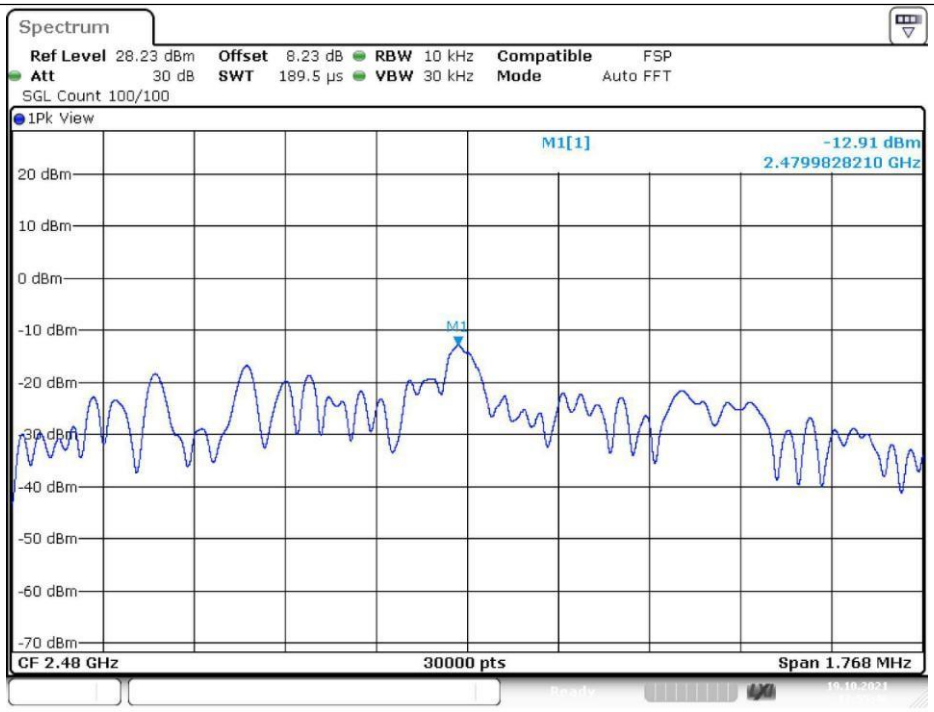
2440 MHz



Date: 19.OCT.2021 17:53:24

2480 MHz



Date: 19.OCT.2021 17:55:46

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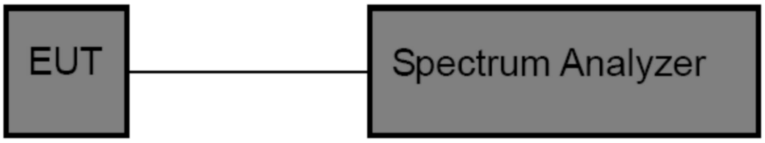
3.7. 6dB Bandwidth

Limit

Test Item	Limit	Frequency Range(MHz)
Bandwidth	>=500 KHz (6dB bandwidth)	2400~2483.5

Test Configuration



Test Procedure

1. Connect EUT RF Output port to the Spectrum Analyzer through an RF attenuator.

2. The 6dB bandwidth is defined as the total spectrum the power of which is higher than peak power minus 6dB.
3. The occupied bandwidth is the frequency bandwidth such that, below its lower and above its upper frequency limits, the mean powers are each equal to 0.5% of the total mean power of the given emission.
4. Spectrum Setting:
   6dB bandwidth:
   (1) Set RBW = 100 kHz.
   (2) Set the video bandwidth (VBW) ≥ 3 RBW.
   (3) Detector = Peak.
   (4) Trace mode = Max hold.
   (5) Sweep = Auto couple.
   (6) Allow the trace to stabilize.
   (7) Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission.

Test Mode

Please refer to the clause 2.2.

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Test Results

GFSK-1M：

Channel	Frequency (MHz)	6dB bandwidth (kHz)	Limit (kHz)	Result
Low	2402	680	500	Pass
Middle	2440	640	500	Pass
High	2480	652	500	Pass

GFSK-2M：

Channel	Frequency (MHz)	6dB bandwidth (kHz)	Limit (kHz)	Result
Low	2402	692	500	Pass
Middle	2440	716	500	Pass
High	2480	884	500	Pass

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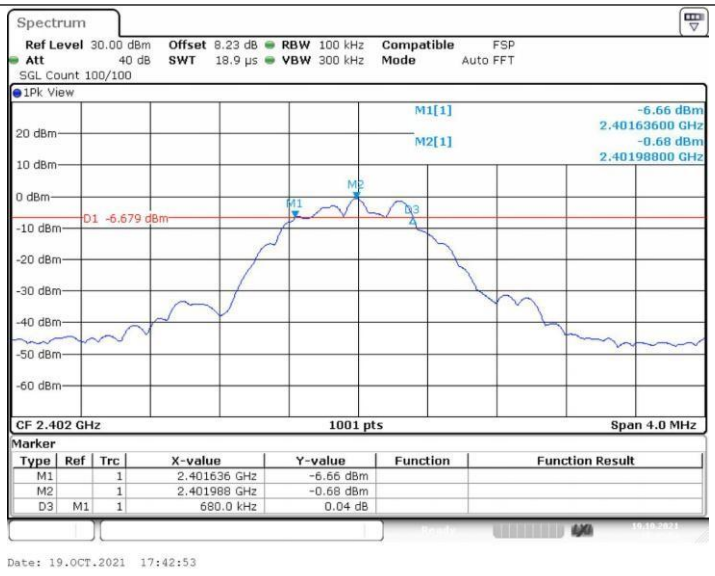
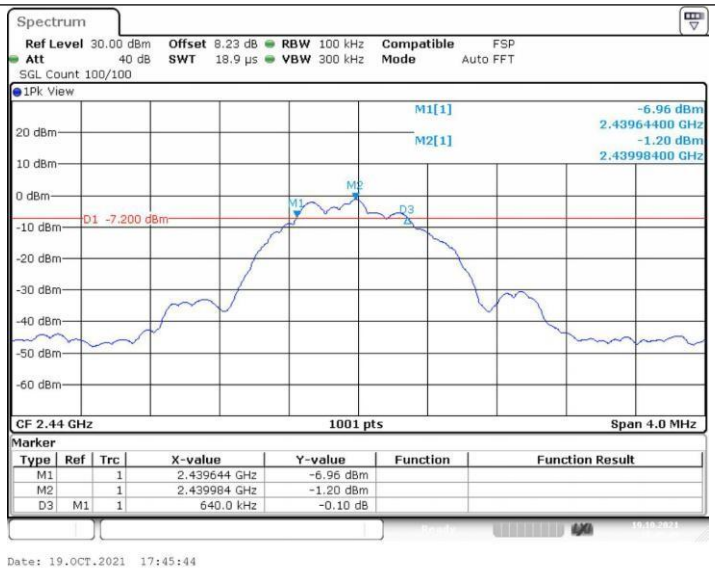
GFSK-1M：

2402 MHz



2440 MHz



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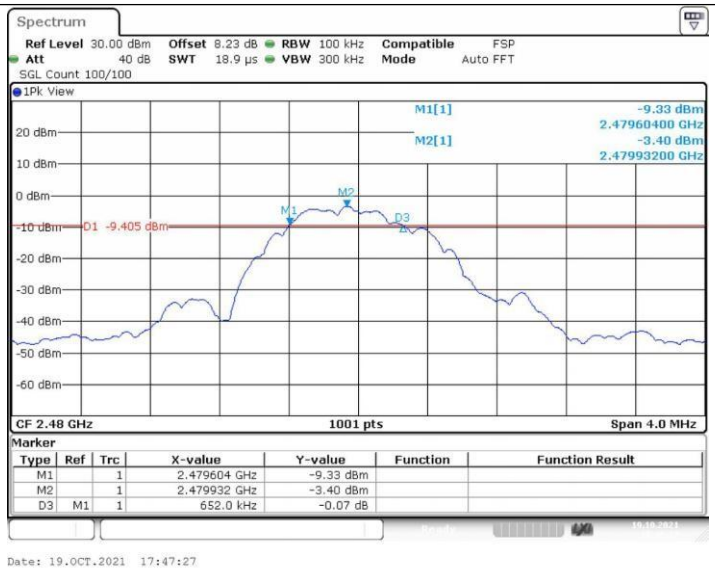
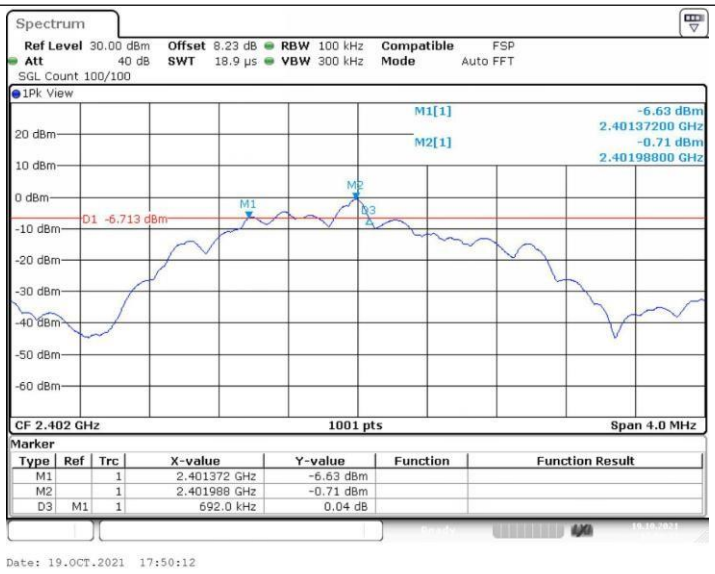
2480 MHz


GFSK-2M：

2402 MHz


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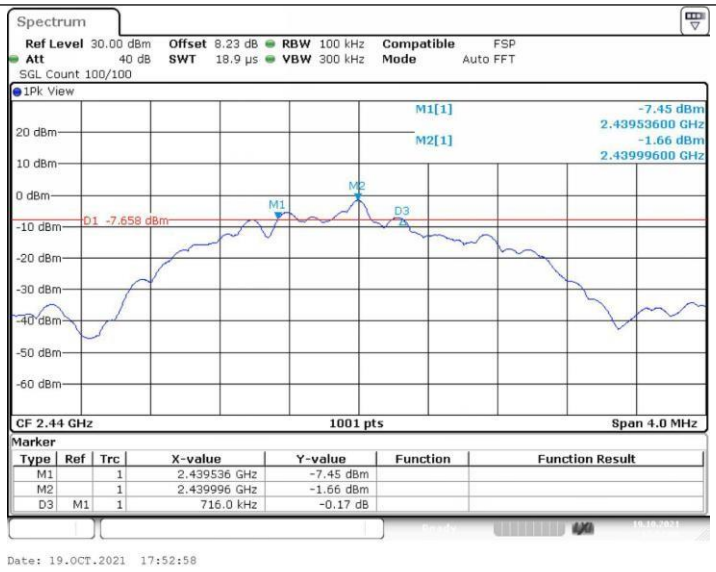
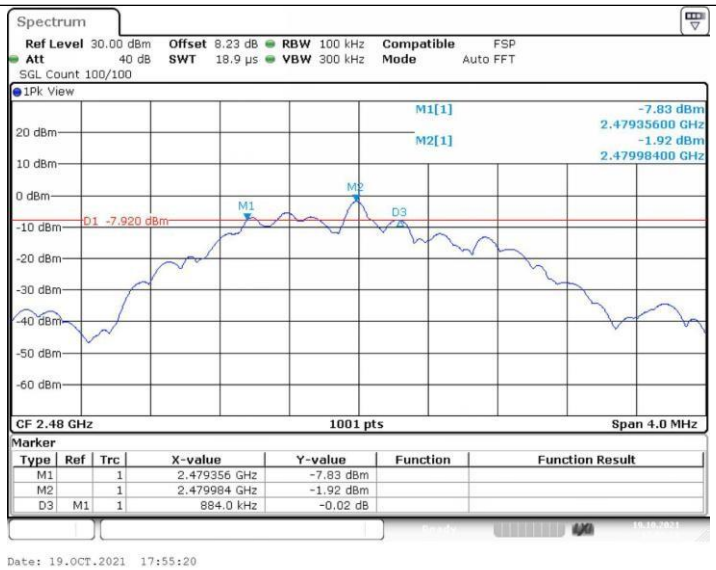
2440 MHz



2480 MHz



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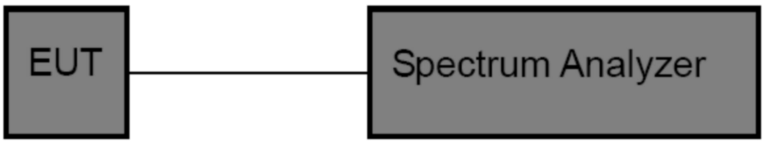
3.8. Duty Cycle

Limit

Test Item	Limit	Frequency Range(MHz)
Duty Cycle	No limit requirement	2400~2483.5

Test Configuration



Test Procedure

The zero-span mode on a spectrum analyzer or EMI receiver if the response time and spacing between bins on the sweep are sufficient to permit accurate measurements of the on and off times of the transmitted signal. Set the center frequency of the instrument to the center frequency of the transmission. Set RBW ≥ OBW if possible; otherwise, set RBW to the largest available value. Set VBW ≥ RBW. Set detector = peak or average. The zero-span measurement method shall not be used unless both RBW and VBW are > 50/T and the number of sweep points across duration T exceeds 100. (For example, if VBW and/or RBW are limited to 3 MHz, then the zero-span method of measuring duty cycle shall not be used if T ≤ 16.7 microseconds.)

The transmitter output is connected to the Spectrum Analyzer. We tested according to the zero-span measurement method, 6.0(b) in KDB 558074 D01 DTS Meas Guidance v05r02.

The largest availble value of RBW is 8 MHz and VBW is 50 MHz. The zero-span method of measuring duty cycle shall not be used if T ≤ 6.25 microseconds. (50/6.25 = 8)

The zero-span method was used because all measured T data are > 6.25 microseconds and both RBW and VBW are > 50/T.

The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator.
The path loss was compensated to the results for each measurement.
Set to the maximum power setting and enable the EUT transmit continuously.
The EUT was operating in controlled its channel.
Use the following spectrum analyzer settings:
Span = Zero Span
RBW = 8MHz (the largest available value)
VBW = 8MHz (≥ RBW)
Number of points in Sweep >100
Detector function = peak
Trace = Clear write
Measure Total and Ton
Calculate Duty Cycle = Ton / Total

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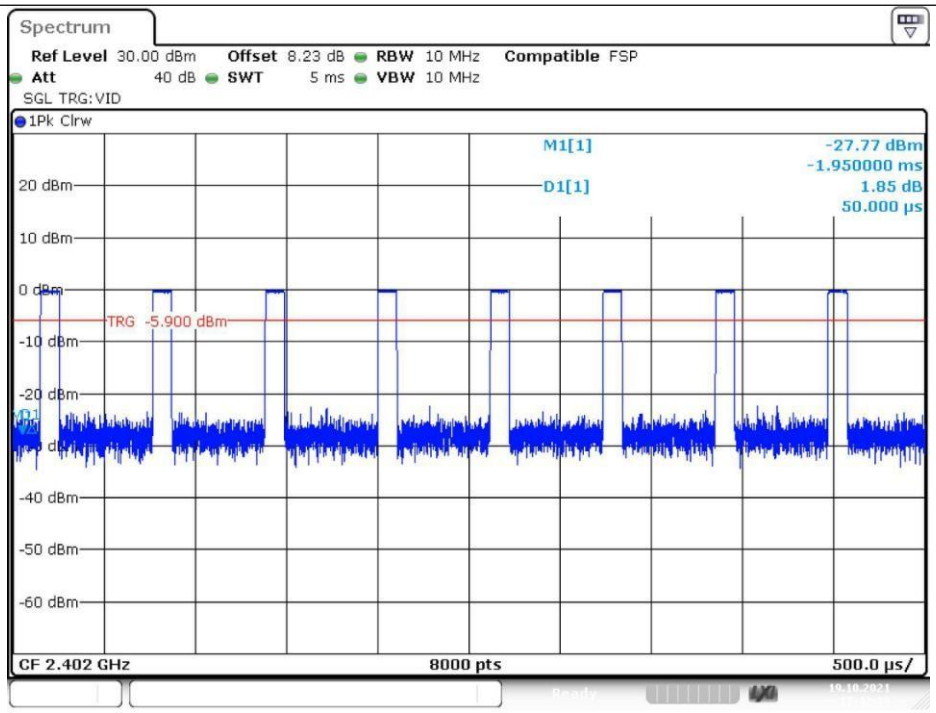
Test Mode

Please refer to the clause 2.2.

Test Results

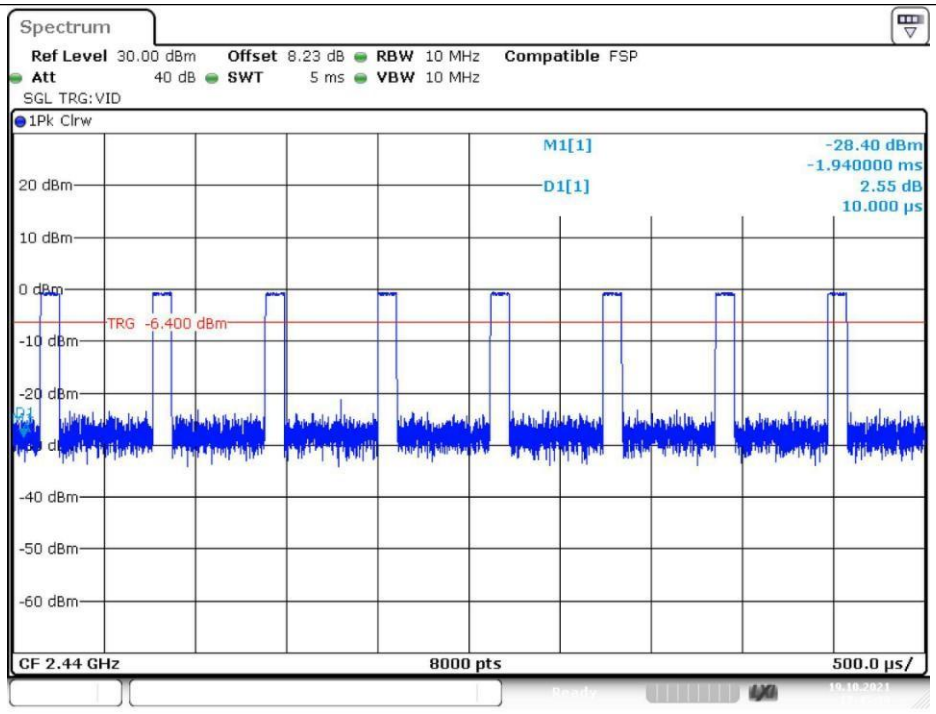
GFSK-1M：

2402 MHz



Date: 19.OCT.2021 17:42:39

2440 MHz



Date: 19.OCT.2021 17:45:31

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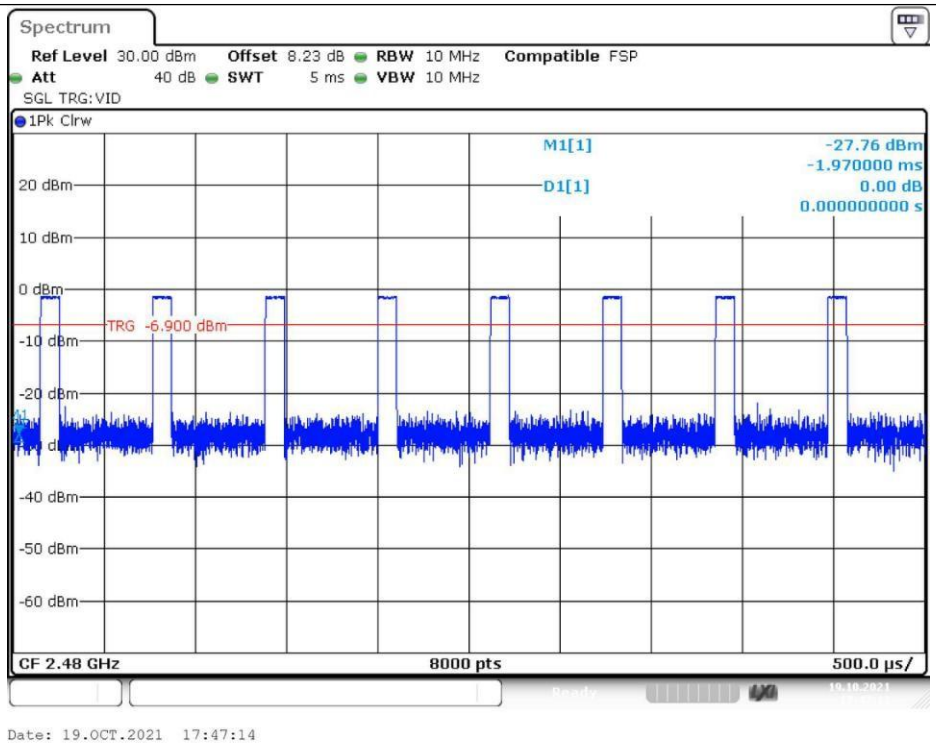
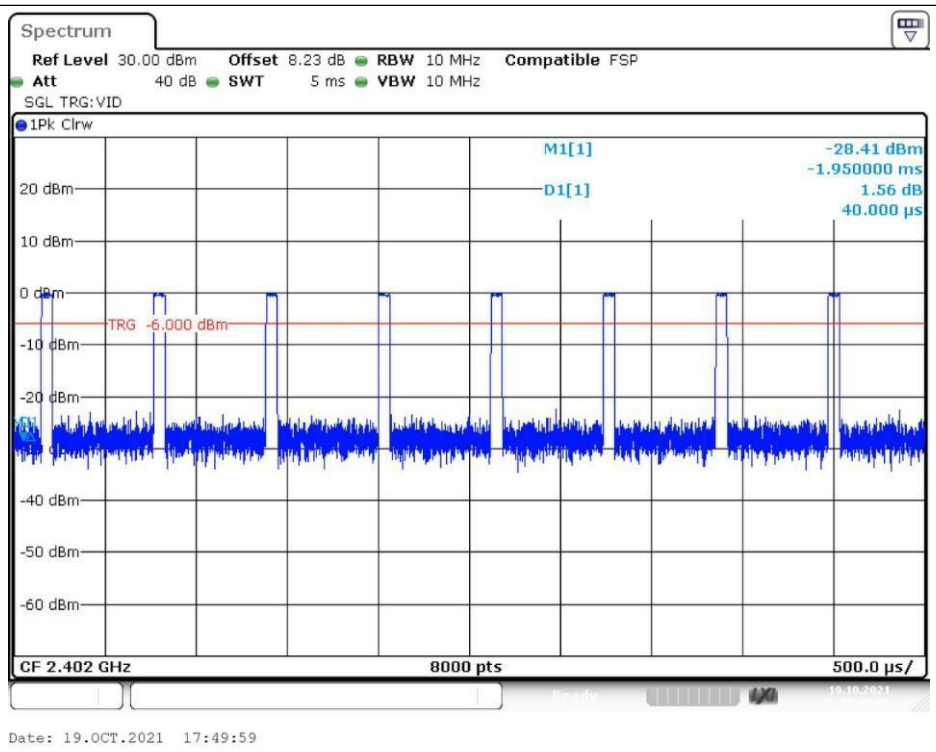
2480 MHz



GFSK-2M：

2402 MHz



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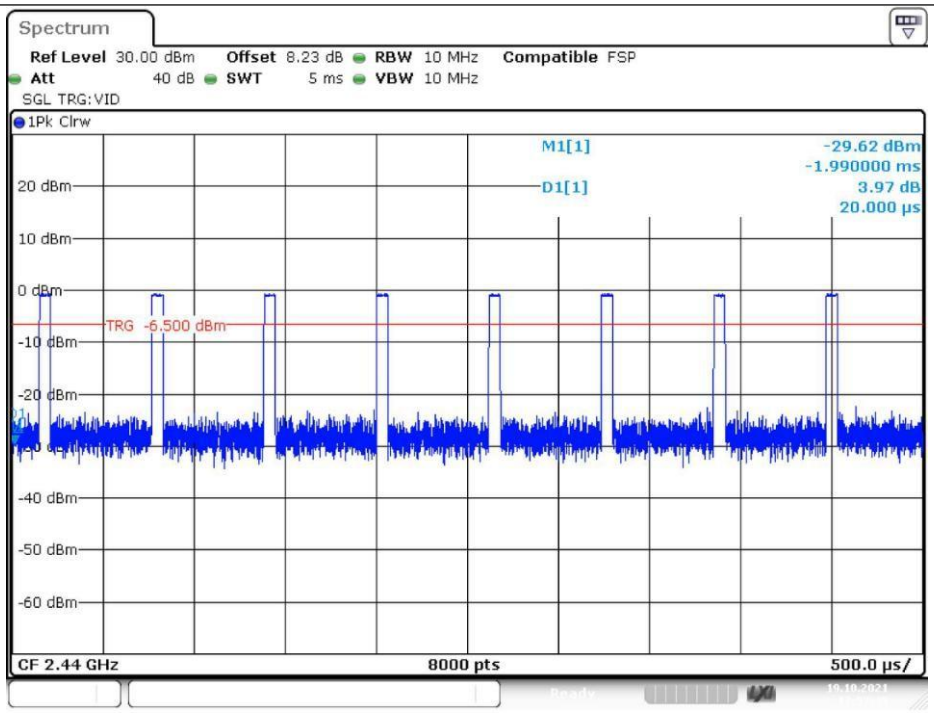
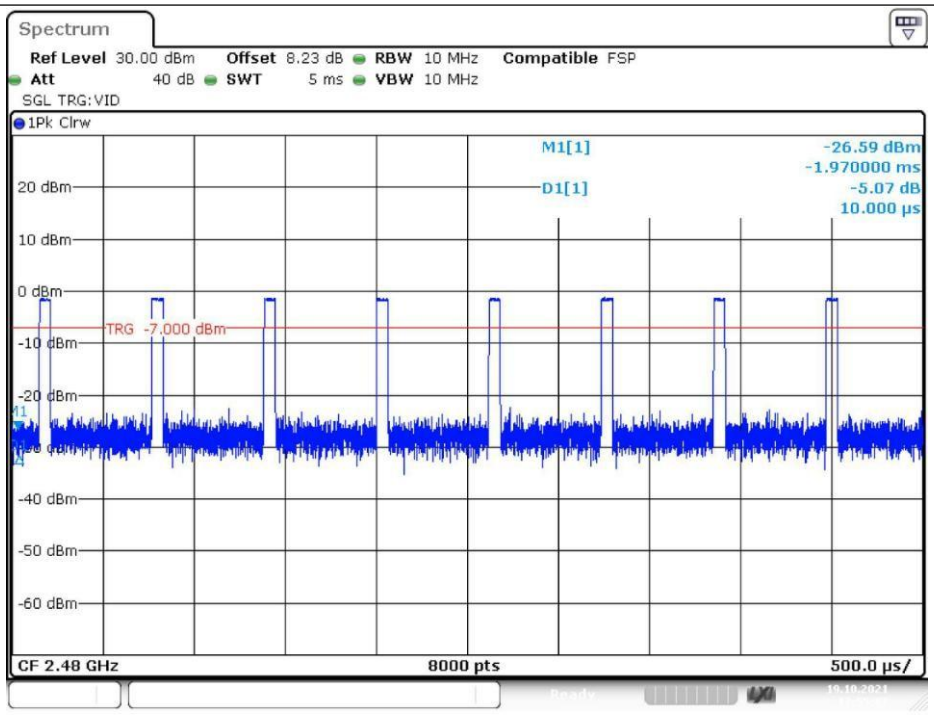
2440 MHz



Date: 19.OCT.2021 17:52:45

2480 MHz



Date: 19.OCT.2021 17:55:06

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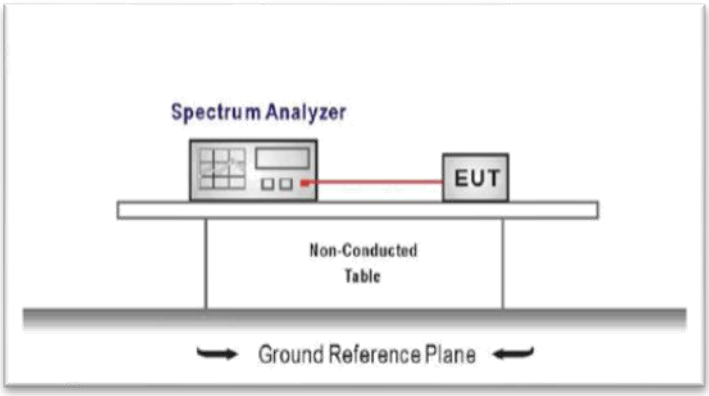
3.9. Conducted Band Edge

Limit

FCC CFR Title 47 Part 15 Subpart C Section15.247 (d):
In any 100 kHz bandwidth outside the frequency band in which the spread spectrum intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement.

Test Configuration



Test Procedure

1. Connect EUT RF Output port to the Spectrum Analyzer through an RF attenuator.
2. Spectrum Setting:
   RBW=100KHz
   VBW=300KHz.
   Detector function: Peak.
   Trace: Max hold.
   Sweep = Auto couple.
   Allow the trace to stabilize.

Test Mode

Please refer to the clause 2.2.

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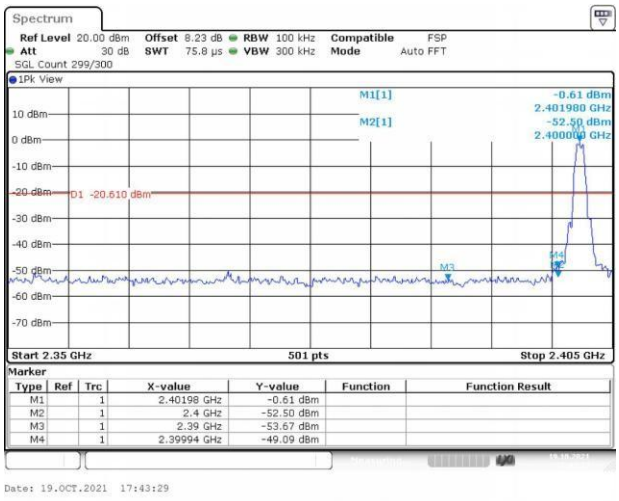
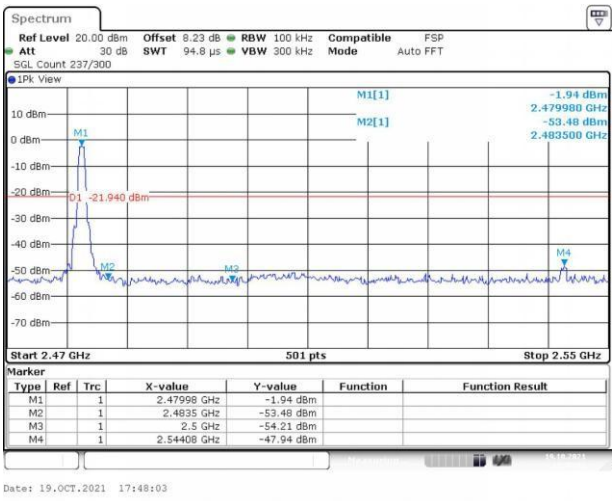
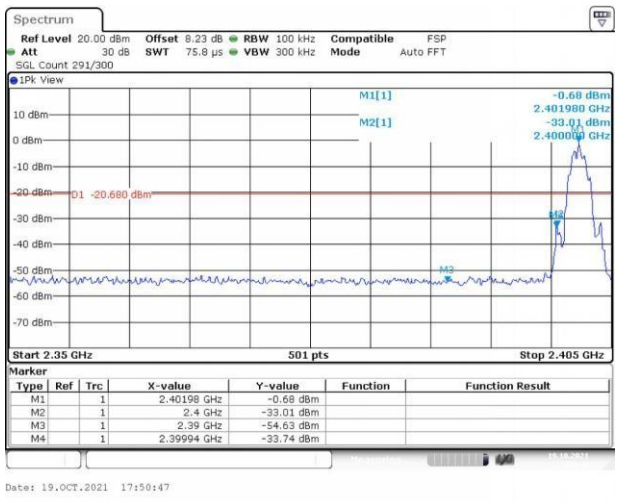
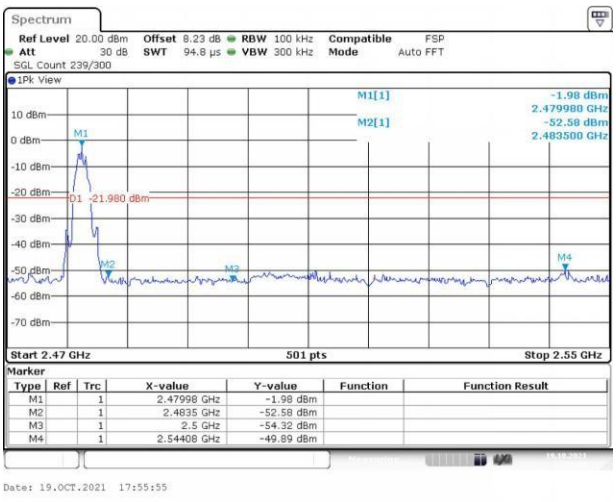
Test Results

GFSK-1M	
CH00-Bandedge	CH39-Bandedge
	

GFSK-2M	
CH00-Bandedge	CH39-Bandedge
	

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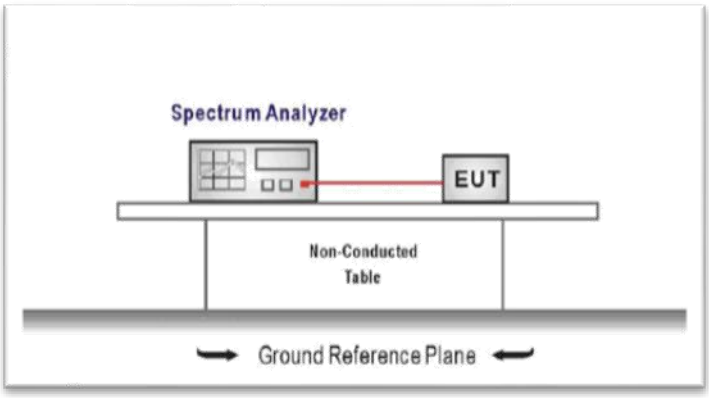
3.10. Spurious RF Conducted Emission

Limit

Below -20dB of the highest emission level in operating band.

Test Configuration



Test Procedure

The Spurious RF conducted emissions compliance of RF radiated emission should be measured by following the guidance in ANSI C63.10-2013 with respect to maximizing the emission by rotating the EUT, measuring the emission while the EUT is situated in three orthogonal planes (if appropriate), adjusting the measurement antenna height and polarization etc. Set RBW=100kHz and VBW= 300kHz to measure the peak field strength, and measure frequency range from 9kHz to 26.5GHz.

Test Mode

Please refer to the clause 2.2.

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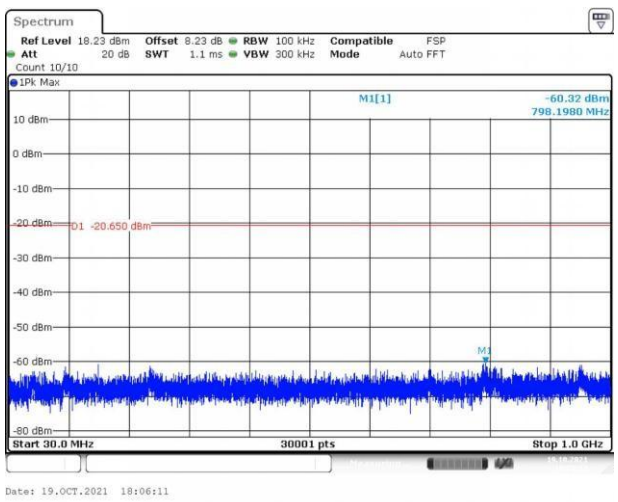
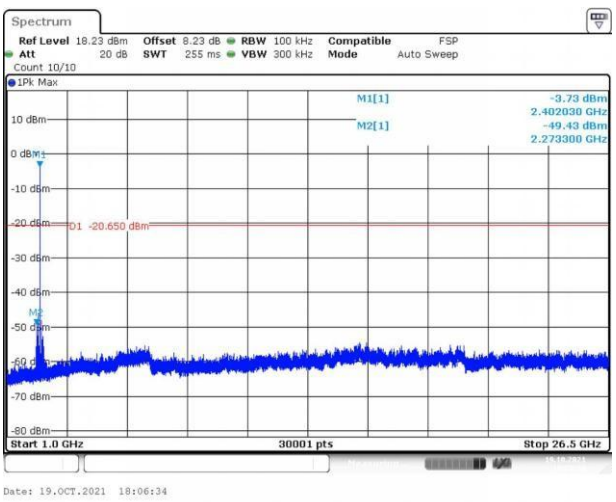
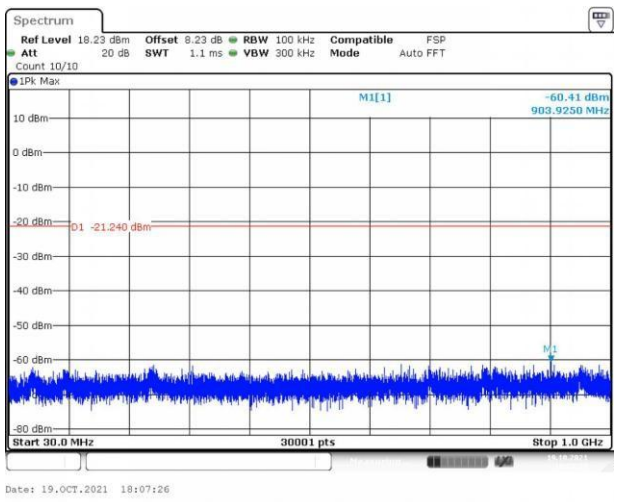
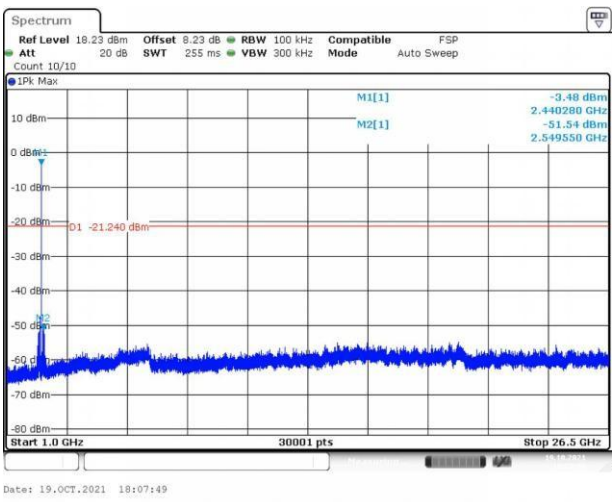
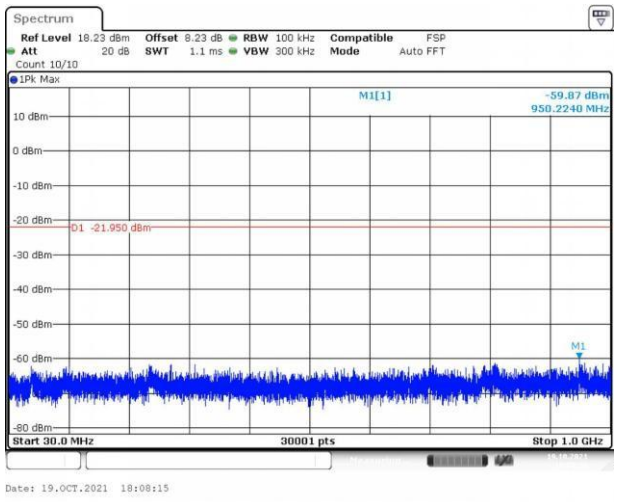
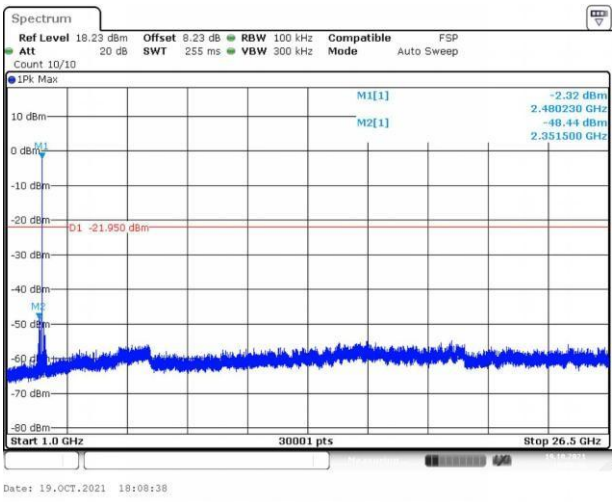
Test Results

GFSK-1M	
CH00	CH00
	
CH19	CH19
	
CH39	CH39
	

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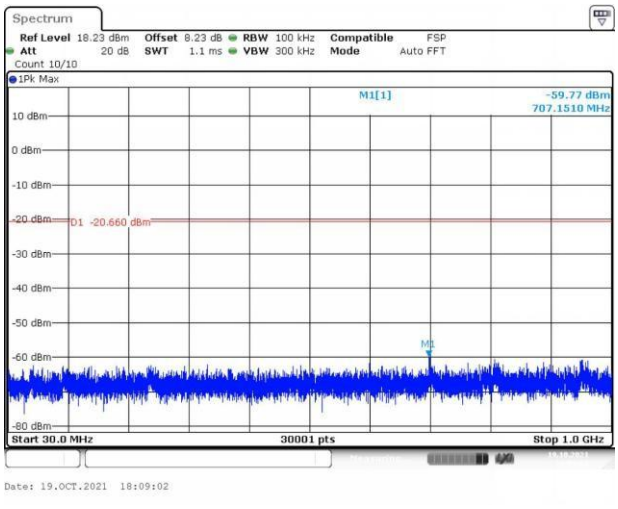
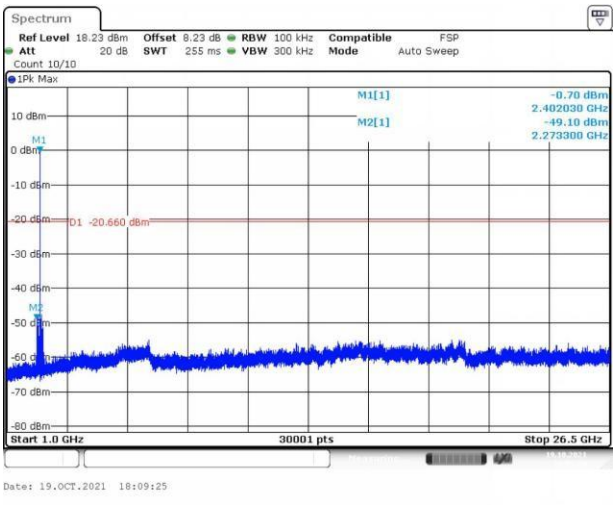
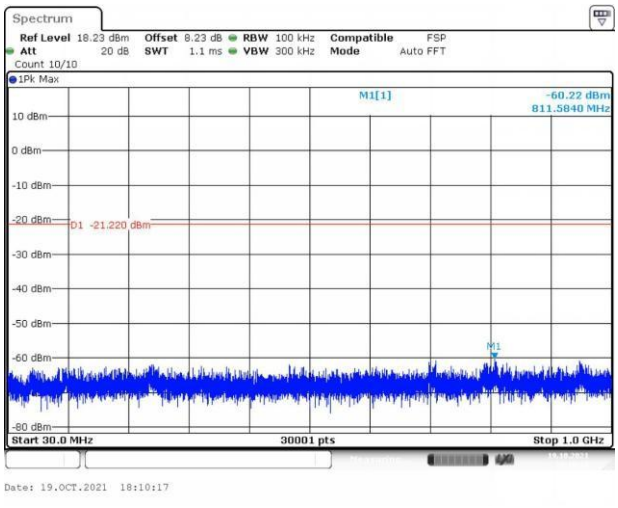
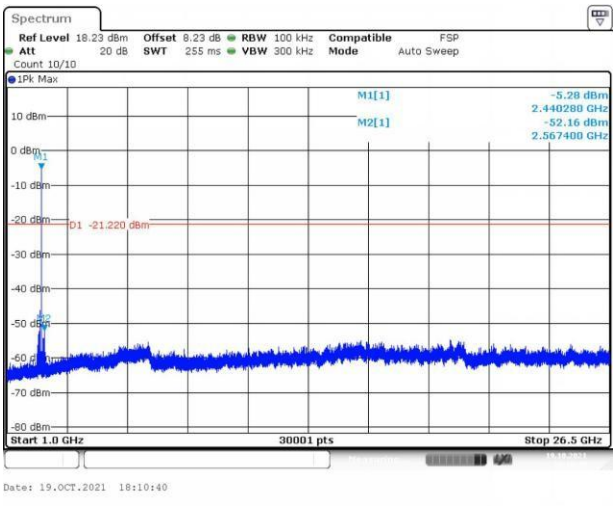
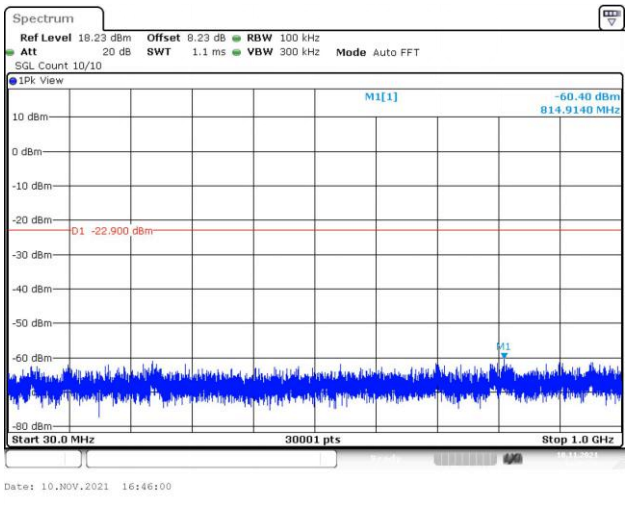
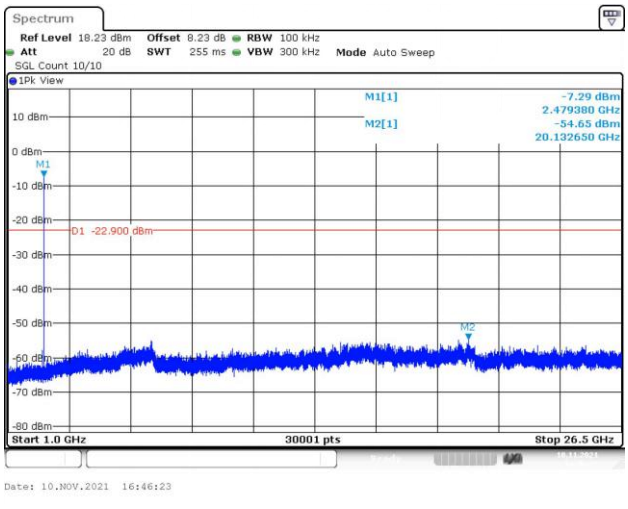
GFSK-2M	
CH00	CH00
	
CH19	CH19
	
CH39	CH39
	

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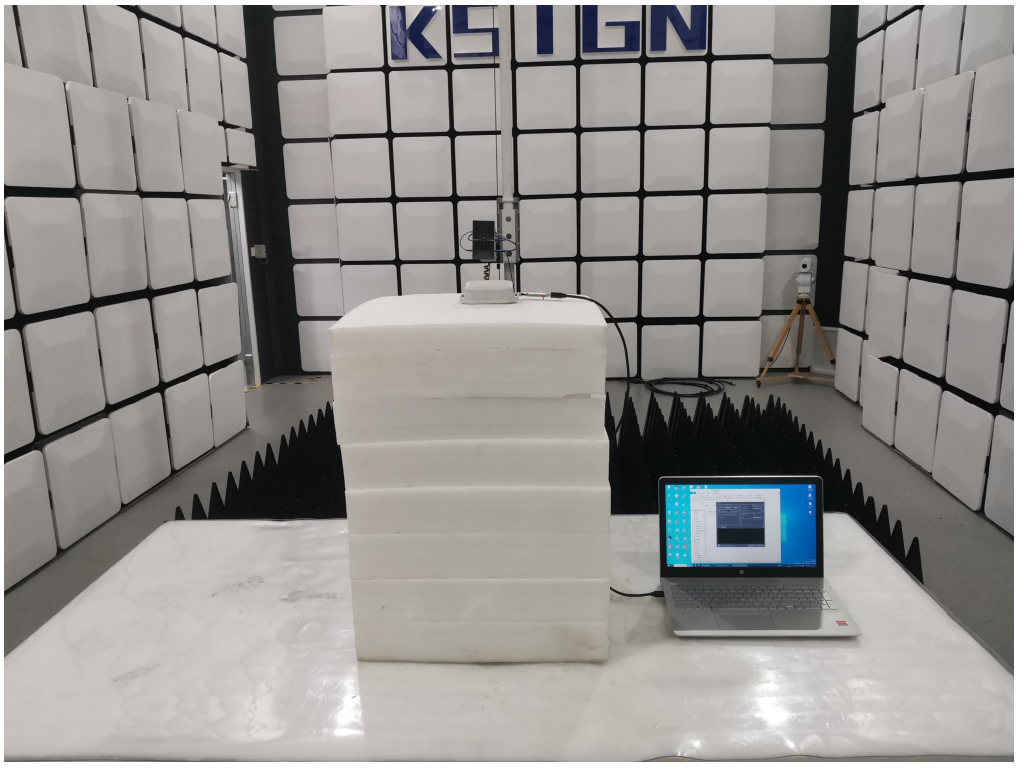
4.EUT TEST PHOTOS

Radiated Measurement (Below 1GHz)

Radiated Measurement (Above 1GHz)


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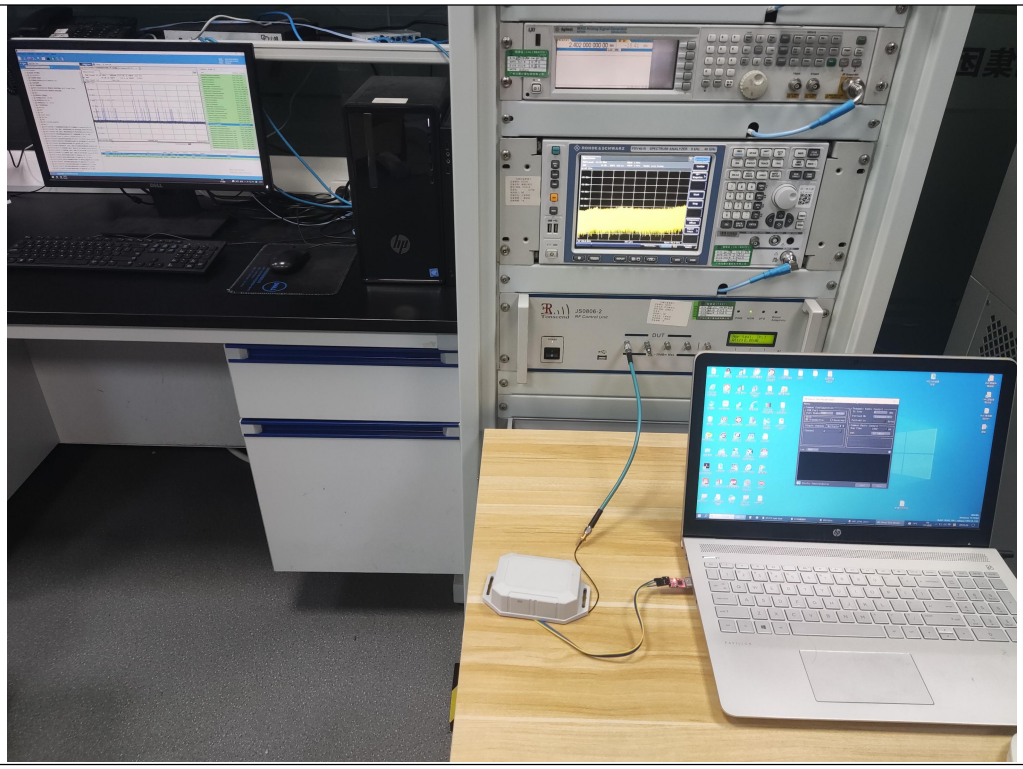
RF Conducted


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5.PHOTOGRAPHS OF EUT CONSTRUCTIONAL

External Photographs

Photo 1

Photo 2

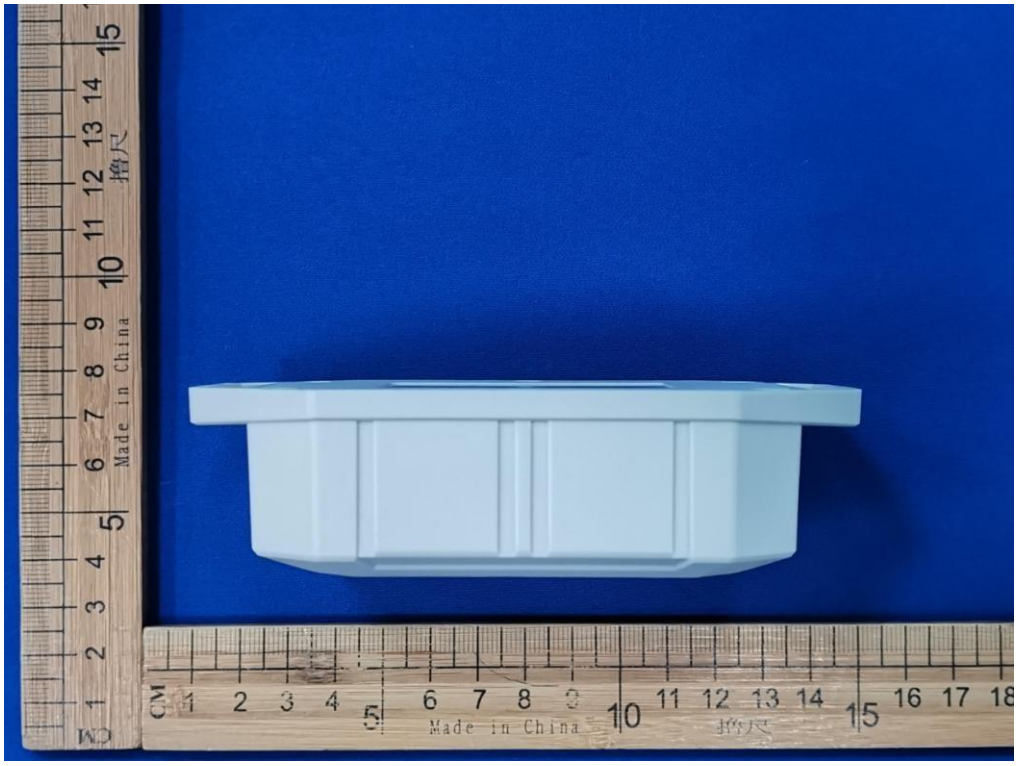

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Photo 3

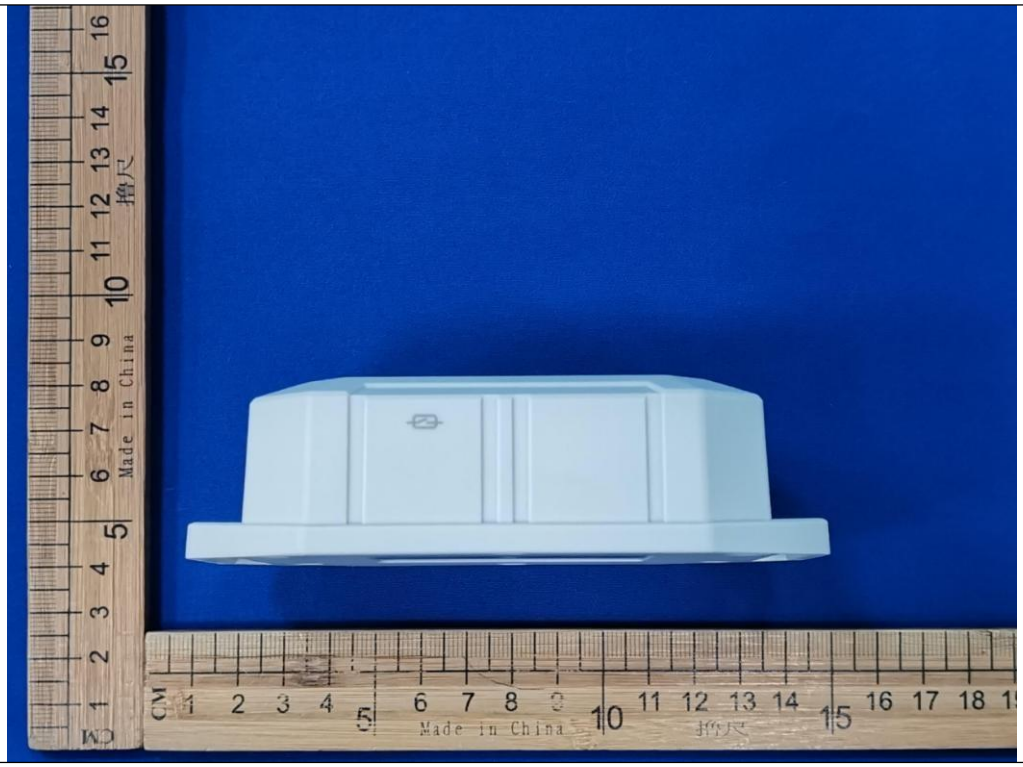

Photo 4

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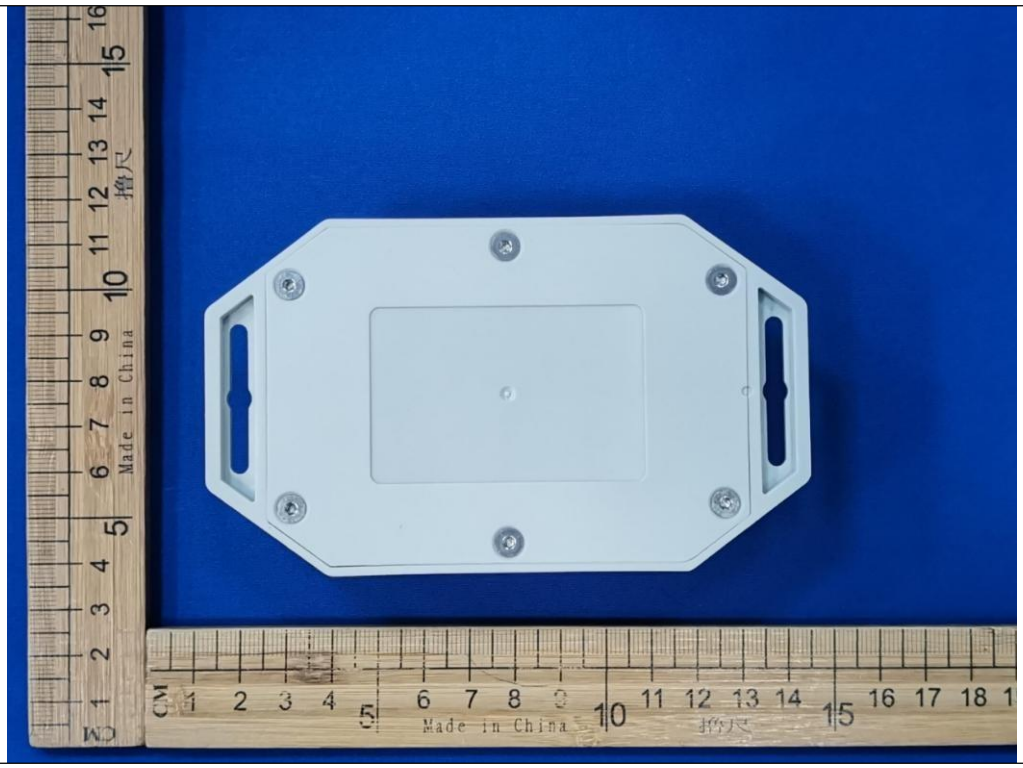
Photo 5

Photo 6



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Internal Photographs

Photo 1

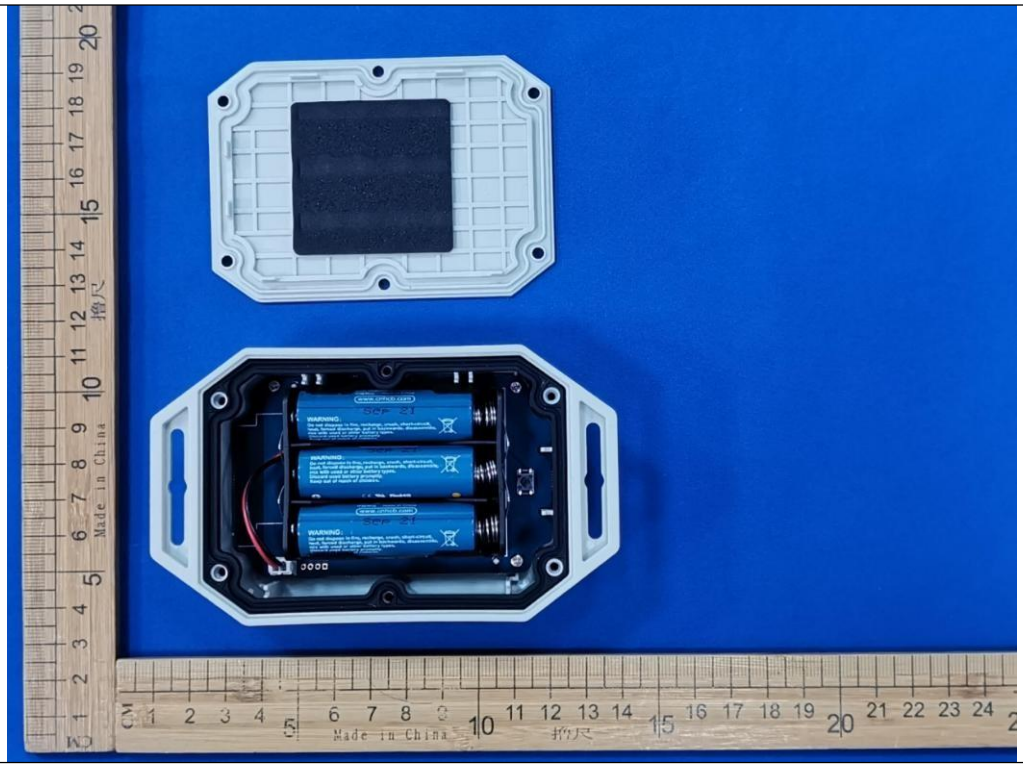

Photo 2

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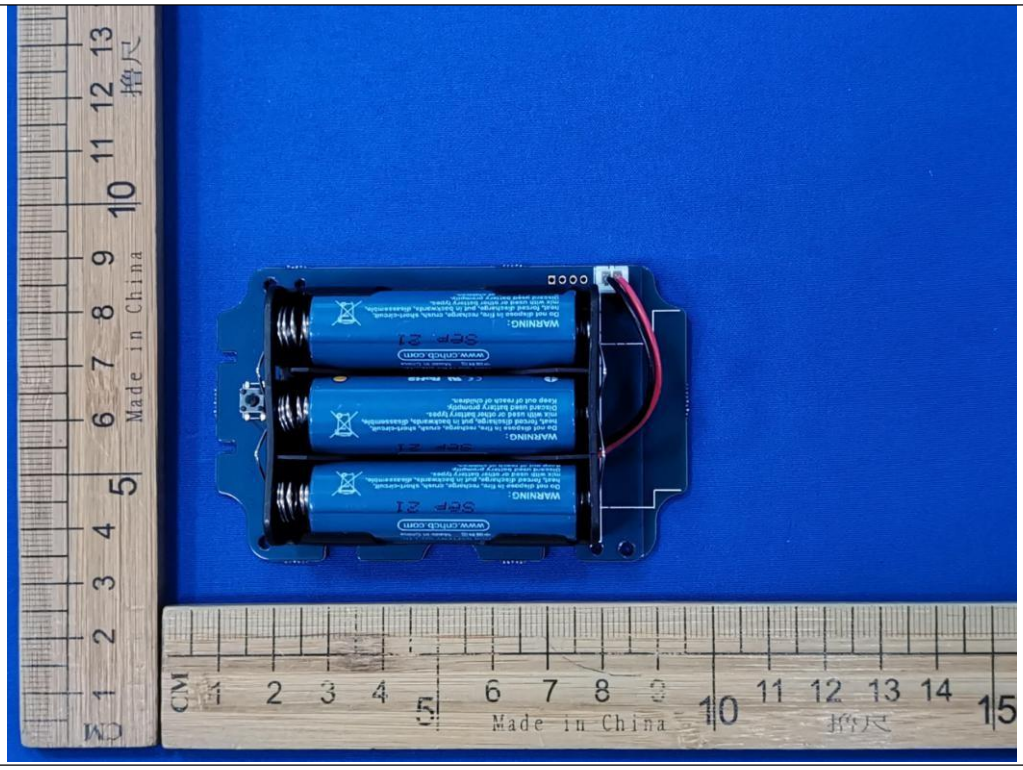
Photo 3



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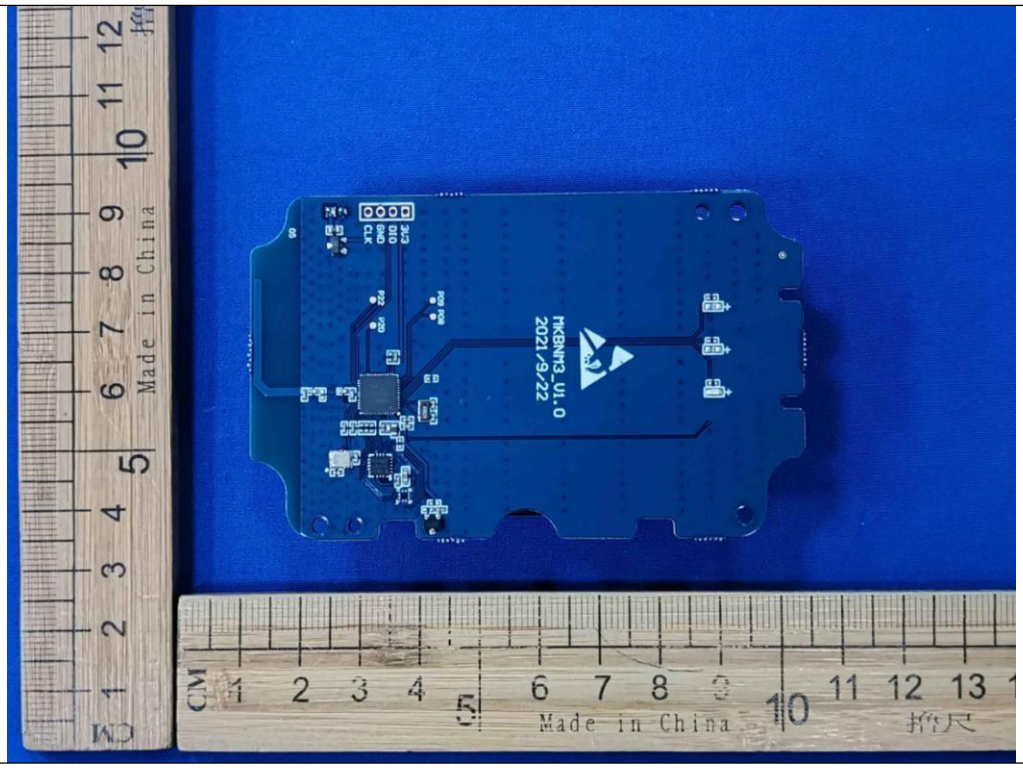

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Photo 5

Photo 6

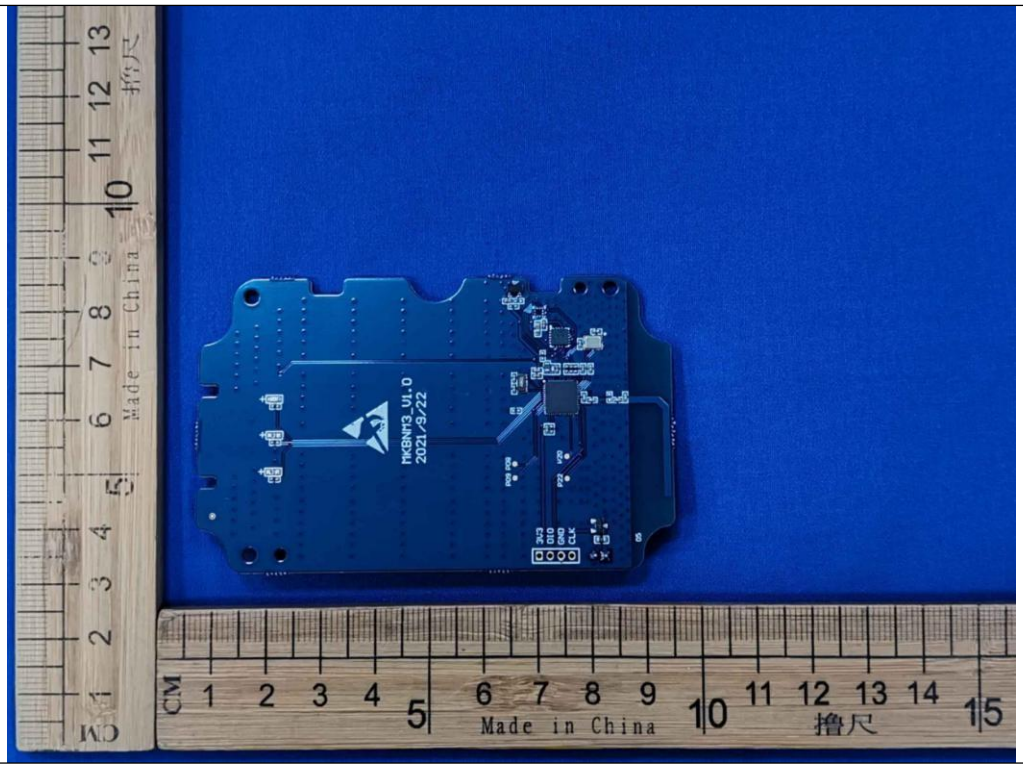

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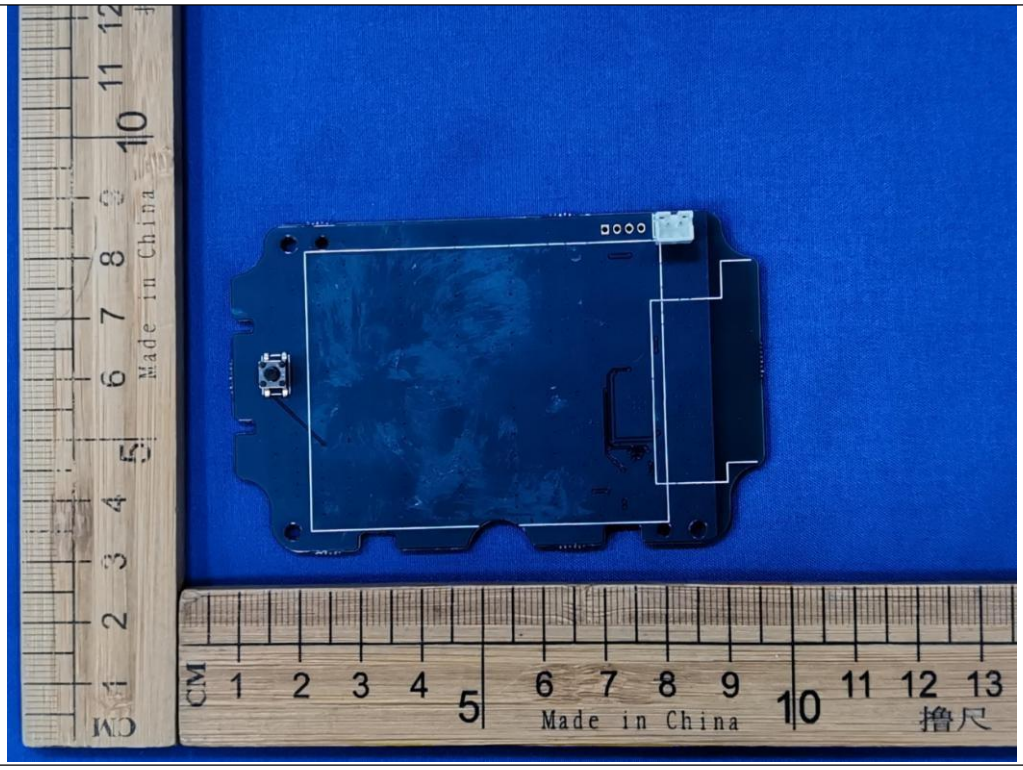
Photo 7



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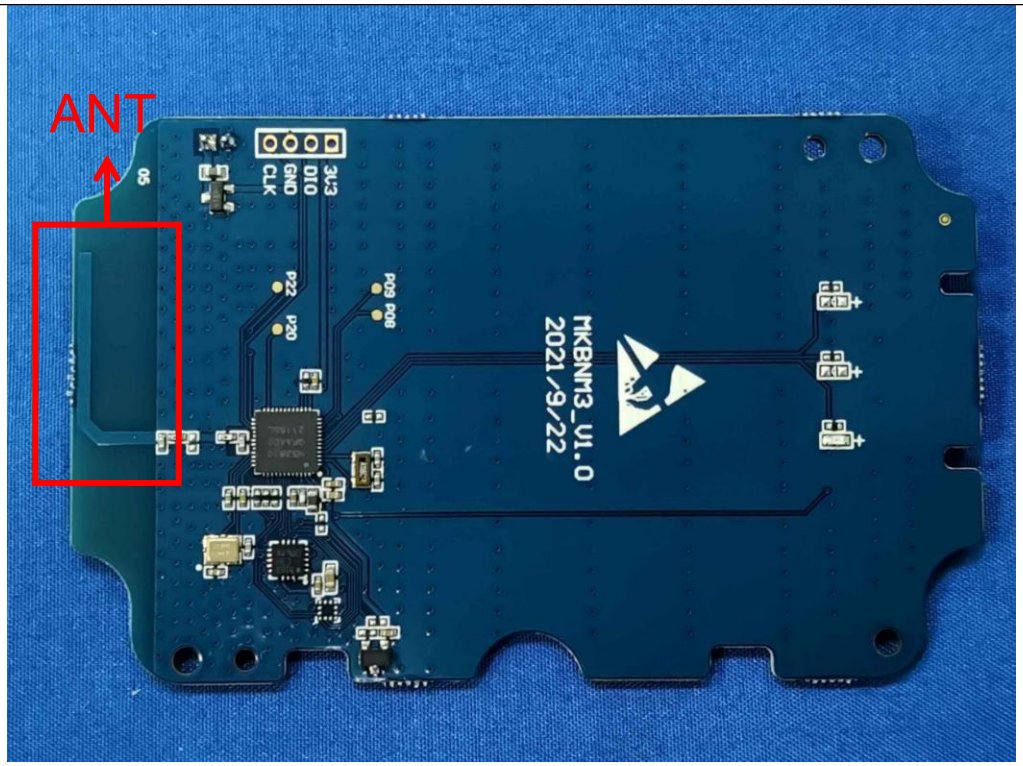

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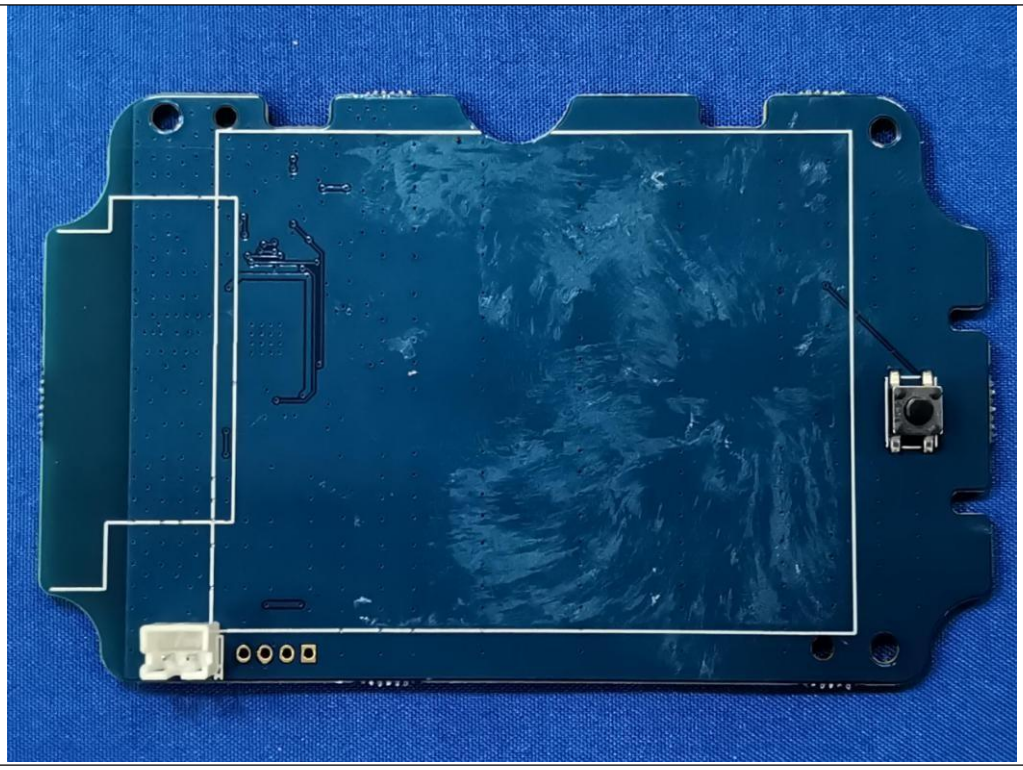
Photo 9

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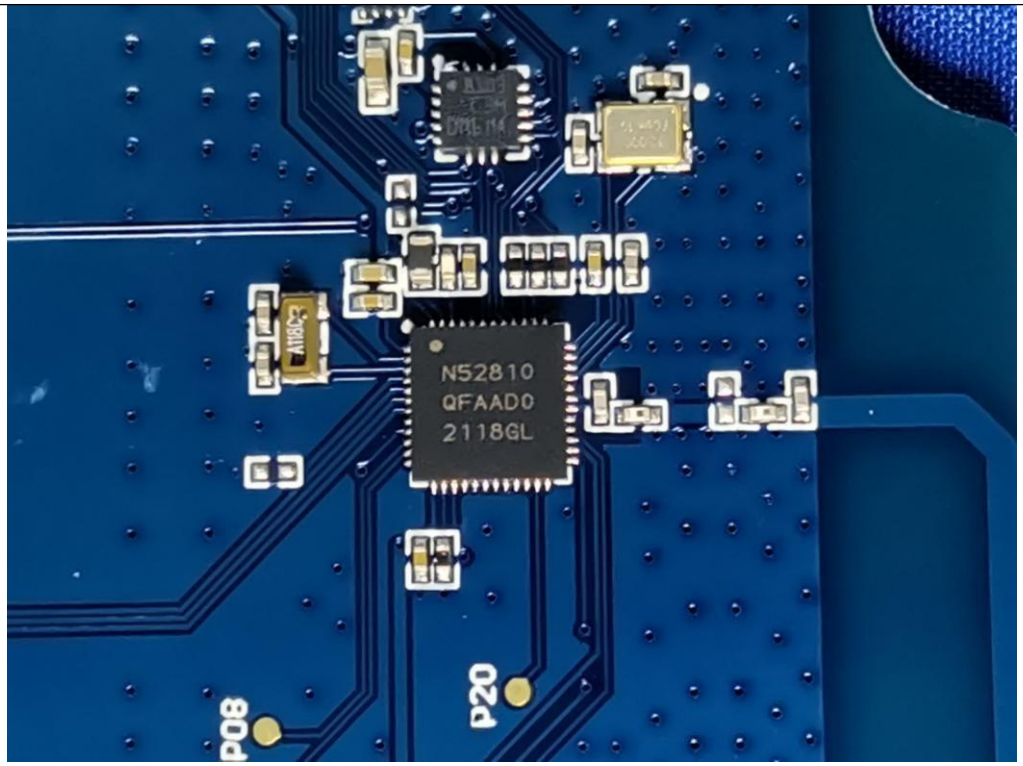

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Photo 11

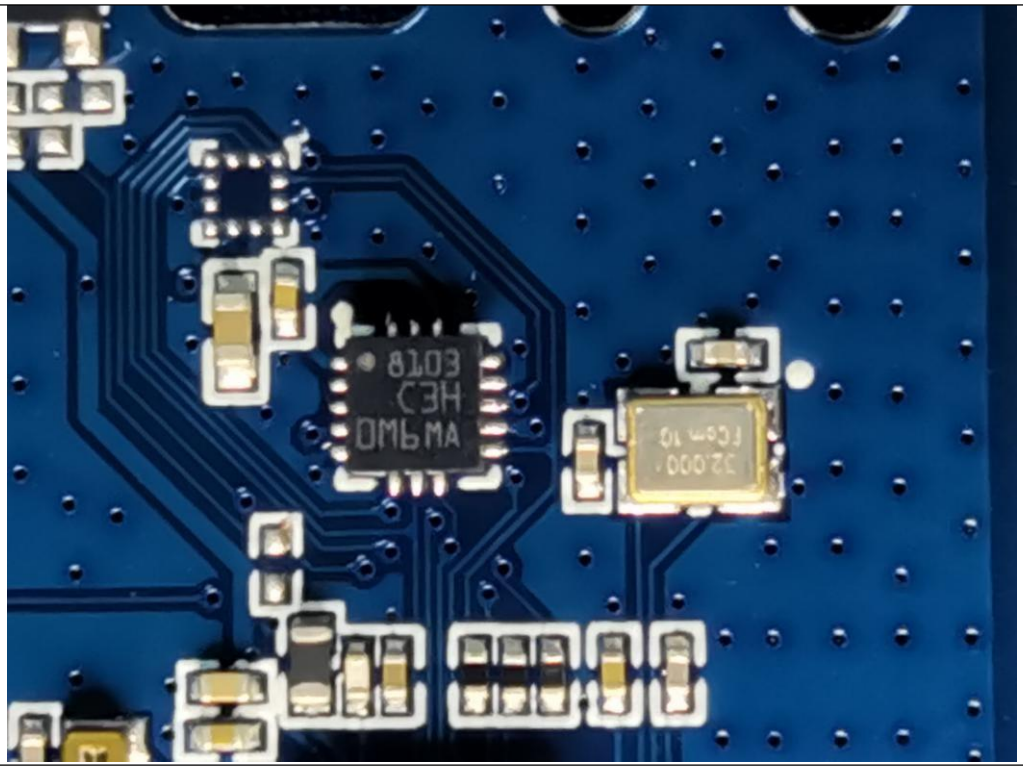

Photo 12

--THE END--

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