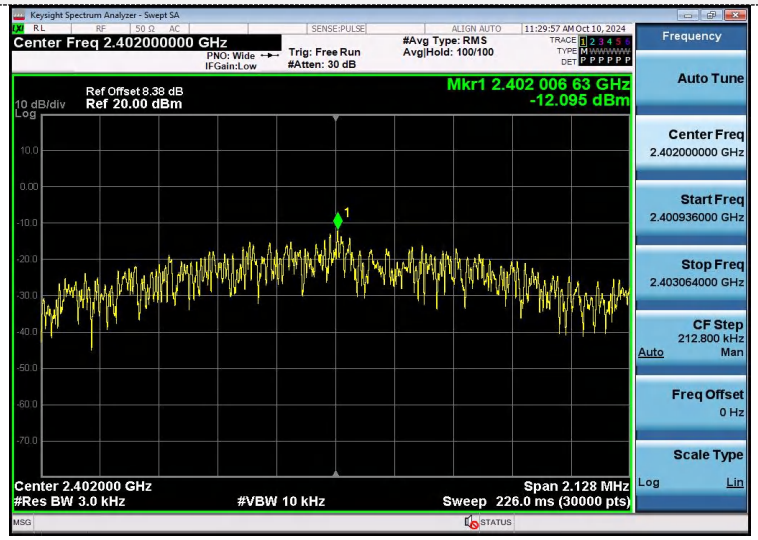
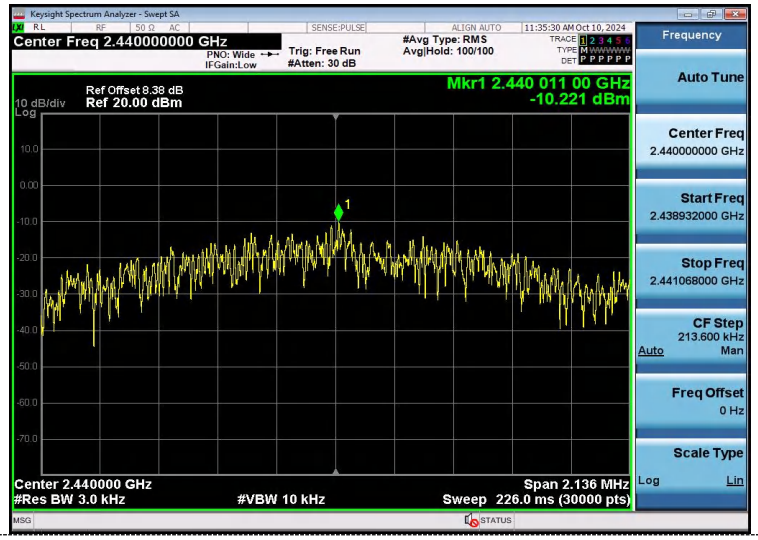
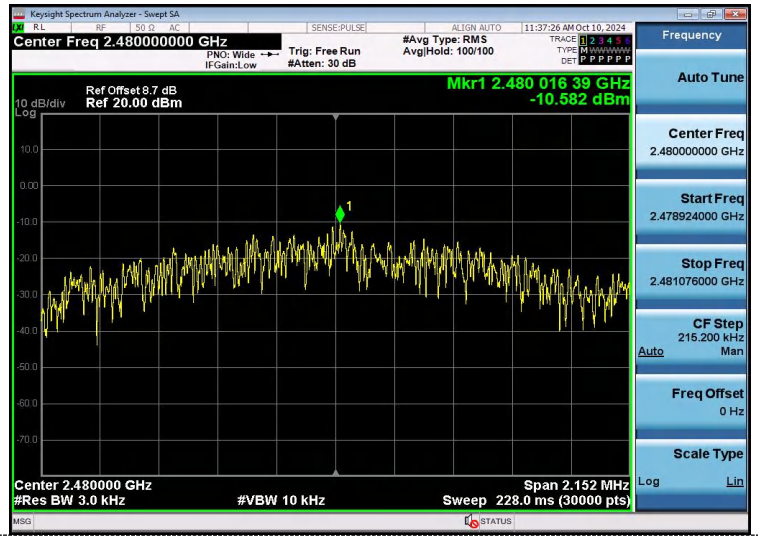
BLE GFSK 2Mpbs



CH00



CH19



CH39

4.5 6dB Bandwidth

Limit

For digital modulation systems, the minimum 6 dB bandwidth shall be at least 500 kHz

Test Procedure

The transmitter output was connected to the spectrum analyzer through an attenuator. The bandwidth of the fundamental frequency was measured by spectrum analyzer with 100 KHz RBW and 300 KHz VBW. The 6dB bandwidth is defined as the total spectrum the power of which is higher than peak power minus 6dB.

Test Configuration

Test Results

Type	Channel	6dB Bandwidth (MHz)	Limit (KHz)	Result
GFSK 1Mpbs	00	0.684	≥500	Pass
	19	0.700		
	39	0.672		
GFSK 2Mpbs	00	1.064	≥500	Pass
	19	1.068		
	39	1.076		

Test plot as follows:

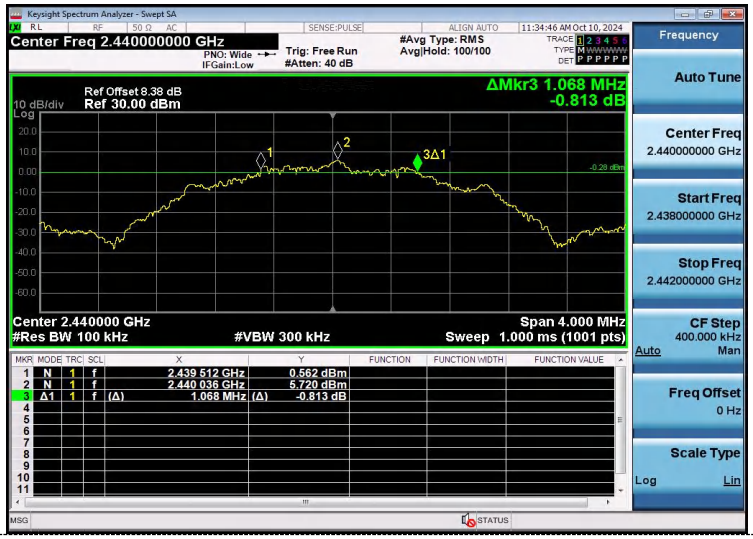
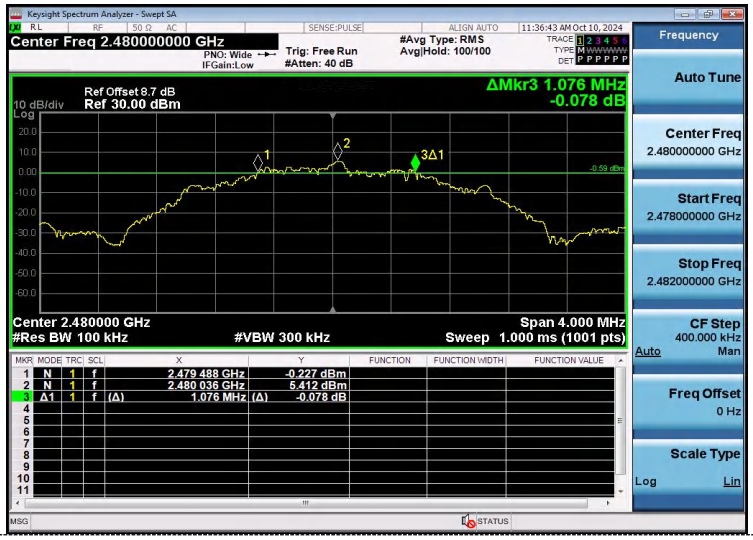
BLE GFSK 1Mpbs

CH00

CH19

CH39

BLE GFSK 2Mpbs

CH00

CH19

CH39

4.6 Out-of-band Emissions

Limit

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated 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 con-ducted or a radiated measurement, pro-vided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter com-plies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in §15.209(a) is not required.

Test Procedure

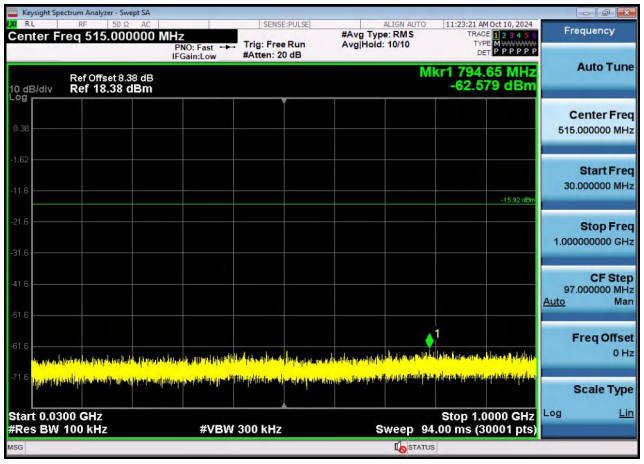
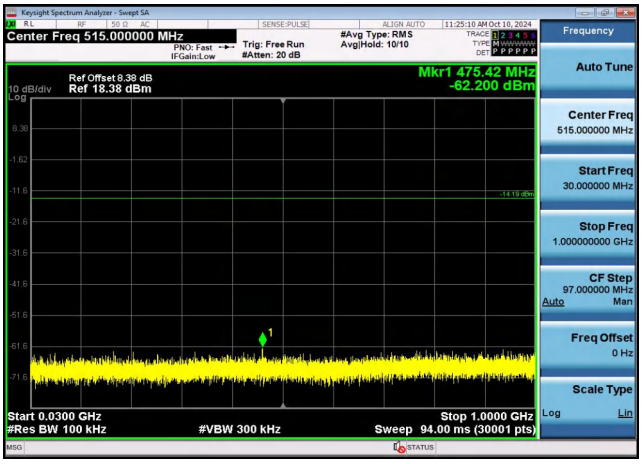
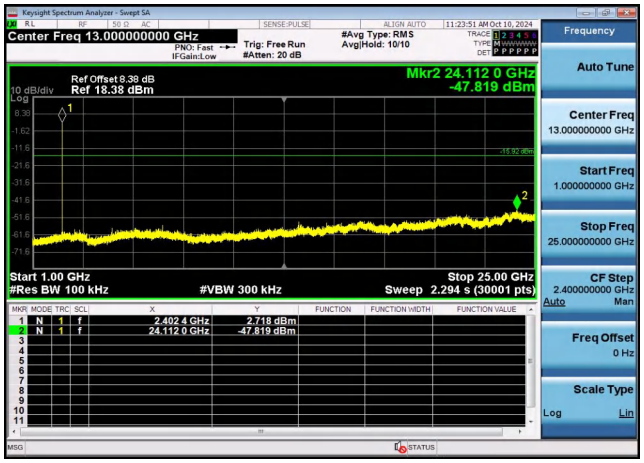
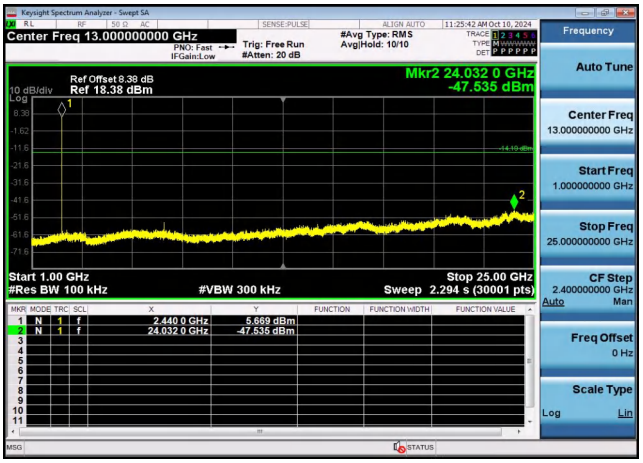
Connect the transmitter output to spectrum analyzer using a low loss RF cable, and set the spectrum analyzer to RBW=100 kHz, VBW= 300 kHz, peak detector , and max hold. Measurements utilizing these setting are made of the in-band reference level, bandedge and out-of-band emissions.

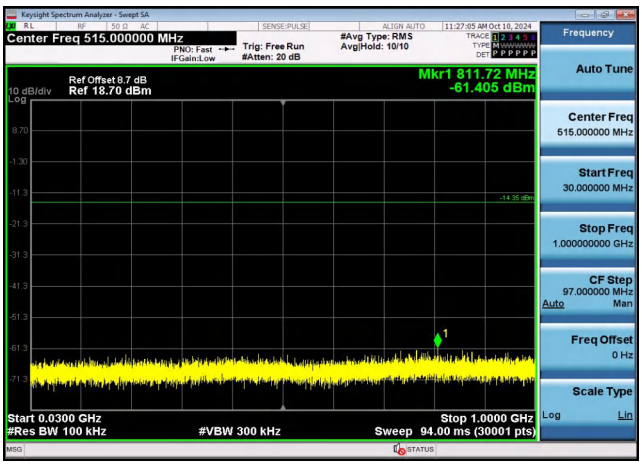
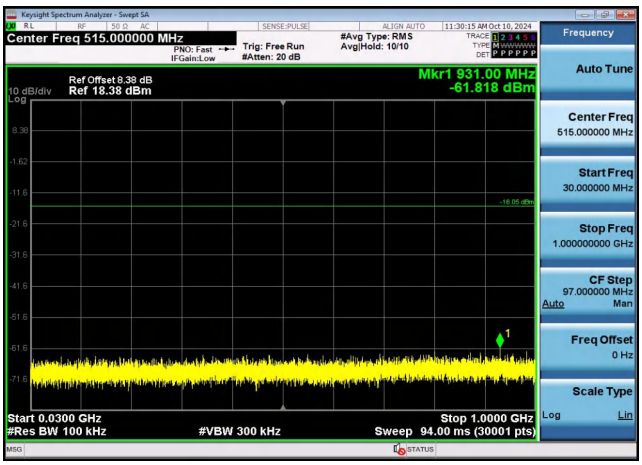
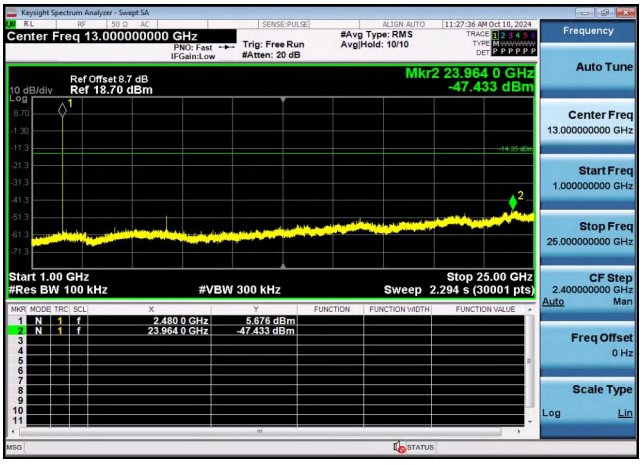
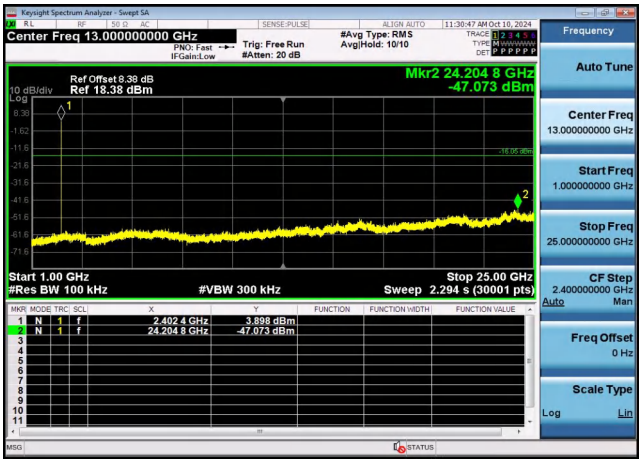
Test Configuration

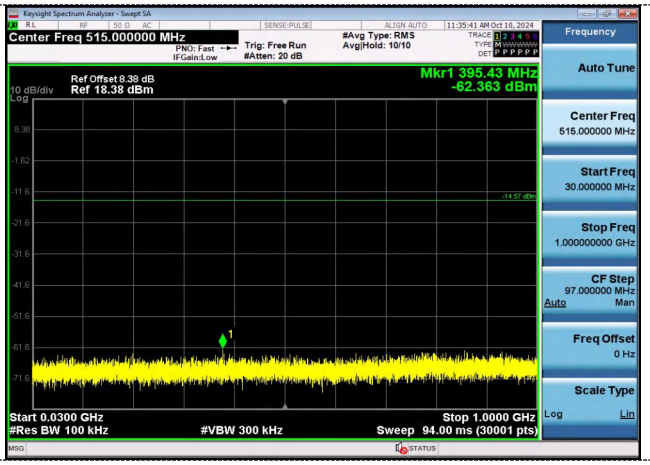
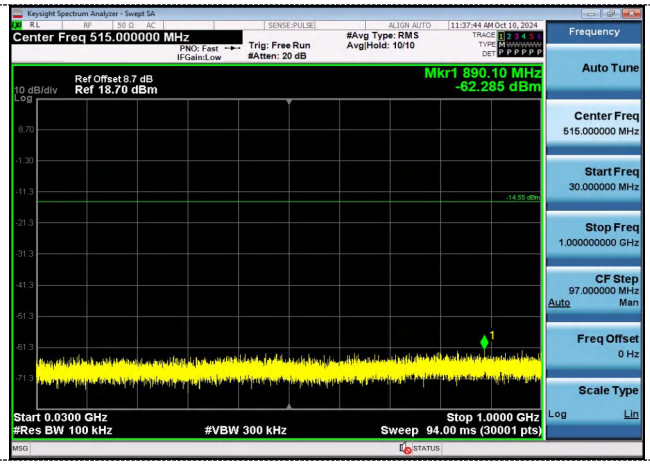
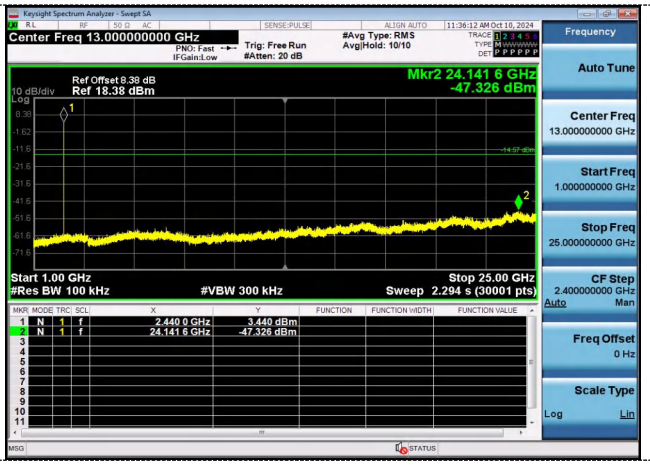
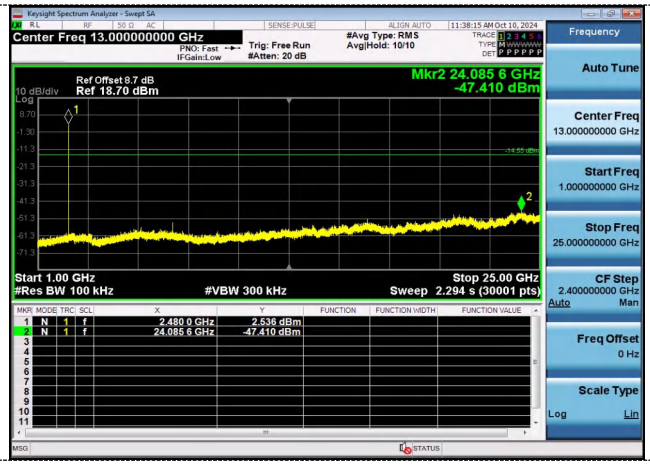
Test Results

Remark: The measurement frequency range is from 30MHz to the 10th harmonic of the fundamental frequency. The lowest, middle and highest channels are tested to verify the spurious emissions and bandage measurement data.

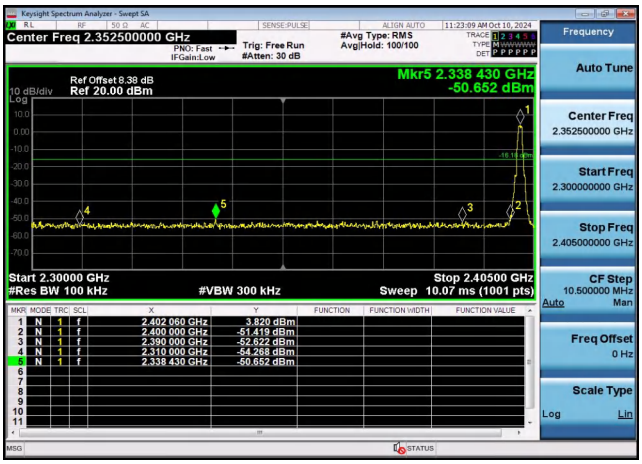
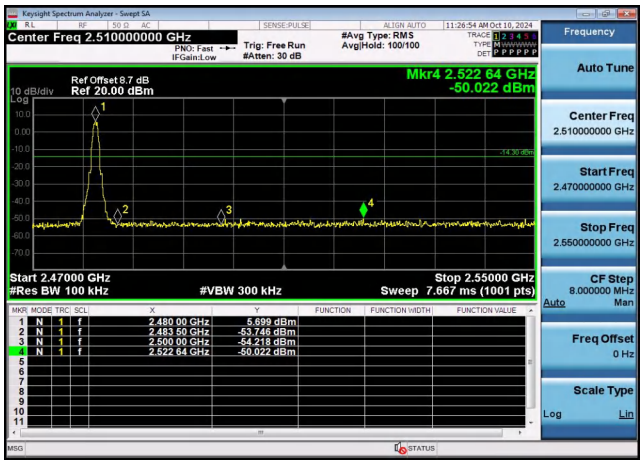
Test plot as follows:

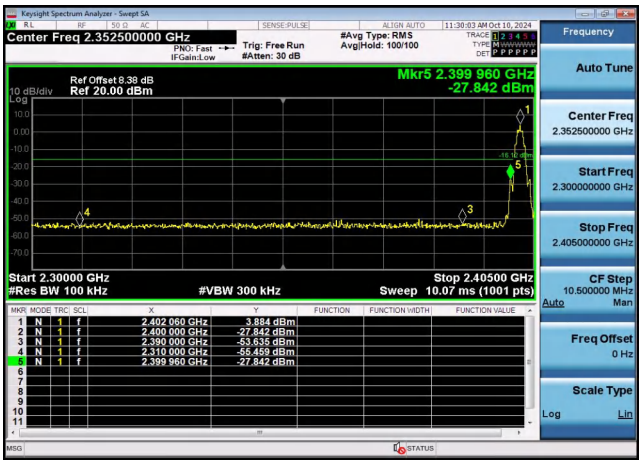
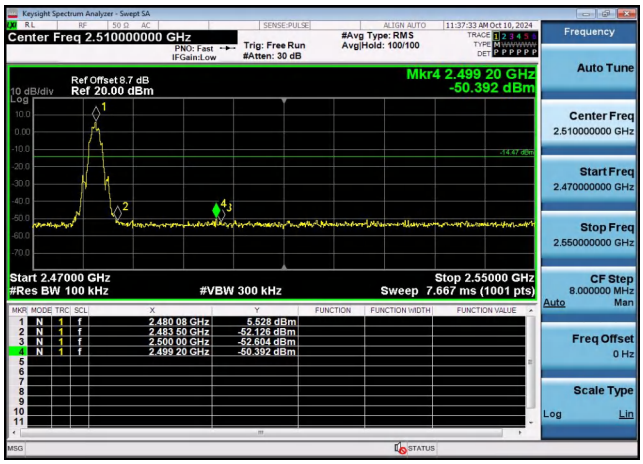
GFSK 1Mpbs(CH00)	GFSK 1Mpbs (CH19)
	
reference	reference
	
30MHz-1G	30MHz-1G
	
1G-25G	1G-25G

GFSK 1Mpbs (CH39)	GFSK 2Mpbs(CH00)
	
reference	reference
	
30MHz-1G	30MHz-1G
	
1G-25G	1G-25G

GFSK 2Mpbs (CH19)	GFSK 2Mpbs(CH39)
	
reference	reference
	
30MHz-1G	30MHz-1G
	
1G-25G	1G-25G

Band-edge Measurements for RF Conducted Emissions:

BLE GFSK 1Mpbs	
	
Left bandedge	Right bandedge

BLE GFSK 2Mpbs	
	
Left bandedge	Right bandedge

4.7 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. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator, the manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.

FCC CFR Title 47 Part 15 Subpart C Section 15.247(c) (1) (I):

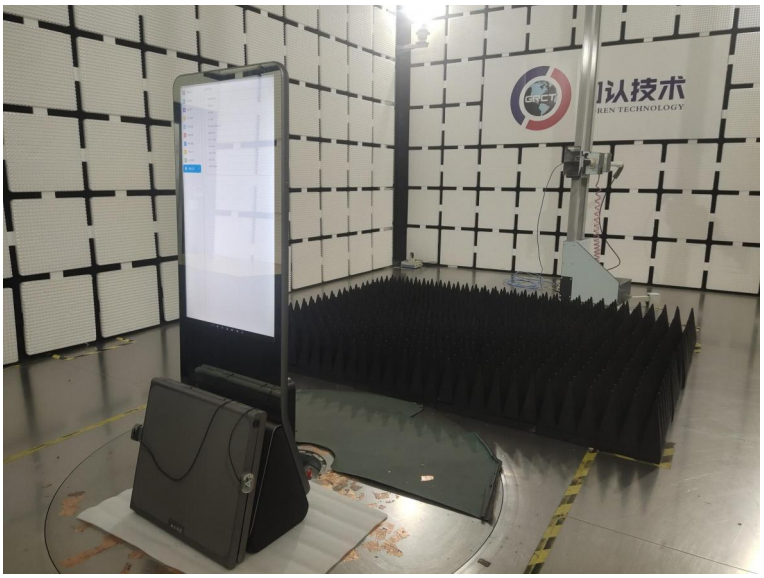
(i) Systems operating in the 2400-2483.5 MHz band that is used exclusively for fixed. Point-to-point operations may employ transmitting antennas with directional gain greater than 6dBi provided the maximum conducted output power of the intentional radiator is reduced by 1 dB for every 3 dB that the directional gain of the antenna exceeds 6dBi.

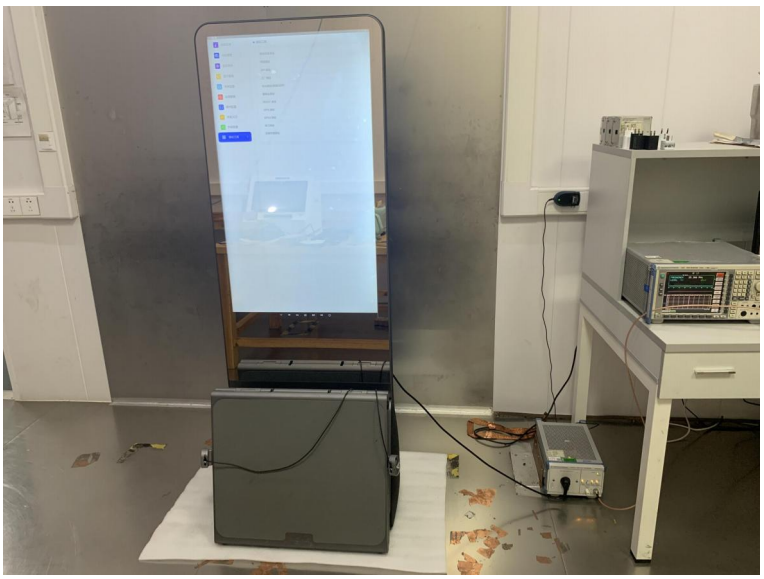
Antenna Connected Construction

The maximum gain of antenna was 3.56 dBi.

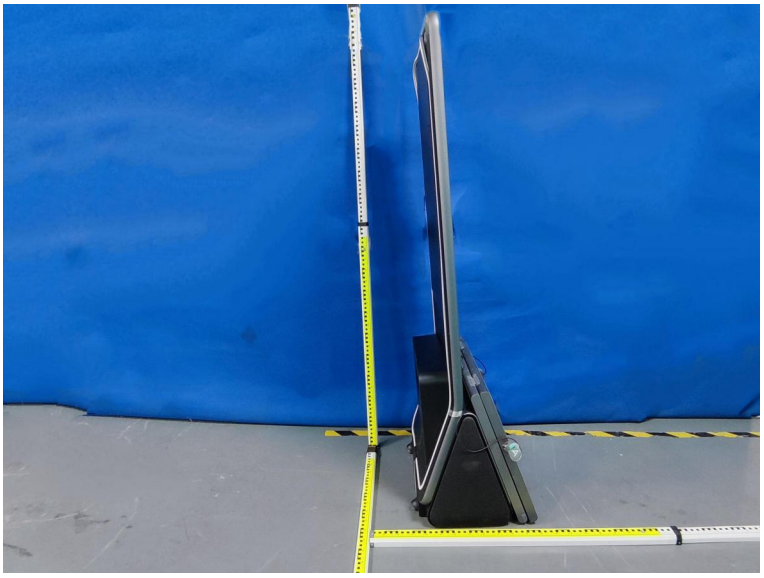
Remark:The antenna gain is provided by the customer , if the data provided by the customer is not accurate, Shenzhen GUOREN Certification Technology Service Co., Ltd. does not assume any responsibility.

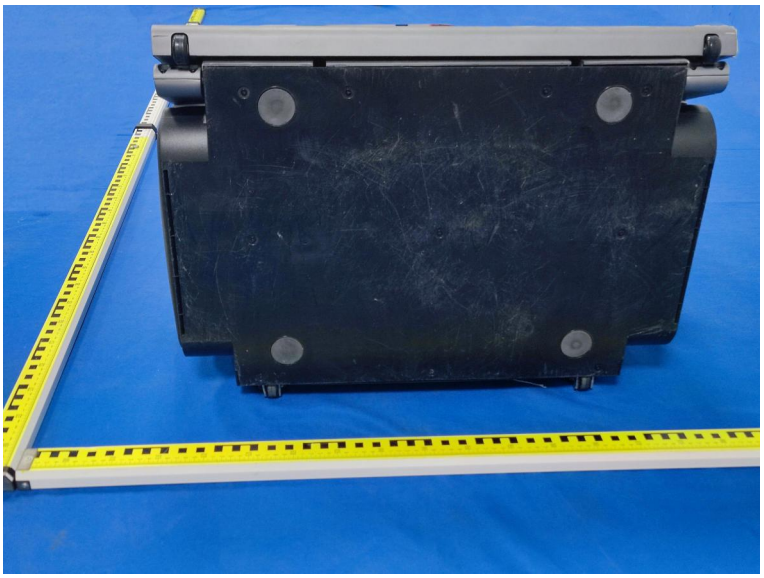
5 Test Setup Photos of the EUT

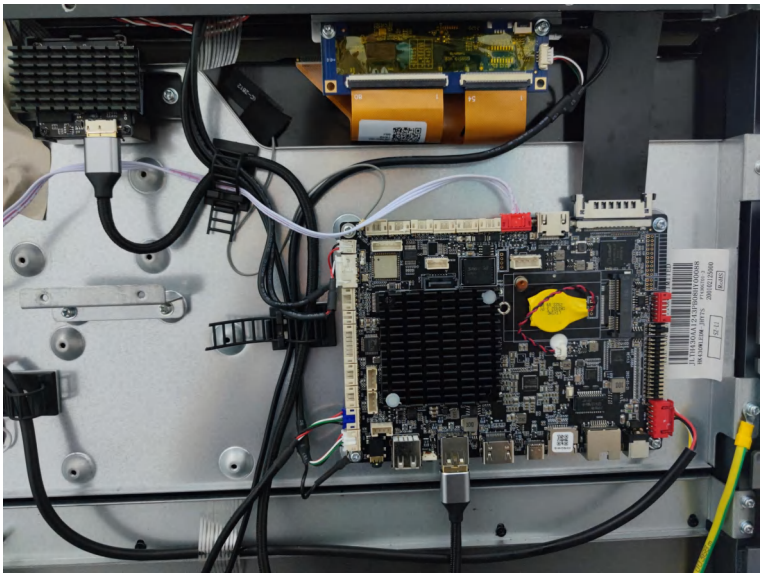


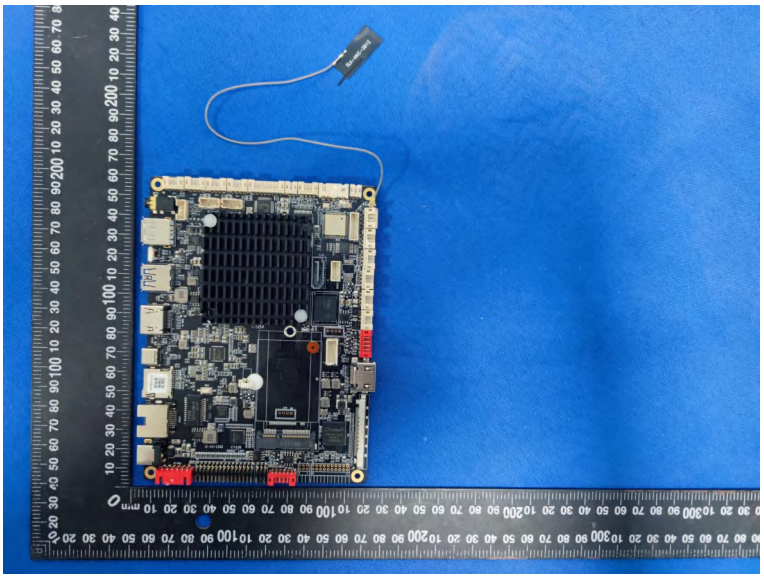


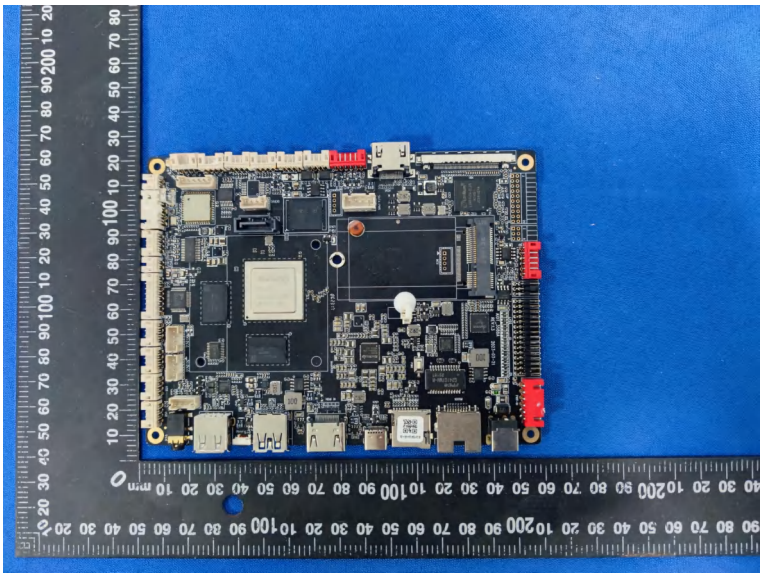
6 Photos of the EUT

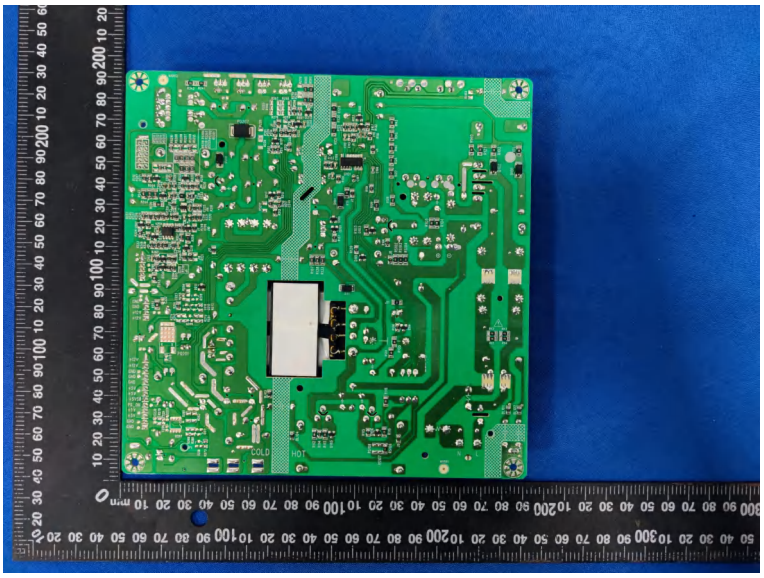


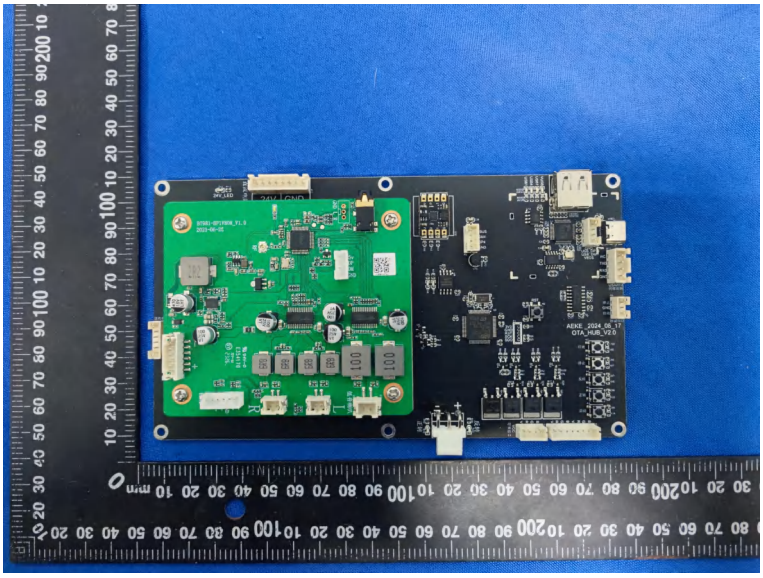


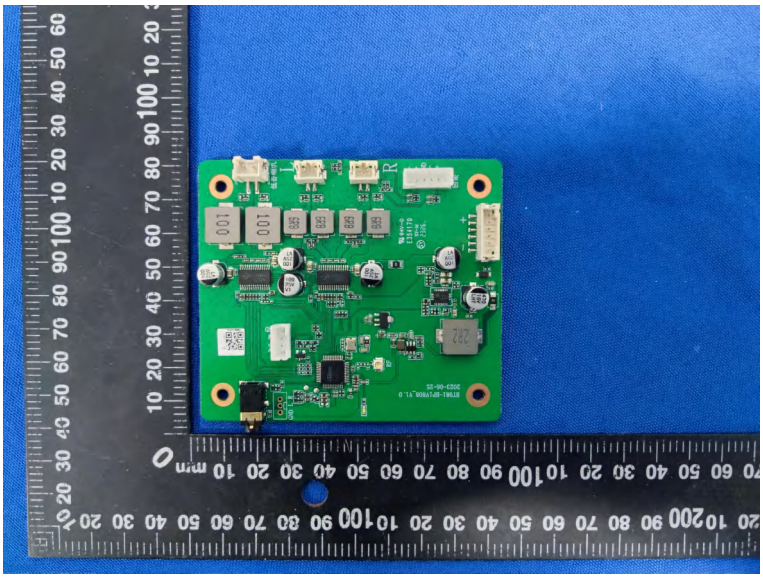


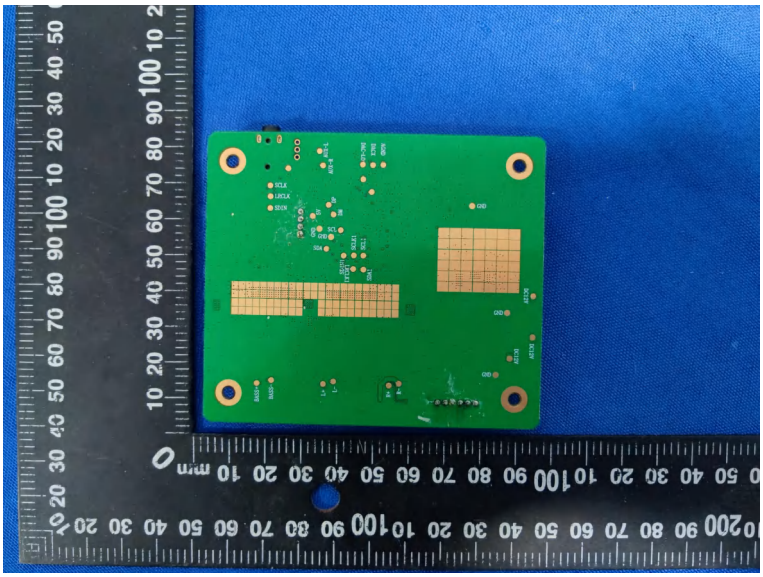


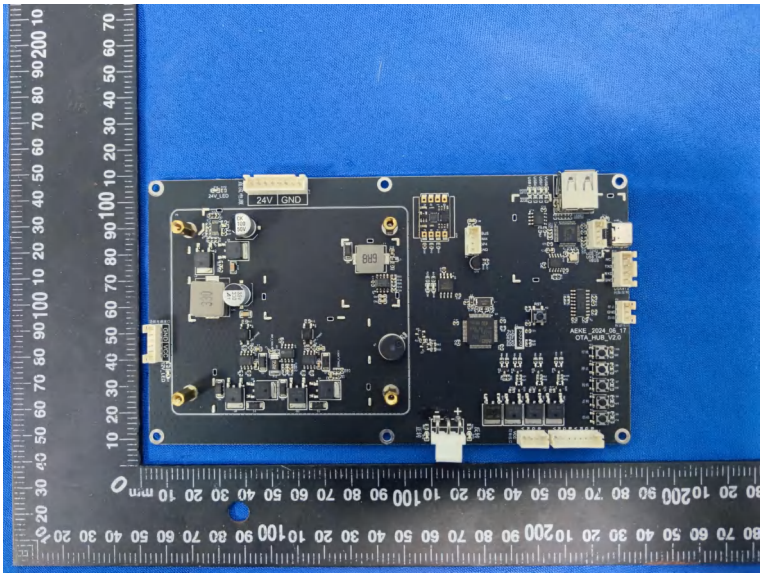


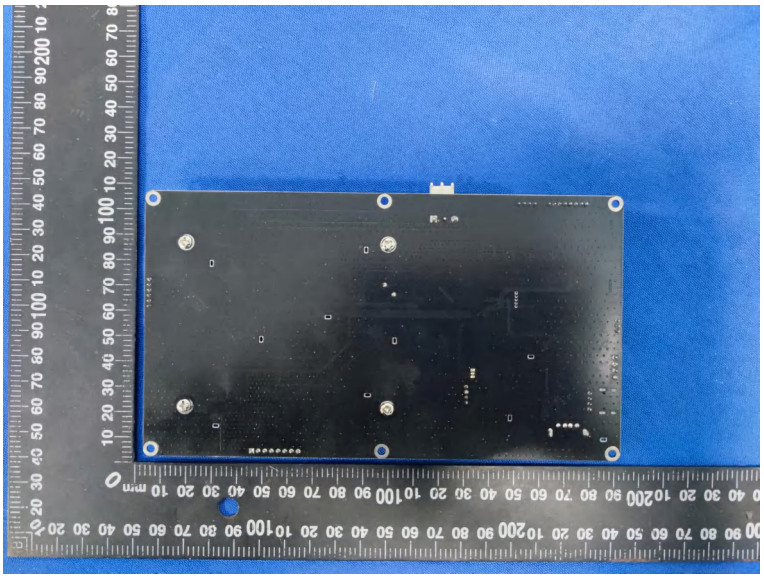


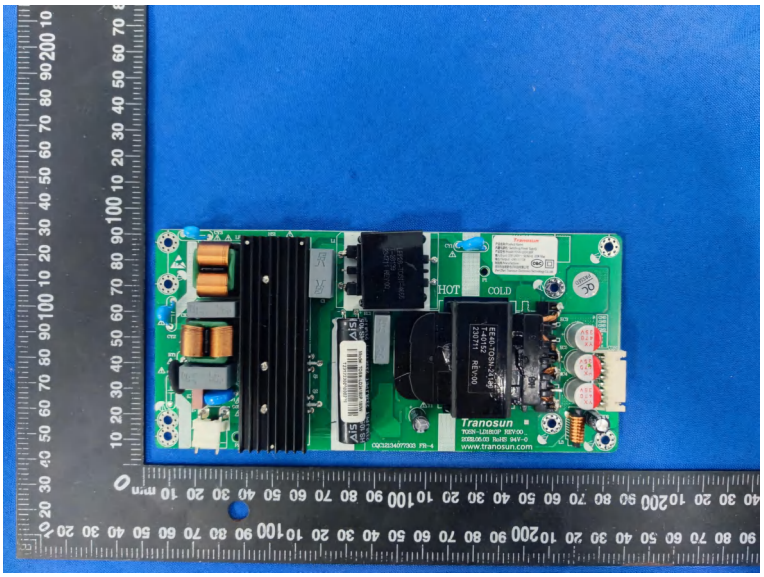


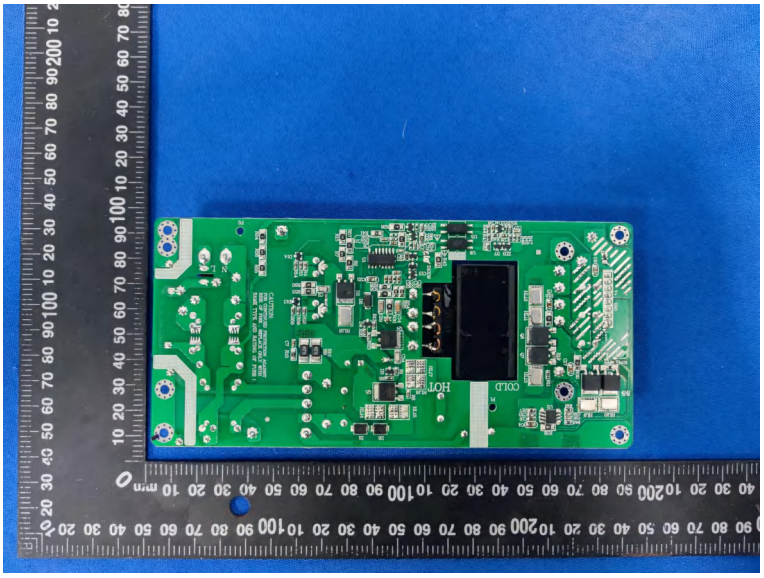


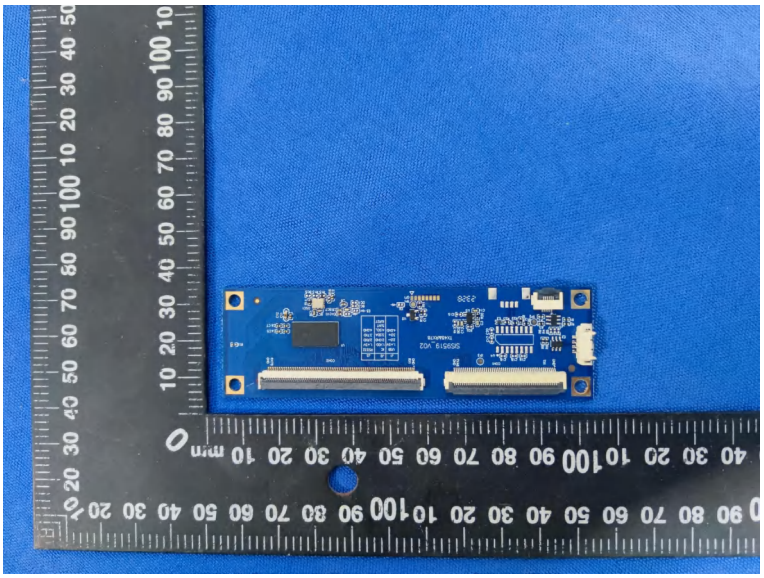


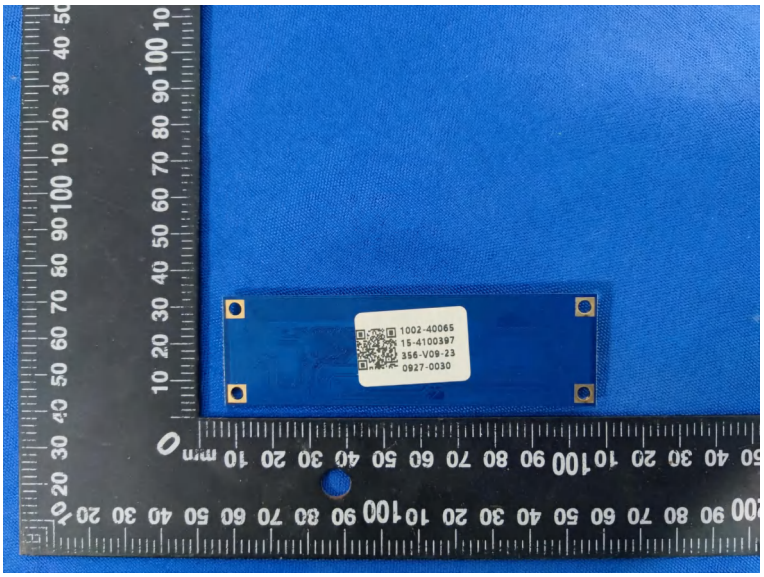

24V GND

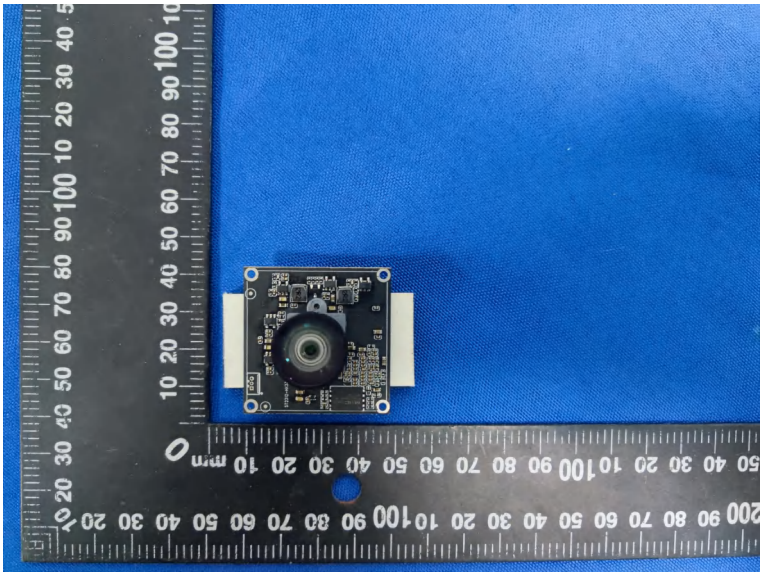


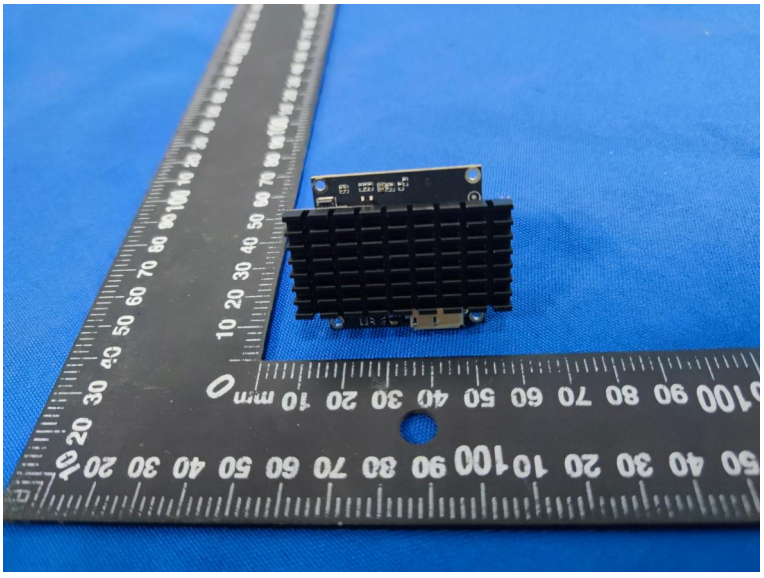

HOT
COLD
Tranosun
www.tranosun.com

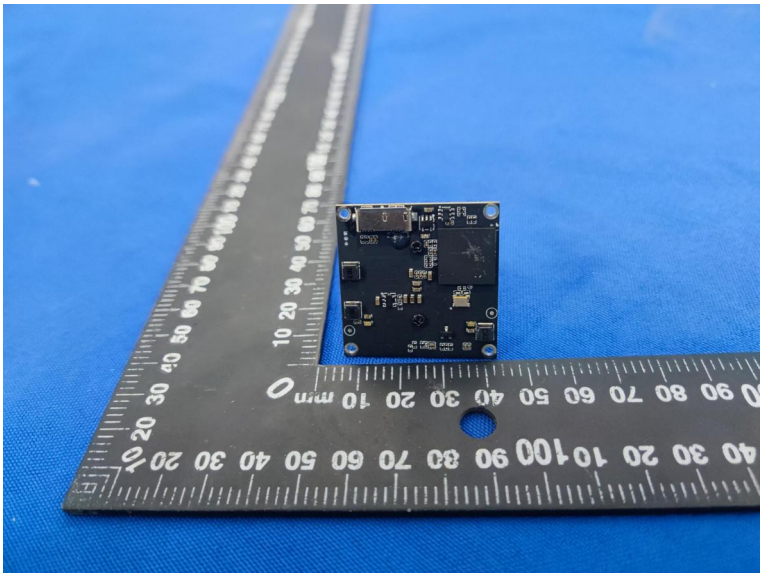


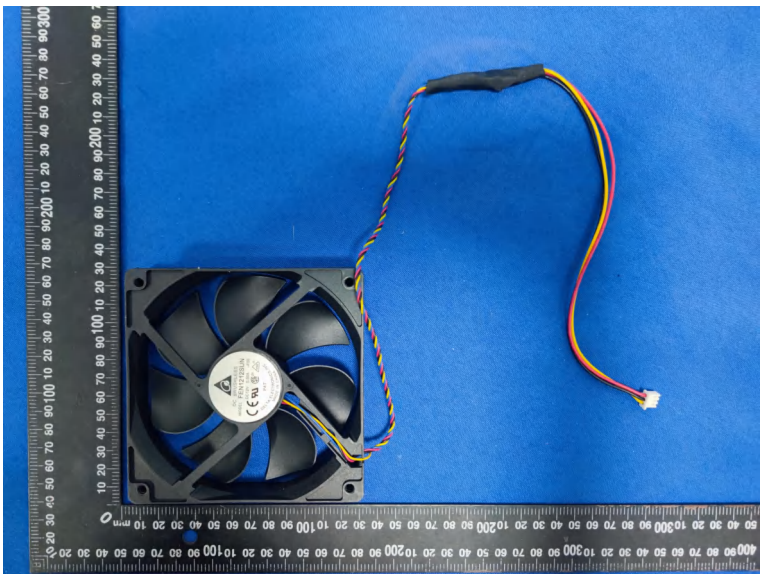



1002-40065
15-4100397
356-V09-23
0927-0030









********** End of Report **********