RADIO TEST REPORT
FCC 47 CFR PART 15 SUBPART C

Test Standard	**FCC Part 15.247**
Product name	**Vehicle Gateway**
Brand Name	**Samsara**
Model No.	**010-00008, 010-00006**
Test Result	**Pass**
Statements of Conformity	**Determination of compliance is based on the results of the compliance measurement, not taking into account measurement instrumentation uncertainty.**

The test Result was tested by Compliance Certification Services Inc. The test data, data evaluation, test procedures, and equipment configurations shown in this report were given in ANSI C63.10: 2013 and compliance standards.
The test results of this report relate only to the tested sample (EUT) identified in this report.

The test Report of full or partial shall not copy. Without written approval of Compliance Certification Services Inc. (Wugu Laboratory).

Approved by:

Shawn Wu
Supervisor

Revision History

Rev.	Issue Date	Revisions	Effect Page	Revised By
00	March 20, 2024	Initial Issue	ALL	Allison Chen
01	March 28, 2024	See the following Note Rev.(01)	P.5, 8, 16	Allison Chen
02	April 3, 2024	See the following Note Rev.(02)	P.9	Allison Chen

Note:
Rev.(01)
1. Modify antenna model, measurement equipment list and setup diagram.
Rev.(02)
1. Modify test setup diagram in section 1.8.

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1. GENERAL INFORMATION

1.1 EUT INFORMATION

Applicant	Samsara Inc. 1 De Haro Street, San Francisco, CA 94107, USA
Manufacturer	Sercomm Corporation 8F, No. 3-1, YuanQu St., NanKang, Taipei 115, Taiwan
Equipment	Vehicle Gateway
Model Name	010-00008, 010-00006
Model Discrepancy	For detailed description of the differences between series models, please see the table below:
Received Date	December 11, 2023
Date of Test	December 15, 2023 ~ March 7, 2024
Power Supply	EUT power by Power supply. (DC24V & DC12V)
HW Version	02-04:23
EUT Serial #	010-00008: GHBE-HW6-JBR 010-00006: GYYV-DEB-3SR

Model name	Difference
010-00008	LTE Band: 2,4,5,12,14
010-00006	LTE Band: 2,4,5,12,13

Remark:

1. For more details, please refer to the User's manual of the EUT.
2. Disclaimer: Antenna information is provided by the applicant, test results of this report are applicable to the sample EUT received.
3. Disclaimer: The variant model numbers / trademarks are assessed as identical in hardware and software to each other, hence all variants are fully covered by the test results in this test report without further verification test.

1.2 EUT CHANNEL INFORMATION

Frequency Range	BLE 1 Mbps: 2402MHz-2480MHz BLE 2 Mbps: 2404MHz-2478MHz
Modulation Type	GFSK for BLE 1 Mbps GFSK for BLE 2 Mbps
Number of channel	BLE 1 Mbps: 40 Channels BLE 2 Mbps: 38 Channels

Remark:
Refer as ANSI C63.10: 2013 clause 5.6.1 Table 4 for test channels

Number of frequencies to be tested		
Frequency range in which device operates	**Number of frequencies**	**Location in frequency range of operation**
☐ 1 MHz or less	1	Middle
☐ 1 MHz to 10 MHz	2	1 near top and 1 near bottom
☒ More than 10 MHz	3	1 near top, 1 near middle, and 1 near bottom

1.3 ANTENNA INFORMATION

Antenna Type	☒ PIFA ☐ PCB ☐ Dipole ☐ Coils
Antenna Gain	Gain: 2.4 dBi
Brand / Model	Brand: Sercomm, Model: 6172001NWA
Antenna Connector	IPEX

Notes:
1.The antenna(s) of the EUT are permanently attached and there are no provisions for connection to an external antenna. So the EUT complies with the requirements of §15.203.

1.4 MEASUREMENT UNCERTAINTY

PARAMETER	UNCERTAINTY
AC Powerline Conducted Emission	± 2.213 dB
Channel Bandwidth	± 2.7 %
RF output power (Power Meter + Power sensor)	± 0.243 dB
Power Spectral density	± 2.739 dB
Conducted Bandedge	± 2.739 dB
Conducted Spurious Emission	± 2.742 dB
Radiated Emission_9kHz-30MHz	± 3.761 dB
Radiated Emission_30MHz-200MHz	± 3.473 dB
Radiated Emission_200MHz-1GHz	± 3.946 dB
Radiated Emission_1GHz-6GHz	± 4.797 dB
Radiated Emission_6GHz-18GHz	± 4.803 dB
Radiated Emission_18GHz-26GHz	± 3.459 dB
Radiated Emission_26GHz-40GHz	± 3.297 dB

Remark:
1.This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2
2. ISO/IEC 17025 requires that an estimate of the measurement uncertainties associated with the emissions test results be included in the report.

1.5 FACILITIES AND TEST LOCATION

All measurement facilities used to collect the measurement data are located at

AC Powerline Conducted Emission and Conducted:

☒ No.11, Wugong 6th Rd., Wugu Dist., New Taipei City, Taiwan.

Radiated emission 9kHz to 40GHz:

☒ No.11, Wugong 6th Rd., Wugu Dist., New Taipei City, Taiwan.

☐ No. 12, Ln. 116, Wugong 3rd Rd., Wugu Dist., New Taipei City, Taiwan 24803

CAB identifier: TW1309

Test site	Test Engineer	Remark
AC Conduction Room	N/A	Not applicable, because EUT doesn't connect to AC Main Source direct.
Radiation	Tony Chao / Ray Li	-
RF Conducted	David Li	-

Remark: The lab has been recognized as the FCC accredited lab. under the KDB 974614 D01 and is listed in the FCC pubic Access Link (PAL) database, FCC Registration No. :444940, the FCC Designation No.:TW1309

1.6 INSTRUMENT CALIBRATION

Conducted_FCC/IC/NCC (All)					
Name of Equipment	**Manufacturer**	**Model**	**Serial Number**	**Calibration Date**	**Calibration Due**
Power Sensor	Anritsu	MA2411B	1911386	2023-07-25	2024-07-24
Power Sensor	Anritsu	MA2411B	1911387	2023-07-25	2024-07-24
Power Meter	Anritsu	ML2496A	2136002	2023-11-16	2024-11-15
EXA Signal Analyzer	Keysight	N9010B	MY60242460	2023-02-02	2024-02-01
				2024-01-18	2025-01-17
EXA Signal Analyzer	Keysight	N9030A	MY54200716	2023-10-13	2024-10-12
Attenuator	Marvelous Microwave Ine	MVE2213-10	08	2023-11-07	2024-11-06
Software	Radio Test Software Ver. 21				

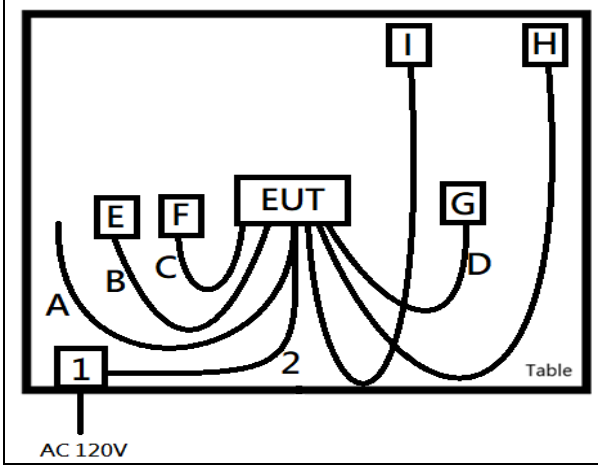
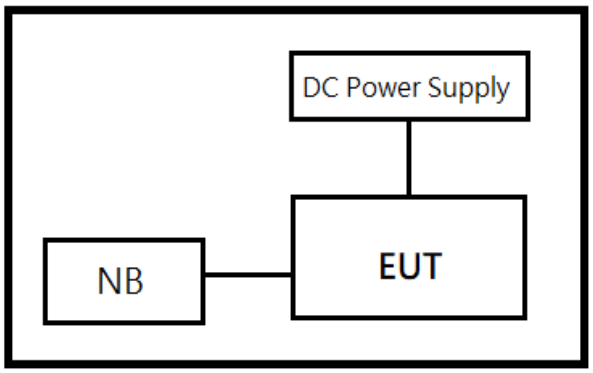
966A_Radiated Wi-Fi 2.4GHz					
Name of Equipment	**Manufacturer**	**Model**	**Serial Number**	**Calibration Date**	**Calibration Due**
Thermo-Hygro Meter	WISEWIND	1206	D07	2023-12-08	2024-12-07
Signal Analyzer	KEYSIGHT	N9010A	MY54200716	2023-10-13	2024-10-12
Loop Antenna	COM-POWER	AL-130	121051	2023-05-23	2024-05-22
Bi-Log Antenna	Sunol Sciences	JB3	A030105	2023-08-08	2024-08-07
Preamplifier	EMEC	EM330	060609	2023-02-22	2024-02-21
Cable	Huber+Suhner	104PEA	20995+21000+182330	2023-02-22	2024-02-21
Horn Antenna	ETC	MCTD 1209	DRH13M02003	2023-12-28	2024-12-27
Preamplifier	HP	8449B	3008A00965	2023-12-22	2024-12-21
Cable	EMCI	EMC101G	221213+221011+221012	2023-10-17	2024-10-16
High Pass Filters	Titan Microwave	T04H30001800070S01	22011402-4	2023-06-17	2024-06-16
Horn Antenna	SCHWARZBECK	BBHA9170	1047	2023-12-13	2024-12-12
Pre-Amplifier	EMCI	EMC184045SE	980860	2023-12-12	2024-12-11
Turn Table	CCS	CC-T-1F	N/A	N.C.R	N.C.R
Controller	CCS	CC-C-1F	N/A	N.C.R	N.C.R
Antenna Tower	CCS	CC-A-1F	N/A	N.C.R	N.C.R
Software	e3 V9-210616c				

1.7 SUPPORT AND EUT ACCESSORIES EQUIPMENT

Support Unit List						
Name of Equipment	**Manufacturer**	**Model**	**Serial Number**	**Calibration Date**	**Calibration Due**	**Remark**
DC Power Source	GWINSTEK	SPS-3610	GPE880163	2023-11-16	2024-11-15	1
DC Power Cable	N/A	N/A	N/A	N/A	N/A	2
DC power Cable	N/A	N/A	N/A	N/A	N/A	A
USB Cable	LINDY	36761-ANTHRA	N/A	N/A	N/A	B
USB Cable	LINDY	36761-ANTHRA	N/A	N/A	N/A	C
USB Cable	LINDY	36761-ANTHRA	N/A	N/A	N/A	D
USB	HP	x306w 32G	N/A	N/A	N/A	E
USB	HP	x306w 32G	N/A	N/A	N/A	F
USB	HP	x306w 32G	N/A	N/A	N/A	G
CM32	N/A	N/A	N/A	N/A	N/A	H
Panic Button	N/A	020-0011	N/A	N/A	N/A	I

Conducted_Sup_Units					
Name of Equipment	**Manufacturer**	**Model**	**Serial Number**	**Calibration Date**	**Calibration Due**
NB(E)	Lenovo	T460	N/A	N/A	N/A
Cable	SP	Type C Cable	N/A	N/A	N/A

1.8 TEST SETUP DIAGRAM

RSE Setup	Conducted Setup
	

1.9 TEST METHODOLOGY AND APPLIED STANDARDS

The test methodology, setups and results comply with all requirements in accordance with ANSI C63.10:2013, FCC Part 2, FCC Part 15.247 and KDB 558074 D01.

2. TEST SUMMARY

FCC Standard Section	Report Section	Test Item	Result
15.203	1.3	Antenna Requirement	Pass
15.207(a)	4.1	AC Conducted Emission	N/A
15.247(a)(2)	4.2	6 dB Bandwidth	Pass
-	4.2	Occupied Bandwidth (99%)	Pass
15.247(b)(3)	4.3	Output Power Measurement	Pass
15.247(e)	4.4	Power Spectral Density	Pass
15.247(d)	4.5	Conducted Band Edge	Pass
15.247(d)	4.5	Conducted Emission	Pass
15.247(d) 15.205 15.209	4.6	Radiation Band Edge	Pass
15.247(d) 15.205 15.209	4.6	Radiation Spurious Emission	Pass

3. DESCRIPTION OF TEST MODES

3.1 THE WORST MODE OF OPERATING CONDITION

Operation mode	BLE Mode (1Mbps) BLE Mode (2Mbps)
Test Channel Frequencies	BLE Mode (1Mbps) 1.Lowest Channel : 2402MHz 2.Middle Channel : 2440MHz 3.Highest Channel : 2480MHz BLE Mode (2Mbps) 1.Lowest Channel : 2404MHz 2.Middle Channel : 2440MHz 3.Highest Channel : 2478MHz

Remark:
1. EUT pre-scanned data rate of output power for each mode, the worst data rate were recorded in this report.

3.2 THE WORST MODE OF MEASUREMENT

Radiated Emission Measurement Above 1G	
Test Condition	**Band edge, Emission for Unwanted and Fundamental**
Test Mode	**Mode 1: EUT(010-00006) power by Power supply DC24V**
Worst Mode	**☒ Mode 1 ☐ Mode 2 ☐ Mode 3 ☐ Mode 4**
Worst Position	**☐ Placed in fixed position.** **☒ Placed in fixed position at X-Plane (E2-Plane)** **☐ Placed in fixed position at Y-Plane (E1-Plane)** **☐ Placed in fixed position at Z-Plane (H-Plane)**

Radiated Emission Measurement Below 1G	
Test Condition	**Radiated Emission Below 1G**
Test Mode	**Mode 1: EUT(010-00006) power by Power supply DC24V** **Mode 2: EUT(010-00006) power by Power supply DC12V** **Mode 3: EUT(010-00008) power by Power supply DC24V** **Mode 4: EUT(010-00008) power by Power supply DC12V**
Worst Mode	**☒ Mode 1 ☐ Mode 2 ☐ Mode 3 ☐ Mode 4**

Remark:
1. The worst mode was record in this test report.
2. EUT pre-scanned in three axis ,X,Y, Z and two polarity, for radiated measurement. The worst case(X-Plane) were recorded in this report

3.3 EUT DUTY CYCLE

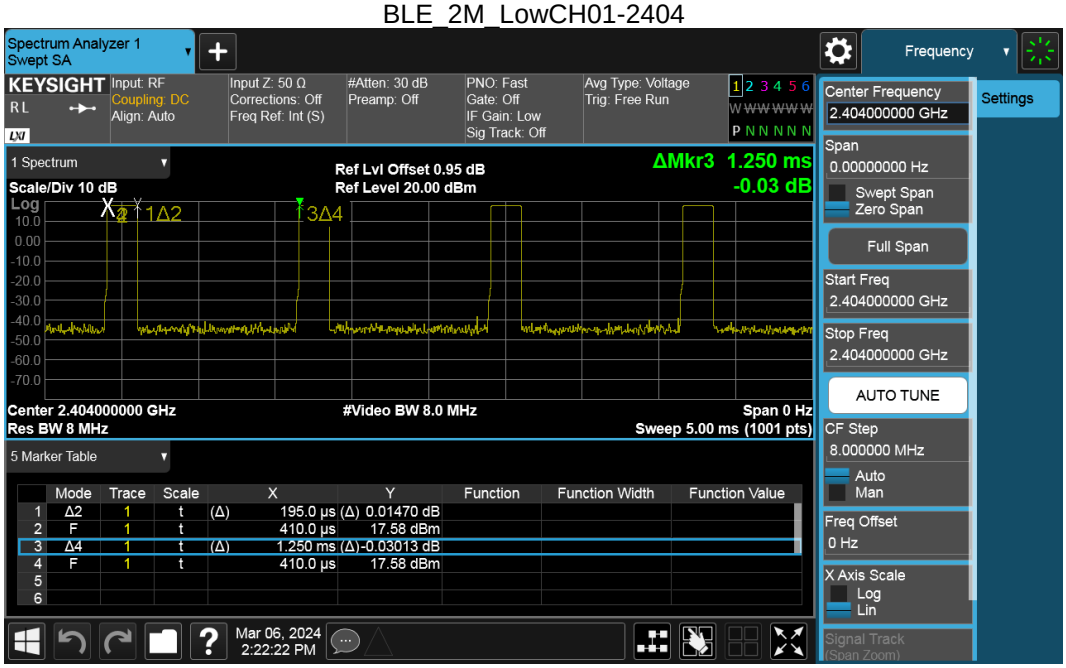
Temperature: 17.1~23.7℃ **Test date:** December 15, 2023 ~ March 6, 2024

Humidity: 50~60% RH **Tested by:** David Li

	Duty Cycle (%) = Ton / (Ton+Toff)	Duty Factor (dB) =10*log (1/Duty Cycle)	1/T (kHz)	VBW setting (kHz)
BLE 1M	30.40	5.17	2.63	3.00
BLE 2M	15.60	8.07	5.13	6.00

BLE_1M_LowCH00-2402

BLE_2M_LowCH01-2404



4. TEST RESULT

4.1 AC POWER LINE CONDUCTED EMISSION

4.1.1 Test Limit

According to §15.207(a),

Frequency Range (MHz)	Limits(dBμV)	
	Quasi-peak	Average
0.15 to 0.50	66 to 56*	56 to 46*
0.50 to 5	56	46
5 to 30	60	50

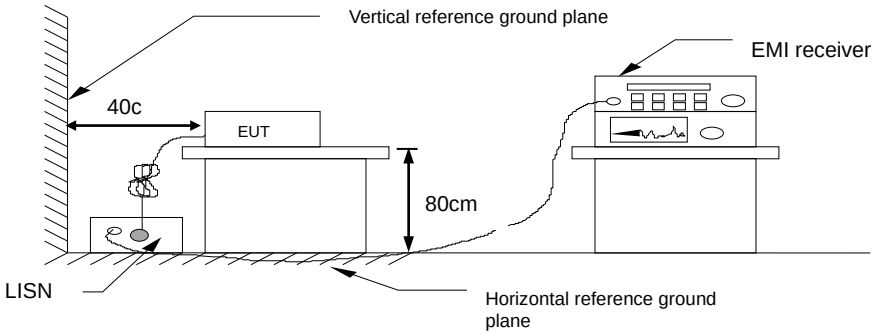
* Decreases with the logarithm of the frequency.

4.1.2 Test Procedure

Test method Refer as ANSI C63.10: 2013 clause 6.2,

1. The EUT was placed on a non-conducted table, which is 0.8m above horizontal ground plane and 0.4m above vertical ground plane.
2. EUT connected to the line impedance stabilization network (LISN)
3. Receiver set RBW of 9kHz and Detector Peak, and note as quasi-peak and average.
4. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
5. Recorded Line for Neutral and Line.

4.1.3 Test Setup



4.1.4 Test Result

Not applicable, because EUT doesn't connect to AC Main Source direct.

4.2 6dB BANDWIDTH AND OCCUPIED BANDWIDTH(99%)

4.2.1 Test Limit

According to §15.247(a)(2)

6 dB Bandwidth ：

Limit	Shall be at least 500kHz

Occupied Bandwidth(99%) ： For reporting purposes only.

4.2.2 Test Procedure

Test method Refer as KDB 558074 D01 and ANSI C63.10: 2013 clause 6.9.2.

1. The EUT RF output connected to the spectrum analyzer by RF cable.
2. Setting maximum power transmit of EUT
3. SA set RBW = 100kHz, VBW = 300kHz and Detector = Peak, to measurement 6 dB Bandwidth.
4. SA set RBW = 1% ~ 5% OBW, VBW = three times the RBW and Detector = Peak, to measurement 99% Bandwidth
5. Measure and record the result of 6 dB Bandwidth and 99% Bandwidth. in the test report.

4.2.3 Test Setup

Refer to section 1.8

4.2.4 Test Result

Temperature:	17.1~23.7℃	**Test date:**	December 15, 2023 ~ March 6, 2024
Humidity:	50~60% RH	**Tested by:**	David Li

6dB Bandwidth

BLE 1M mode

Frequency (MHz)	6dB BW (MHz)	Required BW (MHz)	Result
2402	0.715	≧ 0.5	PASS
2440	0.7173	≧ 0.5	PASS
2480	0.7185	≧ 0.5	PASS

BLE 2M mode

Frequency (MHz)	6dB BW (MHz)	Required BW (MHz)	Result
2404	1.28	≧ 0.5	PASS
2440	1.346	≧ 0.5	PASS
2478	1.274	≧ 0.5	PASS

Bandwidth 99%

BLE 1M mode

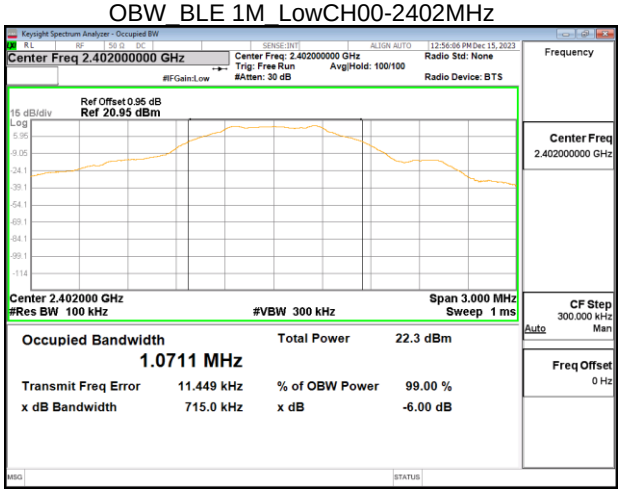
Frequency (MHz)	99%Bandwidth (MHz)
2402	1.0467
2440	1.0502
2480	1.0467

BLE 2M mode

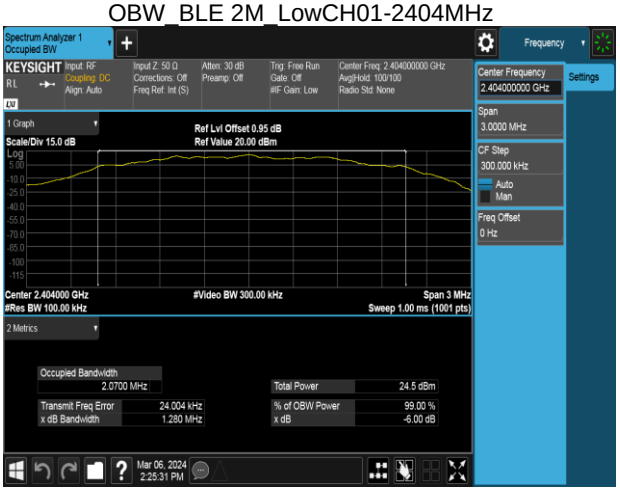
Frequency (MHz)	99%Bandwidth (MHz)
2404	2.0722
2440	2.0867
2478	2.0629

Test Data (6dB Bandwidth)

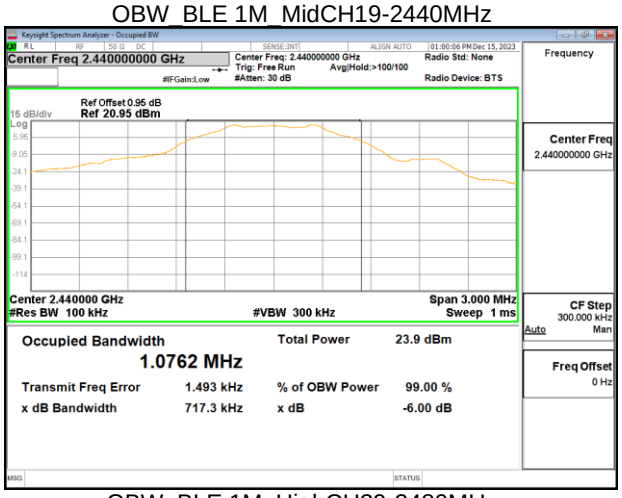
OBW_BLE 1M_LowCH00-2402MHz



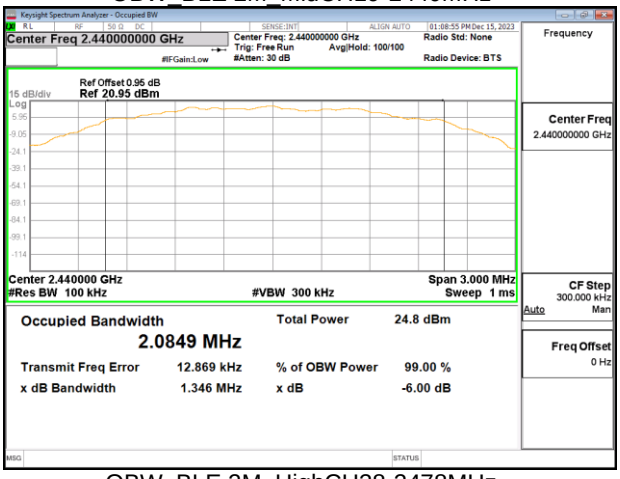
OBW_BLE 2M_LowCH01-2404MHz



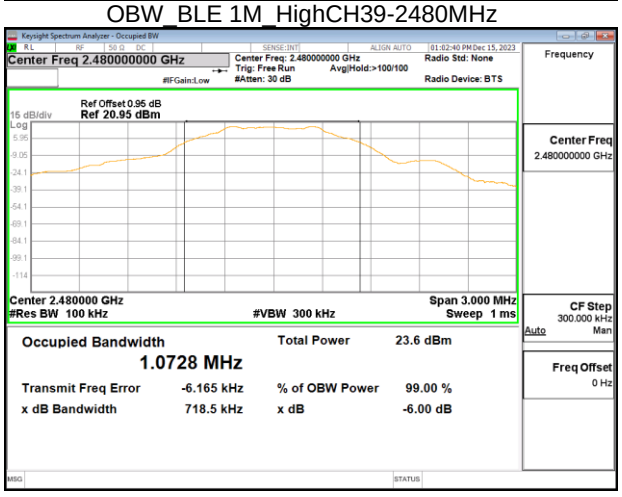
OBW_BLE 1M_MidCH19-2440MHz



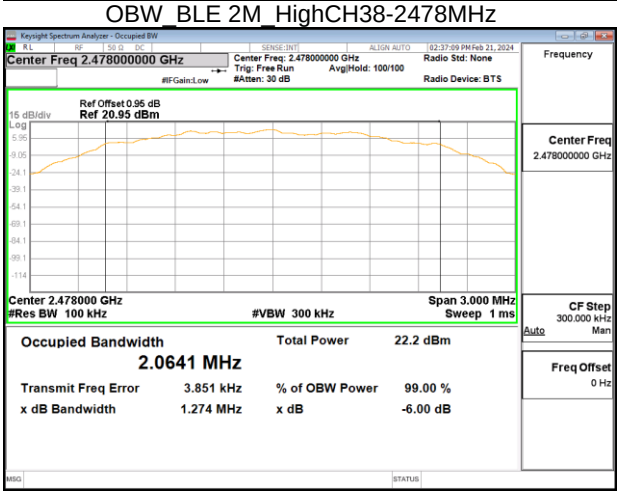
OBW_BLE 2M_MidCH19-2440MHz



OBW_BLE 1M_HighCH39-2480MHz

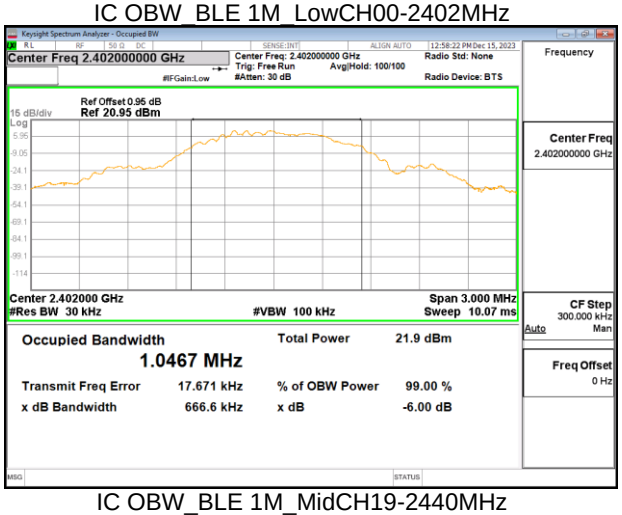


OBW_BLE 2M_HighCH38-2478MHz



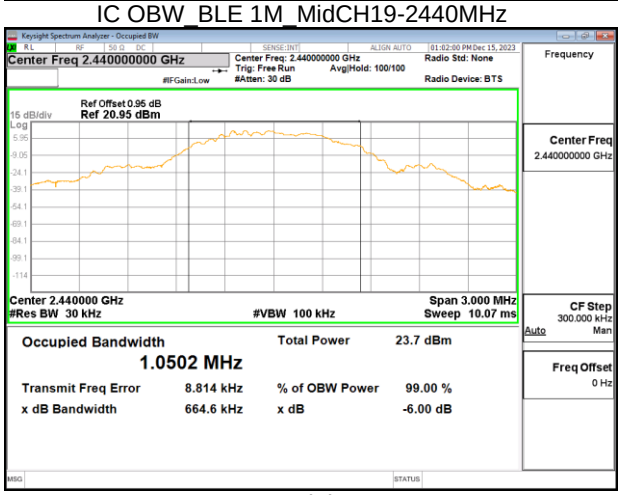
Test Data (Bandwidth 99%)

IC OBW_BLE 1M_LowCH00-2402MHz

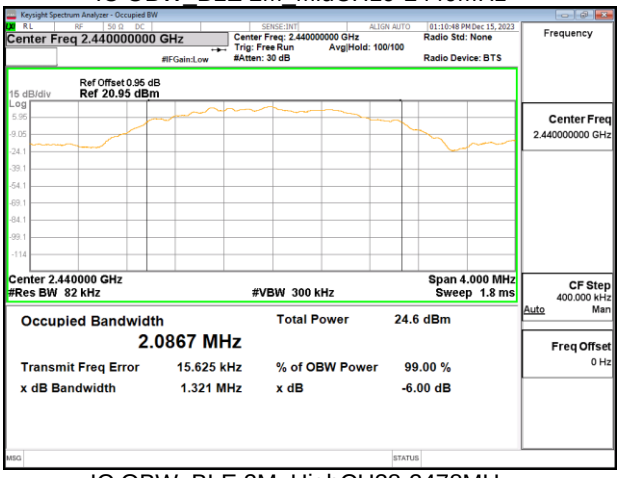


IC OBW_BLE 2M_LowCH01-2404MHz

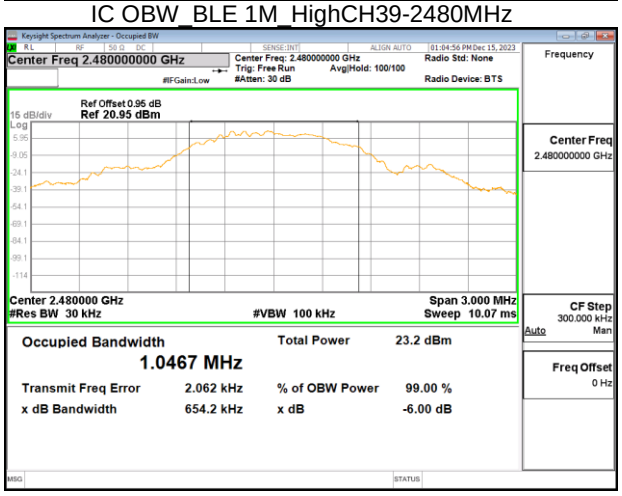
IC OBW_BLE 1M_MidCH19-2440MHz



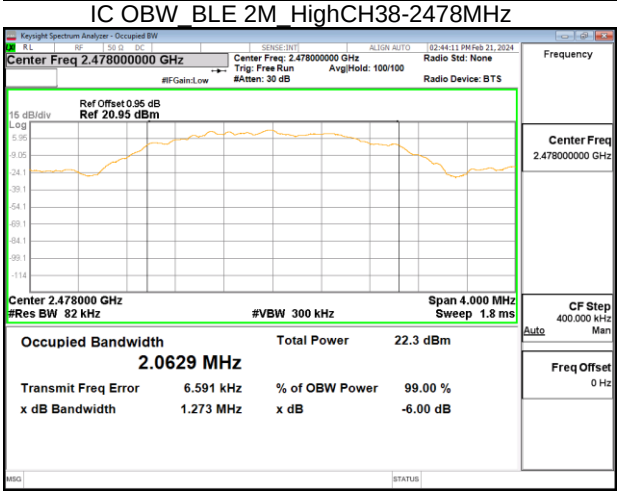
IC OBW_BLE 2M_MidCH19-2440MHz



IC OBW_BLE 1M_HighCH39-2480MHz



IC OBW_BLE 2M_HighCH38-2478MHz



4.3 OUTPUT POWER MEASUREMENT

4.3.1 Test Limit

According to §15.247(b)(3)

Peak output power：

FCC

For systems using digital modulation in the 902–928 MHz, 2400–2483.5 MHz, and 5725–5850 MHz bands: 1 Watt.

Base on the use of antennas with directional gain not exceed 6 dBi If transmitting antennas of directional gain greater than 6dBi are used the peak output power the conducted output power from the intentional radiator shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi. In case of point-to-point operation, the limit has to be reduced by 1dB for every 3 dB that the directional gain of the antenna exceeds 6 dBi.

Limit	☒ Antenna not exceed 6 dBi：30dBm ☐ Antenna with DG greater than 6 dBi [Limit = 30 – (DG – 6)] ☐ Point-to-point operation

Average output power：For reporting purposes only.

4.3.2 Test Procedure

Test method Refer as KDB 558074 D01

1. The EUT RF output connected to the power meter by RF cable.
2. Setting maximum power transmit of EUT.
3. The path loss was compensated to the results for each measurement.
4. Measure and record the result of Peak output power and Average output power. in the test report.

4.3.3 Test Setup

Refer to section 1.8

4.3.4 Test Result

Temperature:	17.1~23.7℃	**Test date:**	December 15, 2023 ~ March 6, 2024
Humidity:	50~60% RH	**Tested by:**	David Li

Peak & Average output power：

BLE 1M mode:

CH	Frequency (MHz)	Power set	Peak Output Power (dBm)	Required Limit (dBm)
Low	2402	0X10	15.96	30
Mid	2440	0X10	**17.64**	30
High	2480	0X10	17.04	30
CH	**Frequency (MHz)**	**Power set**	**Avg. Output Power (dBm)**	**Required Limit (dBm)**
Low	2402	0X10	15.82	30
Mid	2440	0X10	17.61	30
High	2480	0X10	17.02	30

Note:

1.Measured by power meter, cable loss dB + Duty cycle factor has been offseted to the power meter for Avg. power and cable loss has been offseted for Peak power measurement.

BLE 2M mode:

CH	Frequency (MHz)	Power set	Peak Output Power (dBm)	Required Limit (dBm)
Low	2404	0X10	17.95	30
Mid	2440	0X10	**18.24**	30
High	2478	0X10	15.68	30
CH	**Frequency (MHz)**	**Power set**	**Avg. Output Power (dBm)**	**Required Limit (dBm)**
Low	2404	0X10	17.88	30
Mid	2440	0X10	18.10	30
High	2478	0X10	15.41	30

Note:

1.Measured by power meter, cable loss 0.95 dB + Duty cycle factor has been offseted to the power meter for Avg. power and cable loss has been offseted for Peak power measurement.

4.4 POWER SPECTRAL DENSITY

4.4.1 Test Limit

According to §15.247(e)

For digitally modulated systems, the power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission.

Limit	☒ Antenna not exceed 6 dBi：8dBm ☐ Antenna with DG greater than 6 dBi [Limit = 8 – (DG – 6)] ☐ Point-to-point operation：

4.4.2 Test Procedure

Test method Refer as KDB 558074 D01

1. The EUT RF output connected to the spectrum analyzer by RF cable.
2. Setting maximum power transmit of EUT
3. SA set RBW = 3kHz, VBW = 10kHz, Span = 1.5 times DTS Bandwidth (6 dB BW), Detector = Peak, Sweep Time = Auto and Trace = Max hold.
4. The path loss was compensated to the results for each measurement by SA.
5. Mark the maximum level.
6. Measure and record the result of power spectral density. in the test report.

4.4.3 Test Setup

Refer to section 1.8

4.4.4 Test Result

BLE 1M mode

Frequency (MHz)	RF Power Density (dBm/3kHz)	Maximum Limit (dBm/3kHz)	Result
2402	0.153	8	PASS
2440	1.833	8	PASS
2480	1.459	8	PASS

***Note:**

1.cable loss as dB that offsets in the spectrum

BLE 2M mode

Frequency (MHz)	RF Power Density (dBm/3kHz)	Maximum Limit (dBm/3kHz)	Result
2404	-0.030	8	PASS
2440	-0.088	8	PASS
2478	-2.710	8	PASS

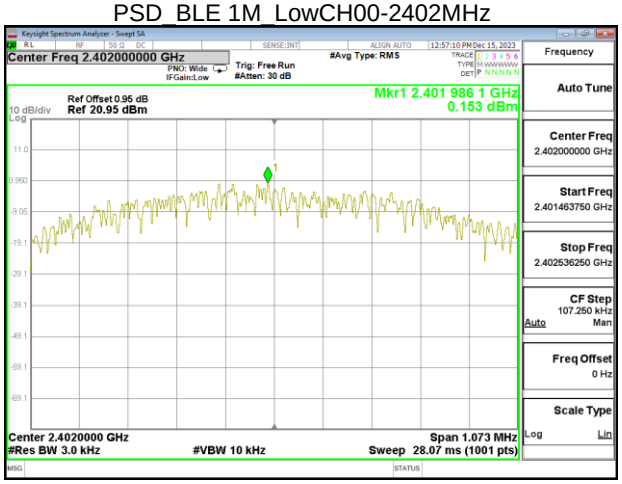
***Note:**

1.cable loss as dB that offsets in the spectrum

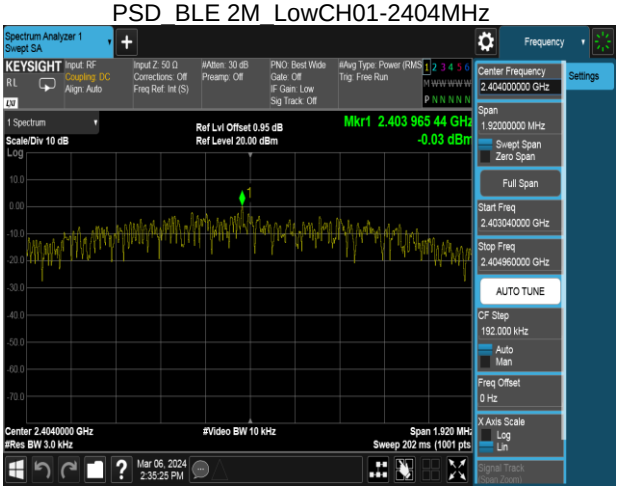
Test Data

Temperature:	17.1~23.7℃	**Test date:**	December 15, 2023 ~ March 6, 2024
Humidity:	50~60% RH	**Tested by:**	David Li

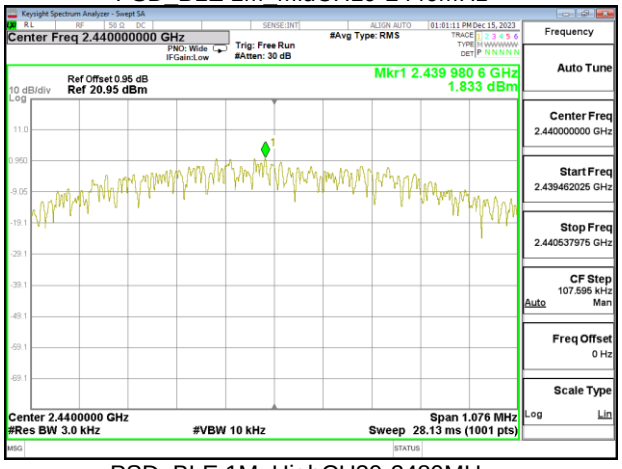
PSD_BLE 1M_LowCH00-2402MHz



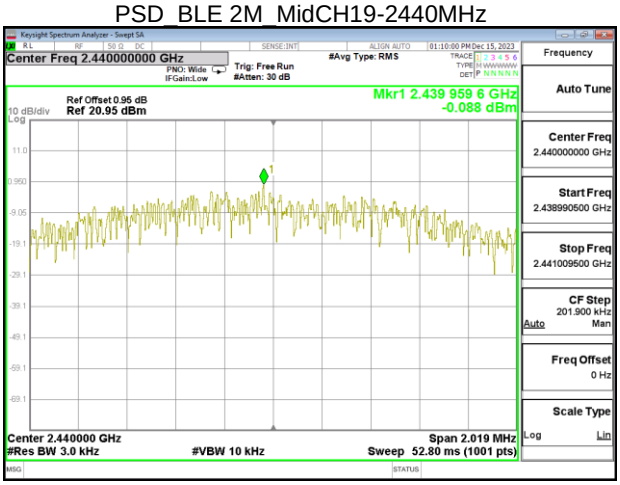
PSD_BLE 2M_LowCH01-2404MHz



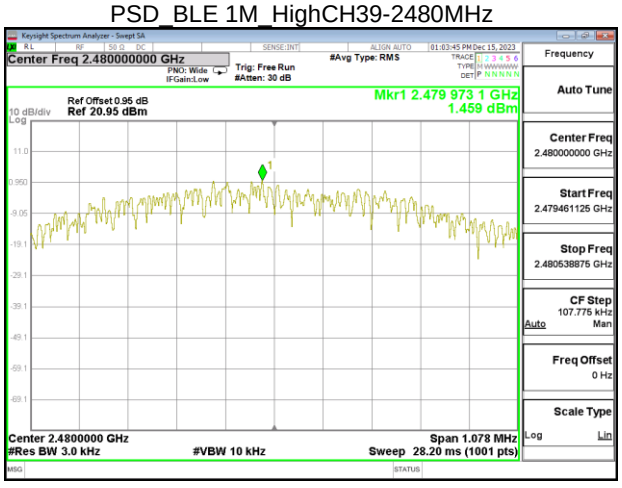
PSD_BLE 1M_MidCH19-2440MHz



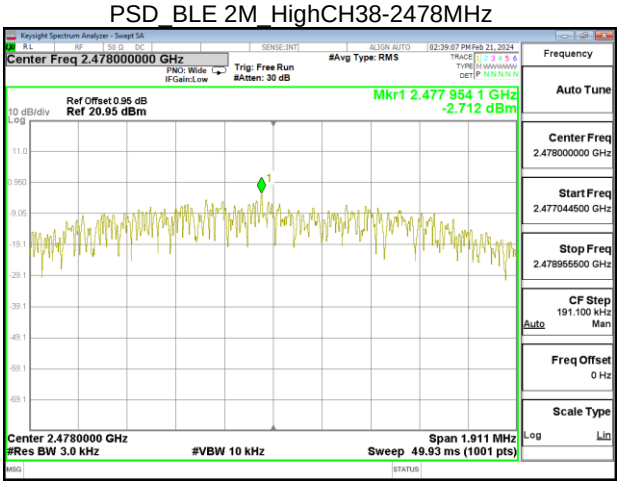
PSD_BLE 2M_MidCH19-2440MHz



PSD_BLE 1M_HighCH39-2480MHz



PSD_BLE 2M_HighCH38-2478MHz



4.5 CONDUCTED BAND EDGE AND SPURIOUS EMISSION

4.5.1 Test Limit

According to §15.247(d)

FCC: In any 100 kHz bandwidth outside the authorized frequency band,
Non-restricted bands shall be attenuated at least 20 dB/30 dB relative to the maximum PSD level in 100 kHz by RF conducted or a radiated measurement which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a).

4.5.2 Test Procedure

Test method Refer as KDB 558074 D01

1. EUT RF output port connected to the SA by RF cable, and the path loss was compensated to result.

2. SA setting, RBW=100kHz, VBW=300kHz, Detector=Peak, Trace mode = max hold, SWT = Auto.

3. In any 100 kHz bandwidth outside the authorized frequency band, shall be attenuated at least 20 dB relative to the maximum in-band peak PSD level in 100 kHz when conducted power procedure is used. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, the attenuation required under this paragraph shall be 30 dB instead of 20 dB.

4.5.3 Test Setup

Refer to section 1.8

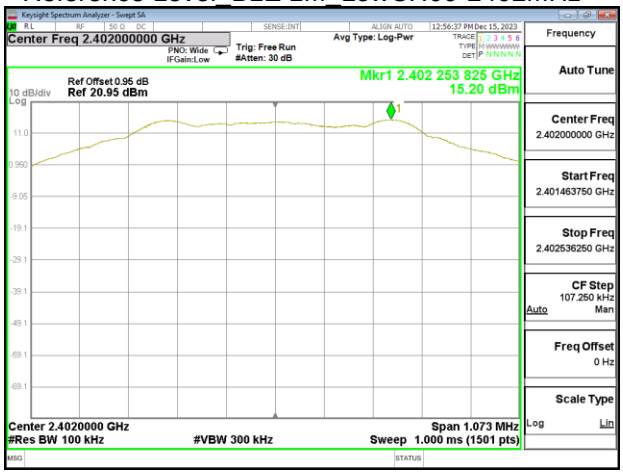
4.5.4 Test Result

Temperature:	17.1~23.7℃	**Test date:**	December 15, 2023 ~ March 6, 2024
Humidity:	50~60% RH	**Tested by:**	David Li

Test Data

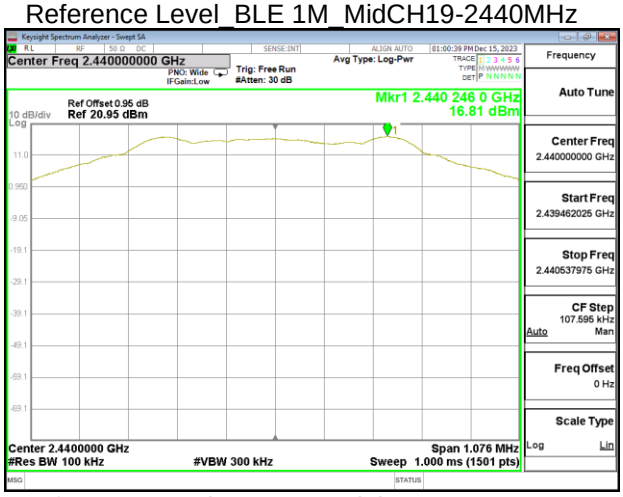
Conducted Reference

Reference Level_BLE 1M_LowCH00-2402MHz

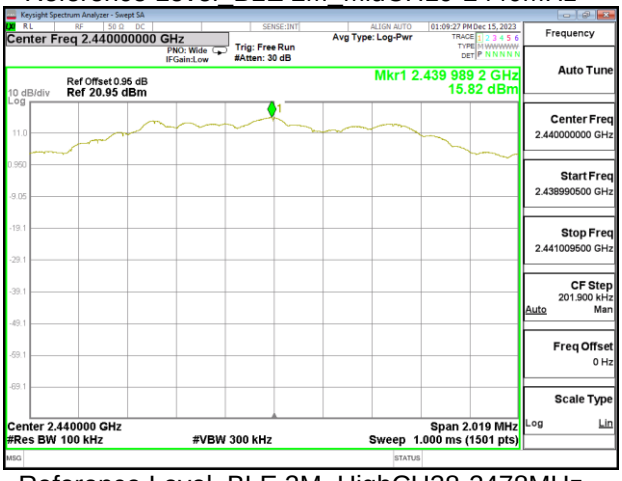


Reference Level_BLE 2M_LowCH01-2404MHz

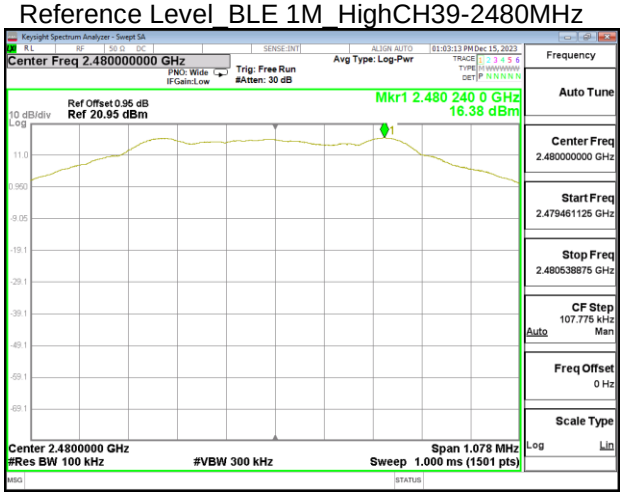
Reference Level_BLE 1M_MidCH19-2440MHz



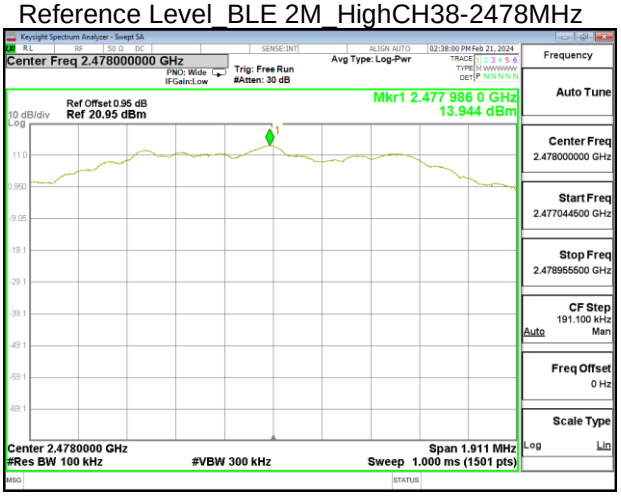
Reference Level_BLE 2M_MidCH19-2440MHz



Reference Level_BLE 1M_HighCH39-2480MHz

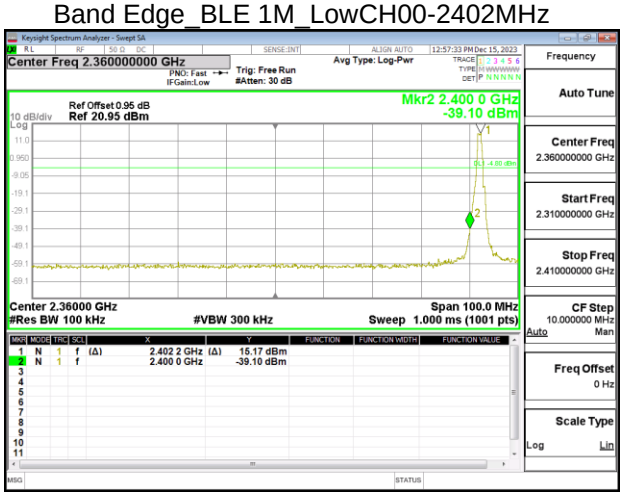


Reference Level_BLE 2M_HighCH38-2478MHz

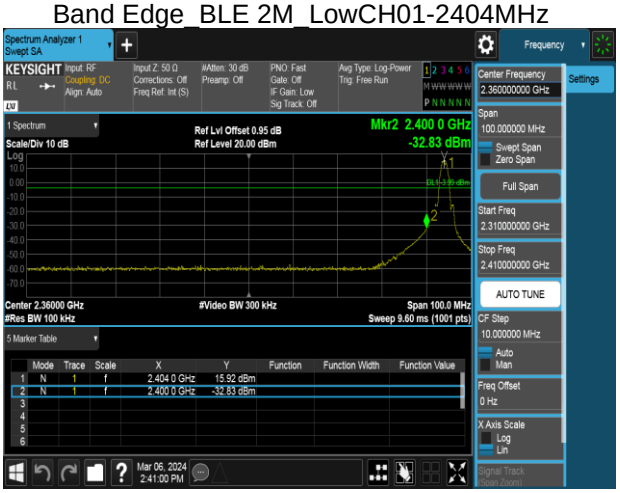


Conducted Band Edge

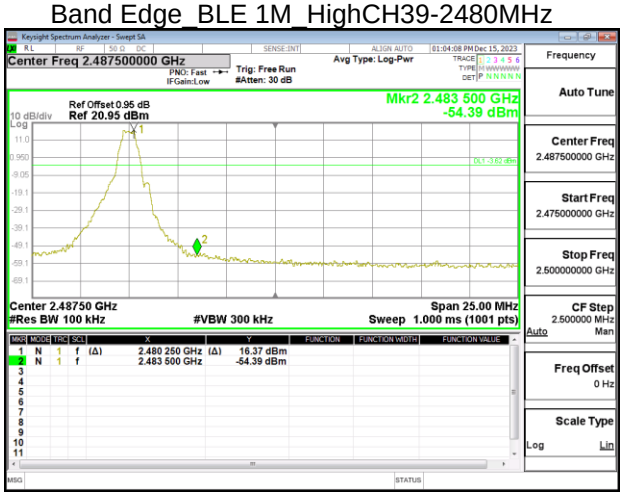
Band Edge_BLE 1M_LowCH00-2402MHz



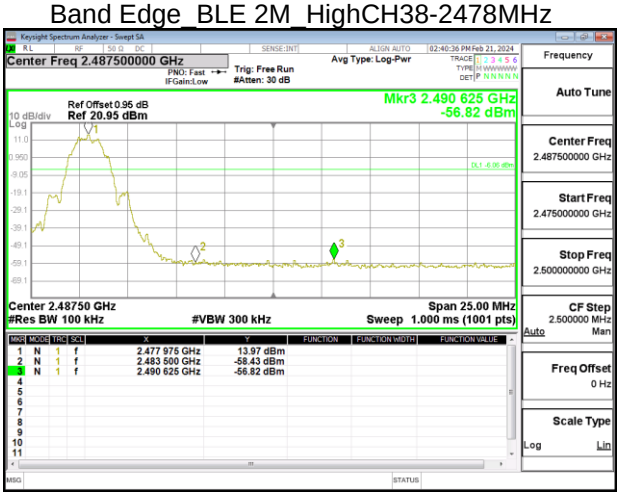
Band Edge_BLE 2M_LowCH01-2404MHz



Band Edge_BLE 1M_HighCH39-2480MHz

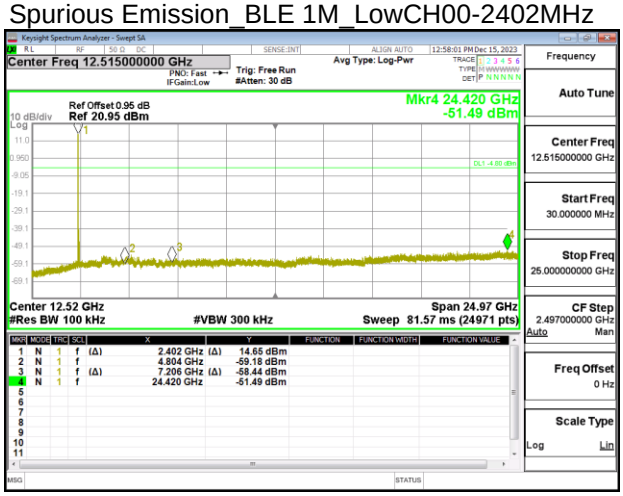


Band Edge_BLE 2M_HighCH38-2478MHz

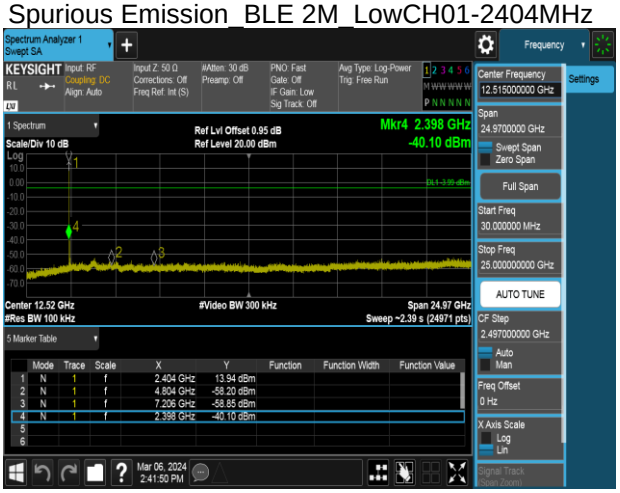


Conducted Spurious Emission

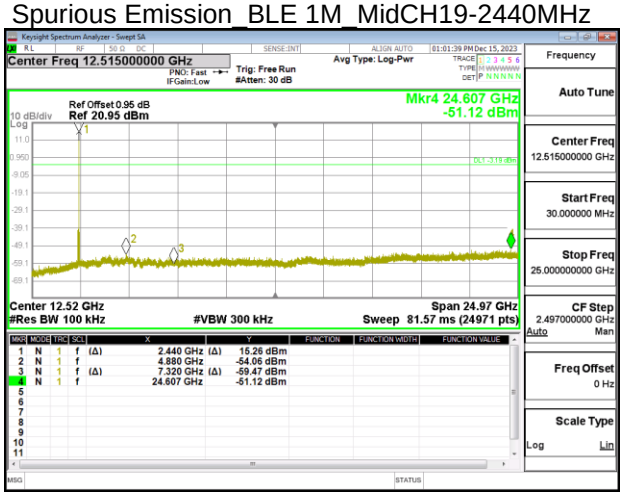
Spurious Emission_BLE 1M_LowCH00-2402MHz



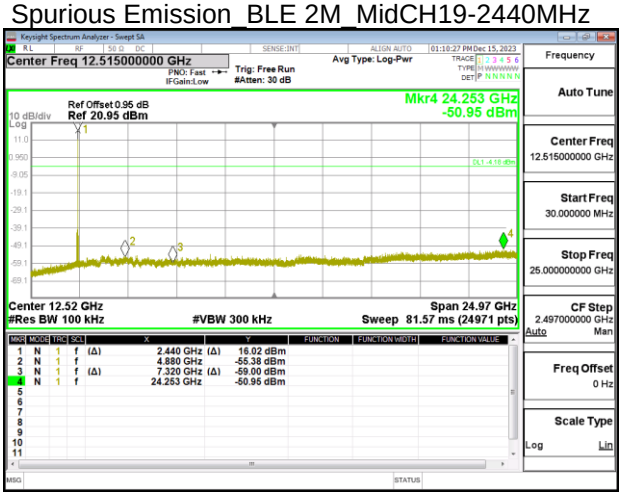
Spurious Emission_BLE 2M_LowCH01-2404MHz



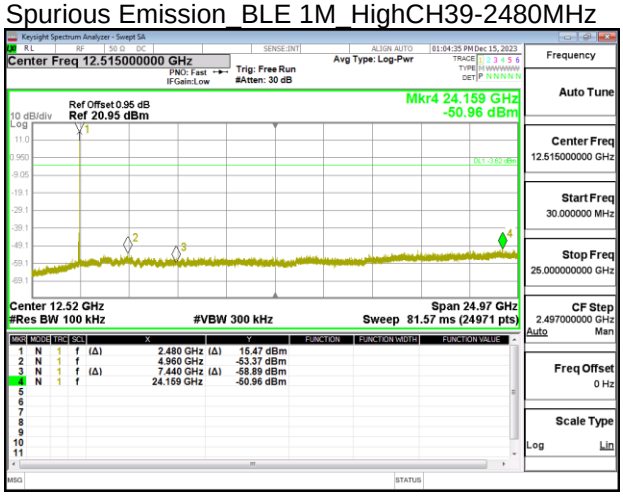
Spurious Emission_BLE 1M_MidCH19-2440MHz



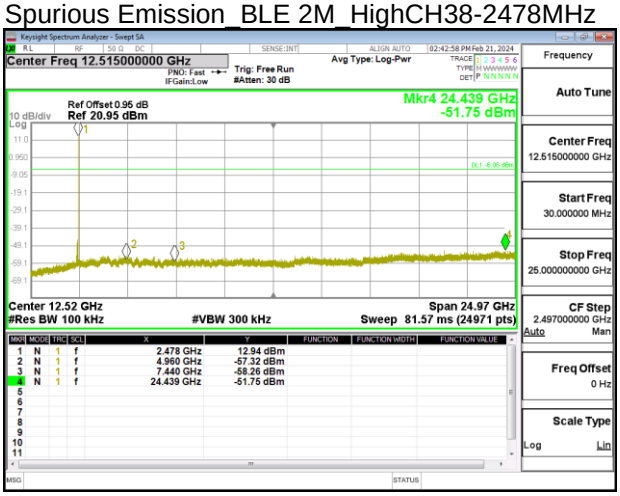
Spurious Emission_BLE 2M_MidCH19-2440MHz



Spurious Emission_BLE 1M_HighCH39-2480MHz



Spurious Emission_BLE 2M_HighCH38-2478MHz



4.6 RADIATION BANDEDGE AND SPURIOUS EMISSION

4.6.1 Test Limit

FCC according to §15.247(d), §15.209 and §15.205,

In any 100 kHz bandwidth outside the authorized frequency band, all harmonic and spurious must be least 20 dB below the highest emission level with the authorized frequency band. Radiation emission which fall in the restricted bands must also follow the FCC section 15.209 as below limit in table.

Below 30 MHz

Frequency	Field Strength (microvolts/m)	Magnetic H-Field (microamperes/m)	Measurement Distance (metres)
9-490 kHz	2,400/F (F in kHz)	2,400/F (F in kHz)	300
490-1,705 kHz	24,000/F (F in kHz)	24,000/F (F in kHz)	30
1.705-30 MHz	30	N/A	30

Above 30 MHz

Frequency (MHz)	Field Strength microvolts/m at 3 metres (watts, e.i.r.p.)	
	Transmitters	Receivers
30-88	100 (3 nW)	100 (3 nW)
88-216	150 (6.8 nW)	150 (6.8 nW)
216-960	200 (12 nW)	200 (12 nW)
Above 960	500 (75 nW)	500 (75 nW)

Remark:
Although these tests were performed other than open area test site, adequate comparison measurements were confirmed against 30 m open are test site. Therefore sufficient tests were made to demonstrate that the alternative site produces results that correlate with the ones of tests made in an open field based on KDB 414788.

4.6.2 Test Procedure

1. The EUT is placed on a turntable, Above 1 GHz is 1.5m and below 1 GHz is 0.8m above ground plane. The EUT Configured un accordance with ANSI C63.10: 2013, and the EUT set in a continuous mode.

2. The turntable shall be rotated for 360 degrees to determine the position of maximum emission level. And EUT is set 3m away from the receiving antenna, which is scanned from 1m to 4m above the ground plane to find out the highest emissions. Measurement are made polarized in both the vertical and the horizontal positions with antenna.

3. Span shall wide enough to full capture the emission measured. The SA from 9KHz to 26.5GHz set to the low, Mid and High channels with the EUT transmit.

Remark:
1. Although these tests were performed other than open area test site, adequate comparison measurements were confirmed against 30 m open are test site. Therefore sufficient tests were made to demonstrate that the alternative site produces results that correlate with the ones of tests made in an open field based on KDB 414788.
2. No emission found between lowest internal used/generated frequency to 30MHz (9kHz~30MHz).

3. The SA setting following：

(1) Below 1G：RBW = 100kHz, VBW ≥ 3 RBW, Sweep = Auto, Detector = Peak, Trace = Max hold.

(2) Above 1G：

(2.1) For Peak measurement：RBW = 1MHz, VBW ≥ 3 RBW, Sweep = Auto, Detector = Peak, Trace = Max hold.

(2.2) For Average measurement：RBW = 1MHz, VBW

- If Duty Cycle ≥ 98%, VBW=10Hz.
- If Duty Cycle < 98%, VBW=1/T.

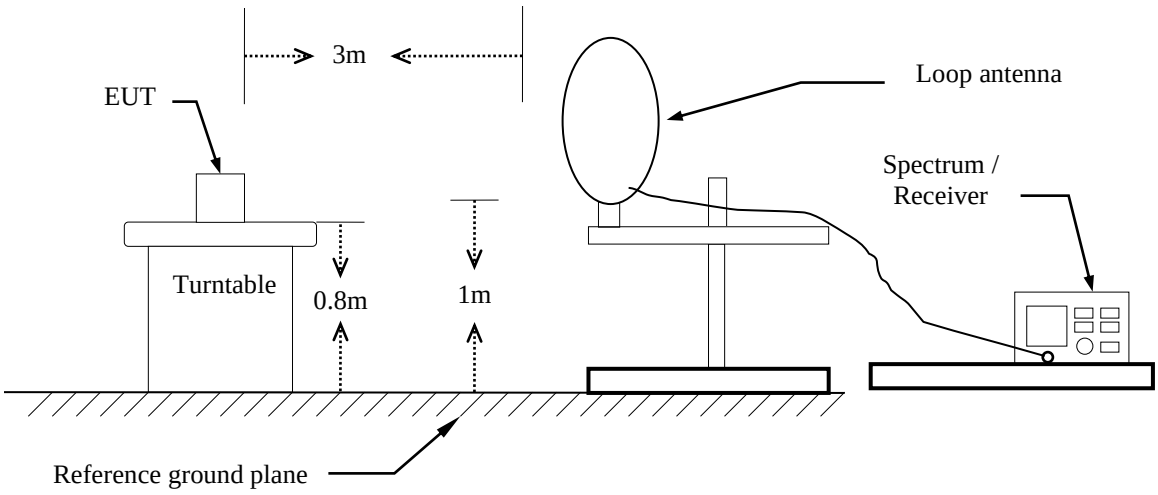
4. Data result

Actual FS=Spectrum Reading Level+Factor

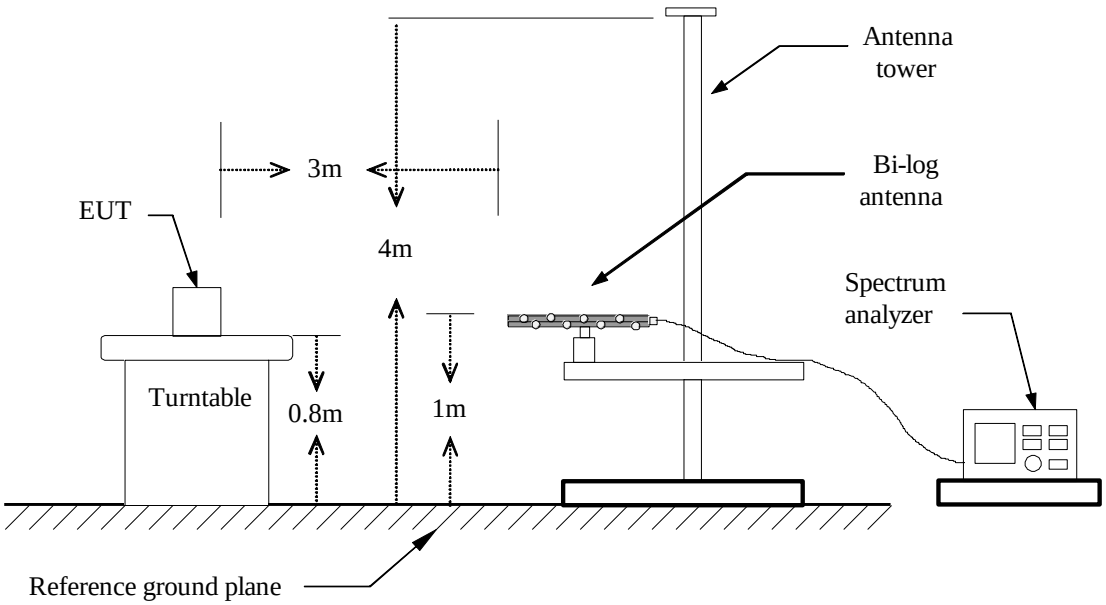
Margin=Actual FS- Limit

4.6.3 Test Setup

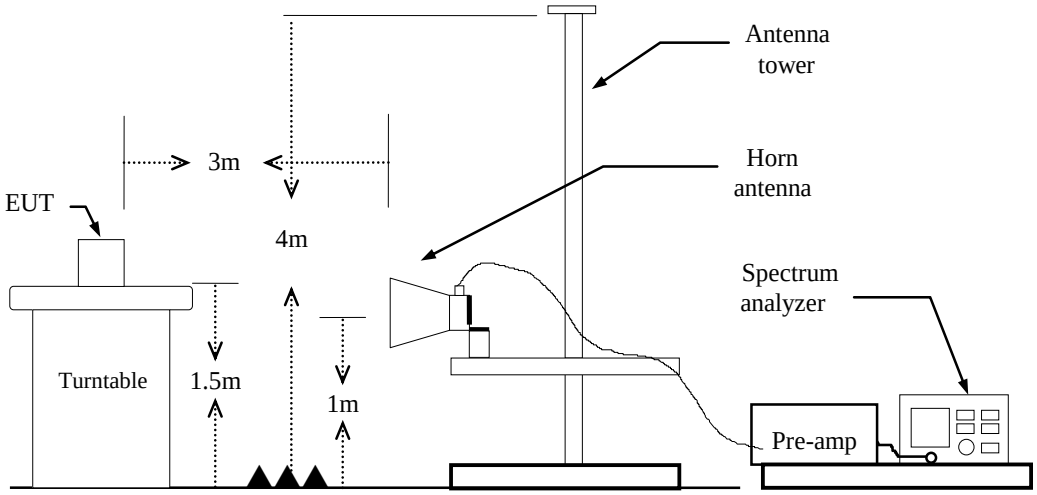
9kHz ~ 30MHz



30MHz ~ 1GHz



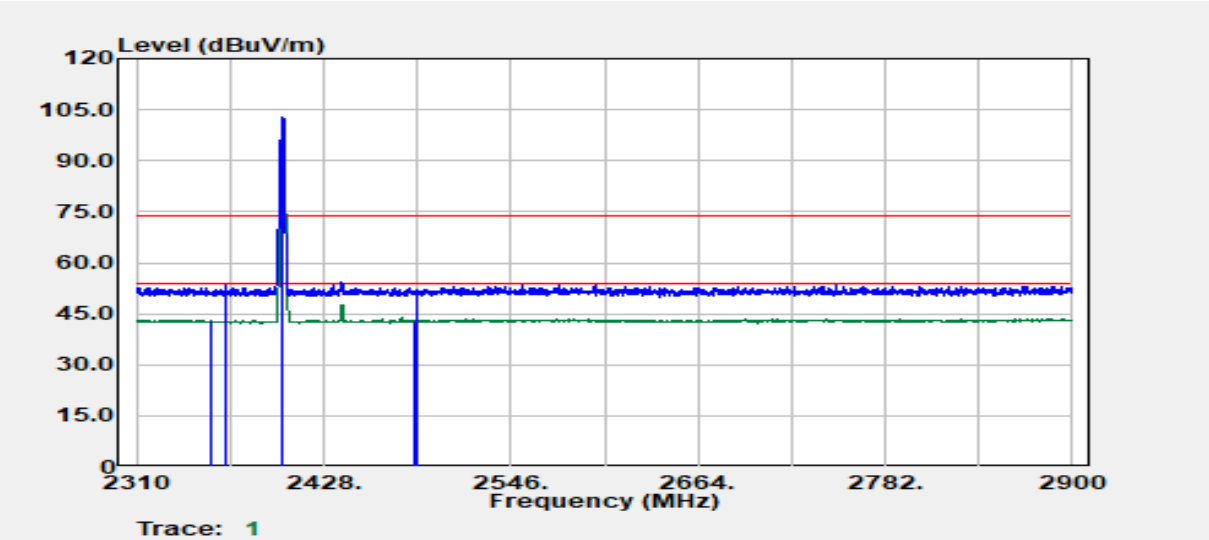
Above 1 GHz



4.6.4 Test Result

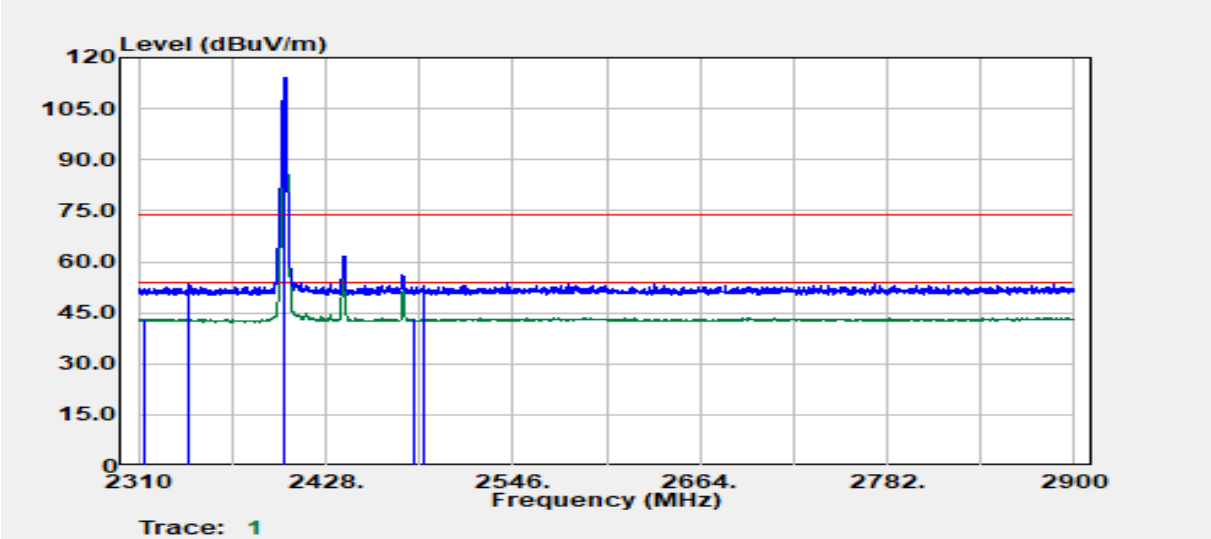
Band Edge Test Data

Project No	:TM-2312000115P	Test Date	:2024-01-08
Operation Band	:BLE_1M	Temp./Humi.	:24.5/58
Frequency	:2402 MHz	Antenna Pol.	:VERTICAL
Operation Mode	:Bandedge	Engineer	:Tony.Chao
EUT Pol	:E2	Test Chamber	: 966A
Setting	:		



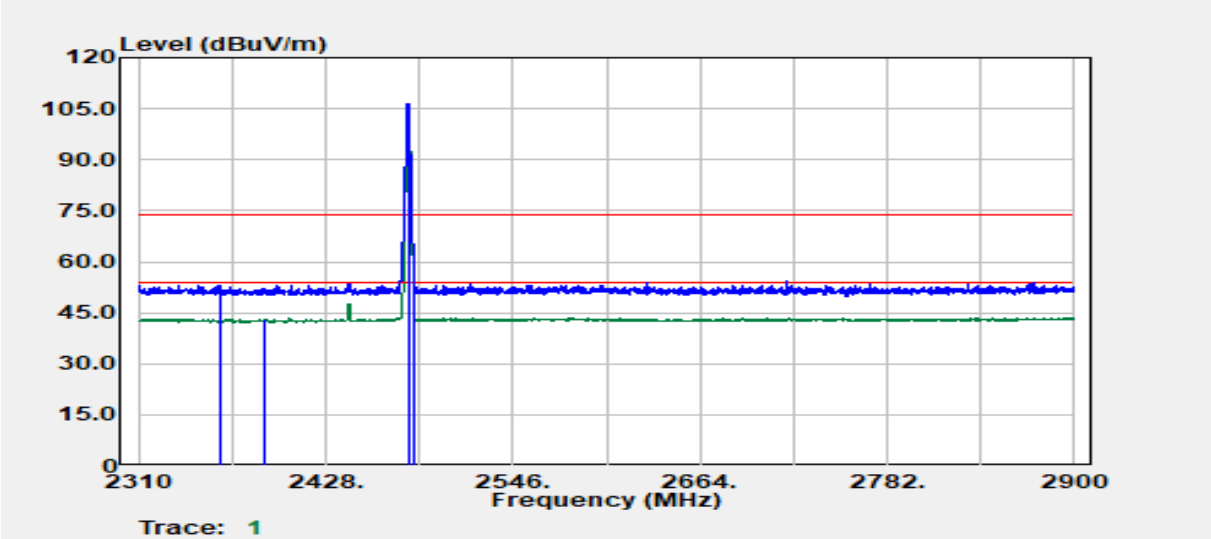
Freq.	Detector Mode	Spectrum Read Level	Factor	Actual FS	Limit	Margin
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
2357.27	Average	33.33	9.72	43.05	54.00	-10.95
2366.52	Peak	43.79	9.70	53.49	74.00	-20.51
2402.00	Peak	93.13	9.73	102.85	--	--
2402.00	Average	92.78	9.73	102.51	--	--
2485.07	Average	32.90	10.06	42.96	54.00	-11.04
2486.08	Peak	41.92	10.08	52.00	74.00	-22.00

Project No	:TM-2312000115P	Test Date	:2024-01-08
Operation Band	:BLE_1M	Temp./Humi.	:24.5/58
Frequency	:2402 MHz	Antenna Pol.	:HORIZONTAL
Operation Mode	:Bandedge	Engineer	:Tony.Chao
EUT Pol	:E2	Test Chamber	: 966A
Setting	:		



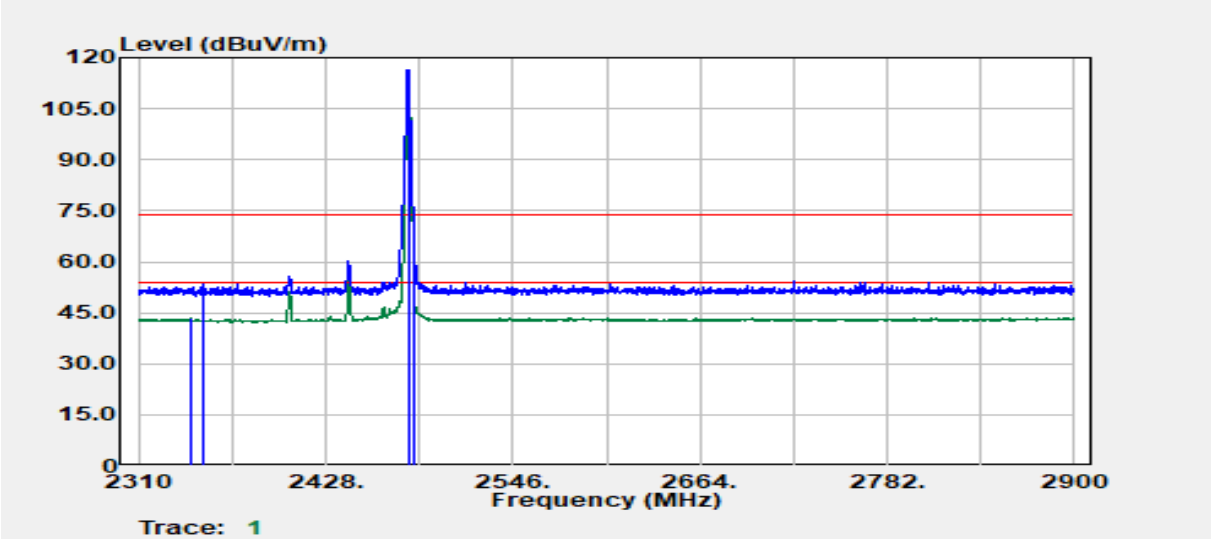
Freq.	Detector Mode	Spectrum Read Level	Factor	Actual FS	Limit	Margin
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
2313.50	Average	33.35	9.82	43.17	54.00	-10.83
2341.51	Peak	43.70	9.86	53.56	74.00	-20.44
2402.00	Peak	104.54	9.73	114.27	--	--
2402.00	Average	104.04	9.73	113.77	--	--
2483.50	Average	33.21	10.05	43.26	54.00	-10.74
2489.83	Peak	42.92	10.12	53.04	74.00	-20.96

Project No	:TM-2312000115P	Test Date	:2024-01-08
Operation Band	:BLE_1M	Temp./Humi.	:24.5/58
Frequency	:2480 MHz	Antenna Pol.	:VERTICAL
Operation Mode	:Bandedge	Engineer	:Tony.Chao
EUT Pol	:E2	Test Chamber	: 966A
Setting	:		



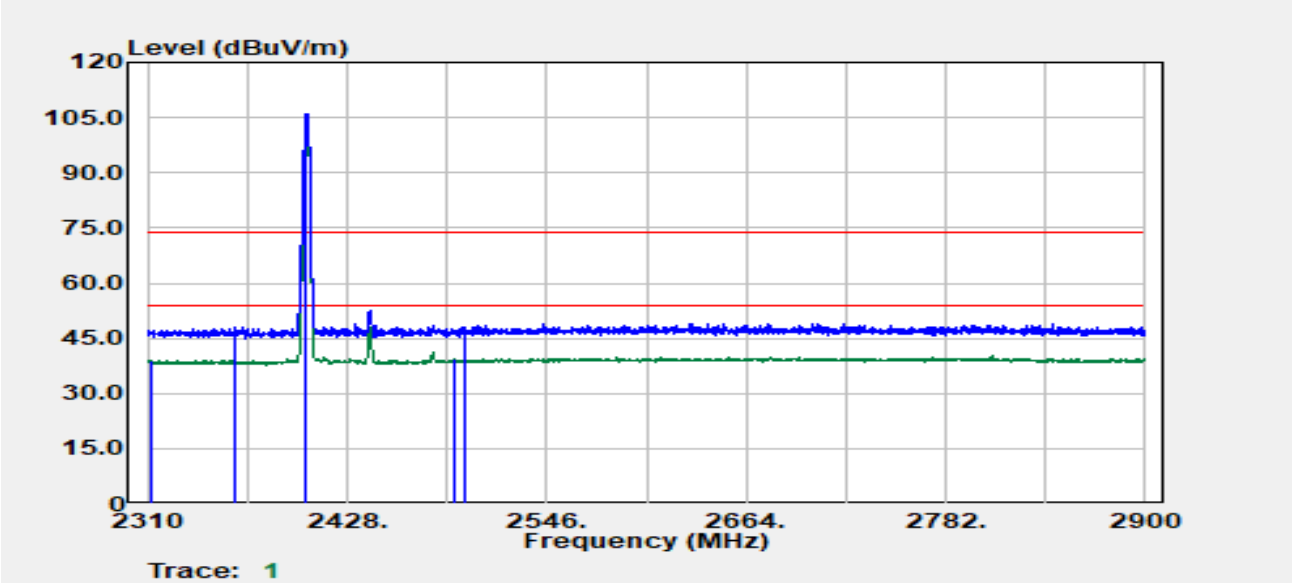
Freq.	Detector Mode	Spectrum Read Level	Factor	Actual FS	Limit	Margin
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
2361.27	Peak	43.31	9.70	53.01	74.00	-20.99
2390.00	Average	33.24	9.71	42.96	54.00	-11.04
2480.00	Peak	96.50	10.01	106.51	--	--
2480.00	Average	96.18	10.01	106.19	--	--
2483.57	Average	39.66	10.05	49.71	54.00	-4.29
2483.82	Peak	46.99	10.05	57.04	74.00	-16.96

Project No	:TM-2312000115P	Test Date	:2024-01-08
Operation Band	:BLE_1M	Temp./Humi.	:24.5/58
Frequency	:2480 MHz	Antenna Pol.	:HORIZONTAL
Operation Mode	:Bandedge	Engineer	:Tony.Chao
EUT Pol	:E2	Test Chamber	: 966A
Setting	:		



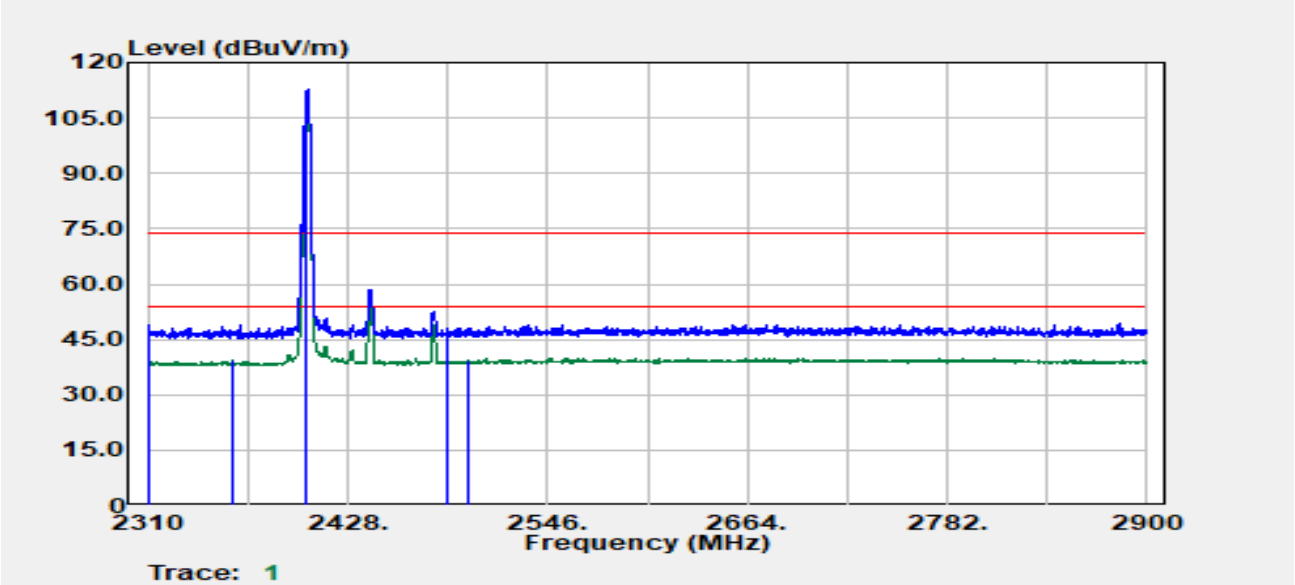
Freq.	Detector Mode	Spectrum Read Level	Factor	Actual FS	Limit	Margin
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
2342.76	Average	33.41	9.85	43.26	54.00	-10.74
2350.02	Peak	43.56	9.79	53.35	74.00	-20.65
2480.00	Peak	106.49	10.01	116.49	--	--
2480.00	Average	106.26	10.01	116.27	--	--
2483.57	Peak	58.77	10.05	68.82	74.00	-5.18
2483.57	Average	41.46	10.05	51.51	54.00	-2.49

Project No	:TM-2312000115P	Test Date	:2024-03-07
Operation Band	:BLE_2M	Temp./Humi.	:24.3/60
Frequency	:2404 MHz	Antenna Pol.	:Vertical
Operation Mode	:Bandedge	Engineer	:Tony.Chao
EUT Pol	:E2	Test Chamber	: 966A
Setting	:		



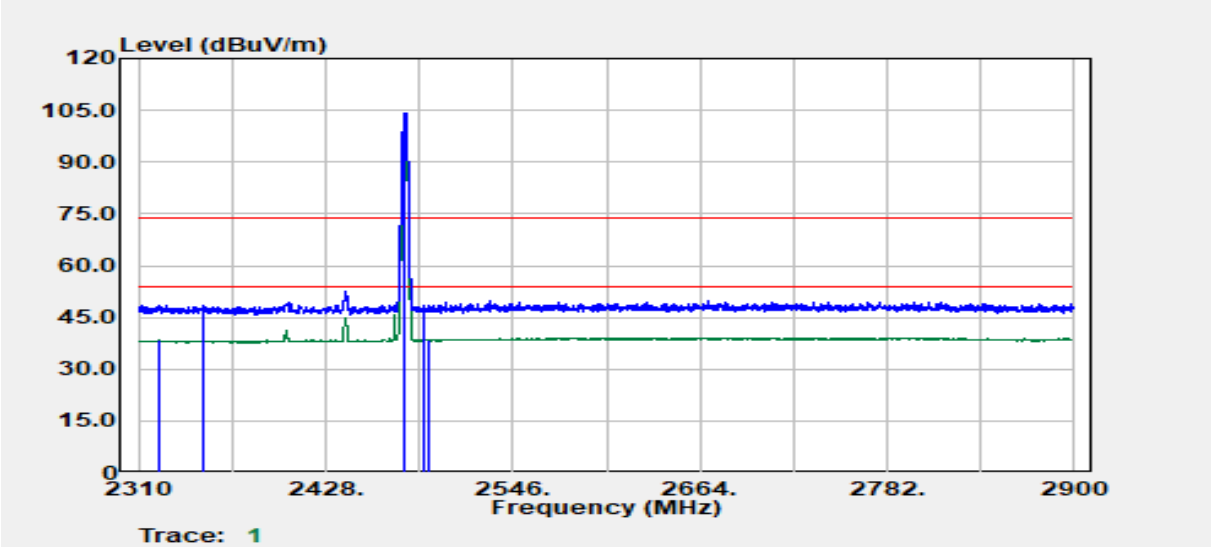
Freq. MHz	Detector Mode PK/QP/AV	Spectrum Read Level dBµV	Factor dB	Actual FS dBµV/m	Limit dBµV/m	Margin dB
2312.00	Average	33.64	5.36	39.01	54.00	-14.99
2361.68	Peak	42.69	5.46	48.15	74.00	-25.85
2404.00	Peak	100.47	5.52	105.99	--	--
2404.00	Average	99.08	5.52	104.61	--	--
2490.77	Average	33.21	6.03	39.24	54.00	-14.76
2498.26	Peak	41.96	6.06	48.02	74.00	-25.98

Project No	:TM-2312000115P	Test Date	:2024-03-07
Operation Band	:BLE_2M	Temp./Humi.	:24.3/60
Frequency	:2404 MHz	Antenna Pol.	:Horizontal
Operation Mode	:Bandedge	Engineer	:Tony.Chao
EUT Pol	:E2	Test Chamber	: 966A
Setting	:		



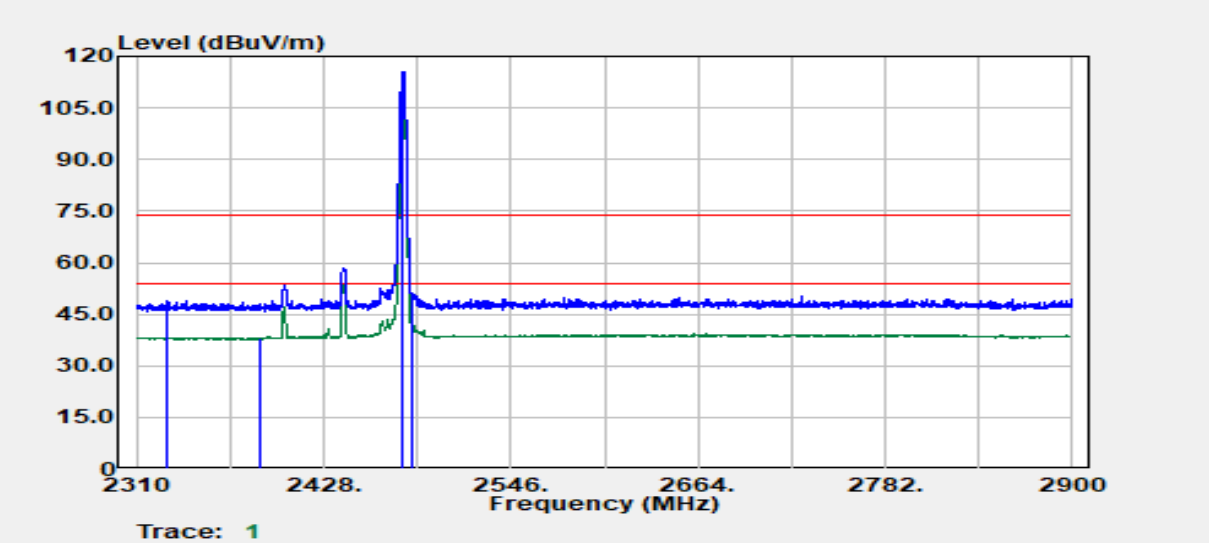
Freq. MHz	Detector Mode PK/QP/AV	Spectrum Read Level dBµV	Factor dB	Actual FS dBµV/m	Limit dBµV/m	Margin dB
2310.25	Peak	43.76	5.36	49.12	74.00	-24.88
2359.94	Average	33.81	5.48	39.29	54.00	-14.71
2404.00	Peak	107.17	5.52	112.70	--	--
2404.00	Average	105.83	5.52	111.36	--	--
2487.52	Peak	42.20	6.00	48.20	74.00	-25.80
2498.51	Average	33.24	6.06	39.30	54.00	-14.70

Project No	:TM-2312000115P	Test Date	:2024-02-21
Operation Band	:BLE_2M	Temp./Humi.	:24.5/57
Frequency	:2478 MHz	Antenna Pol.	:VERTICAL
Operation Mode	:Bandedge	Engineer	:Tony.Chao
EUT Pol	:E2	Test Chamber	: 966A
Setting	:		



Freq.	Detector Mode	Spectrum Read Level	Factor	Actual FS	Limit	Margin
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
2323.51	Average	32.12	6.17	38.28	54.00	-15.72
2350.52	Peak	42.36	6.24	48.60	74.00	-25.40
2478.00	Peak	97.58	6.62	104.20	- -	- -
2478.00	Average	94.75	6.62	101.37	- -	- -
2490.58	Peak	41.78	6.81	48.58	74.00	-25.42
2492.33	Average	31.81	6.81	38.62	54.00	-15.38

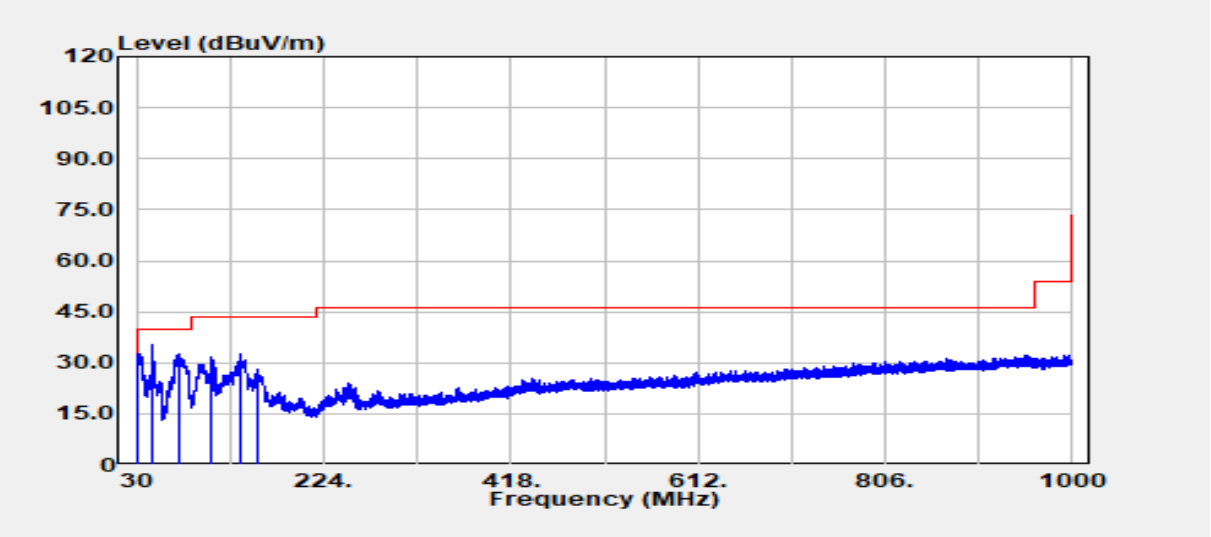
Project No	:TM-2312000115P	Test Date	:2024-02-21
Operation Band	:BLE_2M	Temp./Humi.	:24.5/57
Frequency	:2478 MHz	Antenna Pol.	:HORIZONTAL
Operation Mode	:Bandedge	Engineer	:Tony.Chao
EUT Pol	:E2	Test Chamber	: 966A
Setting	:		



Freq.	Detector Mode	Spectrum Read Level	Factor	Actual FS	Limit	Margin
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
2329.01	Peak	42.68	6.18	48.86	74.00	-25.14
2388.53	Average	31.96	6.25	38.21	54.00	-15.79
2478.00	Peak	109.02	6.62	115.64	- -	- -
2478.00	Average	106.08	6.62	112.70	- -	- -
2483.57	Average	35.18	6.72	41.90	54.00	-12.10
2483.82	Peak	44.20	6.72	50.92	74.00	-23.08

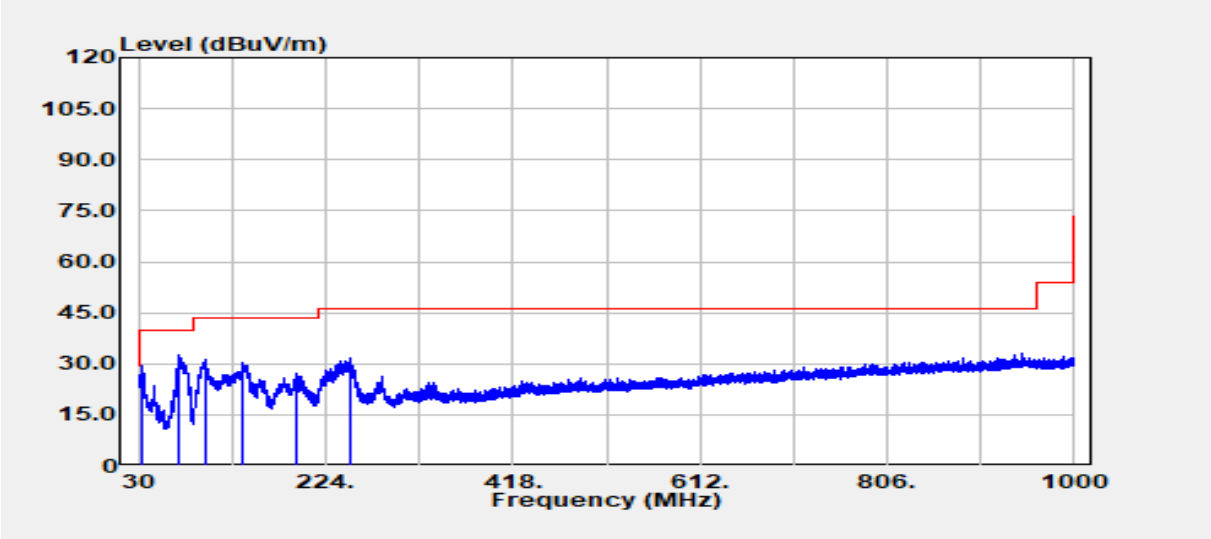
TX Test Data

Project No	:TM-2312000115P	Test Date	:2024-01-08
Operation Band	:BLE_2M	Temp./Humi.	:24.5/58
Frequency	:2480 MHz	Antenna Pol.	:Vertical
Operation Mode	:TX	Engineer	:Ray.Li
EUT Pol	:E2	Test Chamber	: 966A
Setting	:		



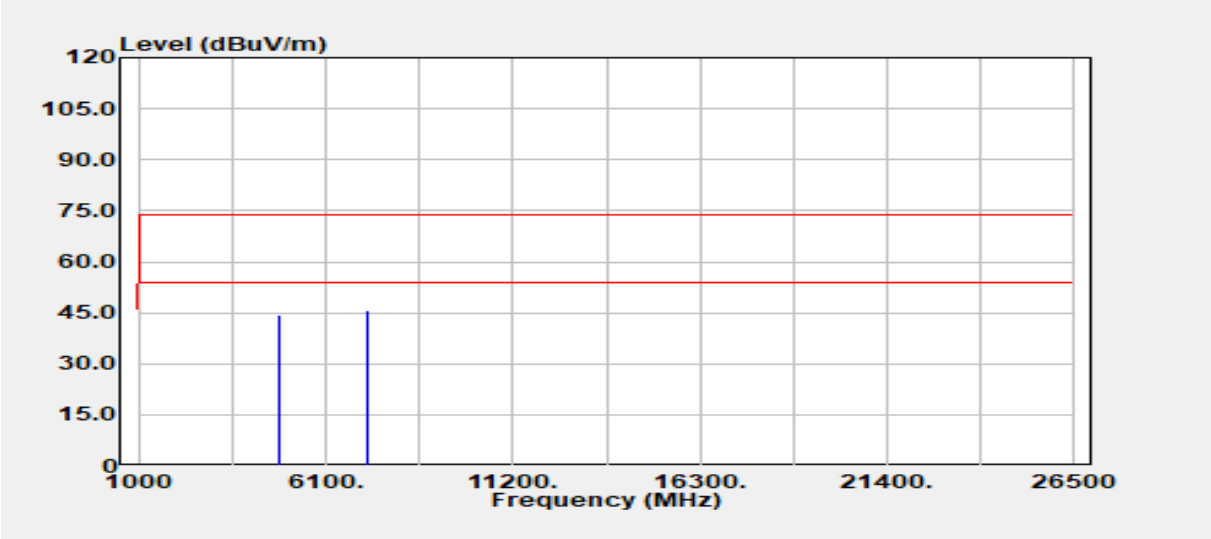
Freq.	Detector Mode	Spectrum Read Level	Factor	Actual FS	Limit	Margin
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
31.90	Peak	35.96	-3.45	32.50	40.00	-7.50
46.10	Peak	48.76	-13.40	35.35	40.00	-4.65
74.70	Peak	48.12	-15.33	32.79	40.00	-7.21
108.30	Peak	42.48	-10.79	31.69	43.50	-11.81
138.10	Peak	42.46	-9.85	32.62	43.50	-10.88
154.70	Peak	38.51	-10.41	28.10	43.50	-15.40

Project No	:TM-2312000115P	Test Date	:2024-01-08
Operation Band	:BLE_2M	Temp./Humi.	:24.5/58
Frequency	:2480 MHz	Antenna Pol.	:Horizontal
Operation Mode	:TX	Engineer	:Ray.Li
EUT Pol	:E2	Test Chamber	: 966A
Setting	:		



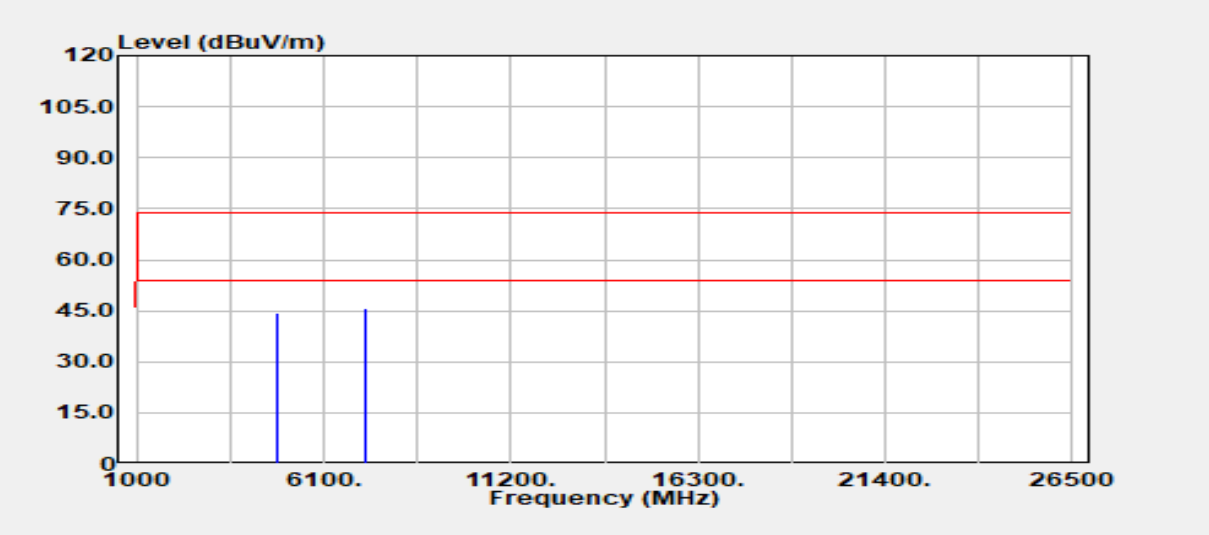
Freq.	Detector Mode	Spectrum Read Level	Factor	Actual FS	Limit	Margin
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
34.50	Peak	34.67	-5.35	29.31	40.00	-10.69
71.40	Peak	47.70	-15.25	32.45	40.00	-7.55
98.40	Peak	44.55	-13.18	31.37	43.50	-12.13
138.60	Peak	39.92	-9.79	30.13	43.50	-13.37
192.50	Peak	38.42	-11.18	27.23	43.50	-16.27
249.70	Peak	42.48	-10.88	31.59	46.00	-14.41

Project No	:TM-2312000115P	Test Date	:2024-01-08
Operation Band	:BLE_1M	Temp./Humi.	:24.5/58
Frequency	:2402 MHz	Antenna Pol.	:Vertical
Operation Mode	:TX	Engineer	:Ray.Li
EUT Pol	:E2	Test Chamber	: 966A
Setting	:		



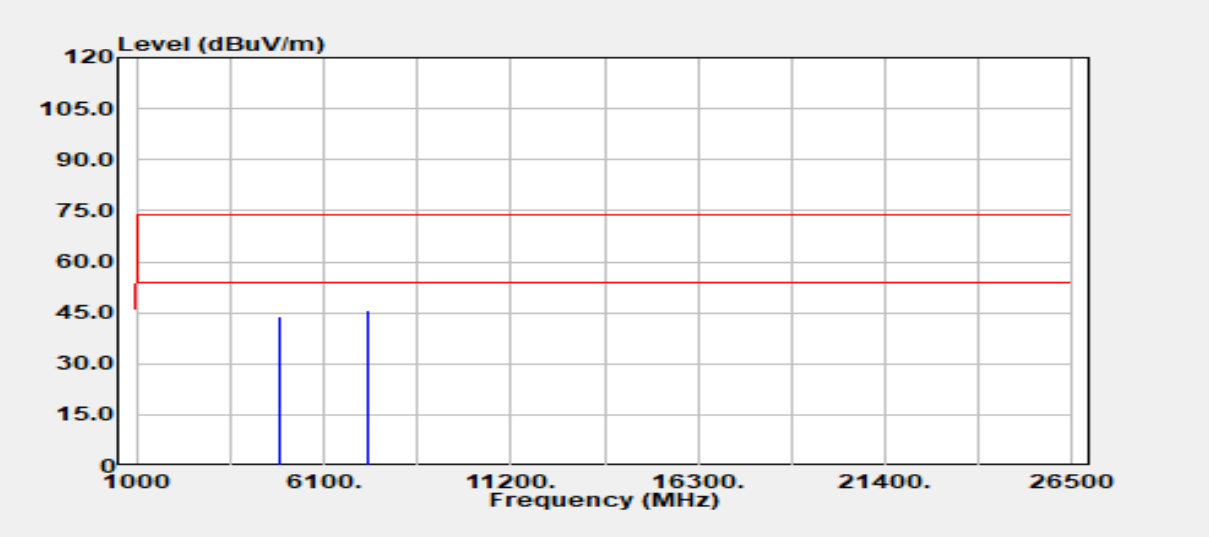
Freq.	Detector Mode	Spectrum Read Level	Factor	Actual FS	Limit	Margin
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
4804.00	Peak	39.12	5.35	44.47	74.00	-29.53
4804.00	Average	33.86	5.35	39.21	54.00	-14.79
7206.00	Peak	37.28	8.60	45.88	74.00	-28.12
7206.00	Average	28.39	8.60	36.99	54.00	-17.01

Project No	:TM-2312000115P	Test Date	:2024-01-08
Operation Band	:BLE_1M	Temp./Humi.	:24.5/58
Frequency	:2402 MHz	Antenna Pol.	:Horizontal
Operation Mode	:TX	Engineer	:Ray.Li
EUT Pol	:E2	Test Chamber	: 966A
Setting	:		



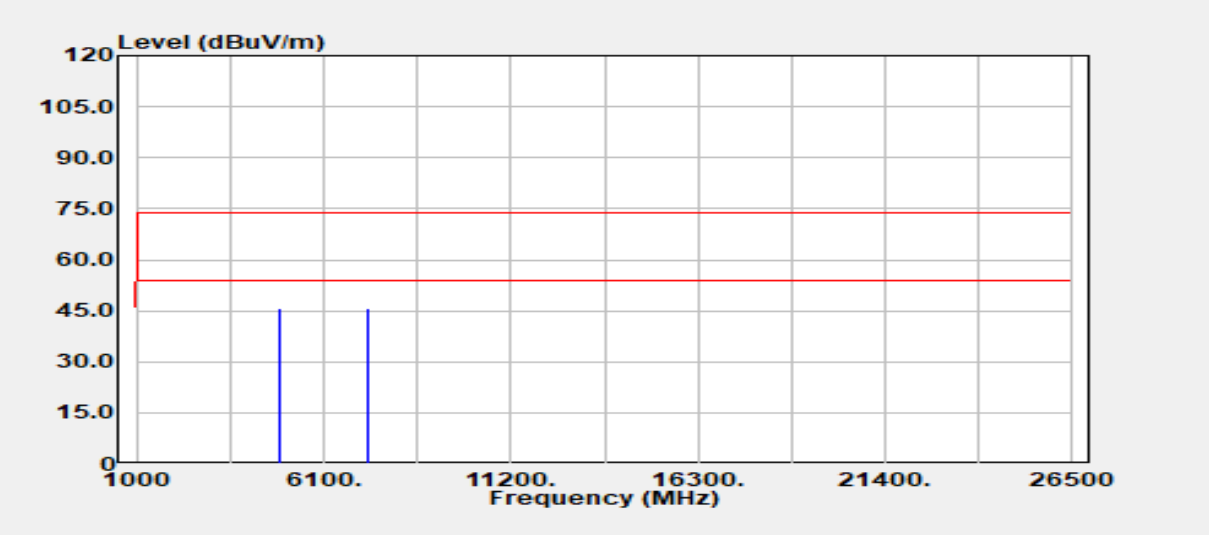
Freq.	Detector Mode	Spectrum Read Level	Factor	Actual FS	Limit	Margin
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
4804.00	Peak	39.22	5.35	44.56	74.00	-29.44
4804.00	Average	35.08	5.35	40.43	54.00	-13.57
7206.00	Peak	37.36	8.60	45.96	74.00	-28.04
7206.00	Average	28.54	8.60	37.14	54.00	-16.86

Project No	:TM-2312000115P	Test Date	:2024-01-08
Operation Band	:BLE_1M	Temp./Humi.	:24.5/58
Frequency	:2440 MHz	Antenna Pol.	:Vertical
Operation Mode	:TX	Engineer	:Ray.Li
EUT Pol	:E2	Test Chamber	: 966A
Setting	:		



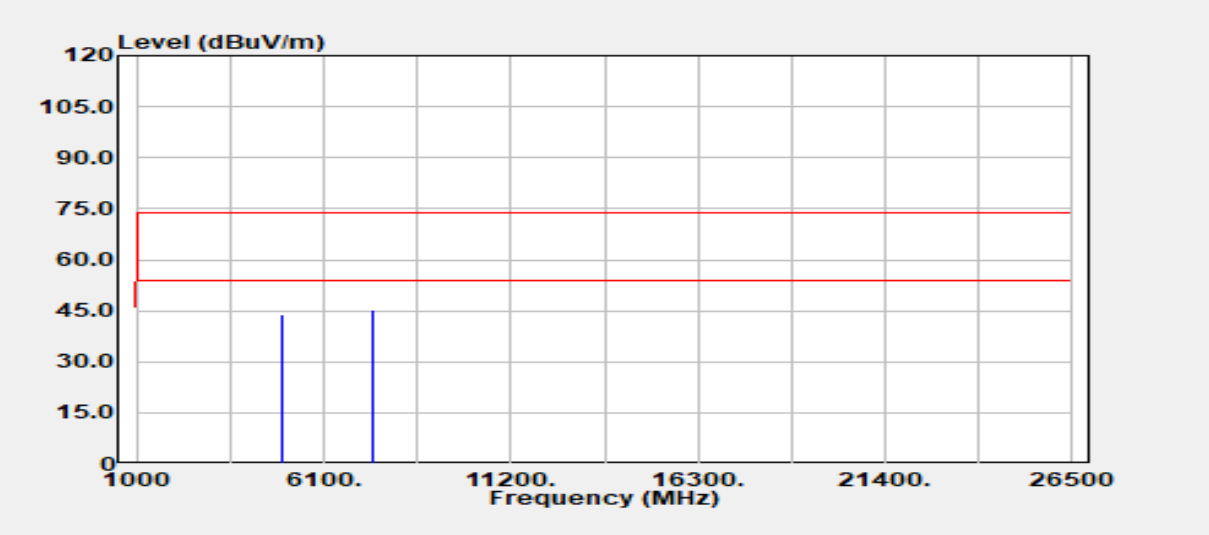
Freq.	Detector Mode	Spectrum Read Level	Factor	Actual FS	Limit	Margin
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
4880.00	Peak	38.52	5.39	43.91	74.00	-30.09
4880.00	Average	32.87	5.39	38.26	54.00	-15.74
7320.00	Peak	37.08	8.44	45.52	74.00	-28.48
7320.00	Average	28.37	8.44	36.81	54.00	-17.19

Project No	:TM-2312000115P	Test Date	:2024-01-08
Operation Band	:BLE_1M	Temp./Humi.	:24.5/58
Frequency	:2440 MHz	Antenna Pol.	:Horizontal
Operation Mode	:TX	Engineer	:Ray.Li
EUT Pol	:E2	Test Chamber	: 966A
Setting	:		



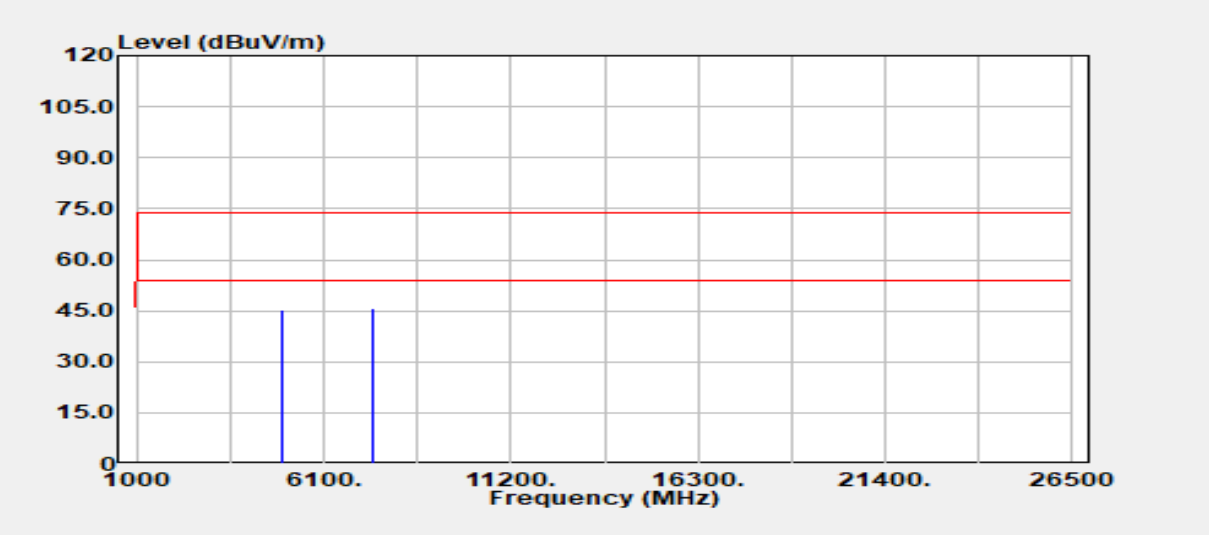
Freq.	Detector Mode	Spectrum Read Level	Factor	Actual FS	Limit	Margin
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
4880.00	Peak	40.21	5.39	45.60	74.00	-28.40
4880.00	Average	35.41	5.39	40.80	54.00	-13.20
7320.00	Peak	37.12	8.44	45.55	74.00	-28.45
7320.00	Average	28.34	8.44	36.77	54.00	-17.23

Project No	:TM-2312000115P	Test Date	:2024-01-08
Operation Band	:BLE_1M	Temp./Humi.	:24.5/58
Frequency	:2480 MHz	Antenna Pol.	:Vertical
Operation Mode	:TX	Engineer	:Ray.Li
EUT Pol	:E2	Test Chamber	: 966A
Setting	:		



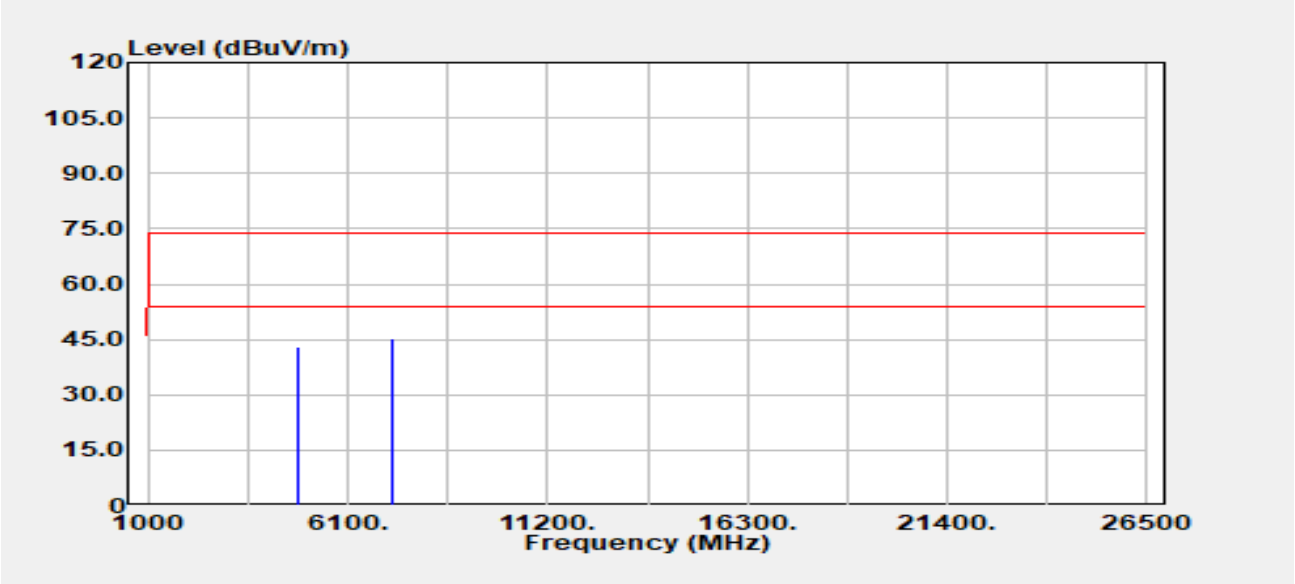
Freq.	Detector Mode	Spectrum Read Level	Factor	Actual FS	Limit	Margin
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
4960.00	Peak	38.37	5.57	43.94	74.00	-30.06
4960.00	Average	32.38	5.57	37.95	54.00	-16.05
7440.00	Peak	36.84	8.44	45.28	74.00	-28.72
7440.00	Average	28.34	8.44	36.78	54.00	-17.22

Project No	:TM-2312000115P	Test Date	:2024-01-08
Operation Band	:BLE_1M	Temp./Humi.	:24.5/58
Frequency	:2480 MHz	Antenna Pol.	:Horizontal
Operation Mode	:TX	Engineer	:Ray.Li
EUT Pol	:E2	Test Chamber	: 966A
Setting	:		



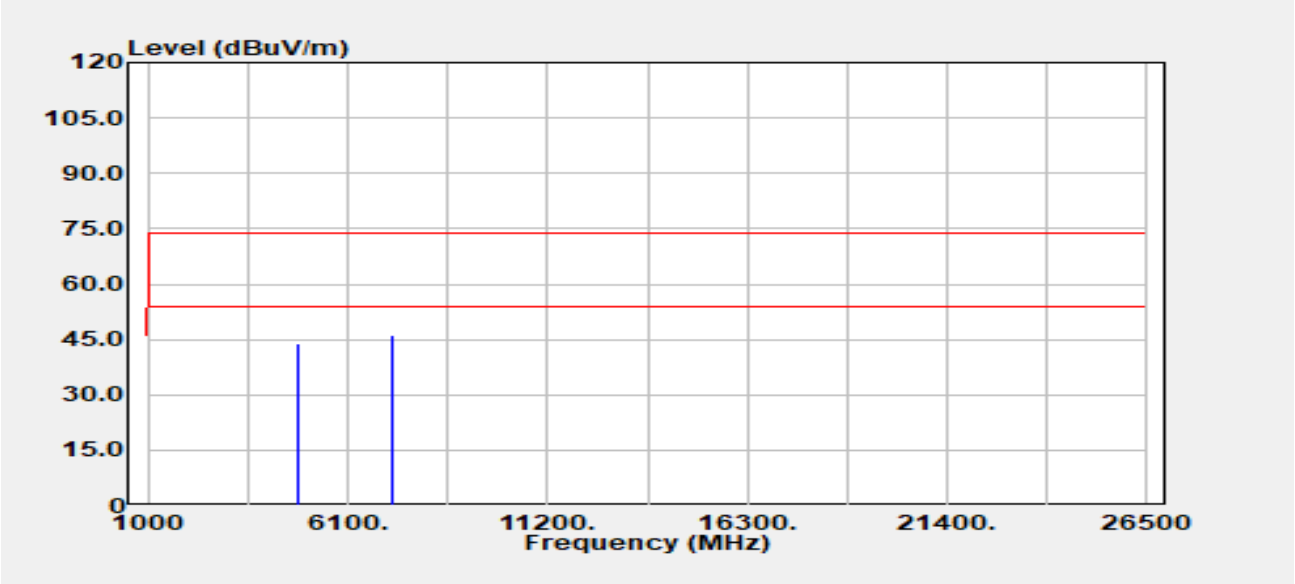
Freq.	Detector Mode	Spectrum Read Level	Factor	Actual FS	Limit	Margin
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
4960.00	Peak	39.68	5.57	45.25	74.00	-28.75
4960.00	Average	36.90	5.57	42.47	54.00	-11.53
7440.00	Peak	37.39	8.44	45.83	74.00	-28.17
7440.00	Average	28.44	8.44	36.88	54.00	-17.12

Project No	:TM-2312000115P	Test Date	:2024-03-07
Operation Band	:BLE_2M	Temp./Humi.	:24.3/60
Frequency	:2404 MHz	Antenna Pol.	:VERTICAL
Operation Mode	:TX	Engineer	:Tony.Chao
EUT Pol	:E2	Test Chamber	: 966A
Setting	:		



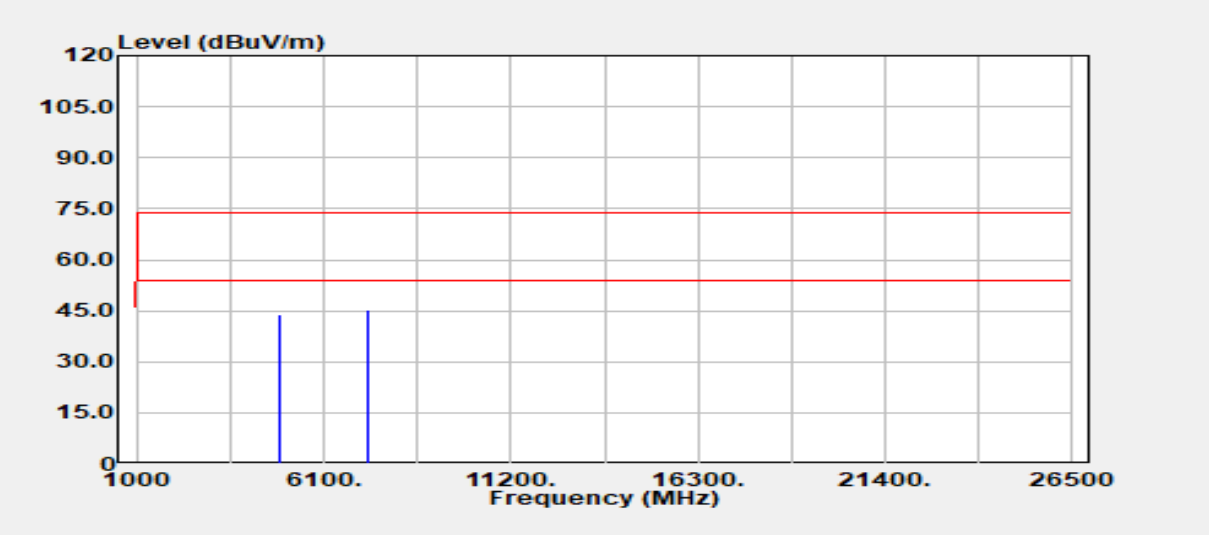
Freq. MHz	Detector Mode PK/QP/AV	Spectrum Read Level dBµV	Factor dB	Actual FS dBµV/m	Limit dBµV/m	Margin dB
4808.00	Peak	41.01	2.23	43.24	74.00	-30.76
4808.00	Average	33.24	2.23	35.47	54.00	-18.53
7212.00	Peak	36.35	9.04	45.39	74.00	-28.61
7212.00	Average	28.49	9.04	37.53	54.00	-16.47

Project No	:TM-2312000115P	Test Date	:2024-03-07
Operation Band	:BLE_2M	Temp./Humi.	:24.3/60
Frequency	:2404 MHz	Antenna Pol.	:HORIZONTAL
Operation Mode	:TX	Engineer	:Tony.Chao
EUT Pol	:E2	Test Chamber	: 966A
Setting	:		



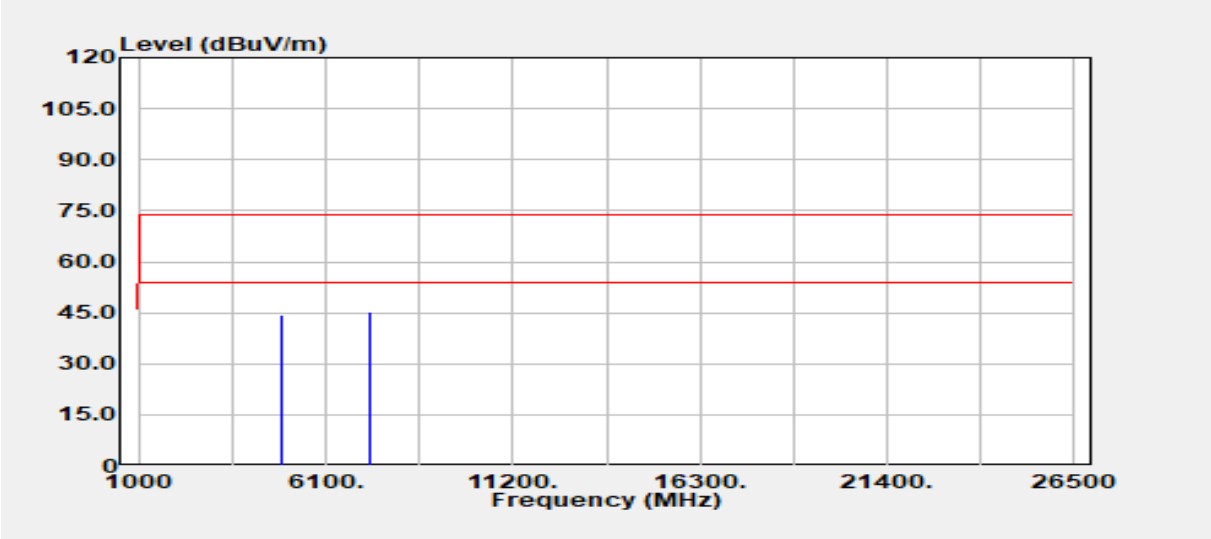
Freq. MHz	Detector Mode PK/QP/AV	Spectrum Read Level dBµV	Factor dB	Actual FS dBµV/m	Limit dBµV/m	Margin dB
4808.00	Peak	41.91	2.23	44.14	74.00	-29.86
4808.00	Average	35.09	2.23	37.32	54.00	-16.68
7212.00	Peak	37.00	9.04	46.05	74.00	-27.95
7212.00	Average	28.56	9.04	37.60	54.00	-16.40

Project No	:TM-2312000115P	Test Date	:2024-01-08
Operation Band	:BLE_2M	Temp./Humi.	:24.5/58
Frequency	:2440 MHz	Antenna Pol.	:Vertical
Operation Mode	:TX	Engineer	:Ray.Li
EUT Pol	:E2	Test Chamber	: 966A
Setting	:		



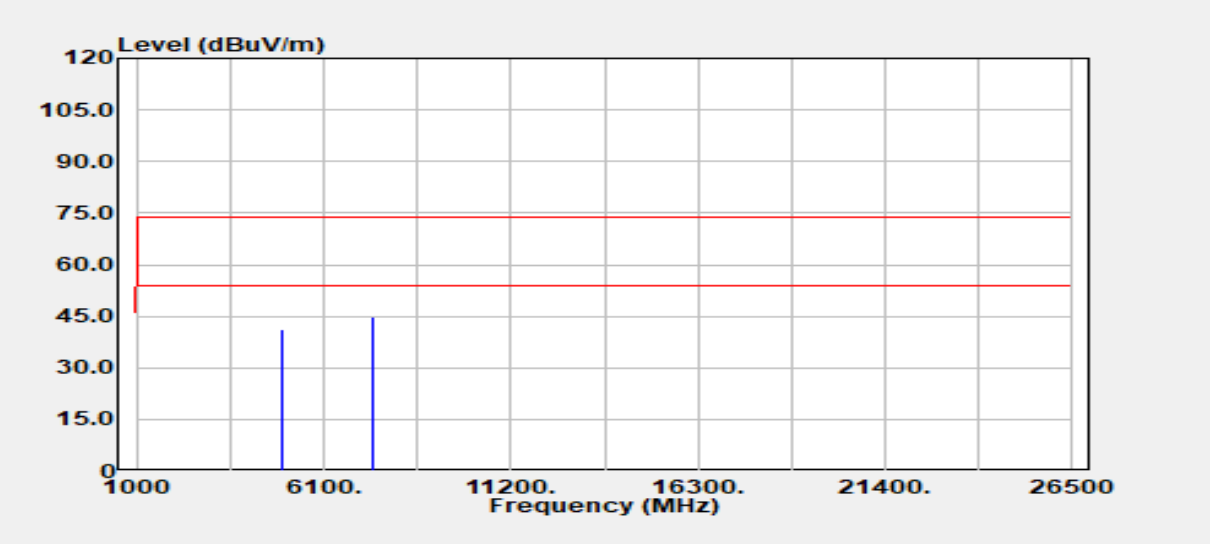
Freq.	Detector Mode	Spectrum Read Level	Factor	Actual FS	Limit	Margin
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
4880.00	Peak	38.69	5.39	44.08	74.00	-29.92
4880.00	Average	31.60	5.39	36.99	54.00	-17.01
7320.00	Peak	37.06	8.44	45.49	74.00	-28.51
7320.00	Average	29.19	8.44	37.63	54.00	-16.37

Project No	:TM-2312000115P	Test Date	:2024-01-08
Operation Band	:BLE_2M	Temp./Humi.	:24.5/58
Frequency	:2440 MHz	Antenna Pol.	:Horizontal
Operation Mode	:TX	Engineer	:Ray.Li
EUT Pol	:E2	Test Chamber	: 966A
Setting	:		



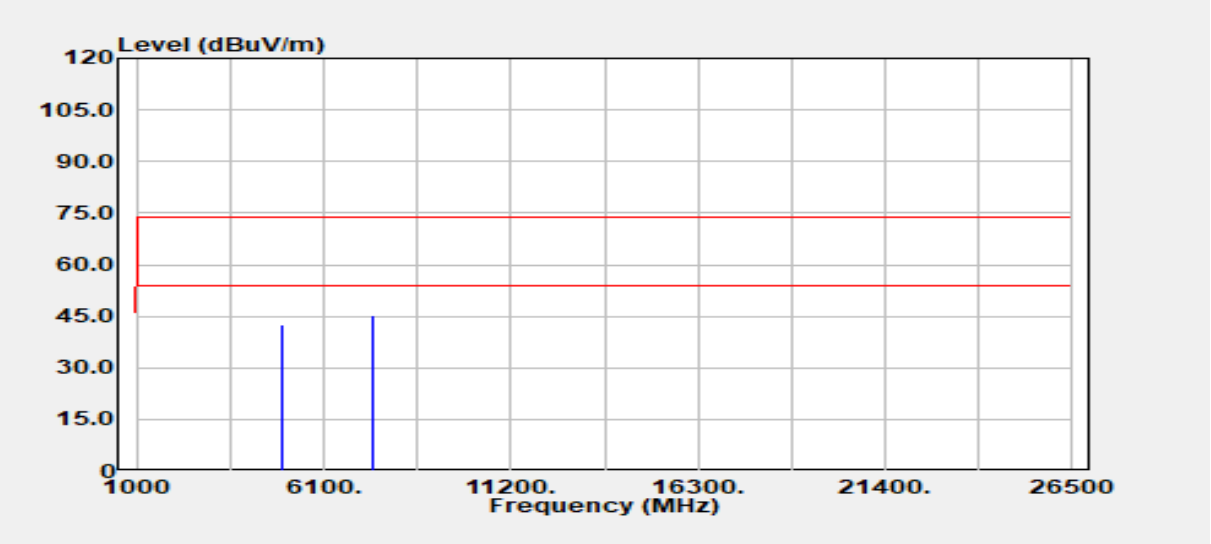
Freq.	Detector Mode	Spectrum Read Level	Factor	Actual FS	Limit	Margin
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
4880.00	Peak	39.16	5.39	44.55	74.00	-29.45
4880.00	Average	34.08	5.39	39.46	54.00	-14.54
7320.00	Peak	36.79	8.44	45.23	74.00	-28.77
7320.00	Average	29.36	8.44	37.80	54.00	-16.20

Project No	:TM-2312000115P	Test Date	:2024-02-21
Operation Band	:BLE_2M	Temp./Humi.	:24.5/57
Frequency	:2478 MHz	Antenna Pol.	:Vertical
Operation Mode	:TX	Engineer	:Tony.Chao
EUT Pol	:E2	Test Chamber	: 966A
Setting	:		



Freq.	Detector Mode	Spectrum Read Level	Factor	Actual FS	Limit	Margin
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
4956.00	Peak	37.82	3.19	41.01	74.00	-32.99
4956.00	Average	29.64	3.19	32.82	54.00	-21.18
7434.00	Peak	36.00	8.94	44.94	74.00	-29.06
7434.00	Average	26.65	8.94	35.59	54.00	-18.41

Project No	:TM-2312000115P	Test Date	:2024-02-21
Operation Band	:BLE_2M	Temp./Humi.	:24.5/57
Frequency	:2478 MHz	Antenna Pol.	:Horizontal
Operation Mode	:TX	Engineer	:Tony.Chao
EUT Pol	:E2	Test Chamber	: 966A
Setting	:		

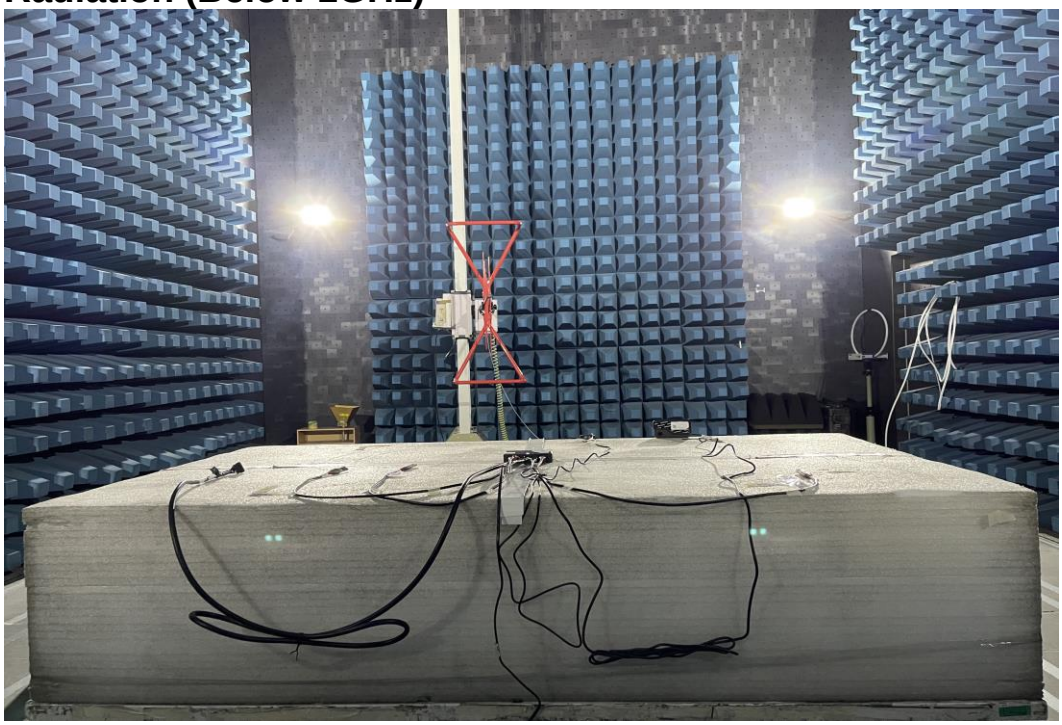


Freq.	Detector Mode	Spectrum Read Level	Factor	Actual FS	Limit	Margin
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
4956.00	Peak	39.55	3.19	42.73	74.00	-31.27
4956.00	Average	33.73	3.19	36.92	54.00	-17.08
7434.00	Peak	36.47	8.94	45.40	74.00	-28.60
7434.00	Average	26.67	8.94	35.61	54.00	-18.39

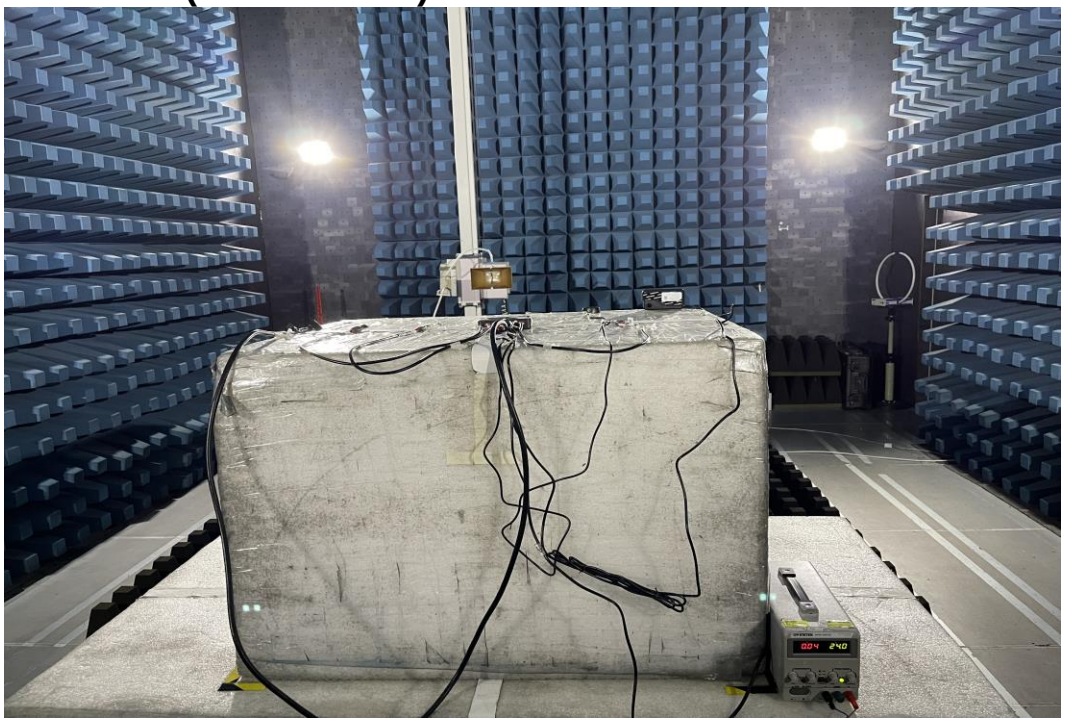
- End of Test Report -

APPENDIX-A Test Photo

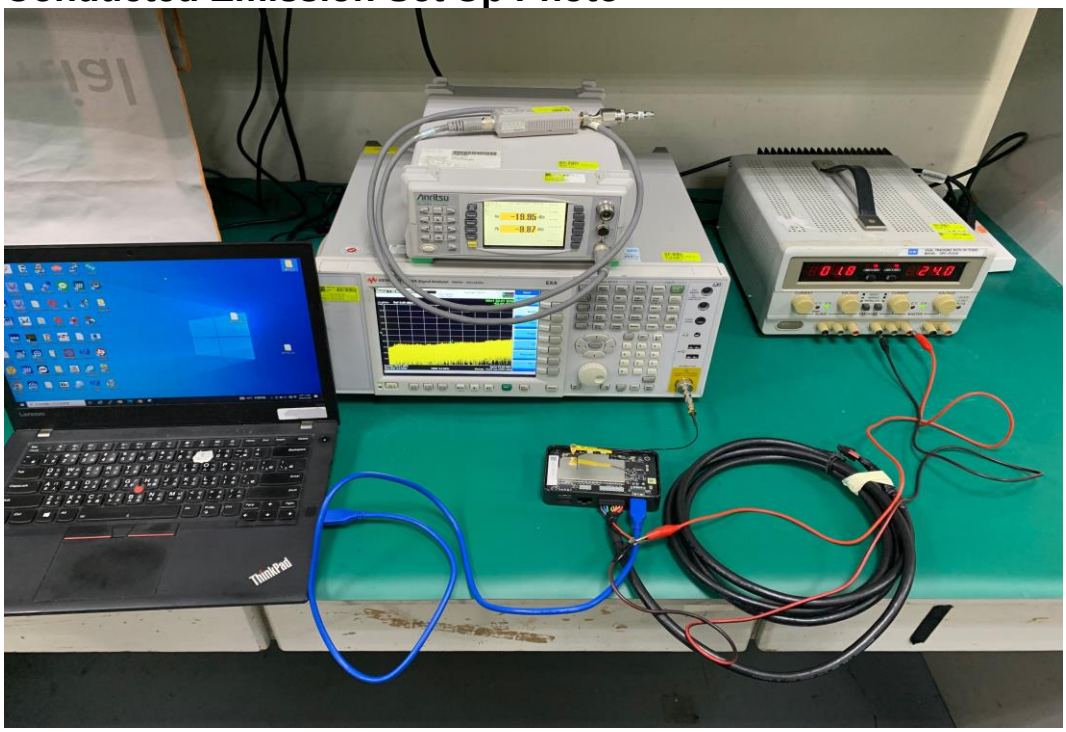
Radiation (Below 1GHz)



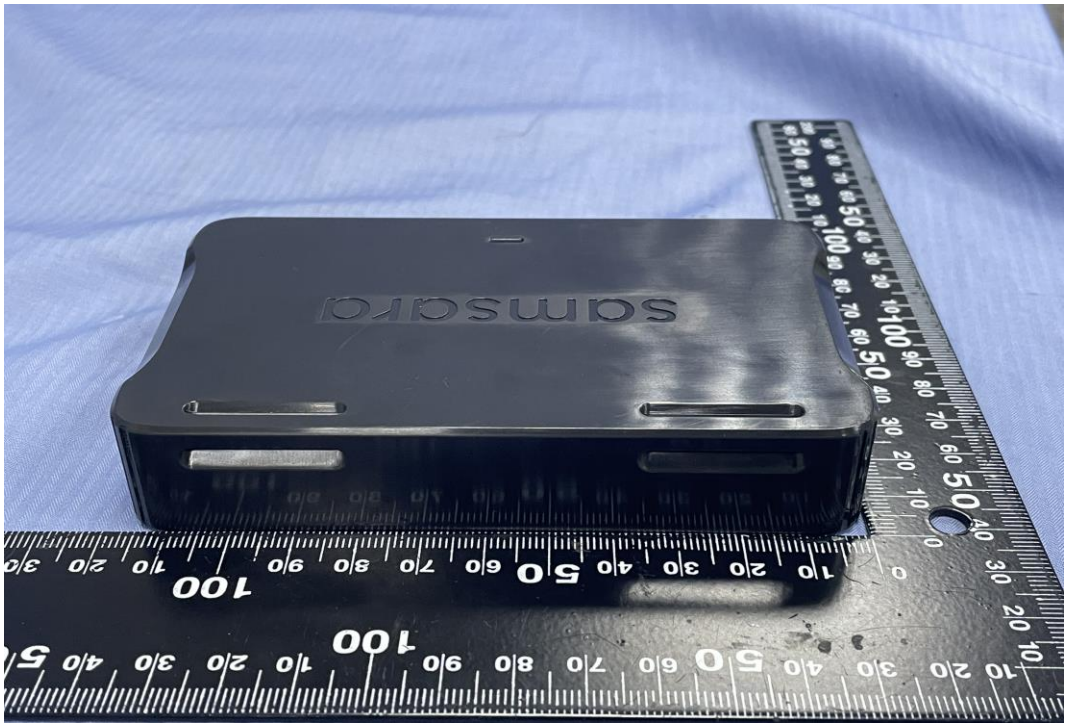
Radiation (Above 1GHz)

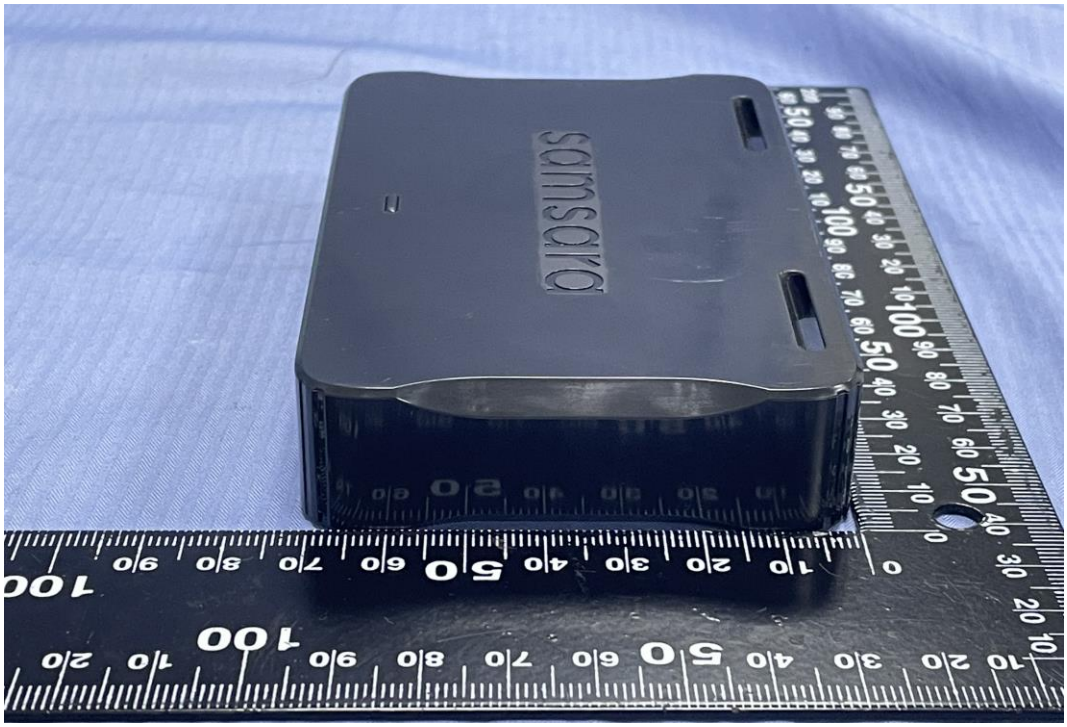


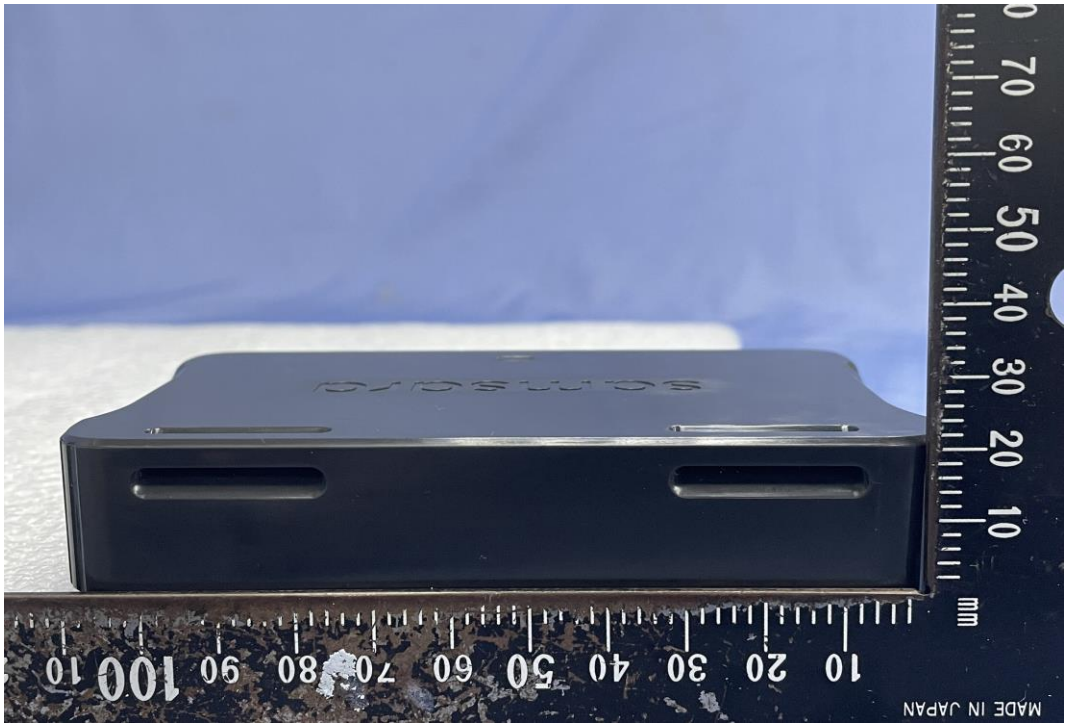
Conducted Emission Set Up Photo



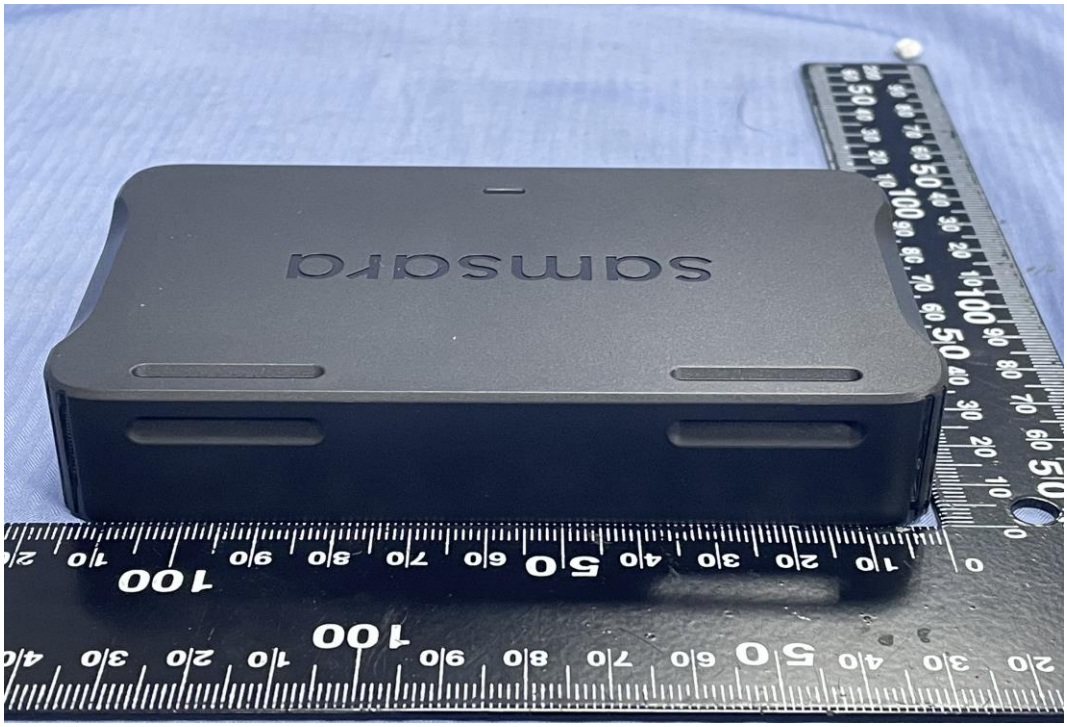
APPENDIX 1 - PHOTOGRAPHS OF EUT
EXTERNAL PHOTOGRAPHS OF EUT
Model: 010-00008

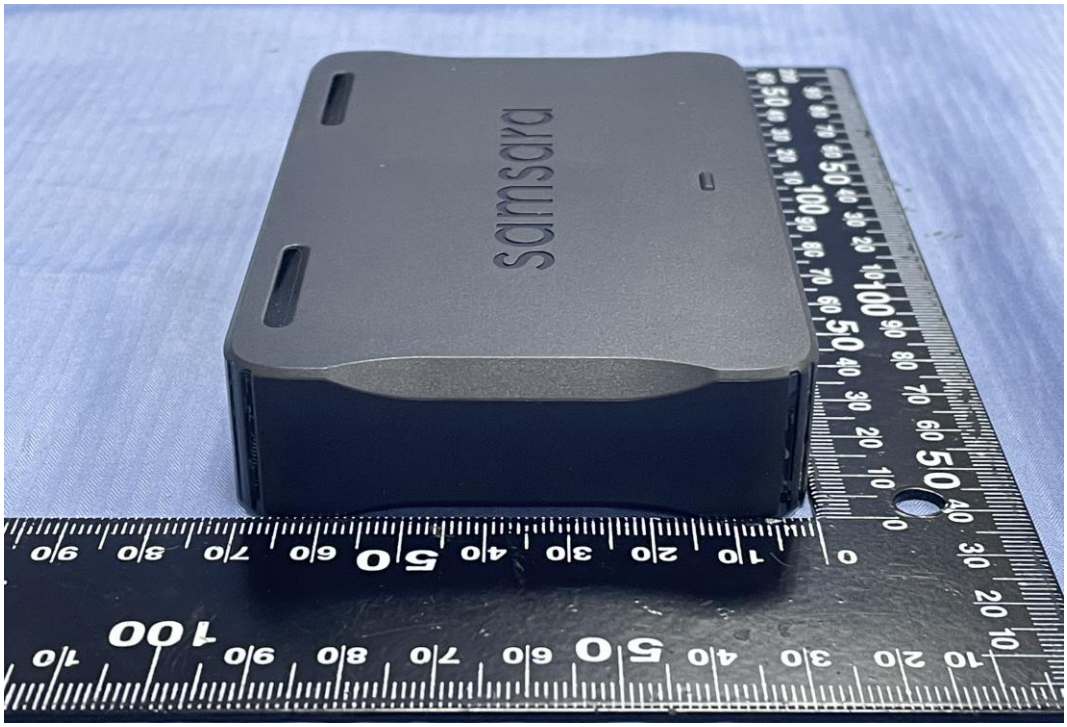


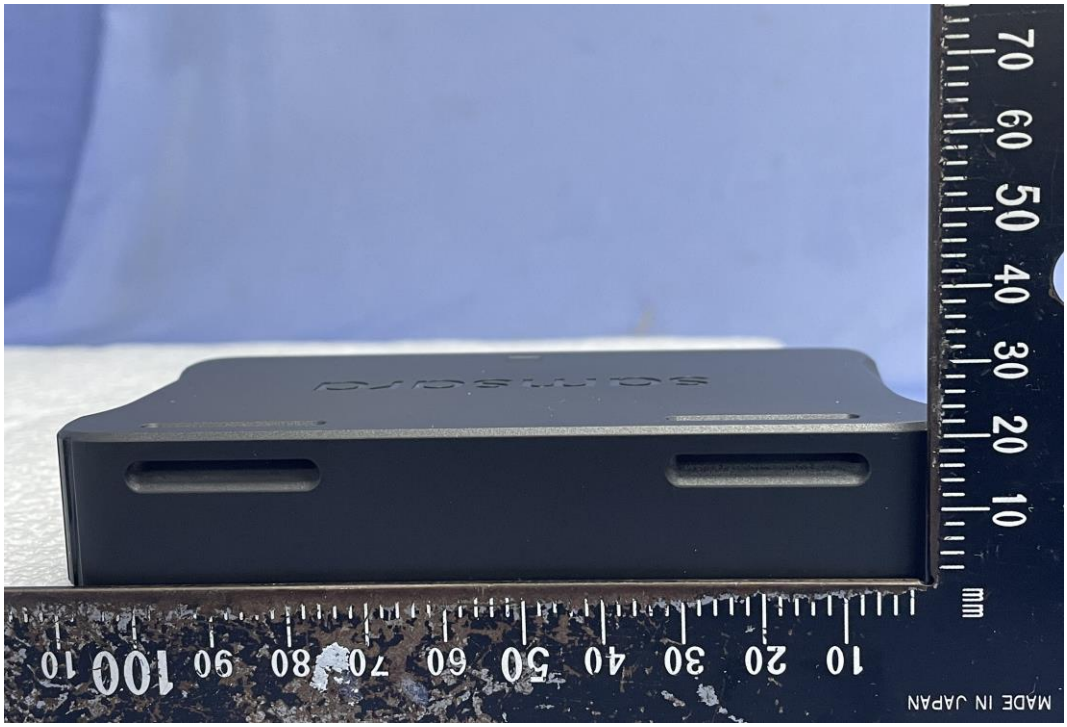


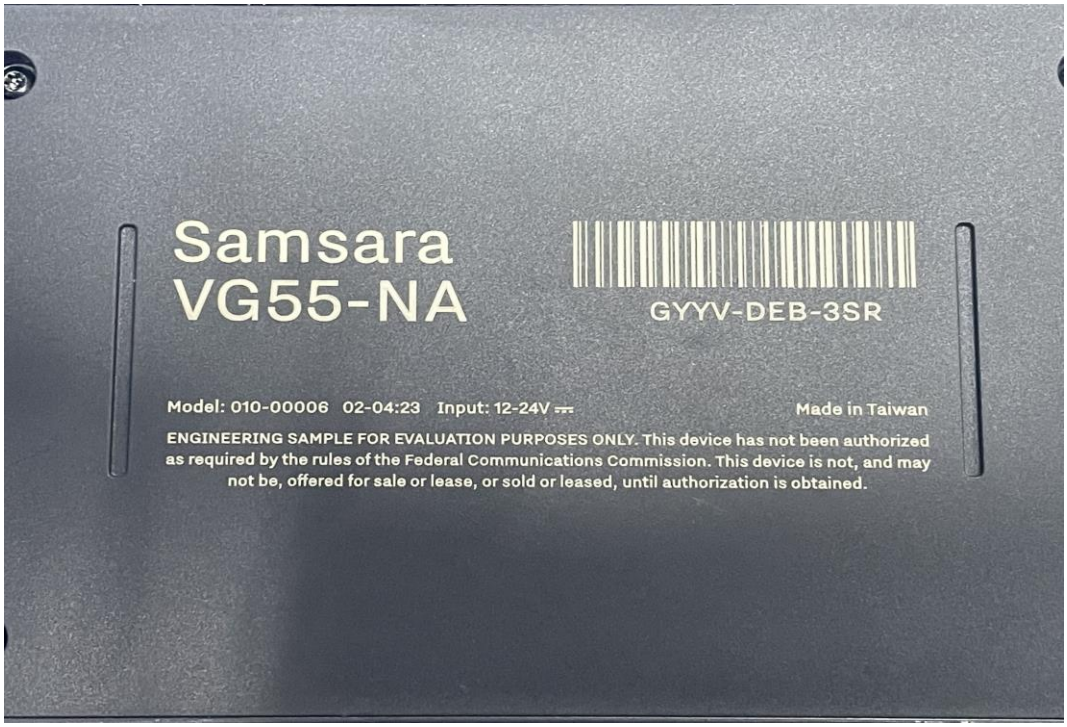


Model: 010-00006

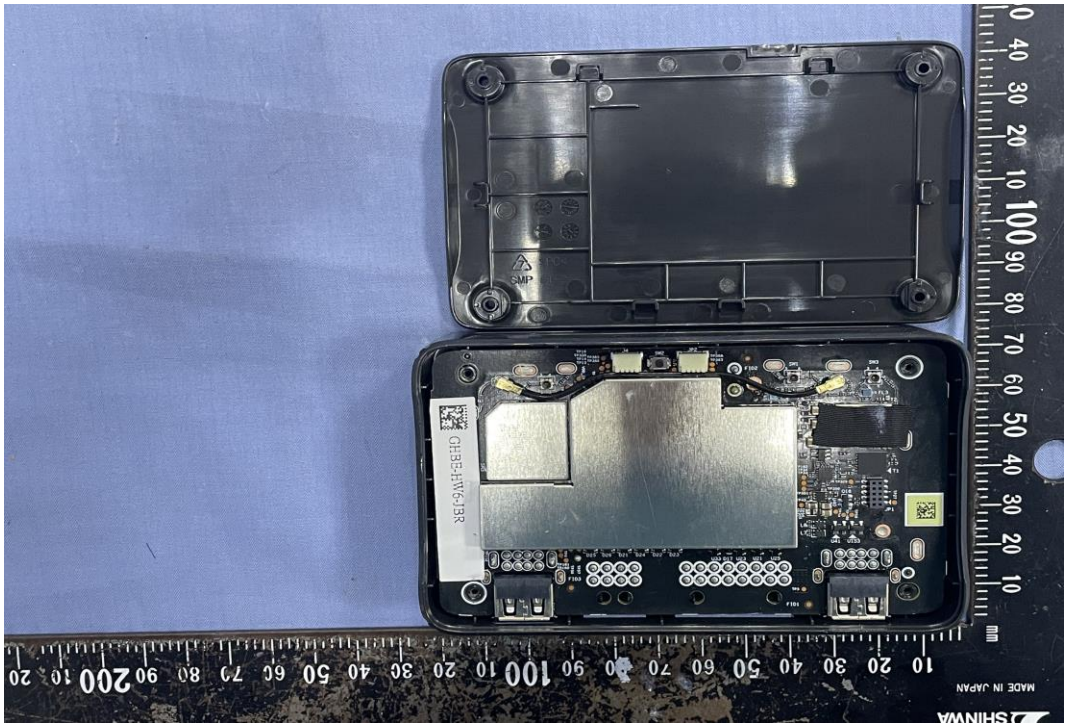


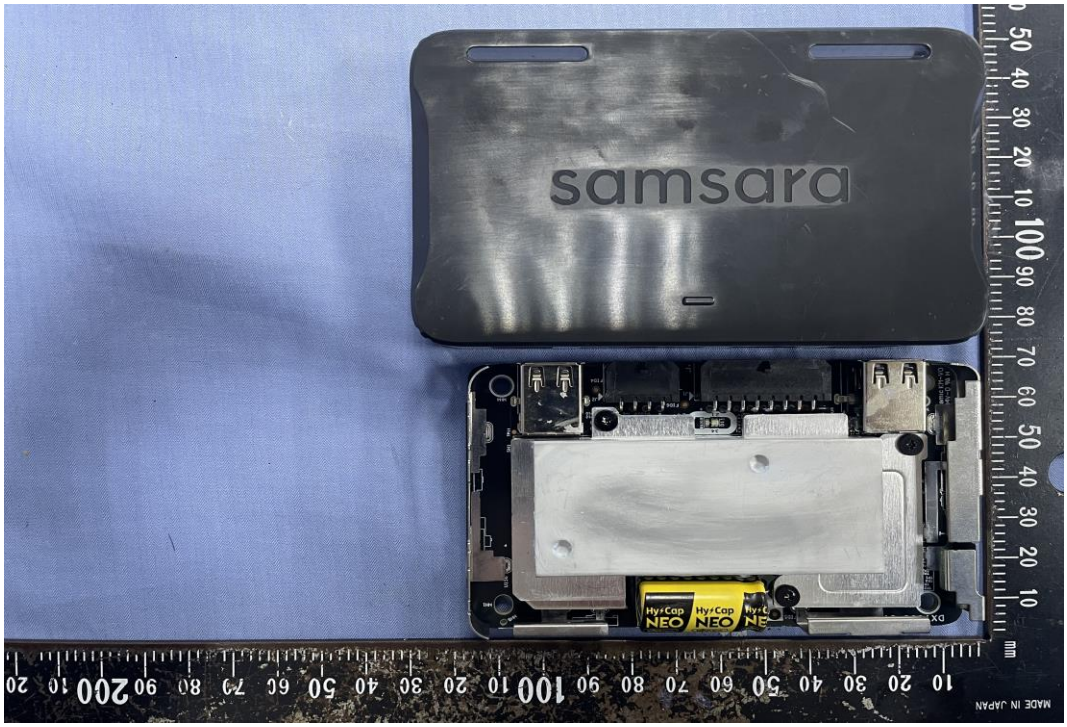


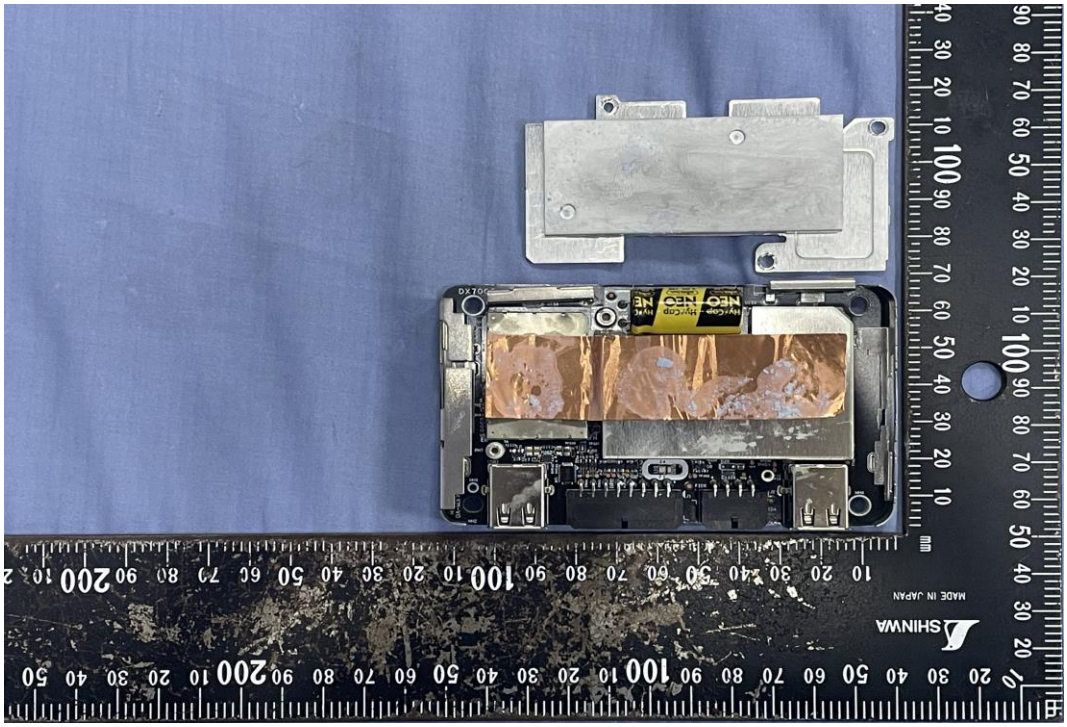


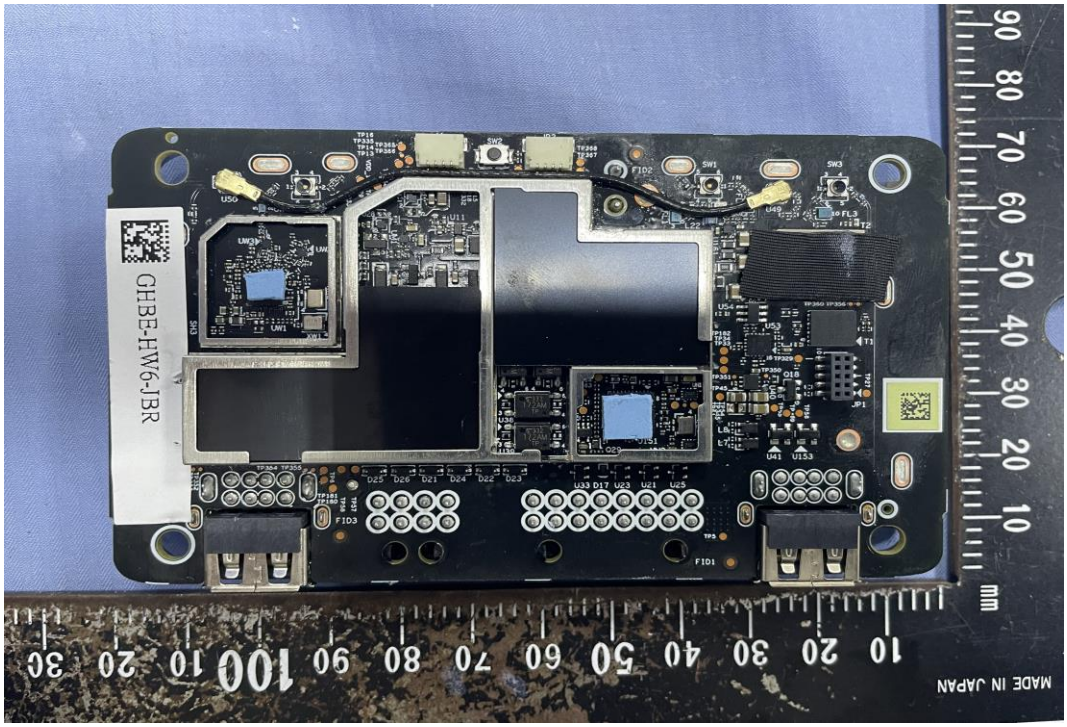


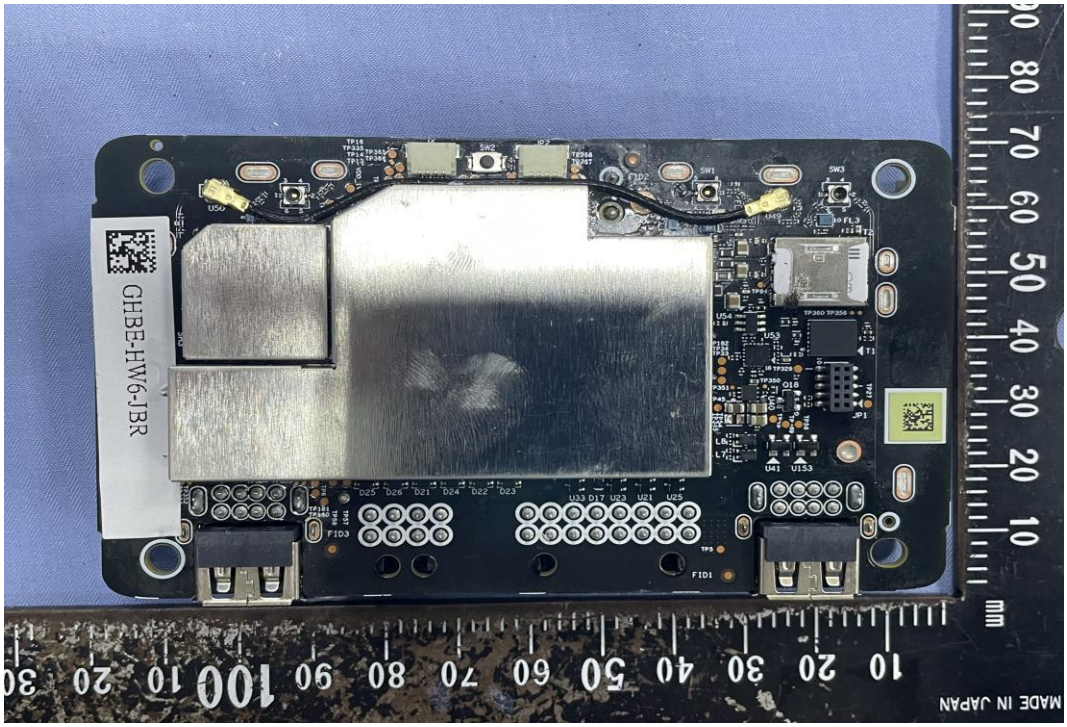
INTERNAL PHOTOGRAPHS OF EUT
Model: 010-00008

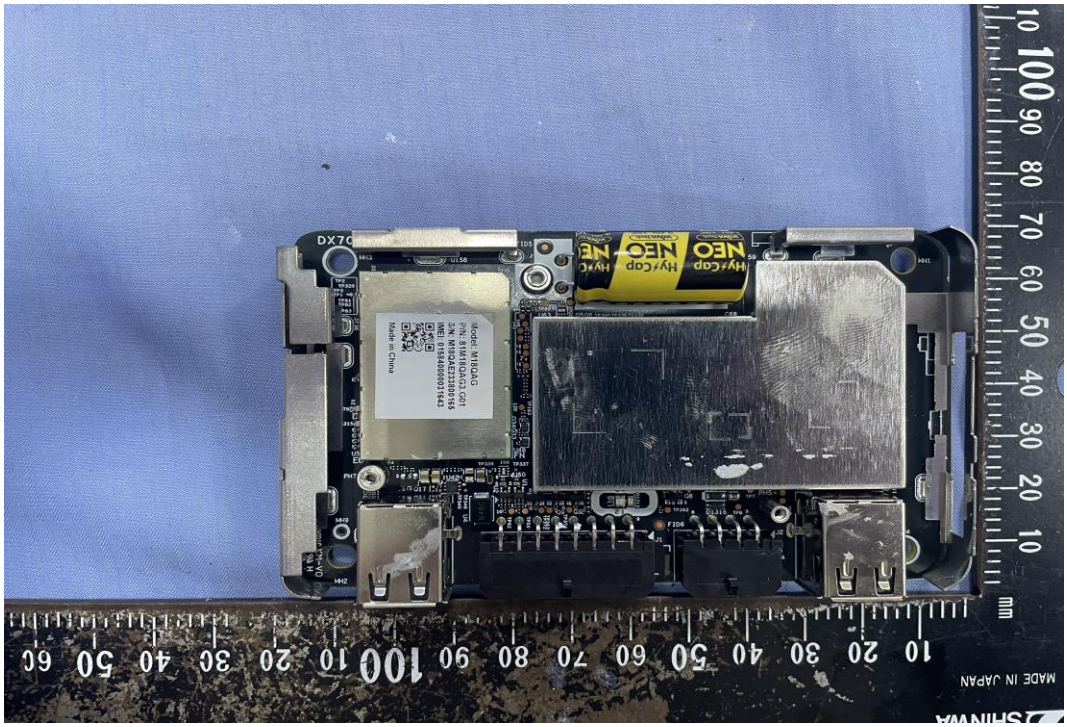


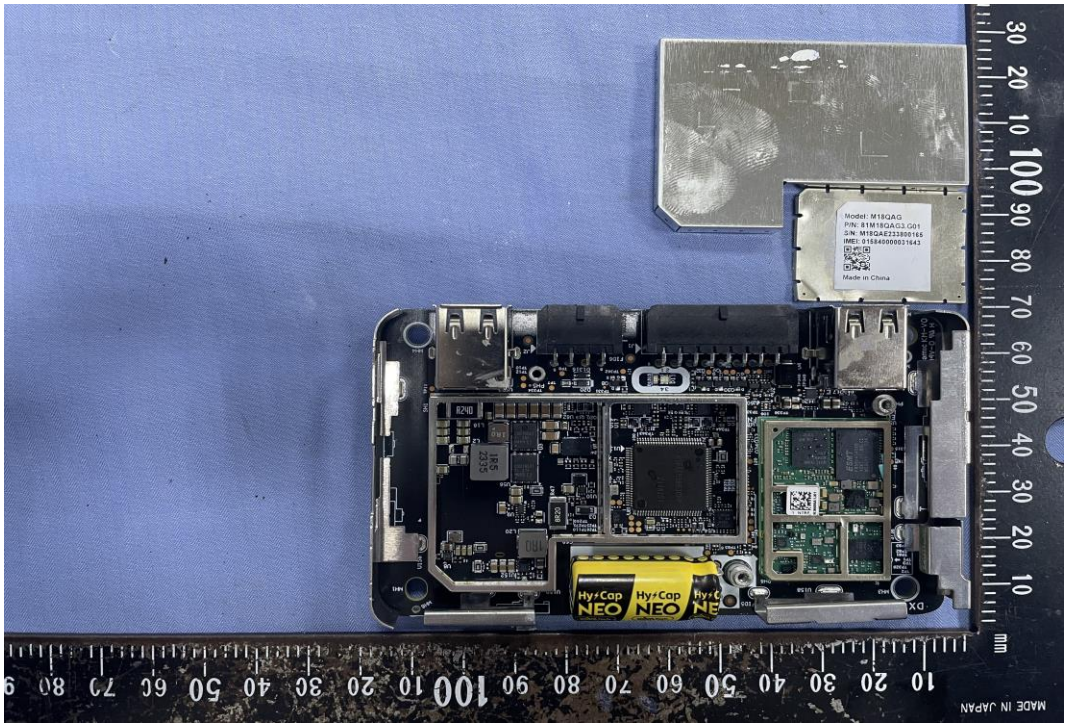


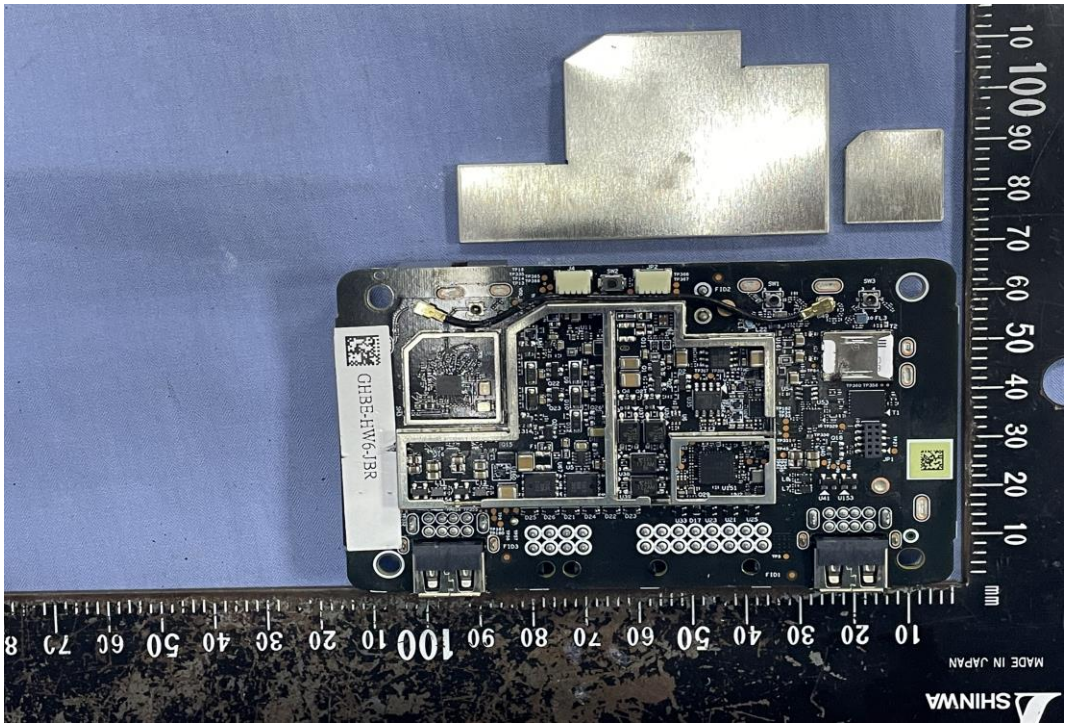












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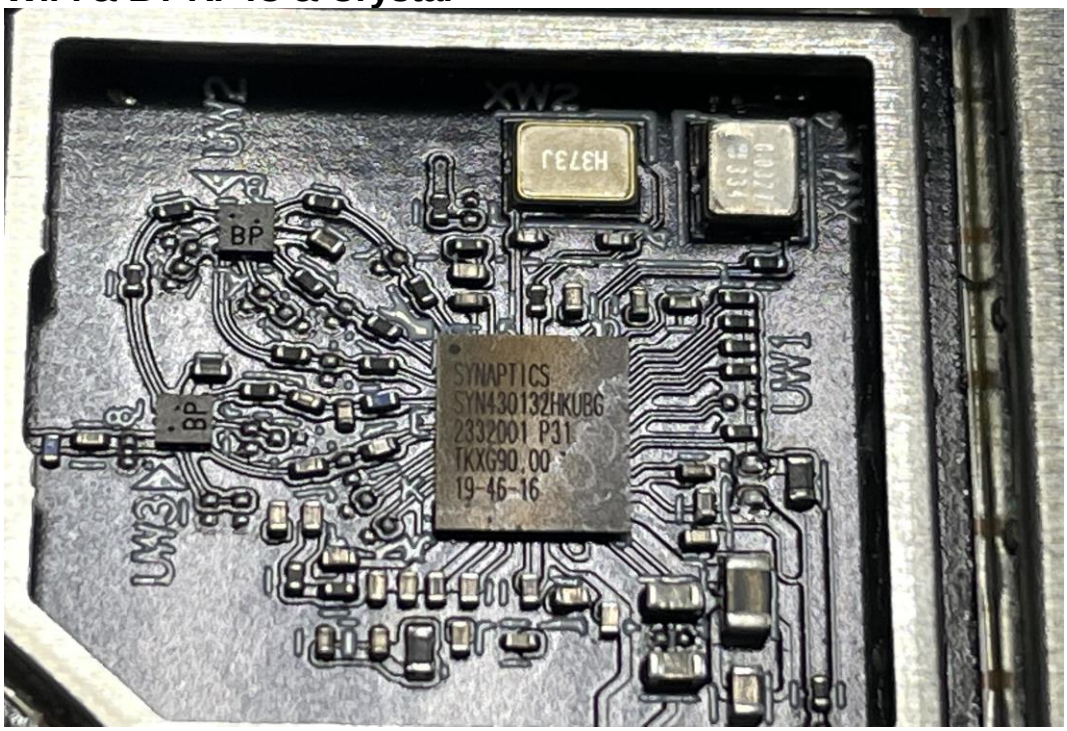

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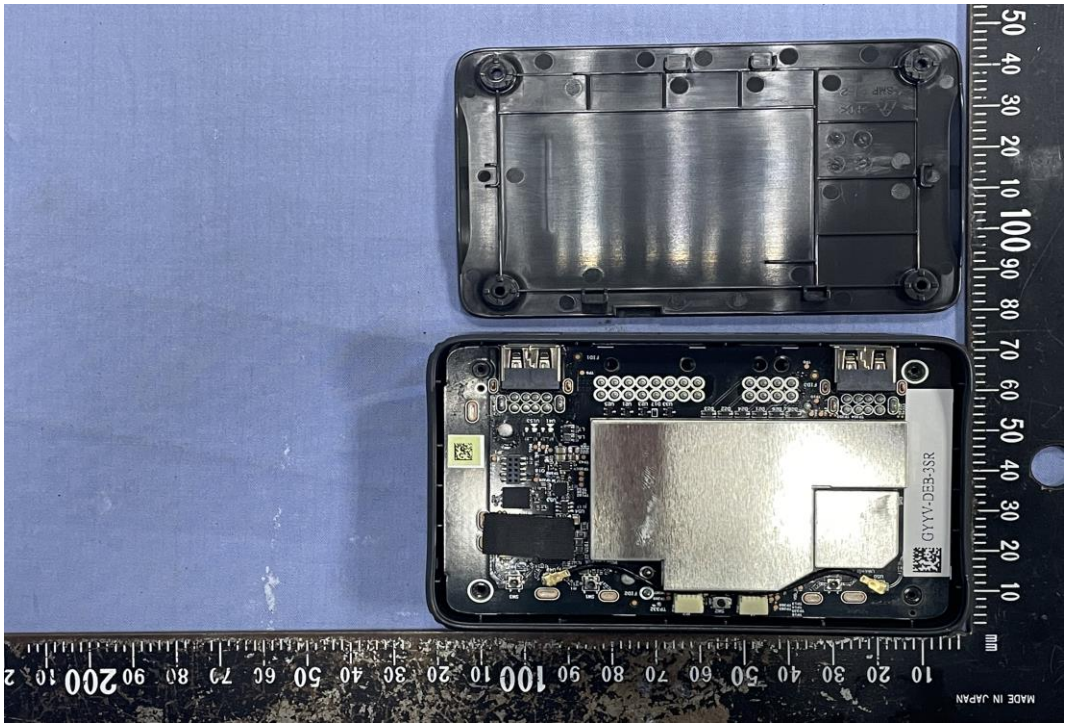

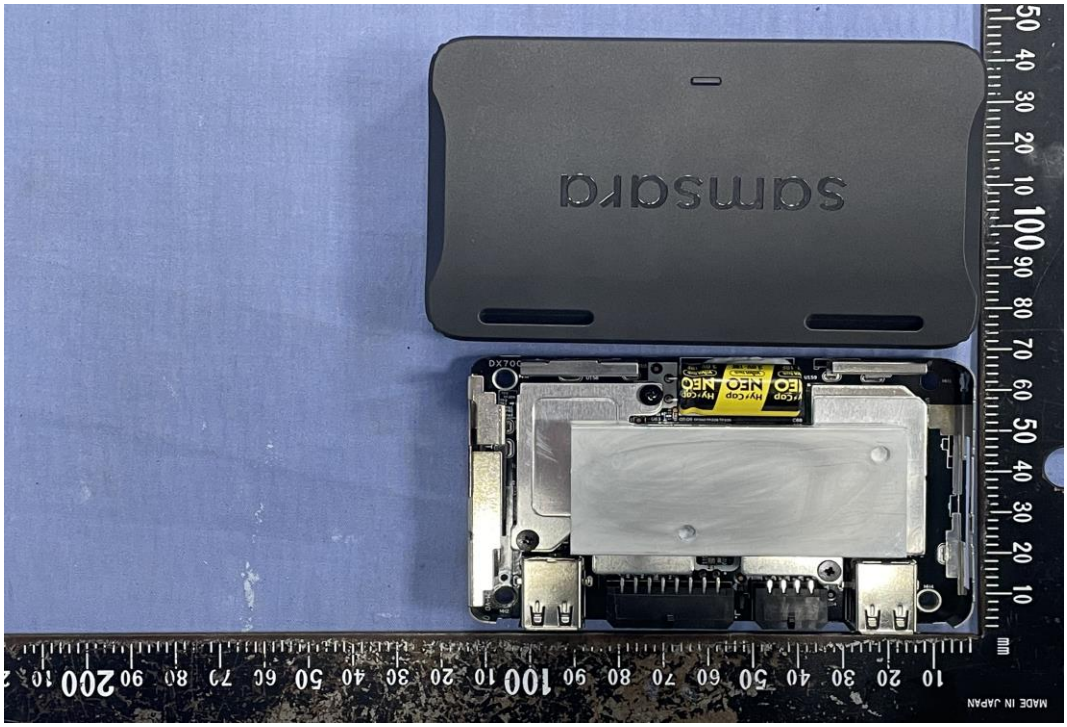

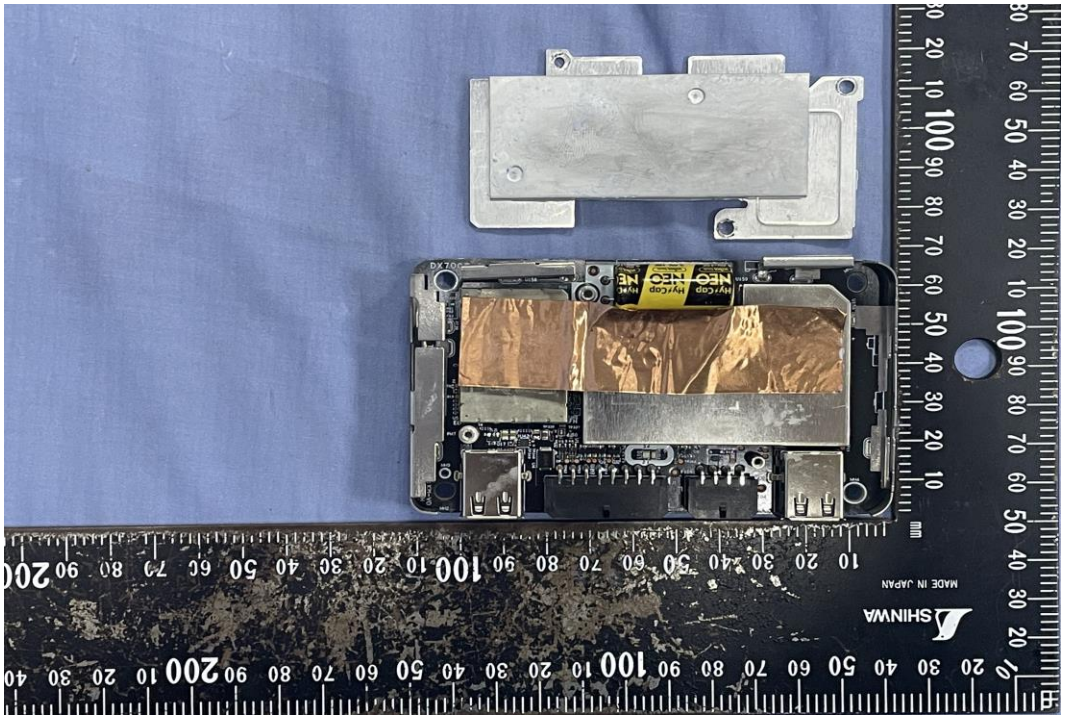

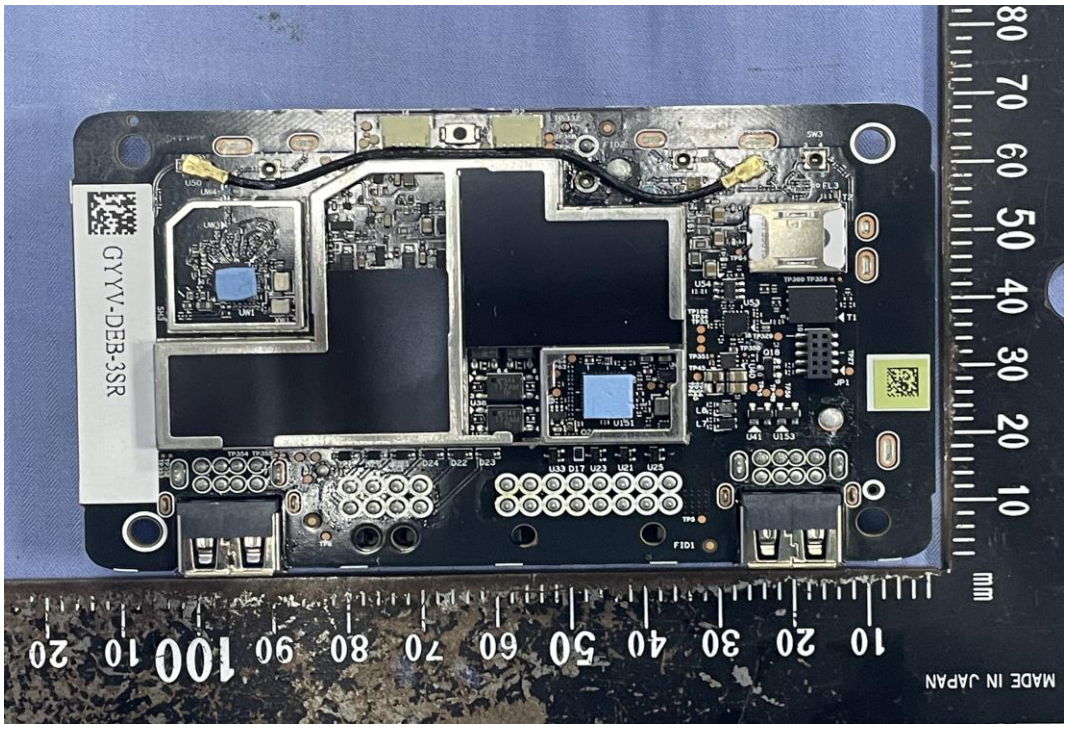

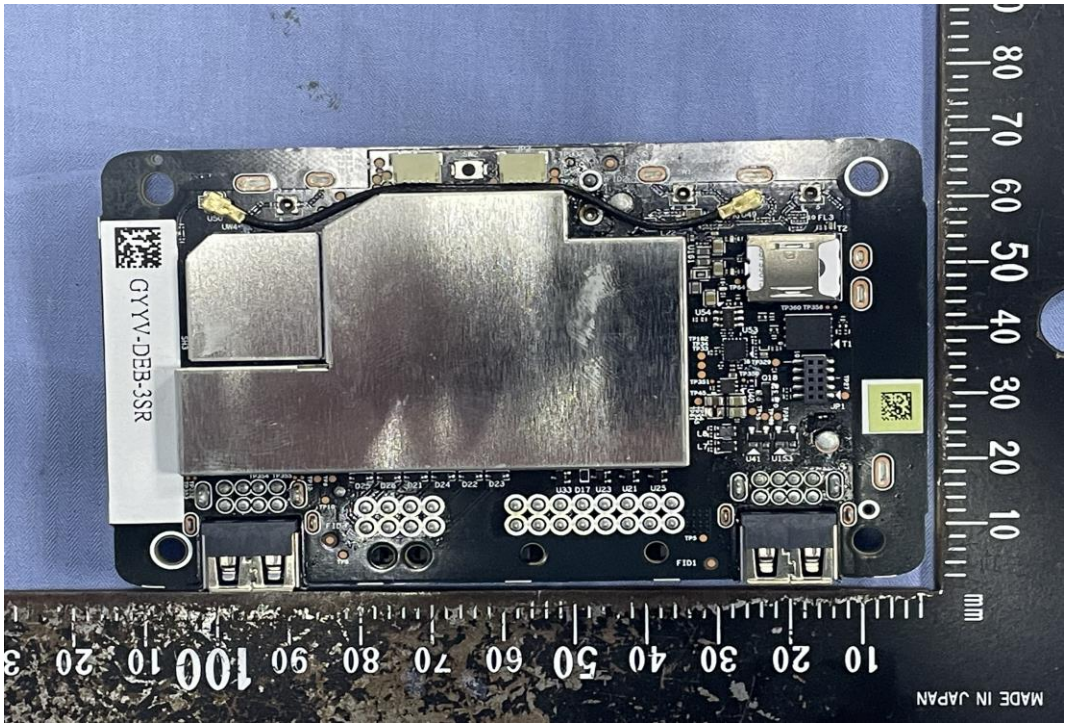

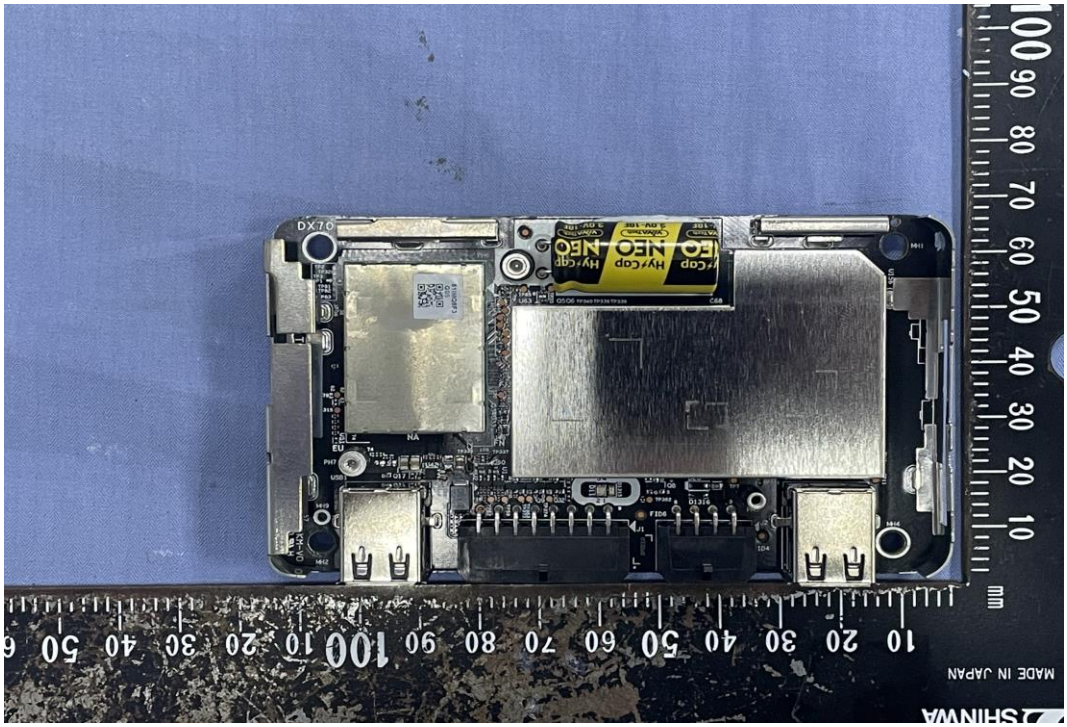

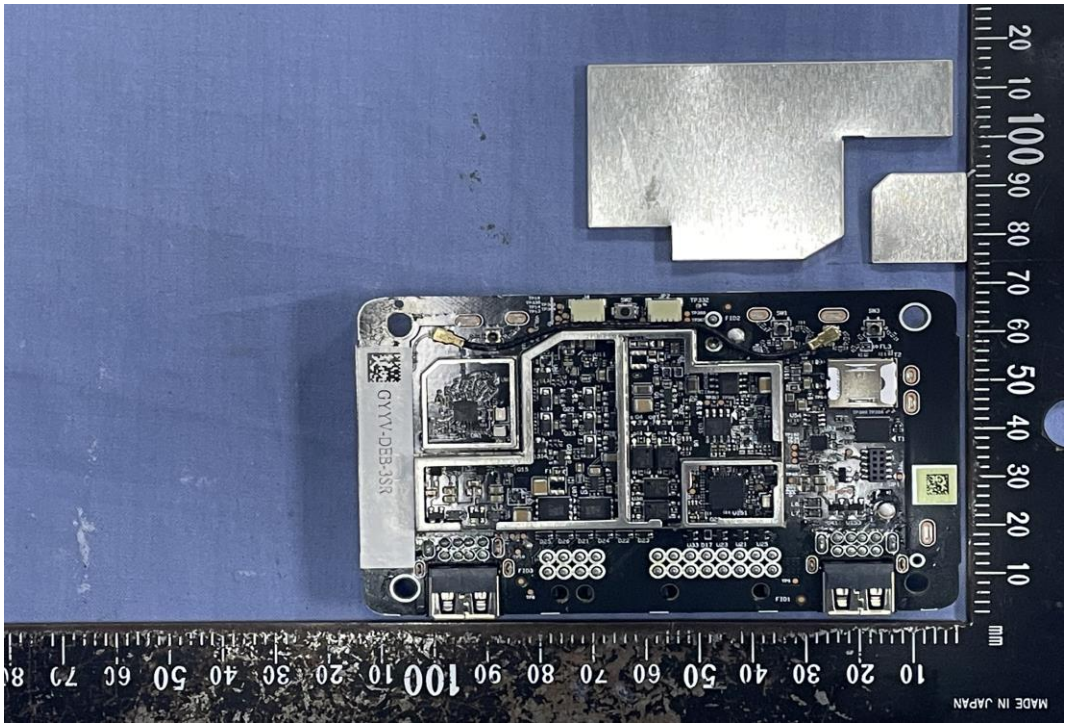

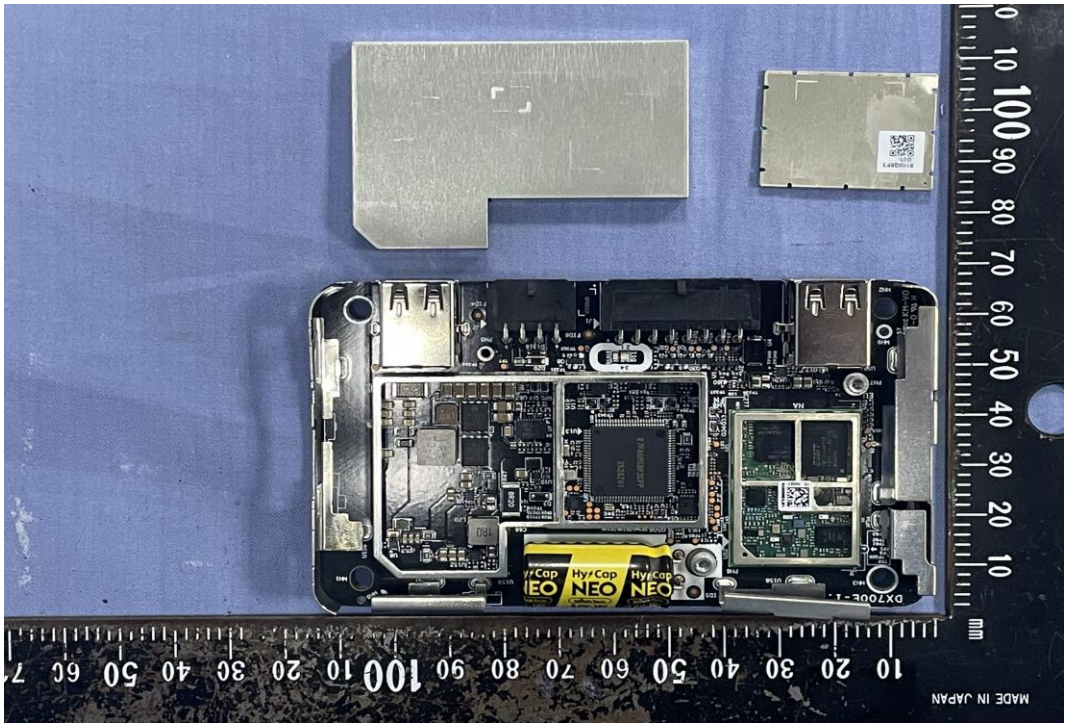

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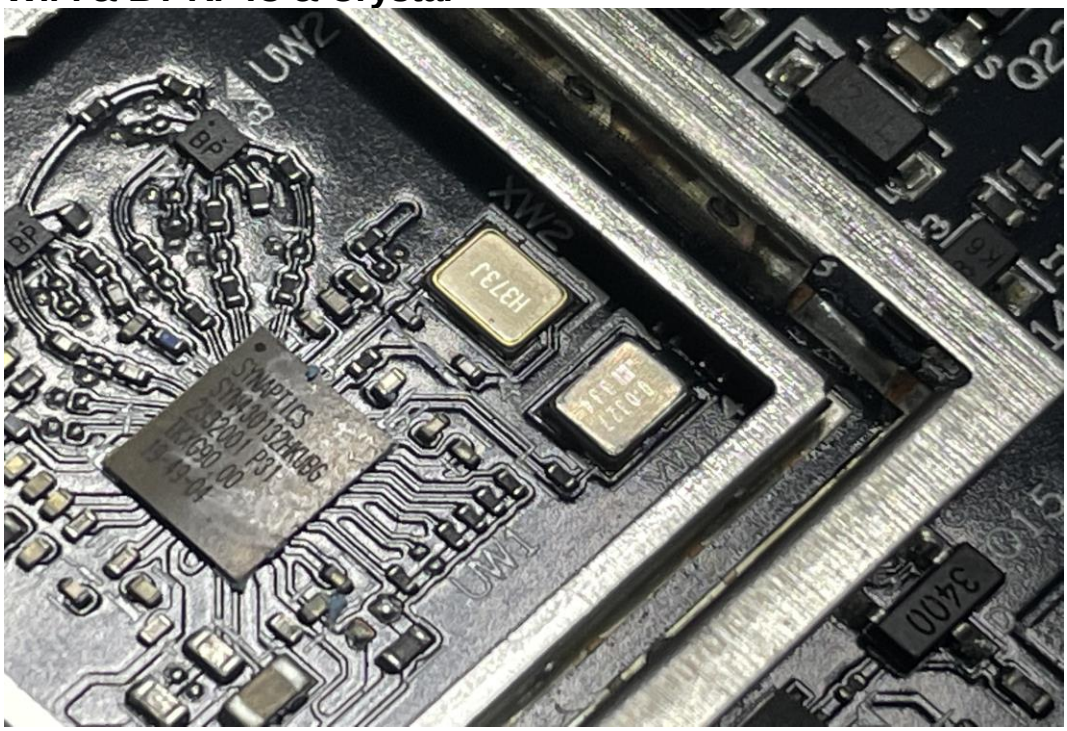

Module

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