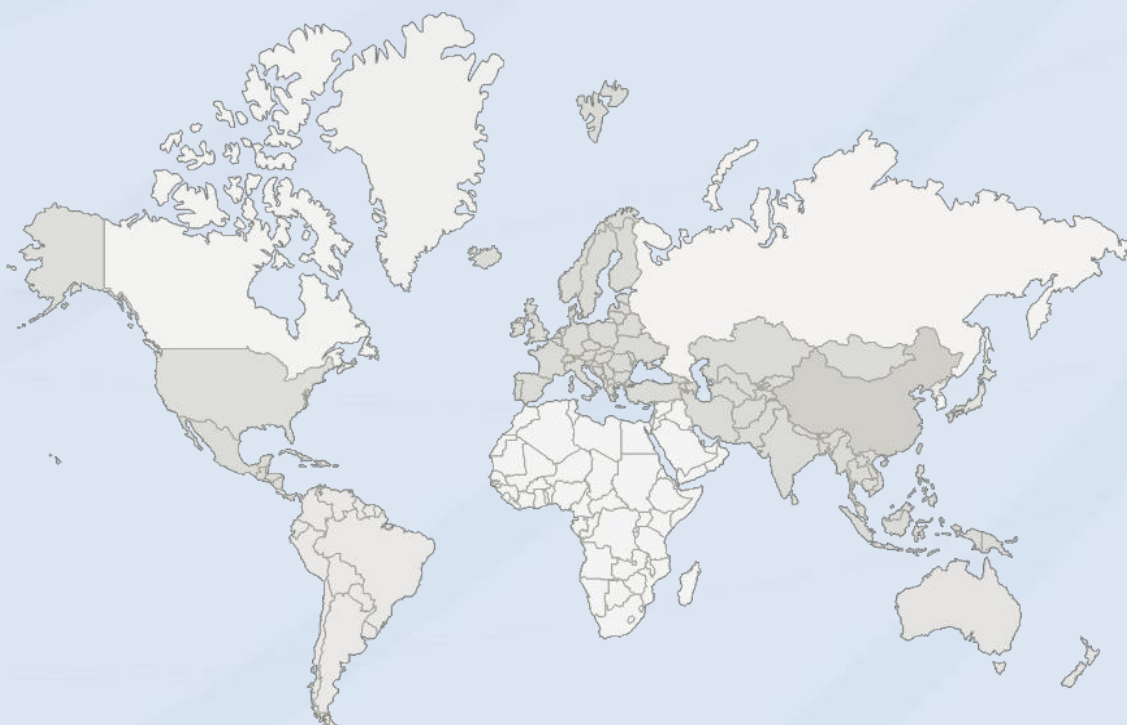


FCC TEST REPORT

Report No. NTC-ER2501044

Applicant's name Huizhou MOSITOECO intelligence Lighting Technology Co., Ltd

Address..... C block 2 floor , No.10 East Hechang No.5 Road,Zhongkai Hi-tech industrial Development Park,Huizhou ,Guangdong,China



DONGGUAN NEW TESTING CENTRE CO., LTD

Address: 31F & 3F, No. 1 the 1st North Industry Road Songshan Lake Science & Technology Park Dongguan, People's Republic of China 523808

Tel: +86-769-22212079

Web: <http://www.ntc-cert.com>

E-mail: dave@ntc-cert.com

TABLE OF CONTENTS

TEST REPORT DECLARE	3
1. Summary of test results.....	4
2. General test information	4
2.1. Detail models.....	5
2.2. Test Peripheral List.....	6
2.3. Block diagram EUT configuration for test.....	6
2.4. Test environment conditions	6
2.5. Measurement uncertainty	6
3. Power Line Conducted Emission Test.....	7
3.1. Test equipment.....	7
3.2. Block diagram of test setup.....	7
3.3. Power Line Conducted Emission Limits (Class B).....	7
3.4. Test Procedure.....	8
3.5. Test Result.....	8
4. Radiated emission test	11
4.1. Test equipment.....	11
4.2. Block diagram of test setup.....	12
4.3. Limit	14
4.4. Test Procedure.....	15
4.5. Test result.....	15
5. Output Power	24
5.1. Test equipment.....	24
5.2. Block diagram of test setup.....	24
5.3. Limit	24
5.4. Test Procedure.....	24
5.5. Test result.....	25
6. -6dB Bandwidth.....	30
6.1. Test equipment.....	30
6.2. Block diagram of test setup.....	30
6.3. Limit	30
6.4. Test Procedure.....	30
6.5. Test result.....	31
7. Band Edges Measurement.....	37
7.1. Test equipment.....	37
7.2. Block diagram of test setup.....	37
7.3. Limit	37
7.4. Test Procedure.....	37
7.5. Test result	38
8. Conducted Spurious Emission.....	44

8.1. Test equipment.....	44
8.2. Block diagram of test setup	44
8.3. Limit	44
8.4. Test Procedure.....	44
8.5. Test result	45
9. Conducted Output Power Spectral Density.....	54
9.1. Test equipment.....	54
9.2. Block diagram of test setup	54
9.3. Limit	54
9.4. Test Procedure.....	54
9.5. Test result	55
10. Antenna Requirement.....	61
10.1. Standard requirement.....	61
10.2. EUT Antenna.....	61
11. Test setup photograph.....	62
11.1. Photos of power line conducted emission test	62
11.2. Photos of radiated emission test.....	62
12. Photos of the EUT	64

TEST REPORT DECLARE

FCC ID	: 2AU7R-PAK41736M
Equipment under Test	: Ceiling light
Model /Type	: PAK41736M
Listed Models	: PAK41736M
Trade Mark	: N/A
Applicant	: Huizhou MOSITOECO intelligence Lighting Technology Co., Ltd
Address	: C block 2 floor , No.10 East Hechang No.5 Road,Zhongkai Hi-tech industrial Development Park,Huizhou ,Guangdong,China
Manufacturer	: Huizhou MOSITOECO intelligence Lighting Technology Co., Ltd
Address	: C block 2 floor , No.10 East Hechang No.5 Road,Zhongkai Hi-tech industrial Development Park,Huizhou ,Guangdong,China
Test Laboratory	: Dongguan New Testing Centre Co., Ltd
Address	: 1F & 3F, No. 1 the 1st North Industry Road Songshan Lake Science & Technology Park Dongguan, People' s Republic of China 523808

Test Standard Used:

FCC Rules and Regulations Part 15 Subpart C: 15.247, ANSI C63.10:2020.

We Declare:

The equipment described above is tested by Dongguan New Testing Centre Co., Ltd and in the configuration tested the equipment complied with the standards specified above. The test results are contained in this test report and Dongguan New Testing Centre Co., Ltd is assumed of full responsibility for the accuracy and completeness of these tests.

After test and evaluation, our opinion is that the equipment provided for test compliance with the requirement of the above FCC standards.

Report No.:	NTC-ER2501044		
Date of Test:	Jan.10,2025 to Jan.13,2025	Date of Report.:	Feb.14,2025

Prepared By:

Taylor Chen

Taylor Chen/Engineer

Approved By:



Dave Gao/LAB Manager

Note: This report applies to above tested sample only. This report shall not be reproduced in parts without written approval of Dongguan New Testing Centre Co., Ltd

1. Summary of test results

Description of Test Item	Standard	Results
Antenna Requirement	Section 15.247(c)	PASS
Conduction Emissions	Section 15.207(a)	PASS
Radiated Emissions	Section 15.247(d)	PASS
Maximum Conducted Output Power	Section 15.247(b)	PASS
Band Edge Emissions	Section 15.247(d)	PASS
Power Spectral Density	Section 15.247(e)	PASS
6dB Bandwidth	Section 15.247(a)(2)	PASS
RF Exposure	Section 15.247(i)	PASS

2. General test information

2.1. Description of EUT

Product Name:	:	Ceiling light
Model/Type reference:	:	PAK41736M
Power supply:	:	AC 120V,60Hz
Hardware Version:	:	V1.0
Software Version:	:	V1.0
BLE		
Supported type:	:	Bluetooth Low Energy
Modulation:	:	GFSK
Operation frequency:	:	2402MHz to 2480MHz
Channel number:	:	40
Channel separation:	:	2 MHz
Antenna type:	:	PCB Antenna
Antenna gain:	:	Max 2.21dBi

Note: 1, EUT is the ab. of equipment under test.

Detail models

Model	Rating	Note
PAK41736M	120V,60Hz	/

2.2. Frequency list:

The Applicant provides communication tools software to control the EUT for staying in continuous transmitting (Duty Cycle more than 98%) and receiving mode for testing. There are 40 channels provided to the EUT and Channel 00/19/39 were selected for BLE test.

Operation Frequency List :

Channel	Frequency (MHz)
00	2402
02	2404
03	2406
⋮	⋮
19	2440
⋮	⋮
37	2476
38	2478
39	2480

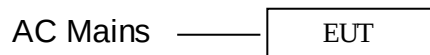
Note: The line display in grey were the channel selected for testing

2.3. Test Peripheral List

No.	Equipment	Manufacturer	Model No.	Serial No.	Note
1	Notebook	Lenovo	ThinkPadE450	PF-0LRXDH	--

2.4. Block diagram EUT configuration for test

For EUT Tx mode:



2.5. Test environment conditions

During the measurement the environmental conditions were within the listed ranges:

(1) E.U.T. test conditions:

15.31(e): For intentional radiators, measurements of the variation of the input power or the radiated signal level of the fundamental frequency component of the emission, as appropriate, shall be performed with the supply voltage varied between 85% and 115% of the nominal rated supply voltage. For battery operated equipment, the equipment tests shall be performed using a new battery.

(2) Test frequencies:

According to the 15.31(m) Measurements on intentional radiators or receivers, other than TV broadcast receivers, shall be performed and. If required reported for each band in which the device can be operated with the device operating at the number of frequencies in each band specified in the following table:

Frequency range over which device operates	Number of frequencies	Location in the range of operation
1 MHz or less	1	Middle

1 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

- (3) Frequency range of radiated measurements:
According to the 15.33, the test range will be up to the tenth harmonic of the highest fundamental frequency.
- (4) Pre-test the EUT in all transmitting mode at the lowest (2402 MHz), middle (2440 MHz) and highest (2480 MHz) channel with different data packet and conducted to determine the worst-case mode,

The radiation measurements are performed in X, Y, Z axis positioning. And found the X axis positioning which it is worse case, only the test worst case mode is recorded in the report.

2.6. Measurement uncertainty

Test Item	Uncertainty
Uncertainty for Conduction emission test	3.20 dB
Uncertainty for Radiation Emission test (30MHz – 1GHz)	4.60 dB (Polarize: V)
	4.60 dB (Polarize: H)
Uncertainty for Radiation Emission test (1GHz – 18GHz)	4.82 dB (Polarize: V)
	4.52 dB (Polarize: H)
Bandwidth	±1.2%
Stop Transmitting Time Test	±0.5%
Uncertainty for frequency error	5.8 x 10 ⁻⁸

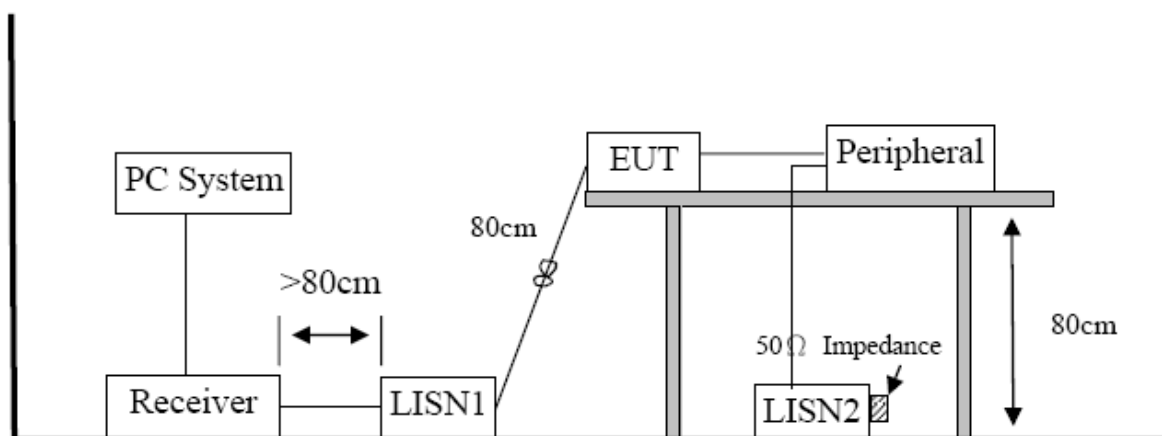
Note: This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

3. Power Line Conducted Emission Test

3.1. Test equipment

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1	Test Receiver	R&S	ESPI	100146	2024-05-14	1 Year
2	LISN	R&S	ENV216	3650.6550.06	2024-05-14	1 Year
3	LISN	R&S	ENV4200	1107.2387.04	2024-05-14	1 Year
4	RF Cable	HUBER	SUCOFLEX100	30722/4E	2023-05-22	2 Year
5	MEASUREMENT SOFTWARE	FARAD	EZ-EMC(VER:1.1.4.2)	N/A	N/A	N/A

3.2. BLOCK DIAGRAM OF TEST SETUP



3.3. Power Line Conducted Emission Limits (Class B)

Frequency	Quasi-Peak Level dB(μV)	Average Level dB(μV)
150kHz ~ 500kHz	66 ~ 56*	56 ~ 46*
500kHz ~ 5MHz	56	46
5MHz ~ 30MHz	60	50

Note 1: * Decreasing linearly with logarithm of frequency.

Note 2: The lower limit shall apply at the transition frequencies.

3.4. Test Procedure

The EUT and Support equipment, if needed, were put placed on a non-metallic table, 80cm above the ground plane.

Configuration EUT to simulate typical usage as described in clause 2.3 and test equipment as described in clause 3.2 of this report.

All I/O cables were positioned to simulate typical actual usage as per ANSI C63.10.

All support equipment power received from a second LISN.

Emissions were measured on each current carrying line of the EUT using an EMI Test Receiver connected to the LISN powering the EUT.

The Receiver scanned from 150 kHz to 30MHz for emissions in each of the test modes.

During the above scans, the emissions were maximized by cable manipulation.

The test mode(s) described in clause 2.3 were scanned during the preliminary test.

After the preliminary scan, we found the test mode producing the highest emission level.

The EUT configuration and worse cable configuration of the above highest emission levels were recorded for reference of the final test.

EUT and support equipment were set up on the test bench as per the configuration with highest emission level in the preliminary test.

A scan was taken on both power lines, Neutral and Line, recording at least the six highest emissions. Emission frequency and amplitude were recorded into a computer in which correction factors were used to calculate the emission level and compare reading to the applicable limit.

The test data of the worst-case condition(s) was recorded.

The bandwidth of test receiver is set at 9 KHz.

3.5. Test Result

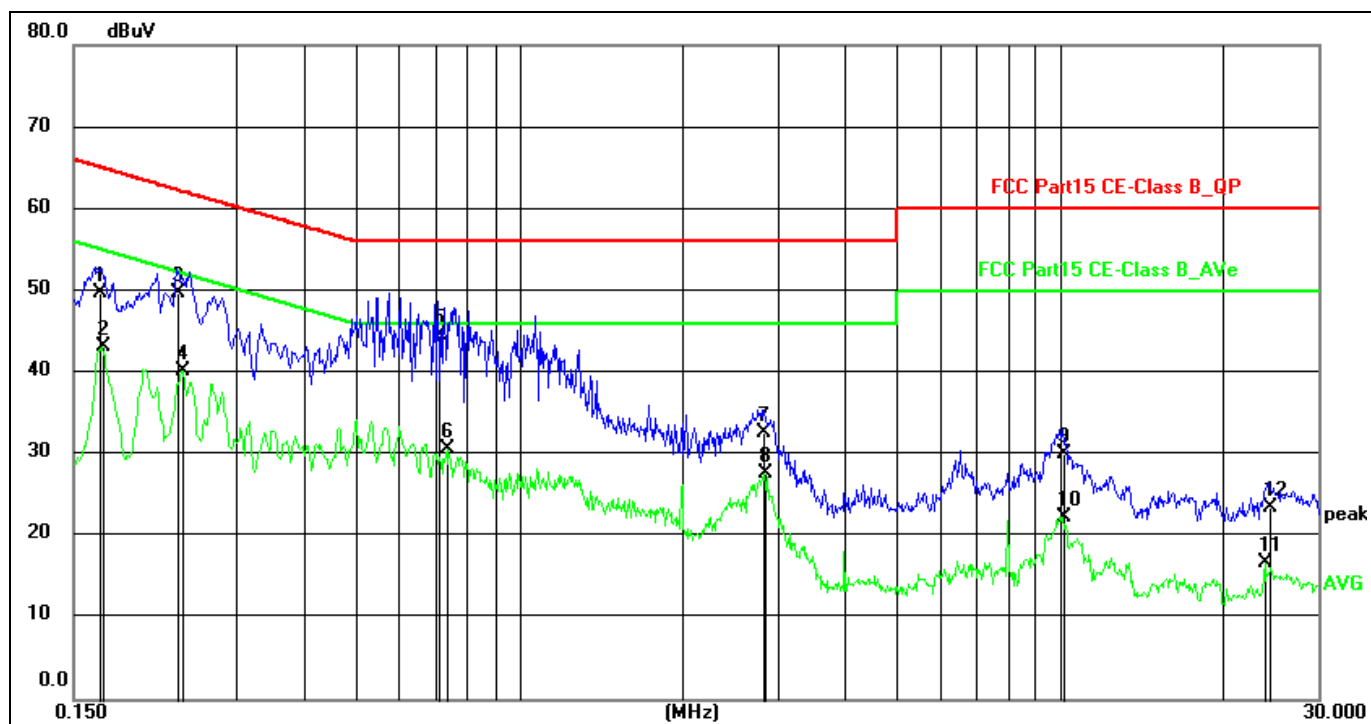
PASS. (See below detailed test result)

Note1: All emissions not reported below are too low against the prescribed limits.

Note2: "-----" means Peak detection; "-----" means Average detection

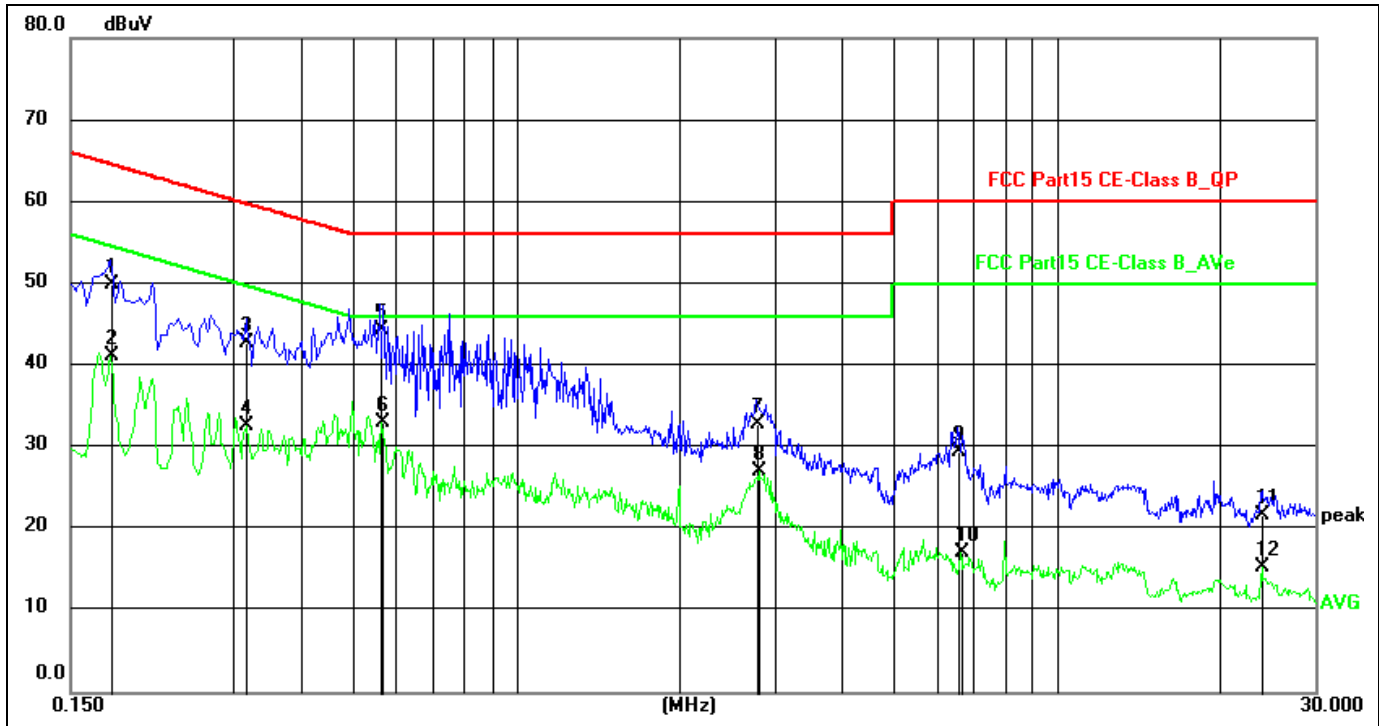
Note3: Measurement = Reading Level + Factor, Margin= Measurement-Limit

Conducted Emission Test Result



Site:	844LAB	Phase:L1	Temperature(C):24(C)
Limit:	FCC Part15 CE-Class B_QP		Humidity(%):63%
EUT:	LED Ceiling Light	Test Time:	2025/1/14 10:50:10
M/N.:	PAK41736M	Power Rating:	AC120V/60Hz
Mode:	Lighting	Test Engineer:	
Note:			

No.	Frequency (MHz)	Reading Level(dBuV)	Factor (dB)	Measure-ment(dBuV)	Limit (dBuV)	Margin (dB)	Detector	Comment
1	0.1675	39.32	10.48	49.80	65.08	-15.28	QP	
2	0.1700	32.77	10.48	43.25	54.96	-11.71	AVG	
3	0.2340	39.26	10.50	49.76	62.31	-12.55	QP	
4	0.2379	29.79	10.50	40.29	52.17	-11.88	AVG	
5 *	0.7100	34.11	10.55	44.66	56.00	-11.34	QP	
6	0.7378	20.07	10.54	30.61	46.00	-15.39	AVG	
7	2.8300	22.07	10.59	32.66	56.00	-23.34	QP	
8	2.8420	17.07	10.59	27.66	46.00	-18.34	AVG	
9	10.1300	19.49	10.56	30.05	60.00	-29.95	QP	
10	10.1300	11.70	10.56	22.26	50.00	-27.74	AVG	
11	23.9980	5.06	11.67	16.73	50.00	-33.27	AVG	
12	24.3060	11.78	11.69	23.47	60.00	-36.53	QP	



Site: 844LAB
Limit: FCC Part15 CE-Class B_QP
EUT: LED Ceiling Light
M/N.: PAK41736M
Mode: Lighting
Note:

Phase: N
Temperature(C): 24(C)
Humidity(%): 63 %
Test Time: 2025/1/14 10:54:09
Power Rating: AC120V/60Hz
Test Engineer:

No.	Frequency (MHz)	Reading Level(dBuV)	Factor (dB)	Measure-ment(dBuV)	Limit (dBuV)	Margin (dB)	Detector	Comment
1	0.1779	39.47	10.47	49.94	64.58	-14.64	QP	
2	0.1779	30.76	10.47	41.23	54.58	-13.35	AVG	
3	0.3180	32.23	10.52	42.75	59.76	-17.01	QP	
4	0.3180	22.20	10.52	32.72	49.76	-17.04	AVG	
5 *	0.5620	33.96	10.49	44.45	56.00	-11.55	QP	
6	0.5658	22.58	10.49	33.07	46.00	-12.93	AVG	
7	2.7900	22.28	10.54	32.82	56.00	-23.18	QP	
8	2.8179	16.51	10.54	27.05	46.00	-18.95	AVG	
9	6.5579	18.92	10.56	29.48	60.00	-30.52	QP	
10	6.6338	6.56	10.56	17.12	50.00	-32.88	AVG	
11	24.0019	10.06	11.68	21.74	60.00	-38.26	QP	
12	24.0019	3.80	11.68	15.48	50.00	-34.52	AVG	

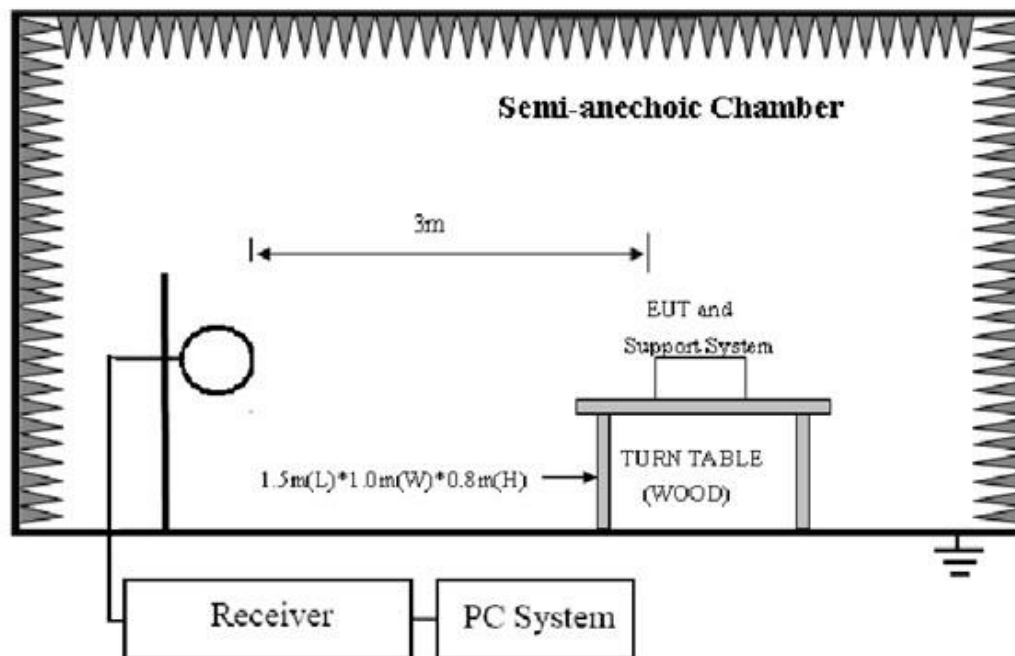
4. Radiated emission test

4.1. Test equipment

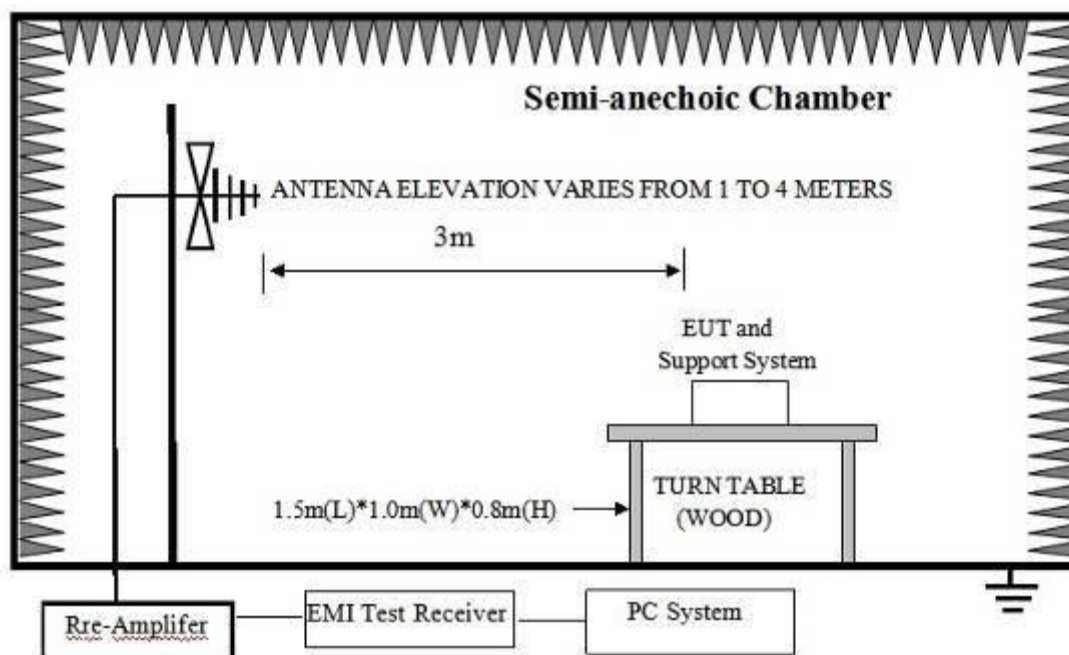
Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1	EMI Test Receiver	R&S	ESR26	7250-30406 7528	2024-05-14	1 Year
2	Trilog Broadband Antenna	Schwarzbeck	VULB9168	00969	2023-05-22	2 Year
3	Pre-amplifier	R&S	8449B	3113A04553	2024-05-14	1 Year
4	Active Loop antenna	Schwarzbeck	FMZB-1519	1519-038	2024-05-14	1 Year
5	Horn antenna	Schwarzbeck	BBHA9120D	453	2023-05-19	2 Year
6	Double Ridged Horn Antenna	A.H. System	SAS-574	584	2024-05-14	1 Year
7	Pre-amplifier	R&S	SCU18	105326	2024-05-14	1 Year
8	RF Cable	GORE	OSQ01Q010 78.7	SN1545847 3	2024-05-14	1 Year
9	RF Cable	GORE	OSQ01Q010 78.7	SN1545847 4	2024-05-14	1 Year
10	RF Cable	ESCO	ETS-LINGR EN	RFC-SMS-1 00-SMS-340 -IN	2024-05-14	1 Year
11	Measurement software	Farad	EZ-EMC(VE R:1.1.4.2)	N/A	N/A	N/A

4.2. Block diagram of test setup

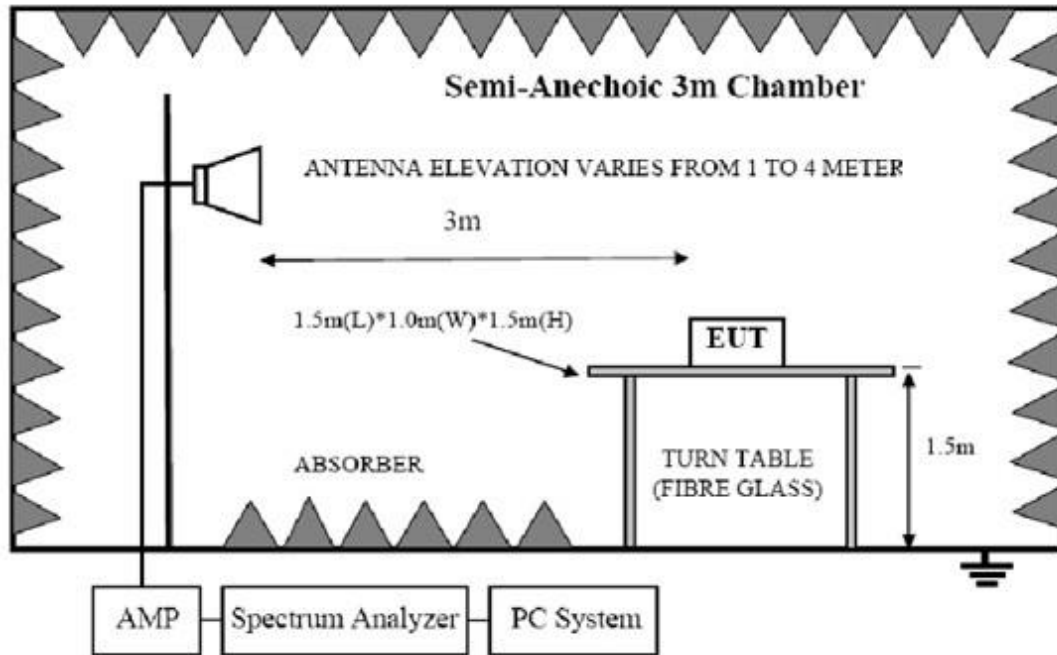
In 3m Anechoic Chamber Test Setup Diagram for 9KHz to 30MHz:



In 3m Anechoic Chamber Test Setup Diagram for 30MHz to 1GHz:



In 3m Anechoic Chamber Test Setup Diagram for frequency above 1GHz:



4.3. Limit

FCC 15.205 Restricted frequency band:

MHz	MHz	MHz	GHz
0.090 - 0.110	16.42 - 16.423	399.9 - 410	4.5 - 5.15
¹ 0.495 - 0.505	16.69475 - 16.69525	608 - 614	5.35 - 5.46
2.1735 - 2.1905	16.80425 - 16.80475	960 - 1240	7.25 - 7.75
4.125 - 4.128	25.5 - 25.67	1300 - 1427	8.025 - 8.5
4.17725 - 4.17775	37.5 - 38.25	1435 - 1626.5	9.0 - 9.2
4.20725 - 4.20775	73 - 74.6	1645.5 - 1646.5	9.3 - 9.5
6.215 - 6.218	74.8 - 75.2	1660 - 1710	10.6 - 12.7
6.26775 - 6.26825	108 - 121.94	1718.8 - 1722.2	13.25 - 13.4
6.31175 - 6.31225	123 - 138	2200 - 2300	14.47 - 14.5
8.291 - 8.294	149.9 - 150.05	2310 - 2390	15.35 - 16.2
8.362 - 8.366	156.52475 - 156.52525	2483.5 - 2500	17.7 - 21.4
8.37625 - 8.38675	156.7 - 156.9	2690 - 2900	22.01 - 23.12
8.41425 - 8.41475	162.0125 - 167.17	3260 - 3267	23.6 - 24.0
12.29 - 12.293	167.72 - 173.2	3332 - 3339	31.2 - 31.8
12.51975 - 12.52025	240 - 285	3345.8 - 3358	36.43 - 36.5
12.57675 - 12.57725	322 - 335.4	3600 - 4400	(²)

FCC 15.209 Limit

Frequency (MHz)	Distance (Meters)	Field Strengths Limits dB(μV)/m
30--88	3	40.0
88--216	3	43.5
216--960	3	46.0
960--1000	3	54.0
Above 1GHz	3	Peak: 74.0
	3	Average: 54.0

Note: (1) The smaller limit shall apply at the cross point between two frequency bands.

(2) Distance is the distance in meters between the measuring instrument, antenna and the closest point of any part of the device or system.

(3) The emission limits shown in the above table are based on measurements employing a CISPR QP detector except for the frequency bands 9-90KHz, 110-490KHz and above 1000MHz. Radiated emissions limits in these three bands are based on measurements employing an average detector.

(4) At frequencies below 30MHz, measurement may be performed at a distance closer than that specified, and the limit at closer measurement distance can be extrapolated by below formula:

$$\text{Limit } 3\text{m(dBuV/m)} = \text{Limit } 30\text{m(dBuV/m)} + 40\text{Log}(30\text{m}/3\text{m})$$

(5) All the emissions appearing within 15.205 restricted frequency bands shall not exceed the limits shown in 15.209, all the other emissions shall be at least 20dB below the fundamental emissions, or comply with 15.209 limits.

4.4. Test Procedure

Procedure of Preliminary Test

Configuration EUT to simulate typical usage as described in clause 2.3 and test equipment as described in clause 4.2 of this report.

Mains cables, telephone lines or other connections to auxiliary equipment located outside the test are shall drape to the floor, be fitted with ferrite clamps or ferrite tubes placed on the floor at the point where the cable reaches the floor and then routed to the place where they leave the turntable. No extension cords shall be used to mains receptacle.

EUT height should be 0.8m for below 1GHz and 1.5m for above 1GHz at ground with absorbers.

The antenna was placed at 3 meter away from the EUT as stated in ANSI C63.10. The antenna connected to the Spectrum Analyzer via a cable and at times a pre-amplifier would be used.

The Analyzer / Receiver quickly scanned from 30MHz to 25GHz. The EUT test program was started. Emissions were scanned and measured rotating the EUT to 360 degrees and positioning the antenna 1 to 4 meters above the ground plane, in both the vertical and the horizontal polarization, to maximize the emission reading level.

The X, Y, Z three axial are tested and the report only the worst case.

The emissions from 9KHz to 1GHz, QP or average values were measured with EMI receiver with below RBW:

Frequency band	RBW
9KHz-150KHz	200Hz
150KHz-30MHz	9KHz
30MHz-1GHz	120KHz

For emissions above 1GHz, both Peak and Average level were measured with Spectrum Analyzer, and the RBW is set at 1MHz, VBW is set at 3MHz for Peak measure; RMS detector RBW 1MHz VBW 3MHz for Average measure.

4.5. Test result

PASS. (See below detailed test result)

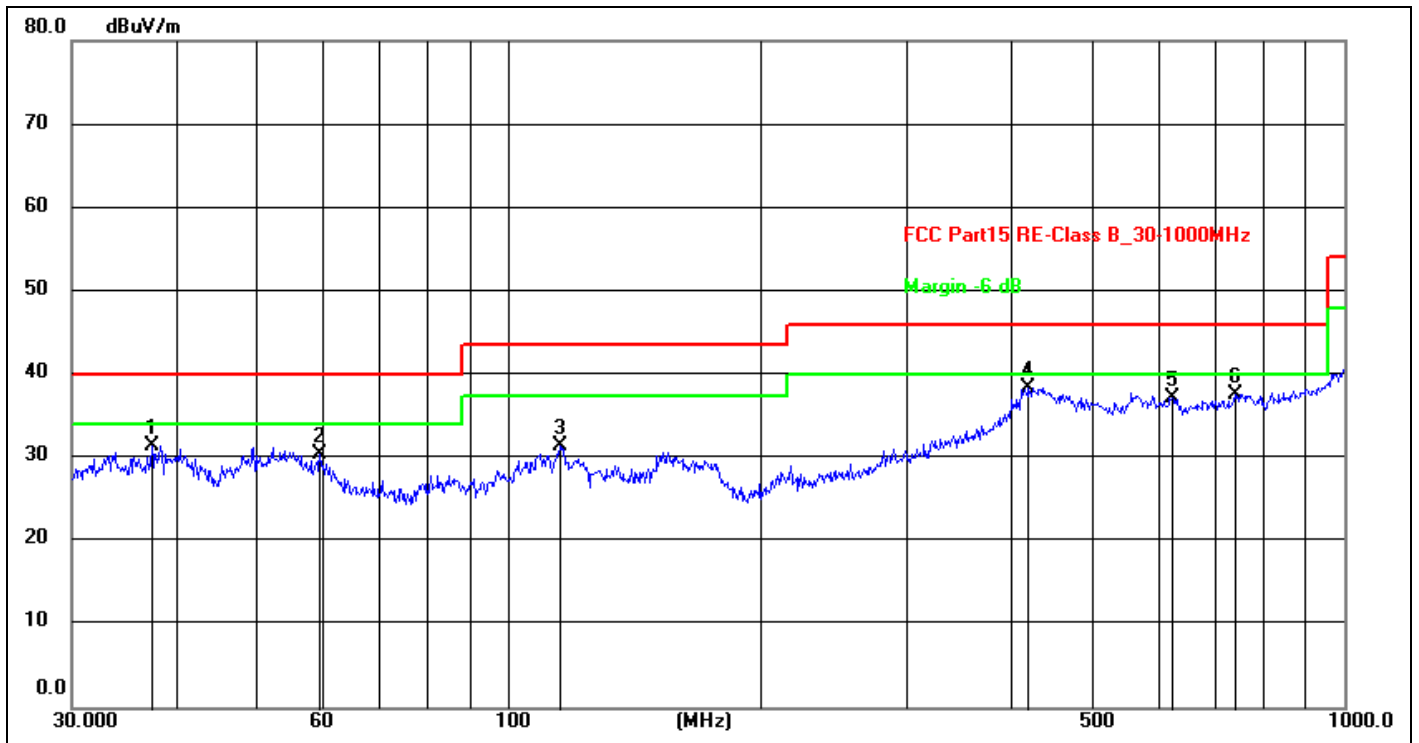
All the emissions except fundamental emission from 9 KHz to 40GHz were comply with FCC PART 15.209 limits limit.

Note1: According exploratory test no any obvious emission were detected from 9KHz to 30MHz and 25GHz to 40GHz, so the final test was performed with frequency range from 30MHz to 25GHz and recorded in below.

Note2: For emissions above 1GHz. If peak results comply with AV limit, AV Result is deemed to comply with AV limit.

Note3: Level = Reading Level + Factor, Margin= Level-Limit

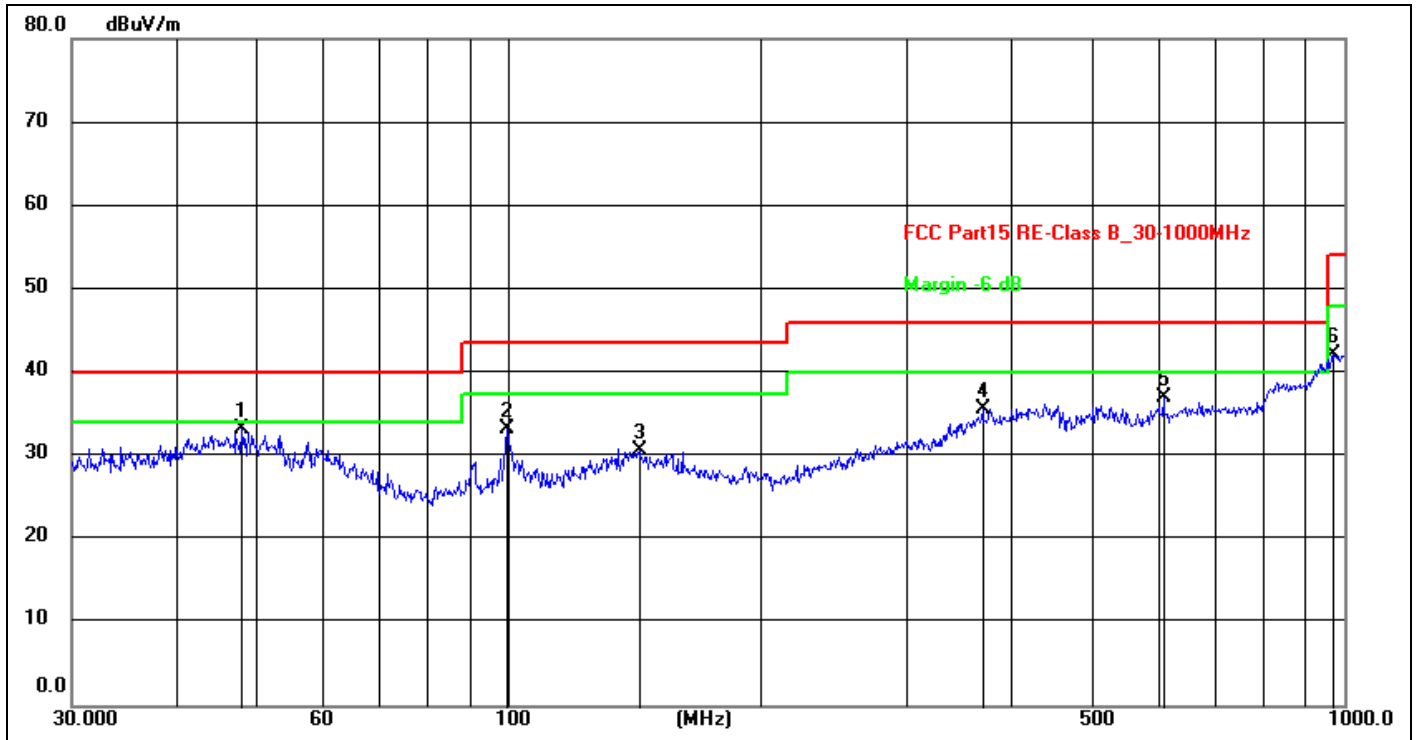
Radiated Emission Test Result



Site: 966LAB
Limit: FCC Part15 RE-Class B_30-1000MHz
EUT: LED
M/N.: PAK41736M
Mode: Lighting
Note:

Antenna::Horizontal
Temperature(C):24(C)
Humidity(%):60 %
Test Time: 2025/1/13 11:45:52
Power Rating: AC 120V/60Hz
Test Engineer:

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.	Height (cm)	Azimuth (deg)	Remark
1	37.4164	17.81	13.73	31.54	40.00	-8.46	peak	200	112	
2	59.4405	17.30	13.11	30.41	40.00	-9.59	peak	200	275	
3	115.3204	19.04	12.40	31.44	43.50	-12.06	peak	100	314	
4 *	419.1080	21.33	17.08	38.41	46.00	-7.59	peak	100	25	
5	622.8900	15.55	21.64	37.19	46.00	-8.81	peak	100	68	
6	739.6603	14.50	23.12	37.62	46.00	-8.38	peak	200	148	



Site: 966LAB
Limit: FCC Part15 RE-Class B_30-1000MHz
EUT: LED
M/N.: PAK41736M
Mode: Lighting
Note:

Antenna::Vertical
Temperature(C):24(C)
Humidity(%):60%
Test Time: 2025/1/13 11:48:28
Power Rating: AC 120V/60Hz
Test Engineer:

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.	Height (cm)	Azimuth (deg)	Remark
1 *	47.9938	18.81	14.37	33.18	40.00	-6.82	peak	100	56	
2	99.5279	22.09	11.22	33.31	43.50	-10.19	peak	100	245	
3	143.3258	15.63	14.99	30.62	43.50	-12.88	peak	200	129	
4	369.4045	19.57	16.10	35.67	46.00	-10.33	peak	100	256	
5	607.7866	15.93	21.05	36.98	46.00	-9.02	peak	200	312	
6	968.9337	16.54	25.56	42.10	54.00	-11.90	peak	200	226	

For 1GHz to 25GHz

GFSK (above 1GHz)

Frequency (MHz)			2402		Polarity			HORIZONTAL	
Frequency (MHz)	Emission Level (dBuV/m)		Limit (dBuV/m)	Margin (dB)	Raw Value (dBuV)	Antenna Factor (dB/m)	Cable Factor (Db)	Preamplifier (dB)	Correction Factor (dB/m)
4804.00	62.22	PK	74.00	-11.78	57.85	33.35	6.91	35.89	4.37
4804.00	45.36	AV	54.00	-8.64	40.99	33.35	6.91	35.89	4.37
7206.00	54.32	PK	74.00	-19.68	43.32	36.85	9.18	35.03	11.00
7206.00	43.56	AV	54.00	-10.44	32.56	36.85	9.18	35.03	11.00

Frequency (MHz)			2402		Polarity			VERTICAL	
Frequency (MHz)	Emission Level (dBuV/m)		Limit (dBuV/m)	Margin (dB)	Raw Value (dBuV)	Antenna Factor (dB/m)	Cable Factor (Db)	Preamplifier (dB)	Correction Factor (dB/m)
4804.00	60.35	PK	74.00	-13.65	55.98	33.35	6.91	35.89	4.37
4804.00	43.58	AV	54.00	-10.42	39.21	33.35	6.91	35.89	4.37
7206.00	53.48	PK	74.00	-20.52	42.48	36.85	9.18	35.03	11.00
7206.00	42.36	AV	54.00	-11.64	31.36	36.85	9.18	35.03	11.00

Frequency (MHz)			2440		Polarity			HORIZONTAL	
Frequency (MHz)	Emission Level (dBuV/m)		Limit (dBuV/m)	Margin (dB)	Raw Value (dBuV)	Antenna Factor (dB/m)	Cable Factor (Db)	Preamplifier (dB)	Correction Factor (dB/m)
4880.00	61.25	PK	74.00	-12.75	55.18	33.42	6.95	34.30	6.07
4880.00	44.28	AV	54.00	-9.72	38.21	33.42	6.95	34.30	6.07
7320.00	54.69	PK	74.00	-19.31	43.10	37.36	9.23	35.00	11.59
7320.00	42.25	AV	54.00	-11.75	30.66	37.36	9.23	35.00	11.59

Frequency (MHz)			2440		Polarity			VERTICAL	
Frequency (MHz)	Emission Level (dBuV/m)		Limit (dBuV/m)	Margin (dB)	Raw Value (dBuV)	Antenna Factor (dB/m)	Cable Factor (Db)	Preamplifier (dB)	Correction Factor (dB/m)
4880.00	61.25	PK	74.00	-12.75	55.18	33.42	6.95	34.30	6.07
4880.00	44.36	AV	54.00	-9.64	38.29	33.42	6.95	34.30	6.07
7320.00	64.35	PK	74.00	-9.65	52.76	37.36	9.23	35.00	11.59
7320.00	42.87	AV	54.00	-11.13	31.28	37.36	9.23	35.00	11.59

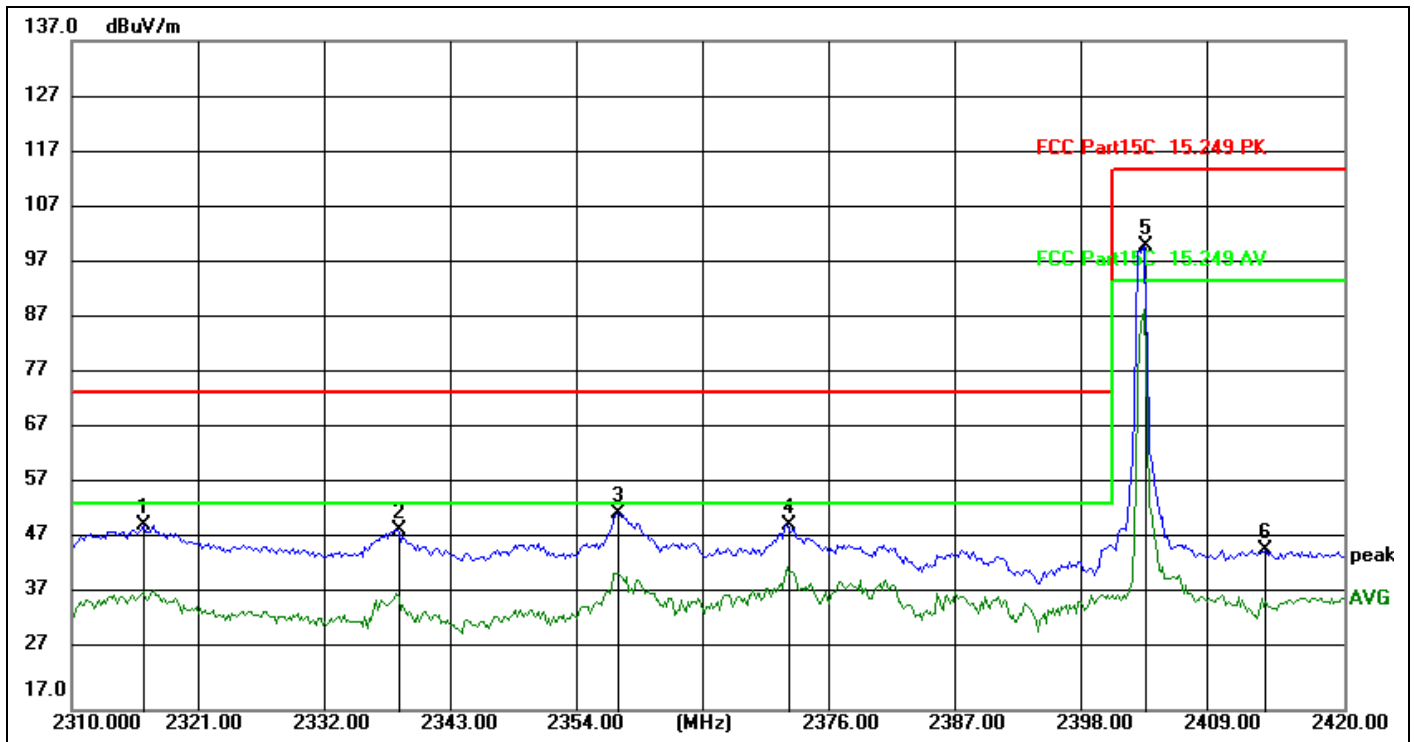
Frequency (MHz)			2480		Polarity			HORIZONTAL	
Frequency (MHz)	Emission Level (dBuV/m)		Limit (dBuV/m)	Margin (dB)	Raw Value (dBuV)	Antenna Factor (dB/m)	Cable Factor (Db)	Preamplifier (dB)	Correction Factor (dB/m)
4960.00	61.22	PK	74.00	-12.78	56.28	33.86	7.00	35.92	4.94
4960.00	43.56	AV	54.00	-10.44	38.62	33.86	7.00	35.92	4.94
7440.00	52.34	PK	74.00	-21.66	40.09	37.94	9.28	34.97	12.25
7440.00	42.67	AV	54.00	-11.33	30.42	37.94	9.28	34.97	12.25

Frequency (MHz)			2480		Polarity			VERTICAL	
Frequency (MHz)	Emission Level (dBuV/m)		Limit (dBuV/m)	Margin (dB)	Raw Value (dBuV)	Antenna Factor (dB/m)	Cable Factor (Db)	Preamplifier (dB)	Correction Factor (dB/m)
4960.00	59.68	PK	74.00	-14.32	54.74	33.86	7.00	35.92	4.94
4960.00	43.57	AV	54.00	-10.43	38.63	33.86	7.00	35.92	4.94
7440.00	50.61	PK	74.00	-23.39	38.36	37.94	9.28	34.97	12.25
7440.00	42.56	AV	54.00	-11.44	30.31	37.94	9.28	34.97	12.25

REMARKS:

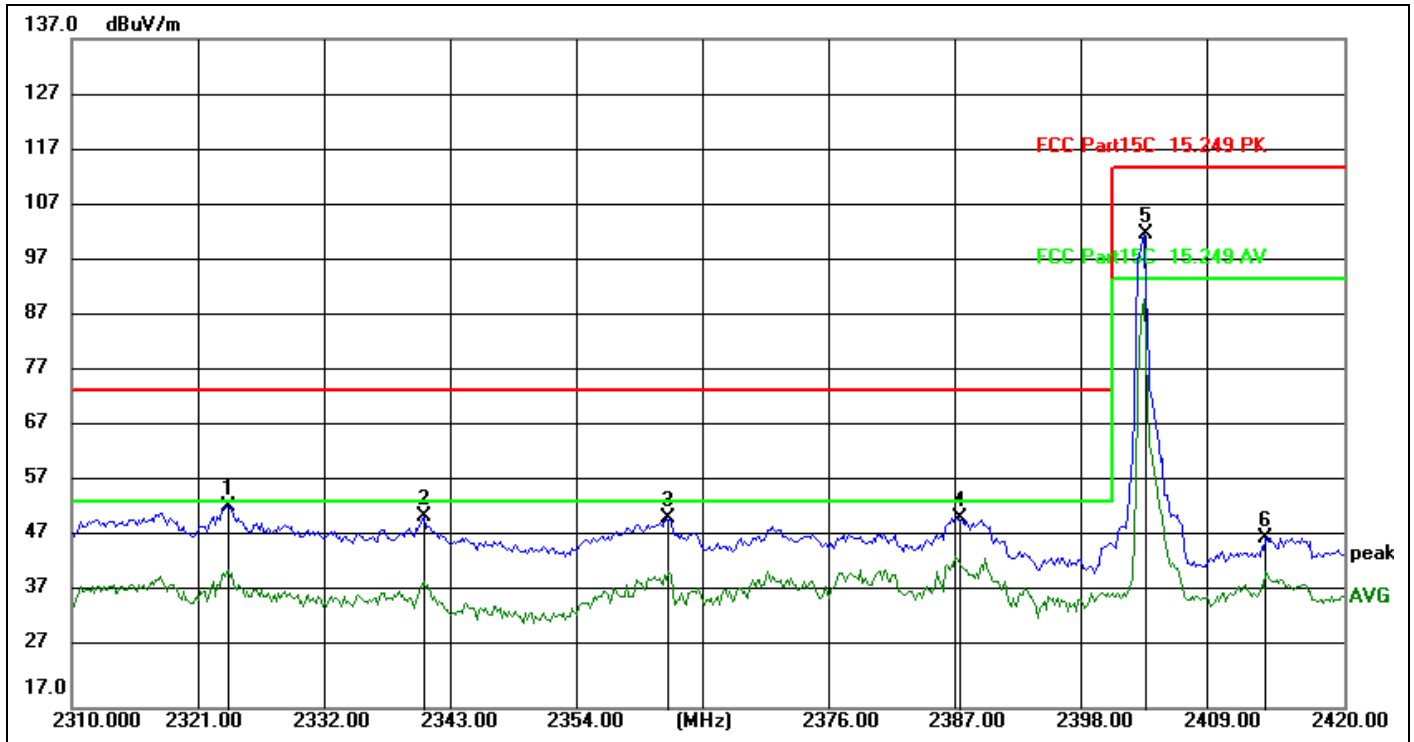
1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m)
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB) - Pre-amplifier Factor
3. Margin value = Limit value - Emission level.
4. -- Mean the PK detector measured value is below average limit.
5. RBW1MHz VBW3MHz Peak detector is for PK value; RBW 1MHz VBW10Hz Peak detector is for AV value.

Results of Band Edges Test (Radiated)



Site:	966LAB	Antenna::Horizontal	Temperature(C):24(C)
Limit:	FCC Part15C 15.249 PK		Humidity(%):60%
EUT:	LED	Test Time:	2024/12/13 14:42:03
M/N.:	PAK41736M(2402)	Power Rating:	AC 120V/60Hz
Mode:	Lighting	Test Engineer:	
Note:			

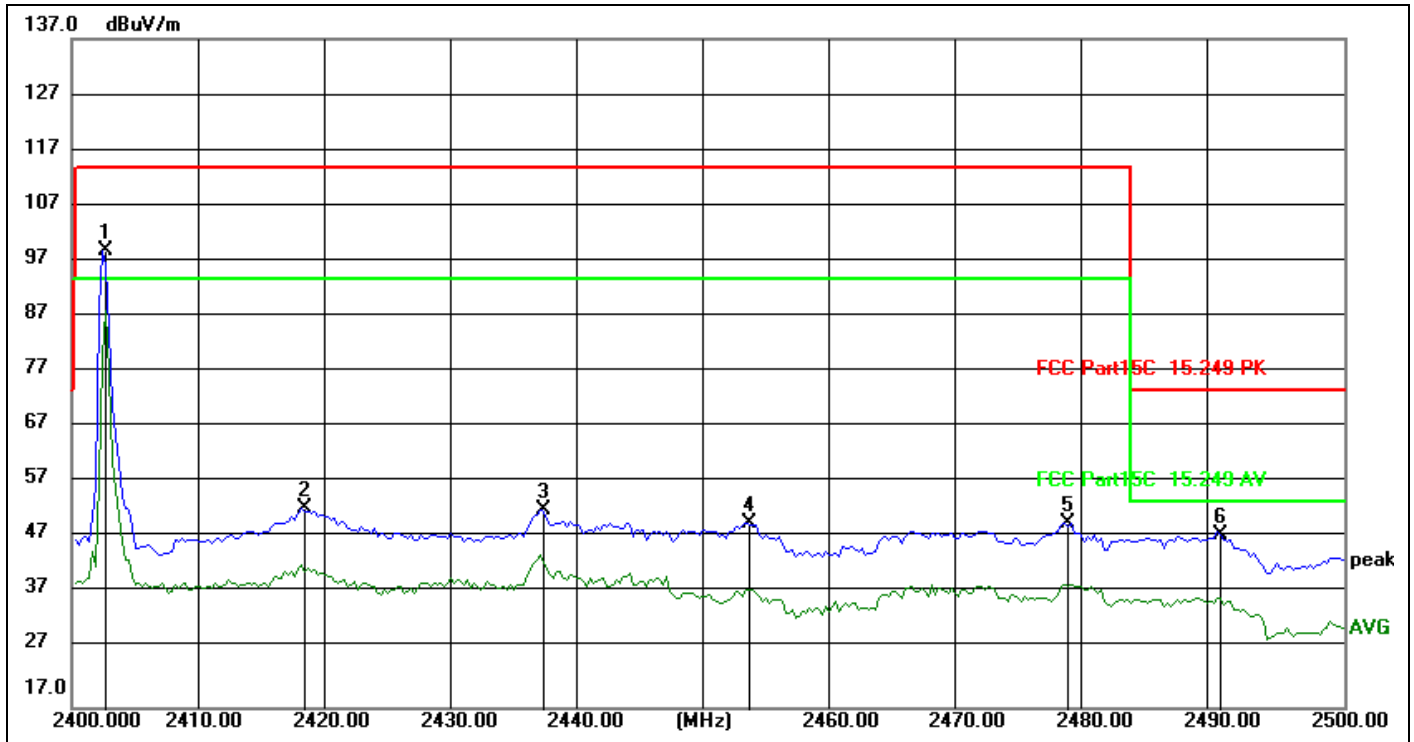
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.	Height (cm)	Azimuth (deg)	Remark
1	2316.202	65.79	-15.60	50.19	74.00	-23.81	peak	100	86	
2	2338.093	65.12	-15.68	49.44	74.00	-24.56	peak	100	213	
3	2357.065	68.02	-15.72	52.30	74.00	-21.70	peak	100	326	
4	2371.841	65.87	-15.74	50.13	74.00	-23.87	peak	100	295	
5 *	2402.670	115.86	-15.76	100.10	114.00	-13.90	peak	200	63	
6	2413.250	61.39	-15.76	45.63	114.00	-68.37	peak	100	57	



Site: 966LAB
Limit: FCC Part15C 15.249 PK
EUT: LED
M/N.: PAK41736M(2402)
Mode: Lighting
Note:

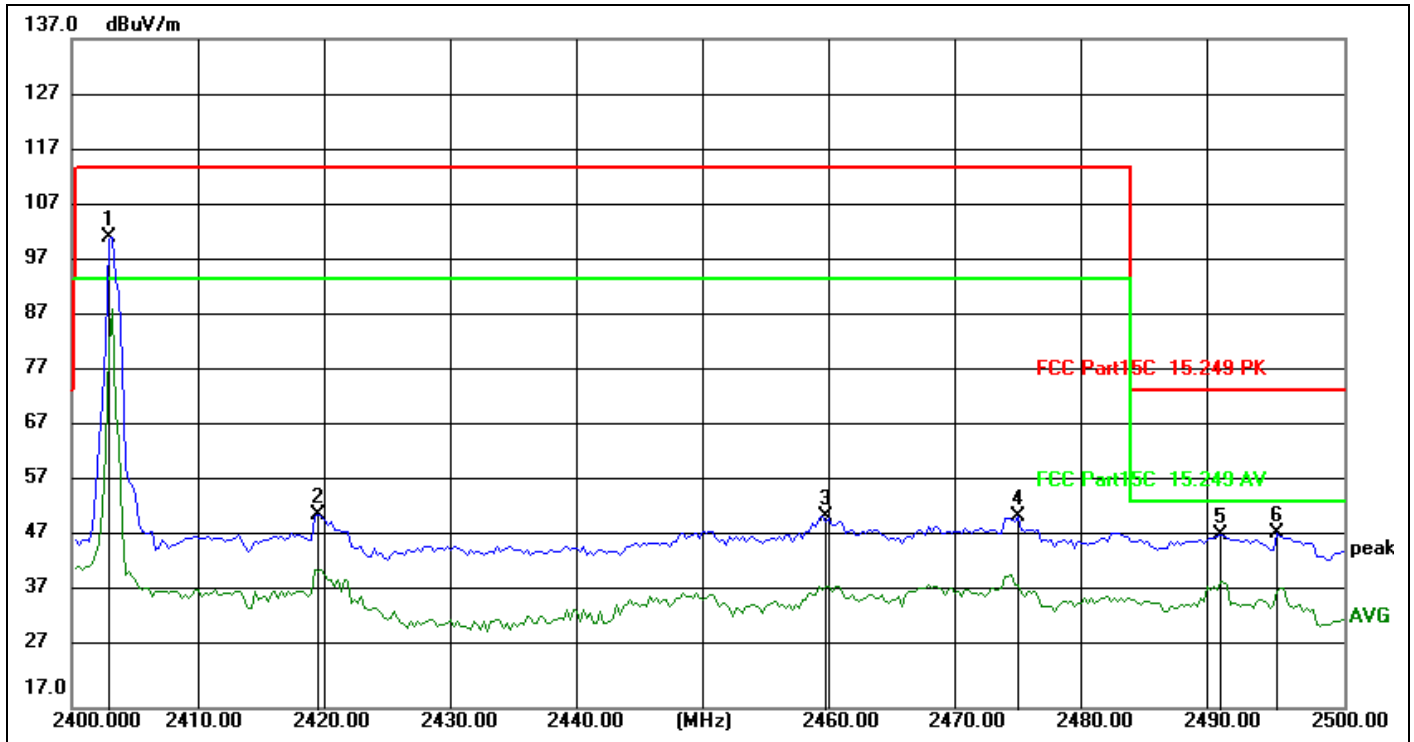
Antenna::Vertical
Temperature(C):24(C)
Humidity(%):60 %
Test Time: 2024/12/13 14:42:03
Power Rating: AC 120V/60Hz
Test Engineer:

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.	Height (cm)	Azimuth (deg)	Remark
1	2323.499	68.81	-15.63	53.18	74.00	-20.82	peak	200	57	
2	2340.464	66.95	-15.69	51.26	74.00	-22.74	peak	200	33	
3	2361.443	66.74	-15.73	51.01	74.00	-22.99	peak	100	301	
4	2386.617	66.93	-15.74	51.19	74.00	-22.81	peak	200	152	
5 *	2402.670	117.86	-15.76	102.10	114.00	-11.90	peak	200	4	
6	2413.250	63.39	-15.76	47.63	114.00	-66.37	peak	100	213	



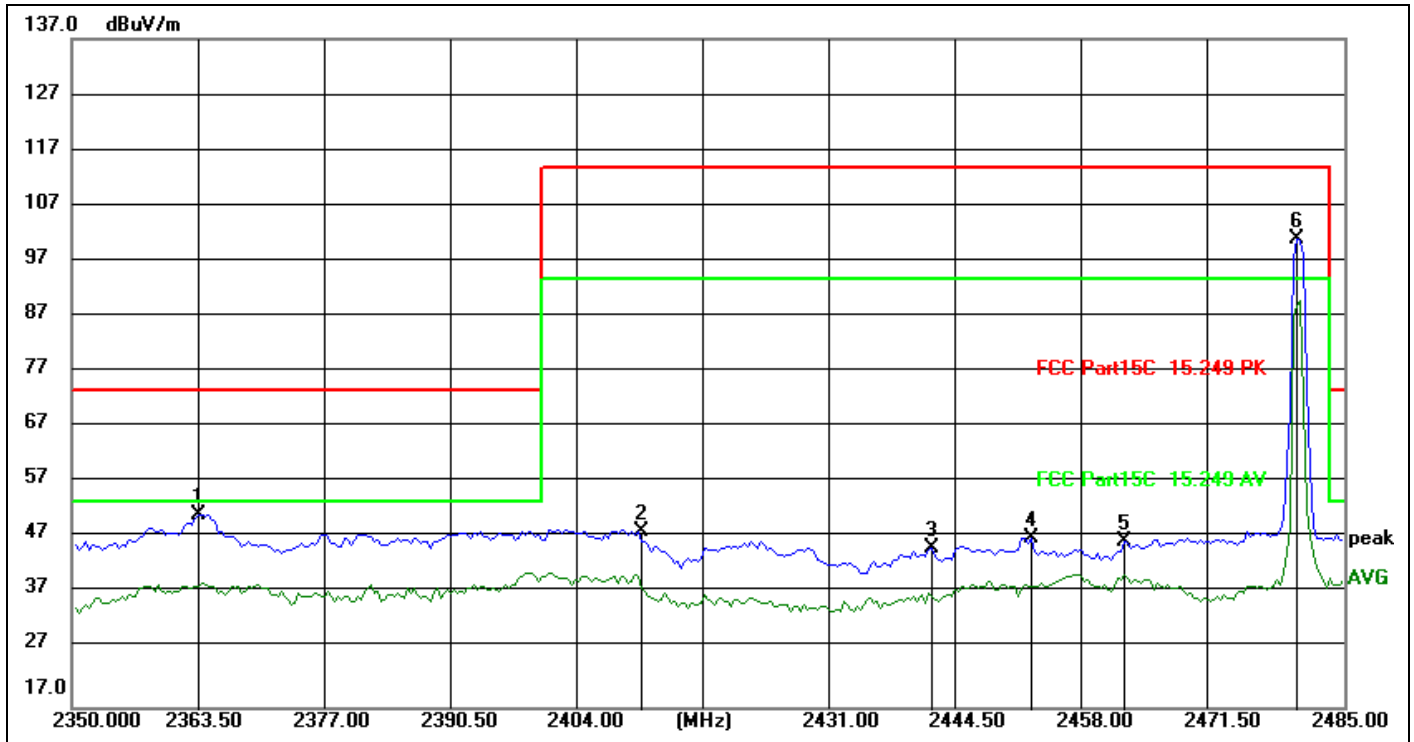
Site:	966LAB	Antenna::Vertical	Temperature(C):24(C)
Limit:	FCC Part15C 15.249 PK		Humidity(%):60%
EUT:	LED	Test Time:	2024/12/16 11:41:10
M/N.:	PAK41736M(2402)	Power Rating:	AC 120V/60Hz
Mode:	Lighting	Test Engineer:	
Note:			

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.	Height (cm)	Azimuth (deg)	Remark
1 *	2402.350	114.90	-15.76	99.14	114.00	-14.86	peak	200	135	
2	2418.016	68.56	-15.75	52.81	114.00	-61.19	peak	100	75	
3	2436.815	68.26	-15.76	52.50	114.00	-61.50	peak	200	69	
4	2453.003	65.83	-15.76	50.07	114.00	-63.93	peak	200	254	
5	2478.068	65.95	-15.66	50.29	114.00	-63.71	peak	100	198	
6	2490.339	63.73	-15.62	48.11	74.00	-25.89	peak	100	12	



Site:	966LAB	Antenna::Horizontal	Temperature(C):24(C)
Limit:	FCC Part15C 15.249 PK		Humidity(%):60%
EUT:	LED	Test Time:	2024/12/16 11:41:10
M/N.:	PAK41736M(2402)	Power Rating:	AC 120V/60Hz
Mode:	Lighting	Test Engineer:	
Note:			

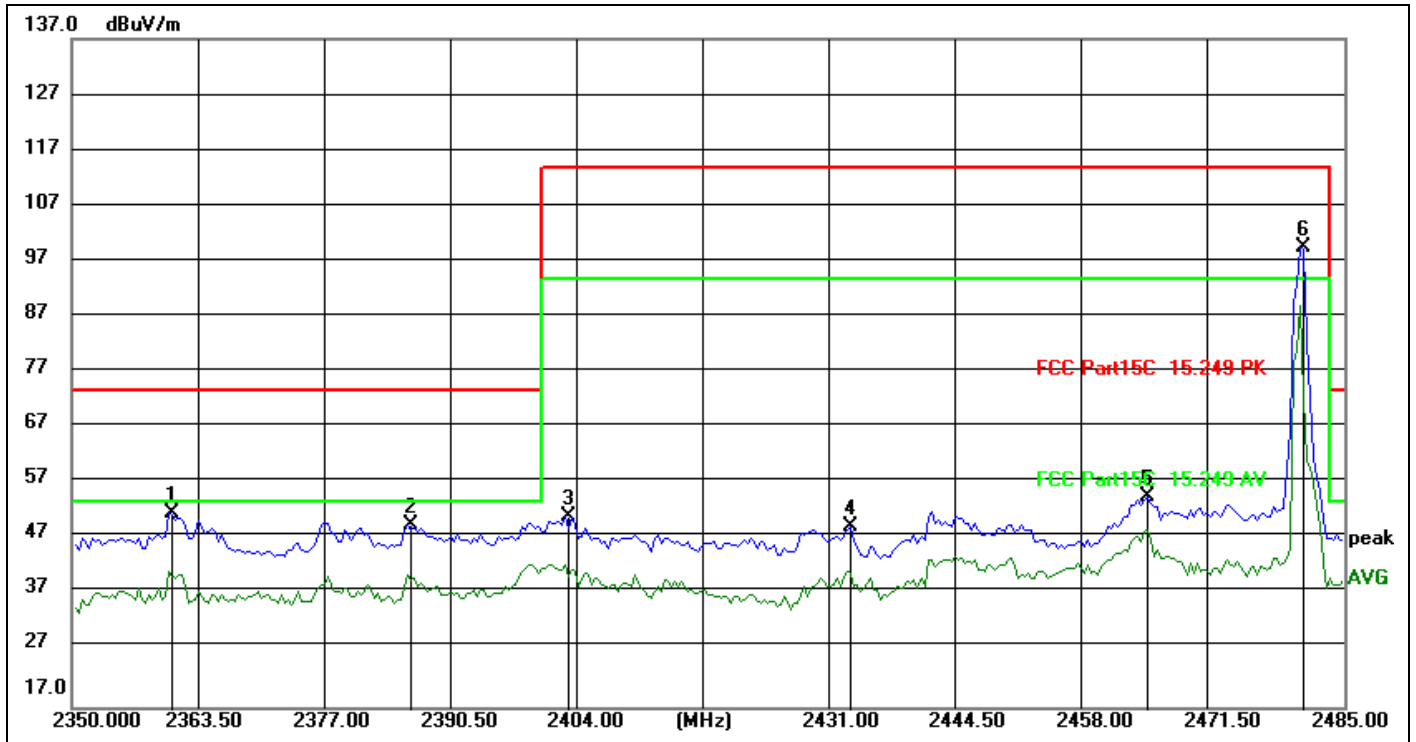
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.	Height (cm)	Azimuth (deg)	Remark
1 *	2402.655	117.19	-15.76	101.43	114.00	-12.57	peak	200	117	
2	2419.321	67.54	-15.76	51.78	114.00	-62.22	peak	100	84	
3	2459.008	67.07	-15.73	51.34	114.00	-62.66	peak	200	4	
4	2474.412	66.98	-15.69	51.29	114.00	-62.71	peak	100	122	
5	2490.339	63.73	-15.62	48.11	74.00	-25.89	peak	100	206	
6	2494.778	64.11	-15.61	48.50	74.00	-25.50	peak	200	93	



Site: 966LAB
 Limit: FCC Part15C 15.249 PK
 EUT: LED
 M/N.: PAK41736M(2480)
 Mode: Lighting
 Note:

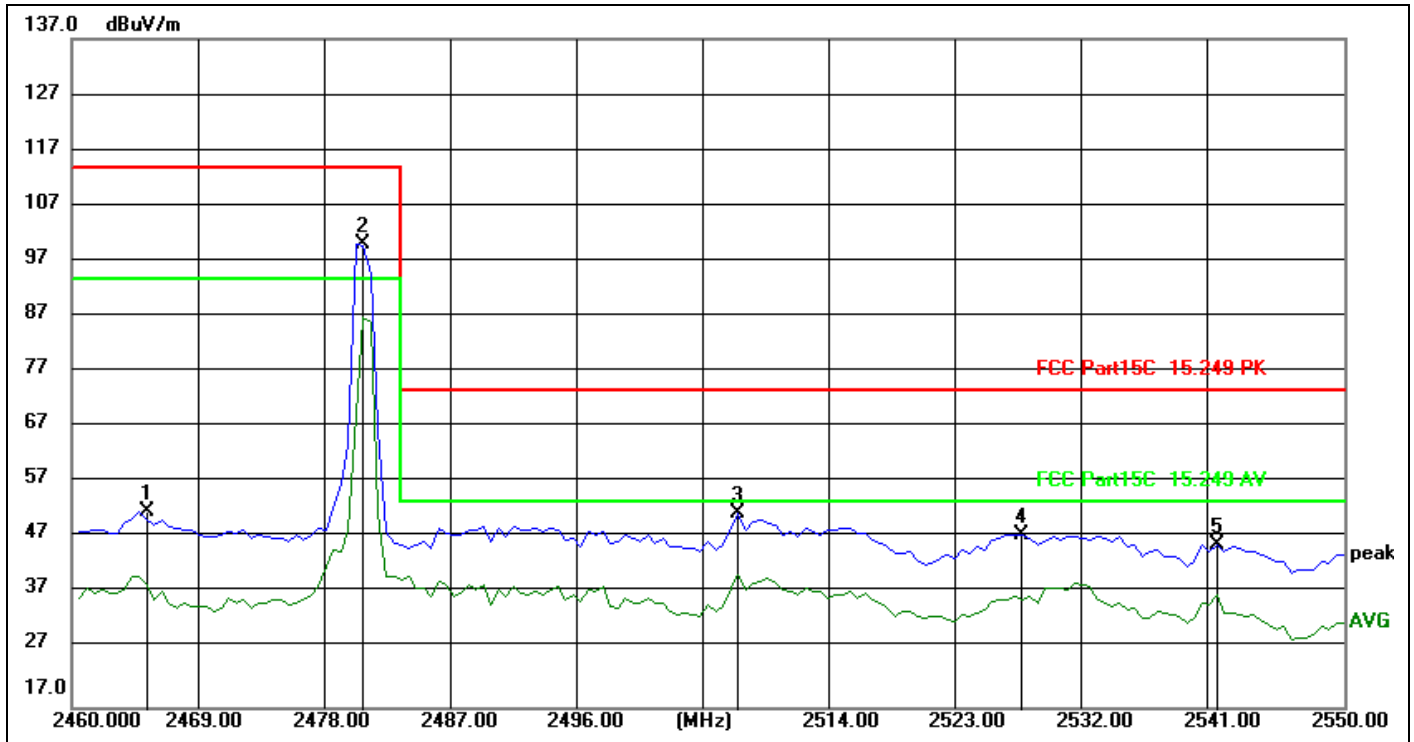
Antenna::Vertical
 Temperature(C):24(C)
 Humidity(%):60 %
 Test Time: 2024/12/13 14:42:03
 Power Rating: AC 120V/60Hz
 Test Engineer:

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.	Height (cm)	Azimuth (deg)	Remark
1	2363.429	67.52	-15.72	51.80	74.00	-22.20	peak	100	52	
2	2410.079	64.38	-15.75	48.63	114.00	-65.37	peak	100	246	
3	2441.178	61.48	-15.77	45.71	114.00	-68.29	peak	200	125	
4	2451.780	63.36	-15.77	47.59	114.00	-66.41	peak	200	321	
5	2461.675	62.60	-15.73	46.87	114.00	-67.13	peak	100	129	
6 *	2480.052	116.76	-15.66	101.10	114.00	-12.90	peak	200	47	



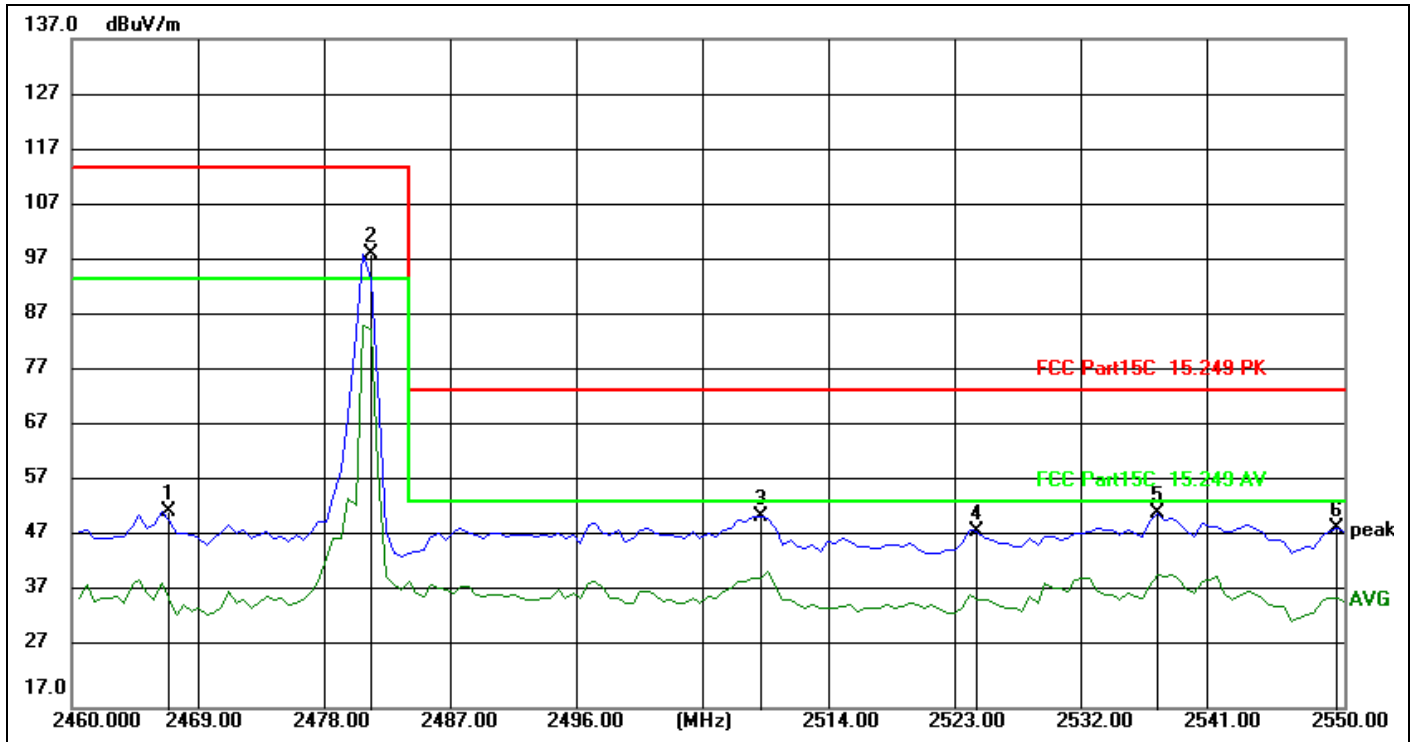
Site:	966LAB	Antenna::Horizontal	Temperature(C):24(C)
Limit:	FCC Part15C 15.249 PK		Humidity(%):60%
EUT:	LED	Test Time:	2024/12/13 14:42:03
M/N.:	PAK41736M(2480)	Power Rating:	AC 120V/60Hz
Mode:	Lighting	Test Engineer:	
Note:			

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.	Height (cm)	Azimuth (deg)	Remark
1	2360.249	67.59	-15.73	51.86	74.00	-22.14	peak	200	20	
2	2385.694	65.51	-15.73	49.78	74.00	-24.22	peak	200	224	
3	2402.304	67.22	-15.76	51.46	114.00	-62.54	peak	100	272	
4	2432.696	65.41	-15.77	49.64	114.00	-64.36	peak	200	168	
5	2464.149	70.79	-15.72	55.07	114.00	-58.93	peak	100	72	
6 *	2480.406	115.43	-15.66	99.77	114.00	-14.23	peak	100	234	



Site:	966LAB	Antenna::Horizontal	Temperature(C):24(C)
Limit:	FCC Part15C 15.249 PK		Humidity(%):60%
EUT:	LED	Test Time:	2024/12/16 11:41:10
M/N.:	PAK41736M(2480)	Power Rating:	AC 120V/60Hz
Mode:	Lighting	Test Engineer:	
Note:			

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.	Height (cm)	Azimuth (deg)	Remark
1	2465.183	68.02	-15.70	52.32	114.00	-61.68	peak	200	321	
2 *	2480.366	115.92	-15.66	100.26	114.00	-13.74	peak	200	276	
3	2507.068	67.43	-15.55	51.88	74.00	-22.12	peak	100	136	
4	2526.963	63.59	-15.46	48.13	74.00	-25.87	peak	100	8	
5	2540.576	61.59	-15.40	46.19	74.00	-27.81	peak	200	208	



Site:	966LAB	Antenna::Vertical	Temperature(C):24(C)
Limit:	FCC Part15C 15.249 PK		Humidity(%):60%
EUT:	LED	Test Time:	2024/12/16 11:41:10
M/N.:	PAK41736M(2480)	Power Rating:	AC 120V/60Hz
Mode:	Lighting	Test Engineer:	
Note:			

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.	Height (cm)	Azimuth (deg)	Remark
1	2466.754	67.89	-15.70	52.19	114.00	-61.81	peak	200	20	
2 *	2480.890	114.16	-15.65	98.51	114.00	-15.49	peak	200	224	
3	2508.639	66.91	-15.55	51.36	74.00	-22.64	peak	200	168	
4	2523.822	64.05	-15.48	48.57	74.00	-25.43	peak	100	255	
5	2536.387	67.44	-15.42	52.02	74.00	-21.98	peak	200	68	
6	2548.953	64.54	-15.36	49.18	74.00	-24.82	peak	200	214	

REMARKS:

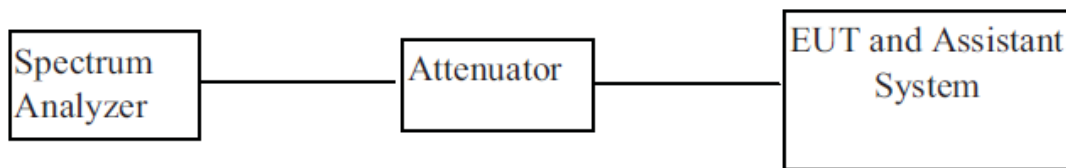
1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m)
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB) - Pre-amplifier Factor
3. Margin value = Limit value - Emission level.
4. -- Mean the PK detector measured value is below average limit.
5. RBW1MHz VBW3MHz Peak detector is for PK value; RBW 1MHz VBW10Hz Peak detector is for AV value.
6. Other emissions are attenuated 20dB below the limits from 9kHz to 30MHz, so it does not recorded in report.

5. Output Power

5.1. Test equipment

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1	MXA Signal Analyzer	KEYSIGHT	N9020A	MY54510476	2024/5/14	1 Year

5.2. BLOCK DIAGRAM OF TEST SETUP



5.3. Limit

For systems using digital modulation in the 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz bands: 1 Watt (30dBm).

5.4. Test Procedure

For output power test:

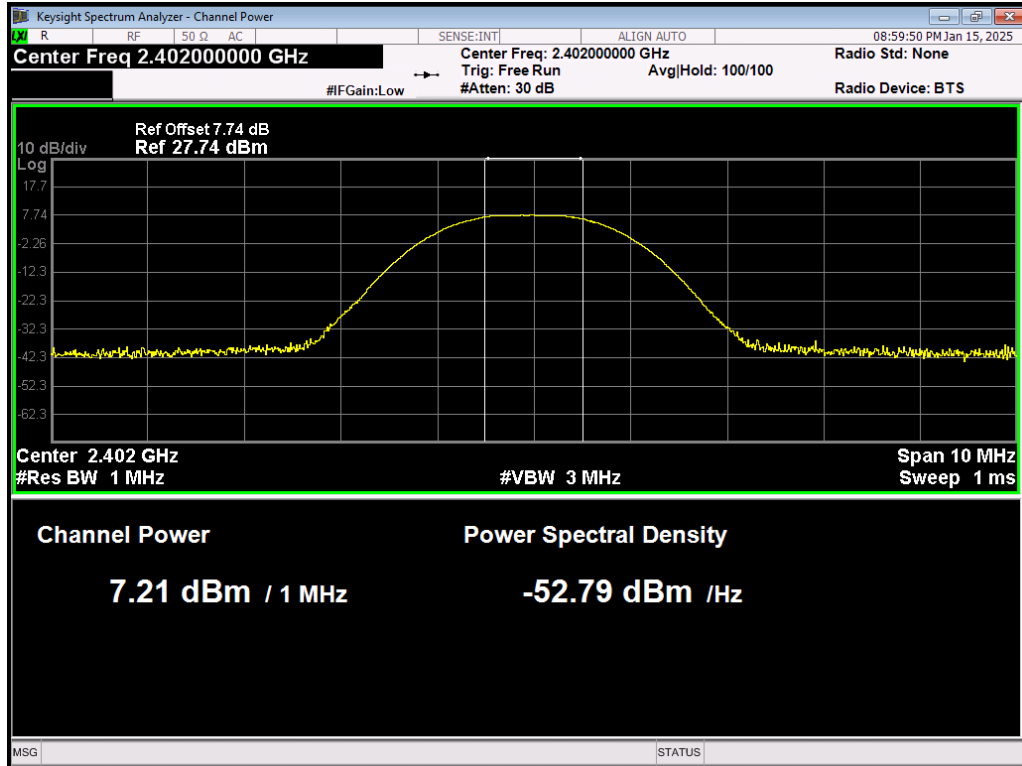
1. Connect EUT RF output port to power sensor through an RF attenuator.
2. Connect the power sensor to the PC.
3. Set the EUT Work on the top, the middle and the bottom operation frequency individually.
4. Record the maximum power from the software.

Note : The EUT was tested according to KDB 558074v03r04 for compliance to FCC 47CFR 15.247 requirements.

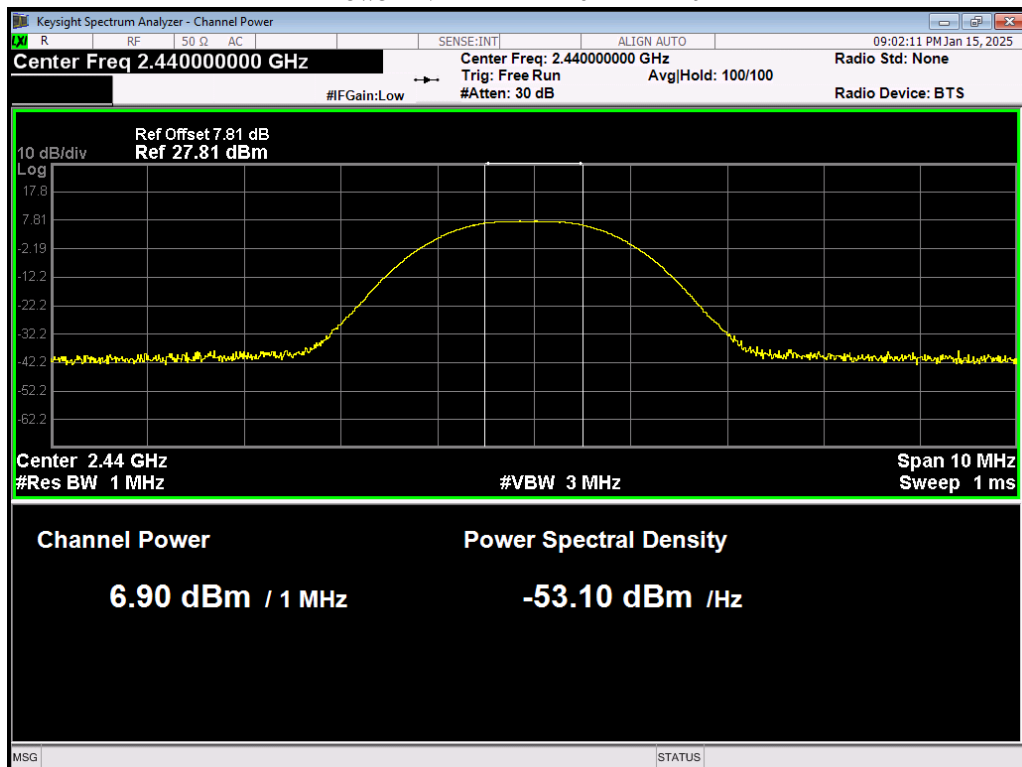
5.5. Test result

Condition	Mode	Frequency (MHz)	Antenna	Conducted Power (dBm)	Duty Factor (dB)	Total Power (dBm)	Limit (dBm)	Verdict
NVNT	BLE	2402	Ant 1	7.213	0	7.213	30	Pass
NVNT	BLE	2440	Ant 1	6.902	0	6.902	30	Pass
NVNT	BLE	2480	Ant 1	5.546	0	5.546	30	Pass

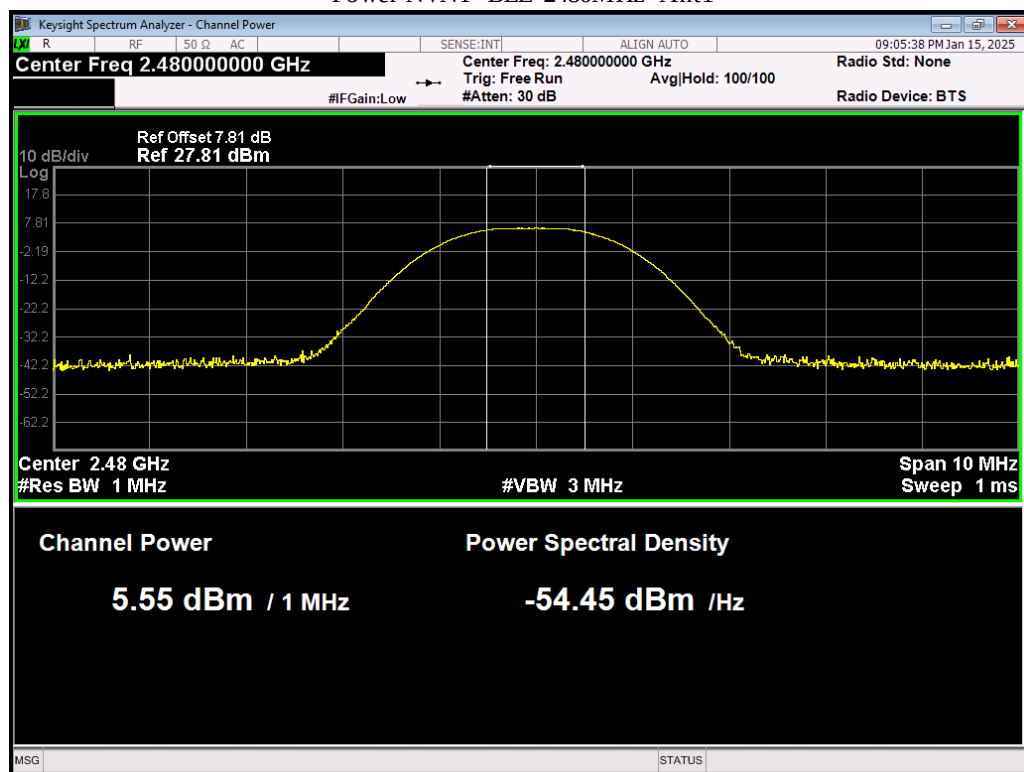
Power NVNT BLE 2402MHz Ant1



Power NVNT BLE 2440MHz Ant1



Power NVNT BLE 2480MHz Ant1

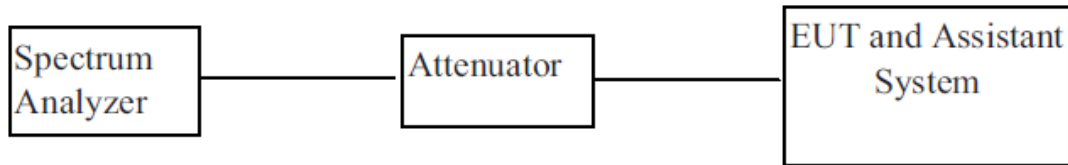


6. -6dB Bandwidth

6.1. Test equipment

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1	MXA Signal Analyzer	KEYSIGHT	N9020A	MY54510476	2024/05/14	1 Year

6.2. BLOCK DIAGRAM OF TEST SETUP



6.3. Limit

Systems using digital modulation techniques may operate in the 902 - 928 MHz, 2400 - 2483.5 MHz, and 5725 - 5850 MHz bands. The minimum 6 dB bandwidth shall be at least 500 kHz.

6.4. Test Procedure

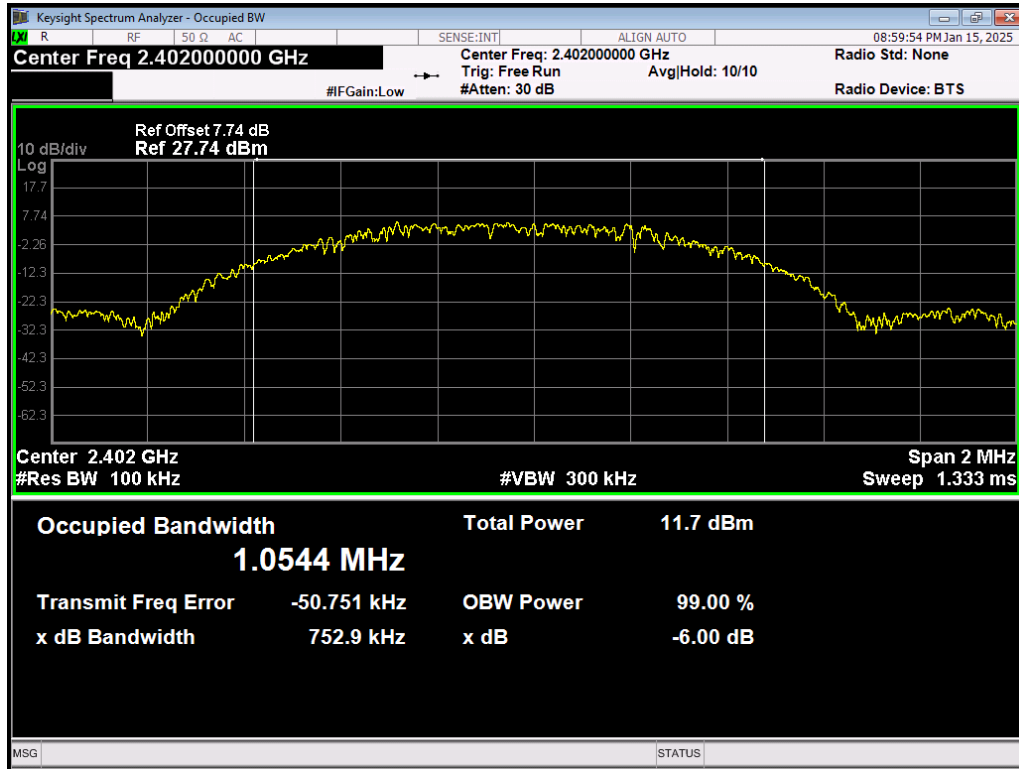
1. Connect EUT RF output port to the Spectrum Analyzer through an RF attenuator
2. Set the EUT Work on the top, the middle and the bottom operation frequency individually.
3. Set SPA Centre Frequency = Operation Frequency, RBW= 100 KHz, VBW $\geq$ 3 $\times$ RBW.
4. Set SPA Trace 1 Max hold, then View.

Note: The EUT was tested according to KDB 558074 for compliance to FCC 47CFR 15.247 requirements.

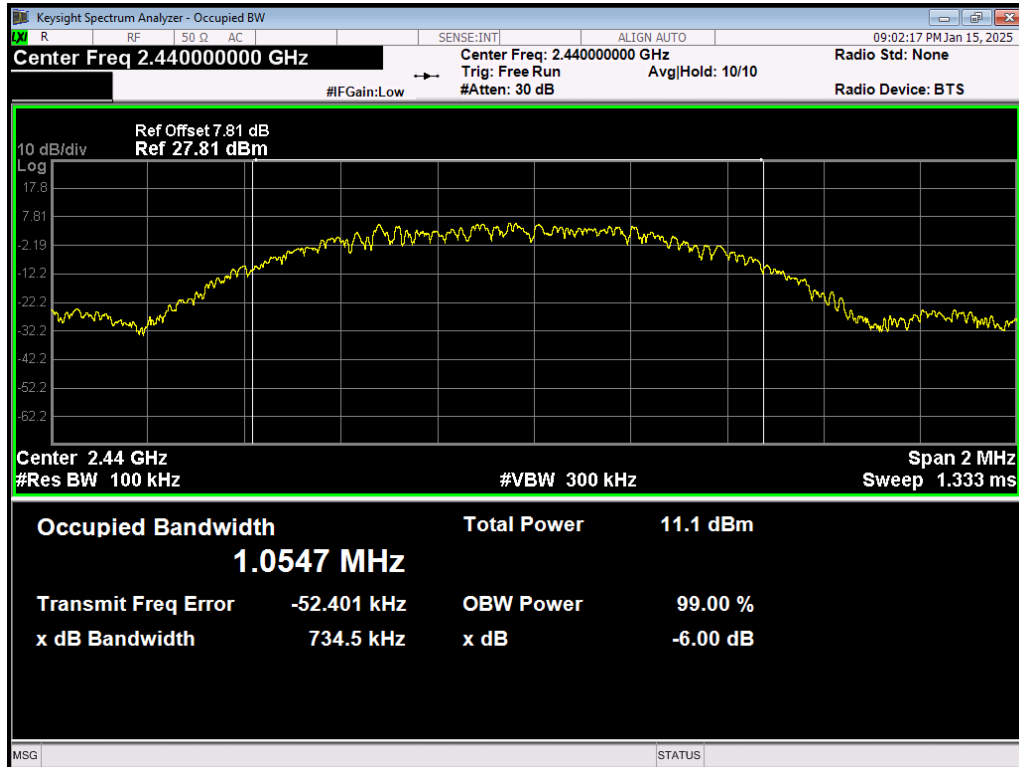
6.5. Test result

Condition	Mode	Frequency (MHz)	Antenna	99% OBW (MHz)	-6 dB Bandwidth (MHz)	Limit -6 dB Bandwidth (MHz)	Verdict
NVNT	BLE	2402	Ant 1	1.0544	0.7529	0.5	Pass
NVNT	BLE	2440	Ant 1	1.0547	0.7345	0.5	Pass
NVNT	BLE	2480	Ant 1	1.0562	0.7353	0.5	Pass

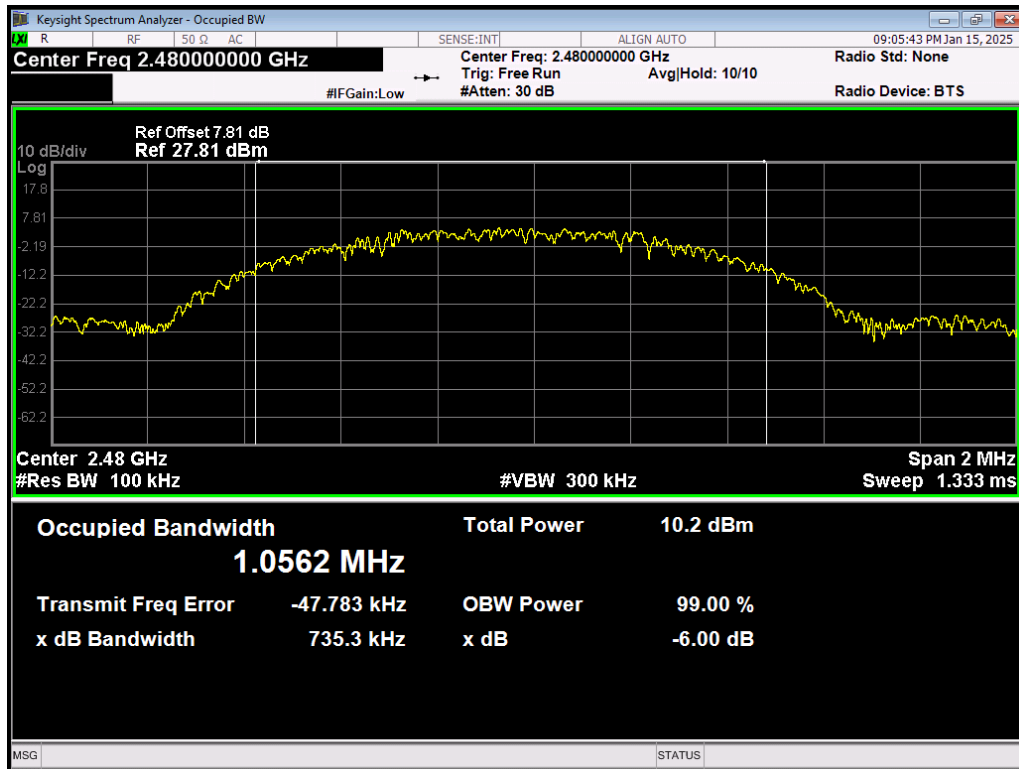
OBW NVNT BLE 2402MHz Ant1



OBW NVNT BLE 2440MHz Ant1



OBW NVNT BLE 2480MHz Ant1

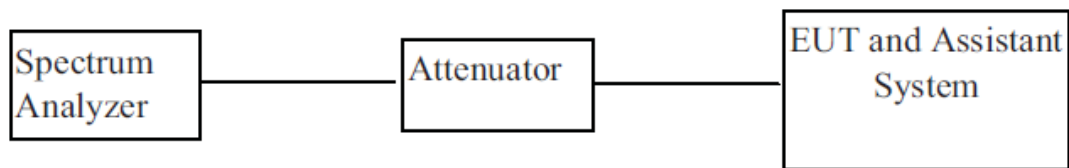


7. Band Edges Measurement

7.1. Test equipment

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1	MXA Signal Analyzer	KEYSIGHT	N9020A	MY54510476	2024/05/14	1 Year

7.2. BLOCK DIAGRAM OF TEST SETUP



7.3. Limit

Below –30dB of the highest emission level of operating band (In 100 kHz Resolution Bandwidth)

7.4. Test Procedure

The transmitter output was connected to the spectrum analyzer via a low lose cable.

Set RBW of spectrum analyzer to 100 KHz and VBW of spectrum analyzer to 300 KHz with convenient frequency span including 100 KHz bandwidth from band edge.

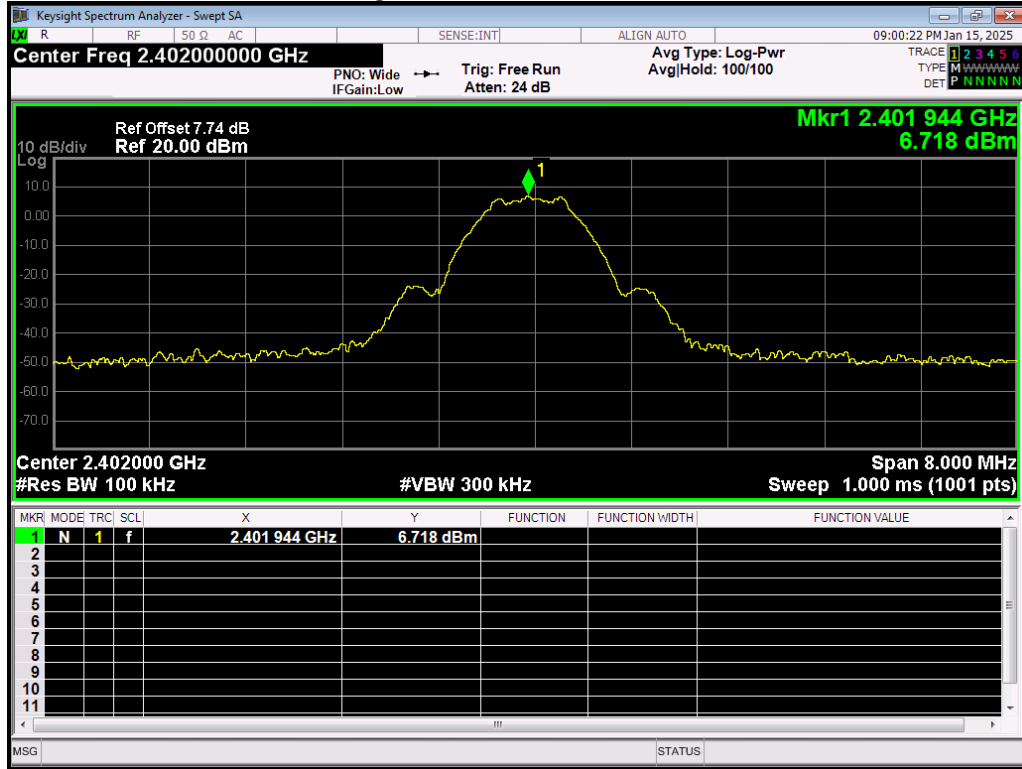
Peak conducted output power measured within any 100 kHz outside the authorized frequency band shall be attenuated by at least 30dB relative to the maximum measured in-band peak PSD level.

The band edges was measured and recorded.

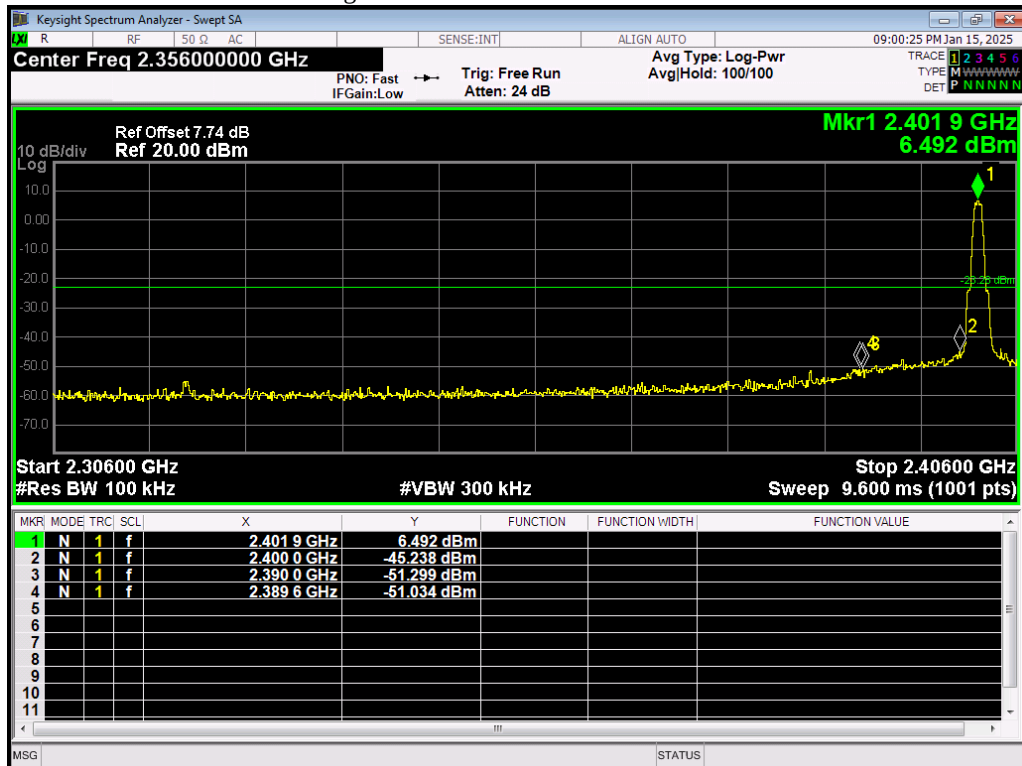
7.5. Test result

Condition	Mode	Frequency (MHz)	Antenna	Max Value (dBc)	Limit (dBc)	Verdict
NVNT	BLE	2402	Ant 1	-57.748	-30	Pass
NVNT	BLE	2480	Ant 1	-52.686	-30	Pass

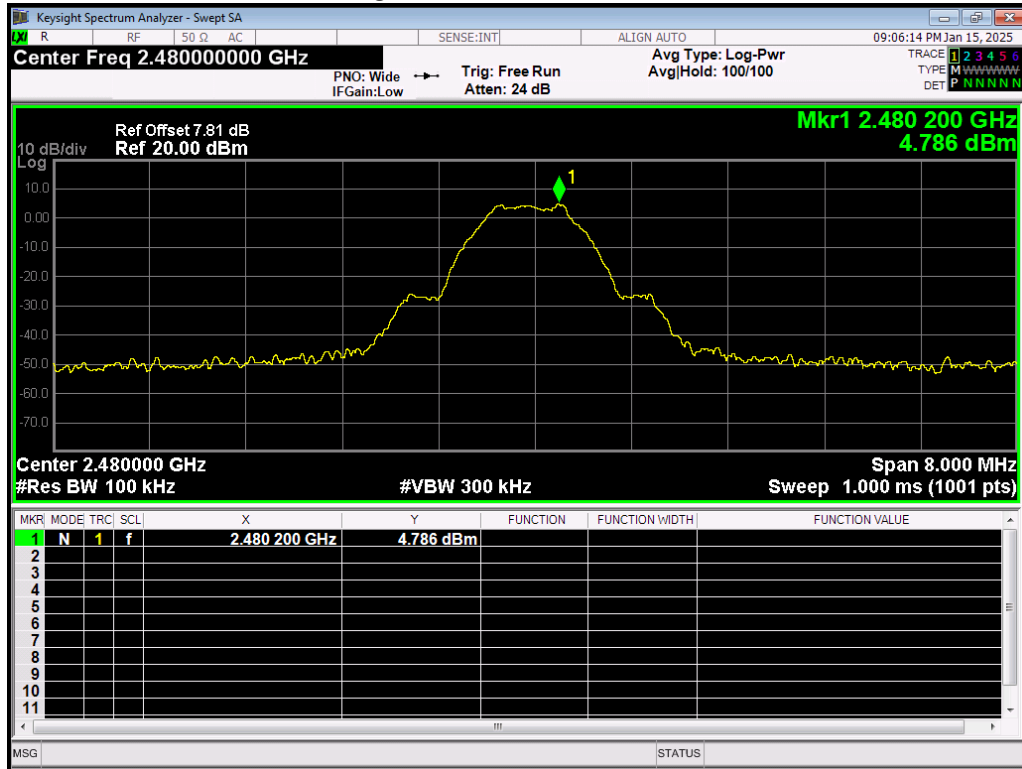
Band Edge NVNT BLE 2402MHz Ant1 Ref



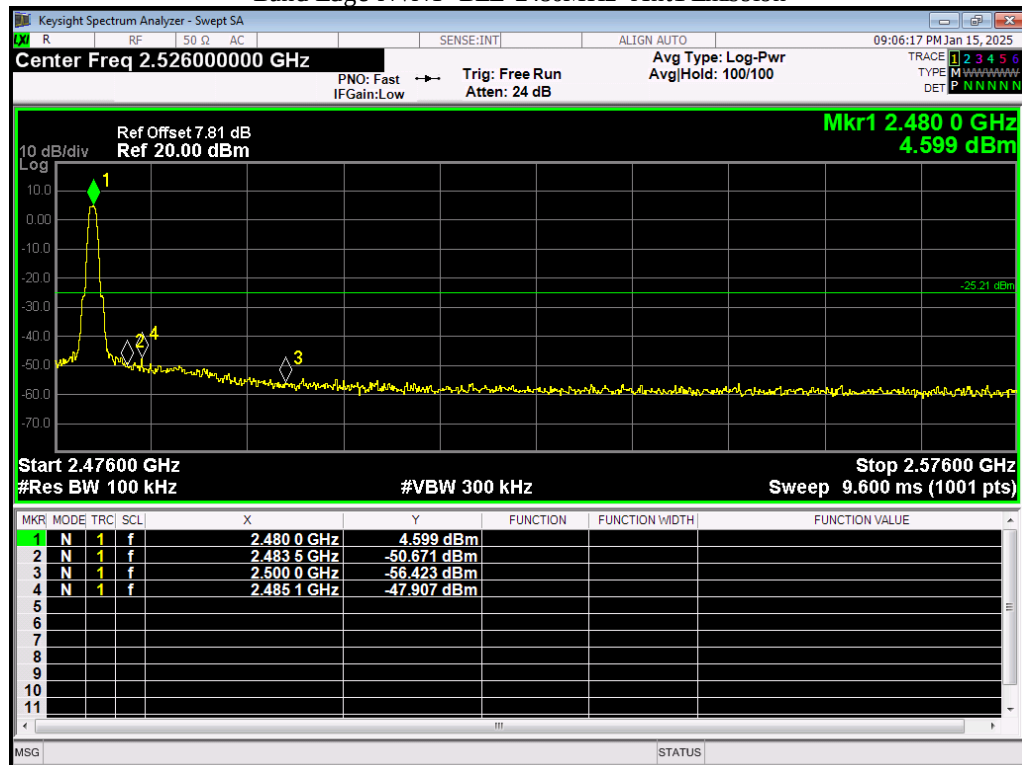
Band Edge NVNT BLE 2402MHz Ant1 Emission



Band Edge NVNT BLE 2480MHz Ant1 Ref



Band Edge NVNT BLE 2480MHz Ant1 Emission

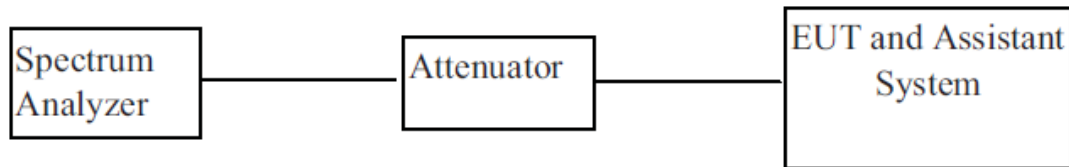


8. Conducted Spurious Emission

8.1. Test equipment

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1	MXA Signal Analyzer	KEYSIGHT	N9020A	MY54510476	2024/05/14	1 Year

8.2. BLOCK DIAGRAM OF TEST SETUP



8.3. Limit

In any 100 KHz Bandwidth Outside the frequency band in which the spread spectrum intentional radiator is operating, the radio frequency power that is produce by the intentional radiator shall be at least 20 dB below that in 100KHz bandwidth within the band that contains the highest level of the desired power.

In addition, radiation emissions 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)

8.4. Test Procedure

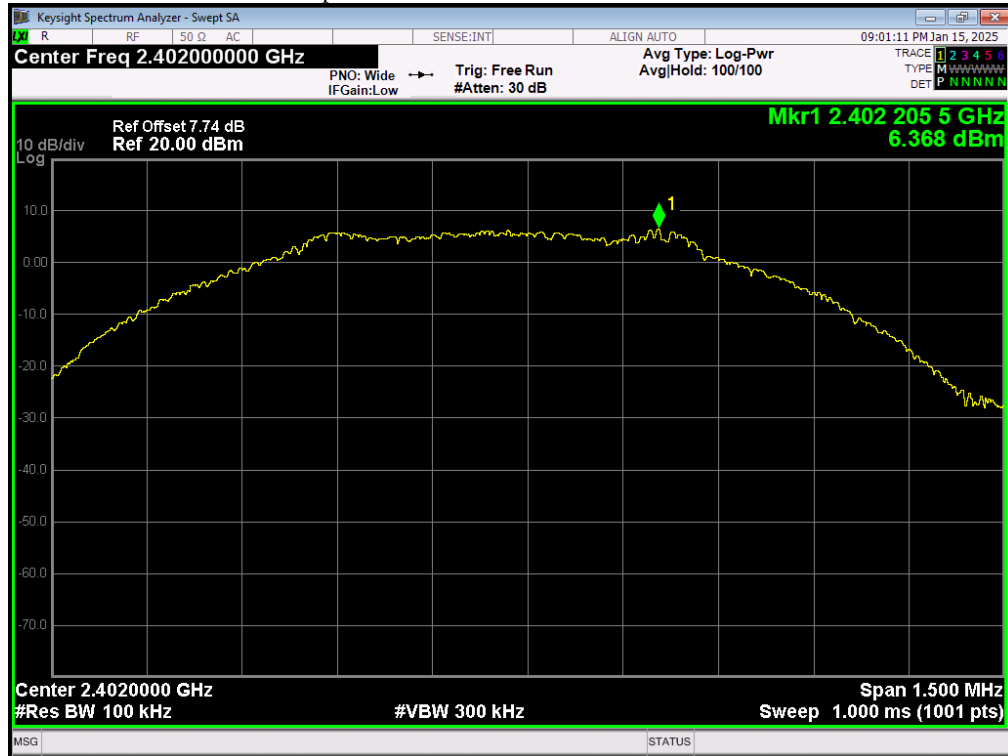
1. Connect EUT RF output port to the Spectrum Analyzer through an RF attenuator
- 2, Set the EUT Work on the top, the middle and the bottom operation frequency individually.
3. Set SPA Trace 1 Max hold, then View.

Note: The EUT was tested according to KDB 558074 for compliance to FCC 47CFR 15.247 requirements. Owing to satisfy the requirements of the number of measurement points, we set the RBW=1MHz, VBW > RBW, scan up through 10th harmonic, and consider the tested results as the worst case, if the tested results conform to the requirement, we can deem that the real tested results(set the RBW=100KHz, VBW > RBW) are conform to the requirement.

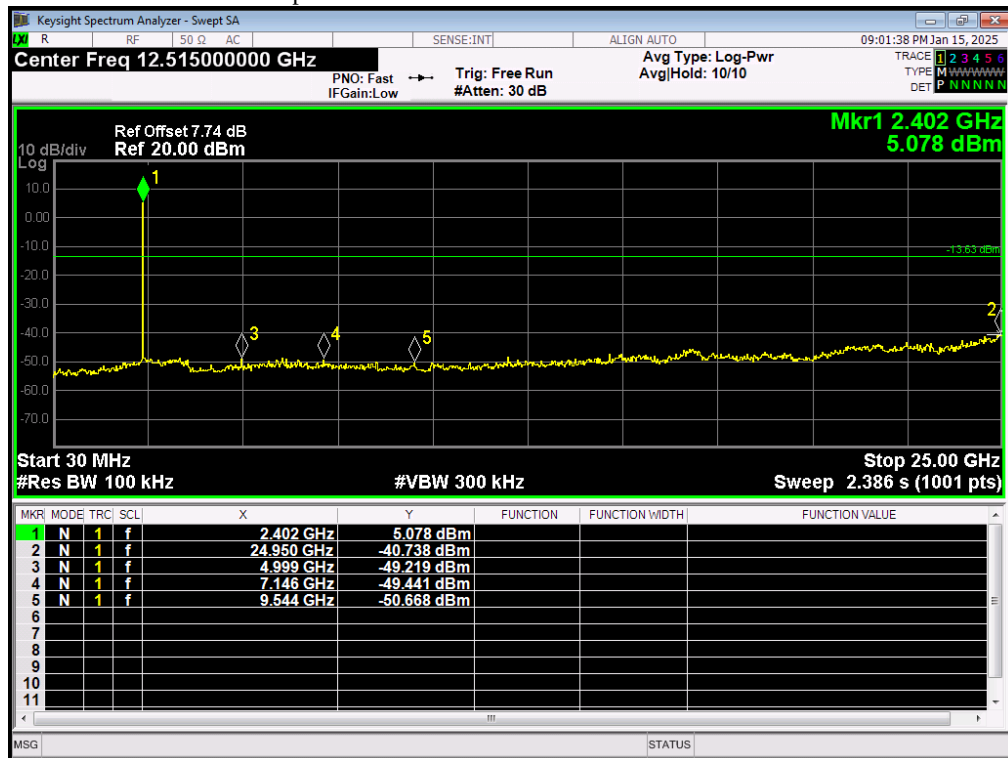
8.5. Test result

Condition	Mode	Frequency (MHz)	Antenna	Max Value (dBc)	Limit (dBc)	Verdict
NVNT	BLE	2402	Ant 1	-47.098	-30	Pass
NVNT	BLE	2440	Ant 1	-46.297	-30	Pass
NVNT	BLE	2480	Ant 1	-44.637	-30	Pass

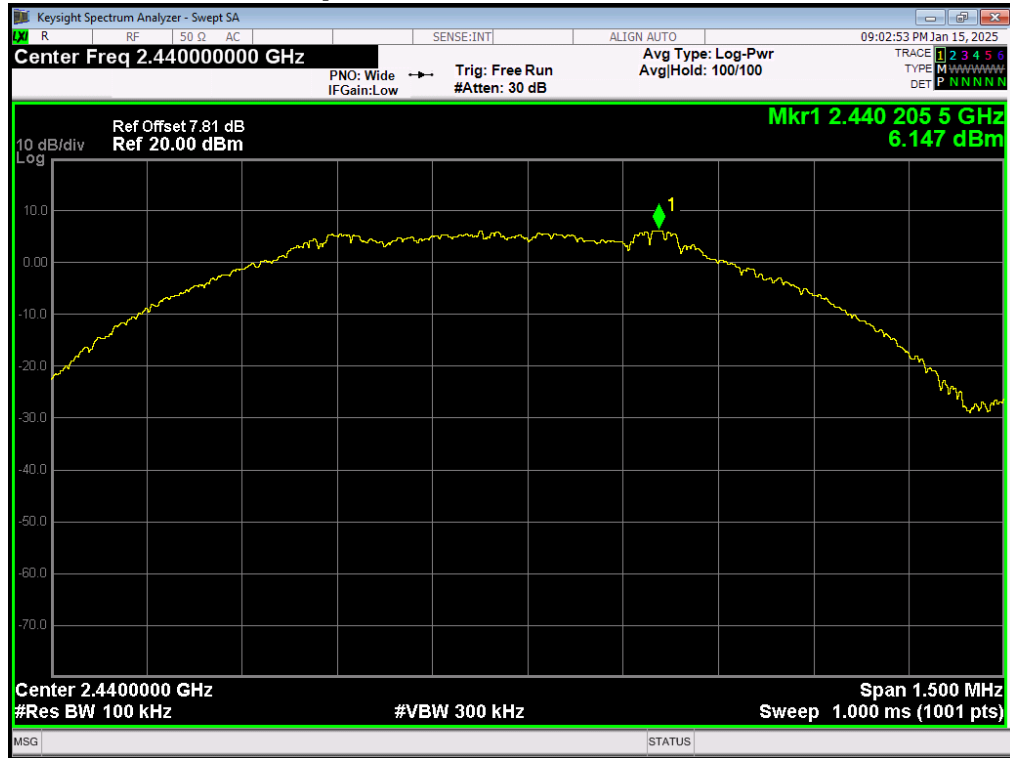
Tx Spurious NVNT BLE 2402MHz Ant1 Ref



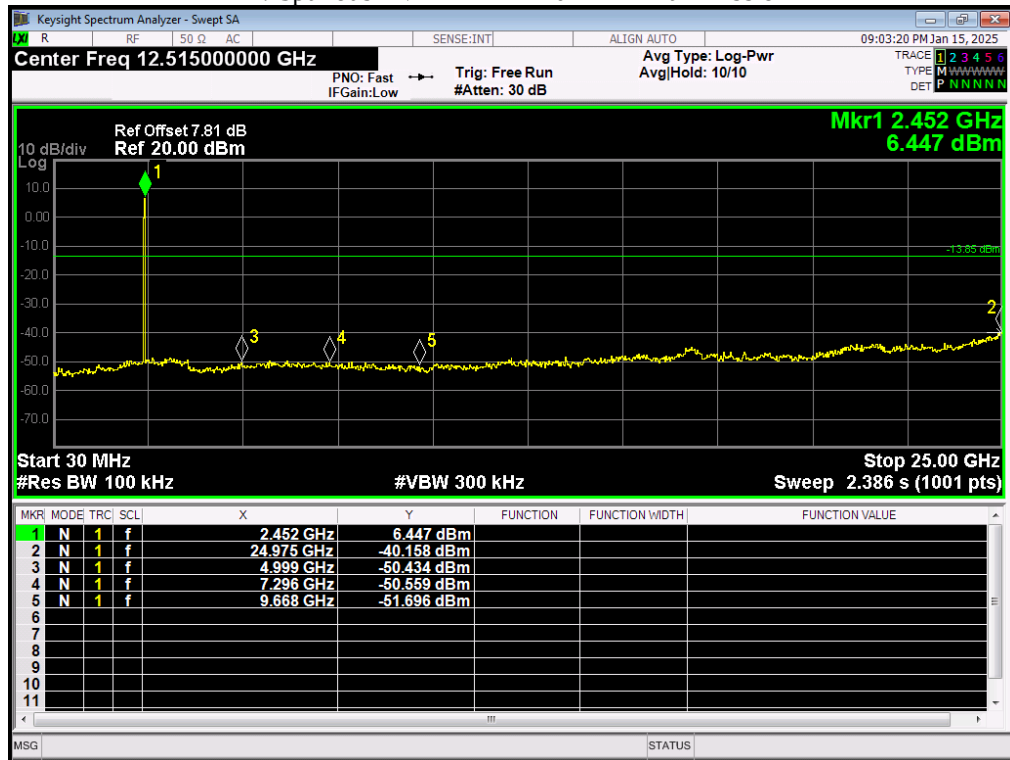
Tx Spurious NVNT BLE 2402MHz Ant1 Emission



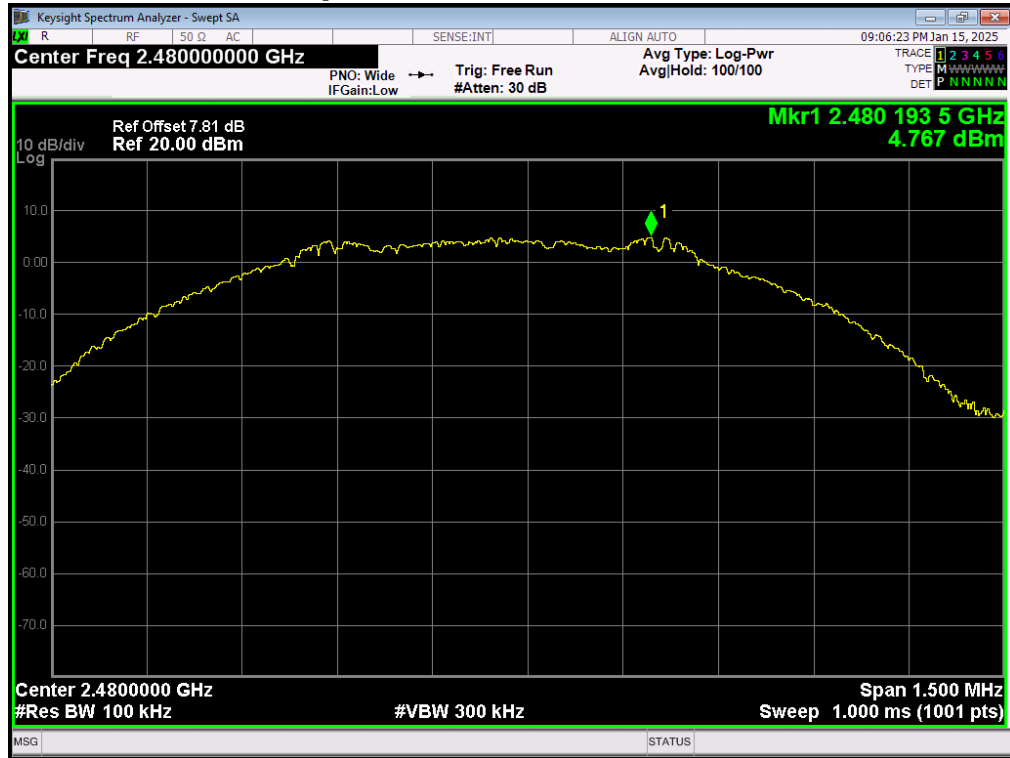
Tx. Spurious NVNT BLE 2440MHz Ant1 Ref



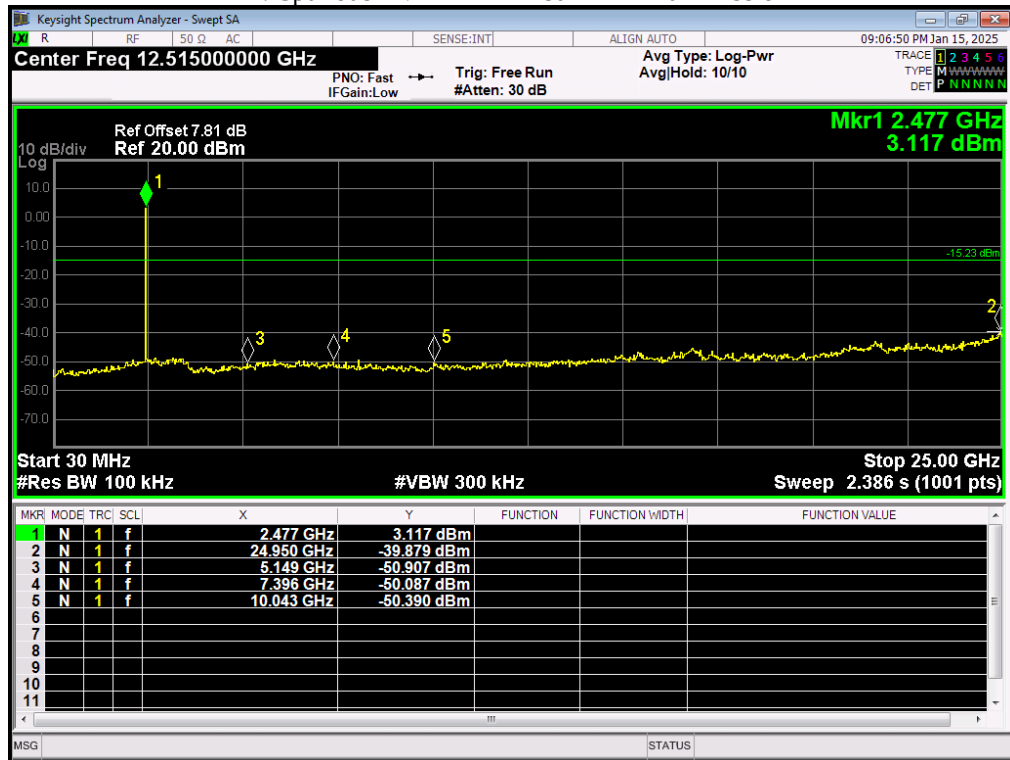
Tx. Spurious NVNT BLE 2440MHz Ant1 Emission



Tx. Spurious NVNT BLE 2480MHz Ant1 Ref



Tx. Spurious NVNT BLE 2480MHz Ant1 Emission

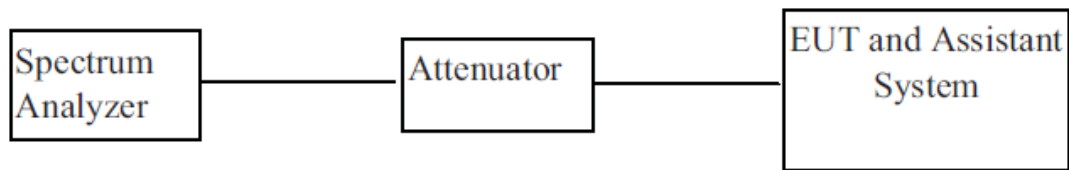


9. Conducted Output Power Spectral Density

9.1. Test equipment

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1	MXA Signal Analyzer	KEYSIGHT	N9020A	MY54510476	2024/05/14	1 Year

9.2. Block diagram of test setup



9.3. Limit

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.

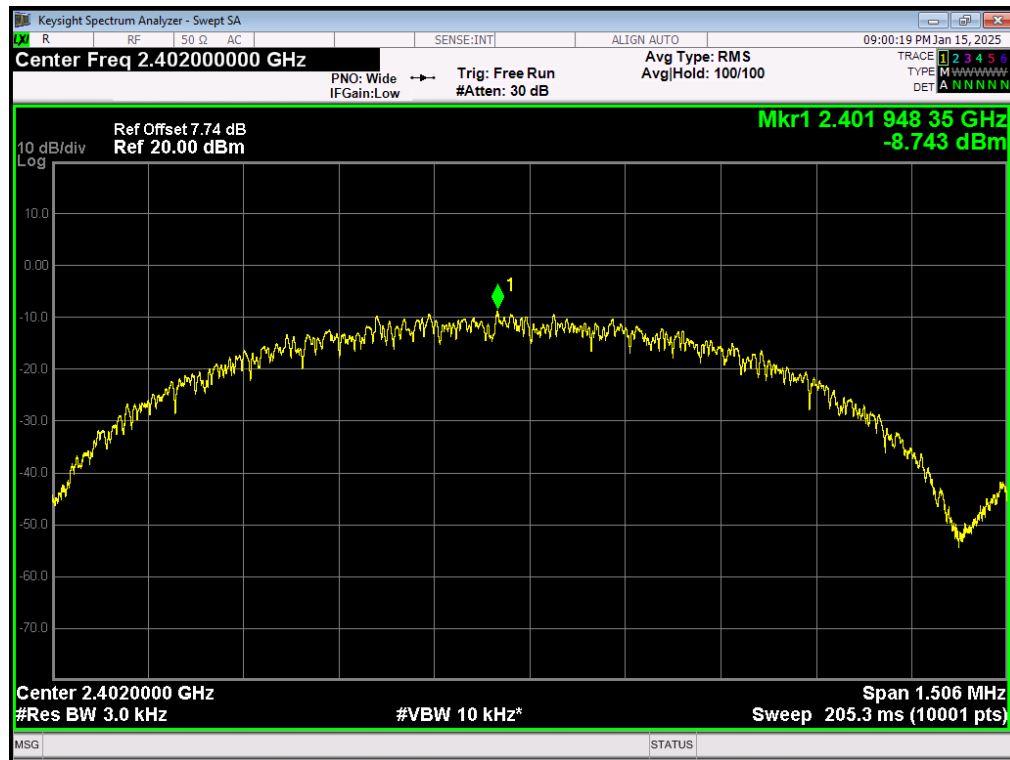
9.4. Test Procedure

- (1). Connect EUT RF output port to the Spectrum Analyzer through an RF attenuator
- (2). Set the EUT Work on the top, the middle and the bottom operation frequency individually.
- (3). Set SPA Trace 1 Max hold, then View.

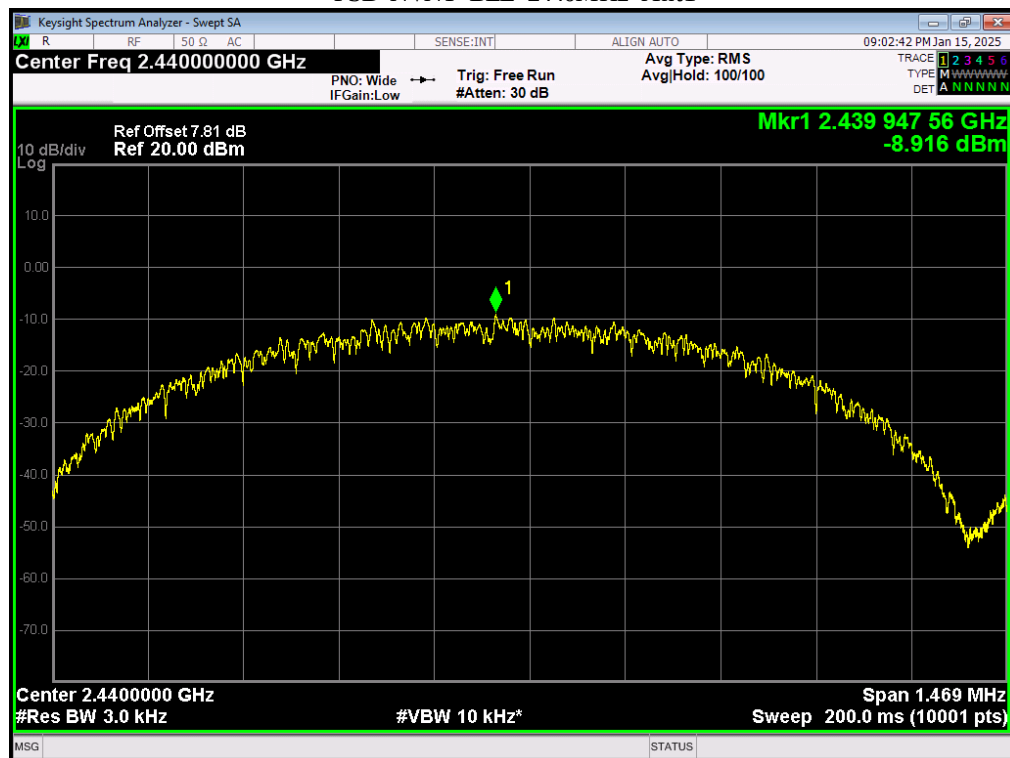
9.5. Test result

Condition	Mode	Frequency (MHz)	Antenna	Max PSD (dBm/3kHz)	Limit (dBm/3kHz)	Verdict
NVNT	BLE	2402	Ant 1	-8.743	8	Pass
NVNT	BLE	2440	Ant 1	-8.916	8	Pass
NVNT	BLE	2480	Ant 1	-10.029	8	Pass

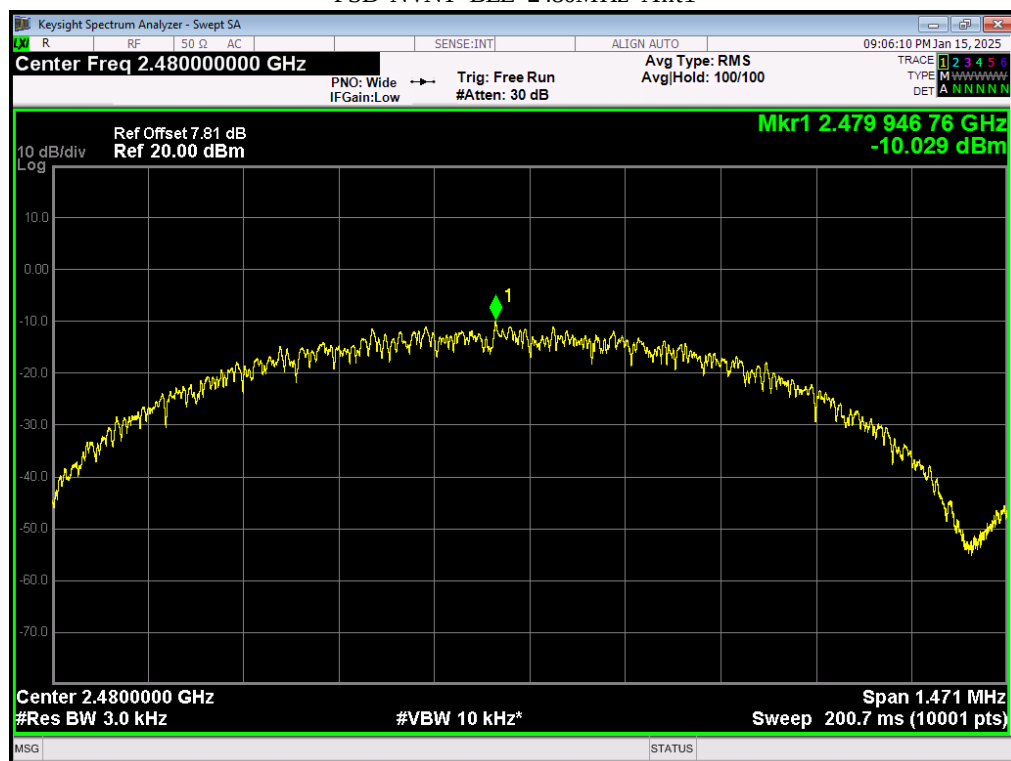
PSD NVNT BLE 2402MHz Ant1



PSD NVNT BLE 2440MHz Ant1



PSD NVNT BLE 2480MHz Ant1



10. Antenna Requirement

10.1. Standard requirement

15.203 requirement: For intentional device, according to 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.

15.247(c) (1)(i) requirement: (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.

10.2. EUT Antenna

The antenna is Integral Antenna and no consideration of replacement. Antenna gain is Maximum 2.21dBi from 2.4GHz to 2.5GHz.

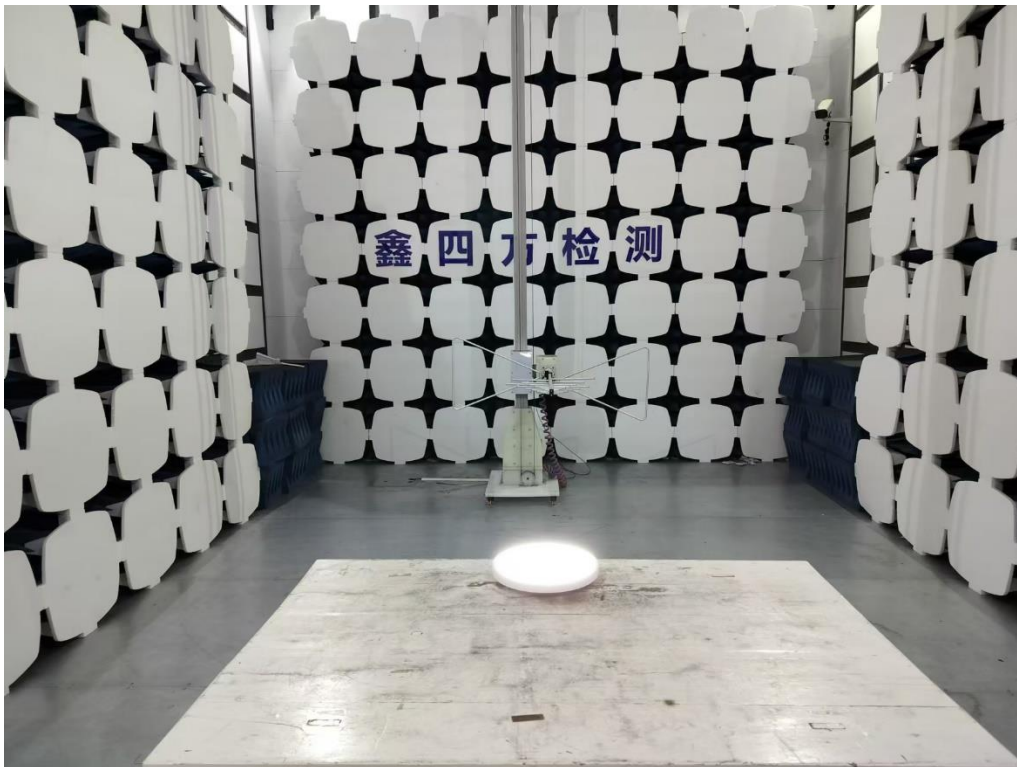
11. Test setup photograph

11.1. Photos of power line conducted emission test



11.2. Photos of radiated emission test

30MHz – 1GHz

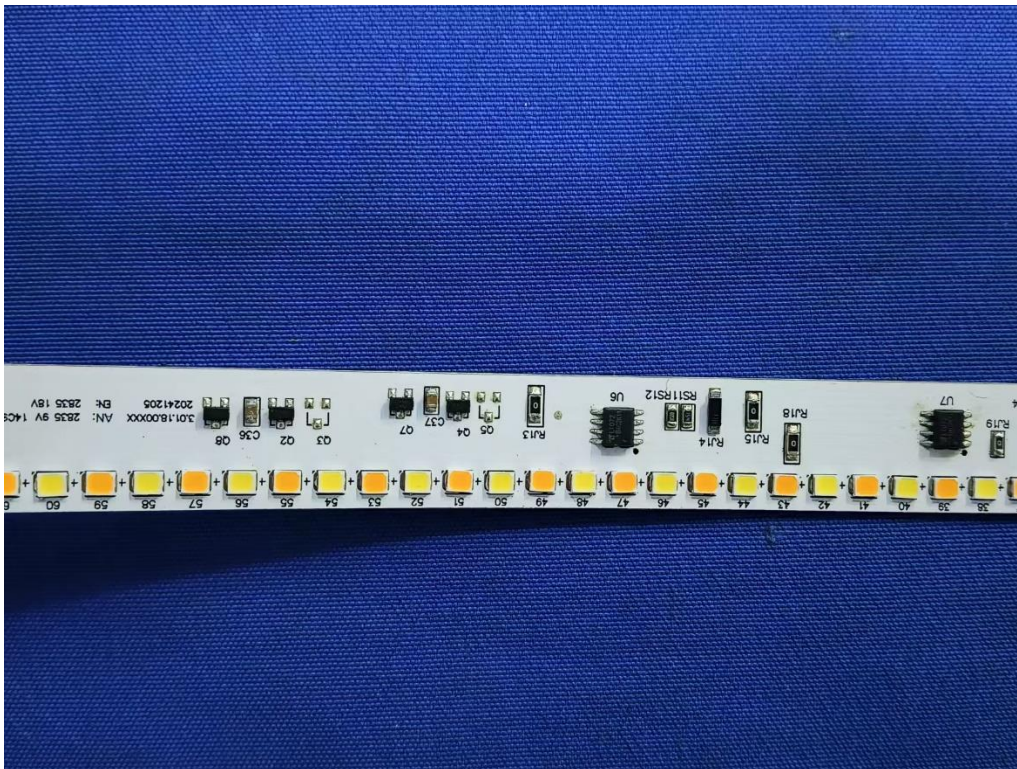
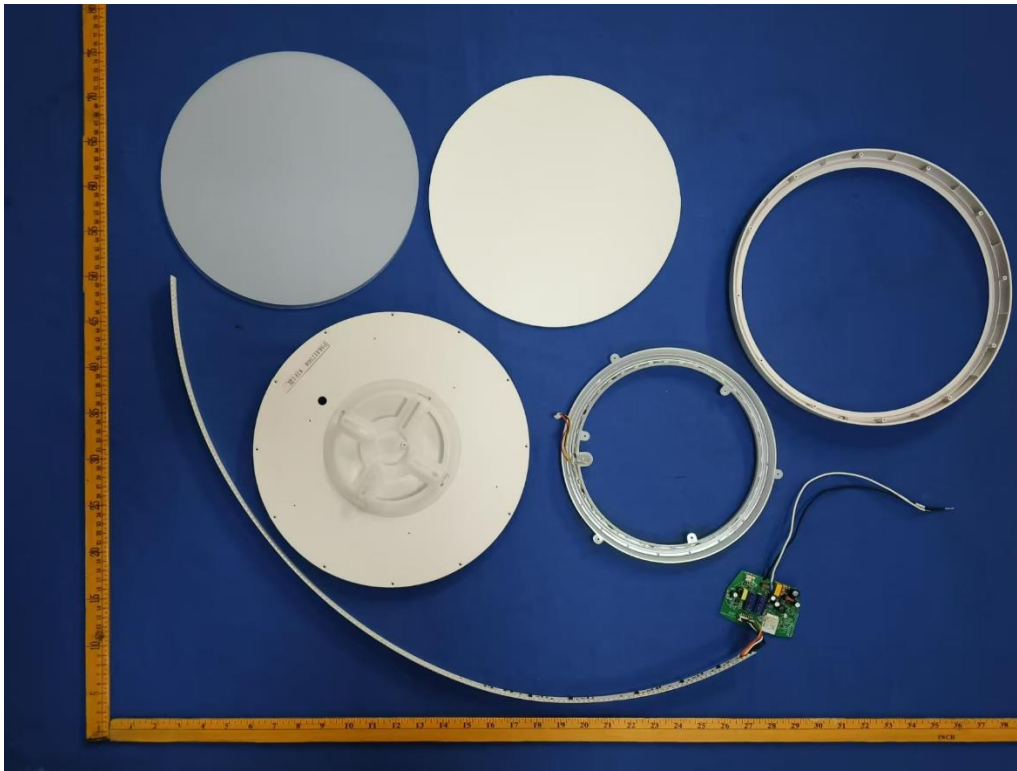


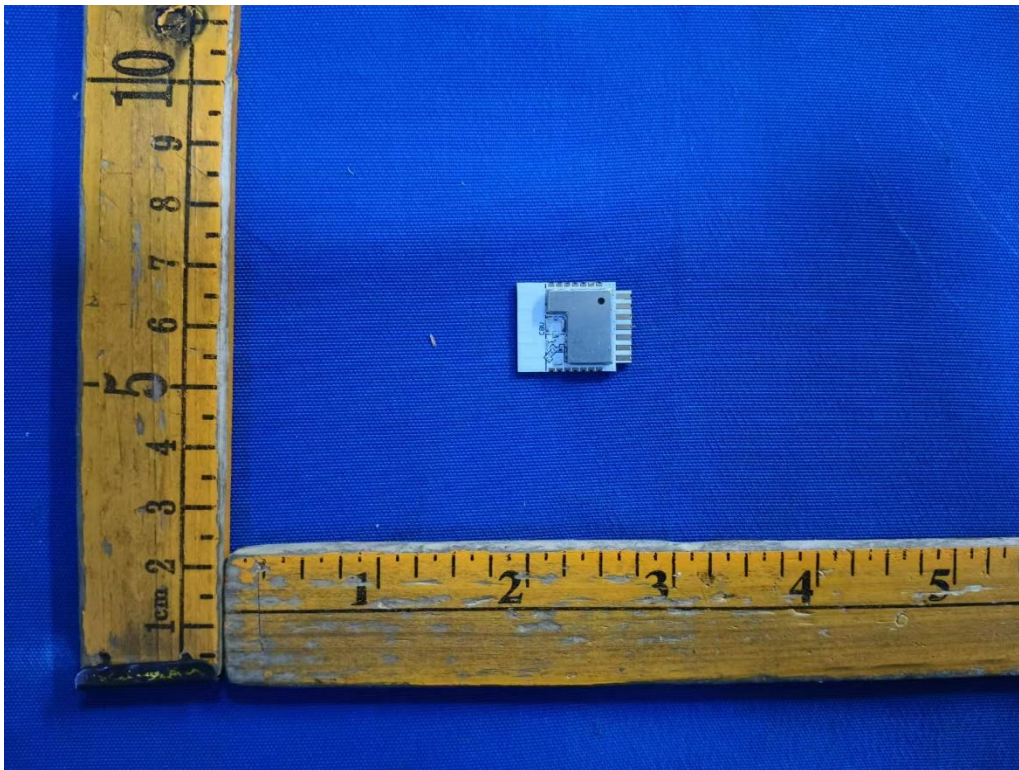
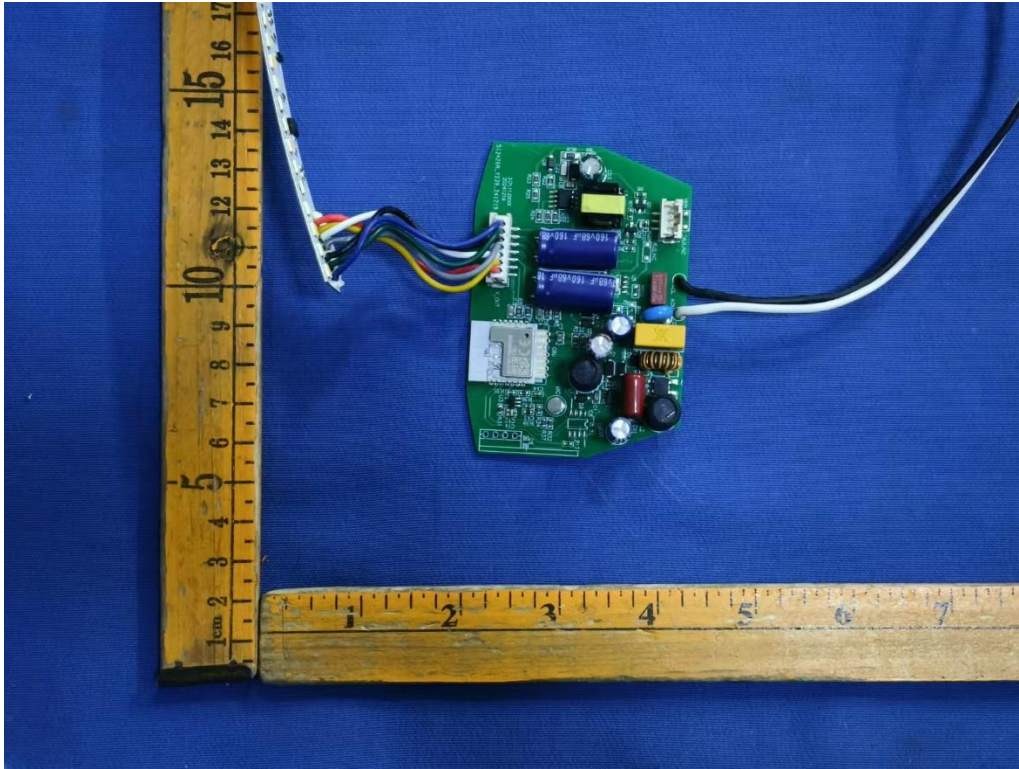
Above 1GHz

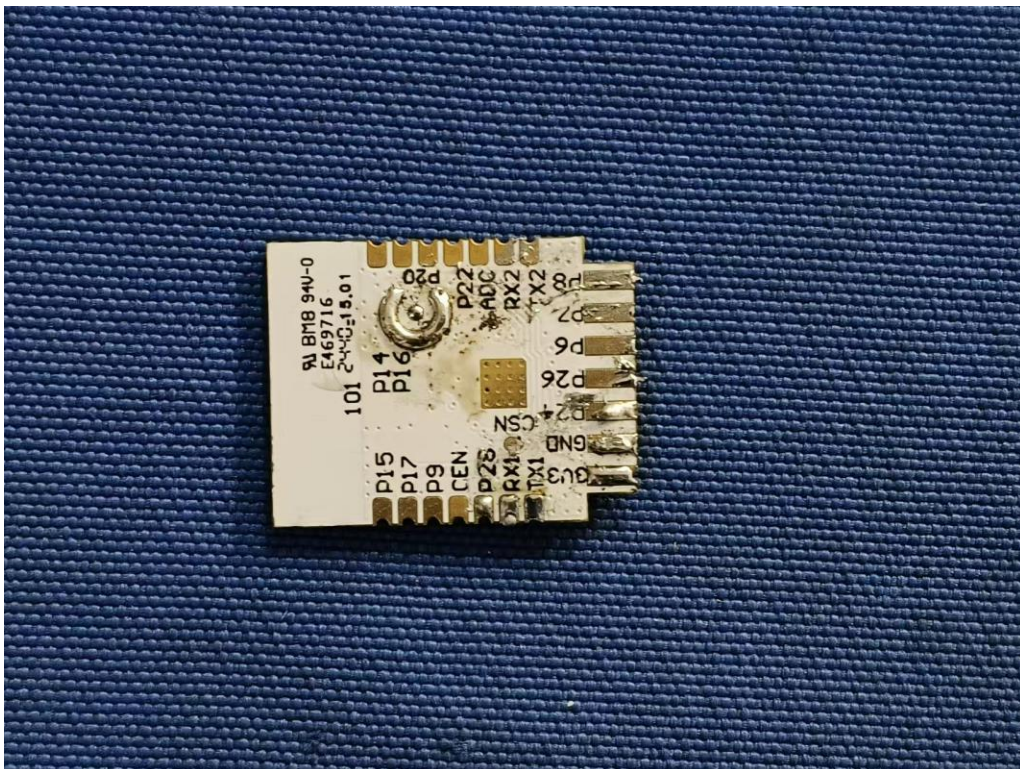
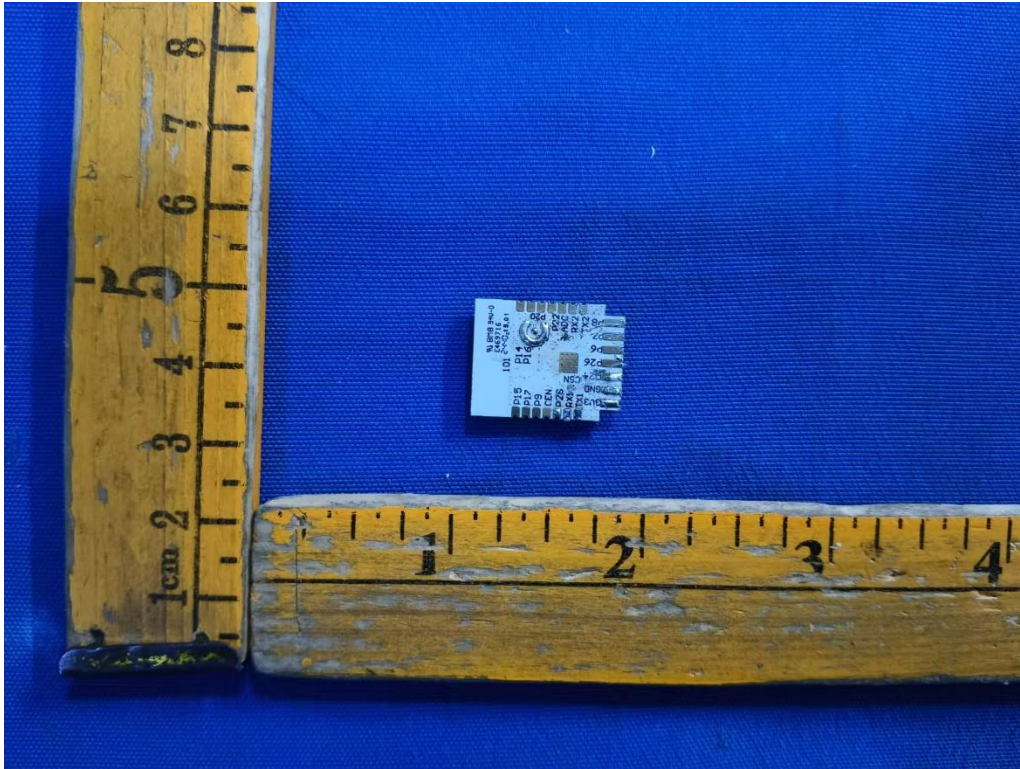


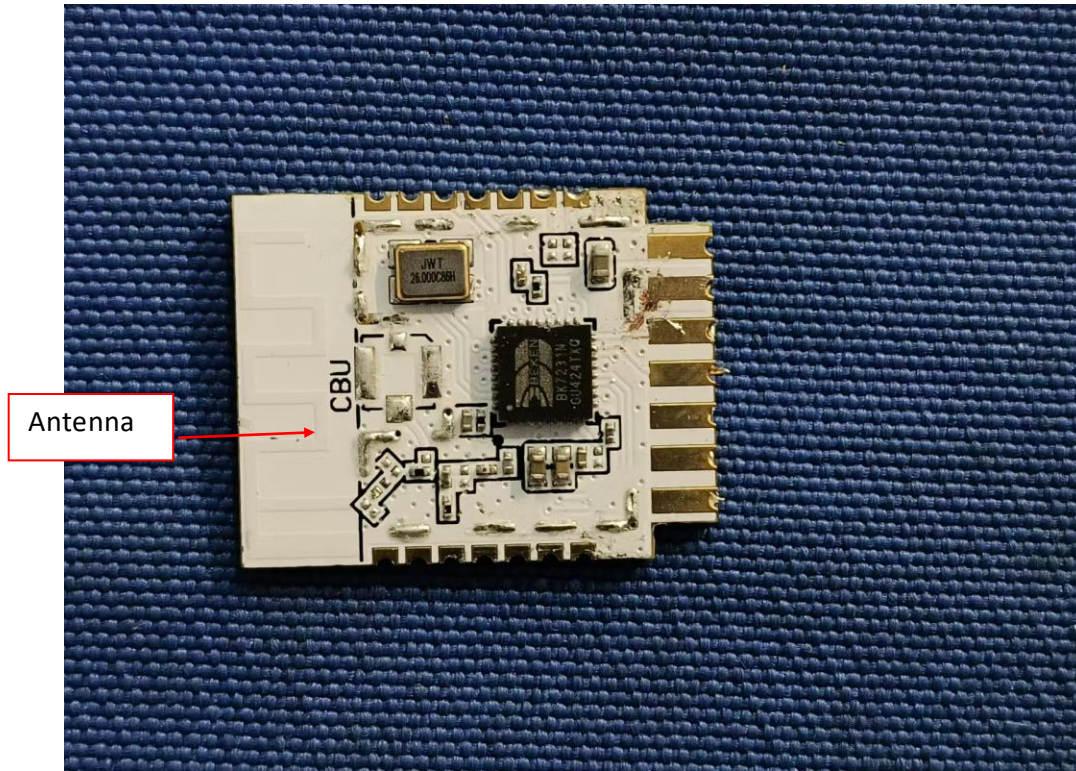
12. Photos of the EUT











--END OF REPORT--