TEST REPORT

Product Name : Wireless Earphones
Model Number : M2430E1
FCC ID : 2AFZZM2430E1

Prepared for	:	Xiaomi Communications Co., Ltd.
Address	:	#019, 9th Floor, Building 6, 33 Xi' erqi Middle Road, Haidian District, Beijing, China, 100085
Prepared by	:	EMTEK (SHENZHEN) CO., LTD.
Address	:	Building 69, Majialong Industry Zone, Nanshan District, Shenzhen, Guangdong, China Tel: (0755) 26954280 Fax: (0755) 26954282
Report Number	:	ENS2406280291W00902R
Date(s) of Tests	:	July 16, 2024 to July 27, 2024
Date of issue	:	July 29, 2024

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1 TEST RESULT CERTIFICATION

Applicant	:	Xiaomi Communications Co., Ltd.
Address	:	#019, 9th Floor, Building 6, 33 Xi' erqi Middle Road, Haidian District, Beijing, China, 100085
Manufacturer	:	Xiaomi Communications Co., Ltd.
Address	:	#019, 9th Floor, Building 6, 33 Xi' erqi Middle Road, Haidian District, Beijing, China, 100085
EUT	:	Wireless Earphones
Model No.	:	M2430E1
Trade Mark	:	Redmi

Measurement Procedure Used:

APPLICABLE STANDARDS	
STANDARD	**TEST RESULT**
FCC 47 CFR Part 2 , Subpart J FCC 47 CFR Part 15, Subpart C	**PASS**

The above equipment was tested by EMTEK(SHENZHEN) CO., LTD. The test data, data evaluation, test procedures, and equipment configurations shown in this report were made in accordance with the procedures given in ANSI C63.10 (2013) and the energy emitted by the sample EUT tested as described in this report is in compliance with the requirements of FCC Rules Part 2 and Part 15.247

The test results of this report relate only to the tested sample identified in this report

Date of Test : July 16, 2024 to July 27, 2024

Prepared by : Una Yu/Editor

Reviewer : Joe Xia/Supervisor

Approved & Authorized Signer : Lisa Wang/Manager

Modified Information

Version	Report No.	Revision Date	Summary
Ver.1.0	ENS2406280291W00902R	/	Original Report

2 EUT TECHNICAL DESCRIPTION

Product Name:	Wireless Earphones
Model Number:	M2430E1
Test Sample S/N:	N/A
Variant Number:	N/A
Bluetooth Version:	Bluetooth V5.3
Hardware Version:	V2
Software Version:	1.0.0.5
Power level setting:	BLE 1M/BLE 2M=56/56
Device Type:	Bluetooth-LE1M/2M
Modulation:	GFSK for Bluetooth-LE1M/2M;
Frequency Range:	2402-2480MHz for Bluetooth-LE1M 2404-2478MHz for Bluetooth-LE2M
Number of Channels:	40 Channels for Bluetooth-LE1M 38 Channels for Bluetooth-LE2M
Antenna:	FPC Antenna
Antenna Gain:	-2.7 dBi (Note: The antenna information is provided by the customers, which will have a certain impact on the test results.)
Power Supply:	Charging Port: Type-C Earbuds Input: 5 V 160mA Earbuds working voltage: 3.85V 54mA Charging Case Input: 5 V 600mA Charging Case Output: 5 V 320mA
Temperature Range:	0°C ~ 45°C

Note: for more details, please refer to the User's manual of the EUT.

The device configuration is as follows

Earbuds	Supplier No.1	Note:Supplier No.1 and Supplier No.2, Except for some battery parameters are different, the hardware and components are the same, but the supplier is different.
	Supplier No.2	
Charging Case	Supplier No.1	
	Supplier No.2	
Note:Supplier No.1 and Supplier No.2, The radio frequency is not affected. We only tested Supplier No.1		

3 SUMMARY OF TEST RESULT

FCC Part Clause	Test Parameter	Verdict	Remark
15.247(a)(2)	DTS (6dB) Bandwidth	PASS	
15.247(b)(3)	Maximum Peak Conducted Output Power	PASS	
15.247(e)	Maximum Power Spectral Density Level	PASS	
15.247(d)	Unwanted Emission Into Non-Restricted Frequency Bands	PASS	
15.247(d) 15.209	Unwanted Emission Into Restricted Frequency Bands (conducted)	PASS	
15.247(d) 15.209	Radiated Spurious Emission	PASS	
15.207	Conducted Emission Test	PASS	
15.247(b)	Antenna Application	PASS	
NOTE1: N/A (Not Applicable) NOTE2: According to FCC OET KDB 558074, the report use radiated measurements in the restricted frequency bands. In addition, the radiated test is also performed to ensure the emissions emanating from the device cabinet also comply with the applicable limits.			

RELATED SUBMITTAL(S) / GRANT(S):

This submittal(s) (test report) is intended for FCC ID: 2AFZZM2430E1 filing to comply with Section 15.247 of the FCC Part 15, Subpart C Rules.

4 TEST METHODOLOGY

4.1 GENERAL DESCRIPTION OF APPLIED STANDARDS

According to its specifications, the EUT must comply with the requirements of the following standards:
FCC 47 CFR Part 2, Subpart J
FCC 47 CFR Part 15, Subpart C
FCC KDB 558074 D01 15.247 Meas Guidance v05r02

4.2 MEASUREMENT EQUIPMENT USED

For Conducted Emission Test Equipment

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
EMI Test Receiver	Rohde & Schwarz	ESCI	101384	2024/5/11	1Year
AMN	Rohde & Schwarz	ENV216	101161	2024/5/10	1Year
AMN	Kyoritsu	KNW-407	8-1492-9	2024/5/11	1Year

For Spurious Emissions Test

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
Pre-Amplifier	Bonn	BLMA 011001N	2213967A	2023/10/23	1Year
EMI Test Receiver	Rohde & Schwarz	ESR7	102551	2023/10/23	1Year
Bilog Antenna	Schwarzbeck	VULB9163	9163142	2024/7/8	2Year
Horn antenna	Schwarzbeck	BBHA9120D	9120D-1198	2023/6/2	2Year
Pre-Amplifier	Bonn	BLMA 0118-5G	2213967B-01	2023/10/23	1Year
Spectrum Analyzer	Rohde & Schwarz	FSV3044	101290	2023/10/23	1Year
Horn antenna	Schwarzbeck	BBHA9170	9170-399	2024/5/11	2Year
Pre-Amplifier	Lunar EM	LNA18G26-40	J1012131010001	2024/5/11	1Year
Pre-Amplifier	Lunar EM	LNA26G40-40	J1013131028001	2024/5/11	1Year
Loop Antenna	Schwarzbeck	FMZB1519	1519-012	2023/5/12	2Year

For other test items:

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
Signal Analyzer	Agilent	N9010A	MY53470879	2024/5/10	1Year
Vector Signal Generater	Agilent	N5182B	MY53050878	2024/5/10	1Year
Analog Signal Generator	Agilent	N5171B	MY53050553	2024/5/10	1Year
RF Control Unit(Power Meter)	Tonscend	JS0806-2	\	2024/5/10	1Year
Temperature&Humidity Chamber	ESPEC	EL-02KA	12107166	2024/5/10	1 Year

4.3 DESCRIPTION OF TEST MODES

The EUT has been tested under its typical operating condition.
The EUT configuration for testing is installed on RF field strength measurement to meet the Commissions requirement and operating in a manner which intends to maximize its emission characteristics in a continuous normal application.

The Transmitter was operated in the normal operating mode. The TX frequency was fixed which was for the purpose of the measurements.

Test of channel included the lowest and middle and highest frequency to perform the test, then record on this report.Those data rates (BLE :1Mbps and 2Mbps) were used for all test.

Pre-defined engineering program for regulatory testing used to control the EUT for staying in continuous transmitting and receiving mode is programmed.

Frequency and Channel list for BLE_1M:

Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
0	2402	19	2440	…	…
1	2404	20	2442	37	2476
2	2406	21	2444	38	2478
…	…	…	…	39	2480
Note: fc=2402MHz+k×2MHz k=0 to 39					

Frequency and Channel list for BLE_2M:

Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
		19	2440	…	…
1	2404	20	2442	37	2476
2	2406	21	2444	38	2478
…	…	…	…		
Note: fc=2402MHz+k×2MHz k=1 to 38					

Test Frequency and channel for BLE_1M:

Lowest Frequency		Middle Frequency		Highest Frequency	
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
0	2402	19	2440	39	2480

Test Frequency and channel for BLE_2M:

Lowest Frequency		Middle Frequency		Highest Frequency	
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
1	2404	19	2440	38	2478

TEST SOFTWARE

Item	Software
RF conducted:	ETSI Certification of Regulations Test Solution(V1.04.01)
Radiated Emission:	EMTEK(Ver.RA-03A1)-Shenzhen

5 FACILITIES AND ACCREDITATIONS

5.1 FACILITIES

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

Bldg 69, Majialong Industry Zone District, Nanshan District, Shenzhen, China
The sites are constructed in conformance with the requirements of ANSI C63.7, ANSI C63.10 and CISPR Publication 22.

5.2 LABORATORY ACCREDITATIONS AND LISTINGS

Site Description		
EMC Lab.	:	**Accredited by CNAS** The Certificate Registration Number is L2291 The Laboratory has been assessed and proved to be in compliance with CNAS-CL01 (identical to ISO/IEC 17025:2017) **Accredited by FCC** Designation Number: CN1204 Test Firm Registration Number: 882943 **Accredited by A2LA** The Certificate Number is 4321.01 **Accredited by Industry Canada** The Conformity Assessment Body Identifier is CN0008
Name of Firm	:	EMTEK (SHENZHEN) CO., LTD.
Site Location	:	Building 69, Majialong Industry Zone, Nanshan District, Shenzhen, Guangdong, China

6 TEST SYSTEM UNCERTAINTY

The following measurement uncertainty levels have been estimated for tests performed on the apparatus:

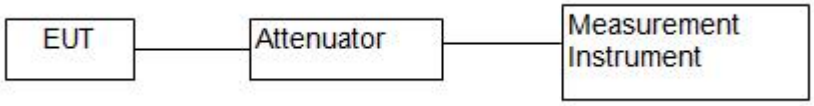
Test Parameter	Measurement Uncertainty
RF Output Power	±1.0%
Power Spectral Density	±0.9%
Duty Cycle and Tx-Sequence and Tx-Gap	±1.3%
Medium Utilisation Factor	±1.5%
Occupied Channel Bandwidth	±2.3%
Transmitter Unwanted Emission in the Out-of Band	±1.2%
Transmitter Unwanted Emissions in the Spurious Domain	±2.7%
Receiver Spurious Emissions	±2.7%
Temperature	±3.2%
Humidity	±2.5%

Measurement Uncertainty for a level of Confidence of 95%

7 SETUP OF EQUIPMENT UNDER TEST

7.1 RADIO FREQUENCY TEST SETUP 1

The BLE component's antenna ports(s) of the EUT are connected to the measurement instrument per an appropriate attenuator. The EUT is controlled by PC/software to emit the specified signals for the purpose of measurements.



7.2 RADIO FREQUENCY TEST SETUP 2

The test site semi-anechoic chamber has met the requirement of NSA tolerance 4 dB according to the standards: ANSI C63.10. The test distance is 3m.The setup is according to the requirements in Section 13.1.4.1 of ANSI C63.10-2013 and CAN/CSA-CEI/IEC CISPR 22.

Below 30MHz：

The EUT is placed on a turntable 0.8 meters above the ground in the chamber, 3 meter away from the antenna (loop antenna). The Antenna should be positioned with its plane vertical at the specified distance from the EUT and rotated about its vertical axis for maximum response at each azimuth about the EUT. The center of the loop shall be 1 m above the ground. For certain applications, the loop antenna plane may also need to be positioned horizontally at the specified distance from the EUT.

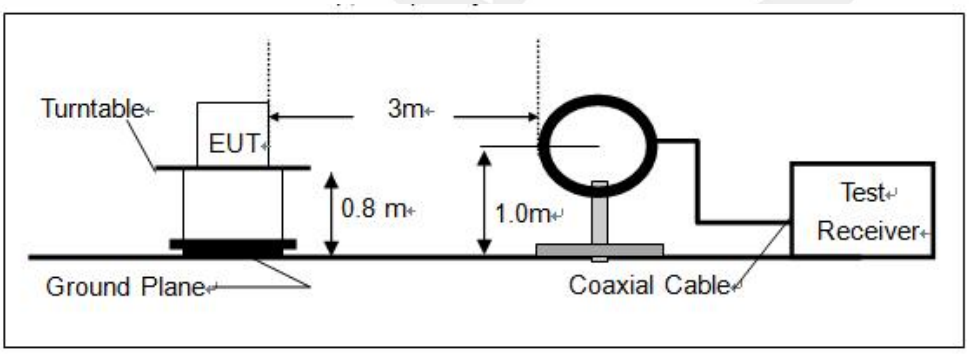
30MHz-1GHz：

The EUT is placed on a turntable 0.8 meters above the ground in the chamber, 3 meter away from the antenna. The maximal emission value is acquired by adjusting the antenna height, polarisation and turntable azimuth. Normally, the height range of antenna is 1 m to 4 m, the azimuth range of turntable is 0° to 360°, and the receive antenna has two polarizations Vertical (V) and Horizontal (H).

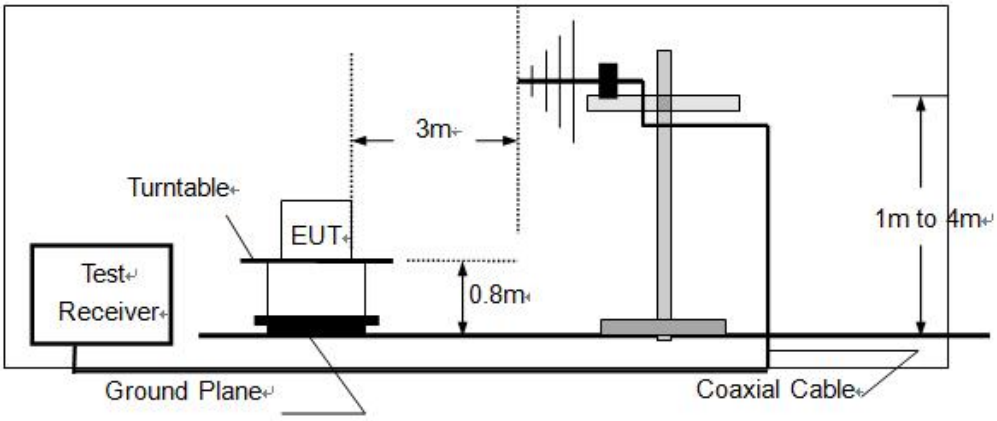
Above 1GHz：

The EUT is placed on a turntable 1.5 meters above the ground in the chamber, 3 meter away from the antenna. The maximal emission value is acquired by adjusting the antenna height, polarisation and turntable azimuth. Normally, the height range of antenna is 1 m to 4 m, the azimuth range of turntable is 0° to 360°, and the receive antenna has two polarizations Vertical (V) and Horizontal (H).

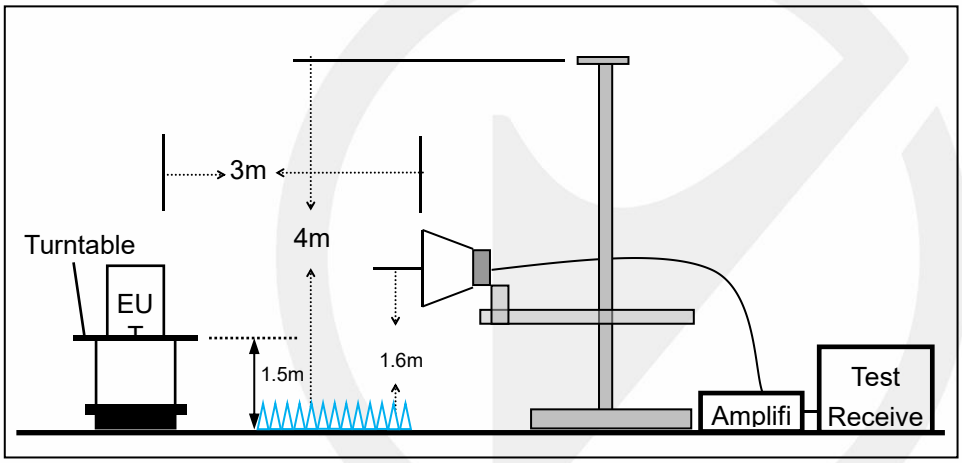
(a) Radiated Emission Test Set-Up, Frequency Below 30MHz



(b) Radiated Emission Test Set-Up, Frequency Below 1000MHz



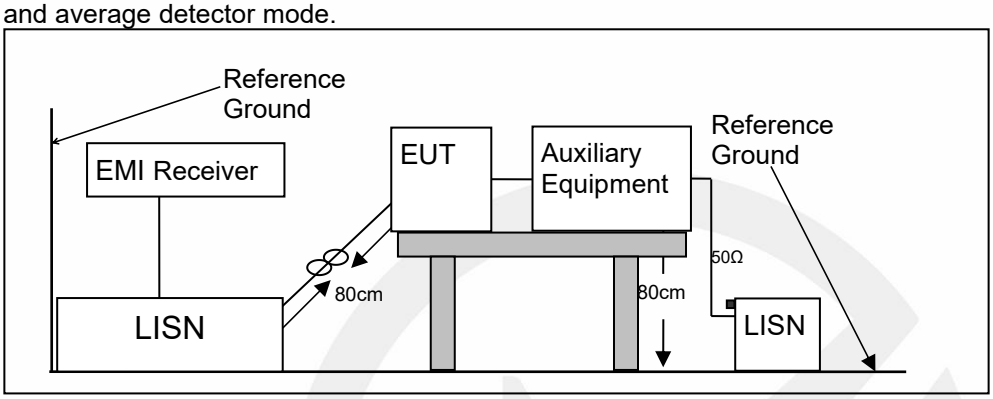
(c) Radiated Emission Test Set-Up, Frequency above 1000MHz



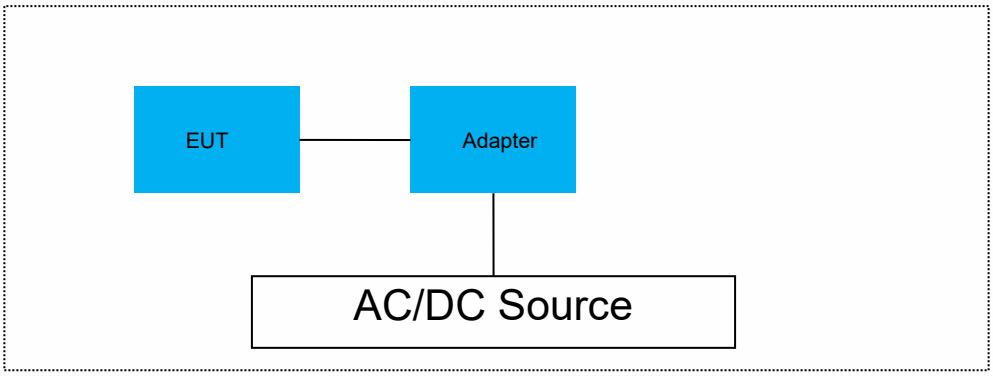
7.3 CONDUCTED EMISSION TEST SETUP

The mains cable of the EUT (maybe per AC/DC Adapter) must be connected to LISN. The LISN shall be placed 0.8 m from the boundary of EUT and bonded to a ground reference plane for LISN mounted on top of the ground reference plane. This distance is between the closest points of the LISN and the EUT. All other units of the EUT and associated equipment shall be at least 0.8m from the LISN. Ground connections, where required for safety purposes, shall be connected to the reference ground point of the LISN and, where not otherwise provided or specified by the manufacturer, shall be of same length as the mains cable and run parallel to the mains connection at a separation distance of not more than 0.1 m.

According to the requirements in Section 13.1.4.1 of ANSI C63.10-2013 Conducted emissions from the EUT measured in the frequency range between 0.15 MHz and 30 MHz using CISPR Quasi-Peak and average detector mode.



7.4 BLOCK DIAGRAM CONFIGURATION OF TEST SYSTEM



7.5 SUPPORT EQUIPMENT

Adapter : Manufacturer: HONOR
M/N: HN-200325CP1
CE, FCC

USB Cable : Manufacturer: Cosonic
M/N: /
CE, FCC

Notes:

1.All the equipment/cables were placed in the worst-case configuration to maximize the emission during the test.

2.Grounding was established in accordance with the manufacturer's requirements and conditions for the intended use.

8 TEST REQUIREMENTS

8.1 DTS 6DB BANDWIDTH

8.1.1 Applicable Standard

According to FCC Part 15.247(a)(2) and KDB 558074 D01 15.247 Meas Guidance v05r02

8.1.2 Conformance Limit

The minimum -6 dB bandwidth shall be at least 500 kHz.

8.1.3 Test Configuration

Test according to clause 7.1 radio frequency test setup 1

8.1.4 Test Procedure

The EUT was operating in BLE mode and controlled its channel. Printed out the test result from the spectrum by hard copy function.
The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator. The path loss was compensated to the results for each measurement.
Set to the maximum power setting and enable the EUT transmit continuously
Set RBW = 100 kHz.
Set the video bandwidth (VBW) =300 kHz.
Set Span=2 times OBW
Set Detector = Peak.
Set Trace mode = max hold.
Set Sweep = auto couple.
Allow the trace to stabilize.
Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission.
Measure and record the results in the test report.

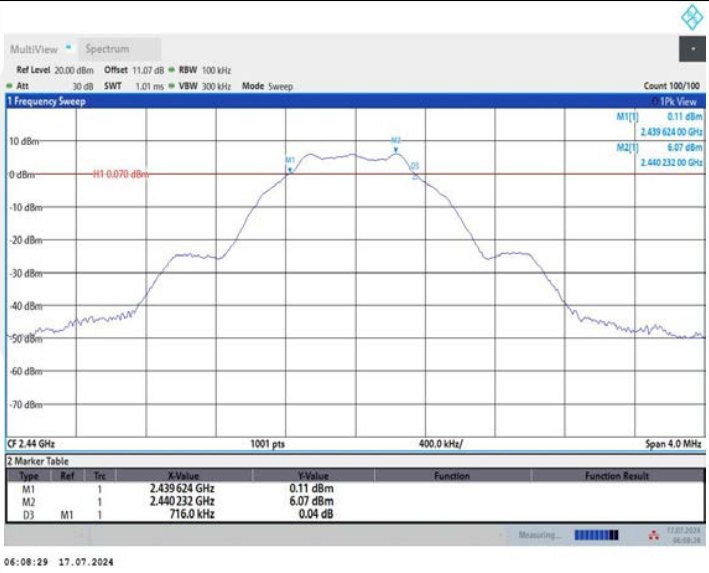
8.1.5 Test Results

Temperature:	25° C
Relative Humidity:	45%
ATM Pressure:	1011 mbar

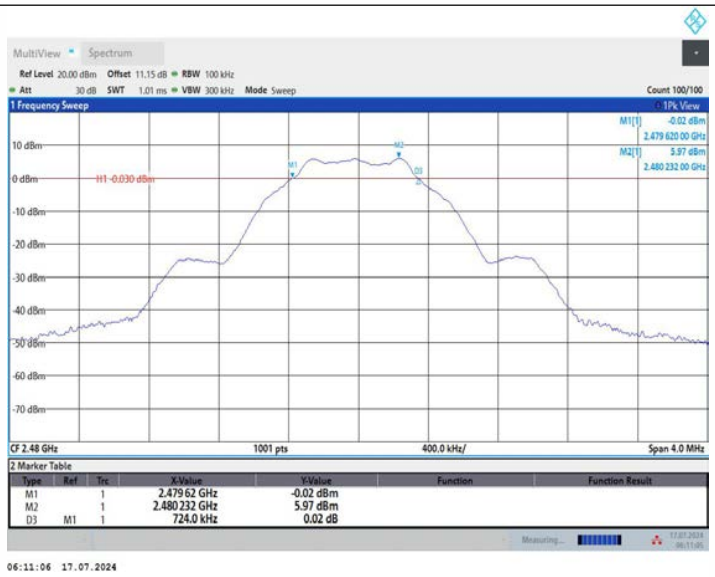
TestMode	Antenna	Frequency[MHz]	DTS BW [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
BLE_1M	Ant1	2402	0.72	2401.62	2402.34	≥0.5	PASS
		2440	0.72	2439.62	2440.34	≥0.5	PASS
		2480	0.72	2479.62	2480.34	≥0.5	PASS
BLE_2M	Ant1	2404	1.26	2403.33	2404.59	≥0.5	PASS
		2440	1.25	2439.34	2440.59	≥0.5	PASS
		2478	1.25	2477.34	2478.59	≥0.5	PASS

BLE_1M_Ant1_2402

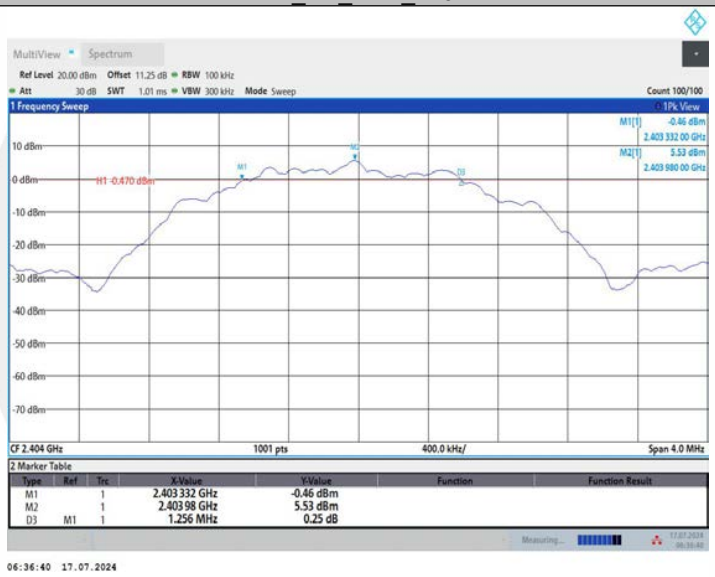
BLE_1M_Ant1_2440



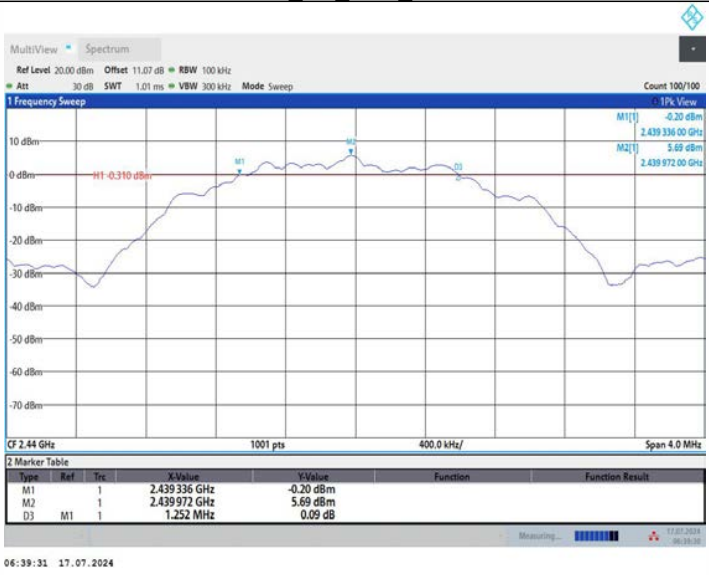
BLE_1M_Ant1_2480



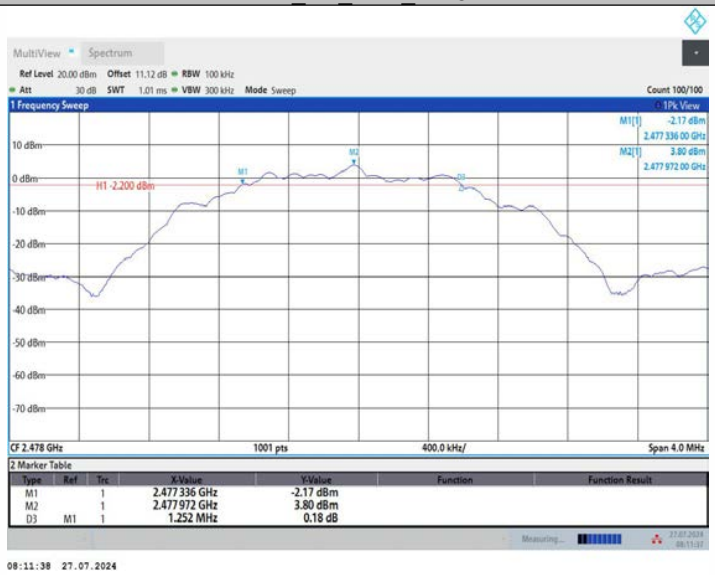
BLE_2M_Ant1_2404



BLE_2M_Ant1_2440



BLE_2M_Ant1_2478



8.2 DTS 99%BANDWIDTH

8.2.1 Applicable Standard

According to RSS-Gen6.7 and KDB 558074 D01 DTS Meas Guidance v05r02

8.2.2 Test Configuration

Test according to clause 7.1 radio frequency test setup 1

8.2.3 Test Procedure

The EUT was operating inBluetooth mode and controlled its channel. Printed out the test result from the spectrum by hard copy function.
The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator. The path loss was compensated to the results for each measurement.
Set to the maximum power setting and enable the EUT transmit continuously
Set RBW = 1%-5% OBW(43KHz).
Set the video bandwidth (VBW) =130kHz.
Set Span=4MHz
Set Detector = Peak.
Set Trace mode = max hold.
Set Sweep = auto couple.
Allow the trace to stabilize.
Use the 99 % power bandwidth function of the instrument
Measure the maximum width of the emission.
Measure and record the results in the test report.

8.2.4 Test Results

Temperature:	25˚C
Relative Humidity:	45%
ATM Pressure:	1011 mbar

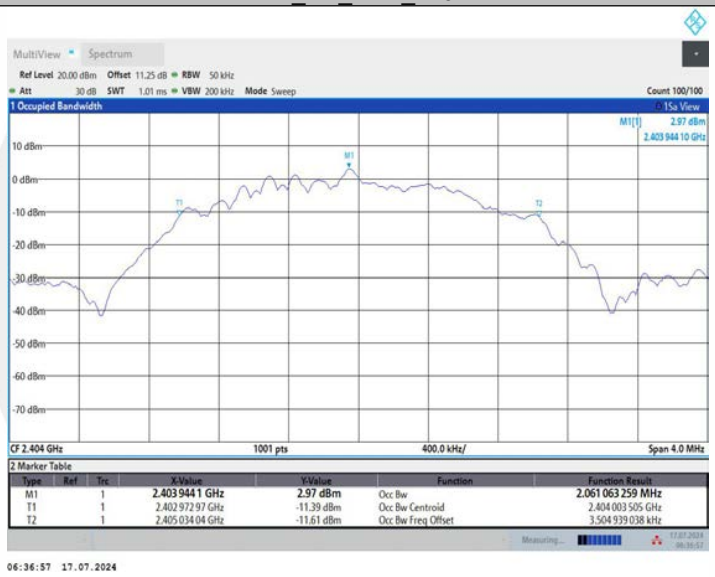
TestMode	Antenna	Frequency[MHz]	OCB [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
BLE_1M	Ant1	2402	1.035	2401.4761	2402.5114	---	---
		2440	1.036	2439.4749	2440.5106	---	---
		2480	1.035	2479.4748	2480.5101	---	---
BLE_2M	Ant1	2404	2.061	2402.9730	2405.0340	---	---
		2440	2.061	2438.9725	2441.0337	---	---
		2478	2.064	2476.9688	2479.0332	---	---

BLE_1M_Ant1_2402

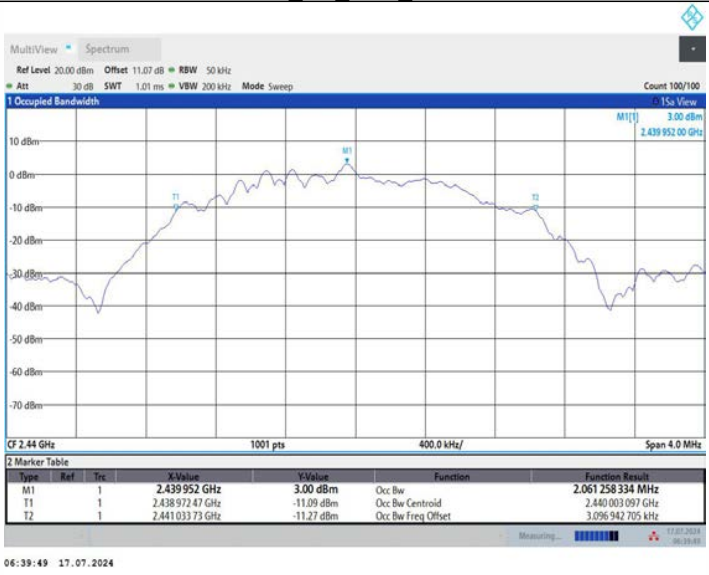
BLE_1M_Ant1_2440

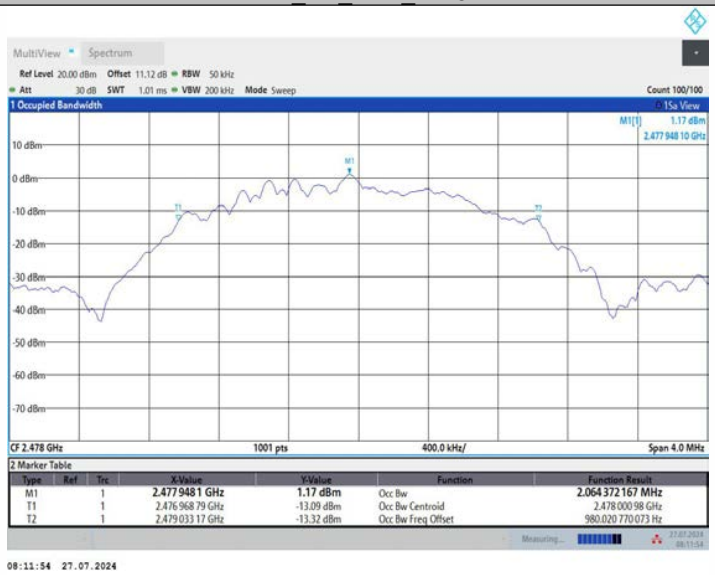
BLE_1M_Ant1_2480

BLE_2M_Ant1_2404



BLE_2M_Ant1_2440



BLE_2M_Ant1_2478


8.3 MAXIMUM PEAK CONDUCTED OUTPUT POWER

8.3.1 Applicable Standard

According to FCC Part 15.247(b)(3) and KDB 558074 D01 15.247 Meas Guidance v05r02

8.3.2 Conformance Limit

The maximum peak conducted output power of the intentional radiator for systems using digital modulation in the 2400 - 2483.5 MHz bands shall not exceed: 1 Watt (30dBm).

8.3.3 Test Configuration

Test according to clause 7.1 radio frequency test setup 1

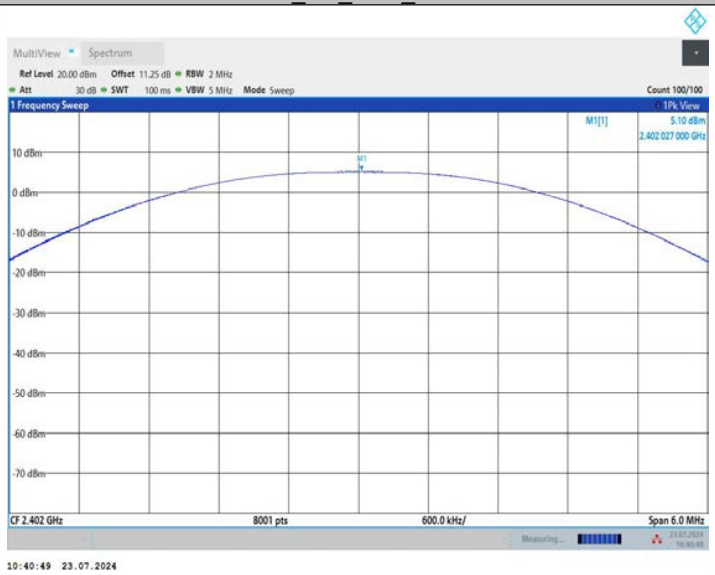
8.3.4 Test Procedure

■ According to FCC Part15.247(b)(3)
As an alternative to a peak power measurement, compliance with the one Watt limit can be based on a measurement of the maximum conducted output power. For smart system, Maximum Conducted Output Power is defined as the total transmit power delivered to all antennas and antenna elements averaged across all symbols in the signaling alphabet when the transmitter is operating at its maximum power control level. Power must be summed across all antennas and antenna elements. If multiple modes of operation are possible (e.g., alternative modulation methods), the maximum conducted output power is the highest total transmit power occurring in any mode.
Set the RBW ≧DTS bandwidth(about 1MHz).
Set VBW =3*RBW(about 3MHz)
Set the span ≧3*RBW
Set Sweep time = auto couple.
Set Detector = peak.
Set Trace mode = max hold.
Allow trace to fully stabilize. Use peak marker function to determine the peak amplitude level.
■ According to FCC Part 15.247(b)(4):
Conducted output power limit specified in paragraph (b) of this section is based on the use of antennas with directional gains that do not exceed 6 dBi. If transmitting antennas of directional gain greater than 6 dBi are used, the conducted output power from the intentional radiator shall be reduced below the stated values in paragraphs (b)(3) of this section, as appropriate, by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

8.3.5 Test Results

Temperature:	25° C
Relative Humidity:	45%
ATM Pressure:	1011 mbar

TestMode	Antenna	Frequency[MHz]	Conducted Peak Powert[dBm]	Conducted Limit[dBm]	EIRP[dBm]	EIRP Limit[dBm]	Verdict
BLE_1M	Ant1	2402	5.10	≤30	2.40	≤36	PASS
		2440	5.39	≤30	2.69	≤36	PASS
		2480	5.30	≤30	2.60	≤36	PASS
BLE_2M	Ant1	2404	5.12	≤30	2.42	≤36	PASS
		2440	5.32	≤30	2.62	≤36	PASS
		2478	5.04	≤30	2.34	≤36	PASS

BLE_1M_Ant1_2402

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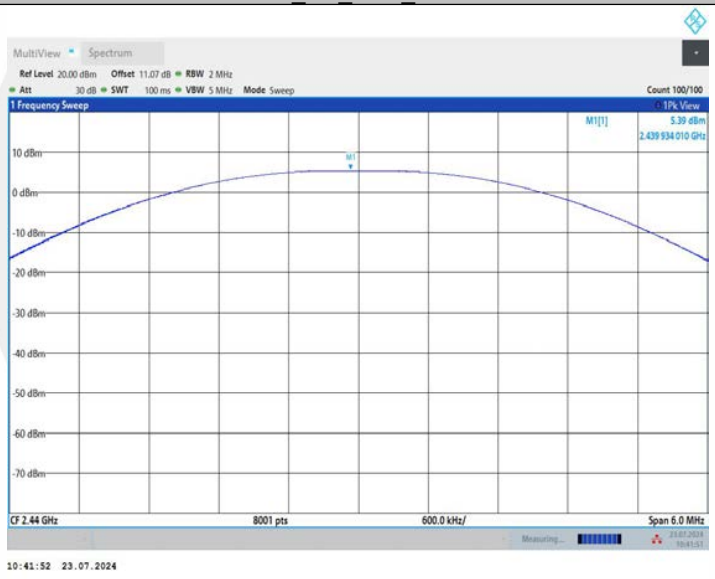
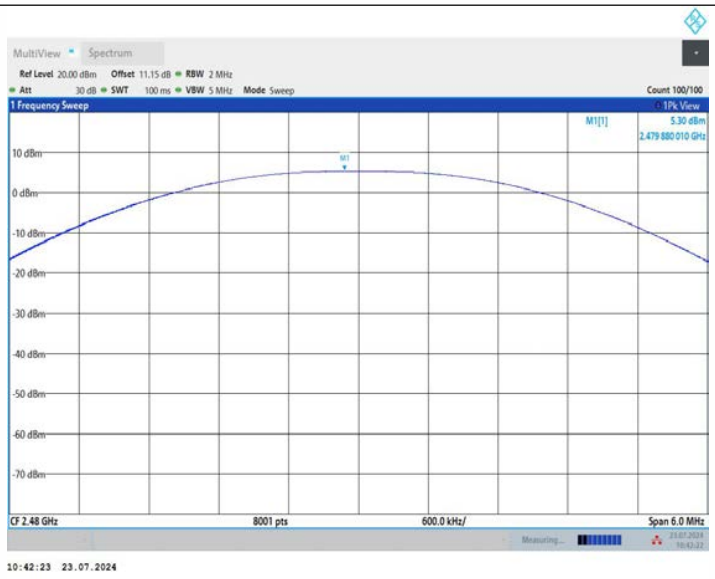
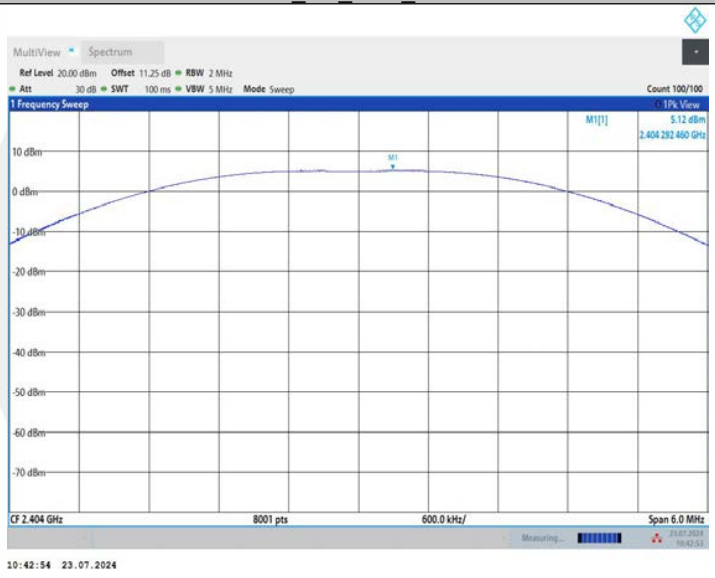
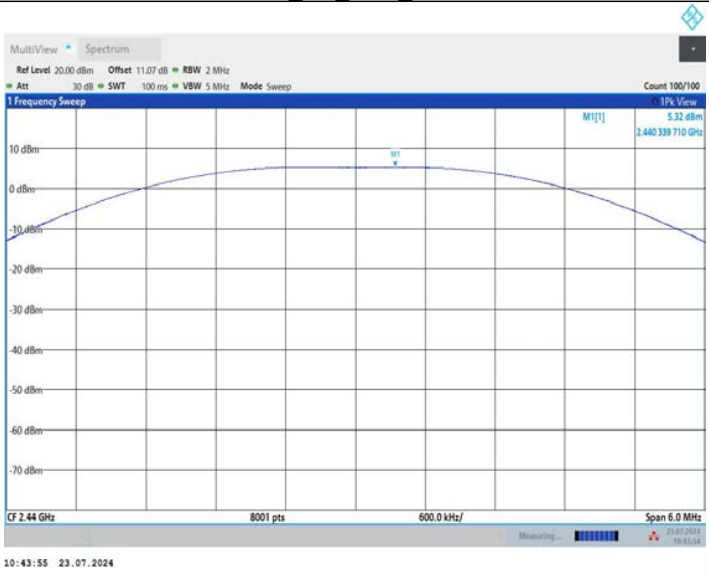

BLE_1M_Ant1_2480

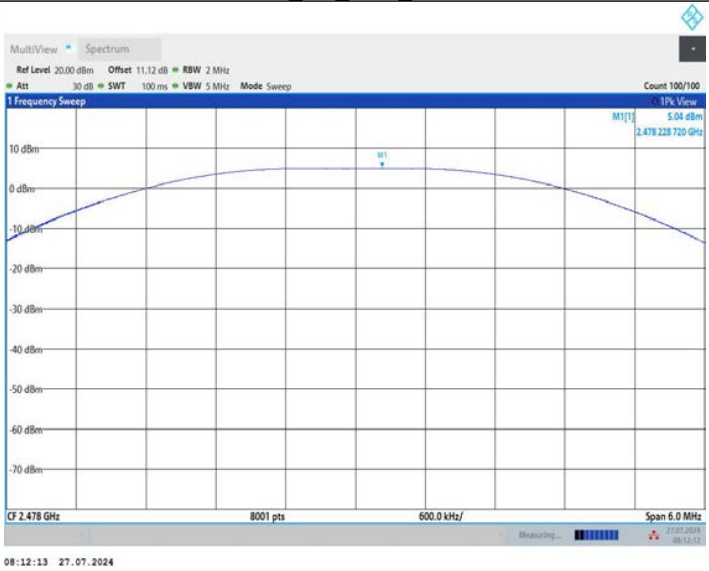


BLE_2M_Ant1_2404



BLE_2M_Ant1_2440



BLE_2M_Ant1_2478


8.4 MAXIMUM POWER SPECTRAL DENSITY

8.4.1 Applicable Standard

According to FCC Part 15.247(e) and KDB 558074 D01 15.247 Meas Guidance v05r02

8.4.2 Conformance Limit

The transmitter power spectral density conducted from the transmitter to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission.

8.4.3 Test Configuration

Test according to clause 7.1 radio frequency test setup 1

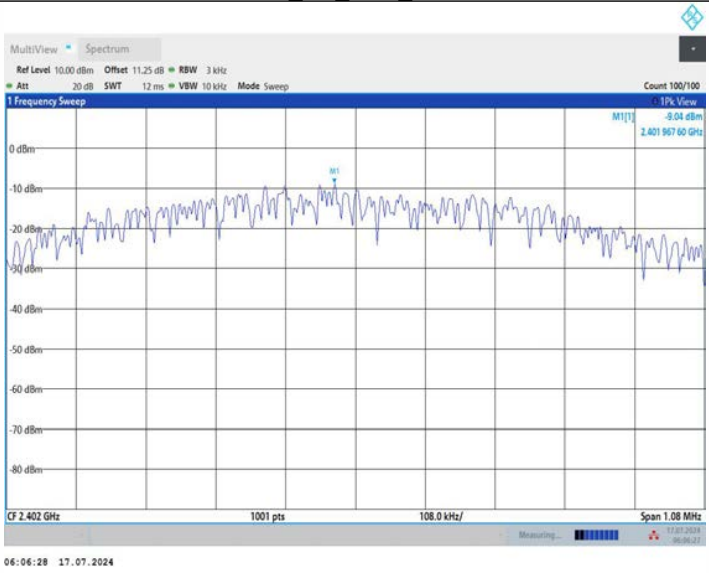
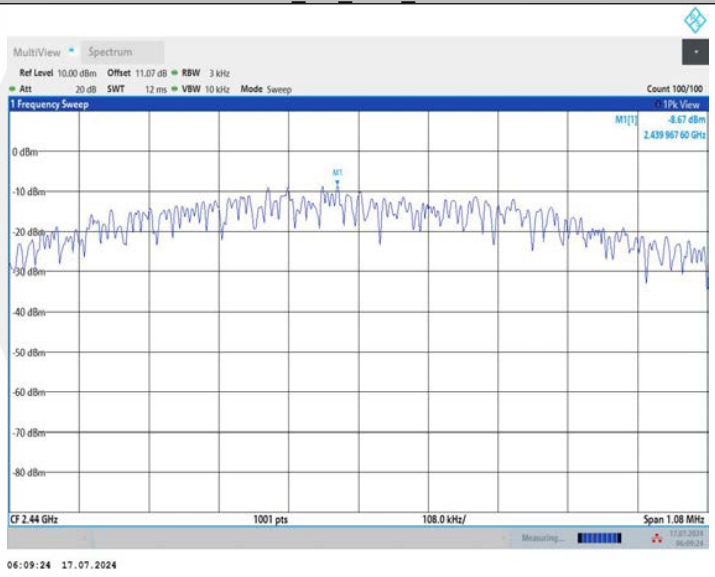
8.4.4 Test Procedure

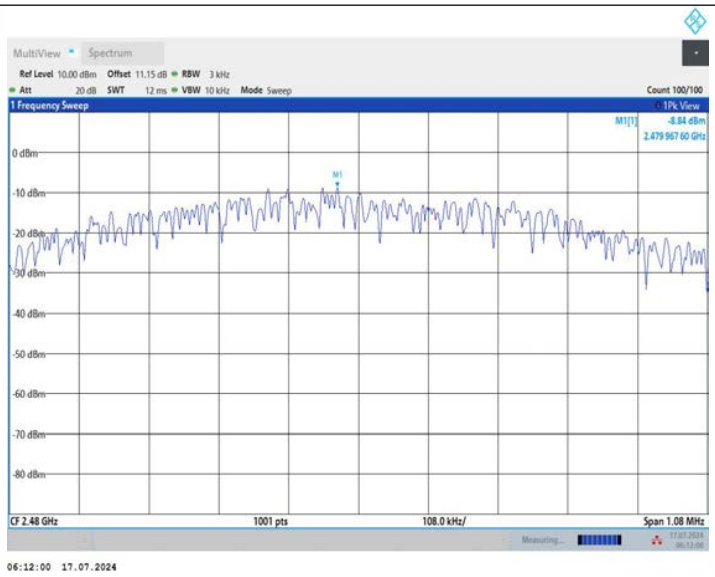
This procedure shall be used if maximum peak conducted output power was used to demonstrate compliance
The transmitter output (antenna port) was connected to the spectrum analyzer
Set analyzer center frequency to DTS channel center frequency.
Set the span to 1.5 times the DTS bandwidth.
Set the RBW to: 3 kHz
Set the VBW to: 10 kHz.
Set Detector = peak.
Set Sweep time = auto couple.
Set Trace mode = max hold.
Allow trace to fully stabilize.
Use the peak marker function to determine the maximum amplitude level within the RBW.

8.4.5 Test Results

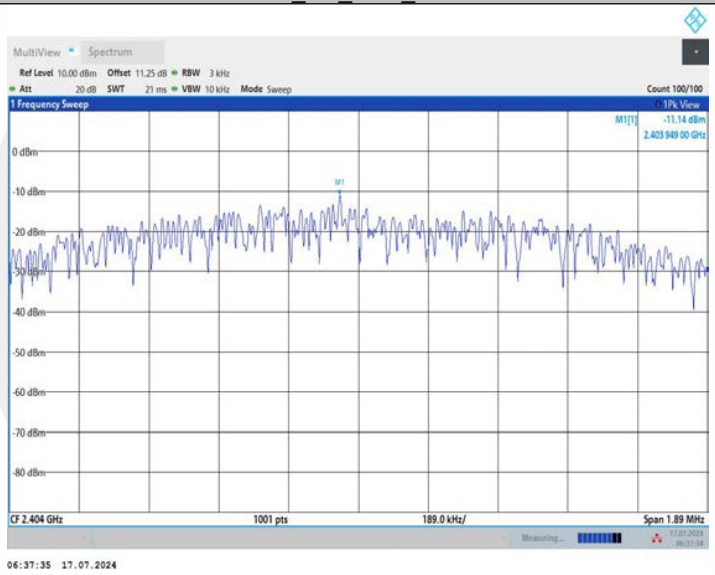
Temperature:	25° C
Relative Humidity:	45%
ATM Pressure:	1011 mbar

TestMode	Antenna	Frequency[MHz]	Result[dBm/3kHz]	Limit[dBm/3kHz]	Verdict
BLE_1M	Ant1	2402	-9.04	≤8.00	PASS
		2440	-8.67	≤8.00	PASS
		2480	-8.84	≤8.00	PASS
BLE_2M	Ant1	2404	-11.14	≤8.00	PASS
		2440	-10.95	≤8.00	PASS
		2478	-12.87	≤8.00	PASS

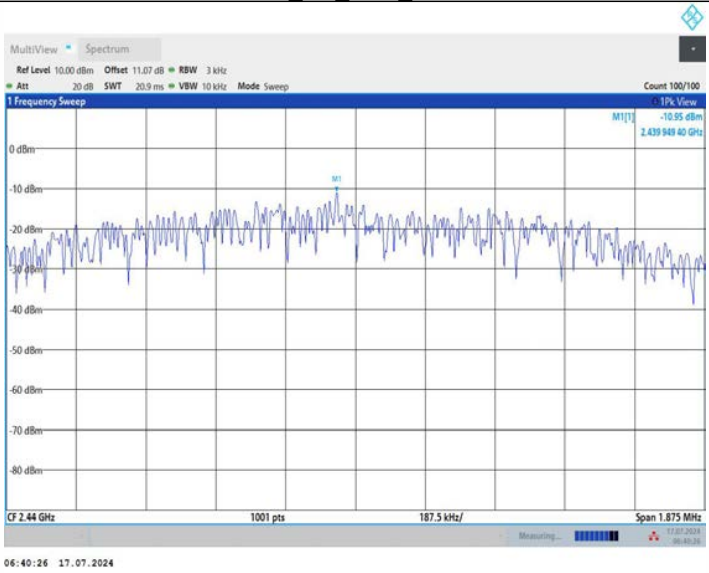
BLE_1M_Ant1_2402

BLE_1M_Ant1_2440

BLE_1M_Ant1_2480

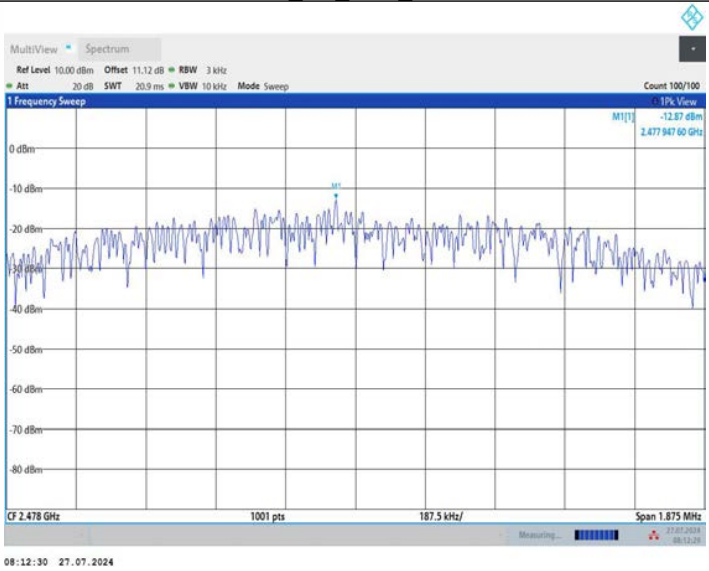


BLE_2M_Ant1_2404



BLE_2M_Ant1_2440



BLE_2M_Ant1_2478


8.5 UNWANTED EMISSIONS IN NON-RESTRICTED FREQUENCY BANDS

8.5.1 Applicable Standard

According to FCC Part 15.247(d) and KDB 558074 D01 15.247 Meas Guidance v05r02

8.5.2 Conformance Limit

According to FCC Part 15.247(d):
In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB.

8.5.3 Test Configuration

Test according to clause 7.1 radio frequency test setup 1

8.5.4 Test Procedure

The transmitter output (antenna port) was connected to the spectrum analyzer

- **Reference level measurement**

Establish a reference level by using the following procedure:
Set instrument center frequency to DTS channel center frequency.
Set the span to = 1.5 times the DTS bandwidth.
Set the RBW = 100 kHz.
Set the VBW ≥ 3 x RBW.
Set Detector = peak.
Set Sweep time = auto couple.
Set Trace mode = max hold.
Allow trace to fully stabilize.
Use the peak marker function to determine the maximum PSD level.
Note that the channel found to contain the maximum PSD level can be used to establish the reference level.

- **Emission level measurement**

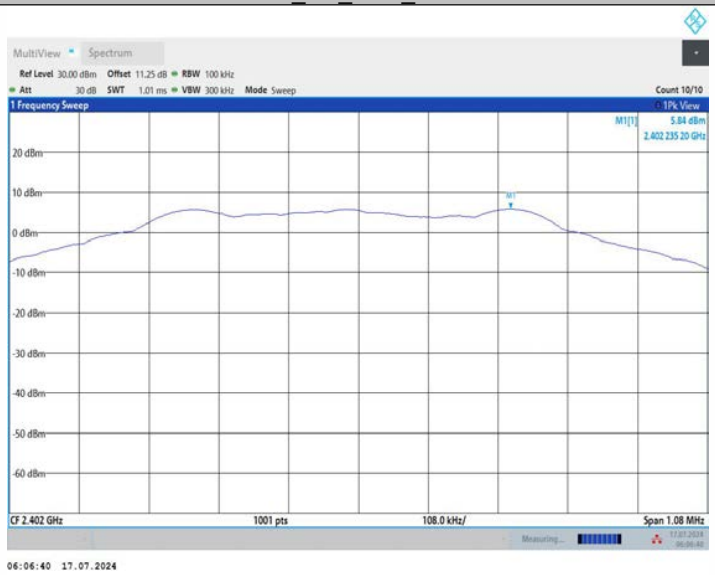
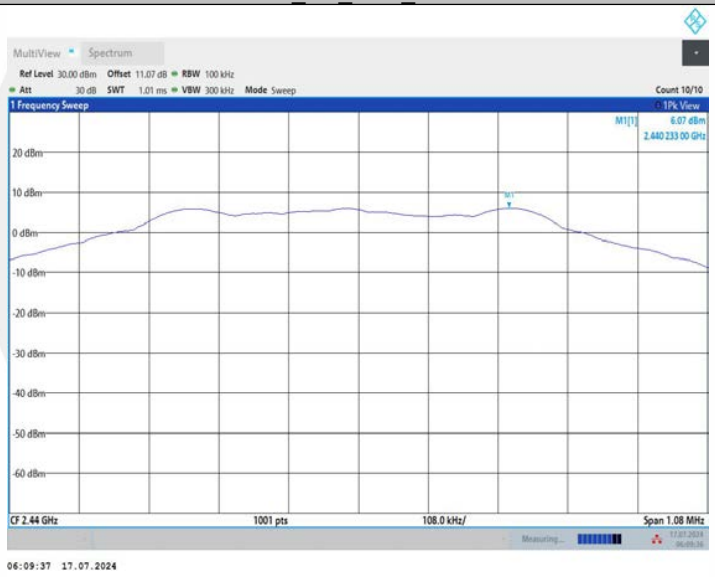
Set the center frequency and span to encompass frequency range to be measured.
Set the RBW = 100 kHz.
Set the VBW =300 kHz.
Set Detector = peak
Sweep time = auto couple.
Trace mode = max hold.
Allow trace to fully stabilize.
Use the peak marker function to determine the maximum amplitude level.
Ensure that the amplitude of all unwanted emissions outside of the authorized frequency band (excluding restricted frequency bands) are attenuated by at least the minimum requirements. Report the three highest emissions relative to the limit.

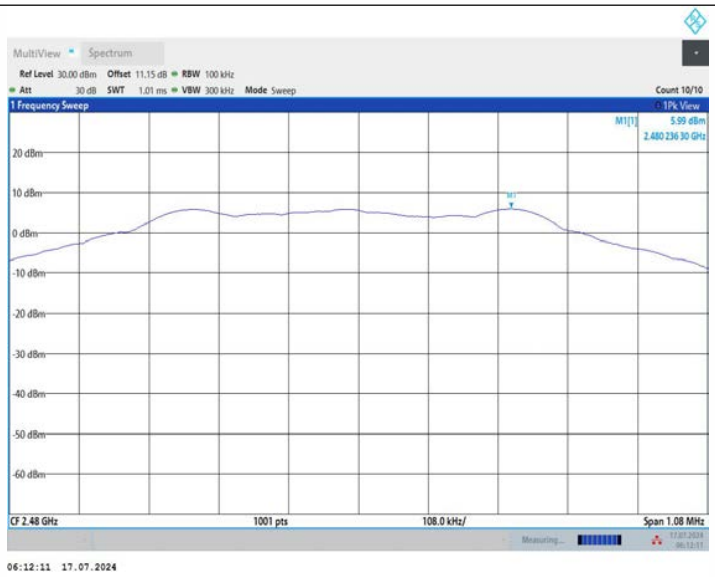
8.5.5 Test Results

Temperature:	25° C
Relative Humidity:	45%
ATM Pressure:	1011 mbar

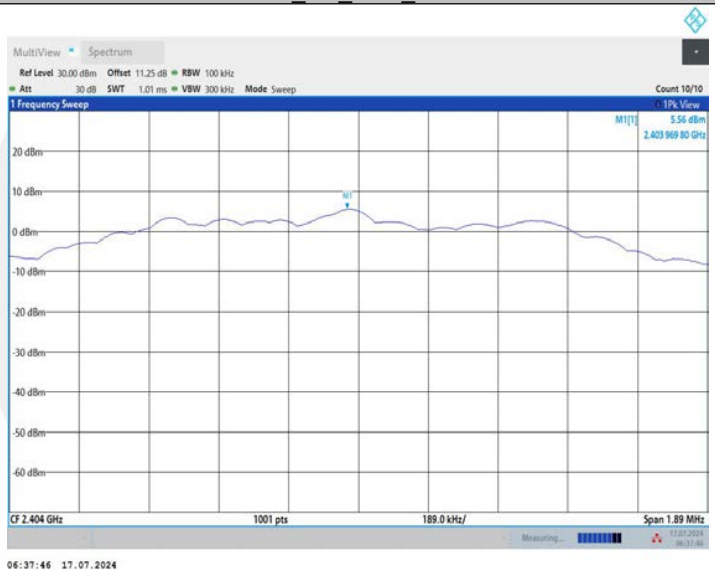
Reference level measurement

TestMode	Antenna	Freq(MHz)	Max.Point[MHz]	Result[dBm]
BLE_1M	Ant1	2402	2402.24	5.84
		2440	2440.23	6.07
		2480	2480.24	5.99
BLE_2M	Ant1	2404	2403.97	5.56
		2440	2439.98	5.72
		2478	2477.98	3.84

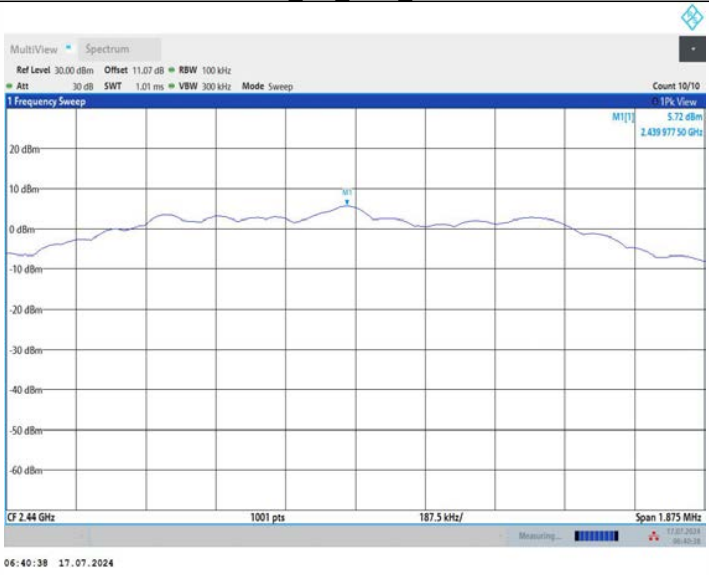
BLE_1M_Ant1_2402

BLE_1M_Ant1_2440

BLE_1M_Ant1_2480

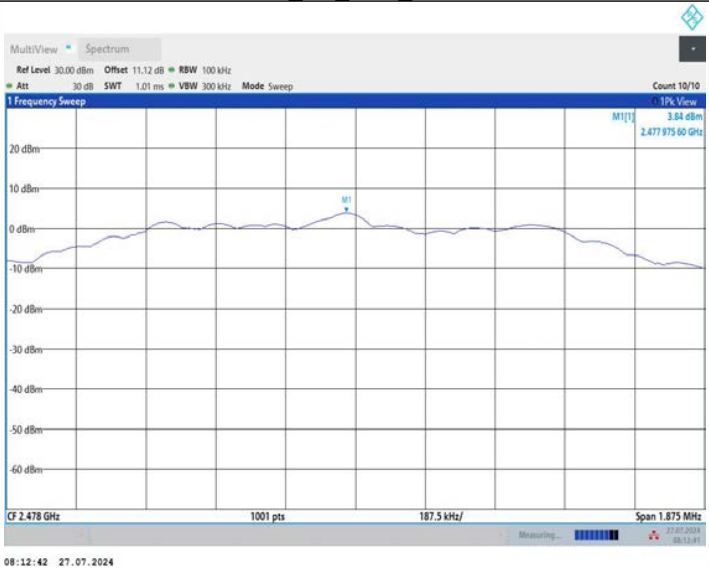


BLE_2M_Ant1_2404



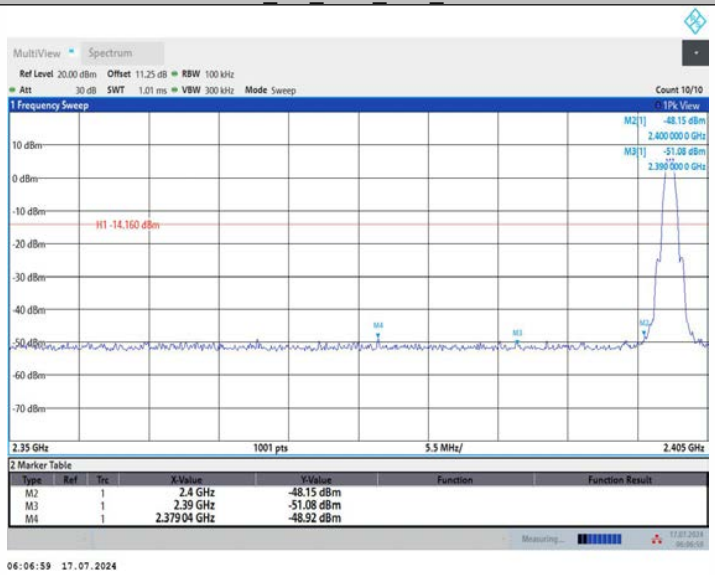
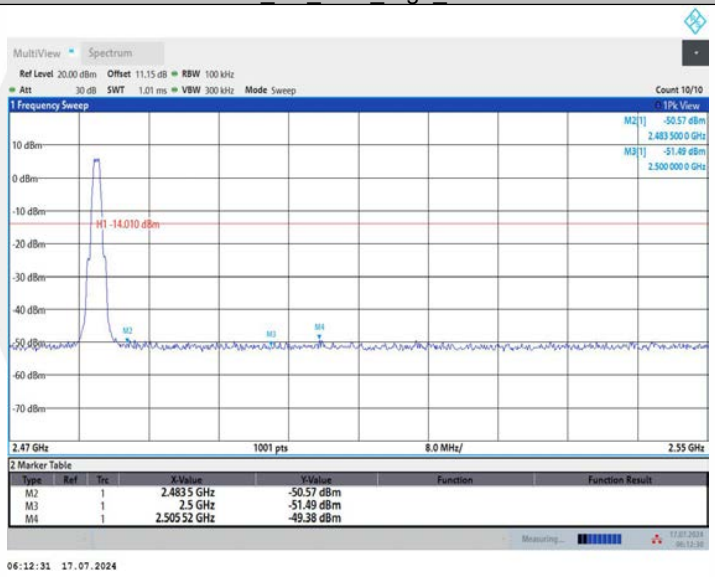
BLE_2M_Ant1_2440

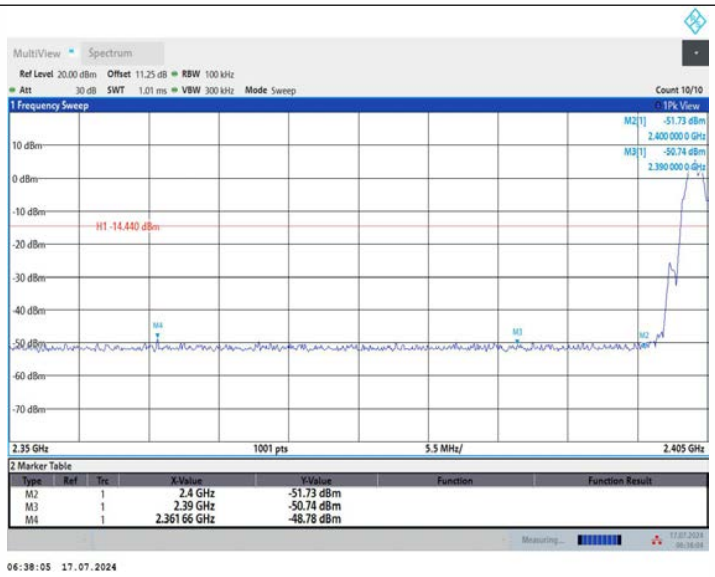


BLE_2M_Ant1_2478


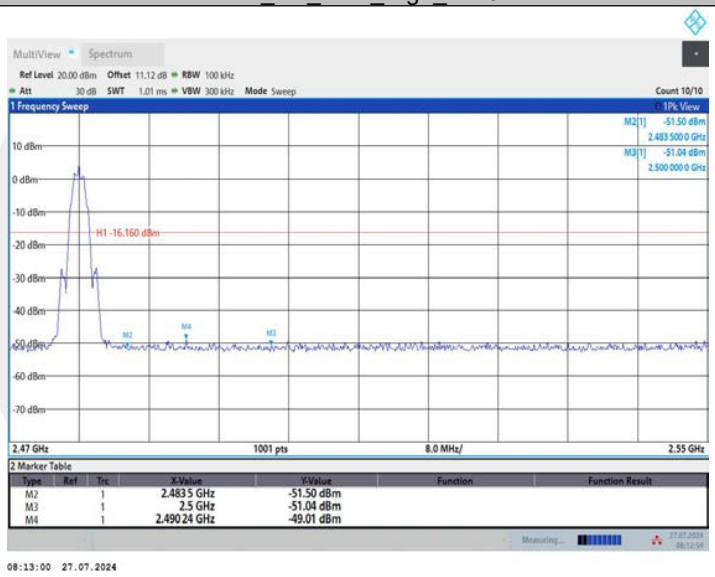
Band edge measurements

TestMode	Antenna	ChName	Frequency[MHz]	RefLevel[dBm]	Result[dBm]	Limit[dBm]	Verdict
BLE_1M	Ant1	Low	2402	5.84	-48.92	≤-14.16	PASS
		High	2480	5.99	-49.38	≤-14.01	PASS
BLE_2M	Ant1	Low	2404	5.56	-48.78	≤-14.44	PASS
		High	2478	3.84	-49.01	≤-16.16	PASS

BLE_1M_Ant1_Low_2402

BLE_1M_Ant1_High_2480

BLE_2M_Ant1_Low_2404

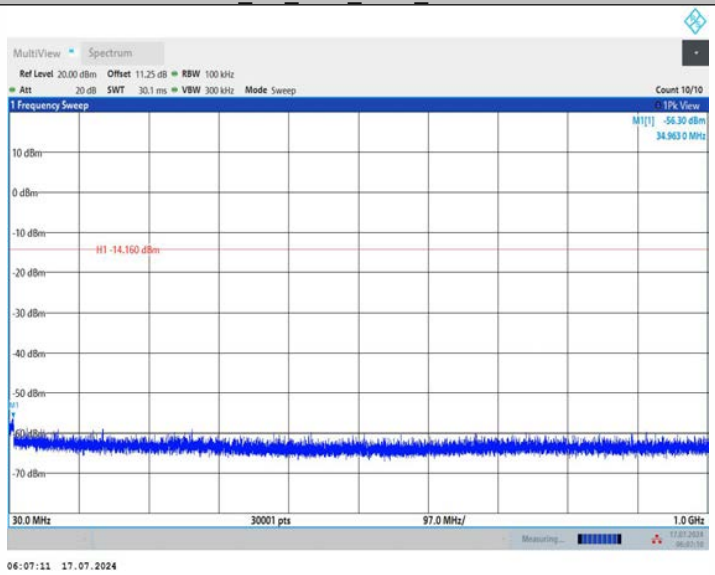
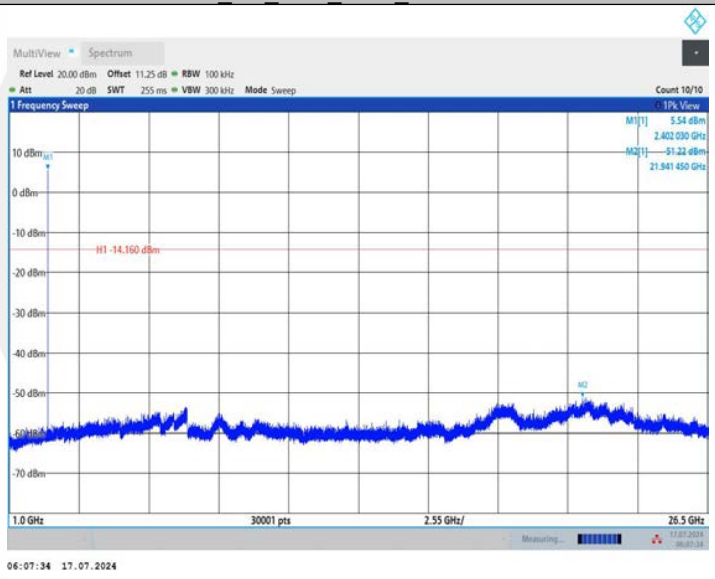


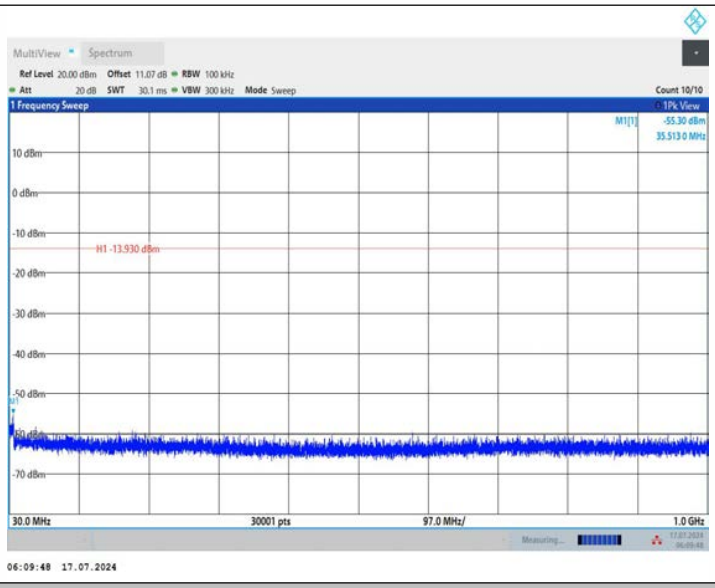
BLE_2M_Ant1_High_2478



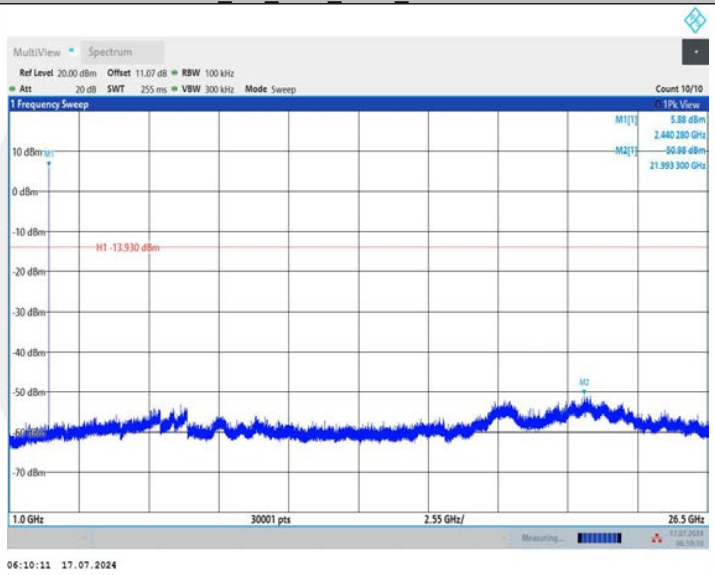
Emission level measurement

TestMode	Antenna	Frequency[MHz]	FreqRange [MHz]	RefLevel [dBm]	Result[dBm]	Limit[dBm]	Verdict
BLE_1M	Ant1	2402	30~1000	5.84	-56.3	≤-14.16	PASS
			1000~26500	5.84	-51.22	≤-14.16	PASS
		2440	30~1000	6.07	-55.3	≤-13.93	PASS
			1000~26500	6.07	-50.98	≤-13.93	PASS
		2480	30~1000	5.99	-55.87	≤-14.01	PASS
			1000~26500	5.99	-51.74	≤-14.01	PASS
BLE_2M	Ant1	2404	30~1000	5.56	-56.11	≤-14.44	PASS
			1000~26500	5.56	-51.32	≤-14.44	PASS
		2440	30~1000	5.72	-56.47	≤-14.28	PASS
			1000~26500	5.72	-51.47	≤-14.28	PASS
		2476	30~1000	5.61	-56.83	≤-14.39	PASS
			1000~26500	5.61	-50.83	≤-14.39	PASS
		2478	30~1000	3.84	-56.65	≤-16.16	PASS
			1000~26500	3.84	-51.16	≤-16.16	PASS

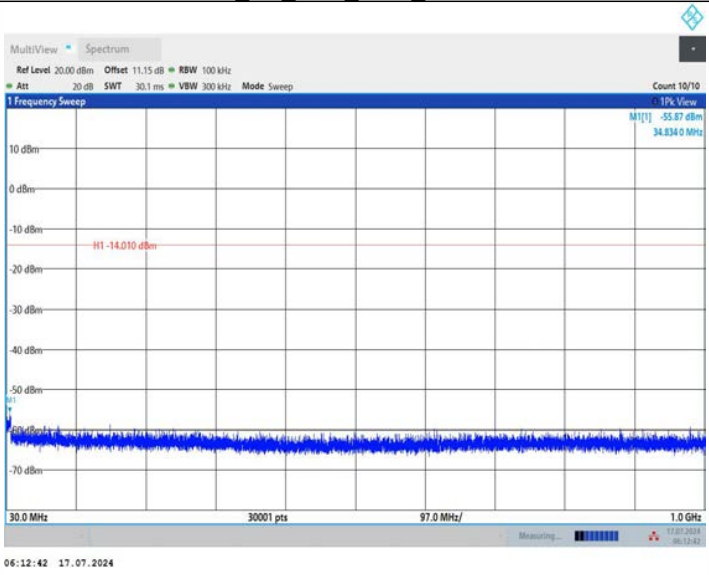
BLE_1M_Ant1_2402_30~1000

BLE_1M_Ant1_2402_1000~26500

BLE_1M_Ant1_2440_30~1000

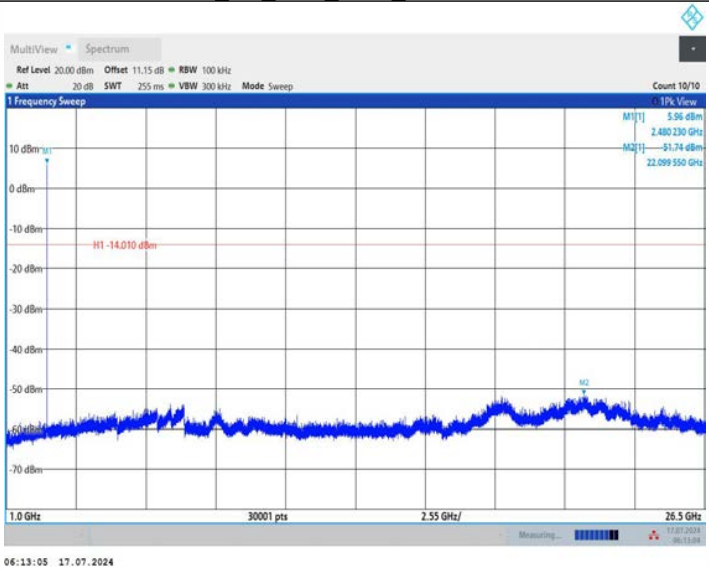
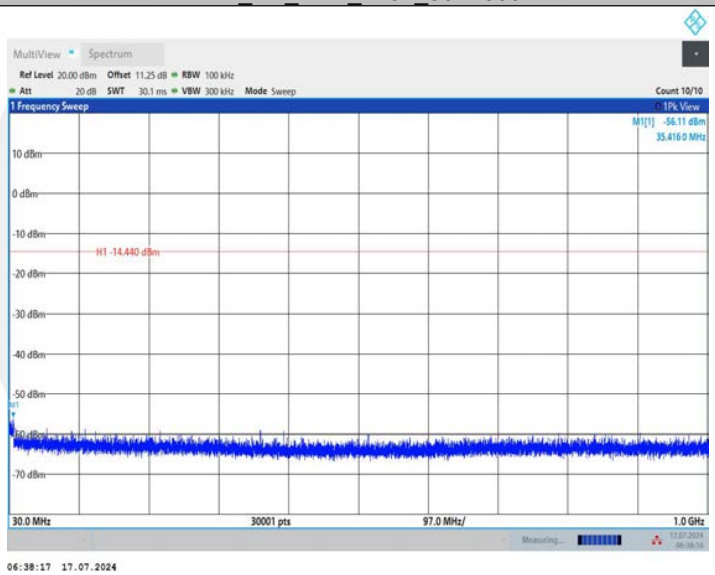


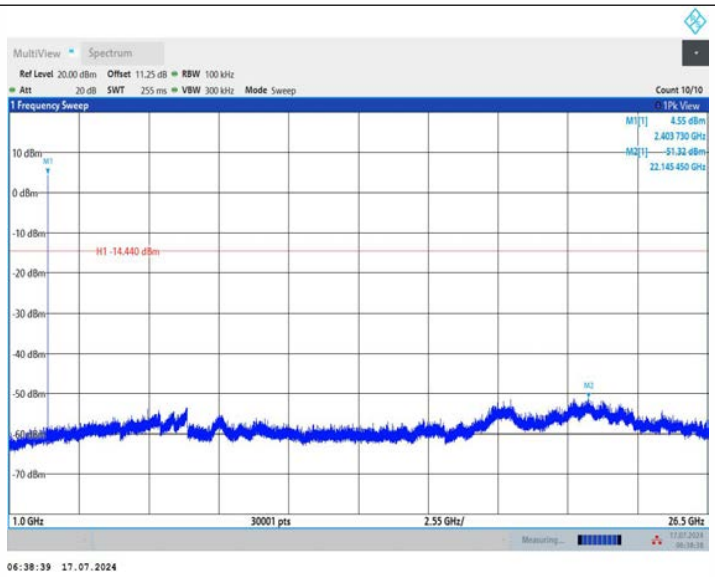
BLE_1M_Ant1_2440_1000~26500



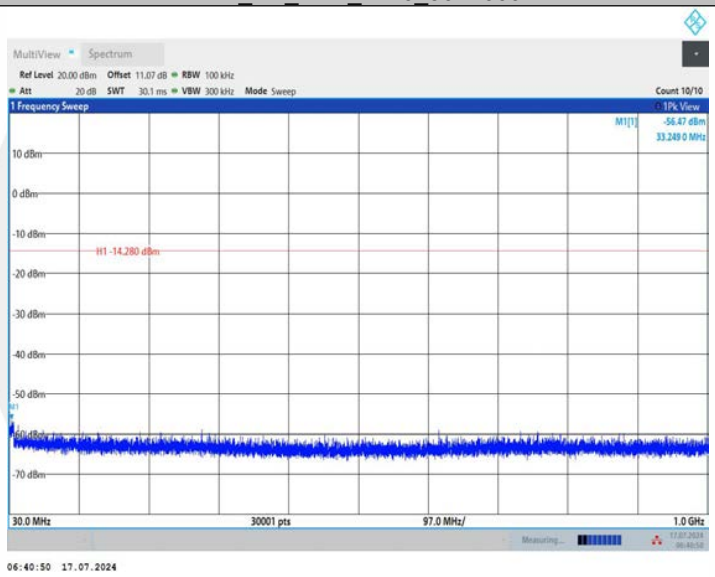
BLE_1M_Ant1_2480_30~1000



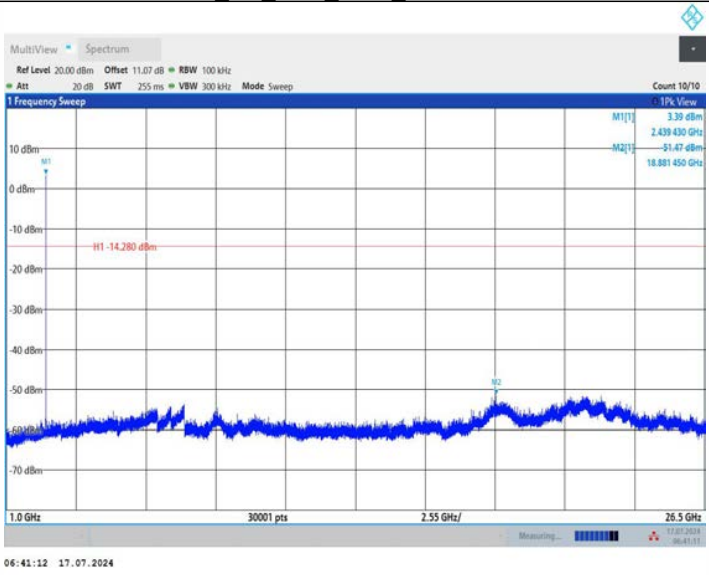
BLE_1M_Ant1_2480_1000~26500

BLE_2M_Ant1_2404_30~1000

BLE_2M_Ant1_2404_1000~26500

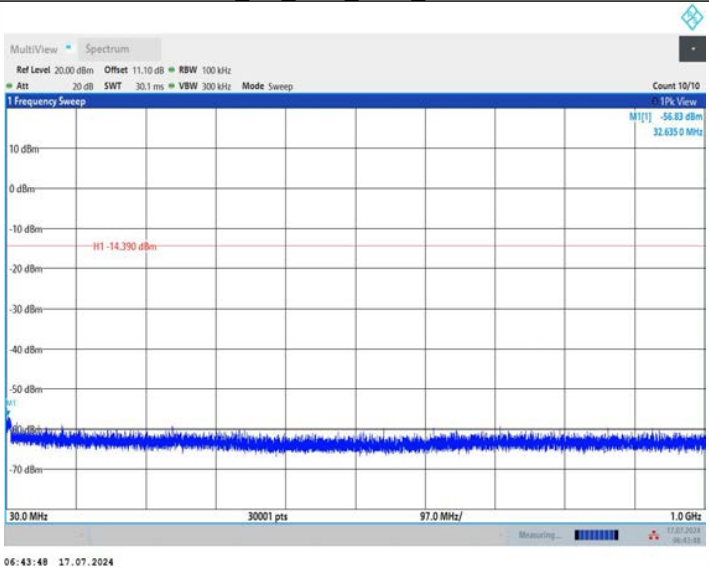
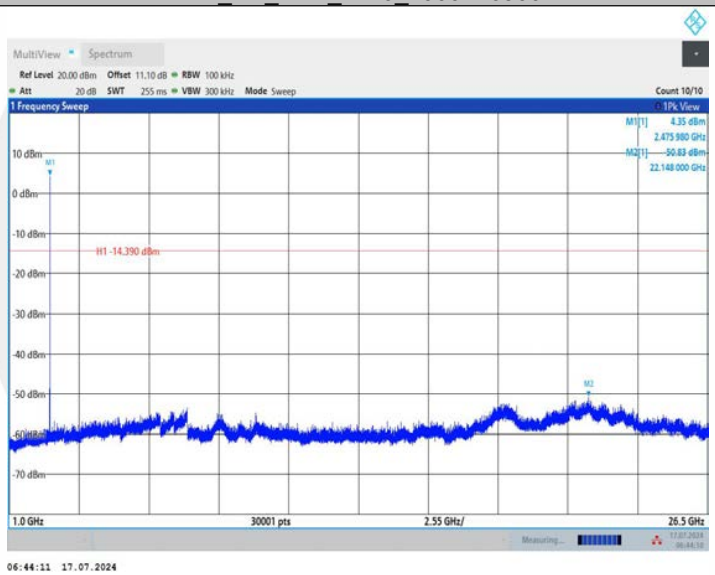


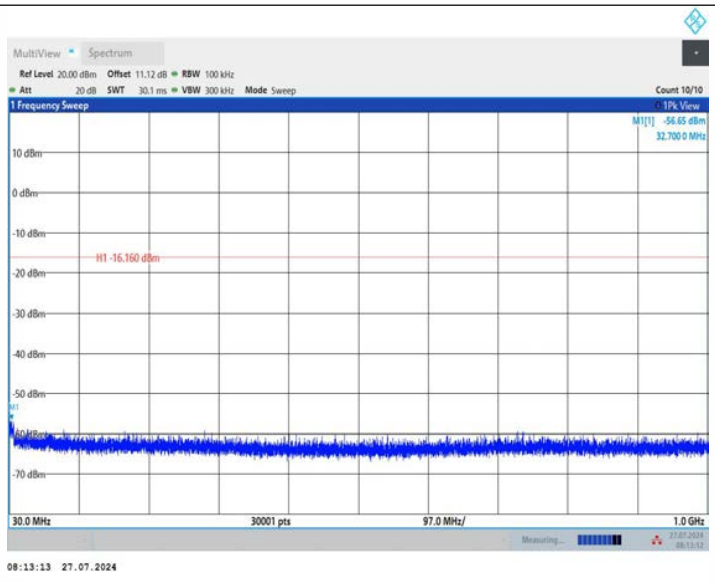
BLE_2M_Ant1_2440_30~1000



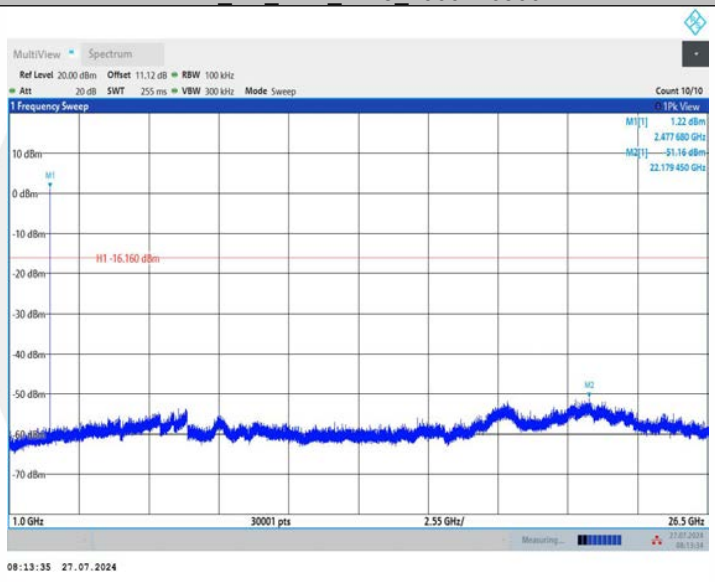
BLE_2M_Ant1_2440_1000~26500



BLE_2M_Ant1_2476_30~1000

BLE_2M_Ant1_2476_1000~26500

BLE_2M_Ant1_2478_30~1000



BLE_2M_Ant1_2478_1000~26500



8.6 RADIATED SPURIOUS EMISSION

8.6.1 Applicable Standard

According to FCC Part 15.247(d) and 15.209 and KDB 558074 D01 15.247 Meas Guidance v05r02

8.6.2 Conformance Limit

According to FCC Part 15.247(d): radiated 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) (see §15.205(c)).
According to FCC Part15.205, Restricted bands

MHz	MHz	MHz	GHz
0.090-0.110	16.42-16.423	399.9-410	4.5-5.15
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	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	Above 38.6
13.36-13.41			

According to FCC Part15.205, the level of any transmitter spurious emission in Restricted bands shall not exceed the level of the emission specified in the following table

Restricted Frequency(MHz)	Field Strength (μV/m)	Field Strength (dBμV/m)	Measurement Distance
0.009-0.490	2400/F(KHz)	20 log (uV/m)	300
0.490-1.705	24000/F(KHz)	20 log (uV/m)	30
1.705-30	30	29.5	30
30-88	100	40	3
88-216	150	43.5	3
216-960	200	46	3
Above 960	500	54	3

8.6.3 Test Configuration

Test according to clause 7.2 radio frequency test setup 2

8.6.4 Test Procedure

This test is required for any spurious emission that falls in a Restricted Band, as defined in Section 15.205. It must be performed with the highest gain of each type of antenna proposed for use with the EUT. Use the following spectrum analyzer settings:
The EUT was placed on a turn table which is 0.8m above ground plane.
Maximum procedure was performed on the highest emissions to ensure EUT compliance.
Span = wide enough to fully capture the emission being measured
RBW = 1 MHz for f ≥ 1 GHz(1GHz to 25GHz), 100 kHz for f < 1 GHz(30MHz to 1GHz)
VBW ≥ RBW
Sweep = auto
Detector function = peak
Trace = max hold

Follow the guidelines in ANSI C63.10-2013 with respect to maximizing the emission by rotating the EUT, measuring the emission while the EUT is situated in three orthogonal planes (if appropriate), adjusting the measurement antenna height and polarization, etc. A pre-amp and a high pass filter are required for this test, in order to provide the measuring system with sufficient sensitivity. Allow the trace to stabilize. The peak reading of the emission, after being corrected by the antenna factor, cable loss, pre-amp gain, etc., is the peak field strength, which must comply with the limit specified in Section 15.35(b). Submit this data.
Now set the VBW to 10 Hz, while maintaining all of the other instrument settings. This peak level, once corrected, must comply with the limit specified in Section 15.209. If the dwell time per channel of the hopping signal is less than 100 ms, then the reading obtained with the 10 Hz VBW may be further adjusted by a “duty cycle correction factor”, derived from 20log(dwell time/100 ms), in an effort to demonstrate compliance with the 15.209 limit. Submit this data.
Repeat above procedures until all frequency measured was complete.

8.6.5 Test Results

Pass

Temperature:	25.7° C
Relative Humidity:	55%
ATM Pressure:	1011 mbar

■ Spurious Emission below 30MHz (9KHz to 30MHz)

Freq. (MHz)	Ant.Pol. H/V	Emission Level(dBuV/m) PK	Emission Level(dBuV/m) AV	Limit 3m(dBuV/m) PK	Limit 3m(dBuV/m) AV	Over(dB) PK	Over(dB) AV
--	--	--	--	--	--	--	--

Note: the amplitude of spurious emission that is attenuated by more than 20dB below the permissible limit has no need to be reported.
Distance extrapolation factor =40log(Specific distance/ test distance)(dB);
Limit line=Specific limits(dBuV) + distance extrapolation factor

■ Spurious Emission Above 1GHz (1GHz to 25GHz)

All the antenna(Antenna 1) and modes(BLE 1M, BLE 2M) mode have been tested, and the worst(Antenna 1,BLE_1M) resultrecorded was report as below:

Test mode: BLE(1M) Frequency: Channel 0: 2402MHz

Freq. (MHz)	Ant.Pol.	Emission Level(dBuV/m)	Limit 3m(dBuV/m)	Over(dB)	Detector
4803.75	V	51.33	74.00	22.67	peak
7206.0000	V	53.70	74.00	20.30	peak
9608.0000	V	57.11	74.00	16.89	peak
4803.75	V	47.45	54.00	6.55	AVG
7206.0000	V	42.75	54.00	11.25	AVG
9608.0000	V	47.85	54.00	6.15	AVG
4803.75	H	52.15	74.00	21.85	peak
7206.0000	H	52.25	74.00	21.75	peak
9608.0000	H	57.06	74.00	16.94	peak
4803.75	H	47.43	54.00	6.57	AVG
7206.0000	H	42.66	54.00	11.34	AVG
9608.0000	H	47.72	54.00	6.28	AVG

Test mode: BLE(1M) Frequency: Channel 19: 2440MHz

Freq. (MHz)	Ant.Pol.	Emission Level(dBuV/m)	Limit 3m(dBuV/m)	Over(dB)	Detector
4878.75	V	52.20	74.00	21.80	peak
7320.0000	V	52.49	74.00	21.51	peak
9760.0000	V	56.10	74.00	17.90	peak
4879.9077	V	48.51	54.00	5.49	AVG
7320.3473	V	42.49	54.00	11.51	AVG
9761.2663	V	46.79	54.00	7.21	AVG
4878.75	H	51.30	74.00	22.70	peak
7320.0000	H	51.98	74.00	22.02	peak
9760.0000	H	55.72	74.00	18.28	peak
4879.9801	H	48.65	54.00	5.35	AVG
7317.7713	H	42.79	54.00	11.21	AVG
9762.4674	H	46.86	54.00	7.14	AVG

Test mode: BLE(1M) Frequency: Channel 39: 2480MHz

Freq. (MHz)	Ant.Pol.	Emission Level(dBuV/m)	Limit 3m(dBuV/m)	Over(dB)	Detector
4959.37	V	50.79	74.00	23.21	peak
7440.0000	V	52.81	74.00	21.19	peak
9920.0000	V	59.27	74.00	14.73	peak
4959.37	V	43.47	54.00	10.53	AVG
7440.0000	V	43.72	54.00	10.28	AVG
9920.0000	V	46.05	54.00	7.95	AVG
4959.375	H	50.62	74.00	23.38	peak
7440.0000	H	53.07	74.00	20.93	peak
9920.0000	H	59.18	74.00	14.82	peak
4959.375	H	43.64	54.00	10.36	AVG
7440.0000	H	43.63	54.00	10.37	AVG
9920.0000	H	46.13	54.00	7.87	AVG

Note: (1) All Readings are Peak Value (VBW=3MHz) and Average Value (VBW=10Hz).
(2) Emission Level= Reading Level+Correct Factor.
(3) Correct Factor= Ant_F + Cab_L - Preamp
(4) The reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
(5) Only records the worst data in tabular form.

■ Spurious Emission in Restricted Band 2310-2390MHz and 2483.5-2500MHz

Test mode: BLE(1M) Frequency: Channel 0: 2402MHz

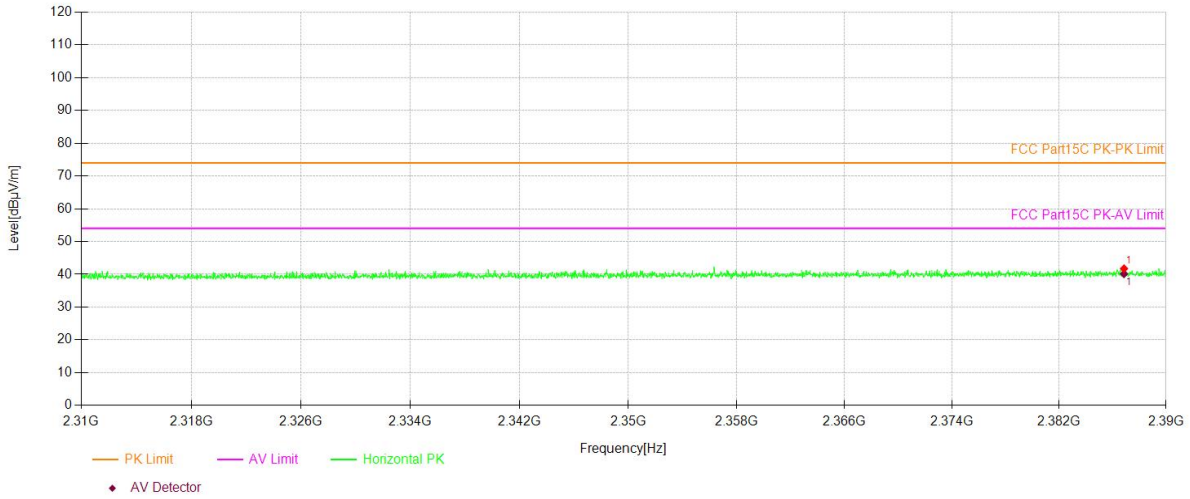
Freq. (MHz)	Ant.Pol.	Emission Level(dBuV/m)	Limit 3m(dBuV/m)	Over(dB)	Detector
2388.53	V	42.35	74.00	31.65	peak
2388.53	V	40.63	54.00	13.37	AVG
2386.85	H	41.74	74.00	32.26	peak
2386.85	H	40.13	54.00	13.87	AVG

Test mode: BLE(1M) Frequency: Channel 39: 2480MHz

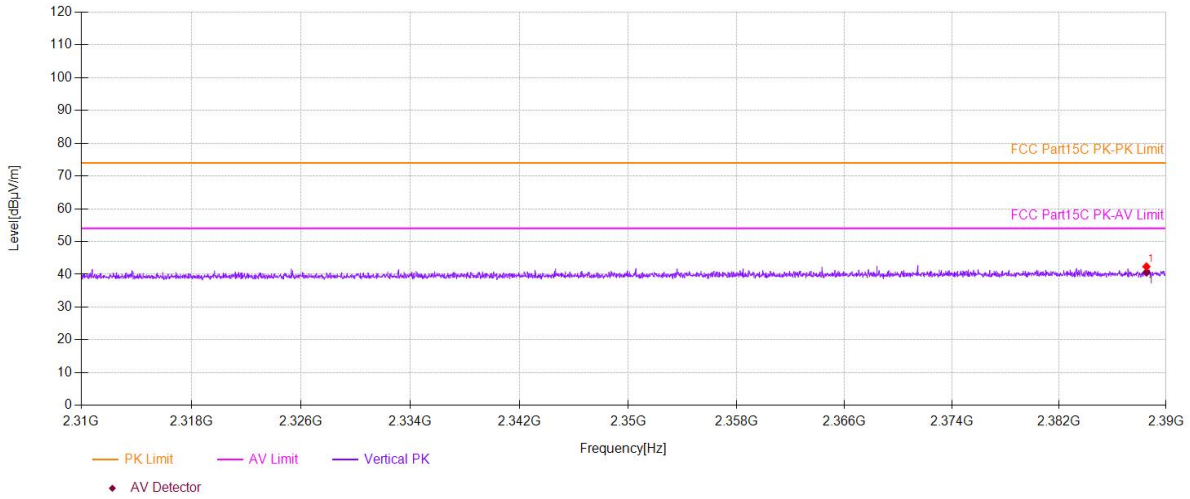
Freq. (MHz)	Ant.Pol.	Emission Level(dBuV/m)	Limit 3m(dBuV/m)	Over(dB)	Detector
2483.53	V	44.56	74.00	29.44	peak
2483.53	V	37.38	54.00	16.62	AVG
2483.68	H	45.49	74.00	28.51	peak
2483.68	H	37.05	54.00	16.95	AVG

Note: (1) All Readings are Peak Value (VBW=3MHz) and Average Value (VBW=10Hz).
(2) Emission Level= Reading Level+Correct Factor.
(3) Correct Factor= Ant_F + Cab_L - Preamp
(4) The reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.

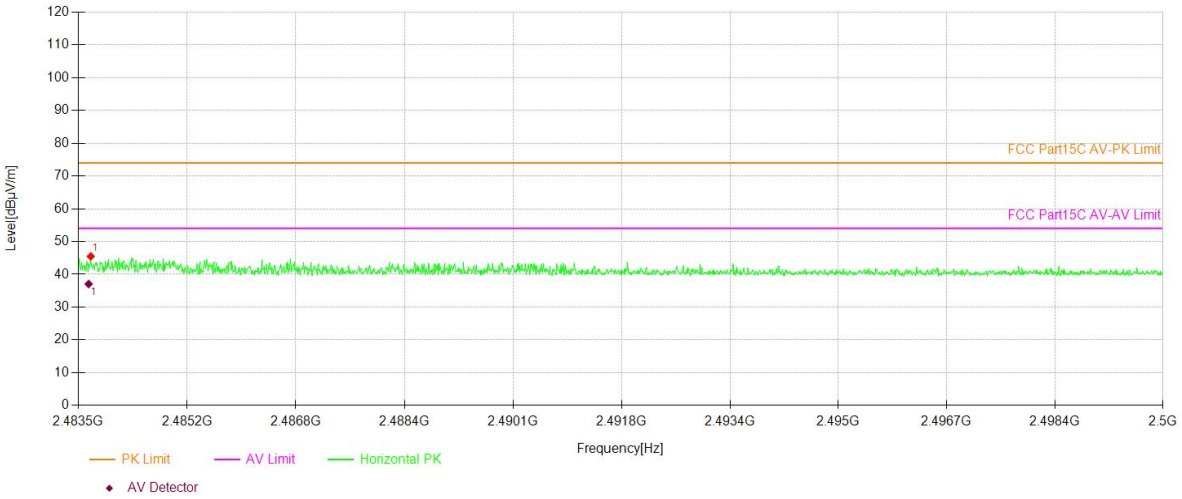
Test Model	Spurious Emission in Restricted Band 2310-2390MHz BLE(1M) Channel 0: 2402MHz	H



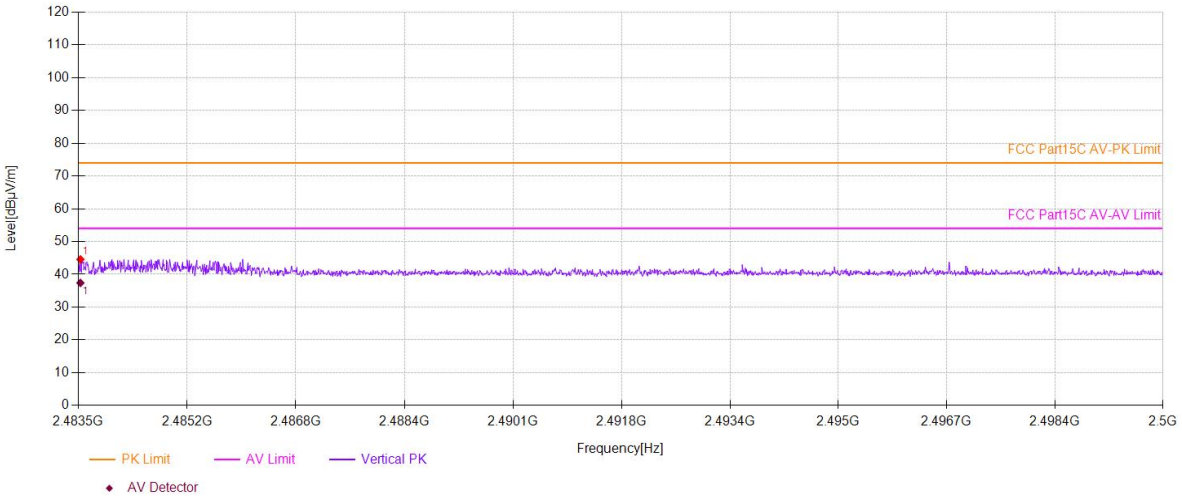
Test Model	Spurious Emission in Restricted Band 2310-2390MHz BLE(1M) Channel 0: 2402MHz	V



Test Model	Spurious Emission in Restricted Band 2483.5-2500MHz BLE(1M) Channel 39: 2480MHz	H



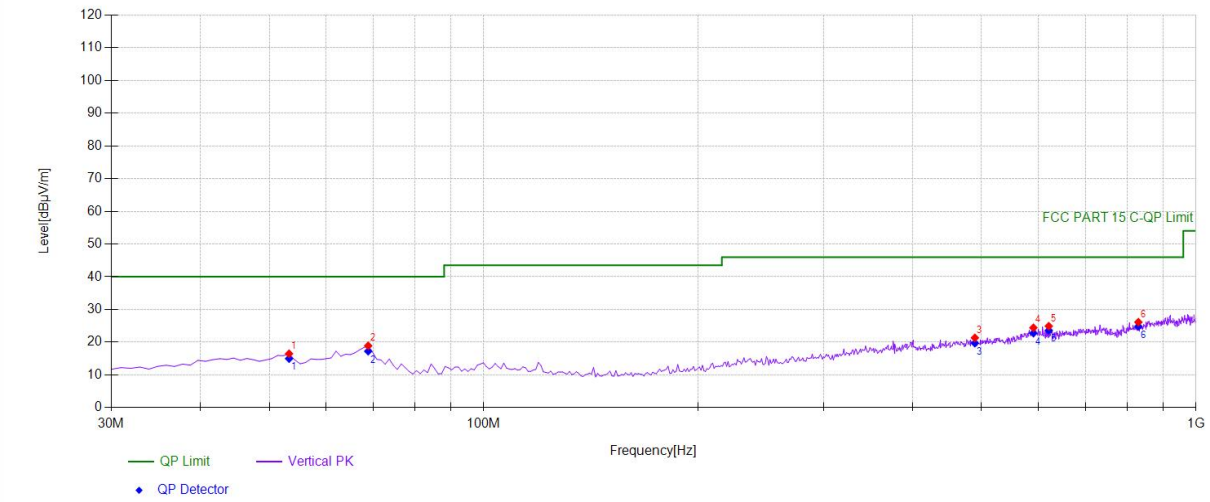
Test Model	Spurious Emission in Restricted Band 2483.5-2500MHz BLE(1M) Channel 39: 2480MHz	V



■ Spurious Emission below 1GHz (30MHz to 1GHz)

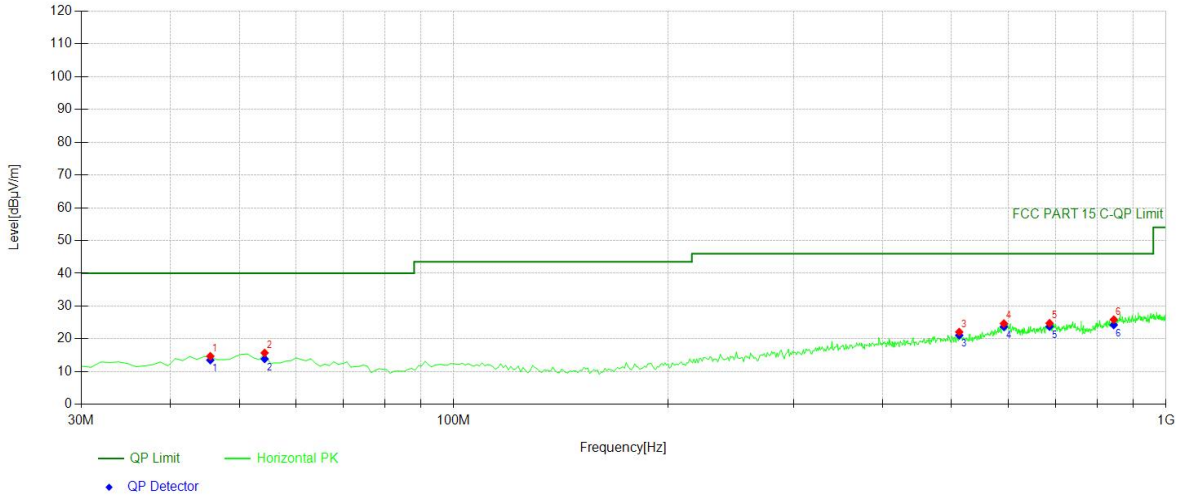
Bluetooth (GFSK, BLE1M/2M) mode have been tested, and the worst result(GFSK,BLE1M) was report as below:

Test mode:	GFSK	Frequency:	Channel 0: 2402MHz



Suspected Data List								
NO.	Freq. [MHz]	Reading [dBµV]	Factor [dB/m]	Level [dBµV/m]	Detector	Limit [dBµV/m]	Margin [dB]	Polarity
1	53.3033	32.94	-16.44	16.50	PK	40.00	23.50	Vertical
2	68.8388	37.44	-18.53	18.91	PK	40.00	21.09	Vertical
3	489.2693	31.45	-10.10	21.35	PK	46.00	24.65	Vertical
4	591.2212	31.31	-6.88	24.43	PK	46.00	21.57	Vertical
5	621.3213	32.52	-7.61	24.91	PK	46.00	21.09	Vertical
6	830.0801	31.06	-4.92	26.14	PK	46.00	19.86	Vertical

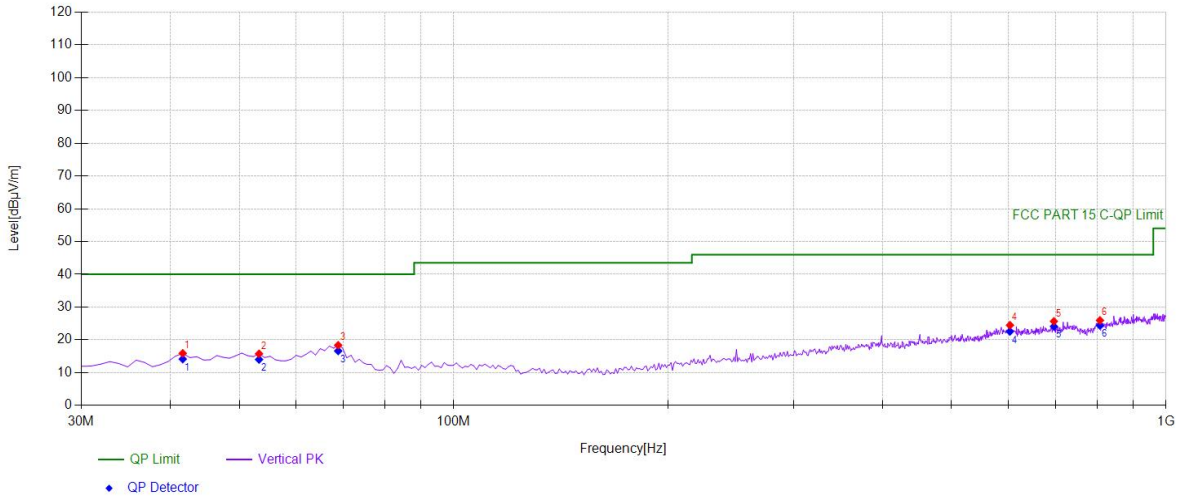
Final Data List					
NO.	Freq. [MHz]	Factor [dB/m]	QP Value [dBµV/m]	QP Limit [dBµV/m]	QP Margin [dB]
1	53.3033	-16.44	15.00	40.00	25.00
2	68.8388	-18.53	17.25	40.00	22.75
3	489.2693	-10.10	19.69	46.00	26.31
4	591.2212	-6.88	22.77	46.00	23.23
5	621.3213	-7.61	23.61	46.00	22.39
6	830.0801	-4.92	24.84	46.00	21.16



Suspected Data List								
NO.	Freq. [MHz]	Reading [dBµV]	Factor [dB/m]	Level [dBµV/m]	Detector	Limit [dBµV/m]	Margin [dB]	Polarity
1	45.5355	31.35	-16.64	14.71	PK	40.00	25.29	Horizontal
2	54.2743	32.29	-16.56	15.73	PK	40.00	24.27	Horizontal
3	512.5726	31.92	-9.82	22.10	PK	46.00	23.90	Horizontal
4	592.1922	31.52	-6.83	24.69	PK	46.00	21.31	Horizontal
5	686.3764	31.45	-6.67	24.78	PK	46.00	21.22	Horizontal
6	844.6446	30.30	-4.42	25.88	PK	46.00	20.12	Horizontal

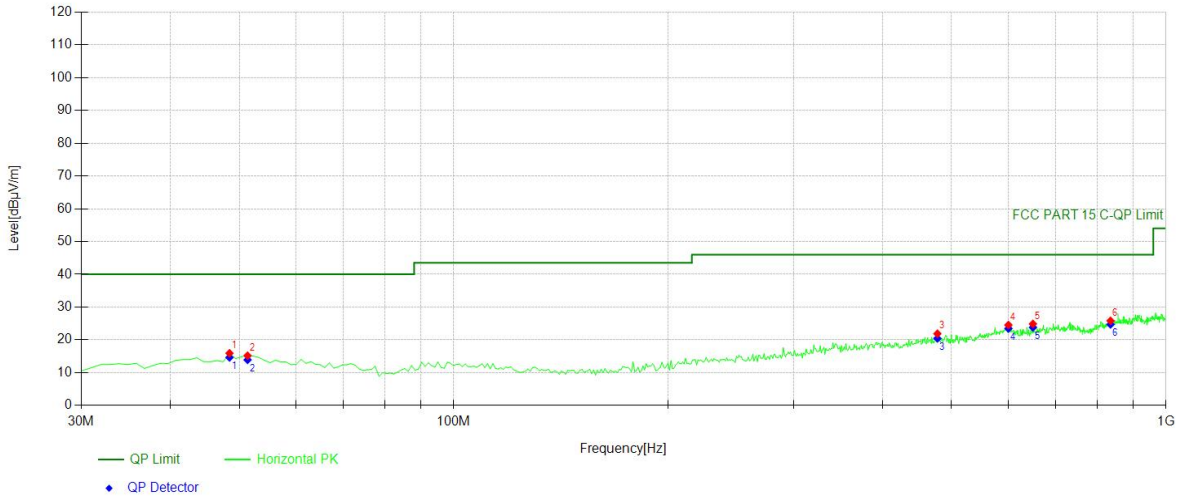
Final Data List					
NO.	Freq. [MHz]	Factor [dB/m]	QP Value [dBµV/m]	QP Limit [dBµV/m]	QP Margin [dB]
1	45.5355	-16.64	13.52	40.00	26.48
2	54.2743	-16.56	13.89	40.00	26.11
3	512.5726	-9.82	21.10	46.00	24.90
4	592.1922	-6.83	23.69	46.00	22.31
5	686.3764	-6.67	23.78	46.00	22.22
6	844.6446	-4.42	24.24	46.00	21.76

Test mode:	GFSK	Frequency:	Channel 19: 2440MHz



Suspected Data List								
NO.	Freq. [MHz]	Reading [dBµV]	Factor [dB/m]	Level [dBµV/m]	Detector	Limit [dBµV/m]	Margin [dB]	Polarity
1	41.6517	33.08	-17.18	15.90	PK	40.00	24.10	Vertical
2	53.3033	32.21	-16.44	15.77	PK	40.00	24.23	Vertical
3	68.8388	36.90	-18.53	18.37	PK	40.00	21.63	Vertical
4	603.8438	31.13	-6.65	24.48	PK	46.00	21.52	Vertical
5	696.0861	31.97	-6.30	25.67	PK	46.00	20.33	Vertical
6	807.7477	31.24	-5.28	25.96	PK	46.00	20.04	Vertical

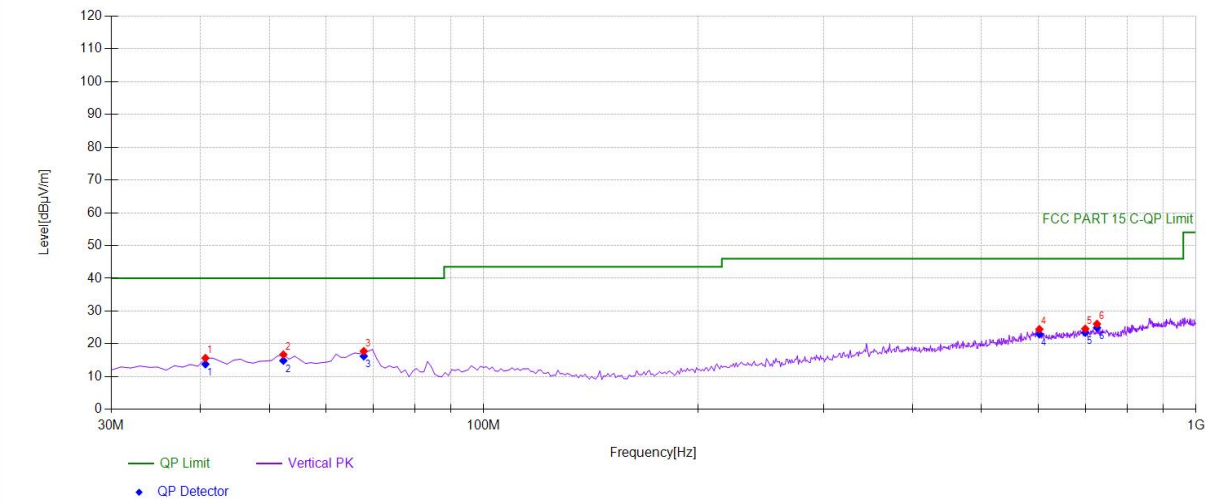
Final Data List					
NO.	Freq. [MHz]	Factor [dB/m]	QP Value [dBµV/m]	QP Limit [dBµV/m]	QP Margin [dB]
1	41.6517	-17.18	14.16	40.00	25.84
2	53.3033	-16.44	14.03	40.00	25.97
3	68.8388	-18.53	16.63	40.00	23.37
4	603.8438	-6.65	22.57	46.00	23.43
5	696.0861	-6.30	24.12	46.00	21.88
6	807.7477	-5.28	24.41	46.00	21.59



Suspected Data List								
NO.	Freq. [MHz]	Reading [dBµV]	Factor [dB/m]	Level [dBµV/m]	Detector	Limit [dBµV/m]	Margin [dB]	Polarity
1	48.4484	32.15	-16.22	15.93	PK	40.00	24.07	Horizontal
2	51.3614	31.39	-16.19	15.20	PK	40.00	24.80	Horizontal
3	477.6176	32.01	-10.11	21.90	PK	46.00	24.10	Horizontal
4	600.9309	31.04	-6.49	24.55	PK	46.00	21.45	Horizontal
5	650.4504	32.15	-7.26	24.89	PK	46.00	21.11	Horizontal
6	835.9059	30.58	-4.76	25.82	PK	46.00	20.18	Horizontal

Final Data List					
NO.	Freq. [MHz]	Factor [dB/m]	QP Value [dBµV/m]	QP Limit [dBµV/m]	QP Margin [dB]
1	48.4484	-16.22	14.65	40.00	25.35
2	51.3614	-16.19	13.92	40.00	26.08
3	477.6176	-10.11	20.46	46.00	25.54
4	600.9309	-6.49	23.46	46.00	22.54
5	650.4504	-7.26	23.80	46.00	22.20
6	835.9059	-4.76	24.73	46.00	21.27

Test mode:	GFSK	Frequency:	Channel 39: 2480MHz

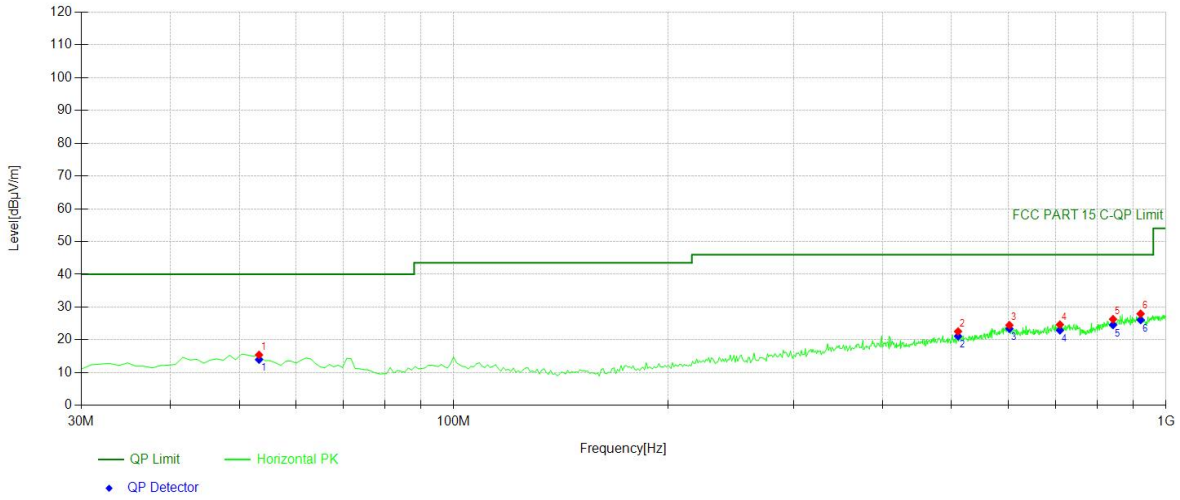


Suspected Data List

NO.	Freq. [MHz]	Reading [dBµV]	Factor [dB/m]	Level [dBµV/m]	Detector	Limit [dBµV/m]	Margin [dB]	Polarity
1	40.6807	32.99	-17.31	15.68	PK	40.00	24.32	Vertical
2	52.3323	33.07	-16.31	16.76	PK	40.00	23.24	Vertical
3	67.8679	36.18	-18.40	17.78	PK	40.00	22.22	Vertical
4	602.8729	31.07	-6.59	24.48	PK	46.00	21.52	Vertical
5	698.999	30.79	-6.18	24.61	PK	46.00	21.39	Vertical
6	726.1862	32.09	-6.00	26.09	PK	46.00	19.91	Vertical

Final Data List

NO.	Freq. [MHz]	Factor [dB/m]	QP Value [dBµV/m]	QP Limit [dBµV/m]	QP Margin [dB]
1	40.6807	-17.31	13.81	40.00	26.19
2	52.3323	-16.31	14.89	40.00	25.11
3	67.8679	-18.40	16.26	40.00	23.74
4	602.8729	-6.59	22.96	46.00	23.04
5	698.999	-6.18	23.45	46.00	22.55
6	726.1862	-6.00	24.93	46.00	21.07



Suspected Data List								
NO.	Freq. [MHz]	Reading [dBµV]	Factor [dB/m]	Level [dBµV/m]	Detector	Limit [dBµV/m]	Margin [dB]	Polarity
1	53.3033	31.88	-16.44	15.44	PK	40.00	24.56	Horizontal
2	510.6306	32.45	-9.87	22.58	PK	46.00	23.42	Horizontal
3	602.8729	31.08	-6.59	24.49	PK	46.00	21.51	Horizontal
4	709.6797	30.74	-6.09	24.65	PK	46.00	21.35	Horizontal
5	842.7027	30.83	-4.52	26.31	PK	46.00	19.69	Horizontal
6	921.3514	30.97	-3.00	27.97	PK	46.00	18.03	Horizontal

Final Data List					
NO.	Freq. [MHz]	Factor [dB/m]	QP Value [dBµV/m]	QP Limit [dBµV/m]	QP Margin [dB]
1	53.3033	-16.44	13.99	40.00	26.01
2	510.6306	-9.87	21.13	46.00	24.87
3	602.8729	-6.59	23.40	46.00	22.60
4	709.6797	-6.09	22.92	46.00	23.08
5	842.7027	-4.52	24.58	46.00	21.42
6	921.3514	-3.00	26.08	46.00	19.92

8.7 CONDUCTED EMISSIONS TEST

8.7.1 Applicable Standard

According to FCC Part 15.207(a)

8.7.2 Conformance Limit

	Conducted Emission Limit	
Frequency(MHz)	Quasi-peak	Average
0.15-0.5	66-56	56-46
0.5-5.0	56	46
5.0-30.0	60	50

Note: 1. The lower limit shall apply at the transition frequencies
2. The limit decreases in line with the logarithm of the frequency in the range of 0.15 to 0.50MHz.

8.7.3 Test Configuration

Test according to clause 7.3 conducted emission test setup

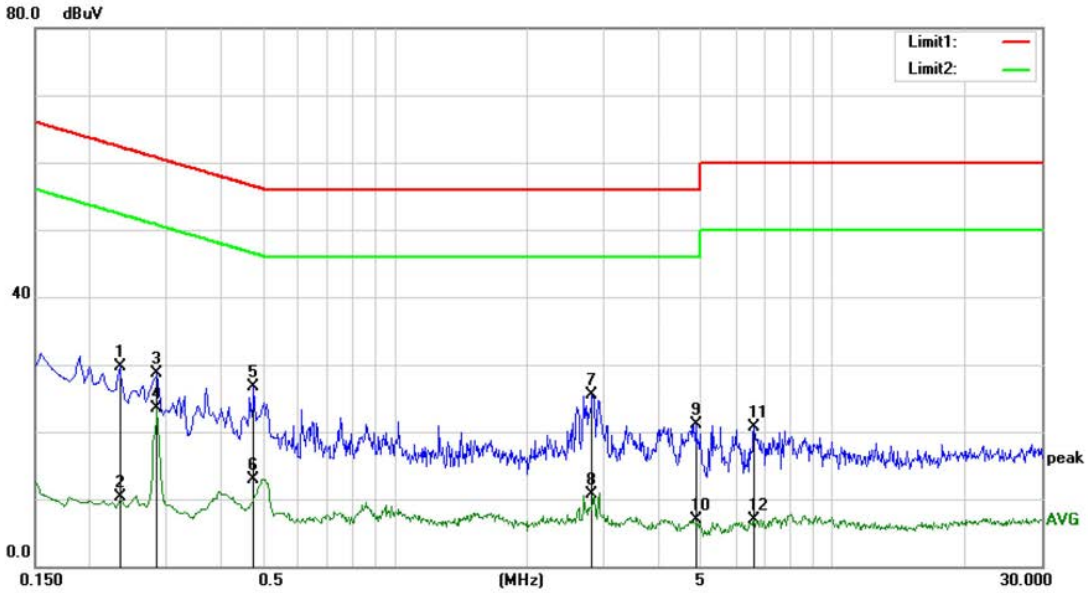
8.7.4 Test Procedure

The EUT was placed on a table which is 0.8m above ground plane.
Maximum procedure was performed on the highest emissions to ensure EUT compliance.
Repeat above procedures until all frequency measured were complete.

8.7.5 Test Results

Pass

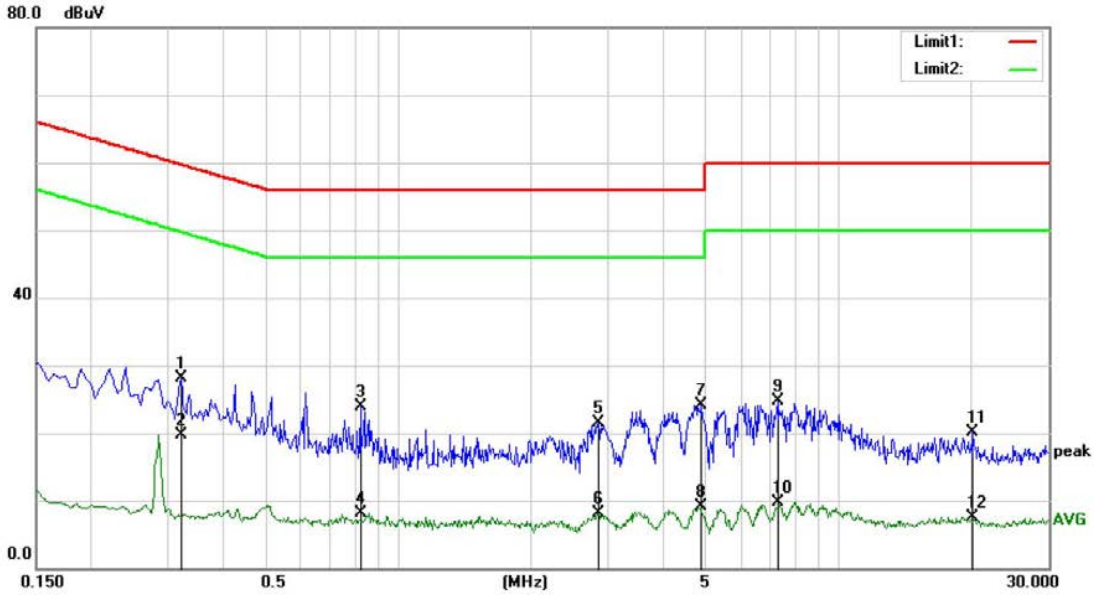
Note: The 120V &240V voltagehave been tested, and the worst result recorded was report as below



Site Conduction 2# Phase: L1 Temperature: 25.1

Limit: (CE)FCC PART 15 class B_QP Power: DC 5V From adapter Humidity: 45 %

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1		0.2350	19.11	10.65	29.76	62.27	-32.51	QP	
2		0.2350	-0.35	10.65	10.30	52.27	-41.97	AVG	
3		0.2850	17.98	10.65	28.63	60.67	-32.04	QP	
4	*	0.2850	12.76	10.65	23.41	50.67	-27.26	AVG	
5		0.4750	16.12	10.66	26.78	56.43	-29.65	QP	
6		0.4750	2.25	10.66	12.91	46.43	-33.52	AVG	
7		2.8150	14.90	10.56	25.46	56.00	-30.54	QP	
8		2.8150	0.18	10.56	10.74	46.00	-35.26	AVG	
9		4.8650	10.72	10.33	21.05	56.00	-34.95	QP	
10		4.8650	-3.48	10.33	6.85	46.00	-39.15	AVG	
11		6.6050	10.30	10.45	20.75	60.00	-39.25	QP	
12		6.6050	-3.54	10.45	6.91	50.00	-43.09	AVG	



Site Conduction 2# Phase: N Temperature: 25.1

Limit: (CE)FCC PART 15 class B_QP Power: DC 5V From adapter Humidity: 45 %

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1		0.3200	17.37	10.65	28.02	59.71	-31.69	QP	
2	*	0.3200	9.09	10.65	19.74	49.71	-29.97	AVG	
3		0.8200	13.24	10.66	23.90	56.00	-32.10	QP	
4		0.8200	-2.64	10.66	8.02	46.00	-37.98	AVG	
5		2.8400	10.97	10.56	21.53	56.00	-34.47	QP	
6		2.8400	-2.36	10.56	8.20	46.00	-37.80	AVG	
7		4.8800	13.79	10.32	24.11	56.00	-31.89	QP	
8		4.8800	-1.30	10.32	9.02	46.00	-36.98	AVG	
9		7.2550	14.19	10.49	24.68	60.00	-35.32	QP	
10		7.2550	-0.72	10.49	9.77	50.00	-40.23	AVG	
11		20.2050	9.05	11.15	20.20	60.00	-39.80	QP	
12		20.2050	-3.66	11.15	7.49	50.00	-42.51	AVG	

8.8 ANTENNA APPLICATION

8.8.1 Antenna Requirement

Standard	Requirement
FCC CRF Part 15.203	An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section. The manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited. This requirement does not apply to carrier current devices or to devices operated under the provisions of §15.211, §15.213, §15.217, §15.219, or §15.221. Further, this requirement does not apply to intentional radiators that must be professionally installed, such as perimeter protection systems and some field disturbance sensors, or to other intentional radiators which, in accordance with §15.31(d), must be measured at the installation site. However, the installer shall be responsible for ensuring that the proper antenna is employed so that the limits in this part are not exceeded.

For intentional device, according to FCC 47 CFR Section 15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. And according to FCC 47 CFR Section 15.247 (b), if transmitting antennas of directional gain greater than 6dBi are used, the power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6dBi.

8.8.2 Result

PASS

☒ Antenna use a permanently attached antenna which is not replaceable.
☐ Not using a standard antenna jack or electrical connector for antenna replacement
☐ The antenna has to be professionally installed (please provide method of installation)
Note: Please refer to the attached document Internal Photos to show the antenna connector.

--- End of Report ---

9 APPENDIX PHOTOGRAPHS OF EUT

Please refer to the file of External Photo and Internal Photo.

10 APPENDIX PHOTOGRAPHS OF TEST SETUP

Please refer to the file of Test Setup Photo.