



RF MEASUREMENT REPORT

FCC ID: 2A3Y3-NSM01

Applicant: Honeywell Safety Products USA, Inc.

Product: Smart Main Module

Model No.: NSM-01

Brand Name: Honeywell and/or NORTH

FCC Classification: Digital Transmission System (DTS)

FCC Rule Part(s): Part15 Subpart C (Section 15.247)

Test Date: November 08, 2021 ~ March 04, 2022

Reviewed By:

Jame Yuan

Approved By:

Robin Wu



The test results relate only to the samples tested.

This equipment has been shown to be capable of compliance with the applicable technical standards as indicated in the measurement report and was tested in accordance with the measurement procedures specified in ANSI C63.10-2013. Test results reported herein relate only to the item(s) tested.

The test report shall not be reproduced except in full without the written approval of MRT Technology (Suzhou) Co., Ltd.

Revision History

Report No.	Version	Description	Issue Date	Note
2111RSU020-U2	Rev. 01	Initial Report	03-04-2022	Valid

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1.4. Product Information

Product Name	Smart Main Module
Model No.	NSM-01
EUT Identification No.	20211105Sample#02 (Conducted Testing) 20211105Sample#01 (Radiated Testing)
Hardware Version	V1.3
Software Version	V1.0
Bluetooth Specification	V5.1 Single mode
UWB Specification	3993.6MHz, Single Channel
Power Supply	DC 5V,1A
Remark:	The information of EUT was provided by the manufacturer, and the accuracy of the information shall be the responsibility of the manufacturer.

1.5. Radio Specification

Frequency Range	2402~2480MHz
Channel Number	40
Type of Modulation	GFSK
Data Rate	0.125Mbps/1Mbps/2Mbps
Antenna Type	PCB Antenna
Antenna Type	3.2dBi

Note: For other features of this EUT, test report will be issued separately.

1.6. Working Frequency for this report

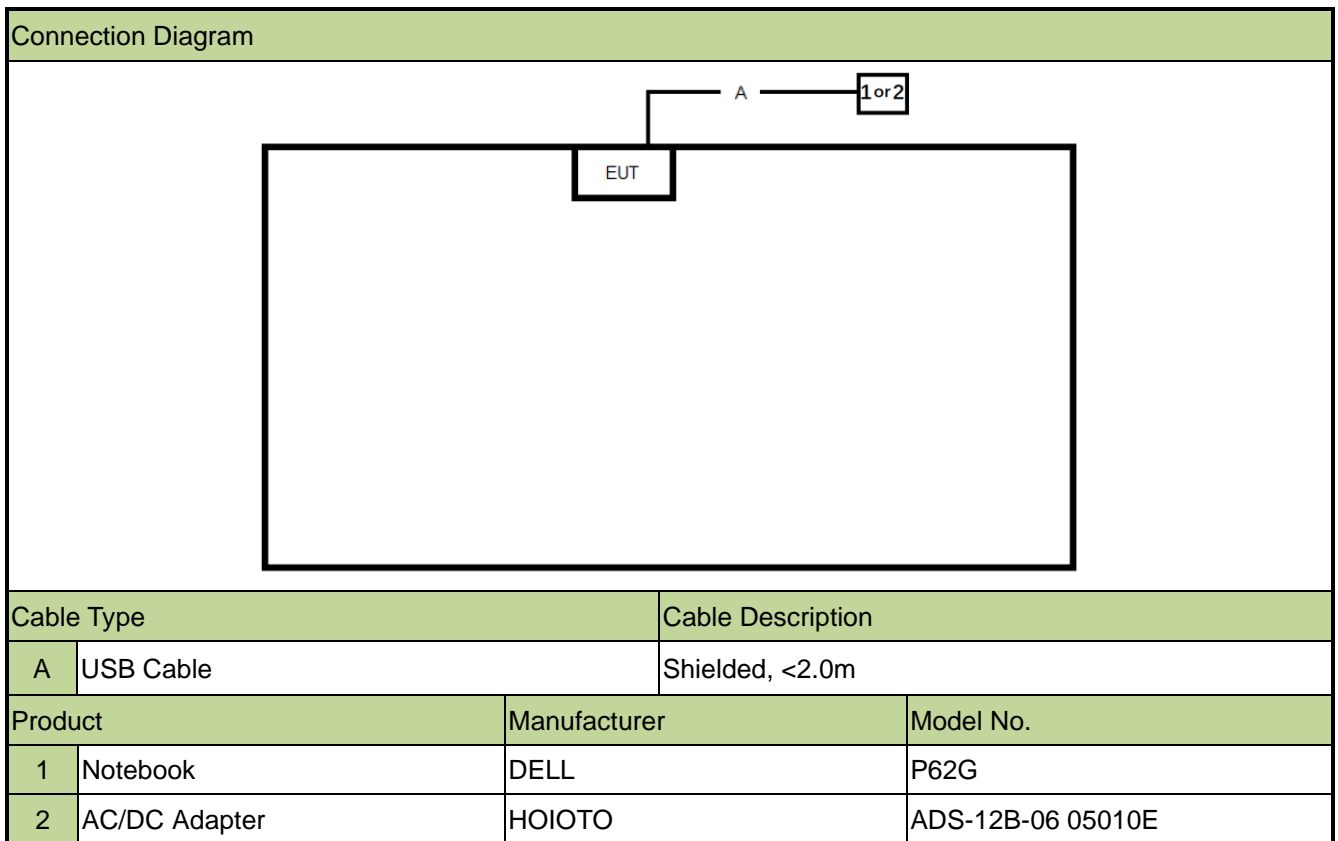
Channel	Frequency	Channel	Frequency	Channel	Frequency
00	2402 MHz	01	2404 MHz	02	2406 MHz
03	2408 MHz	04	2410 MHz	05	2412 MHz
06	2414 MHz	07	2416 MHz	08	2418 MHz
09	2420 MHz	10	2422 MHz	11	2424 MHz
12	2426 MHz	13	2428 MHz	14	2430 MHz
15	2432 MHz	16	2434 MHz	17	2436 MHz
18	2438 MHz	19	2440 MHz	20	2442 MHz
21	2444 MHz	22	2446 MHz	23	2448 MHz
24	2450 MHz	25	2452 MHz	26	2454 MHz
27	2456 MHz	28	2458 MHz	29	2460 MHz
30	2462 MHz	31	2464 MHz	32	2466 MHz
33	2468 MHz	34	2470 MHz	35	2472 MHz
36	2474 MHz	37	2476 MHz	38	2478 MHz
39	2480 MHz	--	--	--	--

2. Test Configuration

2.1. Test Mode

Mode 1: Transmit by BLE-0.125Mbps
Mode 2: Transmit by BLE-1Mbps
Mode 3: Transmit by BLE-2Mbps

2.2. Test System Connection Diagram



2.3. Test Software

The test utility software used during testing was “nRF_DTM” and version was v0.10.2.7.

2.4. Applied Standards

According to the specifications of the manufacturer, the EUT must comply with the requirements of the following standards:

- FCC Part 15.247
- KDB 558074 D01v05r02
- ANSI C63.10-2013

2.5. Test Environment Condition

Ambient Temperature	15 ~ 35°C
Relative Humidity	20 ~ 75%RH

3. Antenna Requirement

Excerpt from §15.203 of the FCC Rules/Regulations:

“An intentional radiator antenna shall be designed to ensure that no antenna other than that furnished by the responsible party can 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 antenna of the EUT is **permanently attached**.
- There are no provisions for connection to an external antenna.

Conclusion:

The unit complies with the requirement of §15.203.

4. Test Equipment Calibration Date

No.	Instrument	Manufacturer	Model No.	Asset No.	Last Cali. Date	Cali. Due Date	Test Site
1	Loop Antenna	Schwarzbeck	FMZB 1519	MRTSUE06025	1 year	2022/10/28	WZ-AC1/WZ-AC2
2	Horn Antenna	ETS	3117	MRTSUE06257	1 year	2022/9/25	WZ-AC1/WZ-AC2
3	Horn Antenna	Schwarzbeck	BBHA 9170	MRTSUE06597	1 year	2022/12/1	WZ-AC1/WZ-AC2
4	TRILOG Antenna	Schwarzbeck	VULB 9162	MRTSUE06022	1 year	2022/5/24	WZ-AC2
5	EMI Test Receiver	Agilent	N9038A	MRTSUE06125	1 year	2022/6/24	WZ-AC2
6	Thermohygrometer	Mingle	ETH529	MRTSUE06170	1 year	2022/12/1	WZ-AC2
7	Horn Antenna	Schwarzbeck	BBHA 9120D	MRTSUE06171	1 year	2022/10/21	WZ-AC2
8	Preamplifier	Schwarzbeck	BBV 9718	MRTSUE06176	1 year	2022/11/12	WZ-AC2
9	Anechoic Chamber	RIKEN	WZ-AC2	MRTSUE06213	1 year	2022/4/29	WZ-AC2
10	Thermohygrometer	testo	Testo 608-H1	MRTSUE11038	1 year	2022/11/11	WZ-AC2
11	Two-Line V-Network	R&S	ENV216	MRTSUE06002	1 year	2022/6/8	WZ-SR2
12	Shielding Room	MIX-BEP	WZ-SR2	MRTSUE06215	/	/	WZ-SR2
13	Thermohygrometer	testo	608-H1	MRTSUE06404	1 year	2022/6/28	WZ-SR2
14	Four-Line V-Network	R&S	ENV432	MRTSUE06615	1 year	2022/10/10	WZ-SR2
15	EMI Test Receiver	R&S	ESR3	MRTSUE06909	1 year	2022/11/1	WZ-SR2
16	USB Power Sensor	Agilent	U2021XA	MRTSUE06030	1 year	2022/10/10	WZ-SR3/WZ-SR5
17	Signal Analyzer	Agilent	N9020A	MRTSUE06106	1 year	2022/4/13	WZ-SR5
18	Thermohygrometer	testo	608-H1	MRTSUE06402	1 year	2022/6/28	WZ-SR5
19	Shielding Room	HUAMING	WZ-SR5	MRTSUE06442	/	/	WZ-SR5
20	Signal Analyzer	Keysight	N9010B	MRTSUE06457	1 year	2022/6/24	WZ-SR5
21	Attenuator	SHX	6dB	MRTSUE06592	1 year	2022/5/24	WZ-SR5
22	Attenuator	SHX	WDTS100-20dB-6G-B	MRTSUE06680	1 year	2022/9/15	WZ-SR5

Software	Version	Function
EMI Software	V3	EMI Test Software

5. Measurement Uncertainty

Where relevant, the following test uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4-2. This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of $k = 2$.

Conducted Emission Measurement
Measurement Uncertainty for a Level of Confidence of 95% ($U=2Uc(y)$): 9kHz~150kHz: 3.74dB 150kHz~30MHz: 3.44dB
Radiated Disturbance
Measurement Uncertainty for a Level of Confidence of 95% ($U=2Uc(y)$): Horizontal: 30MHz~300MHz: 5.04dB 300MHz~1GHz: 4.95dB 1GHz~40GHz: 6.40dB Vertical: 30MHz~300MHz: 5.24dB 300MHz~1GHz: 6.03dB 1GHz~40GHz: 6.40dB
Spurious Emissions, Conducted
Measuring Uncertainty for a Level of Confidence of 95% ($U=2Uc(y)$): 0.78dB
Output Power
Measuring Uncertainty for a Level of Confidence of 95% ($U=2Uc(y)$): 1.13dB
Power Spectrum Density
Measuring Uncertainty for a Level of Confidence of 95% ($U=2Uc(y)$): 1.15dB
Occupied Bandwidth
Measuring Uncertainty for a Level of Confidence of 95% ($U=2Uc(y)$): 0.28%

6. Test Result

6.1. Summary

FCC Section(s)	Test Description	Test Condition	Verdict
15.247(a)(2)	6dB Bandwidth	Conducted	Pass
15.247(b)(3)	Output Power		Pass
15.247(e)	Power Spectral Density		Pass
15.247(d)	Band Edge / Out- of-Band Emissions		Pass
15.205, 15.209	General Field Strength (Restricted Bands and Radiated Emission)	Radiated	Pass
15.207	AC Conducted Emissions 150kHz - 30MHz	Line Conducted	Pass

Remark:

1. The analyzer plots shown in this section were all taken with a correction table loaded into the analyzer. The correction table was used to account for the losses of the cables and attenuators used as part of the system to connect the EUT to the analyzer at all frequencies of interest.
2. For radiated emission test, every axis (X, Y, Z) was also verified. The test results shown in the following sections represent the worst-case emissions.

6.2. Occupied Bandwidth

6.2.1. Test Limit

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

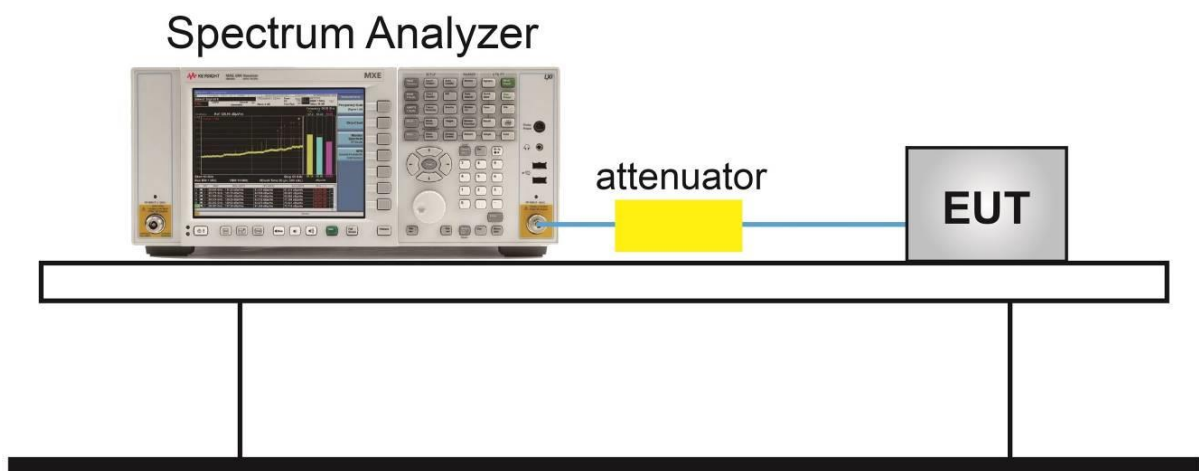
6.2.2. Test Procedure used

ANSI C63.10-2013 - Section 11.8 (6dB bandwidth)

6.2.3. Test Setting

1. The Spectrum's automatic bandwidth measurement capability was used to perform the 6dB bandwidth measurement. The "X" dB bandwidth parameter was set to $X = 6$. The bandwidth measurement was not influenced by any intermediate power nulls in the fundamental emission.
2. Set RBW = 100 kHz
3. VBW $\geq 3 \times$ RBW
4. Detector = Peak
5. Trace mode = Max hold
6. Sweep = Auto couple
7. Allow the trace was allowed to stabilize

6.2.4. Test Setup



6.2.5. Test Result

Refer to Appendix A.

6.3. Output Power

6.3.1. Test Limit

The maximum out power shall be less 1 Watt (30dBm).

The conducted output power limit specified in paragraph FCC Part 15.247(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 FCC Part 15.247(b)(3) of this section, as appropriate, by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

6.3.2. Test Procedure Used

ANSI C63.10-2013 - Section 11.9.1.3 PKPM1 Peak-reading power meter method

ANSI C63.10-2013 - Section 11.9.2.3.2 Method AVGPM-G

6.3.3. Test Setting

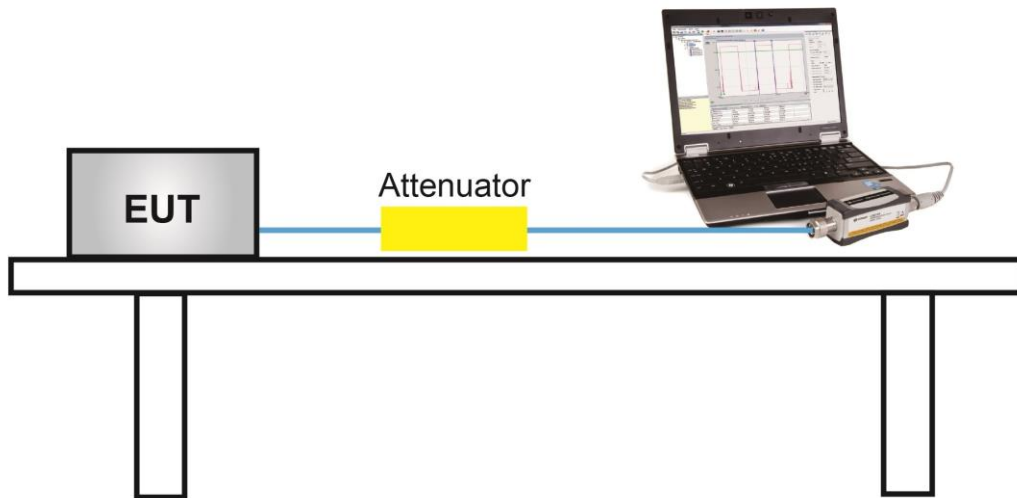
Method PKPM1 (Peak power measurement)

Peak power measurements were performed only when the EUT was transmitting at its maximum power control level using a broadband power meter with a pulse sensor. The pulse sensor employs a VBW = 50MHz so this method was only used for signals whose DTS bandwidth was less than or equal to 50MHz.

Method AVGPM-G (Measurement using a gated RF average-reading power meter)

Measurements may be performed using a wideband gated RF power meter provided that the gate parameters are adjusted such that the power is measured only when the EUT is transmitting at its maximum power control level. Since this measurement is made only during the ON time of the transmitter, no duty cycle correction is required.

6.3.4. Test Setup



6.3.5. Test Result

Refer to Appendix A.

6.4. Power Spectral Density

6.4.1. Test Limit

The maximum permissible power spectral density is 8dBm in any 3 kHz band.

The same method of determining the conducted output power shall be used to determine the power spectral density.

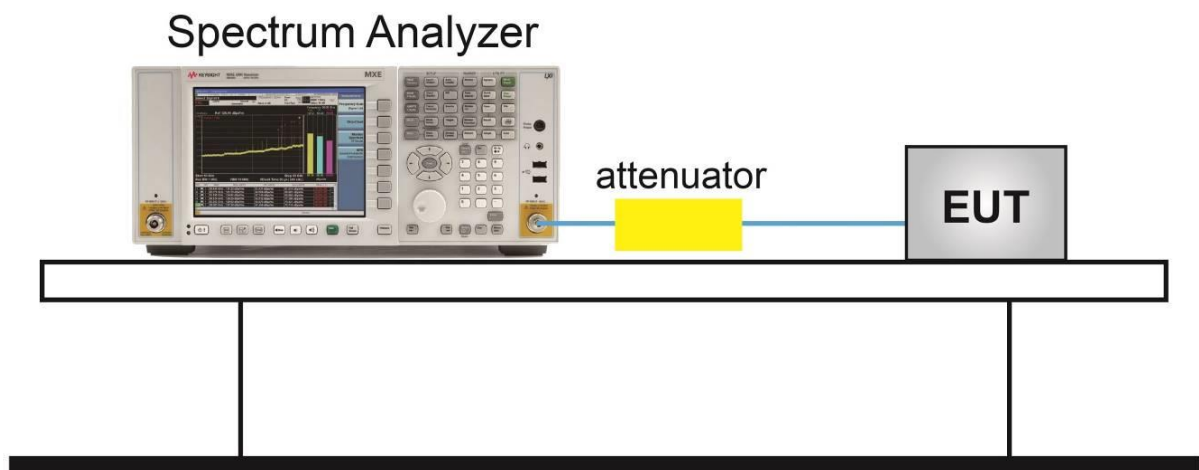
6.4.2. Test Procedure Used

ANSI C63.10-2013 - Section 11.10.2.

6.4.3. Test Setting

1. Analyzer was set to the center frequency of the DTS channel under investigation
2. Span = 1.5 times the DTS channel bandwidth
3. RBW = 3kHz
4. VBW = 10kHz
5. Detector = peak
6. Sweep time = auto couple
7. Trace mode = max hold
8. Trace was allowed to stabilize

6.4.4. Test Setup



6.4.5. Test Result

Refer to Appendix A.

6.5. Conducted Band Edge and Out-of-Band Emissions

6.5.1. Test Limit

The limit for out-of-band spurious emissions at the band edge is 20dB below the fundamental emission level, as determined from the in-band power measurement of the DTS channel performed in a 100 kHz bandwidth per the PSD procedure.

6.5.2. Test Procedure Used

ANSI C63.10-2013 - Section 11.11.2 & 11.11.3.

6.5.3. Test Setting

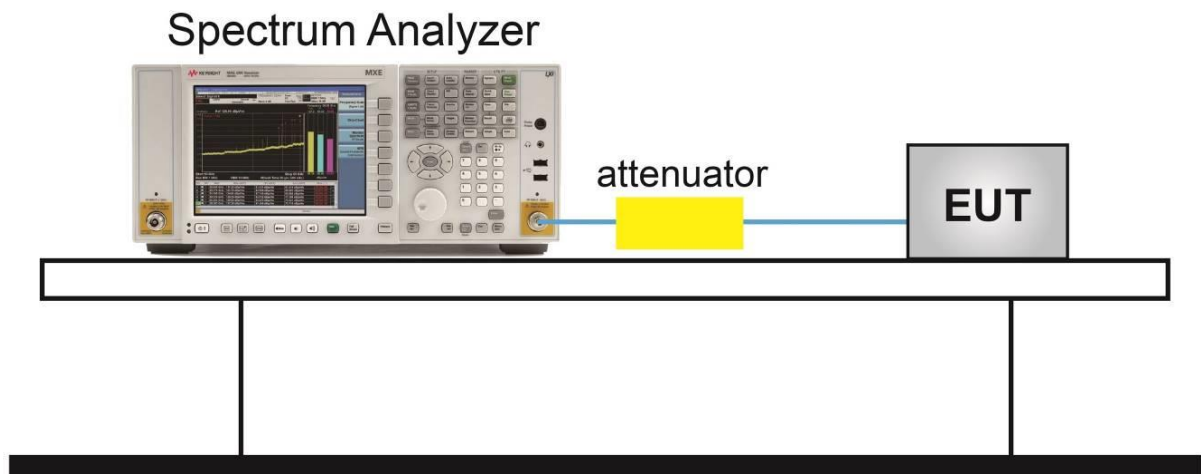
Reference level measurement

1. Set instrument center frequency to DTS channel center frequency
2. Set the span to ≥ 1.5 times the DTS bandwidth
3. Set the RBW = 100 kHz
4. Set the VBW $\geq 3 \times$ RBW
5. Detector = peak
6. Sweep time = auto couple
7. Trace mode = max hold
8. Allow trace to fully stabilize

Emission level measurement

1. Set the center frequency and span to encompass frequency range to be measured
2. RBW = 100KHz
3. VBW = 300KHz
4. Detector = Peak
5. Trace mode = max hold
6. Sweep time = auto couple
7. The trace was allowed to stabilize

6.5.4. Test Setup



6.5.5. Test Result

Refer to Appendix A.

6.6. Radiated Spurious Emission

6.6.1. Test Limit

All out of band emissions appearing in a restricted band as specified in Section 15.205 of the Title 47CFR must not exceed the limits shown in Table per Section 15.209.

FCC Part 15 Subpart C Paragraph 15.209		
Frequency [MHz]	Field Strength [$\mu\text{V/m}$]	Measured Distance [Meters]
0.009 - 0.490	2400/F (kHz)	300
0.490 - 1.705	24000/F (kHz)	30
1.705 - 30	30	30
30 - 88	100	3
88 - 216	150	3
216 - 960	200	3
Above 960	500	3

6.6.2. Test Procedure Used

ANSI C63.10 Section 6.3 (General Requirements)

ANSI C63.10 Section 6.4 (Standard test method below 30MHz)

ANSI C63.10 Section 6.5 (Standard test method above 30MHz to 1GHz)

ANSI C63.10 Section 6.6 (Standard test method above 1GHz)

6.6.3. Test Setting

Table 1 - RBW as a function of frequency

Frequency	RBW
9 ~ 150 kHz	200 ~ 300 Hz
0.15 ~ 30 MHz	9 ~ 10 kHz
30 ~ 1000 MHz	100 ~ 120 kHz
> 1000 MHz	1 MHz

Quasi-Peak Measurements below 1GHz

1. Analyzer center frequency was set to the frequency of the radiated spurious emission of interest
2. Span was set greater than 1MHz
3. RBW = as specified in Table 1
4. Detector = CISPR quasi-peak
5. Sweep time = auto couple
6. Trace was allowed to stabilize

Peak Measurements above 1GHz

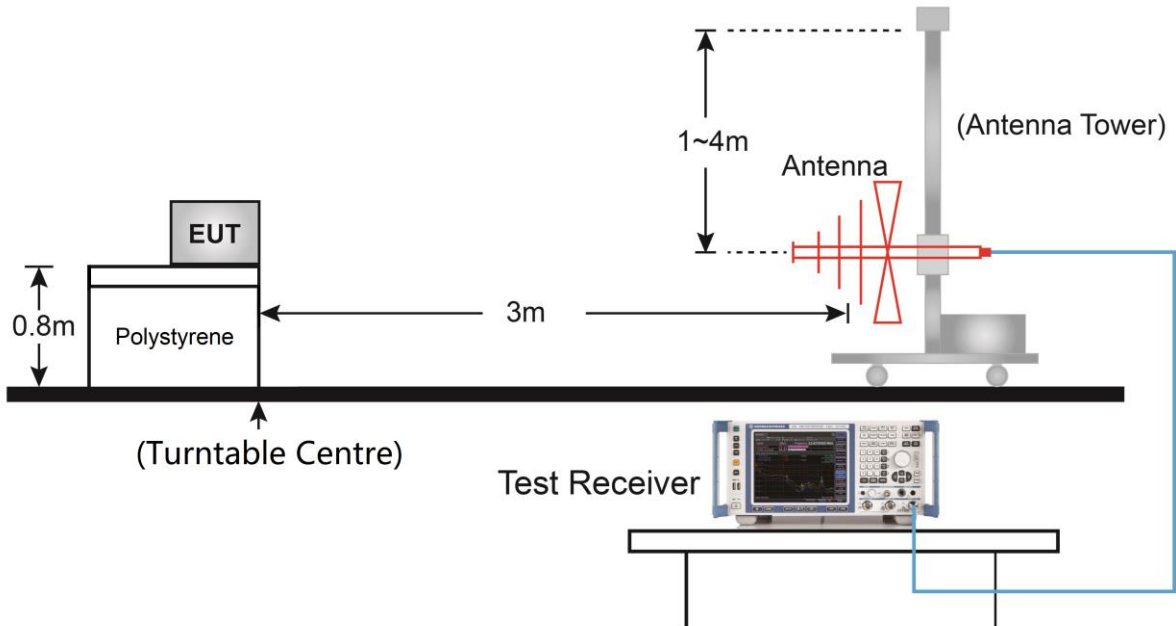
1. Analyzer center frequency was set to the frequency of the radiated spurious emission of interest
2. RBW = 1MHz
3. VBW = 3MHz
4. Detector = peak
5. Sweep time = auto couple
6. Trace mode = max hold
7. Trace was allowed to stabilize

Average Measurements above 1GHz (Method VB)

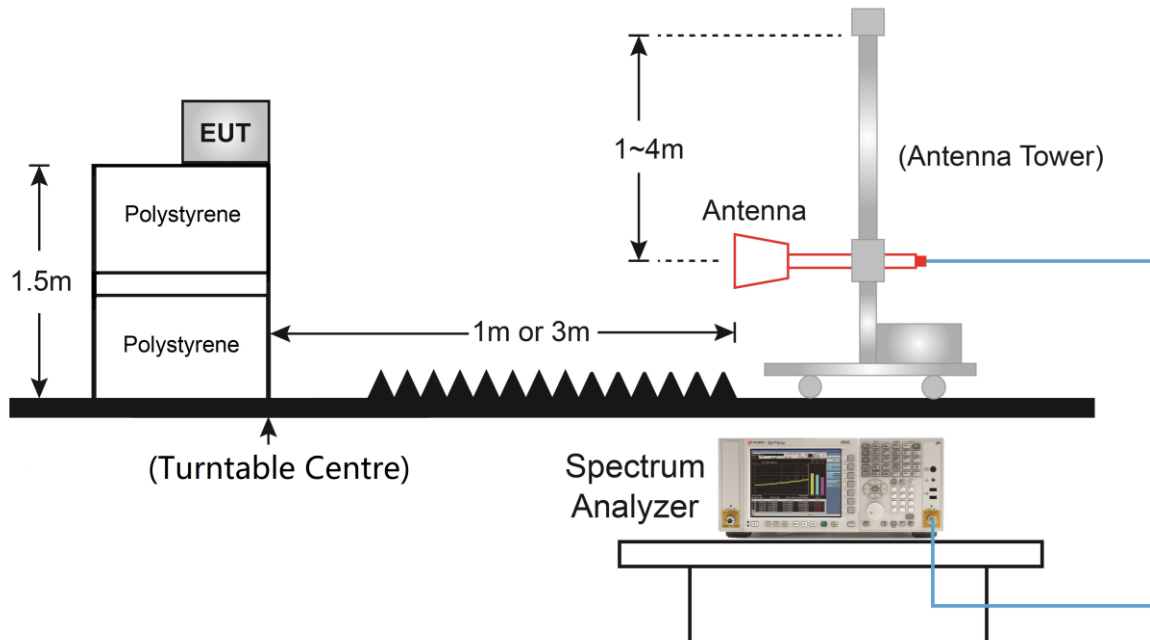
1. Analyzer center frequency was set to the frequency of the radiated spurious emission of interest
2. RBW = 1MHz
3. VBW; If the EUT is configured to transmit with duty cycle $\geq 98\%$, set VBW = 10 Hz.
If the EUT duty cycle is $< 98\%$, set VBW $\geq 1/T$. T is the minimum transmission duration.
4. Detector = Peak
5. Sweep time = auto
6. Trace mode = max hold
7. Trace was allowed to stabilize

6.6.4. Test Setup

Below 1GHz Test Setup:



Above 1GHz Test Setup:



6.6.5. Test Result

Refer to Appendix A.

6.7. Radiated Restricted Band Edge

6.7.1. Test Limit

For 15.205 requirement:

Radiated emissions which fall in the restricted bands, as defined in Section 15.205(a) of FCC part 15, must also comply with the radiated emission limits specified in Section 15.209(a).

Frequency (MHz)	Frequency (MHz)	Frequency (MHz)	Frequency (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)
13.36 - 13.41	--	--	--

All out of band emissions appearing in a restricted band as specified in Section 15.205 of the Title 47CFR must not exceed the limits shown in Table per Section 15.209.

FCC Part 15 Subpart C Paragraph 15.209 Limits		
Frequency [MHz]	Field Strength [μ V/m]	Measured Distance [Meters]
0.009 - 0.490	2400/F (kHz)	300
0.490 - 1.705	24000/F (kHz)	30
1.705 - 30	30	30
30 - 88	100	3
88 - 216	150	3
216 - 960	200	3
Above 960	500	3

6.7.2. Test Procedure Used

ANSI C63.10 Section 6.3 (General Requirements)

ANSI C63.10 Section 6.6 (Standard test method above 1GHz)

6.7.3. Test Setting

Peak Field Strength Measurements

1. Analyzer center frequency was set to the frequency of the radiated spurious emission of interest
2. RBW = 1MHz
3. VBW = 3MHz
4. Detector = peak
5. Sweep time = auto couple
6. Trace mode = max hold
7. Trace was allowed to stabilize

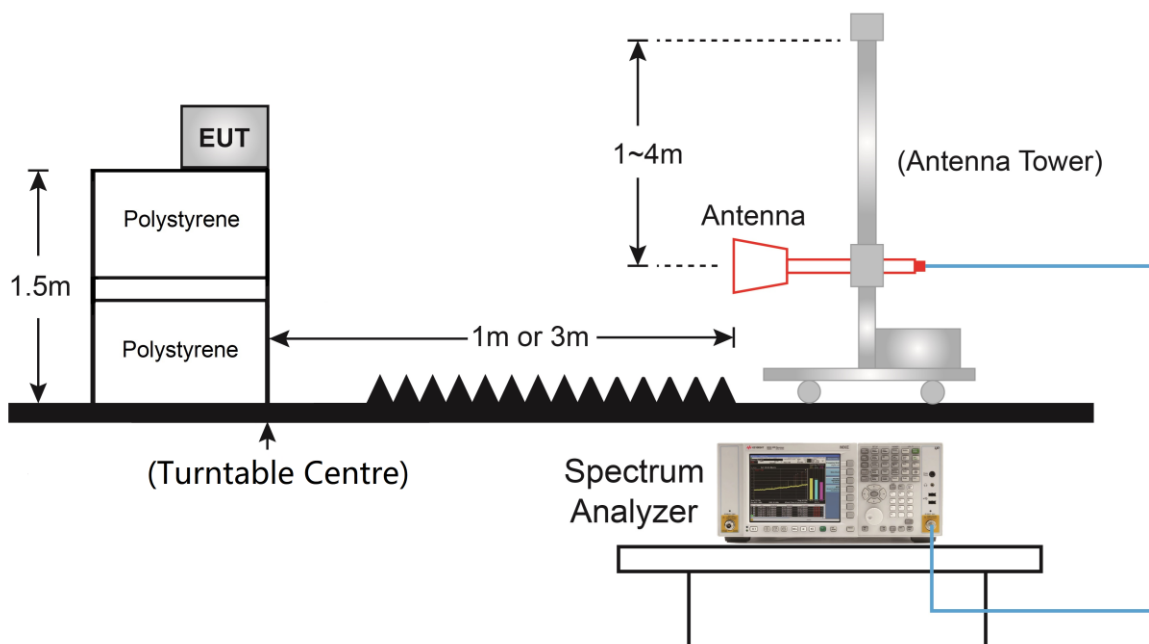
Average Measurements above 1GHz (Method VB)

1. Analyzer center frequency was set to the frequency of the radiated spurious emission of interest
2. RBW = 1MHz
3. VBW; If the EUT is configured to transmit with duty cycle $\geq 98\%$, set VBW = 10 Hz.

If the EUT duty cycle is $< 98\%$, set $VBW \geq 1/T$. T is the minimum transmission duration.

4. Detector = Peak
5. Sweep time = auto
6. Trace mode = max hold
7. Trace was allowed to stabilize

6.7.4. Test Setup



6.7.5. Test Result

Refer to Appendix A.

6.8. AC Conducted Emissions

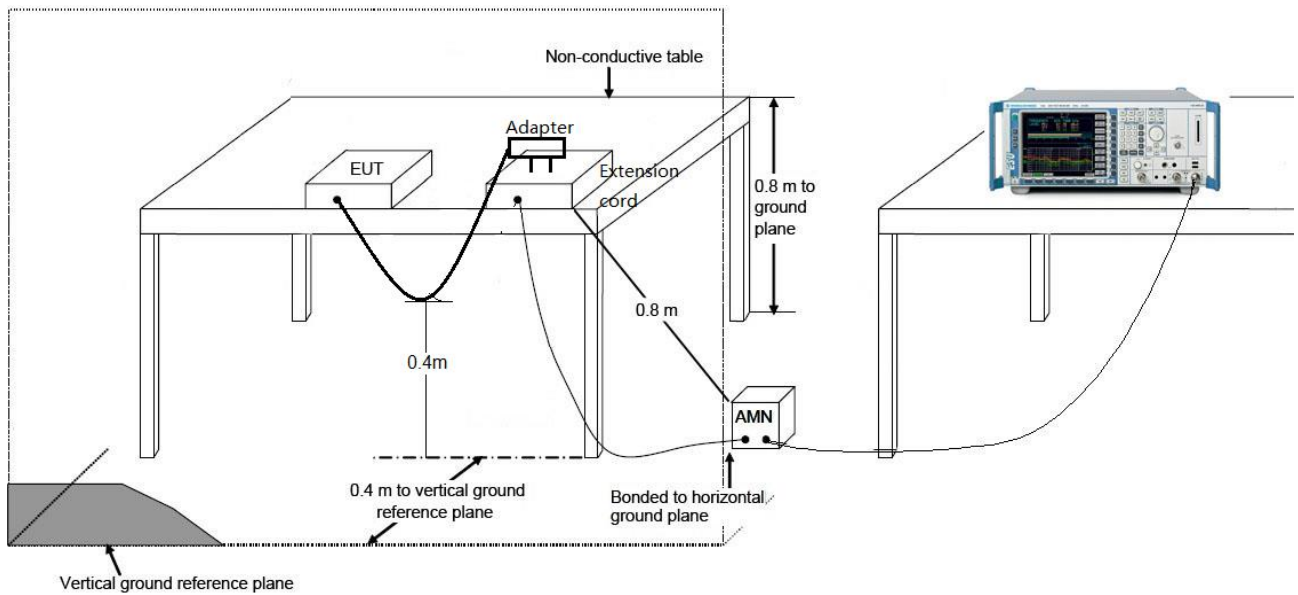
6.8.1. Test Limit

FCC Part 15 Subpart C Paragraph 15.207 Limits		
Frequency (MHz)	QP (dB μ V)	AV (dB μ V)
0.15 - 0.50	66 - 56	56 - 46
0.50 - 5.0	56	46
5.0 - 30	60	50

Note 1: The lower limit shall apply at the transition frequencies.

Note 2: The limit decreases linearly with the logarithm of the frequency in the range 0.15MHz to 0.5MHz.

6.8.2. Test Setup



6.8.3. Test Result

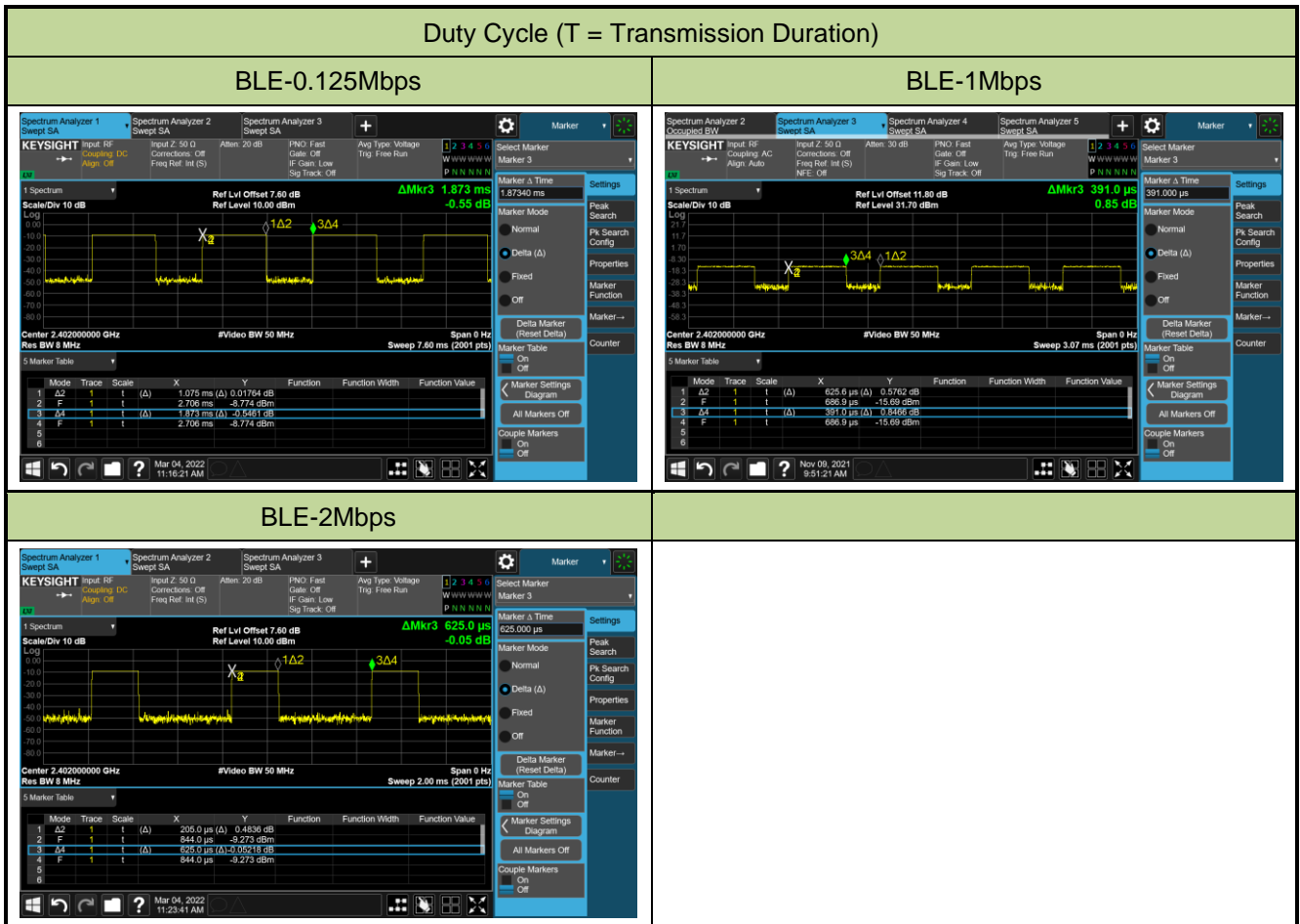
Refer to Appendix A.

Appendix A - Test Result

A.1 Duty Cycle Test Result

Test Mode	Duty Cycle
BLE-0.125Mbps	57.39%
BLE-1Mbps	62.50%
BLE-2Mbps	32.80%

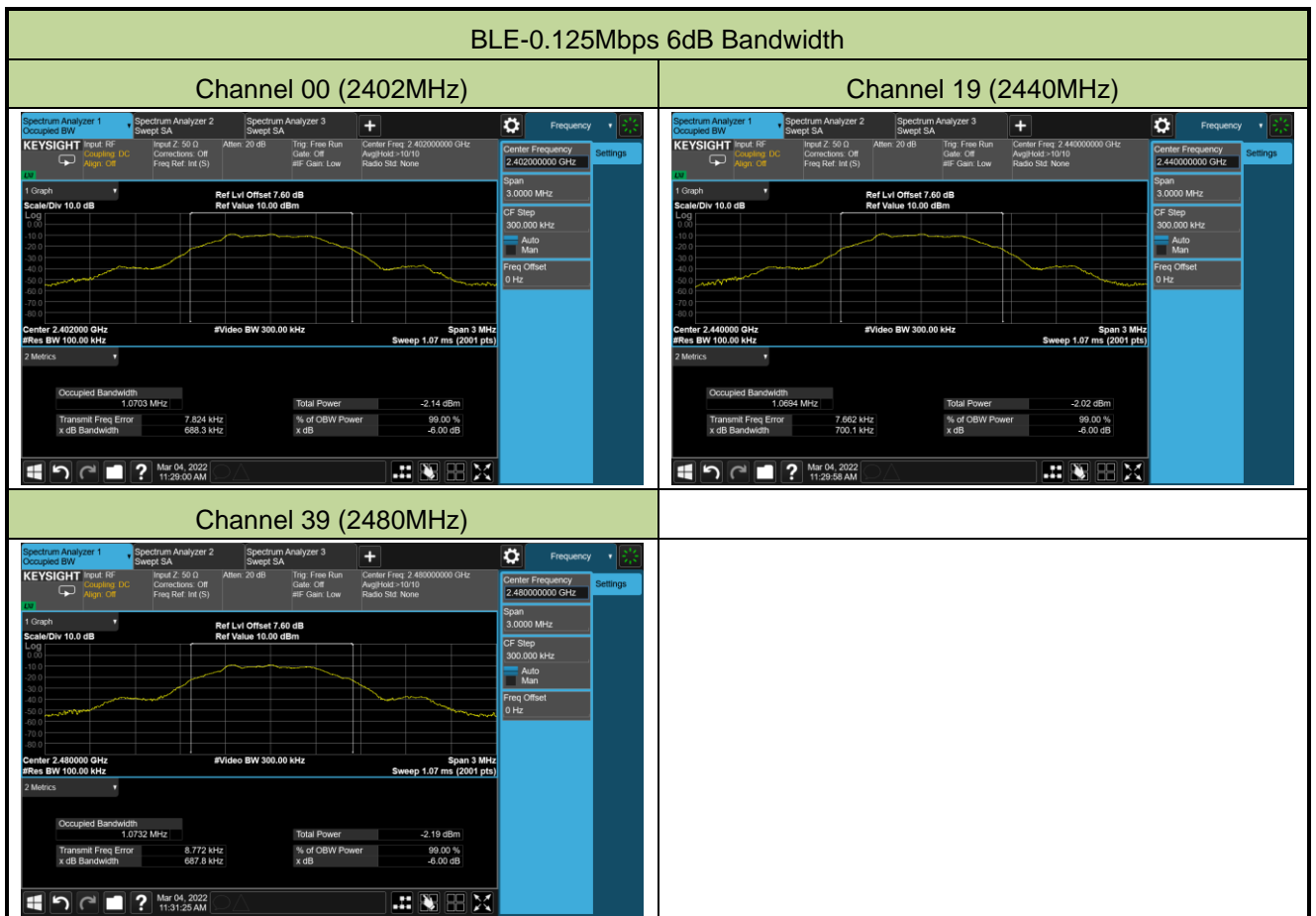
Duty Cycle (T = Transmission Duration)

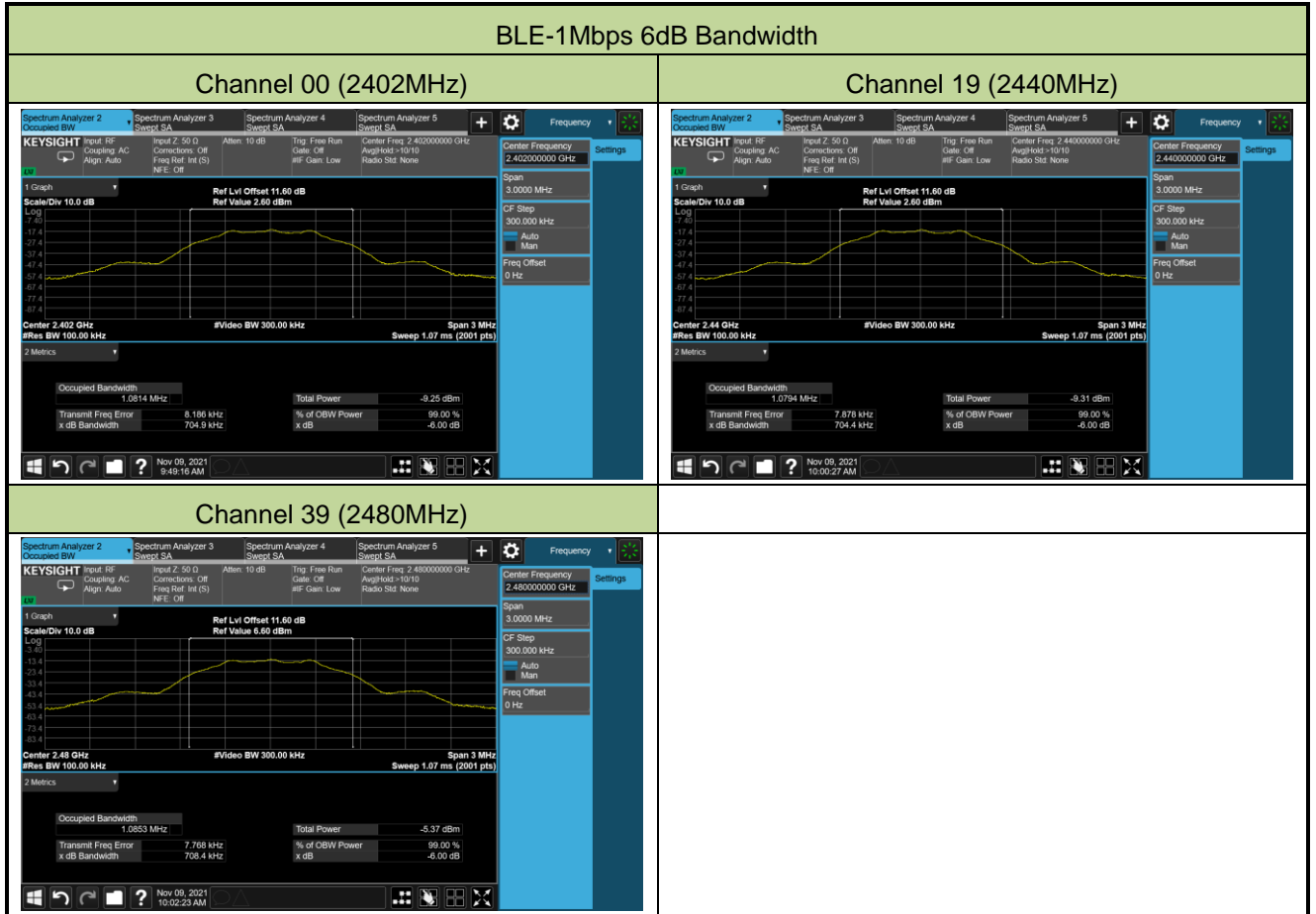


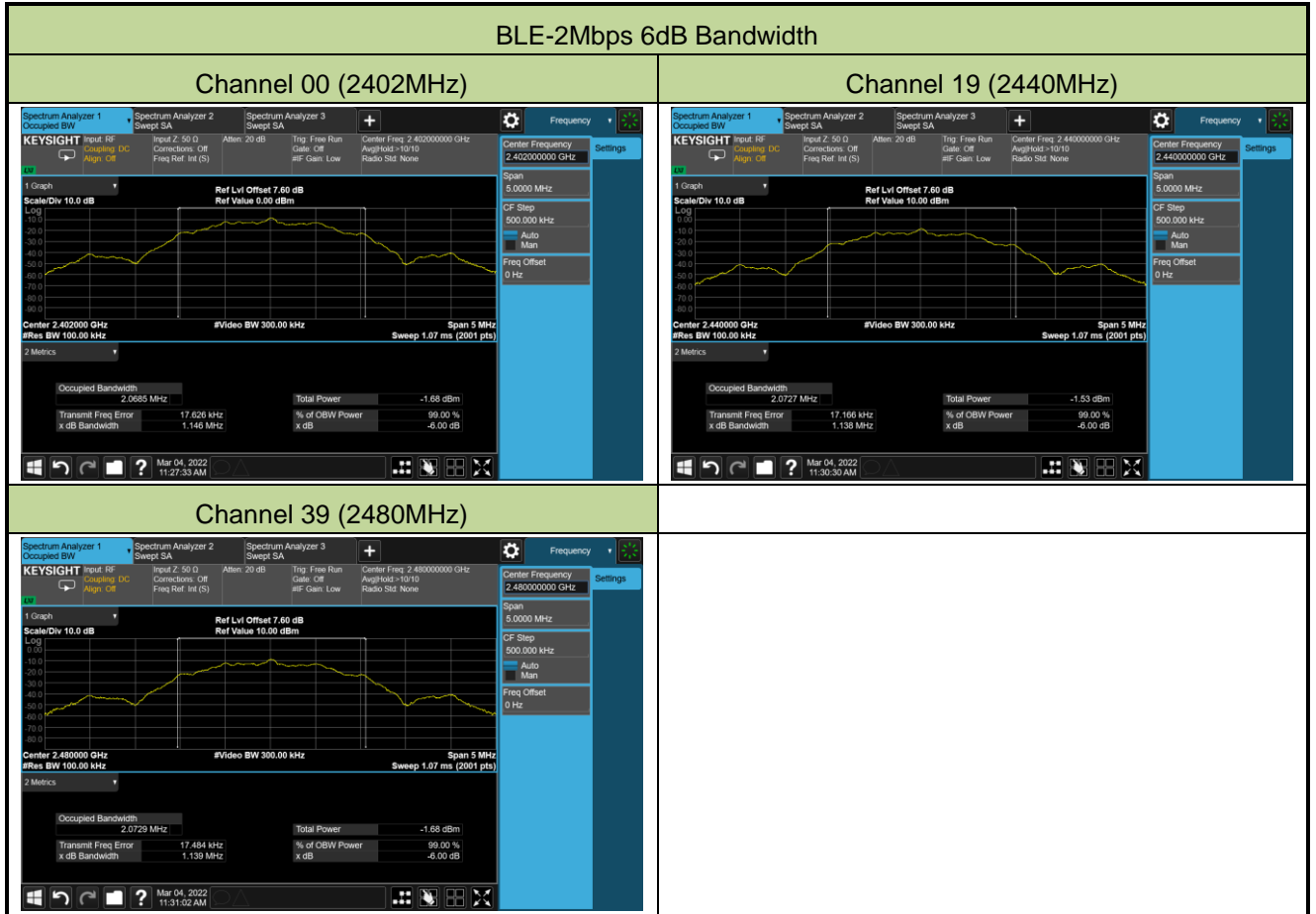
A.2 6dB Bandwidth Test Result

Test Site	WZ-SR5	Test Engineer	Liz Yuan
Test Date	2021/11/09 ~ 2022/03/04		

Test Mode	Data Rate	Channel No.	Frequency (MHz)	6dB Bandwidth (MHz)	Limit (MHz)
BLE	0.125Mbps	00	2402	0.6883	≥ 0.5
BLE	0.125Mbps	19	2440	0.7001	≥ 0.5
BLE	0.125Mbps	39	2480	0.6878	≥ 0.5
BLE	1Mbps	00	2402	0.7049	≥ 0.5
BLE	1Mbps	19	2440	0.7044	≥ 0.5
BLE	1Mbps	39	2480	0.7084	≥ 0.5
BLE	2Mbps	00	2402	1.146	≥ 0.5
BLE	2Mbps	19	2440	1.138	≥ 0.5
BLE	2Mbps	39	2480	1.139	≥ 0.5







A.3 Output Power Test Result

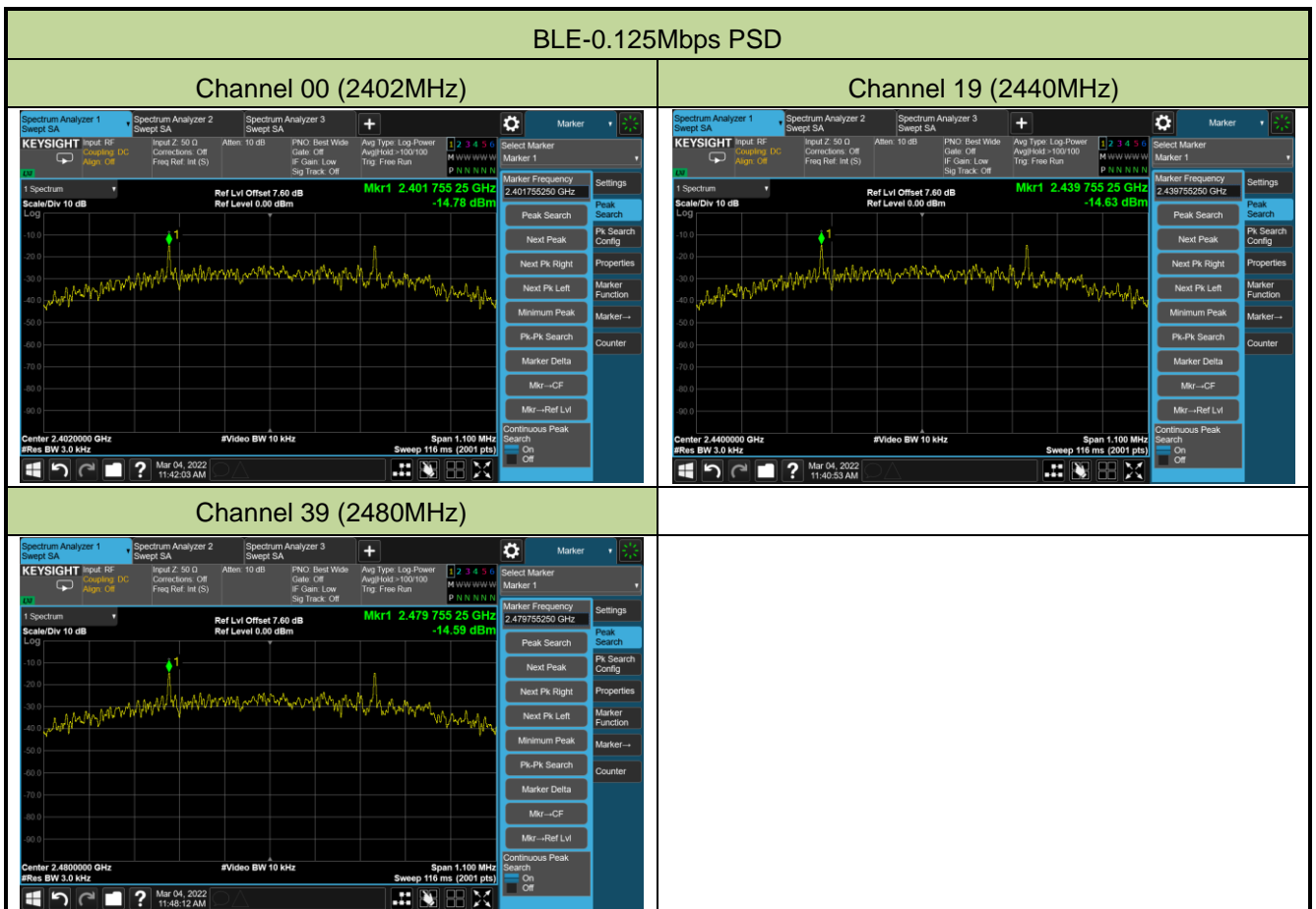
Test Site	WZ-SR5	Test Engineer	Liz Yuan
Test Date	2021/11/09 ~ 2022/03/04		

Test Mode	Data Rate	Channel No.	Frequency (MHz)	Peak Power (dBm)	Limit (dBm)	Result
BLE	0.125Mbps	00	2402	-7.66	≤ 30.00	Pass
BLE	0.125Mbps	19	2440	-7.58	≤ 30.00	Pass
BLE	0.125Mbps	39	2480	-7.63	≤ 30.00	Pass
BLE	1Mbps	00	2402	-5.95	≤ 30.00	Pass
BLE	1Mbps	19	2440	-5.97	≤ 30.00	Pass
BLE	1Mbps	39	2480	-5.35	≤ 30.00	Pass
BLE	2Mbps	00	2402	-7.69	≤ 30.00	Pass
BLE	2Mbps	19	2440	-7.55	≤ 30.00	Pass
BLE	2Mbps	39	2480	-7.56	≤ 30.00	Pass

A.4 Power Spectral Density Test Result

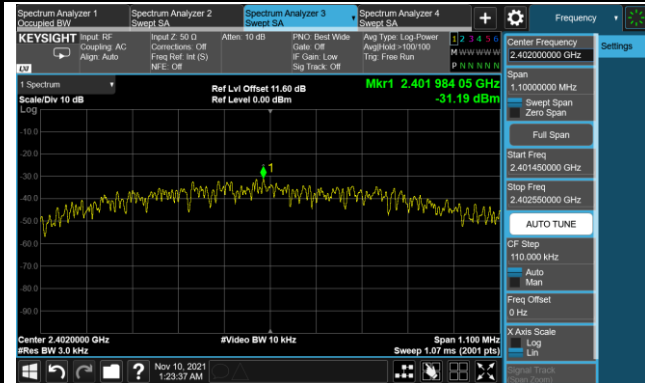
Test Site	WZ-SR5	Test Engineer	Liz Yuan
Test Date	2021/11/09~2022/03/04		

Test Mode	Data Rate	Channel No.	Frequency (MHz)	PSD Result (dBm / 3kHz)	Limit (dBm / 3kHz)	Result
BLE	0.125Mbps	00	2402	-14.78	≤ 8.00	Pass
BLE	0.125Mbps	19	2440	-14.63	≤ 8.00	Pass
BLE	0.125Mbps	39	2480	-14.59	≤ 8.00	Pass
BLE	1Mbps	00	2402	-31.19	≤ 8.00	Pass
BLE	1Mbps	19	2440	-31.37	≤ 8.00	Pass
BLE	1Mbps	39	2480	-27.45	≤ 8.00	Pass
BLE	2Mbps	00	2402	-26.40	≤ 8.00	Pass
BLE	2Mbps	19	2440	-26.35	≤ 8.00	Pass
BLE	2Mbps	39	2480	-26.45	≤ 8.00	Pass

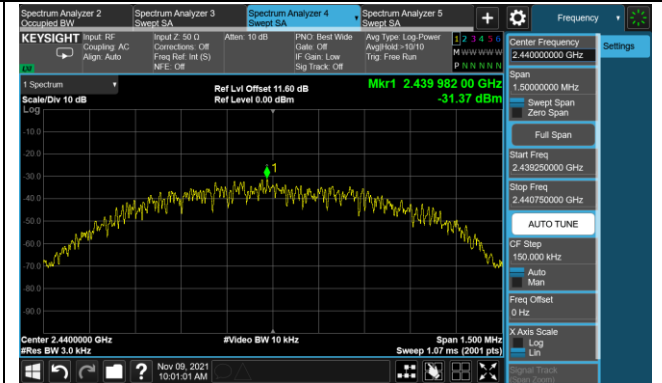


BLE-1Mbps PSD

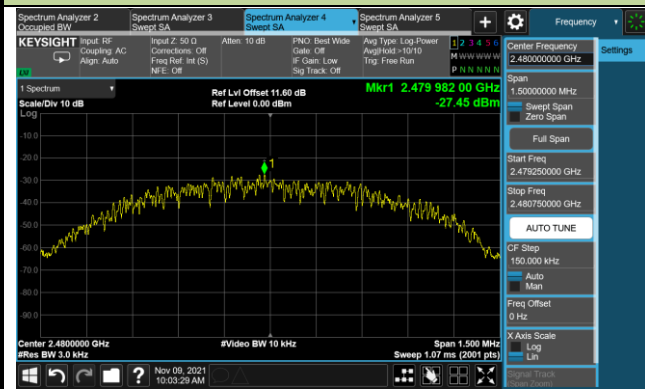
Channel 00 (2402MHz)



Channel 19 (2440MHz)

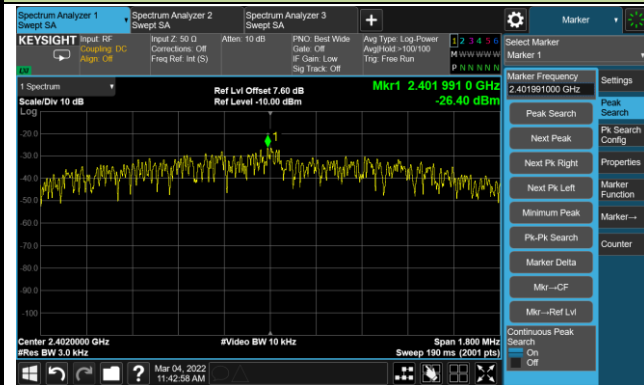


Channel 39 (2480MHz)

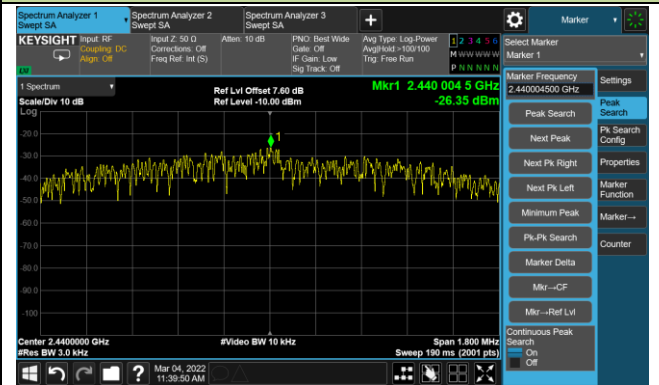


BLE-2Mbps PSD

Channel 00 (2402MHz)



Channel 19 (2440MHz)



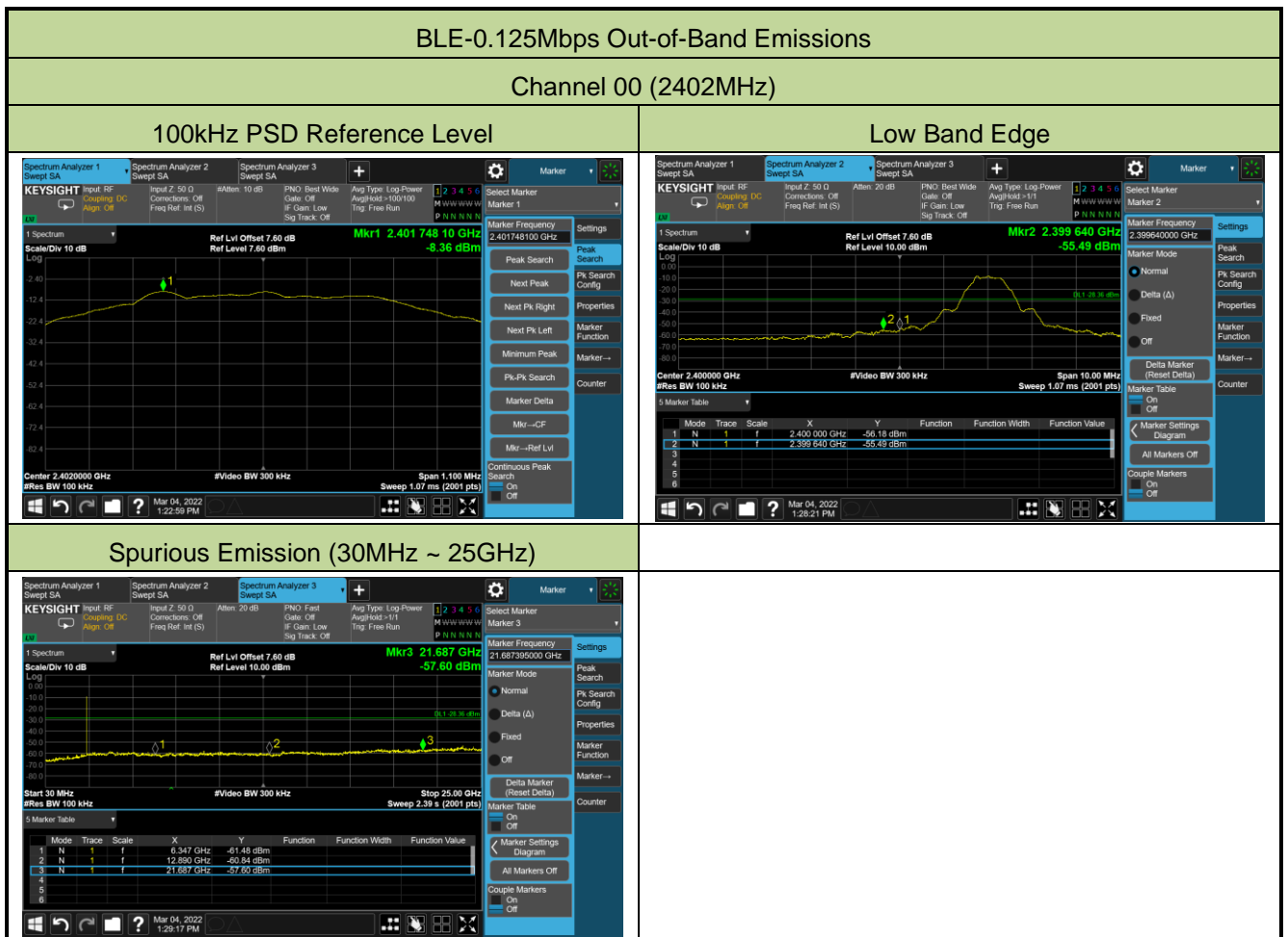
Channel 39 (2480MHz)



A.5 Conducted Band Edge and Out-of-Band Emissions Test Result

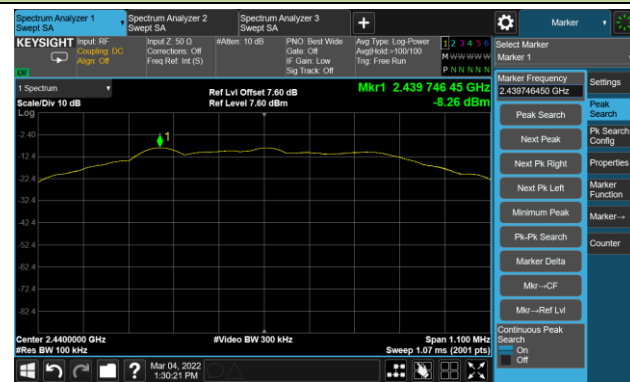
Test Site	WZ-SR5	Test Engineer	Liz Yuan
Test Date	2021/11/09 ~ 2022/03/04		

Test Mode	Data Rate / Mbps	Channel No.	Frequency (MHz)	Limit (dBc)	Result
BLE	0.125	00	2402	20	Pass
BLE	0.125	19	2440	20	Pass
BLE	0.125	39	2480	20	Pass
BLE	1	00	2402	20	Pass
BLE	1	19	2440	20	Pass
BLE	1	39	2480	20	Pass
BLE	2	00	2402	20	Pass
BLE	2	19	2440	20	Pass
BLE	2	39	2480	20	Pass

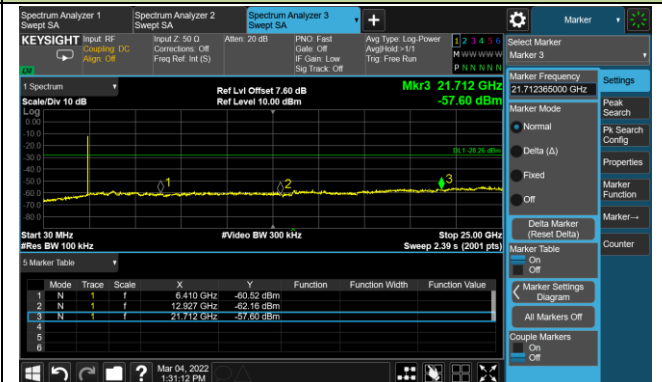


Channel 19 (2440MHz)

100kHz PSD Reference Level

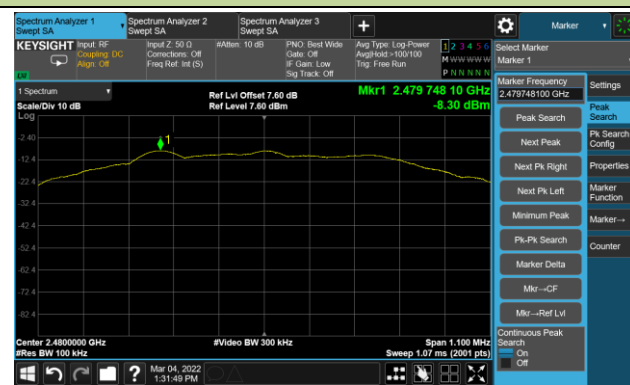


Spurious Emission (30MHz ~ 25GHz)

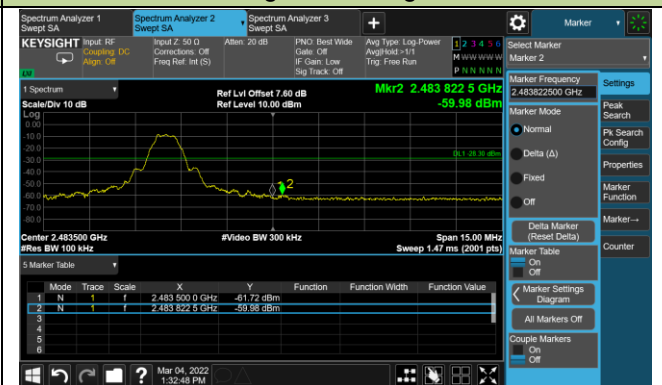


Channel 39 (2480MHz)

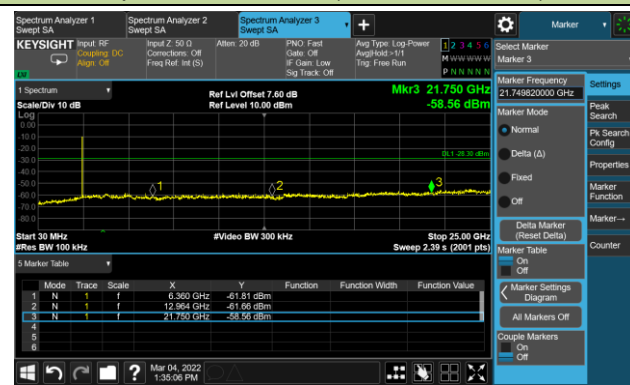
100kHz PSD Reference Level



High Band Edge

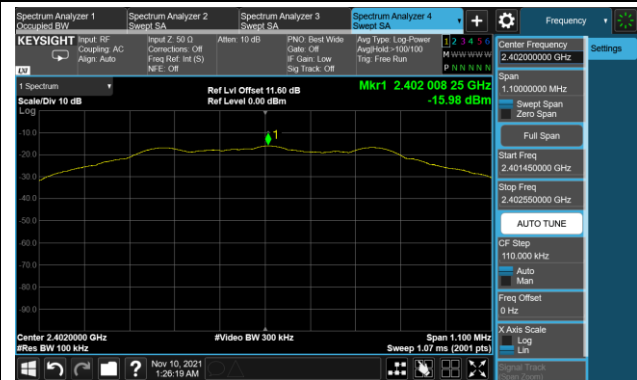


Spurious Emission (30MHz ~ 25GHz)



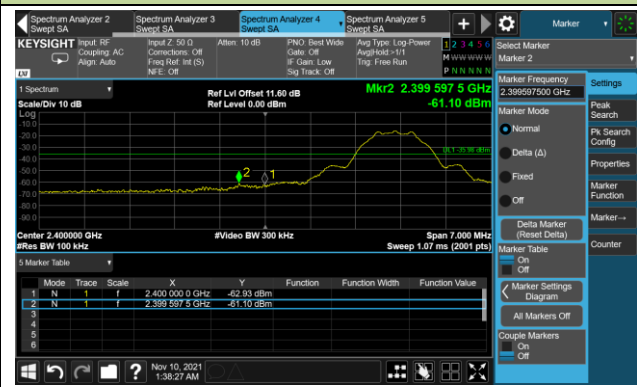
BLE-1Mbps Out-of-Band Emissions

100kHz PSD Reference Level



Channel 00 (2402MHz)

Low Band Edge



Spurious Emission (30MHz ~ 25GHz)



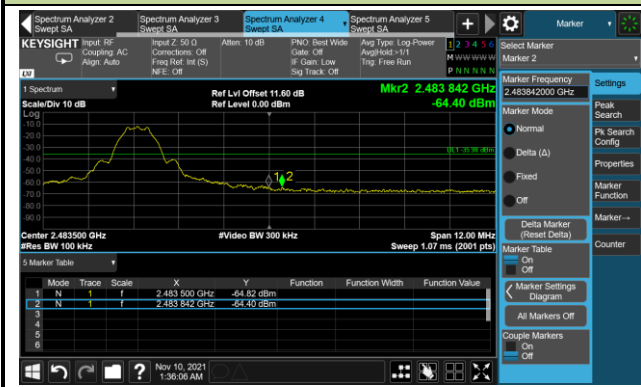
Channel 19 (2440MHz)

Spurious Emission (30MHz ~ 25GHz)



Channel 39 (2480MHz)

High Band Edge



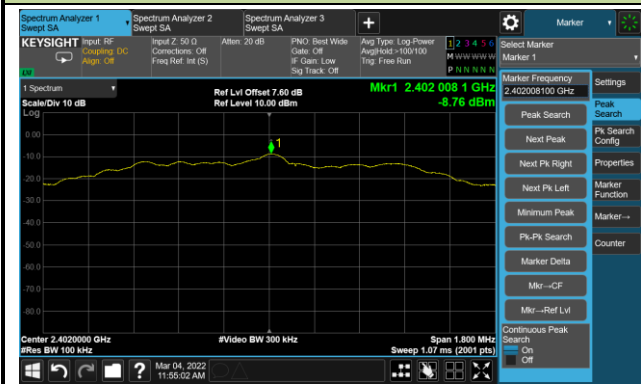
Spurious Emission (30MHz ~ 25GHz)



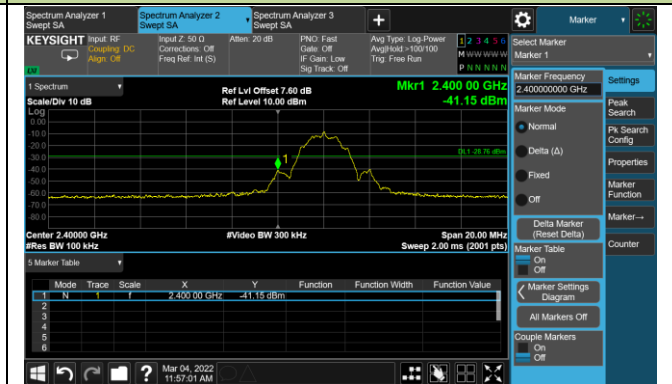
BLE-2Mbps Out-of-Band Emissions

Channel 00 (2402MHz)

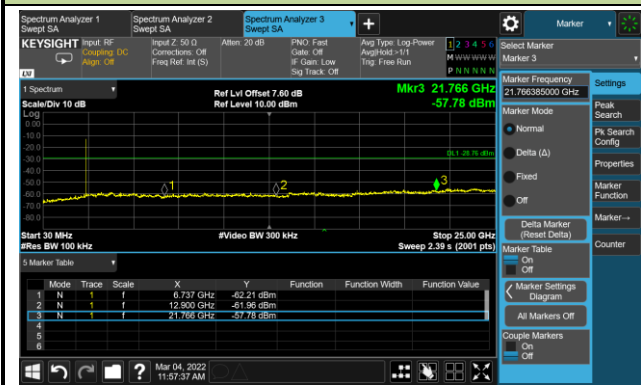
100kHz PSD Reference Level



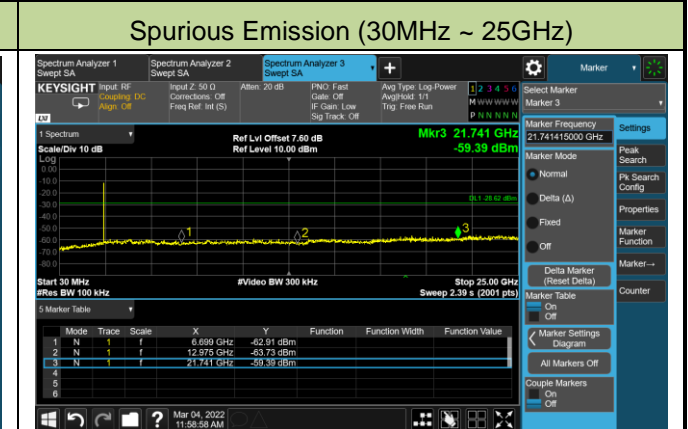
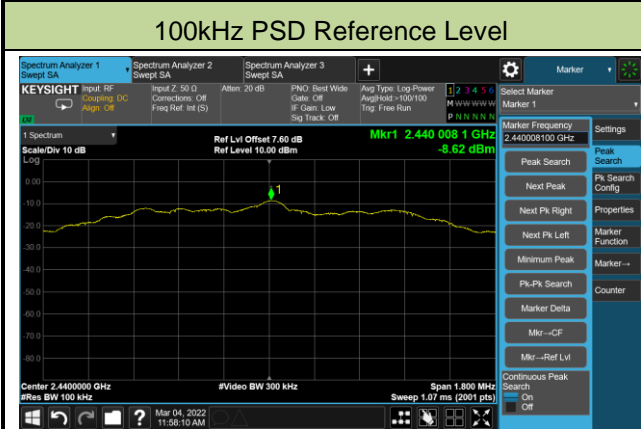
Low Band Edge



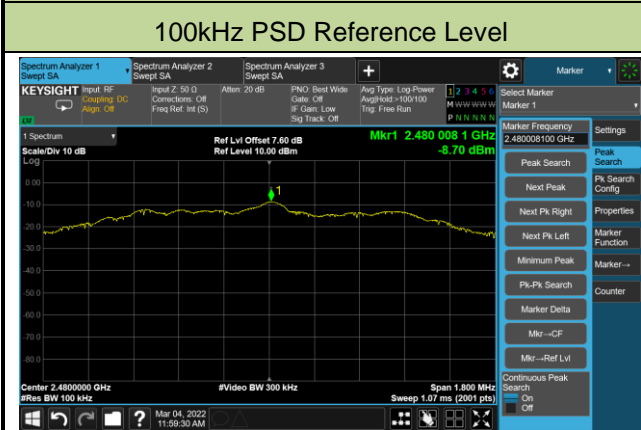
Spurious Emission (30MHz ~ 25GHz)



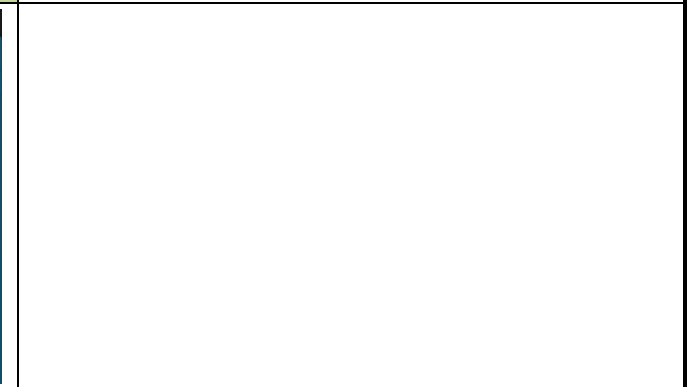
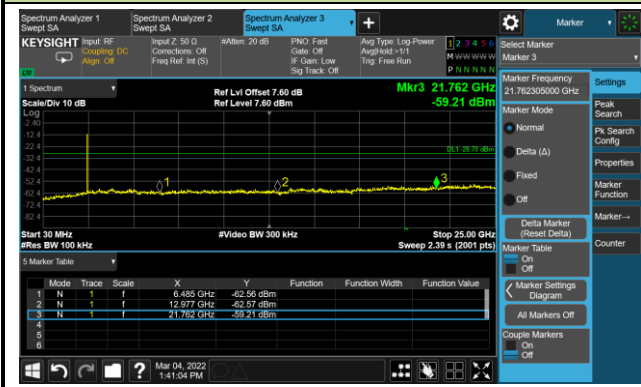
Channel 19 (2440MHz)



Channel 39 (2480MHz)



Spurious Emission (30MHz ~ 25GHz)



A.6 Radiated Spurious Emission Test Result

Test Site	WZ-AC1	Test Engineer	Charles Zhang
Test Date	2022/03/04	Test Mode	BLE – 0.125Mbps
Remark	1. Average measurement was not performed if peak level lower than average limit. 2. Other frequency was 20dB below limit line within 1-18GHz, there is not show in the report.		

Test Channel	Frequency (MHz)	Reading Level (dBμV)	Factor (dB/m)	Measure Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector	Polarization
01	4808.000	48.8	3.8	52.6	74.0	-21.4	Peak	Horizontal
	8429.000	35.7	9.7	45.4	74.0	-28.6	Peak	Horizontal
	11438.000	37.6	13.3	50.9	74.0	-23.1	Peak	Horizontal
	4808.000	45.7	3.8	49.5	74.0	-24.5	Peak	Vertical
	10792.000	35.8	13.7	49.5	74.0	-24.5	Peak	Vertical
	11361.500	37.1	13.1	50.2	74.0	-23.8	Peak	Vertical
19	4876.000	46.8	3.9	50.7	74.0	-23.3	Peak	Horizontal
	7315.500	43.6	8.9	52.5	74.0	-21.5	Peak	Horizontal
	10945.000	36.3	13.7	50.0	74.0	-24.0	Peak	Horizontal
	4884.500	45.8	3.9	49.7	74.0	-24.3	Peak	Vertical
	7315.500	43.9	8.9	52.8	74.0	-21.2	Peak	Vertical
	10945.000	36.0	13.7	49.7	74.0	-24.3	Peak	Vertical
39	4961.000	44.8	4.3	49.1	74.0	-24.9	Peak	Horizontal
	7443.000	42.8	8.9	51.7	74.0	-22.3	Peak	Horizontal
	10987.500	35.6	13.6	49.2	74.0	-24.8	Peak	Horizontal
	4961.000	43.3	4.3	47.6	74.0	-26.4	Peak	Vertical
	7443.000	43.3	8.9	52.2	74.0	-21.8	Peak	Vertical
	11106.500	36.5	13.3	49.8	74.0	-24.2	Peak	Vertical

Note: Measure Level (dBμV/m) = Reading Level (dBμV) + Factor (dB/m)

Factor (dB/m) = Cable Loss (dB) + Antenna Factor (dB/m) - Pre_Amplifier Gain (dB)

Test Site	WZ-AC2	Test Engineer	Bob Zhang
Test Date	2021/11/10	Test Mode	BLE – 1Mbps
Remark	1. Average measurement was not performed if peak level lower than average limit. 2. Other frequency was 20dB below limit line within 1-18GHz, there is not show in the report.		

Test Channel	Frequency (MHz)	Reading Level (dBμV)	Factor (dB/m)	Measure Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector	Polarization
01	4026.0	35.5	0.8	36.3	74.0	-37.7	Peak	Horizontal
	4187.5	34.9	1.5	36.4	74.0	-37.6	Peak	Horizontal
	4808.0	41.2	4.0	45.2	74.0	-28.8	Peak	Horizontal
	4026.0	36.2	0.8	37.0	74.0	-37.0	Peak	Vertical
	4247.0	39.3	1.6	40.9	74.0	-33.1	Peak	Vertical
	4799.5	40.7	4.0	44.7	74.0	-29.3	Peak	Vertical
19	3847.5	34.1	0.2	34.3	74.0	-39.7	Peak	Horizontal
	4187.5	33.1	1.5	34.6	74.0	-39.4	Peak	Horizontal
	4876.0	39.2	3.8	43.0	74.0	-31.0	Peak	Horizontal
	3992.0	35.1	0.6	35.7	74.0	-38.3	Peak	Vertical
	4247.0	38.5	1.6	40.1	74.0	-33.9	Peak	Vertical
	4876.0	40.6	3.8	44.4	74.0	-29.6	Peak	Vertical
39	3915.5	34.9	0.3	35.2	74.0	-38.8	Peak	Horizontal
	4323.5	33.1	2.1	35.2	74.0	-38.8	Peak	Horizontal
	4961.0	40.0	3.6	43.6	74.0	-30.4	Peak	Horizontal
	4017.5	36.6	0.7	37.3	74.0	-36.7	Peak	Vertical
	4162.0	39.4	1.4	40.8	74.0	-33.2	Peak	Vertical
	4961.0	40.6	3.6	44.2	74.0	-29.8	Peak	Vertical

Note: Measure Level (dBμV/m) = Reading Level (dBμV) + Factor (dB/m)

Factor (dB/m) = Cable Loss (dB) + Antenna Factor (dB/m) - Pre_Amplifier Gain (dB)

Test Site	WZ-AC1	Test Engineer	Charles Zhang
Test Date	2022/03/04	Test Mode	BLE – 2Mbps
Remark	1. Average measurement was not performed if peak level lower than average limit. 2. Other frequency was 20dB below limit line within 1-18GHz, there is not show in the report.		

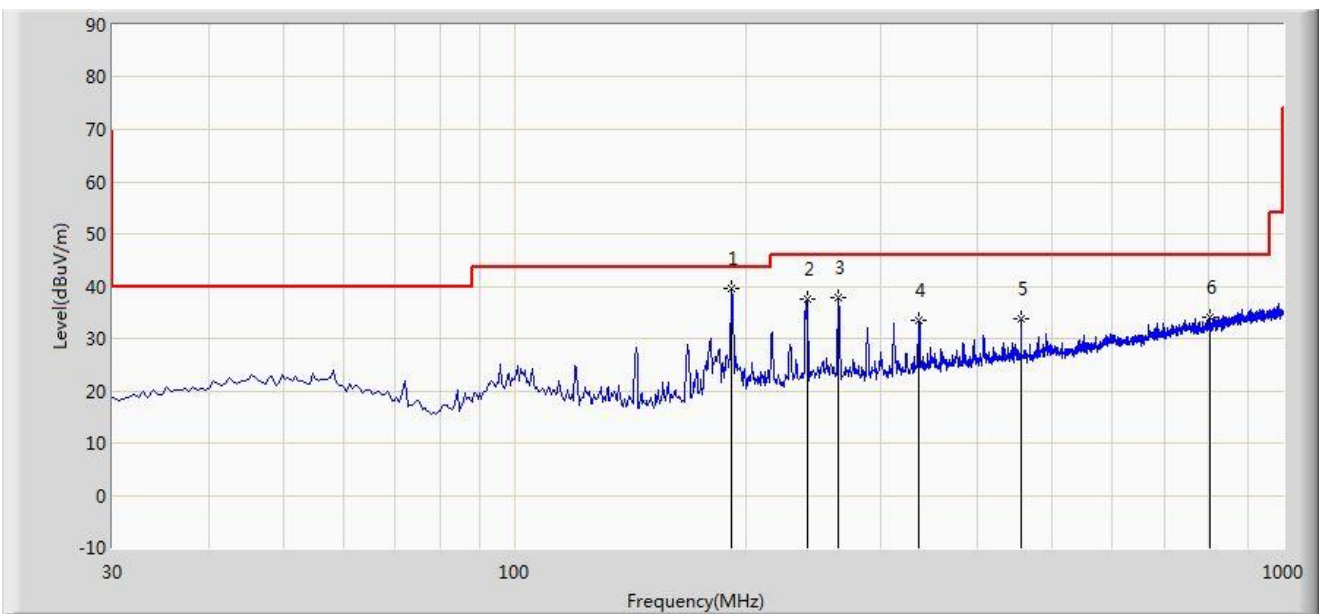
Test Channel	Frequency (MHz)	Reading Level (dBμV)	Factor (dB/m)	Measure Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector	Polarization
01	4799.500	48.5	3.7	52.2	74.0	-21.8	Peak	Horizontal
	7587.500	36.9	8.6	45.5	74.0	-28.5	Peak	Horizontal
	10690.000	35.6	13.6	49.2	74.0	-24.8	Peak	Horizontal
	4799.500	44.8	3.7	48.5	74.0	-25.5	Peak	Vertical
	10911.000	36.3	13.7	50.0	74.0	-24.0	Peak	Vertical
	11582.500	36.1	12.9	49.0	74.0	-25.0	Peak	Vertical
19	4876.000	47.1	3.9	51.0	74.0	-23.0	Peak	Horizontal
	7315.500	42.9	8.9	51.8	74.0	-22.2	Peak	Horizontal
	11038.500	36.2	13.6	49.8	74.0	-24.2	Peak	Horizontal
	4876.000	44.5	3.9	48.4	74.0	-25.6	Peak	Vertical
	7315.500	42.1	8.9	51.0	74.0	-23.0	Peak	Vertical
	10902.500	35.5	13.6	49.1	74.0	-24.9	Peak	Vertical
39	7443.000	43.8	8.9	52.7	74.0	-21.3	Peak	Horizontal
	8310.000	35.4	9.6	45.0	74.0	-29.0	Peak	Horizontal
	10928.000	36.5	13.7	50.2	74.0	-23.8	Peak	Horizontal
	7443.000	43.7	8.9	52.6	74.0	-21.4	Peak	Vertical
	8199.500	35.2	9.5	44.7	74.0	-29.3	Peak	Vertical
	11132.000	35.7	13.2	48.9	74.0	-25.1	Peak	Vertical

Note: Measure Level (dBμV/m) = Reading Level (dBμV) + Factor (dB/m)

Factor (dB/m) = Cable Loss (dB) + Antenna Factor (dB/m) - Pre_Amplifier Gain (dB)

The Result of Radiated Emission below 1GHz:

Site: WZ-AC2	Time: 2021/11/10
Limit: FCC_Part15.209_RE(3m)	Engineer: Bob Zhang
Probe: WZ-AC2_VULB9162_0.03-7GHz	Polarity: Horizontal
EUT: Smart Main Module	Power: By USB
Test Mode: Transmit by BLE -1Mbps at channel 2402MHz	



No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		*	191.990	39.704	21.454	-3.796	43.500	18.251	PK
2			240.975	37.552	17.741	-8.448	46.000	19.811	PK
3			264.255	37.940	17.580	-8.060	46.000	20.361	PK
4			335.065	33.396	11.196	-12.604	46.000	22.200	PK
5			455.830	33.737	9.530	-12.263	46.000	24.207	PK
6			802.120	34.158	3.912	-11.842	46.000	30.246	PK

Note 1: Measure Level (dB μ V/m) = Reading Level (dB μ V) + Factor (dB/m)

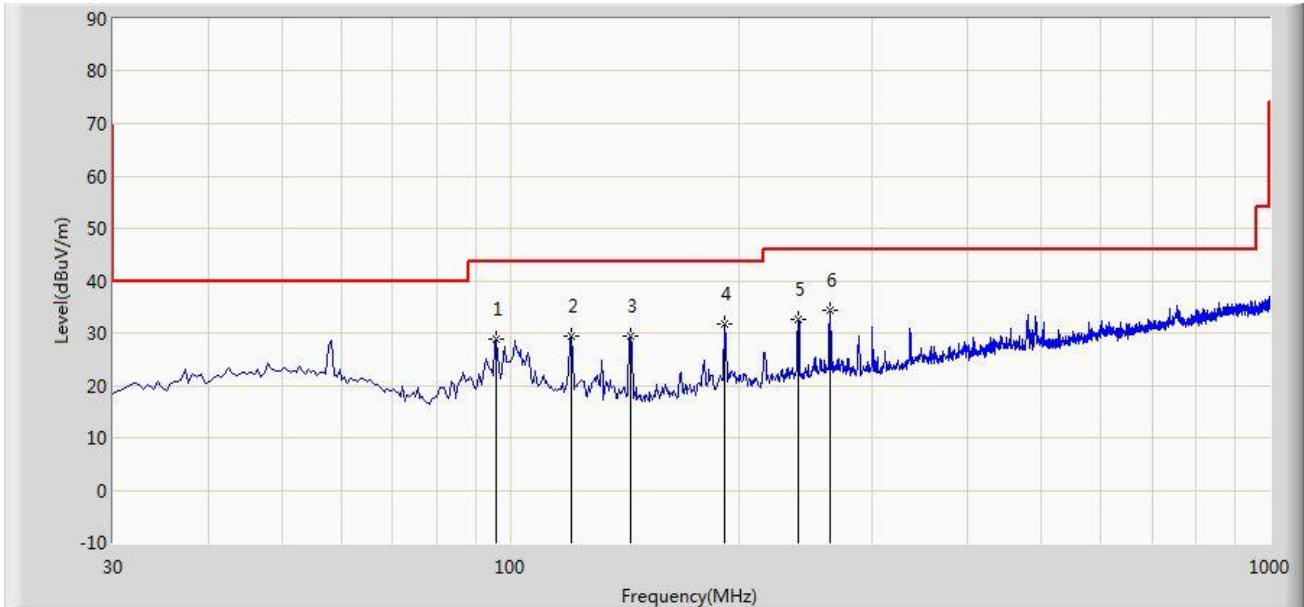
Factor (dB/m) = Cable Loss (dB) + Antenna Factor (dB/m)

Note 2: QP measurement was not performed when peak measure level was lower than the QP limit.

Note 3: The amplitude of radiated emissions (frequency range from 9kHz to 30MHz and 18GHz to 25GHz) is that proximity to ambient noise, which also are attenuated more than 20 dB below the permissible value.

Therefore, the data is not presented in the report.

Site: WZ-AC2	Time: 2021/11/10
Limit: FCC_Part15.209_RE(3m)	Engineer: Bob Zhang
Probe: WZ-AC2_VULB9162_0.03-7GHz	Polarity: Vertical
EUT: Smart Main Module	Power: By USB
Test Mode: Transmit by BLE -1Mbps at channel 2402MHz	



No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1			95.960	28.930	10.858	-14.570	43.500	18.072	PK
2			120.210	29.377	12.587	-14.123	43.500	16.790	PK
3			143.975	29.405	14.219	-14.095	43.500	15.186	PK
4			191.990	31.765	13.515	-11.735	43.500	18.251	PK
5		*	240.005	32.743	12.957	-13.257	46.000	19.786	PK
6			263.770	34.246	13.872	-11.754	46.000	20.374	PK

Note 1: Measure Level (dB μ V/m) = Reading Level (dB μ V) + Factor (dB/m)

Factor (dB/m) = Cable Loss (dB) + Antenna Factor (dB/m)

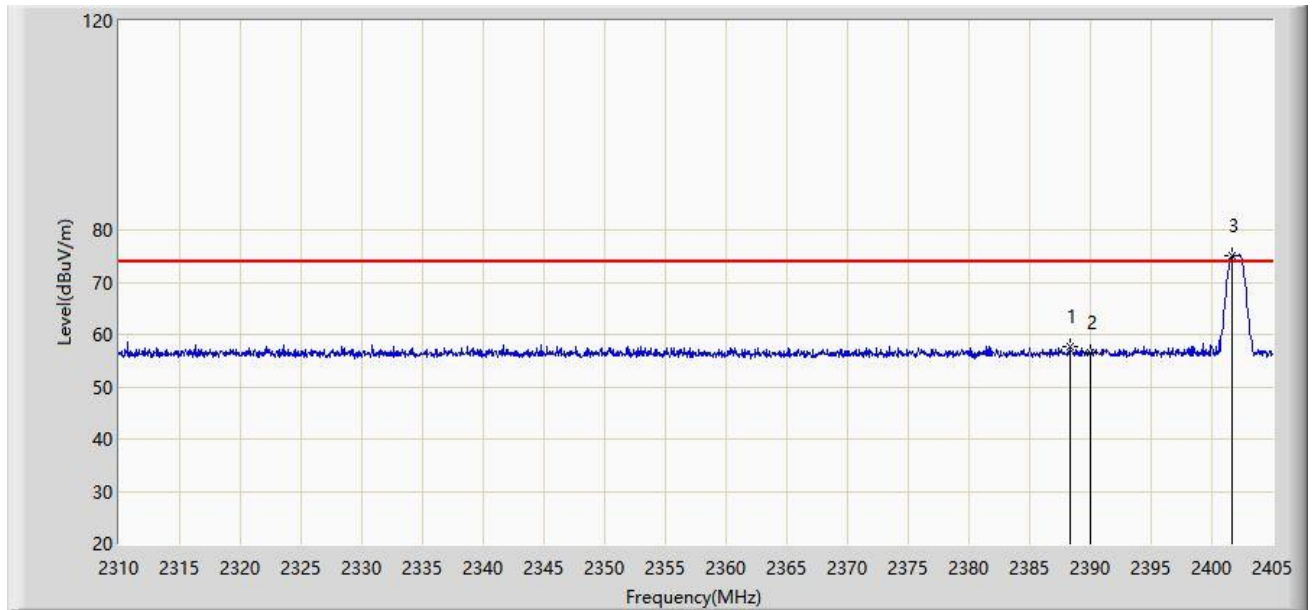
Note 2: QP measurement was not performed when peak measure level was lower than the QP limit.

Note 3: The amplitude of radiated emissions (frequency range from 9kHz to 30MHz and 18GHz to 25GHz) is that proximity to ambient noise, which also are attenuated more than 20 dB below the permissible value.

Therefore, the data is not presented in the report.

A.7 Radiated Restricted Band Edge Test Result

Site: WZ-AC1	Time: 2022/03/04
Limit: FCC_Part15.209_RE(3m)	Engineer: Charles Zhang
Probe: WZ-AC1_BBHA9120D_1-18GHz	Polarity: Horizontal
EUT: Smart Main Module	Power: By PC
Note: Transmit by BLE - 0.125Mbps at Channel 2402MHz	

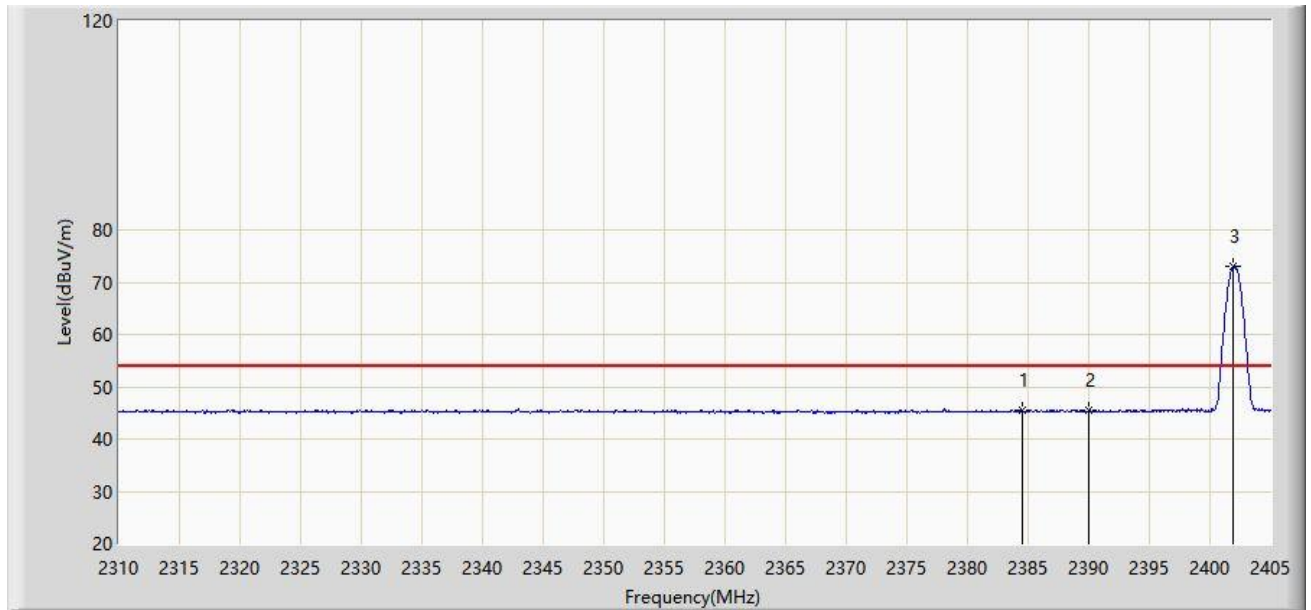


No	Flag	Mark	Frequency (MHz)	Measure Level (dB μ V/m)	Reading Level (dB μ V)	Margin (dB)	Limit (dB μ V/m)	Factor (dB/m)	Type
1			2388.280	57.639	26.825	-16.361	74.000	30.813	PK
2			2390.000	56.389	25.573	-17.611	74.000	30.816	PK
3		*	2401.722	75.139	44.301	N/A	N/A	30.838	PK

Note: Measure Level (dB μ V/m) = Reading Level (dB μ V) + Factor (dB/m)

Factor (dB/m) = Cable Loss (dB) + Antenna Factor (dB/m)

Site: WZ-AC1	Time: 2022/03/04
Limit: FCC_Part15.209_RE(3m)	Engineer: Charles Zhang
Probe: WZ-AC1_BBHA9120D_1-18GHz	Polarity: Horizontal
EUT: Smart Main Module	Power: By PC
Note: Transmit by BLE - 0.125Mbps at Channel 2402MHz	

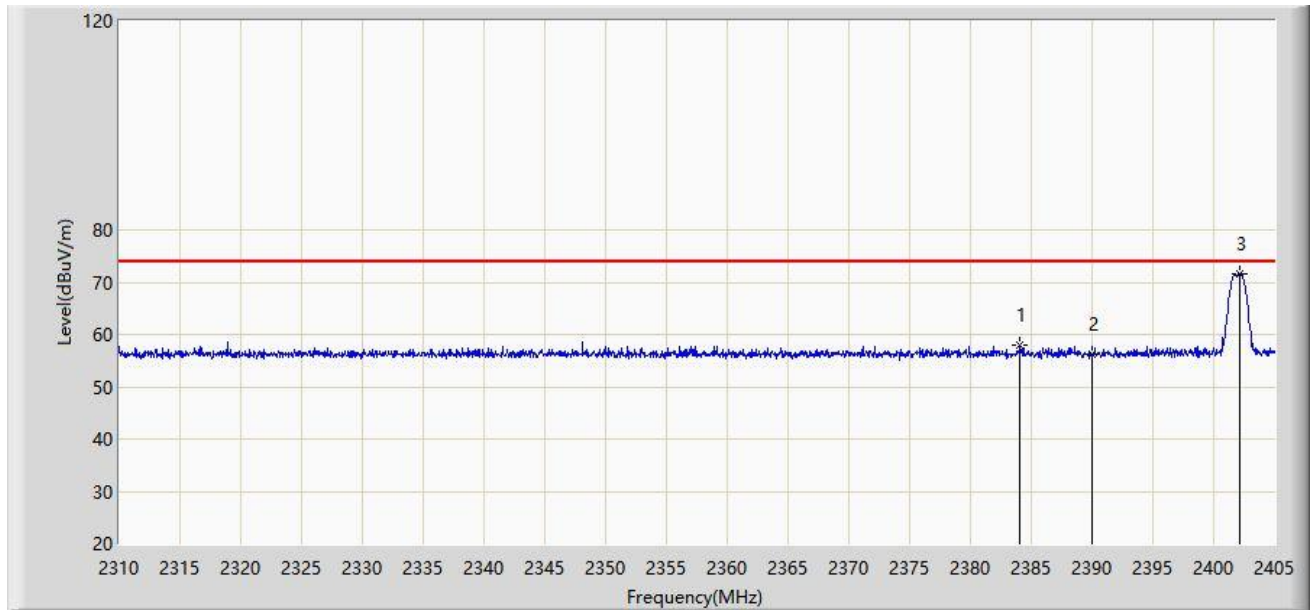


No	Flag	Mark	Frequency (MHz)	Measure Level (dBμV/m)	Reading Level (dBμV)	Margin (dB)	Limit (dBμV/m)	Factor (dB/m)	Type
1			2384.575	45.496	14.686	-8.504	54.000	30.810	AV
2			2390.000	45.381	14.565	-8.619	54.000	30.816	AV
3		*	2401.913	73.004	42.165	N/A	N/A	30.839	AV

Note: Measure Level (dBμV/m) = Reading Level (dBμV) + Factor (dB/m)

Factor (dB/m) = Cable Loss (dB) + Antenna Factor (dB/m)

Site: WZ-AC1	Time: 2022/03/04
Limit: FCC_Part15.209_RE(3m)	Engineer: Charles Zhang
Probe: WZ-AC1_BBHA9120D_1-18GHz	Polarity: Vertical
EUT: Smart Main Module	Power: By PC
Note: Transmit by BLE - 0.125Mbps at Channel 2402MHz	

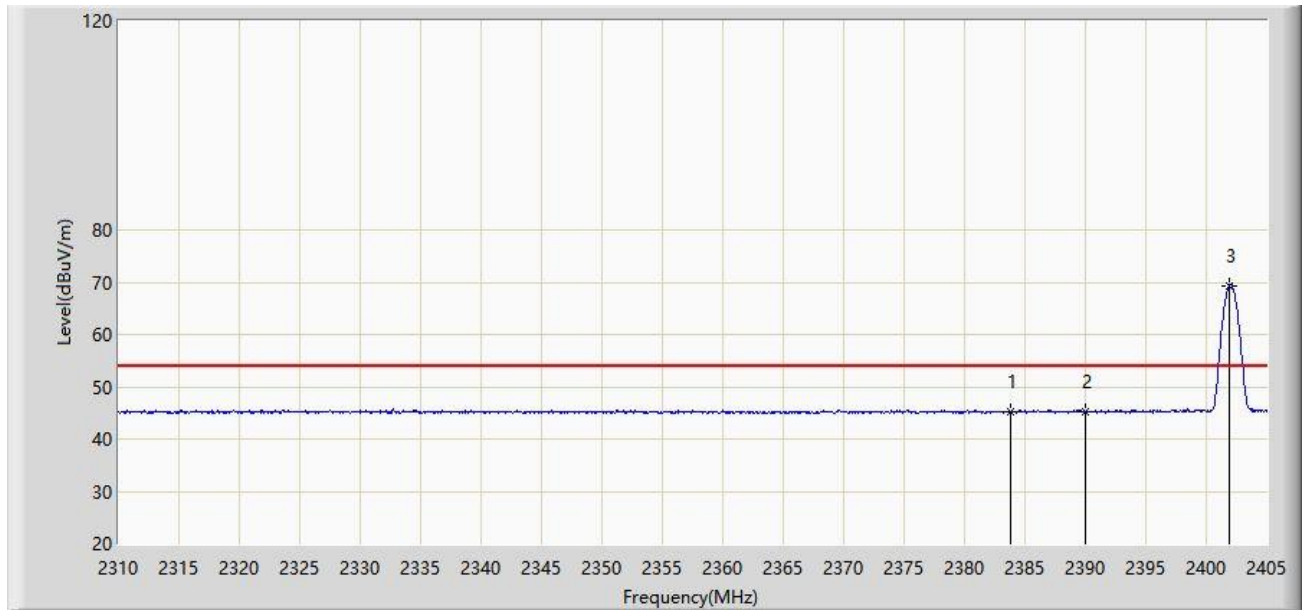


No	Flag	Mark	Frequency (MHz)	Measure Level (dBμV/m)	Reading Level (dBμV)	Margin (dB)	Limit (dBμV/m)	Factor (dB/m)	Type
1			2384.100	57.852	27.042	-16.148	74.000	30.810	PK
2			2390.000	56.121	25.305	-17.879	74.000	30.816	PK
3		*	2402.150	71.478	40.639	N/A	N/A	30.839	PK

Note: Measure Level (dBμV/m) = Reading Level (dBμV) + Factor (dB/m)

Factor (dB/m) = Cable Loss (dB) + Antenna Factor (dB/m)

Site: WZ-AC1	Time: 2022/03/04
Limit: FCC_Part15.209_RE(3m)	Engineer: Charles Zhang
Probe: WZ-AC1_BBHA9120D_1-18GHz	Polarity: Vertical
EUT: Smart Main Module	Power: By PC
Note: Transmit by BLE - 0.125Mbps at Channel 2402MHz	

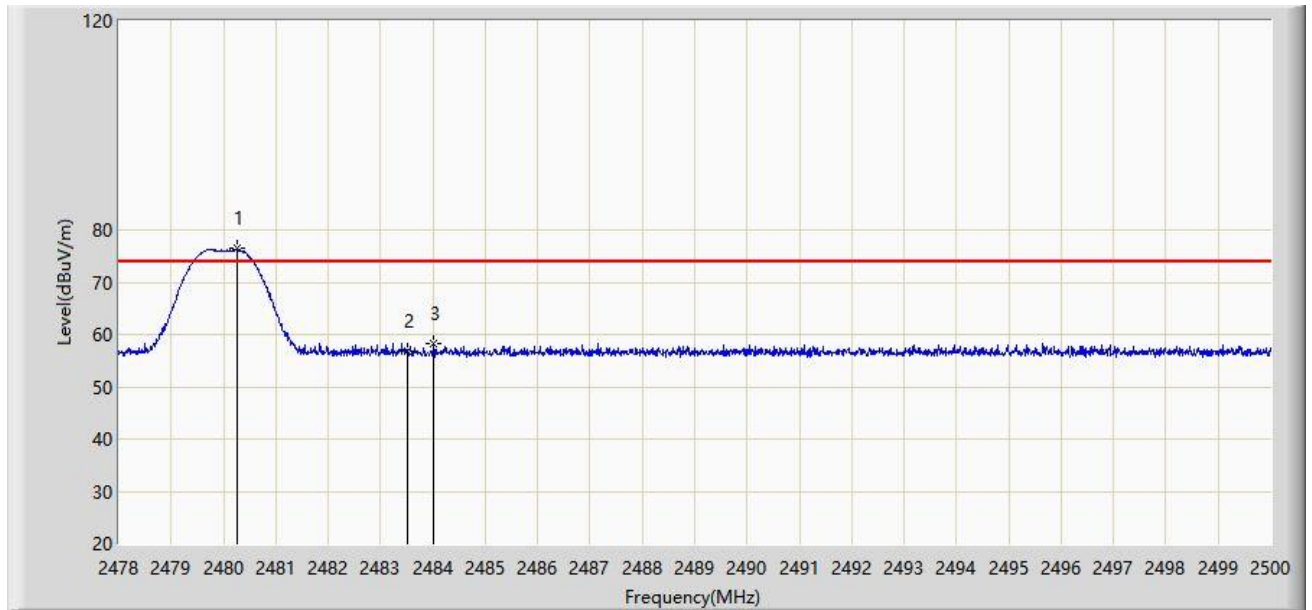


No	Flag	Mark	Frequency (MHz)	Measure Level (dB μ V/m)	Reading Level (dB μ V)	Margin (dB)	Limit (dB μ V/m)	Factor (dB/m)	Type
1			2383.768	45.347	14.538	-8.653	54.000	30.809	AV
2			2390.000	45.104	14.288	-8.896	54.000	30.816	AV
3		*	2401.913	69.379	38.540	N/A	N/A	30.839	AV

Note: Measure Level (dB μ V/m) = Reading Level (dB μ V) + Factor (dB/m)

Factor (dB/m) = Cable Loss (dB) + Antenna Factor (dB/m)

Site: WZ-AC1	Time: 2022/03/04
Limit: FCC_Part15.209_RE(3m)	Engineer: Charles Zhang
Probe: WZ-AC1_BBHA9120D_1-18GHz	Polarity: Horizontal
EUT: Smart Main Module	Power: By PC
Note: Transmit by BLE - 0.125Mbps at Channel 2480MHz	

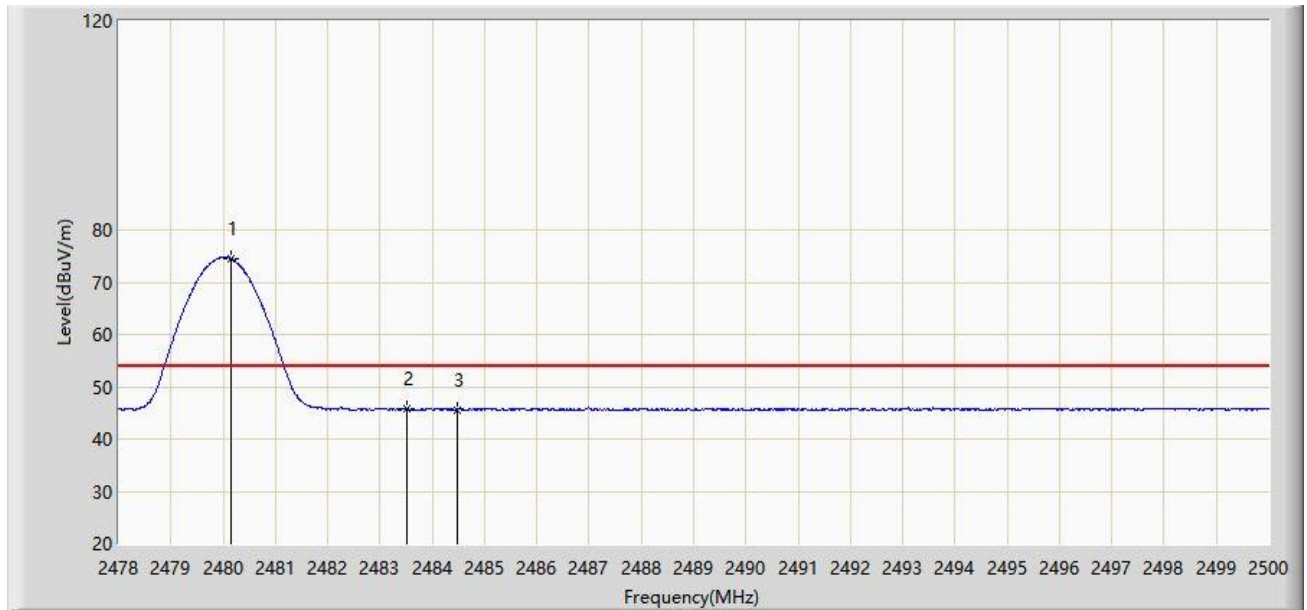


No	Flag	Mark	Frequency (MHz)	Measure Level (dBμV/m)	Reading Level (dBμV)	Margin (dB)	Limit (dBμV/m)	Factor (dB/m)	Type
1		*	2480.266	76.385	45.378	N/A	N/A	31.007	PK
2			2483.500	56.730	25.709	-17.270	74.000	31.021	PK
3			2484.017	58.227	27.204	-15.773	74.000	31.023	PK

Note: Measure Level (dBμV/m) = Reading Level (dBμV) + Factor (dB/m)

Factor (dB/m) = Cable Loss (dB) + Antenna Factor (dB/m)

Site: WZ-AC1	Time: 2022/03/04
Limit: FCC_Part15.209_RE(3m)	Engineer: Charles Zhang
Probe: WZ-AC1_BBHA9120D_1-18GHz	Polarity: Horizontal
EUT: Smart Main Module	Power: By PC
Note: Transmit by BLE - 0.125Mbps at Channel 2480MHz	

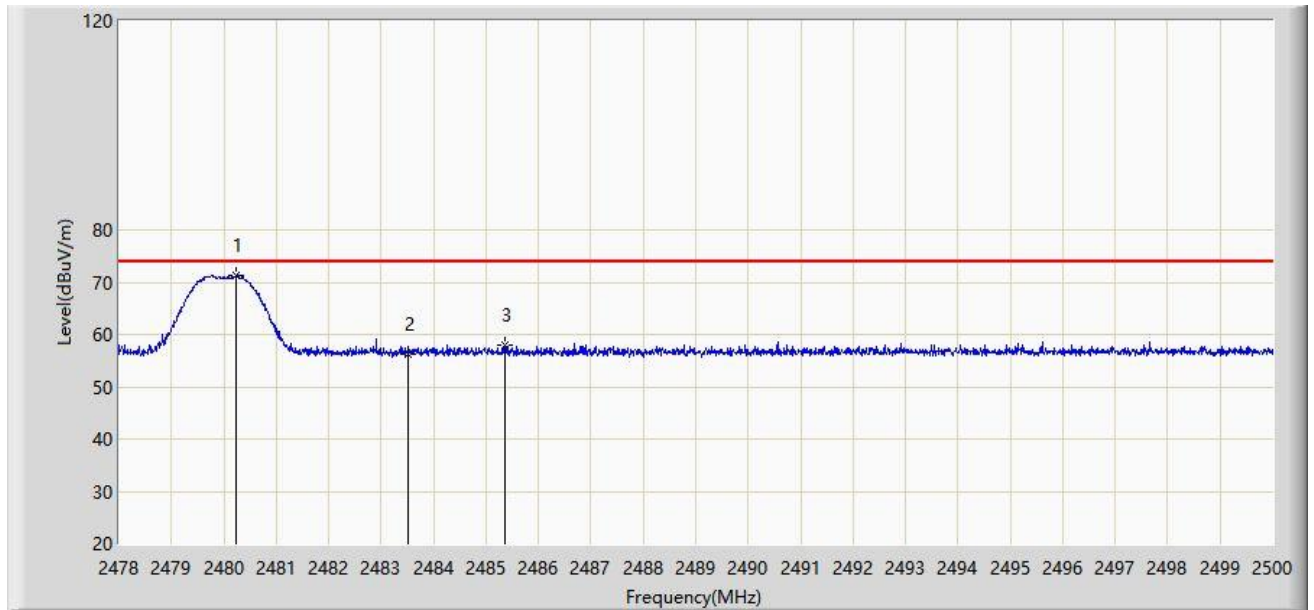


No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Margin (dB)	Limit (dBuV/m)	Factor (dB/m)	Type
1		*	2480.145	74.550	43.544	N/A	N/A	31.007	AV
2			2483.500	45.884	14.863	-8.116	54.000	31.021	AV
3			2484.479	45.652	14.627	-8.348	54.000	31.025	AV

Note: Measure Level (dBuV/m) = Reading Level (dBuV) + Factor (dB/m)

Factor (dB/m) = Cable Loss (dB) + Antenna Factor (dB/m)

Site: WZ-AC1	Time: 2022/03/04
Limit: FCC_Part15.209_RE(3m)	Engineer: Charles Zhang
Probe: WZ-AC1_BBHA9120D_1-18GHz	Polarity: Vertical
EUT: Smart Main Module	Power: By PC
Note: Transmit by BLE - 0.125Mbps at Channel 2480MHz	

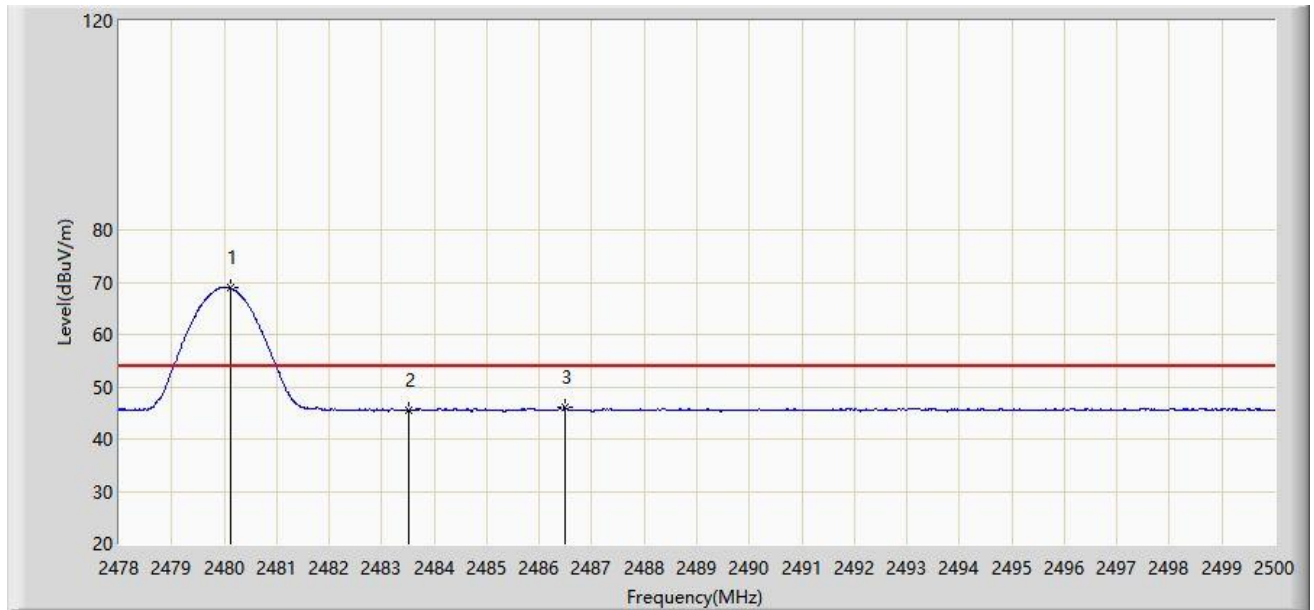


No	Flag	Mark	Frequency (MHz)	Measure Level (dBμV/m)	Reading Level (dBμV)	Margin (dB)	Limit (dBμV/m)	Factor (dB/m)	Type
1		*	2480.233	71.409	40.402	N/A	N/A	31.007	PK
2			2483.500	56.096	25.075	-17.904	74.000	31.021	PK
3			2485.348	57.976	26.947	-16.024	74.000	31.029	PK

Note: Measure Level (dBμV/m) = Reading Level (dBμV) + Factor (dB/m)

Factor (dB/m) = Cable Loss (dB) + Antenna Factor (dB/m)

Site: WZ-AC1	Time: 2022/03/04
Limit: FCC_Part15.209_RE(3m)	Engineer: Charles Zhang
Probe: WZ-AC1_BBHA9120D_1-18GHz	Polarity: Vertical
EUT: Smart Main Module	Power: By PC
Note: Transmit by BLE - 0.125Mbps at Channel 2480MHz	

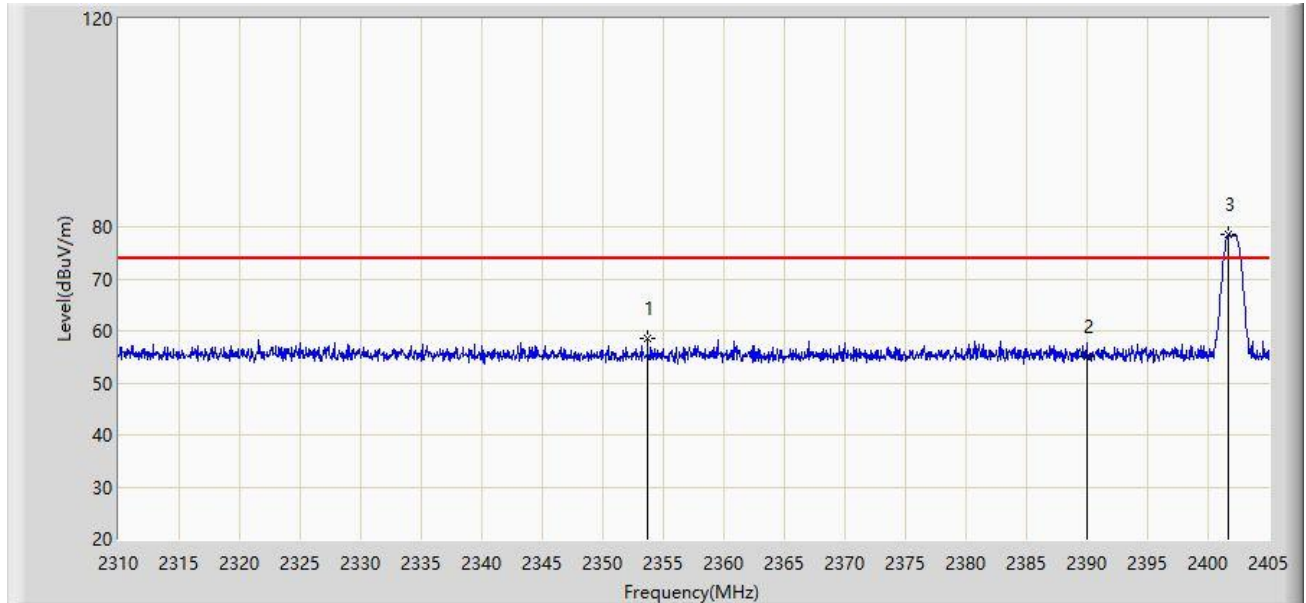


No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Margin (dB)	Limit (dBuV/m)	Factor (dB/m)	Type
1		*	2480.112	68.938	37.932	N/A	N/A	31.007	AV
2			2483.500	45.546	14.525	-8.454	54.000	31.021	AV
3			2486.503	45.974	14.941	-8.026	54.000	31.034	AV

Note: Measure Level (dBuV/m) = Reading Level (dBuV) + Factor (dB/m)

Factor (dB/m) = Cable Loss (dB) + Antenna Factor (dB/m)

Site: WZ-AC2	Time: 2021/11/10
Limit: FCC_Part15.209_RE(3m)	Engineer: Tommy Tang
Probe: WZ-AC2_BBHA9120D_1-18GHz	Polarity: Horizontal
EUT: Smart Main Module	Power: By PC
Test Mode: Transmit by BLE - 1Mbps at Channel 2402MHz	

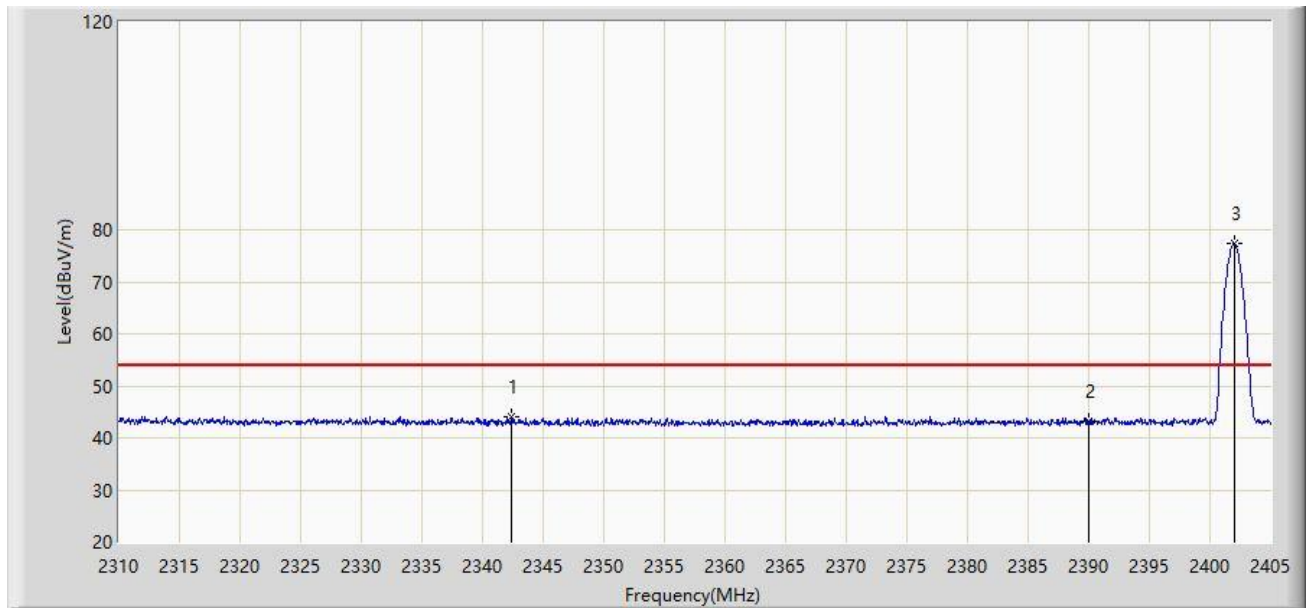


No	Flag	Mark	Frequency (MHz)	Measure Level (dBμV/m)	Reading Level (dBμV)	Margin (dB)	Limit (dBμV/m)	Factor (dB/m)	Type
1			2353.700	58.680	26.652	-15.320	74.000	32.028	PK
2			2390.000	55.005	23.002	-18.995	74.000	32.003	PK
3		*	2401.675	78.436	46.450	N/A	N/A	31.986	PK

Note: Measure Level (dBμV/m) = Reading Level (dBμV) + Factor (dB/m)

Factor (dB/m) = Cable Loss (dB) + Antenna Factor (dB/m)

Site: WZ-AC2	Time: 2021/12/29
Limit: FCC_Part15.209_RE(3m)	Engineer: Tommy Tang
Probe: WZ-AC2_BBHA9120D_1-18GHz	Polarity: Horizontal
EUT: Smart Main Module	Power: By PC
Test Mode: Transmit by BLE - 1Mbps at Channel 2402MHz	

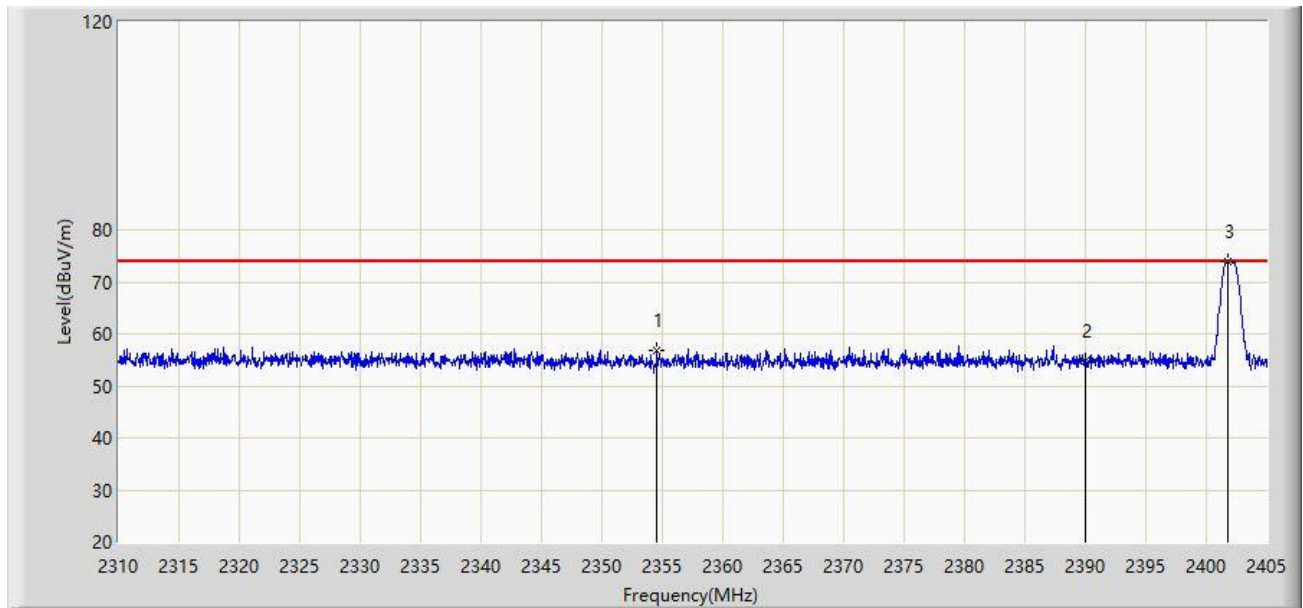


No	Flag	Mark	Frequency (MHz)	Measure Level (dB μ V/m)	Reading Level (dB μ V)	Margin (dB)	Limit (dB μ V/m)	Factor (dB/m)	Type
1			2342.347	44.064	11.993	-9.936	54.000	32.071	AV
2			2390.000	43.054	11.051	-10.946	54.000	32.003	AV
3		*	2402.055	77.273	45.287	N/A	N/A	31.986	AV

Note: Measure Level (dB μ V/m) = Reading Level (dB μ V) + Factor (dB/m)

Factor (dB/m) = Cable Loss (dB) + Antenna Factor (dB/m)

Site: WZ-AC2	Time: 2021/12/29
Limit: FCC_Part15.209_RE(3m)	Engineer: Tommy Tang
Probe: WZ-AC2_BBHA9120D_1-18GHz	Polarity: Vertical
EUT: Smart Main Module	Power: By PC
Test Mode: Transmit by BLE - 1Mbps at Channel 2402MHz	

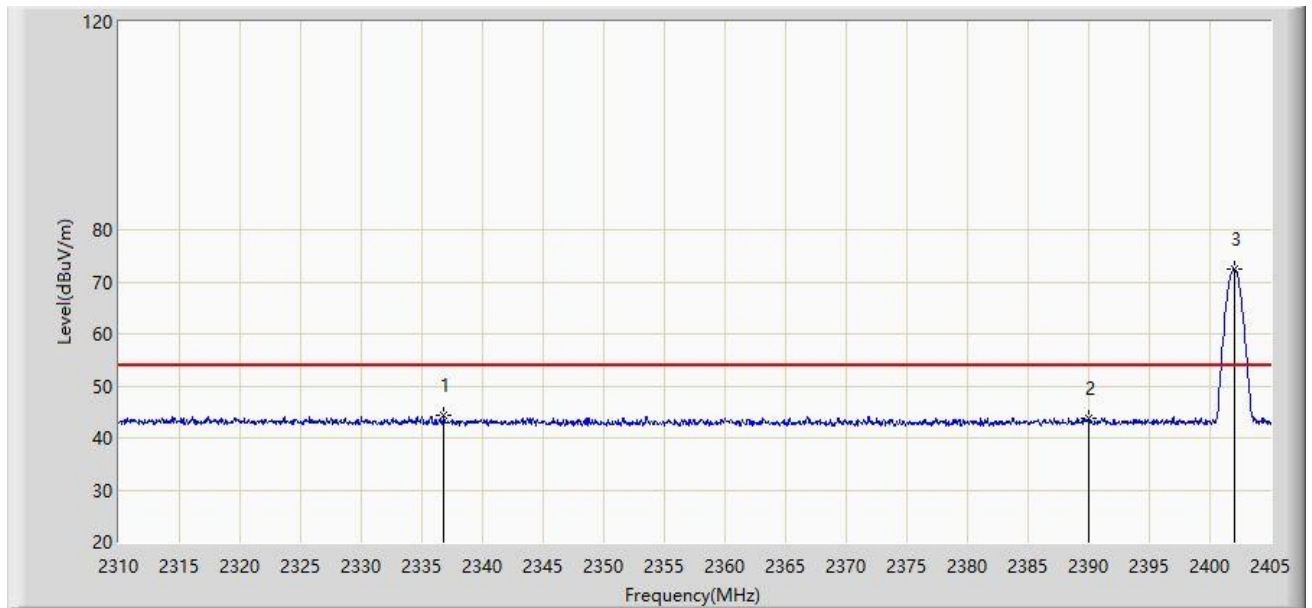


No	Flag	Mark	Frequency (MHz)	Measure Level (dB μ V/m)	Reading Level (dB μ V)	Margin (dB)	Limit (dB μ V/m)	Factor (dB/m)	Type
1			2354.555	56.816	24.789	-17.184	74.000	32.028	PK
2			2390.000	54.776	22.773	-19.224	74.000	32.003	PK
3		*	2401.817	73.899	41.913	N/A	N/A	31.986	PK

Note: Measure Level (dB μ V/m) = Reading Level (dB μ V) + Factor (dB/m)

Factor (dB/m) = Cable Loss (dB) + Antenna Factor (dB/m)

Site: WZ-AC2	Time: 2021/12/29
Limit: FCC_Part15.209_RE(3m)	Engineer: Tommy Tang
Probe: WZ-AC2_BBHA9120D_1-18GHz	Polarity: Vertical
EUT: Smart Main Module	Power: By PC
Test Mode: Transmit by BLE - 1Mbps at Channel 2402MHz	

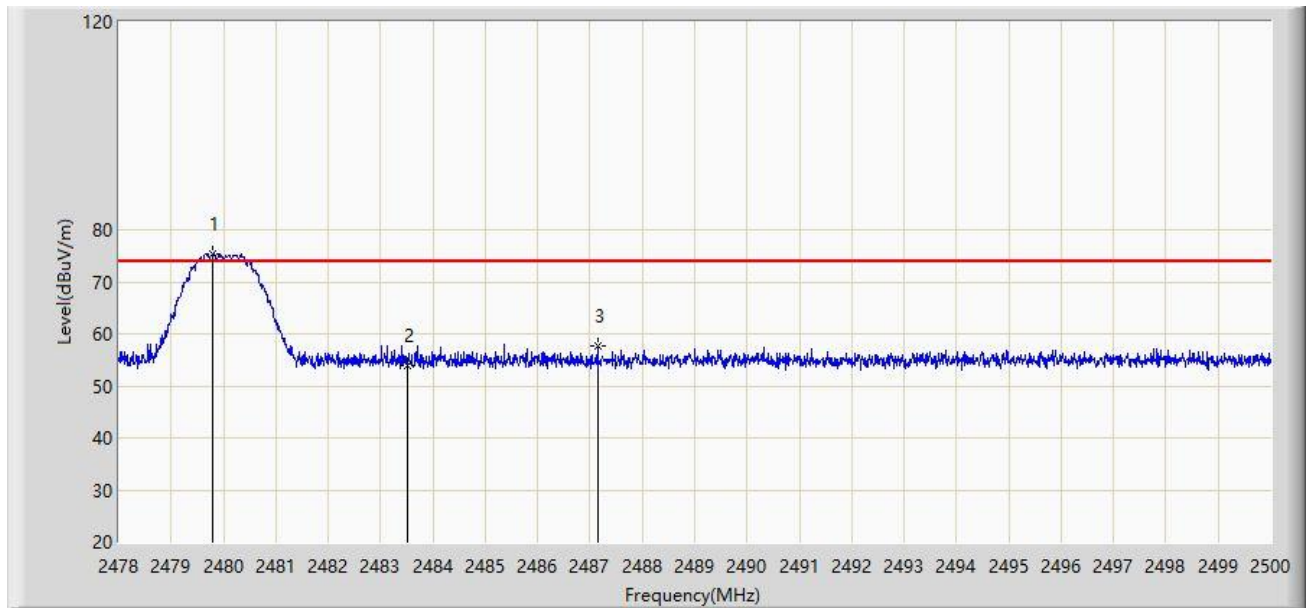


No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Margin (dB)	Limit (dBuV/m)	Factor (dB/m)	Type
1			2336.837	44.214	12.098	-9.786	54.000	32.115	AV
2			2390.000	43.635	11.632	-10.365	54.000	32.003	AV
3		*	2402.008	72.495	40.509	N/A	N/A	31.986	AV

Note: Measure Level (dBuV/m) = Reading Level (dBuV) + Factor (dB/m)

Factor (dB/m) = Cable Loss (dB) + Antenna Factor (dB/m)

Site: WZ-AC2	Time: 2021/12/29
Limit: FCC_Part15.209_RE(3m)	Engineer: Tommy Tang
Probe: WZ-AC2_BBHA9120D_1-18GHz	Polarity: Horizontal
EUT: Smart Main Module	Power: By PC
Test Mode: Transmit by BLE - 1Mbps at Channel 2480MHz	

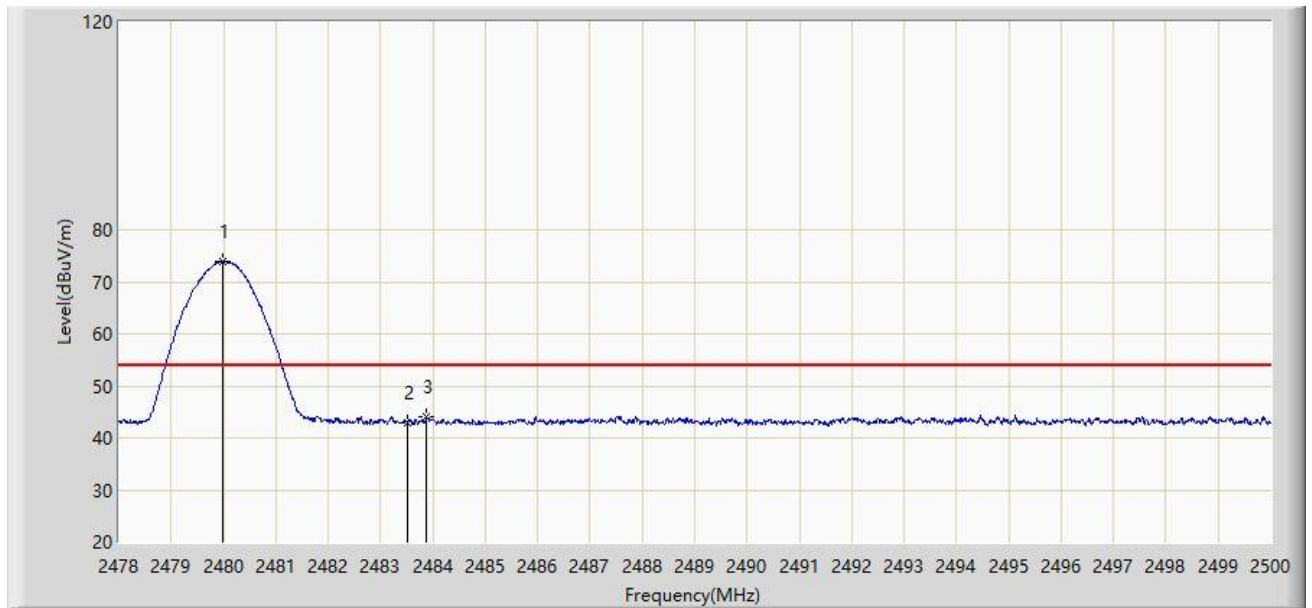


No	Flag	Mark	Frequency (MHz)	Measure Level (dB μ V/m)	Reading Level (dB μ V)	Margin (dB)	Limit (dB μ V/m)	Factor (dB/m)	Type
1		*	2479.804	75.276	43.356	N/A	N/A	31.919	PK
2			2483.500	53.899	21.987	-20.101	74.000	31.912	PK
3			2487.141	57.554	25.650	-16.446	74.000	31.904	PK

Note: Measure Level (dB μ V/m) = Reading Level (dB μ V) + Factor (dB/m)

Factor (dB/m) = Cable Loss (dB) + Antenna Factor (dB/m)

Site: WZ-AC2	Time: 2021/12/29
Limit: FCC_Part15.209_RE(3m)	Engineer: Tommy Tang
Probe: WZ-AC2_BBHA9120D_1-18GHz	Polarity: Horizontal
EUT: Smart Main Module	Power: By PC
Test Mode: Transmit by BLE - 1Mbps at Channel 2480MHz	

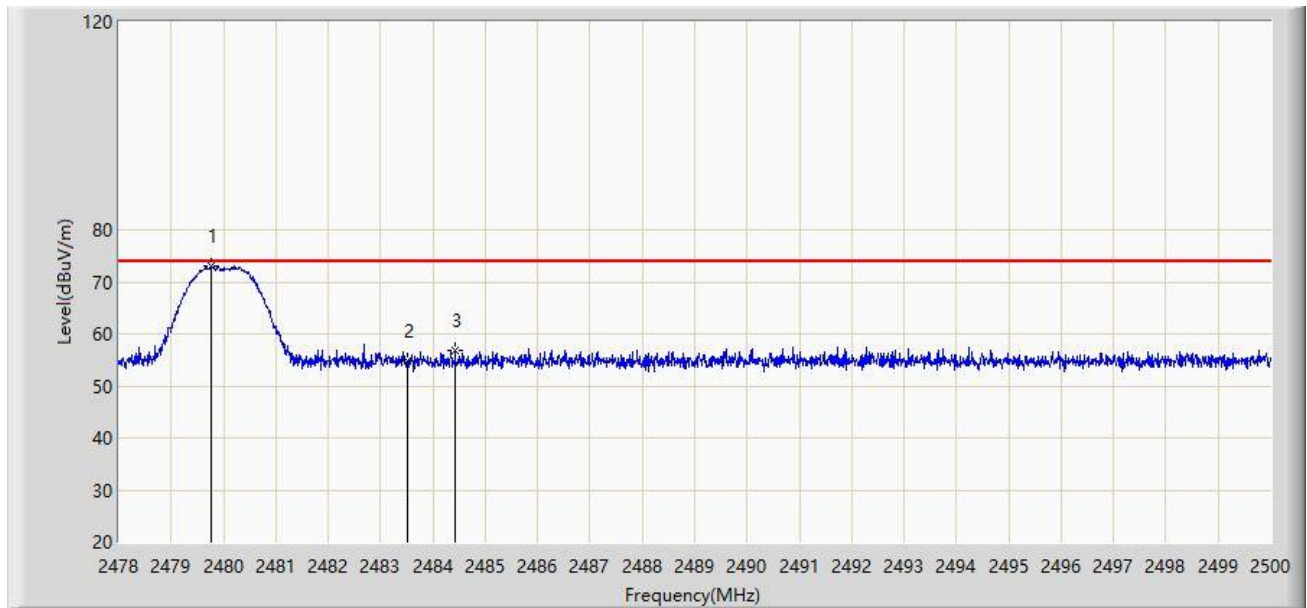


No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Margin (dB)	Limit (dBuV/m)	Factor (dB/m)	Type
1		*	2479.980	73.884	41.965	N/A	N/A	31.919	AV
2			2483.500	42.875	10.963	-11.125	54.000	31.912	AV
3			2483.874	44.072	12.161	-9.928	54.000	31.911	AV

Note: Measure Level (dBuV/m) = Reading Level (dBuV) + Factor (dB/m)

Factor (dB/m) = Cable Loss (dB) + Antenna Factor (dB/m)

Site: WZ-AC2	Time: 2021/12/29
Limit: FCC_Part15.209_RE(3m)	Engineer: Tommy Tang
Probe: WZ-AC2_BBHA9120D_1-18GHz	Polarity: Vertical
EUT: Smart Main Module	Power: By PC
Test Mode: Transmit by BLE - 1Mbps at Channel 2480MHz	

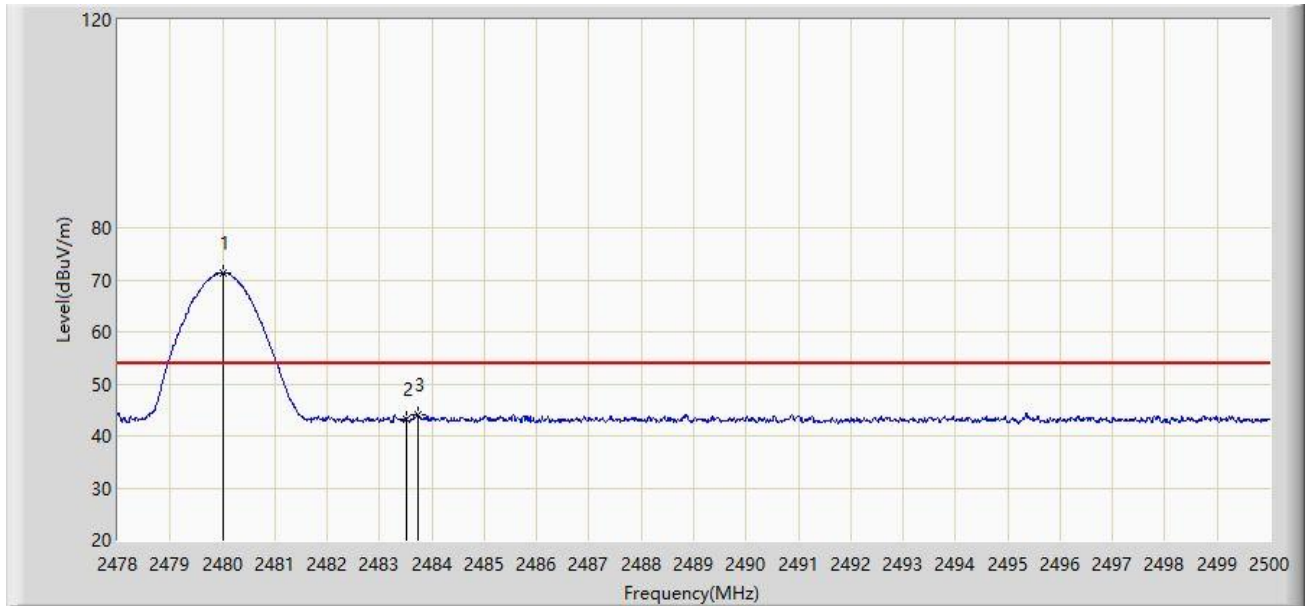


No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Margin (dB)	Limit (dBuV/m)	Factor (dB/m)	Type
1		*	2479.760	72.903	40.983	N/A	N/A	31.920	PK
2			2483.500	54.696	22.784	-19.304	74.000	31.912	PK
3			2484.424	56.916	25.006	-17.084	74.000	31.910	PK

Note: Measure Level (dBuV/m) = Reading Level (dBuV) + Factor (dB/m)

Factor (dB/m) = Cable Loss (dB) + Antenna Factor (dB/m)

Site: WZ-AC2	Time: 2021/12/29
Limit: FCC_Part15.209_RE(3m)	Engineer: Tommy Tang
Probe: WZ-AC2_BBHA9120D_1-18GHz	Polarity: Vertical
EUT: Smart Main Module	Power: By PC
Test Mode: Transmit by BLE - 1Mbps at Channel 2480MHz	

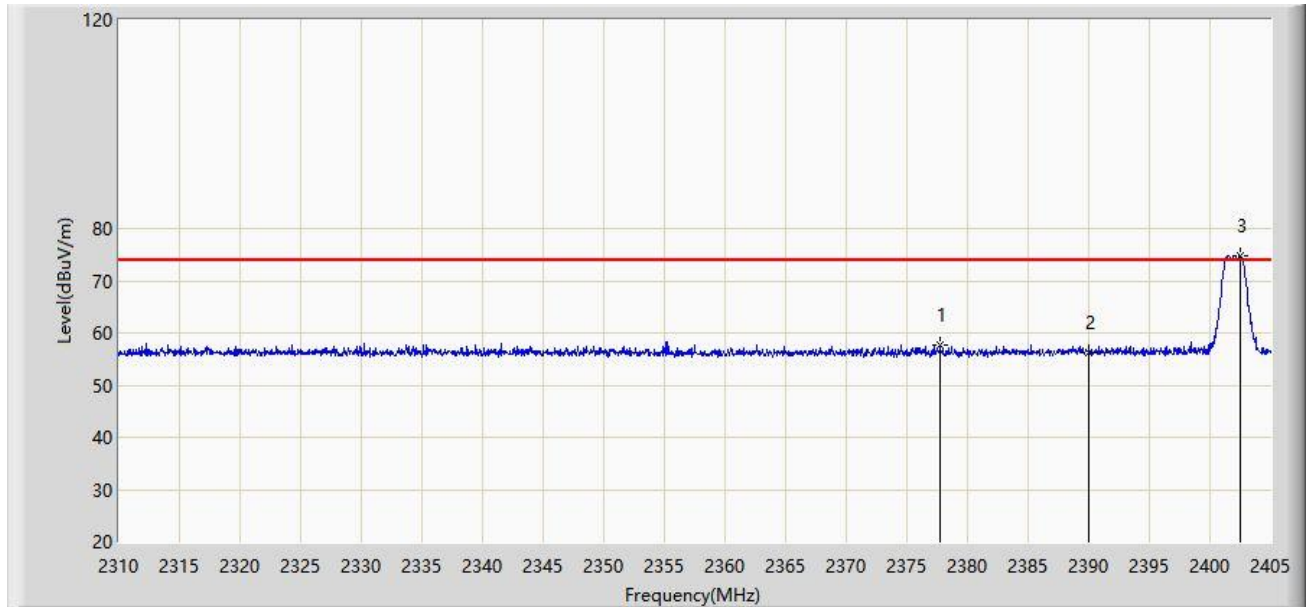


No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Margin (dB)	Limit (dBuV/m)	Factor (dB/m)	Type
1		*	2480.024	71.299	39.380	N/A	N/A	31.919	AV
2			2483.500	43.198	11.286	-10.802	54.000	31.912	AV
3			2483.731	44.077	12.166	-9.923	54.000	31.911	AV

Note: Measure Level (dBuV/m) = Reading Level (dBuV) + Factor (dB/m)

Factor (dB/m) = Cable Loss (dB) + Antenna Factor (dB/m)

Site: WZ-AC1	Time: 2022/03/04
Limit: FCC_Part15.209_RE(3m)	Engineer: Charles Zhang
Probe: WZ-AC1_BBHA9120D_1-18GHz	Polarity: Horizontal
EUT: Smart Main Module	Power: By PC
Test Mode: Transmit by BLE - 2Mbps at Channel 2402MHz	

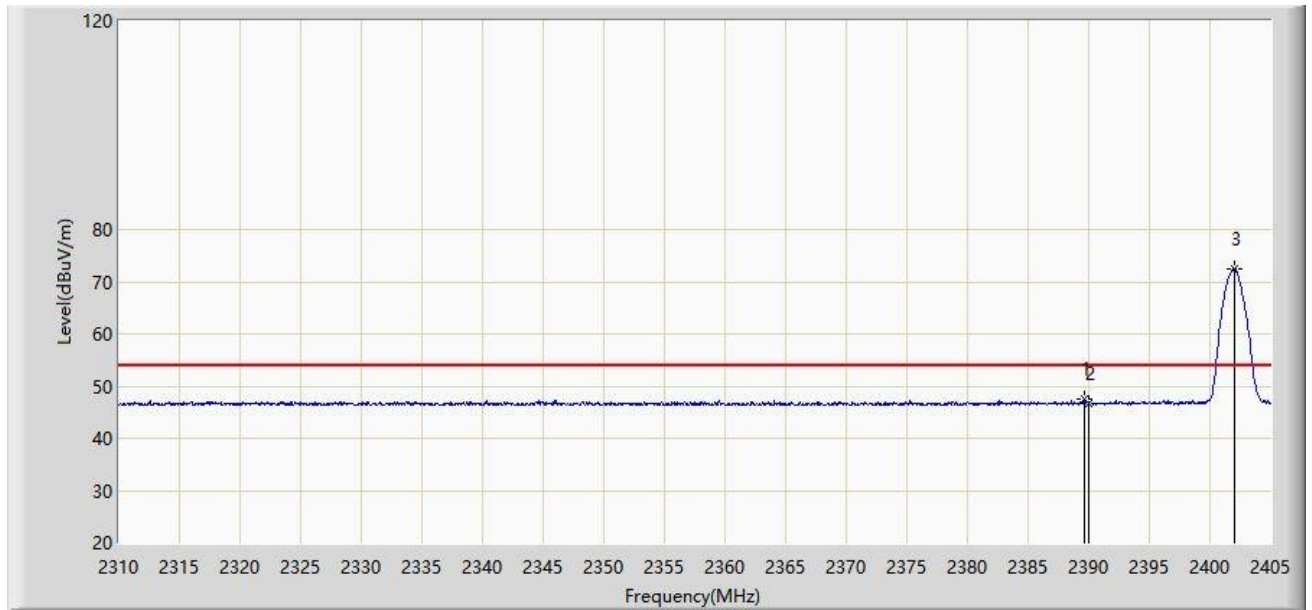


No	Flag	Mark	Frequency (MHz)	Measure Level (dBμV/m)	Reading Level (dBμV)	Margin (dB)	Limit (dBμV/m)	Factor (dB/m)	Type
1			2377.735	57.790	26.988	-16.210	74.000	30.802	PK
2			2390.000	56.245	25.429	-17.755	74.000	30.816	PK
3		*	2402.482	74.820	43.981	N/A	N/A	30.839	PK

Note: Measure Level (dBμV/m) = Reading Level (dBμV) + Factor (dB/m)

Factor (dB/m) = Cable Loss (dB) + Antenna Factor (dB/m)

Site: WZ-AC1	Time: 2022/03/04
Limit: FCC_Part15.209_RE(3m)	Engineer: Charles Zhang
Probe: WZ-AC1_BBHA9120D_1-18GHz	Polarity: Horizontal
EUT: Smart Main Module	Power: By PC
Test Mode: Transmit by BLE - 2Mbps at Channel 2402MHz	

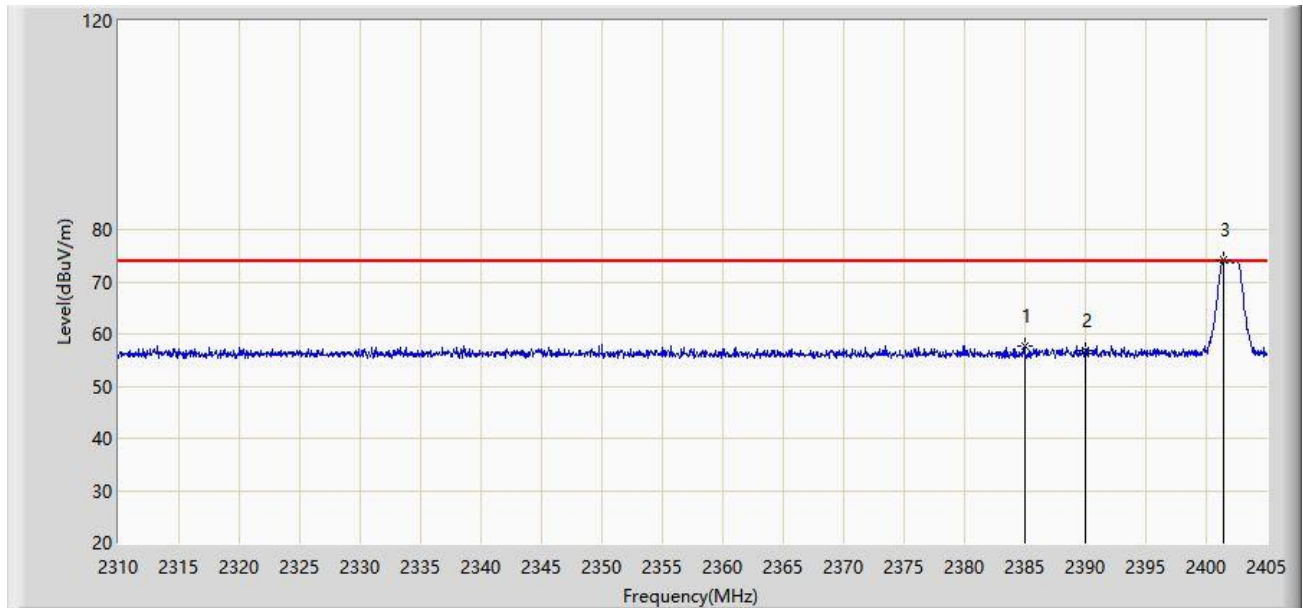


No	Flag	Mark	Frequency (MHz)	Measure Level (dB μ V/m)	Reading Level (dB μ V)	Margin (dB)	Limit (dB μ V/m)	Factor (dB/m)	Type
1			2389.610	47.400	16.585	-6.600	54.000	30.815	AV
2			2390.000	46.538	15.722	-7.462	54.000	30.816	AV
3		*	2402.008	72.442	41.603	N/A	N/A	30.839	AV

Note: Measure Level (dB μ V/m) = Reading Level (dB μ V) + Factor (dB/m)

Factor (dB/m) = Cable Loss (dB) + Antenna Factor (dB/m)

Site: WZ-AC1	Time: 2022/03/04
Limit: FCC_Part15.209_RE(3m)	Engineer: Charles Zhang
Probe: WZ-AC1_BBHA9120D_1-18GHz	Polarity: Vertical
EUT: Smart Main Module	Power: By PC
Test Mode: Transmit by BLE - 2Mbps at Channel 2402MHz	

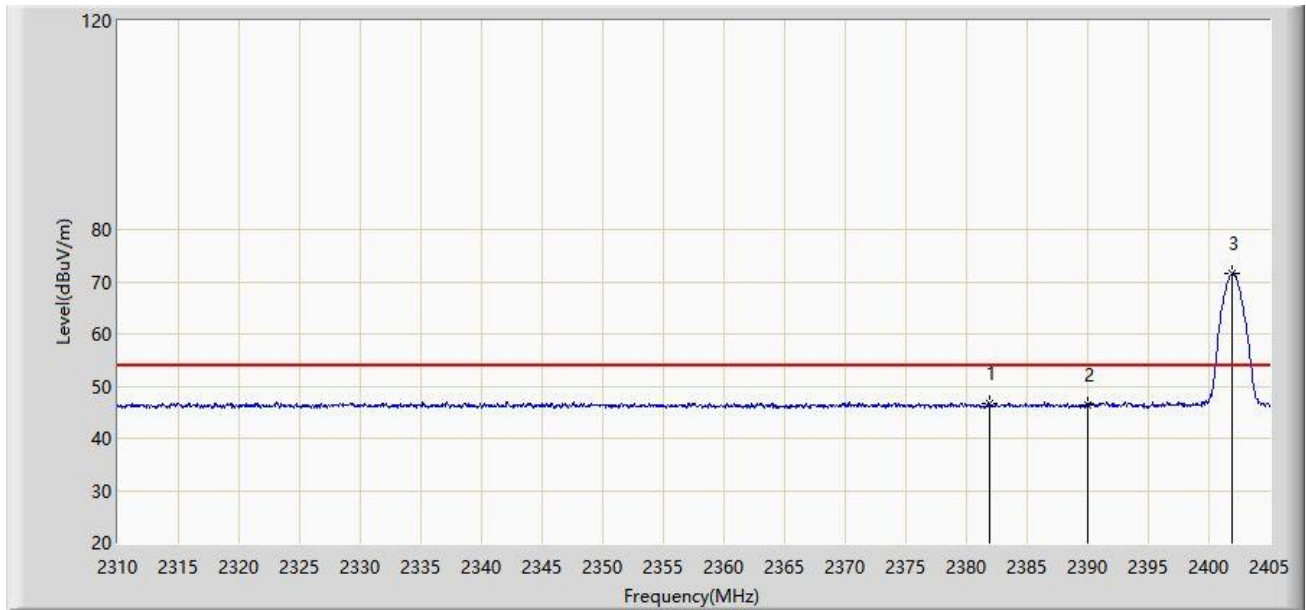


No	Flag	Mark	Frequency (MHz)	Measure Level (dBμV/m)	Reading Level (dBμV)	Margin (dB)	Limit (dBμV/m)	Factor (dB/m)	Type
1			2384.955	57.627	26.817	-16.373	74.000	30.811	PK
2			2390.000	56.868	26.052	-17.132	74.000	30.816	PK
3		*	2401.485	74.219	43.381	N/A	N/A	30.838	PK

Note: Measure Level (dBμV/m) = Reading Level (dBμV) + Factor (dB/m)

Factor (dB/m) = Cable Loss (dB) + Antenna Factor (dB/m)

Site: WZ-AC1	Time: 2022/03/04
Limit: FCC_Part15.209_RE(3m)	Engineer: Charles Zhang
Probe: WZ-AC1_BBHA9120D_1-18GHz	Polarity: Vertical
EUT: Smart Main Module	Power: By PC
Test Mode: Transmit by BLE - 2Mbps at Channel 2402MHz	

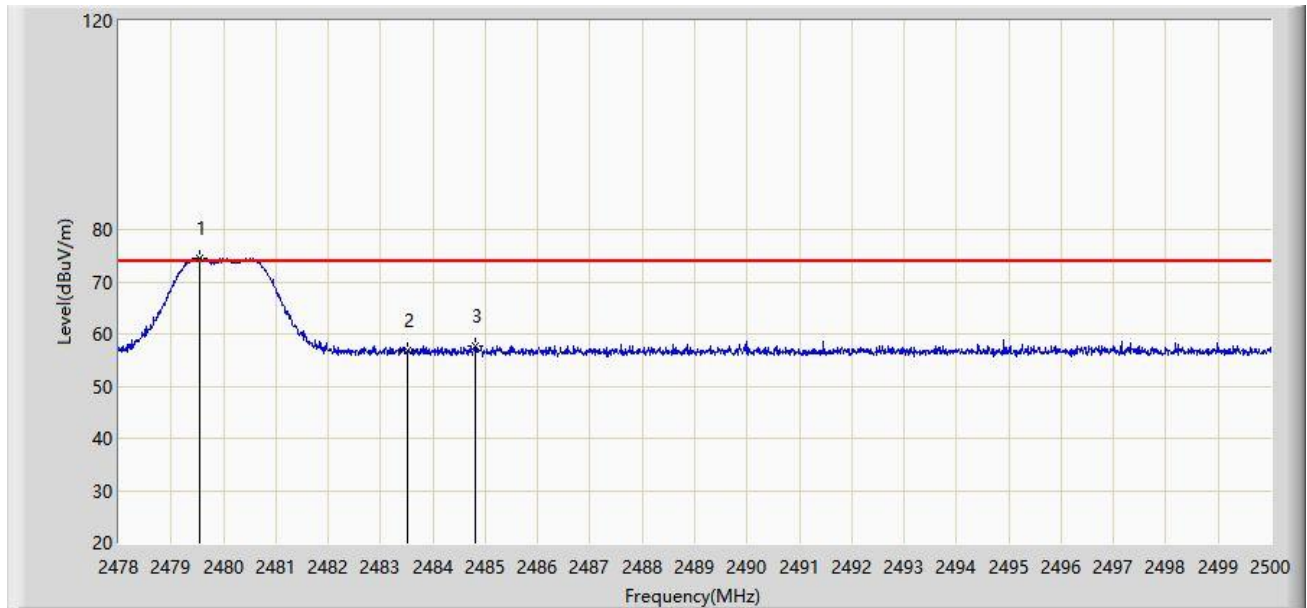


No	Flag	Mark	Frequency (MHz)	Measure Level (dBμV/m)	Reading Level (dBμV)	Margin (dB)	Limit (dBμV/m)	Factor (dB/m)	Type
1			2381.962	46.588	15.781	-7.412	54.000	30.807	AV
2			2390.000	46.334	15.518	-7.666	54.000	30.816	AV
3		*	2401.865	71.479	40.640	N/A	N/A	30.839	AV

Note: Measure Level (dBμV/m) = Reading Level (dBμV) + Factor (dB/m)

Factor (dB/m) = Cable Loss (dB) + Antenna Factor (dB/m)

Site: WZ-AC1	Time: 2022/03/04
Limit: FCC_Part15.209_RE(3m)	Engineer: Charles Zhang
Probe: WZ-AC1_BBHA9120D_1-18GHz	Polarity: Horizontal
EUT: Smart Main Module	Power: By PC
Test Mode: Transmit by BLE - 2Mbps at Channel 2480MHz	

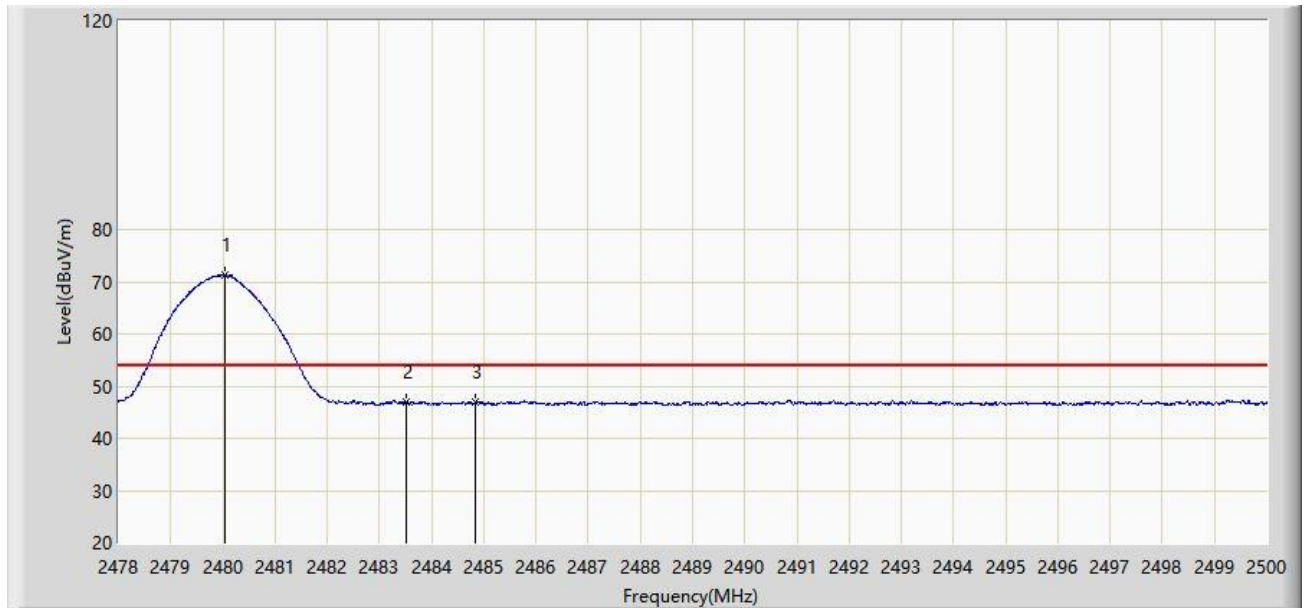


No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Margin (dB)	Limit (dBuV/m)	Factor (dB/m)	Type
1		*	2479.540	74.598	43.594	N/A	N/A	31.004	PK
2			2483.500	56.843	25.822	-17.157	74.000	31.021	PK
3			2484.798	57.755	26.729	-16.245	74.000	31.027	PK

Note: Measure Level (dBuV/m) = Reading Level (dBuV) + Factor (dB/m)

Factor (dB/m) = Cable Loss (dB) + Antenna Factor (dB/m)

Site: WZ-AC1	Time: 2022/03/04
Limit: FCC_Part15.209_RE(3m)	Engineer: Charles Zhang
Probe: WZ-AC1_BBHA9120D_1-18GHz	Polarity: Horizontal
EUT: Smart Main Module	Power: By PC
Test Mode: Transmit by BLE - 2Mbps at Channel 2480MHz	

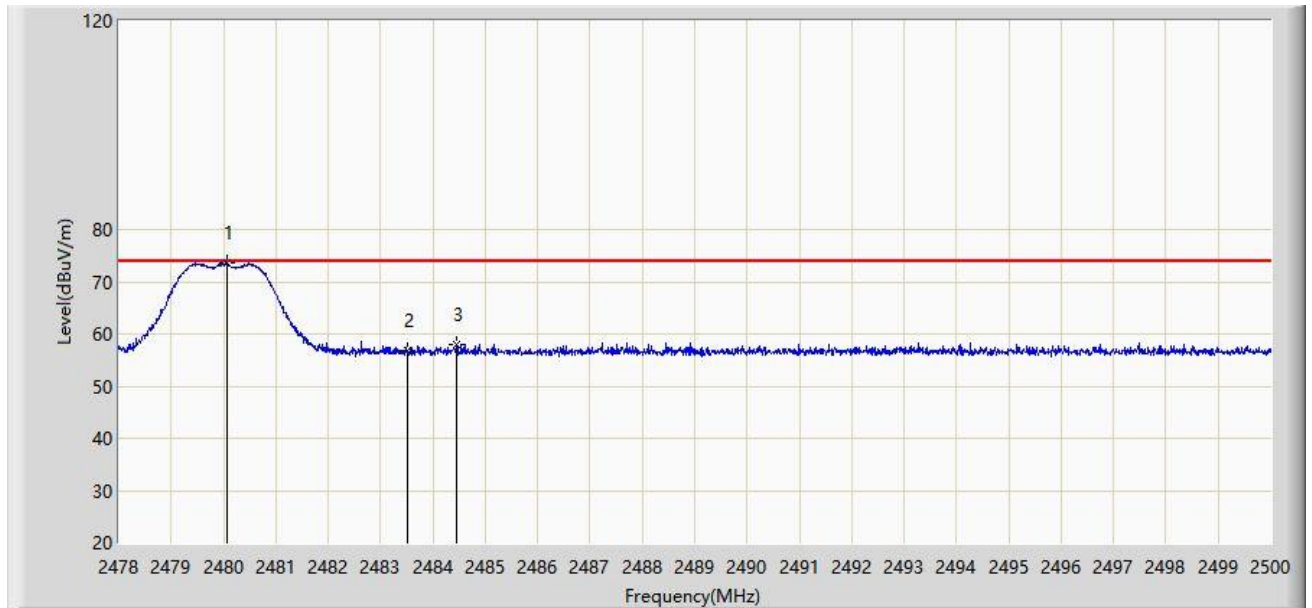


No	Flag	Mark	Frequency (MHz)	Measure Level (dBμV/m)	Reading Level (dBμV)	Margin (dB)	Limit (dBμV/m)	Factor (dB/m)	Type
1		*	2480.046	71.223	40.217	N/A	N/A	31.006	AV
2			2483.500	46.840	15.819	-7.160	54.000	31.021	AV
3			2484.831	46.968	15.942	-7.032	54.000	31.027	AV

Note: Measure Level (dBμV/m) = Reading Level (dBμV) + Factor (dB/m)

Factor (dB/m) = Cable Loss (dB) + Antenna Factor (dB/m)

Site: WZ-AC1	Time: 2022/03/04
Limit: FCC_Part15.209_RE(3m)	Engineer: Charles Zhang
Probe: WZ-AC1_BBHA9120D_1-18GHz	Polarity: Vertical
EUT: Smart Main Module	Power: By PC
Test Mode: Transmit by BLE - 2Mbps at Channel 2480MHz	

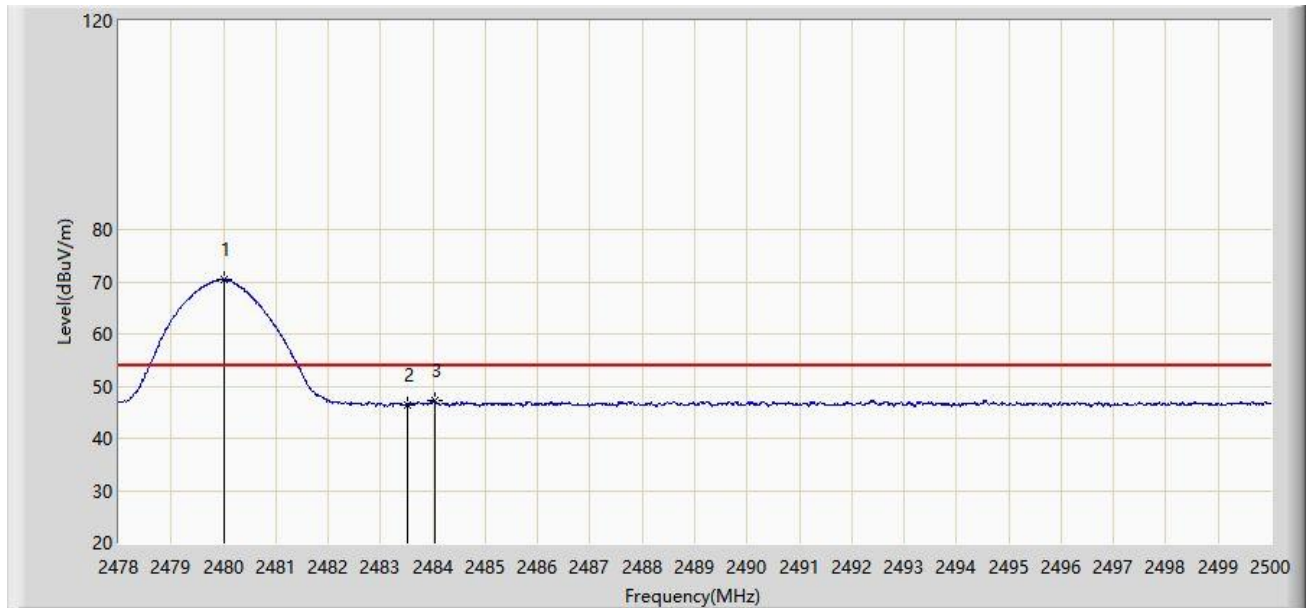


No	Flag	Mark	Frequency (MHz)	Measure Level (dBμV/m)	Reading Level (dBμV)	Margin (dB)	Limit (dBμV/m)	Factor (dB/m)	Type
1		*	2480.057	73.685	42.679	N/A	N/A	31.006	PK
2			2483.500	56.782	25.761	-17.218	74.000	31.021	PK
3			2484.457	58.111	27.086	-15.889	74.000	31.025	PK

Note: Measure Level (dBμV/m) = Reading Level (dBμV) + Factor (dB/m)

Factor (dB/m) = Cable Loss (dB) + Antenna Factor (dB/m)

Site: WZ-AC1	Time: 2022/03/04
Limit: FCC_Part15.209_RE(3m)	Engineer: Charles Zhang
Probe: WZ-AC1_BBHA9120D_1-18GHz	Polarity: Vertical
EUT: Smart Main Module	Power: By PC
Test Mode: Transmit by BLE - 2Mbps at Channel 2480MHz	



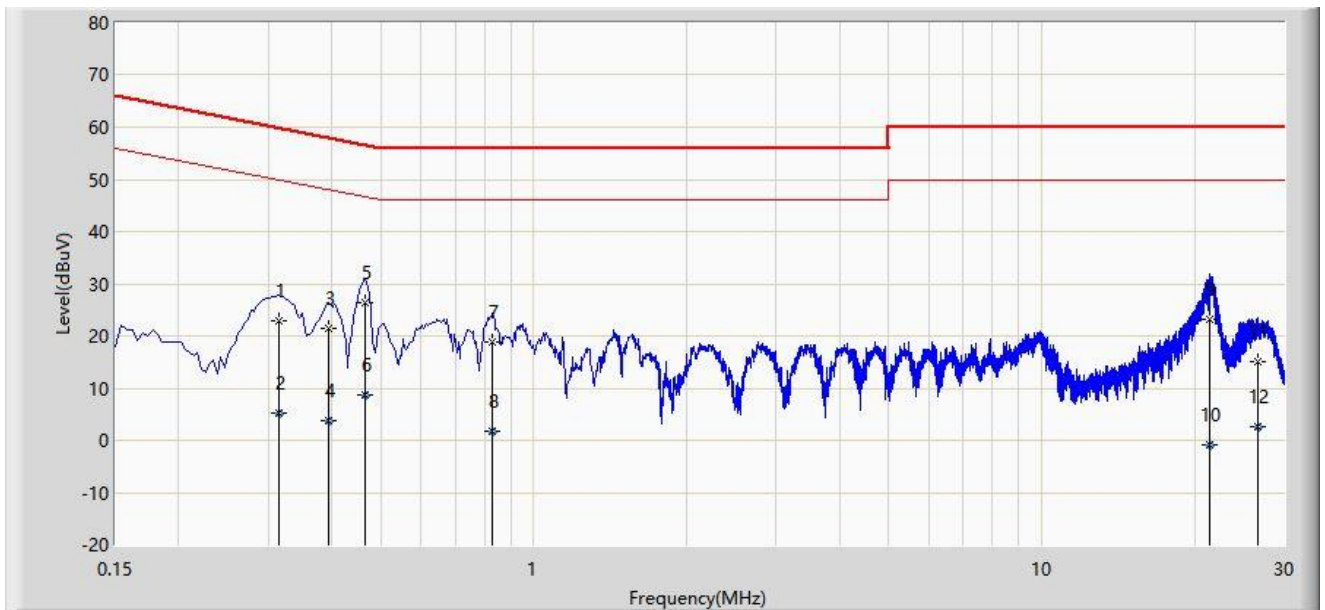
No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Margin (dB)	Limit (dBuV/m)	Factor (dB/m)	Type
1		*	2480.002	70.438	39.432	N/A	N/A	31.006	AV
2			2483.500	46.372	15.351	-7.628	54.000	31.021	AV
3			2484.039	47.180	16.157	-6.820	54.000	31.023	AV

Note: Measure Level (dBuV/m) = Reading Level (dBuV) + Factor (dB/m)

Factor (dB/m) = Cable Loss (dB) + Antenna Factor (dB/m)

A.8 AC Conducted Emissions Test Result

Site: WZ-SR2	Time: 2021/11/15
Limit: FCC_Part15.207_CE_AC Power	Engineer: Helen Han
Probe: ENV216_101683_Filter Off_E	Polarity: Line
EUT: Smart Main Module	Power: AC 120V/60Hz
Test Mode: Transmit by BLE -1Mbps at channel 2402MHz	

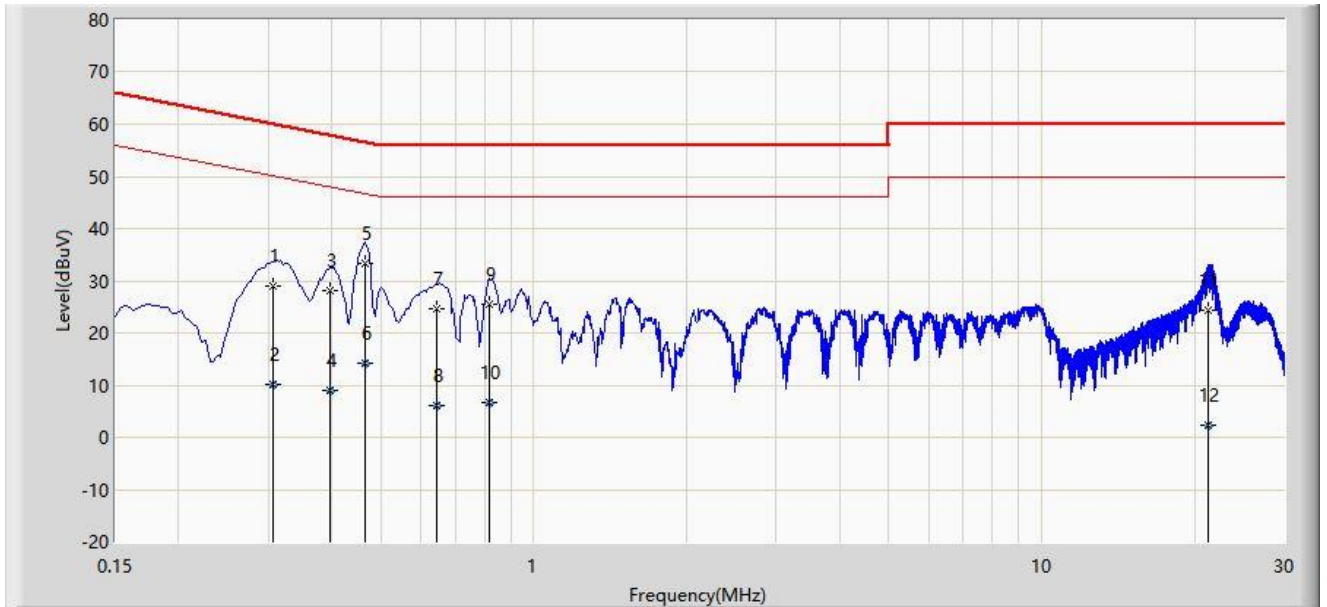


No	Flag	Mark	Frequency (MHz)	Measure Level (dBμV)	Reading Level (dBμV)	Margin (dB)	Limit (dBμV)	Factor (dB)	Type
1			0.314	22.890	12.982	-36.974	59.864	9.907	QP
2			0.314	5.295	-4.612	-44.569	49.864	9.907	AV
3			0.394	21.312	11.399	-36.667	57.979	9.913	QP
4			0.394	3.848	-6.065	-44.131	47.979	9.913	AV
5		*	0.466	26.505	16.587	-30.080	56.585	9.917	QP
6			0.466	8.640	-1.278	-37.945	46.585	9.917	AV
7			0.830	18.962	9.024	-37.038	56.000	9.937	QP
8			0.830	1.646	-8.292	-44.354	46.000	9.937	AV
9			21.410	23.214	11.645	-36.786	60.000	11.569	QP
10			21.410	-0.892	-12.460	-50.892	50.000	11.569	AV
11			26.582	15.161	3.249	-44.839	60.000	11.912	QP
12			26.582	2.699	-9.213	-47.301	50.000	11.912	AV

Note: Measure Level (dBμV) = Reading Level (dBμV) + Factor (dB)

Factor (dB) = Cable Loss (dB) + LISN Factor (dB)

Site: WZ-SR2	Time: 2021/11/15
Limit: FCC_Part15.207_CE_AC Power	Engineer: Helen Han
Probe: ENV216_101683_Filter Off_E	Polarity: Neutral
EUT: Smart Main Module	Power: AC 120V/60Hz
Test Mode: Transmit by BLE -1Mbps at channel 2402MHz	



No	Flag	Mark	Frequency (MHz)	Measure Level (dBμV)	Reading Level (dBμV)	Margin (dB)	Limit (dBμV)	Factor (dB)	Type
1			0.306	29.092	19.175	-30.987	60.078	9.917	QP
2			0.306	10.152	0.235	-39.926	50.078	9.917	AV
3			0.398	27.976	18.053	-29.919	57.895	9.923	QP
4			0.398	8.975	-0.948	-38.920	47.895	9.923	AV
5		*	0.466	33.240	23.312	-23.345	56.585	9.927	QP
6			0.466	14.171	4.244	-32.413	46.585	9.927	AV
7			0.646	24.763	14.820	-31.237	56.000	9.943	QP
8			0.646	6.158	-3.786	-39.842	46.000	9.943	AV
9			0.818	25.520	15.567	-30.480	56.000	9.953	QP
10			0.818	6.569	-3.384	-39.431	46.000	9.953	AV
11			21.330	24.386	12.625	-35.614	60.000	11.761	QP
12			21.330	2.255	-9.506	-47.745	50.000	11.761	AV

Note: Measure Level (dBμV) = Reading Level (dBμV) + Factor (dB)

Factor (dB) = Cable Loss (dB) + LISN Factor (dB)

Appendix B - Test Setup Photograph

Refer to "2111RSU020-UT" file.

Appendix C - EUT Photograph

Refer to " 2111RSU020-UE" file.

————— The End —————