



RF MEASUREMENT REPORT

FCC ID: 2A3Y3-NSB01
Applicant: Honeywell International Inc
Honeywell Safety and Productivity Solutions
Product: Smart Proximity Beacon
Model No.: NSB-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
2111RSU021-U2	Rev. 01	Initial Report	03-04-2022	Valid

CONTENTS

Description	Page
1. General Information	5
1.1. Applicant	5
1.2. Manufacturer	5
1.3. Testing Facility.....	5
1.4. Product Information	6
1.5. Radio Specification.....	6
1.6. Working Frequency for this report.....	7
2. Test Configuration	8
2.1. Test Mode	8
2.2. Test System Connection Diagram.....	8
2.3. Test Software	8
2.4. Applied Standards	8
2.5. Test Environment Condition.....	9
3. Antenna Requirement	10
4. Test Equipment Calibration Date.....	11
5. Measurement Uncertainty	12
6. Test Result	13
6.1. Summary.....	13
6.2. Occupied Bandwidth	14
6.2.1. Test Limit	14
6.2.2. Test Procedure used.....	14
6.2.3. Test Setting.....	14
6.2.4. Test Setup	14
6.2.5. Test Result.....	14
6.3. Output Power	15
6.3.1. Test Limit	15
6.3.2. Test Procedure Used	15
6.3.3. Test Setting.....	15
6.3.4. Test Setup	15
6.3.5. Test Result.....	15
6.4. Power Spectral Density	16
6.4.1. Test Limit	16
6.4.2. Test Procedure Used	16
6.4.3. Test Setting.....	16

6.4.4.	Test Setup	16
6.4.5.	Test Result.....	17
6.5.	Conducted Band Edge and Out-of-Band Emissions	18
6.5.1.	Test Limit	18
6.5.2.	Test Procedure Used	18
6.5.3.	Test Setting.....	18
6.5.4.	Test Setup	19
6.5.5.	Test Result.....	19
6.6.	Radiated Spurious Emission.....	20
6.6.1.	Test Limit	20
6.6.2.	Test Procedure Used	20
6.6.3.	Test Setting.....	20
6.6.4.	Test Setup	22
6.6.5.	Test Result.....	22
6.7.	Radiated Restricted Band Edge	23
6.7.1.	Test Limit	23
6.7.2.	Test Procedure Used	24
6.7.3.	Test Setting.....	24
6.7.4.	Test Setup	25
6.7.5.	Test Result.....	25
6.8.	AC Conducted Emissions.....	26
6.8.1.	Test Limit	26
6.8.2.	Test Setup	26
6.8.3.	Test Result.....	26
Appendix A - Test Result.....		27
A.1	<i>Duty Cycle Test Result.....</i>	27
A.2	<i>6dB Bandwidth Test Result.....</i>	28
A.3	<i>Output Power Test Result.....</i>	32
A.4	<i>Power Spectral Density Test Result</i>	33
A.5	<i>Conducted Band Edge and Out-of-Band Emissions Test Result.....</i>	37
A.6	<i>Radiated Spurious Emission Test Result.....</i>	43
A.7	<i>Radiated Restricted Band Edge Test Result.....</i>	48
A.8	<i>AC Conducted Emissions Test Result.....</i>	72
Appendix B - Test Setup Photograph.....		74
Appendix C - EUT Photograph.....		75

1.4. Product Information

Product Name	Smart Shield Beacon
Model No.	NSB-01
EUT Identification No.	20211105Sample#04 (Conducted Testing) 20211105Sample#03 (Radiated Testing)
Hardware Version	V1.2
Software Version	V1.0
Bluetooth Specification	V5.1 Signal 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

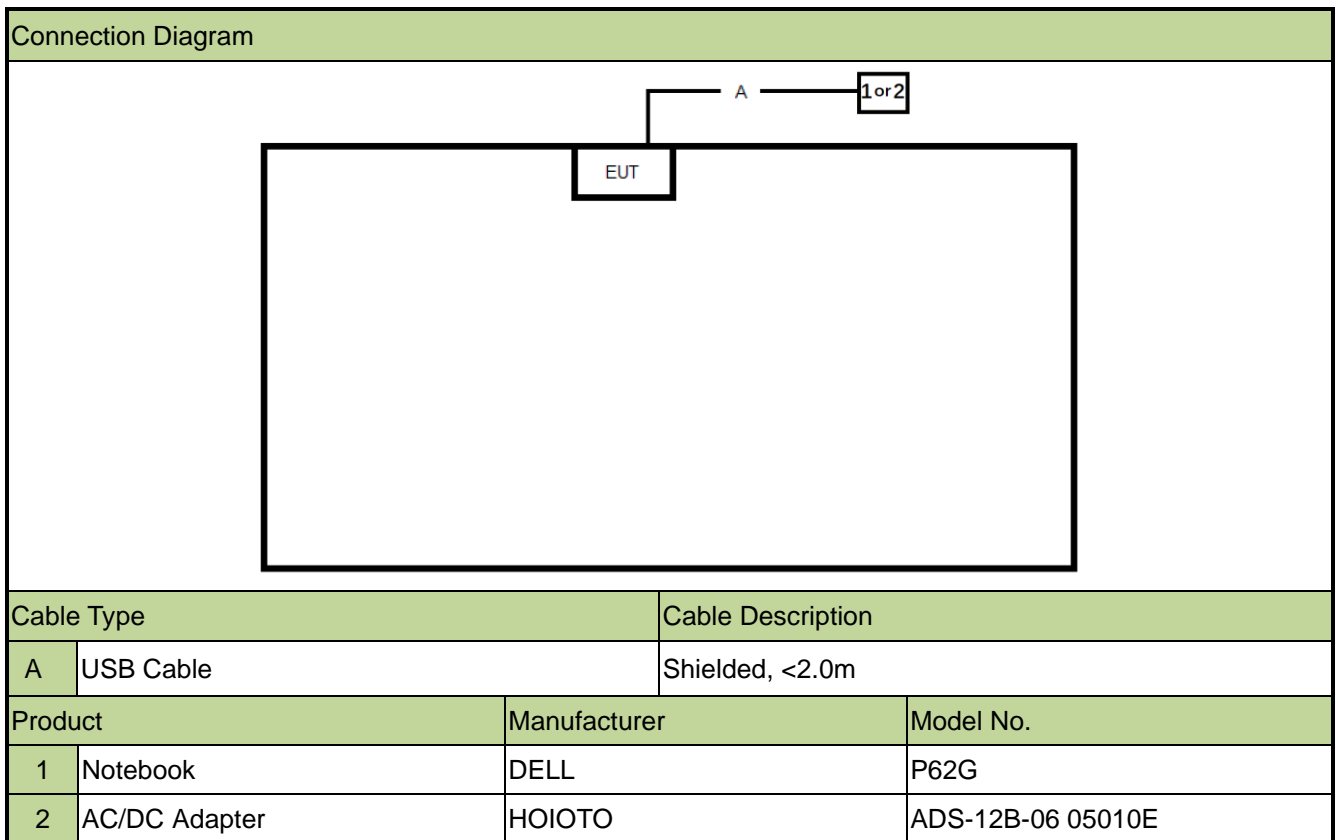
Channel	Frequency	Channel	Frequency	Channel	Frequency
00	2402 MHz	01	2404 MHz	02	2406 MHz
03	2408 MHz	04	2410 MHz	05	2412 MHz
06	2414 MHz	07	2416 MHz	08	2418 MHz
09	2420 MHz	10	2422 MHz	11	2424 MHz
12	2426 MHz	13	2428 MHz	14	2430 MHz
15	2432 MHz	16	2434 MHz	17	2436 MHz
18	2438 MHz	19	2440 MHz	20	2442 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 Smart Shield Beacon 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.

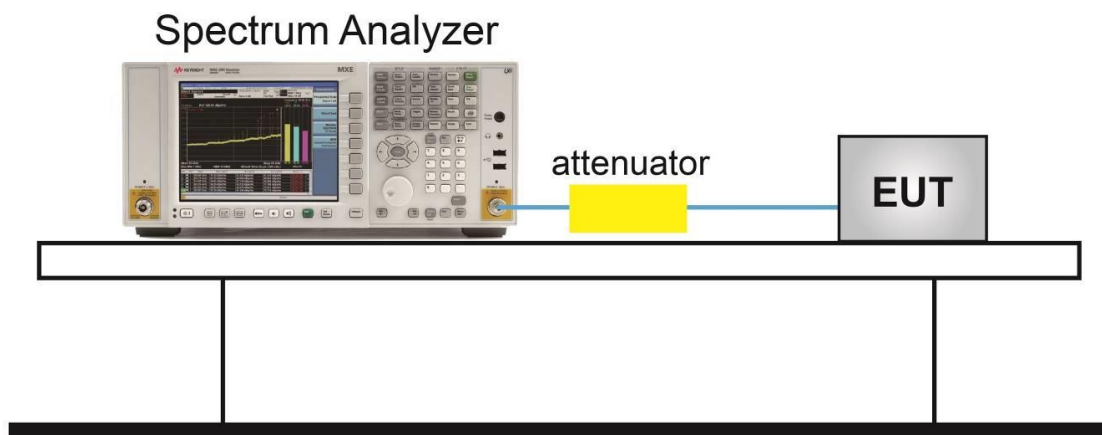
6.2.2. Test Procedure used

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.

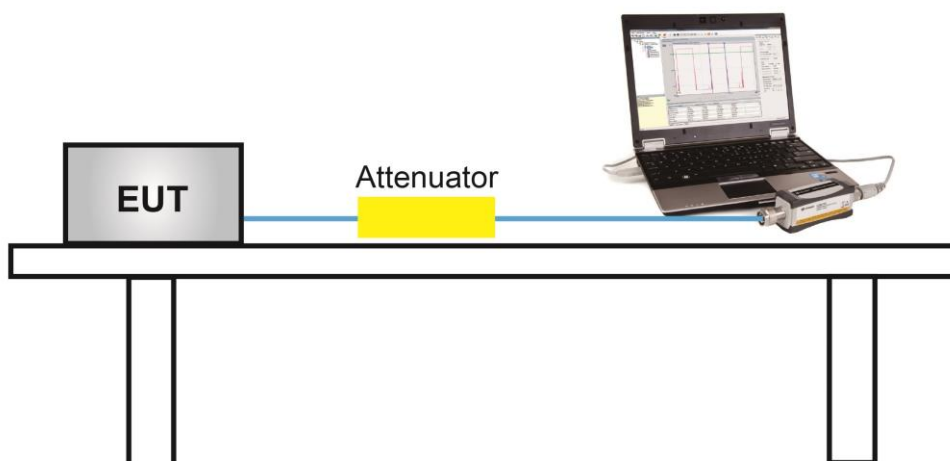
6.3.2. Test Procedure Used

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

6.3.3. Test Setting

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.

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.

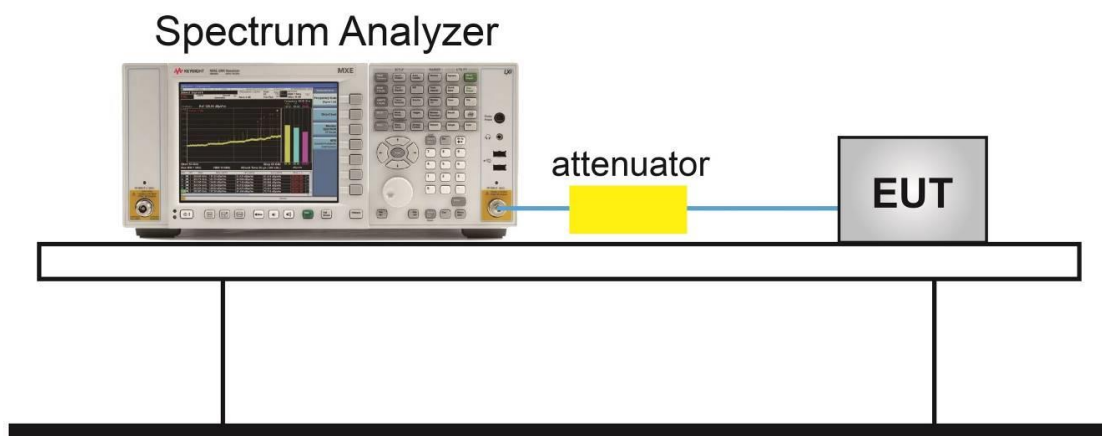
6.4.2. Test Procedure Used

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

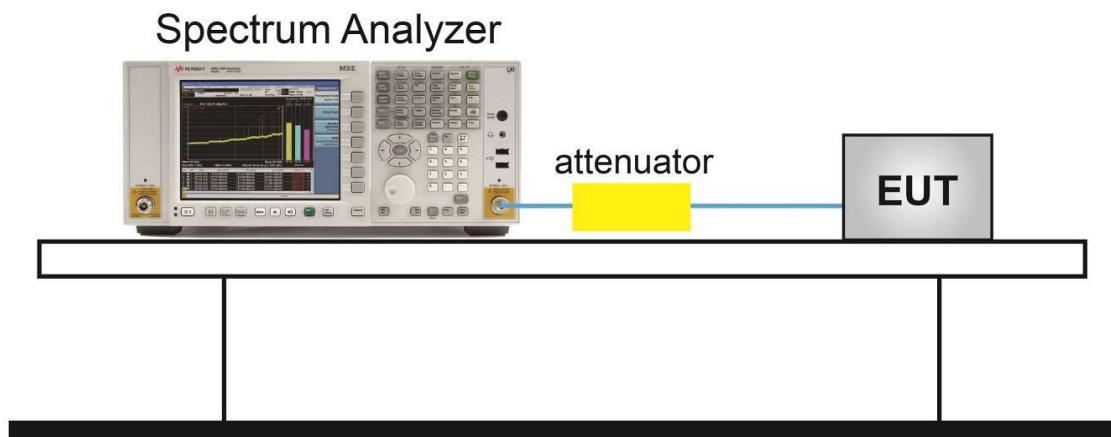
Reference level measurement

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

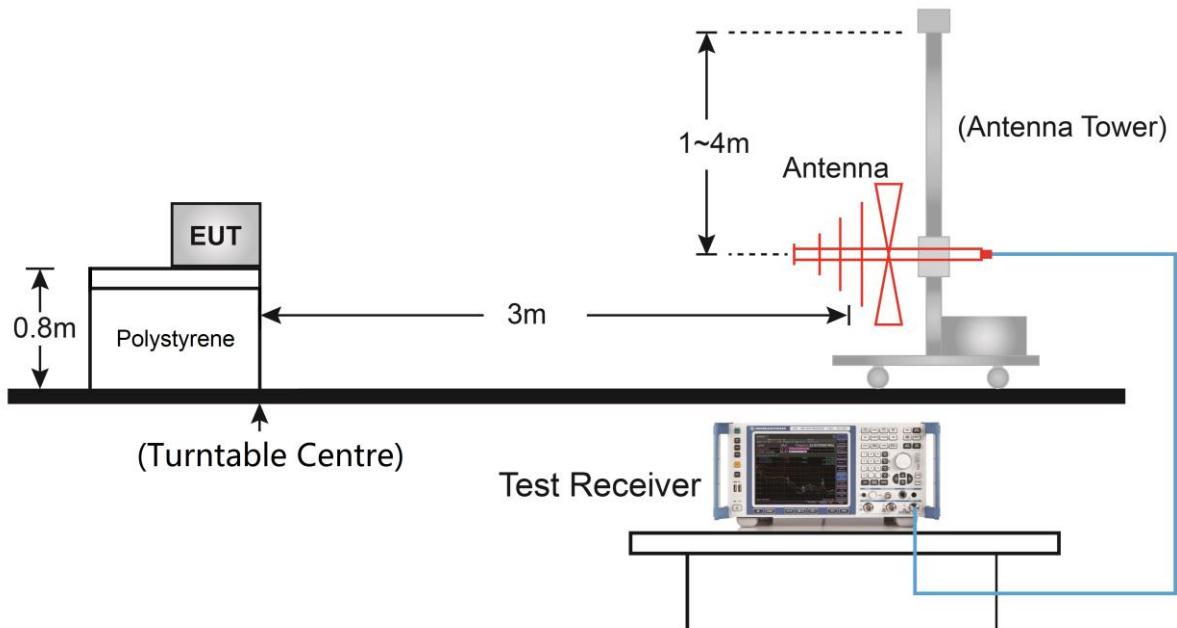
1. Analyzer center frequency was set to the frequency of the radiated spurious emission of interest
2. RBW = 1MHz
3. VBW = 3MHz
4. Detector = peak
5. Sweep time = auto couple
6. Trace mode = max hold
7. Trace was allowed to stabilize

Average Measurements above 1GHz (Method VB)

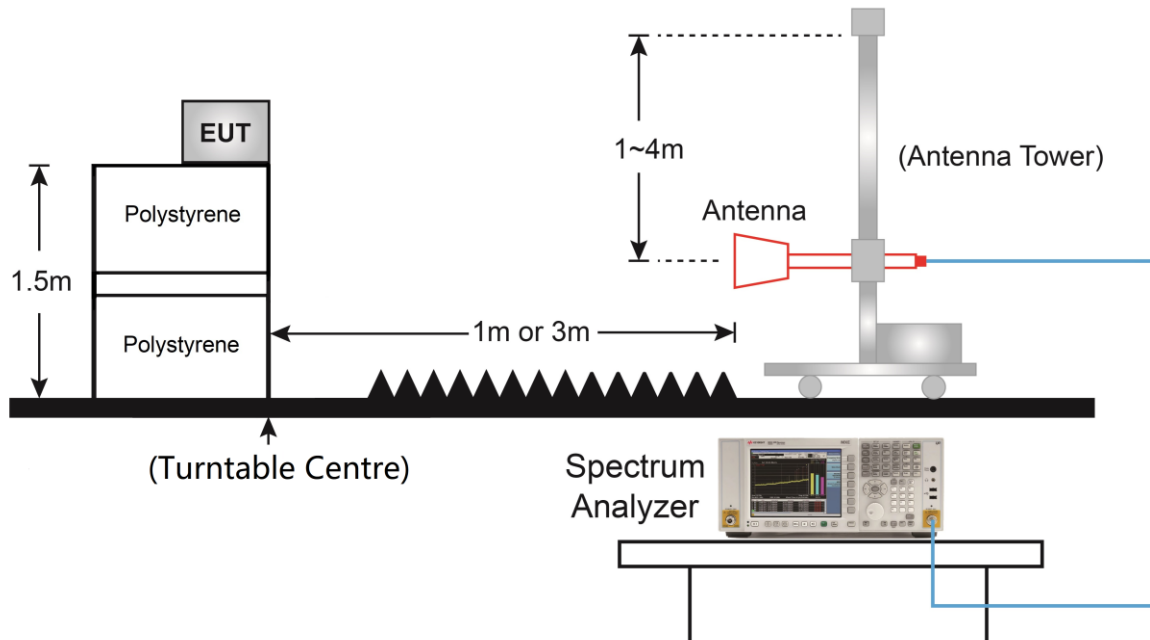
1. Analyzer center frequency was set to the frequency of the radiated spurious emission of interest
2. RBW = 1MHz
3. VBW; If the EUT is configured to transmit with duty cycle $\geq 98\%$, set VBW = 10 Hz.
If the EUT duty cycle is $< 98\%$, set VBW $\geq 1/T$. T is the minimum transmission duration.
4. 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

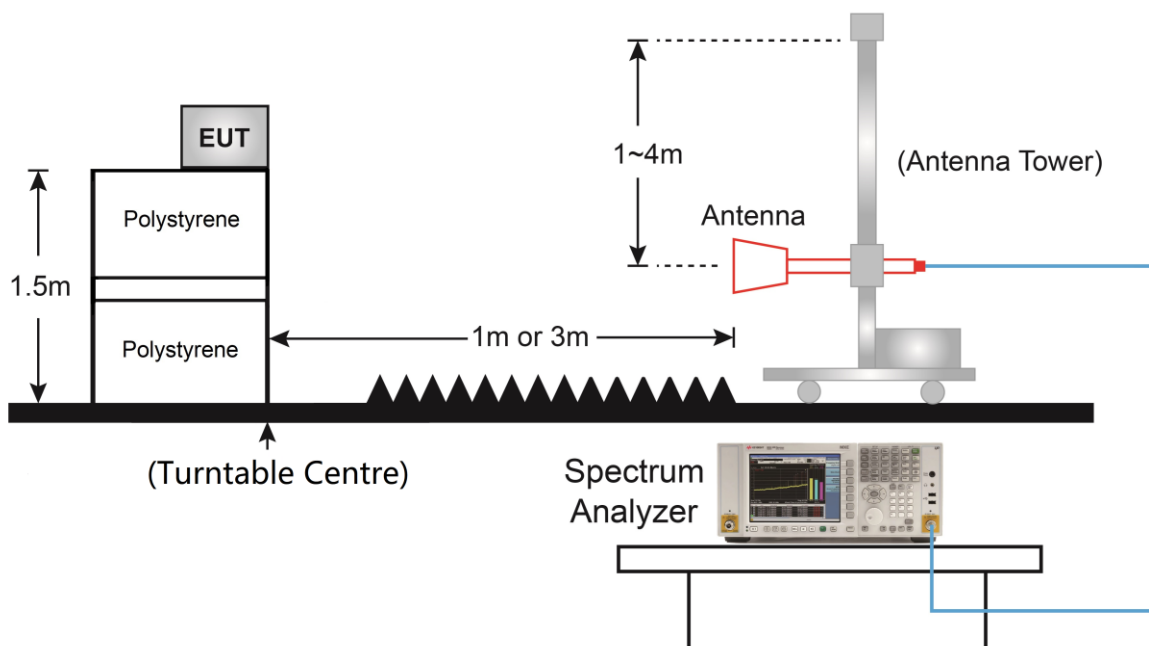
1. Analyzer center frequency was set to the frequency of the radiated spurious emission of interest
2. RBW = 1MHz
3. VBW = 3MHz
4. Detector = peak
5. Sweep time = auto couple
6. Trace mode = max hold
7. Trace was allowed to stabilize

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

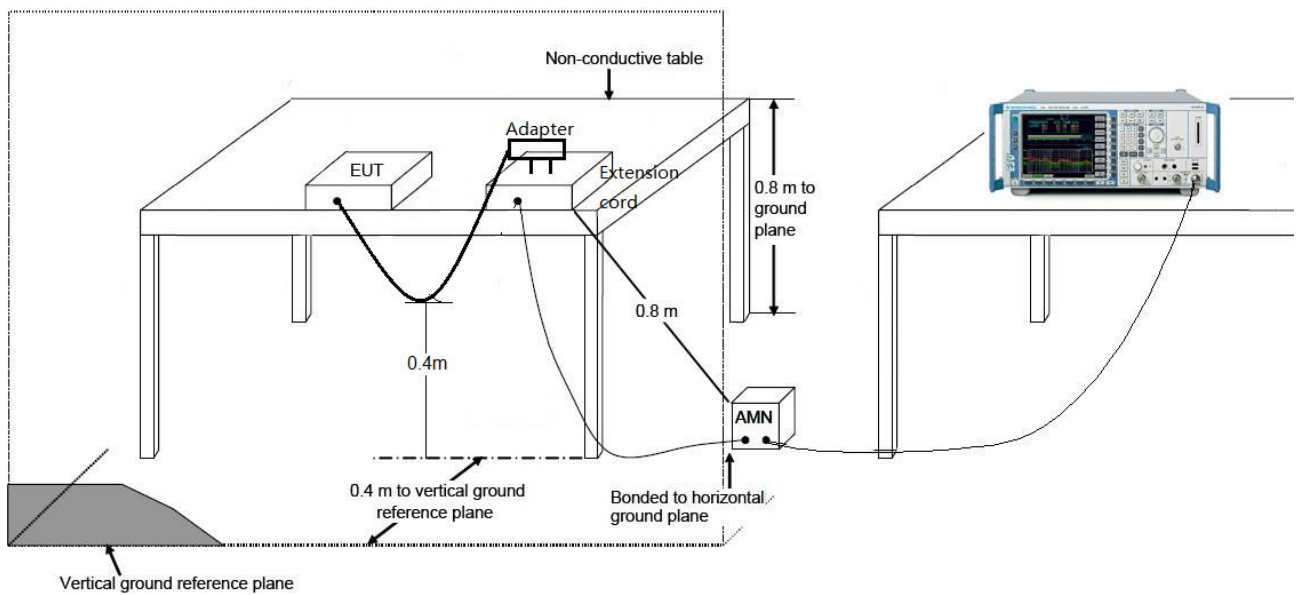
6.8.1. Test Limit

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.

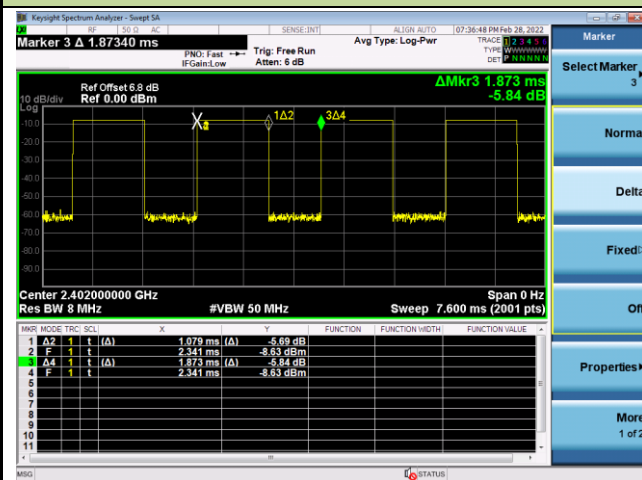
Appendix A - Test Result

A.1 Duty Cycle Test Result

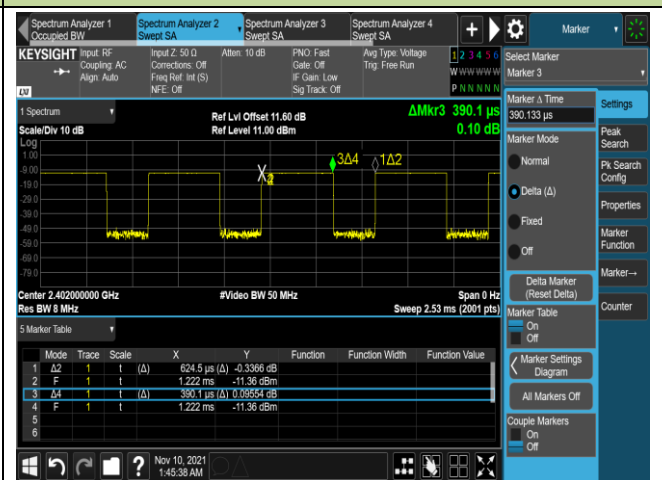
Test Mode	Duty Cycle
BLE-0.125Mbps	57.61%
BLE-1Mbps	62.47%
BLE-2Mbps	33.21%

Duty Cycle (T = Transmission Duration)

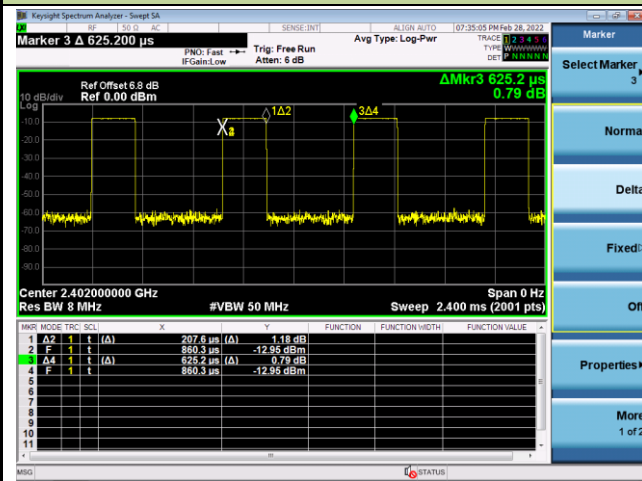
BLE-0.125Mbps



BLE-1Mbps



BLE-2Mbps



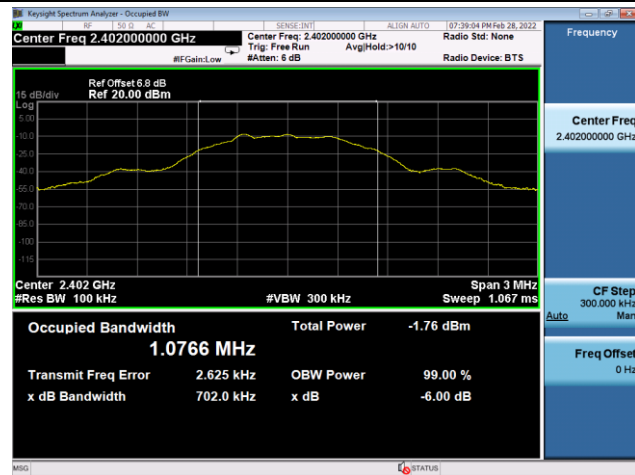
A.2 6dB Bandwidth Test Result

Test Site	WZ-SR5	Test Engineer	Liz Yuan
Test Date	2021/11/10 ~ 2022/02/28		

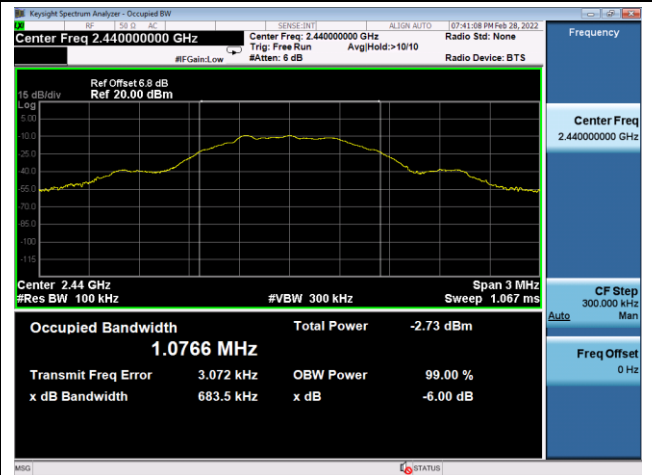
Test Mode	Data Rate	Channel No.	Frequency (MHz)	6dB Bandwidth (MHz)	Limit (MHz)
BLE	0.125Mbps	00	2402	0.7020	≥ 0.5
BLE	0.125Mbps	19	2440	0.6835	≥ 0.5
BLE	0.125Mbps	39	2480	0.7004	≥ 0.5
BLE	1Mbps	00	2402	0.6964	≥ 0.5
BLE	1Mbps	19	2440	0.6994	≥ 0.5
BLE	1Mbps	39	2480	0.7027	≥ 0.5
BLE	2Mbps	00	2402	1.1310	≥ 0.5
BLE	2Mbps	19	2440	1.1370	≥ 0.5
BLE	2Mbps	39	2480	1.1180	≥ 0.5

BLE-0.125Mbps 6dB Bandwidth

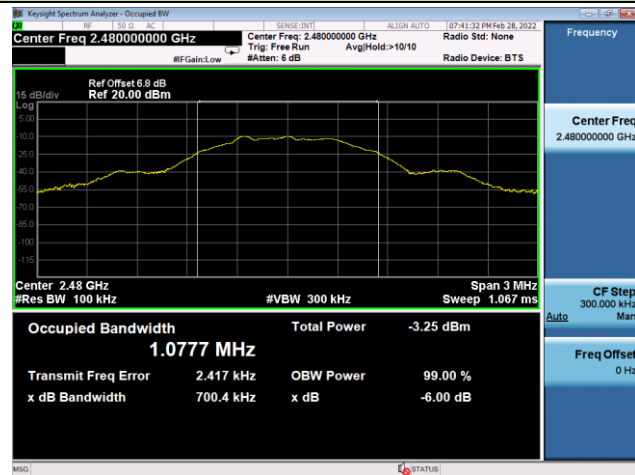
Channel 00 (2402MHz)

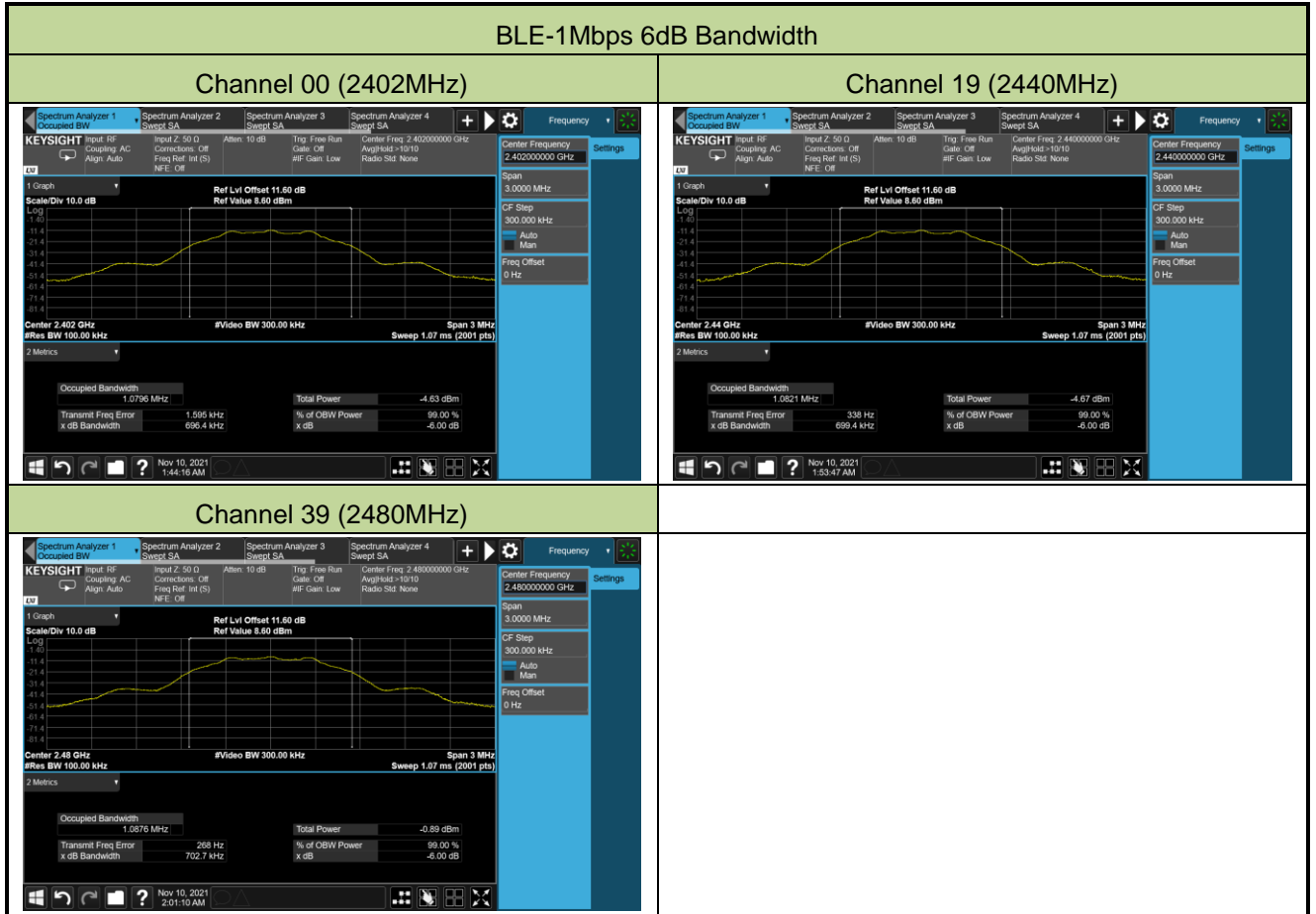


Channel 19 (2440MHz)



Channel 39 (2480MHz)







A.3 Output Power Test Result

Test Site	WZ-SR5	Test Engineer	Liz Yuan
Test Date	2021/11/09 ~ 2022/02/28		

Test Mode	Data Rate	Channel No.	Frequency (MHz)	Peak Power (dBm)	Limit (dBm)	Result
BLE	0.125Mbps	00	2402	-6.02	≤ 30.00	Pass
BLE	0.125Mbps	19	2440	-6.22	≤ 30.00	Pass
BLE	0.125Mbps	39	2480	-6.82	≤ 30.00	Pass
BLE	1Mbps	00	2402	-6.15	≤ 30.00	Pass
BLE	1Mbps	19	2440	-6.26	≤ 30.00	Pass
BLE	1Mbps	39	2480	-4.94	≤ 30.00	Pass
BLE	2Mbps	00	2402	-5.98	≤ 30.00	Pass
BLE	2Mbps	19	2440	-6.39	≤ 30.00	Pass
BLE	2Mbps	39	2480	-6.79	≤ 30.00	Pass

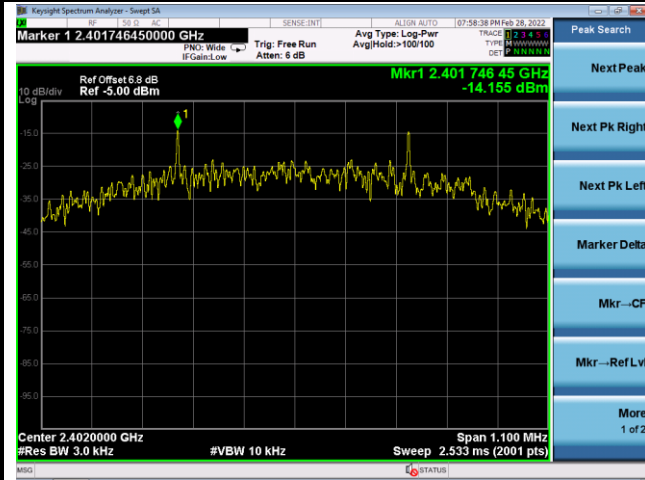
A.4 Power Spectral Density Test Result

Test Site	WZ-SR5	Test Engineer	Liz Yuan
Test Date	2021/11/10 ~ 2022/02/28		

Test Mode	Data Rate	Channel No.	Frequency (MHz)	PSD Result (dBm / 3kHz)	Limit (dBm / 3kHz)	Result
BLE	0.125Mbps	00	2402	-14.16	≤ 8.00	Pass
BLE	0.125Mbps	19	2440	-15.18	≤ 8.00	Pass
BLE	0.125Mbps	39	2480	-15.52	≤ 8.00	Pass
BLE	1Mbps	00	2402	-26.65	≤ 8.00	Pass
BLE	1Mbps	19	2440	-26.73	≤ 8.00	Pass
BLE	1Mbps	39	2480	-23.02	≤ 8.00	Pass
BLE	2Mbps	00	2402	-25.91	≤ 8.00	Pass
BLE	2Mbps	19	2440	-26.60	≤ 8.00	Pass
BLE	2Mbps	39	2480	-27.26	≤ 8.00	Pass

BLE-0.125Mbps PSD

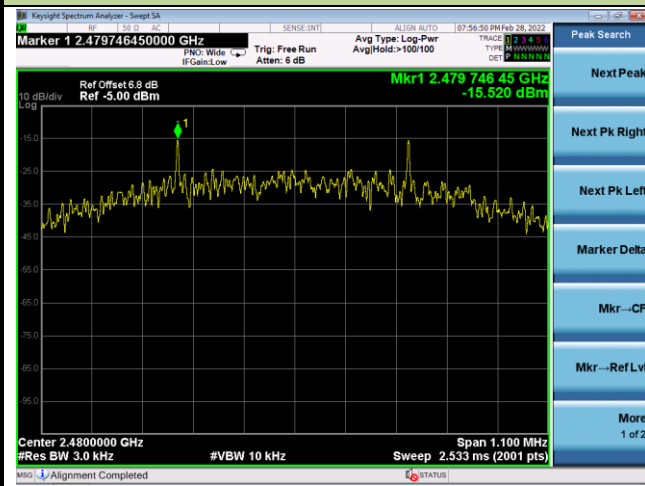
Channel 00 (2402MHz)



Channel 19 (2440MHz)



Channel 39 (2480MHz)

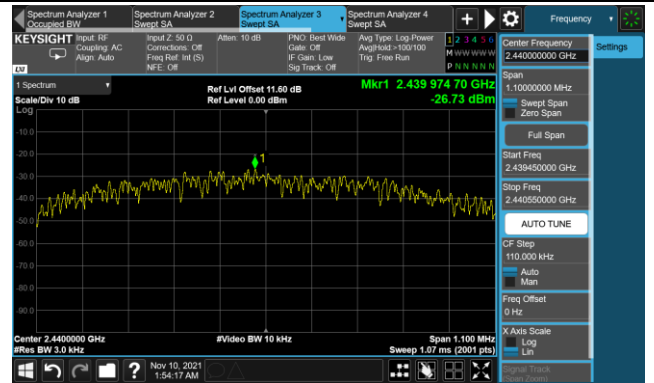


BLE-1Mbps PSD

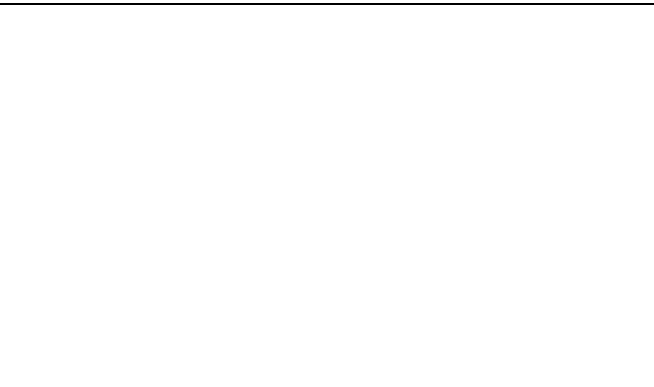
Channel 00 (2402MHz)



Channel 19 (2440MHz)

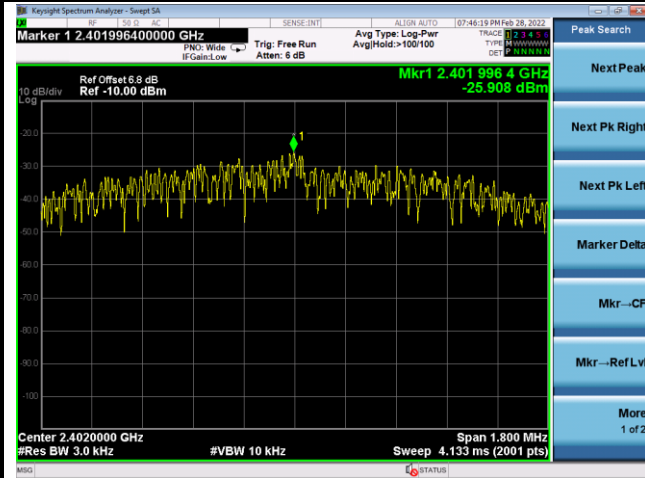


Channel 39 (2480MHz)

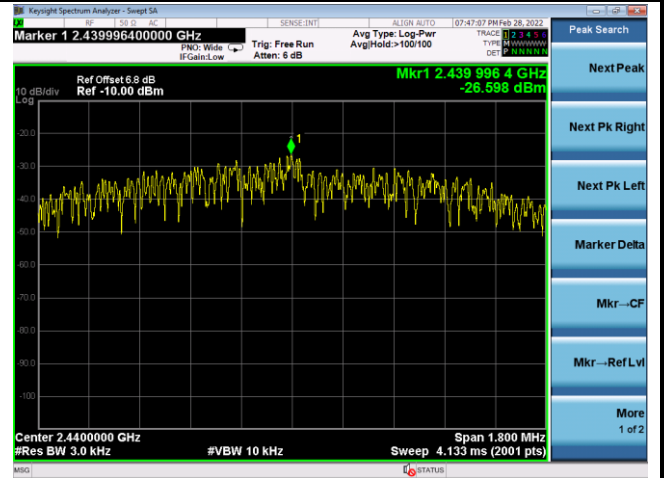


BLE-2Mbps PSD

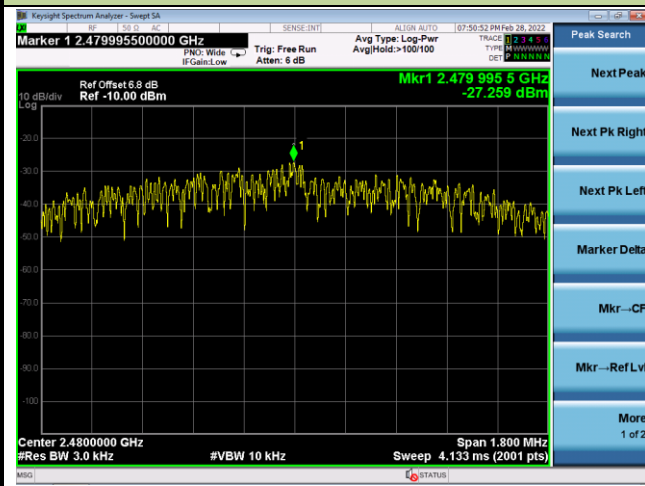
Channel 00 (2402MHz)



Channel 19 (2440MHz)



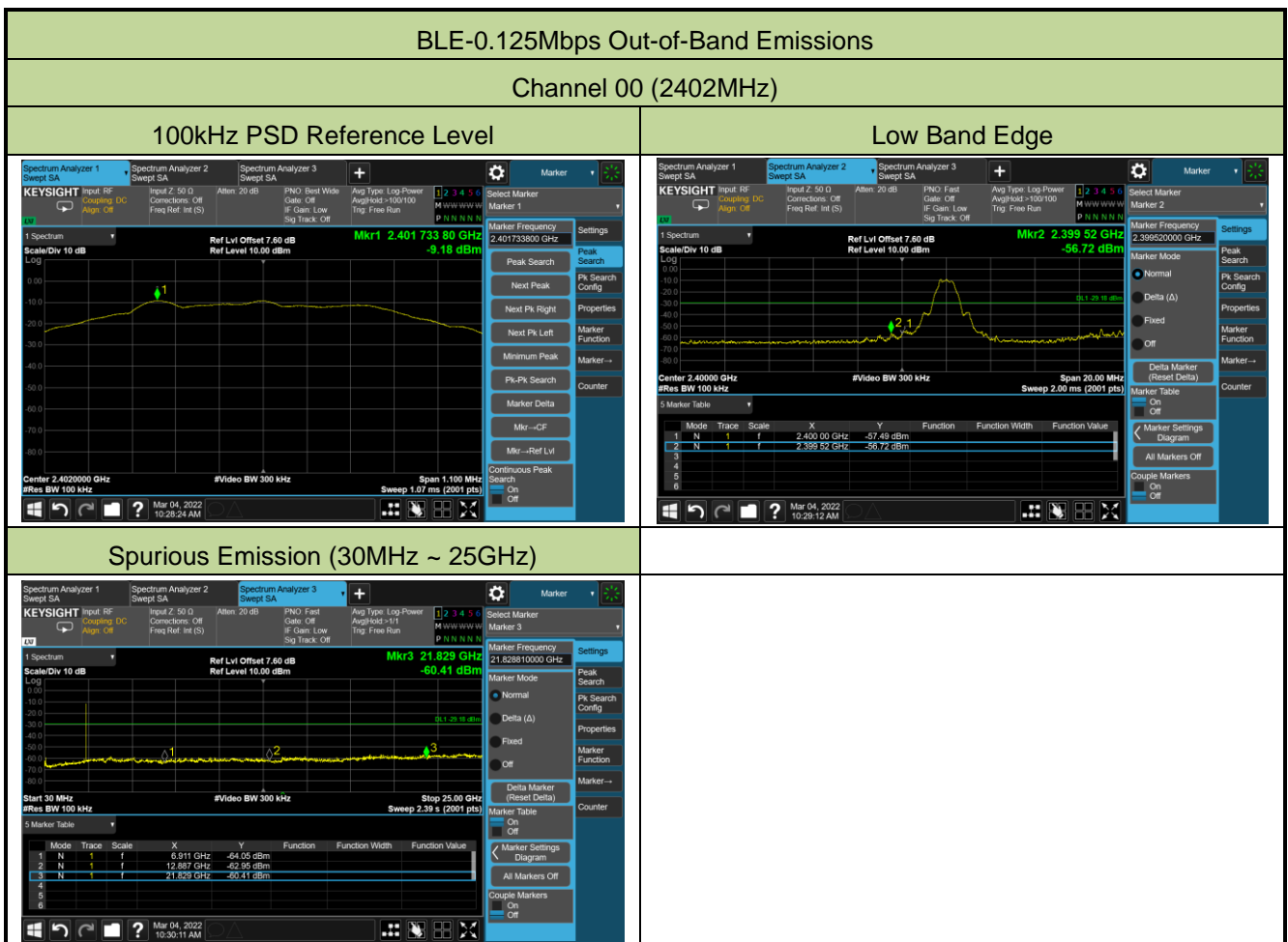
Channel 39 (2480MHz)



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

Test Site	WZ-SR5	Test Engineer	Liz Yuan
Test Date	2021/11/10 ~ 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

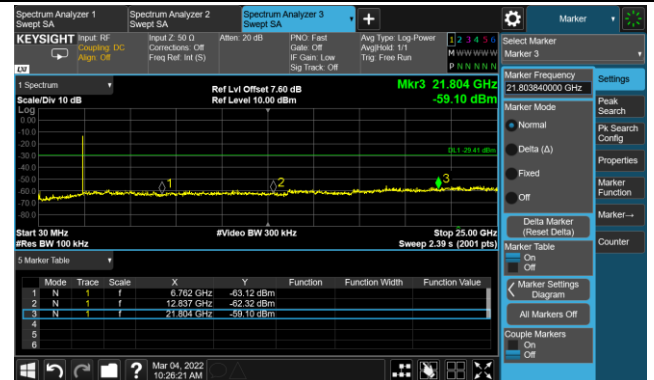


Channel 19 (2440MHz)

100kHz PSD Reference Level

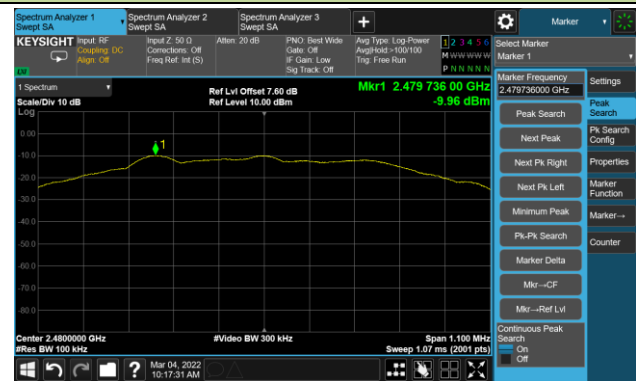


Spurious Emission (30MHz ~ 25GHz)

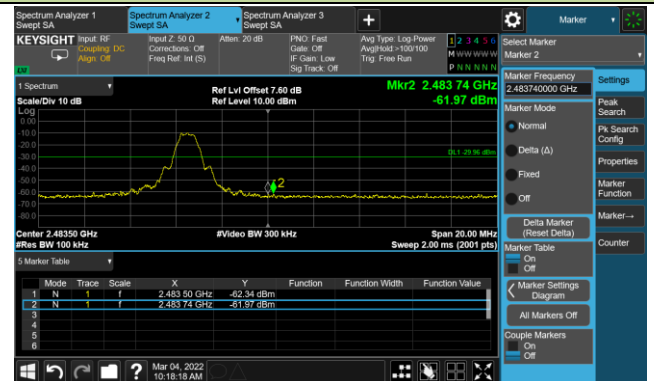


Channel 39 (2480MHz)

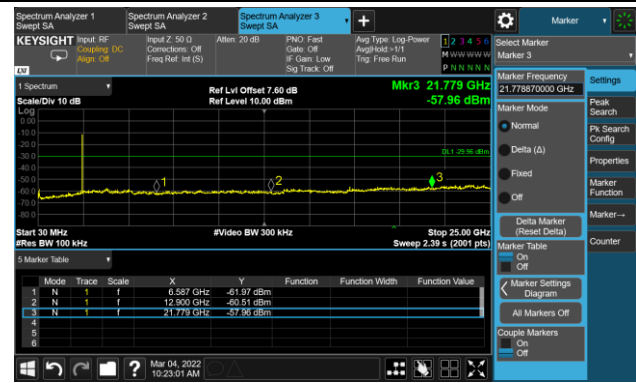
100kHz PSD Reference Level



High Band Edge

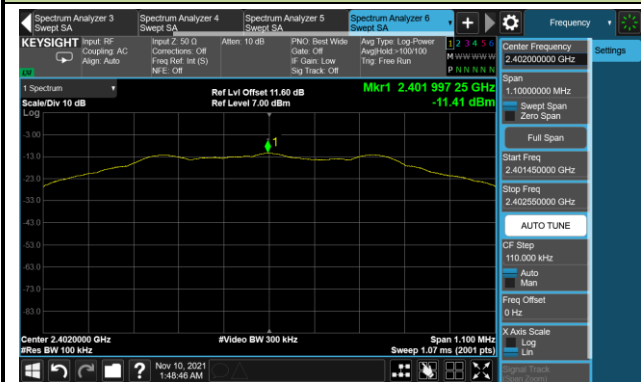


Spurious Emission (30MHz ~ 25GHz)



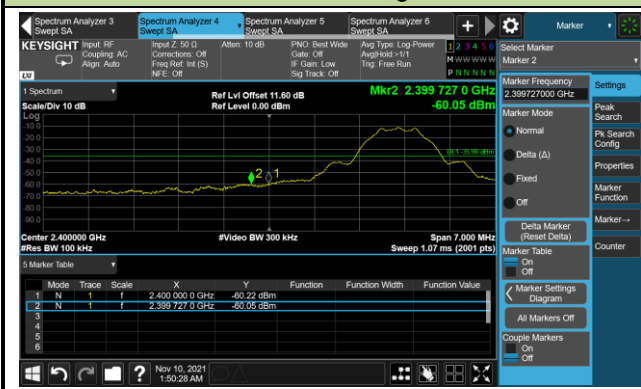
BLE-1Mbps Out-of-Band Emissions

100kHz PSD Reference Level

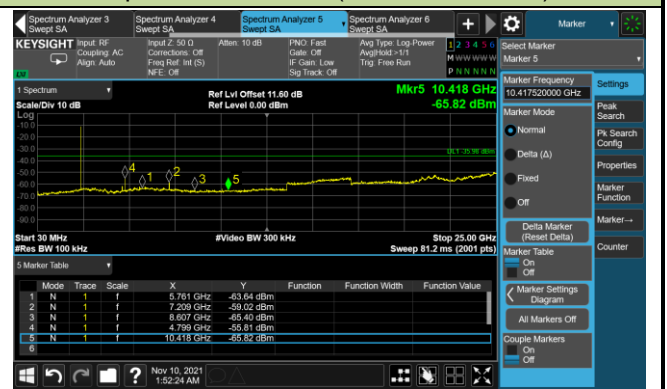


Channel 00 (2402MHz)

Low Band Edge

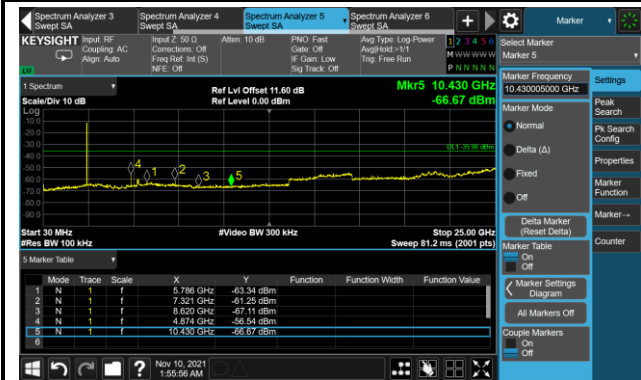


Spurious Emission (30MHz ~ 25GHz)



Channel 19 (2440MHz)

Spurious Emission (30MHz ~ 25GHz)



Channel 39 (2480MHz)

High Band Edge



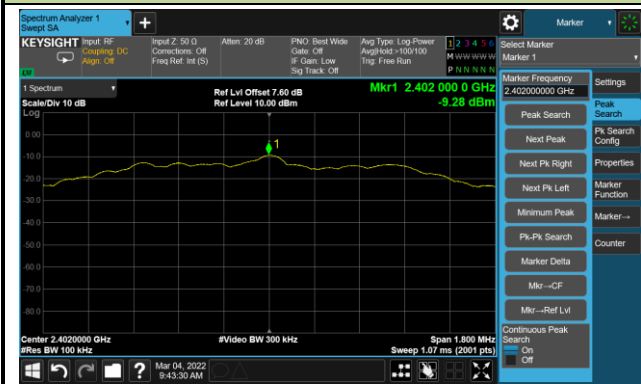
Spurious Emission (30MHz ~ 25GHz)



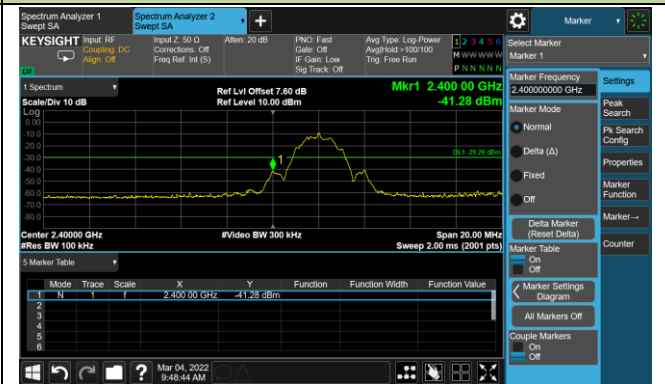
BLE-2Mbps Out-of-Band Emissions

Channel 00 (2402MHz)

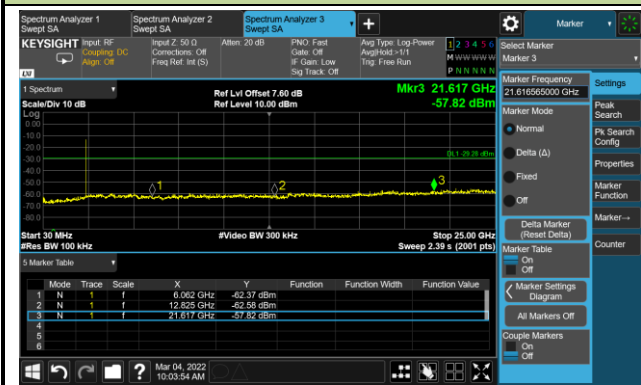
100kHz PSD Reference Level



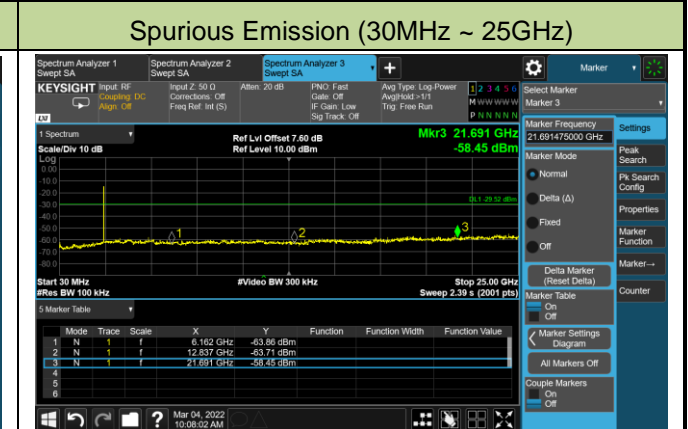
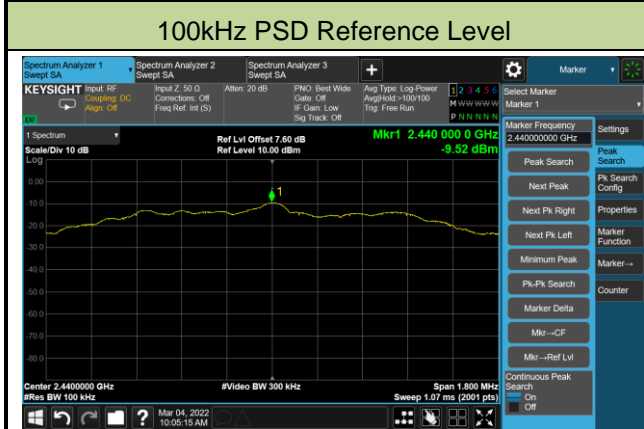
Low Band Edge



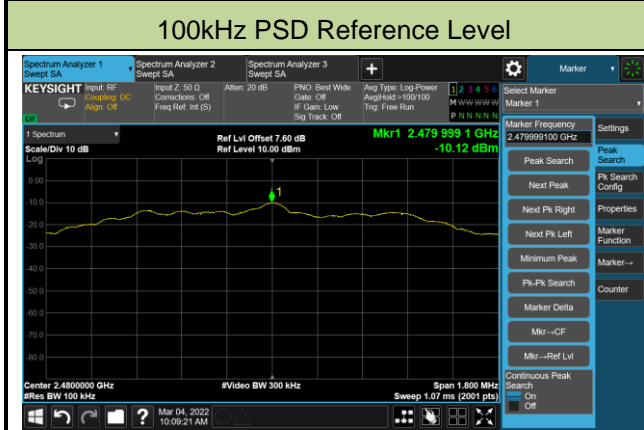
Spurious Emission (30MHz ~ 25GHz)



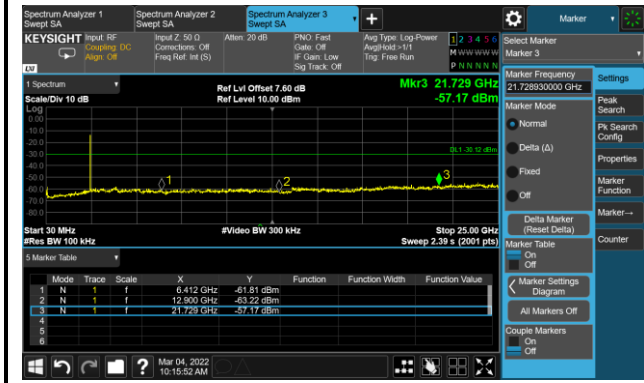
Channel 19 (2440MHz)



Channel 39 (2480MHz)



Spurious Emission (30MHz ~ 25GHz)



A.6 Radiated Spurious Emission Test Result

Test Site	WZ-AC2	Test Engineer	Bob Zhang
Test Date	2022/03/01	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	3796.500	32.9	0.1	33.0	74.0	-41.0	Peak	Horizontal
	4799.500	48.6	4.0	52.6	74.0	-21.4	Peak	Horizontal
	8820.000	32.6	13.5	46.1	74.0	-27.9	Peak	Horizontal
	4026.000	34.2	0.8	35.0	74.0	-39.0	Peak	Vertical
	4808.000	48.2	4.0	52.2	74.0	-21.8	Peak	Vertical
	7978.500	33.5	11.9	45.4	74.0	-28.6	Peak	Vertical
19	4060.000	33.4	0.8	34.2	74.0	-39.8	Peak	Horizontal
	4876.000	47.0	3.8	50.8	74.0	-23.2	Peak	Horizontal
	8820.000	32.1	13.5	45.6	74.0	-28.4	Peak	Horizontal
	4170.500	34.7	1.4	36.1	74.0	-37.9	Peak	Vertical
	4884.500	47.1	3.7	50.8	74.0	-23.2	Peak	Vertical
	8905.000	32.7	13.3	46.0	74.0	-28.0	Peak	Vertical
39	4077.000	33.4	1.0	34.4	74.0	-39.6	Peak	Horizontal
	4961.000	45.7	3.6	49.3	74.0	-24.7	Peak	Horizontal
	9245.000	32.3	14.5	46.8	74.0	-27.2	Peak	Horizontal
	3992.000	34.4	0.6	35.0	74.0	-39.0	Peak	Vertical
	4961.000	43.5	3.6	47.1	74.0	-26.9	Peak	Vertical
	7026.500	33.0	10.6	43.6	74.0	-30.4	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	3. Average measurement was not performed if peak level lower than average limit. 4. 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	4247.000	40.8	4.7	45.5	74.0	-28.5	Peak	Horizontal
	4791.000	39.6	6.3	45.9	74.0	-28.1	Peak	Horizontal
	8284.500	33.3	10.6	43.9	74.0	-30.1	Peak	Horizontal
	3898.500	36.4	3.8	40.2	74.0	-33.8	Peak	Vertical
	4808.000	39.7	6.3	46.0	74.0	-28.0	Peak	Vertical
	7366.500	31.8	10.9	42.7	74.0	-31.3	Peak	Vertical
19	4238.500	41.5	4.7	46.2	74.0	-27.8	Peak	Horizontal
	4799.500	40.5	6.3	46.8	74.0	-27.2	Peak	Horizontal
	8199.500	34.5	10.7	45.2	74.0	-28.8	Peak	Horizontal
	3805.000	37.8	3.9	41.7	74.0	-32.3	Peak	Vertical
	4799.500	38.2	6.3	44.5	74.0	-29.5	Peak	Vertical
	7460.000	31.7	10.7	42.4	74.0	-31.6	Peak	Vertical
39	4255.500	40.4	4.7	45.1	74.0	-28.9	Peak	Horizontal
	4791.000	36.6	6.3	42.9	74.0	-31.1	Peak	Horizontal
	7528.000	32.3	10.8	43.1	74.0	-30.9	Peak	Horizontal
	4264.000	43.3	4.8	48.1	74.0	-25.9	Peak	Vertical
	4782.500	36.4	6.3	42.7	74.0	-31.3	Peak	Vertical
	7358.000	33.0	11.0	43.9	74.0	-30.1	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)

Test Site	WZ-AC2	Test Engineer	Bob Zhang
Test Date	2022/03/01	Test Mode	BLE - 2Mbps
Remark	5. Average measurement was not performed if peak level lower than average limit. 6. Other frequency was 20dB below limit line within 1-18GHz, there is not show in the report.		

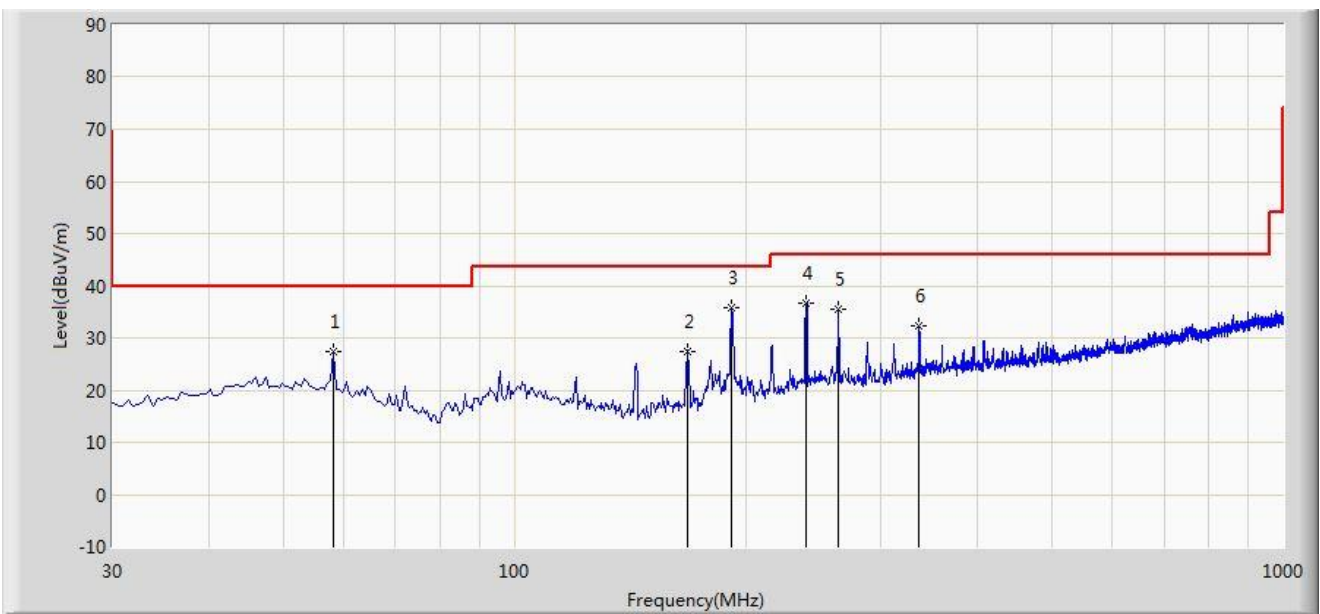
Test Channel	Frequency (MHz)	Reading Level (dBμV)	Factor (dB/m)	Measure Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector	Polarization
01	3958.000	36.0	0.6	36.6	74.0	-37.4	Peak	Horizontal
	5581.500	35.5	4.7	40.2	74.0	-33.8	Peak	Horizontal
	8964.500	32.3	13.5	45.8	74.0	-28.2	Peak	Horizontal
	3881.500	34.2	0.2	34.4	74.0	-39.6	Peak	Vertical
	4119.500	35.9	1.2	37.1	74.0	-36.9	Peak	Vertical
	4808.000	46.4	4.0	50.4	74.0	-23.6	Peak	Vertical
19	3992.000	33.7	0.6	34.3	74.0	-39.7	Peak	Horizontal
	4876.000	45.7	3.8	49.5	74.0	-24.5	Peak	Horizontal
	8837.000	33.1	13.6	46.7	74.0	-27.3	Peak	Horizontal
	4009.000	33.8	0.7	34.5	74.0	-39.5	Peak	Vertical
	4876.000	45.5	3.8	49.3	74.0	-24.7	Peak	Vertical
	8123.000	32.6	12.0	44.6	74.0	-29.4	Peak	Vertical
39	4119.500	33.8	1.2	35.0	74.0	-39.0	Peak	Horizontal
	4961.000	44.1	3.6	47.7	74.0	-26.3	Peak	Horizontal
	6465.500	34.0	7.8	41.8	74.0	-32.2	Peak	Horizontal
	4170.500	34.4	1.4	35.8	74.0	-38.2	Peak	Vertical
	4961.000	42.9	3.6	46.5	74.0	-27.5	Peak	Vertical
	7443.000	39.0	11.8	50.8	74.0	-23.2	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)

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 Shield Beacon	Power: By PC
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			58.130	27.507	7.638	-12.493	40.000	19.869	PK
2			167.740	27.524	11.338	-15.976	43.500	16.186	PK
3		*	191.990	35.816	17.566	-7.684	43.500	18.251	PK
4			240.005	36.720	16.934	-9.280	46.000	19.786	PK
5			263.770	35.632	15.258	-10.368	46.000	20.374	PK
6			336.035	32.328	10.086	-13.672	46.000	22.242	PK

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

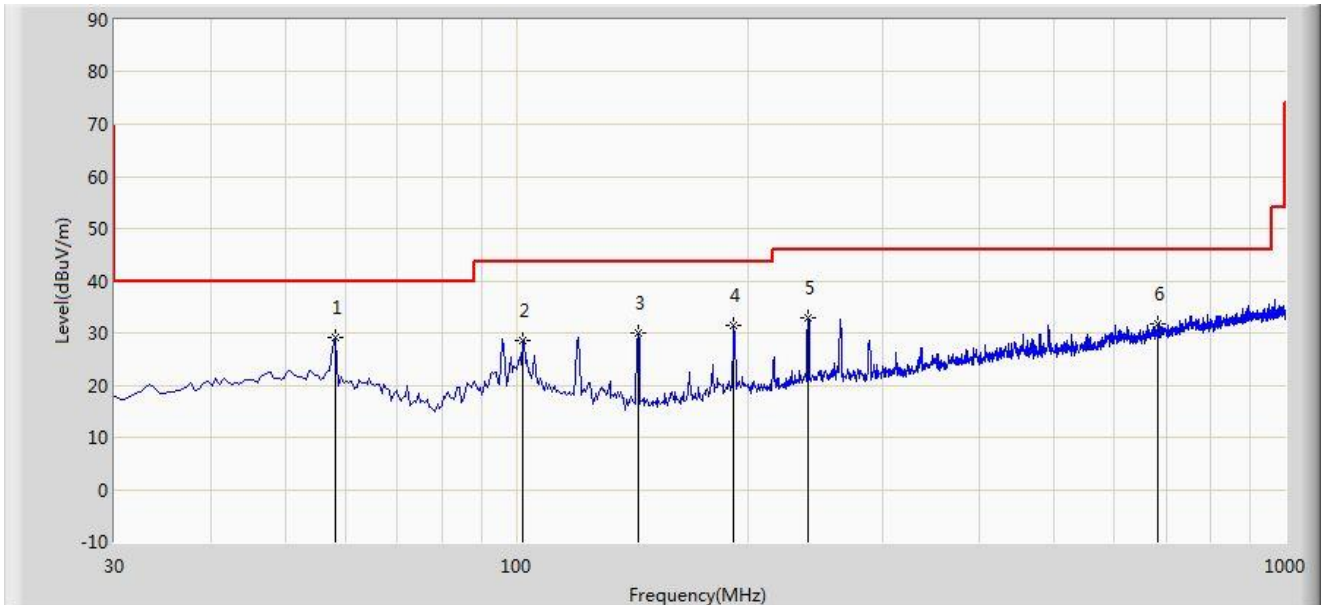
Factor (dB/m) = Cable Loss (dB) + Antenna Factor (dB/m)

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 Shield Beacon	Power: By PC
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		*	58.130	29.185	9.316	-10.815	40.000	19.869	PK
2			101.780	28.685	10.021	-14.815	43.500	18.664	PK
3			143.975	29.955	14.769	-13.545	43.500	15.186	PK
4			191.990	31.395	13.145	-12.105	43.500	18.251	PK
5			240.005	32.803	13.017	-13.197	46.000	19.786	PK
6			684.265	31.653	2.853	-14.347	46.000	28.801	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)

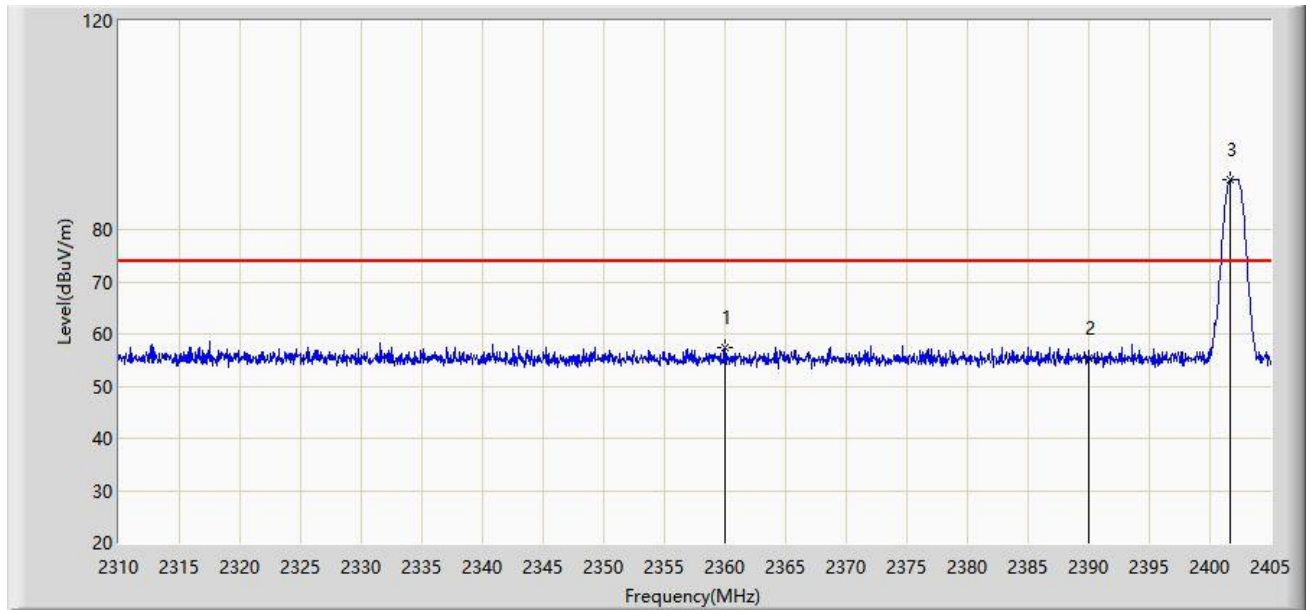
Note 2: QP measurement was not performed when peak measure level was lower than the QP limit.

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-AC2	Time: 2022/03/01
Limit: FCC_Part15.209_RE(3m)	Engineer: Bob Zhang
Probe: WZ-AC2_BBHA9120D_1-18GHz	Polarity: Horizontal
EUT: Smart Shield Beacon	Power: By PC
Test Mode: Transmit by BLE - 0.125Mbps at Channel 2402MHz	

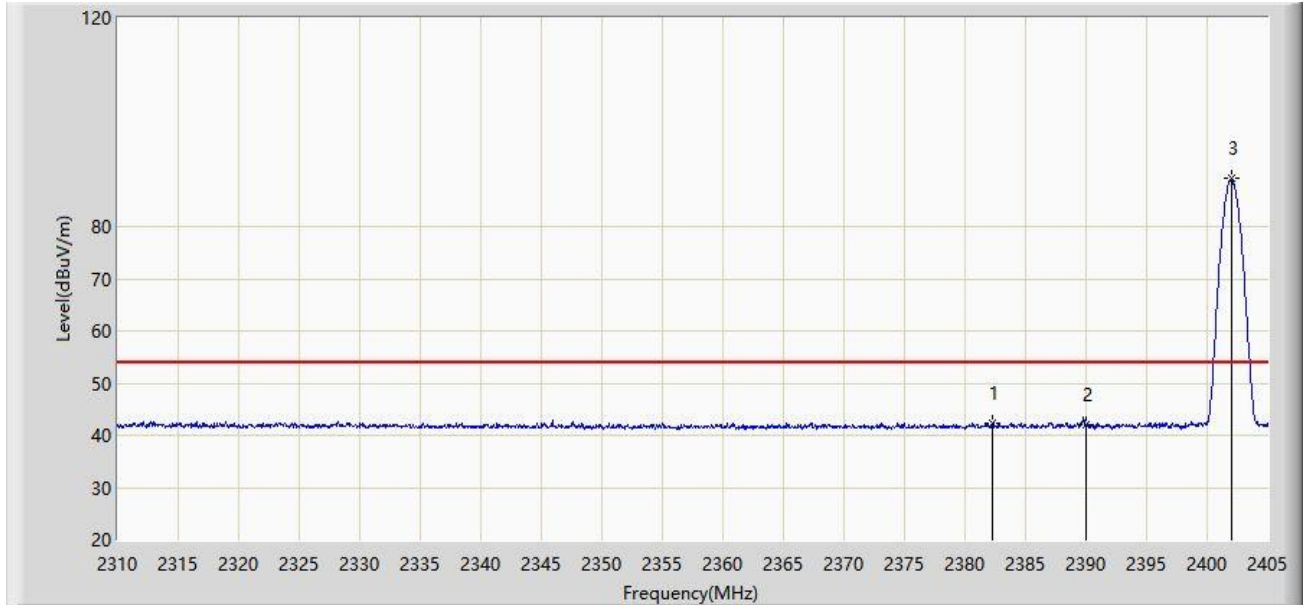


No	Flag	Mark	Frequency (MHz)	Measure Level (dBμV/m)	Reading Level (dBμV)	Margin (dB)	Limit (dBμV/m)	Factor (dB/m)	Type
1			2359.970	57.427	25.406	-16.573	74.000	32.021	PK
2			2390.000	55.267	23.264	-18.733	74.000	32.003	PK
3		*	2401.722	89.669	57.683	N/A	N/A	31.986	PK

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: 2022/03/01
Limit: FCC_Part15.209_RE(3m)	Engineer: Bob Zhang
Probe: WZ-AC2_BBHA9120D_1-18GHz	Polarity: Horizontal
EUT: Smart Shield Beacon	Power: By PC
Test Mode: Transmit by BLE - 0.125Mbps at Channel 2402MHz	

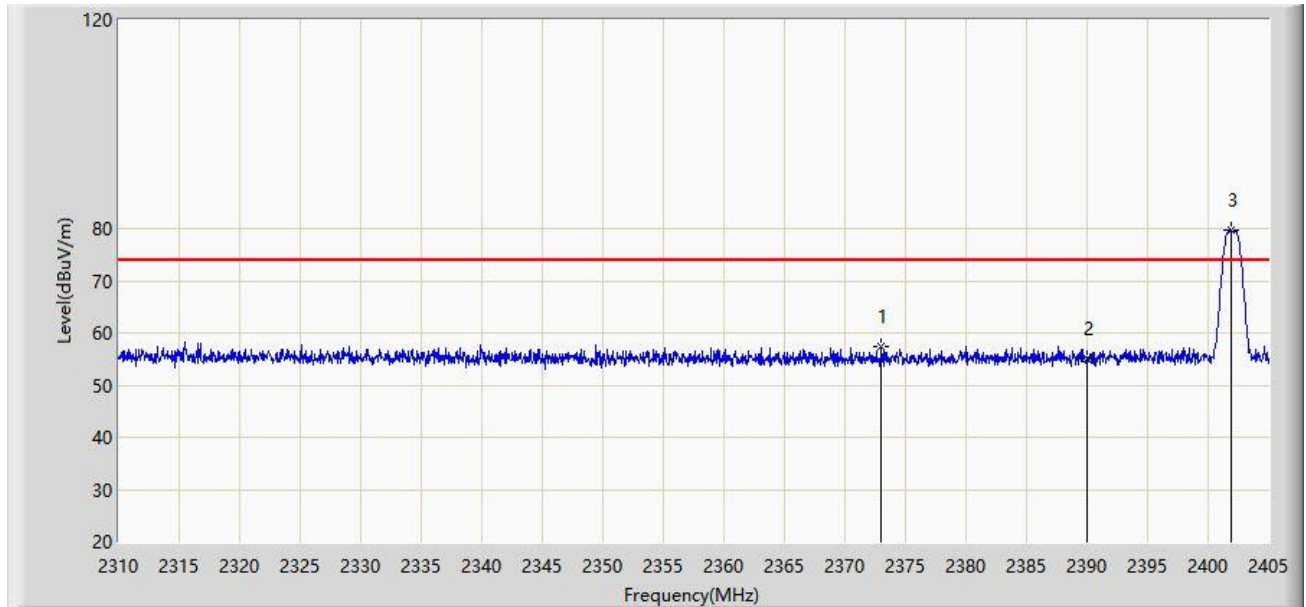


No	Flag	Mark	Frequency (MHz)	Measure Level (dBμV/m)	Reading Level (dBμV)	Margin (dB)	Limit (dBμV/m)	Factor (dB/m)	Type
1			2382.295	42.243	10.227	-11.757	54.000	32.016	AV
2			2390.000	41.957	9.954	-12.043	54.000	32.003	AV
3		*	2402.055	89.153	57.167	N/A	N/A	31.986	AV

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: 2022/03/01
Limit: FCC_Part15.209_RE(3m)	Engineer: Bob Zhang
Probe: WZ-AC2_BBHA9120D_1-18GHz	Polarity: Vertical
EUT: Smart Shield Beacon	Power: By PC
Test Mode: Transmit by BLE - 0.125Mbps at Channel 2402MHz	

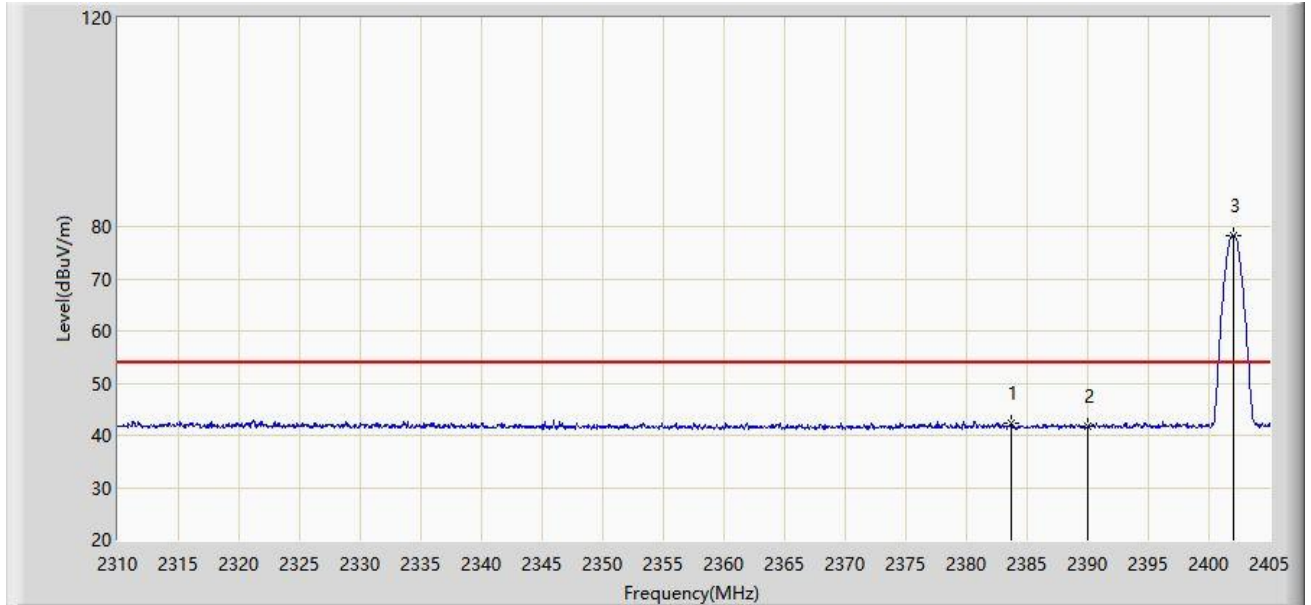


No	Flag	Mark	Frequency (MHz)	Measure Level (dBμV/m)	Reading Level (dBμV)	Margin (dB)	Limit (dBμV/m)	Factor (dB/m)	Type
1			2373.032	57.515	25.502	-16.485	74.000	32.014	PK
2			2390.000	55.030	23.027	-18.970	74.000	32.003	PK
3		*	2401.865	79.662	47.676	N/A	N/A	31.986	PK

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: 2022/03/01
Limit: FCC_Part15.209_RE(3m)	Engineer: Bob Zhang
Probe: WZ-AC2_BBHA9120D_1-18GHz	Polarity: Vertical
EUT: Smart Shield Beacon	Power: By PC
Test Mode: Transmit by BLE - 0.125Mbps at Channel 2402MHz	

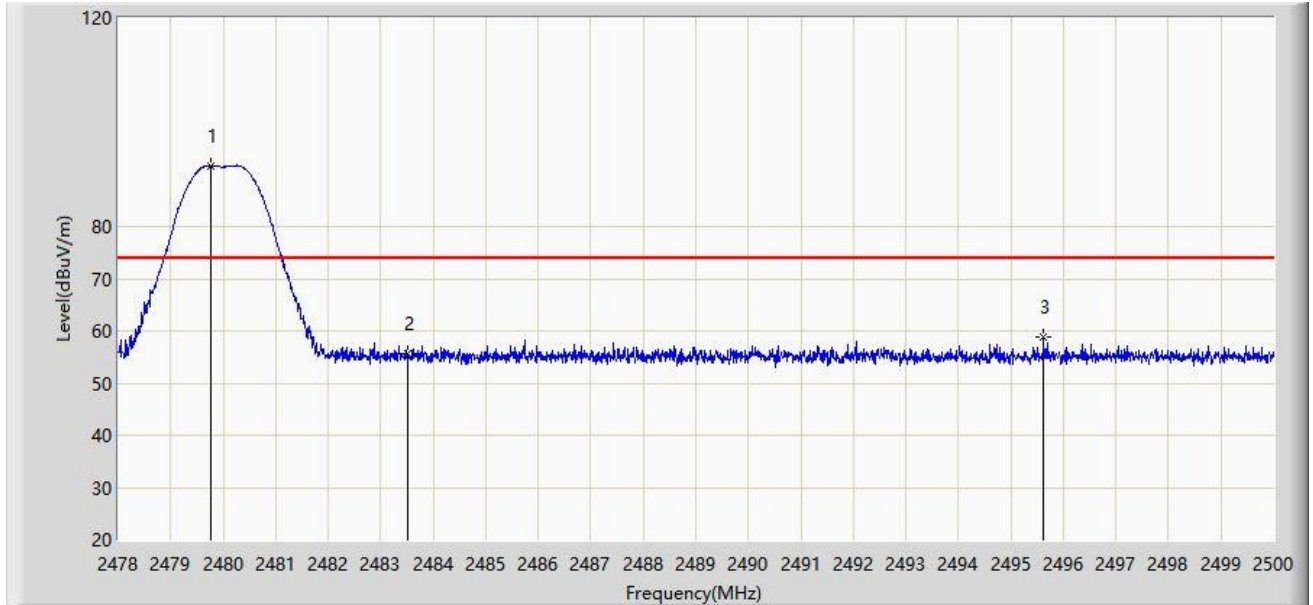


No	Flag	Mark	Frequency (MHz)	Measure Level (dBμV/m)	Reading Level (dBμV)	Margin (dB)	Limit (dBμV/m)	Factor (dB/m)	Type
1			2383.720	42.442	10.425	-11.558	54.000	32.018	AV
2			2390.000	41.705	9.702	-12.295	54.000	32.003	AV
3		*	2402.008	78.324	46.338	N/A	N/A	31.986	AV

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: 2022/03/01
Limit: FCC_Part15.209_RE(3m)	Engineer: Bob Zhang
Probe: WZ-AC2_BBHA9120D_1-18GHz	Polarity: Horizontal
EUT: Smart Shield Beacon	Power: By PC
Test Mode: Transmit by BLE - 0.125Mbps at Channel 2480MHz	

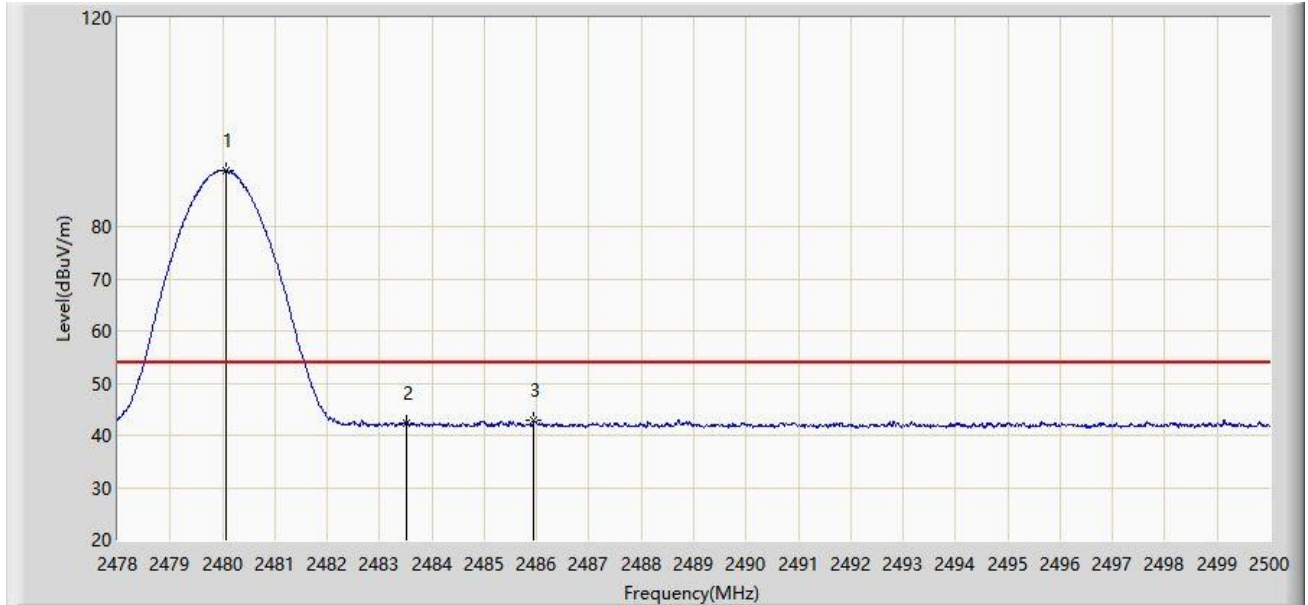


No	Flag	Mark	Frequency (MHz)	Measure Level (dBμV/m)	Reading Level (dBμV)	Margin (dB)	Limit (dBμV/m)	Factor (dB/m)	Type
1		*	2479.771	91.661	59.741	N/A	N/A	31.919	PK
2			2483.500	55.668	23.756	-18.332	74.000	31.912	PK
3			2495.622	58.718	26.812	-15.282	74.000	31.905	PK

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: 2022/03/01
Limit: FCC_Part15.209_RE(3m)	Engineer: Bob Zhang
Probe: WZ-AC2_BBHA9120D_1-18GHz	Polarity: Horizontal
EUT: Smart Shield Beacon	Power: By PC
Test Mode: Transmit by BLE - 0.125Mbps at Channel 2480MHz	

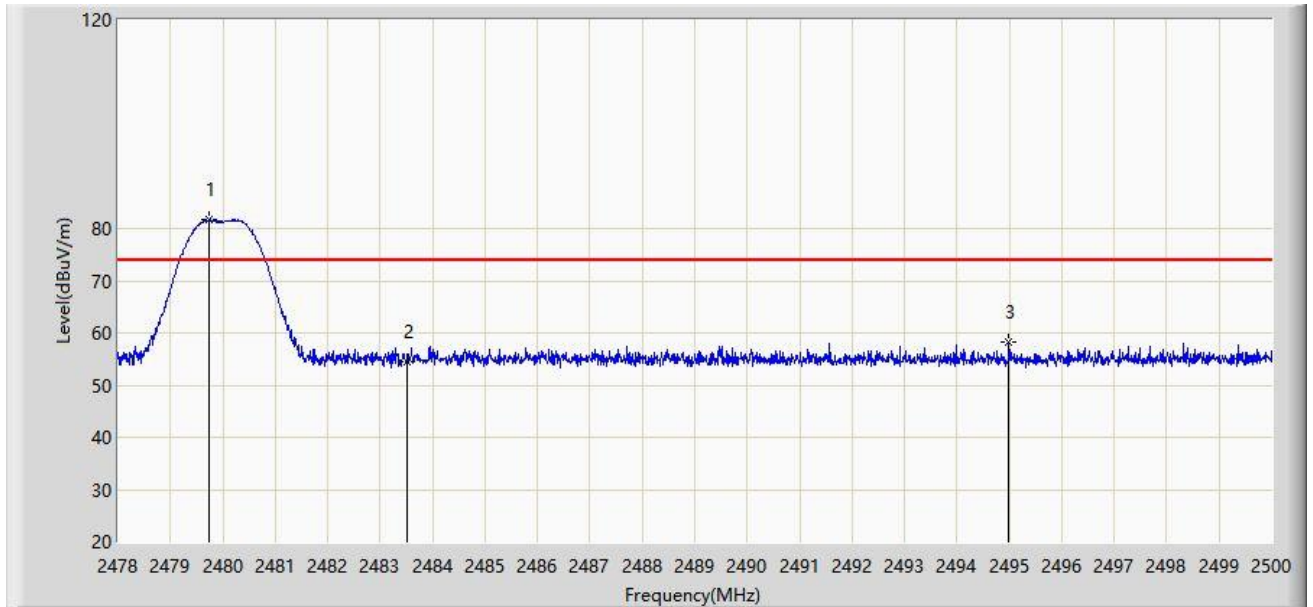


No	Flag	Mark	Frequency (MHz)	Measure Level (dBμV/m)	Reading Level (dBμV)	Margin (dB)	Limit (dBμV/m)	Factor (dB/m)	Type
1		*	2480.079	90.759	58.840	N/A	N/A	31.919	AV
2			2483.500	42.255	10.343	-11.745	54.000	31.912	AV
3			2485.942	42.837	10.930	-11.163	54.000	31.907	AV

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: 2022/03/01
Limit: FCC_Part15.209_RE(3m)	Engineer: Bob Zhang
Probe: WZ-AC2_BBHA9120D_1-18GHz	Polarity: Vertical
EUT: Smart Shield Beacon	Power: By PC
Test Mode: Transmit by BLE - 0.125Mbps at Channel 2480MHz	

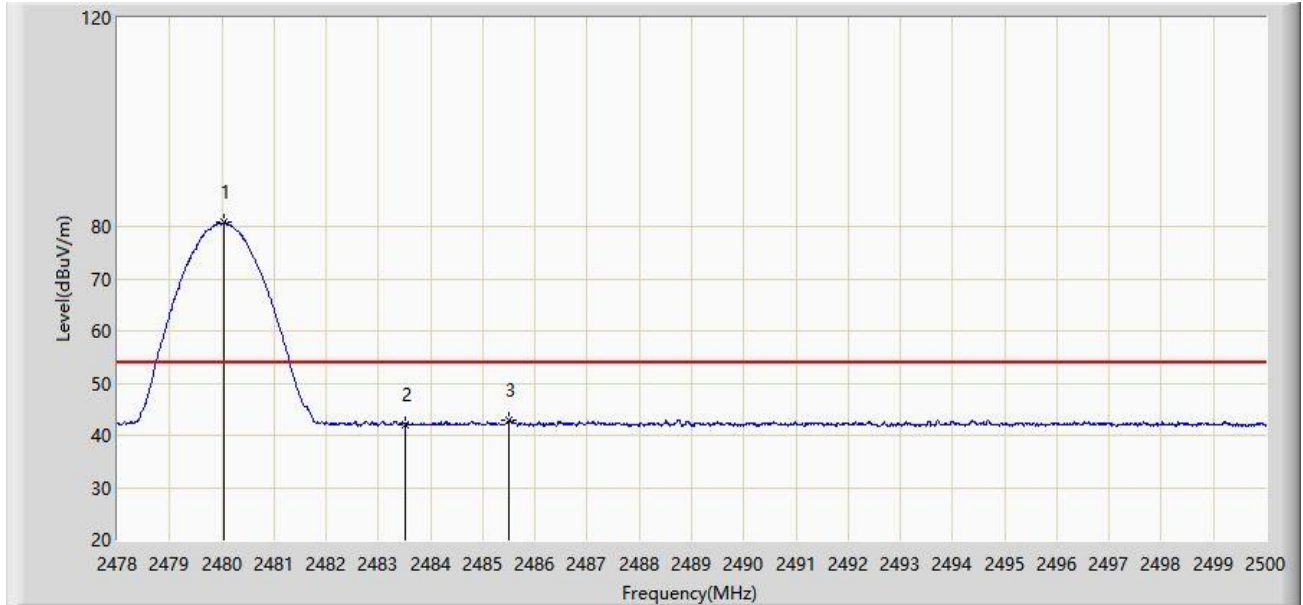


No	Flag	Mark	Frequency (MHz)	Measure Level (dBμV/m)	Reading Level (dBμV)	Margin (dB)	Limit (dBμV/m)	Factor (dB/m)	Type
1		*	2479.727	81.682	49.762	N/A	N/A	31.920	PK
2			2483.500	54.470	22.558	-19.530	74.000	31.912	PK
3			2494.995	58.239	26.335	-15.761	74.000	31.904	PK

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: 2022/03/01
Limit: FCC_Part15.209_RE(3m)	Engineer: Bob Zhang
Probe: WZ-AC2_BBHA9120D_1-18GHz	Polarity: Vertical
EUT: Smart Shield Beacon	Power: By PC
Test Mode: Transmit by BLE - 0.125Mbps at Channel 2480MHz	

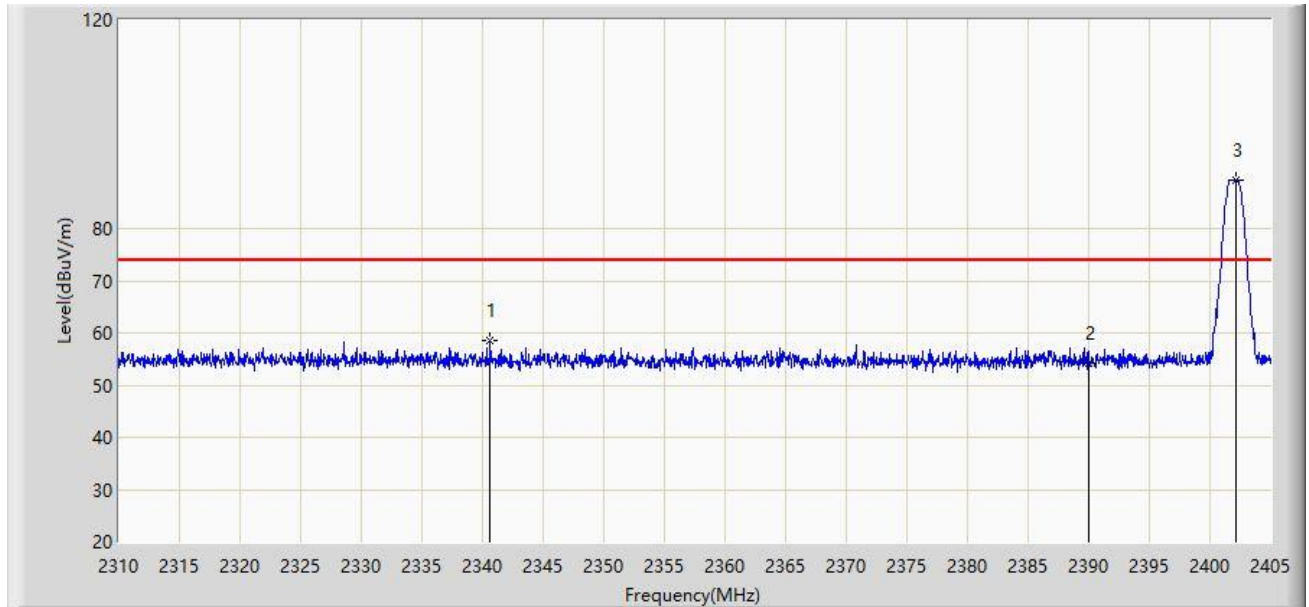


No	Flag	Mark	Frequency (MHz)	Measure Level (dBμV/m)	Reading Level (dBμV)	Margin (dB)	Limit (dBμV/m)	Factor (dB/m)	Type
1		*	2480.046	80.745	48.826	N/A	N/A	31.919	AV
2			2483.500	41.982	10.070	-12.018	54.000	31.912	AV
3			2485.491	42.885	10.977	-11.115	54.000	31.908	AV

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 - 11:04
Limit: FCC_Part15.209_RE(3m)	Engineer: Tommy Tang
Probe: WZ-AC2_BBHA9120D_1-18GHz	Polarity: Horizontal
EUT: Smart Shield Beacon	Power: By PC
Test Mode: Transmit by BLE - 1Mbps at channel 2402MHz	

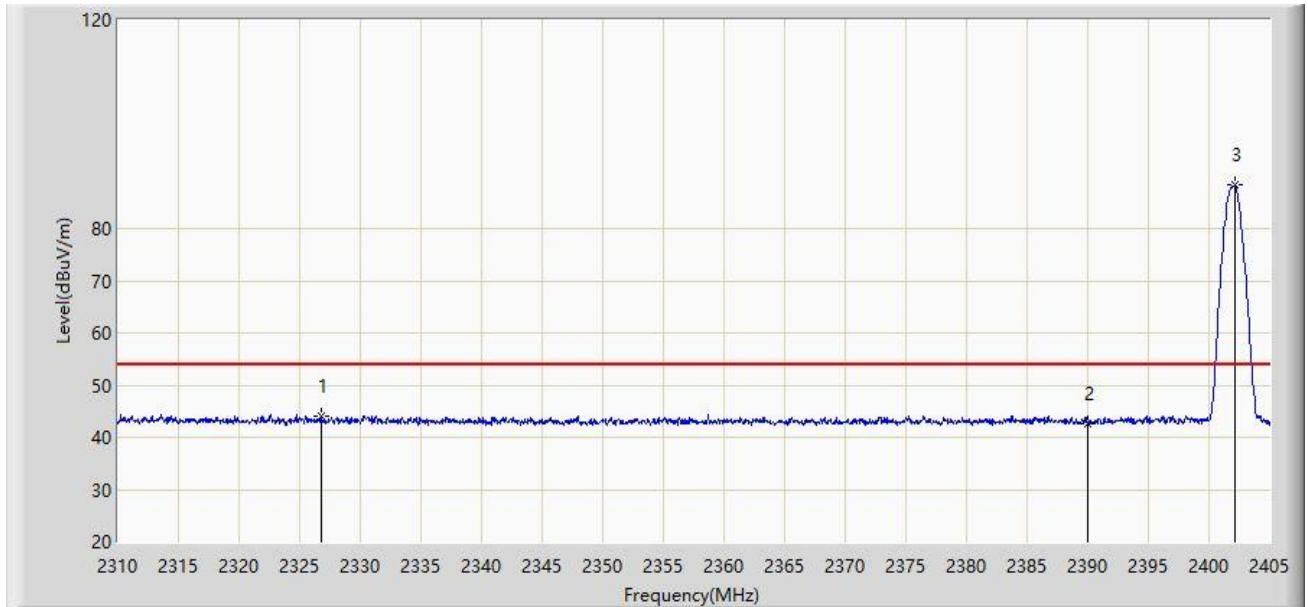


No	Flag	Mark	Frequency (MHz)	Measure Level (dBμV/m)	Reading Level (dBμV)	Margin (dB)	Limit (dBμV/m)	Factor (dB/m)	Type
1			2340.637	58.458	26.373	-15.542	74.000	32.085	PK
2			2390.000	54.124	22.121	-19.876	74.000	32.003	PK
3		*	2402.198	89.420	57.434	N/A	N/A	31.986	PK

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 - 11:13
Limit: FCC_Part15.209_RE(3m)	Engineer: Tommy Tang
Probe: WZ-AC2_BBHA9120D_1-18GHz	Polarity: Horizontal
EUT: Smart Shield Beacon	Power: By PC
Test Mode: Transmit by BLE - 1Mbps at channel 2402MHz	

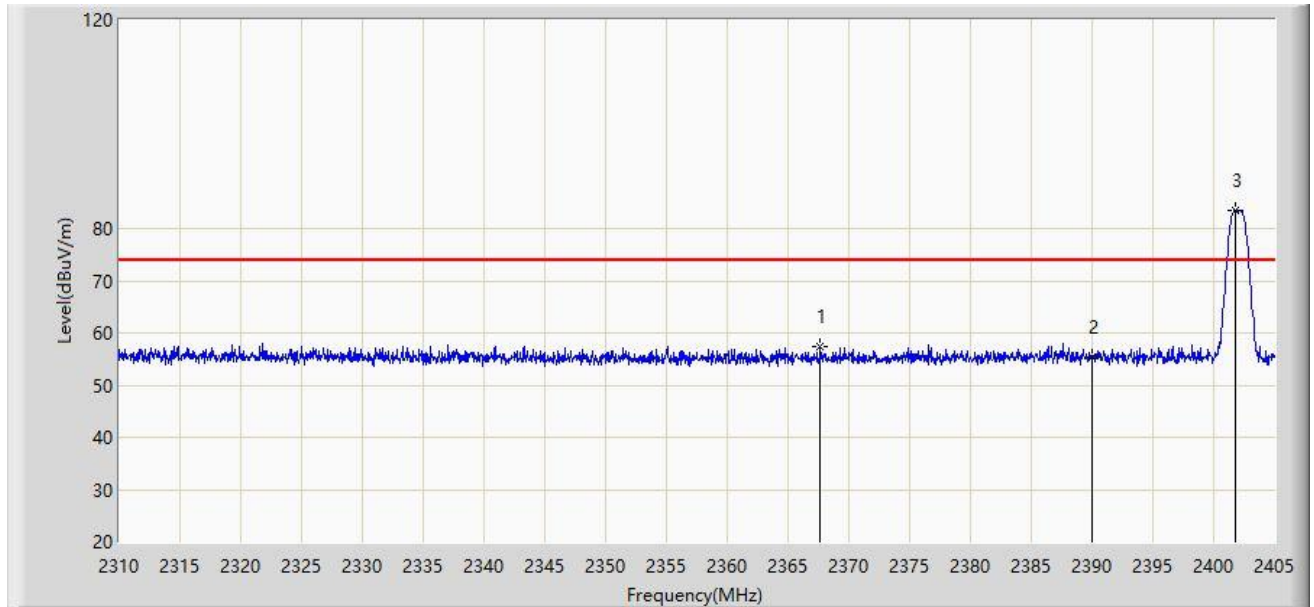


No	Flag	Mark	Frequency (MHz)	Measure Level (dBμV/m)	Reading Level (dBμV)	Margin (dB)	Limit (dBμV/m)	Factor (dB/m)	Type
1			2326.815	44.092	11.895	-9.908	54.000	32.197	AV
2			2390.000	42.700	10.697	-11.300	54.000	32.003	AV
3		*	2402.103	88.279	56.293	N/A	N/A	31.986	AV

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 - 11:15
Limit: FCC_Part15.209_RE(3m)	Engineer: Tommy Tang
Probe: WZ-AC2_BBHA9120D_1-18GHz	Polarity: Vertical
EUT: Smart Shield Beacon	Power: By PC
Test Mode: Transmit by BLE - 1Mbps at channel 2402MHz	

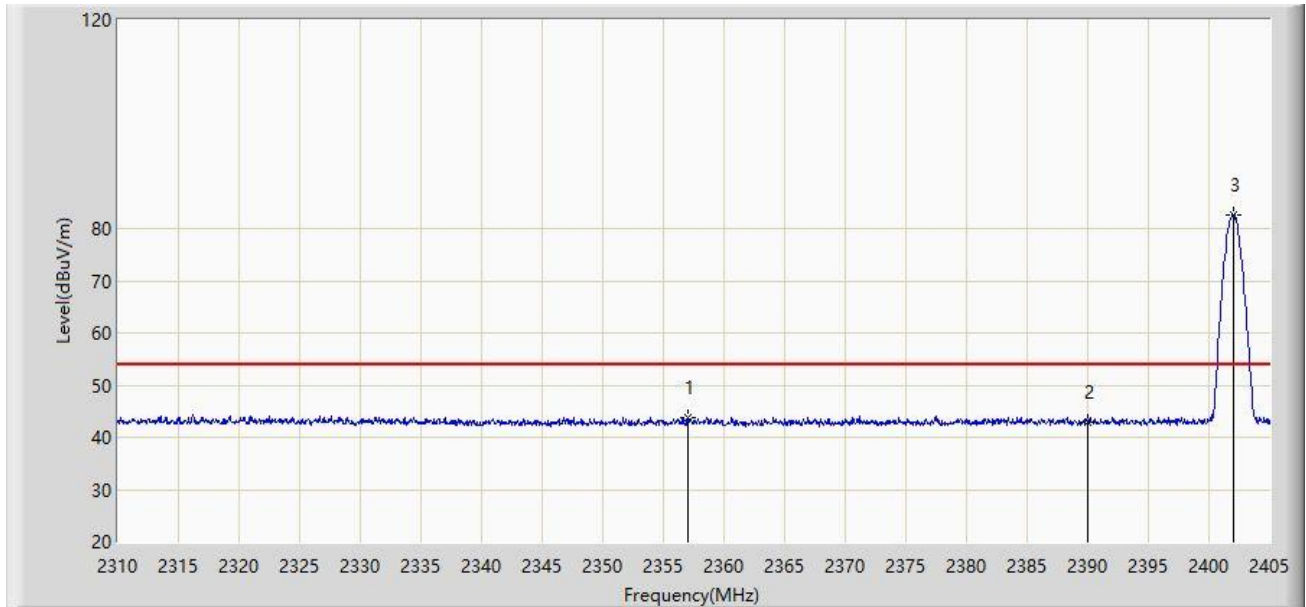


No	Flag	Mark	Frequency (MHz)	Measure Level (dBμV/m)	Reading Level (dBμV)	Margin (dB)	Limit (dBμV/m)	Factor (dB/m)	Type
1			2367.665	57.424	25.410	-16.576	74.000	32.014	PK
2			2390.000	55.375	23.372	-18.625	74.000	32.003	PK
3		*	2401.770	83.585	51.599	N/A	N/A	31.986	PK

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 - 11:17
Limit: FCC_Part15.209_RE(3m)	Engineer: Tommy Tang
Probe: WZ-AC2_BBHA9120D_1-18GHz	Polarity: Vertical
EUT: Smart Shield Beacon	Power: By PC
Test Mode: Transmit by BLE - 1Mbps at channel 2402MHz	

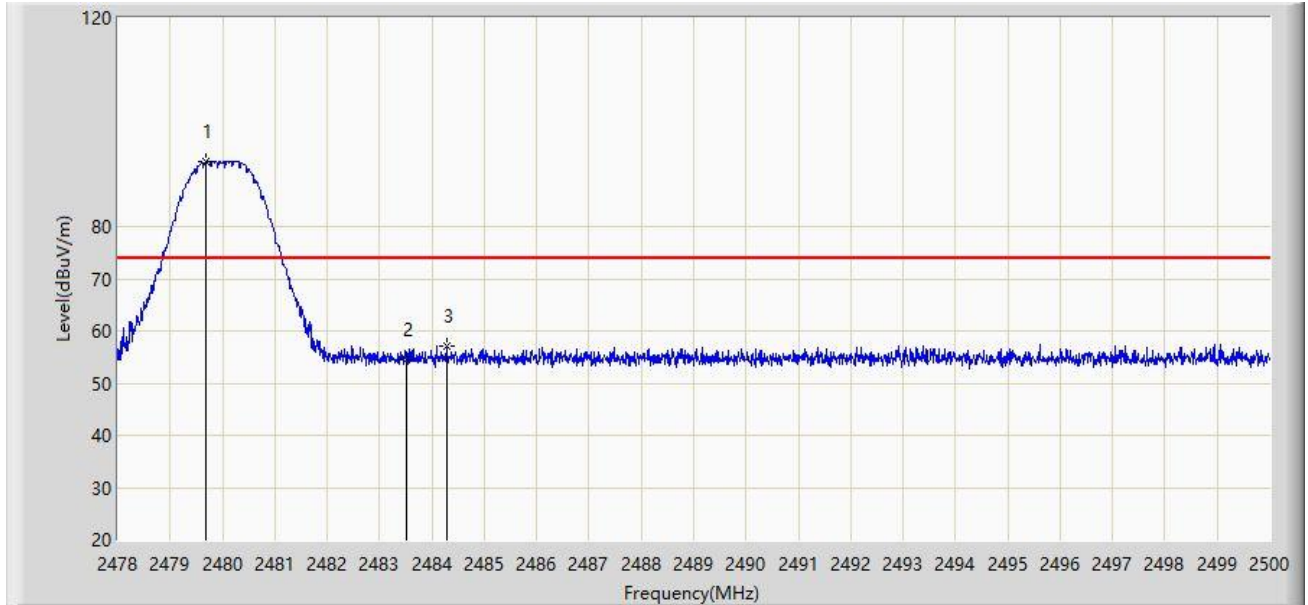


No	Flag	Mark	Frequency (MHz)	Measure Level (dBμV/m)	Reading Level (dBμV)	Margin (dB)	Limit (dBμV/m)	Factor (dB/m)	Type
1			2357.073	43.881	11.857	-10.119	54.000	32.024	AV
2			2390.000	42.871	10.868	-11.129	54.000	32.003	AV
3		*	2402.008	82.607	50.621	N/A	N/A	31.986	AV

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 - 11:21
Limit: FCC_Part15.209_RE(3m)	Engineer: Tommy Tang
Probe: WZ-AC2_BBHA9120D_1-18GHz	Polarity: Horizontal
EUT: Smart Shield Beacon	Power: By PC
Test Mode: Transmit by BLE - 1Mbps at channel 2480MHz	

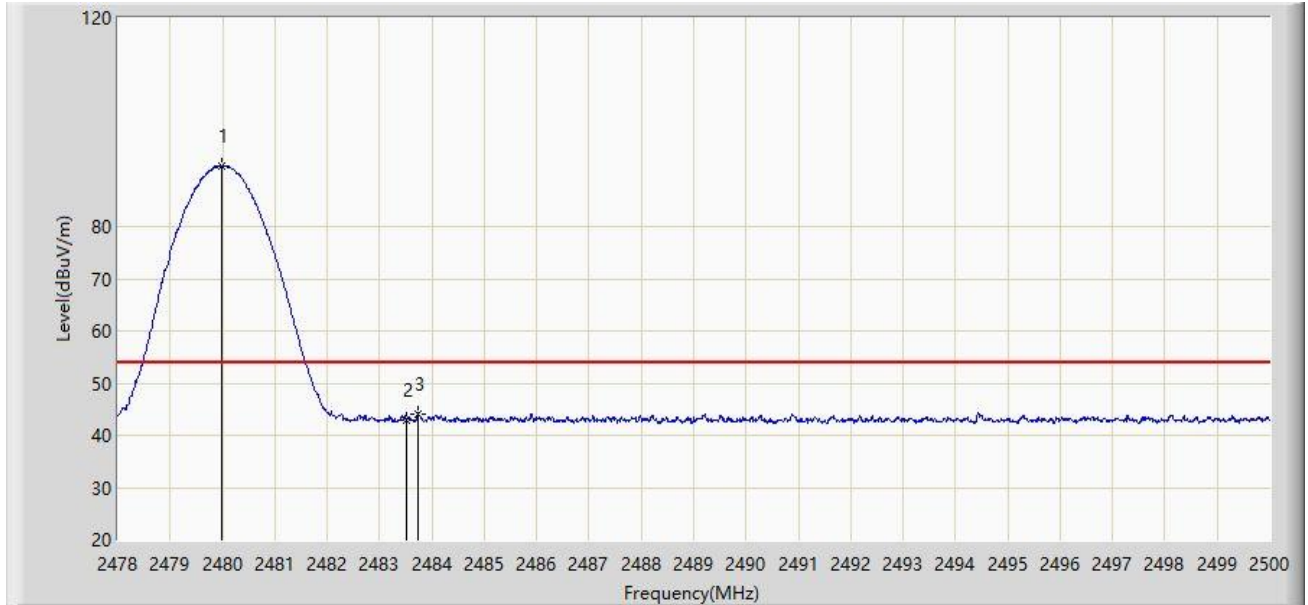


No	Flag	Mark	Frequency (MHz)	Measure Level (dBμV/m)	Reading Level (dBμV)	Margin (dB)	Limit (dBμV/m)	Factor (dB/m)	Type
1		*	2479.683	92.423	60.503	N/A	N/A	31.920	PK
2			2483.500	54.618	22.706	-19.382	74.000	31.912	PK
3			2484.281	57.006	25.096	-16.994	74.000	31.910	PK

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 - 11:24
Limit: FCC_Part15.209_RE(3m)	Engineer: Tommy Tang
Probe: WZ-AC2_BBHA9120D_1-18GHz	Polarity: Horizontal
EUT: Smart Shield Beacon	Power: By PC
Test Mode: Transmit by BLE - 1Mbps at channel 2480MHz	

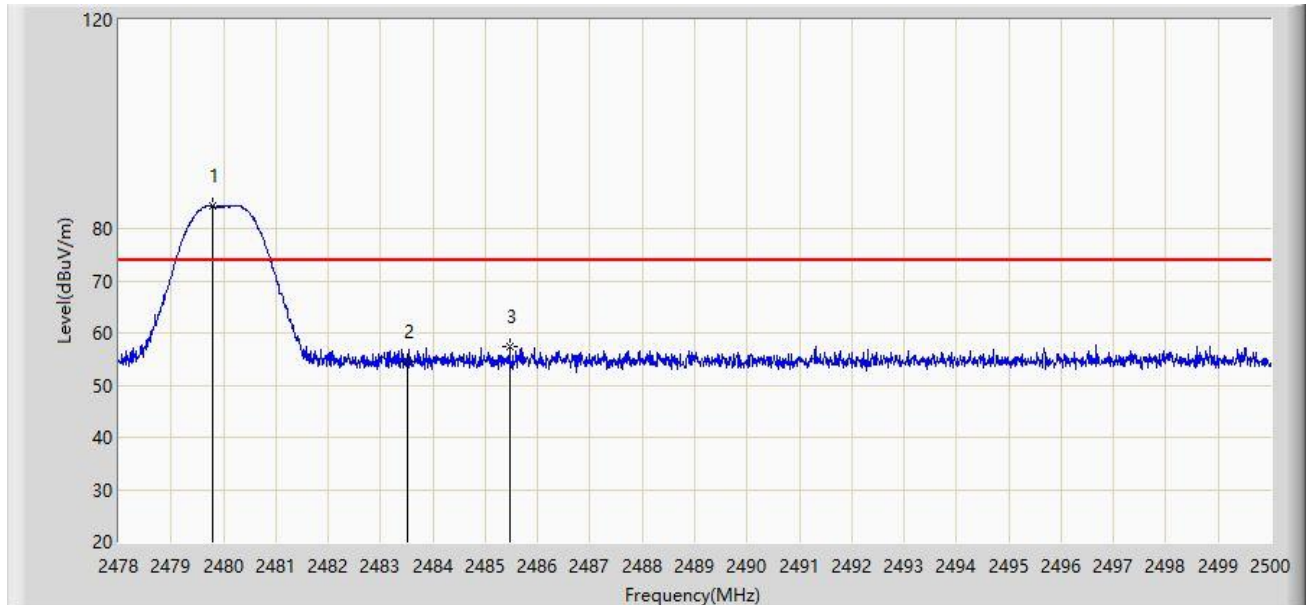


No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Margin (dB)	Limit (dBuV/m)	Factor (dB/m)	Type
1		*	2479.980	91.624	59.705	N/A	N/A	31.919	AV
2			2483.500	42.947	11.035	-11.053	54.000	31.912	AV
3			2483.731	44.110	12.199	-9.890	54.000	31.911	AV

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 - 11:26
Limit: FCC_Part15.209_RE(3m)	Engineer: Tommy Tang
Probe: WZ-AC2_BBHA9120D_1-18GHz	Polarity: Vertical
EUT: Smart Shield Beacon	Power: By PC
Test Mode: Transmit by BLE - 1Mbps at channel 2480MHz	

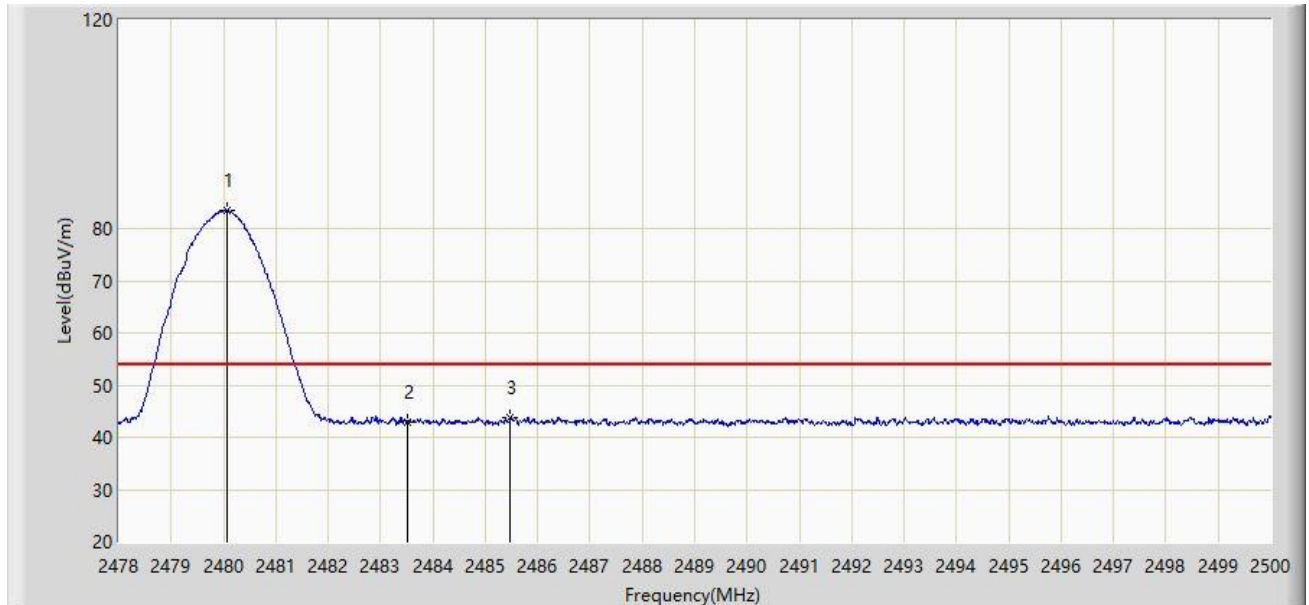


No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Margin (dB)	Limit (dBuV/m)	Factor (dB/m)	Type
1		*	2479.793	84.438	52.518	N/A	N/A	31.919	PK
2			2483.500	54.557	22.645	-19.443	74.000	31.912	PK
3			2485.458	57.483	25.575	-16.517	74.000	31.908	PK

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 - 11:27
Limit: FCC_Part15.209_RE(3m)	Engineer: Tommy Tang
Probe: WZ-AC2_BBHA9120D_1-18GHz	Polarity: Vertical
EUT: Smart Shield Beacon	Power: By PC
Test Mode: Transmit by BLE - 1Mbps at channel 2480MHz	

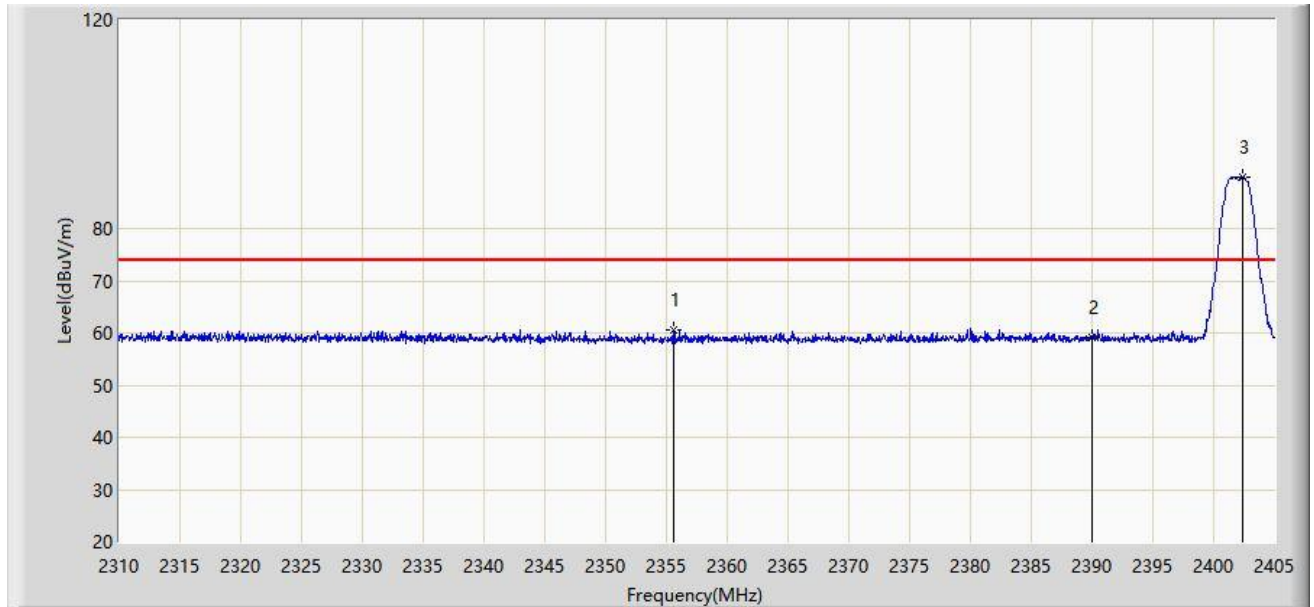


No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Margin (dB)	Limit (dBuV/m)	Factor (dB/m)	Type
1		*	2480.057	83.544	51.625	N/A	N/A	31.919	AV
2			2483.500	42.953	11.041	-11.047	54.000	31.912	AV
3			2485.480	43.830	11.922	-10.170	54.000	31.908	AV

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: 2022/03/01
Limit: FCC_Part15.209_RE(3m)	Engineer: Bob Zhang
Probe: WZ-AC2_BBHA9120D_1-18GHz	Polarity: Horizontal
EUT: Smart Shield Beacon	Power: By PC
Test Mode: Transmit by BLE - 2Mbps at Channel 2402MHz	

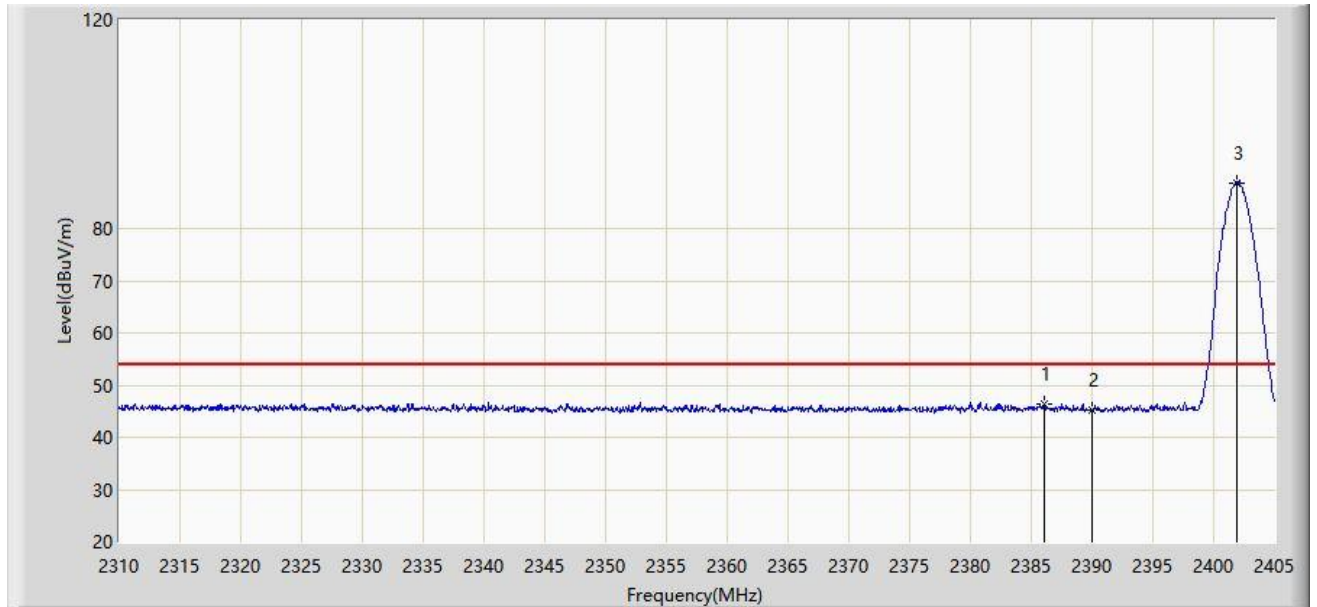


No	Flag	Mark	Frequency (MHz)	Measure Level (dBμV/m)	Reading Level (dBμV)	Margin (dB)	Limit (dBμV/m)	Factor (dB/m)	Type
1			2355.600	60.539	28.513	-13.461	74.000	32.026	PK
2			2390.000	59.143	27.140	-14.857	74.000	32.003	PK
3		*	2402.435	89.983	57.998	N/A	N/A	31.986	PK

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: 2022/03/01
Limit: FCC_Part15.209_RE(3m)	Engineer: Bob Zhang
Probe: WZ-AC2_BBHA9120D_1-18GHz	Polarity: Horizontal
EUT: Smart Shield Beacon	Power: By PC
Test Mode: Transmit by BLE - 2Mbps at Channel 2402MHz	

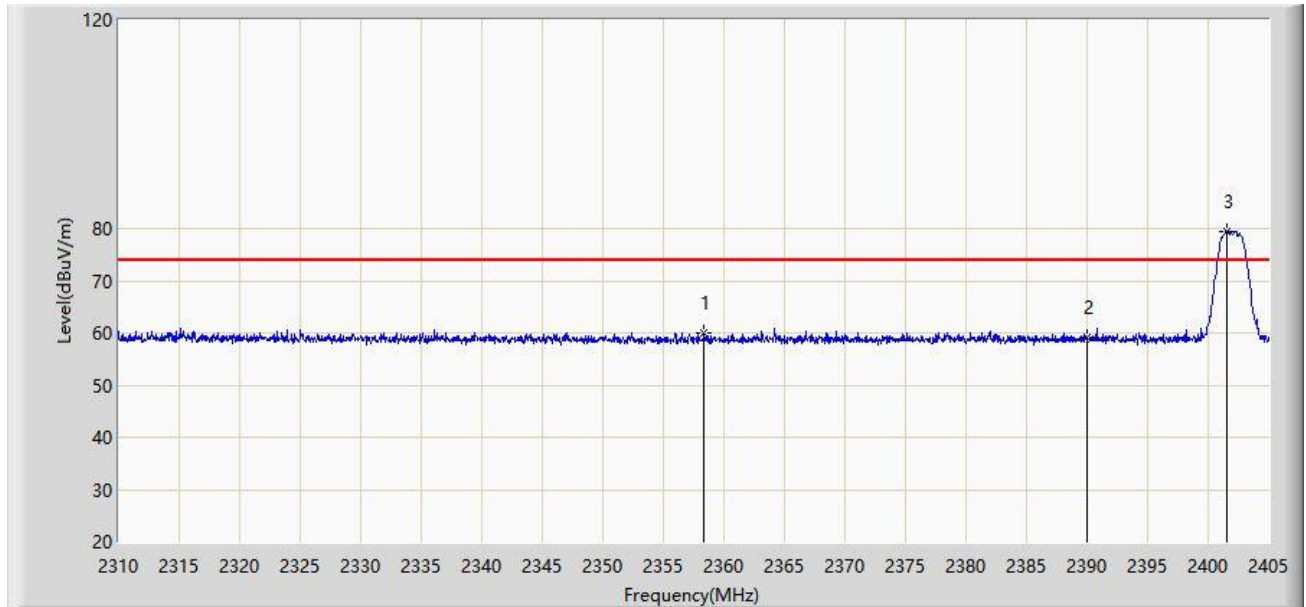


No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Margin (dB)	Limit (dBuV/m)	Factor (dB/m)	Type
1			2386.048	46.308	14.295	-7.692	54.000	32.013	AV
2			2390.000	45.220	13.217	-8.780	54.000	32.003	AV
3		*	2401.865	88.834	56.848	N/A	N/A	31.986	AV

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: 2022/03/01
Limit: FCC_Part15.209_RE(3m)	Engineer: Bob Zhang
Probe: WZ-AC2_BBHA9120D_1-18GHz	Polarity: Vertical
EUT: Smart Shield Beacon	Power: By PC
Test Mode: Transmit by BLE - 2Mbps at Channel 2402MHz	

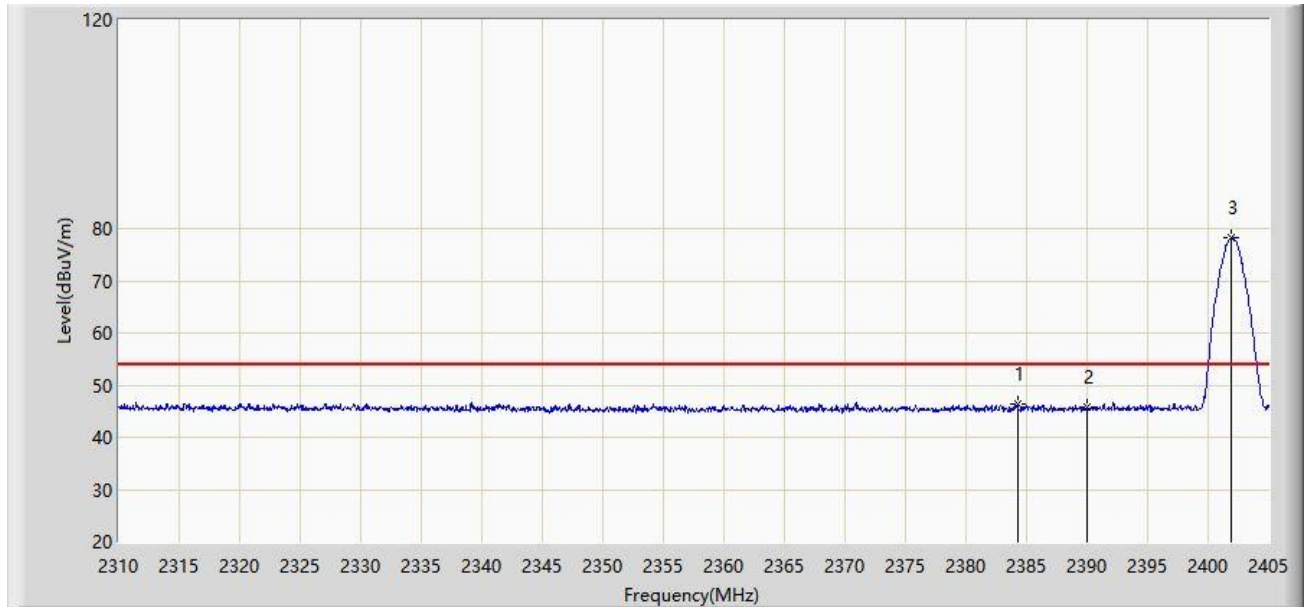


No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Margin (dB)	Limit (dBuV/m)	Factor (dB/m)	Type
1			2358.355	60.040	28.017	-13.960	74.000	32.023	PK
2			2390.000	59.191	27.188	-14.809	74.000	32.003	PK
3		*	2401.580	79.559	47.573	N/A	N/A	31.987	PK

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: 2022/03/01
Limit: FCC_Part15.209_RE(3m)	Engineer: Bob Zhang
Probe: WZ-AC2_BBHA9120D_1-18GHz	Polarity: Vertical
EUT: Smart Shield Beacon	Power: By PC
Test Mode: Transmit by BLE - 2Mbps at Channel 2402MHz	

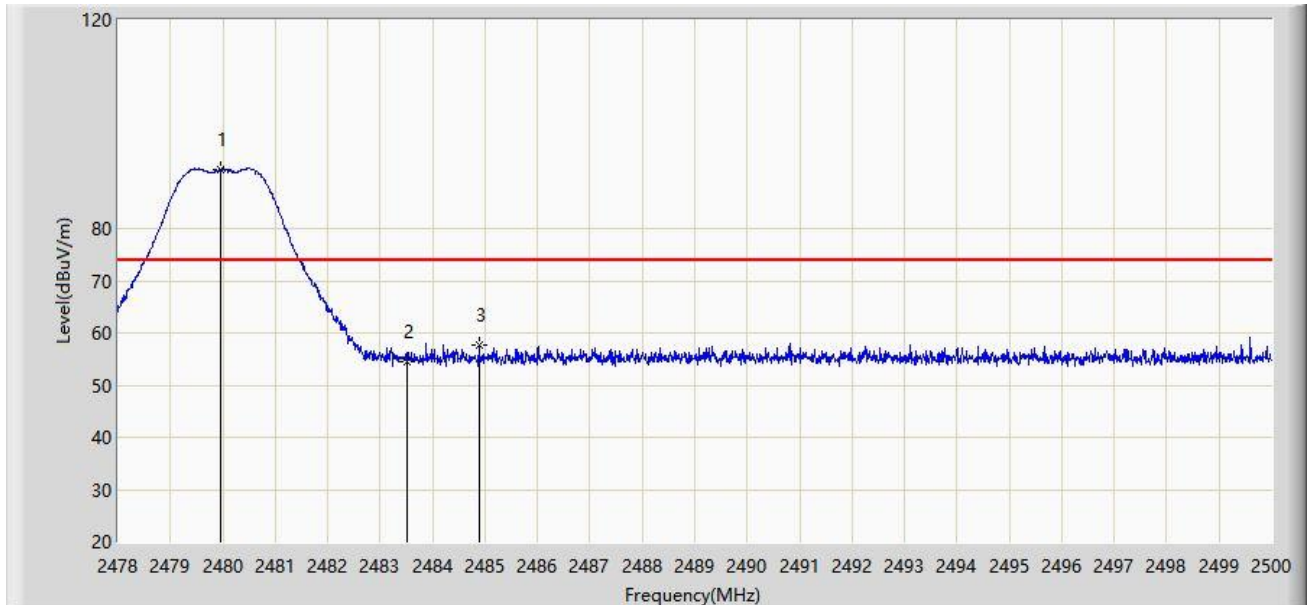


No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Margin (dB)	Limit (dBuV/m)	Factor (dB/m)	Type
1			2384.290	46.247	14.230	-7.753	54.000	32.017	AV
2			2390.000	45.888	13.885	-8.112	54.000	32.003	AV
3		*	2401.913	78.248	46.262	N/A	N/A	31.986	AV

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: 2022/03/01
Limit: FCC_Part15.209_RE(3m)	Engineer: Bob Zhang
Probe: WZ-AC2_BBHA9120D_1-18GHz	Polarity: Horizontal
EUT: Smart Shield Beacon	Power: By PC
Test Mode: Transmit by BLE - 2Mbps at Channel 2480MHz	

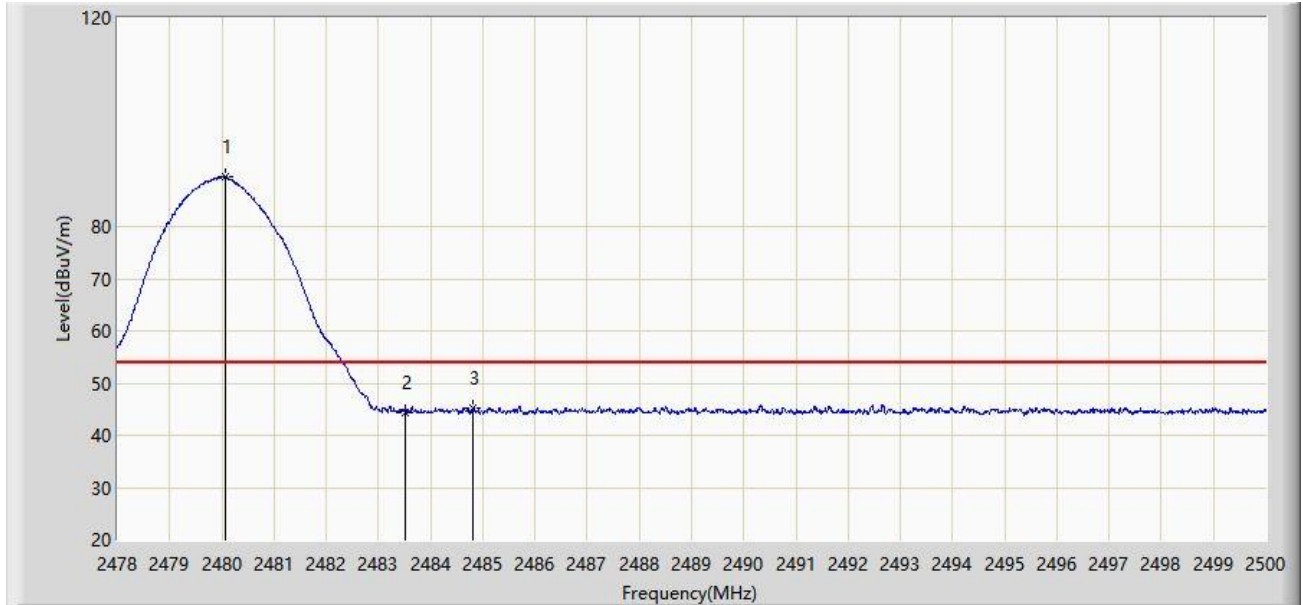


No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Margin (dB)	Limit (dBuV/m)	Factor (dB/m)	Type
1		*	2479.969	91.355	59.436	N/A	N/A	31.919	PK
2			2483.500	54.632	22.720	-19.368	74.000	31.912	PK
3			2484.886	57.729	25.820	-16.271	74.000	31.909	PK

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: 2022/03/01
Limit: FCC_Part15.209_RE(3m)	Engineer: Bob Zhang
Probe: WZ-AC2_BBHA9120D_1-18GHz	Polarity: Horizontal
EUT: Smart Shield Beacon	Power: By PC
Test Mode: Transmit by BLE - 2Mbps at Channel 2480MHz	

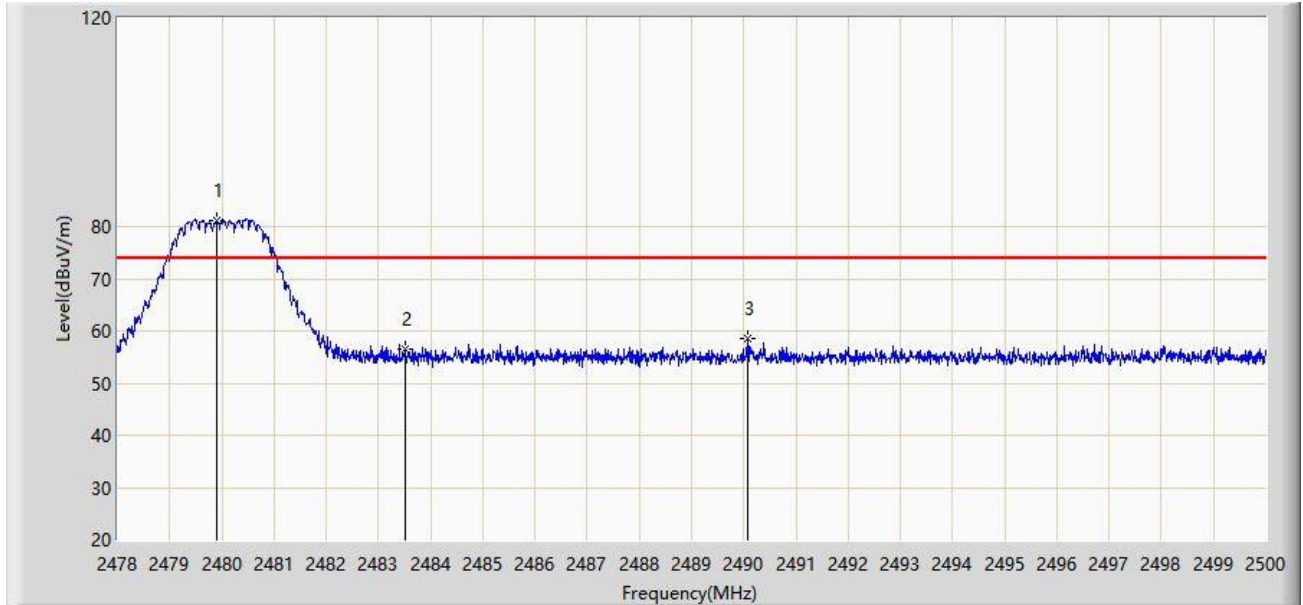


No	Flag	Mark	Frequency (MHz)	Measure Level (dBμV/m)	Reading Level (dBμV)	Margin (dB)	Limit (dBμV/m)	Factor (dB/m)	Type
1		*	2480.079	89.504	57.585	N/A	N/A	31.919	AV
2			2483.500	44.482	12.570	-9.518	54.000	31.912	AV
3			2484.820	45.341	13.432	-8.659	54.000	31.909	AV

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: 2022/03/01
Limit: FCC_Part15.209_RE(3m)	Engineer: Bob Zhang
Probe: WZ-AC2_BBHA9120D_1-18GHz	Polarity: Vertical
EUT: Smart Shield Beacon	Power: By PC
Test Mode: Transmit by BLE - 2Mbps at Channel 2480MHz	

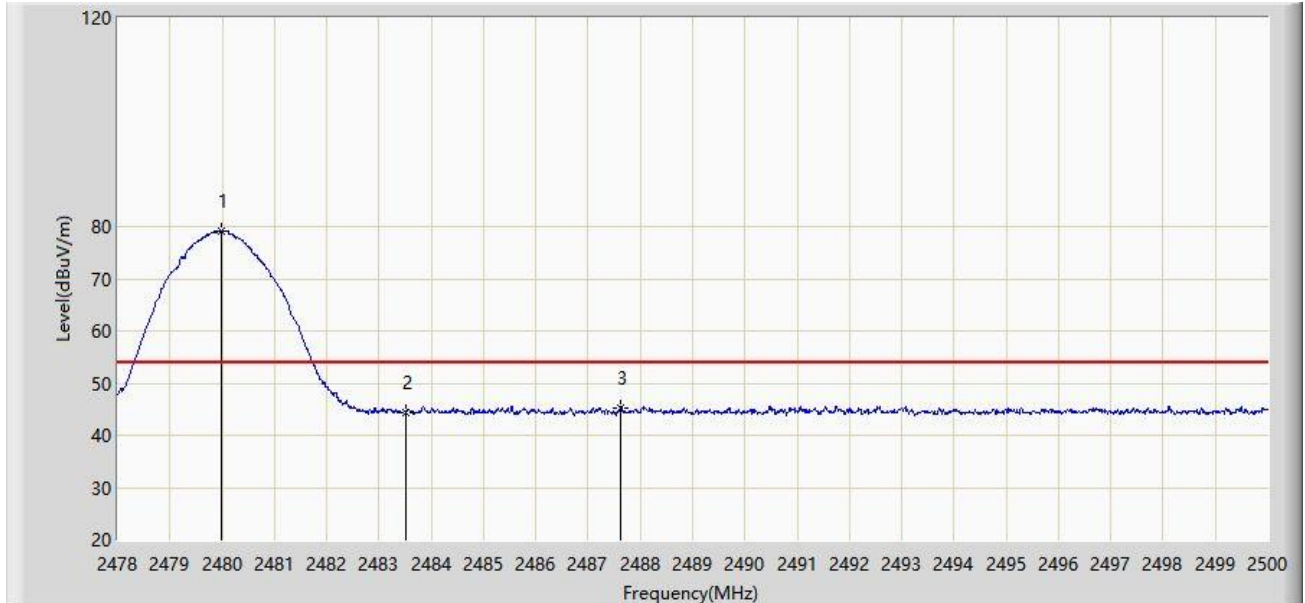


No	Flag	Mark	Frequency (MHz)	Measure Level (dBμV/m)	Reading Level (dBμV)	Margin (dB)	Limit (dBμV/m)	Factor (dB/m)	Type
1		*	2479.903	81.303	49.384	N/A	N/A	31.919	PK
2			2483.500	56.491	24.579	-17.509	74.000	31.912	PK
3			2490.067	58.446	26.548	-15.554	74.000	31.898	PK

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: 2022/03/01
Limit: FCC_Part15.209_RE(3m)	Engineer: Bob Zhang
Probe: WZ-AC2_BBHA9120D_1-18GHz	Polarity: Vertical
EUT: Smart Shield Beacon	Power: By PC
Test Mode: Transmit by BLE - 2Mbps at Channel 2480MHz	



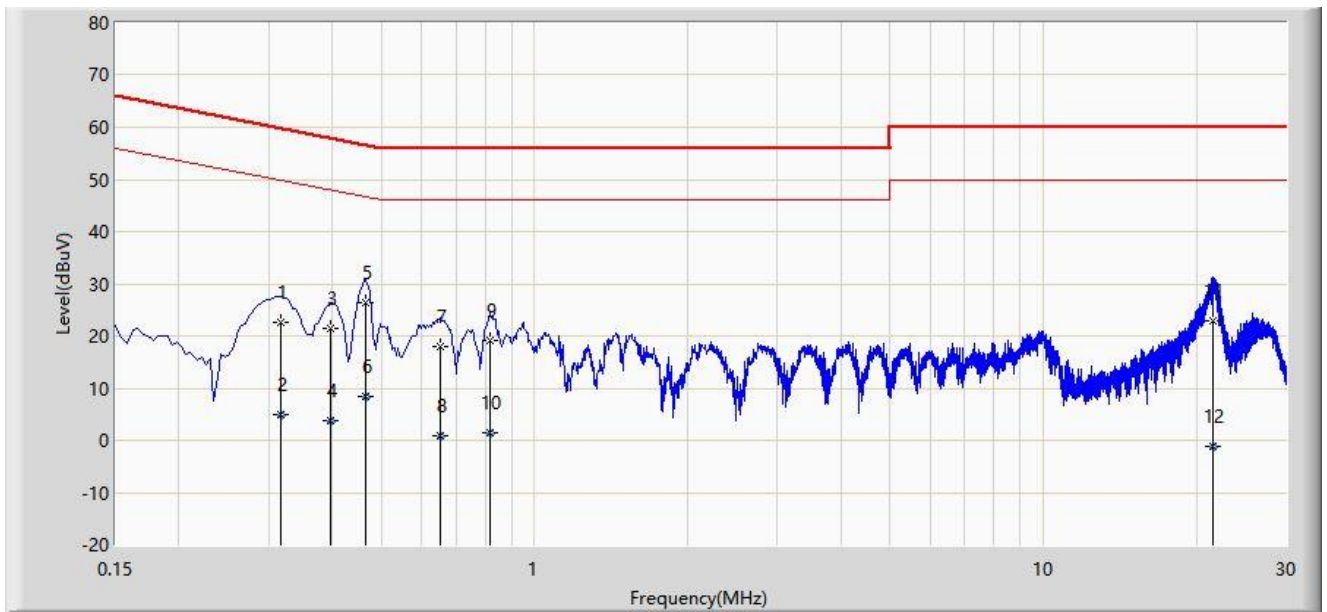
No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Margin (dB)	Limit (dBuV/m)	Factor (dB/m)	Type
1		*	2479.980	79.147	47.228	N/A	N/A	31.919	AV
2			2483.500	44.473	12.561	-9.527	54.000	31.912	AV
3			2487.614	45.358	13.455	-8.642	54.000	31.903	AV

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 Shield Beacon	Power: AC 120V/60Hz
Test Mode: Transmit by BLE - 1Mbps at channel 2402MHz	

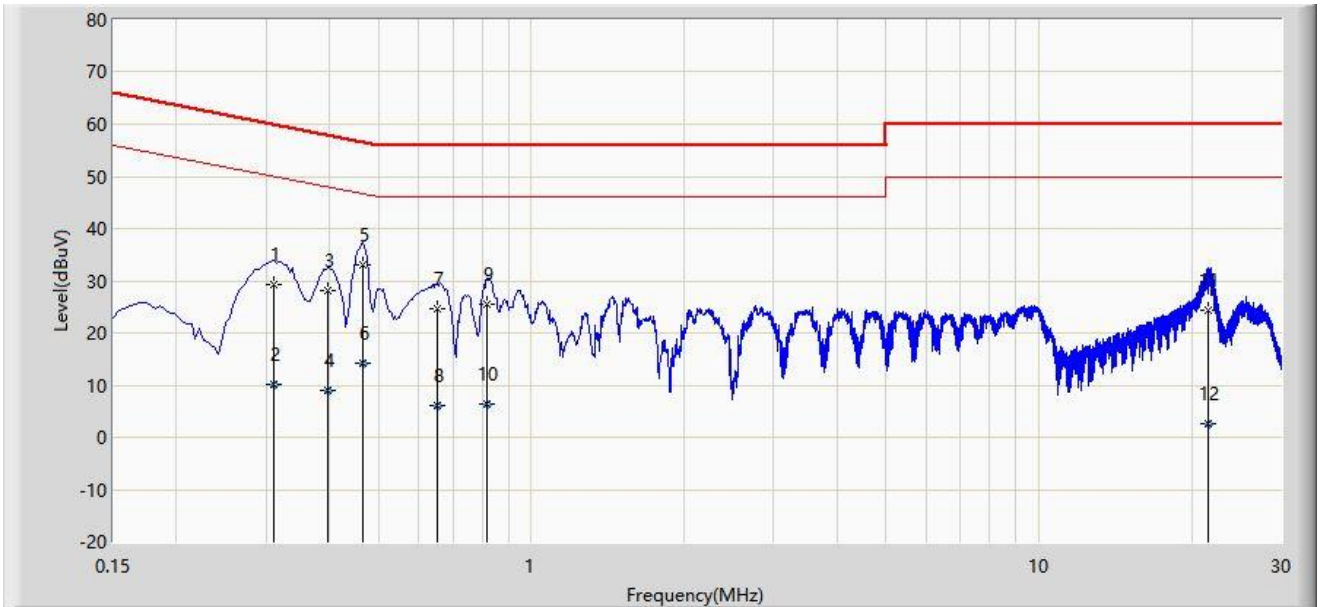


No	Flag	Mark	Frequency (MHz)	Measure Level (dBμV)	Reading Level (dBμV)	Margin (dB)	Limit (dBμV)	Factor (dB)	Type
1			0.318	22.665	12.757	-37.094	59.759	9.908	QP
2			0.318	5.058	-4.850	-44.701	49.759	9.908	AV
3			0.398	21.371	11.458	-36.524	57.895	9.913	QP
4			0.398	3.748	-6.165	-44.147	47.895	9.913	AV
5		*	0.466	26.376	16.459	-30.209	56.585	9.917	QP
6			0.466	8.360	-1.557	-38.225	46.585	9.917	AV
7			0.654	17.862	7.936	-38.138	56.000	9.927	QP
8			0.654	0.837	-9.090	-45.163	46.000	9.927	AV
9			0.818	19.039	9.102	-36.961	56.000	9.937	QP
10			0.818	1.585	-8.352	-44.415	46.000	9.937	AV
11			21.614	22.859	11.277	-37.141	60.000	11.583	QP
12			21.614	-1.073	-12.655	-51.073	50.000	11.583	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 Shield Beacon	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			0.310	29.187	19.270	-30.783	59.970	9.917	QP
2			0.310	10.219	0.302	-39.751	49.970	9.917	AV
3			0.398	27.980	18.057	-29.915	57.895	9.923	QP
4			0.398	8.982	-0.941	-38.913	47.895	9.923	AV
5		*	0.466	33.112	23.184	-23.473	56.585	9.927	QP
6			0.466	14.105	4.178	-32.480	46.585	9.927	AV
7			0.654	24.658	14.714	-31.342	56.000	9.945	QP
8			0.654	6.129	-3.815	-39.871	46.000	9.945	AV
9			0.818	25.461	15.508	-30.539	56.000	9.953	QP
10			0.818	6.511	-3.442	-39.489	46.000	9.953	AV
11			21.594	24.277	12.507	-35.723	60.000	11.771	QP
12			21.594	2.497	-9.273	-47.503	50.000	11.771	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 "2111RSU021-UT" file.

Appendix C - EUT Photograph

Refer to " 2111RSU021-UE" file.