

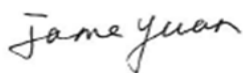
MEASUREMENT REPORT

FCC PART 15.247 / RSS-247 Bluetooth-LE

FCC ID: XCO-QCC3008
ISED: 7756A-QCC3008
APPLICANT: Hansong (Nanjing) Technology Ltd.

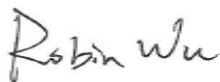
Application Type: Certification
Product Name: Bluetooth Module
Model No.: HSBT3008-IA, HSBT3008-EA
Brand Name: Platin
FCC Classification: Digital Transmission System (DTS)
FCC Rule Part(s): Part 15 Subpart C (Section 15.247)
ISED Rule(s): RSS-247 Issue 2, RSS-GEN Issue 5
Test Procedure(s): ANSI C63.10-2013
Test Date: July 15 ~ 22, 2020

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
2005RSU039-U2	Rev. 01	Initial Report	08-20-2020	Valid

CONTENTS

Description	Page
1. INTRODUCTION	6
1.1. Scope	6
1.2. MRT Test Location	6
2. PRODUCT INFORMATION	7
2.1. Feature of Equipment under Test	7
2.2. Product Specification Subjective to this Report.....	7
2.3. Working Frequencies for this Report.....	8
2.4. Test Mode	8
2.5. Duty Cycle	9
2.6. EMI Suppression Device(s)/Modifications.....	9
2.7. Test Software	9
2.8. Labeling Requirements.....	10
2.9. Test Environment Condition.....	10
3. DESCRIPTION OF TEST	11
3.1. Evaluation Procedure	11
3.2. AC Line Conducted Emissions	11
3.3. Radiated Emissions	12
4. ANTENNA REQUIREMENTS.....	13
5. TEST EQUIPMENT CALIBRATION DATE.....	14
6. MEASUREMENT UNCERTAINTY.....	16
7. TEST RESULT	17
7.1. Summary	17
7.2. Occupied Bandwidth Measurement	18
7.2.1. Test Limit	18
7.2.2. Test Procedure used.....	18
7.2.3. Test Setting.....	18
7.2.4. Test Setup.....	19
7.2.5. Test Result.....	20
7.3. Output Power Measurement.....	22
7.3.1. Test Limit	22
7.3.2. Test Procedure Used	22
7.3.3. Test Setting.....	22
7.3.4. Test Setup.....	23

7.3.5.	Test Result of Output Power	24
7.4.	Power Spectral Density Measurement	25
7.4.1.	Test Limit	25
7.4.2.	Test Procedure Used	25
7.4.3.	Test Setting	25
7.4.4.	Test Setup	25
7.4.5.	Test Result	26
7.5.	Conducted Band Edge and Out-of-Band Emissions	27
7.5.1.	Test Limit	27
7.5.2.	Test Procedure Used	27
7.5.3.	Test Setting	27
7.5.4.	Test Setup	28
7.5.5.	Test Result	29
7.6.	Radiated Spurious Emission Measurement	31
7.6.1.	Test Limit	31
7.6.2.	Test Procedure Used	32
7.6.3.	Test Setting	32
7.6.4.	Test Setup	33
7.6.5.	Test Result	35
7.7.	Radiated Restricted Band Edge Measurement	46
7.7.1.	Test Limit	46
7.7.2.	Test Procedure Used	49
7.7.3.	Test Setting	49
7.7.4.	Test Setup	50
7.7.5.	Test Result	51
7.8.	AC Conducted Emissions Measurement	75
7.8.1.	Test Limit	75
7.8.2.	Test Setup	75
7.8.3.	Test Result	76
8.	CONCLUSION	78
	Appendix A - Test Setup Photograph	79
	Appendix B - EUT Photograph	80

General Information

Applicant:	Hansong (Nanjing) Technology Ltd.
Applicant Address:	8th Kangping Road, Jiangning Economy and Technology Development Zone, Nanjing, 211100, China
Manufacturer:	Hansong (Nanjing) Technology Ltd.
Manufacturer Address:	8th Kangping Road, Jiangning Economy and Technology Development Zone, Nanjing, 211100, China
Test Site:	MRT Technology (Suzhou) Co., Ltd
Test Site Address:	D8 Building, No.2 Tian'edang Rd., Wuzhong Economic Development Zone, Suzhou, China

Test Facility / Accreditations

Measurements were performed at MRT Laboratory located in Tian'edang Rd., Suzhou, China.

- MRT facility is an FCC registered (MRT Designation No. CN1166) test facility with the site description report on file and has met all the requirements specified in ANSI C63.4-2014.
- MRT facility is an IC registered (MRT Reg. No. 11384A-1) test laboratory with the site description on file at Industry Canada.
- MRT facility is a VCCI registered (R-20025, G-20034, C-20020, T-20020) test laboratory with the site description on file at VCCI Council.
- MRT Lab is accredited to ISO 17025 by the American Association for Laboratory Accreditation (A2LA) under the American Association for Laboratory Accreditation Program (A2LA Cert. No. 3628.01) in EMC, Telecommunications, Radio and SAR testing.



1. INTRODUCTION

1.1. Scope

Measurement and determination of electromagnetic emissions (EMC) of radio frequency devices including intentional and/or unintentional radiators for compliance with the technical rules and regulations of the Federal Communications Commission and the Innovation, Science and Economic Development Canada and Certification and Engineering Bureau.

1.2. MRT Test Location

The map below shows the location of the MRT LABORATORY, its proximity to the Taihu Lake. These measurement tests were conducted at the MRT Technology (Suzhou) Co., Ltd. Facility located at D8 Building, No.2 Tian'edang Rd., Wuzhong Economic Development Zone, Suzhou, China. The measurement facility compliant with the test site requirements specified in ANSI C63.4-2014.



2. PRODUCT INFORMATION

2.1. Feature of Equipment under Test

Product Name:	Bluetooth Module
Model No.:	HSBT3008-IA, HSBT3008-EA
Brand Name:	Platin
Radio Specification:	Bluetooth
Bluetooth Version:	V5.0 (Dual mode)
Hardware Version:	V1_0
Software Version:	V1_0
Serial No.:	Product Configured with Onboard PCB Antenna: H208HSBT3008G00011 Product Configured with External PCB Antenna or External Dipole Antenna: H208HSBT3008G00001

Note 1: HSBT3008-IA is corresponded with the product configured with onboard PCB antenna, HSBT3008-EA is corresponded with the module configured with external PCB antenna or external dipole antenna.

Note 2: There is no adapter ship with the product, the adapter (Model no.: FHC-010-EU, Manufacturer: SHENZHEN FURUIDA TECH CO., LTD) was supplied by MRT lab for testing.

2.2. Product Specification Subjective to this Report

Frequency Range:	2402 ~ 2480MHz
Channel Number:	40
Type of modulation:	GFSK
Data Rate:	1Mbps
Antenna Type:	Onboard PCB Antenna External PCB Antenna External Dipole Antenna
Antenna Gain:	Onboard PCB Antenna: 1.14dBi External PCB Antenna: 2.00dBi External Dipole Antenna: 2.93dBi

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

2.3. Working Frequencies 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	--	--	--	--

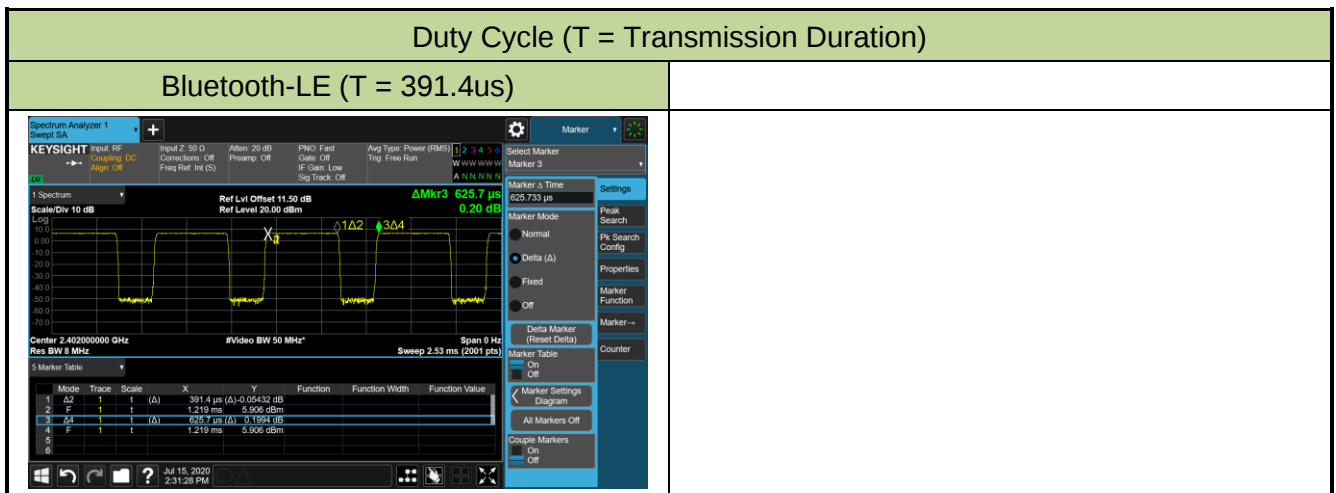
2.4. Test Mode

Test Mode	Mode 1: Transmit by Bluetooth-LE
-----------	----------------------------------

2.5. Duty Cycle

The maximum achievable duty cycle was determined based on measurements performed on a spectrum analyzer in zero-span mode with RBW = 8MHz, VBW = 50MHz. The RBW and VBW were both greater than $50/T$, where T is the minimum transmission duration, and the number of sweep points across T was greater than 100. The duty cycles are as follows:

Test Mode	Duty Cycle
Bluetooth-LE	62.55%



2.6. EMI Suppression Device(s)/Modifications

No EMI suppression device(s) were added and/or no modifications were made during testing.

2.7. Test Software

The test utility software used during testing was “BlueSuite”, and the version was “V2.4.8”.

2.8. Labeling Requirements

Per 2.1074 & 15.19; Docket 95-19

The label shall be permanently affixed at a conspicuous location on the device; instruction manual or pamphlet supplied to the user and be readily visible to the purchaser at the time of purchase.

However, when the device is so small wherein placement of the label with specified statement is not practical, only the FCC ID must be displayed on the device per Section 15.19(a)(5). Please see attachment for FCC ID label and label location.

RSS-Gen Issue 5

In addition to complying with the applicable RSSs and RSP-100, each unit of a product model (i.e. of a radio apparatus) shall meet the labelling requirements set out in this section prior to being marketed in Canada or imported into Canada.

If the dimensions of the product are extremely small or it is not practical to place the label or marking on the product, and if electronic labelling cannot be implemented, the label shall be placed in a prominent location in the user manual supplied with the product, as agreed upon with ISED prior to the certification application. The user manual may be in an electronic format; if it is not supplied to the user, the user manual must be readily available.

2.9. Test Environment Condition

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

3. DESCRIPTION OF TEST

3.1. Evaluation Procedure

The measurement procedure described in the document titled “American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices” (ANSI C63.10-2013) was used in the measurement.

3.2. AC Line Conducted Emissions

The line-conducted facility is located inside an 8'x4'x4' shielded enclosure. A 1m x 2m wooden table 80cm high is placed 40cm away from the vertical wall and 80cm away from the sidewall of the shielded room. Two 10kHz-30MHz, 50 Ω /50uH Line-Impedance Stabilization Networks (LISNs) are bonded to the shielded room floor. Power to the LISNs is filtered by external high-current high-insertion loss power line filters. These filters attenuate ambient signal noise from entering the measurement lines. These filters are also bonded to the shielded enclosure.

The EUT is powered from one LISN and the support equipment is powered from the second LISN. All interconnecting cables more than 1 meter were shortened to a 1 meter length by non-inductive bundling (serpentine fashion) and draped over the back edge of the test table. All cables were at least 40cm above the horizontal reference ground-plane. Power cables for support equipment were routed down to the second LISN while ensuring that that cables were not draped over the second LISN.

Sufficient time for the EUT, support equipment, and test equipment was allowed in order for them to warm up to their normal operating condition. The RF output of the LISN was connected to the receiver and exploratory measurements were made to determine the frequencies producing the maximum emission from the EUT. The receiver was scanned from 150kHz to 30MHz. The detector function was set to peak mode for exploratory measurements while the bandwidth of the analyzer was set to 9kHz. The EUT, support equipment, and interconnecting cables were arranged and manipulated to maximize each emission. Each emission was also maximized by varying: power lines, the mode of operation or data exchange speed, or support equipment whichever determined the worst-case emission. Once the worst case emissions have been identified, the one EUT cable configuration/arrangement and mode of operation that produced these emissions were used for final measurements on the same test site. The analyzer is set to CISPR quasi-peak and average detectors with a 9kHz resolution bandwidth for final measurements.

An extension cord was used to connect to a single LISN which powered by EUT. The extension cord was calibrated with LISN, the impedance and insertion loss are compliance with the requirements as stated in ANSI C63.10-2013.

3.3. Radiated Emissions

The radiated test facilities consisted of an indoor 3 meter semi-anechoic chamber used for final measurements and exploratory measurements, when necessary. The measurement area is contained within the semi-anechoic chamber which is shielded from any ambient interference. For measurements above 1GHz absorbers are arranged on the floor between the turn table and the Antenna mast in such a way so as to maximize the reduction of reflections. For measurements below 1GHz, the absorbers are removed. A MF Model 210SS turntable is used for radiated measurement. It is a continuously rotatable, remote controlled, metallic turntable and 2 meters (6.56 ft.) in diameter. The turn table is flush with the raised floor of the chamber in order to maintain its function as a ground plane. An 80cm high PVC support structure is placed on top of the turntable. For all measurements, the spectrum was scanned through all EUT azimuths and from 1 to 4 meter receive Antenna height using a broadband Antenna from 30MHz up to the upper frequency shown in 15.33(b)(1) depending on the highest frequency generated or used in the device or on which the device operates or tunes. For frequencies above 1GHz, linearly polarized double ridge horn Antennas were used. For frequencies below 30MHz, a calibrated loop Antenna was used. When exploratory measurements were necessary, they were performed at 1 meter test distance inside the semi-anechoic chamber using broadband Antennas, broadband amplifiers, and spectrum analyzers to determine the frequencies and modes producing the maximum emissions. Sufficient time for the EUT, support equipment, and test equipment was allowed in order for them to warm up to their normal operating condition. The test set-up for frequencies below 1GHz was placed on top of the 0.8 meter high, 1 x 1.5 meter table; and test set-up for frequencies 1-40GHz was placed on top of the 1.5 meter high, 1 x 1.5 meter table. The EUT, support equipment, and interconnecting cables were arranged and manipulated to maximize each emission. Appropriate precaution was taken to ensure that all emissions from the EUT were maximized and investigated. The system configuration, clock speed, mode of operation or video resolution, if applicable, turntable azimuth, and receive Antenna height was noted for each frequency found.

Final measurements were made in the semi-anechoic chamber using calibrated, linearly polarized broadband and horn Antennas. The test setup was configured to the setup that produced the worst case emissions. The spectrum analyzer was set to investigate all frequencies required for testing to compare the highest radiated disturbances with respect to the specified limits. The turntable containing the EUT was rotated through 360 degrees and the height of the receive Antenna was varied 1 to 4 meters and stopped at the azimuth and height producing the maximum emission. Each emission was maximized by changing the orientation of the EUT through three orthogonal planes and changing the polarity of the receive Antenna, whichever produced the worst-case emissions. According to 3dB Beam-Width of horn Antenna, the horn Antenna should be always directed to the EUT when rising height.

4. ANTENNA REQUIREMENTS

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 device is permanently attached.
- There is a unique IPEX port for connection to an external antenna.

Conclusion:

The unit complies with the requirement of §15.203.

5. TEST EQUIPMENT CALIBRATION DATE

Conducted Emission - SR2

Instrument	Manufacturer	Type No.	Asset No.	Cali. Interval	Cali. Due Date
EMI Test Receiver	R&S	ESR3	MRTSUE06185	1 year	2021/01/18
Two-Line V-Network	R&S	ENV 216	MRTSUE06002	1 year	2021/06/11
Two-Line V-Network	R&S	ENV 216	MRTSUE06003	1 year	2021/06/11
Thermohygrometer	Testo	608-H1	MRTSUE06404	1 year	2020/08/08
Shielding Chamber	MIX-BEP	Chamber-SR2	MRTSUE06215	N/A	N/A

Radiated Emission - AC1

Instrument	Manufacturer	Type No.	Asset No.	Cali. Interval	Cali. Due Date
EMI Test Receiver	R&S	ESR7	MRTSUE06001	1 year	2021/01/18
PXA Signal Analyzer	Keysight	9030B	MRTSUE06395	1 year	2020/09/03
Loop Antenna	Schwarzbeck	FMZB 1519	MRTSUE06025	1 year	2020/11/13
Bilog Period Antenna	Schwarzbeck	VULB 9168	MRTSUE06172	1 year	2021/04/03
Broad Band Horn Antenna	Schwarzbeck	BBHA 9120D	MRTSUE06023	1 year	2020/10/13
Broad Band Horn Antenna	Schwarzbeck	BBHA 9170	MRTSUE06024	1 year	2020/12/29
Microwave System Amplifier	Agilent	83017A	MRTSUE06076	1 year	2020/11/15
Preamplifier	Schwarzbeck	BBV 9721	MRTSUE06121	1 year	2021/06/11
Thermohygrometer	Testo	608-H1	MRTSUE06403	1 year	2020/08/08
Anechoic Chamber	TDK	Chamber-AC1	MRTSUE06213	1 year	2021/04/30

Radiated Emission - AC2

Instrument	Manufacturer	Type No.	Asset No.	Cali. Interval	Cali. Due Date
Spectrum Analyzer	Keysight	N9038A	MRTSUE06125	1 year	2020/08/01
Loop Antenna	Schwarzbeck	FMZB 1519	MRTSUE06025	1 year	2020/11/13
Bilog Period Antenna	Schwarzbeck	VULB 9162	MRTSUE06022	1 year	2020/10/13
Horn Antenna	Schwarzbeck	BBHA9120D	MRTSUE06171	1 year	2020/10/27
Broad Band Horn Antenna	Schwarzbeck	BBHA 9170	MRTSUE06024	1 year	2020/12/29
Broadband Coaxial Preamplifier	Schwarzbeck	BBV 9718	MRTSUE06176	1 year	2020/11/15
Preamplifier	Schwarzbeck	BBV 9721	MRTSUE06121	1 year	2021/06/11
Temperature/Humidity Meter	Minggao	ETH529	MRTSUE06170	1 year	2020/12/15
Anechoic Chamber	RIKEN	Chamber-AC2	MRTSUE06213	1 year	2021/04/30

Conducted Test Equipment - TR3

Instrument	Manufacturer	Type No.	Asset No.	Cali. Interval	Cali. Due Date
EXA Signal Analyzer	Agilent	N9020A	MRTSUE06106	1 year	2021/04/14
EXA Signal Analyzer	Keysight	N9010B	MRTSUE06607	1 year	2021/01/08
Signal Analyzer	R&S	FSV40	MRTSUE06218	1 year	2021/04/14
Power Meter	Agilent	U2021XA	MRTSUE06030	1 year	2020/11/18
USB wideband power sensor	Keysight	U2021XA	MRTSUE06446	1 year	2021/06/11
USB wideband power sensor	Keysight	U2021XA	MRTSUE06447	1 year	2021/06/11
Bluetooth Test Set	Anritsu	MT8852B-042	MRTSUE06389	1 year	2021/06/11
Audio Analyzer	Agilent	U8903B	MRTSUE06143	1 year	2021/06/11
Modulation Analyzer	HP	HP8901A	MRTSUE06098	1 year	2020/10/10
Wideband Radio Communication Tester	R&S	CMW 500	MRTSUE06243	1 year	2020/11/07
DC Power Supply	GWINSTEK	DPS-3303C	MRTSUE06064	N/A	N/A
Temperature & Humidity Chamber	BAOYT	BYH-150CL	MRTSUE06051	1 year	2020/11/07
Thermohygrometer	Testo	608-H1	MRTSUE06401	1 year	2020/08/08

Software	Version	Function
EMI Software	V3	EMI Test Software

6. 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

The maximum measurement uncertainty is evaluated as:

9kHz~150kHz: 3.74dB

150kHz~30MHz: 3.44dB

Radiated Emission Measurement

The maximum measurement uncertainty is evaluated as:

Horizontal: 30MHz~300MHz: 5.04dB

300MHz~1GHz: 4.95dB

1GHz~25GHz: 6.40dB

Vertical: 30MHz~300MHz: 5.24dB

300MHz~1GHz: 6.03dB

1GHz~25GHz: 6.40dB

7. TEST RESULT

7.1. Summary

FCC Part Section(s)	ISED Part Section(s)	Test Description	Test Limit	Test Condition	Test Result	Reference
15.247(a)(2)	RSS-247 [5.2(a)]	6dB Bandwidth	$\geq 500\text{kHz}$	Conducted	Pass	Section 7.2
N/A	N/A	99% Bandwidth	N/A		N/A	
15.247(b)(3)	RSS-247 [5.4(d)]	Output Power	$\leq 1\text{Watt}$ & $\text{EIRP} \leq 4\text{Watt}$		Pass	Section 7.3
15.247(e)	RSS-247 [5.2(b)]	Power Spectral Density	$\leq 8\text{dBm} / 3\text{kHz}$		Pass	Section 7.4
15.247(d)	RSS-247 [5.5]	Band Edge / Out-of-Band Emissions	$\geq 20\text{dBc}$ (Peak)		Pass	Section 7.5
15.205 15.209	RSS-247 [5.5]	General Field Strength Limits (Restricted Bands and Radiated Emission Limits)	Emissions in restricted bands must meet the radiated limits detailed in 15.209	Radiated	Pass	Section 7.6 Section 7.7
15.207	RSS-Gen [8.8]	AC Conducted Emissions 150kHz - 30MHz	$< \text{FCC } 15.207 \text{ limits}$	Line Conducted	Pass	Section 7.8

Notes:

- 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) All modes of operation and data rates were investigated. 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.

7.2. Occupied Bandwidth Measurement

7.2.1. Test Limit

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

7.2.2. Test Procedure used

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

ANSI C63.10-2013 - Section 6.9.3 (99% Bandwidth)

7.2.3. Test Setting

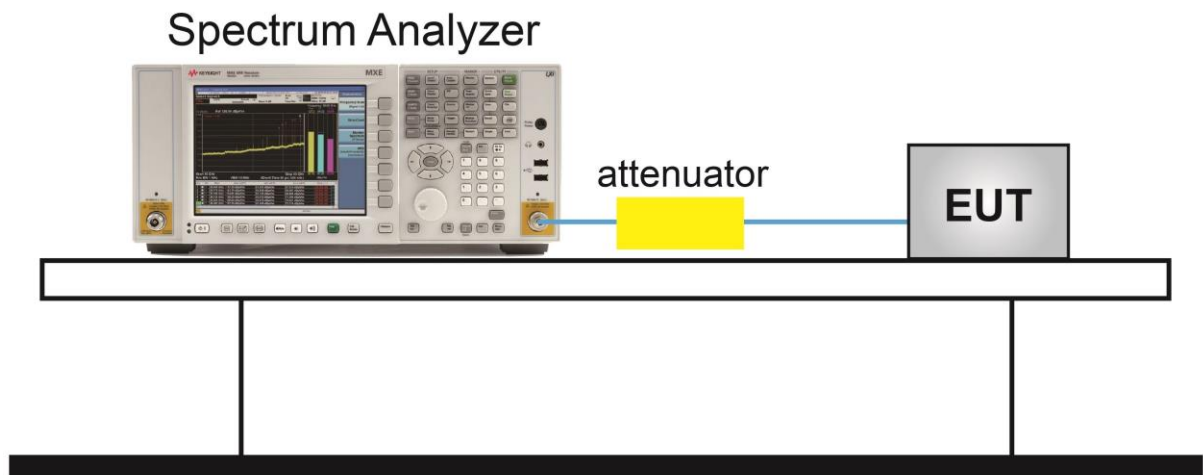
For 6dB bandwidth

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

For 99% bandwidth

1. Span = 1.5 times to 5 times the OBW
2. Set RBW = 1% to 5% the OBW
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

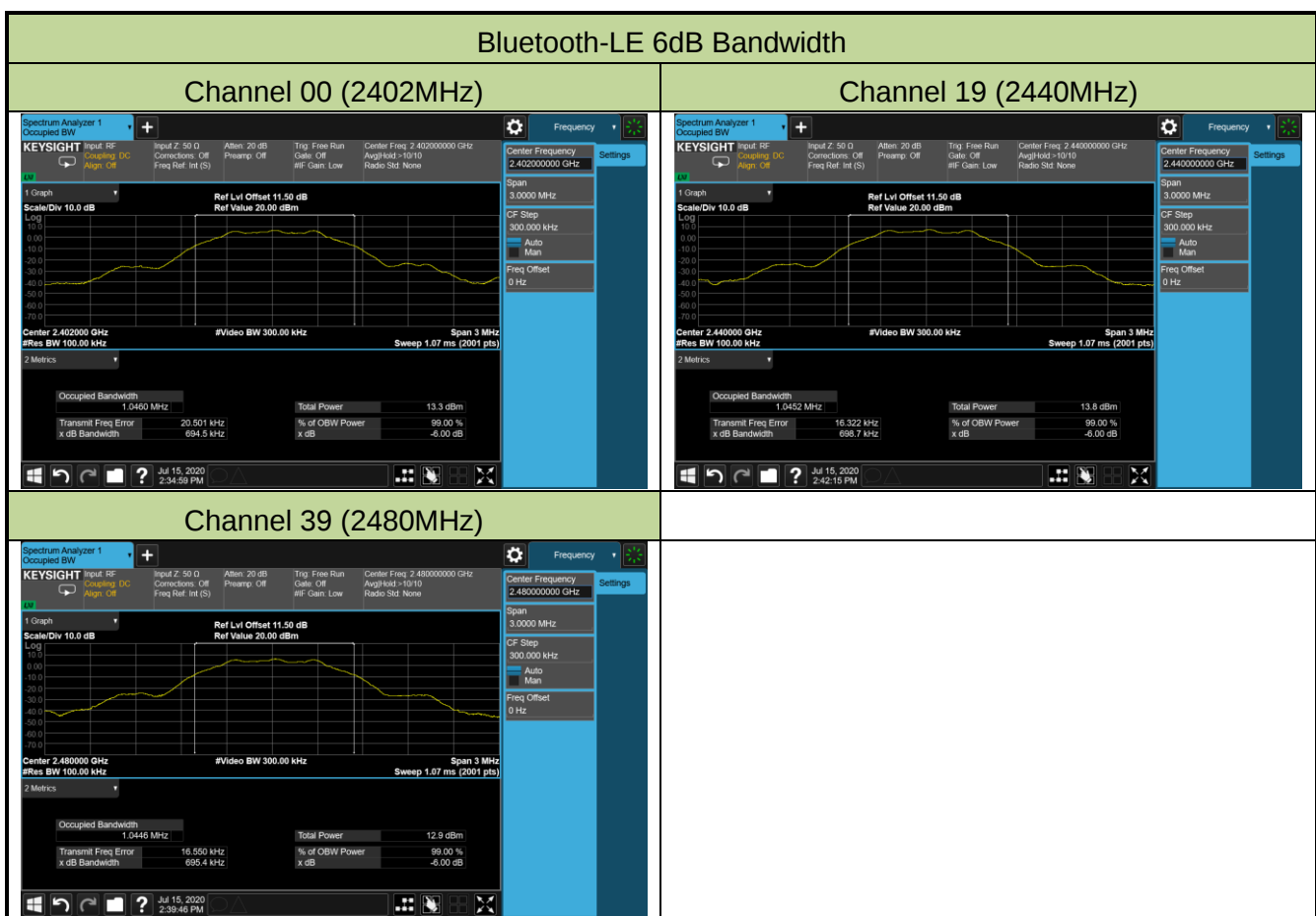
7.2.4. Test Setup



7.2.5. Test Result

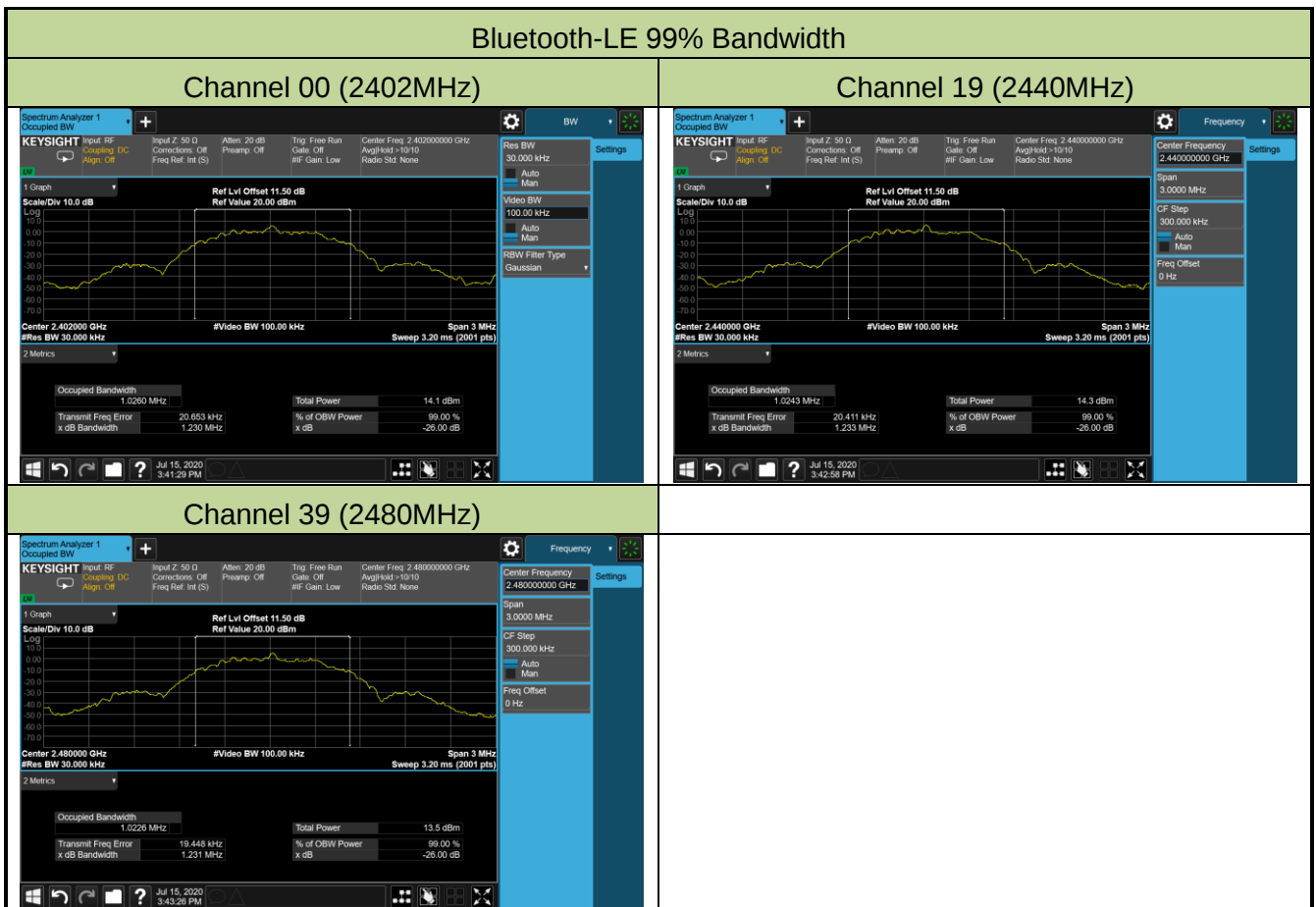
Product	Bluetooth Module	Test Engineer	Liz Yuan
Test Site	TR3	Test Date	2020/07/15

Test Mode	Data Rate (Mbps)	Channel No.	Frequency (MHz)	6dB Bandwidth (MHz)	Limit (MHz)	Result
Bluetooth-LE	1	00	2402	0.695	≥ 0.5	Pass
Bluetooth-LE	1	19	2440	0.699	≥ 0.5	Pass
Bluetooth-LE	1	39	2480	0.695	≥ 0.5	Pass



Product	Bluetooth Module	Test Engineer	Liz Yuan
Test Site	TR3	Test Date	2020/07/15

Test Mode	Data Rate (Mbps)	Channel No.	Frequency (MHz)	99% Bandwidth (MHz)
Bluetooth-LE	1	00	2402	1.026
Bluetooth-LE	1	19	2440	1.024
Bluetooth-LE	1	39	2480	1.023



7.3. Output Power Measurement

7.3.1. Test Limit

The maximum out power shall be less 1 Watt (30dBm) and the E.I.R.P shall not exceed 4 Watt (36.02dBm).

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.

7.3.2. Test Procedure Used

ANSI C63.10-2013 - Section 11.9.1.3

ANSI C63.10-2013 - Section 11.9.2.3.2

7.3.3. Test Setting

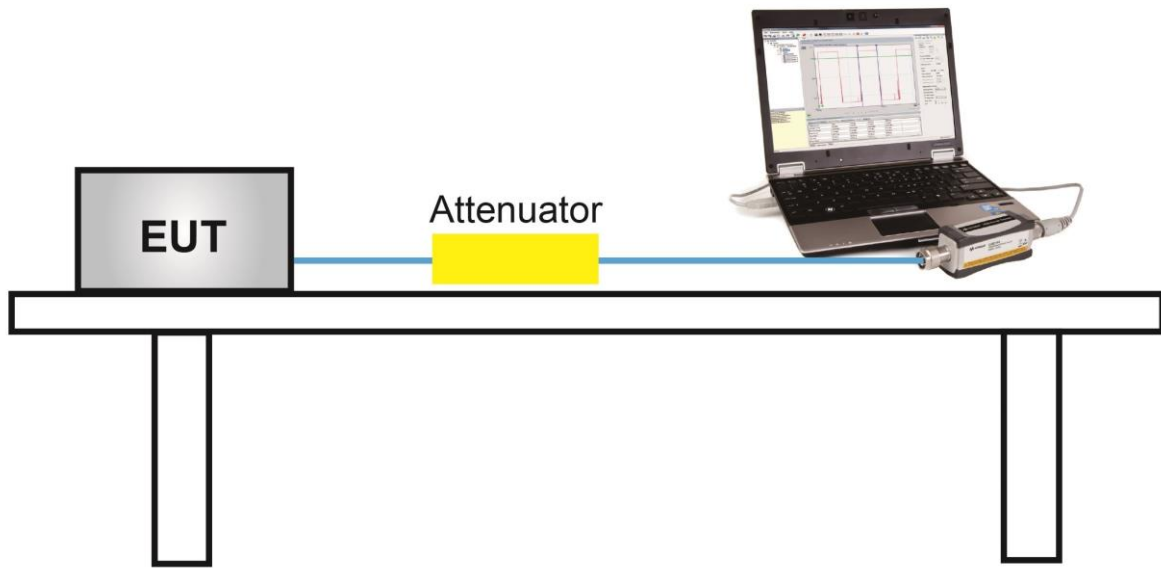
Method PKPM1 (Peak Power Measurement)

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.

7.3.4. Test Setup



7.3.5. Test Result of Output Power

Product	Bluetooth Module	Test Engineer	Liz Yuan
Test Site	TR3	Test Date	2020/07/15

Test Result of Peak Output Power

Test Mode	Data Rate (Mbps)	Channel No.	Frequency (MHz)	Peak Power (dBm)	Limit (dBm)	E.I.R.P (dBm)	E.I.R.P Limit (dBm)	Result
Bluetooth-LE	1	00	2402	-4.82	≤ 30.00	-1.89	≤ 36.02	Pass
Bluetooth-LE	1	19	2440	-4.01	≤ 30.00	-1.08	≤ 36.02	Pass
Bluetooth-LE	1	39	2480	-4.75	≤ 30.00	-1.82	≤ 36.02	Pass

Note: Only exhibited the maximum E.I.R.P. value which used the maximum gain of external dipole antenna, max antenna gain = 2.93dBi.

Test Result of Average Output Power (Reporting Only)

Test Mode	Data Rate (Mbps)	Channel No.	Frequency (MHz)	Average Power (dBm)	Limit (dBm)	E.I.R.P (dBm)	E.I.R.P Limit (dBm)	Result
Bluetooth-LE	1	00	2402	-5.01	≤ 30.00	-2.08	≤ 36.02	Pass
Bluetooth-LE	1	19	2440	-4.41	≤ 30.00	-1.48	≤ 36.02	Pass
Bluetooth-LE	1	39	2480	-5.08	≤ 30.00	-2.15	≤ 36.02	Pass

Note 1: Only exhibited the maximum E.I.R.P. value which used the maximum gain of external dipole antenna, max antenna gain = 2.93dBi.

Note 2: The result of average output power is only for MPE evaluation.

7.4. Power Spectral Density Measurement

7.4.1. Test Limit

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

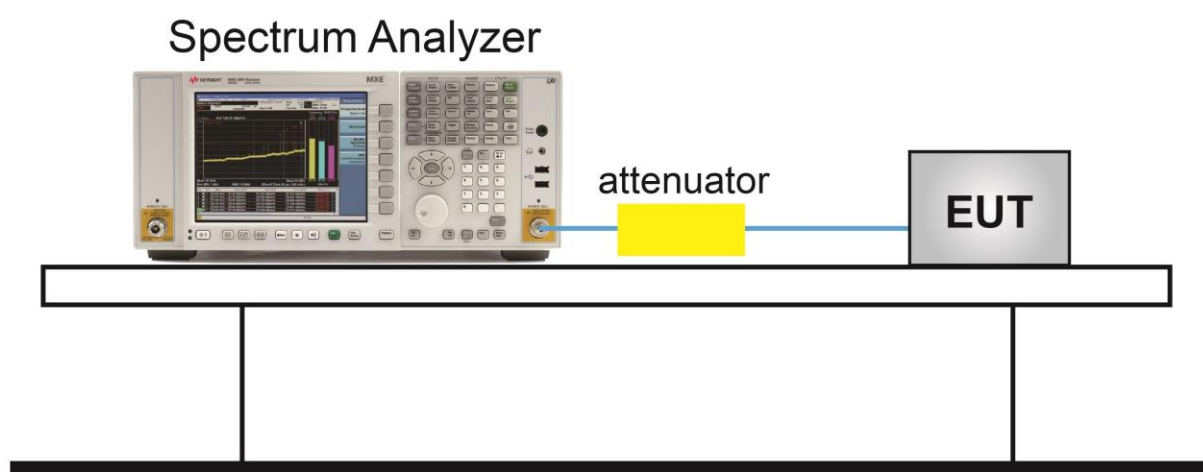
7.4.2. Test Procedure Used

ANSI C63.10-2013 - Section 11.10.2

7.4.3. 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

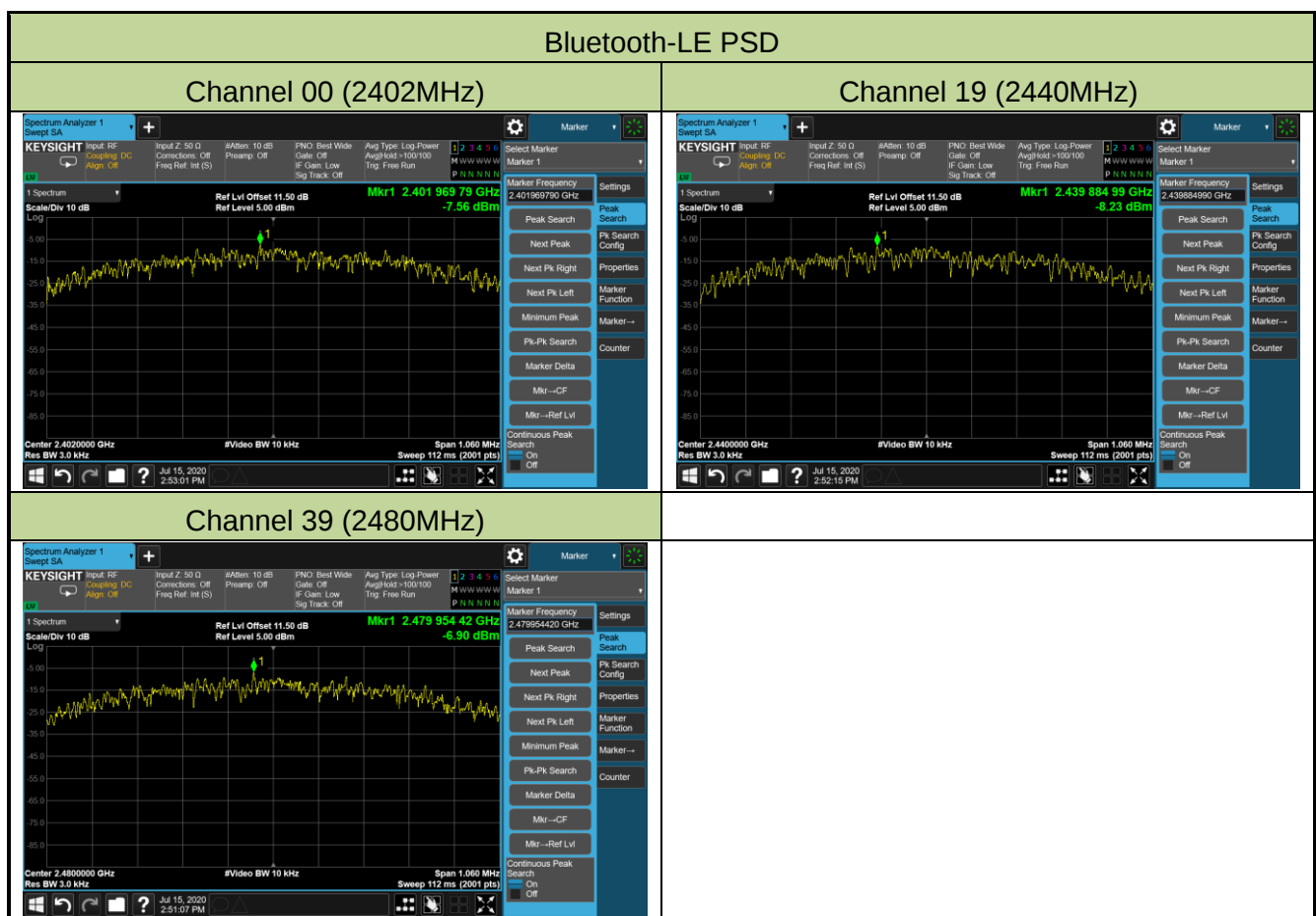
7.4.4. Test Setup



7.4.5. Test Result

Product	Bluetooth Module	Test Engineer	Liz Yuan
Test Site	TR3	Test Date	2020/07/15

Test Mode	Data Rate (Mbps)	Channel No.	Frequency (MHz)	PSD Result (dBm / 3kHz)	Limit (dBm / 3kHz)	Result
Bluetooth-LE	1	00	2402	-7.56	≤ 8.00	Pass
Bluetooth-LE	1	19	2440	-8.23	≤ 8.00	Pass
Bluetooth-LE	1	39	2480	-6.90	≤ 8.00	Pass



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

7.5.1. Test Limit

The limit for out-of-band spurious emissions at the band edge is 20 dB 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.

7.5.2. Test Procedure Used

ANSI C63.10-2013 - Section 11.11

7.5.3. Test Setting

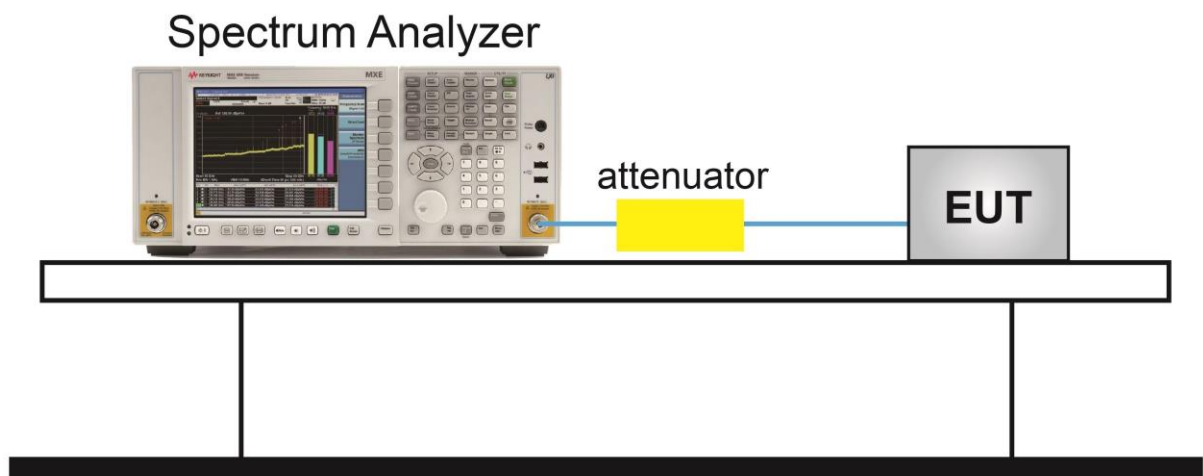
Reference level measurement

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

7.5.4. Test Setup



7.5.5. Test Result

Product	Bluetooth Module	Test Engineer	Liz Yuan
Test Site	TR3	Test Date	2020/07/15 ~ 2020/07/22

Test Mode	Data Rate (Mbps)	Channel No.	Frequency (MHz)	Limit	Result
Bluetooth-LE	1	00	2402	20dBc	Pass
Bluetooth-LE	1	19	2440	20dBc	Pass
Bluetooth-LE	1	39	2480	20dBc	Pass

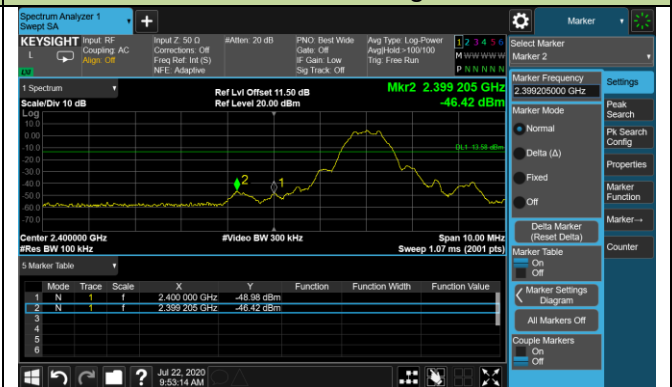
Bluetooth-LE Out-of-Band Emissions

Channel 00 (2402MHz)

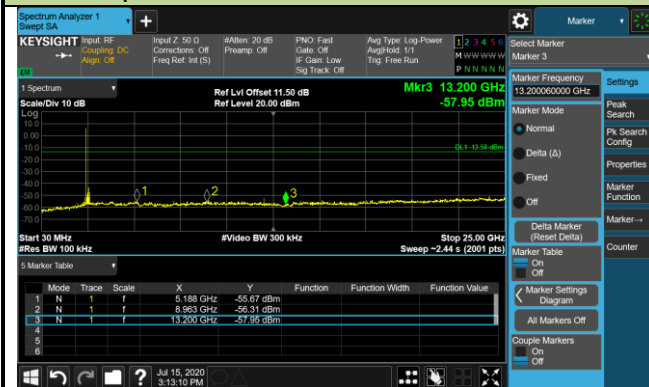
100kHz PSD reference Level



Low Band Edge

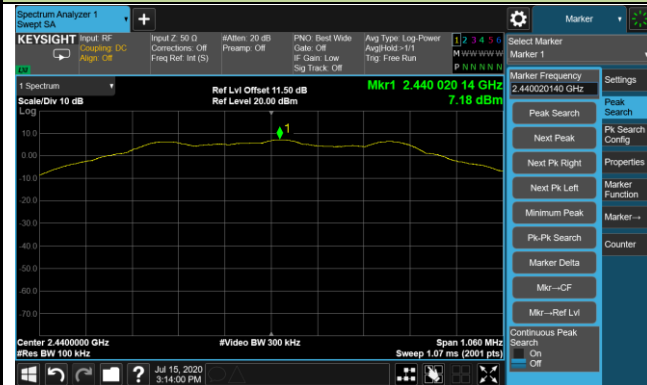


Spurious Emission 30MHz ~ 25GHz

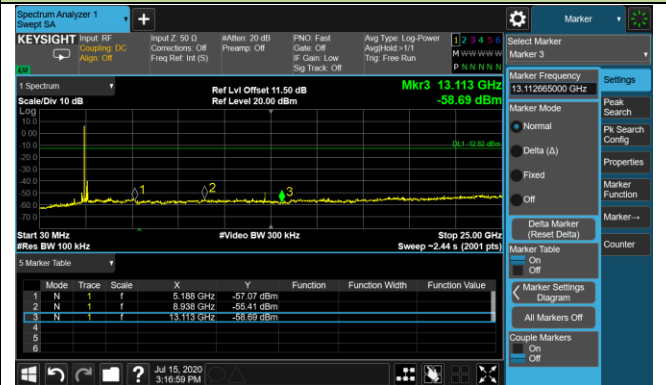


Channel 19 (2440MHz)

100kHz PSD reference Level

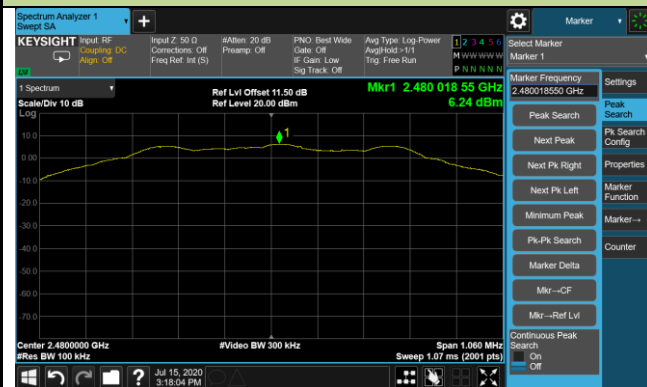


Spurious Emission 30MHz ~ 25GHz



Channel 39 (2480MHz)

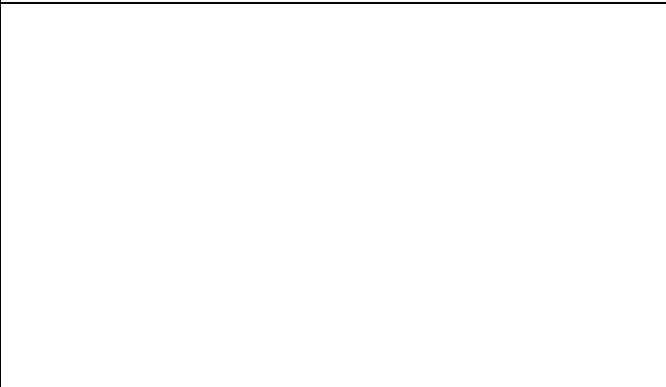
100kHz PSD reference Level



High Band Edge



Spurious Emission 30MHz ~ 25GHz



7.6. Radiated Spurious Emission Measurement

7.6.1. Test Limit

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

FCC Part 15.209 Limit		
Frequency (MHz)	Field Strength ($\mu\text{V/m}$)	Measured Distance (m)
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

All out of band emissions appearing in a restricted band as specified in Section 8.10 of the RSS-Gen must not exceed the limits shown in Table per Section 8.9.

RSS-Gen Section 8.9 Limit			
Frequency (MHz)	Field Strength ($\mu\text{V/m}$)	Magnetic Field Strength (H-Field) ($\mu\text{A/m}$)	Measured Distance (m)
0.009 - 0.490	--	6.37/F (F in kHz)	300
0.490 - 1.705	--	6.37/F (F in kHz)	30
1.705 - 30	--	0.08	30
30 - 88	100	--	3
88 - 216	150	--	3
216 - 960	200	--	3
Above 960	500	--	3

7.6.2. Test Procedure Used

ANSI C63.10-2013 - Section 6.3 (General Requirements)

ANSI C63.10-2013 - Section 6.4 (Standard test method below 30MHz)

ANSI C63.10-2013 - Section 6.5 (Standard test method above 30MHz to 1GHz)

ANSI C63.10-2013 - Section 6.6 (Standard test method above 1GHz)

7.6.3. 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

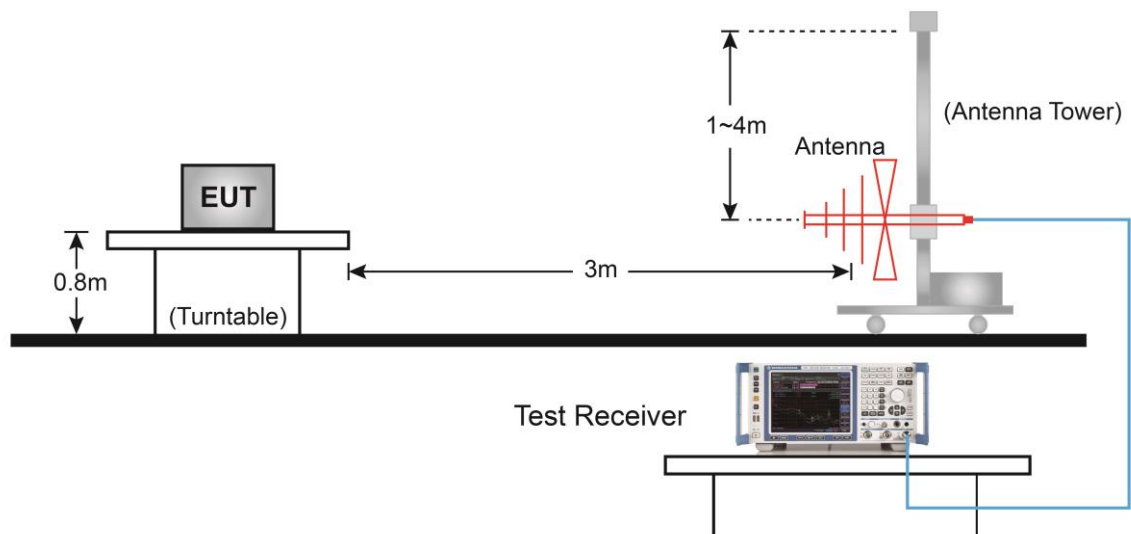
1. Analyzer center frequency was set to the frequency of the radiated spurious emission of interest
2. Span was set greater than 1MHz
3. RBW = as specified in Table 1
4. Detector = CISPR quasi-peak
5. Sweep time = auto couple
6. Trace was allowed to stabilize

Peak Measurements above 1GHz

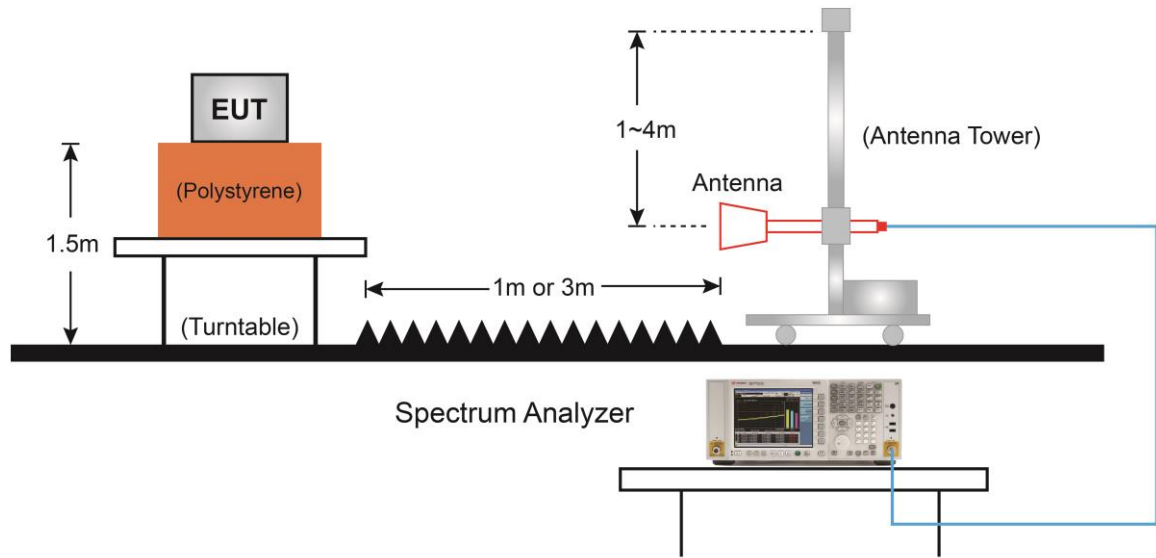
1. Analyzer center frequency was set to the frequency of the radiated spurious emission of interest
2. RBW = 1MHz
3. VBW = 3MHz
4. Detector = peak
5. Sweep time = auto couple
6. Trace mode = max hold
7. Trace was allowed to stabilize

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. 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

7.6.4.Test Setup**Below 1GHz Test Setup:**

Above 1GHz Test Setup:



7.6.5.Test Result

For HSBT3008-IA configured with Onboard PCB Antenna:

Product	Bluetooth Module	Test Engineer	Antony Yang
Test Site	AC1	Test Date	2020/07/16
Test Mode	Bluetooth-LE	Test Channel	00
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.		

Mark	Frequency (MHz)	Reading Level (dBμV)	Factor (dB)	Measure Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector	Polarization
	3193.0	43.8	1.7	45.5	74.0	-28.5	Peak	Horizontal
	4808.0	40.2	5.9	46.1	74.0	-27.9	Peak	Horizontal
	6516.5	37.7	8.6	46.3	74.0	-27.7	Peak	Horizontal
	7281.5	39.8	10.7	50.5	74.0	-23.5	Peak	Horizontal
	3201.5	49.0	1.7	50.7	74.0	-23.3	Peak	Vertical
	4799.5	40.2	5.9	46.1	74.0	-27.9	Peak	Vertical
	6567.5	38.6	8.6	47.2	74.0	-26.8	Peak	Vertical
	7281.5	38.8	10.7	49.5	74.0	-24.5	Peak	Vertical

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

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

Product	Bluetooth Module	Test Engineer	Antony Yang
Test Site	AC1	Test Date	2020/07/16
Test Mode	Bluetooth-LE	Test Channel	19
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.		

Mark	Frequency (MHz)	Reading Level (dBμV)	Factor (dB)	Measure Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector	Polarization
	3193.0	43.3	1.7	45.0	74.0	-29.0	Peak	Horizontal
	4884.5	39.2	5.6	44.8	74.0	-29.2	Peak	Horizontal
	6576.0	36.5	8.7	45.2	74.0	-28.8	Peak	Horizontal
	7324.0	40.5	10.6	51.1	74.0	-22.9	Peak	Horizontal
	3193.0	48.0	1.7	49.7	74.0	-24.3	Peak	Vertical
	4791.0	41.2	5.8	47.0	74.0	-27.0	Peak	Vertical
	5930.0	36.8	7.2	44.0	74.0	-30.0	Peak	Vertical
	7698.0	39.0	10.8	49.8	74.0	-24.2	Peak	Vertical

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

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

Product	Bluetooth Module	Test Engineer	Antony Yang
Test Site	AC1	Test Date	2020/07/16
Test Mode	Bluetooth-LE	Test Channel:	39
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.		

Mark	Frequency (MHz)	Reading Level (dBμV)	Factor (dB)	Measure Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector	Polarization
	3193.0	42.5	1.7	44.2	74.0	-29.8	Peak	Horizontal
	4374.5	36.6	4.7	41.3	74.0	-32.7	Peak	Horizontal
	6261.5	38.4	7.4	45.8	74.0	-28.2	Peak	Horizontal
	7281.5	42.8	10.7	53.5	74.0	-20.5	Peak	Horizontal
	3193.0	44.1	1.7	45.8	74.0	-28.2	Peak	Vertical
	4799.5	42.2	5.9	48.1	74.0	-25.9	Peak	Vertical
	6482.5	37.9	8.1	46.0	74.0	-28.0	Peak	Vertical
	7443.0	42.8	11.0	53.8	74.0	-20.2	Peak	Vertical

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

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

For HSBT3008-EA configured with External PCB Antenna:

Product	Bluetooth Module	Test Engineer	Antony Yang
Test Site	AC1	Test Date	2020/07/17
Test Mode	Bluetooth-LE	Test Channel	00
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.		

Mark	Frequency (MHz)	Reading Level (dBμV)	Factor (dB)	Measure Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector	Polarization
	3193.0	47.7	1.7	49.4	74.0	-24.6	Peak	Horizontal
	4808.0	38.9	5.9	44.8	74.0	-29.2	Peak	Horizontal
	6601.5	36.6	8.6	45.2	74.0	-28.8	Peak	Horizontal
	7205.0	41.4	10.5	51.9	74.0	-22.1	Peak	Horizontal
	3193.0	47.1	1.7	48.8	74.0	-25.2	Peak	Vertical
	4808.0	38.7	5.9	44.6	74.0	-29.4	Peak	Vertical
	7205.0	39.6	10.5	50.1	74.0	-23.9	Peak	Vertical
	8123.0	36.9	11.5	48.4	74.0	-25.6	Peak	Vertical

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

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

Product	Bluetooth Module	Test Engineer	Antony Yang
Test Site	AC1	Test Date	2020/07/17
Test Mode	Bluetooth-LE	Test Channel	19
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.		

Mark	Frequency (MHz)	Reading Level (dBμV)	Factor (dB)	Measure Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector	Polarization
	3193.0	40.1	1.7	41.8	74.0	-32.2	Peak	Horizontal
	4884.5	39.1	5.6	44.7	74.0	-29.3	Peak	Horizontal
	5947.0	37.6	7.1	44.7	74.0	-29.3	Peak	Horizontal
	7324.0	42.1	10.6	52.7	74.0	-21.3	Peak	Horizontal
	3201.5	46.4	1.7	48.1	74.0	-25.9	Peak	Vertical
	4791.0	38.3	5.8	44.1	74.0	-29.9	Peak	Vertical
	6559.0	36.4	8.5	44.9	74.0	-29.1	Peak	Vertical
	7315.5	43.0	10.6	53.6	74.0	-20.4	Peak	Vertical

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

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

Product	Bluetooth Module	Test Engineer	Antony Yang
Test Site	AC1	Test Date	2020/07/17
Test Mode	Bluetooth-LE	Test Channel:	39
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.		

Mark	Frequency (MHz)	Reading Level (dBμV)	Factor (dB)	Measure Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector	Polarization
	3193.0	40.0	1.7	41.7	74.0	-32.3	Peak	Horizontal
	4961.0	39.2	5.9	45.1	74.0	-28.9	Peak	Horizontal
	6431.5	36.6	8.3	44.9	74.0	-29.1	Peak	Horizontal
	7443.0	41.1	11.0	52.1	74.0	-21.9	Peak	Horizontal
	3193.0	45.9	1.7	47.6	74.0	-26.4	Peak	Vertical
	4748.5	36.6	5.5	42.1	74.0	-31.9	Peak	Vertical
	6346.5	37.3	8.1	45.4	74.0	-28.6	Peak	Vertical
	7443.0	41.7	11.0	52.7	74.0	-21.3	Peak	Vertical

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

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

For HSBT3008-EA configured with External Dipole Antenna:

Product	Bluetooth Module	Test Engineer	Antony Yang
Test Site	AC1	Test Date	2020/07/17
Test Mode	Bluetooth-LE	Test Channel	00
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.		

Mark	Frequency (MHz)	Reading Level (dBμV)	Factor (dB)	Measure Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector	Polarization
	3193.0	40.6	1.7	42.3	74.0	-31.7	Peak	Horizontal
	4808.0	38.0	5.9	43.9	74.0	-30.1	Peak	Horizontal
	7205.0	39.7	10.5	50.2	74.0	-23.8	Peak	Horizontal
	8140.0	37.5	11.3	48.8	74.0	-25.2	Peak	Horizontal
	3184.5	47.3	1.7	49.0	74.0	-25.0	Peak	Vertical
	4808.0	38.2	5.9	44.1	74.0	-29.9	Peak	Vertical
	7205.0	40.2	10.5	50.7	74.0	-23.3	Peak	Vertical
	8403.5	36.6	11.4	48.0	74.0	-26.0	Peak	Vertical

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

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

Product	Bluetooth Module	Test Engineer	Antony Yang
Test Site	AC1	Test Date	2020/07/17
Test Mode	Bluetooth-LE	Test Channel	19
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.		

Mark	Frequency (MHz)	Reading Level (dBμV)	Factor (dB)	Measure Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector	Polarization
	3193.0	42.2	1.7	43.9	74.0	-30.1	Peak	Horizontal
	4876.0	36.9	5.5	42.4	74.0	-31.6	Peak	Horizontal
	6066.0	37.5	6.8	44.3	74.0	-29.7	Peak	Horizontal
	7324.0	39.4	10.6	50.0	74.0	-24.0	Peak	Horizontal
	3193.0	44.2	1.7	45.9	74.0	-28.1	Peak	Vertical
	4876.0	35.1	5.5	40.6	74.0	-33.4	Peak	Vertical
	6525.0	37.5	8.5	46.0	74.0	-28.0	Peak	Vertical
	7315.5	42.9	10.6	53.5	74.0	-20.5	Peak	Vertical

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

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

Product	Bluetooth Module	Test Engineer	Antony Yang
Test Site	AC1	Test Date	2020/07/17
Test Mode	Bluetooth-LE	Test Channel:	39
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.		

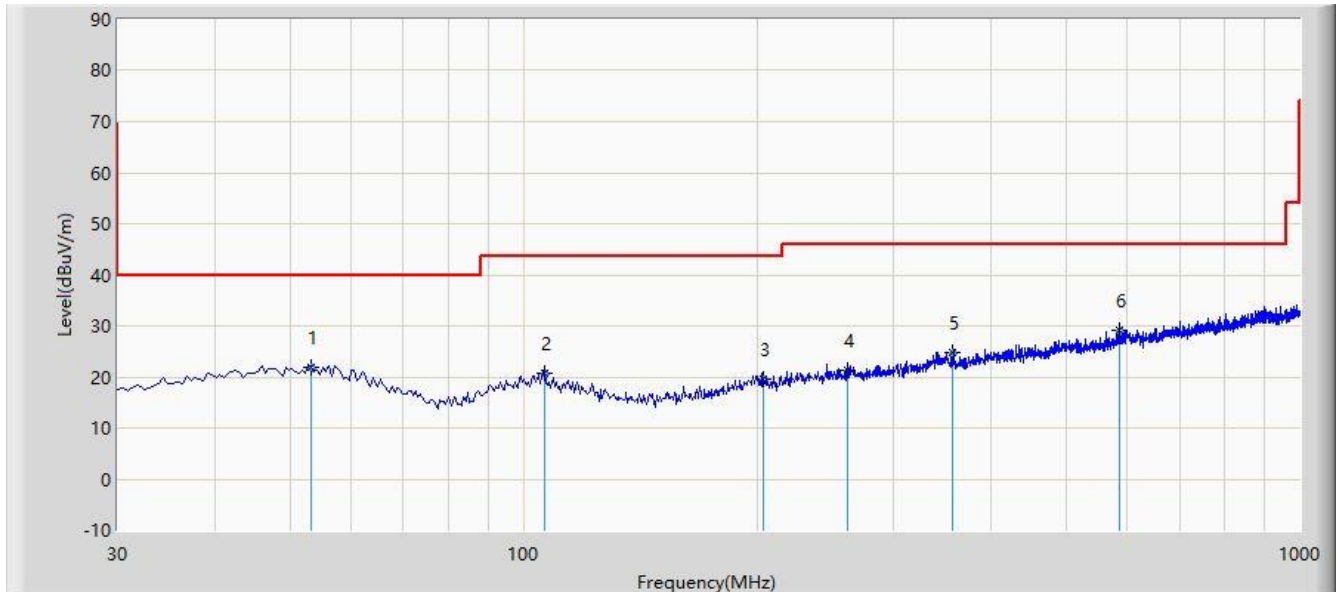
Mark	Frequency (MHz)	Reading Level (dBμV)	Factor (dB)	Measure Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector	Polarization
	3193.0	38.2	1.7	39.9	74.0	-34.1	Peak	Horizontal
	4961.0	37.3	5.9	43.2	74.0	-30.8	Peak	Horizontal
	6542.0	36.9	8.4	45.3	74.0	-28.7	Peak	Horizontal
	7443.0	40.0	11.0	51.0	74.0	-23.0	Peak	Horizontal
	3201.5	45.5	1.7	47.2	74.0	-26.8	Peak	Vertical
	4961.0	37.9	5.9	43.8	74.0	-30.2	Peak	Vertical
	6423.0	36.4	8.3	44.7	74.0	-29.3	Peak	Vertical
	7443.0	42.3	11.0	53.3	74.0	-20.7	Peak	Vertical

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

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

The Worst Case of Radiated Emission below 1GHz:

Site: AC1	Time: 2020/07/18 - 17:34
Limit: FCC_Part15.209_RE(3m)	Engineer: Hyde Yu
Probe: AC1_VULB9168_30-1000MHz	Polarity: Horizontal
EUT: Bluetooth Module	Power: By USB
Test Mode: Transmit by Bluetooth-LE at Channel 2480MHz, for HSBT3008-EA configured with External Dipole Antenna	



No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Margin (dB)	Limit (dBuV/m)	Factor (dB)	Type
1			53.250	21.863	1.690	-18.137	40.000	20.173	QP
2			106.540	20.643	2.490	-22.857	43.500	18.153	QP
3			203.560	19.476	1.540	-24.024	43.500	17.936	QP
4			261.340	21.359	1.690	-24.641	46.000	19.669	QP
5			357.600	24.886	3.680	-21.114	46.000	21.206	QP
6		*	586.590	29.027	2.980	-16.973	46.000	26.047	QP

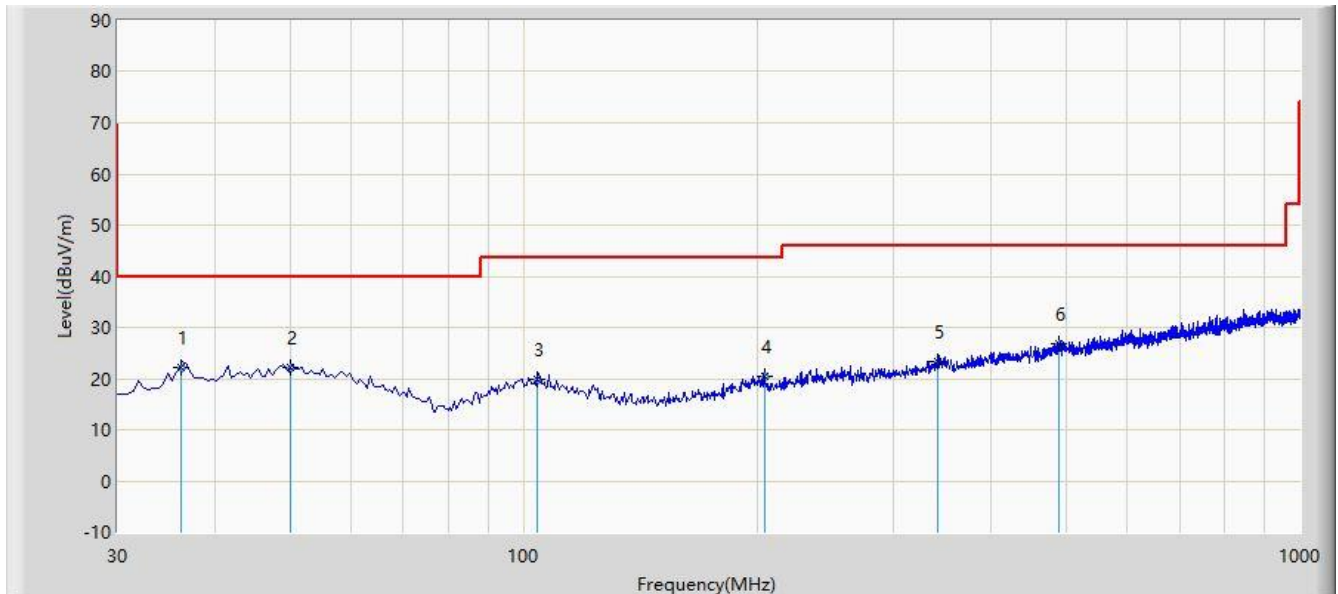
Note 1: Measure Level (dBuV/m) = Reading Level (dBuV) + Factor (dB)

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

Note 2: 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: AC1	Time: 2020/07/18 - 17:37
Limit: FCC_Part15.209_RE(3m)	Engineer: Hyde Yu
Probe: AC1_VULB9168_30-1000MHz	Polarity: Vertical
EUT: Bluetooth Module	Power: By USB
Test Mode: Transmit by Bluetooth-LE at Channel 2480MHz, for HSBT3008-EA configured with External Dipole Antenna	



No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Margin (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		*	36.160	22.300	4.160	-17.700	40.000	18.141	QP
2			50.160	22.143	1.700	-17.857	40.000	20.443	QP
3			104.160	19.833	1.630	-23.667	43.500	18.203	QP
4			204.490	20.464	2.600	-23.036	43.500	17.864	QP
5			341.570	23.356	1.640	-22.644	46.000	21.717	QP
6			490.210	26.725	2.490	-19.275	46.000	24.234	QP

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

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

Note 2: 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.

7.7. Radiated Restricted Band Edge Measurement

7.7.1. 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 47 CFR must not exceed the limits shown in Table per Section 15.209.

FCC Part 15.209 Limit		
Frequency (MHz)	Field Strength (μ V/m)	Measured Distance (m)
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

For RSS-Gen Section 8.10 requirement:

Radiated emissions which fall in the restricted bands, as defined in Section 8.10 of RSS-Gen, must also comply with the radiated emission limits specified in Section 8.9.

Frequency (MHz)	Frequency (MHz)	Frequency (GHz)
0.090 - 0.110	149.9 - 150.05	9.0 - 9.2
0.495 - 0.505	156.52475 - 156.52525	9.3 - 9.5
2.1735 - 2.1905	156.7 - 156.9	10.6 - 12.7
3.020 - 3.026	162.0125 - 167.17	13.25 - 13.4
4.125 - 4.128	167.72 - 173.2	14.47 - 14.5
4.17725 - 4.17775	240 - 285	15.35 - 16.2
4.20725 - 4.20775	322 - 335.4	17.7 - 21.4
5.677 - 5.683	399.9 - 410	22.01 - 23.12
6.215 - 6.218	608 - 614	23.6 - 24.0
6.26775 - 6.26825	960 - 1427	31.2 - 31.8
6.31175 - 6.31225	1435 - 1626.5	36.43 - 36.5
8.291 - 8.294	1645.5 - 1646.5	Above 38.6
8.362 - 8.366	1660 - 1710	* Certain frequency bands listed in table 7 and in bands above 38.6 GHz are designated for license exempt applications. These frequency bands and the requirements that apply to related devices are set out in the 200 and 300 series of RSSs.
8.37625 - 8.38675	1718.8 - 1722.2	
8.41425 - 8.41475	2200 - 2300	
12.29 - 12.293	2310 - 2390	
12.51975 - 12.52025	2483.5 - 2500	
12.57675 - 12.57725	2655 - 2900	
13.36 - 13.41	3260 - 3267	
16.42 - 16.423	3332 - 3339	
16.69475 - 16.69525	3345.8 - 3358	
16.80425 - 16.80475	3500 - 4400	
25.5 - 25.67	4500 - 5150	
37.5 - 38.25	5350 - 5460	
73 - 74.6	7250 - 7750	
74.8 - 75.2	8025 - 8500	
108 - 138	--	

All out of band emissions appearing in a restricted band as specified in Section 8.10 of the RSS-Gen must not exceed the limits shown in Table per Section 8.9.

RSS-Gen Section 8.9 Limit			
Frequency (MHz)	Field Strength ($\mu\text{V/m}$)	Magnetic Field Strength (H-Field) ($\mu\text{A/m}$)	Measured Distance (m)
0.009 - 0.490 1	--	6.37/F (F in kHz)	300
0.490 - 1.705	--	6.37/F (F in kHz)	30
1.705 - 30	--	0.08	30
30 - 88	100	--	3
88 - 216	150	--	3
216 - 960	200	--	3
Above 960	500	--	3

7.7.2.Test Procedure Used

ANSI C63.10-2013 - Section 6.3 (General Requirements)

ANSI C63.10-2013 - Section 6.6 (Standard test method above 1GHz)

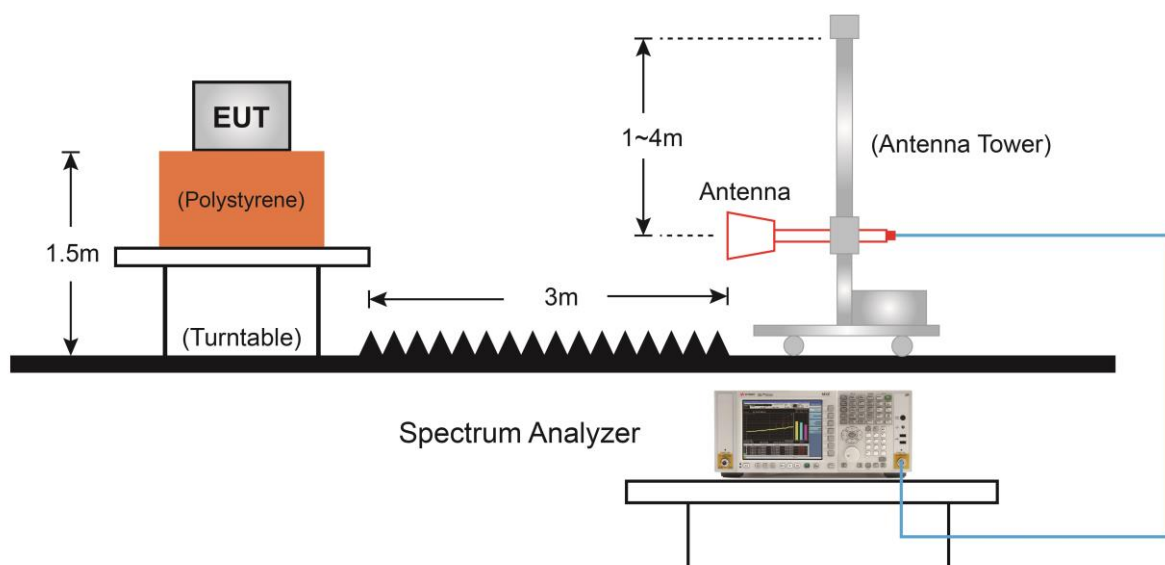
7.7.3.Test Setting

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 Field Strength Measurements

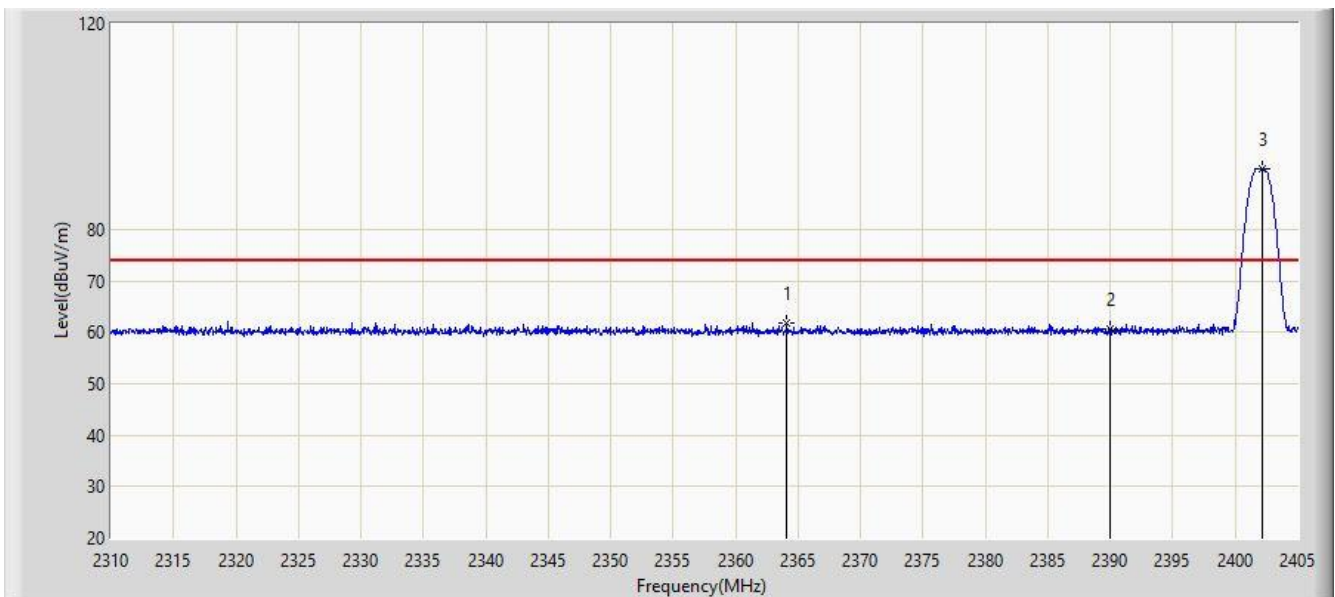
1. Analyzer center frequency was set to the frequency of the radiated spurious emission of interest
2. RBW = 1MHz
3. Set VBW $\geq 1/T$. T is the minimum transmission duration
4. Detector = Peak
5. Sweep time = Auto
6. Trace mode = Max hold
7. Trace was allowed to stabilize

7.7.4. Test Setup

7.7.5.Test Result

For HSBT3008-IA configured with Onboard PCB Antenna:

Site: AC1	Time: 2020/07/16 - 19:03
Limit: FCC_Part15.209_RE(3m)	Engineer: Buter Shi
Probe: AC1_BBHA9120D_1-18GHz	Polarity: Horizontal
EUT: Bluetooth Module	Power: By USB
Test Mode: Transmit by Bluetooth-LE at Channel 2402MHz	

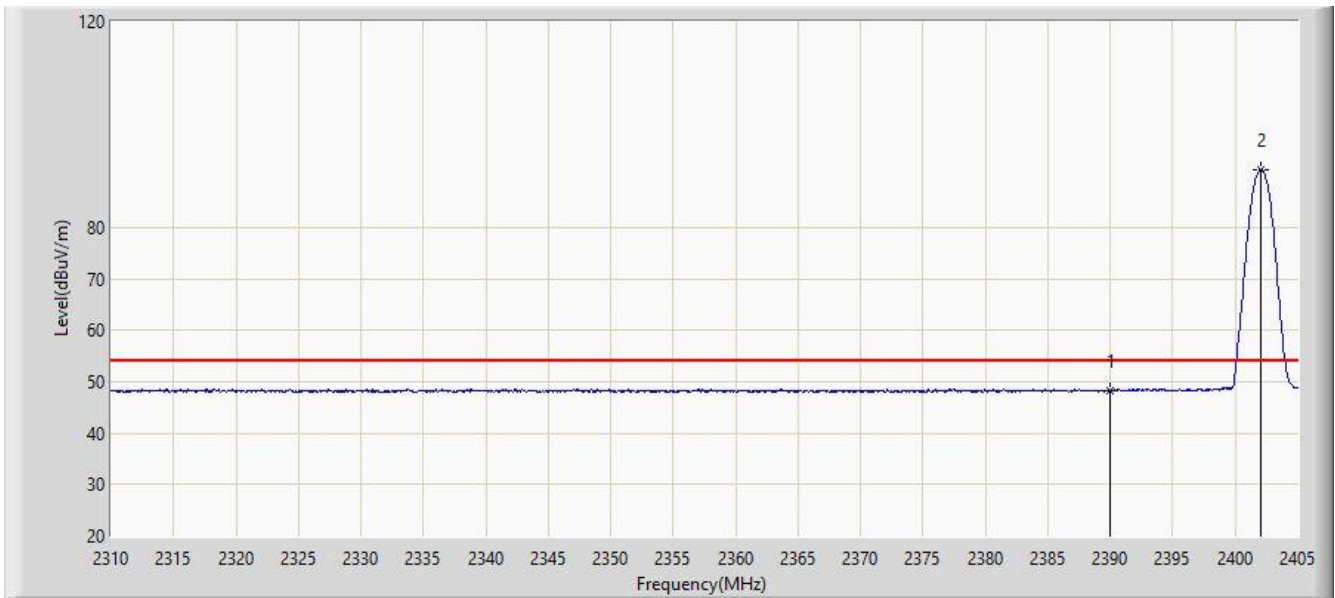


No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Margin (dB)	Limit (dBuV/m)	Factor (dB)	Type
1			2364.103	61.690	28.944	-12.310	74.000	32.746	PK
2			2390.000	60.626	27.914	-13.374	74.000	32.712	PK
3		*	2402.150	91.847	59.103	N/A	N/A	32.744	PK

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

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

Site: AC1	Time: 2020/07/16 - 19:47
Limit: FCC_Part15.209_RE(3m)	Engineer: Buter Shi
Probe: AC1_BBHA9120D_1-18GHz	Polarity: Horizontal
EUT: Bluetooth Module	Power: By USB
Test Mode: Transmit by Bluetooth-LE at Channel 2402MHz	

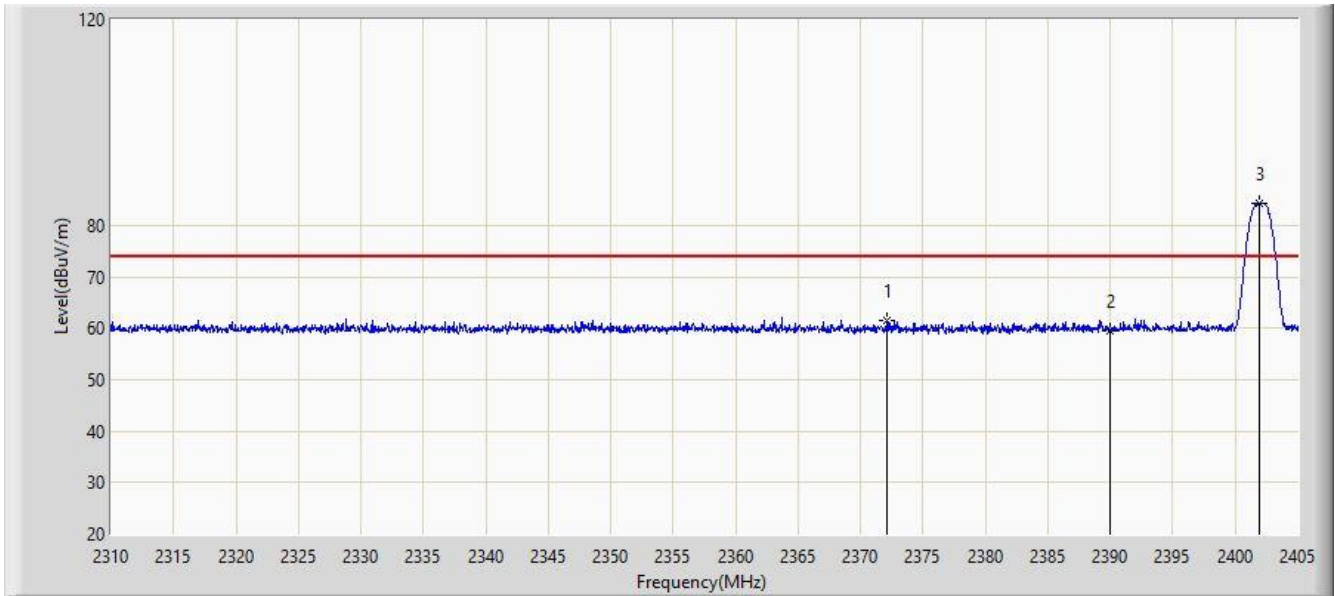


No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Margin (dB)	Limit (dBuV/m)	Factor (dB)	Type
1			2390.000	48.234	15.522	-5.766	54.000	32.712	AV
2		*	2402.008	91.217	58.473	N/A	N/A	32.744	AV

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

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

Site: AC1	Time: 2020/07/16 - 19:59
Limit: FCC_Part15.209_RE(3m)	Engineer: Buter Shi
Probe: AC1_BBHA9120D_1-18GHz	Polarity: Vertical
EUT: Bluetooth Module	Power: By USB
Test Mode: Transmit by Bluetooth-LE at Channel 2402MHz	

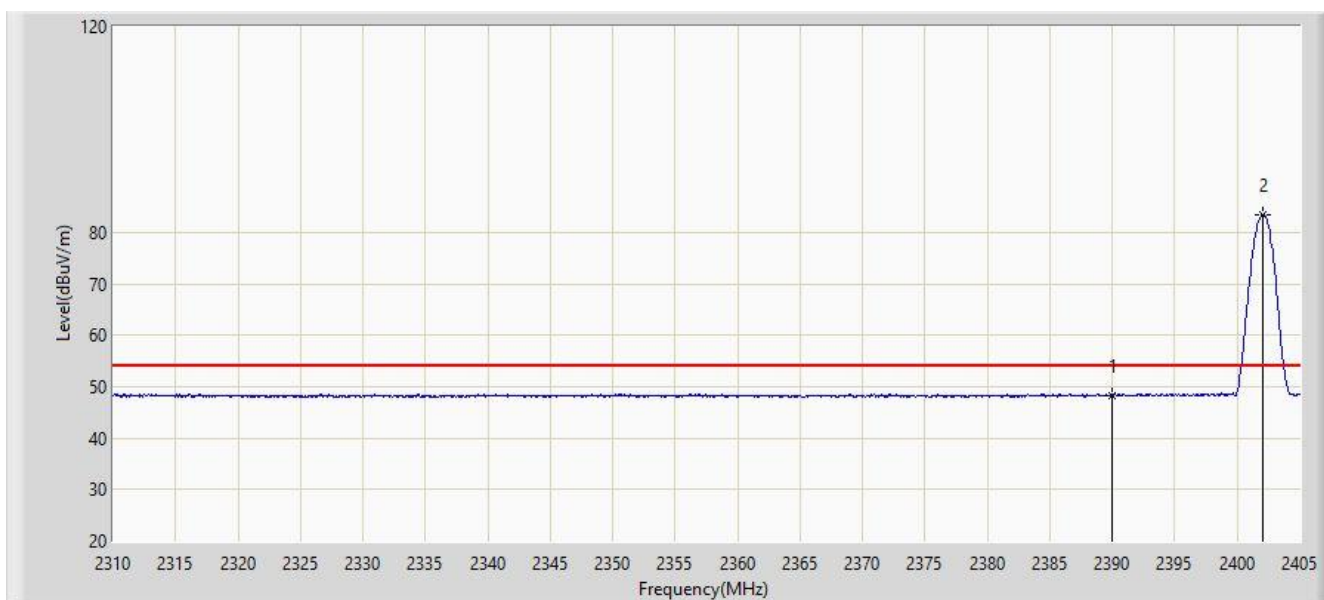


No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Margin (dB)	Limit (dBuV/m)	Factor (dB)	Type
1			2372.083	61.623	28.919	-12.377	74.000	32.704	PK
2			2390.000	59.595	26.883	-14.405	74.000	32.712	PK
3		*	2401.913	84.162	51.418	N/A	N/A	32.744	PK

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

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

Site: AC1	Time: 2020/07/16 - 20:10
Limit: FCC_Part15.209_RE(3m)	Engineer: Buter Shi
Probe: AC1_BBHA9120D_1-18GHz	Polarity: Vertical
EUT: Bluetooth Module	Power: By USB
Test Mode: Transmit by Bluetooth-LE at Channel 2402MHz	

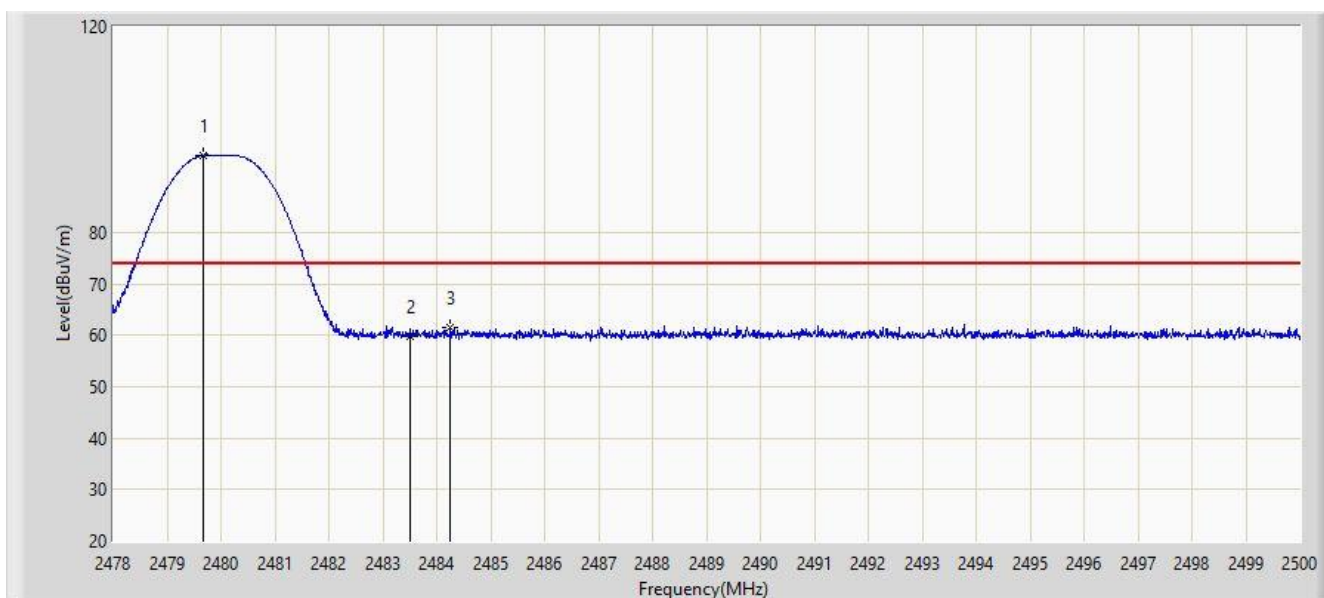


No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Margin (dB)	Limit (dBuV/m)	Factor (dB)	Type
1			2390.000	48.354	15.642	-5.646	54.000	32.712	AV
2		*	2402.008	83.367	50.623	N/A	N/A	32.744	AV

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

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

Site: AC1	Time: 2020/07/16 - 20:16
Limit: FCC_Part15.209_RE(3m)	Engineer: Buter Shi
Probe: AC1_BBHA9120D_1-18GHz	Polarity: Horizontal
EUT: Bluetooth Module	Power: By USB
Test Mode: Transmit by Bluetooth-LE at Channel 2480MHz	

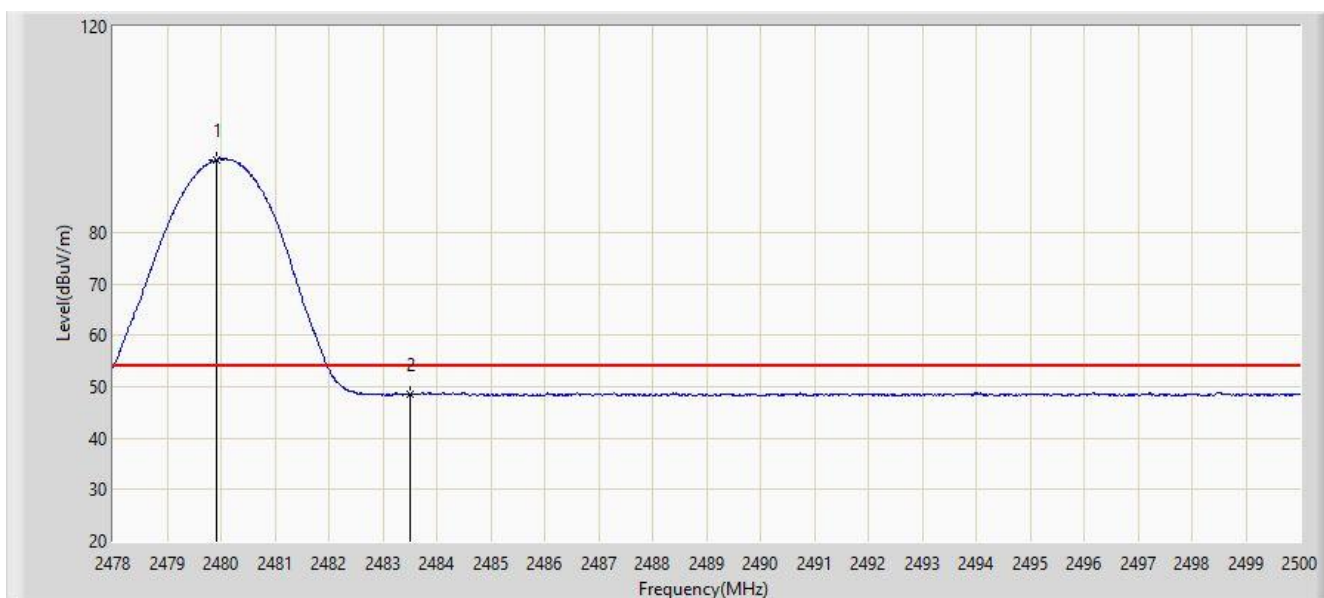


No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Margin (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		*	2479.672	95.013	62.329	N/A	N/A	32.684	PK
2			2483.500	59.669	27.019	-14.331	74.000	32.651	PK
3			2484.248	61.460	28.816	-12.540	74.000	32.644	PK

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

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

Site: AC1	Time: 2020/07/16 - 20:18
Limit: FCC_Part15.209_RE(3m)	Engineer: Buter Shi
Probe: AC1_BBHA9120D_1-18GHz	Polarity: Horizontal
EUT: Bluetooth Module	Power: By USB
Test Mode: Transmit by Bluetooth-LE at Channel 2480MHz	

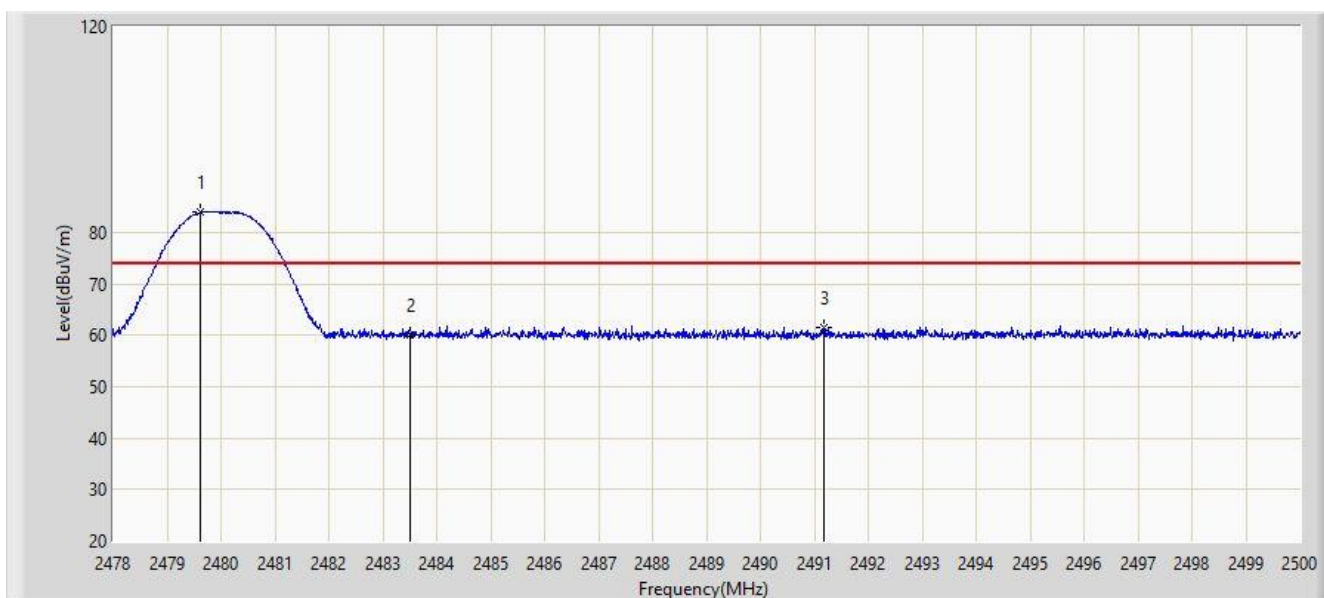


No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Margin (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		*	2479.925	94.082	61.401	N/A	N/A	32.682	AV
2			2483.500	48.430	15.780	-5.570	54.000	32.651	AV

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

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

Site: AC1	Time: 2020/07/16 - 20:20
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: AC1_BBHA9120D_1-18GHz	Polarity: Vertical
EUT: Bluetooth Module	Power: By USB
Test Mode: Transmit by Bluetooth-LE at Channel 2480MHz	

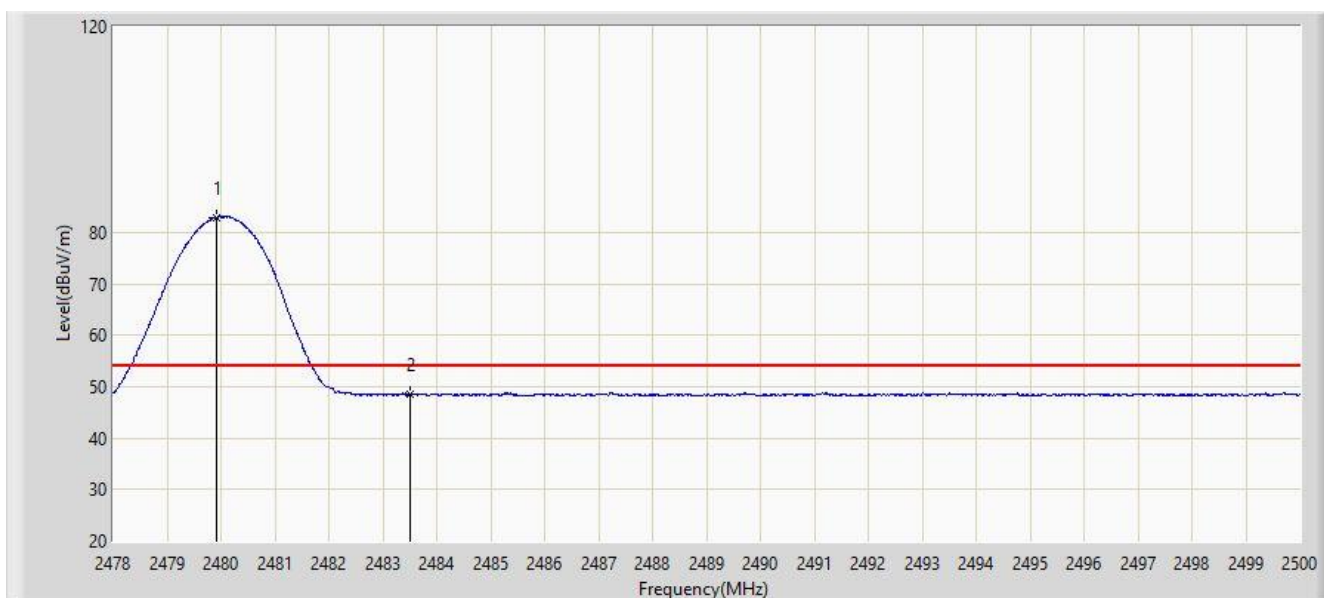


No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Margin (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		*	2479.617	83.851	51.167	N/A	N/A	32.684	PK
2			2483.500	60.139	27.489	-13.861	74.000	32.651	PK
3			2491.167	61.523	28.907	-12.477	74.000	32.617	PK

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

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

Site: AC1	Time: 2020/07/16 - 20:21
Limit: FCC_Part15.209_RE(3m)	Engineer: Buter Shi
Probe: AC1_BBHA9120D_1-18GHz	Polarity: Vertical
EUT: Bluetooth Module	Power: By USB
Test Mode: Transmit by Bluetooth-LE at Channel 2480MHz	



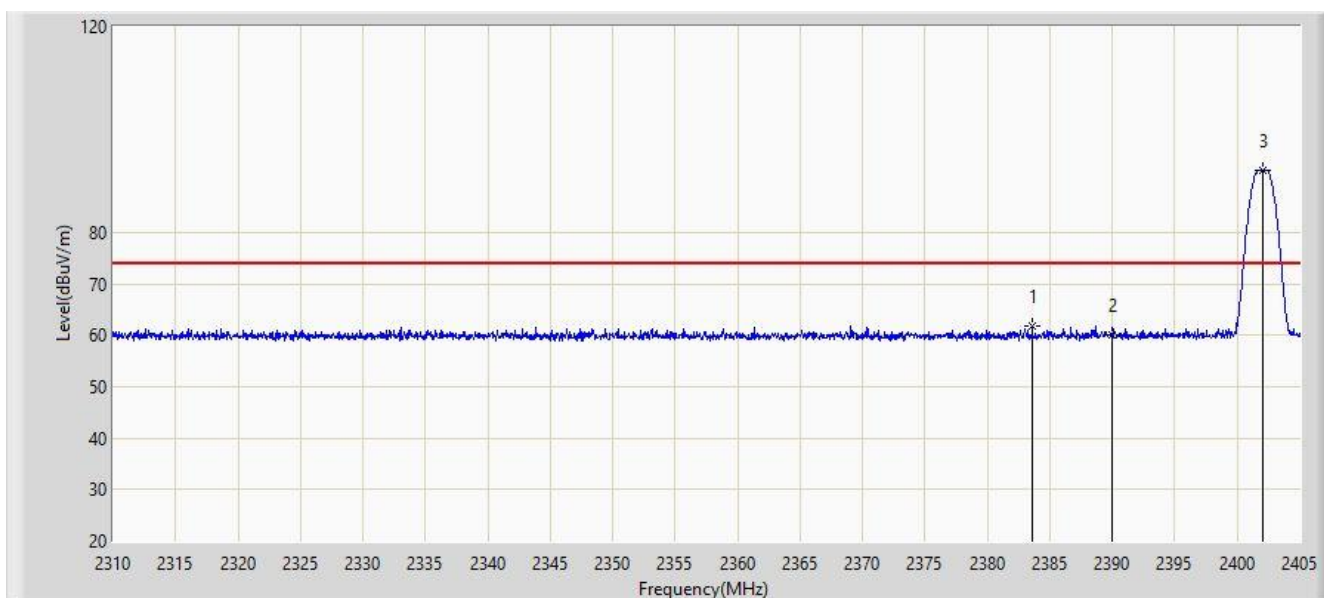
No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Margin (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		*	2479.925	82.914	50.233	N/A	N/A	32.682	AV
2			2483.500	48.464	15.814	-5.536	54.000	32.651	AV

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

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

For HSBT3008-EA configured with External PCB Antenna:

Site: AC1	Time: 2020/07/16 - 20:28
Limit: FCC_Part15.209_RE(3m)	Engineer: Buter Shi
Probe: AC1_BBHA9120D_1-18GHz	Polarity: Horizontal
EUT: Bluetooth Module	Power: By USB
Test Mode: Transmit by Bluetooth-LE at Channel 2402MHz	

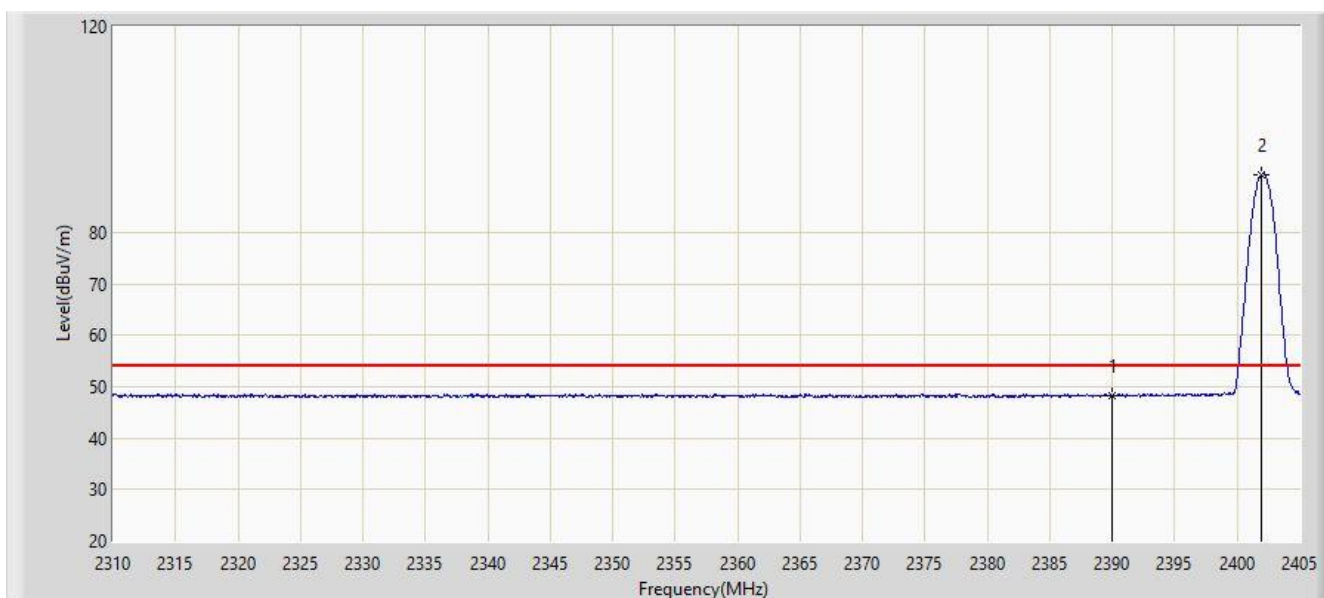


No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Margin (dB)	Limit (dBuV/m)	Factor (dB)	Type
1			2383.577	61.921	29.239	-12.079	74.000	32.682	PK
2			2390.000	60.135	27.423	-13.865	74.000	32.712	PK
3		*	2402.008	92.022	59.278	N/A	N/A	32.744	PK

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

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

Site: AC1	Time: 2020/07/16 - 20:30
Limit: FCC_Part15.209_RE(3m)	Engineer: Buter Shi
Probe: AC1_BBHA9120D_1-18GHz	Polarity: Horizontal
EUT: Bluetooth Module	Power: By USB
Test Mode: Transmit by Bluetooth-LE at Channel 2402MHz	

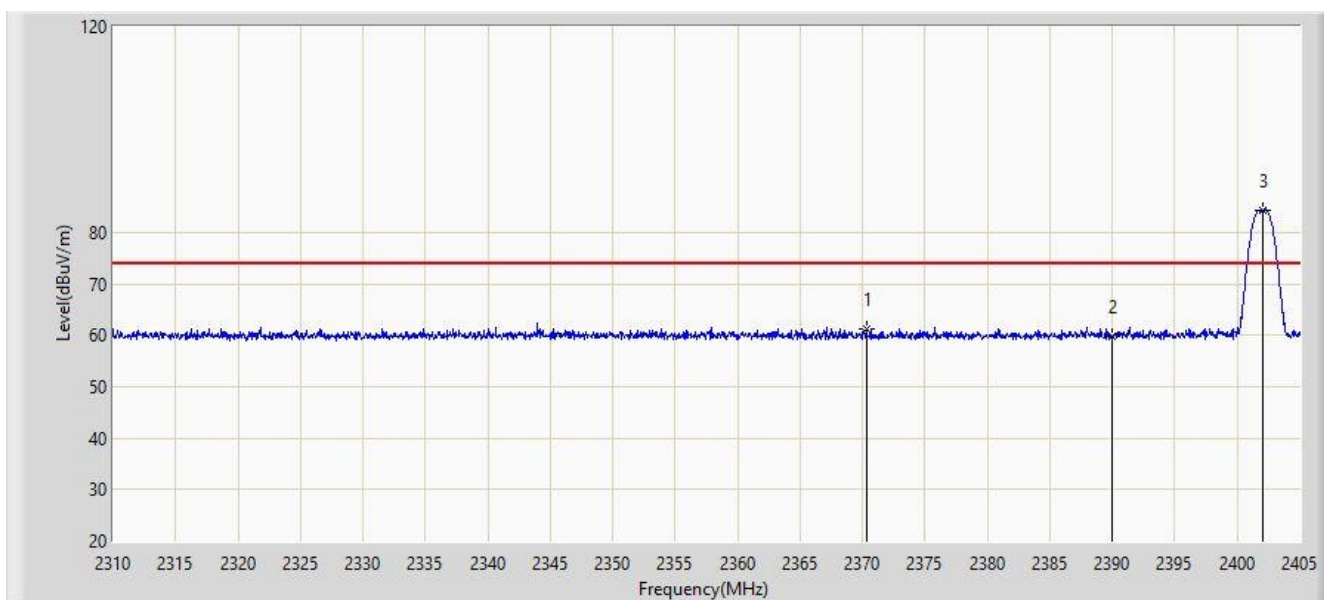


No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Margin (dB)	Limit (dBuV/m)	Factor (dB)	Type
1			2390.000	48.260	15.548	-5.740	54.000	32.712	AV
2		*	2401.960	91.302	58.558	N/A	N/A	32.744	AV

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

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

Site: AC1	Time: 2020/07/16 - 20:32
Limit: FCC_Part15.209_RE(3m)	Engineer: Buter Shi
Probe: AC1_BBHA9120D_1-18GHz	Polarity: Vertical
EUT: Bluetooth Module	Power: By USB
Test Mode: Transmit by Bluetooth-LE at Channel 2402MHz	

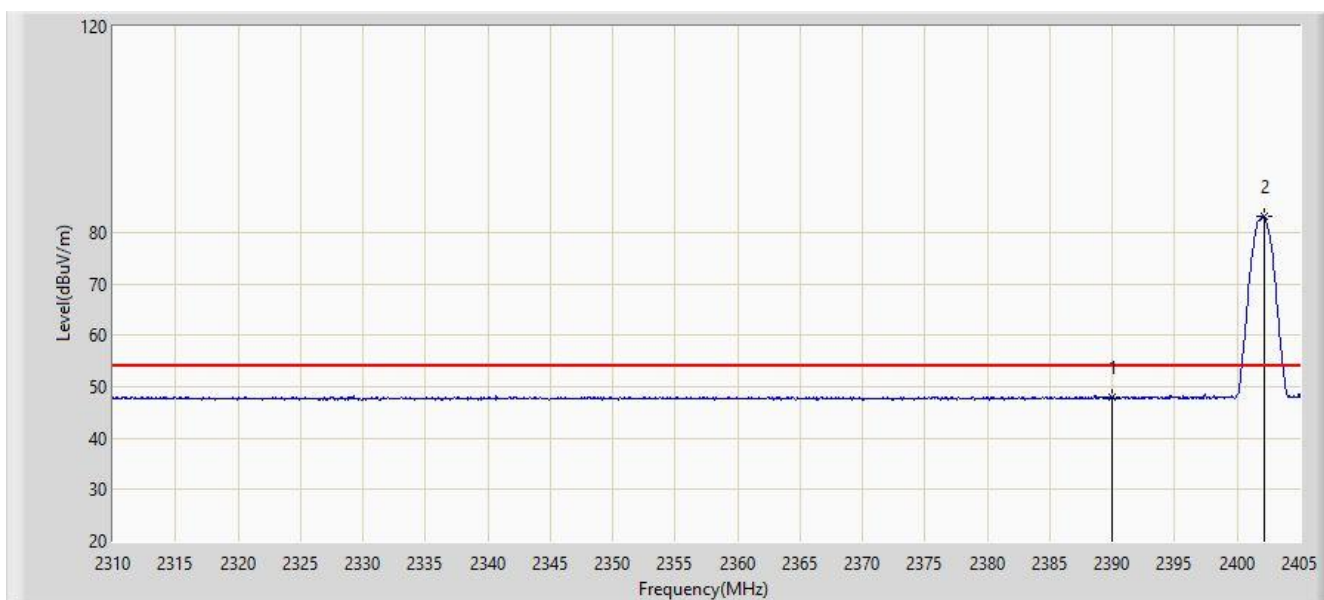


No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Margin (dB)	Limit (dBuV/m)	Factor (dB)	Type
1			2370.278	61.298	28.585	-12.702	74.000	32.713	PK
2			2390.000	59.848	27.136	-14.152	74.000	32.712	PK
3		*	2402.008	84.188	51.444	N/A	N/A	32.744	PK

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

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

Site: AC1	Time: 2020/07/16 - 20:35
Limit: FCC_Part15.209_RE(3m)	Engineer: Buter Shi
Probe: AC1_BBHA9120D_1-18GHz	Polarity: Vertical
EUT: Bluetooth Module	Power: By USB
Test Mode: Transmit by Bluetooth-LE at Channel 2402MHz	

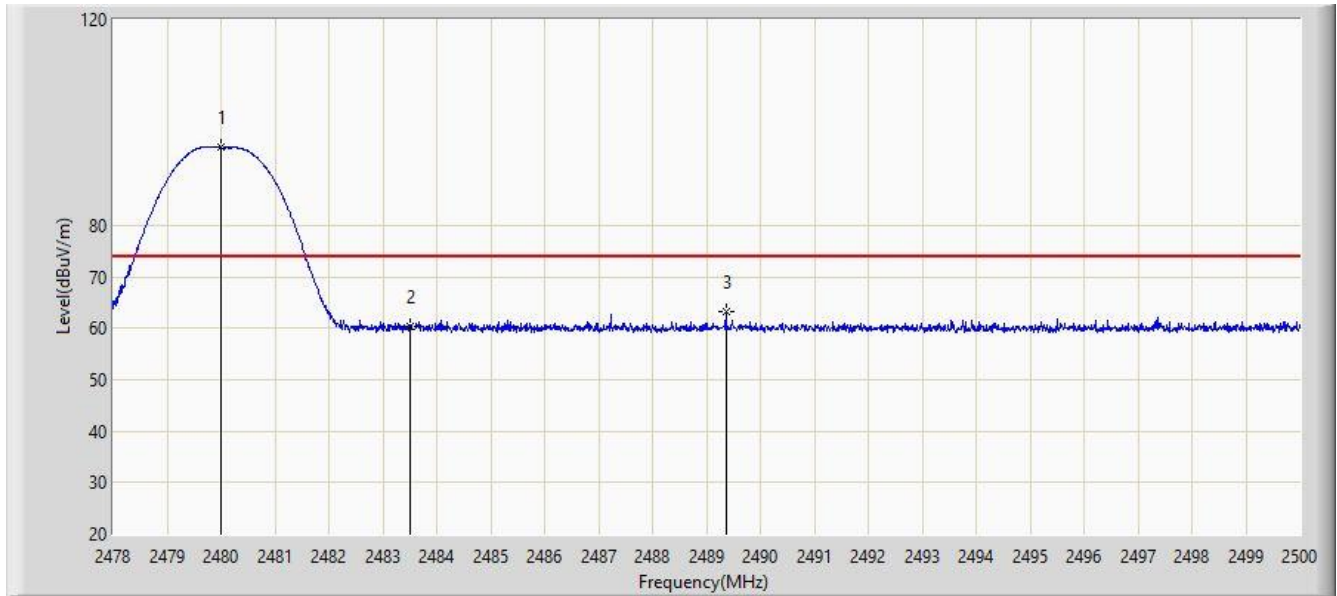


No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Margin (dB)	Limit (dBuV/m)	Factor (dB)	Type
1			2390.000	47.851	15.139	-6.149	54.000	32.712	AV
2		*	2402.150	83.035	50.291	N/A	N/A	32.744	AV

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

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

Site: AC1	Time: 2020/07/16 - 20:37
Limit: FCC_Part15.209_RE(3m)	Engineer: Buter Shi
Probe: AC1_BBHA9120D_1-18GHz	Polarity: Horizontal
EUT: Bluetooth Module	Power: By USB
Test Mode: Transmit by Bluetooth-LE at Channel 2480MHz	

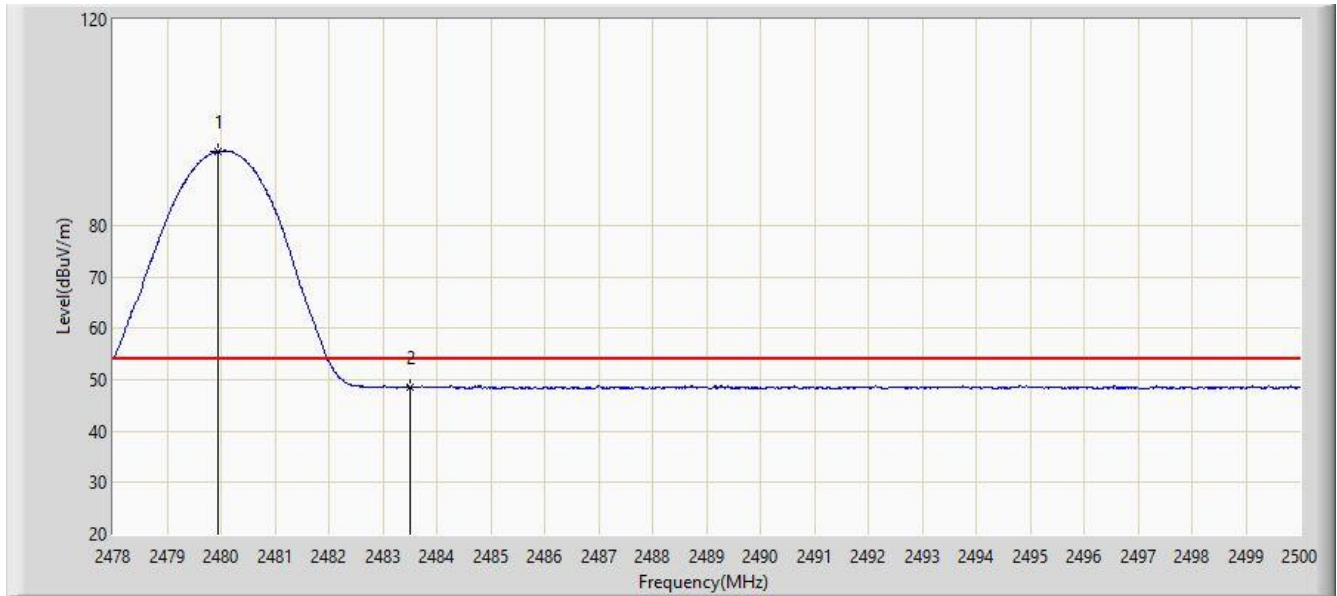


No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Margin (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		*	2480.002	95.084	62.403	N/A	N/A	32.681	PK
2			2483.500	60.217	27.567	-13.783	74.000	32.651	PK
3			2489.363	63.090	30.474	-10.910	74.000	32.615	PK

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

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

Site: AC1	Time: 2020/07/16 - 20:40
Limit: FCC_Part15.209_RE(3m)	Engineer: Buter Shi
Probe: AC1_BBHA9120D_1-18GHz	Polarity: Horizontal
EUT: Bluetooth Module	Power: By USB
Test Mode: Transmit by Bluetooth-LE at Channel 2480MHz	

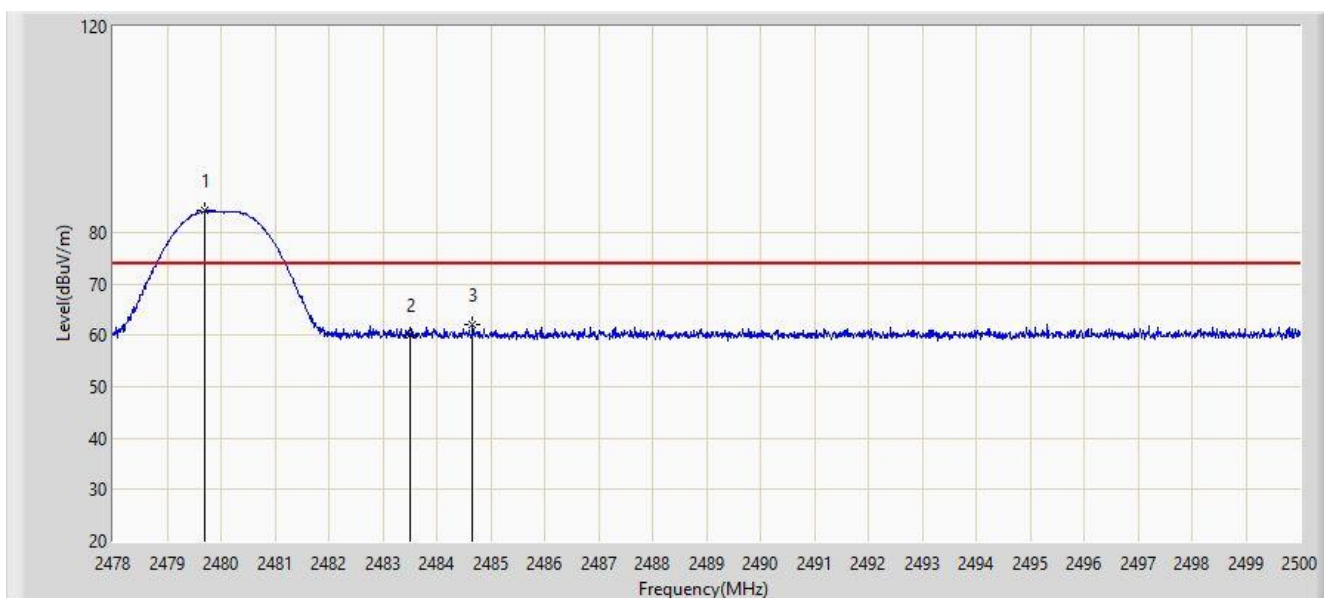


No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Margin (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		*	2479.947	94.385	61.704	N/A	N/A	32.682	AV
2			2483.500	48.602	15.952	-5.398	54.000	32.651	AV

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

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

Site: AC1	Time: 2020/07/16 - 20:42
Limit: FCC_Part15.209_RE(3m)	Engineer: Buter Shi
Probe: AC1_BBHA9120D_1-18GHz	Polarity: Vertical
EUT: Bluetooth Module	Power: By USB
Test Mode: Transmit by Bluetooth-LE at Channel 2480MHz	

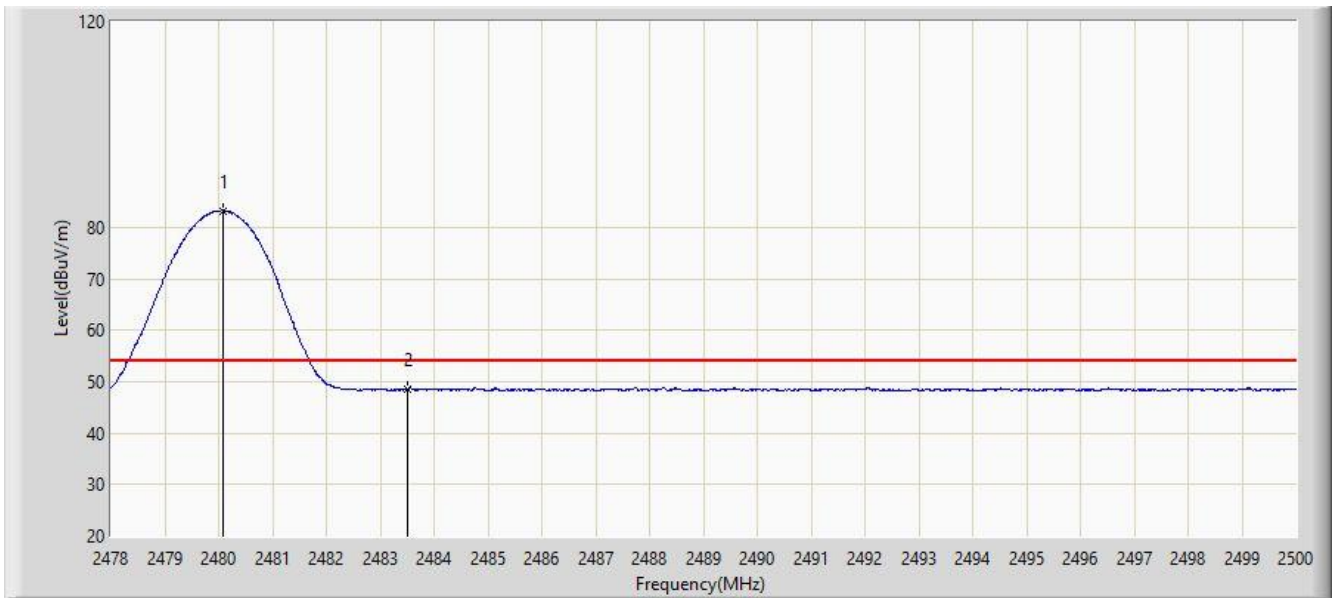


No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Margin (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		*	2479.705	84.160	51.477	N/A	N/A	32.683	PK
2			2483.500	60.199	27.549	-13.801	74.000	32.651	PK
3			2484.666	62.003	29.363	-11.997	74.000	32.640	PK

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

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

Site: AC1	Time: 2020/07/16 - 20:44
Limit: FCC_Part15.209_RE(3m)	Engineer: Messiah Li
Probe: AC1_BBHA9120D_1-18GHz	Polarity: Vertical
EUT: Bluetooth Module	Power: By USB
Test Mode: Transmit by Bluetooth-LE at Channel 2480MHz	



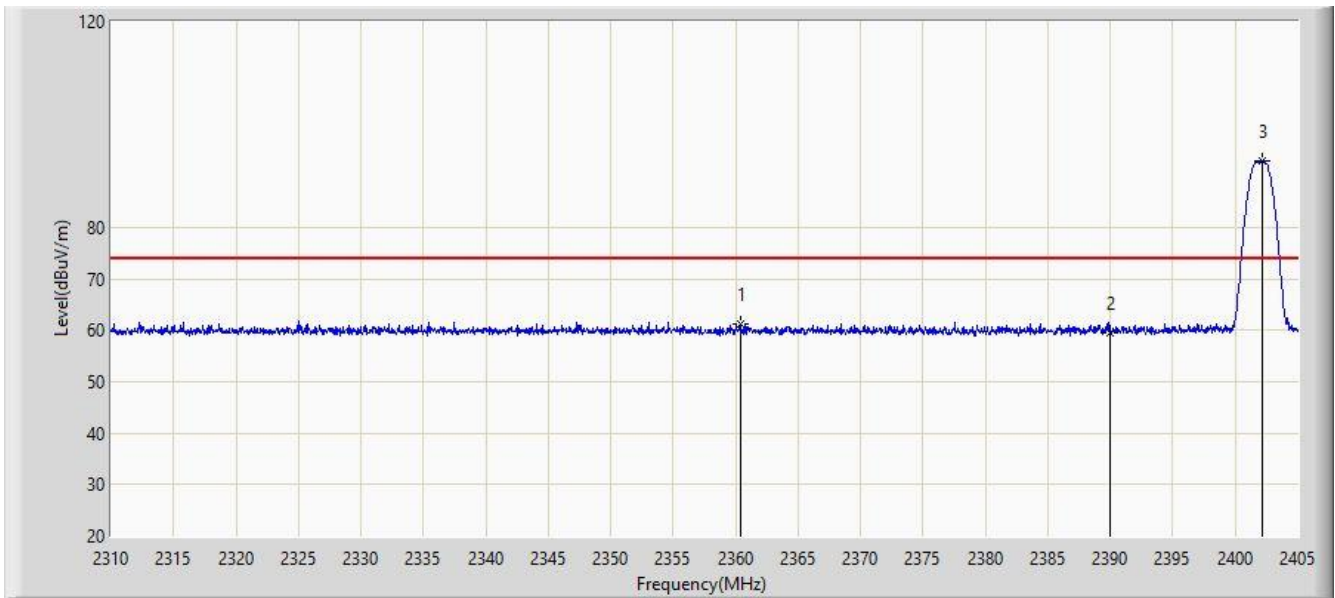
No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Margin (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		*	2480.079	83.243	50.563	N/A	N/A	32.680	AV
2			2483.500	48.454	15.804	-5.546	54.000	32.651	AV

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

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

For HSBT3008-EA configured with External Dipole Antenna

Site: AC1	Time: 2020/07/16 - 20:46
Limit: FCC_Part15.209_RE(3m)	Engineer: Buter Shi
Probe: AC1_BBHA9120D_1-18GHz	Polarity: Horizontal
EUT: Bluetooth Module	Power: By USB
Test Mode: Transmit by Bluetooth-LE at Channel 2402MHz	

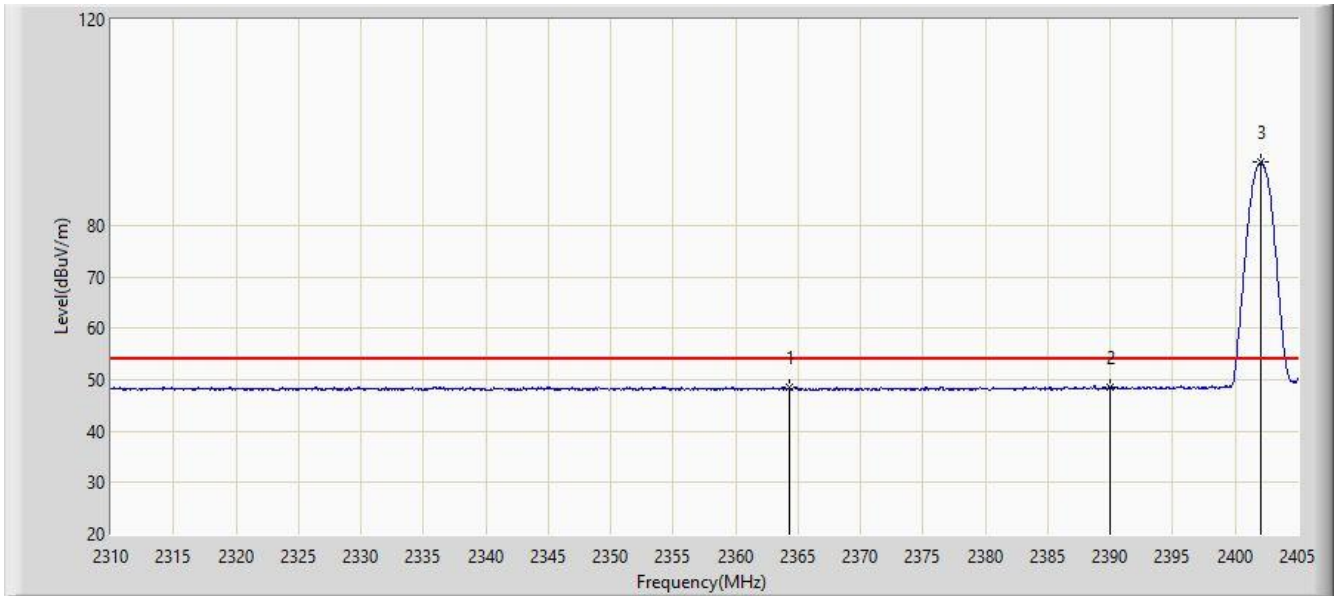


No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Margin (dB)	Limit (dBuV/m)	Factor (dB)	Type
1			2360.397	61.352	28.590	-12.648	74.000	32.762	PK
2			2390.000	59.358	26.646	-14.642	74.000	32.712	PK
3		*	2402.103	92.837	60.093	N/A	N/A	32.744	PK

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

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

Site: AC1	Time: 2020/07/16 - 20:50
Limit: FCC_Part15.209_RE(3m)	Engineer: Buter Shi
Probe: AC1_BBHA9120D_1-18GHz	Polarity: Horizontal
EUT: Bluetooth Module	Power: By USB
Test Mode: Transmit by Bluetooth-LE at Channel 2402MHz	

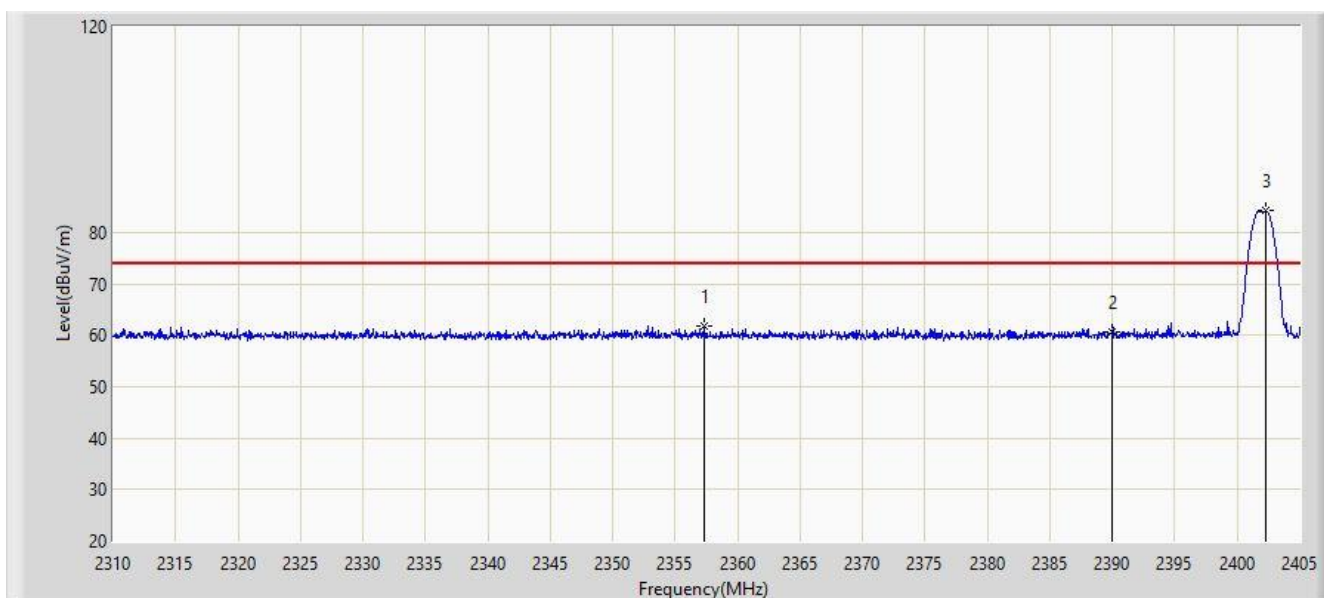


No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Margin (dB)	Limit (dBuV/m)	Factor (dB)	Type
1			2364.245	48.459	15.714	-5.541	54.000	32.745	AV
2			2390.000	48.526	15.814	-5.474	54.000	32.712	AV
3		*	2402.055	92.281	59.537	N/A	N/A	32.744	AV

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

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

Site: AC1	Time: 2020/07/16 - 20:52
Limit: FCC_Part15.209_RE(3m)	Engineer: Buter Shi
Probe: AC1_BBHA9120D_1-18GHz	Polarity: Vertical
EUT: Bluetooth Module	Power: By USB
Test Mode: Transmit by Bluetooth-LE at Channel 2402MHz	

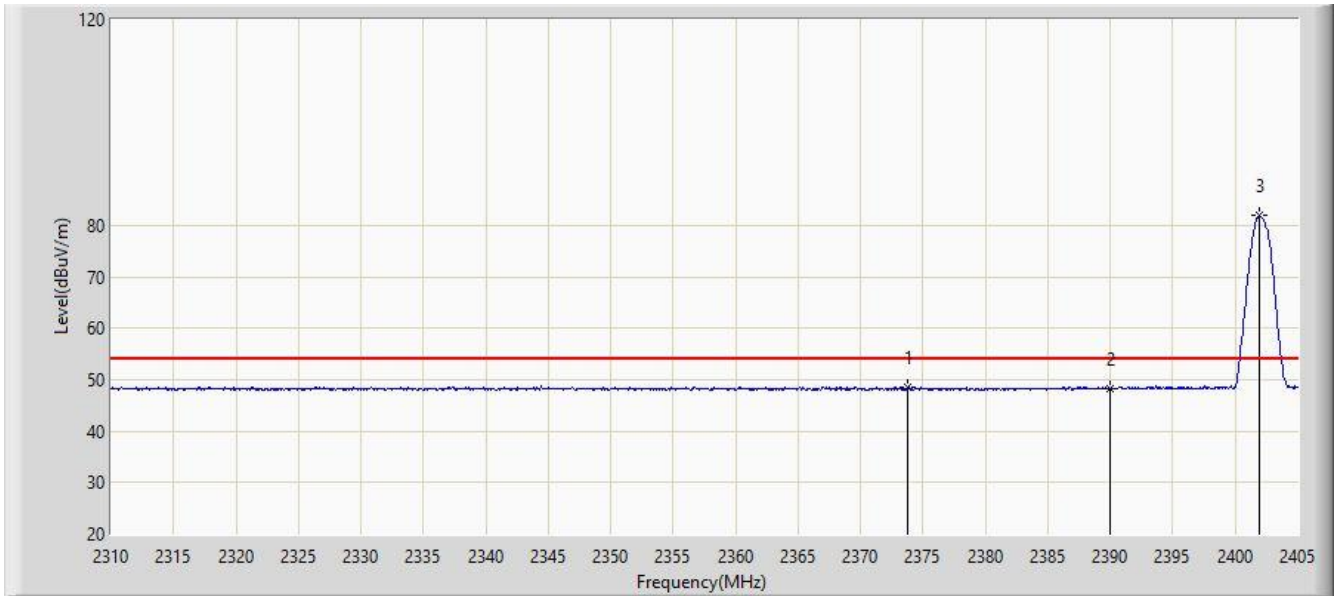


No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Margin (dB)	Limit (dBuV/m)	Factor (dB)	Type
1			2357.310	61.798	29.029	-12.202	74.000	32.769	PK
2			2390.000	60.615	27.903	-13.385	74.000	32.712	PK
3		*	2402.245	84.174	51.431	N/A	N/A	32.743	PK

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

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

Site: AC1	Time: 2020/07/16 - 20:55
Limit: FCC_Part15.209_RE(3m)	Engineer: Buter Shi
Probe: AC1_BBHA9120D_1-18GHz	Polarity: Vertical
EUT: Bluetooth Module	Power: By USB
Test Mode: Transmit by Bluetooth-LE at Channel 2402MHz	

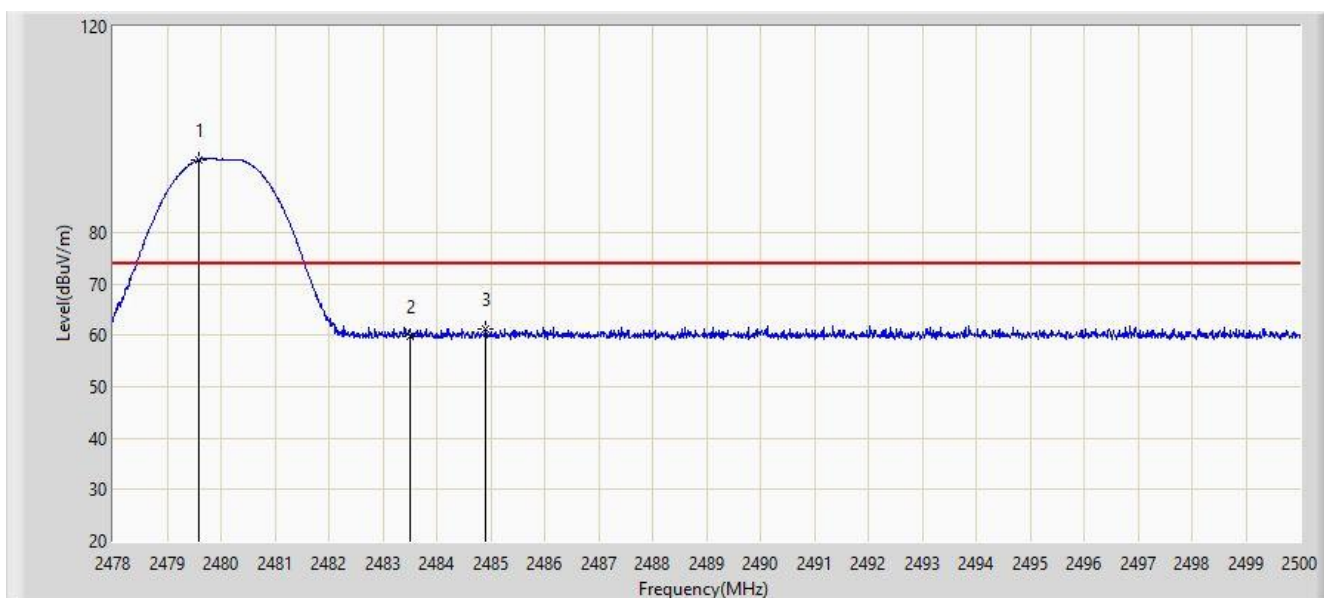


No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Margin (dB)	Limit (dBuV/m)	Factor (dB)	Type
1			2373.792	48.426	15.731	-5.574	54.000	32.694	AV
2			2390.000	48.315	15.603	-5.685	54.000	32.712	AV
3		*	2401.865	81.830	49.086	N/A	N/A	32.744	AV

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

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

Site: AC1	Time: 2020/07/16 - 20:58
Limit: FCC_Part15.209_RE(3m)	Engineer: Buter Shi
Probe: AC1_BBHA9120D_1-18GHz	Polarity: Horizontal
EUT: Bluetooth Module	Power: By USB
Test Mode: Transmit by Bluetooth-LE at Channel 2480MHz	

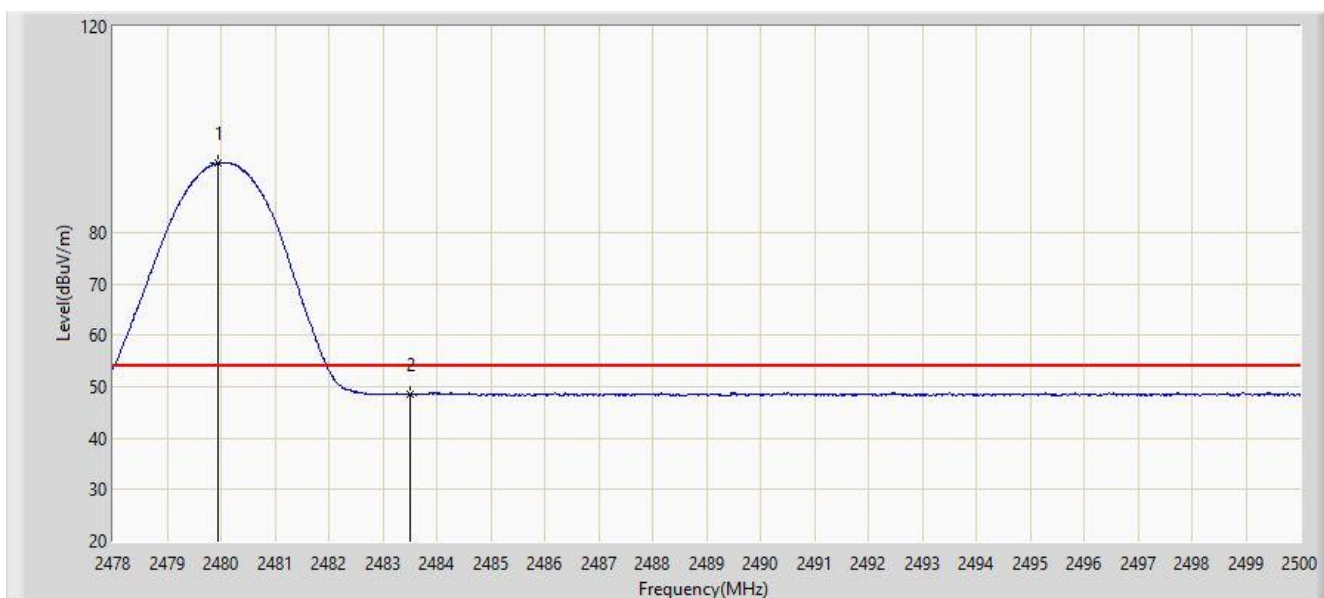


No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Margin (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		*	2479.595	94.135	61.451	N/A	N/A	32.684	PK
2			2483.500	59.912	27.262	-14.088	74.000	32.651	PK
3			2484.897	61.297	28.659	-12.703	74.000	32.639	PK

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

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

Site: AC1	Time: 2020/07/16 - 21:00
Limit: FCC_Part15.209_RE(3m)	Engineer: Buter Shi
Probe: AC1_BBHA9120D_1-18GHz	Polarity: Horizontal
EUT: Bluetooth Module	Power: By USB
Test Mode: Transmit by Bluetooth-LE at Channel 2480MHz	

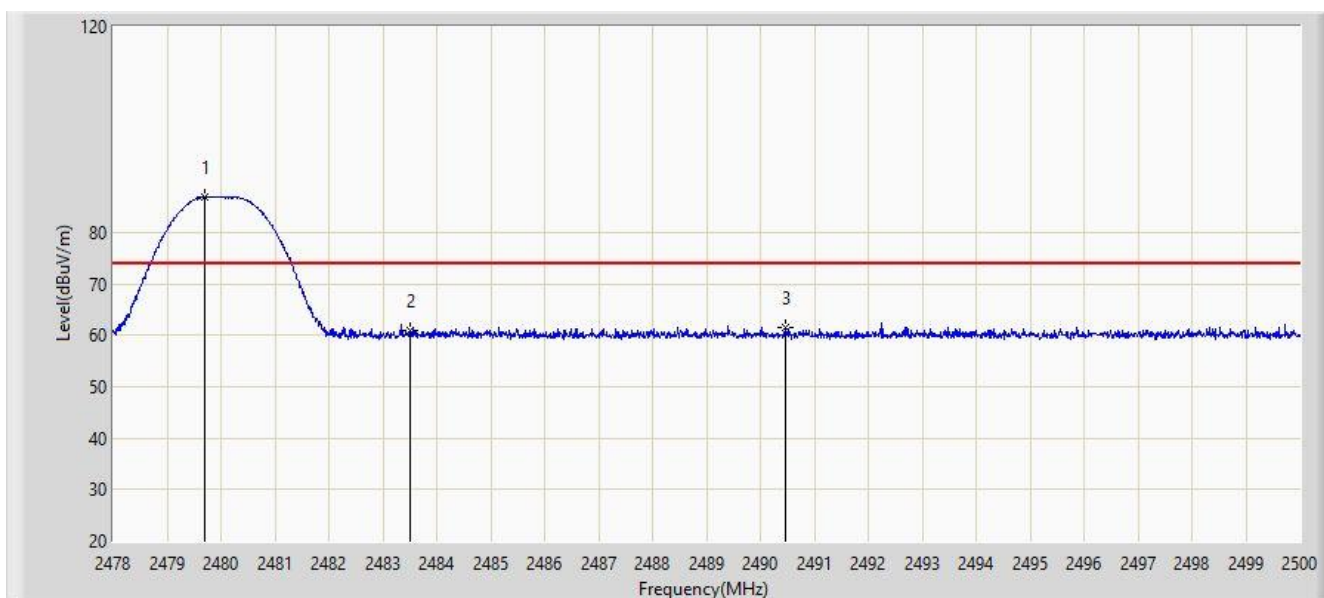


No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Margin (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		*	2479.947	93.458	60.777	N/A	N/A	32.682	AV
2			2483.500	48.473	15.823	-5.527	54.000	32.651	AV

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

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

Site: AC1	Time: 2020/07/16 - 21:02
Limit: FCC_Part15.209_RE(3m)	Engineer: Buter Shi
Probe: AC1_BBHA9120D_1-18GHz	Polarity: Vertical
EUT: Bluetooth Module	Power: By USB
Test Mode: Transmit by Bluetooth-LE at Channel 2480MHz	

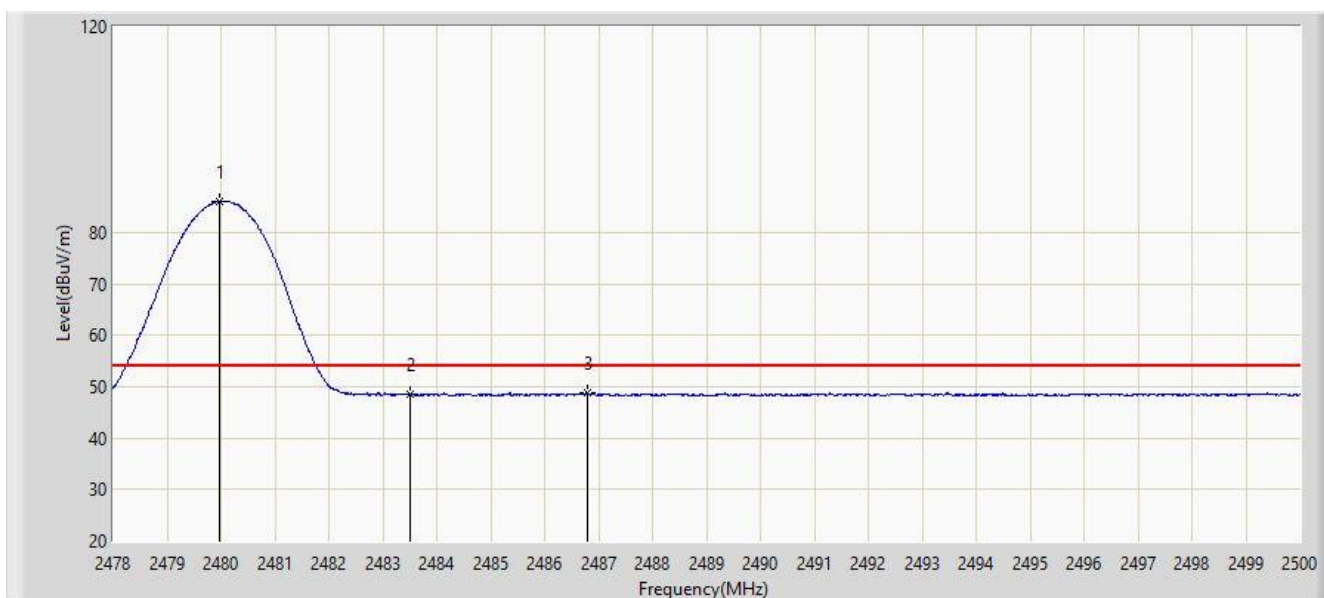


No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Margin (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		*	2479.694	86.966	54.283	N/A	N/A	32.683	PK
2			2483.500	60.819	28.169	-13.181	74.000	32.651	PK
3			2490.474	61.535	28.919	-12.465	74.000	32.616	PK

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

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

Site: AC1	Time: 2020/07/16 - 21:04
Limit: FCC_Part15.209_RE(3m)	Engineer: Buter Shi
Probe: AC1_BBHA9120D_1-18GHz	Polarity: Vertical
EUT: Bluetooth Module	Power: By USB
Test Mode: Transmit by Bluetooth-LE at Channel 2480MHz	



No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Margin (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		*	2479.969	86.014	53.333	N/A	N/A	32.681	AV
2			2483.500	48.441	15.791	-5.559	54.000	32.651	AV
3			2486.800	48.751	16.129	-5.249	54.000	32.622	AV

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

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

7.8. AC Conducted Emissions Measurement

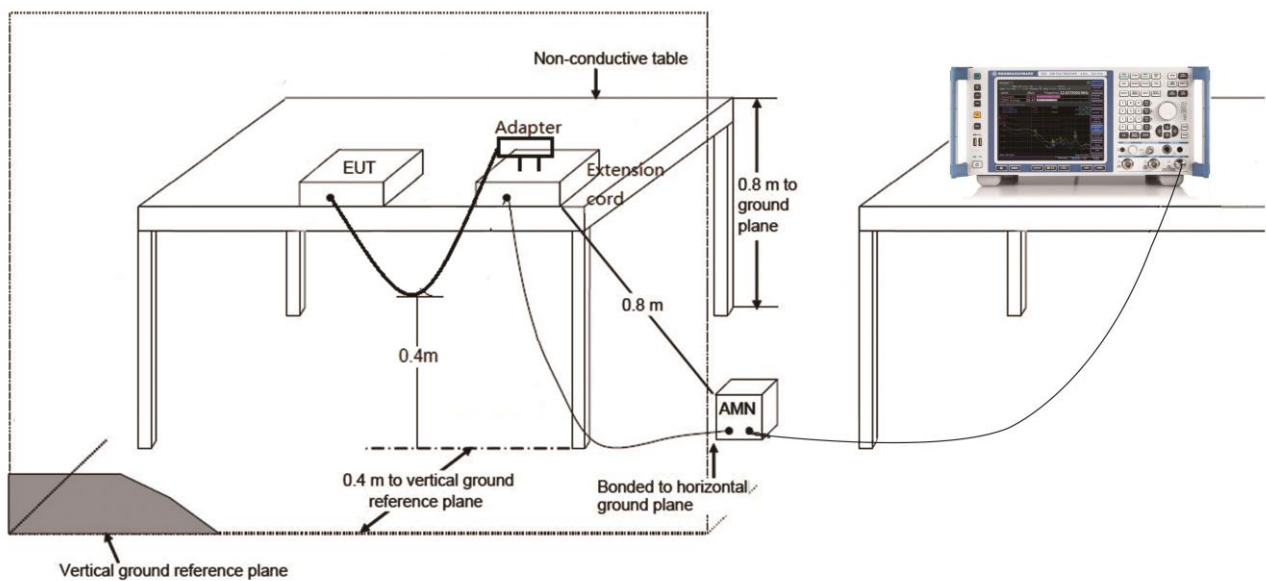
7.8.1. Test Limit

FCC Part 15.207 / RSS-Gen - Limits		
Frequency (MHz)	QP (dB μ V)	Average (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.

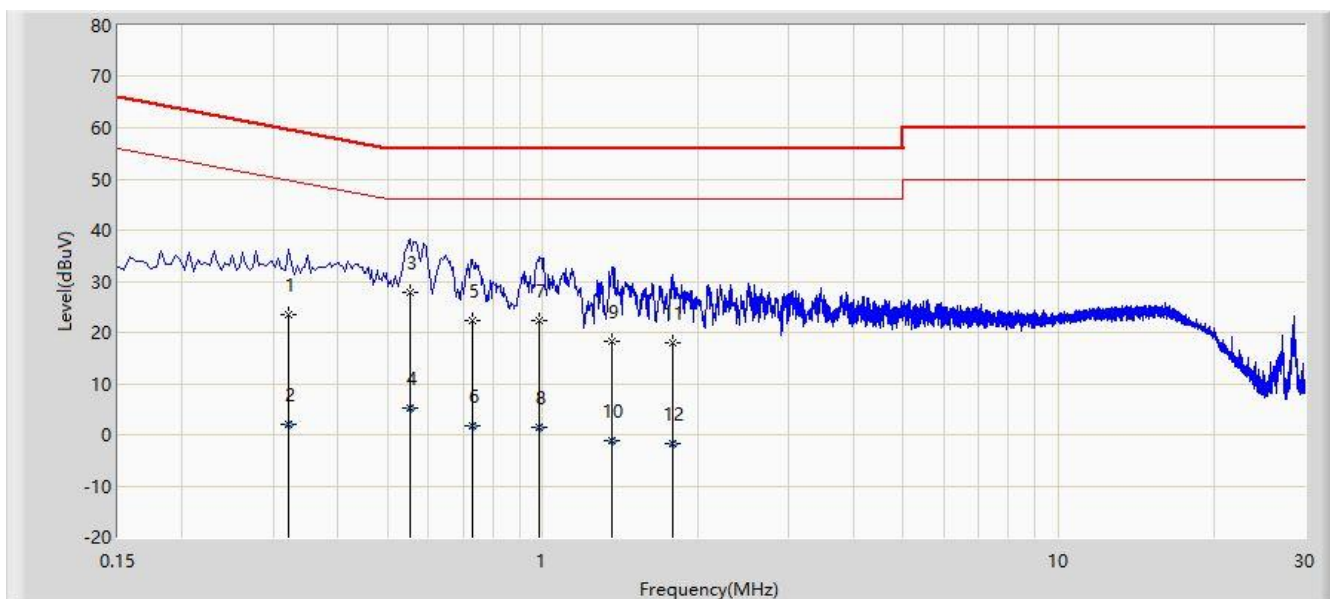
Note 2: The limit decreases linearly with the logarithm of the frequency in the range 0.15MHz to 0.5MHz.

7.8.2. Test Setup



7.8.3.Test Result

Site: SR2	Time: 2020/07/22 - 18:35
Limit: FCC_Part15.207_CE_AC Power	Engineer: Hyde Yu
Probe: ENV216_101683_Filter On	Polarity: Line
EUT: Bluetooth Module	Power: AC 120V/60Hz
Worst Case Mode: Transmit by Bluetooth-LE at Channel 2480MHz, for HSBT3008-EA configured with External Dipole Antenna	

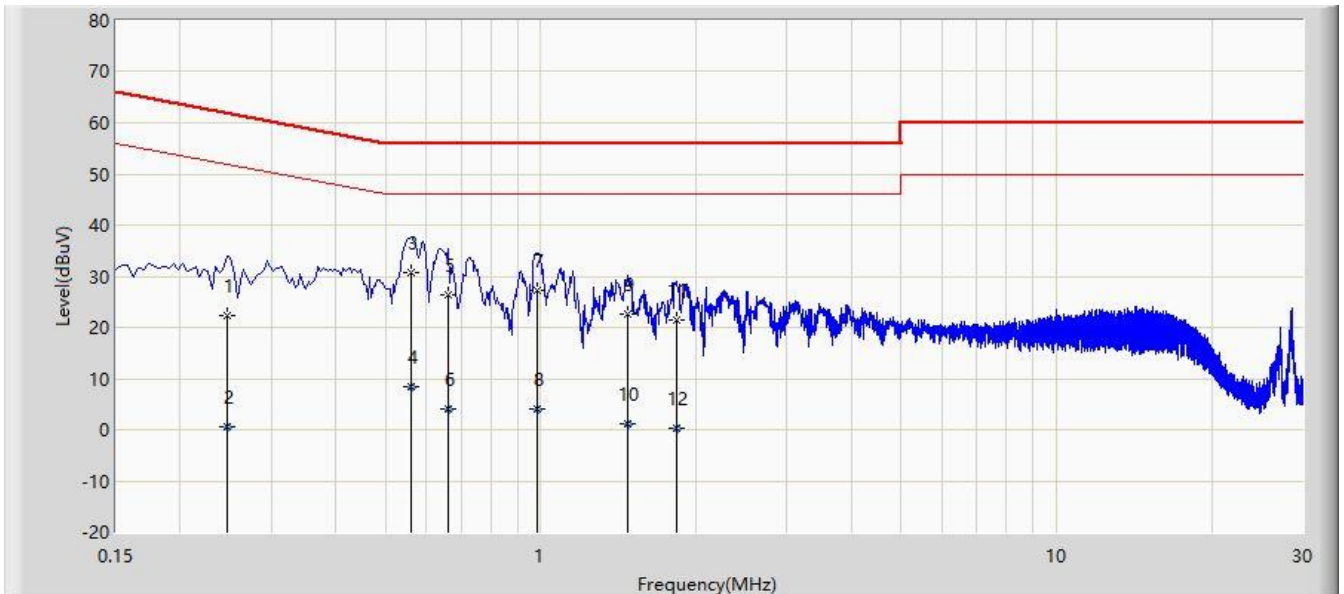


No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV)	Reading Level (dBuV)	Margin (dB)	Limit (dBuV)	Factor (dB)	Type
1			0.322	23.388	13.706	-36.268	59.655	9.682	QP
2			0.322	1.987	-7.695	-47.668	49.655	9.682	AV
3		*	0.554	27.807	18.058	-28.193	56.000	9.748	QP
4			0.554	5.291	-4.457	-40.709	46.000	9.748	AV
5			0.730	22.321	12.545	-33.679	56.000	9.776	QP
6			0.730	1.597	-8.178	-44.403	46.000	9.776	AV
7			0.986	22.236	12.418	-33.764	56.000	9.818	QP
8			0.986	1.317	-8.501	-44.683	46.000	9.818	AV
9			1.362	18.224	8.354	-37.776	56.000	9.870	QP
10			1.362	-1.134	-11.004	-47.134	46.000	9.870	AV
11			1.786	17.917	8.074	-38.083	56.000	9.844	QP
12			1.786	-1.640	-11.484	-47.640	46.000	9.844	AV

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

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

Site: SR2	Time: 2020/07/22 - 19:29
Limit: FCC_Part15.207_CE_AC Power	Engineer: Hyde Yu
Probe: ENV216_101683_Filter On	Polarity: Neutral
EUT: Bluetooth Module	Power: AC 120V/60Hz
Worst Case Mode: Transmit by Bluetooth-LE at Channel 2480MHz, for HSBT3008-EA configured with External Dipole Antenna	



No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV)	Reading Level (dBuV)	Margin (dB)	Limit (dBuV)	Factor (dB)	Type
1			0.246	22.413	12.780	-39.478	61.891	9.632	QP
2			0.246	0.684	-8.948	-51.207	51.891	9.632	AV
3		*	0.562	30.672	21.003	-25.328	56.000	9.670	QP
4			0.562	8.355	-1.315	-37.645	46.000	9.670	AV
5			0.662	26.251	16.580	-29.749	56.000	9.671	QP
6			0.662	4.035	-5.635	-41.965	46.000	9.671	AV
7			0.982	27.298	17.613	-28.702	56.000	9.684	QP
8			0.982	4.077	-5.608	-41.923	46.000	9.684	AV
9			1.478	22.493	12.753	-33.507	56.000	9.740	QP
10			1.478	1.211	-8.529	-44.789	46.000	9.740	AV
11			1.834	21.322	11.560	-34.678	56.000	9.762	QP
12			1.834	0.195	-9.567	-45.805	46.000	9.762	AV

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

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

8. CONCLUSION

The data collected relate only the item(s) tested and show that this device is in compliance with Part 15C of the FCC rules and RSS-247 of the ISED Rules.

The End

Appendix A - Test Setup Photograph

Refer to “2005RSU039-UT” file.

Appendix B - EUT Photograph

Refer to "2005RSU039-UE" file.