

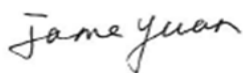
MEASUREMENT REPORT

FCC PART 15.247 / RSS-247 Bluetooth-LE

FCC ID: XCO-QCC3007
ISED: 7756A-QCC3007
APPLICANT: Hansong (Nanjing) Technology Ltd.

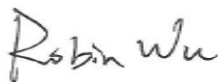
Application Type: Certification
Product: Bluetooth Module
Model No.: HSBT3007-IA, HSBT3007-EA
Brand Name: Platin
FCC Classification: Digital Transmission System (DTS)
FCC Rule Part(s): Part 15 Subpart C (Section 15.247)
ISED Rule(s): RSS-247 Issue 2, RSS-GEN Issue 5
Test Procedure(s): ANSI C63.10-2013
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
2005RSU040-U2	Rev. 01	Initial Report	08-20-2020	Valid

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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.:	HSBT3007-IA, HSBT3007-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: H208HSBT3007G00011 Product Configured with External PCB Antenna or External Dipole Antenna: H208HSBT3007G00001

Note 1: HSBT3007-IA is corresponded with the product configured with onboard PCB antenna, HSBT3007-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	--	--	--	--

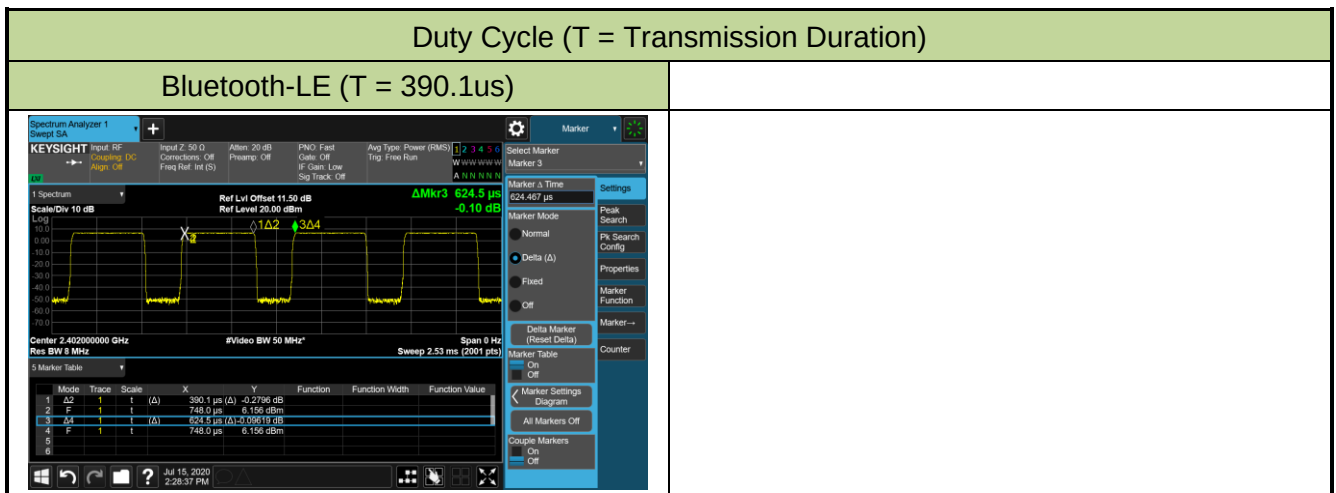
2.4. Test Mode

Test Mode	Mode 1: Transmit by Bluetooth-LE
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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	62.47%



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, 50Ω/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 Emissions - 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 Emissions - 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:

- 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.
- 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

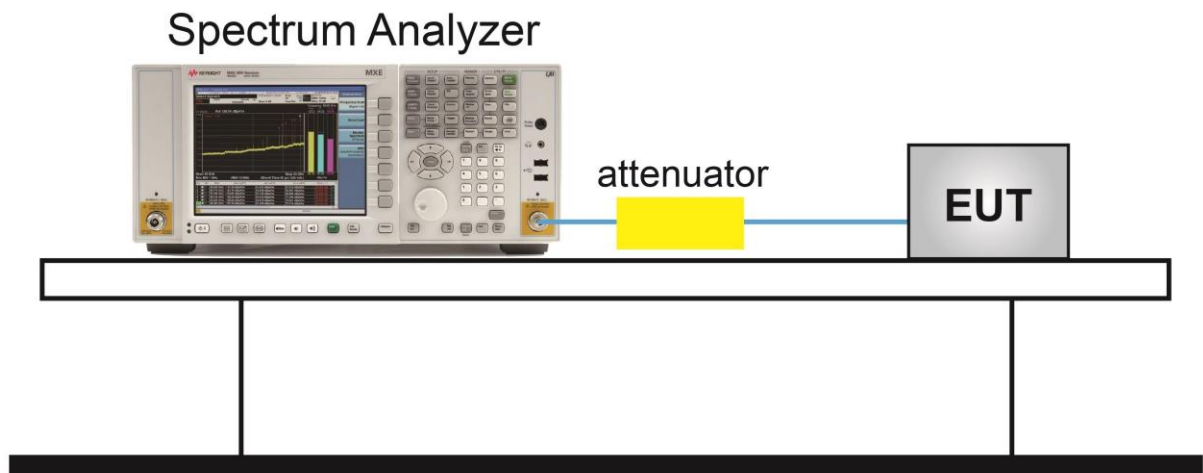
For 6dB bandwidth

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

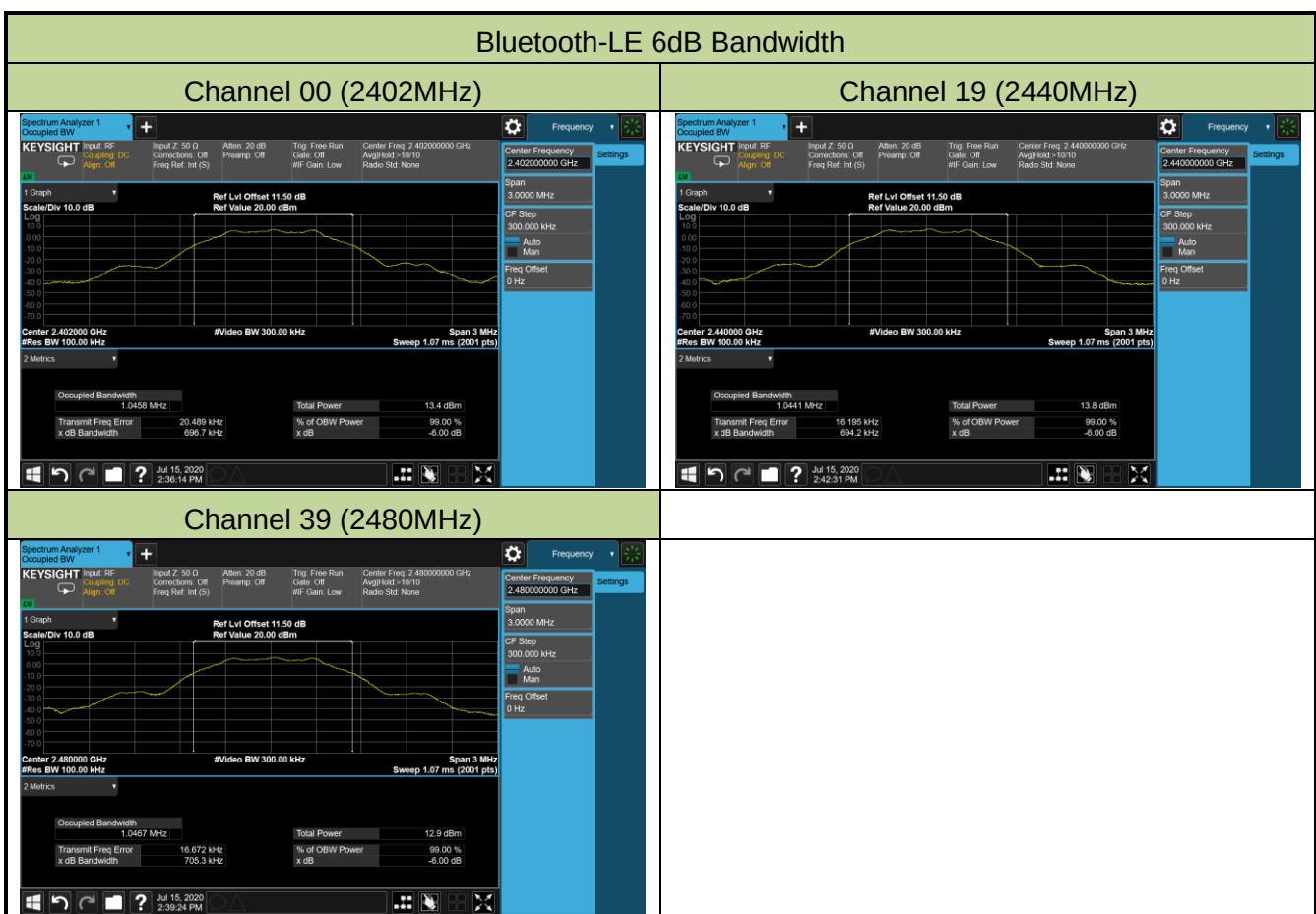
7.2.4. Test Setup



7.2.5.Test Result

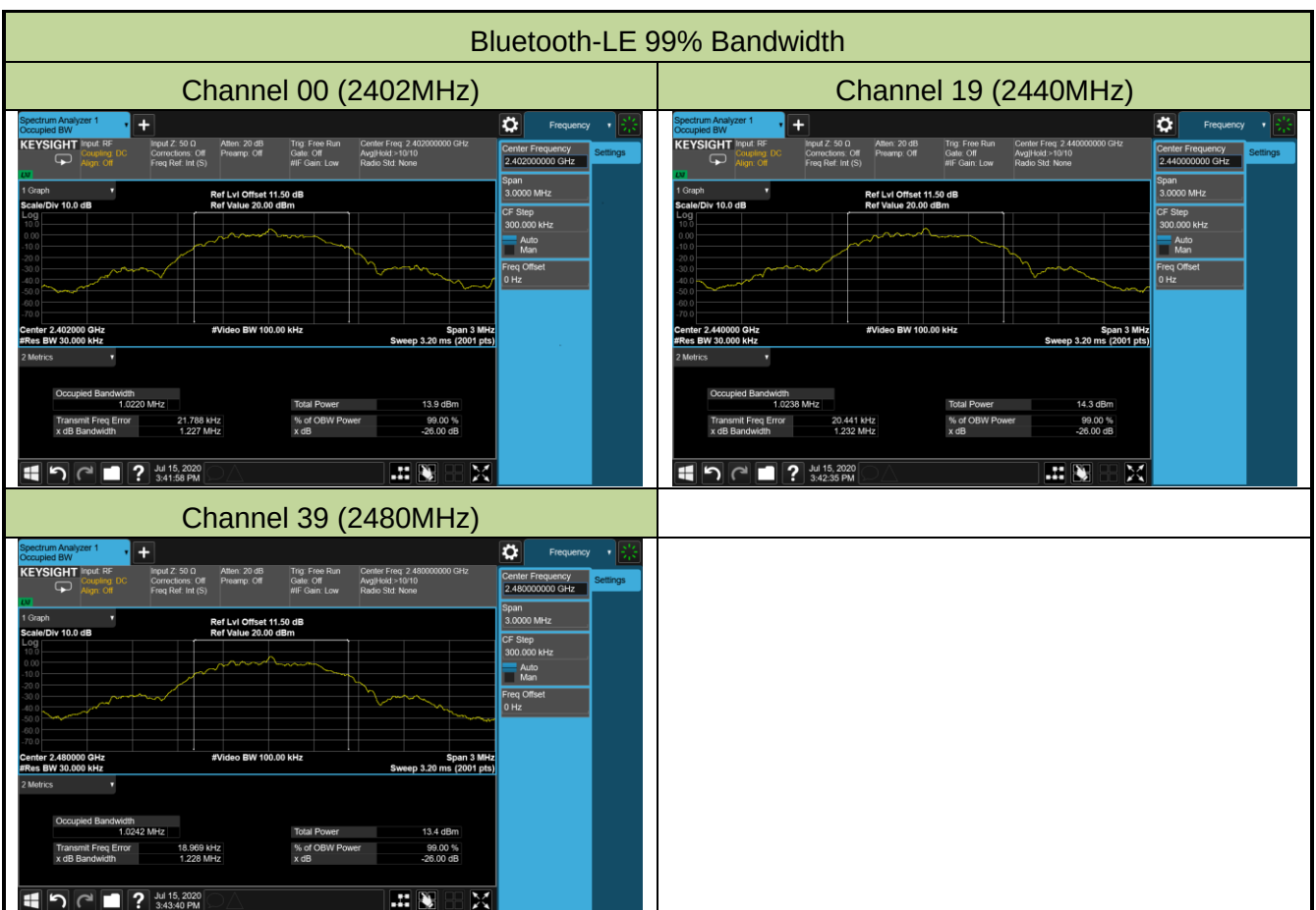
Product	Bluetooth Module	Test Engineer	Liz Yuan
Test Site	TR3	Test Date	2020/07/15

Test Mode	Data Rate (Mbps)	Channel No.	Frequency (MHz)	6dB Bandwidth (MHz)	Limit (MHz)	Result
Bluetooth-LE	1	00	2402	0.697	≥ 0.5	Pass
Bluetooth-LE	1	19	2440	0.694	≥ 0.5	Pass
Bluetooth-LE	1	39	2480	0.705	≥ 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	1.022
Bluetooth-LE	1	19	2440	1.024
Bluetooth-LE	1	39	2480	1.024



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

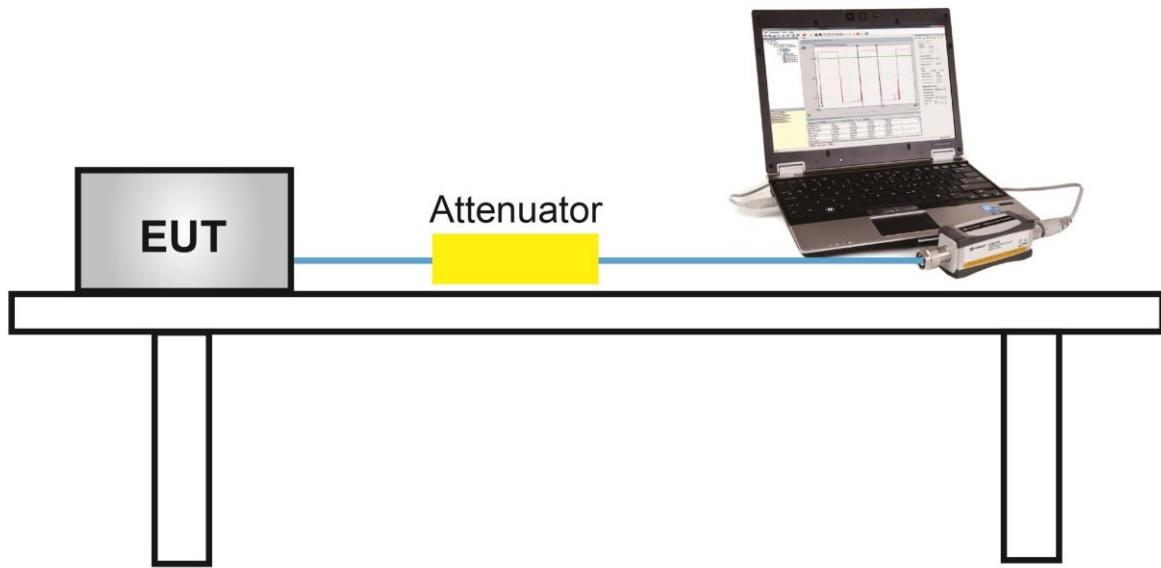
Method PKPM1 (Peak Power Measurement)

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	-4.63	≤ 30.00	-1.70	≤ 36.02	Pass
Bluetooth-LE	1	19	2440	-3.98	≤ 30.00	-1.05	≤ 36.02	Pass
Bluetooth-LE	1	39	2480	-4.67	≤ 30.00	-1.74	≤ 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	-4.92	≤ 30.00	-1.99	≤ 36.02	Pass
Bluetooth-LE	1	19	2440	-4.37	≤ 30.00	-1.44	≤ 36.02	Pass
Bluetooth-LE	1	39	2480	-4.99	≤ 30.00	-2.06	≤ 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.

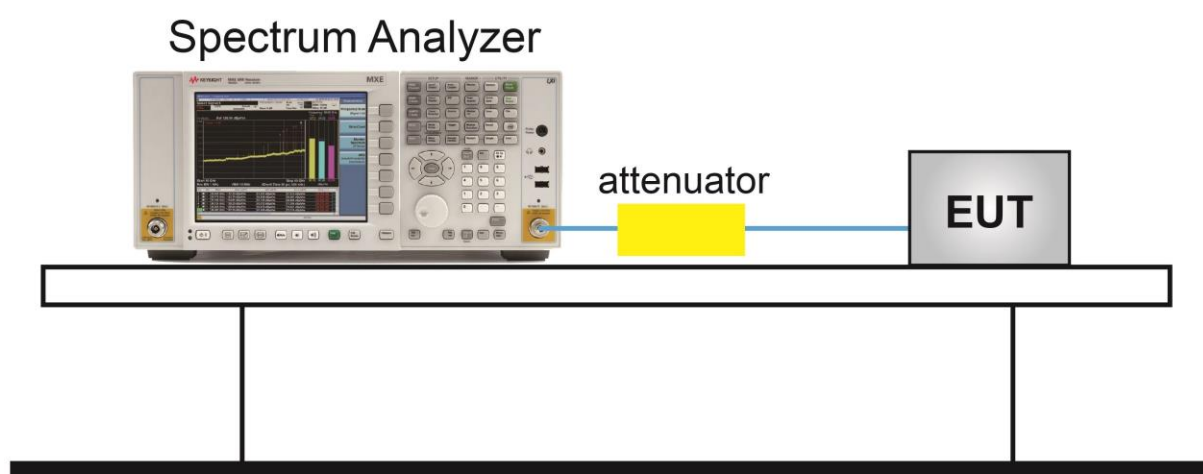
7.4.2. Test Procedure Used

ANSI C63.10 - 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

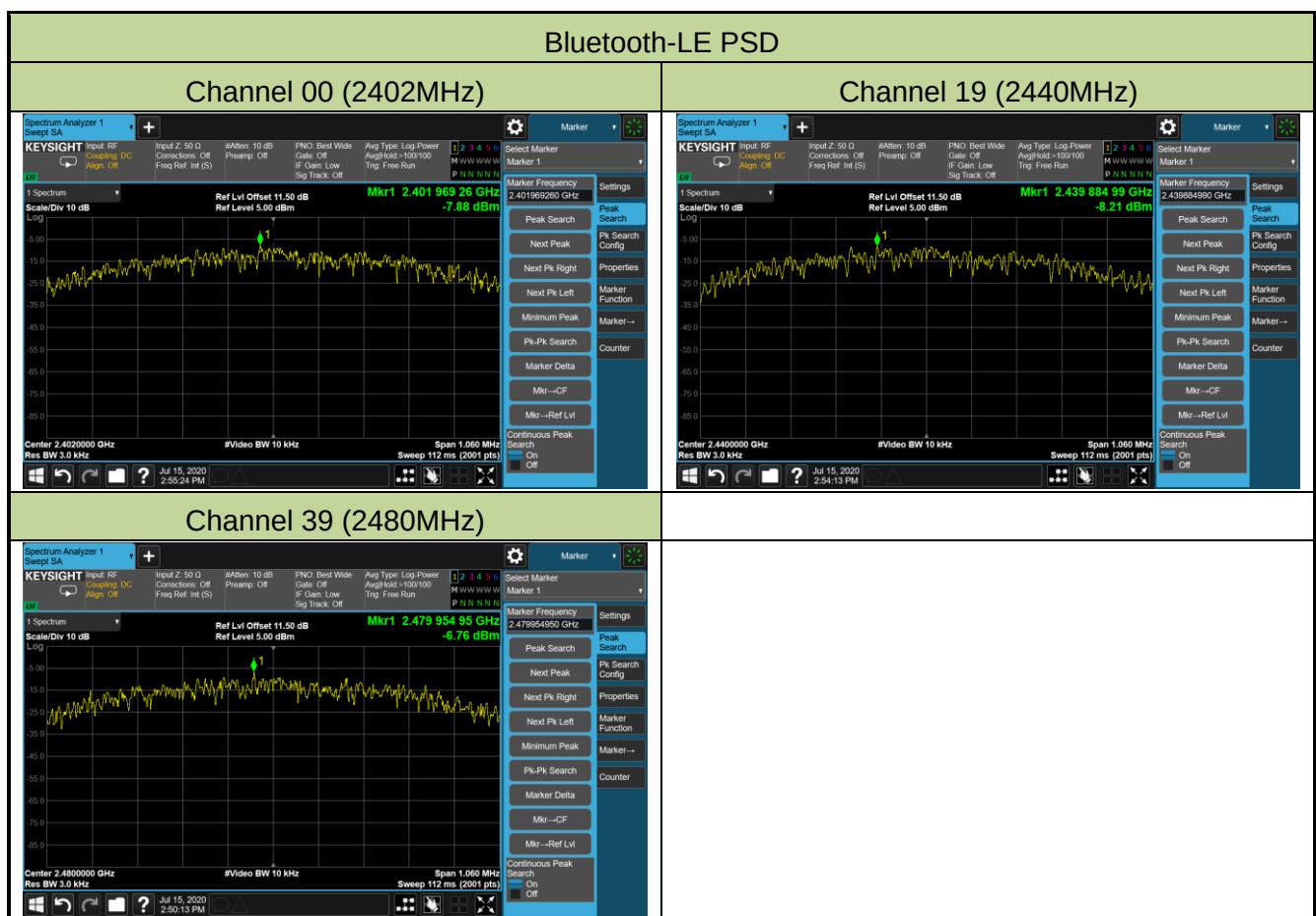
7.4.4. Test Setup



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	-7.88	≤ 8.00	Pass
Bluetooth-LE	1	19	2440	-8.21	≤ 8.00	Pass
Bluetooth-LE	1	39	2480	-6.76	≤ 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 - Section 11.11

7.5.3. Test Setting

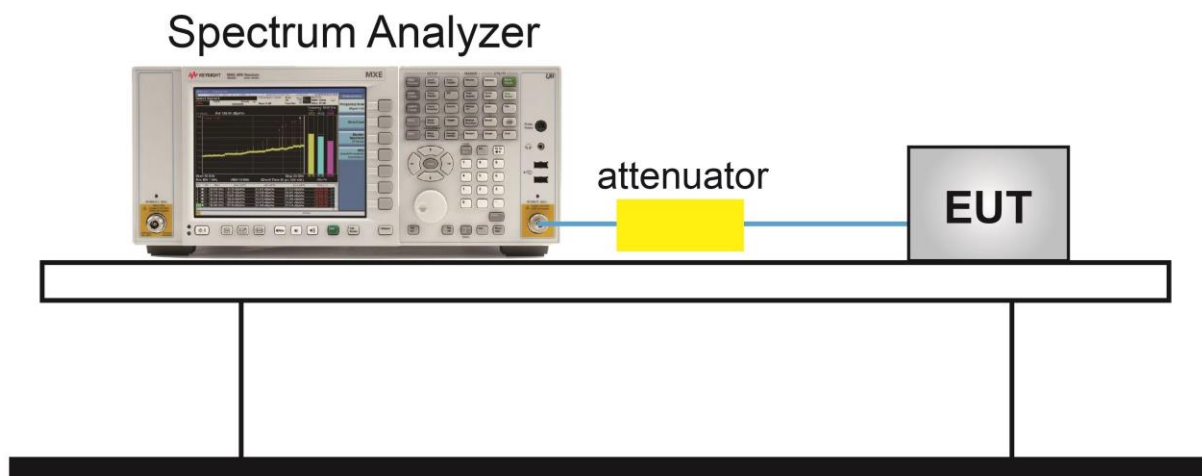
Reference level measurement

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

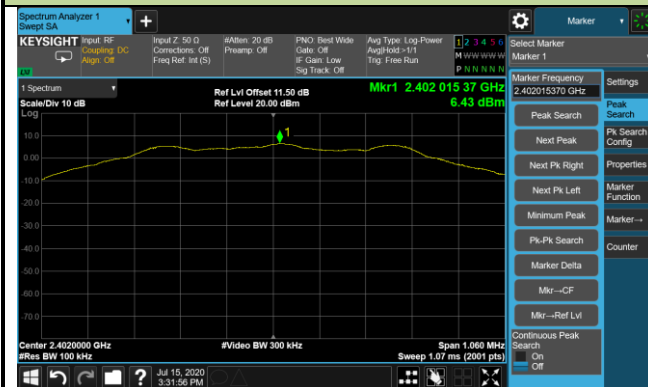
Product	Bluetooth Module	Test Engineer	Liz Yuan
Test Site	TR3	Test Date	2020/07/15 - 2020/07/22

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

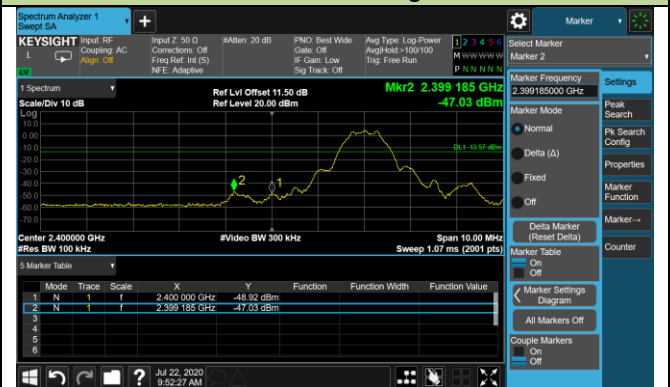
Bluetooth-LE Out-of-Band Emissions

Channel 00 (2402MHz)

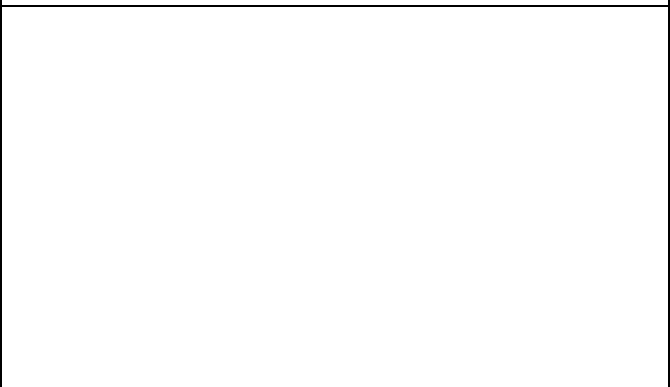
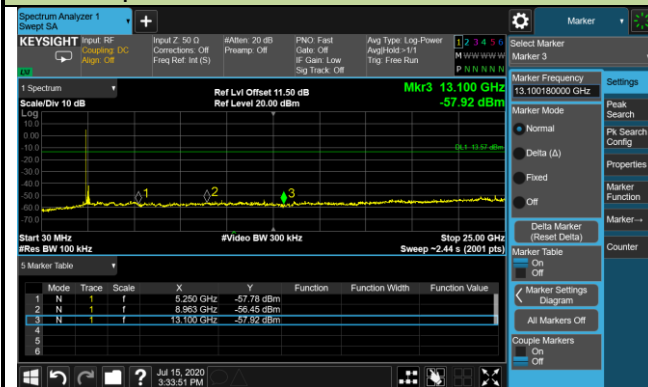
100kHz PSD reference Level



Low Band Edge

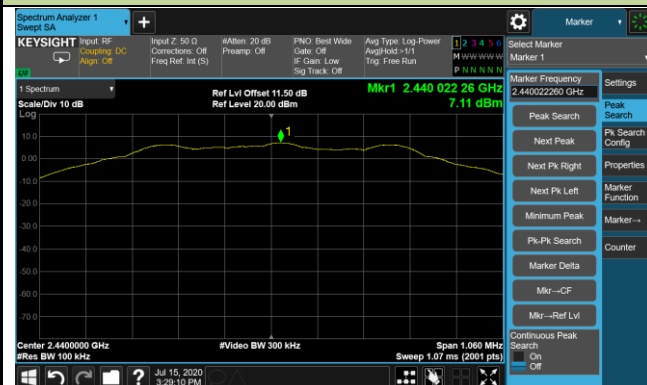


Spurious Emission 30MHz ~ 25GHz

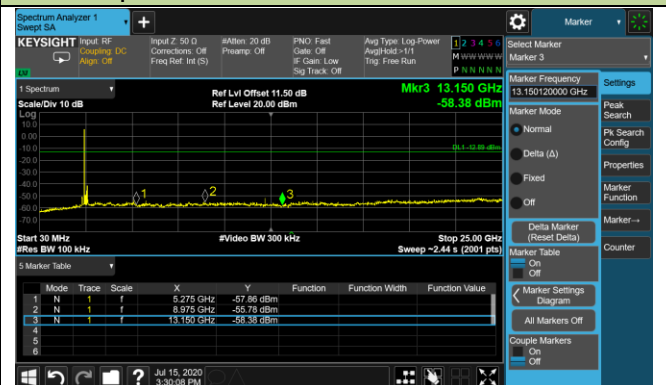


Channel 19 (2440MHz)

100kHz PSD reference Level

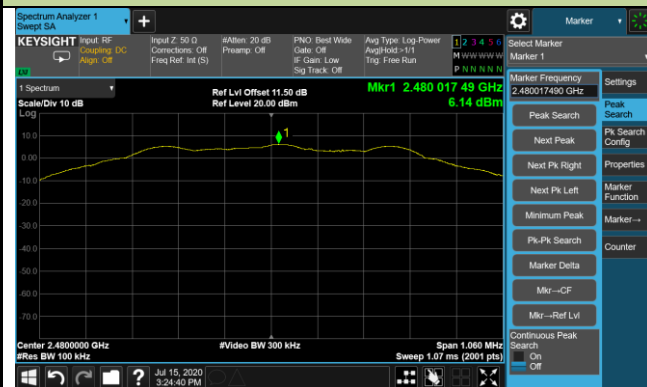


Spurious Emission 30MHz ~ 25GHz



Channel 39 (2480MHz)

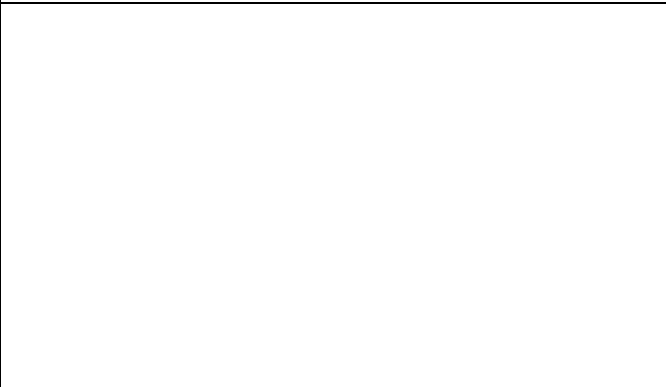
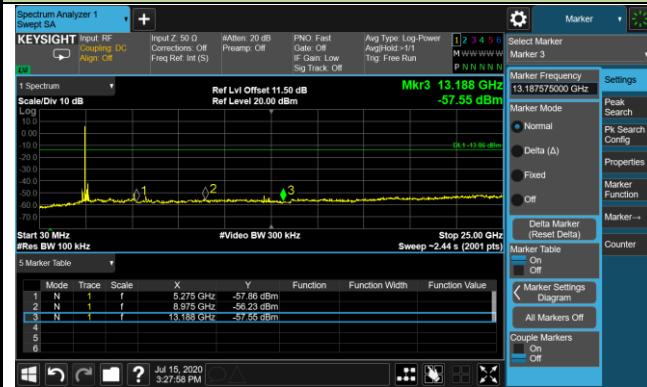
100kHz PSD reference Level



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

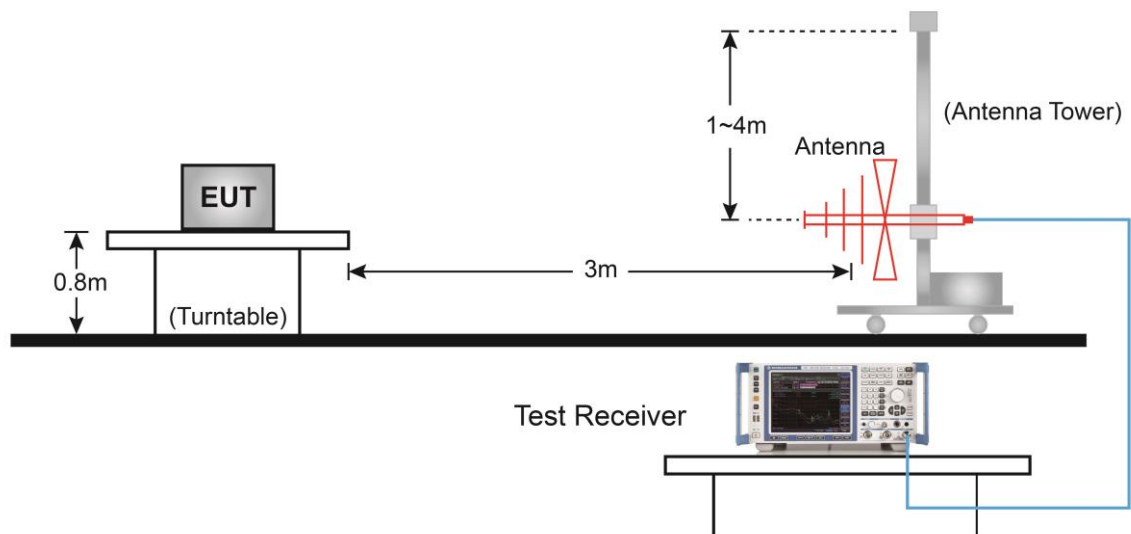
1. Analyzer center frequency was set to the frequency of the radiated spurious emission of interest
2. Span was set greater than 1MHz
3. RBW = as specified in Table 1
4. Detector = CISPR quasi-peak
5. Sweep time = auto couple
6. Trace was allowed to stabilize

Peak Measurements above 1GHz

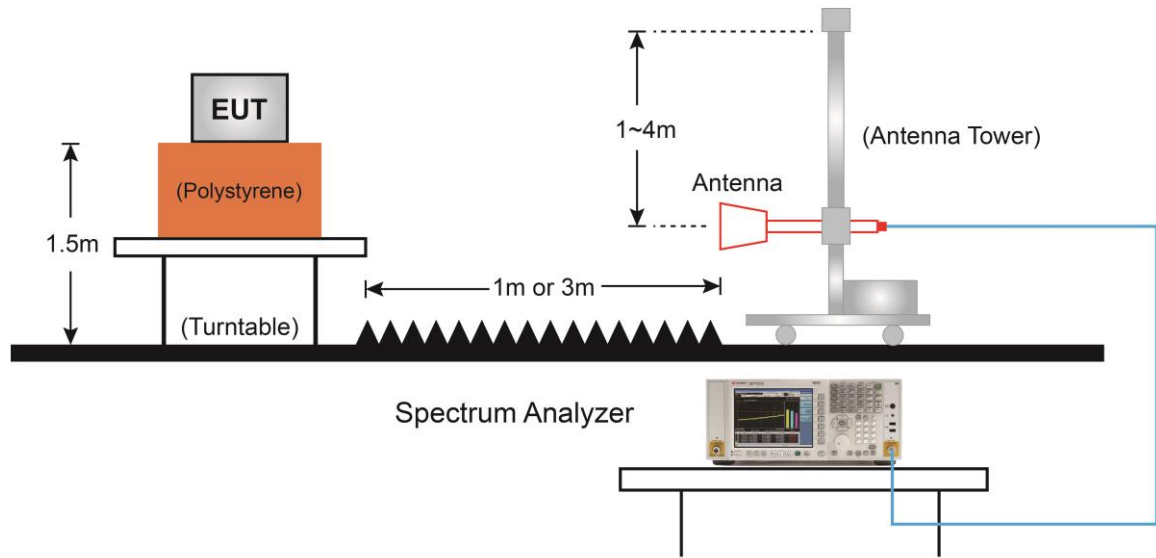
1. Analyzer center frequency was set to the frequency of the radiated spurious emission of interest
2. RBW = 1MHz
3. VBW = 3MHz
4. Detector = peak
5. Sweep time = auto couple
6. Trace mode = max hold
7. Trace was allowed to stabilize

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 HSBT3007-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
	3201.5	43.7	1.7	45.4	74.0	-28.6	Peak	Horizontal
	4808.0	43.4	5.9	49.3	74.0	-24.7	Peak	Horizontal
	6516.5	37.3	8.6	45.9	74.0	-28.1	Peak	Horizontal
	7205.0	40.5	10.5	51.0	74.0	-23.0	Peak	Horizontal
	3193.0	41.2	1.7	42.9	74.0	-31.1	Peak	Vertical
	4791.0	39.5	5.8	45.3	74.0	-28.7	Peak	Vertical
	6423.0	37.1	8.3	45.4	74.0	-28.6	Peak	Vertical
	7366.5	37.4	10.9	48.3	74.0	-25.7	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)

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	45.6	1.7	47.3	74.0	-26.7	Peak	Horizontal
	4884.5	41.3	5.6	46.9	74.0	-27.1	Peak	Horizontal
	6975.5	37.3	9.5	46.8	74.0	-27.2	Peak	Horizontal
	7324.0	40.4	10.6	51.0	74.0	-23.0	Peak	Horizontal
	3201.5	48.0	1.7	49.7	74.0	-24.3	Peak	Vertical
	4799.5	38.7	5.9	44.6	74.0	-29.4	Peak	Vertical
	5615.5	36.2	6.5	42.7	74.0	-31.3	Peak	Vertical
	7324.0	39.5	10.6	50.1	74.0	-23.9	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	43.7	1.7	45.4	74.0	-28.6	Peak	Horizontal
	4961.0	38.4	5.9	44.3	74.0	-29.7	Peak	Horizontal
	7205.0	38.5	10.5	49.0	74.0	-25.0	Peak	Horizontal
	7443.0	38.4	11.0	49.4	74.0	-24.6	Peak	Horizontal
	3193.0	45.8	1.7	47.5	74.0	-26.5	Peak	Vertical
	4791.0	38.5	5.8	44.3	74.0	-29.7	Peak	Vertical
	6933.0	38.0	9.3	47.3	74.0	-26.7	Peak	Vertical
	7443.0	38.6	11.0	49.6	74.0	-24.4	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)

For HSBT3007-EA configured with External 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	43.6	1.7	45.3	74.0	-28.7	Peak	Horizontal
	4808.0	42.4	5.9	48.3	74.0	-25.7	Peak	Horizontal
	7205.0	40.1	10.5	50.6	74.0	-23.4	Peak	Horizontal
	7281.5	38.5	10.7	49.2	74.0	-24.8	Peak	Horizontal
	3193.0	43.6	1.7	45.3	74.0	-28.7	Peak	Vertical
	4808.0	41.2	5.9	47.1	74.0	-26.9	Peak	Vertical
	7111.5	37.4	10.5	47.9	74.0	-26.1	Peak	Vertical
	7273.0	37.8	10.8	48.6	74.0	-25.4	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	2020/07/16
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
	3201.5	44.2	1.7	45.9	74.0	-28.1	Peak	Horizontal
	4876.0	42.4	5.5	47.9	74.0	-26.1	Peak	Horizontal
	7205.0	38.3	10.5	48.8	74.0	-25.2	Peak	Horizontal
	7315.5	40.6	10.6	51.2	74.0	-22.8	Peak	Horizontal
	3193.0	46.4	1.7	48.1	74.0	-25.9	Peak	Vertical
	4884.5	38.8	5.6	44.4	74.0	-29.6	Peak	Vertical
	7086.0	36.9	10.3	47.2	74.0	-26.8	Peak	Vertical
	7324.0	38.6	10.6	49.2	74.0	-24.8	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
	3201.5	43.7	1.7	45.4	74.0	-28.6	Peak	Horizontal
	4961.0	43.1	5.9	49.0	74.0	-25.0	Peak	Horizontal
	7179.5	38.2	10.7	48.9	74.0	-25.1	Peak	Horizontal
	7443.0	38.3	11.0	49.3	74.0	-24.7	Peak	Horizontal
	3193.0	48.9	1.7	50.6	74.0	-23.4	Peak	Vertical
	4961.0	39.6	5.9	45.5	74.0	-28.5	Peak	Vertical
	6389.0	38.0	7.8	45.8	74.0	-28.2	Peak	Vertical
	7443.0	38.0	11.0	49.0	74.0	-25.0	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)

For HSBT3007-EA configured with External Dipole 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
	3201.5	45.9	1.7	47.6	74.0	-26.4	Peak	Horizontal
	4808.0	42.6	5.9	48.5	74.0	-25.5	Peak	Horizontal
	5428.5	36.5	6.5	43.0	74.0	-31.0	Peak	Horizontal
	7205.0	39.0	10.5	49.5	74.0	-24.5	Peak	Horizontal
	3193.0	45.3	1.7	47.0	74.0	-27.0	Peak	Vertical
	4808.0	41.8	5.9	47.7	74.0	-26.3	Peak	Vertical
	5437.0	35.4	6.4	41.8	74.0	-32.2	Peak	Vertical
	7205.0	41.7	10.5	52.2	74.0	-21.8	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
	3201.5	43.6	1.7	45.3	74.0	-28.7	Peak	Horizontal
	4876.0	44.2	5.5	49.7	74.0	-24.3	Peak	Horizontal
	6423.0	37.2	8.3	45.5	74.0	-28.5	Peak	Horizontal
	7324.0	41.5	10.6	52.1	74.0	-21.9	Peak	Horizontal
	3184.5	49.9	1.7	51.6	74.0	-22.4	Peak	Vertical
	4876.0	41.1	5.5	46.6	74.0	-27.4	Peak	Vertical
	6508.0	37.3	8.6	45.9	74.0	-28.1	Peak	Vertical
	7324.0	40.1	10.6	50.7	74.0	-23.3	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)

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.		

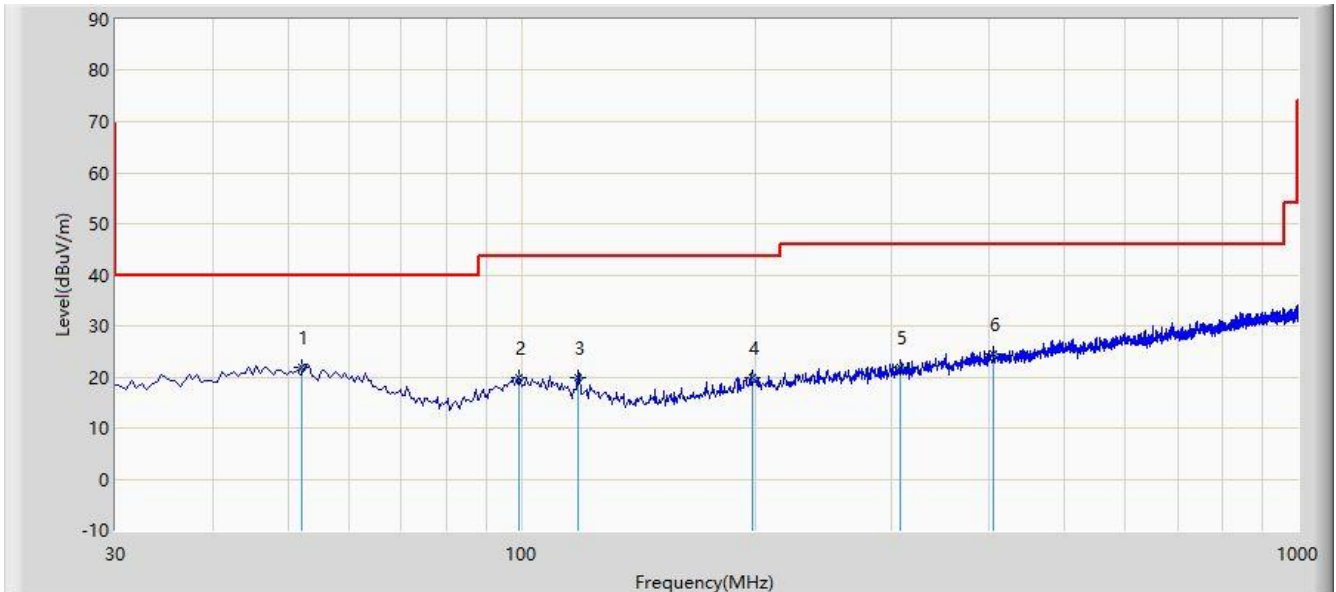
Mark	Frequency (MHz)	Reading Level (dBμV)	Factor (dB)	Measure Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector	Polarization
	3201.5	44.3	1.7	46.0	74.0	-28.0	Peak	Horizontal
	4961.0	43.2	5.9	49.1	74.0	-24.9	Peak	Horizontal
	6746.0	37.4	8.9	46.3	74.0	-27.7	Peak	Horizontal
	7443.0	40.2	11.0	51.2	74.0	-22.8	Peak	Horizontal
	3193.0	48.2	1.7	49.9	74.0	-24.1	Peak	Vertical
	4961.0	39.8	5.9	45.7	74.0	-28.3	Peak	Vertical
	6924.5	37.1	9.3	46.4	74.0	-27.6	Peak	Vertical
	7443.0	38.4	11.0	49.4	74.0	-24.6	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)

The Worst Case of Radiated Emission below 1GHz:

Site: AC1	Time: 2020/07/18 - 17:36
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 HSBT3007-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		*	52.160	21.943	1.630	-18.057	40.000	20.313	QP
2			99.416	19.750	1.500	-23.750	43.500	18.249	QP
3			118.460	19.973	3.410	-23.527	43.500	16.563	QP
4			198.460	19.945	1.490	-23.555	43.500	18.455	QP
5			308.160	21.831	1.540	-24.169	46.000	20.291	QP
6			405.160	24.416	1.690	-21.584	46.000	22.726	QP

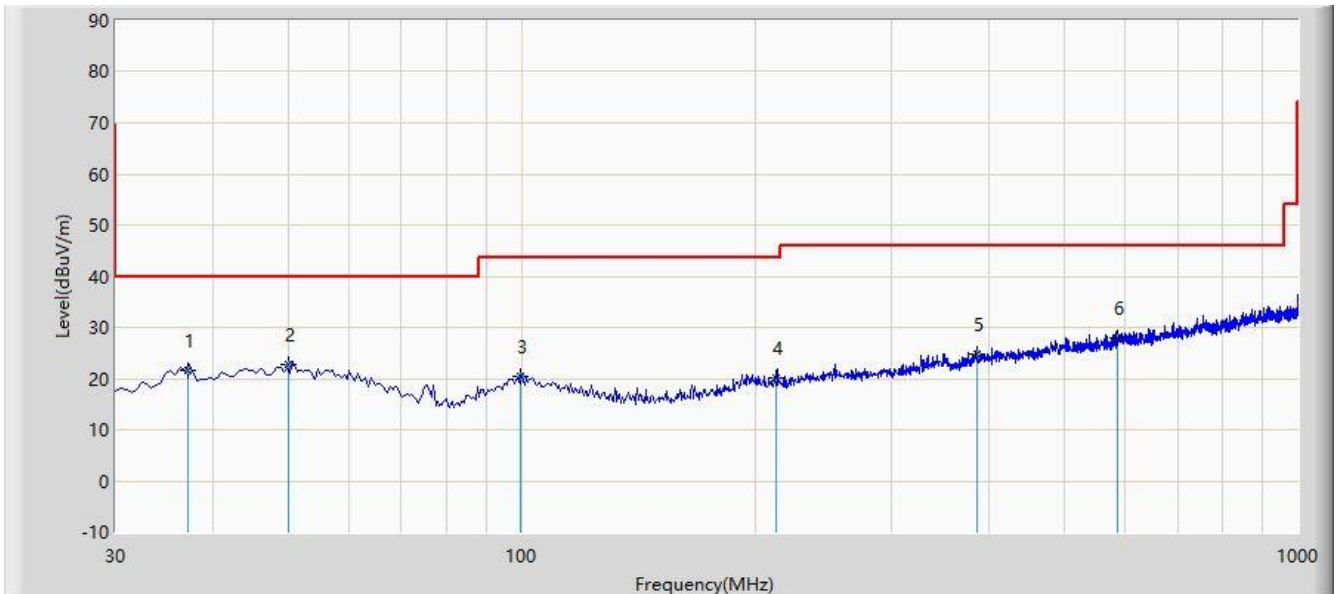
Note 1: Measure Level (dBμV/m) = Reading Level (dBμV) + Factor (dB)

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 HSBT3007-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			37.160	21.585	3.190	-18.415	40.000	18.395	QP
2		*	50.160	22.753	2.310	-17.247	40.000	20.443	QP
3			99.840	20.344	2.050	-23.156	43.500	18.294	QP
4			213.210	20.081	2.190	-23.419	43.500	17.891	QP
5			385.640	24.763	2.490	-21.237	46.000	22.273	QP
6			584.620	28.106	2.160	-17.894	46.000	25.946	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 ($\mu\text{V/m}$)	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

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)

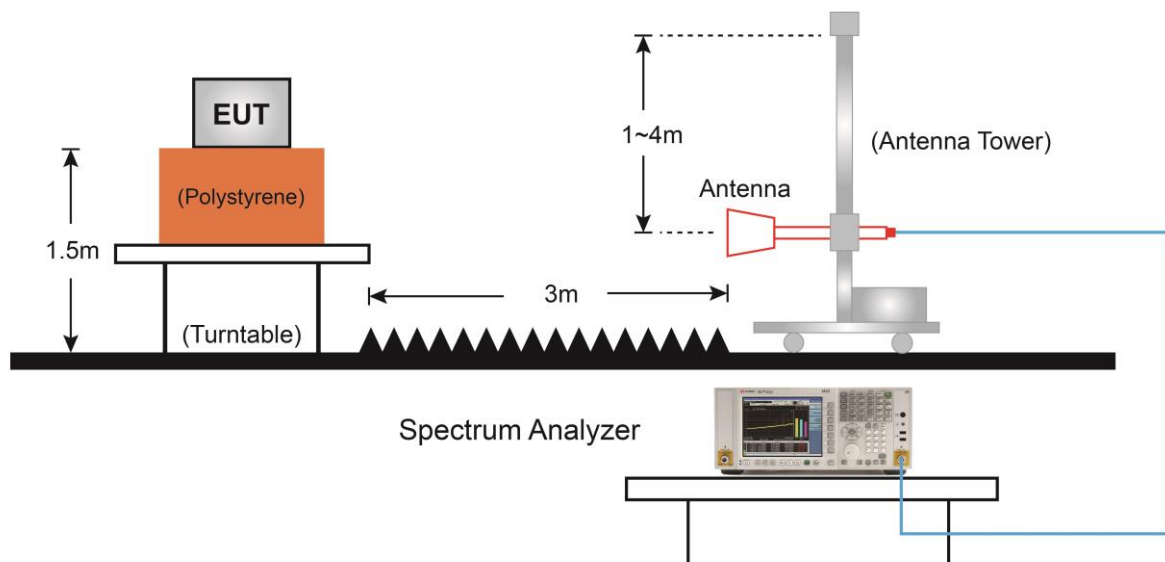
7.7.3.Test Setting

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

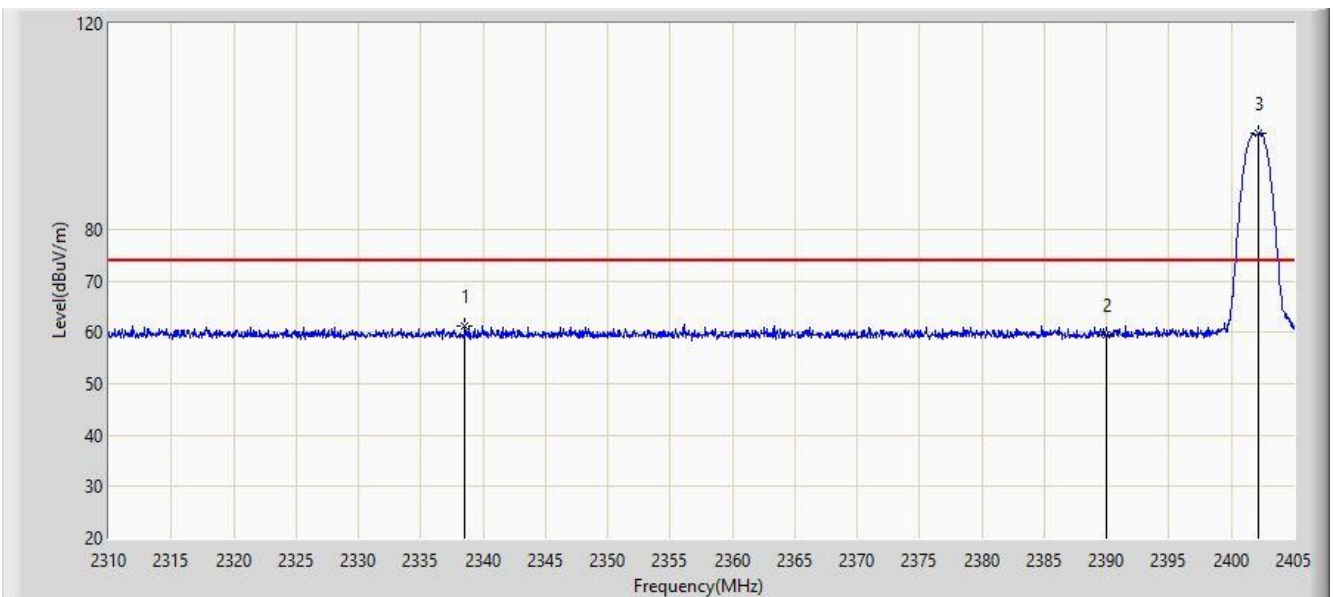
1. Analyzer center frequency was set to the frequency of the radiated spurious emission of interest
2. RBW = 1MHz
3. Set VBW $\geq 1/T$. T is the minimum transmission duration
4. Detector = Peak
5. Sweep time = Auto
6. Trace mode = Max hold
7. Trace was allowed to stabilize

7.7.4. Test Setup

7.7.5.Test Result

For HSBT3007-IA configured with Onboard PCB Antenna:

Site: AC1	Time: 2020/07/17 - 14:16
Limit: FCC_Part15.209_RE(3m)	Engineer: Messiah Li
Probe: AC1_BBHA9120D_1-18GHz	Polarity: Horizontal
EUT: Bluetooth Module	Power: By USB
Test Mode: Transmit by Bluetooth-LE at Channel 2402MHz	

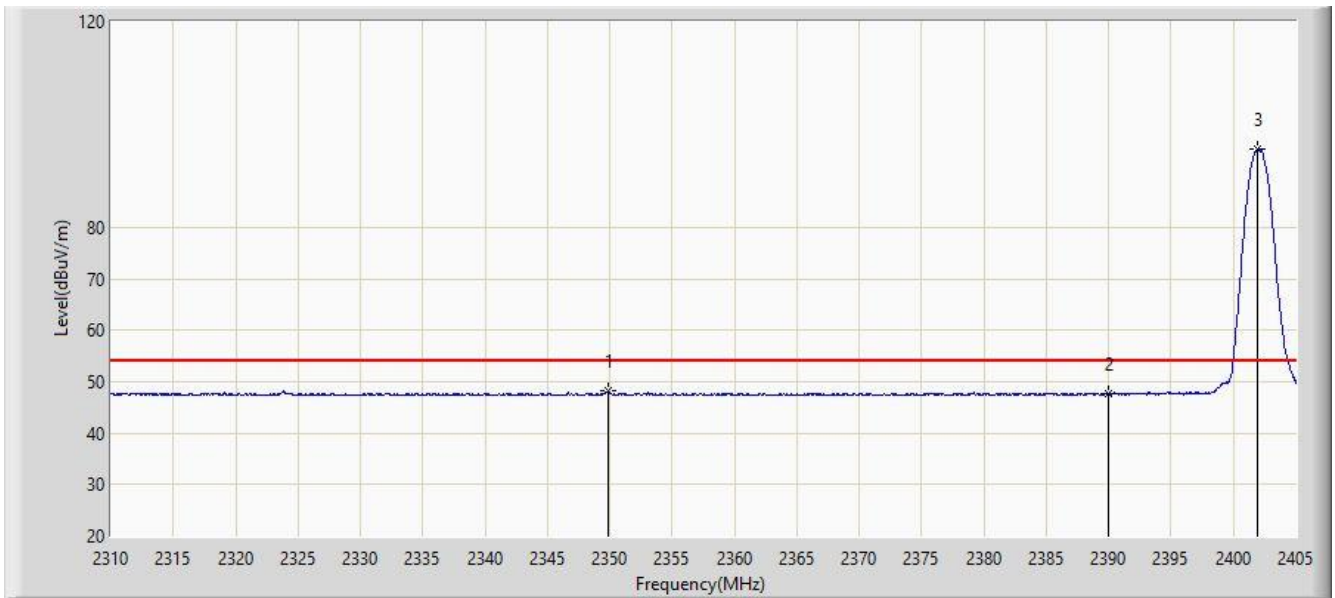


No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Margin (dB)	Limit (dBuV/m)	Factor (dB)	Type
1			2338.548	61.340	28.550	-12.660	74.000	32.790	PK
2			2390.000	59.445	26.733	-14.555	74.000	32.712	PK
3		*	2402.103	98.542	65.798	N/A	N/A	32.744	PK

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

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

Site: AC1	Time: 2020/07/17 - 14:22
Limit: FCC_Part15.209_RE(3m)	Engineer: Messiah Li
Probe: AC1_BBHA9120D_1-18GHz	Polarity: Horizontal
EUT: Bluetooth Module	Power: By USB
Test Mode: Transmit by Bluetooth-LE at Channel 2402MHz	

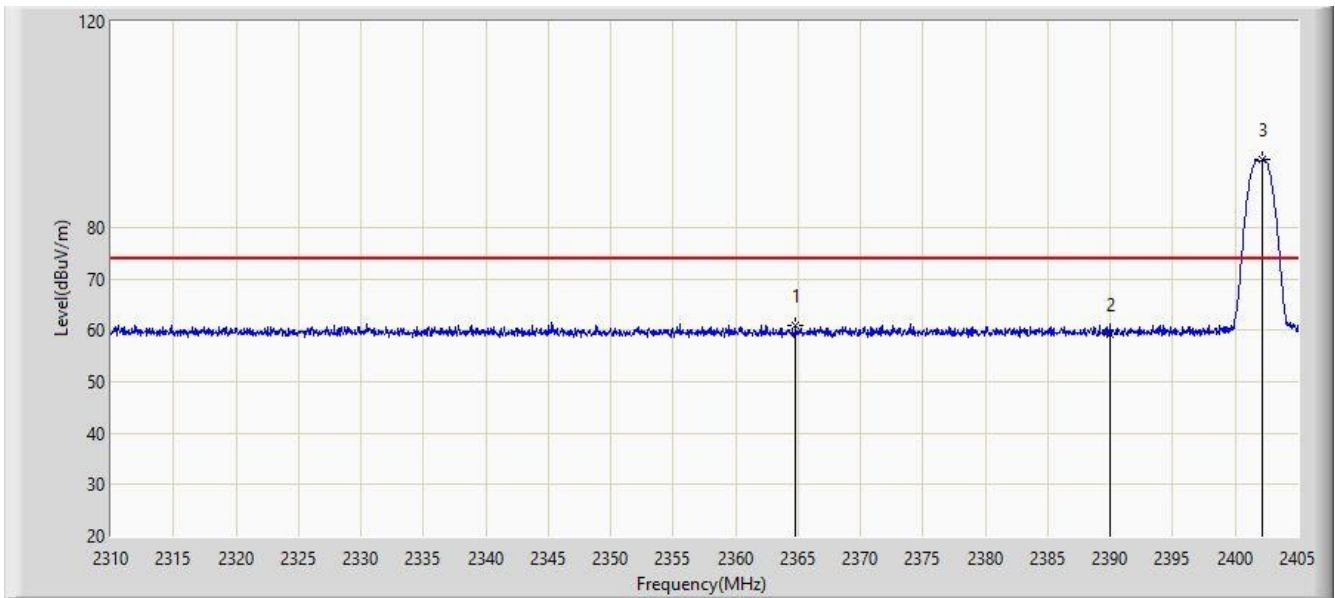


No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Margin (dB)	Limit (dBuV/m)	Factor (dB)	Type
1			2349.900	48.164	15.377	-5.836	54.000	32.787	AV
2			2390.000	47.649	14.937	-6.351	54.000	32.712	AV
3		*	2401.960	95.320	62.576	N/A	N/A	32.744	AV

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

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

Site: AC1	Time: 2020/07/17 - 14:28
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 2402MHz	

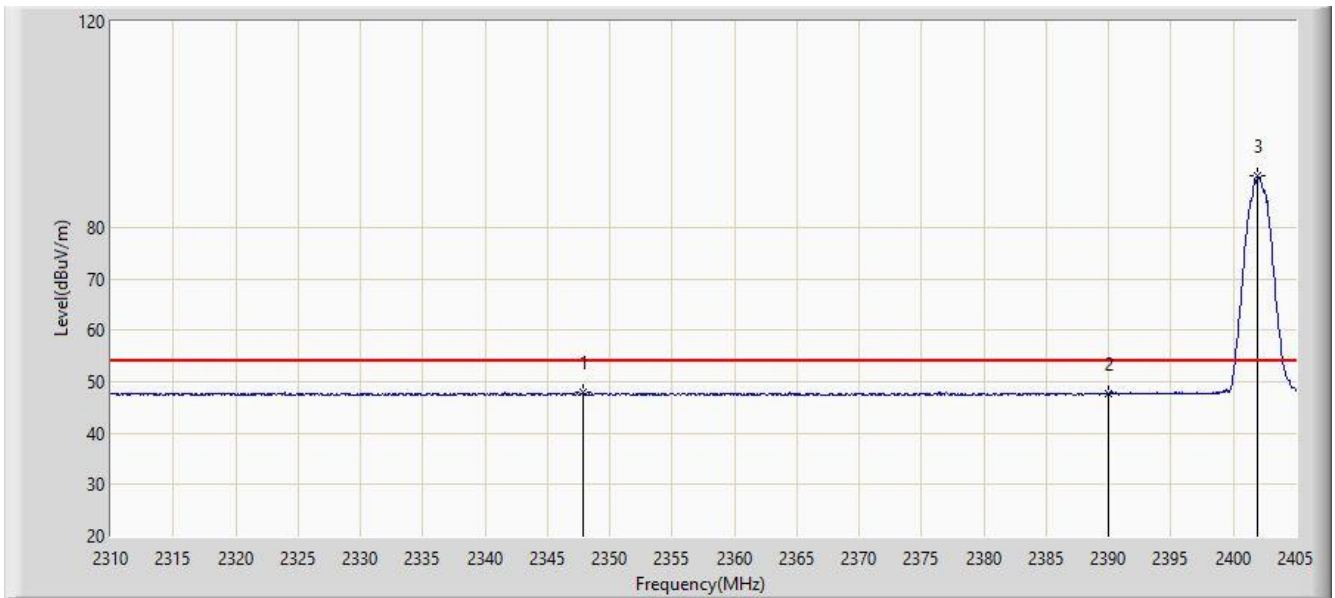


No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Margin (dB)	Limit (dBuV/m)	Factor (dB)	Type
1			2364.815	60.906	28.164	-13.094	74.000	32.742	PK
2			2390.000	59.292	26.580	-14.708	74.000	32.712	PK
3		*	2402.150	93.167	60.423	N/A	N/A	32.744	PK

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

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

Site: AC1	Time: 2020/07/17 - 14:29
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 2402MHz	

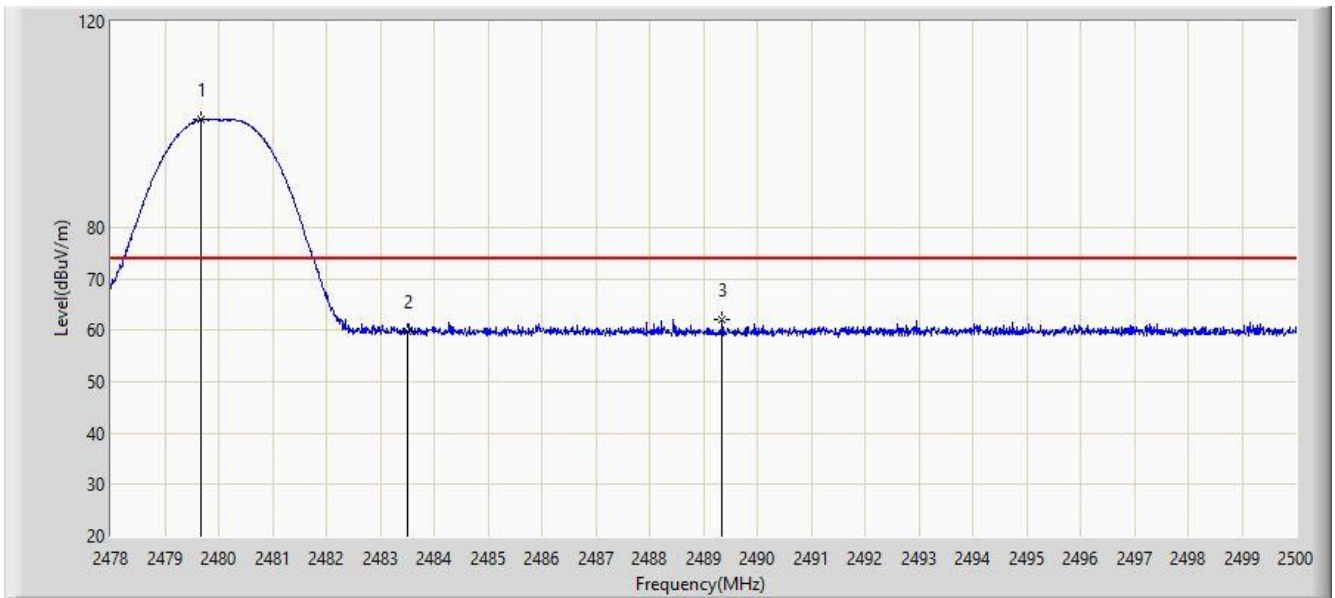


No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Margin (dB)	Limit (dBuV/m)	Factor (dB)	Type
1			2347.857	47.812	15.021	-6.188	54.000	32.791	AV
2			2390.000	47.651	14.939	-6.349	54.000	32.712	AV
3		*	2401.913	90.043	57.299	N/A	N/A	32.744	AV

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

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

Site: AC1	Time: 2020/07/17 - 14:30
Limit: FCC_Part15.209_RE(3m)	Engineer: Messiah Li
Probe: AC1_BBHA9120D_1-18GHz	Polarity: Horizontal
EUT: Bluetooth Module	Power: By USB
Test Mode: Transmit by Bluetooth-LE at Channel 2480MHz	

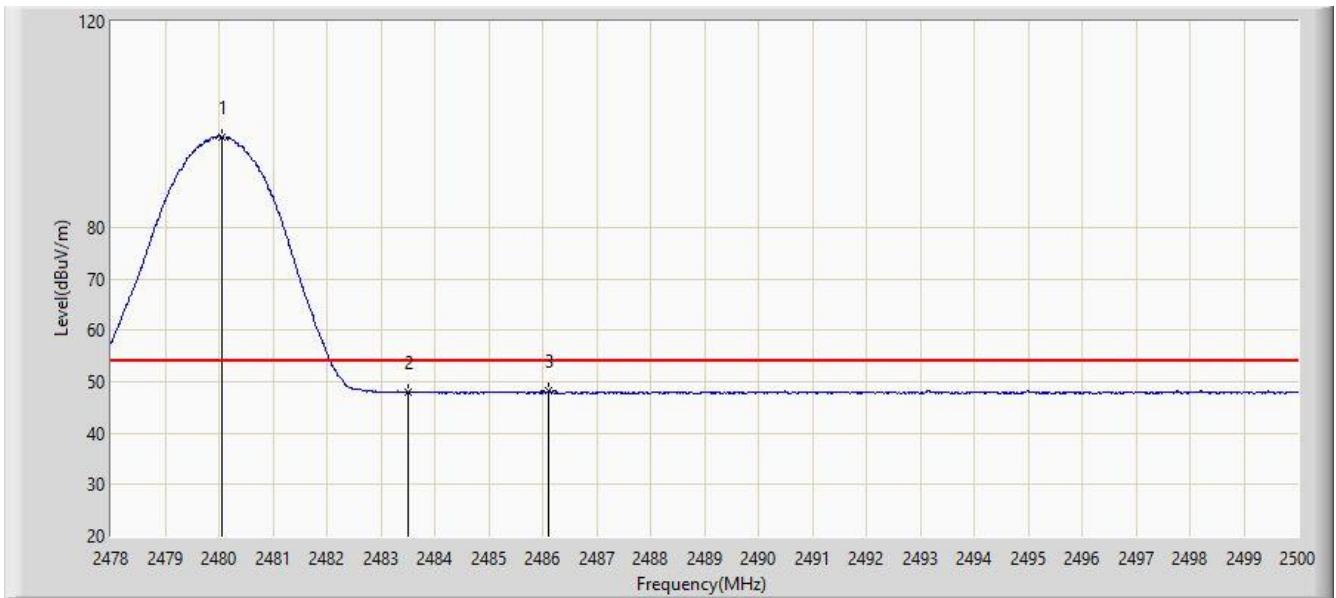


No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Margin (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		*	2479.683	100.964	68.280	N/A	N/A	32.684	PK
2			2483.500	59.642	26.992	-14.358	74.000	32.651	PK
3			2489.352	62.132	29.516	-11.868	74.000	32.615	PK

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

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

Site: AC1	Time: 2020/07/17 - 14:32
Limit: FCC_Part15.209_RE(3m)	Engineer: Messiah Li
Probe: AC1_BBHA9120D_1-18GHz	Polarity: Horizontal
EUT: Bluetooth Module	Power: By USB
Test Mode: Transmit by Bluetooth-LE at Channel 2480MHz	

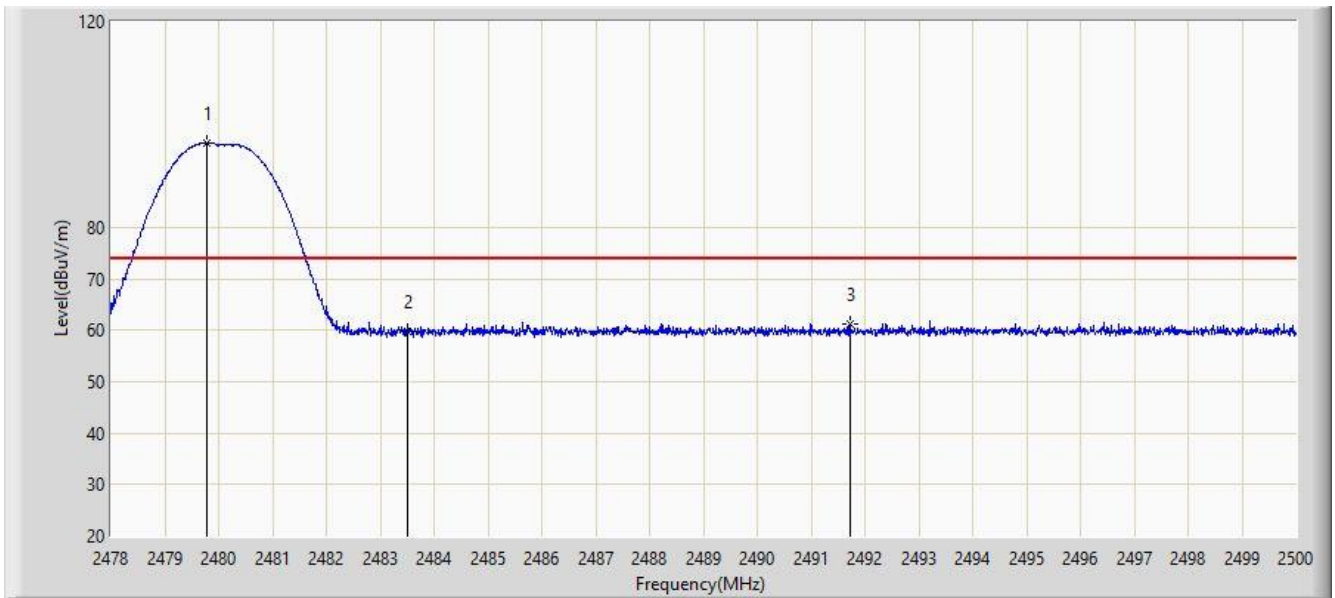


No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Margin (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		*	2480.057	97.591	64.911	N/A	N/A	32.681	AV
2			2483.500	47.871	15.221	-6.129	54.000	32.651	AV
3			2486.096	48.171	15.543	-5.829	54.000	32.628	AV

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

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

Site: AC1	Time: 2020/07/17 - 14:33
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	

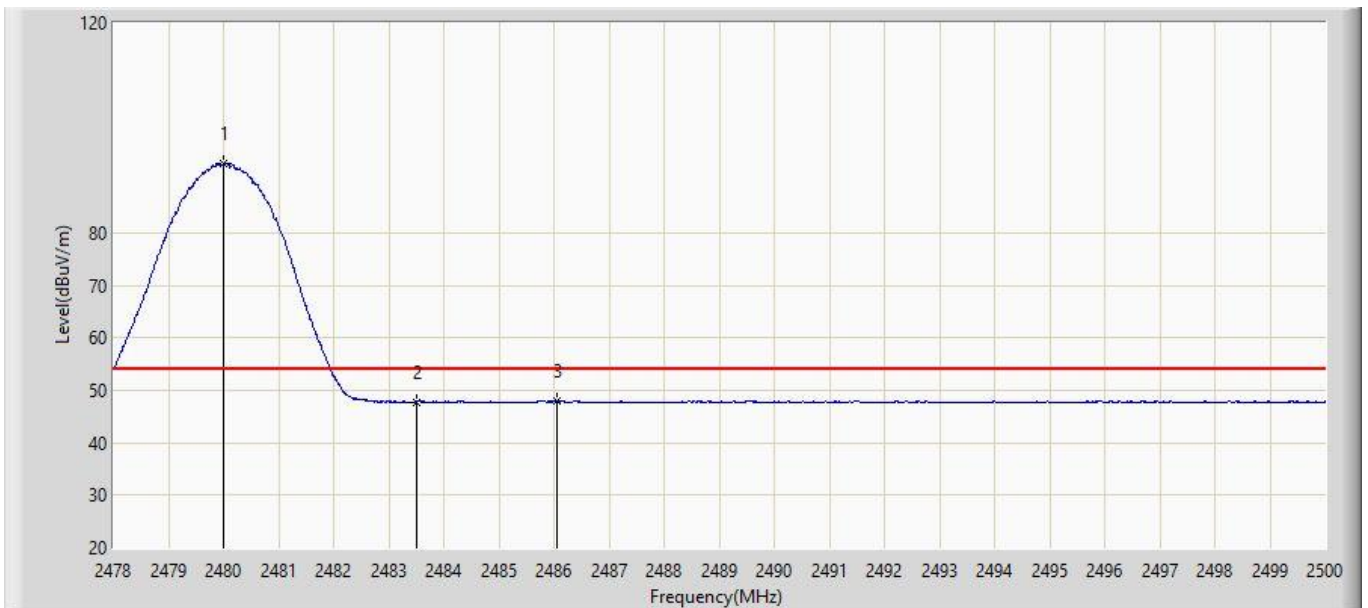


No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Margin (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		*	2479.771	96.352	63.669	N/A	N/A	32.683	PK
2			2483.500	59.736	27.086	-14.264	74.000	32.651	PK
3			2491.739	61.294	28.677	-12.706	74.000	32.617	PK

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

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

Site: AC1	Time: 2020/07/17 - 14:34
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	



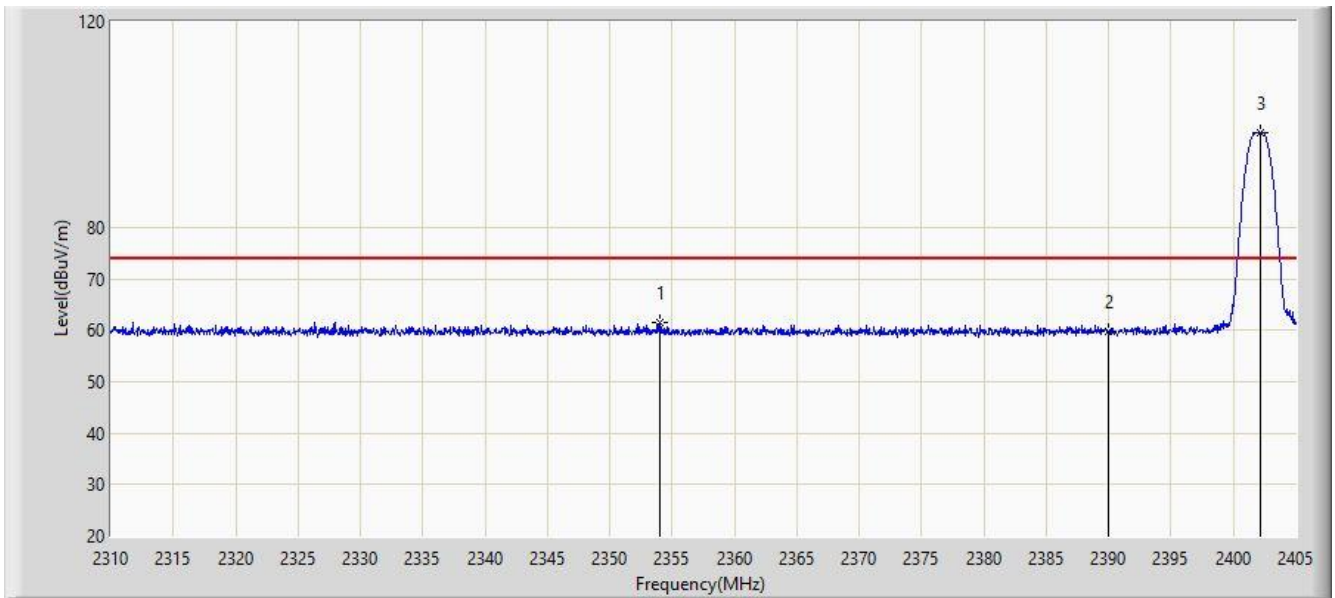
No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Margin (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		*	2480.013	93.213	60.532	N/A	N/A	32.681	AV
2			2483.500	47.780	15.130	-6.220	54.000	32.651	AV
3			2486.063	47.909	15.281	-6.091	54.000	32.628	AV

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

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

For HSBT3007-EA configured with External PCB Antenna:

Site: AC1	Time: 2020/07/17 - 14:40
Limit: FCC_Part15.209_RE(3m)	Engineer: Messiah Li
Probe: AC1_BBHA9120D_1-18GHz	Polarity: Horizontal
EUT: Bluetooth Module	Power: By USB
Test Mode: Transmit by Bluetooth-LE at Channel 2402MHz	

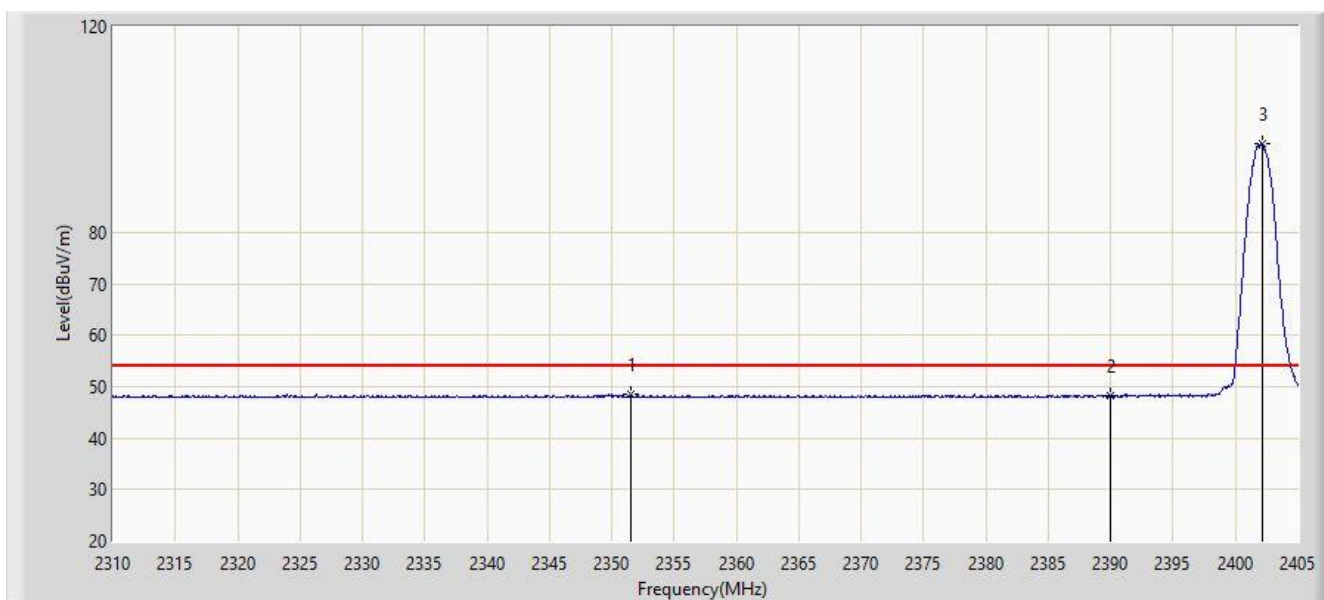


No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Margin (dB)	Limit (dBuV/m)	Factor (dB)	Type
1			2354.032	61.612	28.835	-12.388	74.000	32.777	PK
2			2390.000	59.718	27.006	-14.282	74.000	32.712	PK
3		*	2402.198	98.420	65.677	N/A	N/A	32.743	PK

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

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

Site: AC1	Time: 2020/07/17 - 14:42
Limit: FCC_Part15.209_RE(3m)	Engineer: Messiah Li
Probe: AC1_BBHA9120D_1-18GHz	Polarity: Horizontal
EUT: Bluetooth Module	Power: By USB
Test Mode: Transmit by Bluetooth-LE at Channel 2402MHz	

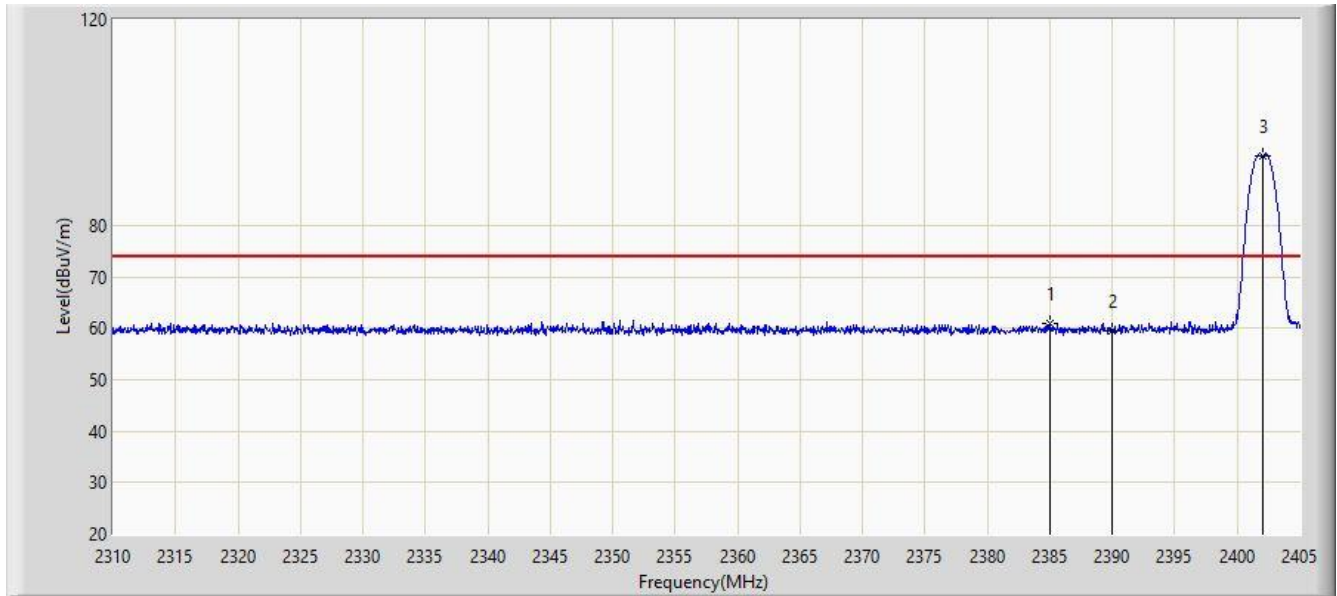


No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Margin (dB)	Limit (dBuV/m)	Factor (dB)	Type
1			2351.515	48.453	15.670	-5.547	54.000	32.782	AV
2			2390.000	48.119	15.407	-5.881	54.000	32.712	AV
3		*	2402.150	97.124	64.380	N/A	N/A	32.744	AV

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

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

Site: AC1	Time: 2020/07/17 - 14:43
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 2402MHz	

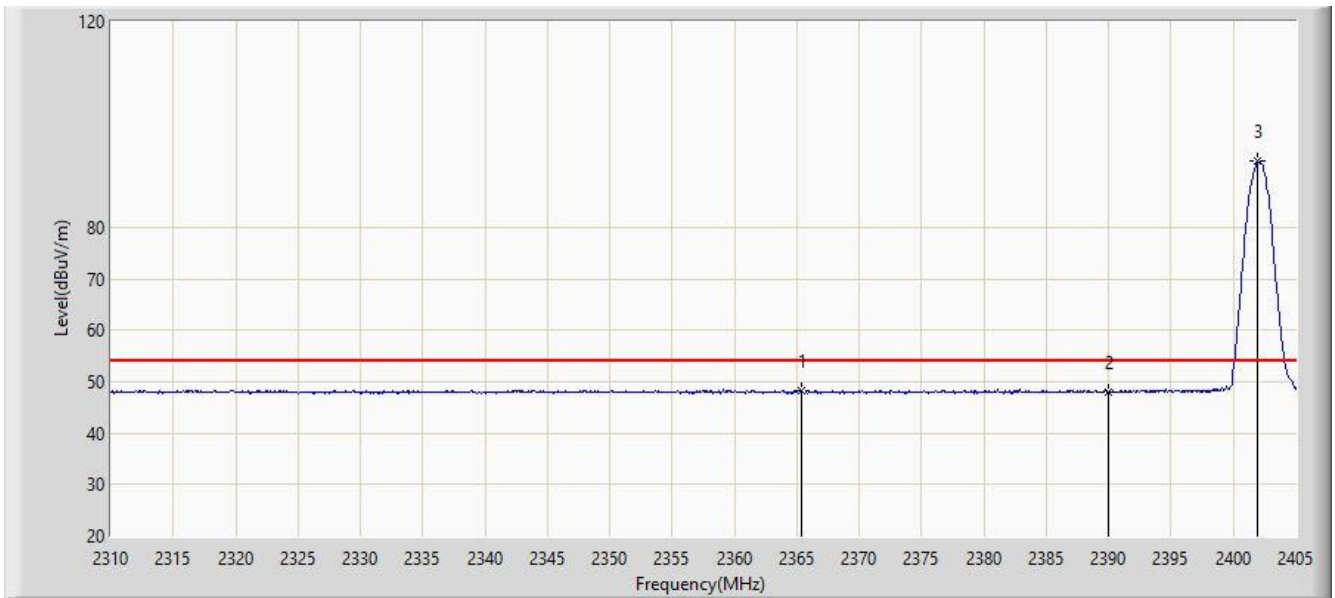


No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Margin (dB)	Limit (dBuV/m)	Factor (dB)	Type
1			2384.955	60.999	28.311	-13.001	74.000	32.688	PK
2			2390.000	59.351	26.639	-14.649	74.000	32.712	PK
3		*	2402.008	93.518	60.774	N/A	N/A	32.744	PK

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

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

Site: AC1	Time: 2020/07/17 - 14:45
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 2402MHz	

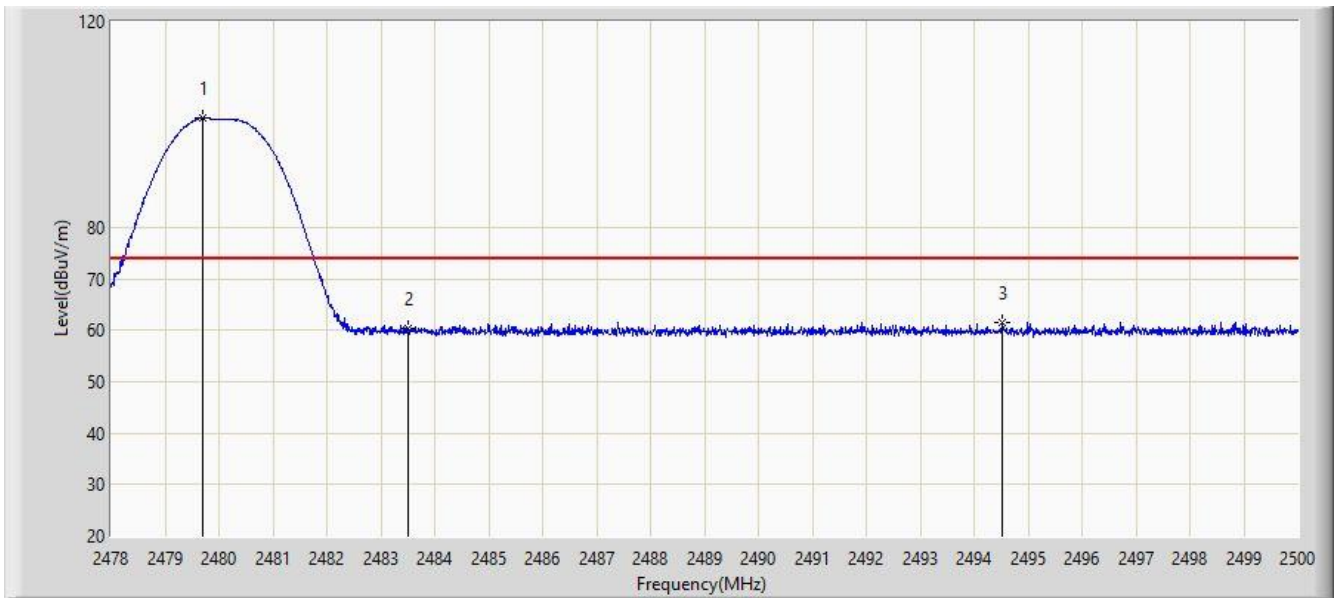


No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Margin (dB)	Limit (dBuV/m)	Factor (dB)	Type
1			2365.337	48.146	15.407	-5.854	54.000	32.739	AV
2			2390.000	48.021	15.309	-5.979	54.000	32.712	AV
3		*	2401.960	92.946	60.202	N/A	N/A	32.744	AV

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

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

Site: AC1	Time: 2020/07/17 - 14:35
Limit: FCC_Part15.209_RE(3m)	Engineer: Messiah Li
Probe: AC1_BBHA9120D_1-18GHz	Polarity: Horizontal
EUT: Bluetooth Module	Power: By USB
Test Mode: Transmit by Bluetooth-LE at Channel 2480MHz	

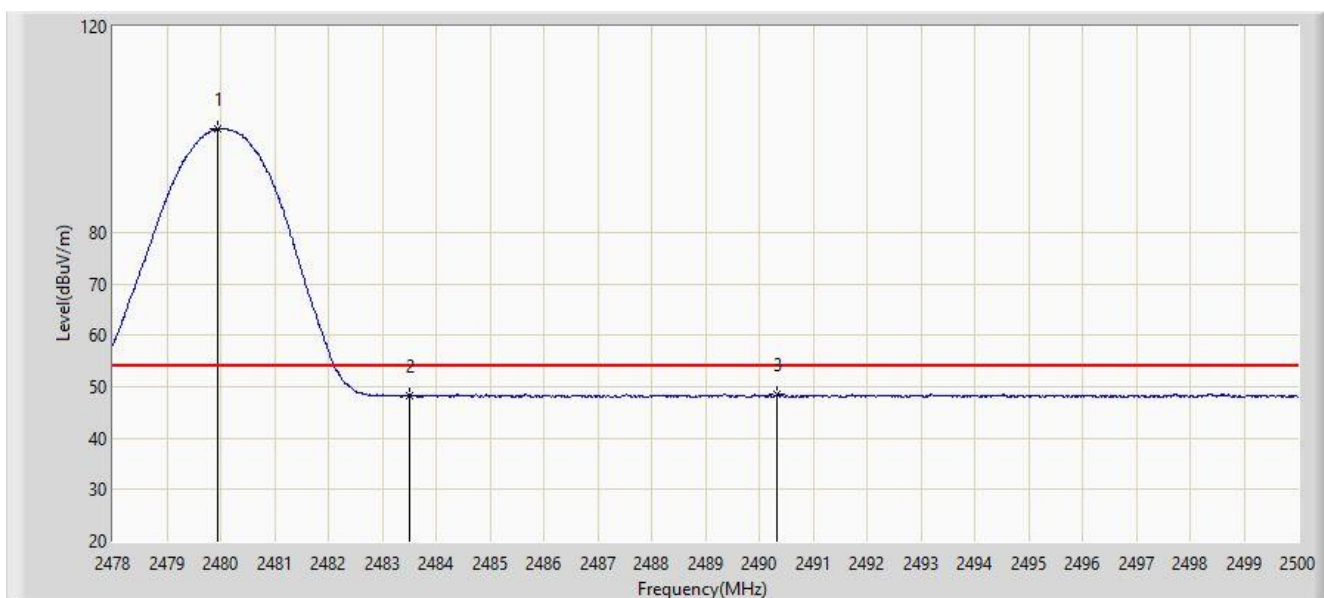


No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Margin (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		*	2479.705	101.237	68.554	N/A	N/A	32.683	PK
2			2483.500	60.280	27.630	-13.720	74.000	32.651	PK
3			2494.533	61.475	28.857	-12.525	74.000	32.618	PK

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

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

Site: AC1	Time: 2020/07/17 - 14:37
Limit: FCC_Part15.209_RE(3m)	Engineer: Messiah Li
Probe: AC1_BBHA9120D_1-18GHz	Polarity: Horizontal
EUT: Bluetooth Module	Power: By USB
Test Mode: Transmit by Bluetooth-LE at Channel 2480MHz	

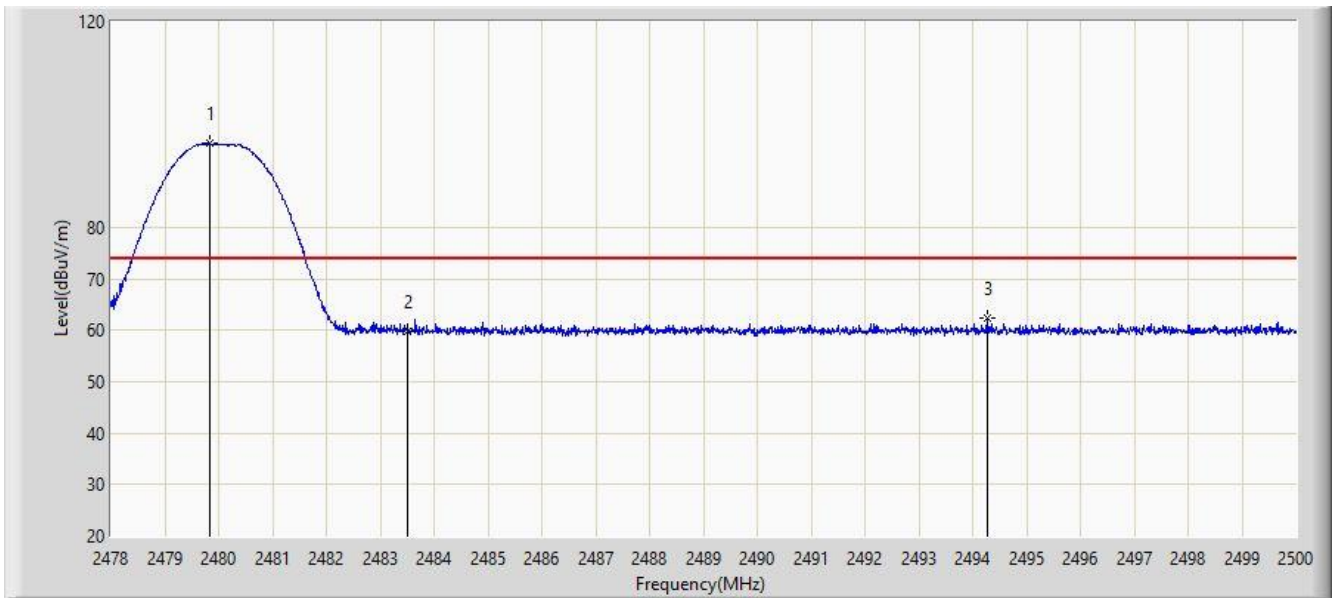


No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Margin (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		*	2479.936	100.146	67.465	N/A	N/A	32.682	AV
2			2483.500	48.305	15.655	-5.695	54.000	32.651	AV
3			2490.331	48.464	15.848	-5.536	54.000	32.616	AV

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

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

Site: AC1	Time: 2020/07/17 - 14:37
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	

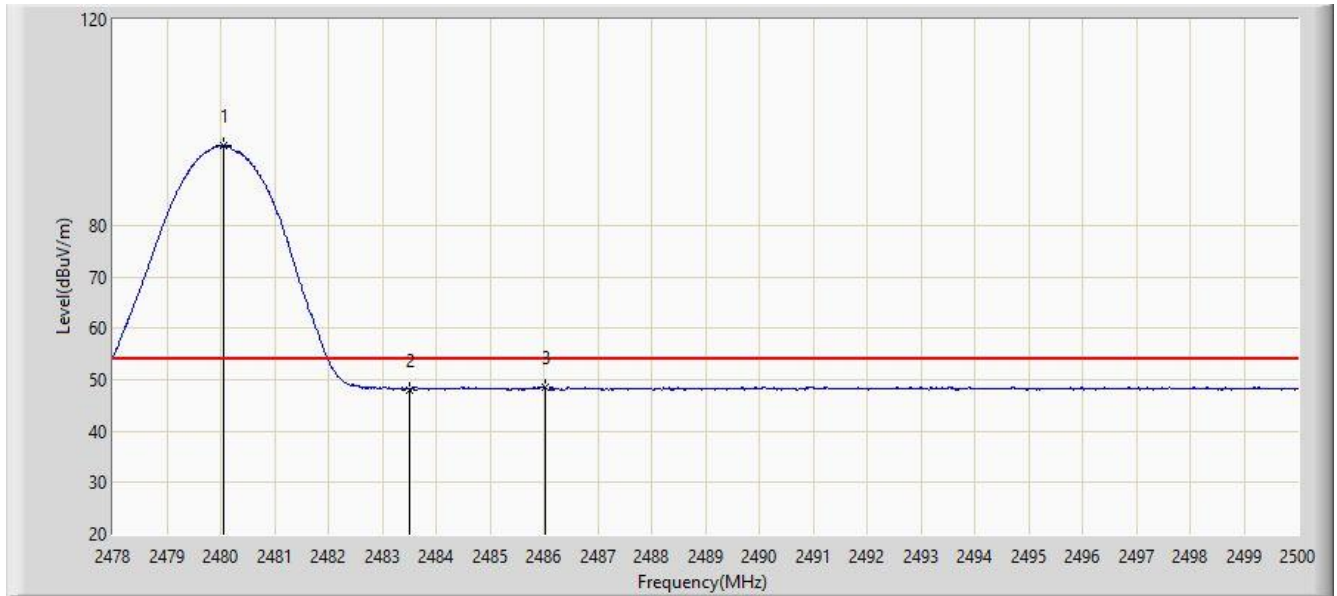


No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Margin (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		*	2479.837	96.243	63.561	N/A	N/A	32.682	PK
2			2483.500	59.771	27.121	-14.229	74.000	32.651	PK
3			2494.269	62.278	29.660	-11.722	74.000	32.617	PK

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

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

Site: AC1	Time: 2020/07/17 - 14:39
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	



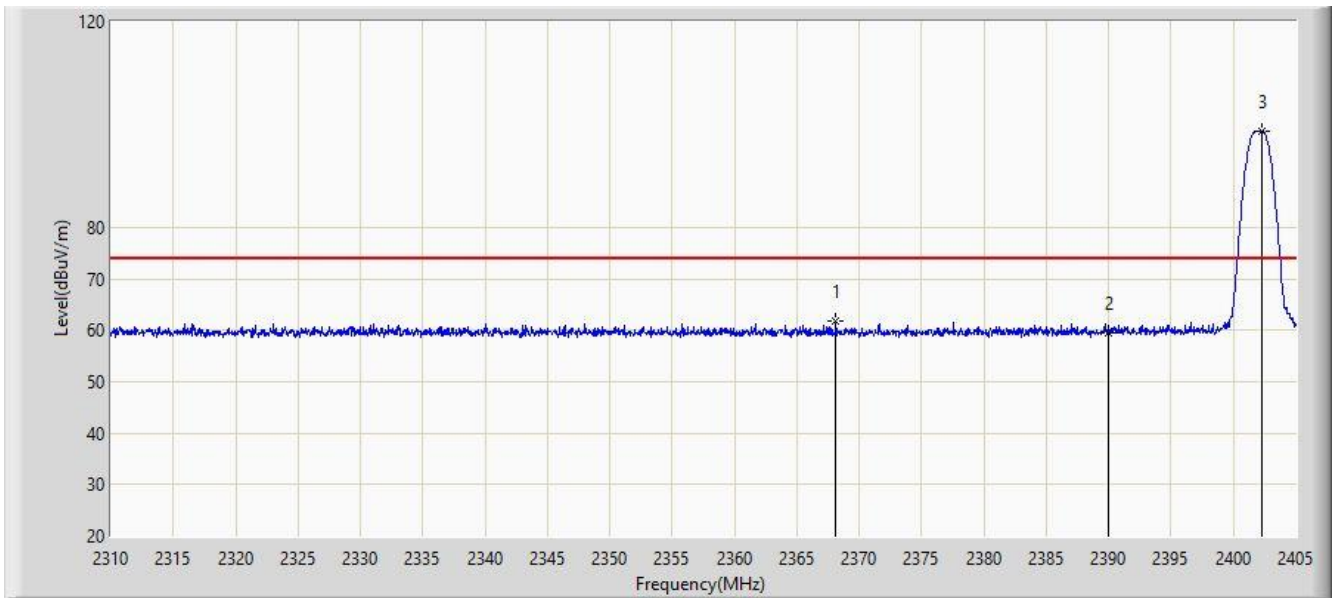
No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Margin (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		*	2480.046	95.416	62.736	N/A	N/A	32.681	AV
2			2483.500	48.097	15.447	-5.903	54.000	32.651	AV
3			2486.030	48.421	15.793	-5.579	54.000	32.628	AV

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

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

For HSBT3007-EA configured with External Dipole Antenna

Site: AC1	Time: 2020/07/17 - 14:46
Limit: FCC_Part15.209_RE(3m)	Engineer: Messiah Li
Probe: AC1_BBHA9120D_1-18GHz	Polarity: Horizontal
EUT: Bluetooth Module	Power: By USB
Test Mode: Transmit by Bluetooth-LE at Channel 2402MHz	

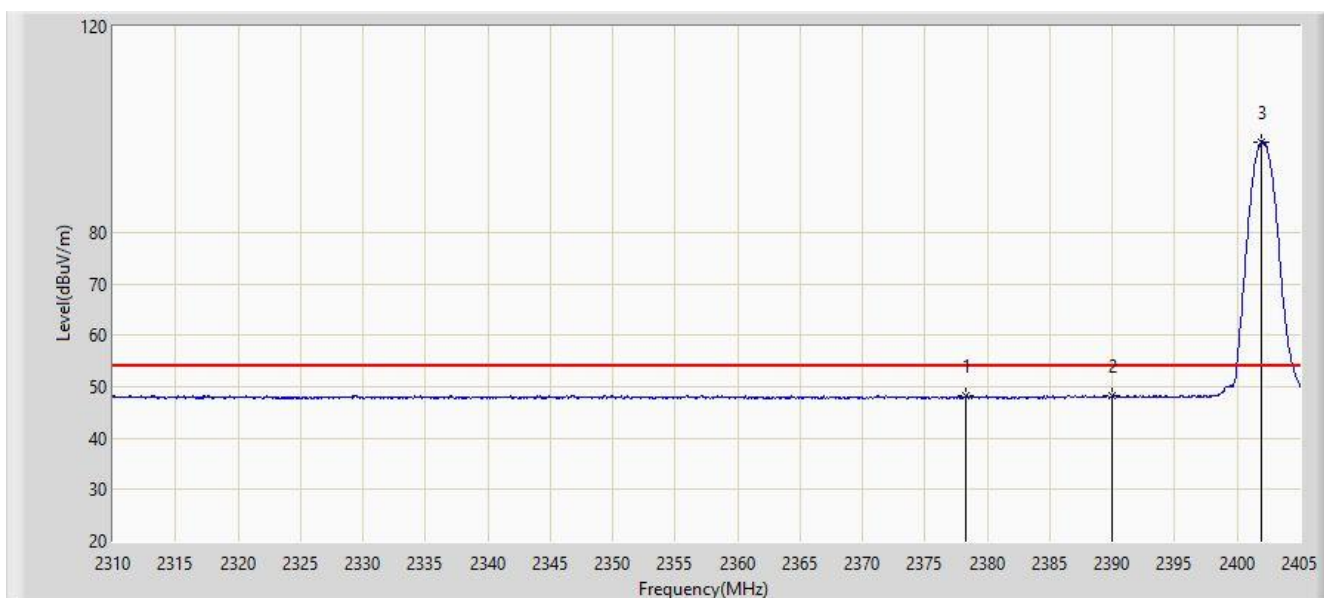


No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Margin (dB)	Limit (dBuV/m)	Factor (dB)	Type
1			2368.093	61.675	28.950	-12.325	74.000	32.724	PK
2			2390.000	59.355	26.643	-14.645	74.000	32.712	PK
3		*	2402.245	98.768	66.025	N/A	N/A	32.743	PK

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

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

Site: AC1	Time: 2020/07/17 - 14:47
Limit: FCC_Part15.209_RE(3m)	Engineer: Messiah Li
Probe: AC1_BBHA9120D_1-18GHz	Polarity: Horizontal
EUT: Bluetooth Module	Power: By USB
Test Mode: Transmit by Bluetooth-LE at Channel 2402MHz	

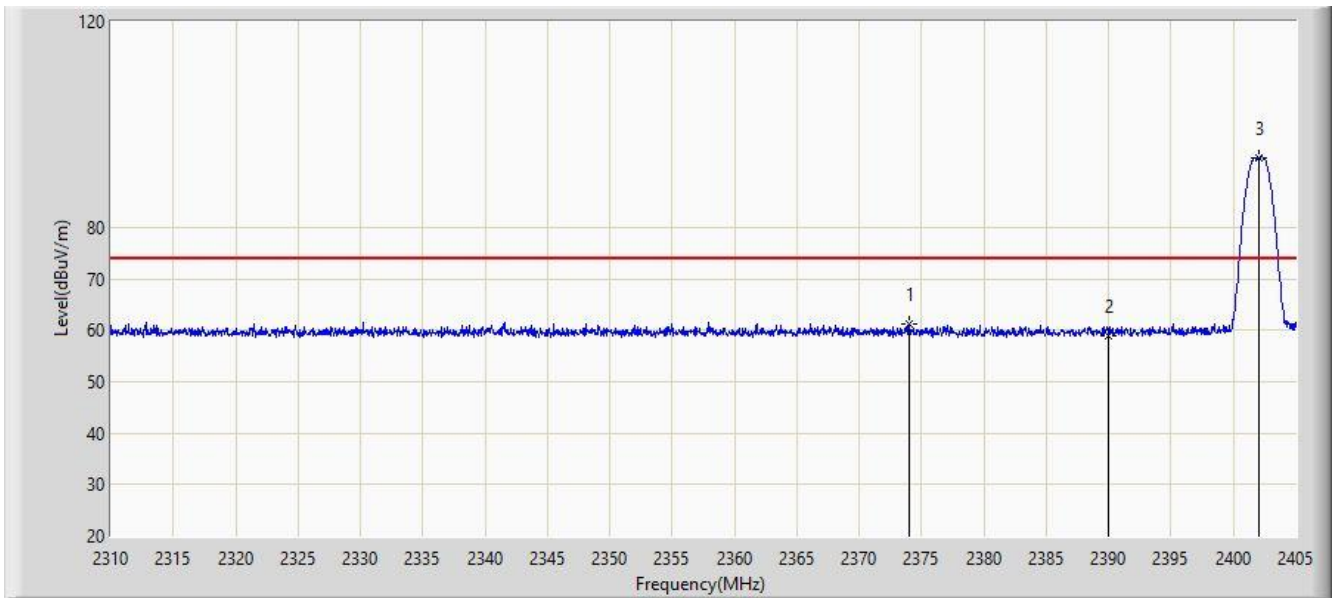


No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Margin (dB)	Limit (dBuV/m)	Factor (dB)	Type
1			2378.305	48.190	15.519	-5.810	54.000	32.671	AV
2			2390.000	48.100	15.388	-5.900	54.000	32.712	AV
3		*	2401.913	97.558	64.814	N/A	N/A	32.744	AV

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

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

Site: AC1	Time: 2020/07/17 - 14:48
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 2402MHz	

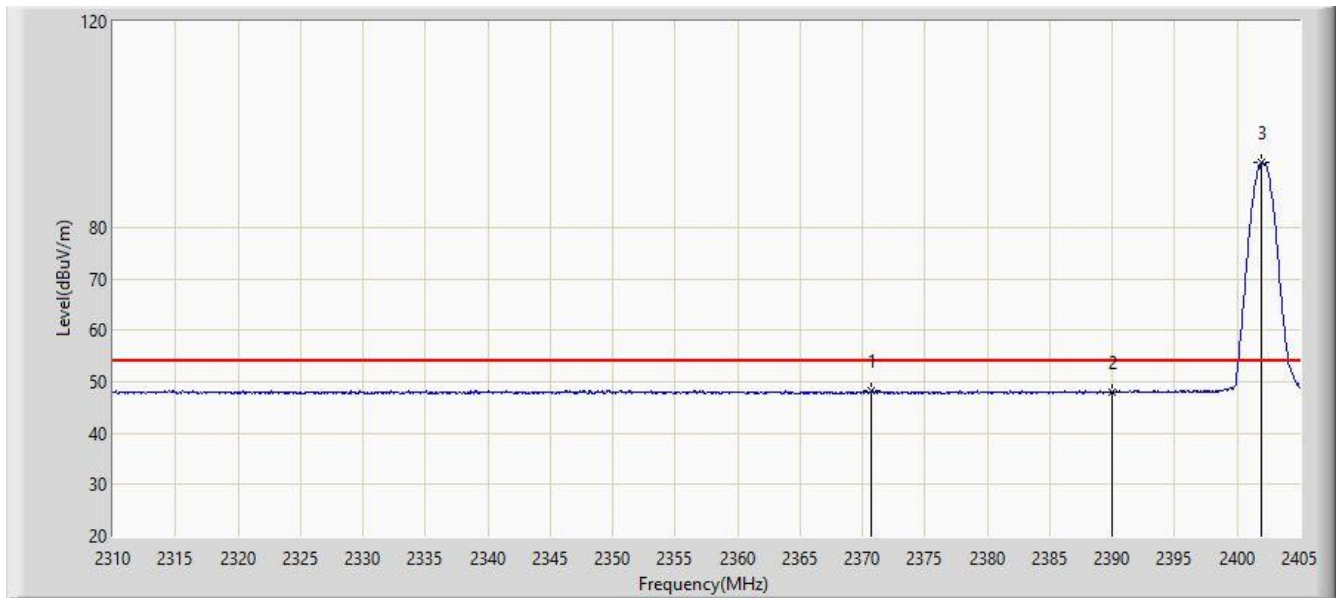


No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Margin (dB)	Limit (dBuV/m)	Factor (dB)	Type
1			2374.030	61.251	28.557	-12.749	74.000	32.694	PK
2			2390.000	58.933	26.221	-15.067	74.000	32.712	PK
3		*	2402.008	93.559	60.815	N/A	N/A	32.744	PK

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

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

Site: AC1	Time: 2020/07/17 - 14:49
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 2402MHz	

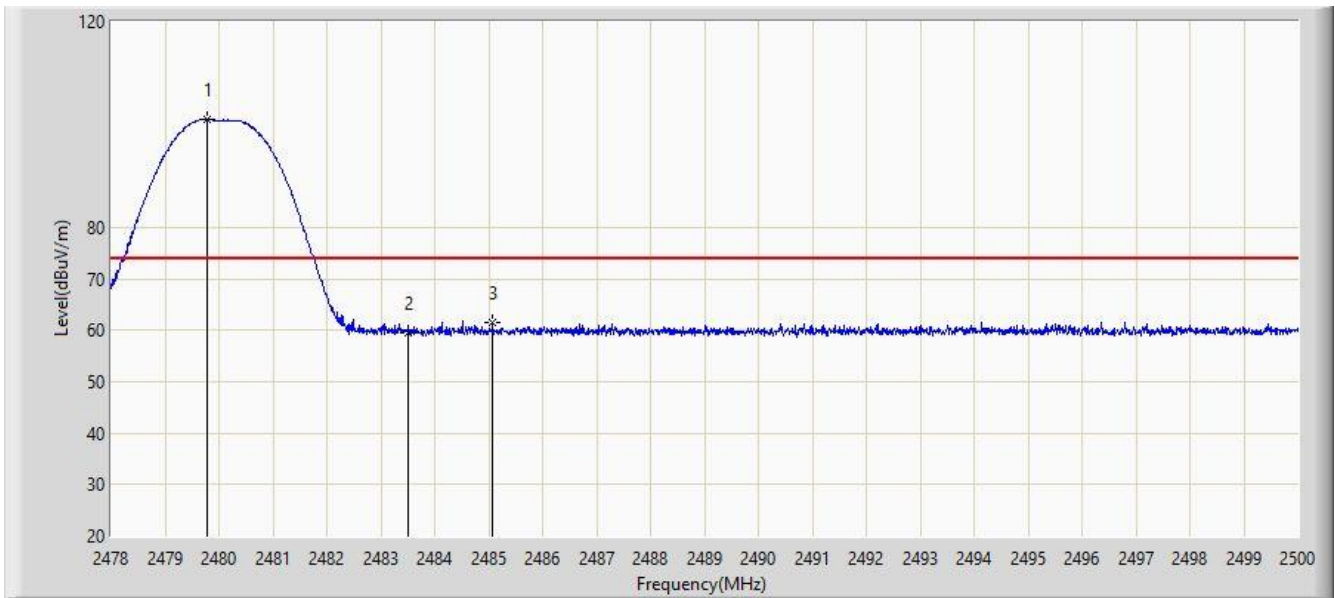


No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Margin (dB)	Limit (dBuV/m)	Factor (dB)	Type
1			2370.705	48.185	15.474	-5.815	54.000	32.711	AV
2			2390.000	48.035	15.323	-5.965	54.000	32.712	AV
3		*	2401.960	92.689	59.945	N/A	N/A	32.744	AV

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

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

Site: AC1	Time: 2020/07/17 - 14:51
Limit: FCC_Part15.209_RE(3m)	Engineer: Messiah Li
Probe: AC1_BBHA9120D_1-18GHz	Polarity: Horizontal
EUT: Bluetooth Module	Power: By USB
Test Mode: Transmit by Bluetooth-LE at Channel 2480MHz	

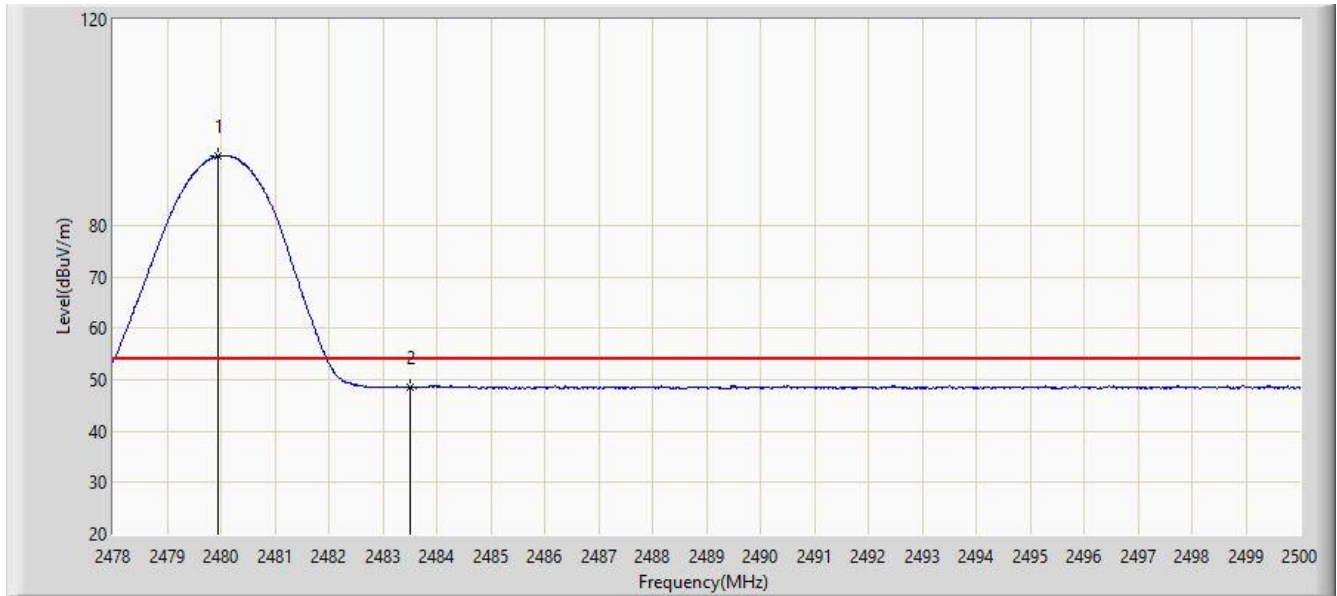


No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Margin (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		*	2479.771	100.911	68.228	N/A	N/A	32.683	PK
2			2483.500	59.343	26.693	-14.657	74.000	32.651	PK
3			2485.073	61.610	28.973	-12.390	74.000	32.636	PK

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

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

Site: AC1	Time: 2020/07/17 - 14:52
Limit: FCC_Part15.209_RE(3m)	Engineer: Messiah Li
Probe: AC1_BBHA9120D_1-18GHz	Polarity: Horizontal
EUT: Bluetooth Module	Power: By USB
Test Mode: Transmit by Bluetooth-LE at Channel 2480MHz	

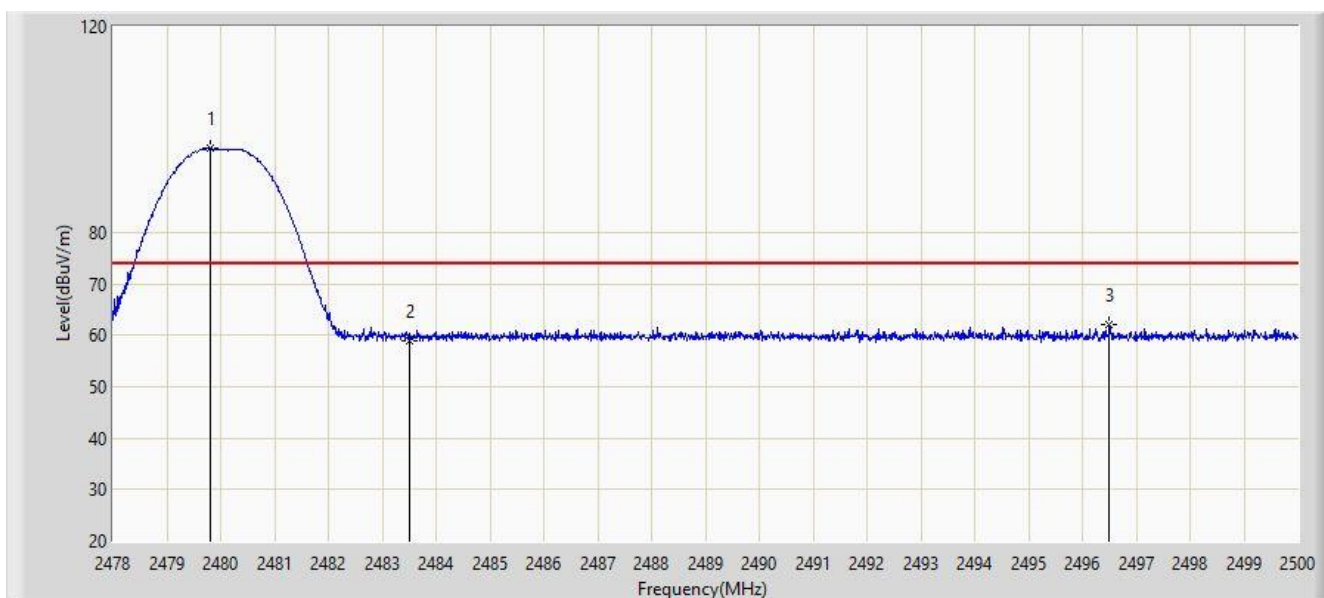


No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Margin (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		*	2480.057	99.689	67.009	N/A	N/A	32.681	AV
2			2483.500	48.107	15.457	-5.893	54.000	32.651	AV
3			2489.528	48.430	15.814	-5.570	54.000	32.616	AV

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

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

Site: AC1	Time: 2020/07/17 - 14:53
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	

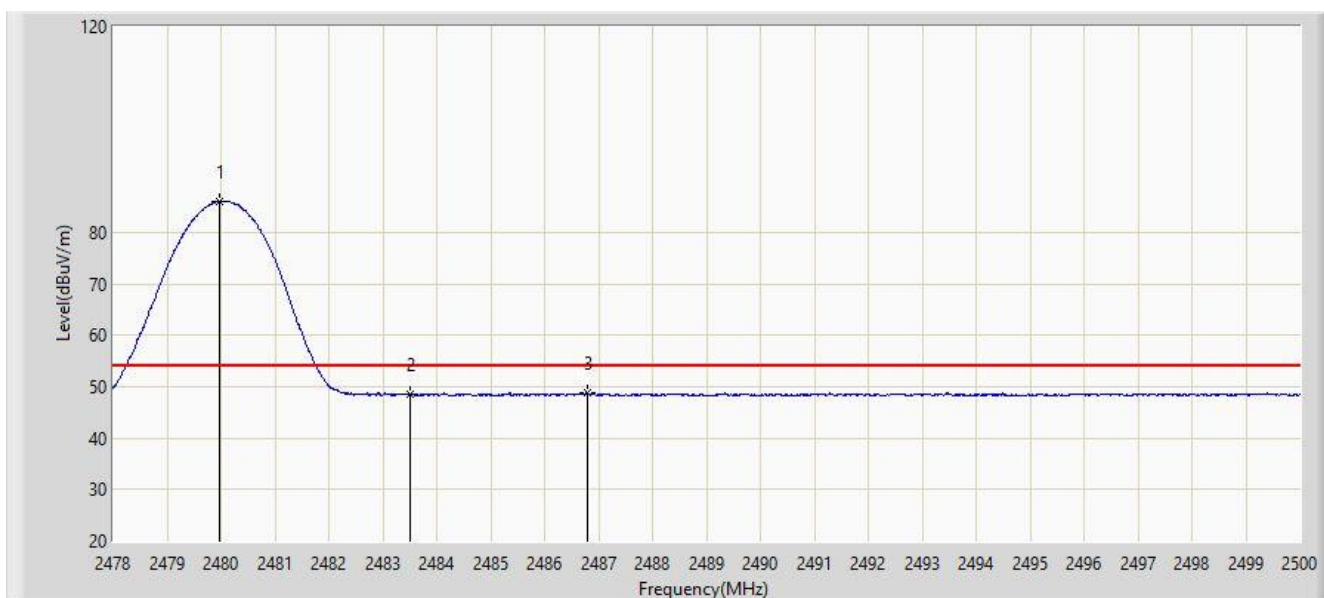


No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Margin (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		*	2479.804	96.282	63.600	N/A	N/A	32.683	PK
2			2483.500	58.879	26.229	-15.121	74.000	32.651	PK
3			2496.491	61.978	29.359	-12.022	74.000	32.618	PK

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

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

Site: AC1	Time: 2020/07/17 - 14:54
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		*	2480.112	95.227	62.547	N/A	N/A	32.679	AV
2			2483.500	48.079	15.429	-5.921	54.000	32.651	AV
3			2488.560	48.255	15.640	-5.745	54.000	32.616	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

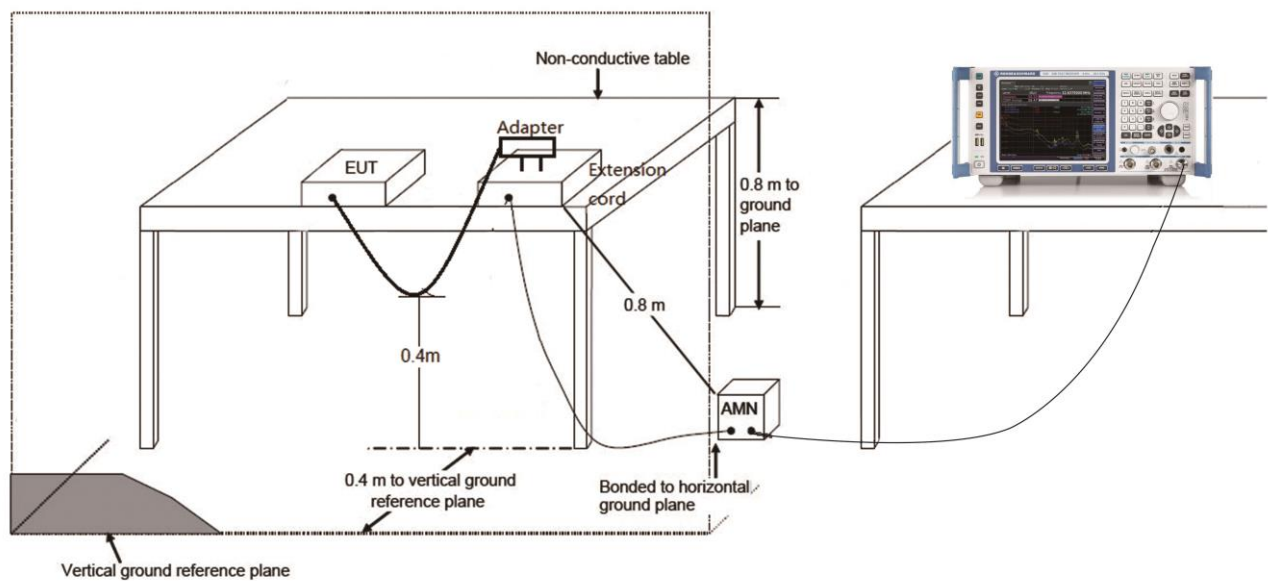
7.8.1. Test Limit

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.

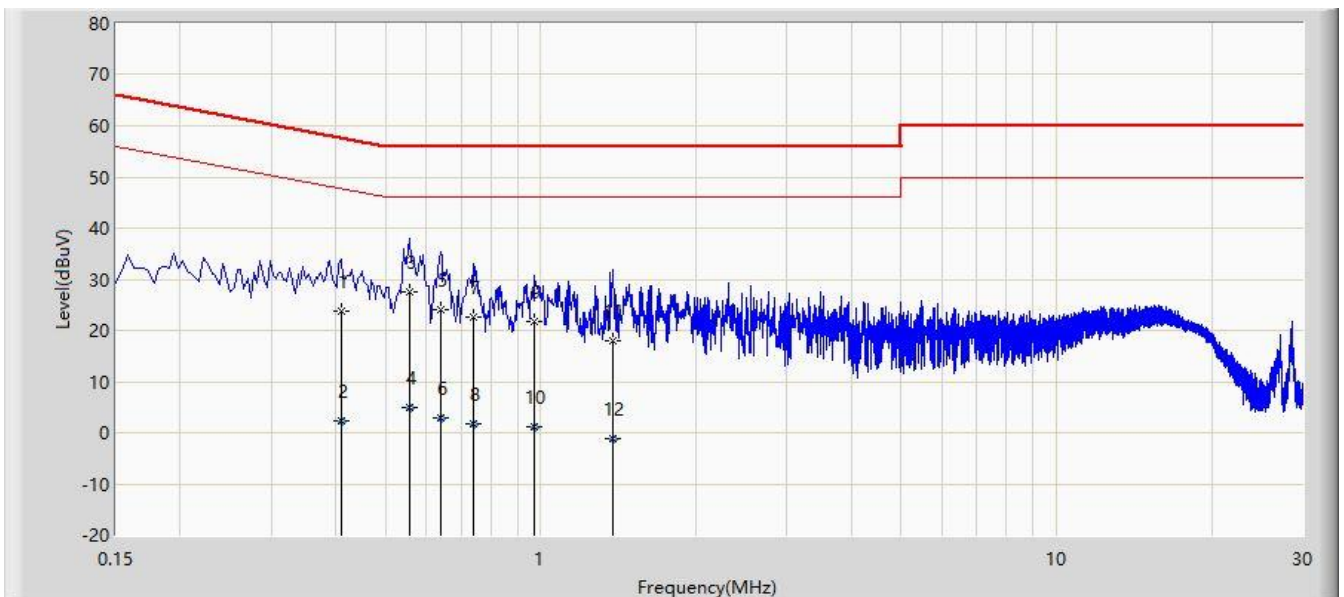
Note 2: The limit decreases linearly with the logarithm of the frequency in the range 0.15MHz to 0.5MHz.

7.8.2. Test Setup



7.8.3.Test Result

Site: SR2	Time: 2020/07/22 - 19:36
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 2402MHz, for HSBT3007-EA configured with External Dipole Antenna	

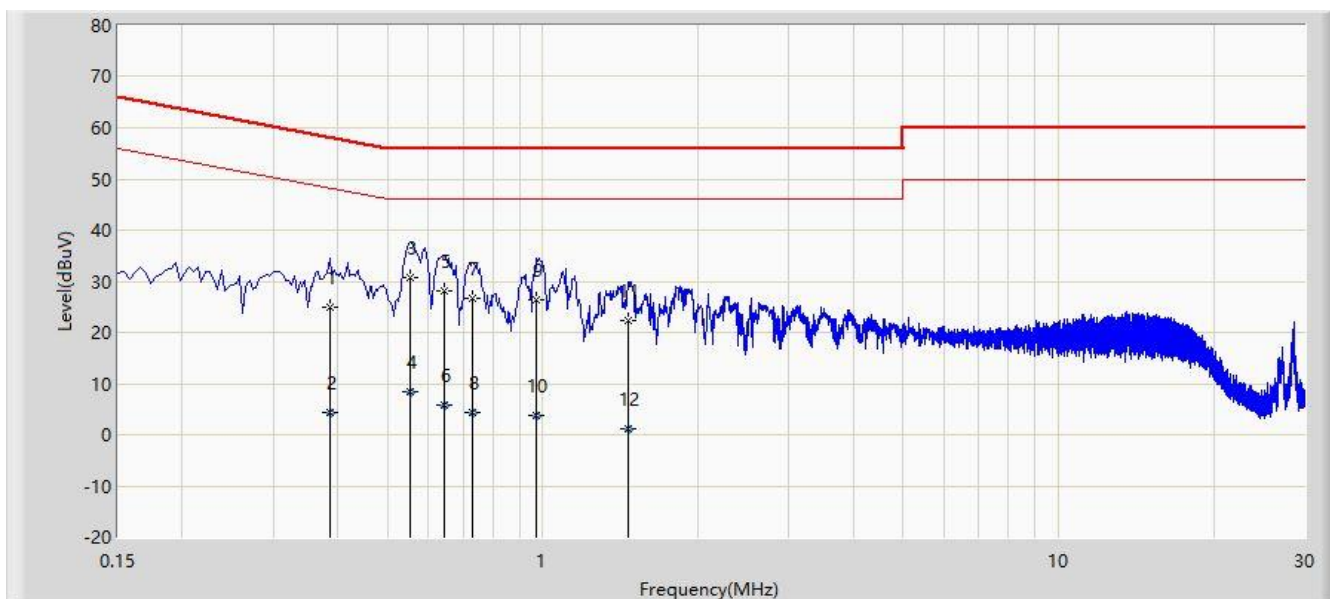


No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV)	Reading Level (dBuV)	Margin (dB)	Limit (dBuV)	Factor (dB)	Type
1			0.410	23.912	14.194	-33.736	57.648	9.717	QP
2			0.410	2.365	-7.353	-45.283	47.648	9.717	AV
3		*	0.558	27.434	17.685	-28.566	56.000	9.749	QP
4			0.558	5.001	-4.748	-40.999	46.000	9.749	AV
5			0.638	24.107	14.346	-31.893	56.000	9.761	QP
6			0.638	2.885	-6.876	-43.115	46.000	9.761	AV
7			0.738	22.699	12.921	-33.301	56.000	9.778	QP
8			0.738	1.742	-8.036	-44.258	46.000	9.778	AV
9			0.974	21.850	12.034	-34.150	56.000	9.816	QP
10			0.974	1.101	-8.715	-44.899	46.000	9.816	AV
11			1.382	18.101	8.231	-37.899	56.000	9.870	QP
12			1.382	-1.198	-11.068	-47.198	46.000	9.870	AV

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

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

Site: SR2	Time: 2020/07/22 - 19:41
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 2402MHz, for HSBT3007-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			0.386	24.935	15.300	-33.215	58.149	9.635	QP
2			0.386	4.206	-5.429	-43.944	48.149	9.635	AV
3		*	0.554	30.778	21.109	-25.222	56.000	9.668	QP
4			0.554	8.371	-1.297	-37.629	46.000	9.668	AV
5			0.642	28.205	18.532	-27.795	56.000	9.673	QP
6			0.642	5.737	-3.936	-40.263	46.000	9.673	AV
7			0.730	26.566	16.899	-29.434	56.000	9.667	QP
8			0.730	4.387	-5.280	-41.613	46.000	9.667	AV
9			0.974	26.458	16.776	-29.542	56.000	9.683	QP
10			0.974	3.760	-5.923	-42.240	46.000	9.683	AV
11			1.466	22.209	12.469	-33.791	56.000	9.740	QP
12			1.466	1.072	-8.668	-44.928	46.000	9.740	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 “2005RSU040-UT” file.

Appendix B - EUT Photograph

Refer to "2005RSU040-UE" file.