MEASUREMENT REPORT

FCC PART 15.247 / Bluetooth

FCC ID:	Z9G-EDF141
Applicant:	Edifier International Limited
Application Type:	Certification
Product:	Gaming speakers
Model No.:	G1000
Brand Name:	EDIFIER, HECATE
FCC Classification:	FCC Part 15 Spread Spectrum Transmitter (DSS)
FCC Rule Part(s):	Part 15 Subpart C (Section 15.247)
Test Procedure(s):	ANSI C63.10-2013
Test Date:	March 29 ~ April 02, 2021

Reviewed By: Vincent Yu

Approved By: Robin Wu

ACCREDITED
TESTING LABORATORY
CERTIFICATE #3628.02

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.

Revision History

Report No.	Version	Description	Issue Date	Note
2103RSU083-U1	Rev. 01	Initial Report	04-12-2021	Valid

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Description Page

1. GENERAL INFORMATION

1.1. Applicant

Edifier International Limited

P.O. Box 6264 General Post Office Hong Kong

1.2. Manufacturer

Dongguan Edifier Esports Technology Co., Ltd.

5th floor, Office Building in the 1st district, No. 2, East Industry Road, Songshan Lake Science & Technology Industrial Park, Dongguan, 523808, CHINA

1.3. Test Facility

☐	**Test Site – MRT Suzhou Laboratory**	
	Laboratory Location (Suzhou - Wuzhong)	
	D8 Building, No.2 Tian'edang Rd., Wuzhong Economic Development Zone, Suzhou, China	
	Laboratory Location (Suzhou - SIP)	
	4b Building, Liando U Valley, No.200 Xingpu Rd., Shengpu Town, Suzhou Industrial Park, China	
	Laboratory Accreditations	
	A2LA: 3628.01	CNAS: L10551
	FCC: CN1166	ISED: CN0001
	VCCI: R-20025, G-20034, C-20020, T-20020	
☒	**Test Site – MRT Shenzhen Laboratory**	
	Laboratory Location (Shenzhen)	
	1G, Building A, Junxiangda Building, Zhongshanyuan Road West, Nanshan District, Shenzhen, China	
	Laboratory Accreditations	
	A2LA: 3628.02	CNAS: L10551
	FCC: CN1284	ISED: CN0105
☐	**Test Site – MRT Taiwan Laboratory**	
	Laboratory Location (Taiwan)	
	No. 38, Fuxing 2nd Rd., Guishan Dist., Taoyuan City 333, Taiwan (R.O.C.)	
	Laboratory Accreditations	
	TAF: L3261-190725	
	FCC: 291082, TW3261	ISED: TW3261

2. PRODUCT INFORMATION

2.1. Equipment Description

Product Name	Gaming speakers
Model No.	G1000
Serial No.	658002897881 (Conducted Sample) 658002897747 (Radiated Sample)
Operating Temp.	0 ~ 45°C
Input	5Vdc, 1A
Bluetooth Version	v5.1 single mode, BR/EDR only

2.2. Product Specification Subjective to this Report

Operating Frequency	2402~2480MHz
Channel Number	79
Type of modulation	GFSK, Pi/4 DQPSK
Data Rate	1Mbps (GFSK), 2Mbps (Pi/4 DQPSK)
Antenna Type	PCB Antenna
Antenna Gain	2.59dBi

Note: All above information was declared by manufacturer.

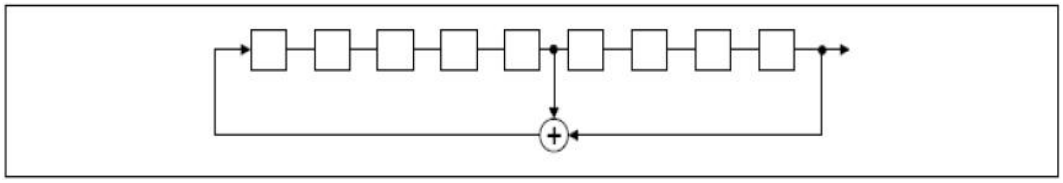
2.3. Working Frequencies

Channel	Frequency	Channel	Frequency	Channel	Frequency
00	2402 MHz	01	2403 MHz	02	2404 MHz
03	2405 MHz	04	2406 MHz	05	2407 MHz
06	2408 MHz	07	2409 MHz	08	2410 MHz
09	2411 MHz	10	2412 MHz	11	2413 MHz
12	2414 MHz	13	2415 MHz	14	2416 MHz
15	2417 MHz	16	2418 MHz	17	2419 MHz
18	2420 MHz	19	2421 MHz	20	2422 MHz
21	2423 MHz	22	2424 MHz	23	2425 MHz
24	2426 MHz	25	2427 MHz	26	2428 MHz
27	2429 MHz	28	2430 MHz	29	2431 MHz
30	2432 MHz	31	2433 MHz	32	2434 MHz
33	2435 MHz	34	2436 MHz	35	2437 MHz
36	2438 MHz	37	2439 MHz	38	2440 MHz
39	2441 MHz	40	2442 MHz	41	2443 MHz
42	2444 MHz	43	2445 MHz	44	2446 MHz
45	2447 MHz	46	2448 MHz	47	2449 MHz
48	2450 MHz	49	2451 MHz	50	2452 MHz
51	2453 MHz	52	2454 MHz	53	2455 MHz
54	2456 MHz	55	2457 MHz	56	2458 MHz
57	2459 MHz	58	2460 MHz	59	2461 MHz
60	2462 MHz	61	2463 MHz	62	2464 MHz
63	2465 MHz	64	2466 MHz	65	2467 MHz
66	2468 MHz	67	2469 MHz	68	2470 MHz
69	2471 MHz	70	2472 MHz	71	2473 MHz
72	2474 MHz	73	2475 MHz	74	2476 MHz
75	2477 MHz	76	2478 MHz	77	2479 MHz
78	2480 MHz	--	--	--	--

2.4. Pseudorandom Frequency Hopping Sequence

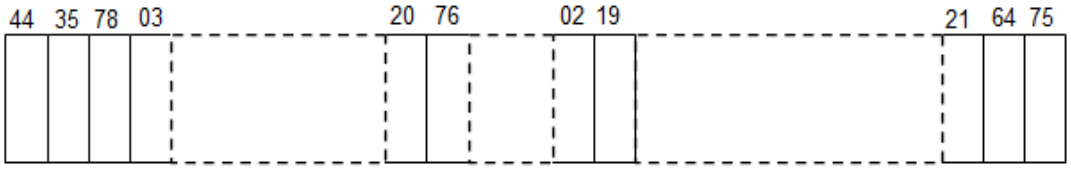
The pseudorandom sequence may be generated in a nine-stage shift register whose 5th and 9th stage outputs are added in a modulo-two addition stage. And the result is fed back to the input of the first stage. The sequence begins with the first ONE of 9 consecutive ONES, i.e. the shift register is initialized with nine ones.

- Number of shift register stages: 9
- Length of pseudo-random sequence: 2^9 - 1 = 511 bits
- Longest sequence of zeros: 8 (non-inverted signal)



Linear Feedback Shift Register for Generation of the PRBS sequence

An example of Pseudorandom Frequency Hopping Sequence as follow:



Each frequency used equally on the average by each transmitter.

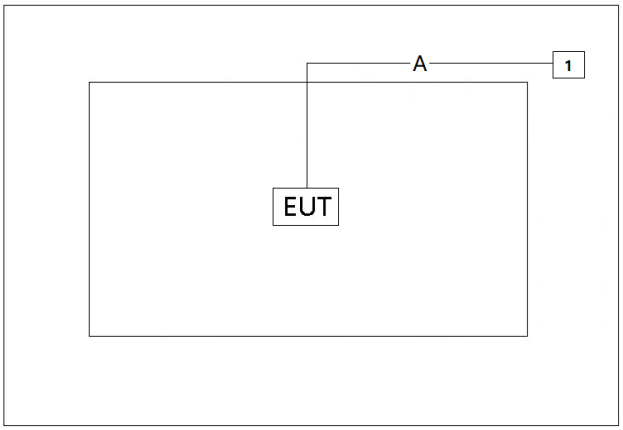
The system receivers have input bandwidths that match the hopping channel bandwidths of their Corresponding transmitters and shift frequencies in synchronization with the transmitted signals.

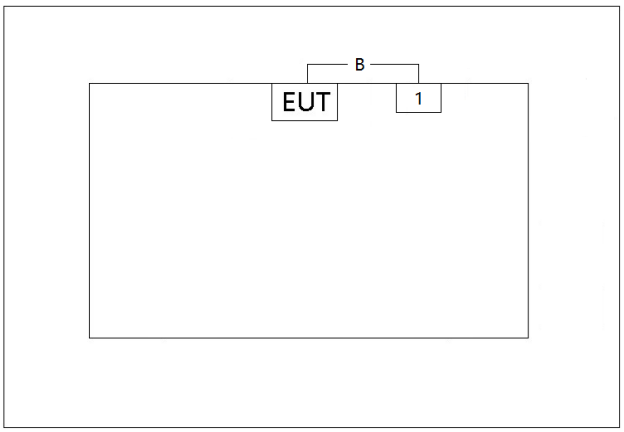
2.5. Test Mode

Test Mode
Mode 1: Transmit by DH5
Mode 2: Transmit by 2DH5

2.6. Description of Test Configuration

The ANSI C63.10: 2013 was used to reference the appropriate EUT setup for testing.

Radiated Emission Measurement


AC Conducted Emission Measurement


Cable Type		Cable Description
A	USB Cable	Non-Shielded, > 5 m
B	USB Cable	Non-Shielded, 1.8 m

2.7. Test System Details

Product		Manufacturer	Model No.
1	Notebook	Lenovo	E495

2.8. Test Software

The test utility software used during testing was “FCC_assist”, and the version was 1.0.1.2, and RF power setting values of the software refer to operation description.

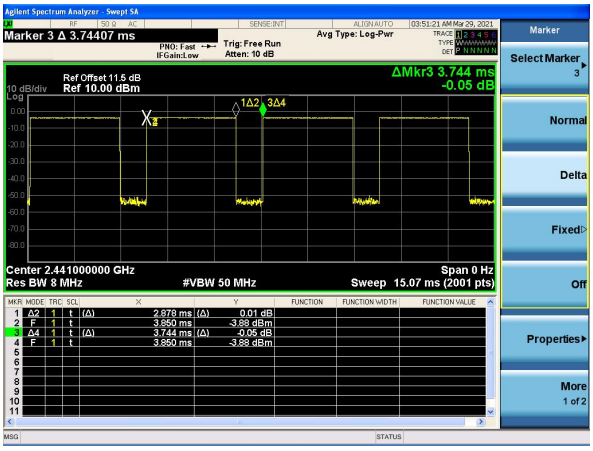
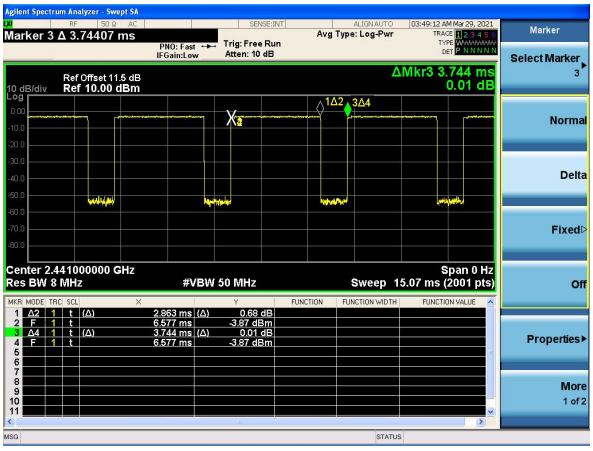
2.9. Test Environment Condition

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

2.10. 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
DH5	76.87%
2DH5	76.47%

Duty Cycle (T = Transmission Duration)	
DH5 (T = 2.878ms)	2DH5 (T = 2.863ms)
	

3. 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 are no provisions for connection to an external antenna.

Conclusion:

The unit complies with the requirement of §15.203.

4. TEST EQUIPMENT CALIBRATION DATE

Conducted Emission (NS-SR2)

Instrument	Manufacturer	Type No.	Asset No.	Cali. Interval	Cali. Due Date
EMI Test Receiver	R&S	ESL3	MRTSUE06576	1 year	2021/07/09
ENV216-LV-NETZNACHB	R&S	ENV216	MRTSUE06577	1 year	2021/07/09
ENV216-LV-NETZNACHB	R&S	ENV216	MRTSUE06578	1 year	2021/07/09
Temperature/Humidity Meter	deli	NO.8813	MRTSUE06587	1 year	2021/07/08
Shielding Anechoic Chamber	BOOMWAVE	SR2	MRTSUE06551	5 year	2024/06/04

Radiated Emission (NS-AC1)

Instrument	Manufacturer	Type No.	Asset No.	Cali. Interval	Cal. Due Date
EMI Test Receiver	R&S	ESR3	MRTSUE06575	1 year	2021/07/09
EXA Signal Analyzer	Keysight	N9010A	MRTSUE06195	1 year	2021/04/14
Horn Antenna	Schwarzbeck	BBHA 9170	MRTSUE06292	1 year	2021/10/24
Broad-Band Horn Antenna	Schwarzbeck	9120D	MRTSUE06572	1 year	2021/07/03
Bilog Period Antenna	Schwarzbeck	VULB 9162	MRTSUE06573	1 year	2021/07/03
Preamplifier	Schwarzbeck	BBV 9721	MRTSUE06121	1 year	2021/06/11
Broadband Coaxial Preamplifier	Schwarzbeck	BBV 9718	MRTSUE06574	1 year	2021/07/13
Anechoic Chamber	BOOMWAVE	AC1	MRTSUE06496	1 year	2021/07/25
Temperature/Humidity Meter	deli	NO.8813	MRTSUE06588	1 year	2021/07/08

Conducted Test Equipment (NS-TR2)

Instrument	Manufacturer	Type No.	Asset No.	Cali. Interval	Cali. Due Date
electronic hygrothermograph	DELI	No.8813	MRTSUE06783	1 year	2021/05/13
USB wideband power sensor	Keysight	U2021XA	MRTSUE06581	1 year	2021/08/20
EXA Signal Analyzer	Keysight	N9010A	MRTSUE06195	1 year	2021/04/14

Software	Version	Function
EMI Software	V3	EMI Test Software

5. MEASUREMENT UNCERTAINTY

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

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

6. TEST RESULT

6.1. Summary

FCC Part Section(s)	Test Description	Test Limit	Test Condition	Test Result	Reference
15.247(a)(1)	20dB Bandwidth	No Limit	Conducted	Pass	Section 6.2
15.247(b)(1)	Peak Transmitter Output Power	<1 Watt if > 75 non-overlapping channels used		Pass	Section 6.3
15.24207(a)(1)	Channel Separation	> 2/3 of 20 dB BW for systems with Output Power < 125mW		Pass	Section 6.4
15.247(a)(1)(iii)	Number of Channels	> 15 Channels		Pass	Section 6.5
15.247(a)(1)(iii)	Time of Occupancy	< 0.4 sec in 31.6 sec period		Pass	Section 6.6
15.247(d)	Band Edge / Out-of-Band Emissions	Conducted ≥ 20dBc		Pass	Section 6.7 Section 6.8
15.205, 15.209	General Field Strength (Restricted Bands and Radiated Emission)	Emissions in restricted bands must meet the radiated limits detailed in 15.209	Radiated	Pass	Section 6.9 Section 6.10
15.207	AC Conducted Emissions 150kHz - 30MHz	< FCC 15.207 limits >	Line Conducted	Pass	Section 6.11

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.

6.2. 20dB Bandwidth Measurement

6.2.1.Test Limit

N/A

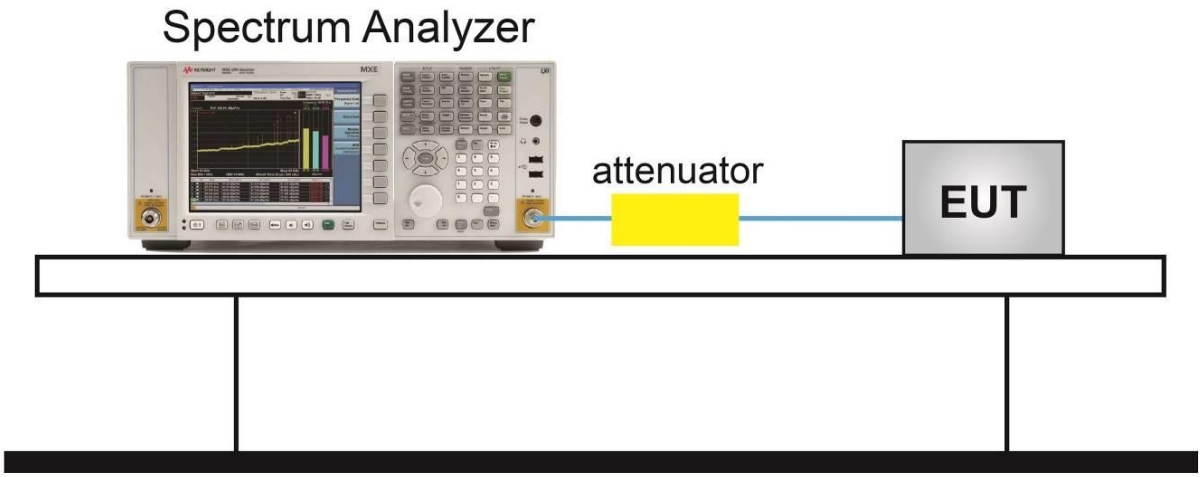
6.2.2.Test Procedure Used

ANSI C63.10-2013 - Section 6.9.2

6.2.3.Test Setting

1. Set RBW ≥ 1% to 5% of the OBW
2. VBW = Approximately three times RBW
3. Span = Approximately 2 to 5 times the OBW, centered on a hopping channel
4. Detector = Peak
5. Trace mode = Max hold
6. Sweep = Auto couple
7. Allow the trace to stabilize
8. Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 20 dB relative to the maximum level measured in the fundamental emission.

6.2.4.Test Setup

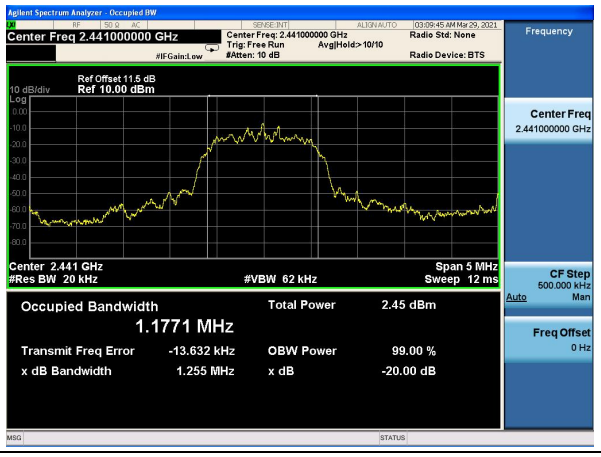


6.2.5.Test Result

Test Site	NS-TR2	Test Engineer	Selina Zhang
Test Date	2021/03/29		

Test Mode	Channel No.	Frequency (MHz)	20dB Bandwidth (kHz)	Result
DH5	00	2402	882.0	Pass
DH5	39	2441	918.6	Pass
DH5	78	2480	883.0	Pass
2DH5	00	2402	1288.0	Pass
2DH5	39	2441	1255.0	Pass
2DH5	78	2480	1283.0	Pass

DH5 20dB Bandwidth	
Channel 00 (2402MHz)	Channel 39 (2441MHz)
	
Channel 78 (2480MHz)	
	

2DH5 20dB Bandwidth	
Channel 00 (2402MHz)	Channel 39 (2441MHz)
	
Channel 78 (2480MHz)	
	

6.3. Output Power Measurement

6.3.1.Test Limit

The maximum out power permissible output power is 1 Watt for all frequency hopping systems operating in the 2400-2483.5 MHz band employing at least 75 non-overlapping hopping channels. For all other frequency hopping systems in the 2400-2483.5 MHz band: 0.125 watts.

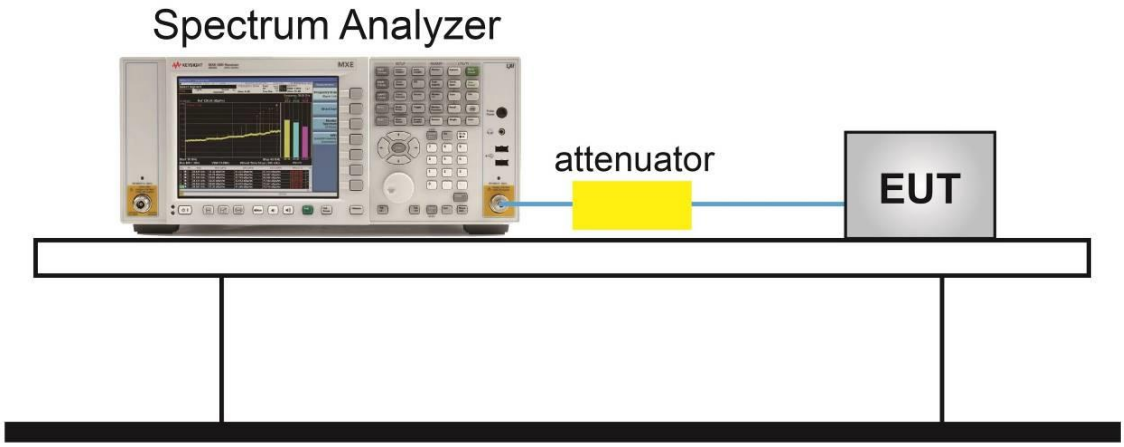
6.3.2.Test Procedure Used

ANSI C63.10-2013 - Section 7.8.5

6.3.3.Test Setting

1. Set RBW ≥ the 20 dB bandwidth of the emission being measured.
2. VBW ≥ RBW
3. Span = approximately five times the 20dB bandwidth, centered on a hopping channel
4. Detector = Peak
5. Trace mode = Max hold
6. Sweep = Auto couple
7. Allow the trace to stabilize. Use the marker-to-peak function to set the marker to the peak of the emission. The indicated level is the peak output power (don't forget added the external attenuation and cable loss)

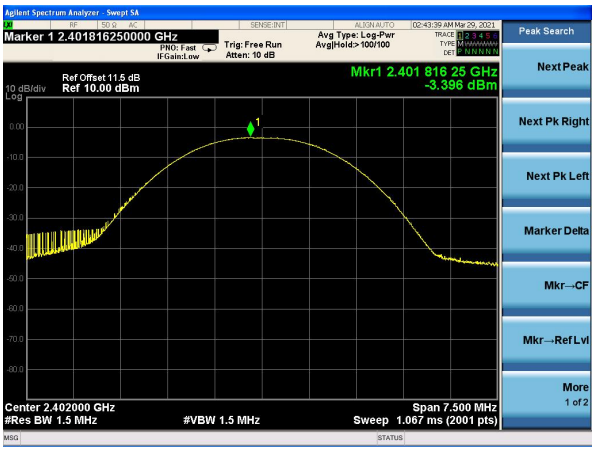
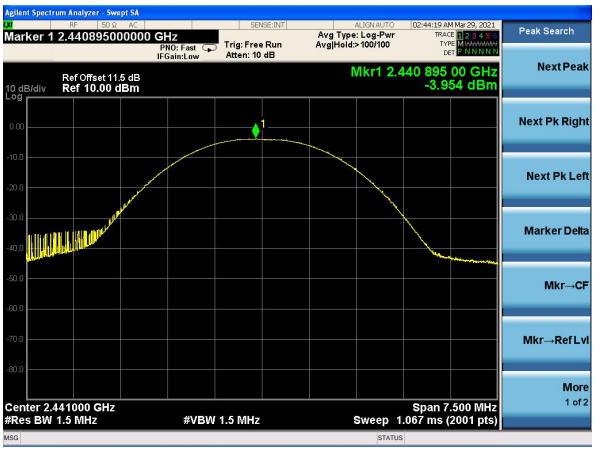
6.3.4.Test Setup

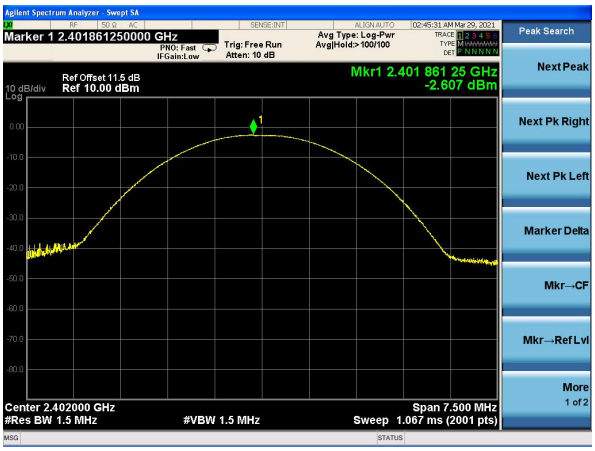
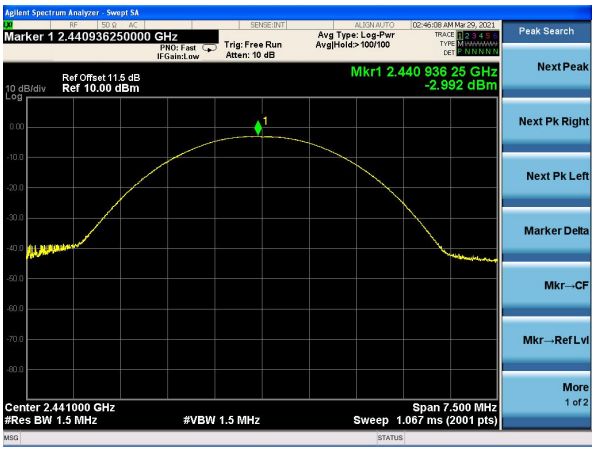


6.3.5.Test Result

Test Site	NS-TR2	Test Engineer	Selina Zhang
Test Date	2021/03/29		

Test Mode	Channel No.	Frequency (MHz)	Peak Power (dBm)	Power Limit (dBm)
DH5	00	2402	-3.40	≤ 20.97
DH5	39	2441	-3.95	≤ 20.97
DH5	78	2480	-4.99	≤ 20.97
2DH5	00	2402	-2.61	≤ 20.97
2DH5	39	2441	-2.99	≤ 20.97
2DH5	78	2480	-4.16	≤ 20.97

DH5 Output Power	
Channel 00 (2402MHz)	Channel 39 (2441MHz)
	
Channel 78 (2480MHz)	
	

2DH5 Output Power	
Channel 00 (2402MHz)	Channel 39 (2441MHz)
	
Channel 78 (2480MHz)	
	

6.4. Carrier Frequency Separation Measurement

6.4.1.Test Limit

The minimum permissible channel separation for this system is 2/3 the value of the 20dB BW.

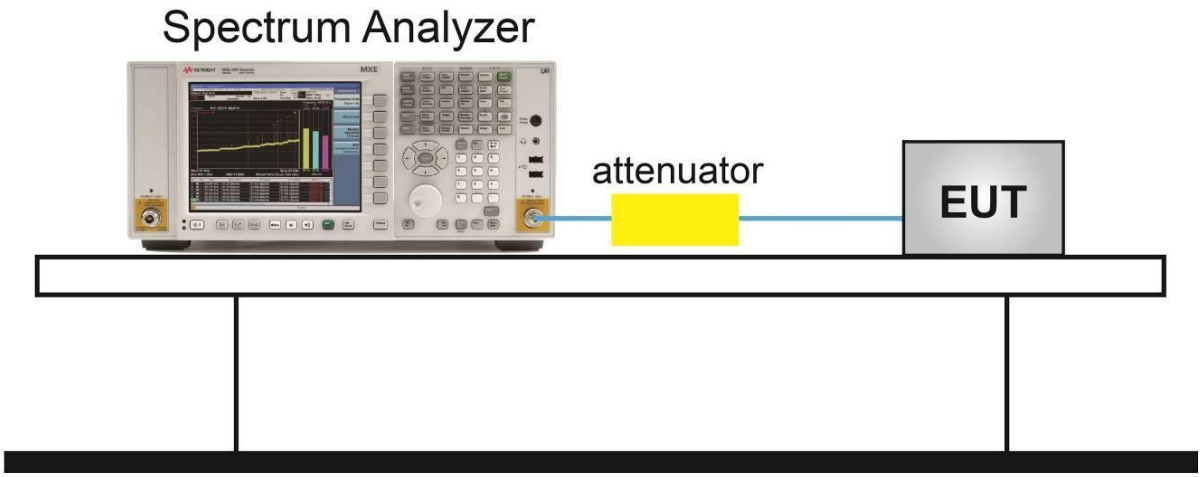
6.4.2.Test Procedure Used

ANSI C63.10-2013 - Section 7.8.2

6.4.3.Test Setting

1. Span = Wide enough to capture the peaks of two adjacent channels.
2. Start with the RBW set to approximately 30% of the channel spacing; adjust as necessary to best identify the center of each individual channel.
3. VBW ≥ RBW
4. Sweep time = Auto couple
5. Detector = Peak
6. Trace mode = Max hold
7. Allowed the trace to stabilize
8. Use the marker-delta function to determine the separation between the peaks of the adjacent channels.

6.4.4.Test Setup

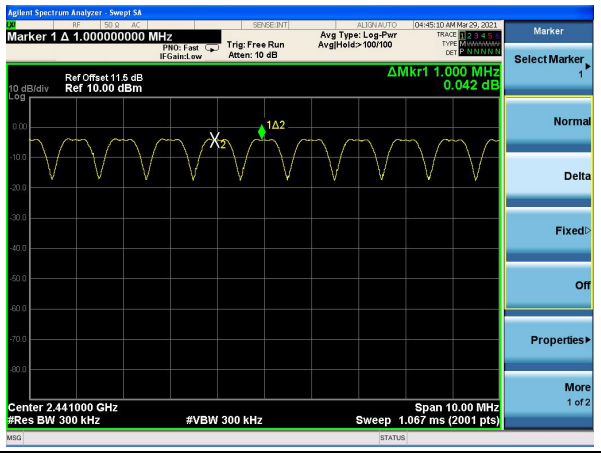


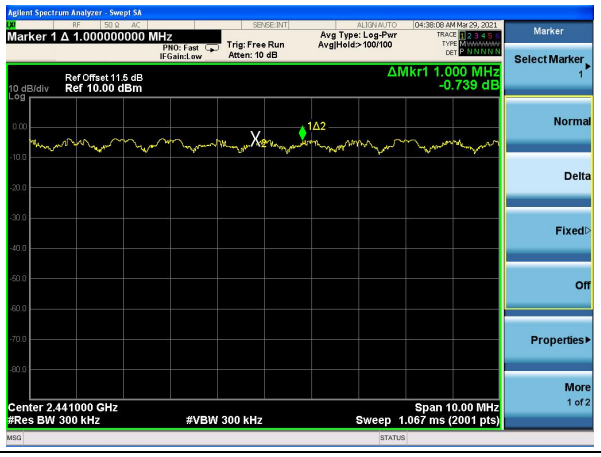
6.4.5.Test Result

Test Site	NS-TR2	Test Engineer	Selina Zhang
Test Date	2021/03/29		

Test Mode	Channel No.	Frequency (MHz)	Carrier Frequency Separation (kHz)	Limit (kHz)	Result
DH5	00	2402	1000	≥ 588.0	Pass
DH5	39	2441	1000	≥ 612.4	Pass
DH5	78	2480	1000	≥ 588.7	Pass
2DH5	00	2402	1000	≥ 858.7	Pass
2DH5	39	2441	1000	≥ 836.7	Pass
2DH5	78	2480	1000	≥ 855.3	Pass

Note: The Limit is 2/3 the value of the 20dB BW.

DH5 Carrier Frequency Separation	
Channel 00 (2402MHz)	Channel 39 (2441MHz)
	
Channel 78 (2480MHz)	
	

2DH5 Carrier Frequency Separation	
Channel 00 (2402MHz)	Channel 39 (2441MHz)
	
Channel 78 (2480MHz)	
	

6.5. Number of Hopping Channels Measurement

6.5.1.Test Limit

This frequency hopping system must employ a minimum of 15 hopping channels.

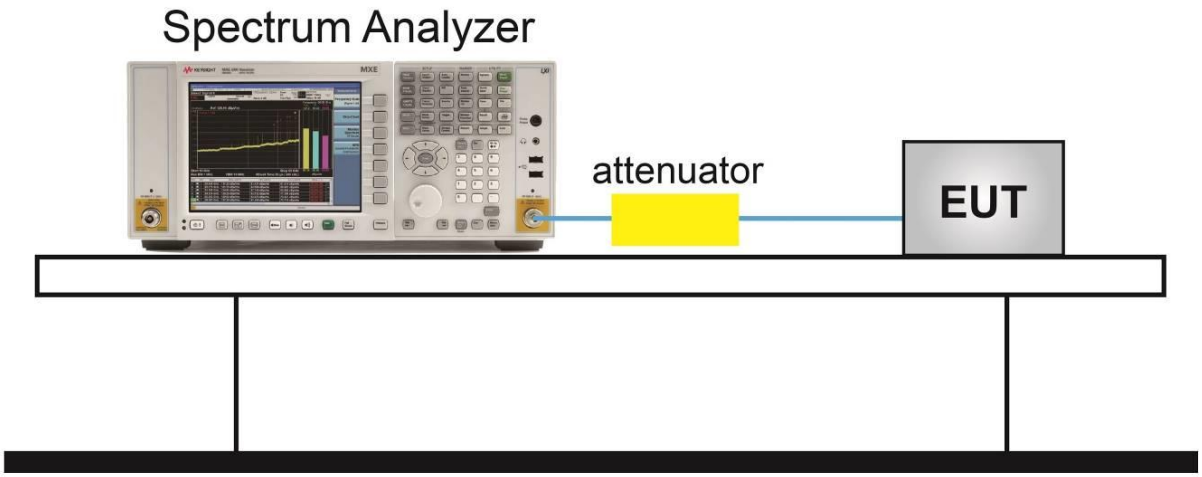
6.5.2.Test Procedure Used

ANSI C63.10-2013 - Section 7.8.3

6.5.3.Test Setting

1. Span = The frequency band of operation. Depending on the number of channels the device supports, it may be necessary to divide the frequency range of operation across multiple spans, to allow the individual channels to be clearly seen.
2. RBW: To identify clearly the individual channels, set the RBW to less than 30% of the channel spacing or the 20 dB bandwidth, whichever is smaller.
3. VBW ≥ RBW
4. Sweep time = Auto couple
5. Detector = Peak
6. Trace mode = Max hold
7. Allow the trace to stabilize

6.5.4.Test Setup



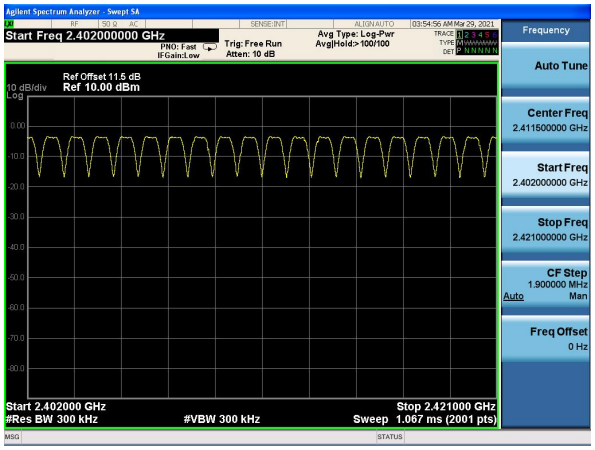
6.5.5.Test Result

Test Site	NS-TR2	Test Engineer	Selina Zhang
Test Date	2021/03/29		

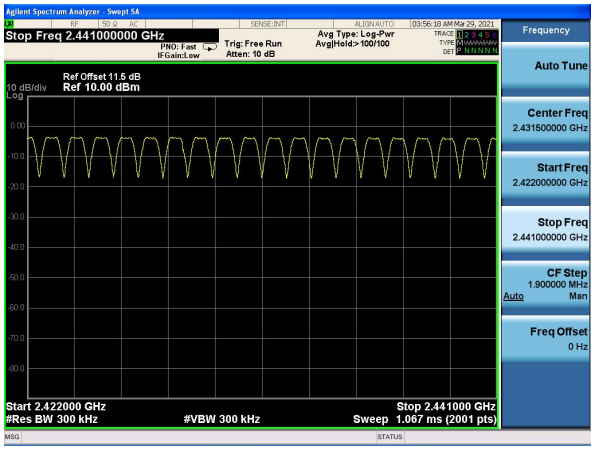
Test Mode (Hopping)	Frequency (MHz)	Channel Numbers	Limit (Hopping Channels)	Result
DH5	2402 ~ 2480	79	≥ 15	Pass
2DH5	2402 ~ 2480	79	≥ 15	Pass

DH5 Number of Hopping Channels

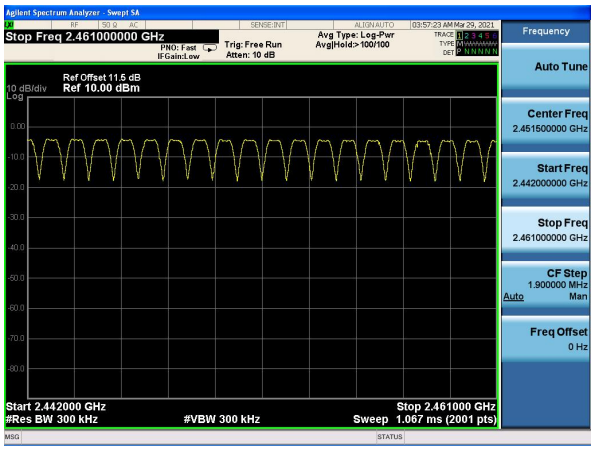
2402 ~ 2421MHz



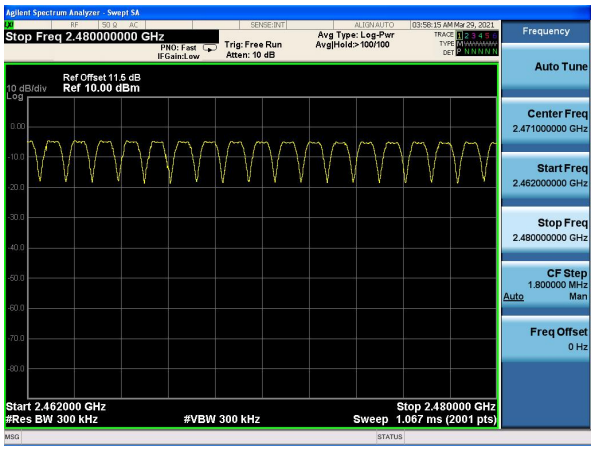
2422 ~ 2441MHz

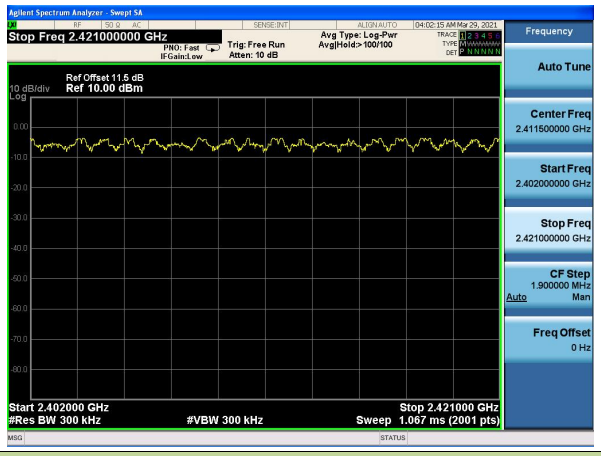
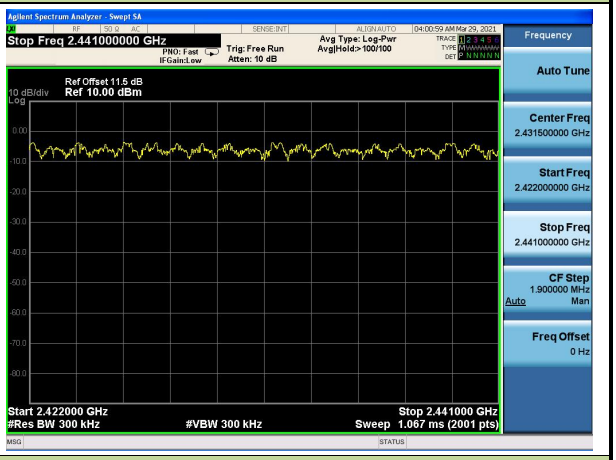
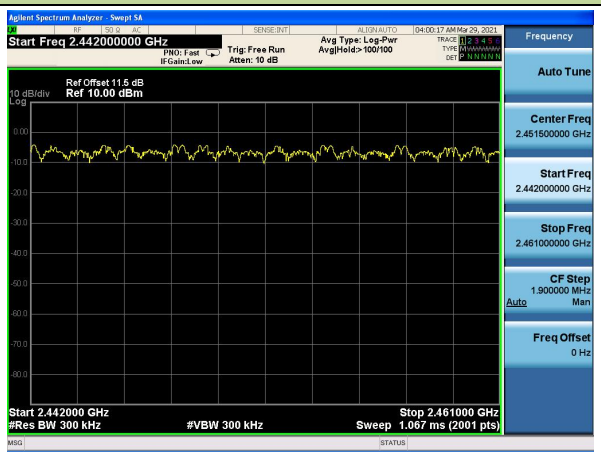
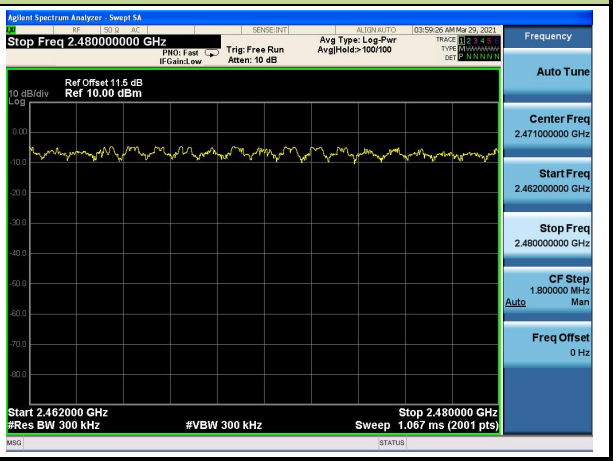


2442 ~ 2461MHz



2462 ~ 2480MHz



2DH5 Number of Hopping Channels	
2402 ~ 2421MHz	2422 ~ 2441MHz
	
2442 ~ 2461MHz	2462 ~ 2480MHz
	

6.6. Time of Occupancy Measurement

6.6.1.Test Limit

The maximum permissible time of occupancy is 400ms within a period of 400ms multiplied by the number of hopping channels employed.

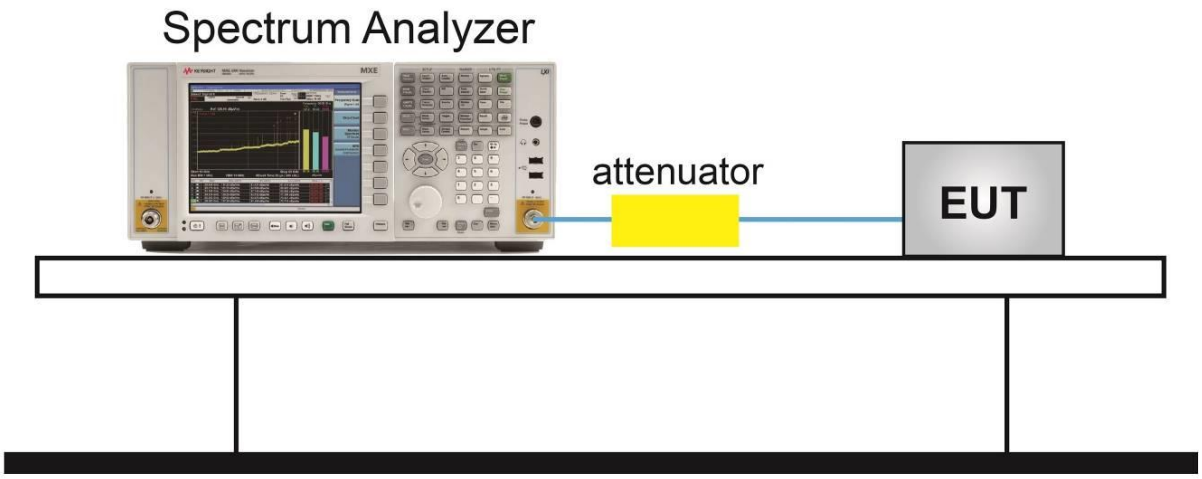
6.6.2.Test Procedure Used

ANSI C63.10-2013 - Section 7.8.4

6.6.3.Test Setting

1. Span = Zero span, centered on a hopping channel.
2. RBW shall be ≤ channel spacing and where possible RBW should be set >> 1 / T, where T is the expected dwell time per channel.
3. VBW ≥ RBW
4. Sweep time = As necessary to capture the entire dwell time per hopping channel
5. Detector = Peak
6. Trace mode = Free run
7. Use the marker-delta function to determine the transmit time per hop. If this value varies with different modes of operation (data rate, modulation format, number of hopping channels, etc.), then repeat this test for each variation in transmit time. An oscilloscope may be used instead of a spectrum analyzer. The EUT shall show compliance with the appropriate regulatory limit for the number of hopping channels. A plot of the data shall be included in the test report.

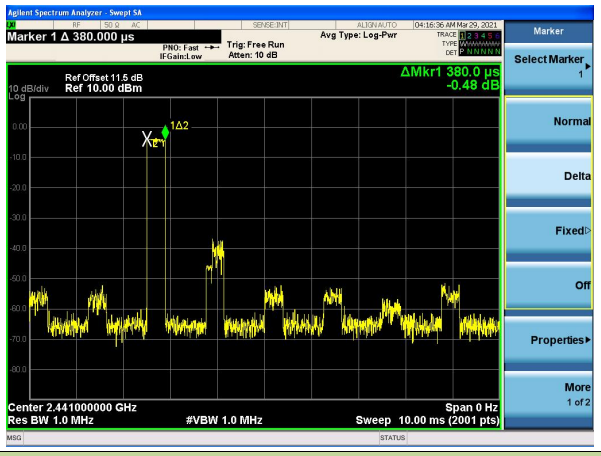
6.6.4.Test Setup



6.6.5.Test Result

Test Site	NS-TR2	Test Engineer	Selina Zhang
Test Date	2021/03/29		

Test Mode	Channel No.	Frequency (MHz)	Hops Over Occupancy Time (Hops)	Packet Transfer Time (ms)	Time of Occupancy (ms)	Limit (ms)	Result
Non-AFH							
2DH1	39	2441	320	0.380	121.600	≤ 400	Pass
2DH3	39	2441	160	1.600	256.000	≤ 400	Pass
2DH5	39	2441	107	2.853	305.271	≤ 400	Pass
AFH							
2DH1	39	2441	160	0.380	60.800	≤ 400	Pass
2DH3	39	2441	80	1.600	128.000	≤ 400	Pass
2DH5	39	2441	53.5	2.853	152.636	≤ 400	Pass

Packet Transfer Time	
2DH1 - Channel 39 (2441MHz)	2DH3 - Channel 39 (2441MHz)
	
2DH5 - Channel 39 (2441MHz)	
	

Note 1: According the Bluetooth Standard Specification, the nominal hop rate is 1600 hops/s. All Bluetooth unit participating in the piconet are time and hop synchronized to the channel.

Non-AFH

Hops Over Occupancy Time in 31.6s for 3DH1 = 1600 / 2 / 79 * 31.6 = 320.

Hops Over Occupancy Time in 31.6s for 3DH3 = 1600 / 4 / 79 * 31.6 = 160.

Hops Over Occupancy Time in 31.6s for 3DH5 = 1600 / 6 / 79 * 31.6 = 107.

AFH

Hops Over Occupancy Time in 31.6s for 3DH1 = 800 / 2 / 20 * 8.0 = 160.

Hops Over Occupancy Time in 31.6s for 3DH3 = 800 / 4 / 20 * 8.0 = 80.

Hops Over Occupancy Time in 31.6s for 3DH5 = 800 / 6 / 20 * 8.0 = 53.5.

Note 2: Time of Occupancy = Packet Transfer Time * Hops Over Occupancy Time in 31.6s.

6.7. Band-edge Compliance Measurement

6.7.1.Test Limit

The maximum permissible emission level is 20dBc. Any emissions were lying outside of the emission bandwidth and in authorized band edges to a field strength limit specified in Section 15.209 of the Title 47 CFR.

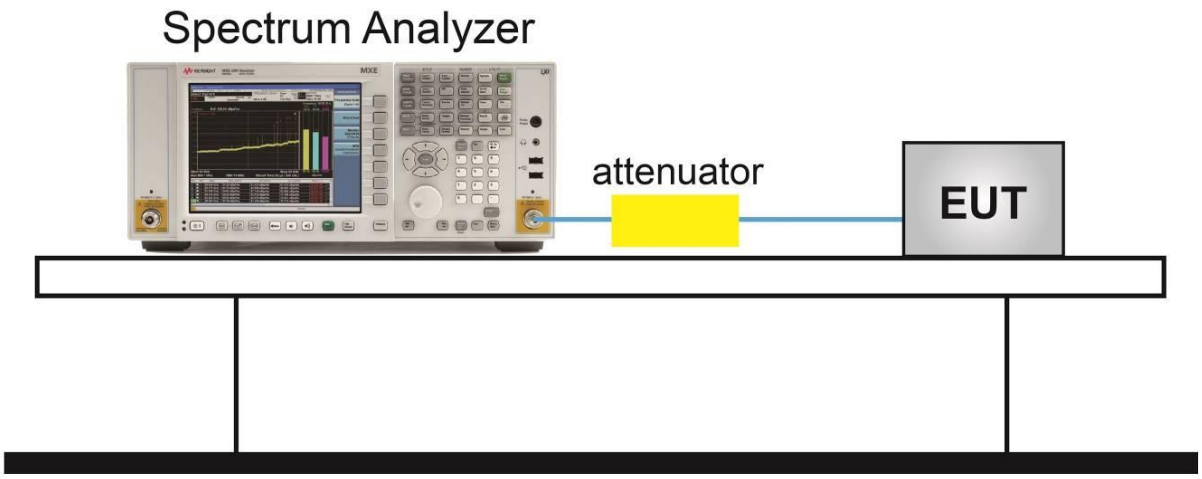
6.7.2.Test Procedure Used

ANSI C63.10-2013 - Section 6.10.4

6.7.3.Test Setting

1. Span = Wide enough to capture the peak level of the emission operating on the channel closest to the band edge, as well as any modulation products which fall outside of the authorized band of operation.
2. RBW = 100kHz
3. VBW = 300kHz
4. Detector = Peak
5. Sweep time = Auto couple
6. Trace mode = Max hold
7. Allow the trace to stabilize. Set the marker on the emission at the band edge, or on the highest modulation product outside of the band, if this level is greater than that at the band edge. Enable the marker-delta function, then use the marker-to-peak function to move the marker to the peak of the in-band emission.

6.7.4.Test Setup



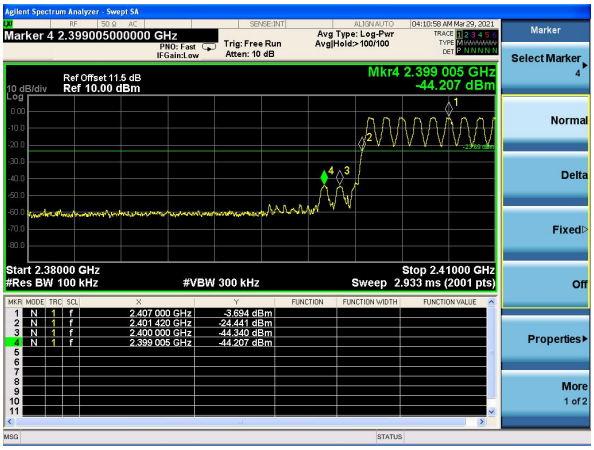
6.7.5.Test Result

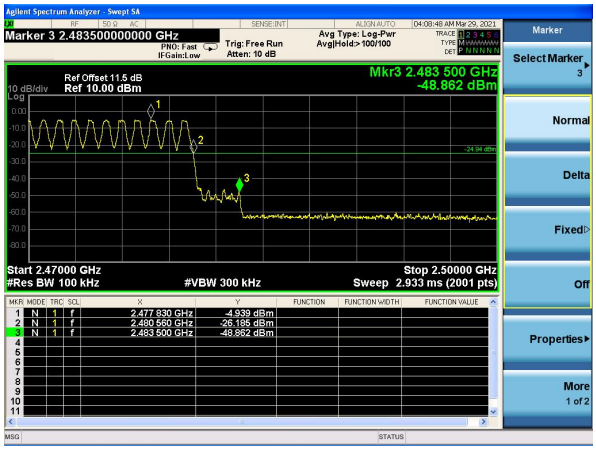
Test Site	NS-TR2	Test Engineer	Selina Zhang
Test Date	2021/03/29		

Test Mode	Channel No.	Frequency (MHz)	Limit	Result
DH5	00	2402	20dBc	Pass
DH5	78	2480	20dBc	Pass
DH5	00 ~ 78	2402 ~ 2480	20dBc	Pass
2DH5	00	2402	20dBc	Pass
2DH5	78	2480	20dBc	Pass
2DH5	00 ~ 78	2402 ~ 2480	20dBc	Pass

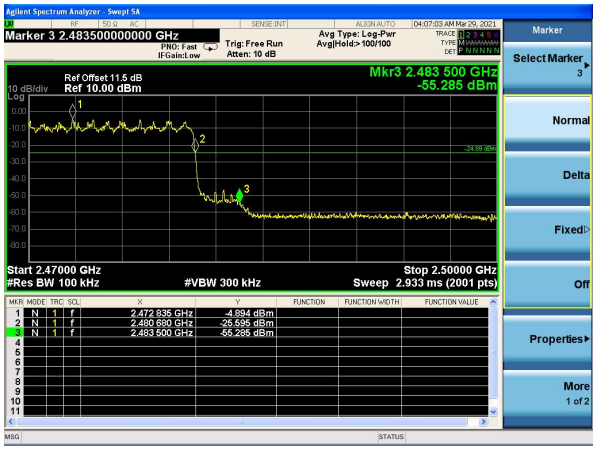
Band-edge Compliance	
DH5 - Channel 00 (2402MHz)	DH5 - Channel 78 (2480MHz)
	
2DH5 - Channel 00 (2402MHz)	2DH5 - Channel 78 (2480MHz)
	

DH5 - Operation Frequency Range of 20dB Bandwidth within Hopping Mode





2DH5 - Operation Frequency Range of 20dB Bandwidth within Hopping Mode



6.8. Conducted Spurious Emissions Measurement

6.8.1.Test Limit

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

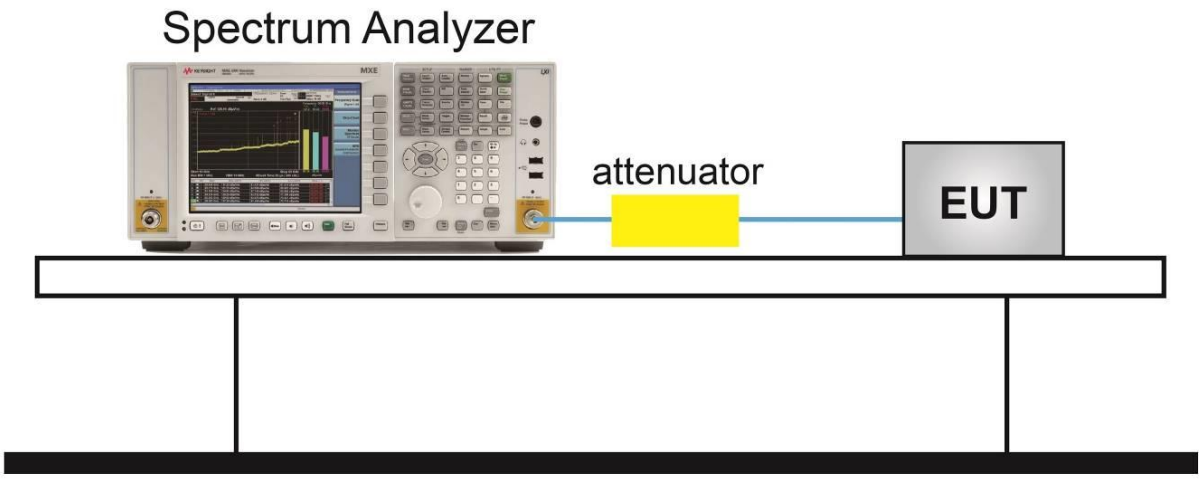
6.8.2.Test Procedure Used

ANSI C63.10-2013 - Section 7.8.8

6.8.3.Test Setting

1. Span = Wide enough to capture the peak level of the in-band emission and all spurious emissions (e.g., harmonics) from the lowest frequency generated in the EUT up through the 10th harmonic. Typically, several plots are required to cover this entire span.
2. RBW = 100kHz
3. VBW = 300kHz
4. Detector = Peak
5. Sweep time = Auto couple
6. Trace mode = Max hold
7. Trace was allowed to stabilize
8. Set the marker on the peak of any spurious emission recorded. The level displayed must comply with the limit specified in this section.

6.8.4.Test Setup

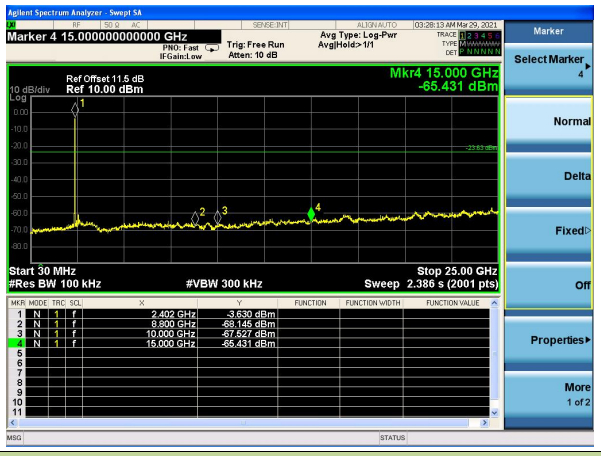
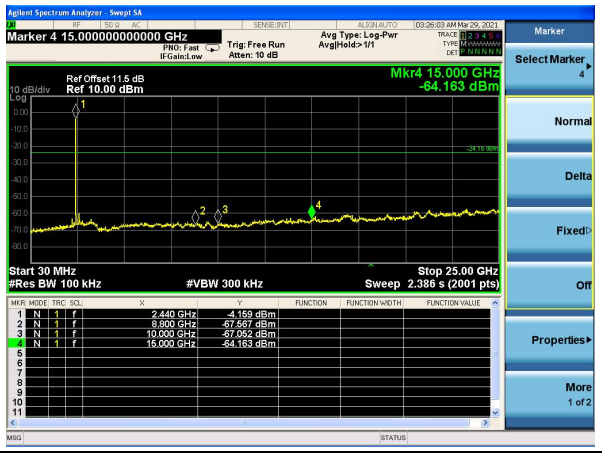
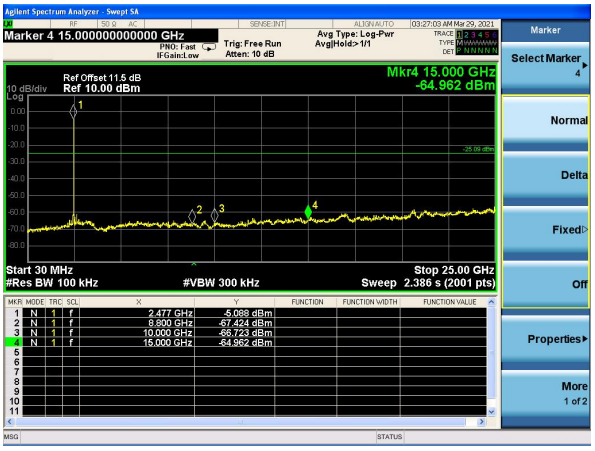


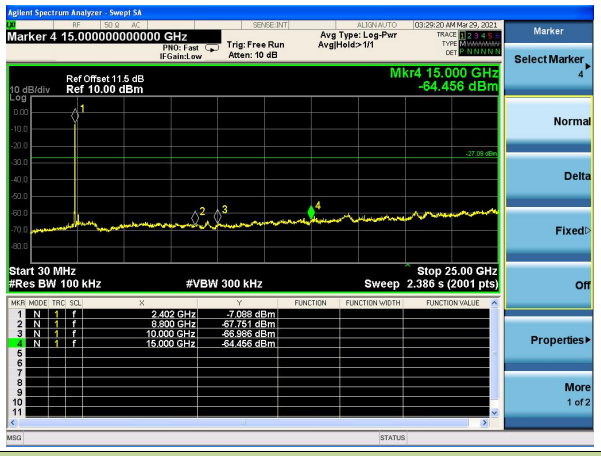
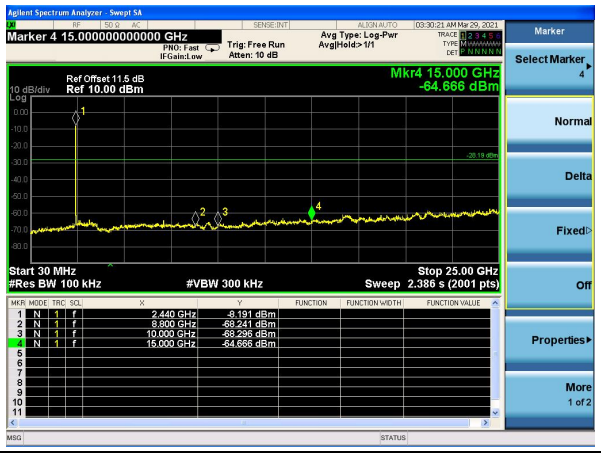
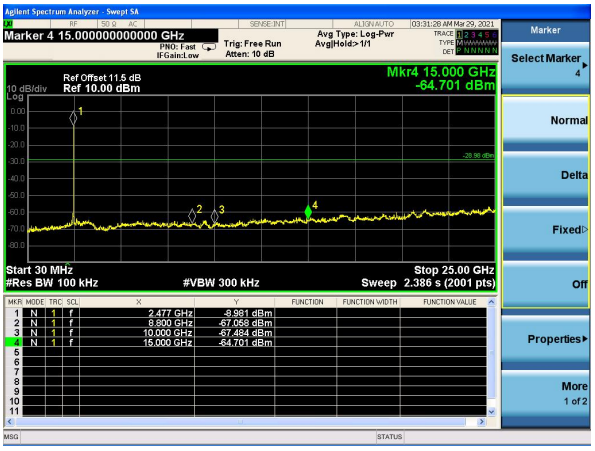
6.8.5.Test Result

Test Site	NS-TR2	Test Engineer	Selina Zhang
Test Date	2021/03/29		

Test Mode	Channel No.	Frequency (MHz)	Limit (dBm)	Result
DH5	00	2402	-23.63	Pass
DH5	39	2441	-24.16	Pass
DH5	78	2480	-25.09	Pass
2DH5	00	2402	-27.09	Pass
2DH5	39	2441	-28.19	Pass
2DH5	78	2480	-28.98	Pass

Note: The limit is 20dB below the fundamental emission level.

DH5 Conducted Spurious Emissions	
Channel 00 (2402MHz)	Channel 39 (2441MHz)
	
Channel 78 (2480MHz)	
	

2DH5 Conducted Spurious Emissions	
Channel 00 (2402MHz)	Channel 39 (2441MHz)
	
Channel 78 (2480MHz)	
	

6.9. Radiated Spurious Emission Measurement

6.9.1.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 [μV/m]	Measured Distance [Meters]
0.009 - 0.490	2400/F (kHz)	300
0.490 - 1.705	24000/F (kHz)	30
1.705 - 30	30	30
30 - 88	100	3
88 - 216	150	3
216 - 960	200	3
Above 960	500	3

6.9.2.Test Procedure Used

ANSI C63.10-2013 - Section 6.3 & 6.4 & 6.5 & 6.6

6.9.3.Test Setting

Table 1 - RBW as a function of frequency

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

Quasi-Peak Measurements below 1GHz

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

Peak Measurements above 1GHz

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

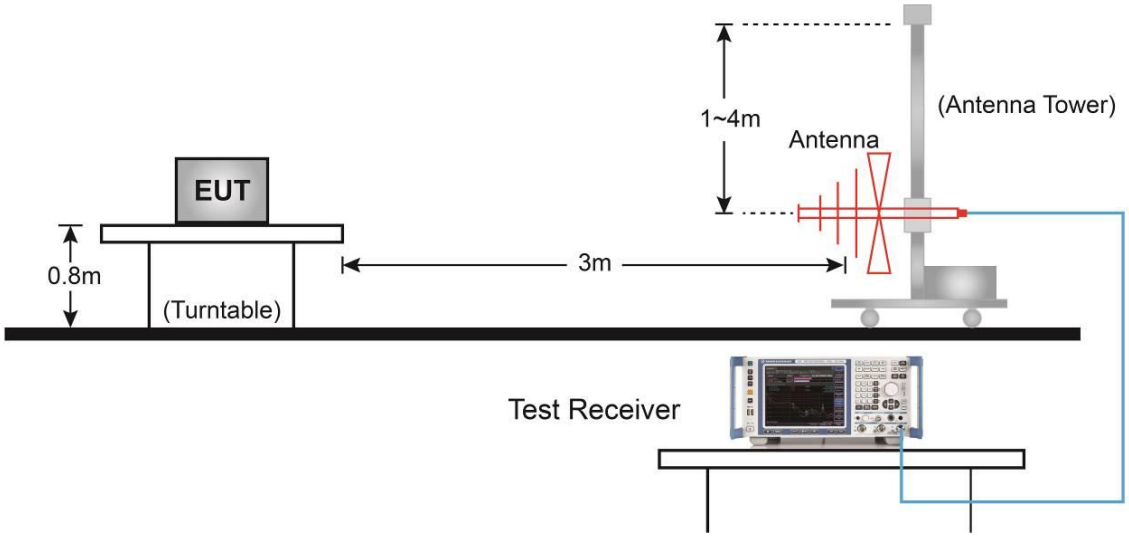
Average Measurements above 1GHz (Method VB)

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

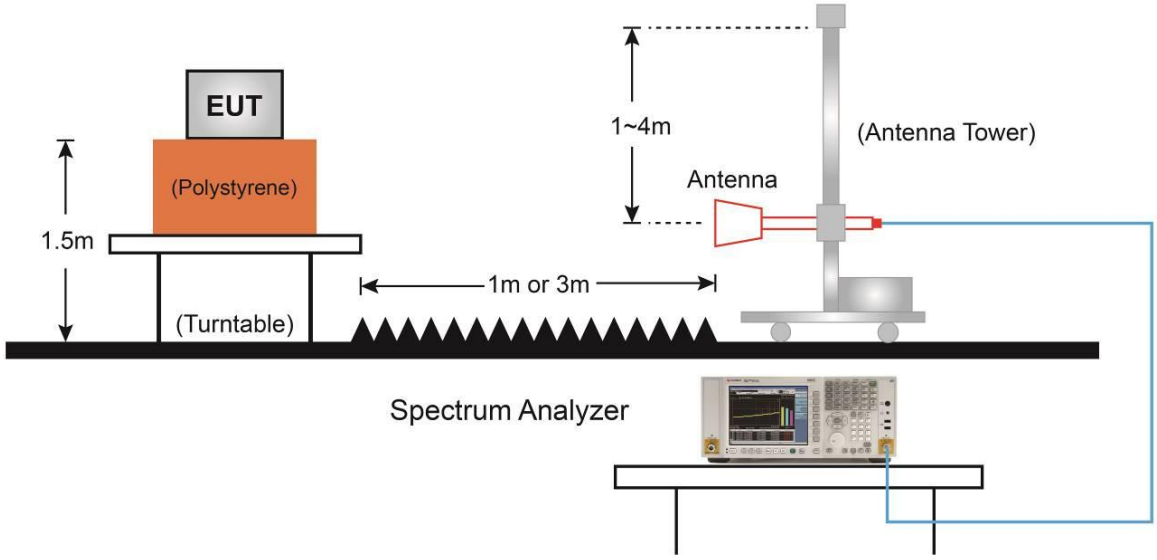
   If the EUT duty cycle is < 98%, set VBW ≥ 1/T. T is the minimum transmission duration
4. Detector = Peak
5. Sweep time = Auto
6. Trace mode = Max hold
7. Trace was allowed to stabilize

6.9.4.Test Setup

Below 1GHz Test Setup:



Above 1GHz Test Setup:



6.9.5.Test Result

Test Site	NS-AC1	Test Engineer	Antony Yang
Test Date	2021/04/02	Test Mode	DH5, 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.		

Frequency (MHz)	Reading Level (dBμV)	Factor (dB)	Measure Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector	Polarization
4595.5	39.0	2.7	41.7	74.0	-32.3	Peak	Horizontal
5598.5	37.5	4.2	41.7	74.0	-32.3	Peak	Horizontal
7264.5	36.1	10.2	46.3	74.0	-27.7	Peak	Horizontal
4383.0	39.1	1.7	40.8	74.0	-33.2	Peak	Vertical
5088.5	38.2	4.0	42.2	74.0	-31.8	Peak	Vertical
6797.0	35.1	7.9	43.0	74.0	-31.0	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)							

Test Site	NS-AC1	Test Engineer	Antony Yang
Test Date	2021/04/02	Test Mode	DH5, 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.		

Frequency (MHz)	Reading Level (dBμV)	Factor (dB)	Measure Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector	Polarization
4808.0	39.1	3.0	42.1	74.0	-31.9	Peak	Horizontal
5054.5	38.7	3.7	42.4	74.0	-31.6	Peak	Horizontal
7791.5	36.5	10.2	46.7	74.0	-27.3	Peak	Horizontal
4663.5	38.5	3.0	41.5	74.0	-32.5	Peak	Vertical
6703.5	36.0	7.4	43.4	74.0	-30.6	Peak	Vertical
7944.5	36.2	10.7	46.9	74.0	-27.1	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)							

Test Site	NS-AC1	Test Engineer	Antony Yang
Test Date	2021/04/02	Test Mode	DH5, Channel 78
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.		

Frequency (MHz)	Reading Level (dBμV)	Factor (dB)	Measure Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector	Polarization
4842.0	38.7	3.0	41.7	74.0	-32.3	Peak	Horizontal
6406.0	36.6	6.1	42.7	74.0	-31.3	Peak	Horizontal
7264.5	35.2	10.2	45.4	74.0	-28.6	Peak	Horizontal
4808.0	39.3	3.0	42.3	74.0	-31.7	Peak	Vertical
5573.0	38.9	4.2	43.1	74.0	-30.9	Peak	Vertical
7222.0	35.4	10.1	45.5	74.0	-28.5	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)							

Test Site	NS-AC1	Test Engineer	Antony Yang
Test Date	2021/04/02	Test Mode	2DH5, 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.		

Frequency (MHz)	Reading Level (dBμV)	Factor (dB)	Measure Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector	Polarization
5046.0	37.7	3.5	41.2	74.0	-32.8	Peak	Horizontal
6550.5	36.3	7.1	43.4	74.0	-30.6	Peak	Horizontal
8199.5	35.4	10.8	46.2	74.0	-27.8	Peak	Horizontal
5122.5	38.2	3.8	42.0	74.0	-32.0	Peak	Vertical
7086.0	35.8	9.4	45.2	74.0	-28.8	Peak	Vertical
7995.5	37.0	11.3	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)							

Test Site	NS-AC1	Test Engineer	Antony Yang
Test Date	2021/04/02	Test Mode	2DH5, 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.		

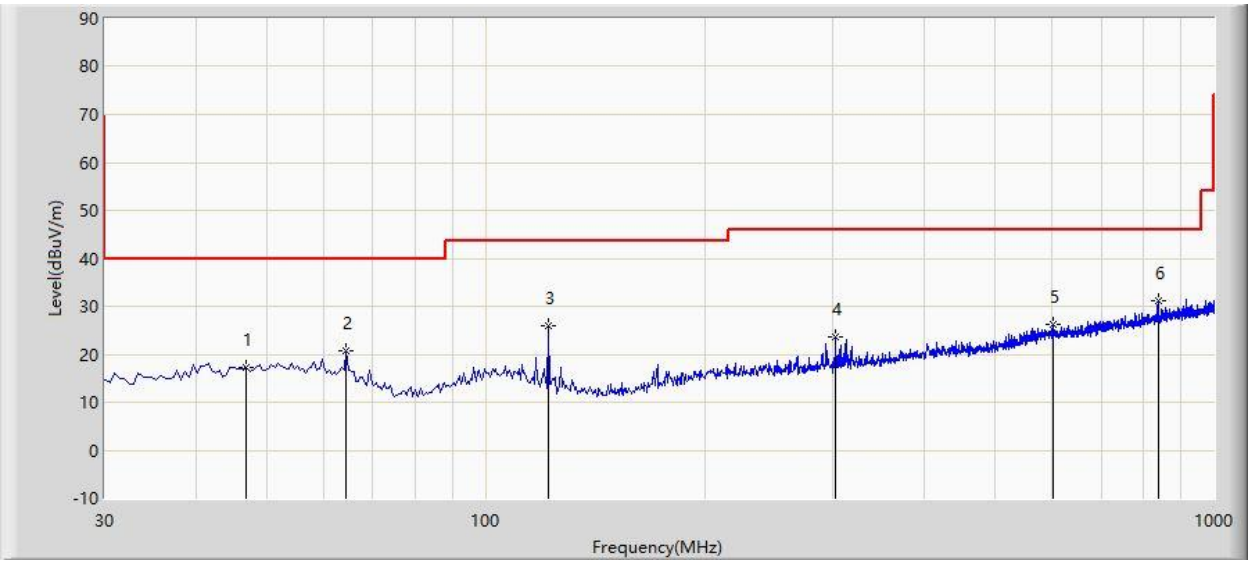
Frequency (MHz)	Reading Level (dBμV)	Factor (dB)	Measure Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector	Polarization
3890.0	40.3	0.0	40.3	74.0	-33.7	Peak	Horizontal
5207.5	38.1	3.5	41.6	74.0	-32.4	Peak	Horizontal
6448.5	36.9	6.6	43.5	74.0	-30.5	Peak	Horizontal
5139.5	37.9	3.9	41.8	74.0	-32.2	Peak	Vertical
6108.5	36.2	5.4	41.6	74.0	-32.4	Peak	Vertical
8497.0	35.7	11.5	47.2	74.0	-26.8	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)							

Test Site	NS-AC1	Test Engineer	Antony Yang
Test Date	2021/04/02	Test Mode	2DH5, Channel 78
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.		

Frequency (MHz)	Reading Level (dBμV)	Factor (dB)	Measure Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector	Polarization
4340.5	39.2	1.3	40.5	74.0	-33.5	Peak	Horizontal
5063.0	39.1	3.8	42.9	74.0	-31.1	Peak	Horizontal
7579.0	35.3	10.5	45.8	74.0	-28.2	Peak	Horizontal
4995.0	38.2	3.6	41.8	74.0	-32.2	Peak	Vertical
5785.5	34.5	4.5	39.0	74.0	-35.0	Peak	Vertical
7120.0	35.6	9.9	45.5	74.0	-28.5	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)							

The Result of Radiated Emission below 1GHz:

Site: NS-AC1	Time: 2021/04/02 - 14:22
Limit: FCC_Part 15.209_RE(3m)	Engineer: Antony Yang
Probe: NS-AC1_VULB9162	Polarity: Horizontal
EUT: Gaming speakers	Power: DC 5V
Test Mode: Transmit by DH5 at channel 2441MHz	



No	Flag	Mark	Frequency (MHz)	Measure Level (dBμV/m)	Reading Level (dBμV)	Margin (dB)	Limit (dBμV/m)	Factor (dB)	Type
1			46.975	17.185	-1.933	-22.815	40.000	19.118	PK
2			64.435	20.796	3.111	-19.204	40.000	17.685	PK
3			122.150	25.990	10.391	-17.510	43.500	15.599	PK
4			302.085	23.522	4.397	-22.478	46.000	19.125	PK
5			601.815	26.195	1.342	-19.805	46.000	24.852	PK
6		*	837.525	31.271	3.273	-14.729	46.000	27.998	PK

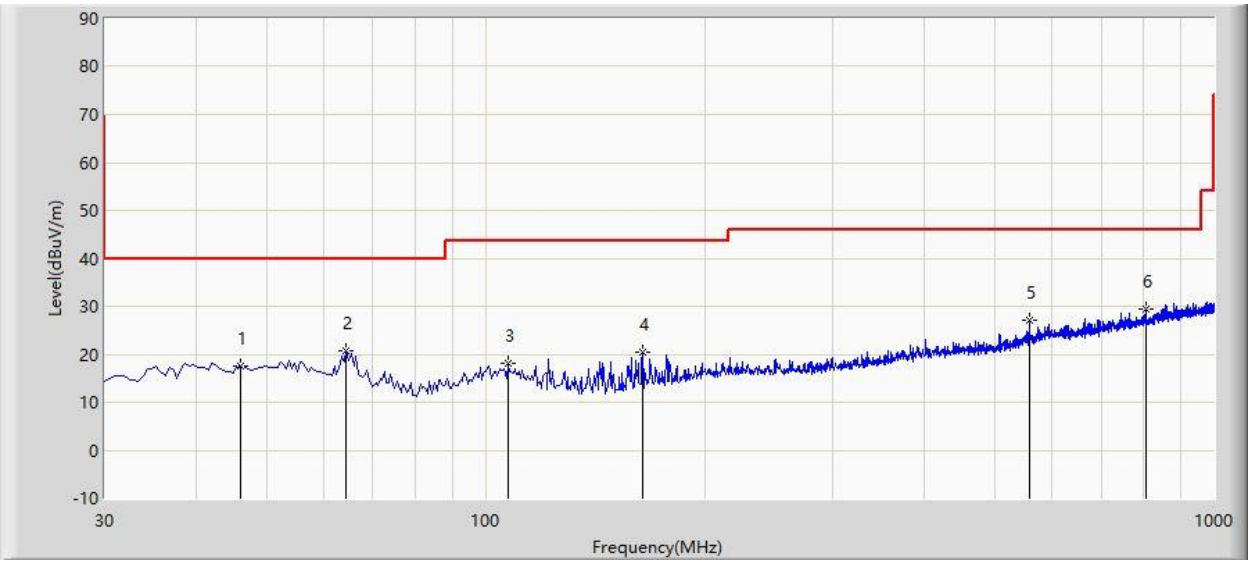
Note 1: Measure Level (dBμV/m) = Reading Level (dBμV) + Factor (dB)

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

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

Note 3: The amplitude of radiated emissions (frequency range from 9kHz to 30MHz and 18GHz to 25GHz) is that proximity to ambient noise, which also are attenuated more than 20 dB below the permissible value. Therefore, the data is not presented in the report.

Site: NS-AC1	Time: 2021/04/02 - 14:25
Limit: FCC_Part 15.209_RE(3m)	Engineer: Antony Yang
Probe: NS-AC1_VULB9162	Polarity: Vertical
EUT: Gaming speakers	Power: DC 5V
Test Mode: Transmit by DH5 at channel 2441MHz	



No	Flag	Mark	Frequency (MHz)	Measure Level (dBµV/m)	Reading Level (dBµV)	Margin (dB)	Limit (dBµV/m)	Factor (dB)	Type
1			46.005	17.508	-1.509	-22.492	40.000	19.017	PK
2			64.435	20.693	3.008	-19.307	40.000	17.685	PK
3			107.600	18.087	-0.003	-25.413	43.500	18.090	PK
4			164.345	20.496	5.646	-23.004	43.500	14.850	PK
5			558.165	27.107	3.163	-18.893	46.000	23.943	PK
6		*	805.030	29.471	2.096	-16.529	46.000	27.375	PK

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

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

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

Note 3: The amplitude of radiated emissions (frequency range from 9kHz to 30MHz and 18GHz to 25GHz) is that proximity to ambient noise, which also are attenuated more than 20 dB below the permissible value. Therefore, the data is not presented in the report.

6.10. Radiated Restricted Band Edge Measurement

6.10.1. 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 [μV/m]	Measured Distance [Meters]
0.009 - 0.490	2400/F (kHz)	300
0.490 - 1.705	24000/F (kHz)	30
1.705 - 30	30	30
30 - 88	100	3
88 - 216	150	3
216 - 960	200	3
Above 960	500	3

6.10.2.Test Procedure Used

ANSI C63.10-2013 - Section 6.3 & 6.6 & 6.10

6.10.3.Test Setting

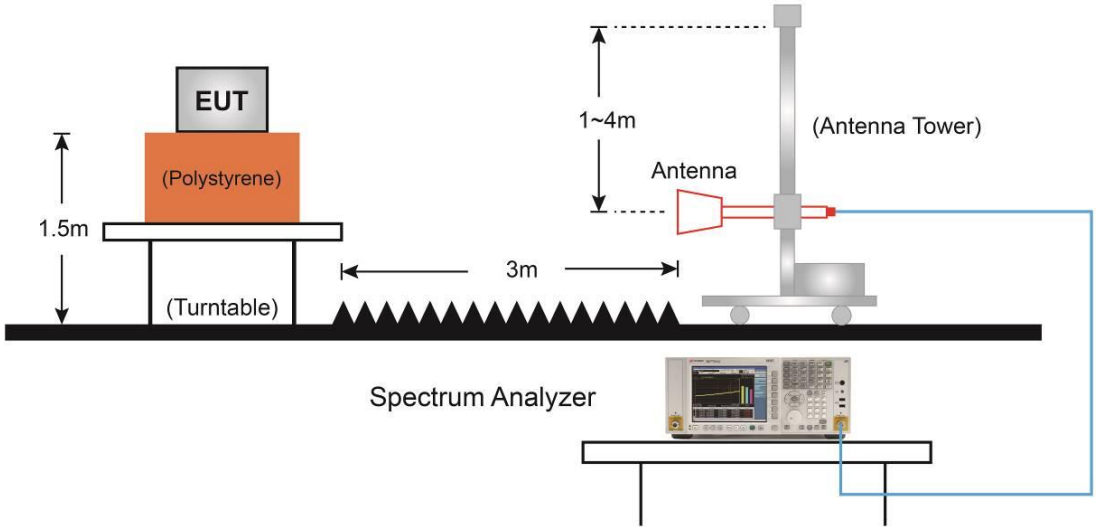
Peak Field Strength Measurements

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

Average Measurements above 1GHz (Method VB)

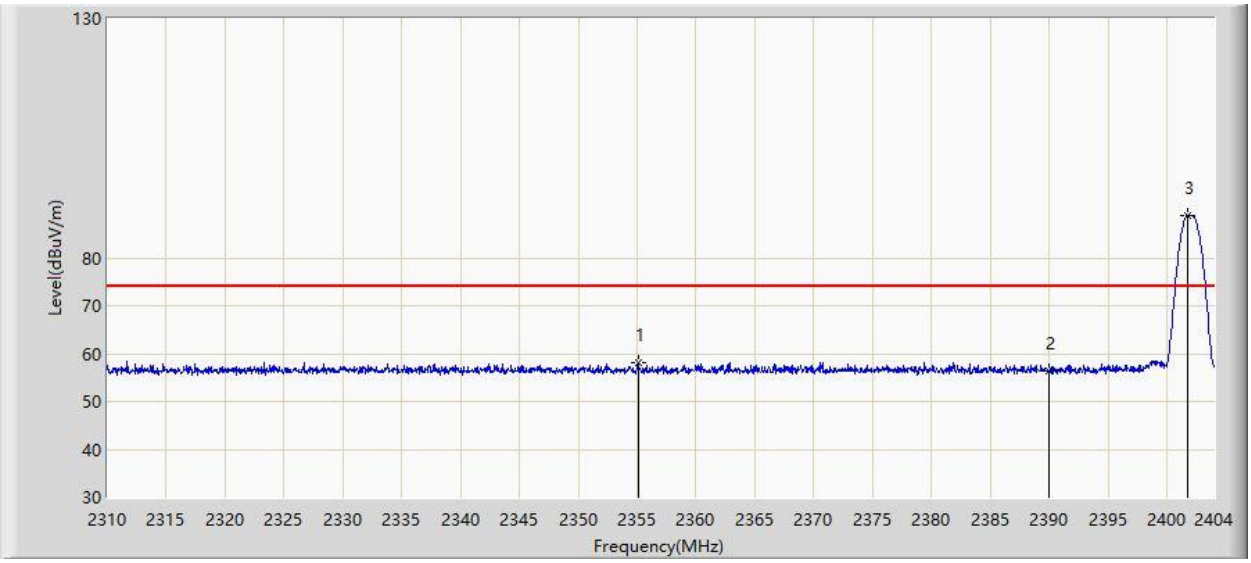
1. Analyzer center frequency was set to the frequency of the radiated spurious emission of interest
2. RBW = 1MHz
3. VBW; If the EUT is configured to transmit with duty cycle ≥ 98%, set VBW = 10Hz
4. If the EUT duty cycle is < 98%, set VBW ≥ 1/T. T is the minimum transmission duration
5. Detector = Peak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

6.10.4.Test Setup



6.10.5.Test Result

Site: NS-AC1	Time: 2021/04/02 - 16:03
Limit: FCC_Part 15.209_RE(3m)	Engineer: Antony Yang
Probe: NS-AC1_BBHA9120D_2111	Polarity: Horizontal
EUT: Gaming speakers	Power: DC 5V
Test Mode: Transmit by DH5 at Channel 2402MHz	

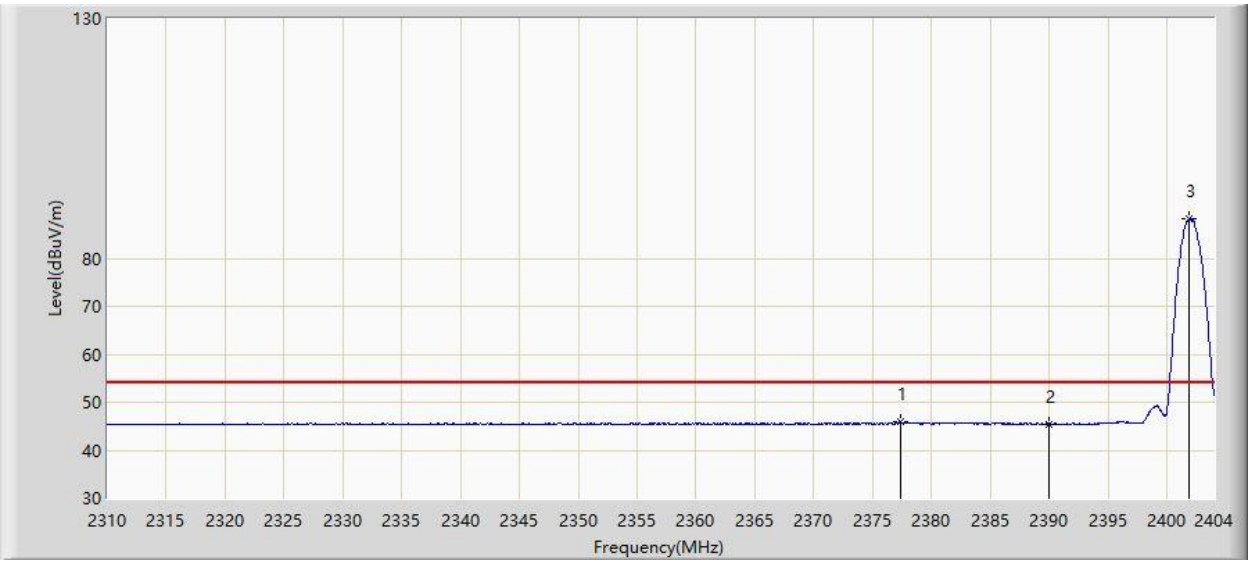


No	Flag	Mark	Frequency (MHz)	Measure Level (dBμV/m)	Reading Level (dBuV)	Margin (dB)	Limit (dBμV/m)	Factor (dB)	Type
1			2355.073	58.260	27.272	-15.740	74.000	30.988	PK
2			2390.000	56.271	25.365	-17.729	74.000	30.906	PK
3		*	2401.744	88.905	58.009	N/A	N/A	30.897	PK

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

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

Site: NS-AC1	Time: 2021/04/02 - 16:42
Limit: FCC_Part 15.209_RE(3m)	Engineer: Antony Yang
Probe: NS-AC1_BBHA9120D_2111	Polarity: Horizontal
EUT: Gaming speakers	Power: DC 5V
Test Mode: Transmit by DH5 at Channel 2402MHz	

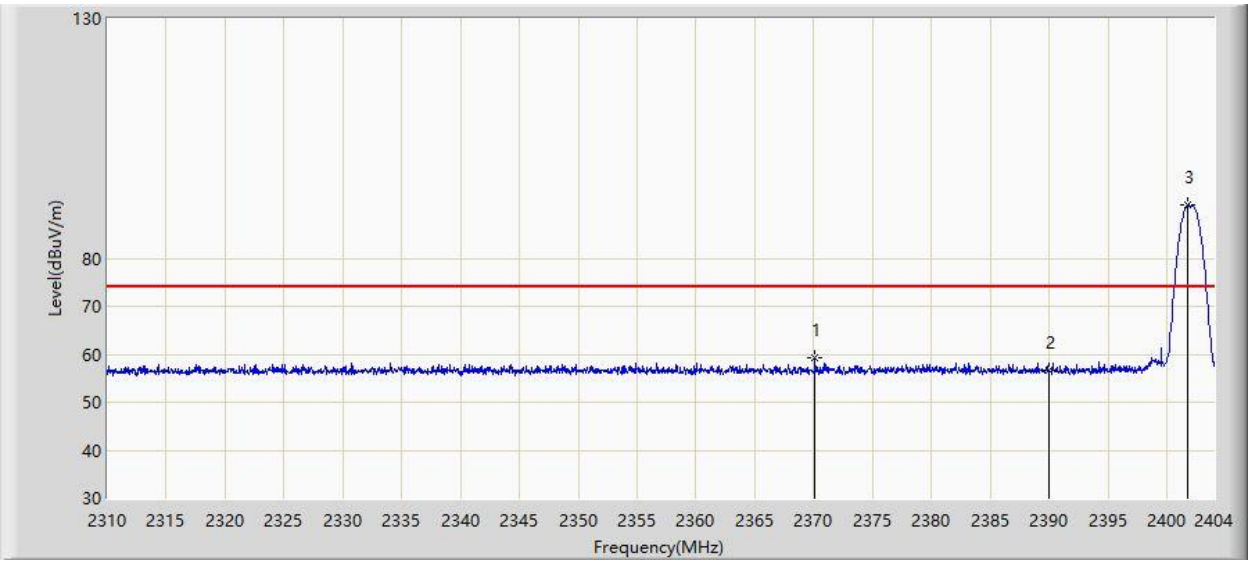


No	Flag	Mark	Frequency (MHz)	Measure Level (dBµV/m)	Reading Level (dBuV)	Margin (dB)	Limit (dBµV/m)	Factor (dB)	Type
1			2377.351	45.839	14.903	-8.161	54.000	30.936	AV
2			2390.000	45.497	14.591	-8.503	54.000	30.906	AV
3		*	2401.932	88.248	57.352	N/A	N/A	30.896	AV

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

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

Site: NS-AC1	Time: 2021/04/02 - 16:45
Limit: FCC_Part 15.209_RE(3m)	Engineer: Antony Yang
Probe: NS-AC1_BBHA9120D_2111	Polarity: Vertical
EUT: Gaming speakers	Power: DC 5V
Test Mode: Transmit by DH5 at Channel 2402MHz	

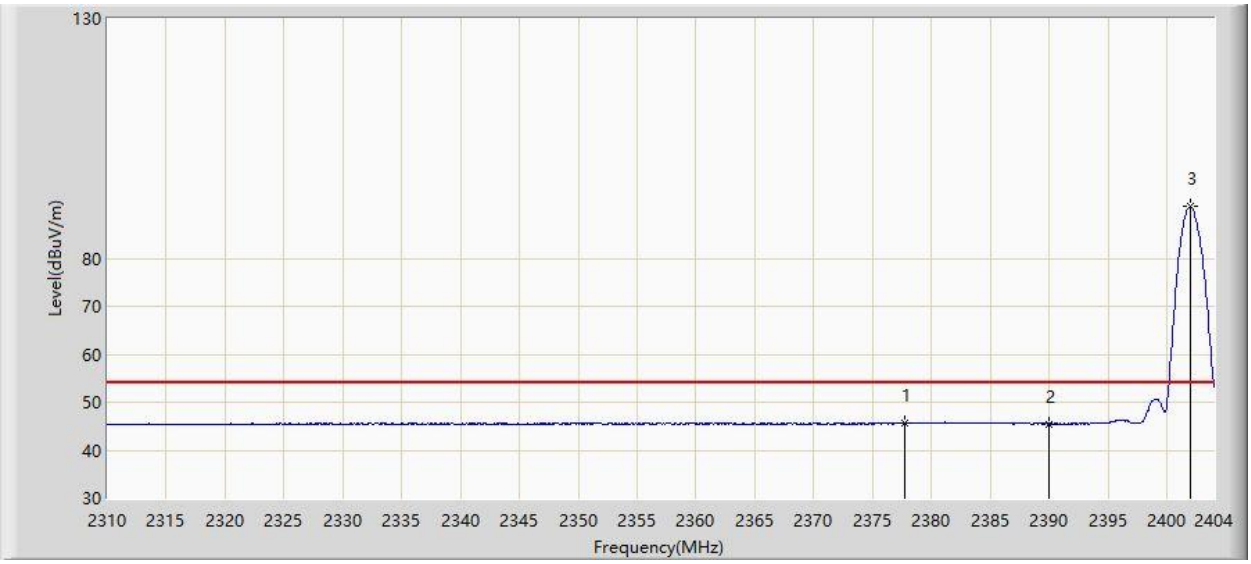


No	Flag	Mark	Frequency (MHz)	Measure Level (dBµV/m)	Reading Level (dBuV)	Margin (dB)	Limit (dBµV/m)	Factor (dB)	Type
1			2370.066	59.279	28.326	-14.721	74.000	30.953	PK
2			2390.000	56.594	25.688	-17.406	74.000	30.906	PK
3		*	2401.791	91.051	60.155	N/A	N/A	30.896	PK

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

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

Site: NS-AC1	Time: 2021/04/02 - 16:47
Limit: FCC_Part 15.209_RE(3m)	Engineer: Antony Yang
Probe: NS-AC1_BBHA9120D_2111	Polarity: Vertical
EUT: Gaming speakers	Power: DC 5V
Test Mode: Transmit by DH5 at Channel 2402MHz	

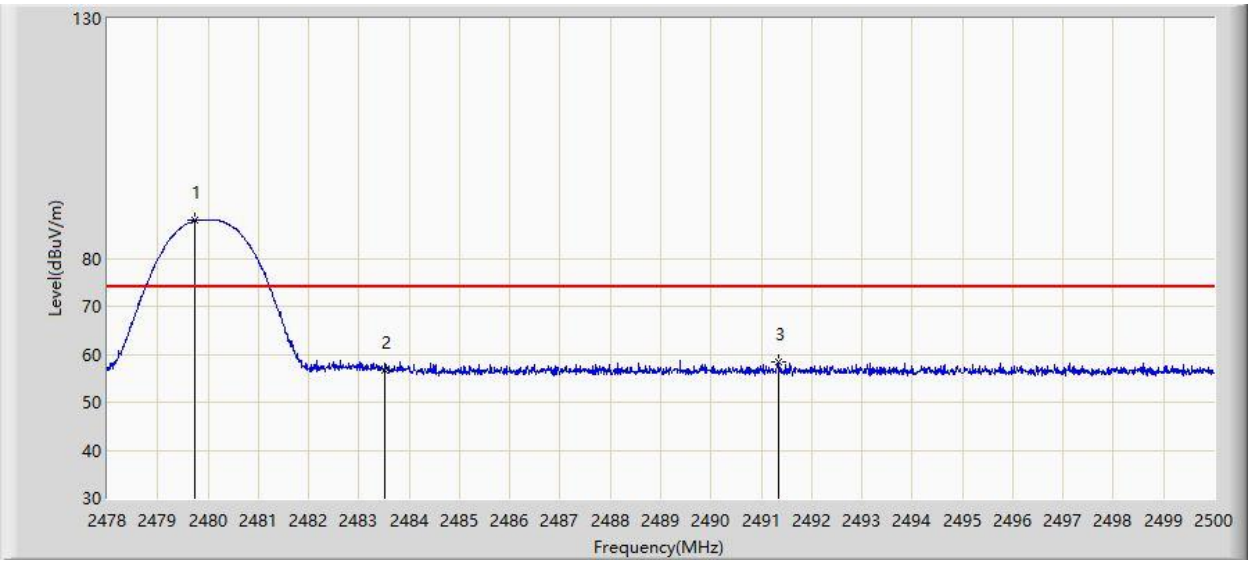


No	Flag	Mark	Frequency (MHz)	Measure Level (dBµV/m)	Reading Level (dBuV)	Margin (dB)	Limit (dBµV/m)	Factor (dB)	Type
1			2377.774	45.690	14.755	-8.310	54.000	30.935	AV
2			2390.000	45.505	14.599	-8.495	54.000	30.906	AV
3		*	2401.979	90.733	59.837	N/A	N/A	30.896	AV

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

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

Site: NS-AC1	Time: 2021/04/02 - 16:49
Limit: FCC_Part 15.209_RE(3m)	Engineer: Antony Yang
Probe: NS-AC1_BBHA9120D_2111	Polarity: Horizontal
EUT: Gaming speakers	Power: DC 5V
Test Mode: Transmit by DH5 at Channel 2480MHz	

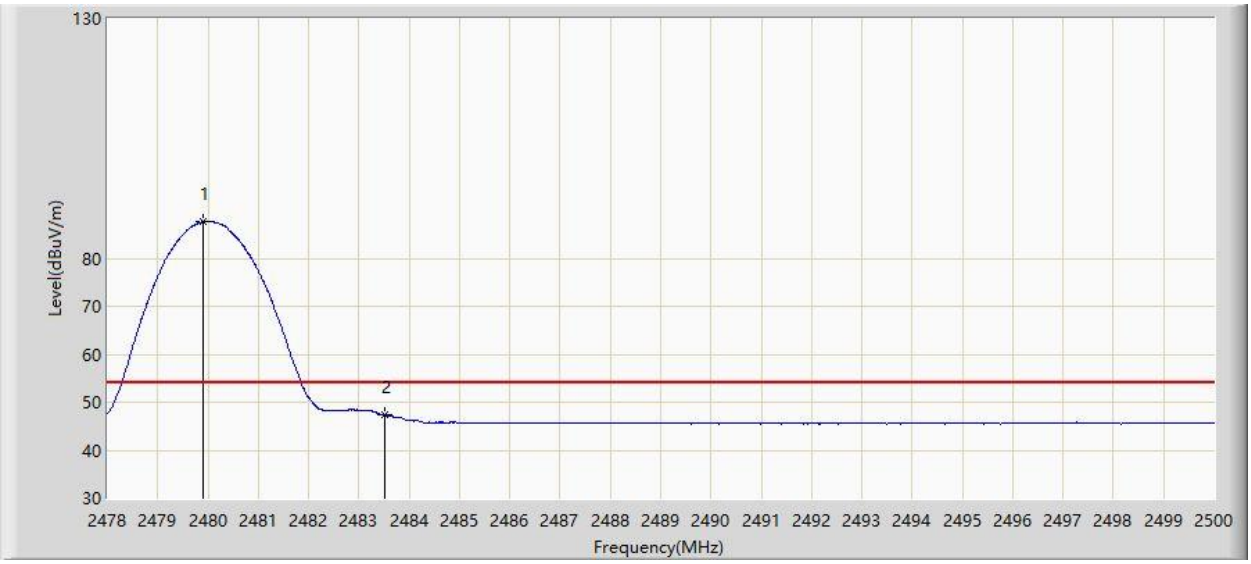


No	Flag	Mark	Frequency (MHz)	Measure Level (dBμV/m)	Reading Level (dBuV)	Margin (dB)	Limit (dBμV/m)	Factor (dB)	Type
1		*	2479.749	87.923	57.032	N/A	N/A	30.891	PK
2			2483.500	56.674	25.786	-17.326	74.000	30.888	PK
3			2491.354	58.546	27.664	-15.454	74.000	30.882	PK

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

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

Site: NS-AC1	Time: 2021/04/02 - 16:56
Limit: FCC_Part 15.209_RE(3m)	Engineer: Antony Yang
Probe: NS-AC1_BBHA9120D_2111	Polarity: Horizontal
EUT: Gaming speakers	Power: DC 5V
Test Mode: Transmit by DH5 at Channel 2480MHz	

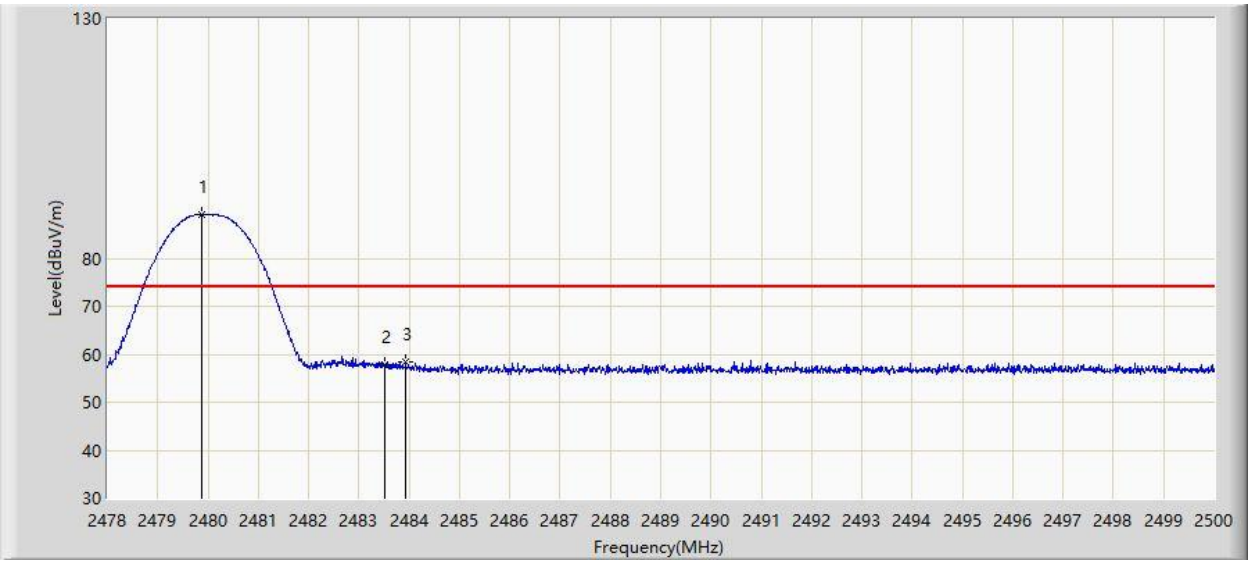


No	Flag	Mark	Frequency (MHz)	Measure Level (dBμV/m)	Reading Level (dBuV)	Margin (dB)	Limit (dBμV/m)	Factor (dB)	Type
1		*	2479.903	87.620	56.729	N/A	N/A	30.891	AV
2			2483.500	47.430	16.542	-6.570	54.000	30.888	AV

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

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

Site: NS-AC1	Time: 2021/04/02 - 16:57
Limit: FCC_Part 15.209_RE(3m)	Engineer: Antony Yang
Probe: NS-AC1_BBHA9120D_2111	Polarity: Vertical
EUT: Gaming speakers	Power: DC 5V
Test Mode: Transmit by DH5 at Channel 2480MHz	

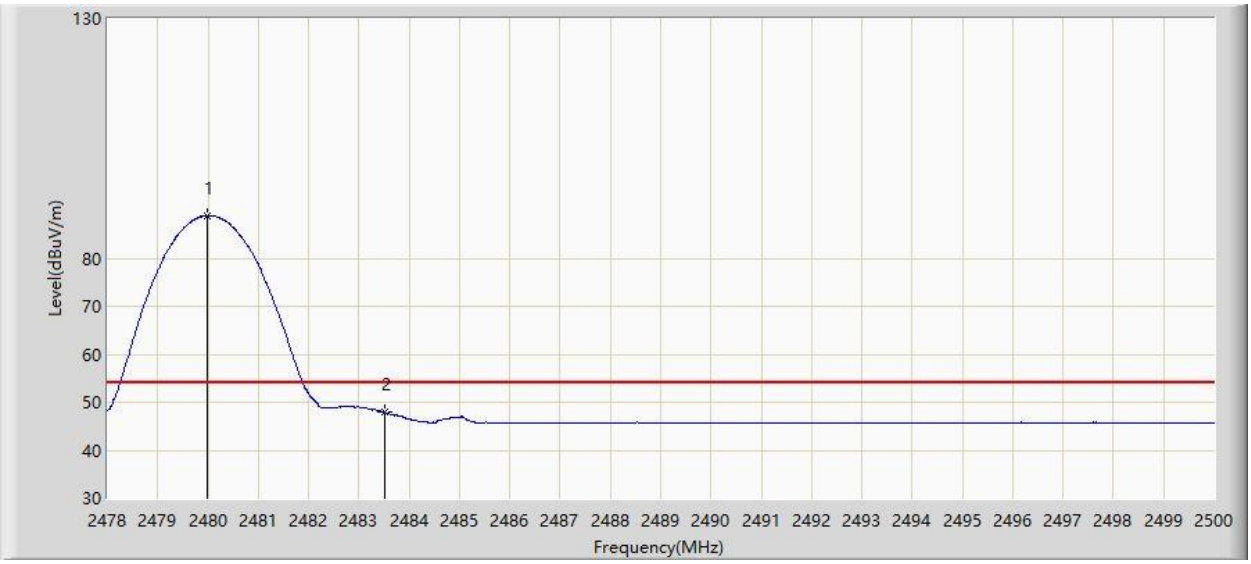


No	Flag	Mark	Frequency (MHz)	Measure Level (dBµV/m)	Reading Level (dBuV)	Margin (dB)	Limit (dBµV/m)	Factor (dB)	Type
1		*	2479.881	89.191	58.300	N/A	N/A	30.891	PK
2			2483.500	57.788	26.900	-16.212	74.000	30.888	PK
3			2483.929	58.391	27.503	-15.609	74.000	30.888	PK

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

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

Site: NS-AC1	Time: 2021/04/02 - 16:59
Limit: FCC_Part 15.209_RE(3m)	Engineer: Antony Yang
Probe: NS-AC1_BBHA9120D_2111	Polarity: Vertical
EUT: Gaming speakers	Power: DC 5V
Test Mode: Transmit by DH5 at Channel 2480MHz	

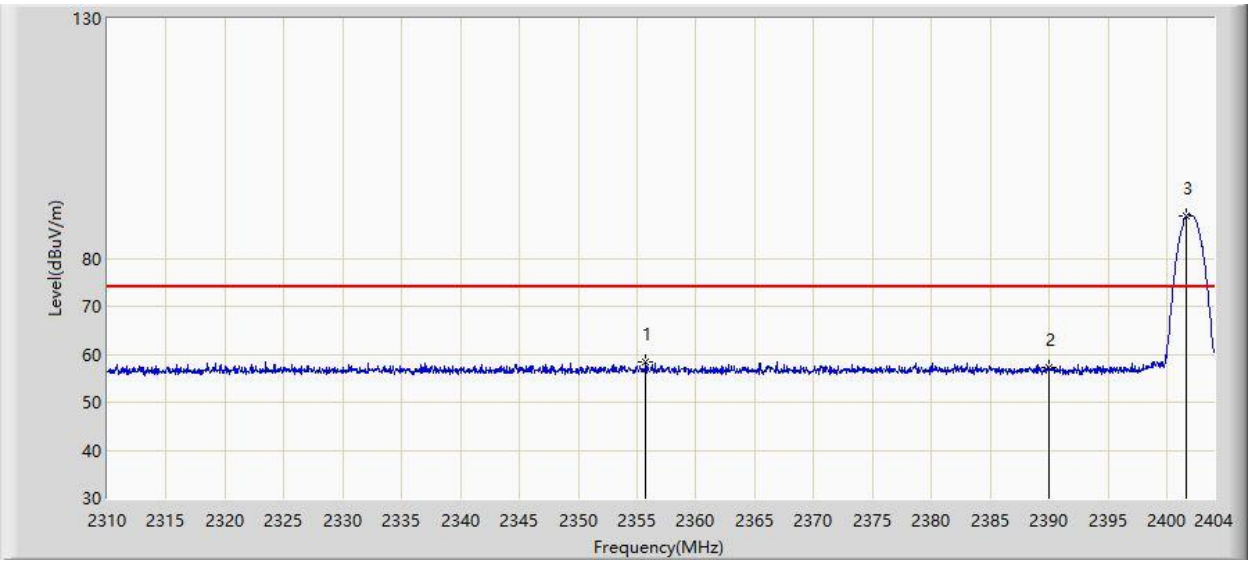


No	Flag	Mark	Frequency (MHz)	Measure Level (dBμV/m)	Reading Level (dBuV)	Margin (dB)	Limit (dBμV/m)	Factor (dB)	Type
1		*	2479.991	88.852	57.961	N/A	N/A	30.891	AV
2			2483.500	47.887	16.999	-6.113	54.000	30.888	AV

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

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

Site: NS-AC1	Time: 2021/04/02 - 17:01
Limit: FCC_Part 15.209_RE(3m)	Engineer: Antony Yang
Probe: NS-AC1_BBHA9120D_2111	Polarity: Horizontal
EUT: Gaming speakers	Power: DC 5V
Test Mode: Transmit by 2DH5 at Channel 2402MHz	

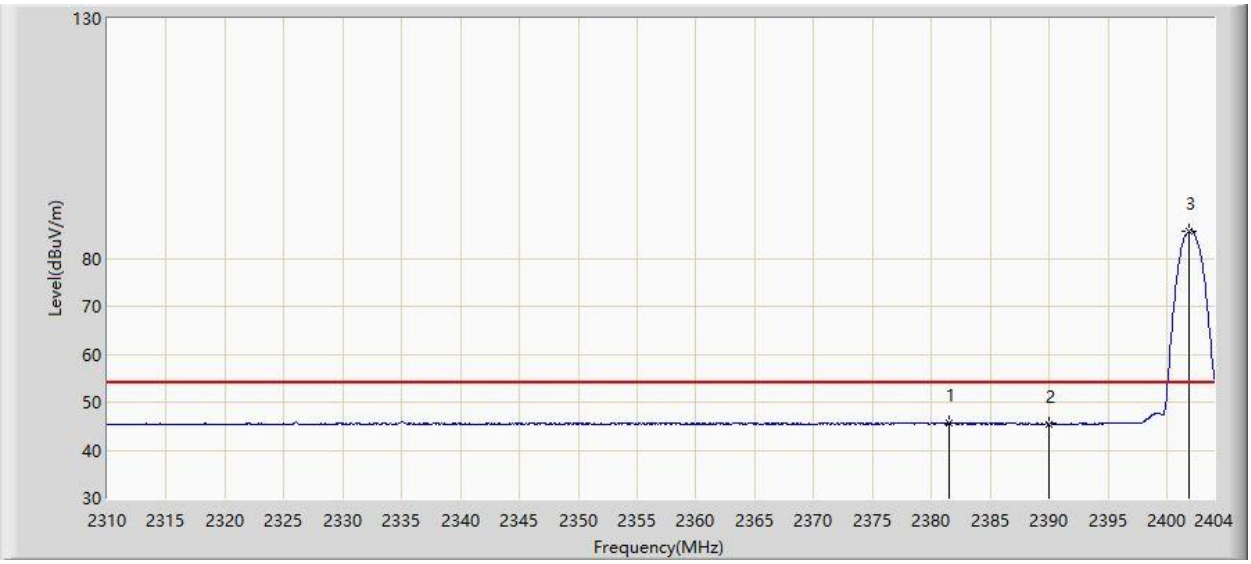


No	Flag	Mark	Frequency (MHz)	Measure Level (dBµV/m)	Reading Level (dBuV)	Margin (dB)	Limit (dBµV/m)	Factor (dB)	Type
1			2355.731	58.480	27.493	-15.520	74.000	30.987	PK
2			2390.000	57.245	26.339	-16.755	74.000	30.906	PK
3		*	2401.650	88.925	58.029	N/A	N/A	30.897	PK

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

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

Site: NS-AC1	Time: 2021/04/02 - 17:15
Limit: FCC_Part 15.209_RE(3m)	Engineer: Antony Yang
Probe: NS-AC1_BBHA9120D_2111	Polarity: Horizontal
EUT: Gaming speakers	Power: DC 5V
Test Mode: Transmit by 2DH5 at Channel 2402MHz	

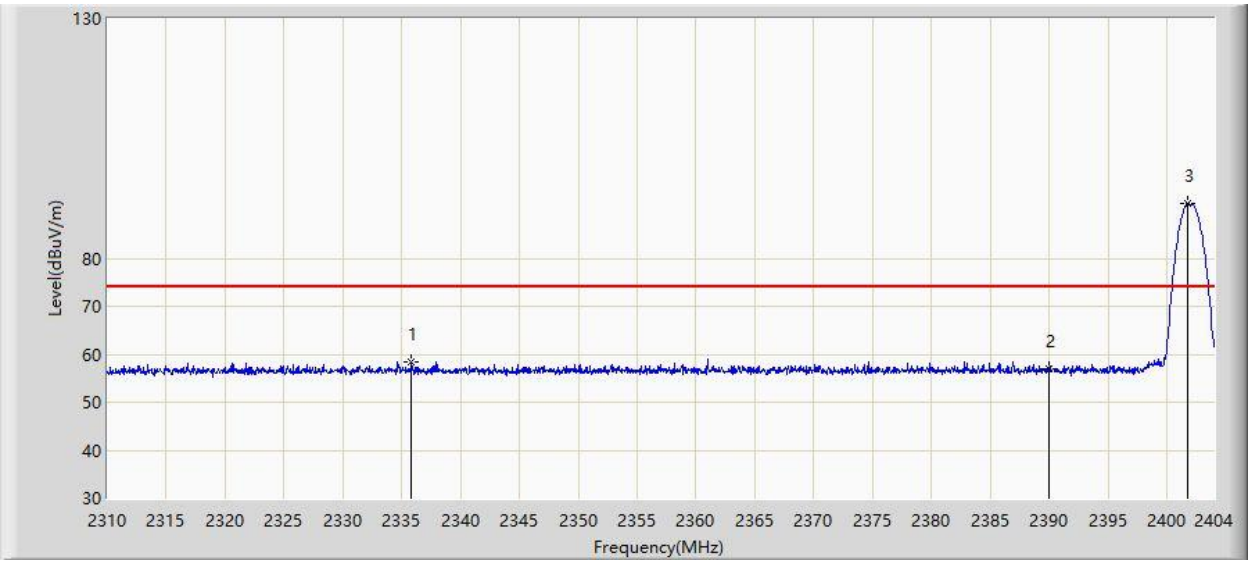


No	Flag	Mark	Frequency (MHz)	Measure Level (dBμV/m)	Reading Level (dBuV)	Margin (dB)	Limit (dBμV/m)	Factor (dB)	Type
1			2381.487	45.706	14.780	-8.294	54.000	30.926	AV
2			2390.000	45.457	14.551	-8.543	54.000	30.906	AV
3		*	2401.932	85.770	54.874	N/A	N/A	30.896	AV

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

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

Site: NS-AC1	Time: 2021/04/02 - 17:18
Limit: FCC_Part 15.209_RE(3m)	Engineer: Antony Yang
Probe: NS-AC1_BBHA9120D_2111	Polarity: Vertical
EUT: Gaming speakers	Power: DC 5V
Test Mode: Transmit by 2DH5 at Channel 2402MHz	

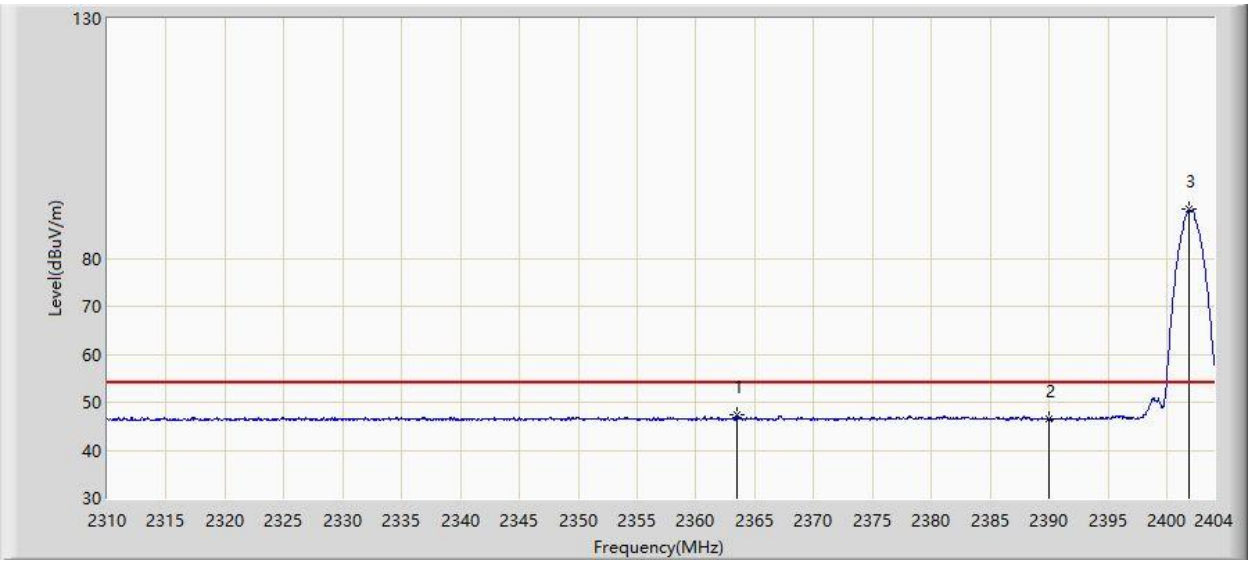


No	Flag	Mark	Frequency (MHz)	Measure Level (dBμV/m)	Reading Level (dBuV)	Margin (dB)	Limit (dBμV/m)	Factor (dB)	Type
1			2335.850	58.447	27.406	-15.553	74.000	31.041	PK
2			2390.000	56.994	26.088	-17.006	74.000	30.906	PK
3		*	2401.744	91.355	60.459	N/A	N/A	30.897	PK

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

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

Site: NS-AC1	Time: 2021/04/02 - 17:19
Limit: FCC_Part 15.209_RE(3m)	Engineer: Antony Yang
Probe: NS-AC1_BBHA9120D_2111	Polarity: Vertical
EUT: Gaming speakers	Power: DC 5V
Test Mode: Transmit by 2DH5 at Channel 2402MHz	

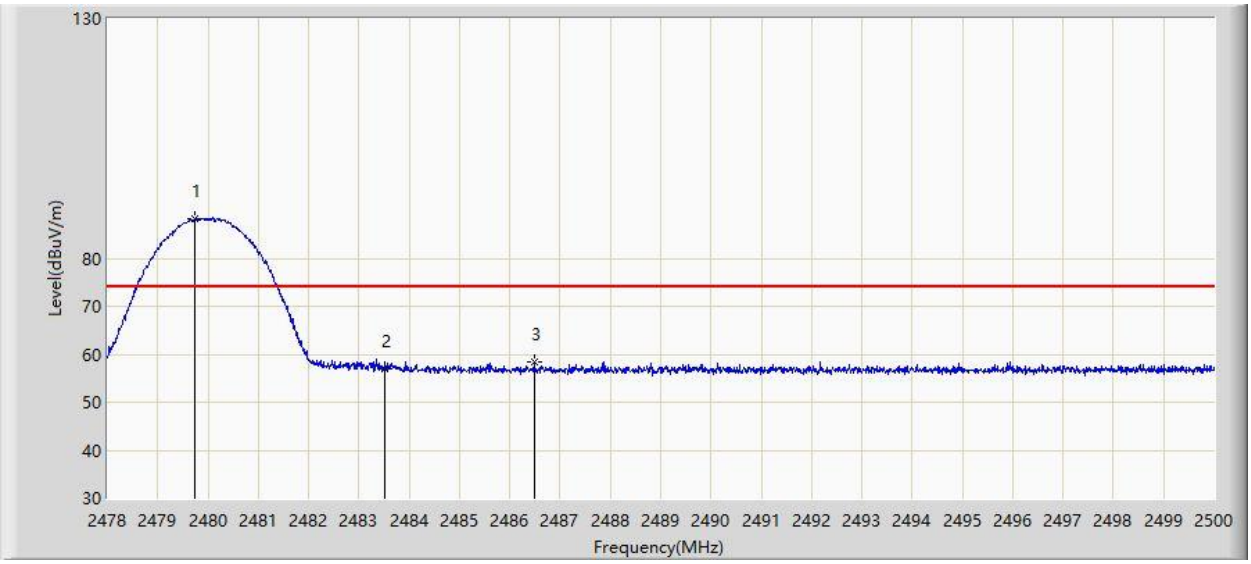


No	Flag	Mark	Frequency (MHz)	Measure Level (dBµV/m)	Reading Level (dBuV)	Margin (dB)	Limit (dBµV/m)	Factor (dB)	Type
1			2363.439	47.341	16.373	-6.659	54.000	30.968	AV
2			2390.000	46.494	15.588	-7.506	54.000	30.906	AV
3		*	2401.885	90.187	59.291	N/A	N/A	30.896	AV

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

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

Site: NS-AC1	Time: 2021/04/02 - 17:21
Limit: FCC_Part 15.209_RE(3m)	Engineer: Antony Yang
Probe: NS-AC1_BBHA9120D_2111	Polarity: Horizontal
EUT: Gaming speakers	Power: DC 5V
Test Mode: Transmit by 2DH5 at Channel 2480MHz	

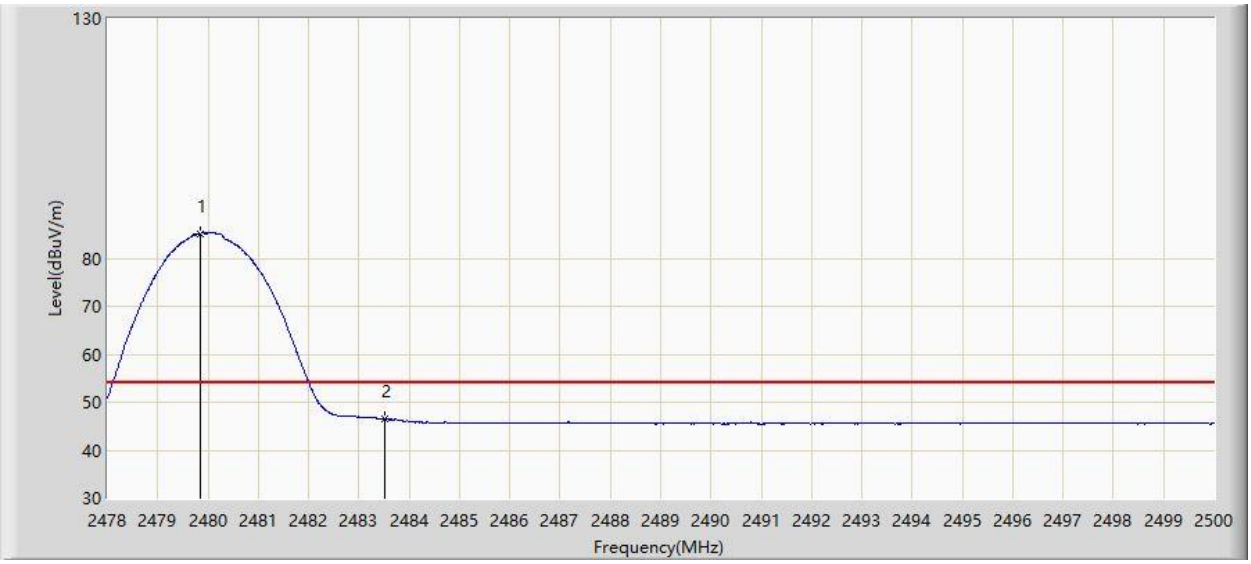


No	Flag	Mark	Frequency (MHz)	Measure Level (dBµV/m)	Reading Level (dBuV)	Margin (dB)	Limit (dBµV/m)	Factor (dB)	Type
1		*	2479.738	88.288	57.397	N/A	N/A	30.891	PK
2			2483.500	57.001	26.113	-16.999	74.000	30.888	PK
3			2486.492	58.420	27.534	-15.580	74.000	30.886	PK

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

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

Site: NS-AC1	Time: 2021/04/02 - 17:23
Limit: FCC_Part 15.209_RE(3m)	Engineer: Antony Yang
Probe: NS-AC1_BBHA9120D_2111	Polarity: Horizontal
EUT: Gaming speakers	Power: DC 5V
Test Mode: Transmit by 2DH5 at Channel 2480MHz	

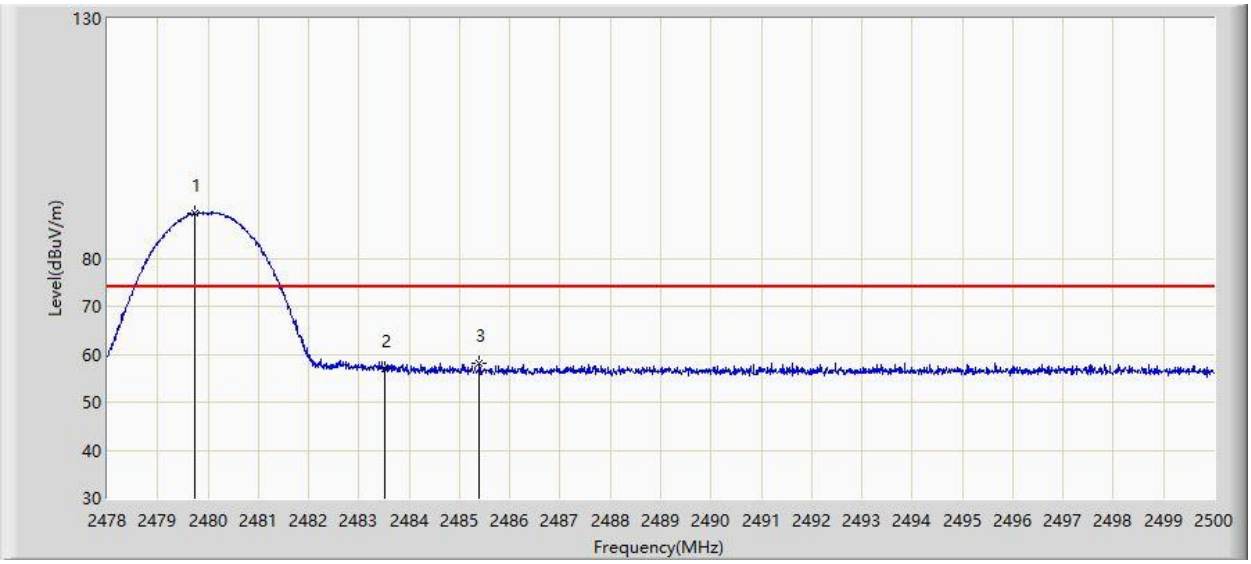


No	Flag	Mark	Frequency (MHz)	Measure Level (dBμV/m)	Reading Level (dBuV)	Margin (dB)	Limit (dBμV/m)	Factor (dB)	Type
1		*	2479.848	85.125	54.234	N/A	N/A	30.891	AV
2			2483.500	46.544	15.656	-7.456	54.000	30.888	AV

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

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

Site: NS-AC1	Time: 2021/04/02 - 17:24
Limit: FCC_Part 15.209_RE(3m)	Engineer: Antony Yang
Probe: NS-AC1_BBHA9120D_2111	Polarity: Vertical
EUT: Gaming speakers	Power: DC 5V
Test Mode: Transmit by 2DH5 at Channel 2480MHz	

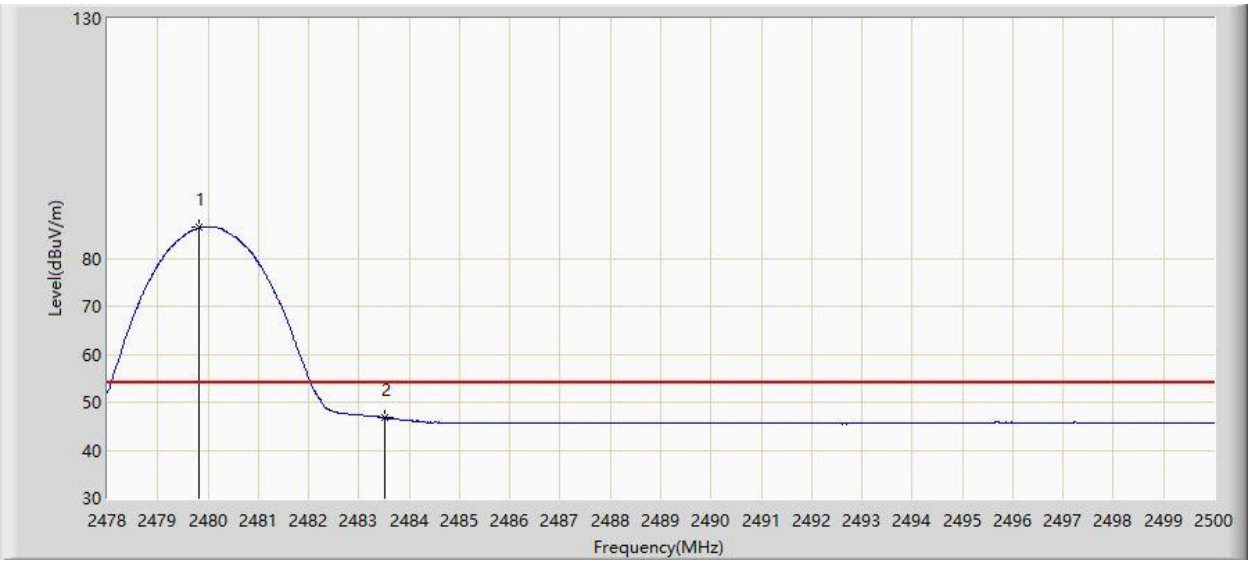


No	Flag	Mark	Frequency (MHz)	Measure Level (dBµV/m)	Reading Level (dBuV)	Margin (dB)	Limit (dBµV/m)	Factor (dB)	Type
1		*	2479.749	89.476	58.585	N/A	N/A	30.891	PK
2			2483.500	56.854	25.966	-17.146	74.000	30.888	PK
3			2485.392	58.118	27.231	-15.882	74.000	30.887	PK

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

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

Site: NS-AC1	Time: 2021/04/02 - 17:26
Limit: FCC_Part 15.209_RE(3m)	Engineer: Antony Yang
Probe: NS-AC1_BBHA9120D_2111	Polarity: Vertical
EUT: Gaming speakers	Power: DC 5V
Test Mode: Transmit by 2DH5 at Channel 2480MHz	



No	Flag	Mark	Frequency (MHz)	Measure Level (dBμV/m)	Reading Level (dBuV)	Margin (dB)	Limit (dBμV/m)	Factor (dB)	Type
1		*	2479.815	86.390	55.499	N/A	N/A	30.891	AV
2			2483.500	46.772	15.884	-7.228	54.000	30.888	AV

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

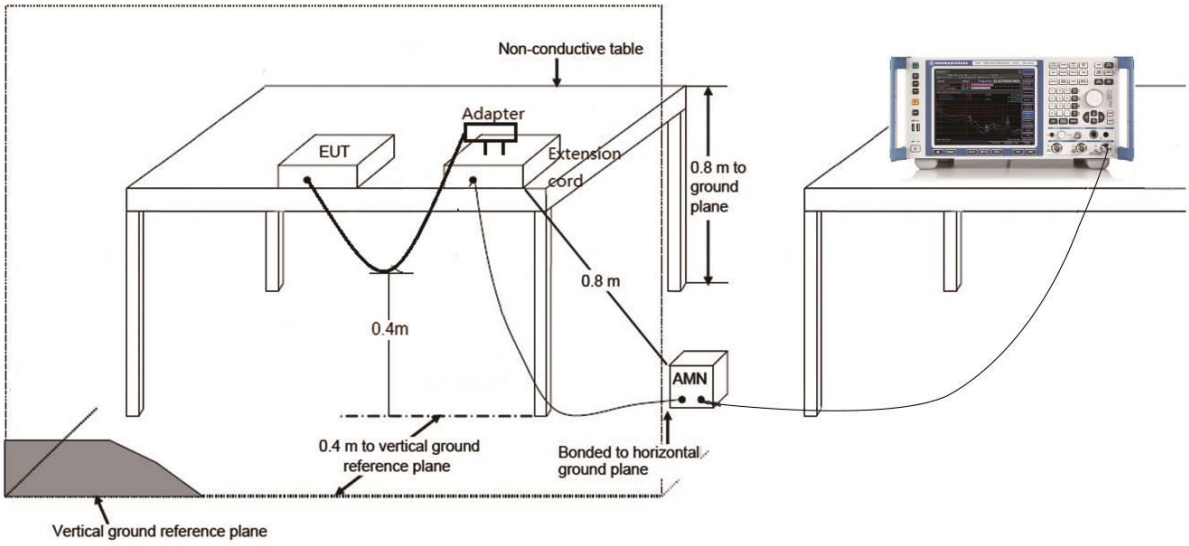
Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m).

6.11. AC Conducted Emissions Measurement

6.11.1.Test Limit

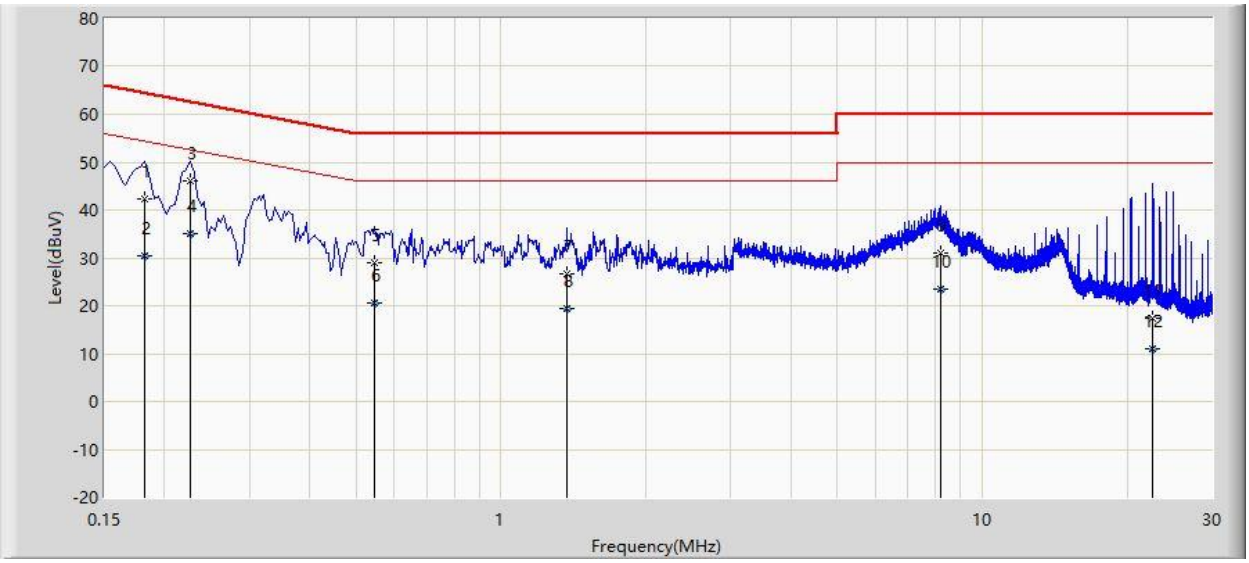
FCC Part 15 Subpart C Paragraph 15.207 Limits		
Frequency (MHz)	QP (dBμV)	Average (dBμV)
0.15 - 0.50	66 - 56	56 - 46
0.50 - 5.0	56	46
5.0 - 30	60	50
Note 1: The lower limit shall apply at the transition frequencies. Note 2: The limit decreases linearly with the logarithm of the frequency in the range 0.15MHz to 0.5MHz.		

6.11.2.Test Setup



6.11.3.Test Result

Site: NS-SR2	Time: 2021/04/01 - 11:28
Limit: FCC_Part15.207_CE_AC Power	Engineer: Selina Zhang
Probe: ENV216_102493_Filter On	Polarity: Line
EUT: Gaming speakers	Power: AC 120V/60Hz
Test Mode: Transmit by 2DH5 at Channel 2441MHz	

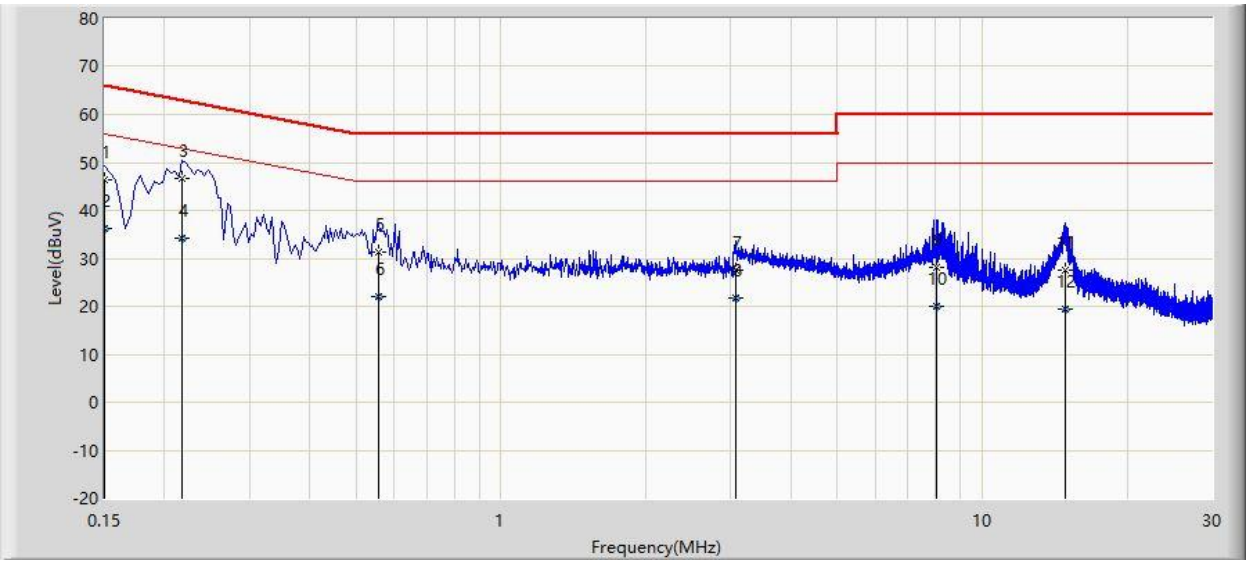


No	Flag	Mark	Frequency (MHz)	Measure Level (dBµV)	Reading Level (dBµV)	Margin (dB)	Limit (dBµV)	Factor (dB)	Type
1			0.182	42.234	32.329	-22.160	64.394	9.905	QP
2			0.182	30.369	20.465	-24.025	54.394	9.905	AV
3		*	0.226	46.007	36.272	-16.589	62.595	9.734	QP
4			0.226	35.009	25.274	-17.587	52.595	9.734	AV
5			0.546	28.947	18.976	-27.053	56.000	9.971	QP
6			0.546	20.439	10.469	-25.561	46.000	9.971	AV
7			1.370	26.577	16.835	-29.423	56.000	9.743	QP
8			1.370	19.310	9.567	-26.690	46.000	9.743	AV
9			8.178	30.914	21.118	-29.086	60.000	9.796	QP
10			8.178	23.530	13.734	-26.470	50.000	9.796	AV
11			22.630	17.371	7.434	-42.629	60.000	9.937	QP
12			22.630	11.119	1.182	-38.881	50.000	9.937	AV

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

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

Site: NS-SR2	Time: 2021/04/01 - 11:39
Limit: FCC_Part15.207_CE_AC Power	Engineer: Selina Zhang
Probe: ENV216_102493_Filter On	Polarity: Neutral
EUT: Gaming speakers	Power: AC 120V/60Hz
Test Mode: Transmit by 2DH5 at Channel 2441MHz	



No	Flag	Mark	Frequency (MHz)	Measure Level (dBµV)	Reading Level (dBµV)	Margin (dB)	Limit (dBµV)	Factor (dB)	Type
1			0.150	46.325	35.560	-19.675	66.000	10.766	QP
2			0.150	36.170	25.405	-19.830	56.000	10.766	AV
3		*	0.218	46.573	36.796	-16.322	62.895	9.777	QP
4			0.218	34.292	24.516	-18.603	52.895	9.777	AV
5			0.558	31.328	21.352	-24.672	56.000	9.976	QP
6			0.558	22.132	12.156	-23.868	46.000	9.976	AV
7			3.078	27.542	17.830	-28.458	56.000	9.711	QP
8			3.078	21.604	11.893	-24.396	46.000	9.711	AV
9			8.046	28.181	18.386	-31.819	60.000	9.795	QP
10			8.046	19.921	10.127	-30.079	50.000	9.795	AV
11			14.834	27.539	17.593	-32.461	60.000	9.945	QP
12			14.834	19.308	9.363	-30.692	50.000	9.945	AV

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

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

7. CONCLUSION

The data collected relate only the item(s) tested and show that the device is compliance with Part 15C of the FCC rules.

The End

Appendix A - Test Setup Photograph

Refer to “2103RSU083-UT” file.

Appendix B - EUT Photograph

Refer to “2103RSU083-UE” file.