

MEASUREMENT REPORT

FCC PART 15.247 / Bluetooth-LE

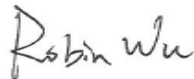
FCC ID: O57-PS1551B
Applicant: Lenovo (Shanghai) Electronics Technology Co., Ltd.
Application Type: Certification
Product: Lenovo Smart Wireless Earbuds
Model No.: Lenovo PS-1551B
Brand Name: Lenovo
FCC Classification: Digital Transmission System (DTS)
FCC Rule Part(s): Part15 Subpart C (Section 15.247)
Test Procedure(s): ANSI C63.10-2013
Test Date: May 24 ~ June 03, 2021

Reviewed By:



Vincent Yu

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
2105RSU058-U2	Rev. 01	Initial Report	07-16-2021	Valid

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1. GENERAL INFORMATION

1.1. Applicant

Lenovo (Shanghai) Electronics Technology Co., Ltd.
 Section 304-305, Building No.4, #222, Meiyue Road, China (Shanghai) Pilot Free Trade Zone,
 Shanghai 200131, China

1.2. Manufacturer

Lenovo PC HK Limited
 23/F, Lincoln House, Taikoo Place 979 King's Road, Quarry Bay, Hong Kong, China

1.3. Testing Facility

<input checked="" type="checkbox"/>	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
<input type="checkbox"/>	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
<input type="checkbox"/>	Test Site – MRT Taiwan Laboratory
	Laboratory Location (Taiwan) No. 38, Fuxing 2 nd 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. Feature of Equipment under Test

Product	Lenovo Smart Wireless Earbuds
Model No.	Lenovo PS-1551B
Test Sample ID	20210520Sample#12 (Radiated) 20210520Sample#13 (Conducted)
Brand Name	Lenovo
Operating Temp.	0~40°C
Bluetooth Spec.	V5.2 Dual Mode

2.2. Product Specification Subjective to this Report

Bluetooth Frequency	2402~2480MHz
Channel Number	40
Type of modulation	GFSK
Data Rate	1Mbps, 2Mbps
Antenna Type	FPC Antenna
Antenna Gain	Left Earbud: -1.58dBi Right Earbud: -1.08dBi

Note 1: For other features of this EUT, test report will be issued separately.

Note 2: Antenna type and antenna gain are provided by the manufacturer.

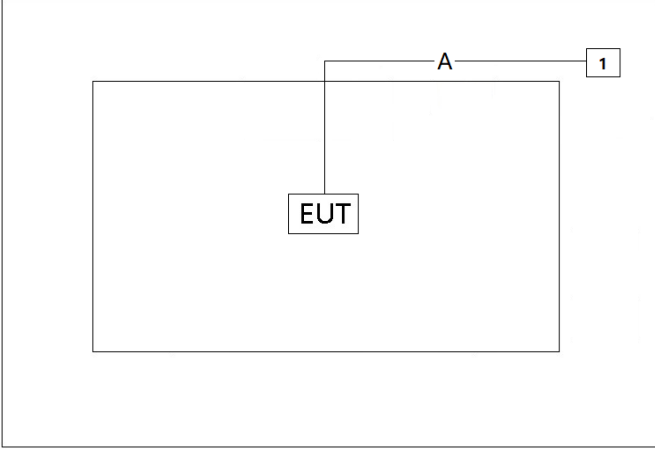
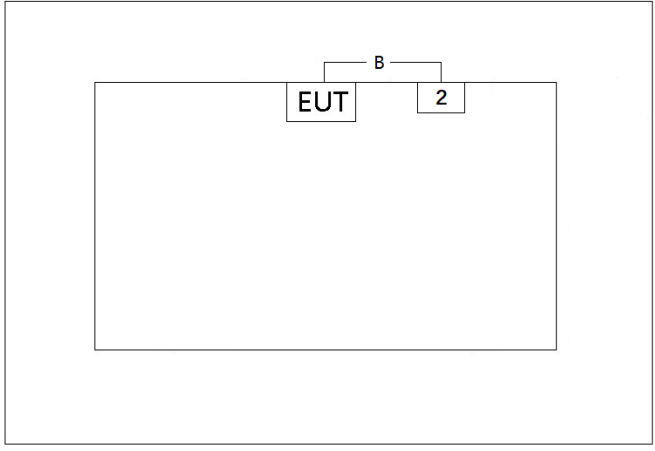
2.3. Working Frequencies

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 BLE (1Mbps)
	Mode 2: Transmit by BLE (2Mbps)

2.5. Description of Test Configuration and Software

Radiated Emission Measurement	
	
AC Conducted Emission Measurement	
	
Cable Type	Cable Description
A	USB Cable Non-Shielded, > 5 m
B	USB Cable Shielded, 0.2m

2.6. Test System Details

Product	Manufacturer	Model No.
1 Notebook	HP	EliteBook 735G5
2 AC/DC adapter	Newman	LC203

Note: The adapter used during the test was provided by MRT lab.

2.7. Test Software

The test utility software used during testing was “BQB”, and the version was 20210115.

Power parameter value refers to operation description.

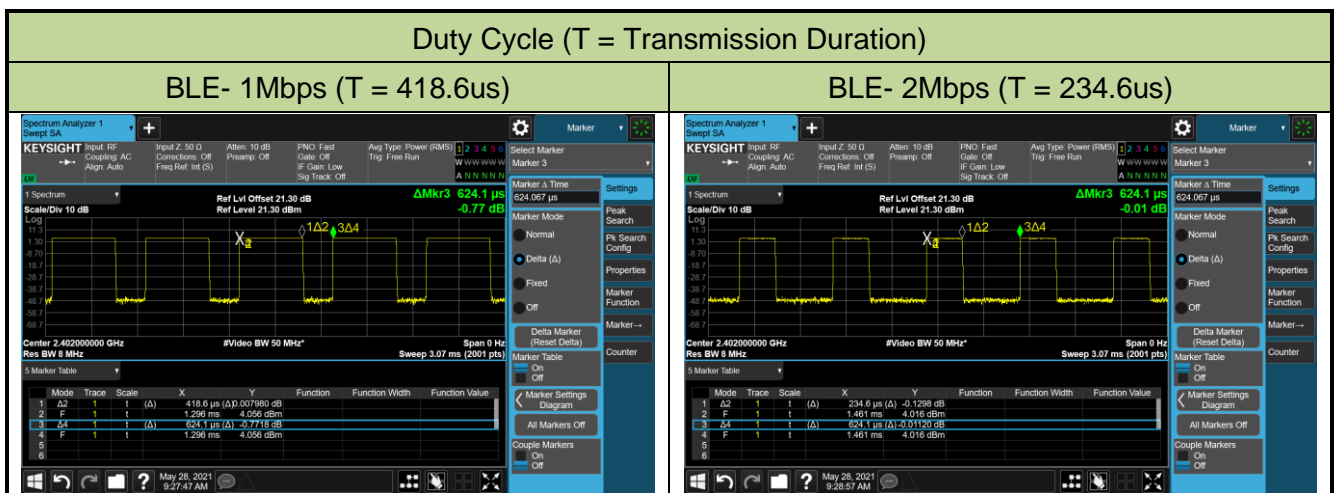
2.8. Test Environment Condition

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

2.9. Duty Cycle

The maximum achievable duty cycles were 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
BLE 1Mbps	67.07%
BLE 2Mbps	37.59%



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 (WZ-SR2)

Instrument	Manufacturer	Type No.	Asset No.	Cali. Interval	Cali. Due Date
EMI Test Receiver	R&S	ESR3	MRTSUE06185	1 year	2022/01/12
Two-Line V-Network	R&S	ENV216	MRTSUE06002	1 year	2021/09/09
Thermal Hygrometer	testo	608-H1	MRTSUE06404	1 year	2021/07/26
Shielding Room	MIX-BEP	Chamber-SR2	MRTSUE06215	N/A	N/A

Conducted Emission (SIP-SR2)

Instrument	Manufacturer	Type No.	Asset No.	Cali. Interval	Cali. Due Date
EMI Test Receiver	R&S	ESR3	MRTSUE06613	1 year	2021/07/02
Two-Line V-Network	R&S	ENV216	MRTSUE06003	1 year	2021/09/09
Thermal Hygrometer	testo	608-H1	MRTSUE06621	1 year	2021/12/03

Radiated Emission (WZ-AC1)

Instrument	Manufacturer	Type No.	Asset No.	Cali. Interval	Cali. Due Date
EMI Test Receiver	R&S	ESR7	MRTSUE06001	1 year	2022/01/04
PXA Signal Analyzer	Keysight	N9030B	MRTSUE06395	1 year	2021/08/30
Loop Antenna	Schwarzbeck	FMZB 1519	MRTSUE06025	1 year	2021/11/08
Bilog Period Antenna	Schwarzbeck	VULB 9168	MRTSUE06172	1 year	2021/08/08
Horn Antenna	Schwarzbeck	BBHA 9120D	MRTSUE06023	1 year	2021/09/27
Horn Antenna	Schwarzbeck	BBHA9170	MRTSUE06597	1 year	2021/12/14
Microwave System Amplifier	Agilent	83017A	MRTSUE06076	1 year	2021/11/14
Pre-amplifier	Schwarzbeck	BBV 9721	MRTSUE06121	1 year	2021/06/11
				1 year	2022/06/10
Thermal Hygrometer	testo	608-H1	MRTSUE06403	1 year	2021/07/26
Anechoic Chamber	TDK	Chamber-AC1	MRTSUE06212	1 year	2022/04/29

Radiated Emission (WZ-AC2)

Instrument	Manufacturer	Type No.	Asset No.	Cali. Interval	Cali. Due Date
MXE EMI Receiver	Keysight	N9038A	MRTSUE06125	1 year	2021/07/02
Loop Antenna	Schwarzbeck	FMZB 1519	MRTSUE06025	1 year	2021/11/08
Bilog Period Antenna	Schwarzbeck	VULB 9162	MRTSUE06022	1 year	2022/05/21
Broad-Band Horn Antenna	Schwarzbeck	BBHA 9120D	MRTSUE06171	1 year	2021/10/25
Horn Antenna	Schwarzbeck	BBHA9170	MRTSUE06597	1 year	2021/12/14
Broadband Coaxial Preamplifier	Schwarzbeck	BBV 9718	MRTSUE06176	1 year	2021/11/14
Preamplifier	Schwarzbeck	BBV 9721	MRTSUE06121	1 year	2021/06/11
				1 year	2022/06/10
Thermal Hygrometer	Minggao	ETH529	MRTSUE06170	1 year	2021/12/08
Anechoic Chamber	RIKEN	Chamber-AC2	MRTSUE06213	1 year	2022/04/29

Radiated Emission (SIP-AC1)

Instrument	Manufacturer	Type No.	Asset No.	Cali. Interval	Cali. Due Date
EMI Test Receiver	R&S	ESR3	MRTSUE06612	1 year	2021/07/02
EXA Signal Analyzer	Keysight	N9010B	MRTSUE06559	1 year	2021/07/23
Loop Antenna	Schwarzbeck	FMZB 1519	MRTSUE06025	1 year	2021/11/08
Bilog Period Antenna	Schwarzbeck	VULB9168	MRTSUE06645	1 year	2021/08/30
Double Ridged Horn Antenna	R&S	HF907	MRTSUE06610	1 year	2021/08/30
Preamplifier	EMCI	EMC051845SE	MRTSUE06600	1 year	2021/11/09
Thermal Hygrometer	testo	608-H1	MRTSUE06620	1 year	2021/12/03
Anechoic Chamber	RIKEN	SIP-AC1	MRTSUE06554	1 year	2021/12/24

Radiated Emission (SIP-AC2)

Instrument	Manufacturer	Type No.	Asset No.	Cali. Interval	Cali. Due Date
EMI Test Receiver	R&S	ESR3	MRTSUE06613	1 year	2021/07/02
MXA Signal Analyzer	Keysight	N9020B	MRTSUE06604	1 year	2021/09/26
Loop Antenna	Schwarzbeck	FMZB 1519	MRTSUE06025	1 year	2021/11/08
Bilog Period Antenna	Schwarzbeck	VULB9168	MRTSUE06646	1 year	2021/08/30
Horn Antenna	Schwarzbeck	BBHA9120D	MRTSUE06648	1 year	2021/11/26
Horn Antenna	Schwarzbeck	BBHA9170	MRTSUE06599	1 year	2021/11/26
Preamplifier	EMCI	EMC051845SE	MRTSUE06644	1 year	2021/11/09
Preamplifier	EMCI	EMC184045SE	MRTSUE06602	1 year	2021/10/12
Thermal Hygrometer	testo	608-H1	MRTSUE06624	1 year	2021/12/03
Anechoic Chamber	RIKEN	SIP-AC2	MRTSUE06781	1 year	2021/12/24

Radiated Emission (SIP-AC3)

Instrument	Manufacturer	Type No.	Asset No.	Cali. Interval	Cali. Due Date
EMI Test Receiver	R&S	ESR3	MRTSUE06612	1 year	2021/07/02
EXA Signal Analyzer	Keysight	N9010B	MRTSUE06559	1 year	2021/07/23
Loop Antenna	Schwarzbeck	FMZB 1519	MRTSUE06025	1 year	2021/11/08
Bilog Period Antenna	Schwarzbeck	VULB9168	MRTSUE06647	1 year	2021/08/08
Double Ridged Horn Antenna	R&S	HF907	MRTSUE06611	1 year	2021/09/13
Horn Antenna	Schwarzbeck	BBHA9170	MRTSUE06598	1 year	2021/11/26
Preamplifier	EMCI	EMC012645SE	MRTSUE06642	1 year	2022/01/14
Preamplifier	EMCI	EMC184045SE	MRTSUE06641	1 year	2022/01/14
Thermal Hygrometer	testo	608-H1	MRTSUE06622	1 year	2021/12/03
Anechoic Chamber	RIKEN	SIP-AC3	MRTSUE06782	1 year	2021/12/24

Conducted Test Equipment (WZ-TR3)

Instrument	Manufacturer	Type No.	Asset No.	Cali. Interval	Cali. Due Date
EXA Signal Analyzer	Agilent	N9020A	MRTSUE06106	1 year	2022/04/13
EXA Signal Analyzer	Keysight	N9010B	MRTSUE06607	1 year	2022/01/06
Signal Analyzer	R&S	FSV40	MRTSUE06218	1 year	2022/04/13
Power Meter	Agilent	U2021XA	MRTSUE06030	1 year	2021/10/22
USB wideband power sensor	Keysight	U2021XA	MRTSUE06446	1 year	2021/08/30
USB wideband power sensor	Keysight	U2021XA	MRTSUE06447	1 year	2021/08/08
Bluetooth Test Set	Anritsu	MT8852B-042	MRTSUE06389	1 year	2021/06/11
				1 year	2022/06/10
Audio Analyzer	Agilent	U8903B	MRTSUE06143	1 year	2022/05/19
Modulation Analyzer	HP	HP8901A	MRTSUE06098	1 year	2021/09/26
Wideband Radio Communication Tester	R&S	CMW 500	MRTSUE06243	1 year	2021/10/20
DC Power Supply	GWINSTEK	DPS-3303C	MRTSUE06064	N/A	N/A
Temperature & Humidity Chamber	BAOYT	BYH-150CL	MRTSUE06051	1 year	2021/10/22
Thermal Hygrometer	testo	608-H1	MRTSUE06401	1 year	2021/07/26

Conducted Test Equipment (SIP-SR5)

Instrument	Manufacturer	Type No.	Asset No.	Cali. Interval	Cali. Due Date
Signal Analyzer	R&S	FSV40	MRTSUE06218	1 year	2022/04/13
PXA Signal Analyzer	Keysight	N9030B	MRTSUE06395	1 year	2021/08/30
USB wideband power sensor	Agilent	U2021XA	MRTSUE06595	1 year	2021/09/26
USB wideband power sensor	Agilent	U2021XA	MRTSUE06596	1 year	2021/09/26
Wideband Radio Communication Tester	R&S	CMW 500	MRTSUE06243	1 year	2021/10/20
Bluetooth Test Set	Anritsu	MT8852B-042	MRTSUE06389	1 year	2021/06/11
				1 year	2022/06/10
Temperature Chamber	BAOYT	BYG-408CS	MRTSUE06847	1 year	2022/02/23
Thermal Hygrometer	testo	622	MRTSUE06629	1 year	2021/11/25

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

6. TEST RESULT

6.1. Summary

FCC Part Section(s)	Test Description	Test Limit	Test Condition	Test Result	Reference
15.247(a)(2)	6dB Bandwidth	$\geq 500\text{kHz}$	Conducted	Pass	Section 6.2
15.247(b)(3)	Output Power	$\leq 1\text{Watt}$		Pass	Section 6.3
15.247(e)	Power Spectral Density	$\leq 8\text{dBm} / 3\text{kHz}$		Pass	Section 6.4
15.247(d)	Band Edge / Out-of-Band Emissions	$\geq 20\text{dBc (Peak)}$		Pass	Section 6.5
15.205 15.209	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 6.6 Section 6.7
15.207	AC Conducted Emissions 150kHz - 30MHz	< FCC 15.207 limits >	Line Conducted	Pass	Section 6.8

Note:

1. The analyzer plots shown in this section were all taken with a correction table loaded into the analyzer. The correction table was used to account for the losses of the cables and attenuators used as part of the system to connect the EUT to the analyzer at all frequencies of interest.
2. The test items of Peak Transmitter Output Power, Restricted Bands and Radiated Emission have been tested for both Left Earbud and Right Earbud, and all other items were tested only for the Left Earbud.

6.2. 6dB Bandwidth Measurement

6.2.1. Test Limit

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

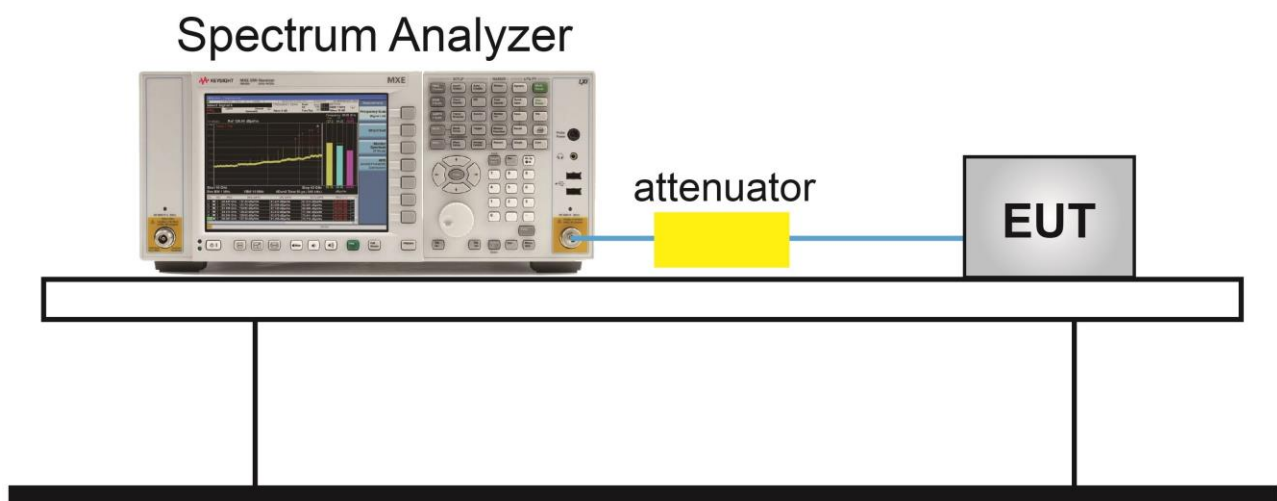
6.2.2. Test Procedure used

ANSI C63.10-2013 - Section 11.8

6.2.3. Test Setting

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

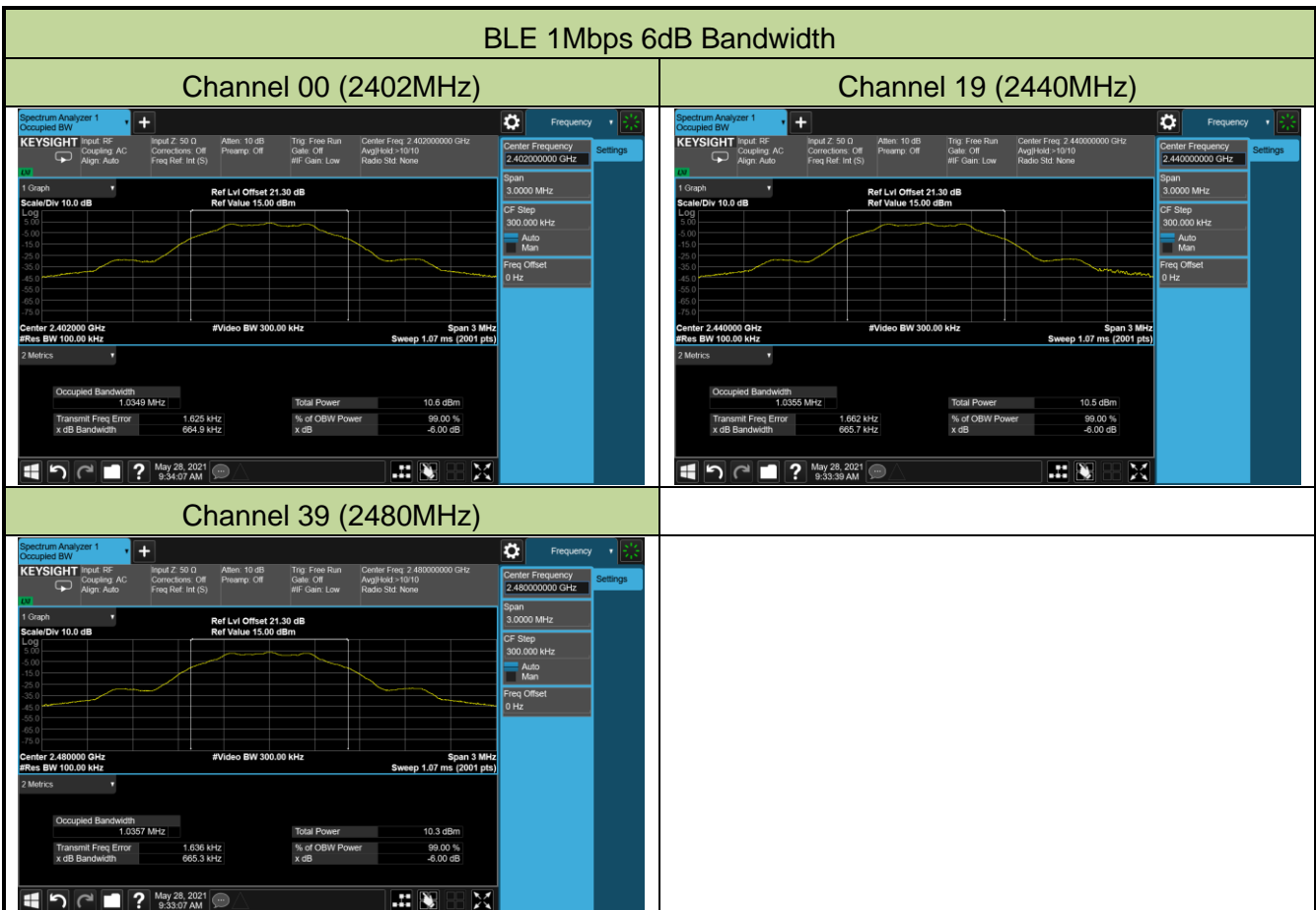
6.2.4. Test Setup

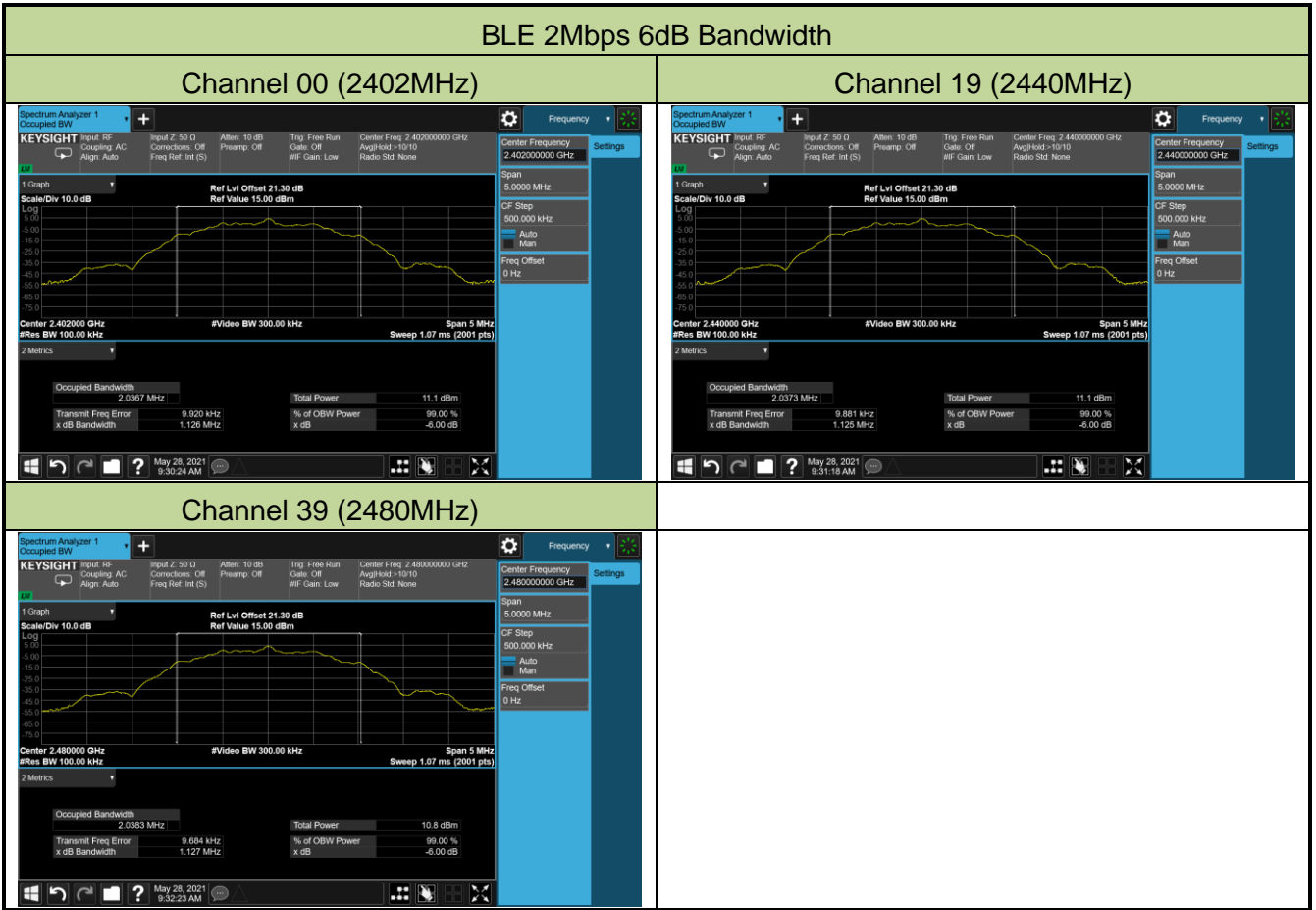


6.2.5. Test Result

Test Site	SIP-SR5	Test Engineer	Alisa Deng
Test Date	2021/05/28		

Test Mode	Data Rate (Mbps)	Channel No.	Frequency (MHz)	6dB Bandwidth (MHz)	Limit (MHz)	Result
BLE	1	00	2402	664.9	≥ 0.5	Pass
BLE	1	19	2440	665.7	≥ 0.5	Pass
BLE	1	39	2480	665.3	≥ 0.5	Pass
BLE	2	00	2402	1126.0	≥ 0.5	Pass
BLE	2	19	2440	1125.0	≥ 0.5	Pass
BLE	2	39	2480	1127.0	≥ 0.5	Pass





6.3. Output Power Measurement

6.3.1. Test Limit

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

6.3.2. Test Procedure Used

ANSI C63.10-2013 - Section 11.9.1.3

ANSI C63.10-2013 - Section 11.9.2.3.2

6.3.3. Test Setting

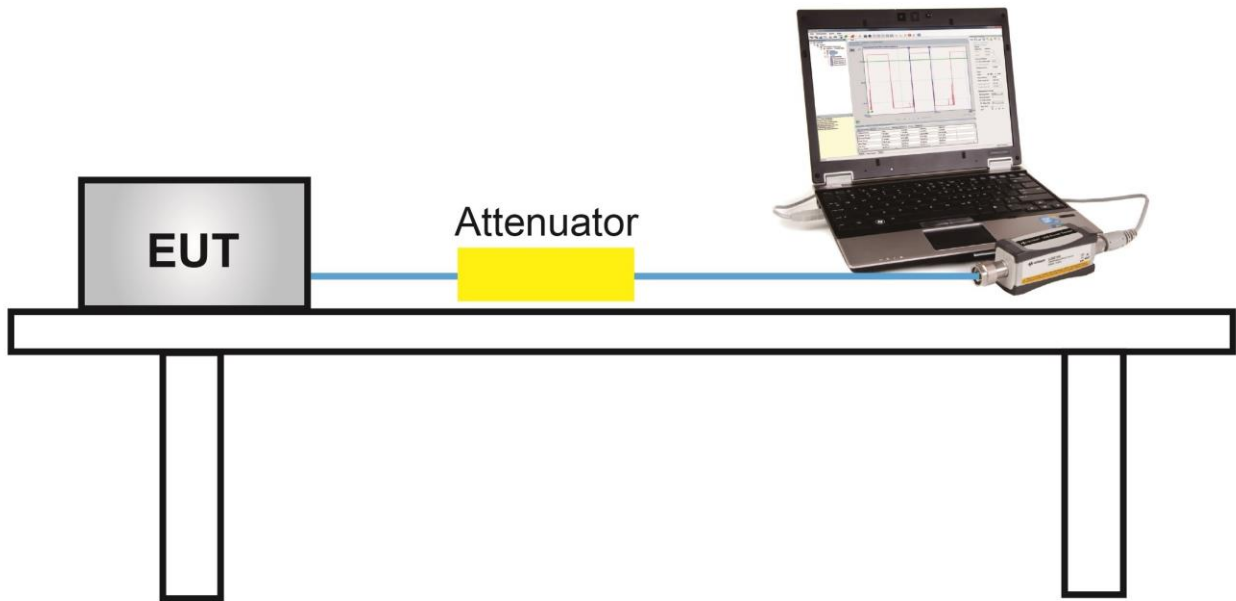
Method PKPM1 (Peak Power Measurement)

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

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

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

6.3.4. Test Setup



6.3.5. Test Result

Test Site	SIP-SR5	Test Engineer	Alisa Deng
Test Date	2021/05/24		

Test Result of Peak Output Power

Test Mode	Data Rate (Mbps)	Channel No.	Frequency (MHz)	Peak Power (dBm)	Limit (dBm)	Result
Left Earbud						
BLE	1	00	2402	4.76	≤ 30.00	Pass
BLE	1	19	2440	4.66	≤ 30.00	Pass
BLE	1	39	2480	4.35	≤ 30.00	Pass
BLE	2	00	2402	4.84	≤ 30.00	Pass
BLE	2	19	2440	4.80	≤ 30.00	Pass
BLE	2	39	2480	4.54	≤ 30.00	Pass
Right Earbud						
BLE	1	00	2402	4.67	≤ 30.00	Pass
BLE	1	19	2440	4.72	≤ 30.00	Pass
BLE	1	39	2480	4.41	≤ 30.00	Pass
BLE	2	00	2402	4.68	≤ 30.00	Pass
BLE	2	19	2440	4.78	≤ 30.00	Pass
BLE	2	39	2480	4.46	≤ 30.00	Pass

Test Result of Average Output Power (Reporting Only)

Test Mode	Data Rate (Mbps)	Channel No.	Frequency (MHz)	Average Power (dBm)	Limit (dBm)	Result
Left Earbud						
BLE	1	00	2402	4.04	≤ 30.00	Pass
BLE	1	19	2440	3.97	≤ 30.00	Pass
BLE	1	39	2480	3.61	≤ 30.00	Pass
BLE	2	00	2402	4.02	≤ 30.00	Pass
BLE	2	19	2440	4.00	≤ 30.00	Pass
BLE	2	39	2480	3.64	≤ 30.00	Pass
Right Earbud						
BLE	1	00	2402	3.83	≤ 30.00	Pass
BLE	1	19	2440	3.89	≤ 30.00	Pass
BLE	1	39	2480	3.58	≤ 30.00	Pass
BLE	2	00	2402	3.72	≤ 30.00	Pass
BLE	2	19	2440	3.82	≤ 30.00	Pass
BLE	2	39	2480	3.57	≤ 30.00	Pass

6.4. Power Spectral Density Measurement

6.4.1. Test Limit

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

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

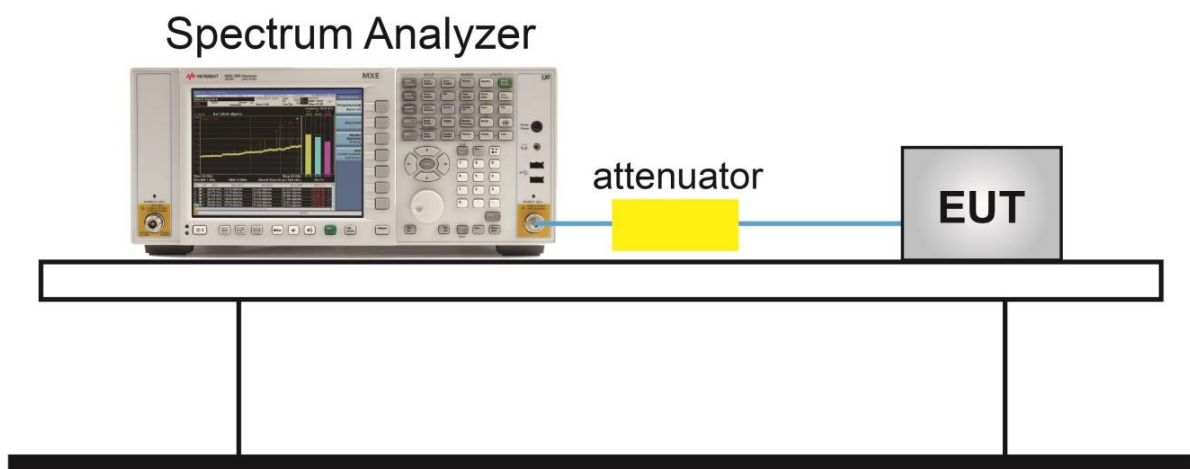
6.4.2. Test Procedure Used

ANSI C63.10-2013 - Section 11.10.2

6.4.3. Test Setting

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

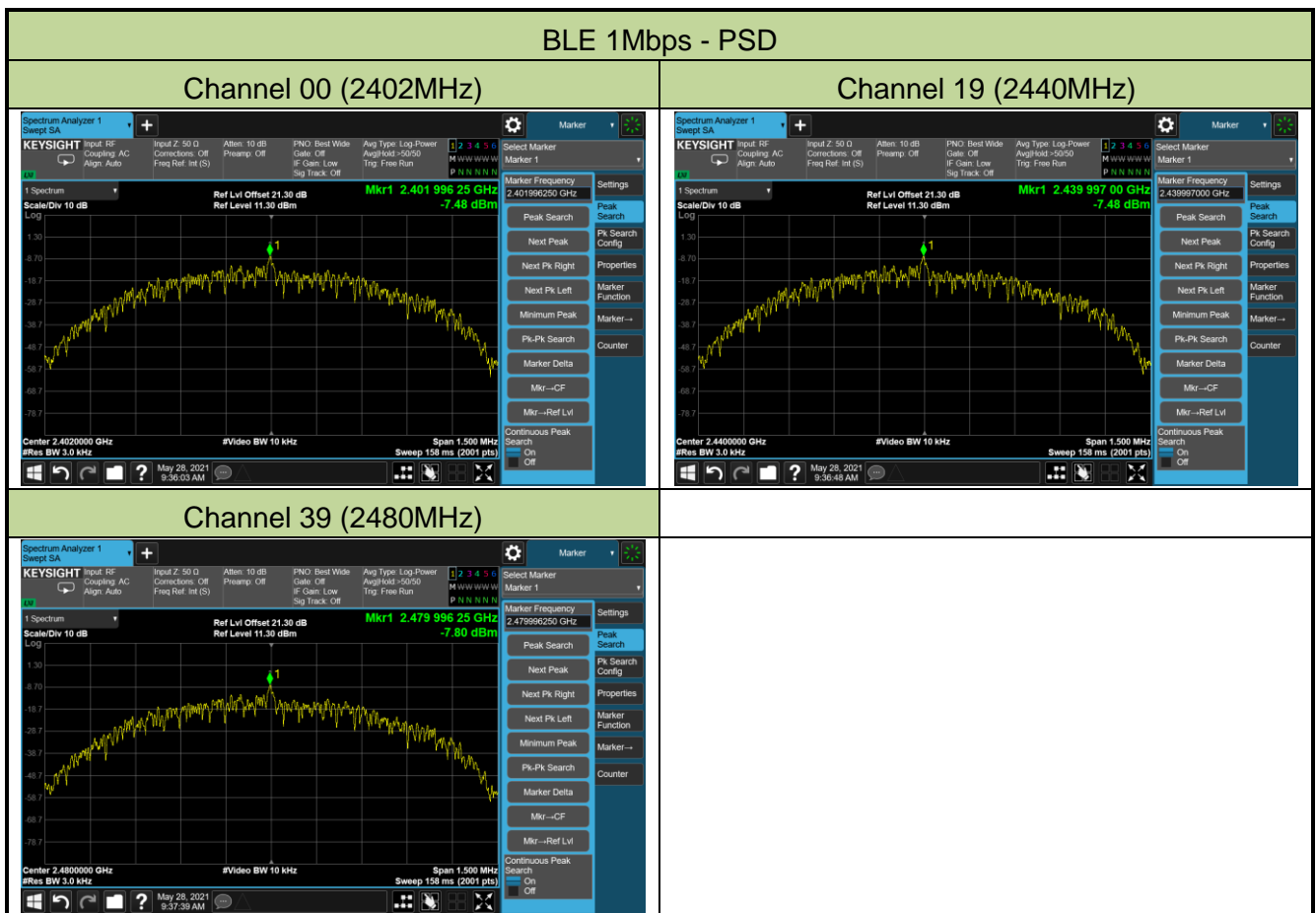
6.4.4. Test Setup

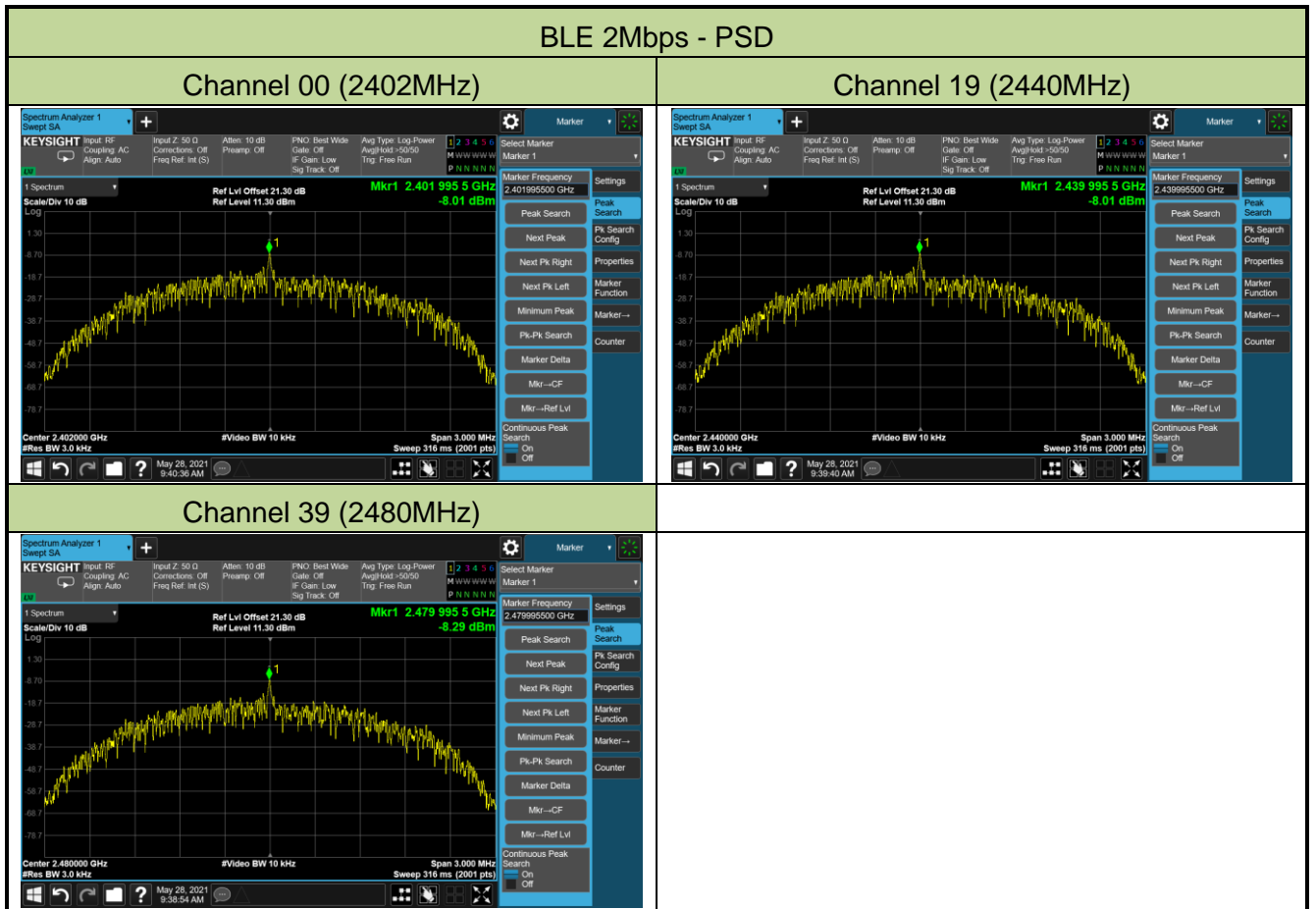


6.4.5. Test Result

Test Site	SIP-SR5	Test Engineer	Alisa Deng
Test Date	2021/05/28		

Test Mode	Data Rate (Mbps)	Channel No.	Frequency (MHz)	PSD Result (dBm / 3kHz)	Limit (dBm / 3kHz)	Result
BLE	1	00	2402	-7.48	≤ 8.00	Pass
BLE	1	19	2440	-7.48	≤ 8.00	Pass
BLE	1	39	2480	-7.80	≤ 8.00	Pass
BLE	2	00	2402	-8.01	≤ 8.00	Pass
BLE	2	19	2440	-8.01	≤ 8.00	Pass
BLE	2	39	2480	-8.29	≤ 8.00	Pass





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

6.5.1. Test Limit

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

6.5.2. Test Procedure Used

ANSI C63.10-2013 - Section 11.11

6.5.3. Test Setting

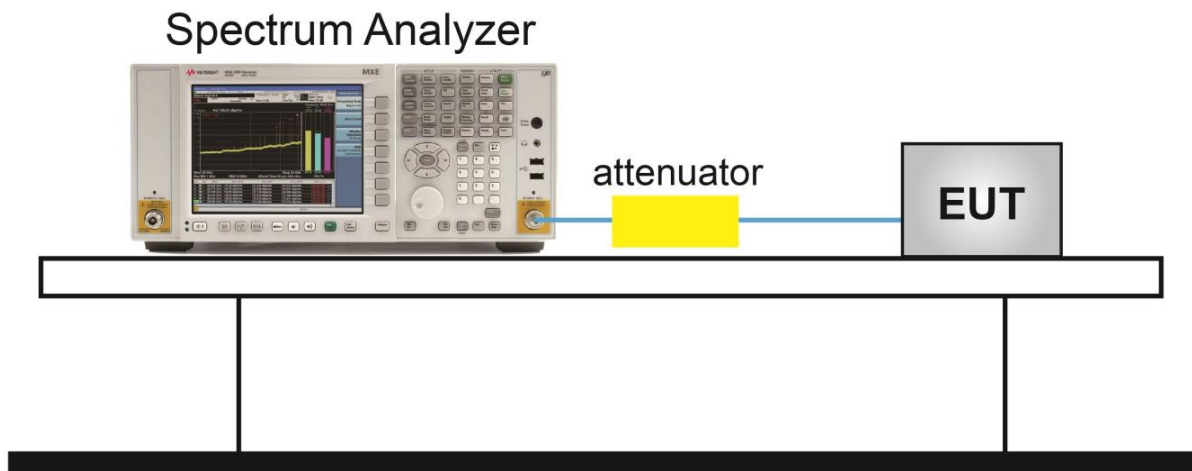
Reference level measurement

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

Emission level measurement

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

6.5.4. Test Setup



6.5.5. Test Result

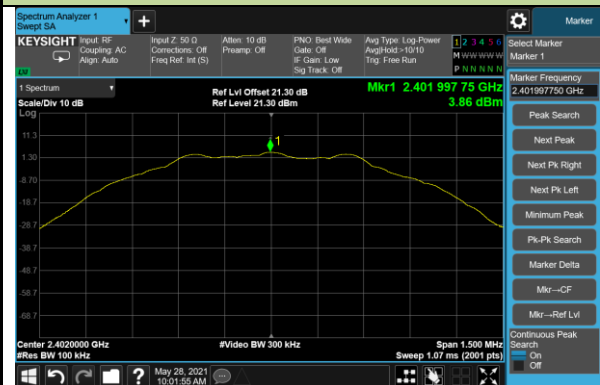
Test Site	SIP-SR5	Test Engineer	Alisa Deng
Test Date	2021/05/28		

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

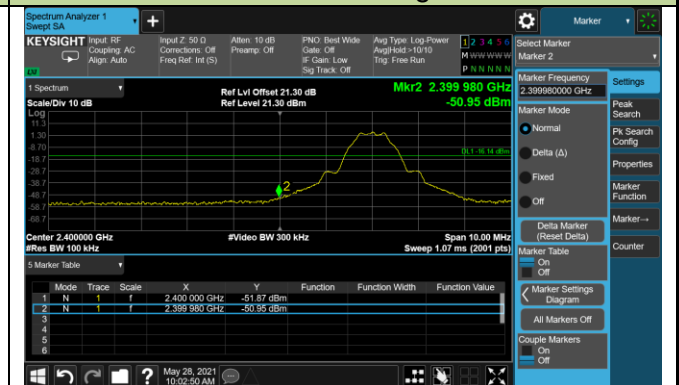
BLE 1Mbps Out-of-Band Emissions

Channel 00 (2402MHz)

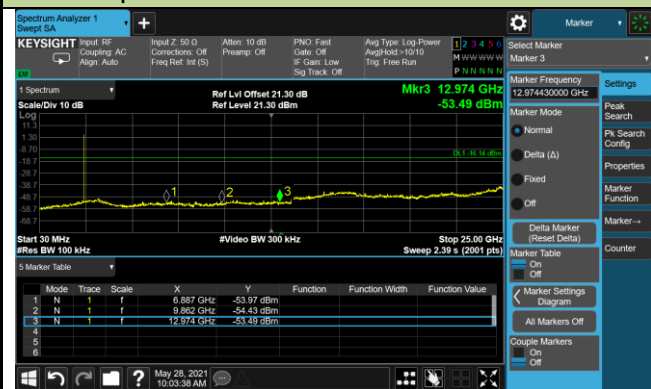
100kHz PSD reference Level



Low Band Edge

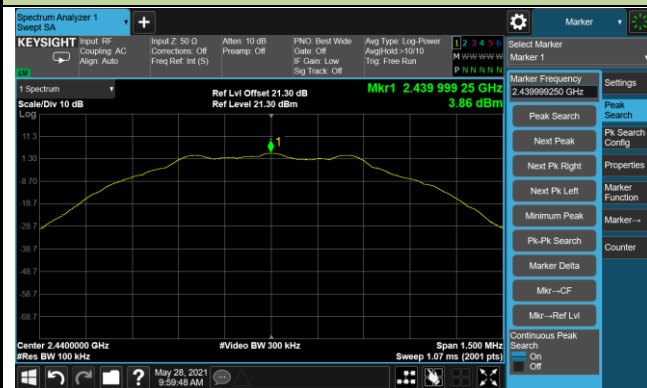


Spurious Emission 30MHz ~ 25GHz



Channel 19 (2440MHz)

100kHz PSD reference Level



Spurious Emission 30MHz ~ 25GHz

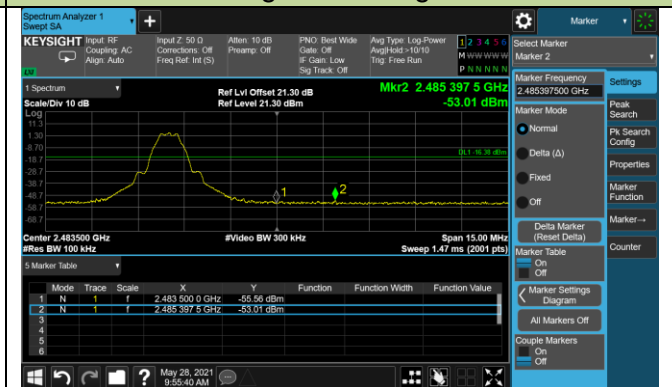


Channel 39 (2480MHz)

100kHz PSD reference Level



High Band Edge



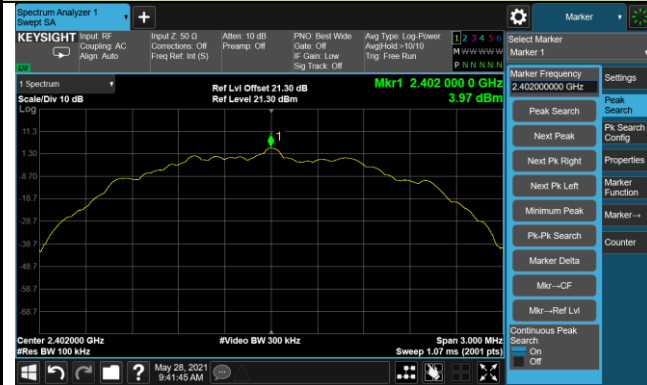
Spurious Emission 30MHz ~ 25GHz



BLE 2Mbps 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

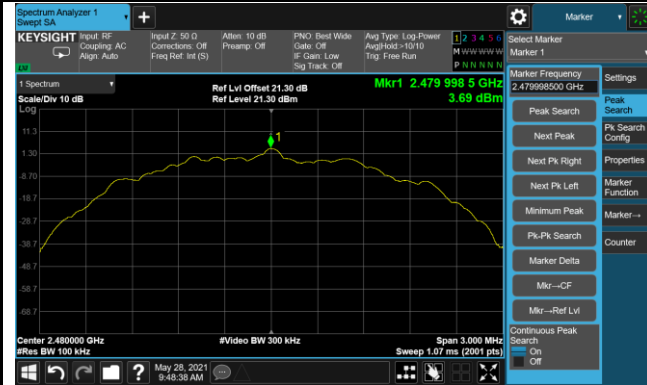


Spurious Emission 30MHz ~ 25GHz

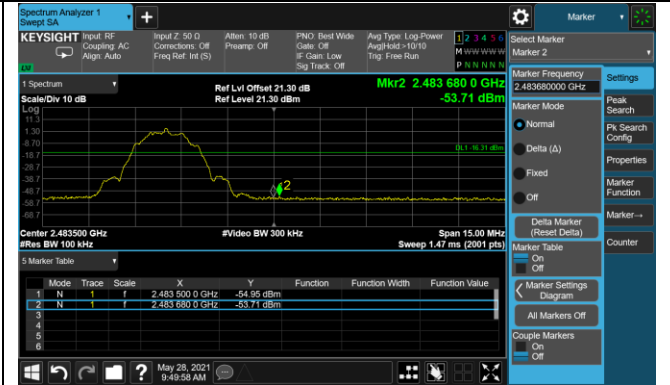


Channel 39 (2480MHz)

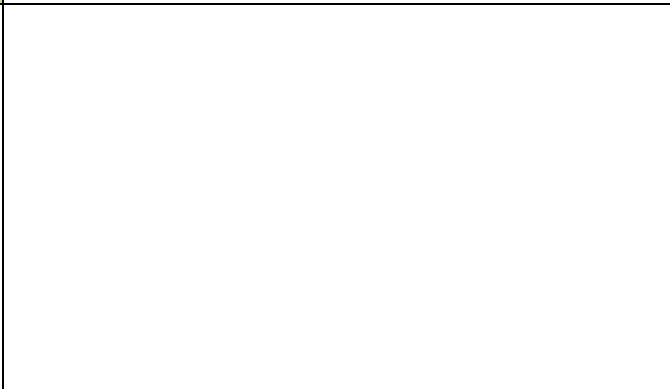
100kHz PSD reference Level



High Band Edge



Spurious Emission 30MHz ~ 25GHz



6.6. Radiated Spurious Emission Measurement

6.6.1. 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 Subpart C Paragraph 15.209		
Frequency (MHz)	Field Strength ($\mu\text{V}/\text{m}$)	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

6.6.2. Test Procedure Used

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

6.6.3. Test Setting

Table 1 - RBW as a function of frequency

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

Quasi-Peak Measurements below 1GHz

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

Peak Measurements above 1GHz

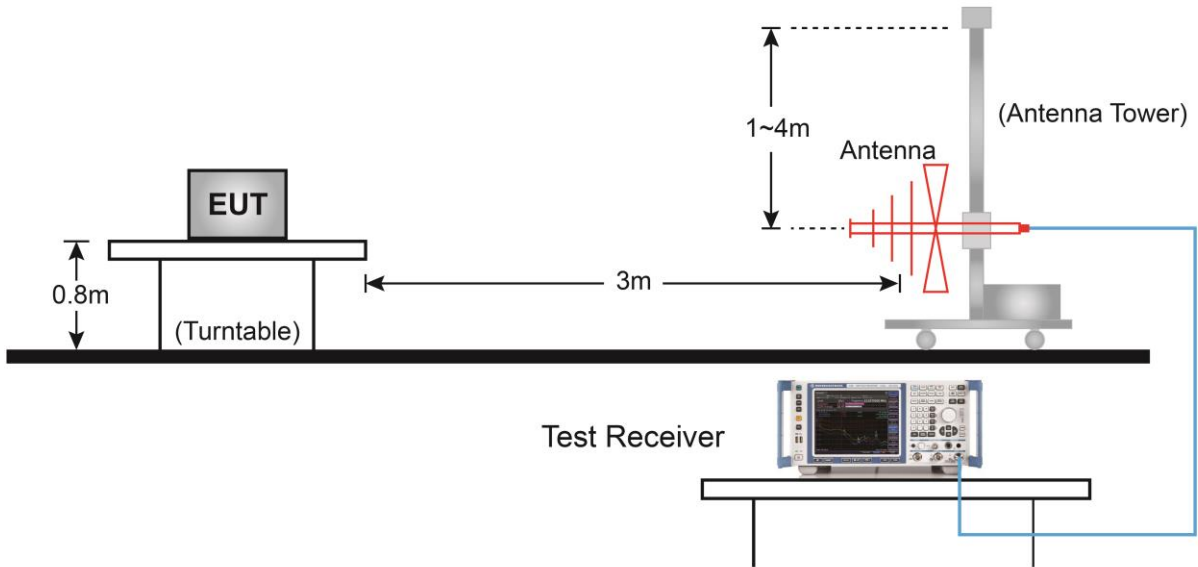
1. Analyzer center frequency was set to the frequency of the radiated spurious emission of interest
2. RBW = 1MHz
3. VBW = 3MHz
4. Detector = peak
5. Sweep time = auto couple
6. Trace mode = max hold
7. Trace was allowed to stabilize

Average Measurements above 1GHz (Method VB)

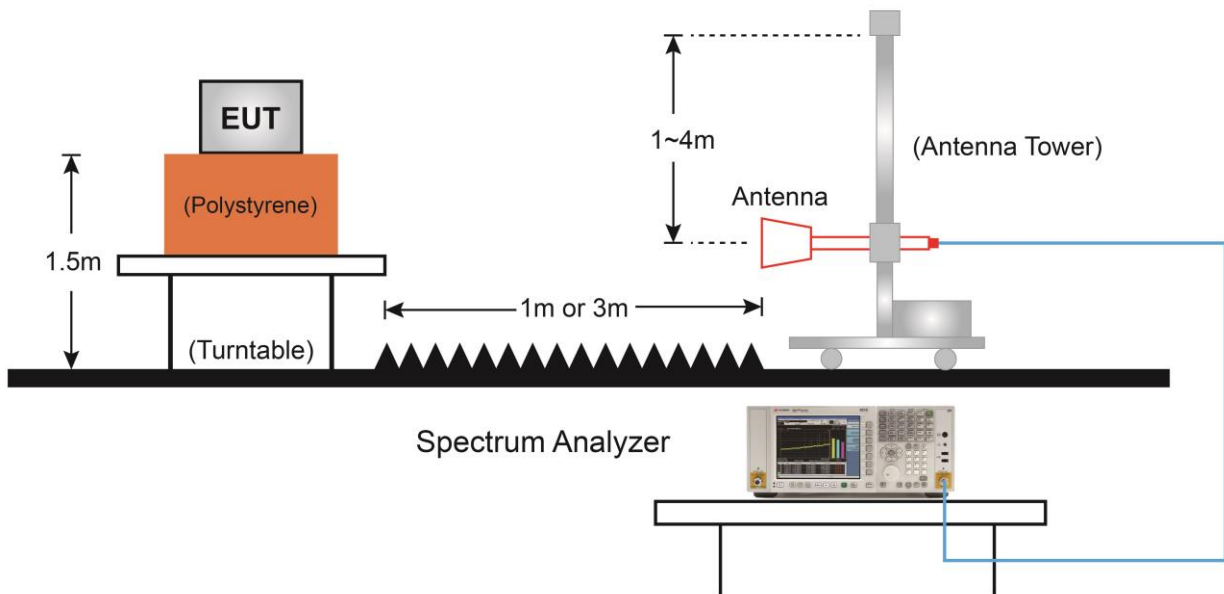
1. Analyzer center frequency was set to the frequency of the radiated spurious emission of interest
2. RBW = 1MHz
3. VBW; If the EUT is configured to transmit with duty cycle $\geq 98\%$, set VBW = 10Hz
If the EUT duty cycle is $< 98\%$, set VBW $\geq 1/T$. T is the minimum transmission duration
4. Detector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

6.6.4. Test Setup

Below 1GHz Test Setup:



Above 1GHz Test Setup:



6.6.5. Test Result

Test Site	SIP-AC2	Test Engineer	Yien Qian
Test Channel	00	Test Date	2021/05/27
Test Mode	BLE 1Mbps - Left Earbud		
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 (dB μ V)	Factor (dB)	Measure Level (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Detector	Polarization
4791.0	49.5	-9.0	40.5	74.0	-33.5	Peak	Horizontal
7536.5	46.8	-1.3	45.5	74.0	-28.5	Peak	Horizontal
11174.5	45.4	5.0	50.4	74.0	-23.6	Peak	Horizontal
4782.5	49.0	-9.1	39.9	74.0	-34.1	Peak	Vertical
7553.5	46.7	-1.3	45.4	74.0	-28.6	Peak	Vertical
10860.0	44.4	4.9	49.3	74.0	-24.7	Peak	Vertical

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

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

Test Site	SIP-AC2	Test Engineer	Yien Qian
Test Channel	19	Test Date	2021/05/27
Test Mode	BLE 1Mbps - Left Earbud		
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 (dB μ V)	Factor (dB)	Measure Level (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Detector	Polarization
4782.5	49.0	-9.1	39.9	74.0	-34.1	Peak	Horizontal
7451.5	46.8	-1.1	45.7	74.0	-28.3	Peak	Horizontal
10724.0	46.2	3.6	49.8	74.0	-24.2	Peak	Horizontal
4782.5	49.0	-9.1	39.9	74.0	-34.1	Peak	Vertical
7485.5	46.7	-1.1	45.6	74.0	-28.4	Peak	Vertical
10809.0	45.4	4.4	49.8	74.0	-24.2	Peak	Vertical

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

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

Test Site	SIP-AC2	Test Engineer	Yien Qian
Test Channel	39	Test Date	2021/05/27
Test Mode	BLE 1Mbps - Left Earbud		
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 (dB μ V)	Factor (dB)	Measure Level (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Detector	Polarization
4791.0	48.6	-9.0	39.6	74.0	-34.4	Peak	Horizontal
7630.0	48.1	-1.8	46.3	74.0	-27.7	Peak	Horizontal
11072.5	44.3	5.3	49.6	74.0	-24.4	Peak	Horizontal
4757.0	49.9	-9.6	40.3	74.0	-33.7	Peak	Vertical
7621.5	48.0	-1.7	46.3	74.0	-27.7	Peak	Vertical
11157.5	45.1	5.0	50.1	74.0	-23.9	Peak	Vertical

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

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

Test Site	SIP-AC2	Test Engineer	Yien Qian
Test Channel	00	Test Date	2021/05/27
Test Mode	BLE 2Mbps - Left Earbud		
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 (dB μ V)	Factor (dB)	Measure Level (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Detector	Polarization
4723.0	49.9	-9.3	40.6	74.0	-33.4	Peak	Horizontal
7383.5	46.8	-1.5	45.3	74.0	-28.7	Peak	Horizontal
11336.0	44.5	5.2	49.7	74.0	-24.3	Peak	Horizontal
5012.0	50.4	-8.6	41.8	74.0	-32.2	Peak	Vertical
7358.0	47.5	-1.7	45.8	74.0	-28.2	Peak	Vertical
10962.0	44.8	5.1	49.9	74.0	-24.1	Peak	Vertical

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

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

Test Site	SIP-AC2	Test Engineer	Yien Qian
Test Channel	19	Test Date	2021/05/27
Test Mode	BLE 2Mbps - Left Earbud		
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 (dB μ V)	Factor (dB)	Measure Level (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Detector	Polarization
4748.5	49.4	-9.5	39.9	74.0	-34.1	Peak	Horizontal
7647.0	47.9	-1.7	46.2	74.0	-27.8	Peak	Horizontal
11438.0	44.1	5.5	49.6	74.0	-24.4	Peak	Horizontal
4825.0	49.8	-9.6	40.2	74.0	-33.8	Peak	Vertical
7638.5	48.0	-1.8	46.2	74.0	-27.8	Peak	Vertical
10962.0	44.4	5.1	49.5	74.0	-24.5	Peak	Vertical

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

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

Test Site	SIP-AC2	Test Engineer	Yien Qian
Test Channel	39	Test Date	2021/05/27
Test Mode	BLE 2Mbps - Left Earbud		
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 (dB μ V)	Factor (dB)	Measure Level (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Detector	Polarization
4714.5	49.7	-9.3	40.4	74.0	-33.6	Peak	Horizontal
7443.0	46.6	-1.1	45.5	74.0	-28.5	Peak	Horizontal
11251.0	44.7	4.9	49.6	74.0	-24.4	Peak	Horizontal
4748.5	50.2	-9.5	40.7	74.0	-33.3	Peak	Vertical
7545.0	46.8	-1.3	45.5	74.0	-28.5	Peak	Vertical
11285.0	46.1	5.1	51.2	74.0	-22.8	Peak	Vertical

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

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

Test Site	SIP-AC2	Test Engineer	Yien Qian
Test Channel	00	Test Date	2021/05/27
Test Mode	BLE 1Mbps - Right Earbud		
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
4723.0	49.2	-9.3	39.9	74.0	-34.1	Peak	Horizontal
7366.5	47.1	-1.6	45.5	74.0	-28.5	Peak	Horizontal
11540.0	44.7	5.4	50.1	74.0	-23.9	Peak	Horizontal
4791.0	50.2	-9.0	41.2	74.0	-32.8	Peak	Vertical
7443.0	47.3	-1.1	46.2	74.0	-27.8	Peak	Vertical
11064.0	44.8	5.4	50.2	74.0	-23.8	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	SIP-AC2	Test Engineer	Yien Qian
Test Channel	19	Test Date	2021/05/27
Test Mode	BLE 1Mbps - Right Earbud		
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
4748.5	51.0	-9.5	41.5	74.0	-32.5	Peak	Horizontal
7502.5	46.4	-1.1	45.3	74.0	-28.7	Peak	Horizontal
11038.5	43.7	5.5	49.2	74.0	-24.8	Peak	Horizontal
5037.5	49.5	-8.5	41.0	74.0	-33.0	Peak	Vertical
7451.5	46.2	-1.1	45.1	74.0	-28.9	Peak	Vertical
11072.5	43.9	5.3	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)

Test Site	SIP-AC2	Test Engineer	Yien Qian
Test Channel	39	Test Date	2021/05/27
Test Mode	BLE 1Mbps - Right Earbud		
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 (dB μ V)	Factor (dB)	Measure Level (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Detector	Polarization
4791.0	49.8	-9.0	40.8	74.0	-33.2	Peak	Horizontal
7647.0	47.9	-1.7	46.2	74.0	-27.8	Peak	Horizontal
11446.5	44.8	5.4	50.2	74.0	-23.8	Peak	Horizontal
4799.5	49.7	-9.2	40.5	74.0	-33.5	Peak	Vertical
7349.5	46.8	-1.7	45.1	74.0	-28.9	Peak	Vertical
10962.0	44.5	5.1	49.6	74.0	-24.4	Peak	Vertical

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

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

Test Site	SIP-AC2	Test Engineer	Yien Qian
Test Channel	00	Test Date	2021/05/27
Test Mode	BLE 2Mbps - Right Earbud		
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 (dB μ V)	Factor (dB)	Measure Level (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Detector	Polarization
4723.0	49.2	-9.3	39.9	74.0	-34.1	Peak	Horizontal
7349.5	47.1	-1.7	45.4	74.0	-28.6	Peak	Horizontal
10775.0	45.0	4.5	49.5	74.0	-24.5	Peak	Horizontal
5054.5	49.2	-8.6	40.6	74.0	-33.4	Peak	Vertical
7494.0	47.5	-1.1	46.4	74.0	-27.6	Peak	Vertical
10775.0	45.0	4.5	49.5	74.0	-24.5	Peak	Vertical

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

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

Test Site	SIP-AC2	Test Engineer	Yien Qian
Test Channel	19	Test Date	2021/05/27
Test Mode	BLE 2Mbps - Right Earbud		
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 (dB μ V)	Factor (dB)	Measure Level (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Detector	Polarization
4791.0	49.6	-9.0	40.6	74.0	-33.4	Peak	Horizontal
7528.0	47.0	-1.4	45.6	74.0	-28.4	Peak	Horizontal
10800.5	46.4	4.3	50.7	74.0	-23.3	Peak	Horizontal
4799.5	49.9	-9.2	40.7	74.0	-33.3	Peak	Vertical
7264.5	47.3	-1.8	45.5	74.0	-28.5	Peak	Vertical
11285.0	44.2	5.1	49.3	74.0	-24.7	Peak	Vertical

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

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

Test Site	SIP-AC2	Test Engineer	Yien Qian
Test Channel	39	Test Date	2021/05/27
Test Mode	BLE 2Mbps - Right Earbud		
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.		

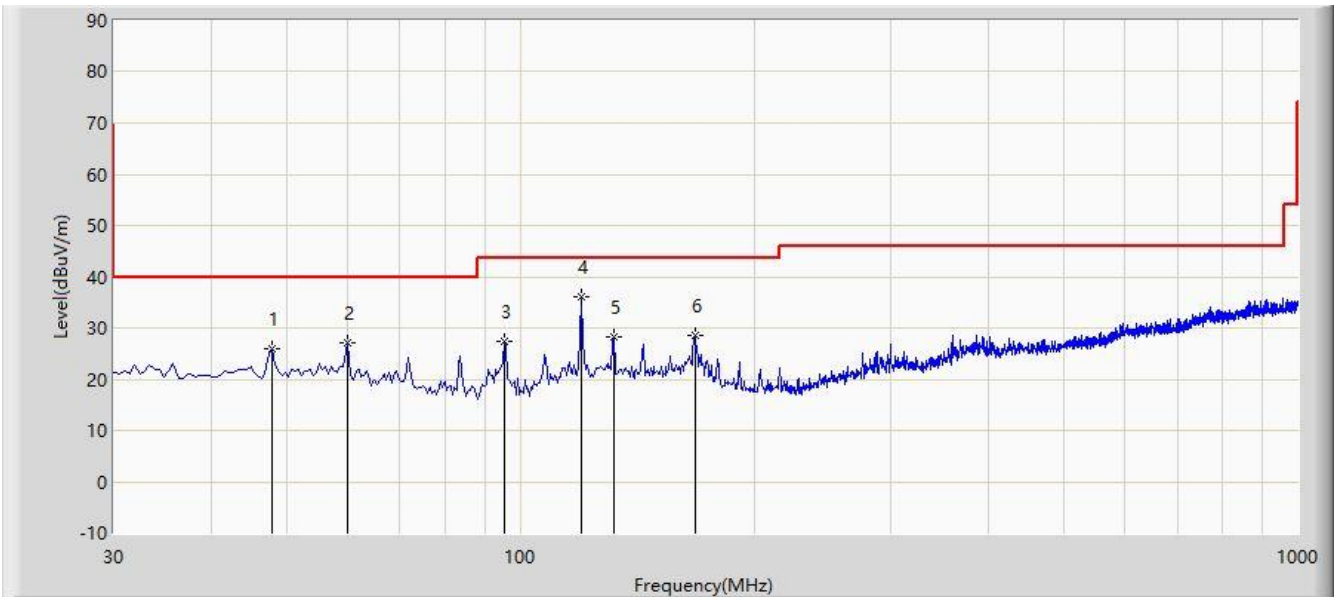
Frequency (MHz)	Reading Level (dB μ V)	Factor (dB)	Measure Level (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Detector	Polarization
4748.5	50.2	-9.5	40.7	74.0	-33.3	Peak	Horizontal
7494.0	46.6	-1.1	45.5	74.0	-28.5	Peak	Horizontal
10792.0	45.4	4.3	49.7	74.0	-24.3	Peak	Horizontal
4791.0	51.2	-9.0	42.2	74.0	-31.8	Peak	Vertical
7604.5	48.9	-1.5	47.4	74.0	-26.6	Peak	Vertical
11089.5	45.2	4.9	50.1	74.0	-23.9	Peak	Vertical

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

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

The Result of Radiated Emission below 1GHz:

Site: SIP-AC2	Time: 2021/05/27
Limit: FCC_Part15.209_RE(3m)	Engineer: Yien Qian
Probe: SIP-AC2_VULB 9168 _30-1000MHz	Polarity: Horizontal
EUT: Lenovo Smart Wireless Earbuds	Power: By Battery
Test Mode: Transmit by BLE (2Mbps) at Channel 2402MHz, Left Earbud	



No	Flag	Mark	Frequency (MHz)	Measure Level (dBμV/m)	Reading Level (dBμV)	Margin (dB)	Limit (dBμV/m)	Factor (dB)	Type
1			47.945	25.854	7.119	-14.146	40.000	18.735	PK
2			60.070	26.971	8.948	-13.029	40.000	18.023	PK
3			95.475	27.270	14.223	-16.230	43.500	13.048	PK
4		*	119.725	36.109	19.933	-7.391	43.500	16.177	PK
5			131.850	28.336	10.983	-15.164	43.500	17.353	PK
6			167.740	28.471	10.183	-15.029	43.500	18.288	PK

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

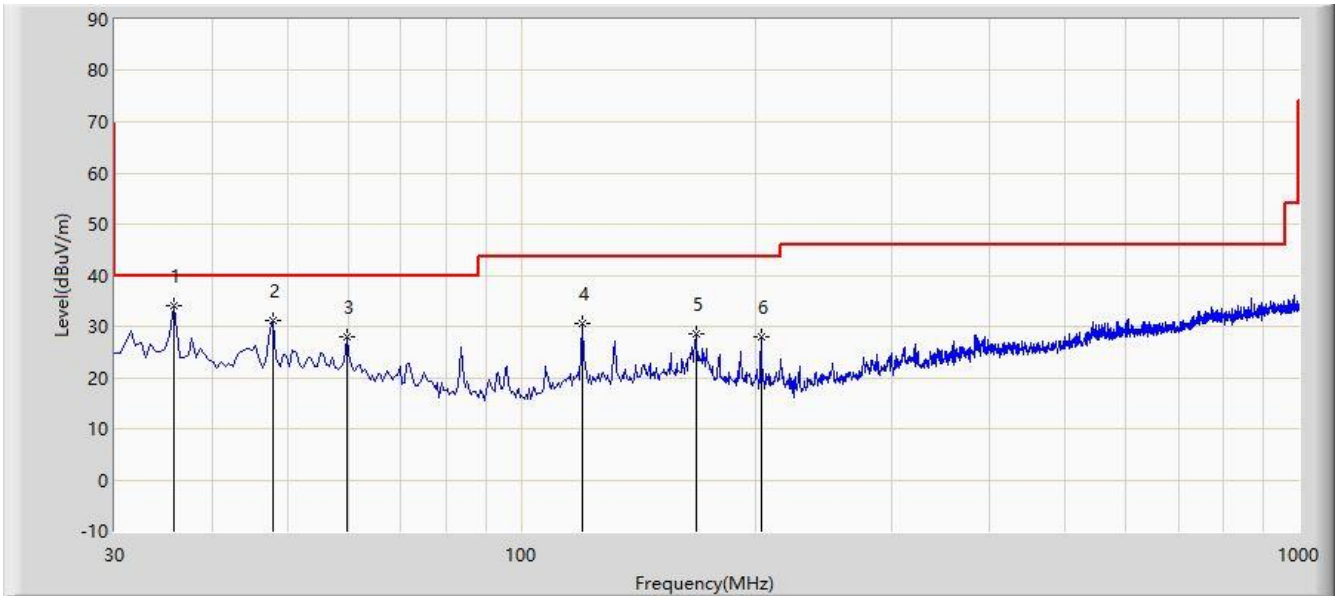
Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m)

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: SIP-AC2	Time: 2021/05/27
Limit: FCC_Part15.209_RE(3m)	Engineer: Yien Qian
Probe: SIP-AC2_VULB 9168 _30-1000MHz	Polarity: Vertical
EUT: Lenovo Smart Wireless Earbuds	Power: By Battery
Test Mode: Transmit by BLE (2Mbps) at Channel 2402MHz, Left Earbud	



No	Flag	Mark	Frequency (MHz)	Measure Level (dB μ V/m)	Reading Level (dB μ V)	Margin (dB)	Limit (dB μ V/m)	Factor (dB)	Type
1		*	35.820	33.930	16.331	-6.070	40.000	17.599	PK
2			47.945	31.089	12.354	-8.911	40.000	18.735	PK
3			59.585	28.062	9.952	-11.938	40.000	18.110	PK
4			119.725	30.445	14.269	-13.055	43.500	16.177	PK
5			167.740	28.601	10.313	-14.899	43.500	18.288	PK
6			203.630	28.100	12.935	-15.400	43.500	15.165	PK

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

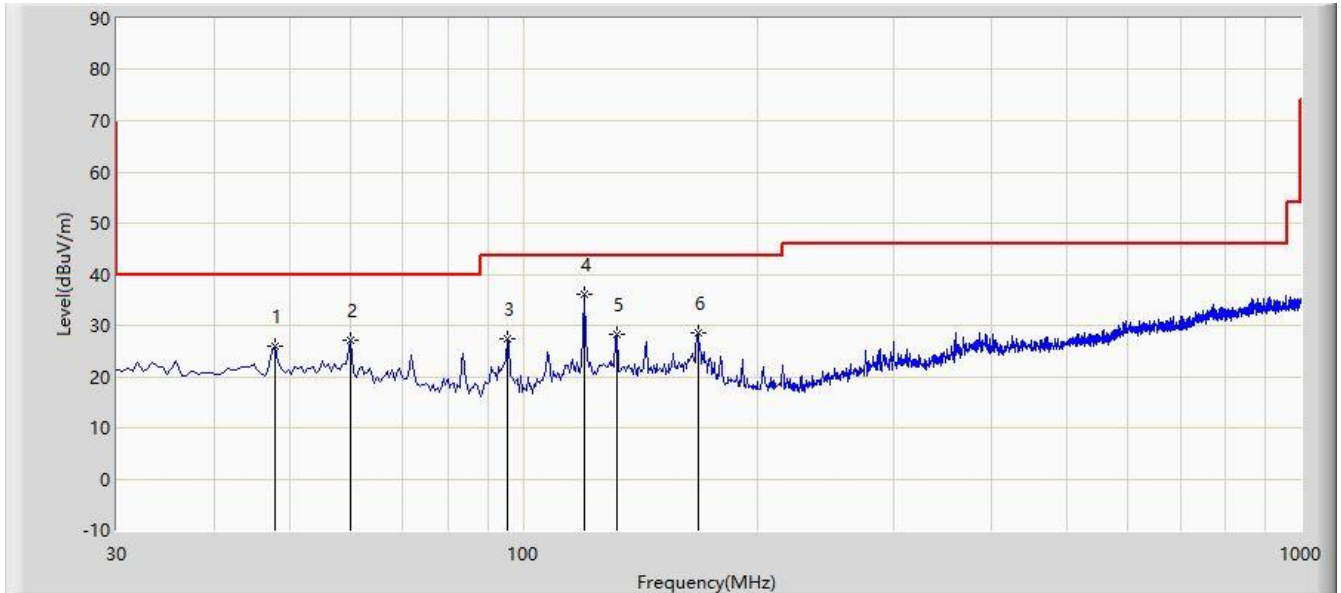
Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m)

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: SIP-AC2	Time: 2021/05/27
Limit: FCC_Part15.209_RE(3m)	Engineer: Yien Qian
Probe: SIP-AC2_VULB 9168 _30-1000MHz	Polarity: Horizontal
EUT: Lenovo Smart Wireless Earbuds	Power: By Battery
Test Mode: Transmit by BLE (2Mbps) at Channel 2402MHz, Right Earbud	



No	Flag	Mark	Frequency (MHz)	Measure Level (dB μ V/m)	Reading Level (dB μ V)	Margin (dB)	Limit (dB μ V/m)	Factor (dB)	Type
1			47.945	25.854	7.119	-14.146	40.000	18.735	PK
2			60.070	26.971	8.948	-13.029	40.000	18.023	PK
3			95.475	27.270	14.223	-16.230	43.500	13.048	PK
4		*	119.725	36.109	19.933	-7.391	43.500	16.177	PK
5			131.850	28.336	10.983	-15.164	43.500	17.353	PK
6			167.740	28.471	10.183	-15.029	43.500	18.288	PK

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

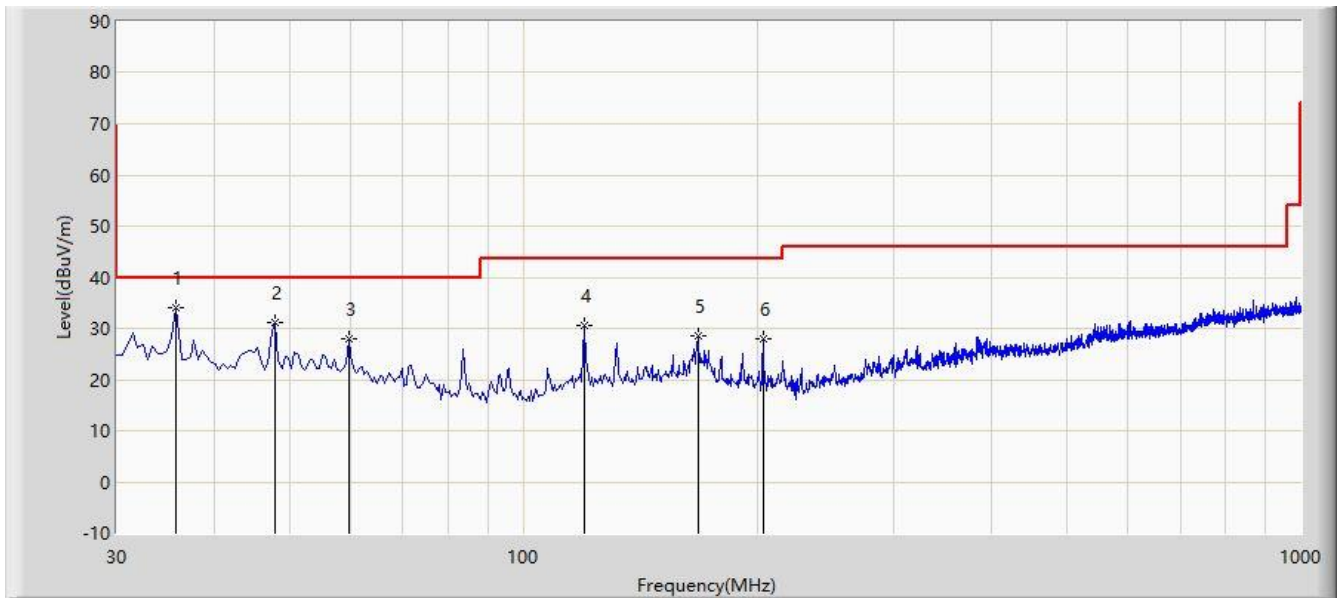
Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m)

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: SIP-AC2	Time: 2021/05/27
Limit: FCC_Part15.209_RE(3m)	Engineer: Yien Qian
Probe: SIP-AC2_VULB 9168 _30-1000MHz	Polarity: Vertical
EUT: Lenovo Smart Wireless Earbuds	Power: By Battery
Test Mode: Transmit by BLE (2Mbps) at Channel 2402MHz, Right Earbud	



No	Flag	Mark	Frequency (MHz)	Measure Level (dB μ V/m)	Reading Level (dB μ V)	Margin (dB)	Limit (dB μ V/m)	Factor (dB)	Type
1		*	35.820	33.930	16.331	-6.070	40.000	17.599	PK
2			47.945	31.089	12.354	-8.911	40.000	18.735	PK
3			59.585	28.062	9.952	-11.938	40.000	18.110	PK
4			119.725	30.445	14.269	-13.055	43.500	16.177	PK
5			167.740	28.601	10.313	-14.899	43.500	18.288	PK
6			203.630	28.100	12.935	-15.400	43.500	15.165	PK

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

6.7. Radiated Restricted Band Edge Measurement

6.7.1. Test Limit

For 15.205 requirement:

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

Frequency (MHz)	Frequency (MHz)	Frequency (MHz)	Frequency (GHz)
0.090 - 0.110	16.42 - 16.423	399.9 - 410	4.5 - 5.15
¹ 0.495 - 0.505	16.69475 - 16.69525	608 - 614	5.35 - 5.46
2.1735 - 2.1905	16.80425 - 16.80475	960 - 1240	7.25 - 7.75
4.125 - 4.128	25.5 - 25.67	1300 - 1427	8.025 - 8.5
4.17725 - 4.17775	37.5 - 38.25	1435 - 1626.5	9.0 - 9.2
4.20725 - 4.20775	73 - 74.6	1645.5 - 1646.5	9.3 - 9.5
6.215 - 6.218	74.8 - 75.2	1660 - 1710	10.6 - 12.7
6.26775 - 6.26825	108 - 121.94	1718.8 - 1722.2	13.25 - 13.4
6.31175 - 6.31225	123 - 138	2200 - 2300	14.47 - 14.5
8.291 - 8.294	149.9 - 150.05	2310 - 2390	15.35 - 16.2
8.362 - 8.366	156.52475 - 156.52525	2483.5 - 2500	17.7 - 21.4
8.37625 - 8.38675	156.7 - 156.9	2690 - 2900	22.01 - 23.12
8.41425 - 8.41475	162.0125 - 167.17	3260 - 3267	23.6 - 24.0
12.29 - 12.293	167.72 - 173.2	3332 - 3339	31.2 - 31.8
12.51975 - 12.52025	240 - 285	3345.8 - 3358	36.43 - 36.5
12.57675 - 12.57725	322 - 335.4	3600 - 4400	(²)
13.36 - 13.41	--	--	--

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

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

6.7.2. Test Procedure Used

ANSI C63.10-2013 - Section 6.3 & 6.6 & 11.13

6.7.3. Test Setting

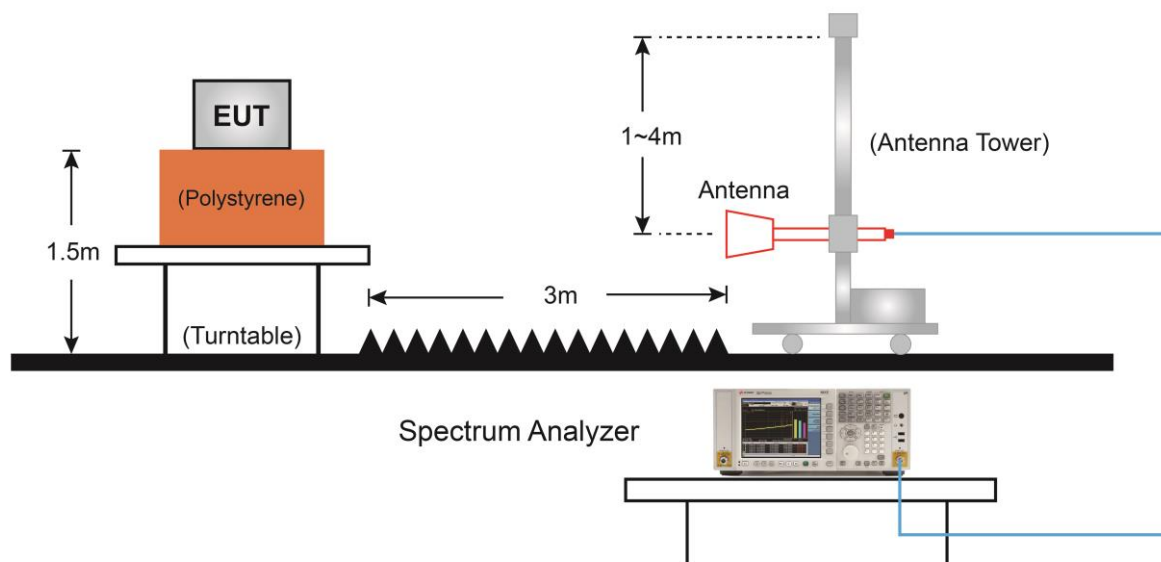
Peak Field Strength Measurements

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

Average Field Strength Measurements

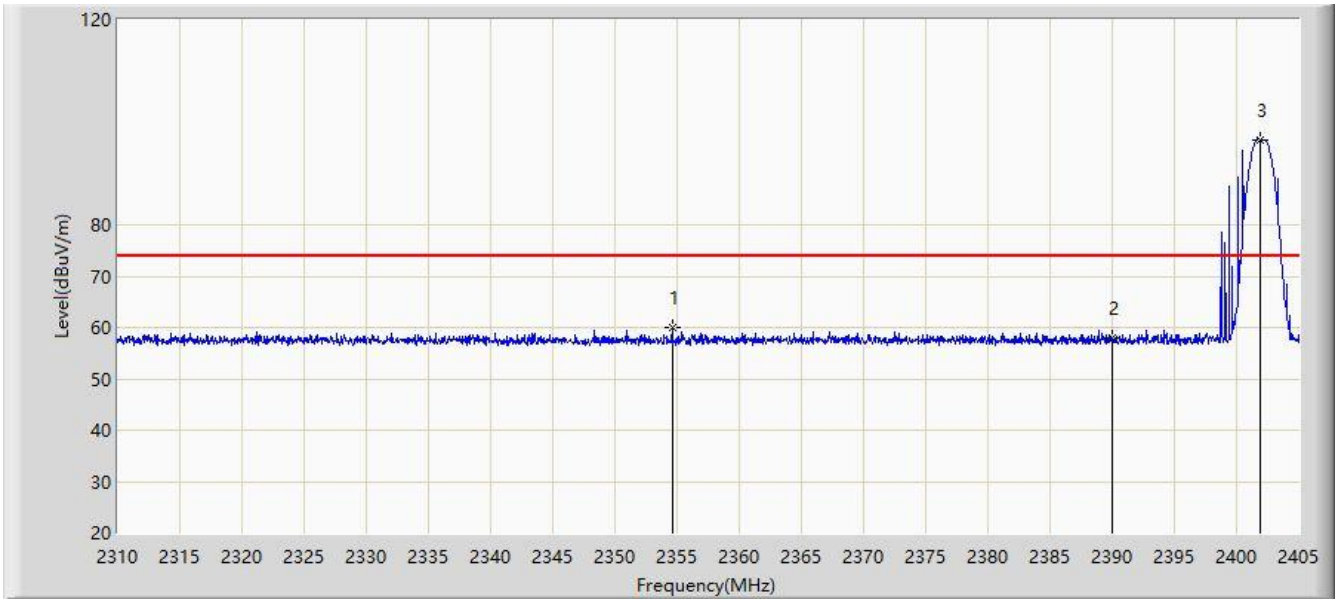
1. Analyzer center frequency was set to the frequency of the radiated spurious emission of interest
2. RBW = 1MHz
3. VBW $\geq 1/T$
4. De As an alternative, the instrument may be set to linear detector mode. Ensure that video filtering is applied in linear voltage domain (rather than in a log or dB domain). Some instruments require linear display mode in order to accomplish this. Others have a setting for Average-VBW Type, which can be set to "Voltage" regardless of the display mode
5. Detector = Peak
6. Sweep time = auto
7. Trace mode = max hold
8. Allow max hold to run for at least 50 times (1/duty cycle) traces

6.7.4. Test Setup



6.7.5. Test Result

Site: SIP-AC2	Time: 2021/05/29 - 12:59
Limit: FCC_Part15.209_RE(3m)	Engineer: Yien Qian
Probe: SIP-AC2_BBHA9120D_1-18GHz	Polarity: Horizontal
EUT: Lenovo Smart Wireless Earbuds	Power: By Battery
Note: Transmit by BLE (1Mbps) at Channel 2402MHz, Left Earbud	

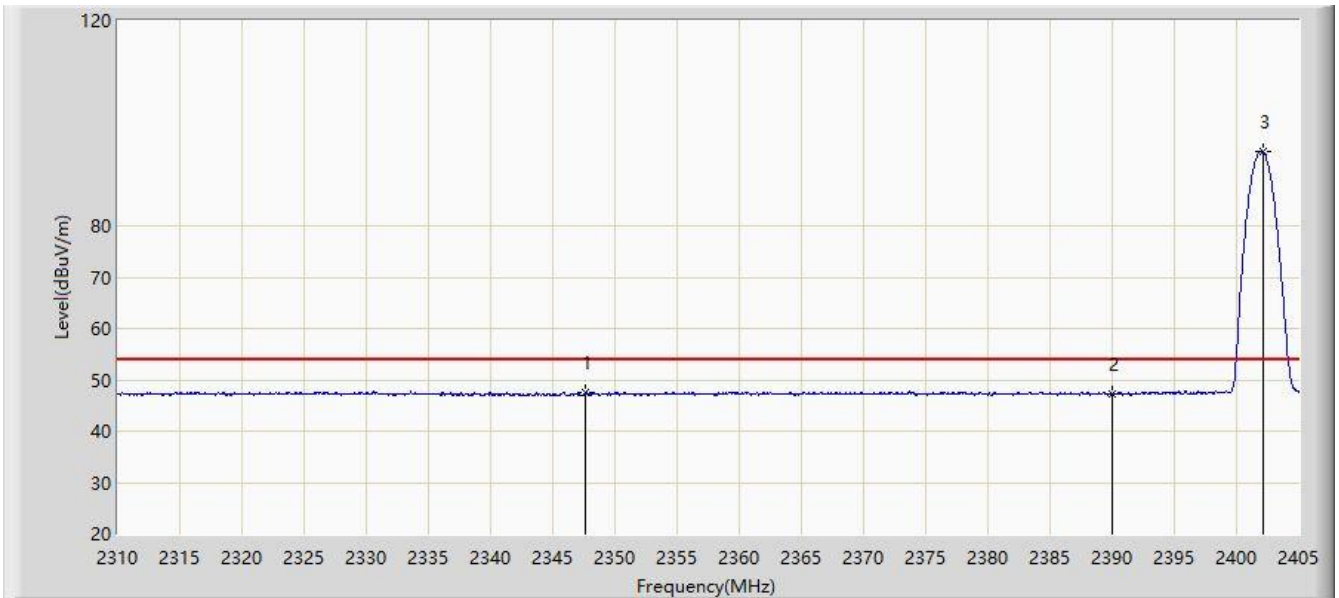


No	Flag	Mark	Frequency (MHz)	Measure Level (dB μ V/m)	Reading Level (dB μ V)	Margin (dB)	Limit (dB μ V/m)	Factor (dB)	Type
1			2354.603	59.965	27.496	-14.035	74.000	32.469	PK
2			2390.000	57.835	25.431	-16.165	74.000	32.404	PK
3		*	2401.913	96.652	64.286	N/A	N/A	32.366	PK

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

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

Site: SIP-AC2	Time: 2021/05/29 - 14:43
Limit: FCC_Part15.209_RE(3m)	Engineer: Yien Qian
Probe: SIP-AC2_BBHA9120D_1-18GHz	Polarity: Horizontal
EUT: Lenovo Smart Wireless Earbuds	Power: By Battery
Note: Transmit by BLE (1Mbps) at Channel 2402MHz, Left Earbud	

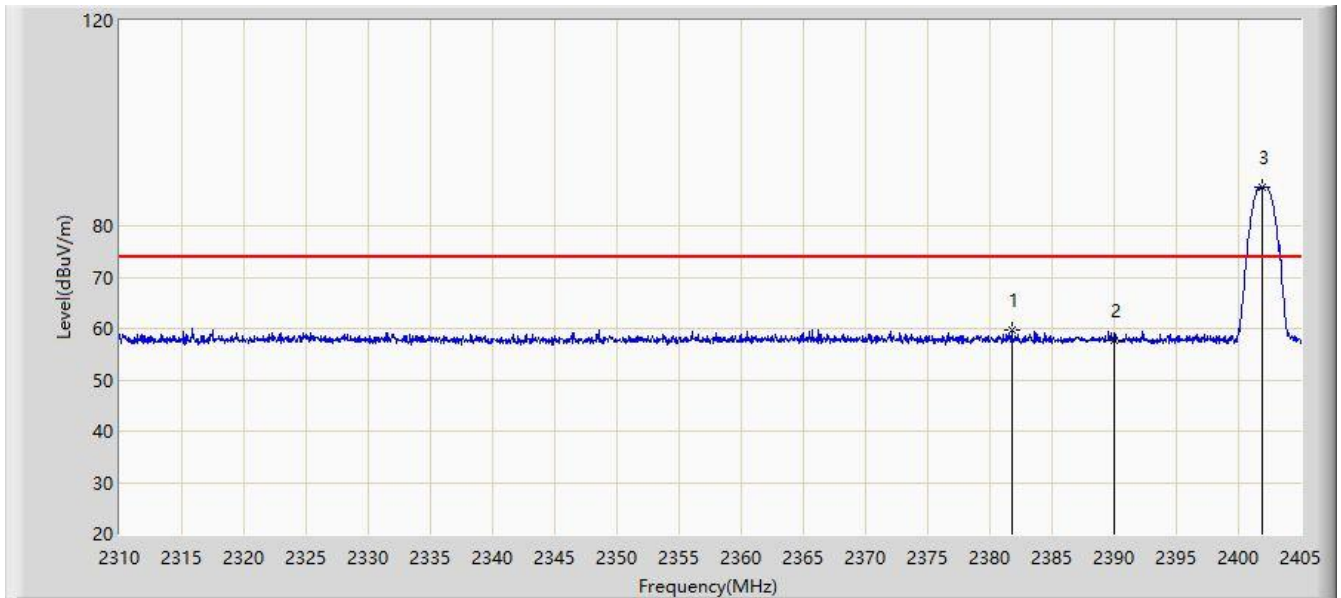


No	Flag	Mark	Frequency (MHz)	Measure Level (dB μ V/m)	Reading Level (dB μ V)	Margin (dB)	Limit (dB μ V/m)	Factor (dB)	Type
1			2347.667	47.504	15.094	-6.496	54.000	32.410	AV
2			2390.000	47.180	14.776	-6.820	54.000	32.404	AV
3		*	2402.103	94.550	62.184	N/A	N/A	32.365	AV

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

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

Site: SIP-AC2	Time: 2021/05/29 - 14:45
Limit: FCC_Part15.209_RE(3m)	Engineer: Yien Qian
Probe: SIP-AC2_BBHA9120D_1-18GHz	Polarity: Vertical
EUT: Lenovo Smart Wireless Earbuds	Power: By Battery
Note: Transmit by BLE (1Mbps) at Channel 2402MHz, Left Earbud	

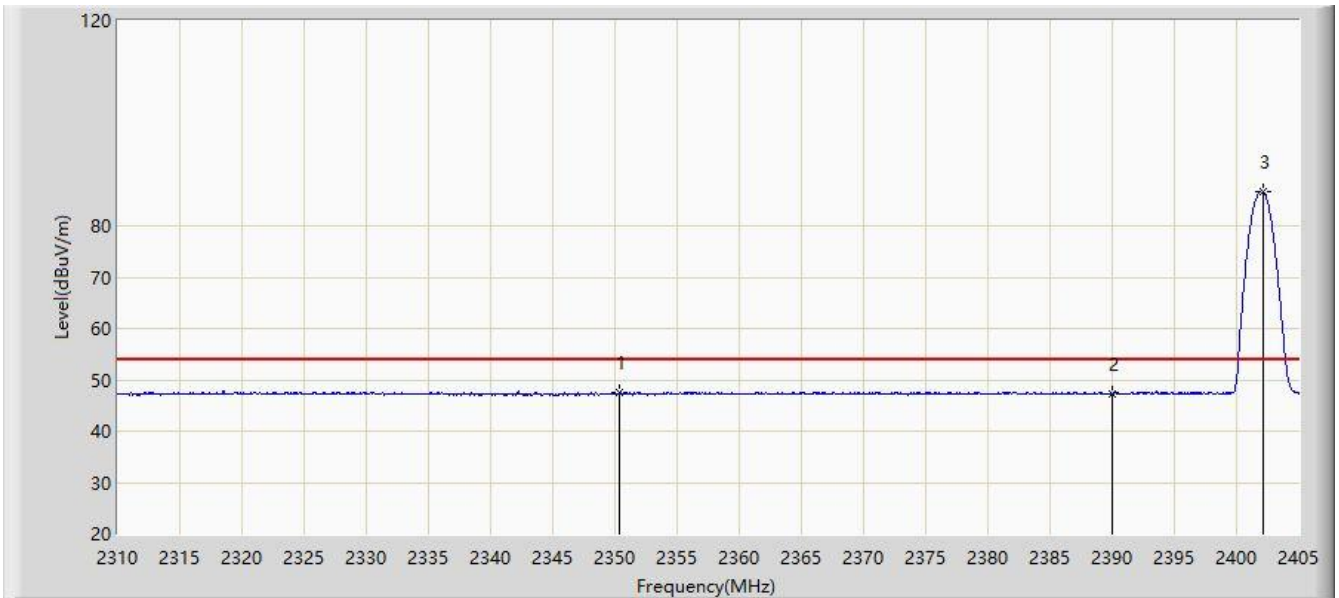


No	Flag	Mark	Frequency (MHz)	Measure Level (dB μ V/m)	Reading Level (dB μ V)	Margin (dB)	Limit (dB μ V/m)	Factor (dB)	Type
1			2381.772	59.834	27.375	-14.166	74.000	32.459	PK
2			2390.000	57.812	25.408	-16.188	74.000	32.404	PK
3		*	2401.913	87.477	55.111	N/A	N/A	32.366	PK

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

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

Site: SIP-AC2	Time: 2021/05/29 - 14:49
Limit: FCC_Part15.209_RE(3m)	Engineer: Yien Qian
Probe: SIP-AC2_BBHA9120D_1-18GHz	Polarity: Vertical
EUT: Lenovo Smart Wireless Earbuds	Power: By Battery
Note: Transmit by BLE (1Mbps) at Channel 2402MHz, Left Earbud	

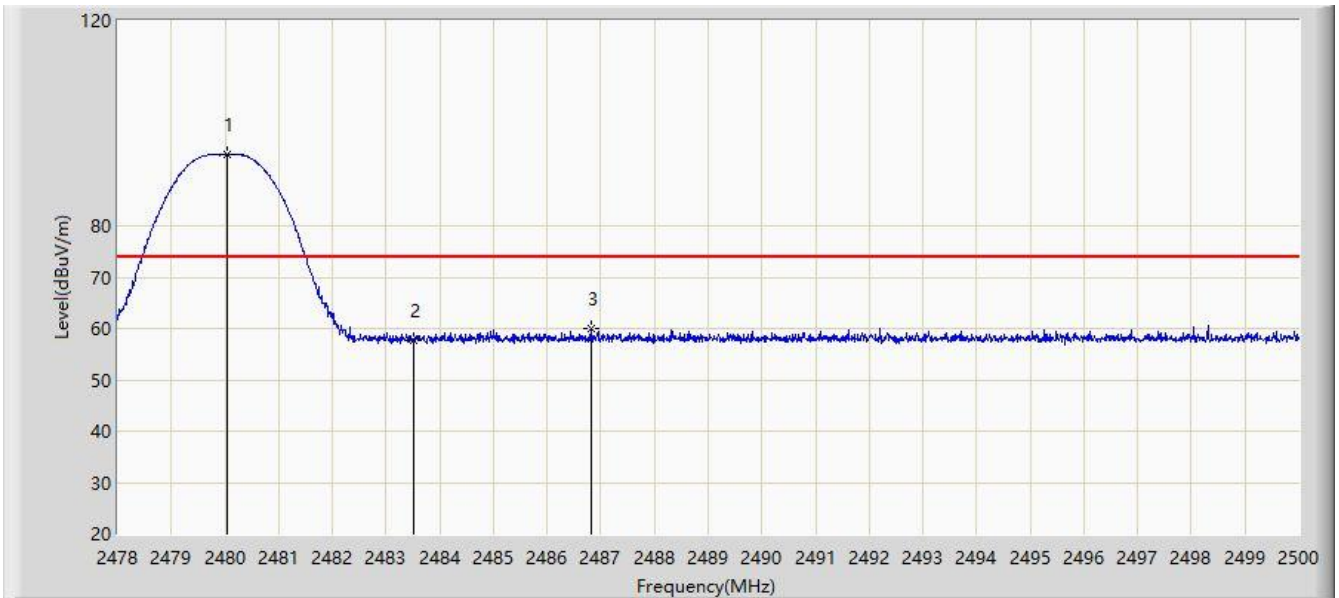


No	Flag	Mark	Frequency (MHz)	Measure Level (dB μ V/m)	Reading Level (dB μ V)	Margin (dB)	Limit (dB μ V/m)	Factor (dB)	Type
1			2350.375	47.518	15.085	-6.482	54.000	32.433	AV
2			2390.000	47.140	14.736	-6.860	54.000	32.404	AV
3		*	2402.103	86.791	54.425	N/A	N/A	32.365	AV

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

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

Site: SIP-AC2	Time: 2021/05/29 - 14:50
Limit: FCC_Part15.209_RE(3m)	Engineer: Yien Qian
Probe: SIP-AC2_BBHA9120D_1-18GHz	Polarity: Horizontal
EUT: Lenovo Smart Wireless Earbuds	Power: By Battery
Note: Transmit by BLE (1Mbps) at Channel 2480MHz, Left Earbud	

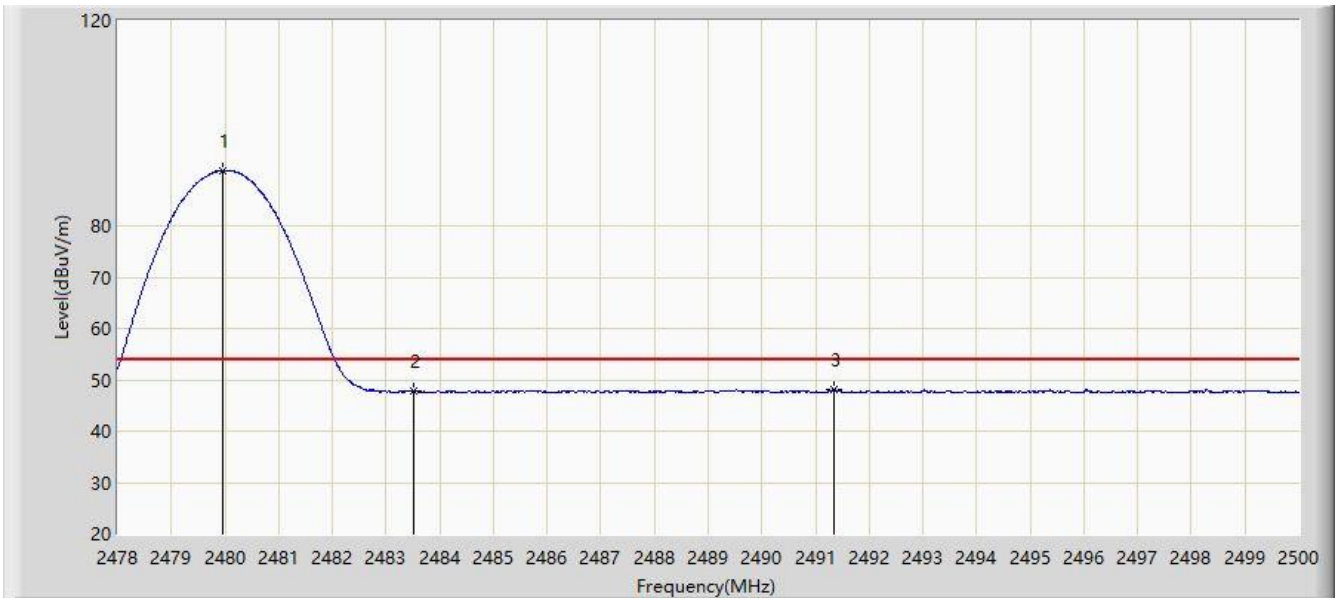


No	Flag	Mark	Frequency (MHz)	Measure Level (dBμV/m)	Reading Level (dBμV)	Margin (dB)	Limit (dBμV/m)	Factor (dB)	Type
1		*	2480.035	93.797	61.611	N/A	N/A	32.186	PK
2			2483.500	57.685	25.490	-16.315	74.000	32.195	PK
3			2486.833	59.917	27.713	-14.083	74.000	32.205	PK

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

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

Site: SIP-AC2	Time: 2021/05/29 - 14:53
Limit: FCC_Part15.209_RE(3m)	Engineer: Yien Qian
Probe: SIP-AC2_BBHA9120D_1-18GHz	Polarity: Horizontal
EUT: Lenovo Smart Wireless Earbuds	Power: By Battery
Note: Transmit by BLE (1Mbps) at Channel 2480MHz, Left Earbud	

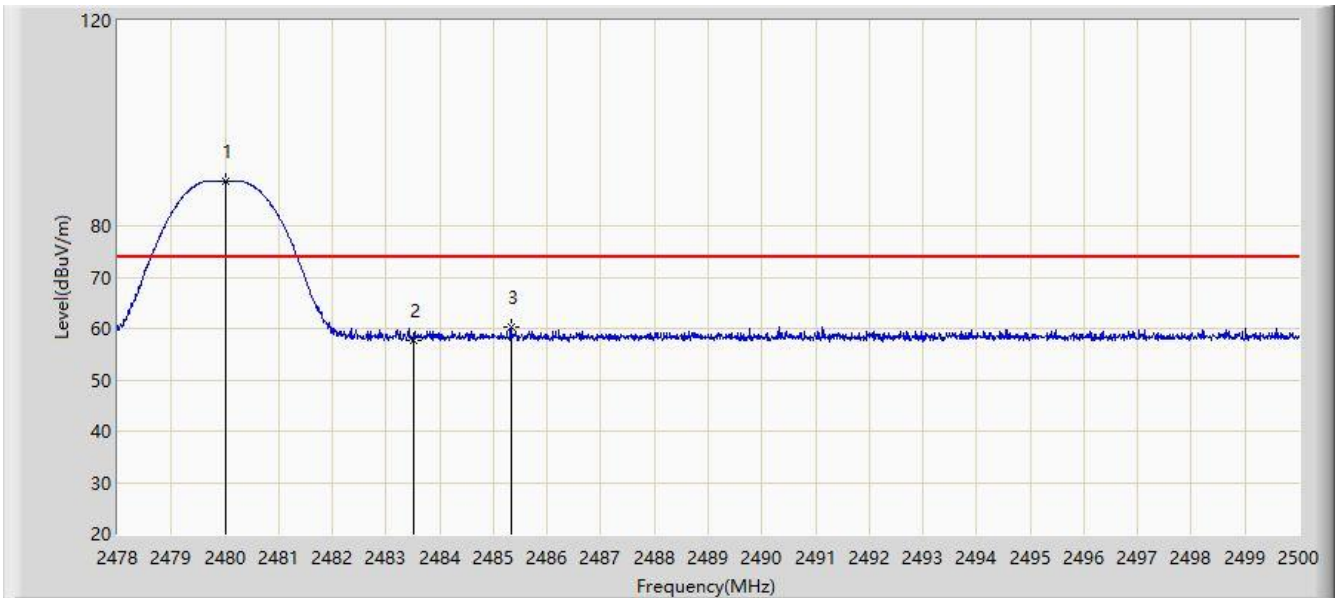


No	Flag	Mark	Frequency (MHz)	Measure Level (dB μ V/m)	Reading Level (dB μ V)	Margin (dB)	Limit (dB μ V/m)	Factor (dB)	Type
1		*	2479.969	90.801	58.615	N/A	N/A	32.186	AV
2			2483.500	47.699	15.504	-6.301	54.000	32.195	AV
3			2491.343	48.072	15.856	-5.928	54.000	32.216	AV

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

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

Site: SIP-AC2	Time: 2021/05/29 - 14:54
Limit: FCC_Part15.209_RE(3m)	Engineer: Yien Qian
Probe: SIP-AC2_BBHA9120D_1-18GHz	Polarity: Vertical
EUT: Lenovo Smart Wireless Earbuds	Power: By Battery
Note: Transmit by BLE (1Mbps) at Channel 2480MHz, Left Earbud	

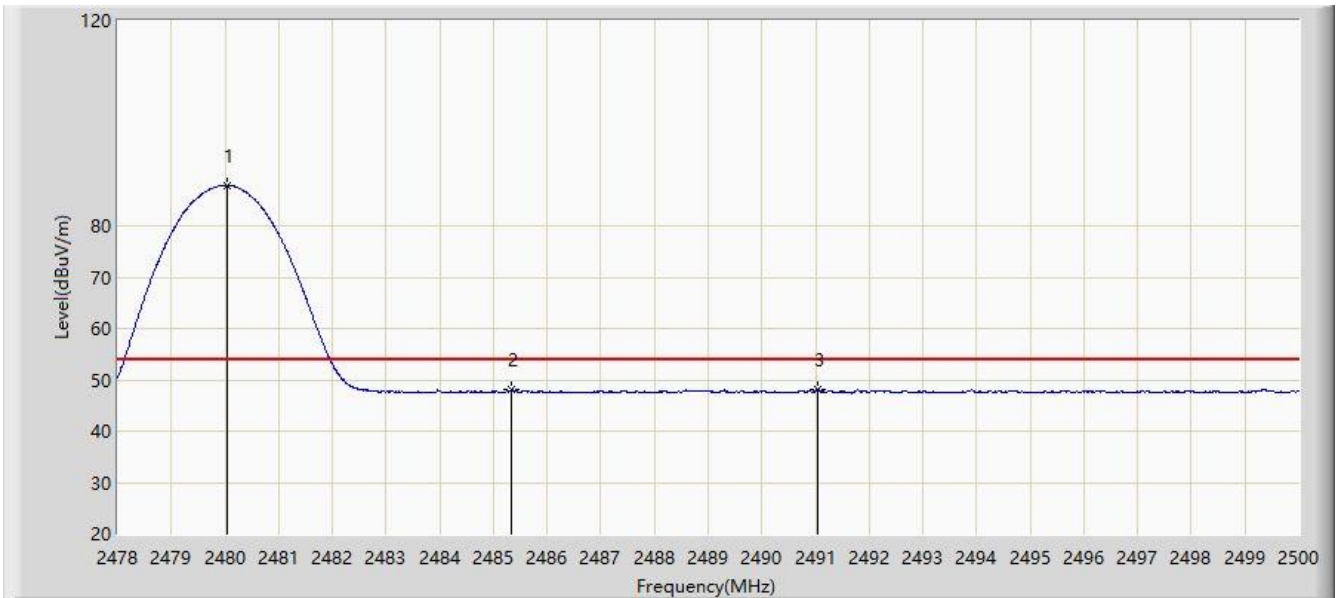


No	Flag	Mark	Frequency (MHz)	Measure Level (dBμV/m)	Reading Level (dBμV)	Margin (dB)	Limit (dBμV/m)	Factor (dB)	Type
1		*	2480.013	88.816	56.630	N/A	N/A	32.186	PK
2			2483.500	57.787	25.592	-16.213	74.000	32.195	PK
3			2485.326	60.219	28.019	-13.781	74.000	32.200	PK

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

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

Site: SIP-AC2	Time: 2021/05/29 - 14:56
Limit: FCC_Part15.209_RE(3m)	Engineer: Yien Qian
Probe: SIP-AC2_BBHA9120D_1-18GHz	Polarity: Vertical
EUT: Lenovo Smart Wireless Earbuds	Power: By Battery
Note: Transmit by BLE (1Mbps) at Channel 2480MHz, Left Earbud	

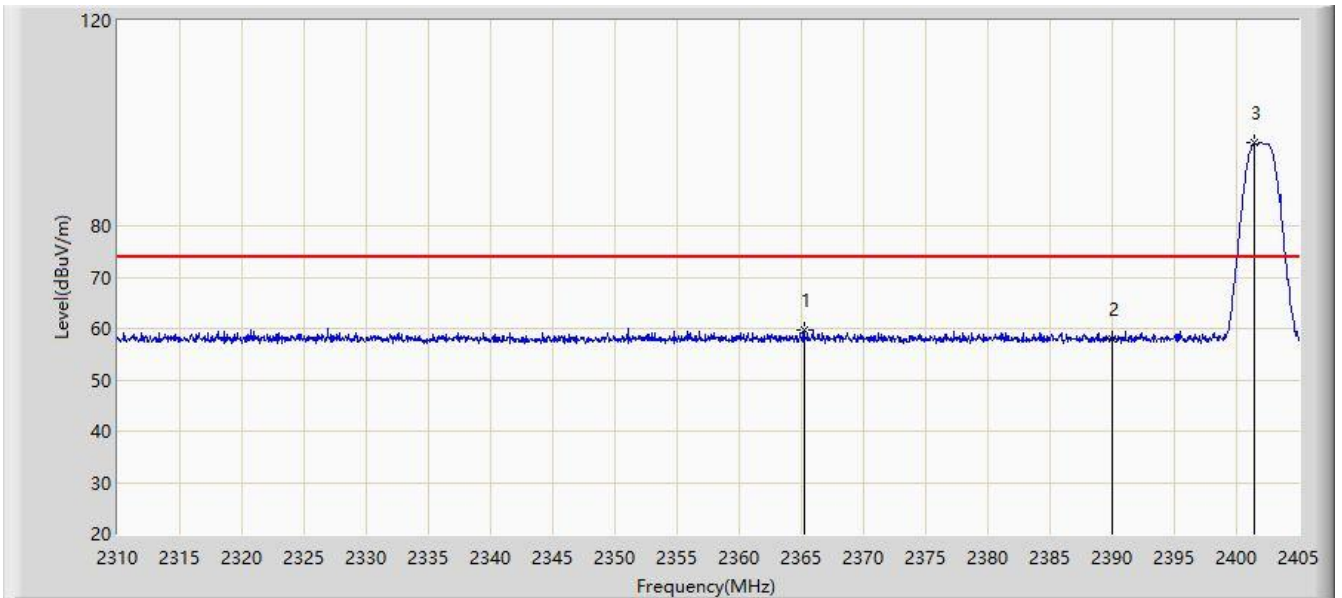


No	Flag	Mark	Frequency (MHz)	Measure Level (dB μ V/m)	Reading Level (dB μ V)	Margin (dB)	Limit (dB μ V/m)	Factor (dB)	Type
1		*	2480.035	87.938	55.752	N/A	N/A	32.186	AV
2			2485.337	48.106	15.906	-5.894	54.000	32.200	AV
3			2491.035	48.149	15.933	-5.851	54.000	32.216	AV

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

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

Site: SIP-AC2	Time: 2021/05/29 - 14:57
Limit: FCC_Part15.209_RE(3m)	Engineer: Yien Qian
Probe: SIP-AC2_BBHA9120D_1-18GHz	Polarity: Horizontal
EUT: Lenovo Smart Wireless Earbuds	Power: By Battery
Note: Transmit by BLE (2Mbps) at Channel 2402MHz, Left Earbud	

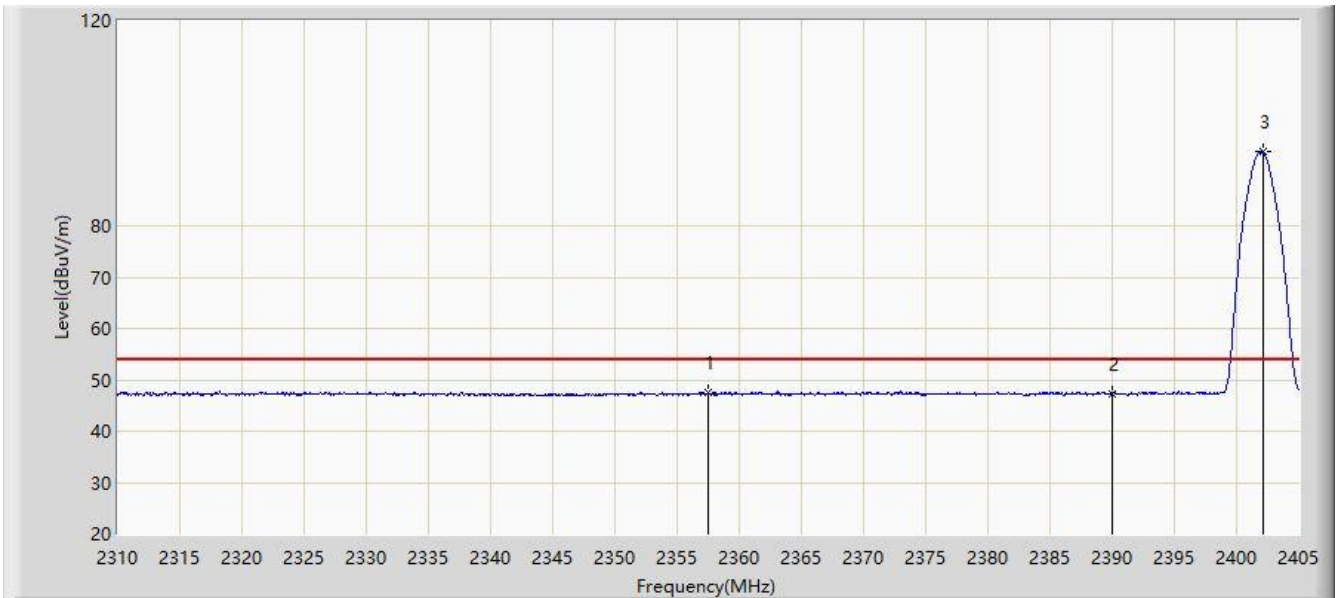


No	Flag	Mark	Frequency (MHz)	Measure Level (dB μ V/m)	Reading Level (dB μ V)	Margin (dB)	Limit (dB μ V/m)	Factor (dB)	Type
1			2365.195	59.629	27.122	-14.371	74.000	32.507	PK
2			2390.000	57.850	25.446	-16.150	74.000	32.404	PK
3		*	2401.485	96.108	63.741	N/A	N/A	32.367	PK

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

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

Site: SIP-AC2	Time: 2021/05/29 - 15:03
Limit: FCC_Part15.209_RE(3m)	Engineer: Yien Qian
Probe: SIP-AC2_BBHA9120D_1-18GHz	Polarity: Horizontal
EUT: Lenovo Smart Wireless Earbuds	Power: By Battery
Note: Transmit by BLE (2Mbps) at Channel 2402MHz, Left Earbud	

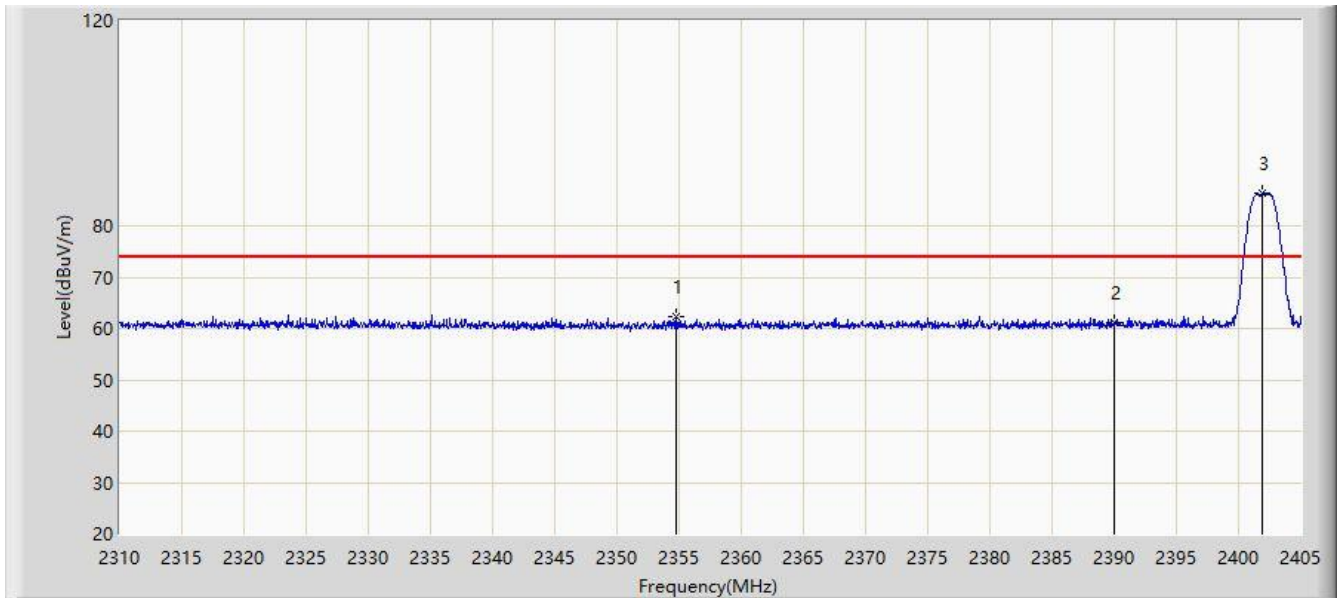


No	Flag	Mark	Frequency (MHz)	Measure Level (dB μ V/m)	Reading Level (dB μ V)	Margin (dB)	Limit (dB μ V/m)	Factor (dB)	Type
1			2357.500	47.588	15.094	-6.412	54.000	32.494	AV
2			2390.000	47.369	14.965	-6.631	54.000	32.404	AV
3		*	2402.103	94.387	62.021	N/A	N/A	32.365	AV

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

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

Site: SIP-AC2	Time: 2021/06/01 - 10:03
Limit: FCC_Part15.209_RE(3m)	Engineer: Yien Qian
Probe: SIP-AC2_BBHA9120D_1-18GHz	Polarity: Vertical
EUT: Lenovo Smart Wireless Earbuds	Power: By Battery
Note: Transmit by BLE (2Mbps) at Channel 2402MHz, Left Earbud	

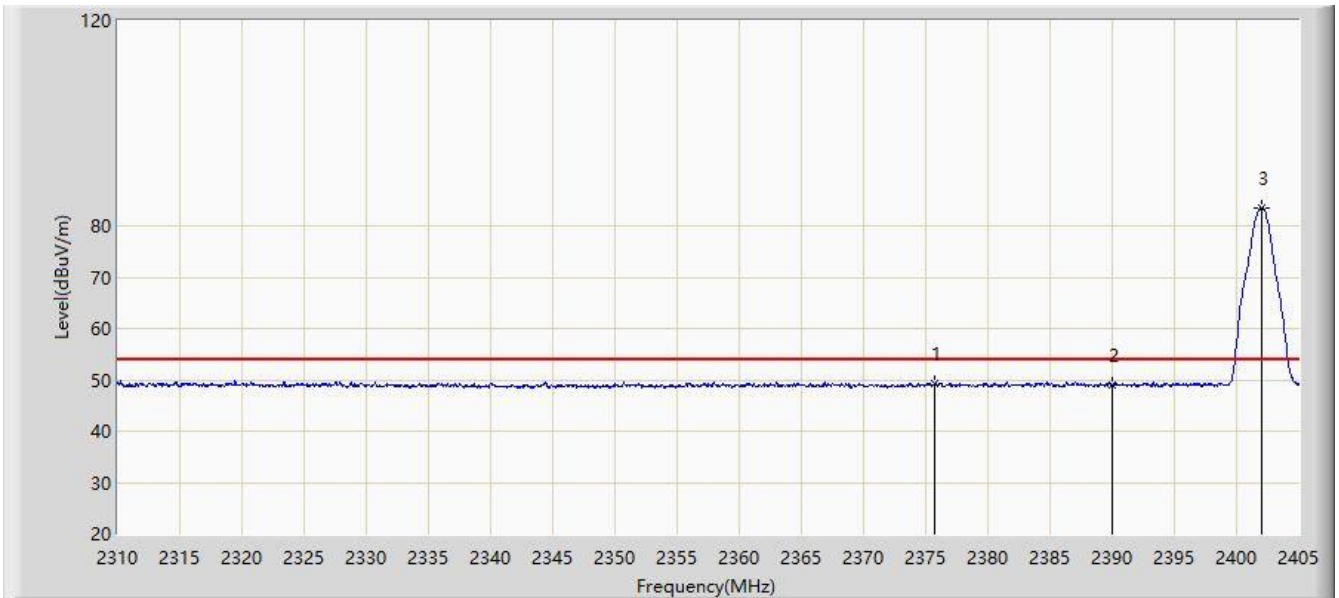


No	Flag	Mark	Frequency (MHz)	Measure Level (dB μ V/m)	Reading Level (dB μ V)	Margin (dB)	Limit (dB μ V/m)	Factor (dB)	Type
1			2354.745	62.254	29.784	-11.746	74.000	32.470	PK
2			2390.000	61.146	28.742	-12.854	74.000	32.404	PK
3		*	2401.913	86.323	53.957	N/A	N/A	32.366	PK

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

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

Site: SIP-AC2	Time: 2021/06/01 - 10:33
Limit: FCC_Part15.209_RE(3m)	Engineer: Yien Qian
Probe: SIP-AC2_BBHA9120D_1-18GHz	Polarity: Vertical
EUT: Lenovo Smart Wireless Earbuds	Power: By Battery
Note: Transmit by BLE (2Mbps) at Channel 2402MHz, Left Earbud	

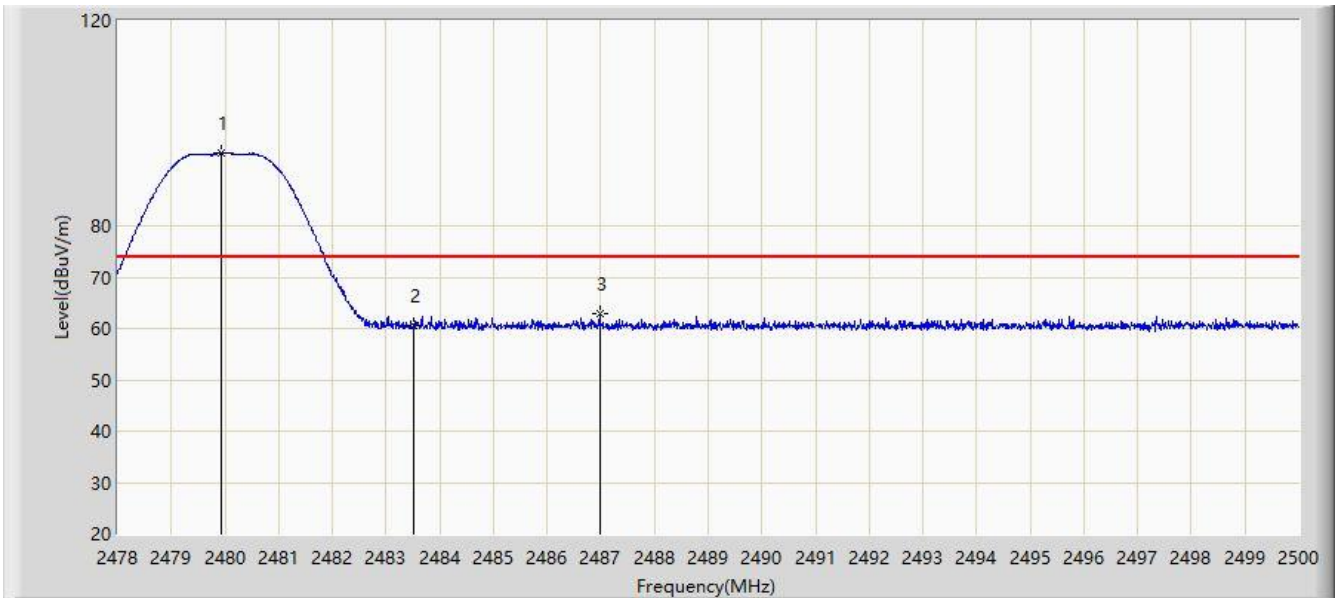


No	Flag	Mark	Frequency (MHz)	Measure Level (dB μ V/m)	Reading Level (dB μ V)	Margin (dB)	Limit (dB μ V/m)	Factor (dB)	Type
1			2375.740	49.365	16.873	-4.635	54.000	32.492	AV
2			2390.000	48.860	16.456	-5.140	54.000	32.404	AV
3		*	2402.008	83.619	51.253	N/A	N/A	32.366	AV

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

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

Site: SIP-AC2	Time: 2021/06/01 - 10:34
Limit: FCC_Part15.209_RE(3m)	Engineer: Yien Qian
Probe: SIP-AC2_BBHA9120D_1-18GHz	Polarity: Horizontal
EUT: Lenovo Smart Wireless Earbuds	Power: By Battery
Note: Transmit by BLE (2Mbps) at Channel 2480MHz, Left Earbud	

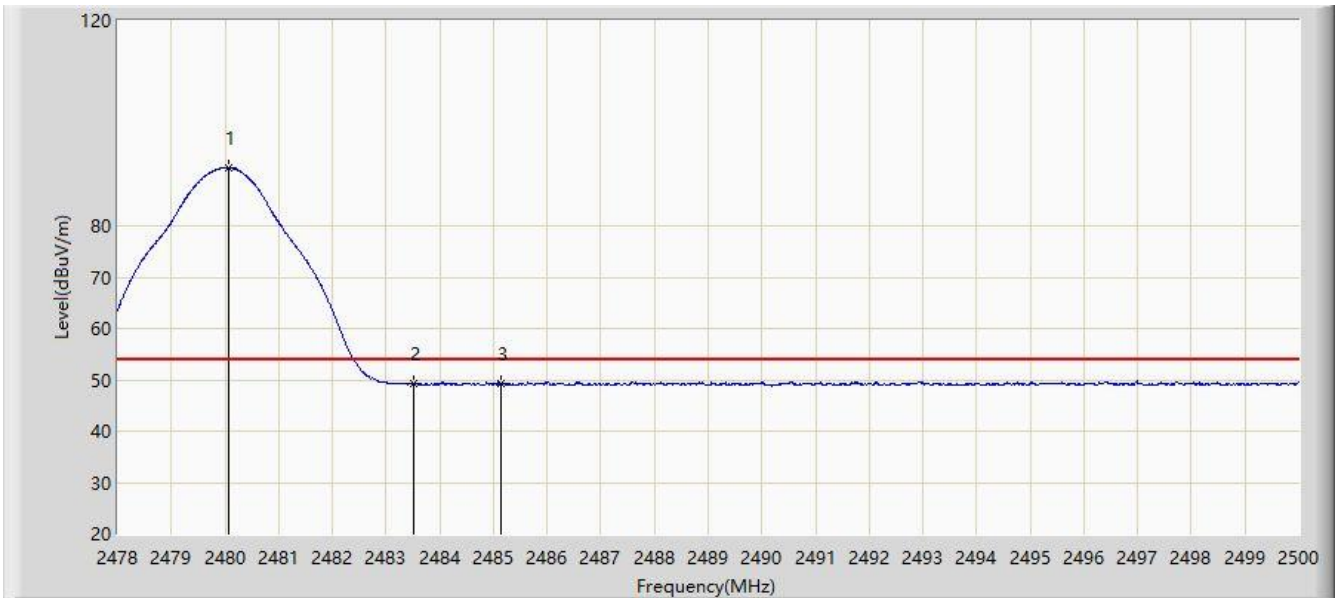


No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Margin (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		*	2479.936	94.258	62.072	N/A	N/A	32.185	PK
2			2483.500	60.580	28.385	-13.420	74.000	32.195	PK
3			2486.976	62.770	30.565	-11.230	74.000	32.204	PK

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

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

Site: SIP-AC2	Time: 2021/06/01 - 10:40
Limit: FCC_Part15.209_RE(3m)	Engineer: Yien Qian
Probe: SIP-AC2_BBHA9120D_1-18GHz	Polarity: Horizontal
EUT: Lenovo Smart Wireless Earbuds	Power: By Battery
Note: Transmit by BLE (2Mbps) at Channel 2480MHz, Left Earbud	

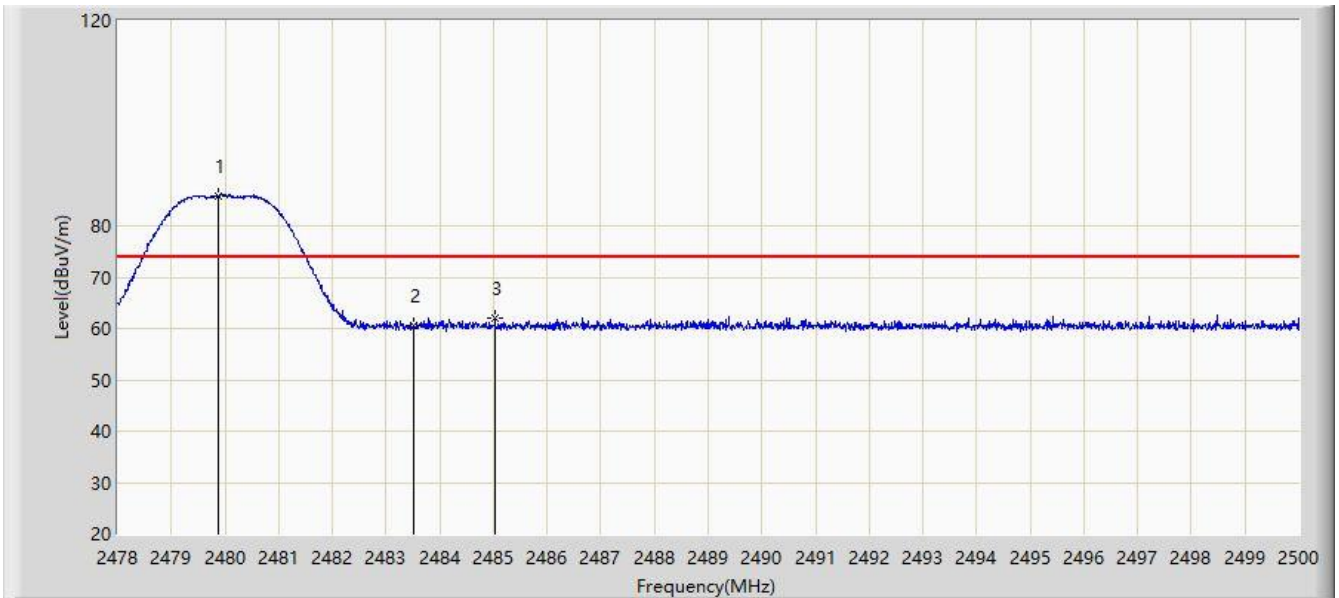


No	Flag	Mark	Frequency (MHz)	Measure Level (dB μ V/m)	Reading Level (dB μ V)	Margin (dB)	Limit (dB μ V/m)	Factor (dB)	Type
1		*	2480.079	91.329	59.143	N/A	N/A	32.186	AV
2			2483.500	49.299	17.104	-4.701	54.000	32.195	AV
3			2485.150	49.356	17.156	-4.644	54.000	32.199	AV

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

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

Site: SIP-AC2	Time: 2021/06/01 - 10:42
Limit: FCC_Part15.209_RE(3m)	Engineer: Yien Qian
Probe: SIP-AC2_BBHA9120D_1-18GHz	Polarity: Vertical
EUT: Lenovo Smart Wireless Earbuds	Power: By Battery
Note: Transmit by BLE (2Mbps) at Channel 2480MHz, Left Earbud	

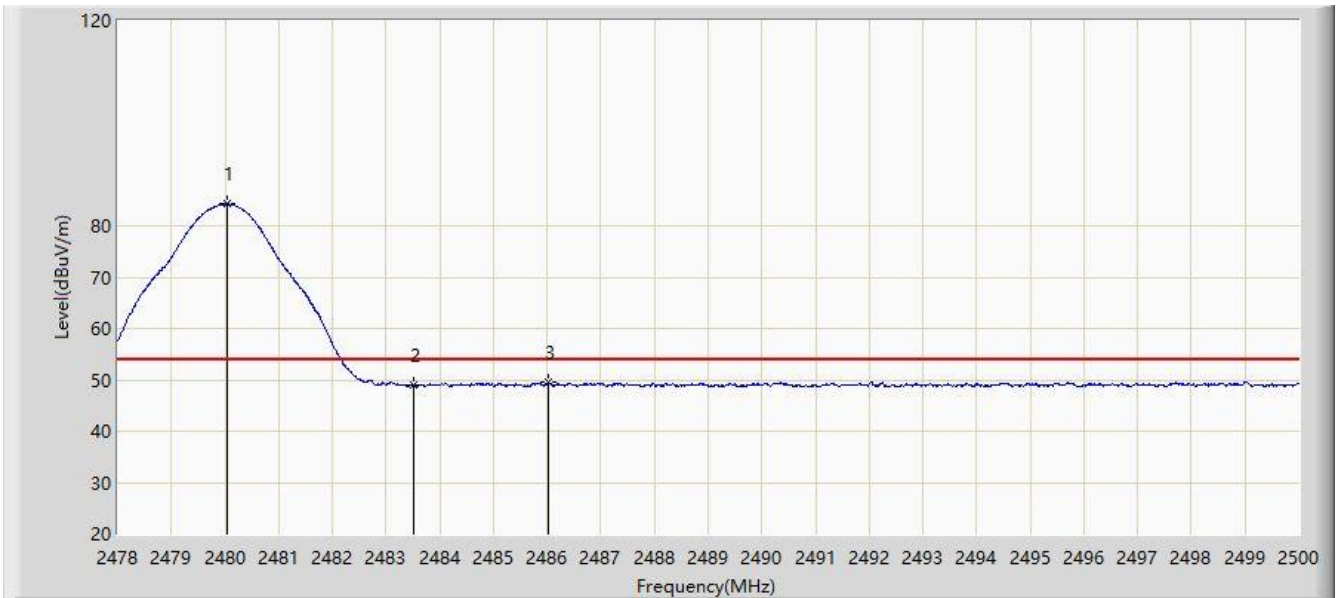


No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Margin (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		*	2479.870	85.847	53.662	N/A	N/A	32.185	PK
2			2483.500	60.508	28.313	-13.492	74.000	32.195	PK
3			2485.029	61.896	29.697	-12.104	74.000	32.199	PK

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

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

Site: SIP-AC2	Time: 2021/06/01 - 10:44
Limit: FCC_Part15.209_RE(3m)	Engineer: Yien Qian
Probe: SIP-AC2_BBHA9120D_1-18GHz	Polarity: Vertical
EUT: Lenovo Smart Wireless Earbuds	Power: By Battery
Note: Transmit by BLE (2Mbps) at Channel 2480MHz, Left Earbud	

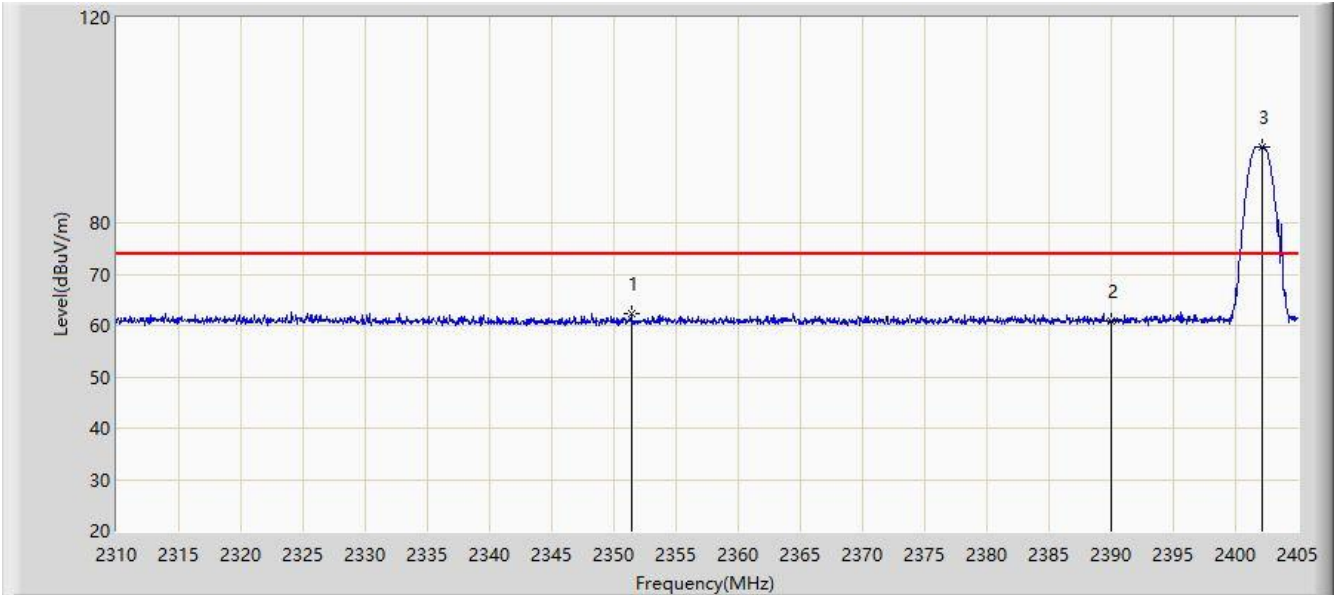


No	Flag	Mark	Frequency (MHz)	Measure Level (dB μ V/m)	Reading Level (dB μ V)	Margin (dB)	Limit (dB μ V/m)	Factor (dB)	Type
1		*	2480.046	84.204	52.018	N/A	N/A	32.186	AV
2			2483.500	49.082	16.887	-4.918	54.000	32.195	AV
3			2486.030	49.486	17.284	-4.514	54.000	32.202	AV

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

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

Site: SIP-AC2	Time: 2021/06/01 - 13:08
Limit: FCC_Part15.209_RE(3m)	Engineer: Yien Qian
Probe: SIP-AC2_BBHA9120D_1-18GHz	Polarity: Horizontal
EUT: Lenovo Smart Wireless Earbuds	Power: By Battery
Note: Transmit by BLE (1Mbps) at Channel 2402MHz, Right Earbud	

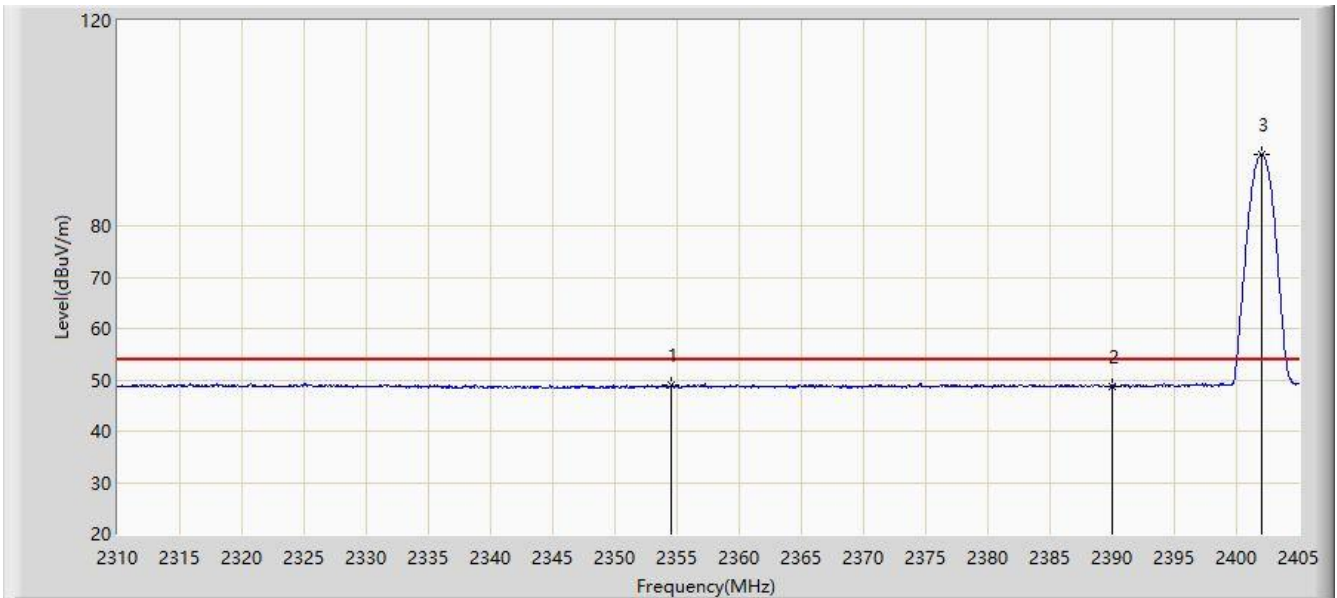


No	Flag	Mark	Frequency (MHz)	Measure Level (dB μ V/m)	Reading Level (dB μ V)	Margin (dB)	Limit (dB μ V/m)	Factor (dB)	Type
1			2351.420	62.244	29.802	-11.756	74.000	32.442	PK
2			2390.000	60.765	28.361	-13.235	74.000	32.404	PK
3		*	2402.150	94.839	62.473	N/A	N/A	32.365	PK

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

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

Site: SIP-AC2	Time: 2021/06/01 - 13:16
Limit: FCC_Part15.209_RE(3m)	Engineer: Yien Qian
Probe: SIP-AC2_BBHA9120D_1-18GHz	Polarity: Horizontal
EUT: Lenovo Smart Wireless Earbuds	Power: By Battery
Note: Transmit by BLE (1Mbps) at Channel 2402MHz, Right Earbud	

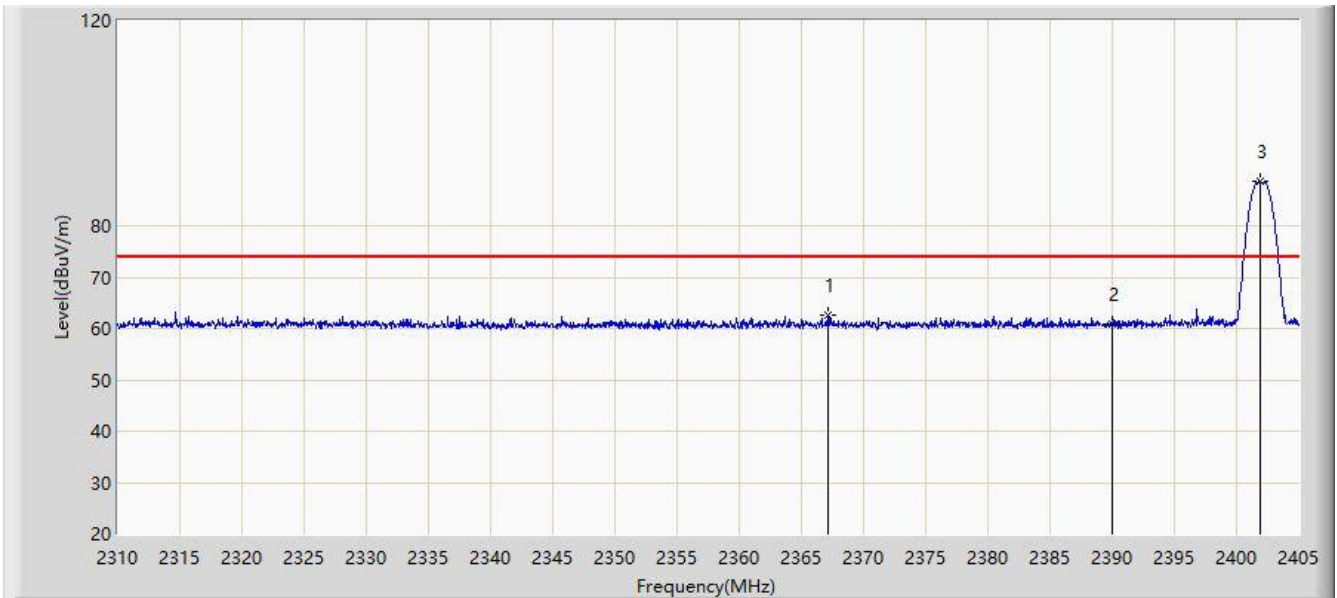


No	Flag	Mark	Frequency (MHz)	Measure Level (dB μ V/m)	Reading Level (dB μ V)	Margin (dB)	Limit (dB μ V/m)	Factor (dB)	Type
1			2354.555	49.065	16.596	-4.935	54.000	32.468	AV
2			2390.000	48.738	16.334	-5.262	54.000	32.404	AV
3		*	2402.008	93.883	61.517	N/A	N/A	32.366	AV

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

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

Site: SIP-AC2	Time: 2021/06/01 - 13:17
Limit: FCC_Part15.209_RE(3m)	Engineer: Yien Qian
Probe: SIP-AC2_BBHA9120D_1-18GHz	Polarity: Vertical
EUT: Lenovo Smart Wireless Earbuds	Power: By Battery
Note: Transmit by BLE (1Mbps) at Channel 2402MHz, Right Earbud	

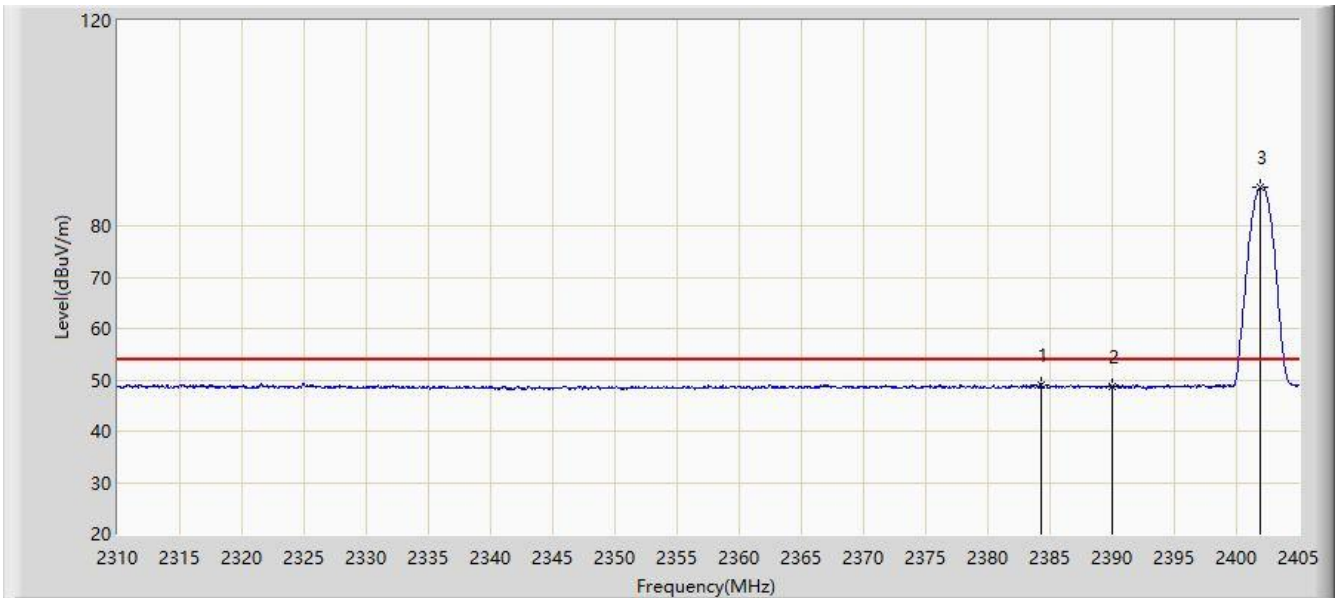


No	Flag	Mark	Frequency (MHz)	Measure Level (dB μ V/m)	Reading Level (dB μ V)	Margin (dB)	Limit (dB μ V/m)	Factor (dB)	Type
1			2367.190	62.467	29.963	-11.533	74.000	32.504	PK
2			2390.000	60.974	28.570	-13.026	74.000	32.404	PK
3		*	2401.865	88.555	56.189	N/A	N/A	32.366	PK

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

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

Site: SIP-AC2	Time: 2021/06/01 - 13:21
Limit: FCC_Part15.209_RE(3m)	Engineer: Yien Qian
Probe: SIP-AC2_BBHA9120D_1-18GHz	Polarity: Vertical
EUT: Lenovo Smart Wireless Earbuds	Power: By Battery
Note: Transmit by BLE (1Mbps) at Channel 2402MHz, Right Earbud	

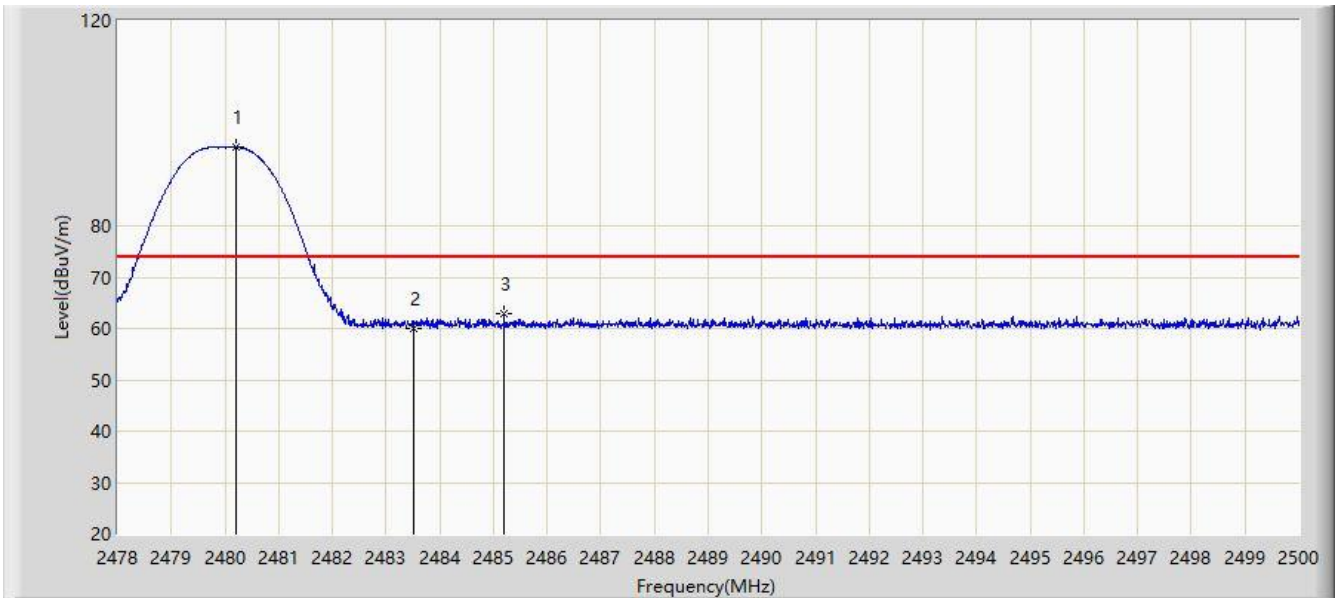


No	Flag	Mark	Frequency (MHz)	Measure Level (dB μ V/m)	Reading Level (dB μ V)	Margin (dB)	Limit (dB μ V/m)	Factor (dB)	Type
1			2384.242	49.100	16.658	-4.900	54.000	32.443	AV
2			2390.000	48.678	16.274	-5.322	54.000	32.404	AV
3		*	2401.913	87.576	55.210	N/A	N/A	32.366	AV

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

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

Site: SIP-AC2	Time: 2021/06/01 - 13:23
Limit: FCC_Part15.209_RE(3m)	Engineer: Yien Qian
Probe: SIP-AC2_BBHA9120D_1-18GHz	Polarity: Horizontal
EUT: Lenovo Smart Wireless Earbuds	Power: By Battery
Note: Transmit by BLE (1Mbps) at Channel 2480MHz, Right Earbud	

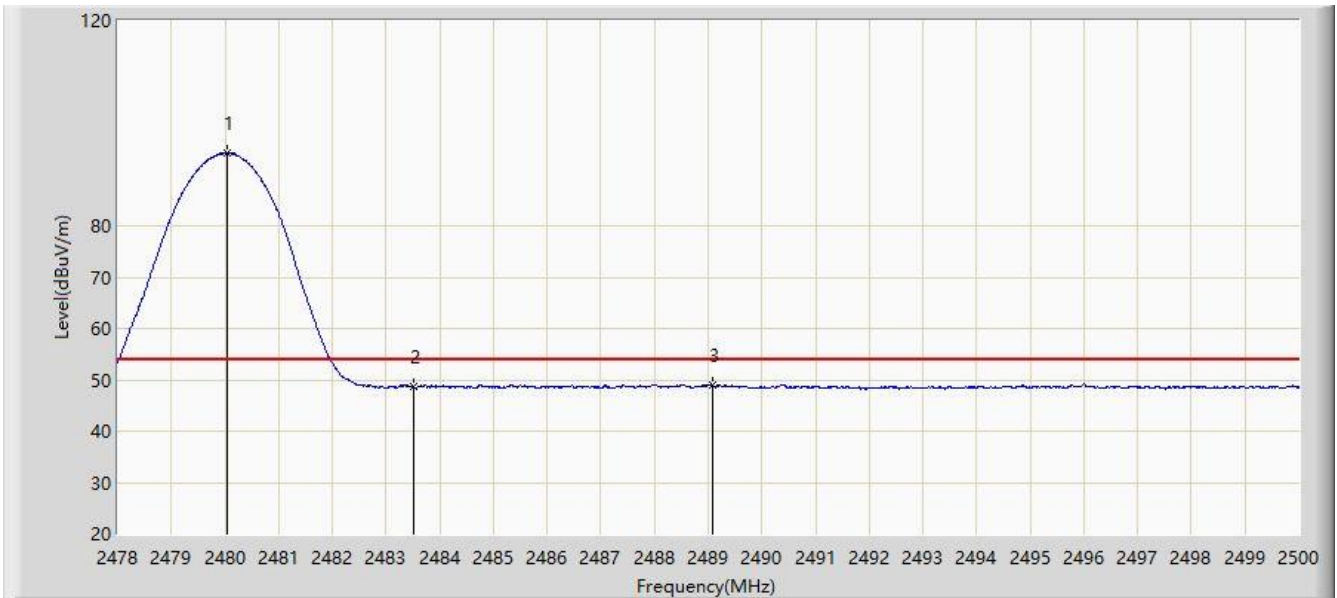


No	Flag	Mark	Frequency (MHz)	Measure Level (dBμV/m)	Reading Level (dBμV)	Margin (dB)	Limit (dBμV/m)	Factor (dB)	Type
1		*	2480.211	95.323	63.137	N/A	N/A	32.186	PK
2			2483.500	60.143	27.948	-13.857	74.000	32.195	PK
3			2485.194	62.921	30.721	-11.079	74.000	32.200	PK

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

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

Site: SIP-AC2	Time: 2021/06/01 - 13:27
Limit: FCC_Part15.209_RE(3m)	Engineer: Yien Qian
Probe: SIP-AC2_BBHA9120D_1-18GHz	Polarity: Horizontal
EUT: Lenovo Smart Wireless Earbuds	Power: By Battery
Note: Transmit by BLE (1Mbps) at Channel 2480MHz, Right Earbud	

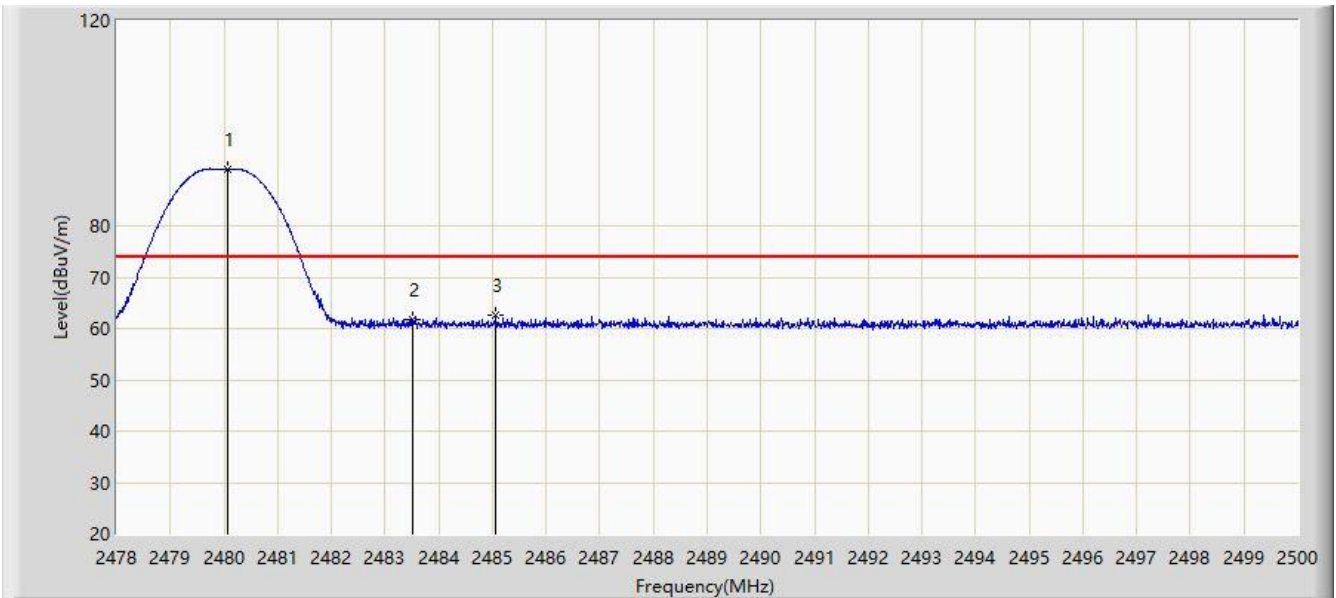


No	Flag	Mark	Frequency (MHz)	Measure Level (dB μ V/m)	Reading Level (dB μ V)	Margin (dB)	Limit (dB μ V/m)	Factor (dB)	Type
1		*	2480.046	94.139	61.953	N/A	N/A	32.186	AV
2			2483.500	48.586	16.391	-5.414	54.000	32.195	AV
3			2489.077	49.049	16.839	-4.951	54.000	32.211	AV

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

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

Site: SIP-AC2	Time: 2021/06/01 - 13:28
Limit: FCC_Part15.209_RE(3m)	Engineer: Yien Qian
Probe: SIP-AC2_BBHA9120D_1-18GHz	Polarity: Vertical
EUT: Lenovo Smart Wireless Earbuds	Power: By Battery
Note: Transmit by BLE (1Mbps) at Channel 2480MHz, Right Earbud	

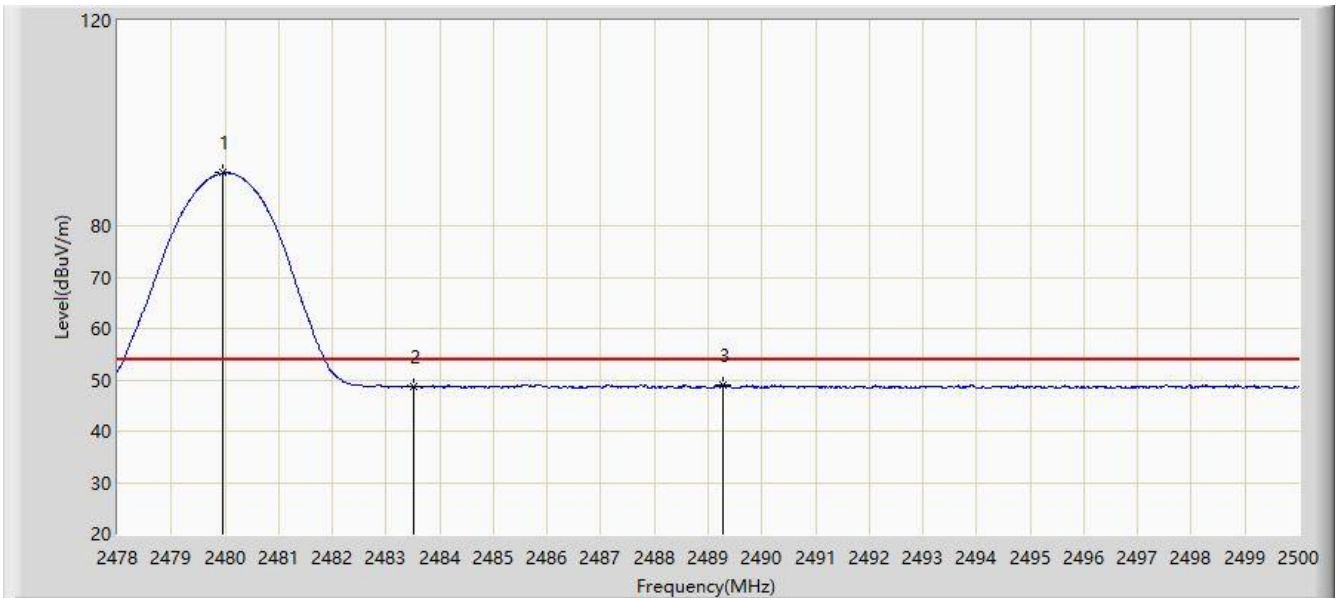


No	Flag	Mark	Frequency (MHz)	Measure Level (dBμV/m)	Reading Level (dBμV)	Margin (dB)	Limit (dBμV/m)	Factor (dB)	Type
1		*	2480.079	91.056	58.870	N/A	N/A	32.186	PK
2			2483.500	61.776	29.581	-12.224	74.000	32.195	PK
3			2485.062	62.706	30.507	-11.294	74.000	32.199	PK

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

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

Site: SIP-AC2	Time: 2021/06/01 - 13:32
Limit: FCC_Part15.209_RE(3m)	Engineer: Yien Qian
Probe: SIP-AC2_BBHA9120D_1-18GHz	Polarity: Vertical
EUT: Lenovo Smart Wireless Earbuds	Power: By Battery
Note: Transmit by BLE (1Mbps) at Channel 2480MHz, Right Earbud	

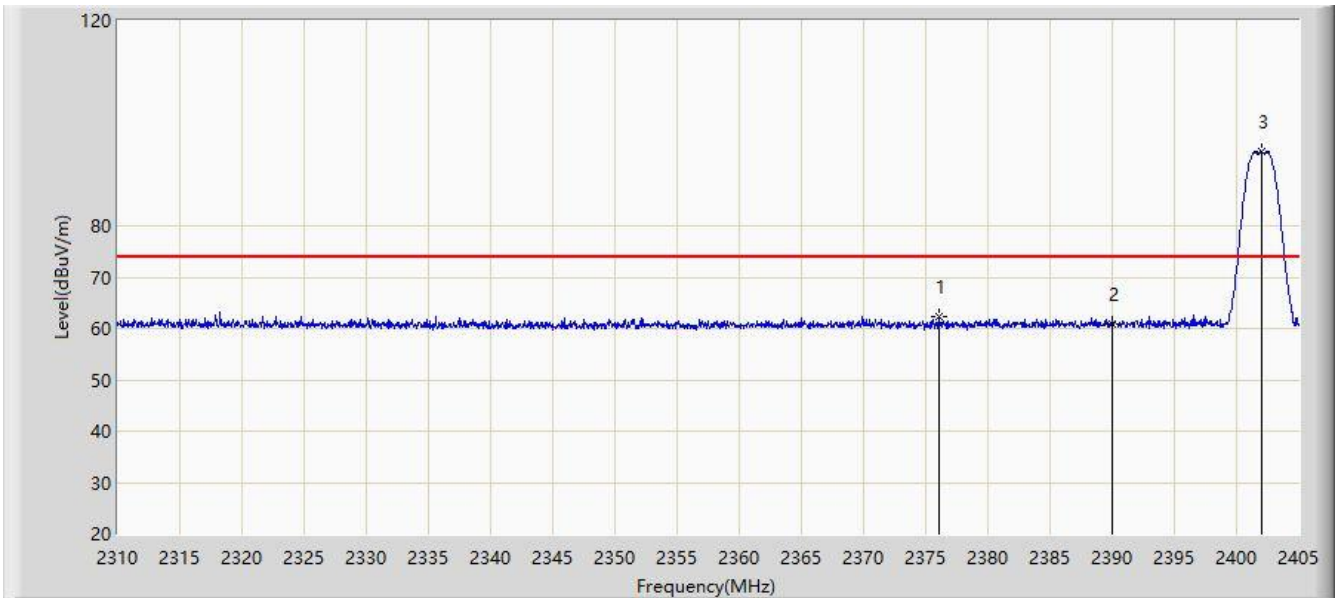


No	Flag	Mark	Frequency (MHz)	Measure Level (dBμV/m)	Reading Level (dBμV)	Margin (dB)	Limit (dBμV/m)	Factor (dB)	Type
1		*	2479.969	90.297	58.111	N/A	N/A	32.186	AV
2			2483.500	48.626	16.431	-5.374	54.000	32.195	AV
3			2489.275	48.913	16.702	-5.087	54.000	32.210	AV

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

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

Site: SIP-AC2	Time: 2021/06/01 - 13:32
Limit: FCC_Part15.209_RE(3m)	Engineer: Yien Qian
Probe: SIP-AC2_BBHA9120D_1-18GHz	Polarity: Horizontal
EUT: Lenovo Smart Wireless Earbuds	Power: By Battery
Note: Transmit by BLE (2Mbps) at Channel 2402MHz, Right Earbud	

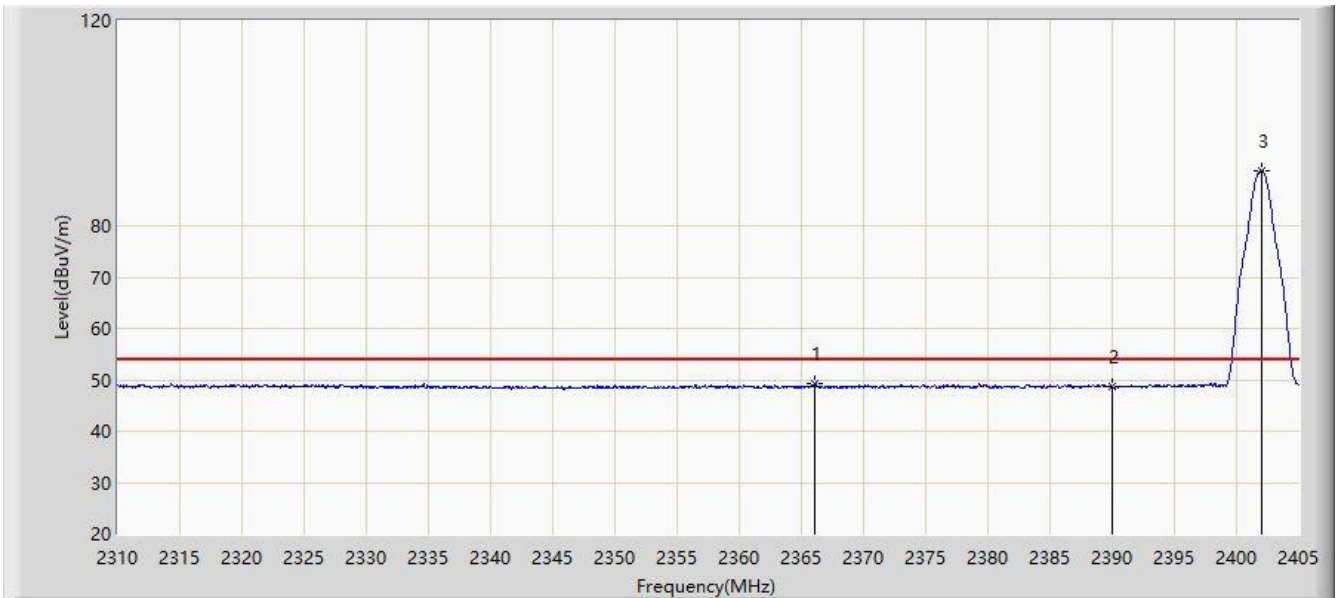


No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Margin (dB)	Limit (dBuV/m)	Factor (dB)	Type
1			2376.073	62.206	29.715	-11.794	74.000	32.491	PK
2			2390.000	61.009	28.605	-12.991	74.000	32.404	PK
3		*	2402.008	94.395	62.029	N/A	N/A	32.366	PK

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

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

Site: SIP-AC2	Time: 2021/06/01 - 13:37
Limit: FCC_Part15.209_RE(3m)	Engineer: Yien Qian
Probe: SIP-AC2_BBHA9120D_1-18GHz	Polarity: Horizontal
EUT: Lenovo Smart Wireless Earbuds	Power: By Battery
Note: Transmit by BLE (2Mbps) at Channel 2402MHz, Right Earbud	

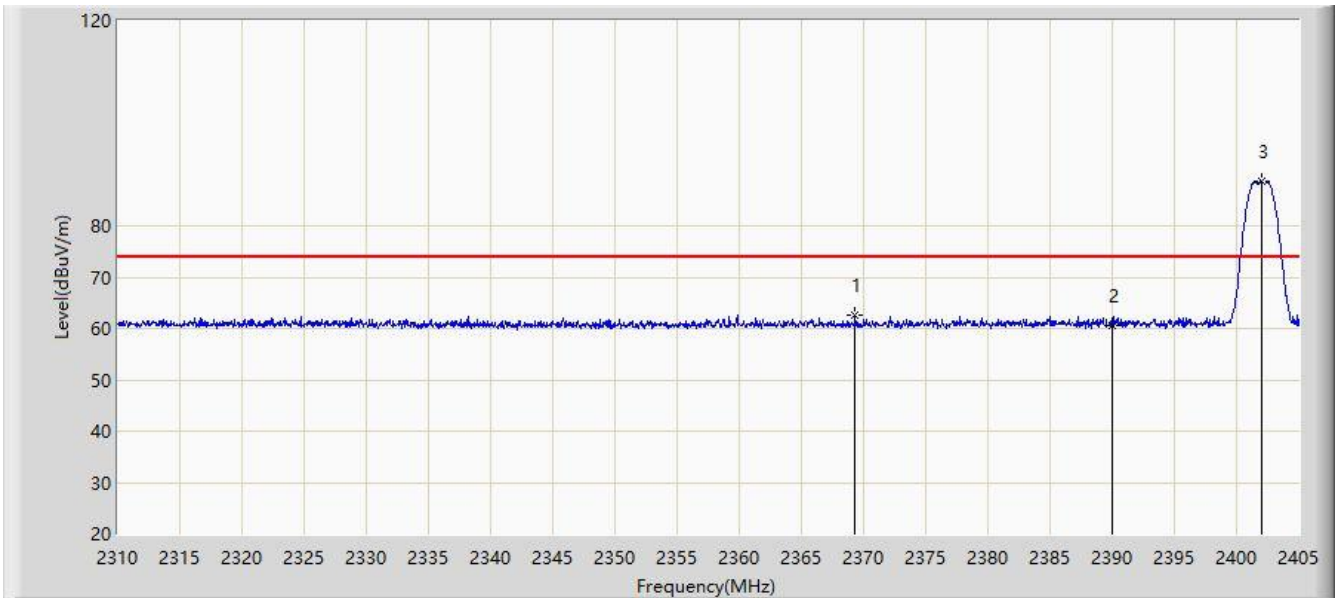


No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Margin (dB)	Limit (dBuV/m)	Factor (dB)	Type
1			2366.097	49.222	16.716	-4.778	54.000	32.506	AV
2			2390.000	48.786	16.382	-5.214	54.000	32.404	AV
3		*	2402.008	90.784	58.418	N/A	N/A	32.366	AV

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

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

Site: SIP-AC2	Time: 2021/06/01 - 13:38
Limit: FCC_Part15.209_RE(3m)	Engineer: Yien Qian
Probe: SIP-AC2_BBHA9120D_1-18GHz	Polarity: Vertical
EUT: Lenovo Smart Wireless Earbuds	Power: By Battery
Note: Transmit by BLE (2Mbps) at Channel 2402MHz, Right Earbud	

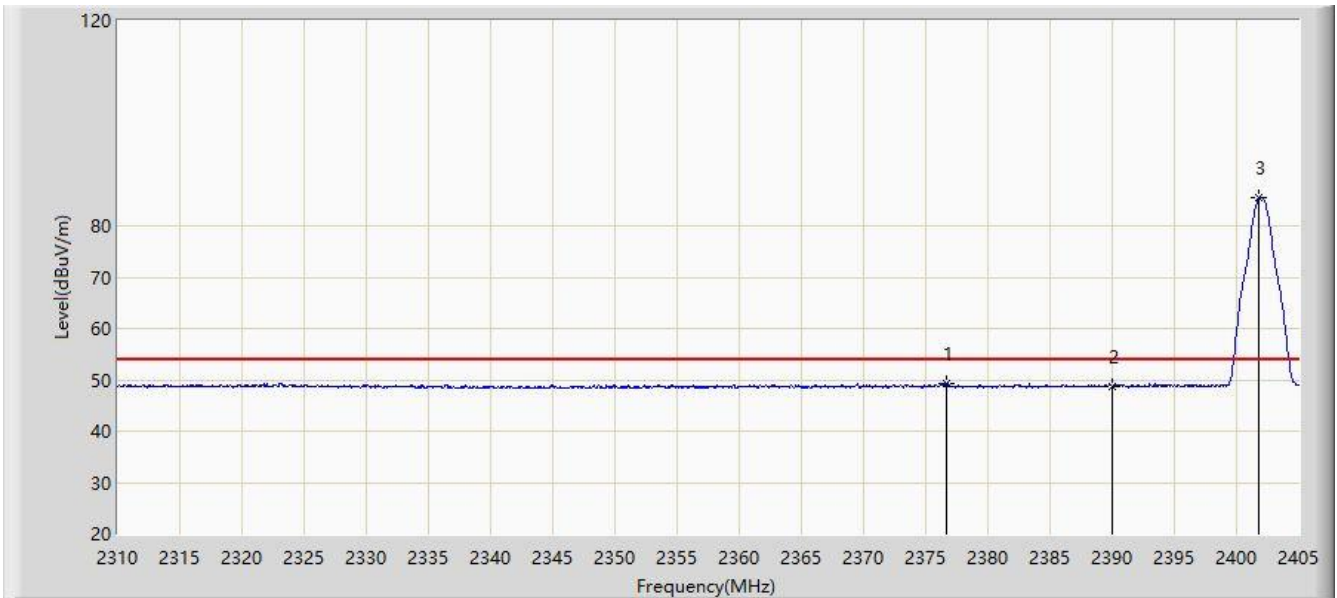


No	Flag	Mark	Frequency (MHz)	Measure Level (dB μ V/m)	Reading Level (dB μ V)	Margin (dB)	Limit (dB μ V/m)	Factor (dB)	Type
1			2369.327	62.593	30.092	-11.407	74.000	32.502	PK
2			2390.000	60.651	28.247	-13.349	74.000	32.404	PK
3		*	2402.008	88.642	56.276	N/A	N/A	32.366	PK

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

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

Site: SIP-AC2	Time: 2021/06/01 - 13:43
Limit: FCC_Part15.209_RE(3m)	Engineer: Yien Qian
Probe: SIP-AC2_BBHA9120D_1-18GHz	Polarity: Vertical
EUT: Lenovo Smart Wireless Earbuds	Power: By Battery
Note: Transmit by BLE (2Mbps) at Channel 2402MHz, Right Earbud	

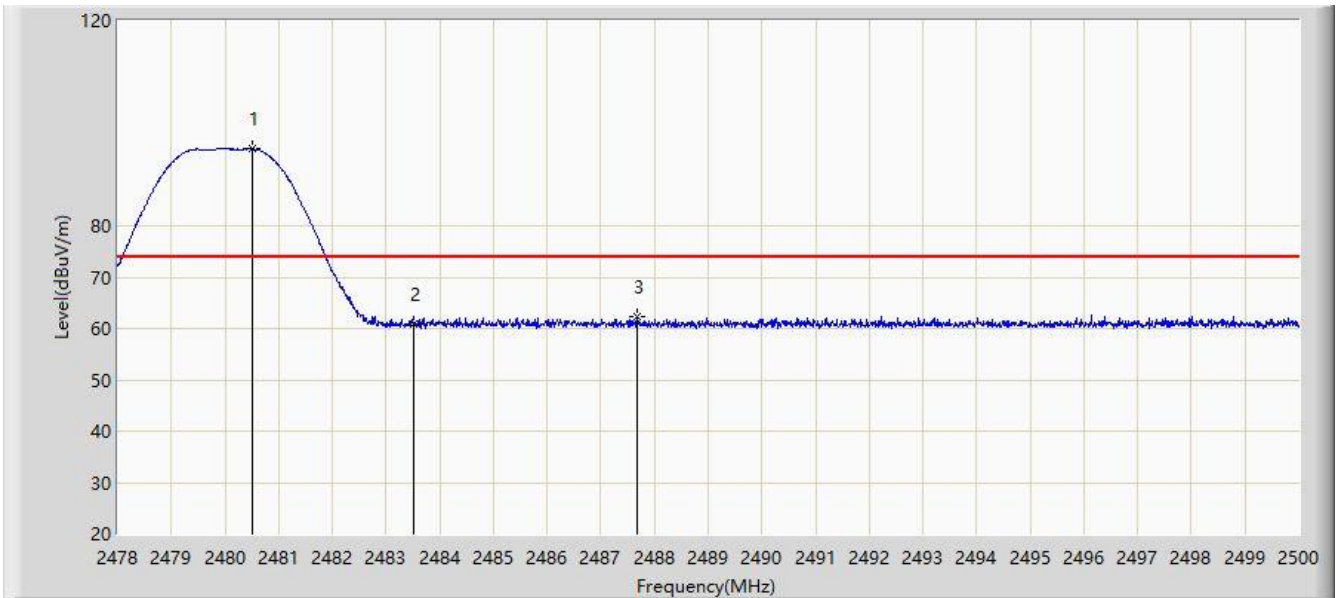


No	Flag	Mark	Frequency (MHz)	Measure Level (dBμV/m)	Reading Level (dBμV)	Margin (dB)	Limit (dBμV/m)	Factor (dB)	Type
1			2376.690	49.391	16.901	-4.609	54.000	32.490	AV
2			2390.000	48.736	16.332	-5.264	54.000	32.404	AV
3		*	2401.817	85.388	53.022	N/A	N/A	32.366	AV

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

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

Site: SIP-AC2	Time: 2021/06/01 - 13:43
Limit: FCC_Part15.209_RE(3m)	Engineer: Yien Qian
Probe: SIP-AC2_BBHA9120D_1-18GHz	Polarity: Horizontal
EUT: Lenovo Smart Wireless Earbuds	Power: By Battery
Note: Transmit by BLE (2Mbps) at Channel 2480MHz, Right Earbud	

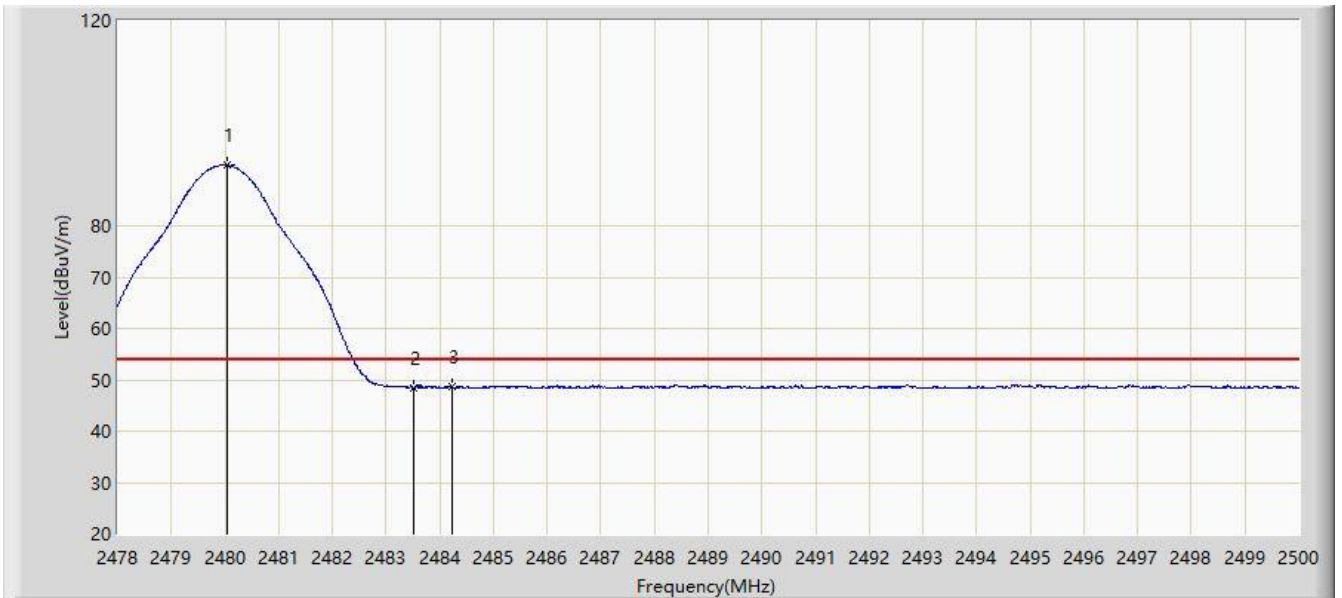


No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Margin (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		*	2480.508	95.038	62.851	N/A	N/A	32.187	PK
2			2483.500	60.808	28.613	-13.192	74.000	32.195	PK
3			2487.680	62.332	30.126	-11.668	74.000	32.207	PK

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

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

Site: SIP-AC2	Time: 2021/06/01 - 13:48
Limit: FCC_Part15.209_RE(3m)	Engineer: Yien Qian
Probe: SIP-AC2_BBHA9120D_1-18GHz	Polarity: Horizontal
EUT: Lenovo Smart Wireless Earbuds	Power: By Battery
Note: Transmit by BLE (2Mbps) at Channel 2480MHz, Right Earbud	

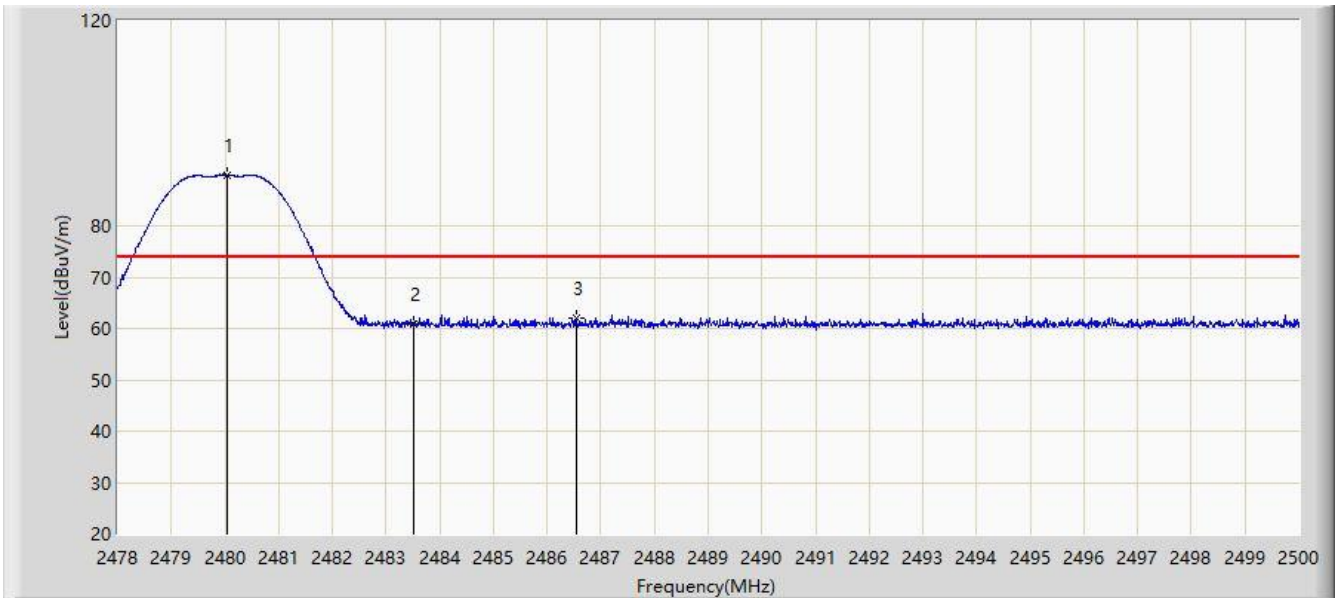


No	Flag	Mark	Frequency (MHz)	Measure Level (dB μ V/m)	Reading Level (dB μ V)	Margin (dB)	Limit (dB μ V/m)	Factor (dB)	Type
1		*	2480.046	91.837	59.651	N/A	N/A	32.186	AV
2			2483.500	48.511	16.316	-5.489	54.000	32.195	AV
3			2484.226	48.811	16.614	-5.189	54.000	32.197	AV

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

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

Site: SIP-AC2	Time: 2021/06/01 - 13:49
Limit: FCC_Part15.209_RE(3m)	Engineer: Yien Qian
Probe: SIP-AC2_BBHA9120D_1-18GHz	Polarity: Vertical
EUT: Lenovo Smart Wireless Earbuds	Power: By Battery
Note: Transmit by BLE (2Mbps) at Channel 2480MHz, Right Earbud	

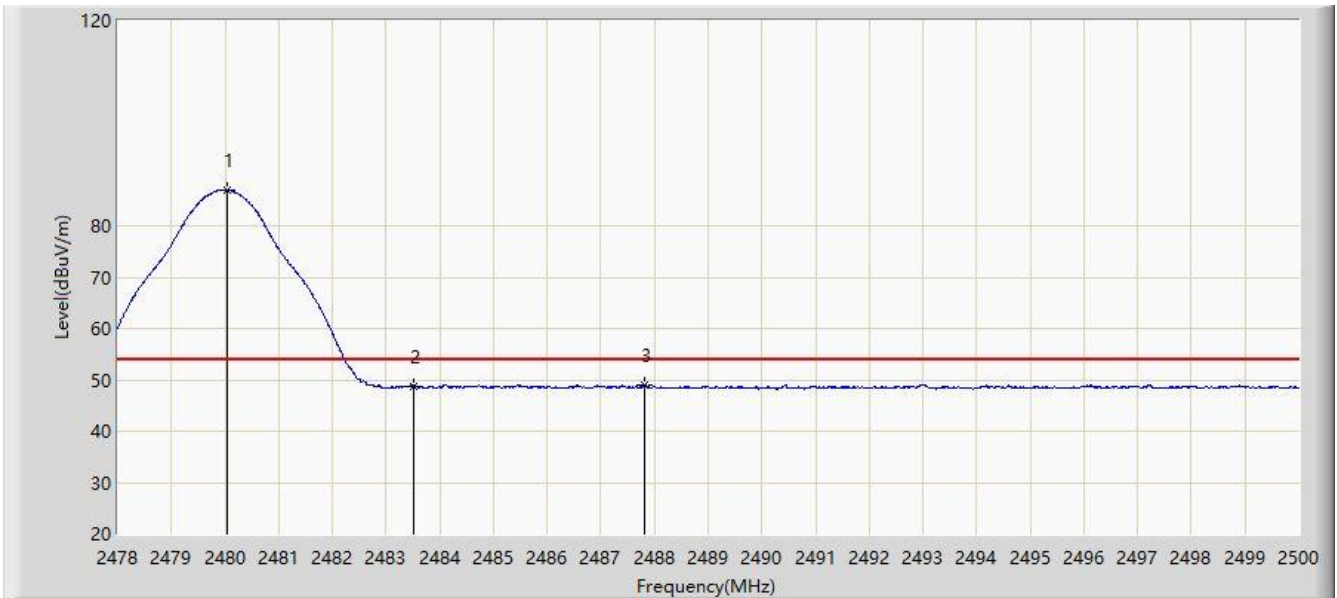


No	Flag	Mark	Frequency (MHz)	Measure Level (dBμV/m)	Reading Level (dBμV)	Margin (dB)	Limit (dBμV/m)	Factor (dB)	Type
1		*	2480.046	89.983	57.797	N/A	N/A	32.186	PK
2			2483.500	60.803	28.608	-13.197	74.000	32.195	PK
3			2486.536	62.169	29.966	-11.831	74.000	32.203	PK

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

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

Site: SIP-AC2	Time: 2021/06/01 - 13:53
Limit: FCC_Part15.209_RE(3m)	Engineer: Yien Qian
Probe: SIP-AC2_BBHA9120D_1-18GHz	Polarity: Vertical
EUT: Lenovo Smart Wireless Earbuds	Power: By Battery
Note: Transmit by BLE (2Mbps) at Channel 2480MHz, Right Earbud	



No	Flag	Mark	Frequency (MHz)	Measure Level (dBμV/m)	Reading Level (dBμV)	Margin (dB)	Limit (dBμV/m)	Factor (dB)	Type
1		*	2480.046	86.990	54.804	N/A	N/A	32.186	AV
2			2483.500	48.779	16.584	-5.221	54.000	32.195	AV
3			2487.812	49.097	16.890	-4.903	54.000	32.207	AV

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

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

6.8. AC Conducted Emissions Measurement

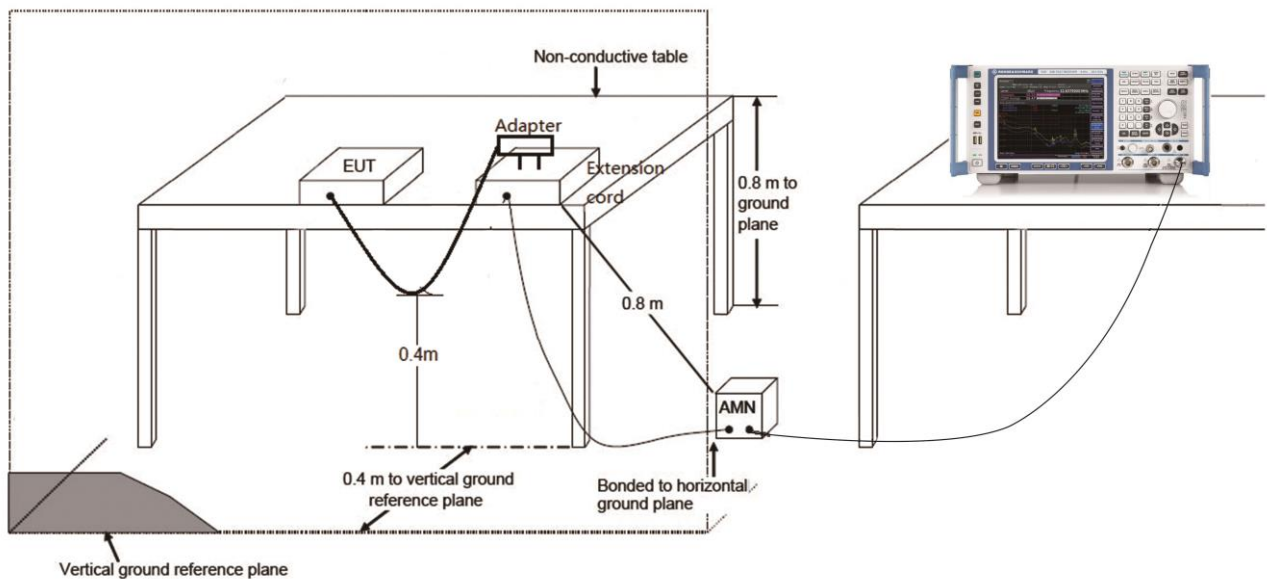
6.8.1. Test Limit

FCC Part 15 Subpart C Paragraph 15.207 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.

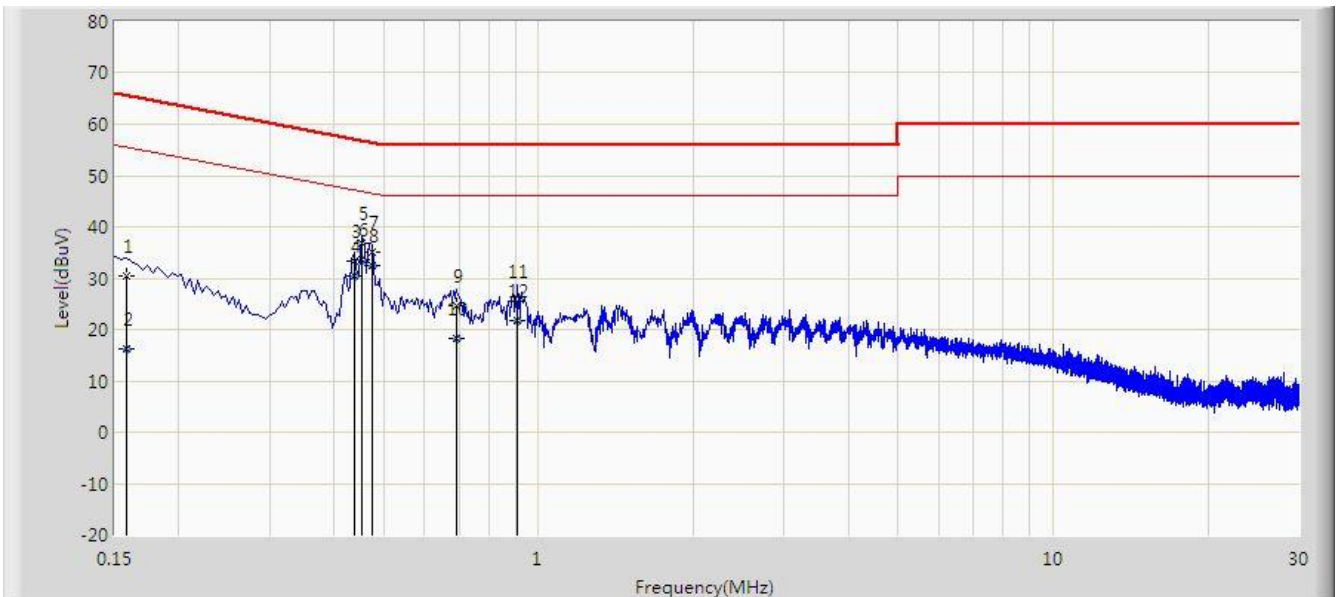
Note 2: The limit decreases linearly with the logarithm of the frequency in the range 0.15MHz to 0.5MHz.

6.8.2. Test Setup



6.8.3. Test Result

Site: SIP-SR2	Test Date: 2021/06/03
Limit: FCC_Part15.107_CE_AC Power	Engineer: Rupert Wang
Probe: SIP-SR2-ENV216_101684_With Connector	Polarity: Line
EUT: Lenovo Smart Wireless Earbuds	Power: AC 120V/60Hz
Test Mode 1	

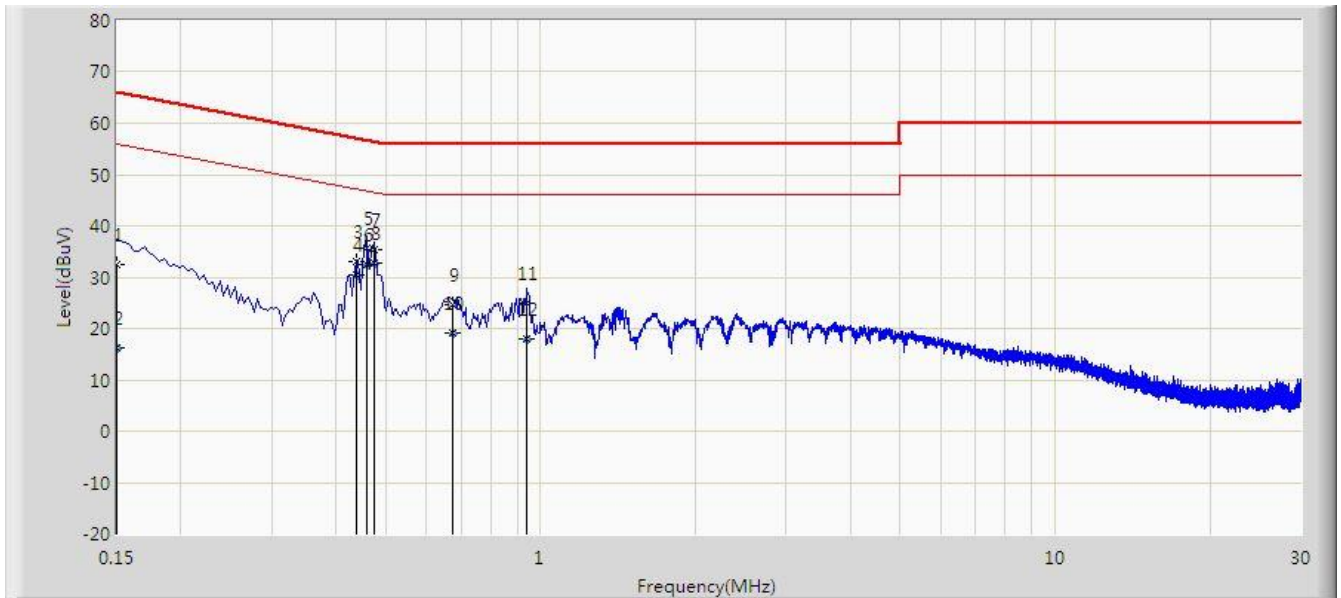


No	Flag	Mark	Frequency (MHz)	Measure Level (dBµV)	Reading Level (dBµV)	Margin (dB)	Limit (dBµV)	Factor (dB)	Type
1			0.158	30.549	21.097	-35.019	65.568	9.452	QP
2			0.158	16.265	6.813	-39.303	55.568	9.452	AV
3			0.438	33.352	23.797	-23.747	57.100	9.556	QP
4			0.438	30.301	20.745	-16.799	47.100	9.556	AV
5			0.454	36.886	27.329	-19.916	56.802	9.557	QP
6		*	0.454	33.766	24.209	-13.036	46.802	9.557	AV
7			0.474	35.191	25.633	-21.253	56.444	9.558	QP
8			0.474	32.547	22.989	-13.897	46.444	9.558	AV
9			0.694	24.556	14.996	-31.444	56.000	9.560	QP
10			0.694	18.188	8.628	-27.812	46.000	9.560	AV
11			0.910	25.408	15.858	-30.592	56.000	9.550	QP
12			0.910	21.704	12.154	-24.296	46.000	9.550	AV

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

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

Site: SIP-SR2	Test Date: 2021/06/03
Limit: FCC_Part15.107_CE_AC Power	Engineer: Rupert Wang
Probe: SIP-SR2-ENV216_101684_With Connector	Polarity: Neutral
EUT: Lenovo Smart Wireless Earbuds	Power: AC 120V/60Hz
Test Mode 1	



No	Flag	Mark	Frequency (MHz)	Measure Level (dB μ V)	Reading Level (dB μ V)	Margin (dB)	Limit (dB μ V)	Factor (dB)	Type
1			0.150	32.322	22.890	-33.678	66.000	9.431	QP
2			0.150	16.127	6.696	-39.873	56.000	9.431	AV
3			0.438	33.073	23.538	-24.026	57.100	9.536	QP
4			0.438	30.478	20.943	-16.621	47.100	9.536	AV
5			0.458	35.754	26.217	-20.974	56.729	9.537	QP
6			0.458	32.426	22.889	-14.303	46.729	9.537	AV
7			0.474	35.299	25.761	-21.145	56.444	9.538	QP
8		*	0.474	32.681	23.143	-13.763	46.444	9.538	AV
9			0.674	24.604	15.064	-31.396	56.000	9.540	QP
10			0.674	19.067	9.527	-26.933	46.000	9.540	AV
11			0.942	24.940	15.410	-31.060	56.000	9.530	QP
12			0.942	18.032	8.502	-27.968	46.000	9.530	AV

Note: Measure Level (dB μ V) = Reading Level (dB μ V) + 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 "2105RSU058-UT" file.

Appendix B - EUT Photograph

Refer to "2105RSU058-UE" file.