



Prüfbericht-Nr.: <i>Test report no.:</i>	CN214AJL 002	Auftrags-Nr.: <i>Order no.:</i>	168331356	Seite 1 von 22 <i>Page 1 of 22</i>
Kunden-Referenz-Nr.: <i>Client reference no.:</i>	N/A	Auftragsdatum: <i>Order date:</i>	2021-08-12	
Auftraggeber: <i>Client:</i>	Lenovo (Beijing) Limited No.6 Chuang Ye Road, Shangdi Information Industry Base, Haidian District, Beijing, China			
Prüfgegenstand: <i>Test item:</i>	Lenovo Go Wireless ANC Headset			
Bezeichnung / Typ-Nr.: <i>Identification / Type no.:</i>	L12WL (Trademark: Lenovo)			
Auftrags-Inhalt: <i>Order content:</i>	FCC and IC approval			
Prüfgrundlage: <i>Test specification:</i>	CFR47 FCC Part 15: Subpart C Section 15.247 CFR47 FCC Part 15: Subpart C Section 15.207 CFR47 FCC Part 15: Subpart C Section 15.209 CFR47 FCC Part 2.1093			
Wareneingangsdatum: <i>Date of sample receipt:</i>	2021-09-22	Please refer to photo documents		
Prüfmuster-Nr.: <i>Test sample no.:</i>	A003132788-016			
Prüfzeitraum: <i>Testing period:</i>	2021-09-23 – 2021-09-28			
Ort der Prüfung: <i>Place of testing:</i>	TÜV Rheinland (Shenzhen) Co., Ltd.			
Prüflaboratorium: <i>Testing laboratory:</i>	TÜV Rheinland (Shenzhen) Co., Ltd.			
Prüfergebnis*: <i>Test result*:</i>	Pass			
geprüft von: <i>tested by:</i>	genehmigt von: <i>authorized by:</i>			
Datum: <i>Date:</i> 2021-10-28	 Signed by: Alex Lan		 Signed by: Winnie Hou	
Stellung / Position	Senior Project Engineer	Stellung / Position	Department Manager	
Sonstiges / Other:	FCC ID: A5ML12WL			
Zustand des Prüfgegenstandes bei Anlieferung: <i>Condition of the test item at delivery:</i>	Prüfmuster vollständig und unbeschädigt <i>Test item complete and undamaged:</i>			
* Legende: 1 = sehr gut 2 = gut 3 = befriedigend 4 = ausreichend 5 = mangelhaft P(ass) = entspricht o.g. Prüfgrundlage(n) F(ail) = entspricht nicht o.g. Prüfgrundlage(n) N/A = nicht anwendbar N/T = nicht getestet <i>Legend: 1 = very good 2 = good 3 = satisfactory 4 = sufficient 5 = poor</i> P(ass) = passed a.m. test specifications(s) F(ail) = failed a.m. test specifications(s) N/A = not applicable N/T = not tested				
Dieser Prüfbericht bezieht sich nur auf das o.g. Prüfmuster und darf ohne Genehmigung der Prüfstelle nicht auszugsweise vervielfältigt werden. Dieser Bericht berechtigt nicht zur Verwendung eines Prüfzeichens. <i>This test report only relates to the a. m. test sample. Without permission of the test center this test report is not permitted to be duplicated in extracts. This test report does not entitle to carry any test mark.</i>				

V05

Test Summary

5.1.1 ANTENNA REQUIREMENT

RESULT: Pass

5.1.2 MAXIMUM PEAK CONDUCTED OUTPUT POWER

RESULT: Pass

5.1.3 CONDUCTED POWER SPECTRAL DENSITY

RESULT: Pass

5.1.5 6dB BANDWIDTH

RESULT: Pass

5.1.6 CONDUCTED SPURIOUS EMISSIONS MEASURED IN 100 kHz BANDWIDTH

RESULT: Pass

5.1.7 RADIATED SPURIOUS EMISSION

RESULT: Pass

5.1.8 CONDUCTED EMISSION ON AC MAINS

RESULT: Pass

6.1.1 ELECTROMAGNETIC FIELDS

RESULT: Pass

Contents

1	GENERAL REMARKS	4
1.1	COMPLEMENTARY MATERIALS	4
2	TEST SITES.....	4
2.1	TEST FACILITIES.....	4
2.2	LIST OF TEST AND MEASUREMENT INSTRUMENTS	5
2.3	TRACEABILITY.....	7
2.4	CALIBRATION.....	7
2.5	MEASUREMENT UNCERTAINTY	7
2.6	LOCATION OF ORIGINAL DATA	7
2.7	STATUS OF FACILITY USED FOR TESTING.....	7
3	GENERAL PRODUCT INFORMATION.....	8
3.1	PRODUCT FUNCTION AND INTENDED USE.....	8
3.2	RATINGS AND SYSTEM DETAILS	8
3.3	INDEPENDENT OPERATION MODES	10
3.4	NOISE GENERATING AND NOISE SUPPRESSING PARTS.....	10
3.5	SUBMITTED DOCUMENTS.....	10
4	TEST SET-UP AND OPERATION MODES	11
4.1	PRINCIPLE OF CONFIGURATION SELECTION.....	11
4.2	TEST OPERATION AND TEST SOFTWARE.....	11
4.3	SPECIAL ACCESSORIES AND AUXILIARY EQUIPMENT.....	11
4.4	COUNTERMEASURES TO ACHIEVE EMC COMPLIANCE.....	11
4.5	TEST SETUP DIAGRAM	12
5	TEST RESULTS.....	14
5.1	TRANSMITTER REQUIREMENT & TEST SUITES.....	14
<i>5.1.1</i>	<i>Antenna Requirement.....</i>	<i>14</i>
<i>5.1.2</i>	<i>Maximum Peak Conducted Output Power.....</i>	<i>15</i>
<i>5.1.3</i>	<i>Conducted Power Spectral Density.....</i>	<i>16</i>
<i>5.1.5</i>	<i>6dB Bandwidth.....</i>	<i>17</i>
<i>5.1.6</i>	<i>Conducted Spurious Emissions Measured in 100 kHz Bandwidth</i>	<i>18</i>
<i>5.1.7</i>	<i>Radiated Spurious Emission.....</i>	<i>19</i>
<i>5.1.8</i>	<i>Conducted Emission on AC Mains.....</i>	<i>20</i>
6	SAFETY HUMAN EXPOSURE	21
6.1	RADIO FREQUENCY EXPOSURE COMPLIANCE	21
<i>6.1.1</i>	<i>Electromagnetic Fields</i>	<i>21</i>
7	PHOTOGRAPHS OF THE TEST SET-UP.....	22
8	LIST OF TABLES	22

1 General Remarks

1.1 Complementary Materials

All attachments are integral parts of this test report. This applies especially to the following appendix:

Appendix A: Photographs of the Test Set-up

Appendix B: Test Results of Conducted & Radiated Testing

2 Test Sites

2.1 Test Facilities

TÜV Rheinland (Shenzhen) Co., Ltd.

No. 362 Huanguan Road Middle, Longhua District, Shenzhen 518110, People's Republic of China

FCC Registration No.: 694916

IC Registration No.: 25069

2.2 List of Test and Measurement Instruments

Table 1: List of Test and Measurement Equipment

Radio Spectrum Testing				
Equipment	Manufacturer	Model No.	Serial No.	Cal. Until
Wireless Connectivity Tester	R&S	CMW270	101375	2022-08-09
Signal Analyzer	R&S	FSV 40	101441	2022-08-09
Vector Signal Generator	R&S	SMBV100A	263301	2022-08-09
Signal Generator	R&S	SMB100A	115186	2022-08-09
OSP	R&S	OSP 150	101017	2021-12-10
Control PC	DELL	OptiPlex 7050	FTJZ9P2	N/A
Test Software	R&S	WMS32 (V11.00.00)	N/A	N/A
Power Meter	R&S	NRP2	107105	2021-12-10
Power Sensor	R&S	NRP-Z81	105677	2022-08-09
Humid & Temp Programmable Tester	BOST	NTH090-60	19040801	2022-04-02
Shielding Room 8#	Albatross	SR8	APC17151-SR8	2024-06-22
Unwanted Emission Testing				
Equipment	Manufacturer	Model No.	Serial No.	Cal. Until
EMI Test Receiver	R&S	ESR 7	102021	2022-08-10
Signal Analyzer	R&S	FSV 40	101439	2022-08-09
System Controller Interface	R&S	SCI-100	S10010038	N/A
Filterbank	R&S	Wlan	100759	2022-08-09
OSP	R&S	OSP 120	102040	N/A
Pre-amplifier	R&S	SCU08F1	08320031	2022-08-09
Amplifier	R&S	SCU-18F	180070	2022-08-09
Amplifier	R&S	SCU40A	100475	2022-08-09
Trilog Broadband Antenna (30 MHz - 7 GHz)	Schwarzbeck	VULB 9162	193	2022-08-08
Double-Ridged Antenna (1 -18 GHz)	ETS-LINDGREN	3117	00218717	2022-08-08
Wideband Ridged Horn Antenna (18-40 GHz)	Steatite	QMS-00880	19067	2022-08-08
Active Loop Antenna	Schwarzbeck	FMZB 1513	302	2022-09-13
Test software	R&S	EMC32 (V10.60.10)	N/A	N/A
Control PC	Dell	OptiPlex 7050	36NV9P2	N/A

Prüfbericht - Nr.: CN214AJL 002
Test Report No.Seite 6 von 22
Page 6 of 22

3m Semi-Anechoic Chamber	Albatross	SAC-3m	APC17151-SAC	2024-06-22
Conducted Emissions testing				
Equipment	Manufacturer	Model No.	Serial No.	Cal. Until
EMI Test Receiver	R&S	ESR3	102428	2021-08-16
Artificial Mains Network	R&S	ENV216	102333	2021-08-16
EMC32 test software	R&S	EMC32(Ver.10.50.00)	N/A	N/A

2.3 Traceability

All measurement equipment calibrations are traceable to NIM (National Institute of Metrology) or where calibration is performed in other countries, to equivalent nationally recognized standards organizations.

2.4 Calibration

Equipment requiring calibration is calibrated periodically by the manufacturer or according to manufacturer's specifications. Additionally all equipment is verified for proper performance on a regular basis using in house standards or comparisons.

2.5 Measurement Uncertainty

The estimated combined standard uncertainty for radiated emissions and conducted emissions measurements as below table.

Item		Extended Uncertainty
Conducted Emission		± 2.74 dB
Radiated Emission (30-1000MHz)	Field strength (dBµV/m)	4.27dB
Radiated Emission (above 1000MHz)	Field strength (dBµV/m)	4.46dB
Radio Spectrum		± 1.5 dB

2.6 Location of Original Data

The original copies of all test data taken during actual testing were attached at Appendix A & B of this report and delivered to the applicant. A copy has been retained in the TÜV Rheinland (Shenzhen) file for certification follow-up purposes.

2.7 Status of Facility Used for Testing

The TÜV Rheinland (Shenzhen) Co., Ltd. Test facility located at No. 362 Huanguan Road Middle, Longhua District, Shenzhen 518110, People's Republic of China. is listed on the US Federal Communications Commission list of facilities approved to perform measurements.

3 General Product Information

3.1 Product Function and Intended Use

The EUT is a Lenovo Go Wireless ANC Headset which supports Bluetooth dual mode technology.

For details refer to the User Manual and Circuit Diagram.

3.2 Ratings and System Details

Table 2: Technical Specification of EUT

General Information of EUT	Value
Kind of Equipment	Lenovo Go Wireless ANC Headset
Type Designation	L12WL
Trade Mark	Lenovo
FCC ID	A5ML12WL
HVIN	L12WL
Operating Voltage	DC 3.85V via built-in battery or DC 5V via charging stand or DC 5V via Type-C port with adapter
Technical Specification of Bluetooth	
Technical Specification	Value
Operating Frequency	2402 - 2480 MHz
Type of Modulation	GFSK, $\pi/4$ DQPSK, 8DPSK
Channel Number	BDR & EDR mode: 79 channels
Channel Separation	BDR & EDR mode: 1MHz
Antenna Type	Ceramic antenna
Max. Antenna Gain	1.71 dBi
Technical Specification of Bluetooth Low Energy	
Technical Specification	Value
Operating Frequency band	2402 – 2480 MHz
Channel Number	40 channels
Channel separation	2MHz
Data rate	1Mbps, 2Mbps
Modulation	GFSK
Antenna Type	Ceramic antenna
Max. Antenna Gain	1.71 dBi

Table 3: RF Channel and Frequency of Classic Bluetooth (BDR & EDR)

RF Channel	Frequency (MHz)	RF Channel	Frequency (MHz)	RF Channel	Frequency (MHz)	RF Channel	Frequency (MHz)
0	2402.00	20	2422.00	40	2442.00	60	2462.00
1	2403.00	21	2423.00	41	2443.00	61	2463.00
2	2404.00	22	2424.00	42	2444.00	62	2464.00
3	2405.00	23	2425.00	43	2445.00	63	2465.00
4	2406.00	24	2426.00	44	2446.00	64	2466.00
5	2407.00	25	2427.00	45	2447.00	65	2467.00
6	2408.00	26	2428.00	46	2448.00	66	2468.00
7	2409.00	27	2429.00	47	2449.00	67	2469.00
8	2410.00	28	2430.00	48	2450.00	68	2470.00
9	2411.00	29	2431.00	49	2451.00	69	2471.00
10	2412.00	30	2432.00	50	2452.00	70	2472.00
11	2413.00	31	2433.00	51	2453.00	71	2473.00
12	2414.00	32	2434.00	52	2454.00	72	2474.00
13	2415.00	33	2435.00	53	2455.00	73	2475.00
14	2416.00	34	2436.00	54	2456.00	74	2476.00
15	2417.00	35	2437.00	55	2457.00	75	2477.00
16	2418.00	36	2438.00	56	2458.00	76	2478.00
17	2419.00	37	2439.00	57	2459.00	77	2479.00
18	2420.00	38	2440.00	58	2460.00	78	2480.00
19	2421.00	39	2441.00	59	2461.00		

Table 4: RF Channel and Frequency of Bluetooth Low Energy

RF Channel	Frequency (MHz)	RF Channel	Frequency (MHz)	RF Channel	Frequency (MHz)	RF Channel	Frequency (MHz)
00	2402.00	10	2422.00	20	2442.00	30	2462.00
01	2404.00	11	2424.00	21	2444.00	31	2464.00
02	2406.00	12	2426.00	22	2446.00	32	2466.00
03	2408.00	13	2428.00	23	2448.00	33	2468.00
04	2410.00	14	2430.00	24	2450.00	34	2470.00
05	2412.00	15	2432.00	25	2452.00	35	2472.00
06	2414.00	16	2434.00	26	2454.00	36	2474.00
07	2416.00	17	2436.00	27	2456.00	37	2476.00
08	2418.00	18	2438.00	28	2458.00	38	2478.00
09	2420.00	19	2440.00	29	2460.00	39	2480.00

3.3 Independent Operation Modes

The basic operation modes are:

- A. On, transmitting mode (BLE)
 - 1. Low channel
 - 2. Middle channel
 - 3. High channel
- B. On, Operating
- C. Off

3.4 Noise Generating and Noise Suppressing Parts

Refer to Circuit Diagram for further details.

3.5 Submitted Documents

- Application Form
- Block Diagram
- FCC/IC Label and Location Info
- Operation Description
- Photo Document
- Schematics
- User Manual

4 Test Set-up and Operation Modes

4.1 Principle of Configuration Selection

Radio Spectrum: The equipment under test (EUT) was configured at its highest power output in order to measure its highest possible radiation and conducted level. The test modes were adapted accordingly in reference to the instructions for use.

Emission: The equipment under test (EUT) was configured to measure its highest possible radiation level. The test modes were adapted accordingly in reference to the instructions for use.

4.2 Test Operation and Test Software

Test operation refers to test setup in chapter 5. All testing were performed according to the procedures in ANSI C63.10: 2013.

4.3 Special Accessories and Auxiliary Equipment

Table 5: List of Accessories and Auxiliary Equipment

Description	Manufacturer	Model	Rating
Notebook	Lenovo	ThinkPad 260	PC0GP71G

4.4 Countermeasures to Achieve EMC Compliance

The test sample which has been tested contained the noise suppression parts as described in the Technical Construction File (TCF).

No additional measures were employed to achieve compliance.

4.5 Test Setup Diagram

Diagram of Measurement Configuration for Radiation Test (Below 30MHz)

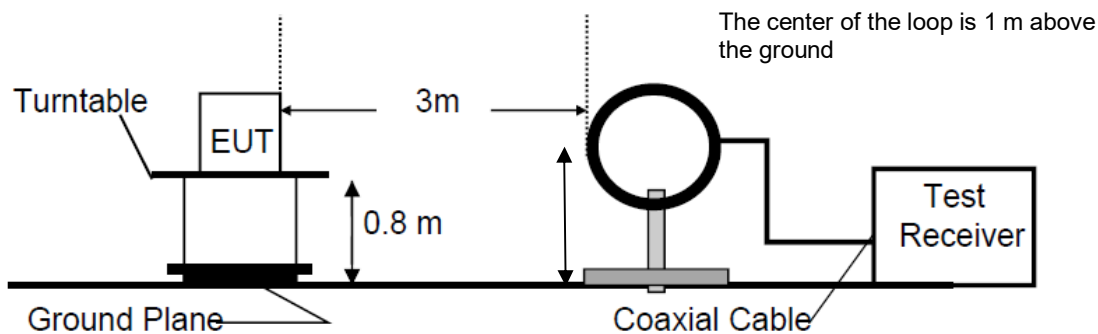


Diagram of Measurement Configuration for Radiation Test (Below 1GHz)

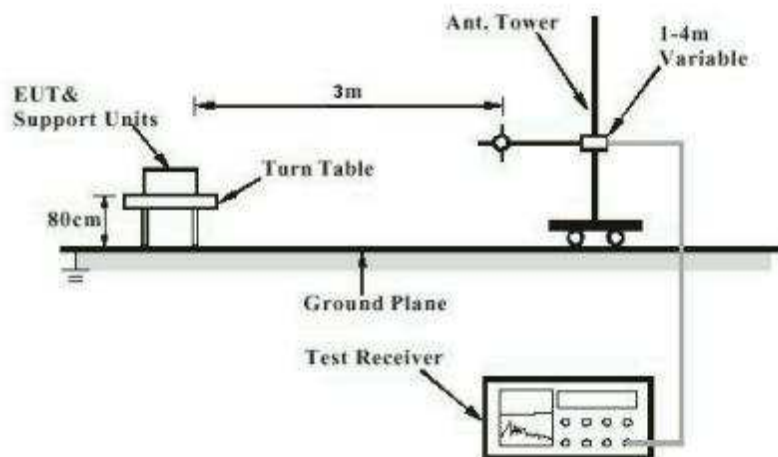


Diagram of Measurement Configuration for Radiation Test (Above 1GHz)

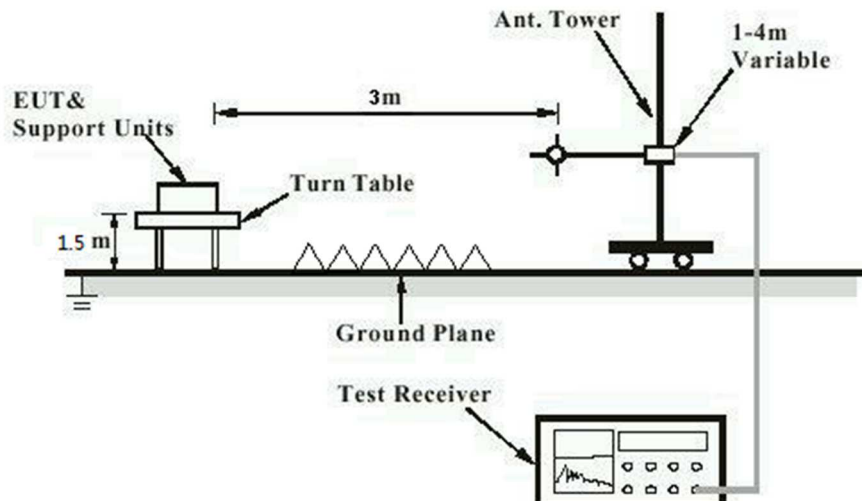


Diagram of Measurement Configuration for Mains Conduction Measurement

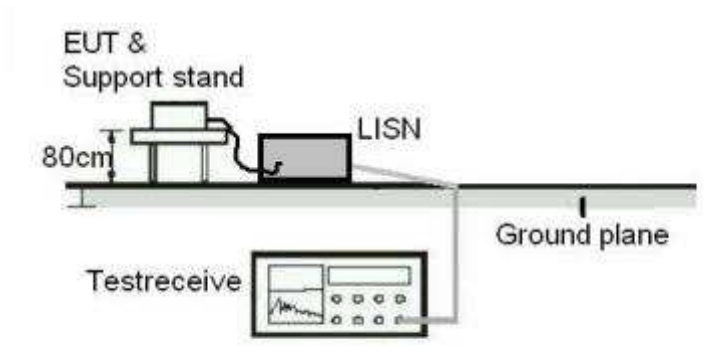
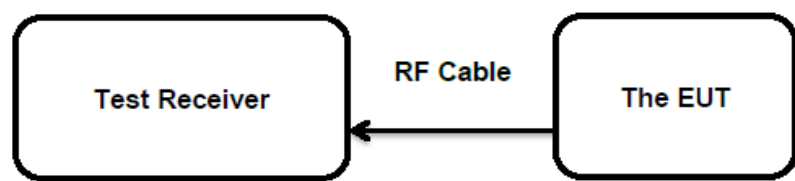


Diagram of Measurement Configuration for Conducted Transmitter Measurement



5 Test Results

5.1 Transmitter Requirement & Test Suites

5.1.1 Antenna Requirement

RESULT:**Pass****Test Specification**

Test standard : FCC Part 15.247(b)(4) and Part 15.203
Limit : the use of antennas with directional gains that do not exceed 6 dBi

According to the manufacturer declared, the EUT has an Integral antenna, the directional gain of antenna is 1.71 dBi, and the antenna connector is designed with permanent attachment and no consideration of replacement. Therefore the EUT is considered sufficient to comply with the provision.

Refer to EUT Photo for further details.

5.1.2 Maximum Peak Conducted Output Power

RESULT:
Pass
Test Specification

Test standard : FCC Part 15.247(b)(3)
 Basic standard : ANSI C63.10: 2013
 Limits : < 1 Watt (Maximum Conducted Peak Power)
 : e.i.r.p. <4W
 Kind of test site : Shielded Room

Test Setup

Date of testing : 2021-09-28
 Input voltage : Battery
 Operation mode : A
 Test channel : Low / Middle / High
 Ambient temperature : 24.8 °C
 Relative humidity : 53 %
 Atmospheric pressure : 101 kPa

For details refer to following test result.

Table 6: Test Result of Maximum Peak Conducted Output Power

Test Mode	Channel Frequency (MHz)	Measured Peak Output Power		Measured Average Output Power		Limit (W)
		(dBm)	(W)	(dBm)	(W)	
BLE 1Mbps	2402	8.26	0.00670	6.69	0.00467	< 1
	2440	7.93	0.00621	6.28	0.00425	
	2480	8.13	0.00650	6.65	0.00462	
BLE 2Mbps	2402	8.22	0.00664	6.62	0.00459	< 1
	2440	7.85	0.00610	6.21	0.00418	
	2480	8.09	0.00644	6.58	0.00455	

Note: The cable loss is taken into account in results and the e.i.r.p. is 9.97dBm less than 4W (36 dBm).

5.1.3 Conducted Power Spectral Density

RESULT:
Pass
Test Specification

Test standard : FCC Part 15.247(e)
 Basic standard : ANSI C63.10: 2013
 Limits : 8 dBm / 3kHz
 Kind of test site : Shielded Room

Test Setup

Date of testing : 2021-09-28
 Input voltage : Battery
 Operation mode : A
 Test channel : Low / Middle / High
 Ambient temperature : 24.8 °C
 Relative humidity : 53 %
 Atmospheric pressure : 101 kPa

For details refer to following test result.

Table 7: Test Result of Power Spectral Density

Test Mode	Channel Frequency (MHz)	Power Spectral Density (dBm/3kHz)	Limit (dBm/3kHz)
BLE 1Mbps	2402	-6.33	8
	2440	-6.45	
	2480	-6.29	
BLE 2Mbps	2402	-9.09	8
	2440	-9.21	
	2480	-8.96	

Note: The cable loss is taken into account in results.

For the measurement records, refer to the appendix B.

5.1.5 6dB Bandwidth

RESULT:
Pass
Test Specification

Test standard : FCC Part 15.247(a)(2)
 Basic standard : ANSI C63.10: 2013
 Kind of test site : Shielded Room

Test Setup

Date of testing : 2021-09-28
 Input voltage : Battery
 Operation mode : A
 Test channel : Low / Middle / High
 Ambient temperature : 24.8 °C
 Relative humidity : 53 %
 Atmospheric pressure : 101 kPa

Table 8: Test Result of 6dB Bandwidth

Test Mode	Channel Frequency (MHz)	-6dB Bandwidth (kHz)	Limit (kHz)
BLE 1Mbps	2402	732.674	500
	2440	752.476	
	2480	752.476	
BLE 2Mbps	2402	1307	500
	2440	1307	
	2480	1307	

For the measurement records, refer to the appendix B.

5.1.6 Conducted Spurious Emissions Measured in 100 kHz Bandwidth

RESULT:**Pass****Test Specification**

Test standard	: FCC Part 15.247(d)
Basic standard	: ANSI C63.10: 2013
Limits	: 20dB (below that in the 100kHz bandwidth within the band that contains the highest level of the desired power); In addition, radiated emissions which fall in the restricted bands, must also comply with the radiated emission limits specified in 15.209(a)
Kind of test site	: Shielded Room

Test Setup

Date of testing	: 2021-09-28
Input voltage	: Battery
Operation mode	: A
Test channel	: Low / Middle / High
Ambient temperature	: 24.8 °C
Relative humidity	: 53 %
Atmospheric pressure	: 101 kPa

Test results of 100kHz Bandwidth of Frequency Band Edge by Conducted method refer to test plots, and compliance is achieved as well.

For the measurement records, refer to the appendix B.

5.1.7 Radiated Spurious Emission

RESULT:**Pass****Test Specification**

Test standard	:	FCC Part 15.247(d) & FCC Part 15.205
Basic standard	:	ANSI C63.10: 2013
Limits	:	Refer to 15.209(a) of FCC part 15.247(d)
Kind of test site	:	3m Semi-anechoic Chamber

Test Setup

Date of testing	:	2021-09-27 - 2021-09-28
Input voltage	:	Battery
Operation mode	:	A
Test channel	:	Low / Middle / High
Ambient temperature	:	23 °C
Relative humidity	:	45 %
Atmospheric pressure	:	101 kPa

Remark:

Testing was carried out within frequency range 9kHz to the tenth harmonics. Only the worst case spurious emissions configuration of the each mode were reported.

For the measurement records, refer to the appendix B.

5.1.8 Conducted Emission on AC Mains

RESULT:**Pass****Test Specification**

Test standard	:	FCC Part 15.207(a)
Basic standard	:	ANSI C63.10: 2013
Frequency range	:	0.15 – 30MHz
Limits	:	FCC Part 15.207(a)
Kind of test site	:	Shielded Room

Test Setup

Date of testing	:	2021-08-30
Input voltage	:	AC 120V/60Hz
Operation mode	:	B
Earthing	:	Not connected
Ambient temperature	:	24.8 °C
Relative humidity	:	53 %
Atmospheric pressure	:	101 kPa

For the measurement records, refer to the appendix B.

6 Safety Human Exposure

6.1 Radio Frequency Exposure Compliance

6.1.1 Electromagnetic Fields

RESULT:**Pass****Test Specification**

Test standard : FCC KDB Publication 447498 v06
CFR47 FCC Part 2: Section 2.1093
CFR47 FCC Part 1: Section 1.1310

The measured maximum conducted average output power of the EUT is 6.69dBm \approx 4.67mW, which is far below the SAR exclusion threshold level 10mW (SAR Test Exclusion Thresholds for 100 MHz – 6 GHz and \leq 50 mm), hence the EUT is excluded from SAR evaluation according to FCC KDB publication 447498 D01: Mobile and Portable RF Exposure. Guidance v06.

7 Photographs of the Test Set-Up

For photographs of the test set-up, refer to the appendix A.

8 List of Tables

Table 1: List of Test and Measurement Equipment.....	5
Table 2: Technical Specification of EUT	8
Table 3: RF Channel and Frequency of Bluetooth (BDR & EDR).....	9
Table 4: RF Channel and Frequency of Classic Bluetooth.....	9
Table 5: List of Accessories and Auxiliary Equipment.....	11
Table 6: Test Result of Maximum Peak Conducted Output Power.....	15
Table 7: Test Result of Power Spectral Density.....	16
Table 8: Test Result of 6dB Bandwidth.....	17

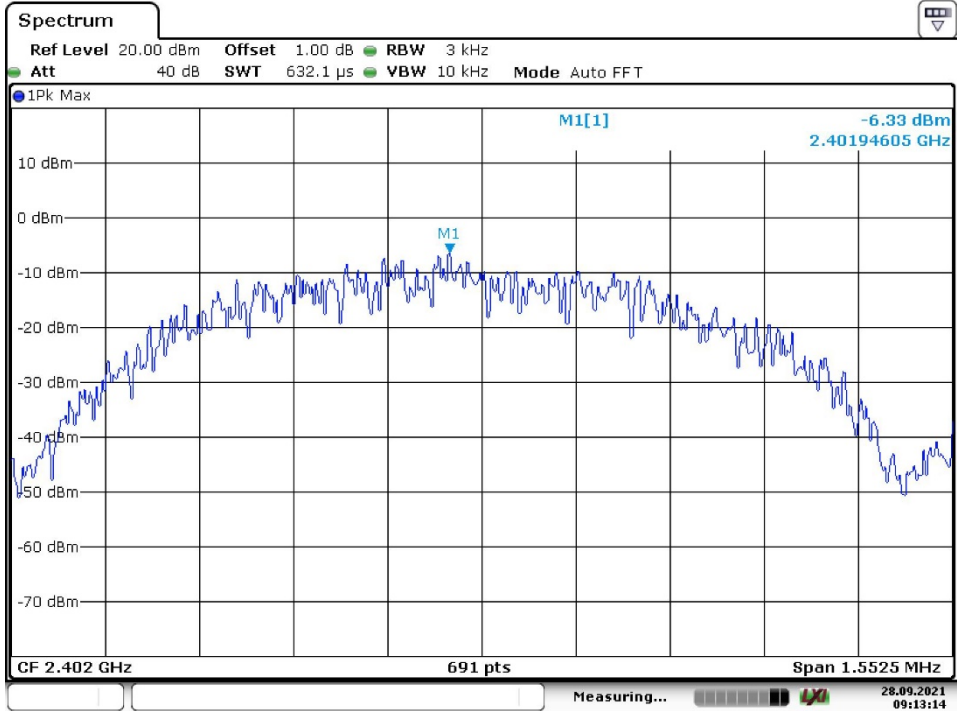
Appendix B: Test Results

APPENDIX B: TEST RESULTS.....	1
APPENDIX B.1: CONDUCTED POWER SPECTRAL DENSITY	2
BLE, 1Mbps	2
BLE, 2Mbps	3
APPENDIX B.2: 6DB BANDWIDTH	5
BLE, 1Mbps	5
BLE, 2Mbps	6
APPENDIX B.3: CONDUCTED SPURIOUS EMISSIONS MEASURED IN 100 KHz BANDWIDTH	8
BLE, 1Mbps	8
BLE, 2Mbps	12
APPENDIX B.4: TEST RESULTS OF RADIATED SPURIOUS EMISSIONS	16
APPENDIX B.5: TEST RESULTS OF RADIATED EMISSIONS IN RESTRICTED BANDS.....	32
APPENDIX B.6: TEST RESULTS OF CONDUCTED EMISSIONS ON AC MAINS	36

Appendix B.1: Conducted Power Spectral Density

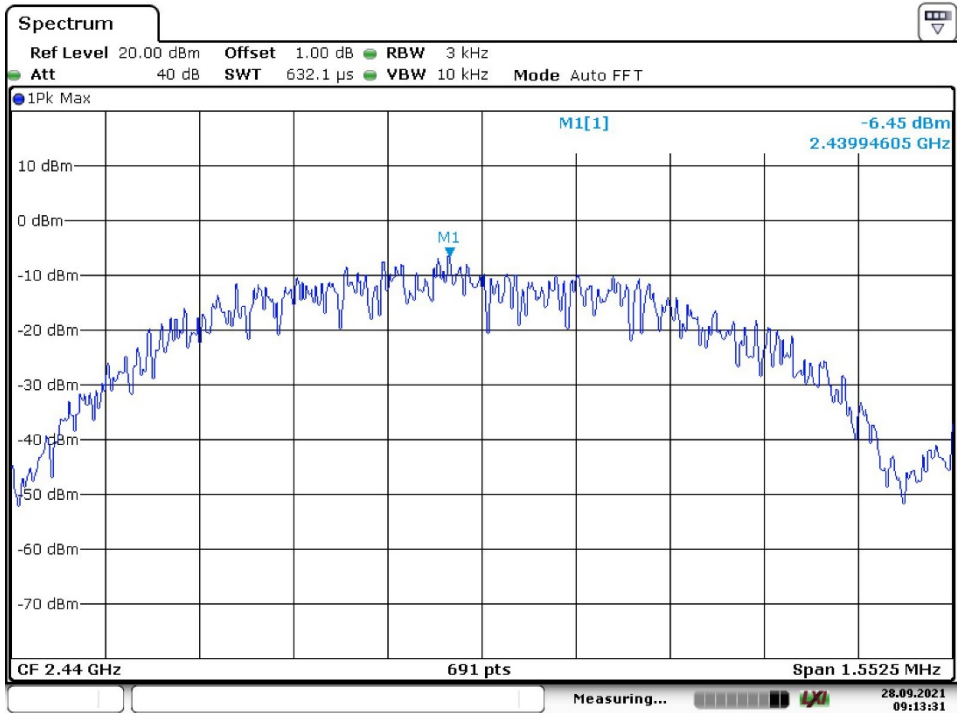
BLE, 1Mbps

Low Channel



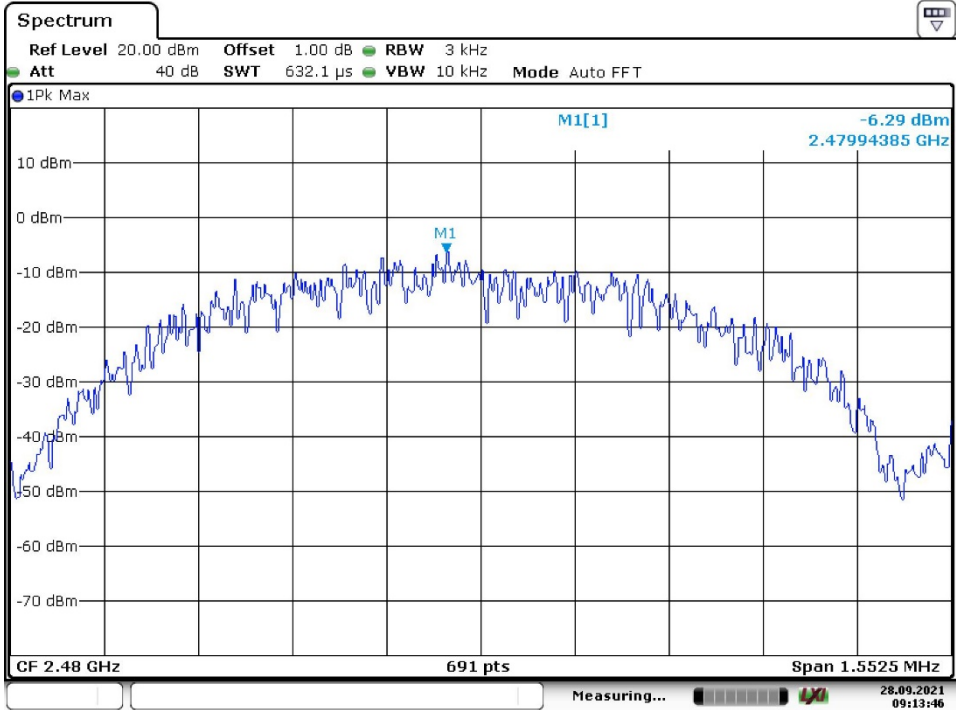
Date: 28.SEP.2021 09:13:14

Middle Channel



Date: 28.SEP.2021 09:13:31

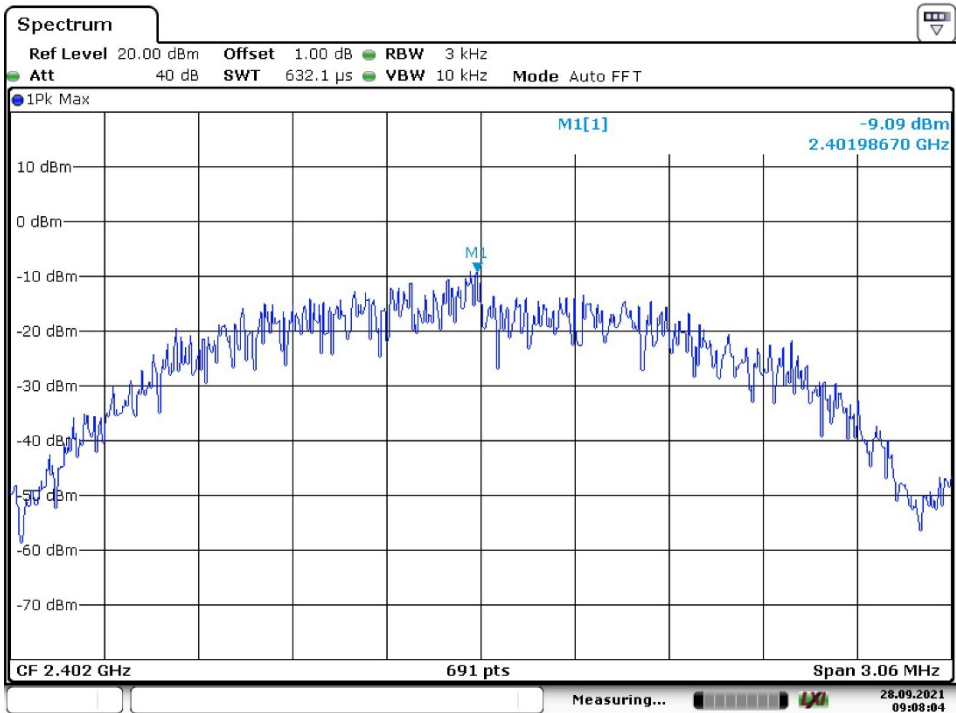
High Channel



Date: 28.SEP.2021 09:13:46

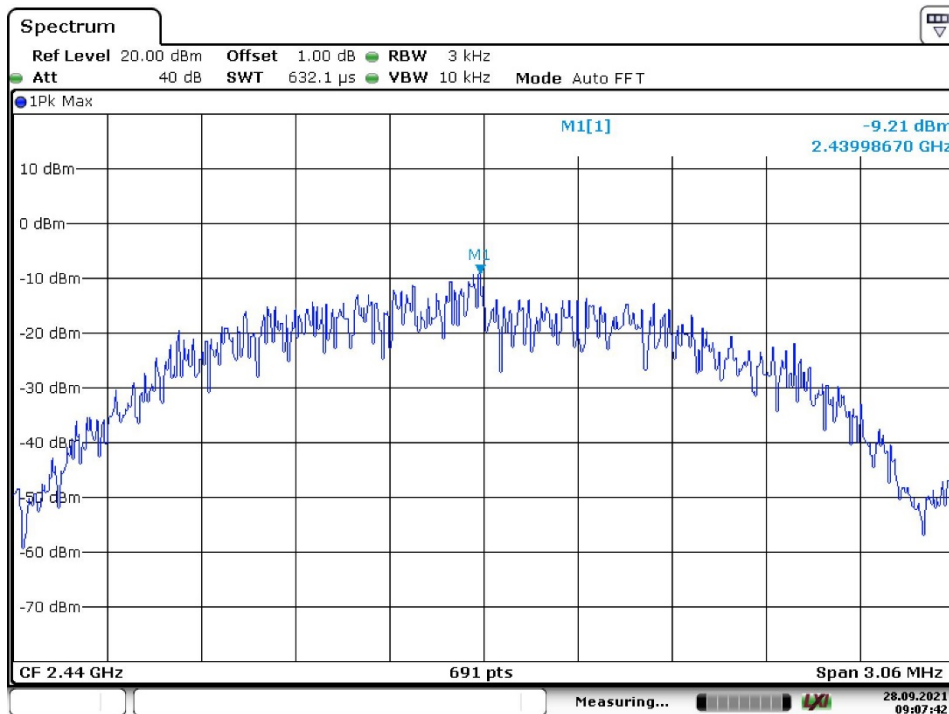
BLE, 2Mbps

Low Channel



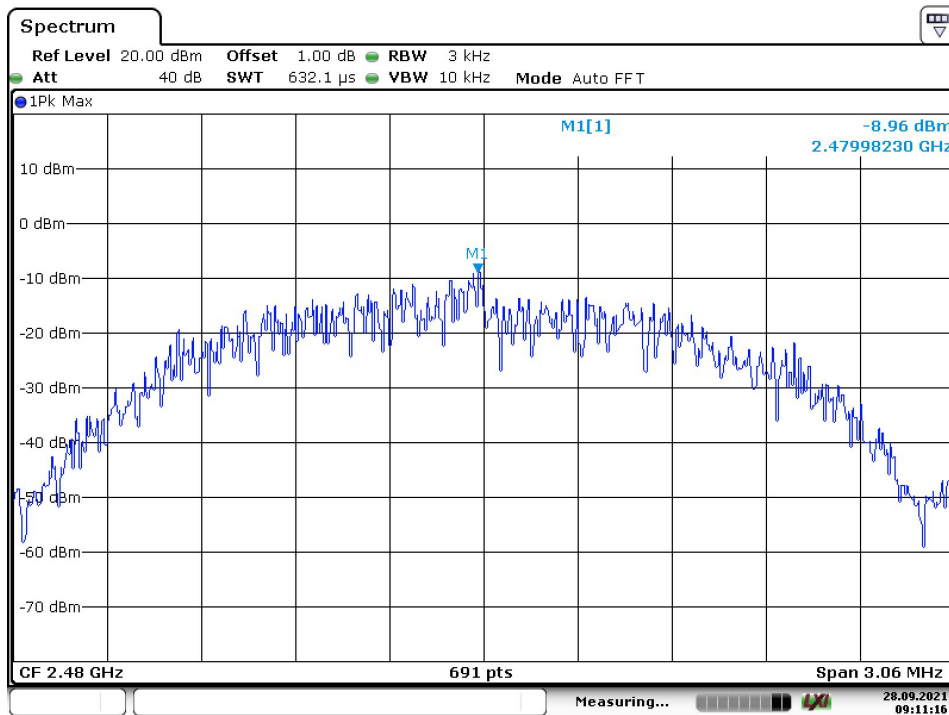
Date: 28.SEP.2021 09:08:03

Middle Channel



Date: 28.SEP.2021 09:07:41

High Channel



Date: 28.SEP.2021 09:11:16

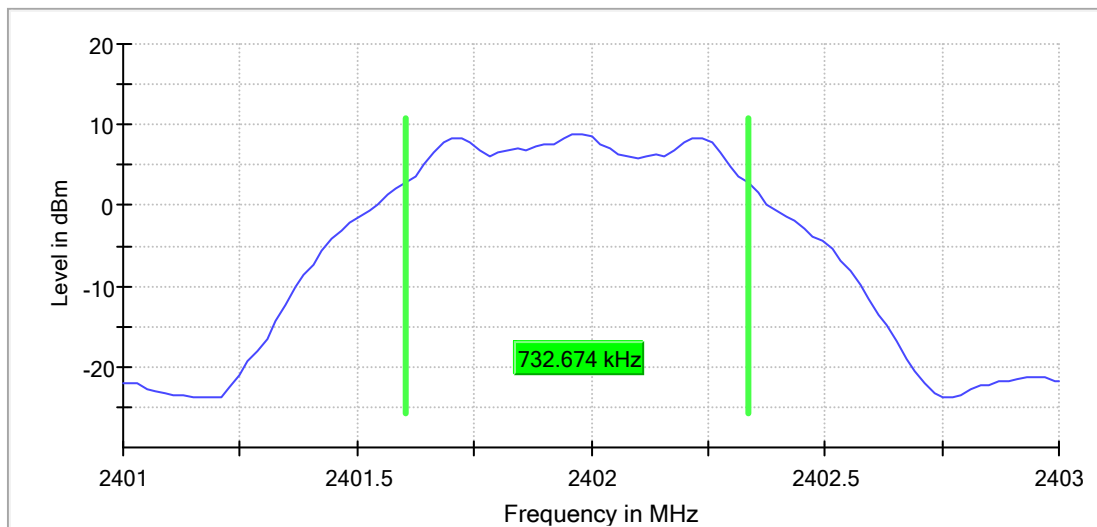
Appendix B.2: 6dB Bandwidth

BLE, 1Mbps

Low Channel

RBW=100kHz, VBW=300kHz

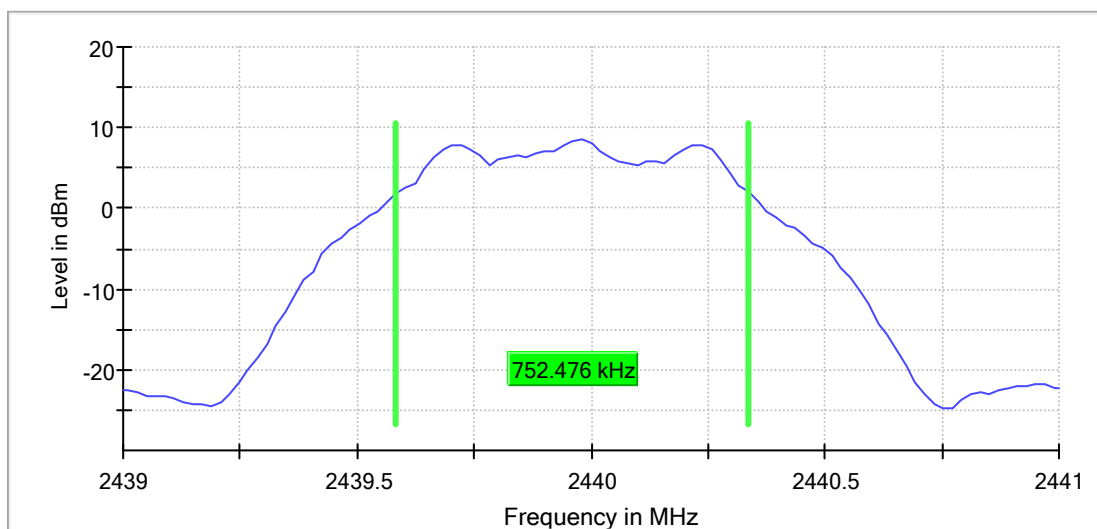
6 dB Bandwidth



Middle Channel

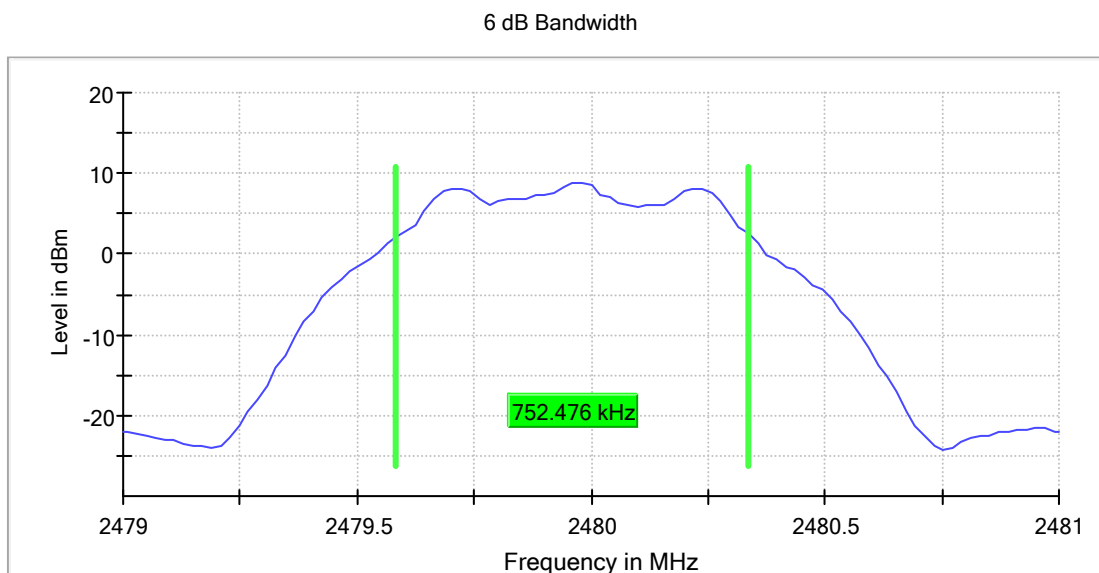
RBW=100kHz, VBW=300kHz

6 dB Bandwidth



High Channel

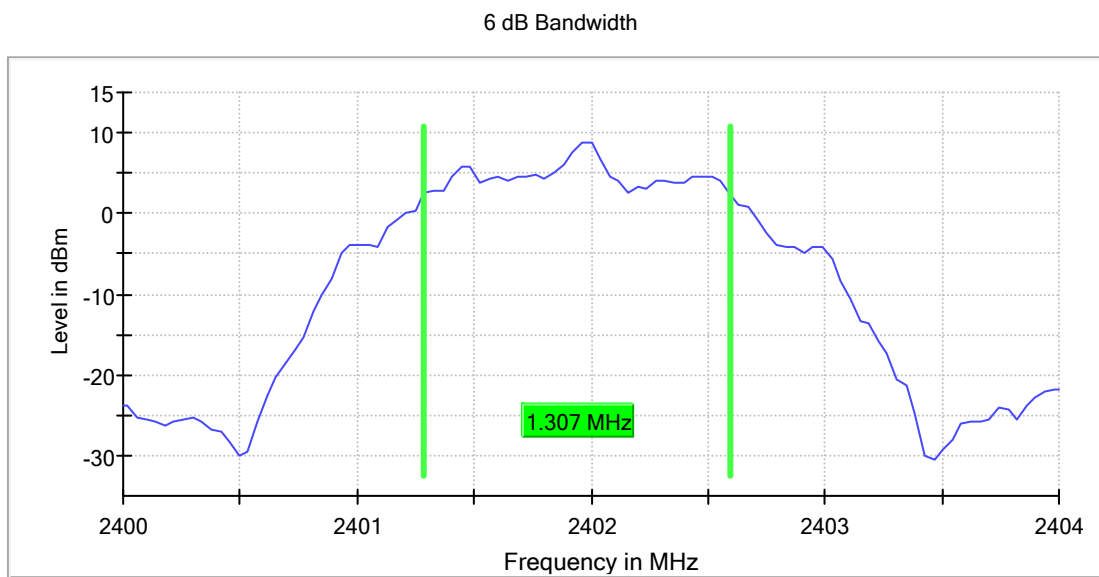
RBW=100kHz, VBW=300kHz



BLE, 2Mbps

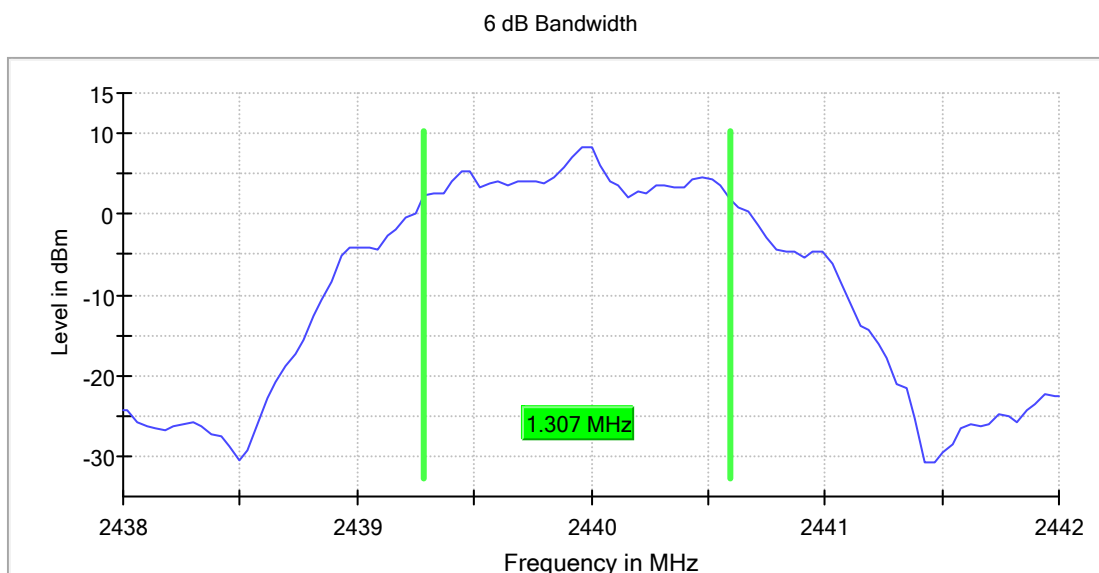
Low Channel

RBW=100kHz, VBW=300kHz



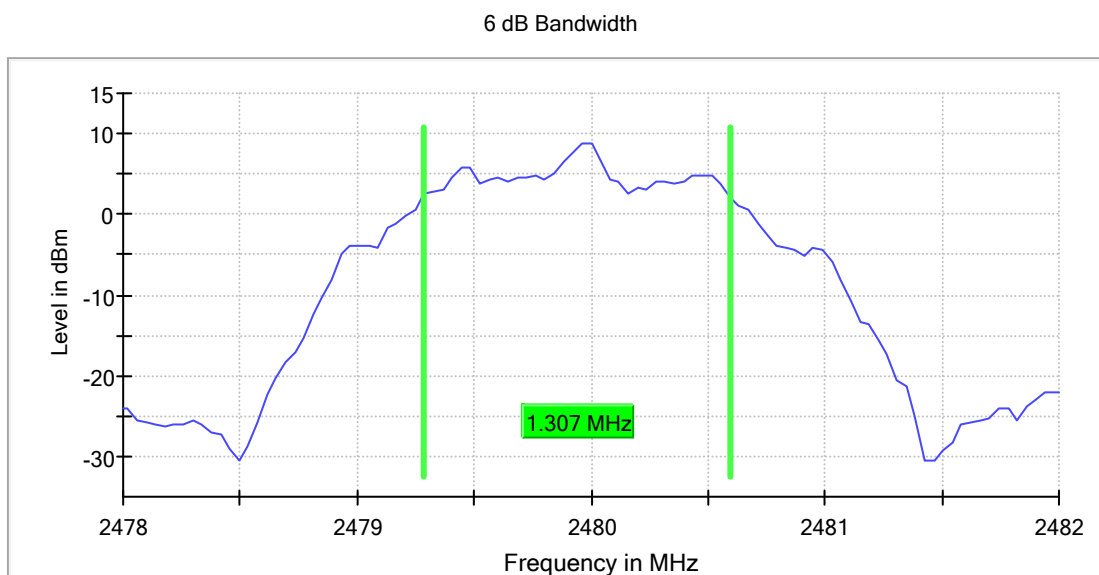
Middle Channel

RBW=100kHz, VBW=300kHz



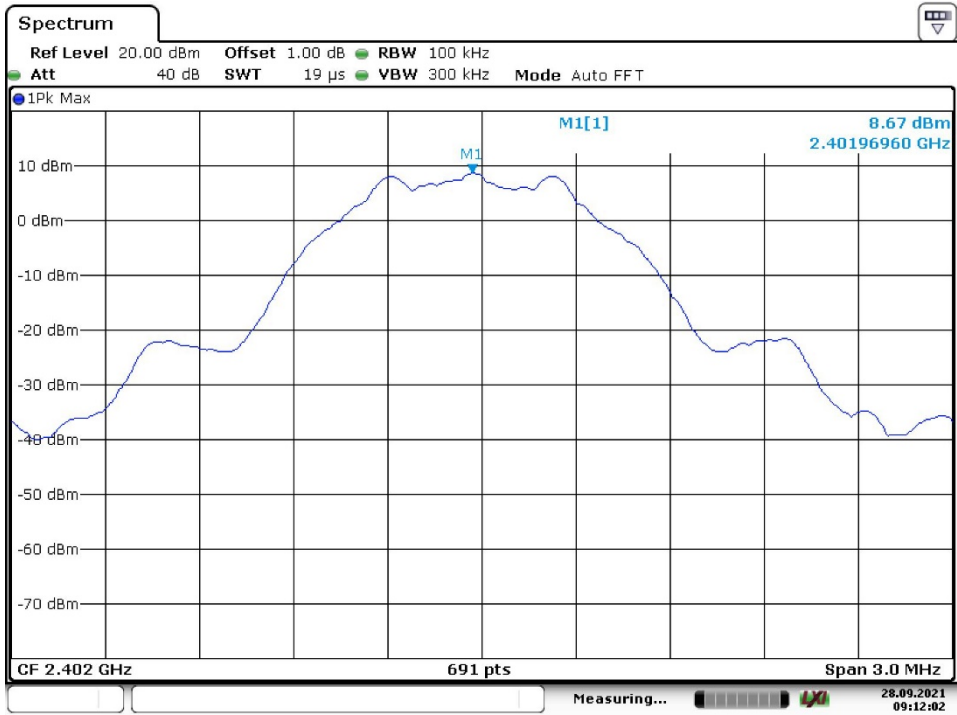
High Channel

RBW=100kHz, VBW=300kHz

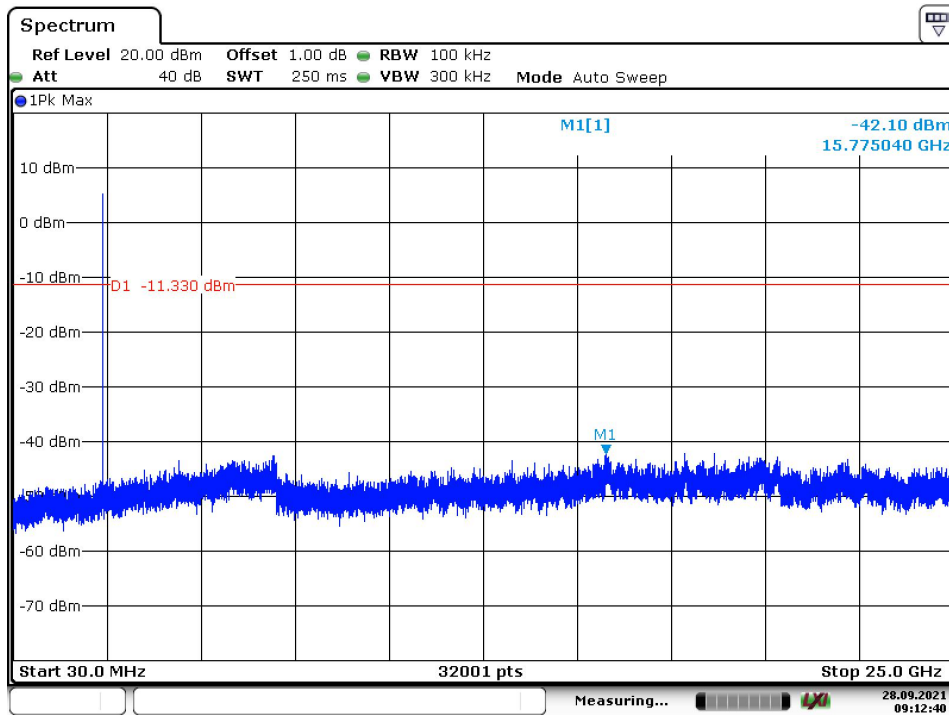


Appendix B.3: Conducted Spurious Emissions Measured in 100 kHz Bandwidth BLE, 1Mbps

Low Channel

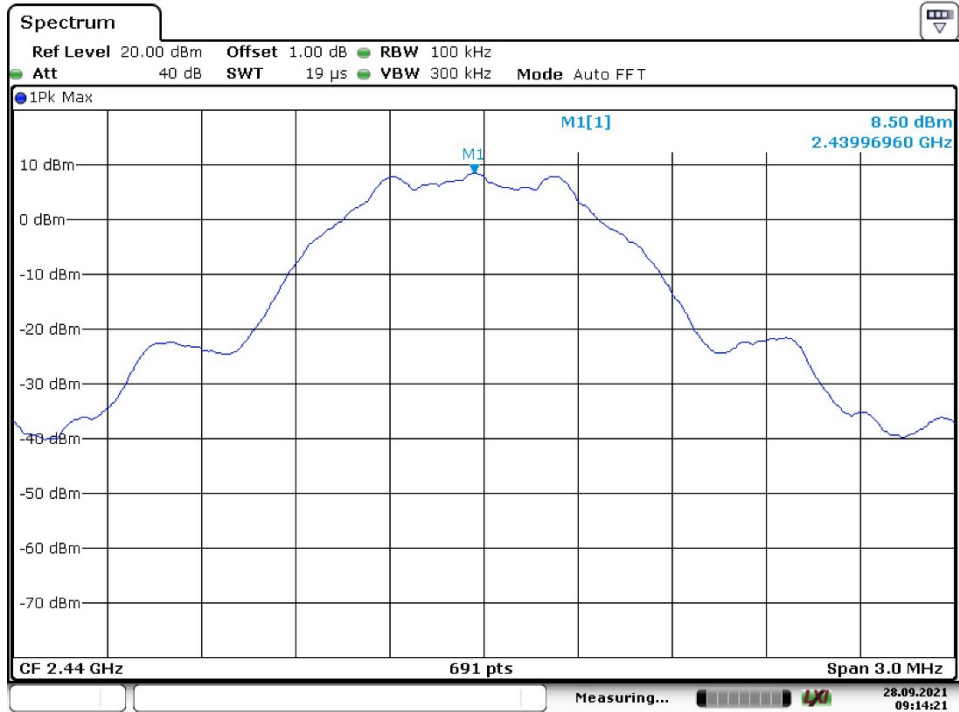


Date: 28.SEP.2021 09:12:02

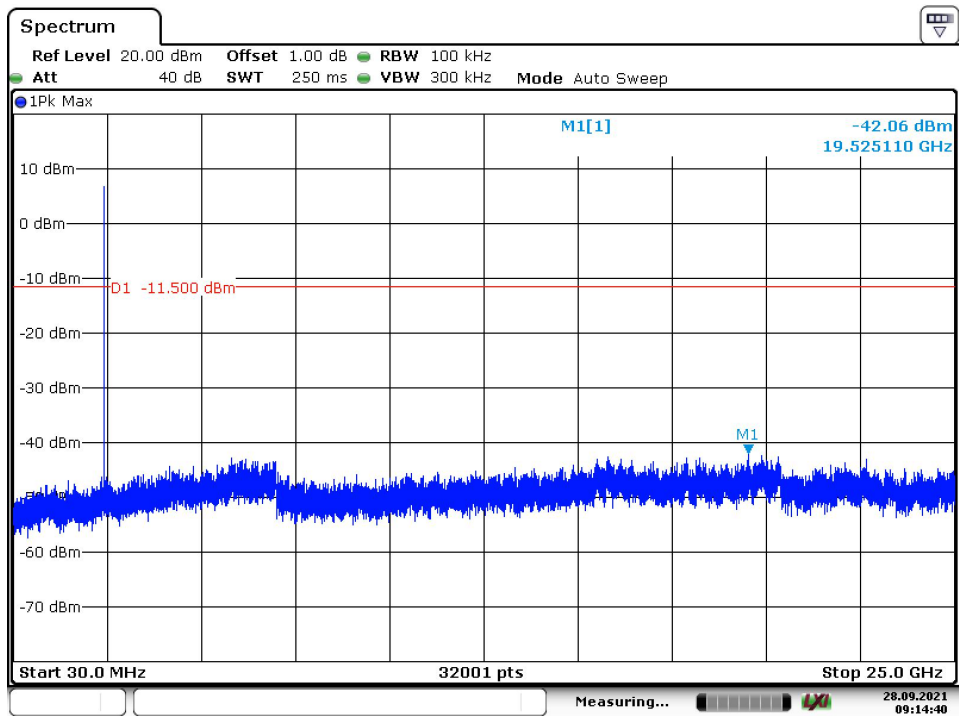


Date: 28.SEP.2021 09:12:40

Middle Channel

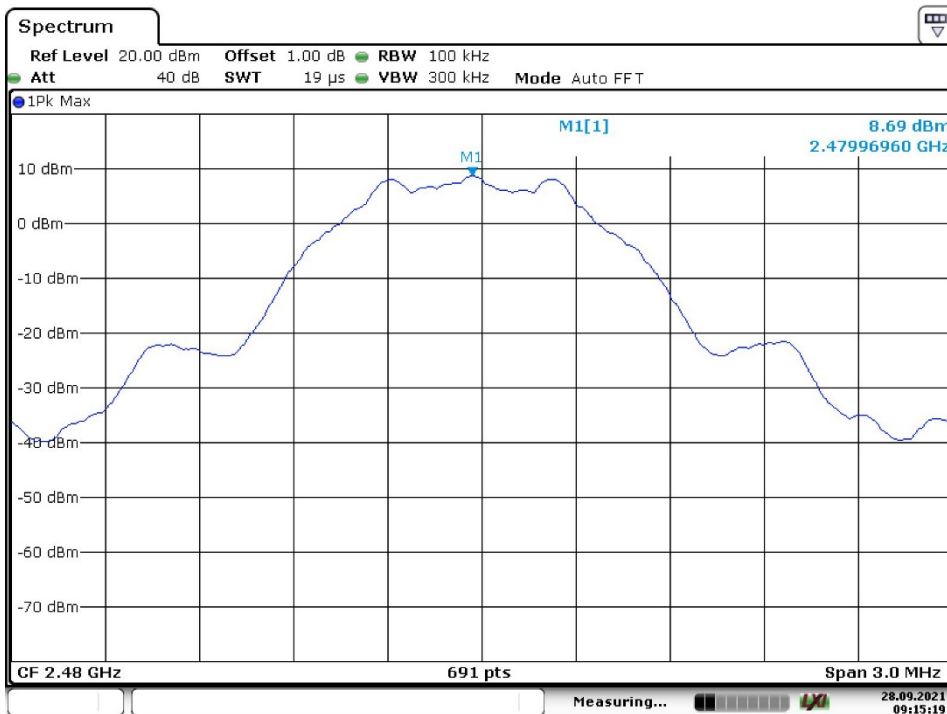


Date: 28.SEP.2021 09:14:21

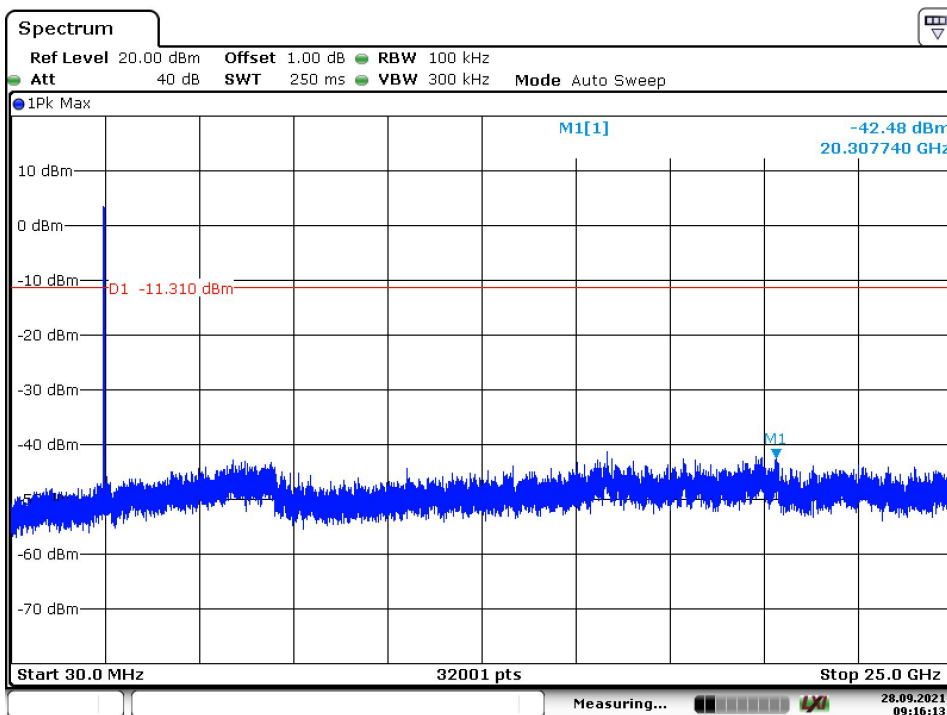


Date: 28.SEP.2021 09:14:40

High Channel

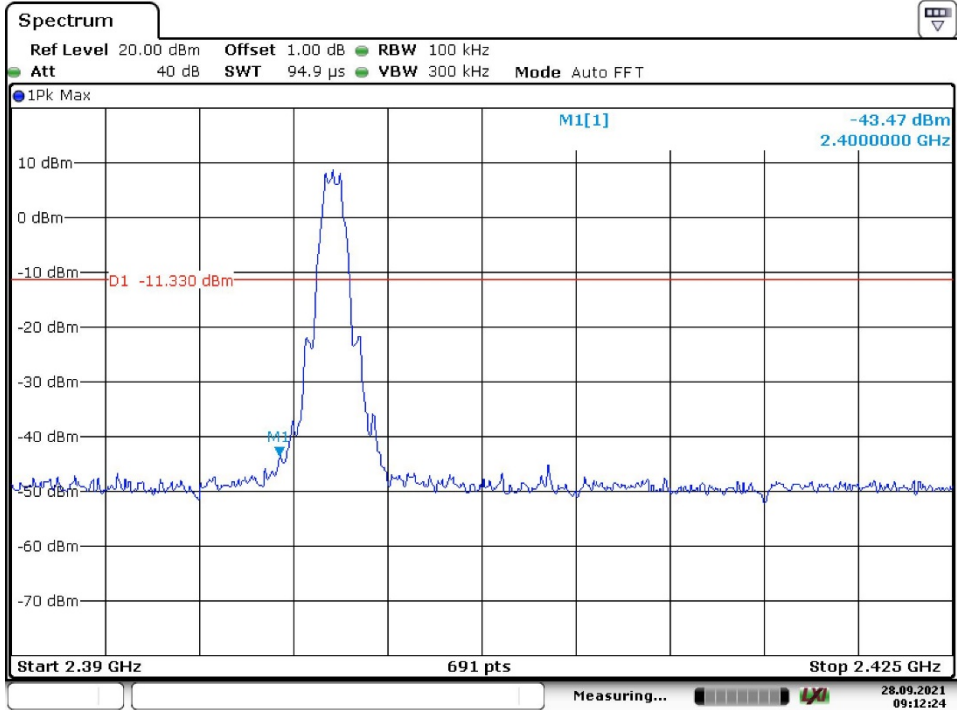


Date: 28.SEP.2021 09:15:19



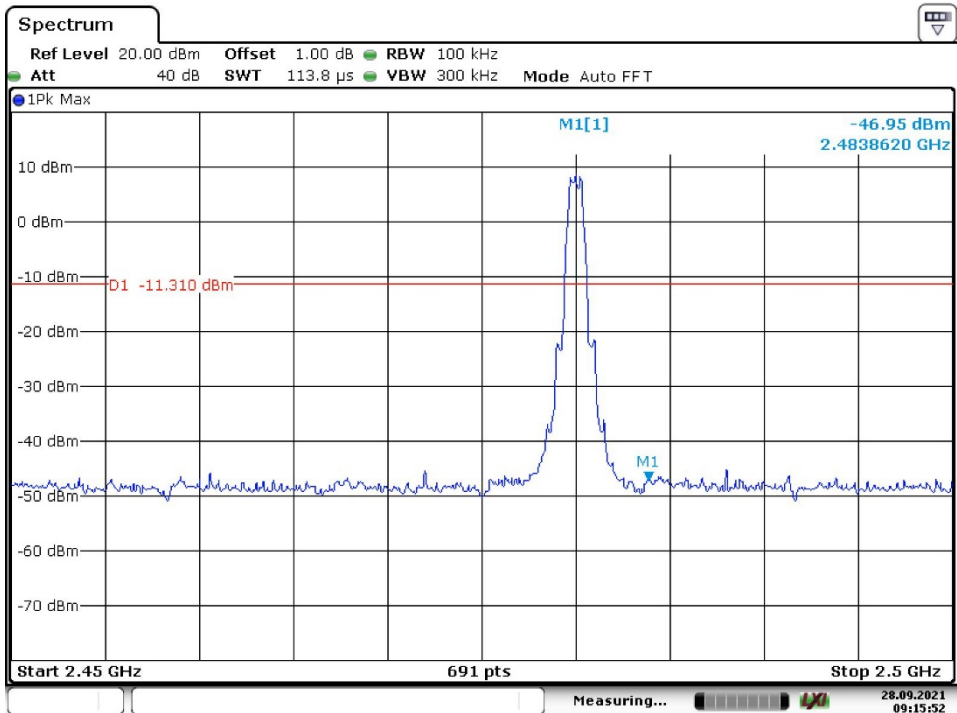
Date: 28.SEP.2021 09:16:13

Low Channel_Band Edge



Date: 28.SEP.2021 09:12:24

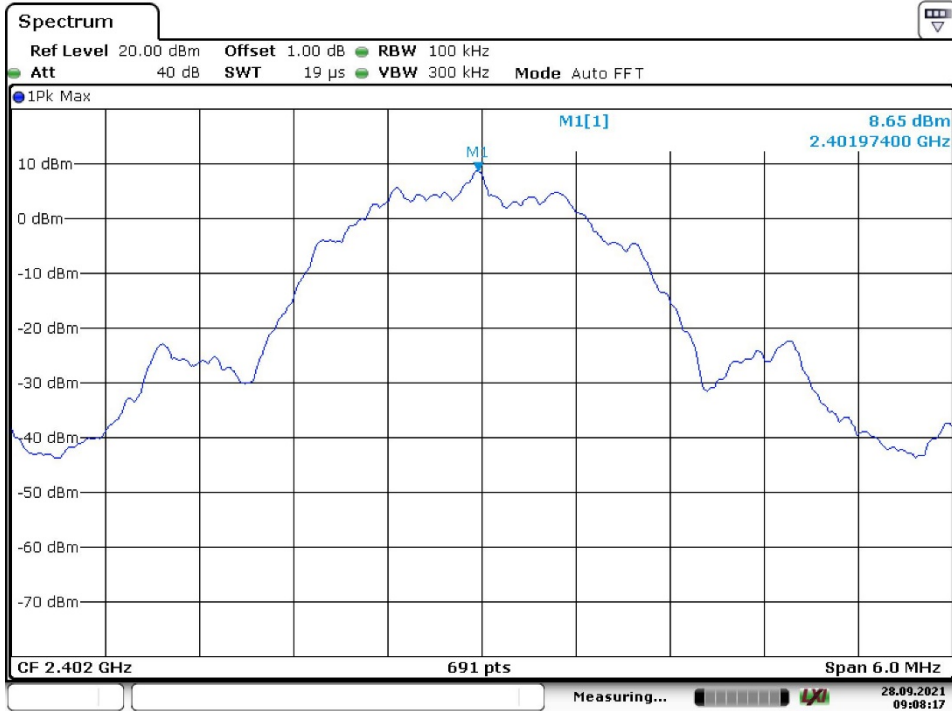
High Channel_Band Edge



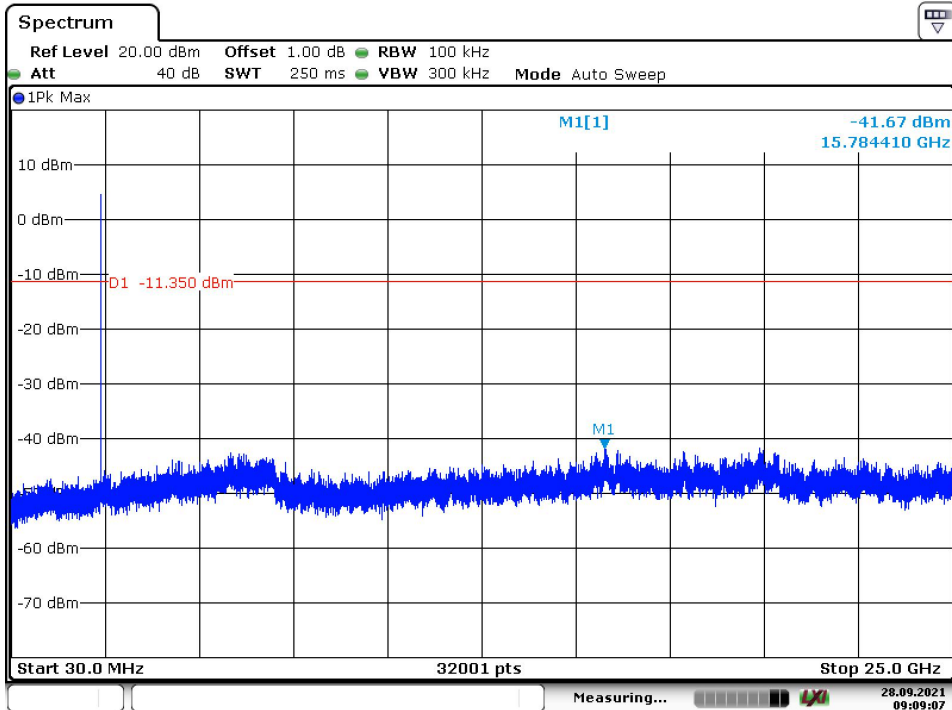
Date: 28.SEP.2021 09:15:52

BLE, 2Mbps

Low Channel

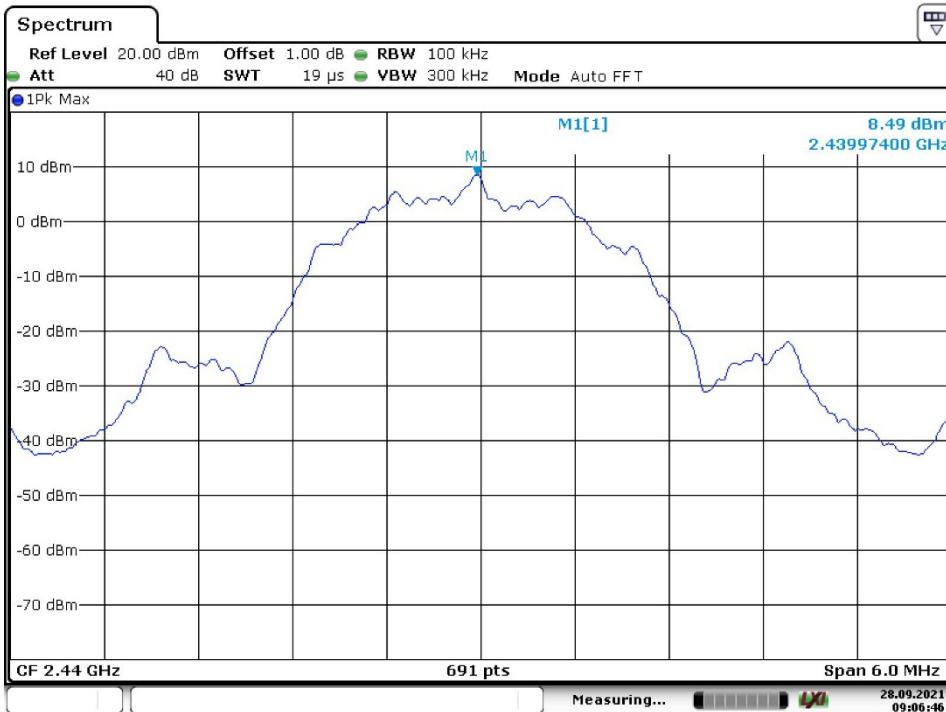


Date: 28.SEP.2021 09:08:17

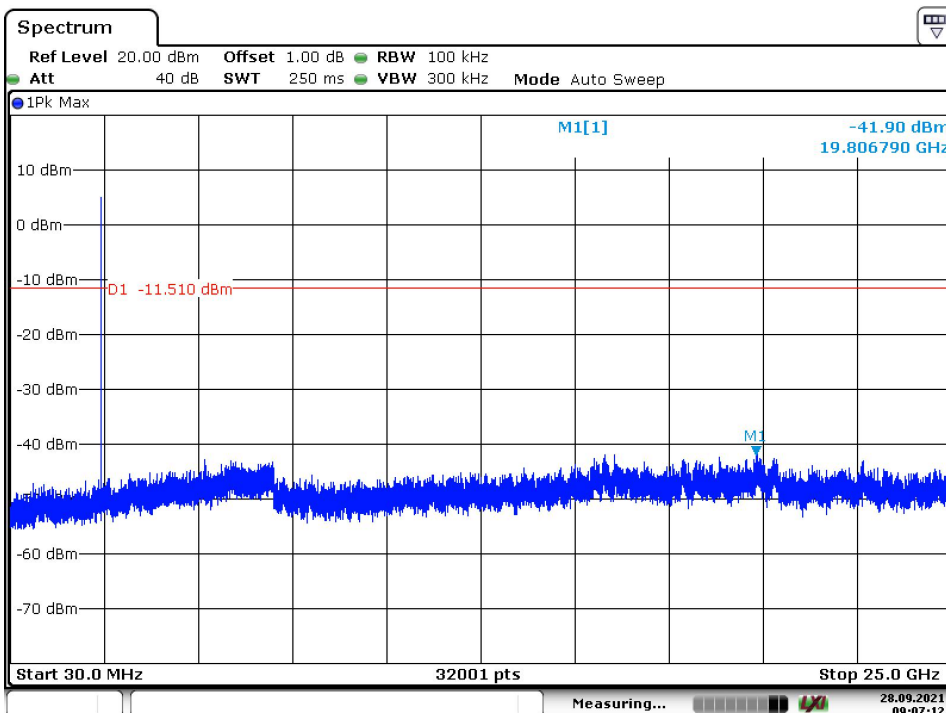


Date: 28.SEP.2021 09:09:07

Middle Channel

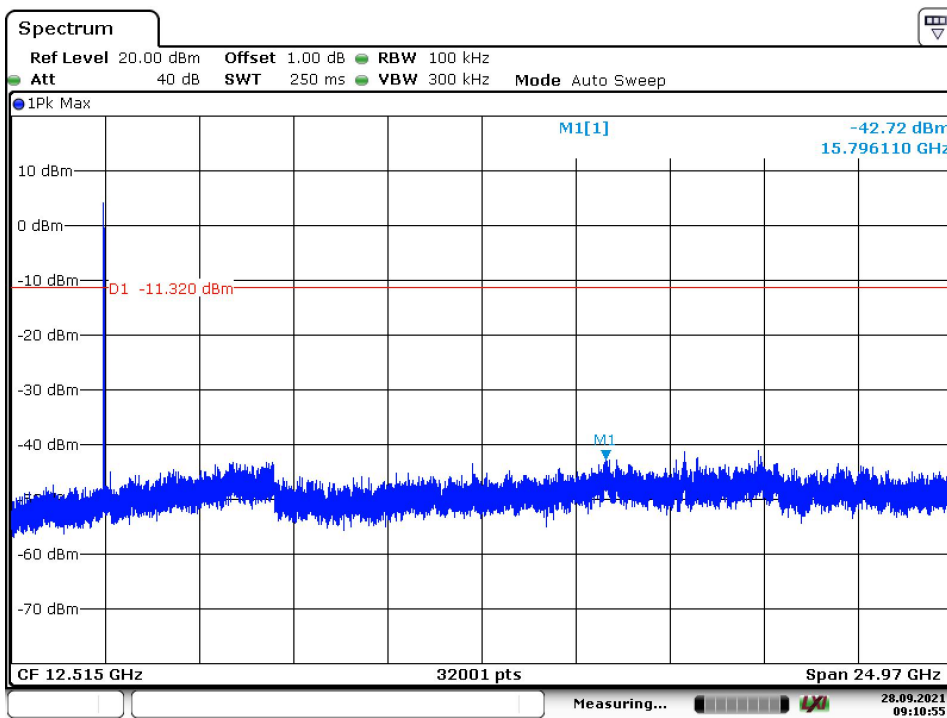
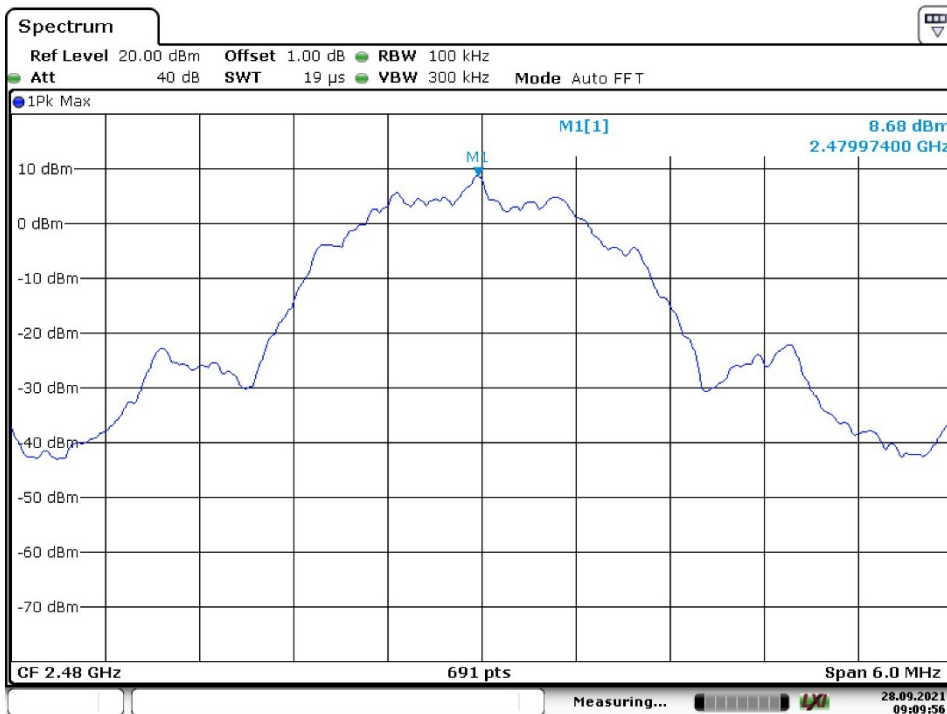


Date: 28.SEP.2021 09:06:45

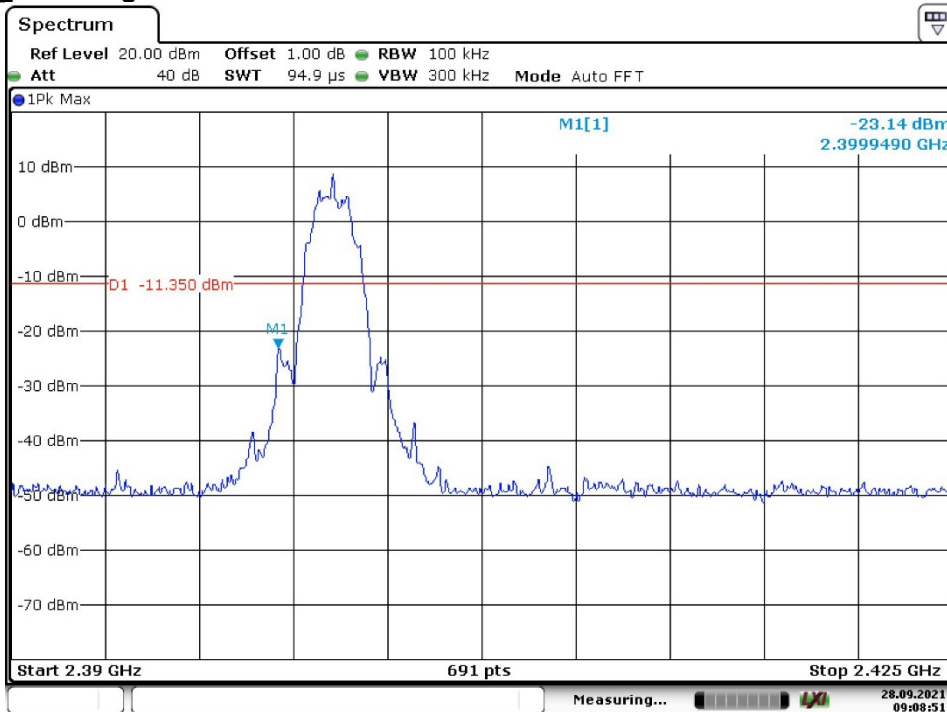


Date: 28.SEP.2021 09:07:12

High Channel

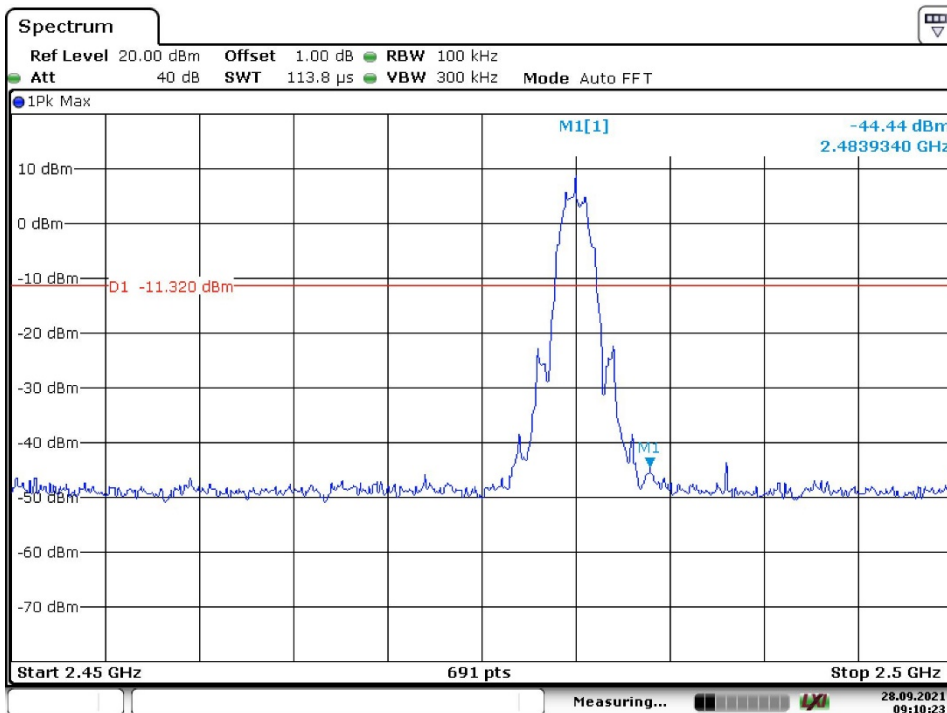


Low Channel_Band Edge



Date: 28.SEP.2021 09:08:51

High Channel_Band Edge



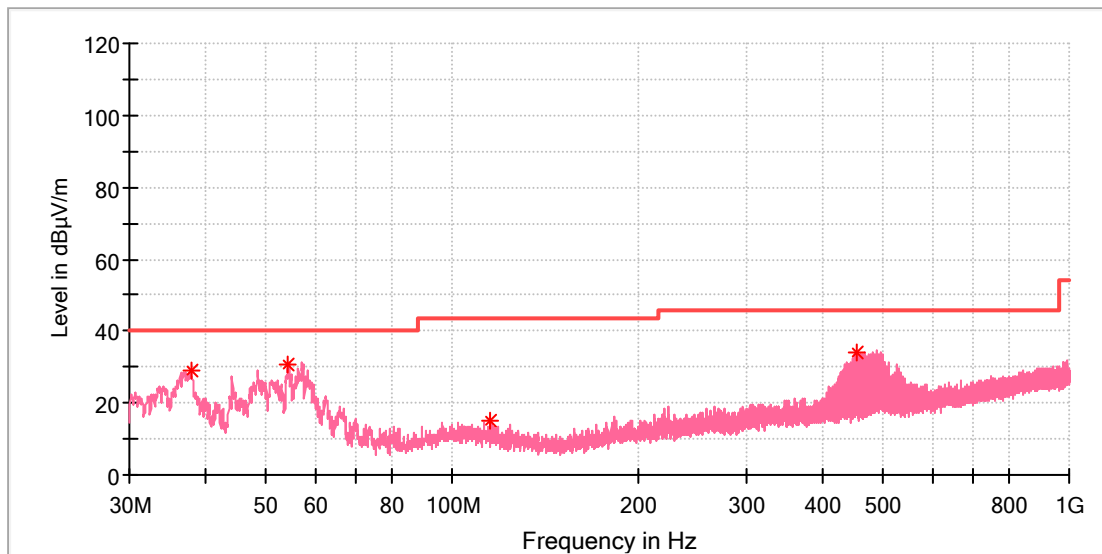
Date: 28.SEP.2021 09:10:23

Appendix B.4: Test Results of Radiated Spurious Emissions

Note 1: Testing was carried out within frequency range 9 kHz to the tenth harmonics. The measurement results below 30MHz and above 18GHz were greater than 20dB below the limit, so only the radiated spurious emissions from 30MHz to 18GHz were reported.

EUT Information

EUT Name: Lenovo Go Wireless ANC Headset
 Model: L12WL
 Test Mode: BLE 1M_Low channel
 Test Voltage:: Battery
 Remark: Temp 23 Humi:45%
 Test Standard: FCC 15.247
 Tested By: Kei Zhang
 Reviewed By: Terry Yin

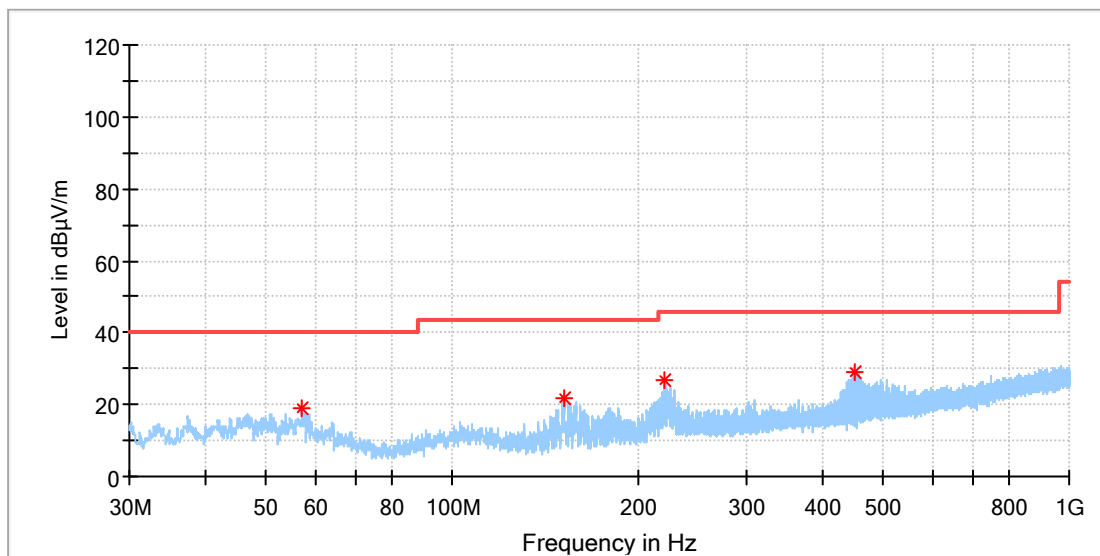


Critical Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
37.760000	28.83	40.00	11.17	100.0	V	107.0	-20.9
54.347000	30.92	40.00	9.08	100.0	V	278.0	-18.4
115.602500	15.06	43.50	28.44	100.0	V	0.0	-19.9
454.035500	34.17	46.00	11.83	100.0	V	194.0	-12.8

EUT Information

EUT Name: Lenovo Go Wireless ANC Headset
 Model: L12WL
 Test Mode: BLE 1M_Low channel
 Test Voltage:: Battery
 Remark: Temp 23 Humi:45%
 Test Standard: FCC 15.247
 Tested By: Kei Zhang
 Reviewed By: Terry Yin

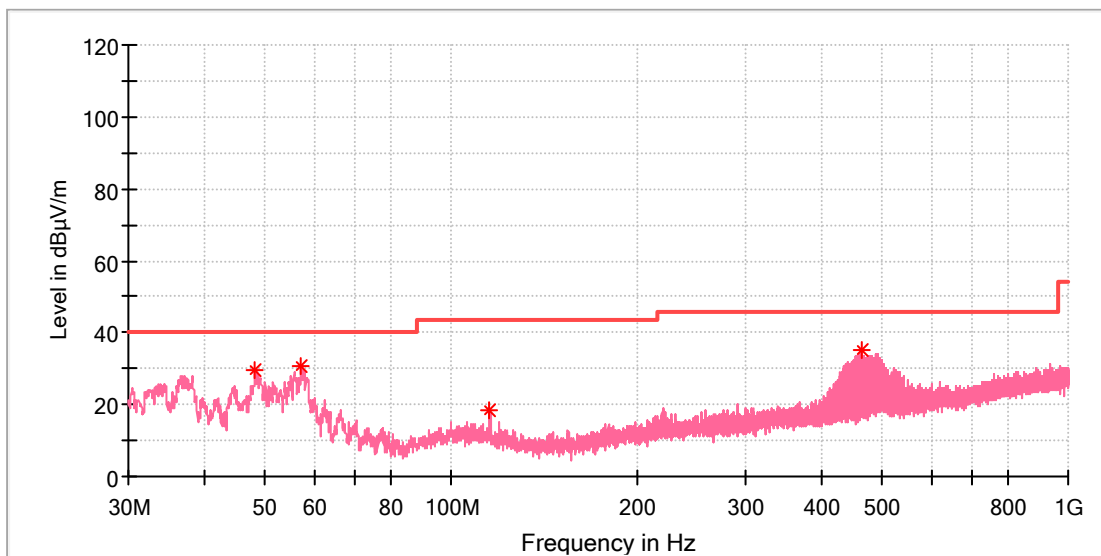


Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
57.063000	19.25	40.00	20.75	100.0	H	185.0	-18.7
151.735000	21.57	43.50	21.93	100.0	H	176.0	-22.1
221.429500	26.62	46.00	19.38	100.0	H	236.0	-18.5
450.010000	29.09	46.00	16.91	100.0	H	203.0	-12.9

EUT Information

EUT Name: Lenovo Go Wireless ANC Headset
 Model: L12WL
 Test Mode: BLE 1M_High channel
 Test Voltage:: Battery
 Remark: Temp 23 Humi:45%
 Test Standard: FCC 15.247
 Tested By: Kei Zhang
 Reviewed By: Terry Yin

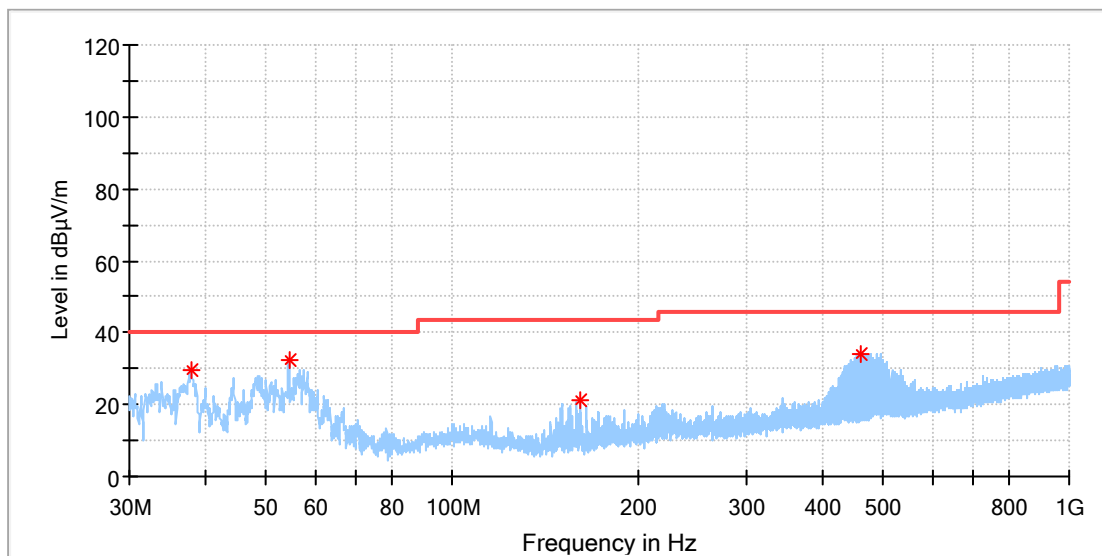


Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
48.187500	29.40	40.00	10.60	100.0	V	38.0	-18.4
57.257000	30.88	40.00	9.12	100.0	V	292.0	-18.7
115.651000	18.56	43.50	24.94	100.0	V	70.0	-19.9
464.026500	35.00	46.00	11.00	100.0	V	185.0	-12.6

EUT Information

EUT Name: Lenovo Go Wireless ANC Headset
 Model: L12WL
 Test Mode: BLE 1M_High channel
 Test Voltage:: Battery
 Remark: Temp 23 Humi:45%
 Test Standard: FCC 15.247
 Tested By: Kei Zhang
 Reviewed By: Terry Yin

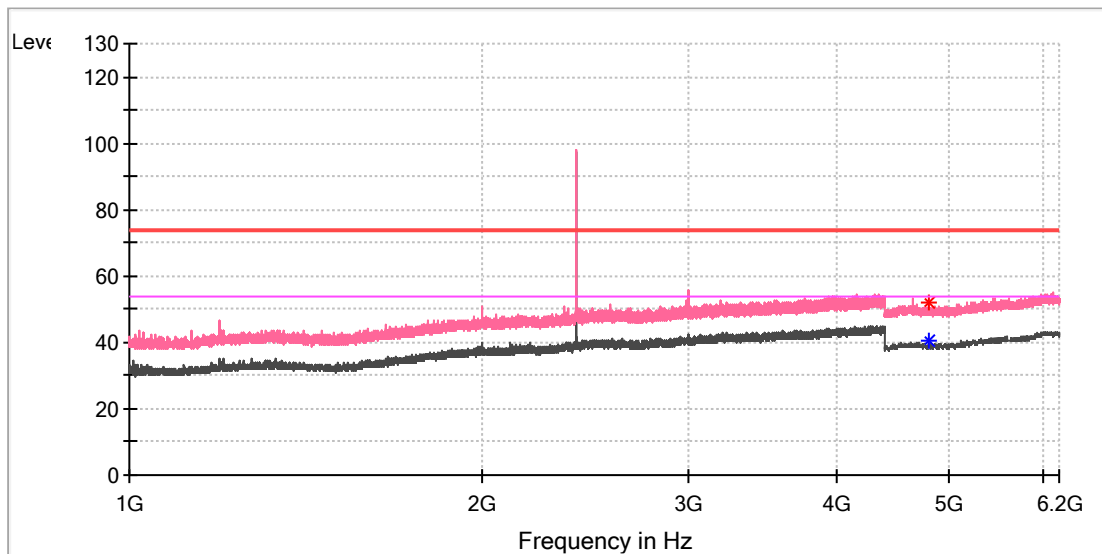


Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
37.808500	29.77	40.00	10.23	100.0	H	288.0	-20.9
54.395500	32.33	40.00	7.67	100.0	H	212.0	-18.4
161.483500	21.05	43.50	22.45	100.0	H	1.0	-21.7
460.001000	34.13	46.00	11.87	100.0	H	193.0	-12.7

EUT Information

EUT Name: Lenovo Go Wireless ANC Headset
 Model: L12WL
 Test Mode: BLE 1M_Low channel
 Test Voltage:: Battery
 Remark: Temp 23 Humi:45%
 Test Standard: FCC 15.247
 Tested By: Kei Zhang
 Reviewed By: Terry Yin

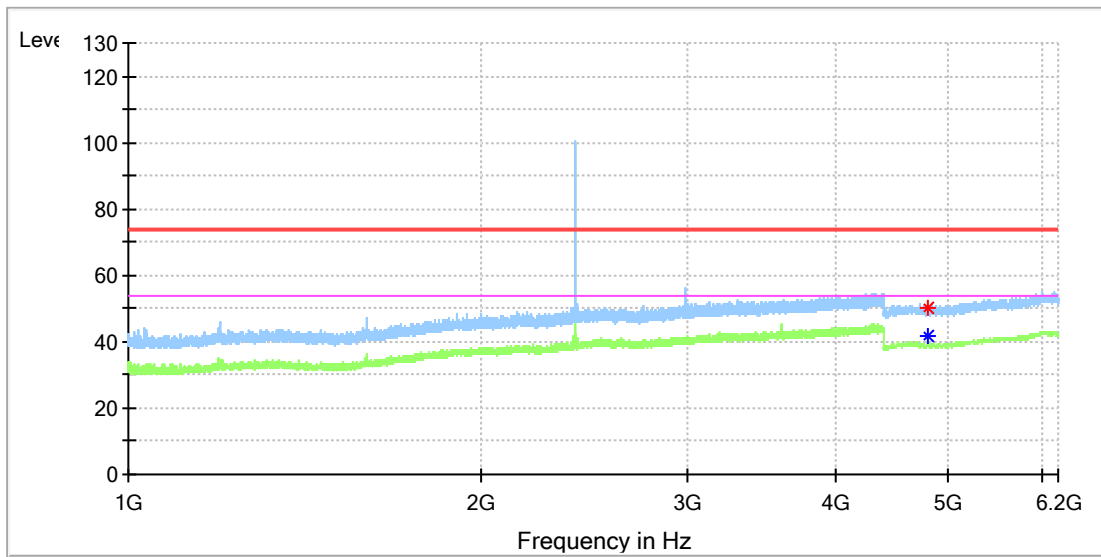


Critical_Freqs

Frequency (MHz)	MaxPeak (dBμV/m)	Average (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
4803.000000	---	40.64	54.00	13.36	100.0	V	110.0	11.8
4804.500000	51.71	---	74.00	22.29	100.0	V	154.0	11.8

EUT Information

EUT Name: Lenovo Go Wireless ANC Headset
 Model: L12WL
 Test Mode: BLE 1M_Low channel
 Test Voltage:: Battery
 Remark: Temp 23 Humi:45%
 Test Standard: FCC 15.247
 Tested By: Kei Zhang
 Reviewed By: Terry Yin

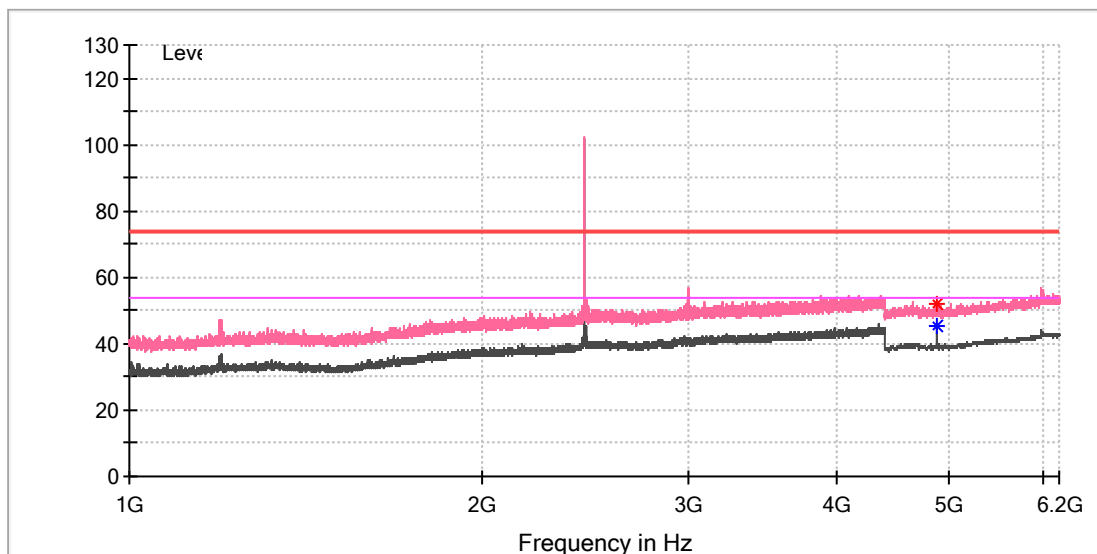


Critical_Freqs

Frequency (MHz)	MaxPeak (dBμV/m)	Average (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
4804.000000	50.47	---	74.00	23.53	100.0	H	315.0	11.8
4804.000000	---	41.50	54.00	12.50	100.0	H	315.0	11.8

EUT Information

EUT Name: Lenovo Go Wireless ANC Headset
 Model: L12WL
 Test Mode: BLE 1M_Mid channel
 Test Voltage:: Battery
 Remark: Temp 23 Humi:45%
 Test Standard: FCC 15.247
 Tested By: Kei Zhang
 Reviewed By: Terry Yin

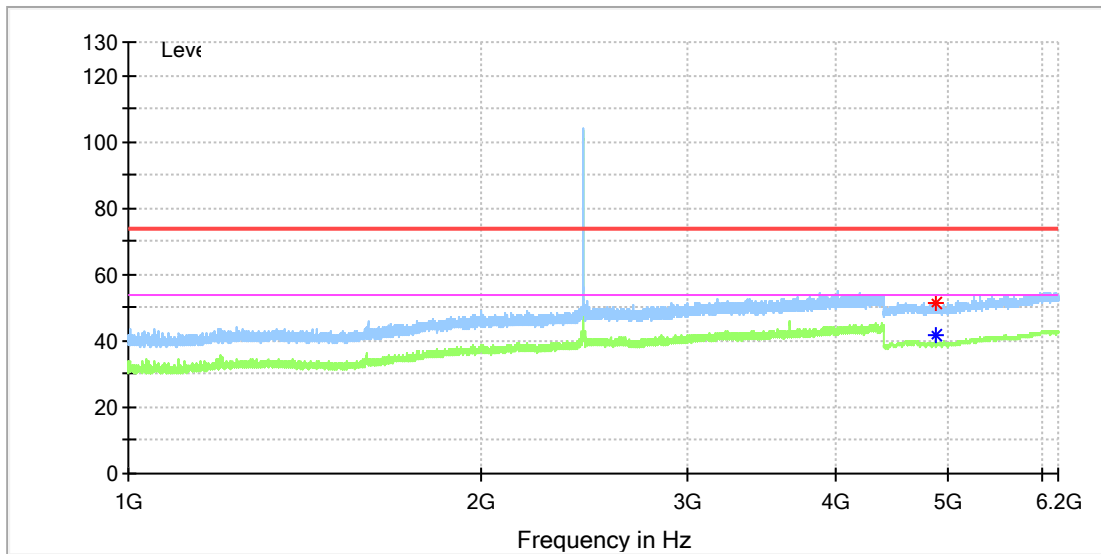


Critical_Freqs

Frequency (MHz)	MaxPeak (dBμV/m)	Average (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
4879.500000	52.21	---	74.00	21.79	100.0	V	127.0	11.8
4880.000000	---	45.13	54.00	8.87	100.0	V	127.0	11.8

EUT Information

EUT Name: Lenovo Go Wireless ANC Headset
 Model: L12WL
 Test Mode: BLE 1M_Mid channel
 Test Voltage:: Battery
 Remark: Temp 23 Humi:45%
 Test Standard: FCC 15.247
 Tested By: Kei Zhang
 Reviewed By: Terry Yin

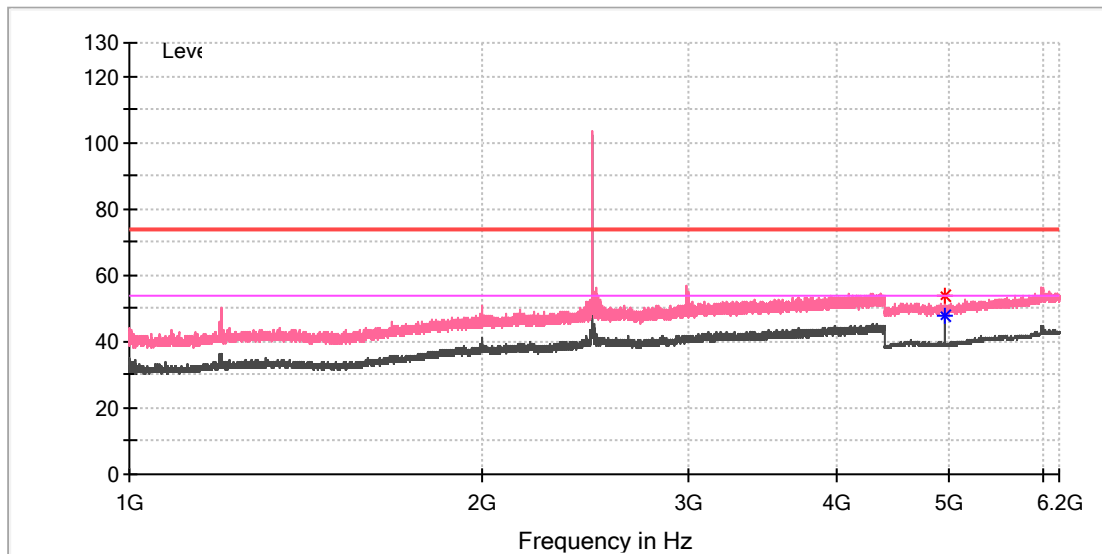


Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
4880.000000	51.14	---	74.00	22.86	100.0	H	201.0	11.8
4880.000000	---	41.82	54.00	12.18	100.0	H	201.0	11.8

EUT Information

EUT Name: Lenovo Go Wireless ANC Headset
 Model: L12WL
 Test Mode: BLE 1M_High channel
 Test Voltage:: Battery
 Remark: Temp 23 Humi:45%
 Test Standard: FCC 15.247
 Tested By: Kei Zhang
 Reviewed By: Terry Yin

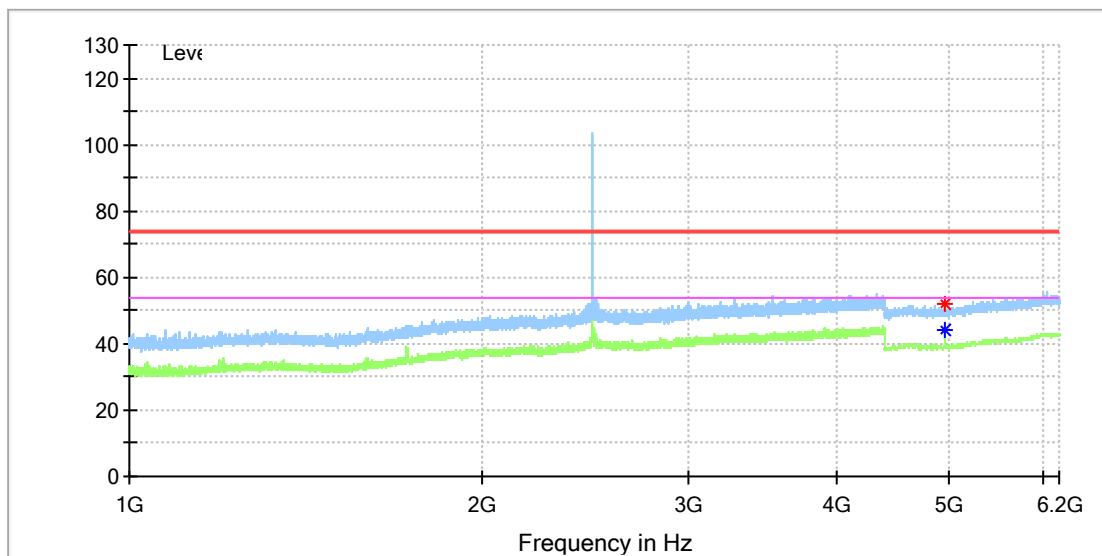


Critical Freqs

Frequency (MHz)	MaxPeak (dBμV/m)	Average (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
4959.000000	53.80	---	74.00	20.20	100.0	V	132.0	11.8
4960.000000	---	47.61	54.00	6.39	100.0	V	118.0	11.8

EUT Information

EUT Name: Lenovo Go Wireless ANC Headset
 Model: L12WL
 Test Mode: BLE 1M_High channel
 Test Voltage:: Battery
 Remark: Temp 23 Humi:45%
 Test Standard: FCC 15.247
 Tested By: Kei Zhang
 Reviewed By: Terry Yin

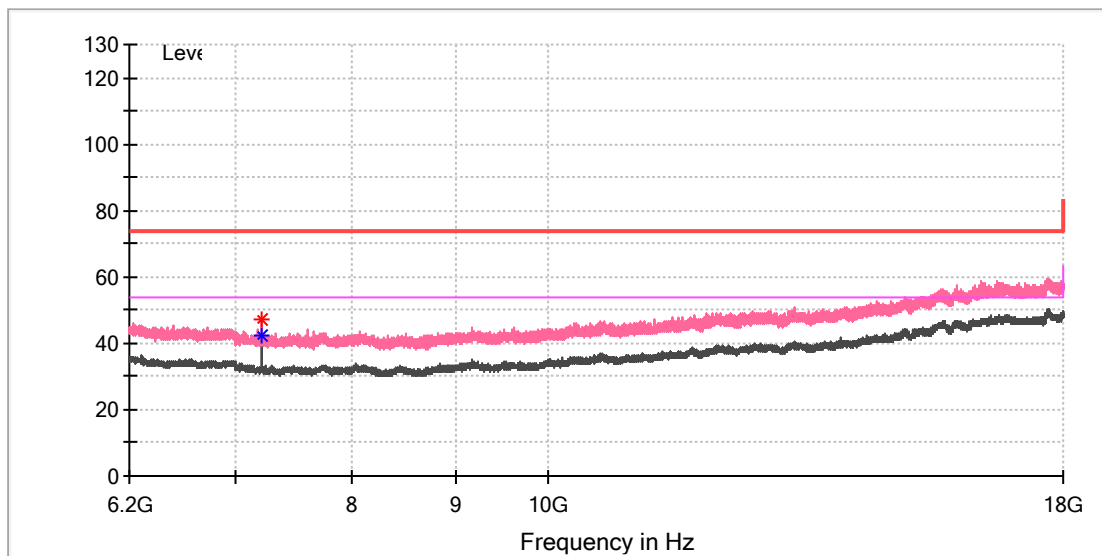


Critical_Freqs

Frequency (MHz)	MaxPeak (dBμV/m)	Average (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
4959.500000	52.16	---	74.00	21.84	100.0	H	75.0	11.8
4959.500000	---	44.15	54.00	9.85	100.0	H	75.0	11.8

EUT Information

EUT Name: Lenovo Go Wireless ANC Headset
 Model: L12WL
 Test Mode: BLE 1M_Low channel
 Test Voltage:: Battery
 Remark: Temp 23 Humi:45%
 Test Standard: FCC 15.247
 Tested By: Kei Zhang
 Reviewed By: Terry Yin

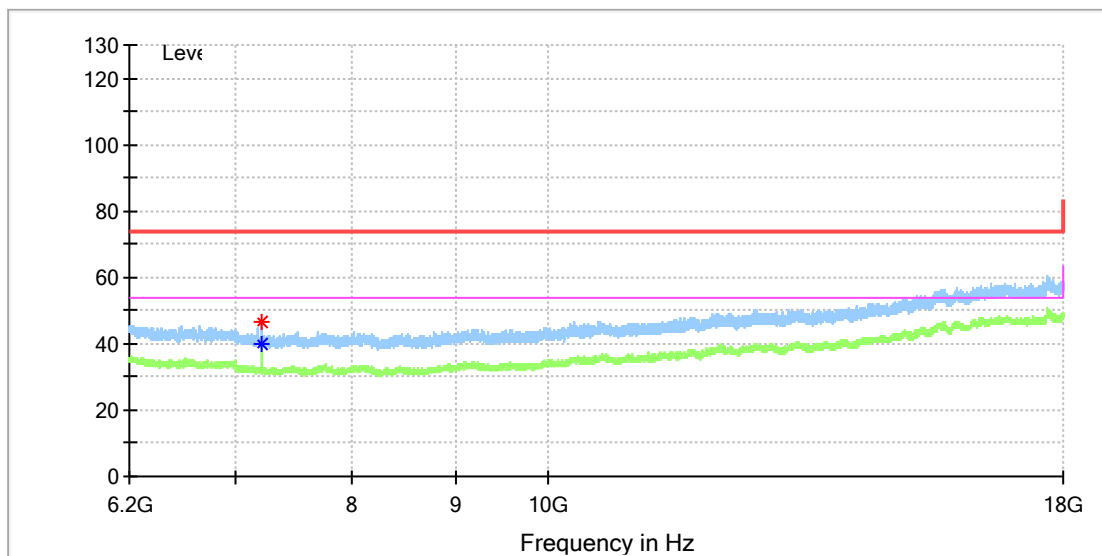


Critical Freqs

Frequency (MHz)	MaxPeak (dBμV/m)	Average (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
7205.458333	---	42.51	54.00	11.49	100.0	V	293.0	8.8
7206.933333	47.31	---	74.00	26.69	100.0	V	293.0	8.8

EUT Information

EUT Name: Lenovo Go Wireless ANC Headset
 Model: L12WL
 Test Mode: BLE 1M_Low channel
 Test Voltage:: Battery
 Remark: Temp 23 Humi:45%
 Test Standard: FCC 15.247
 Tested By: Kei Zhang
 Reviewed By: Terry Yin

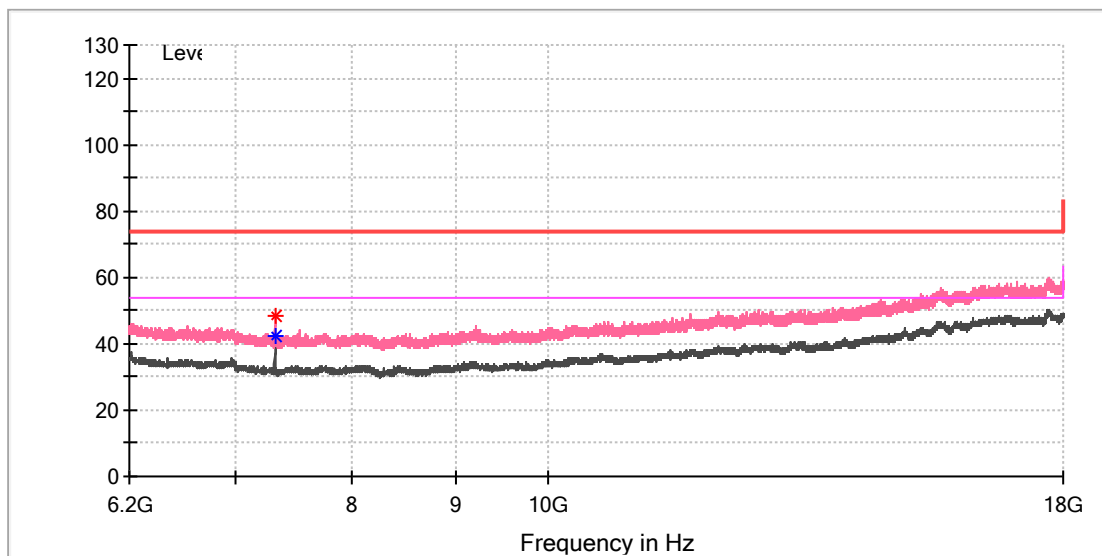


Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
7204.966667	46.33	---	74.00	27.67	100.0	H	225.0	8.8
7205.950000	---	39.85	54.00	14.15	100.0	H	225.0	8.8

EUT Information

EUT Name: Lenovo Go Wireless ANC Headset
 Model: L12WL
 Test Mode: BLE 1M_Mid channel
 Test Voltage:: Battery
 Remark: Temp 23 Humi:45%
 Test Standard: FCC 15.247
 Tested By: Kei Zhang
 Reviewed By: Terry Yin

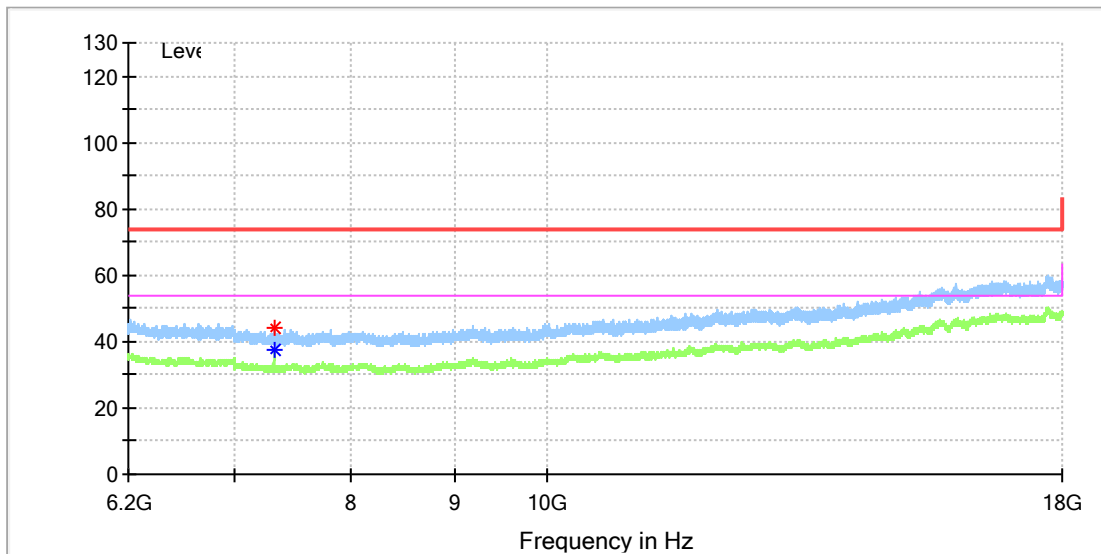


Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
7320.016667	48.36	---	74.00	25.64	100.0	V	296.0	8.2
7320.016667	---	42.25	54.00	11.75	100.0	V	296.0	8.2

EUT Information

EUT Name: Lenovo Go Wireless ANC Headset
 Model: L12WL
 Test Mode: BLE 1M_Mid channel
 Test Voltage:: Battery
 Remark: Temp 23 Humi:45%
 Test Standard: FCC 15.247
 Tested By: Kei Zhang
 Reviewed By: Terry Yin

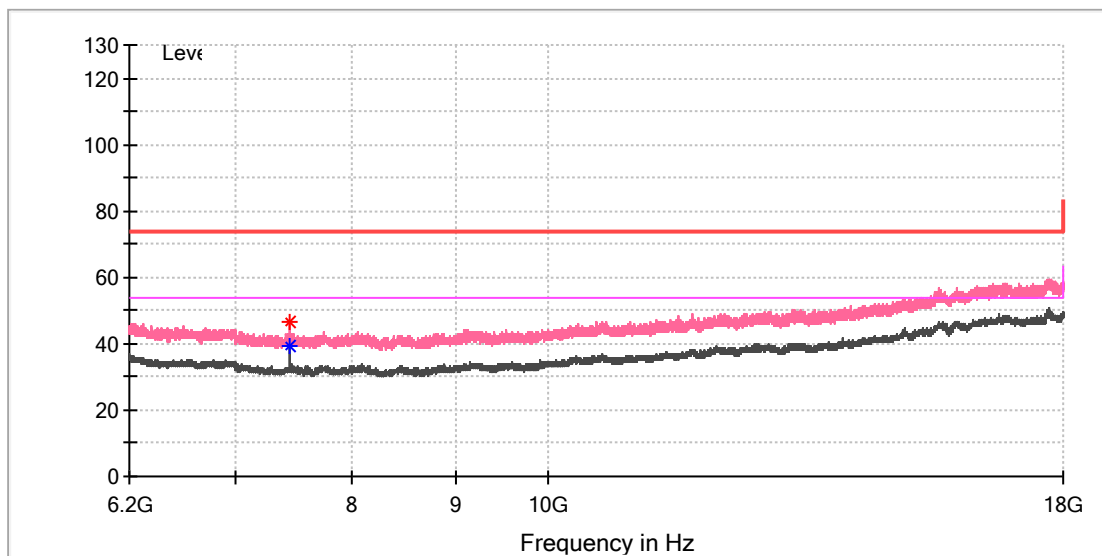


Critical Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
7319.033333	---	37.65	54.00	16.35	100.0	H	292.0	8.2
7321.000000	43.87	---	74.00	30.13	100.0	H	166.0	8.2

EUT Information

EUT Name: Lenovo Go Wireless ANC Headset
 Model: L12WL
 Test Mode: BLE 1M_High channel
 Test Voltage:: Battery
 Remark: Temp 23 Humi:45%
 Test Standard: FCC 15.247
 Tested By: Kei Zhang
 Reviewed By: Terry Yin

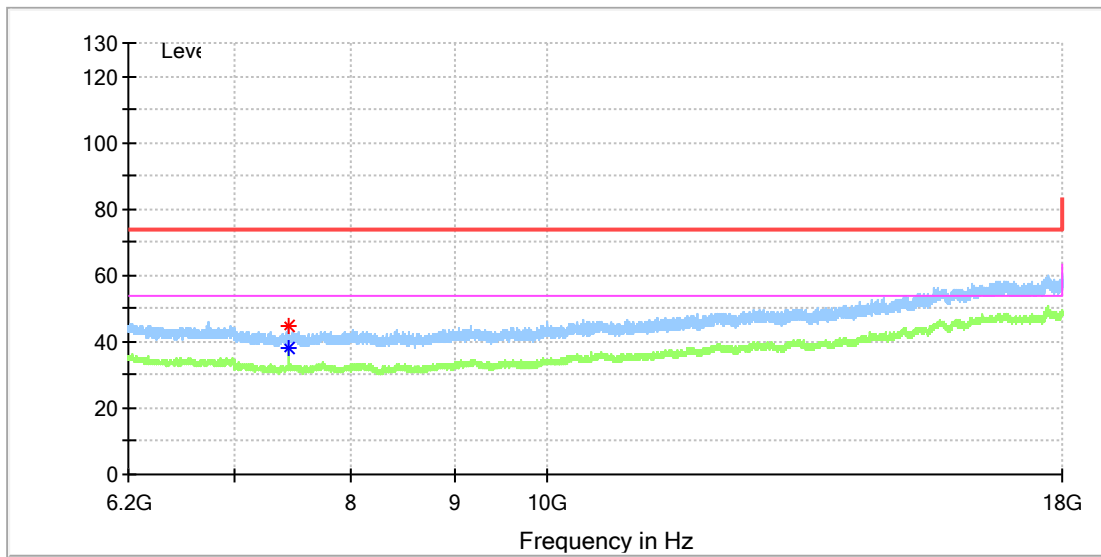


Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
7439.000000	46.76	---	74.00	27.24	100.0	V	308.0	8.4
7440.475000	---	39.30	54.00	14.70	100.0	V	37.0	8.4

EUT Information

EUT Name: Lenovo Go Wireless ANC Headset
 Model: L12WL
 Test Mode: BLE 1M_High channel
 Test Voltage:: Battery
 Remark: Temp 23 Humi:45%
 Test Standard: FCC 15.247
 Tested By: Kei Zhang
 Reviewed By: Terry Yin



Critical_Freqs

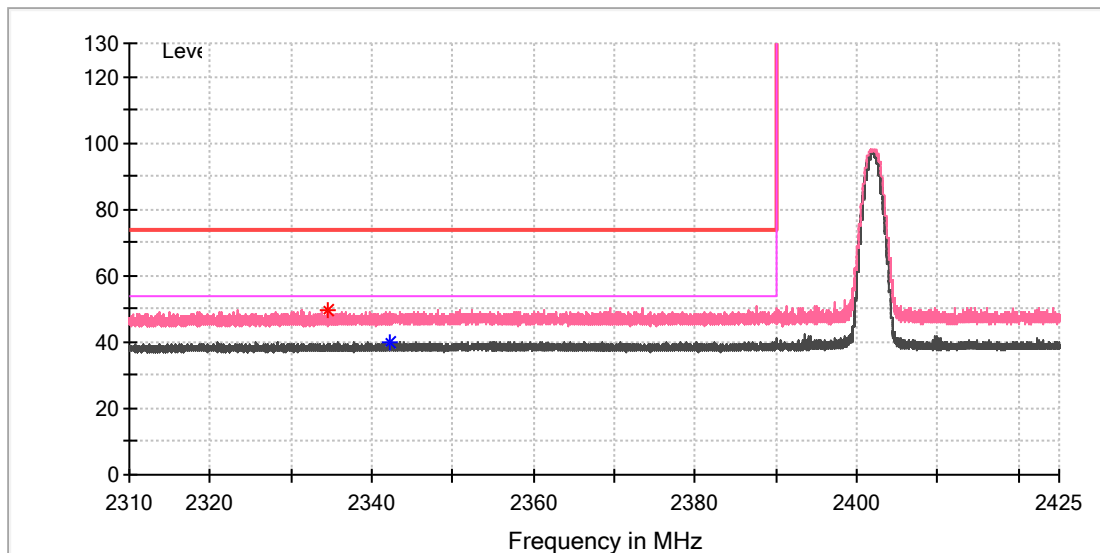
Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
7440.475000	---	38.37	54.00	15.63	100.0	H	0.0	8.4
7440.475000	44.82	---	74.00	29.18	100.0	H	0.0	8.4

Appendix B.5: Test Results of Radiated Emissions in Restricted Bands

Low Channel

EUT Information

EUT Name:	Lenovo Go Wireless ANC Headset
Model:	L12WL
Test Mode:	BLE 1M_Low channel
Test Voltage::	Battery
Remark:	Temp 23 Humi:45%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin

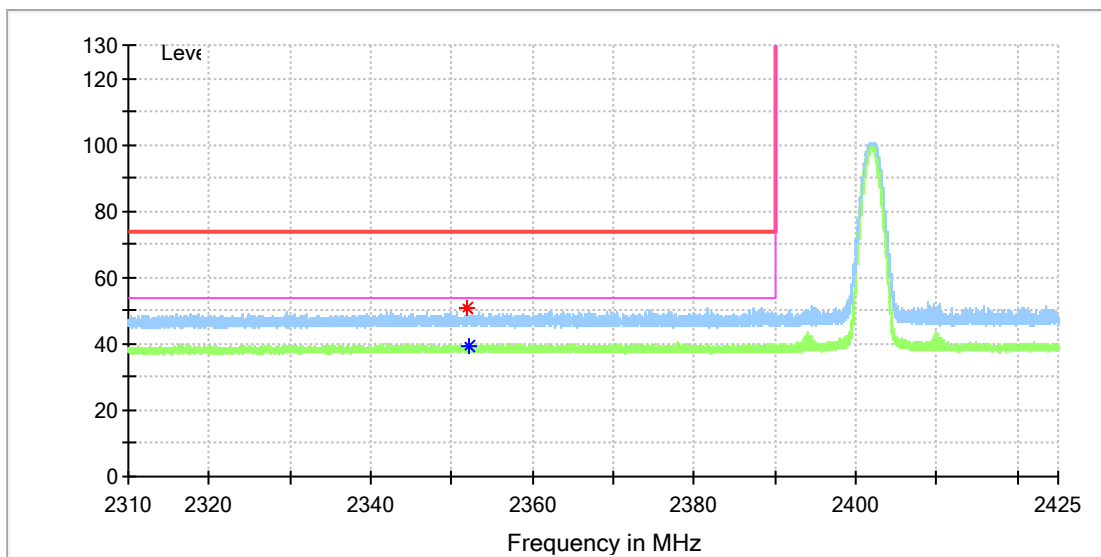


Critical_Freqs

Frequency (MHz)	MaxPeak (dBμV/m)	Average (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
2334.598500	49.52	---	74.00	24.48	100.0	V	90.0	6.8
2342.274750	---	39.84	54.00	14.16	100.0	V	185.0	6.8

EUT Information

EUT Name: Lenovo Go Wireless ANC Headset
 Model: L12WL
 Test Mode: BLE 1M_Low channel
 Test Voltage:: Battery
 Remark: Temp 23 Humi:45%
 Test Standard: FCC 15.247
 Tested By: Kei Zhang
 Reviewed By: Terry Yin



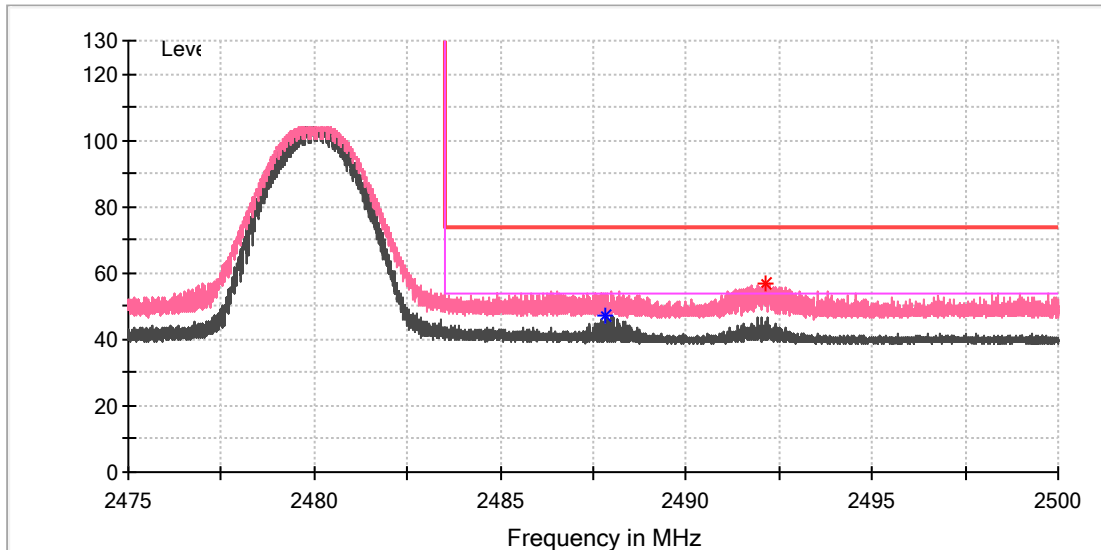
Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
2351.888750	50.90	---	74.00	23.10	100.0	H	264.0	6.9
2352.061250	---	39.55	54.00	14.45	100.0	H	358.0	6.9

High Channel

EUT Information

EUT Name:	Lenovo Go Wireless ANC Headset
Model:	L12WL
Test Mode:	BLE 1M_High channel
Test Voltage::	Battery
Remark:	Temp 23 Humi:45%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin

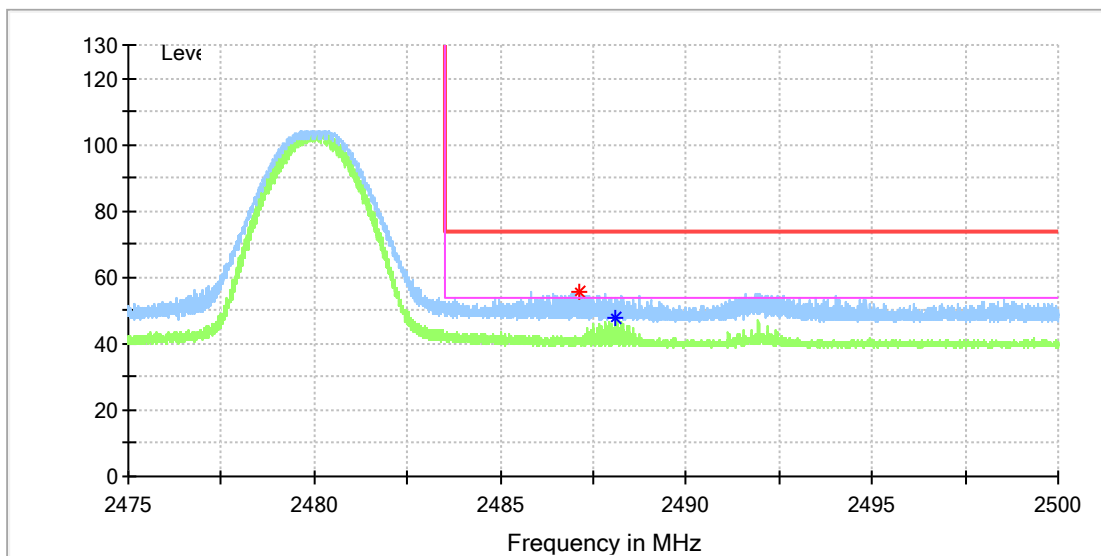


Critical Freqs

Frequency (MHz)	MaxPeak (dBμV/m)	Average (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
2487.804000	---	47.39	54.00	6.61	100.0	V	149.0	7.4
2492.156000	56.64	---	74.00	17.36	100.0	V	103.0	7.4

EUT Information

EUT Name: Lenovo Go Wireless ANC Headset
 Model: L12WL
 Test Mode: BLE 1M_High channel
 Test Voltage:: Battery
 Remark: Temp 23 Humi:45%
 Test Standard: FCC 15.247
 Tested By: Kei Zhang
 Reviewed By: Terry Yin



Critical_Freqs

Frequency (MHz)	MaxPeak (dBμV/m)	Average (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
2487.120000	55.52	---	74.00	18.48	100.0	H	277.0	7.4
2488.078000	---	47.51	54.00	6.49	100.0	H	277.0	7.4

Appendix B.6: Test Results of Conducted Emissions on AC Mains