TECHNICAL REPORT

Report No.: FCC 1908237-01
File Reference No.: 2019-09-04

Applicant: Richen Industrial Co., Ltd.

Product: GuruGear Behind the neck waterproof IPX5 BT Headphones

Model No.: A3, A3B, NPFU0

Trademark: ILE, GuruGear

Test Standards: FCC Part 15.247

Test Result: It is herewith confirmed and found to comply with the requirements set up by ANSI C63.10, FCC Part 15.247 for the evaluation of electromagnetic compatibility

Approved By

Jack Chung

Jack Chung

Manager

Dated: September 04, 2019

Results appearing herein relate only to the sample tested
The technical reports is issued errors and omissions exempt and is subject to withdrawal at

SHENZHEN TIMEWAY TESTING LABORATORIES

Zone C, 1st Floor, Block B, Jun Xiang Da Building, Zhongshan Park Road West, Tong Le Village, Nanshan District, Shenzhen, China
Tel (755) 83448688, Fax (755) 83442996, E-Mail:info@timeway-lab.com

Special Statement：

The testing quality ability of our laboratory meet with "Quality Law of People's Republic of China" Clause 19.

The testing quality system of our laboratory meets with ISO/IEC-17025 requirements, which is approved by CNAS. This approval result is accepted by MRA of APLAC.

Our test facility is recognized, certified, or accredited by the following organizations:

CNAS-LAB Code: L2292

The EMC Laboratory has been assessed and in compliance with CNAS-CL01 accreditation criteria for testing Laboratories (identical to ISO/IEC 17025:2005 General Requirements) for the Competence of testing Laboratories.

FCC-Registration No.: 744189

The EMC Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications commission. The acceptance letter from the FCC is maintained in our files. Registration No.: 744189.

Industry Canada (IC) —Registration No.:5205A

The EMC Laboratory has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 5205A.

A2LA (Certification Number:5013.01)

The EMC Laboratory has been accredited by the American Association for Laboratory Accreditation (A2LA). Certification Number:5013.01

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Test Report Conclusion

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1.0 **General Details**

1.1 Test Lab Details

Name : SHENZHEN TIMEWAY TESTING LABORATORIES.

Address: Zone C, 1st Floor, Block B, Jun Xiang Da Building, Zhongshan Park Road West, Tong Le Village, Nanshan District, Shenzhen, China

Telephone: (755) 83448688

Fax: (755) 83442996

Site Listed with Federal Communications commission (FCC)

Registration Number:744189

For 3m Anechoic Chamber

Site Listed with Industry Canada of Ottawa, Canada

Registration Number: IC: 5205A

For 3m Anechoic Chamber

1.2 Applicant Details

Applicant: Richen Industrial Co., Ltd.

Address: Rm.1688, Building A, Bantian International Center, No.5 Huancheng South Street, Longgang, 518129, Shenzhen

Telephone: --

Fax: --

1.3 Description of EUT

Product: GuruGear Behind the neck waterproof IPX5 BT Headphones

Manufacturer: Richen Industrial Co., Ltd.

Address: Rm.1688, Building A, Bantian International Center, No.5 Huancheng South Street, Longgang, 518129, Shenzhen

Brand Name: ILE, GuruGear

Model Number: A3

Additional Model Number: A3B, NPFU0

Type of Modulation GFSK, Л/4DQPSK, 8DPSK for Bluetooth

Frequency range 2402-2480MHz for Bluetooth

Channel Spacing 1MHz for Bluetooth

Frequency Selection By software

Channel Number 79 channel for Bluetooth

Antenna: Ceramic antenna used. The gain of the antennas is -0.8dBi

Input: DC5V or Built-in 3.7V, 150mAh Li-ion battery

1.4 Submitted Sample: 1 Samples

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1.5 Test Duration

2019-08-28 to 2019-09-04

1.6 Test Uncertainty

Conducted Emissions Uncertainty =3.6dB

Radiated Emissions below 1GHz Uncertainty =4.7dB

Radiated Emissions above 1GHz Uncertainty =6.0dB

Conducted Power Uncertainty =6.0dB

Occupied Channel Bandwidth Uncertainty =5%

1.7 Test Engineer

The sample tested by Terry Tang

Print Name: Terry Tang

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2.0 Test Equipment					
Instrument Type	Manufacturer	Model	Serial No.	Date of Cal.	Due Date
ESPI Test Receiver	R&S	ESPI 3	100379	2019-06-21	2020-06-20
LISN	R&S	EZH3-Z5	100294	2019-06-21	2020-06-20
LISN	R&S	EZH3-Z5	100253	2019-06-21	2020-06-20
Ultra Broadband ANT	R&S	HL562	100157	2019-06-21	2020-06-20
Impuls-Begrenzer	R&S	ESH3-Z2	100281	2019-06-21	2020-06-20
Loop Antenna	EMCO	6507	00078608	2018-06-25	2021-06-24
Spectrum	R&S	FSIQ26	100292	2019-06-21	2020-06-20
Horn Antenna	A-INFO	LB-180400-KF	J211060660	2019-06-21	2021-06-20
Horn Antenna	R&S	BBHA 9120D	9120D-631	2018-07-09	2021-07-08
Power meter	Anritsu	ML2487A	6K00003613	2019-08-22	2020-08-21
Power sensor	Anritsu	MA2491A	32263	2019-08-22	2020-08-21
Bilog Antenna	Schwarebeck	VULB9163	9163/340	2018-07-04	2021-07-03
9*6*6 Anechoic	--	--	N/A	2018-02-07	2021-02-06
EMI Test Receiver	RS	ESVB	826156/011	2019-06-21	2020-06-20
EMI Test Receiver	RS	ESH3	860904/006	2019-06-21	2020-06-20
Spectrum	HP/Agilent	ESA-L1500A	US37451154	2019-06-21	2020-06-20
Spectrum	HP/Agilent	E4407B	MY50441392	2019-06-21	2020-06-20
Spectrum	RS	FSP	1164.4391.38	2019-01-20	2020-01-19
RF Cable	Zhengdi	ZT26-NJ-NJ-8 M/FA	--	2019-06-21	2020-06-20
RF Cable	Zhengdi	7m	--	2019-06-21	2020-06-20
RF Switch	EM	EMSW18	060391	2019-06-21	2020-06-20
Pre-Amplifier	Schwarebeck	BBV9743	#218	2019-06-21	2020-06-20
Pre-Amplifier	HP/Agilent	8449B	3008A00160	2019-06-21	2020-06-20
LISN	SCHAFFNER	NNB42	00012	2019-01-08	2020-01-07

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3.0 Technical Details

3.1 Summary of test results

The EUT has been tested according to the following specifications:

Requirement	CFR 47 Section	Result	Notes
Antenna Requirement	15.203	PASS	Complies
Spurious Emission, Band Edge, and Restricted bands	15.247(d),15.205(a), 15.209 (a)	PASS	Complies

Note: This is a C2PC test report based on original FCC ID: RMZ-A3B. The original FCC test report number is FCC1702039-01.

3.2 Test Standards

FCC Part 15 Subpart & Subpart C, Paragraph 15.247

4.0 EUT Modification

No modification by SHENZHEN TIMEWAY TESTING LABORATORIES.

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5 Radiated Emission Test

5.1 Test Method and test Procedure:

(1) The EUT was tested according to ANSI C63.10-2013. The radiated test was performed at Timeway EMC Laboratory. This site is on file with the FCC laboratory division, Registration No. 744189

(2) The EUT, peripherals were put on the turntable which table size is 1m x 1.5 m, table high 0.8 m. All set up is according to ANSI C63.10-2013.

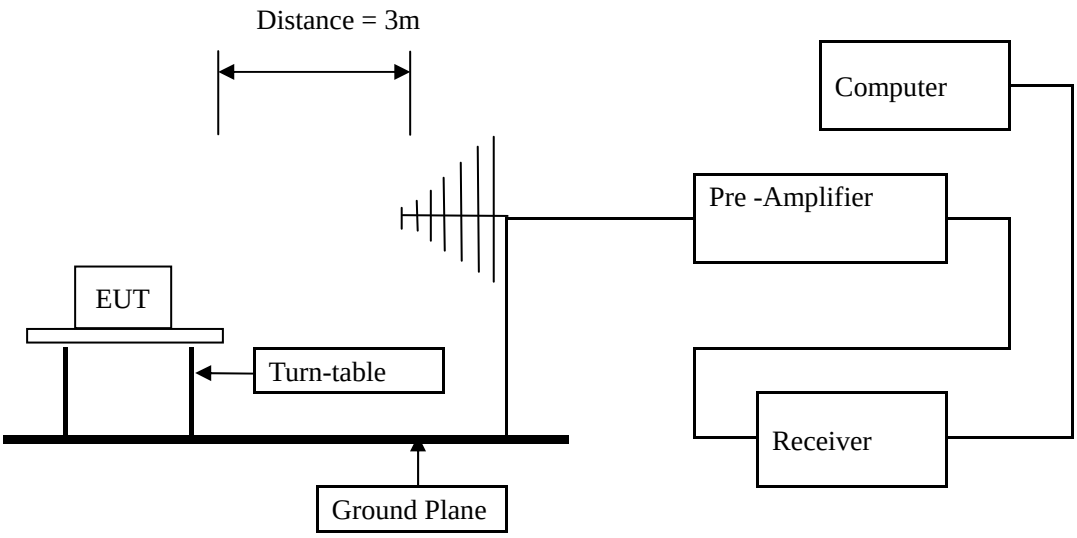
(3) The frequency spectrum from 30 MHz to 25GHz was investigated. All readings from 30 MHz to 1 GHz are quasi-peak values with a resolution bandwidth of 120 kHz. For measurement above 1GHz, peak values with RBW=VBW=1MHz and PK detector. AV value with RBW=1MHz, VBW=10Hz and PK detector. Measurements were made at 3 meters.

(4) The antenna high is varied from 1 m to 4 m high to find the maximum emission for each frequency.

(5) Maximizing procedure was performed on the six (6) highest emissions to ensure EUT compliance is with all installation combinations. All data was recorded in the peak detection mode. Quasi-peak readings was performed only when an emission was found to be marginal (within -4 dB of specification limit), and are distinguished with a "**QP**" in the data table.

(6) The antenna polarization : Vertical polarization and Horizontal polarization.

Block diagram of Test setup



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5.2 Radiated Emission Limit

All emission from a digital device, including any network of conductors and apparatus connected thereto, shall not exceed the level of field strength specified below:

Frequencies in restricted band are complied to limit on Paragraph 15.209

Frequency Range (MHz)	Distance (m)	Field strength (dB μ V/m)
30-88	3	40.0
88-216	3	43.5
216-960	3	46.0
Above 960	3	54.0

Note: 1. RF Voltage (dBuV) = 20 log RF Voltage (uV)

2. In the Above Table, the higher limit applies at the band edges.

3. Distance refers to the distance in meters between the measuring instrument antenna and the EUT

4. GFSK is the worse case and only worse case is reported

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Test result

General Radiated Emission Data and Harmonics Radiated Emission Data

Radiated Emission In Horizontal/Vertical (30MHz----1000MHz)

EUT set Condition: Keep Bluetooth Transmitting

Results: Pass

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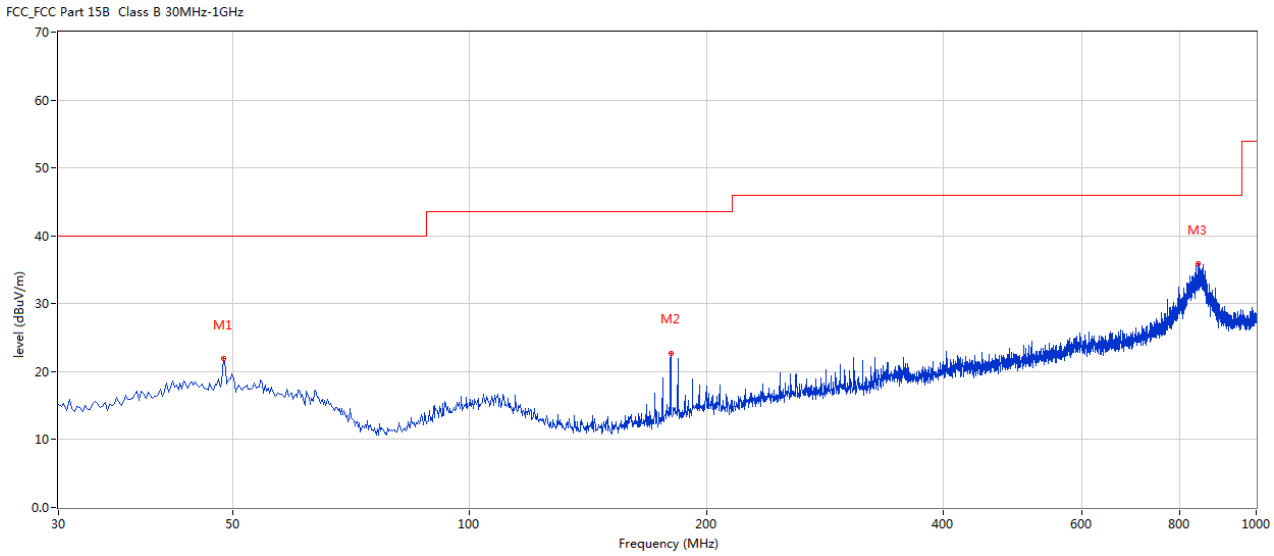
Test Figure:

H



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
1	48.668	21.87	-11.22	40.0	-18.13	Peak	280.00	100	H	Pass
2	180.070	22.74	-15.31	43.5	-20.76	Peak	9.00	200	H	Pass
3	843.627	35.85	-2.75	46.0	-10.15	Peak	343.00	100	H	Pass

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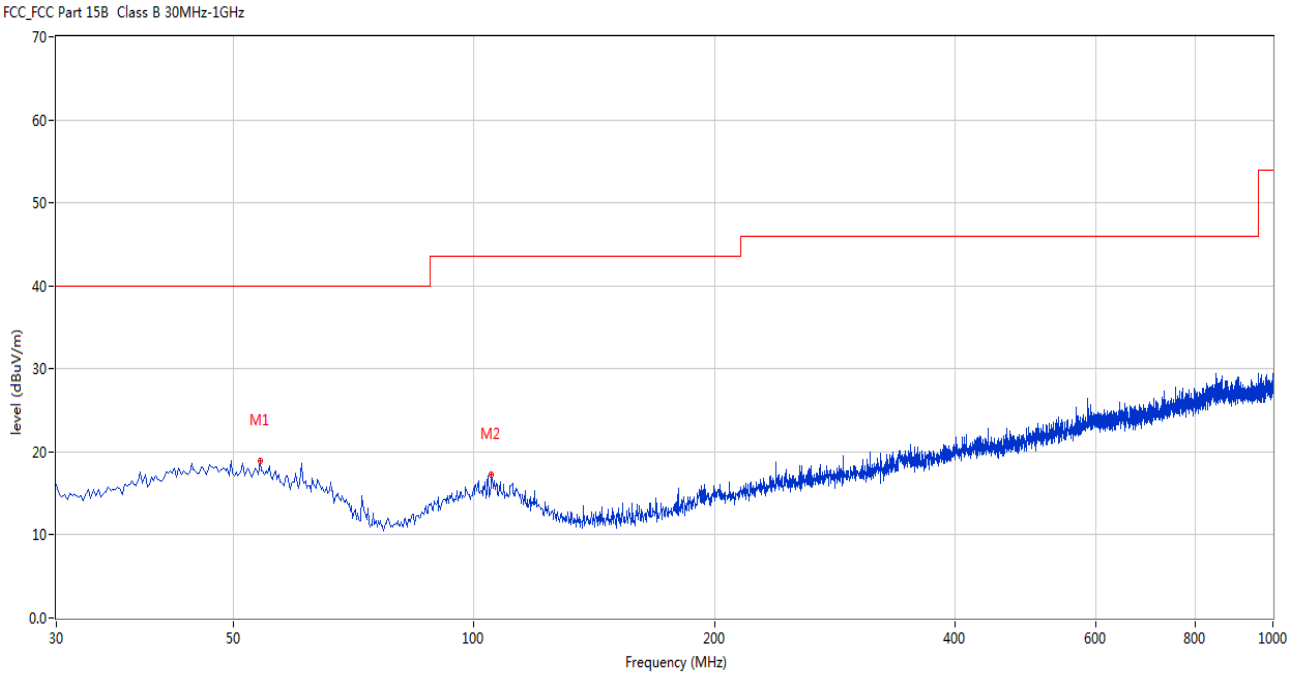
Test Figure:

V



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
1	54.001	18.94	-11.54	40.0	-21.06	Peak	304.00	100	V	Pass
2	105.156	17.28	-13.23	43.5	-26.22	Peak	44.00	100	V	Pass

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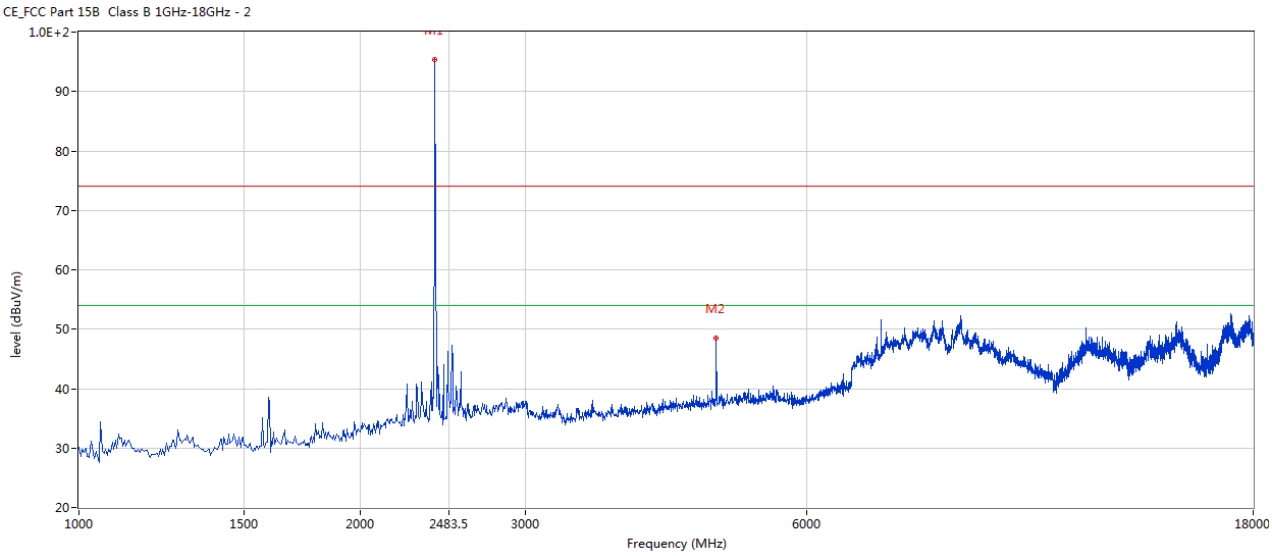
Please refer to the following test plots for details:

Low Channel: Vertical



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
1	2402.149	95.28	-3.57	74.0	21.28	Peak	147.00	100	H	N/A
2	4802.799	48.49	3.12	74.0	-25.51	Peak	325.00	100	H	Pass

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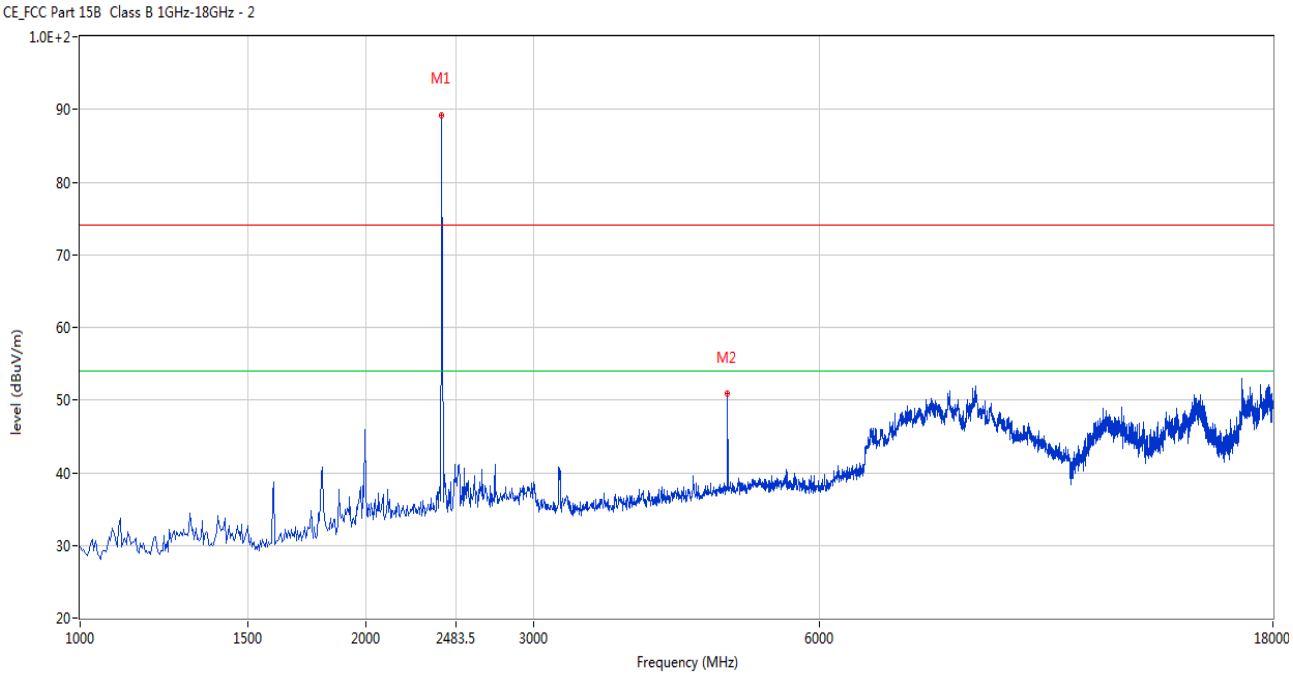
Low Channel : Horizontal



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
1	2402.149	89.25	-3.57	74.0	15.25	Peak	16.00	100	V	N/A
2	4802.799	50.88	3.12	74.0	-23.12	Peak	44.00	100	V	Pass

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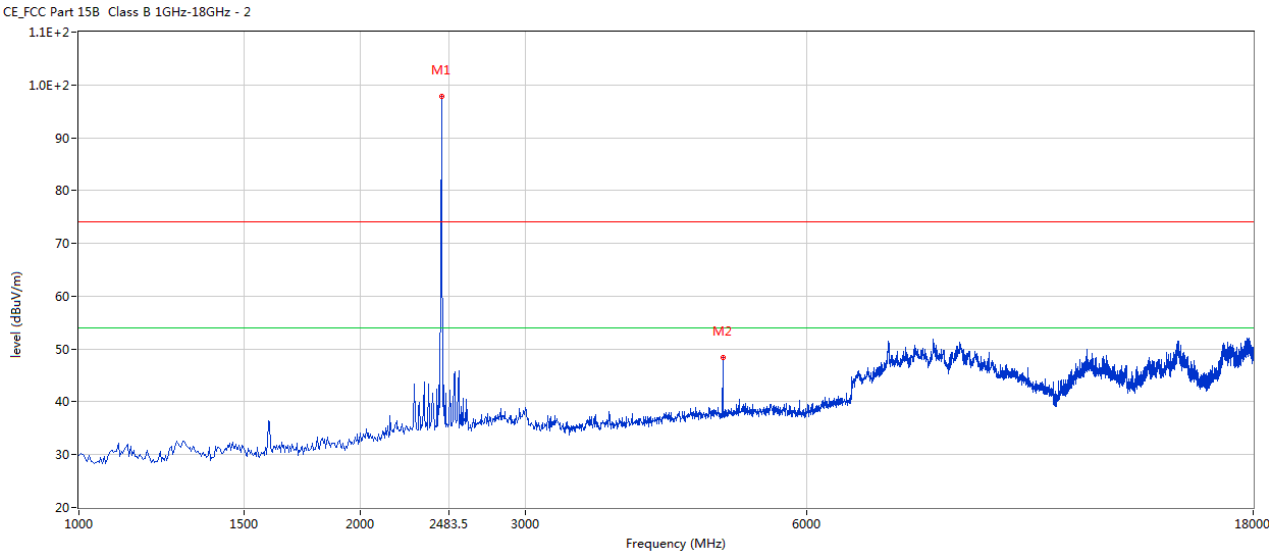
Middle Channel : Horizontal



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
1	2440.390	97.90	-3.57	74.0	23.90	Peak	217.00	100	H	N/A
2	4879.280	48.35	3.20	74.0	-25.65	Peak	194.00	100	H	Pass

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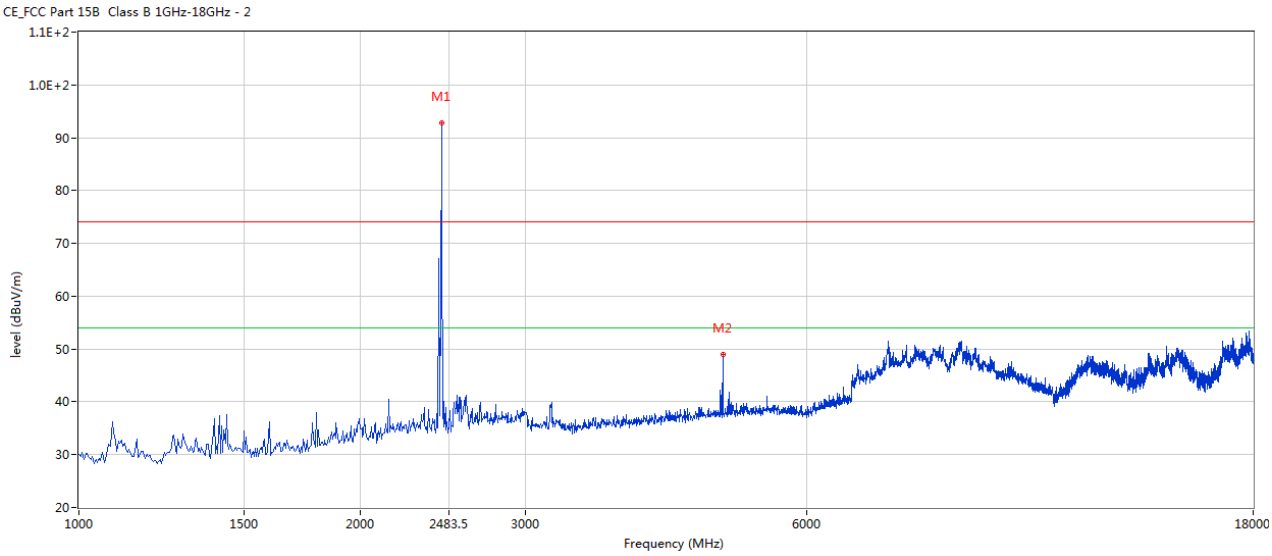
Middle Channel : Vertical



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
1	2440.390	92.85	-3.57	74.0	18.85	Peak	47.00	100	V	N/A
2	4879.280	48.89	3.20	74.0	-25.11	Peak	38.00	100	V	Pass

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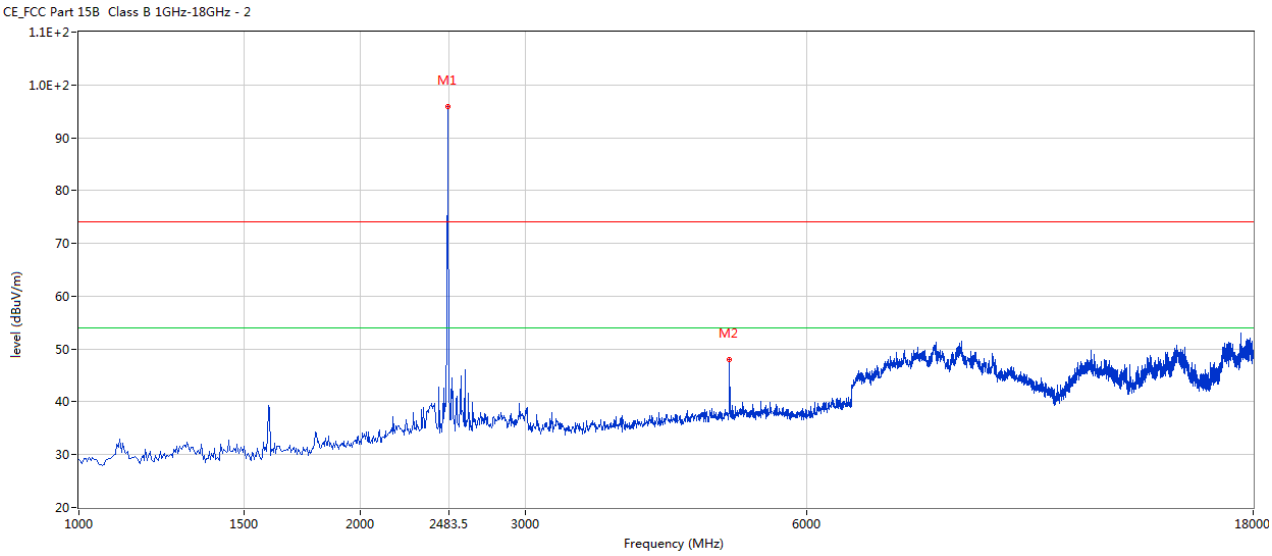
High Channel : Horizontal



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
1	2478.630	95.98	-3.57	74.0	21.98	Peak	208.00	100	H	N/A
2	4960.010	47.95	3.36	74.0	-26.05	Peak	186.00	100	H	Pass

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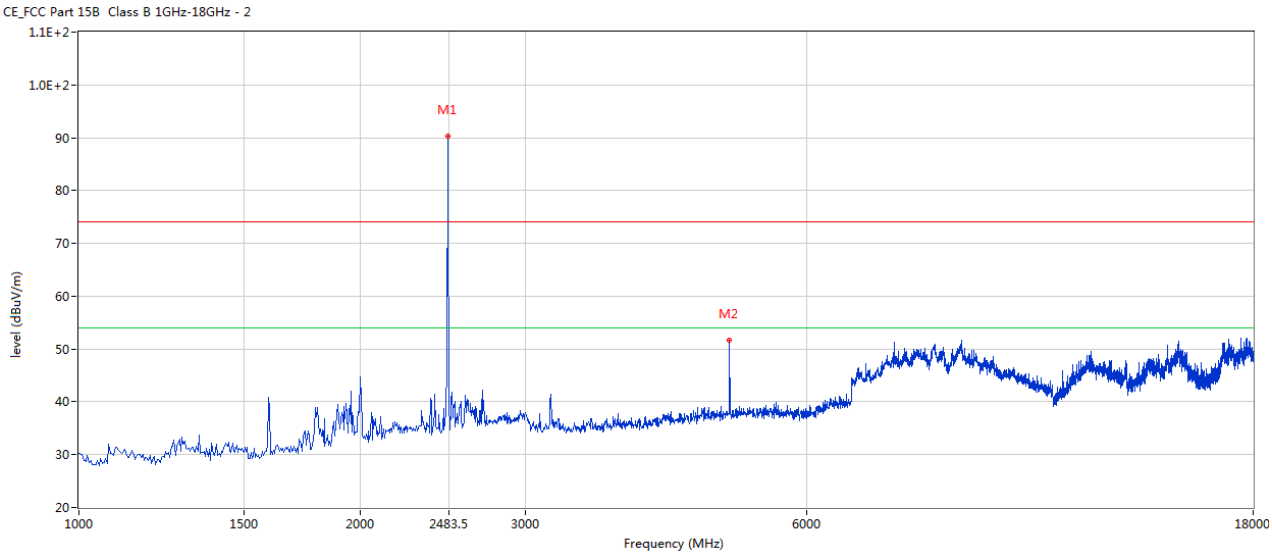
High Channel : Vertical



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
1	2478.630	90.26	-3.57	74.0	16.26	Peak	124.00	100	V	N/A
2	4960.010	51.61	3.36	74.0	-22.39	Peak	69.00	100	V	Pass

Note: 1. for the radiated emissions above 18G, it is the floor noise.
2. Results = Reading + AF + Cable - Preamp

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6.0 Restricted Band Measurement

6.1 Test Setup

Please see the clause 5 for the test setup

6.2 Limits of Out of Band Emissions Measurement

Fall in the restricted bands listed in section 15.205. The maximum permitted average field strength is listed in section 15.209.

6.3 Test Procedure

For signals in the restricted bands above and below the 2.4-2.483GHz allocated band a measurement was made of Radiated emission test. Peak values with RBW=VBW=1MHz and PK detector.

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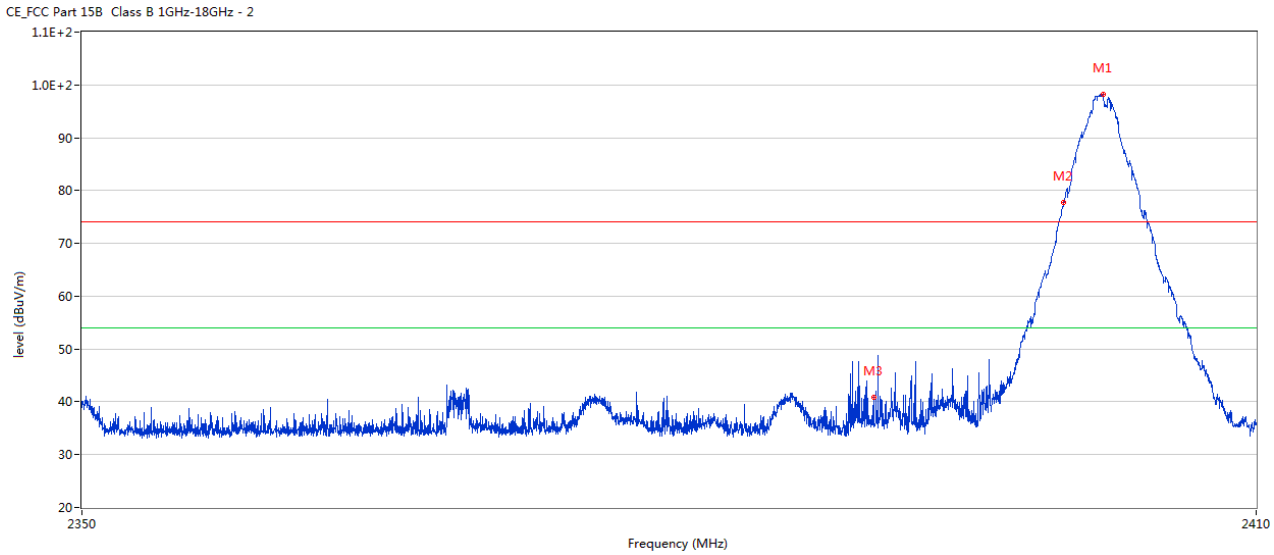
6.4 Restrict Band Measurement

EUT	GuruGear Behind the neck waterproof IPX5 BT Headphones	Model	A3
Mode	Keep Transmitting	Input Voltage	DC3.7V
Temperature	24 deg. C,	Humidity	56% RH
Test Result:	Pass	Modulation Type	GFSK



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
3	2390	40.87	-3.53	74.0	-33.13	Peak	351.00	100	H	Pass

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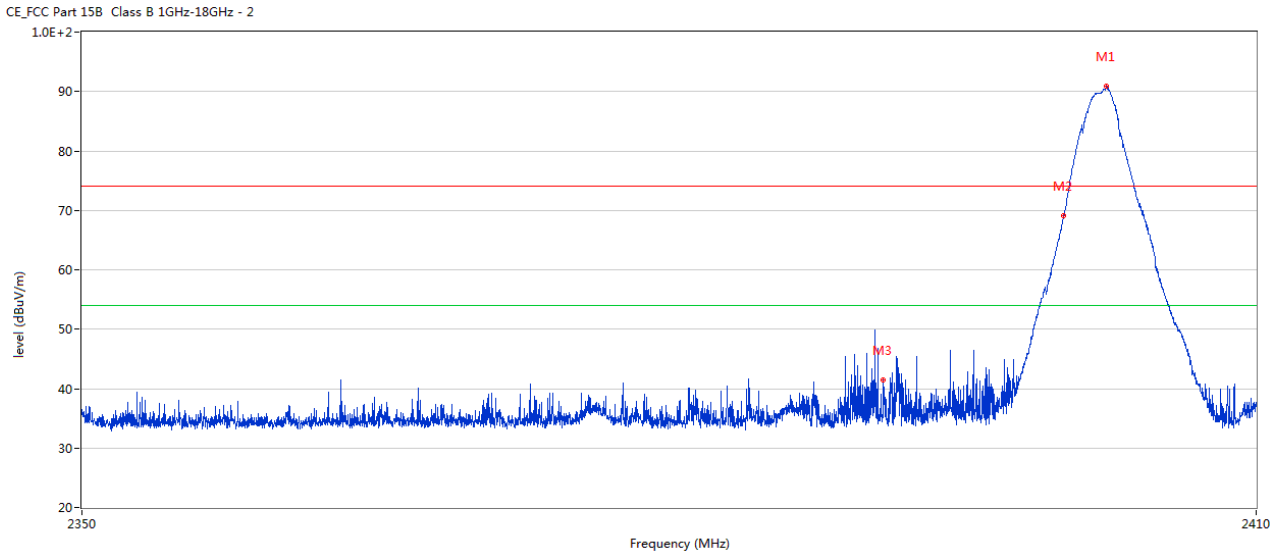
Mode	Keep Transmitting	Input Voltage	DC3.7V
Temperature	24 deg. C,	Humidity	56% RH
Test Result:	Pass	Modulation Type	GFSK



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
3	2390	41.40	-3.53	74.0	-32.60	Peak	294.00	100	V	Pass

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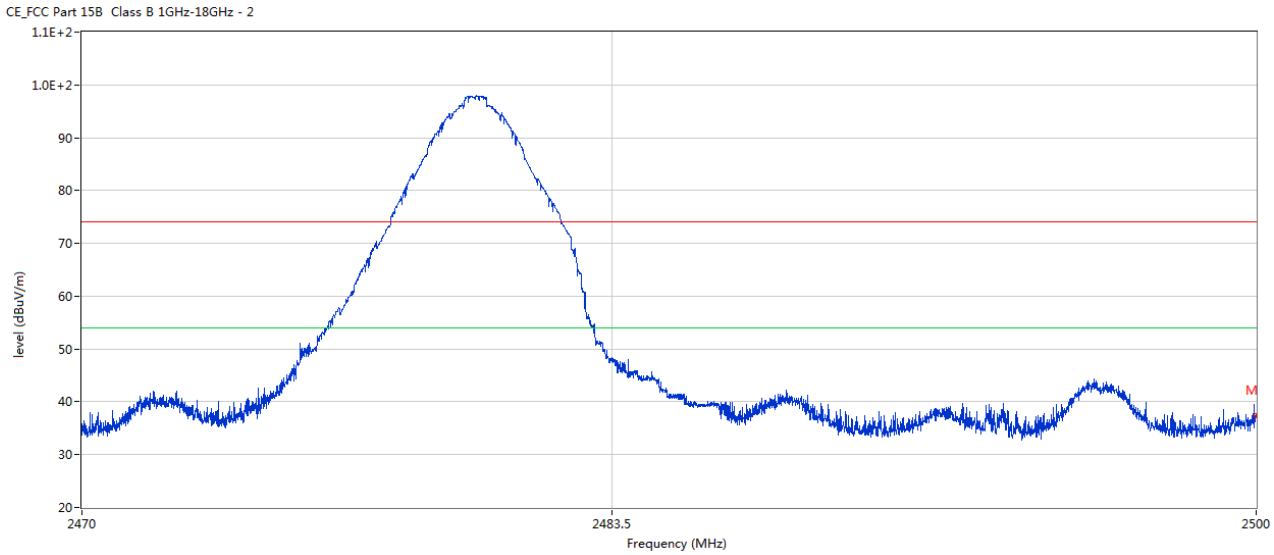
6.4 Restrict Band Measurement

EUT	GuruGear Behind the neck waterproof IPX5 BT Headphones	Model	A3
Mode	Keep Transmitting	Input Voltage	DC3.7V
Temperature	24 deg. C,	Humidity	56% RH
Test Result:	Pass	Modulation Type	GFSK



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
2	2483.5	48.72	-3.57	74.0	-25.28	Peak	134.00	100	H	Pass

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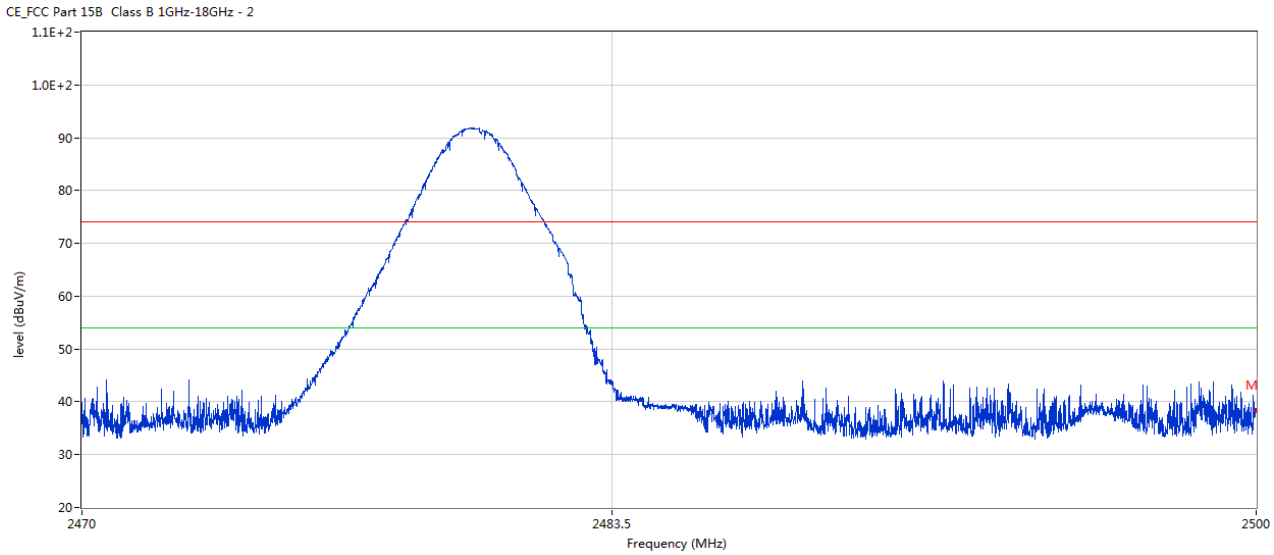
Mode	Keep Transmitting	Input Voltage	DC3.7V
Temperature	24 deg. C,	Humidity	56% RH
Test Result:	Pass	Modulation Type	GFSK



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
2	2483.5	42.37	-3.57	74.0	-31.63	Peak	48.00	100	V	Pass

Note: For Restricted band test, only the worst case was reported.

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7.0 Antenna Requirement

7.1 Standard Applicable

For intentional device, according to FCC 47 CFR Section 15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device.

And according to FCC 47 CFR Section 15.247 (b), if transmitter antennas of directional gain greater than 6 dBi are used, the power shall be reduced by the mount in dB that the directional gain of the antenna exceeds 6 dBi.

7.2 Antenna Connected constructions

Ceramic antenna used. The gain of the antennas is -0.8dBi.

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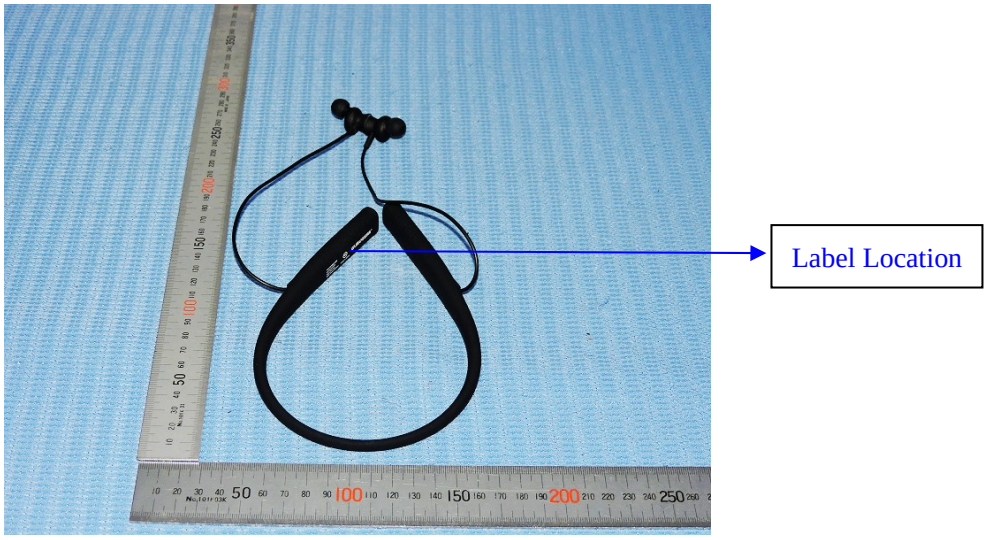
8.0 FCC ID Label

FCC ID: RMZ-A3B

The label must not be a stick-on paper label. The label on these products must be permanently affixed to the product and readily visible at the time of purchase and must last the expected lifetime of the equipment not be readily detachable.

Mark Location:



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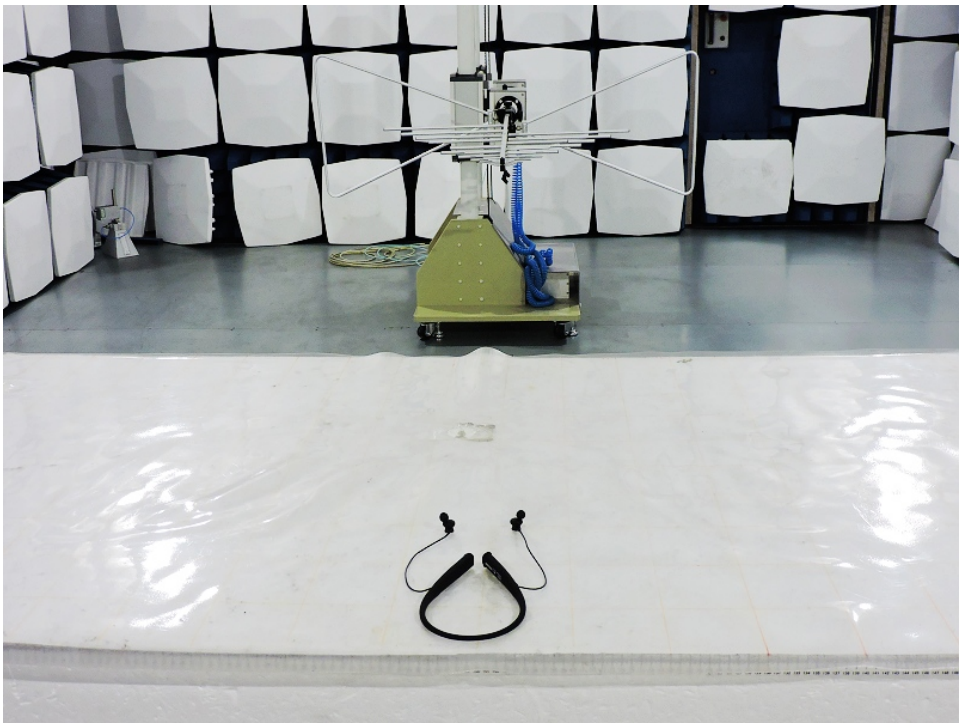
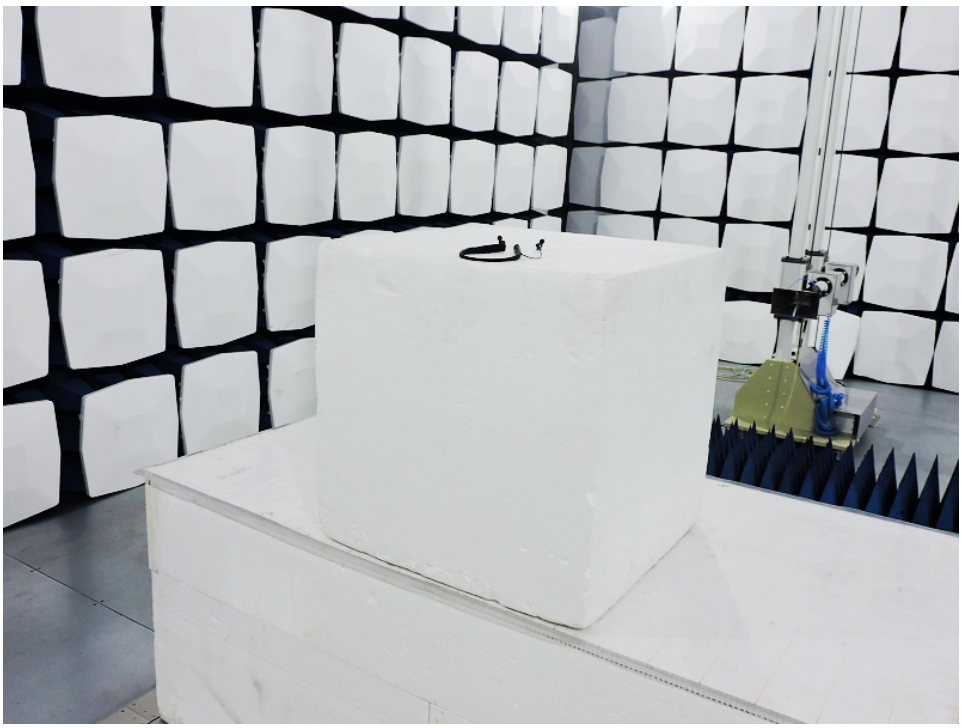
9.0 Photo of testing

Radiated Emission Test Setup:





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Photographs – EUT

Outside view

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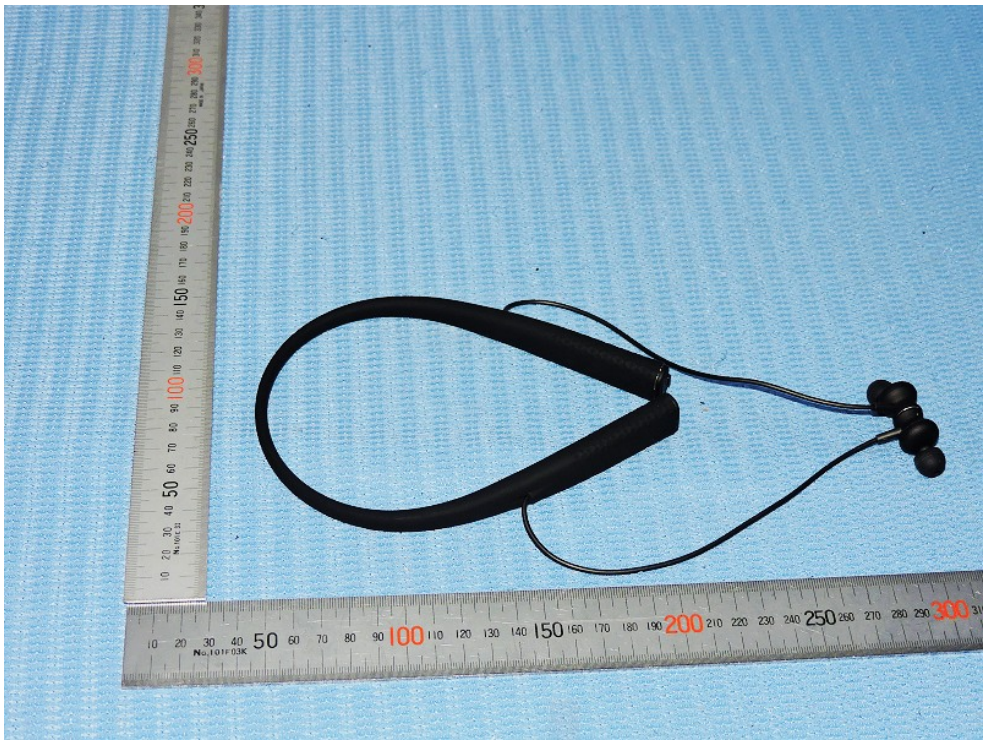
Outside view



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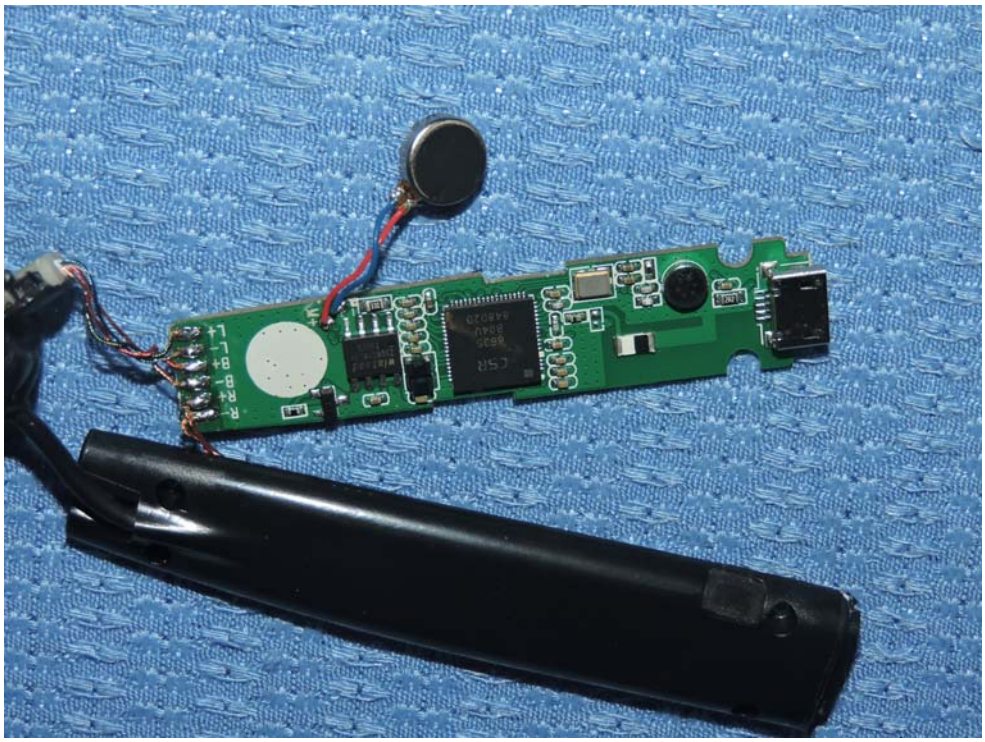
Inside view



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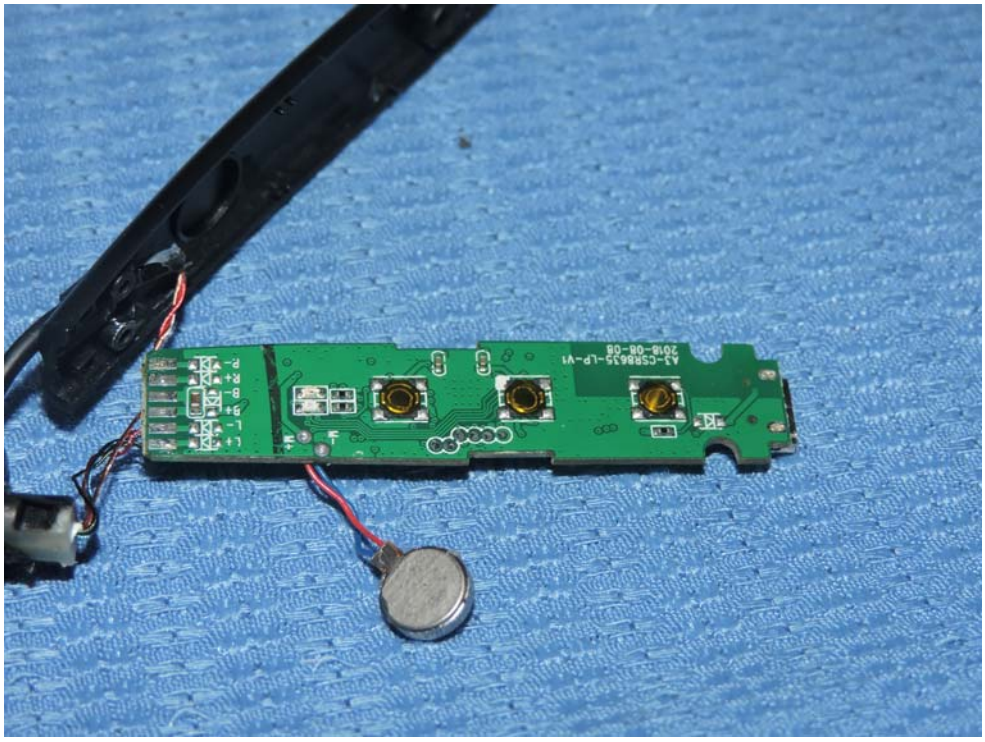

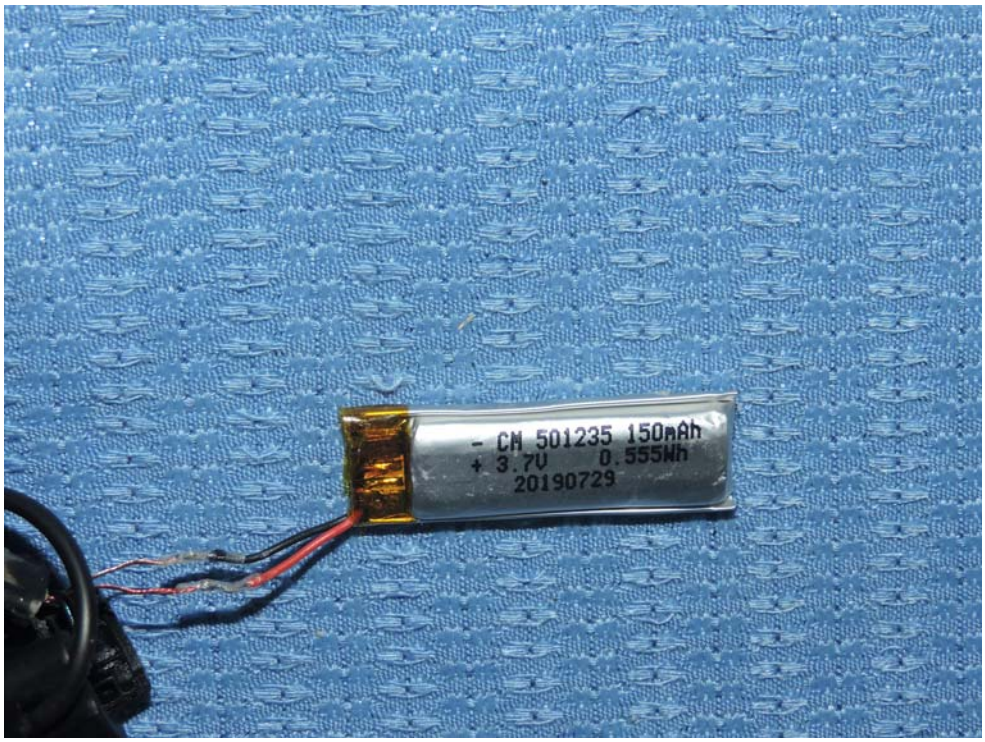

End of the report

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