



Report No.: TW2305168-02E  
Applicant: TERRANO, LLC  
Product: Bluetooth Headphone  
Model No.: Terrano Q, 2221  
Trademark: Terrano Q  
Test Standards: FCC Part 15.249

Test result: It is herewith confirmed and found to comply with the requirements set up by ANSI C63.10 & FCC Part 15 Subpart C, Paragraph 15.249 regulations for the evaluation of electromagnetic compatibility

Approved By

Terry Tang

Manager

Dated: June 14, 2023

**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 meet 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 17025:2017 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

### **CAB identifier: CN0033**

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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 on File with the Federal Communications Commission – United States  
Registration Number: 744189  
For 3m Anechoic Chamber

### 1.2 Applicant Details

Applicant: TERRANO, LLC  
Address: 4610 S. Ulster St. Suite 150 Denver, Colorado 80237, USA  
Telephone: --  
Fax: --

### 1.3 Description of EUT

Product:	Bluetooth Headphone
Manufacturer:	WATA ELECTRONICS CO., LTD.
Address:	No.142, South Tanshen Road, Tanzhou Town, Zhongshan City, Guangdong, China
Trademark:	Terrano Q
Additional Trademark:	N/A
Model Number:	Terrano Q
Additional Model Name	2221
Rating:	Input: DC5V, 300mA
Battery:	DC3.7V, 300mAh Li-ion battery
Modulation Type:	GFSK (Bluetooth Low Energy)
Operation Frequency:	2402-2480MHz
Channel Separate:	2MHz
Channel Number:	40
Hardware Version:	V01
Software Version:	V1.0
Serial No.:	TR000016
Antenna Designation	PCB antenna with gain 0dBi Max (Get from the antenna Specification)

### 1.4 Submitted Sample: 2 Samples

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1.5 Test Duration

2023-05-16 to 2023-06-14

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%

Conducted Emissions Uncertainty =3.6dB

Note: The measurement uncertainty is for coverage factor of k=2 and a level of confidence of 95%.

1.7 Test Engineer

*Andy -Xing*

The sample tested by

Print Name: Andy Xing

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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	2022-07-15	2023-07-14
LISN	R&S	EZH3-Z5	100294	2022-07-18	2023-07-17
LISN	R&S	EZH3-Z5	100253	2022-07-18	2023-07-17
Impuls-Begrenzer	R&S	ESH3-Z2	100281	2022-07-18	2023-07-17
Loop Antenna	EMCO	6507	00078608	2022-07-18	2025-07-17
Spectrum	R&S	FSIQ26	100292	2022-07-15	2023-07-14
Horn Antenna	A-INFO	LB-180400-KF	J211060660	2022-07-18	2025-07-17
Horn Antenna	R&S	BBHA 9120D	9120D-631	2022-07-18	2024-07-17
Power meter	Anritsu	ML2487A	6K00003613	2022-07-18	2023-07-17
Power sensor	Anritsu	MA2491A	32263	2022-07-18	2023-07-17
Bilog Antenna	Schwarebeck	VULB9163	9163/340	2022-07-18	2025-07-17
9*6*6 Anechoic	--	--	N/A	2022-07-26	2025-07-25
EMI Test Receiver	RS	ESVB	826156/011	2022-07-15	2023-07-14
EMI Test Receiver	RS	ESCS 30	834115/006	2022-07-15	2023-07-14
Spectrum	HP/Agilent	E4407B	MY50441392	2022-07-15	2023-07-14
Spectrum	RS	FSP	1164.4391.38	2022-07-15	2023-07-14
RF Cable	Zhengdi	ZT26-NJ-NJ-8M/FA	--	2022-07-15	2023-07-14
RF Cable	Zhengdi	7m	--	2022-07-15	2023-07-14
Pre-Amplifier	Schwarebeck	BBV9743	#218	2022-07-15	2023-07-14
Pre-Amplifier	HP/Agilent	8449B	3008A00160	2022-07-15	2023-07-14
LISN	SCHAFFNER	NNB42	00012	2022-08-18	2023-07-17
ESPI Test Receiver	R&S	ESPI 3	100379	2022-07-15	2023-07-14
LISN	R&S	EZH3-Z5	100294	2022-07-18	2023-07-17

### 2.2 Automation Test Software

For Conducted Emission Test

Name	Version
EZ-EMC	Ver.EMC-CON 3A1.1

For Radiated Emissions

Name	Version
EMI Test Software BL410-EV18.91	V18.905
EMI Test Software BL410-EV18.806 High Frequency	V18.06

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### 3.0 Technical Details

#### 3.1 Summary of test results

The EUT has been tested according to the following specifications:			
Standard	Test Type	Result	Notes
FCC Part 15, Paragraph 15.203	Antenna Requirement	Pass	Complies
FCC Part 15, Paragraph 15.207	Conducted Emission Test	Pass	Complies
FCC Part 15 Subpart C Paragraph 15.249(a) & 15.249(b) Limit	Field Strength of Fundamental	Pass	Complies
FCC Part 15, Paragraph 15.209	Radiated Emission Test	Pass	Complies
FCC Part 15 Subpart C Paragraph 15.249(d) Limit	Band Edge Test	Pass	Complies

#### 3.2 Test Standards

FCC Part 15 Subpart C, Paragraph 15.249 , ANSI C63.4 :2014 and ANSI C63.10 :2013

#### 4.0 EUT Modification

No modification by SHENZHEN TIMEWAY TESTING LABORATORIES

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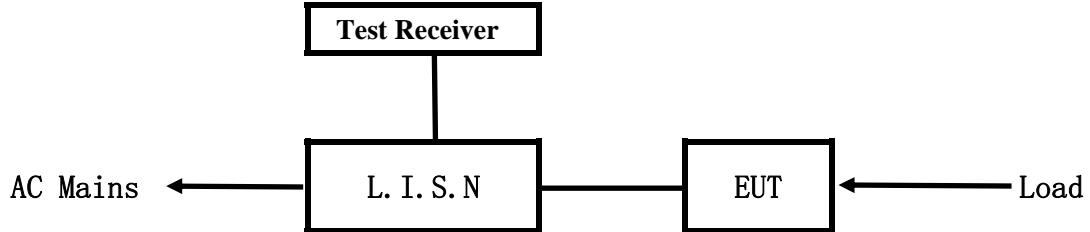
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## 5. Power Line Conducted Emission Test

### 5.1 Schematics of the test



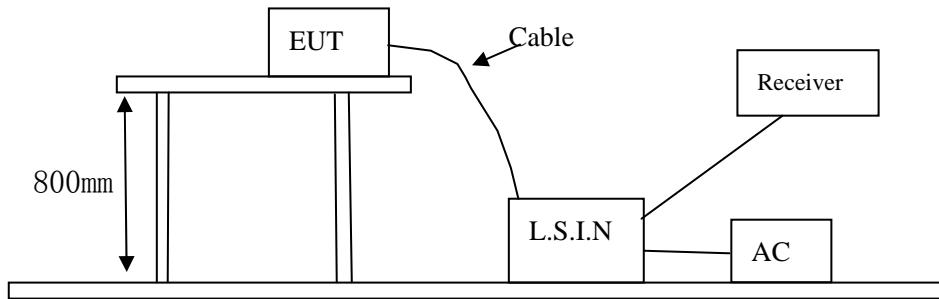
EUT: Equipment Under Test

### 5.2 Test Method and test Procedure

The EUT was tested according to ANSI C63.10-2013. The Frequency spectrum from 0.15MHz to 30MHz was investigated. The LISN used was 50ohm/50uH as specified by section 5.1 of ANSI C63.10 –2013.

Test Voltage: 120V~, 60Hz

Block diagram of Test setup



### 5.3 Configuration of the EUT

The EUT was configured according to ANSI C63.10-2013. All interface ports were connected to the appropriate peripherals. All peripherals and cables are listed below.

40 channels are provided to the EUT

#### A. EUT

Device	Manufacturer	Model	FCC ID
Bluetooth Headphone	WATA ELECTRONICS CO., LTD.	Terrano Q, 2221	2AE6N-TERRANOQ

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B. Internal Device

Device	Manufacturer	Model	FCC ID/DOC
N/A			

C. Peripherals

Device	Manufacturer	Model	Rating
Power Supply	KEYU	KA23-0502000DEU	Input: 100-240V~, 50/60Hz, 0.35A; Output: DC5V, 2A

5.4 EUT Operating Condition

Operating condition is according to ANSI C63.10-2013

A Setup the EUT and simulators as shown on follow  
B Enable AF signal and confirm EUT active to normal condition

5.5 Power line conducted Emission Limit according to Paragraph 15.207

Frequency (MHz)	Limits (dB $\mu$ V)	
	Quasi-peak Level	Average Level
0.15 ~ 0.50	66.0~56.0*	56.0~46.0*
0.50 ~ 5.00	56.0	46.0
5.00 ~ 30.00	60.0	0.0

Notes: 1. \*Decreasing linearly with logarithm of frequency.  
2. The tighter limit shall apply at the transition frequencies

5.6 Test Results:

Pass

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**A: Conducted Emission on Live Terminal (150kHz to 30MHz)**

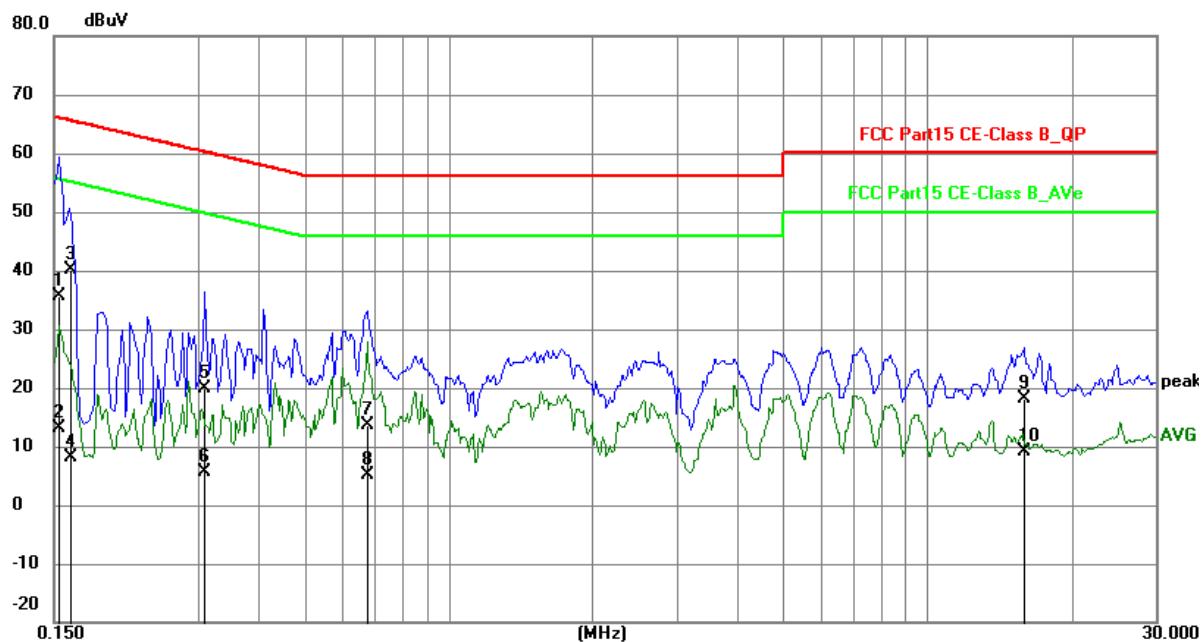
**EUT Operating Environment**

Temperature: 25°C      Humidity: 65%RH      Atmospheric Pressure: 101 kPa

**EUT set Condition: Charging + Communication by BT**

**Results: Pass**

Please refer to following diagram for individual



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	P/F
1	0.1539	25.89	9.78	35.67	65.79	-30.12	QP	P
2	0.1539	3.42	9.78	13.20	55.79	-42.59	AVG	P
3	0.1617	30.24	9.78	40.02	65.38	-25.36	QP	P
4	0.1617	-1.66	9.78	8.12	55.38	-47.26	AVG	P
5	0.3099	10.15	9.76	19.91	59.97	-40.06	QP	P
6	0.3099	-4.06	9.76	5.70	49.97	-44.27	AVG	P
7	0.6765	3.97	9.78	13.75	56.00	-42.25	QP	P
8	0.6765	-4.74	9.78	5.04	46.00	-40.96	AVG	P
9	15.8700	7.70	10.43	18.13	60.00	-41.87	QP	P
10	15.8700	-1.27	10.43	9.16	50.00	-40.84	AVG	P

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## B: Conducted Emission on Neutral Terminal (150kHz to 30MHz)

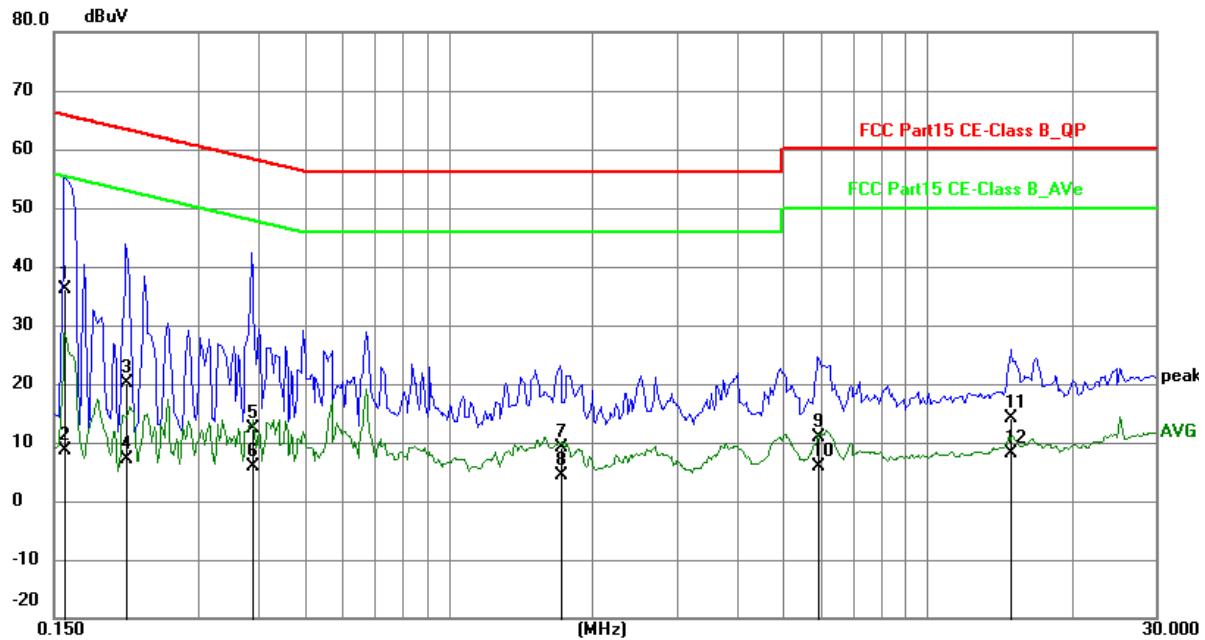
### EUT Operating Environment

Temperature: 25°C      Humidity: 65%RH      Atmospheric Pressure: 101 kPa

### EUT set Condition: Charging + Communication by BT

#### Results: Pass

Please refer to following diagram for individual



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	P/F
1	0.1578	26.32	9.78	36.10	65.58	-29.48	QP	P
2	0.1578	-1.14	9.78	8.64	55.58	-46.94	AVG	P
3	0.2124	10.35	9.75	20.10	63.11	-43.01	QP	P
4	0.2124	-2.69	9.75	7.06	53.11	-46.05	AVG	P
5	0.3879	2.66	9.76	12.42	58.11	-45.69	QP	P
6	0.3879	-3.99	9.76	5.77	48.11	-42.34	AVG	P
7	1.7139	-0.71	9.80	9.09	56.00	-46.91	QP	P
8	1.7139	-5.33	9.80	4.47	46.00	-41.53	AVG	P
9	5.9211	0.84	9.97	10.81	60.00	-49.19	QP	P
10	5.9211	-4.02	9.97	5.95	50.00	-44.05	AVG	P
11	14.9223	3.78	10.38	14.16	60.00	-45.84	QP	P
12	14.9223	-2.18	10.38	8.20	50.00	-41.80	AVG	P

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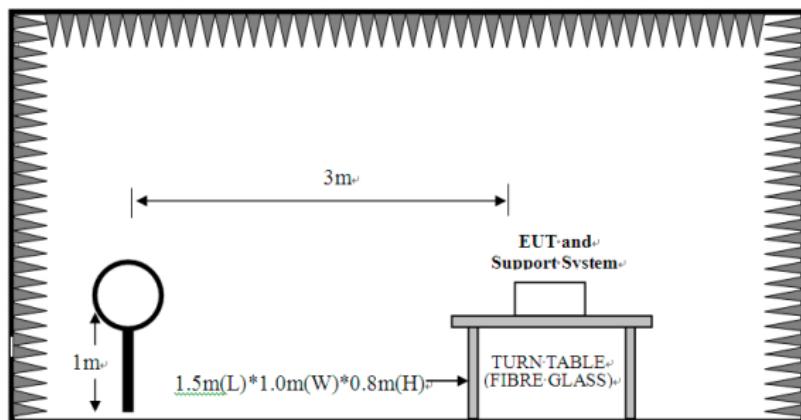
## 6 Radiated Emission Test

### 6.1 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 25 GHz was investigated. All readings from 30 MHz to 1 GHz are quasi-peak values with a resolution bandwidth of 120 kHz. All readings are above 1 GHz, peak values with a resolution bandwidth of 1 MHz (Note: for Fundamental frequency radiated emission measurement, RBW=3MHz, VBW=10MHz). Measurements were made at 3 meters.
- (4) The antenna height is varied from 1 m to 4 m high to find the maximum emission for each frequency.
- (5) The antenna polarization: Vertical polarization and Horizontal polarization.

#### Block diagram of Test setup

For radiated emissions from 9kHz to 30MHz



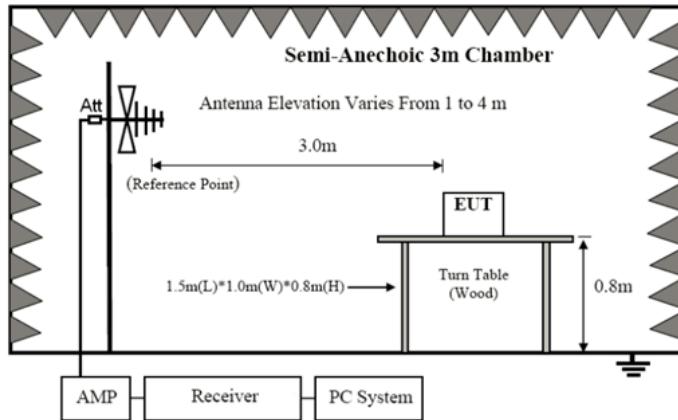
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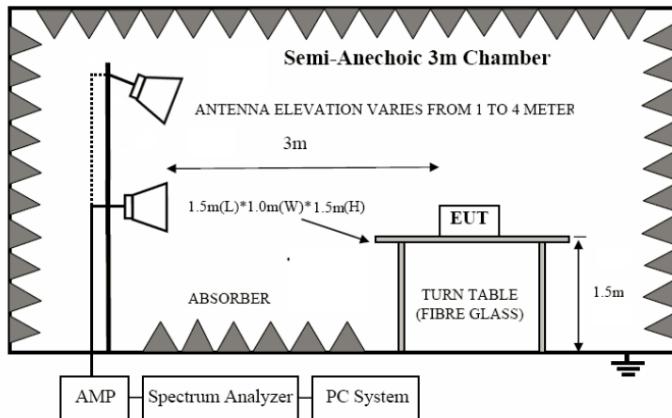
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For radiated emissions from 30MHz to1GHz



For radiated emissions above 1GHz



## 6.2 Configuration of the EUT

Same as section 5.3 of this report

## 6.3 EUT Operating Condition

Same as section 5.4 of this report.

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#### 6.4 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:

#### A FCC Part 15 Subpart C Paragraph 15.249(a) Limit

Fundamental Frequency (MHz)	Field Strength of Fundamental (3m)			Field Strength of Harmonics (3m)		
	<b>mV/m</b>	<b>dBuV/m</b>		<b>uV/m</b>	<b>dBuV/m</b>	
2400-2483.5	50	94 (Average)	114 (Peak)	500	54 (Average)	74 (Peak)

Note:

1. RF Field Strength (dBuV) = 20 log RF Voltage (uV)
2. Distance refers to the distance in meters between the measuring instrument antenna and the closed point of any part of the device or system.
3. The emission limit in this paragraph is based on measurement instrumentation employing an average detector.

#### B. Frequencies in restricted band are complied to limit on Paragraph 15.209.

Frequency Range (MHz)	Distance (m)	Field strength (dB $\mu$ V/m)
0.009-0.490	3	20log(2400/F(kHz)) +40log (300/3)
0.490-1.705	3	20log(24000/F(kHz)) +40log (30/3)
1.705-30	3	69.5
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 tighter limit applies at the band edges.
3. Distance refers to the distance in meters between the measuring instrument antenna and the EUT
4. All scanning using PK detector. And the final emission level was get using QP detector for frequency range from 30-1000MHz. As to 1G-25G, the final emission level got using PK. For fundamental measurement, PK detector used.
5. For radiated emissions from 9kHz to 30MHz, the emission level is much less than the limit for more than 20dB. No necessary to take down the record.
6. This is a handheld device. The radiated emissions should be tested under 3-axes position (Lying, Side, and Stand), After pre-test. It was found that the worse radiated emission was get at the lying position.
7. Battery fully charged was used during the test.

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## 6.5 Test result

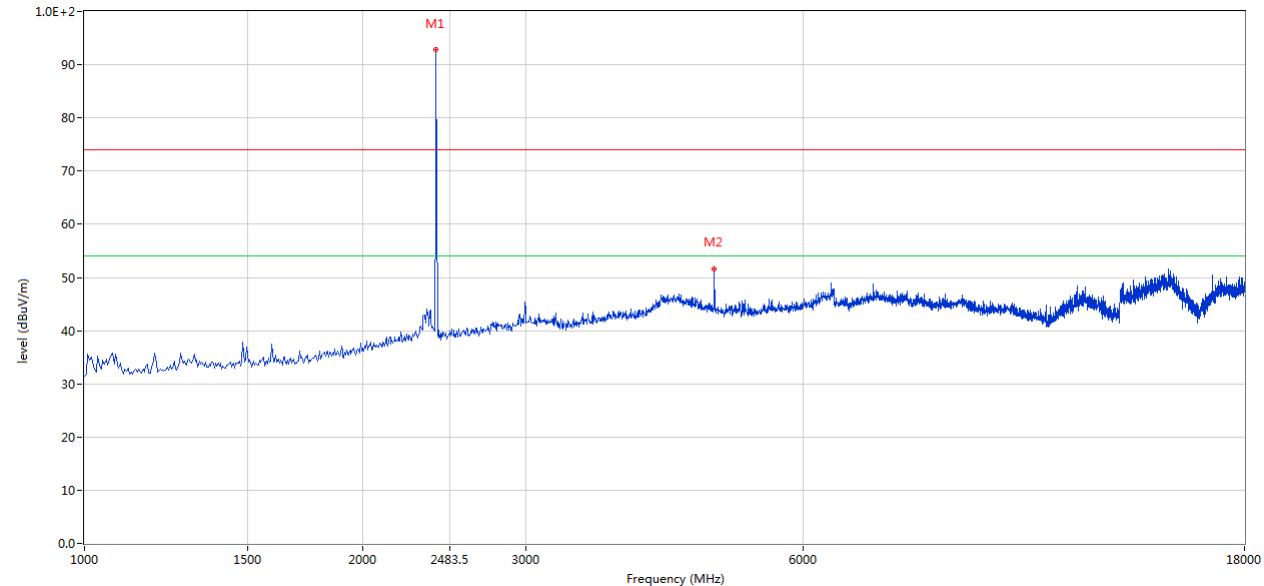
### A Fundamental & Harmonics Radiated Emission Data

Please refer to the following test plots for details: Low Channel-2402MHz

#### GFSK 1M

##### Horizontal

FCC Part 15C Class B 1GHz-18GHz -2



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
1	2402	92.75	-3.57	114.0	-21.25	Peak	212.00	100	Horizontal	Pass
2	4802.799	51.68	3.12	74.0	-22.32	Peak	195.00	100	Horizontal	Pass

The report refers only to the sample tested and does not apply to the bulk.

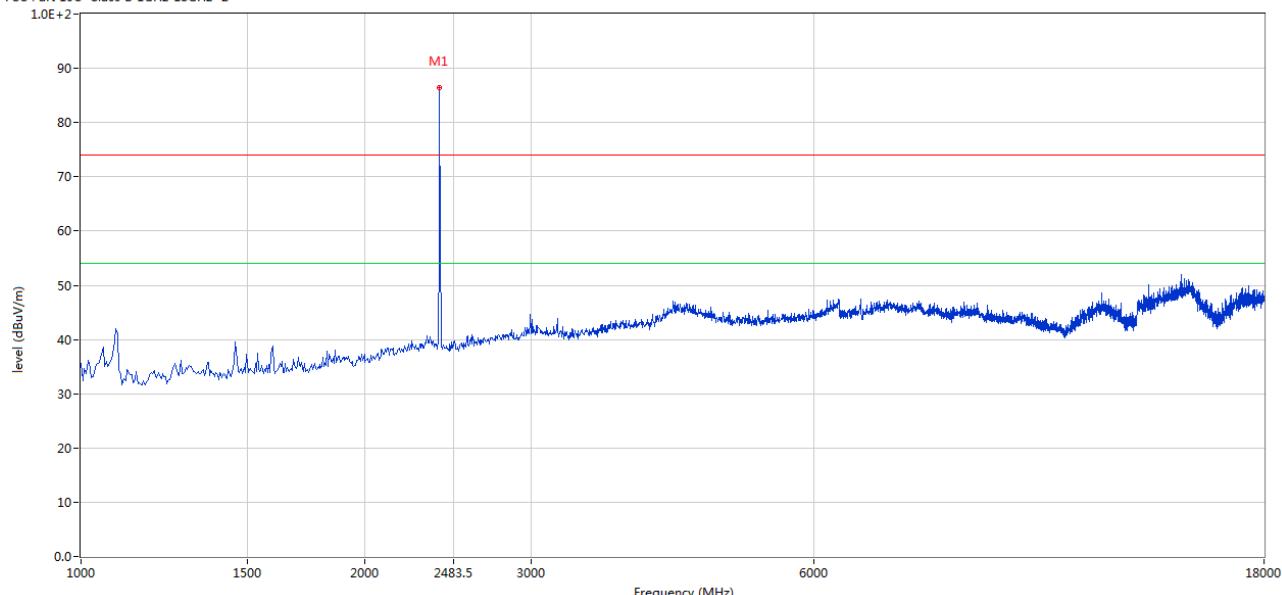
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## Vertical

FCC Part 15C Class B 1GHz-18GHz -2



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
1	2402	86.64	-3.57	114.0	-27.36	Peak	297.00	100	Vertical	Pass

The report refers only to the sample tested and does not apply to the bulk.

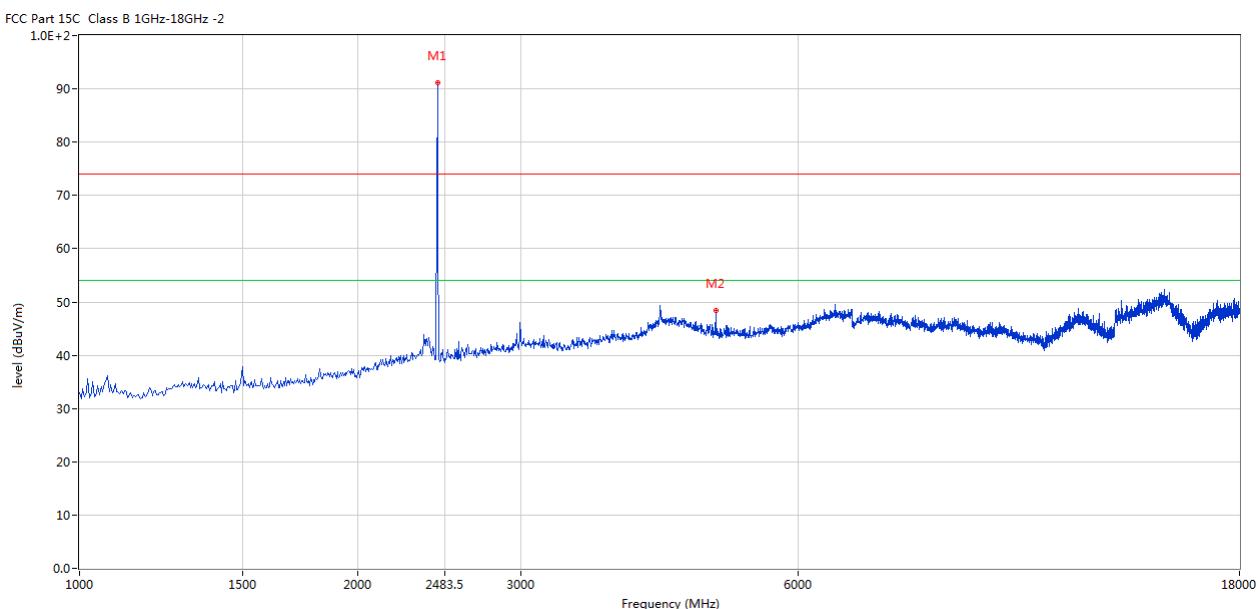
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Please refer to the following test plots for details: Middle Channel-2440MHz

### Horizontal



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
1	2440	91.16	-3.57	114.0	-22.84	Peak	201.00	100	Horizontal	Pass
2	4879.280	48.49	3.20	74.0	-25.51	Peak	201.00	100	Horizontal	Pass

The report refers only to the sample tested and does not apply to the bulk.

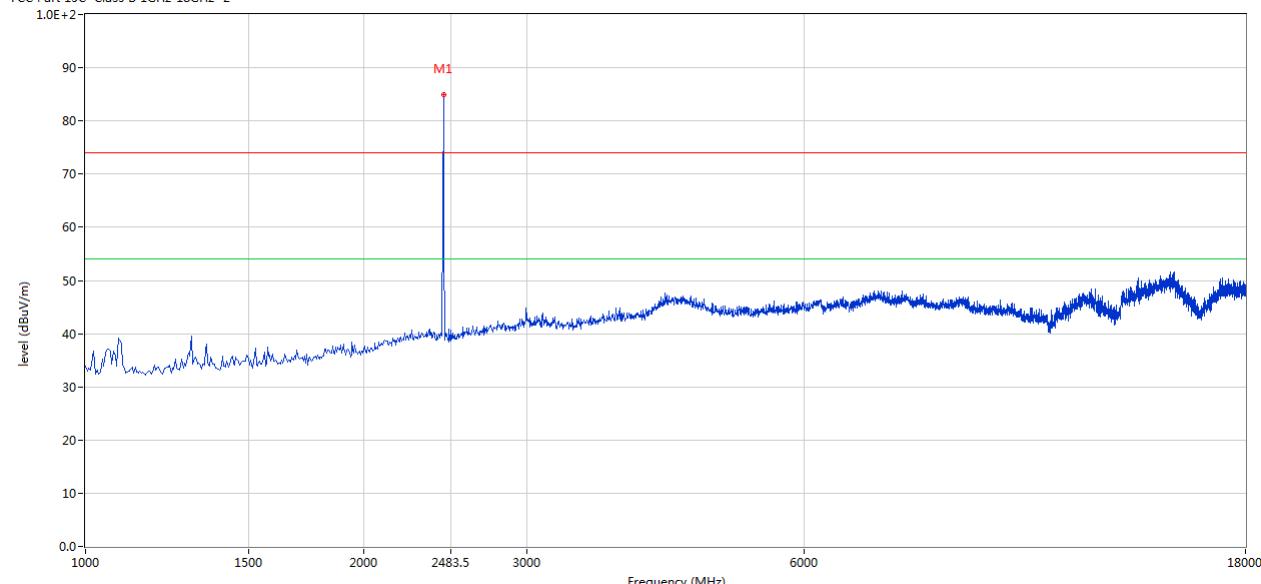
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## Vertical

FCC Part 15C Class B 1GHz-18GHz -2



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
1	2440	84.84	-3.57	114.0	-29.16	Peak	294.00	100	Vertical	Pass

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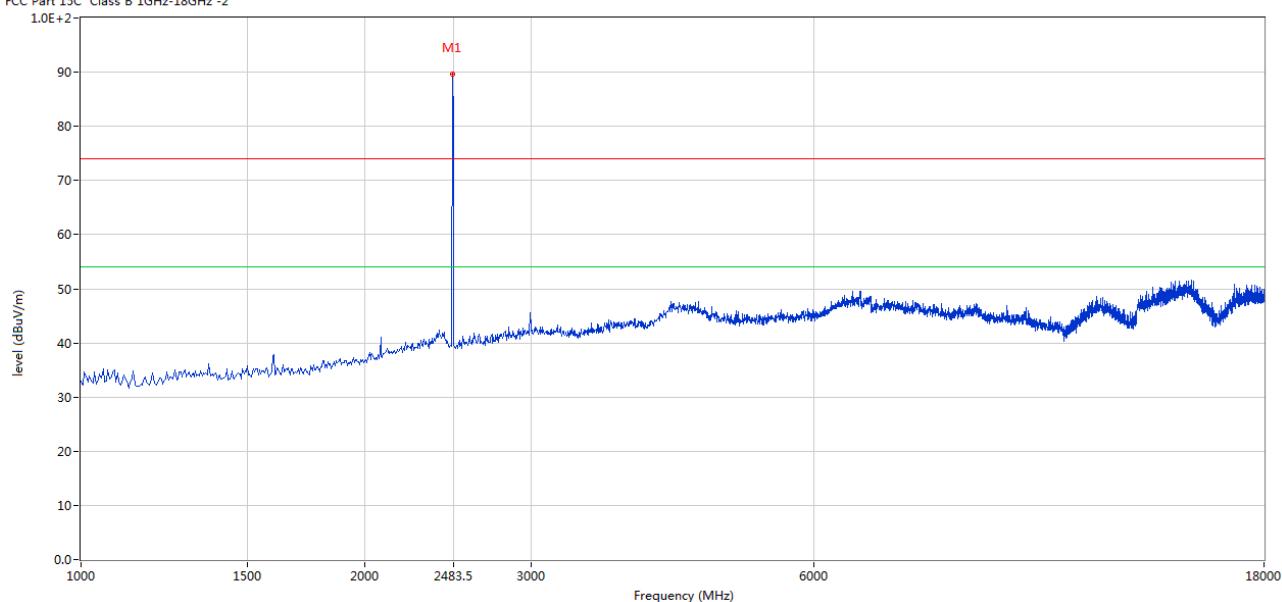
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Please refer to the following test plots for details: High Channel-2480MHz

### Horizontal

FCC Part 15C Class B 1GHz-18GHz -2



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
1	2480	89.79	-3.57	114.0	-24.21	Peak	201.00	100	Horizontal	Pass

The report refers only to the sample tested and does not apply to the bulk.

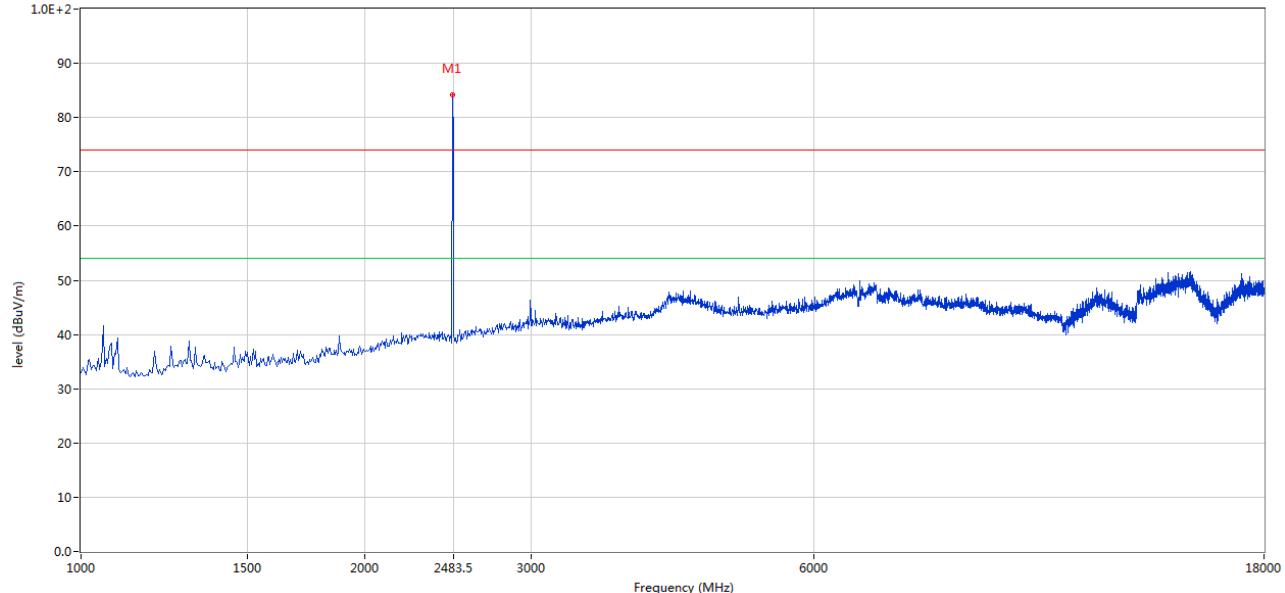
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### Vertical

FCC Part 15C Class B 1GHz-18GHz -2



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
1	2480	84.28	-3.57	114.0	-29.72	Peak	301.00	100	Vertical	Pass

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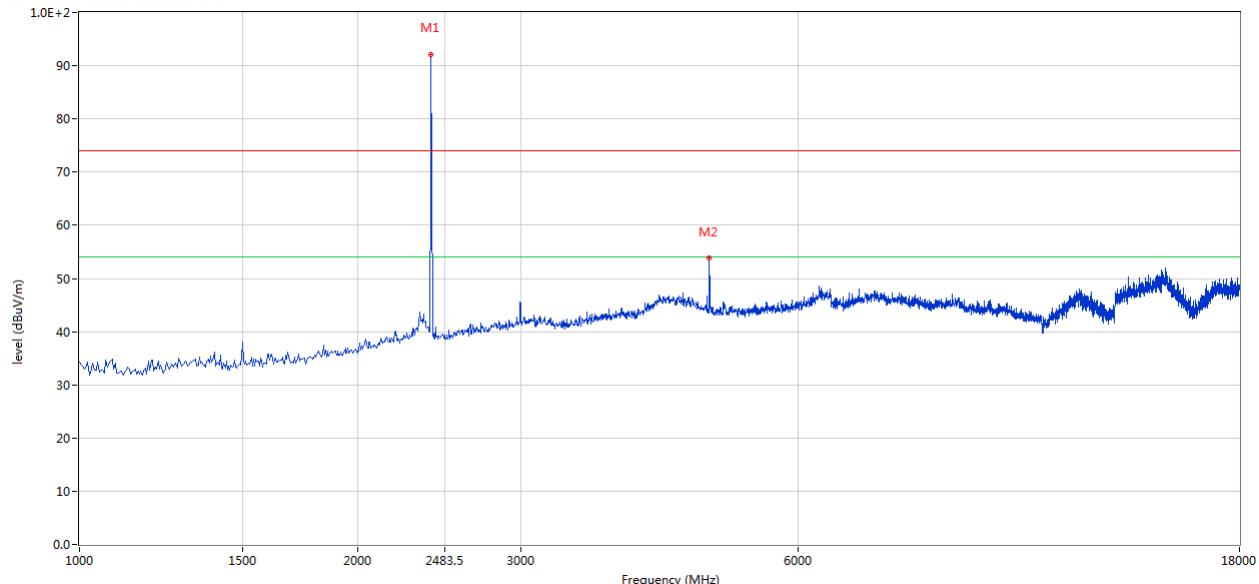
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## GFSK 2M

### Horizontal

FCC Part 15C Class B 1GHz-18GHz -2



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
1	2402	92.12	-3.57	114.0	-21.88	Peak	47.00	100	Horizontal	Pass
2	4802.799	53.78	3.12	74.0	-20.22	Peak	52.00	100	Horizontal	Pass

The report refers only to the sample tested and does not apply to the bulk.

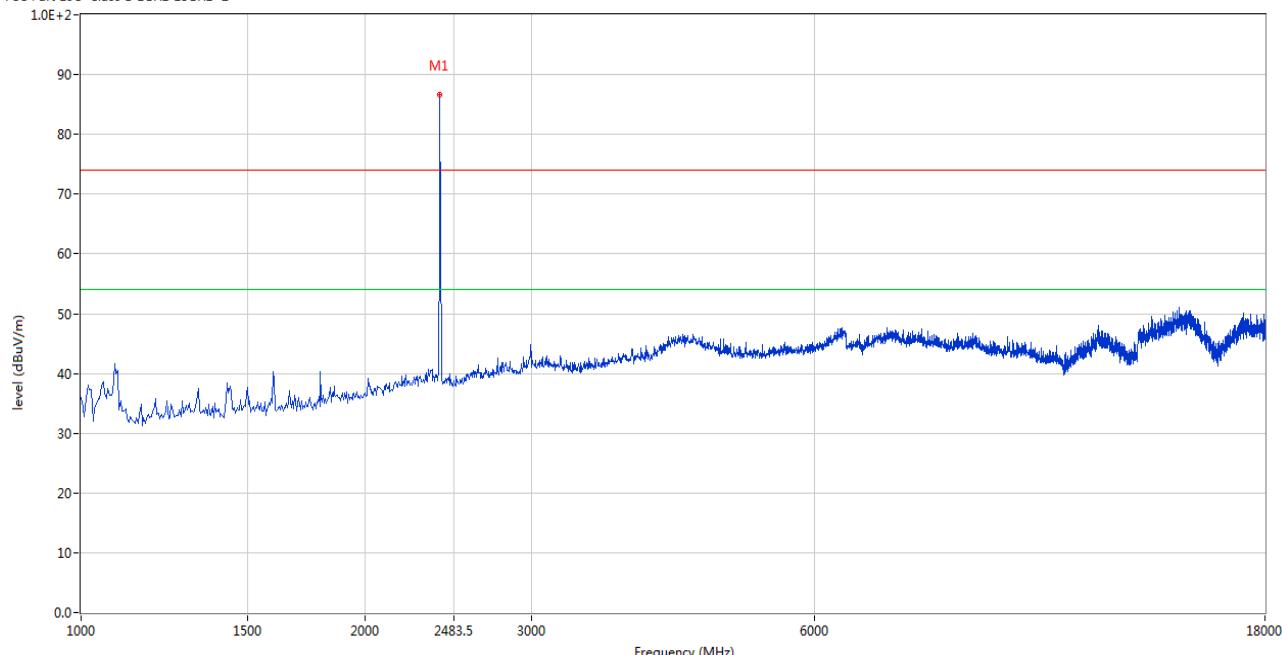
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## Vertical

FCC Part 15C Class B 1GHz-18GHz -2



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
1	2402	86.56	-3.57	114.0	-27.44	Peak	79.00	100	Vertical	Pass

The report refers only to the sample tested and does not apply to the bulk.

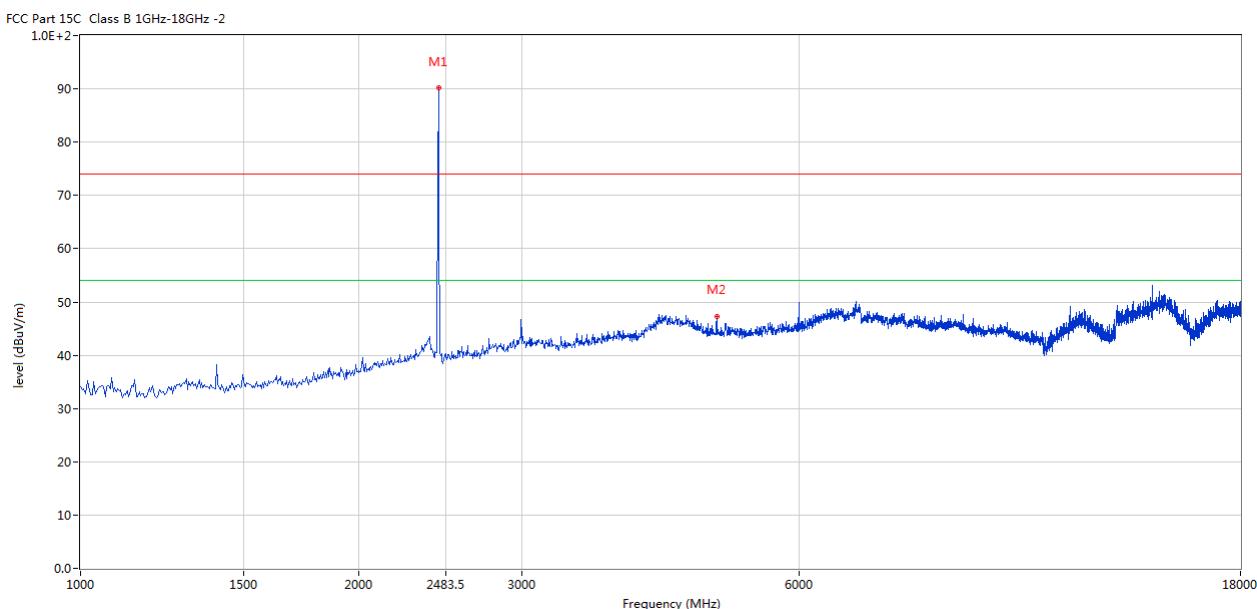
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Please refer to the following test plots for details: Middle Channel-2440MHz

### Horizontal



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
1	2440	90.19	-3.57	114.0	-23.81	Peak	52.00	100	Horizontal	Pass
2	4879.280	47.29	3.20	74.0	-26.71	Peak	57.00	100	Horizontal	Pass

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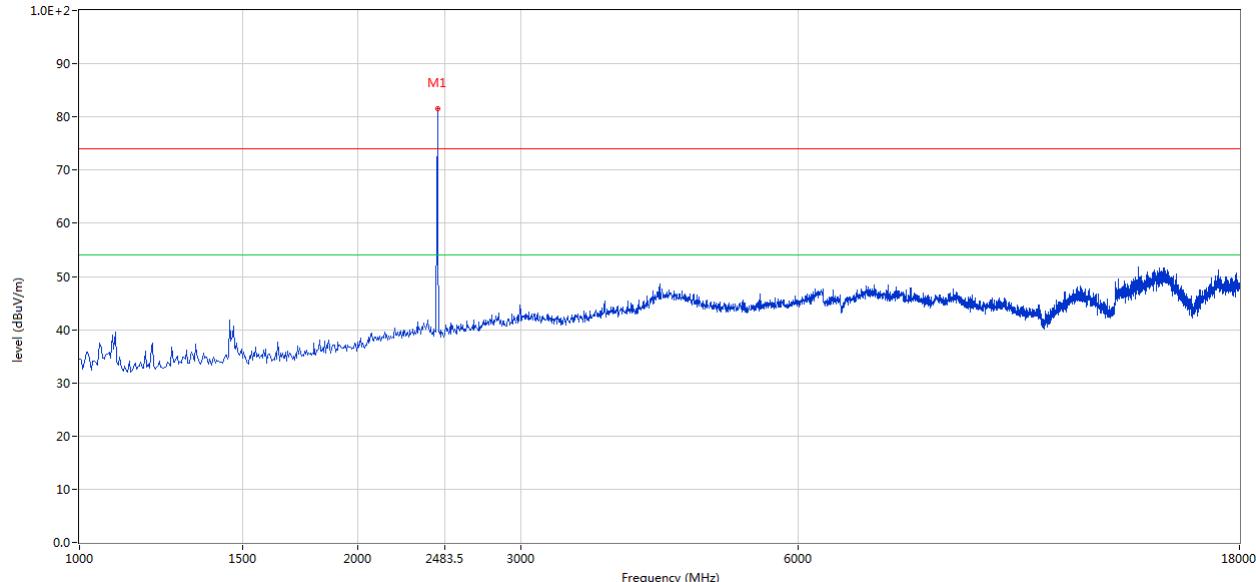
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## Vertical

FCC Part 15C Class B 1GHz-18GHz -2



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
1	2440	81.52	-3.57	114.0	-32.48	Peak	113.00	100	Vertical	Pass

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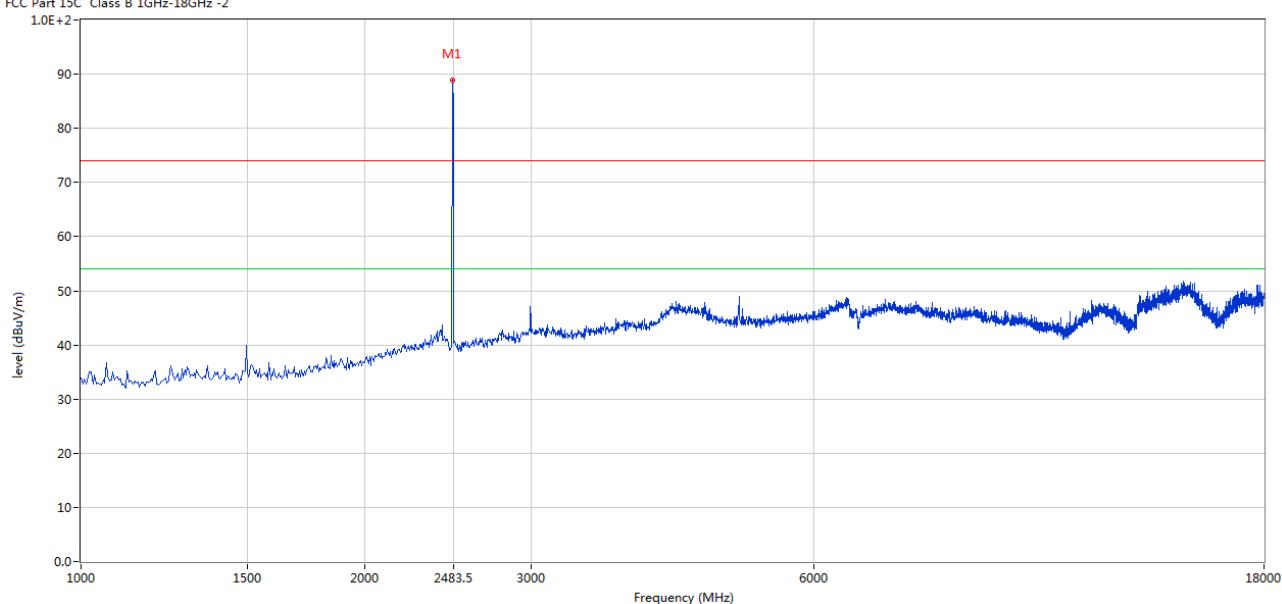
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Please refer to the following test plots for details: High Channel-2480MHz

### Horizontal

FCC Part 15C Class B 1GHz-18GHz -2



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
1	2480	88.79	-3.57	114.0	-25.21	Peak	60.00	100	Horizontal	Pass

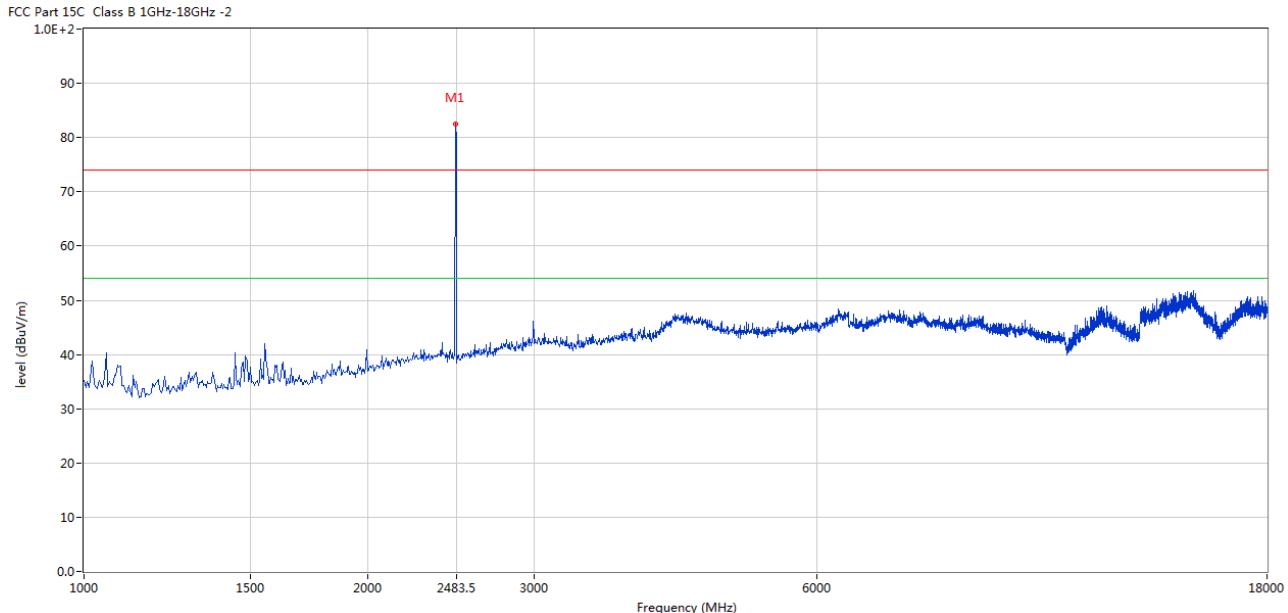
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### Vertical



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
1	2480	82.38	-3.57	114.0	-31.62	Peak	117.00	100	Vertical	Pass

Note:

- (2) Emission Level = Reading Level + Antenna Factor + Cable Loss-Amplifier
- (3) Margin=Emission-Limits
- (4) According to section 15.35(b), the peak limit is 20dB higher than the average limit
- (5) For test purpose, keep EUT continuous transmitting
- (5) For emission above 18GHz and Below 30MHz, It is only the floor noise. No necessary to take down.
- (6) the measured PK value less than the AV limit.

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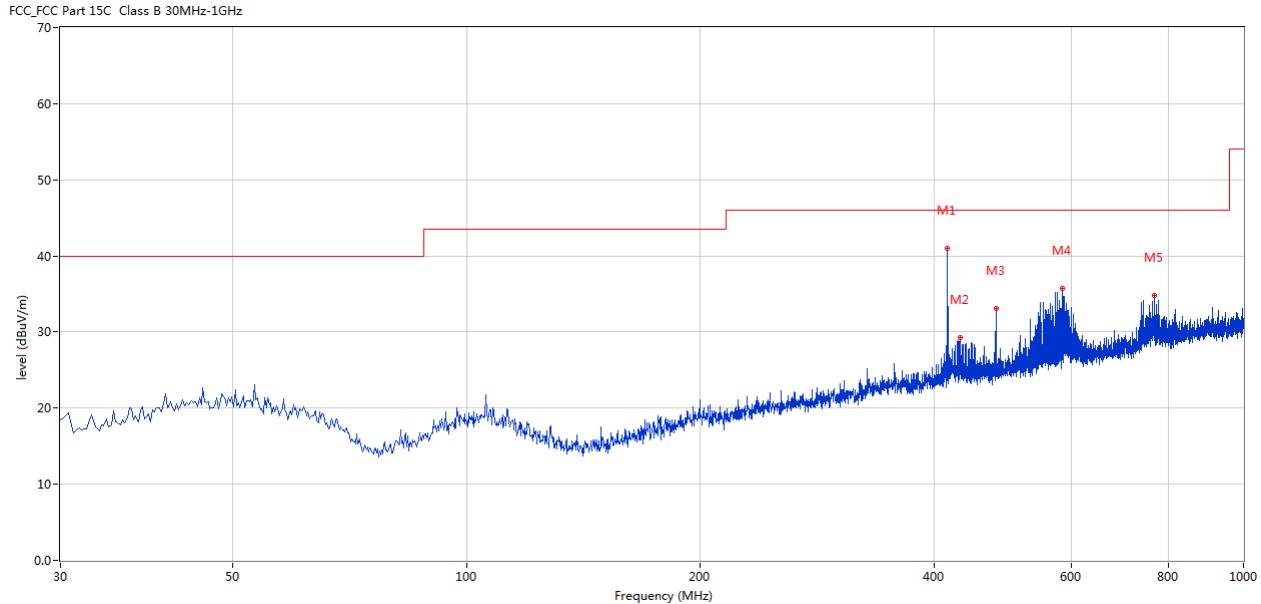
## B. General Radiated Emission Data

### Radiated Emission In Horizontal (30MHz----1000MHz)

EUT set Condition: Keep Tx transmitting

**Results: Pass**

Please refer to following diagram for individual



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
1	415.964	41.02	-8.34	46.0	-4.98	Peak	274.00	100	Horizontal	Pass
2	431.965	29.27	-8.09	46.0	-16.73	Peak	274.00	100	Horizontal	Pass
3	479.968	33.14	-7.40	46.0	-12.86	Peak	147.00	100	Horizontal	Pass
4	583.974	35.68	-5.52	46.0	-10.32	Peak	269.00	100	Horizontal	Pass
5	767.986	34.79	-3.20	46.0	-11.21	Peak	56.00	100	Horizontal	Pass

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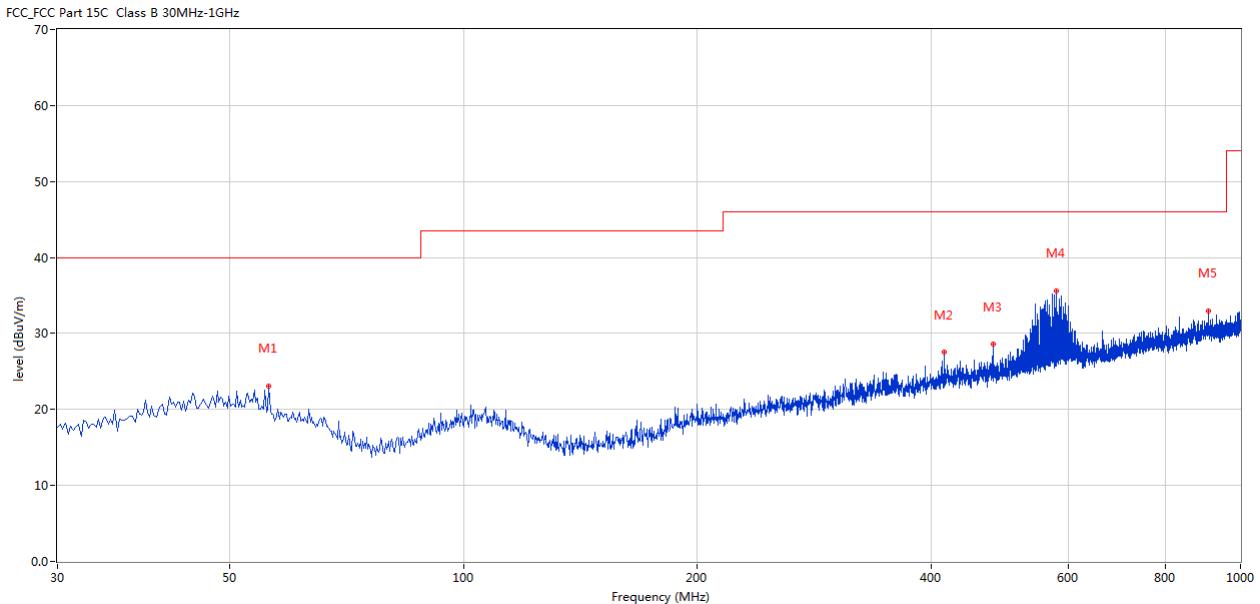


### Radiated Emission In Vertical (30MHz----1000MHz)

EUT set Condition: Keep Tx transmitting

#### Results: Pass

Please refer to following diagram for individual



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
1	56.183	23.06	-12.07	40.0	-16.94	Peak	353.00	100	Vertical	Pass
2	415.964	27.49	-8.34	46.0	-18.51	Peak	147.00	100	Vertical	Pass
3	479.968	28.55	-7.40	46.0	-17.45	Peak	13.00	100	Vertical	Pass
4	579.853	35.65	-5.57	46.0	-10.35	Peak	163.00	100	Vertical	Pass
5	910.540	32.98	-1.77	46.0	-13.02	Peak	314.00	100	Vertical	Pass

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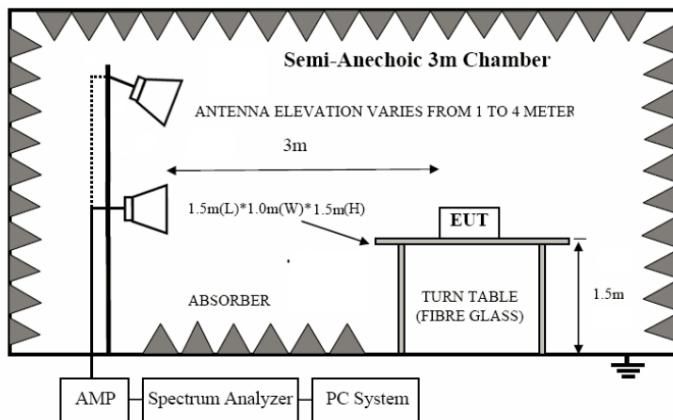


## 7. Band Edge

### 7.1 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) Set Spectrum as RBW=1MHz, VBW=3MHz and Peak detector used for PK value. RBW=1MHz, VBW=10Hz and Peak detector used for AV value.
- (3) The antenna high is varied from 1 m to 4 m high to find the maximum emission for each frequency.
- (4) The antenna polarization: Vertical polarization and Horizontal polarization.

### 7.2 Radiated Test Setup



For the actual test configuration, please refer to the related items – Photos of Testing

### 7.3 Configuration of the EUT

Same as section 5.3 of this report

### 7.4 EUT Operating Condition

Same as section 5.4 of this report.

### 7.5 Band Edge Limit

Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50 dB below the level of the fundamental or to the general radiated emission limits in Section 15.209, whichever is the lesser attenuation.

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## 7.6 Test Result

### GFSK 1M

Product:	Bluetooth Headphone		Polarity	Horizontal						
Mode	Keeping Transmitting		Test Voltage	DC3.7V						
Temperature	24 deg. C,		Humidity	56% RH						
Test Result:	Pass		--	--						
FCC Part 15C Class B 1GHz-18GHz -2										
No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
1	2402.037	91.10	-3.57	74.0	17.10	Peak	199.00	100	Horizontal	N/A
2	2400.000	64.81	-3.57	74.0	-9.19	Peak	202.43	100	Horizontal	Pass
2**	2400.000	49.38	-3.57	54.0	-4.62	AV	202.43	100	Horizontal	Pass
3	2390.000	39.51	-3.53	74.0	-34.49	Peak	231.00	100	Horizontal	Pass

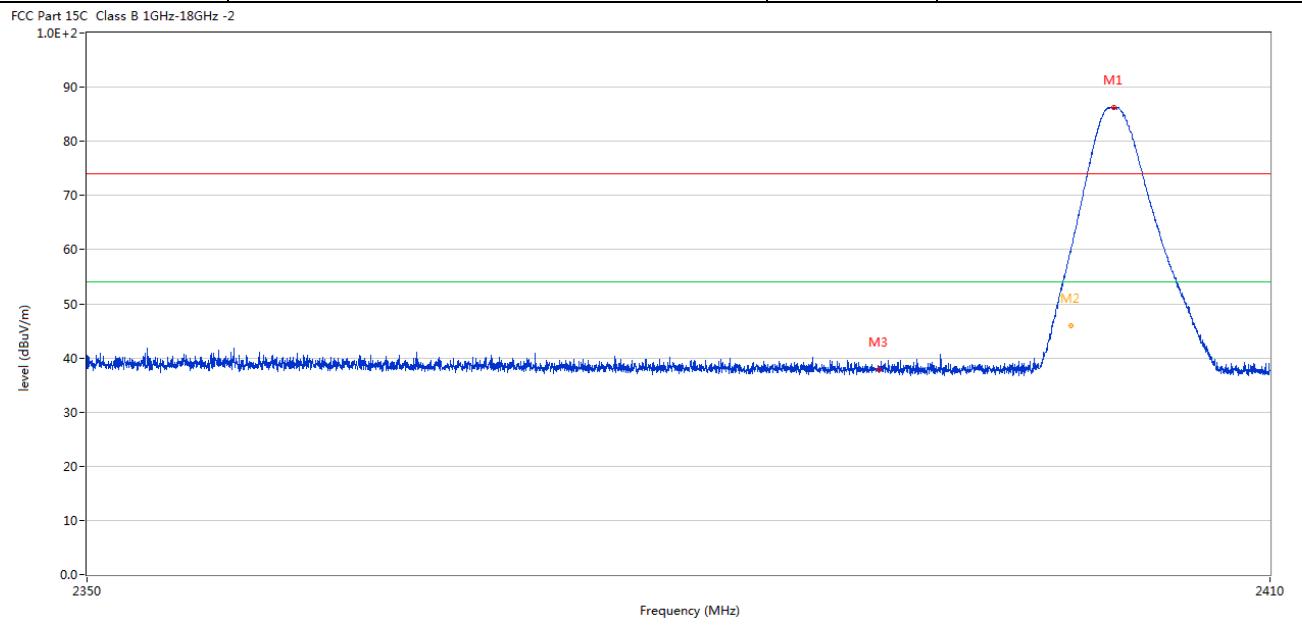
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Product:	Bluetooth Headphone	Detector	Vertical
Mode	Keeping Transmitting	Test Voltage	DC3.7V
Temperature	24 deg. C,	Humidity	56% RH
Test Result:	Pass	--	--



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
1	2401.977	86.26	-3.57	74.0	12.26	Peak	207.00	100	Vertical	N/A
2	2400.000	60.29	-3.57	74.0	-13.71	Peak	207.00	100	Vertical	Pass
2**	2400.000	46.28	-3.57	54.0	-7.72	AV	207.00	100	Vertical	Pass
3	2390.000	38.08	-3.53	74.0	-35.92	Peak	237.67	100	Vertical	Pass

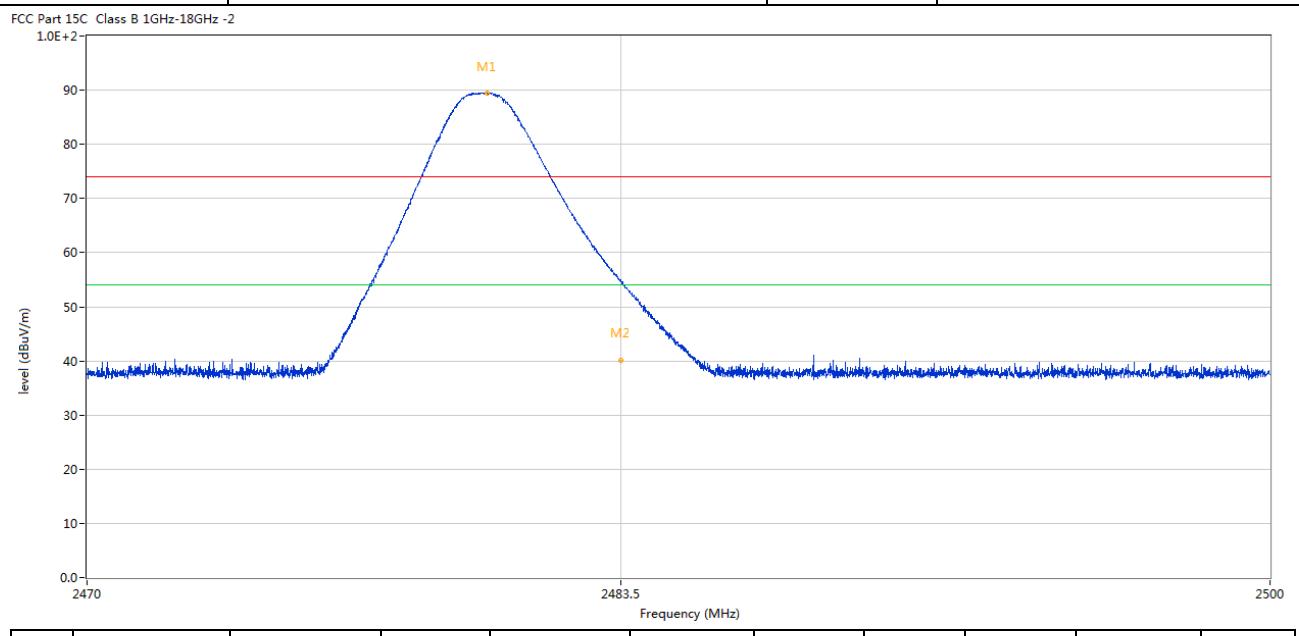
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Product:	Bluetooth Headphone	Polarity	Horizontal
Mode	Keeping Transmitting	Test Voltage	DC3.7V
Temperature	24 deg. C,	Humidity	56% RH
Test Result:	Pass	--	--



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
1	2480.107	89.44	-3.57	74.0	15.44	Peak	203.00	100	Horizontal	N/A
2	2483.500	54.84	-3.57	74.0	-19.16	Peak	203.00	100	Horizontal	Pass
2**	2483.500	40.21	-3.57	54.0	-13.79	AV	203.00	100	Horizontal	Pass

The report refers only to the sample tested and does not apply to the bulk.

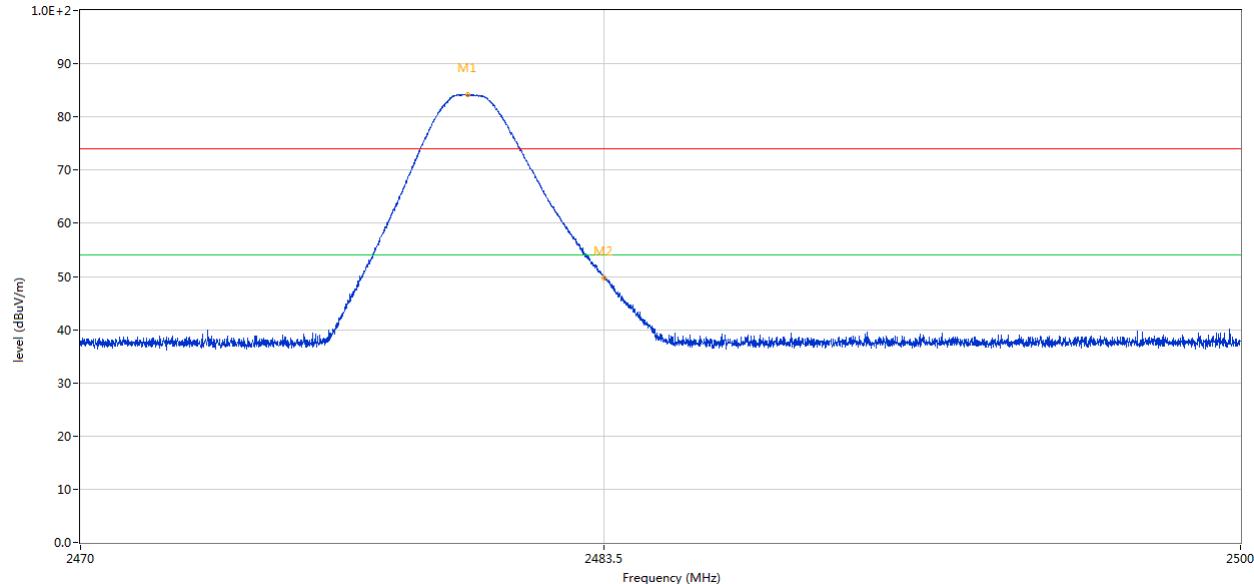
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Product:	Bluetooth Headphone	Detector	Vertical
Mode	Keeping Transmitting	Test Voltage	DC3.7V
Temperature	24 deg. C,	Humidity	56% RH
Test Result:	Pass	--	--

FCC Part 15C Class B 1GHz-18GHz -2



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
1	2479.980	84.19	-3.57	74.0	10.19	Peak	295.00	100	Vertical	N/A
2	2483.500	49.77	-3.57	74.0	-24.23	Peak	295.00	100	Vertical	Pass

Note: The PK emission level less than the AV limit. No necessary to record the AV emission level.

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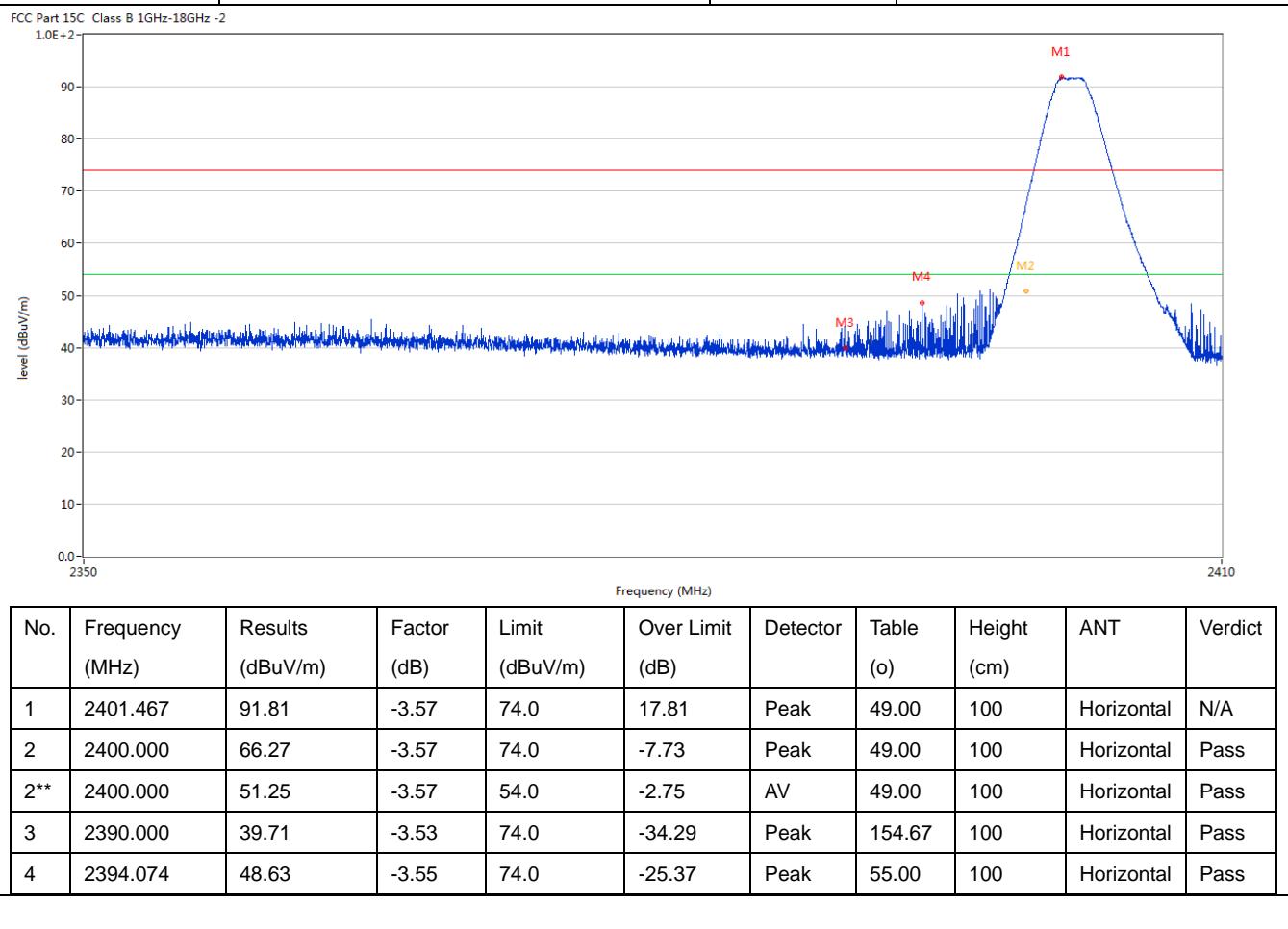
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**GFSK 2M**

Product:	Bluetooth Headphone	Polarity	Horizontal
Mode	Keeping Transmitting	Test Voltage	DC3.7V
Temperature	24 deg. C,	Humidity	56% RH
Test Result:	Pass	--	--



The report refers only to the sample tested and does not apply to the bulk.

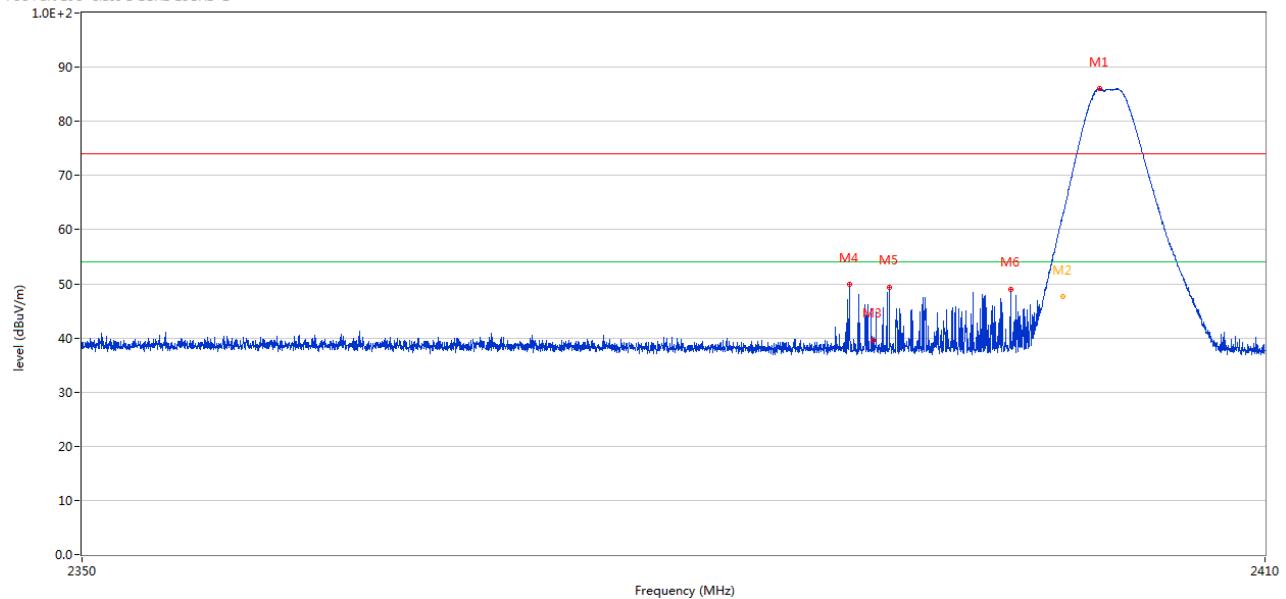
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Product:	Bluetooth Headphone	Detector	Vertical
Mode	Keeping Transmitting	Test Voltage	DC3.7V
Temperature	24 deg. C,	Humidity	56% RH
Test Result:	Pass	--	--

FCC Part 15C Class B 1GHz-18GHz -2



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
1	2401.497	86.01	-3.57	74.0	12.01	Peak	76.00	100	Vertical	N/A
2	2400.000	62.49	-3.57	74.0	-11.51	Peak	80.29	100	Vertical	Pass
2**	2400.000	47.38	-3.57	54.0	-6.62	AV	80.29	100	Vertical	Pass
3	2390.000	39.44	-3.53	74.0	-34.56	Peak	100.33	100	Vertical	Pass
4	2388.750	49.81	-3.53	74.0	-24.19	Peak	351.00	100	Vertical	Pass
5	2390.775	49.33	-3.53	74.0	-24.67	Peak	341.00	100	Vertical	Pass
6	2396.983	48.98	-3.56	74.0	-25.02	Peak	341.00	100	Vertical	Pass

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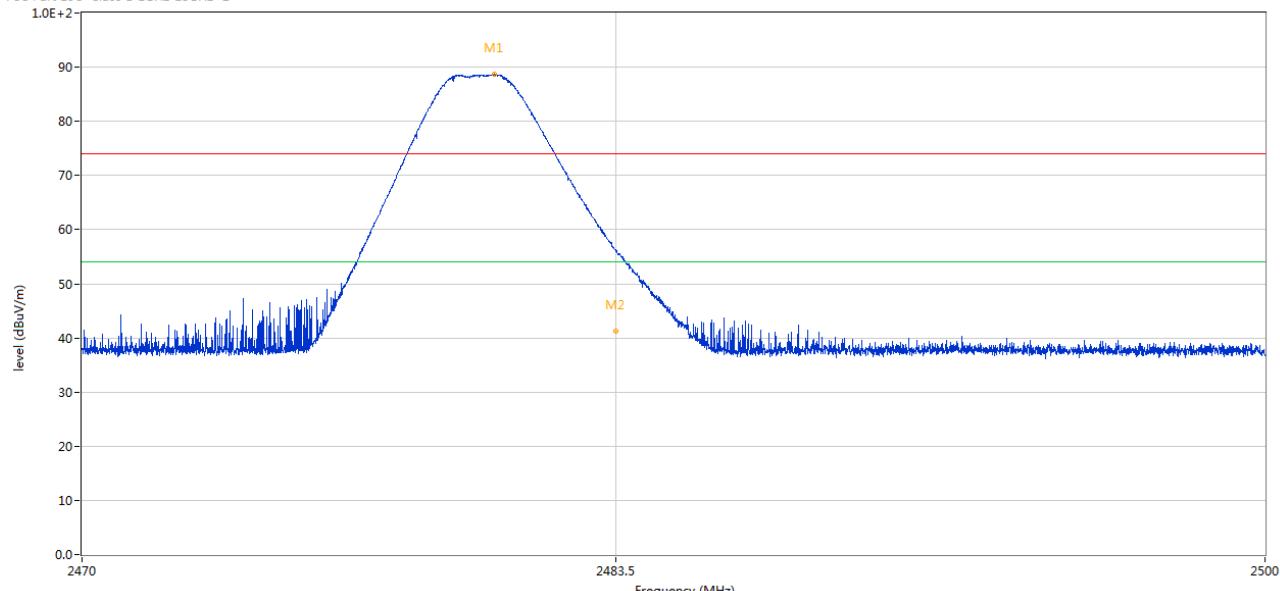
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Product:	Bluetooth Headphone	Polarity	Horizontal
Mode	Keeping Transmitting	Test Voltage	DC3.7V
Temperature	24 deg. C,	Humidity	56% RH
Test Result:	Pass	--	--

FCC Part 15C Class B 1GHz-18GHz -2



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
1	2480.407	88.62	-3.57	74.0	14.62	Peak	59.00	100	Horizontal	N/A
2	2483.500	56.04	-3.57	74.0	-17.96	Peak	59.00	100	Horizontal	Pass
2**	2483.500	41.89	-3.57	54.0	-12.11	AV	59.00	100	Horizontal	Pass

The report refers only to the sample tested and does not apply to the bulk.

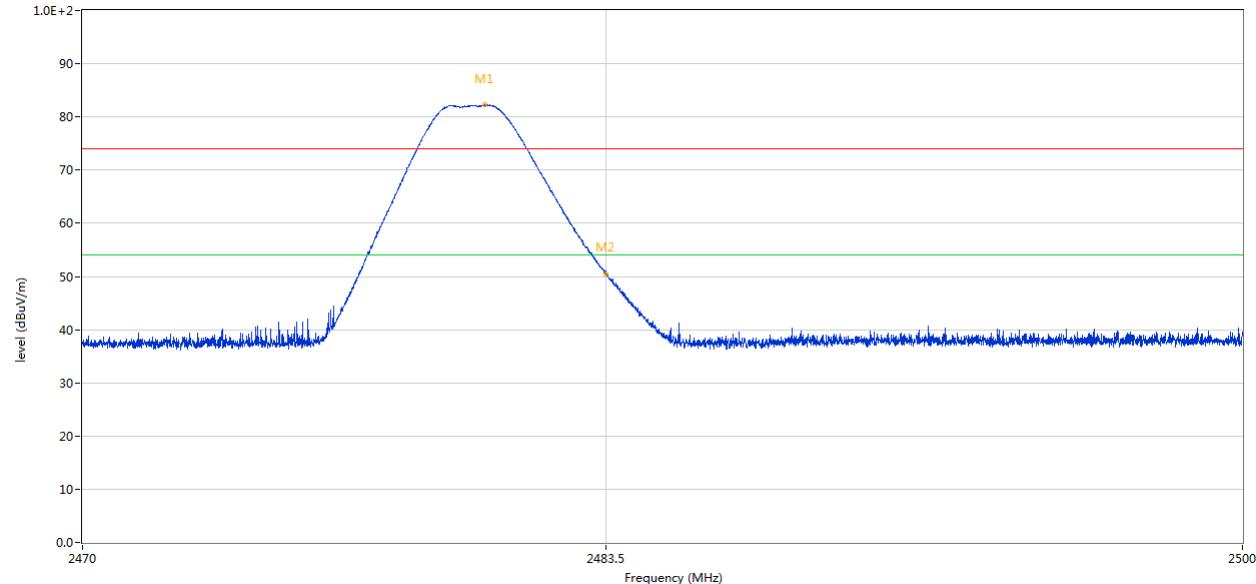
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Product:	Bluetooth Headphone	Detector	Vertical
Mode	Keeping Transmitting	Test Voltage	DC3.7V
Temperature	24 deg. C,	Humidity	56% RH
Test Result:	Pass	--	--

FCC Part 15C Class B 1GHz-18GHz -2



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
1	2480.370	82.23	-3.57	74.0	8.23	Peak	70.00	100	Vertical	N/A
2	2483.500	50.55	-3.57	74.0	-23.45	Peak	94.57	100	Vertical	Pass

Note: The PK emission level less than the AV limit. No necessary to record the AV emission level.

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## 8.0 Antenna Requirement

### Applicable Standard

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. 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.

This product has a PCB antenna with gain 0dBi maximum. It fulfills the requirement of this section.

Test Result: Pass

The report refers only to the sample tested and does not apply to the bulk.

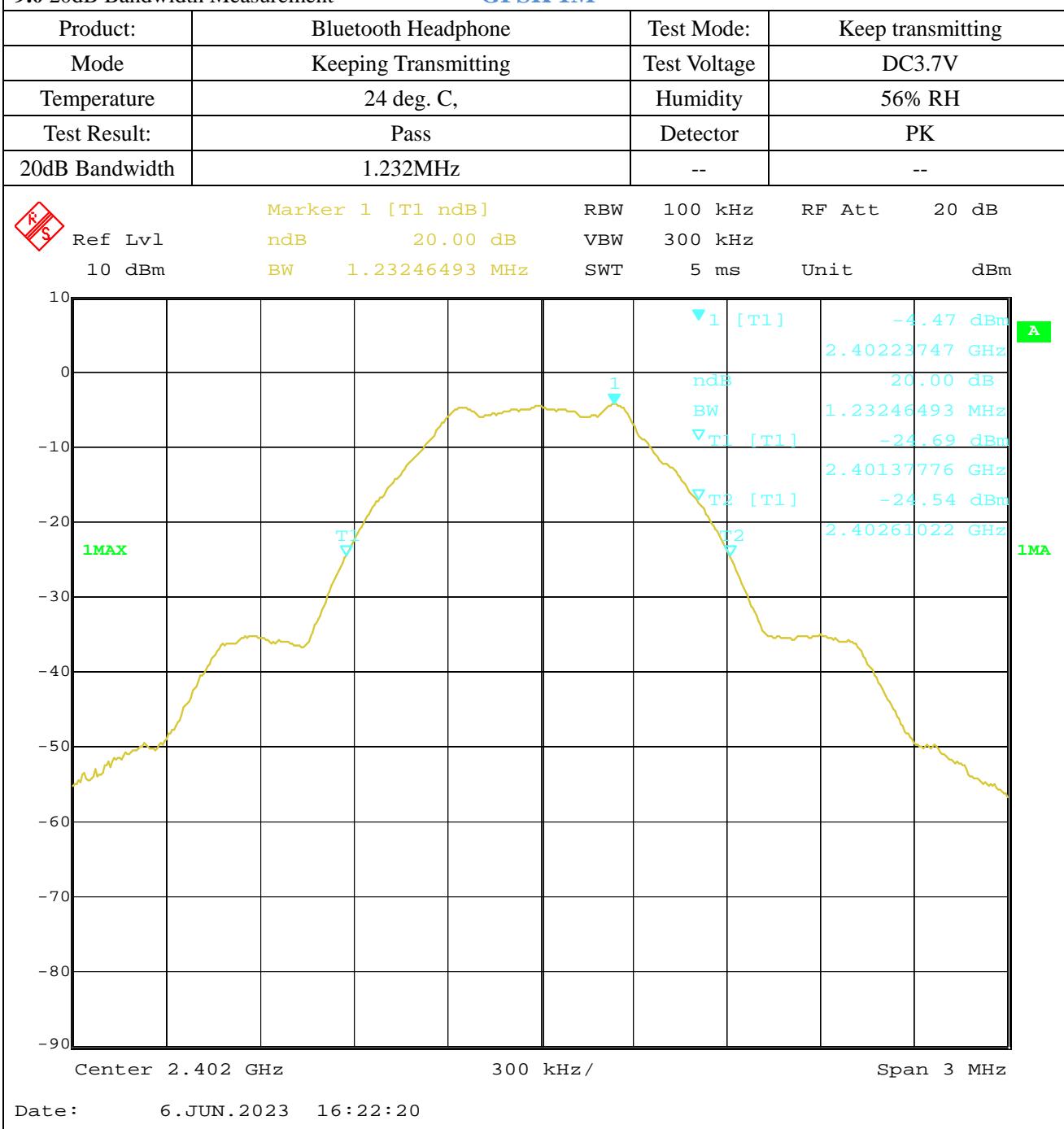
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## 9.0 20dB Bandwidth Measurement

### GFSK 1M



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Product:	Bluetooth Headphone	Test Mode:	Keep transmitting					
Mode	Keeping Transmitting	Test Voltage	DC3.7V					
Temperature	24 deg. C,	Humidity	56% RH					
Test Result:	Pass	Detector	PK					
20dB Bandwidth	1.226MHz	--	--					
Ref Lvl Marker 1 [T1 ndB] RBW 100 kHz RF Att 20 dB ndB 20.00 dB VBW 300 kHz 10 dBm BW 1.22645291 MHz SWT 5 ms Unit dBm								
1MAX 1MA								
Date: 6.JUN.2023 16:16:33								

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Product:	Bluetooth Headphone	Test Mode:	Keep transmitting					
Mode	Keeping Transmitting	Test Voltage	DC3.7V					
Temperature	24 deg. C,	Humidity	56% RH					
Test Result:	Pass	Detector	PK					
20dB Bandwidth	1.232MHz	--	--					
Ref Lvl Marker 1 [T1 ndB] RBW 100 kHz RF Att 20 dB ndB 20.00 dB VBW 300 kHz 10 dBm BW 1.23246493 MHz SWT 5 ms Unit dBm								
1MAX 1MA								
Date: 6.JUN.2023 16:15:49								

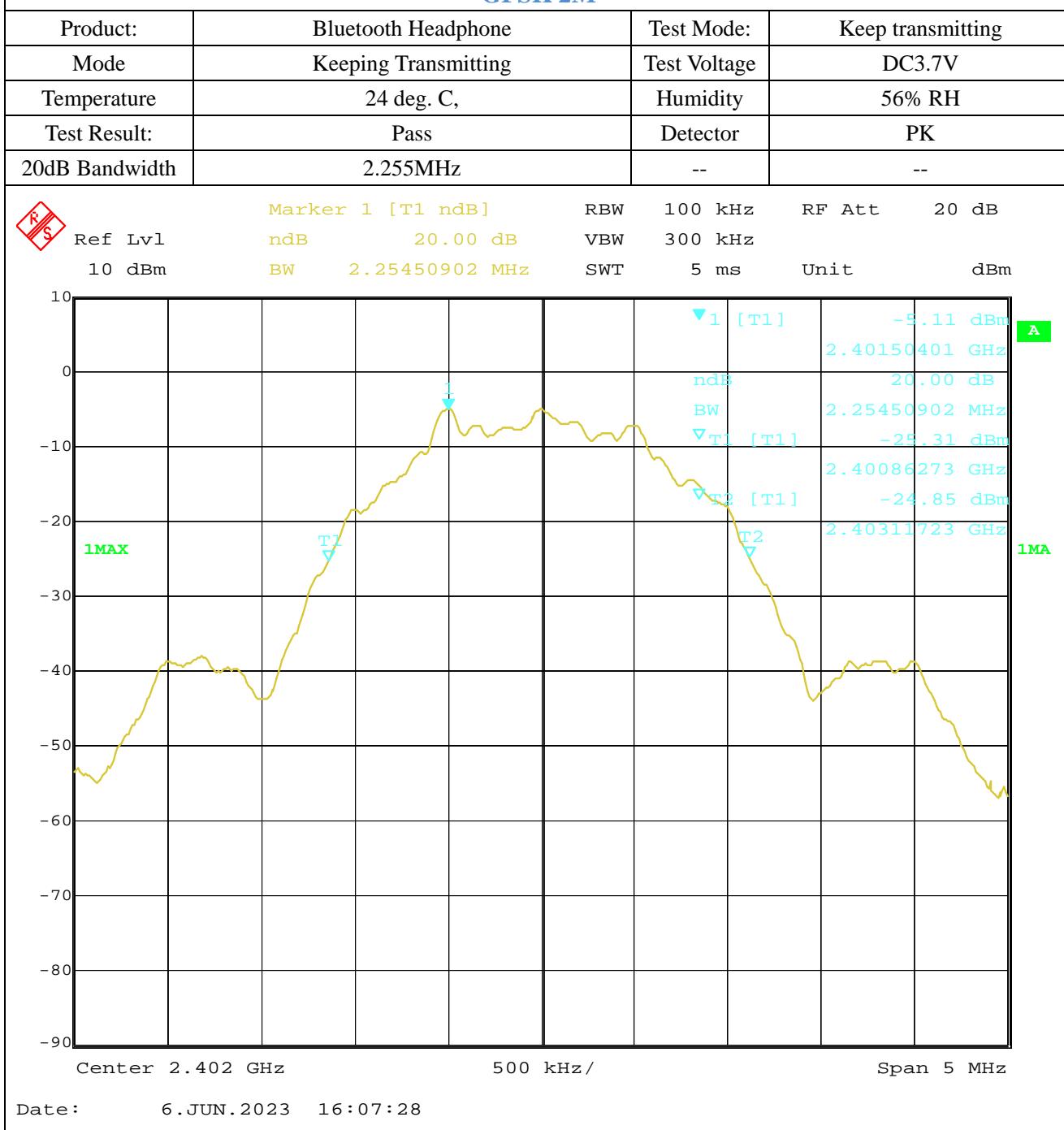
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**GFSK 2M**

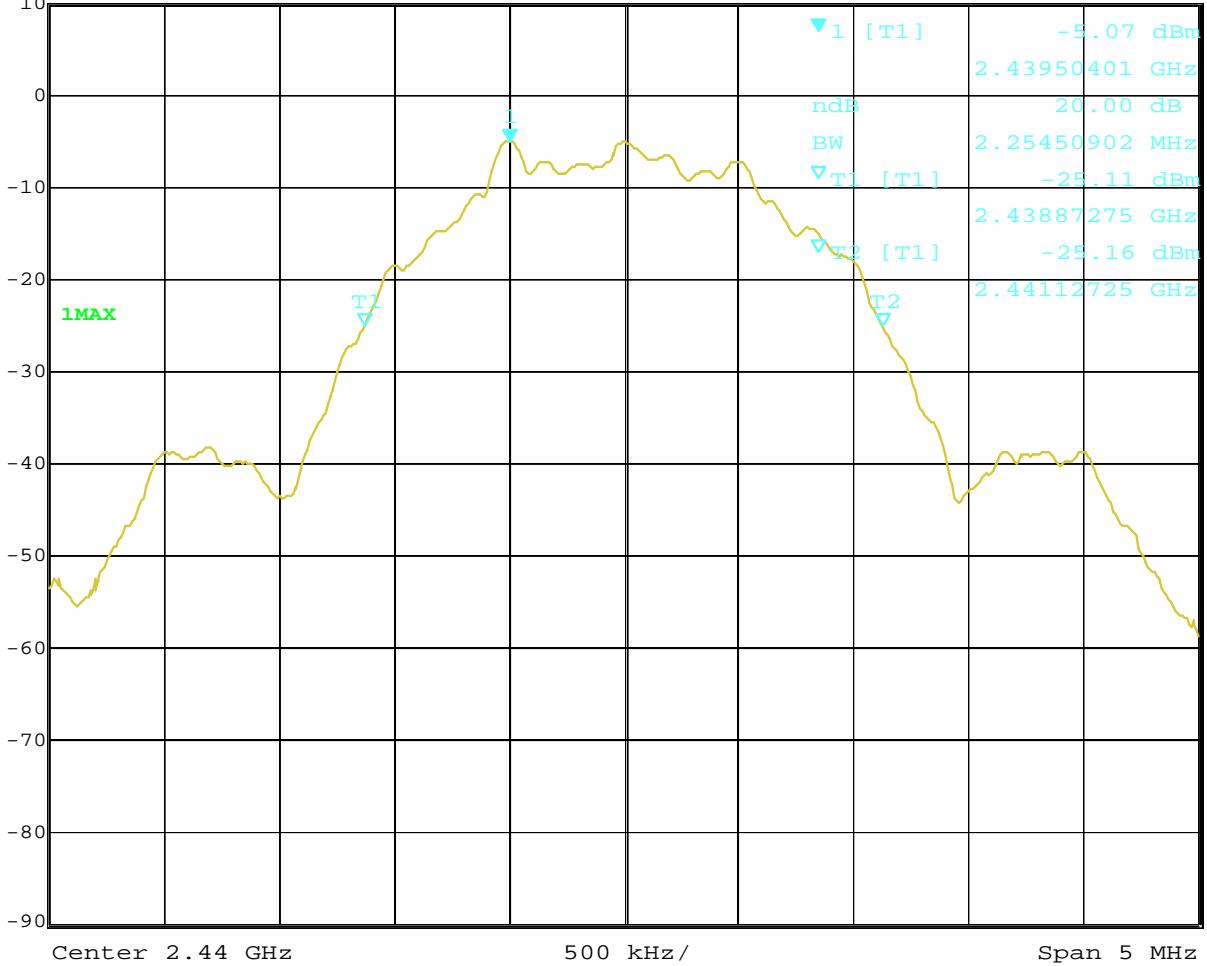


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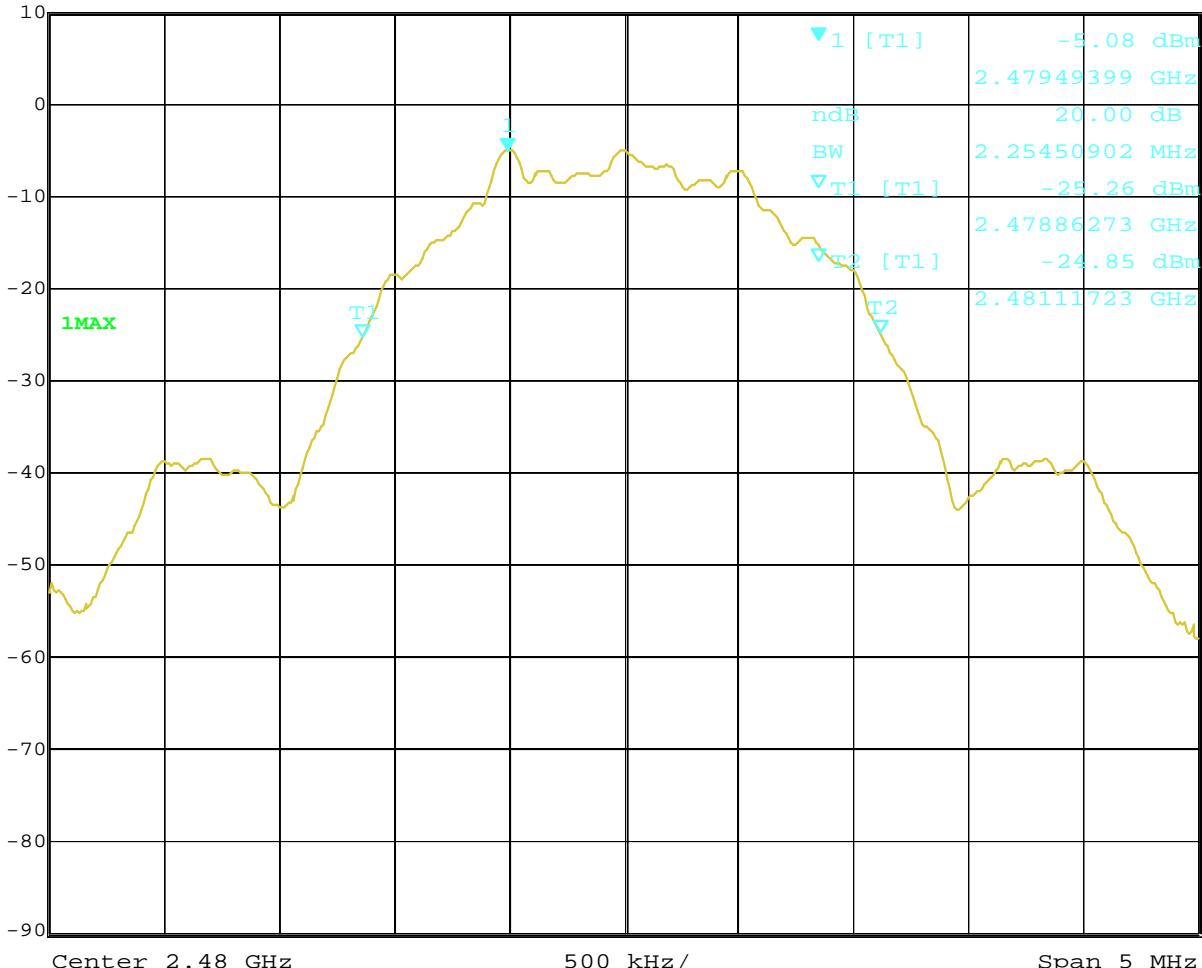
Product:	Bluetooth Headphone	Test Mode:	Keep transmitting
Mode	Keeping Transmitting	Test Voltage	DC3.7V
Temperature	24 deg. C,	Humidity	56% RH
Test Result:	Pass	Detector	PK
20dB Bandwidth	2.255MHz	--	--
 Ref Lvl Marker 1 [T1 ndB] ndB 20.00 dB 10 dBm BW 2.25450902 MHz RBW 100 kHz VBW 300 kHz SWT 5 ms Unit dBm			
 A			
1MAX			
Date: 6.JUN.2023 16:10:45			

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Product:	Bluetooth Headphone	Test Mode:	Keep transmitting												
Mode	Keeping Transmitting	Test Voltage	DC3.7V												
Temperature	24 deg. C,	Humidity	56% RH												
Test Result:	Pass	Detector	PK												
20dB Bandwidth	2.255MHz	--	--												
 Ref Lvl <table> <tr> <td>Marker 1 [T1 ndB]</td> <td>RBW 100 kHz</td> <td>RF Att 20 dB</td> </tr> <tr> <td>ndB 20.00 dB</td> <td>VBW 300 kHz</td> <td></td> </tr> <tr> <td>10 dBm</td> <td>SWT 5 ms</td> <td>Unit dBm</td> </tr> <tr> <td>BW 2.25450902 MHz</td> <td></td> <td></td> </tr> </table>				Marker 1 [T1 ndB]	RBW 100 kHz	RF Att 20 dB	ndB 20.00 dB	VBW 300 kHz		10 dBm	SWT 5 ms	Unit dBm	BW 2.25450902 MHz		
Marker 1 [T1 ndB]	RBW 100 kHz	RF Att 20 dB													
ndB 20.00 dB	VBW 300 kHz														
10 dBm	SWT 5 ms	Unit dBm													
BW 2.25450902 MHz															
 <p>The plot shows a spectrum analysis result. The Y-axis represents power in dBm, ranging from -90 to 10. The X-axis represents frequency in GHz, with a center frequency of 2.48 GHz and a span of 5 MHz. The spectrum shows a main emission at 2.47949399 GHz with a power of -5.08 dBm and a bandwidth of 2.25450902 MHz. There are also markers for T1 and T2, with T1 at 2.47886273 GHz and T2 at 2.48111723 GHz. The plot is labeled with '1MAX' and '1MA'.</p>															
Date: 6.JUN.2023 16:13:06															

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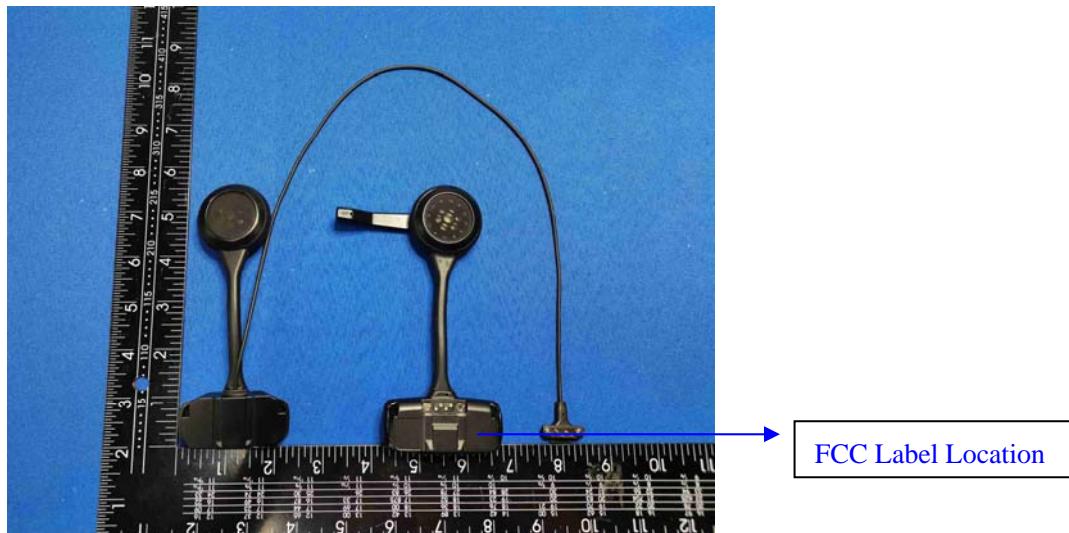


## 10.0 FCC ID Label

**FCC ID: 2AE6N-TERRANOQ**

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:



FCC Label Location

The report refers only to the sample tested and does not apply to the bulk.

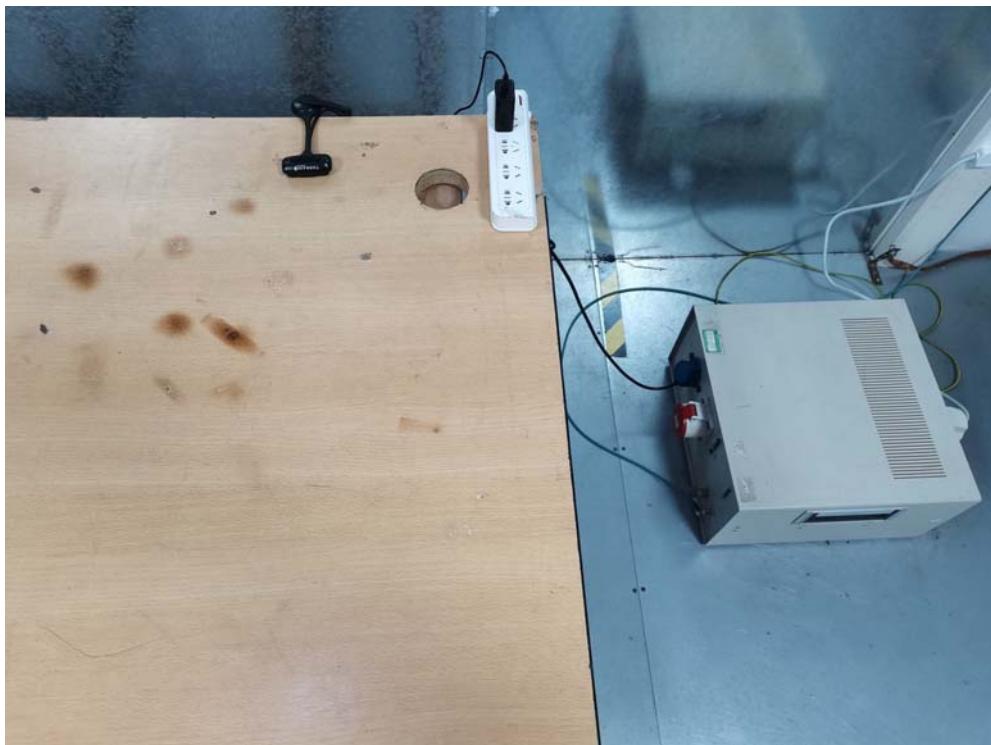
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**11.0** Photo of testing

**11.1** Conducted test View



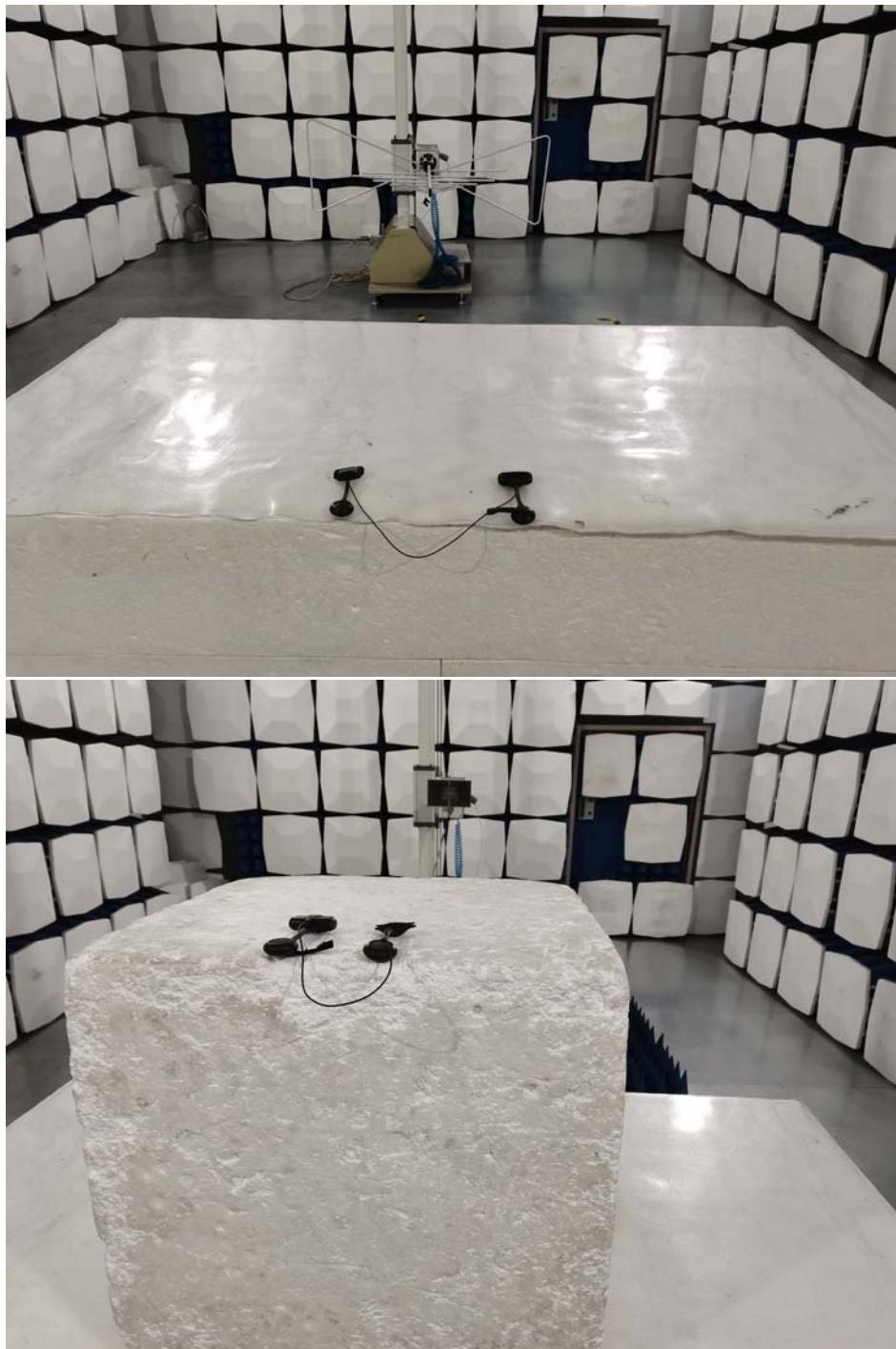
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Radiated emission test view



### Photographs – EUT

Please refer test report TW2305168-01E.

**--End of the report--**

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