TEST REPORT

Report No.:	TWN2503520-02E
Applicant:	Shenzhen Shenma Technology Co., Ltd
Product:	Dual two-in-one Earphone
Model No.:	i24, i24X, i20, i21, i100, i39, i39P, A7, A8, A9, A10, A20, A30
Trademark:	N/A
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: April 07, 2025

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:

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

Test Report Conclusion

Content

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 Sates

Registration Number: 744189

For 3m Anechoic Chamber

1.2 Applicant Details

Applicant: Shenzhen Shenma Technology Co., Ltd

Address: 4th Floor, Building B, Wannianhao Technology Park, Yu'an 2nd Road, Bao'an District, Shenzhen, Guangdong Province

1.3 Description of EUT

Product:	Dual two-in-one Earphone
Manufacturer:	Shenzhen Shenma Technology Co., Ltd
Address:	4th Floor, Building B, Wannianhao Technology Park, Yu'an 2nd Road, Bao'an District, Shenzhen, Guangdong Province
Trademark:	N/A
Model Number:	i24
Additional Model Name	i24X, i20, i21, i100, i39, i39P, A7, A8, A9, A10, A20, A30
Remark:	This dual two-in-one Earphones is a set of combination earphones (model: i24) that include three parts: clip on headphones, in ear headphones and share a battery charging compartment. It has two identical clip on headphones (models: i24, i24X, i20, i21, i100, i39, i39P, A7, A8, A9, A10, A20, A30, these models are identical in terms of internal structure, circuits, and components, but the model names vary due to market demand, with built-in lithium battery DC3.7V, 30Mah), and two identical in ear headphones (models: i24, i24X, i24S, i24J, i24JS, i25, T400, D29, i01, i10, i10P, i100P, these models are all the same in terms of internal structure, circuits, and components, but the model names vary depending on market demand. They have a built-in lithium battery: 3.7V, 30Mah), and share a battery charging compartment (built-in lithium battery: DC3.7V, 300mAH). We prepare i21 for this RF testing

Rating:	Input: DC3.7V
Battery:	DC3.7V, 30mAh Li-ion battery for earphones and Built-in DC3.7V, 300mAh Li-ion battery for charger base.
Serial No.:	20250310
Hardware Version:	V1.5
Software Version:	V1.2
Operation Frequency:	2402-2480MHz
Modulation Type:	GFSK, Л/4DQPSK, 8DPSK
Number of Channels:	79
Channel Separation:	1MHz
Antenna Designation	Chip antenna with gain 0.98dBi Max for left and right earphones (Get from the antenna specification)

1.4 Submitted Sample: 4 Samples

1.5 Test Duration

2025-03-29 to 2025-04-07

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

The sample tested by Andy Xing

Print Name: Andy Xing

2.0 Test Equipment					
Instrument Type	Manufacturer	Model	Serial No.	Date of Cal.	Due Date
ESPI Test Receiver	R&S	ESPI 3	100379	2024-07-12	2025-07-11
LISN	R&S	EZH3-Z5	100294	2024-07-12	2025-07-11
LISN	R&S	EZH3-Z5	100253	2024-07-12	2025-07-11
Impuls-Begrenzer	R&S	ESH3-Z2	100281	2024-07-12	2025-07-11
Loop Antenna	EMCO	6507	00078608	2022-07-18	2025-07-17
Spectrum	R&S	FSIQ26	100292	2024-07-12	2025-07-11
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	2025-07-17
Power meter	Anritsu	ML2487A	6K00003613	2024-07-12	2025-07-11
Power sensor	Anritsu	MA2491A	32263	2024-07-12	2025-07-11
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	2024-07-12	2025-07-11
EMI Test Receiver	RS	ESCS 30	834115/006	2024-07-12	2025-07-11
Spectrum	HP/Agilent	E4407B	MY50441392	2024-07-12	2025-07-11
Spectrum	RS	FSP	1164.4391.38	2024-07-12	2025-07-11
RF Cable	Zhengdi	ZT26-NJ-NJ-8M/FA	--	2024-07-12	2025-07-11
RF Cable	Zhengdi	7m	--	2024-07-12	2025-07-11
Pre-Amplifier	Schwarebeck	BBV9743	#218	2024-07-12	2025-07-11
Pre-Amplifier	HP/Agilent	8449B	3008A00160	2024-07-12	2025-07-11
LISN	SCHAFFNER	NNB42	00012	2024-07-12	2025-07-11
ESPI Test Receiver	R&S	ESPI 3	100379	2024-07-12	2025-07-11
LISN	R&S	EZH3-Z5	100294	2024-07-12	2025-07-11

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

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

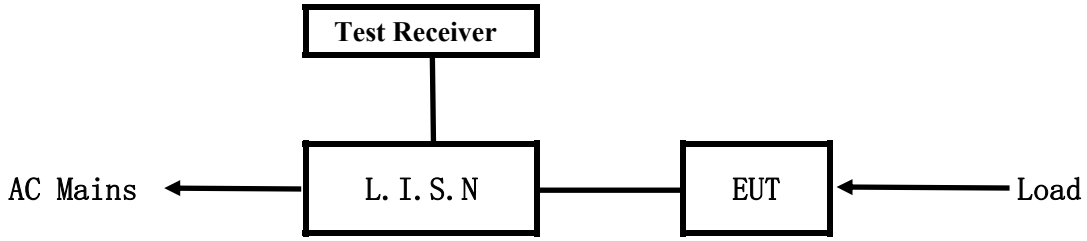
FCC Part 15 Subpart C, Paragraph 15.249, ANSI C63.4 :2014 and ANSI C63.10 :2013

4.0 EUT Modification

No modification by SHENZHEN TIMEWAY TESTING LABORATORIES

5.0 Power Line Conducted Emission Test

5.1 Schematics of the test



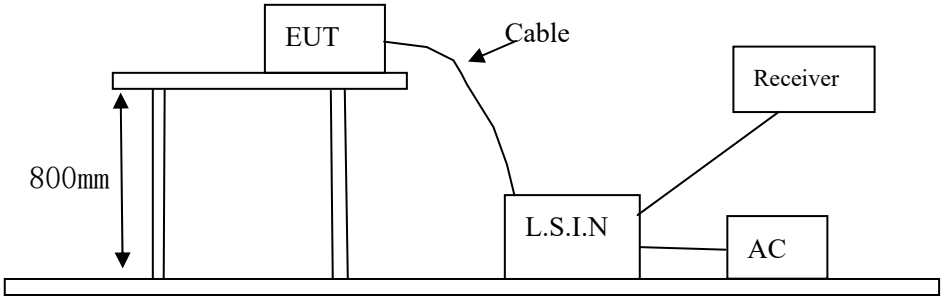
EUT: Equipment Under Test

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.

A. EUT

Device	Manufacturer	Model	FCC ID
Dual two-in-one Earphone	Shenzhen Shenma Technology Co., Ltd	i24, i24X, i20, i21, i100, i39, i39P, A7, A8, A9, A10, A20, A30	2BOIS-2503I21

B. Internal Device

Device	Manufacturer	Model	FCC ID/DOC
N/A			

C. Peripherals

Device	Manufacturer	Model	Rating
Power Supply	Xiaomi	MDY-12-EF	Input: 100-240V~, 50/60Hz, 1.7A; Output: DC5V, 3A; 5-20A; 6.2- 3.25A(67W Max)

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 μ 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	50.0

Notes: 1. *Decreasing linearly with logarithm of frequency.

2. The tighter limit shall apply at the transition frequencies

5.6 Test Results:

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

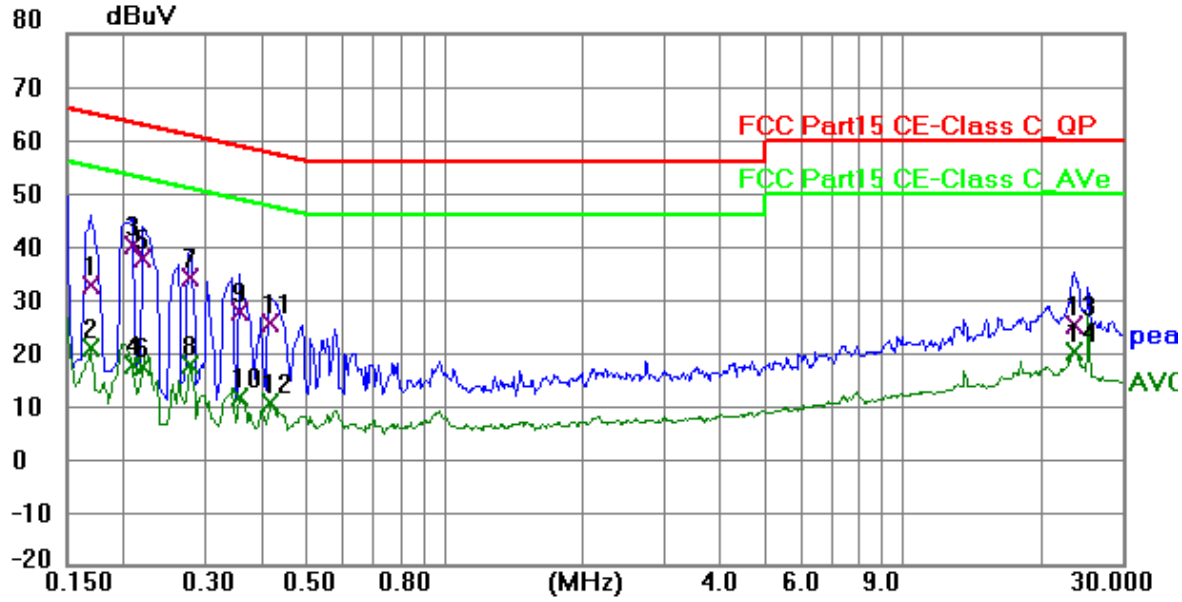
EUT Operating Environment

Temperature: 25℃ Humidity: 65%RH Atmospheric Pressure: 101 kPa

EUT set Condition: Charging and 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	0.1695	22.27	10.33	32.60	64.98	-32.38	QP	P
2	0.1695	10.52	10.33	20.85	54.98	-34.13	AVG	P
3	0.2085	29.70	10.32	40.02	63.26	-23.24	QP	P
4	0.2085	7.31	10.32	17.63	53.26	-35.63	AVG	P
5	0.2202	27.22	10.33	37.55	62.81	-25.26	QP	P
6	0.2202	7.07	10.33	17.40	52.81	-35.41	AVG	P
7	0.2787	23.62	10.34	33.96	60.85	-26.89	QP	P
8	0.2787	7.17	10.34	17.51	50.85	-33.34	AVG	P
9	0.3567	17.41	10.36	27.77	58.80	-31.03	QP	P
10	0.3567	1.14	10.36	11.50	48.80	-37.30	AVG	P
11	0.4191	15.02	10.38	25.40	57.47	-32.07	QP	P
12	0.4191	0.05	10.38	10.43	47.47	-37.04	AVG	P
13	23.6076	9.65	15.65	25.30	60.00	-34.70	QP	P
14	23.6076	4.39	15.65	20.04	50.00	-29.96	AVG	P

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

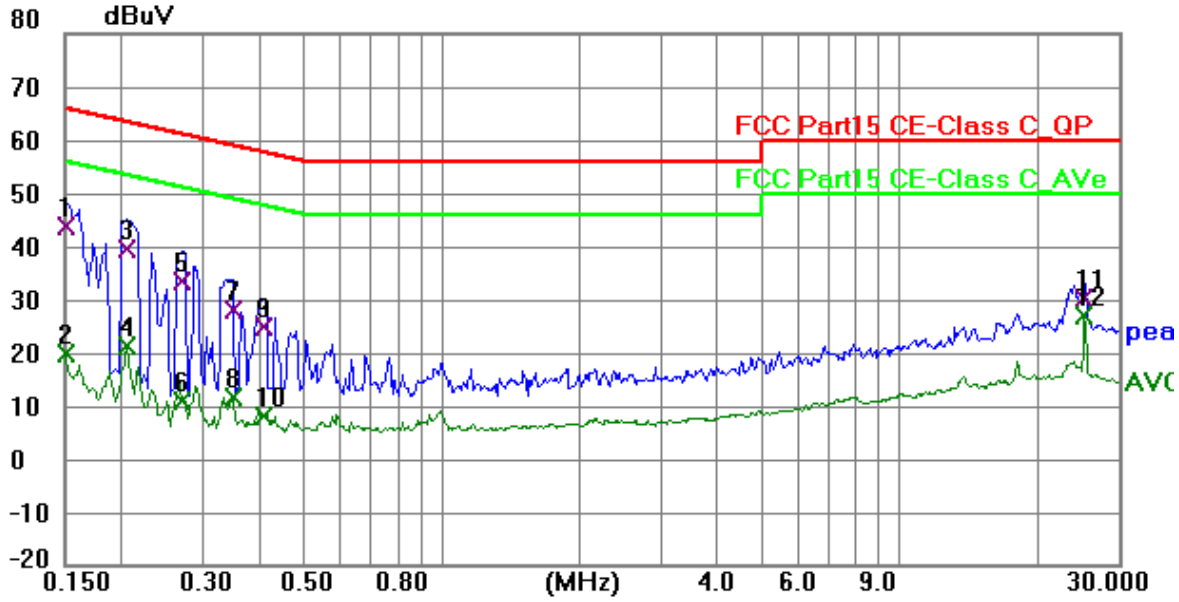
EUT Operating Environment

Temperature: 25℃ Humidity: 65%RH Atmospheric Pressure: 101 kPa

EUT set Condition: Charging and 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	0.1500	33.35	10.34	43.69	66.00	-22.31	QP	P
2	0.1500	9.58	10.34	19.92	56.00	-36.08	AVG	P
3	0.2046	29.17	10.32	39.49	63.42	-23.93	QP	P
4	0.2046	10.87	10.32	21.19	53.42	-32.23	AVG	P
5	0.2709	23.08	10.34	33.42	61.09	-27.67	QP	P
6	0.2709	0.49	10.34	10.83	51.09	-40.26	AVG	P
7	0.3489	17.80	10.36	28.16	58.99	-30.83	QP	P
8	0.3489	1.08	10.36	11.44	48.99	-37.55	AVG	P
9	0.4074	14.62	10.38	25.00	57.70	-32.70	QP	P
10	0.4074	-2.37	10.38	8.01	47.70	-39.69	AVG	P
11	25.2300	15.05	15.29	30.34	60.00	-29.66	QP	P
12	25.2300	11.85	15.29	27.14	50.00	-22.86	AVG	P

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 9kHz to 25 GHz was investigated. The frequency spectrum is set as follows:

Frequency	Detector	RBW	VBW	Value
9KHz-150KHz	Quasi-peak	200Hz	600Hz	Quasi-peak
150KHz-30MHz	Quasi-peak	9KHz	30KHz	Quasi-peak
30MHz-1GHz	Quasi-peak	120KHz	300KHz	Quasi-peak
Above 1GHz	Peak	1MHz	3MHz	Peak
	Peak	1MHz	10Hz	Average

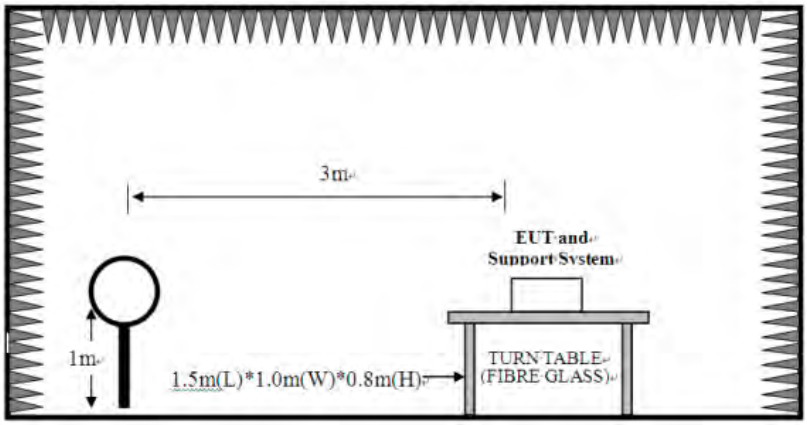
(Note: for Fundamental frequency radiated emission measurement, RBW=3MHz, VBW=10MHz).
Measurements were made at 3 meters.

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

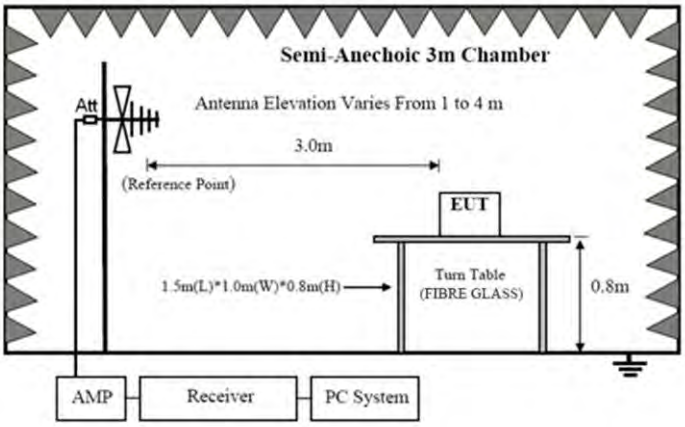
(5) The antenna polarization: Vertical polarization and Horizontal polarization.

Block diagram of Test setup

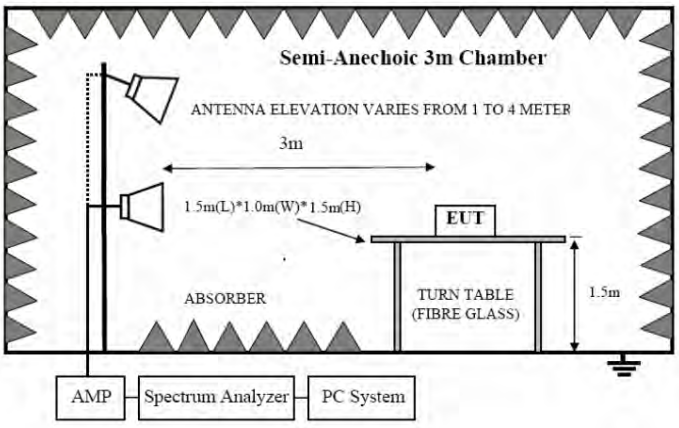
For radiated emissions from 9kHz to 30MHz



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.

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)	
	mV/m	**dBuV/m**	**uV/m**	**dBuV/m**

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 μ 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
30-80	3	40.0
88-216	3	3.5
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. The three modulation modes of GFSK, Pi/4D-QPSK and 8DPSK were tested. And only the worst case was recorded in the test report. GFSK was the worst case.

6. Battery fully charged was used during the test.

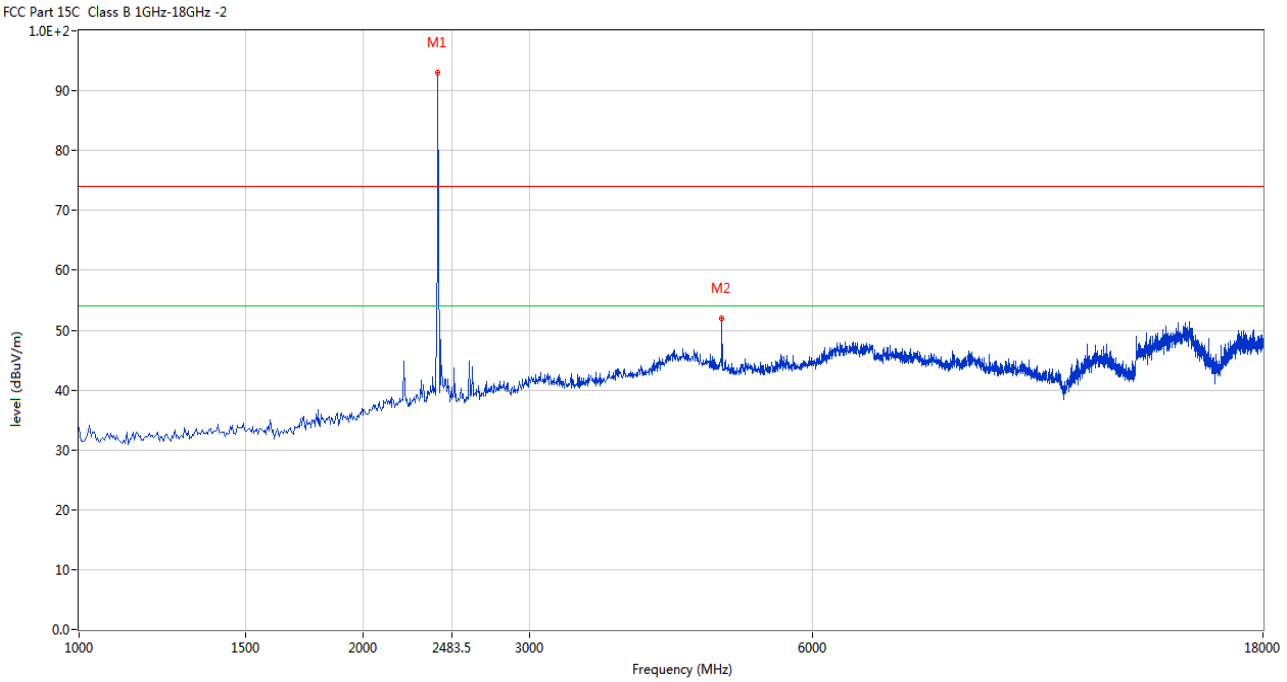
6.5 Test result

A Fundamental & Harmonics Radiated Emission Data

Left earphone

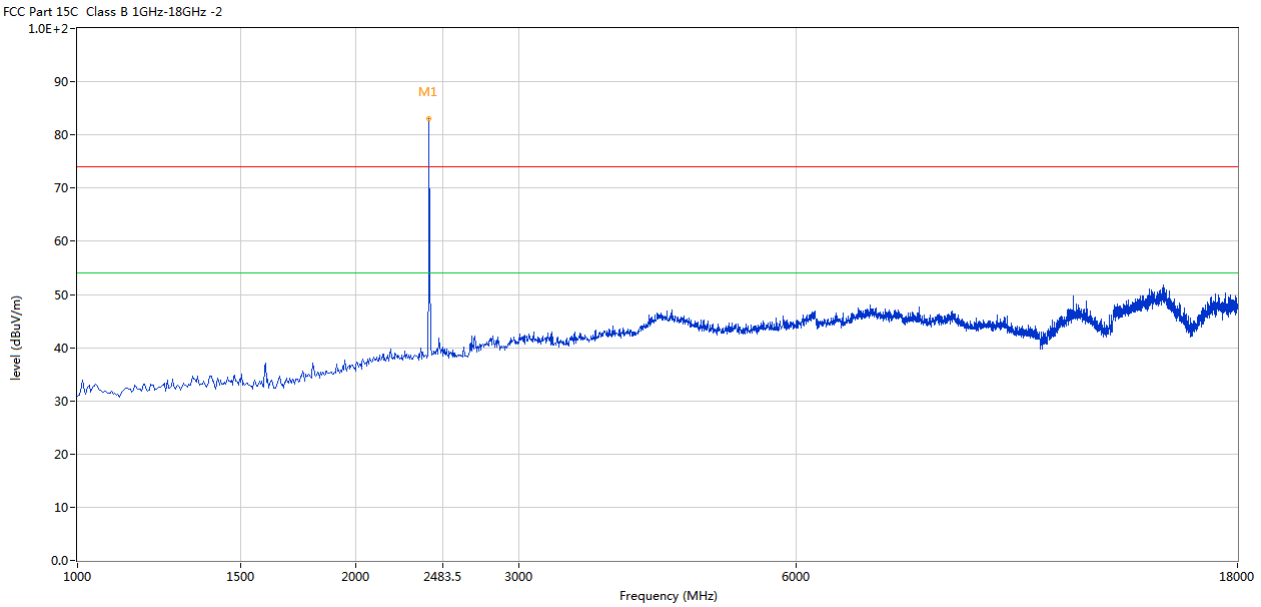
Please refer to the following test plots for details: Low Channel-2402MHz

Horizontal



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
1	2402	93.07	-3.57	114.0	-20.93	Peak	302.00	100	Horizontal	Pass
2	4802.799	52.05	3.12	74.0	-21.95	Peak	270.00	100	Horizontal	Pass

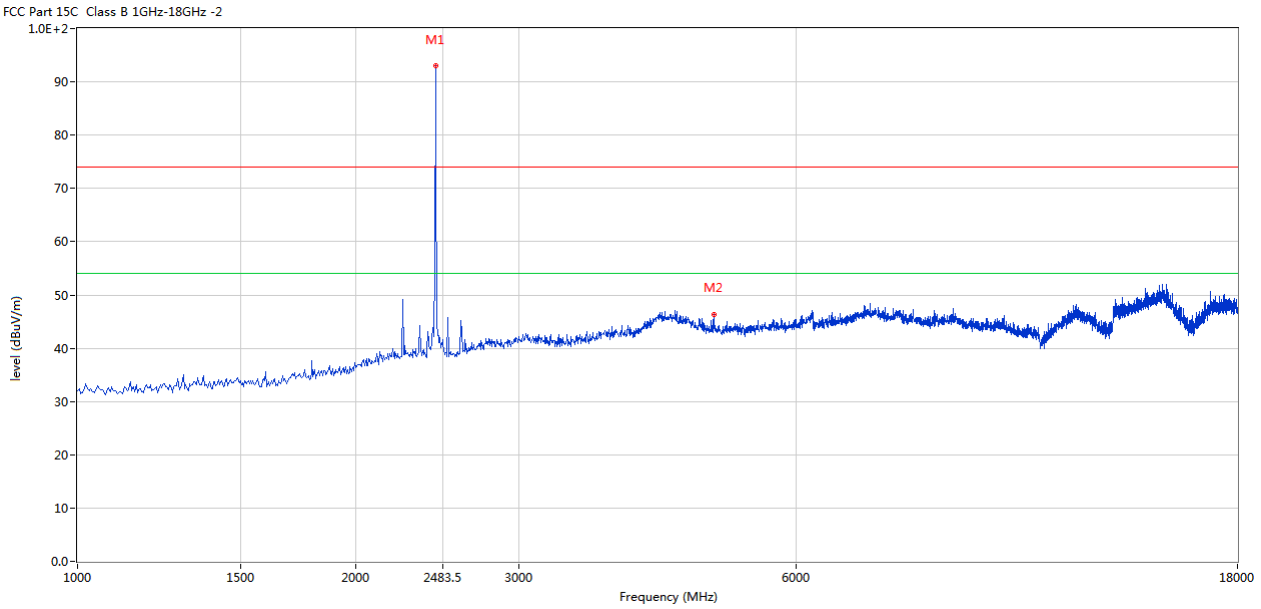
Vertical



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
1	2402	83.14	-3.57	114.0	-30.86	Peak	316.00	100	Vertical	Pass

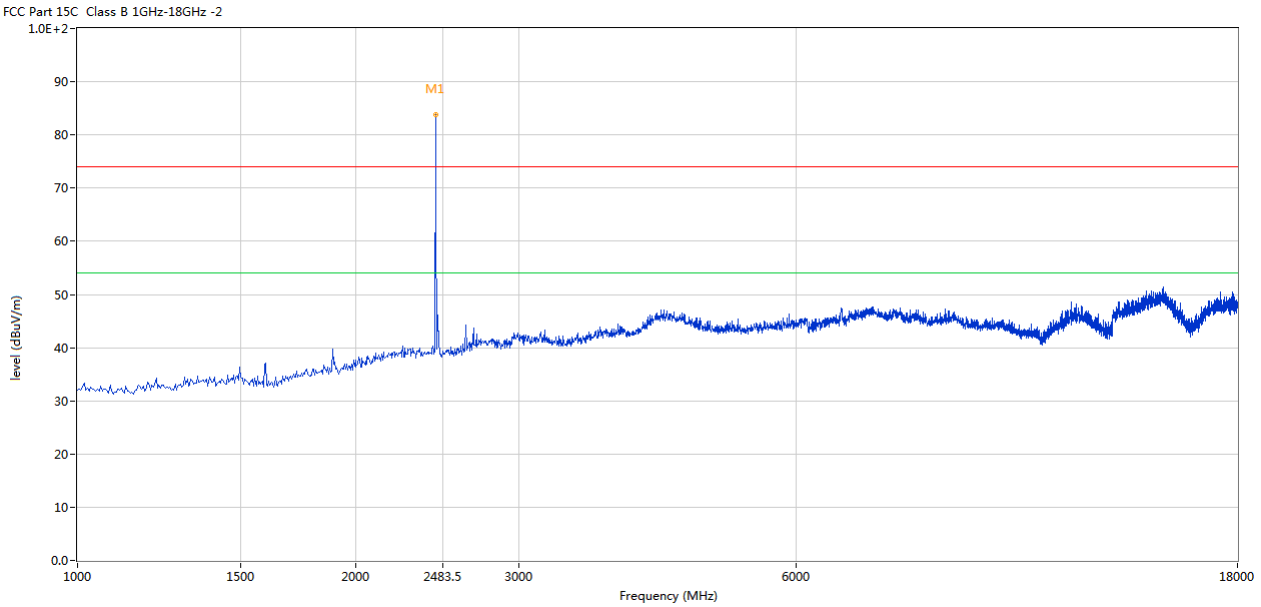
Please refer to the following test plots for details: Middle Channel-2441MHz

Horizontal



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
1	2441	92.98	-3.57	114.0	-21.02	Peak	270.00	100	Horizontal	Pass
2	4879.280	46.36	3.20	74.0	-27.64	Peak	12.00	100	Horizontal	Pass

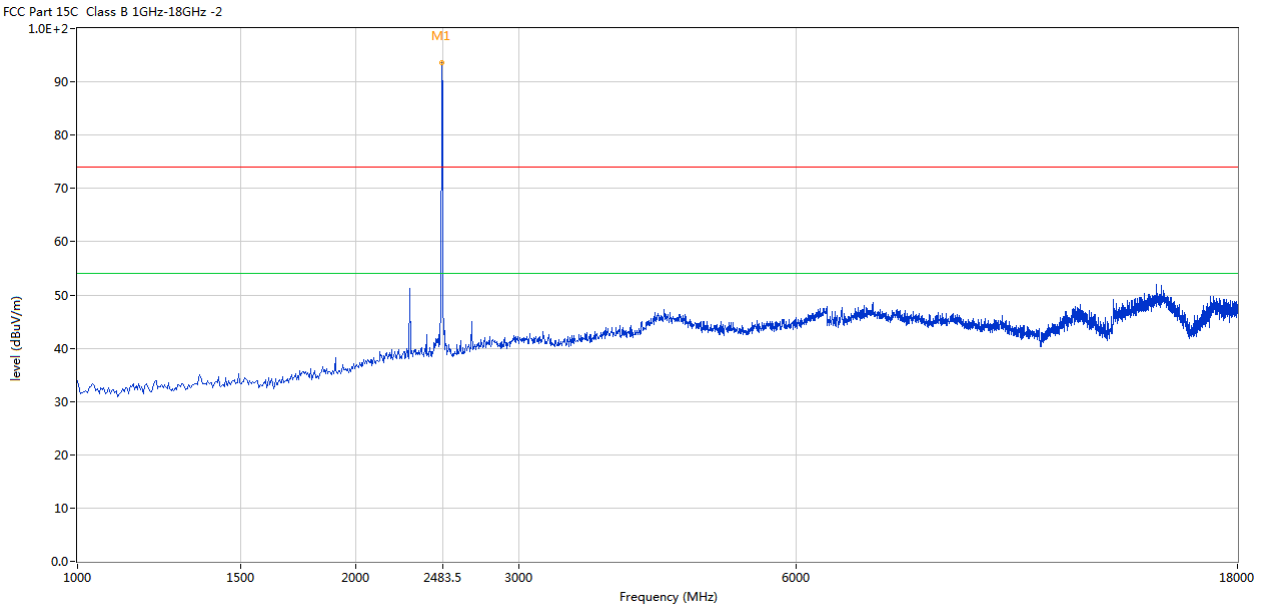
Vertical



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
1	2441	83.88	-3.57	114.0	-30.12	Peak	304.00	100	Vertical	Pass

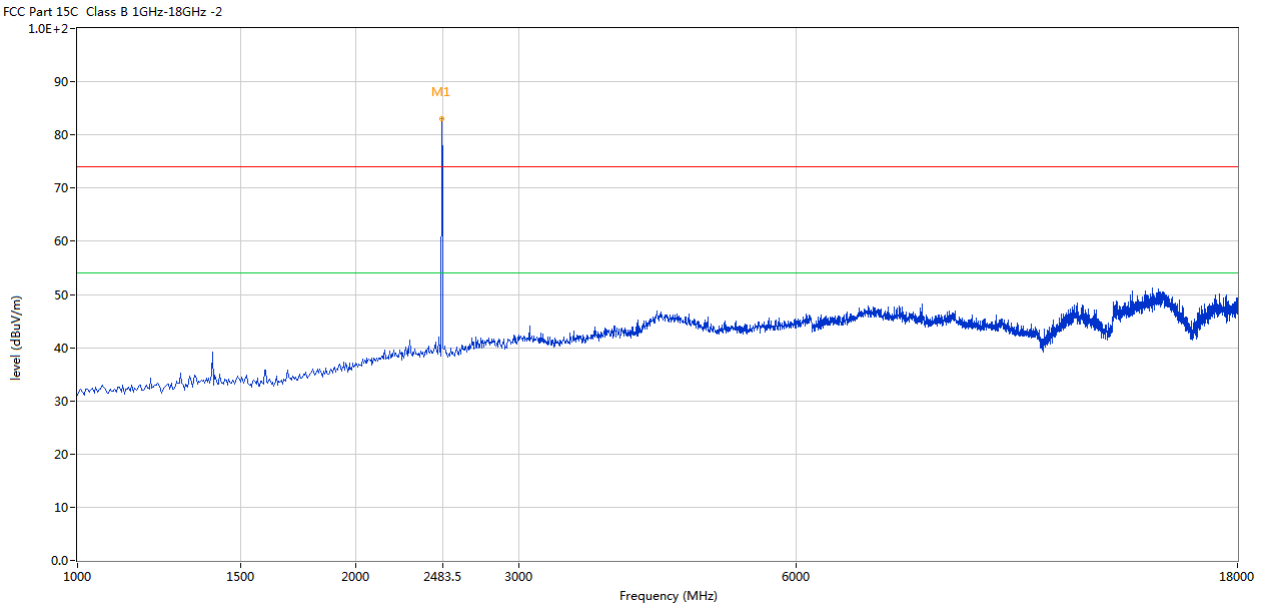
Please refer to the following test plots for details: High Channel-2480MHz

Horizontal



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
1	2480	93.67	-3.57	114.0	-20.33	Peak	1.00	100	Horizontal	Pass

Vertical



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
1	2480	83.09	-3.57	114.0	-30.91	Peak	91.00	100	Vertical	Pass

Note: (1) Emission Level = Reading Level + Antenna Factor + Cable Loss-Amplifier

(2) Margin=Emission-Limits

(3) According to section 15.35(b), the peak limit is 20dB higher than the average limit

(4) For test purpose, keep EUT continuous transmitting

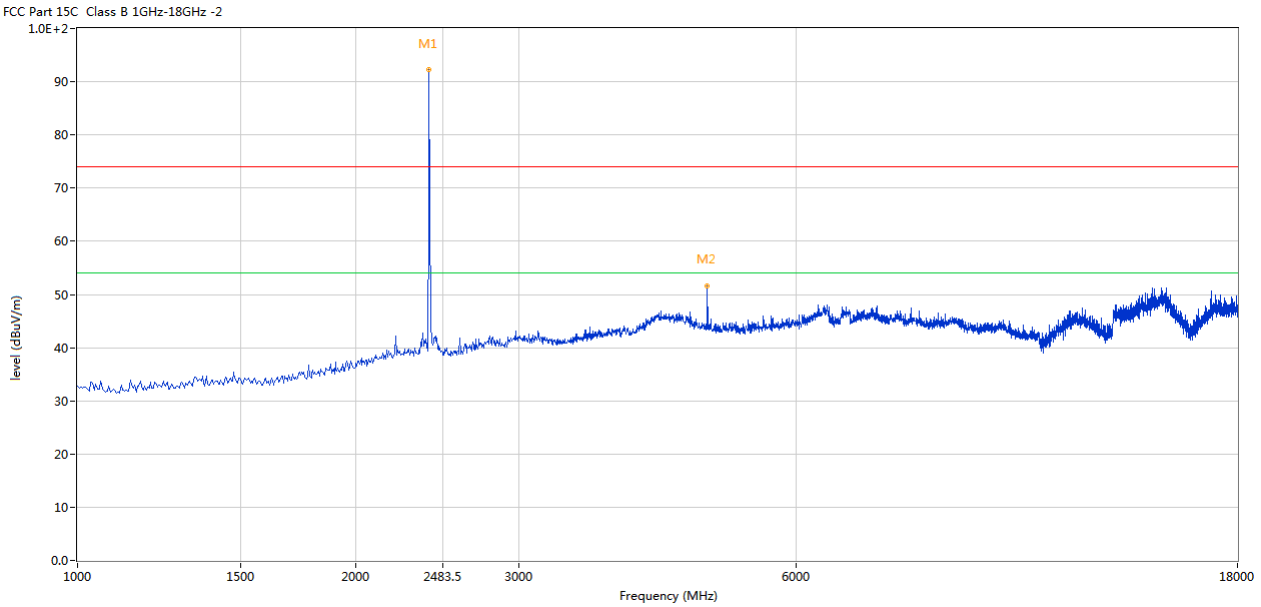
(5) For emission above 18GHz and Below 30MHz, It is only the floor noise and less than the limit for more than 20dB. No necessary to take down.

(6) the measured PK value less than the AV limit.

Right earphone

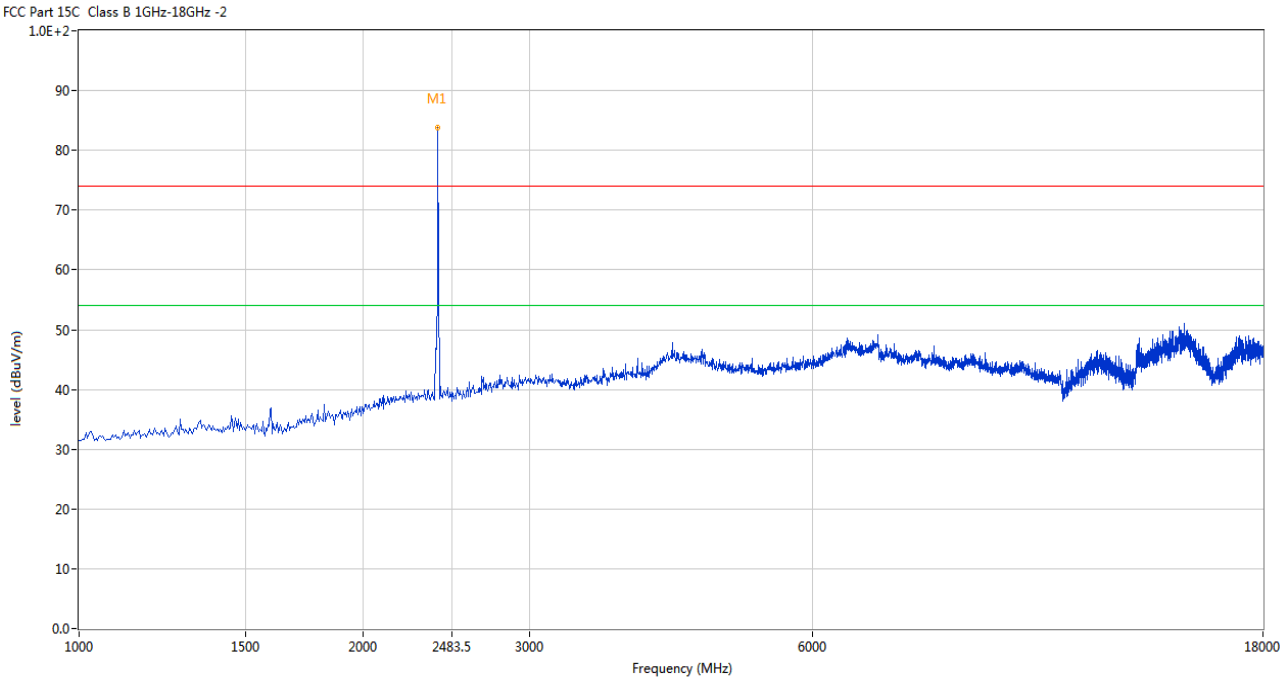
Please refer to the following test plots for details: Low Channel-2402MHz

Horizontal



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
1	2402	92.27	-3.57	114.0	-21.73	Peak	279.00	100	Horizontal	Pass
2	4802.799	51.69	3.12	74.0	-22.31	Peak	267.00	100	Horizontal	Pass

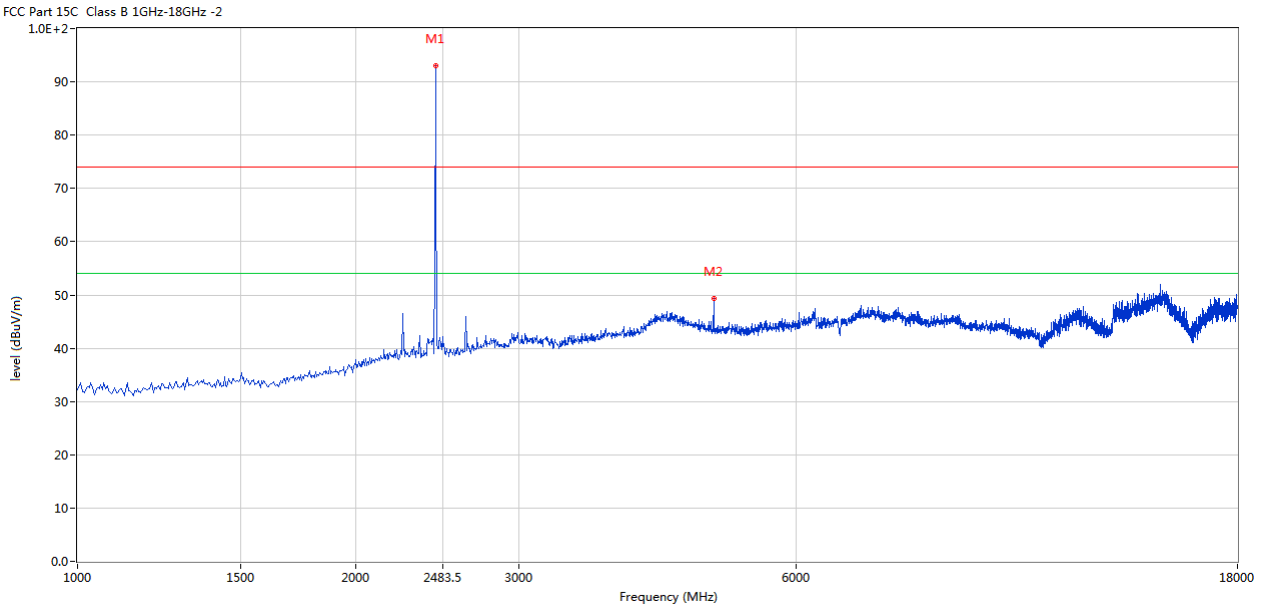
Vertical



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
1	2402	83.86	-3.57	114.0	-30.14	Peak	332.00	100	Vertical	Pass

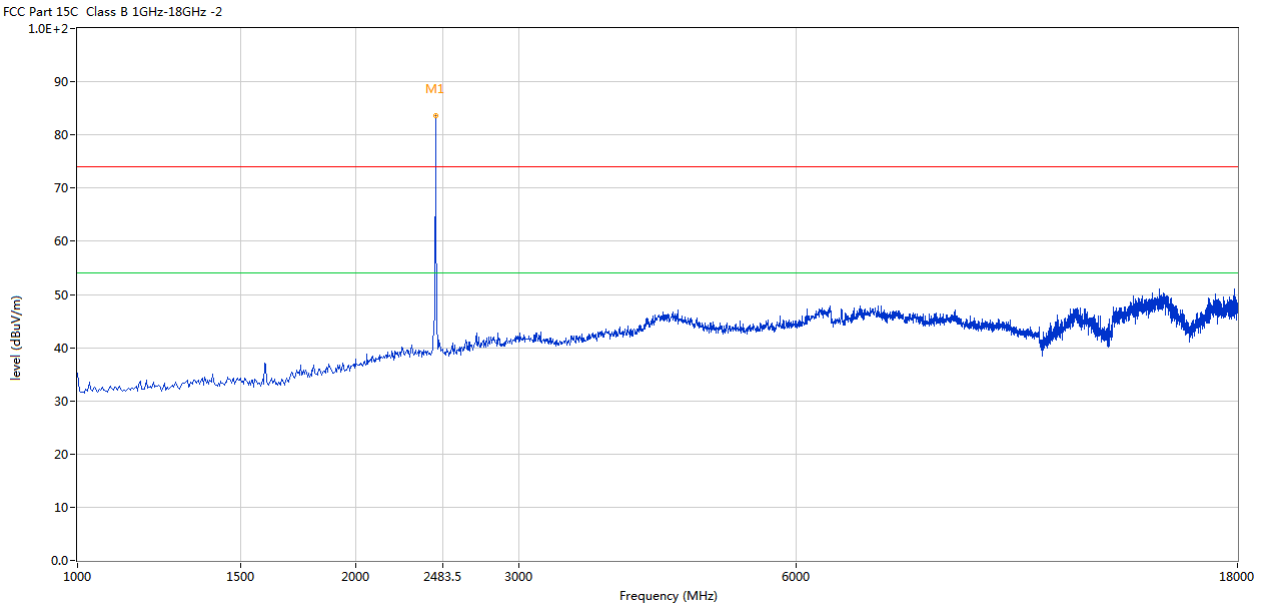
Please refer to the following test plots for details: Middle Channel-2441MHz

Horizontal



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
1	2441	93.09	-3.57	114.0	-20.91	Peak	284.00	100	Horizontal	Pass
2	4879.280	49.38	3.20	74.0	-24.62	Peak	269.00	100	Horizontal	Pass

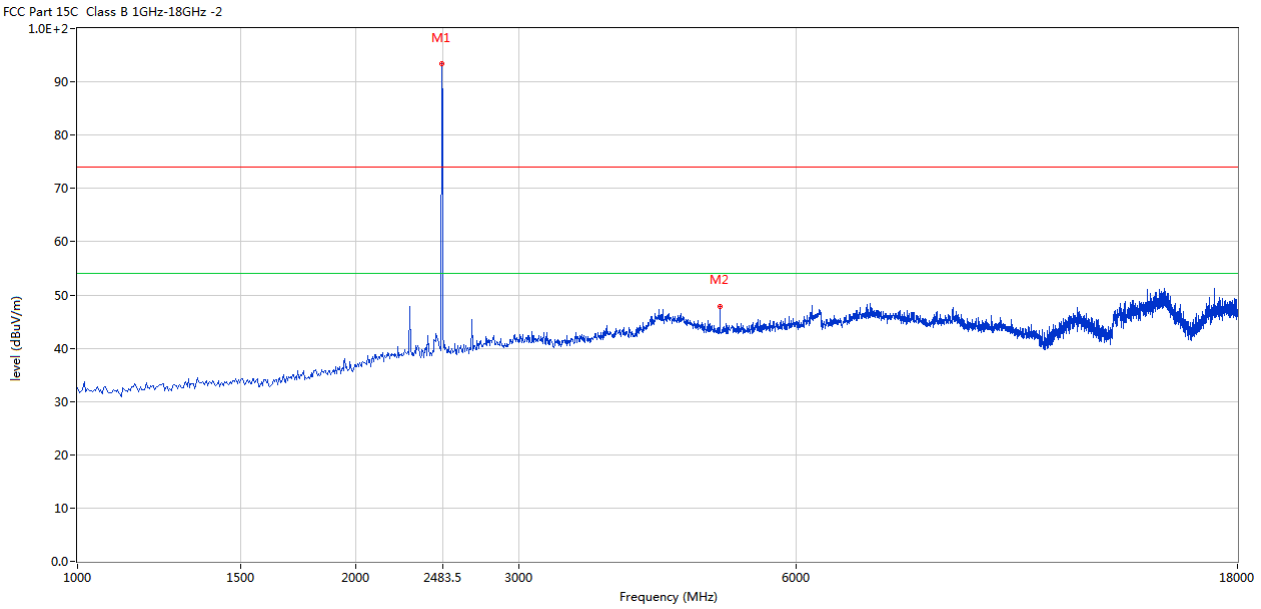
Vertical



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
1	2441	83.61	-3.57	114.0	-30.39	Peak	218.00	100	Vertical	Pass

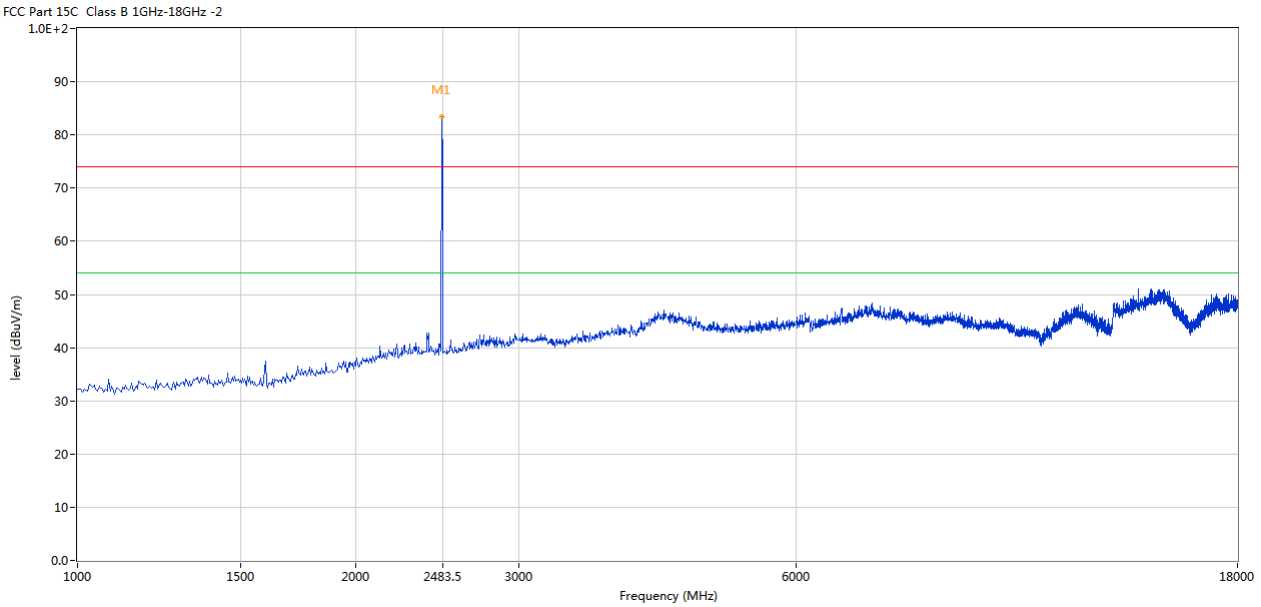
Please refer to the following test plots for details: High Channel-2480MHz

Horizontal



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
1	2480	93.33	-3.57	114.0	-20.67	Peak	279.00	100	Horizontal	Pass
2	4960.010	47.83	3.36	74.0	-26.17	Peak	283.00	100	Horizontal	Pass

Vertical



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
1	2480	83.34	-3.57	114.0	-30.66	Peak	11.00	100	Vertical	Pass

Note: (1) Emission Level = Reading Level + Antenna Factor + Cable Loss-Amplifier

(2) Margin=Emission-Limits

(3) According to section 15.35(b), the peak limit is 20dB higher than the average limit

(4) For test purpose, keep EUT continuous transmitting

(5) For emission above 18GHz and Below 30MHz, It is only the floor noise and less than the limit for more than 20dB. No necessary to take down.

(6) the measured PK value less than the AV limit.

B. General Radiated Emission Data

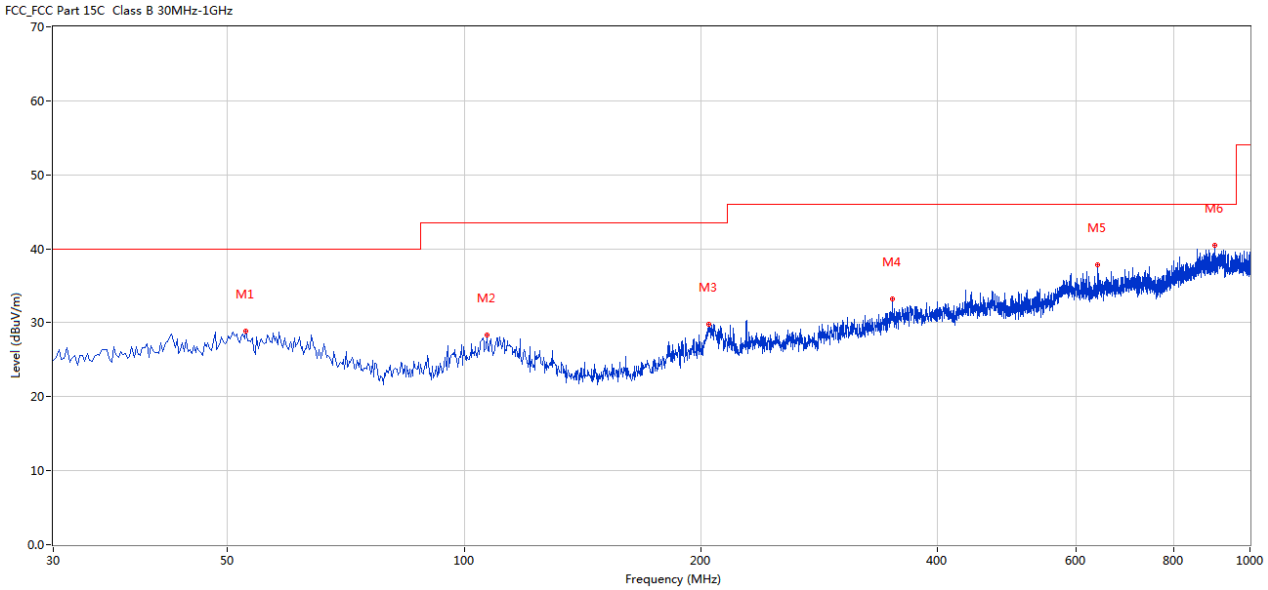
Left earphone

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

EUT set Condition: Keep Tx transmitting

Results: Pass

Please refer to following diagram for individual



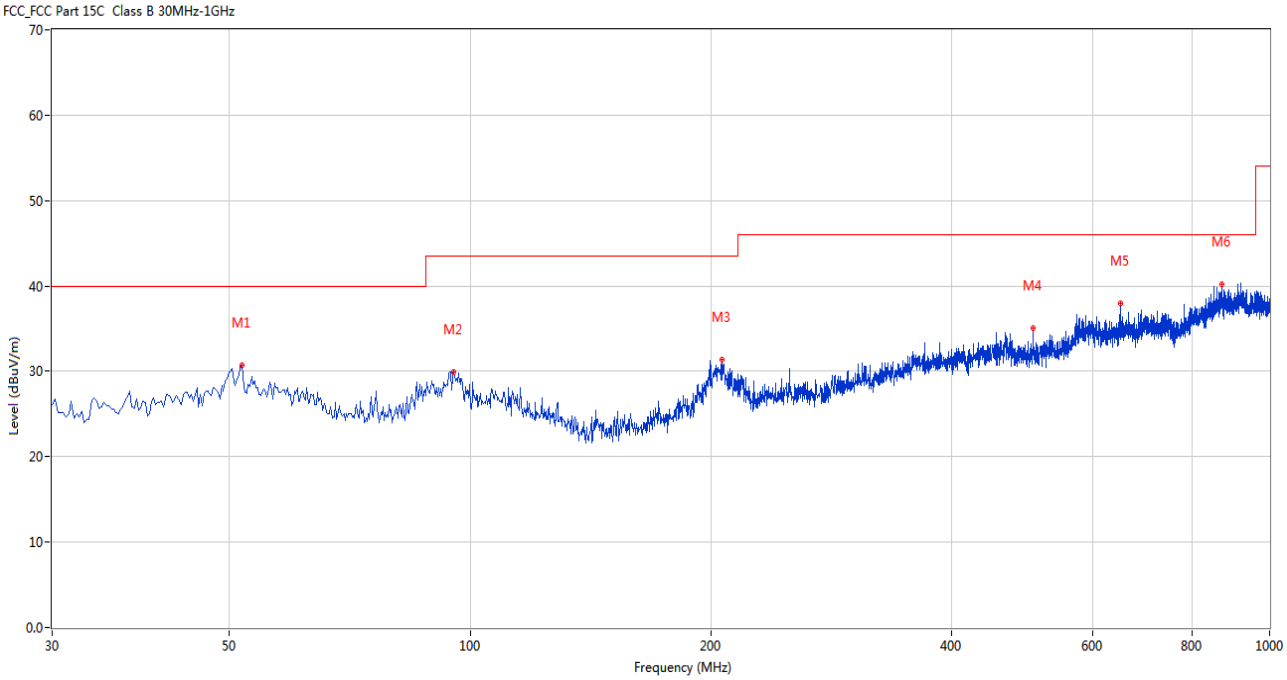
No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Margin (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	52.789	28.91	-4.99	40.0	11.09	Peak	205.00	100	Horizontal	Pass
2	106.853	28.31	-6.12	43.5	15.19	Peak	205.00	100	Horizontal	Pass
3	205.041	29.86	-7.21	43.5	13.64	Peak	67.00	100	Horizontal	Pass
4	350.747	33.22	-2.41	46.0	12.78	Peak	341.00	100	Horizontal	Pass
5	640.462	37.83	1.46	46.0	8.17	Peak	132.00	100	Horizontal	Pass
6	901.085	40.53	4.65	46.0	5.47	Peak	262.00	100	Horizontal	Pass

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)	Margin (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	51.820	30.76	-4.86	40.0	9.24	Peak	229.00	100	Vertical	Pass
2	95.459	29.95	-7.68	43.5	13.55	Peak	29.00	100	Vertical	Pass
3	206.738	31.33	-7.16	43.5	12.17	Peak	171.00	100	Vertical	Pass
4	505.909	35.09	-0.88	46.0	10.91	Peak	88.00	100	Vertical	Pass
5	650.160	37.92	1.75	46.0	8.08	Peak	103.00	100	Vertical	Pass
6	872.477	40.27	5.10	46.0	5.73	Peak	322.00	100	Vertical	Pass

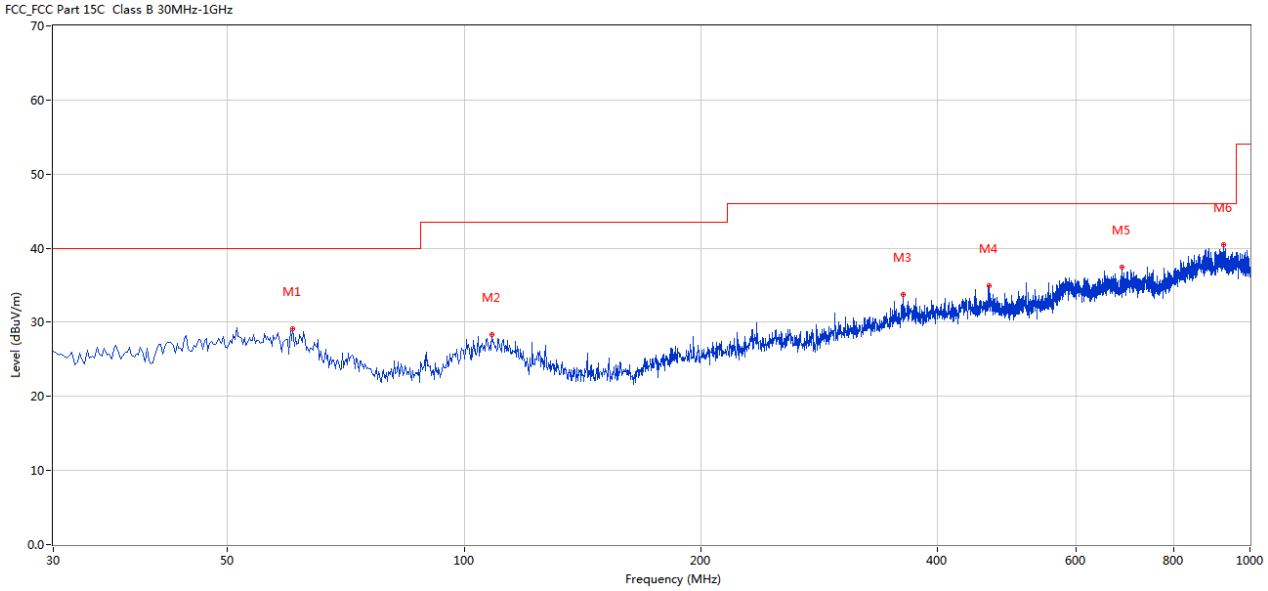
Right earphone

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

EUT set Condition: Keep Tx transmitting

Results: Pass

Please refer to following diagram for individual



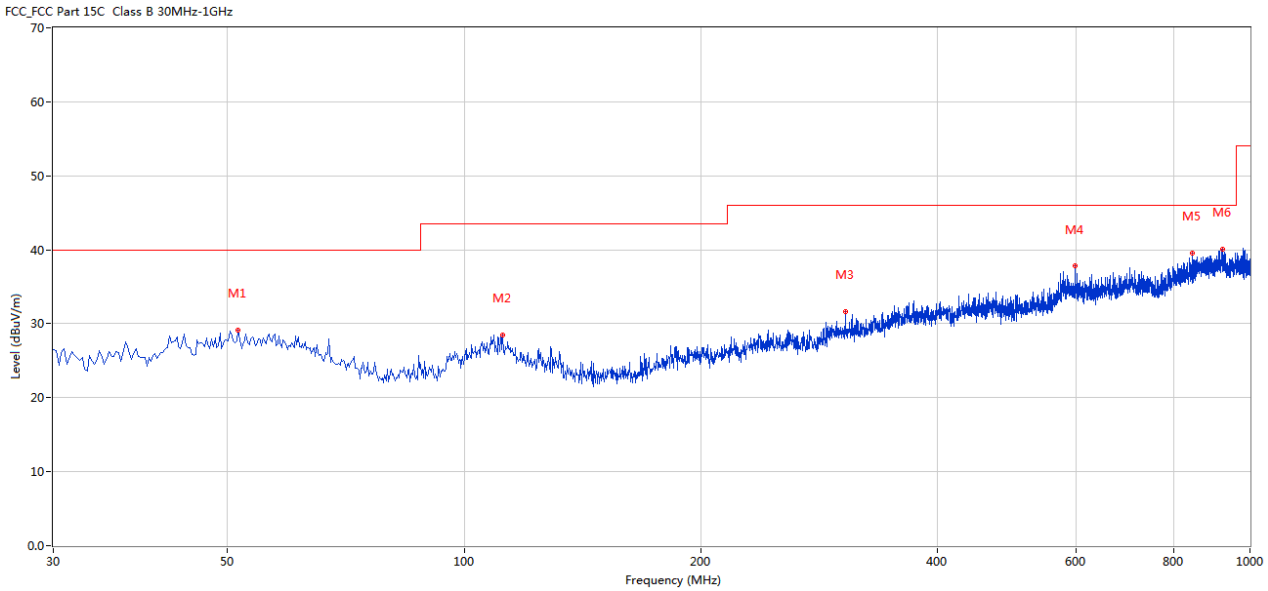
No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Margin (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	60.547	29.11	-5.48	40.0	10.89	Peak	130.00	100	Horizontal	Pass
2	108.550	28.36	-5.98	43.5	15.14	Peak	198.00	100	Horizontal	Pass
3	361.657	33.79	-1.86	46.0	12.21	Peak	240.00	100	Horizontal	Pass
4	465.179	34.92	-0.54	46.0	11.08	Peak	69.00	100	Horizontal	Pass
5	686.526	37.42	1.92	46.0	8.58	Peak	283.00	100	Horizontal	Pass
6	924.601	40.52	5.30	46.0	5.48	Peak	201.00	100	Horizontal	Pass

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)	Margin (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	51.577	29.17	-4.90	40.0	10.83	Peak	197.00	100	Vertical	Pass
2	111.945	28.48	-6.13	43.5	15.02	Peak	102.00	100	Vertical	Pass
3	305.654	31.59	-3.92	46.0	14.41	Peak	92.00	100	Vertical	Pass
4	599.490	37.78	1.57	46.0	8.22	Peak	0.00	100	Vertical	Pass
5	845.809	39.59	4.18	46.0	6.41	Peak	351.00	100	Vertical	Pass
6	924.116	40.09	5.32	46.0	5.91	Peak	273.00	100	Vertical	Pass

7. Band Edge

7.1 Test Method and test Procedure:

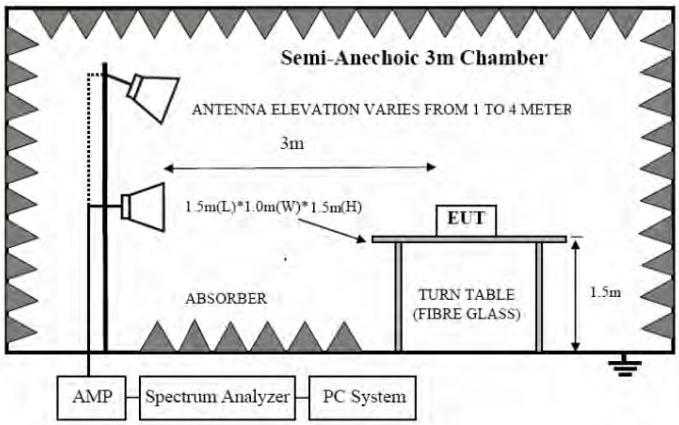
(1) The EUT was tested according to ANSI C63.10–2013. The radiated test was performed at Timeway EMC Laboratory. This site is on file with the FCC laboratory division, Registration No. 744189

(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.

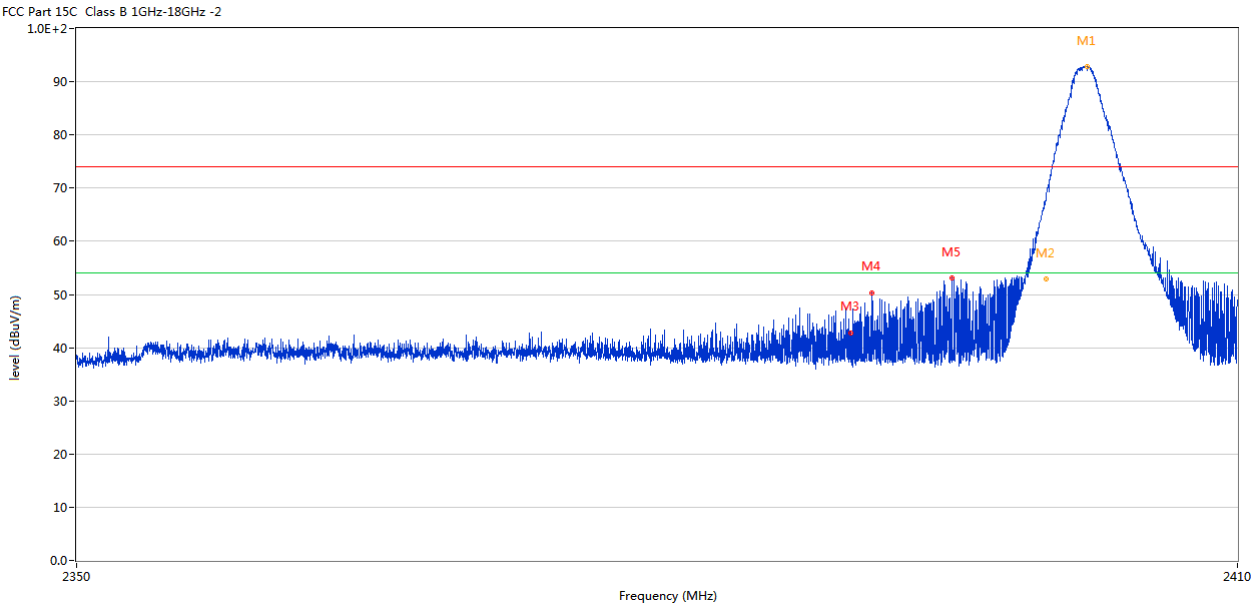
7.5 Band Edge Limit

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.

7.6 Test Result

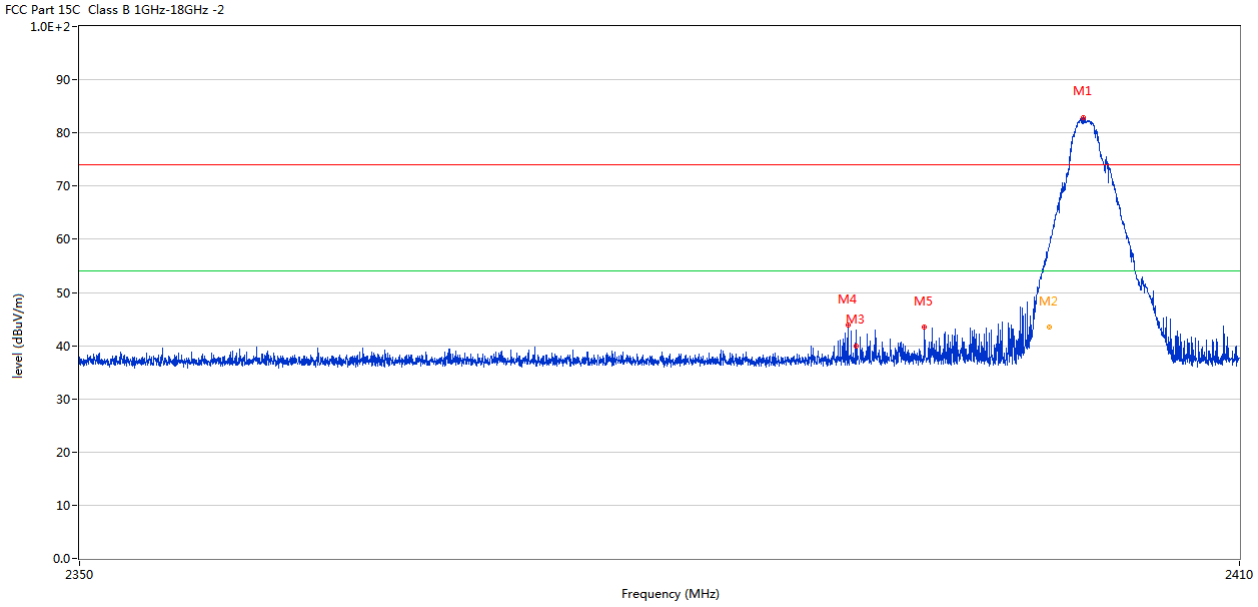
Left earphone

Product:	Dual two-in-one Earphone	Polarity	Horizontal
Mode	Keeping Transmitting	Test Voltage	DC3.7V
Temperature	24 deg. C,	Humidity	56% RH
Test Result:	Pass	--	--



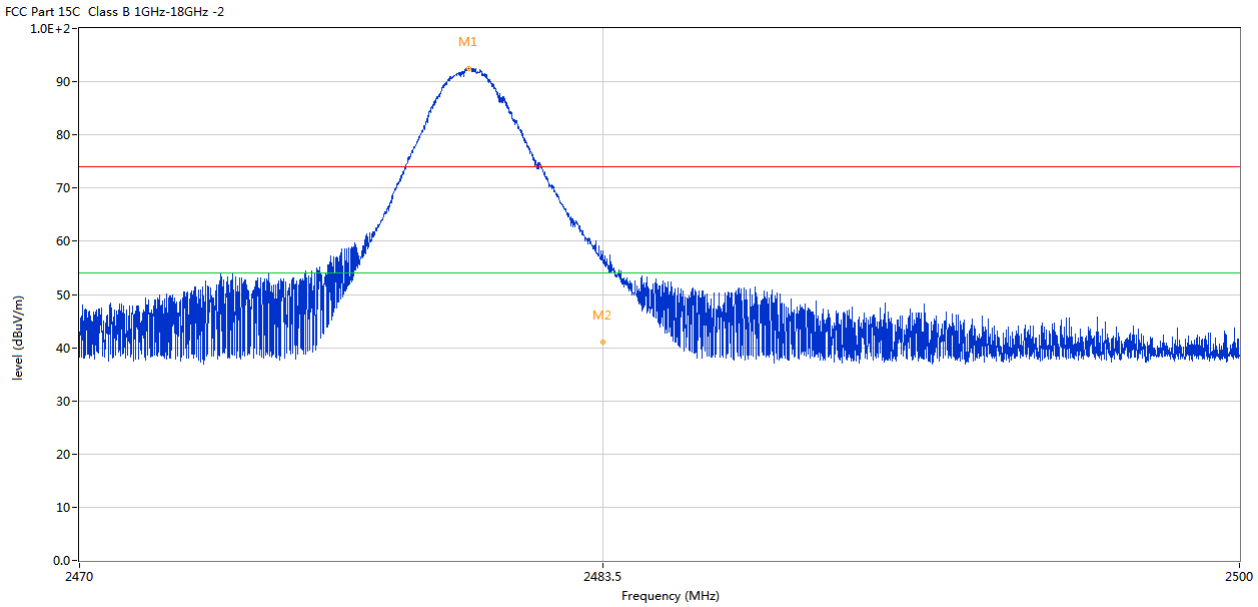
No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
1	2402.127	92.88	-3.57	74.0	18.88	Peak	234.00	100	Horizontal	N/A
2	2400.000	68.39	-3.57	74.0	-5.61	Peak	247.71	100	Horizontal	Pass
2**	2400.000	52.98	-3.57	54.0	-1.02	AV	247.71	100	Horizontal	Pass
3	2390.000	42.99	-3.53	74.0	-31.01	Peak	245.00	100	Horizontal	Pass
4	2390.955	50.31	-3.53	74.0	-23.69	Peak	250.00	100	Horizontal	Pass
5	2395.094	53.58	-3.55	74.0	-20.42	Peak	239.00	100	Horizontal	Pass

Product:	Dual two-in-one Earphone	Detector	Vertical
Mode	Keeping Transmitting	Test Voltage	DC3.7V
Temperature	24 deg. C,	Humidity	56% RH
Test Result:	Pass	--	--



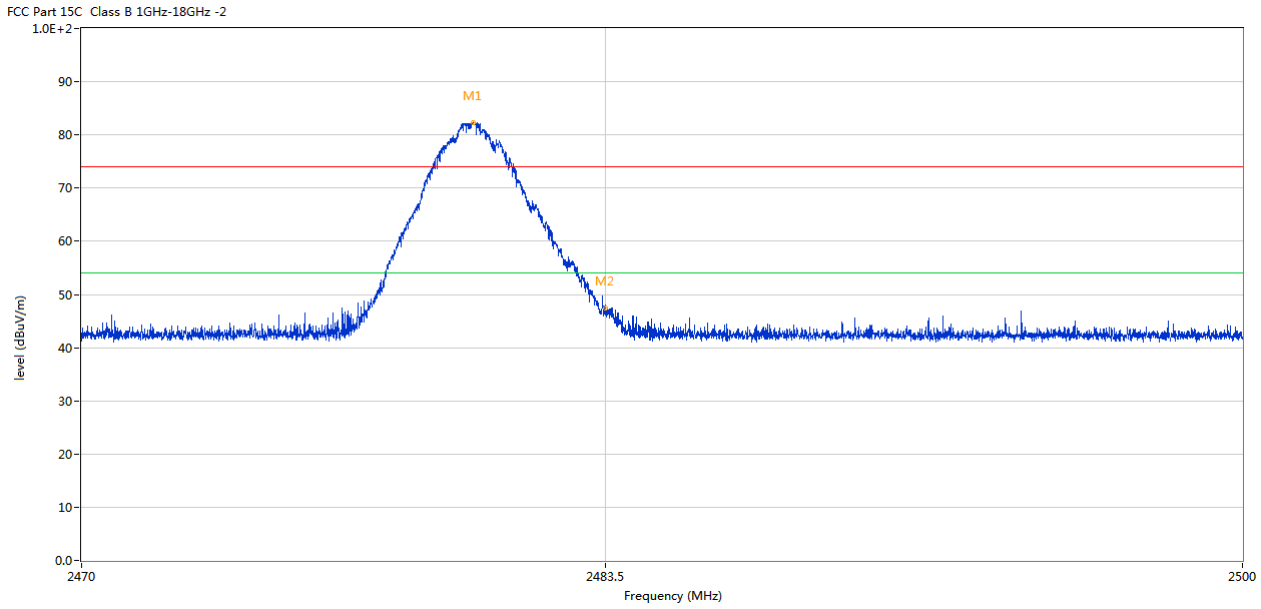
No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
1	2401.857	82.91	-3.57	74.0	8.91	Peak	322.00	100	Vertical	N/A
2	2400.042	58.58	-3.57	74.0	-15.42	Peak	322.00	100	Vertical	Pass
2**	2400.042	43.51	-3.57	54.0	-10.49	AV	322.00	100	Vertical	Pass
3	2390.010	39.85	-3.53	74.0	-34.15	Peak	76.00	100	Vertical	Pass
4	2389.590	43.86	-3.53	74.0	-30.14	Peak	95.00	100	Vertical	Pass
5	2393.564	43.48	-3.54	74.0	-30.52	Peak	76.00	100	Vertical	Pass

Product:	Dual two-in-one Earphone	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	2480.040	92.55	-3.57	74.0	18.55	Peak	11.00	100	Horizontal	N/A
2	2483.500	56.18	-3.57	74.0	-17.82	Peak	265.57	100	Horizontal	Pass
2**	2483.500	41.09	-3.57	54.0	-12.91	AV	265.57	100	Horizontal	Pass

Product:	Dual two-in-one Earphone	Detector	Vertical
Mode	Keeping Transmitting	Test Voltage	DC3.7V
Temperature	24 deg. C,	Humidity	56% RH
Test Result:	Pass	--	--



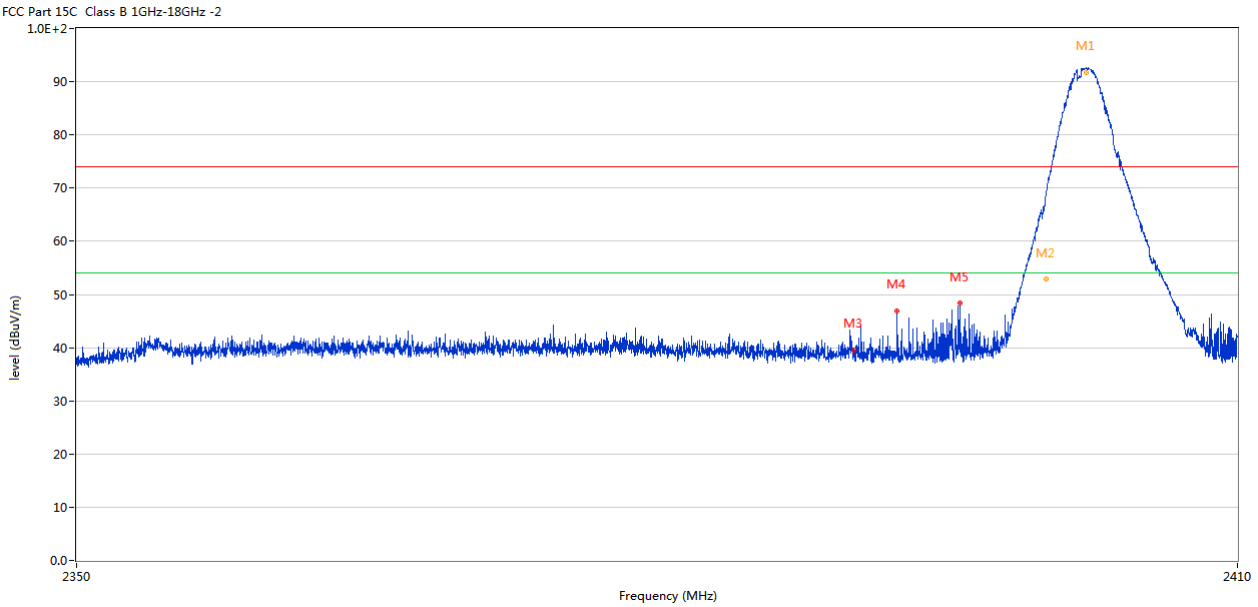
No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
1	2480.070	82.30	-3.57	74.0	8.30	Peak	151.00	100	Vertical	N/A
2	2483.500	47.38	-3.57	74.0	-26.62	Peak	80.57	100	Vertical	Pass

Note: 1. The PK emission level less than the AV limit. No necessary to record the AV emission level.

2. For Restricted band test, the two modulation modes of GFSK, Pi/4D-QPSK and 8DPSK were tested. And only the worst case was recorded in the test report. GFSK was the worst case.

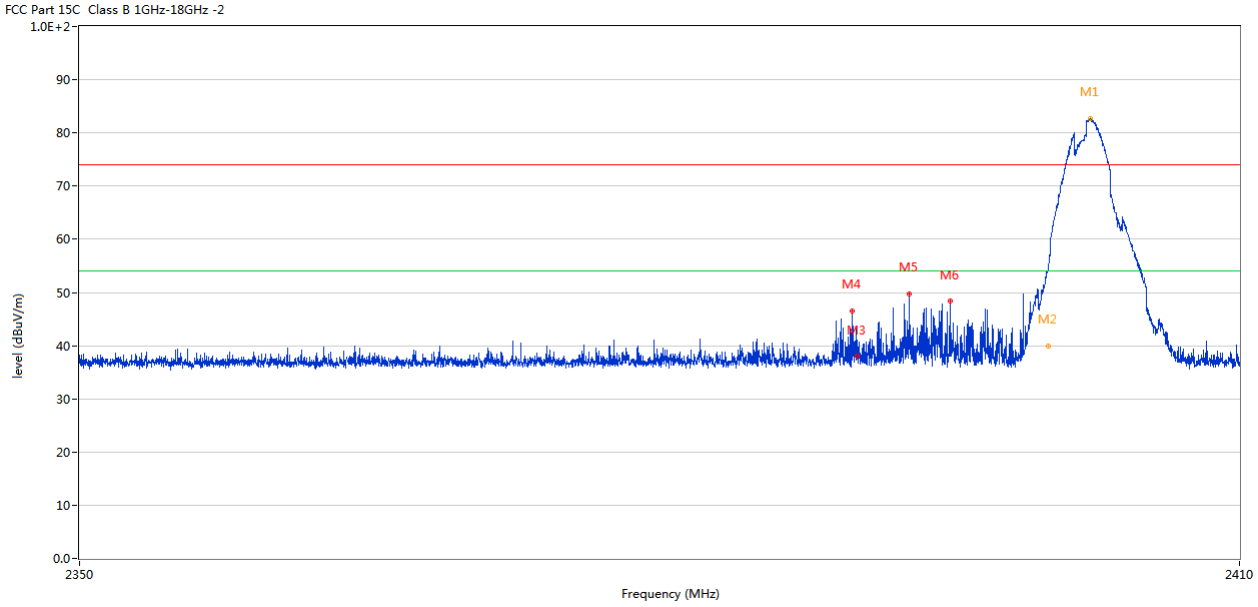
Right earphone

Product:	Dual two-in-one Earphone	Polarity	Horizontal
Mode	Keeping Transmitting	Test Voltage	DC3.7V
Temperature	24 deg. C,	Humidity	56% RH
Test Result:	Pass	--	--



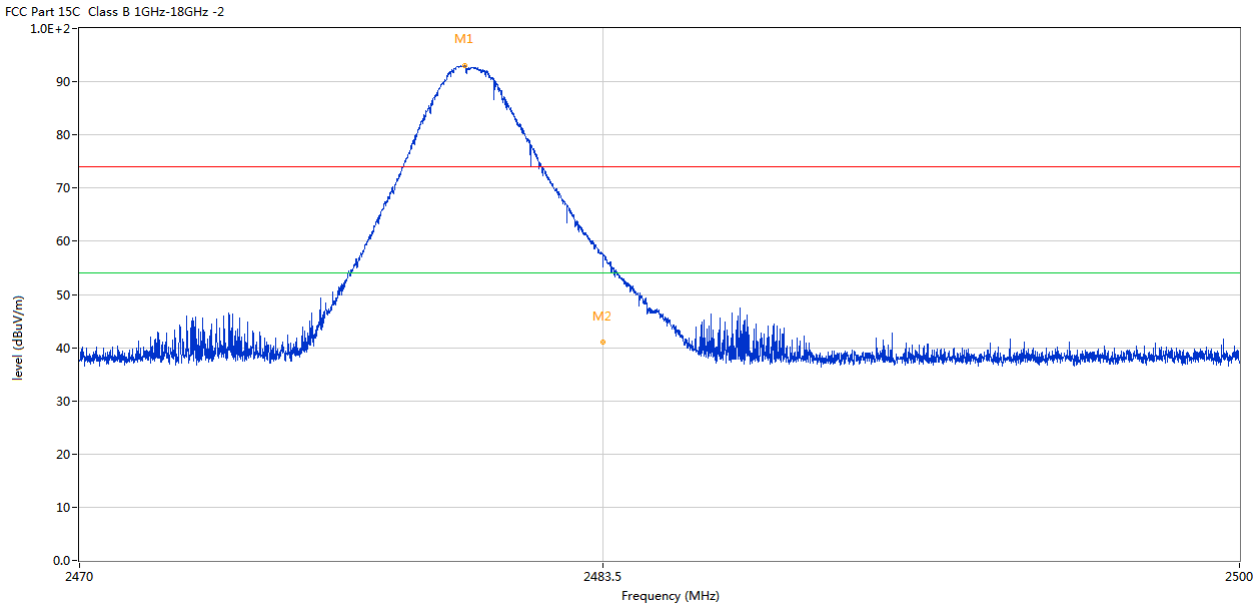
No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
1	2402.097	91.62	-3.57	74.0	17.62	Peak	271.00	100	Horizontal	N/A
2	2400.012	68.34	-3.57	74.0	-5.66	Peak	282.00	100	Horizontal	Pass
2**	2400.012	52.98	-3.57	54.0	-1.02	AV	282.00	100	Horizontal	Pass
3	2390.025	39.50	-3.53	74.0	-34.50	Peak	312.00	100	Horizontal	Pass
4	2392.259	46.91	-3.54	74.0	-27.09	Peak	157.00	100	Horizontal	Pass
5	2395.499	48.34	-3.55	74.0	-25.66	Peak	276.00	100	Horizontal	Pass

Product:	Dual two-in-one Earphone	Detector	Vertical
Mode	Keeping Transmitting	Test Voltage	DC3.7V
Temperature	24 deg. C,	Humidity	56% RH
Test Result:	Pass	--	--



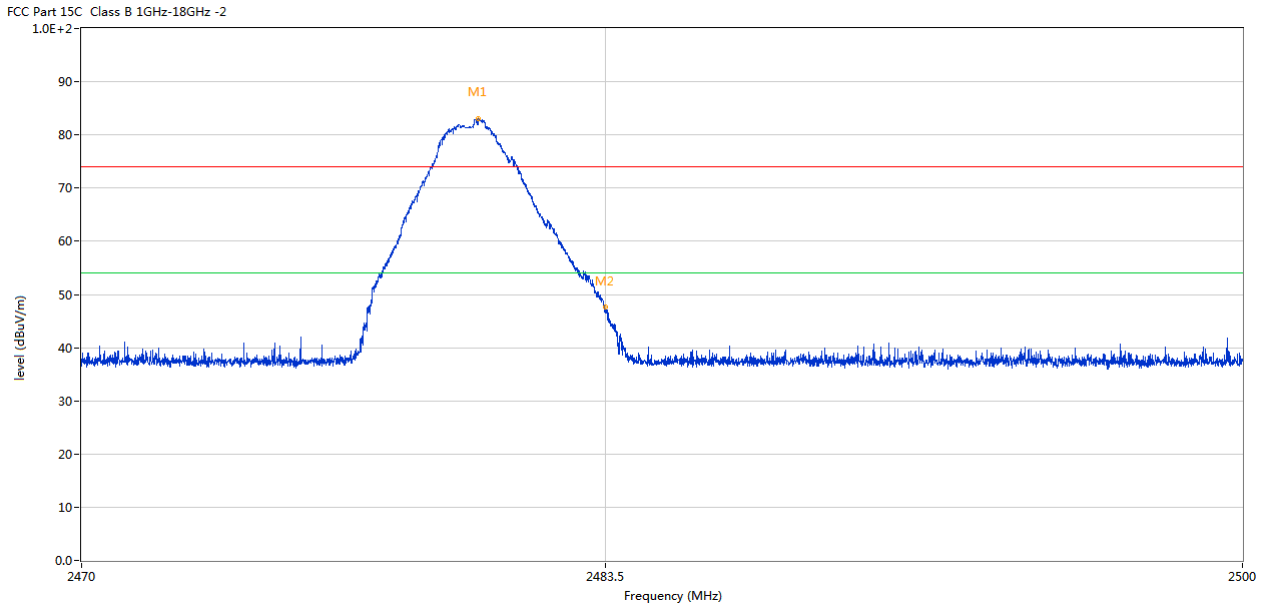
No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
1	2402.217	82.61	-3.57	74.0	8.61	Peak	315.00	100	Vertical	N/A
2	2400.027	55.13	-3.57	74.0	-18.87	Peak	238.00	100	Vertical	Pass
2**	2400.027	39.98	-3.57	54.0	-14.02	AV	238.00	100	Vertical	Pass
3	2390.040	38.04	-3.53	74.0	-35.96	Peak	96.00	100	Vertical	Pass
4	2389.785	46.51	-3.53	74.0	-27.49	Peak	96.00	100	Vertical	Pass
5	2392.784	49.75	-3.54	74.0	-24.25	Peak	107.00	100	Vertical	Pass
6	2394.884	48.36	-3.55	74.0	-25.64	Peak	87.00	100	Vertical	Pass

Product:	Dual two-in-one Earphone	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	2479.913	92.98	-3.57	74.0	18.98	Peak	278.00	100	Horizontal	N/A
2	2483.500	56.22	-3.57	74.0	-17.78	Peak	278.00	100	Horizontal	Pass
2**	2483.500	41.11	-3.57	54.0	-12.89	AV	278.00	100	Horizontal	Pass

Product:	Dual two-in-one Earphone	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	2480.205	83.03	-3.57	74.0	9.03	Peak	8.00	100	Vertical	N/A
2	2483.500	47.59	-3.57	74.0	-26.41	Peak	258.43	100	Vertical	Pass

Note: 1. The PK emission level less than the AV limit. No necessary to record the AV emission level.

2. For Restricted band test, the two modulation modes of GFSK, Pi/4D-QPSK and 8DPSK were tested. And only the worst case was recorded in the test report. GFSK was the worst case.

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.

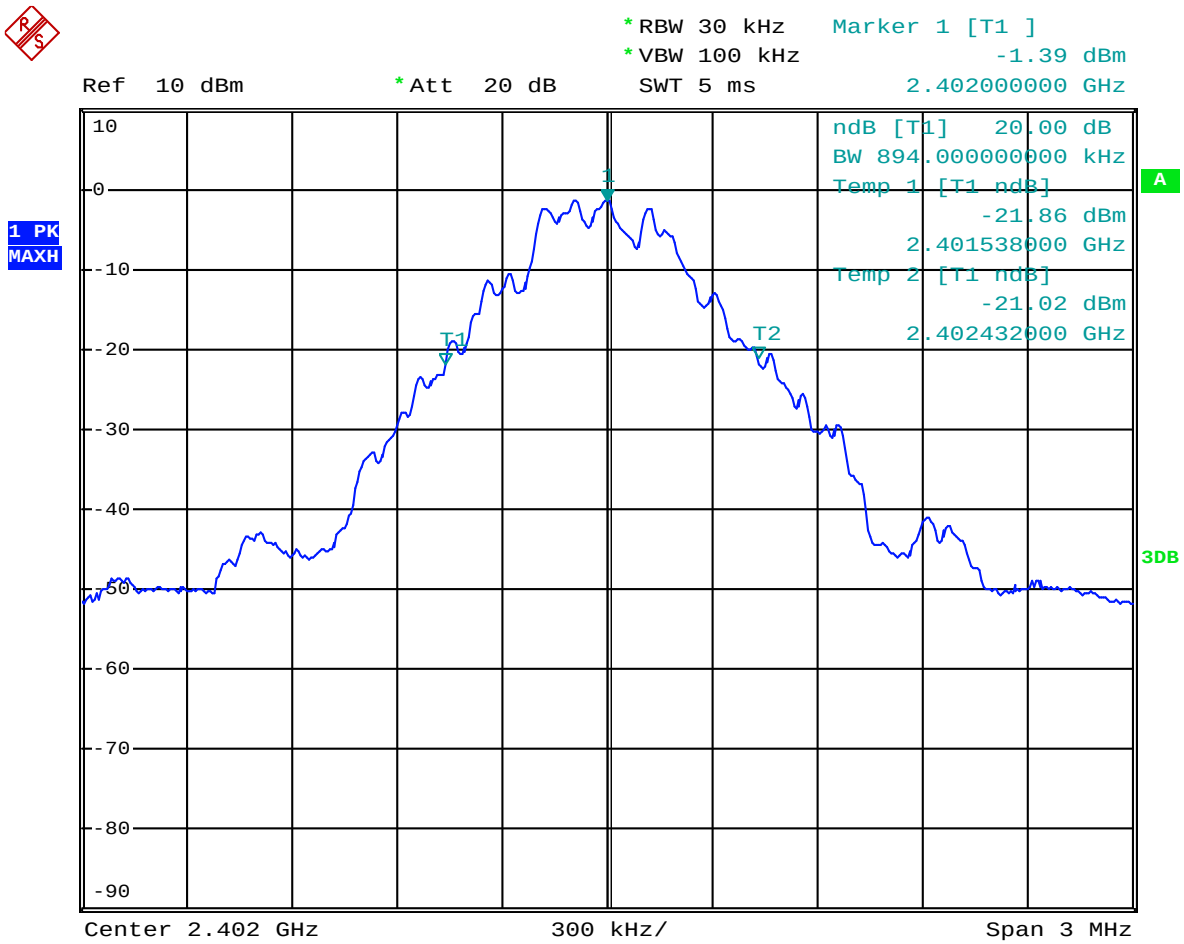
This product has a chip antenna. The antenna gain is 0.98dBi Max for both right and left earphones. It fulfills the requirement of this section.

Test Result: Pass

9.0 20dB Bandwidth Measurement

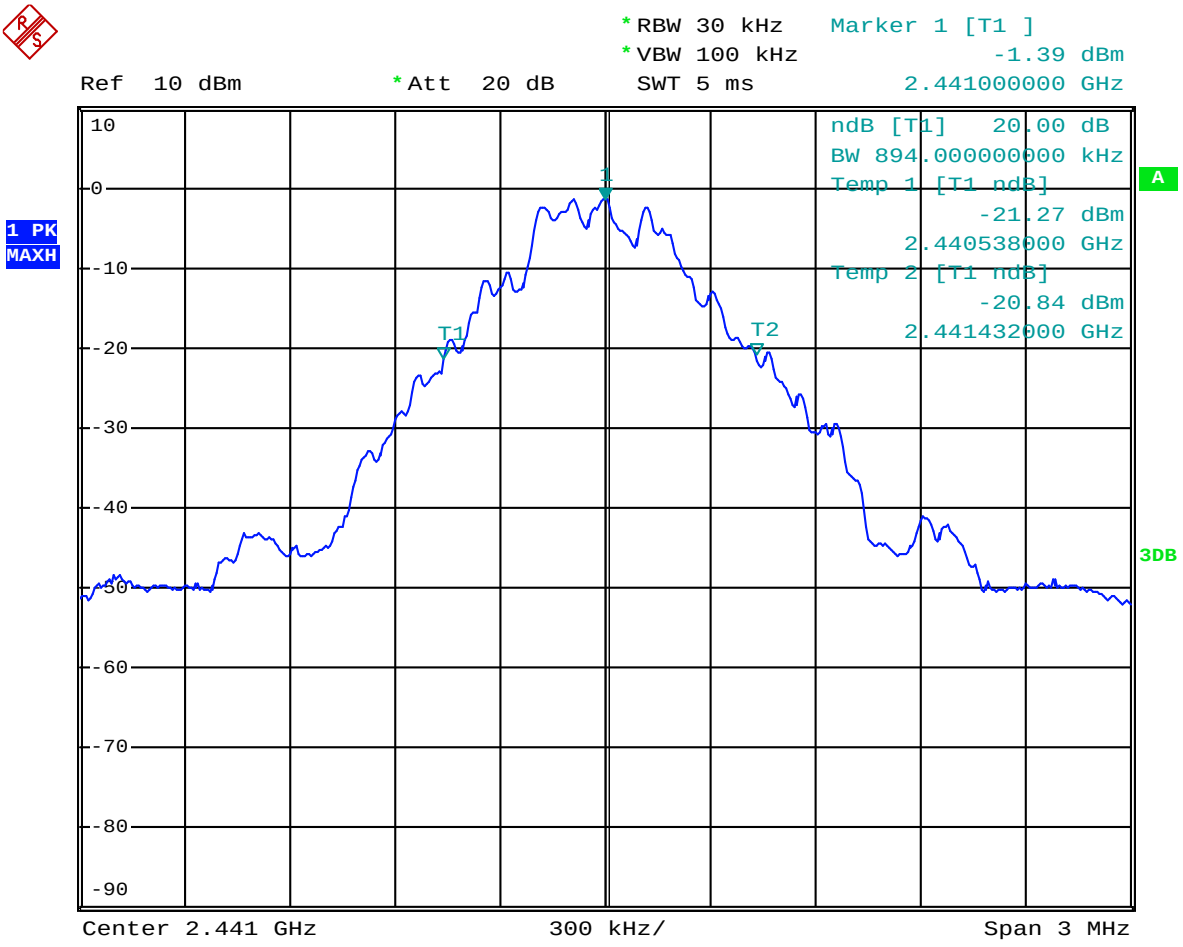
Left earphone

GFSK			
Product:	Dual two-in-one Earphone	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	894kHz	--	--



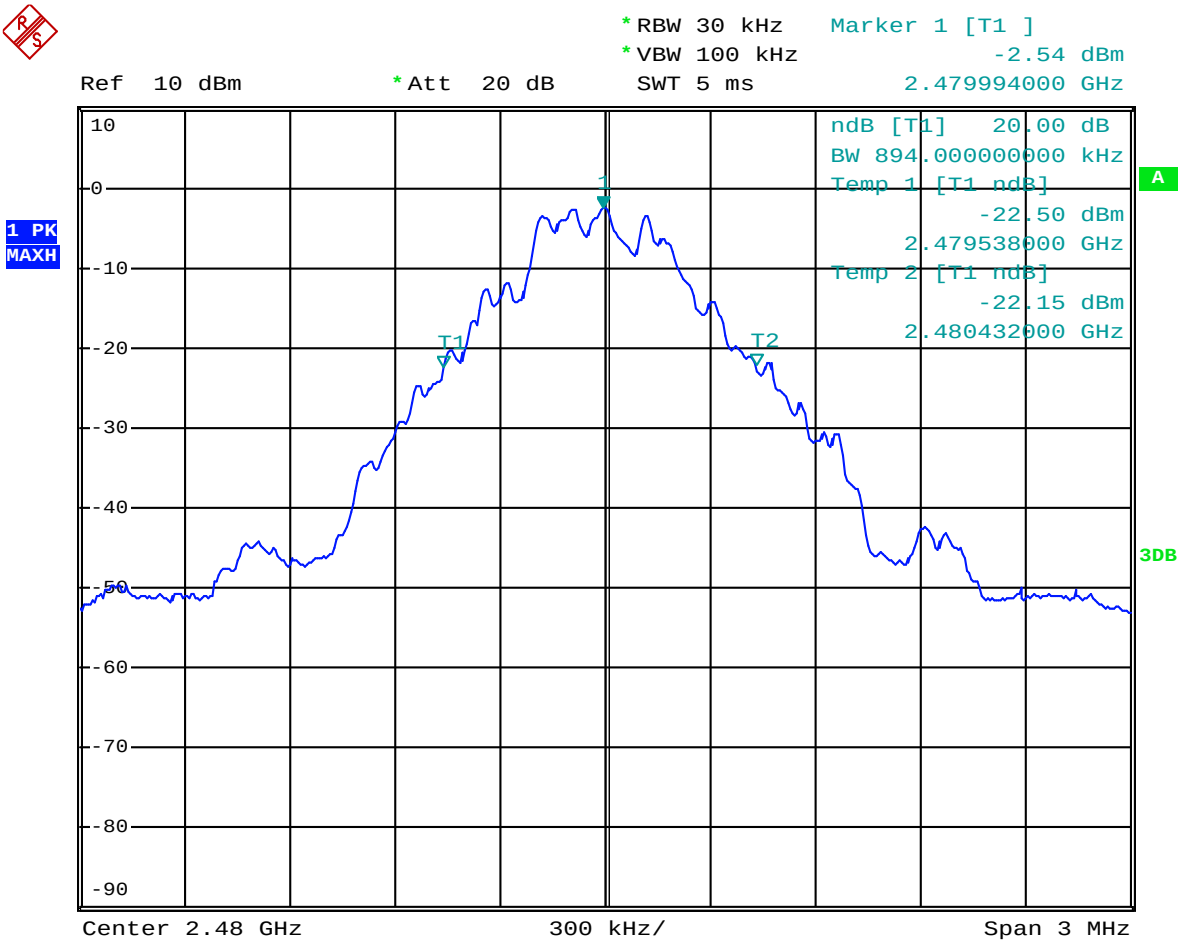
Date: 31.MAR.2025 16:04:45

GFSK			
Product:	Dual two-in-one Earphone	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	894kHz	--	--



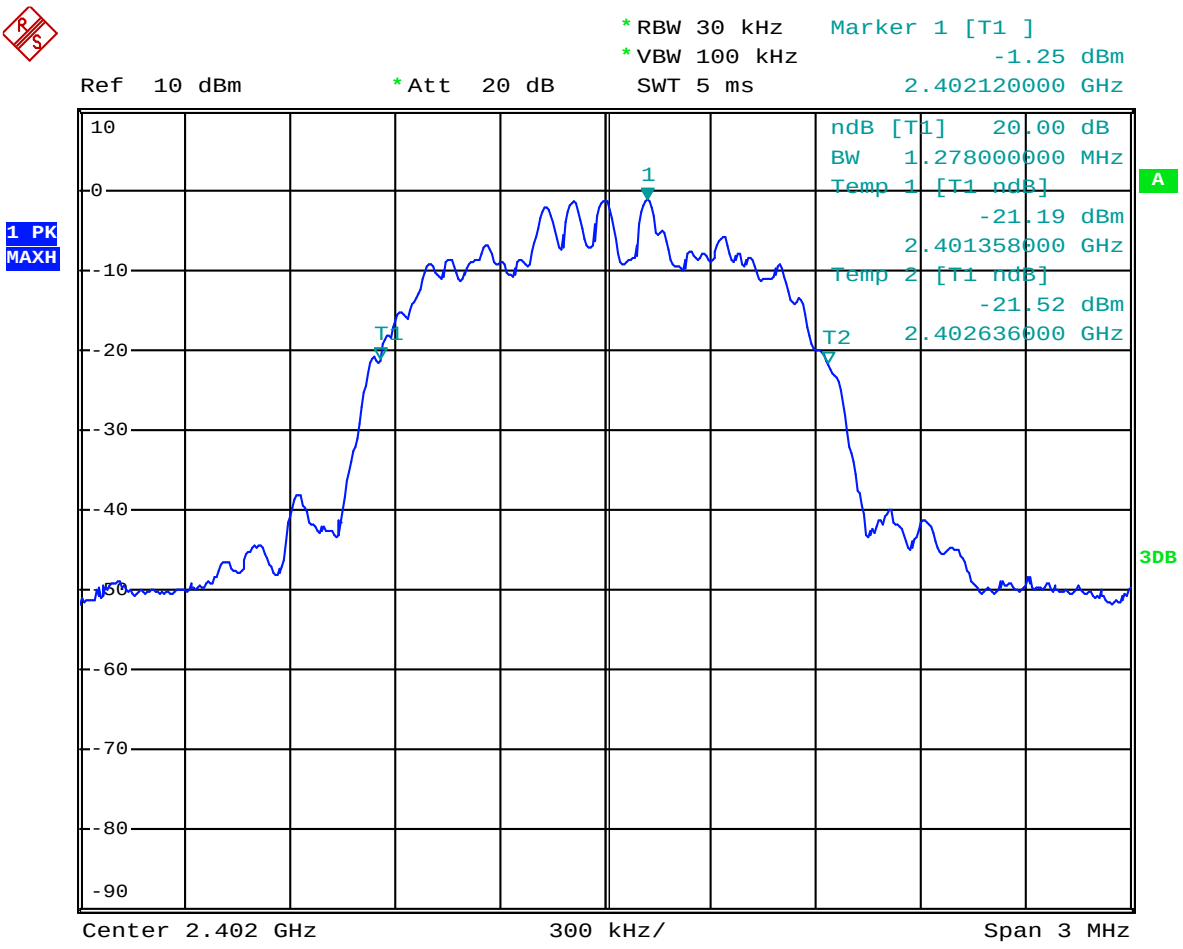
Date: 31.MAR.2025 15:53:00

GFSK			
Product:	Dual two-in-one Earphone	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	894kHz	--	--



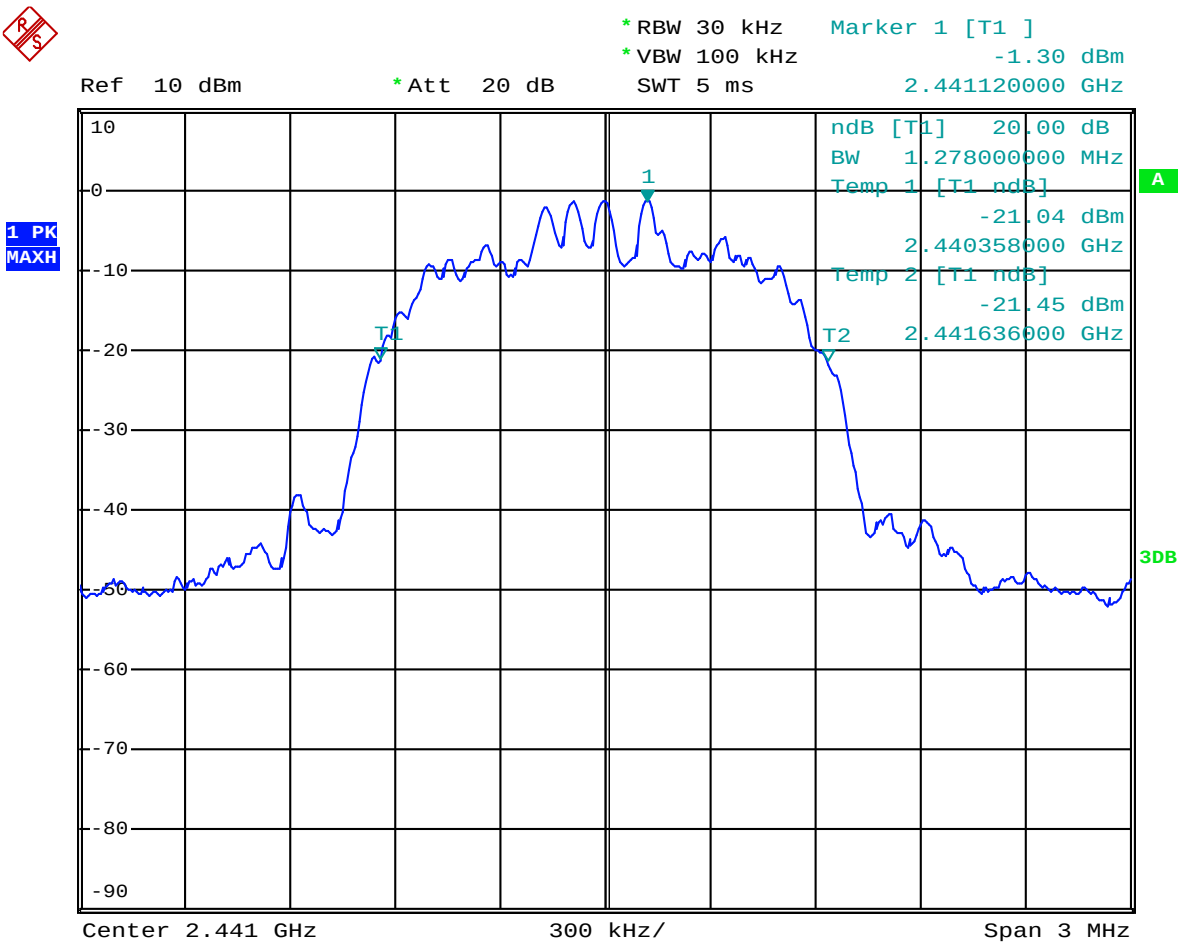
Date: 31.MAR.2025 15:47:54

Л/4DQPSK			
Product:	Dual two-in-one Earphone	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	1.278MHz	--	--



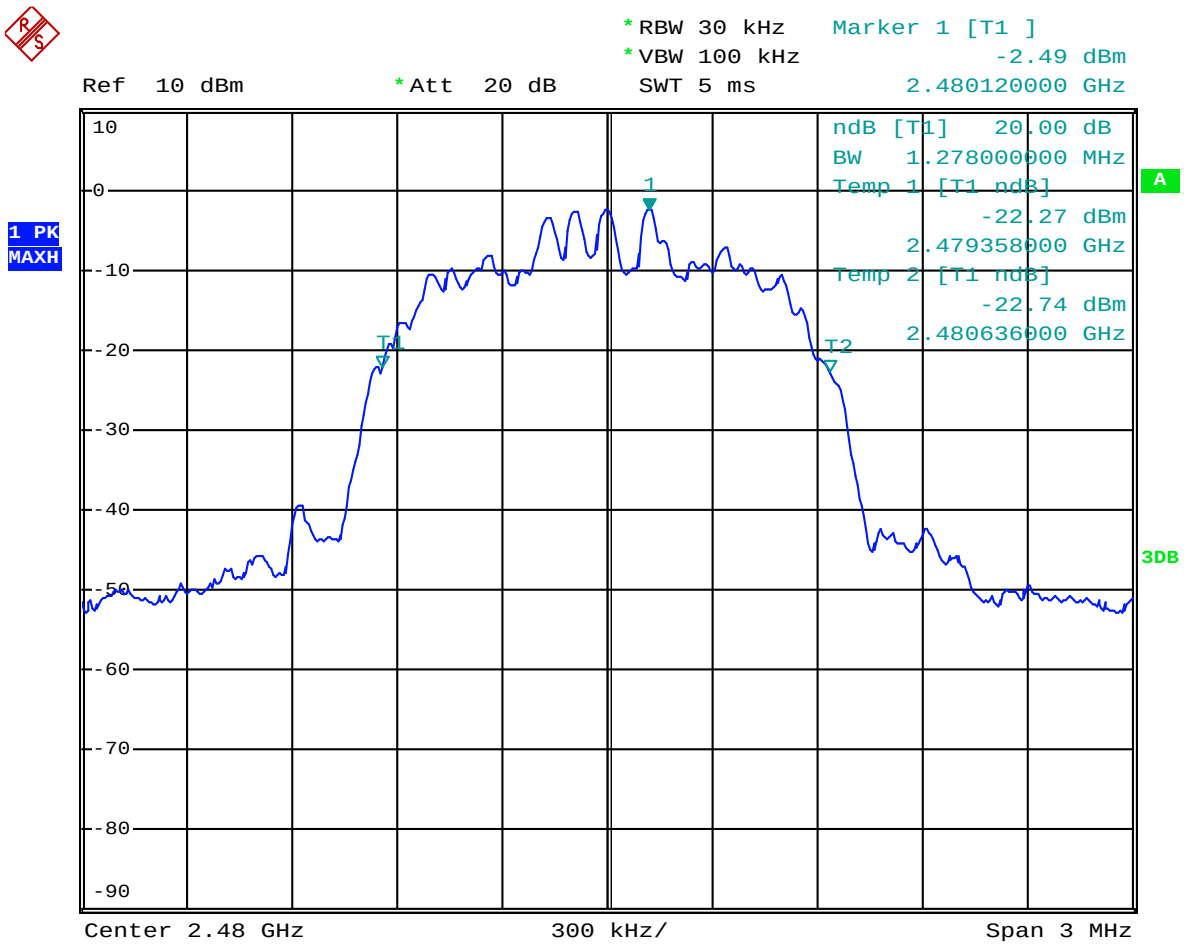
Date: 31.MAR.2025 16:07:05

Л/4DQPSK			
Product:	Dual two-in-one Earphone	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	1.278MHz	--	--



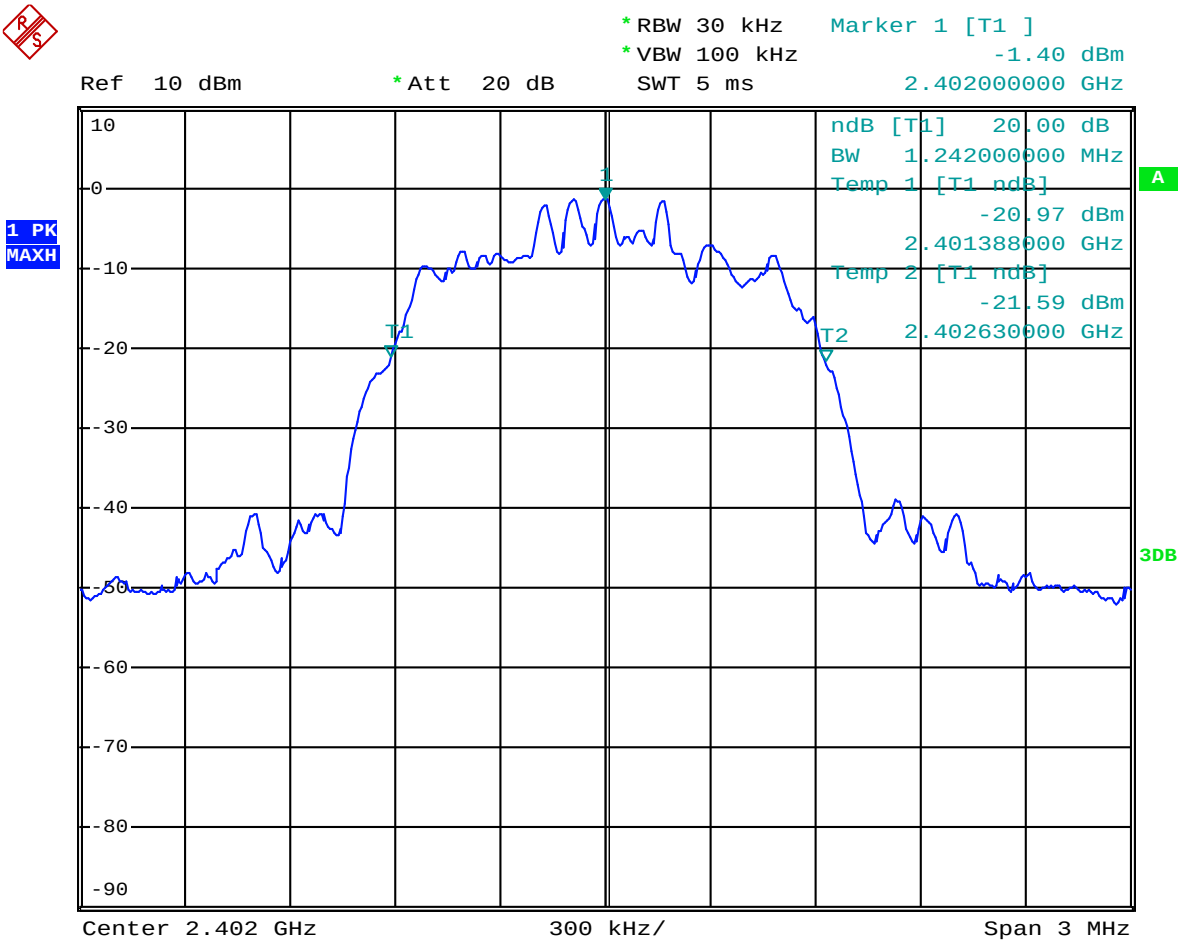
Date: 31.MAR.2025 16:15:52

Л/4DQPSK			
Product:	Dual two-in-one Earphone	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	1.278MHz	--	--



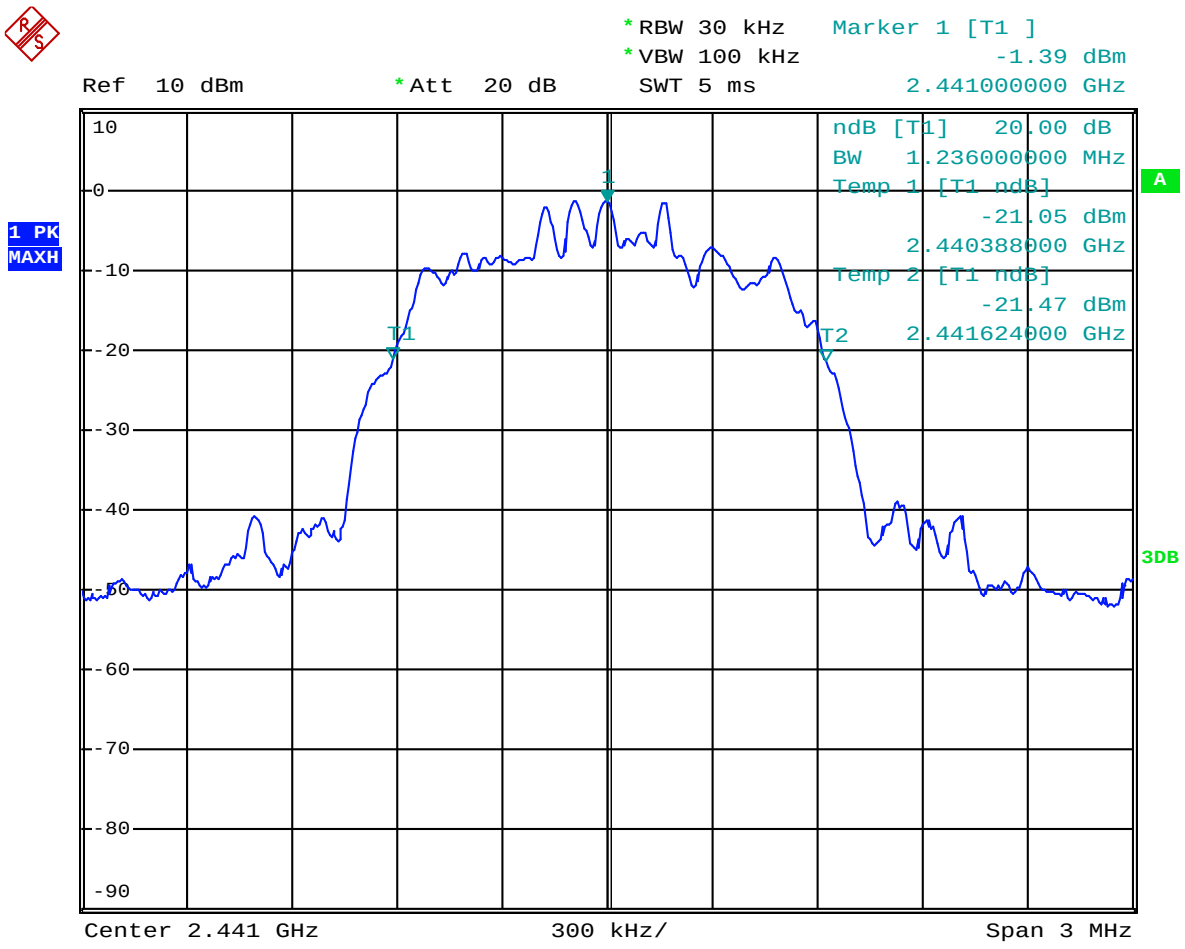
Date: 31.MAR.2025 16:17:53

8DPSK			
Product:	Dual two-in-one Earphone	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	1.242MHz	--	--



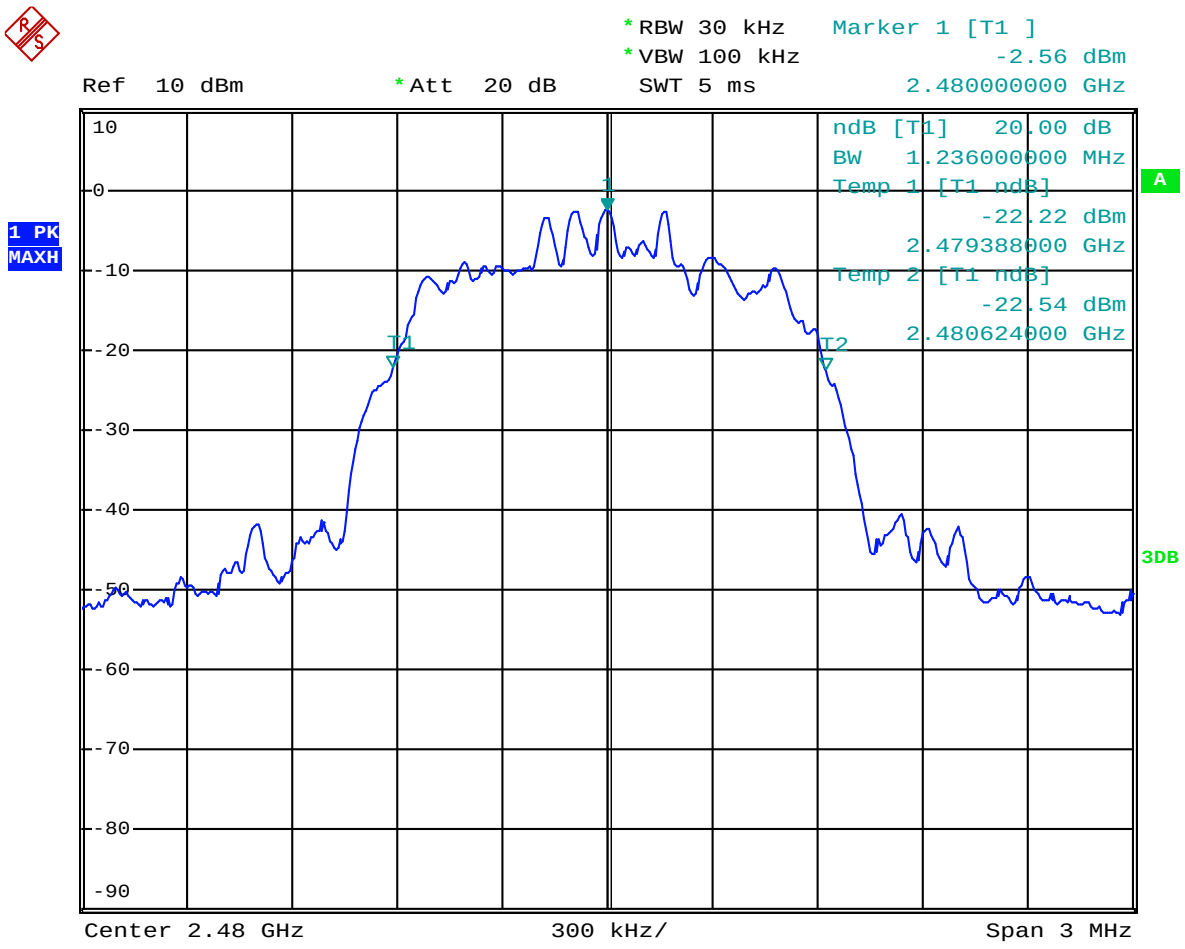
Date: 31.MAR.2025 16:29:37

8DPSK			
Product:	Dual two-in-one Earphone	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	1.236MHz	--	--



Date: 31.MAR.2025 16:23:30

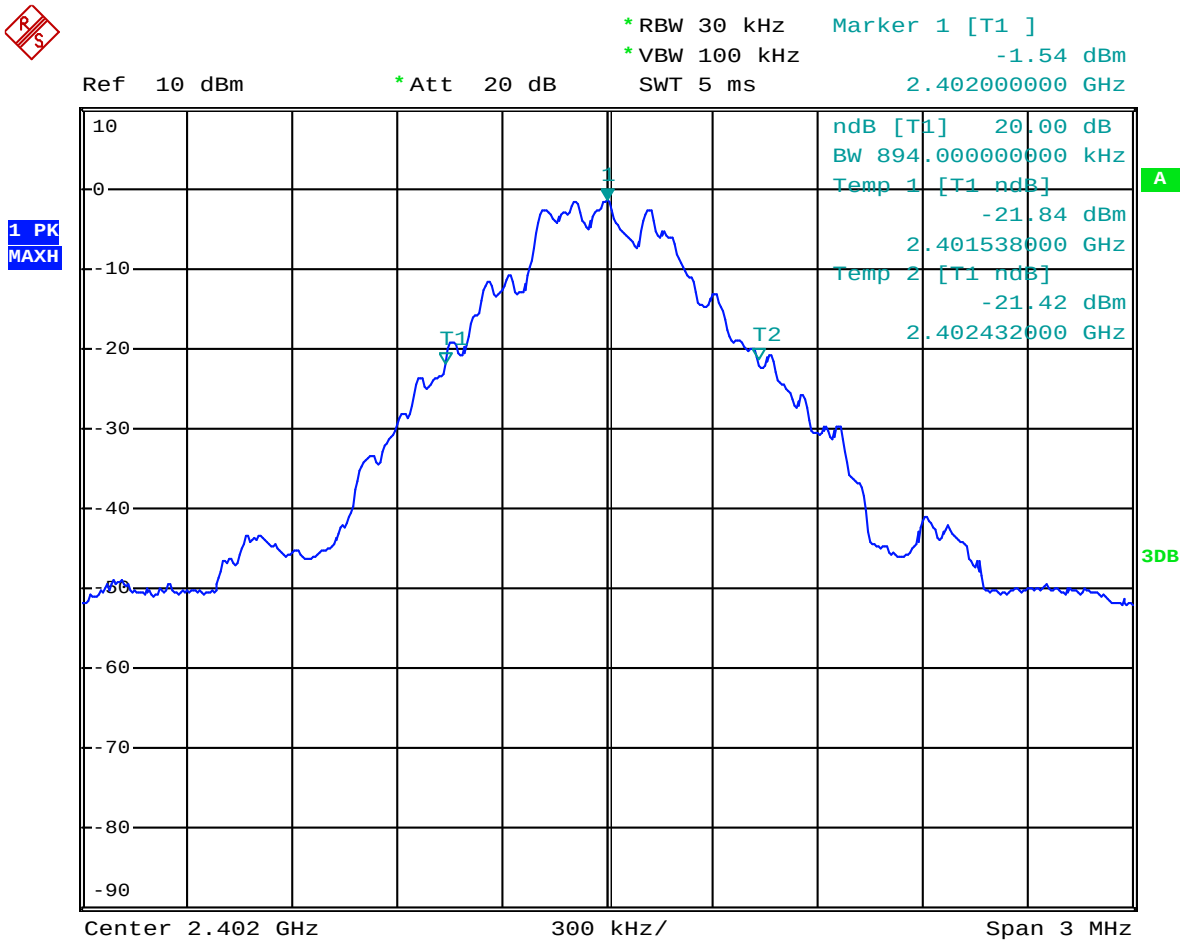
8DPSK			
Product:	Dual two-in-one Earphone	Test Mode:	Keep transmitting
Mode	Keeping Transmitting	Test Voltage	DC3.7V
Temperature	24 deg. C,	Humidity	56% RH
Test Result:	Pass	Detector	PK
20dB Bandwidth	1.236MHz	--	--



Date: 31.MAR.2025 16:22:31

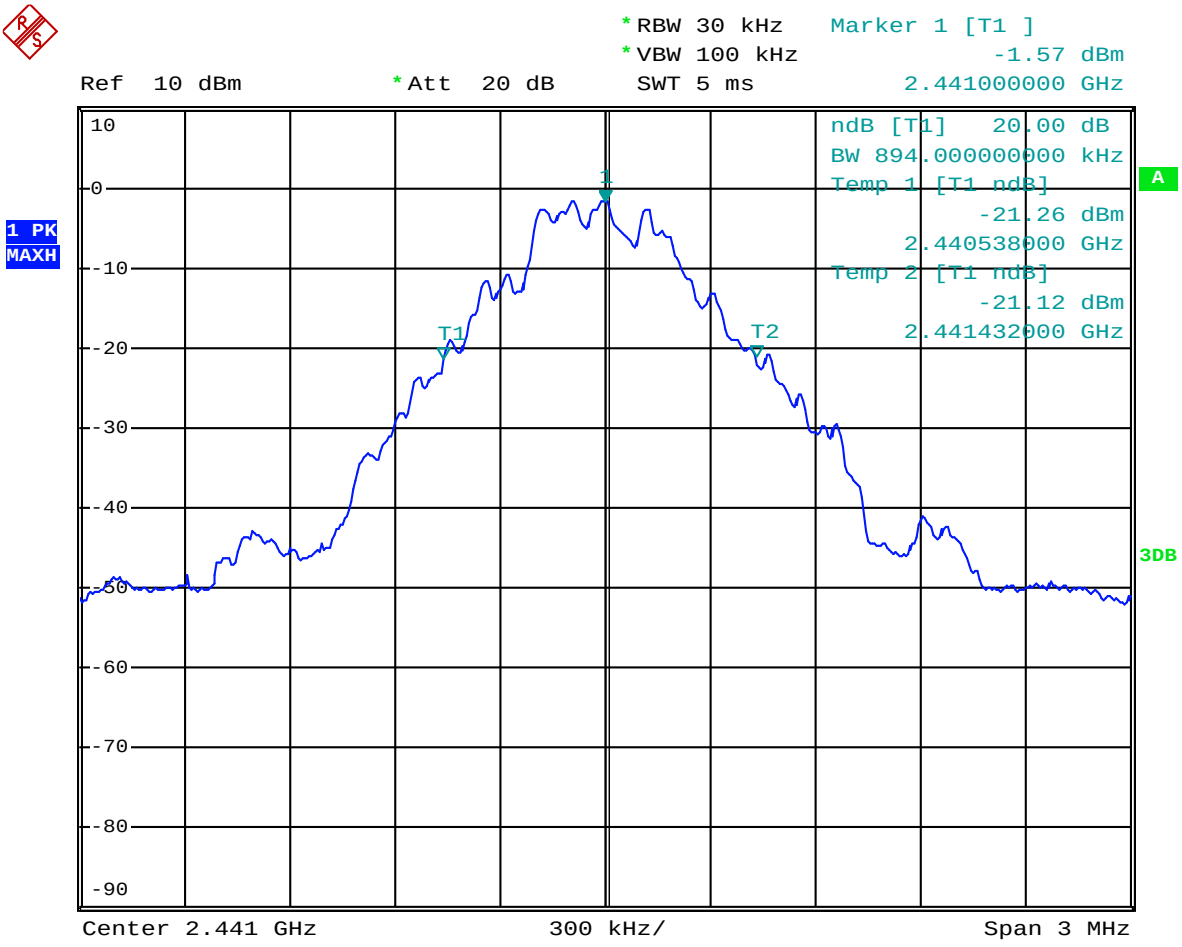
Right earphone

GFSK			
Product:	Dual two-in-one Earphone	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	894kHz	--	--



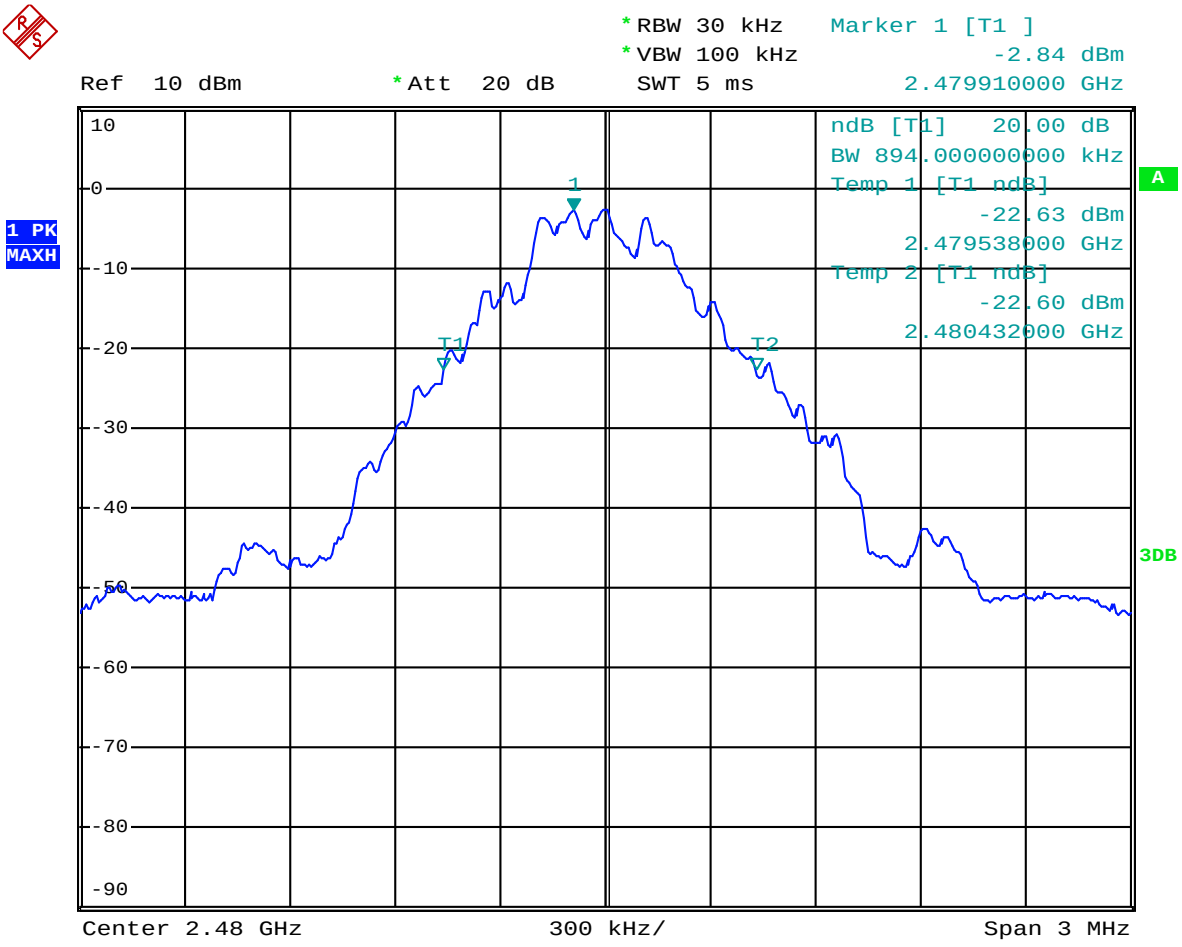
Date: 3.APR.2025 16:01:03

GFSK			
Product:	Dual two-in-one Earphone	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	894kHz	--	--



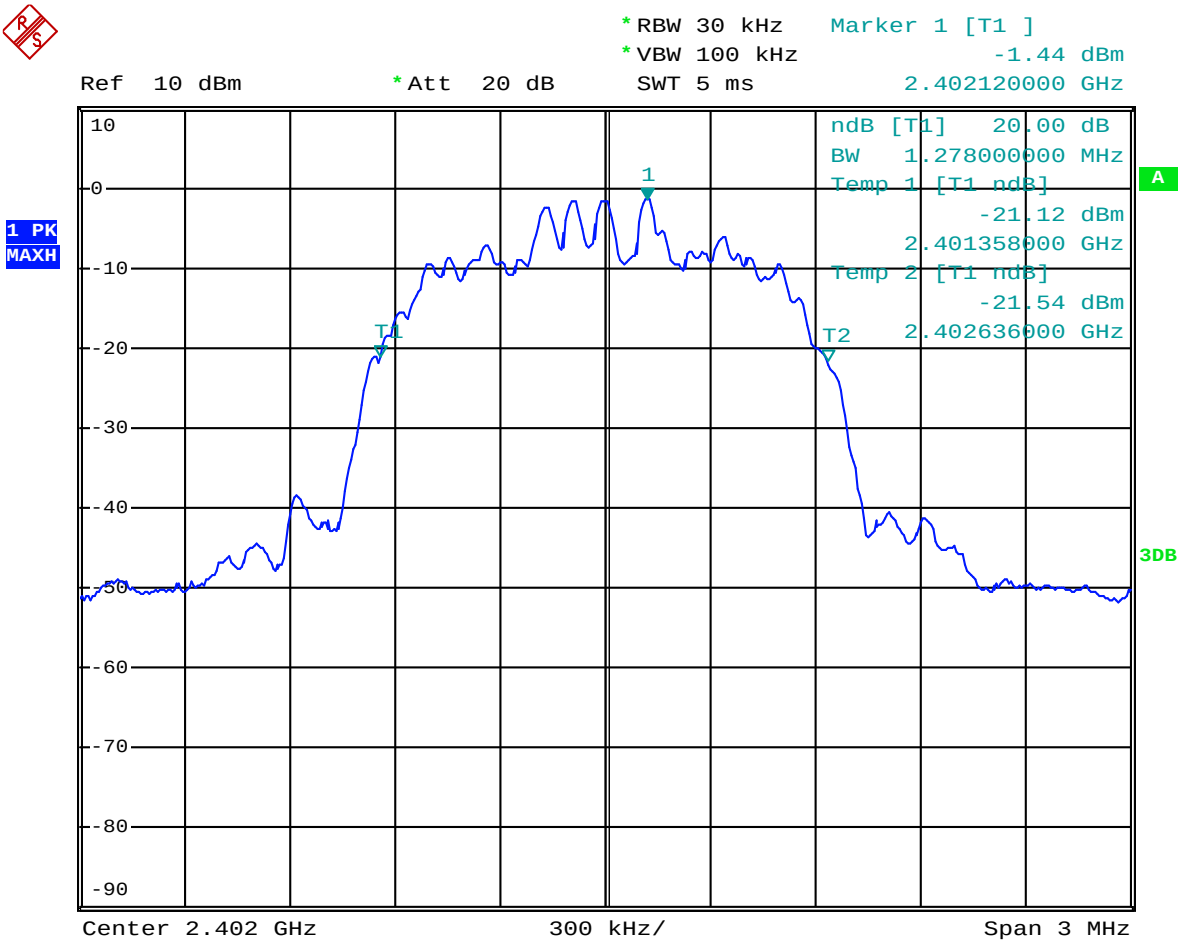
Date: 3.APR.2025 15:56:14

GFSK			
Product:	Dual two-in-one Earphone	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	894kHz	--	--



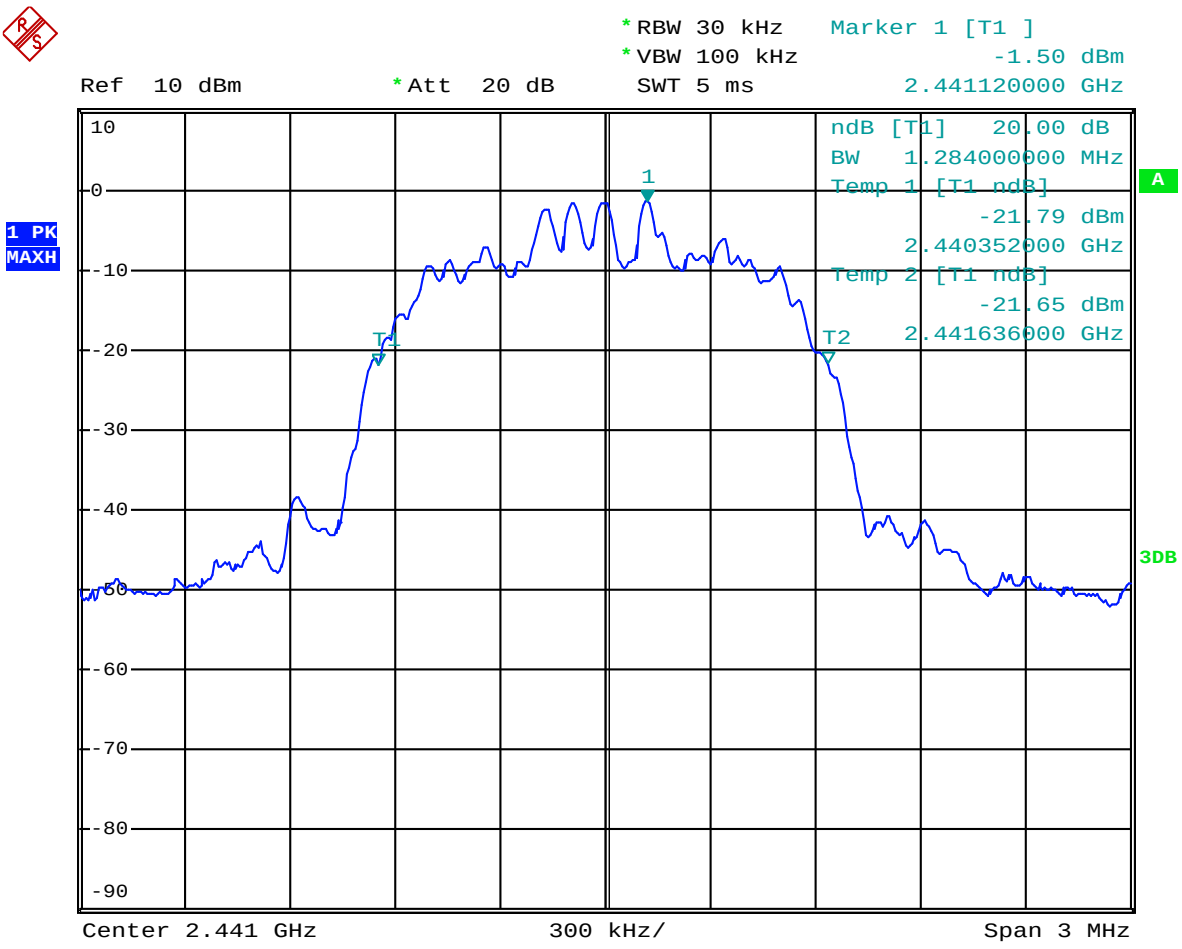
Date: 3.APR.2025 15:47:05

Л/4DQPSK			
Product:	Dual two-in-one Earphone	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	1.278MHz	--	--



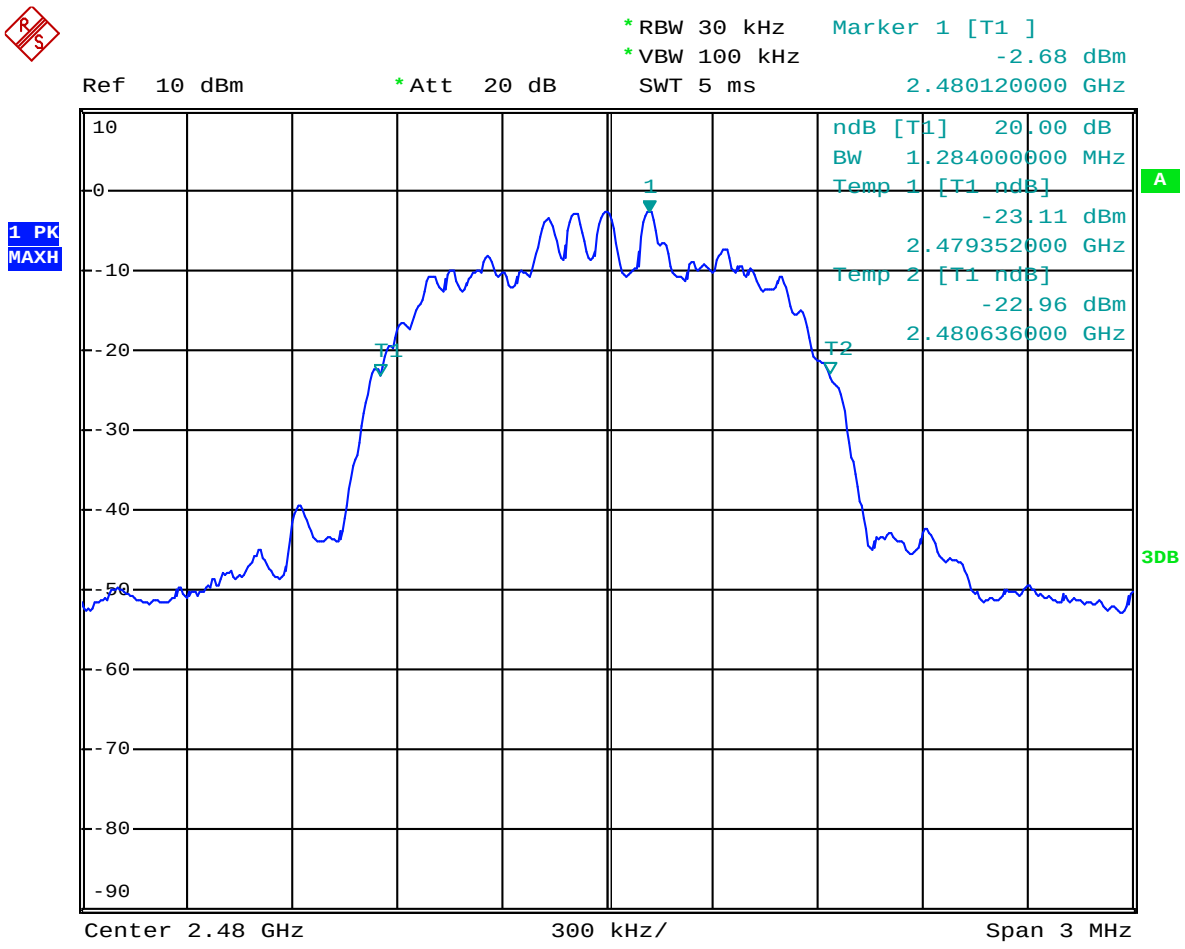
Date: 3.APR.2025 16:06:25

Л/4DQPSK			
Product:	Dual two-in-one Earphone	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	1.284MHz	--	--



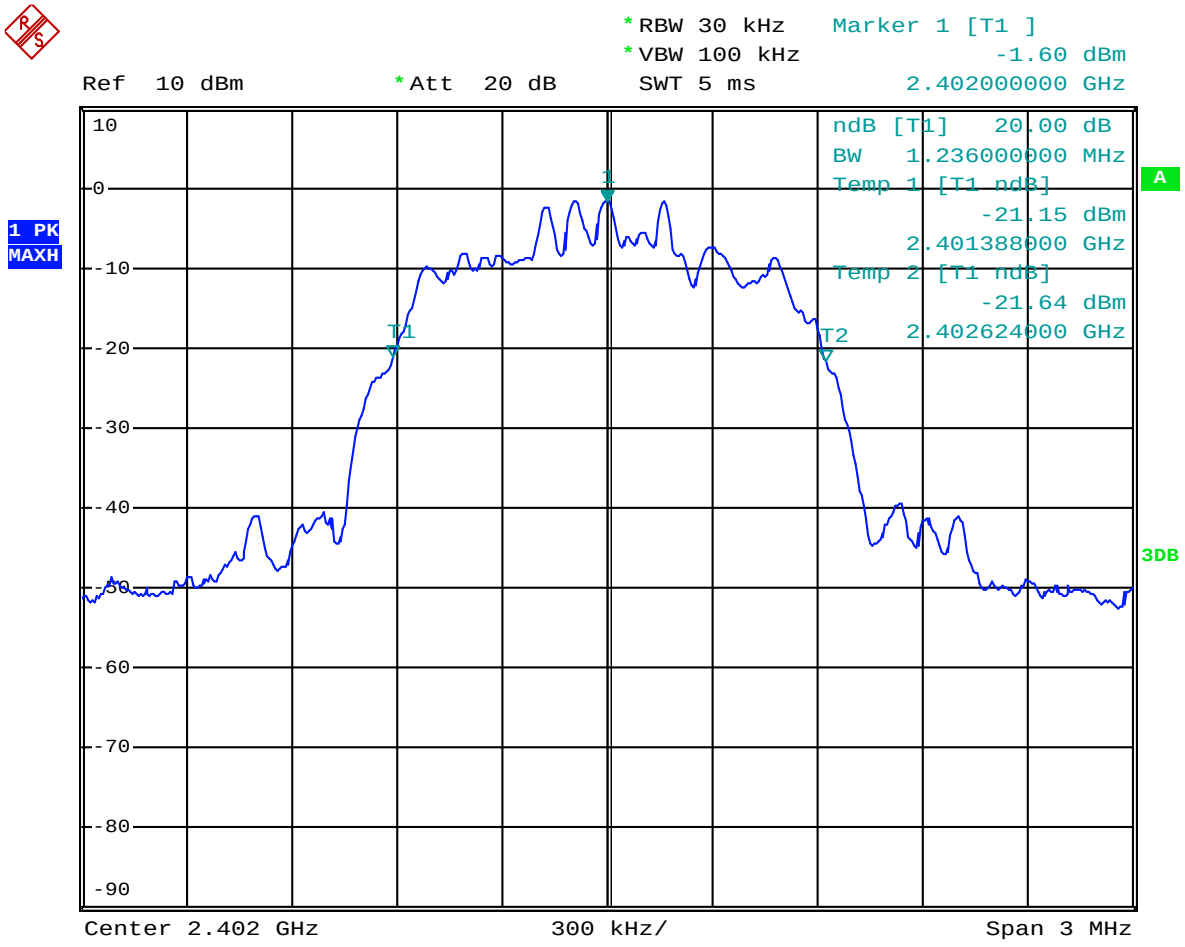
Date: 3.APR.2025 16:09:35

Л/4DQPSK			
Product:	Dual two-in-one Earphone	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	1.284MHz	--	--



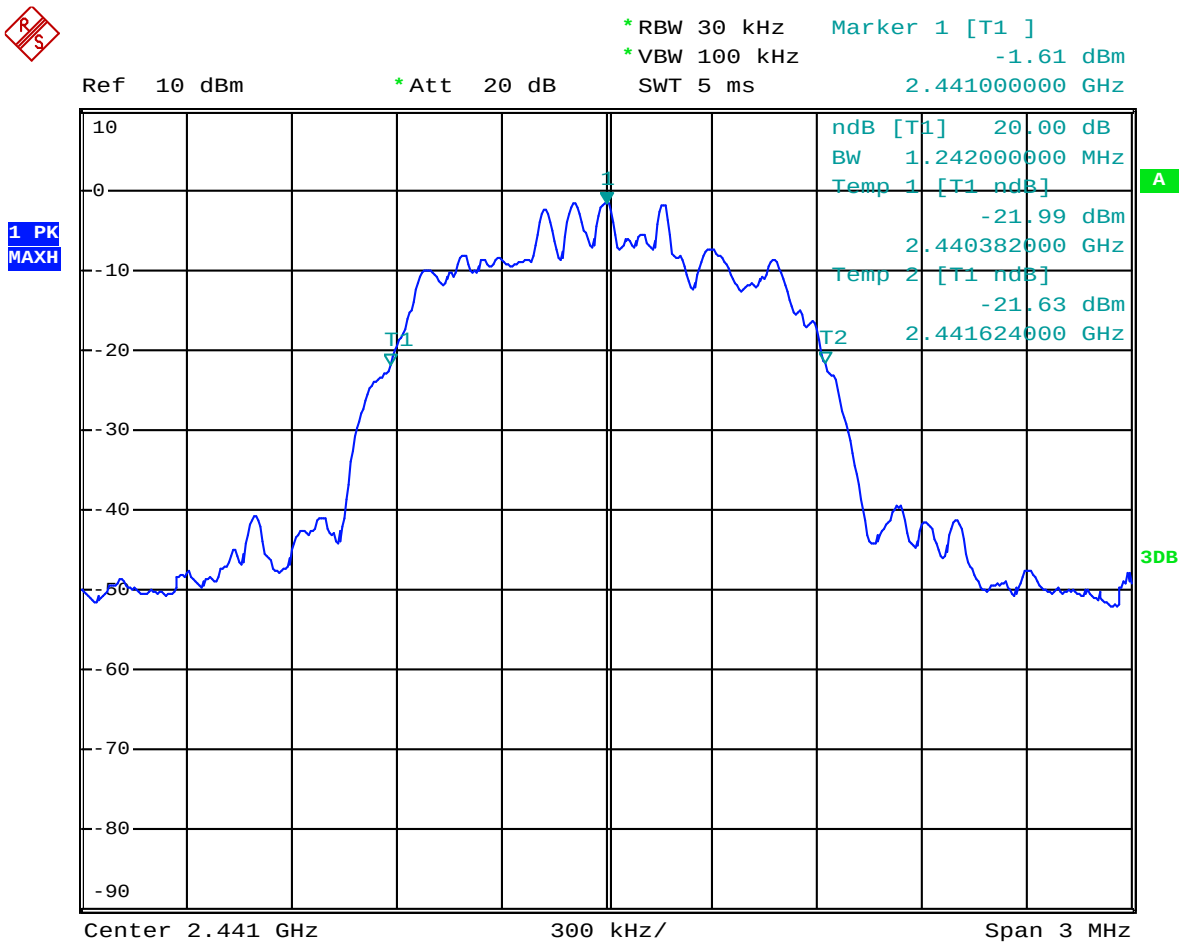
Date: 3.APR.2025 16:13:46

8DPSK			
Product:	Dual two-in-one Earphone	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	1.236MHz	--	--



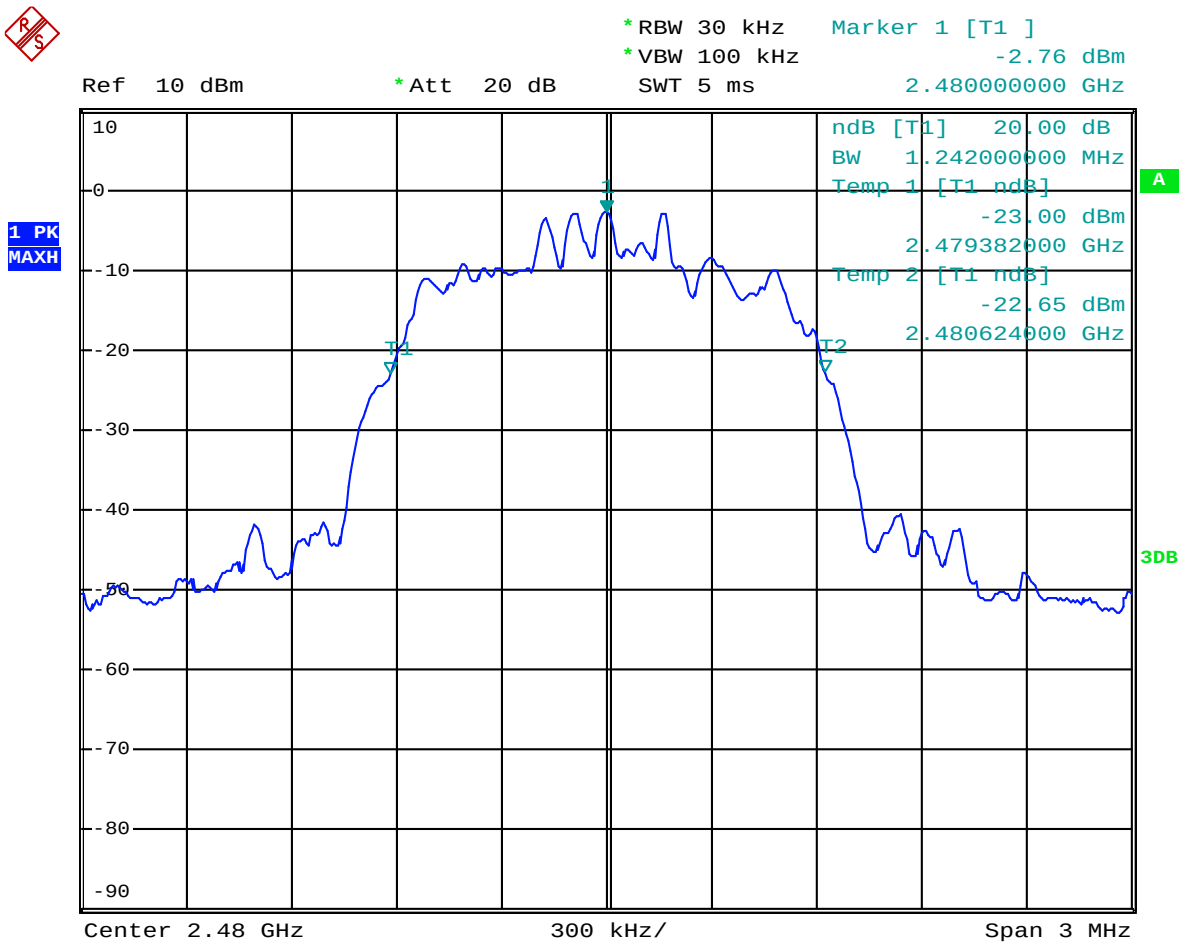
Date: 3.APR.2025 16:21:29

8DPSK			
Product:	Dual two-in-one Earphone	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	1.242MHz	--	--



Date: 3.APR.2025 16:19:56

8DPSK			
Product:	Dual two-in-one Earphone	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	1.242MHz	--	--



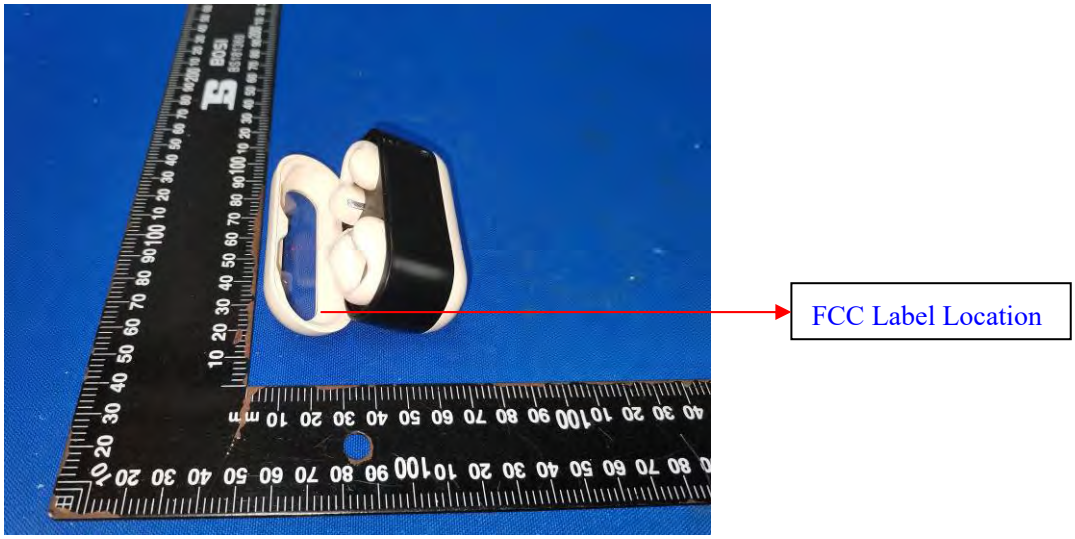
Date: 3.APR.2025 16:17:57

10.0 FCC ID Label

FCC ID: 2BOIS-2503I21

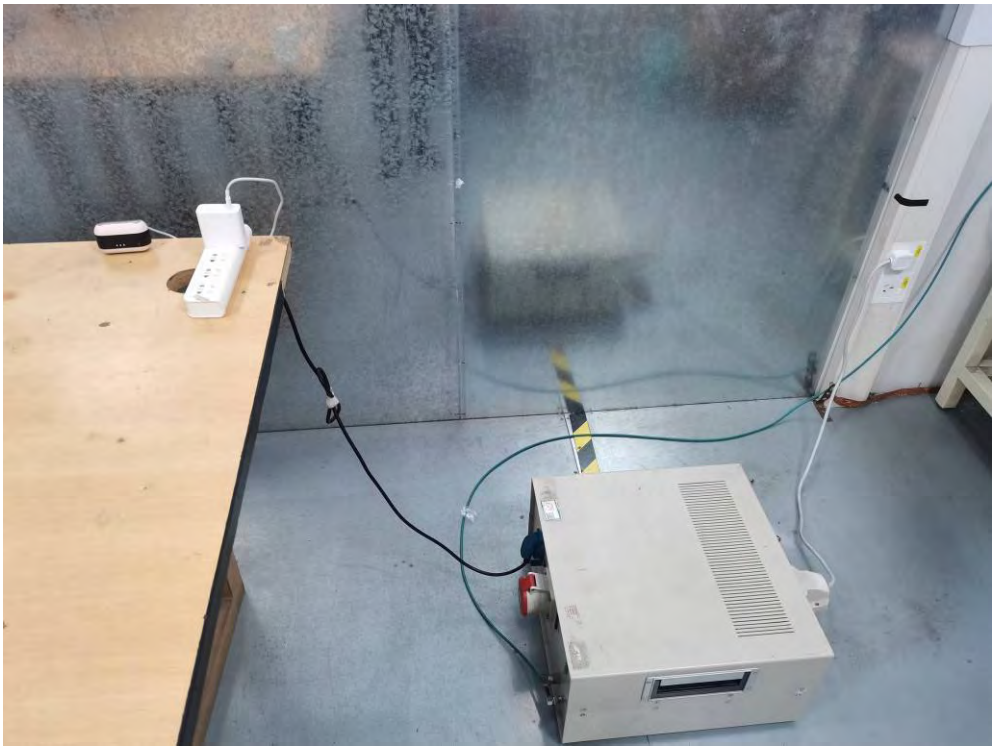
The label must not be a stick-on paper label. The label on these products must be permanently affixed to the product and readily visible at the time of purchase and must last the expected lifetime of the equipment not be readily detachable.

Mark Location:



11.0 Photo of testing

11.1 Conducted test View



Radiated emission test view

11.2 Photographs – EUT

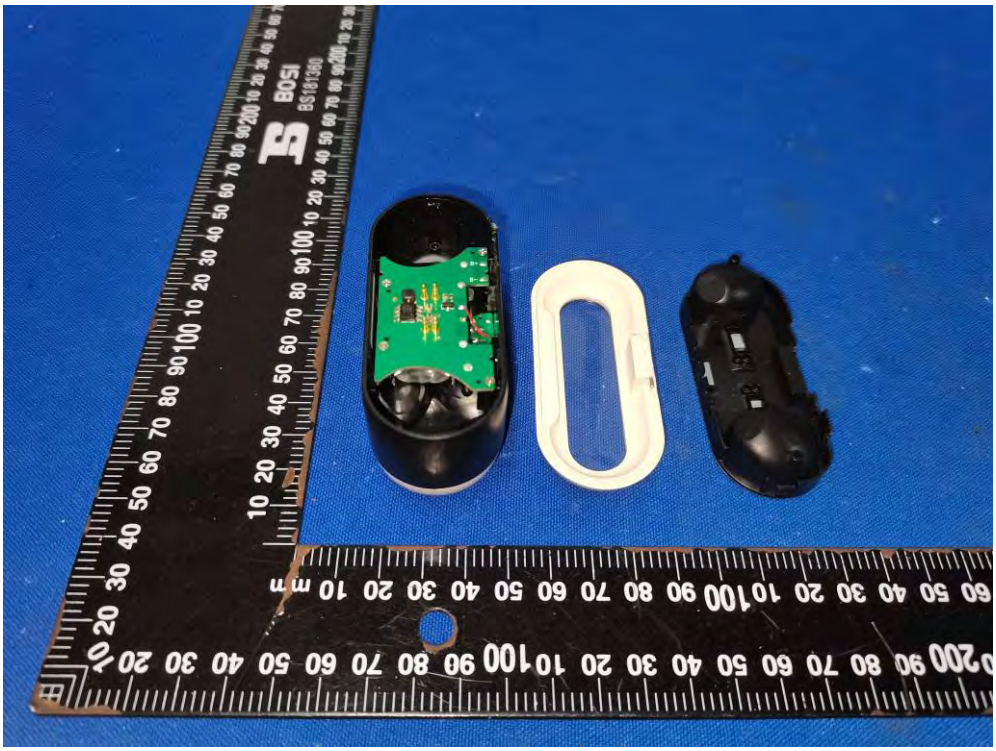
Outside View - charger base

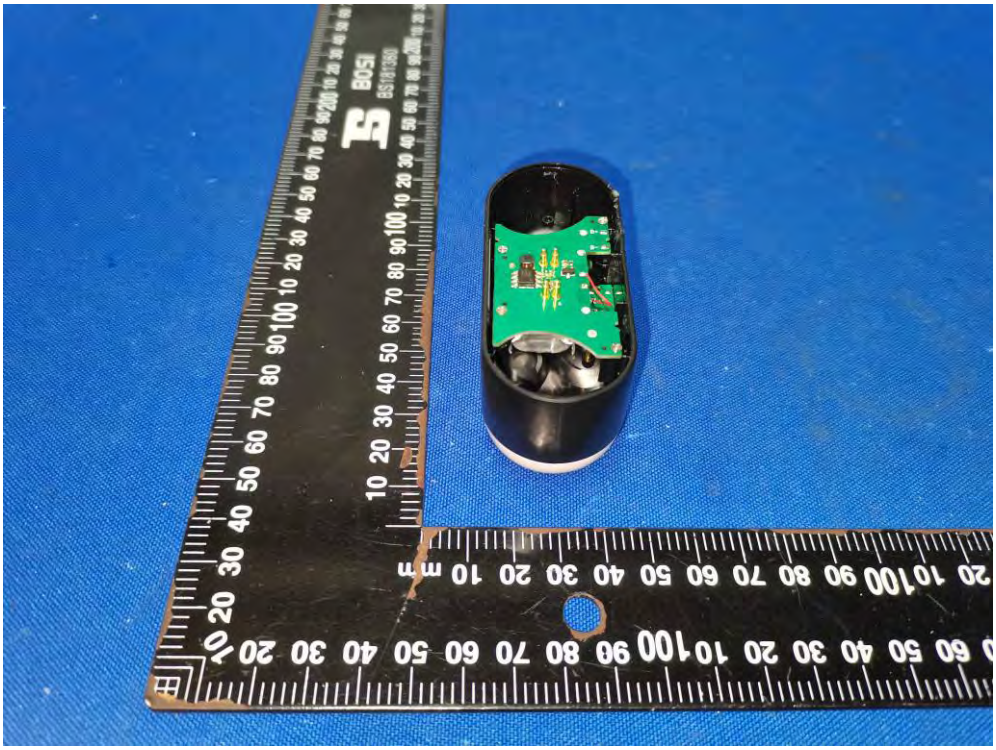
Outside View - charger base

Outside View - charger base

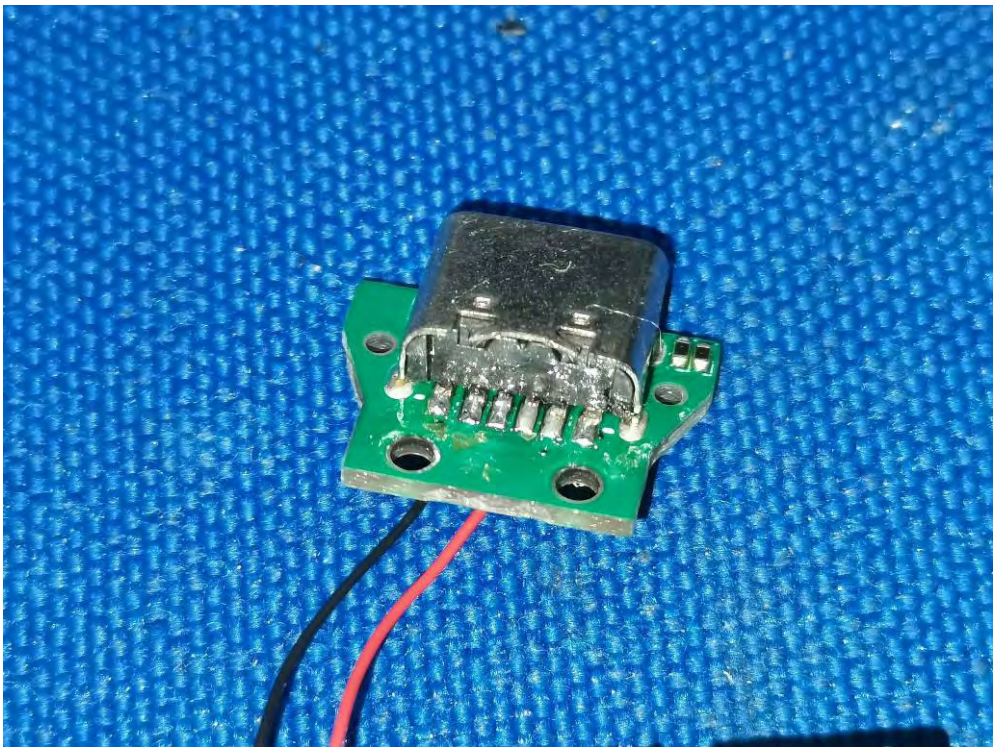
Outside View - charger base

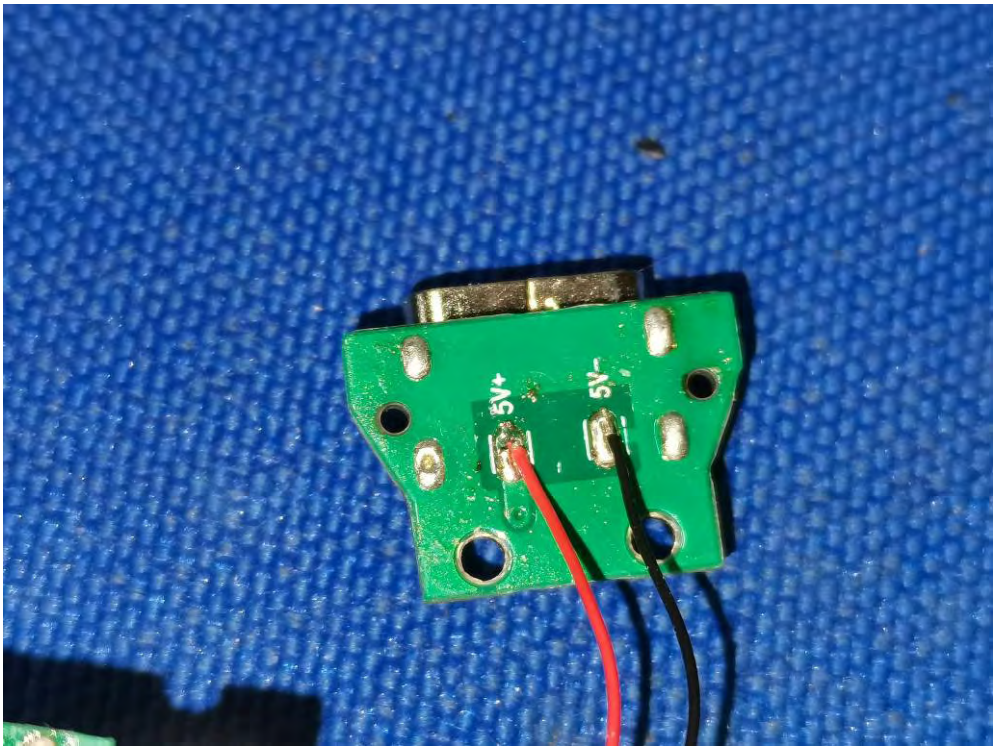
Inside View - charger base



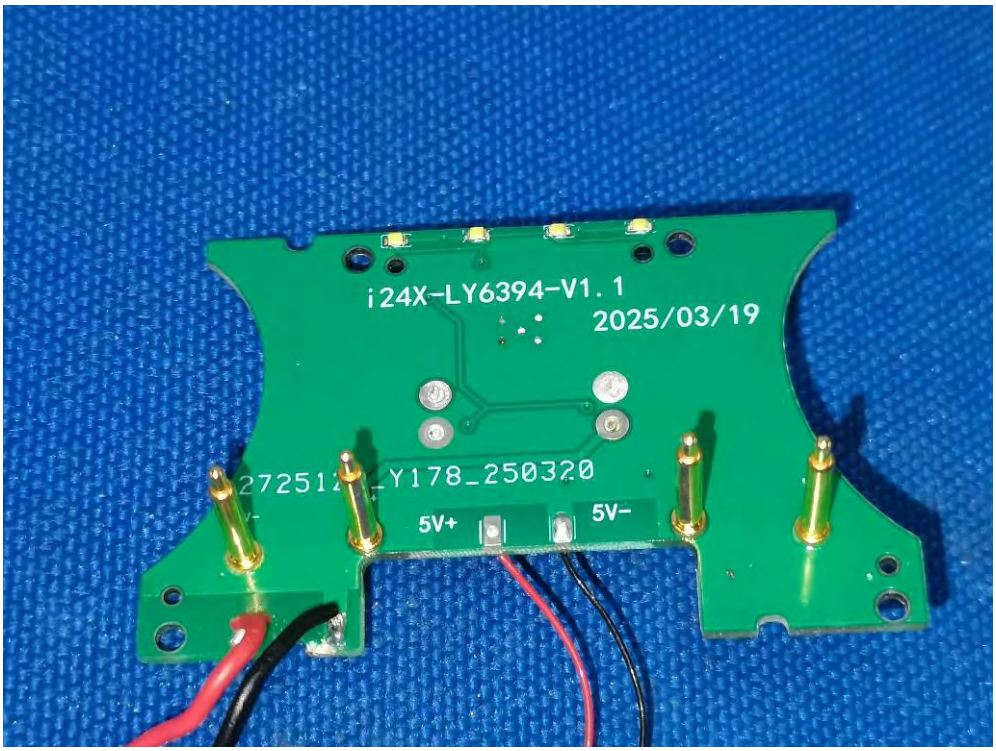


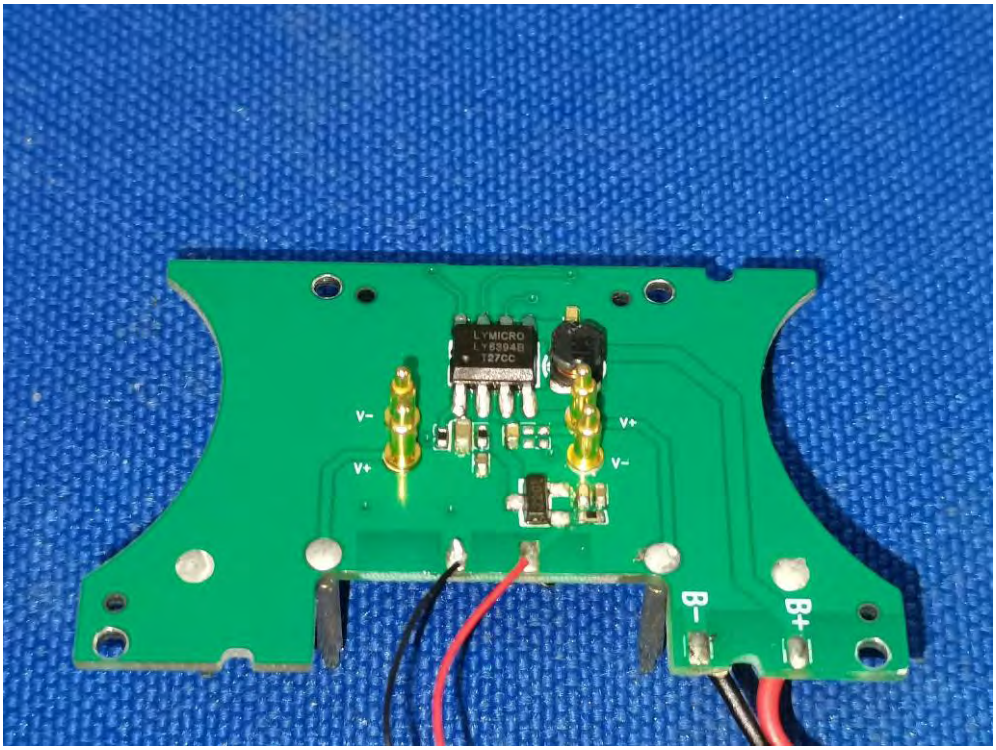
Inside View - charger base



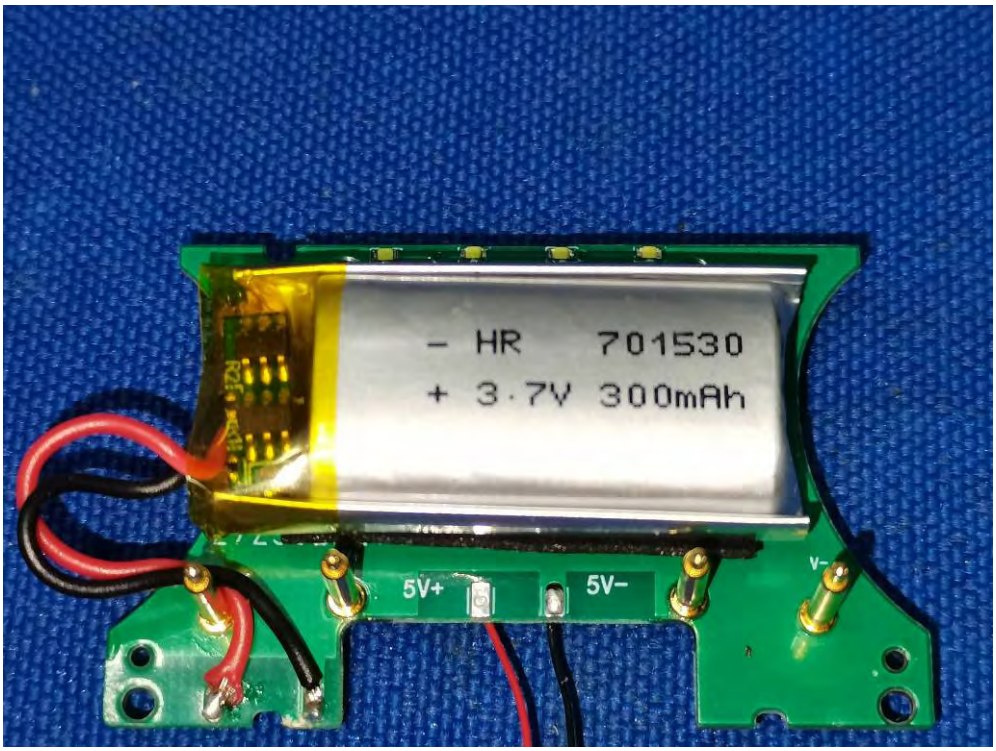


Inside View - charger base

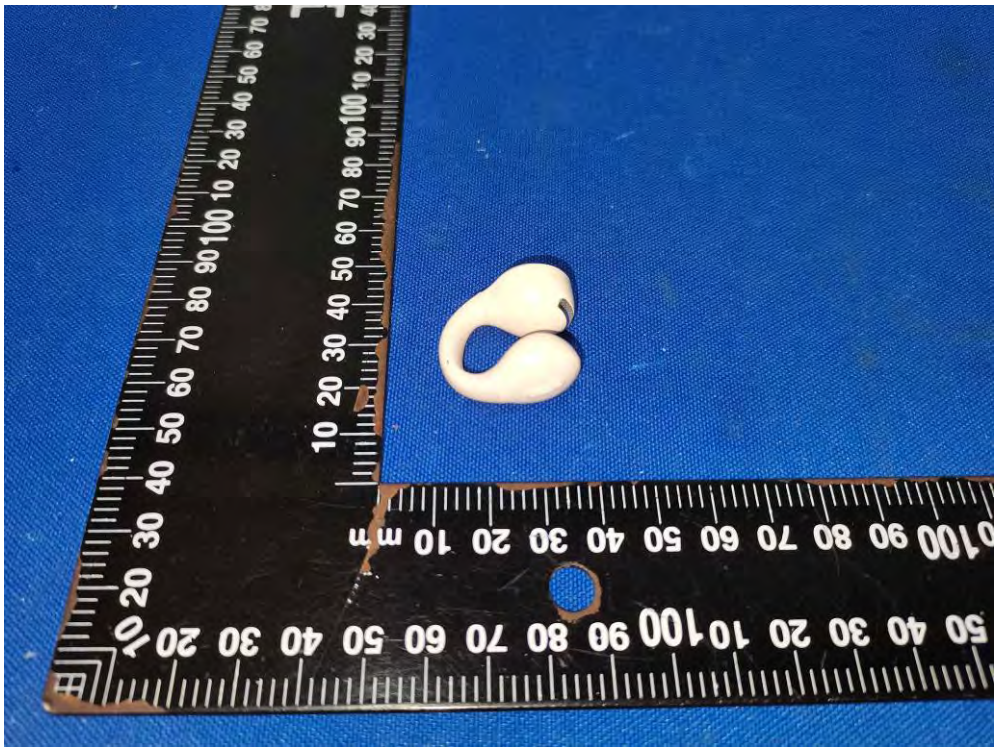




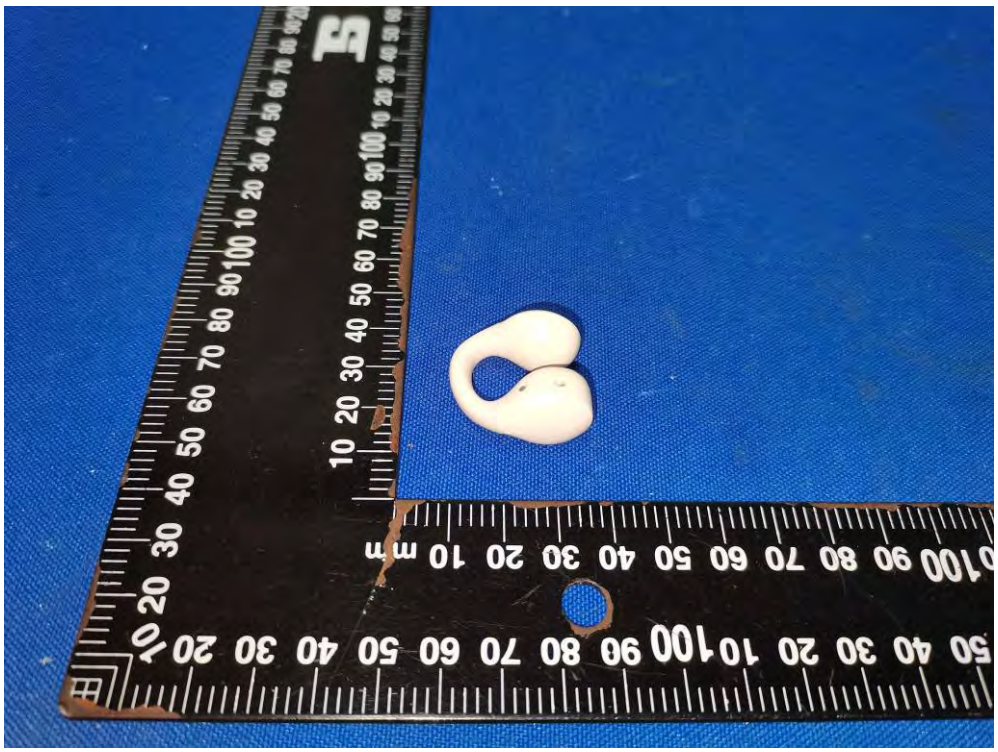
Inside View - charger base



Outside View - Left earphone

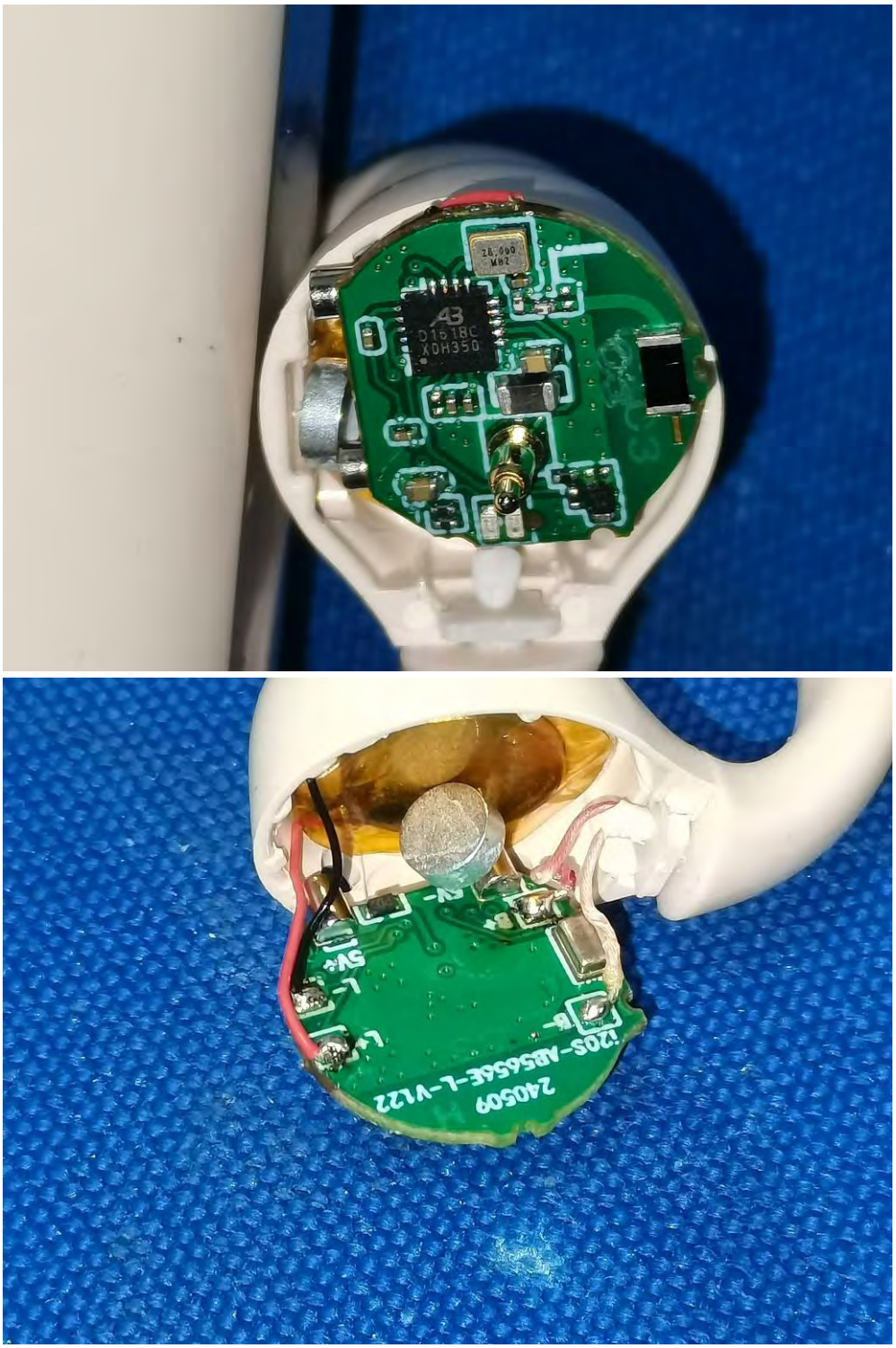


Outside View - Left earphone

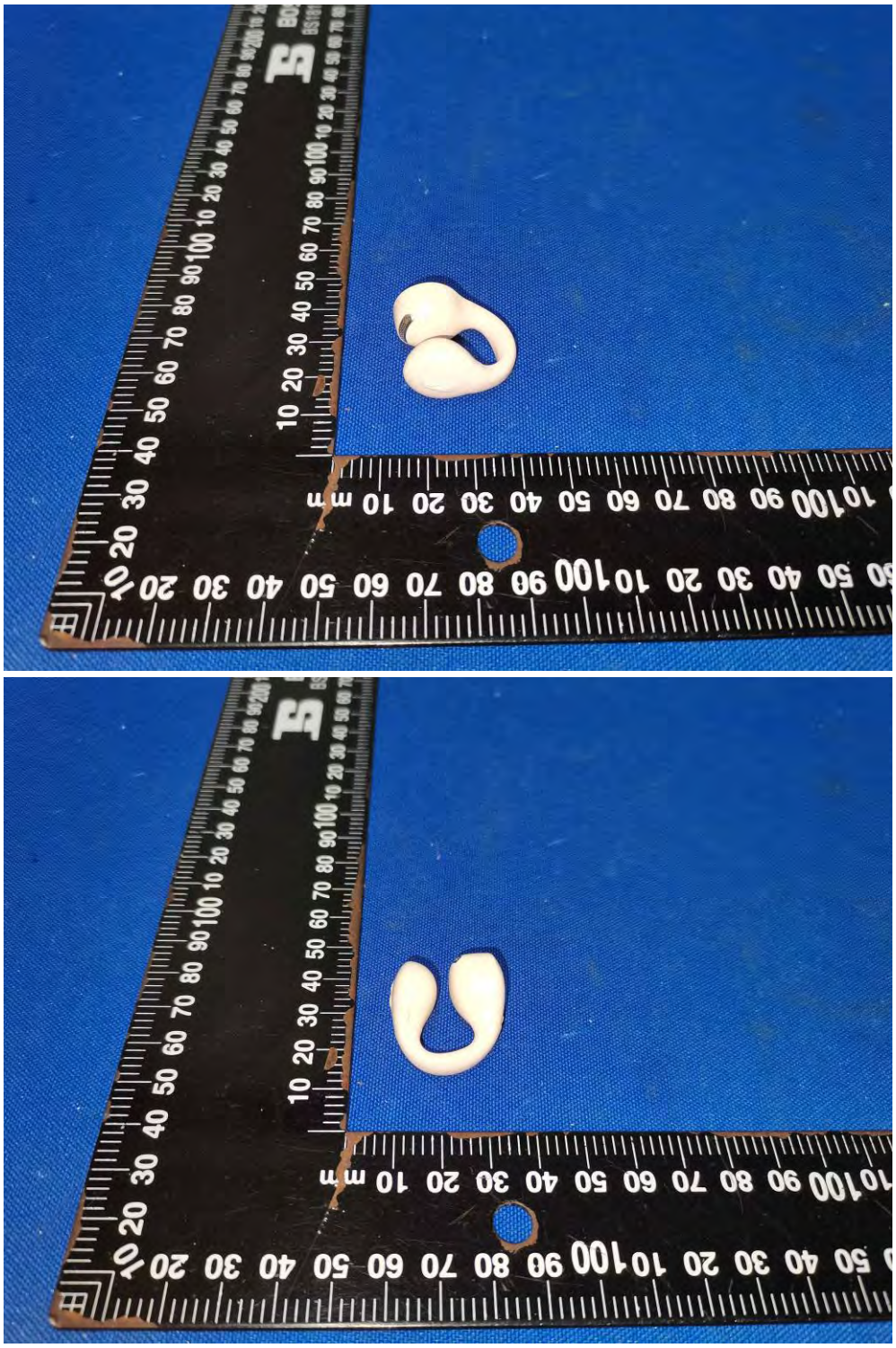


Inside View - Left earphone

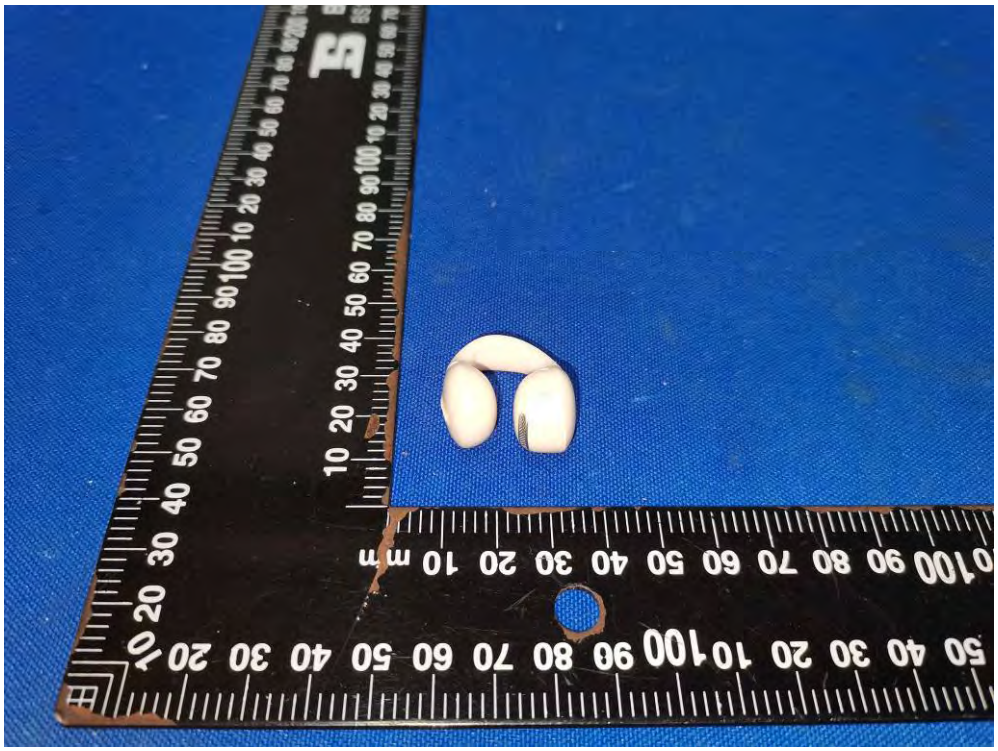
Inside View - Left earphone

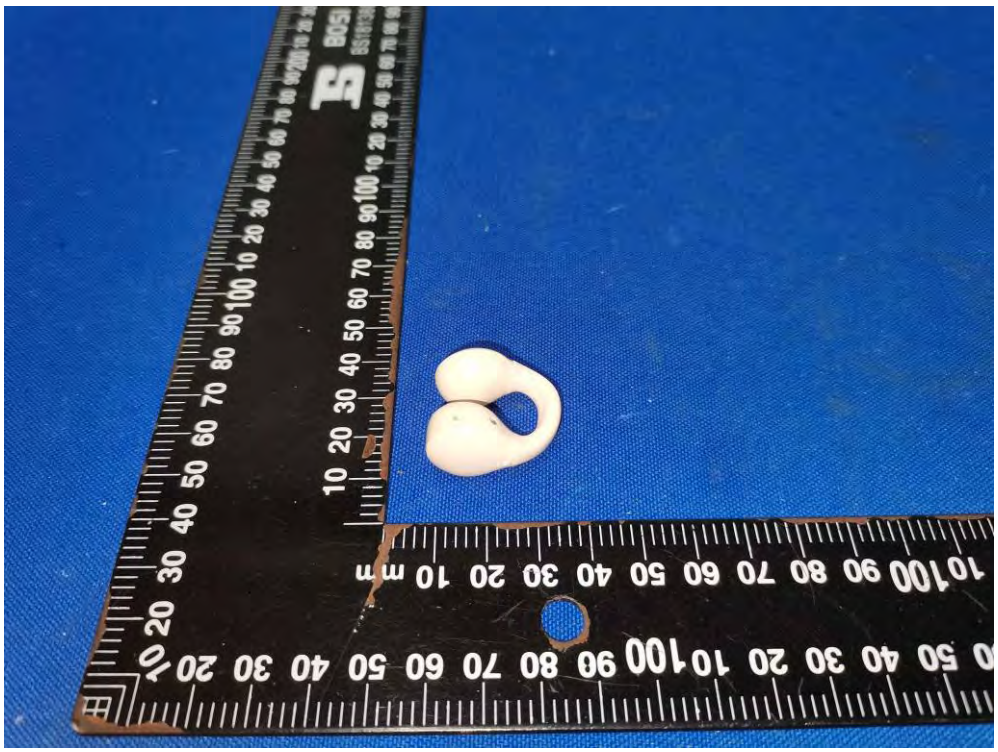


Outside View - Right earphone

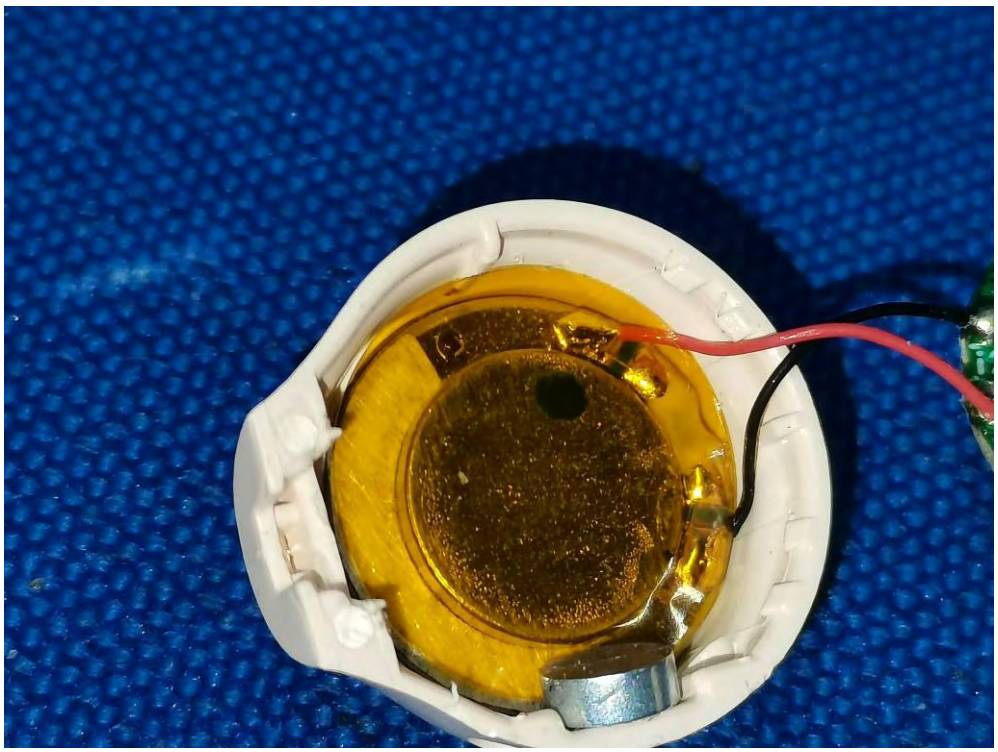


Outside View - Right earphone

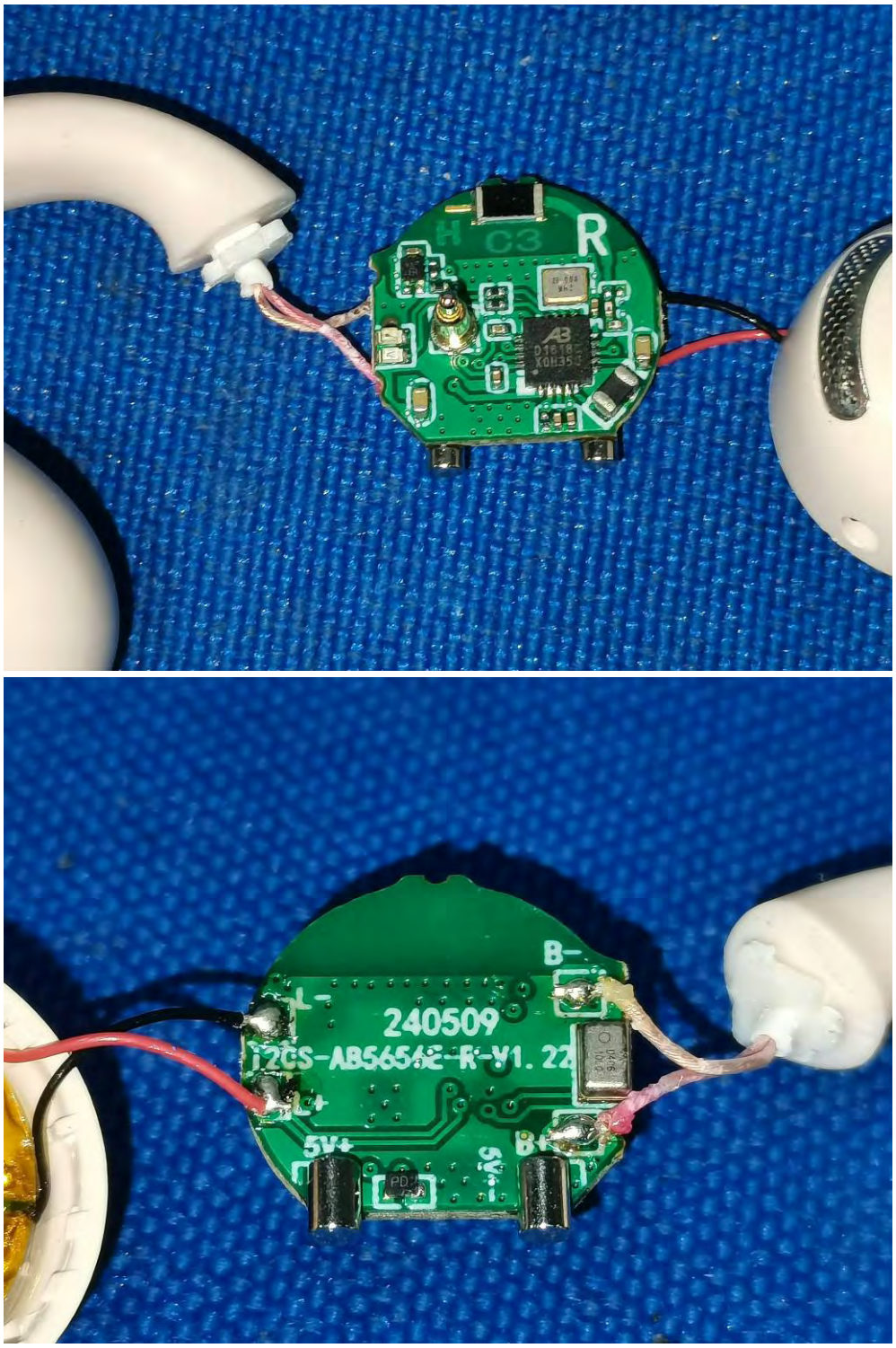




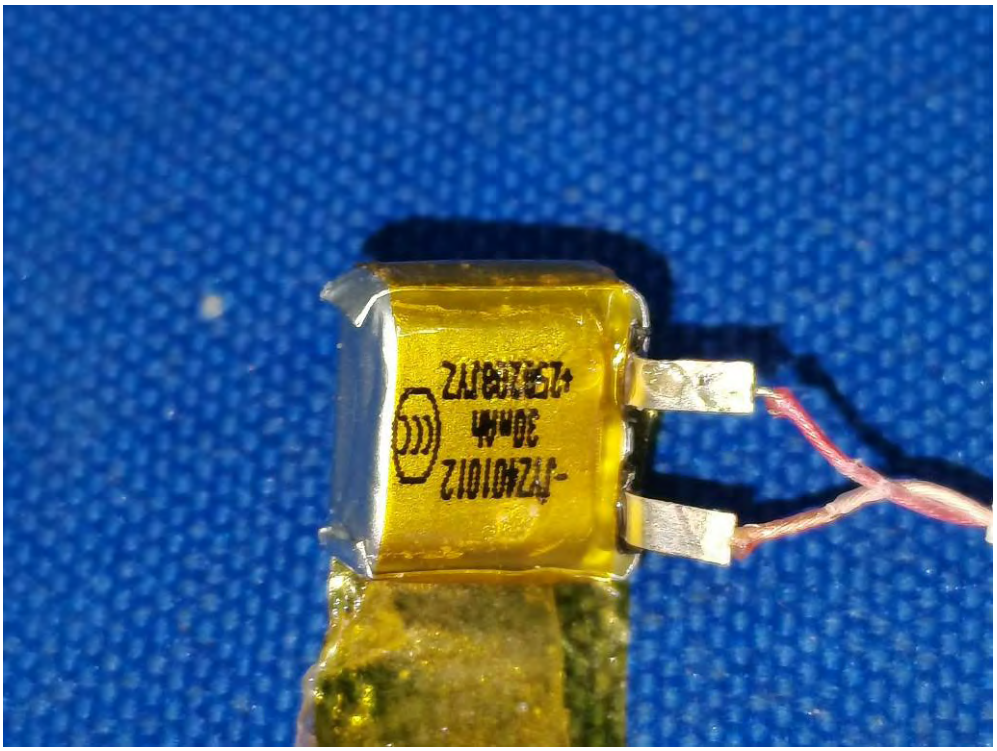
Inside View - Right earphone



Inside View - Right earphone



Inside View - Right earphone



--End of the report--