

Report No.: TW2410101E

Applicant: Shenzhen Glory Star Technology Industrial Co., Ltd

Product: TWS earphones

Model No.: Earset Pro1, G54

Trademark: Glory Star, Beleth

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: November 04, 2024

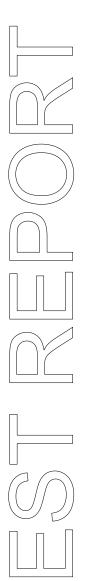
Results appearing herein relate only to the sample tested

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



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# **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

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Date: 2024-11-04



# **Test Report Conclusion**

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

11.0

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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 Sates

Registration Number: 744189 For 3m Anechoic Chamber

# 1.2 Applicant Details

Applicant: Shenzhen Glory Star Technology Industrial Co., Ltd

Address: Room 2202, Block 1 st, Yi Luan Building, Xixiang Road 230, BaoAn District, Shenzhen,

China

### 1.3 Description of EUT

Product: TWS earphones

Manufacturer: Shenzhen Glory Star Technology Industrial Co., Ltd

Address: Room 2202, Block 1 st, Yi Luan Building, Xixiang Road 230, BaoAn District,

Shenzhen, China

Trademark: Glory Star, Beleth

Model Number: Earset Pro1

Additional Model Name G54

Rating: DC5V input or Built-in DC3.7V, 50mAh Li-ion battery for earphones and DC5V

input or Built-in DC3.7V, 400mAh Li-ion battery for charger base.

Serial No.: N/A

Hardware Version: DXC-T8506 7003D4

Software Version: BT5.4

Operation Frequency: 2402-2480MHz
Modulation Type: GFSK, JI/4DQPSK

Number of Channels: 79 Channel Separation: 1MHz

Antenna Designation Chip antenna with gain 2.7dBi maximum for both right earphone and left one

(Get from the antenna specification)

### 1.4 Submitted Sample: 2 Samples

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### 1.5 Test Duration

2024-10-21 to 2024-11-04

### 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%

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

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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	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

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### 3.0 Technical Details

# 3.1 Summary of test results

The EUT has been tested according to the following specifications	The EUT has b	een tested acco	ording to the f	following s	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
FCC Part 15.215(c)	20dB bandwidth	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

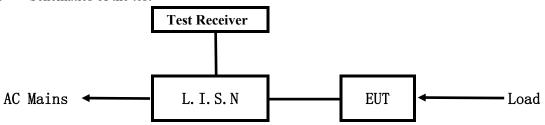
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### 5.0 Power Line Conducted Emission Test

### 5.1 Schematics of the test

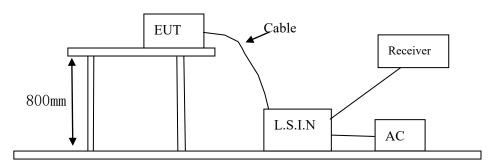


**EUT: Equipment Under Test** 

### 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.

79 channels are provided to the EUT

### A. EUT

Device	Manufacturer	Model	FCC ID
TWS earphones	Shenzhen Glory Star	Earset Pro1, G54	2AS7V-G54
	Technology Industrial Co., Ltd	Laiset 1101, U34	2A3/V-U34

# B. Internal Device

Device	Manufacturer	Model	FCC ID/DOC
N/A			

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# 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	Limits (c	lB μ V)
(MHz)	Quasi-peak Level	Average Level
0.15 ~ 0.50	66.0~56.0*	56.0~46.0*
$0.50 \sim 5.00$	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:

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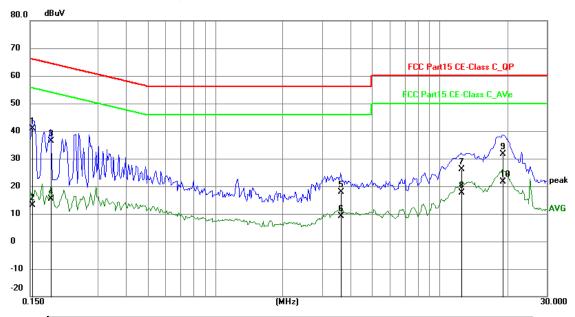
# A: Conducted Emission on Live Terminal (150kHz to 30MHz)

# **EUT Operating Environment**

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

**EUT set Condition: Communication by BT** 

**Results: Pass** 



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	P/F
1	0.1539	31.09	9.78	40.87	65.79	-24.92	QP	Р
2	0.1539	3.29	9.78	13.07	55.79	-42.72	AVG	Р
3	0.1850	26.63	9.76	36.39	64.26	-27.87	QP	Р
4	0.1850	5.59	9.76	15.35	54.26	-38.91	AVG	Р
5	3.6240	7.99	9.87	17.86	56.00	-38.14	QP	Р
6	3.6240	-0.68	9.87	9.19	46.00	-36.81	AVG	Р
7	12.4965	15.92	10.27	26.19	60.00	-33.81	QP	Р
8	12.4965	7.42	10.27	17.69	50.00	-32.31	AVG	Р
9	19.0251	21.07	10.62	31.69	60.00	-28.31	QP	Р
10	19.0251	11.11	10.62	21.73	50.00	-28.27	AVG	Р

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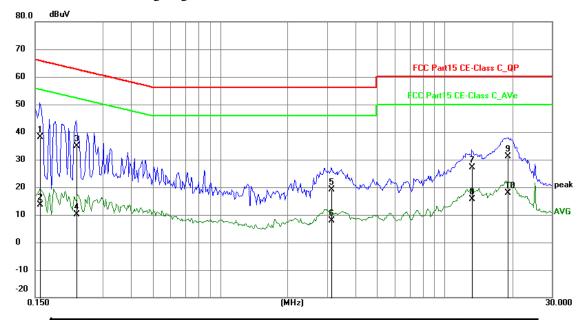
# B: Conducted Emission on Neutral Terminal (150kHz to 30MHz)

# **EUT Operating Environment**

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

**EUT set Condition: Communication by BT** 

**Results: Pass** 



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	P/F
1	0.1578	28.44	9.78	38.22	65.58	-27.36	QP	Р
2	0.1578	3.95	9.78	13.73	55.58	-41.85	AVG	Р
3	0.2280	25.14	9.75	34.89	62.52	-27.63	QP	Р
4	0.2280	0.31	9.75	10.06	52.52	-42.46	AVG	Р
5	3.1287	9.16	9.85	19.01	56.00	-36.99	QP	Р
6	3.1287	-1.87	9.85	7.98	46.00	-38.02	AVG	Р
7	13.1985	16.77	10.30	27.07	60.00	-32.93	QP	Р
8	13.1985	5.41	10.30	15.71	50.00	-34.29	AVG	Р
9	19.0680	20.42	10.62	31.04	60.00	-28.96	QP	Р
10	19.0680	7.33	10.62	17.95	50.00	-32.05	AVG	Р

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

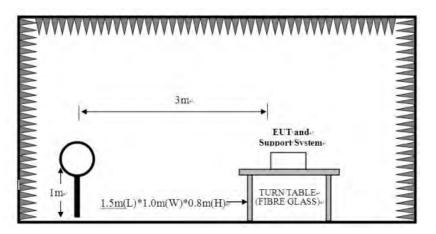
Frequency	Detector	RBW	VBW	Value
9KHz-150KHz	Quasi-peak	200Hz	600Hz	Quasi-peak
150KHz-30MHz	Quasi-peak	9KHz	30KHz	Quasi-peak
30MHz-1GHz	Quasi-peak	120KHz	300KHz	Quasi-peak
Above 1GHz	Peak	1MHz	3MHz	Peak
ADOVE IGHZ	Peak	1MHz	10Hz	Average

(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

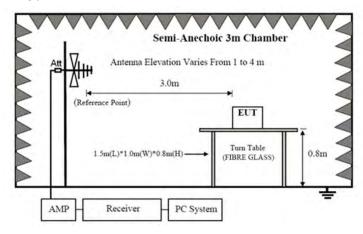


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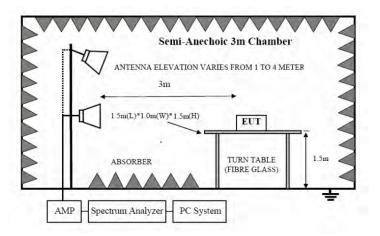
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For radiated emissions from 30MHz to1GHz



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.
- 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	Field Stre	ength of Fundamental (3m)	Field Strength of Harmonics (3m)			
(MHz)	mV/m	dBuV/m	uV/m	dBuV/m		

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2400-2483.5	50	94 (Average)	114 (Peak)	500	54 (Average)	74 (Peak)
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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			
30-80	3	40.0			
88-216	3	43.5			
216-960	3	46.0			
Above 960	3	54.0			

Note:

- 1. RF Voltage  $(dBuV) = 20 \log RF \text{ Voltage } (uV)$
- 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 two modulation modes of GFSK, Pi/4D-QPSK were tested. And only the worst case was recorded in the test report. GFSK was the worst case.
- 6. Battery was fully charged during test

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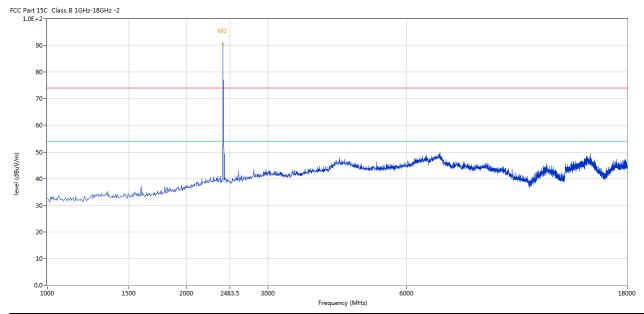
### 6.5 Test result

# A Fundamental & Harmonics Radiated Emission Data

### **Left Part**

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

### Horizontal



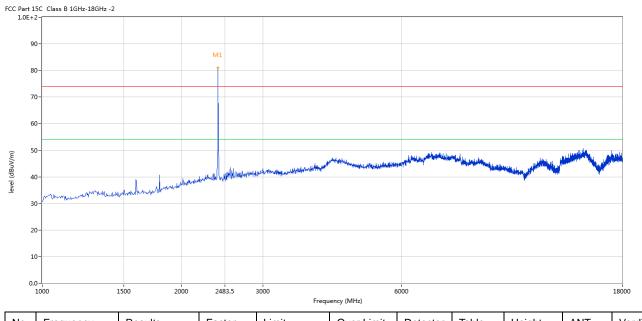
No.	Frequency	Results	Factor	Limit	Over Limit	Detector	Table	Height	ANT	Verdict
	(MHz)	(dBuV/m)	(dB)	(dBuV/m)	(dB)		(o)	(cm)		
1	2402	90.53	-3.57	114.0	-23.47	Peak	204.00	100	Horizontal	Pass

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# Vertical



No.	Frequency	Results	Factor	Limit	Over Limit	Detector	Table	Height	ANT	Verdict
	(MHz)	(dBuV/m)	(dB)	(dBuV/m)	(dB)		(o)	(cm)		
1	2402	80.95	-3.57	114.0	-33.05	Peak	277.00	100	Vertical	Pass

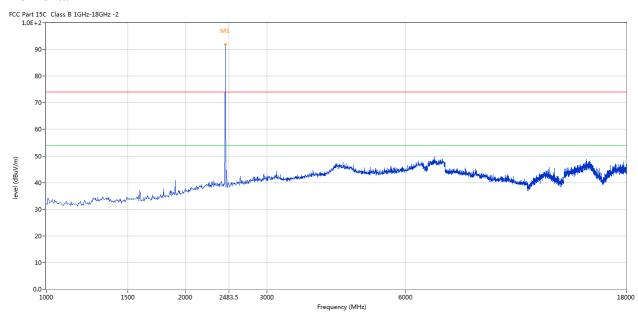
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Please refer to the following test plots for details: Middle Channel-2441MHz

### Horizontal



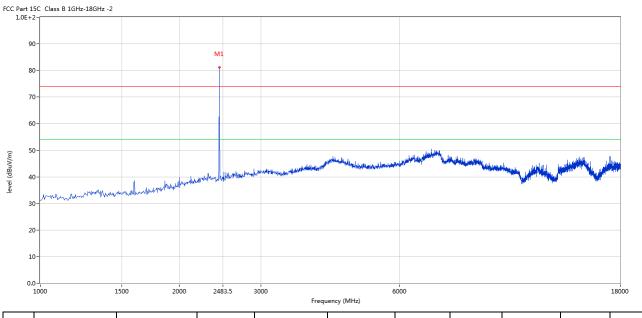
No.	Frequency	Results	Factor	Limit	Over Limit	Detector	Table	Height	ANT	Verdict
	(MHz)	(dBuV/m)	(dB)	(dBuV/m)	(dB)		(o)	(cm)		
1	2441	91.87	-3.57	114.0	-22.13	Peak	336.00	100	Horizontal	Pass

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# Vertical



No.	Frequency	Results	Factor	Limit	Over Limit	Detector	Table	Height	ANT	Verdict
	(MHz)	(dBuV/m)	(dB)	(dBuV/m)	(dB)		(o)	(cm)		
1	2441	81.25	-3.57	114.0	-32.75	Peak	273.00	100	Vertical	Pass

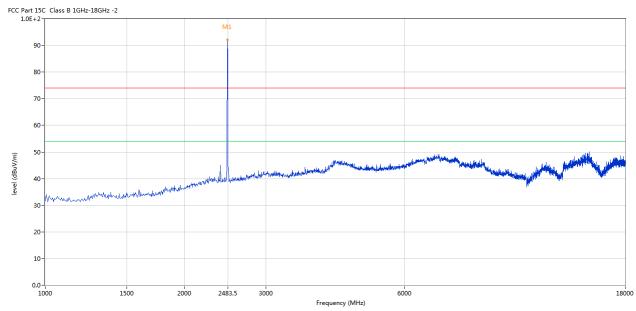
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Please refer to the following test plots for details: High Channel-2480MHz

### Horizontal



No.	Frequency	Results	Factor	Limit	Over Limit	Detector	Table	Height	ANT	Verdict
	(MHz)	(dBuV/m)	(dB)	(dBuV/m)	(dB)		(o)	(cm)		
1	2480	92.04	-3.57	114.0	-21.96	Peak	334.00	100	Horizontal	Pass

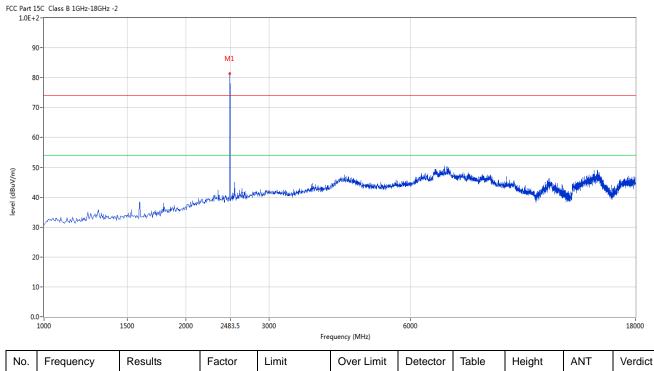
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### Vertical



No.	Frequency	Results	Factor	Limit	Over Limit	Detector	Table	Height	ANT	Verdict
	(MHz)	(dBuV/m)	(dB)	(dBuV/m)	(dB)		(o)	(cm)		
1	2480	81.41	-3.57	114.0	-32.59	Peak	274.00	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.

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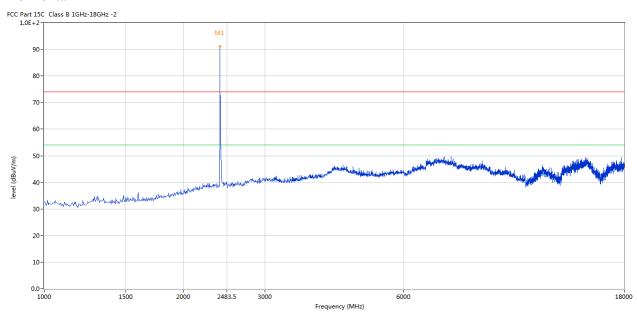
Date: 2024-11-04



# **Right Part**

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

### Horizontal



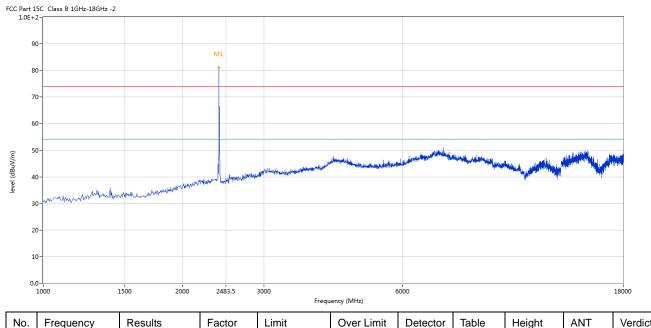
No.	Frequency	Results	Factor	Limit	Over Limit	Detector	Table	Height	ANT	Verdict
	(MHz)	(dBuV/m)	(dB)	(dBuV/m)	(dB)		(o)	(cm)		
1	2402	91.09	-3.57	114.0	-22.91	Peak	11.00	100	Horizontal	Pass

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# Vertical



No.	Frequency	Results	Factor	Limit	Over Limit	Detector	Table	Height	ANT	Verdict
	(MHz)	(dBuV/m)	(dB)	(dBuV/m)	(dB)		(o)	(cm)		
1	2402	81.10	-3.57	114.0	-32.90	Peak	355.00	100	Vertical	Pass

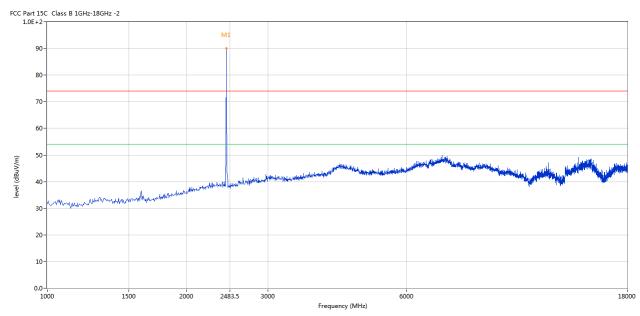
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Please refer to the following test plots for details: Middle Channel-2441MHz

### Horizontal



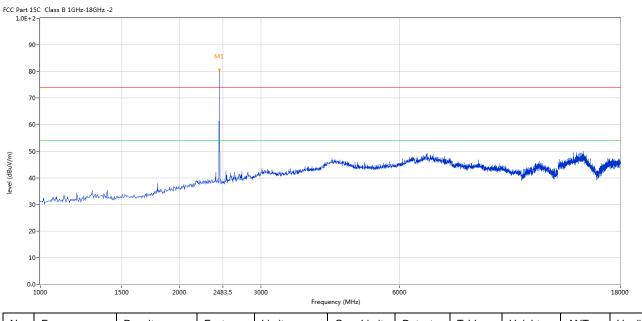
No.	Frequency	Results	Factor	Limit	Over Limit	Detector	Table	Height	ANT	Verdict
	(MHz)	(dBuV/m)	(dB)	(dBuV/m)	(dB)		(o)	(cm)		
1	2441	89.96	-3.57	114.0	-24.04	Peak	2.00	100	Horizontal	Pass

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# Vertical



No.	Frequency	Results	Factor	Limit	Over Limit	Detector	Table	Height	ANT	Verdict
	(MHz)	(dBuV/m)	(dB)	(dBuV/m)	(dB)		(o)	(cm)		
1	2441	80.65	-3.57	114.0	-33.35	Peak	280.00	100	Vertical	Pass

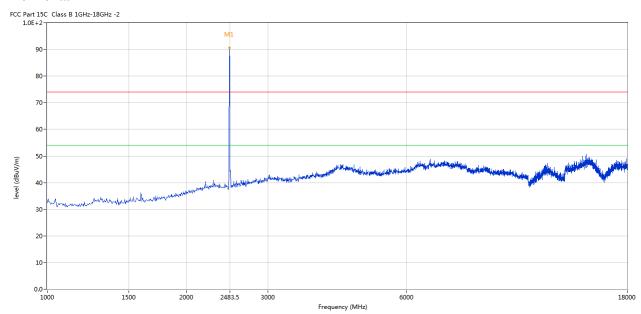
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Please refer to the following test plots for details: High Channel-2480MHz

### Horizontal



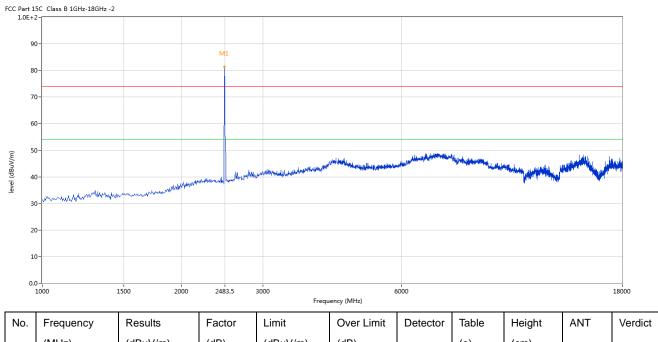
No.	Frequency	Results	Factor	Limit	Over Limit	Detector	Table	Height	ANT	Verdict
	(MHz)	(dBuV/m)	(dB)	(dBuV/m)	(dB)		(o)	(cm)		
1	2480	90.64	-3.57	114.0	-23.36	Peak	49.00	100	Horizontal	Pass

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### Vertical



No.	Frequency	Results	Factor	Limit	Over Limit	Detector	Table	Height	ANT	Verdict
	(MHz)	(dBuV/m)	(dB)	(dBuV/m)	(dB)		(o)	(cm)		
1	2480	81.41	-3.57	114.0	-32.59	Peak	289.00	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.

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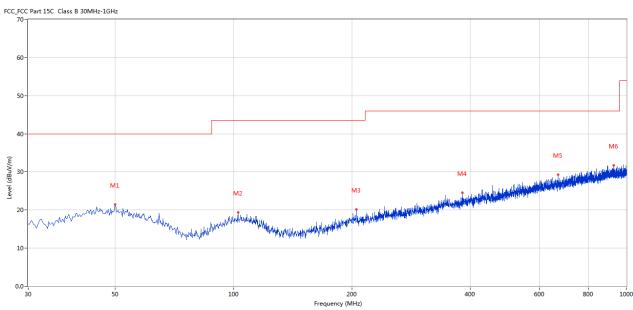
### B. General Radiated Emission Data

### **Left Part**

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

EUT set Condition: Keep Tx transmitting

**Results:** Pass



No.	Frequency	Results	Factor	Limit	Margin	Detector	Table	Height	Antenna	Verdict
	(MHz)	(dBuV/m)	(dB)	(dBuV/m)	(dB)		(Degree)	(cm)		
1	49.880	21.44	-11.36	40.0	18.56	Peak	110.00	100	Horizontal	Pass
2	102.732	19.34	-13.39	43.5	24.16	Peak	110.00	100	Horizontal	Pass
3	205.526	20.16	-13.62	43.5	23.34	Peak	310.00	100	Horizontal	Pass
4	382.022	24.51	-9.17	46.0	21.49	Peak	317.00	100	Horizontal	Pass
5	669.313	29.25	-4.41	46.0	16.75	Peak	272.00	100	Horizontal	Pass
6	927.753	31.77	-1.67	46.0	14.23	Peak	343.00	100	Horizontal	Pass

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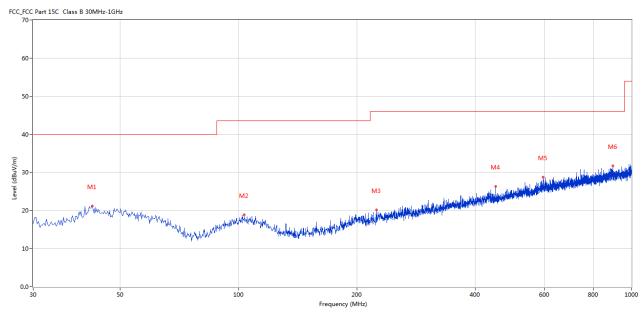
Date: 2024-11-04



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

EUT set Condition: Keep Tx transmitting

Results: Pass



No.	Frequency	Results	Factor	Limit	Margin	Detector	Table	Height	Antenna	Verdict
	(MHz)	(dBuV/m)	(dB)	(dBuV/m)	(dB)		(Degree)	(cm)		
1	42.364	21.17	-11.59	40.0	18.83	Peak	191.00	100	Vertical	Pass
2	103.459	18.85	-13.36	43.5	24.65	Peak	77.00	100	Vertical	Pass
3	224.194	20.20	-13.03	46.0	25.80	Peak	319.00	100	Vertical	Pass
4	450.875	26.34	-7.97	46.0	19.66	Peak	286.00	100	Vertical	Pass
5	595.611	28.75	-5.20	46.0	17.25	Peak	125.00	100	Vertical	Pass
6	895.751	31.70	-1.78	46.0	14.30	Peak	266.00	100	Vertical	Pass

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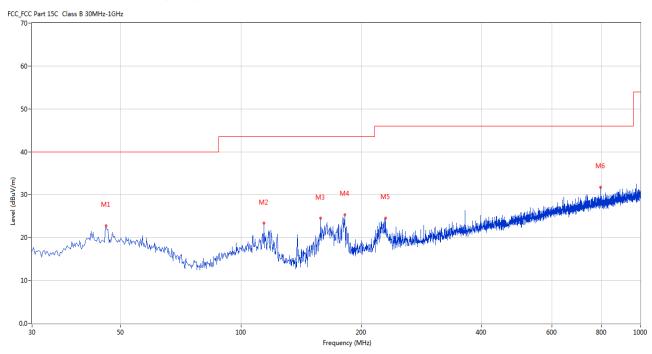


# **Right Part**

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

EUT set Condition: Keep Tx transmitting

**Results:** Pass



No.	Frequency	Results	Factor	Limit	Margin	Detector	Table	Height	Antenna	Verdict
	(MHz)	(dBuV/m)	(dB)	(dBuV/m)	(dB)		(Degree)	(cm)		
1	46.001	22.72	-11.40	40.0	17.28	Peak	207.00	100	Horizontal	Pass
2	114.126	23.31	-14.28	43.5	20.19	Peak	143.00	100	Horizontal	Pass
3	158.493	24.47	-16.48	43.5	19.03	Peak	158.00	100	Horizontal	Pass
4	182.009	25.27	-15.03	43.5	18.23	Peak	92.00	100	Horizontal	Pass
5	230.012	24.50	-12.67	46.0	21.50	Peak	202.00	100	Horizontal	Pass
6	796.108	31.70	-3.10	46.0	14.30	Peak	36.00	100	Horizontal	Pass

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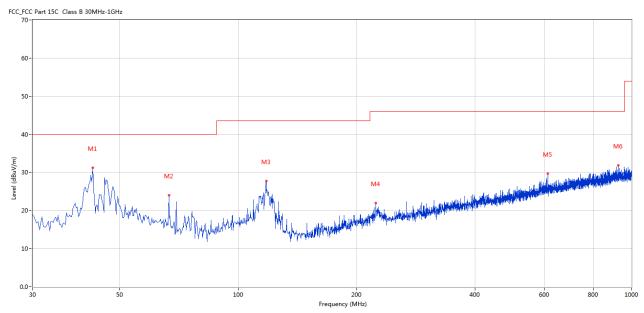
Date: 2024-11-04



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

EUT set Condition: Keep Tx transmitting

**Results:** Pass



No.	Frequency	Results	Factor	Limit	Margin	Detector	Table	Height	Antenna	Verdict
	(MHz)	(dBuV/m)	(dB)	(dBuV/m)	(dB)		(Degree)	(cm)		
1	42.607	31.26	-11.55	40.0	8.74	Peak	18.00	100	Vertical	Pass
2	66.608	24.02	-14.16	40.0	15.98	Peak	96.00	100	Vertical	Pass
3	117.763	27.71	-14.92	43.5	15.79	Peak	72.00	100	Vertical	Pass
4	223.952	21.97	-13.07	46.0	24.03	Peak	41.00	100	Vertical	Pass
5	612.339	29.61	-5.07	46.0	16.39	Peak	124.00	100	Vertical	Pass
6	924.844	31.90	-1.73	46.0	14.10	Peak	100.00	100	Vertical	Pass

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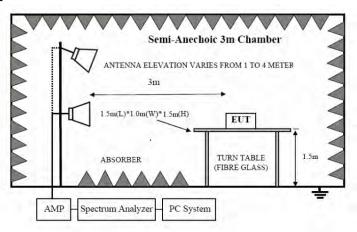


### 7. Band Edge

### 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.

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

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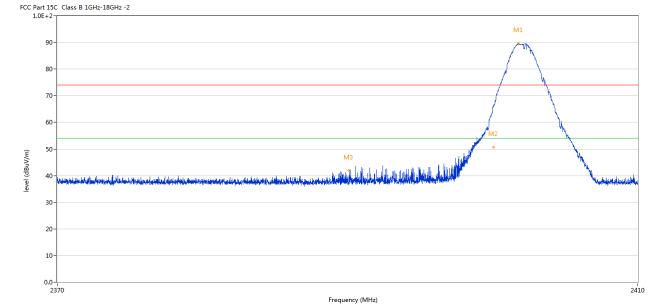


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### 7.6 Test Result

### **Left Part**

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



No.	Frequency	Results	Factor	Limit	Over Limit	Detector	Table	Height	ANT	Verdict
	(MHz)	(dBuV/m)	(dB)	(dBuV/m)	(dB)		(o)	(cm)		
1	2401.732	89.57	-3.57	74.0	15.57	Peak	158.00	100	Horizontal	N/A
2	2400.000	65.93	-3.57	74.0	-8.07	Peak	158.00	100	Horizontal	Pass
2**	2400.000	50.71	-3.57	54.0	-3.29	AV	158.00	100	Horizontal	Pass
3	2390.000	42.04	-3.53	74.0	-31.96	Peak	65.50	100	Horizontal	Pass

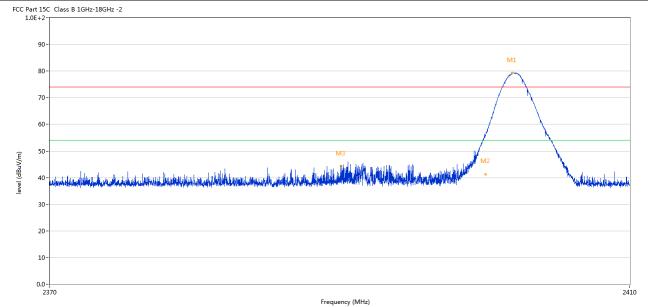
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1	13

Product:	TWS earphones	Detector	Vertical
Mode	Keeping Transmitting	Test Voltage	DC3.7V
Temperature	24 deg. C,	Humidity	56% RH
Test Result:	Pass		
Test Result:  FCC Part 15C Class B 1GHz-18GHz -2			

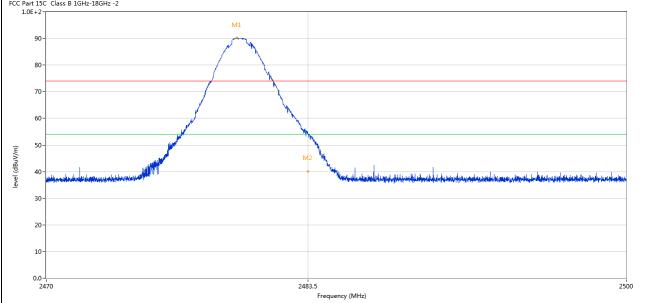


No.	Frequency	Results	Factor	Limit	Over Limit	Detector	Table	Height	ANT	Verdict
	(MHz)	(dBuV/m)	(dB)	(dBuV/m)	(dB)		(o)	(cm)		
1	2401.822	79.29	-3.57	74.0	5.29	Peak	302.00	100	Vertical	N/A
2	2400.000	55.85	-3.57	74.0	-18.15	Peak	278.00	100	Vertical	Pass
2**	2400.000	41.19	-3.57	54.0	-12.81	AV	278.00	100	Vertical	Pass
3	2390.000	44.27	-3.53	74.0	-29.73	Peak	336.50	100	Vertical	Pass

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Comai	Horizontal	Polarity	TWS earphones	Product:		
3.7V	DC3.7V	Test Voltage	Keeping Transmitting	Mode		
RH	56% RH	Humidity	24 deg. C,	Temperature		
-			Pass	Test Result:		
<u>-</u>			Pass	Test Result:  CC Part 15C Class B 1GHz-18GHz -2  1.0E+2		



No.	Frequency	Results	Factor	Limit	Over	Detector	Table	Height	ANT	Verdict
	(MHz)	(dBuV/m)	(dB)	(dBuV/m)	Limit (dB)		(o)	(cm)		
1	2479.830	90.18	-3.57	74.0	16.18	Peak	328.00	100	Horizontal	N/A
2	2483.500	55.25	-3.57	74.0	-18.75	Peak	328.00	100	Horizontal	Pass
2**	2483.500	40.19	-3.57	54.0	-13.81	AV	328.00	100	Horizontal	Pass

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]	Product:		TWS ear	rphones		Detec	tor		Vertical	
	Mode	I	Keeping Tr	ansmitting		Test Vo	ltage		DC3.7V	
Te	mperature		24 deg. C, Pass			Humidity 		у		
Te	est Result:									
	rt 15C Class B 1GHz-18GH	lz -2		•						
	90-		M1	The state of the s						
	70-			M						
	60-			M2 M2						
level (dBuV/m)	60 - 50 - 40 - 30 - 20 -	الموسنط فم المعالمة والمعالمة المعالمة المعالمة المعالمة والمعالمة		M2	March March March March	haire a balantari	kelongel distribute	da, id dia militar, but di	in the state of th	
level (dBuV/m)	40 - 11 - 11 - 11 - 13 - 13 - 13 - 13 - 1	المرادة فألأ بالمثالة والبادة فألح فالمتاركة		M2	V1000 (1000)	halini isibabibba	ndundi dini kapi	da sidak a sidak a kida		2500
	30 - 20 - 0.	Results	Factor	2483.	.5	Detector	Table	Height	ANT	
	30 - 20 - 10 - 2470		Factor (dB)	1	.5 Frequency (MHz)			Height (cm)	ANT	
No.	30- 20- 10- 2470	Results		Limit	.5 Frequency (MHz)		Table	_	ANT Vertical	2500 Verdid

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

2. The two modulation modes of GFSK, Pi/4D-QPSK were tested. And only the worst case was recorded in the test report. GFSK was the worst case.

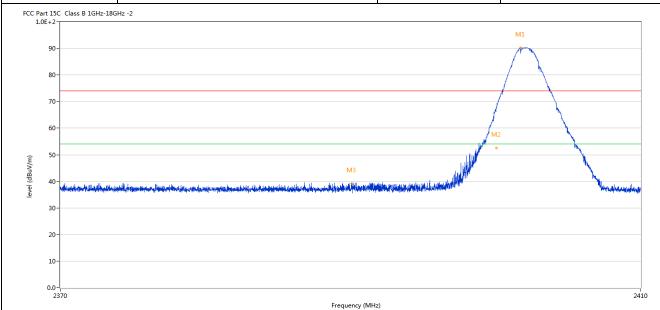
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# **Right Part**

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



No	. Frequency	Results	Factor	Limit	Over Limit	Detector	Table	Height	ANT	Verdict
	(MHz)	(dBuV/m)	(dB)	(dBuV/m)	(dB)		(o)	(cm)		
1	2401.662	90.27	-3.57	74.0	16.27	Peak	43.00	100	Horizontal	N/A
2	2400.000	67.90	-3.57	74.0	-6.10	Peak	43.00	100	Horizontal	Pass
2*	2400.000	52.61	-3.57	54.0	-1.39	AV	43.00	100	Horizontal	Pass
3	2390.000	39.20	-3.53	74.0	-34.80	Peak	107.00	100	Horizontal	Pass

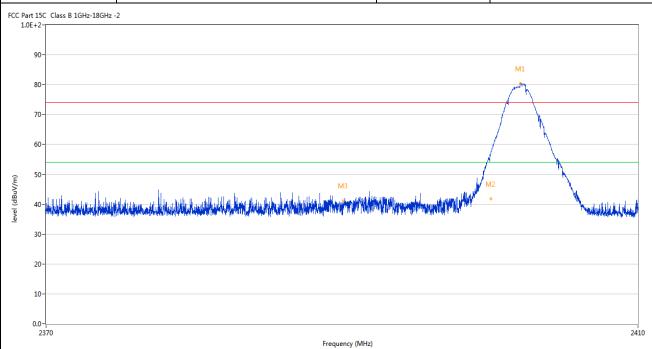
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Product:	TWS earphones	Detector	Vertical
Mode	Keeping Transmitting	Test Voltage	DC3.7V
Temperature	24 deg. C,	Humidity	56% RH
Test Result:	Pass		



No.	Frequency	Results	Factor	Limit	Over Limit	Detector	Table	Height	ANT	Verdict
	(MHz)	(dBuV/m)	(dB)	(dBuV/m)	(dB)		(o)	(cm)		
1	2401.992	80.35	-3.57	74.0	6.35	Peak	276.00	100	Vertical	N/A
2	2400.000	57.41	-3.57	74.0	-16.59	Peak	269.00	100	Vertical	Pass
2**	2400.000	41.77	-3.57	54.0	-12.23	AV	269.00	100	Vertical	Pass
3	2390.000	41.06	-3.53	74.0	-32.94	Peak	276.00	100	Vertical	Pass

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I	Product:		TWS 6	earphones		Po	olarity		Horizont	al
	Mode		Keeping 7	Transmitting		Test	Voltage		DC3.7\	7
Te	mperature		24 0	leg. C,		Hu	midity		56% RI	I
Te	st Result:		F	Pass						
Part 1 1.0E+2	5C Class B 1GHz-18GHz 2-	: -2								
			M1							
90	0-			1						
80	0-									
70	0-									
60	0-		1	1						
50				M2						
5(		A STANLE OF THE		N.	N.					
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30										
20	0-									
10	0-									
-										
0.0	0- <del> </del> 2470			2483.	5 Frequency (MHz)					2500
lo.	Frequency	Results	Factor	Limit	Over Limit	Detector	Table	Height	ANT	Verdi
	(MHz)	(dBuV/m)	(dB)	(dBuV/m)	(dB)		(o)	(cm)		
	2479.755	89.84	-3.57	74.0	15.84	Peak	44.00	100	Horizontal	N/A
2	2483.500	52.56	-3.57	74.0	-21.44	Peak	48.71	100	Horizontal	Pass

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]	Pro	oduct:		TWS ear	phones		Detec	tor		Vertical	
	M	Iode	K	Leeping Tra	ansmitting		Test Vo	ltage		DC3.7V	
Те	mp	perature		24 de	g. C,		Humio	lity		56% RH	
Te	est l	Result:		Pas	SS						
	rt 15C E+2-r	C Class B 1GHz-18GHz	z -2			•			•		
	90-			M1							
	80-			<u></u>	^						
	70-				1						
					<u> </u>						
	60-			I	<b>M</b>						
Ê	50-			1	M2						
(dBuV/m)					M2	Calling on a 11 th call to the control	a Labout de	t altr	المحاللة مناط		
level (dBuV/m)	50-	Naj julijulga anjaka kulika anga	والمستر أوالم المراجعة والمتعادمة والمتعادمة والمتعادمة والمتعادمة والمتعادمة والمتعادمة والمتعادمة والمتعادمة		<b>™</b>	have allest played above of a	agagi dayi balik dayahira dayi	والمالين المادينة المالينا أرا			
level (dBuV/m)	50-	Marie Control of the Control	nitritis di de de la constitución		<b>™</b>	hamen and letter the steer and a	engelik kepitan biga	de de la companya de		Mahalaharin	U.S. M. A. S.
level (dBuV/m)	50-	W wholesomethic distance	n delin a salah da fi da sanda da fi		<b>™</b>	The agency for all facilities the first agency of	aya di day 1945 U, blan saya	بالمضايمة ويعانيها لمار		والمتعالمة المتعالمة	
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level (dBuV/m)	50- 40- 30- 20-		n deleta en de desperadores de la constitución de l		<b>™</b>		aye da fara la da aye	dhain an dheadh		od, Marshall and s	2500
	50- 40- 30- 20- 10- 0.0- 247		Results	Factor	***	.5	Detector	Table	Height	ANT	2500
	50	770		Factor (dB)	2483.	.5 Frequency (MHz)					2500
(m/\ngp)   evel	30	requency	Results		2483.	.5 Frequency (MHz)		Table	Height		

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

2. The two modulation modes of GFSK, Pi/4D-QPSK were tested. And only the worst case was recorded in the test report. GFSK was the worst case.

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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 Chip antenna with gain 2.7dBi maximum for both right earphone and left one. It fulfills the requirement of this section.

Test Result: Pass

Date: 2024-11-04



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#### 9.0 20dB Bandwidth Measurement

## **Test Configuration**



## **Test Procedure**

The transmitter output was connected to the spectrum analyzer through an attenuator. The bandwidth of the fundamental frequency was measured by spectrum analyzer with 30kHz RBW and 100kHz VBW.

The 20dB bandwidth is defined as the total spectrum the power of which is higher than peak power minus 20dB.

## Limit

N/A

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Report No.: TW2410101E

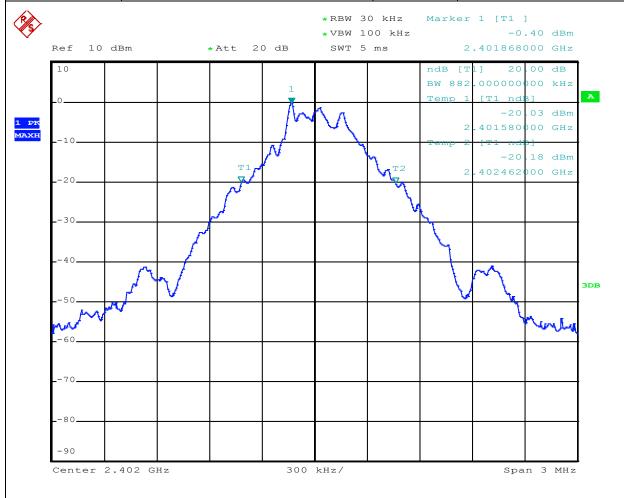
Date: 2024-11-04



#### **Test Result**

#### **Left Part**

GFSK			
Product:	TWS earphones	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	882kHz		



Date: 29.OCT.2024 09:02:57

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Date: 2024-11-04



Product:		TWS earphones		Test	Mode:		Keep tran	smitting
Mode	Kee	ping Transmittii	ng	Test Y	Voltage	DC3.7V		
Temperature		24 deg. C,		Hun	nidity		56%	RH
Test Result:		Pass			ector		Pk	(
0dB Bandwidth		888kHz						
Ref 10 d	Bm	*Att 20 dB	*RBW 30 *VBW 10 SWT 5	0 kHz			.60 dBm	
		1			BW 888		000 kHz	A
-0 -10		Ň	M		Temp 1	T1 nd -20 .440574	.68 dBm 000 GHz	A
20		T1	1	T2	2	-20 .441462	.79 dBm	
30					to.			
40					Ly.			
50						m		3DB
~W	<i>'</i>						wwa	
70								
80								
-90								
Center 2.	441 GHz	30	00 kHz/			Spa	ın 3 MHz	

Date: 29.OCT.2024 09:05:57

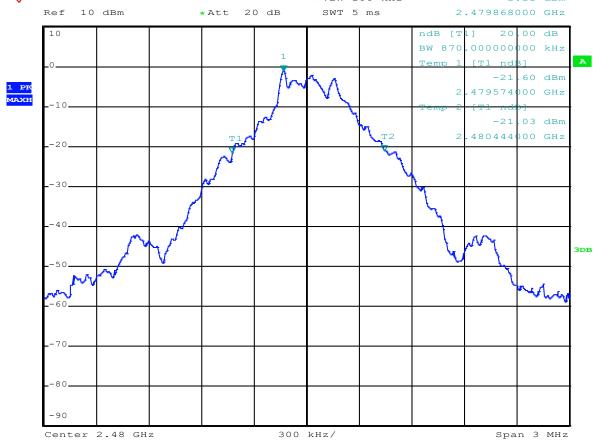
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GFSK				
Product:	TWS earphones		Test Mode:	Keep transmitting
Mode	Keeping Transmitting		Test Voltage	DC3.7V
Temperature	24 deg. C,		Humidity	56% RH
Test Result:	Pass		Detector	PK
20dB Bandwidth	870kHz			
<b>%</b>		*RBW 30		1 [T1 ] -1.11 dBm
Ref 10 dBm	*Att 20 dB	SWT 5 i	ms 2.	.479868000 GHz



Date: 29.OCT.2024 09:07:11

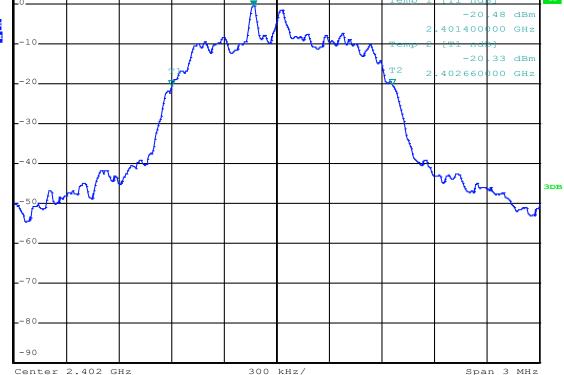
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Date: 2024-11-04



Л/4DQPSK			
Product:	TWS earphones	Test Mode:	Keep transmitting
Mode	Keeping Transmitting	Test Voltage	DC3.7V
Temperature	24 deg. C,	Humidity	56% RH
Test Result:	Test Result: Pass		PK
20dB Bandwidth	1.260MHz		
Ref 10 dBm	* VBW	30 kHz Marko 100 kHz 5 ms	er 1 [T1 ] -0.51 dBm 2.401868000 GHz
10 _0	1 M	ndB BW Temp	[T1] 20.00 dB 1.260000000 MHz 1 [T1 ndB] A -20.48 dBm 2.401400000 GHz 2 [T1 ndb] -20.33 dBm
-20	12-1	T2	2.402660000 GHz



Date: 29.OCT.2024 09:11:20

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Product:	TWS earphon	es	Test Mode:	Keep transmitting	
Mode	Keeping Transm	itting	Test Voltage	DC3.7V	
Temperature	24 deg. C,		Humidity	56% RH	
Test Result:	Pass		Detector	PK	
20dB Bandwidth	1.260MHz				
Ref 10 de	3m *Att 20 d		) kHz		
_0		1 Average	Temp 1		
20			T2 2	.441660000 GHz	
40_ <b></b>	m			3DB	
-60				~~~	
70					
-90 Center 2.4	441 GHz	300 kHz/		Span 3 MHz	

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Л/4DQPSK					
Product:	TWS earp	hones	Test Mode:	Keep transmitting	
Mode	Keeping Tran	nsmitting	Test Voltage	DC3.7V	
Temperature	24 deg.	С,	Humidity	56% RH	
Test Result:	Pass	}	Detector	PK	
20dB Bandwidth	1.254M	IHz			
Ref 10 di	Bm ∗Att 2	*RBW 30 *VBW 10	0 kHz	1 [T1 ] -1.11 dBm .479868000 GHz	
10		1	ndB [T BW 1 Temp 1		
1 PK MAXH	Al col	Many	2 An Temp 2	-21.09 dBm .479400000 GHz <del>[T1 ndb]</del>	
20			T2 2	-20.93 dBm .480654000 GHz	
30			1		
40			<u> </u>		
A50				Muny 3DB	
V-60					
70_					
80					

Date: 29.OCT.2024 09:08:18

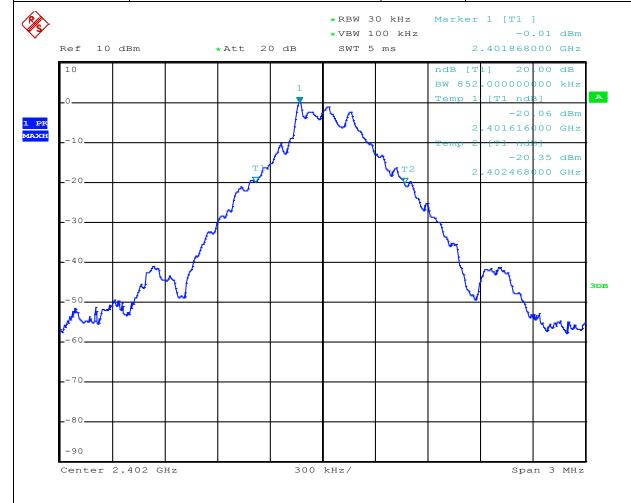
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Date: 2024-11-04



## **Right Part**

GFSK			
Product:	TWS earphones	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	852kHz		



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Product:	TWS earpho	ones	Test Mode:	Keep transm	nitting	
Mode	Keeping Transr	nitting	Test Voltage	DC3.7V		
Temperature	24 deg. C	2	Humidity	56% RI	56% RH	
Test Result:	Pass		Detector	PK		
20dB Bandwidth	882kHz					
Ref 10 di	Bm *Att 20		00 kHz	-0.22 dBm -0.22 dBm 2.440874000 GHz		
		1	BW 882			
-0 -10		MM	Temp 1	[T1 nd8] A -19.69 dBm 2.440580000 GHz		
20	T1	V	T2 2	-20.38 dBm		
30			M.			
40						
-50			k	3D	В	
-60	,			Lunus		
70						
80						
-90						
Center 2.	441 GHz	300 kHz/		Span 3 MHz		

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Product: TWS earphones					Mode:	Keep transmitting		
Mode	Keepii	ng Transmitting	Test Voltage		DC3.7V			
Temperature	2	24 deg. C,	Hun	nidity	56% RH			
Test Result:		Pass			tector	PK		
20dB Bandwidth		876kHz						
Ref 10 di	∃m ∗A	tt 20 dB	*RBW 30 *VBW 10 SWT 5	0 kHz		1 [T1 -0.479862	.92 dBm	
10		1 <b>K</b>			ndB [T BW 876 Temp 1	.000000 [T1 nd	B]	A
PK 10					2 <del>Temp 2</del>	.479580 <del>[T1 nd</del>	93	
20		T1	<b>\</b>	T2 Eq	2	-20 .480456		
30		<u> </u>			<u></u>			
40					4			
50					W	M		3DB
-60						· ·	me	
70								
80								
-90								
Center 2.	48 GHz	300	kHz/			Spa	n 3 MHz	

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Span 3 MHz

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I/4DQ	PSK											
Pro	Product: TWS earphones					Test N	lode:	Keep transmitting				
Mode Temperature Test Result:			Keeping Transmitting 24 deg. C, Pass			Test Voltage			DC3.7V			
							Humidity			56% RH		
							Dete	ctor	PK			
0dB B	andwidth			1.260M	Hz							
RAN		•				* RBW 30	) kHz	Marker	1 [T1	]		
<b>(</b> \$/						*VBW 10	00 kHz		-0	.12 dBm		
R	ef 10 dE	∃m	•	Att 20	0 dB	SWT 5	ms	2	.401868	000 GHz		
Г	10							ndB [1	1] 20	.00 dB	Ī	
					1			BW 1	.260000	000 MHz		
_(	0				X			Temp 1	[T1 nd]	8]	A	
DY					[ <i>[</i> ]	$\Lambda$				.63 dBm		
PK AXH	1.0				1/4/	m nu	A.	2	.401400	000 GHz		
F	-10			1 V	V *	<u> </u>	W	Temp 2	T1 ndi	0.2 45	İ	
							· ·	T2 <sub>2</sub>		.93 dBm		
L-*	-20								. 402000	JOU GHZ	ļ	
			ſ									
I-	-30							<u> </u>			ļ	
			- <i>f</i>					\ \f				
ŀ	-40	700	NA NA					- Last	<u> </u>		ł	
	-50 A	$\sqrt{W}$							ratur	m	3DB	
¥	V V									M		
	60											
f	-60										İ	
	-70										ļ	
					1							
<b>I</b> .	-80	l l	l								l .	

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Center 2.402 GHz

300 kHz/

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Date: 2024-11-04



Product: TWS earphones				Test Mode:		Keep transmitting				
Mode	Keep	Keeping Transmitting			Voltage	ge DC3.7V				
Temperature		24 deg. C,		Hun	nidity	56% RH				
Test Result:		Pass			Detector			PK		
20dB Bandwidth		1.254MHz								
Ref 10 di	3m * 2	Att 20 dB	*RBW 30 *VBW 10 SWT 5	0 kHz	2	.479868	.78 dBm			
10		1			ndB [T BW 1	_	000 dB			
-0-		T A	Λ		Temp 1	[T1 nd] -21		A		
PK IAXH			$\Lambda$	л	2	.479400	l I			
-10		100 Dr.	<del>\ \ \ \</del>	, pV	Temp 2	<del>[T1 nd]</del> -20	<del>8]</del> .36 dBm			
20	1/2	J			T2 2		l			
					1					
30					l <sub>y</sub>					
-40	MW				- Jacob	M	_	3DB		
<b>7</b> 50	<del>V</del>					,				
60										
70										
80										
-90										
Center 2.	18.64-		0 kHz/			2	n 3 MHz			

Date: 4.NOV.2024 08:08:52

Date: 2024-11-04



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## 10.0 FCC ID Label

FCC ID: 2AS7V-G54

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.

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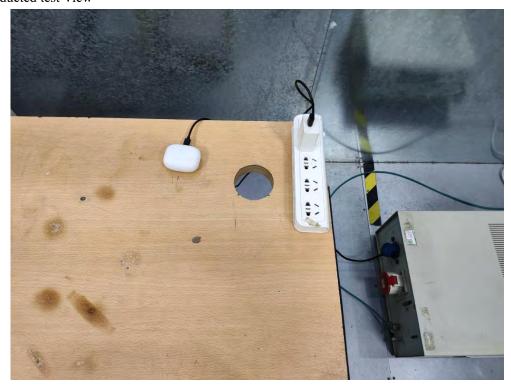
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# 11.0 Photo of testing

## 11.1 Conducted test View



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## Radiated emission test view



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## 11.2 Photographs – EUT

Outside View- charger base



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Outside View - charger base



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Outside View - charger base



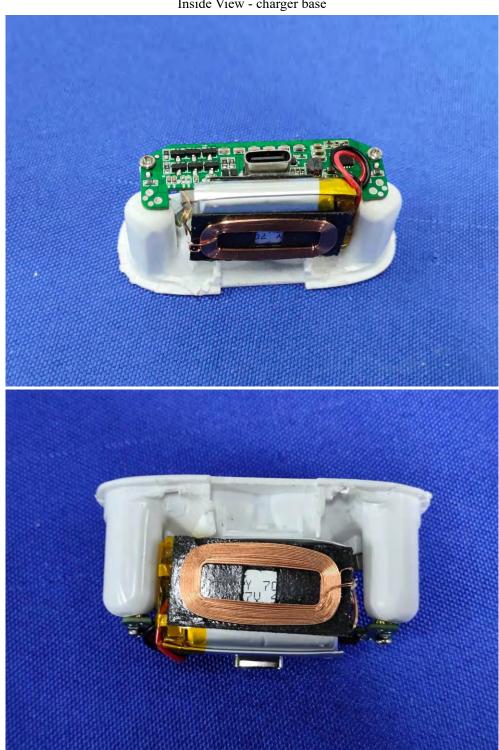
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Inside View - charger base



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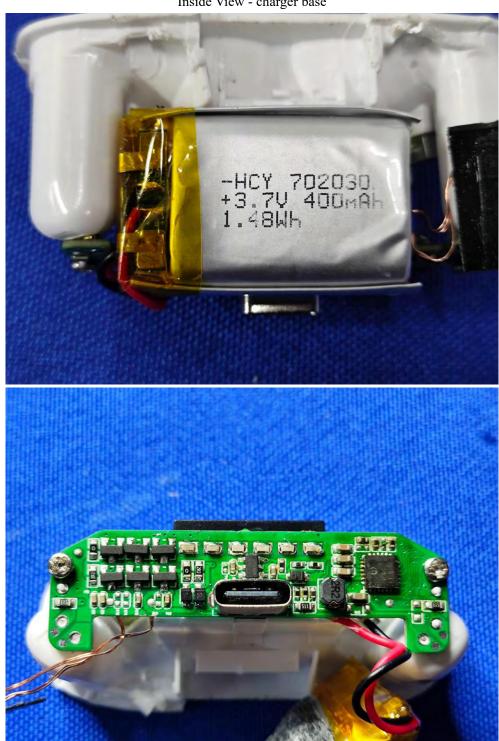
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Inside View - charger base



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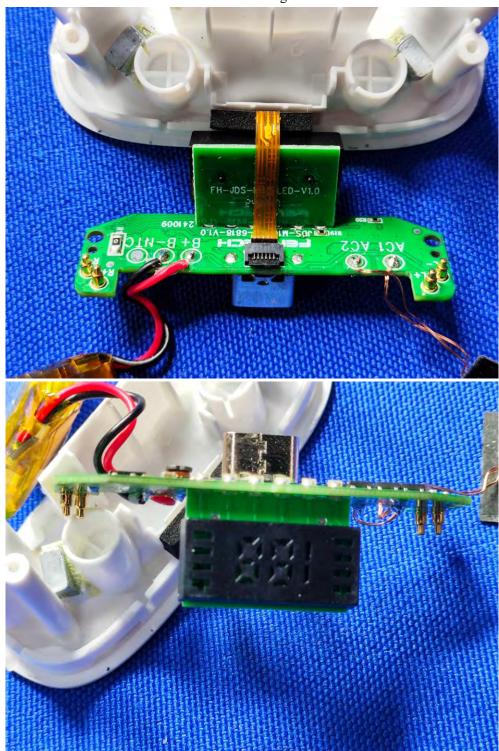
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Inside View - charger base



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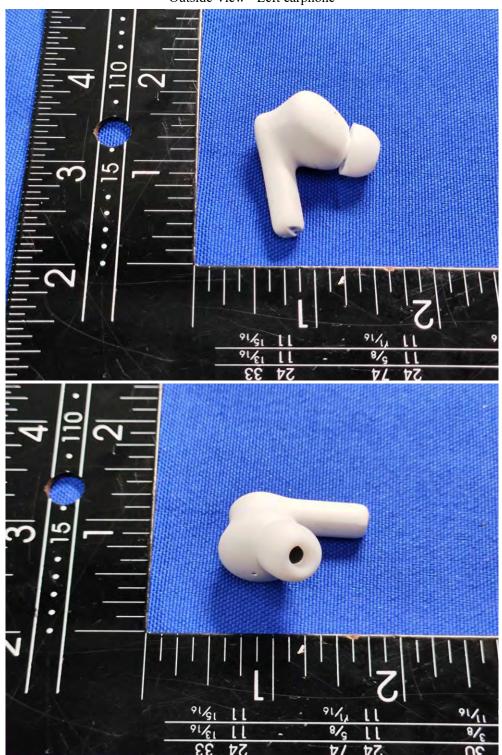
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Outside View - Left earphone



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Outside View - Left earphone



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Inside View - Left earphone



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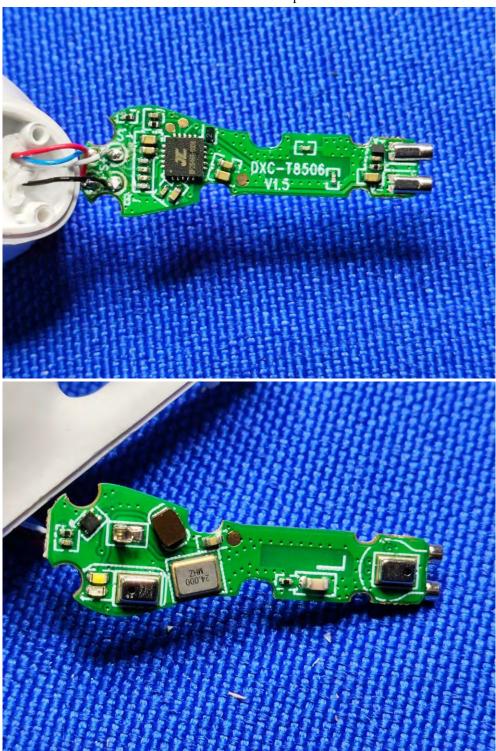
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Inside View - Left earphone



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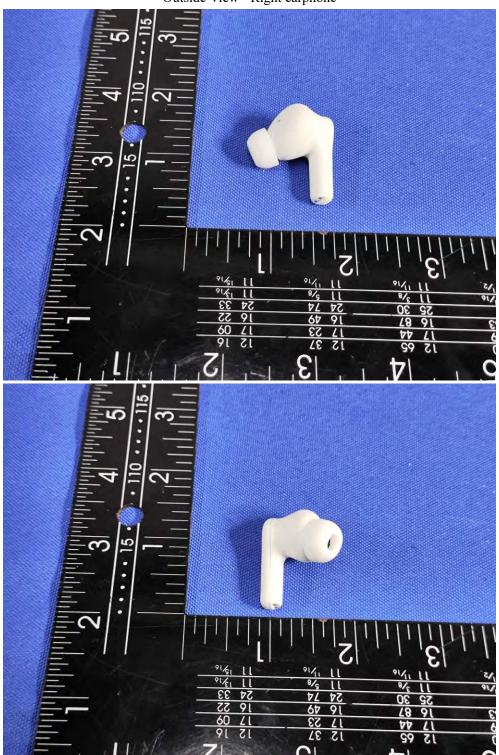
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Outside View - Right earphone



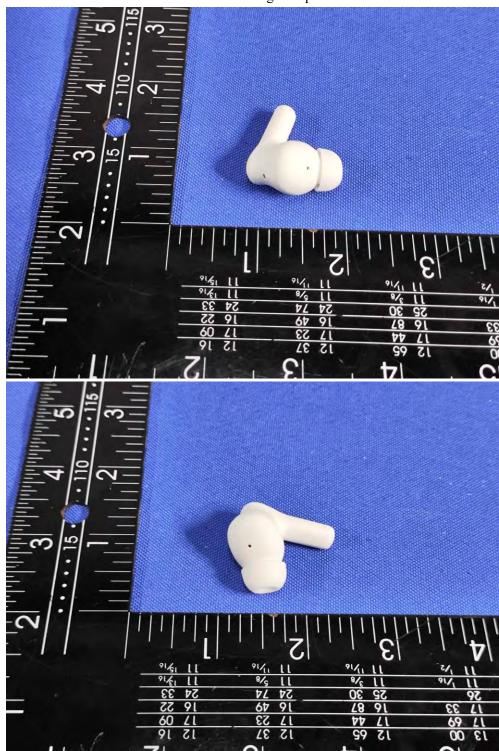
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Outside View - Right earphone



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Inside View - Right earphone



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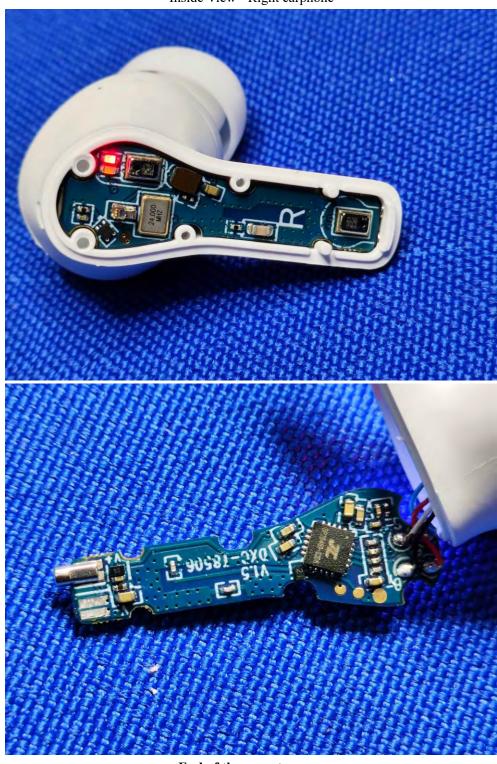
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Inside View - Right earphone



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