



Report No.: TW2104213E File reference No.: 2021-04-28

Applicant: TECHNOFASHION INC.

Product: TWS Bluetooth Earphone

Model No.: NTWS02

Brand Name: Nautica

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

Jack Chung

Jack Chung

Manager

Dated: April 28, 2021

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

Date: 2021-04-28



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# **Special Statement:**

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

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

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

#### **CNAS-LAB Code: L2292**

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

# FCC-Registration No.: 744189

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

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

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

## A2LA (Certification Number:5013.01)

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

Date: 2021-04-28



# 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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Photo of Test Setup and EUT View.

In the event of the improper use of the report. The SHENZHEN TIMEWAY TESTING LABORATORIES. reserves the rights to withdraw it and to adopt any other remedies which may be appropriate.

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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: TECHNOFASHION INC.

Address: 26, Park Street Ste#2340, Montclair, NJ, USA, 07042

Telephone: +1 (347) 510-2340

Fax: --

## 1.3 Description of EUT

Product: TWS Bluetooth Earphone Manufacturer: TECHNOFASHION INC.

Address: 26, Park Street Ste#2340, Montclair, NJ, USA, 07042

Brand Name: Nautica
Model Number: NTWS02

Additional Model Name N/A

Hardware Version: S18-AD6973 V2.0

Software Version: 5.1

Serial No.: NTWS02202103

Rating: DC5V or Built-in DC3.7V, 40mAh Li-ion battery

Modulation Type: GFSK, Pi/4D-QPSK, 8DPSK (Bluetooth)

Operation Frequency: 2402-2480MHz

Channel Separate: 1MHz
Channel Number: 79

Antenna Designation PCB antenna with gain 2.73dBi Max (Get from the antenna specification

provided by the applicant)

#### 1.4 Submitted Sample: 1 Sample

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

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1.5 Test Duration

2021-04-16 to 2021-04-27

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

Terry Tang

The sample tested by

Print Name: Terry Tang

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2.0 Test Equipment					
Instrument Type	Manufacturer	Model	Serial No.	Date of Cal.	Due Date
ESPI Test Receiver	R&S	ESPI 3	100379	2020-06-23	2021-06-22
LISN	R&S	EZH3-Z5	100294	2020-06-23	2021-06-22
LISN	R&S	EZH3-Z5	100253	2020-06-23	2021-06-22
Impuls-Begrenzer	R&S	ESH3-Z2	100281	2020-06-23	2021-06-22
Loop Antenna	EMCO	6507	00078608	2018-06-25	2021-06-24
Spectrum	R&S	FSIQ26	100292	2020-06-23	2021-06-22
Horn Antenna	A-INFO	LB-180400-KF	J211060660	2020-06-23	2021-06-22
Horn Antenna	R&S	BBHA 9120D	9120D-631	2018-07-09	2021-07-08
Power meter	Anritsu	ML2487A	6K00003613	2020-06-23	2021-06-22
Power sensor	Anritsu	MA2491A	32263	2020-06-23	2021-06-22
Bilog Antenna	Schwarebeck	VULB9163	9163/340	2018-07-04	2021-07-03
9*6*6 Anechoic			N/A	2020-07-06	2021-07-05
EMI Test Receiver	RS	ESVB	826156/011	2020-06-23	2021-06-22
EMI Test Receiver	RS	ESH3	860904/006	2020-06-23	2021-06-22
Spectrum	HP/Agilent	ESA-L1500A	US37451154	2020-06-23	2021-06-22
Spectrum	HP/Agilent	E4407B	MY50441392	2020-06-23	2021-06-22
Spectrum	RS	FSP	1164.4391.38	2021-01-16	2022-01-15
RF Cable	Zhengdi	ZT26-NJ-NJ-8 M/FA		2020-06-23	2021-06-22
RF Cable	Zhengdi	7m		2020-06-23	2021-06-22
RF Switch	EM	EMSW18	060391	2020-06-23	2021-06-22
Pre-Amplifier	Schwarebeck	BBV9743	#218	2020-06-23	2021-06-22
Pre-Amplifier	HP/Agilent	8449B	3008A00160	2020-06-23	2021-06-22
LISN	SCHAFFNER	NNB42	00012	2021-01-06	2022-01-05

#### 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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#### **Technical Details** 3.0

#### 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 15.207	Conducted Emission Test	PASS	Complies
FCC Part 15 Subpart C Paragraph 15.249(a) & 15.249(b) Limit	Field Strength of Fundamental	PASS	Complies
FCC Part 15, Paragraph 15.209	Radiated Emission Test	PASS	Complies
FCC Part 15 Subpart C Paragraph 15.249(d) Limit	Band Edge Test	PASS	Complies

#### 3.2 **Test Standards**

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

#### 4.0 **EUT Modification**

No modification by SHENZHEN TIMEWAY TESTING LABORATORIES

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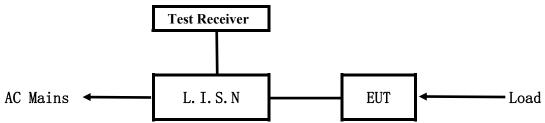
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#### 5. Power Line Conducted Emission Test

#### 5.1 Schematics of the test

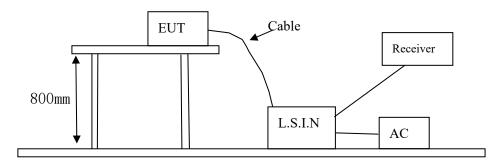


EUT: Equipment Under Test

## 5.2 Test Method and test Procedure

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

#### 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.

One channels are provided to the EUT

#### A. EUT

Device	Manufacturer	Model	FCC ID
TWS Bluetooth Earphone	TECHNOFASHION INC.	NTWS02	2AZBO-N00004

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#### B. Internal Device

Device	Manufacturer	Model	FCC ID/DOC
N/A			

# C. Peripherals

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

5.4 EUT Operating Condition

Operating condition is according to ANSI C63.10-2013

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

5.5 Power line conducted Emission Limit according to Paragraph 15.207

Frequency	Limits (dB μ V)			
(MHz)	Quasi-peak Level	Average Level		
$0.15 \sim 0.50$	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:

Pass

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

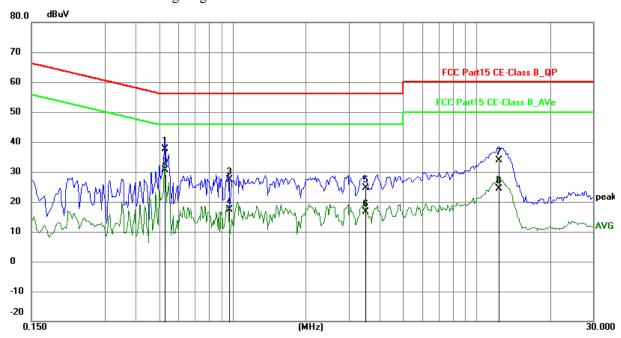
**EUT Operating Environment** 

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

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

Model: NTWS02 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	0.5283	27.96	9.77	37.73	56.00	-18.27	QP	Р
2	0.5283	20.80	9.77	30.57	46.00	-15.43	AVG	Р
3	0.9651	17.67	9.79	27.46	56.00	-28.54	QP	Р
4	0.9651	7.48	9.79	17.27	46.00	-28.73	AVG	Р
5	3.4914	14.70	9.86	24.56	56.00	-31.44	QP	Р
6	3.4914	6.66	9.86	16.52	46.00	-29.48	AVG	Р
7	12.2976	23.54	10.26	33.80	60.00	-26.20	QP	Р
8	12.2976	14.14	10.26	24.40	50.00	-25.60	AVG	Р

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

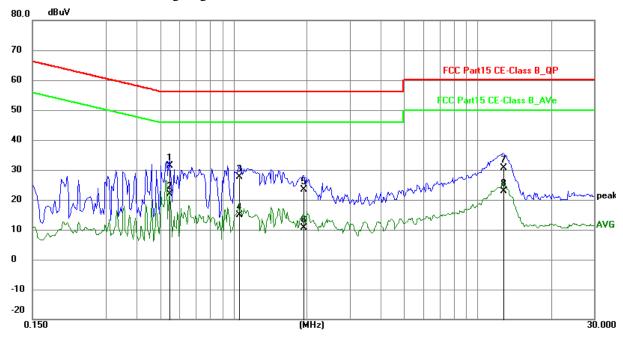
**EUT Operating Environment** 

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

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

Model: NTWS02 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	0.5478	21.71	9.77	31.48	56.00	-24.52	QP	Р
2	0.5478	12.11	9.77	21.88	46.00	-24.12	AVG	Р
3	1.0548	17.96	9.79	27.75	56.00	-28.25	QP	Р
4	1.0548	5.06	9.79	14.85	46.00	-31.15	AVG	Р
5	1.9362	13.64	9.80	23.44	56.00	-32.56	QP	Р
6	1.9362	0.90	9.80	10.70	46.00	-35.30	AVG	Р
7	12.7461	20.24	10.28	30.52	60.00	-29.48	QP	Р
8	12.7461	12.54	10.28	22.82	50.00	-27.18	AVG	Р

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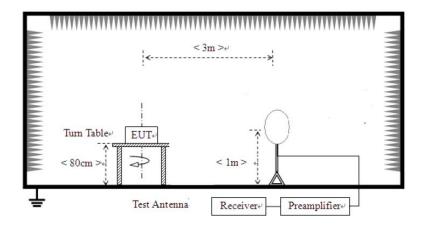


#### **6** Radiated Emission Test

- 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 30 MHz to 25 GHz was investigated. All readings from 30 MHz to 1 GHz are quasi-peak values with a resolution bandwidth of 120 kHz. All readings are above 1 GHz, peak values with a resolution bandwidth of 1 MHz (Note: for Fundamental frequency radiated emission measurement, RBW=3MHz, VBW=10MHz). Measurements were made at 3 meters.
- (4) The antenna 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**

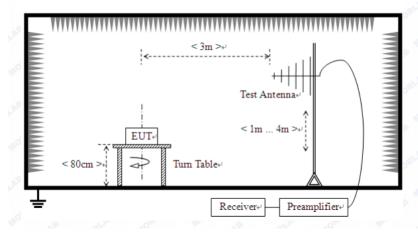
For radiated emissions from 9kHz to 30MHz



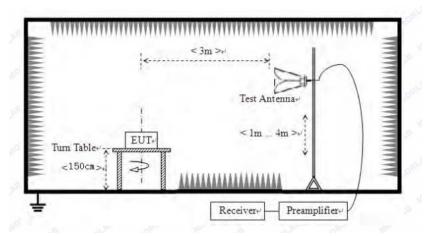
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For radiated emissions from 30MHz to1GHz



For radiated emissions above 1GHz



- 6.2 Configuration of The EUT

  Same as section 5.3 of this report
- 6.3 EUT Operating Condition

  Same as section 5.4 of this report.

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# 6.4 Radiated Emission Limit

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

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

Fundamental Frequency	Field Stre	Field Strength of Fundamental (3m)			trength of Harmo	onics (3m)
(MHz)	mV/m	dBuV/m		uV/m	dBu	V/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)
30-88	3	40.0
88-216	3	43.5
216-960	3	46.0
Above 960	3	54.0

Note:

- 1. RF Voltage  $(dBuV) = 20 \log RF \text{ Voltage } (uV)$
- 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. This is a handhold device. The radiated emissions should be tested under 3-axes position (Lying, Side, and Stand), After pre-test. It was found that the worse radiated emission was get at the lying position.
- 5. 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.
- 6. Battery full charged during tests.
- 7. 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.

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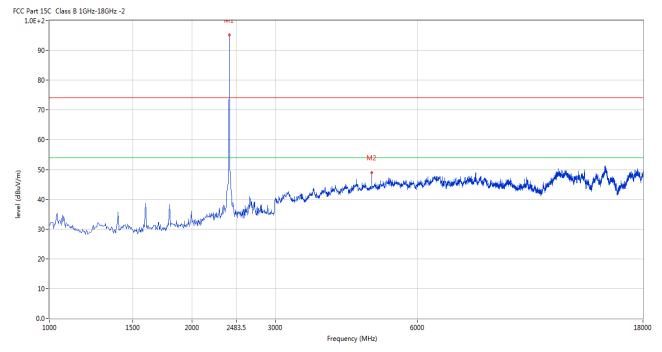


#### 6.5 Test result

# A Fundamental & Harmonics Radiated Emission Data

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

#### Horizontal



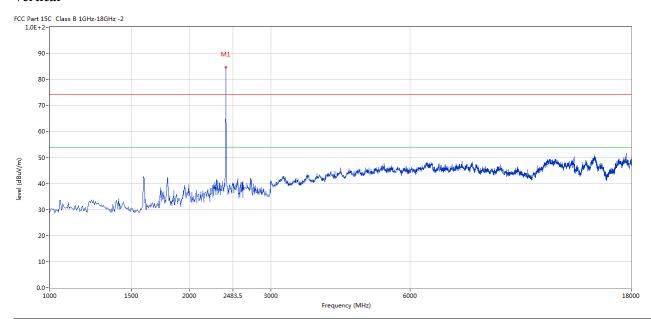
No.	Frequency	Results	Factor	Limit	Over Limit	Detector	Table (o)	Height	ANT	Verdict
	(MHz)	(dBuV/m)	(dB)	(dBuV/m)	(dB)			(cm)		
1	2402.500	95.25	-3.57	114.0	-18.75	Peak	134.00	100	Horizontal	Pass
1*	2402.500	84.53	-3.57	94.0	-9.47	AV	134.00	100	Horizontal	Pass
2	4803.750	49.04	3.13	74.0	-24.96	Peak	134.00	100	Horizontal	Pass

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#### Vertical



No.	Frequency	Results	Factor	Limit	Over Limit	Detector	Table (o)	Height	ANT	Verdict
	(MHz)	(dBuV/m)	(dB)	(dBuV/m)	(dB)			(cm)		
1	2402.500	84.65	-3.57	114.0	-29.35	Peak	42.00	100	Vertical	Pass

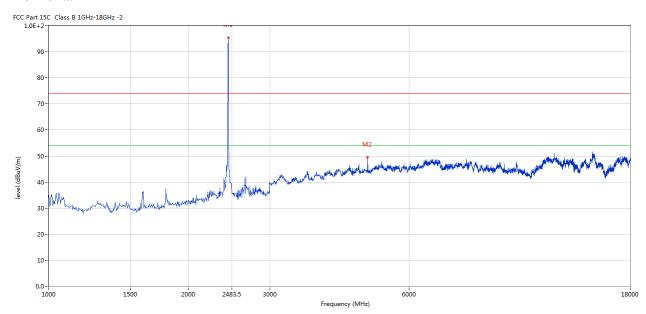
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Please refer to the following test plots for details: High Channel-2441MHz

#### Horizontal



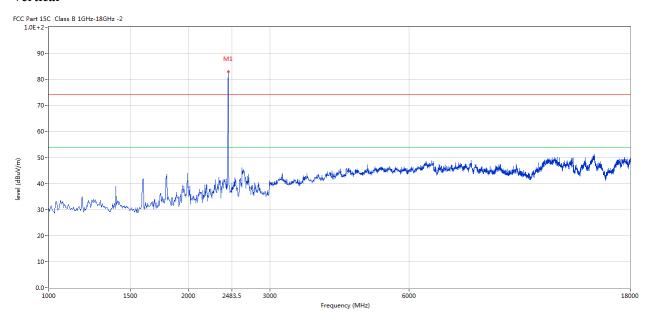
No.	Frequency	Results	Factor	Limit	Over Limit	Detector	Table (o)	Height	ANT	Verdict
	(MHz)	(dBuV/m)	(dB)	(dBuV/m)	(dB)			(cm)		
1	2440.750	95.40	-3.57	114.0	-18.60	Peak	136.00	100	Horizontal	Pass
1*	2440.750	84.68	-3.57	94.0	-9.32	AV	136.00	100	Horizontal	Pass
2	4880.250	49.44	3.20	74.0	-24.56	Peak	141.00	100	Horizontal	Pass

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#### Vertical



No.	Frequency	Results	Factor	Limit	Over Limit	Detector	Table (o)	Height	ANT	Verdict
	(MHz)	(dBuV/m)	(dB)	(dBuV/m)	(dB)			(cm)		
1	2440.750	83.00	-3.57	114.0	-31.00	Peak	225.00	100	Vertical	Pass

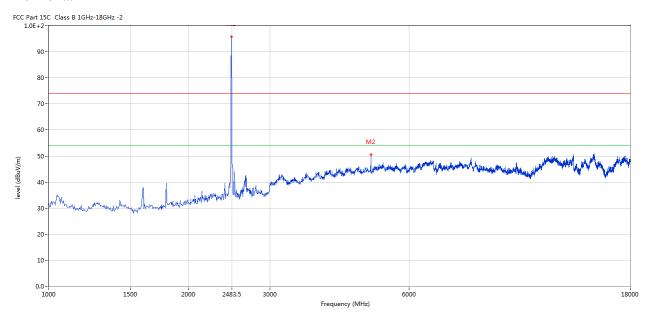
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Please refer to the following test plots for details: High Channel-2480MHz

#### Horizontal



No.	Frequency	Results	Factor	Limit	Over Limit	Detector	Table (o)	Height	ANT	Verdict
	(MHz)	(dBuV/m)	(dB)	(dBuV/m)	(dB)			(cm)		
1	2479.750	95.73	-3.57	114.0	-18.27	Peak	150.00	100	Horizontal	Pass
1*	2479.750	85.02	-3.57	94.0	-8.98	AV	150.00	100	Horizontal	Pass
2	4961.000	50.51	3.36	74.0	-23.49	Peak	138.00	100	Horizontal	Pass

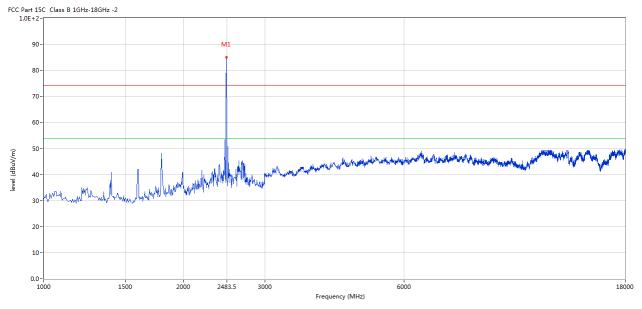
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#### Vertical



No.	Frequency	Results	Factor	Limit	Over Limit	Detector	Table (o)	Height	ANT	Verdict
	(MHz)	(dBuV/m)	(dB)	(dBuV/m)	(dB)			(cm)		
1	2479.750	84.99	-3.57	114.0	10.99	Peak	144.00	100	Vertical	Pass

Note: (2) Emission Level = Reading Level + Antenna Factor + Cable Loss-Amplifier

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

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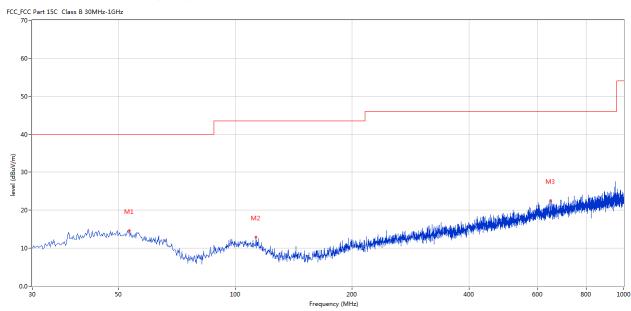


# B. General Radiated Emission Data Radiated Emission In Horizontal (30MHz----1000MHz)

EUT set Condition: Keep Tx transmitting

**Results:** Pass

Please refer to following diagram for individual



No.	Frequency	Results	Factor	Limit	Over Limit	Detector	Table (o)	Height	ANT	Verdict
	(MHz)	(dBuV/m)	(dB)	(dBuV/m)	(dB)			(cm)		
1	53.274	14.67	-11.51	40.0	-25.33	Peak	360.00	100	Horizontal	Pass
2	112.914	12.89	-14.01	43.5	-30.61	Peak	336.00	100	Horizontal	Pass
3	647.736	22.55	-4.61	46.0	-23.45	Peak	319.00	100	Horizontal	Pass

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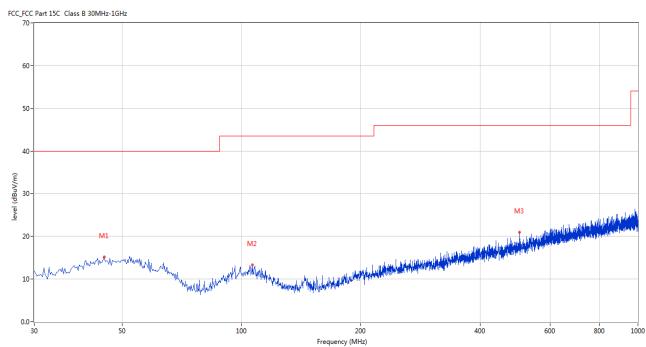


## Radiated Emission In Vertical (30MHz----1000MHz)

EUT set Condition: Keep Tx transmitting

Results: Pass

Please refer to following diagram for individual



No.	Frequency	Results	Factor	Limit	Over Limit	Detector	Table (o)	Height	ANT	Verdict
	(MHz)	(dBuV/m)	(dB)	(dBuV/m)	(dB)			(cm)		
1	45.031	15.16	-11.41	40.0	-24.84	Peak	91.00	100	Vertical	Pass
2	106.368	13.28	-13.34	43.5	-30.22	Peak	0.00	100	Vertical	Pass
3	502.757	20.95	-6.97	46.0	-25.05	Peak	115.00	100	Vertical	Pass

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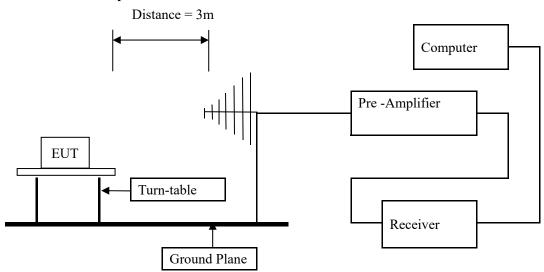


#### 7. Band Edge

#### 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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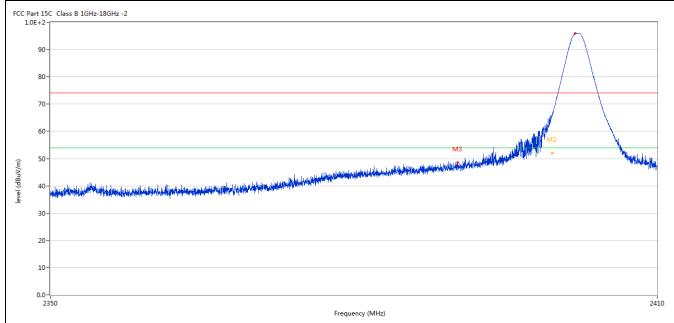
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#### 7.6 Test Result

Product:	TWS Bluetooth Earphone	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 (o)	Height	ANT	Verdict
	(MHz)	(dBuV/m)	(dB)	(dBuV/m)	(dB)			(cm)		
2	2400.025	65.91	-3.57	74.0	-8.09	Peak	141.00	100	Horizontal	Pass
2**	2400.025	52.10	-3.57	54.0	-1.90	AV	141.00	100	Horizontal	Pass
3	2390.110	48.48	-3.53	74.0	-25.52	Peak	133.00	100	Horizontal	Pass

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	roduct:	T		etooth Earpl		Detec			Vertical	
l	Mode		Keeping	g Transmitti	ng	Test Vol	ltage	I	OC3.7V	
Ten	nperature		24	4 deg. C,		Humio	lity	5	6% RH	
Tes	t Result:			Pass						
Part 15C	Class B 1GHz-18GHz	-2								
90-									M1	
80-									$/ \setminus$	
70-								/		
60-										
								- 1	, t	
50-	ha mindara ara		ولا فالدان	ومان و در الوما	والمراجعة والمراجعة والمراجعة والمراجعة والمراجعة	والمراجعة والمالية والمراجعة والمراجعة والمراجعة والمراجعة والمراجعة والمراجعة والمراجعة والمراجعة والمراجعة و	Mβ	M2 *		Walder Jilly
50- 40- 30-	distributed and the pass of an other	en filder kan de bolling fir die de de be		Hapathapathaban kephadalaha	propholographic describing spirit		Mβ	•		
40-	his while and the state of the	ng daga an an ladig daga da da	and the second second	Hadingan da karang malalbah	prighadas para filiplatus das distribus para distri	abolinasi karapatan araa		M2 •		K-484-malded
40 <b>-</b> 30 <b>-</b>	hin which have been beauth	entrantella production de la companya de la company	alayan lutas di	Hadingari dalah kepiladi ka		abgliqued lances to tax and a		•		M. A. Shamadalah
40- 30- 20-	Have add for heavy have the addition	eriktipercente <mark>bilija/apade</mark> pt	adipularint kutuma akti	Hadronic dian kry modiliki	ngigal alay sayay kalaka ka	ilgi hang lanng hipi aga d		•		A de la comina de la del
40- 30- 20-	50	eriktipercente <mark>bilija/apade</mark> pt	adipularint lutura al P	Handropen's delening to provide his	Frequency (MH	z)		•		2410
40- 30- 20- 10- 0.0- 233	50 Frequency	Results	Factor	Limit	Frequency (MH	z) Detector	Table (o)	Height	ANT	2410
40- 30- 20- 10- 0.0- 233	T	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Т	1	Table (o)	Height (cm)		2410
40- 30- 20- 10- 0.0- 23:	Frequency				Over Limit	1	Table (o)	_		
40 - 30 20 - 10 0.0	Frequency (MHz)	(dBuV/m)	(dB)	(dBuV/m)	Over Limit (dB)	Detector		(cm)	ANT	2410 Verdic

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2\*\*

2483.530

51.09

-3.57

54.0



P	Product:	T	WS Blue	etooth Earp	hone	Polarity	7	-	Horizontal	
	Mode		Keeping	g Transmitti	ng	Test Volta	ige		DC3.7V	
Ter	mperature		24	l deg. C,		Humidit	у		56% RH	
Tes	st Result:			Pass						
CC Part 15	5C Class B 1GHz-18GHz	-2							<u> </u>	
90-	_									
80-	_		$-\!$	$\overline{}$						
70-										
60-		ماميانىد	All the second second							
50-					M2	the same of the same	china bhaga (n. 1.2.2.1114)	- L 101k.an ( )	* 4 di	
(m/\ngp) 40-						11	and the property of the same		<b>計画を対象が、対するというに対しています。</b>	AND AND THE
<u>io</u> 30-	_									
20-	_									
10-										
0.0-										
0.0-	- -  -				2483.5 Frequency (MHz	z)				2500
0.0-	Frequency	Results	Factor	Limit			Table (o)	Height	ANT	2500 Verdic
0.0- 24	2470	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Frequency (MH:		Table (o)	Height (cm)	ANT	T

ΑV

-2.91

132.00

100

Horizontal

Pass

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	Pr	roduct:	Т	WS Blu	etooth Earpl	hone	Detecto	or	•	Vertical	
	N	Mode		Keeping	g Transmitti	ng	Test Volta	age	I	DC3.7V	
]	Гет	nperature		24	l deg. C,		Humidi	ity	5	56% RH	
-	Tes	t Result:			Pass						
	art 15C DE+2-	C Class B 1GHz-18GHz	2								
	90-										
	80-										
	70-										
					1						
	60-										
(E)	60- 50-	La grand de la		Market Control of the							
rel (dBuV/m)			Harry Haller of Beerle	present.					Walter State of State		
level (dBuV/m)	50-	neural phone de l'angula	d days of planter or house	park		The state of the s					
level (dBuV/m)	50- 40-		d the state of all beautiful								
level (dBuV/m)	50- 40- 30-		d the state of all beauti					White particularly better			
level (dBuV/m)	50- 40- 30- 20-		ikking de plate de red beseebe								
level (dBuV/m)	50 - 40 - 30 -	70	ik kingen de Wiki di para Ungani bi			2483.5 Frequency (MHz	ulunk sumera à Alu masinas, la				2500
NO (m/nm)	50- 40- 30- 20- 10- 247	Frequency	Results	Factor	Limit		z)	Table (o)	Height	ANT	2500 Verdict
	50- 40- 30- 20- 10- 247	1	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Frequency (MH:	z)	المناهبة بشامها	र होत्र चुन्न क्ष्मा क्ष्म -	**************************************	1

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

- 2. This is a handhold device. The radiated emissions should be tested under 3-axes position (Lying, Side, and Stand), After pre-test. It was found that the worse radiated emission was get at the lying position.
- 3. 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.

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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. The antenna gain is 2.73dBi Max. It fulfills the requirement of this section. Test Result: Pass

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FSK Modulation								1			
Product:		TWS Bl	uetooth E	arphone		T	est Mode:		Keep trai	nsmitting	
Mode	Keeping Transmitting						est Voltage	DC3.7V			
Temperature		2	24 deg. C,			I	Humidity		56%	RH	
Test Result:			Pass				Detector		P	K	
dB Bandwidth		8	317.64kHz	Z					-	-	
Ref Lvl	r	ndB		.00 dB	VI	BW BW	30 ki	Hz	F Att	20 dB	
10 dBm		3W 817	.635270	)54 kHz	Sī	VT	8.5 m	s U	nit	dBr	m
0				_1			<b>V</b> 1	[T1]	-: 2.40199	1.26 dBn 9699 GHz	
				\_\_\	4		ndB BW <b>▽</b> T1	81 . [ <b>T1</b> ]	7.6352 -21	0.00 dB 7054 kHz 1.45 dBn	z
-10			T1,-/	$\bigwedge$	•	ل	$\setminus_{\mathbb{T}^2} \nabla_{\mathbb{T}^2}$	[T1]	2.40158	8818 GHz	
-20 <b>1MAX</b>			~						2.40240	)581 GHz	1
-30			,					کی ا			
-40								ή,	~~		
-50 MM		Ň						V		ullan	
-60											
-70											
-80											
-90 Center 2.4	402 611	-		200	kHz/	ļ			C	an 3 MHz	

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Product:		ΓWS Blu	etooth Ear	rphone		T	est Mode:		Keep tra	ansmitting	
Mode			g Transmi			Т	est Voltage		DC3.7V		
Temperature		2	4 deg. C,			]	Humidity		56%	6 RH	
Test Result:			Pass				Detector		I	PK	
0dB Bandwidth		81	7.64kHz								
Ŕ	1	Marker	1 [T1 n	ndB]	RI	ВW	30 kI	lz Rl	F Att	20 dB	
Ref Lvl	r	ndB		00 dB		ВW	100 kF				
10 dBm	BW 817.63527054 kHz		SV	VΤ	8.5 ms	s Uı	nit	dBm	1		
							<b>v</b> <sub>1</sub>	[T1]	-1	.72 dBm	Α
0				1					2.44099	699 GHz	
				\\	M ۵		ndB BW		20 7.63527	.00 dB 054 kHz	
-10				$\mathcal{N}$			$oldsymbol{ abla}_{\mathrm{T}1}$	[T1]	-21	.93 dBm	
					`	١,			2.44058	818 GHz	
-20	T1					W	$ abla_{T2}  abla_{T2}$				
1MAX							• کرا		2.44140	581 GHz	1M2
-30							4	η_			
-40	/\\\	/						\ \ /	~~~~		
-60	J** (	,						V	hy	hohaba	
-70											
-80											
-90 Center 2	.441 GH	z		300	kHz/				Spa	ın 3 MHz	]

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Product:		TWS Blu	ietooth Eai	rphone		Τ	est Mode:	Keep transmitting			
Mode		Keepin	g Transmi	tting		T	est Voltage	DC3.7V			
Temperature			4 deg. C,				Humidity	56% RH			
Test Result:			Pass				Detector		]	PK	
0dB Bandwidth		81	17.64kHz								
Ŕ <b></b>		Marker	1 [T1 n	ndB]	R	BW	30 kH	Iz RI	F Att	20 dB	
Ref Lvl		ndB		00 dB		BW	100 kH				
10 dBm		BW 817	7.635270	)54 kHz	S	TW	8.5 ms	. Uı	nit	dBm	! •
							$\mathbf{v}_1$	[T1]	-2	.49 dBm	A
0									2.47999	699 GHz	
				0.0			ndB BW		20 7.63527	0.00 dB 7054 kHz	
-10				\ \tag{2}	J.		$oldsymbol{ abla}_{\mathrm{T1}}$	[T1]	-22	3.89 dBm	
					'	7			2.47958	818 GHz	
-20						سا	$\nabla_{\mathrm{T2}}$	[T1]	-22	.14 dBm	
1MAX			~				J. J		2.48040	581 GHz	1M2
-30			/				Ì	Ly .			
-40	~~\							7	my		
-60	کممر	V						V	, San	maly	
-70											
-80											
-90 Center 2	.48 GHz	z		300	kHz/				Spa	an 3 MHz	

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Product:	TWS Blu	uetooth Earphone		Test Mode	:	Keep tra	ansmitting	
Mode	Keepir	ng Transmitting		Test Voltag	e	DC3.7V		
Temperature	2	24 deg. C,		Humidity		56% RH		
Test Result:		Pass		Detector		]	PK	
20dB Bandwidth	1	.257MHz						
Ŕ	Marker	1 [T1 ndB]	RI	BW 30 1	kHz R	F Att	20 dB	
Ref Lvl	ndB	20.00 di			кНz			
10 dBm	BW	1.25651303 Mi	iz SV	WT 8.5 r	ns U	nit	dBm	
10				<b>v</b> <sub>1</sub>	[T1]	-1	1.30 dBm	A
0			1			2.40199	699 GHz	
		_	Λ	nd	В	20	0.00 dB	
				BW $\nabla_{\mathrm{T}}$	 1 [T1]	1.25651	.303 MHz	
-10		WW	A   A	my		2.40137174 GE		
	T	<b>√</b>		\sqrt{\sq}}}}}}}}}} \end{\sqrt{\sqnt{\sqrt{\sqrt{\sqrt{\sqrt{\sqrt{\sq}}}}}}}}} \end{\sqrt{\sqnt{\sqrt{\sqrt{\sqrt{\sqrt{\sqrt{\sqrt{\sq}}}}}}}}} \end{\sqrt{\sqrt{\sqrt{\sqrt{\sqrt{\sqrt{\sqrt{\sqrt{\sqrt{\sqrt{\sqrt{\sqrt{\sqrt{\sqrt{\sqrt{\sqrt{\sqrt{\sqrt{\sq}}}}}}}}}} \end{\sqrt{\sqrt{\sqrt{\sqrt{\sqrt{\sqrt{\sqrt{\sqrt{\sqnt{\sqrt{\sqrt{\sqrt{\sqrt{\sqrt{\sqrt{\sqrt{\sq}}}}}}}}} \end{\sqnt{\sqnt{\sqrt{\sq}}}}}}} \end{\sqnt{\sqnt{\sqrt{\sq}}}}}}} \end{\sqnt{\sqnt{\sqnt{\sqrt{\sq}}}}}}}} \sqnt{\sqnt{\sqnt{\s	 	-21	1.21 dBm	
-20	<u> </u>				7	2.40262	2826 GHz	1M2
IFIAA								1111
-30					<del>                                     </del>			
					\			
-40					$\uparrow \uparrow \uparrow \uparrow$			
\					"	~		
-50	~ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \				<u> </u>	W. /	my 1	
~~						Ť	War of the same of	
-60								
-70								
-80								
-90								
Center 2.	402 GHz	30	00 kHz/			Spa	an 3 MHz	

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Product:	TW	VS Blu	etooth Ear	rphone		Test 1	Mode:		Keep transmitting		
Mode			g Transmi			Test V	Voltage	;	DC3.7V		
Temperature			4 deg. C,				nidity		56% RH		
Test Result:			Pass				ector		]	PK	
0dB Bandwidth		1.	257MHz								
/s/a	Ma	rker	1 [T1 n	ndB]	RI	3W	30 k	Hz R	RF Att 20 dB		
Ref Lvl	ndl	В	20.	00 dB	VE	3W 1	100 k	Hz			
10 dBm	BW	1	.256513	303 MHz	SV	7T 8	3.5 m	s U	nit	dBm	
10							$\blacktriangledown_1$	[T1]	-1	.75 dBm	
				-				, - <b>-</b>	2.44099	699 GHz	A
0				<u> </u>			ndE		20	.00 dB	
				$\cap$ /			BW		1.25651	303 MHz	
-10			/^\	\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \		~~~~	$\nabla_{\mathrm{T}1}$	[T1]	-21	.74 dBm	
									2.44037	174 GHz	
-20	T)**							[T1] [2]	2.44162	.62 dBm	
1MAX									2.44102	1	1 <i>M</i> 2
-30											
-50		J						M	$\mathcal{M}$		
-60											
-70											
-80											
-90											

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Product:	TWS Bluetooth Earphone						est Mode:		Keep transmitting		
Mode		Keepin	g Transmi	tting		T	est Voltage	DC3.7V			
Temperature			4 deg. C,			-	Humidity		56% RH		
Test Result:			Pass				Detector		1	PK	
OdB Bandwidth		1.	.257MHz								
<b>€</b>		Marker	1 [T1 n	ndB]	F	RBW	30 kl	Hz RI	F Att	20 dB	
Ref Lvl		ndB		00 dB		/BW	100 k				
10 dBm		BW 1	L.256513	303 MHz		SWT	8.5 m	s Ur	nit	dBm	l •
							<b>v</b> <sub>1</sub>	[T1]	-2	.49 dBm	A
0				1					2.47999	699 GHz	
				/			ndB BW		20 1.25651	.00 dB 303 MHz	
-10					$\backslash \land$		▼ <sub>T1</sub>	[T1]	- <u>22</u>	.51 dBm	
			~~	$\mathcal{N}$	\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	m	hom		2.47937	174 GHz	
-20							<b>▽</b> \_2	[T1]	-22	.44 dBm	
1MAX		7					<u>\</u>	<b>V</b>	2.48062	826 GHz	1M2
-30											
-40		$\sim$						$\mathcal{N}$	$\sim$		
\mu_	1000								W	hy www	
-60											
-70											
-80											
-90 Center 2	.48 GHz	z		300	kHz/	,			Spa	ın 3 MHz	]

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Product:	-	TWS Blu	etooth Ear	rphone		T	est Mode:		Keep tra	ansmitting	
Mode			g Transmi			Te	est Voltage		DC3.7V		
Temperature		2	4 deg. C,			I	Humidity		56%	% RH	
Test Result:			Pass				Detector		1	PK	
dB Bandwidth		1.	.257MHz								
<b>*</b>	1	Marker	1 [T1 n	ndB]	RE	ВW	30 ki	Hz RI	7 Att	20 dB	
Ref Lvl		ndB		00 dB	VE		100 ki				
10 dBm	I	BW 1	1.256513	303 MHz	SV	VT	8.5 ms	s Ui	nit	dBm	1
							<b>v</b> <sub>1</sub>	[T1]	-1	.25 dBm	A
0				_1					2.40199	699 GHz	
							ndB BW		20 1.25651	.00 dB 303 MHz	
-10					$\setminus \cap$		$     \nabla_{\text{T1}} $	[T1]	-21	.15 dBm	
			\ \\		, (	<b>/</b> ~~	W/		2.40137	174 GHz	
-20	I.						▽ <u>`</u> \	<sub>'2</sub> [T1]	<u> </u>		
1MAX									2.40262	826 GHz	1M
-30											
-50		~						$\bigvee$	<i>/ /</i>		
-60											
-70											
-80											
-90 Center 2	.402 GH	z		300	kHz/				Spa	ın 3 MHz	!

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8QPSK Modulation							
Product:	TWS Bluetooth Ear	phone	Test Mode:		Keep tra	nsmitting	
Mode	Keeping Transmit	tting	Test Voltage	/oltage		DC3.7V	
Temperature	24 deg. C,		Humidity		56%	6 RH	
Test Result:	Pass		Detector		P	ΥK	
20dB Bandwidth	1.257MHz				-		
Ř.	Marker 1 [T1 n	idB]	RBW 30 k	Hz RE	7 Att	20 dB	
Ref Lvl				Hz			
10 dBm	BW 1.256513	03 MHz	SWT 8.5 m	.s Ur	nit	dBm	
			<b>v</b> <sub>1</sub>	[T1]	-1	.73 dBm	A
0		1			2.44099	699 GHz	
			ndE BW		20 1.25651	.00 dB 303 MHz	
-10			$\setminus$ $\bigvee_{\mathbf{T}}$	[T1]	-21	.66 dBm	
10		7	my my		2.44037	174 GHz	
-20	T		<b>▽</b> \ <u>\</u> 2	[T1] [2]	-21	.67 dBm	
1MAX					2.44162	826 GHz	1MA
-30							
-40	$\sim$			$\mathcal{N}$	$\mathcal{M}$		
-50						M	
-60							
-70							
-80							
-90 A41		200 1 **	/			- 2 1477	
Center 2.441 Date: 26.APR.		300 kHz,	,		Spa	n 3 MHz	

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8QPSK Modul	ation									
Product:		TWS Bluetooth Earphone				Test Mode:		Keep transmitting		
Mode		Keeping Transmitting 24 deg. C,				Test Voltag	ge	DC3.7V 56% RH		
Temperature						Humidity	,			
Test Result:	Pass					Detector		PK		
20dB Bandwidth		1.257MHz								
F)		Marker	1 [T1 n	ndB]	RB	W 30	kHz R	F Att	20 dB	
Ref Lvl		ndB		00 dB	VB		kHz 			
10 dBm		BW 1	.256513	803 MHz	SW	т 8.5	ms U	nit	dBm	
						<b>▼</b> 1	[T1]	-2	2.51 dBm	Α
0				7				2.47999	699 GHz	
						nd BW		20 1.25651	0.00 dB	
1.0				$\bigwedge$		DW ∇η		-22	.303 MHz	
-10			~^	$\mathcal{N}$	Δ /	molyn		2.47937	174 GHz	
						$\triangle $	2 [T1]	-22	.56 dBm	
-20		7					Ÿ	2.48062	826 GHz	1MA
-30										
-40							+ \ .			
-50	$\langle \cdot \rangle$	M					V	~^		
Mm	Up~ V*								www	
-60										
-70										
-80										
-90 Center 2	48 CH	,		300	kHz/			Sn=	an 3 MHz	
	.40 GH2		:36:06	500	11114/				5 -1112	

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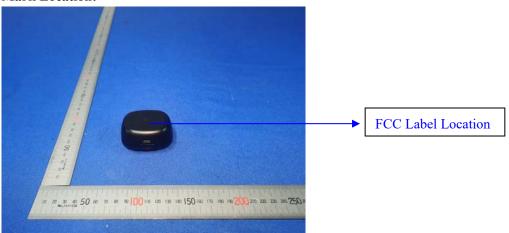


## 10.0 FCC ID Label

## FCC ID: 2AZBO-N00004

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

## **Mark Location:**



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### 11.0 Photo of testing

#### 11.1 Conducted test View--



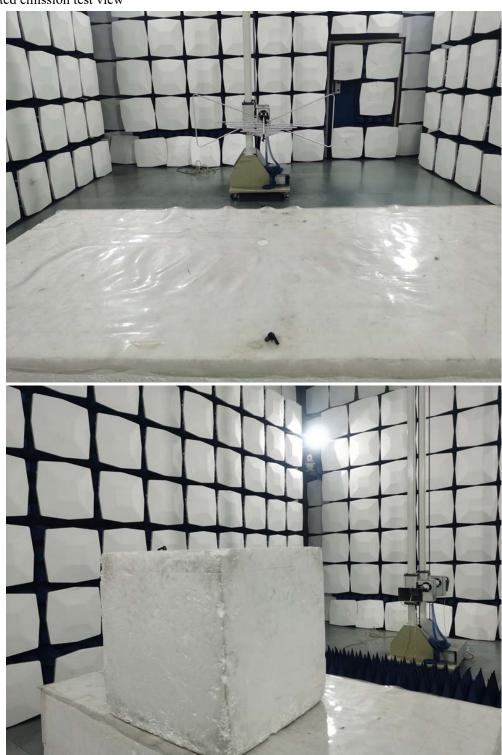
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## Radiated emission test view



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### 11.2 Photographs-EUT

Outside View



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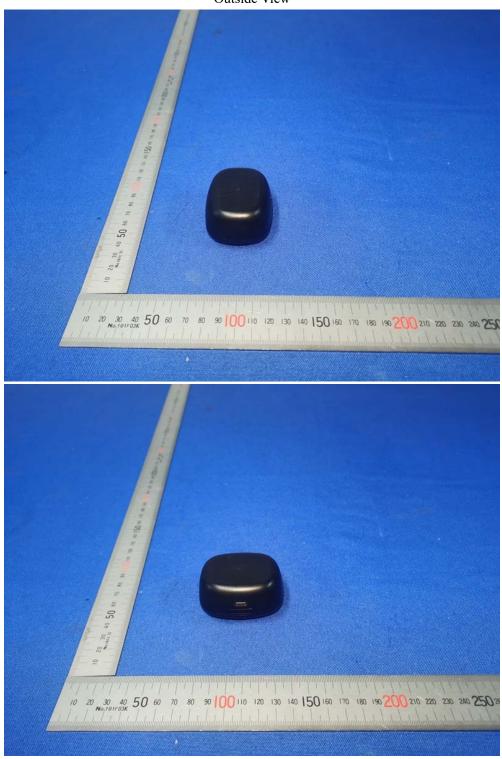
Report No.: TW2104213E

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# Photographs – EUT

## Outside View



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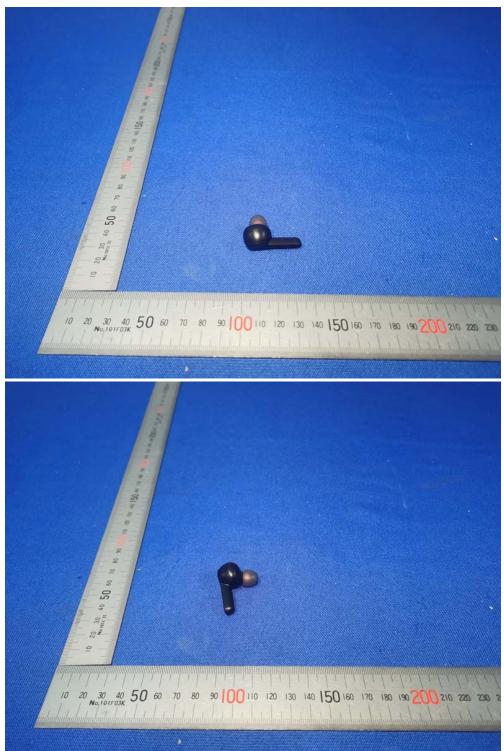
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Left - Outside View



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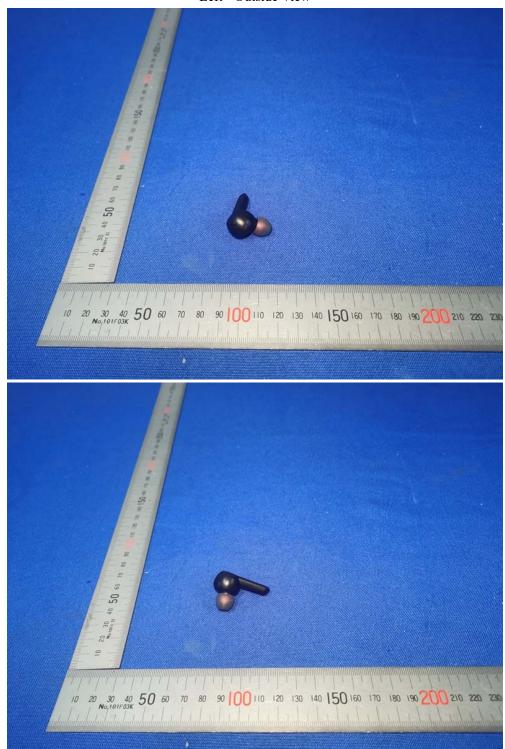
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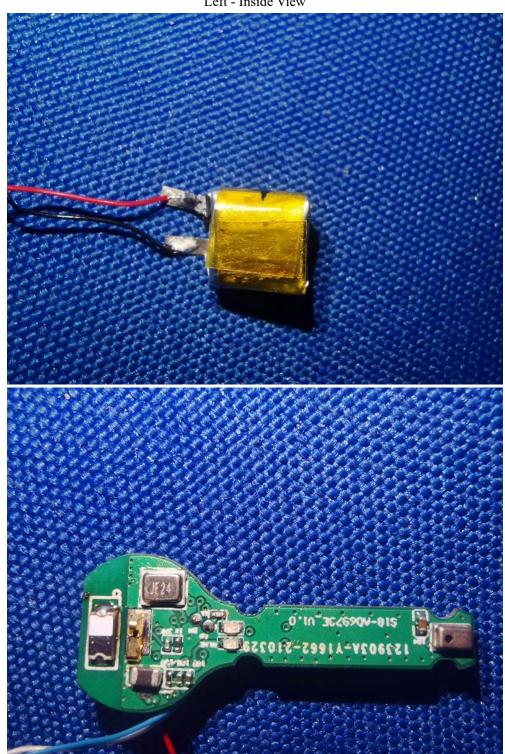
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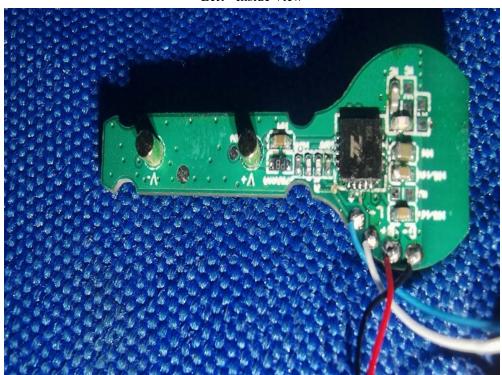
adopt any other remedies which may be appropriate.

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Left - Inside View



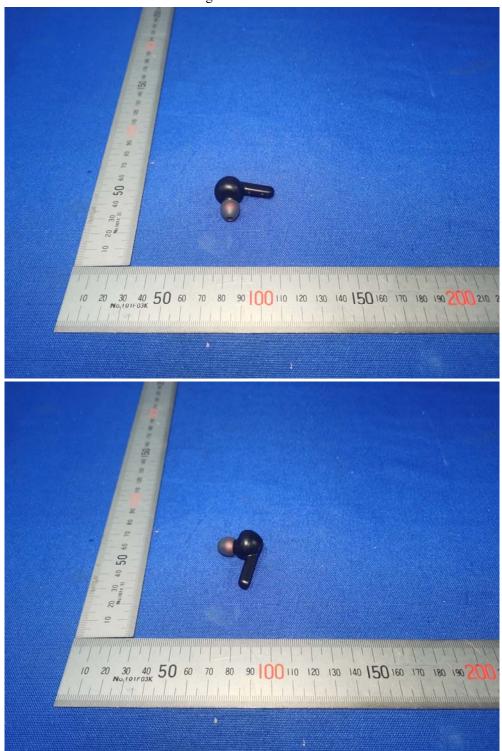
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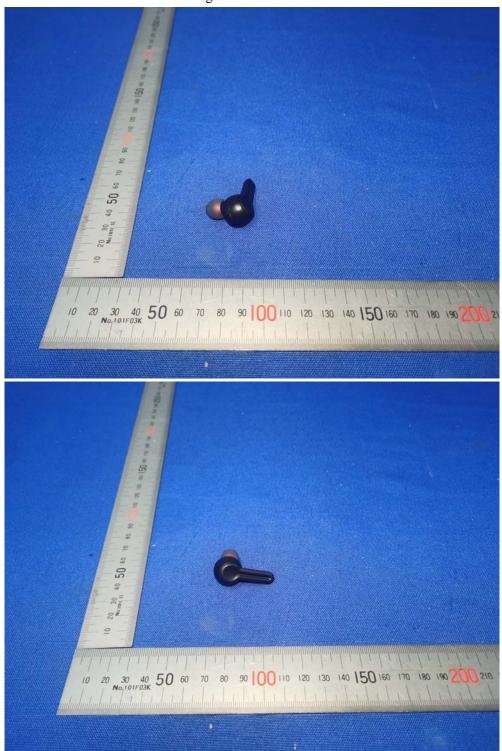
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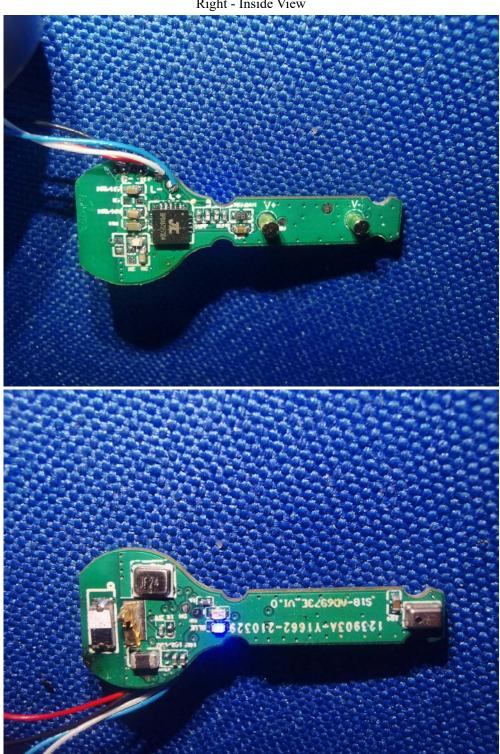
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-- End of the report--

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