



Report No.: TW2104167E File reference No.: 2021-04-19

Applicant: LEADER PREMIUMS LTD.

Product: TWS Earbuds

Model No.: AF0063

Brand Name: 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



Dated: April 19, 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

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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

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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: LEADER PREMIUMS LTD.

Address: 9/F., Hengfu Mansion, NO.858. Fuming Road, Ningbo, China

Telephone: -Fax: --

# 1.3 Description of EUT

Product: TWS Earbuds

Manufacturer: LEADER PREMIUMS LTD.

Address: 9/F., Hengfu Mansion, NO.858. Fuming Road, Ningbo, China

Brand Name: N/A
Model Number: AF0063
Additional Model Name N/A

Hardware Version: Bluetooth- AF0063 V1.0 Software Version: leader.1910.01 V5.0

Serial No.: AF0063

Rating: Built-in DC3.7V, 35mAH Li-ion battery; Modulation Type: GFSK, Pi/4D-QPSK, 8DPSK (Bluetooth)

Operation Frequency: 2402-2480MHz

Channel Separate: 1MHz Channel Number: 79

Antenna Designation Chip antenna with gain 1.11dBi Max (Get from the antenna specification

provided by the applicant)

## 1.4 Submitted Sample: 1 Sample

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#### 1.5 Test Duration

2021-04-12 to 2021-04-19

# 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 force erage factor of k=2 and a level of confidence of 95%.

# 1.7 Test Engineer

The sample tested by

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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		2020-06-23	2021-06-22
Kr Cable	Zhengui	M/FA		2020-00-23	2021-00-22
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	2020-01-07	2021-01-06

#### 2.2 Automation Test Software

## For Conducted Emission Test

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

## For Radiated Emissions

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

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#### 3.0 Technical Details

# 3.1 Summary of test results

The EUT has been tested according to the following specifications:

Standard	Test Type	Result	Notes
FCC Part 15, Paragraph 15.207	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

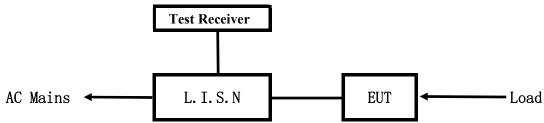
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#### 5. Power Line Conducted Emission Test

## 5.1 Schematics of the test

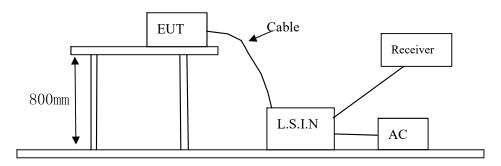


**EUT: Equipment Under Test** 

# 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. AC 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.

One channels are provided to the EUT

# A. EUT

Device	Manufacturer	Model	FCC ID
TWS Earbuds	LEADER PREMIUMS LTD.	AF0063	2APYY-AF0063

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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 $\mu$ V)					
(MHz)	Quasi-peak Level	Average Lev 1				
$0.15 \sim 0.50$	66.0~56.0*	56.0~46.0*				
$0.50 \sim 5.00$	56.0	46.0				
$5.00 \sim 30.00$	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

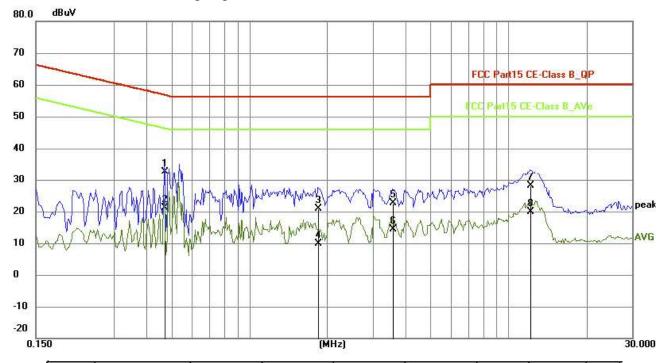
**EUT set Condition: Charing and Communication by Bluetooth** 

Model: AF0063

**Equipment Level: Class B** 

**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	0.4698 22.82 9		9.77	32.59	56.52	-23.93	QP	Р
2	0.4698	11.48	9.77	21.25	46.52	-25.27	AVG	Р
3	1.8387	10.98	9.80	20.78	56.00	-35.22	QP	Р
4	1.8387	0.06	9.80	9.86	46.00	-36.14	AVG	Р
5	3.5733	12.68	9.87	22.55	56.00	-33.45	QP	Р
6	3.5733	4.63	9.87	14.50	46.00	-31.50	AVG	Р
7	12.1611	17.76	10.26	28.02	60.00	-31.98	QP	Р
8	12.1611	9.67	10.26	19.93	50.00	-30.07	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

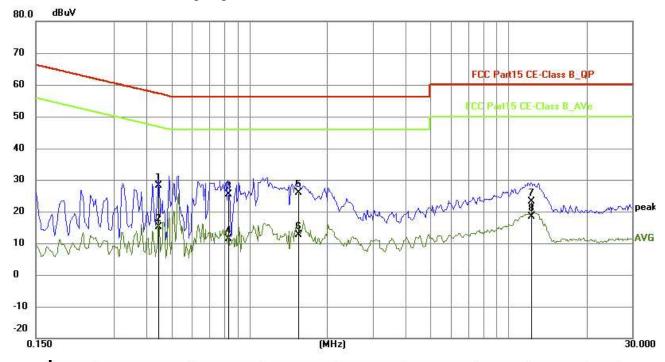
**EUT set Condition: Charing and Communication by Bluetooth** 

Model: AF0063

**Equipment Level: Class B** 

**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	0.4464	18.44	9.77	28.21	56.94	-28.73	QP	Р
2	0.4464	5.38	9.77	15.15	46.94	-31.79	AVG	Р
3	0.8286	15.56	9.78	25.34	56.00	-30.66	QP	Р
4	0.8286	1.54	9.78	11.32	46.00	-34.68	AVG	Р
5	1.5501	15.97	9.80	25.77	56.00	-30.23	QP	Р
6	1.5501	2.88	9.80	12.68	46.00	-33.32	AVG	Р
7	12.2157	12.89	10.26	23.15	60.00	-36.85	QP	Р
8	12.2157	8.24	10.26	18.50	50.00	-31.50	AVG	Р

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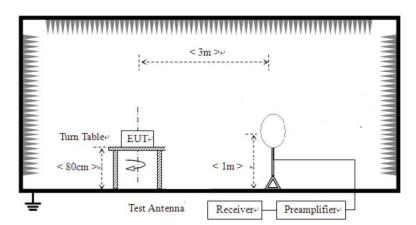


## **6** Radiated Emission Test

- 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



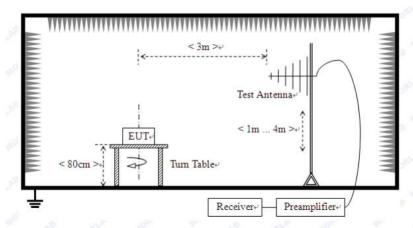
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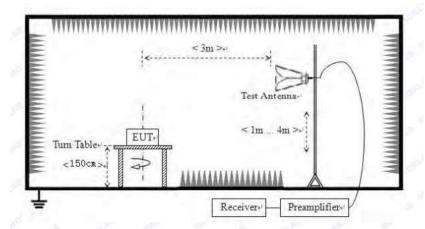
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For radiated emissions from 30MHz to1GHz



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	ength of Fundame	ental (3m)	Field Strength of Harmonics (3m)			
(MHz)	mV/m	mV/m dBuV/m uV/m dl				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 $\mu$ 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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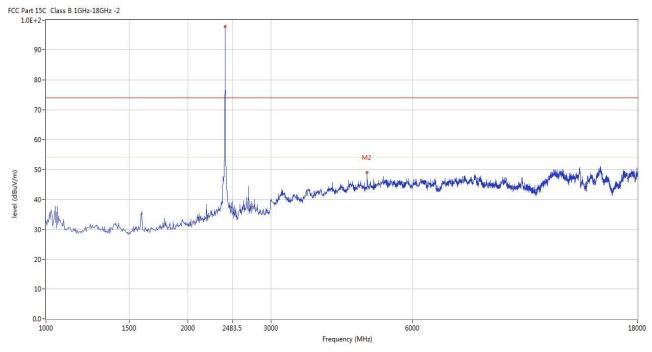


## 6.5 Test result

# A Fundamental & Harmonics Radiated Emission Data

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

# Horizontal



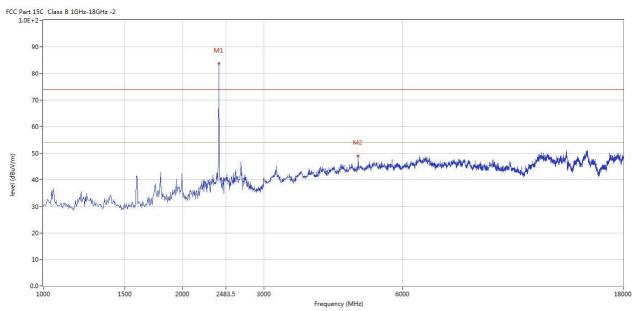
No.	Frequency	Results	Factor	Limit	Over Limit	Detector	Table (o)	Height	ANT	Verdict
	(MHz)	(dBuV/m)	(dB)	(dBuV/m)	(dB)			(cm)		
1	2402.500	97.92	-3.57	114.0	-16.08	Peak	133.00	100	Horizontal	Pass
1*	2402.500	88.19	-3.57	94.0	-5.81	AV	133.00	100	Horizontal	Pass
2	4803.750	49.92	3.13	74.0	-24.08	Peak	125.00	100	Horizontal	Pass

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# Vertical



Ī	No.	Frequency	Results	Factor	Limit	Over Limit	Detector	Table (o)	Height	ANT	Verdict
		(MHz)	(dBuV/m)	(dB)	(dBuV/m)	(dB)			(cm)		
Ī	1	2402.500	83.72	-3.57	114.0	-30.28	Peak	107.00	100	Vertical	Pass
Ī	2	4803.750	49.00	3.13	74.0	-25.00	Peak	59.00	100	Vertical	Pass

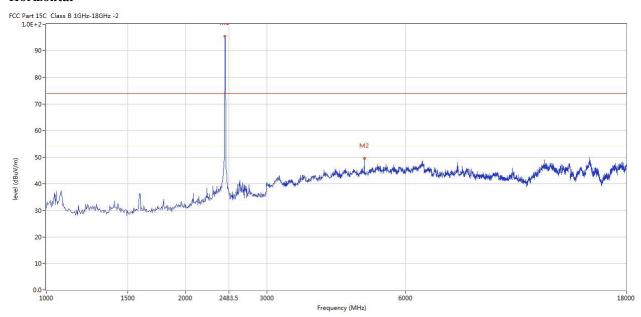
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Please refer to the following test plots for details: Middle Channel-2441MHz

#### Horizontal



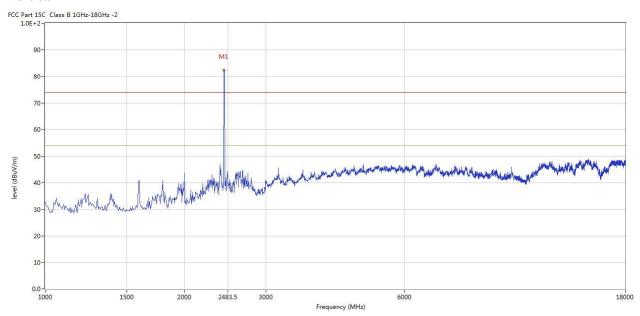
No.	Frequency	Results	Factor	Limit	Over Limit	Detector	Table (o)	Height	ANT	Verdict
	(MHz)	(dBuV/m)	(dB)	(dBuV/m)	(dB)			(cm)		
1	2440.500	95.51	-3.57	114.0	-18.49	Peak	134.00	100	Horizontal	Pass
1*	2440.500	86.31	-3.57	94.0	-27.69	AV	134.00	100	Horizontal	Pass
2	4880.250	49.45	3.20	74.0	-24.55	Peak	142.00	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	2440.500	82.50	-3.57	114.0	-31.50	Peak	187.00	100	Vertical	Pass

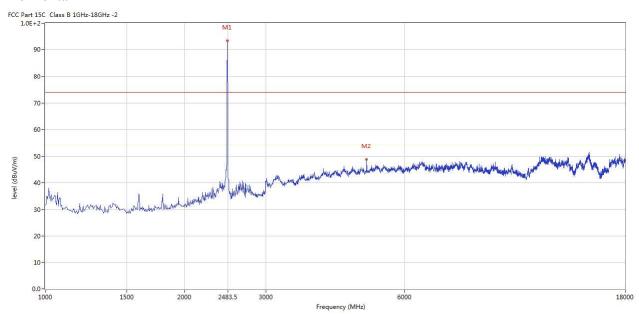
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Please refer to the following test plots for details: High Channel-2480MHz

#### Horizontal



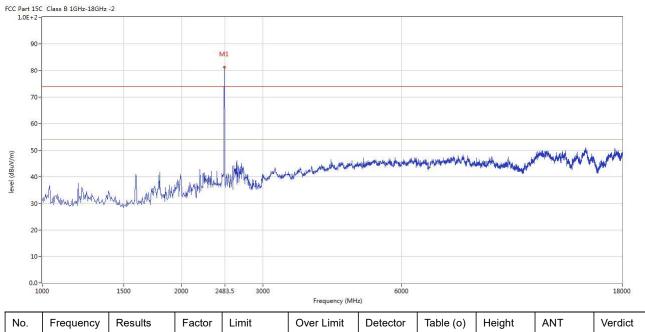
No.	Frequency	Results	Factor	Limit	Over Limit	Detector	Table (o)	Height	ANT	Verdict
	(MHz)	(dBuV/m)	(dB)	(dBuV/m)	(dB)			(cm)		
1	2479.800	93.43	-3.57	114.0	-20.57	Peak	119.00	100	Horizontal	Pass
1	2479.800	84.09	-3.57	94.0	-9.91	AV	119.00	100	Horizontal	Pass
2	4961.000	49.81	3.36	74.0	-24.19	Peak	1.00	100	Horizontal	Pass

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## Vertical



(MHz) (dBuV/m) (dB) (dBuV/m) (dB) (cm) 2479.800 81.32 -3.57 114.0 -32.68 119.00 100 Vertical Peak 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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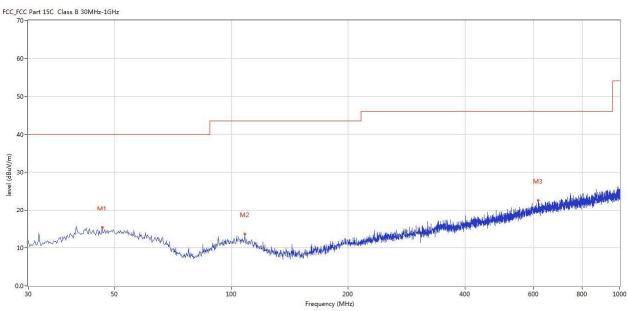


# B. General Radiated Emission Data Radiated Emission In Horizontal (30MHz----1000MHz)

EUT set Condition: Keep Tx transmitting

Results: Pass

Please refer to following diagram for individual



No.	Frequency	Results	Factor	Limit	Over	Detector	Table (o)	Height	ANT	Verdict
	(MHz)	(dBuV/m)	(dB)	(dBuV/m)	Limit (dB)			(cm)		
1	46.486	15.37	-11.43	40.0	-24.63	Peak	360.00	100	Horizontal	Pass
2	108.308	13.66	-13.43	43.5	-29.84	Peak	360.00	100	Horizontal	Pass
3	617.431	22.53	-5.01	46.0	-23.47	Peak	360.00	100	Horizontal	Pass

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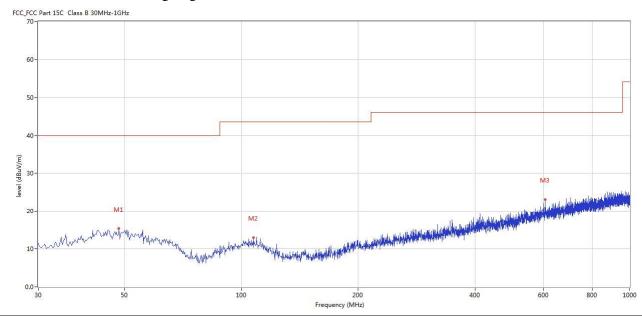


# Radiated Emission In Vertical (30MHz----1000MHz)

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	48.425	15.43	-11.22	40.0	-24.57	Peak	41.00	100	Vertical	Pass
2	107.581	13.00	-13.40	43.5	-30.50	Peak	13.00	100	Vertical	Pass
3	605.794	23.09	-4.97	46.0	-22.91	Peak	13.00	100	Vertical	Pass

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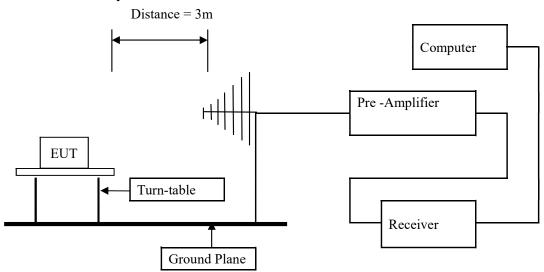


# 7. Band Edge

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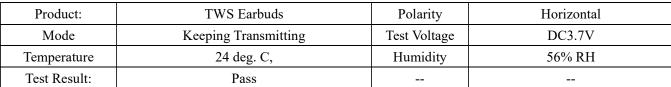
In the event of the improper use of the report. The SHENZHEN TIMEWAY TESTING LABORATORIES. reserves the rights to withdraw it and to adopt any other remedies which may be appropriate.

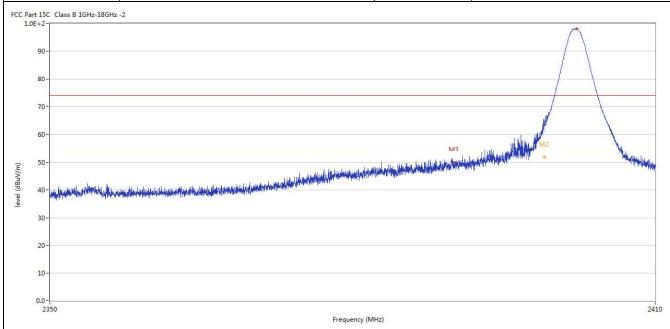
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# 7.6 Test Result





No.	Frequency	Results	Factor	Limit	Over Limit	Detector	Table (o)	Height	ANT	Verdict
	(MHz)	(dBuV/m)	(dB)	(dBuV/m)	(dB)			(cm)		
2	2399.980	62.70	-3.57	74.0	-11.30	Peak	138.00	100	Horizontal	Pass
2**	2399.980	51.79	-3.57	54.0	-2.21	AV	138.00	100	Horizontal	Pass
3	2389.915	49.95	-3.53	74.0	-24.05	Peak	126.00	100	Horizontal	Pass

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3

2390.065

48.21

-3.53

74.0



D.	dr.at.		TW	C Farley da		Datas	ton		Vartical	
	roduct:			S Earbuds	•	Detec			Vertical	
	Mode			g Transmitt	ıng	Test Vo			DC3.7V	
	perature		24	4 deg. C,		Humio	lity		56% RH	
Tes	t Result:			Pass						
90 - 80 - 70 - 60 - 50 - 40 - 30 -	hat was a final state of the	iproduce simple of the ballet		nisolal nightical Parish deleta		his for the short of the short of			M1 2 2	Andrew Market
0.0-	50				Frequency (MH	iz)				2410
No.	Frequency	Results	Factor	Limit	Over Limit	Detector	Table (o)	Height	ANT	Verdi
	(MHz)	(dBuV/m)	(dB)	(dBuV/m)	(dB)			(cm)		
2	2399.935	60.81	-3.57	74.0	-13.19	Peak	187.00	100	Vertical	Pass
2**	2399.935	51.09	-3.57	54.0	-2.91	AV	187.00	100	Vertical	Pass
						<u> </u>				+

-25.79

Peak

211.00

100

Vertical

Pass

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2\*\*

2483.327

51.11

-3.57

54.0



	Product:			S Earbuds		Polarit	-		Horizontal	
	Mode			g Transmitti	ing	Test Volt	tage		DC3.7V	
Ten	nperature		24	deg. C,		Humid	ity		56% RH	
Tes	st Result:			Pass						
Part 15 1.0E+2	C Class B 1GHz-18GHz	-2								
90										
70	-									
60		La	Market Control of the		M					
60 50 40	-	14414 14 14 14 14 14 14 14 14 14 14 14 1			M2	adding to any to the original to	diff to be be the state of the second dispersion	radion had all brook de	and has been superpooled the of the superpool	wheeld probably of
50	- National Action of the Control of	inidition				ash what from it the magnitude	d#Hzh-following.dbgo.	radamentul attacepad	ساها جالاس بدرينا والاراهي	white the production of
50	August, de la la decida decida de la constante	itali di kilika di karak kababa				Rahbanikasi dagan ipidi amaganika	difficulty discountry, discountry,	radioodus albanad	ndeladious and all distant	white the production of
50 40 30	Antonial All Ship Ship Ship Ship Ship Ship Ship Ship	italia di di dana di d				Rahbunika di baguni pilika maganika	elf-lk-th-poll-mainep-delegen	radionalistication	مناط بيان مناسب المناسبة المنا	rktholls prilingto)
50 40 30 20 10	Natural All Ship Ship Ship Ship Ship Ship Ship Ship	AND			2483.5		erde er folker er folker	had the location of the locati	andelsandensensende git of strong	
50 40 30 20 10	varanishi dhish ki dan dan isan				2483.5 Frequency (MH			radigion de alla langua		2500
50 40 30 20 10 0.0 2	470 Frequency	Results	Factor	Limit	2483.5		Table (o)	Height	ANT	2500
50 40 30 20 10	August All Andrews		Factor (dB)	Limit (dBuV/m)	2483.5 Frequency (MH	z)				

-2.89

ΑV

118.00

100

Horizontal

Pass

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P	Product:		TW	S Earbuds		Detect	or	•	Vertical	
	Mode		Keeping	g Transmitti	ng	Test Volt	tage	I	DC3.7V	
Ter	mperature		24	l deg. C,		Humid	ity	5	66% RH	
Tes	st Result:			Pass						
CC Part 15 1.0E+2	5C Class B 1GHz-18GHz	-2								1
90	)-									
80	0-		/							
70	0-									
60	)-									
		طن					W 222			
		al photological property and a second			And the last of th	und de l'affrade de la desart				
		al <sub>ar</sub> der shape to the property to the bear the			A STATE OF THE PARTY OF THE PAR	antidad official stage of the fire of			al de la constant de	aldikandi pake dada
level (dBuV/m) 40		al <sub>ar</sub> healaghagha <sub>ar th</sub> aigeaghair a'			A STATE OF THE STA	untifak spindukan kilikula, d		hair the said the said		albithagi pale diba
50   40   40   30	o- - phologic phologic phologic phologic 	d <sub>es</sub> herdische player gesteller be			The state of the s	inkifad sygnada a a killi disa d	ni bergaha da katalah da		al the second of	aldinary network
50   40   30   20   10   10		ol <sub>a</sub> darahada pal <sub>ar ker</sub> apada kereba			The state of the s	oktob zgodoba k biotopi		handi firiffictual idea firi	al de la company	ulthrapische der
50   40   30   20   10   10	o- - phologic phologic phologic phologic 	akapharingka palagan da kabunda			2483.5 Frequency (MH:					2500
50   40   30   20   10   10		Results	Factor	Limit		Detector	Table (o)	Height	ANT	2500 Verdict
(E//\mu/\subseteq 50	2	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Frequency (MH:	T 1	Table (o)	Height (cm)	ANT	

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 1.11dBi Max. It fulfills the requirement of this section. Test Result: Pass

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<b>9.0</b> 20dB Bandwidt		ement									
GFSK Modulation	1										
Product:			VS Earbu			T	est Mode:		Keep tran	smitting	
Mode		Keepin	g Transm	itting		Te	est Voltage		DC3	.7V	
Temperature		2	4 deg. C,			I	Humidity		56%	RH	
Test Result:			Pass				Detector		PI	Κ	
20dB Bandwidth		7	81.56kHz	7						-	
Ref Lvl		dB		ndB] .00 dB 525 kHz	VE	BW BW VT	30 k 100 k 8.5 m	Hz	F Att	20 dB dBm	ı
10							<b>v</b> <sub>1</sub>	[T1]	-1 2.40200	.09 dBm	A
-10					V,		ndH BW <b>∇</b> T	78 [ <u>T1]</u>	1.56312 -20	.00 dB 625 kHz	ı
-20			TI	$\mathcal{N}_{\mathbf{q}}$		7	$igvee_{ ext{T2}}oldsymbol{ abla}_{ ext{T2}}$	[T1]	2.40161	824 GHz	L
1MAX							~~\ \		2.40239	980 GHz	1MA
-40		~~						7			
									, <u>,</u>		
-50								V	hon	haran	
-60											
-70											
-80											
-90 Center 2.	402 GHz			300	kHz/				Spa	ın 3 MHz	
Date: 16.	.APR.202	21 17	:36:50								

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Product:		TW	S Earbuds	s		T	est Mode:		Keep tra	nsmitting	
Mode		Keepin	g Transmi	tting		Te	est Voltage		DC	3.7V	
Temperature		2	4 deg. C,			]	Humidity		56%	% RH	
Test Result:			Pass				Detector		1	PK	
0dB Bandwidth		78	81.56kHz								
Ŕ		Marker	1 [T1 r	ndB]	RI	BW	30 kF	lz Rl	F Att	20 dB	
Ref Lvl		ndB		.00 dB		BW	100 kF				
10 dBm		BW 781	.563126	625 kHz	SI	ИT	8.5 ms	s Uı	nit	dBm	l m
							<b>v</b> <sub>1</sub>		-1	.51 dBm	A
0				-			- AT		2.44100	301 GHz	
				\ \w\	1		ndB BW		20 1.56312	.00 dB 625 kHz	
-10					$\bigvee$		$\nabla_{\mathrm{T}}$	[T1]	-21	.30 dBm	l
			TA .			V1				824 GHz	
-20								[T1]	[T1] -21.		
1MAX									2.44139	980 GHZ	1M7
-30		<u></u>	1					<u>\</u>			
-50	$\mathcal{M}$								$\sim$		
a all		V						V	Jun	Mund	
-60											
-70											
-80											
-90 Center 2	-90 Center 2.441 GHz			300 kHz/			/		Span 3 MHz		,
	6.APR.2										

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Product:		TW	S Earbuds	S		T	est Mode:		Keep tra	ansmitting	
Mode		Keepin	g Transmi	tting		Te	est Voltage		DC	3.7V	
Temperature		2	4 deg. C,			]	Humidity		56%	% RH	
Test Result:			Pass				Detector		I	PK	
20dB Bandwidth		78	81.56kHz								
(S)		Marker	1 [T1 n		R	BW	30 kH			20 dB	
Ref Lvl		ndB		00 dB		BW	100 kH			10	
10 dBm	-	BW 781	.563126	25 KHZ	S	WT	8.5 ms	Uı	nit	dBm	l 1
							<b>V</b> 1 [			.30 dBm	Α
0							200		2.47999	699 GHz	
			M				ndB BW			.00 db	
-10				1. 0	$\mathcal{M}$		$ abla_{\mathrm{T1}}$	[T1]	-22	.01 dBm	
							4		2.47961824 (		
-20	71					V	$\nabla_{\mathrm{T2}}$	[T1] -22.50 de			
1MAX							The state of the s		2.4803998		1M2
-30			<i></i>				<u> </u>				
		$\sim$	<i>/</i>				· \	L <sub>y</sub>			
-40	$\bigcap$								<b>,</b> -Μ		
-50	, W.S.	<u> </u>						\/	hu	hal .	
-60										Mhy	
-70											
, ,											
-80											
-90 Center 2	.48 GHz	2		300	kHz/				Spa	ın 3 MHz	ı

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Pi/4D-QPSK M	Iodulatio	on												
Product:		TW	S Earbuds	S		T	est Mod	e:		Keep tr	ransmitting			
Mode		Keepin	g Transmi	tting		T	est Volta	ge		DO	C3.7V			
Temperature		2	4 deg. C,			]	Humidity	y		56	% RH			
Test Result:			Pass				Detector				PK			
20dB Bandwidth		1.	214MHz											
Ŕ		Marker	1 [T1 r	ndB]		RBW	30	kHz	RF Att 20 c		z RF Att		20 dB	
Ref Lvl		ndB		00 dB		VBW	100							
10 dBm		BW 1	1.214428	886 MHz		SWT	8.5	ms	Uı	nit	dBm	1		
10							▼ :	1 [T1	.]	_	1.24 dBm	Α		
										2.4019	9699 GHz			
0				^ /			no			2	0.00 dB			
1.0					\		BV			1.2144	2886 MHz 1.18 dBm			
-10			W	\rangle \rangl		$\bigvee$	~~~			2.4013	7776 GHz			
		T	$\sqrt{}$				$\nabla$	12 [1		-2	1.63 dBm			
-20		Ţ						Ì		2.4025	9218 GHz	1MA		
								7						
-30														
								\						
-40		$\wedge \downarrow \downarrow$						1	Λ.					
	$\int V$	/ 00							$V\setminus$	$\mathcal{M}$				
-50	W										www			
-60														
-70														
-80														
-90														
Center 2	.402 GI	Hz		300	kHz.	/				Sp	an 3 MHz			
Date: 16	.APR.2	021 18	:16:43											

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Pi/4D-QPSK M	Iodulatio	n										
Product: TWS Earbuds					T	Test Mode: Test Voltage		Keep transmitting				
Mode	Keeping Transmitting				Te			DC3.7V				
Temperature		24 deg. C,				Humidity		7	56% RH			
Test Result:		Pass				Detector			PK			
20dB Bandwidth		1.214MHz										
		Marker	1 [T1 r	ndB]		RBW	30	kHz :	RF Att	20 dB		
Ref Lvl		ndB		.00 dB		VBW	100					
10 dBm		BW 1	L.214428	886 MHz		SWT	8.5	ms	Unit	dBm		
10							<b>v</b> <sub>1</sub>	[T1]	_	1.63 dBm	A	
				1					2.4409	9699 GHz		
0				^ /			nd		2	0.00 dB		
				$  \   \   \  $	\		BW V		1.2144	2886 MHz		
-10			MM		<del>~</del>		My		2.4403	7776 GHz		
							\\frac{1}{2}	[2] [T1]	-2	1.98 dBm		
-20		7						<b>X</b>	2.4415	9218 GHz	4	
-30								4			1MA	
-40	\\ <b>\</b>	\\\\\						A.V	\ <sub>a</sub> _ \			
-50	,~\ <sup>1</sup>								\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	May May		
-60												
-70												
-80												
-90 Center 2	.441 GI	Hz		300	kHz	/			ga	an 3 MHz		
Date: 16	5.APR.2	021 18	:15:22									

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Pi/4D-QPSK M	Iodulatio	n									
Product:		TW	S Earbuds	S		Test Mode:	:	Keep transmitting			
Mode Kee			g Transmi	tting		Test Voltage	e	DC3.7V			
Temperature	2	24 deg. C,					56% RH PK				
Test Result:		Pass				Detector					
20dB Bandwidth		1	1.22MHz								
<b>F</b>		Marker	1 [T1 n	ndB]	RBV	√ 30 k	Hz R	F Att	20 dB		
Ref Lvl		ndB		00 dB	VBV		Hz				
10 dBm		BW 1	.220440	088 MHz	SWI	8.5 m	ıs U:	nit	dBm		
						<b>V</b> 1	[T1]	-2 2.47999	.32 dBm	Α	
0				^ /		ndi BW		1.22044	.00 dB 088 MHz		
-10			\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	~ <del> </del>			[ [T1]	-22 2.47937 -22	.64 dBm 174 GHz .44 dBm		
-20			~			1	4	2.48059	218 GHz	1MA	
-30											
-40	. ^~/	$\sim$					W	~^			
-50	/*\ <del>\</del>							LM.	My My Market		
-60											
-70											
-80											
-90 Center 2	.48 GH:	Z		300	kHz/			Spa	an 3 MHz		
Date: 16	5.APR.2	021 18	:04:07								

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8QPSK Modula	ation											
Product: TWS Earbuds						Т	est Mode:		Keep transmitting			
Mode Keeping Transmitt Temperature 24 deg. C,			tting		To	est Voltage	:	DC3.7V				
			24 deg. C,				Humidity		56% RH			
Test Result:		Pass 1.214MHz				Detector			PK 			
20dB Bandwidth												
(Î)		Marker			Ι	RBW	30 k	Hz R	F Att	20 dB		
Ref Lvl		ndB		00 dB		/BW		Hz		10		
10 dBm		BW 1	.214428	386 MHZ	``	SWT	8.5 m	ıs U	nit	dBm		
				1			<b>v</b> <sub>1</sub>	[T1]	-1 2.40199	.22 dBm	Α	
0							ndE BW	(TT1)	1.21442	.00 dB		
-10		ጥነ		<i>~ \</i>	\_ <u>-</u> \_	M		T1)	2.40137	.15 dBm 776 GHz .66 dBm		
-20 1MAX							· · · · · · · · · · · · · · · · · · ·	7	2.40259	218 GHz	1MA	
-30												
-40	$\sim$	W						M				
-50 hh	W								\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	~~~~~~		
-60												
-70												
-80												
-90 Center 2.	.402 GI	Ηz		300	kHz/	/			Spa	an 3 MHz		
Date: 16	.APR.2	021 18	:23:57									

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Product: TWS Earbuds			Т	Test Mode:	Keep transmitting				
Mode	g Transmitting			est Voltage	DC3.7V				
Temperature	24		Humidity	56% RH					
Test Result:		Pass			Detector		I	PK	
20dB Bandwidth	1.214MHz								
	Marker	1 [T1 n		RBW	30 kHz	z RF Att 20 dB		20 dB	}
Ref Lvl	ndB		00 dB	VBW	100 kHz			10	
10 dBm	BW 1	.214428	86 MHZ	SWT	8.5 ms	Un	ıt	dBm	1
			-		<b>V</b> 1 ['	[1]		.57 dBm 699 GHz	Α
0			^ /		ndB		20	.00 dB	
			/\ / \		BW V T	[m1]		886 MHz	
-10		$\sim$	<i></i>		Mys		-21 2.44037	.48 GHz	
	T 1	~			\\	[T1]		.83 dBm	
-20	_/				Y	2	2.44159	218 GHz	1M2
-30									
-40	M					M			
-50	<del>√</del>						\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	M	
-60									
-70									
-80									
-90 Center 2.4	41 GHz		300 k	Hz/			Sna	n 3 MHz	ļ

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8QPSK Modulation											
Product: TWS Earb				Earbuds			Test Mode:		Keep transmitting		
Mode	Keepin	ing Transmitting				Test Voltage		DC3.7V			
Temperature		24 deg. C,				Humidity			56% RH		
Test Result:		Pass					Detector		PK		
20dB Bandwidth	1.232MHz										
Ŕ.	Marker 1 [T1 ndB]					RBW	30 kI	Hz RI	F Att	20 dB	
Ref Lvl	1	ndB	20.	00 dB	7	/BW	100 kF	Hz			
10 dBm	Ι	BW 1	.232464	193 MHz	S	SWT	8.5 ms	s Uı	nit	dBm	
10				-				[T1]	-2 2.47999	.26 dBm	A
-10							ndB BW ▼ <sub>T1</sub>	[T1]	20 1.23246 -22	.00 dB 493 MHz .44 dBm	
-20		an s		\_ \_		$\bigvee$	my j	[T1]	2.47937	174 GHz	
1MAX							No.	\	2.48060	421 GHz	1MA
-40											
	$\mathcal{M}$	W							$\wedge$		
-50	NW.								· Cu	my war	
-60											
-70											
-80											
-90 Center 2	.48 GHz			300	kHz/	,			Spa	n 3 MHz	
Date: 16.APR.2021 18:55:08											

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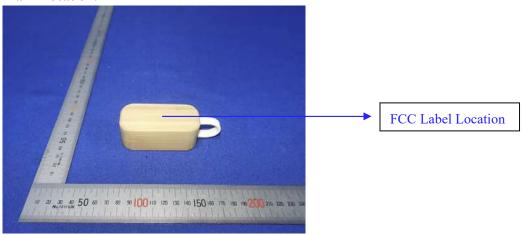


## 10.0 FCC ID Label

### FCC ID: 2APYY-AF0063

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:**



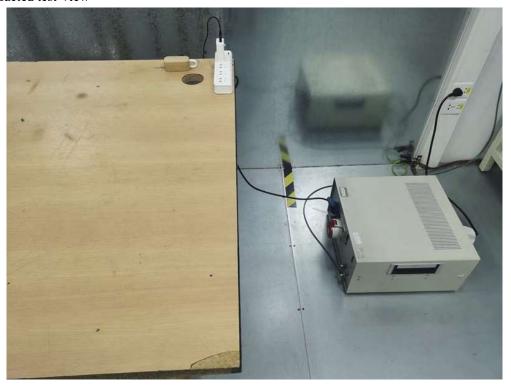
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#### 11.0 Photo of testing

#### 11.1 Conducted test View--



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## Radiated emission test view



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

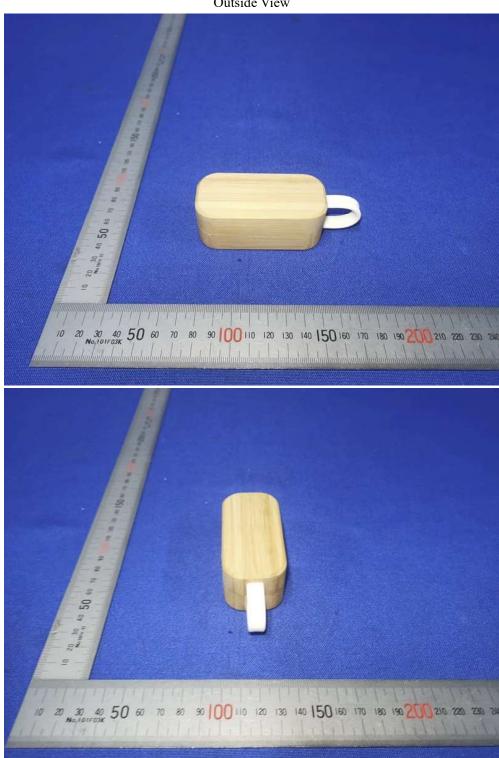
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#### 11.2 Photographs-EUT

Outside View



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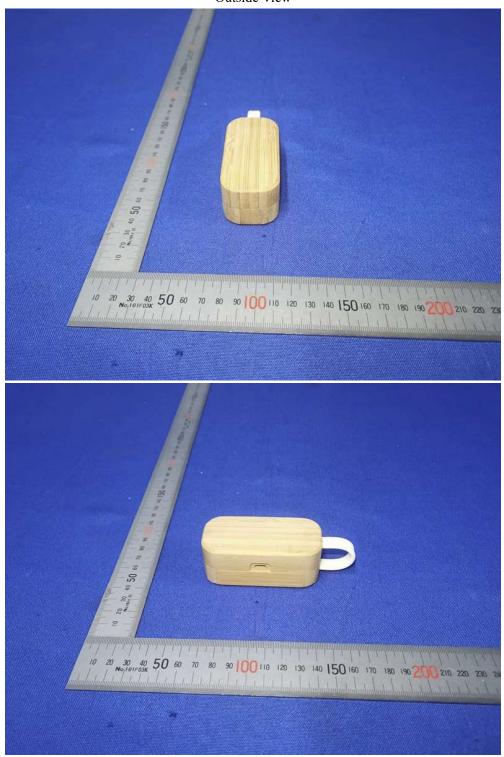
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Photographs - EUT

Outside View



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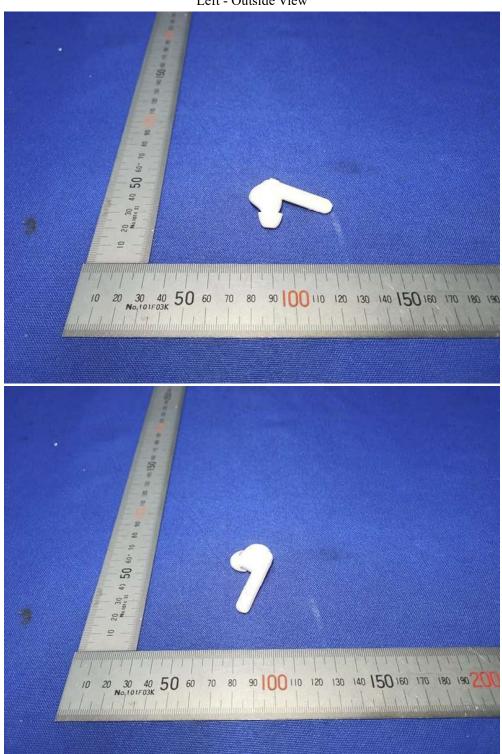
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Photographs - EUT

Left - Outside View



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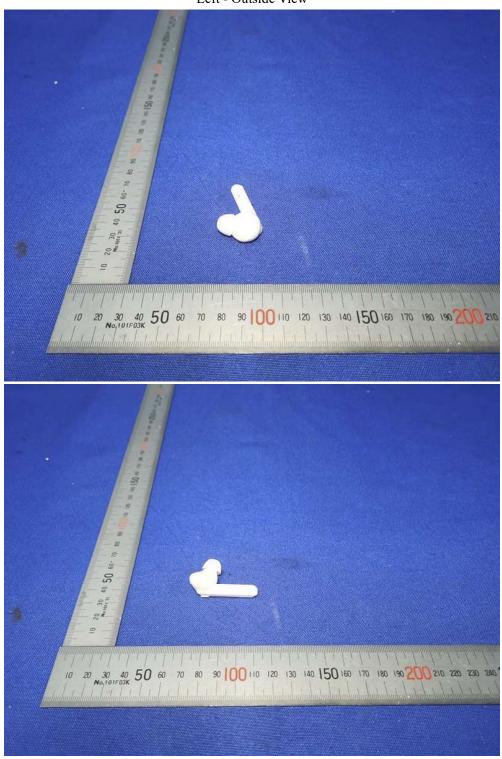
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## Photographs - EUT

Left - Outside View



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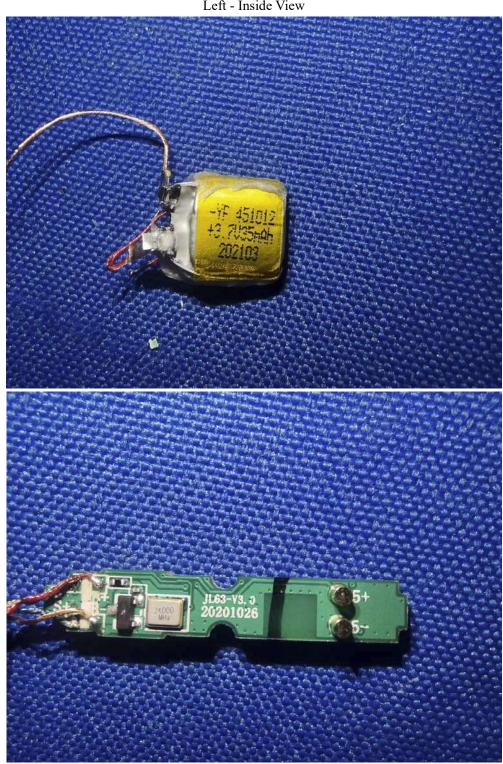
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Photographs - EUT

Left - Inside View



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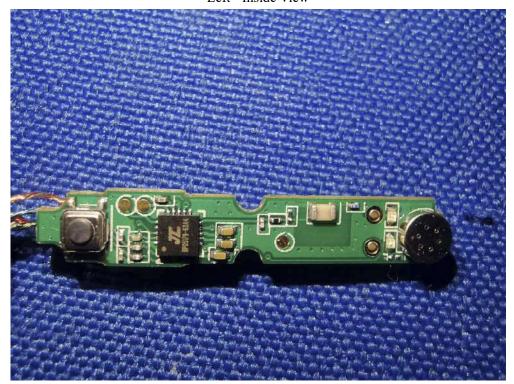
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Photographs-EUT

Left - Inside View

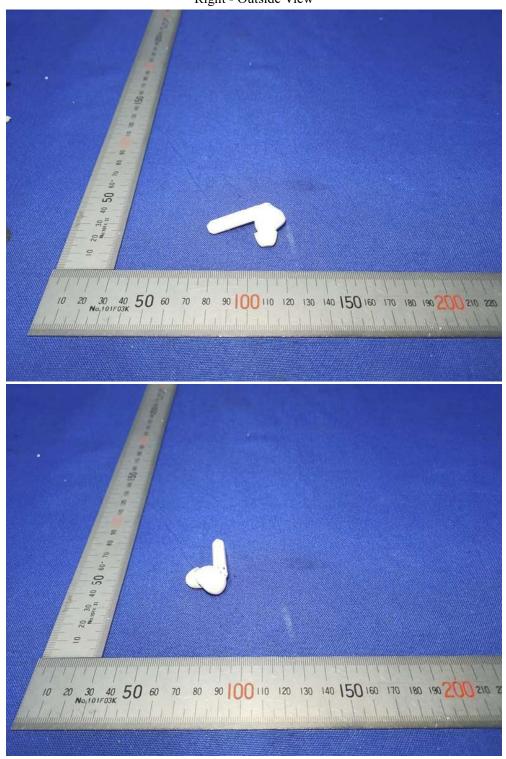


Date: 2021-04-19



Photographs – EUT

Right - Outside View



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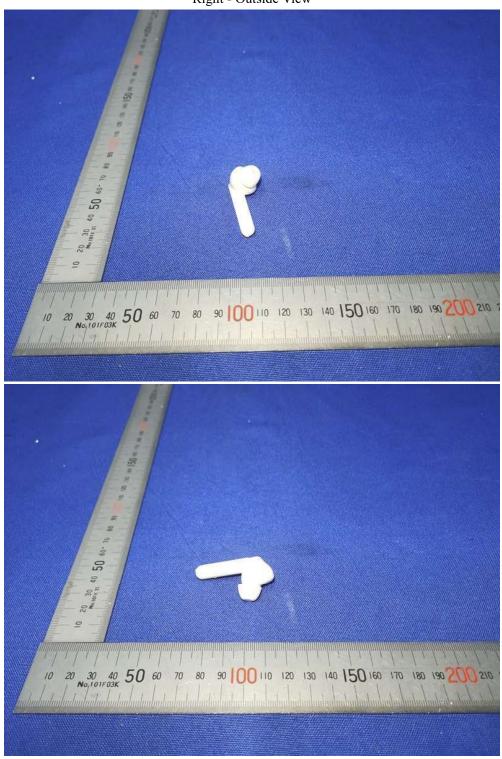
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# Photographs – EUT

Right - Outside View



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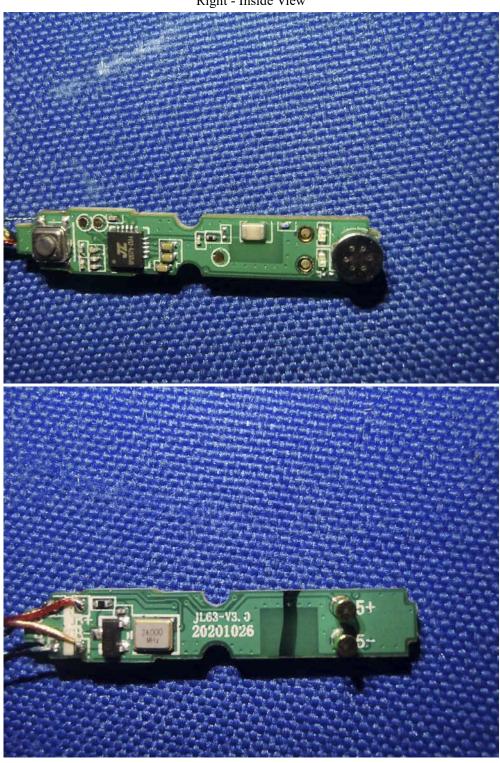
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Photographs - EUT

Right - Inside View



-- End of the report--

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