



Report No.: TW2104166E File reference No.: 2021-04-19

Applicant: LEADER PREMIUMS LTD.

Product: TWS Earbuds

Model No.: AF0060

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

Approved By

Jack Chung

Jack Chung

Manager

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

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Report No.: TW2104166E Page 2 of 49

Date: 2021-04-19



# **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

Report No.: TW2104166E

Date: 2021-04-19



# Test Report Conclusion

## Content

1.0	General Details	4
1.1	Test Lab Details	4
1.2	Applicant Details	4
1.3	Description of EUT	4
1.4	Submitted Sample	4
1.5	Test Duration.	5
1.6	Test Uncertainty	5
1.7	Test By	5
2.0	List of Measurement Equipment	6
3.0	Technical Details	7
3.1	Summary of Test Results	7
3.2	Test Standards	7
4.0	EUT Modification.	7
5.0	Power Line Conducted Emission Test.	8
5.1	Schematics of the Test	8
5.2	Test Method and Test Procedure	8
5.3	Configuration of the EUT	8
5.4	EUT Operating Condition.	9
5.5	Conducted Emission Limit.	9
5.6	Test Result	9
6.0	Radiated Emission test	12
6.1	Test Method and Test Procedure	12
6.2	Configuration of the EUT	12
6.3	EUT Operation Condition	12
6.4	Radiated Emission Limit	13
6.5	Test Result	14
7.0	Band Edge	23
7.1	Test Method and Test Procedure.	23
7.2	Radiated Test Setup.	23
7.3	Configuration of the EUT	23
7.4	EUT Operating Condition.	23
7.5	Band Edge Limit.	23
7.6	Band Edge Test Result.	24
8.0	Antenna Requirement.	28
9.0	20dB bandwidth measurement.	29
10.0	FCC ID Label	38
11.0	Photo of Test Setup and EUT View.	39

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Report No.: TW2104166E Page 4 of 49

Date: 2021-04-19



#### 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: AF0060
Additional Model Name N/A

Hardware Version: Bluetooth- AF0060 V1.0 Software Version: leader.1910.01 V5.0

Serial No.: AF0060

Rating: Built-in DC 3.7V, 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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Report No.: TW2104166E Page 5 of 49

Date: 2021-04-19



#### 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 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

Page 6 of 49

Report No.: TW2104166E

Date: 2021-04-19



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	7honadi	ZT26-NJ-NJ-8		2020-06-23	2021-06-22
KF Cable	Zhengdi	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	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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Report No.: TW2104166E Page 7 of 49

Date: 2021-04-19



#### 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

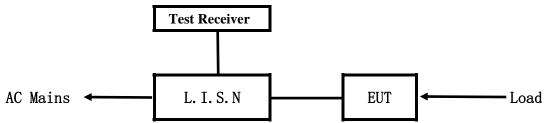
Report No.: TW2104166E

Date: 2021-04-19



## 5. Power Line Conducted Emission Test

## 5.1 Schematics of the test

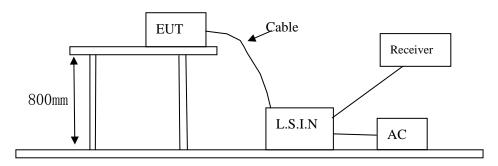


**EUT: Equipment Under Test** 

## 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 Earbuds	LEADER PREMIUMS LTD.	AF0060	2APYY-AF0060

Report No.: TW2104166E Page 9 of 49

Date: 2021-04-19



#### 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	Class B 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 ~ 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



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

**EUT Operating Environment** 

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

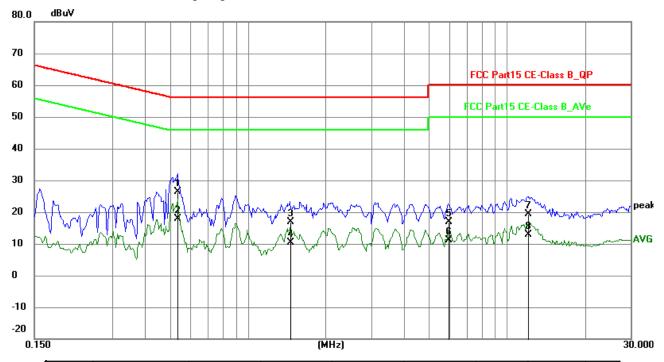
**EUT set Condition: Charging and Communication by Bluetooth** 

Model: AF0060

**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	0.5361	16.49	9.77	26.26	56.00	-29.74	QP	Р
2	0.5361	8.05	9.77	17.82	46.00	-28.18	AVG	Р
3	1.4604	7.05	9.79	16.84	56.00	-39.16	QP	Р
4	1.4604	0.70	9.79	10.49	46.00	-35.51	AVG	Р
5	5.9367	6.88	9.97	16.85	60.00	-43.15	QP	Р
6	5.9367	1.08	9.97	11.05	50.00	-38.95	AVG	Р
7	12.0401	9.12	10.25	19.37	60.00	-40.63	QP	Р
8	12.0401	2.64	10.25	12.89	50.00	-37.11	AVG	Р

Report No.: TW2104166E

Date: 2021-04-19



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

**EUT Operating Environment** 

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

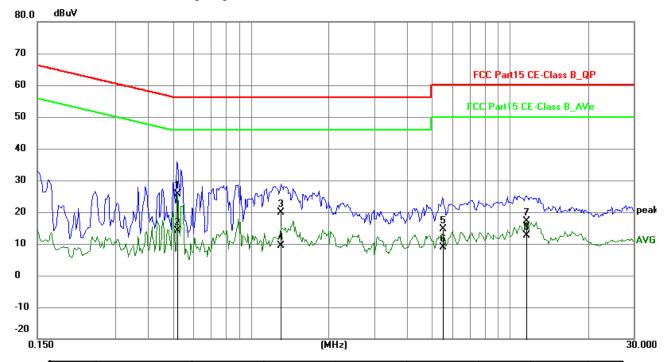
**EUT set Condition: Charging and Communication by Bluetooth** 

Model: AF0060

**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	0.5205	15.88	9.77	25.65	56.00	-30.35	QP	Р
2	0.5205	4.38	9.77	14.15	46.00	-31.85	AVG	Р
3	1.3083	10.00	9.79	19.79	56.00	-36.21	QP	Р
4	1.3083	-0.44	9.79	9.35	46.00	-36.65	AVG	Р
5	5.4843	4.77	9.95	14.72	60.00	-45.28	QP	Р
6	5.4843	-1.10	9.95	8.85	50.00	-41.15	AVG	Р
7	11.5566	6.96	10.23	17.19	60.00	-42.81	QP	Р
8	11.5566	2.44	10.23	12.67	50.00	-37.33	AVG	Р

Report No.: TW2104166E Page 12 of 49

Date: 2021-04-19

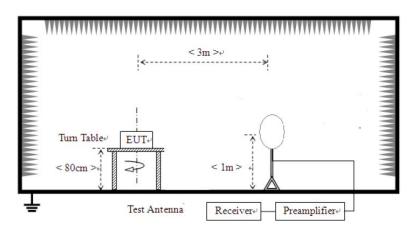


#### 6 Radiated Emission Test

- 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



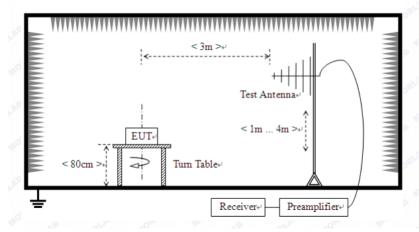
Page 13 of 49

Report No.: TW2104166E

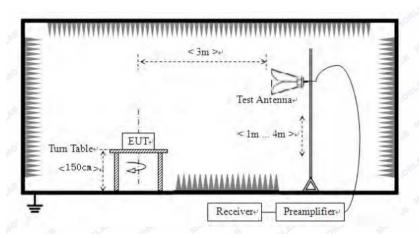
Date: 2021-04-19



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.

Report No.: TW2104166E Page 14 of 49

Date: 2021-04-19



#### 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	dBuV/m		uV/m	dBuV/m	
2400-2483.5	50	94 (Average)	114 (Peak)	500	54 (Average)	74 (Peak)

Note: 1. RF Field Strength (dBuV) = 20 log RF Voltage (uV)

- 2.Distance refers to the distance in meters between the measuring instrument antenna and the closed point of any part of the device or system.
- 3. The emission limit in this paragraph is based on measurement instrumentation employing an average detector.

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

Frequency Range (MHz)	Distance (m)	Field strength (dB $\mu$ 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.

Report No.: TW2104166E Page 15 of 49

Date: 2021-04-19

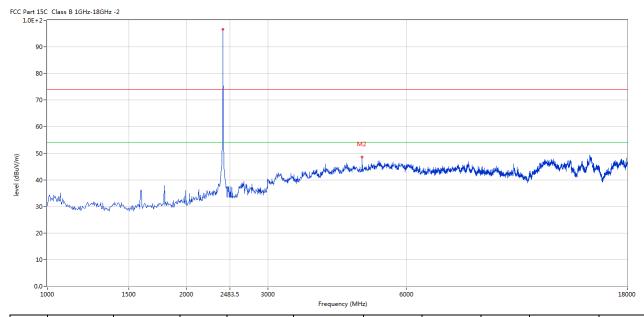


## 6.5 Test result

# A Fundamental & Harmonics Radiated Emission Data

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

#### Horizontal



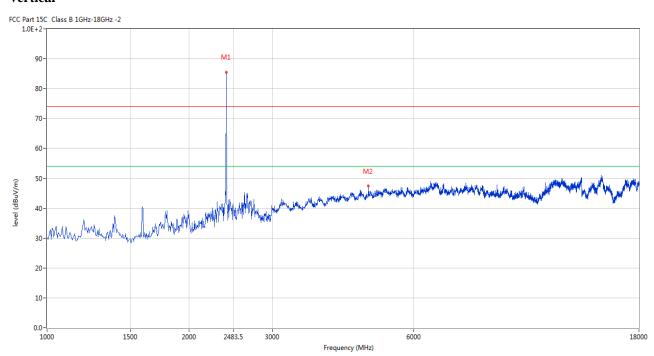
No.	Frequency	Results	Factor	Limit	Over Limit	Detector	Table (o)	Height	ANT	Verdict
	(MHz)	(dBuV/m)	(dB)	(dBuV/m)	(dB)			(cm)		
1	2402.500	96.58	-3.57	114.0	-17.42	Peak	276.00	100	Horizontal	Pass
1*	2402.500	87.09	-3.57	94.0	-6.91	AV	276.00	100	Horizontal	Pass
2	4803.750	48.57	3.13	74.0	-25.43	Peak	266.00	100	Horizontal	Pass

Report No.: TW2104166E Page 16 of 49

Date: 2021-04-19



#### 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	85.57	-3.57	114.0	-28.43	Peak	19.00	100	Vertical	Pass
2	4803.750	47.40	3.13	74.0	-26.60	Peak	12.00	100	Vertical	Pass

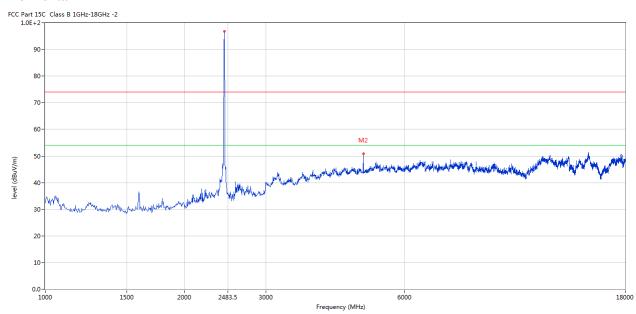
Report No.: TW2104166E Page 17 of 49

Date: 2021-04-19



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

#### **Horizontal**



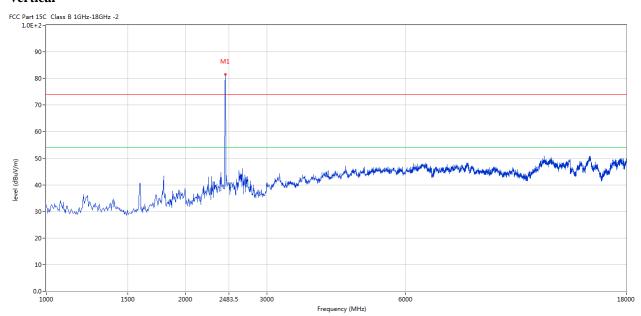
No.	Frequency	Results	Factor	Limit	Over Limit	Detector	Table (o)	Height	ANT	Verdict
	(MHz)	(dBuV/m)	(dB)	(dBuV/m)	(dB)			(cm)		
1	2440.750	96.73	-3.57	114.0	-17.27	Peak	133.00	100	Horizontal	Pass
1*	2440.750	87.51	-3.57	94.0	-6.49	AV	133.00	100	Horizontal	Pass
2	4880.250	50.81	3.20	74.0	-23.19	Peak	144.00	100	Horizontal	Pass

Report No.: TW2104166E Page 18 of 49

Date: 2021-04-19



#### 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	81.51	-3.57	114.0	-32.49	Peak	52.00	100	Vertical	Pass

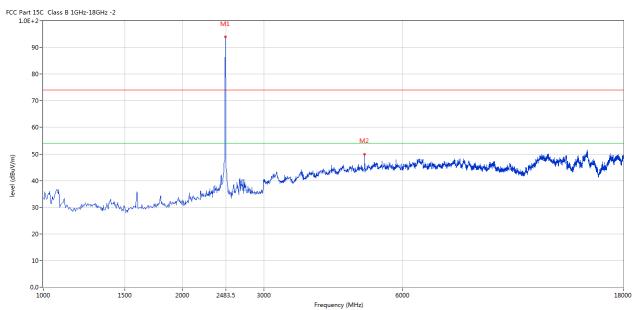
Report No.: TW2104166E Page 19 of 49

Date: 2021-04-19



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

#### Horizontal



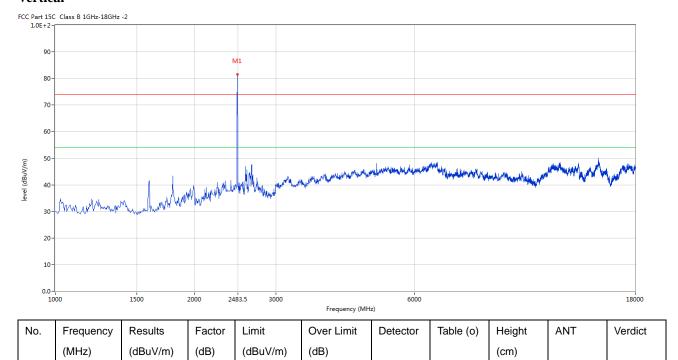
No.	Frequency	Results	Factor	Limit	Over Limit	Detector	Table (o)	Height	ANT	Verdict
	(MHz)	(dBuV/m)	(dB)	(dBuV/m)	(dB)			(cm)		
1	2479.750	93.96	-3.57	114.0	-20.04	Peak	122.00	100	Horizontal	Pass
1*	2479.750	84.25	-3.57	94.0	-9.75	AV	122.00	100	Horizontal	Pass
2	4961.000	50.98	3.36	74.0	-23.02	Peak	122.00	100	Horizontal	Pass

Report No.: TW2104166E Page 20 of 49

Date: 2021-04-19



#### Vertical



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

114.0

(3) Margin=Emission-Limits

81.55

2479.750

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

-32.45

- (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.

Peak

126.00

100

Vertical

**Pass** 

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

-3.57

Report No.: TW2104166E Page 21 of 49

Date: 2021-04-19

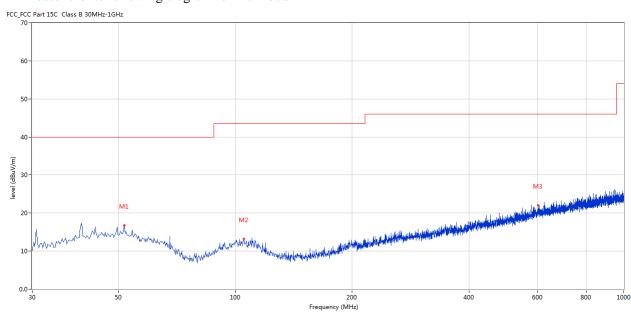


# B. General Radiated Emission Data Radiated Emission In Horizontal (30MHz----1000MHz)

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	51.820	16.69	-11.42	40.0	-23.31	Peak	20.00	100	Horizontal	Pass
2	105.156	13.16	-13.23	43.5	-30.34	Peak	264.00	100	Horizontal	Pass
3	602.642	21.97	-5.08	46.0	-24.03	Peak	299.00	100	Horizontal	Pass

Report No.: TW2104166E Page 22 of 49

Date: 2021-04-19

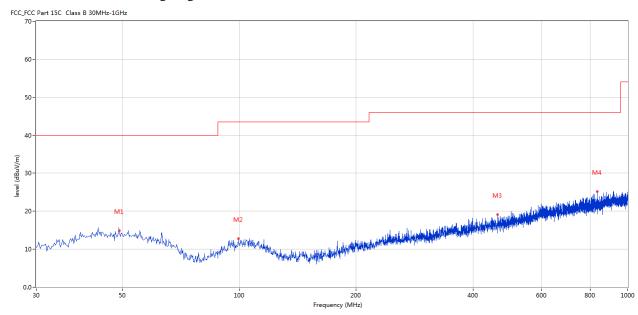


## Radiated Emission In Vertical (30MHz----1000MHz)

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	49.153	14.88	-11.24	40.0	-25.12	Peak	320.00	100	Vertical	Pass
2	99.338	12.73	-13.64	43.5	-30.77	Peak	357.00	100	Vertical	Pass
3	462.512	19.14	-7.84	46.0	-26.86	Peak	337.00	100	Vertical	Pass
4	834.414	25.15	-2.70	46.0	-20.85	Peak	359.00	100	Vertical	Pass

Report No.: TW2104166E Page 23 of 49

Date: 2021-04-19

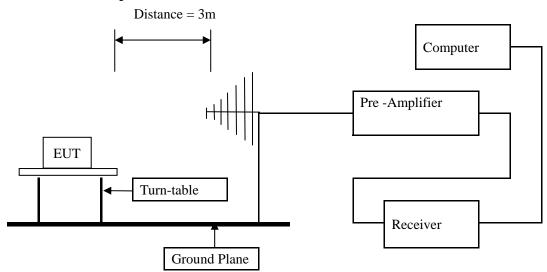


## 7. Band Edge

#### 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.

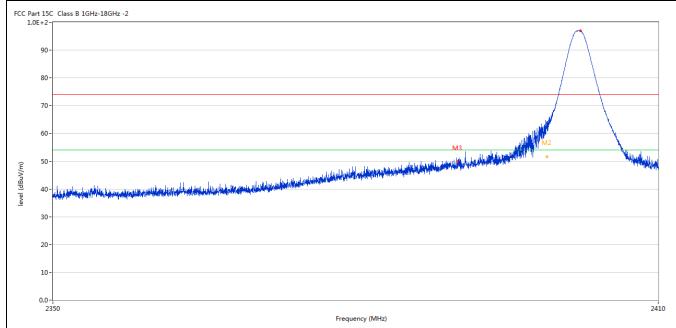
Report No.: TW2104166E Page 24 of 49

Date: 2021-04-19



#### 7.6 Test Result

Product:	TWS Earbuds	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	2399.620	64.06	-3.57	74.0	-9.94	Peak	275.00	100	Horizontal	Pass
2**	2399.620	50.55	-3.57	54.0	-3.45	AV	275.00	100	Horizontal	Pass
3	2389.960	50.00	-3.53	74.0	-24.00	Peak	281.00	100	Horizontal	Pass

Report No.: TW2104166E Page 25 of 49



Pr	oduct:		TW	S Earbuds		Detect	tor		Vertical	
N	Mode		Keeping	g Transmitti	ng	Test Vol	tage		DC3.7V	
Tem	perature		24	4 deg. C,		Humid	lity		56% RH	
Test	t Result:			Pass						
Part 15C 1.0E+2-	Class B 1GHz-18GHz	-2								
90-									M1	
80-										
70-										
								/	\	
60-										
50-						1 1 1 1 1 1 1 1 1 1	N13	Market State of the State of th		
	Libraria da a da cara da da cara da da cara da	photographic photographic property for	partition of the second	the three tempting of the state of the	and the first the state of the	high the state of	M3	LAND AND STATE OF THE PARTY OF		hadada ja dada
50 - 40 -	144 to the state of the state o	ndere durche modern de describ de	ngshial political process	High Residence Language Residence of	and of the first of the first of the first	high had and had and	111111111111111111111111111111111111111	Leffel like the second		hadalah jada
50 - 40 - 30 -	khipalahay dan dan pelalah dirik dirik	hida ad hard hardson disclosis de	haring hard hard	ddedanian dagad en de	and all the property of the latest of the la	historia de la compania del compania del compania de la compania del compania del compania de la compania del compania d		· ·		riadi enjrigada
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50- 40- 30- 20-		de de la constitución de la cons		his hand completely be a similar to the second completely and the seco	Frequency (MH	z)		•		2410
50- 40- 30- 20- 10- 0.0- 23:	50 Frequency	Results	Factor	Limit	Frequency (MH	z) Detector	Table (o)	Height	ANT	and in terms
50- 40- 30- 20- 10- 0.0- 23:		Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	1	1	Table (o)	Height (cm)		2410
50	Frequency				Over Limit	1	Table (o)	_		2410
50 40 30 20 10	Frequency (MHz)	(dBuV/m)	(dB)	(dBuV/m)	Over Limit (dB)	Detector		(cm)	ANT	2410 Verdic

Page 26 of 49 Report No.: TW2104166E



]	Product:		TW	S Earbuds		Polari	ty	•	Horizontal	
	Mode		Keeping	g Transmitti	ng	Test Vol	tage		DC3.7V	
Te	mperature		24	4 deg. C,		Humid	ity		56% RH	
Те	est Result:			Pass						
CC Part 1 1.0E+	15C Class B 1GHz-18GHz	:-2								
g	90-		,							
8	30-		$-\!$							
7	70-		=							
			MARKET .							
6	50-	ic to book a substitution			M2					
	50-	And the state of t				ni de dina dina dina dina dina dina dina dina	وروار المراجع	radio nda carrella d	W 4	
	50-	ALINA BALLANDE				ol discholidação, chip	hard bard you did not a solve blood	and the latest special design of the latest s	Kapanibidah pilipan bahkan bahkan bahkan b	A Bloom of the Contract
(m/\mu) level	50-	de line la				alden desirente des estado de la constantida del constantida de la constantida de la constantida del constantida de la constantida del constantida de la constantida del constantida d	and the greated and a single-party	-pality did sonal de lange	Karenitatisiko ubahkuntehiye	d Administration
(m/\ngp) avai	0-	HARAN A Makes Make but a				oldinated dependents	<del>last hid profit de des rès fitza</del>	madifyriaid daedd gagd	Marketining by the ship of the physical people of the ship of the	A Bring Agency
(m/\mu   (dBu/\mu   dBu/\mu   dBu/	50	Harris Ha				alde desperantes de	land their security of the security flowing	المهورة المتاريخ والمتاريخ والمتارغ والمتاريخ والمتاريخ والمتارغ والمتاريخ والمتاريخ والمتاريخ والمتاريخ والمتاريخ والمتاريخ و	d menindisephorehadised	Alphan, Anjuna
(m/\08p)   44	00-	Halling to the state of the sta				old de about des propositios de	land took greated and an article for gr	madilinisish dipalisish dipalisish	demonstratively and adjusted to the solid and the solid an	A Bloom, Angelowan
(w/\ngp)   44	50-	Harry Control of the					land took production of a social photograph	madificials to an industrial spends	de maria de després de la plante	2500
(m/\08p)   44	50	Results	Factor	Limit	2483.5		Table (o)	Height	ANT	
(m//ngp) 44 3 2 1	50		Factor (dB)	Limit (dBuV/m)	2483.5 Frequency (MH	z)				2500
(m//mgg) 44	50	Results			2483.5 Frequency (MH	z)		Height		2500

Report No.: TW2104166E Page 27 of 49



P	Product:		TW	S Earbuds		Detect	tor	Vertical		
	Mode		Keeping	g Transmittii	ng	Test Vol	tage	]	DC3.7V	
Ter	mperature		24	4 deg. C,		Humid	lity	56% RH		
Tes	st Result:			Pass						
FCC Part 15 1.0E+2	5C Class B 1GHz-18GHz	-2								
90	)-									
80	)-		,							
70	)-									
			/							
60	)-									
								1		
	ر بران مع بر در روز در المالة المالة على المالة	Marine Marine Marine Marine Marine Marine				depropriate placed by the design of the second	udiylariyolidaddi.Dafadiyla	Marakh productific		id y day hapeliya laya
BuV/m)	s - - <del>Alabida pallida a pudata galapa</del>	· · · · · · · · · · · · · · · · · · ·			and the same	deposition of the land	udhalaniadhariadhalah		herifysik og hjalandisk og sken elektrik	in galant and part and
level (dBuV/m) 40		<b>東京学生の表現である。</b>			an replantation	dependent the Western	ulidamind ulimatu. Dodavalida	Mentalyside	heritysk oppskarej de eightli	ist play have been a
level (dBuV/m) 40 30	- - abablapalikkan maanagabab -	A griphility is the figure of the second			NA CONTRACTOR OF THE PARTY OF T	dependent of the land	udiyanini udhardu.Doddabida	Marahab processing and bear	heritytek gefindetend, den eindeld	strate and sector
(m/ngp)   40   30   20   10   0.00		Ng ng katalan				dispression of the best of the second	uliyaniniyahandaliyahah	Marahad procedures Had	hadigabbayahada englada englada b	ist phylogenetical
(m/ngp)   40   30   20   10   0.00		Marie Marie de la constitución d			2483.5 Frequency (MHz	2)	ulidaribilahadu.Dalabih	Madadoppedagea	herte jak oppisk fregisske en høbet	2500
(m/ngp)   40   30   20   10   0.00		Results	Factor	Limit		2) Detector	Table (o)	Height	ANT	2500 Verdict
(m/npg) 40 30 20 10		Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Frequency (MHz		Table (o)	Height (cm)	ANT	Г

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.

Report No.: TW2104166E Page 28 of 49

Date: 2021-04-19



## 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

Page 29 of 49

Report No.: TW2104166E



FSK Modulation										
Product:	T	WS Earbu	ds		T	est Mode:		Keep tran	smitting	
Mode	Keeping Transmitting					est Voltage		DC3	.7V	
Temperature	24 deg. C,					Humidity		56%	RH	
Test Result:		Pass						PF	ζ	
20dB Bandwidth	<u> </u>	781.56kHz	Z							
Ref Lvl	Marker ndB	1 [T1 r	ndB] .00 dB		BW BW	30 k		F Att	20 dB	
10 dBm	BW 781	1.563126	525 kHz	SV	ИT	8.5 m	s U:	nit	dBr	m
10						lacksquare1	[T1]	-1	.08 dBr	1
			1					2.40200	301 GHz	2
0			Λ <sub>0</sub> /			ndI	1	20	.00 dB	
			1,0	$\bigvee$		BW $oldsymbol{ abla}_{ ext{T1}}$	78 . [T1]	1.56312 -20	625 kHz 1.91 dBr	3
-10				<del></del>	/	1.		2.40161		<u> </u>
		TA	J*		V	$\setminus_{\mathrm{T2}}   lackbr{ abla}_{\mathrm{T2}}$	[T1]		.00 dBr	
-20 1MAX		~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~				W. C.		2.40239	980 GHz	11
-30		<i>/</i>								
-40	<i></i>						Ly.			
\										
-50	V						V	m	mulan	
-60										
-70										
-80										
-90 Center 2.4	02 GHz	ı	300	kHz/				Spa	n 3 MHz	<b>_U</b> 3

Page 30 of 49 Report No.: TW2104166E



781 Marker I		.dB] 00 dB		Pest Voltage Humidity Detector 30 kHz 100 kHz 8.5 ms	56 z RF Att	C3.7V % RH PK  20 dB
783 Marker 3	Pass 1.56kHz 1 [T1 n	00 dB	RBW VBW	Detector 30 kH: 100 kH:	z RF Att	PK  20 dB
782 Marker I	1.56kHz 1 [T1 n 20.	00 dB	VBW	 30 kH: 100 kH:	z RF Att	 20 dB
Marker 1	1 [T1 n	00 dB	VBW	30 kHz	Z	20 dB
ndB	20.	00 dB	VBW	100 kHz	Z	
						dBm
BW 781	.563126	25 kHz	SWT	8.5 ms	Unit	dBm
						<u> </u>
				<b>▼</b> 1 [	T1] -	1.51 dBm
		1			2.4409	9699 GHz
		$\sim$ /	\	ndB BW	781.5631	0.00 dB 2625 kHz
			$\bigvee$	$oldsymbol{ abla}_{ ext{T1}}$	(T1) -2	1.36 dBm
		$\sqrt{}$	w/		2.4406	1824 GHz
	Ξλ	v		$igwedge_{\mathrm{T2}}^{f  abla_{\mathrm{T2}}}$	[T1] -2	1.49 dBm
				7	2.4413	9980 GHz 1
	كمسر			\_		
				\hat{\gamma}	٣.	
					1 m	
$\bigvee$					W We	andrews.
						W
Hz		300	kHz/	1	Spa	an 3 MHz
	GHz 2021 17:				Hz 300 kHz/	2.4413 2.4413 300 kHz/ Sp.

Page 31 of 49

Report No.: TW2104166E



Product:		TW	S Earbuds	S		T	est Mode:		Keep tra	ansmitting	
Mode		Keepin	g Transmi	tting		Te	est Voltage		DC	23.7V	
Temperature		2	4 deg. C,			]	Humidity	56% RH PK			
Test Result:			Pass				Detector				
0dB Bandwidth	781.56kHz										
Ŕ	Marker 1 [T1 ndB]					BW	30 kH	z Rl	7 Att	20 dB	
Ref Lvl		ndB		00 dB	VI	BW	100 kH				
10 dBm		BW 781	.563126	25 kHz	SI	TW	8.5 ms	Uı	nit	dBm	<u>.</u>
10							<b>V</b> 1	T1]	-2	3.30 dBm	Α
				1					2.47999	699 GHz	
0				^ /			ndB		20	0.00 dB	
					$\backslash \bigwedge$		BW ▽ <sub>T1</sub>	78 [T1]	1.56312 -21	625 kHz 1.88 dBm	
-10					<u>,</u>	\		<u> </u>	2.47961		
			m1/	$\mathcal{N}$		V	$ abla_{\mathrm{T2}}$	[T1]	-22	2.43 dBm	
-20			\ <del>\\</del>				W		2.48039	980 GHz	1M2
			لہم				7				
-30		^	1				$\sim$				
		~/						h			
-40								4			
	$\wedge$	/						\ ,	m		
-50	<del></del>										
V whi									~~W	Muy	
-60										. 4/7	
-70											
-80											
-90											
Center 2	.48 GHz	Z		300	kHz/				Spa	an 3 MHz	

Page 32 of 49 Report No.: TW2104166E



Pi/4D-QPSK M	Iodulatio	on										
Product:		TW	S Earbuds	3		Г	est Mode:		Keep tra	ansmitting		
Mode		Keepin	g Transmi	tting		To	est Voltage	;	DC	23.7V		
Temperature		2	4 deg. C,			]	Humidity		56% RH			
Test Result:			Pass				Detector		]	PK		
20dB Bandwidth		1.	214MHz									
R)	Marker 1 [T1 ndB]						30 k	Hz R	z RF Att 20 dB			
Ref Lvl		ndB		00 dB		BW	100 k					
10 dBm		BW 1	1.214428	886 MHz	S	WT	8.5 m	s U	nit	dBm		
10							<b>V</b> <sub>1</sub>	[T1]	2.40200	.24 dBm	A	
0							ndE	8	20	0.00 dB		
				/ /	\		BW ▼ <sub>T1</sub>	[T1]	1.21442	886 MHz		
-10				\(\frac{1}{2}\)	\	7	A TOTAL OF THE PARTY OF THE PAR	(T1)	2.40137	776 GHz		
-20		7	۲				£	2	2.40259	218 GHz		
-30								7			1MA	
-40	M	$\wedge \psi$							· .			
-50	M,								<u> </u>	Lun		
-60												
-70												
-80												
-90 Center 2	402 C	u z		300	bu - /				Cr	n 2 MII-		
	.402 Gr		:19:05	300	кпа/				Бре	an 3 MHz		

Page 33 of 49 Report No.: TW2104166E



Product:		TW	/S Earbuds	8		Г	est Mode:		Keep tra	ansmitting		
Mode		Keepin	g Transmi	tting		To	est Voltage		DC	23.7V		
Temperature		2	4 deg. C,				Humidity		56% RH			
Test Result:			Pass Detector PK 1.214MHz				PK					
dB Bandwidth	1.214MHz											
<b>(</b>	Marker 1 [T1 ndB]					RBW	30 k	Hz Rl	7 Att	20 dB		
Ref Lvl		ndB	20.	00 dB	7	/BW	100 k	Hz				
10 dBm		BW I	1.214428	886 MHz	S	SWT	8.5 m	s Uı	nit	dBm	l	
10							<b>v</b> <sub>1</sub>	[T1]	-1	.63 dBm	A	
				-					2.44099	699 GHz	-	
0				^ /			ndB		20	.00 dB		
					\		lacksquare BW $lacksquare$ $lacksquare$ $lacksquare$ $lacksquare$	[T1]	1.21442	.64 dBm		
-10			$\sim$		<del>-\-</del> ~	<u>~</u>	My		2.44037			
		m					$^{\lambda}$	[T1]	-22	.01 dBm		
-20		7						? <u> </u>	2.44159	218 GHz	1 2 2	
1MAX		7						4			1M2	
-30								1				
-40	W	W						W	$\wedge$			
-50 W	w/									Mary Mary		
-60										·		
-70												
-80												
-90 Center 2	441 61	T		300		,			G	. 2 MII-		
Center 2	. + + 1 GF	14		300	NΠZ/				Spa	n 3 MHz		

Page 34 of 49 Report No.: TW2104166E



Product:		TW	/S Earbuds	<u> </u>		T	est Mode:		Keep tra	nsmitting		
Mode		Keepin	g Transmi	tting		Т	est Voltage		DC	3.7V		
Temperature		2	4 deg. C,			]	Humidity		56% RH			
Test Result:	Pass					Detector			PK			
20dB Bandwidth	1.214MHz											
<u>ka</u>	Marker 1 [T1 ndB]					RBW 30 kH		Iz RI	7 Att	20 dB		
Ref Lvl		ndB	20.	00 dB	V	BW	100 kH	Iz				
10 dBm		BW 3	1.214428	886 MHz	S	WT	8.5 ms	s U1	nit	dBm	ı	
10							<b>v</b> <sub>1</sub>	[T1]	-2	.37 dBm		
									2.47999	699 GHz	A	
0				. 7			ndB		20	.00 dB		
							BW ▽⊤1		1.21442	886 MHz		
-10			- 4 0	_/ \	M	~	Ny 1	[T1]	2.47937	.25 dBm 776 GHz		
				<i></i>	Ì	~	$\mathcal{A}^{\mathbb{Z}_{5}}$	[T1]	-22	.62 dBm		
-20			~				<del>/</del>		2.48059	218 GHz		
1MAX		/						4			1M2	
-30												
-40	٨٨	W						\w\	Λ			
-50 Manny	pw/w/								- \w	Wy Van and		
-60										4,		
-70												
-80												
-90												
Center 2.	.48 GH2	Z		300	kHz/				Spa	n 3 MHz		

Page 35 of 49

Report No.: TW2104166E



Product:	TWS Earbuds						est Mode:		Keep tra	nsmitting		
Mode		Keepin	g Transmi	tting		Те	est Voltage	;		3.7V		
Temperature			4 deg. C,				Humidity		56% RH			
Test Result:	Pass						Detector		PK			
dB Bandwidth	1.214MHz											
6	Marker 1 [T1 ndB] F					BW	30 k	Hz RI	F Att	20 dB		
Ref Lvl		ndB	20.	00 dB	V	BW	100 k	Hz				
10 dBm		BW 1	.214428	886 MHz	S	WT	8.5 m	s Uı	nit	dBm	ı	
10							<b>v</b> <sub>1</sub>	[T1]	-1	.23 dBm		
				1					2.40199	699 GHz	A	
0				^ /			ndE	3	20	.00 dB		
							BW ▼ <sub>T</sub>	[T1]	1.21442	886 MHz		
-10			MM	7	<del></del>	M	My	[TL]	2.40137	.17 dBm 776 GHz		
		m i					$\triangle \sqrt{J}$	2 [T1]	-21	.38 dBm		
-20		7					<u> </u>	\	2.40259	218 GHz		
1MAX								4			1M2	
-30								_				
-40	$\sim$	Vu						W	_^			
-50 WWW. M									<b>*</b>	W. M. W.		
-60										•		
-70												
-80												
-90												
Center 2.	402 GH	Iz		300	kHz/				Spa	n 3 MHz		

Page 36 of 49

Report No.: TW2104166E



8QPSK Modul	ation											
Product:		TW	S Earbuds	S		Γ	est Mode:		Keep tra	ansmitting		
Mode		Keepin	g Transmi	tting		To	est Voltage	;	DC3.7V 56% RH			
Temperature		2	4 deg. C,			]	Humidity					
Test Result:			Pass				Detector		]	PK		
20dB Bandwidth		1.	.208MHz									
Ř.	Marker 1 [T1 ndB]						30 k	Hz R	F Att	20 dB		
Ref Lvl		ndB		00 dB		BW	100 k					
10 dBm		BW 1	L.208416	83 MHz	S	WT	8.5 m	s Ui	nit	dBm		
10							<b>v</b> <sub>1</sub>	[T1]	2.44099	.54 dBm	A	
0				^			ndI	3	20	.00 dB		
				/\ /			BW $\nabla_{\mathrm{T}}$	r	1.20841			
-10			M	~ <del> </del>	<u>~</u> ~	~~		T1]	2.44038 -21			
-20		T	N				<u> </u>	2 2	2.44159	218 GHz		
-30								7			1MA	
-40	ΛN	M						M	<i></i> ∧			
-50	~~ <sup>/</sup> \							<u>\</u>	m	man and a second		
-60												
-70												
-80												
-90 Center 2	.441 G	Hz		300	kHz/				Spa	ın 3 MHz		
	APR.2		:30:55		<b>2</b> /				~_			

Page 37 of 49 Report No.: TW2104166E

Date: 2021-04-19



8QPSK Modul	lation										
Product:		TWS Earbuds				Test Mode: Test Voltage Humidity Detector			Keep transmitting DC3.7V 56% RH		
Mode		Keeping Transmitting 24 deg. C, Pass						;			
Temperature											
Test Result:									PK		
20dB Bandwidth		1.214MHz									
Ŕ		Marker	1 [T1 r	ndB]	R	BW	30 k	Hz R	F Att	20 dB	
Ref Lvl		ndB		00 dB		BW	100 k				
10 dBm		BW I	L.214428	886 MHz	S	WT	8.5 m	s Ui	nit	dBm	
							<b>v</b> <sub>1</sub>	[T1]	-2	.29 dBm	A
				1					2.47999	699 GHz	
				^ /			ndH	3	20	.00 dB	
					\		BW ▽ <sub>T1</sub>	[T1]	1.21442	886 MHz	
-10			mM	7	$\sim$	$\mathcal{N}$	$\sqrt{\gamma}$		2.47937	776 GHz	
		m	, ,	~			4	[T1]	-22	.53 dBm	
-20		$\overline{\gamma}$	V				7	<u>.</u>	2.48059	218 GHz	1MA
								4			
-30											
		/						\			
-40								$\overline{}$			
	Λ δ.	$\wedge \checkmark$						W	Λ		
-50	auto N								W\ M	lm i	
Morrow									9/ 0	my m	
-60										W)	
-70											
-80											
-90											
Center 2.48 GHz 300 kHz/									Spa	n 3 MHz	
Date: 16	5.APR.2	2021 18	:37:48								

Report No.: TW2104166E Page 38 of 49

Date: 2021-04-19

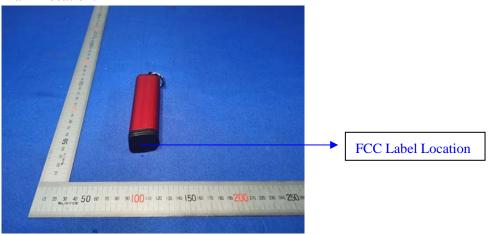


## 10.0 FCC ID Label

#### FCC ID: 2APYY-AF0060

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:**



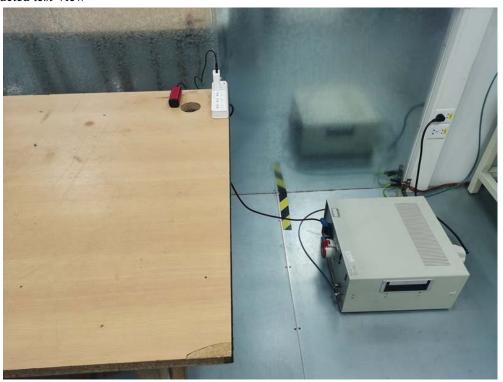
Page 39 of 49 Report No.: TW2104166E

Date: 2021-04-19



#### 11.0 Photo of testing

#### 11.1 Conducted test View--



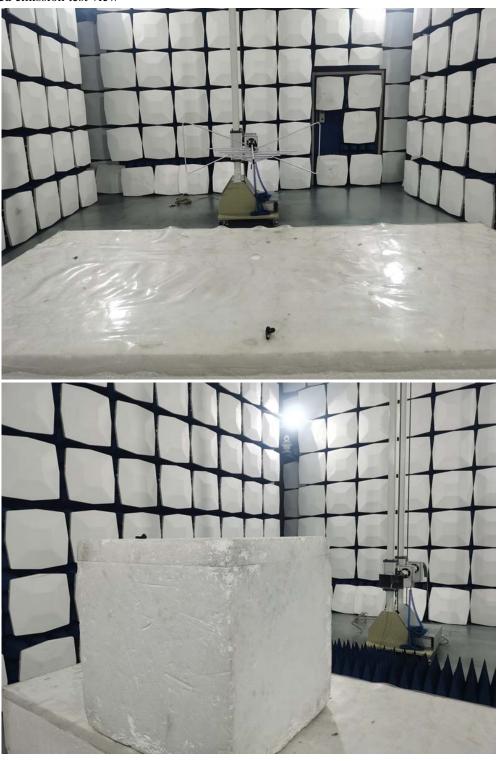
Page 40 of 49

Report No.: TW2104166E

Date: 2021-04-19



## Radiated emission test view



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#### 11.2 Photographs-EUT

Outside View



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Photographs - EUT

Outside View



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# Photographs - EUT

Left - Outside View



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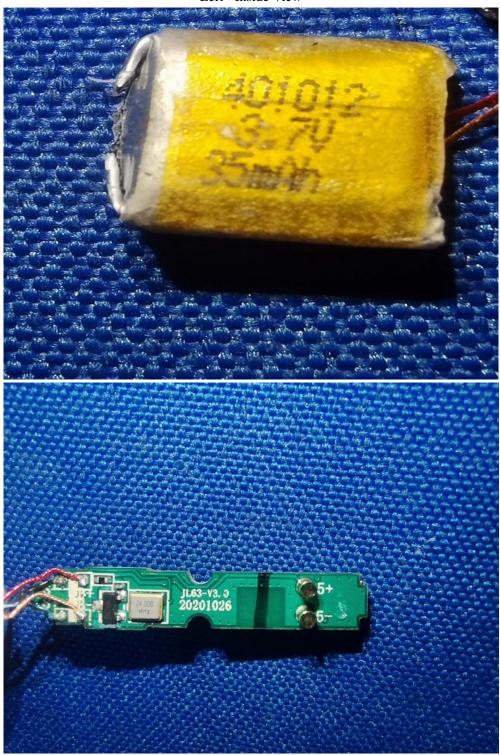
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Photographs - EUT

Left - Inside View



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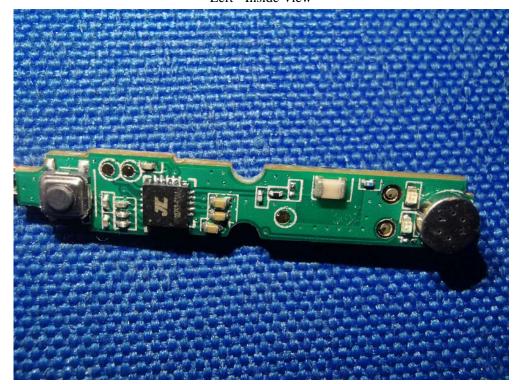
Page 46 of 49 Report No.: TW2104166E

Date: 2021-04-19



Photographs - EUT

## Left - Inside View



Date: 2021-04-19



Photographs - EUT

Right - Outside View



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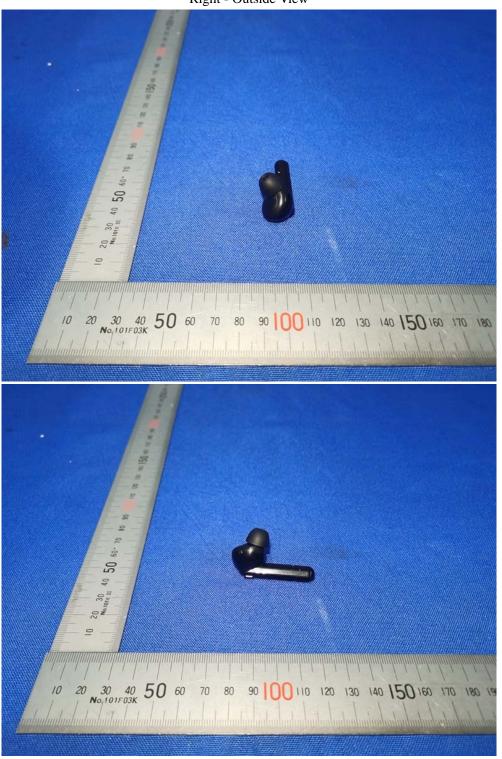
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Photographs - EUT

Right - Outside View



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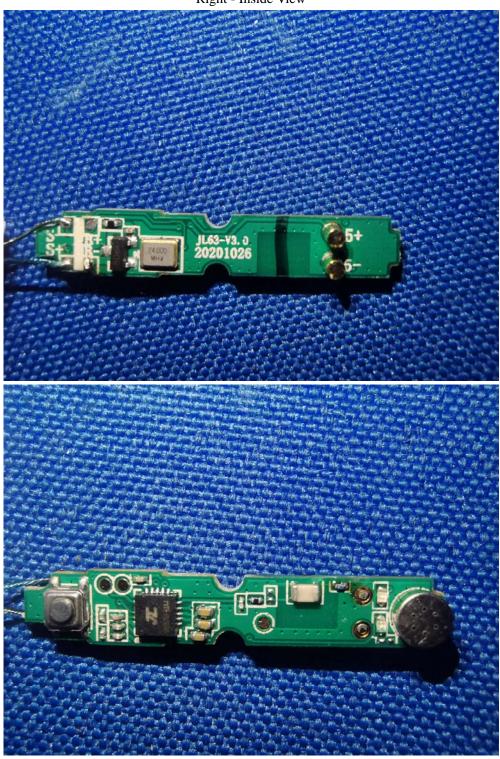
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Right - Inside View



-- End of the report--

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