



Report No.: TW2011056E File reference No.: 2020-11-19

Applicant: LEADER PREMIUMS LTD.

Product: TWS Bluetooth Earbuds

Model No.: AF0031

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: November 19, 2020

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 Bluetooth Earbuds
Manufacturer: LEADER PREMIUMS LTD.

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

Brand Name: N/A
Model Number: AF0031
Additional Model Name N/A

Rating: DC5V or 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 2.58dBi Max (Get from the antenna specification

provided by the applicant)

1.4 Submitted Sample: 1 Sample

1.5 Test Duration

2020-11-03 to 2020-11-19

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1.6 Test Uncertainty

Conducted Emissions Uncertainty = 3.6dB

Radiated Emissions below 1GHz Uncertainty =4.7dB

Radiated Emissions above 1GHz Uncertainty =6.0dB

Conducted Power Uncertainty =6.0dB

Occupied Channel Bandwidth Uncertainty =5%

Conducted Emissions Uncertainty = 3.6dB

Note: The measurement uncertainty is for coverage factor of k=2 and a level of confidence of 95%.

1.7 Test Engineer

The sample tested by



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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	2018-02-07	2021-02-06
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	2020-01-16	2021-01-15
RF Cable	Zhengdi	ZT26-NJ-NJ-8		2020-06-23	2021-06-22
DE C 11	71 1	M/FA		2020.06.22	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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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 and RSS-210	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

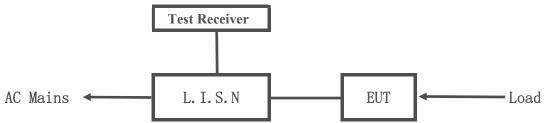
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5. Power Line Conducted Emission Test

5.1 Schematics of the test

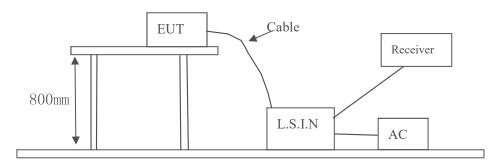


EUT: Equipment Under Test

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. AC120V 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 Bluetooth Earbuds	LEADER PREMIUMS LTD.	AF0031	2APYY-AF0031-A

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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	Class B Limits (dB µ V)			
(MHz)	Quasi-peak Level	Average Level		
0.15 ~ 0.50	66.0~56.0*	56.0~46.0*		
$0.50 \sim 5.00$	56.0	46.0		
5.00 ~ 30.00	60.0	50.0		

Notes:

- 1. *Decreasing linearly with logarithm of frequency.
- 2. The tighter limit shall apply at the transition frequencies

5.6 Test Results:

Pass

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

EUT Operating Environment

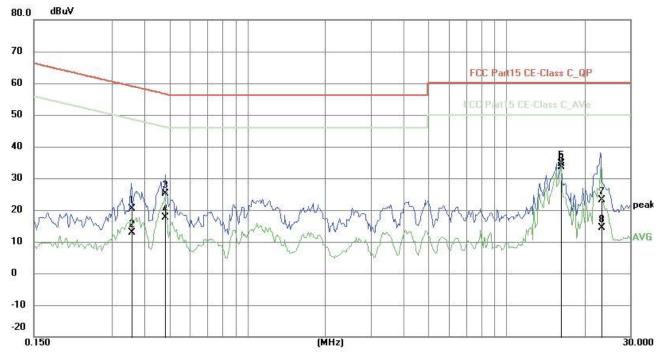
Temperature: 26°C Humidity: 65%RH Atmospheric Pressure: 101 kPa

EUT set Condition: Charging and Communication by Bluetooth

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	0.3567	10.65	9.76	20.41	58.80	-38.39	QP	Р
2	0.3567	3.20	9.76	12.96	48.80	-35.84	AVG	Р
3	0.4815	15.28	9.77	25.05	56.31	-31.26	QP	Р
4	0.4815	7.95	9.77	17.72	46.31	-28.59	AVG	Р
5	16.2288	24.17	10.45	34.62	60.00	-25.38	QP	Р
6	16.2288	23.21	10.45	33.66	50.00	-16.34	AVG	Р
7	23.1404	12.35	10.87	23.22	60.00	-36.78	QP	Р
8	23.1404	3.41	10.87	14.28	50.00	-35.72	AVG	Р

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

EUT Operating Environment

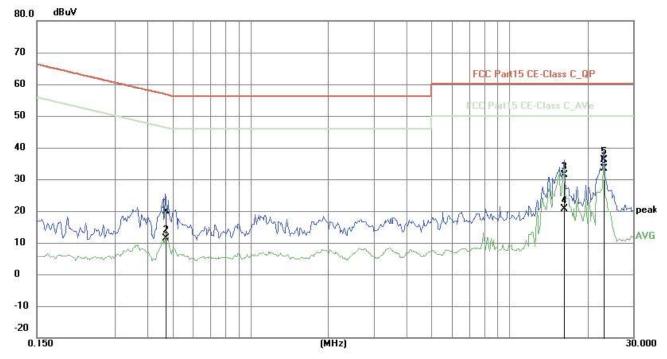
Temperature: 26°C Humidity: 65%RH Atmospheric Pressure: 101 kPa

EUT set Condition: Charging and Communication by Bluetooth

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	0.4711	10.22	9.77	19.99	56.49	-36.50	QP	Р
2	0.4711	1.52	9.77	11.29	46.49	-35.20	AVG	Р
3	16.1399	20.87	10.45	31.32	60.00	-28.68	QP	Р
4	16.1399	10.19	10.45	20.64	50.00	-29.36	AVG	Р
5	23.1279	25.20	10.87	36.07	60.00	-23.93	QP	Р
6	23.1279	22.46	10.87	33.33	50.00	-16.67	AVG	Р

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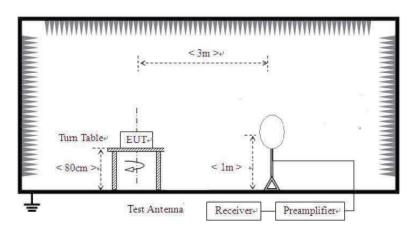


6 Radiated Emission Test

- 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

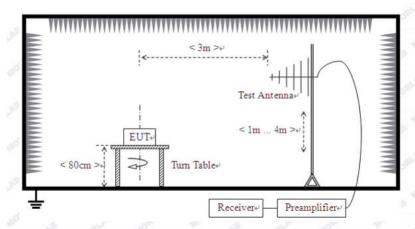


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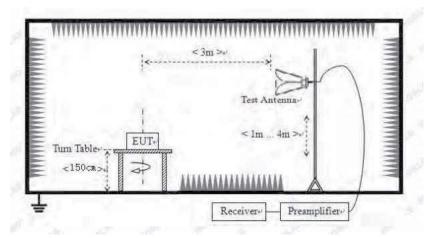
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For radiated emissions from 30MHz to1GHz



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 Strength of Fundamental (3m)			Field S	trength of Harmo	onics (3m)
	(MHz)	mV/m	dBuV/m		uV/m	dBu	V/m
ĺ	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 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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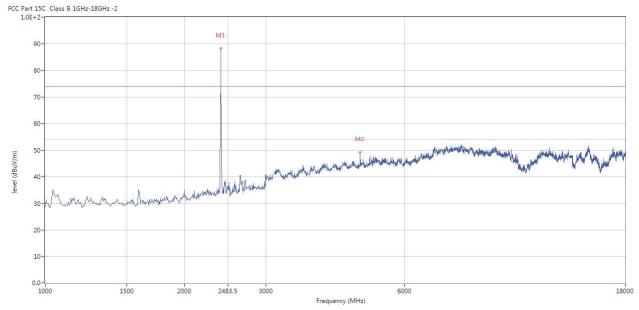


6.5 Test result

A Fundamental & Harmonics Radiated Emission Data

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

Horizontal



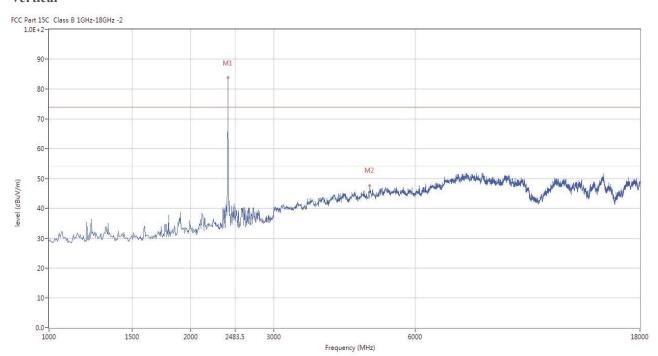
No.	Frequency	Results	Factor	Limit	Over Limit	Detector	Table (o)	Height	ANT	Verdict
	(MHz)	(dBuV/m)	(dB)	(dBuV/m)	(dB)			(cm)		
1	2402.250	88.68	-3.57	94.0	-5.32	Peak	323.00	100	Horizontal	Pass
2	4803.750	49.37	3.13	54.0	-4.63	Peak	187.00	100	Horizontal	Pass

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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	2402.250	84.83	-3.56	94.0	-9.17	Peak	167.00	100	Vertical	Pass
2	4803.750	47.67	3.13	54.0	-6.33	Peak	202.00	100	Vertical	Pass

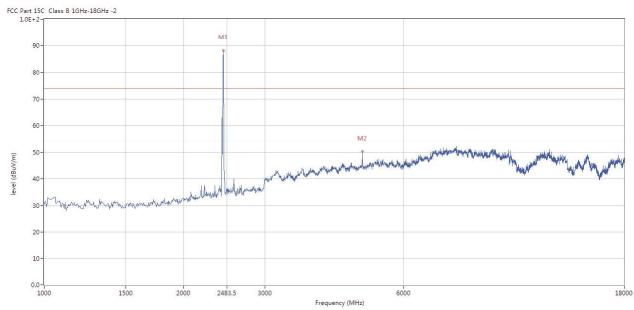
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Please refer to the following test plots for details: Middle Channel-2441MHz

Horizontal



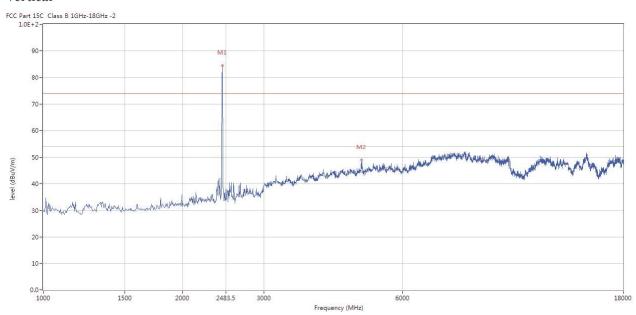
No.	Frequency	Results	Factor	Limit	Over Limit	Detector	Table (o)	Height	ANT	Verdict
	(MHz)	(dBuV/m)	(dB)	(dBuV/m)	(dB)			(cm)		
1	2440.750	87.26	-3.57	94.0	-6.74	Peak	152.00	100	Horizontal	Pass
2	4880.250	50.18	3.20	54.0	-3.82	Peak	116.00	100	Horizontal	Pass

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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	84.62	-3.57	94.0	-9.38	Peak	90.00	100	Vertical	Pass
2	4880.250	48.99	3.20	54.0	-5.01	Peak	118.00	100	Vertical	Pass

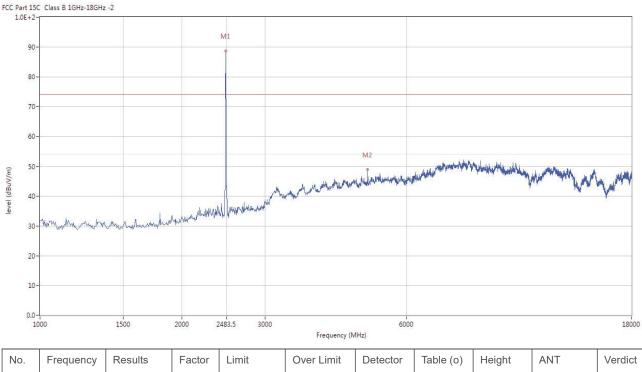
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Please refer to the following test plots for details: High Channel-2480MHz

Horizontal



No.	Frequency	Results	Factor	Limit	Over Limit	Detector	Table (o)	Height	ANT	Verdict
	(MHz)	(dBuV/m)	(dB)	(dBuV/m)	(dB)			(cm)		
1	2479.815	88.75	-3.57	94.0	-5.25	Peak	130.00	100	Horizontal	Pass
2	4961.160	49.78	3.36	54.0	-4.22	Peak	130.00	100	Horizontal	Pass

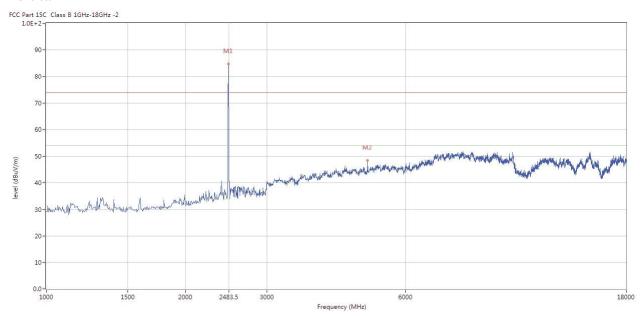
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Vertical



No.	Frequency	Results	Factor	Limit	Over Limit	Detector	Table (o)	Height	ANT	Verdict
	(MHz)	(dBuV/m)	(dB)	(dBuV/m)	(dB)			(cm)		
1	2479.815	84.78	-3.57	94.0	-9.22	Peak	277.00	100	Vertical	Pass
2	4961.160	48.41	3.36	54.0	-5.59	Peak	93.00	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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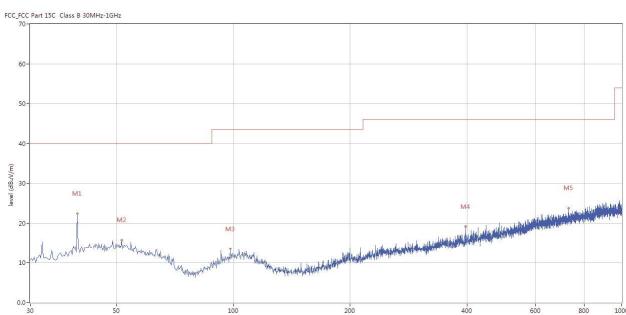


B. General Radiated Emission Data Radiated Emission In Horizontal (30MHz----1000MHz)

EUT set Condition: Keep Tx transmitting

Results: Pass

Please refer to following diagram for individual



No.	Frequen	Results	Factor	Limit	Over	Detector	Table (o)	Height	ANT	Verdict
	cy (MHz)	(dBuV/m	(dB)	(dBuV/m	Limit			(cm)		
))	(dB)					
1	39.698	22.50	-12.47	40.0	-17.50	Peak	31.00	100	Horizontal	Pass
2	51.577	15.82	-11.41	40.0	-24.18	Peak	137.00	100	Horizontal	Pass
3	98.368	13.60	-13.72	43.5	-29.90	Peak	333.00	100	Horizontal	Pass
4	396.568	19.21	-8.74	46.0	-26.79	Peak	31.00	100	Horizontal	Pass
5	730.165	23.83	-3.74	46.0	-22.17	Peak	119.00	100	Horizontal	Pass

Frequency (MHz)

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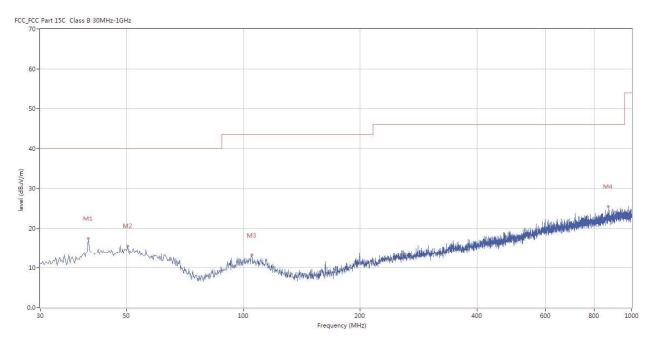


Radiated Emission In Vertical (30MHz----1000MHz)

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	39.940	17.47	-12.43	40.0	-22.53	Peak	88.00	100	Vertical	Pass
2	50.365	15.60	-11.39	40.0	-24.40	Peak	260.00	100	Vertical	Pass
3	105.156	13.13	-13.23	43.5	-30.37	Peak	88.00	100	Vertical	Pass
4	870.780	25.48	-2.04	46.0	-20.52	Peak	39.00	100	Vertical	Pass

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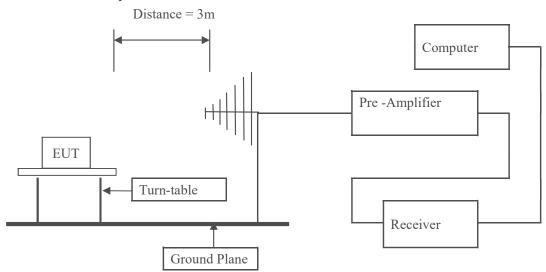


7. Band Edge

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.

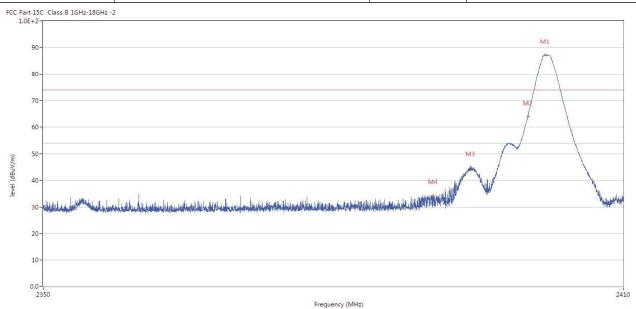
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7.6 Test Result

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



١.,											
	No.	Frequency	Results	Factor	Limit	Over Limit	Detector	Table (o)	Height	ANT	Verdict
		(MHz)	(dBuV/m)	(dB)	(dBuV/m)	(dB)			(cm)		
	2	2400.040	64.15	-3.57	74.0	-9.85	Peak	139.00	100	Horizontal	Pass
	2*	2400.040	45.86	-3.57	54.0	-8.14	AV	139.00	100	Horizontal	Pass
	3	2394.475	45.28	-3.55	54.0	-8.72	Peak	139.00	100	Horizontal	Pass
	4	2390.050	34.33	-3.53	54.0	-13.67	Peak	0.00	100	Horizontal	Pass

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3

2390.320

42.95

-3.53

54.0



	oduct:		TWS Blu	etooth Earb	uds	Detec	tor		Vertical	
N	Mode		Keeping	g Transmitti	ng	Test Vol	ltage		DC3.7V	
Tem	perature		24	deg. C,		Humid	lity		56% RH	
Test	t Result:			Pass						
Part 15C L.0E+2-	Class B 1GHz-18GHz	-2								
90-										
(-0.0)									M1	
80-										
70-										
60-								M	1	
50-							M3	year		
40-	التعليلين والمستعدد المستعدد	and the second second	أمرته وانتاهانيم	de disculation in the second second section.	Maria da sa sa kada mara .			WHIPHIN !		
30-				Albani da Abaha Mahaba da Abaha da Aba	ALEA ATTACK A CALLANDA A PARA A ALEA PATA	Labitation in Manager	Hara and hat one	T		A PARTIE NAME OF THE PARTIES OF THE
20-										
20-	50									2410
20- 10- 0.0- 235	NACO.	Deputts	Footo	Limit	Frequency (MH	I	Toble (s)	Height	ANT	
20	Frequency	Results	Factor	Limit (dR.W/m)	Over Limit	z) Detector	Table (o)	Height	ANT	verdic
20- 10- 0.0- 235	NACO.	Results (dBuV/m) 57.12	Factor (dB)	Limit (dBuV/m) 74.0	# S0	I	Table (o)	Height (cm)	ANT	

-11.05

Peak

241.00

100

Vertical

Pass

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Product:		TWS Blu	etooth Earbı	uds	Polarit	у	H	orizontal	
Mode		Keeping	g Transmitti	ng	Test Volt	age	Ι	OC3.7V	
Temperature		24	l deg. C,		Humidi	ity	5	6% RH	
Test Result:			Pass						
CC Part 15C Class B 1GHz-18G 1.0E+2- 90- 80- 70- 60-	12-2								
30-					Control of the second	ahandariba bi jahili qaaba	kalled he de	e dois ann iom la ribbet de de de diffé	
30-				2483.5 Frequency (MHz		Ahadiath, PUdithaha	e allered system to all expels of high	e eftereller (bestlet de des des de de	2500
20-	Results	Factor	Limit	2483.5		Table (o)	Height	ANT	
20- 10- 0.0- 2470	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	2483.5 Frequency (MHz					2500

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Product:	TWS Bluetooth Earbuds Detector							Vertical	
Mode		Keeping	g Transmitti	ing	Test Vol	tage		DC3.7V	
Temperature		24	4 deg. C,		Humid	ity		56% RH	
Test Result:			Pass						
Part 15C Class B 1GHz-18	Hz -2								
90- 80- 70-									
30 - 10 - 2470	Management			2483.5 Frequency (MH:	A A A A A A A A A A A A A A A A A A A	happen yezh ezh ezh e		and the life below have to the state while	2500
30 - 10 - 2470	Management			2483.5 Frequency (MH:				en fra grad forest year from the second	
30- 20- 10- 0.0- 2470		Factor	Limit	2483.5 Frequency (MH:		Table (o)	Height	ANT	2500
30 - 10 - 2470	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	2483.5 Frequency (MH:	z)				

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 2.58dBi Max. It fulfills the requirement of this section. Test Result: Pass

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GFSK Modulation					
Product:	TWS Bluetooth E	arbuds	Test Mode:	Keep tra	insmitting
Mode	Keeping Transm	itting	Test Voltage	DC	3.7V
Temperature	24 deg. C,		Humidity	56%	% RH
Test Result:	Pass		Detector	I.	PK
20dB Bandwidth	781.56kHz				
Ref Lvl		00 dB V	BW 30 ki	Hz	10 dB
0 dBm	BW 781.563126	525 kHz S	WT 8.5 ms	s Unit	dBm
			V ₁	[T1] - 2.4020	6.69 dBm A
-10		W/\	ndB BW ▼⊤	781.5631	
-20	Ţ	,	T2 ▼T2	2.4016	1824 GHz
-30 1MAX			V	2.4023	9980 GHz
-40				My I	
-60					<u> </u>
-70					makey
-80					
-90					
-100 Center 2.40	0. 677	300 kHz/			an 3 MHz

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GFSK Modula	ntion					
Product:	TWS	Bluetooth Earbuds		Test Mode:	Keep tra	nsmitting
Mode	Kee	ping Transmitting		Test Voltage	DC	3.7V
Temperature		24 deg. C,		Humidity	56%	6 RH
Test Result:		Pass		Detector	F	PK
20dB Bandwidth		781.56kHz				
(\$)	Marke	er 1 [T1 ndB]	RBV		z RF Att	10 dB
Ref Lvl	ndB	20.00 dB				
0 dBm	BW 7	781.56312625 kH	z SWI	8.5 ms	Unit	dBm
Ĭ				V 1	[T1] -	7.06 dBm A
		^	Ä		2.4410	0301 GHz
-10			<u> </u>	ndB	2	0.00 dB
			1 h	BW	781.5631	I I
-20		- 		∇_{T_1}	[T1] -2	6.93 dBm
		Ţ V		T2 ▼ T2	2.4406 [T1] -2	1824 GHz 6.82 dBm
-30				4	2.4413	
1MAX				\sim		1MA
-40		<i>/</i> Y		<u></u>	}	
					7	
-50						
-60						many
-70						
-80						
-90						
-100						
Center 2.	.441 GHz	30	0 kHz/		Sp	an 3 MHz
Date: 17	.NOV.2020	13:20:57				

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GFSK Modu	lation									
Product:		TWS B	uetooth Ea	arbuds	Т	est Mode:		Keep trai	nsmitting	
Mode		Keepir	ng Transmi	tting	Te	est Voltage		DC3	3.7V	
Temperature		2	4 deg. C,]	Humidity		56%	RH	
Test Result:			Pass			Detector		P	K	
20dB Bandwidth	ı	7	81.56kHz					_	_	
I (R)			1 [T1 r		RBW	30 k		F Att	10 dB	
Ref Lvl		ndB		00 dB	VBW		Hz		100	
0 dBm		BW 781	.563126	25 KHZ	SWT	8.5 m	s Ur	nit	dBm	
						V 1	[T1]	-7	.85 dBm	A
-10								2.48000	301 GHz	
-10					$\backslash \Lambda$	ndB		20	.00 dB	
					ا لم	BW ▼⊤1	78 [T1]	1.56312	625 kHz	
-20				\mathcal{N}	7	n	[11]	2.47961		
			TA		ľ	T2 ▼ ▼ _{T2}	[T1]	-27	.41 dBm	
-30						hy		2.48039	980 GHz	
1MAX			<i></i>			\sim				1MA
-40			,				7			
							4			
-60	No.							m L		
								,	Mounta	
-70										
-80										
-90										
100										
-100 Center 2	2.48 GH	 Z		300	kHz/	<u> </u>		Spa	n 3 MHz	l
			.01.57		,			- <u>F</u>		
Date: 1	7.NOV.2	.020 13	:21:57							

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Pi/4D-QPS	K Modulati	ion								
Product:		TWS B	luetooth Ea	arbuds	Т	est Mode:		Keep trai	nsmitting	
Mode		Keepir	ng Transmi	tting	To	est Voltage		DC3	3.7V	
Temperature		2	24 deg. C,			Humidity		56%	RH	
Test Result:			Pass			Detector		PK		
20dB Bandwid	th	1	.214MHz							
(R)			1 [T1 n		RBW	30 k		F Att	10 dB	
Ref Lv	L	ndB		00 dB	VBW		Hz		15	
0 dBm		BW 1	1.214428	886 MHZ	SWT	8.5 m	S Ui	nit 	dBm	1
					-	v ₁	[T1]	-6	.71 dBm	A
1.0				\wedge				2.40200	301 GHz	
-10					\	ndE	3	20	.00 dB	
			\sim	\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	$ \vee \vee $	M BW	[T1]	1.21442	886 MHz	
-20		т.				7		2.40137	776 GHz	
		7	, v			∇_{T}	(T1)	-26	.53 dBm	
-30							7	2.40259	218 GHz	
1MAX										1MA
-40										
-50 4 Mul		/ W					\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \		m, , ,	
-60									40	
-70										
-80										
-90										
-100					- '					
	2.402 G		16 50	300	kHz/			Spa	ın 3 MHz	
Date:	17.NOV.2	2020 13	:16:59							

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Pi/4D-QPSK	Modulati	ion								
Product:		TWS B	uetooth Ea	arbuds		Test Mode:		Keep tra	nsmitting	
Mode		Keepir	ıg Transmi	tting	,	Test Voltage		DC3	3.7V	
Temperature		24 deg. C,				Humidity		56%	RH	
Test Result:			Pass			Detector		PK		
20dB Bandwidth	ı	1	.214MHz							
(\$)			1 [T1 n		RBW			F Att	10 dB	
Ref Lvl		ndB		00 dB	VBW		Hz			
0 dBm		BW 1	.214428	886 MHz	SWI	8.5 m	ıs U:	nit	dBm	l -
				_		v ₁	[T1]	-7	.07 dBm	Α
				^ /				2.44100	301 GHz	
-10				\wedge	\	ndE	3	20	.00 dB	
			~~~	$\searrow$ $\bigvee$	$\sim \sim \sim \sim$	AN BW	L [T1]	1.21442		
-20				مر		7	[ [,T,T]	2.44037	.37 dBm 776 GHz	
		T 7	<b>~</b>			$\nabla_{\mathrm{T}}$	2 <b>[T1]</b>	-25	770 GHZ	
-30		7					7	2.44159	218 GHz	
1MAX										1MA
-40										
-50		$\triangle A$								
Way on		V 40					0		My	
-60									Man de	
-70										
-80										
-90										
-100										
Center	2.441 G	Hz		300	kHz/			Spa	an 3 MHz	•
Date: 1	7.NOV.2	2020 13	:19:47							

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Product:	TWS	Bluetooth Ea	ırbuds	Т	est Mode:		Keep tran	nsmitting
Mode	Kee	ping Transmi	tting	To	est Voltage		DC3	
Temperature		24 deg. C,	-		Humidity		56%	RH
Test Result:		Pass			Detector		P	K
dB Bandwidth		1.220MHz					_	_
	Marke	er 1 [T1 n	ıdB]	RBW	30 kF	Iz RI	Att	10 dB
Ref Lvl	ndB	20.	00 dB	VBW	100 kF	Ιz		
0 dBm	BW	1.220440	88 MHz	SWT	8.5 ms	s Ur	nit	dBm
					<b>v</b> ₁	[T1]	-7	.85 dBm
			1				2.48000	301 GHz
-10			$\wedge$	\	ndB		20	.00 dB
		_		m ~	∩ BW		1.22044	088 MHz
-20			~~	W	TI	[T1]	-27	.95 dBm
		T			V⊤	2	2.47937	
-30		7			V TW	[T1]		.03 dBm
1MAX		/					2.48059	820 GHz 1
-40								
-50 hh						$\sim$	Mum	~~
60 160 160								Wy M
-70								
-80								
-90								
Center 2.48	GH 7	I	300	kHz/			Sna	n 3 MHz

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8QF	PSK Modu	ulation										
Pro	oduct:		TWS B1	uetooth Ea	arbuds	,	Test Mode:		Keep tran	nsmitting		
M	Iode		Keepir	ng Transmi	tting	Т	est Voltage		DC3	3.7V		
Temp	perature		2	4 deg. C,			Humidity		56%	RH		
Test	Result:			Pass			Detector		PK			
20dB B	Bandwidth		1.263MHz							_		
(F)		Marker 1 [T1 ndB] RBW 30 kHz RF Att				F Att	10 dB					
•	ef Lvl		ndB		00 dB	VBW		Hz		15		
0	0 dBm		BW 1	.262525	005 MHZ	SWT	8.5 m	ıs Uı	nit 	dBn	1 •	
					-		<b>v</b> ₁	[T1]	-6	.73 dBm	A	
1.0						(			2.40200	301 GHz		
-10					$\bigwedge$	M	ndE	3	20	.00 dB		
				$\sim$	$\mathcal{N}$	\ \rac{1}{\rac{1}{2}}	BW	L [T1]	1.26252	505 MHz		
-20			m:				1		2.40137	776 GHz		
			¥				▽ _T	▼[T1]	-26	.55 dBm	ı.	
-30								<del>                                     </del>	2.40264	028 GHz	l	
	1MAX										1MA	
-40	+							<del>- \</del>				
5.0			/ <b>4</b>					$\setminus \setminus$				
-50									Www	Wy		
-60	V									<del>√w</del>		
-70	+											
-80												
-90												
-100												
	Center 2	2.402 G	Hz		300	kHz/			Spa	n 3 MHz		
Date:	1 '	7.NOV.2	020 13	:17:52								

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8QPSK Mod	dulation											
Product:		TWS B	luetooth Ea	arbuds		Те	st Mode:		Keep tran	smitting		
Mode		Keepii	ng Transmi	tting		Tes	st Voltage		DC3	.7V		
Temperature		2	24 deg. C,			Н	umidity		56%	RH		
Test Result:			Pass			Г	Detector		P)	K		
20dB Bandwidth	h	1	.263MHz						_	-		
₹ <u>R</u>		Marker	1 [T1 r	ndB]	R	BW	30 k	Hz Rl	F Att	Att 10 dB		
Ref Lvl		ndB		00 dB		BW		Hz				
0 dBm		BW 1	L.262525	05 MHz	S	WT	8.5 m	s Uı	nit	dBn	n _	
Ŭ,				_			<b>v</b> ₁	[T1]	-7	.09 dBm	A	
				7					2.44100	301 GHz	A	
-10				Λ./	1 M		ndF	3	20	.00 dB	1	
			mM	NV	V (	~~	BW		1.26252	505 MHz		
-20			7.0	•			T	<u>[T1]</u>	-26	.98 dBm		
		T:	~				$ abla_{ m T}$	T2 <b>(V</b> [T1]	2.44037 -27	776 GHz		
-30							1.4	- [ + + ]	2.44164	028 GHz	İ	
1MAX										020 0112	1MA	
-40		A .										
-50 Auth - M	mon							V		W		
-60 <b>CW</b> (1)									-			
-70												
-80						+						
-90												
-100												
Center	2.441 G	Hz		300	kHz/				Spa	n 3 MHz		
Date: 1	17.NOV.2	2020 13	:18:51									

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8QPSK Modula	ntion					
Product:	TWS Bluetooth Earbuds		Test Mode:	Keep transi	Keep transmitting	
Mode	Keeping Transmitting		Test Voltage	DC3.7	DC3.7V	
Temperature	24 deg. C,		Humidity	56% R	56% RH	
Test Result:	Pass		Detector	PK	PK	
20dB Bandwidth	1.263MHz					
	Marker 1 [T1				10 dB	
Ref Lvl		20.00 dB		Hz		
0 dBm	BW 1.2625	52505 MHz	SWT 8.5 m	ns Unit	dBm	
			<b>v</b> ₁	[T1] -7.	88 dBm A	
1.0		<b>1</b>		2.480003	01 GHz	
-10		\ \ \ \	ndl M		00 dB	
		$\sim \sim $	BW		05 MHz 84 dBm	
-20			7		76 GHz	
	T.		$ hildrightarrow$ $_{ m T}$		<b>I</b>	
-30				2.4806403		
1MAX					1MA	
-40				^		
-50				Mym		
-60					Www	
-70						
-80						
-90						
-100						
Center 2.48 GHz 300 kHz/ Span 3 MHz						
Date: 17.NOV.2020 13:24:05						

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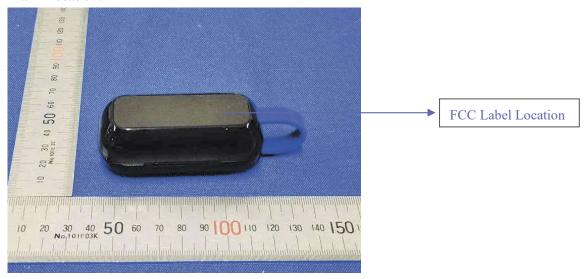


### 10.0 FCC ID Label

### FCC ID: 2APYY-AF0031-A

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:**



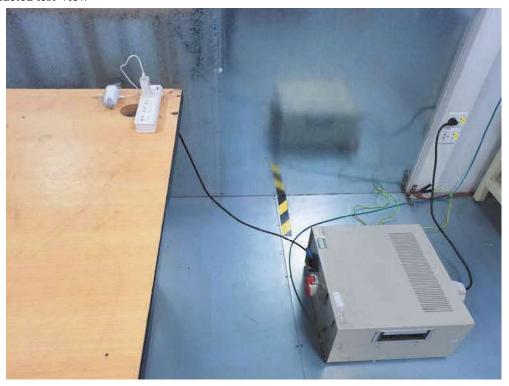
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### 11.0 Photo of testing

#### 11.1 Conducted test View--



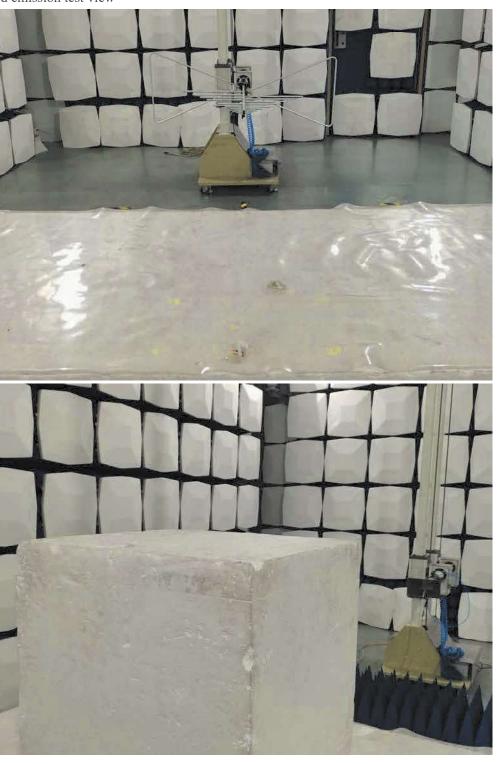
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# Radiated emission test view



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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## Photographs – EUT

Outside View





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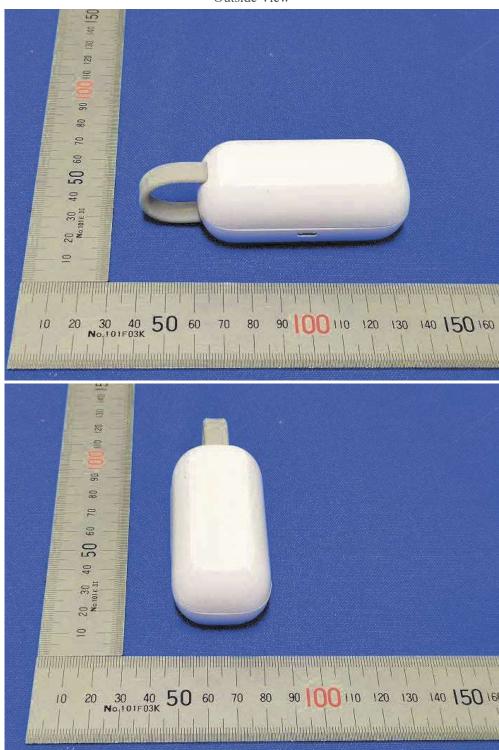
Outside View



Date: 2020-11-19



Outside View

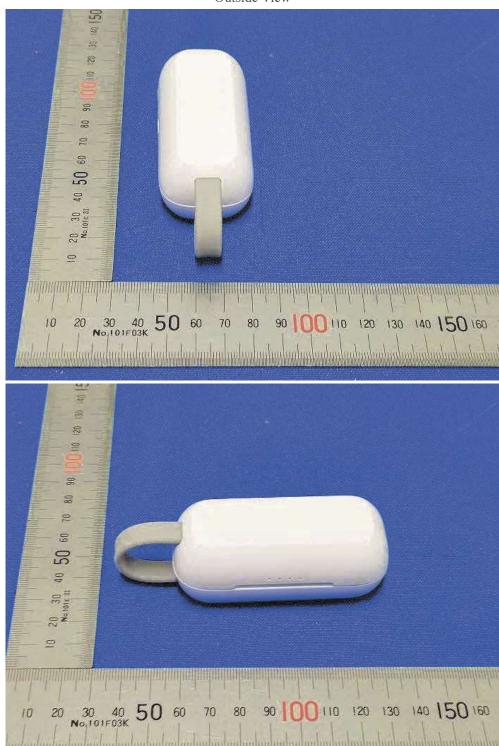


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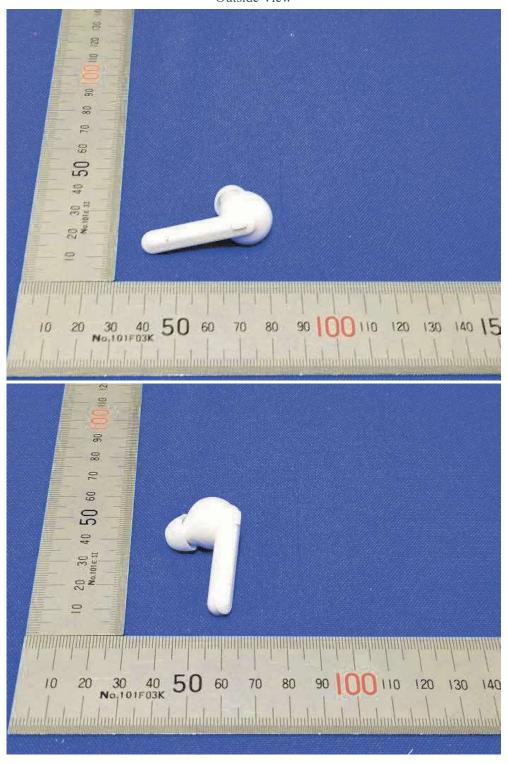
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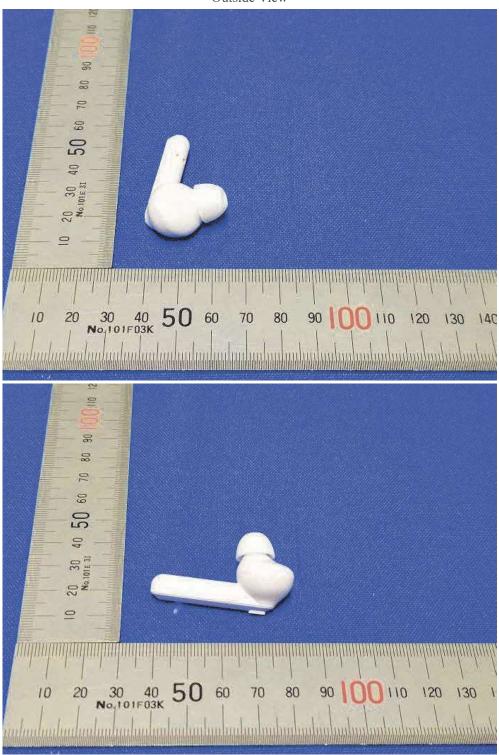
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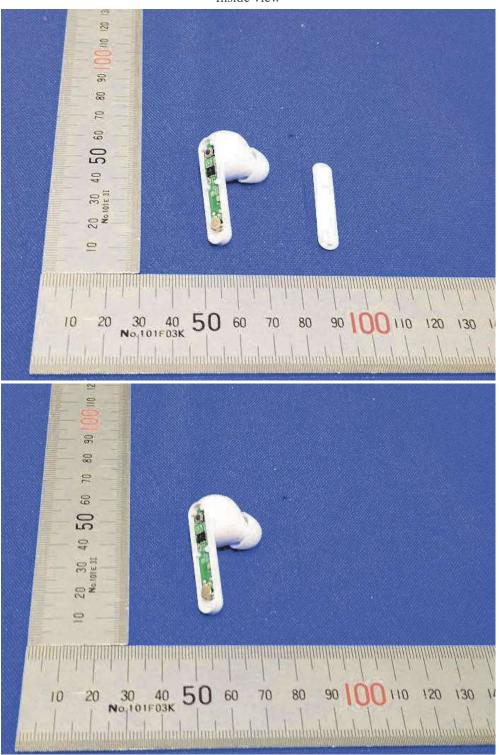
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Inside view



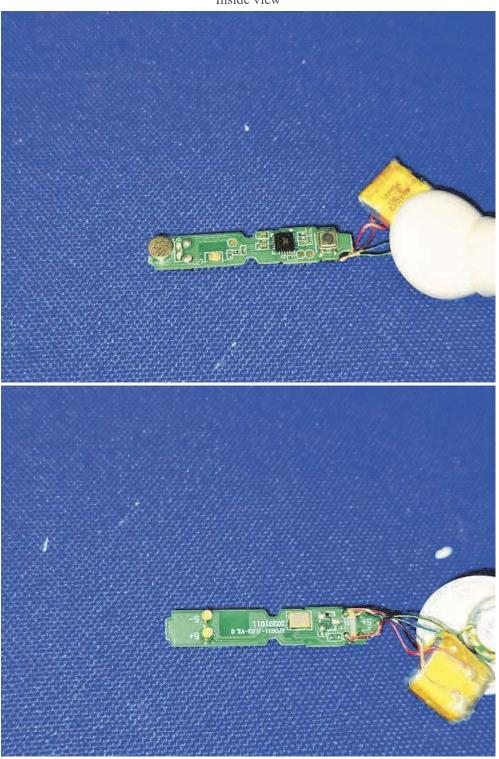
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Inside view



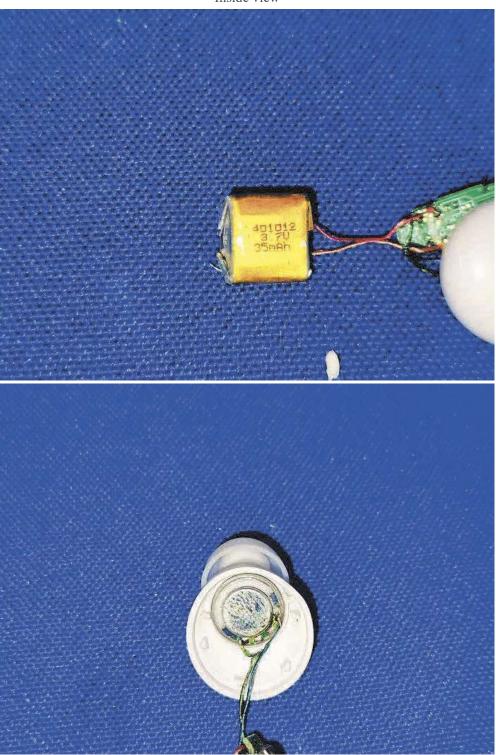
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Inside view



-- End of the report--

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