

Report No.: TW2302025E

Applicant: Shenzhen Glory Star Technology Industrial Co., Ltd.

Product: TWS earbuds

Model No.: TWS163, MI-E102T

Trademark: Glory Star, Merkury

Test Standards: FCC Part 15.249

Test result:

It is herewith confirmed and found to comply with the

requirements set up by ANSI C63.10 & FCC Part 15 Subpart C,

Paragraph 15.249 regulations for the evaluation of

electromagnetic compatibility

Approved By

Terry Tang

Manager

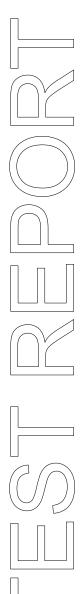
Dated: February 13, 2023

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 17025:2017 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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Test Report Conclusion Content

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1.0 General Details

1.1 Test Lab Details

Name: SHENZHEN TIMEWAY TESTING LABORATORIES.

Address: Zone C, 1st Floor, Block B, Jun Xiang Da Building, Zhongshan Park Road West, Tong Le

Village, Nanshan District, Shenzhen, China

Telephone: (755) 83448688 Fax: (755) 83442996

Site on File with the Federal Communications Commission – United Sates

Registration Number: 744189 For 3m Anechoic Chamber

1.2 Applicant Details

Applicant: Shenzhen Glory Star Technology Industrial Co., Ltd.

Address: Room2102, Block 1st, Yi Luan Building, Xixiang Road 230, BaoAn District, Shenzhen, China

Telephone: +86-755-86397260 Fax: +86-755-26609516

1.3 Description of EUT

Product: TWS earbuds

Manufacturer: Shenzhen Glory Star Technology Industrial Co., Ltd.

Address: Room2102, Block 1st, Yi Luan Building, Xixiang Road 230, BaoAn District,

Shenzhen, China

Trademark: Glory Star, Merkury

Model Number: TWS163 Additional Model Name MI-E102T

Rating: DC5V input or Built-in DC3.7V, 25mAh Li-ion battery for earphones and DC5V

input or Built-in DC3.7V, 200mAh Li-ion battery for charger base.

Modulation Type: GFSK, Π/4DQPSK, 8DPSK for Bluetooth

Operation Frequency: 2402-2480MHz

Channel Number: 79
Channel Separation: 1MHz
Hardware Version: V1.0
Software Version: V1.0

Serial No.: TWS163E102T

Antenna Designation Chip antenna with gain 2.71dBi Max (Get from the antenna specification)

1.4 Submitted Sample: 2 Samples

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1.5 Test Duration 2023-02-06 to 2023-02-13

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

Print Name: Andy Xing

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2.0 Test Equipment					
Instrument Type	Manufacturer	Model	Serial No.	Date of Cal.	Due Date
ESPI Test Receiver	R&S	ESPI 3	100379	2022-07-15	2023-07-14
LISN	R&S	EZH3-Z5	100294	2022-07-18	2023-07-17
LISN	R&S	EZH3-Z5	100253	2022-07-18	2023-07-17
Impuls-Begrenzer	R&S	ESH3-Z2	100281	2022-07-18	2023-07-17
Loop Antenna	EMCO	6507	00078608	2022-07-18	2025-07-17
Spectrum	R&S	FSIQ26	100292	2022-07-15	2023-07-14
Horn Antenna	A-INFO	LB-180400-KF	J211060660	2022-07-18	2025-07-17
Horn Antenna	R&S	BBHA 9120D	9120D-631	2022-07-18	2024-07-17
Power meter	Anritsu	ML2487A	6K00003613	2022-07-18	2023-07-17
Power sensor	Anritsu	MA2491A	32263	2022-07-18	2023-07-17
Bilog Antenna	Schwarebeck	VULB9163	9163/340	2022-07-18	2025-07-17
9*6*6 Anechoic			N/A	2022-07-26	2025-07-25
EMI Test Receiver	RS	ESVB	826156/011	2022-07-15	2023-07-14
EMI Test Receiver	RS	ESCS 30	834115/006	2022-07-15	2023-07-14
Spectrum	HP/Agilent	E4407B	MY50441392	2022-07-15	2023-07-14
Spectrum	RS	FSP	1164.4391.38	2022-07-15	2023-07-14
RF Cable	Zhengdi	ZT26-NJ-NJ-8M/FA	-	2022-07-15	2023-07-14
RF Cable	Zhengdi	7m		2022-07-15	2023-07-14
Pre-Amplifier	Schwarebeck	BBV9743	#218	2022-07-15	2023-07-14
Pre-Amplifier	HP/Agilent	8449B	3008A00160	2022-07-15	2023-07-14
LISN	SCHAFFNER	NNB42	00012	2022-08-18	2023-07-17
ESPI Test Receiver	R&S	ESPI 3	100379	2022-07-15	2023-07-14
LISN	R&S	EZH3-Z5	100294	2022-07-18	2023-07-17

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

3.2 Test Standards

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

4.0 EUT Modification

No modification by SHENZHEN TIMEWAY TESTING LABORATORIES

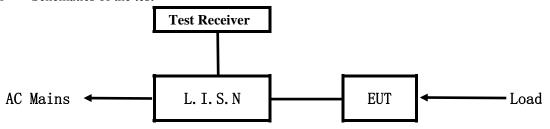
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5.0 Power Line Conducted Emission Test

5.1 Schematics of the test

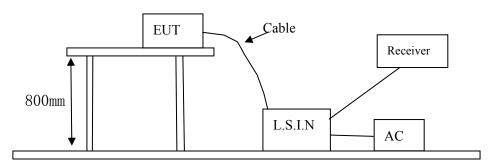


EUT: Equipment Under Test

5.2 Test Method and test Procedure

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

Test Voltage: 120V~, 60Hz Block diagram of Test setup



5.3 Configuration of the EUT

The EUT was configured according to ANSI C63.10-2013. All interface ports were connected to the appropriate peripherals. All peripherals and cables are listed below.

79 channels are provided to the EUT

A. EUT

Device	Manufacturer	Model	FCC ID
	Shenzhen Glory Star		
TWS earbuds	Technology Industrial Co.,	TWS163, MI-E102T	2AS7V-TWS163
	Ltd.		

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B. Internal Device

Device	Manufacturer	Model	FCC ID/DOC
N/A			

C. Peripherals

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

5.4 EUT Operating Condition

Operating condition is according to ANSI C63.10-2013

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

5.5 Power line conducted Emission Limit according to Paragraph 15.207

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

Notes:

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

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

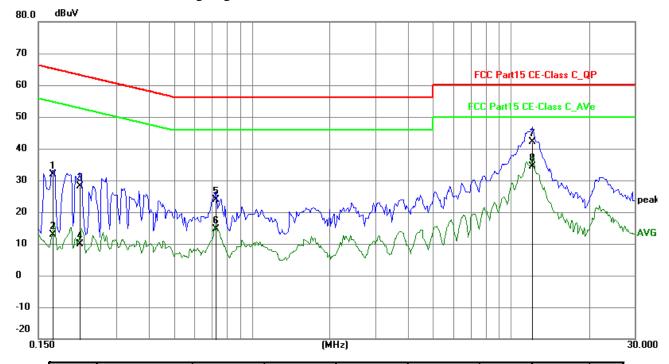
EUT Operating Environment

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

EUT set Condition: Charging + Communication by BT

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	0.1695	22.14	9.77	31.91	64.98	-33.07	QP	Р
2	0.1695	3.05	9.77	12.82	54.98	-42.16	AVG	Р
3	0.2163	18.50	9.75	28.25	62.96	-34.71	QP	Р
4	0.2163	0.18	9.75	9.93	52.96	-43.03	AVG	Р
5	0.7272	14.11	9.78	23.89	56.00	-32.11	QP	Р
6	0.7272	4.79	9.78	14.57	46.00	-31.43	AVG	Р
7	12.0909	31.84	10.25	42.09	60.00	-17.91	QP	Р
8	12.0909	24.08	10.25	34.33	50.00	-15.67	AVG	Р

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

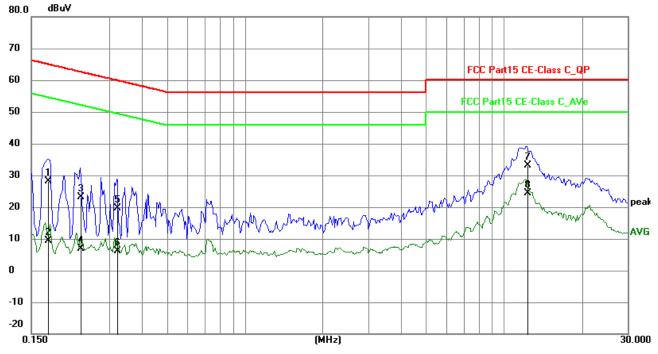
EUT Operating Environment

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

EUT set Condition: Charging + Communication by BT

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	0.1734	18.28	9.77	28.05	64.80	-36.75	QP	Р
2	0.1734	-0.37	9.77	9.40	54.80	-45.40	AVG	Р
3	0.2319	13.31	9.75	23.06	62.38	-39.32	QP	Р
4	0.2319	-2.83	9.75	6.92	52.38	-45.46	AVG	Р
5	0.3215	9.88	9.76	19.64	59.67	-40.03	QP	Р
6	0.3215	-3.57	9.76	6.19	49.67	-43.48	AVG	Р
7	12.2703	22.98	10.26	33.24	60.00	-26.76	QP	Р
8	12.2703	14.22	10.26	24.48	50.00	-25.52	AVG	Р

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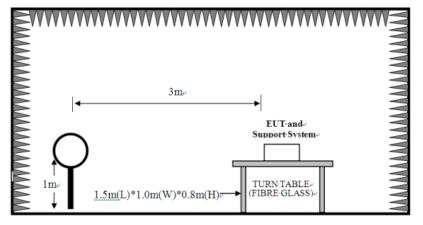


6 Radiated Emission Test

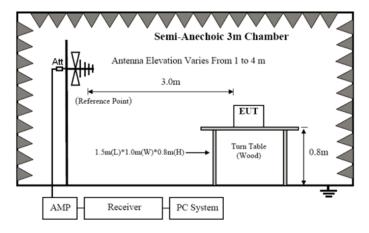
- 6.1 Test Method and test Procedure:
- (1) The EUT was tested according to ANSI C63.10-2013. The radiated test was performed at Timeway EMC Laboratory. This site is on file with the FCC laboratory division, Registration No. 744189
- (2) The EUT, peripherals were put on the turntable which table size 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



For radiated emissions from 30MHz to1GHz



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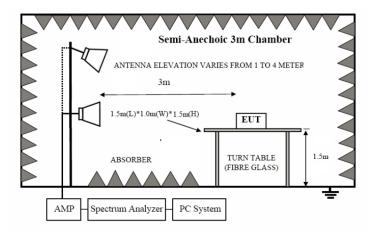
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For radiated emissions above 1GHz



- 6.2 Configuration of The EUT

 Same as section 5.3 of this report
- 6.3 EUT Operating Condition
 Same as section 5.4 of this report.
- 6.4 Radiated Emission Limit

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

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

Fundamental Frequency	Field Strength of Fundamental (3m)			Field S	trength of Harmo	onics (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.

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

Frequency Range (MHz)	Distance (m)	Field strength (dB μ V/m)
0.009-0.490	3	20log(2400/F(kHz)) +40log (300/3)
0.490-1.705	3	20log(24000/F(kHz)) +40log (30/3)
1.705-30	3	69.5
30-80	3	40.0
88-216	3	43.5
216-960	3	46.0
Above 960	3	54.0

Note:

- 1. RF Voltage (dBuV) = 20 log RF Voltage (uV)
- 2. In the Above Table, the tighter limit applies at the band edges.
- 3. Distance refers to the distance in meters between the measuring instrument antenna and the EUT
- 4. All scanning using PK detector. And the final emission level was get using QP detector for frequency range from 30-1000MHz.As to 1G-25G, the final emission level got using PK. For fundamental measurement, PK detector used.
- 5. The 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.
- 6. 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.
- 7. Battery fully charged was used during the test.

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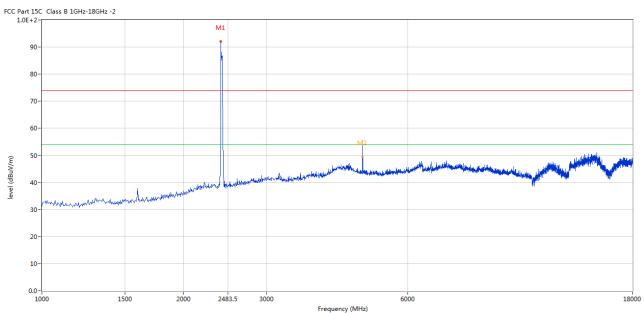


6.5 Test result

A Fundamental & Harmonics Radiated Emission Data

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

Horizontal



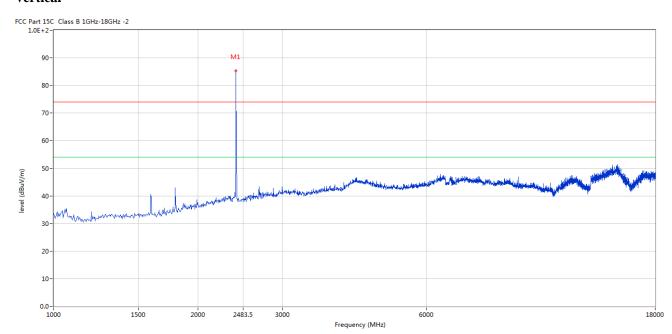
No.	Frequency	Results	Factor	Limit	Over Limit	Detector	Table	Height	ANT	Verdict
	(MHz)	(dBuV/m)	(dB)	(dBuV/m)	(dB)		(o)	(cm)		
1	2402	92.93	-3.57	114.0	-21.07	Peak	79.00	100	Horizontal	Pass
2	4802.799	55.56	3.12	74.0	-18.44	Peak	47.00	100	Horizontal	Pass
2**	4802.799	49.45	3.12	54.0	-4.55	AV	47.00	100	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	85.95	-3.57	114.0	-28.05	Peak	182.00	100	Vertical	Pass

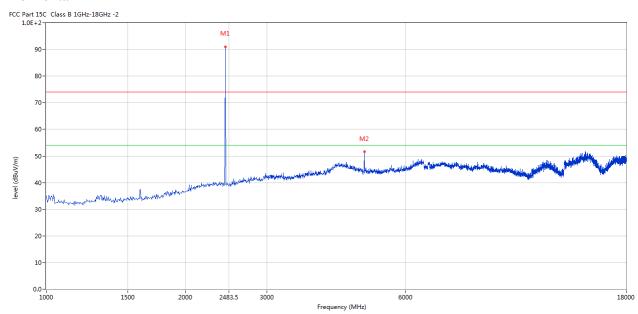
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Please refer to the following test plots for details: Middle Channel-2441MHz

Horizontal



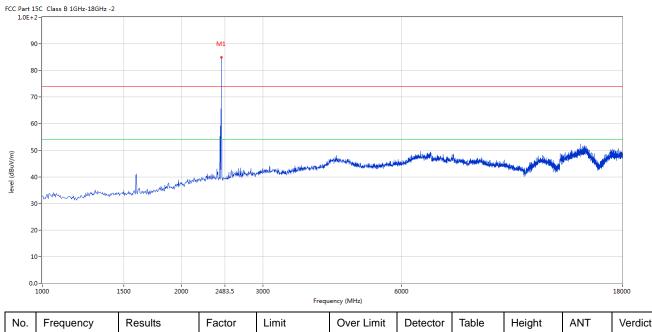
No.	Frequency	Results	Factor	Limit	Over Limit	Detector	Table	Height	ANT	Verdict
	(MHz)	(dBuV/m)	(dB)	(dBuV/m)	(dB)		(o)	(cm)		
1	2441	91.03	-3.57	114.0	-22.97	Peak	74.00	100	Horizontal	Pass
2	4879.280	51.56	3.20	74.0	-22.44	Peak	47.00	100	Horizontal	Pass

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Vertical



No.	Frequency	Results	Factor	Limit	Over Limit	Detector	Table	Height	ANT	Verdict
	(MHz)	(dBuV/m)	(dB)	(dBuV/m)	(dB)		(o)	(cm)		
1	2441	84.94	-3.57	114.0	-29.06	Peak	166.00	100	Vertical	Pass

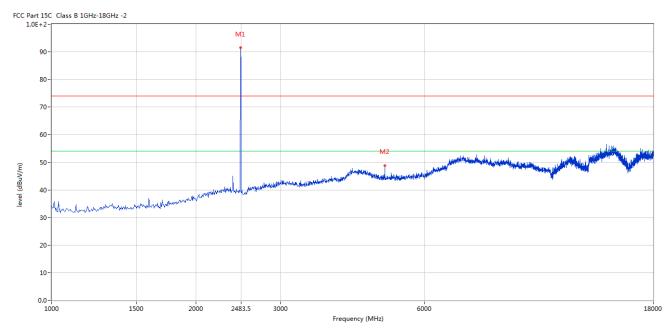
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Please refer to the following test plots for details: High Channel-2480MHz

Horizontal



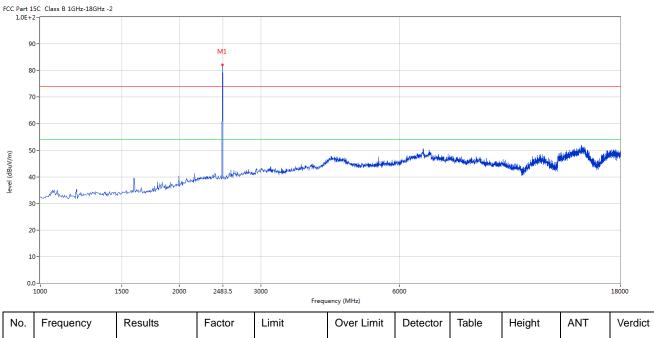
No.	Frequency	Results	Factor	Limit	Over Limit	Detector	Table (o)	Height	ANT	Verdict
	(MHz)	(dBuV/m)	(dB)	(dBuV/m)	(dB)			(cm)		
1	2480	91.68	-3.57	114.0	-22.32	Peak	97.00	100	Horizontal	Pass
2	4960.010	48.77	3.36	74.0	-25.23	Peak	82.00	100	Horizontal	Pass

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Vertical



No.	Frequency	Results	Factor	Limit	Over Limit	Detector	Table	Height	ANT	Verdict
	(MHz)	(dBuV/m)	(dB)	(dBuV/m)	(dB)		(o)	(cm)		
1	2480	82.25	-3.57	114.0	-31.75	Peak	176.00	100	Vertical	Pass

Note: (1) Emission Level = Reading Level + Antenna Factor + Cable Loss-Amplifier

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

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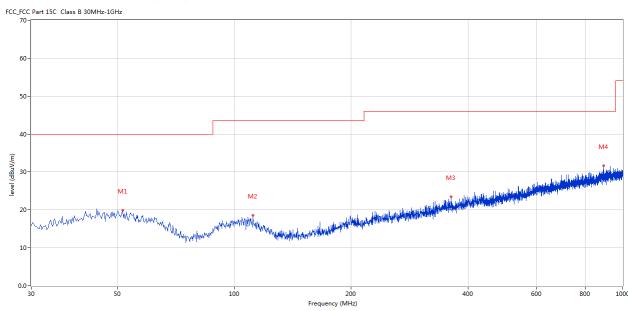


B. General Radiated Emission Data Radiated Emission In Horizontal (30MHz----1000MHz)

EUT set Condition: Keep Tx transmitting

Results: Pass

Please refer to following diagram for individual



No.	Frequency	Results	Factor	Limit	Over Limit	Detector	Table	Height	ANT	Verdict
	(MHz)	(dBuV/m)	(dB)	(dBuV/m)	(dB)		(o)	(cm)		
1	51.577	19.86	-11.41	40.0	-20.14	Peak	84.00	100	Horizontal	Pass
2	111.702	18.54	-13.76	43.5	-24.96	Peak	140.00	100	Horizontal	Pass
3	361.657	23.47	-9.51	46.0	-22.53	Peak	22.00	100	Horizontal	Pass
4	892.599	31.61	-1.93	46.0	-14.39	Peak	180.00	100	Horizontal	Pass

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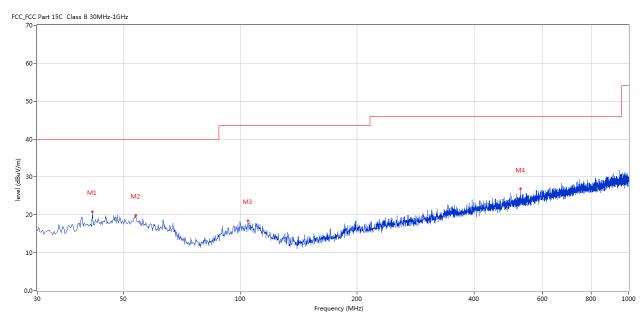


Radiated Emission In Vertical (30MHz----1000MHz)

EUT set Condition: Keep Tx transmitting

Results: Pass

Please refer to following diagram for individual



No.	Frequency	Results	Factor	Limit	Over Limit	Detector	Table	Height	ANT	Verdict
	(MHz)	(dBuV/m)	(dB)	(dBuV/m)	(dB)		(o)	(cm)		
1	41.637	20.77	-11.82	40.0	-19.23	Peak	301.00	100	Vertical	Pass
2	53.759	19.94	-11.53	40.0	-20.06	Peak	336.00	100	Vertical	Pass
3	104.671	18.45	-13.25	43.5	-25.05	Peak	243.00	100	Vertical	Pass
4	526.273	26.83	-6.55	46.0	-19.17	Peak	336.00	100	Vertical	Pass

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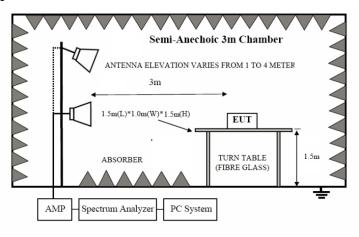


7. Band Edge

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.

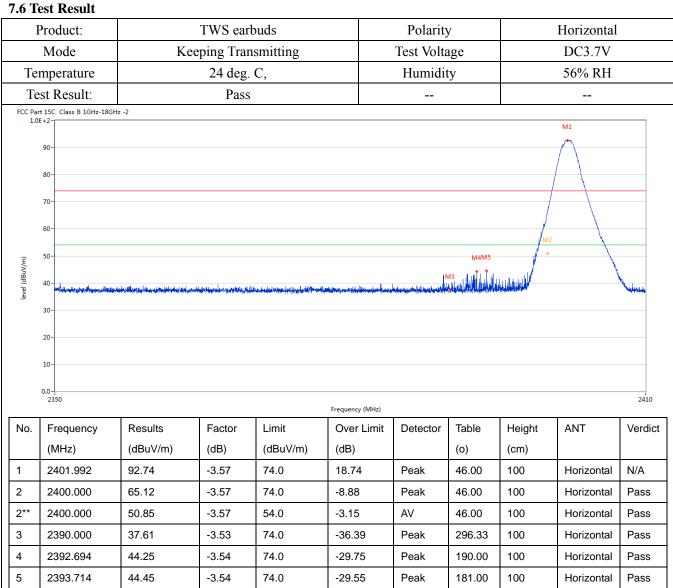
7.5 Band Edge Limit

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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ı	Product:		TWS ea	arbuds		Detecto	or	1	Vertical	
	Mode	k	Keeping Tra	ansmitting		Test Volt	age	I	DC3.7V	
Te	mperature		24 deg	g. C,		Humidi	ty	5	66% RH	
Te	est Result:		Pas	SS						
Part 1	15C Class B 1GHz-18GHz	2 -2			'		· ·			
									M1	
9	0-								M1	
8	0-							/		
7	0-									
6								/		
0	0-						M4	M5		
5	0-					الممان	وألم والراب	M2		
3	file to a second and the second second	أغلبت ووساليا أواري أواوه فالارواء والمالا والمراد	Marie Constitution of the second state of		alentorialista or katerialista pe					- indicates
	0-	ukaitellei valkaeli kailakilmissä ki	pardy declaration	and the state of t	aliver consideration in accordance pro					
3 2 1 1 0.	0-	ukusitelei kulturet kasilyhikusiside	and the therebeard	akida dalah da	alteriosituskinskioù-konsakrisken			•		THE PROPERTY OF THE
3 2 1 1 0.	0-		istoriale, iterationis		Frequency (MHz)					24
3 2 1 0.	0-	Results	Factor		Frequency (MHz) Over Limit	Detector	Table	Height	ANT	24
3 2 1 0.	0-				1	Detector	Table (o)	Height (cm)	ANT	24
3 2 1 0. No.	0- 0- 0- 2350	Results	Factor	Limit	Over Limit	Detector		_	ANT Vertical	24 Verd
3: 2: 1: 0.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)		(o)	(cm)		Verd
3 2 1 0. No.	Frequency (MHz) 2402.007	Results (dBuV/m) 85.76	Factor (dB) -3.57	Limit (dBuV/m) 74.0	Over Limit (dB) 11.76	Peak	(o) 171.00	(cm) 100	Vertical	Verd N/A Pas
3 2 1 0. Vo.	Frequency (MHz) 2402.007 2400.000	Results (dBuV/m) 85.76 58.27	Factor (dB) -3.57	Limit (dBuV/m) 74.0 74.0	Over Limit (dB) 11.76 -15.73	Peak Peak	(o) 171.00 170.29	(cm) 100 100	Vertical Vertical	Verd N/A Pas Pas
3 2 1 0.	Frequency (MHz) 2402.007 2400.000 2400.000	Results (dBuV/m) 85.76 58.27 43.67	Factor (dB) -3.57 -3.57 -3.57	Limit (dBuV/m) 74.0 74.0 54.0	Over Limit (dB) 11.76 -15.73 -10.33	Peak Peak AV	(o) 171.00 170.29 170.29	(cm) 100 100 100	Vertical Vertical Vertical	24 Verco N/A Pass Pas Pas

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]	Product:		TW	S earbuds			Polarit	у	Horizon	tal
	Mode		Keeping	g Transmittin	g	7	Test Volta	age	DC3.7	V
Te	mperature		24	deg. C,			Humidi	ty	56% R	Н
Те	est Result:			Pass						
CC Part 1	15C Class B 1GHz-18GHz					l .		 		
	90-		M1							
	30-		-							
7	70-									
6	50-			W						
(w// _N	50-	J.V		M2	The same of the sa					
level (dBuV/m)	المستراه المستراء الم	n Marie de la companya de la company			Mary Mary		of the second second	forkaddission philliple de aller de		and productions
	80-									
2	20-									
1	.0-									
0	.0-									
	2470			2483.5	Frequency (MHz)					2500
No.	Frequency	Results	Factor	Limit	Over Limit	Detector	Table	Height	ANT	Verdi
	(MHz)	(dBuV/m)	(dB)	(dBuV/m)	(dB)		(o)	(cm)		
	1	91.45	-3.57	74.0	17.45	Peak	84.00	100	Horizontal	
1	2480.055	31.43								N/A
1	2480.055 2483.500	55.44	-3.57	74.0	-18.56	Peak	79.00	100	Horizontal	N/A Pass

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]	Product:		TV	WS earbuds			Detecto	or	Vertic	al
	Mode		Keepir	ng Transmitt	ing		Test Volt	age	DC3.7	7V
Te	mperature		2	24 deg. C,			Humidi	ty	56% R	RH
Te	est Result:			Pass						
	rt 15C Class B 1GHz-18GH:	z -2						•		
	90-		M1							
level (dBuV/m)	60 - 50 - 40 - 11 - 11 - 11 - 11 - 11 - 11 - 11 -	المعتمد والمعتمد والمعتمد والمعتمد		M2	and the second and the second assessment of the second asset of the second assessment of the second assessment of the second asset of the second a	httaskiellenkeliellenkeliel	den di dila para di	Halifaçılı havva ildən daha	alleget of the second of	Marino Lage High
level (dBuV/m)	50- 40- 30-	anna ka a ka da a da a da a da a da a da		2483		httisk in the land of the	dens did public part collective	Hallagill)most ilimiki	ni di kalendari kalendari da	2500
No.	30 - 20 -	Results	Factor	2483	.5	Detector	Table	Height	ANT	2500
	30 - 20 - 10 - 2470	Marie Leave de la Marie de La Carte de	Factor (dB)	1	.5 Frequency (MHz)					2500
	30- 20- 10- 2470	Results		Limit	.5 Frequency (MHz)		Table	Height		

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

2. For Restricted band test, 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 2.71dBi Max. It fulfills the requirement of this section. Test Result: Pass

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FSK Product:	TWS	earbuds		Test Mode:		Keep tran	smitting	
Mode		ransmitting		Test Voltage		DC3		
Temperature		eg. C,		Humidity		56%	RH	
Test Result:	P	ass		Detector		PI	ζ	
0dB Bandwidth	919.	84kHz				z RF Att 20 dB		
Ref Lvl 10 dBm	Marker 1 ndB BW 919.8	[T1 ndB] 20.00 dB 3967936 kHz	VE	BW 30 k BW 100 k WT 8.5 m	Hz			
0		1		▼ ₁	[T1]	-3 2.40187	.26 dBm 074 GHz	A
-10			<u></u>	ightharpoonup BW $ ightharpoonup$ $ ightharpoonup$	91 [<u>T1</u>]	9.83967 -23	.10 dBm	<u>.</u>
-20				$\bigvee_{\mathbb{T}^2}$	2 [T1]		014 GHz .06 dBm 998 GHz	
-30		J						1M
-40					7			
-50	January				\	~~		
-60					·	h.	Mary	
-70								
-80								
-90 Center 2.40		300 ki					n 3 MHz]

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Product: Mode Temperature Test Result:	Kee	TWS earbuds								
Temperature	= 20	eping Transmi	tting	-	Test Mode: Test Voltage	ge DC3.7V 7 56% RH				
		24 deg. C,	<u>U</u>		Humidity					
		Pass			Detector					
0dB Bandwidth		919.84kHz								
<u> </u>	Mark	er 1 [T1 n	ndB]	RBW	30 kH	z RF	7 Att	20 dB		
Ref Lvl	ndB	20.	00 dB	VBW	100 kH	z				
10 dBm	BW	919.839679	36 kHz	SWT	8.5 ms	Un	nit	dBm	ı	
10					v ₁ [T1]	-3	.97 dBm	A	
							2.44087	074 GHz		
0			1		ndB		20	.00 dB		
				\searrow	BW V _{T1}	91 [T1]	9.83967	936 kHz .80 dBm		
-10					11		2.44057			
		0/	\bigwedge	\	\bigvee ∇_{T2}	[T1]	-23	.85 dBm		
-20		TA			T2		2.44148	998 GHz	110	
IMAX		\sim			\				1M	
-30					1					
		~								
-40						4				
	man						<u>ب</u> مر ا			
-50	~~ <u></u>						4			
~~~~							\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	man and a second		
-60								W.		
-70										
-80										
-90 Center 2			300					n 3 MHz	į	

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GFSK	1											
Product:			/S earbuds				est Mode:		Keep transmitting			
Mode			g Transmi	tting	Test Voltage Humidity			DC3.7V				
Temperature		2	4 deg. C,					ity 56% RH				
Test Result:			Pass			]	Detector		I	PK		
20dB Bandwidth		91	19.84kHz									
Ŕ	ľ	Marker	1 [T1 r	ndB]	RE	ВW	30 ki	Iz R	F Att	20 dB		
Ref Lvl	1	ndB		00 dB	VE	ВW	100 ki					
10 dBm	Ι	BW 919	839679	36 kHz	SW	VТ	8.5 ms	s Ui	nit	dBm	ı	
10							$\mathbf{v}_1$	[T1]	- 4	.55 dBm	A	
									2.47987	074 GHz		
0				1			ndB		20	.00 dB		
				\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	\M		BW $oldsymbol{ abla}_{ ext{T1}}$	91 [T1]	9.83967	936 kHz .45 dBm		
-10					•	$\forall$	. 11		2.47957		ĺ	
				$\sim$		1	$\bigwedge \qquad \nabla_{\mathrm{T2}}$	[T1]	-24			
-20			TA.			1	T2		2.48048	998 GHz	1 2 2 -	
1MAX			$\mathcal{J}$				74				1M2	
-30			<i></i>			1	<u></u>					
			<i>(</i> *					$\mathcal{A}$				
-40								<del>-\</del>				
		ر میر ا							٨٨			
-50	~~~								<del></del>			
and the same	•								\h	~.		
-60										~~\^\		
-70												
-80												
-90												
Center 2	.48 GHz			300	kHz/				Spa	n 3 MHz	_	
Date: 11	l.FEB.20	23 13	:39:02									

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Л/4DQPSK											
Product:		TV	VS earbuc	ls		T	est Mode:		Keep tran	smitting	
Mode		Keepii	ng Transm	itting		Т	est Voltage		DC3	.7V	
Temperature		2	24 deg. C,			I	Humidity		56%	RH	
Test Result:			Pass				Detector		Pl	K	
20dB Bandwidth		1	.287MHz							-	
<u>k</u>	Ма	rker	1 [T1 r	ndB]	RI	ЗW	30 k	Hz Ri	F Att	20 dB	
Ref Lvl	nd			00 dB		B₩	100 k				
10 dBm	BW	1	.286573	815 MHz	SI	VТ	8.5 m	s Ui	nit	dBm	1 -
10							<b>v</b> ₁	[T1]	-3	.33 dBm	A
0									2.40187	074 GHz	
o l				X	. ^		ndF	3	20	.00 dB	
			,	\\\/\/	\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	\	BW V _{T1}	[T1]	1.28657	315 MHz	
-10			\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	W		V	N		2.40138		
			کہ				$ abla_{\mathrm{T}_{2}}$	[T1]	-23	.17 dBm	
-20		T V	/					Y	2.40267	034 GHz	1MA
-30											
-40		<b>V</b>						$\bigvee$	W.		
-60	كس								***	mmy	
-70											
-80											
-90 Center 2.	402 GHz			300	kHz/				Spa	n 3 MHz	U
	FEB.202	3 13	:49:24		,				250		

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Product:  Mode  Temperature  Test Result:  20dB Bandwidth  Ref Lvl  10 dBm	Keepir 2 1 Marker ndB	WS earbuds ag Transmir 24 deg. C, Pass .287MHz 1 [T1 n 20. 1.286573	tting  ndB] .00 dB	Т	Test Mode: Test Woltage Humidity Detector 30 ki 100 ki 8.5 ms	Hz RI	DC 56% I	ansmitting 3.7V 6 RH PK 20 dB dBm	
Temperature Test Result: 0dB Bandwidth  Ref Lv1 10 dBm	2 1 Marker ndB	24 deg. C, Pass .287MHz 1 [T1 n	ndB] .00 dB	RBW VBW	Humidity  Detector   30 ki  100 ki  8.5 ms	Hz Rl Hz	56% I	6 RH PK  20 dB dBm	1
Test Result: 20dB Bandwidth  Ref Lv1 10 dBm	l Marker ndB	Pass .287MHz 1 [T1 r. 20.	.00 dB	RBW VBW	Detector 30 ki 100 ki 8.5 ms	Hz s Uı	I F Att	PK  20 dB dBm	1 1
Ref Lvl 10 dBm	Marker ndB	.287MHz 1 [T1 r	.00 dB	RBW VBW	30 ki 100 ki 8.5 ms	Hz s Uı	F Att	 20 dB dBm	L I
Ref Lvl 10 dBm	Marker ndB	1 [T1 n	.00 dB	VBW	30 ki 100 ki 8.5 ms	Hz s Uı	F Att	20 dB dBm	I
10 dBm	ndB	20.	.00 dB	VBW	100 kI 8.5 ms	Hz s Uı		dBm	ı 1
10 dBm					8.5 ms	s Uı	nit		l <b>1</b>
0	BW	1.286573	315 MHz	SWT			nit -4		1
0			<u>1</u>		<b>v</b> ₁	[T1]	-4	.03 dBm	ı
			<u>1</u>						A
			<u>1</u>				2.44087	074 GHz	A
-10		1	_	_	ndB		20	.00 dB	
-10			$\left  \right  \left\langle \right  \left\langle \right  \right\rangle$	$\gamma M$	$_{\bullet}$ $_{ ext{T1}}$		1.28657		
		~~~	\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	\ \	V Ly	[T1]	2.44038	.06 dBm 377 GHz	
					$\nabla_{\mathrm{T}_{2}^{2}}$	[T1]	-23	.77 dBm	
-20	T	V.			- 1	ب 2	2.44167	034 GHz	
1MAX						7			1M2
-30									
-40						\bigvee	_		
-50							1	many	
-60 ^m									
-70									
-80									
-90 Center 2.4	41 GH2		300	kHz/			Sna	n 3 MHz	
		3:46:38	300	12114/			ppa	.11 5 191112	

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Product:		TW	/S earbuds	3		T	est Mode:	Keep transmitting DC3.7V 56% RH				
Mode		Keepin	g Transmi	tting		To	est Voltage					
Temperature			4 deg. C,				Humidity					
Test Result:			Pass				Detector		PK			
0dB Bandwidth		1.	.287MHz									
Ŕ		Marker	1 [T1 n	ıdB]	R	BW	30 k	Hz RI	7 Att	20 dB		
Ref Lvl		ndB		00 dB	V	BW	100 k					
10 dBm		BW 1	L.286573	15 MHz	S	WT	8.5 m	s Ur	nit	dBm	ı	
10							v ₁	[T1]	- 4	.55 dBm	A	
									2.47987	074 GHz		
0				1			ndB		20	.00 dB		
1.0				$\left\langle \left\langle \right\rangle \right\rangle$	$\uparrow \downarrow \uparrow \uparrow$	۱ ا	BW ∇_{T1}	[T1]	1.28657 -24	315 MHz		
-10			~~\ [^]	V-1		\bigvee	1 h		2.47938			
			\int				$ abla_{ ext{T}}$	[T1]	-24	.38 dBm		
-20		T						LT 2	2.48067	034 GHz	1M	
- 30												
-40	0	~~ <u></u>						\\\				
-50	~~~~								\ \\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	my		
-60												
-70												
-80												
-90 Center 2	48 GH	,		300	kHz/				Sna	n 3 MHz	!	

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DPSK									
Product:		TWS earl	buds		Test Mode	:	Keep tran	smitting	
Mode	I	Keeping Tran	smitting		Test Voltag	e	DC3.7V		
Temperature		24 deg.	C,		Humidity		56% RH		
Test Result:		Pass			Detector		PF	ζ	
20dB Bandwidth		1.263M	Hz						
r)	Mar	ker 1 [T]	ndB]	RE	30 E	kHz R	F Att	20 dB	
Ref Lvl	ndE	3 2	20.00 dB	VE	BW 100				
10 dBm	BW	1.2625	52505 MHz	SV	WT 8.5	ms Ui	nit	dBm	
10					▼ 1	[T1]	-2	.69 dBm	
							2.40187	074 GHz	
0			X	`	nd	В	20	.00 dB	
				\^\	BW V _T		1.26252	505 MHz .57 dBm	
-10		~			7/~		2.40140		
					∇_{T}	% [T1]		.06 dBm	
-20		7				T 2	2.40267	034 GHz	
1MAX								11	
-30									
						\			
- 40		N				\frac{1}{1}			
-50	J						m	~~~\\\	
-60									
-70									
-80									
-90									
Center 2.	402 GHz		300 }	·H7/	ļ.		Spa	n 3 MHz	

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Product: Mode												
Mode			/S earbuds			Γ	est Mode:		Keep tra	nsmitting		
1.10 40		Keepin	g Transmi	tting		T	est Voltage	;	DC3.7V			
Temperature		2	4 deg. C,				Humidity	y 56% RH				
Test Result:			Pass		Detecto			PK				
0dB Bandwidth		1.	263MHz									
Ŕ		Marker	1 [T1 n	idB]	F	BW	30 k	Hz Rl	F Att	20 dB		
Ref Lvl		ndB		00 dB	V	BW	100 k					
10 dBm		BW 1	L.262525	05 MHz	S	WT	8.5 m	s Ui	nit	dBm	1	
10							\mathbf{v}_1	[T1]	-3	.33 dBm	A	
									2.44087	074 GHz		
0				1	S		ndE	3	20	.00 dB		
					\~~	1	BW ∇_{T}	[T1]	1.26252	505 MHz		
-10			~^^	\sim			\	_ [2.44040			
							$^{\vee} \triangledown_{1}$	[T1]	-23	.71 dBm		
-20 1MAX		Ţ	-/					Γ2 ∇	2.44167	034 GHz	1.00	
IMAX											1M2	
-30												
-40	\bigwedge	The same							\sim			
-50	\\\^\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\								Vu	Jr.		
-60												
-70												
-80												
-90 Center 2	.441 GH	Iz		300	kHz/				Spa	n 3 MHz		
	.FEB.20		:05:30	200	/				2PG	0 112		

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8DPSK										
Product:	TWS earbuds				Test Mode:		Keep transmitting			
Mode	Keepin	Keeping Transmitting				e	DC3.7V			
Temperature		24 deg. C,				Humidity		56% RH		
Test Result:	Pass					Detector		PK		
20dB Bandwidth		1.257MHz								
R	Marker 1 [T1 ndB]				RBI	W 30 k	Hz R	F Att	20 dB	
Ref Lvl		ndB	20.	00 dB	VBV					
10 dBm		BW 1	.256513	303 MHz	SW	r 8.5 m	ns Ui	nit	dBm	
10						v ₁	[T1]	-3	3.89 dBm	A
								2.47987	7074 GHz	
0				1		ndI	3	20	0.00 dB	
				$\left \right \left\langle \right \right\rangle$		BW $\nabla_{\mathbf{T}}$	[[T1]	1.25651	1303 MHz	
-10			_ ^^	\sim		V \		2.47940		
						∇T	2 [T1]	-23	3.54 dBm	
-20		Ţ	1				1 2	2.48066	6433 GHz	
1MAX			a .							1MA
-30										
-40	\bigwedge						M	\mathcal{N}		
-50	\J^*							_	m	
-60										
-70										
-80										
-90 Center 2	.48 GHz	Z		300	kHz/			Spa	an 3 MHz	
Date: 11	.FEB.2	023 14	:09:28							

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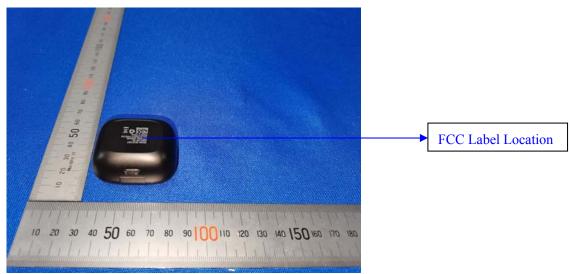


10.0 FCC ID Label

FCC ID: 2AS7V-TWS163

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

Mark Location:



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11.0 Photo of testing

11.1 Conducted test View



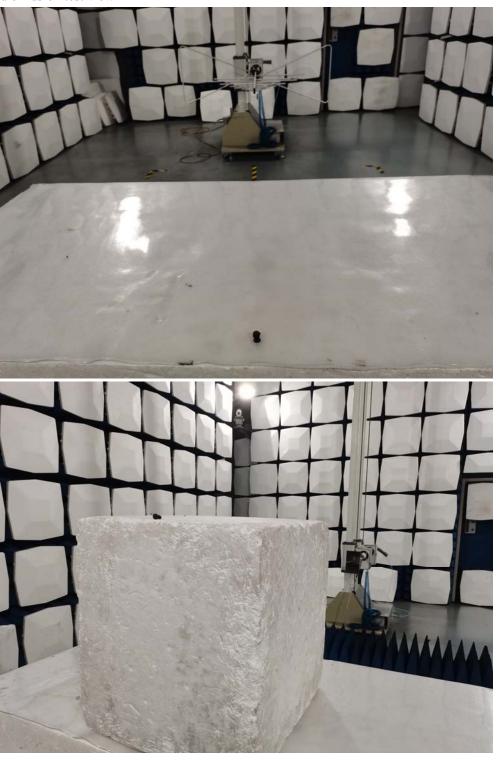
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Radiated emission test view



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11.2 Photographs – EUT

Outside View - charger base



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Outside View- charger base



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Outside View- charger base



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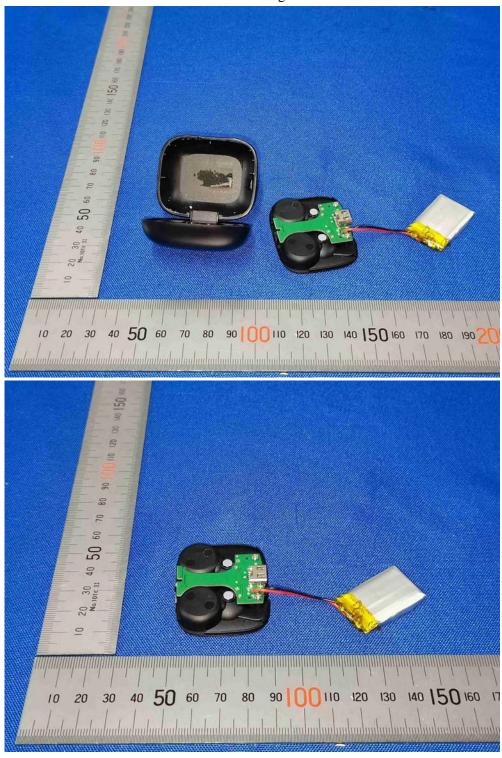
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Inside View- charger base



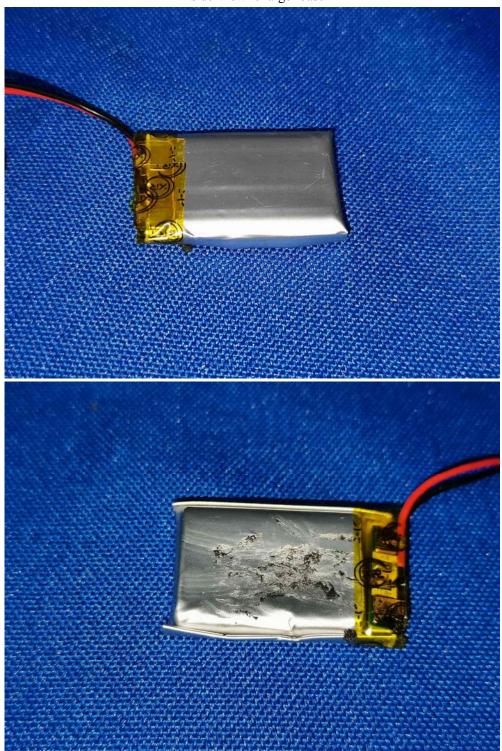
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Inside View- charger base



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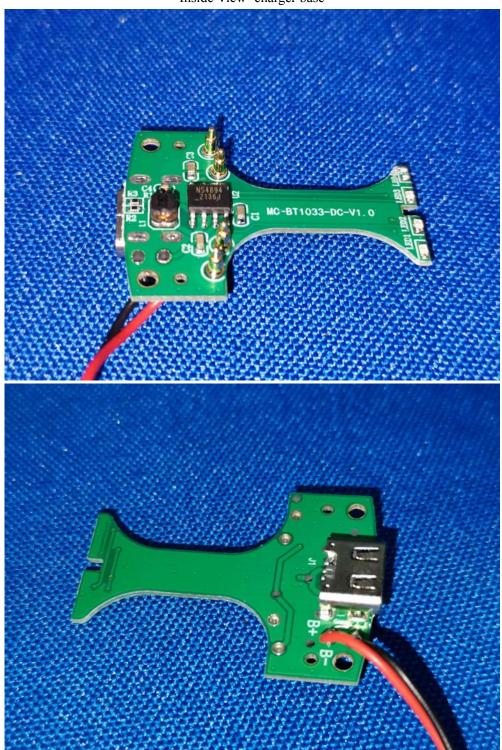
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Inside View- charger base



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Outside View - Left earphone



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Outside View - Left earphone



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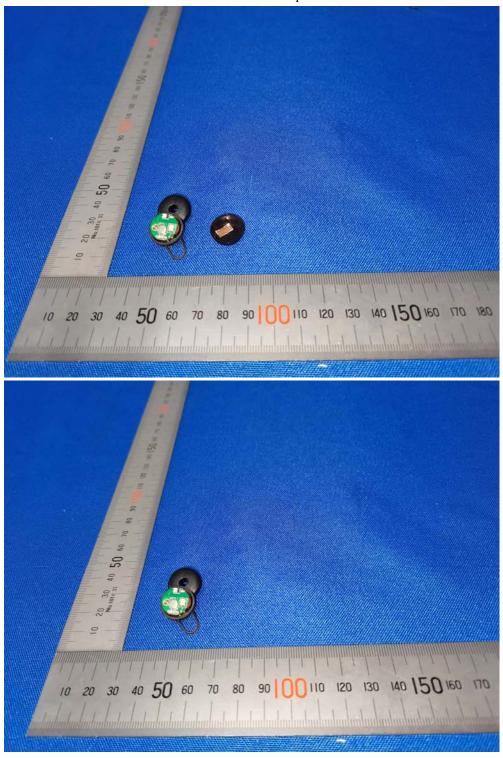
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Inside View - Left earphone



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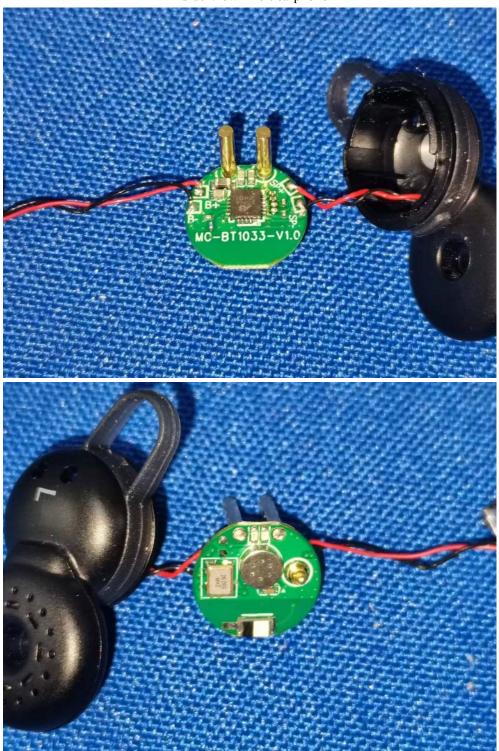
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Inside View - Left earphone



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Outside View - Right earphone



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Outside View - Right earphone



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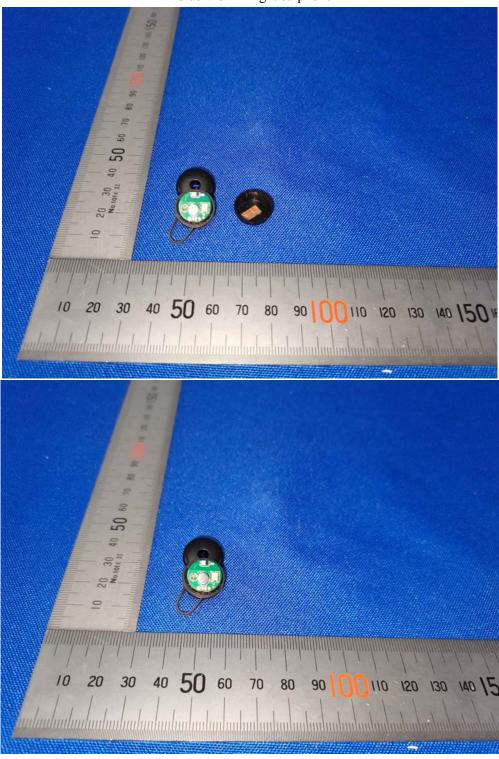
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Inside View - Right earphone



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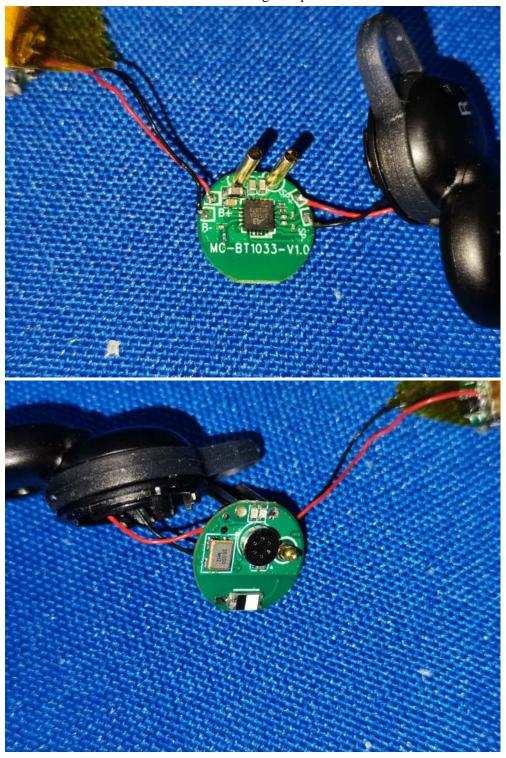
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Inside View - Right earphone



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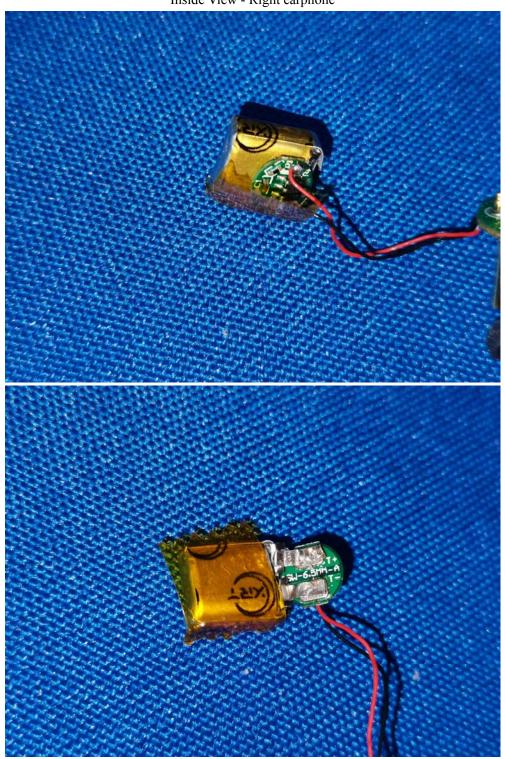
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Inside View - Right earphone



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