

Shenzhen CTA Testing Technology Co., Ltd.

Room 106, Building 1, Yibaolai Industrial Park, Qiaotou Community, Fuhai Street, Bao'an District, Shenzhen, China

FCC PART 15 SUBPART C TEST REPORT

Report Reference No...... CTA23102000401

FCC ID.....: 2BDEP-MAGTUNE5000

Compiled by

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Testing Laboratory Name Shenzhen CTA Testing Technology Co., Ltd.

Address...... Room 106, Building 1, Yibaolai Industrial Park, Qiaotou Community,

Fuhai Street, Bao'an District, Shenzhen, China

Applicant's name...... Shenzhen WireBeats Technology Co., Ltd

Building A123, Fengtai Building, Third Industrial Zone, Shayi

Address....... Community, Shajing Street, Bao'an District, Shenzhen, Guangdong,

China

Test specification:

Standard FCC Rules and Regulations Part 15 Subpart C (Section 15.209),

ANSI C63.10: 2013

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Test item description WireBeats

Trade Mark N/A

Manufacturer Shenzhen WireBeats Technology Co., Ltd

Model/Type reference...... Mag tune 5000

Listed Models N/A

Modulation Type: ASK

Operation Frequency...... From 110KHz~205KHz

Rating DC 3.7V From battery and DC 5.0V From external circuit

Wireless output: 5W

Result..... PASS

Shenzhen CTA Testing Technology Co., Ltd.

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TEST REPORT

Equipment under Test WireBeats

Model /Type Mag tune 5000

Listed Models N/A CTATESTING

Applicant Shenzhen WireBeats Technology Co., Ltd

Building A123, Fengtai Building, Third Industrial Zone, Shayi Community, Address

> Shajing Street, Bao'an District, Shenzhen, Guangdong, China TATESTING

Shenzhen WireBeats Technology Co., Ltd Manufacturer

Building A123, Fengtai Building, Third Industrial Zone, Shayi Community, Address

Shajing Street, Bao'an District, Shenzhen, Guangdong, China

Test Result: **PASS**

The test report merely corresponds to the test sample.

It is not permitted to copy extracts of these test result without the written permission of the test laboratory. CTATESTING

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4E51"	CTATESTING	

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TEST STANDARDS

The tests were performed according to following standards:

FCC Rules and Regulations Part 15 Subpart C (Section 15.207): Conducted limits.

FCC Rules and Regulations Part 15 Subpart C (Section 15.200): Description 15.200 FCC Rules and Regulations Part 15 Subpart C (Section 15.209): Radiated emission limits; general requirements.

ANSI C63.10: 2013: American National Standard for Testing Unlicensed Wireless Devices

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SUMMARY

General Remarks 2.1

CIATES	
2.1 General Remarks	TATESTI
Date of receipt of test sample	: Oct. 20, 2023
Testing commenced on	: Oct. 20, 2023
Testing concluded on	: Oct. 31, 2023

2.2 Product Description

Testing commenced on	: Oct. 20, 2023
Testing concluded on	: Oct. 31, 2023
2.2 Product Description	
Product Name:	WireBeats
Model/Type reference:	Mag tune 5000
Hardware version:	V1.0
Software version:	V1.0
Test samples ID:	CTA231020004-1# (Engineer sample), CTA231020004-2# (Normal sample)
Power Supply:	DC 3.7V From battery and DC 5.0V From external circuit Wireless output: 5W
Adapter information (Auxiliary test supplied by test L	ab): Model: EP-TA20CBC Input: AC 100-240V 50/60Hz Output: DC 5V 2A
Operation frequency:	110KHz - 205KHz
Modulation type:	ASK
Antenna type:	Loop coil antenna

2.3 Description of the test mode

Equipment under test was operated during the measurement under the following conditions:

Charging and communication mode

Mode 1	Wireless Charging	ESTING	Recorded
Mode 2	Standby	CIA	Pre-tested

2.4 **Special Accessories**

The following is the EUT test of the auxiliary equipment provided by the laboratory:

Description	Manufacturer	Model	Technical Parameters	Certificate	Provided by
Wireless charge load	/	5W/7.5W/10W/15W	/	/	/
2.5 Modification No modifications we		to meet testing criteria.	CTATES	STING	

Modifications

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TEST ENVIRONMENT

Address of the test laboratory

Shenzhen CTA Testing Technology Co., Ltd.

Room 106, Building 1, Yibaolai Industrial Park, Qiaotou Community, Fuhai Street, Bao'an District, Shenzhen, China

3.2 Test Facility

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

FCC-Registration No.: 517856 Designation Number: CN1318

Shenzhen CTA Testing Technology Co., Ltd. has been listed on the US Federal Communications Commission list of test facilities recognized to perform electromagnetic emissions measurements.

A2LA-Lab Cert. No.: 6534.01

Shenzhen CTA Testing Technology Co., Ltd. has been listed by American Association for Laboratory Accreditation to perform electromagnetic emission measurement.

The 3m-Semi anechoic test site fulfils CISPR 16-1-4 according to ANSI C63.10 and CISPR 16-1-4:2010.

Environmental conditions

During the measurement the environmental conditions were within the listed ranges:

Radiated Emission:

Temperature:	24 ° C
	-TA
Humidity:	45 %
Atmospheric pressure:	950-1050mbar

AC Power Conducted Emission:

TO I OWEL COLLUCIED ETHISSION.	
Temperature:	25 ° C
ING	
Humidity:	46 %
-1N	9
Atmospheric pressure:	950-1050mbar

Conducted testing:

Atmospheric pressure:	950-1050mbar	
Conducted testing:		TING
Temperature:	25 ° C	
	C	
Humidity:	44 %	
	D p season	
Atmospheric pressure:	950-1050mbar	

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Summary of measurement results

Description of test	Result
Conducted emissions test	Compliant
Radiated emission test	Compliant
The 20dB bandwidth measurement	Compliant
Antenna requirement	Compliant

Note: The wireless charge output is 10W when charging with the adapter, and 15W when the battery is discharged.

Statement of the measurement uncertainty

The data and results referenced in this document are true and accurate. The reader is cautioned that there may be errors within the calibration limits of the equipment and facilities. The measurement uncertainty was calculated for all measurements listed in this test report acc. to TR-100028-01" Electromagnetic compatibility and Radio spectrum Matters (ERM); Uncertainties in the measurement of mobile radio equipment characteristics; Part 1" and TR-100028-02 "Electromagnetic compatibility and Radio spectrum Matters (ERM);Uncertainties in the measurement of mobile radio equipment characteristics; Part 2 " and is documented in the Shenzhen CTA Testing Technology Co., Ltd. quality system acc. to DIN EN ISO/IEC 17025. Furthermore, component and process variability of devices similar to that tested may result in additional deviation. The manufacturer has the sole responsibility of continued compliance of the device.

Hereafter the best measurement capability for Shenzhen CTA Testing Technology Co., Ltd.:

	Test	Range	Measurement Uncertainty	Notes
	Radiated Emission	30~1000MHz	4.06 dB	(1)
	Radiated Emission	1~18GHz	5.14 dB	(1)
	Radiated Emission	18-40GHz	5.38 dB	(1)
	Conducted Disturbance	0.15~30MHz	2.14 dB	(1)
	Output Peak power	30MHz~18GHz	0.55 dB	(1)
	Power spectral density	/	0.57 dB	(1)
	Spectrum bandwidth	/	1.1%	(1)
	Radiated spurious emission (30MHz-1GHz)	30~1000MHz	4.10 dB	(1)
	Radiated spurious emission (1GHz-18GHz)	1~18GHz	4.32 dB	(1)
	Radiated spurious emission (18GHz-40GHz)	18-40GHz	5.54 dB	(1)

⁽¹⁾ This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2. CTATES:



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Equipments Used during the Test

	Test Equipment	Manufacturer	Model No.	Equipment No.	Calibration Date	Calibration Due Date
	LISN	R&S	ENV216	CTA-308	2023/08/02	2024/08/01
	LISN	R&S	ENV216	CTA-314	2023/08/02	2024/08/01
	EMI Test Receiver	R&S	ESPI	CTA-307	2023/08/02	2024/08/01
	EMI Test Receiver	R&S	ESCI	CTA-306	2023/08/02	2024/08/01
TATE	Spectrum Analyzer	Agilent	N9020A	CTA-301	2023/08/02	2024/08/01
	Spectrum Analyzer	R&S	FSP	CTA-337	2023/08/02	2024/08/01
	Vector Signal generator	Agilent	N5182A	CTA-305	2023/08/02	2024/08/01
	Analog Signal Generator	R&S	SML03	CTA-304	2023/08/02	2024/08/01
	WIDEBAND RADIO COMMUNICATION TESTER	CMW500	R&S	CTA-302	2023/08/02	2024/08/01
	Temperature and humidity meter	Chigo	ZG-7020	CTA-326	2023/08/02	2024/08/01
	Ultra-Broadband Antenna	Schwarzbeck	VULB9163	CTA-310	2023/10/17	2024/10/16
	Horn Antenna	Schwarzbeck	BBHA 9120D	CTA-309	2023/10/13	2024/10/12
	Loop Antenna	Zhinan	ZN30900C	CTA-311	2023/10/17	2024/10/16
	Horn Antenna	Beijing Hangwei Dayang	OBH100400	CTA-336	2021/08/07	2024/08/06
	Amplifier	Schwarzbeck	BBV 9745	CTA-312	2023/08/02	2024/08/01
	Amplifier	Taiwan chengyi	EMC051845B	CTA-313	2023/08/02	2024/08/01
ATE	Directional coupler	NARDA	4226-10	CTA-303	2023/08/02	2024/08/01
	High-Pass Filter	XingBo	XBLBQ-GTA18	CTA-402	2023/08/02	2024/08/01
	High-Pass Filter	XingBo	XBLBQ-GTA27	CTA-403	2023/08/02	2024/08/01
	Automated filter bank	Tonscend	JS0806-F	CTA-404	2023/08/02	2024/08/01
	Power Sensor	Agilent	U2021XA	CTA-405	2023/08/02	2024/08/01
	Amplifier	Schwarzbeck	BBV9719	CTA-406	2023/08/02	2024/08/01
	CTATESTI.	C C	ATESTING		ESTING	

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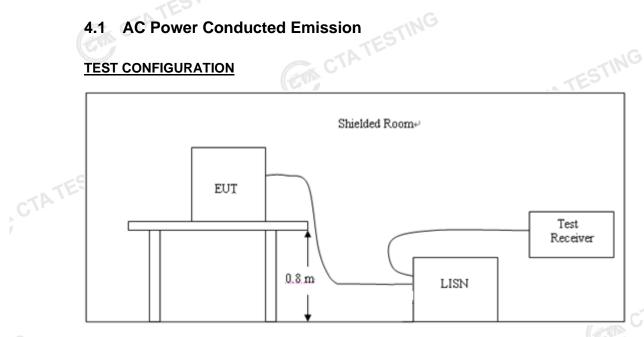
	Test Equipment	Manufacturer	Model No.	Version number	Calibration Date	Calibration Due Date
	EMI Test Software	Tonscend	TS®JS32-RE	5.0.0.2	N/A	N/A
	EMI Test Software	Tonscend	TS®JS32-CE	5.0.0.1	N/A	N/A
	RF Test Software	Tonscend	TS®JS1120-3	3.1.65	N/A	N/A
	RF Test Software	Tonscend	TS®JS1120	3.1.46	N/A	N/A
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CTATE	5,	CTATESTING				
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TEST CONDITIONS AND RESULTS

AC Power Conducted Emission

TEST CONFIGURATION



TEST PROCEDURE

- 1, The equipment was set up as per the test configuration to simulate typical actual usage per the user's manual. The EUT is a tabletop system, a wooden table with a height of 0.8 meters is used and is placed on the ground plane as per ANSI C63.10.
- 2, Support equipment, if needed, was placed as per ANSI C63.10.
- 3, All I/O cables were positioned to simulate typical actual usage as per ANSI C63.10.
- 4, If a EUT received DC power from the USB Port of Notebook PC, the PC's adapter received power through a Line Impedance Stabilization Network (LISN) which supplied power source and was grounded to the ground plane.
- 5, All support equipments received AC power from a second LISN, if any.
- 6, The EUT test program was started. Emissions were measured on each current carrying line of the EUT using a spectrum Analyzer / Receiver connected to the LISN powering the EUT. The LISN has two monitoring points: Line 1 (Hot Side) and Line 2 (Neutral Side). Two scans were taken: one with Line 1 connected to Analyzer / Receiver and Line 2 connected to a 50 ohm load; the second scan had Line 1 connected to a 50 ohm load and Line 2 connected to the Analyzer / Receiver.
- 7, Analyzer / Receiver scanned from 150 KHz to 30MHz for emissions in each of the test modes.

AC Power Conducted Emission Limit

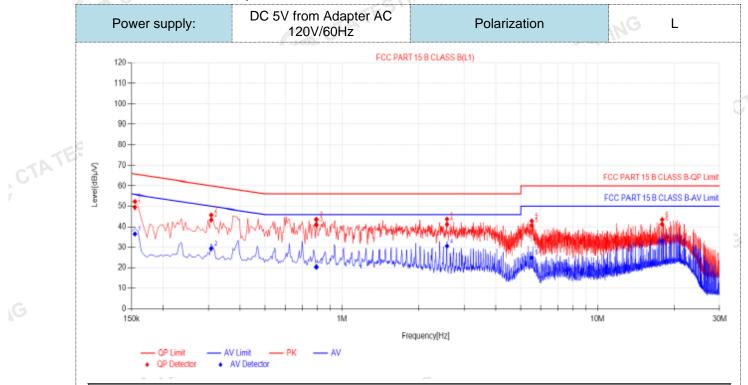
For intentional device, according to § 15.207(a) AC Power Conducted Emission Limits is as following:

Frequency range (MHz)	Limit	(dBuV)
Frequency range (Miriz)	Quasi-peak	Average
0.15-0.5	66 to 56*	56 to 46*
0.5-5	56	46
5-30	60	50
* Decreases with the logarithm of the frequ	iency.	
CTATESTING CTATESTING	TATESTING	TING

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TEST RESULTS

1. Both 120 VAC, 50/60 Hz and 240 VAC, 50/60 Hz power supply have been tested, only the worst result of 120 VAC, 60 Hz was reported as below:



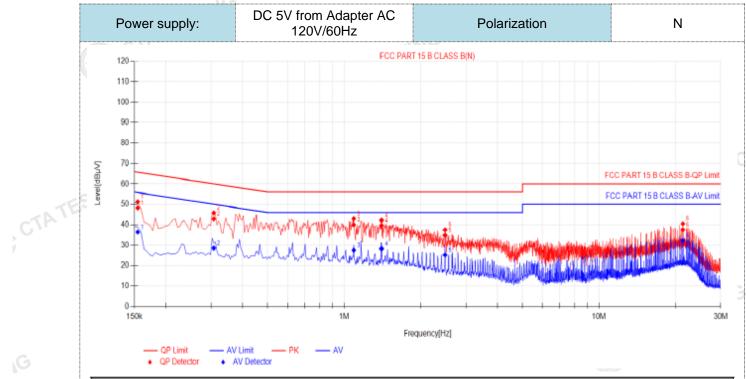
	Final Data List												
No.	NO.	Freq. [MHz]	Factor [dB]	QP Reading[dB μV]	QP Value [dBµV]	QP Limit [dBµV]	QP Margin [dB]	AV Reading [dBμV]	AV Value [dBµV]	ΑV Limit [dBμV]	AV Margin [dB]	Verdict	
	1	0.1545	9.89	39.56	49.45	65.75	16.30	26.55	36.44	55.75	19.31	PASS	
	2	0.3075	9.94	33.35	43.29	60.04	16.75	19.40	29.34	50.04	20.70	PASS	
	3	0.7935	9.97	31.11	41.08	56.00	14.92	10.47	20.44	46.00	25.56	PASS	
	4	2.571	10.09	31.14	41.23	56.00	14.77	20.49	30.58	46.00	15.42	PASS	
	5	5.523	10.07	30.63	40.70	60.00	19.30	14.82	24.89	50.00	25.11	PASS	
	6	17.889	10.37	30.92	41.29	60.00	18.71	22.83	33.20	50.00	16.80	PASS	

CTATESTING

Note: Note:1).QP Value ($dB\mu V$)= QP Reading ($dB\mu V$)+ Factor (dB)

- 2). Factor (dB)=insertion loss of LISN (dB) + Cable loss (dB)
- 3). $QPMargin(dB) = QP Limit (dB\mu V) QP Value (dB\mu V)$
- 4). AVMargin(dB) = AV Limit (dB μ V) AV Value (dB μ V)

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		μV]	[dBµV]	Limit [dBµV]	Margin [dB]	Reading [dBµV]	Value [dBµV]	Limit [dBµV]	Margin [dB]	Verdict
1 0.1545	10.00	38.25	48.25	65.75	17.50	26.38	36.38	55.75	19.37	PASS
2 0.3075	9.86	32.98	42.84	60.04	17.20	18.74	28.60	50.04	21.44	PASS
3 1.0905	10.15	29.82	39.97	56.00	16.03	17.44	27.59	46.00	18.41	PASS
4 1.401	10.15	29.47	39.62	56.00	16.38	18.14	28.29	46.00	17.71	PASS
5 2.4855	10.12	24.77	34.89	56.00	21.11	15.16	25.28	46.00	20.72	PASS
6 21.363	10.61	26.91	37.52	60.00	22.48	21.70	32.31	50.00	17.69	PASS

CTA TESTING

- 2). Factor (dB)=insertion loss of LISN (dB) + Cable loss (dB)
- 3). $QPMargin(dB) = QP Limit (dB\mu V) QP Value (dB\mu V)$
- 4). $AVMargin(dB) = AV Limit (dB\mu V) AV Value (dB\mu V)$

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Radiated Emission 4.2

Limit

For intentional device, according to § 15.209(a), the general requirement of field strength of radiated emission out of authorized band shall not exceed the following table at a 3 meters measurement distance.

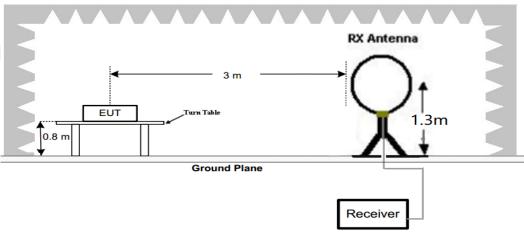
In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a)

emission	

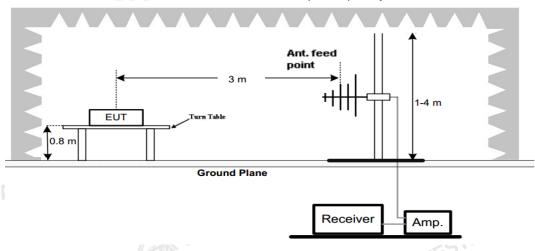
	Frequency (MHz)	Distance (Meters)	Radiated (dBµV/m)	Radiated (µV/m)
	0.009-0.49	3	20log(2400/F(KHz))+40log(300/3)	2400/F(KHz)
TATE	0.49-1.705 3		20log(24000/F(KHz))+ 40log(30/3)	24000/F(KHz)
CALL	1.705-30	3	20log(30)+ 40log(30/3)	30
1	30-88	3	40.0	100
	88-216	3	43.5	150
	216-960		46.0	200
	Above 960	3	54.0	500

TEST CONFIGURATION

Radiated Emission Test Set-Up, Frequency Below 30MHz



Radiated Emission Test Set-Up, Frequency below 1000MHz



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- Below 1GHz measurement the EUT is placed on a turntable which is 0.8m above ground plane.
- Maximum procedure was performed by raising the receiving antenna from 1m to 4m and rotating the turn table from 0°C to 360°C to acquire the highest emissions from EUT
- 3. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
- Repeat above procedures until all frequency measurements have been completed. 4.
- 5. Radiated emission test frequency band from 9KHz to 1000MHz.
- The distance between test antenna and EUT as following table states:

Test Frequency range	Test Antenna Type	Test Distance
9KHz-30MHz	Active Loop Antenna	3
30MHz-1GHz	Bilog Antenna	3

Setting test receiver/spectrum as following table states:

Test Frequency range	Test Receiver/Spectrum Setting	Detector	
9KHz-150KHz	RBW=200Hz/VBW=3KHz,Sweep time=Auto	QP	
150KHz-30MHz	RBW=9KHz/VBW=100KHz,Sweep time=Auto	QP	
30MHz-1GHz	RBW=120KHz/VBW=1000KHz,Sweep time=Auto	QP	
RESULTS	GTATES CTATES		STING
(Hz-30MHz			
WOR	ST-CASE RADIATED EMISSION BELOW 30 MHz		

TEST RESULTS

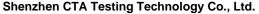
For 9 KHz-30MHz

WORST-CASE RADIATED EMISSION BELOW 30 MHz

Frequency	Reading	Polar	Antenna Factor	Cable Loss	Emission Levels	Limits at 3m	Margin	Detector Mode
(MHz)	(dBµV/m)	Loop	(dB/m)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	
0.119440(F)	76.68	Loop	23.63	0.02	100.33	106.06	5.73	PK
0.119440(F)	55.81	Loop	23.63	0.02	79.46	86.06	6.60	AV
0.110	54.54	Loop	23.51	0.02	78.07	106.78	28.71	PK
0.110	48.96	Loop	23.51	0.02	72.49	86.78	14.29	AV
0.288	45.99	Loop	23.82	-0.17	69.64	98.42	28.78	QP
0.471	42.21	Loop	24.21	-0.28	66.14	94.14	28.00	QP
0.549	35.45	Loop	24.32	-0.3	59.47	72.81	13.34	QP
- NG								

Remark:

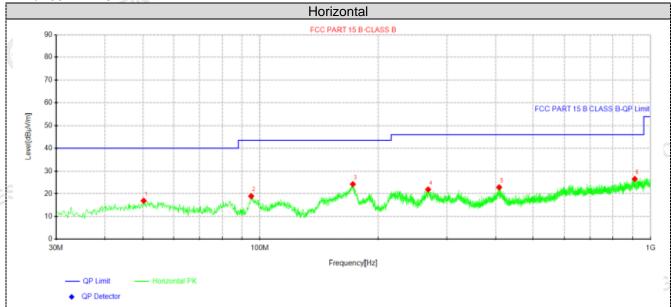
- Data of measurement within this frequency range shown "-- in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits and not recorded.
- The test limit distance is 3m limit.
- CTATESTING PK means Peak Value, QP means Quasi Peak Value, AV means Average Value.
- F means Fundamental Frequency.
- Emission level (dBuV/m) = Reading + Antenna Factor + Cable Loss. 5.
- Margin value = Limit value- Emission level.



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For 30MHz-1GHz

CTATESTING

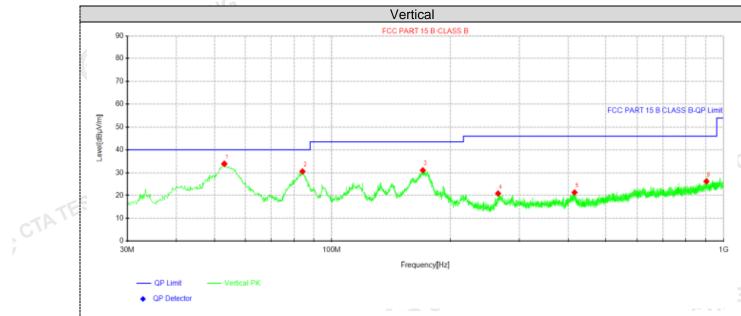


Susp	Suspected Data List											
NO	Freq.	Reading	Level	Factor	Limit	Margin	Height	Angle	Dolority			
NO.	[MHz]	[dBµV]	[dBµV/m]	[dB/m]	[dBµV/m]	[dB]	[cm]	[°]	Polarity			
1	50.2488	28.30	16.84	-11.46	40.00	23.16	100	360	Horizontal			
2	94.99	33.25	18.88	-14.37	43.50	24.62	100	237	Horizontal			
3	172.953	39.62	24.23	-15.39	43.50	19.27	100	283	Horizontal			
4	268.377	34.11	21.85	-12.26	46.00	24.15	100	90	Horizontal			
5	408.421	33.21	22.81	-10.40	46.00	23.19	100	90	Horizontal			
6	909.79	28.74	26.53	-2.21	46.00	19.47	100	179	Horizontal			

Note:1).Level ($dB\mu V/m$)= Reading ($dB\mu V$)+ Factor (dB/m)

- 2). Factor(dB/m)=Antenna Factor (dB/m) + Cable loss (dB) Pre Amplifier gain (dB)
- 3). Margin(dB) = Limit (dB μ V/m) Level (dB μ V/m)

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Susp	Suspected Data List												
NO	Freq.	Reading	Level	Factor	Limit	Margin	Height	Angle	Dolositu				
NO.	[MHz]	[dBµV]	[dBµV/m]	[dB/m]	[dBµV/m]	[dB]	[cm]	[°]	Polarity				
1	53.0375	45.60	33.86	-11.74	40.00	6.14	100	0	Vertical				
2	84.0775	47.05	30.60	-16.45	40.00	9.40	100	67	Vertical				
3	170.771	46.58	31.11	-15.47	43.50	12.39	100	144	Vertical				
4	264.618	33.16	20.84	-12.32	46.00	25.16	100	358	Vertical				
5	415.332	31.63	21.29	-10.34	46.00	24.71	100	77	Vertical				
6	902.757	28.49	26.21	-2.28	46.00	19.79	100	33	Vertical				

Note:1).Level ($dB\mu V/m$)= Reading ($dB\mu V$)+ Factor (dB/m)

- 2). Factor(dB/m)=Antenna Factor (dB/m) + Cable loss (dB) Pre Amplifier gain (dB)
- 3). Margin(dB) = Limit (dB μ V/m) Level (dB μ V/m)

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The 20dB bandwidth 4.3

TEST CONFIGURATION



TEST PROCEDURE

Intentional radiators operating under the alternative provisions to the general emission limits, as contained in §§15.217 through 15.257 and in subpart E of this part, must be designed to ensure that 20dB bandwidth of the emission, or whatever bandwidth may otherwise be specified in the specific rule section under which the equip compliance with the 20dB attenuation specification may base on measurement at the intentional radiator's antenna output terminal unless the intentional radiator uses a permanently attached antenna, in which case compliance shall be deomonstrated by measuring the radiated emissions.

LIMIT

The 20dB bandwidth shall be less than 80% of the permitted frequency band.

TEST RESULTS

Mode	Freq (KHz)	20dB Bandwidth (KHz)	Conclusion
Tx Mode	119.440	2.884	PASS



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Antenna Requirement

Standard Applicable

Standard Applicable

CTA TESTING For intentional device, according to FCC 47 CFR Section 15.203, an intentional radiator shall be designed to CTATE ensure that no antenna other than that furnished by the responsible party shall be used with the device.

Antenna Information

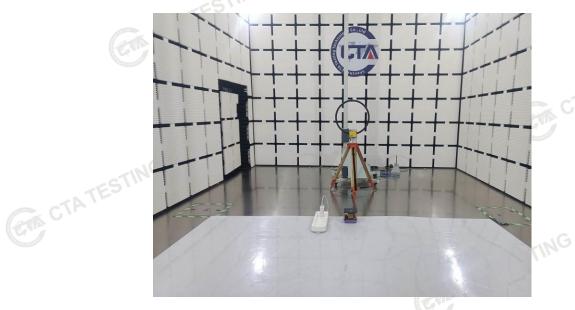
The antenna used in this product is a Coil Antenna, The directional gains of antenna used for transmitting is 0dBi.

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Test Setup Photos of the EUT





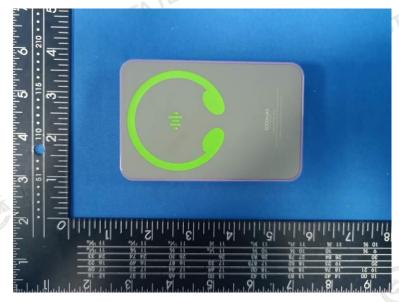


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PHOTOS OF THE EUT

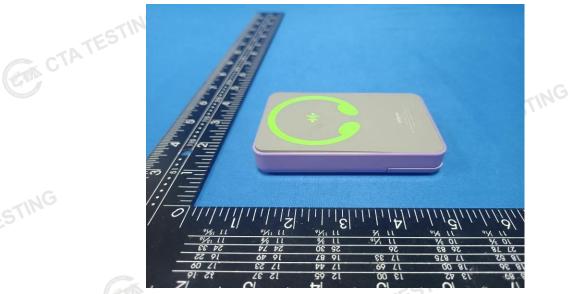




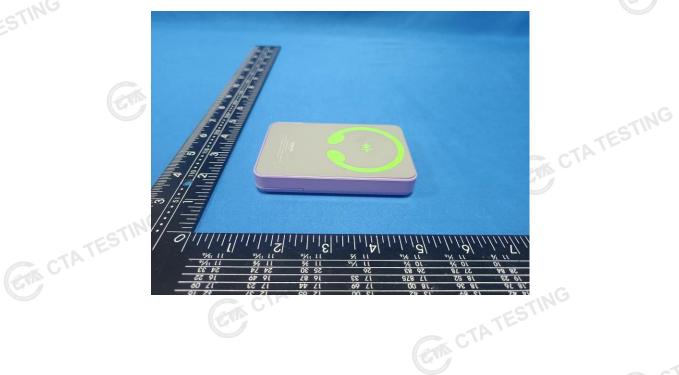
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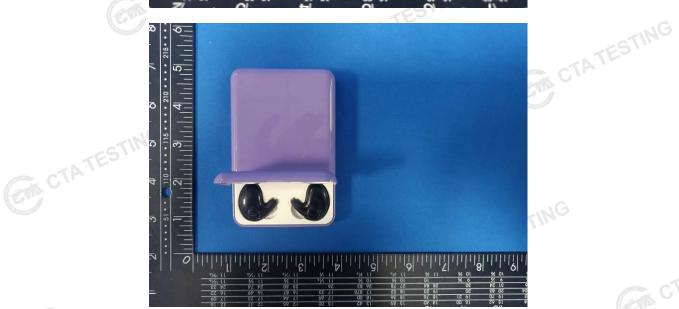






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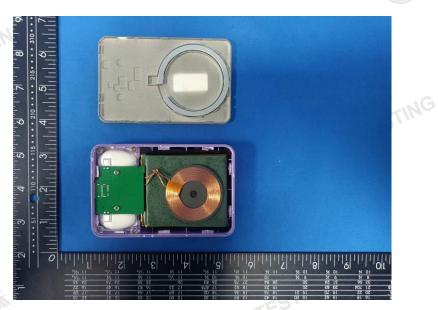




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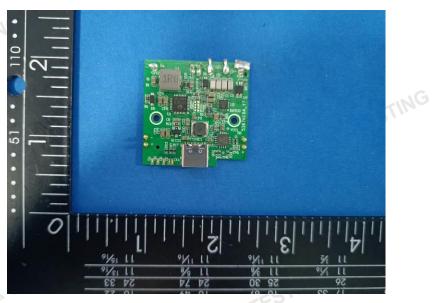


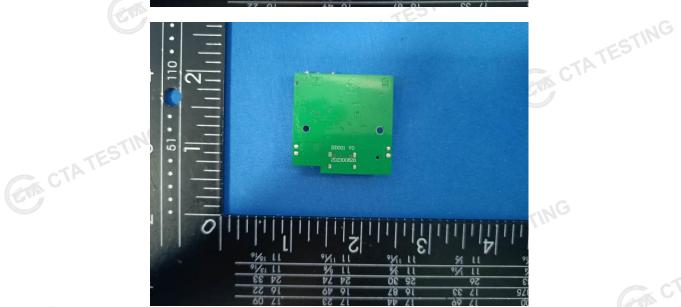


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***** End of Report **************