

FCC TEST REPORT

FCC ID: 2AP2N-3IN1

On Behalf of

Shenzhen Esorun Technology Co.,LTD

3in1 Wireless charging station

Model No.: Farer 3in1

Prepared for : Shenzhen Esorun Technology Co.,LTD

Address Room 226, Building A, B, C, Zone B, Yuanfen Industrial Zone, Taoyuan

Community, Dalang Street, Longhua District, Shenzhen

Prepared By : Shenzhen Alpha Product Testing Co., Ltd.

Address : Building i, No.2, Lixin Road, Fuyong Street, Bao'an District,

518103, Shenzhen, Guangdong, China

Report Number : A2202143-C01-R01 Date of Receipt : February 25, 2022

Date of Test : February 25, 2022–March 2, 2022

Date of Report : March 2, 2022

Version Number : V0

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TEST REPORT DECLARATION

Applicant Shenzhen Esorun Technology Co.,LTD

Room 226, Building A, B, C, Zone B, Yuanfen Industrial Zone, Taoyuan Address

Community, Dalang Street, Longhua District, Shenzhen

Manufacturer Shenzhen Esorun Technology Co.,LTD

Room 226, Building A, B, C, Zone B, Yuanfen Industrial Zone, Taoyuan Address

Community, Dalang Street, Longhua District, Shenzhen

EUT Description 3in1 Wireless charging station

> (A) Model No. Farer 3in1 **ESORUN** (B) Trademark

Measurement Standard Used:

Date of issue....:

FCC CFR Title 47 Part 15 Subpart C Section 15.209

The device described above is tested by Shenzhen Alpha Product Testing Co., Ltd. to determine the maximum emission levels emanating from the device and the severe levels of the device can endure and its performance criterion. The test results are contained in this test report and Shenzhen Alpha Product Testing Co., Ltd. is assumed full responsibility for the accuracy and completeness of test. Also, this report shows that the EUT is technically compliant with the FCC CFR Title 47 Part 15 Subpart C Section 15.209 requirements.

This report applies to above tested sample only. This report shall not be reproduced in parts without written approval of Shenzhen Alpha Product Testing Co., Ltd.

Yannis wen Tested by (name + signature)....: Project Engineer Simple Guan Approved by (name + signature).....: Project Manager

March 2, 2022

Yannis Wen

Revision History

Revision	Issue Date	Revisions	Revised By
V0	March 2, 2022	Initial released Issue	Yannis Wen

Requirement	CFR 47 Section	Result		
Antenna requirement	§15.203	PASS		
AC Power Line Conducted Emission	§15.207	PASS		
Spurious Emission	§15.209(a)(f)	PASS		
Occupied Bandwidth	§15.215 (c)	PASS		

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Note:

- ${\it 1. PASS: Test item meets the requirement.}$
- 2. Fail: Test item does not meet the requirement.
- 3. N/A: Test case does not apply to the test object.
- 4. The test result judgment is decided by the limit of test standard.

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2. General Information

2.1. Description of Device (EUT)

EUT Name : 3in1 Wireless charging station

Model No. : Farer 3in1

DIFF. : N/A

Trademark : **ESORUN**

Power supply : Input : 5V/2A, 9V/2A, 12V/2A

Phone Output: 15W(Max)/10W/7.5W/5W

Watch Output: 3W(Max)(Apple Watch Series1,2,3,4,5)

Airpods Output:5W(Max)(Apple Airpod2,3)

Operation frequency : 120~205KHz

Modulation : MSK

Antenna Type : Coil Antenna, Maximum Gain is 0dBi (This value is supplied by

applicant).

Software version : $V_{1.0}$

Hardware version : V1.0

Connector cable loss : 0.5dB (This value is supplied by applicant).

Intend use environment : Residential, commercial and light industrial environment

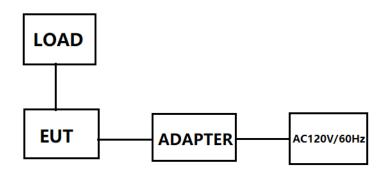
2.2. Accessories of Device (EUT)

Accessories 1 : /
Manufacturer : /
Model : /
Ratings : /

2.3. Tested Supporting System Details

No.	Description	Manufacturer	Model Serial Number		Certification
1	Wireless load				
2	Adapter		HNFCQC3024UU		

2.4. Block Diagram of Connection between EUT and Simulators



2.5. Description of Test Modes

Channel	Frequency (KHz)
1	127
2	148
3	150

2.6. Test Conditions

Items	Required	Actual
Temperature range:	15-35°C	24°C
Humidity range:	25-75%	56%
Pressure range:	86-106kPa	98kPa

2.7. Test Facility

Shenzhen Alpha Product Testing Co., Ltd Building i, No.2, Lixin Road, Fuyong Street, Bao'an District, 518103, Shenzhen, Guangdong, China

June 21, 2018 File on Federal Communication Commission

Registration Number: 293961

July 15, 2019 Certificated by IC Registration Number: CN0085

2.8. Measurement Uncertainty

(95% confidence levels, k=2)

Item	MU	Remark
Uncertainty for Conducted Emission Test	2.74dB	
Uncertainty for Radiation Emission test in 3m chamber	2.13 dB	Polarize: V
(below 30MHz)	2.57dB	Polarize: H
Uncertainty for Radiation Emission test in 3m chamber	3.77dB	Polarize: V
(30MHz to 1GHz)	3.80dB	Polarize: H
Uncertainty for Radiation Emission test in 3m chamber	4.13dB	Polarize: H
(1GHz to 25GHz)	4.16dB	Polarize: V
Uncertainty for radio frequency	5.4×10 ⁻⁸	
Uncertainty for conducted RF Power	0.37dB	

2.9. Test Equipment List

Equipment	Manufacture	Model No.	Serial No.	Last cal.	Cal Interval
9*6*6 anechoic chamber	CHENYU	9*6*6	N/A	2020.09.02	3Year
Spectrum analyzer	ROHDE&SCHW ARZ	FSV40-N	102137	2021.08.25	1Year
Spectrum analyzer	Agilent	N9020A	MY499100060	2021.08.25	1Year
Receiver	ROHDE&SCHW ARZ	ESR	1316.3003K03-102082- Wa	2021.08.25	1Year
Receiver	R&S	ESCI	101165	2021.08.25	1Year
Bilog Antenna	Schwarzbeck	VULB 9168	VULB9168-438	2020.04.12	2Year
Horn Antenna	SCHWARZBEC K	BBHA 9120 D	BBHA 9120 D(1201)	2020.04.12	2Year
Active Loop Antenna	SCHWARZBEC K	FMZB 1519B	00059	2021.08.30	2Year
RF Cable	Resenberger	Cable 1	RE1	2021.08.25	1Year
RF Cable	Resenberger	Cable 2	RE2	2021.08.25	1Year
RF Cable	Resenberger	Cable 3	CE1	2021.08.25	1Year
Pre-amplifier	НР	HP8347A	2834A00455	2021.08.25	1Year
Pre-amplifier	Agilent	8449B	3008A02664	2021.08.25	1Year
L.I.S.N.#1	Schwarzbeck	NSLK8126	8126-466	2021.08.25	1Year
L.I.S.N.#2	ROHDE&SCHW ARZ	ENV216	101043	2021.08.25	1 Year
Horn Antenna	SCHWARZBEC K	BBHA9170	00946	2021.08.30	2 Year
Preamplifier	SKET	LNPA_1840-50	SK2018101801	2021.08.25	1 Year
Power Meter	Agilent	E9300A	MY41496628	2021.08.25	1 Year
Power Sensor	DARE	RPR3006W	15100041SNO91	2021.08.25	1 Year
Temp. & Humid. Chamber	Weihuang	WHTH-1000-40-88	100631	2021.04.21	1 Year
Switching Mode Power Supply	JUNKE	JK12010S	20140927-6	2021.08.25	1 Year
Adjustable attenuator	MWRFtest	N/A	N/A	N/A	N/A

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10dB Attenuator Mini-Circuits DC-6G	N/A	N/A	N/A
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Software Information						
Test Item	Software Name	Manufacturer	Version			
RE	EZ-EMC	EZ	Alpha-3A1			
CE	EZ-EMC	EZ	Alpha-3A1			
RF-CE	MTS 8310	MW	V2.0.0.0			

3. Test Results and Measurement Data

3.1. Conducted Emission

3.1.1. Test Specification

Test Requirement:	FCC Part15 C Section 15	.207			
•					
Test Method:	ANSI C63.10:2013				
Frequency Range:	150 kHz to 30 MHz				
Receiver setup:	RBW=9 kHz, VBW=30 l	xHz, Sweep time=a	uto		
	Frequency range	Limit (d	dBuV)		
	(MHz)	Quasi-peak	Áverage		
Limits:	0.15-0.5	66 to 56*	56 to 46*		
	0.5-5	56	46		
	5-30	60	50		
	Refere	nce Plane			
Test Setup:	Adapter Filter AC power E.U.T Adapter Filter AC power EMI Receiver Remark E.U.T: Equipment Under Test LISN: Line Impedence Stabilization Network Test table height=0.8m				
Test Mode:	Charging + Transmitting Mode				
Test Procedure:	 The E.U.T is connected to an adapter through a line impedance stabilization network (L.I.S.N.). This provides a 50ohm/50uH coupling impedance for the measuring equipment. The peripheral devices are also connected to the main power through a LISN that provides a 50ohm/50uH coupling impedance with 50ohm termination. (Please refer to the block diagram of the test setup and photographs). Both sides of A.C. line are checked for maximum conducted interference. In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to ANSI C63.10: 2013 on conducted measurement. 				
Test Result:	PASS				

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3.1.2. Test Data

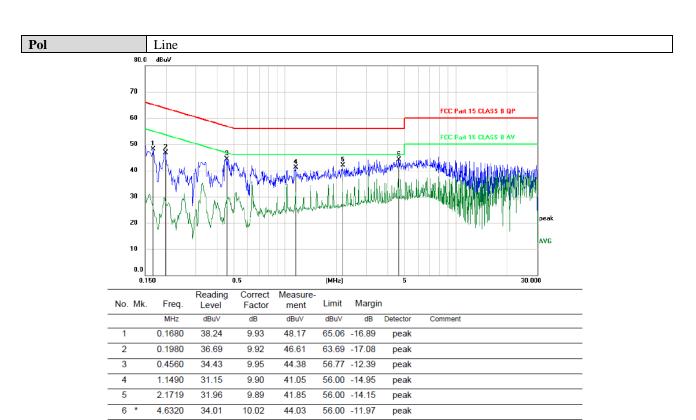
Please refer to following diagram for individual

Test Mode : Full Load, Empty Load

Test Result : PASS

Note: The test results are listed in next pages.

All test modes has been tested, this report only reflected the worst mode. (Full Load) If the limits for the measurement with the average detector are met when using a receiver with a peak detector, the test unit shall be deemed to meet both limits and the measurement with the average detector and quasi-peak detector need not be carried out. If the limits for the measurement with the average detector are met when using a receiver with a quasi-peak detector, the test unit shall be deemed to meet both limits and the measurement with the average detector need not be carried out.



Pol Neutral 80.0 dBuV 70 FCC Part 15 CLASS B QP 60 50 30 20 10 0.0 0.150 (MHz) 30.000 Reading Correct Measure-Freq. Limit Margin No. Mk. Factor ment MHz dBuV dBuV dB dBuV dB Detector Comment

*:Maximum data x:Over limit !:over margin

35.39

35.31

35.96

37.10

37.32

39.64

0.3270

0.4440

0.6390

2.6820

3.9600

6.6420

2

3

4

5

6

Note: Measurement=Reading Level+Correc Factor. Factor=(LISN or ISN or PLC or Current Probe)Factor+Cable

60.00 -10.25

59.53 -14.20

56.99 -11.73

56.00 -10.12

-8.98

-8.71

56.00

56.00

peak

peak

peak

peak

peak

peak

45.33

45.26

45.88

47.02

47.29

49.75

9.94

9.95

9.92

9.92

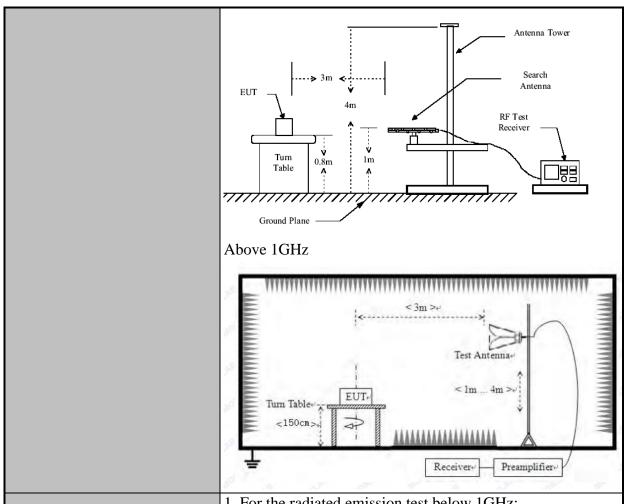
9.97

10.11

3.2. Radiated Spurious Emission Measurement

3.2.1. Test Specification

Test Requirement:	FCC Part15 C Section 15.209							
Test Method:	ANSI C63.10: 2013							
Frequency Range:	9 kHz to 25 GHz							
Measurement Distance:	3 m	3 m						
Antenna Polarization:	Horizontal & Vertical							
Operation mode:	Refer to item 4.1							
	Frequency 9kHz- 150kHz 150kHz-	Detector Quasi-per Quasi-per	ak	RBW 200Hz 9kHz	VBW 1kHz 30kHz		Remark si-peak Value si-peak Value	
Receiver Setup:	30MHz 30MHz-1GHz	Quasi-pe		100KHz	300KHz		si-peak Value	
	Above 1GHz	Peak		1MHz	3MHz	F	Peak Value	
	Above IGIE	Peak		1MHz	10Hz	Av	erage Value	
	Frequency 0.009-0.490			Field Strength (microvolts/meter) 2400/F(KHz)		Measurement Distance (meters)		
	0.490-1.705			24000/F(KHz)		30		
	1.705-30			30		30		
	30-88			100		3		
T • •/	88-216			150 200		3		
Limit:	216-960 Above 960			500			3 3	
	Above 960 500 3				3			
	Frequency		Field Strength (microvolts/meter)		Measurement Distance (meters)		Detector	
	Above 1GHz			500	3		Average	
	Above IGHZ		5	5000 3			Peak	
	For radiated en	missions	bel	low 30MF	Iz			
	Distance = 3m Computer					Computer		
Test setup:	Pre -Amplifier					plifier		
Test setup.	Turn table 1m					eiver		
		C	Groun	d Plane		L		
	30MHz to 1G	Hz						



1. For the radiated emission test below 1GHz:

The EUT was placed on a turntable with 0.8 meter above ground. The EUT was set 3 meters from the interference receiving antenna, which was mounted on the top of a variable height antenna tower. The EUT was arranged to its worst case and then tune the antenna tower (from 1 m to 4 m) and turntable (from 0 degree to 360 degrees) to find the maximum reading. A pre-amp and a high PASS filter are used for the test in order to get better signal level.

For the radiated emission test above 1GHz:

Place the measurement antenna on a turntable with 1.5 meter above ground, which is away from each area of the EUT determined to be a source of emissions at the specified measurement distance, while keeping the measurement antenna aimed at the source of emissions at each frequency of significant emissions, with polarization oriented for maximum response. The measurement antenna may have to be higher or lower than the EUT, depending on the radiation pattern of the emission and staying aimed at the emission source for receiving the maximum signal. The final measurement antenna elevation shall be that which maximizes the emissions. The measurement antenna elevation for maximum emissions shall be restricted to a range of heights of from

Test Procedure:

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	 1 m to 4 m above the ground or reference ground plane. 2. Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level 3. For measurement below 1GHz, If the emission level of the EUT measured by the peak detector is 3 dB lower than the applicable limit, the peak emission level will be reported. Otherwise, the emission measurement will be repeated using the quasi-peak detector and reported. 4. Use the following spectrum analyzer settings: Span shall wide enough to fully capture the emission being measured; Set RBW=100 kHz for f < 1 GHz; VBW ≥RBW; Sweep = auto; Detector function = peak; Trace = max hold; Set RBW = 1 MHz, VBW= 3MHz for f □ 1 GHz for peak measurement. For average measurement: VBW = 10 Hz, when duty cycle is no less than 98 percent. VBW ≥ 1/T, when duty cycle is less than 98 percent where T is the minimum transmission duration over which the transmitter is on and is transmitting at its maximum power control level
	for the tested mode of operation.
Test mode:	Refer to section 4.1 for details
Test results:	PASS

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3.2.2. Test Data

Please refer to following diagram for individual

Frequency Range : 9KHz~30MHz

Test Mode : TX: 127kHz, 148kHz, 150kHz

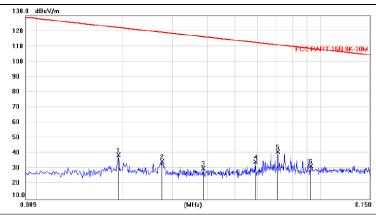
Test Results : PASS

Note: 1. The test results are listed in next pages.

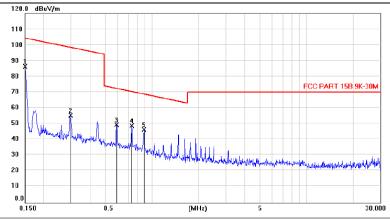
2. This mode is worst case mode, so this report only reflected the worst mode. (Full Load)

3. If the limits for the measurement with the average detector are met when using a receiver with a peak detector, the test unit shall be deemed to meet both limits and the measurement with the quasi-peak detector need not be carried out.

For signal coil



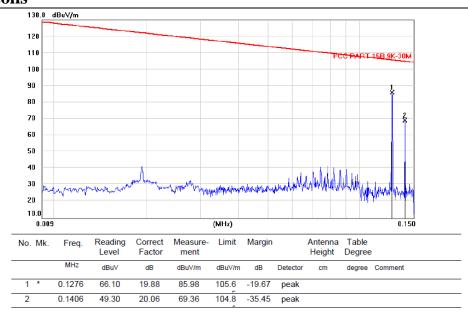
No. Mk.	Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Margin		Antenna Height	Table Degree	
	MHz	dBu∨	dB	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1	0.0191	17.75	21.27	39.02	122.0	-83.07	peak			
2	0.0275	13.56	21.06	34.62	118.9	-84.32	peak			
3	0.0384	9.70	20.53	30.23	116.0	-85.81	peak			
4	0.0590	14.32	20.04	34.36	112.3	-77.97	peak			
5 *	0.0708	20.72	20.19	40.91	110.7	-69.84	peak			
6	0.0928	11.73	19.87	31.60	108.4	-76.81	peak			



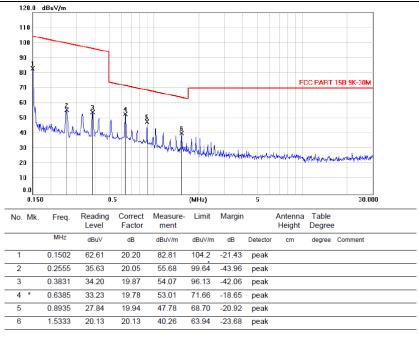
No.	Mk.	Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Margin		Antenna Height		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1	*	0.1500	66.17	20.20	86.37	104.2	-17.88	peak			
2		0.2960	35.45	19.99	55.44	98.36	-42.92	peak			
3		0.5914	29.56	19.75	49.31	72.34	-23.03	peak			
4		0.7401	28.87	19.84	48.71	70.36	-21.65	peak			
5		0.8887	26.31	19.93	46.24	68.75	-22.51	peak			

*:Maximum data x:Over limit !:over margin

Note: Measurement=Reading Level+Correc Factor. Factor=(LISN or ISN or PLC or Current Probe)Factor+Cable



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*:Maximum data x:Over limit !:over margin

Note: Measurement=Reading Level+Correc Factor. Factor=(LISN or ISN or PLC or Current Probe)Factor+Cable

Frequency Range : 30MHz~1000MHz

Test Mode : Full Load, Half Load, Empty Load

Test Results : PASS

Note: 1. The test results are listed in next pages.

2. All test modes has been tested, this report only reflected the worst mode. (Full Load)

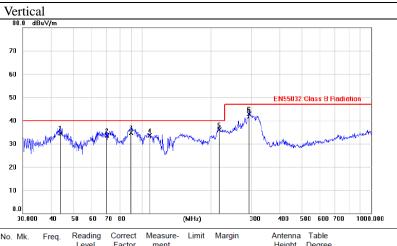
3. If the limits for the measurement with the average detector are met when using a receiver with a peak detector, the test unit shall be deemed to meet both limits and the measurement with the quasi-peak detector need not be carried out.

Frequency Range	:	Above 1GHz			
EUT	:	/	Test Date	:	/
M/N	:	/	Temperature	:	/
Test Engineer	:	/	Humidity	:	/
Test Mode	:	/			
Test Results	:	N/A			

1. The highest frequency of the internal sources of the EUT is less than 108 MHz, the Note: measurement shall only be made up to 1 GHz. So the frequency rang above 1GHz radiation test not applicable.

$30 MHz\hbox{-}1GHz$

Pol



No.	Mk	. Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Margin		Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1		43.9451	20.33	14.23	34.56	40.00	-5.44	QP			
2		70.1475	22.14	11.37	33.51	40.00	-6.49	QP			
3		89.4224	24.57	10.04	34.61	40.00	-5.39	QP			
4		107.5729	21.92	11.59	33.51	40.00	-6.49	QP			
5	*	216.8080	24.28	11.53	35.81	40.00	-4.19	QP			
6		293.3926	28.71	13.95	42.66	47.00	-4.34	QP			

Pol Horizonta



No. Mk	. Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Margin		Antenna Height	Table Degree	
	MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1	47.5248	11.39	14.08	25.47	40.00	-14.53	peak			
2	63.8333	16.91	12.52	29.43	40.00	-10.57	peak			
3	91.4733	24.31	10.19	34.50	40.00	-5.50	QP			
4	171.5929	19.59	13.86	33.45	40.00	-6.55	QP			
5 *	182.5592	22.39	12.37	34.76	40.00	-5.24	QP			
6	293.9418	25.23	13.97	39.20	47.00	-7.80	QP			

3.3. Test Specification

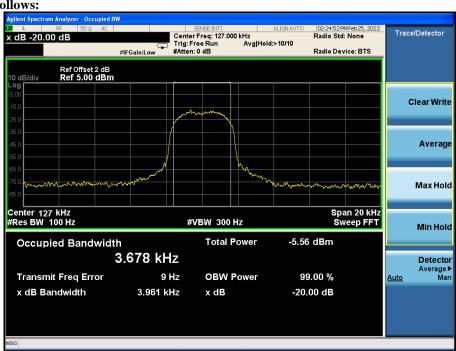
Test Requirement:	FCC Part15 C Section 15.215(c)
Test Method:	ANSI C63.10: 2013
Limit:	N/A
Test Procedure:	 According to the follow Test-setup, keep the relative position between the artificial antenna and the EUT. Set to the maximum power setting and enable the EUT transmit continuously. Use the following spectrum analyzer settings for 20dB Bandwidth measurement. Span = approximately 2 to 3 times the 20 dB bandwidth, centered on a hopping channel; RBW≥1% of the 20 dB bandwidth; VBW≥RBW; Sweep = auto; Detector function = peak; Trace = max hold. Measure and record the results in the test report.
Test setup:	Spectrum Analyzer EUT
Test Mode:	Refer to section 4.1 for details
Test results:	PASS

3.3.1. Test Data

For Watch

Frequency(KHz)	20dB Occupy Bandwidth (kHz)	Limit (kHz)	Conclusion	
127	3.961		PASS	

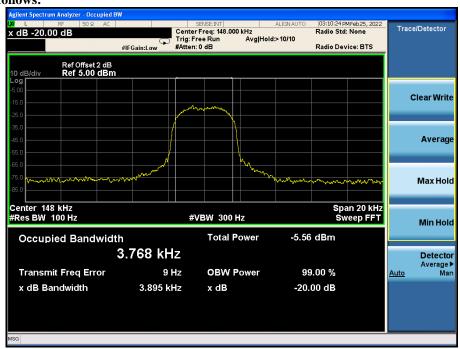
Test plots as follows:



For Airpods

Frequency(KHz)	20dB Occupy Bandwidth (kHz)	Limit (kHz)	Conclusion
148	3.895		PASS

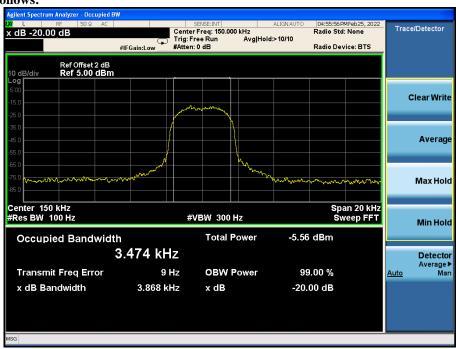
Test plots as follows:



For Phone

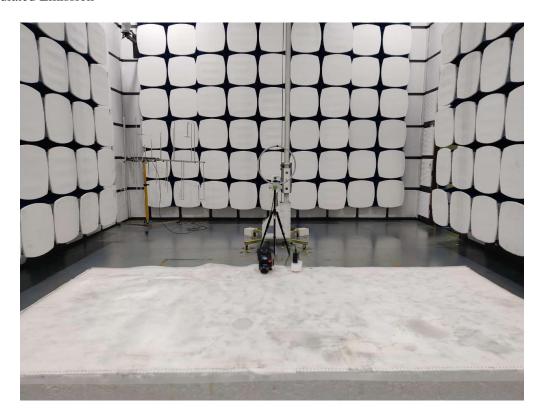
Frequency(KHz)	20dB Occupy Bandwidth (kHz)	Limit (kHz)	Conclusion
150	3.868		PASS

Test plots as follows:



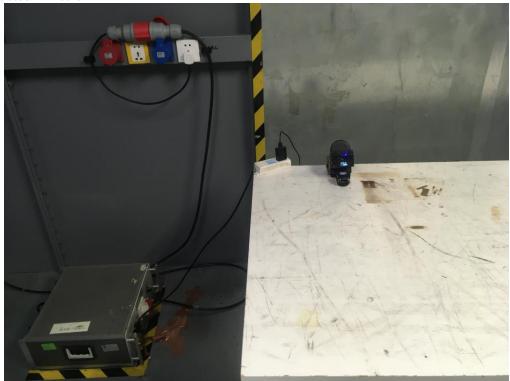
4. Photos of Test Setup

Radiated Emission





Conducted Emission



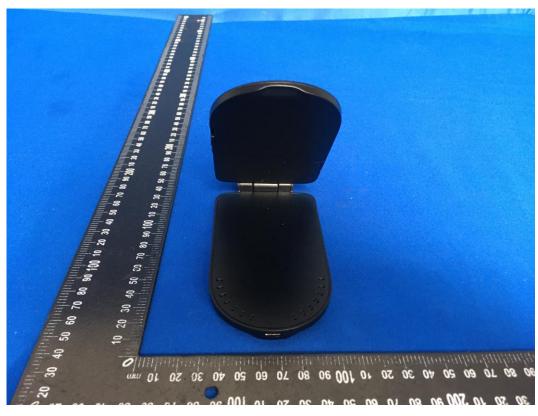
5. Photographs of EUT





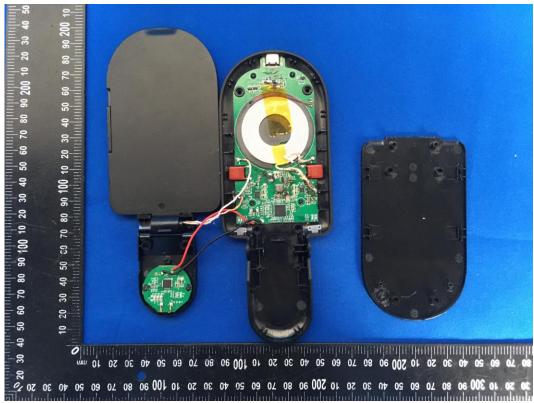


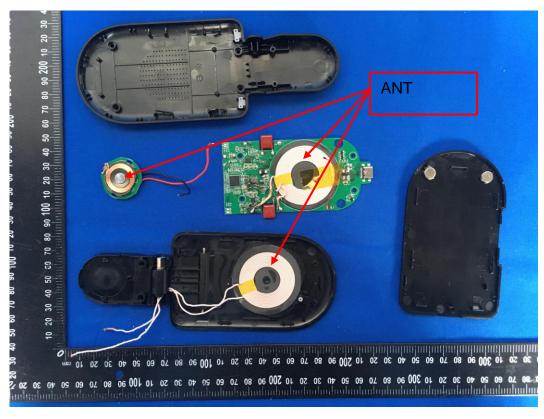




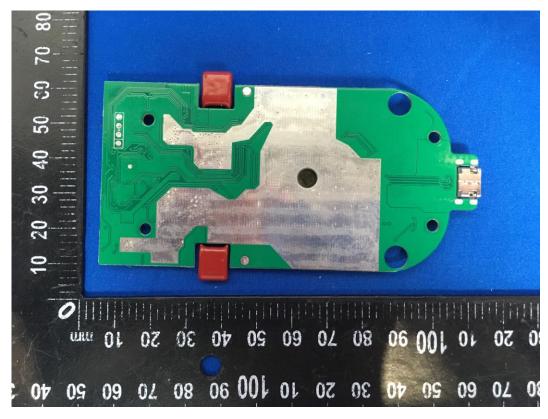


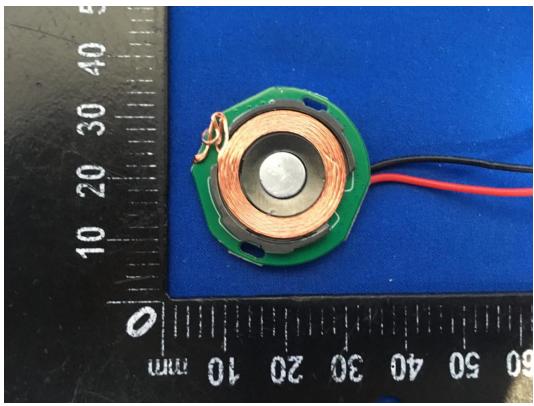


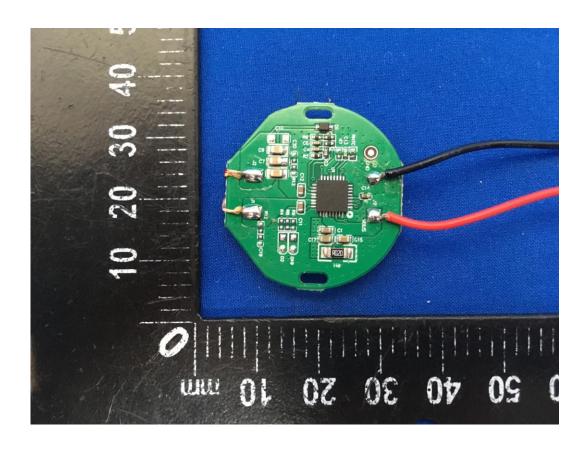












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