

FCC TEST REPORT FCC ID: 2AP2N-M52

On Behalf of

Shenzhen Esorun Technology Co., LTD

Magnetic Wireless Power Bank With Stand

Model No.: Fold M52, Fold M52M, Fold M52S

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	:	A2307239-C02-R07
Date of Receipt	:	August 2, 2023
Date of Test	:	August 2, 2023-August 14, 2023
Date of Report	:	October 16, 2023
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TEST REPORT DECLARATION

Applicant	:	Shenzhen Esorun Technology Co., LTD				
Address	:	Room 226, Building A, B, C, Zone B, Yuanfen Industrial Zone, Taoyuan Community, Dalang Street, Longhua District, Shenzhen				
Manufacturer	:	Shen	Shenzhen Esorun Technology Co., LTD			
Address	:		Room 226, Building A, B, C, Zone B, Yuanfen Industrial Zone, Taoyuan Community, Dalang Street, Longhua District, Shenzhen			
EUT Description	:	Magr	Magnetic Wireless Power Bank With Stand			
		(A)	Model No.	:	Fold M52, Fold M52M, Fold M52S	
		(B)	Trademark	:	ESORUN	

Measurement Standard Used: 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.

Tested by (name + signature).....:

Lucas Pang **Project Engineer**

Renter Poung

Reak Yang **Project Manager**

Date of issue.....

Approved by (name + signature).....:

October 16, 2023

Revision History

Revision	Issue Date	Revisions	Revised By
V0	October 16, 2023	Initial released Issue	Lucas Pang

1. Test Result Summary

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

Note:

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.

5. Decision rules for the conclusion of this test report: decision by actual test data without considering neasurement uncertainty.

2. General Information

2.1. Description of Device (EUT)						
EUT Name	:	Magnetic Wireless Power Bank With Stand				
Model No.	:	Fold M52, Fold M52M, Fold M52S				
DIFF.	:	There is no difference between the models except the appearance color. So all the test were performed on the model Fold M52.				
Power supply	:	DC 5V/9V/12V from adapter with AC 120V/60Hz DC 3.7V from battery Type-C Input: 5V=2.6A, 9V=2.0A, 12V=1.5A Wireless Output: 5V, 7.5W, 10W, 15W Type-C Output: 5V=2.4A, 9V=2.22A, 12V=1.67A Max Multiplex output: Type-C Output: 5V=1A and Wireless Output: 10W				
Radio Technology	•	Wireless power transmission systems				
Operation frequency	:	115-205KHz				
Modulation	:	MSK				
Antenna Type	:	Coil Antenna, Maximum Gain is 0dBi(This value is supplied by applicant).				
Connector cable loss	:	0.5dB (This value is supplied by applicant).				
Software version	:	V1.0				
Hardware version	:	V1.2				

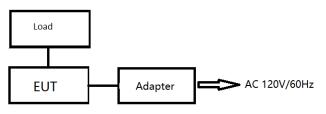
2.2. Accessories of Device (EUT)

Accessories	:	/
Manufacturer	:	/
Model	:	/
Input	:	/
Output	:	/

2.3. Tested Supporting System Details

No.	Description	Manufacturer	Model	Serial Number	Certification or SDoC
1	Adapter	Huoniu	HNFCQC3024UU	N/A	N/A
2	Load	N/A	N/A	N/A	N/A

2.4. Block Diagram of connection between EUT and simulators



2.5. Description of Test Modes

Channel	Frequency (KHz)
1	148

2.6. Test Conditions

Items	Required	Actual
Temperature range:	15-35 ℃	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: 14835A

2.8. Measurement Uncertainty

(95% confidence levels, k=2)

Item	Uncertainty
Uncertainty for Power point Conducted Emissions Test	1.63dB
Uncertainty for Radiation Emission test in 3m chamber (below 30MHz)	3.5dB
Uncertainty for Radiation Emission test in 3m chamber	3.74dB(Polarize: V)
(30MHz to 1GHz)	3.76dB(Polarize: H)
Uncertainty for Radiation Emission test in 3m chamber	3.77dB(Polarize: V)
(1GHz to 25GHz)	3.80dB(Polarize: H)
Uncertainty for radio frequency	5.06×10⁻8GHz
Uncertainty for conducted RF Power	0.40dB
Uncertainty for temperature	0.2°C
Uncertainty for humidity	1%
Uncertainty for DC and low frequency voltages	0.06%

Equipment	Manufacture	Model No.	Firmware version	Serial No.	Last cal.	Cal Interval
9*6*6 anechoic chamber	CHENYU	9*6*6	/	N/A	2022.05.17	3Year
Spectrum analyzer	ROHDE&SCHWARZ	FSV40-N	2.3	102137	2022.08.22	1Year
Spectrum analyzer	Agilent	N9020A	A.14.16	MY499100060	2022.08.22	1Year
Receiver	ROHDE&SCHWARZ	ESR	2.28 SP1	1316.3003K03-10 2082-Wa	2022.08.22	1Year
Receiver	R&S	ESCI	4.42 SP1	101165	2022.08.22	1Year
Bilog Antenna	Schwarzbeck	VULB 9168	/	VULB 9168#627	2021.08.30	2Year
Horn Antenna	SCHWARZBECK	BBHA 9120 D	/	2106	2021.08.30	2Year
Active Loop Antenna	SCHWARZBECK	FMZB 1519B	/	00059	2021.08.30	2Year
RF Cable	Resenberger	Cable 1	/	RE1	2022.08.22	1Year
RF Cable	Resenberger	Cable 2	/	RE2	2022.08.22	1Year
RF Cable	Resenberger	Cable 3	/	CE1	2022.08.22	1Year
Pre-amplifier	HP	HP8347A	/	2834A00455	2022.08.22	1Year
Pre-amplifier	Agilent	8449B	/	3008A02664	2022.08.22	1Year
L.I.S.N.#1	Schwarzbeck	NSLK8126	/	8126-466	2022.08.22	1Year
L.I.S.N.#2	ROHDE&SCHWARZ	ENV216	/	101043	2022.08.23	1 Year
Horn Antenna	SCHWARZBECK	BBHA9170	/	00946	2021.08.30	2 Year
Preamplifier	SKET	LNPA_1840 -50	/	SK2018101801	2022.08.22	1 Year
Power Meter	Agilent	E9300A	/	MY41496628	2022.08.22	1 Year
Power Sensor	DARE	RPR3006W	/	15100041SNO91	2022.08.22	1 Year
Temp. & Humid. Chamber	Weihuang	WHTH-1000 -40-880	/	100631	2022.08.22	1 Year
Switching Mode Power Supply	JUNKE	JK12010S	/	20140927-6	2022.08.22	1 Year
Adjustable attenuator	MWRFtest	N/A	/	N/A	N/A	N/A
10dB Attenuator	Mini-Circuits	DC-6G	/	N/A	N/A	N/A

2.9. Test Equipment List

Software Information									
Test Item	Test Item Software Name Manufacturer								
RE	EZ-EMC	Farad	Alpha-3A1						
CE	EZ-EMC	Farad	Alpha-3A1						
RF-CE	MTS 8310	MWRFtest	2.0.0.0						

3. Test Results and Measurement Data

3.1. Conducted Emission

3.1.1. Test Specification

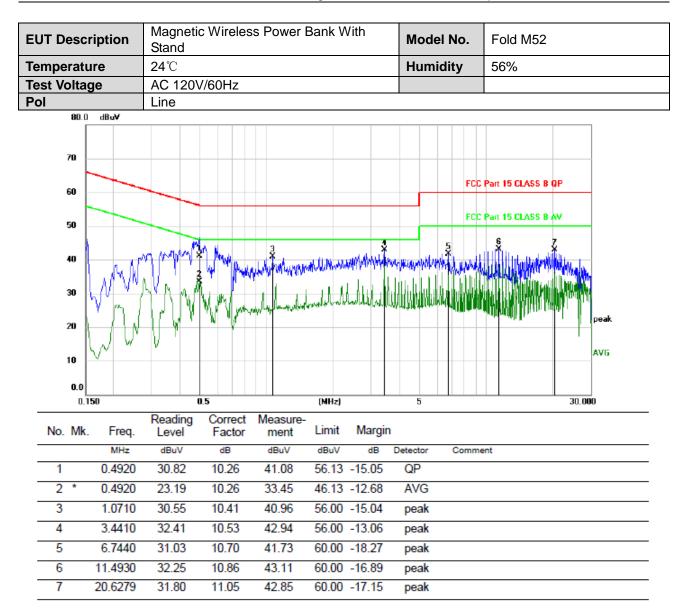
Test Requirement:	FCC Part15 C Section 15.20	07		
Test Method:	ANSI C63.10:2013			
Frequency Range:	150 kHz to 30 MHz			
Receiver setup:	RBW=9 kHz, VBW=30 kHz,	Sweep time=auto		
	Frequency range (MHz)	Limit (d	IBuV)	
		Quasi-peak	Average	
Limits:	0.15-0.5	66 to 56*	56 to 46*	
	0.5-5	56	46	
	5-30	60	50	
	Refere	nce Plane		
Test Setup:	40cm 80cm LISN 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:	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			

3.1.2. Test data

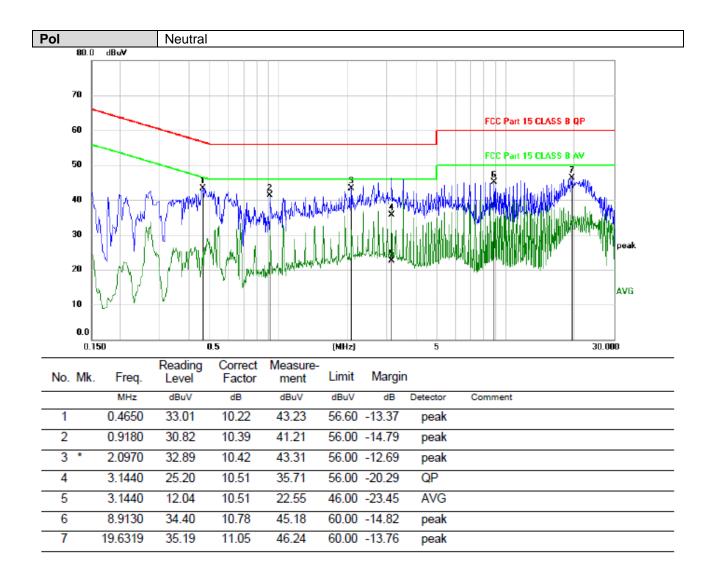
Please refer to following diagram for individual

Test Mo	ode : 148KHz								
Test Results : PASS									
Note:	The test results are listed in next pages.								
	All test modes has been tested, this report only reflected the worst mode.								
	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 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.								

Report No.: A2307239-C02-R07



*:Maximum data	x:Over limit	!:over margin		(Reference Only
Note: Measuremer	nt=Reading Lev	vel+Correc Factor.	Factor=(LISN or ISN or PLC or Current Probe)Factor+Cable



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

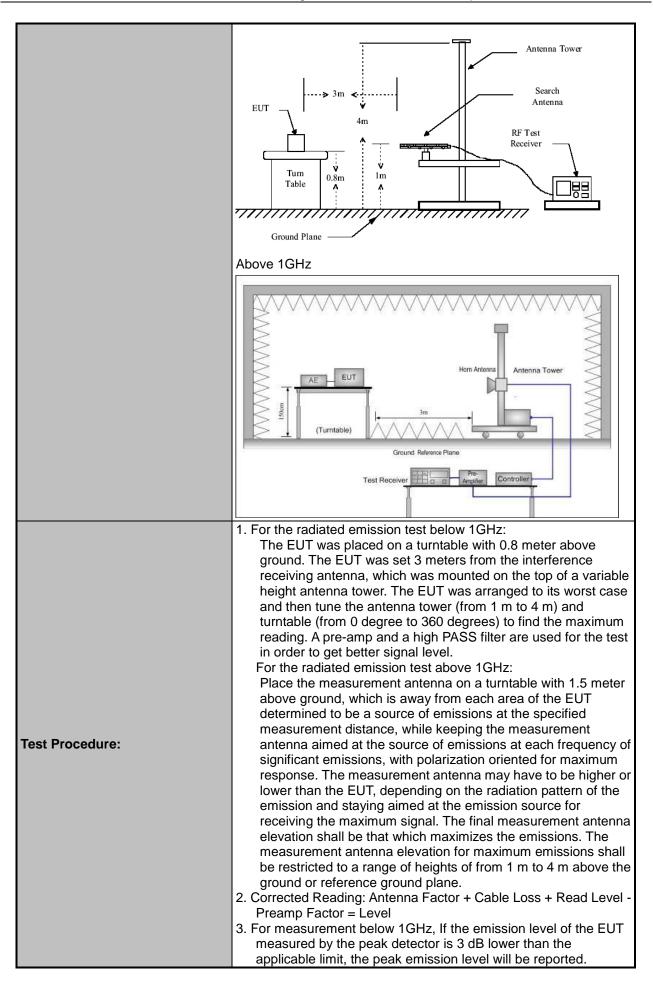
(Reference Only

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

3.2. Radiated Spurious Emission Measurement

3.2.1. Test Specification

Test Requirement:	FCC Part15 C	Section	on 15	.20	9				
Test Method:	ANSI C63.10: 2013 9 kHz to 25 GHz								
Frequency Range:	9 kHz to 25 GHz 3 m								
Measurement Distance:	3 m								
Antenna Polarization:	Horizontal & Vertical								
Operation mode:	Refer to item 4.	.1							
	Frequency 9kHz-		tecto asi-pe		RBW 200Hz	VBW 1kHz		Remark uasi-peak	
	150kHz		k .					Value	
Receiver Setup:	150kHz- 30MHz	Qua	asi-pe k	ea	9kHz	30kHz	Q	uasi-peak Value	
	30MHz-1GH	Qua	asi-pe	ea	100KH	300KH	Q	uasi-peak Value	
	Z	F	k Peak		z 1MHz	z 3MHz	Pe	eak Value	
	Above 1GHz		Peak		1MHz	10Hz		rage Value	
	Frequer	су		(Field Stre	ength Distan		asurement Distance meters)	
	0.009-0.4	490		2400/F(K				300	
	0.490-1.7			24000/F(I		KHz)		30	
	1.705-3			<u> </u>			30 3		
	30-88 88-216		150				3		
Limit:	216-96			200			3		
	Above 960				500 3				
	Frequency		Field Strength (microvolts/mete r)		olts/mete	Measure nt Distan (meter	се	Detector	
	Above 1GHz			500		3		Average	
	For radiated en		no ha		000 w 20MH -	3		Peak	
	For radiated en	lissio							
	Distance = 3m								
Test setup:	EUT	 Turn	table		Ĭ		Reco	iver	
			G	roun	d Plane		L		
	30MHz to 1GH	Z							

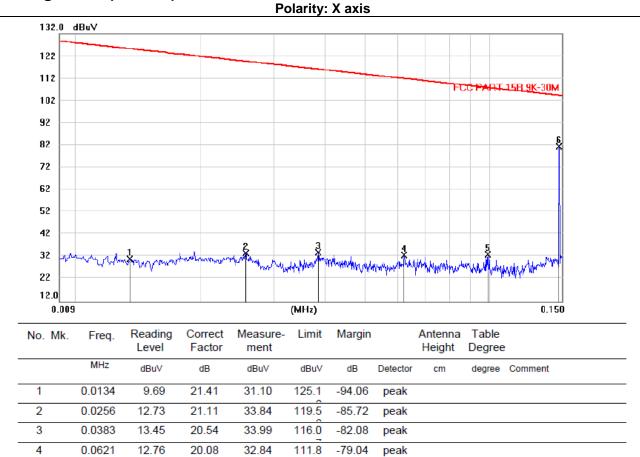


	 4. Use the following spectrum analyzer settings: (1) Span shall wide enough to fully capture the emission being measured; (2) Set RBW=100 kHz for f < 1 GHz; VBW ≥RBW; Sweep = auto; Detector function = peak; Trace = max hold; (3) Set RBW = 1 MHz, VBW= 3MHz for f 1 GHz for peak measurement. For average 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

3.2.2. Test Data

Please refer to following diagram for individual

Freque	ncy Range	:	9KHz~30MHz				
Test Mo	ode	:	148kHz				
Test Re	sults	:	PASS				
Note:	1. The test	resu	ults are listed in next pages.				
	2. This mode is worst case mode, so this report only reflected the worst mode.						
	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 th quasi-peak detector need not be carried out.						



For signal coil(148KHz):

5

6

*

0.0990

0.1476

13.27

61.27

19.81

20.17

Note:1. *:Maximum data; x:Over limit; !:over margin. 2.Measurement=Reading Level+Correct Factor; Correct Factor=Antenna Factor+Cable Loss.

33.08

81.44

107.8

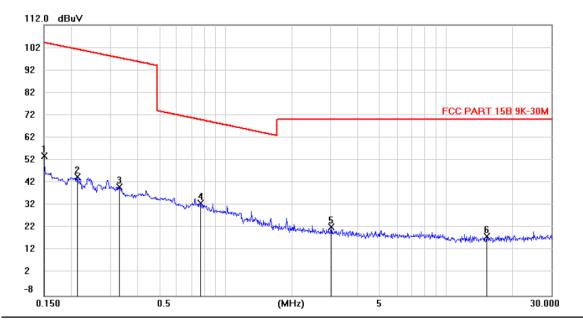
104.3

-74.77

-22.95

peak

peak



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Margin		Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	cm	degree	Comment
1		0.1500	33.62	20.20	53.82	104.2	-50.43	peak			
2		0.2137	24.51	20.11	44.62	101.1	-56.56	peak			
3		0.3311	20.17	19.94	40.11	97.39	-57.28	peak			
4	*	0.7711	12.95	19.86	32.81	70.00	-37.19	peak			
5		3.0232	2.00	20.51	22.51	70.00	-47.49	peak			
6		15.2850	-2.81	21.08	18.27	70.00	-51.73	peak			

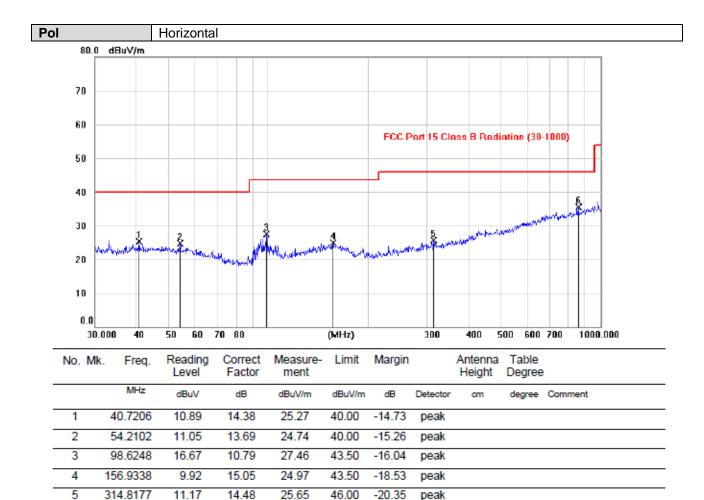
Note:1. *:Maximum data; x:Over limit; !:over margin. 2.Measurement=Reading Level+Correct Factor; Correct Factor=Antenna Factor+Cable Loss.

Frequenc	cy Range	:	30MHz~1000MHz				
Test Mod	е	:	148KHz				
Test Results		:	PASS				
Note:	1. The test	res	ults are listed in next pages.				
	2. All test r	node	es has been tested, this report only reflected the worst mode.				
	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 guasi-peak detector need not be carried out.						

Frequer	ncy Range	:	Above 1GHz			
EUT		:	/	Test Date	:	/
M/N		:	/	Temperature	:	/
Test Eng	gineer	:	/	Humidity	:	/
Test Mo	de	:	/			
Test Re	sults	:	N/A			
Note:		nt	frequency of the internal sources of the E shall only be made up to 1 GHz. So the free			

						30	0MHz-	1GHz							
EUT Descriptio	n M	Magnetic Wireless Power Bank With Stand						Mo	Model No.		Fold M52				
Temperature	24	24℃ DC 5V from adapter					Hu	midity		56%)				
Fest Voltage	DC														
Pol		ertical													
80.0 dBu	V/m														
70															
60								Free	Part 15 Cli			20.10			
								FUU	Partis Ca	ass 15 Ha	diation (30-101	uuj		
50															
40															
10	. 3.													\$	
30 🐝	_/**		, M		4		5				dament	And a start	and and	Mar 1	
	1	m	M	M.	MA			len	where where	where the	NO. WWW				
20				71	" "Huh	(more that the		. Manuala	~~~						
10															
10															
0.0															
	40	50 61	0 70	80			(MHz)		300	400		00 70	0	1000.000	1
0.0	40 Freq.	50 60 Readir Level	ng	80 Corre Facto		asure- ent		Margin		400 Antenna Height	500 6 a Tab	00 70 le	0	1000.000	1
0.0 30.000 No. Mk.		Readir	ng (I	Corre	or m			Margin		Antenna	500 6 a Tab Degr	00 70 le			1
0.0 30.000 No. Mk.	Freq.	Readir Level	ng (I	Corre Facto	or m dBu	ent	Limit	Margin	1	Antenn Height	500 6 a Tab Degr	00 70 le ree)
0.0 30.000 No. Mk.	Freq. MHz	Readir Level	ng (l	Corre Facto dB	or m dBu 0 32	ent JV/m	Limit dBuV/r	Margin n dB	Detector	Antenn Height	500 6 a Tab Degr	00 70 le ree]
0.0 30.000 No. Mk. 1 1 32. 2 * 45.	Freq. MHz 0144	Readir Level dBuV 18.45	ng (7 5 3	Corre Facto dB 13.60	or m dBu 0 32 0 33	ent ///m 2.05	Limit dBuV/r 40.00	Margin n dB -7.95	Detector peak	Antenn Height	500 6 a Tab Degr	00 70 le ree			1
0.0 30.000 No. Mk. 1 32. 2 * 45. 3 71.	Freq. MHz 0144 1902	Readir Level dBuV 18.45	ng (7 5 3 8	Corre Facto dB 13.60 14.10	or m dBu 0 32 0 33 1 31	ent JV/m 2.05 3.33	Limit dBuV/r 40.00 40.00	Margin dB -7.95 -6.67	Detector peak QP peak	Antenn Height	500 6 a Tab Degr	00 70 le ree]
0.0 30.000 No. Mk. 1 32. 2 * 45. 3 71. 4 97.	Freq. MHz 0144 1902 2883	Readir Level dBuV 18.45 19.23 20.58	ng (5 3 3	Corre Facto dB 13.60 14.10	or m dBu 0 32 0 33 1 31 9 30	ent .V/m .05 .33 .69	Limit dBuV/r 40.00 40.00	Margin dB -7.95 -6.67 -8.31	Detector peak QP peak peak	Antenn Height	500 6 a Tab Degr	00 70 le ree]

Note:1. *:Maximum data; x:Over limit; !:over margin. 2.Measurement=Reading Level+Correct Factor; Correct Factor=Antenna Factor+Cable Loss.



-10.48

peak

46.00

Note:1. *: Maximum data; x: Over limit; !: over margin.

12.09

23.43

35.52

6 *

857.8264

2.Measurement=Reading Level+Correct Factor; Correct Factor=Antenna Factor+Cable Loss.

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

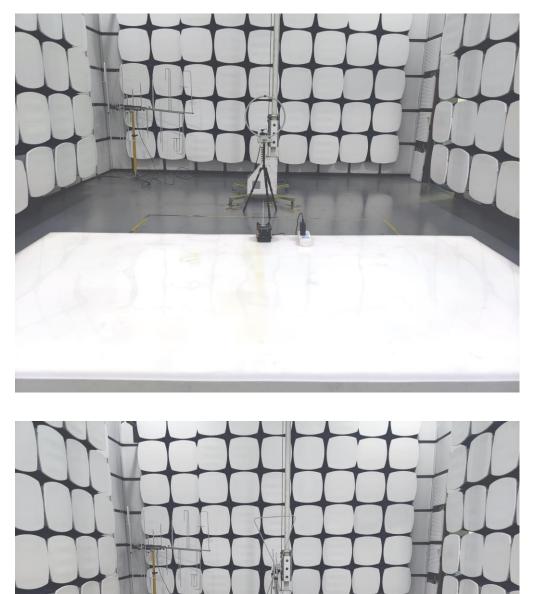
Frequency(kHz)	20dB Occupy Bandwidth (kHz)	Limit (kHz)	Conclusion
148	0.256		Pass

	est plots as lo	110W3.		
	SENSE:INT SOURCE OFF			Frequency
			io Std: None	Frequency
			io Device: BTS	
Gam.Eow				
				Center Freq
				148.000 kHz
			Span 2 kHz	
	#VBW 300 Hz		Sweep FFT	CF Step 200 Hz
				Auto Man
	Total Power	-43.6 dB	m	
221 Uz				
				Freq Offset
-82 Hz	OBW Power	99 00	%	0 Hz
256 Hz	x dB	-20.00 c	В	
		<mark>status</mark> <u>1</u> A	C coupled: Accy u	nspec'd < 10MHz
	Ce ₊₊ Tri	SENSE.INT SOURCE OFF	Center Freq: 148.000 kHz Trig: Free Run Avg Hold: 10/10 Rad Rad Avg Hold: 10/10 Rad Rad Rad Rad Rad Rad Rad Rad	Sense:INT SOURCE OFF ALIGN OFF 06:37:06 AM Aug 08, 2023 Center Freq: 148.000 kHz Trig: Freq: 148.000 kHz #Atten: 0 dB Aug/Hold: 10/10 #Atten: 0 dB Std: None Radio Device: BTS Radio Device: BTS Span 2 kHz Syme p FFT Total Power -43.6 dBm 231 Hz -82 Hz OBW Power 99.00 %

Test plots as follows:

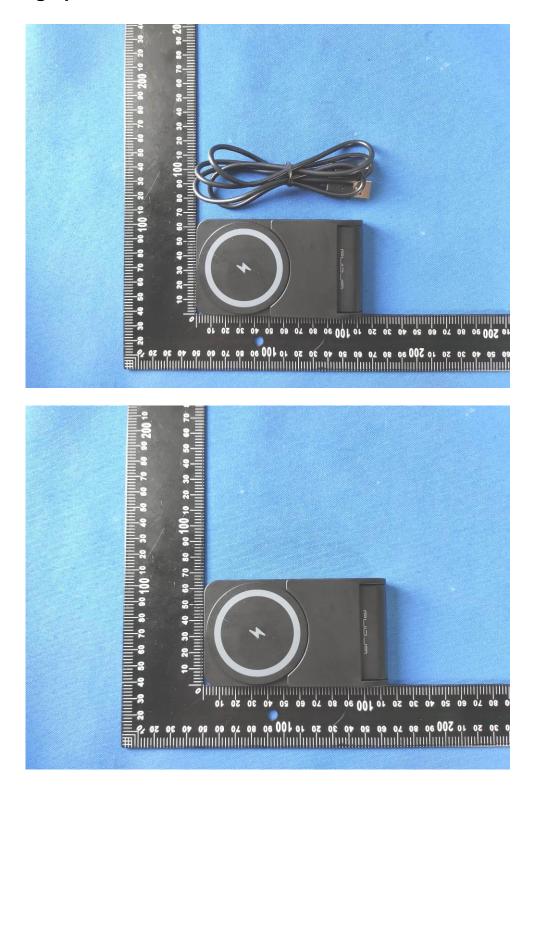
4. Photos of test setup

Radiated Emission

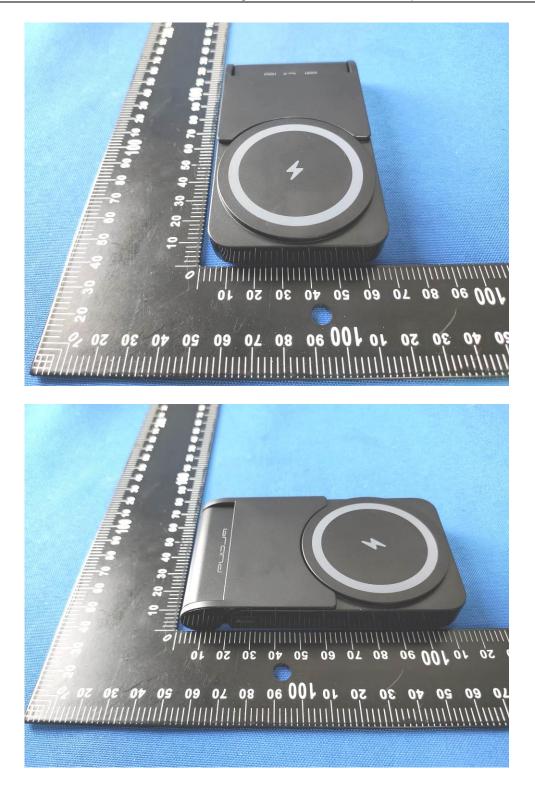


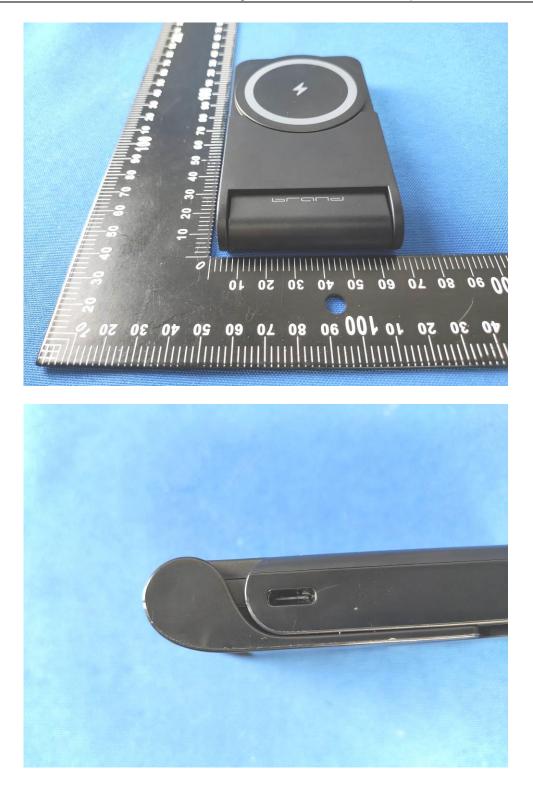


5. Photographs of EUT

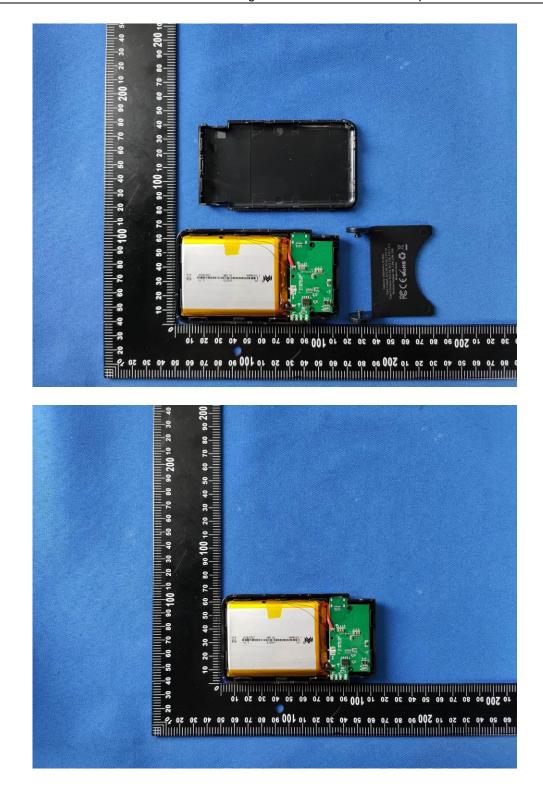


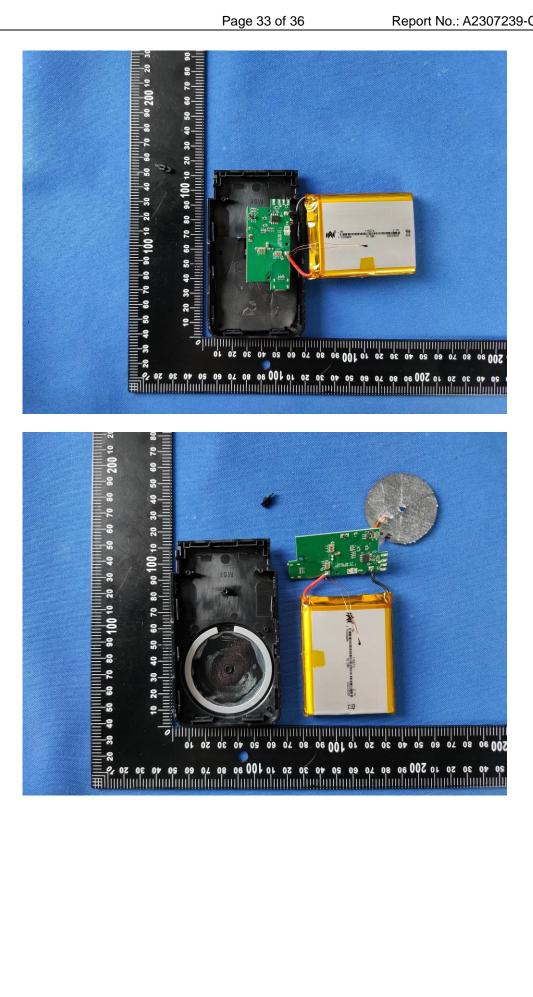


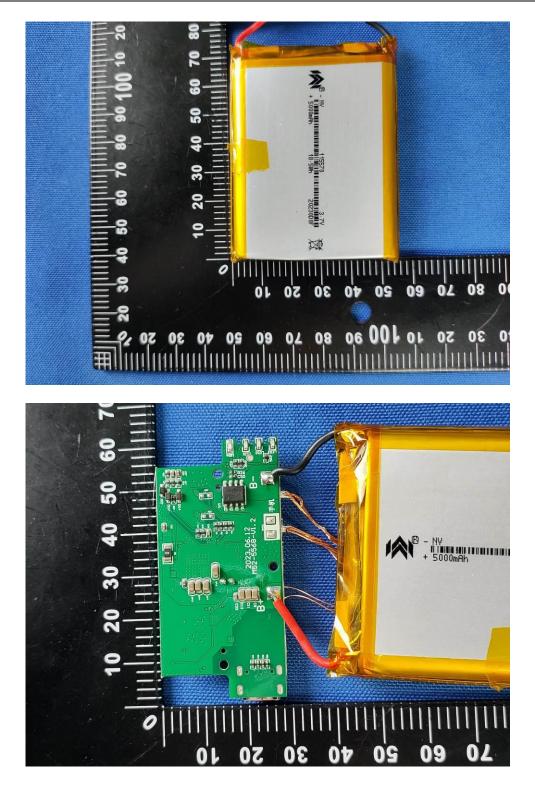


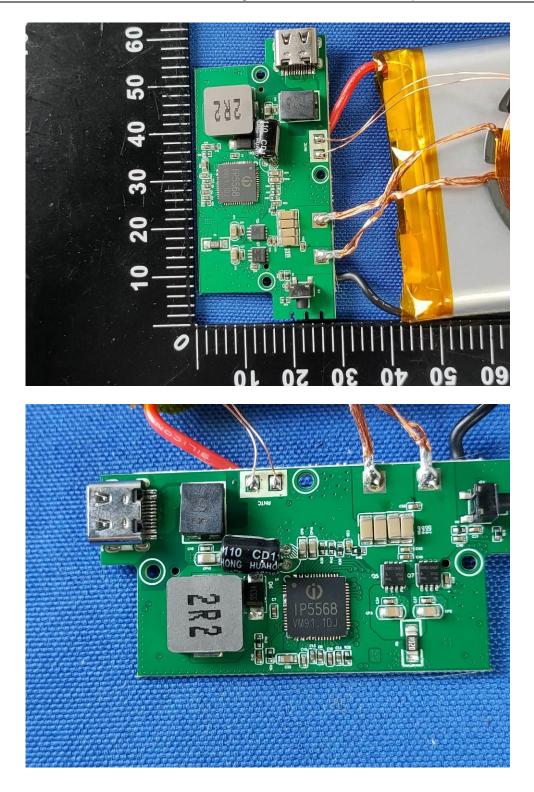


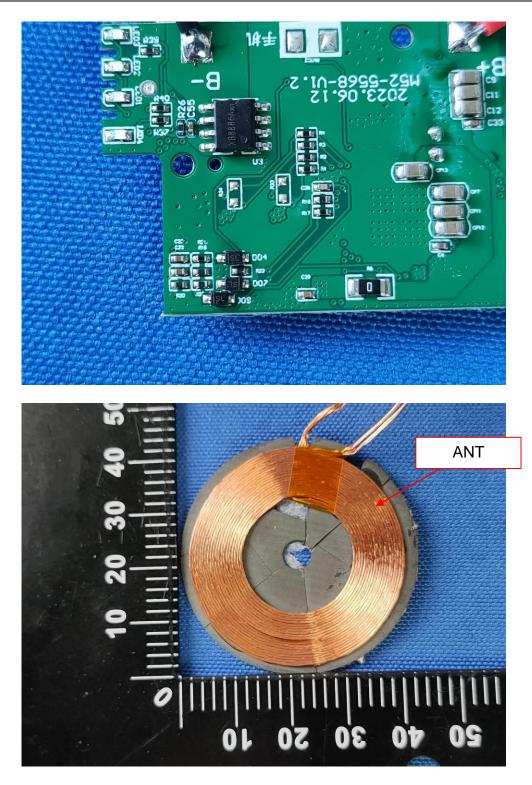












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