

FCC TEST REPORT

FCC ID: 2BC8J-PS-H048

On Behalf of

SHENZHEN SNAPPER TECHNOLOGY CO., LTD

Power Bank

Model No.: PS-H048

Prepared for	:	SHENZHEN SNAPPER TECHNOLOGY CO., LTD
Address	•	F4, BldgE, Fenghuang third Industrial area, Tengfeng Road, Fuyong, Baoan, Shenzhen, 518000, China

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

Test Result	:	Pass
Version Number	:	V0
Date of Report	:	August 30, 2024
Date of Test	:	August 8, 2024 – August 15, 2024
Date of Receipt	:	August 8, 2024
Report Number	:	A2406214-C01-R02

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TEST REPORT DECLARATION

Applicant	:	SHENZHEN SNAPPER TECHNOLOGY CO., LTD		
Address	:	F4, BldgE, Fenghuang third Industrial area, Tengfeng Road, Fuyong, Baoan, Shenzhen, 518000, China		
Manufacturer	:	SHENZHEN SNAPPER TECHNOLOGY CO., LTD		
Address	:	F4, BldgE, Fenghuang third Industrial area, Tengfeng Road, Fuyong, Baoan, Shenzhen, 518000, China		
EUT Description	:	Power Bank		
		(A) Model No. : PS-H048		
		(B) Trademark : N/A		

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):	Yannis Wen Project Engineer	Vannis wen
Approved by (name + signature):	Jack Xu Project Manager	Janes
Date of issue	August 30, 2024	

Revision History

Revision	Issue Date	Revisions	Revised By
V0	August 30, 2024	Initial released Issue	Yannis Wen

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.

2. General Information

2.1. Description of Device (EUT)			
EUT Name	:	Power Bank	
Model No.	:	PS-H048	
DIFF. Power supply	:	N/A DC 5V from Type-C port, DC 9V from Type-C port, DC 12V from Type-C port, DC 3.85V from battery.	
EUT information Operation frequency	:	Battery: 5000mAh @3.85V 19.25Wh Type-C Input: DC 5V=3A, 9V=2A, 12V=1.5A PD18W Max Type-C Output: DC5V=3A, 9V=2.22A,12V=1.67A PD20W Max Wireless Output: 5W/7.5W/10W/15W 115~205KHz	
Modulation	:	MSK	
Antenna Type	:	loop coil Antenna, Maximum Gain is 0dBi (This value is supplied by applicant).	
Software version	:	V1.0	
Hardware version	:	V1.0	
Intend use environment	:	Residential, commercial and light industrial environment	

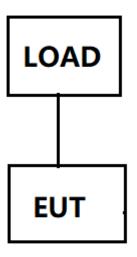
2.2. Accessories of Device (EUT)

Accessories1	:	/	
Manufacturer	:	/	
Model	:	/	
Ratings	:	/	

2.3. Tested Supporting System Details

No.	Description	Manufacturer	Model	Serial Number	Certification
1	N/A	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	150

2.6. Test Conditions

Items	Required	Actual		
Temperature range:	15-35°C	2 4°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: 12135A

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 Radiation Emission test in 3m chamber	4.31 dB(Polarize: V)
(18GHz to 40GHz)	4.30 dB(Polarize: H)
Uncertainty for radio frequency	5.06×10 ⁻⁸ GHz
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%

2.9. Test Equipment List

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	2024.08.08	1Year
Spectrum analyzer	Agilent	N9020A	A.14.16	MY499100060	2024.08.08	1Year
Receiver	ROHDE&SCHWARZ	ESR	2.28 SP1	1316.3003K03-10 2082-Wa	2024.08.08	1Year
Receiver	R&S	ESCI	4.42 SP1	101165	2024.08.08	1Year
Bilog Antenna	Schwarzbeck	VULB 9168	/	VULB 9168#627	2023.08.28	2Year
Horn Antenna	SCHWARZBECK	BBHA 9120 D	/	2106	2023.08.19	2Year
Loop Antenna	SCHWARZBECK	FMZB 1519B	/	00128	2023.08.19	2Year
RF Cable	Resenberger	Cable 1	/	RE1	2024.08.08	1Year
RF Cable	Resenberger	Cable 2	/	RE2	2024.08.08	1Year
RF Cable	Resenberger	Cable 3	/	CE1	2024.08.08	1Year
Pre-amplifier	HP	HP8347A	/	2834A00455	2024.08.08	1Year
Pre-amplifier	Agilent	8449B	/	3008A02664	2024.08.08	1Year
L.I.S.N.#1	Schwarzbeck	NSLK8126	/	8126-466	2024.08.08	1Year
L.I.S.N.#2	ROHDE&SCHWARZ	ENV216	/	101043	2024.08.08	1Year
Horn Antenna	SCHWARZBECK	BBHA 9170	/	00946	2023.08.19	2Year
Preamplifier	SKET	LNPA_1840 -50	/	SK2018101801	2024.08.08	1 Year
Power Meter	Agilent	E9300A	/	MY41496628	2024.08.08	1 Year
Power Sensor	DARE	RPR3006W	/	15100041SNO91	2024.08.08	1 Year
Electronic Thermo-Hygrome ter	S.H.Qixiang	HTC-1	/	N/A	2023.08.11	2 Year
Temp. & Humid. Chamber	Teelong	TL-HW408S	/	TL-20191205-01	2024.07.15	1 Year
Switching Mode Power Supply	JUNKE	JK12010S	/	20140927-6	2024.08.08	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

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

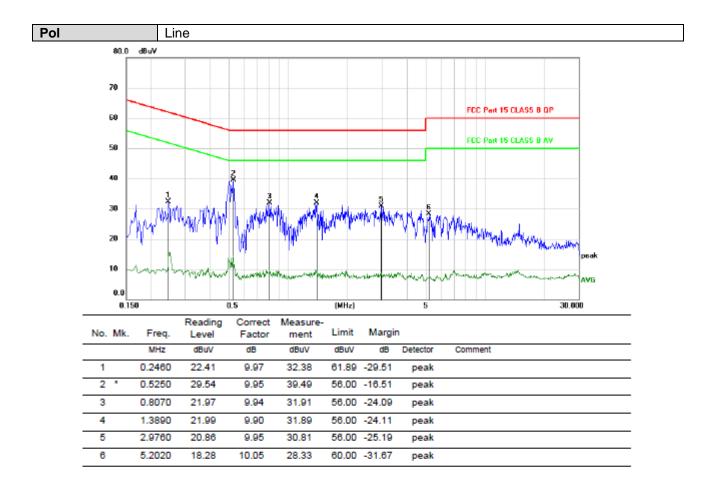
3.1.1. Test Specification

Test Requirement:	FCC Part15 C Section 15.20	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	,			
Limiter	0.15-0.5	Quasi-peak 66 to 56*	Average 56 to 46*			
Limits:	0.13-0.5	56	46			
	5-30	60	50			
	Referen	nce Plane				
Test Setup:	40cm 80cm Filter AC power 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					

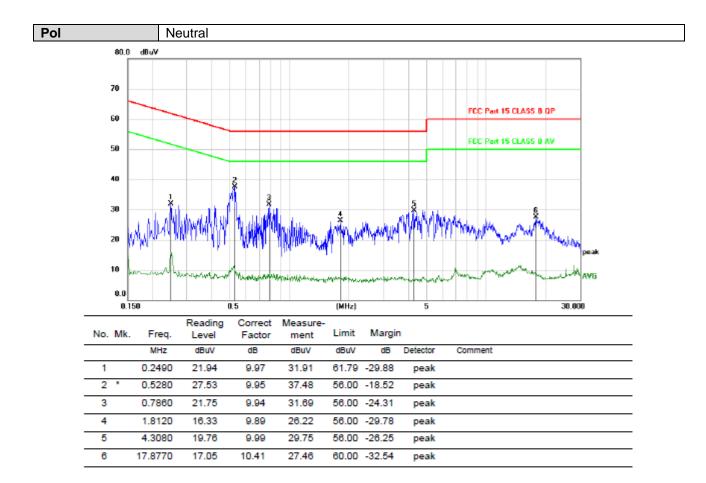
3.1.2. Test Data

Please refer to following diagram for individual

Test Mo	ode : Charging+Wireless TX Output: 15W(Max)
Test Re	esult : PASS
Note:	The test results are listed in next pages.
	All test modes has been tested, this report only reflected the worst mode.(Charging+5W)
	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.



*: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



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

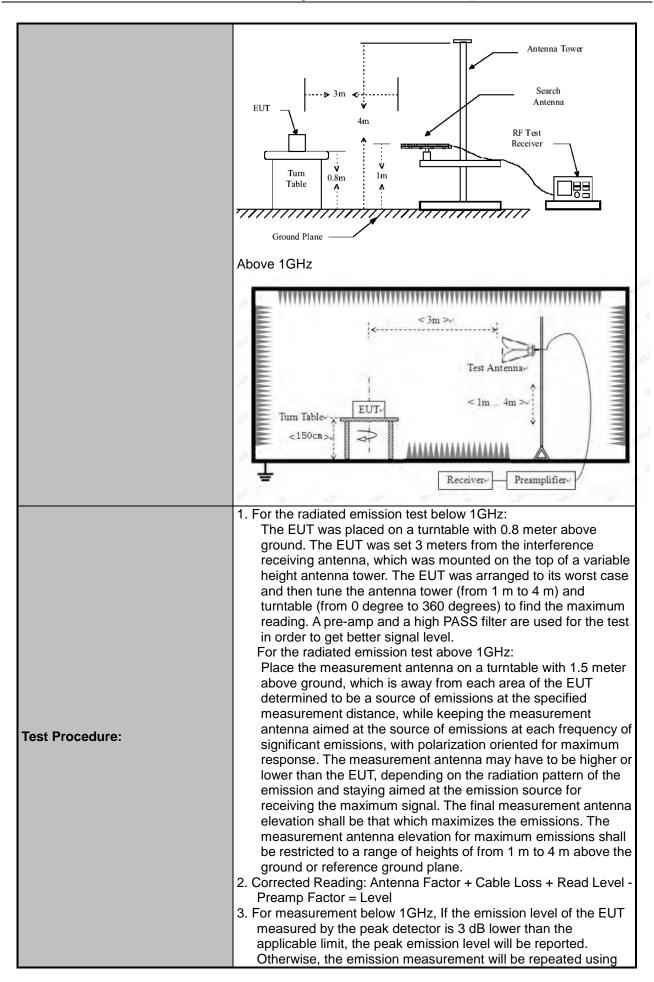
(Reference Only

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 15.209							
Test Method:	ANSI C63.10: 2	2013						
Frequency Range:	9 kHz to 25 GH	z						
Measurement Distance:	3 m							
Antenna Polarization:	Horizontal & Ve	ertical						
Operation mode:	Refer to item 4.	.1						
	Frequency 9kHz-		tecto asi-pe		RBW 200Hz	VBW 1kHz		Remark uasi-peak
	150kHz	Qua	k k	a	200112	TKTIZ	Q	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
	z		k		Z	Z		Value
	Above 1GHz		Peak		1MHz	3MHz		eak Value
		P	eak		1MHz	10Hz		rage Value asurement
	Frequer	су		(Field Stre microvolts/	ength /meter)		Distance meters)
	0.009-0.490				2400/F(k			300
	0.490-1.705			24000/F(KHz)			30	
	1.705-30			30			30	
	30-88			<u> </u>			3	
Limit:	88-210 216-96			200				3
	Above 9			500				3
				Field Strength (microvolts/mete		Measureme		
	Frequency					nt Distance		Detector
				r)		(meter		
	Above 1GH	7	500		3		Average	
		-		50	000	3		Peak
	For radiated en	nissio	ns be	elov	v 30MHz			
	Distance = 3m							
		•		/	\frown	г		
Test setup:				<u>'(</u>	\square		Pre -Am	
	EUT	 Turn	tabla	1m		,		
	0.8m₄	_ 1014					Reco	eiver
			G	roun	d Plane			
	30MHz to 1GH	z						
	1							

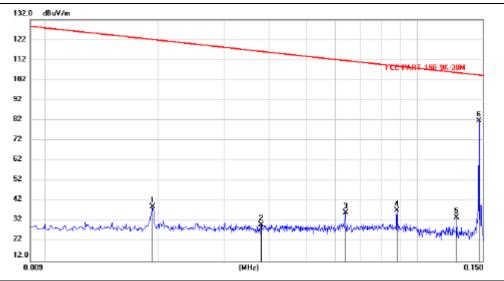


	 the quasi-peak detector and reported. 4. Use the following spectrum analyzer settings: (1) Span shall wide enough to fully capture the emission being measured; (2) Set RBW=100 kHz for f < 1 GHz; VBW ≥RBW; Sweep = auto; Detector function = peak; Trace = max hold; (3) Set RBW = 1 MHz, VBW= 3MHz for f 1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

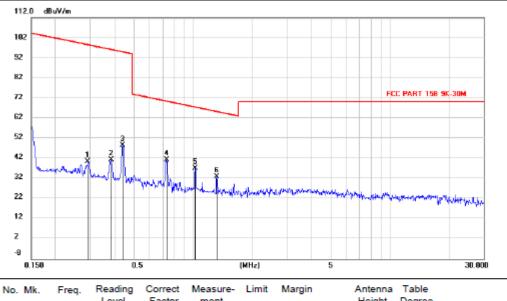
Please refer to following diagram for individual

Freque	ncy Range	:	9KHz~30MHz					
Test Mo	ode	:	TX: 150kHz					
Test Re	sults	:	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.							
	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.							



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	0.0192	17.86	21.27	39.13	122.0	-82.92	peak			
2	0.0378	9.49	20.56	30.05	116.1	-86.13	peak			
3	0.0638	15.97	20.11	36.08	111.6	-75.57	peak			
4	0.0879	17.33	19.93	37.26	108.8	-71.62	peak			
5	0.1275	13.74	19.88	33.62	105.6	-72.04	peak			
6 *	0.1466	61.61	20.15	81.76	104.4	-22.69	peak			

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

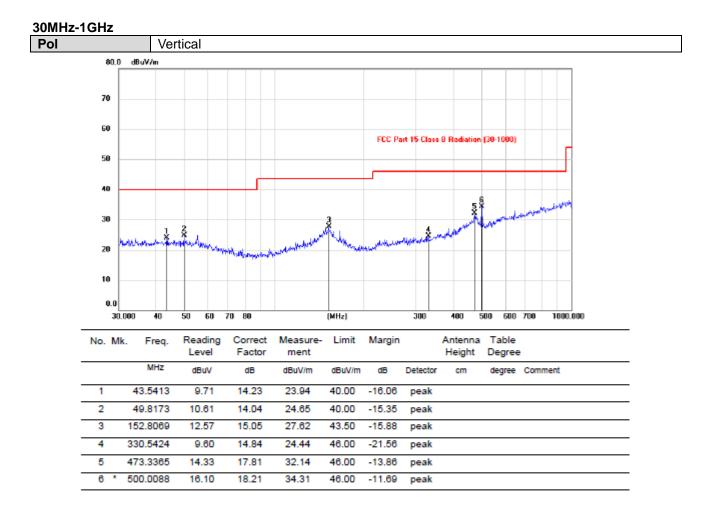


		Level	Factor	ment		-		Height	Degree	•
	MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1	0.2921	20.60	20.00	40.60	98.48	-57.88	peak			
2	0.3815	21.46	19.87	41.33	96.17	-54.84	peak			
3	0.4390	28.78	19.79	48.57	94.95	-46.38	peak			
4 *	0.7330	21.55	19.84	41.39	70.45	-29.06	peak			
5	1.0258	17.13	20.01	37.14	67.48	-30.34	peak			
6	1.3204	13.00	20.08	33.08	65.26	-32.18	peak			

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

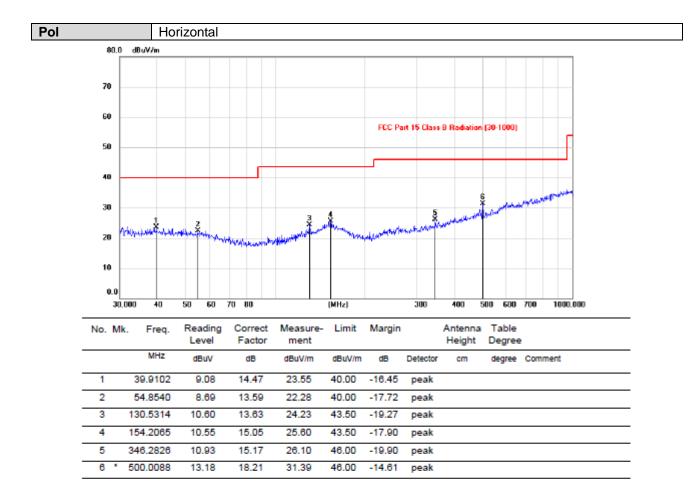
Frequer	icy Range	:	30MHz~1000MHz				
Test Mo	de	:	Wireless TX Output: 15W(Max)				
Test Re	sults	:	PASS				
Note:	1. The test	res	ults are listed in next pages.				
	 All test modes has been tested, this report only reflected the worst mode. (Wireless TX Output: 15W) If the limits for the measurement 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. 						

Frequency Range : A	Above 1GHz			
EUT : /		Test Date	:	/
M/N : /		Temperature	:	/
Test Engineer : /		Humidity	:	/
Test Mode : /				
Test Results : N/A	/Α			
 The highest frequency of the internal sources of the EUT is less than 108 MHz, the measurement shall only be made up to 1 GHz. So the frequency rang above 1GHz radiation test not applicable. 				



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

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



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

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

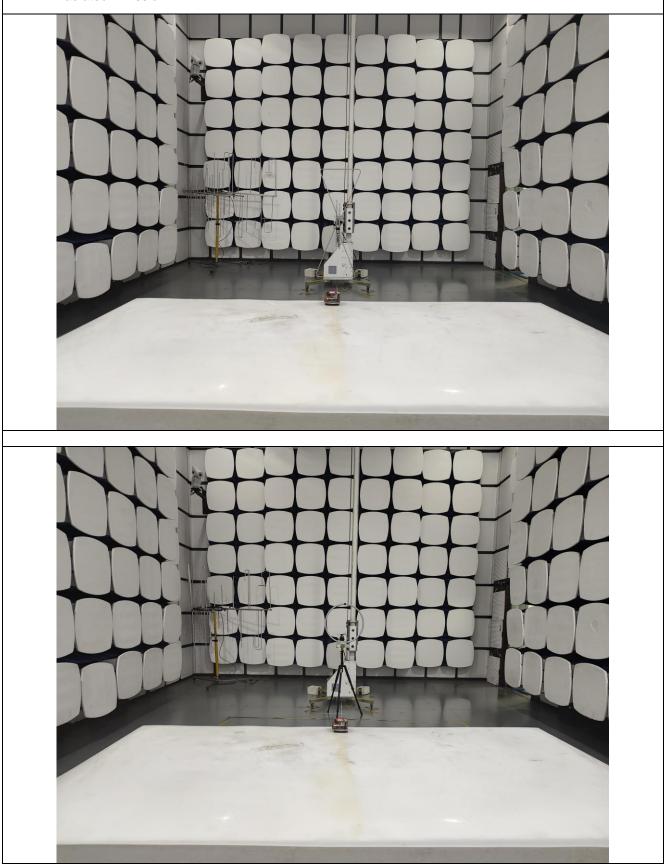
Frequency(KHz)	20dB Occupy Bandwidth (kHz)	Limit (kHz)	Conclusion
150	0.275		PASS

Test plots as follows:

Agilent Spectrum Analyzer - Occupied BW Δμ RF 50 Ω AC #IF	Tri	SENSE:INT SOURCE OFF Inter Freq: 150.100 kHz g: Free Run Avg Hol ten: 6 dB	Radio d:>10/10	49PM Aug 15, 2024 Std: None Device: BTS	Trace/Detecto	or
10 dB/div Ref 10.00 dBm Log 0.00 -10.0 -20.0					ClearW	lrite
-30.0					Aver	age
-60.0					Max H	lold
Center 150.1 kHz #Res BW 100 Hz Occupied Bandwidth		#VBW 300 Hz	-10.3 dBm	Span 1 kHz Sweep FFT	Min H	lold
	242 Hz				Deteo Avera	
Transmit Freq Error x dB Bandwidth	-7 Hz 275 Hz	OBW Power x dB	99.00 % -20.00 dB			Man
MSG			STATUS 🥂 AC	coupled: Accy u	nspec'd < 10MHz	z

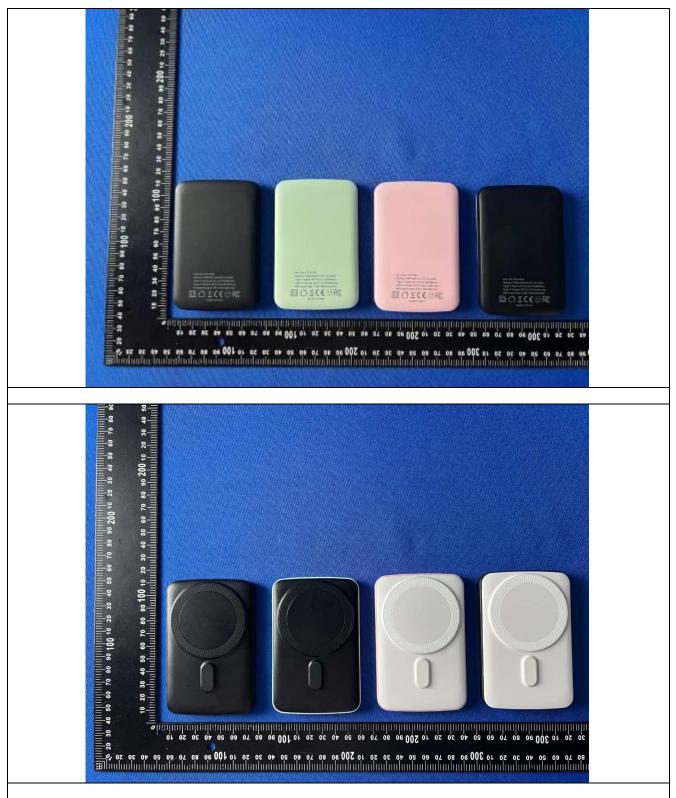
4. Photos of Test Setup

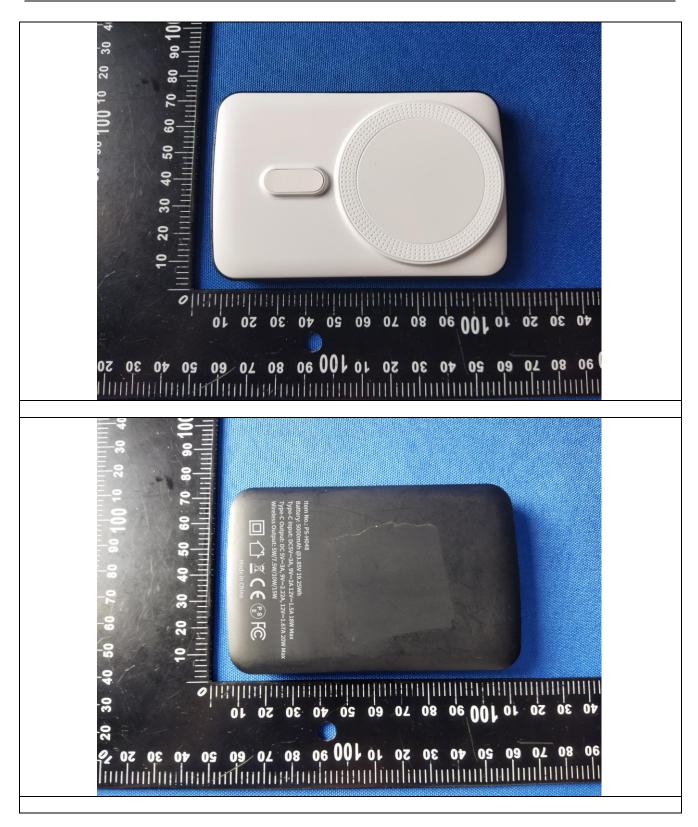
4.1.1. Radiated Emission

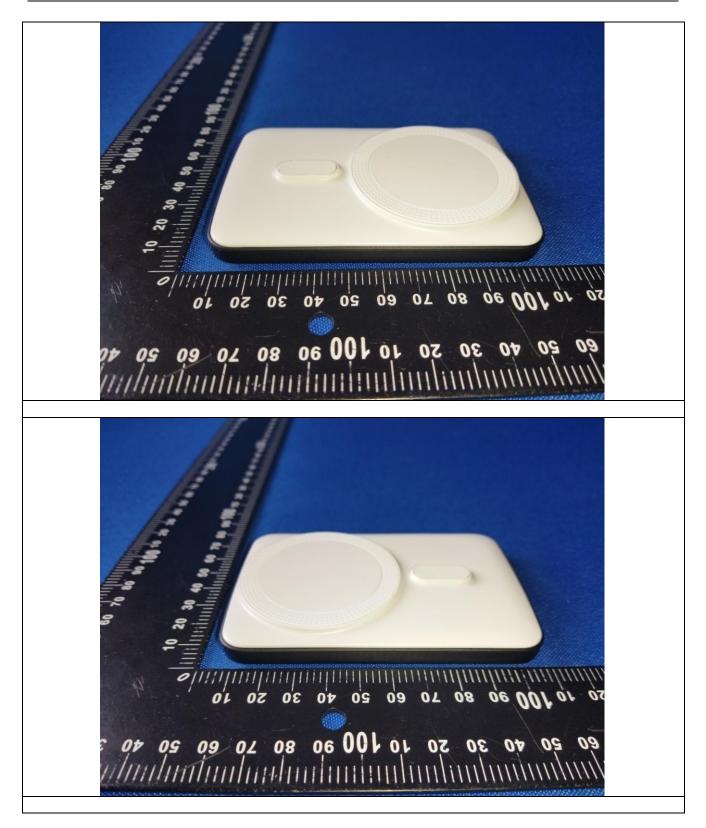




5. Photographs of EUT



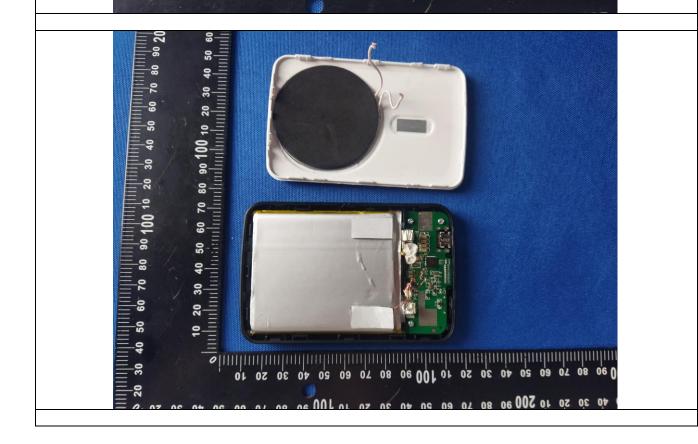




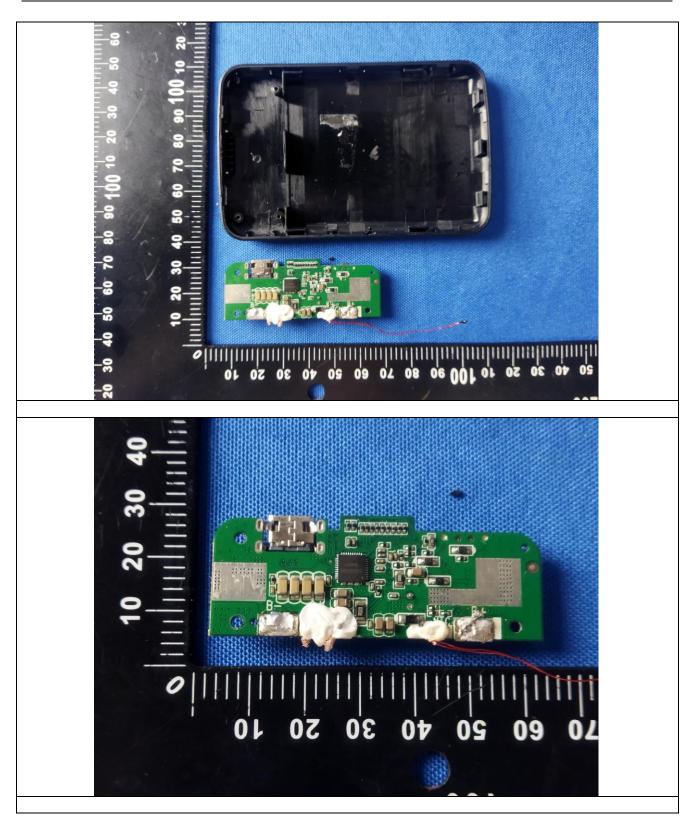


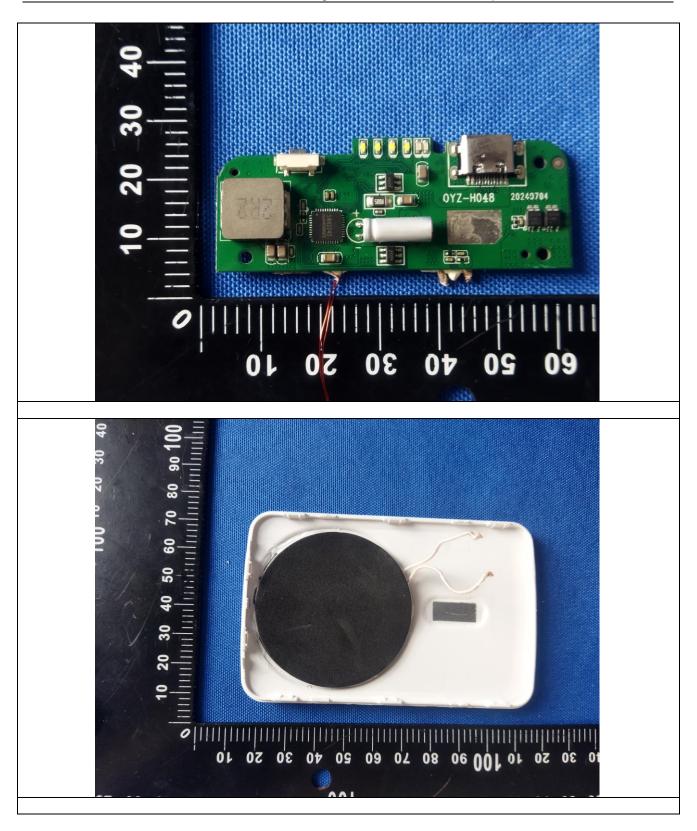


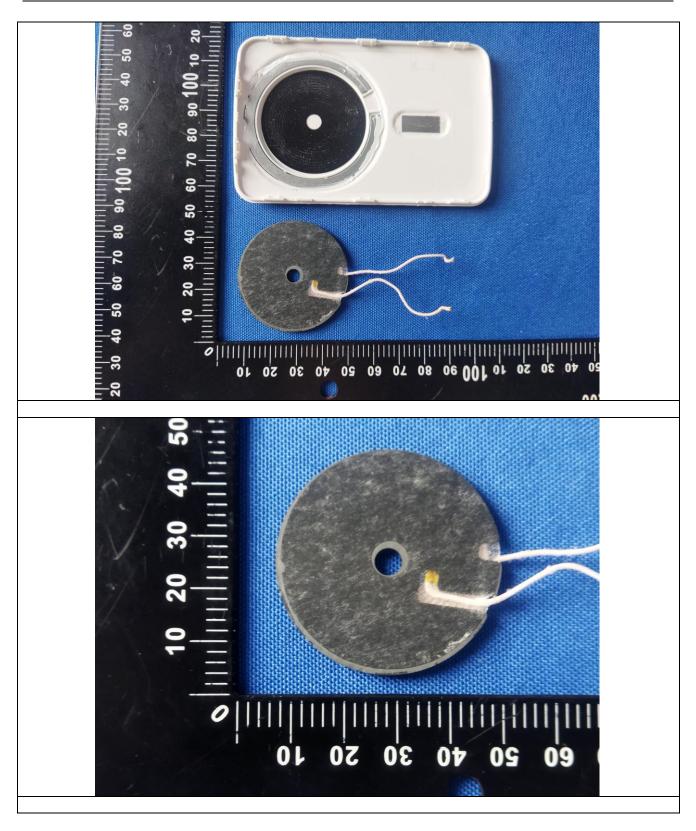


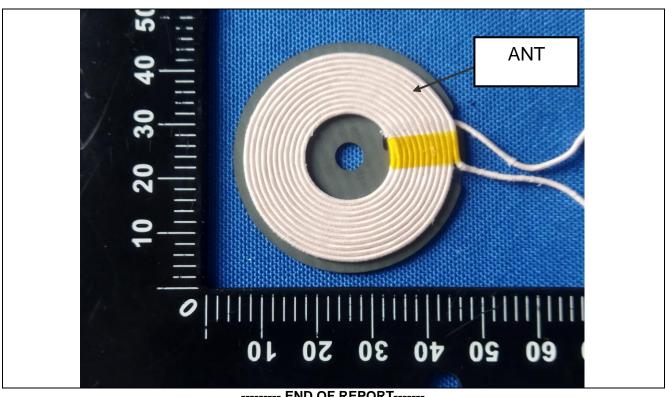












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