FCC TEST REPORT

FCC ID: 2AP2N-X1045

On Behalf of

Shenzhen Esorun Technology Co.,LTD

Wireless Power Bank

Model No.: X1045

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 PSI Testing Co., Ltd.
Address	:	1-2F, Building 5, Yudafu Industrial Park, No. 10, Xingye West Road, Shajing Street, Bao'an District, Shenzhen, Guangdong, China 518104

Report Number	:	psi2312067-C01-R06
Date of Receipt	:	December 26, 2023
Date of Test	:	December 26, 2023-January 16, 2024
Date of Report	:	January 16, 2024
Version Number	:	V0

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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	:	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	:	Wireless Power Bank
		(A) Model No. : X1045
		(B) Trademark : ESORUN

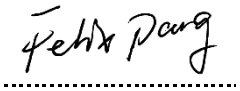
Measurement Standard Used:

FCC CFR Title 47 Part 15 Subpart C

ANSI C63.10:2013

The device described above is tested by Shenzhen PSI 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 PSI 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 requirements.

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

Tested by (name + signature).....…..:	Felix Pang Test Engineer	
Approved by (name + signature)…....:	Simple Guan Project Manager	
Date of issue……...:	January 16, 2024	

Revision History

Revision	Issue Date	Revisions	Revised By
V0	January 16, 2024	Initial released Issue	Felix 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	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 measurement uncertainty.

2. General Information

2.1. Description of Device (EUT)

EUT Name	:	Wireless Power Bank
Model No.	:	X1045
DIFF.	:	N/A
Power supply	:	Type-C Input: 5V⎓3A, 9V⎓2A, 12V⎓1.5A, 15V⎓1.8A Type-C Output: 5V⎓3A, 9V⎓3A, 12V⎓3A, 15V⎓3A, 20V⎓2.25A USB-A Output: 5V⎓3A, 9V⎓2.22A, 12V⎓1.67A Wireless Output: 5W, 7.5W, 10W ,15W Simultaneous Output: 5V⎓3A DC 11.1V from battery
Radio Technology	:	Wireless power transmission systems
Operation frequency	:	115KHz -205KHz
Modulation	:	ASK
Antenna Type	:	Coil Antenna
Connector cable loss	:	0.5dB
Software version	:	V1.0
Hardware version	:	V1.5
Note	:	Antenna information is provided by applicant. Testing lab is not responsible for the accuracy of the information.

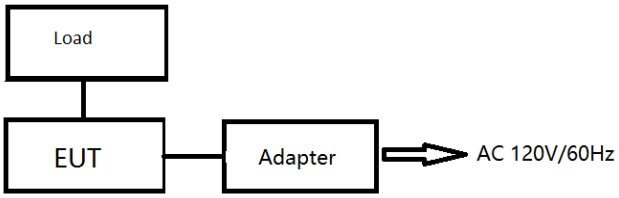
2.2. Accessories of Device (EUT)

Accessories	:	USB Cable
Manufacturer	:	Shenzhen Esorun Technology Co., LTD
Model	:	0.8m
specifications	:	0.8m

2.3. Tested Supporting System Details

No.	Description	Manufacturer	Model	Serial Number	Certification or SDoC
1	Adapter	Jinhu Industrial	V8060LOA0-CN	363P228301N6PSA01	N/A
2	Load	N/A	N/A	N/A	N/A
3	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

Number	Modes
※1	Wireless Output(15W)
2	Wireless Output(10W)
3	Wireless Output(7.5W)
4	Wireless Output(5W)

Note: All test modes has been tested, ※ is worst case mode.

2.6. Test Conditions

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

2.7. Test Facility

Shenzhen PSI Testing Co., Ltd.
1-2F, Building 5, Yudafu Industrial Park, No. 10, Xingye West Road, Shajing Street, Bao'an District, Shenzhen, Guangdong, China 518104

September 13, 2023 File on Federal Communication Commission
Registration Number: 916281

2.8. Measurement Uncertainty

(95% confidence levels, k=2)

Item	Uncertainty
Uncertainty for Power point Conducted Emissions Test	2.17dB
Uncertainty for Radiation Emission test in 3m chamber (below 30MHz)	3.5dB
Uncertainty for Radiation Emission test in 3m chamber (30MHz to 1GHz)	2.74dB(Polarize: V)
	2.76dB(Polarize: H)
Uncertainty for Radiation Emission test in 3m chamber (1GHz to 18GHz)	4.29dB(Polarize: V)
	4.82dB(Polarize: H)
Uncertainty for Radiation Emission test in 3m chamber (18GHz to 40GHz)	4.31 dB(Polarize: V)
	4.30 dB(Polarize: H)
Uncertainty for radio frequency	48.24KHz
Uncertainty for conducted RF Power	0.41dB

2.9. Test Equipment List

Item	Equipment	Manufacturer	Model No.	Serial No.	Firmware Version	Last Cal.	Cal. Interval
1.	9*6*6 anechoic chamber	SKET	9*6*6	N/A	/	2022.12.20	3 Year
2.	Test Receiver	Rohde&Schwarz	ESCI 7	101032/003	4.42 SP3	2023.12.19	1 Year
3.	L.I.S.N.#1	Rohde&Schwarz	ENV216	102282	/	2023.12.19	1 Year
4.	L.I.S.N.#2	RFT	NNB111	13835240	/	2023.12.19	1 Year
5.	Loop Antenna	Schwarz beck	FMZB 1519B	00128	/	2023.04.03	2 Year
6.	Bilog Antenna	Schwarz beck	VULB 9168	01448	/	2022.12.26	2 Year
7.	Spectrum Analyzer	Rohde&Schwarz	FSV-40N	101648	3.70	2023.12.19	1 Year
8.	Horn Antenna	Schwarz beck	BBHA 9120 D	02706	/	2022.12.26	2 Year
9.	Amplifier	SKET	LAPA_01G18G-45dB	SK2022032901	/	2023.12.19	1 Year
10.	Horn Antenna	Schwarz beck	BBHA 9170	00946	/	2022.12.25	2 Year
11.	Amplifier	SKET	LNPA_0118G-45	SK2020010801	/	2023.12.19	1 Year
12	RF Power Probe	Rohde&Schwarz	NRP-Z11	1138.3004.02-1111533-Fz	/	2023.12.19	1 Year

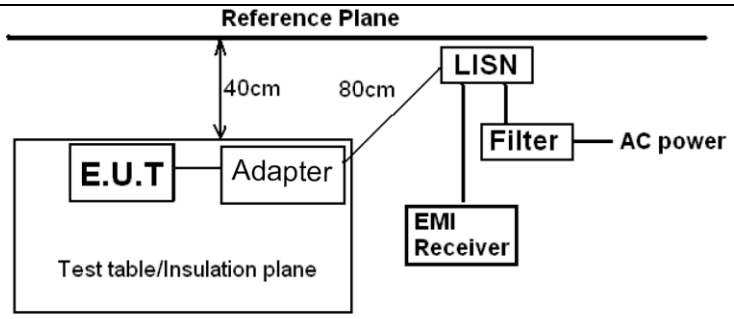
For Test Software Information

Item	Software Name	Manufacturer	Version
RE	EMC-I	SKET	V1.5.0.3
CE	EMC-I	SKET	V1.5.0.3
RF	RTS	TACHOY	V1.0.0

3. Test Results and Measurement Data

3.1. Conducted Emission

3.1.1. Test Specification

<table>
<tr><td>Test Requirement:</td><td>FCC Part15 C Section 15.207</td></tr>
<tr><td>Test Method:</td><td>ANSI C63.10:2013</td></tr>
<tr><td>Frequency Range:</td><td>150 kHz to 30 MHz</td></tr>
<tr><td>Receiver setup:</td><td>RBW=9 kHz, VBW=30 kHz, Sweep time=auto</td></tr>
<tr><td>Limits:</td><td>
<table>
<tr><td rowspan="2">Frequency range (MHz)</td><td colspan="2">Limit (dBuV)</td></tr>
<tr><td>Quasi-peak</td><td>Average</td></tr>
<tr><td>0.15-0.5</td><td>66 to 56*</td><td>56 to 46*</td></tr>
<tr><td>0.5-5</td><td>56</td><td>46</td></tr>
<tr><td>5-30</td><td>60</td><td>50</td></tr>
</table>
</td></tr>
<tr><td>Test Setup:</td><td> 

Remark:
E.U.T: Equipment Under Test
LISN: Line Impedence Stabilization Network
Test table height=0.8m</td></tr>
<tr><td>Test Mode:</td><td>Transmitting Mode</td></tr>
<tr><td>Test Procedure:</td><td>1. 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.
2. 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).
3. 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.</td></tr>
<tr><td>Test Result:</td><td>PASS</td></tr>
</table>

3.1.2. Test data

Please refer to following diagram for individual

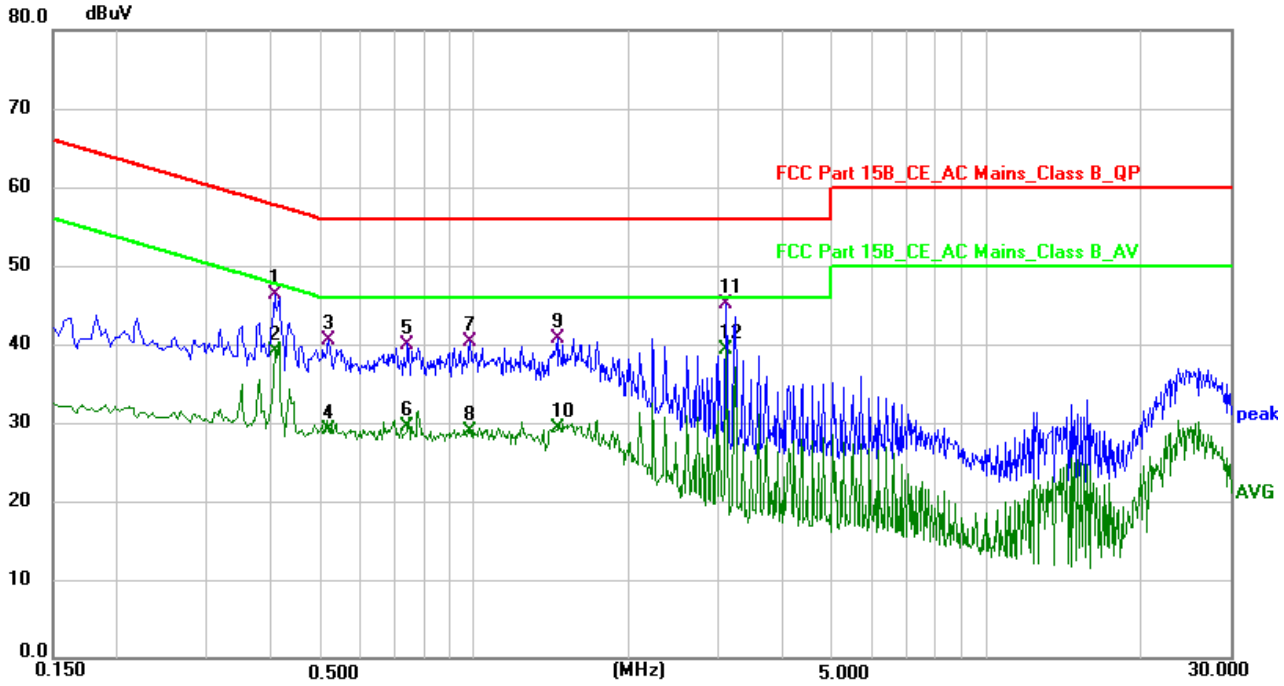
Test Mode	:	Wireless Output(15W)
Test Results	:	**PASS**

Note: The test results are listed in next pages.

All test modes has been tested, this report only reflected the worst mode.

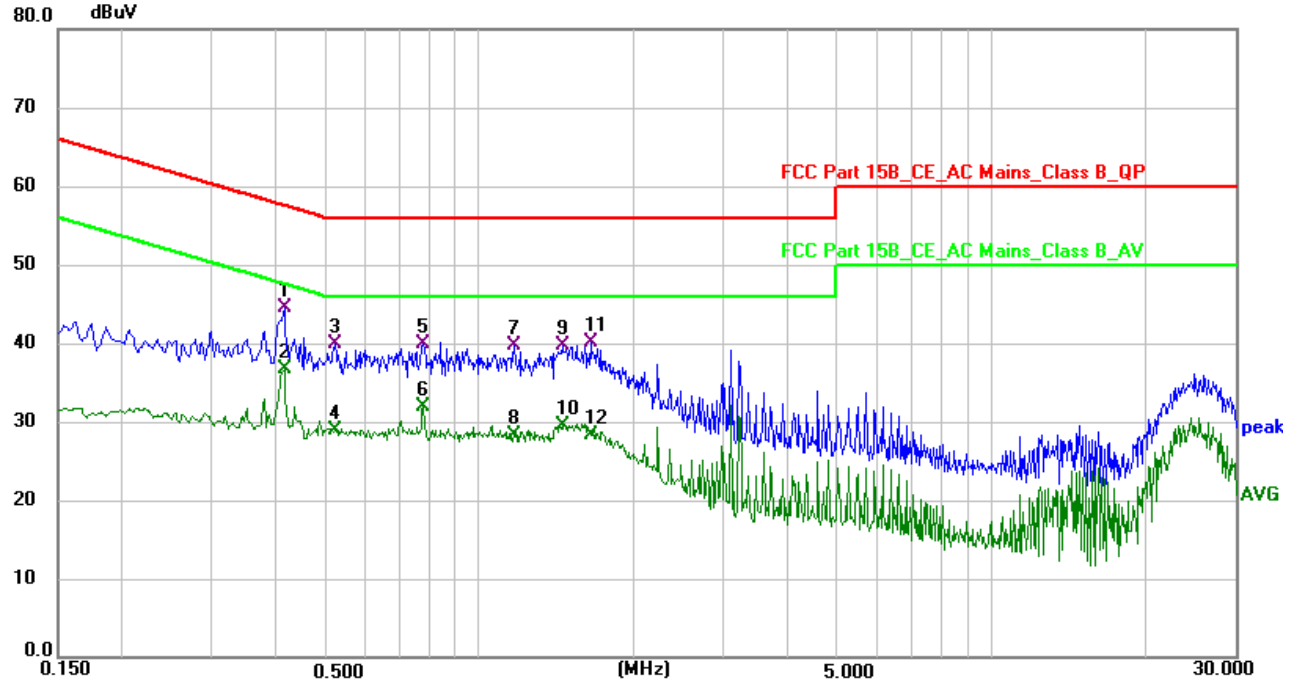
If the limits for the measurement with the average detector are met when using a receiver with a peak detector, the test unit shall be deemed to meet both limits and the measurement with the average detector and quasi-peak detector need not be carried out.
If the limits for the measurement with the average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

EUT Description	Wireless Power Bank	Model No.	X1045
Temperature	24℃	Humidity	56%
Test Voltage	AC 120V/60Hz		
Pol	Line		



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	P/F
1	0.4060	36.70	9.64	46.34	57.73	-11.39	QP	P
2	0.4060	29.42	9.64	39.06	47.73	-8.67	AVG	P
3	0.5180	30.58	9.87	40.45	56.00	-15.55	QP	P
4	0.5180	19.28	9.87	29.15	46.00	-16.85	AVG	P
5	0.7420	30.57	9.43	40.00	56.00	-16.00	QP	P
6	0.7420	20.04	9.43	29.47	46.00	-16.53	AVG	P
7	0.9820	30.93	9.41	40.34	56.00	-15.66	QP	P
8	0.9820	19.49	9.41	28.90	46.00	-17.10	AVG	P
9	1.4540	31.25	9.40	40.65	56.00	-15.35	QP	P
10	1.4540	19.83	9.40	29.23	46.00	-16.77	AVG	P
11	3.1020	35.69	9.38	45.07	56.00	-10.93	QP	P
12 *	3.1020	29.96	9.38	39.34	46.00	-6.66	AVG	P

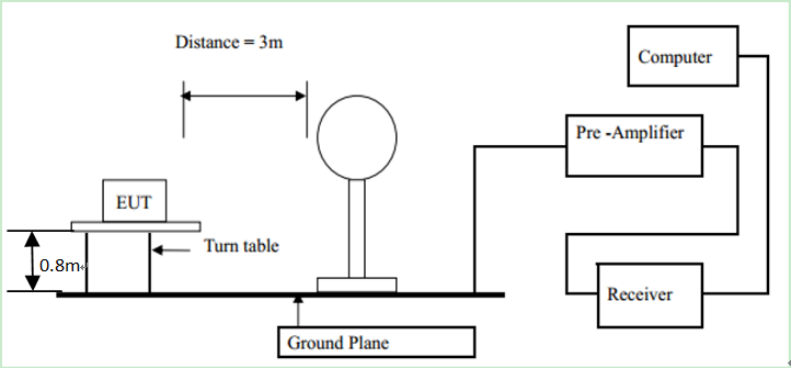
Pol	Neutral



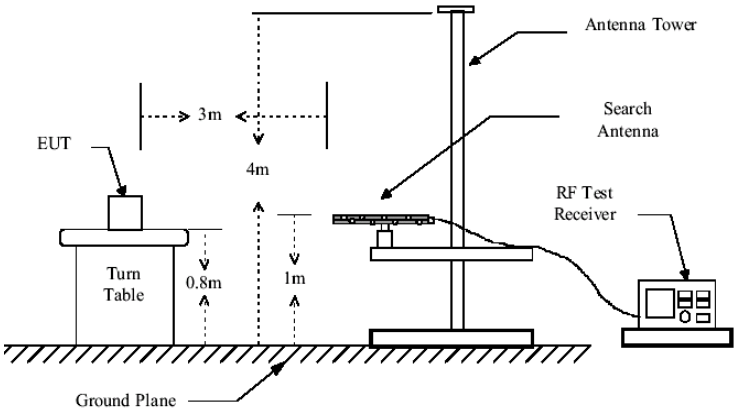
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	P/F
1	0.4140	34.88	9.58	44.46	57.57	-13.11	QP	P
2 *	0.4140	27.20	9.58	36.78	47.57	-10.79	AVG	P
3	0.5220	30.14	9.78	39.92	56.00	-16.08	QP	P
4	0.5220	19.15	9.78	28.93	46.00	-17.07	AVG	P
5	0.7780	30.16	9.71	39.87	56.00	-16.13	QP	P
6	0.7780	22.11	9.71	31.82	46.00	-14.18	AVG	P
7	1.1660	30.33	9.47	39.80	56.00	-16.20	QP	P
8	1.1660	18.82	9.47	28.29	46.00	-17.71	AVG	P
9	1.4500	30.27	9.40	39.67	56.00	-16.33	QP	P
10	1.4500	20.20	9.40	29.60	46.00	-16.40	AVG	P
11	1.6500	30.81	9.35	40.16	56.00	-15.84	QP	P
12	1.6500	19.00	9.35	28.35	46.00	-17.65	AVG	P

3.2. Radiated Spurious Emission Measurement

3.2.1. Test Specification

<table>
<tr><td>Test Requirement:</td><td>FCC Part15 C Section 15.209</td></tr>
<tr><td>Test Method:</td><td>ANSI C63.10: 2013</td></tr>
<tr><td>Frequency Range:</td><td>9 kHz to 1 GHz</td></tr>
<tr><td>Measurement Distance:</td><td>3 m</td></tr>
<tr><td>Antenna Polarization:</td><td>Coaxial & Coplanar(9KHz-30MHz)
Horizontal & Vertical(30MHz-1GHz)</td></tr>
<tr><td>Operation mode:</td><td>Refer to item 4.1</td></tr>
<tr><td>Receiver Setup:</td><td>
<table>
<tr><th>Frequency</th><th>Detector</th><th>RBW</th><th>VBW</th><th>Remark</th></tr>
<tr><td>9kHz- 150kHz</td><td>Quasi-peak</td><td>200Hz</td><td>1kHz</td><td>Quasi-peak Value</td></tr>
<tr><td>150kHz-30MHz</td><td>Quasi-peak</td><td>9kHz</td><td>30kHz</td><td>Quasi-peak Value</td></tr>
<tr><td>30MHz-1GHz</td><td>Quasi-peak</td><td>100KHz</td><td>300KHz</td><td>Quasi-peak Value</td></tr>
</table>
Note: The emission limits shown in the above table are based on measurements employing a CISPR quasi-peak detector except for the frequency bands 9-90 KHz, 110-490 KHz and above 1000 MHZ. Radiated emission limits in these three bands are based on measurements employing an average detector.</td></tr>
<tr><td>Limit:</td><td>
<table>
<tr><th>Frequency</th><th>Field Strength (microvolts/meter)</th><th>Measurement Distance (meters)</th></tr>
<tr><td>0.009-0.490</td><td>2400/F(KHz)</td><td>300</td></tr>
<tr><td>0.490-1.705</td><td>24000/F(KHz)</td><td>30</td></tr>
<tr><td>1.705-30</td><td>30</td><td>30</td></tr>
<tr><td>30-88</td><td>100</td><td>3</td></tr>
<tr><td>88-216</td><td>150</td><td>3</td></tr>
<tr><td>216-960</td><td>200</td><td>3</td></tr>
<tr><td>Above 960</td><td>500</td><td>3</td></tr>
</table>
</td></tr>
<tr><td>Test setup:</td><td>For radiated emissions below 30MHz
 

30MHz to 1GHz</td></tr>
</table>

	
Test Procedure:	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. 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: (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; 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

Frequency Range	:	9KHz~30MHz
Test Mode	:	Wireless Output(15W)
Test Results	:	**PASS**

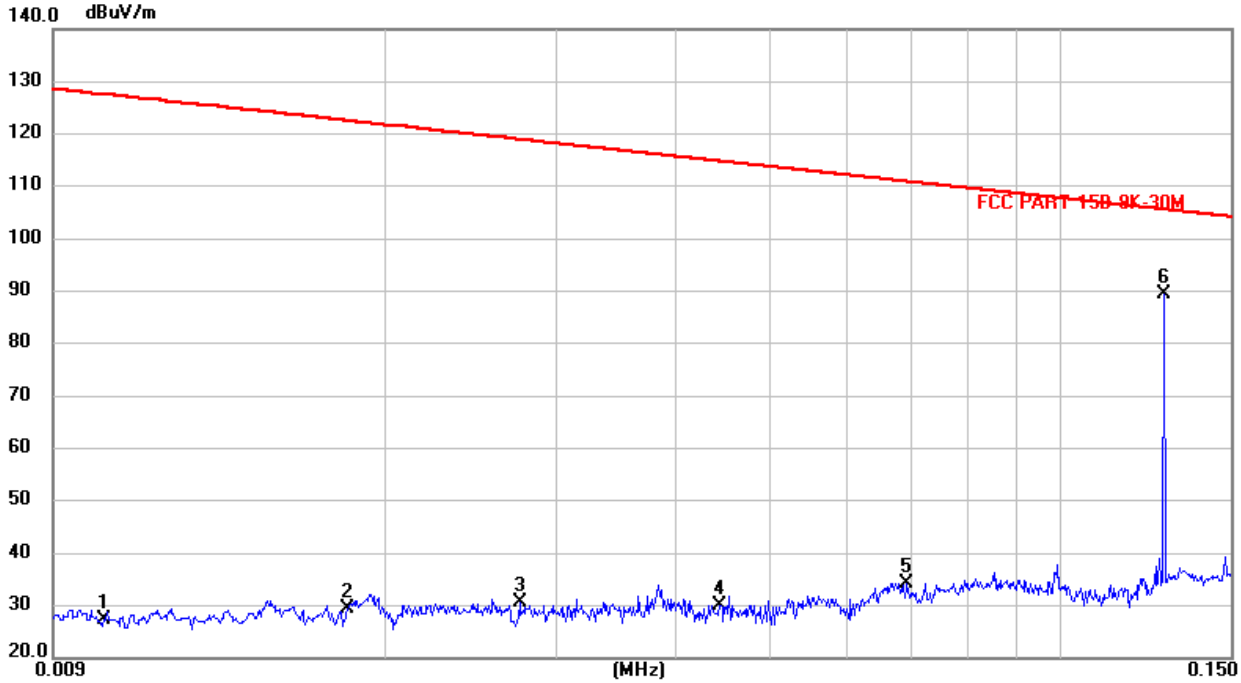
Note: 1. The test results are listed in next pages.

2. This mode is worst case mode, so this report only reflected the worst mode.

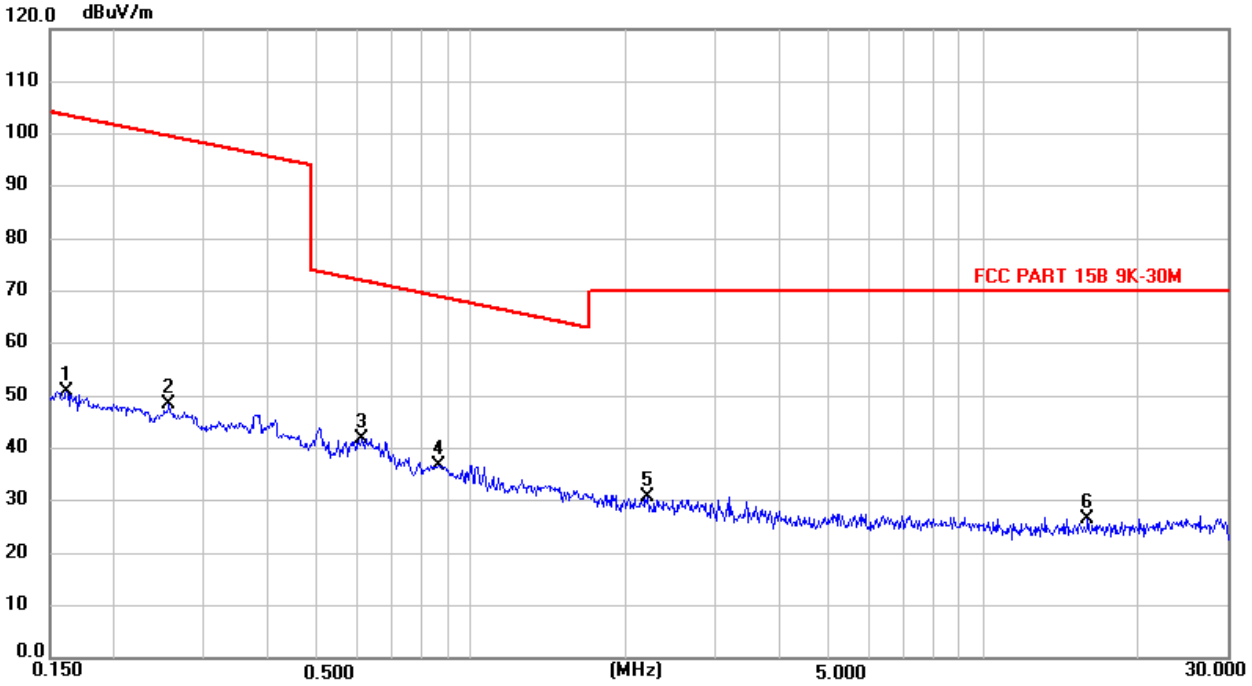
3. If the limits for the measurement with the average detector are met when using a receiver with a peak detector, the test unit shall be deemed to meet both limits and the measurement with the quasi-peak detector need not be carried out.

For signal coil:

Antenna polarity: Coaxial



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	0.0102	5.85	21.49	27.34	127.52	-100.18	peak
2	0.0182	8.29	21.29	29.58	122.51	-92.93	peak
3	0.0274	9.61	21.06	30.67	118.97	-88.30	peak
4	0.0442	9.97	20.22	30.19	114.83	-84.64	peak
5	0.0693	14.12	20.19	34.31	110.93	-76.62	peak
6 *	0.1280	69.59	19.88	89.47	105.62	-16.15	peak



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	0.1615	30.70	20.18	50.88	103.61	-52.73	peak
2	0.2564	28.40	20.05	48.45	99.61	-51.16	peak
3 *	0.6130	22.04	19.77	41.81	72.02	-30.21	peak
4	0.8660	16.94	19.92	36.86	68.98	-32.12	peak
5	2.2065	10.32	20.30	30.62	70.00	-39.38	peak
6	16.0177	5.35	21.31	26.66	70.00	-43.34	peak

Note: All polarization has been tested and only the worst polarization direction data is displayed.
s

Frequency Range	:	30MHz~1000MHz
Test Mode	:	Wireless Output(15W)
Test Results	:	**PASS**

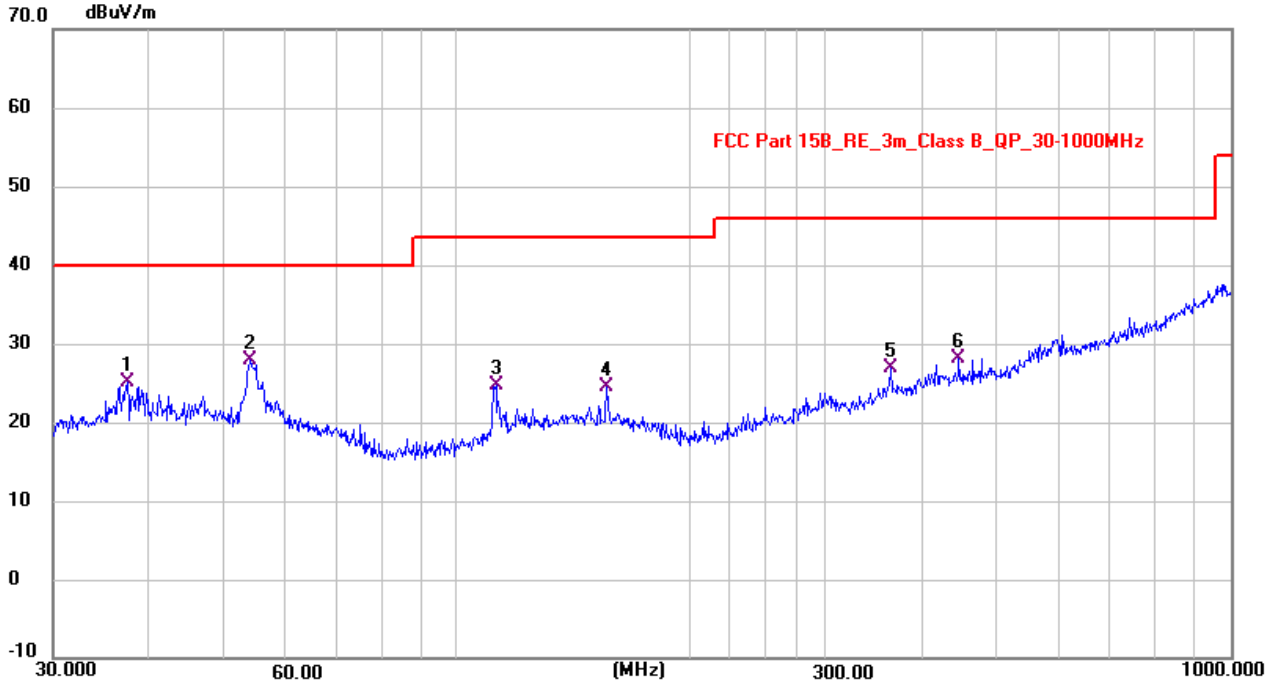
Note: 1. The test results are listed in next pages.

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

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.

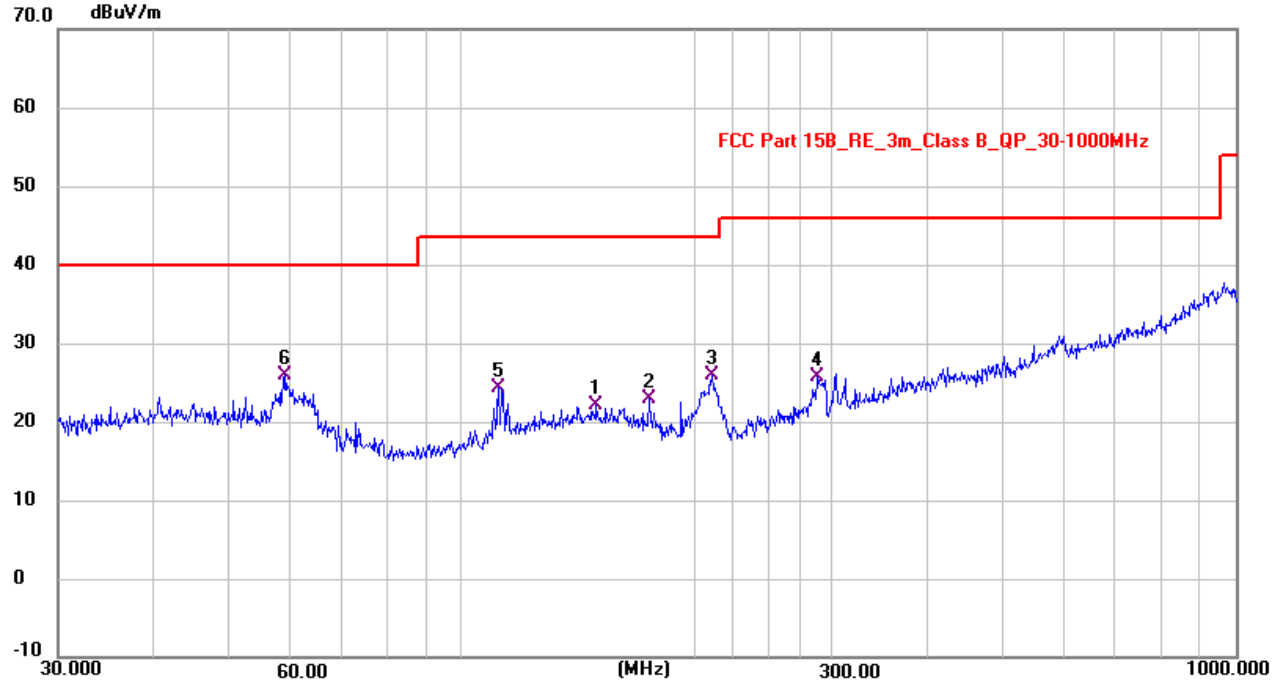
30MHz-1GHz

EUT Description	Wireless Power Bank	Model No.	X1045
Temperature	24℃	Humidity	56%
Test Voltage	AC 120V/60Hz		
Pol	Vertical		



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	37.4491	11.78	13.27	25.05	40.00	-14.95	QP
2 *	53.9054	15.14	12.79	27.93	40.00	-12.07	QP
3	112.3272	13.91	10.73	24.64	43.50	-18.86	QP
4	155.9782	11.25	13.17	24.42	43.50	-19.08	QP
5	363.9402	11.68	15.27	26.95	46.00	-19.05	QP
6	445.8274	10.88	17.16	28.04	46.00	-17.96	QP

Pol	Horizontal



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	149.0278	9.02	13.02	22.04	43.50	-21.46	QP
2	175.0368	11.17	11.78	22.95	43.50	-20.55	QP
3	210.3246	15.48	10.39	25.87	43.50	-17.63	QP
4	287.9904	12.21	13.46	25.67	46.00	-20.33	QP
5	111.4444	13.66	10.65	24.31	43.50	-19.19	QP
6 *	59.1805	13.70	12.23	25.93	40.00	-14.07	QP

3.3. Test Specification

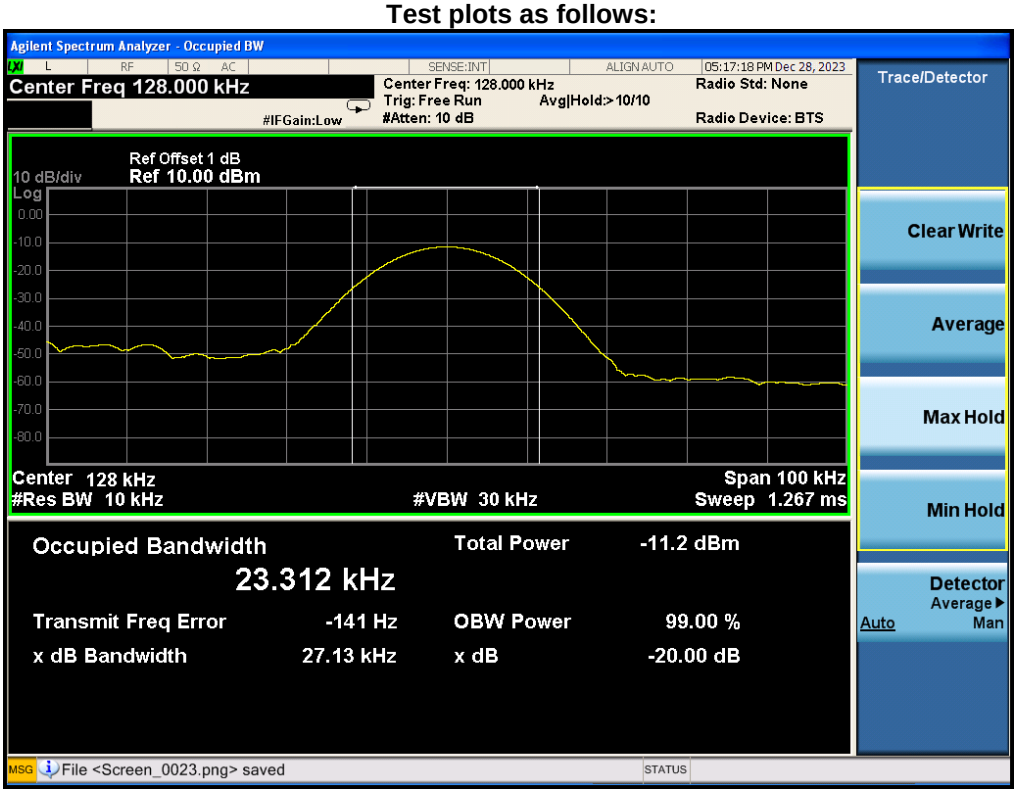
Test Requirement:	FCC Part15 C Section 15.215(c)
Test Method:	ANSI C63.10: 2013
Limit:	N/A
Test Procedure:	1. According to the follow Test-setup, keep the relative position between the artificial antenna and the EUT. 2. Set to the maximum power setting and enable the EUT transmit continuously. 3. Use 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. 4. Measure and record the results in the test report.
Test setup:	
Test Mode:	Refer to section 4.1 for details
Test results:	PASS

3.3.1. Test data

Test Mode: Wireless Output(15W)

Frequency(kHz)	20dB Occupy Bandwidth (kHz)	Limit (kHz)	Conclusion
128	27.13	---	Pass

Test plots as follows:



4. Photos of test setup

Reference to the **appendix I Test Setup Photo** for details.

5. Photos of EUT

Reference to the **appendix II external photos** and **appendix III internal photos** for details.

------ END OF REPORT------