FCC TEST REPORT

FCC ID: 2AP2N-BOX5000WS

On Behalf of

Shenzhen Esorun Technology Co.,LTD

Wireless Power Bank

Model No.: BOX5000W

Prepared for	:	Shenzhen Esorun Technology Co.,LTD
Address	:	425(E02), No. 5 Golf Avenue, Guangpei Community, Guanlan Street, Longhua Distric, Shenzhen, 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

Report Number	:	A1911004-C01-R01
Date of Receipt	:	November 11, 2019
Date of Test	:	November 11, 2019–January 08, 2020
Date of Report	:	January 08, 2020
Version Number	:	V0

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TEST REPORT DECLARATION

Applicant	:	Shenzhen Esorun Technology Co.,LTD
Address	:	425(E02), No. 5 Golf Avenue, Guangpei Community, Guanlan Street, Longhua Distric, Shenzhen, China
Manufacturer	:	Shenzhen Esorun Technology Co.,LTD
Address	:	425(E02), No. 5 Golf Avenue, Guangpei Community, Guanlan Street, Longhua Distric, Shenzhen, China
EUT Description	:	Wireless Power Bank
		(A) Model No. : BOX5000W
		(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 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 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).....:	Ella Liang Project Engineer	Ella Liang
Approved by (name + signature).....:	Simple Guan Project Manager	
Date of issue…… ……..:	January 08, 2020	

Revision History

Revision	Issue Date	Revisions	Revised By
V0	January 08, 2020	Initial released Issue	Simple Guan

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) and 15.209(f)	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	:	Wireless Power Bank
Model No.	:	BOX5000W
DIFF.	:	N/A
Trademark	:	ESORUN
Power supply	:	Input : DC 5V/2.0A Wireless Output : DC 5V/1A USB Output: 5V/2A
Operation frequency	:	125-205KHz
Modulation	:	MSK
Antenna Type	:	Coil Antenna
Software version	:	N/A
Hardware version	:	N/A

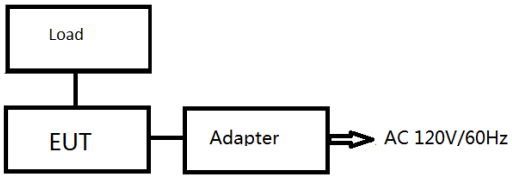
2.2. Accessories of Device (EUT)

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

2.3. Tested Supporting System Details

No.	Description	Manufacturer	Model	Serial Number	Certification or DOC
1	Wireless Load	JIDUOMANG TECHNOLOGY CO.,LTD	Jiduobang-004	--	--
2	Adapter	SHENZHEN BIAOYUAN TECHNOLOGY CO.,LTD	BY-075W01M	--	SDOC

2.4. Block Diagram of connection between EUT and simulators



2.5. Description of Test Modes

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

No.	Test model	Radiated emission	Conducted emission
1	Load Empty	/	/
2	Half Load	/	/
3	Full Load	※	※

Modulation Type: CW (Continuous Wave)

Note: All test modes were pre-tested, but we only recorded the worst case in this report (※ 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 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 (below 30MHz)	2.13 dB	Polarize: V
	2.57dB	Polarize: H
Uncertainty for Radiation Emission test in 3m chamber (30MHz to 1GHz)	3.77dB	Polarize: V
	3.80dB	Polarize: H
Uncertainty for Radiation Emission test in 3m chamber (1GHz to 25GHz)	4.16dB	Polarize: H
	4.13dB	Polarize: V
Uncertainty for radio frequency	5.4×10^{-8}	
Uncertainty for conducted RF Power	0.37dB	

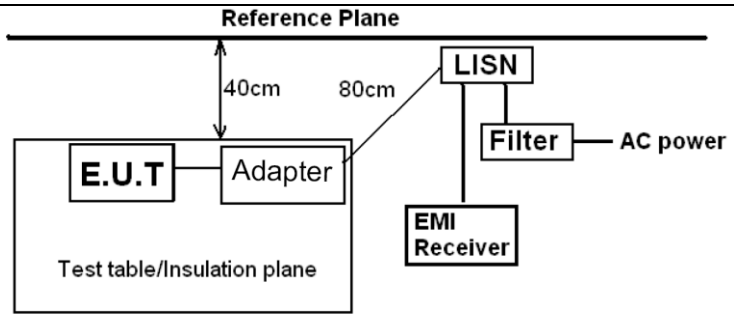
2.9. Test Equipment List

Equipment	Manufacture	Model No.	Serial No.	Last cal.	Cal Interval
9*6*6 anechoic chamber	CHENYU	9*6*6	N/A	2019.09.06	1Year
Spectrum analyzer	ROHDE&SCHWARZ	FSU	1166.1660.26	2019.09.06	1Year
Spectrum analyzer	Agilent	N9020A	MY499100060	2019.09.05	1Year
Receiver	ROHDE&SCHWARZ	ESR	1316.3003K03-102082-Wa	2019.09.06	1Year
Receiver	R&S	ESCI	101165	2019.09.05	1Year
Bilog Antenna	Schwarzbeck	VULB 9168	VULB9168-438	2018.04.13	2Year
Loop Antenna	SCHWARZBECK	FMZB 1519B	00059	2019.09.07	2Year
Cable	Resenberger	N/A	No.1	2019.09.05	1Year
Cable	SCHWARZBECK	N/A	No.2	2019.09.05	1Year
Cable	SCHWARZBECK	N/A	No.3	2019.09.05	1Year
Pre-amplifier	HP	HP8347A	2834A00455	2019.09.05	1Year
Pre-amplifier	Agilent	8449B	3008A02664	2019.09.05	1Year
Temperature controller	Terchy	MHQ	120	2019.09.20	1Year
L.I.S.N.#1	Schwarzbeck	NSLK8126	8126-466	2019.09.05	1Year
L.I.S.N.#2	ROHDE&SCHWARZ	ENV216	101043	2019.09.05	1 Year
20db Attenuator	ICPROBING	IATS1	82347	2019.09.20	1 Year

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> 

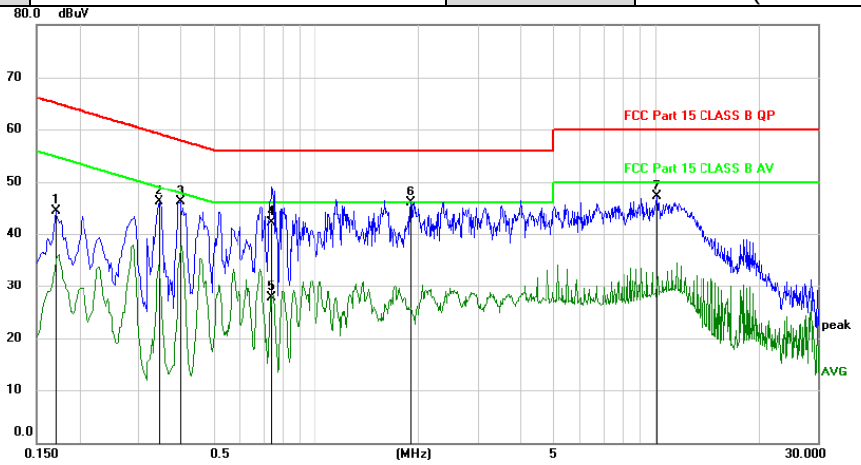
Remark:
E.U.T: Equipment Under Test
LISN: Line Impedence Stabilization Network
Test table height=0.8m</td></tr>
<tr><td>Test Procedure:</td><td>1. The E.U.T is connected to an adapter through a line impedance stabilization network (L.I.S.N.). This provides a 50ohm/50uH coupling impedance for the measuring 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

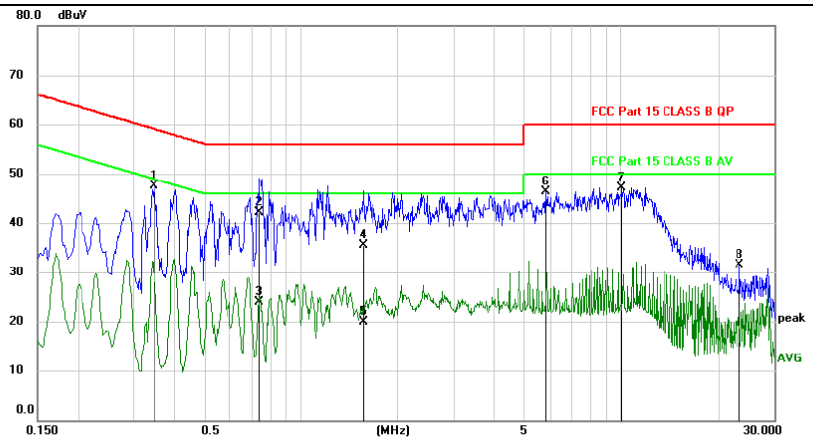
Test Mode	: 125KHz (Full Load)
Test Results	: **PASS**
Note:	The test results are listed in next pages. This mode is worst case mode, so this report only reflected the worst mode. If the limits for the measurement with the average detector are met when using a receiver with a peak detector, the test 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.	BOX5000W
Temperature	24℃	Humidity	56%
Pol	Line	Test date	2020/1/6
Test Voltage	AC 120V/60Hz	Test mode	125KHz (Full Load)



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1		0.1710	34.41	9.93	44.34	64.91	-20.57	peak	
2		0.3450	36.20	9.95	46.15	59.08	-12.93	peak	
3		0.3990	36.16	9.94	46.10	57.87	-11.77	peak	
4		0.7409	32.17	9.93	42.10	56.00	-13.90	QP	
5		0.7409	17.80	9.93	27.73	46.00	-18.27	AVG	
6	*	1.9050	36.09	9.88	45.97	56.00	-10.03	peak	
7		10.1250	36.95	10.21	47.16	60.00	-12.84	peak	

Pol	Neutral



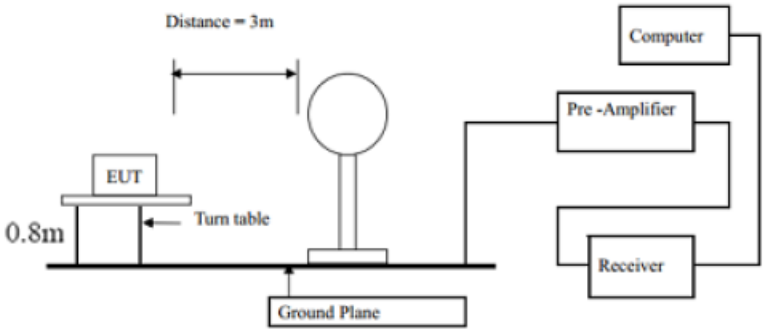
No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1	*	0.3480	37.64	9.95	47.59	59.01	-11.42	peak	
2		0.7409	32.22	9.93	42.15	56.00	-13.85	QP	
3		0.7409	14.03	9.93	23.96	46.00	-22.04	AVG	
4		1.5630	25.55	9.89	35.44	56.00	-20.56	QP	
5		1.5630	10.09	9.89	19.98	46.00	-26.02	AVG	
6		5.8350	36.22	10.07	46.29	60.00	-13.71	peak	
7		10.0229	36.83	10.21	47.04	60.00	-12.96	peak	
8		23.4360	21.13	10.45	31.58	60.00	-28.42	peak	

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

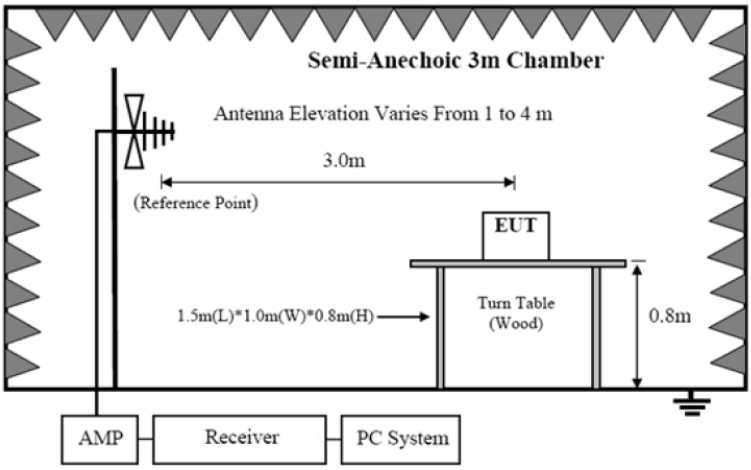
Note: Measurement=Reading Level+Correc Factor. Factor=(LISN or ISN or PLC or Current Probe)Factor+Cable

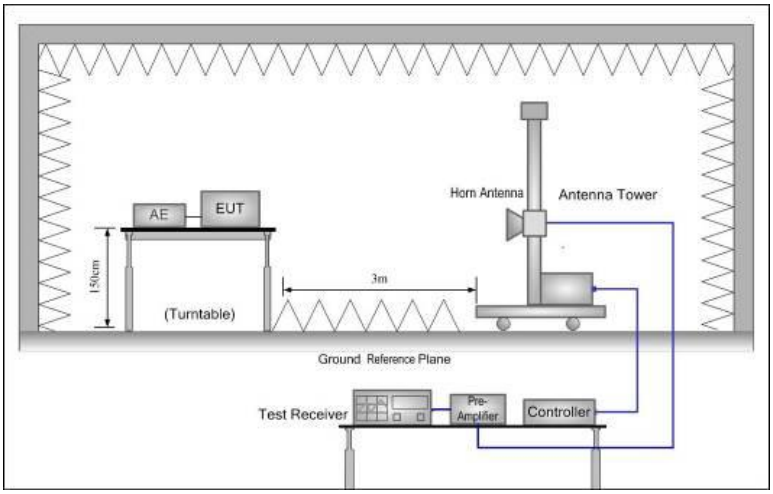
3.2. Radiated Spurious Emission Measurement

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 25 GHz</td></tr>
<tr><td>Measurement Distance:</td><td>3 m</td></tr>
<tr><td>Antenna Polarization:</td><td>Horizontal & Vertical</td></tr>
<tr><td>Receiver Setup:</td><td>
<table>
<tr><td>Frequency</td><td>Detector</td><td>RBW</td><td>VBW</td><td>Remark</td></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>
<tr><td rowspan="2">Above 1GHz</td><td>Peak</td><td>1MHz</td><td>3MHz</td><td>Peak Value</td></tr>
<tr><td>Peak</td><td>1MHz</td><td>10Hz</td><td>Average Value</td></tr>
</table>
</td></tr>
<tr><td>Limit:</td><td>
<table>
<tr><td>Frequency</td><td>Field Strength (microvolts/meter)</td><td>Measurement Distance (meters)</td></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>
<table>
<tr><td>Frequency</td><td>Field Strength (microvolts/meter)</td><td>Measurement Distance (meters)</td><td>Detector</td></tr>
<tr><td rowspan="2">Above 1GHz</td><td>500</td><td>3</td><td>Average</td></tr>
<tr><td>5000</td><td>3</td><td>Peak</td></tr>
</table>
</td></tr>
<tr><td>Test setup:</td><td>For radiated emissions below 30MHz
 

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

<table>
<tr>
<td></td>
<td>


Above 1GHz


</td>
</tr>
<tr>
<td>Test Procedure:</td>
<td>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</td>
</tr>
</table>

	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 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: (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 results:	PASS

3.2.2. Test Data

Please refer to following diagram for individual

Frequency Range	:	9KHz~30MHz
Test Mode	:	TX: channel low, channel mid, channel high
Test Results	:	**PASS**

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

2. 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.

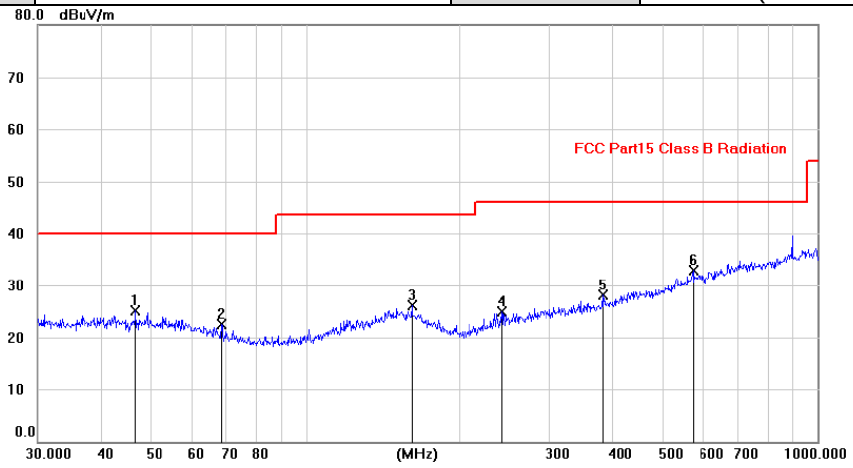
Freq.	Reading	Antenna Factor	Cable loss	Amp Factor	Result	Limit	Margin	Detector	State
(MHz)	(dBuV/m)	dB/m	dB	dB	(dBuV/m)	(dBuV/m) at 3 m	(dB)		P/F
0.125	71.46	48.34	0.16	29.87	90.09	125.67	-35.57	PK	PASS
0.125	59.73	48.34	0.16	29.87	78.36	105.67	-27.31	AV	PASS
0.175	69.40	48.34	0.16	29.87	88.03	122.74	-34.72	PK	PASS
0.175	62.26	48.34	0.16	29.87	80.89	102.74	-21.86	AV	PASS
0.205	68.53	48.38	0.17	29.89	87.19	121.37	-34.18	PK	PASS
0.205	61.78	48.38	0.17	29.89	80.44	101.37	-20.93	AV	PASS
0.35	60.93	48.44	0.19	29.89	79.67	116.72	-37.05	PK	PASS
0.35	53.80	48.44	0.19	29.89	72.54	96.72	-24.18	AV	PASS
0.45	58.51	48.47	0.19	29.89	77.28	114.54	-37.26	PK	PASS
0.45	51.12	48.47	0.19	29.89	69.89	94.54	-24.65	AV	PASS
1.928	27.65	49.12	0.2	29.94	47.03	60	-12.97	QP	PASS
1.920	31.80	49.12	0.2	29.94	51.18	60	-8.82	QP	PASS

Frequency Range	:	30MHz~1000MHz
Test Mode	:	125KHz (Full Load)
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.	

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

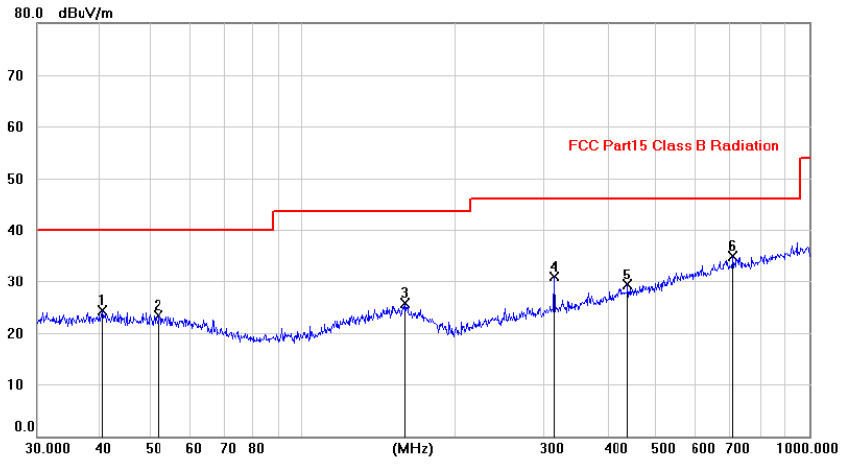
30MHz-1GHz

EUT Description	Wireless Power Bank	Model No.	BOX5000W
Temperature	24℃	Humidity	56%
Pol	Vertical	Test date	2020/1/7
Test Voltage	DC 3.7V	Test mode	125KHz (Full Load)



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		46.5356	10.45	14.66	25.11	40.00	-14.89	peak			
2		68.6070	10.35	12.21	22.56	40.00	-17.44	peak			
3		161.5874	10.10	15.91	26.01	43.50	-17.49	peak			
4		241.7611	11.12	13.74	24.86	46.00	-21.14	peak			
5		380.4474	10.98	17.06	28.04	46.00	-17.96	peak			
6	*	571.8118	11.83	21.01	32.84	46.00	-13.16	peak			

Pol	Horizontal



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		40.4738	9.37	14.97	24.34	40.00	-15.66	peak			
2		52.1530	8.83	14.46	23.29	40.00	-16.71	peak			
3		160.0648	9.60	16.04	25.64	43.50	-17.86	peak			
4		314.8177	15.35	15.64	30.99	46.00	-15.01	peak			
5		439.4252	10.84	18.55	29.39	46.00	-16.61	peak			
6	*	708.9336	11.54	23.30	34.84	46.00	-11.16	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

4. Antenna Requirements

4.1. Limit

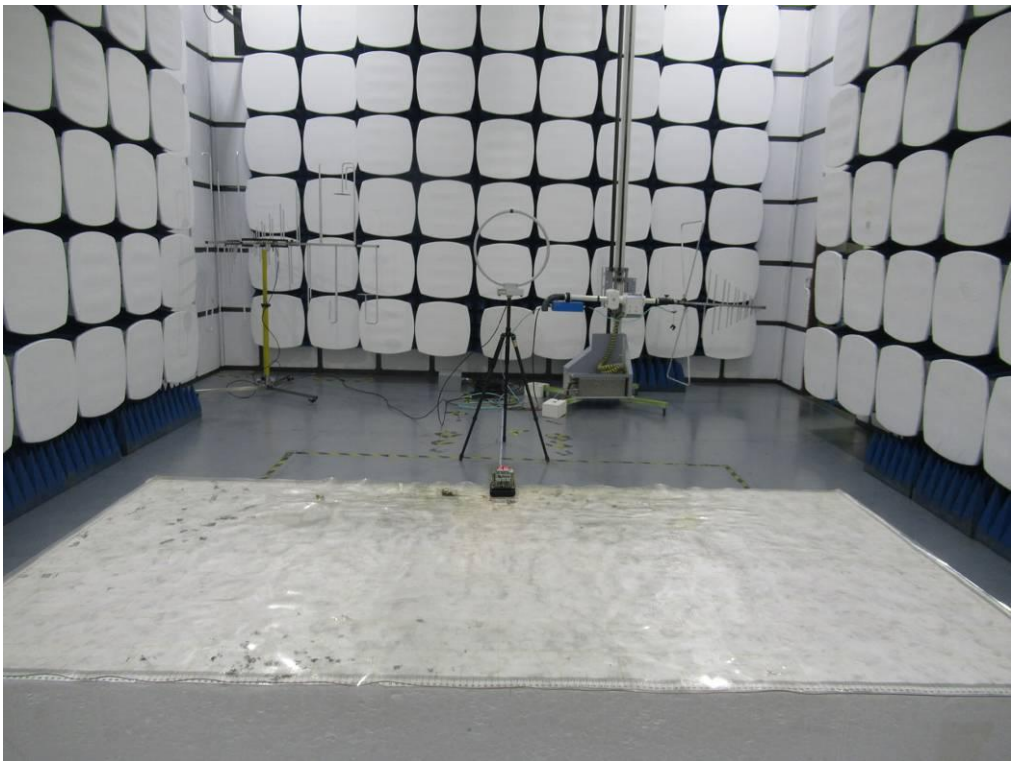
15.203 requirement:
An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator, the manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.

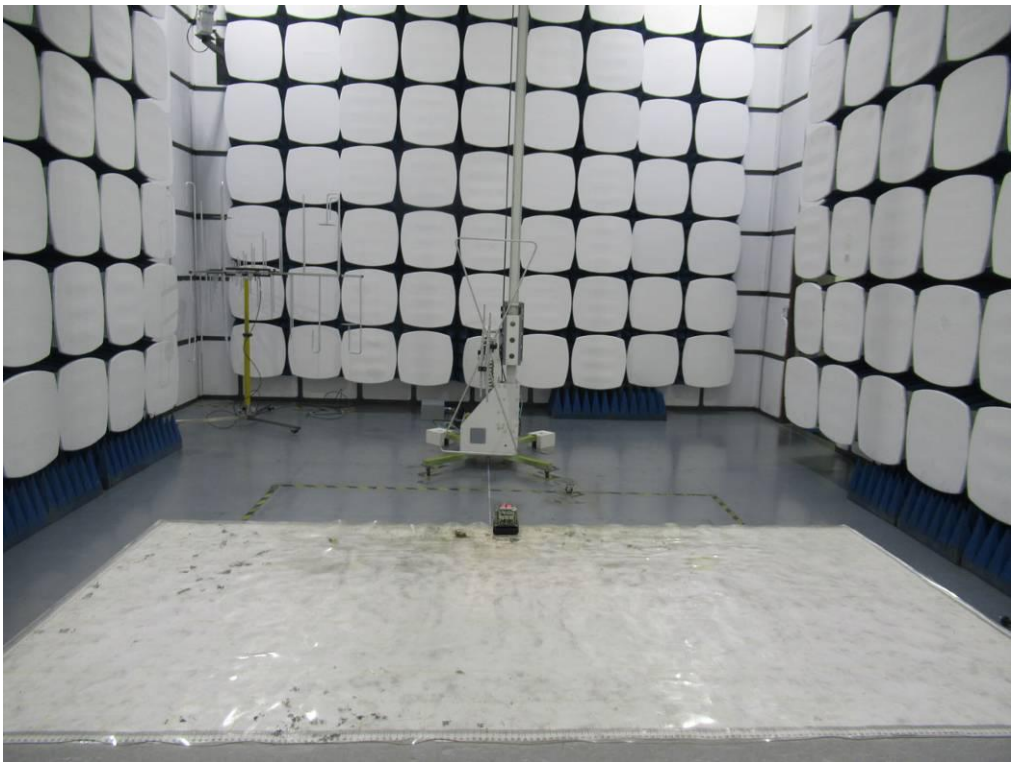
4.2. Result

The antenna is coil antenna which permanently attached. It complies with the standard requirement.

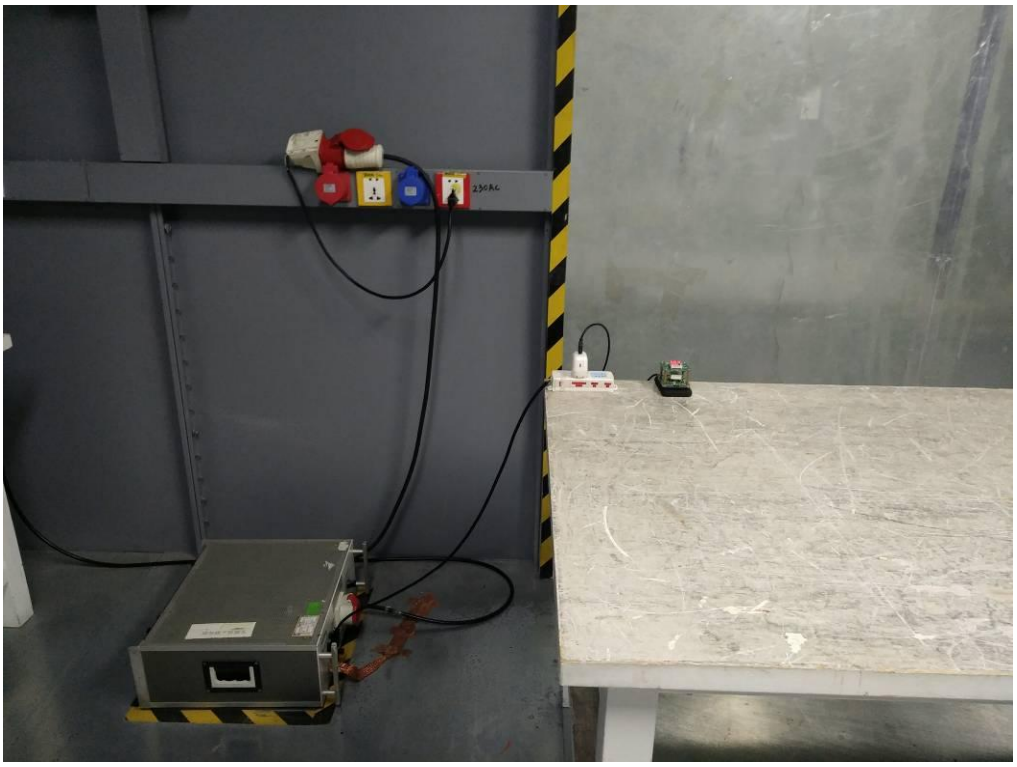
5. Photos of test setup

Radiated Emission

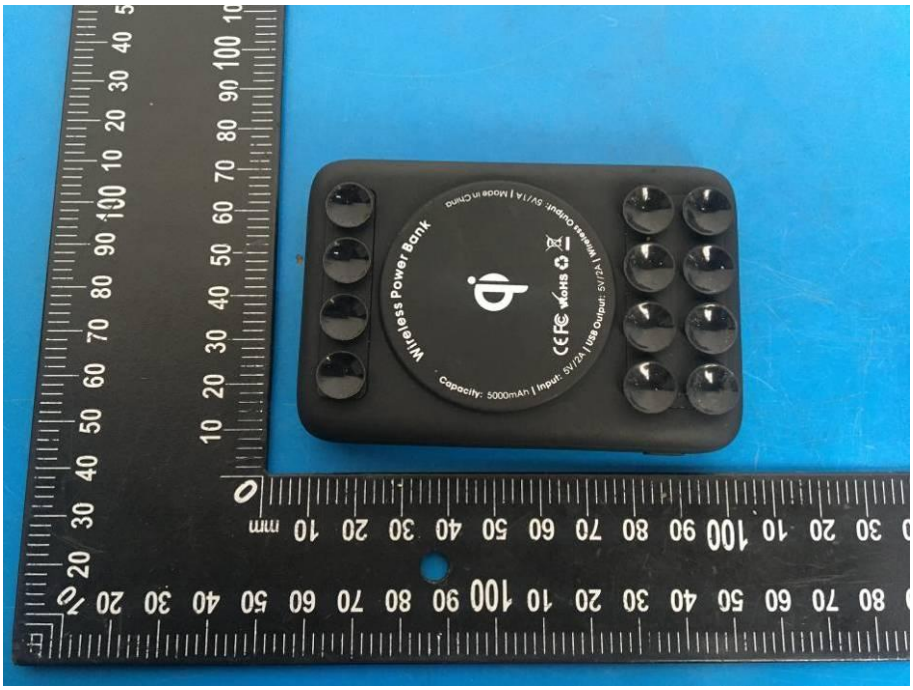


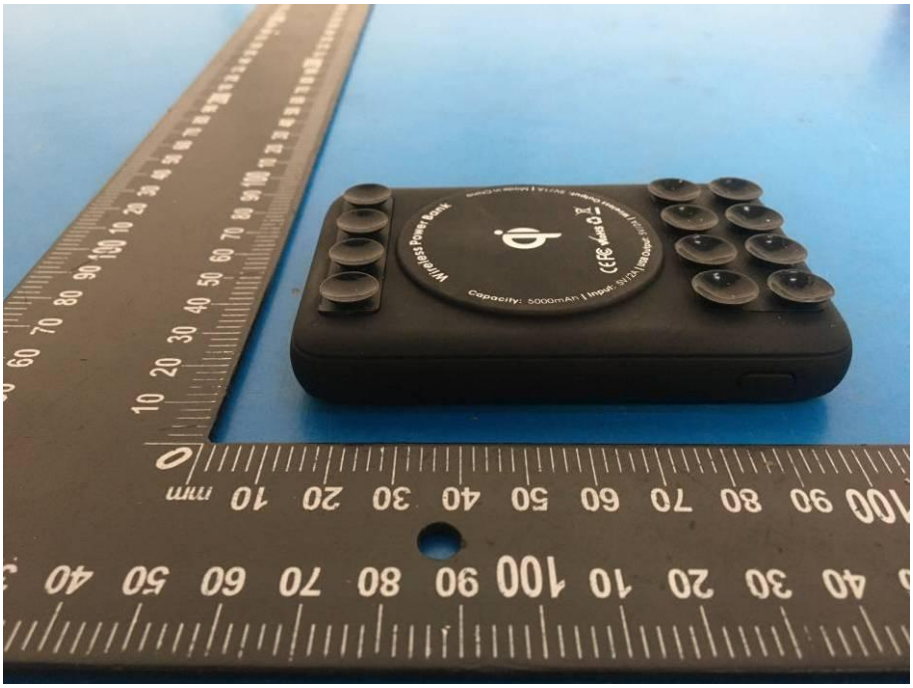


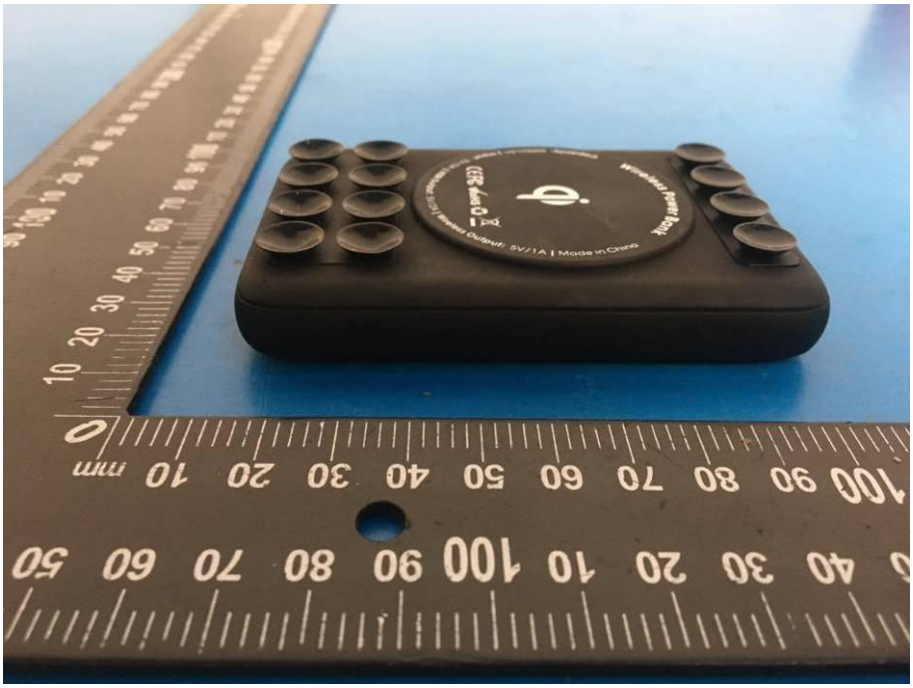
Conducted Emission

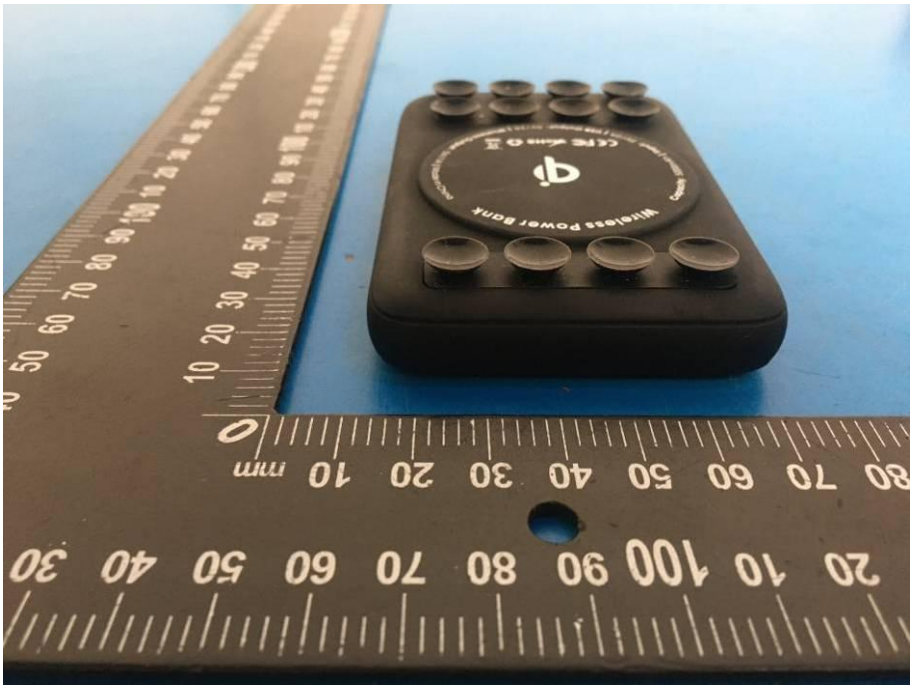


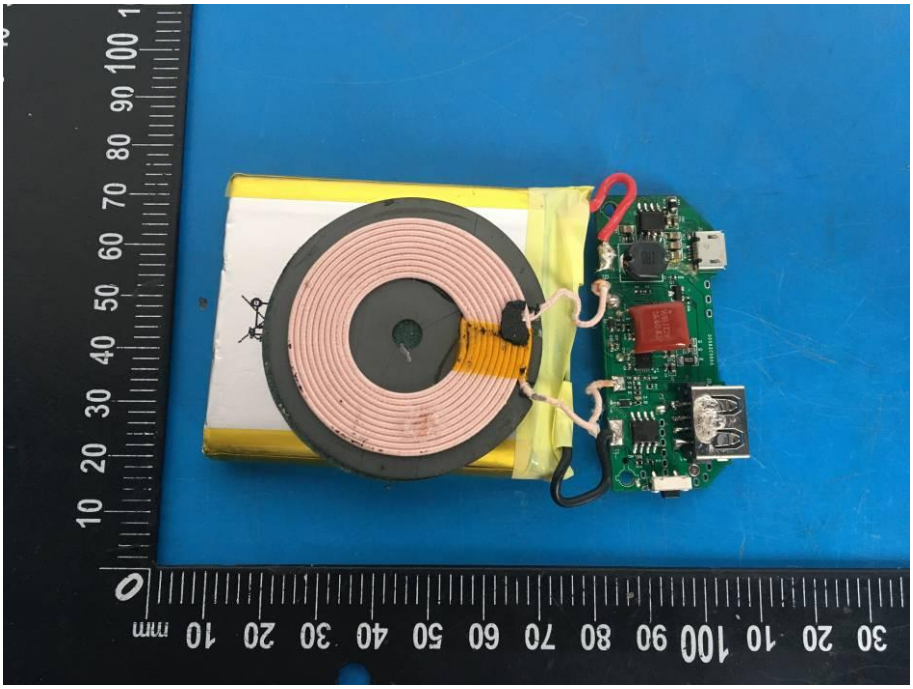
6. Photographs of EUT

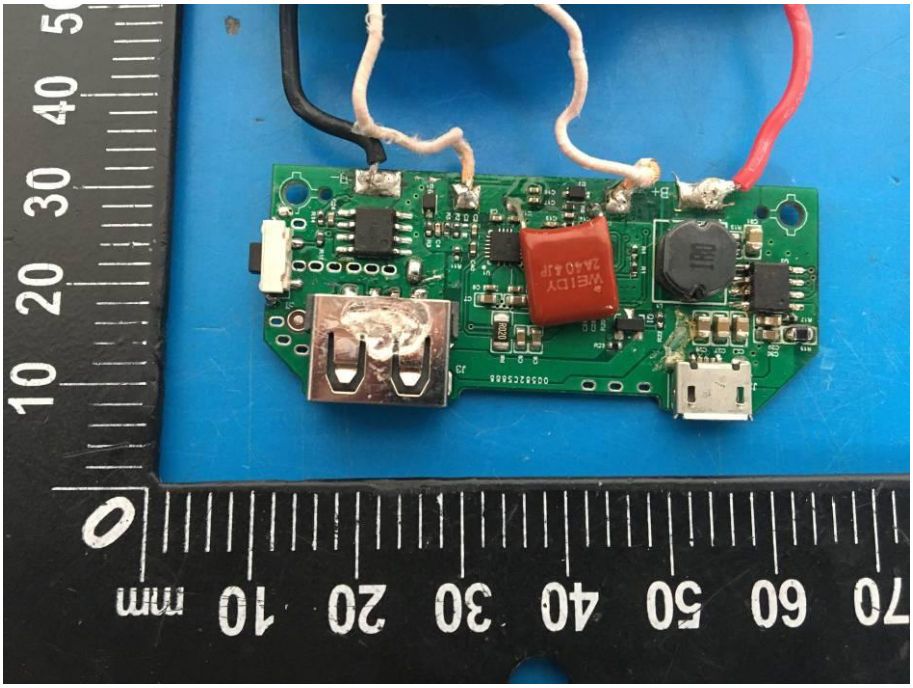


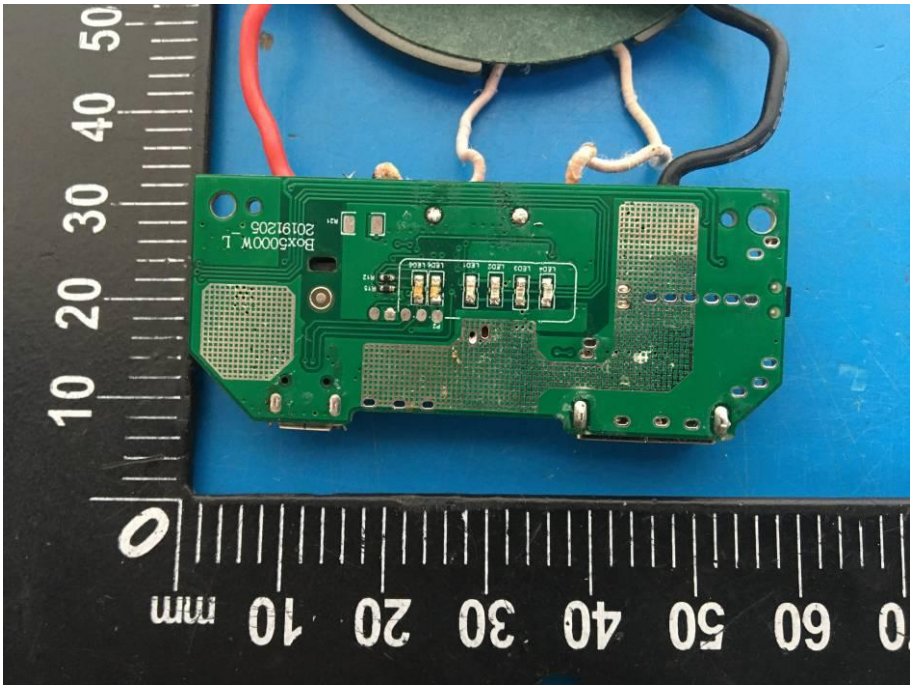

Capacity: 5000mAh











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