TCT 通测检测 TESTING CENTRE TECHNOLOGY

TEST REPORT

FCC ID. ..... :	RLY-R050MAGNETIC	
Test Report No..... :	TCT231025E017	
Date of issue..... :	Jan. 04, 2024	
Testing laboratory ..... :	SHENZHEN TONGCE TESTING LAB	
Testing location/ address:	2101 & 2201, Zhenchang Factory Renshan Industrial Zone, Fuhai Subdistrict, Bao'an District, Shenzhen, Guangdong, 518103, People's Republic of China	
Applicant's name..... :	ADATA Technology Co. Ltd.	
Address..... :	2F, No.258, Lian Cheng Rd., Chung Ho Dist., New Taipei City, Taiwan	
Manufacturer's name ... :	Dong guan Utopia-Originality Technology Co., Ltd	
Address..... :	NO.2, moushan Road, Chan'an Town, Dongguan City, Guangdong Province, China	
Standard(s) ..... :	FCC CFR Title 47 Part 15 Subpart C	
Product Name..... :	Rechargeable Li-Polymer Magnetic Power Bank	
Trade Mark ..... :	ADATA	
Model/Type reference..... :	R050 Magnetic	
Rating(s) ..... :	Rechargeable Li-ion Battery DC 3.85V	
Date of receipt of test item ..... :	Oct. 25, 2023	
Date (s) of performance of test..... :	Oct. 25, 2023 - Jan. 04, 2024	
Tested by (+signature) ... :	Brews XU	
Check by (+signature).... :	Beryl ZHAO	
Approved by (+signature):	Tomsin	

General disclaimer:

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Hotline: 400-6611-140 Tel: 86-755-27673339 Fax: 86-755-27673332 http://www.tct-lab.com

1. General Product Information

1.1. EUT description

Product Name.....:	Rechargeable Li-Polymer Magnetic Power Bank
Model/Type reference.....:	R050 Magnetic
Sample Number.....:	TCT231025E017-0101
Operation Frequency.....:	111.30kHz ~ 147.90kHz
Modulation Technology.....:	Load modulation
Max. Wireless Output Power:	15W
Antenna Type.....:	Inductive loop coil Antenna
Rating(s).....:	Rechargeable Li-ion Battery DC 3.85V

1.2. Model(s) list

None.

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2. 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

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.

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3. General Information

3.1. Test environment and mode

Operating Environment:		
Condition	Conducted Emission	Radiated Emission
Temperature:	25.3 °C	24.6 °C
Humidity:	45 % RH	52 % RH
Atmospheric Pressure:	1010 mbar	1010 mbar
Test Mode:		
Internal Battery Mode	Keep the EUT in three different wireless output modes (1%, 50%, 99% load).	
The sample was placed 0.8m for the measurement below above the ground plane of 3m chamber. Measurements in both horizontal and vertical polarities were performed. During the test, each emission was maximized by: having the EUT continuously working, investigated all operating modes, rotated about all 3 axis (X, Y & Z) and considered typical configuration to obtain worst position, manipulating interconnecting cables, rotating the turntable, varying antenna height from 1m to 4m in both horizontal and vertical polarizations. The emissions worst-case(Z axis) are shown in Test Results of the following pages.		

3.2. Description of Support Units

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

Equipment	Model No.	Serial No.	FCC ID	Trade Name
Adapter	EP-TA200	R37R55T6KL2SE3	/	SAMSUNG
Mobile Phone	SM-G9350	R28HA2ER3GT	/	SAMSUNG

Note:

1. All the equipment/cables were placed in the worst-case configuration to maximize the emission during the test.

2. Grounding was established in accordance with the manufacturer's requirements and conditions for the intended use.

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4. Facilities and Accreditations

4.1. Facilities

The test facility is recognized, certified, or accredited by the following organizations:

- FCC - Registration No.: 645098
  SHENZHEN TONGCE TESTING LAB
  Designation Number: CN1205
  The testing lab has been registered and fully described in a report with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files.
- IC - Registration No.: 10668A-1
  SHENZHEN TONGCE TESTING LAB
  CAB identifier: CN0031
  The testing lab has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing.

4.2. Location

SHENZHEN TONGCE TESTING LAB
Address: 2101 & 2201, Zhenchang Factory Renshan Industrial Zone, Fuhai Subdistrict, Bao'an District, Shenzhen, Guangdong, 518103, People's Republic of China
TEL: +86-755-27673339

4.3. Measurement Uncertainty

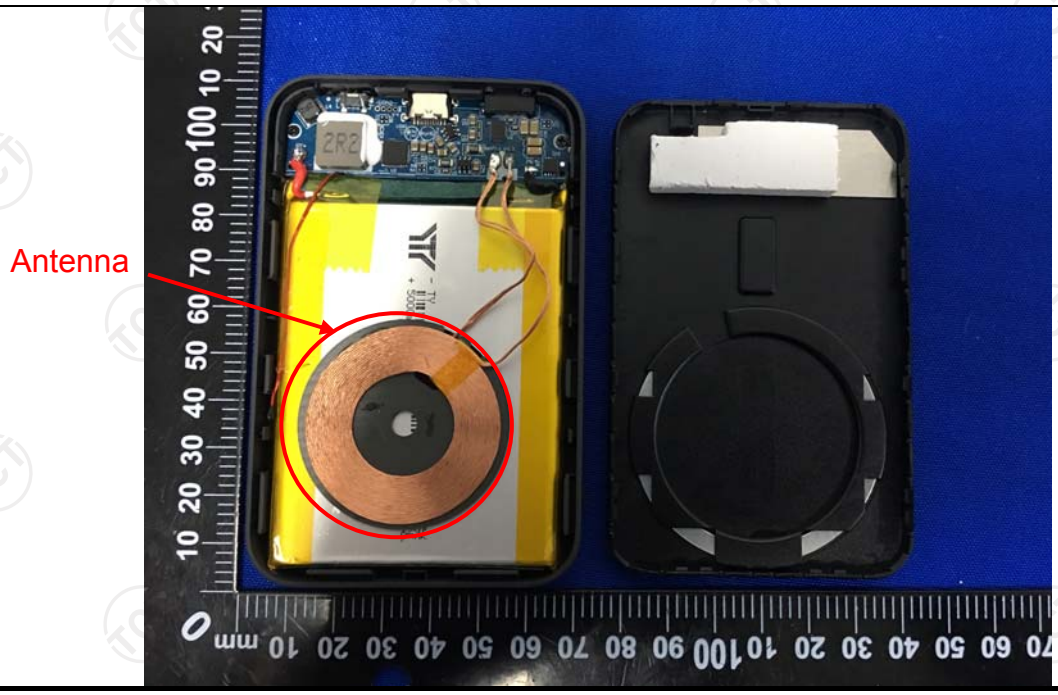
The reported uncertainty of measurement y ± U, where expended uncertainty U is based on a standard uncertainty multiplied by a coverage factor of k=2, providing a level of confidence of approximately 95 %.

No.	Item	MU
1	Conducted Emission	± 3.10 dB
2	RF power, conducted	± 0.12 dB
3	Spurious emissions, conducted	± 0.11 dB
4	All emissions, radiated(<1 GHz)	± 4.56 dB
5	All emissions, radiated(1 GHz - 18 GHz)	± 4.22 dB
6	All emissions, radiated(18 GHz- 40 GHz)	± 4.36 dB

5. Test Results and Measurement Data

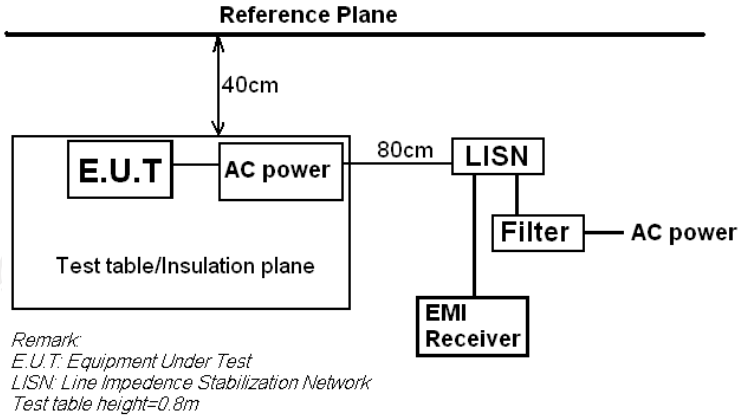
5.1. Antenna requirement

Standard requirement:	FCC Part15 C Section 15.203
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.	
E.U.T Antenna:	
The antennas are inductive loop coil antenna which permanently attached.	



5.2. Conducted Emission

5.2.1. 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>Charging</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>

5.2.2. Test Instruments

Conducted Emission Shielding Room Test Site (843)				
Equipment	**Manufacturer**	**Model**	**Serial Number**	**Calibration Due**
EMI Test Receiver	R&S	ESCI3	100898	Jun. 29, 2024
Line Impedance Stabilisation Newtork(LISN)	Schwarzbeck	NSLK 8126	8126453	Feb. 20, 2024
Line-5	TCT	CE-05	/	Jul. 03, 2024
EMI Test Software	Shurple Technology	EZ-EMC	/	/

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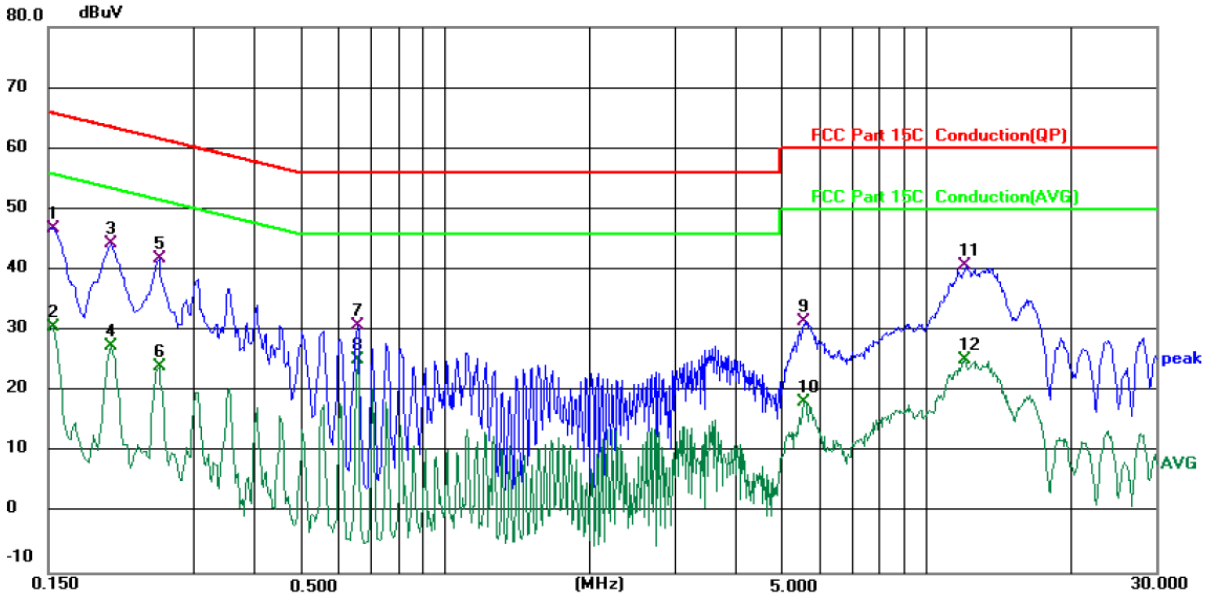
5.2.3. Test data

Please refer to following diagram for individual

Conducted Emission on Line Terminal of the power line (150 kHz to 30MHz)



Site 844 Shielding Room | Phase: *L1* | Temperature: 25.3 (℃) | Humidity: 45 %

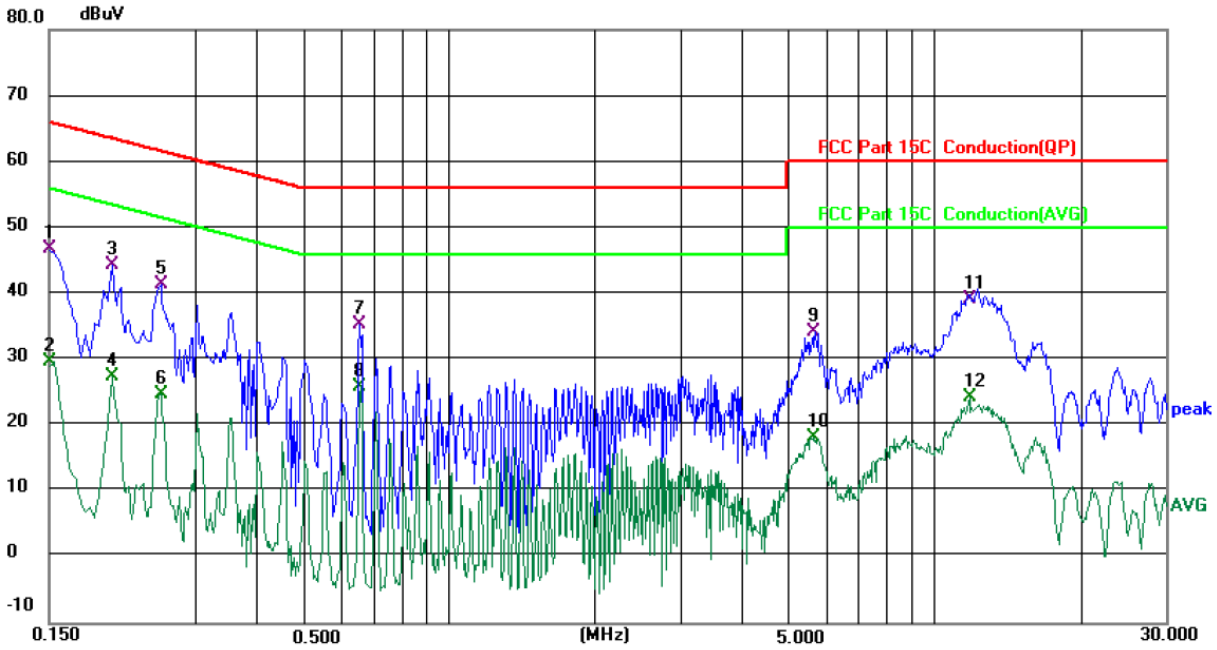
Limit: FCC Part 15C Conduction(QP) | Power: DC 9 V(Adapter Input AC 120 V/60 Hz)

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1	*	0.1539	36.81	10.11	46.92	65.79	-18.87	QP	
2		0.1539	20.42	10.11	30.53	55.79	-25.26	AVG	
3		0.2020	34.12	10.15	44.27	63.53	-19.26	QP	
4		0.2020	17.36	10.15	27.51	53.53	-26.02	AVG	
5		0.2540	31.96	9.95	41.91	61.63	-19.72	QP	
6		0.2540	14.15	9.95	24.10	51.63	-27.53	AVG	
7		0.6580	21.51	9.30	30.81	56.00	-25.19	QP	
8		0.6580	15.99	9.30	25.29	46.00	-20.71	AVG	
9		5.5700	21.45	10.10	31.55	60.00	-28.45	QP	
10		5.5700	8.18	10.10	18.28	50.00	-31.72	AVG	
11		12.0180	30.66	10.16	40.82	60.00	-19.18	QP	
12		12.0180	15.09	10.16	25.25	50.00	-24.75	AVG	

Note:

Freq. = Emission frequency in MHz
Reading level (dBμV) = Receiver reading
Corr. Factor (dB) = LISN factor + Cable loss
Measurement (dBμV) = Reading level (dBμV) + Corr. Factor (dB)
Limit (dBμV) = Limit stated in standard
Margin (dB) = Measurement (dBμV) – Limits (dBμV)
Q.P. =Quasi-Peak
AVG =average
** is meaning the worst frequency has been tested in the frequency range 150 kHz to 30MHz*

Conducted Emission on Neutral Terminal of the power line (150 kHz to 30MHz)



Site 844 Shielding Room Phase: *N* Temperature: 25.3 (℃) Humidity: 45 %

Limit: FCC Part 15C Conduction(QP) Power: DC 9 V(Adapter Input AC 120 V/60 Hz)

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1		0.1500	36.61	10.09	46.70	66.00	-19.30	QP	
2		0.1500	19.61	10.09	29.70	56.00	-26.30	AVG	
3	*	0.2020	34.22	10.15	44.37	63.53	-19.16	QP	
4		0.2020	17.23	10.15	27.38	53.53	-26.15	AVG	
5		0.2540	31.48	9.94	41.42	61.63	-20.21	QP	
6		0.2540	14.89	9.94	24.83	51.63	-26.80	AVG	
7		0.6540	26.07	9.32	35.39	56.00	-20.61	QP	
8		0.6540	16.50	9.32	25.82	46.00	-20.18	AVG	
9		5.6579	24.00	10.12	34.12	60.00	-25.88	QP	
10		5.6579	8.10	10.12	18.22	50.00	-31.78	AVG	
11		11.8539	29.04	10.21	39.25	60.00	-20.75	QP	
12		11.8539	14.18	10.21	24.39	50.00	-25.61	AVG	

Note:

Freq. = Emission frequency in MHz

Reading level (dBμV) = Receiver reading

Corr. Factor (dB) = LISN factor + Cable loss

Measurement (dBμV) = Reading level (dBμV) + Corr. Factor (dB)

Limit (dBμV) = Limit stated in standard

Margin (dB) = Measurement (dBμV) – Limits (dBμV)

Q.P. =Quasi-Peak AVG =average

** is meaning the worst frequency has been tested in the frequency range 150 kHz to 30MHz*

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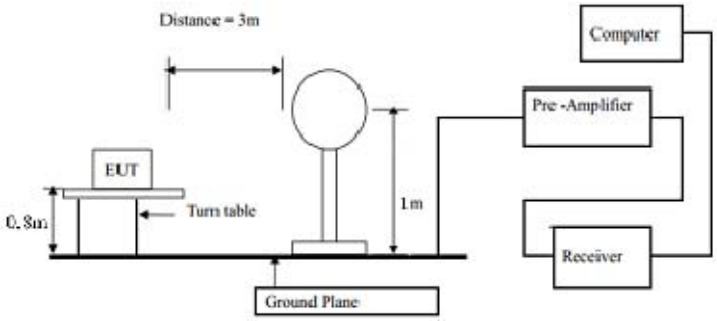
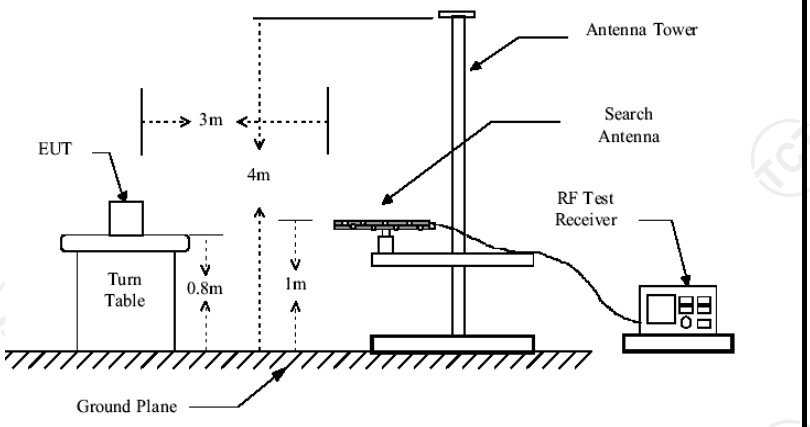
5.3. Radiated Spurious Emission Measurement

5.3.1. 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>Operation mode:</td><td>Refer to item 3.1</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>120KHz</td><td>300KHz</td><td>Quasi-peak 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>
</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=120 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 3.1 for details
Test results:	PASS

5.3.2. Test Instruments

Radiated Emission Test Site (966)				
Name of Equipment	**Manufacturer**	**Model**	**Serial Number**	**Calibration Due**
EMI Test Receiver	R&S	ESIB7	100197	Jun. 29, 2024
Spectrum Analyzer	R&S	FSQ40	200061	Jun. 29, 2024
Pre-amplifier	SKET	LNPA_0118G-45	SK2021012102	Feb. 20, 2024
Pre-amplifier	SKET	LNPA_1840G-50	SK202109203500	Feb. 20, 2024
Pre-amplifier	HP	8447D	2727A05017	Jun. 27, 2024
Loop antenna	Schwarzbeck	FMZB1519B	00191	Jul. 02, 2024
Broadband Antenna	Schwarzbeck	VULB9163	340	Jul. 01, 2024
Horn Antenna	Schwarzbeck	BBHA 9120D	631	Jul. 01, 2024
Horn Antenna	Schwarzbeck	BBHA 9170	00956	Feb. 24, 2024
Antenna Mast	Keleto	RE-AM	/	/
Coaxial cable	SKET	RC-18G-N-M	/	Feb. 24, 2024
Coaxial cable	SKET	RC_40G-K-M	/	Feb. 24, 2024
EMI Test Software	Shurple Technology	EZ-EMC	/	/

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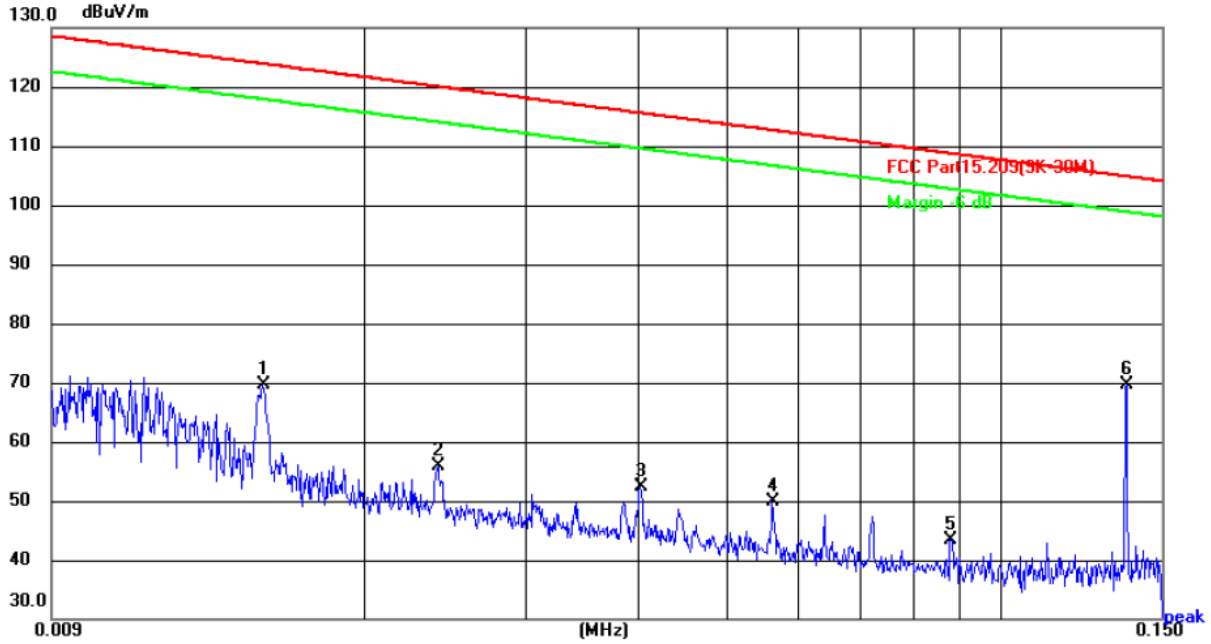
5.3.3. Test Data

Please refer to following diagram for individual

9KHz-30MHz

9KHz-150KHz:

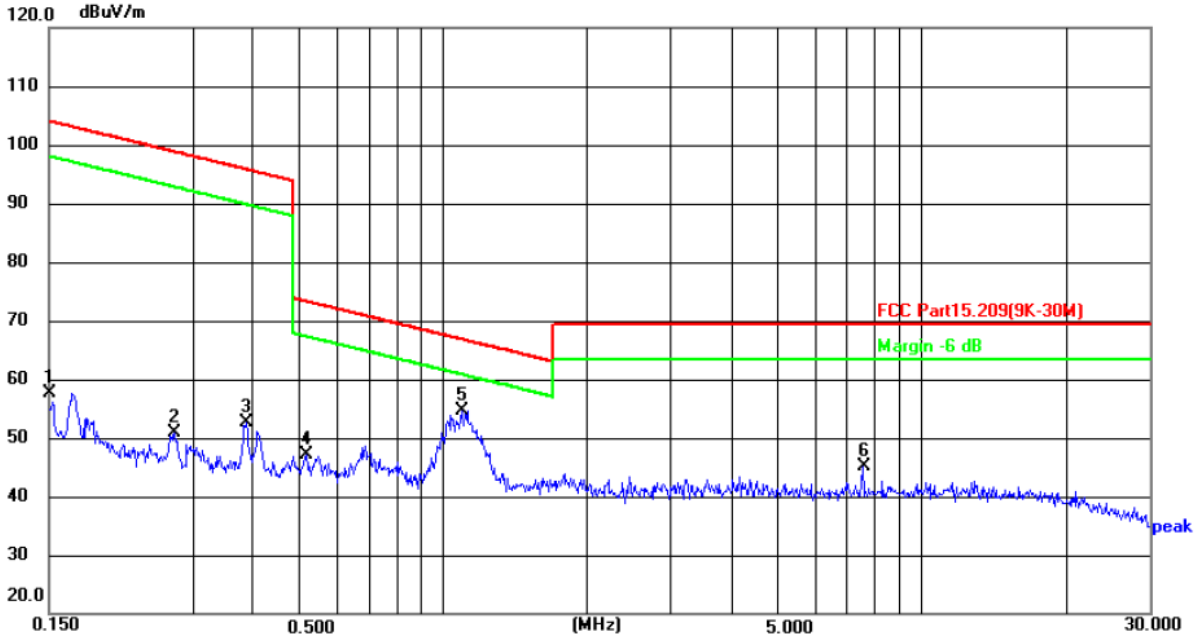


Site: #3 3m Anechoic Chamber Polarization: *Vertical* Temperature: 25.2(℃) Humidity: 51 %

Limit: FCC Part15.209(9K-30M) Power: DC3.85V

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	P/F	Remark
1	0.0154	48.85	20.67	69.52	123.85	-54.33	peak	P	
2	0.0240	35.25	20.54	55.79	120.00	-64.21	peak	P	
3	0.0401	31.76	20.54	52.30	115.54	-63.24	peak	P	
4	0.0560	29.21	20.76	49.97	112.64	-62.67	peak	P	
5	0.0880	22.47	21.01	43.48	108.71	-65.23	peak	P	
6 *	0.1372	49.25	20.32	69.57	104.86	-35.29	peak	P	

150KHz-30MHz:



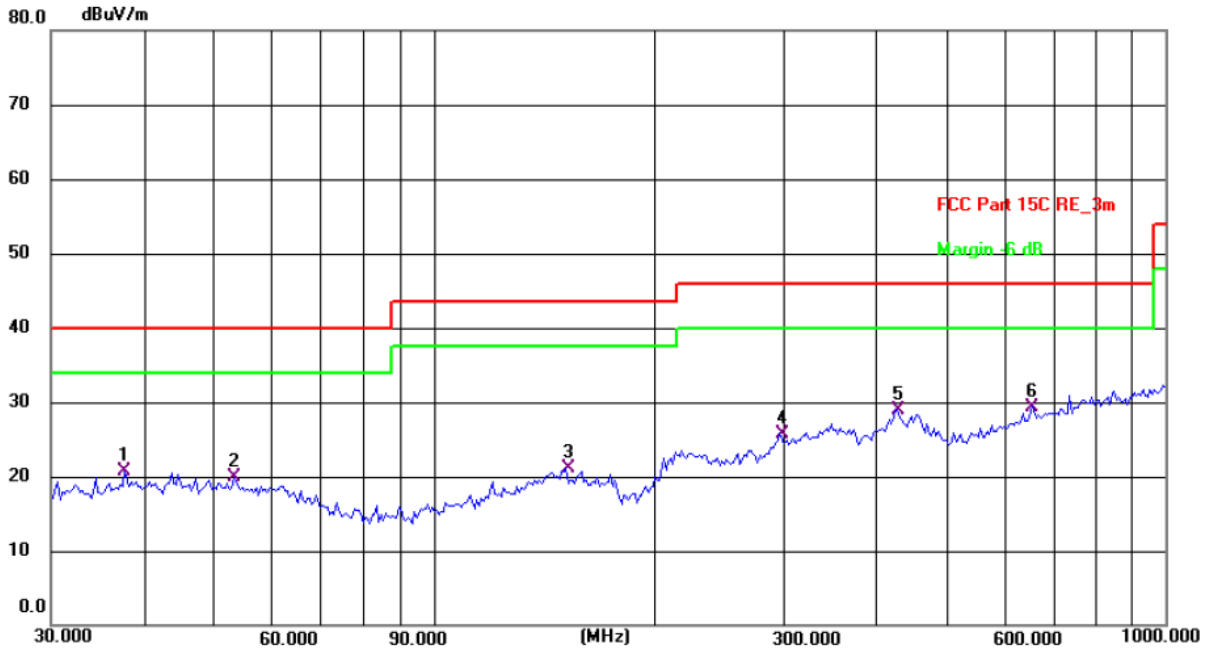
Site: #3 3m Anechoic Chamber Polarization: *Vertical* Temperature: 25.2(℃) Humidity: 51 %

Limit: FCC Part15.209(9K-30M) Power: DC3.85V

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	P/F	Remark
1	0.1504	36.94	20.72	57.66	104.06	-46.40	peak	P	
2	0.2748	29.96	21.01	50.97	98.82	-47.85	peak	P	
3	0.3876	31.37	21.28	52.65	95.84	-43.19	peak	P	
4	0.5193	25.52	21.58	47.10	73.30	-26.20	peak	P	
5 *	1.0962	31.88	22.86	54.74	66.83	-12.09	peak	P	
6	7.5298	9.67	35.55	45.22	69.50	-24.28	peak	P	

30MHz-1GHz

Horizontal:

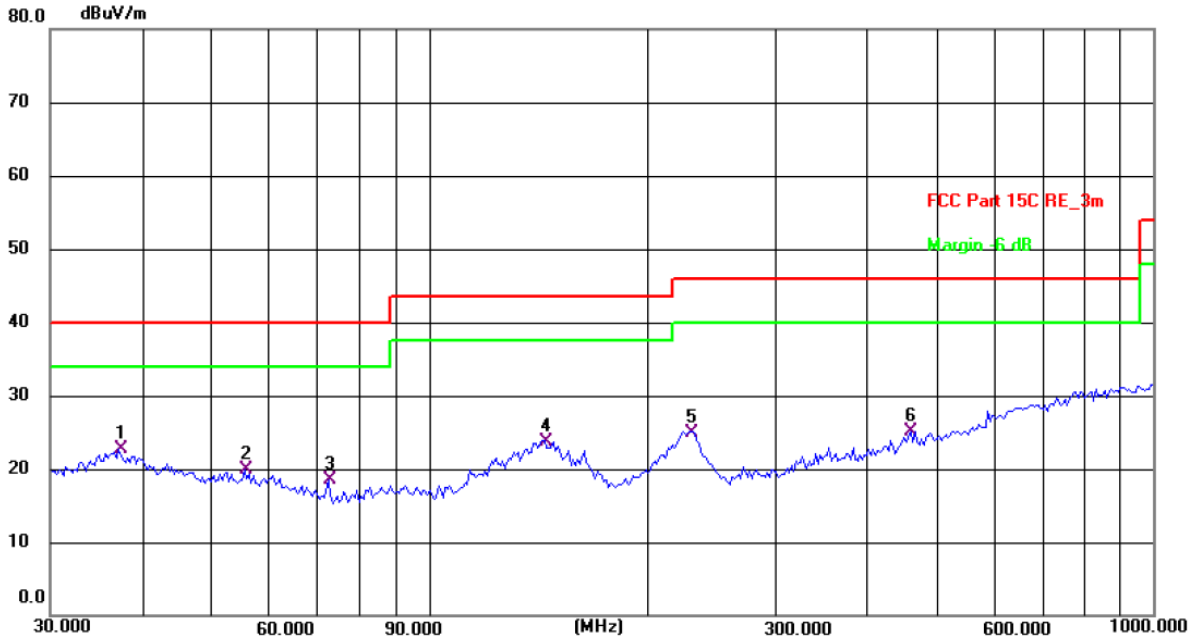


Site: #1 3m Anechoic Chamber Polarization: *Horizontal* Temperature: 24.6(C) Humidity: 52 %

Limit: FCC Part 15C RE_3m Power: DC3.85V

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	P/F	Remark
1	37.8121	6.86	13.90	20.76	40.00	-19.24	QP	P	
2	53.3179	6.60	13.34	19.94	40.00	-20.06	QP	P	
3	151.5972	6.52	14.53	21.05	43.50	-22.45	QP	P	
4	297.2241	11.83	13.89	25.72	46.00	-20.28	QP	P	
5	428.0193	11.80	17.11	28.91	46.00	-17.09	QP	P	
6 *	656.5300	7.59	21.67	29.26	46.00	-16.74	QP	P	

Vertical:



Site: #1 3m Anechoic Chamber Polarization: *Vertical* Temperature: 24.6(C) Humidity: 52 %

Limit: FCC Part 15C RE_3m Power: DC3.85V

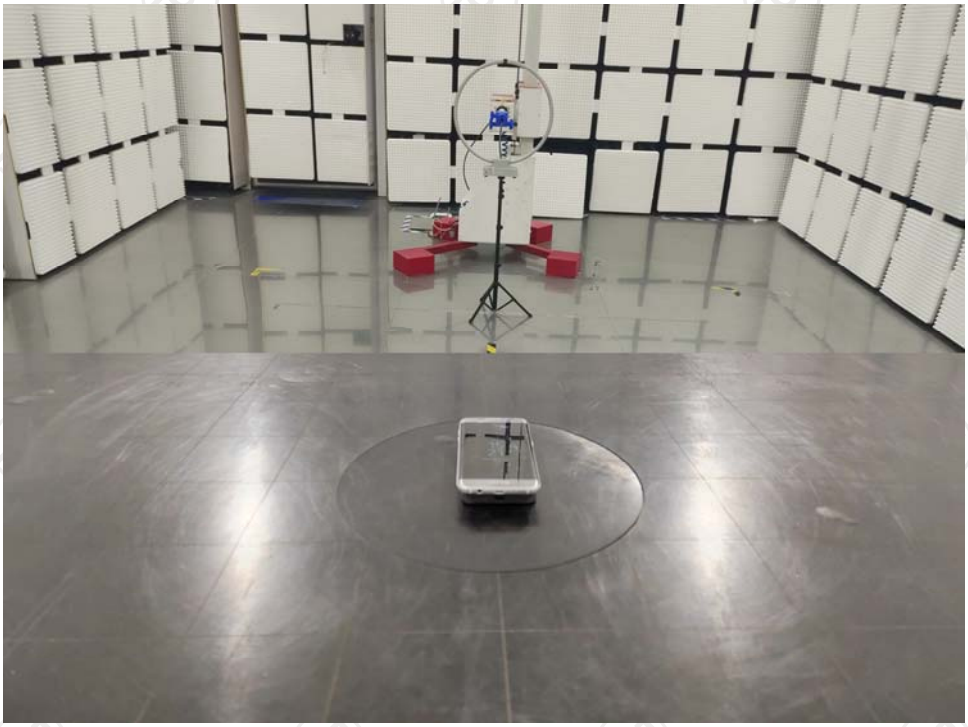
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	P/F	Remark
1 *	37.2855	8.89	13.85	22.74	40.00	-17.26	QP	P	
2	55.6094	6.67	13.21	19.88	40.00	-20.12	QP	P	
3	72.5916	8.03	10.51	18.54	40.00	-21.46	QP	P	
4	144.3348	9.67	14.08	23.75	43.50	-19.75	QP	P	
5	229.2931	12.95	11.96	24.91	46.00	-21.09	QP	P	
6	462.3455	7.14	17.93	25.07	46.00	-20.93	QP	P	

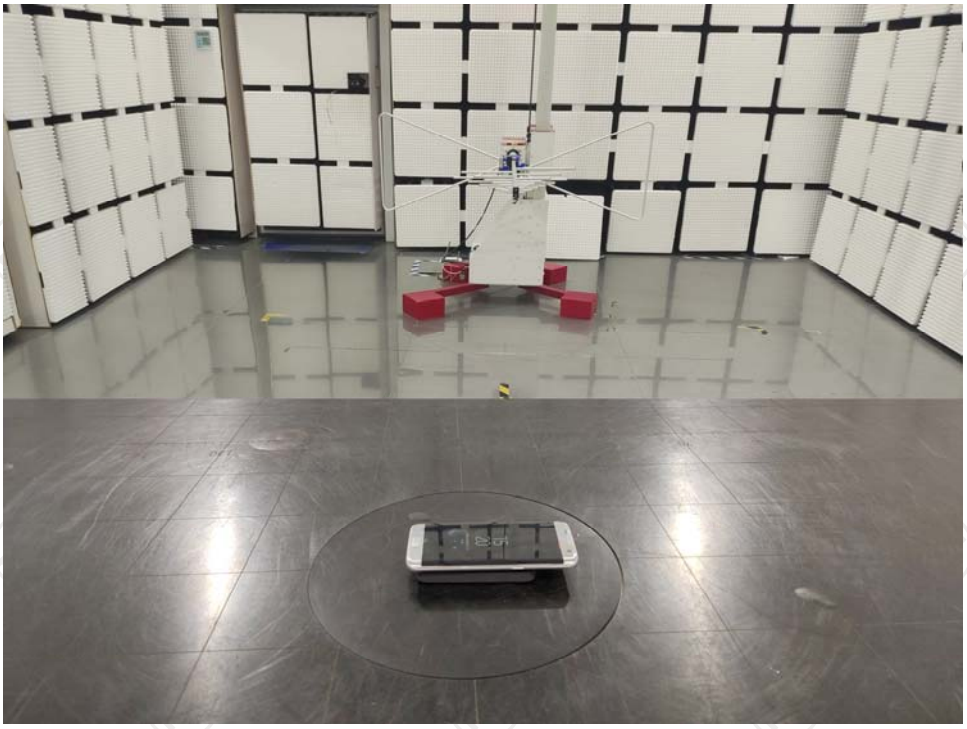
Note:

1. Emission Level=Peak Reading + Correction Factor; Correction Factor= Antenna Factor + Cable loss – Pre-amplifier

Appendix A: Photographs of Test Setup

Product: Rechargeable Li-Polymer Magnetic Power Bank
Model: R050 Magnetic
Radiated Emission





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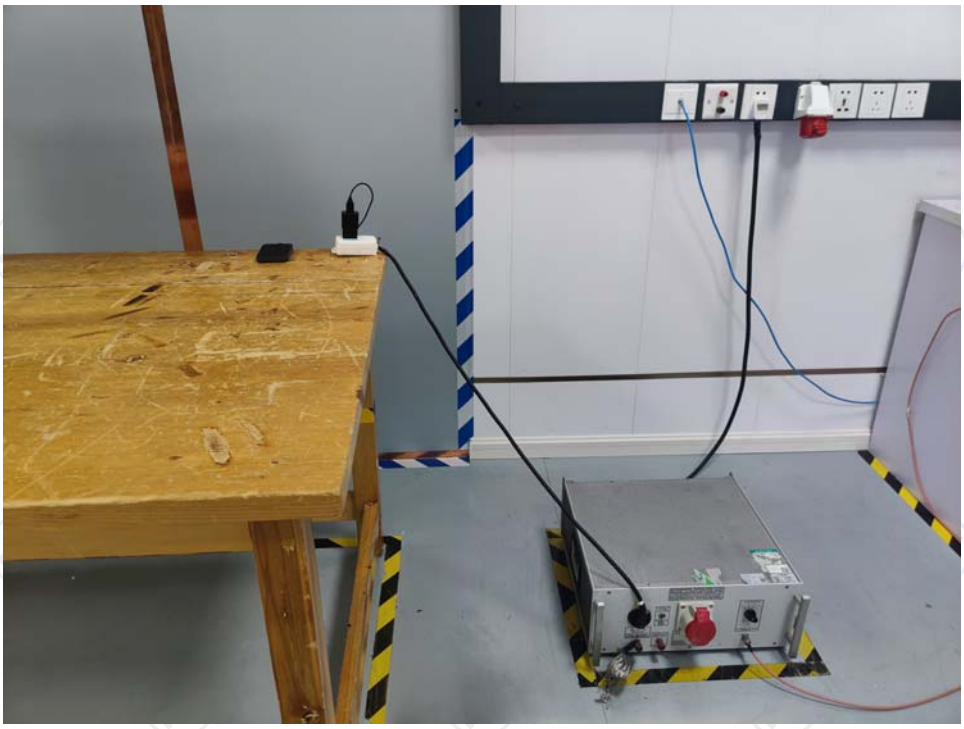
Conducted Emission



Appendix B: Photographs of EUT

Product: Rechargeable Li-Polymer Magnetic Power Bank
Model: R050 Magnetic
External Photos

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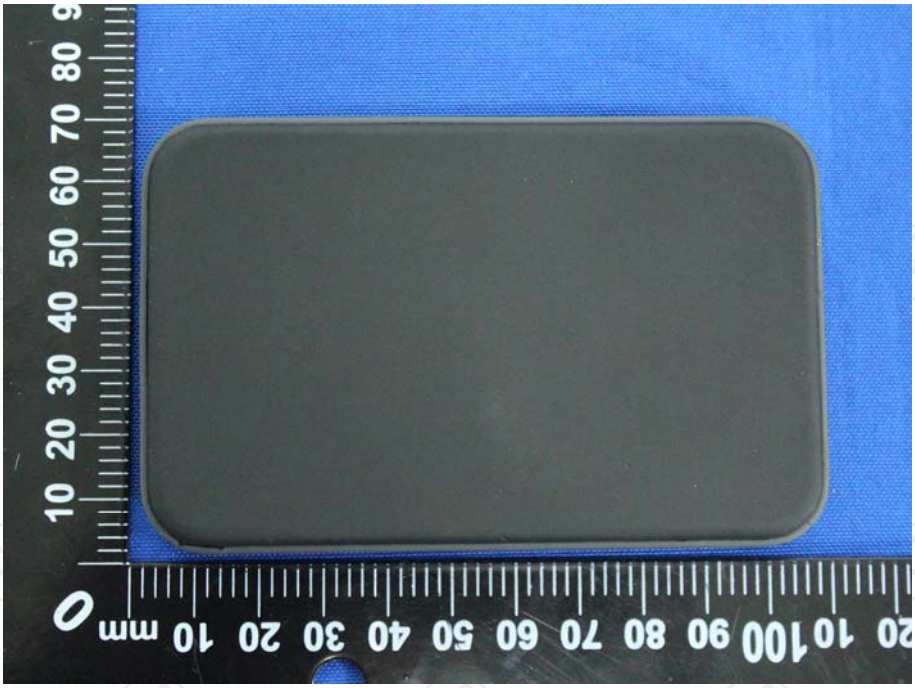

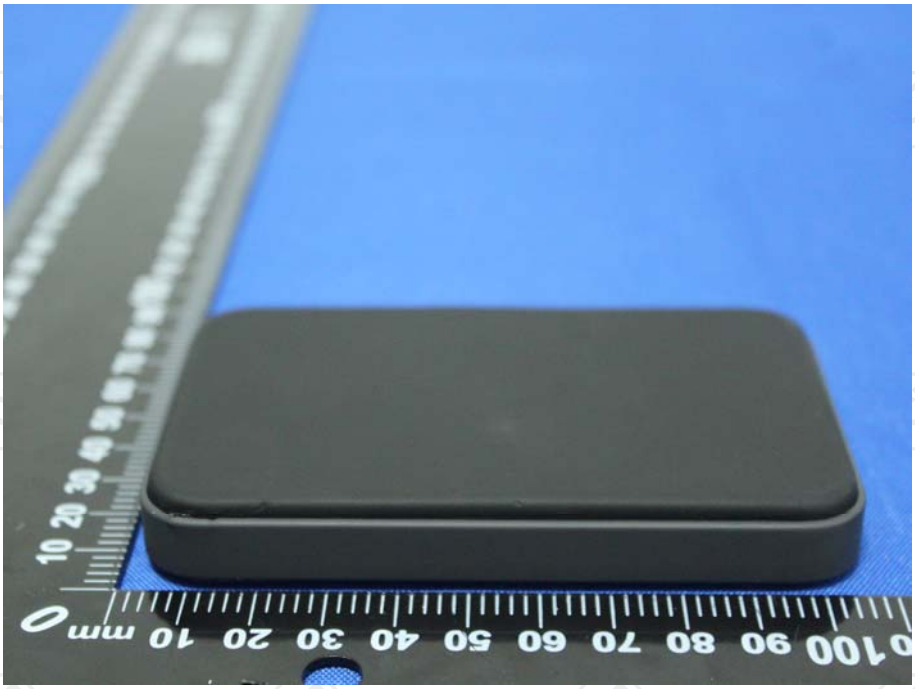

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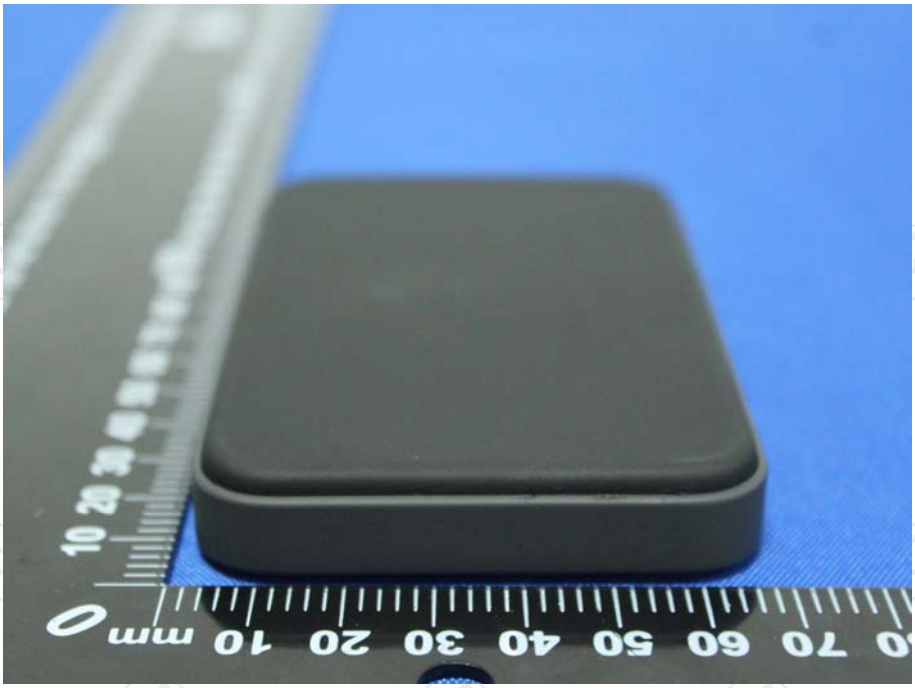

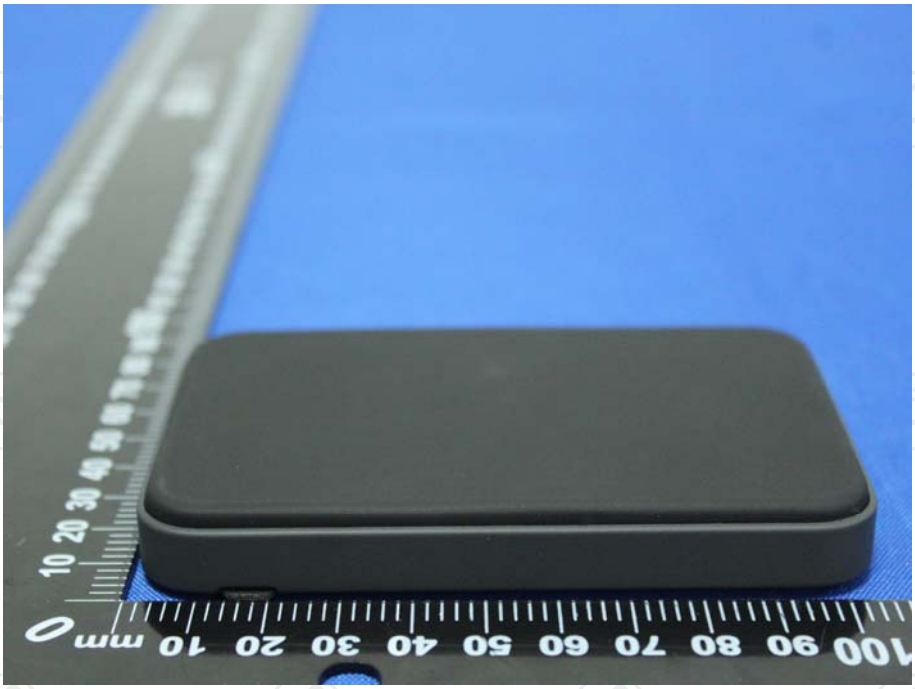

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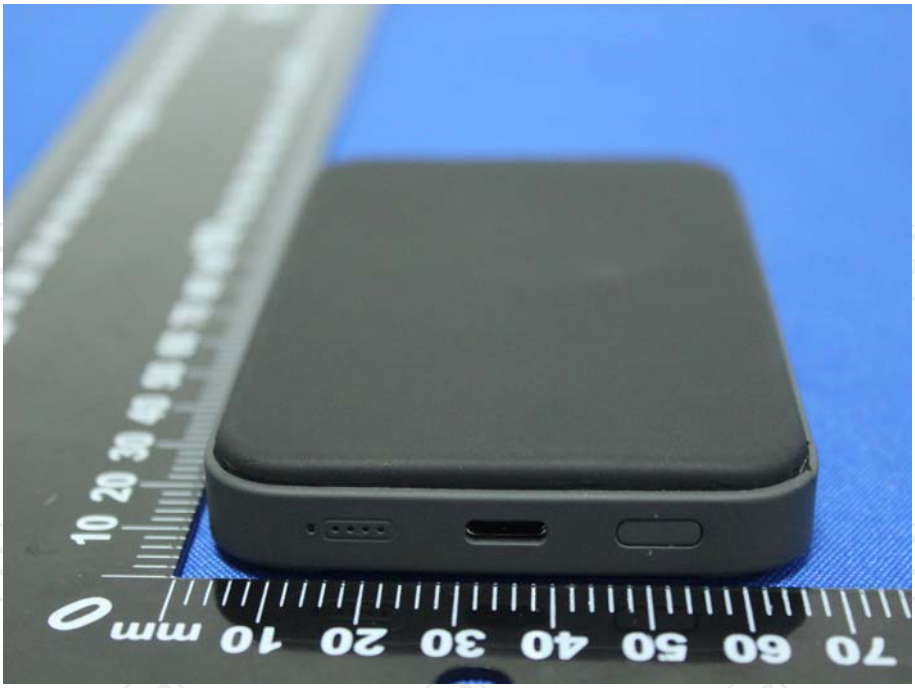

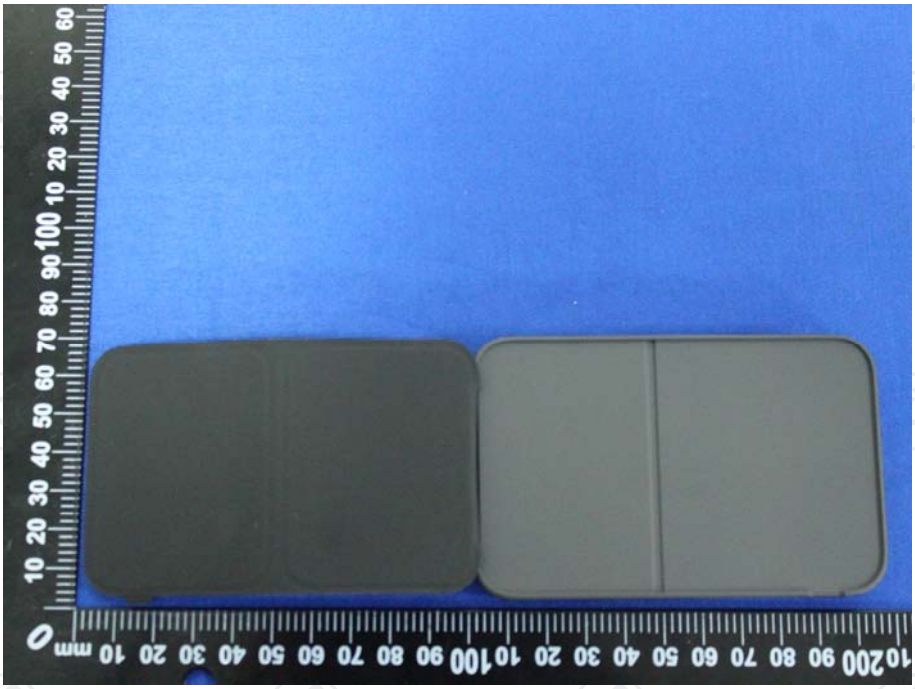

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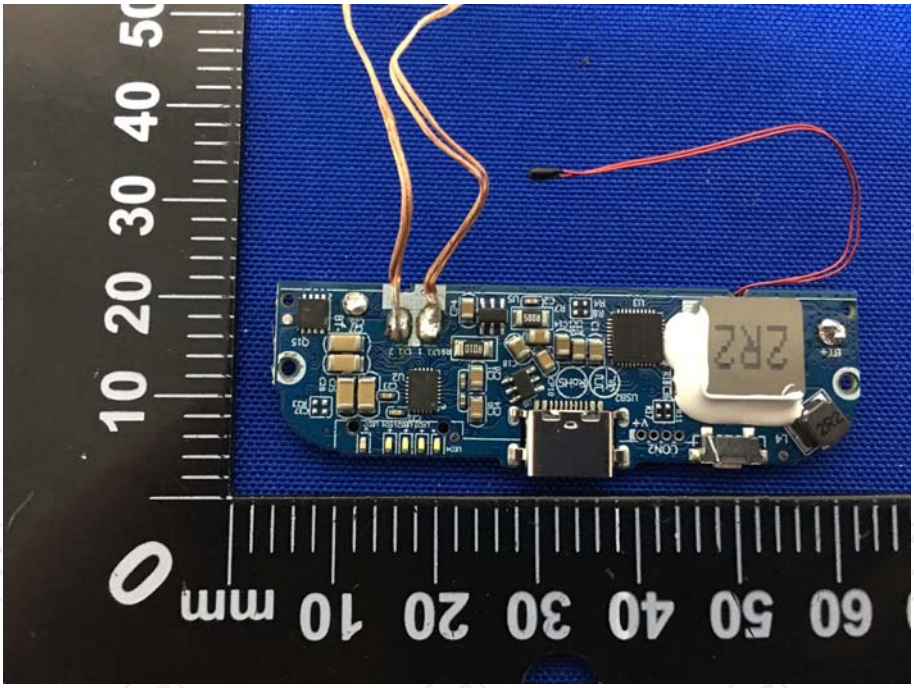
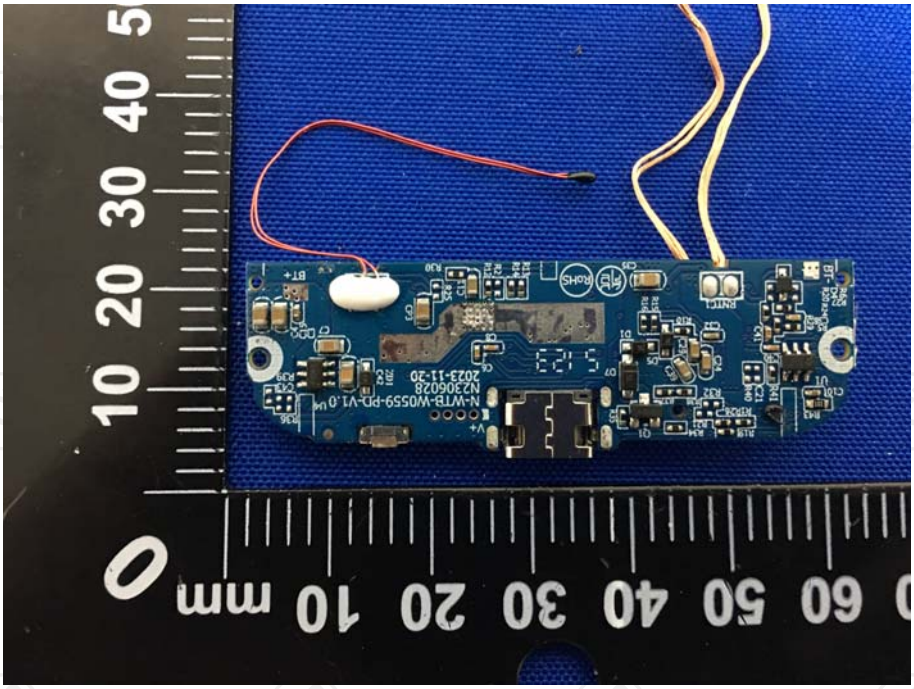
Product: Rechargeable Li-Polymer Magnetic Power Bank
Model: R050 Magnetic
Internal Photos

Hotline: 400-6611-140 Tel: 86-755-27673339 Fax: 86-755-27673332 http://www.tct-lab.com


ZR2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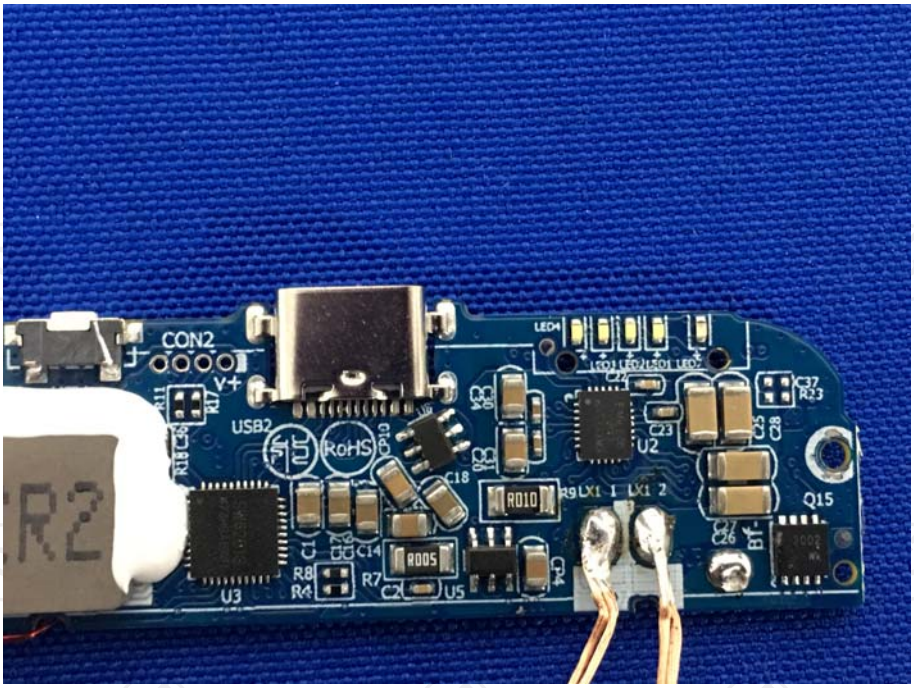
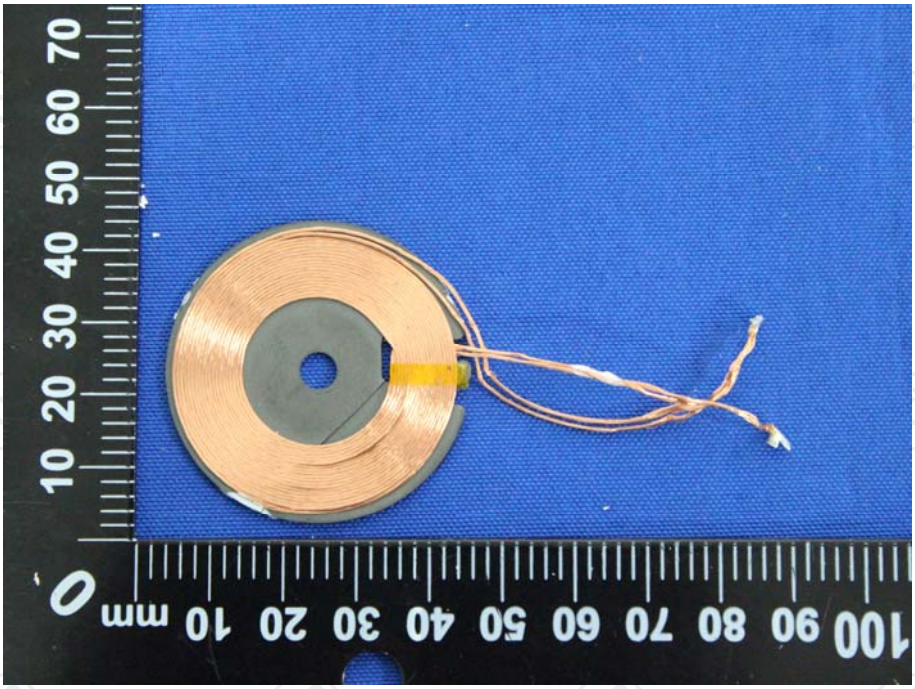
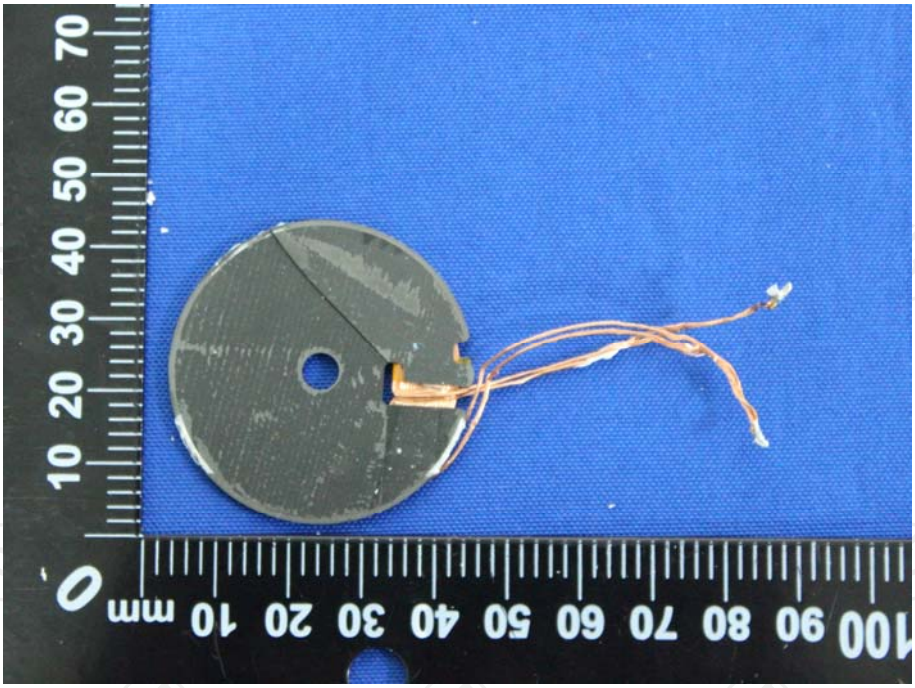
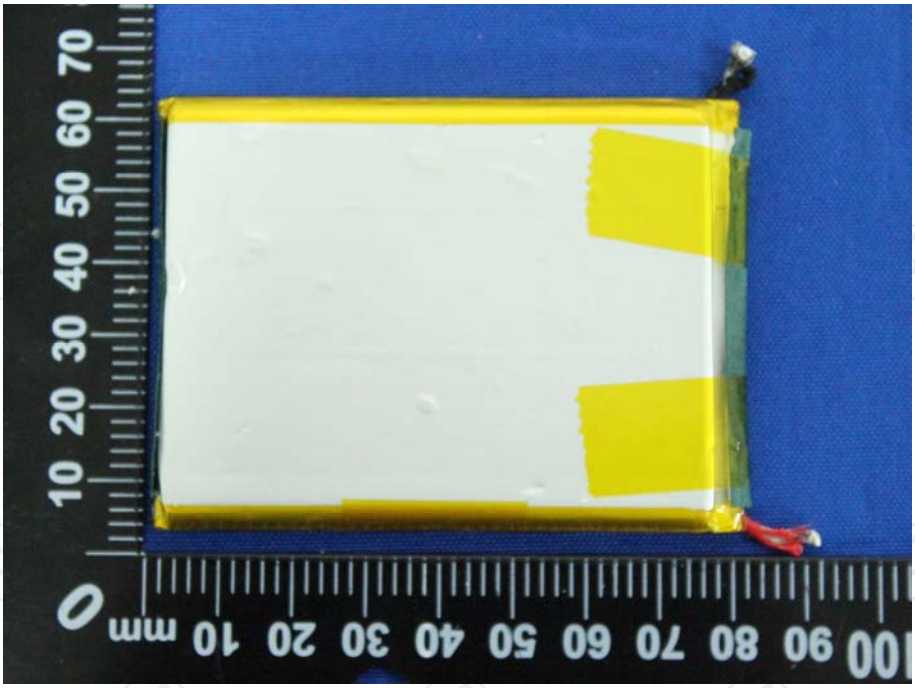
N230602B
2023-11-20


CON2
V+
USB2
RoHS
U2
U3
U5
Q15
R2


mm 0 10 20 30 40 50 60 70 80 90 100




- TY 656080 3.85V
+ 5000mAh 19.25Wh 2023AA01



*****END OF REPORT*****

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