

TEST REPORT

FCC ID. :	RLY-R050MAGNETIC	
Test Report No..... :	Jan. 04, 2024	
Date of issue..... :	SHENZHEN TONGCE TESTING LAB	
Testing laboratory :	2101 & 2201, Zhenchang Factory Renshan Industrial Zone, Fuhai Subdistrict, Bao'an District, Shenzhen, Guangdong, 518103, People's Republic of China	
Testing location/ address:	ADATA Technology Co. Ltd.	
Applicant's name..... :	2F, No.258, Lian Cheng Rd., Chung Ho Dist., New Taipei City, Taiwan	
Address..... :	Dong guan Utopia-Originality Technology Co., Ltd	
Manufacturer's name ... :	NO.2, moushan Road, Chan'an Town, Dongguan City, Guangdong Province, China	
Address..... :	Jan. 04, 2024	
Standard(s) :	FCC CFR Title 47 Part 1.1310 KDB 680106 D01 RF Exposure Wireless Charging App v03r01	
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	

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Table of Contents

1. General Product Information	3
1.1. EUT description	3
1.2. Model(s) list.....	3
2. Facilities and Accreditations	4
2.1. Facilities	4
2.2. Location	4
3. Technical Requirements Specification	5
3.1. Requirements.....	5
3.2. Test Setup	6
3.3. Test Procedure	7
3.4. Test Instruments List	7
3.5. Test Result	8
3.6. Test Set-up Photo.....	10

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.

2. Facilities and Accreditations

2.1. 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.

2.2. 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

3. Technical Requirements Specification

3.1. Requirements

According to the item 5 of KDB 680106 D01 RF Exposure Wireless Charging App v03r01:

- (1) Power transfer frequency is less than 1 MHz.
Yes
- (2) Output power from each primary coil is less than or equal to 15 watts.
Yes
- (3) The system may consist of more than one source primary coils, charging one or more clients. If more than one primary coil is present, the coil pairs may be powered on at the same time.
Yes
- (4) Client device is placed directly in contact with the transmitter.
Yes
- (5) Mobile exposure conditions only (portable exposure conditions are not covered by this exclusion).
No
- (6) The aggregate H-field strengths at 15 cm surrounding the device and 20 cm above the top surface from all simultaneous transmitting coils are demonstrated to be less than 50% of the MPE limit.
Yes

Limits

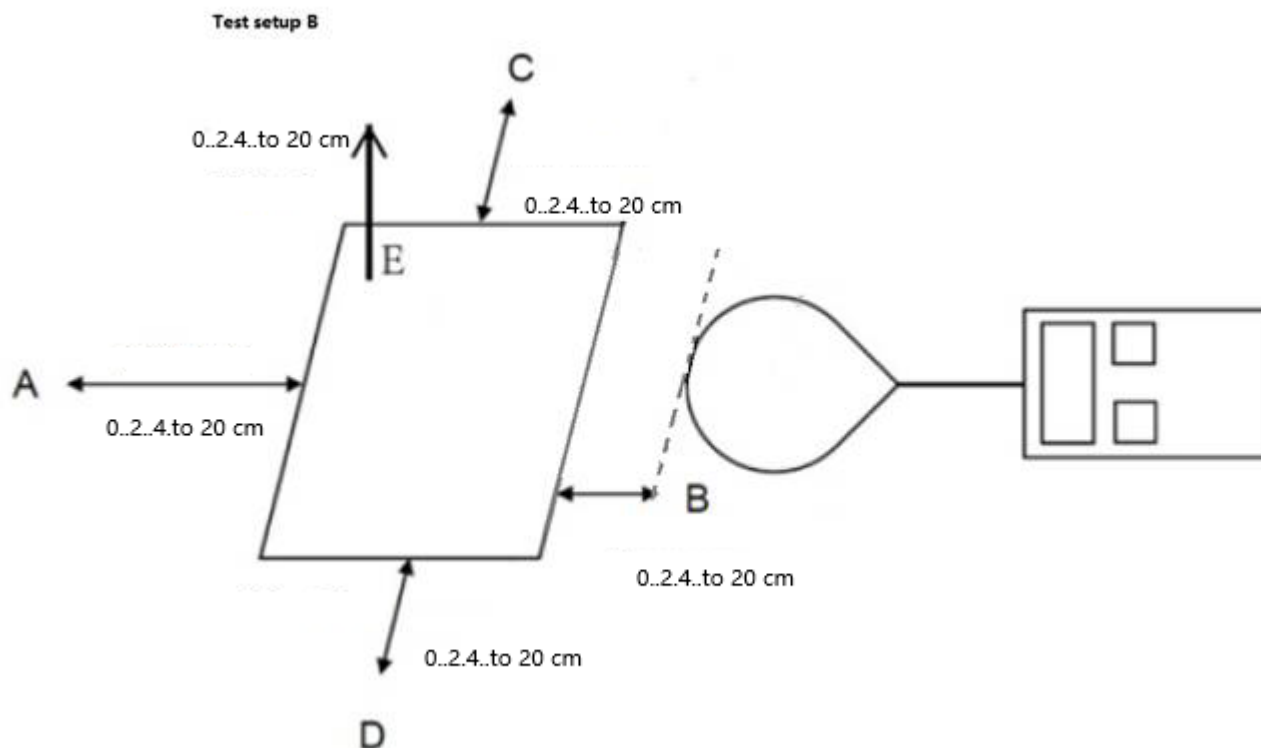
The criteria listed in the following table shall be used to evaluate the environment impact of human exposure to radio frequency (RF) radiation as specified in 1.1307(b)

Limits for Maximum Permissible Exposure (MPE)

Frequency range (MHz)	Electric field strength (V/m)	Magnetic field strength (A/m)	Power density (mW/cm ²)	Averaging time (minutes)
(A) Limits for Occupational/Controlled Exposures				
0.3-3.0	614	1.63	*(100)	6
3.0-30	1842/f	4.89/f	*(900/f ²)	6
30-300	61.4	0.163	1.0	6
300-1500	/	/	f/300	6
1500-100,000	/	/	5	6
(B) Limits for General Population/Uncontrolled Exposure				
0.3-1.34	614	1.63	*(100)	30
1.34-30	824/f	2.19/f	*(180/f ²)	30
30-300	27.5	0.073	0.2	30
300-1500	/	/	f/1500	30
1500-100,000	/	/	1.0	30

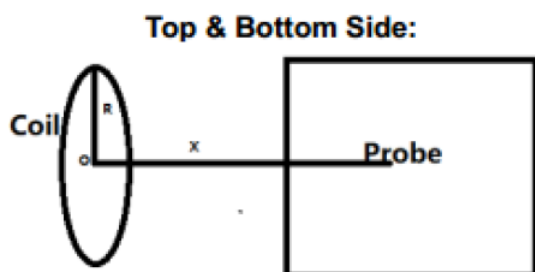
F=frequency in MHz
 * =Plane-wave equivalent power density
 RF exposure compliance will need to be determined with respect to 1.1307(c) and (d) of the FCC rules. The emissions should be within the limits at 300kHz in Table 1 of 1.1310(use the 300kHz limits for 150kHz:614V/m,1.63A/m).

3.2. Test Setup

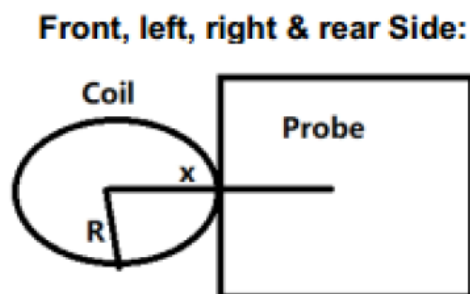


3.3. Test Procedure

- 1) The RF exposure test was performed in an echoic chamber;
- 2) The measurement probe was placed at test distance 0cm to 20cm at 2cm iteration, i.e. at a distance of 0cm, 2cm, 4cm, 20cm. Which is between the edge of the charger and the edge of of probe;
- 3) The highest emission leve laws recorded and compared with limit as soon as measurement of each points (A,B, C,D, E)were completed;
- 4) According to the requirements if KDB 680106 D01 v04, If the center of the probe sensing element is located more than 5 mm (The sensitive elements are located approximately 8 mm below the external surface specified in user manual of EHP-200A) from the probe outer surface, the field strengths need to be estimated through modeling for those positions that are not reachable;
- 5) Use **Biot-Savart Law**, the value of 0 cm can be estimated through the results of 2 cm, according to the formula:



$$B = \frac{\mu_0 * I * N * R^2}{2 * (R^2 + x^2)^{3/2}}$$



$$B = \frac{\mu_0 * I * N}{2 * x}$$

Remark:

B: H-field (Unit: T);

μ_0 : Space permeability= $4 * \pi * 10^{-7}$;

I (Unit: A): The current element passing through a radiated coil;

R: Radius of radiated coil, according to the coil specification: R=0.02m;

X: The distance from the sensing elements of the probe to the edge of the radiated coil (the dimensions of EUT and load are take into account) (Unit: m); X=0.008m

N: Turns of the radiated coil, according to the coil specification: N=10.

3.4. Test Instruments List

Equipment	Manufacturer	Model No.	Serial No.	Calibration Due
Electric and Magnetic field probe-analyzer	Narda	EHP-200A	180ZX20511	Jul. 04, 2024
Mobile Phone	SAMSUNG	SM-G9350	R28HA2ER3GT	/

3.5. Test Result

Note: EUT mode: wireless output 15 W

1% ,50% ,99% load all have been tested ,only worse case Max load (<1%) is reported.

H-Filed Strength at (distance 2cm to 20cm at 2cm iteration, i.e. at a distance of 20cm, 18cm, 16cm, 0cm, Which is between the edge of the charger and the edge of of probe,) surrounding the EUT (A/m)

Test distance (cm)	Test Position A(A/m)	Test Position B(A/m)	Test Position C(A/m)	Test Position D(A/m)	Test Position E(A/m)	Test Position F(A/m)	Limits (A/m)
2	0.135	0.106	0.258	0.119	0.368	0.194	1.63
4	0.102	0.092	0.209	0.100	0.136	0.066	1.63
6	0.0730	0.0681	0.151	0.0813	0.0937	0.0476	1.63
8	0.0622	0.0563	0.125	0.0719	0.0755	0.0438	1.63
10	0.0523	0.0485	0.0915	0.0618	0.0644	0.0391	1.63
12	0.0448	0.0402	0.0863	0.0518	0.0536	0.0327	1.63
14	0.0413	0.0349	0.0756	0.0481	0.0357	0.0266	1.63
16	0.0351	0.0332	0.0667	0.0413	0.0314	0.0227	1.63
18	0.0336	0.0289	0.0613	0.0371	0.0281	0.0213	1.63
20	0.0311	0.0257	0.053	0.0346	0.0237	0.01911	1.63

Use the Biot-Savart Law to estimated the results of 2cm through 4 cm.

Test position	Measure Value(A/m)	Estimated Value (A/m)	Agreement Ratio	Limits
A	0.135	0.140	3.7%	30%
B	0.106	0.126	18.9%	30%
C	0.258	0.287	11.2%	30%
D	0.119	0.121	1.7%	30%
E	0.368	0.469	27.4%	30%
F	0.194	0.209	7.7%	30%

As the model is sufficient, the value of 0cm can be estimated through the results of 2 cm

Test position	Estimated Value (A/m)	Limits(A/m)
A	0.216	1.63
B	0.169	
C	0.480	
D	0.190	
E	1.50	
F	0.821	

3.6. Test Set-up Photo

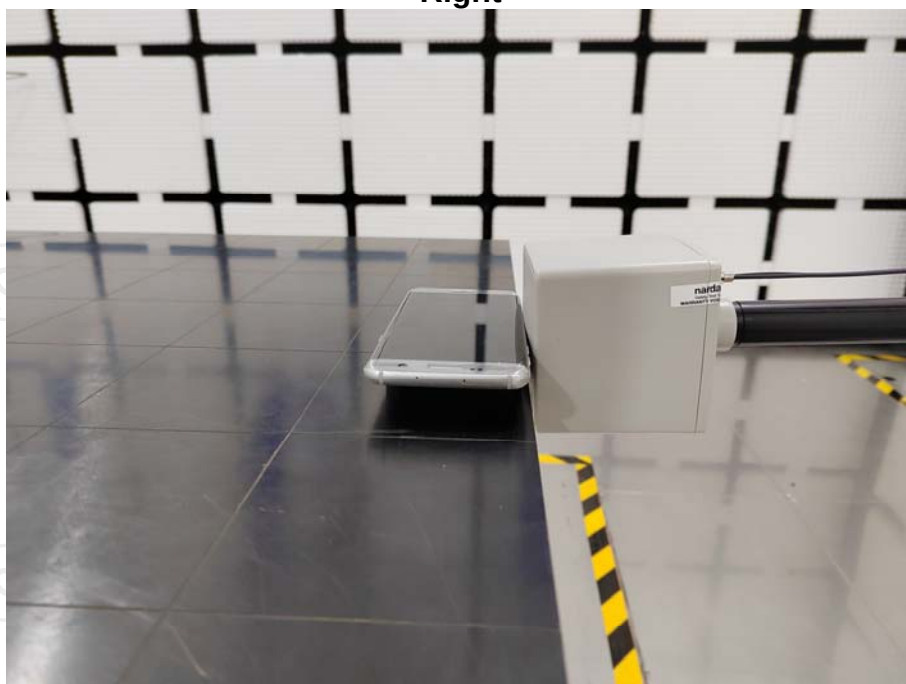
Left



Front



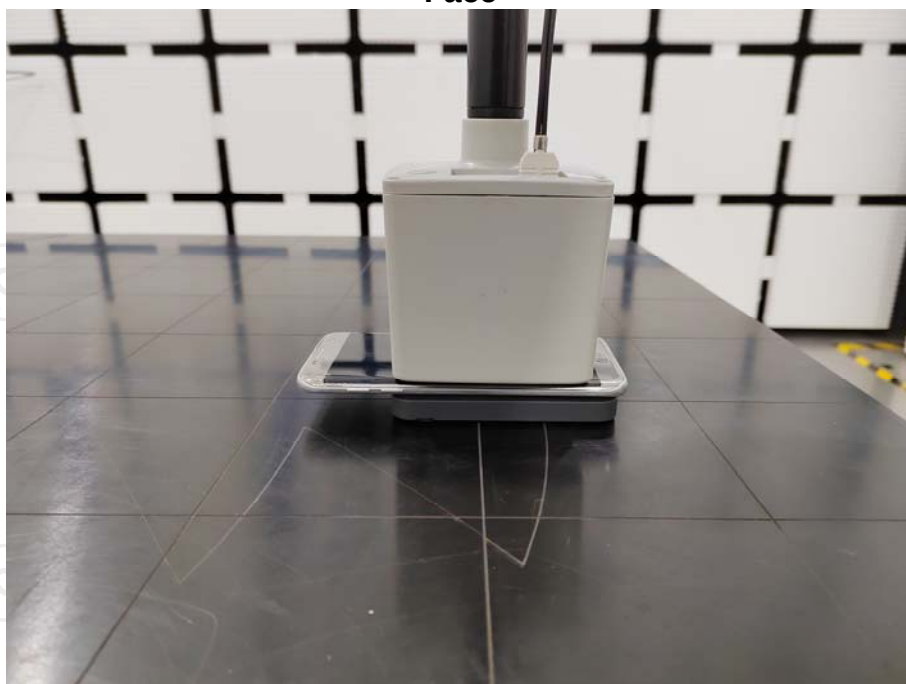
Right



Rear



Face



Back



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