



## FCC TEST REPORT

**FCC ID: 2AR7W-PB-MAG-5K**

On Behalf of

Shenzhen BNY Industrial Co.,Ltd

Magnetic Power Bank

Model No.: PB\_MAG\_G\_PB\_5K, PB\_MAG\_GM\_PB\_5K, BNY-50GWB,  
BNY-50DW

Prepared for : Shenzhen BNY Industrial Co.,Ltd  
Address : No.332 Liangji Building, Donghuan No.1 Road, 518109 Longhua district,  
Shenzhen, China

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

Report Number : psi2412010-C01-R04  
Date of Receipt : December 5, 2024  
Date of Test : December 5, 2024-December 12, 2024  
Date of Report : December 13, 2024  
Version Number : V0

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## TEST REPORT DECLARATION

Applicant : Shenzhen BNY Industrial Co.,Ltd  
 Address : No.332 Liangji Building, Donghuan No.1 Road, 518109 Longhua district,  
 Shenzhen, China  
 Manufacturer : Shenzhen BNY Industrial Co.,Ltd  
 Address : No.332 Liangji Building, Donghuan No.1 Road, 518109 Longhua district,  
 Shenzhen, China  
 EUT Description : Magnetic Power Bank  
 (A) Model No. : PB\_MAG\_G\_PB\_5K, PB\_MAG\_GM\_PB\_5K,  
 BNY-50GWB, BNY-50DW  
 (B) Trademark : N/A

Measurement Standard Used:

**FCC CFR 47 PART 1, FCC CFR 47 part1, 1.1307(b), 1.1310, 2.1093**

**KDB 680106 D01 Wireless Power Transfer v04**

**Test Result: PASS**

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 test. Also, this report shows that the EUT is technically compliant with the KDB 680106 D01 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.....:

December 13, 2024

**Revision History**

Revision	Issue Date	Revisions	Revised By
REV0	December 13, 2024	Initial released Issue	Felix Pang

## 1. Test Result Summary

Requirement	CFR 47 Section	Result
RF EXPOSURE	§1.1307(b)(1), §1.1310, §2.1093 & KDB680106 D01	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. EUT Description

### 2.1. Description of Device (EUT)

EUT Name : Magnetic Power Bank  
Model No. : PB\_MAG\_G\_PB\_5K, PB\_MAG\_GM\_PB\_5K, BNY-50GWB, BNY-50DW  
DIFF. : There is no difference except for the appearance, shape and model name.  
So all the test were performed on the model BNY-50GWB.  
Type-C Input: 5V $\overline{=}$ 3A, 9V $\overline{=}$ 2A  
Power supply : Type-C Output: 5V $\overline{=}$ 3A, 9V $\overline{=}$ 2.22A, 12V $\overline{=}$ 1.67A  
Wireless Output: 15W, 10W, 7.5W, 5W  
Battery: DC 3.87V 5000mAh

Radio Technology : Wireless power transmission systems

Operation frequency : 110KHz -205KHz

Modulation : ASK

Antenna Type : Coil Antenna

Connector cable loss : 0.5dB

Software version : V1.0

Hardware version : V1.0

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	:	N/A
Manufacturer	:	N/A
Model	:	N/A
specifications	:	N/A

## 2.3. Tested Supporting System Details

No.	Description	Manufacturer	Model	Serial Number	Certification
1	Cellphone	Apple	iPhone 15 Pro Max	N/A	N/A
2	N/A	N/A	N/A	N/A	N/A

## 2.4. Block Diagram of connection between EUT and simulators



## 2.5. Equipment Approval Considerations

The EUT does comply with KDB 680106 D01 as follow table.

Requirements of KDB 680106 D01	Yes/No	Description
Mobile Device and Portable Device Configurations	Yes	Portable Device
Equipment Authorization Procedures for Devices Operating at Frequencies Below 4 MHz	Yes	The device operate in the frequency range 110KHz~205KHz

## 2.6. Description of Test Modes

Mode	Test mode description
1	Wireless output: 15W
2	Wireless output: 10W
3	Wireless output: 7.5W
4	Wireless output: 5W
5	No Load

Note: The client operating modes (client battery status 1%, 50%, 99%) have been tested and only display data for the worst-case scenario Mode 1 of the client battery status.

## 2.7. Test Conditions

Items	Required	Actual
Temperature range:	15-35°C	26°C
Humidity range:	25-75%	54%
Pressure range:	86-106kPa	101kPa

## 2.8. Test Facility

Shenzhen PSI Testing Co., Ltd.

1-2/F., Building 5, Yudafu Industrial Park, No.10, Xingye West Road, Shajing Subdistrict, Bao'an District, Shenzhen, Guangdong, China

September 13, 2023 File on Federal Communication Commission

Registration Number: 916281

## 2.9. Measurement Uncertainty

(95% confidence levels, k=2)

Item	Uncertainty
Uncertainty for H-Field	2.39dB
Uncertainty for E-Field	2.45dB
Uncertainty for conducted RF Power	0.65dB
Uncertainty for temperature	0.2°C
Uncertainty for humidity	1%
Uncertainty for DC and low frequency voltages	0.06%

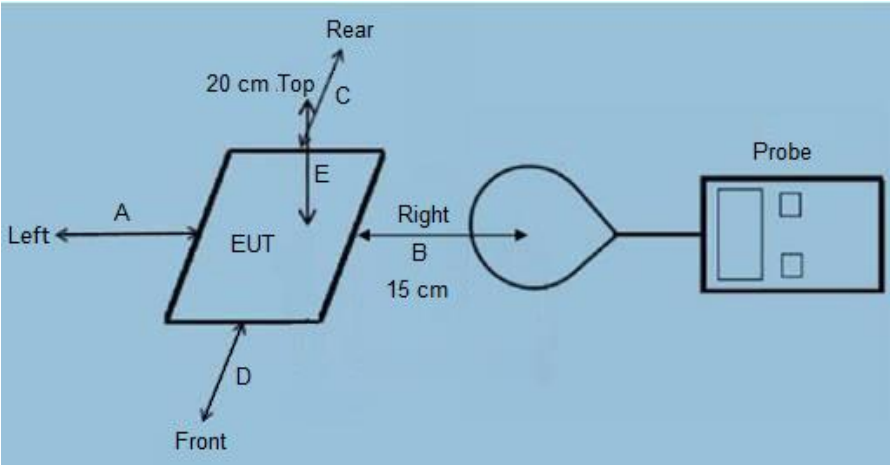
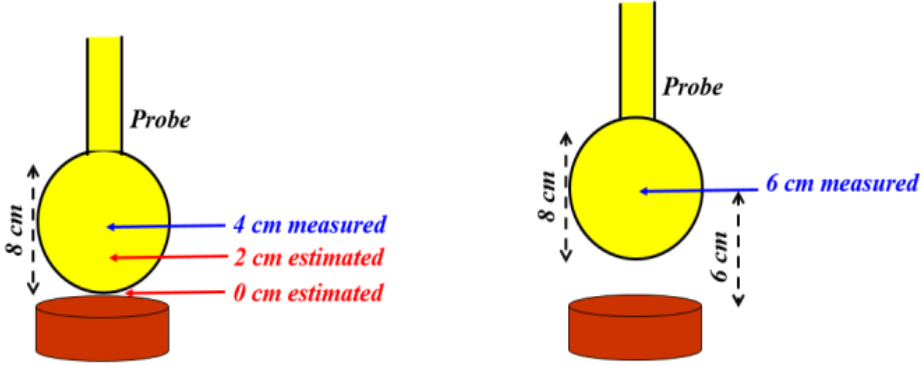


### 3. Test Results and Measurement Data

#### 3.1. RF EXPOSURE TEST

##### 3.1.1. Test Specification

<b>Test Requirement:</b>	<b>FCC Rules and Regulations KDB680106</b>																																																																				
<b>Test Method:</b>	According to §1.1307(b)(1), systems operating under the provisions of this section shall be operated in a manner that ensures that the public is not exposed to radio frequency energy level in excess of the Commission's guidelines. According to §1.1310 and §2.1093 RF exposure is calculated. According KDB680106 D01: KDB 680106 D01 Wireless Power Transfer v04.																																																																				
<b>Limits:</b>	<p>According to the item 3 of KDB 680106 D01v04:            Inductive wireless power transfer applications that meet all of the following requirements are excluded from submitting an RF exposure evaluation.</p> <p>(1) Mobile Device and Portable Device Configurations            (2) Equipment Authorization Procedures for Devices Operating at Frequencies Below 4 MHz            (3) The aggregate H-field strengths anywhere at (0/2/4/6/8/10/12/14/16/18/20cm) surrounding the device six surfaces.</p> <p>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)</p> <table border="1"> <thead> <tr> <th>Frequency range (MHz)</th> <th>Electric field strength (V/m)</th> <th>Magnetic field strength (A/m)</th> <th>Power density (mW/cm<sup>2</sup>)</th> <th>Averaging time (minutes)</th> </tr> </thead> <tbody> <tr> <td colspan="5" style="text-align: center;"><b>(A) Limits for Occupational/Controlled Exposures</b></td> </tr> <tr> <td>0.3-3.0</td> <td>614</td> <td>1.63</td> <td>*(100)</td> <td>6</td> </tr> <tr> <td>3.0-30</td> <td>1842/f</td> <td>4.89/f</td> <td>*(900/f<sup>2</sup>)</td> <td>6</td> </tr> <tr> <td>30-300</td> <td>61.4</td> <td>0.163</td> <td>1.0</td> <td>6</td> </tr> <tr> <td>300-1500</td> <td>/</td> <td>/</td> <td>f/300</td> <td>6</td> </tr> <tr> <td>1500-100,000</td> <td>/</td> <td>/</td> <td>5</td> <td>6</td> </tr> <tr> <td colspan="5" style="text-align: center;"><b>(B) Limits for General Population/Uncontrolled Exposure</b></td> </tr> <tr> <td>0.3-1.34</td> <td>614</td> <td>1.63</td> <td>*(100)</td> <td>30</td> </tr> <tr> <td>1.34-30</td> <td>824/f</td> <td>2.19/f</td> <td>*(180/f<sup>2</sup>)</td> <td>30</td> </tr> <tr> <td>30-300</td> <td>27.5</td> <td>0.073</td> <td>0.2</td> <td>30</td> </tr> <tr> <td>300-1500</td> <td>/</td> <td>/</td> <td>f/1500</td> <td>30</td> </tr> <tr> <td>1500-100,000</td> <td>/</td> <td>/</td> <td>1.0</td> <td>30</td> </tr> </tbody> </table> <p>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).</p>				Frequency range (MHz)	Electric field strength (V/m)	Magnetic field strength (A/m)	Power density (mW/cm <sup>2</sup> )	Averaging time (minutes)	<b>(A) Limits for Occupational/Controlled Exposures</b>					0.3-3.0	614	1.63	*(100)	6	3.0-30	1842/f	4.89/f	*(900/f <sup>2</sup> )	6	30-300	61.4	0.163	1.0	6	300-1500	/	/	f/300	6	1500-100,000	/	/	5	6	<b>(B) Limits for General Population/Uncontrolled Exposure</b>					0.3-1.34	614	1.63	*(100)	30	1.34-30	824/f	2.19/f	*(180/f <sup>2</sup> )	30	30-300	27.5	0.073	0.2	30	300-1500	/	/	f/1500	30	1500-100,000	/	/	1.0	30
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<p><b>Test Setup:</b></p>	 <p style="text-align: center;">Figure 1</p>  <p style="text-align: center;">Figure 2</p>
<p><b>Test Mode:</b></p>	<p>Communication Mode (Mobile phone will be charged at zero charge, intermediate charge, and full charge.)</p>
<p><b>Test Procedure:</b></p>	<ol style="list-style-type: none"> <li>1) The RF exposure test was performed in anechoic chamber.</li> <li>2) The measurement probe was placed at test distance (0/2/4/6/8/10/12/14/16/18/20cm) which is between the edge of the charger and the geometric center of probe.</li> <li>3) The highest emission level was recorded and compared with limit as soon as measurement of each point (A, B, C, D, E, F) were completed.</li> <li>4) The EUT was measured according to the dictates of KDB 680106 D01v04.</li> <li>5) Large size probes may prevent the measurement of E- and/or H-fields near the surface of the radiating structure (e.g., a WPT source coil), as in the example shown in Figure 2. These estimates shall include points spaced no more than 2 cm from each other. Thus, in the example of Figure 2, at least the estimates at 0 cm and 2 cm are required, while only one point would not be sufficient. In addition, the model needs to be validated through the probe measurements for the two closest points to the device surface, and with 2-cm increments, as indicated in Figure 2. In that example, the same model must also be applied to the 4 cm and 6 cm positions, and then compared with the measured data, for validation purposes. The validation is considered sufficient if a 30% agreement between the model and the (E- and/or H-field) probe measurements is demonstrated. If such a level of agreement cannot be shown, a more accurate model (and/or a smaller probe) shall be used.</li> </ol>
<p><b>Test Result:</b></p>	<p>PASS</p>

### 3.1.2. Test Instruments

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1	Exposure Level Tester	narda	ELT-400	N-0231	2023.12.19	1 Year
2	Magnetic field probe 100cm2	narda	ELT probe 100cm2	M0675	2023.12.19	1 Year
3	Isotropic Electric Field Probe	narda	EP-601	511WX60706	2023.12.19	1 Year

Note: The probe radius is 8 cm

### 3.1.3. Test data

The probe radius is 8 cm.

E-Field Strength at 8/10/12/14/16/18/20cm from the edges surrounding the EUT

Charging Battery Level	Measured Distance (cm)	Measured E-Field Strength Values (V/m)						FCC E-Field Strength Limits (V/m)
		Test Position A	Test Position B	Test Position C	Test Position D	Test Position E	Test Position F	
99%	8	17.606	19.555	18.997	22.764	23.998	26.052	614
50%	8	17.997	19.878	19.371	23.181	24.649	26.305	614
1%	8	18.437	20.486	20.011	23.986	25.484	26.741	614
99%	10	16.011	17.678	17.197	20.378	21.419	23.296	614
50%	10	16.402	18.001	17.571	20.795	22.070	23.549	614
1%	10	16.842	18.609	18.211	21.600	22.905	23.985	614
99%	12	14.416	15.801	15.397	17.992	18.841	20.541	614
50%	12	14.807	16.124	15.771	18.409	19.492	20.794	614
1%	12	15.247	16.732	16.411	19.214	20.327	21.230	614
99%	14	12.821	13.924	13.597	15.606	16.262	17.786	614
50%	14	13.212	14.247	13.971	16.023	16.913	18.039	614
1%	14	13.652	14.855	14.611	16.828	17.748	18.475	614
99%	16	11.225	12.046	11.797	13.220	13.684	15.031	614
50%	16	11.616	12.369	12.171	13.637	14.335	15.284	614
1%	16	12.056	12.977	12.811	14.442	15.170	15.720	614
99%	18	9.630	10.169	9.997	10.834	11.105	12.276	614
50%	18	10.021	10.492	10.371	11.251	11.756	12.529	614
1%	18	10.461	11.100	11.011	12.056	12.591	12.965	614
99%	20	8.035	8.292	8.197	8.448	8.527	9.521	614
50%	20	8.426	8.615	8.571	8.865	9.178	9.774	614
1%	20	8.866	9.223	9.211	9.670	10.013	10.210	614

Note: V/m= A/m \*377

## H-Field Strength at 8/10/12/14/16/18/20cm from the edges surrounding the EUT

Charging Battery Level	Measured Distance (cm)	Unit	Measured H-Field Strength Values (A/m)						FCC H-Field Strength Limits (A/m)
			Test Position A	Test Position B	Test Position C	Test Position D	Test Position E	Test Position F	
99%	8	uT	0.058	0.065	0.063	0.075	0.080	0.086	--
99%	8	A/m	0.047	0.052	0.050	0.060	0.064	0.069	1.63
50%	8	uT	0.060	0.066	0.064	0.077	0.082	0.087	--
50%	8	A/m	0.048	0.053	0.051	0.061	0.065	0.070	1.63
1%	8	uT	0.061	0.068	0.066	0.080	0.084	0.089	--
1%	8	A/m	0.049	0.054	0.053	0.064	0.068	0.071	1.63
99%	10	uT	0.053	0.059	0.057	0.068	0.071	0.077	--
99%	10	A/m	0.042	0.047	0.046	0.054	0.057	0.062	1.63
50%	10	uT	0.054	0.060	0.058	0.069	0.073	0.078	--
50%	10	A/m	0.044	0.048	0.047	0.055	0.059	0.062	1.63
1%	10	uT	0.056	0.062	0.060	0.072	0.076	0.080	--
1%	10	A/m	0.045	0.049	0.048	0.057	0.061	0.064	1.63
99%	12	uT	0.048	0.052	0.051	0.060	0.062	0.068	--
99%	12	A/m	0.038	0.042	0.041	0.048	0.050	0.054	1.63
50%	12	uT	0.049	0.053	0.052	0.061	0.065	0.069	--
50%	12	A/m	0.039	0.043	0.042	0.049	0.052	0.055	1.63
1%	12	uT	0.051	0.055	0.054	0.064	0.067	0.070	--
1%	12	A/m	0.040	0.044	0.044	0.051	0.054	0.056	1.63
99%	14	uT	0.043	0.046	0.045	0.052	0.054	0.059	--
99%	14	A/m	0.034	0.037	0.036	0.041	0.043	0.047	1.63
50%	14	uT	0.044	0.047	0.046	0.053	0.056	0.060	--
50%	14	A/m	0.035	0.038	0.037	0.043	0.045	0.048	1.63
1%	14	uT	0.045	0.049	0.048	0.056	0.059	0.061	--
1%	14	A/m	0.036	0.039	0.039	0.045	0.047	0.049	1.63
99%	16	uT	0.037	0.040	0.039	0.044	0.045	0.050	--
99%	16	A/m	0.030	0.032	0.031	0.035	0.036	0.040	1.63
50%	16	uT	0.039	0.041	0.040	0.045	0.048	0.051	--
50%	16	A/m	0.031	0.033	0.032	0.036	0.038	0.041	1.63
1%	16	uT	0.040	0.043	0.042	0.048	0.050	0.052	--
1%	16	A/m	0.032	0.034	0.034	0.038	0.040	0.042	1.63
99%	18	uT	0.032	0.034	0.033	0.036	0.037	0.041	0.023
99%	18	A/m	0.026	0.027	0.027	0.029	0.029	0.033	1.63
50%	18	uT	0.033	0.035	0.034	0.037	0.039	0.042	--
50%	18	A/m	0.027	0.028	0.028	0.030	0.031	0.033	1.63
1%	18	uT	0.035	0.037	0.037	0.040	0.042	0.043	--
1%	18	A/m	0.028	0.029	0.029	0.032	0.033	0.034	1.63
99%	20	uT	0.027	0.027	0.027	0.028	0.028	0.032	--
99%	20	A/m	0.021	0.022	0.022	0.022	0.023	0.025	1.63
50%	20	uT	0.028	0.029	0.028	0.029	0.030	0.032	--
50%	20	A/m	0.022	0.023	0.023	0.024	0.024	0.026	1.63

1%	20	uT	0.029	0.031	0.031	0.032	0.033	0.034	0.030
1%	20	A/m	0.024	0.024	0.024	0.026	0.027	0.027	1.63

Note: A/m=uT/1.25

#### According to the formula:

The formula for the magnetic field strength at a distance r from the coil is

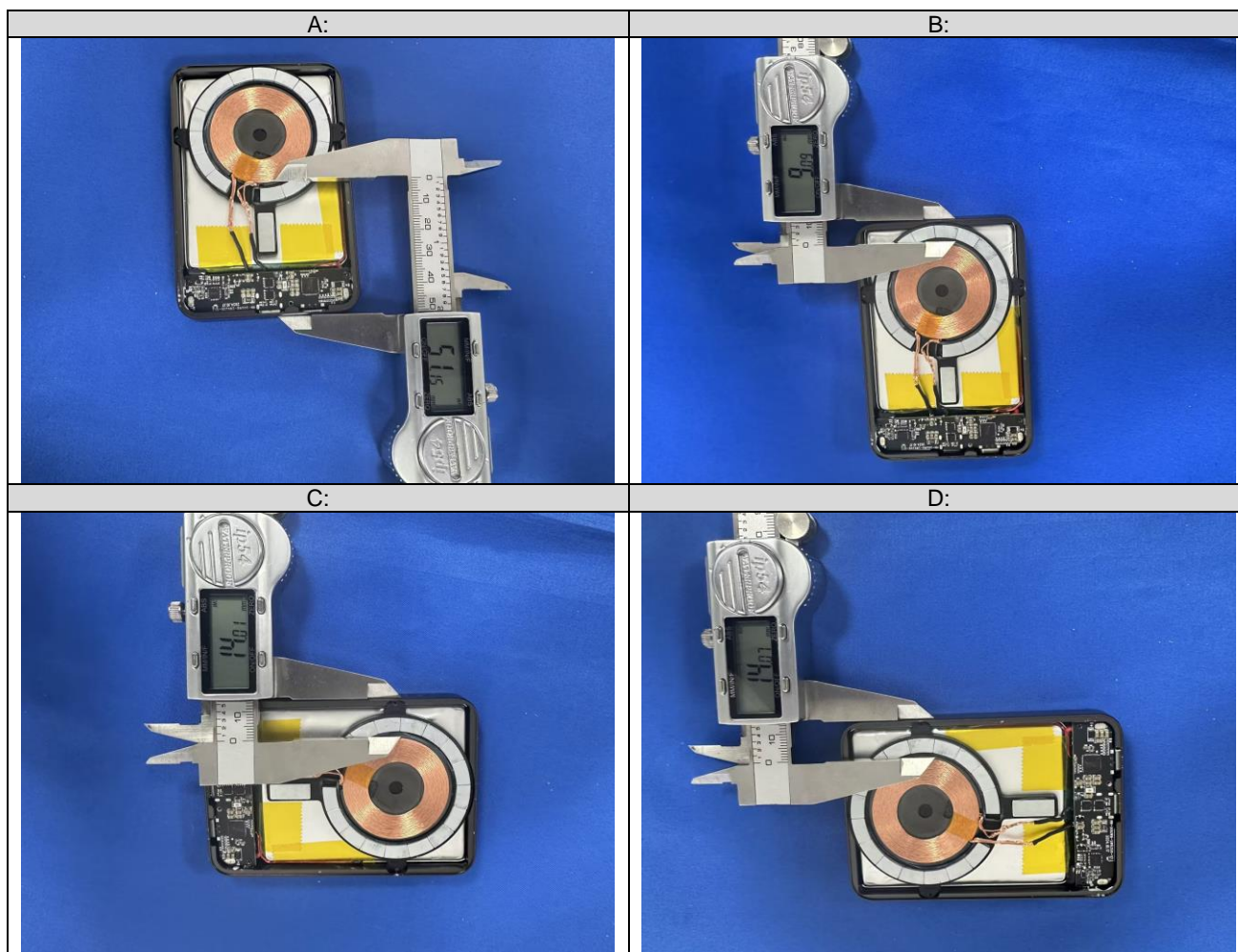
$$H = I/(2\pi r) * \mu$$

H is A/m

I is the current intensity

$\mu$  is the permeability, and its value depends on the medium.

The other parameters are fixed, so H is inversely proportional to r.



ABCDEF direction The actual distance(r) to the antenna coil.

measured distance(cm)	Actual distance r to the antenna (cm)					
	Test Position A	Test Position B	Test Position C	Test Position D	Test Position E	Test Position F
20	25.115	20.909	21.401	21.401	20.835	20.620
18	23.115	18.909	19.401	19.401	18.835	18.620
16	21.115	16.909	17.401	17.401	16.835	16.620
14	19.115	14.909	15.401	15.401	14.835	14.620
12	17.115	12.909	13.401	13.401	12.835	12.620
10	15.115	10.909	11.401	11.401	10.835	10.620
8	13.115	8.909	9.401	9.401	8.835	8.620
6	11.115	6.909	7.401	7.401	6.835	6.620
4	9.115	4.909	5.401	5.401	4.835	4.620
2	7.115	2.909	3.401	3.401	2.835	2.620
0	5.115	0.909	1.401	1.401	0.835	0.620

Note: The phone is 8.35mm thick.

The result is calculated by the above formula:

H-Field Strength at 0/2/4/6cm from the edges surrounding the EUT

Charging Battery Level	Measured Distance (cm)	Unit	Measured H-Field Strength Values (A/m)						FCC H-Field Strength Limits (A/m)
			Test Position A	Test Position B	Test Position C	Test Position D	Test Position E	Test Position F	
1%	0	A/m	0.148	0.336	0.741	0.613	1.134	<b>1.422</b>	1.63
50%	0	A/m	0.137	0.273	0.683	0.514	1.012	1.219	1.63
99%	0	A/m	0.131	0.231	0.567	0.420	0.978	0.977	1.63
1%	2	A/m	0.054	0.083	0.275	0.219	0.246	0.202	1.63
50%	2	A/m	0.054	0.082	0.267	0.213	0.239	0.197	1.63
99%	2	A/m	0.053	0.073	0.217	0.175	0.194	0.164	1.63
1%	4	A/m	0.053	0.075	0.199	0.162	0.184	0.155	1.63
50%	4	A/m	0.052	0.069	0.171	0.140	0.156	0.135	1.63
99%	4	A/m	0.052	0.068	0.163	0.133	0.149	0.130	1.63
1%	6	A/m	0.053	0.069	0.132	0.111	0.129	0.114	1.63
50%	6	A/m	0.052	0.063	0.117	0.098	0.111	0.102	1.63
99%	6	A/m	0.051	0.061	0.101	0.088	0.099	0.093	1.63

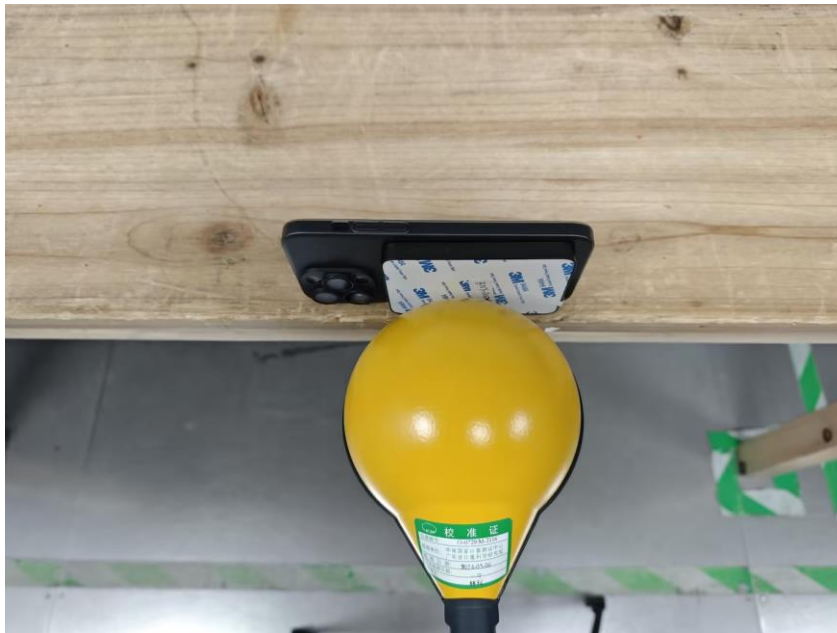
### 3.1.4. Conclusion

A minimum safety distance of 0 cm to the antenna is required when the device is charging a smart phone for mobile exposure. The detected emissions are below the limitations according FCC KDB 680106.

**The model was established with a 30% agreement, so it was considered to be approved.**



#### 4. Photos of test setup



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