

RF EXPOSURE REPORT

Equipment under test Wireless Power Bank

Model name GB-WL3000

FCC ID 2BA5M-GB-WL3000

Applicant HiggsKorea CO.,LTD

Manufacturer DIGIWAY ELECTRONICS CO., LTD

Date of test(s) 2023.03.22 ~ 2023.04.03

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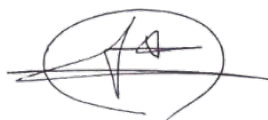
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Revision history

Revision	Date of issue	Test report No.	Description
-	2023.06.26	KES-RF-23T0090	Initial

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1. General information

Applicant HiggsKorea CO.,LTD
Applicant address B-308B, 57-2, Heungan-daero 427beon-gil,Dongan-gu, Anyang-si,
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Test site KES Co., Ltd.
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Test Facility FCC Accreditation Designation No.: KR0100, Registration No.: 444148
FCC rule part(s): Part 15C
FCC ID: 2BA5M-GB-WL3000
Test device serial No. ☒ Production ☐ Pre-production ☐ Engineering

1.1. EUT description

Equipment under test Wireless Power Bank
5 W : 0.127 MHz ~ 0.148 MHz
Frequency 7.5 W : 0.128 MHz
10 W : 0.121 MHz ~ 0.138 MHz
Inductive charging technique Magnetic Induction
Model: GB-WL3000
Antenna specification Internal type (Coil antenna)
Power source DC 3.7 V (Battery)
S/W Version DHW2204_WXC_V1.0
H/W version GBHW2304_3000_V2.03

1.2. Test configuration

The **HiggsKorea CO.,LTD / Wireless Power Bank / GB-WL3000 / FCC ID: 2BA5M-GB-WL3000**
was tested according to the specification of EUT, the EUT must comply with following standards.

FCC Part 15C
ANSI C63.10-2013
KDB 680106 D01 V03

1.3. Test frequency

		Frequency Range
Power source	DC 3.7 V(Battery)	5 W : 0.127 MHz ~ 0.148 MHz 7.5 W : 0.128 MHz 10 W : 0.121 MHz ~ 0.138 MHz

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1.4. Test mode

Mode	Charging current	Description
Charging mode With load	90%	Using Max load
	50%	Using Mid load
	10%	Using Min load

1.5. Information about derivative model

N/A

1.6. Accessory information

Equipment	Manufacturer	Model	Serial No.	Power source
-	-	-	-	-

1.7. Measurement Uncertainty

Test Item		Uncertainty
Uncertainty for Conduction emission test		2.22 dB (SHIELD ROOM #6)
Uncertainty for Radiation emission test (include Fundamental emission)	Below 1GHz	4.04 dB (SAC #6)
	Above 1GHz	4.42 dB (SAC #5)
Note. This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.		

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2. Environmental evaluation and exposure limit

Limits for Maximum Permissible Exposure (MPE)

§1.1310 The criteria listed in Table 1 shall be used to evaluate the environmental impact of human exposure to radio-frequency (RF) radiation as specified in §1.1307(b), except in the case of portable devices which shall be evaluated according to the provisions of §2.1093 of this chapter.

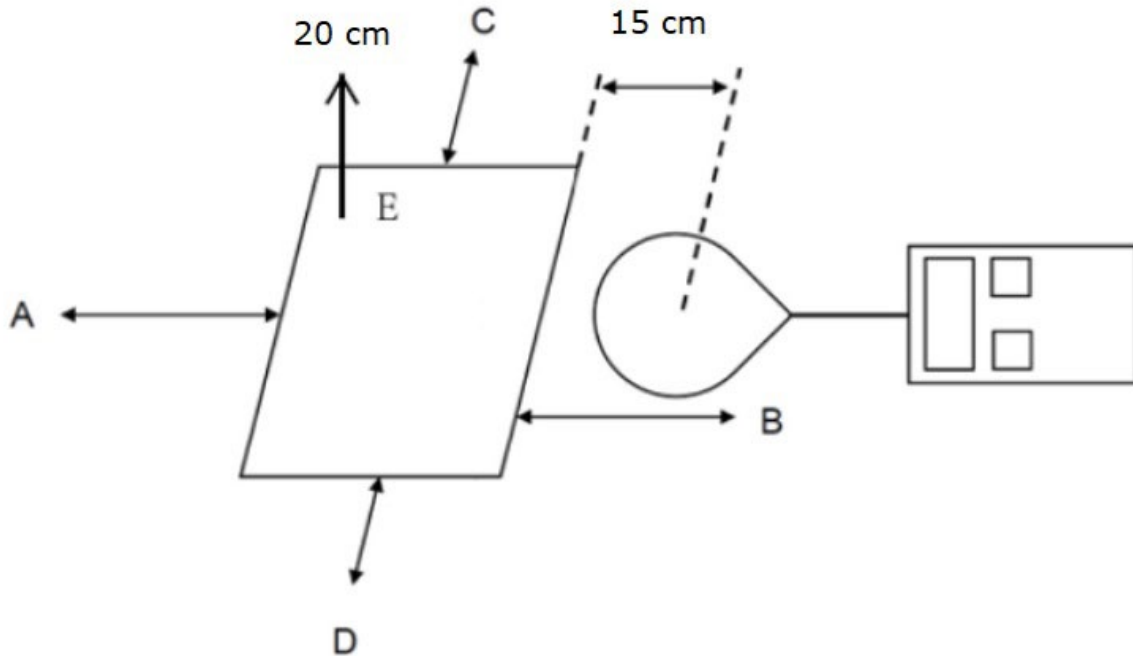
TABLE 1 - Limits for Maximum Permissible Exposure (MPE)

Frequency Range (MHz)	Electric Field Strength (V/m)	Magnetic Field Strength (A/m)	Power Density (mW/cm ²)	Average Time (minutes)
(A) Limits for Occupational / Control 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	0.613	1.0	6
300 - 1 500			f/300	6
1 500 - 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 - 1 500			f/1 500	30
1 500 - 100 000			1.0	30

Note.

1. f= frequency in MHz
2. “*” means Plane-wave equivalent power density

2.1. Test Setup



1. The test was performed on 360° turn table in anechoic chamber.
2. The probe was placed at distance 15 cm or 20 cm which is between the edge of the charger and the geometric center of the probe.
3. The highest emission level was recorded and compared with limit as soon as measurement of each point ; A, B, C, D, E were completed.
4. Point F is highest measured field from moving the probe around the device at distance 15 cm.
5. The EUT was measured according to the KDB 680106 D01v03.

Note.

Equipment Approval Considerations item 5.b) of KDB 680106 D01 v03.

a) Power transfer frequency is less than 1 MHz.

- The device operates at a frequency of **0.121 MHz ~ 0.148 MHz**.

b) Output power from each primary coil is less than or equal to 15 watts.

- Output power from each primary coil : **5,7.5,10 watts**.

c) The transfer system includes only single primary and secondary coils. This includes charging systems that may have multiple primary coils and clients that are able to detect and allow coupling only between individual pairs of coils.

- The transfer system including a charging system with single coil.

d) Client device is placed directly in contact with the transmitter.

- Client device is placed **directly**.

e) Mobile exposure conditions only (portable exposure conditions are not covered by this exclusion).

- The device is a **mobile device**.

f) 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.

- Refer to following test results.

**The EUT H-Field Strength levels at 15 cm < 50 % of the MPE H-Field Strength limit 1.63 A/m
0.395 A/m (Max) < 0.815 A/m**

2.2. Test results

Test mode : 5 W

E-Field Strength from each edges the EUT

Test Mode		Point A (V/m)	Point B (V/m)	Point C (V/m)	Point D (V/m)	Point E (V/m)
5 W Charging mode	10 % load	1.003	1.066	0.999	0.997	0.996
	50 % load	1.002	1.065	0.997	0.998	0.995
	90 % load	1.005	1.069	0.995	0.997	0.994

H-Field Strength from each edges the EUT

Test Mode		Point A (A/m)	Point B (A/m)	Point C (A/m)	Point D (A/m)	Point E (A/m)
5 W Charging mode	10 % load	0.370	0.390	0.330	0.338	0.332
	50 % load	0.366	0.387	0.327	0.334	0.330
	90 % load	0.368	0.392	0.328	0.341	0.337

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Test mode : 7.5 W

E-Field Strength from each edges the EUT

Test Mode		Point A (V/m)	Point B (V/m)	Point C (V/m)	Point D (V/m)	Point E (V/m)
7.5 W Charging mode	10 % load	0.995	0.997	1.040	0.992	1.001
	50 % load	0.996	0.997	1.041	0.994	1.000
	90 % load	0.995	0.998	1.038	0.995	1.002

H-Field Strength from each edges the EUT

Test Mode		Point A (A/m)	Point B (A/m)	Point C (A/m)	Point D (A/m)	Point E (A/m)
7.5 W Charging mode	10 % load	0.351	0.382	0.342	0.350	0.351
	50 % load	0.354	0.379	0.335	0.342	0.356
	90 % load	0.361	0.384	0.329	0.339	0.360

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Test mode : 10 W**E-Field Strength from each edges the EUT**

Test Mode		Point A (V/m)	Point B (V/m)	Point C (V/m)	Point D (V/m)	Point E (V/m)
10 W Charging mode	10 % load	1.164	1.109	1.003	0.997	1.033
	50 % load	1.161	1.105	1.005	0.998	1.033
	90 % load	1.163	1.107	1.007	0.997	1.034

H-Field Strength from each edges the EUT

Test Mode		Point A (A/m)	Point B (A/m)	Point C (A/m)	Point D (A/m)	Point E (A/m)
10 W Charging mode	10 % load	0.368	0.395	0.331	0.330	0.314
	50 % load	0.372	0.379	0.336	0.327	0.318
	90 % load	0.378	0.384	0.342	0.336	0.326

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Appendix A. Measurement equipment

Equipment	Manufacturer	Model	Serial No.	Calibration interval	Calibration due.
Electric Field Probe	ETS LINDGREN	HI-6105	00151770	1 year	2023.06.17
					2024.06.12
Magnetic Field Hitester	HIOKI	FT3470-50	120429926	1 year	2023.10.13

Peripheral device

Device	Manufacturer	Model No.	S/N	Note
Notebook computer	LG Electronics Inc.,	LGS53	306QCZP560949	Notebook computer
Test Jig	-	-	-	-

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