



TEST REPORT



Report No. : KES-RF-23T0170
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KES Co., Ltd.
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Gyeonggi-do, 14057, Korea
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■ FCC EXPOSURE REPORT

1. Client

- Name : KEYTH INTERNATIONAL
- Address : 06021 B2-#2, Horim Art Center Building 1, 317, Dosan-daero, Gangnam-gu, Seoul, Republic of Korea
- Product item : Merch Box #14
- Model name : MerchBox14
- Manufacturer etc. : Dongguan Youwei Smart Home Co.,Ltd

3. Date of test : 2023.12.11 ~ 2023.12.13

4. Location of Test : ☒ Permanent Testing Lab ☐ On Site Testing

- Address : 473-29, Gayeo-ro, Yeosu-si, Gyeonggi-do, Korea

5. Test method used : Part 15C

6. Test result : PASS

The results shown in this test report refer only to the sample(s) tested unless otherwise stated.
This laboratory is not accredited for the test results marked*.

This test report is not related to KOLAS accreditation.

Affirmation	Tested by	Technical Manager
	Name : Bong-Seok Kim (Signature)	Name : Yeong-Jun Cho (Signature)

2023 . 12. 27.

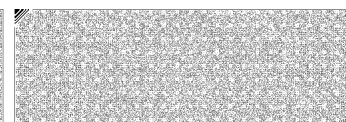
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REPORT REVISION HISTORY

Date	Test Report No.	Revision History
2023.12.27	KES-RF-23T0170	Initial

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Use of uncertainty of measurement for decisions on conformity (decision rule):

- ☒ No decision rule is specified by the standard, when comparing the measurement result with the applicable limit according to the specification in that standard. The decisions on conformity are made without applying the measurement uncertainty("simple acceptance" decision rule, previously known as "accuracy method").
- ☐ Other (to be specified, for example when required by the standard or client)

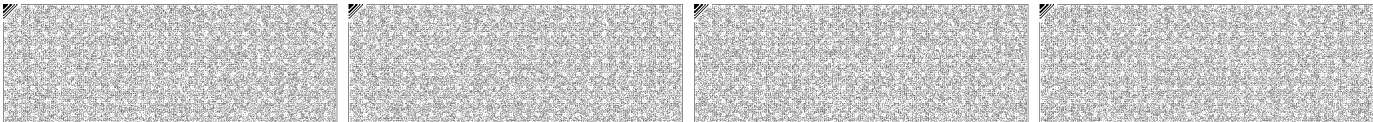


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1. Summary of tests

Applicant KEYTH INTERNATIONAL
 Applicant address 06021 B2-#2, Horim Art Center Building 1, 317, Dosan-daero,
 Gangnam-gu, Seoul, Republic of Korea
 Test site KES Co., Ltd.
 Test site address ☐ 3701, 40, Simin-daero 365beon-gil, Dongan-gu, Anyang-si,
 Gyeonggi-do, 14057, Korea43
☒ 473-29, Gayeo-ro, Yeosu-si, Gyeonggi-do, Korea
 Test Facility FCC Accreditation Designation No.: KR0100, Registration No.: 444148
 FCC rule part(s): Part 15C
 FCC ID: 2AZWB-MERCHBOX14
 Test device serial No. ☒ Production ☐ Pre-production ☐ Engineering

1.1. Test configuration

Equipment under test Merch Box #14
 5 W : 0.126 MHz ~ 0.134 MHz
 Frequency 7.5 W : 0.128 MHz
 10 W : 0.125 MHz ~ 0.136 MHz
 15 W : 0.125 MHz ~ 0.140 MHz
 Inductive charging technique Magnetic Induction
 Model: MerchBox14
 Antenna specification Internal type (Coil antenna)
 Power source AC 120 V (Adapter Output DC 5,9 V)
 S/W Version DHW2204_WXC_V1.0
 H/W version GBHW2304_3000_V2.03

1.2. Test configuration

The **KEYTH INTERNATIONAL / Merch Box #14 / MerchBox14**
/ FCC ID: 2AZWB-MERCHBOX14 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 V04

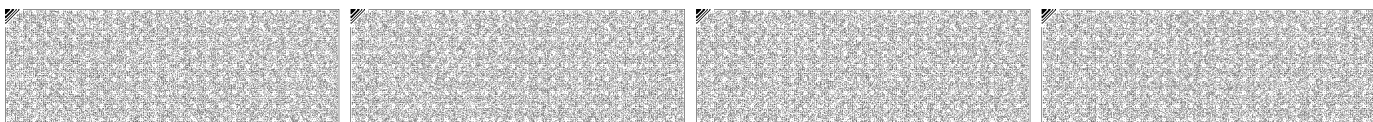
1.3. Test frequency

		Frequency Range
Power source	AC 120 V	5 W : 0.126 MHz ~ 0.134 MHz 7.5 W : 0.128 MHz 10 W : 0.125 MHz ~ 0.136 MHz 15 W : 0.125 MHz ~ 0.140 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	5.32 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)

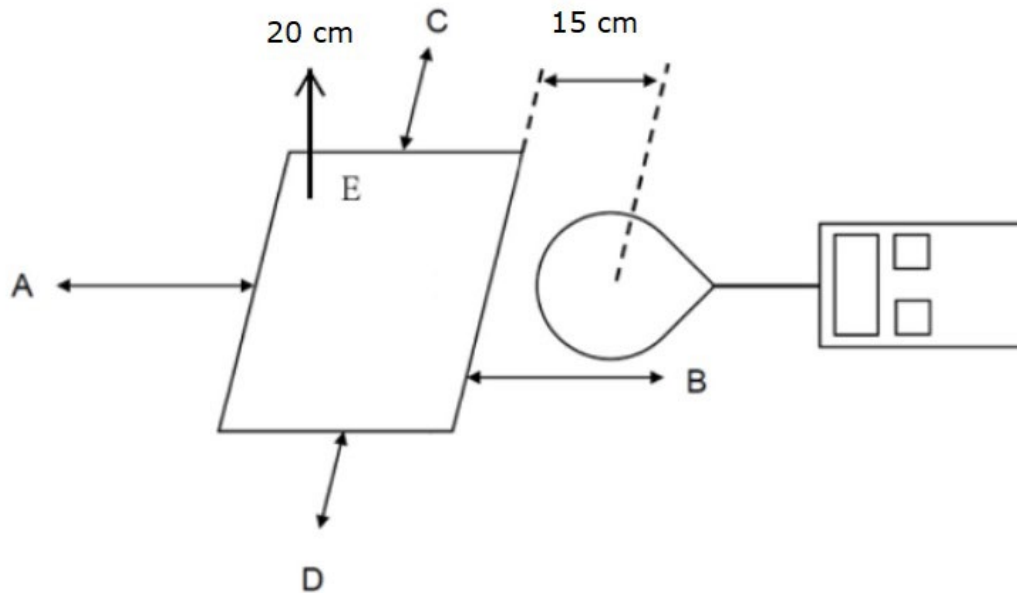
Frequency Range (MHz)	Electric Field Strength (V/m)	Magnetic Field Strength (A/m)	Power Density (mW/cm ²)	Average Time (minutes)
(A) Limits for Occupational / Control Exposures				
0.3 - 3.0	614	1.63	*(100)	6
3.0 - 30	1842/f	4.89/f	*(900/f ²)	6
30 - 300	61.4	0.613	1.0	6
300 - 1 500			f/300	6
1 500 - 100 000			5	6
(B) Limits for General Population/Uncontrolled Exposure				
<u>0.3-1.34</u>	<u>614</u>	<u>1.63</u>	*(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 D01v04.



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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 125.0 ~ 140.0 kHz.

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

- Output power from each primary coil : 15 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 not 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
0.207 A/m (Max) < 0.815 A/m

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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)
5W Charging mode	10 % load	1.589	1.476	1.482	1.350	2.049
	50 % load	1.592	1.485	1.480	1.355	2.038
	90 % load	1.585	1.482	1.877	1.352	2.050

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)
5W Charging mode	10 % load	0.092	0.090	0.120	0.110	0.207
	50 % load	0.094	0.092	0.118	0.109	0.206
	90 % load	0.091	0.092	0.121	0.111	0.206

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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)
7.5W Charging mode	10 % load	1.674	1.524	1.499	1.375	1.987
	50 % load	1.682	1.518	1.498	1.377	1.985
	90 % load	1.678	1.526	1.506	1.382	1.989

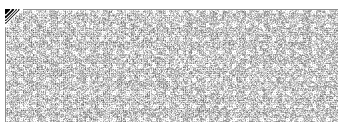
H-Field Strength from each edges the EUT

Test Mode		Point A (A/m)	Point B (A/m)	Point C (A/m)	Point D (A/m)	Point E (A/m)
7.5W Charging mode	10 % load	0.104	0.099	0.118	0.120	0.194
	50 % load	0.106	0.100	0.119	0.118	0.192
	90 % load	0.108	0.102	0.120	0.118	0.194

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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)
10W Charging mode	10 % load	1.576	1.488	1.503	1.347	2.014
	50 % load	1.582	1.496	1.498	1.353	2.010
	90 % load	1.580	1.492	1.499	1.350	2.013

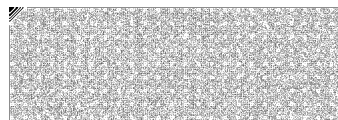
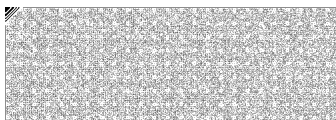
H-Field Strength from each edges the EUT

Test Mode		Point A (A/m)	Point B (A/m)	Point C (A/m)	Point D (A/m)	Point E (A/m)
10W Charging mode	10 % load	0.102	0.094	0.115	0.111	0.203
	50 % load	0.103	0.098	0.113	0.111	0.202
	90 % load	0.105	0.095	0.117	0.108	0.205

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Test mode : 15 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)
15W Charging mode	10 % load	1.604	1.532	1.496	1.397	2.072
	50 % load	1.608	1.528	1.499	1.395	2.075
	90 % load	1.601	1.533	1.503	1.392	2.068

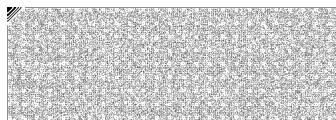
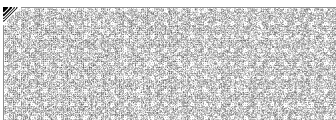
H-Field Strength from each edges the EUT

Test Mode		Point A (A/m)	Point B (A/m)	Point C (A/m)	Point D (A/m)	Point E (A/m)
15W Charging mode	10 % load	0.095	0.096	0.114	0.112	0.198
	50 % load	0.098	0.099	0.116	0.112	0.202
	90 % load	0.094	0.097	0.114	0.110	0.201

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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	2024.06.12
Magnetic Field Hitester	HIOKI	FT3470-50	120429926	1 year	2024.10.13

* Statement of Traceability: KES Co., Ltd. attests that all calibrations have been performed, traceable to National Primary Standards and International System of Units (SI).

Peripheral device

Device	Manufacturer	Model No.	S/N
Smart Phone	Samsung Electronics Co., Ltd.	SM-A305N	R59M503KX0M

The end of test report.

