

Test Report

Report No.: MTi240528020-05E2

Date of issue: 2024-08-21

Applicant: Hafele SE and Co KG

Product: Loox5 wireless Charger

Model(s): 833.73.822, 833.73.823

FCC ID: 2BLJD-LOOX5

Shenzhen Microtest Co., Ltd.

<http://www.mtitest.cn>

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Contents

1	General Description	5
1.1	Description of the EUT	5
1.2	Description of test modes	6
1.3	Description of support units	7
2	Measurement uncertainty	7
3	Test facilities and accreditations.....	8
3.1	Test laboratory	8
4	List of test equipment	9
5	Test result	10
5.2	Test setup	11
5.3	Test Procedures.....	11
5.4	Information of test equipment	12
5.5	Test results	13
	Photographs of the Test Setup.....	15
	Photographs of the EUT.....	15

Test Result Certification	
Applicant:	Hafele SE and Co KG
Address:	Adolf-Hafele-Street 1 D-72202 Nagold Germany
Manufacturer:	Hafele SE and Co KG
Address:	Adolf-Hafele-Street 1 D-72202 Nagold Germany
Product description	
Product name:	Loox5 wireless Charger
Trademark:	N/A
Model name:	833.73.822
Series Model:	833.73.823
Standards:	FCC CFR 47 PART 1, § 1.1310
Test method:	KDB 680106 D01 Wireless Power Transfer v04
Date of Test	
Date of test:	2024-08-04 to 2024-08-21
Test result:	Pass

Test Engineer	:	<i>James Qin</i>
		(James Qin)
Reviewed By	:	<i>David. Lee</i>
		(David Lee)
Approved By	:	<i>Leon Chen</i>
		(Leon Chen)

1 General Description

1.1 Description of the EUT

Product name:	Loox5 wireless Charger
Model name:	833.73.822
Series Model:	833.73.823
Model difference:	All models are the same circuit and module, only the model name, input parameters, wire color and case color is different
Electrical rating:	833.73.822: Input: DC 24V--20W Output: 15W Cable: 2m 833.73.823: Input: DC 12V--20W Output: 15W Cable: 2m
Accessories:	N/A
Hardware version:	V1.0
Software version:	V1.0
Test sample(s) number:	MTi240528020-05S1001
RF specification:	
Operation frequency:	115-205kHz(5W/ 7.5W) 360kHz(15W)
Modulation type:	ASK
Antenna type:	Coil

1.2 Description of test modes

All the test modes were carried out with the EUT in normal operation, the final test mode of the EUT was the worst test mode for emission test, which was shown in this report and defined as:

No.	Emission test modes
Mode1	Wireless Output(5W) 24V
Mode2	Wireless Output(7.5W) 24V
Mode3	Wireless Output(15W) 24V
Mode4	Wireless Output(5W) 12V
Mode5	Wireless Output(7.5W) 12V
Mode6	Wireless Output(15W) 12V
Mode7	Stand by

1.3 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.

Support equipment list			
Description	Model	Serial No.	Manufacturer
Mobile phone	iPhone12	/	Apple
Mobile phone	iPhone 13	/	Apple
Accumulator	6-QW-45(370)-L	/	Camel Group Co., Ltd.
Support cable list			
Description	Length (m)	From	To
/	/	/	/

2 Measurement uncertainty

Parameter	Expanded Uncertainty
Magnetic field measurements(3kHz~10MHz)	$\pm 14.8\%$
Electric field measurements(3kHz~10MHz)	$\pm 17.5\%$

This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of $k=2$.

3 Test facilities and accreditations

3.1 Test laboratory

Test laboratory:	Shenzhen Microtest Co., Ltd.
Test site location:	101, No. 7, Zone 2, Xinxing Industrial Park, Fuhai Avenue, Xinhe Community, Fuhai Street, Bao'an District, Shenzhen, Guangdong, China
Telephone:	(86-755)88850135
Fax:	(86-755)88850136
CNAS Registration No.:	CNAS L5868
FCC Registration No.:	448573

4 List of test equipment

No.	Equipment	Manufacturer	Model	Serial No.	Cal. date	Cal. Due
MTI-E143	Near-field Electric and Magnetic Field Sensor System	Speag	MAGPy-8H3D +ED3 V2	3101	2024/3/12	2027/3/11

No.	Equipment	Manufacturer	Model	Software version:	Cal. date	Cal. Due
MTI-E016S	MPE test software	SPEAG	MAGPY 2.4	2.4.1	/	/

5 Test result

5.1.1 Requirement

§1.1310: 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), except in the case of portable devices which shall be evaluated according to the provisions of FCC part 2.1093 of this chapter.

Table 1 to §1.1310(e)(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)	Averaging time (minutes)
(i) Limits for Occupational/Controlled Exposure				
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
1500-100000			5	<6
(ii) 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
1500-100000			1.0	<30

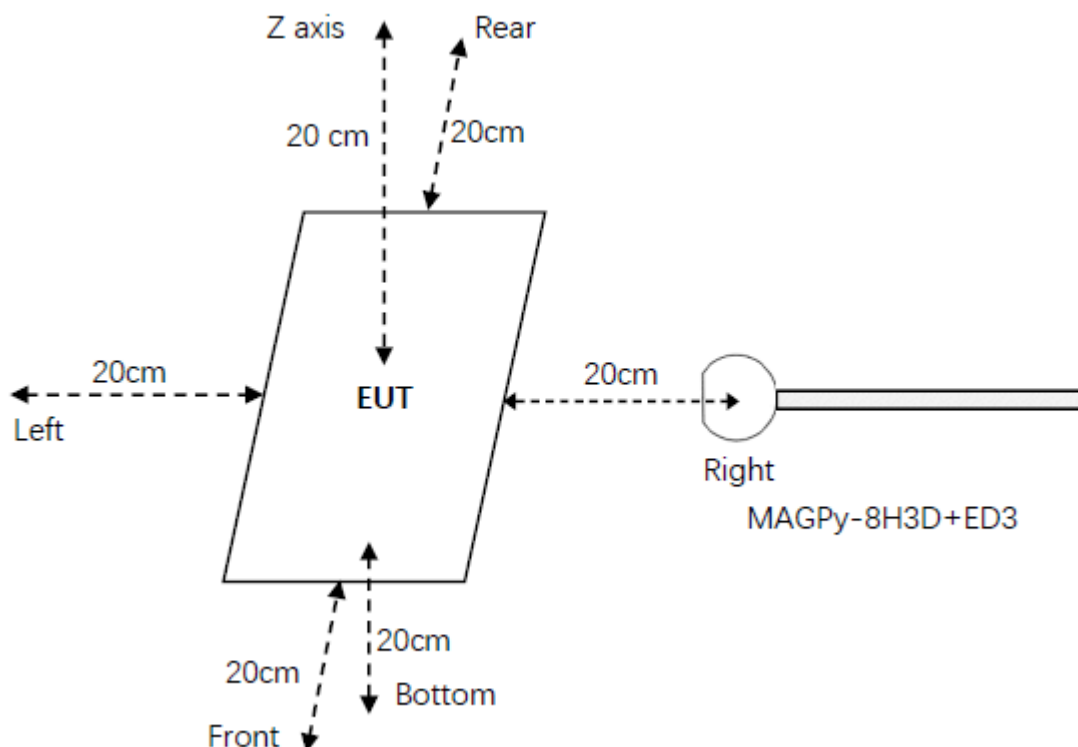
f = frequency in MHz

* = Plane-wave equivalent power density

Note 1: Occupational/controlled exposure limits apply in situations in which persons are exposed as a consequence of their employment provided those persons are fully aware of the potential for exposure and can exercise control over their exposure.

Note 2: General population/uncontrolled exposure limits apply in situations in which the general public may be exposed, or in which persons who are exposed as a consequence of their employment may not be fully aware of the potential for exposure or cannot exercise control over their exposure.


5.2 Test setup



5.3 Test Procedures

- The RF exposure test was performed in anechoic chamber.
- E and H-field measurements should be made with these devices considered to meet the § 2.1091-Mobile conditions ("generally be used in such a way that a separation distance of at least 20 centimeters is normally maintained between the RF source's radiating structure(s) and [the nearest person]").
- The highest emission level was recorded and compared with limit.
- The EUT was measured according to the dictates of KDB 680106 D01 Wireless Power Transfer v04.

5.4 Information of test equipment

Test equipment: MAGPy-8H3D+ED3	
Diameter	60mm
8 isotropic H-field sensors	Concentric loops of 1cm ² arranged at the corner of a cube of 22mm side length
1 isotropic E-field sensor	Orthogonal dipole/monopole (arm length: 50mm)
Measurement center	18.5mm from the probe tip
Dimensions	110*635*35mm (MAGPy-8H3D+E3D V2 & MAGPy-DAS V2)
	
Test probe, without the casing	

5.5 Test results

Test condition 1: Mode 2 operating mode with client device (1 % battery status of client device)

Probe Position	E -field (V/m)			H-field (A/m)		
	Measurement	Limit	Percentage (%)	Measurement	Limit	Percentage (%)
Z axis	5.34	614	0.32%	0.12	1.63	7.36%
Left	4.67			0.08		
Right	3.76			0.03		
Front	3.23			0.02		
Rear	2.87			0.02		
Bottom	2.46			0.01		

Test condition 2: Mode 2 operating mode with client device (50 % battery status of client device)

Probe Position	E -field (V/m)			H-field (A/m)		
	Measurement	Limit	Max. Percentage (%)	Measurement	Limit	Max. Percentage (%)
Z axis	5.33	614	0.33%	0.12	1.63	7.42%
Left	4.69			0.08		
Right	3.77			0.03		
Front	3.23			0.02		
Rear	2.86			0.03		
Bottom	2.46			0.01		

Test condition 3: Mode 2 operating mode with client device (99 % battery status of client device)

Probe Position	E -field (V/m)			H-field (A/m)		
	Measurement	Limit	Percentage (%)	Measurement	Limit	Percentage (%)
Z axis	5.34	614	0.32%	0.12	1.63	7.23%
Left	4.66			0.07		
Right	3.75			0.03		
Front	3.21			0.02		
Rear	2.87			0.01		
bottom	2.44			0.01		

Test condition 1: Mode 3 operating mode with client device (1 % battery status of client device)

Probe Position	E -field (V/m)			H-field (A/m)		
	Measurement	Limit	Percentage (%)	Measurement	Limit	Percentage (%)
Z axis	4.43	614	0.29%	0.12	1.63	7.36%
Left	3.89			0.08		
Right	2.45			0.03		
Front	2.23			0.02		
Rear	2.13			0.01		
Bottom	1.98			0.01		

Test condition 2: Mode 3 operating mode with client device (50 % battery status of client device)

Probe Position	E -field (V/m)			H-field (A/m)		
	Measurement	Limit	Max. Percentage (%)	Measurement	Limit	Max. Percentage (%)
Z axis	4.43	614	0.29%	0.12	1.63	7.28%
Left	3.90			0.07		
Right	2.43			0.02		
Front	2.21			0.02		
Rear	2.11			0.01		
Bottom	1.99			0.01		

Test condition 3: Mode 3 operating mode with client device (99 % battery status of client device)

Probe Position	E -field (V/m)			H-field (A/m)		
	Measurement	Limit	Percentage (%)	Measurement	Limit	Percentage (%)
Z axis	4.41	614	0.29%	0.12	1.63	7.07%
Left	3.88			0.08		
Right	2.45			0.03		
Front	2.21			0.01		
Rear	2.12			0.00		
bottom	1.97			0.01		

Photographs of the Test Setup

See the Appendix - Test Setup Photos.

Photographs of the EUT

See the Appendix - EUT Photos.

----End of Report----