MPE Test Report

Report No:STS2408160H01

Issued for

Shenzhen Houlici Network Technology CO., Ltd

2606A, West Tower, Galaxy Twin Towers, Yaxing Road 8, Nankeng Community, Bantian Street, Longgang District, Shenzhen, China

Product Name: Watch wireless charging mobile power

Brand Name: N/A

Model Name: DC-002

Series Model(s): N/A

FCC ID: 2BA3TCWP181A01

Test Standard: FCC CFR 47 part 1, 1.1310

The test results presented in this report relate only to the object tested. This report shall not be reproduced, except in full, without the written approval of the Shenzhen STS Test Services Co., Ltd.



TEST RESULT CERTIFICATION

Applicant's Name:	Shenzhen Houlici Network Technology CO., Ltd
Address:	2606A, West Tower, Galaxy Twin Towers, Yaxing Road 8, Nankeng Community, Bantian Street, Longgang District, Shenzhen, China
Manufacturer's Name:	Shenzhen Blue Times Technology Co Ltd
Address:	Building B, Taixinglong Industrial City, Hezhou Community, Hangcheng Street, Baoan District, Shenzhen, China
Product Description	

Product Name:	Watch wireless charging mobile power
Brand Name:	N/A
Model Name:	DC-002
Series Model(s):	N/A
Standards	FCC CFR 47 part 1, 1.1310
Test Procedure:	680106 D01 RF Exposure Wireless Charging Apps v03

This device described above has been tested by STS, the test results show that the equipment under test (EUT) is in compliance with the FCC requirements. And it is applicable only to the tested sample identified in the report.

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Date of Test.....: Date of receipt of test item: 30 Aug. 2024 Date of performance of tests..: 30 Aug. 2024 ~ 06 Sept. 2024 Date of Issue.....: 06 Sept. 2024 Test Result.....: Pass

Testing Engineer

Aann Bu

(Aaron Bu)

Technical Manager

(Tony Liu)



Authorized Signatory :

(Bovey Yang)



Table of Contents	Page
1. SUMMARY OF TEST RESULTS	5
1.1 TEST FACTORY	5
1.2 MEASUREMENT UNCERTAINTY	5
1.3 GENERAL DESCRIPTION OF THE EUT	6
1.5 EQUIPMENTS LIST FOR ALL TEST ITEMS	7
1.6 DESCRIPTION OF NECESSARY ACCESSORIES AND SUPPORT UNITS	7
2. COIL SPECIFICATIONS	8
2.1 COIL SIZE	8
2.2 LOCATION(S) – COIL TO THE OUTER SURFACE OF THE ENCLOSURE(S)	8
3. MAXIMUM PERMISSIBLE EXPOSURE	9
3.1MEASURING STANDARD	9
3.2 REQUIREMENTS	9
3.3TEST PROCEDURE	11
3.4 TEST SETUP	11
3.5 TEST RESULTS	12
3.6 MAXIMUM PERMISSIBLE EXPOSURE	13



Revision History

	Rev.	Issue Date	Report No.	Effect Page	Contents
	00	06 Sept. 2024	STS2408160H01	ALL	Initial Issue
f					





1. SUMMARY OF TEST RESULTS

Test procedures according to the technical standards: FCC KDB 680106 D01 RF Exposure Wireless Charging Apps v03

Requirements of section 5 of KDB 680106 D01	Yes / No	Description
Mobile Device and Portable Device Configurations	Yes	Mobile Device or Portable Device
Equipment Authorization Procedures for Devices Operating at Frequencies Below 4 MHz	Yes	The device operate in the frequency range 300 kHz ~ 360 kHz
RF Exposure compliance may be ensured only for a minimum separation distance that is greater than 20 cm, while use conditions at smaller distances can still be considered unlikely.	Yes	Mobile mode: The EUT H-field strengths at 15 cm surrounding the device and 20 cm above the top surface. Portable mode: H-field and E-field measurement taken every 2 cm (starting as close to 20 cm as possible) on each edge/top surface of the host/client pair were also evaluated for portable use conditions.

1.1 TEST FACTORY

SHENZHEN STS TEST SERVICES CO., LTD

Add. : 101, Building B, Zhuoke Science Park, No.190 Chongqing Road, ZhanChengShequ, Fuhai Sub-District, Bao'an District, Shenzhen, Guang Dong, China

FCC test Firm Registration Number: 625569

IC test Firm Registration Number: 12108A

A2LA Certificate No.: 4338.01

1.2 MEASUREMENT UNCERTAINTY

The reported uncertainty of measurement $y \pm U$, where expended uncertainty U is based on a standard uncertainty multiplied by a coverage factor of **k=2**, providing a level of confidence of approximately **95** %.

No.	Item	Uncertainly
1	H-filed	±0.83dB
2	E-filed	±0.91dB



1.3 GENERAL DESCRIPTION OF THE EUT

Product Name	Watch wireless charging mobile power
Brand	N/A
Model Number	DC-002
Series Model(s)	N/A
Model Difference	N/A
Equipemnt Category	Non-ISM frequency
Antenna Type	Please refer to the Note 2.
Operating frequency	110.5kHz~205kHz
Modulation Type	ASK
Rating	Input: DC 5V 750mA Output: DC 5V 500mA
Hardware version number	V1.0
Software version number	V1.0
Connecting I/O Port(s)	Please refer to the Note 1.

Note:

1. For a more detailed features description, please refer to the manufacturer's specifications or the User Manual.

2. Table for Filed Antenna

Ant.	Brand	Model Name	Antenna Type	Connector	NOTE
1	N/A	CWP-181A01	Coil	N/A	Antenna

The EUT antenna is Coil Antenna. No antenna other than that furnished by the responsible party shall be used with the device.

1.4 DESCRIPTION OF THE TEST MODES

Equipment under test was operated during the measurement under the following conditions:

Test Mode	Description	
Mode 1	AC Adapter + EUT + BOX (Battery Status: < 1%)	Record
Mode 2	AC Adapter + EUT + BOX (Battery Status: < 50%)	Record
Mode 3	AC Adapter + EUT + BOX (Battery Status: < 99%)	Record
Mode 4	EUT + BOX (Battery Status: < 1%)	Record
Mode 5	EUT + BOX (Battery Status: < 50%)	Pre-tested
Mode 6	EUT + BOX (Battery Status: < 99%)	Pre-tested
Mode 7	Test the EUT in idle mode.	Pre-tested
Note: All test modes	were pre-tested, but we only recorded the worst case in this report.	

1.5 EQUIPMENTS LIST FOR ALL TEST ITEMS

Kind of Equipment	Manufacturer	Type No.	Serial No.	Last calibration	Calibrated until
Electric and Magnetic field Probe - Analyzer	Narda	EHP 200A	180ZX10220	2023.02.28	2024.02.27

1.6 DESCRIPTION OF NECESSARY ACCESSORIES AND SUPPORT UNITS Necessary accessories

Item	Equipment	Mfr/Brand	Model/Type No.	Length	Note
N/A	N/A	N/A	N/A	N/A	N/A
	L.				

Support units

Item	Equipment	Mfr/Brand	Model/Type No.	Length	Note
	Adapter	HUA WEI	HW-050450C00	N/A	N/A
	USB Cable	HUA WEI	N/A	150cm	N/A
	charing Box	HUA WEI	HW-050450C00	N/A	N/A

Note:

- (1) For detachable type I/O cable should be specified the length in cm in ^r Length ^a column.
- (2) "YES" is means "with core"; "NO" is means "without core".



2. COIL SPECIFICATIONS

Item	Parameter
Input inductance:	L1: 10uH±5%
Material of enclosure(s):	Silk wrapped wire
Number of turns:	Transmitter 1: 15 turns

2.1 COIL SIZE



Unit: mm

A	В	С	D	E
3±0.5	13.9±0.2	24.4MAX	3±1	6±0.5
-	1 m 1			

2.2 LOCATION(S) – COIL TO THE OUTER SURFACE OF THE ENCLOSURE(S) Unit: mm

Front A	Rear B	Left C	Right D	Тор Е	Bottom F
10	10	10	10	3	12
	Front			Тор	
Lef	it Rear	Right		Bottom	



3. MAXIMUM PERMISSIBLE EXPOSURE

3.1MEASURING STANDARD

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 Cocmission's guidelines. According to §1.1310 and §2.1091 RF exposure is calculated. According KDB680106 D01: KDB 680106 D01 Wireless Power Transfer v04.

3.2 REQUIREMENTS

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.

(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 or beyond 15 cm surrounding the device, and 20

cm away from the top surface.

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 Occupational / Controlled Exposure						
Frequency Range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (H) (A/m)	Power Density (S) (mW/ cm²)	Averaging Time E ², H ² or S (minutes)		
0.3-3.0	614	1.63	(100)*	6		
3.0-30	1842 / f	4.89 / f	(900 / f)*	6		
30-300	61.4	0.163	1.0	6		
300-1500			F/300	6		
1500-100,000			5	6		

Limit of Maximum Permissible Exposure



Limits for General Population / Uncontrolled Exposure						
Frequency Range (MHz)	Electric Field Strength (E) (V/m)	Power Density (S) (mW/ cm ²)	Averaging Time E ², H ² or S (minutes)			
0.3-1.34	614	1.63	(100)*	30		
1.34-30	824/f	2.19/f	(180 / f)*	30		
30-300	27.5	0.073	0.2	30		
300-1500			F/1500	30		
1500-100,000			1	30		

Note 1: f = frequency in MHz ; *Plane-wave equivalent power density

Note 2: For the applicable limit, see FCC 1.1310, 680106 D01 RF Exposure Wireless Charging Apps v03 Note 3: Emissions between 100 kHz to 300 kHz should be assessed versus the limits at 300 kHz in Table 1 of Section 1.1310: 614 V/m and 1.63 A/m. A KDB inquiry is required to determine the applicable exposure limits below 100 kHz.

Note 4: 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.



3.3TEST PROCEDURE

1) The RF exposure test was performed in anechoic chamber.

2) The measurement probe was placed at test distance (2cm increments from $0 \sim 20$ cm for all sides for portable mode, 15 cm from all sides and 20 cm from the top for mobile mode) which is between the edge of the charger and the geometric edge of probe.

3) The highest emission level was recorded and compared with limit as soon as measurement of each points (A, B, C, D, E, F) were completed.

4) The EUT was measured according to the dictates of KDB 680106 D01 Wireless Power Transfer v04. 5) According to the reguirements if KDB 680106 D01 v04, If the center of the probe sensing element is located more than 5mm from the probe outer surface, the field strengths need to be estimated through modeling for those positions that are not reachable. (The sensitive elements are located approximately 18.5 mm below the external surface specified in user manual of MAGPy-8H3D+E3D)

6) Use Biot-Savart Law, the value of 0 cm can be estimated through the results of 2 cm, according to the formula:

Top & Bottom Side:





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

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

Remark:

B: H-field (Unit:T)

u_{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=0.015m
- 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)
- N: Turns of the radiated coil, according to the coil specification: N=15.

3.4 TEST SETUP







3.5 TEST RESULTS

The EUT does comply with item 3 KDB680106 D01 v04.

- (1) Power transfer frequency is less than 1 MHz. (Conform)
- (2) Output power from each primary coil is less than or equal to 15 watts. (Conform)
- (3) 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. (Conform)
- (4) Client device is placed directly in contact with the transmitter. (Conform)
- (5) Mobile exposure conditions only (portable exposure conditions are not covered by this exclusion).
 - (Conform)
- (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. (Conform)



3.6 MAXIMUM PERMISSIBLE EXPOSURE

MPE					
Test	Potton lovolo	Drobo from ELIT Sido	E-field	H-field	
distance	ballery levels	Probe from EUT Side	(V/m)	(A/m)	
20cm	< 1%	Тор	1.125	0.481	and the second
20cm	< 1%	Bottom	0.946	0.349]
15cm	< 1%	Left	0.871	0.318	
15cm	< 1%	Right	0.865	0.309	
15cm	< 1%	Front	0.459	0.145	1
15cm	< 1%	Rear	0.437	0.137	1
Limit 614 1.63					
	1.5				
		MDE			

MPE					
Test	Battony loyols			H-field	
distance	Dattery levels		(V/m)	(A/m)	
20cm	< 50%	Тор	1.053	0.460	
20cm	< 50%	Bottom	0.942	0.322	
15cm	< 50%	Left	0.814	0.293	
15cm	< 50%	Right	0.820	0.279	
15cm	< 50%	Front	0.419	0.144	
15cm	< 50%	Rear	0.398	0.134	
	614	1.63			

MPE					
Test	Pottony lovola	Drobo from ELIT Sido	E-field	H-field	
distance	Dattery levels		(V/m)	(A/m)	
20cm	< 99%	Тор	1.037	0.428	
20cm	< 99%	Bottom	0.892	0.302	
15cm	< 99%	Left	0.806	0.289	
15cm	< 99%	Right	0.753	0.256	
15cm	< 99%	Front	0.386	0.140	
15cm	< 99%	Rear	0.373	0.133	
	Limit		614	1.63	

Note: All test modes were pre-tested, but we only recorded the worst case in this report.



Mode 4

Note: <1%, 50%, >95% load all have been tested, only worse case Max load (<1%) is reported. H-Filed Strength at (distance 0cm 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) Battery < 1% (Worst case)

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)	Limit (A/m)
2	0.134	0.138	0.061	0.053	0.124	0.112	
4	0.073	0.078	0.031	0.027	0.030	0.035	
6	0.066	0.071	0.031	0.026	0.029	0.034	
8	0.066	0.070	0.028	0.025	0.026	0.031	
10	0.061	0.065	0.026	0.024	0.025	0.028	1.00
12	0.056	0.064	0.025	0.024	0.025	0.026	1.63
14	0.052	0.062	0.025	0.023	0.024	0.024	
16	0.049	0.056	0.025	0.022	0.022	0.024	
18	0.047	0.056	0.024	0.021	0.020	0.022	
20	0.043	0.054	0.024	0.020	0.018	0.022	

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

Test position	Measure Value (A/m)	Estimated Value (A/m)	Agreement Ratio	Limits
A	0.134	0.105	-21.31%	30%
В	0.138	0.113	-18.36%	30%
С	0.061	0.045	-26.59%	30%
D	0.053	0.039	-26.42%	30%
E	0.124	0.137	10.37%	30%
F	0.112	0.126	12.22%	30%

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

Test position	Estimated Value (A/m)	Limits (A/m)
A	0.241	
В	0.248	
С	0.110	1.62
D	0.095	1.03
E	0.717	
F	0.697	



MPE Setup photo





















Тор





















Left



Rear









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