

TEST REPORT

For

Guangzhou Shihuan Trade Company Limited

Product Name: Cowhide wireless charging mouse pad

Test Model(s): CF9080

Report Reference No. : DACE240603002RL002

FCC ID : 2BG53-CF9080

Applicant's Name : Guangzhou Shihuan Trade Company Limited

Address : Room 201 2nd building, N0.18 Honglong East Road, Baiyun District,
Guangzhou City

Testing Laboratory : Shenzhen DACE Testing Technology Co., Ltd.

Address : 102 Building H1 & 1/F., Building H, Hongfa Science & Technology Park,
Tangtou, Shiyan, Bao'an District, Shenzhen, Guangdong, China

Date of Receipt : June 3, 2024

Date of Test : June 3, 2024 to June 25, 2024

Data of Issue : June 25, 2024

Result : **Pass**

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1 GENERAL INFORMATION

1.1 Description of Device (EUT)

Product Name:	Cowhide wireless charging mouse pad
Model/Type reference:	CF9080
Series Model:	CF9081,CF9082,CF9083,CF9084,CF9086,CF9087,CF9088
Model Difference:	The product has many models, only the model name is different, and the other parts such as the circuit principle, pcb and electrical structure are the same.
Trade Mark:	N/A
Power Supply:	DC 9V/2A from adapter
Operation Frequency:	115KHz~205KHz
Number of Channels:	N/A
Modulation Type:	MSK
Antenna Type:	Inductive loop coil Antenna
Antenna Gain:	0dBi (Max)
Hardware Version:	V1.0
Software Version:	V1.0

1.2 Description of Test Modes

No	Title	Description
TM1	Full load test	Keep the EUT in wireless charging mode
TM2	half load test	Keep the EUT in wireless charging mode
TM3	No-load load test	Keep the EUT in wireless charging mode
Remark:TM1 is the full load mode, and the full load mode is the worst mode,Only the data of the worst mode would be recorded in this report.		

1.3 Description of Support Units

Title	Manufacturer	Model No.	Serial No.
AC-DC adapter	HUAWEI TECHNOLOGY	HW100400C01	
mobile phone	Apple	Apple 14	N/A

1.4 Test Instruments list

Test Equipment	Manufacturer	Model No.	SN.	Cal.Date (mm-dd-yy)	Cal.Due date (mm-dd-yy)
Exposure Level Tester	Narda	ELT-400	N-0231	2023-12-14	2024-12-13
Magnetic field probe 100cm ²	Narda	ELT probe 100cm ²	M0675	2023-12-14	2024-12-13

1.5 Statement Of The Measurement Uncertainty

Test Item	Measurement Uncertainty
Exposure Level Tester	0.8dB
Note: (1) This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.	

1.6 Identification of Testing Laboratory

Company Name:	Shenzhen DACE Testing Technology Co., Ltd.
Address:	102 Building H1 & 1/F., Building H, Hongfa Science & Technology Park, Tangtou, Shiyao, Bao'an District, Shenzhen, Guangdong, China
Phone Number:	+86-13267178997
Fax Number:	86-755-29113252

Identification of the Responsible Testing Location

Company Name:	Shenzhen DACE Testing Technology Co., Ltd.
Address:	102 Building H1 & 1/F., Building H, Hongfa Science & Technology Park, Tangtou, Shiyao, Bao'an District, Shenzhen, Guangdong, China
Phone Number:	+86-13267178997
Fax Number:	86-755-29113252
FCC Registration Number:	0032847402
Designation Number:	CN1342
Test Firm Registration Number:	778666
A2LA Certificate Number:	6270.01

1.7 Announcement

- (1) The test report reference to the report template version v0.
- (2) The test report is invalid if not marked with the signatures of the persons responsible for preparing, reviewing and approving the test report.
- (3) The test report is invalid if there is any evidence and/or falsification.
- (4) This document may not be altered or revised in any way unless done so by POCE and all revisions are duly noted in the revisions section.
- (5) Content of the test report, in part or in full, cannot be used for publicity and/or promotional purposes without prior written approval from the laboratory.
- (6) The laboratory is only responsible for the data released by the laboratory, except for the part provided by the applicant.

2 Evaluation Results (Evaluation)

2.1 Maximum Permissible Exposure

Test Requirement:	According to§1.1310 system operating under the provisions of this section shall be operating in a manner that the public is not exposed to radio frequency energy level in excess limit for maximum permissible exposure.																																																																																
Test Limit:	<table><tr><th colspan="5">Limits for Maximum Permissible Exposure (MPE)/Controlled Exposure</th></tr><tr><th>Frequency Range(MHz)</th><th>Electric Field Strength(V/m)</th><th>Magnetic Field Strength(A/m)</th><th>Power Density (mW/cm²)</th><th>Averaging Time (minute)</th></tr><tr><th colspan="5">Limits for Occupational/Controlled Exposure</th></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/f²</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>300-1,500</td><td>/</td><td>/</td><td>f/300</td><td>6</td></tr><tr><td>1,500-100,000</td><td>/</td><td>/</td><td>5</td><td>6</td></tr><tr><th colspan="5">Limits for Maximum Permissible Exposure (MPE)/Uncontrolled Exposure</th></tr><tr><th>Frequency Range(MHz)</th><th>Electric Field Strength(V/m)</th><th>Magnetic Field Strength(A/m)</th><th>Power Density (mW/cm²)</th><th>Averaging Time (minute)</th></tr><tr><th colspan="5">Limits for General Population/Uncontrolled Exposure</th></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/f²</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>300-1,500</td><td>/</td><td>/</td><td>f/1500</td><td>30</td></tr><tr><td>1,500-100,000</td><td>/</td><td>/</td><td>1.0</td><td>30</td></tr></table>	Limits for Maximum Permissible Exposure (MPE)/Controlled Exposure					Frequency Range(MHz)	Electric Field Strength(V/m)	Magnetic Field Strength(A/m)	Power Density (mW/cm²)	Averaging Time (minute)	Limits for Occupational/Controlled Exposure					0.3-3.0	614	1.63	*100	6	3.0-30	1842/f	4.89/f	*900/f²	6	30-300	61.4	0.163	1.0	6	300-1,500	/	/	f/300	6	1,500-100,000	/	/	5	6	Limits for Maximum Permissible Exposure (MPE)/Uncontrolled Exposure					Frequency Range(MHz)	Electric Field Strength(V/m)	Magnetic Field Strength(A/m)	Power Density (mW/cm²)	Averaging Time (minute)	Limits for General Population/Uncontrolled Exposure					0.3-1.34	614	1.63	*100	30	1.34-30	824/f	2.19/f	*180/f²	30	30-300	27.5	0.073	0.2	30	300-1,500	/	/	f/1500	30	1,500-100,000	/	/	1.0	30
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Procedure:	For mobile exposure conditions: a. The RF exposure test was performed in anechoic chamber. b. E and H-field measurements should be made with the center of the probe at a distance of 15 cm surrounding the EUT and 20 cm above the top surface of the primary/client pair. c. The highest emission level was recorded and compared with limit. d. The EUT was measured according to the KDB 680106 D01 v04 Wireless Power Transfer v04. For portable exposure conditions: a. The RF exposure test was performed in anechoic chamber. b. Perform H-field measurements for each edge/top surface of the host/client pair at every 2 cm, starting from as close as possible out to 20 cm c. The highest emission level was recorded and compared with limit. d. The EUT was measured according to the KDB 680106 D01 v04 Wireless Power Transfer v04.																																																																																

2.1.1 E.U.T. Operation:

Operating Environment:					
Temperature:	23.2 °C	Humidity:	51.9 %	Atmospheric Pressure:	102 kPa
Pre test mode:	TM1				
Final test mode:	TM1				

2.1.2 Standard and Requirements

The EUT complies with item 5.2 of KDB 680106 D01 v04

1. The power transfer frequency is below 1 MHz.

Yes, the device operates in the frequency range from 115 kHz to 205 kHz.

2. The output power from each transmitting element (e.g., coil) is less than or equal to 15 watts.

Yes, the maximum output power of the primary coil is equal to 15W.

3. A client device providing the maximum permitted load is placed in physical contact with the transmitter (i.e., the surfaces of the transmitter and client device enclosures need to be in physical contact)

Yes, the surfaces of the transmitter and client device enclosures has be in physical contact.

4. Only § 2.1091-Mobile exposure conditions apply (i.e., this provision does not cover § 2.1093-Portableexposure conditions).

No, it also supports portable exposure conditions.

5. For systems with more than one radiating structure, the conditions specified in (5) must be met when the system is fully loaded (i.e., clients absorbing maximum power available), and with all the radiating structures operating at maximum power at the same time, as per design conditions. If the design allows one or more radiating structures to be powered at a higher level while other radiating structures are not powered, then those cases must be tested as well.

Yes, The EUT field strength levels are less than 50% of the MPE limit, refer to test list; and the coils can't transmitted simultaneous.

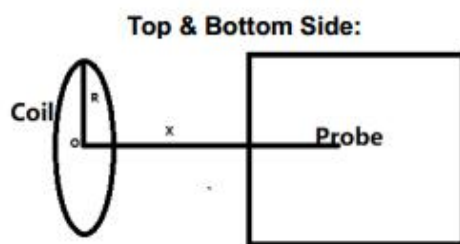
2.1.3 Test Result:

H-field measurements are taken along all three axes the device from 0cm~20cm in 2cm minimum increment for each edge surface of the host/client pair. If the center of the probe sensing element is more than 5mm from the probe outer edge, the field strengths need to be estimated for the positions that are not reachable.

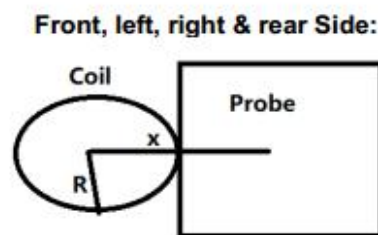
According to Calibration information and specification about ETL-400 Probe, The Probe ETL-400 Probe's sensitive elements center is located in the probe's center, and the distance from the sensitive elements center to the tip of probe is 6.25cm.

The actral 0cm, 2cm, 4cm and 6cm field strengths need to be estimated for the positions that are not reachable via numerical calculation.

Use Biot-Savart formula theory to estimate the strength of the magnetic field that the measuring instrument cannot measure. According to Biot-Savart formula:



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



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

B(Unit:A/m): means H-field value;
 μ_0 is space permeability; $\mu_0=4\pi*10^{-7}$;

I(Unit:A): A current element passing through a radiated coil;

R(Unit:m): means the Radius of radiated coil,According to provided Antenna specification:

$$R=38.5/2=19.25\text{mm}=0.01925\text{m};$$

Test Distance(Unit:m): The distance from the sensing element of the probe to the edge of the device surface.

x(Unit:m): means the center of the coil to the sensing elements of the probe. (For top & bottom side: $x=\text{test distance}$; For other side: $x=\text{test distance}+R$)

N: Number of turns, according to providing "Antenna specification" files: $N=11$.

(10)For validation purposes: If the value to show a 30% agreement between the mode and the probe measurements for the two closest points to the device surface, and with 2cm increments. Then this extrapolation method is reasonable.

(11)Coil Size

產品型號:
DESC

Φ20.5x40-10Ts-0.08x105-20mm-

版本

客戶 CUST:
料号 Fine P/N:331
FYD331003

Rev: A.0

客戶料号 CUST P/N:

A11

一、尺寸 DIMENSION:(mm)

A 41.5±0.5

B 20.3±0.5

二、原理图 SCHEMATIC DIAGRAM:

C 0.93±0.05

D1 20mm±0.2

D2 20mm±0.2

三、绕线参数 Winding Specification:

F 49.5±1

G 0.6 ref

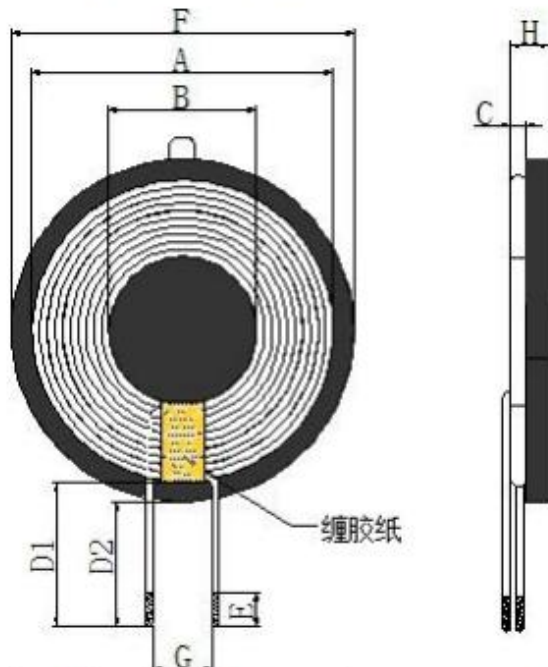
H 2.0Max

I 5.3 ref

E 3±0.2

注:

- 1.线圈贴磁片,磁片尺寸45±1mm,内孔 5.3mm,厚度为2.2±0.2mm。
- 2.线圈出线位置缠8mm(ref)宽度高温胶纸 1-2Ts;
- 3.磁片反面贴圆形直径49mm(ref)白色双面胶,内孔6.0mm (ref), (必须加带孔3mm双面胶)。



序号 NO.	端子 TERMINAL		线径 WIRE	圈数 Turns	绕线方向 Winding Direction
1	S	F	纯铜漆包线 0.08*105P	10Ts	CCW

Item	Parameter
Input inductance:	Transmitter 1: 6.3 μH±5%
Material of enclosure(s):	Multiple strands of enamelled wire
Number of turns:	Transmitter 1: 10 turns

2.1.4 Validation results for the numerical calculation model

- a) Measure with probe directed contact(test distance:6.25cm)
b) Using Biot-Savart formula to calculate estimated results at test distance of 8cm and 10 cm;
c) measure at test distance of 6 cm and 8cm;
d) Compares the estimated results and measured result, the variation should not be greater than 30%;
Conclusion: The numerical calculation model is valid.

	Test distance (cm)	Unit	Position A	Position B	Position C	Position D	Position E	Position F	Limits
Measure Value	10	uT	0.333	0.364	0.334	0.353	0.354	0.333	--
Valuation	10	uT	0.351	0.384	0.356	0.38	0.381	0.371	--
Agreement ratio			5%	5%	6%	7%	7%	10%	30%
Measure Value	8	uT	0.375	0.348	0.332	0.337	0.36	0.375	--
Valuation	8	uT	0.391	0.388	0.393	0.373	0.389	0.399	--
Agreement ratio			4%	10%	16%	10%	7%	6%	30%
Measure Value	6.25	uT	0.33	0.367	0.337	0.359	0.378	0.33	--
Valuation	6.25	uT	0.394	0.397	0.393	0.399	0.398	0.382	--
Agreement ratio			16%	8%	14%	10%	5%	14%	30%

2.1.5 Test Data:

For setup E:

H-Filed Strength at (distance from 0cm to 20cm at 2cm iteration) surrounding the EUT (A/m)

Test distance (cm)	Unit	Position A	Position B	Position C	Position D	Position E	Position F	50% Limits	Limits (A/m)
Using Biot-Savart Law, the value of 2cm can be estimated through the test results of 4cm:									
0	uT	0.598	0.611	0.627	0.611	0.590	0.656	--	--
0	A/m	0.478	0.489	0.502	0.489	0.472	0.525	0.815	1.63
0	V/m	179.681	183.836	188.572	183.724	177.282	197.316	307.0	614.0
Using Biot-Savart Law, the value of 2cm can be estimated through the test results of 4cm:									
2	uT	0.360	0.367	0.364	0.371	0.331	0.360	--	--
2	A/m	0.288	0.293	0.291	0.296	0.265	0.288	0.815	1.63
2	V/m	108.331	110.227	109.459	111.400	99.540	108.331	307.0	614.0
Using Biot-Savart Law, the value of 4cm can be estimated through the test results of 6cm:									
4	uT	0.344	0.355	0.348	0.380	0.335	0.344	--	--
4	A/m	0.275	0.284	0.278	0.304	0.268	0.275	0.815	1.63
4	V/m	103.440	106.706	104.586	114.114	100.679	103.440	307.0	614.0
6.25	uT	0.330	0.367	0.337	0.359	0.378	0.330	--	--
6.25	A/m	0.264	0.294	0.270	0.287	0.303	0.264	0.815	1.63
6.25	V/m	99.340	110.377	101.443	108.051	113.765	99.340	307.0	614.0
8	uT	0.375	0.348	0.332	0.337	0.360	0.375	--	--
8	A/m	0.300	0.279	0.266	0.269	0.288	0.300	0.815	1.63
8	V/m	112.729	104.744	99.952	101.219	108.295	112.729	307.0	614.0
10	uT	0.333	0.364	0.334	0.353	0.354	0.333	--	--

10	A/m	0.266	0.291	0.267	0.282	0.283	0.266	0.815	1.63
10	V/m	100.123	109.428	100.511	106.103	106.436	100.123	307.0	614.0
12	uT	0.343	0.371	0.372	0.364	0.360	0.343	--	--
12	A/m	0.274	0.297	0.298	0.291	0.288	0.274	0.815	1.63
12	V/m	103.107	111.679	111.911	109.375	108.109	103.107	307.0	614.0
14	uT	0.342	0.347	0.380	0.332	0.364	0.342	--	--
14	A/m	0.274	0.277	0.304	0.265	0.291	0.274	0.815	1.63
14	V/m	102.832	104.258	114.238	99.751	109.316	102.832	307.0	614.0
18	uT	0.338	0.332	0.341	0.350	0.350	0.338	--	--
18	A/m	0.271	0.266	0.273	0.280	0.280	0.271	0.815	1.63
18	V/m	101.692	99.801	102.658	105.313	105.273	101.692	307.0	614.0
20	uT	0.375	0.353	0.373	0.342	0.370	0.375	--	--
20	A/m	0.300	0.282	0.299	0.274	0.296	0.300	0.815	1.63
20	V/m	112.794	106.038	112.215	102.814	111.356	112.794	307.0	614.0

A/m=uT/1.25

3 TEST SETUP PHOTOS

Position E



***** End of Report *****