TCT 通测检测 TESTING CENTRE TECHNOLOGY

TEST REPORT

FCC ID. ..... :	2AQ5C-4IN1WLS	
Test Report No..... :	TCT241105E010	
Date of issue..... :	Nov. 11, 2024	
Testing laboratory ..... :	SHENZHEN TONGCE TESTING LAB	
Testing location/ address:	2101 & 2201, Zhenchang Factory, Renshan Industrial Zone, Fuhai Subdistrict, Bao'an District, Shenzhen, Guangdong, 518103, People's Republic of China	
Applicant's name..... :	Hypercel Corporation	
Address..... :	28385 Constellation Rd. Valencia, California 91355, United States	
Manufacturer's name ... :	Shenzhen Hypercel Technology Co., Ltd	
Address..... :	Room 605, No.4 Building, Tongtai Times Center, No.6259 Bao'an Avenue, Bao'an District, Shenzhen City 518103, China	
Standard(s) ..... :	FCC CFR Title 47 Part 1.1310 KDB 680106 D01 RF Exposure Wireless Charging App v04	
Product Name..... :	4-IN-1 Foldable Charging Stand	
Brand Name..... :	HYPERGEAR	
Model/Type reference..... :	16046, 15869, 15870	
Rating(s)..... :	Refer to EUT description of page 3	
Date of receipt of test item ..... :	Nov. 05, 2024	
Date (s) of performance of test..... :	Nov. 05, 2024 ~ Nov. 11, 2024	
Tested by (+signature) ... :	Ronaldo LUO	
Check by (+signature).... :	Beryl ZHAO	
Approved by (+signature):	Tomsin	

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1. General Product Information

1.1. EUT description

Product Name.....:	4-IN-1 Foldable Charging Stand
Model/Type reference.....:	16046
Sample Number.....:	TCT241105E009-0101
Operation Frequency.....:	Stand Output: 112.26kHz – 179.49kHz Pad Output: 112.39kHz – 163.78kHz Mount Output: 325.73kHz
Output power.....:	Stand Output: 15W/ 10W/ 7.5W/ 5W Pad Output: 5W Mount Output: 2.5W
Modulation Technology.....:	Load modulation
Antenna Type.....:	Inductive loop coil Antenna
Rating(s).....:	Adapter Information: Model: HYP-PD20-3000 Input: AC 100–240V, 50/60Hz, 1A MAX. Output: DC 5V, 3A/ DC 9V, 2.22A/ DC 12V, 1.67A Wireless charging: Input: DC 5V, 2A/ DC 9V, 2A Max Output: 25W Stand Output: 15W/ 10W/ 7.5W/ 5W Pad Output: 5W Watch Mount Output: 2.5W USB Port Output: DC 5V, 1A (5W Max)

Note: The antenna gain listed in this report is provided by applicant, and the test laboratory is not responsible for this parameter.

1.2. Model(s) list

No.	Model No.	Tested with
1	16046	☒
Other models	15869, 15870	☐

Note: 16046 is tested model, other models are derivative models. The models are identical in circuit and PCB layout, only different on the model names. So the test data of 16046 can represent the remaining models.

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2. General Information

2.1. Test environment and mode

Operating Environment:		
Condition	Conducted Emission	Radiated Emission
Temperature:	25.1 °C	23.1 °C
Humidity:	48 % RH	50 % RH
Atmospheric Pressure:	1010 mbar	1010 mbar

Test Mode:		
AC mode:	Mode 1	Wireless Charging(Full Load)
	Mode 2	Wireless Charging(Half Load)
	Mode 3	Wireless Charging(No Load)
	Mode 4	Wireless Charging (Stand Output: 15W)
	Mode 5	Wireless Charging (Pad Output: 5W)
	Mode 6	Wireless Charging (Mount Output: 2.5W)

The sample was placed 0.8m for the measurement below above the ground plane of 3m chamber. Measurements in both horizontal and vertical polarities were performed. During the test, each emission was maximized by: having the EUT continuously working, investigated all operating modes, rotated about all 3 axis (X, Y & Z) and considered typical configuration to obtain worst position, manipulating interconnecting cables, rotating the turntable, varying antenna height from 1m to 4m in both horizontal and vertical polarizations. The emissions worst-case(Z axis) are shown in Test Results of the following pages.

2.2. 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.

Equipment	Model No.	Serial No.	FCC ID	Trade Name
Apple Watch	Series 2	/	/	APPLE
Air Pods 2	A2032	/	/	APPLE
Intelligent wireless charging full function test mode	/	/	/	/

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3. Facilities and Accreditations

3.1. Facilities

The test facility is recognized, certified, or accredited by the following organizations:

- FCC - Registration No.: 645098

  SHENZHEN TONGCE TESTING LAB

  Designation Number: CN1205

  The testing lab has been registered and fully described in a report with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files.

- IC - Registration No.: 10668A

  SHENZHEN TONGCE TESTING LAB

  CAB identifier: CN0031

  The testing lab has been registered by Innovation, Science and Economic Development Canada for radio equipment testing.

3.2. Location

SHENZHEN TONGCE TESTING LAB

Address: 2101 & 2201, Zhenchang Factory, Renshan Industrial Zone, Fuhai Subdistrict, Bao'an District, Shenzhen, Guangdong, 518103, People's Republic of China

TEL: +86-755-27673339

4. Test Results and Measurement Data

4.1. Requirements

According to the item 5 of KDB 680106 D01 RF Exposure Wireless Charging App v04:

Inductive wireless power transfer applications with supporting field strength results and meeting all of the following requirements are not required to submit a KDB inquiry for devices approved using SDoC or a PAG for equipment approved using certification to address RF exposure compliance. However, the responsible party is required to keep a copy of the test report in accordance with KDB 865664 D02. A copy of the test report is to be submitted with the application if the device is approved using certification.

(1) Power transfer frequency is less than 1 MHz.

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

(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.

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

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

(6) The E-field and H-field strengths, at and beyond 20 cm surrounding the device surface, are demonstrated to be less than 50% of the applicable MPE limit.

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)
(A) Limits for Occupational/Controlled 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	0.163	1.0	6
300-1500	/	/	f/300	6
1500-100,000	/	/	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
300-1500	/	/	f/1500	30
1500-100,000	/	/	1.0	30

F=frequency in MHz
*=Plane-wave equivalent power density
RF exposure compliance will need to be determined with respect to 1.1307(c) and (d) of the FCC rules. The emissions should be within the limits at 300kHz in Table 1 of 1.1310(use the 300kHz limits for 150kHz:614V/m,1.63A/m).

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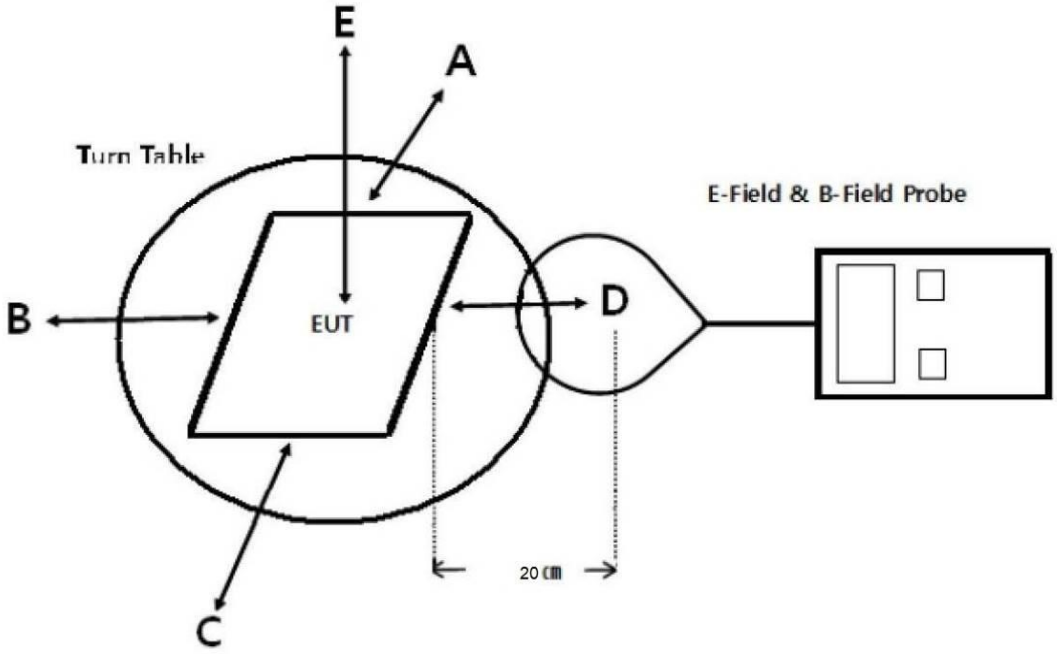
4.2. Test Setup



Note: Measurements should be made from all sides and the top of the primary/client pair, with the 20cm measured from the center of the probe(s) to the edge of the device.

4.3. Test Procedure

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

2) The measurement probe was placed at 20 cm surrounding the device.

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

4) The EUT was measured according to the dictates of KDB 680106 D01 Wireless Power Transfer v04
Remark: The EUT's test position A, B, C, D and E is valid for the E and H field measurements.

4.4. Test Equipment List

Equipment	Manufacturer	Model No.	Serial No.	Calibration Due
Electric and Magnetic field probe-analyzer	Narda	EHP-200A	180ZX20511	Jun. 26, 2024
Apple Watch	Apple	Apple Watch A1757	/	/

4.5. Test Result

E-Filed Strength 20 cm surrounding the device and the EUT (V/m)

Frequency Range (KHz)	Test mode	Test Position A	Test Position B	Test Position C	Test Position D	Test Position E	Reference Limits Test (V/m)	Limits Test (V/m)
112.26 – 179.49	TM1	1.23	1.22	1.25	1.11	1.25	307	614
112.26 – 179.49	TM2	1.24	1.25	1.24	1.14	1.14	307	614
112.26 – 179.49	TM3	1.21	1.16	1.21	1.15	1.16	307	614
112.39 – 163.78	TM1	1.22	1.27	1.27	1.16	1.28	307	614
112.39 – 163.78	TM2	1.25	1.24	1.29	1.17	1.19	307	614
112.39 – 163.78	TM3	1.26	1.11	1.23	1.12	1.17	307	614
325.73	TM1	1.29	1.22	1.24	1.13	1.22	307	614
325.73	TM2	1.20	1.20	1.25	1.10	1.14	307	614
325.73	TM3	1.23	1.18	1.23	1.15	1.11	307	614

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H-Filed Strength 20 cm surrounding the device and the EUT (A/m)

Frequency Range (KHz)	Test mode	Test Position A	Test Position B	Test Position C	Test Position D	Test Position E	Reference Limits Test (A/m)	Limits Test ((A/m)
112.26 – 179.49	TM1	0.186	0.182	0.198	0.205	0.183	0.184	1.63
112.26 – 179.49	TM2	0.182	0.184	0.205	0.204	0.182	0.181	1.63
112.26 – 179.49	TM3	0.181	0.181	0.204	0.201	0.184	0.185	1.63
112.39 – 163.78	TM1	0.185	0.185	0.199	0.208	0.187	0.183	1.63
112.39 – 163.78	TM2	0.187	0.186	0.202	0.205	0.186	0.188	1.63
112.39 – 163.78	TM3	0.188	0.183	0.200	0.207	0.188	0.189	1.63
325.73	TM1	0.186	0.184	0.194	0.206	0.189	0.180	1.63
325.73	TM2	0.189	0.187	0.201	0.209	0.180	0.182	1.63
325.73	TM3	0.181	0.185	0.206	0.201	0.185	0.187	1.63

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According to KDB 680106 D01 RF Exposure Wireless Charging App v04 section 5, b, satisfy the following conditions.

Requirement of KDB 680106 D01	Yes/No	Description
Power transfer frequency is below 1MHz	Yes	The device operate in the frequency range 112.26kHz – 179.49kHz; 112.39kHz – 163.78kHz; 325.73kHz
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 2.5W.
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	Client device is placed in physical contact with the transmitter.
Only § 2.1091-Mobile exposure conditions apply (i.e., this provision does not cover § 2.1093-Portable exposure conditions)	Yes	Mobile exposure conditions only
The E-field and H-field strengths, at and beyond 20 cm surrounding the device surface, are demonstrated to be less than 50% of the applicable MPE limit, per KDB 447498, Table 1.	Yes	The E-field and H-field strengths meet the requirements
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. For instance, a device may use three RF coils powered at 5 W, or one coil powered at 15 W: in this case, both scenarios shall be tested	Yes	All the modes were tested

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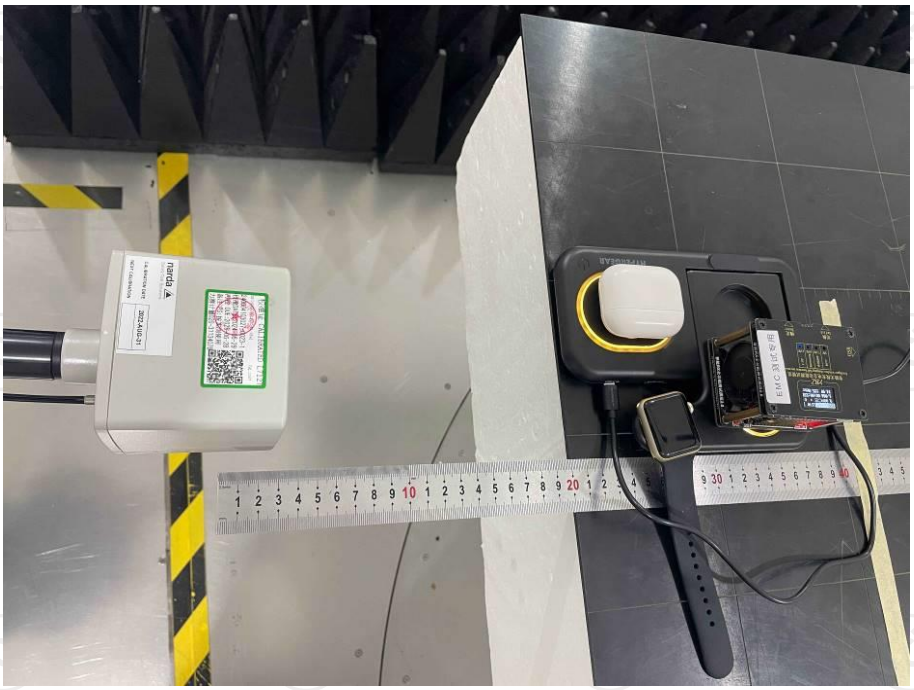
4.6. Test Set-up Photo

Front

Back



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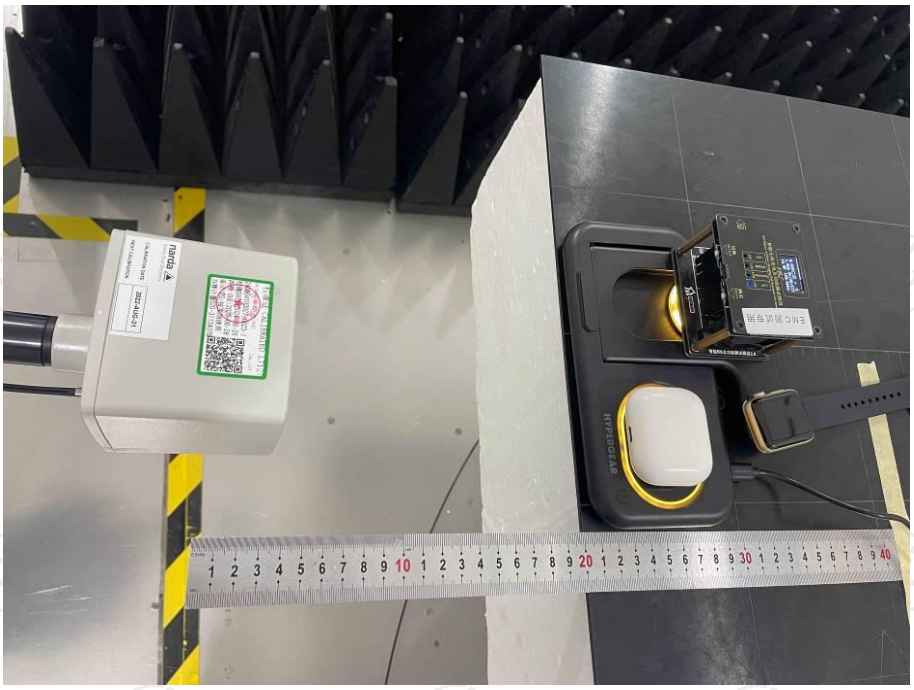
Left



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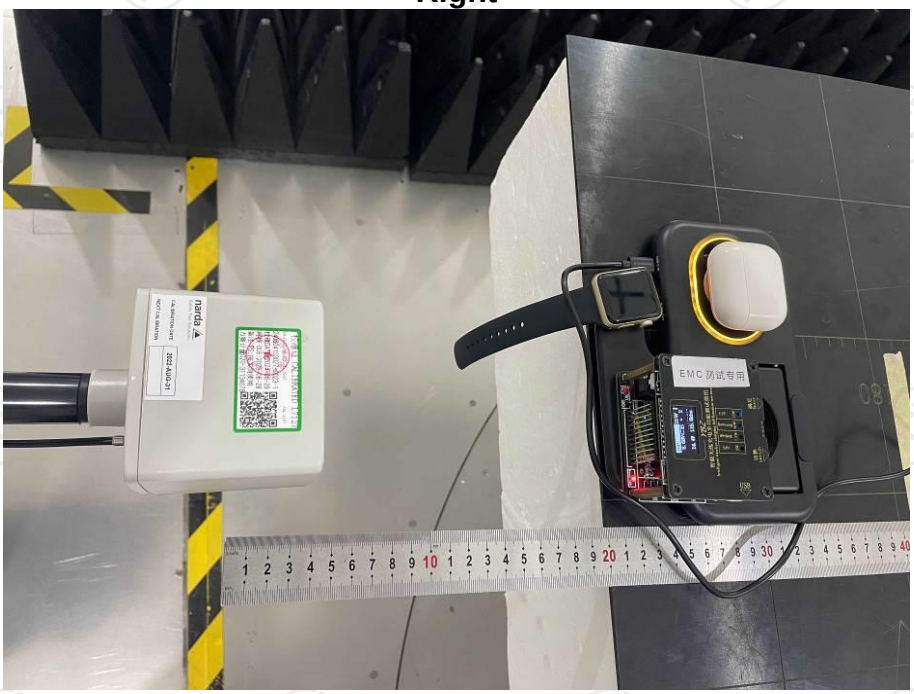

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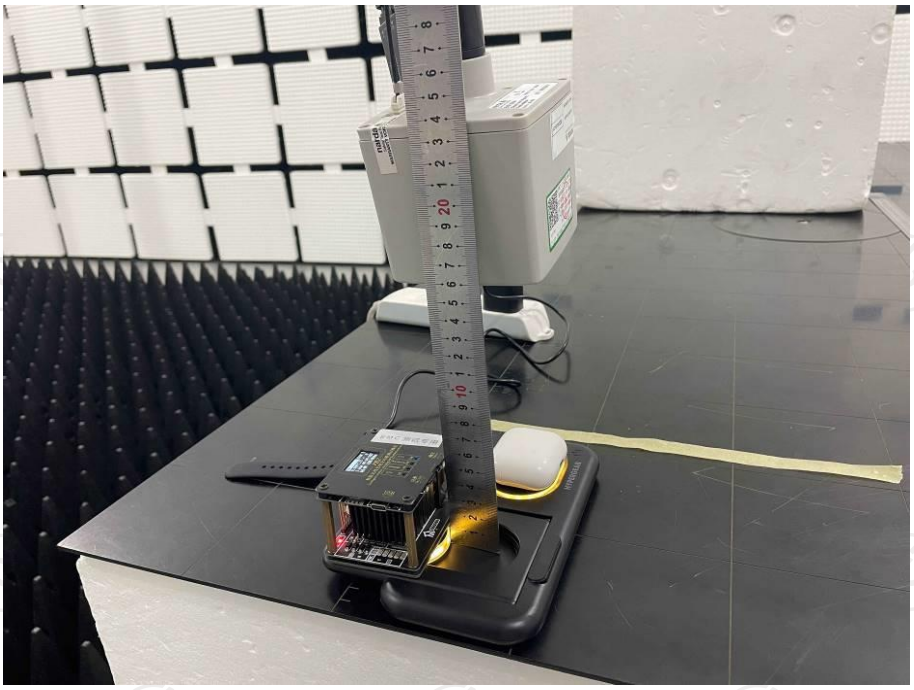

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