TEST REPORT

Applicant:	Hefei Invispower Co., Ltd
Address:	2A, Yousi Tiancheng Industrial Park, No. 1800, Dabieshan Road, High-tech Zone, Hefei, P.R. China Summary of Activities
Equipment Type:	Wireless Charging module
Model Name:	PAH-3725200 (refer to section 2.3)
Brand Name:	BYD
FCC ID:	2BBHHYGKJ-21531WPC
Test Standard:	47 CFR Part 1 (refer section 3.1)
Sample Arrival Date:	Dec. 08, 2023
Test Date:	Jan. 22, 2024
Date of Issue:	Jan. 29, 2024

ISSUED BY:

Shenzhen BALUN Technology Co., Ltd.

Tested by: Xu Rui

Checked by: Liyao Zong

Approved by: Liao Jianming (Technical Director)

Revision History

Version	Issue Date	Revisions Content
Rev. 01	Jan. 29, 2024	Initial Issue

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1 GENERAL INFORMATION

1.1 Test Laboratory

Name	Shenzhen BALUN Technology Co., Ltd.
Address	Block B, 1/F, Baisha Science and Technology Park, Shahe Xi Road, Nanshan District, Shenzhen, Guangdong Province, P. R. China
Phone Number	+86 755 6685 0100

1.2 Test Location

Name	Shenzhen BALUN Technology Co., Ltd.
Location	☑ Block B, 1/F, Baisha Science and Technology Park, Shahe Xi Road, Nanshan District, Shenzhen, Guangdong Province, P. R. China
	☐ 1/F, Building B, Ganghongji High-tech Intelligent Industrial Park, No. 1008, Songbai Road, Yangguang Community, Xili Sub-district, Nanshan District, Shenzhen, Guangdong Province, P. R. China

2 PRODUCT INFORMATION

2.1 Applicant Information

Applicant	Hefei Invispower Co., Ltd
Address	2A, Yousi Tiancheng Industrial Park, No. 1800, Dabieshan Road, High-tech Zone, Hefei, P.R. China Summary of Activities

2.2 Manufacturer Information

Manufacturer	Hefei Invispower Co., Ltd
Address	2A, Yousi Tiancheng Industrial Park, No. 1800, Dabieshan Road, High-tech Zone, Hefei, P.R. China Summary of Activities

2.3 General Description for Equipment under Test (EUT)

EUT Name	Wireless Charging module
Model Name Under Test	PAH-3725200
Series Model Name	PAH-3725200, STHXA-3725200, STHXB-3725200, MCH-3725200, SFHB-3725200, MREB-3725200, MREA-3725200, MRHD-3725400B, MRHD-3725400A, UXEA-3725200, UXEA-3725200A, EREA-3725200, SGH-3725200
Description of Model name differentiation	All models are same with circuit design, layout and internal wiring are identical, but only differ in appearance, location of DC fans, location of the power port, mounting options, hardware version and software version. (this information provided by the applicant)
Hardware Version	/
Software Version	/
Dimensions (Approx.)	N/A
Weight (Approx.)	N/A

2.4 Ancillary Equipment

Note: Not applicable.

2.5 Technical Information

Network and Wireless connectivity	Qi

The requirement for the following technical information of the EUT was tested in this report:

Operating Mode	Qi	
Frequency Range	Qi	110.5KHz - 147.7KHz
Antenna Type	Qi	Coil Antenna
Exposure Category	General Population/Uncontrolled Exposure	
EUT Type	Mobile Device	

3 SUMMARY OF TEST RESULT

3.1 Test Standards

No.	Identity	Document Title
1	47 CFR Part 1	Practice and Procedure
2	KDB 680106 D01 v04	EQUIPMENT AUTHORIZATION OF WIRELESS POWER TRANSFER DEVICES

3.2 Radiofrequency Radiation Exposure Limit

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 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
300-1,500			f/300	6
1,500-100,000			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
300-1,500			f/1500	30
1,500-100,000			1.0	30
*f = frequency in MHz * = Plane-wave equivalent power density*				

NOTE:

Limits: According KDB 680106 D01, 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.

General Population/Uncontrolled Exposure: Locations where there is the exposure of individuals who have no knowledge or control of their exposure. General population/uncontrolled exposure limits are applicable to 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 made fully aware of the potential for exposure or cannot exercise control over their exposure. Members of the general public would come under this category when exposure is not employment-related; for example, in the case of a wireless transmitter that exposes persons in its vicinity.

Occupational/Controlled Exposure: Locations where there is exposure that may be incurred by persons who are aware of the potential for exposure. In general, occupational/controlled exposure limits are applicable to situations in which persons are exposed as consequence of their employment, who have been made fully aware of the potential for exposure and can exercise control over their exposure. This exposure category is also applicable when the exposure is of a transient nature due to incidental passage through a location where the exposure levels may be higher than the general population/uncontrolled limits, but the exposed person is fully aware of the potential for exposure and can exercise control over his or her exposure by leaving the area or by some other appropriate means.

3.3 Measurement Uncertainly

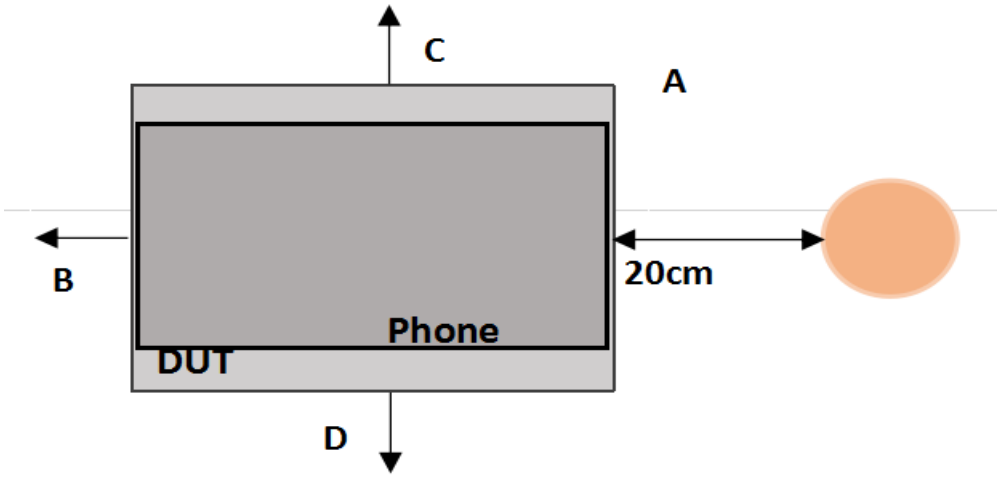
Measurement uncertainly evaluation for electric filed strength and magnetic filed strength test
This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

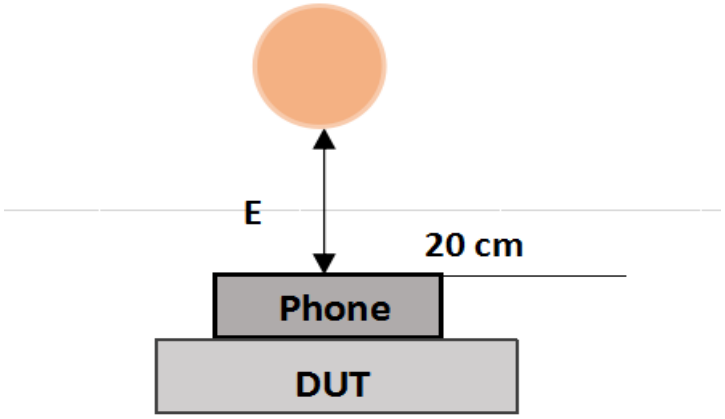
Measurement	Value
Magnetic Filed Strength	1.18 dB
Electric filed strength	1.13 dB

4 DEVICE CATEGORY AND LEVELS LIMITS

4.1 Test Setup Photo

Maximum H-field and E-filed measurements were made on each of five sides of the EUT that could come in contact with a user. The five sides are defined as follows: A, B, C, D, E. Refer to the test position diagram below.





4.2 Measurement procedure

1. The RF exposure test was performed in anechoic chamber.
2. The measurement probe was placed at test distance 20 cm for A, B, C, D and E 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 were completed.
4. The EUT was measured according the dictates of KDB 680106 D01v04.

4.3 Mobile Condition

Probe	Condition	Test Distance (cm) A, B, C, D, E
E&H-field	Mobile	20

4.4 Equipment Approval Considerations item 5.2 of KDB 680106 D01 v04.

1. Power transfer frequency is less than 1 MHz.
   - The device operates at a frequency 117.0 KHz - 147.7 KHz

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

3. The system may consist of more than one source primary coils, charging one or more clients. If more than one primary coil is present, the coil pairs may be powered on at the same time.
   - The transfer system including a charging system with one coils that is able to detect receiver device.

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

5. Mobile exposure conditions only (portable exposure conditions are not covered by this exclusion).
   - According safety guide, on the wireless power sharing function this this DUT should be operate with a minimum distance of 20cm between the DUT and human body, so this EUT only support mobile exposure condition.

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.
   - Refer to following test results.
   The EUT H-Field Strength levels at 20 cm< 50 % of the MPE H-Field Strength limit
   0.477 A/m < 0.815 A/m

4.5 Test Equipment

Description	Manufacturer	Model	Serial No.	Cal. Date	Cal. Due
E&H-Field Probe	Wavecontrol	WP400	22WP100980	2023/08/25	2024/08/25
EMF Electromagnetic Field Tester	Wavecontrol	SMP2 Dual	22SN1912	2023/08/25	2024/08/25
Anechoic Chamber	RAINFORD	9m*6m*6m	N/A	2021/04/10	2024/04/10
Phone	OPPO	PFFM10	N/A	N/A	N/A

4.6 Test Configuration

To check all kinds of possible modes, the EUT was support reverse charging function, so the EUT was evaluated in reverse charge mode with appropriate client and under each charging condition as the below table:

Test Mode No.	Description
1	EUT(reverse charging mode) + Mobile Phone which has Less than 10 % of battery
2	EUT(reverse charging mode) + Mobile Phone which has Less than 50 % of battery
3	EUT(reverse charging mode) + Mobile Phone which has 90 % of battery

5 TEST RESULT

5.1 E&H-field

Main model test results

Distance(cm)	Model name	Test Mode	EUT Edges					Max. H-field (A/m)	Limit H-field (A/m)
			A (A/m)	B (A/m)	C (A/m)	D (A/m)	E (A/m)		
20	PAH-3725200	1	0.473	0.462	0.452	0.477	0.488	0.488	1.63
20	PAH-3725200	2	0.412	0.415	0.402	0.406	0.413	0.415	1.63
20	PAH-3725200	3	0.403	0.413	0.417	0.408	0.417	0.417	1.63

Distance(cm)	Model name	Test Mode	EUT Edges					Max. E-field (A/m)	Limit E-field (A/m)
			A (V/m)	B (V/m)	C (V/m)	D (V/m)	E (V/m)		
20	PAH-3725200	1	18.251	18.469	18.563	18.452	18.556	18.563	307.00
20	PAH-3725200	2	15.232	15.241	15.063	15.084	15.423	15.423	307.00
20	PAH-3725200	3	15.256	15.174	15.167	15.234	15.236	15.256	307.00

Note: PAH-3725200 is Main model, and full test.

Worst-case of series models

Distance(cm)	Model name	Test Mode	EUT Edges					Max. H-field (A/m)	Limit H-field (A/m)
			A (A/m)	B (A/m)	C (A/m)	D (A/m)	E (A/m)		
20	STHXA-3725200	1	0.470	0.455	0.451	0.463	0.472	0.472	1.63
20	MCH-3725200	1	0.462	0.458	0.448	0.465	0.473	0.473	1.63
20	SFHB-3725200	1	0.466	0.460	0.458	0.442	0.458	0.466	1.63
20	MRHD-3725400A	1	0.458	0.453	0.448	0.468	0.458	0.468	1.63
20	MREA-3725200	1	0.448	0.435	0.435	0.448	0.462	0.462	1.63

Distance(cm)	Model name	Test Mode	EUT Edges					Max. E-field (A/m)	Limit E-field (A/m)
			A (V/m)	B (V/m)	C (V/m)	D (V/m)	E (V/m)		
20	STHXA-3725200	1	17.708	17.158	17.841	17.535	18.246	18.246	307.00
20	MCH-3725200	1	17.037	18.255	18.221	18.314	17.918	18.314	307.00
20	SFHB-3725200	1	18.074	18.352	17.740	17.076	17.782	18.352	307.00
20	MRHD-3725400A	1	18.248	17.004	17.353	17.878	17.879	18.248	307.00
20	MREA-3725200	1	17.500	17.573	17.905	17.121	17.907	17.907	307.00

Note: The series models is testing worst-case in the main model.

6 Test Conclusion

6.1 E&H-field

Distance (cm)	Worst-case Test Mode	EUT Edge D (A/m)	Limit H-field (A/m)	50% Limit H-field (A/m)	Verdict
20	1	0.488	1.63	0.815	Pass

Distance (cm)	Worst-case Test Mode	EUT Edge C (V/m)	Limit E-field (V/m)	50% Limit E-field (V/m)	Verdict
20	1	18.563	614	307	Pass

According KDB 680106 D01v04, the EUT is compliant with the 50% of the MPE limits.

Note: Test setup photos please refer the document “BL-SZ23C0429-AS SAR test setup photo.pdf”.

Statement

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--END OF REPORT--