

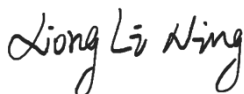
TEST REPORT

Applicant: SHENZHEN INVISPOWER TECHNOLOGY CO., LTD.
Address: 13B, Xu Sheng building, 4004 Baoan Avenue, Baoan District, Shenzhen, China
Equipment Type: WLC_ECU
Model Name: WLC_ECU
Brand Name: VINFAST
FCC ID: 2AR4XYGKJ-VFE34S
Test Standard: 47 CFR Part 1 (refer section 3.1)
Sample Arrival Date: Apr. 07, 2023
Test Date: Jul. 05, 2023
Date of Issue: Jul. 06, 2023

ISSUED BY:

Shenzhen BALUN Technology Co., Ltd.

Tested by: Xiong Lining



Checked by: Xu Rui



Approved by: Tolan Tu

(Testing Director)



Revision History		
Version	Issue Date	Revisions Content
<u>Rev. 01</u>	<u>Jul. 06, 2023</u>	<u>Initial Issue</u>

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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	<input checked="" type="checkbox"/> Block B, 1/F, Baisha Science and Technology Park, Shahe Xi Road, Nanshan District, Shenzhen, Guangdong Province, P. R. China
	<input type="checkbox"/> 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
Accreditation Certificate	The laboratory is a testing organization accredited by FCC as a accredited testing laboratory. The designation number is CN1196.

2 PRODUCT INFORMATION

2.1 Applicant Information

Applicant	SHENZHEN INVISPOWER TECHNOLOGY CO., LTD.
Address	13B, Xu Sheng building, 4004 Baoan Avenue, Baoan District, Shenzhen, China

2.2 Manufacturer Information

Manufacturer	SHENZHEN INVISPOWER TECHNOLOGY CO., LTD.
Address	13B, Xu Sheng building, 4004 Baoan Avenue, Baoan District, Shenzhen, China

2.3 Factory Information

Factory	Jiangsu InvisPower Co., Ltd
Address	No.100, Xinning Road, Chongchuan District, Nantong City, Jiangsu Province, P.R.China

2.4 General Description for Equipment under Test (EUT)

EUT Name	WLC_ECU
Model Name Under Test	WLC_ECU
Series Model Name	N/A
Description of Model name differentiation	N/A
Hardware Version	N/A
Software Version	N/A
Dimensions (Approx.)	N/A
Weight (Approx.)	N/A

2.5 Ancillary Equipment

Note: Not applicable.

2.6 Technical Information

Network and Wireless connectivity	Qi
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The requirement for the following technical information of the EUT was tested in this report:

Operating Frequency	117~137 kHz	
Antenna Type	Coil Antenna	
About Product	The EUT support the Qi and PMA technology, and they have the same operating frequency.	
Exposure Category	General Population/Uncontrolled Exposure	
Product Type	Mobile Device	
EUT Type	<input checked="" type="checkbox"/> Production unit	<input type="checkbox"/> Identical prototype

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 v03	RF Exposure Considerations for Low Power Consumer Wireless Power Transfer Applications

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
<i>f = frequency in MHz * = Plane-wave equivalent power density</i>				

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 Uncertainty

Measurement uncertainty evaluation for electric filed strength and magnetic filed strength test

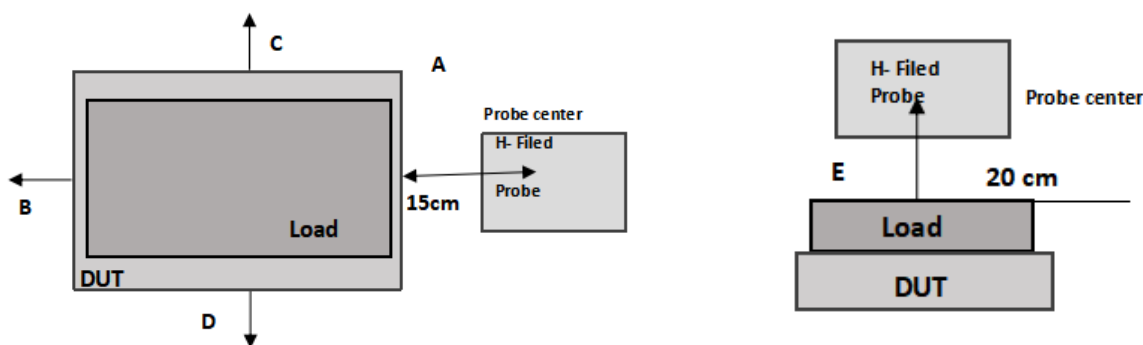
This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of $k=2$.

Measurement	Value
Magnetic Filed Strength	1.18 dB

4 DEVICE CATEGORY AND LEVELS LIMITS

4.1 Test Setup Photo

Maximum H-field and E-field 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 15 cm for Front, Back, Left, Right and 20cm for Top 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 D01v03r01.

4.3 Mobile Condition

Probe	Condition	Test Distance (cm) A, B, C, D	Test Distance (cm) E
H-field	Mobile	15	20

4.4 Equipment Approval Considerations item 5.2 of KDB 680106 D01 v03r01.

1. Power transfer frequency is less than 1 MHz.
 - The device operates at a frequency 117 kHz ~ 137 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 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.
 - Refer to following test results.

The EUT H-Field Strength levels at 15 cm < 50 % of the MPE H-Field Strength limit
0.328 A/m (Max. at 15 cm) < 0.815 A/m

4.5 Test Equipment

Description	Manufacturer	Model	Serial No.	Cal. Date	Cal. Due
PC	Lonovo	E4-ARR	MP1K4PCW	N/A	N/A
Test Software	Narda	WinEP600	N/A	N/A	N/A
H-Field Probe	Narda	ELT B-Field-Probe 3cm ²	C-0405	2022/08/20	2023/08/19
Exposure Level Tester	Narda	ELT-400	O-0362	2022/08/12	2023/08/11
Anechoic Chamber	RAINFORD	9m*6m*6m	N/A	2021/04/10	2024/04/09
Load	N/A	N/A	N/A	N/A	N/A

5 TEST RESULT

5.1 H-field

Distance(cm)	Unit	EUT Edges					Max. (A/m)	Limit (A/m)	Verdict
		A	B	C	D	E			
15	μT	0.405	0.392	0.397	0.410	/	0.410	/	/
20	μT	/	/	/	/	0.406	0.406	/	/
15	A/m	0.324	0.314	0.318	0.328	/	0.328	1.63	Pass
20	A/m	/	/	/	/	0.325	0.325	1.63	Pass

Note: A/m=uT/1.25

6 Test Conclusion

6.1 H-field

Distance (cm)	Worst-case Test Mode	EUT Edge E	Limit (A/m)	50% Limit (A/m)	Verdict
		(A/m)			
15	1	0.328	1.63	0.815	Pass

According KDB 680106 D01v03r01, the EUT is compliant with the 50% of the MPE limits.

Note: Test setup photos please refer the document "BL-SZ2340120-AS-2 SAR test setup photo.pdf".

Statement

1. The laboratory guarantees the scientificity, accuracy and impartiality of the test, and is responsible for all the information in the report, except the information provided by the customer. The customer is responsible for the impact of the information provided on the validity of the results.
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--END OF REPORT--