

# RF Exposure Report

Report No.: AGC14295230702FH01

FCC ID : 2APEW-2G505B

APPLICATION PURPOSE : Original Equipment

**PRODUCT DESIGNATION**: ESR HaloLock Wireless Power Bank

**BRAND NAME**: ESR

**MODEL NAME** : 2G505B, 2G512B

**APPLICANT**: Electronic Silk Road (Shenzhen) Tech Co., Ltd

**DATE OF ISSUE** : Aug. 21, 2023

STANDARD(S) : KDB680106 D01 RF Exposure Wireless Charging Base App

v03r01

**REPORT VERSION** : V 1.0

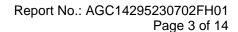
Attestation of Global Compliance (Shenzhen) Co., Ltd



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# REPORT REVISE RECORD

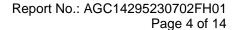
Report Version	Revise Time	Issued Date	Valid Version	Notes
V1.0	/	Aug. 21, 2023	Valid	Initial Release





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# 1. GENERAL INFORMATION

Applicant	Electronic Silk Road (Shenzhen) Tech Co., Ltd
Address	439, Building A7, Fuhai Xinxigang, Xinhe Community, Fuhai Street, Bao'an District, Shenzhen, Guangdong, China
Manufacturer	Electronic Silk Road (Shenzhen) Tech Co., Ltd
Address	439, Building A7, Fuhai Xinxigang, Xinhe Community, Fuhai Street, Bao'an District, Shenzhen, Guangdong, China
Factory	Electronic Silk Road (Shenzhen) Tech Co., Ltd
Address	439, Building A7, Fuhai Xinxigang, Xinhe Community, Fuhai Street, Bao'an District, Shenzhen, Guangdong, China
Product Designation	ESR HaloLock Wireless Power Bank
Brand Name	ESR
Test Model	2G505B
Series Model(s)	2G512B
Difference Description	Different model names result in different appearance colors. The 2G512B model does not have a bracket on the back.
Deviation from Standard	No any deviation from the test method
Date of Receipt	Aug. 09, 2023
Date of Test	Aug. 09, 2023 to Aug. 21, 2023
Test Result	Pass

Alan Duan
(Project Engineer)

Reviewed By

Calvin Liu
(Reviewer)

Aug. 21, 2023



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# 2. PRODUCT INFORMATION

# 2.1 PRODUCT TECHNICAL DESCRIPTION

Equipment Specification	WPT
Operation Frequency	110kHz-148kHz
Test Frequency	113kHz
Hardware Version	TYH_A34_V1.1
Software Version	V1.0
Modulation Type	ASK
Number of channels	1
Field Strength of Fundamental	76.63dBuV/m (Max)
Antenna Designation	Coil Antenna
Antenna Gain	0dBi
EUT Power Supply	DC 3.85V by battery
Input Rating	USB-C: 5V/3A, 9V/2A, 12V/1.5A
Output Rating	USB-C: 5V/2.4A, 9V/2.22A, 12V/1.67A Wireless Charge: 5W/7.5W/10W/15W (7.5W max for iPhone)
Adapter Information	N/A

# 2.2 TEST FREQUENCY LIST

Frequency Band	Channel Number	Test Frequency
110.5kHz-148kHz	01	113kHz



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## 3. TEST ENVIRONMENT

## 3.1 ADDRESS OF THE TEST LABORATORY

Laboratory: Attestation of Global Compliance (Shenzhen) Co., Ltd.

Address: 1-2/F, Building 19, Junfeng Industrial Park, Chongqing Road, Heping Community, Fuhai Street, Bao'an District, Shenzhen, Guangdong, China

## 3.2 TEST FACILITY

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

# CNAS-Lab Code: L5488

Attestation of Global Compliance (Shenzhen) Co., Ltd. has been assessed and proved to be in compliance with CNAS-CL01 Accreditation Criteria for Testing and Calibration Laboratories (identical to ISO/IEC17025: 2017 General Requirements) for the Competence of Testing and Calibration Laboratories.

# A2LA-Lab Cert. No.: 5054.02

Attestation of Global Compliance (Shenzhen) Co., Ltd. EMC Laboratory has been accredited by A2LA for technical competence in the field of electrical testing, and proved to be in compliance with ISO/IEC 17025: 2017 General Requirements for the Competence of Testing and Calibration Laboratories and any additional program requirements in the identified field of testing.

# FCC-Registration No.: 975832

Attestation of Global Compliance (Shenzhen) Co., Ltd. EMC Laboratory has been registered and fully described in a report filed with the FCC (Federal Communications Commission). The acceptance letter from the FCC is maintained in our files with Registration 975832.

## IC-Registration No.: 24842 (CAB identifier: CN0063)

Attestation of Global Compliance (Shenzhen) Co., Ltd. EMC Laboratory has been registered and fully described in a report filed with the Certification and Engineering Bureau of Industry Canada. The acceptance letter from the IC is maintained in our files with Registration 24842.



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# 3.3 ENVIRONMENTAL CONDITIONS

	NORMAL CONDITIONS	EXTREME CONDITIONS	
Temperature range (°C)	15 - 35		
Relative humidity range	20 % - 75 %		
Pressure range (kPa)	86 - 106		
Power supply	DC 5V		

Note: The Extreme Temperature and Extreme Voltages declared by the manufacturer.

## 3.4 MEASUREMENT UNCERTAINTY

The reported uncertainty of measurement y ±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%.

Item	Measurement Uncertainty
E-Field Strength(0.003-0.4MHz)	±1.5dB
E-Field Strength(0.4-10MHz)	±1.3dB
H-Field Strength(0.003-0.4MHz)	±1.3dB
H-Field Strength(0.4-10MHz)	±1.2dB

## 3.5 LIST OF EQUIPMENTS USED

Equipment	Manufacturer	Model	S/N	Cal. Date	Cal. Due
Broadband Field Meter	WAVECONTROL	SMP2	J-0004	Feb. 24, 2023	Feb. 23, 2025
Probe FHP	WAVECONTROL	WP400	J-0015	Feb. 24, 2023	Feb. 23, 2025



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# 4. EQUIPMENT USED IN TESTED SYSTEM

The Following Peripheral Devices And Interface Cables Were Connected During The Measurement:

☐ Test Accessories Come From The Laboratory

Item	Equipment	Model No.	Identifier	Note
1	wireless charging load	N/A	N/A	AE
2	Adapter	HW-050200C01	N/A	AE

Item	Equipment	Model No.	Identifier	Note
1	ESR HaloLock Wireless Power Bank	2G505B	2APEW-2G505B	EUT

# 5. DESCRIPTION OF TEST MODES

NO.	TEST MODE DESCRIPTION	<b>Exposure Conditions</b>				
1	Mode 1: AC/DC Adapter + EUT + Wireless load (Full Load)	Mobile				
2	Mode 2: AC/DC Adapter + EUT + Wireless load (Half Load)	Mobile				
3	Mode 3: AC/DC Adapter + EUT + Wireless load (Null Load)	Mobile				
4	Mode 4: AC/DC Adapter + EUT (Null Load)	Mobile				
5	Mode 5: Wireless load+USB-C (2Ω) (Full Load)	Portable				
6	Mode 6: Wireless load+ USB-C (2Ω) (Half Load)	Portable				
7	Mode7: Wireless load+ USB-C (2Ω) (Null Load)	Portable				
Note:	Note: All test modes were pre-tested, but we only recorded the worst case in this report.					

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## 6. RF EXPOSURE MEASUREMENT

## **6.1 REFER EVALUATION METHOD**

ANSI C95.1–1999: IEEE Standard for Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz to 300 GHz.

FCC KDB publication 680106 D01v03r01 RF Exposure Wireless Charging Apps v03: RF Exposure Considerations for Low Power Consumer Wireless Power Transfer Applications

FCC CFR 47 part1 1.1310: Radiofrequency radiation exposure limits.

FCC CFR 47 part2 2.1091: Radiofrequency radiation exposure evaluation: mobile devices.

FCC CFR 47 part 18.107: Indusial, Scientific, and Medical Equipment.

## **6.2 TEST LIMITS**

Limits for Maximum Permissible Exposure (MPE)/Controlled Exposure

Frequency	Electric Field	Magnetic Field	Power Density	Averaging Time	
Range(MHz)	Strength(V/m)	Strength(A/m)	(mW/cm²)	(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	Electric Field	Magnetic Field	Power Density	Averaging Time			
Range(MHz)	Strength(V/m)	Strength(A/m)	(mW/cm²)	(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			

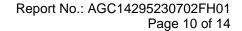
F=frequency in MHz

According to FCC KDB 680106 D01v03r01 Section 3. RF Exposure Requirements clause 3 the Emission-Limits in the frequency range from 100 kHz to 300 kHz should be assessed versus the limits at 300 kHz in Table 1 of CFR 47 – Section1.310 as following (measured distance shall be 15cm from the center of the probe to the edge of the device):

	E-Field	*/*	B-Field
Frequency	V/m	A/m	uT
0.3 MHz – 3.0 MHz	614	1.613	2.0
3.0 MHz – 30 MHz	824/f (=27.5 <sub>30MHz</sub> )	2.19/f (=0.073 <sub>30MHz</sub> )	

## A KDB inquire was required to determine/confirm the applicable limits below 100 kHz.

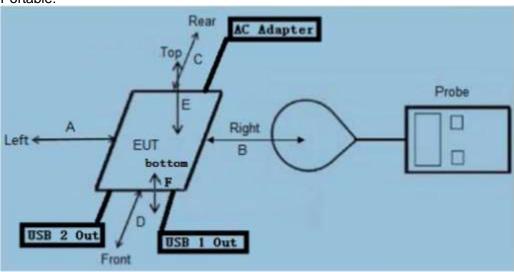
<sup>\*=</sup>Plane-wave equivalent power density



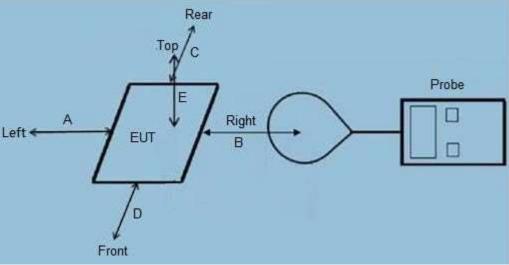


## **6.3 MEASUREMENT SETUP**

## Portable:



## Mobile:



#### Note

- -- RF exposure assessment tests are conducted in a shielded room.
- -- Refer to the following test method description for the test distance between the edge of the charger and the measuring probe.
- -- As shown in the above picture, the test layout is not for the real object, only the requirements of the test layout listed in the standard requirements are presented, for reference only.
- -- The actual test EUT distinguishes the test type according to the requirements as shown in the figure above.



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## **6.4 MEASUREMENT PROCEDURE**

## For mobile RF exposure:

- The RF exposure test was performed on 360 degree turn table in anechoic chamber.
- b) The measurement probe was placed at test distance (15cm) which is between the edge
- c) The charger and the geometric center of probe. And a test distance (20cm) which is between the Top of the charger and the geometric center of probe.
- d) The highest emission level was recorded and compared with limit as soon as measurement of each points (A, B, C, D, E) were completed.
- e) The EUT were measured according to the dictates of KDB 680106 D01v03r01.

## For portable RF exposure:

- a) The RF exposure test was performed on 360 degree turn table in anechoic chamber.
- b) The measurement probe was placed at test distance (from 0 cm to 20 cm, in 2 cm maximum increment) which is between the edge of the charger and the geometric center of probe.
- c) 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.
- d) The EUT were measured according to the dictates of KDB 680106 D01v03r01

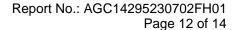
Remark: The diameter size of the probe is 11.5cm.

## **6.4 MEASUREMENT RESULTS**

Mobile devices are evaluated as follows:

Operate	Field		Measured H-F Measured E-F		50%_FCC				
Mode	Strength	Test Position A	Test Position B	Test Position C	Test Test Position Position D E		FCC Limit	limit	
Mode 1	nT	703.52	791.46	891.96	979.90	829.15			
Mode 1	A/m	0.56	0.63	0.71	0.78	0.66	1.63	0.815	
Mode 1	V/m	0.52	0.61	0.66	0.72	0.60	614	307	

Note: Unit conversion formula: 1ut=1.25A/m





## Portable devices are evaluated as follows:

			Measured H-Field Strength Values (A/m) Measured E-Field Strength Values (V/m)						
Operate Mode	Field Strength	Measured distance (cm)	Test Position A	Test Position B	Test Position C	Test Position D	Test Position E	FCC Limits	FCC 50% Limits
Mode 6	nT	0	791.46	766.33	716.08	967.34	728.64	1	
Mode 6	A/m	0	0.63	0.61	0.57	0.77	0.58	1.63	0.815
Mode 6	V/m	0	0.58	0.59	0.55	0.72	0.54	614	307
Mode 6	nT	2	753.77	917.09	703.52	917.09	778.89		
Mode 6	A/m	2	0.6	0.73	0.56	0.73	0.62	1.63	0.815
Mode 6	V/m	2	0.62	0.71	0.55	0.72	0.58	614	307
Mode 6	nT	4	942.21	791.46	628.14	942.21	866.83		
Mode 6	A/m	4	0.75	0.63	0.5	0.75	0.69	1.63	0.815
Mode 6	V/m	4	0.72	0.60	0.52	0.73	0.65	614	307
Mode 6	nT	6	942.21	728.64	741.21	829.15	904.52		
Mode 6	A/m	6	0.75	0.58	0.59	0.66	0.72	1.63	0.815
Mode 6	V/m	6	0.71	0.52	0.55	0.62	0.70	614	307
Mode 6	nT	8	941.36	996.35	886.32	967.23	773.26		
Mode 6	A/m	8	0.75	0.79	0.71	0.77	0.62	1.63	0.815
Mode 6	V/m	8	0.68	0.73	0.61	0.54	0.46	614	307
Mode 6	nT	10	829.15	640.70	1080.40	942.21	728.64		
Mode 6	A/m	10	0.66	0.51	0.86	0.75	0.58	1.63	0.815
Mode 6	V/m	10	0.62	0.56	0.73	0.54	0.46	614	307
Mode 6	nT	12	841.71	1067.84	917.09	829.15	1030.15		
Mode 6	A/m	12	0.67	0.85	0.73	0.66	0.729	1.63	0.815
Mode 6	V/m	12	0.62	0.81	0.75	0.62	0.84	614	307
Mode 6	nT	14	741.21	942.21	866.83	778.89	917.09		
Mode 6	A/m	14	0.59	0.75	0.69	0.62	0.73	1.63	0.815
Mode 6	V/m	14	0.66	0.58	0.69	0.73	0.58	614	307
Mode 6	nT	16	703.52	954.77	690.95	992.46	979.90		
Mode 6	A/m	16	0.56	0.76	0.55	0.79	0.739	1.63	0.815
Mode 6	V/m	16	0.52	0.71	0.52	0.75	0.70	614	307

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Mode 6	nT	18	791.46	728.64	929.65	665.83	778.89		
Mode 6	A/m	18	0.63	0.58	0.74	0.53	0.62	1.63	0.815
Mode 6	V/m	18	0.60	0.63	0.72	0.66	0.58	614	307
Mode 6	nT	20	967.34	866.83	741.21	942.21	1017.59		
Mode 6	A/m	20	0.77	0.69	0.59	0.75	0.81	1.63	0.815
Mode 6	V/m	20	0.72	0.64	0.55	0.78	0.83	614	307

Note: Unit conversion formula: 1ut=1.25A/m



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# **APPENDIX I: PHOTOGRAPHS OF TEST SETUP**

Refer to the Report No.: AGC14295230702AP02

**APPENDIX II: PHOTOGRAPHS OF TEST EUT** 

Refer to the Report No.: AGC14295230702AP03

----END OF REPORT----



# Conditions of Issuance of Test Reports

- 1. All samples and goods are accepted by the Attestation of Global Compliance (Shenzhen) Co., Ltd (the "Company") solely for testing and reporting in accordance with the following terms and conditions. The company provides its services on the basis that such terms and conditions constitute express agreement between the company and any person, firm or company requesting its services (the "Clients").
- 2. Any report issued by Company as a result of this application for testing services (the "Report") shall be issued in confidence to the Clients and the Report will be strictly treated as such by the Company. It may not be reproduced either in its entirety or in part and it may not be used for advertising or other unauthorized purposes without the written consent of the Company. The Clients to whom the Report is issued may, however, show or send it, or a certified copy thereof prepared by the Company to its customer, supplier or other persons directly concerned. The Company will not, without the consent of the Clients, enter into any discussion or correspondence with any third party concerning the contents of the Report, unless required by the relevant governmental authorities, laws or court orders.
- 3. The Company shall not be called or be liable to be called to give evidence or testimony on the Report in a court of law without its prior written consent, unless required by the relevant governmental authorities, laws or court orders.
- 4. In the event of the improper use of the report as determined by the Company, the Company reserves the right to withdraw it, and to adopt any other additional remedies which may be appropriate.
- 5. Samples submitted for testing are accepted on the understanding that the Report issued cannot form the basis of, or be the instrument for, any legal action against the Company.
- 6. The Company will not be liable for or accept responsibility for any loss or damage however arising from the use of information contained in any of its Reports or in any communication whatsoever about its said tests or investigations.
- 7.Clients wishing to use the Report in court proceedings or arbitration shall inform the Company to that effect prior to submitting the sample for testing.
- 8. The Company is not responsible for recalling the electronic version of the original report when any revision is made to them. The Client assumes the responsibility to providing the revised version to any interested party who uses them.
- 9. Subject to the variable length of retention time for test data and report stored hereinto as otherwise specifically required by individual accreditation authorities, the Company will only keep the supporting test data and information of the test report for a period of six years. The data and information will be disposed of after the aforementioned retention period has elapsed. Under no circumstances shall we provide any data and information which has been disposed of after retention period. Under no circumstances shall we be liable for damage of any kind, including (but not limited to) compensatory damages, lost profits, lost data, or any form of special, incidental, indirect, consequential or punitive damages of any kind, whether based on breach of contract of warranty, tort (including negligence), product liability or otherwise, even if we are informed in advance of the possibility of such damages.