Test Report

Report No.:	MTi240702015-01E2
Date of issue:	2024-07-24
Applicant:	Electronic Silk Road (Shenzhen) Tech Co., Ltd
Product:	ESR Qi2 3-in-1 Wireless Charging Station with CryoBoost (HaloLock)
Model(s):	2C580
FCC ID:	2APEW-2C580

Shenzhen Microtest Co., Ltd.

http://www.mtitest.cn

Address: 101, No. 7, Zone 2, Xinxing Industrial Park, Fuhai Avenue, Xinhe Community, Fuhai Street, Bao'an District, Shenzhen, Guangdong, China
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Instructions

1. This test report shall not be partially reproduced without the written consent of the laboratory.

2. The test results in this test report are only responsible for the samples submitted

3. This test report is invalid without the seal and signature of the laboratory.

4. This test report is invalid if transferred, altered, or tampered with in any form without authorization.

5. Any objection to this test report shall be submitted to the laboratory within 15 days from the date of receipt of the report.

Contents

Test Result Certification	
Applicant:	Electronic Silk Road (Shenzhen) Tech Co., Ltd
Address:	Room 1601, Building 1D, Creative City, Liu Xian Avenue, Nan Shan District, Shenzhen,Guangdong,China
Manufacturer:	Electronic Silk Road (Shenzhen) Tech Co., Ltd
Address:	Room 1601, Building 1D, Creative City, Liu Xian Avenue, Nan Shan District, Shenzhen,Guangdong,China
Product description	
Product name:	ESR Qi2 3-in-1 Wireless Charging Station with CryoBoost (HaloLock)
Trademark:	ESR
Model name:	2C580
Series Model:	N/A
Standards:	FCC CFR 47 PART 1, § 1.1310
Test method:	KDB 680106 D01 Wireless Power Transfer v04
Date of Test	
Date of test:	2024-07-09 to 2024-07-22
Test result:	Pass

Test Engineer : Maleah Deng

(Maleah Deng)

Reviewed By: David. Lee

(David Lee)

Approved By: Leon chen

(Leon Chen)

1 General Description

1.1 Description of the EUT

Product name:	ESR Qi2 3-in-1 Wireless Charging Station with CryoBoost (HaloLock)
Model name:	2C580
Series Model:	N/A
Model difference:	N/A
Electrical rating:	Input: DC 12V 2.5A Wireless output for phone: 5W, 7.5W, 10W, 15W Max Wireless output for earphone: 5W
Accessories:	Adaptor: Model: AC-GAN-101 Input: AC 100-240V 1A,50-60Hz Output: DC 5V 3A,9V3A,12V2.5A,15V2A,20V1.5A(30W Max) Cable: USB-C to USB-C cable 150cm ESR Portable Fast Charger for Apple Watch: Model: 2C573 Input: DC 5V 1A Output: 5W Max FCC:2APEW-2C573
Hardware version:	V1.0
Software version:	V1.0
Test sample(s) number:	MTi240702015-01S1001
RF specification:	
Operation frequency:	Transmitter1(Phone): 115-205kHz(5W/7.5W/10W/15W(EPP)); 360kHz(15W(MPP)) Transmitter2(Earphone): 115-205kHz
Modulation type:	ASK
Antenna type:	Coil Antenna

1.2 Description of test modes

All the test modes were carried out with the EUT in normal operation, the final test mode of the EUT was the worst test mode for emission test, which was shown in this report and defined as:

No.	Emission test modes
Mode1	Wireless Output(Phone 5W)
Mode2	Wireless Output(Phone 7.5W)
Mode3	Wireless Output(Phone 10W)
Mode4	Wireless Output(Phone 15W(EPP))
Mode5	Wireless Output(Phone 15W(MPP))
Mode6	Wireless Output(Earphone 5W)
Mode7	Wireless Output(Phone 5W +Earphone5W)
Mode8	Wireless Output(Phone 10W +Earphone 5W)
Mode9	Wireless Output(Phone 7.5W +Earphone 5W)
Mode10	Wireless Output(Phone 15W(EPP)+Earphone 5W)
Mode11	Wireless Output(Phone 15W(MPP)+ Earphone 5W)
Mode12	Wireless Output(Earphone 5W+ Watch 5W)
Mode13	Wireless Output(Earphone 5W+ Watch 3W)
Mode14	Wireless Output(Phone 5W+ Watch 3W)
Mode15	Wireless Output(Phone 7.5W+ Watch 3W)
Mode16	Wireless Output(Phone 10W+ Watch 3W)
Mode17	Wireless Output(Phone 15W(EPP)+ Watch 3W)
Mode18	Wireless Output(Phone 15W(MPP)+ Watch 3W)
Mode19	Wireless Output(Phone 5W+ Watch 5W)
Mode20	Wireless Output(Phone 7.5W+ Watch 5W)
Mode21	Wireless Output(Phone 10W+ Watch 5W)
Mode22	Wireless Output(Phone 15W(EPP)+ Watch 5W)
Mode23	Wireless Output(Phone 15W(MPP)+ Watch 5W)
Mode24	Wireless Output(Phone 5W+ Earphone 5W+ Watch 3W)
Mode25	Wireless Output(Phone 7.5W+ Earphone 5W+ Watch 3W)
Mode26	Wireless Output(Phone 10W+ Earphone 5W+ Watch 3W)
Mode27	Wireless Output(Phone 15W(EPP)+ Earphone 5W+ Watch 3W)
Mode28	Wireless Output(Phone 15W(MPP)+ Earphone 5W+ Watch 3W)
Mode29	Wireless Output(Phone 5W+ Earphone 5W+ Watch 5W)
Mode30	Wireless Output(Phone 7.5W+ Earphone 5W+ Watch 5W)
Mode31	Wireless Output(Phone 10W+ Earphone 5W+ Watch 5W)
Mode32	Wireless Output(Phone 15W(EPP)+ Earphone 5W+ Watch 5W)
Mode33	Wireless Output(Phone 15W(MPP)+ Earphone 5W+ Watch 5W)
Mode34	stand by

1.3 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.

Support equipment list			
Description	Model	Serial No.	Manufacturer
HUAWEI QUICK CHARGE	HW-200200ZP1	JN67LSN7N03451	HUAWEI
PHONE	iPhone 15	IOS17.3	Apple
PHONE	iPhone 12	IOS16.6	Apple
iwatch	Series 7	/	Apple
Air Pods	MQD83CH/A	/	Apple
Support cable list			
Description	Length (m)	From	To
/	/	/	/

2 Measurement uncertainty

Parameter	Expanded Uncertainty
Magnetic field measurements(3kHz~10MHz)	±14.8%
Electric field measurements(3kHz~10MHz)	±17.5%

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

3 Test facilities and accreditations

3.1 Test laboratory

Test laboratory:	Shenzhen Microtest Co., Ltd.
Test site location:	101, No. 7, Zone 2, Xinxing Industrial Park, Fuhai Avenue, Xinhe Community, Fuhai Street, Bao'an District, Shenzhen, Guangdong, China
Telephone:	(86-755)88850135
Fax:	(86-755)88850136
CNAS Registration No.:	CNAS L5868
FCC Registration No.:	448573
IC Registration No.:	21760
CABID:	CN0093

4 List of test equipment

No.	Equipment	Manufacturer	Model	Serial No.	Cal. date	Cal. Due
MTI-E143	Near-field Electric and Magnetic Field Sensor System	SPEAG	MAGPy-8H3D +ED3 V2	3101	2024/03/12	2026/03/11

No.	Equipment	Manufacturer	Model	Software version:	Cal. date	Cal. Due
MTI-E016S	MPE test software	SPEAG	MAGPY 2.4	2.4.1	/	/

5 Test result

5.1.1 Requirement

§1.1310: The criteria listed in the following table shall be used to evaluate the environment impact of human exposure to radio frequency (RF) radiation as specified in §1.1307(b), except in the case of portable devices which shall be evaluated according to the provisions of FCC part 2.1093 of this chapter.

Table 1 to §1.1310(e)(1) - Limits for Maximum Permissible Exposure (MPE)

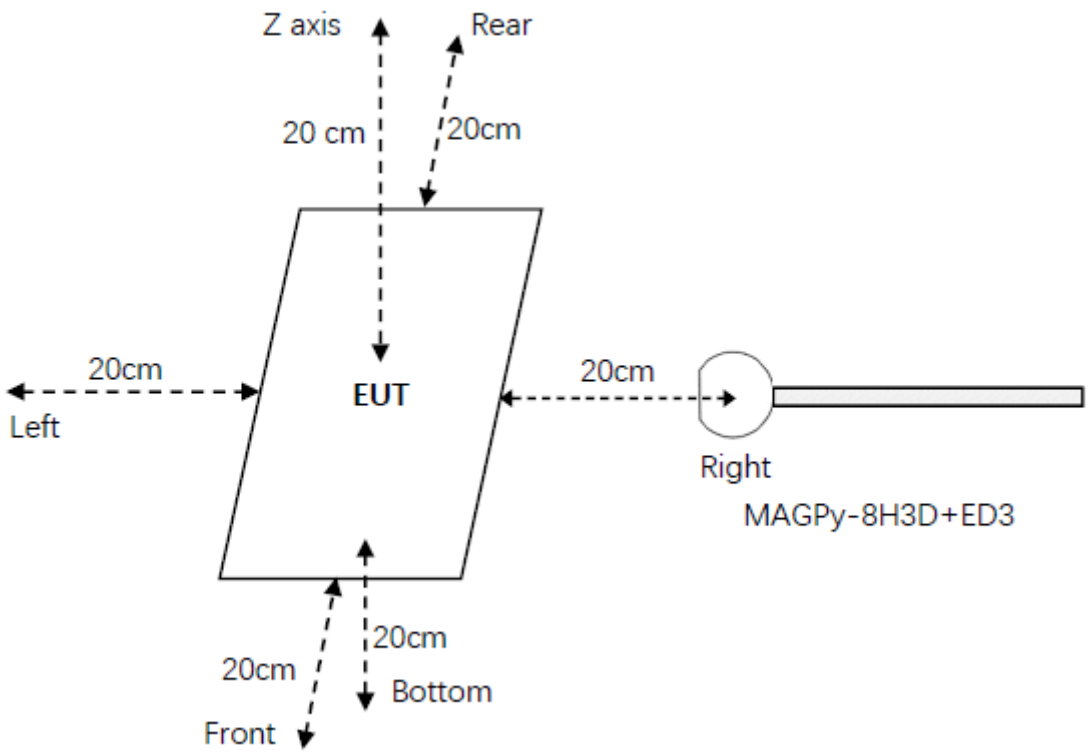
Frequency range (MHz)	Electric field strength (V/m)	Magnetic field strength (A/m)	Power density (mW/cm^2)	Averaging time (minutes)
(i) Limits for Occupational/Controlled Exposure				
0.3-3.0	614	1.63	*(100)	≤6
3.0-30	1842/f	4.89/f	*($900/f^2$)	<6
30-300	61.4	0.163	1.0	<6
300-1500			f/300	<6
1500-100000			5	<6
(ii) 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
1500-100000			1.0	<30

f = frequency in MHz
* = Plane-wave equivalent power density

Note 1: Occupational/controlled exposure limits apply in situations in which persons are exposed as a consequence of their employment provided those persons are fully aware of the potential for exposure and can exercise control over their exposure.

Note 2: General population/uncontrolled exposure limits apply in 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 fully aware of the potential for exposure or cannot exercise control over their exposure.

5.2 Test setup



5.3 Test Procedures

a. The RF exposure test was performed in anechoic chamber.

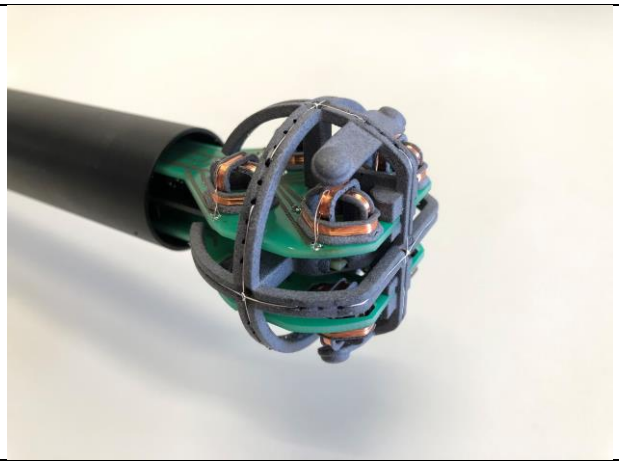
b. E and H-field measurements should be made with these devices considered to meet the § 2.1091-Mobile conditions (“generally be used in such a way that a separation distance of at least 20 centimeters is normally maintained between the RF source's radiating structure(s) and [the nearest person]”).

c. The highest emission level was recorded and compared with limit.

d. The EUT was measured according to the dictates of KDB 680106 D01 Wireless Power Transfer v04.

5.4 Information of test equipment

Test equipment: MAGPy-8H3D+ED3	
Diameter	60mm
8 isotropic H-field sensors	Concentric loops of 1cm^2 arranged at the corner of a cube of 22mm side length
1 isotropic E-field sensor	Orthogonal dipole/monopple(arm length:50mm)
Measurement center	18.5mm from the probe tip
Dimensions	110*635*35mm (MAGPy-8H3D+E3D V2 & MAGPy-DAS V2)



5.5 Test results

Test condition 1: Mode 27 operating mode with client device (1 % battery status of client device)

Probe Position	E –field (V/m)			H–field (A/m)		
	Measurement	Limit	Percentage (%)	Measurement	Limit	Percentage (%)
Z axis	7.71	614	1.26%	0.17	1.63	26.99%
Left	5.02			0.18		
Right	3.41			0.07		
Front	1.51			0.07		
Rear	3.15			0.09		
bottom	1.41			0.44		

Test condition 2: Mode 27 operating mode with client device (50 % battery status of client device)

Probe Position	E –field (V/m)			H–field (A/m)		
	Measurement	Limit	Max. Percentage (%)	Measurement	Limit	Max. Percentage (%)
Z axis	7.72	614	1.26%	0.18	1.63	27.61%
Left	5.01			0.18		
Right	3.41			0.08		
Front	1.52			0.06		
Rear	3.15			0.08		
Bottom	1.43			0.45		

Test condition 3: Mode 27 operating mode with client device (99 % battery status of client device)

Probe Position	E –field (V/m)			H–field (A/m)		
	Measurement	Limit	Percentage (%)	Measurement	Limit	Percentage (%)
Z axis	7.69	614	1.25%	0.16	1.63	26.99%
Left	5.02			0.17		
Right	3.39			0.07		
Front	1.51			0.07		
Rear	3.15			0.08		
bottom	1.39			0.44		

Test condition 1: Mode 33 operating mode with client device (1 % battery status of client device)

Probe Position	E –field (V/m)			H–field (A/m)		
	Measurement	Limit	Percentage (%)	Measurement	Limit	Percentage (%)
Z axis	9.51	463	2.05%	0.14	1.23	33.33%
Left	4.25			0.39		
Right	7.37			0.26		
Front	6.19			0.40		
Rear	3.19			0.25		
bottom	6.02			0.27		

*Note: The limit of E-field strength is 824/f V/m, f =1.778MHz; The limit of H-field strength is 2.19/f A/m, f =1.778MHz;

Test condition 2: Mode 33 operating mode with client device (50 % battery status of client device)

Probe Position	E –field (V/m)			H–field (A/m)		
	Measurement	Limit	Max. Percentage (%)	Measurement	Limit	Max. Percentage (%)
Z axis	9.49	463	2.05%	0.15	1.23	34.15%
Left	4.24			0.40		
Right	7.36			0.25		
Front	6.18			0.42		
Rear	3.20			0.25		
Bottom	6.03			0.27		

*Note: The limit of E-field strength is 824/f V/m, f =1.778MHz; The limit of H-field strength is 2.19/f A/m, f =1.778MHz;

Test condition 3: Mode 33 operating mode with client device (99 % battery status of client device)

Probe Position	E –field (V/m)			H–field (A/m)		
	Measurement	Limit	Percentage (%)	Measurement	Limit	Percentage (%)
Z axis	9.50	463	2.05%	0.14	1.23	32.52%
Left	4.23			0.39		
Right	7.35			0.25		
Front	6.18			0.40		
Rear	3.18			0.25		
bottom	6.02			0.27		

*Note: The limit of E-field strength is 824/f V/m, f =1.778MHz; The limit of H-field strength is 2.19/f A/m, f =1.778MHz;

Photographs of the Test Setup

See the Appendix - Test Setup Photos.

Photographs of the EUT

See the Appendix - EUT Photos.

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