

FCC 47 CFR § 2.1093
RF EVALUATION REPORT (MPE-WPT)
FOR

Wireless Charger

MODEL NUMBER: WCSTE40A

FCC ID: 2A6WXWCSTE40AA

REPORT NUMBER: 4791175582-S1V1

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Prepared for

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TL-637

Revision History			
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V1	3/7/2024	Initial Issue	--

Table of Contents

1. Attestation	4
2. Test Methodology.....	5
3. Facilities and Accreditation	5
4. Equipment Under Test	6
4.1 Description of EUT	6
4.2 WPT charging test considerations	6
4.3 KDB 680106 D01 General Considerations	6
4.4 Description of Test setup	7
5. H-field Measurement equipment	8
6. Maximum Permissive Exposure test Results	8
6.1 FCC MPE Limits	8
6.2 MPE Test Results.....	9
Appendixes	10
4791175582-S1 FCC Report MPE_App A_Test setup photos.....	10
4791175582-S1 FCC Report MPE_App B_Probe Cal. Certificates.....	10

1. Attestation

Applicant Name	BH EVS Co.,Ltd
FCC ID	2A6WXWCSTE40AA
Model Number	WCSTE40A
Applicable Standards	FCC 47 CFR § 2.1093 KDB 680106 D01 RF Exposure Wireless Charging Apps
Exposure Category	MPE Limit
	H-field (A/m)
General population / Uncontrolled exposure	1.63
RF exposure conditions MPE (=at 8 cm test distance)	The Highest MPE Results
	H-field (A/m)
	0.91
Date Tested	3/6/2024
Test Results	Pass

UL Korea, Ltd. tested the above equipment in accordance with the requirements set forth in the above standards. All indications of Pass/Fail in this report are opinions expressed by UL Korea, Ltd. based on interpretations and/or observations of test results. Measurement Uncertainties were not taken into account and are published for informational purposes only. The test results show that the equipment tested is capable of demonstrating compliance with the requirements as documented in this report.

Note: The results documented in this report apply only to the tested sample, under the conditions and modes of operation as described herein. This document may not be altered or revised in any way unless done so by UL Korea, Ltd. and all revisions are duly noted in the revisions section. Any alteration of this document not carried out by UL Korea, Ltd. will constitute fraud and shall nullify the document. This report must not be used by the client to claim product certification, approval, or endorsement by IAS, any agency of the Federal Government, or any agency of any government

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2. Test Methodology

All calculations were made in accordance with FCC OET Bulletin 65 Edition 97-01.

3. Facilities and Accreditation

The test sites and measurement facilities used to collect data are located at 218 Maeyeong-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16675, Korea. Line conducted emissions are measured only at the 218 address. The following table identifies which facilities were utilized for radiated emission measurements documented in this report. Specific facilities are also identified in the test results sections.

218 Maeyeong-ro
<input checked="" type="checkbox"/> Shield Room 1

UL Korea, Ltd. is accredited by IAS, Laboratory Code TL-637. The full scope of accreditation can be viewed at <https://www.iasonline.org/wp-content/uploads/2017/05/TL-637-cert-New.pdf>.

4. Equipment Under Test

4.1 Description of EUT

The EUT has WPT (Wireless Power Transfer) feature which has inductive charging coil to charge phone or watch. The charging frequency is 128 kHz, and the maximum power consumption is 15.0 W in charging status.

4.2 WPT charging test considerations

Test configuration	Descriptions
DUT to Phone test configuration 1	Charging from Phone to DUT

4.3 KDB 680106 D01 General Considerations

Requirement	Device informations
(1) WPT operating frequency.	Operating frequency is 128 kHz.
(2) Conducted power for each radiating structure.	Maximum power is 15.0 Watts.
(3) 2.1091-Mobile or 2.1093-Portable demonstrated scenarios of operation, including RF exposure compliance information	2.1093 Portable.
(4) Maximum distance from the WPT transmitter at which, by design, a load can be charged (including slow-charging operations)	This device is inductive WPT device. So When WPT client placed on WPT device, then Power is transfer.

4.4 Description of Test setup

SUPPORT EQUIPMENTS & PERIPHERALS

WPT Client used General smart phone provided by the WPT manufacturer.

MEASUREMENT TEST SETUP

For 5 test positions (Above DUT/Top/Bottom/Left/Right),

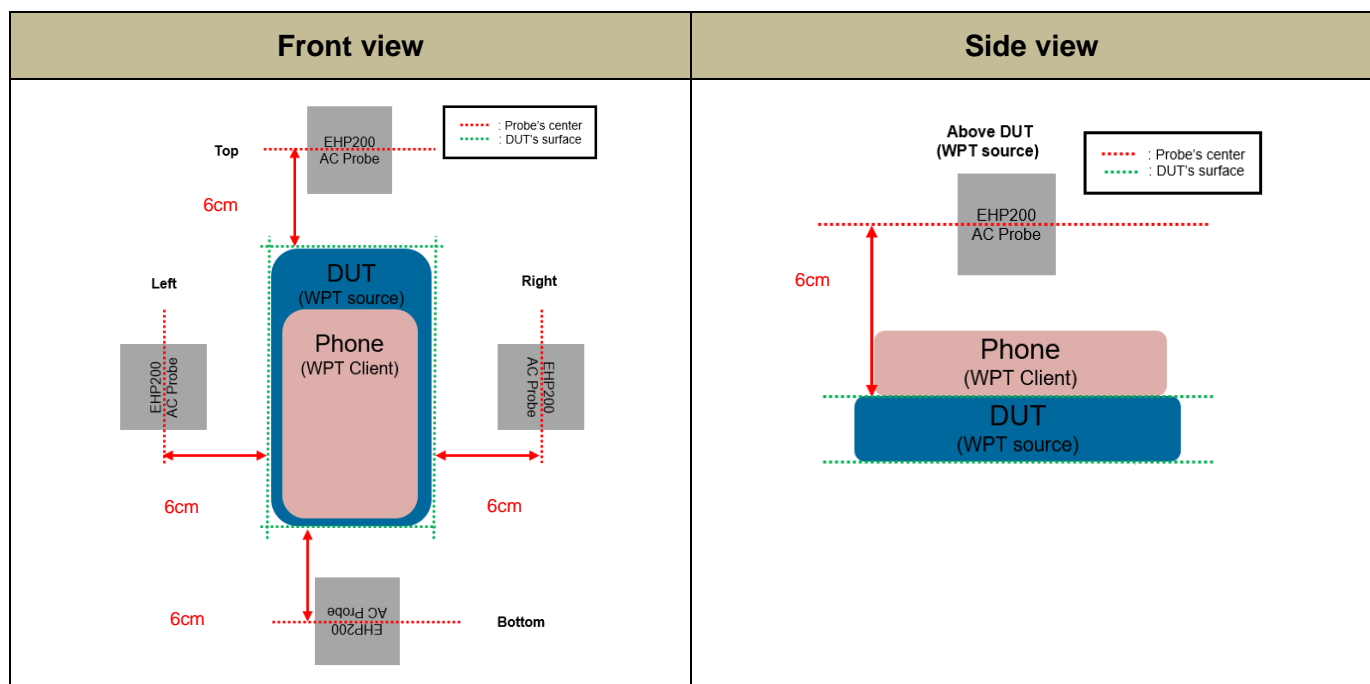
All test positions tested at 6cm test distance between DUT's surface to Probe's center. And additional measurements were made at Worst test position up to 20cm in 2cm increments.

Charging test modes : The following three modes are tested in test configurations

Mode
Operating 1 (SUPPORT Equipment, <10% Power Charging)
Operating (SUPPORT Equipment, 50~55% Power Charging)
Operating (SUPPORT Equipment, 90~95% Power Charging)

Test results of Operating 1 is worst, so this test report described Operating 1.

DUT to phone test Configuration



Note:

Test distance is the distance between DUT's surface to center of probe.

5. H-field Measurement equipment

The following equipment was used in this report;

Test equipment (Measurement probe)				
Description	Manufacturer	Model	S/N	Cal due.
E-H Field Analyzer	Narda	EHP-200AC	170WX91008	8-11-2024

6. Maximum Permissive Exposure test Results

6.1 FCC MPE Limits

§ 1.1310 The criteria listed in Table 1 shall be used to evaluate the environmental 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 § 2.1093 of this chapter.

TABLE 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)
(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

TABLE 1—LIMITS FOR MAXIMUM PERMISSIBLE EXPOSURE (MPE)—Continued

Frequency range (MHz)	Electric field strength (V/m)	Magnetic field strength (A/m)	Power density (mW/cm ²)	Averaging time (minutes)
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

NOTE 1 TO TABLE 1: Occupational/controlled 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. Limits for occupational/controlled exposure also apply in situations when an individual is transient through a location where occupational/controlled limits apply provided he or she is made aware of the potential for exposure.

NOTE 2 TO TABLE 1: General population/uncontrolled exposures apply in situations in which the general public may be exposed, or in which persons that are exposed as a consequence of their employment may not be fully aware of the potential for exposure or can not exercise control over their exposure.

6.2 MPE Test Results

H-Field Measurements

Peak measurement were performed. Additional test was performed in each Test mode by moving the probe surrounding the device to find the maximum exposure.

MPE(H-field) test Result

TEST results of DUT to phone test Configuration 1

Test configuration	Charging test mode	Test distance	Test positions	H-field meas H-field (A/m)	MPE (H-field) Limit (A/m)
Configuration 1	Operating (WPT Client, <10 % Power Charging)	6cm test distance for Between Probe's center to DUT	Above DUT	0.910	1.63
			Top	1.210	
			Bottom	0.870	
			Left	0.890	
			Right	2.180	

TEST results of up to 20cm(2cm step) in Worst position

Test position	H-field meas H-field (A/m)									MPE (H-field) Limit (A/m)
	Test Distance 6 cm	Test Distance 8 cm	Test Distance 10 cm	Test Distance 12 cm	Test Distance 14 cm	Test Distance 15 cm	Test Distance 16 cm	Test Distance 18 cm	Test Distance 20 cm	
Right	2.18	0.91	0.49	0.26	0.17	0.12	0.09	0.06	0.05	1.63

Conclusion:

This WPT device satisfies the FCC limit at the minimum distance 8cm.

Appendixes

Refer to separated files for the following appendixes.

4791175582-S1 FCC Report MPE_App A_Test setup photos

4791175582-S1 FCC Report MPE_App B_Probe Cal. Certificates

END OF REPORT