CERTIFICATION TEST REPORT

Report Number. : 4791130549-FR1V1

Applicant	:	BH EVS Co.,Ltd 5, Magokjungang 8-ro 5-gil, Gangseo-gu, Seoul, 07794 Republic of Korea
Model	:	WCSTE40A
FCC ID	:	2A6WXWCSTE40A
EUT Description	:	Wireless Charger
Test Standard(s)	:	FCC 47 CFR PART 15 SUBPART C

Date Of Issue:
2024-02-28

Prepared by:
UL KOREA LTD.
26th floor, 152, Teheran-ro, Gangnam-gu Seoul, 06236, Korea

Suwon Test Site: UL KOREA LTD. Suwon Laboratory
218 Maeyeong-ro, Yeongtong-gu,
Suwon-si, Gyeonggi-do, 16675, Korea
TEL: (031) 337-9902
FAX: (031) 213-5433

IAS ACCREDITED Testing Laboratory TL-637

Revision History

Rev.	Issue Date	Revisions	Revised By
V1	2024-02-28	Initial issue	SunGeun Lee

UL KOREA LTD. Suwon Laboratory FORM ID: FCC_15C (05)
218 Maeyeong-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16675, Korea TEL: (031) 337-9902 FAX: (031) 213-5433

TABLE OF CONTENTS

UL KOREA LTD. Suwon Laboratory FORM ID: FCC_15C (05)
218 Maeyeong-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16675, Korea TEL: (031) 337-9902 FAX: (031) 213-5433

1. ATTESTATION OF TEST RESULTS

COMPANY NAME: BH EVS Co.,Ltd

EUT DESCRIPTION: Wireless Charger

MODEL NUMBER: WCSTE40A

SERIAL NUMBER: Proto Type (RADIATED)

DATE TESTED: 2023-12-18 ~ 2024-02-28

APPLICABLE STANDARDS	
STANDARD	**TEST RESULTS**
CFR 47 Part 15 Subpart C	Complies

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.

Approved & Released For
UL KOREA LTD. By:

Seokhwan Hong
Suwon Lab Engineer
UL Korea, Ltd.

Tested By:

Sungeun Lee
Suwon Lab Engineer
UL Korea, Ltd.

2. TEST METHODOLOGY

The tests documented in this report were performed in accordance with following methods.

1. FCC CFR 47 Part 2.
2. FCC CFR 47 Part 15.
3. ANSI C63.10-2013.
4. KDB 680106 D01 RF Exposure Wireless Charging Apps v03r01.

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
☐ Chamber 1(3m semi-anechoic chamber)
☒ Chamber 2(3m semi-anechoic chamber)
☐ Chamber 3(3m semi-anechoic chamber)
☐ Chamber 4(3m Full-anechoic chamber)
☐ Chamber 5(3m Full-anechoic chamber)

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. CALIBRATION AND UNCERTAINTY

4.1. MEASURING INSTRUMENT CALIBRATION

The measuring equipment utilized to perform the tests documented in this report has been calibrated in accordance with the manufacturer's recommendations, and is traceable to recognized national standards.

4.2. SAMPLE CALCULATION

Where relevant, the following sample calculation is provided:

Field Strength (dBuV/m) = Measured Voltage (dBuV) + Antenna Factor (dB/m) + Cable Loss (dB) – Preamp Gain (dB)
36.5 dBuV + 18.7 dB/m + 0.6 dB – 26.9 dB = 28.9 dBuV/m

Corrected Reading (dBuV) = Meter Reading (dBuV) + External Cable (dB) + Cableloss (dB)
46.62 dBuV + 9.8 dB + 0.1 dB = 56.52 dBuV

4.3. MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the apparatus:

PARAMETER	UNCERTAINTY
Occupied Bandwidth	0.20 %
Conducted Disturbance, 0.15 to 30 MHz	2.80 dB
Radiated Disturbance, 9 kHz to 30 MHz	1.69 dB

Uncertainty figures are valid to a confidence level of 95%.

4.4. DECISION RULE

Decision rule for statement(s) of conformity is based on Clause 4.3.3 in IEC Guide 115:2023.

5. EQUIPMENT UNDER TEST

5.1. DESCRIPTION OF EUT

The EUT is the wireless charger.
This test report addresses the wireless low power transmitter(DCD) operational mode.

5.2. MAXIMUM E-FIELD STRENGTH

Fundamental Frequency(kHz)	Test Case	E-Field (300m distance) FCC (dBuV/m)
128	1	**20.21**

5.3. WORST-CASE CONFIGURATION AND MODE

Mode	Test Case	Description
Power sharing mode	**1 (Worst case)**	**Type 1 Position**
	2	Type 2 Position

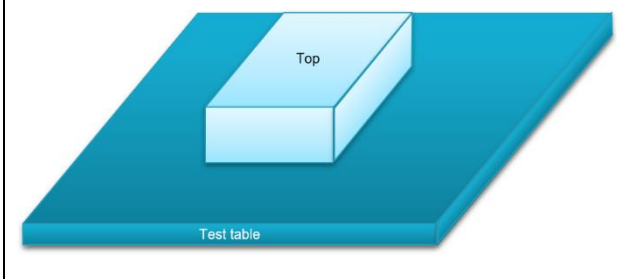
Cross Position (Client): When mounted on the final product (Car wireless Charger), Cross Position is not possible.

Both ‘Fast charging mode (15W)’ and ‘Normal charging mode (5W)’ are supported and tested. Only reported the worst case.

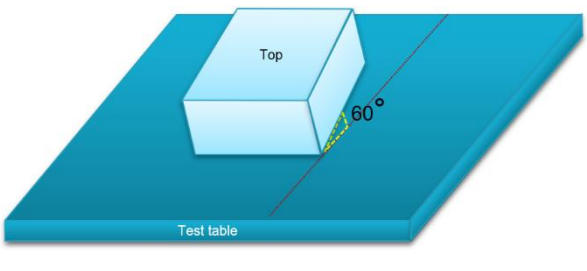
Also according to current client device’s(Phone) battery level, test results are different. Because the test results were worst when the battery level was 1%~20%, tests were performed when the battery level was 1%~20%.

The EUT will be connected DC power (Car battery). So AC line conducted test not performed. Two types of EUT configuration were investigated for Radiated testing. The two configurations supported by EUT are shown as below.

- Type1 position: The EUT lying flat on the test table.
- Type2 position: The EUT lying diagonally on the test table.



Type1



Type2

5.4. MODIFICATIONS

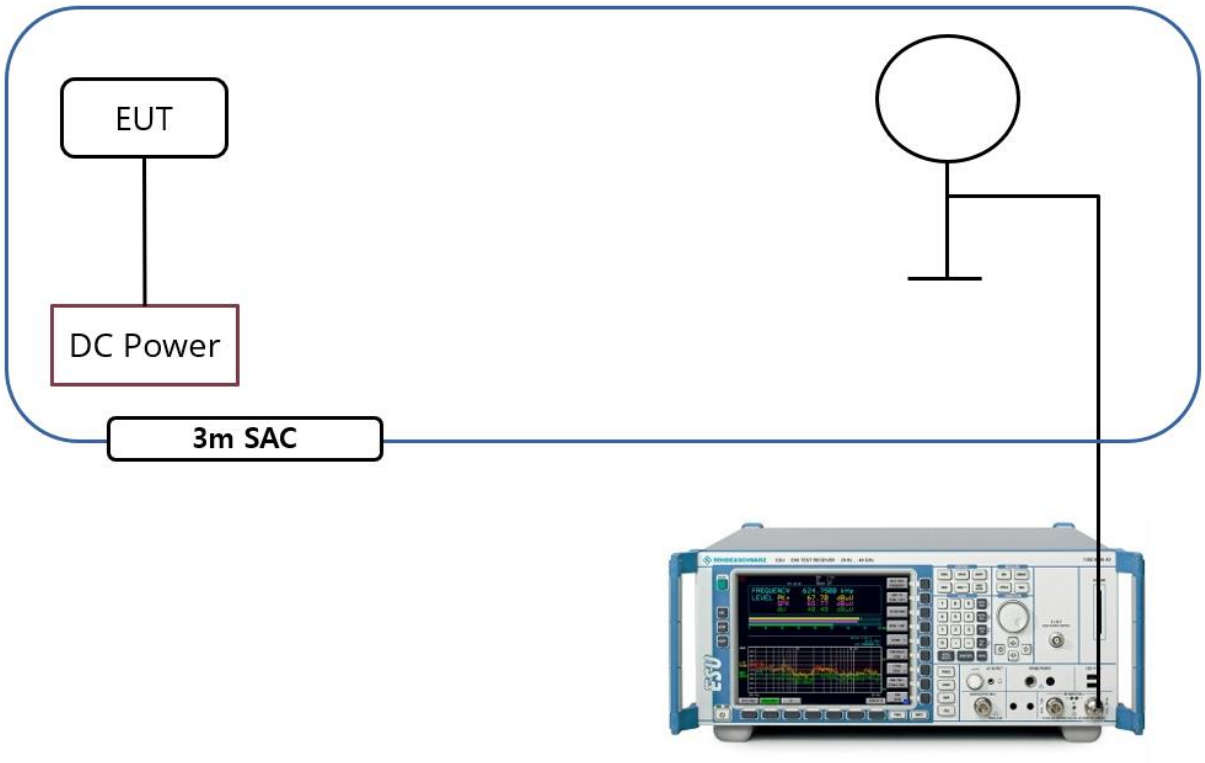
No modifications were made during testing.

5.5. DESCRIPTION OF TEST SETUP

SUPPORT EQUIPMENT & PERIPHERALS

Support Equipment List				
Description	**Manufacturer**	**Model**	**Serial Number**	**FCC ID**
Client device	SAMSUNG	SM-G986B/DS	R3CMB0C70XN	A3LSMG986B

TEST SETUP



6. TEST AND MEASUREMENT EQUIPMENT

The following test and measurement equipment was utilized for the tests documented in this report:

Test Equipment List				
Description	**Manufacturer**	**Model**	**S/N**	**Cal Due**
Preamplifier, 1000 MHz	Sonoma	310N	341282	2024-07-24
Preamplifier, 1000 MHz	Sonoma	310N	351741	2024-07-24
Spectrum Analyzer, 7 GHz	Agilent / HP	N9010A	MY54200580	2024-07-23
Spectrum Analyzer, 44 GHz	KEYSIGHT	N9030A	MY54170614	2024-07-24
EMI Test Receive, 3 GHz	R&S	ESR3	101832	2024-07-23
DC Power Supply	Agilent / HP	E3640A	MY54226395	2024-07-24
Antenna, Loop, 9kHz-30MHz	R&S	HFH2-Z2	100418	2025-09-06
UL Software				
Description	**Manufacturer**	**Model**	**Version**	
Radiated software	UL	UL EMC	Ver 9.5	

7. 99% BANDWIDTH

LIMITS

None; for reporting purposes only.

TEST PROCEDURE

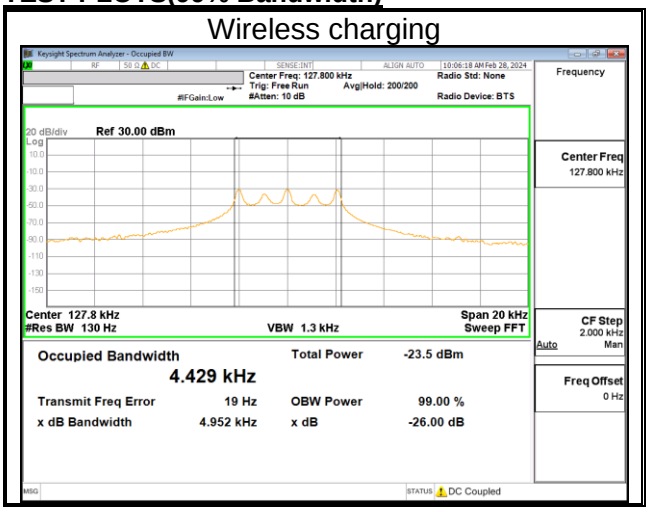
- 99% Bandwidth
RBW: 1 ~ 5% of 99% Bandwidth, VBW >= 3 x RBW, sample detector.

RESULTS

Test Mode	Frequency [kHz]	99% Bandwidth [kHz]
Wireless charging	128	4.429

TEST PLOTS(99% Bandwidth)

Wireless charging



8. APPLICABLE LIMITS AND TEST RESULTS

8.1. RADIATED EMISSIONS

TEST PROCEDURE

ANSI C63.10: 2013;

The highest clock frequency generated or used in the EUT is 600 kHz therefore the frequency range was investigated from 9 kHz to 30 MHz (30 MHz to 100MHz for ICES-001).

LIMIT

FCC §15.209 (a)

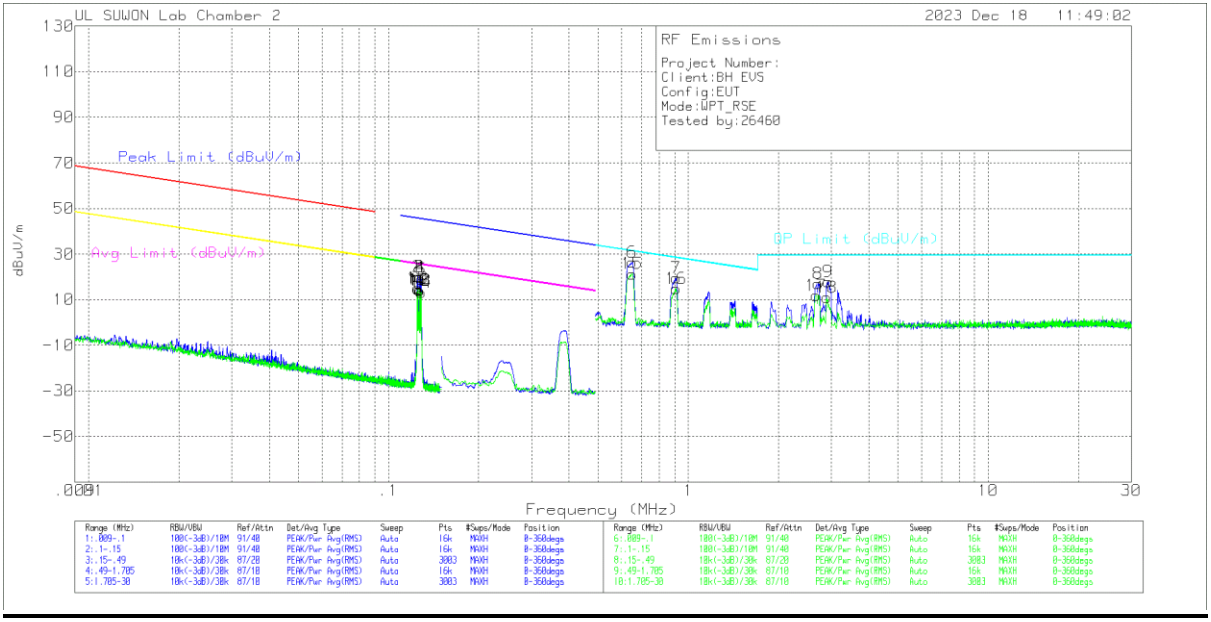
Frequency (MHz)	Field Strength (microvolts/meter)	Measurement Distance (m)
0.009–0.490	2400/F(kHz)	300
0.490–1.705	24000/F(kHz)	30
1.705–30.0	30	30
30–88	100	3
88 to 216	150	3
216 to 960	200	3
Above 960 MHz	500	3
Note: The lower limit shall apply at the transition frequency.		

RESULTS

Although these tests were performed other than open field test site, adequate comparison measurements were confirmed against 300 m open field test site.
Therefore sufficient tests were made to demonstrate that the alternative site produces results that correlate with the ones of tests made in an open field based on KDB 414788 D01.

UL KOREA LTD. Suwon Laboratory FORM ID: FCC_15C (05)
218 Maeyeong-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16675, Korea TEL: (031) 337-9902 FAX: (031) 213-5433

FUNDAMENTAL AND RADIATED EMISSIONS 9 KHz to 30 MHz(Test Case 1)



TEST DATA

Trace Markers

[Face On]

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	Antenna Correction Factor(dB/m)	Loss (dB)	Dist Corr 300m (dB)	Corrected Reading (dBuV/m)	Peak Limit (dBuV/m)	Margin (dB)	Avg Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)
**1	.12476	80	Pk	20	.1	-80	20.1	45.7	-25.6	25.7	-5.6	0-360
**2	.12578	80.11	Pk	20	.1	-80	20.21	45.63	-25.42	25.63	-5.42	0-360
**3	.12669	79.92	Pk	20	.1	-80	20.02	45.57	-25.55	25.57	-5.55	0-360
**4	.12774	79.72	Pk	20	.1	-80	19.82	45.5	-25.68	25.5	-5.68	0-360
**5	.12868	78.85	Pk	20	.1	-80	18.95	45.44	-26.49	25.44	-6.49	0-360

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	Antenna Correction Factor(dB/m)	Loss (dB)	Dist Corr 30m (dB)	Corrected Reading (dBuV/m)	QP Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)
6	.64971	46.29	Pk	20	.1	-40	26.39	31.36	-4.97	0-360
7	.91058	39.26	Pk	20	.2	-40	19.46	28.43	-8.97	0-360
8	2.70405	36.53	Pk	20.2	.3	-40	17.03	29.5	-12.47	0-360
9	2.92083	37.43	Pk	20.2	.3	-40	17.93	29.5	-11.57	0-360

[Face Off]

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	Antenna Correction Factor(dB/m)	Loss (dB)	Dist Corr 300m (dB)	Corrected Reading (dBuV/m)	Peak Limit (dBuV/m)	Margin (dB)	Avg Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)
**10	.12476	75.11	Pk	20	.1	-80	15.21	45.7	-30.49	25.7	-10.49	0-360
**11	.12578	74.57	Pk	20	.1	-80	14.67	45.63	-30.96	25.63	-10.96	0-360
**12	.12669	74.26	Pk	20	.1	-80	14.36	45.57	-31.21	25.57	-11.21	0-360
**13	.12774	73.89	Pk	20	.1	-80	13.99	45.5	-31.51	25.5	-11.51	0-360
**14	.12868	73.26	Pk	20	.1	-80	13.36	45.44	-32.08	25.44	-12.08	0-360

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	Antenna Correction Factor(dB/m)	Loss (dB)	Dist Corr 30m (dB)	Corrected Reading (dBuV/m)	QP Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)
15	.65017	41.26	Pk	20	.1	-40	21.36	31.35	-9.99	0-360
16	.90986	34.78	Pk	20	.2	-40	14.98	28.44	-13.46	0-360
17	2.66635	31.47	Pk	20.2	.3	-40	11.97	29.5	-17.53	0-360
18	2.89255	30.65	Pk	20.2	.3	-40	11.15	29.5	-18.35	0-360

Pk - Peak detector
** Fundamental

Note : Radiated test were investigated with three receiving antenna axes: Face-on, Face-off and horizontal (parallel to the ground plane) and the worse orientations of Face-on and Face-off were set for final test.

UL KOREA LTD. Suwon Laboratory FORM ID: FCC_15C (05)
218 Maeyeong-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16675, Korea TEL: (031) 337-9902 FAX: (031) 213-5433

FUNDAMENTAL AND RADIATED EMISSIONS 9 KHz to 30 MHz(Test Case 2)

TEST DATA

Trace Markers

[Face On]

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	Antenna Correction Factor(dB/m)	Loss (dB)	Dist Corr 300m (dB)	Corrected Reading (dBuV/m)	Peak Limit (dBuV/m)	Margin (dB)	Avg Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)
**1	.12669	79.19	Pk	20	.1	-80	19.29	45.57	-26.28	25.57	-6.28	0-360

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	Antenna Correction Factor(dB/m)	Loss (dB)	Dist Corr 30m (dB)	Corrected Reading (dBuV/m)	QP Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)
2	.63923	42.2	Pk	20	.1	-40	22.3	31.5	-9.2	0-360
3	.8955	35.86	Pk	20	.2	-40	16.06	28.58	-12.52	0-360
4	2.93968	28.54	Pk	20.2	.3	-40	9.04	29.5	-20.46	0-360

Pk - Peak detector

** Fundamental

Note : The worst case tested at face-on

END OF TEST REPORT

UL KOREA LTD. Suwon Laboratory FORM ID: FCC_15C (05)
218 Maeyeong-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16675, Korea TEL: (031) 337-9902 FAX: (031) 213-5433