CERTIFICATION TEST REPORT

Report Number : 4789831808-FR2V3

Applicant : EnMovi Ltd.
Unit 1I, Inovo Building, 121 George St, Glasgow G1 1RD, United Kingdom

Model : MSC 2.0

FCC ID : 2AY5U-A

EUT Description : Wireless Charger

Test Standard(s) : FCC 47 CFR PART 1 SUBPART I
FCC 47 CFR PART 2 SUBPART J

Date Of Issue:
March 23, 2021

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
TL-637

REPORT REVISION HISTORY

Rev.	Issue Date	Revisions	Revised By
V1	03/16/21	Initial issue	Robby Lee
V2	03/19/21	Updated about the TCB's question (page 7)	Robby Lee
V3	03/23/21	Updated about the TCB's question (page 7)	Robby Lee

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1. ATTESTATION OF TEST RESULTS

COMPANY NAME: EnMovi Ltd.

EUT DESCRIPTION: Wireless Charger

MODEL: MSC 2.0

SERIAL NUMBER: AE106-99000140 V:06_190315a A:05022021

DATE TESTED: FEB 18, 2021 ~ FEB 23, 2021

APPLICABLE STANDARDS	
STANDARD	**TEST RESULTS**
FCC PART 1 SUBPART I FCC PART 2 SUBPART J	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:

Anthony Kim
Suwon Lab Engineer
UL Korea, Ltd.

Tested By:

Robby Lee
Suwon Lab Engineer
UL Korea, Ltd.

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
☒ Shield Room 5

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. The charging frequency is 1.047 MHz, and the maximum power consumption is 5.0 W in charging status.

4.2. WORST-CASE CONFIGURATION

Test configuration	Description
DUT to Wearable Sensor test configuration 1 (Case 1 ~ 3)	Charging from DUT to Wearable Sensor(Placed on the left)
DUT idle test configuration 2 (Case 4)	Idle status (Non-charging)

4.3. KDB 680106 D01 v03 SECTION 5.b) EQUIPMENT APPROVAL CONSIDERATIONS

Requirement	Device
(1) Power transfer frequency is less than 1 MHz.	No. Operating Frequency is between 1.047MHz.
(2) Output power from each primary coil is less than or equal to 15 watts.	Yes. Maximum power is 5.0 Watts.
(3) The transfer system includes only single primary and secondary coils. This includes charging systems that may have multiple primary coils and clients that are able to detect and allow coupling only between individual pairs of coils.	Yes.
(4) Client device is placed directly in contact with the transmitter.	Yes.
(5) Mobile exposure conditions only (portable exposure conditions are not covered by this exclusion).	Yes.
(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.	Yes. The aggregate field at 15 cm from the device are 6.99 % of the FCC H field limit.

4.4. DESCRIPTION OF TEST SETUP

SUPPORT EQUIPMENT & PERIPHERALS

SUPPROT EQUIPMENT & PERIPHERALS LIST				
Description	Manufacturer	Model	Serial Numver	Note
Wearable Sensor * 2ea	EnMovi Ltd.	MS 2.0	None	Client device
Adapter	HDP Power	HDP05-MD05010U	None	-
USB Cable	None	None	None	-

MEASUREMENT TEST SETUP

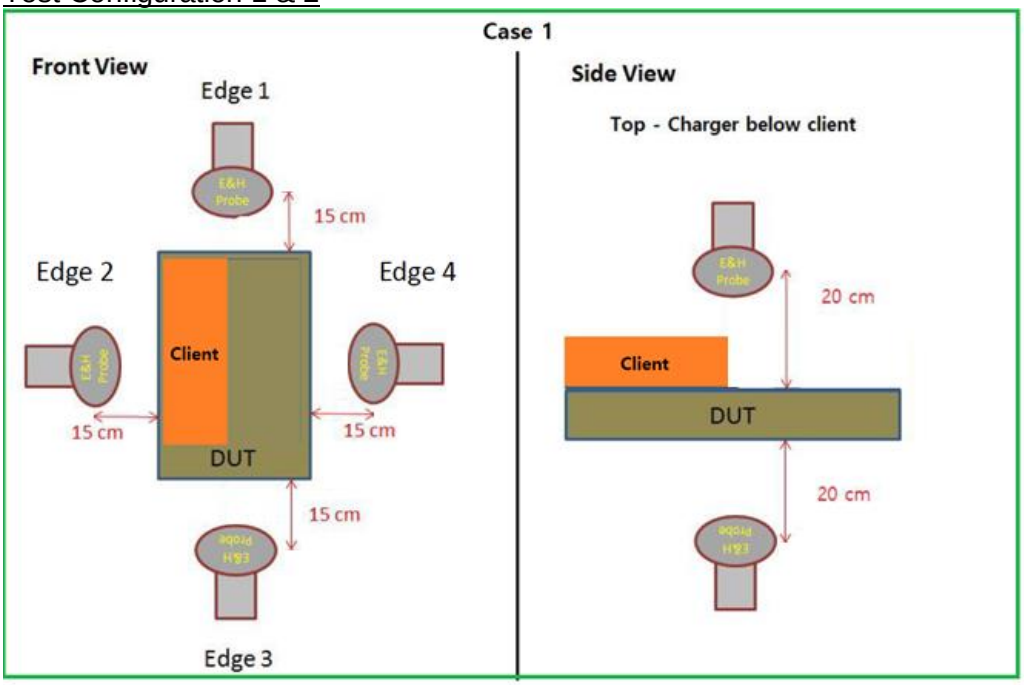
The measurement was taken using a probe placed 15 cm surrounding the device and 20 cm above the top surface of the EUT. Measurements were taken the top (charger below/above client) and all sides of the EUT per KDB680106 D01 v03r01 and RF Exposure Procedures (Wireless Power Transfer) in TCB Workshop October, 2020.

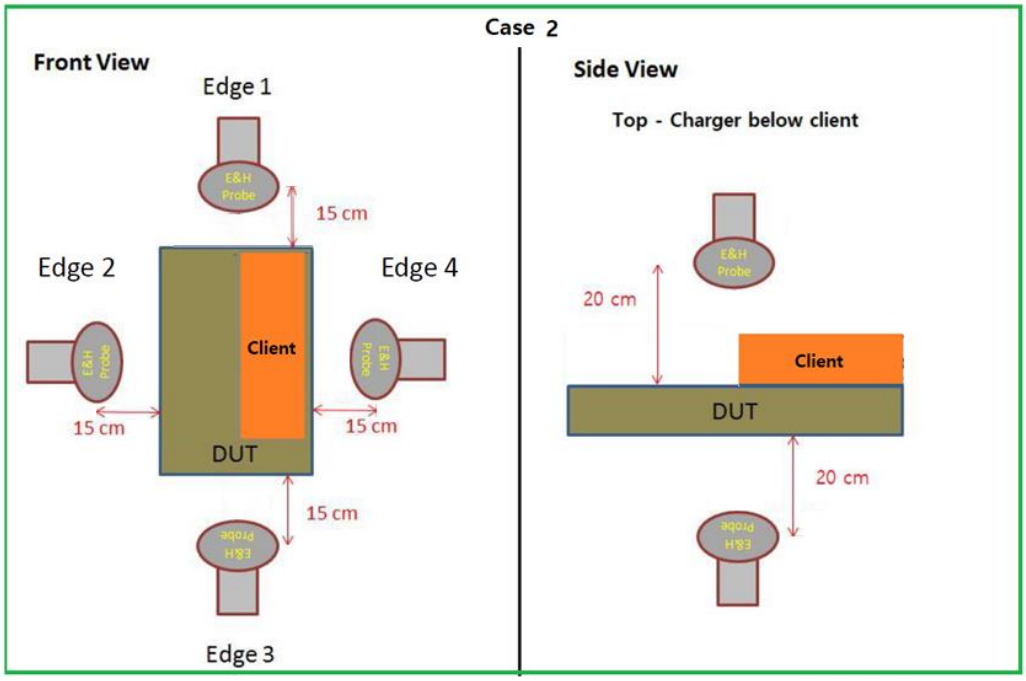
The measurement was performed in the worst case according to the charging status of the client device.

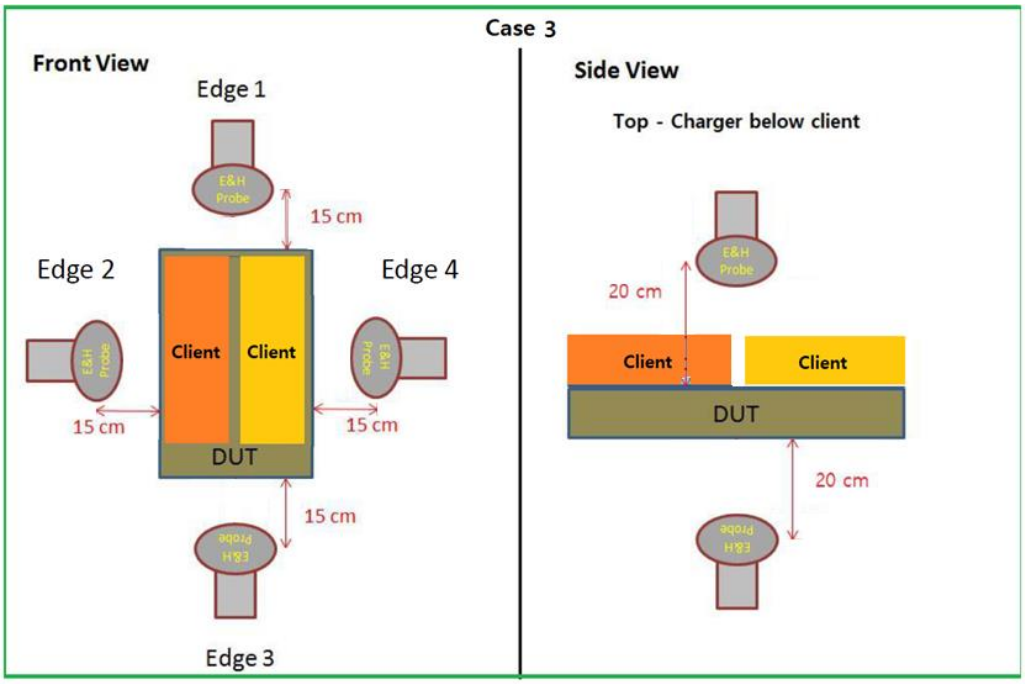
Charging status
Configuration 1 (Client device, <10% Power Charging)
Configuration 1 (Client device, 50~55% Power Charging)
Configuration 1 (Client device, 90~95% Power Charging)

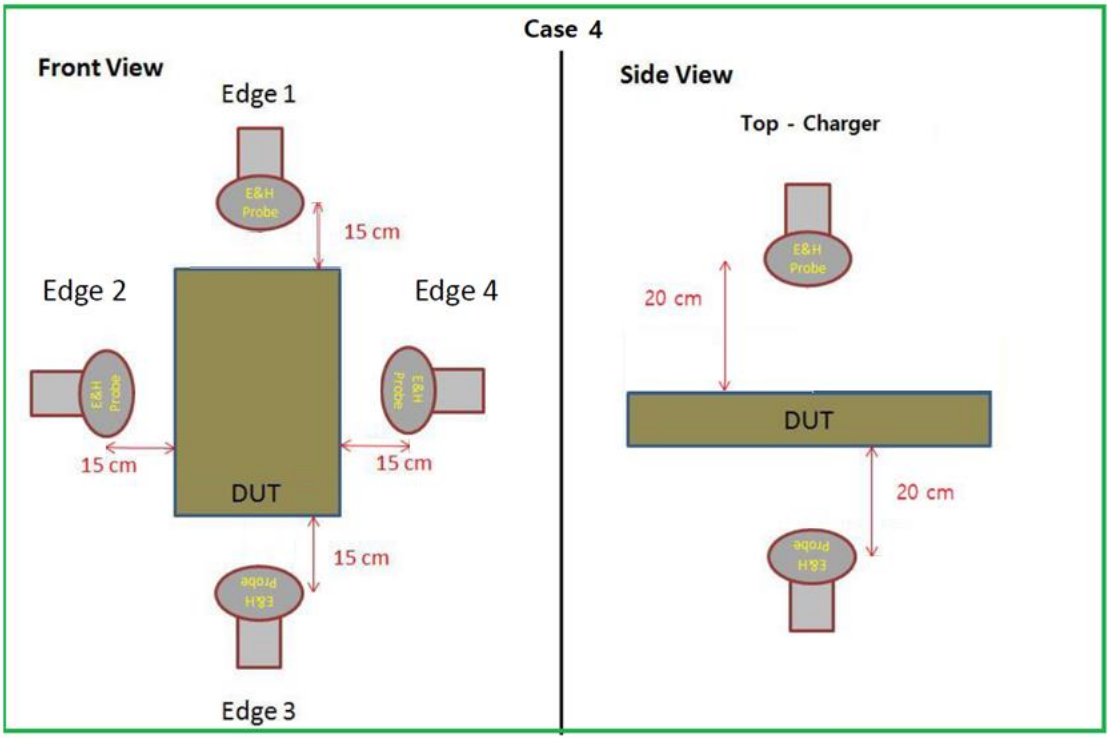
All 3 charging statuses have been investigated and no signification change, and therefore, Configuration 1 with battery status 90~95% was set for final test.

Test Configuration 1 & 2









5. TEST AND MEASUREMENT EQUIPMENT

The following test and measurement equipment was used for the tests documented in this report;

Test Equipment List					
Description	Manufacturer	Model	Serial Numver	Cal Date	Cal Due
Electric and Magnetic Field Probe	Narda	EHP-200AC	170WX91008	3-2-2020	3-2-2021

6. MAXIMUM PERMISSIBLE RF EXPOSURE

6.1. FCC LIMITS AND SUMMARY

6.1.1. FCC 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. TEST RESULTS

6.2.1. FCC RF EXPOSURE

H-FIELD MEASUREMENTS

Note: Peak measurement were performed. RMS values were calculated from the peak measurement.

Please refer to the formula for calculating the RMS values: [Field Strength x √Duty Cycle].

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

TEST results of DUT to phone test Configuration 1 & 2

FCC RF Exposure Result					
Test Configuration	Test mode	Test distance	Test Position	H-Field Limit (A/m)	H-Field meas data (A/m)
Configuration 1	Case 1 (Client placed to the Left)	**15 cm** probe to edges of EUT and **20 cm** probe to top surface of the EUT	Top of EUT	1.63	0.114
			Bottom of EUT		0.044
			Edge 1		0.071
			Edge 2		0.063
			Edge 3		0.034
			Edge 4		0.032
			max		**0.114**
	Case 2 (Client placed to the Right)		Top of EUT		0.101
			Bottom of EUT		0.069
			Edge 1		0.070
			Edge 2		0.068
			Edge 3		0.033
			Edge 4		0.029
			max		0.101
	Case 3 (Client placed to the Both)		Top of EUT		0.102
			Bottom of EUT		0.078
			Edge 1		0.068
			Edge 2		0.049
			Edge 3		0.031
			Edge 4		0.038
			max		0.102
Configuration 2	Case 4 (Non-charging)		Top of EUT		0.102
			Bottom of EUT		0.078
			Edge 1		0.033
			Edge 2		0.057
			Edge 3		0.025
			Edge 4		0.027
			max		0.029

6.2.2. FCC SUMMARY OF RESULTS

H-Field Limit		
FCC RF Exposure	Maximum meas data (A/m)	Percentage (%)
1.63	0.114	**6.99**

Conclusion:

H-Field result is less than 50% of the MPE limit.