CERTIFICATION TEST REPORT

Report Number : 4789567118-FR2V2

Applicant : MEGABROS Co.,Ltd.
3rd floor, 307-ho, Technotel, Bongsu-daero 17, Michuhol-gu, Incheon, South Korea

Model : MC10A

FCC ID : 2AW4I-MC10A

EUT Description : Black Horn with WPT

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

Date Of Issue:
September 09, 2020

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	09/07/20	Initial issue	Robby Lee
V2	09/09/20	Updated to address about the TCB's question	Robby Lee

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1. ATTESTATION OF TEST RESULTS

COMPANY NAME: MEGABROS Co.,Ltd.

EUT DESCRIPTION: Black Horn with WPT

MODEL: MC10A

SERIAL NUMBER: Proto type

DATE TESTED: SEP 02, 2020 – SEP 09, 2020

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:

CY Choi
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 between 110 kHz to 191 kHz, and the maximum power consumption is 5.0 W in charging status.

4.2. WORST-CASE CONFIGURATION

Test configuration	Description
DUT to Phone test configuration 1	Charging from DUT to phone
DUT to Phone test configuration 2	Charging from DUT to phone (TA Charging from DUT)

Note:
Configuration 2 was tested with the worst case of configuration 1.
For Configuration 1 test, the EUT can operate the wireless charging mode when battery level is over DC 3.2V. Because test results are not different between fully charged status and battery level DC 3.2V status(EUT condition), test were performed fully charged condition.

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

Requirement	Device
(1) Power transfer frequency is less than 1 MHz.	Yes. Operating Frequency is between 110 kHz to 191 kHz.
(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.	The transfer system includes only single primary and secondary coils.
(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 2.93 % of the FCC H field limit.

4.4. DESCRIPTION OF TEST SETUP

SUPPORT EQUIPMENT & PERIPHERALS

SUPPROT EQUIPMENT & PERIPHERALS LIST				
Description	Manufacturer	Model	Serial Numver	FCC ID
Phone	Samsung Electronics Co., Ltd.	SM-G977N	R3CM4083W5N	A3LSMG977KOR
Traver Adapter	Samsung Electronics Co., Ltd.	EP-TA20KWK	RK7HAQLBH52HMK	DoC
USB Cable	MEGABROS Co.,Ltd..	-	-	-

TEST SETUP

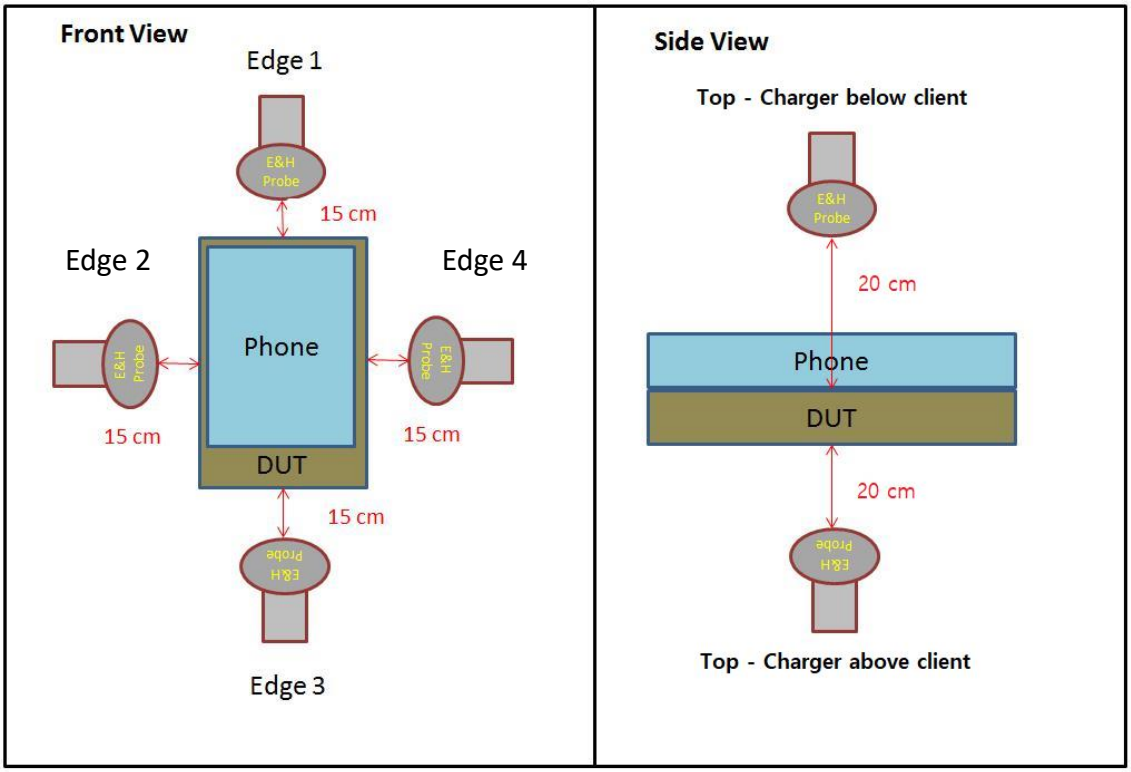
The following three modes are tested in test configurations;

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

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 v03 and RF Exposure Procedures (Wireless Power Transfer) in TCB Workshop October, 2018.

DUT to phone 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	8-12-2020	8-12-2021

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.

The EUT has 100% Duty cycle.

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	Operating Real Product (Power <10% charging)	**15 cm** probe to edges of EUT and **20 cm** probe to top surface of the EUT	Top - charger above client	1.63	0.020
			Top - charger below client		0.021
			Edge 1		0.047
			Edge 2		0.031
			Edge 3		0.027
			Edge 4		0.030
			max		0.048
	Operating Real Product (Power 50~55% charging)		Top - charger above client		0.019
			Top - charger below client		0.020
			Edge 1		0.046
			Edge 2		0.031
			Edge 3		0.030
			Edge 4		0.029
			max		0.046
	Operating Real Product (Power 90~95% charging)		Top - charger above client		0.020
			Top - charger below client		0.020
			Edge 1		0.041
			Edge 2		0.041
			Edge 3		0.028
			Edge 4		0.038
			max		0.043
Configuration 2	Operating Real Product (Power <10% charging)		Edge 1		0.045
			max		**0.046**

6.2.2. FCC SUMMARY OF RESULTS

FCC RF Exposure	Maximum meas data (A/m)	Percentage (%)
1.63	0.048	**2.93**

Conclusion:

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

END OF TEST REPORT