TEST REPORT

of

FCC CFR 47 part 1, 1.1307(b), 1.1310

FCC ID: OSLOKA-211W

Equipment Under Test	:	UNIT ASSY - WIRELESS CHARGING
Model Name	:	OKA-211W
Variant Model Name	:	OKA-213W
Applicant	:	Omron Automotive Electronics Korea Co., Ltd.
Manufacturer	:	Omron Automotive Electronics Korea Co., Ltd.
Date of Receipt	:	2019.05.07
Date of Test(s)	:	2019.07.01 ~ 2019.07.29
Date of Issue	:	2019.08.01

In the configuration tested, the EUT complied with the standards specified above.

Tested By: **Murphy Kim** **Date:** **2019.08.01**

Technical Manager: **Jungmin Yang** **Date:** **2019.08.01**

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1. General Information

1.1. Testing Laboratory

SGS Korea Co., Ltd. (Gunpo Laboratory)
- 10-2, LS-ro 182beon-gil, Gunpo-si, Gyeonggi-do, Korea, 15807
- 4, LS-ro 182beon-gil, Gunpo-si, Gyeonggi-do, Korea, 15807
- Designation number: KR0150

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1.2. Details of Applicant

Applicant : Omron Automotive Electronics Korea Co., Ltd.
Address : 790-12, Bogaewonsam-ro, Bogae-myeon, Anseong-si, Gyeonggi-do, South Korea, 17507
Contact Person : Nam, Sang-Il
Phone No. : +82 2 850 5789

1.3. Details of Manufacturer

Company : Same as applicant
Address : Same as applicant

1.4. Description of EUT

Kind of Product	UNIT ASSY - WIRELESS CHARGING
Model Name	OKA-211W
Variant Model Name	OKA-213W
Power Supply	DC 12.0 V
Frequency Range	112 ㎑
Antenna Type	Inductive loop coil antenna

1.5. Declaration by the Manufacturer

- The EUT has 3 loop coil antennas with one amplifier, and only one antenna can transmit at once.

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1.6. Test Equipment List

Equipment	Manufacturer	Model	S/N	Cal. Date	Cal. Interval	Cal. Due
E-Field Probe	D.A.R.E!! Instruments	RadiSense 4	13I00444SNO04	Jun. 24, 2019	Annual	Jun. 24, 2020
Magnetic Field Sensor	HIOKI	1087-C1	3471	Aug 31, 2018	Annual	Aug. 31, 2019
Magnetic Field Hitester	HIOKI	FT3470-50	171129500	Aug 31, 2018	Annual	Aug 31, 2019
Anechoic Chamber	SY Corporation	L × W × H (9.6 m × 6.4 m × 6.6 m)	N/A	N.C.R.	N/A	N.C.R.

▶ **Support Equipment**

Description	Manufacturer	Model	FCC ID
Samsung Mobile Phone	Samsung Electronics Co., Ltd.	SM-G955N	A3LSMG955N

1.7. Worst Case of Test Configurations

EUT Configuration	Description
Charging Mode With Client Device (Model: SM-G955N, FCC ID: A3LSMG955N)	1 % of battery
	50 % of battery
	99 % of battery

Note;

EUT was investigated with client device under normal charging condition as above then worst value was only reported.

1.8. Test report Revision

Revision	Report Number	Date of Issue	Description
0	F690501/RF-RTL014158	2019.08.01	Initial

1.9. Information of Variant Model

Model Name		Description
Basic Model	OKA-211W	- Basic model
Variant Model	OKA-213W	- Same to basic model except the cover case.

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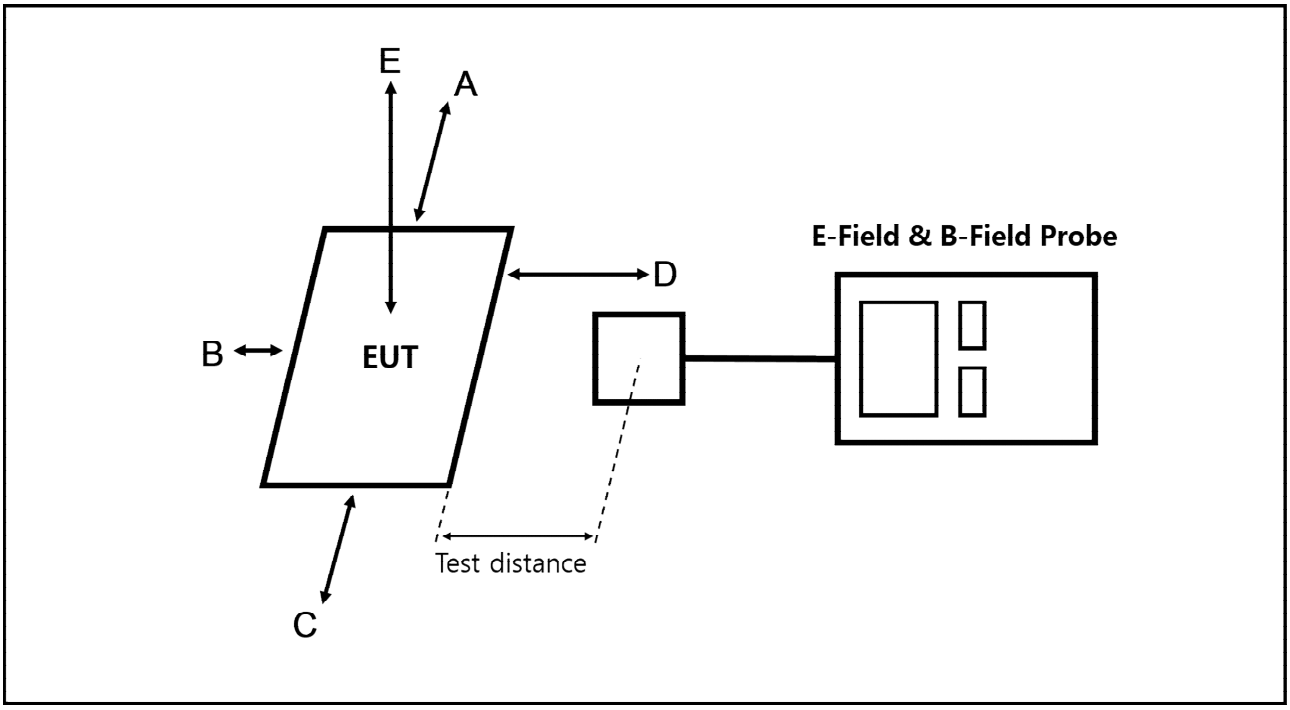
2. Test Result

2.1. Test Setup



2.2. Measurement Procedure

a) The RF exposure test was performed in anechoic chamber.
b) The minimum separation distance to user is 6 ㎝. Thus, the measurement probe was placed at test distance (6, 8, 10, 13, 15 ㎝) which is between the edge of the charger and the geometric center of probe.
c) The highest emission level was recorded and compared with limit as soon as measurement of each points (A, B, C, D, E) were completed.
d) The EUT was measured according to the dictates of KDB 680106 D01 v03.

Note;

- Bottom of EUT shall be connected into the vehicle.
  So these parts are not considered from MPE measurement.

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2.3. Equipment Approval Considerations item 5 b) of KDB 680106 D01 v03.

(1) Power transfer frequency is less that 1 ㎒.
- The device operates at a frequency 112 ㎑.

(2) Output power from each primary coil is less than or equal to 15 watts.
- Output power from primary coil: 5 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 including a charging system with multiple primary coils are to detect and allow only between individual pairs of coils.

(4) Client device is placed directly in contact with the transmitter.
- Client device is placed directly in contact with the transmitter.

(5) Mobile exposure conditions only (portable exposure conditions are not covered by this exclusion).
- Mobile exposure conditions only.

(6) The aggregate H-field strengths at 15 ㎝ surrounding the device and 20 ㎝ above the top surface from all simultaneous transmitting coils are demonstrated to be less than 50 % of the MPE limit.
- Refer to following test results.

  The EUT H-Field Strength levels at 15 ㎝ < 50 % of the MPE H-Field Strength limit 1.63 A/m

  0.170 A/m (Max. at 15 ㎝) < 0.815 A/m

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2.4. Environmental Evaluation and Exposure Limit According to FCC CFR 47 part 1, 1.1307(b), 1.1310

§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 - LIMITS FOR MAXIMUM PERMISSIBLE EXPOSURE (MPE)

Frequency Range (㎒)	Electric Field Strength (V/m)	Magnetic Field Strength (A/m)	Power Density (㎽/㎠)	Average Time (minutes)
(A) Limits for Occupational /Control 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
300-1 500			f/300	6
1 500-100 000			5	6
(B) Limits for General Population / Uncontrol Exposures				
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
300-1 500			f/1 500	30
1 500-100 000			1.0	30

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

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2.5. E and H Field Strength

Ambient temperature : (23 ± 1) ℃
Relative humidity : 47 % R.H.

2.5.1. E-Field Strength at from The Edges Surrounding the EUT

Test Condition: Operating Mode with Client Device (1 % Battery Status of Client Device)

Frequency (㎑)	Distance (㎝)	Probe Position A (V/m)	Probe Position B (V/m)	Probe Position C (V/m)	Probe Position D (V/m)	Probe Position E (V/m)	Limits (V/m)
112	15	6.68	4.98	5.51	6.65	6.51	614
	13	8.45	5.41	7.29	7.24	9.22	
	10	13.80	10.50	4.01	11.80	12.90	
	8	18.20	12.50	14.20	13.70	18.40	
	6	20.20	41.00	25.10	24.40	32.00	

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2.5.2. H-Field Strength at from The Edges Surrounding the EUT

Test Condition: Operating Mode with Client Device (1 % Battery Status of Client Device)

Frequency (㎑)	Distance (㎝)	Probe Position A (A/m)	Probe Position B (A/m)	Probe Position C (A/m)	Probe Position D (A/m)	Probe Position E (A/m)	Limits (A/m)
112	15	0.10	0.10	0.12	0.11	0.17	1.63
	13	0.11	0.13	0.12	0.15	0.21	
	10	0.18	0.22	0.28	0.25	0.34	
	8	0.27	0.30	0.41	0.32	0.46	
	6	0.67	0.49	0.97	0.50	0.90	

Remark:

1. H-field strength (A/m) = B-field (μT) / 1.25
2. Each antenna was tested. As worst condition, Ant. 3 is reported.

- End of the Test Report -

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