

TEST REPORT

of

FCC CFR 47 part1, 1.1307(b), 1.1310

FCC ID: 2AV76-NMOK-360W

Equipment Under Test : WIRELESS POWER CHARGING SYSTEM
Model Name : NMOK-360W
Variant Model Name(s) : -
Applicant : NIDEC MOBILITY KOREA CORPORATION
Manufacturer : NIDEC MOBILITY KOREA CORPORATION
Date of Receipt : 2025.07.18
Date of Test(s) : 2025.07.24 ~ 2025.09.18
Date of Issue : 2025.09.23

In the configuration tested, the EUT complied with the standards specified above. This test report does not assure KOLAS accreditation.

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- 2) The SGS Korea is not responsible for the sampling, the results of this test report apply to the sample as received.
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Tested by:



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Report Number: F690501-RF-RTL006346

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1. General Information

1.1. Testing Laboratory

SGS Korea Co., Ltd. (Gunpo Laboratory)

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- Designation number: KR0150

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1.2. Details of Applicant

Applicant : NIDEC MOBILITY KOREA CORPORATION
Address : 790-12, Bogaewonsam-ro, Bogae-myeon, Anseong-si, Gyeonggi-do, 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	WIRELESS POWER CHARGING SYSTEM	
Model Name	NMOK-360W	
Serial Number	001	
Power Supply	DC 12 V	
Operation Mode	5 W, 10 W	
Frequency Range	5 W	126.7 kHz ~ 128.7 kHz
	10 W	126.7 kHz ~ 128.7 kHz
	Idle	126.7 kHz ~ 128.7 kHz
Antenna Type	Coil Antenna	
Antenna Part Number	N/A	
H/W Version	1.0	
S/W Version	1.0	

1.5. Test Equipment List

Equipment	Manufacturer	Model	S/N	Cal. Due	Cal. Interval
Electric and Magnetic field Probe analyzer	NARDA	EHP 200AC	170WX91017	04/07/2026	Annual
DC Power Supply	Agilent	U8002A	MY53150029	12/10/2025	Annual
Anechoic Chamber	SY Corporation	L × W × H (9.6 m × 6.4 m × 6.6 m)	N/A	N.C.R.	N/A

► Support Equipment

Description	Manufacturer	Model	FCC ID
SAMSUNG Mobile Phone	Samsung Electronics Co., Ltd.	SM-S908U	A3LSMS908U
Lap top	Dell	Latitude 3510	-

1.6. Summary of Test Results

The EUT has been tested according to the following specifications:

APPLIED STANDARD: FCC Part 1 Subpart I		
Section	Test Item(s)	Result
1.1307(b) 1.1310(e)(1)	Electronic Field and Magnetic Field	Pass

1.7. Test Report Revision

Revision	Report Number	Date of Issue	Description
0	F690501-RF-RTL006346	2025.09.23	Initial

1.8. Measurement Uncertainty

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

Parameter	Uncertainty
Electric Field	19.28 %
Magnetic Field	19.64 %

All measurement uncertainty values are shown with a coverage factor of $k=2$ to indicate a 95 % level of confidence.

1.9. Worst Case of Test Configurations

In order to check all kinds of possible configurations, EUT was evaluated with appropriate client and under each charging condition as below table.

Charging mode With client device		Mode		Description
Model	FCC ID			
SM-S901U	A3LSMS901U	5 W, 10 W	126.7 kHz ~ 128.7 kHz	1 % of battery 50 % of battery 99 % of battery

Mode	Battery	Frequency (kHz)	E-field Strength (V/m)	H-field Strength (A/m)
5 W	1 %	126.7 ~ 128.7	<u>68.652</u>	<u>1.126</u>
	50 %		67.558	1.025
	99 %		67.576	1.020
10 W	1 %	126.7 ~ 128.7	<u>85.827</u>	<u>1.123</u>
	50 %		83.624	1.121
	99 %		83.220	1.013

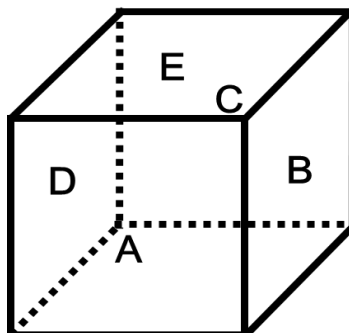
Note;

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

2. Electronic Field and Magnetic Field

2.1. Isotropic Probe Test Setup

The measurement probe (EHP-200AC) is a regular hexahedron and supports 3-axis isotropic probe.



A: Front of measurement probe

B: Right of measurement probe

C: Rear of measurement probe

D: Left of measurement probe

E: Top of measurement probe

*Bottom of measurement probe is not used to measure RF exposure condition owing to connection with a stick.

- measurement isotropic probe was investigated by rotating the probe through various angles for one of the EUT's sides as below.

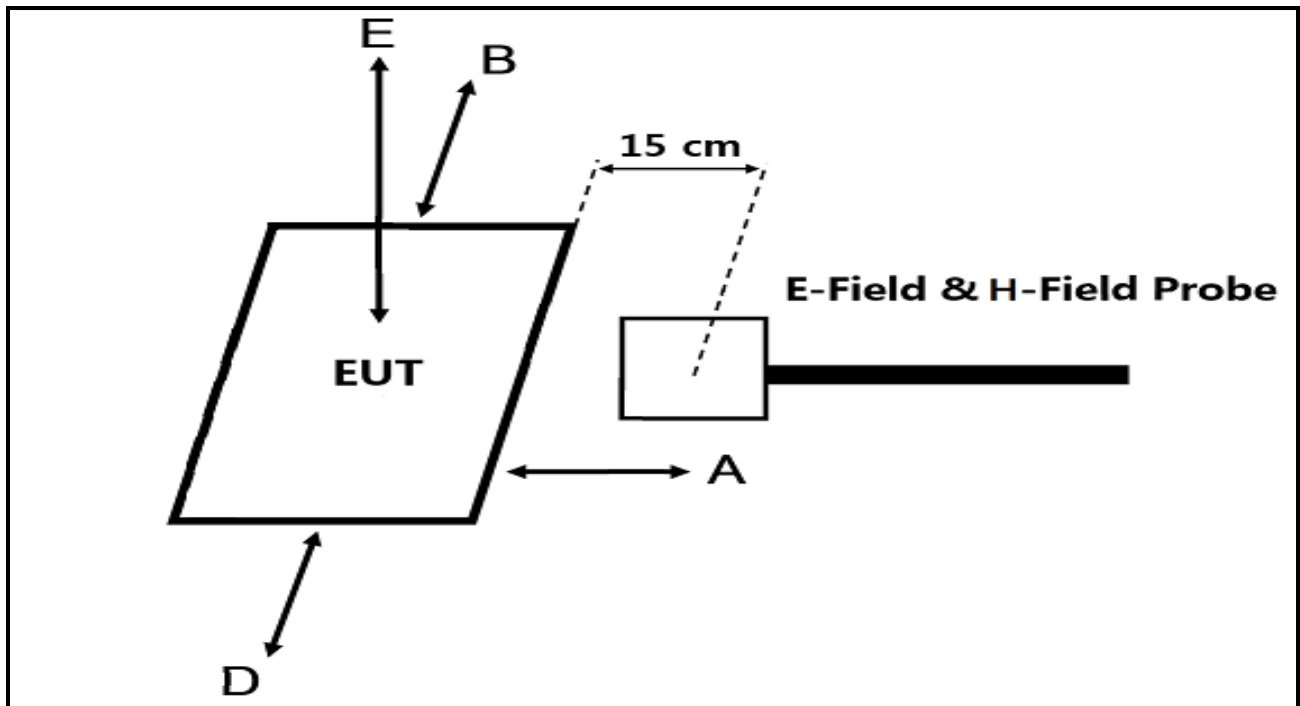
Measurement Point	A	B	C	D	E
Direction	Front	Right	Rear	Left	Top
Measurement Point	A to B	B to C	C to D	D to A	N/A
Direction	Front to Right	Right to Rear	Rear to Left	Left to Front	-
Measurement Point	A to E	B to E	C to E	D to E	N/A
Direction	Front to Top	Right to Top	Rear to Top	Left to Top	-

- When the worst angle among all angles was found, RF exposure measurement should be adjusted from worst angle.

- Worst Case

Mode	Condition	Isotropic Probe position
5W	E-Field	Side D
	H-Field	Side A
10W	E-Field	Side D
	H-Field	Side A

2.2. EUT Test Setup



2.3. Measurement procedure

- The RF exposure test was performed in anechoic chamber.
- The measurement probe was placed at test distance (4, 6, 8, 10, 15 cm) which is between the edge of the charger and the geometric center of probe.
- Measurement was performed on each side of the EUT as described above picture (A, B, D, E).
- The EUT was measured according to the dictates of KDB 680106 D01 RF Exposure Wireless Power Transfer v04.

Note;

- Because of measurement probe antenna size, minimum distance between charger and probe is 4 cm for E-Field and H-Field.
- Probe has 4 cm radius enclosure but each sensing element is located 8 mm from the other edge. Therefore, actual distance in measurement at 4 cm is 8 mm.
- The EUT installed to the vehicle was charged from the top, so it was measured from 4 sides except the bottom and rear.
- According to the manufacturer's declaration, in the installation environment of EUT the minimum distance is 82 mm on the B and D sides and 17 mm on the A side. Therefore, considering the minimum installation environment and the probe's sensing element, the evaluation were carried out at 74 mm and 9 mm, respectively.

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 to § 1.1310(e)(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)	Average Time (minutes)
(i) 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
(ii) Limits for General Population/Uncontrolled Exposures				
<u>0.3-1.34</u>	<u>614</u>	<u>1.63</u>	*(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 MHz. * = Plane wave equivalent power density.

2.5. E and H field strength

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

2.5.1. E-Field Strength at from the edges surrounding the EUT

Test Condition: 5 W Operating mode with client device

Frequency (kHz)	Distance (cm)	EUT Sides	Distance (cm)	EUT Sides		Distance (cm)	EUT Sides
		A (V/m)		B (V/m)	D (V/m)		E (V/m)
126.7 ~ 128.7	15	2.734	15	4.064	4.823	15	5.164
	10	6.073	Contact (12.2 cm)	37.797	40.498	10	13.258
	8	9.215	-	-	-	8	21.363
	6	14.918	-	-	-	6	33.666
	Contact (5.7 cm)	20.348	-	-	-	Contact (4 cm)	<u>50.453</u>

Test Condition: 10 W Operating mode with client device

Frequency (kHz)	Distance (cm)	EUT Sides	Distance (cm)	EUT Sides		Distance (cm)	EUT Sides
		A (V/m)		B (V/m)	D (V/m)		E (V/m)
126.7 ~ 128.7	15	6.153	15	3.081	8.441	15	5.797
	10	12.010	Contact (12.2 cm)	11.785	58.463	10	9.880
	8	17.580	-	-	-	8	14.952
	6	29.891	-	-	-	6	23.102
	Contact (5.7 cm)	32.186	-	-	-	Contact (4 cm)	<u>54.433</u>

Test Condition: Idle

Frequency (kHz)	Distance (cm)	EUT Sides	Distance (cm)	EUT Sides		Distance (cm)	EUT Sides
		A (V/m)		B (V/m)	D (V/m)		E (V/m)
126.7 ~ 128.7	15	0.073	15	0.073	0.073	15	0.073
	10	0.091	Contact (12.2 cm)	0.075	0.128	10	0.130
	8	0.075	-	-	-	8	0.074
	6	0.106	-	-	-	6	0.618
	Contact (5.7 cm)	0.268	-	-	-	Contact (4 cm)	<u>0.992</u>

2.5.2. H-Field Strength at from the edges surrounding the EUT

Test Condition: 5 W Operating mode with client device

Frequency (kHz)	Distance (cm)	EUT Sides	Distance (cm)	EUT Sides		Distance (cm)	EUT Sides
		A (A/m)		B (A/m)	D (A/m)		E (A/m)
126.7 ~ 128.7	15	0.062	15	0.072	0.072	15	0.145
	10	0.241	Contact (12.2 cm)	0.507	0.259	10	0.346
	8	0.425	-	-	-	8	0.575
	6	0.650	-	-	-	6	0.879
	Contact (5.7 cm)	0.674	-	-	-	Contact (4 cm)	<u>1.132</u>

Test Condition: 10 W Operating mode with client device

Frequency (kHz)	Distance (cm)	EUT Sides	Distance (cm)	EUT Sides		Distance (cm)	EUT Sides
		A (A/m)		B (A/m)	D (A/m)		E (A/m)
126.7 ~ 128.7	15	0.128	15	0.191	0.233	15	0.140
	10	0.409	Contact (12.2 cm)	0.861	0.938	10	0.347
	8	0.616	-	-	-	8	0.655
	6	1.102	-	-	-	6	1.063
	Contact (5.7 cm)	1.245	-	-	-	Contact (4 cm)	<u>1.255</u>

Test Condition: Idle

Frequency (kHz)	Distance (cm)	EUT Sides	Distance (cm)	EUT Sides		Distance (cm)	EUT Sides
		A (A/m)		B (A/m)	D (A/m)		E (A/m)
126.7 ~ 128.7	15	0.028	15	0.028	0.031	15	0.157
	10	0.029	Contact (12.2 cm)	0.054	0.079	10	0.197
	8	0.028	-	-	-	8	0.178
	6	0.027	-	-	-	6	0.440
	Contact (5.7 cm)	0.124	-	-	-	Contact (4 cm)	<u>0.735</u>

2.6. H-Field Strength Calculation of the EUT

2.6.1. Calculation of μ_r (relative permeability)

According to the self-inductance formula, μ_r (relative permeability) can be obtained.

$$x = \sqrt{1 + \left(\frac{d}{2l}\right)^2}$$

$$L = 2l \left[\ln \left\{ \left(\frac{2l}{d} \right) (1 + x) \right\} - x + \frac{\mu_r}{4} + \frac{d}{2l} \right]$$

$$\mu_r = 4 \left[\frac{L}{2l} - \ln \left\{ \left(\frac{2l}{d} \right) (1 + x) \right\} + x - \frac{d}{2l} \right]$$

Where;

L: self inductance [nH], Qi specification of WIRELESS POWER CONSORTIUM

d: diameter of the wire [cm]

l: length of the wire in [cm]

μ_r : relative permeability

L [nH]	d [cm]	l [cm]	μ_r
11 500	0.115	153	120.01

2.6.2. Calculation of theoretical H-field strength with Biot-Savart's law

According to Biot-Savart law, the value of the B-field at the distance z from the coil is expressed as follows.

$$B_z = \frac{\mu_0 I R^2}{2(R^2 + z^2)^{3/2}}$$

Convert the value of the B-field to the H-field.

$$B_z = \mu_0 \times H_z,$$

$$H_z = \frac{I R^2}{2(R^2 + z^2)^{3/2}}$$

Considering the number of turns and relative permeability of coil, it is expressed as follows.

$$H_z = \frac{I R^2}{2(R^2 + z^2)^{3/2}} \times \frac{N}{\mu_r}$$

Where;

I: the maximum current to the EUT during charging can be obtained from the power supply equipment [A]

R: the radial of EUT's coil antenna [m]

z: the distance from the coil antenna to the point to be measured [m]

N: the number of turns in the coil

μ_r : relative permeability

Test Condition	I [A]	R [m]	μ_r	N	z [m]	Actual measuring distance ³⁾ [m]	Theoretical H-field value [A/m]
5 W	1	0.027	120.01	12	0.019 6 ¹⁾	0.007 6	0.981
					0.011 6 ²⁾	0	1.436
10 W	1	0.027	120.01	12	0.019 6 ¹⁾	0.007 6	0.981
					0.011 6 ²⁾	0	1.436

Note;

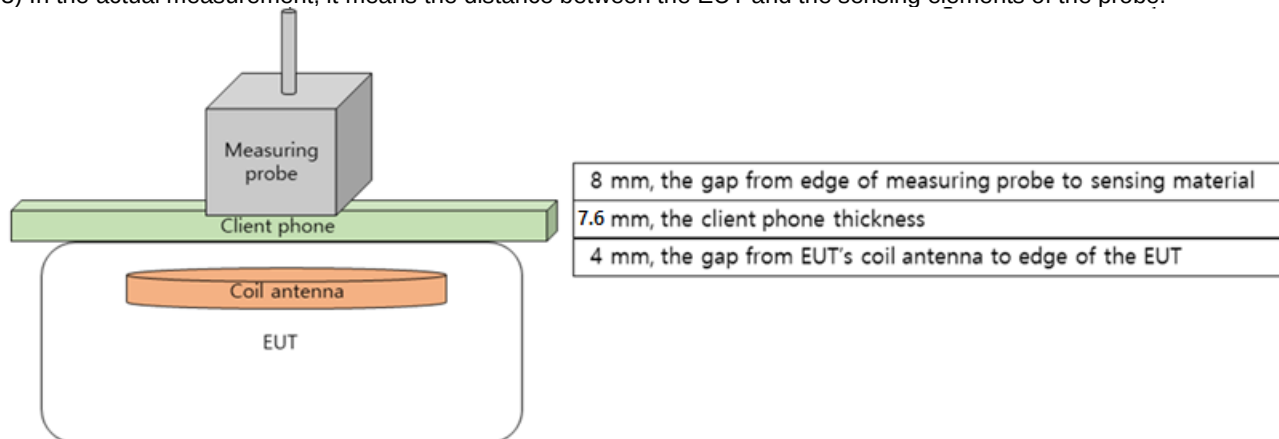
1) Distance z is from the EUT's coil antenna to the measurement point and includes all of the following.

- 4 mm, the gap from EUT's coil antenna to edge of the EUT
- 7.6 mm, the client phone thickness
- 8 mm, the gap from edge of measuring probe to sensing elements of measuring probe

2) Distance z is from the EUT's coil antenna to the measurement point and includes all of the following.

- 4 mm, the gap from EUT's coil antenna to edge of the EUT
- 7.6 mm, the client phone thickness

3) In the actual measurement, it means the distance between the EUT and the sensing elements of the probe.



2.6.3. The validation of H-field strength

Frequency (kHz)	Test Condition	Distance (cm)	Theoretical H-field value [A/m]	30 % tolerance of theoretical H-field value [A/m]		EUT Sides E [A/m]	Limits [A/m]
				Min.	Max	Measured value	
126.7 ~ 128.7	5 W (1 % battery status of client device)	Contact ¹⁾	0.981	0.687	1.276	1.132	1.63
126.7 ~ 128.7	10 W (1 % battery status of client device)	Contact ¹⁾	0.981	0.687	1.276	1.255	

Note;

- 1) Probe has 4 cm radius enclosure but each sensing element is located 8 mm from the probe edge.
Therefore, actual distance in measurement is 8 mm.

2.6.4. The estimation of H-field strength

Frequency (kHz)	Test Condition	Distance (cm)	EUT Sides E	Limits [A/m]
			Theoretical H-field value [A/m]	
126.7 ~ 128.7	5 W (1 % battery status of client device)	0	1.436	1.63
126.7 ~ 128.7	10 W (1 % battery status of client device)	0	1.436	

Estimation formula and theoretical value have 30% agreement with actual measurement. Estimation for 0 mm field strength with validated formula complies limit.

- End of the Test Report -