

TEST REPORT



CTK Co., Ltd.
(Ho-dong), 113, Yejik-ro, Cheoin-gu,
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Report No.:
CTK-2022-03392
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1. Applicant

- Name : Aptiv Connection Systems Korea LLC
- Address : 3, Hyundaiakia-ro, Paltan-myeon, Hwaseong-si, Gyeonggi-do, Republic of Korea
- Date of Receipt : 2022-08-24

2. Manufacturer

- Name : Aptiv Connection Systems Korea LLC
- Address : 3, Hyundaiakia-ro, Paltan-myeon, Hwaseong-si, Gyeonggi-do, Republic of Korea

3. Use of Report : For FCC Certification, For ISED Certification

4. Test Sample / Model : Wireless Power Charger / SX2 WPC with NFC

5. Date of Test : 2022-10-05

6. Test Standard(method) used : FCC 47 CFR part 2 subpart J 2.1091,
RSS-102 Issue 5

7. Testing Environment: Temp.: (22.3 ± 0.5) °C, Humidity: (30 ± 3) % R.H

8. Test Results : Compliance

9. Location of Test : ☒ Permanent Testing Lab ☐ On Site Testing
(Address : 5, Dongbu-ro 221beon-gil, Cheoin-gu, Yongin-si, Gyeonggi-do, Korea)

The results shown in this test report refer only to the sample(s) tested unless otherwise stated. This report cannot be reproduced or copied without the written consent of CTK.

Approval	Tested by	Technical Manager
	Bong-seok Kim: (Signature) 	Young-taek Lee: (Signature) 

Remark. This report is not related to KOLAS accreditation and relevant regulation.

2022-12-29

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REPORT REVISION HISTORY

Date	Revision	Page No
2022-12-29	Issued (CTK-2022-03392)	all

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1. General Product Description

1.1 Client Information

Company	Aptiv Connection Systems Korea LLC
Contact Point	3, Hyundaikia-ro, Paltan-myeon, Hwaseong-si, Gyeonggi-do, Republic of Korea
Contact Person	Name : Maeng, MinKyung E-mail : min-kyung.maeng@aptiv.com Tel : +82-31-350-1799

1.2 Product Information

FCC ID	2A29I-SX2WPCNFC
IC	29623-SX2WPCNFC
Product Description	Wireless Power Charger
Model name	SX2 WPC with NFC
Variant Model name	-
Operating Frequency	13.56 MHz
RF Output Power	78.6 dBuV/m @ 3m
Antenna Type	PCB antenna(Loop antenna)
Power Source	DC 12 V

2. Accreditations

2.1 Laboratory Accreditations and Listings

Country	Agency	Registration Number
USA	FCC	805871
CANADA	ISED	8737A
KOREA	NRRA	KR0025

2.2 Calibration Details of Equipment Used for Measurement

Test equipment and test accessories are calibrated on regular basis. The maximum time between calibrations is one year or what is recommended by the manufacturer, whichever is less. All test equipment calibrations are traceable to the Korea Research Institute of Standards and Science (KRISS), therefore, all test data recorded in this report is traceable to KRISS.

3. RF Exposure Assessment

3.1 Maximum Permissible Exposure

FCC Limit

Frequency range (MHz)	Electric field strength (V/m)	Magnetic field strength (A/m)	Power density (mW/cm ²)	Averaging time (minutes)
(B) Limits for General Population/Uncontrolled Exposure				
0.3-1.34	614	1.63	*100	30
<u>1.34-30</u>	<u>824/f</u>	<u>2.19/f</u>	*180/f ²	30
30-300	27.5	0.073	0.2	30
300-1,500	-	-	f/1500	30
1,500-100,000	-	-	1.0	30

Note 1 : f = frequency in MHz; *Plane-wave equivalent power density
Note 2 : For the applicable limit, see FCC 1.1310

ISED Limit

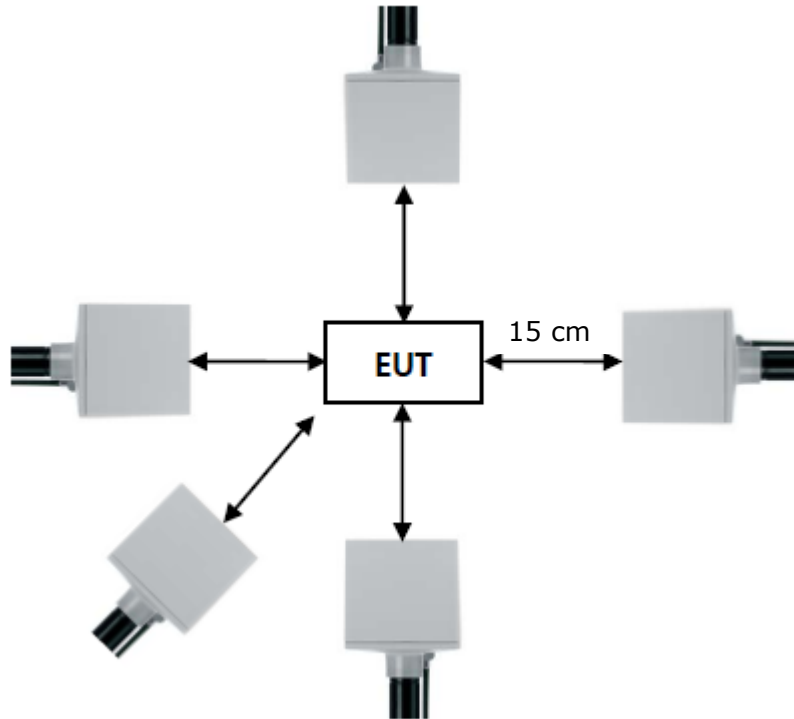
RF Field Strength Limits for Devices Used by the General Public (Uncontrolled Environment)				
Frequency Range (MHz)	Electric Field (V/m rms)	Magnetic Field (A/m rms)	Power Density (W/m ²)	Reference Period (minutes)
0.003-10	83	90	-	Instantaneous*
0.1-10	-	0.73/ f	-	6**
1.1-10	87/ f ^{0.5}	-	-	6**
<u>10-20</u>	<u>27.46</u>	<u>0.0728</u>	-2	6
20-48	58.07/ f ^{0.25}	0.1540/ f ^{0.25}	8.944/ f ^{0.5}	6
48-300	22.06	0.05852	1.291	6
300-6000	3.142 f ^{0.3417}	0.008335 f ^{0.3417}	0.02619 f ^{0.6834}	6
6000-15000	61.4	0.163	10	6
15000-150000	61.4	0.163	10	616000/ f ^{1.2}
150000-300000	0.158 f ^{0.5}	4.21 x 10 ⁻⁴ f ^{0.5}	6.67 x 10 ⁻⁵ f	616000/f ^{1.2}

Note: f is frequency in MHz.
* Based on nerve stimulation (NS).
** Based on specific absorption rate (SAR).

Test method

- Performed aggregate both leakage E-field and H-field at surrounding the device from all simultaneous transmitting coils.
- During testing, the EUT was placed on a non-conductive table top and the ancillary equipment (e.g., mobile phone) was placed on the EUT for charging. Maximum E-field and H-field measurement were tested 15 cm from each side of the EUT. Along the side of the EUT to side of E-field probe and H-field probe were positioned at the location to search maximum field strength.

Test Setup



Test results

Maximum Permissible Exposure				
Charging Condition	Separation	Probe from EUT Side	E-field (V/m)	H-field (A/m)
Operating	15 cm	right	0.415	0.015
Operating	15 cm	bottom	0.741	0.032
Operating	15 cm	left	1.083	0.016
Operating	15 cm	top	0.504	0.020
Operating	15 cm	Y-axis above EUT	1.363	0.066
Limit			27.46	0.0728
Margin Limit(Measurement value / Limit * 100)(%)			4.96 %	90.65 %

Maximum Measurement Uncertainty

The value of the measurement uncertainty for the measurement of each parameter.
Coverage factor $k = 2$, Confidence levels of 95 %

item	Uncertainty
H-field	15 % (C.L. : Approx. 95 %, $k = 2$)
E-field	15 % (C.L. : Approx. 95 %, $k = 2$)

APPENDIX A – Test Equipment Used For Tests

No.	Name of Equipment	Manufacturer	Model No.	Serial No.	Date of Calibration	Due Date
1	Electric and Magnetic Field Analyzer	Narda	EHP-200AC	170WX91010	2021-10-27	2022-10-27
2	EHP200-TS Software	Narda	EHP200-TS	650.000.207	-	-
3	Note Computer	HP	15-bs563TU	CND7253QRM	-	-

APPENDIX B – Test Photos



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