

FCC TEST REPORT

Job No. : GPWE2309000143EC

Applicant : O-JIN CORPORATION

Equipment Under Test (EUT) :

Product Name : Charging Dock RGB

Model Name : IMCD300

FCC Authorization Type : Certification of Conformity

Applied Standards : FCC Part 15 Subpart B, Class B

FCC ID : 2A3ZZ-IMCD300

Date of Receipt : September 05, 2023

Date of Test : September 15, 2023 ~ September 19, 2023

Date of Issue : October 4, 2023

Test Results : Complied

Tested by :



Luther Choi

Reviewed by :



Julia Choi

This test report does not assure KOLAS accreditation.

1) The results of this test report are effective only to the items tested.

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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The results shown in this test report refer only to the sample(s) tested unless otherwise stated. This Test Report cannot be reproduced, except in full.

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Revision History

Revision	Report number	Description
0	F690501-RF-EMC001700	Initial

1. General Information

1.1 Client Information

Applicant	O-JIN CORPORATION
Applicant Address	61-1, Seosomun-ro, Seodaemun-gu, Seoul, Republic of Korea
Manufacturer	Bench soft.Co.,Ltd
Manufacturer Address	A-S907, Incheon Techno Valley, 236, Jubuto-ro, Bupyeong-gu, Incheon, Republic of Korea

1.2 Test Laboratory

Name and Address	SGS Korea Co., Ltd.
- Giheung Laboratory	35, Giheungdanji-ro 121beon-gil, Giheung-gu, Yongin-si, Gyeonggi-do, Republic of Korea
- Gunpo Laboratory	4, LS-ro 182beon-gil, Gunpo-si, Gyeonggi-do, 15807, Republic of Korea
- Dongtan Laboratory	12, Dongtansandan 10-gil, Hwaseong-si, Gyeonggi-do, 18487, Republic of Korea
FCC Registration No.	KR0150
IC Registration No.	7837B
Phone	+ 82 31 548 0710
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1.3 General Information of E.U.T.

Classification	Specification
Product Name	Charging Dock RGB
Model Name	IMCD300
Serial No.	-
EMI Classification	Class B
Internal Clock Frequency	16 MHz
Rated Power	DC 5.0 V / 0.5 A
Test Voltage	AC 120 V, 60 Hz
H/W Version	1.5
S/W Version	1.07
Port	USB(C-type), USB(A-type), POGO Pin
Components	EUT, Cap for charging, Cable(USB A to C)
Function	Charging that the EUT was charge for a wireless mouse and operated a USB(A-type) mouse at the same time

1.4 Operating Modes and Conditions

Operating mode	Operating Condition
Charging + Operating	A state that the EUT was charging mouse1 and operating mouse2 while powered by Laptop.

1.5 Peripheral Equipments

Description	Model	Serial No.	Manufacturer	Note.
Mouse 1	T41126	-	Logitech	-
Mouse 2	M270	-	G - cliker	-
Laptop	NT740USL	-	Samsung Electronics Suzhou Computer Co., Ltd	
Laptop Adaptor	CPA09-004A	BA44-00297A	Chicony Power Technology Co., Ltd	-

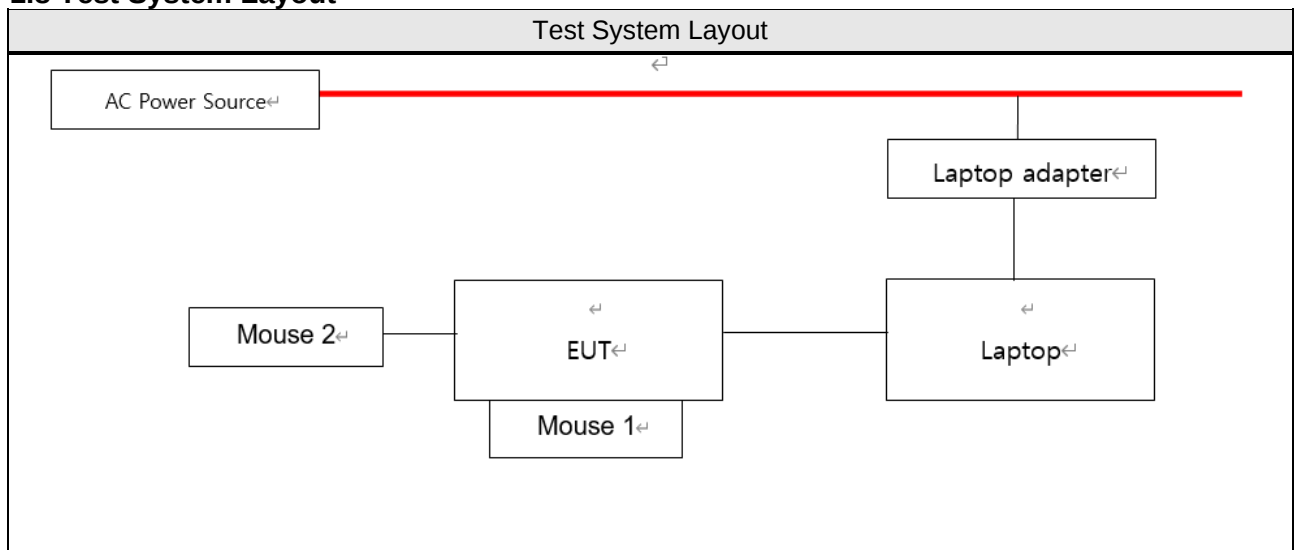
1.6 Cable List

Start		END		Cable Spec.		Used core
Name	I/O Port	Name	I/O Port	Length (m)	Shield	
EUT	POGO Pin	Mouse 1	POGO Pin	-	-	-
	USB A-type	Mouse 2	USB A-type	1.5	Unshield	No
	USB C-type	Laptop	USB A-type	1.8	Unshield	No

1.7 System Configurations

Description	Model	Serial No.	Manufacturer	Note
Main Board	MCD_RGB/R1.6	6132515A-Y14-230811	-	-

1.8 Test System Layout



1.9 Modifications/Notes

- There was no modified item during the test.

1.10 Applicable Standards for Testing

Standards	Status	Deviation
FCC Part 15 : Subpart B	Applicable	No Deviation

1.11 Summary of Test Results

Test Item	Standards	Results
Conducted Emission	FCC Part 15 Subpart B Section 15.107	Complied
Radiated Emission	FCC Part 15 Subpart B Section 15.109	Complied

Note : Test methods of all test items are performed according to the basic standards in this table.

EMISSION

2.1 Test Results

Test Items	Standards	Test Results
Conducted Emission	FCC Part 15 Subpart B Section 15.107	Complied
Radiated Emission	FCC Part 15 Subpart B Section 15.109	Complied

2.2 Test Method and Limits

2.2.1 Test Method

Test Items	Measuring Frequency Range	RBW	Measuring Distance
Conducted Emission	0.15 MHz ~ 30 MHz	9 kHz	-
Radiated Emission	30 MHz ~ 1 GHz	120 kHz	10 m & 3 m
	Above 1 GHz	1 MHz	3 m

Note : 10 m method of radiated emission measurement is only applied to Class A equipment over the frequency range of 30 MHz ~ 1 GHz. Except this, 3 m method is applied to Class B equipment over the frequency range of 30 MHz ~ 1 GHz and Class A and Class B equipment above 1 GHz.

2.2.2 Test Limits

-Conducted Emission Limits

Frequency Range	Limits(dB μ V)		Class
	Quasi-peak	Average	
0.15 MHz ~ 0.5 MHz	79	66	Class A
0.5 MHz ~ 30 MHz	73	60	
0.15 MHz ~ 0.5 MHz	66 to 56	56 to 46	Class B
0.5 MHz ~ 5 MHz	56	46	
5 MHz ~ 30 MHz	60	50	

Note : The lower limit shall apply at the transition frequencies. The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.5 MHz.

-Radiated Emission Limits below 1 GHz

Frequency Range	Limits(dB μ V/m)	Class
	Quasi-peak	
30 MHz ~ 88 MHz	39.0	Class A (10 m method)
88 MHz ~ 216 MHz	43.5	
216 MHz ~ 960 MHz	46.4	
960 MHz ~ 1 GHz	49.5	
30 MHz ~ 88 MHz	40.0	Class B (3 m method)
88 MHz ~ 216 MHz	43.5	
216 MHz ~ 960 MHz	46.0	
960 MHz ~ 1 GHz	54.0	

-Radiated Emission Limits above 1 GHz (3 m method)

Frequency Range	Limits(dB μ V/m)		Class
	Average	Peak	
Above 1 GHz	60.0	80.0	Class A
Above 1 GHz	54.0	74.0	Class B

Note : The limits of class A equipment is extrapolated using an extrapolation factor of 20 dB/decade because it was measured at 3 m distance not 10 m distance.

2.3 Conducted Disturbance

The initial preliminary exploratory scans were performed over the measuring frequency range(0.15 MHz to 30 MHz) using a max hold mode incorporating a Peak detector and CISPR-Average detector and using the EMI measuring software. The final test data was measured using a Quasi-Peak detector and CISPR-Average detector.

Note. Measuring software

- Giheung Lab.: EMC32(V10.40.10) from R&S
- Gunpo Lab.: EMC32(V10.60.20) from R&S
- Dongtan Lab.: EMC32(V10.40.00) from R&S

2.3.1 Test Equipments

Equipment	Model	Manufacturer	Serial No	Cal Due. Date
EMI TEST RECEIVER	ESU8	R&S	100128	2024.05.25
2-LINE V-NETWORK	ENV216	R&S	101180	2024.08.04
PULSE LIMITER	ESH3-Z2	R&S	100283	2024.08.28
ARTIFICIAL MAIN NETWORK	ESH2-Z5	R&S	100303	2024.08.29
RF Cable	EMH-1Lab-CE-01	-	-	2024.01.07

2.3.2 Test Site

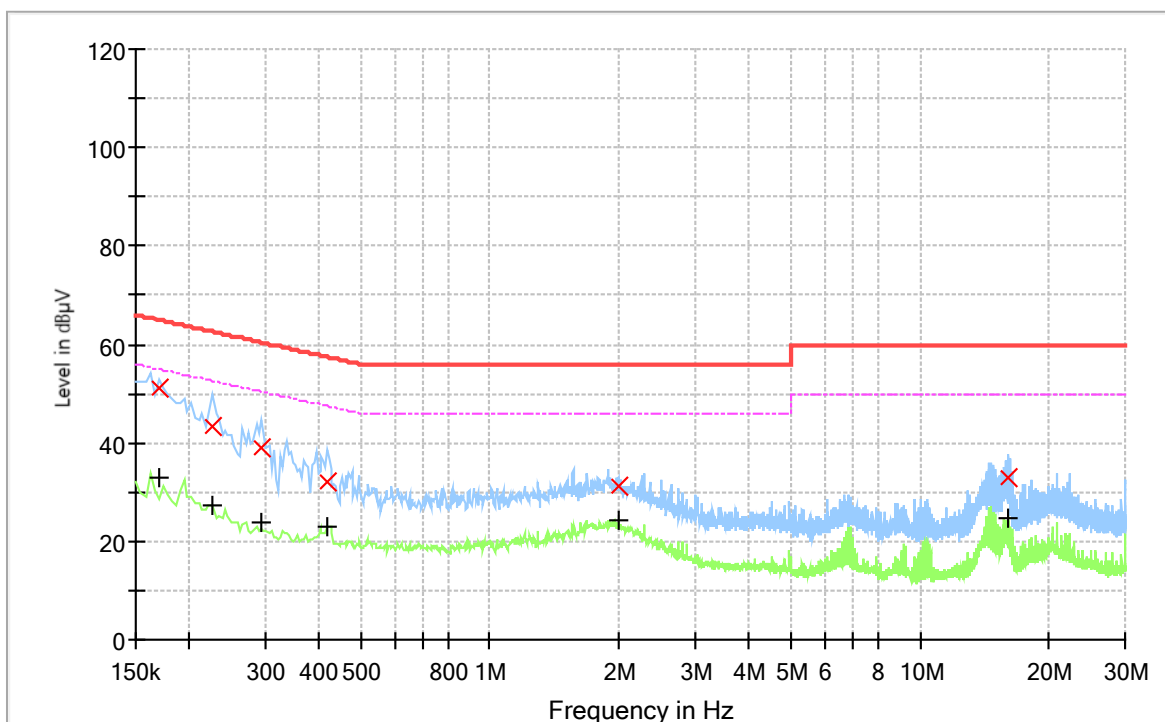
Shield Room in Giheung Laboratory

2.3.3 Environment Conditions

Temperature	(Minimum 22.4, Maximum 22.7) °C
Humidity	(Minimum 57.0, Maximum 59.0) % R.H.
Atmospheric Pressure	(Minimum 100.3, Maximum 100.3) kPa
Test Date	September 19, 2023

2.3.4 Test Results

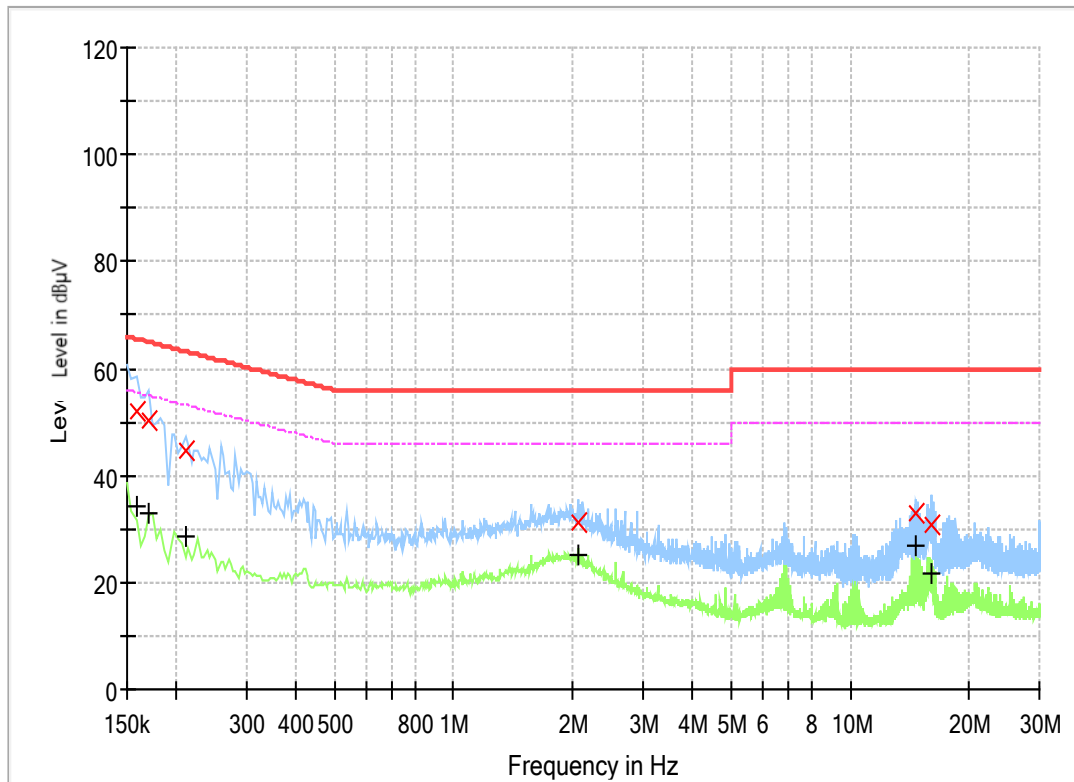
Live Line



Final Result

Frequency (MHz)	QuasiPeak (dBμV)	CAverage (dBμV)	Limit (dBμV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Filter	Corr. (dB)
0.170	---	33.05	54.96	21.91	15 000.0	9.000	L1	ON	19.8
0.170	50.96	---	64.96	14.00	15 000.0	9.000	L1	ON	19.8
0.226	---	27.23	52.60	25.36	15 000.0	9.000	L1	ON	19.6
0.226	43.12	---	62.60	19.47	15 000.0	9.000	L1	ON	19.6
0.294	---	23.73	50.41	26.68	15 000.0	9.000	L1	ON	19.5
0.294	38.91	---	60.41	21.51	15 000.0	9.000	L1	ON	19.5
0.418	---	23.14	47.49	24.35	15 000.0	9.000	L1	ON	19.8
0.418	32.04	---	57.49	25.45	15 000.0	9.000	L1	ON	19.8
1.982	---	24.45	46.00	21.55	15 000.0	9.000	L1	ON	19.6
1.982	31.05	---	56.00	24.95	15 000.0	9.000	L1	ON	19.6
15.974	---	24.61	50.00	25.39	15 000.0	9.000	L1	ON	19.8
15.974	32.79	---	60.00	27.21	15 000.0	9.000	L1	ON	19.8

Neutral Line



Final Result

Frequency (MHz)	QuasiPeak (dBμV)	CAverage (dBμV)	Limit (dBμV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Filter	Corr. (dB)
0.158	---	34.13	55.57	21.44	15 000.0	9.000	N	ON	19.7
0.158	52.02	---	65.57	13.55	15 000.0	9.000	N	ON	19.7
0.170	---	33.03	54.96	21.93	15 000.0	9.000	N	ON	19.8
0.170	50.15	---	64.96	14.81	15 000.0	9.000	N	ON	19.8
0.210	---	28.69	53.21	24.51	15 000.0	9.000	N	ON	19.6
0.210	44.77	---	63.21	18.43	15 000.0	9.000	N	ON	19.6
2.054	---	25.20	46.00	20.80	15 000.0	9.000	N	ON	19.6
2.054	31.31	---	56.00	24.69	15 000.0	9.000	N	ON	19.6
14.638	---	26.65	50.00	23.35	15 000.0	9.000	N	ON	19.8
14.638	32.92	---	60.00	27.08	15 000.0	9.000	N	ON	19.8
16.050	---	21.52	50.00	28.48	15 000.0	9.000	N	ON	19.9
16.050	30.95	---	60.00	29.05	15 000.0	9.000	N	ON	19.9

Measurement Uncertainty : See Appendix A

Note : • (L1) : Live

• Margin = Limit – Quasi Peak or CAverage

• (N) : Neutral

• Corr. = LISN Factor + Cable loss + Pulse Limiter factor

Ex) In case

Freq ; 0.5 MHz, level ; 30 dB(μV), CL ; 0.2 dB, LISN ; 9.5 dB, P/L: 9.8 dB

Result = Level + CL + LISN + P/L

= 30 + 0.2 + 9.5 + 9.8

= 49.5

Margin = Limit – Result

= 79 - 49.5

= 29.5

2.4 Radiated Emission

The initial preliminary exploratory scans were performed over the measuring frequency range (30 MHz to 1 GHz) using a max hold mode incorporating a Peak detector by using the EMI measuring software. The final test data was measured using a Quasi-Peak detector below 1 GHz,.

Measurements were made with the antenna positioned in both the horizontal and vertical planes of polarization. The antenna height was varied from 1 m to 4 m and the EUT was rotated 360° to find the maximum emitting point for each frequency.

Note. Measuring software

- Giheung Lab.: EMC32(V10.40.10) from R&S
- Gunpo Lab.: EP5RE(V5.3.70) from TOYO
- Dongtan Lab.: EMC32(V10.40.10) from R&S

2.4.1 Test Equipments

Equipment	Model	Manufacturer	Serial No	Cal Due. Date
EMI TEST RECEIVER	ESU40	R&S	100075	2024.01.19
Hybrid ANTENNA	VULB 9163	SCHWARZBECK	9163-396	2024.03.22
PREAMPLIFIER	AM-1431	MITEQ	1336160	2024.05.23
RF Cable	EMH-1Lab-RE-01	-	-	2024.01.07
RF Cable	EMH-1Lab-RE-04	-	-	2024.01.07
RF Cable	EMH-1Lab-RE-06	-	-	2024.01.07

Note: The calibration period of every equipment is 1 year.

2.4.2 Test Site

10 m SEMI-ANECHOIC CHAMBER in Giheung Laboratory

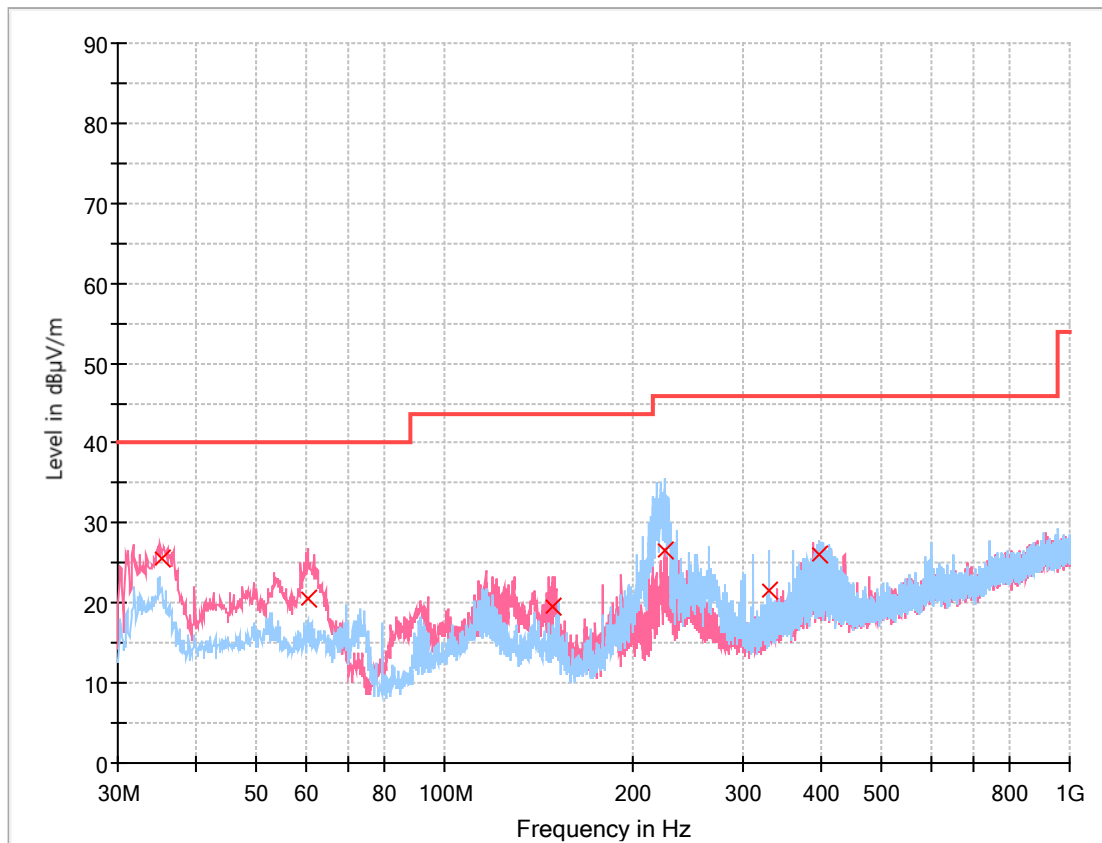
2.4.3 Environment Conditions

Below 1 GHz

Temperature	(Minimum 20.2, Maximum 21.3) °C
Humidity	(Minimum 40.0, Maximum 41.0) % R.H.
Atmospheric Pressure	(Minimum 100.0, Maximum 100.0) kPa
Test Date	September 15, 2023

2.4.4 Test Results

Below 1 GHz (3 m method)



Final Result

Frequency (MHz)	QuasiPeak (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
35.266	25.53	40.00	14.47	15 000.0	120.000	103.0	V	319.0	-20.3
60.441	20.56	40.00	19.44	15 000.0	120.000	104.0	V	15.0	-19.0
149.378	19.66	43.50	23.84	15 000.0	120.000	100.0	V	15.0	-23.3
224.462	26.49	46.00	19.51	15 000.0	120.000	150.0	H	341.0	-19.3
330.386	21.67	46.00	24.33	15 000.0	120.000	100.0	H	36.0	-16.3
396.740	26.19	46.00	19.81	15 000.0	120.000	103.0	H	89.0	-14.6

Measurement Uncertainty: See Appendix A

Note: • AF = Antenna Factor

• POL H = Horizontal

• CL = Cable Loss

• POL V = Vertical

• Margin = Limit – Average

• H = Height

Ex) In case

Freq ; 100 MHz, level ; 30 dB(μV/m), AF ; 10 dB/m, CL ; 4 dB

Result = Level + AF + CL

= 30 + 10 + 4

= 19

Margin = Limit – Result

= 73.14 – 19

= 54.14

Appendix A : Measurement Uncertainty

- Giheung Laboratory

Test Method		Measurement Uncertainty	
Conducted Emission		ENV216	3.7 dB (The confidential level is 95 %, k=2)
		ESH2-Z5	3.2 dB (The confidential level is 95 %, k=2)
		ESH3-Z6	3.2 dB (The confidential level is 95 %, k=2)
		NNLK8129	3.1 dB (The confidential level is 95 %, k=2)
Conducted Emission - Signal		ISN T800	5.4 dB (The confidential level is 95 %, k=2)
		ISN ST08	6.6 dB (The confidential level is 95 %, k=2)
Discontinuous		2.7 dB (The confidential level is 95 %, k=2)	
Radiated Emission	9 kHz ~30 MHz	Horizontal	3.3 dB (The confidential level is 95 %, k=2)
		Vertical	3.3 dB (The confidential level is 95 %, k=2)
	30 MHz ~ 1 000 MHz	Horizontal	4.3 dB (The confidential level is 95 %, k=2)
		Vertical	4.6 dB (The confidential level is 95 %, k=2)
	1 GHz ~ 18 GHz	Horizontal	3.9 dB (The confidential level is 95 %, k=2)
		Vertical	4.0 dB (The confidential level is 95 %, k=2)

- Gunpo Laboratory

Test Method		Measurement Uncertainty	
Conducted Emission		ENV216	4.0 dB (The confidential level is 95 %, k=2)
		ESH2-Z5	3.6 dB (The confidential level is 95 %, k=2)
		ESH3-Z6	3.8 dB (The confidential level is 95 %, k=2)
Conducted Emission - Signal		ISN T800	5.8 dB (The confidential level is 95 %, k=2)
		ISNT8-Cat6	5.8 dB (The confidential level is 95 %, k=2)
		ISN S751	7.5 dB (The confidential level is 95 %, k=2)
Disturbance Voltage at Antenna Terminal		2.9 dB (The confidential level is 95 %, k=2)	
Radiated Emission	9 kHz ~30 MHz	Horizontal	3.4 dB (The confidential level is 95 %, k=2)
		Vertical	3.4 dB (The confidential level is 95 %, k=2)
	30 MHz ~ 1 000 MHz	Horizontal	4.5 dB (The confidential level is 95 %, k=2)
		Vertical	5.1 dB (The confidential level is 95 %, k=2)
	1 GHz ~ 18 GHz	Horizontal	3.7 dB (The confidential level is 95 %, k=2)
		Vertical	3.9 dB (The confidential level is 95 %, k=2)

- Dongtan Laboratory

Test Method		Measurement Uncertainty	
Conducted Emission		ENV216	3.5 dB (The confidential level is 95 %, $k=2$)
		ESH2-Z5	3.3 dB (The confidential level is 95 %, $k=2$)
		ESH3-Z6	3.3 dB (The confidential level is 95 %, $k=2$)
		NNLK8129	3.4 dB (The confidential level is 95 %, $k=2$)
Radiated Emission	30 MHz ~ 1 000 MHz	Horizontal	4.8 dB (The confidential level is 95 %, $k=2$)
		Vertical	5.4 dB (The confidential level is 95 %, $k=2$)

- End of Test Report -