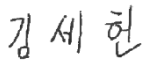


EMC TEST REPORT

Test Report No. : KES-EM-22T0968
Date of Issue : Dec. 08, 2022
Product name : Decorder
Model/Type No. : SPD-152
Variant Model : -
Applicant : Hanwha Techwin Co., Ltd.
Applicant Address : 6, Pangyo-ro 319Beon-gil, Bundang-gu, Seongnam-si,
Gyeonggi-do, Republic of Korea
Manufacturer : 1. HANWHA TECHWIN SECURITY VIETNAM CO.,LTD.
2. D-TECH CO.,LTD.
Manufacturer Address : 1. Lot O-2, Que Vo Industrial Zone extended area,
Nam Son commune, Bac Ninh city, Bac Ninh province, Vietnam
2. 173-25, Saneop-ro, Gwonseon-gu, Suwon-si, Gyeonggi- do,
Korea (Suwon Industrial Complex)
Equipment authorization : **Supplier's Declaration of Conformity**
Date of Receipt : Nov. 23, 2022
Test date : Nov. 28, 2022 ~ Nov. 29, 2022
Test Results : ☒ **In Compliance** ☐ **Not in Compliance**

Tested by



Se Heon, Kim
EMC Test Engineer

Reviewed by



Dong-Hun, Jang
EMC Technical Manager

This test report is not related to KS Q ISO/IEC 17025 and KOLAS.

**KES Co., Ltd.**

3701, 40, Simin-daero 365beon-gil,
Dongan-gu, Anyang-si, Gyeonggi-do, 14057, Korea
Tel: +82-31-425-6200 / Fax: +82-31-424-0450
www.kes.co.kr

Report No.:

KES-EM-22T0968

Page (2) of (41)

REPORT REVISION HISTORY

Date	Test Report No.	Revision History
Dec. 08, 2022	KES-EM-22T0968	Issued

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3701, 40, Simin-daero 365beon-gil,
Dongan-gu, Anyang-si, Gyeonggi-do, 14057, Korea
Tel: +82-31-425-6200 / Fax: +82-31-424-0450
www.kes.co.kr

Report No.:

KES-EM-22T0968

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1.0 General Product Description

Main Specifications of EUT are:

CPU		Embedded CPU
Operating System		Embedded Linux
Video Output	HDMI#1	1EA (up-to 4K), Audio support
	HDMI#2	1EA (up-to 1080p), Audio not support
	VGA	None
	CVBS	None
	Video-out Format	3840 X 2160@30Hz (HDMI#1) 2560 X 1440@30Hz (HDMI#1) 1920 X 1080@60Hz (HDMI#1, HDMI#2) 1280 X 1024@60Hz (HDMI#1, HDMI#2) 1280 X 720@60Hz (HDMI#1, HDMI#2)
External	Ethernet	1EA (10/100/1000BASE-T)
	USB	2EA(USB 2.0)
	Audio Out	None
	LED	Power, Network
Network	Bandwidth	Max. 150Mbps
Environmental		
Operating Temperature		0°C to +40°C (32°F to 104°F)
Operating Humidity		20% ~ 85% RH
Electrical		
Power Input		12VDC, PoE (IEEE802.3af)
Power Consumption		None
Mechanical		
Color / Material		Black / Metal&Plastic
Dimension (WxHxD)		140 x 29.5 x 115.4mm
Weight		260g
Software		
Video	Codec	H.265 / H.264 / MJPEG
	Max. Decoding Performance	8M@60fps, 2M@360fps
	Division (/Monitor)	Clone mode (HDMI#1) Max. 64 Expand mode (HDMI#1) Max. 36 (HDMI#2) Max. 25
	Layout	Up to 20, Sequence support
Audio	Codec	G.711 / G.726 / AAC
Merge	Monitor Merge	None
	Tile Merge	None
Management		Local UI, Web-Viewer
Time Setting		NTP/Manual
Export/Import		Configuration Export/Import
Log		Max. 10000 (System log)
Protocol		RTP, RTSP, HTTP, CGI (SUNAPI), ONVIF
Remote Connect		None
Security		IP address filtering, User access Log, 802.1x, Encryption, Device certificate(Hanwha
ETC	P2P	None

1.1 Test Voltage & Frequency

Unless indicated otherwise on the individual data sheet or test results, the test voltage and frequency was as indicated below.

- ☒ AC 120 V, 60 Hz (DC Adapter Input Power)
- ☒ AC 120 V, 60 Hz (PoE Adapter Input Power)

1.2 Variant Model Differences

Not applicable

1.3 Device Modifications

Not applicable

1.4 Equipment Under Test

Description	Model Number	Serial Number	Manufacturer	Remarks
Decorder	SPD-152	-	HANWHA TECHWIN SECURITY VIETNAM CO.,LTD.	EUT
Mouse	MOKJUO	-	Primax Electronics Ltd.	EUT

1.5 Support Equipments

Description	Model Number	Serial Number	Manufacturer	Remarks
Adapter	FJ-SW1205000	-	Shenzhen Fujia Appliance Co, LTD.	-
PoE Injector 1	MA-INJ-4	-	Changzhou Wujin Hong Guang radio Factory Co.,LTD	-
PoE Injector 2	GS728TPP	-	NETGEAR	-
Notebook	LG15N54	507NZET040180	LG Electronics	-
Notebook Adapter	PA-1900-14	OF4A263348701J247	LITE-ON TECHNOLOGY COPORATION	-
Monitor 1	SMT-2233	ZC6U67VH500194D	Weihai Daewoo Electronics Co., Ltd.	-
Monitor 2	DELL E2222H DVT	8221TCM10D00103X	DELL INC.	-
Camera	LND-6070R	-	HANWHA TECHWIN SECURITY VIETNAM CO.,LTD.	-
Router	IpTIME A2004MU	-	ipTIME	-
Router Adapter	DCP024B121000K	-	ZIONCOM ELECTRONICS (SHENZHEN) LTD.	-
USB Memory	-	-	Sandisk	-

1.6 External I/O Cabling

■ DC Mode

Start		END		Cable Spec.	
Description	I/O Port	Description	I/O Port	Length	Shield
Decorder (EUT)	DC 12V	Adapter	DC 12V	1.5	U
	HDMI 1	Monitor 1	HDMI 1	1.3	S
	HDMI 2	Monitor 2	HDMI 2	1.2	S
	NETWORK	Router	NETWORK	3.0	U
	USB	Mouse (EUT)	USB	1.4	U
	USB	USB Memory	USB	-	-
	GROUND	GROUND	GROUND	2.0	-
Router	DC Jack	Router Adapter	DC Jack	1.5	U
	RJ-45	Notebook	RJ-45	2.0	U
	RJ-45	PoE Injector 1	RJ-45	2.0	U
Notebook	DC Jack	Notebook Adapter	DC Jack	1.4	U
PoE Injector 1	RJ-45	Camera	RJ-45	1.0	U

* Unshielded=U, Shielded=S

■ PoE Mode

Start		END		Cable Spec.	
Description	I/O Port	Description	I/O Port	Length	Shield
Decorder (EUT)	NETWORK	PoE Injector 2	NETWORK	3.0	U
	HDMI 1	Monitor 1	HDMI 1	1.3	U
	HDMI 2	Monitor 2	HDMI 2	1.2	-
	USB	Mouse (EUT)	USB	1.4	S
	USB	USB Memory	USB	-	U
	GROUND	GROUND	GROUND	2.0	S
PoE Injector 2	RJ-45	Notebook	RJ-45	2.0	U
	RJ-45	Camera	RJ-45	1.0	U
Notebook	DC Jack	Notebook Adapter	DC Jack	1.4	U

* Unshielded=U, Shielded=S



1.7 EUT Operating Mode(s)

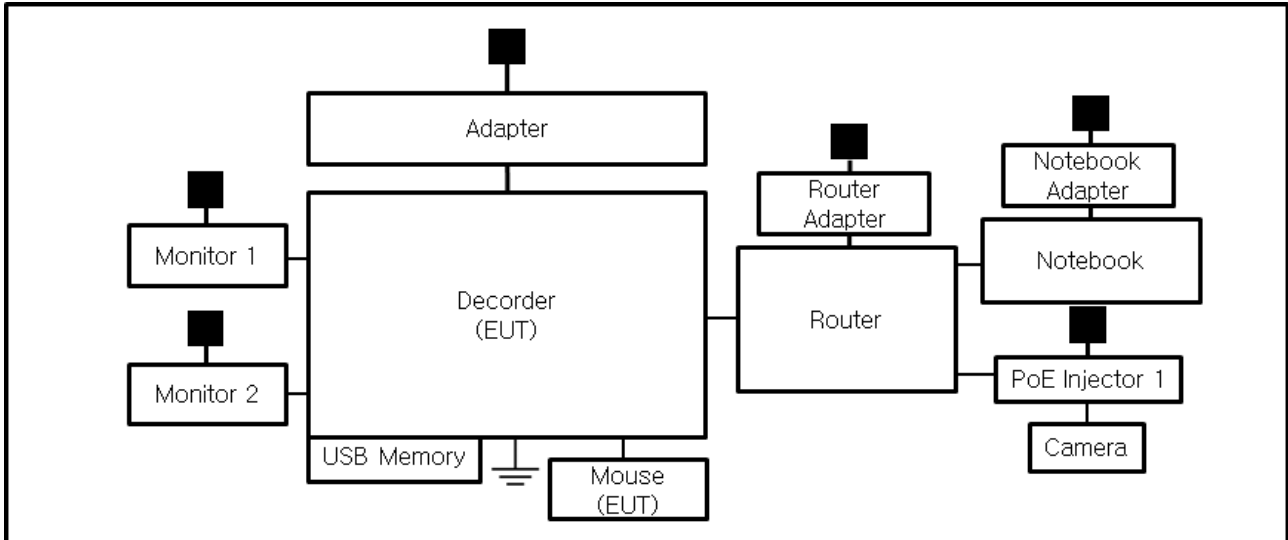
Test Mode	operating
DC, PoE Mode	- Check the image output of the camera on the monitor, and check the normal operation of the network function through the laptop ping test. - After testing, check if the recording is normally done on the USB Memory

EUT Test operating S/W		
Name	Version	Manufacture Company
-	-	-

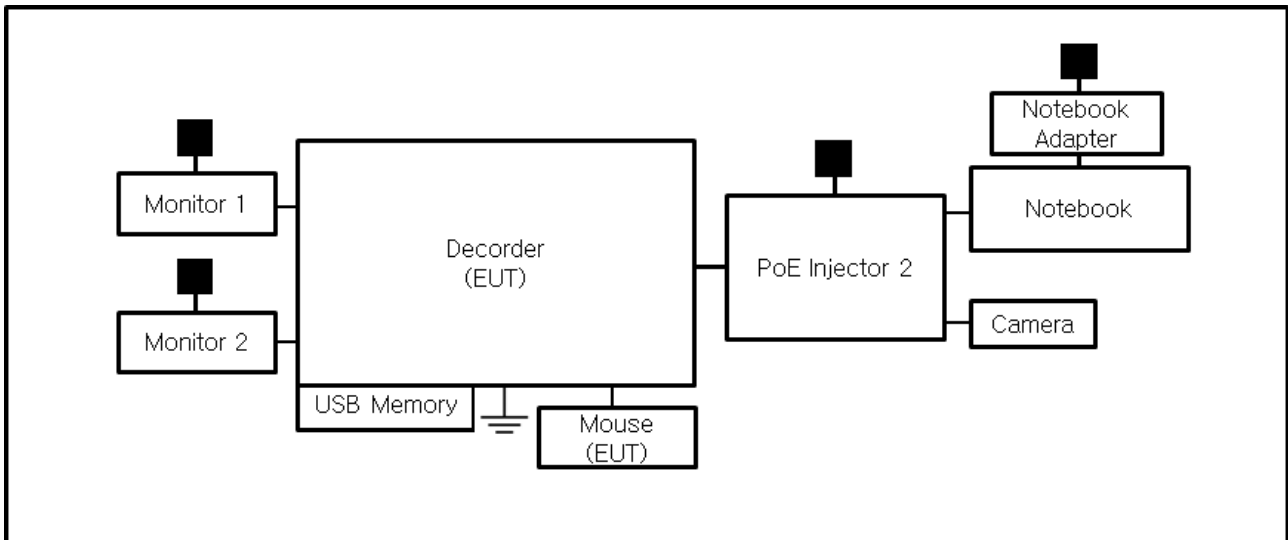
1.8 Configuration

■ AC Main
 □ DC Main

■ DC Mode



■ PoE Mode



1.9 Remarks when standards applied

N/A

1.10 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.

1.11 Test Facility

The measurement facility is located at 473-21, Gayeo-ro, Yeosu-si, Gyeonggi-do, 12658, Korea, Republic of. The sites are constructed in conformance with the requirements of ANSI C63.4a-2017 and CISPR 16-1-4:2019

1.12 Laboratory Accreditations and Listings

Country	Agency	Scope of Accreditation	Logo
KOREA	RRA	EMI (3 m & 10 m Semi-Anechoic Chamber , 10 m Open Area and conducted test site) EMS (ESD, RS, EFT/Burst, Surge, CS, Magnetic, Dips and interruptions)	 KR0100
International	KOLAS	EMI (3 m & 10 m Semi-Anechoic Chamber , and conducted test site) EMS (ESD, RS, EFT/Burst, Surge, CS, Magnetic, Dips and interruptions)	 KT489
USA	FCC	3 m & 10 m Semi-Anechoic Chamber, 10 m Open Area and Conducted test site to perform FCC Part 15/18 measurements.	 KR0100
Canada	ISED	3 m & 10 m Semi-Anechoic Chamber and Conducted test site	 23298
JAPAN	VCCI	Mains Ports Conducted Interference Measurement, Telecommunication Ports Conducted Disturbance Measurement and Radiation 10 meter site, Facility for measuring radiated disturbance above 1 GHz	 R-20056, C-20036, T-20040, G-20057
Europe	TÜV SÜD	EMI (3 m & 10 m Semi-Anechoic Chamber , 10 m Open Area and conducted test site) EMS (ESD, RS, EFT/Burst, Surge, CS, Magnetic, Dips and interruptions)	 CARAT 001633 0004

2.0 Test Regulations

The emissions tests were performed according to following regulations:

☒ **47 CFR Part 15, Subpart B**

☐ CISPR 22:2009 +A1:2010

☐ Class A

☐ Class B

☒ ANSI C63.4a-2017

☒ Class A

☐ Class B

☒ **IC Regulation ICES-003 Issue 7**

☐ CAN/CSA-CISPR 32:17

☐ Class A

☐ Class B

☒ ANSI C63.4a-2017

☒ Class A

☐ Class B

2.1 Conducted Emissions at Mains Power Ports

Test Date

Nov. 29, 2022

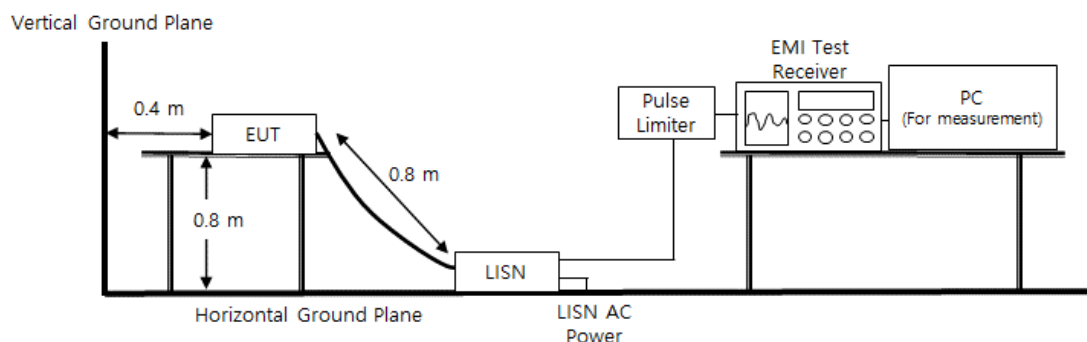
Test Location

Electro wave Shieldroom #6

Test Equipment

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
☒	EMI Test S/W	EMC32	R & S	9.12.00	-
☒	EMI TEST RECEIVER	ESR3	R & S	101783	11, 11, 2023
☒	LISN	ENV216	R & S	101787	11, 10, 2023
☒	LISN	ESH2-Z5	R & S	100450	11, 10, 2023
☒	PULSE LIMITER	ESH3-Z2	R & S	101915	11, 10, 2023

Diagram of test setup





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Test Conditions

Temperature: $(22,8 \pm 0,1) ^\circ\text{C}$
Relative Humidity: $(46,0 \pm 0,2) \% \text{ R.H.}$

Frequency Range of Measurement

150 kHz to 30 MHz

Instrument Settings

IF Band Width: 9 kHz

Test Results

The requirements are:

- ☒ PASS
- ☐ NOT PASS
- ☐ NOT APPLICABLE

Remarks

See Appendix A for test data.

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2.2 Radiated Electric Field Emissions(Below 1 GHz)

Test Date

Nov. 29, 2022

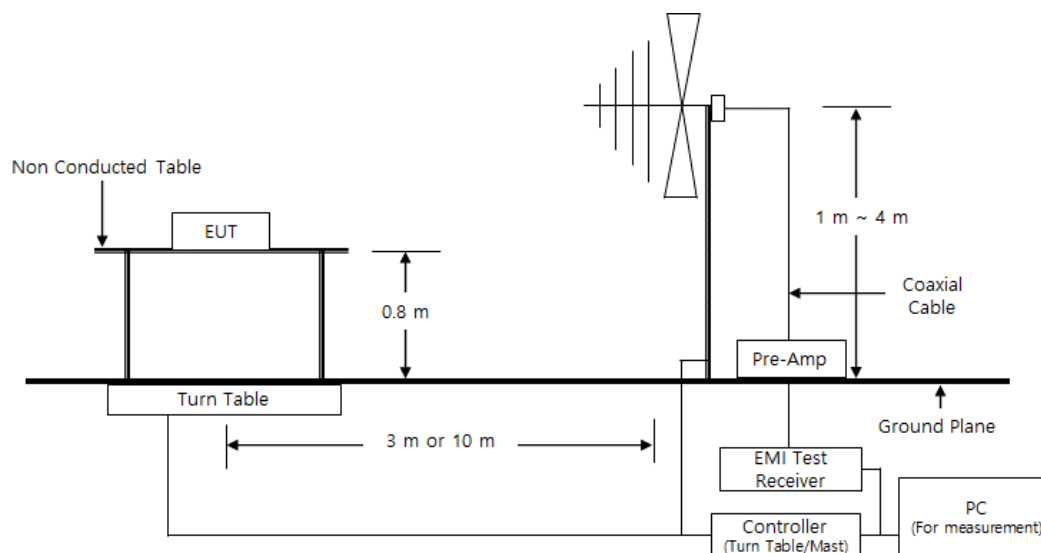
Test Location

☐ OPEN AREA TEST SITE #2 ☒ SEMI ANECHOIC CHAMBER #4(10m)

Test Equipment

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
☒	EMI Test S/W	EP5/RE	TOYO Corporation	6.0.0	-
☒	EMI TEST RECEIVER	ESU26	R & S	100551	03, 31, 2023
☒	AMPLIFIER	SCU 01	R & S	100603	11, 10, 2023
☒	TRILOG-BROADBAND ANTENNA	VULB9163	Schwarzbeck	715	11, 17, 2024
☒	ATTENUATOR	8491A	HP	32173	03, 08, 2023

Diagram of test setup



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Test Conditions

Temperature: (22,5 ± 0,1) °C

Relative Humidity: (46,0 ± 0,0) % R.H.

Frequency Range of Measurement

30 MHz to 1 GHz

Instrument Settings

IF Band Width: 120 kHz

Test Results

The requirements are:

- ☒ PASS
- ☐ NOT PASS
- ☐ NOT APPLICABLE

Remarks

See Appendix A for test data.

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2.3 Radiated Electric Field Emissions(Above 1 GHz)

Test Date

Nov. 28, 2022

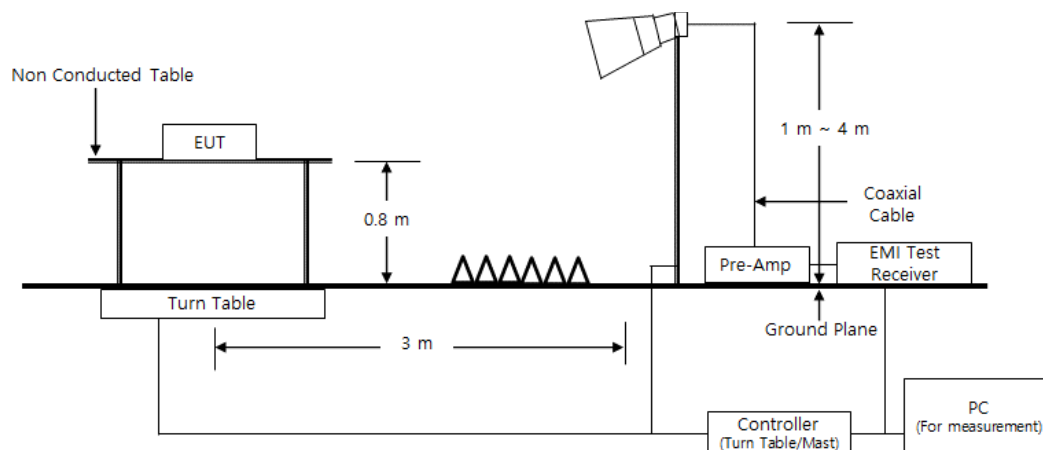
Test Location

SEMI ANECHOIC CHAMBER #5

Test Equipment

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
☒	EMI Test S/W	ES10/RE	TOYO Corporation	2022.01.000	-
☒	EMI TEST RECEIVER	ESU26	Rohde & Schwarz	100552	03, 31, 2023
☒	HORN ANTENNA	BBHA 9120D	SCHWARZBECK	9120D-1802	11, 08, 2023
☒	PREAMPLIFIER	8449B	HP	3008A00538	06, 02, 2023
☒	ATTENUATOR	8491B	HP	23094	04, 21, 2023

Diagram of test setup



Test Conditions

Temperature: (22,7 ± 0,2) °C
Relative Humidity: (47,0 ± 0,3) % R.H.

Frequency Range of Measurement

1 GHz to 5 GHz

Instrument Settings

IF Band Width: 1 MHz

Test Results

The requirements are:

- ☒ PASS
☐ NOT PASS
☐ NOT APPLICABLE

Remarks

- See Appendix A for test data.
- The Average of the test data is the cispr average result.

APPENDIX A – TEST DATA

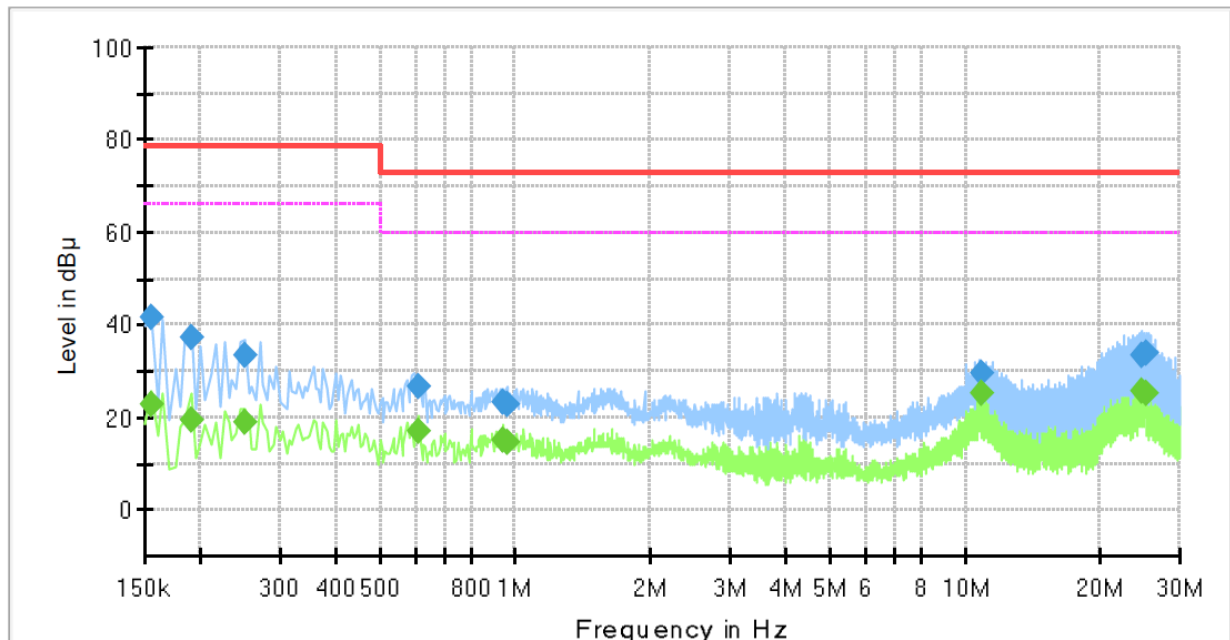
Conducted Emissions at Mains Power Ports

■ DC Mode

HOT LINE

Common Information

Test Description:	Conducted Emission
Model No.:	SPD-152
Phase:	L1
Mode:	DC
Operator Name:	KES





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Report No.:

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Final Result

Frequency (MHz)	QuasiPeak (dBμV)	CAverage (dBμV)	Limit (dBμV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.155000	41.58	---	79.00	37.42	1000.0	9.000	L1	19.5
0.155000	---	23.02	66.00	42.98	1000.0	9.000	L1	19.5
0.190000	---	19.57	66.00	46.43	1000.0	9.000	L1	19.5
0.190000	37.21	---	79.00	41.79	1000.0	9.000	L1	19.5
0.250000	33.39	---	79.00	45.61	1000.0	9.000	L1	19.5
0.250000	---	18.78	66.00	47.22	1000.0	9.000	L1	19.5
0.610000	---	16.86	60.00	43.14	1000.0	9.000	L1	19.9
0.610000	26.73	---	73.00	46.27	1000.0	9.000	L1	19.9
0.940000	---	15.16	60.00	44.84	1000.0	9.000	L1	20.1
0.940000	23.29	---	73.00	49.71	1000.0	9.000	L1	20.1
0.960000	22.83	---	73.00	50.17	1000.0	9.000	L1	20.1
0.960000	---	14.55	60.00	45.45	1000.0	9.000	L1	20.1
10.940000	29.54	---	73.00	43.46	1000.0	9.000	L1	20.0
10.940000	---	25.26	60.00	34.74	1000.0	9.000	L1	20.0
24.710000	33.52	---	73.00	39.48	1000.0	9.000	L1	20.2
24.710000	---	25.92	60.00	34.08	1000.0	9.000	L1	20.2
25.235000	33.87	---	73.00	39.13	1000.0	9.000	L1	20.2
25.235000	---	25.37	60.00	34.63	1000.0	9.000	L1	20.2

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NEUTRAL LINE

Common Information

Test Description:

Model No.:

Phase:

Mode:

Operator Name:

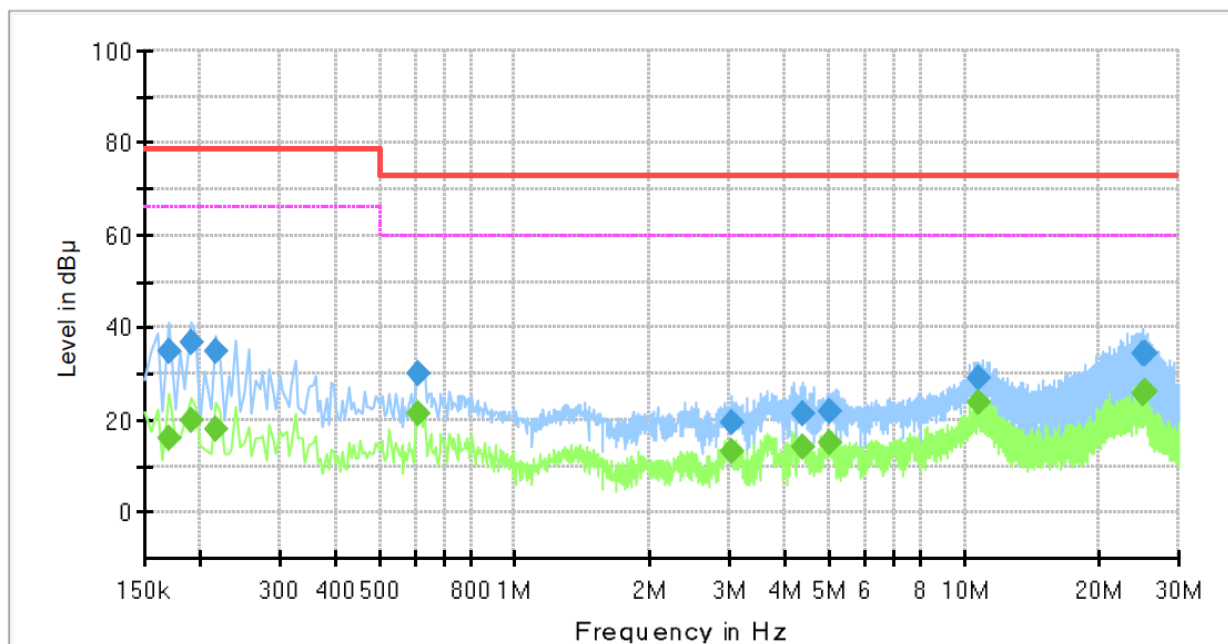
Conducted Emission

SPD-152

N

DC

KES





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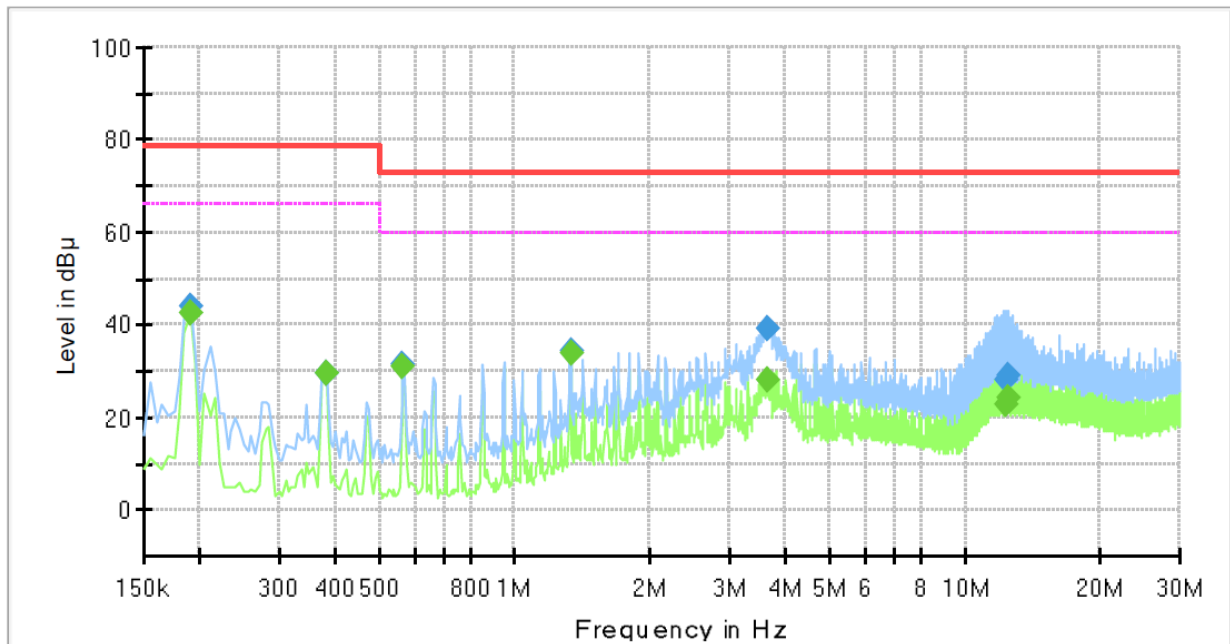
Final Result

Frequency (MHz)	QuasiPeak (dBμV)	CAverage (dBμV)	Limit (dBμV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.170000	---	16.29	66.00	49.71	1000.0	9.000	N	19.4
0.170000	34.87	---	79.00	44.13	1000.0	9.000	N	19.4
0.190000	---	19.86	66.00	46.14	1000.0	9.000	N	19.5
0.190000	36.69	---	79.00	42.31	1000.0	9.000	N	19.5
0.215000	34.84	---	79.00	44.16	1000.0	9.000	N	19.5
0.215000	---	17.86	66.00	48.14	1000.0	9.000	N	19.5
0.610000	---	21.41	60.00	38.59	1000.0	9.000	N	19.9
0.610000	30.18	---	73.00	42.82	1000.0	9.000	N	19.9
3.035000	19.33	---	73.00	53.67	1000.0	9.000	N	20.2
3.035000	---	13.39	60.00	46.61	1000.0	9.000	N	20.2
4.355000	---	14.32	60.00	45.68	1000.0	9.000	N	19.8
4.355000	21.58	---	73.00	51.42	1000.0	9.000	N	19.8
5.025000	21.78	---	73.00	51.22	1000.0	9.000	N	19.7
5.025000	---	15.28	60.00	44.72	1000.0	9.000	N	19.7
10.805000	29.00	---	73.00	44.00	1000.0	9.000	N	20.0
10.805000	---	23.87	60.00	36.13	1000.0	9.000	N	20.0
25.080000	34.29	---	73.00	38.71	1000.0	9.000	N	20.2
25.080000	---	25.80	60.00	34.20	1000.0	9.000	N	20.2
25.150000	34.41	---	73.00	38.59	1000.0	9.000	N	20.2
25.150000	---	26.21	60.00	33.79	1000.0	9.000	N	20.2

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PoE Mode
HOT LINE
Common Information

Test Description:	Conducted Emission
Model No.:	SPD-152
Phase:	L1
Mode:	PoE
Operator Name:	KES

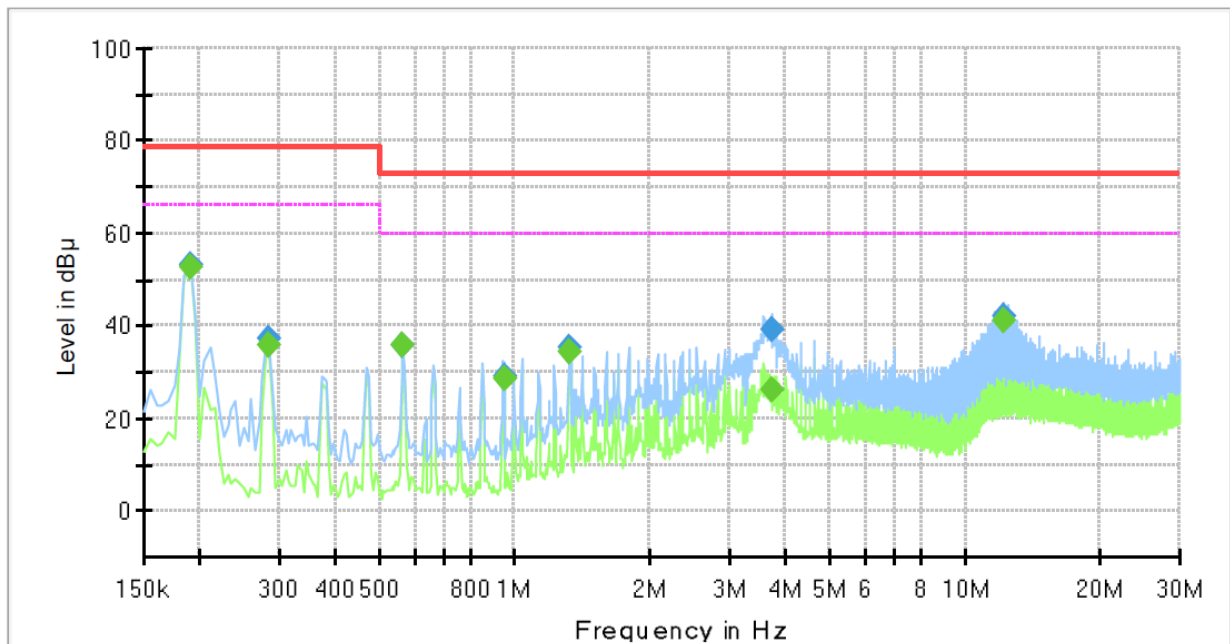

Final Result

Frequency (MHz)	QuasiPeak (dBμV)	CAverage (dBμV)	Limit (dBμV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.190000	43.83	---	79.00	35.17	1000.0	9.000	L1	19.5
0.190000	---	42.45	66.00	23.55	1000.0	9.000	L1	19.5
0.380000	29.67	---	79.00	49.33	1000.0	9.000	L1	19.6
0.380000	---	29.41	66.00	36.59	1000.0	9.000	L1	19.6
0.565000	31.70	---	73.00	41.30	1000.0	9.000	L1	19.8
0.565000	---	31.23	60.00	28.77	1000.0	9.000	L1	19.8
1.330000	---	33.92	60.00	26.08	1000.0	9.000	L1	20.2
1.330000	34.34	---	73.00	38.66	1000.0	9.000	L1	20.2
3.650000	---	27.91	60.00	32.09	1000.0	9.000	L1	20.0
3.650000	39.01	---	73.00	33.99	1000.0	9.000	L1	20.0
12.270000	28.08	---	73.00	44.92	1000.0	9.000	L1	20.0
12.270000	---	22.91	60.00	37.09	1000.0	9.000	L1	20.0
12.460000	29.31	---	73.00	43.69	1000.0	9.000	L1	20.0
12.460000	---	24.04	60.00	35.96	1000.0	9.000	L1	20.0

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NEUTRAL LINE**Common Information**

Test Description:	Conducted Emission
Model No.:	SPD-152
Phase:	N
Mode:	PoE
Operator Name:	KES





KES Co., Ltd.

3701, 40, Simin-daero 365beon-gil,
Dongan-gu, Anyang-si, Gyeonggi-do, 14057, Korea
Tel: +82-31-425-6200 / Fax: +82-31-424-0450
www.kes.co.kr

Report No.:

KES-EM-22T0968

Page (24) of (41)

Final Result

Frequency (MHz)	QuasiPeak (dBμV)	CAverage (dBμV)	Limit (dBμV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.190000	53.29	---	79.00	25.71	1000.0	9.000	N	19.5
0.190000	---	52.94	66.00	13.06	1000.0	9.000	N	19.5
0.285000	37.14	---	79.00	41.86	1000.0	9.000	N	19.5
0.285000	---	35.75	66.00	30.25	1000.0	9.000	N	19.5
0.565000	35.74	---	73.00	37.26	1000.0	9.000	N	19.8
0.565000	---	35.72	60.00	24.28	1000.0	9.000	N	19.8
0.945000	29.11	---	73.00	43.89	1000.0	9.000	N	20.1
0.945000	---	28.63	60.00	31.37	1000.0	9.000	N	20.1
1.320000	---	34.29	60.00	25.71	1000.0	9.000	N	20.2
1.320000	35.52	---	73.00	37.48	1000.0	9.000	N	20.2
3.720000	---	26.05	60.00	33.95	1000.0	9.000	N	20.0
3.720000	39.36	---	73.00	33.64	1000.0	9.000	N	20.0
12.250000	---	40.94	60.00	19.06	1000.0	9.000	N	20.0
12.250000	42.16	---	73.00	30.84	1000.0	9.000	N	20.0

◆ Calculation

QuasiPeak[dBuV] / CAverage [dBuV] = Reading Value[dBuV] + Corr. [dB]

QuasiPeak / CAverage : The Final Value

Reading Value : Not shown in the table.

Corr. : Correction values (LISN FACTOR + (Cable Loss + Pulse Limiter FACTOR))

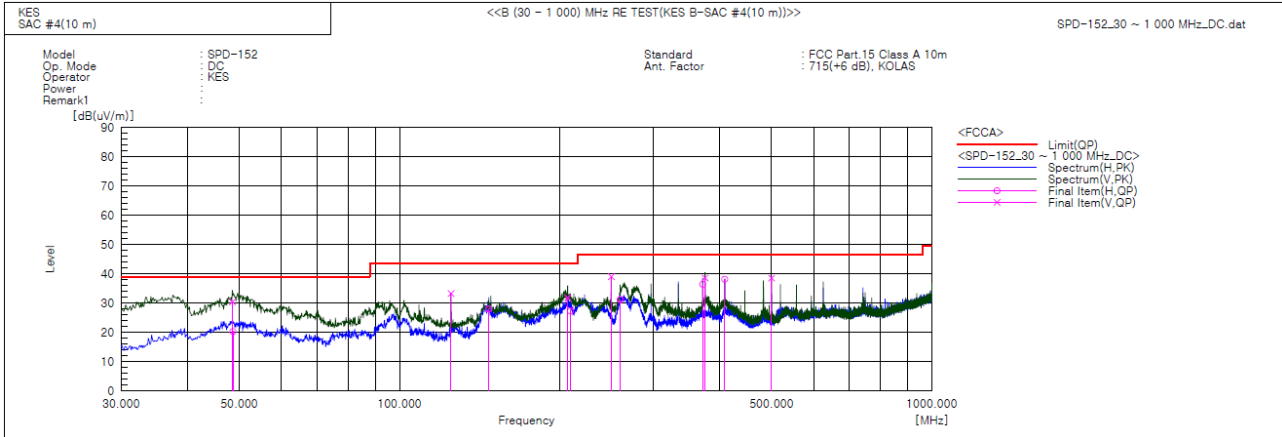
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Radiated Electric Field Emissions(Below 1 GHz)

- 47 CFR Part 15, Subpart B

DC Mode

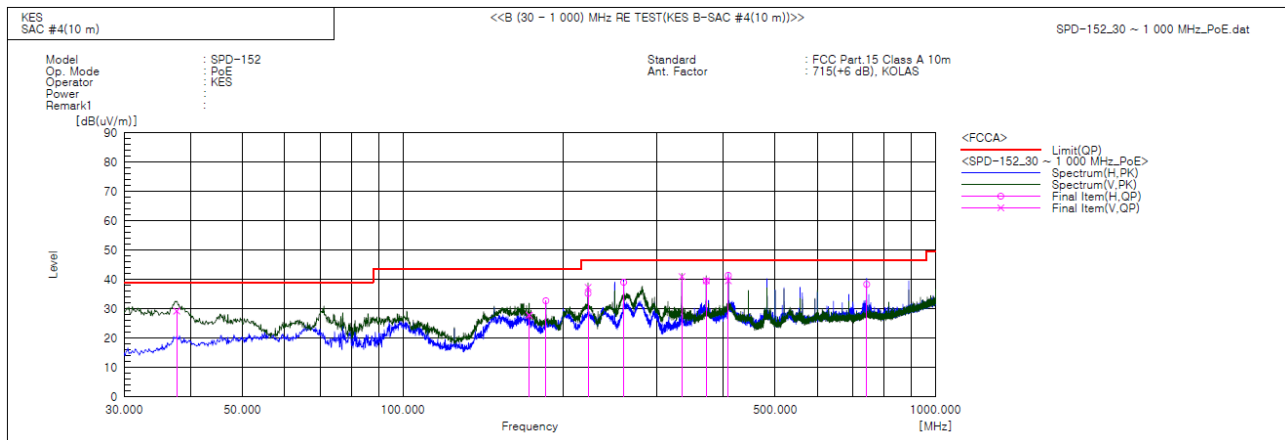


Final Result

No.	Frequency [MHz]	(P)	Reading QP [dB(uV)]	c.f [dB(1/m)]	Result QP [dB(uV/m)]	Limit QP [dB(uV/m)]	Margin QP [dB]	Height [cm]	Angle [deg]	Remark
1	48.551	V	50.9	-20.5	30.4	39.0	8.6	127.0	279.0	
2	48.673	H	40.8	-20.5	20.3	39.0	18.7	394.0	142.0	
3	124.939	V	57.6	-24.3	33.3	43.5	10.2	144.0	64.0	
4	147.128	H	53.0	-25.0	28.0	43.5	15.5	385.0	191.0	
5	207.025	V	52.2	-20.4	31.8	43.5	11.7	125.0	358.0	
6	209.450	H	47.5	-20.2	27.3	43.5	16.2	369.0	16.0	
7	249.948	V	57.8	-18.8	39.0	46.5	7.5	103.0	316.0	
8	259.769	H	49.8	-18.6	31.2	46.5	15.3	357.0	285.0	
9	371.198	H	50.4	-14.0	36.4	46.5	10.1	381.0	341.0	
10	374.956	V	52.6	-14.0	38.6	46.5	7.9	142.0	268.0	
11	408.300	H	51.4	-13.3	38.1	46.5	8.4	396.0	188.0	
12	500.086	V	49.2	-10.7	38.5	46.5	8.0	110.0	30.0	



PoE Mode

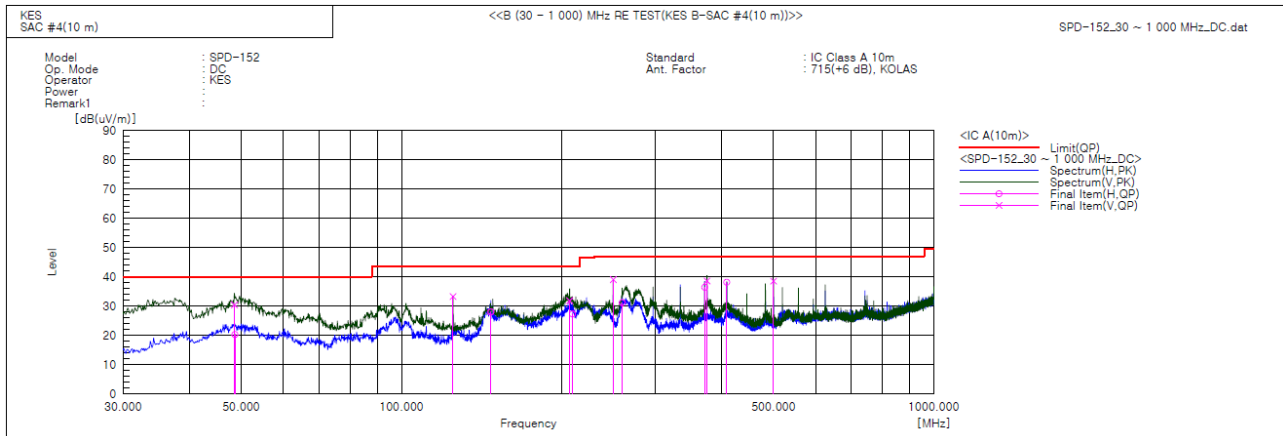


Final Result

No.	Frequency [MHz]	(P)	Reading QP [dB(uV)]	c.f [dB(1/m)]	Result QP [dB(uV/m)]	Limit QP [dB(uV/m)]	Margin QP [dB]	Height [cm]	Angle [deg]	Remark
1	37.639	V	52.4	-23.2	29.2	39.0	9.8	129.0	352.0	
2	172.711	V	51.7	-23.9	27.8	43.5	15.7	143.0	290.0	
3	185.564	H	55.3	-22.6	32.7	43.5	10.8	358.0	46.0	
4	222.666	H	54.7	-19.5	35.2	46.5	11.3	359.0	288.0	
5	222.666	V	56.8	-19.5	37.3	46.5	9.2	118.0	215.0	
6	259.769	H	57.6	-18.6	39.0	46.5	7.5	395.0	191.0	
7	334.095	V	56.6	-15.6	41.0	46.5	5.5	140.0	151.0	
8	371.198	V	53.6	-14.0	39.6	46.5	6.9	106.0	219.0	
9	371.198	H	53.4	-14.0	39.4	46.5	7.1	396.0	77.0	
10	408.300	V	52.8	-13.3	39.5	46.5	7.0	140.0	184.0	
11	408.300	H	54.7	-13.3	41.4	46.5	5.1	367.0	267.0	
12	742.465	H	44.4	-6.1	38.3	46.5	8.2	376.0	352.0	

- IC Regulation ICES-003 Issue 7

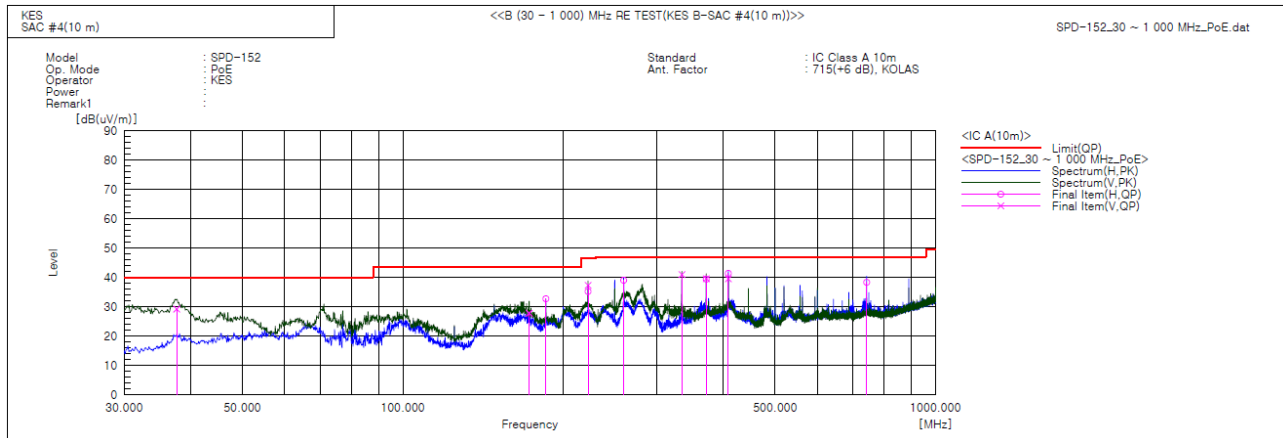
■ DC Mode



Final Result

No.	Frequency [MHz]	(P)	Reading QP [dB(uV)]	c.f [dB(1/m)]	Result QP [dB(uV/m)]	Limit QP [dB(uV/m)]	Margin QP [dB]	Height [cm]	Angle [deg]	Remark
1	48.551	V	50.9	-20.5	30.4	40.0	9.6	127.0	279.0	
2	48.673	H	40.8	-20.5	20.3	40.0	19.7	394.0	142.0	
3	124.939	V	57.6	-24.3	33.3	43.5	10.2	144.0	64.0	
4	147.128	H	53.0	-25.0	28.0	43.5	15.5	385.0	191.0	
5	207.025	V	52.2	-20.4	31.8	43.5	11.7	125.0	358.0	
6	209.450	H	47.5	-20.2	27.3	43.5	16.2	369.0	16.0	
7	249.948	V	57.8	-18.8	39.0	47.0	8.0	103.0	316.0	
8	259.769	H	49.8	-18.6	31.2	47.0	15.8	357.0	285.0	
9	371.198	H	50.4	-14.0	36.4	47.0	10.6	381.0	341.0	
10	374.956	V	52.6	-14.0	38.6	47.0	8.4	142.0	268.0	
11	408.300	H	51.4	-13.3	38.1	47.0	8.9	396.0	188.0	
12	500.086	V	49.2	-10.7	38.5	47.0	8.5	110.0	30.0	

PoE Mode



Final Result

No.	Frequency [MHz]	(P)	Reading QP [dB(uV)]	c.f [dB(1/m)]	Result QP [dB(uV/m)]	Limit QP [dB(uV/m)]	Margin QP [dB]	Height [cm]	Angle [deg]	Remark
1	37.639	V	52.4	-23.2	29.2	40.0	10.8	129.0	352.0	
2	172.711	V	51.7	-23.9	27.8	43.5	15.7	143.0	290.0	
3	185.564	H	55.3	-22.6	32.7	43.5	10.8	358.0	46.0	
4	222.666	H	54.7	-19.5	35.2	46.4	11.2	359.0	288.0	
5	222.666	V	56.8	-19.5	37.3	46.4	9.1	118.0	215.0	
6	259.769	H	57.6	-18.6	39.0	47.0	8.0	395.0	191.0	
7	334.095	V	56.6	-15.6	41.0	47.0	6.0	140.0	151.0	
8	371.198	V	53.6	-14.0	39.6	47.0	7.4	106.0	219.0	
9	371.198	H	53.4	-14.0	39.4	47.0	7.6	396.0	77.0	
10	408.300	V	52.8	-13.3	39.5	47.0	7.5	140.0	184.0	
11	408.300	H	54.7	-13.3	41.4	47.0	5.6	367.0	267.0	
12	742.465	H	44.4	-6.1	38.3	47.0	8.7	376.0	352.0	

◆ Calculation - SAC #4(10 m)

Result(QP) [dB(μ V/m)] = (Reading(QP)[dB(μ V)] + c.f[dB(1/m)])

Margin(QP)[dB] = Limit[dB(μ V/m)] - Result(QP) [dB(μ V/m)]

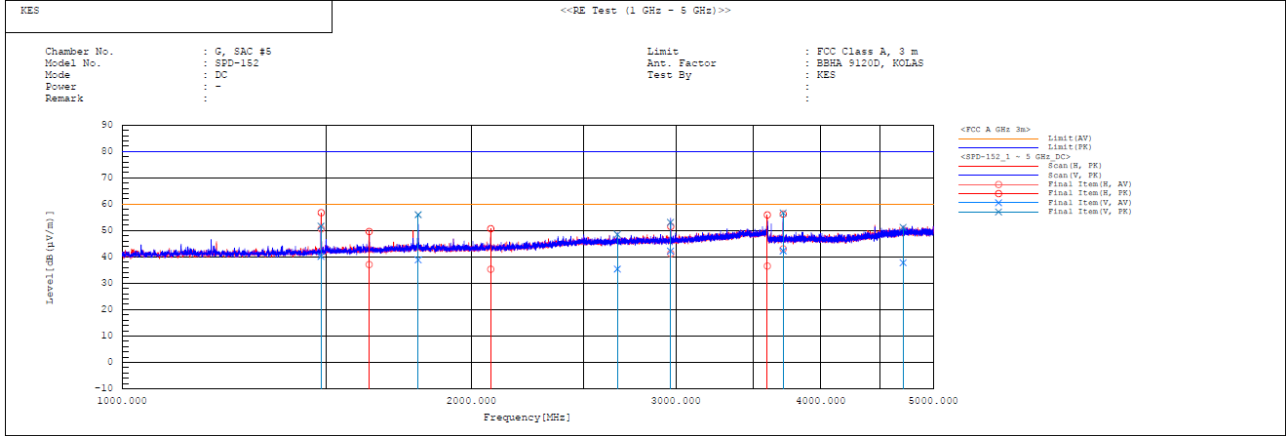
Reading(QP) : Reading value, Result(QP) : Reading value + Factor value

Limit(QP) : Limit value, c.f : (ANT Factor + Cable Loss - Preamp Factor), Margin: Margin value



Radiated Electric Field Emissions(Above 1 GHz)

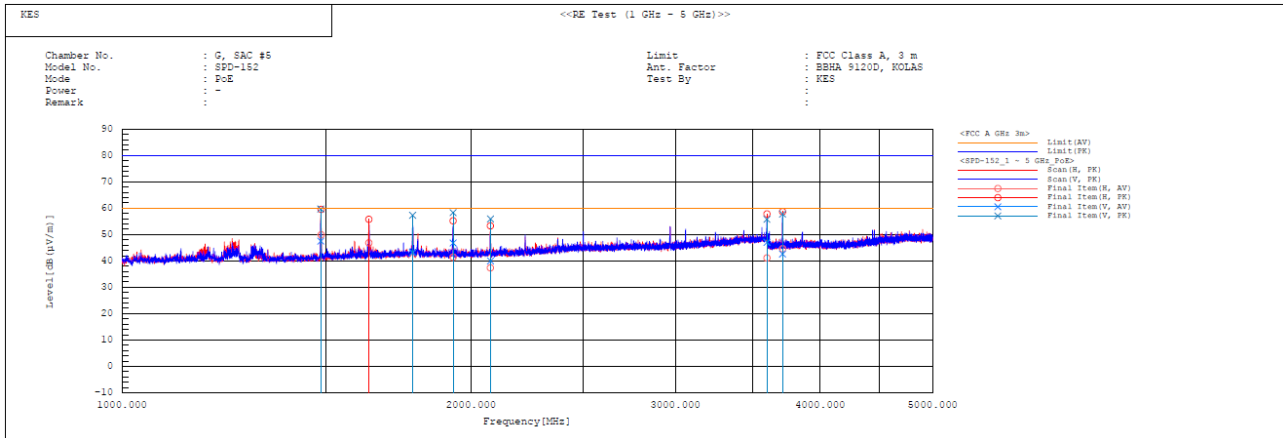
DC Mode



Final Result

No.	Frequency [MHz]	Pol	Reading AV [dB(μV)]	Reading PK [dB(μV)]	c.f [dB(1/m)]	Result AV [dB(μV/m)]	Result PK [dB(μV/m)]	Limit AV [dB(μV/m)]	Limit PK [dB(μV/m)]	Margin AV [dB]	Margin PK [dB]	Height [cm]	Angle [deg]	Remark
1	1484.400	V	40.4	51.9	-0.2	40.2	51.7	60.0	80.0	19.8	28.3	114.2	0.3	
2	1484.800	H	50.8	57.0	-0.2	50.6	56.8	60.0	80.0	9.4	23.2	378.2	340.7	
3	1632.800	H	36.7	49.2	0.4	37.1	49.6	60.0	80.0	22.9	30.4	361.8	180.4	
4	1800.000	V	37.6	54.7	1.3	38.9	56.0	60.0	80.0	21.1	24.0	122.9	260.9	
5	2078.400	H	33.1	48.5	2.2	35.3	50.7	60.0	80.0	24.7	29.3	347.4	58.0	
6	2672.400	V	31.3	44.4	4.1	35.4	48.5	60.0	80.0	24.6	31.5	105.0	24.2	
7	2969.600	V	37.3	48.2	4.9	42.2	53.1	60.0	80.0	17.8	26.9	101.8	88.9	
8	2970.000	H	36.3	46.6	4.9	41.2	51.5	60.0	80.0	18.8	28.5	396.6	114.8	
9	3597.200	H	30.5	49.9	6.0	36.5	55.9	60.0	80.0	23.5	24.1	394.5	129.1	
10	3712.400	V	36.1	50.4	6.2	42.3	56.6	60.0	80.0	17.7	23.4	107.0	358.6	
11	3712.400	H	36.8	50.1	6.2	43.0	56.3	60.0	80.0	17.0	23.7	340.4	110.0	
12	4709.600	V	28.2	41.6	9.6	37.8	51.2	60.0	80.0	22.2	28.8	143.6	129.1	

PoE Mode



Final Result

No.	Frequency [MHz]	Pol	Reading AV [dB (μV)]	Reading PK [dB (μV)]	c.f [dB (1/m)]	Result AV [dB (μV/m)]	Result PK [dB (μV/m)]	Limit AV [dB (μV/m)]	Limit PK [dB (μV/m)]	Margin AV [dB]	Margin PK [dB]	Height [cm]	Angle [deg]	Remark
1	1484.400	V	47.7	59.9	-0.2	47.5	59.7	60.0	80.0	12.5	20.3	107.4	11.5	
2	1485.200	H	50.1	59.7	-0.2	49.9	59.5	60.0	80.0	10.1	20.5	350.1	26.7	
3	1633.200	H	46.5	55.4	0.4	46.9	55.8	60.0	80.0	13.1	24.2	349.2	7.1	
4	1781.200	V	42.0	56.1	1.2	43.2	57.3	60.0	80.0	16.8	22.7	101.5	27.9	
5	1930.000	H	39.7	53.5	1.7	41.4	55.2	60.0	80.0	18.6	24.8	347.8	31.5	
6	1930.400	V	45.1	56.6	1.7	46.8	58.3	60.0	80.0	13.2	21.7	100.1	45.0	
7	2078.800	H	35.2	51.1	2.2	37.4	53.3	60.0	80.0	22.6	26.7	392.6	46.5	
8	2079.200	V	37.8	53.7	2.2	40.0	55.9	60.0	80.0	20.0	24.1	122.6	74.3	
9	3598.800	H	35.1	51.8	6.0	41.1	57.8	60.0	80.0	18.9	22.2	370.9	191.1	
10	3599.600	V	41.0	49.8	6.0	47.0	55.8	60.0	80.0	13.0	24.2	110.7	132.0	
11	3712.400	H	38.4	52.5	6.2	44.6	58.7	60.0	80.0	15.4	21.3	366.3	18.0	
12	3712.400	V	36.4	51.6	6.2	42.6	57.8	60.0	80.0	17.4	22.2	103.3	359.8	

Calculation

Result(PK/CAV) [dB(μV/m)] = (Reading(PK/CAV)[dB(μV)] + c.f[dB(1/m)])

Margin(PK/CAV)[dB] = Limit[dB(μV/m)] - Result(PK/CAV) [dB(μV/m)]

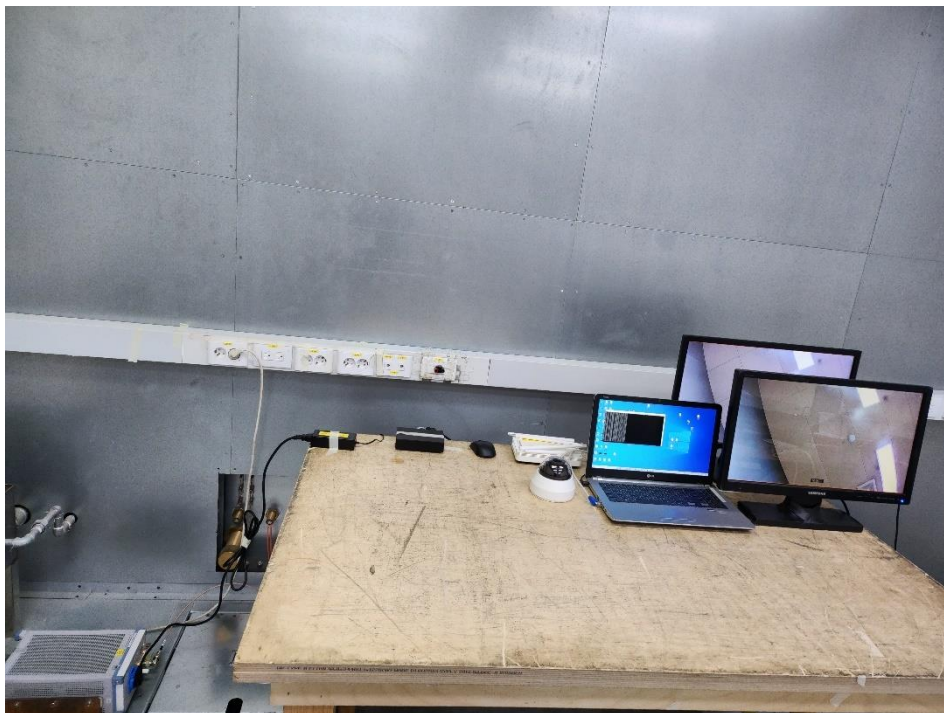
Reading(PK/CAV) : Reading value, Result(PK/CAV) : Reading value + Factor value

Limit(QP) : Limit value, c.f : (ANT Factor + Cable Loss - Preamp Factor), Margin: Margin value

Test Setup Photos and Configuration

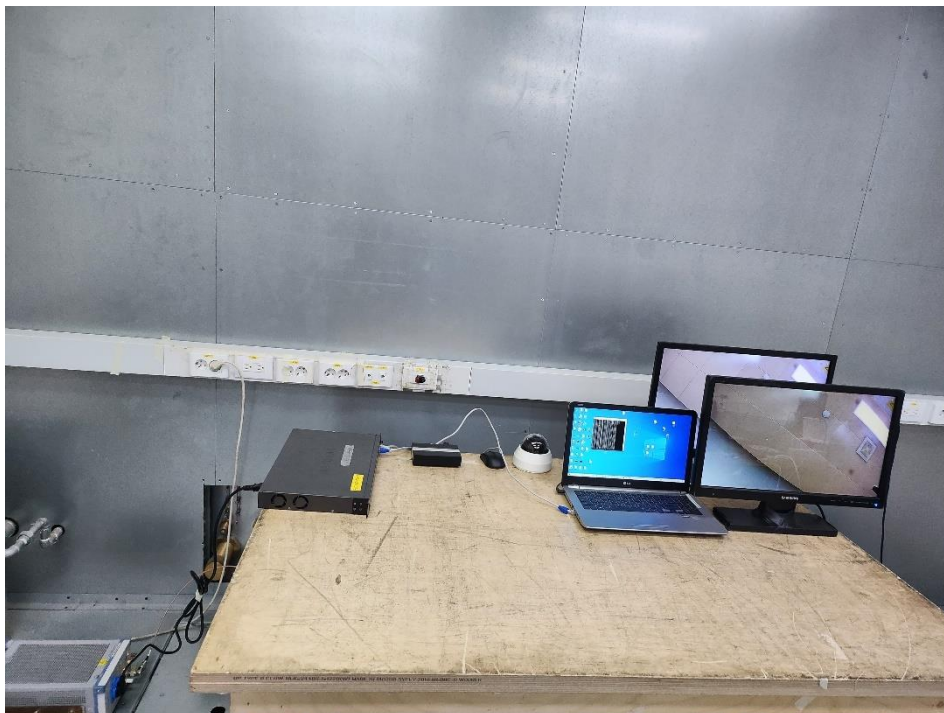
Conducted Emissions at Mains Power Ports

■ DC Mode



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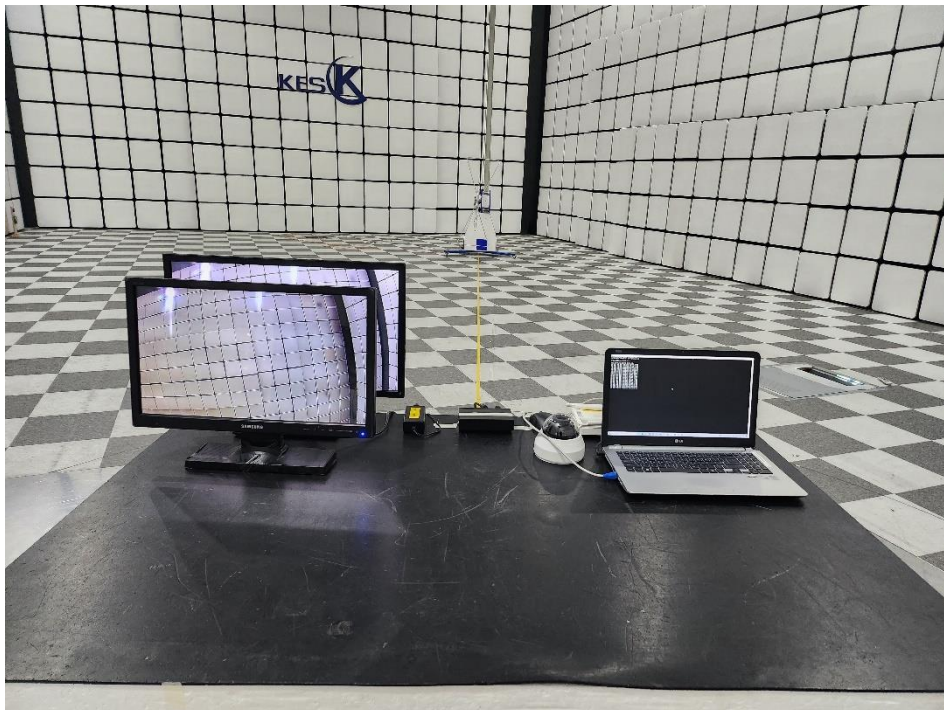
■ PoE Mode



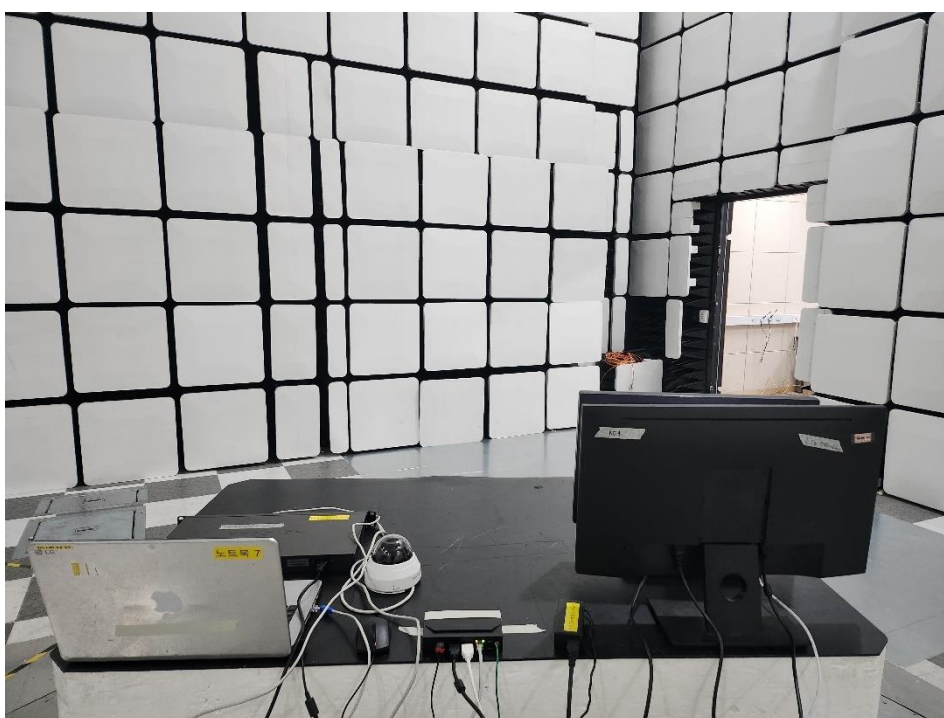
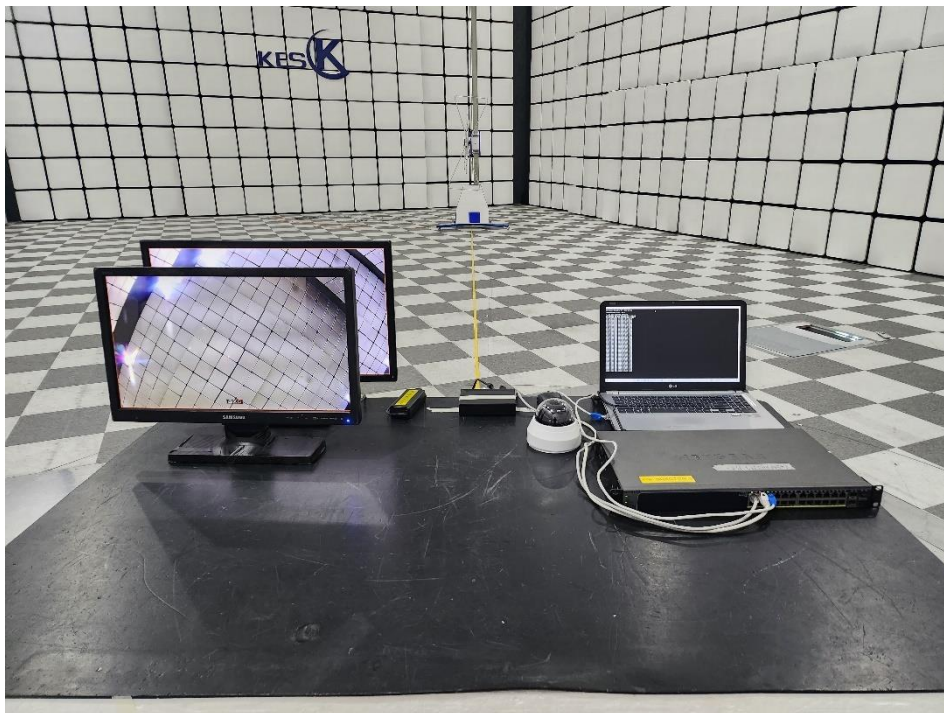
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Radiated Electric Field Emissions(Below 1 GHz)

■ DC Mode



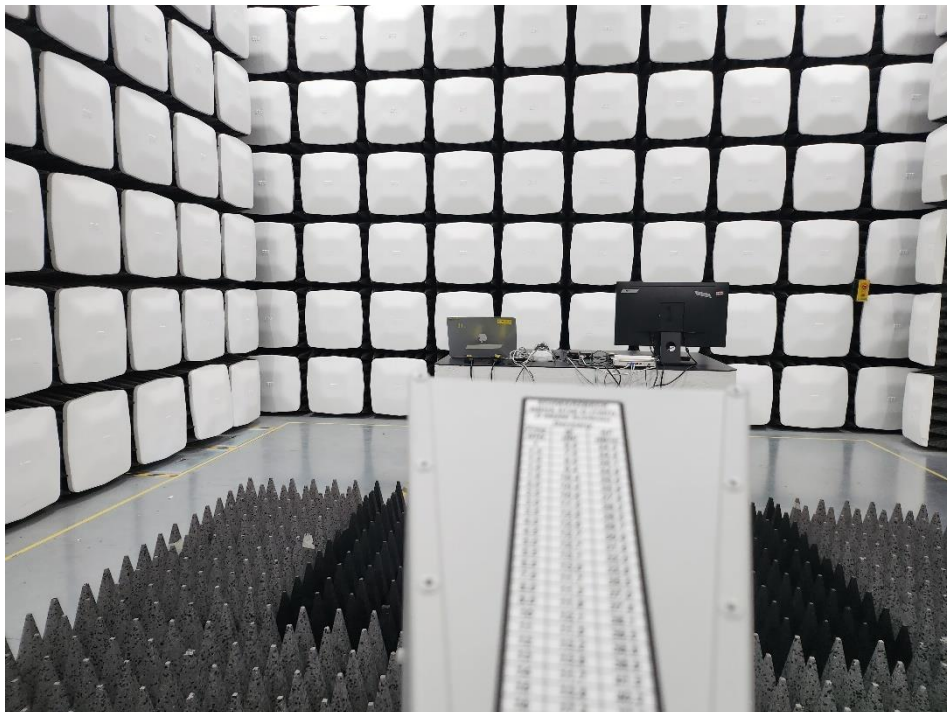
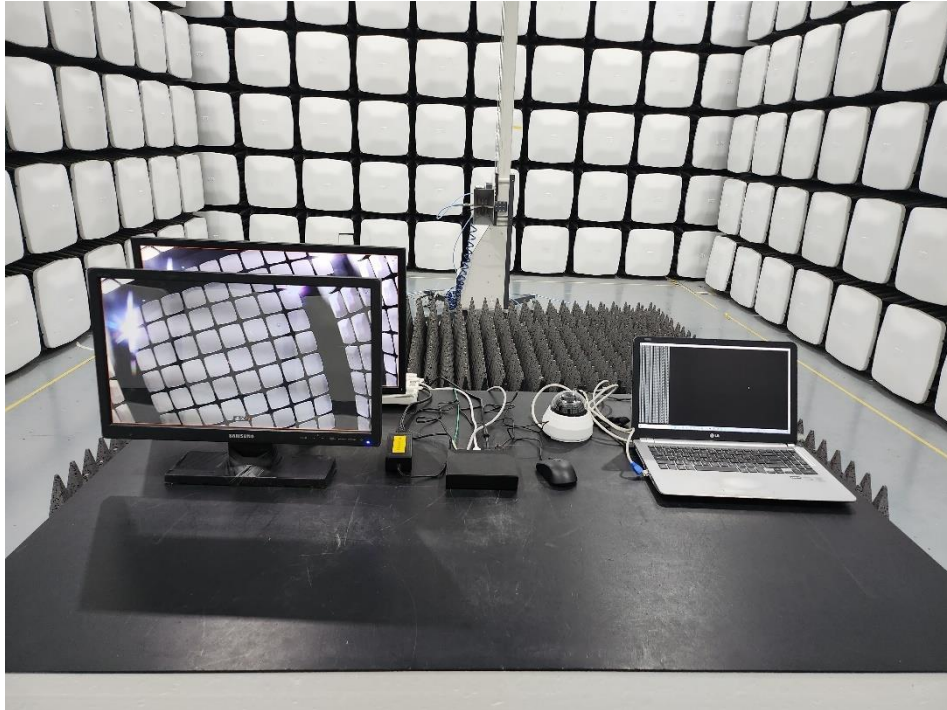
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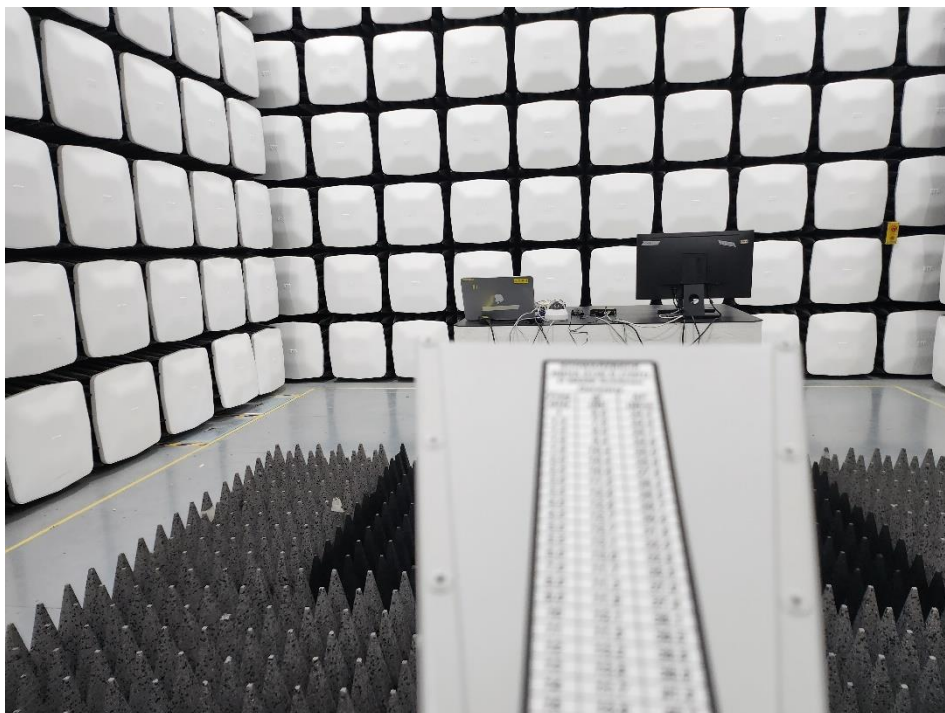
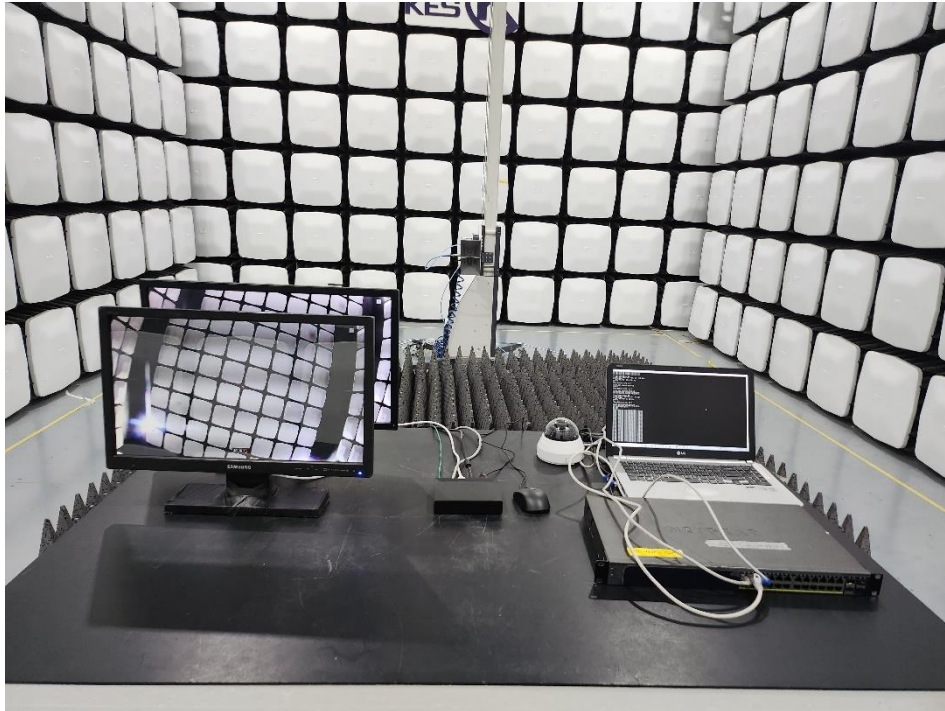
Radiated Electric Field Emissions(Above 1 GHz)

■ DC Mode



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■ PoE Mode



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EUT External Photographs

(Top)



(Bottom)



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EUT Internal Photographs

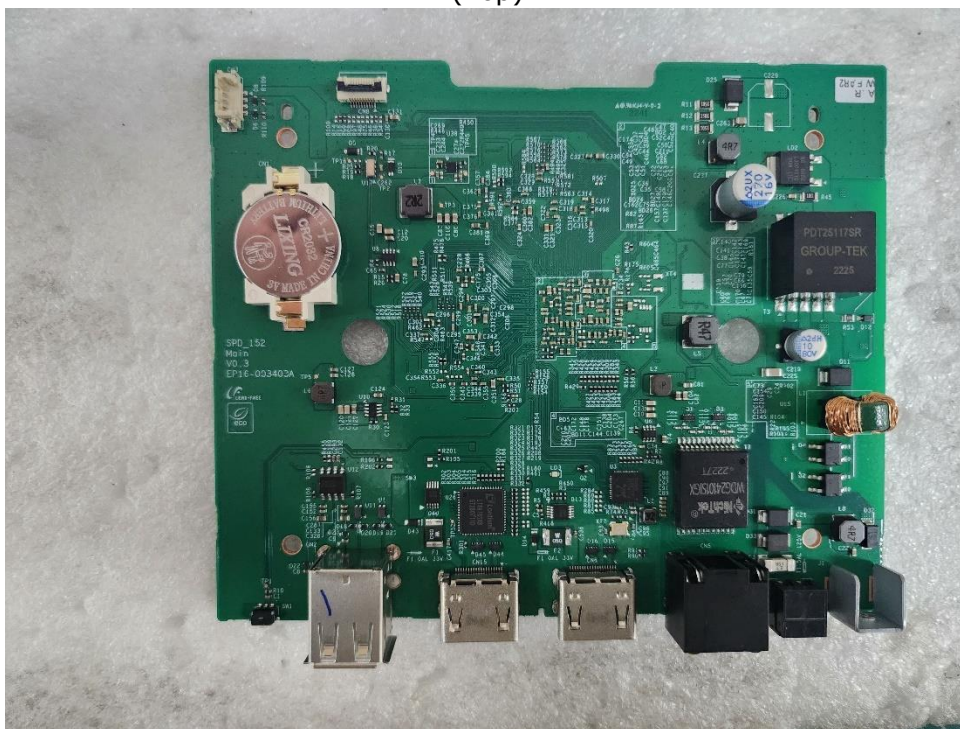
(Internal View)



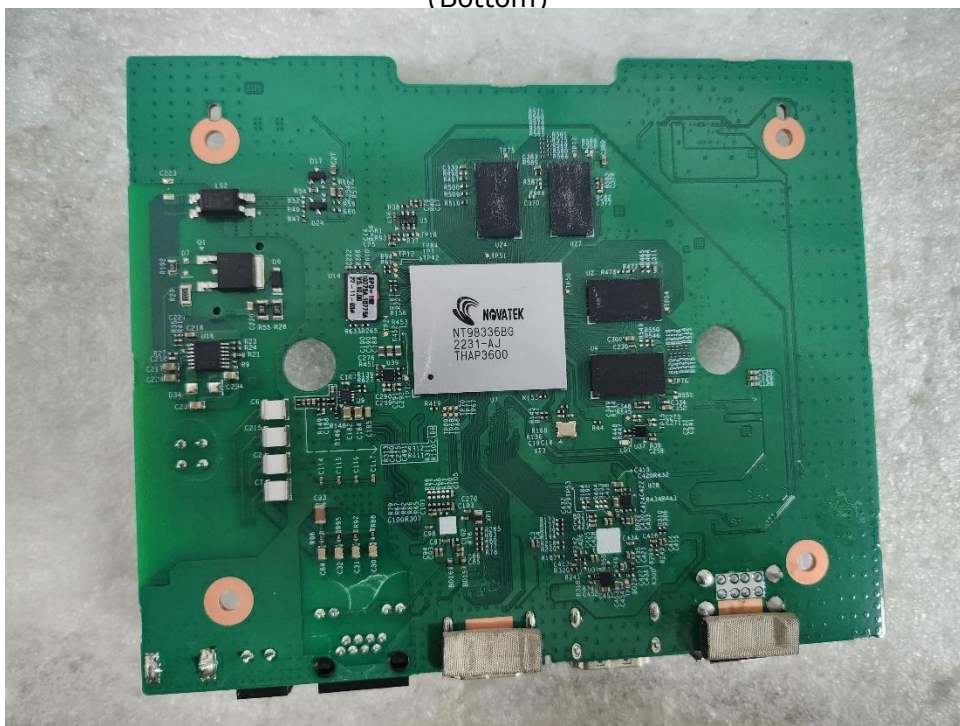
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EUT Internal View – Board

(Top)



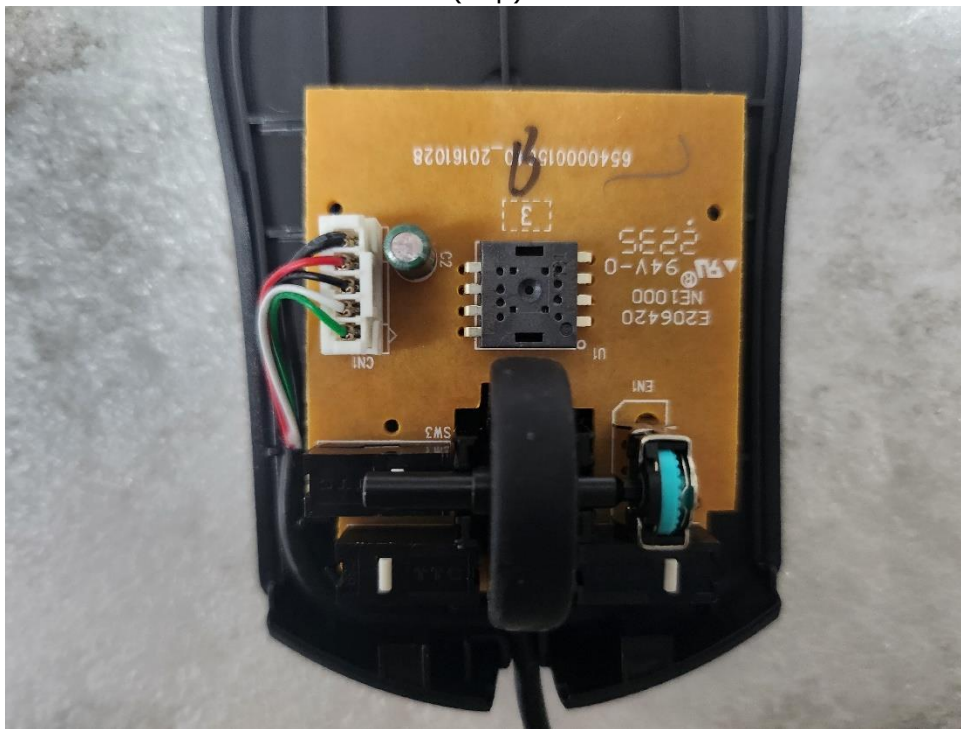
(Bottom)



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EUT Internal View – Mouse Board

(Top)



(Bottom)



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Label Photographs

FCC Label



Hanwha Techwin Co., Ltd.

SPD-152

IC Label

CAN ICES-003(A) / NMB-003(A)

This device complies with Industry Canada license-exempt RSS standard(s). Operation is subject to the following two conditions:
(1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of the device.

Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes :

(1) l'appareil ne doit pas produire de brouillage, et (2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.