TEST REPORT

KES Co., Ltd.
3701, 40, Simin-daero 365beon-gil,Dongan-gu, Anyang-si, Gyeonggi-do,14057, Korea
Tel : +82-31-425-6200, Fax : +82-31-425-6200

1. Client

Applicant : Hanwha Vision Co., Ltd

Applicant Address : 6, Pangyo-ro 319Beon-gil, Bundang-gu, Seongnam-si, Gyeonggi-do, Republic of Korea

2. Sample Description

Product name : NETWORK CAMERA

Model/Type No. : PNO-A9311R

Variant Model : PNO-A9311RLP

Manufacturer : 1. HANWHA VISION VIETNAM COMPANY LIMITED
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, Vietna
2. 173-25, Saneop-ro, Gwonseon-gu, Suwon-si, Gyeonggi-do, Korea (Suwon Industrial Complex)

3. Equipment authorization : Supplier's Declaration of Conformity

4. Date of Receipt : Dec. 28, 2023

5. Test date : Aug. 15, 2023 ~ Aug. 16, 2023

6. Date of Issue : Dec. 29, 2023

7. Test Results : In Compliance

Tested by

Jae Won, Lee
EMC Test Engineer

Reviewed by

Dae Jung, Choi
EMC Technical Manager

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

REPORT REVISION HISTORY

Date	Test Report No.	Revision History
Aug. 24, 2023	KES-EM-23T0741	Issued
Dec. 29, 2023	KES-EM-23T0741-R1	Reissuance due to the addition of a derivative

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1.0 General Product Description

Main Specifications of EUT are:

Video	
Imaging Device	1/1.8" CMOS
Resolution	3840x2160, 3072x1728, 2592x1944, 2688x1520, 2560x1440, 2048x1536, 1920x1080, 1600x1200, 1280x1024,1280x960, 1280x720, 1024x768, 800 x 600, 800 x 448, 720 x 576, 720x480, 640x480, 640x360
Max. Framerate	H.265/H.264: Max. 30fps/25fps(60Hz/50Hz) MJPEG: Max. 30fps/25fps(60Hz/50Hz)
NETD	None
Pixel Size	None
Min. Illumination	Color: 0.05Lux(F1.6, 1/30sec) BW: 0.005Lux(F1.6, 1/30sec), 0Lux(IR LED on)
Video Out	CVBS: 1.0 Vp-p / 75Ω composite, 720x480(N), 720x576(P) for installation USB: Micro USB Type B, 1280x720 for installation
Video Transmission Distance	None
Lens	
Focal Length (Zoom Ratio)	6.91~214.7mm (31x) motorized varifocal
Max. Aperture Ratio	F1.36(Wide)~F4.6(Tele)
Angular Field of View	H: 60.92°(Wide)~2.2°(Tele) / V:35.26°(Wide)~1.24°(Tele) / D:69.18°(Wide)~2.52°(Tele) [TBD]
Min. Object Distance	3m(9.84ft)
Focus Control	Simple focus
Lens Type	P iris
Mount Type	None
Optional Lens	None
Pan / Tilt / Rotate	
Pan / Tilt / Rotate Range	None
Pan Range	None
Pan Speed	None
Tilt Range	None
Tilt Speed	None
Rotate Range	None
Sequence	None
Preset Accuracy	None
Operational	
Camera Title	Displayed up to 85 characters
Direction Indicator	None
Day & Night	Auto(ICR)
Backlight Compensation	BLC, WDR, SSDR
Wide Dynamic Range	None
Digital Noise Reduction	SSNRV, WiseNR Ⅱ(using AI engine)
Digital Image Stabilization	Stabilization Support(built-in gyro sensor)
Defog	None
Motion Detection	8ea, polygonal zones
Privacy Masking	6ea, rectangle zones - Color: Gray/Black/White
Gain Control	Low / Middle / High
White Balance	ATW / AWC / Manual / Indoor / Outdoor
LDC	Support
Electronic Shutter Speed	Minimum / Maximum / Anti flicker (1/5~1/12,000sec) Auto prefer shutter control based on AI engine
Digital PTZ	None
Video Rotation	Flip, Mirror, Hallway view(90°/270°)
Analytics	Classified object type : Person/Face/Vehicle/License plate Attributes : Person(Gender, Color and Bag), Face(Age, Gender, Mask and Glasses), Vehicle(Type:car/bus/truck/motorcycle/bicycle and Color) Support Bestshot per object Analytics events based on AI engine - Object detection, Virtual line*(Crossing/Direction), Virtual area*(Loitering/Intrusion/Enter/Exit), Face mask detection, Digital auto tracking, Social distancing detection, Slip&Fall detection Analytics events - Defocus detection, Motion detection, Tampering, Audio detection, Sound classification, Shock detection, Virtual area(Appear/Disappear) *Some of the video analytics only works with people and vehicle detection
Business Intelligence	People/Vehicle/Crowd counting, Queue management, Heatmap based on AI engine
Serial Interface	None

Alarm I/O	2 configurable I/O ports, DC 12V output(Max. 50mA)
Alarm Triggers	Analytics, Network disconnect, Alarm input
Alarm Events	File upload via FTP and e-mail Notification via e-mail SD/SDHC/SDXC or NAS recording at event triggers Alarm output Handover Audio playback
Audio In	Selectable(mic in/line in) Supply voltage: 2.5VDC(4mA), Input impedance: 2K Ohm
Audio Out	Line out, Max.output level: 1Vrms
IR Viewable Length	**70m(229.66ft) TBD, testing up to 90m(295.28ft)**
IR Illuminator (Optional)	None
Water Removal	None
Auto Tracking	None
Coaxial Protocol	None
Color Palettes	None
Radiometry	
Temperature detect range	None
Temperature accuracy	None
Temperature detection	None
Additional	None
Network	
Ethernet	Metal shielded RJ-45(10/100/1000 BASE-T)
Video Compression	H.265/H.264: Main/High, MJPEG
Audio Compression	G.711 u-law /G.726 Selectable G.726(ADPCM) 8KHz, G.711 8KHz G.726: 16Kbps, 24Kbps, 32Kbps, 40Kbps AAC-LC: 48Kbps at 16KHz
Smart Codec	Manual(5ea area), WiseStreamⅡ, WiseStreamⅢ(using AI engine)
Video Quality Adjustment	H.264/H.265: Target bitrate level control MJPEG: Target bitrate level control
Bitrate Control	H.264/H.265: CBR or VBR MJPEG: VBR
Streaming	Unicast(6 users) / Multicast Multiple streaming(Up to 6 profiles)
Protocol	IPv4, IPv6, TCP/IP, UDP/IP, RTP(UDP), RTP(TCP), RTCP,RTSP, NTP, HTTP, HTTPS, SSL/TLS, DHCP, FTP, SMTP, ICMP, IGMP, SNMPv1/v2c/v3(MIB-2), ARP, DNS, DDNS, QoS, UPnP, Bonjour, LLDP, SRTP (TCP, UDP Unicast)
Security	HTTPS(SSL) Login Authentication Digest Login Authentication IP Address Filtering User access log 802.1X Authentication(EAP-TLS, EAP-LEAP) Device Certificate(Hanwha Techwin Root CA) Secure boot
Application Programming Interface	ONVIF Profile S/G/T/M SUNAPI(HTTP API) Wisenet open platform
General	
Webpage Language	English, French, German, Spanish, Italian, Chinese, Korean, Russian, Japanese, ~~Swedish,~~ Portuguese, Czech, Polish, Turkish, Dutch, Hungarian, Greek
Web Viewer	None
Edge Storage	Micro SD/SDHC/SDXC 2slots 512GB
Memory	4096MB RAM, 1024MB Flash
Environmental & Electrical	
Operating Temperature / Humidity	-40°C ~ +55°C(-40°F ~ +131°F) / Less than 90% RH * Start up should be done at above -30°C
Storage Temperature / Humidity	-50°C ~ +60°C(-58°F ~ +140°F) / Less than 90% RH
Certification	IP66/IP67, IK10, NEMA4X
Input Voltage	PoE+(IEEE802.3at), 12VDC
Power Consumption	PoE+: Max 20.0W, typical 17.00W 12VDC: Max 18.00W, typical 16.00W
Mechanical	
Color / Material	Dark gray / Aluminum
RAL Code	None
Product dimensions / weight	Ø136.2x358.7mm (Ø5.36" x 14.12") (Without sunshield), Weight : 0.00Kg (0.00lb) TBD, New design
Compatible Conduit hole / Gangbox	None
Hanging mount(Dome)	None
Skin cover(Dome)	None
Weather cap(Dome)	None

Power module	None
Backbox	None
DORI (EN62676-4 standard)	
Detect (25PPM/ 8PPF)	Wide: 73.5m(241ft) / Tele: 2,250m(7,382ft) [TBD]
Observe (63PPM/ 19PPF)	Wide: 29.4m(96.4ft) / Tele: 900m(2,953ft) [TBD]
Recognize (125PPM/ 38PPF)	Wide: 14.7m(48.2ft) / Tele: 450m(1,476ft) [TBD]
Identify (250PPM/ 76PPF)	Wide: 7.3m(24.1ft) / Tele: 225m(738.2ft) [TBD]

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

Differences between basic model and SW

1.3 Device Modifications

Not applicable

1.4 Equipment Under Test

Description	Model Number	Serial Number	Manufacturer	Remarks
NETWORK CAMERA	PNO-A9311R	-	HANWHA VISION VIETNAM COMPANY LIMITED	EUT

1.5 Support Equipments

Description	Model Number	Serial Number	Manufacturer	Remarks
Adapter	2ACB022F	-	ChAnnel Well Technology (Guangzhou) Co.,Ltd.	-
PoE Adapter	PT-PSE109GBRO-AH	-	Dongguan PROCET Network Technology Co.,Ltd	-
Laptop	P95G001	8KM8HT2	DELL INC.	-
Laptop Adapter	LA65NS2-01	-	LITE-ON TECHNOLOGY(CHANGZHOU)CO.,LTD.	-
Micro SD Card1	-	-	SanDisk	8 GB
Micro SD Card2	-	-	SanDisk	8 GB
Alarm	PRO-SL	-	SENSOR PRO	-
Button Alarm1	-	-	-	-
Button Alarm2	-	-	-	-
Headset	K550	-	Britz®	-
Smartphone	-	-	SAMSUNG	-

1.6 External I/O Cabling

■ DC Mode

Start		END		Cable Spec.	
Description	**I/O Port**	**Description**	**I/O Port**	**Length**	**Shield**
NETWORK CAMERA (EUT)	RJ-45(LAN)	Laptop	RJ-45(LAN)	3.5	U
	Alarm OUT	Alarm	Alarm IN	3.5	U
	Alarm IN	Button Alarm1	Alarm OUT	3.5	U
	Alarm IN	Button Alarm2	Alarm OUT	3.5	U
	Audio OUT	Headset	Audio IN	1.5	U
	Audio IN		Audio OUT	1.5	U
	Micro SD Card Slot	Micro SD Card1	Micro SD Card Slot	-	-
	Micro SD Card Slot	Micro SD Card2	Micro SD Card Slot	-	-
	DC Jack	Adapter	DC Jack	1.6	U
Laptop	DC Jack	Laptop Adapter	DC Jack	1.3	U
	3.5 mm	Smartphone	3.5 mm	1.0	U

* Unshielded=U, Shielded=S

■ PoE Mode

Start		END		Cable Spec.	
Description	**I/O Port**	**Description**	**I/O Port**	**Length**	**Shield**
NETWORK CAMERA (EUT)	RJ-45(PoE)	PoE Adapter	RJ-45(PoE)	3.5	U
	Alarm OUT	Alarm	Alarm IN	3.5	U
	Alarm IN	Button Alarm1	Alarm OUT	3.5	U
	Alarm IN	Button Alarm2	Alarm OUT	3.5	U
	Audio OUT	Headset	Audio IN	1.5	U
	Audio IN		Audio OUT	1.5	U
	Micro SD Card Slot	Micro SD Card1	Micro SD Card Slot	-	-
	Micro SD Card Slot	Micro SD Card2	Micro SD Card Slot	-	-
Laptop	DC Jack	Laptop Adapter	DC Jack	1.3	U
	3.5 mm	Smartphone	3.5 mm	1.0	U

* Unshielded=U, Shielded=S

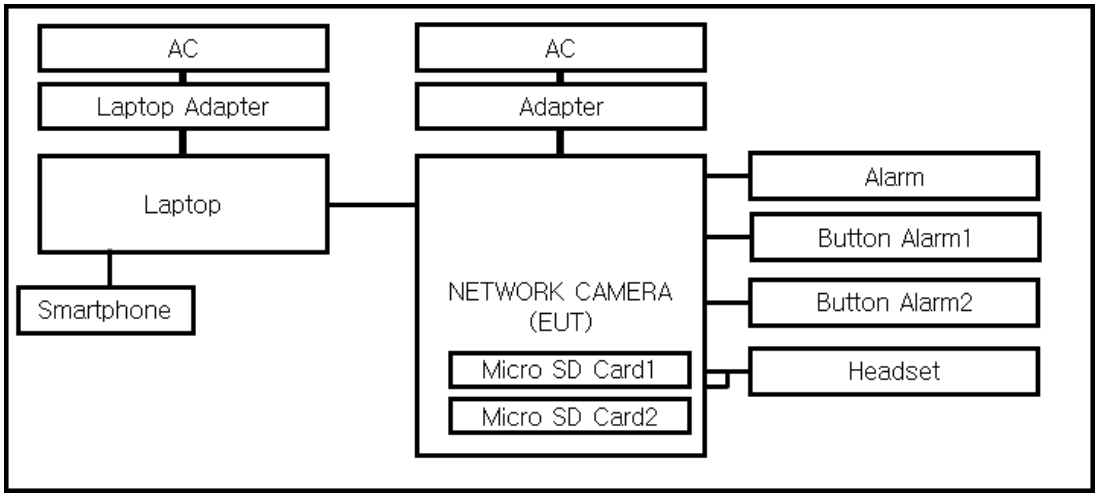
1.7 EUT Operating Mode(s)

Test mode	operating
Operater	After arranging the test equipment and peripherals as shown in the layout diagram below, 1. Run the Web Viewer on your laptop and check the camera video output 2. PingTest from your laptop to check the network status 3. Confirm the alarm output by pressing the alarm button 4. Play 1KHz toon on your smartphone and check the output on your headset 5. Record in the notebook and check the input in the headset microphone 6. After the test, the Micro SD Card storage file was checked.

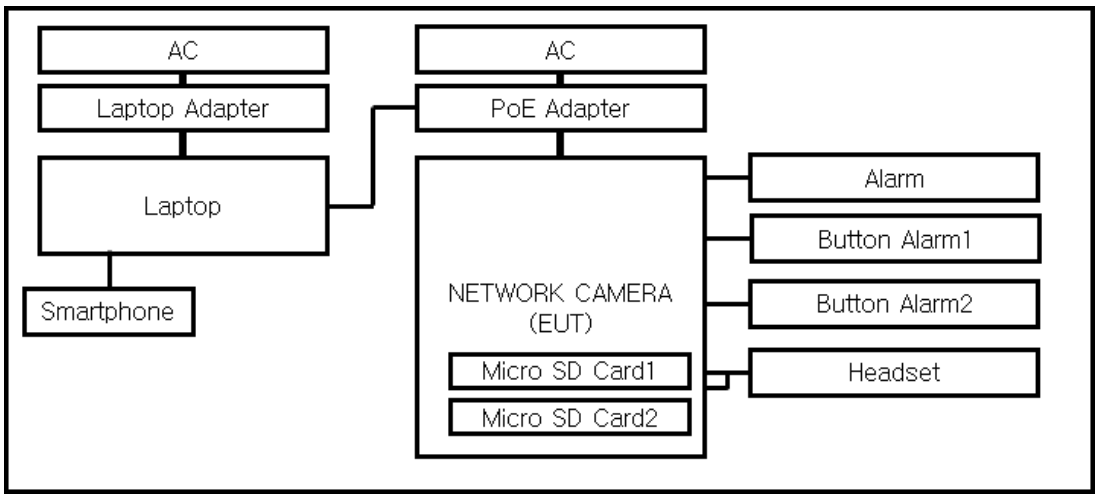
EUT Test operating S/W		
Name	**Version**	**Manufacture Company**
Web Viewer	-	Hanwha Vision Co., Ltd

1.8 Configuration

■ DC Mode



■ PoE Mode



1.9 Remarks when standards applied

Micro 5 Pin, VIDEO port is not tested because it is for administrators.

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, Yeoju-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 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 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**	EMI (3 m & 10 m Semi-Anechoic Chamber and conducted test site)	C-20136, T-20137, R-20181, G-20176
Europe	**TÜV SÜD**	EMI (3 m & 10 m Semi-Anechoic Chamber 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

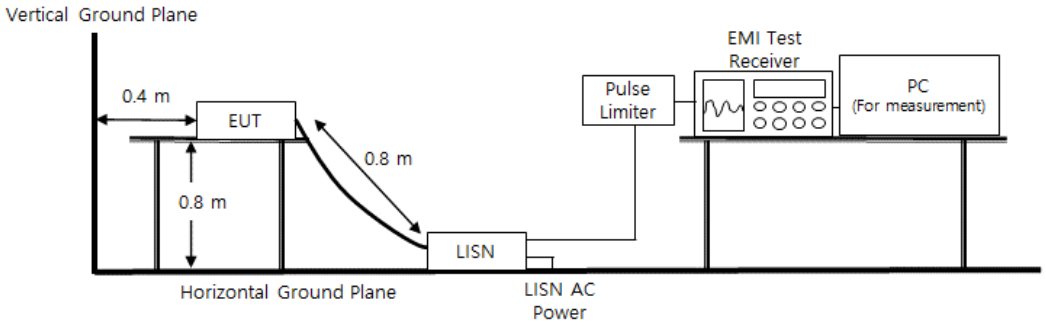
Test Date
Aug. 16, 2023

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



Test Conditions

Temperature: (24,2 ± 0,1) ℃
Relative Humidity: (48,8 ± 0,1) % R.H.

Frequency Range of Measurement

150 ㎑ to 30 ㎒

Instrument Settings

IF Band Width: 9 ㎑

Test Results

The requirements are:

☒ PASS
☐ NOT PASS
☐ NOT APPLICABLE

Remarks

See Appendix A for test data.

2.2 Radiated Electric Field Emissions(Below 1 ㎓)

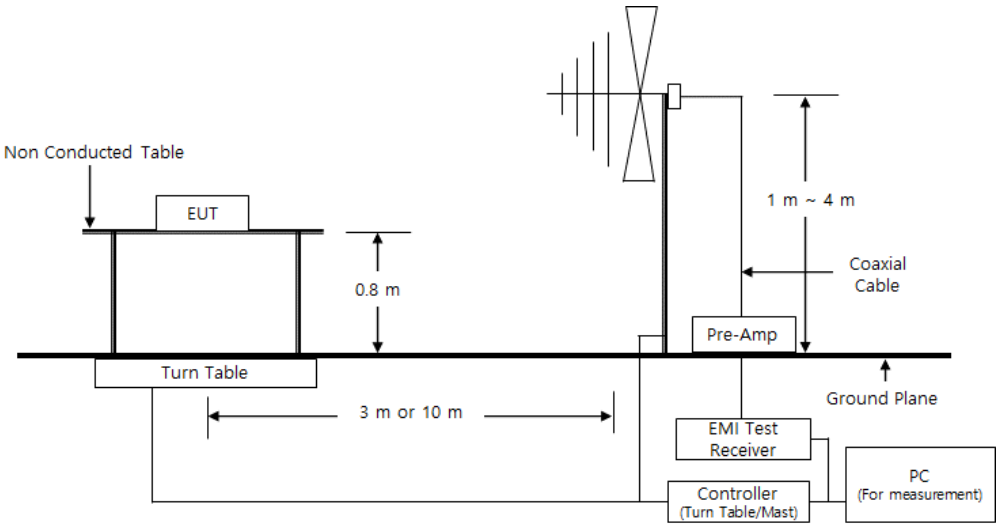
Test Date
Aug. 15, 2023

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, 21, 2024
☒	AMPLIFIER	SCU 01	R & S	100603	11, 10, 2023
☒	TRILOG-BROADBAND ANTENNA	VULB9163	Schwarzbeck	715	11, 17, 2024
☒	ATTENUATOR	8491A	HP	32173	03, 03, 2024

Diagram of test setup



Test Conditions

Temperature: (24,7 ± 0,1) ℃
Relative Humidity: (48,7 ± 0,1) % R.H.

Frequency Range of Measurement

30 ㎒ to 1 ㎓

Instrument Settings

IF Band Width: 120 ㎑

Test Results

The requirements are:

☒ PASS
☐ NOT PASS
☐ NOT APPLICABLE

Remarks

See Appendix A for test data.

2.3 Radiated Electric Field Emissions(Above 1 ㎓)

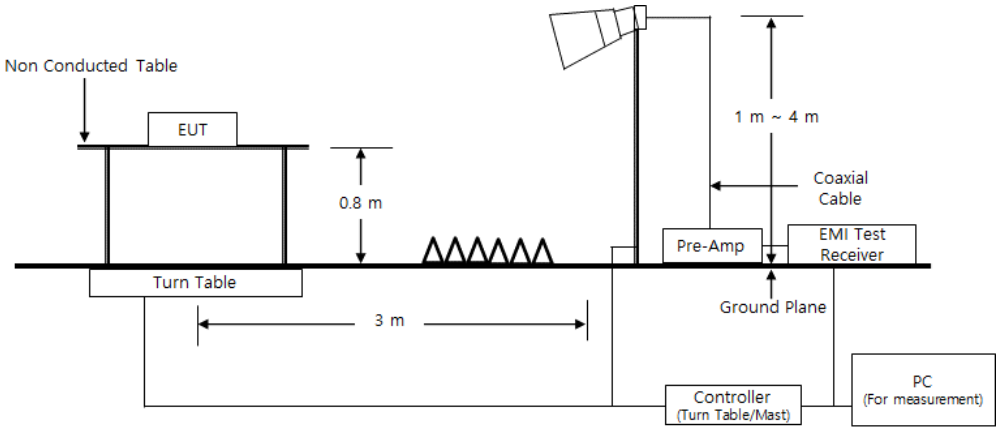
Test Date
Aug. 16, 2023

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, 21, 2024
☒	HORN ANTENNA	BBHA 9120D	SCHWARZBECK	9120D-1802	11, 08, 2023
☒	PREAMPLIFIER	8449B	HP	3008A00538	05, 31, 2024
☒	ATTENUATOR	8491B	HP	23094	03, 21, 2024

Diagram of test setup



Test Conditions

Temperature: (24,4 ± 0,1) ℃
Relative Humidity: (46,7 ± 0,1) % R.H.

Frequency Range of Measurement

1 ㎓ to 6 ㎓

Instrument Settings

IF Band Width: 1 ㎒

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

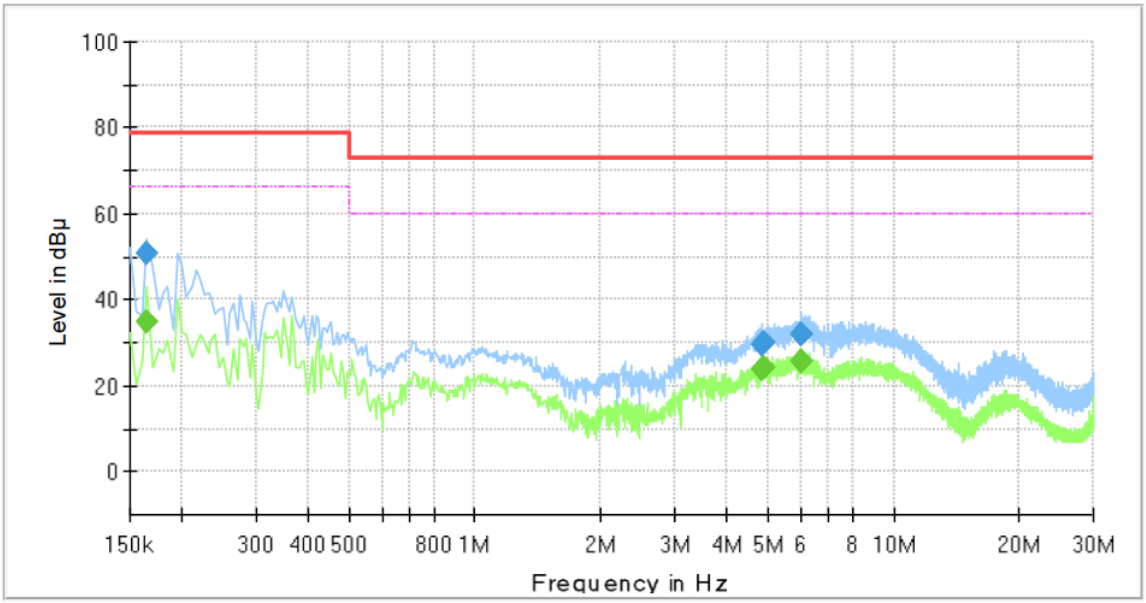
Conducted Emissions at Mains Power Ports

■ DC Mode

HOT LINE

Common Information

Test Description:	Conducted Emission
Model No.:	PNO-A9311R
Phase:	DC_L1
Mode:	
Operator Name:	KES



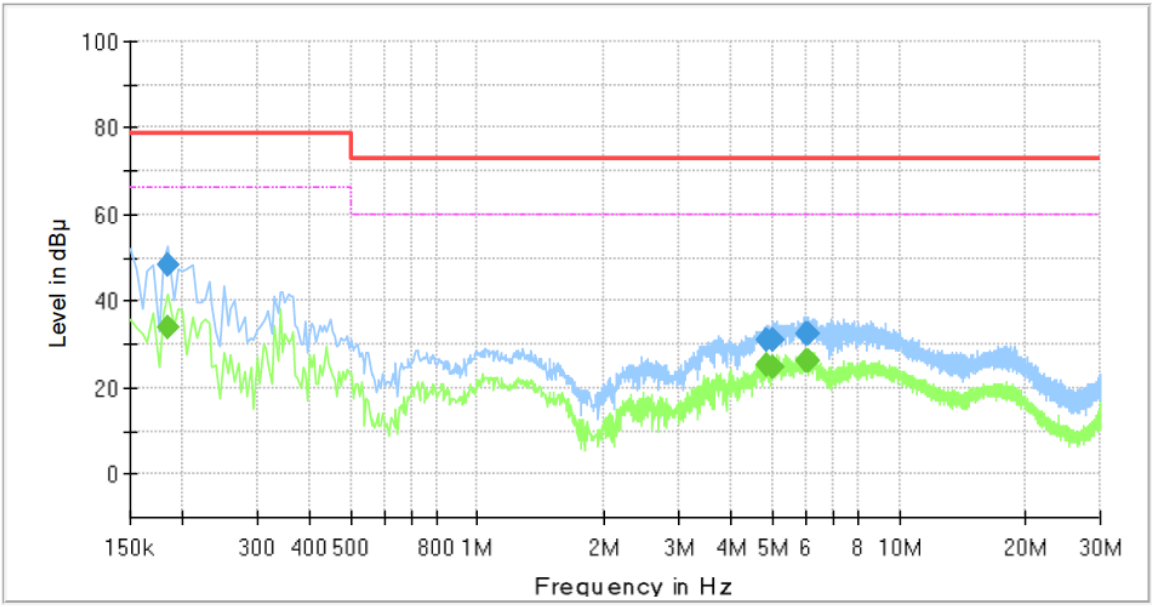
Final_Result

Frequency (MHz)	QuasiPeak (dBµV)	CAverage (dBµV)	Limit (dBµV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.165000	---	35.06	66.00	30.94	1000.0	9.000	L1	19.4
0.165000	50.69	---	79.00	28.31	1000.0	9.000	L1	19.4
4.845000	---	23.57	60.00	36.43	1000.0	9.000	L1	19.7
4.845000	29.57	---	73.00	43.43	1000.0	9.000	L1	19.7
4.880000	---	24.07	60.00	35.93	1000.0	9.000	L1	19.7
4.880000	29.85	---	73.00	43.15	1000.0	9.000	L1	19.7
6.005000	---	25.80	60.00	34.20	1000.0	9.000	L1	19.8
6.005000	31.78	---	73.00	41.22	1000.0	9.000	L1	19.8
6.040000	---	25.67	60.00	34.33	1000.0	9.000	L1	19.8
6.040000	31.82	---	73.00	41.18	1000.0	9.000	L1	19.8

NEUTRAL LINE

Common Information

Test Description:	Conducted Emission
Model No.:	PNO-A9311R
Phase:	DC_N
Mode:	
Operator Name:	KES



Final_Result

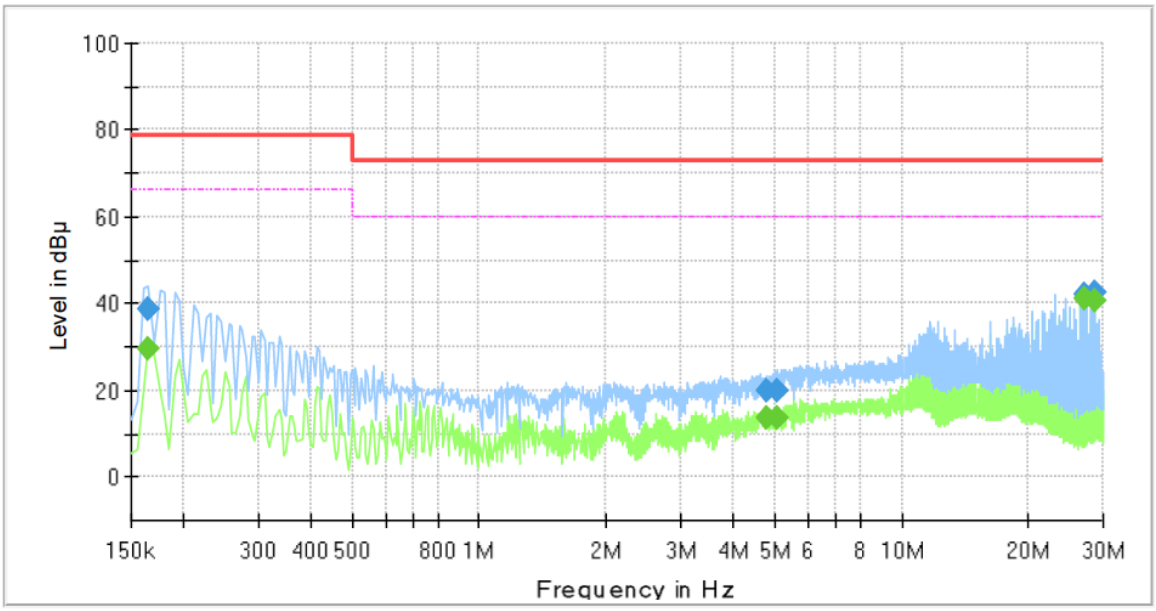
Frequency (MHz)	QuasiPeak (dBµV)	CAverage (dBµV)	Limit (dBµV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.185000	---	34.12	66.00	31.88	1000.0	9.000	N	19.4
0.185000	48.33	---	79.00	30.67	1000.0	9.000	N	19.4
4.835000	---	25.03	60.00	34.97	1000.0	9.000	N	19.7
4.835000	30.97	---	73.00	42.03	1000.0	9.000	N	19.7
5.010000	---	24.51	60.00	35.49	1000.0	9.000	N	19.7
5.010000	30.80	---	73.00	42.20	1000.0	9.000	N	19.7
6.045000	---	26.42	60.00	33.58	1000.0	9.000	N	19.8
6.045000	32.39	---	73.00	40.61	1000.0	9.000	N	19.8
6.055000	---	26.42	60.00	33.58	1000.0	9.000	N	19.8
6.055000	32.46	---	73.00	40.54	1000.0	9.000	N	19.8

■ PoE Mode

HOT LINE

Common Information

Test Description:	Conducted Emission
Model No.:	PNO-A9311R
Phase:	PoE_L1
Mode:	
Operator Name:	KES



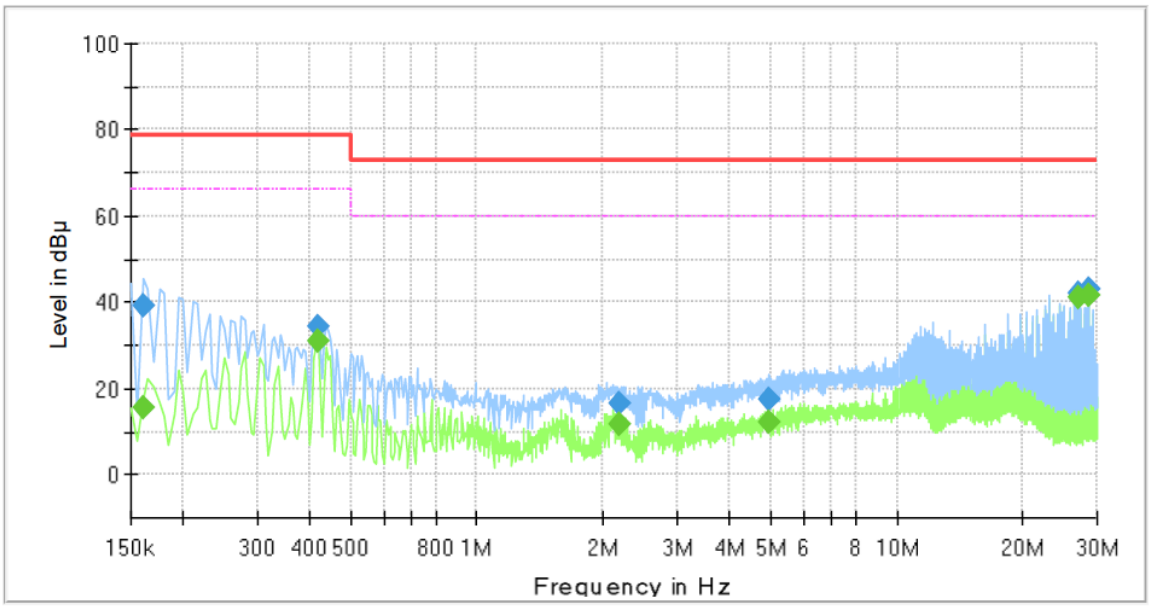
Final_Result

Frequency (MHz)	QuasiPeak (dBµV)	CAverage (dBµV)	Limit (dBµV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.165000	---	29.49	66.00	36.51	1000.0	9.000	L1	19.4
0.165000	38.55	---	79.00	40.45	1000.0	9.000	L1	19.4
4.770000	---	13.88	60.00	46.12	1000.0	9.000	L1	19.7
4.770000	19.69	---	73.00	53.31	1000.0	9.000	L1	19.7
5.070000	---	13.73	60.00	46.27	1000.0	9.000	L1	19.7
5.070000	19.74	---	73.00	53.26	1000.0	9.000	L1	19.7
27.160000	---	41.22	60.00	18.78	1000.0	9.000	L1	20.3
27.160000	42.18	---	73.00	30.82	1000.0	9.000	L1	20.3
28.685000	---	40.43	60.00	19.57	1000.0	9.000	L1	20.3
28.685000	42.46	---	73.00	30.54	1000.0	9.000	L1	20.3

NEUTRAL LINE

Common Information

Test Description:	Conducted Emission
Model No.:	PNO-A9311R
Phase:	PoE_N
Mode:	
Operator Name:	KES



Final_Result

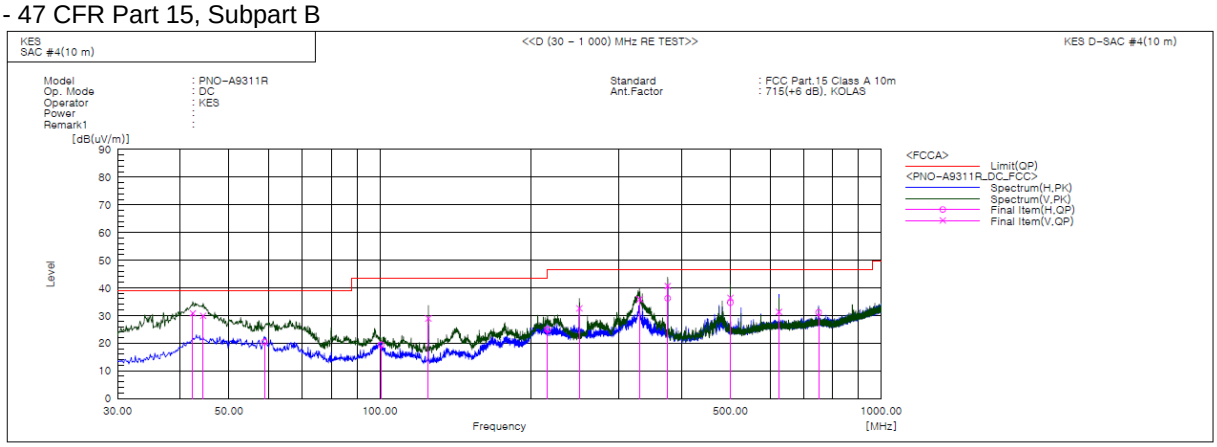
Frequency (MHz)	QuasiPeak (dBµV)	CAverage (dBµV)	Limit (dBµV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.160000	---	15.65	66.00	50.35	1000.0	9.000	N	19.4
0.160000	39.03	---	79.00	39.97	1000.0	9.000	N	19.4
0.420000	---	31.14	66.00	34.86	1000.0	9.000	N	19.4
0.420000	34.53	---	79.00	44.47	1000.0	9.000	N	19.4
2.175000	---	11.54	60.00	48.46	1000.0	9.000	N	19.5
2.175000	16.67	---	73.00	56.33	1000.0	9.000	N	19.5
4.985000	---	12.11	60.00	47.89	1000.0	9.000	N	19.7
4.985000	17.56	---	73.00	55.44	1000.0	9.000	N	19.7
27.160000	---	41.20	60.00	18.80	1000.0	9.000	N	20.3
27.160000	42.18	---	73.00	30.82	1000.0	9.000	N	20.3
28.685000	---	41.47	60.00	18.53	1000.0	9.000	N	20.4
28.685000	43.23	---	73.00	29.77	1000.0	9.000	N	20.4

♦ 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))

Radiated Electric Field Emissions(Below 1 ㎓)

■ DC Mode

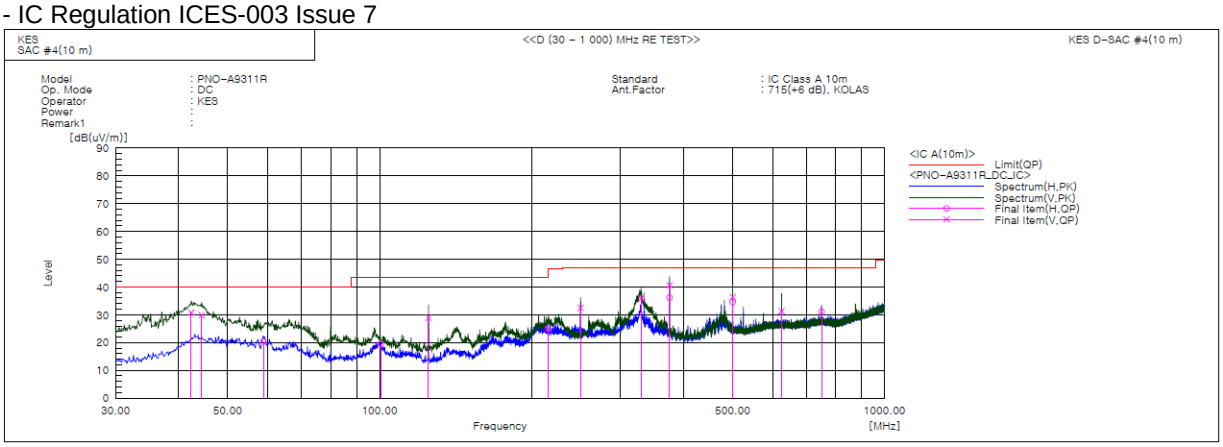
- 47 CFR Part 15, Subpart B



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	42.368	V	52.2	-21.4	30.8	39.0	8.2	119.0	163.0	
2	44.429	V	50.9	-21.0	29.9	39.0	9.1	145.0	126.0	
3	58.858	H	41.7	-21.3	20.4	39.0	18.6	389.0	268.0	
4	100.568	H	41.5	-22.1	19.4	43.5	24.1	399.0	353.0	
5	124.939	V	53.2	-24.3	28.9	43.5	14.6	100.0	358.0	
6	215.998	H	44.7	-19.8	24.9	43.5	18.6	397.0	264.0	
7	249.948	V	51.4	-18.8	32.6	46.5	13.9	142.0	182.0	
8	329.488	V	51.7	-15.8	35.9	46.5	10.6	115.0	14.0	
9	374.956	V	54.7	-14.0	40.7	46.5	5.8	100.0	178.0	
10	374.986	H	50.2	-14.0	36.2	46.5	10.3	196.0	330.0	
11	499.965	V	47.0	-10.6	36.4	46.5	10.1	114.0	159.0	
12	499.999	H	45.2	-10.6	34.6	46.5	11.9	195.0	252.0	
13	625.095	V	38.9	-7.6	31.3	46.5	15.2	112.0	52.0	
14	750.104	H	37.3	-6.2	31.1	46.5	15.4	100.0	344.0	

- IC Regulation ICES-003 Issue 7

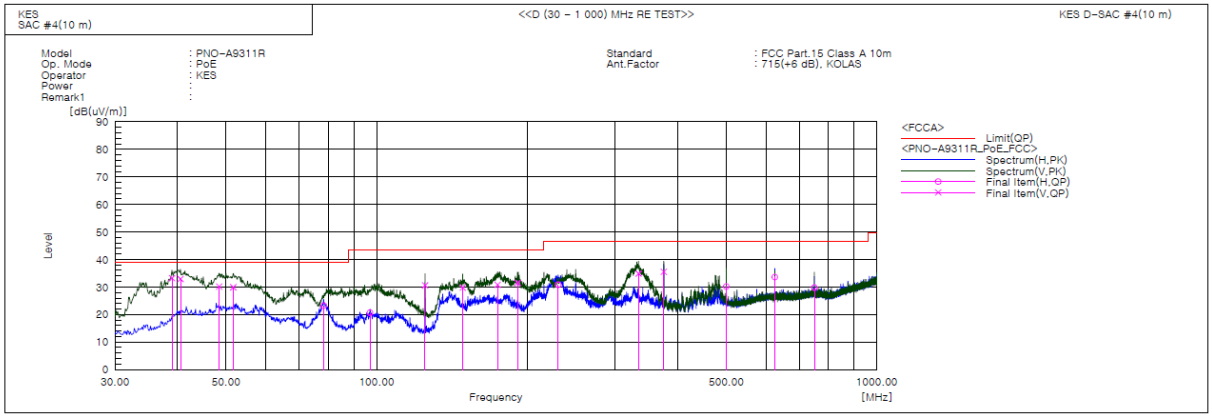


Final Result

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	42.368	V	52.2	-21.4	30.8	40.0	9.2	119.0	163.0	
2	44.429	V	50.9	-21.0	29.9	40.0	10.1	145.0	126.0	
3	58.858	H	41.7	-21.3	20.4	40.0	19.6	389.0	268.0	
4	100.568	H	41.5	-22.1	19.4	43.5	24.1	399.0	353.0	
5	124.939	V	53.2	-24.3	28.9	43.5	14.6	100.0	358.0	
6	215.998	H	44.7	-19.8	24.9	43.5	18.6	397.0	264.0	
7	249.948	V	51.4	-18.8	32.6	47.0	14.4	142.0	182.0	
8	329.488	V	51.7	-15.8	35.9	47.0	11.1	115.0	14.0	
9	374.956	V	54.7	-14.0	40.7	47.0	6.3	100.0	178.0	
10	374.986	H	50.2	-14.0	36.2	47.0	10.8	196.0	330.0	
11	499.965	V	47.0	-10.6	36.4	47.0	10.6	114.0	159.0	
12	499.999	H	45.2	-10.6	34.6	47.0	12.4	195.0	252.0	
13	625.095	V	38.9	-7.6	31.3	47.0	15.7	112.0	52.0	
14	750.104	H	37.3	-6.2	31.1	47.0	15.9	100.0	344.0	

■ PoE Mode

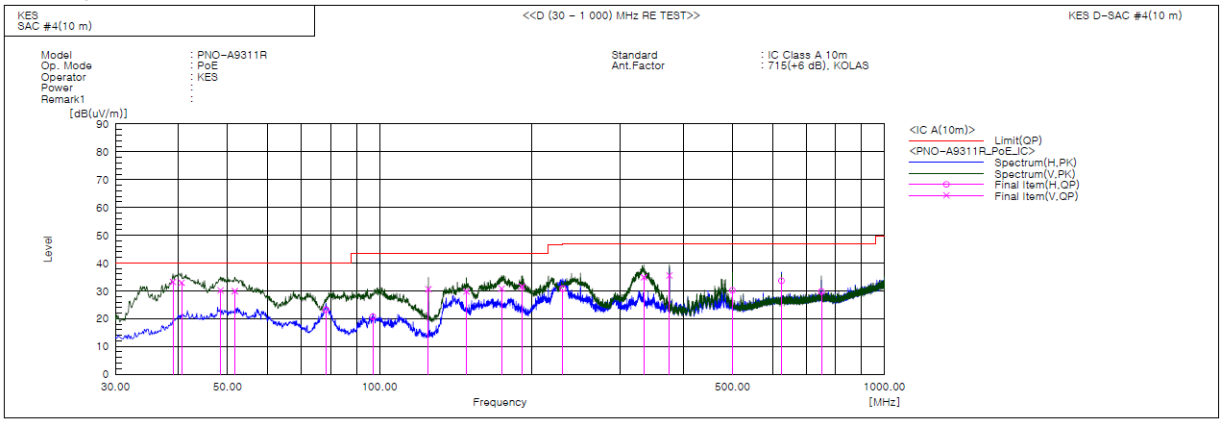
- 47 CFR Part 15, Subpart B



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	38.973	V	55.8	-22.6	33.2	39.0	5.8	100.0	261.0	
2	40.549	V	54.9	-22.0	32.9	39.0	6.1	149.0	267.0	
3	48.430	V	50.7	-20.5	30.2	39.0	8.8	145.0	270.0	
4	51.704	V	50.3	-20.4	29.9	39.0	9.1	399.0	101.0	
5	78.379	H	50.3	-27.1	23.2	39.0	15.8	389.0	148.0	
6	97.051	H	42.9	-22.2	20.7	43.5	22.8	396.0	100.0	
7	124.939	V	54.9	-24.3	30.6	43.5	12.9	142.0	2.0	
8	148.583	V	54.8	-25.0	29.8	43.5	13.7	106.0	164.0	
9	174.530	V	54.5	-23.7	30.8	43.5	12.7	112.0	153.0	
10	191.384	V	53.4	-21.9	31.5	43.5	12.0	115.0	105.0	
11	230.669	H	50.0	-19.2	30.8	46.5	15.7	196.0	74.0	
12	333.731	V	50.5	-15.6	34.9	46.5	11.6	107.0	179.0	
13	374.956	V	49.5	-14.0	35.5	46.5	11.0	112.0	171.0	
14	499.965	H	40.8	-10.6	30.2	46.5	16.3	393.0	308.0	
15	624.974	H	41.2	-7.6	33.6	46.5	12.9	195.0	300.0	
16	749.983	H	36.0	-6.2	29.8	46.5	16.7	196.0	155.0	

- IC Regulation ICES-003 Issue 7



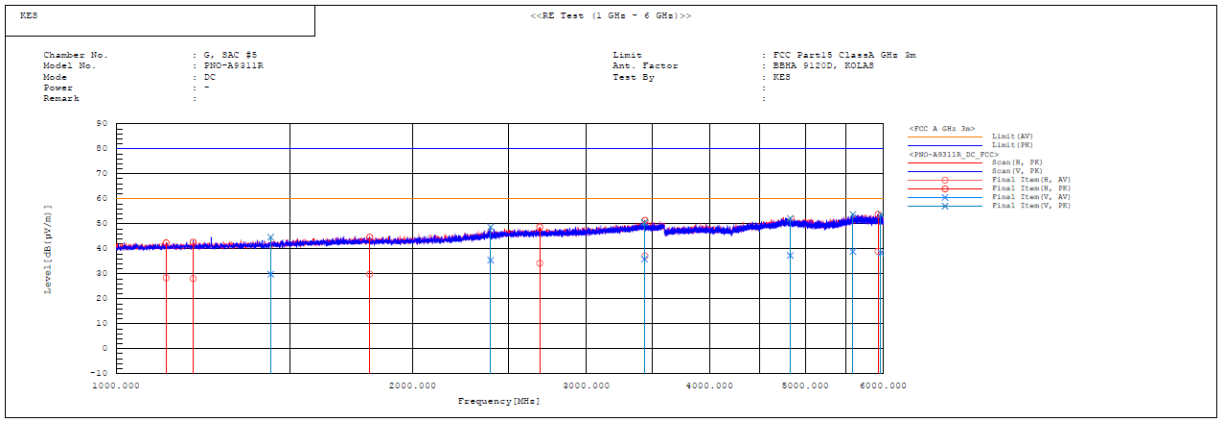
Final Result

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	38.973	V	55.8	-22.6	33.2	40.0	6.8	100.0	261.0	
2	40.549	V	54.9	-22.0	32.9	40.0	7.1	149.0	267.0	
3	48.430	V	50.7	-20.5	30.2	40.0	9.8	145.0	270.0	
4	51.704	V	50.3	-20.4	29.9	40.0	10.1	399.0	101.0	
5	78.379	H	50.3	-27.1	23.2	40.0	16.8	389.0	148.0	
6	97.051	H	42.9	-22.2	20.7	43.5	22.8	396.0	100.0	
7	124.939	V	54.9	-24.3	30.6	43.5	12.9	142.0	2.0	
8	148.583	V	54.8	-25.0	29.8	43.5	13.7	106.0	164.0	
9	174.530	V	54.5	-23.7	30.8	43.5	12.7	112.0	153.0	
10	191.384	V	53.4	-21.9	31.5	43.5	12.0	115.0	105.0	
11	230.669	H	50.0	-19.2	30.8	47.0	16.2	196.0	74.0	
12	333.731	V	50.5	-15.6	34.9	47.0	12.1	107.0	179.0	
13	374.956	V	49.5	-14.0	35.5	47.0	11.5	112.0	171.0	
14	499.965	H	40.8	-10.6	30.2	47.0	16.8	393.0	308.0	
15	624.974	H	41.2	-7.6	33.6	47.0	13.4	195.0	300.0	
16	749.983	H	36.0	-6.2	29.8	47.0	17.2	196.0	155.0	

♦ Calculation
Result(QP) [dB(㎶/m)] = (Reading(QP)[dB(㎶)] + c.f[dB(1/m)]
Margin(QP)[dB] = Limit[dB(㎶/m)] - Result(QP) [dB(㎶/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 ㎓)

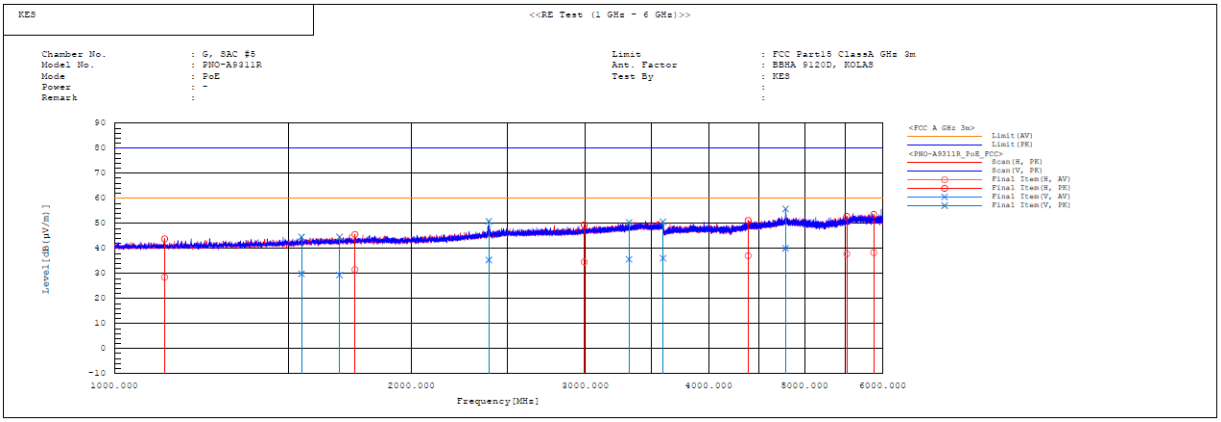
■ DC Mode



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	1124.144	H	29.6	43.6	-1.2	28.4	42.4	60.0	80.0	31.6	37.6	197.0	288.0	
2	1197.597	H	28.9	43.5	-0.8	28.1	42.7	60.0	80.0	31.9	37.3	195.0	268.7	
3	1435.548	V	29.5	44.3	0.4	29.9	44.7	60.0	80.0	30.1	35.3	397.0	315.9	
4	1808.458	H	27.9	42.7	2.0	29.9	44.7	60.0	80.0	30.1	35.3	196.0	137.5	
5	2399.500	V	31.2	44.4	4.3	35.5	48.7	60.0	80.0	24.5	31.3	150.2	114.9	
6	2689.589	H	29.0	43.5	5.3	34.3	48.8	60.0	80.0	25.7	31.2	199.0	131.8	
7	3435.499	V	29.1	43.7	6.8	35.9	50.5	60.0	80.0	24.1	29.5	149.0	185.0	
8	3439.489	H	30.4	44.6	6.8	37.2	51.4	60.0	80.0	22.8	28.6	199.0	359.1	
9	4829.585	V	25.7	40.6	11.6	37.3	52.2	60.0	80.0	22.7	27.8	397.0	299.7	
10	5589.758	V	25.8	40.7	13.1	38.9	53.8	60.0	80.0	21.1	26.2	143.0	4.1	
11	5928.362	H	25.3	40.1	13.7	39.0	53.8	60.0	80.0	21.0	26.2	117.0	161.2	
12	5966.146	V	24.5	39.9	13.8	38.3	53.7	60.0	80.0	21.7	26.3	397.0	129.8	

■ 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	1124.596	H	29.7	45.0	-1.2	28.5	43.8	60.0	80.0	31.5	36.2	102.0	65.0	
2	1547.785	V	29.0	43.7	0.9	29.9	44.6	60.0	80.0	30.1	35.4	102.0	110.7	
3	1691.397	V	27.9	43.1	1.5	29.4	44.6	60.0	80.0	30.6	35.4	114.0	0.5	
4	1752.485	H	29.8	43.8	1.8	31.6	45.6	60.0	80.0	28.4	34.4	196.0	7.1	
5	2395.369	V	31.1	46.5	4.3	35.4	50.8	60.0	80.0	24.6	29.2	102.0	265.5	
6	2991.389	H	28.3	43.1	6.3	34.6	49.4	60.0	80.0	25.4	30.6	196.0	130.3	
7	3321.852	V	29.0	43.6	6.7	35.7	50.3	60.0	80.0	24.3	29.7	103.0	193.8	
8	3594.485	V	29.1	43.6	7.0	36.1	50.6	60.0	80.0	23.9	29.4	397.0	282.0	
9	4385.458	H	27.0	41.1	10.1	37.1	51.2	60.0	80.0	22.9	28.8	101.0	154.1	
10	4784.881	V	28.8	44.5	11.3	40.1	55.8	60.0	80.0	19.9	24.2	105.0	156.8	
11	5517.745	H	25.0	39.9	12.9	37.9	52.8	60.0	80.0	22.1	27.2	196.0	325.9	
12	5875.599	H	24.8	40.0	13.6	38.4	53.6	60.0	80.0	21.6	26.4	105.0	109.7	

♦ 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

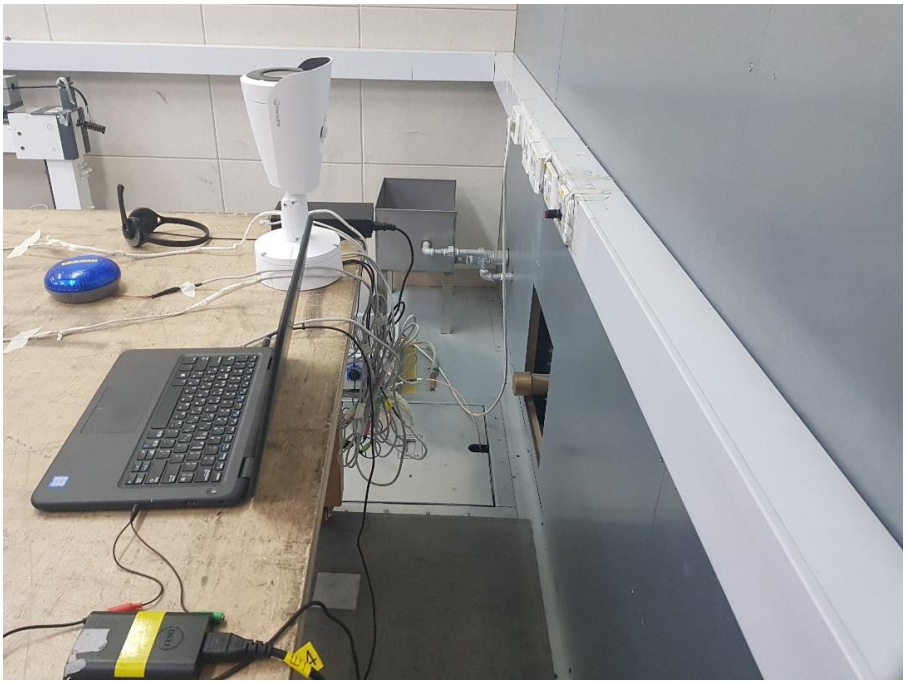
Limit(QP) : Limit value, c.f : (ANT Factor + Cable Loss - Preamp Factor), Margin: Margin value

Test Setup Photos and Configuration

Conducted Emissions at Mains Power Ports

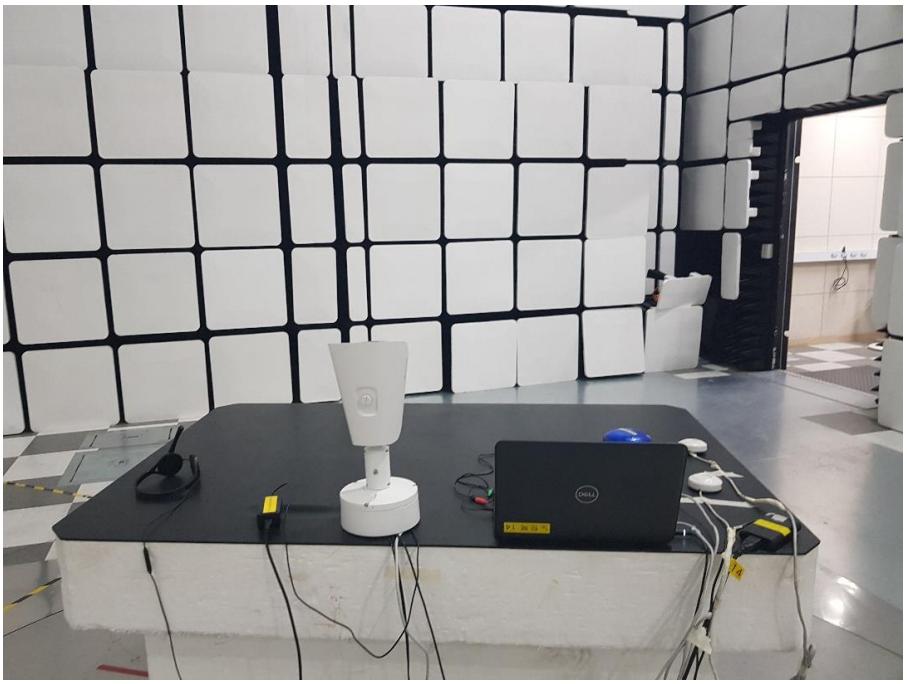
■ DC Mode

■ PoE Mode

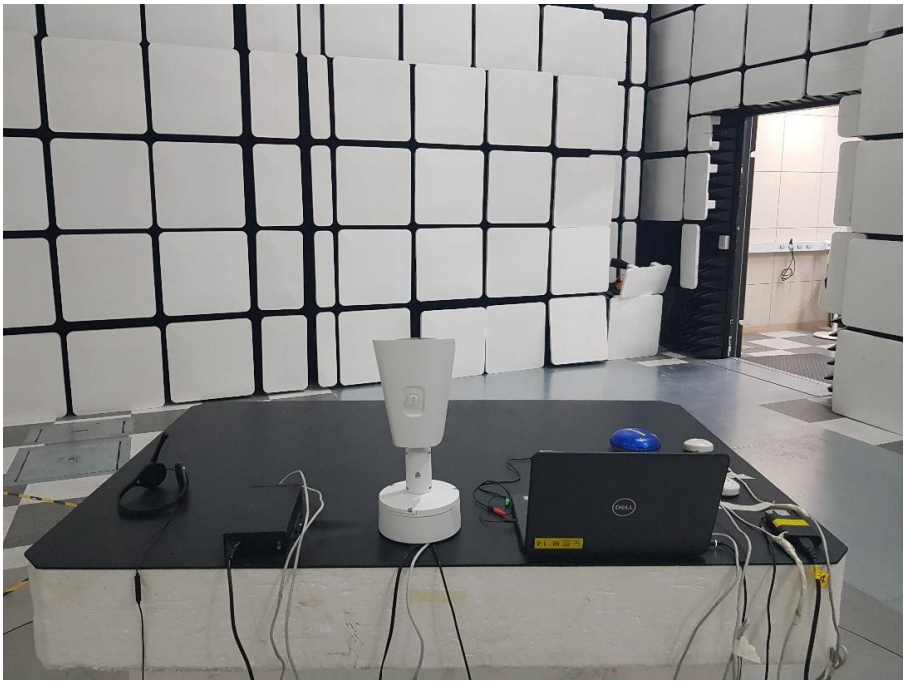


Radiated Electric Field Emissions(Below 1 ㎓)

■ DC Mode

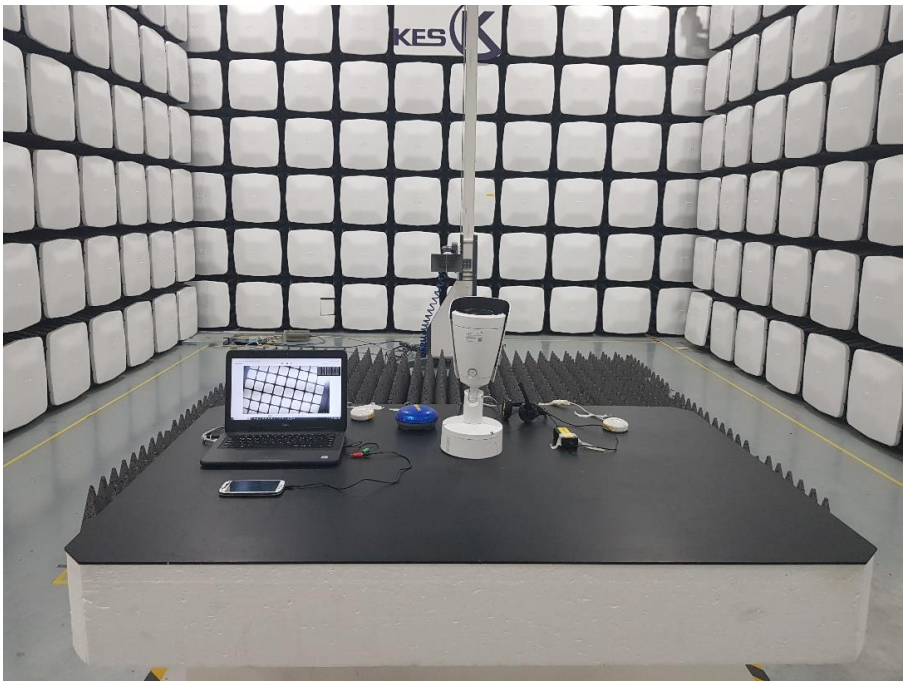


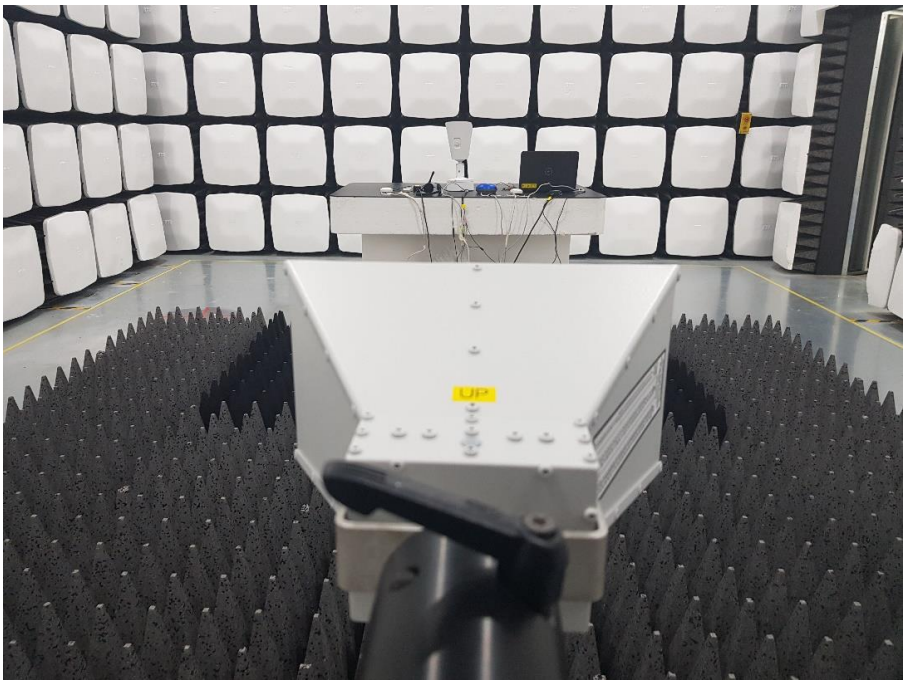
■ PoE Mode



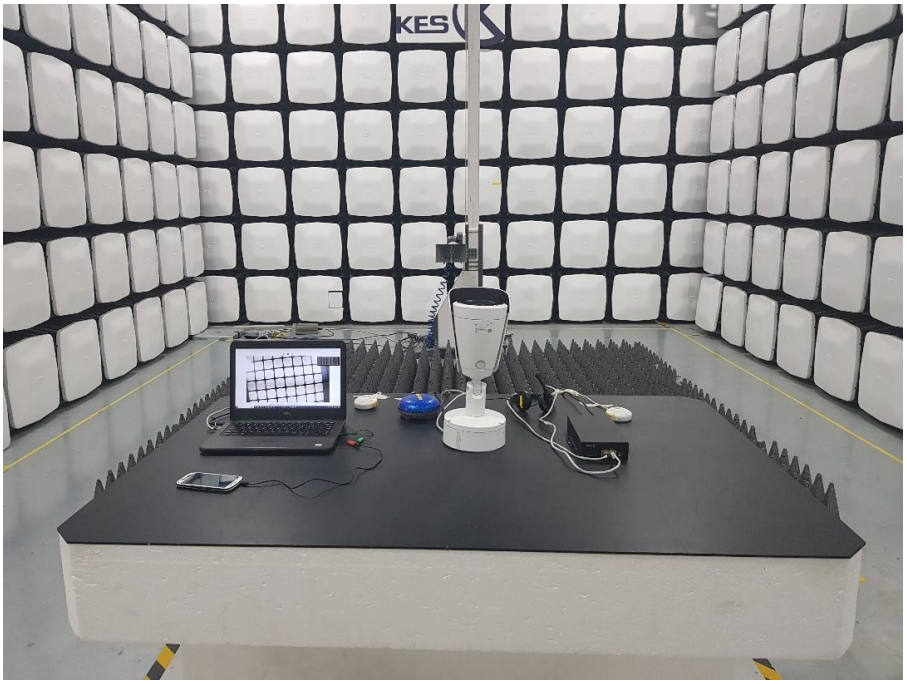
Radiated Electric Field Emissions(Above 1 ㎓)

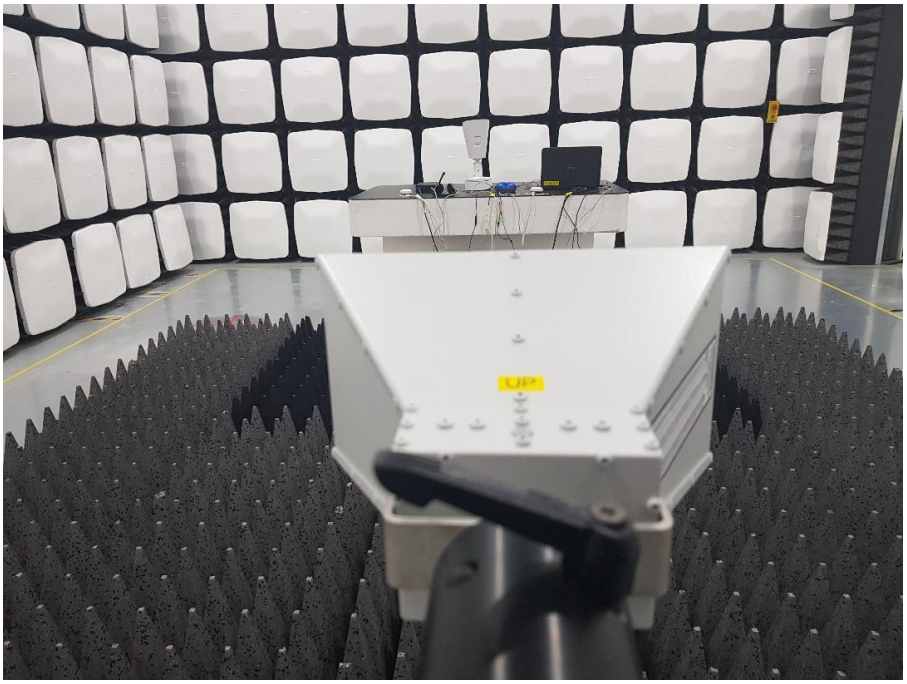
■ DC Mode





■ PoE Mode





EUT External Photographs

(Top)

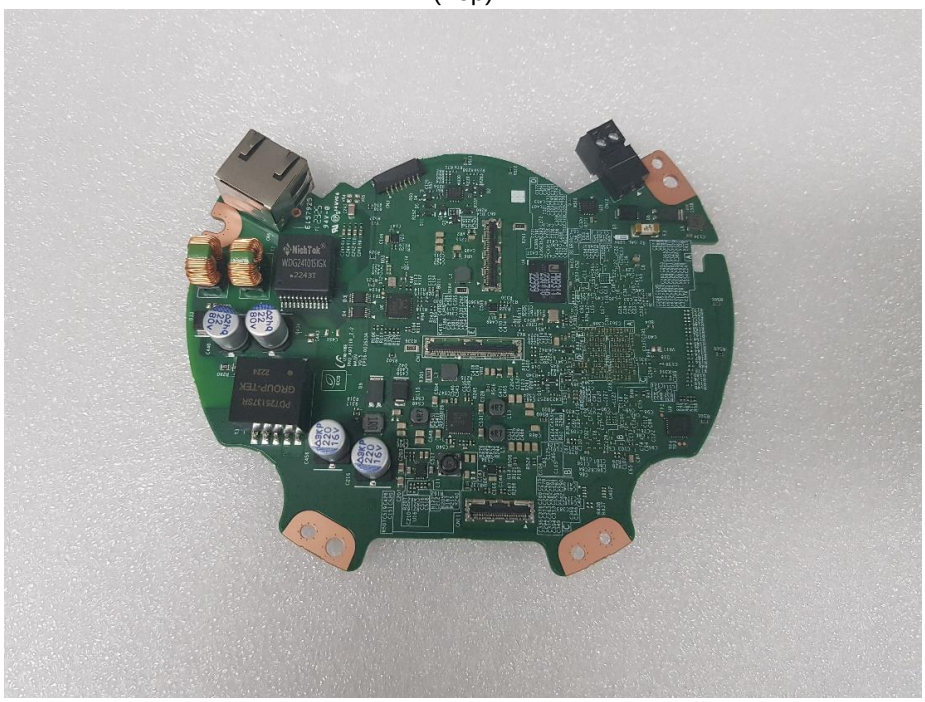
(Bottom)

EUT Internal Photographs

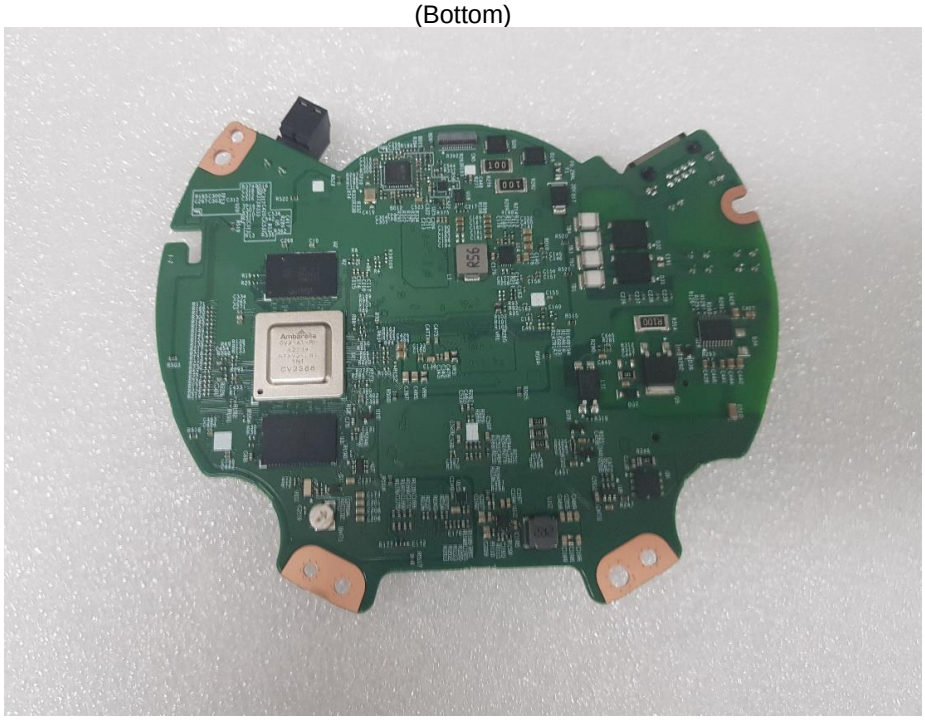
(Internal View)

EUT Internal View – Main board

(Top)

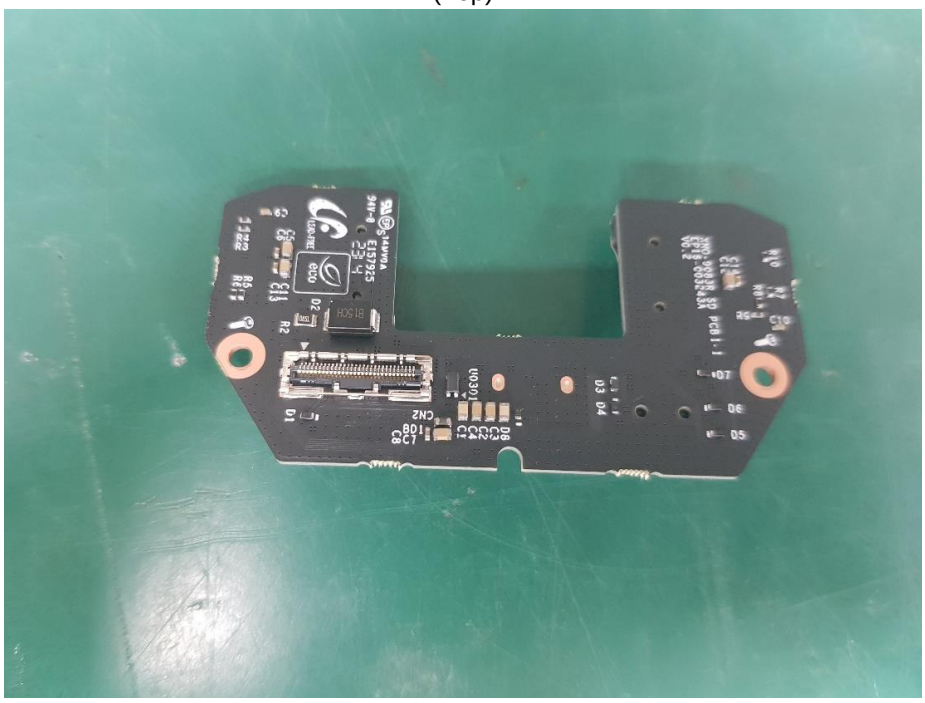


(Bottom)



EUT Internal View – Sub board 1

(Top)



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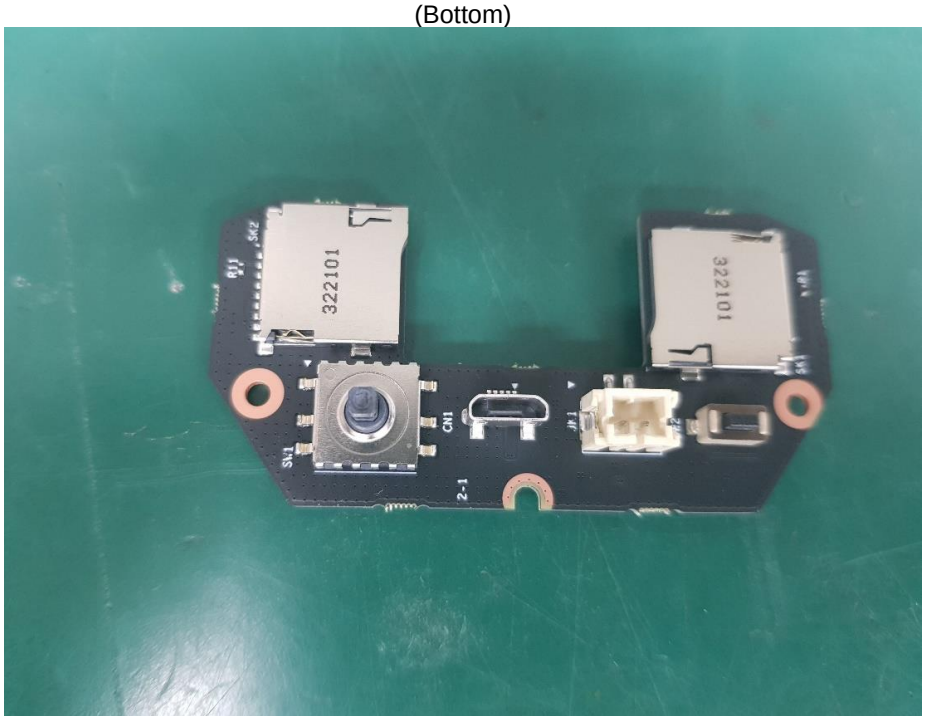
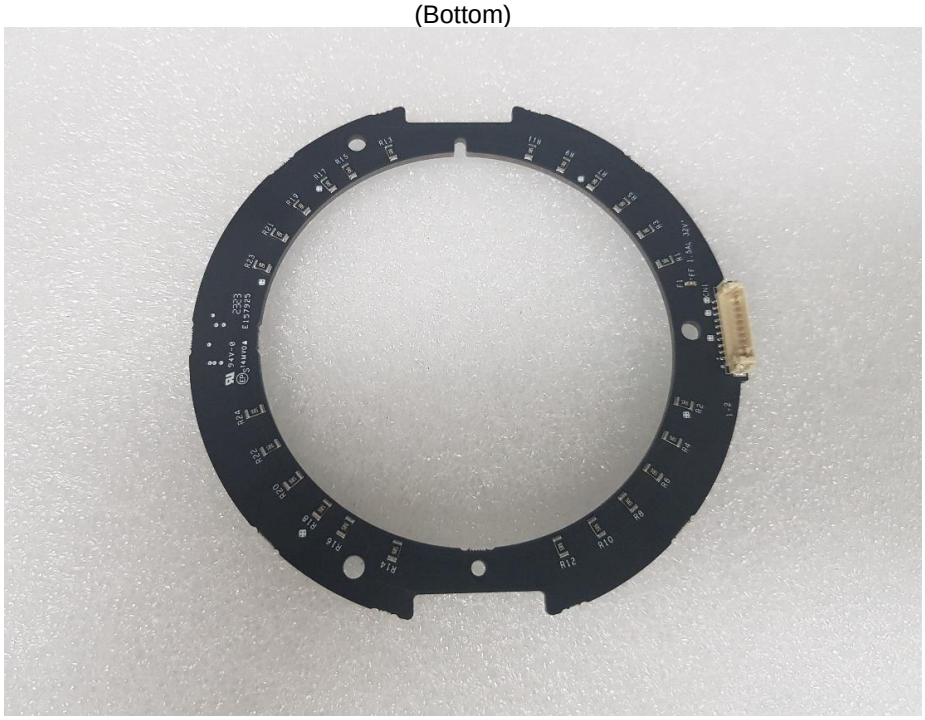


EUT Internal View – Sub board 2

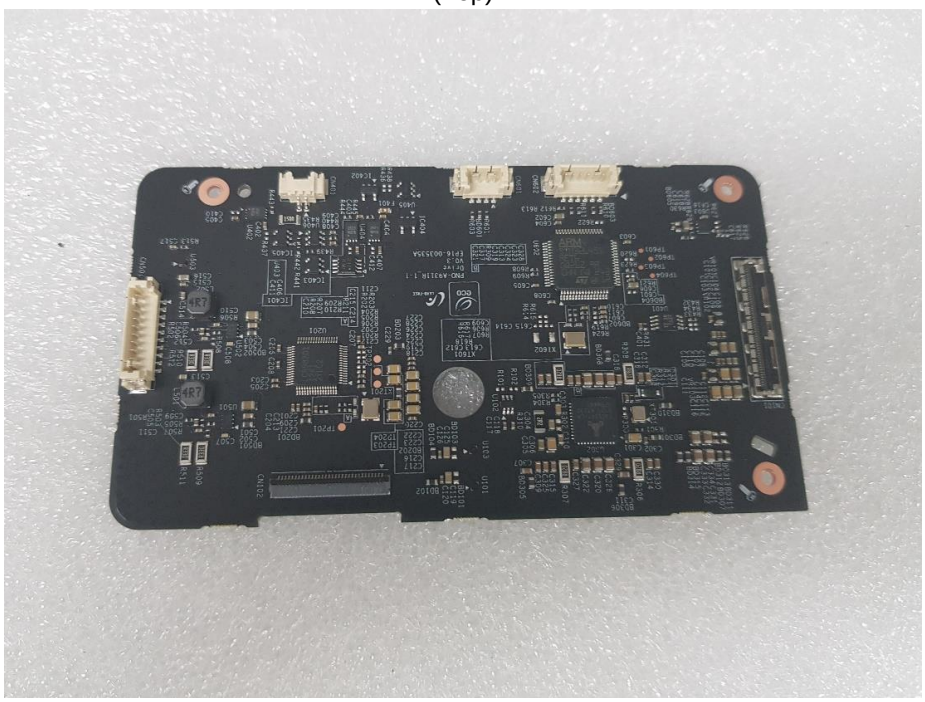
(Top)

(Bottom)

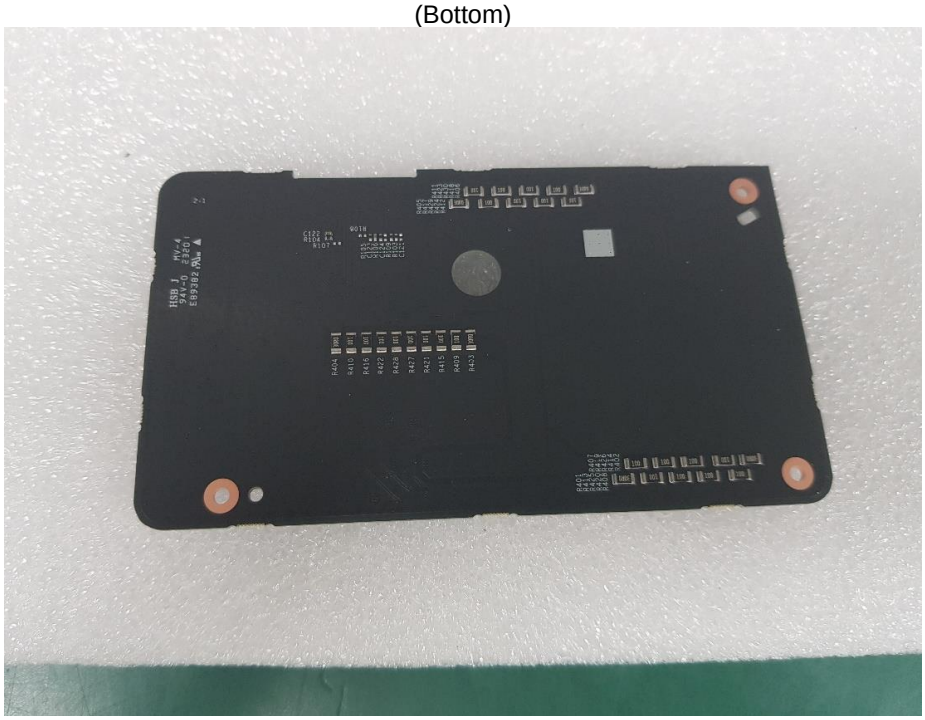


EUT Internal View – Sub board 3

(Top)

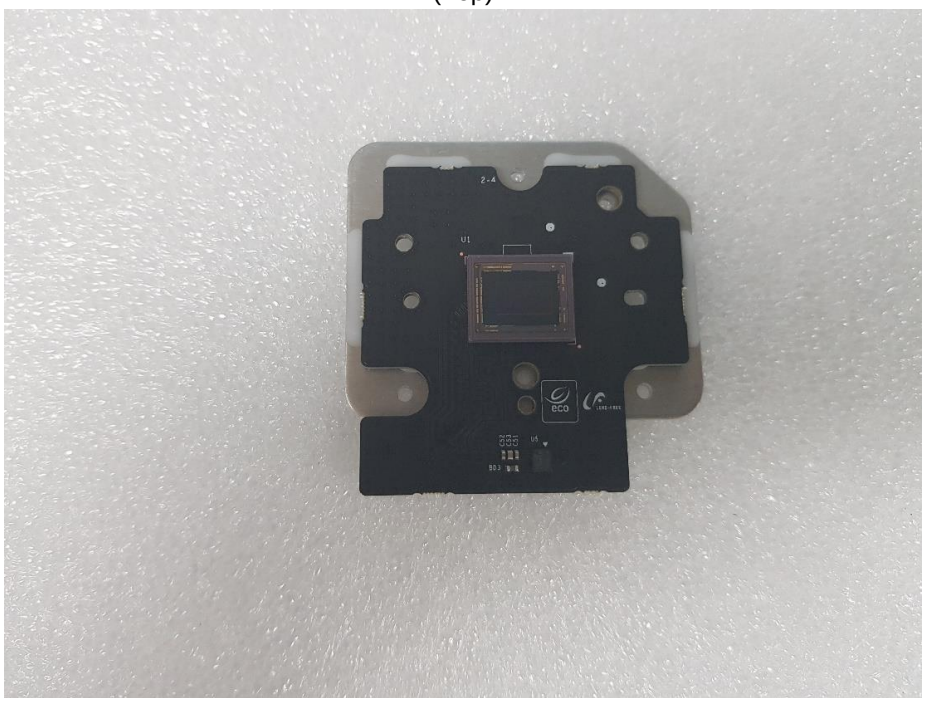


(Bottom)

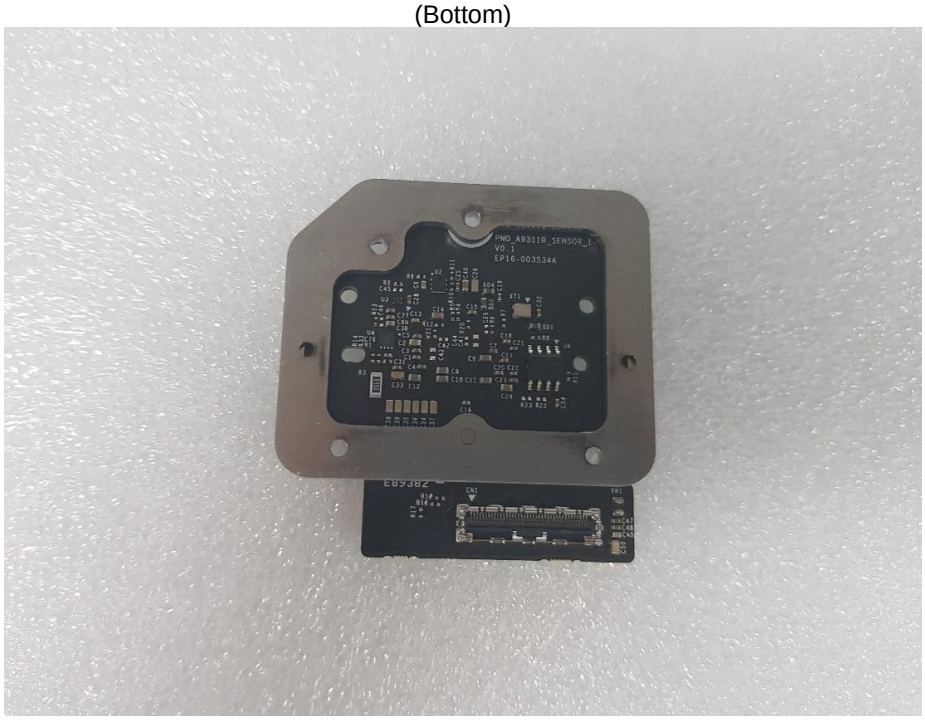


EUT Internal View – Sub board 4

(Top)



(Bottom)



EUT Internal View – Camera Lens

(Top)

(Bottom)

Label Photographs

FCC Label

NETWORK CAMERA

PNO-A9311R

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.