



EMC TEST REPORT

Test Report No. : KES-EM-23T0067
Date of Issue : Jan. 25, 2023
Product name : NETWORK CAMERA
Model/Type No. : PNV-A6081R-E1T
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 : Dec. 22, 2022
Test date : Dec. 28, 2022 ~ Dec. 29, 2022
Test Results : ☒ **In Compliance** ☐ **Not in Compliance**

Tested by

Jae Won, Lee
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.

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REPORT REVISION HISTORY

Date	Test Report No.	Revision History
Jan. 25, 2023	KES-EM-23T0067	Issued

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1.0 General Product Description

Main Specifications of EUT are:

Video	
Imaging Device	1/2" CMOS
Resolution	1920x1080, 1280x1024, 1280x960, 1280x720, 1024x768, 800x600, 800x448, 720x576, 720x480, 640x480, 640x360
Max. Framerate	H.265/H.264: 2MP Max. 120fps/100fps/60fps/50fps/30fps/25fps(120Hz/100Hz/60Hz/50Hz/30Hz/25Hz) MJPEG: 2MP Max. 30fps/30fps/30fps/30fps/30fps/25fps(120Hz/100Hz/60Hz/50Hz/30Hz/25Hz)
NETD	None
Pixel Size	None
Min. Illumination	Color: 0.008Lux(F1.3, 1/30sec, 30IRE) B/W: 0.0008Lux(F1.3, 1/30sec, 30IRE), 0Lux(IR LED on), 30/25fps Color: 0.016Lux(F1.3, 1/60sec, 30IRE) B/W: 0.0016Lux(F1.3, 1/60sec, 30IRE), 0Lux(IR LED on), 60/50fps Color: 0.032Lux(F1.3, 1/120sec, 30IRE) B/W: 0.0032Lux(F1.3, 1/120sec, 30IRE), 0Lux(IR LED on), 120/100fps
Video Out	CVBS: 1.0 Vp-p / 75Ω composite, 720x480(N), 720x576(P) for installation
Video Transmission Distance	None
Lens	
Focal Length (Zoom Ratio)	4.38~9.33mm(2.13x) motorized varifocal
Max. Aperture Ratio	F1.3(Wide)~F2.15(Tele)
Angular Field of View	H:103.1°(Wide)~44.5°(Tele) V:54.2°(Wide)~24.9°(Tele) D:124°(Wide)~51.1°(Tele)
Min. Object Distance	0.5m(1.64ft)
Focus Control	Simple focus
Lens Type	P-Iris(IR corrected)
Mount Type	None
Optional Lens	None
Pan / Tilt / Rotate	
Pan / Tilt / Rotate Range	0°~360° / -45°~85° / 0°~355°
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	120dB
Digital Noise Reduction	(Need to check) WiseNR II (Based on AI engine), SSNRV
Digital Image Stabilization	None
Defog	None
Motion Detection	8ea, 8point Polygonal zones
Privacy Masking	(Need to check) 6ea, Rectangular zones - Color: Gray/Black/White
Gain Control	Low / Middle / High
White Balance	ATW / AWC / Manual / Indoor / Outdoor
LDC	Support
Electronic Shutter Speed	Minimum / Maximum / Prefer / Anti flicker(1/5~1/12,000sec) Auto Prefer shutter control(Based on AI engine)
Digital PTZ	Support(preset/group)
Video Rotation	Flip, Mirror, Hallway view(90°/270°)
Analytics	(Need to check) 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 Analytics events - Defocus detection, Motion detection, Tampering, Audio detection, Sound classification, Virtual area(Appear/Disappear)
Business Intelligence	None
Serial Interface	None
Alarm I/O	Input 1ea / Output 1ea
Alarm Triggers	Analytics, Network disconnect, Alarm input, App event, Time schedule, MQTT subscription

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Alarm Events	When alarm trigger occurred - File upload(image): e-mail/FTP - Notification: e-mail - Recording: SD/SDHC/SDXC or NAS recording at event triggers - Alarm output - Handover: PTZ preset, send message by HTTP/HTTPS/TCP - Audio clip playback - MQTT: publication
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	WiseIR 40m(131.23ft)
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(10/100/1000BASE-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(Sea area), WiseStreamII, WiseStreamIII(Based on 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 5 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), MQTT
Security	TPM 2.0(FIPS 140-2 level 2) 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, pre-installed) Secure Boot, Verify firmware forqery
SIP support (VoIP, Peer-to-peer, SIP/PB)	None
Application Programming Interface	ONVIF Profile S/T/M SUNAPI(HTTP API)
General	
Webpage Language	English, Korean, Chinese, French, Italian, Spanish, German, Japanese, Russian, Portuguese, Czech, Polish, Turkish, Dutch, Greek, Hungarian
Web Viewer	None
Edge Storage	1TB SSD included(WAVE pre-installed) Possible to register the maximum number of camera - up to 6 camera(Host + 5 camera) - Total bandwidth: up to 33Mbps * Cannot support the camera when use AI mode
Memory	4GB RAM, 512MB Flash
Environmental & Electrical	
Operating Temperature / Humidity	(TBD) -20°C~+50°C(-4°F~+122°F) / 0~95%RH(non-condensing) * Start up should be done at above -20°C Humidity control /w AIR vent
Storage Temperature / Humidity	-50°C~+60°C(-58°F~+140°F) / 0~90% RH
Certification	IP66/IP67/IP68, NEMA4X, IK10
Input Voltage	PoE+(IEEE802.3at type 2, Class4), 12VDC
Power Consumption	(TBD) PoE+: Max ???.7W, typical ???.7W DC 12V: Max ???.7W, typical ???.7W
Mechanical	
Color / Material	White / Aluminum Hard-coated dome bubble
RAL Code	RAL9003

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Product Dimensions / Weight	(TBD) Ø180x130mm(7.09x5.12"), 1900g(4.19 lb)
Compatible Conduit hole / Gangbox	19.1mm(3/4")(M25) single, double, 4" octagon, 4" square
Hanging Mount (Dome)	SBP-187HWW
Skin Cover (Dome)	None
Weather Cap (Dome)	include
Power Module	None
Backbox	None
Certifications & Standards	
Network	None
EMC	FCC 47 CFR 15 Subpart B Class A ICES-3(A)/NMB-3(A) CE/UKCA - EN 55032 Class A, EN 50130-4, EN 61000-3-2, EN 61000-3-3 VCCI CISPR 32 Class A RCM AS/NZS CISPR 32 Class A KS C 9832 Class A, KS C 9835
Safety	UL 62368-1, CAN/CSA C22.2 NO. 62368-1 IEC/EN 62471
Environment	IEC/EN 63000 IEC/EN 60529 IP66/IP67, ISO 20653 IP6K9K, IEC/EN 62262 IK10 NEMA 250 type 4X
Video	None
DORI (EN62676-4 standard)	
Detect (25PPM/ 8PPF)	Wide: 30.5m(100.03ft) / Tele: 93.9m(307.95ft)
Observe (63PPM/ 19PPF)	Wide: 12.2m(40.01ft) / Tele: 37.5m(123.18ft)
Recognize (125PPM/ 38PPF)	Wide: 6.1m(20.01ft) / Tele: 18.8m(61.59ft)
Identify (250PPM/ 76PPF)	Wide: 3.0m(10.00ft) / Tele: 9.4m(30.79ft)

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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
NETWORK CAMERA	PNV-A6081R-E1T	-	HANWHA TECHWIN SECURITY VIETNAM CO.,LTD.	EUT
SSD	TS1TMTS952T2- HWT	-	Transcend	1 TB

1.5 Support Equipments

Description	Model Number	Serial Number	Manufacturer	Remarks
Adaptor	2ACB022F	-	Channel Well Technology (Guangzhou) Co., Ltd.	-
PoE Adaptor	PT-PSE109GBRO-AH	-	Dongguan PROCET Network Technology Co.,Ltd	-
Notebook	P95G001	9JM8HT2	DELL INC.	-
Notebook Adaptor	LA65NS2-01	-	LITE-ON TECHNOLOGY(CHANGZ HOU)CO.,LTD.	-
Button Alarm	-	-	-	-
Alarm	-	-	-	-
Smartphone	-	-	SAMSUNG	-
Headset	K550	-	Britz®	-
Micro SD Card1	-	-	Sandisk	8 GB
Micro SD Card2	-	-	Sandisk	8 GB

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)	Notebook	RJ-45 (LAN)	3.0	S
	Slot	Micro SD Card1	Slot	-	-
	Slot	Micro SD Card2	Slot	-	-
	Alarm OUT	Alarm	Alarm IN	3.0	U
	Alarm IN	Button Alarm	Alarm OUT	3.0	U
	Audio IN	Headset	Audio OUT	1.7	U
	Audio OUT		Audio IN	1.7	U
Notebook	2 Pin	Adaptor	2 Pin	1.6	U
	3.5 mm	Smartphone	3.5 mm	0.8	U
	JACK	Notebook Adaptor	JACK	1.7	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 Adaptor	RJ-45 (PoE)	3.0	S
	Slot	Micro SD Card1	Slot	-	-
	Slot	Micro SD Card2	Slot	-	-
	Alarm OUT	Alarm	Alarm IN	3.0	U
	Alarm IN	Button Alarm	Alarm OUT	3.0	U
	Audio IN	Headset	Audio OUT	1.7	U
	Audio OUT		Audio IN	1.7	U
Notebook	RJ-45 (LAN)	PoE Adaptor	RJ-45 (LAN)	3.5	S
	3.5 mm	Smartphone	3.5 mm	0.8	U
	JACK	Notebook Adaptor	JACK	1.7	U

* Unshielded=U, Shielded=S



1.7 EUT Operating Mode(s)

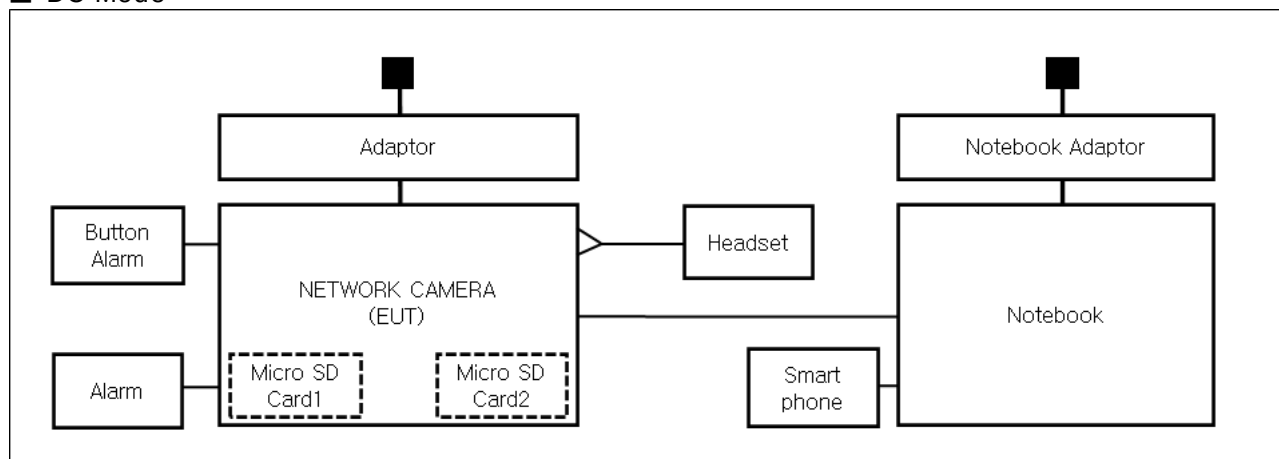
Test Mode	operating
DC	1. Check the camera video output on the laptop 2. Check if the network status is operating normally during PING TEST 3. Check the output of the 1 kHz tone output from the smartphone and the microphone input from the headset 4. Press the alarm button to check the normal operation of the button alarm. 5. After testing, I checked the files stored on Micro SD cards1,2 and SSD.
PoE	

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

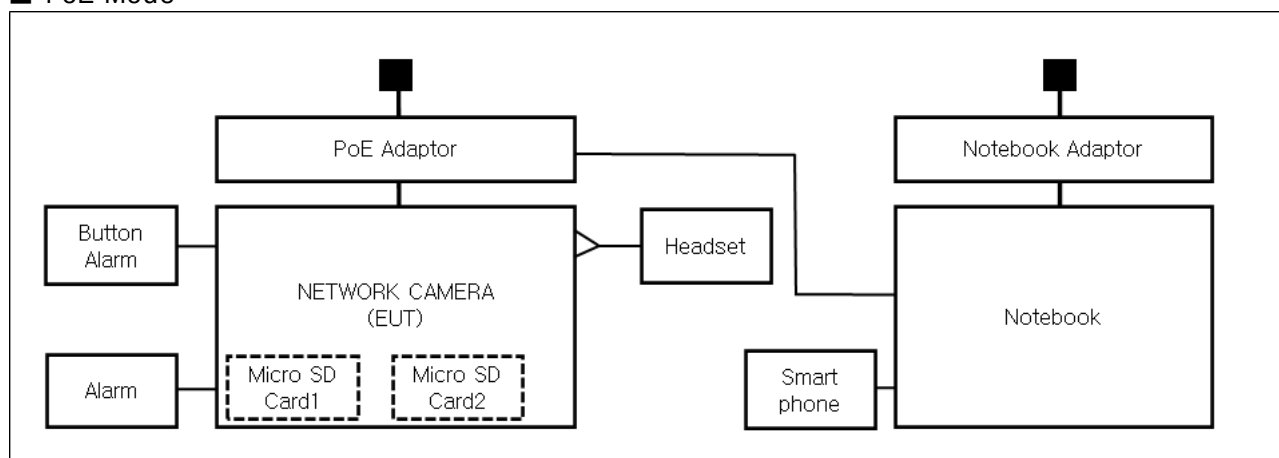
1.8 Configuration

■ AC Main
 □ DC Main

■ DC Mode



■ PoE Mode



1.9 Remarks when standards applied

- VIDEO ports are not used and have not been tested.
- port picture for admin



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

Dec. 29, 2022

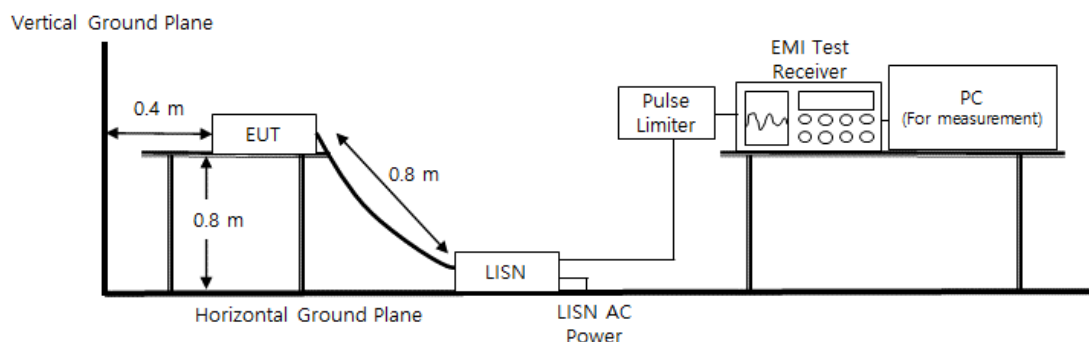
Test Location

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: (22,9 ± 0,1) °C
Relative Humidity: (45,0 ± 0,1) % 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

Dec. 28, 2022

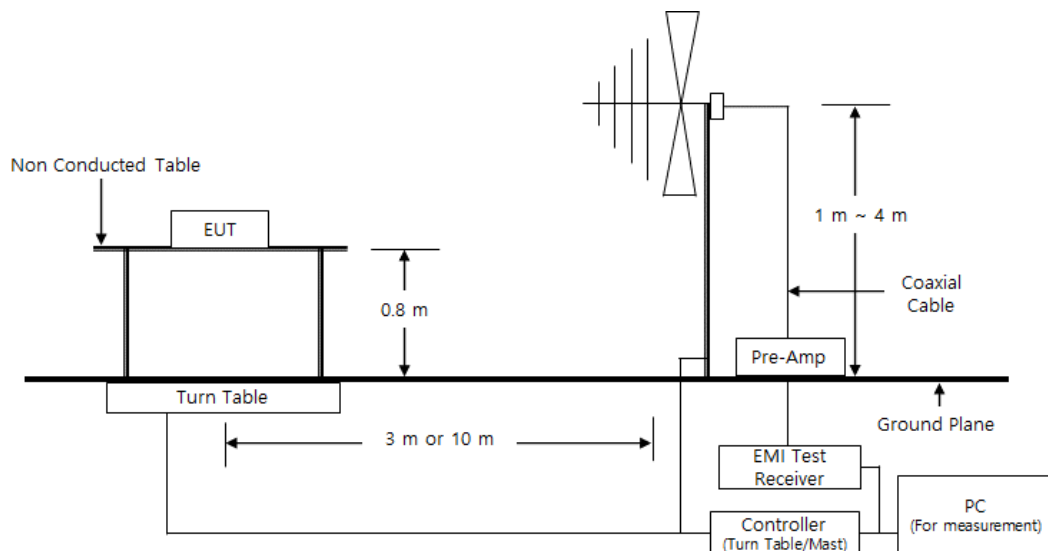
Test Location

☐ 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: (22,3 ± 0,1) °C
Relative Humidity: (44,9 ± 0,1) % 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

Dec. 28, 2022

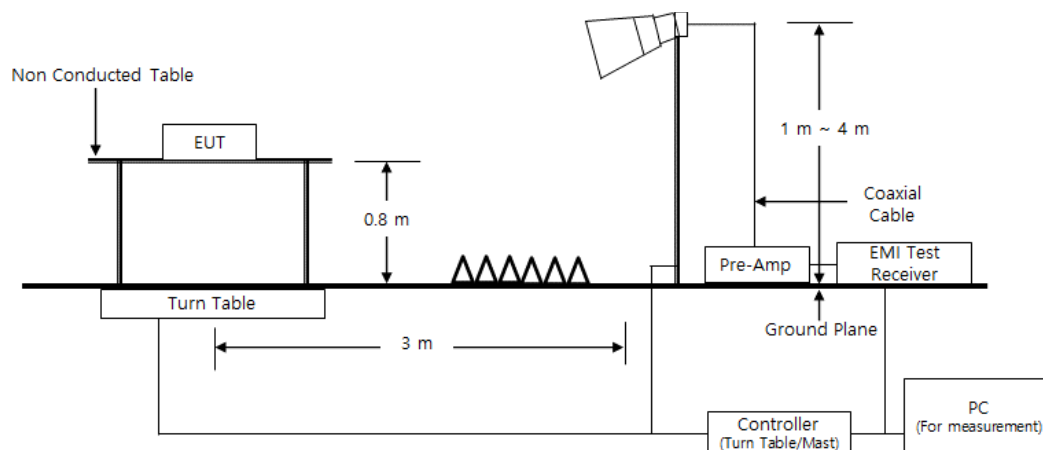
Test Location

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





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Test Conditions

Temperature: (22,8 ± 0,1) °C
Relative Humidity: (44,7 ± 0,1) % 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.

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APPENDIX A – TEST DATA

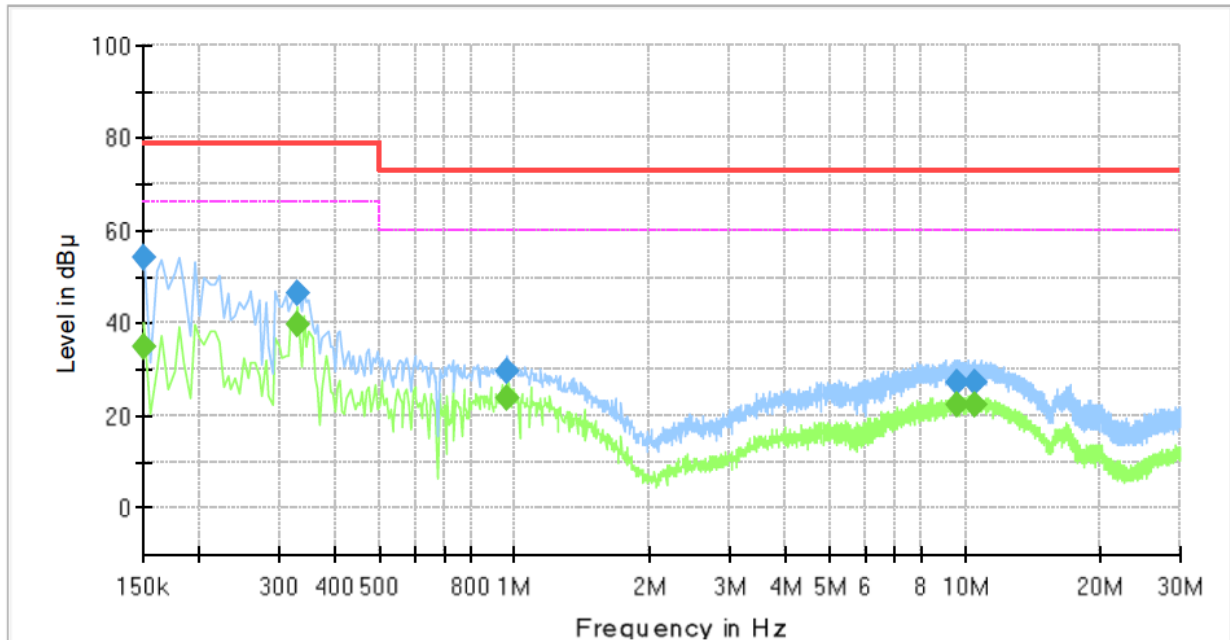
Conducted Emissions at Mains Power Ports

■ DC Mode

HOT LINE

Common Information

Test Description: Conducted Emission
 Model No.: PNV-A6081R-E1T
 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)
0.150000	---	35.01	66.00	30.99	1000.0	9.000	L1	19.5
0.150000	54.06	---	79.00	24.94	1000.0	9.000	L1	19.5
0.330000	---	39.58	66.00	26.42	1000.0	9.000	L1	19.6
0.330000	46.49	---	79.00	32.51	1000.0	9.000	L1	19.6
0.965000	---	23.62	60.00	36.38	1000.0	9.000	L1	20.1
0.965000	29.35	---	73.00	43.65	1000.0	9.000	L1	20.1
9.600000	---	22.19	60.00	37.81	1000.0	9.000	L1	19.9
9.600000	27.22	---	73.00	45.78	1000.0	9.000	L1	19.9
10.525000	---	22.50	60.00	37.50	1000.0	9.000	L1	20.0
10.525000	27.33	---	73.00	45.67	1000.0	9.000	L1	20.0

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NEUTRAL LINE

Common Information

Test Description:

Model No.:

Phase:

Mode:

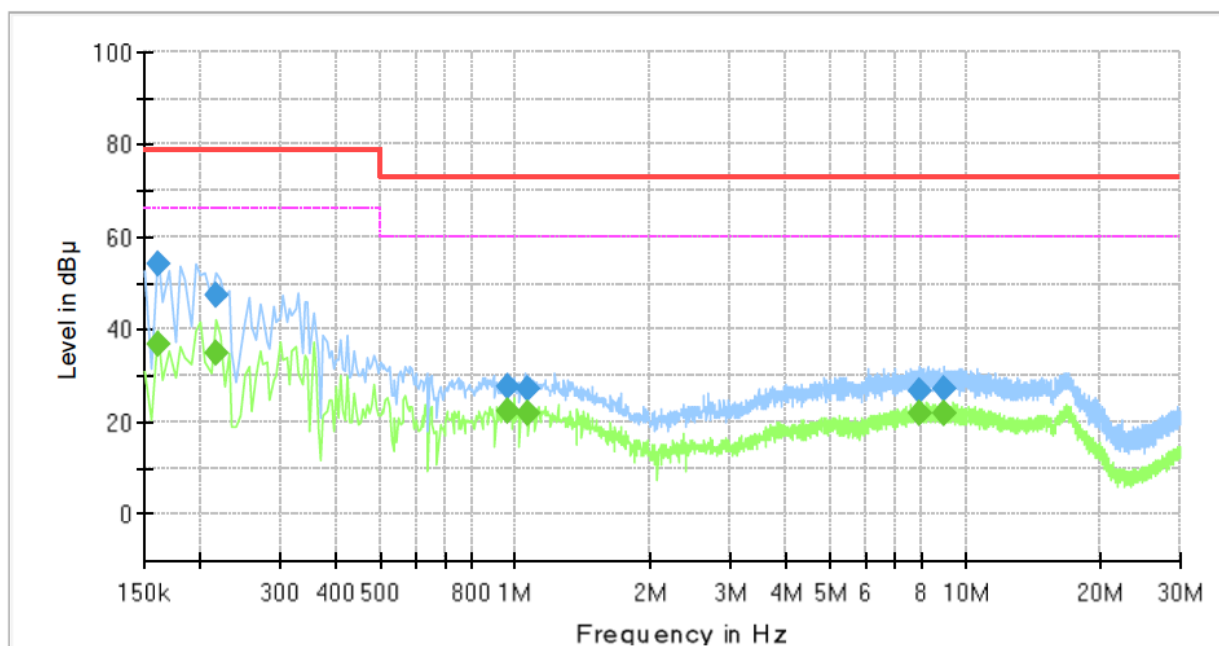
Operator Name:

Conducted Emission

PNV-A6081R-E1T

DC_N

KES



Final Result

Frequency (MHz)	QuasiPeak (dBμV)	CAverage (dBμV)	Limit (dBμV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.160000	---	36.81	66.00	29.19	1000.0	9.000	N	19.4
0.160000	54.36	---	79.00	24.64	1000.0	9.000	N	19.4
0.215000	---	35.03	66.00	30.97	1000.0	9.000	N	19.5
0.215000	47.62	---	79.00	31.38	1000.0	9.000	N	19.5
0.960000	---	22.10	60.00	37.90	1000.0	9.000	N	20.1
0.960000	27.50	---	73.00	45.50	1000.0	9.000	N	20.1
1.065000	---	21.95	60.00	38.05	1000.0	9.000	N	20.1
1.065000	27.28	---	73.00	45.72	1000.0	9.000	N	20.1
7.940000	---	21.89	60.00	38.11	1000.0	9.000	N	19.7
7.940000	26.86	---	73.00	46.14	1000.0	9.000	N	19.7
8.930000	---	21.83	60.00	38.17	1000.0	9.000	N	19.8
8.930000	26.91	---	73.00	46.09	1000.0	9.000	N	19.8

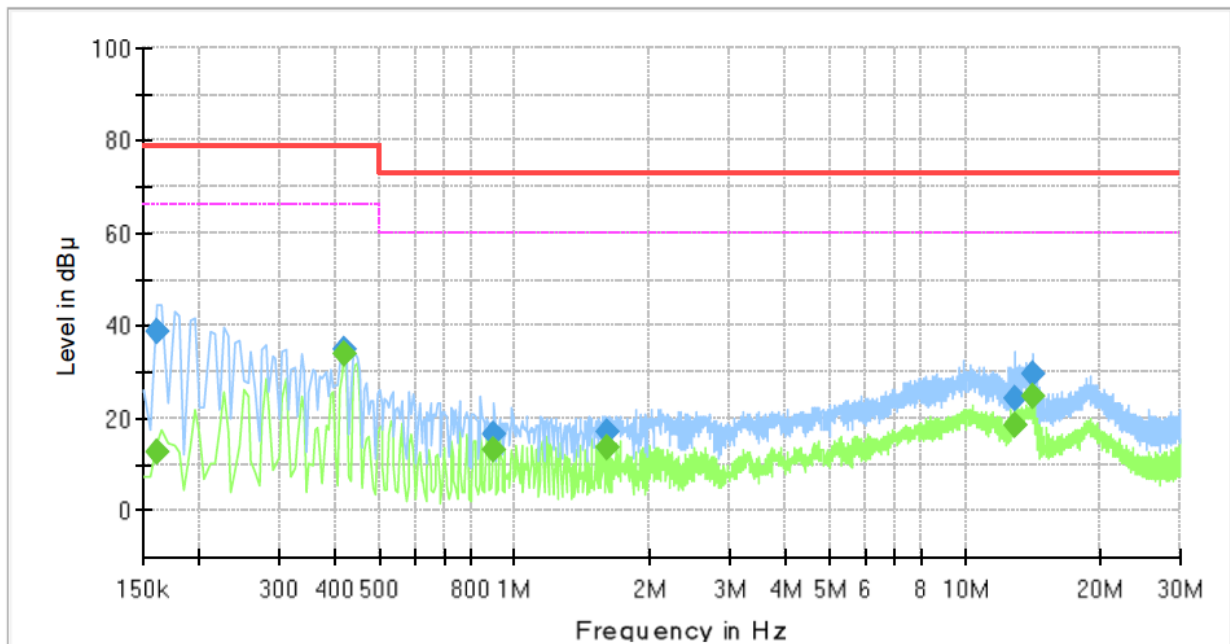
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PoE Mode
HOT LINE
Common Information

Test Description: Conducted Emission
Model No.: PNV-A6081R-E1T
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)
0.160000	---	12.71	66.00	53.29	1000.0	9.000	L1	19.5
0.160000	38.69	---	79.00	40.31	1000.0	9.000	L1	19.5
0.420000	---	33.76	66.00	32.24	1000.0	9.000	L1	19.7
0.420000	34.89	---	79.00	44.11	1000.0	9.000	L1	19.7
0.900000	---	13.14	60.00	46.86	1000.0	9.000	L1	20.1
0.900000	16.76	---	73.00	56.24	1000.0	9.000	L1	20.1
1.600000	---	13.40	60.00	46.60	1000.0	9.000	L1	20.3
1.600000	17.25	---	73.00	55.75	1000.0	9.000	L1	20.3
12.855000	---	18.55	60.00	41.45	1000.0	9.000	L1	20.0
12.855000	24.08	---	73.00	48.92	1000.0	9.000	L1	20.0
14.170000	---	24.62	60.00	35.38	1000.0	9.000	L1	20.0
14.170000	29.40	---	73.00	43.60	1000.0	9.000	L1	20.0

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NEUTRAL LINE

Common Information

Test Description:

Model No.:

Phase:

Mode:

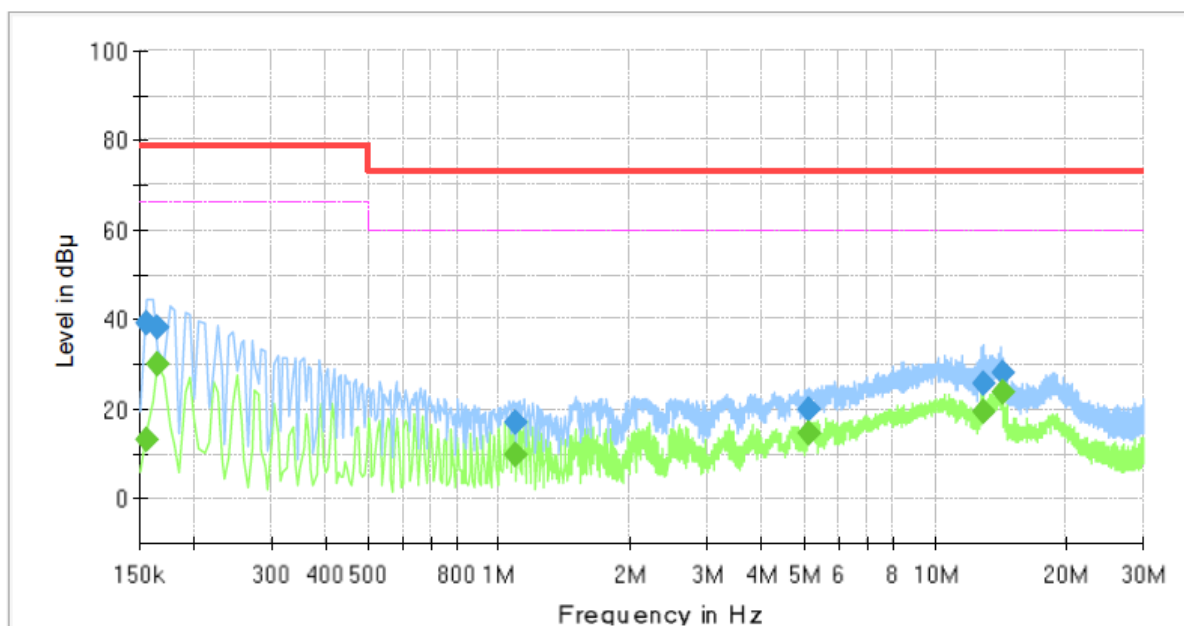
Operator Name:

Conducted Emission

PNV-A6081R-E1T

PoE_N

KES



Final Result

Frequency (MHz)	QuasiPeak (dBμV)	CAverage (dBμV)	Limit (dBμV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.155000	---	12.98	66.00	53.02	1000.0	9.000	N	19.4
0.155000	39.30	---	79.00	39.70	1000.0	9.000	N	19.4
0.165000	---	30.16	66.00	35.84	1000.0	9.000	N	19.4
0.165000	38.42	---	79.00	40.58	1000.0	9.000	N	19.4
1.085000	---	9.89	60.00	50.11	1000.0	9.000	N	20.1
1.085000	17.13	---	73.00	55.87	1000.0	9.000	N	20.1
5.105000	---	14.58	60.00	45.42	1000.0	9.000	N	19.7
5.105000	19.78	---	73.00	53.22	1000.0	9.000	N	19.7
12.860000	---	19.46	60.00	40.54	1000.0	9.000	N	20.0
12.860000	25.83	---	73.00	47.17	1000.0	9.000	N	20.0
14.365000	---	23.98	60.00	36.02	1000.0	9.000	N	20.0
14.365000	27.96	---	73.00	45.04	1000.0	9.000	N	20.0

◆ Calculation

$$\text{QuasiPeak [dBuV]} / \text{CAverage [dBuV]} = \text{Reading Value [dBuV]} + \text{Corr. [dB]}$$

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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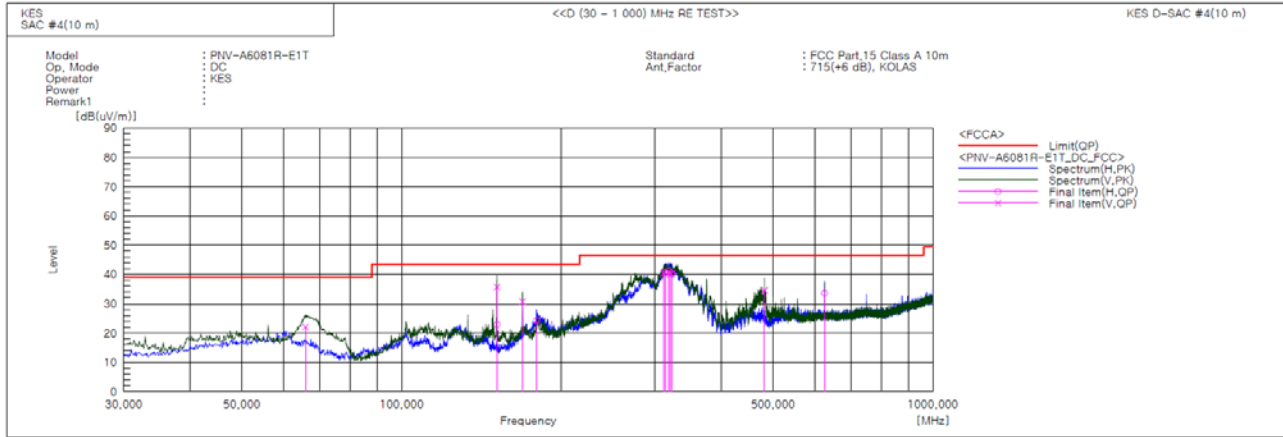
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Radiated Electric Field Emissions(Below 1 GHz)

- 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	65.890	V	45.2	-23.1	22.1	39.0	16.9	142.0	83.0	
2	151.129	V	60.6	-24.9	35.7	43.5	7.8	112.0	56.0	
3	151.175	H	47.8	-24.9	22.9	43.5	20.6	396.0	218.0	
4	168.831	V	55.0	-24.2	30.8	43.5	12.7	142.0	7.0	
5	179.501	H	47.6	-23.3	24.3	43.5	19.2	398.0	125.0	
6	311.421	V	57.3	-16.9	40.4	46.5	6.1	112.0	199.0	
7	313.725	H	57.4	-16.8	40.6	46.5	5.9	399.0	98.0	
8	317.726	H	57.7	-16.6	41.1	46.5	5.4	197.0	102.0	
9	320.394	V	56.3	-16.4	39.9	46.5	6.6	112.0	325.0	
10	322.576	H	56.7	-16.3	40.4	46.5	6.1	196.0	356.0	
11	481.899	V	45.9	-11.3	34.6	46.5	11.9	145.0	191.0	
12	624.974	H	41.2	-7.6	33.6	46.5	12.9	386.0	121.0	

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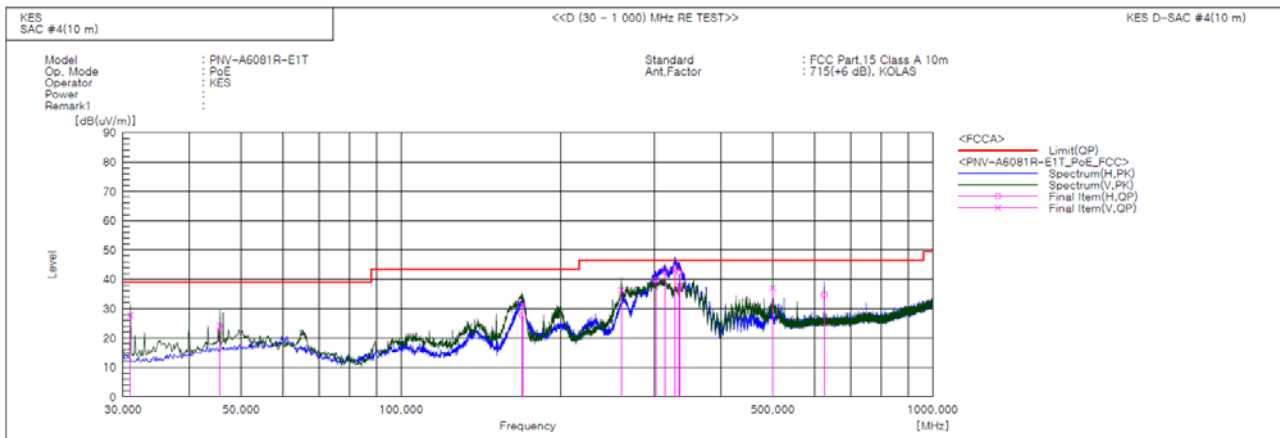
3701, 40, Simin-daero 365beon-gil,
Dongan-gu, Anyang-si, Gyeonggi-do, 14057, Korea
Tel: +82-31-425-6200 / Fax: +82-31-424-0450
www.kes.co.kr

Report No.:

KES-EM-23T0067

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PoE Mode



Final Result

No.	Frequency	(P)	Reading	c.f	Result	Limit	Margin	Height	Angle	Remark
	[MHz]		QP [dB(uV)]	[dB(1/m)]	QP [dB(uV/m)]	QP [dB(uV/m)]	QP [dB]	[cm]	[deg]	
1	30.970	V	52.6	-24.8	27.8	39.0	11.2	145.0	232.0	
2	45.641	V	44.9	-20.8	24.1	39.0	14.9	112.0	153.0	
3	168.831	V	55.6	-24.2	31.4	43.5	12.1	106.0	273.0	
4	169.195	H	51.8	-24.1	27.7	43.5	15.8	396.0	346.0	
5	259.526	V	54.9	-18.6	36.3	46.5	10.2	144.0	325.0	
6	301.358	H	57.2	-17.4	39.8	46.5	6.7	199.0	278.0	
7	313.483	H	59.4	-16.8	42.6	46.5	3.9	195.0	256.0	
8	328.033	H	59.6	-15.9	43.7	46.5	2.8	396.0	256.0	
9	333.731	V	53.2	-15.6	37.6	46.5	8.9	106.0	22.0	
10	333.974	H	57.7	-15.6	42.1	46.5	4.4	395.0	245.0	
11	499.965	V	47.8	-10.7	37.1	46.5	9.4	149.0	168.0	
12	624.974	H	42.4	-7.6	34.8	46.5	11.7	106.0	128.0	

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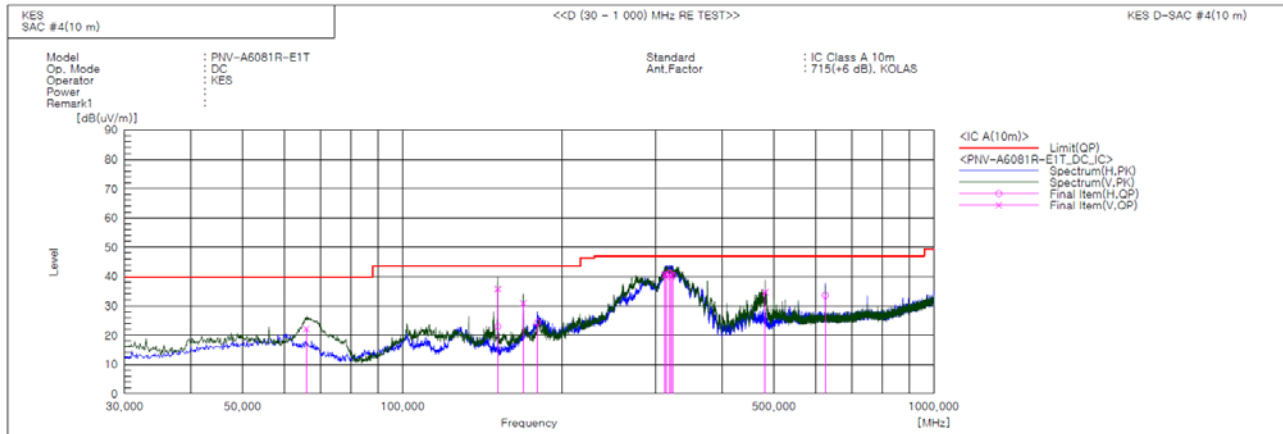
KES Co., Ltd.

3701, 40, Simin-daero 365beon-gil,
Dongan-gu, Anyang-si, Gyeonggi-do, 14057, Korea
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Report No.:
KES-EM-23T0067
Page (26) of (45)

- IC Regulation ICES-003 Issue 7

■ DC Mode

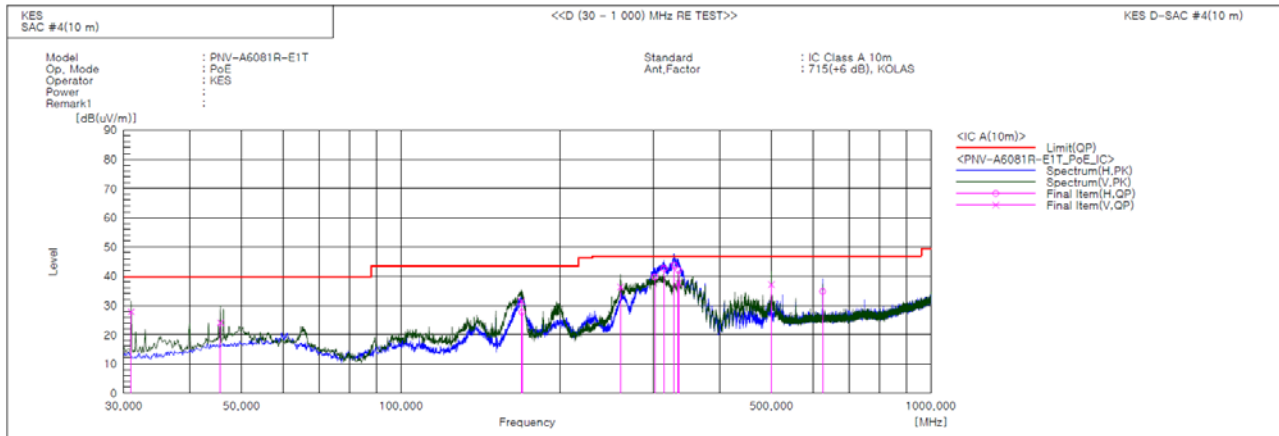


Final Result

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	65.890	V	45.2	-23.1	22.1	40.0	17.9	142.0	83.0	
2	151.129	V	60.6	-24.9	35.7	43.5	7.8	112.0	56.0	
3	151.175	H	47.8	-24.9	22.9	43.5	20.6	396.0	218.0	
4	168.831	V	55.0	-24.2	30.8	43.5	12.7	142.0	7.0	
5	179.501	H	47.6	-23.3	24.3	43.5	19.2	398.0	125.0	
6	311.421	V	57.3	-16.9	40.4	47.0	6.6	112.0	199.0	
7	313.725	H	57.4	-16.8	40.6	47.0	6.4	399.0	98.0	
8	317.726	H	57.7	-16.6	41.1	47.0	5.9	197.0	102.0	
9	320.394	V	56.3	-16.4	39.9	47.0	7.1	112.0	325.0	
10	322.576	H	56.7	-16.3	40.4	47.0	6.6	196.0	356.0	
11	481.899	V	45.9	-11.3	34.6	47.0	12.4	145.0	191.0	
12	624.974	H	41.2	-7.6	33.6	47.0	13.4	386.0	121.0	

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■ 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	30.970	V	52.6	-24.8	27.8	40.0	12.2	145.0	232.0	
2	45.641	V	44.9	-20.8	24.1	40.0	15.9	112.0	153.0	
3	168.831	V	55.6	-24.2	31.4	43.5	12.1	106.0	273.0	
4	169.195	H	51.8	-24.1	27.7	43.5	15.8	396.0	346.0	
5	259.526	V	54.9	-18.6	36.3	47.0	10.7	144.0	325.0	
6	301.358	H	57.2	-17.4	39.8	47.0	7.2	199.0	278.0	
7	313.483	H	59.4	-16.8	42.6	47.0	4.4	195.0	256.0	
8	328.033	H	59.6	-15.9	43.7	47.0	3.3	396.0	256.0	
9	333.731	V	53.2	-15.6	37.6	47.0	9.4	106.0	22.0	
10	333.974	H	57.7	-15.6	42.1	47.0	4.9	395.0	245.0	
11	499.965	V	47.8	-10.7	37.1	47.0	9.9	149.0	168.0	
12	624.974	H	42.4	-7.6	34.8	47.0	12.2	106.0	128.0	

◆ Calculation – SAC #4(10 m)

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

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

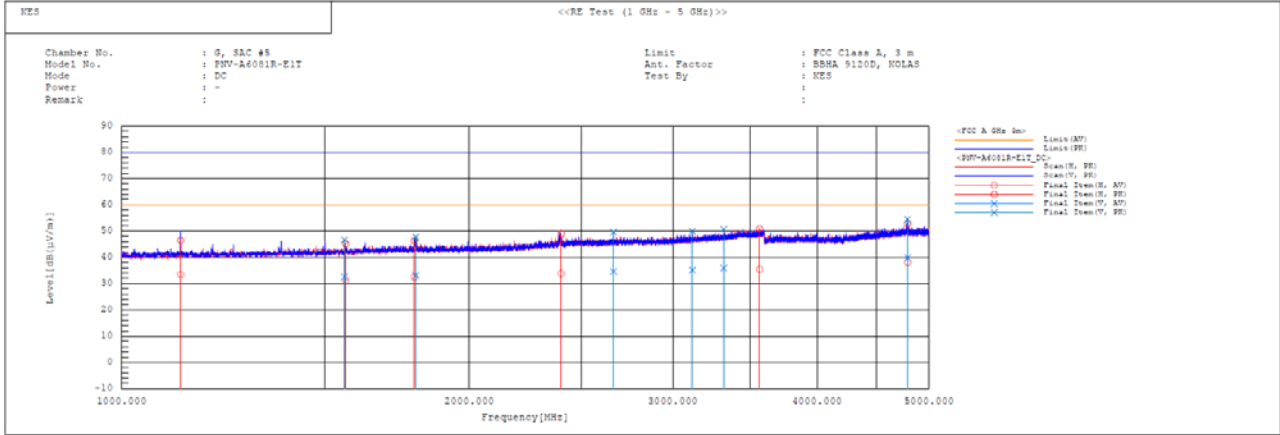
Reading(QP) : Reading value, Result(QP) : Reading value + Factor value

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



Radiated Electric Field Emissions(Above 1 GHz)

■ DC Mode



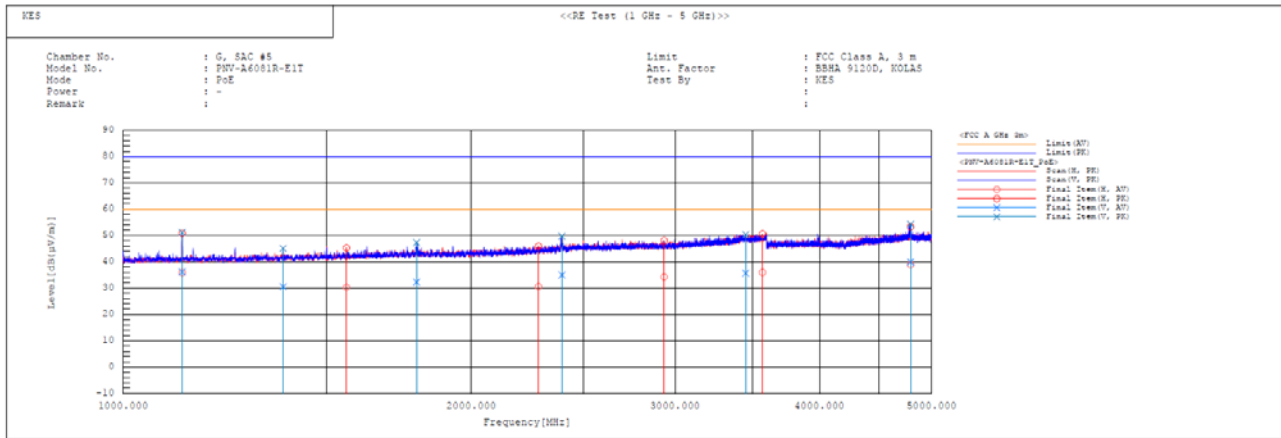
Final Result

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	1124.475	H	35.4	48.4	-1.9	33.5	46.5	60.0	80.0	26.5	33.5	389.0	93.4	
2	1559.257	V	32.4	46.6	0.1	32.5	46.7	60.0	80.0	27.5	33.3	111.0	74.7	
3	1562.800	H	31.3	45.1	0.1	31.4	45.2	60.0	80.0	28.6	34.8	103.0	18.9	
4	1791.698	H	31.3	45.2	1.2	32.5	46.4	60.0	80.0	27.5	33.6	398.0	61.9	
5	1797.532	V	31.9	46.6	1.2	33.1	47.8	60.0	80.0	26.9	32.2	398.0	197.0	
6	2400.875	H	30.6	45.7	3.3	33.9	49.0	60.0	80.0	26.1	31.0	399.0	352.8	
7	2665.545	V	30.6	45.6	4.0	34.6	49.6	60.0	80.0	25.4	30.4	142.0	211.0	
8	3119.554	V	29.9	44.8	5.2	35.1	50.0	60.0	80.0	24.9	30.0	105.0	19.6	
9	3320.145	V	30.5	45.3	5.4	35.9	50.7	60.0	80.0	24.1	29.3	143.0	129.1	
10	3566.087	H	29.6	45.0	5.9	35.5	50.9	60.0	80.0	24.5	29.1	397.0	155.4	
11	4788.656	V	30.0	44.6	9.9	39.9	54.5	60.0	80.0	20.1	25.5	149.0	146.0	
12	4790.785	H	28.0	42.9	10.0	38.0	52.9	60.0	80.0	22.0	27.1	197.0	72.3	

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PoE Mode



Final Result

No.	Frequency	Pol	Reading	Reading	c.f	Result	Result	Limit	Limit	Margin	Margin	Height	Angle	Remark
	[MHz]		[dB(μV)]	[dB(μV)]	[dB(1/m)]	[dB(μV/m)]	[dB(μV/m)]	[dB(μV/m)]	[dB(μV/m)]	[dB]	[dB]	[cm]	[deg]	
1	1124.474	V	38.0	53.1	-1.9	36.1	51.2	60.0	80.0	23.9	28.8	148.0	8.7	
2	1124.567	H	37.8	52.7	-1.9	35.9	50.8	60.0	80.0	24.1	29.2	197.0	34.6	
3	1374.875	V	31.1	45.7	-0.6	30.5	45.1	60.0	80.0	29.5	34.9	149.0	342.4	
4	1559.511	H	30.2	45.2	0.1	30.3	45.3	60.0	80.0	29.7	34.7	397.0	173.5	
5	1793.547	V	31.1	46.1	1.2	32.3	47.3	60.0	80.0	27.7	32.7	105.0	156.4	
6	2285.549	H	27.7	43.1	2.9	30.6	46.0	60.0	80.0	29.4	34.0	197.0	21.2	
7	2394.875	V	31.8	46.6	3.2	35.0	49.8	60.0	80.0	25.0	30.2	143.0	319.7	
8	2935.578	H	29.5	43.3	4.8	34.3	48.1	60.0	80.0	25.7	31.9	197.0	275.2	
9	3453.547	V	30.1	44.8	5.6	35.7	50.4	60.0	80.0	24.3	29.6	397.0	317.3	
10	3570.397	H	30.1	44.7	5.9	36.0	50.6	60.0	80.0	24.0	29.4	197.0	270.8	
11	4794.217	H	28.9	43.3	10.0	38.9	53.3	60.0	80.0	21.1	26.7	397.0	100.8	
12	4794.675	V	29.9	44.3	10.0	39.9	54.3	60.0	80.0	20.1	25.7	149.0	21.1	

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)]

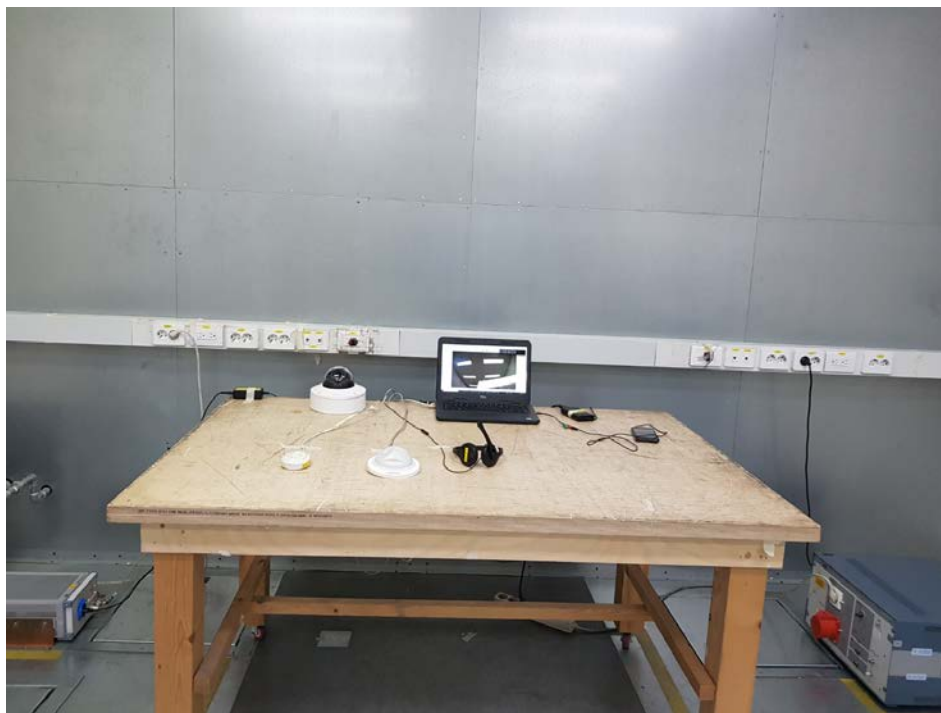
Reading(PK/CAV) : Reading value, Result(PK/CAV) : Reading value + Factor value

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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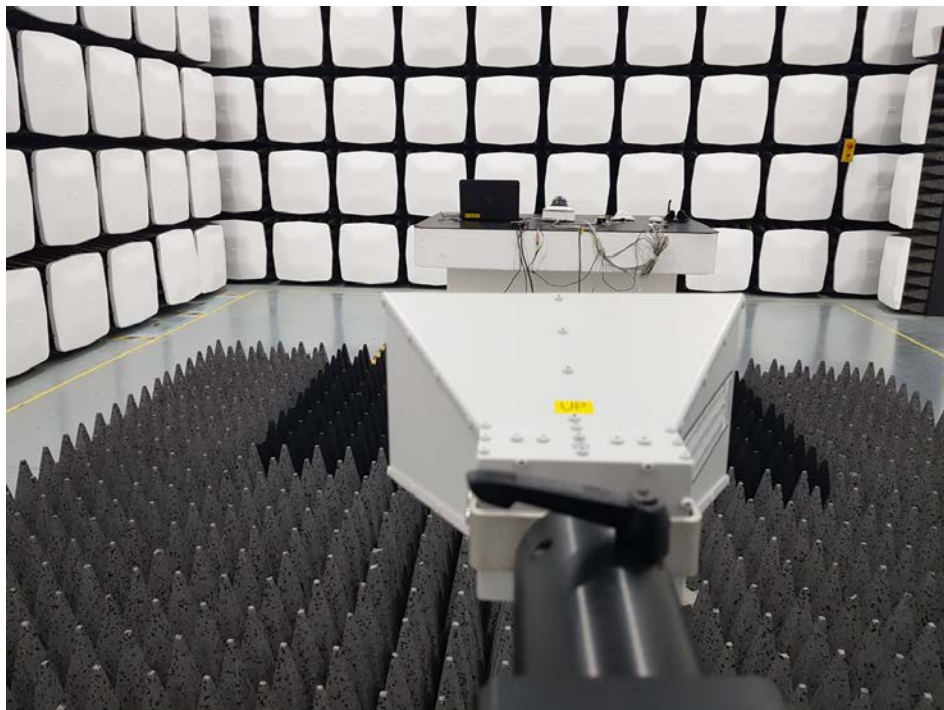
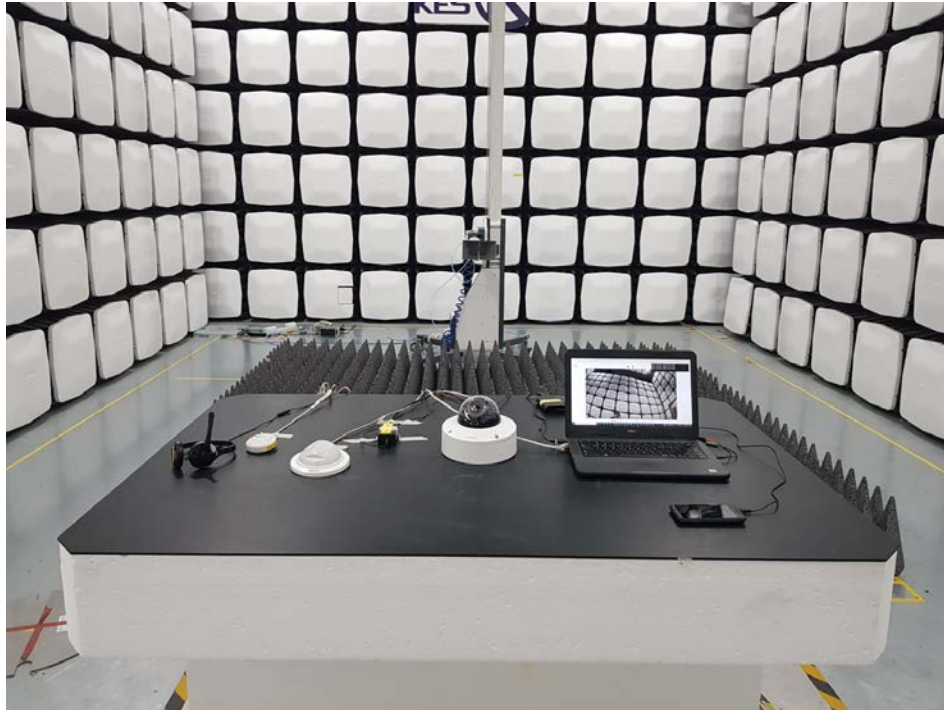
■ PoE Mode



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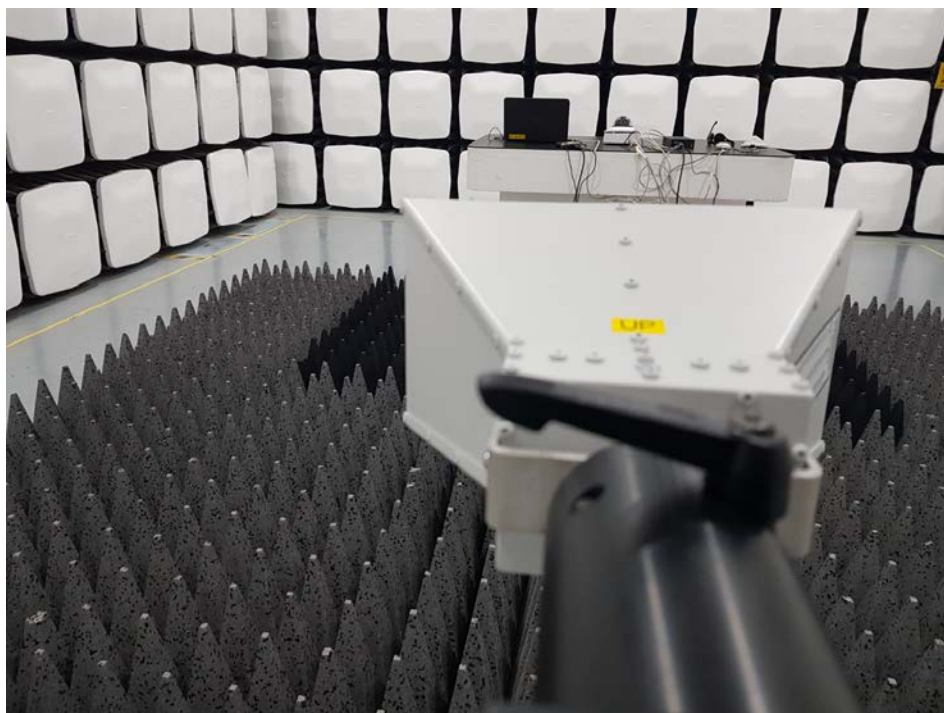
Radiated Electric Field Emissions(Above 1 GHz)

■ 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 – Main Board

(Top)



(Bottom)



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EUT Internal View – SUB Board 1

(Top)



(Bottom)



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EUT Internal View – SUB Board 2

(Top)



(Bottom)



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EUT Internal View – SUB Board 3

(Top)



(Bottom)



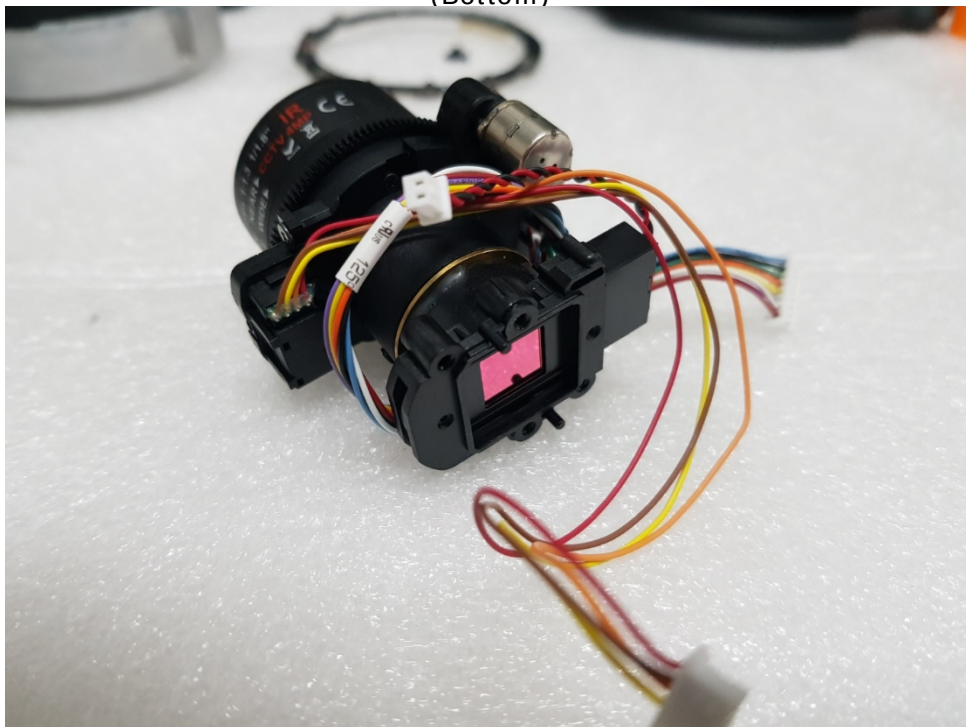
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EUT Internal View – Camera Lens

(Top)



(Bottom)



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EUT Internal View – Camera Lens Board

(Top)



(Bottom)



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EUT Internal View – SSD

(Top)



(Bottom)



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Label Photographs

FCC Label



Hanwha Techwin Co., Ltd.

PNV-A6081R-E1T

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.