



EMC TEST REPORT For RCM

Test Report No. : KES-EM-21T0972-R1
Date of Issue : Feb. 24, 2023
Product name : NETWORK CAMERA
Model/Type No. : XNV-6020R
Variant Model : -
Applicant : Hanwha Vision Co., Ltd
Applicant Address : 6, Pangyo-ro 319Beon-gil, Bundang-gu, Seongnam-si,
Gyeonggi-do, Republic of Korea
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, Vietnam
2. 173-25, Saneop-ro, Gwonseon-gu, Suwon-si, Gyeonggi- do,
Korea (Suwon Industrial Complex)
Date of Receipt : Aug. 27, 2021
Test date : Sep. 09, 2021
Test Results : ☒ **In Compliance** ☐ **Not in Compliance**

Tested by

김세헌

Se Heon, Kim
EMC Test Engineer

Tested by In Han, Kang
(Retries person)
Proxy signature : Se Heon, Kim

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
Oct. 07, 2021	KES-EM-21T0972	Issued
Feb. 24, 2023	KES-EM-21T0972-R1	Change the Applicant and Manufacturer at the request of the customer

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1.0 General Product Description

Main Specifications of EUT are:

VIDEO	
Imaging Device	1/2.8" 2M CMOS
Total Pixels	1,945(H) x 1,109(V) 2.16M
Effective Pixels	1,945(H) x 1,097(V) 2.13M
Scanning System	Progressive Scan
Min. Illumination	Color : 0.015 lux(F1.4, 1/30sec), B/W : 0Lux(IR LED On)
S / N Ratio	50dB
Video Out	CVBS : 1.0Vpp / 75Ω composite, 720 x 480(N), 720 x 576(P), for installation USB : micro USB type B, 1280 x 720 for installation
LENS	
Focal Length (Zoom Ratio)	4mm Fixed
Max. Aperture Ratio	F1.4
Angular Field of View	H: 88.6°, V: 47.5°, D: 104.8°
Min. Object Distance	0.4m (1.31ft)
Focus Control	Manual
Lens / Mount Type	Fixed / Board-in type
PAN / TILT / ROTATE	
Pan / Tilt / Rotate Range	0° ~ 354° / 0° ~ 67° / 0° ~ 355°
OPERATIONAL	
IR Viewable Length	30m(98.43ft)
Camera Title	Off / On (Displayed up to 85 characters) - W/W : English / Numeric / Special characters - China : English / Numeric / Special / Chinese characters - Common : Multi-line (Max. 5), Color (Grey / Green / Red / Blue / Black / White), Transparency, Auto scale by resolution
Day & Night	Auto (ICR) / Color / B/W / External / Schedule
Backlight Compensation	Off / BLC / HLC (Masking / Dimming), WDR
Wide Dynamic Range	150dB
Contrast Enhancement	SSDR (Off / On)
Digital Noise Reduction	SSNRV (2D+3D noise filter) (Off / On)
Digital Image Stabilization	Off / On
Defog	Off / Auto (Input from fog detection) / Manual
Motion Detection	Off / On (Bea, 8point polygonal zones), Handover
Privacy Masking	Off / On (32ea, Polygonal) - Color : Grey / Green / Red / Blue / Black / White, Mosaic
Gain Control	Off / Low / Middle / High
White Balance	ATW / AWC / Manual / Indoor / Outdoor (Included mercury & Sodium)
Contrast	Level adjustment
LDC (Lens Distortion Correction)	Off / On (5 levels with min / max)
Electronic Shutter Speed	Minimum / Maximum / Anti flicker (2 ~ 1/12,000sec)
Digital PTZ	24x, Digital PTZ (Preset, Group)
Flip / Mirror	Off / On, Hallway view : 90°/270°
Video & Audio Analytics	Tampering, Loitering, Directional detection, Defocus detection, Fog detection, Virtual line, Enter / Exit, (Dis)Appear, Audio detection, Face detection, Motion detection, Digital auto tracking, Sound classification, Heatmap, People counting, Queue management
Alarm I/O	Input 1ea / Output 1ea
Alarm Triggers	Alarm input, Motion detection, Video & Audio analytics, Network disconnect
Alarm Events	File upload via FTP, E-mail, Notification via E-mail, Local storage (SD/SDHC/SDXC) or NAS recording at event triggers, External output, DPTZ preset
Pixel Counter	Support

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NETWORK	
Ethernet	RJ-45 (10/100BASE-T)
Video Compression Format	H.265 / H.264 (MPEG-4 part 10/AVC) : Main / Baseline / High, MJPEG
Resolution	1920 x 1080, 1280 x 1024, 1280 x 960, 1280 x 720, 1024 x 768, 800 x 600, 800 x 448, 720 x 576, 720 x 480, 640 x 480, 640 x 360, 320 x 240
Max. Framerate	H.265 / H.264 : Max. 60fps at all resolutions, MJPEG : Max. 30fps
Smart Codec	Manual mode (Area-based : Sea)
WiseStream II	Support
Video Quality Adjustment	H.265 / H.264 : Target bitrate level control, MJPEG : Target bitrate level control
Bitrate Control Method	H.265 / H.264 : CBR or VBR, MJPEG : VBR
Streaming Capability	Multiple streaming (Up to 10 profiles)
Audio In	Selectable (Mic in / Line in), Supply voltage : 2.5V DC (4mA), Input impedance : approx. 2K Ohm
Audio Out	Line out, Max output level : 1Vrms
Audio Compression Format	G.711 u-law/G.726 selectable, G.726 (ADPCM) 8KHz, G.711 8KHz G.726 : 16Kbps, 24Kbps, 32Kbps, 40Kbps, AAC-LC : 48Kbps at 8/16/32/48KHz
Audio Communication	Bi-directional (2-way)
IP	IPv4, IPv6
Protocol	TCP/IP, UDP/IP, RTP(UDP), RTP(TCP), RTCP, RTSP, NTP, HTTP, HTTPS, SSL/TLS, DHCP, PPPoE, FTP, SMTP, ICMP, IGMP, SNMPv1/v2c/v3(MIB-2), ARP, DNS, DDNS, QoS, PIM-SM, UPnP, Bonjour
Security	HTTPS(SSL) login authentication, Digest login authentication IP address filtering, User access log, 802.1X authentication (EAP-TLS, EAP-LEAP)
Streaming Method	Unicast / Multicast
Max. User Access	20 users at unicast mode
Edge Storage	SD/SDHC/SDXC 2slot (Up to 512GB) - Continuous recording (1st slot to 2nd slot) NAS (Network Attached Storage), Local PC for instant recording
Application Programming Interface	ONVIF profile S/G, SUNAPI (HTTP API), Wisenet Open Platform
Webpage Language	English, Korean, Chinese, French, Italian, Spanish, German, Japanese, Russian, Swedish, Portuguese, Czech, Polish, Turkish, Dutch, Hungarian, Greek
Web Viewer	Supported OS : Windows 7, 8.1, 10, Mac OS X 10.10, 10.11, 10.12
	Non-plugin Webviewer - Supported Browser : Google Chrome 54, MS Edge 38, Mozilla Firefox 49 (Window 64bit only), Apple Safari 9 * Mac OS X only
	Plug-in Webviewer - Supported Browser : MS Explore 11, Apple Safari 9 * Mac OS X only
Central Management Software	
ENVIRONMENTAL	
Operating Temperature / Humidity	-30°C ~ +55°C (-22°F ~ +131°F) / Less than 90% RH * Start up should be done at above -20°C (-4°F)
Storage Temperature / Humidity	-50°C ~ +60°C (-58°F ~ +140°F) / Less than 90% RH
Ingress Protection / Vandal Resistance	IP67, IP66 / IK10
ELECTRICAL	
Input Voltage / Current	12V DC ±10%, PoE (IEEE802.3af)
Power Consumption	Max. 8W(12VDC), Max. 9W(PoE)
MECHANICAL	
Color / Material	Ivory / Metal
Dimensions (WxH)	Ø120.0 x 97.5mm (Ø4.72" x 3.84")
Weight	615g (1.36lb)

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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 240 V, 50 Hz ☒ PoE

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	XNV-6020R	-	HANWHA VISION VIETNAM COMPANY LIMITED	EUT
Adapter	2ACB022F	-	Channel Well Technology (Guangzhou) Co., Ltd.	-

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1.5 Support Equipments

Description	Model Number	Serial Number	Manufacturer	Remarks
PoE Adaptor	PT-PSE109GBRO	-	-	-
Notebook	P95G001	8KM8HT2	Wistron Infocom (Chengdu) Company Limited	-
Notebook Adapter	LA65NS2-01	-	LITE-ON TECHNOLOGY(CHANGZ HOU)CO.,LTD.	-
Button alarm	-	-	-	-
Multimeter	-	-	-	-
Micro SD Card	-	-	Sandisk	8 GB
Mic	MP1000	-	-	-
iPhone	A1429	-	Apple Inc.	-
Speaker	BR1000A Cuve Black 2	-	DONGGUAN EDIFIER TECHNOLOGY Co., Ltd	-

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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)	2 Pin	Adapter (EUT)	LINE OUT	1.6	U
	RJ-45 (LAN)	Notebook	RJ-45 (LAN)	3.0	U
	Micro SD Slot	Micro SD Card	Micro SD Slot	-	-
	2 Pin	Button alarm	2 Pin	3.0	U
	2 Pin	Multimeter	2 Pin	3.0	U
	3.5 mm	Mic	3.5 mm	1.4	U
	3.5 mm	Speaker	3.5 mm	1.5	U
	DC Jack	Notebook Adapter	LINE OUT	1.4	U
Notebook	3.5 mm	iPhone	3.5 mm	1.1	U
	3.5 mm	iPhone	3.5 mm	1.1	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)	3.0	U
	Micro SD Slot	Micro SD Card	Micro SD Slot	-	-
	2 Pin	Button alarm	2 Pin	3.0	U
	2 Pin	Multimeter	2 Pin	3.0	U
	3.5 mm	Mic	3.5 mm	1.4	U
	3.5 mm	Speaker	3.5 mm	1.5	U
Notebook	RJ-45 (LAN)	PoE Adapter	RJ-45 (LAN)	1.0	U
	DC Jack	Notebook Adapter	LINE OUT	1.4	U
	3.5 mm	iPhone	3.5 mm	1.1	U

* Unshielded=U, Shielded=S

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1.7 EUT Operating Mode(s)

Test Mode	operating
DC Mode	EUT Monitoring, Ping Test
PoE Mode	

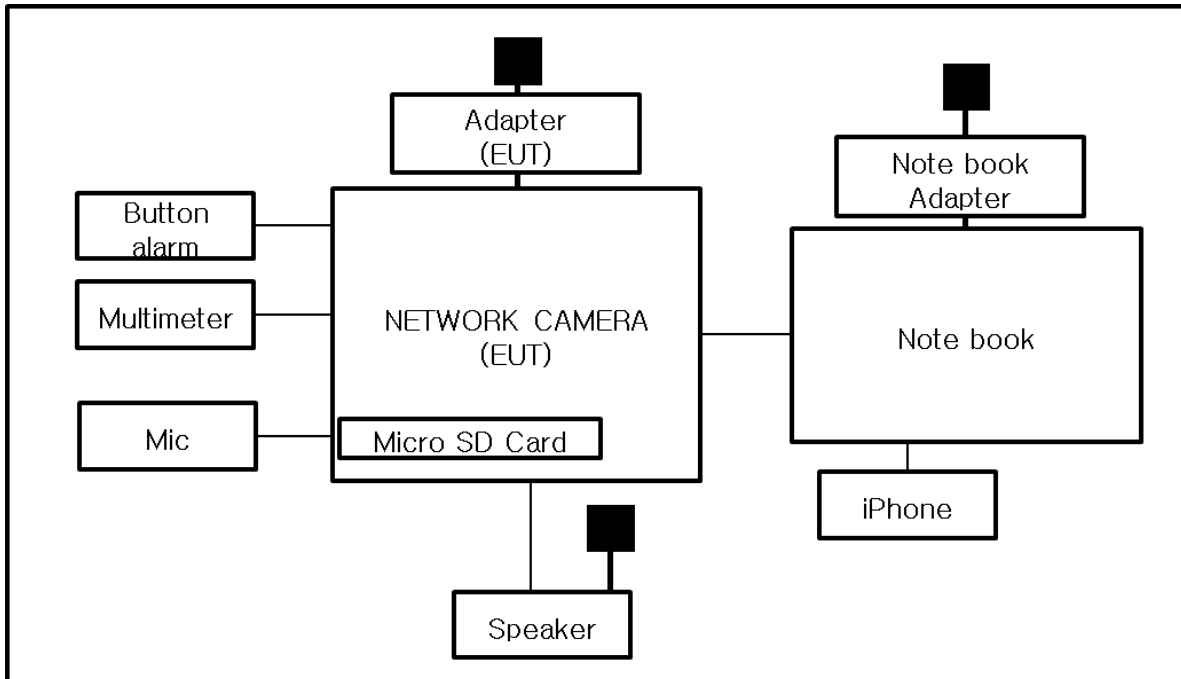
EUT Test operating S/W		
Name	Version	Manufacture Company
Web Viewer	-	Hanwha Vision Co., Ltd

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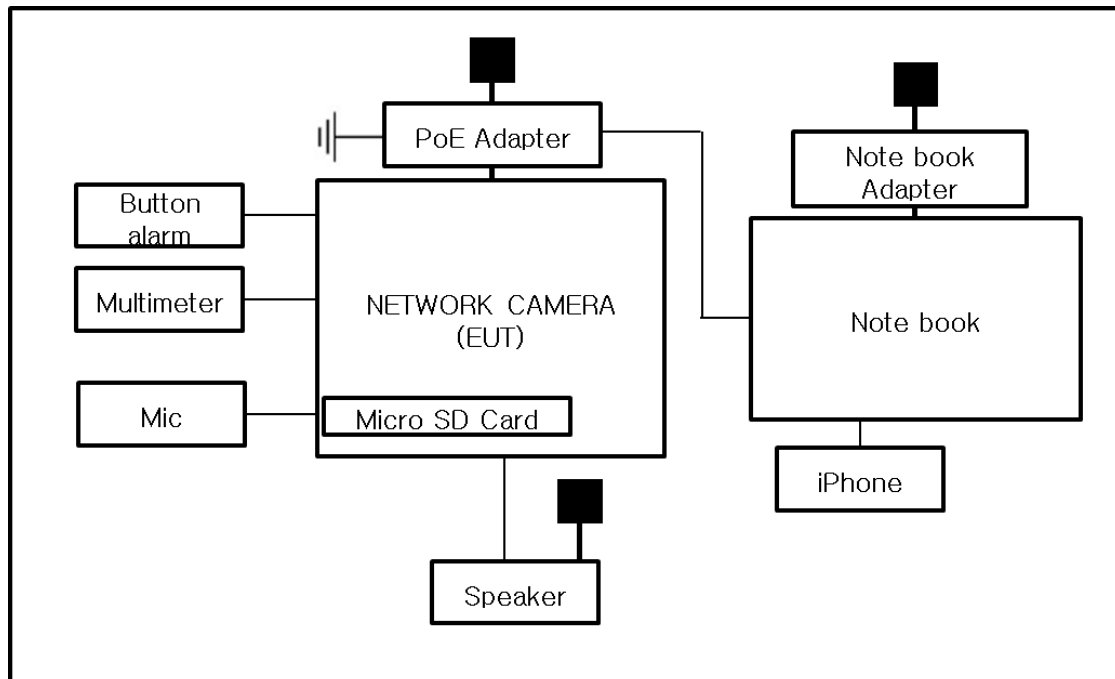
1.8 Configuration

■ AC Main
 □ DC Main

■ DC Mode



■ PoE Mode



1.9 Remarks when standards applied

VIDEO, USB ports are not used and have not been tested.

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 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:

☐ **EMC – Directive 2014/30/EU**

☐ EN 61000-6-3:2011

☐ EN 61000-6-1:2007

☐ EN 61000-6-4:2007 +A1:2011

☐ EN 61000-6-2:2005

☐ EN 55011:2007 +A1:2010

☐ Group 1
☐ Class A

☐ Group 2
☐ Class B

☐ EN 55014-1:2006 +A2:2011

☐ EN 55014-2:1997 +A2:2008

☐ EN 55015:2013

☐ EN 55032:2015

☐ Class A

☐ Class B

☐ EN 55024:2010

☐ EN 50130-4:2011 +A1:2014

☐ EN 61000-3-2:2014

☐ EN 61000-3-3:2013

☐ EN 61326-1:2013



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- | | | |
|--|---|----------------------------------|
| ☐ VCCI-CISPR 32:2016 | ☐ Class A | ☐ Class B |
| ☒ AS/NZS CISPR32:2015 | ☒ Class A | ☐ Class B |
|
 | | |
| ☐ 47 CFR Part 15, Subpart B | | |
| ☐ CISPR 22:2009 +A1:2010 | ☐ Class A | ☐ Class B |
| ☐ ANSI C63.4-2009 | | |
|
 | | |
| ☐ IC Regulation ICES-003 : 2016 | | |
| ☐ CAN/CSA CISPR 22-10 | ☐ Class A | ☐ Class B |
| ☐ ANSI C63.4-2014 | | |
|
 | | |
| ☐ RE- Directive 2014/53/EU | | |
|
 | | |
| ☐ EN 301 489-1 V1.9.2 | | |
| ☐ Equipment for fixed use | | |
| ☐ Equipment for vehicular use | | |
| ☐ Equipment for portable use | | |
|
 | | |
| ☐ EN 301 489-3 V1.6.1 | | |
| ☐ EN 301 489-17 V2.2.1 | | |
| ☐ EN 60945:2002 | | |

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2.1 Conducted Emissions at Mains Power Ports

Test Date

Sep. 09, 2021

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	01, 15, 2022
☒	LISN	ENV216	R & S	101787	12, 29, 2021
☒	LISN	ESH2-Z5	R & S	100450	12, 29, 2021
☒	PULSE LIMITER	ESH3-Z2	R & S	101915	12, 29, 2021

Test Conditions

Temperature: (24,4 ± 0,1) °C

Relative Humidity: (50,1 ± 0,2) % 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.

2.2 Conducted Emissions at Telecommunication Ports

Test Date

Sep. 09, 2021

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	01, 15, 2022
☒	LISN	ENV216	R & S	101787	12, 29, 2021
☒	LISN	ESH2-Z5	R & S	100450	12, 29, 2021
☒	PULSE LIMITER	ESH3-Z2	R & S	101915	12, 29, 2021
☒	8-WIRE ISN CAT3,5	ENY81	R & S	100174	12, 30, 2021
☐	8-WIRE ISN CAT6	ENY81-CAT6	R & S	101665	12, 30, 2021
☐	CDN	CDNS502A	TESEQ	40431	

Test Conditions

Temperature: (24,4 ± 0,1) °C

Relative Humidity: (50,1 ± 0,2) % 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.

- For Ethernet interfaces, measurements are required at the highest data rate supported by the interface.



2.3 Radiated Electric Field Emissions(Below 1 GHz)

Test Date

Sep. 09, 2021

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	04, 01, 2022
☒	AMPLIFIER	SCU 01	R & S	100603	11, 25, 2021
☒	TRILOG-BROADBAND ANTENNA	VULB9163	Schwarzbeck	715	12, 08, 2022
☒	ATTENUATOR	8491A	HP	32173	03, 10, 2022

Test Conditions

Temperature: (24,1 ± 0,1) °C

Relative Humidity: (50,1 ± 0,2) % 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.



2.4 Radiated Electric Field Emissions(Above 1 GHz)

Test Date

Sep. 09, 2021

Test Location

SEMI ANECHOIC CHAMBER #3

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	ESR7	R & S	101190	08, 03, 2022
☒	PREAMPLIFIER	8449B	AGILENT	3008A01967	04, 07, 2022
☐	ATTENUATOR	8491A	HP	35496	03, 10, 2022
☒	DOUBLE RIDGED HORN ANTENNA	SAS-571	A.H.SYSTEM,INC	781	03, 11, 2022

Test Conditions

Temperature: (24,2 ± 0,1) °C

Relative Humidity: (50,2 ± 0,2) % R.H.

Frequency Range of Measurement

1 GHz to 6 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.

APPENDIX A – TEST DATA

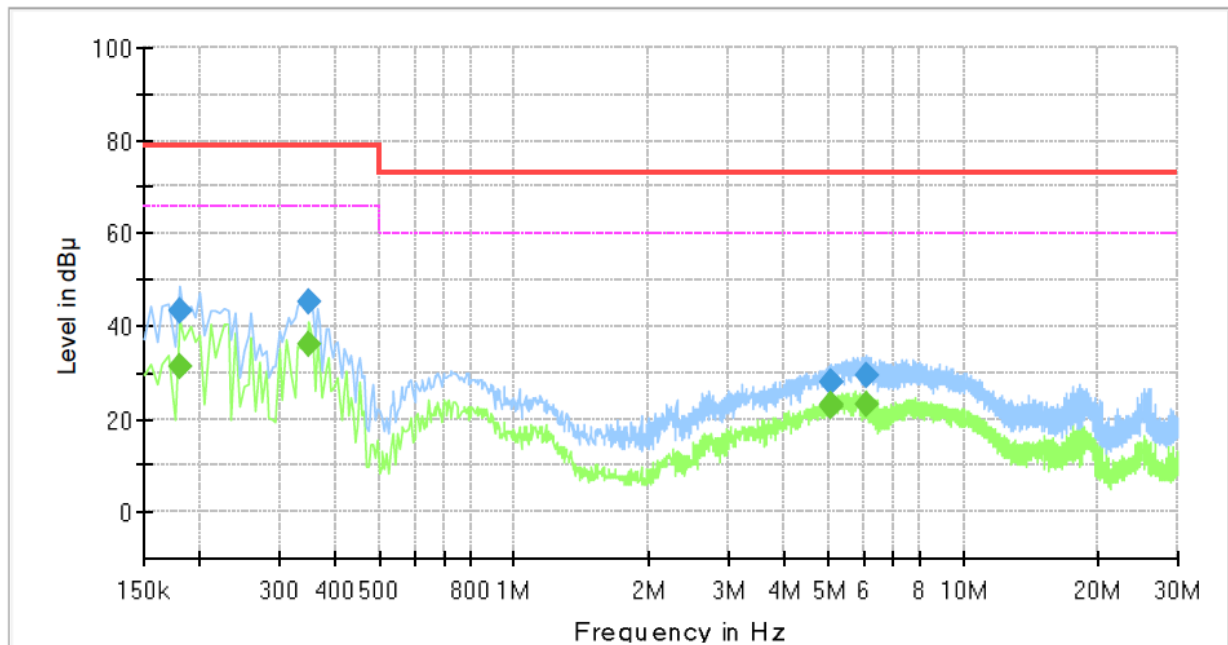
Conducted Emissions at Mains Power Ports

■ DC Mode

HOT LINE

Common Information

Test Description:	Conducted Emission
Model No.:	XNV-6020R
Phase:	L1
Mode:	DC
Operator Name:	KES



Final Result

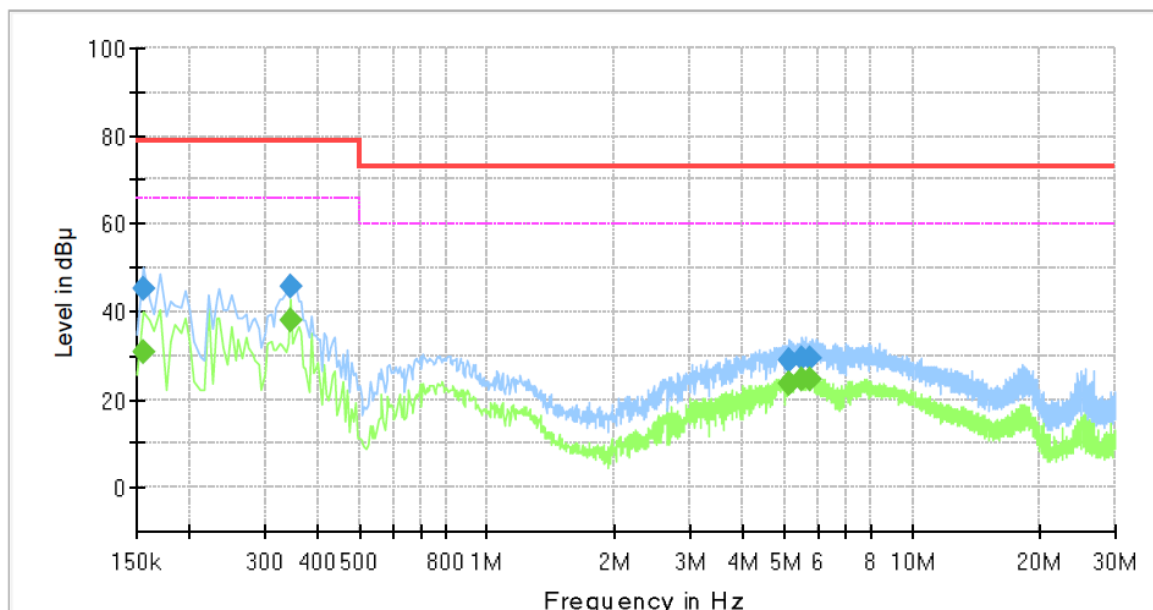
Frequency (MHz)	QuasiPeak (dBμV)	CAverage (dBμV)	Limit (dBμV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.180000	43.51	---	79.00	35.49	1000.0	9.000	L1	19.5
0.180000	---	31.41	66.00	34.59	1000.0	9.000	L1	19.5
0.350000	---	36.06	66.00	29.94	1000.0	9.000	L1	19.6
0.350000	45.17	---	79.00	33.83	1000.0	9.000	L1	19.6
5.045000	---	22.88	60.00	37.12	1000.0	9.000	L1	19.7
5.045000	27.72	---	73.00	45.28	1000.0	9.000	L1	19.7
5.065000	27.78	---	73.00	45.22	1000.0	9.000	L1	19.7
5.065000	---	22.99	60.00	37.01	1000.0	9.000	L1	19.7
6.065000	---	22.98	60.00	37.02	1000.0	9.000	L1	19.6
6.065000	29.19	---	73.00	43.81	1000.0	9.000	L1	19.6

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NEUTRAL LINE

Common Information

Test Description:	Conducted Emission
Model No.:	XNV-6020R
Phase:	N
Mode:	DC
Operator Name:	KES



Final Result

Frequency (MHz)	QuasiPeak (dBμV)	CAverage (dBμV)	Limit (dBμV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.155000	---	30.76	66.00	35.24	1000.0	9.000	N	19.4
0.155000	45.46	---	79.00	33.54	1000.0	9.000	N	19.4
0.345000	---	37.83	66.00	28.17	1000.0	9.000	N	19.6
0.345000	45.80	---	79.00	33.20	1000.0	9.000	N	19.6
5.105000	---	23.64	60.00	36.36	1000.0	9.000	N	19.7
5.105000	28.74	---	73.00	44.26	1000.0	9.000	N	19.7
5.125000	---	23.68	60.00	36.32	1000.0	9.000	N	19.7
5.125000	28.93	---	73.00	44.07	1000.0	9.000	N	19.7
5.520000	---	24.40	60.00	35.60	1000.0	9.000	N	19.6
5.520000	29.49	---	73.00	43.51	1000.0	9.000	N	19.6
5.735000	---	24.36	60.00	35.64	1000.0	9.000	N	19.6
5.735000	29.59	---	73.00	43.41	1000.0	9.000	N	19.6

◆ 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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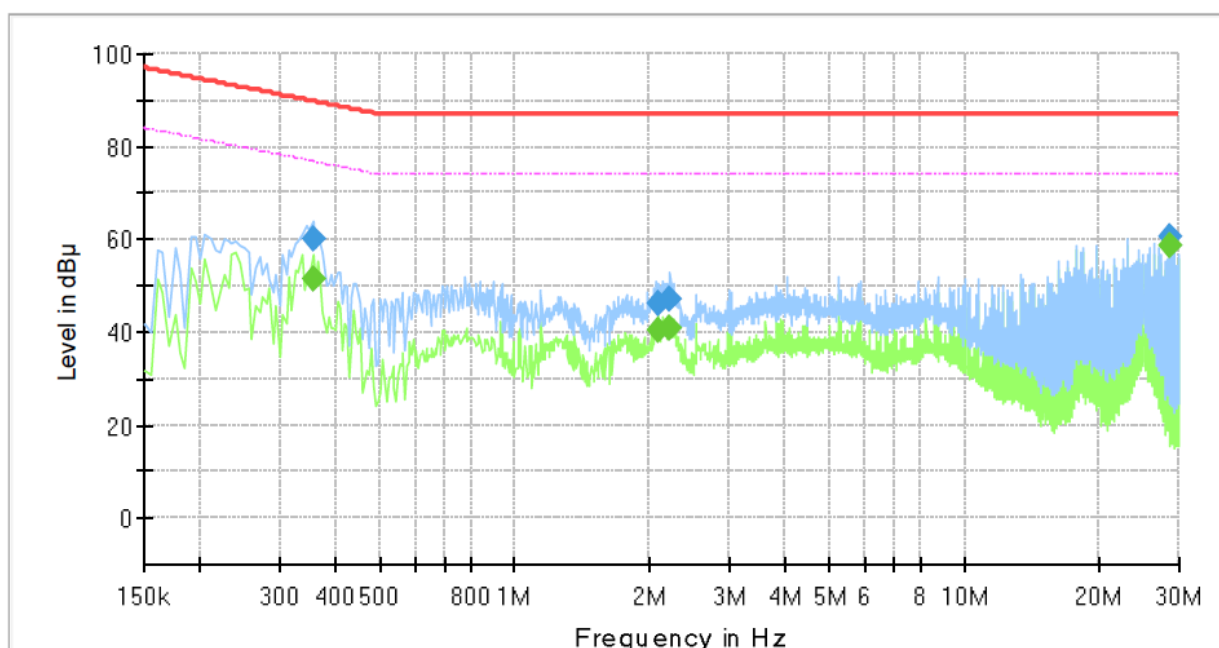
Conducted Emissions at Telecommunication Ports

■ DC Mode

[100 Mbps]

Common Information

Test Description:	Telecommunication Emission
Model No.:	XNV-6020R
Mode :	DC
Speed :	100 Mbps
Operator Name:	KES



Final Result

Frequency (MHz)	QuasiPeak (dBμV)	CAverage (dBμV)	Limit (dBμV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.355000	---	51.68	76.84	25.16	1000.0	9.000	Single Line	19.7
0.355000	60.32	---	89.84	29.52	1000.0	9.000	Single Line	19.7
2.090000	---	40.24	74.00	33.76	1000.0	9.000	Single Line	20.2
2.090000	46.25	---	87.00	40.75	1000.0	9.000	Single Line	20.2
2.220000	---	41.14	74.00	32.86	1000.0	9.000	Single Line	20.2
2.220000	47.03	---	87.00	39.97	1000.0	9.000	Single Line	20.2
28.685000	---	58.69	74.00	15.31	1000.0	9.000	Single Line	20.5
28.685000	60.48	---	87.00	26.52	1000.0	9.000	Single Line	20.5

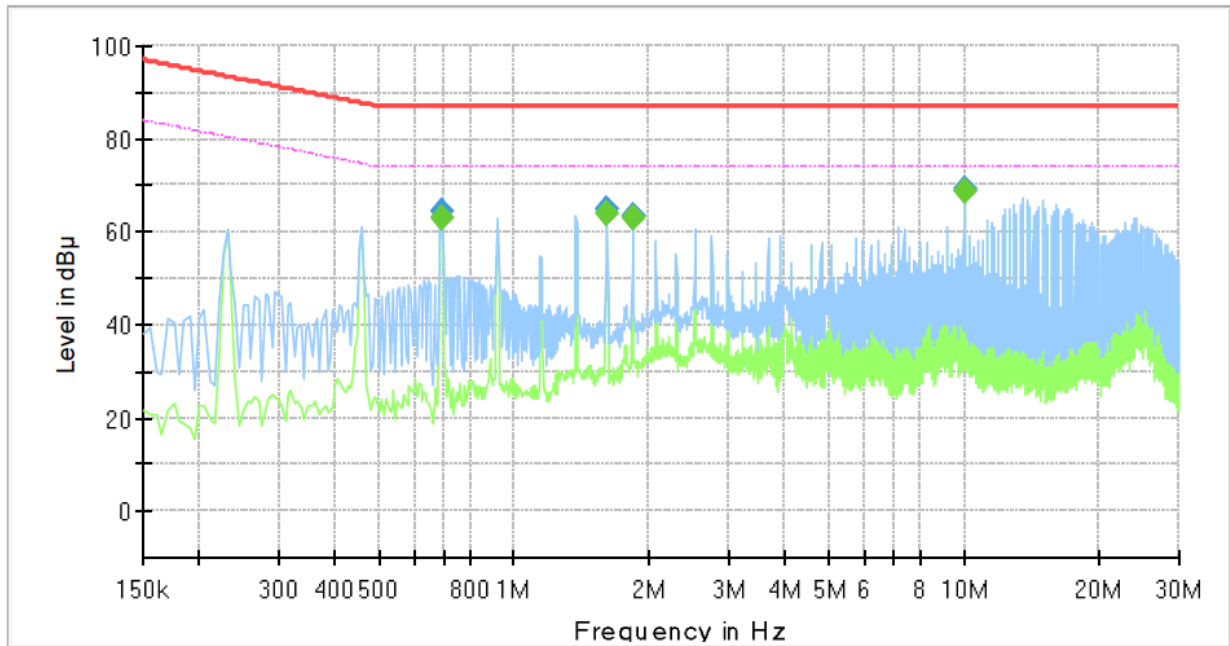
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PoE Mode
[100 Mbps]
Common Information

Test Description:	Telecommunication Emission
Model No.:	XNV-6020R
Mode :	PoE
Speed :	100 Mbps
Operator Name:	KES


Final Result

Frequency (MHz)	QuasiPeak (dBμV)	CAverage (dBμV)	Limit (dBμV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.690000	---	62.78	74.00	11.22	1000.0	9.000	Single Line	20.0
0.690000	64.30	---	87.00	22.70	1000.0	9.000	Single Line	20.0
1.605000	---	63.88	74.00	10.12	1000.0	9.000	Single Line	20.2
1.605000	64.71	---	87.00	22.29	1000.0	9.000	Single Line	20.2
1.835000	---	63.22	74.00	10.78	1000.0	9.000	Single Line	20.2
1.835000	63.39	---	87.00	23.61	1000.0	9.000	Single Line	20.2
10.000000	---	68.60	74.00	5.40	1000.0	9.000	Single Line	19.7
10.000000	69.13	---	87.00	17.87	1000.0	9.000	Single Line	19.7

◆ Calculation

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

QuasiPeak / CAverage : The Final Value

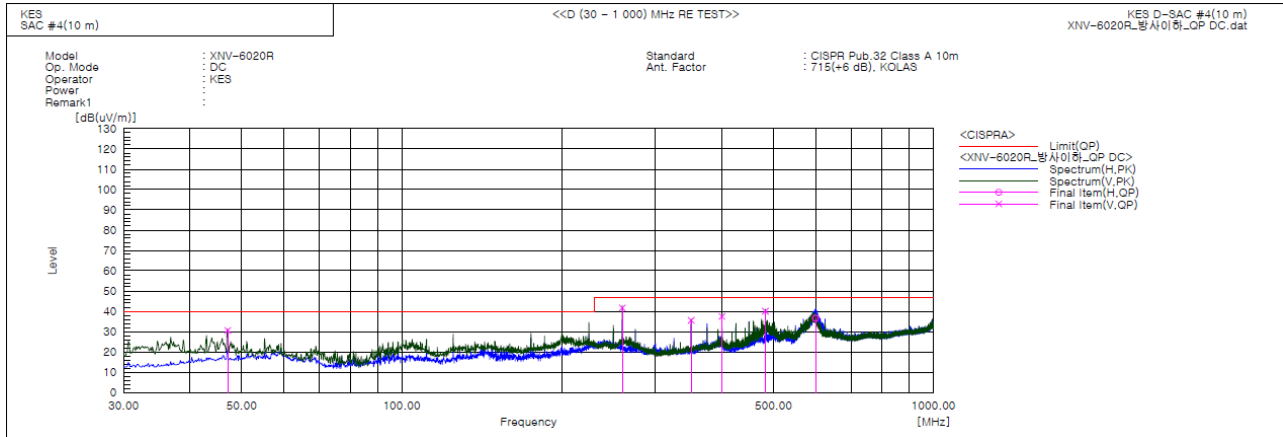
Reading Value : Not shown in the table.

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



Radiated Electric Field Emissions(Below 1 GHz)

■ 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	47.096	V	51.9	-21.3	30.6	40.0	9.4	121.0	121.0	
2	259.890	V	60.6	-18.9	41.7	47.0	5.3	105.0	8.0	
3	349.979	V	50.9	-15.3	35.6	47.0	11.4	108.0	158.0	
4	400.055	V	51.7	-14.2	37.5	47.0	9.5	112.0	284.0	
5	482.626	V	52.2	-12.1	40.1	47.0	6.9	104.0	165.0	
6	599.754	H	45.0	-8.4	36.6	47.0	10.4	197.0	297.0	

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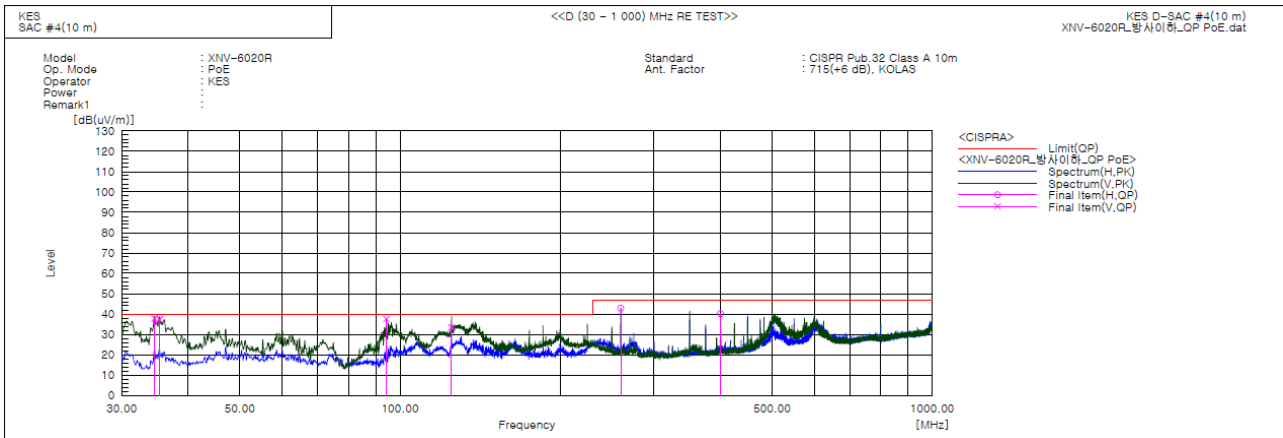
3701, 40, Simin-daero 365beon-gil,
Dongan-gu, Anyang-si, Gyeonggi-do, 14057, Korea
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KES-EM-21T0972-R1

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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	34.608	V	62.6	-24.7	37.9	40.0	2.1	102.0	90.0	
2	35.335	V	62.1	-24.7	37.4	40.0	2.6	103.0	67.0	
3	94.263	V	61.2	-23.6	37.6	40.0	2.4	105.0	270.0	
4	124.939	V	58.3	-24.8	33.5	40.0	6.5	109.0	279.0	
5	259.890	H	61.7	-18.9	42.8	47.0	4.2	397.0	177.0	
6	400.055	H	54.4	-14.2	40.2	47.0	6.8	249.0	330.0	

◆ Calculation

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

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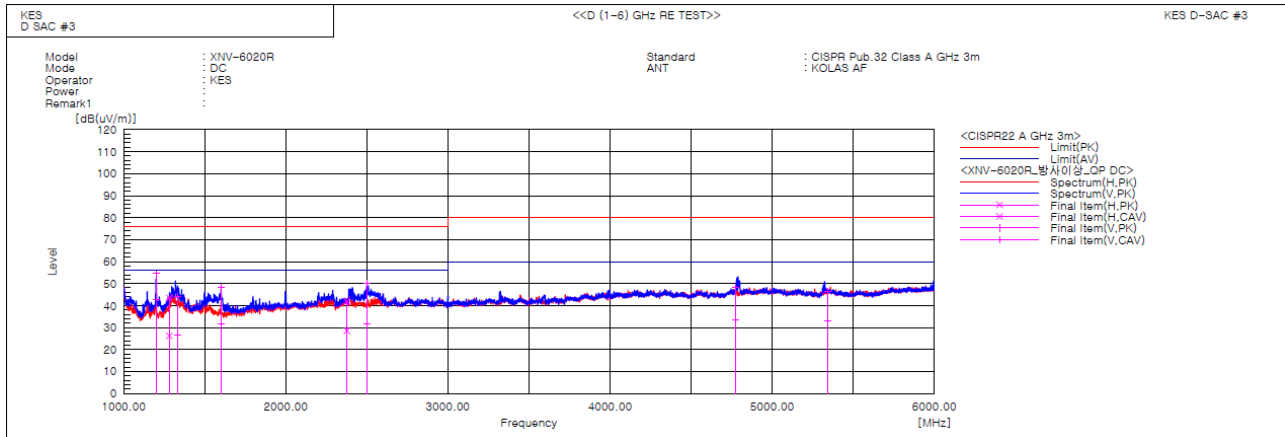
Report No.:

KES-EM-21T0972-R1

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Radiated Electric Field Emissions(Above 1 GHz)

■ DC Mode



Final Result

No.	Frequency [MHz]	(P)	Reading PK [dB(uV)]	Reading CAV [dB(uV)]	c.f [dB(1/m)]	Result PK [dB(uV/m)]	Result CAV [dB(uV/m)]	Limit PK [dB(uV/m)]	Limit AV [dB(uV/m)]	Margin PK [dB]	Margin CAV [dB]	Height [cm]	Angle [deg]	Remark
1	1199.880	V	63.1	51.1	-8.5	54.6	42.6	76.0	56.0	21.4	13.4	100.0	28.9	
2	1280.014	H	51.2	34.0	-7.7	43.5	26.3	76.0	56.0	32.5	29.7	100.0	162.2	
3	1329.748	V	51.3	34.0	-7.3	44.0	26.7	76.0	56.0	32.0	29.3	100.0	50.5	
4	1599.320	V	53.6	36.8	-5.3	48.3	31.5	76.0	56.0	27.7	24.5	100.0	3.8	
5	2376.393	H	41.7	28.4	0.2	41.9	28.6	76.0	56.0	34.1	27.4	100.0	176.6	
6	2501.891	V	49.9	31.7	0.1	50.0	31.8	76.0	56.0	26.0	24.2	100.0	13.1	
7	4773.003	V	40.4	25.7	7.8	48.2	33.5	80.0	60.0	31.8	26.5	100.0	35.5	
8	5339.707	V	38.0	24.7	8.3	46.3	33.0	80.0	60.0	33.7	27.0	100.0	331.3	

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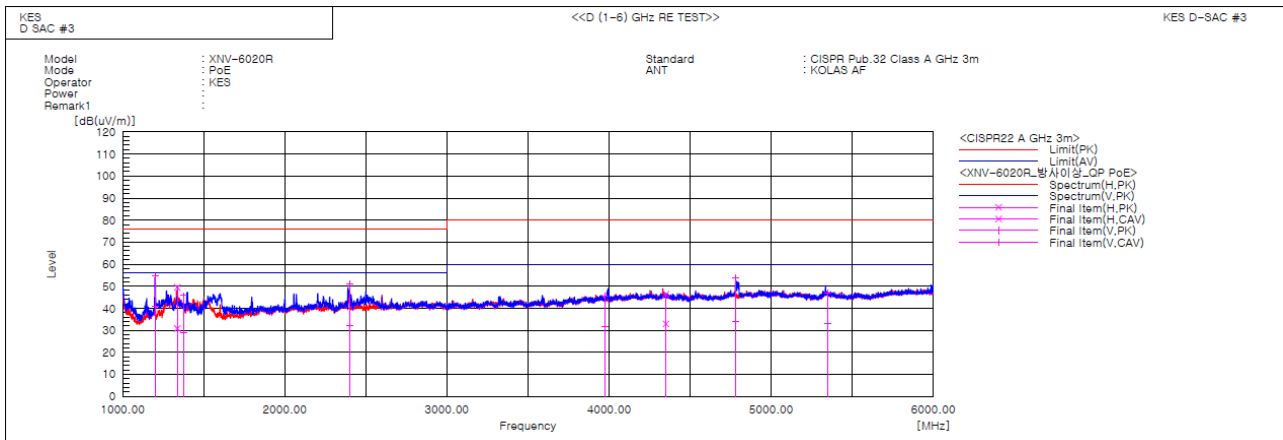
3701, 40, Simin-daero 365beon-gil,
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PoE Mode



Final Result

No.	Frequency [MHz]	(P)	Reading PK [dB(uV)]	Reading CAV [dB(uV)]	c.f [dB(1/m)]	Result PK [dB(uV/m)]	Result CAV [dB(uV/m)]	Limit PK [dB(uV/m)]	Limit AV [dB(uV/m)]	Margin PK [dB]	Margin CAV [dB]	Height [cm]	Angle [deg]	Remark
1	1200.390	V	63.0	49.2	-8.5	54.5	40.7	76.0	56.0	21.5	15.3	100.0	0.4	
2	1337.299	H	56.6	38.0	-7.2	49.4	30.8	76.0	56.0	26.6	25.2	100.0	42.1	
3	1377.724	V	52.5	35.7	-6.8	45.7	28.9	76.0	56.0	30.3	27.1	100.0	5.4	
4	2399.668	V	50.7	32.0	0.2	50.9	32.2	76.0	56.0	25.1	23.8	100.0	262.3	
5	3976.123	V	39.6	25.9	5.8	45.4	31.7	80.0	60.0	34.6	28.3	100.0	133.6	
6	4350.446	H	39.4	25.9	7.0	46.4	32.9	80.0	60.0	33.6	27.1	100.0	300.2	
7	4778.291	V	45.8	26.2	7.8	53.6	34.0	80.0	60.0	26.4	26.0	100.0	21.6	
8	5349.717	V	38.6	24.8	8.3	46.9	33.1	80.0	60.0	33.1	26.9	100.0	243.7	

◆ Calculation

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

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

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Test Setup Photos and Configuration

Conducted Emissions at Mains Power Ports

■ DC Mode



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Conducted Emissions at Telecommunication Ports

■ DC Mode



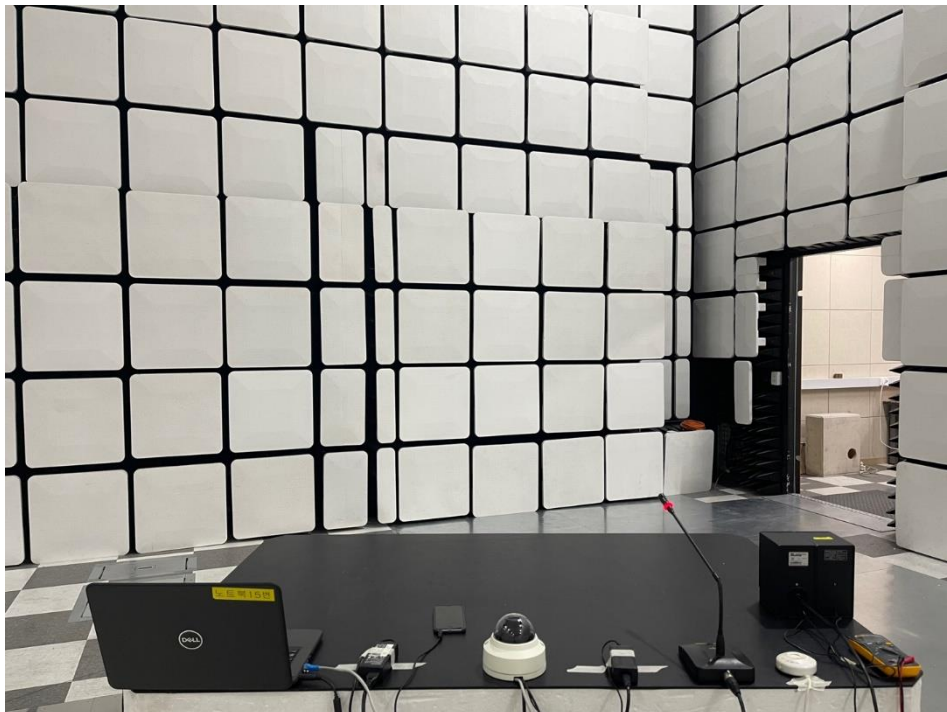
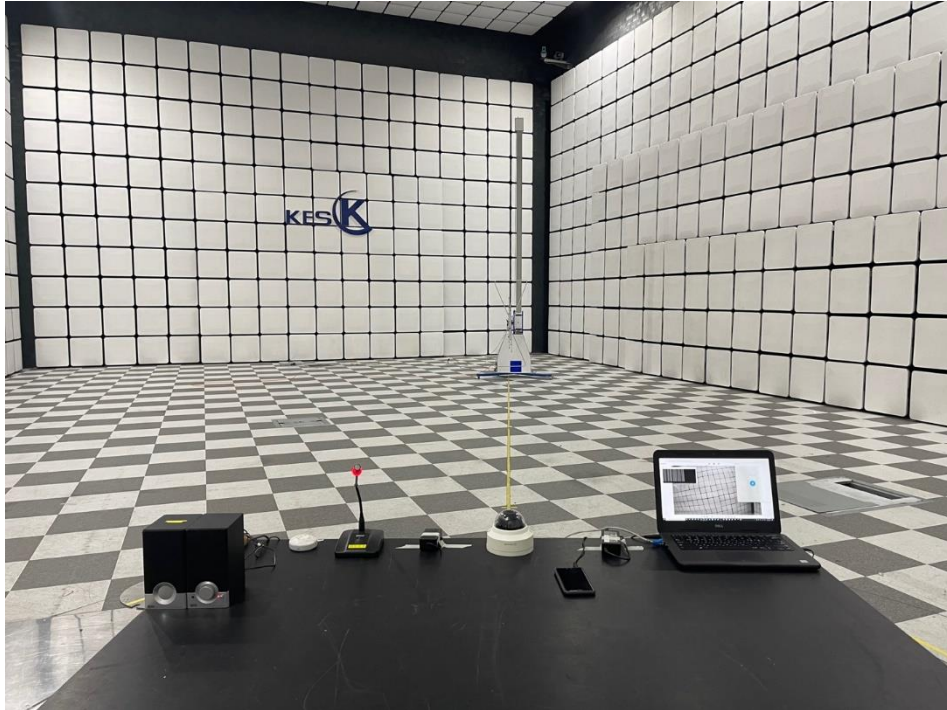
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■ PoE Mode



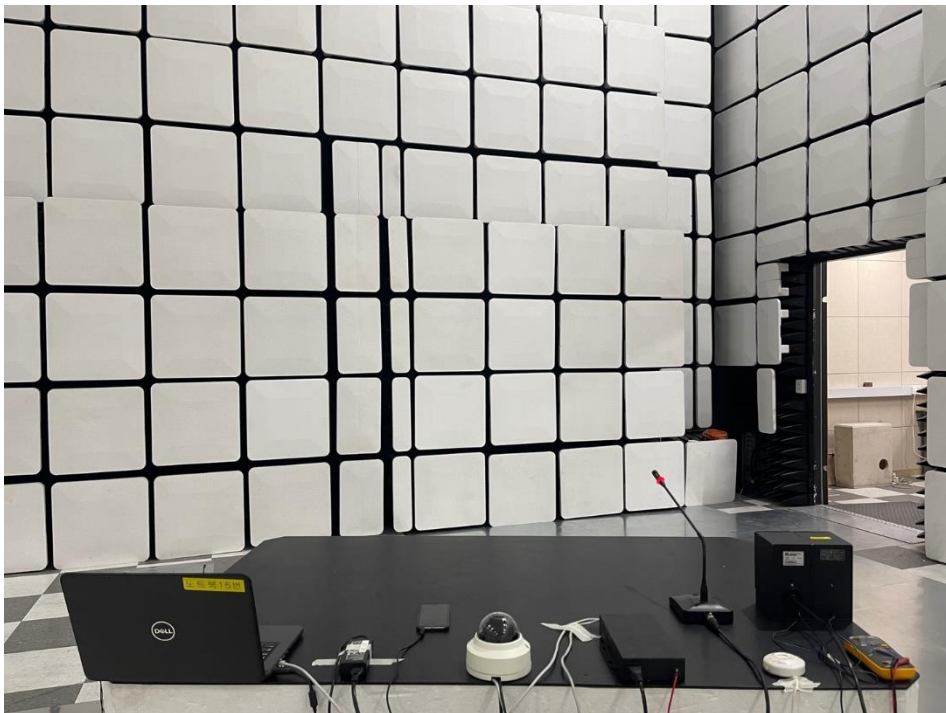
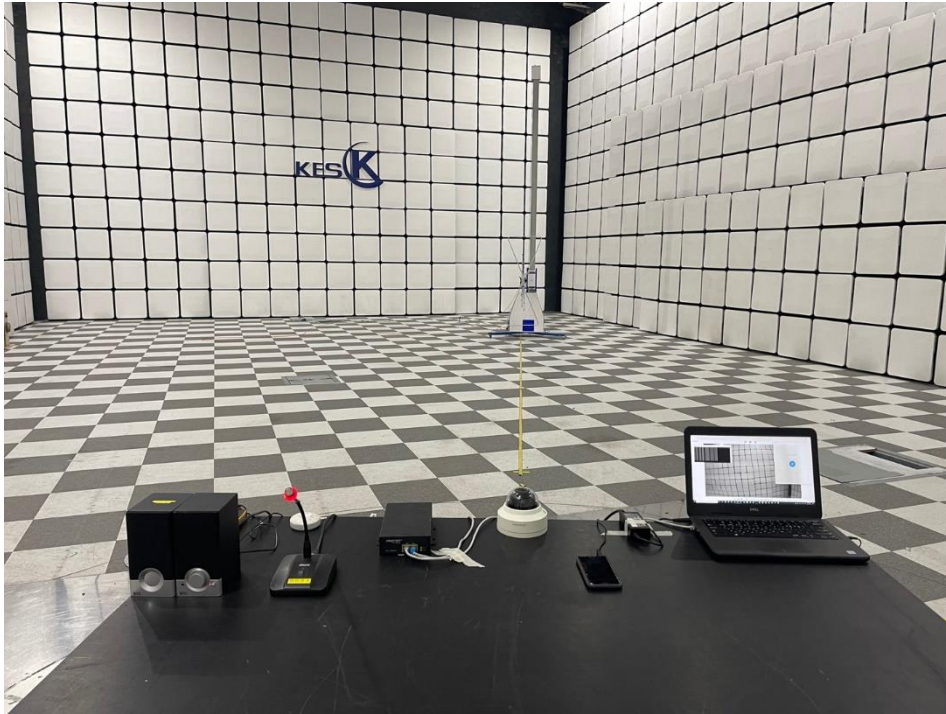
Radiated Electric Field Emissions(Below 1 GHz)

■ DC Mode



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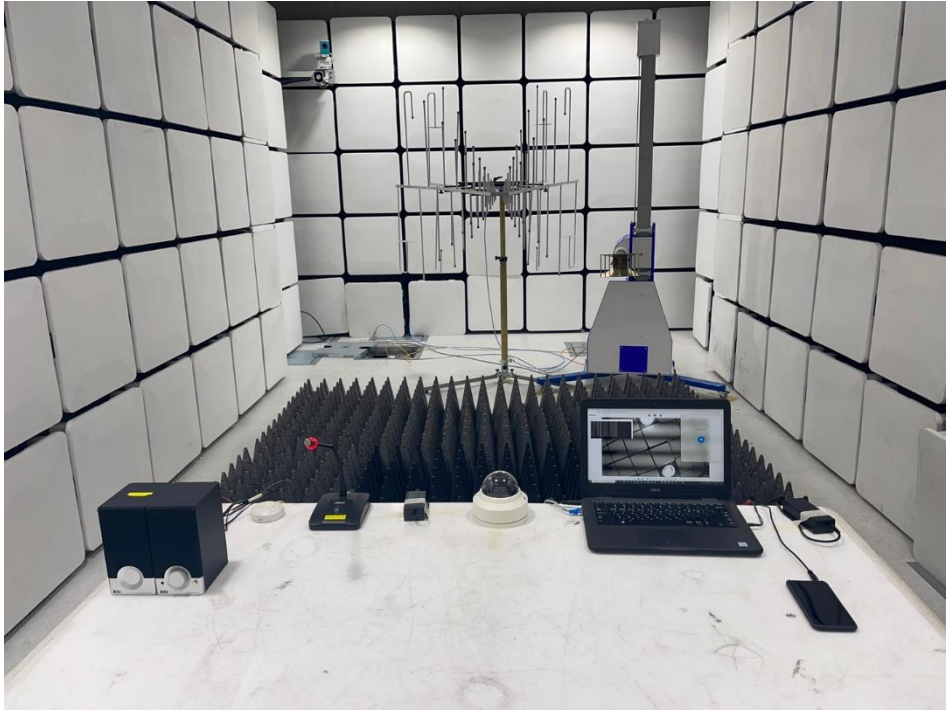
■ PoE Mode



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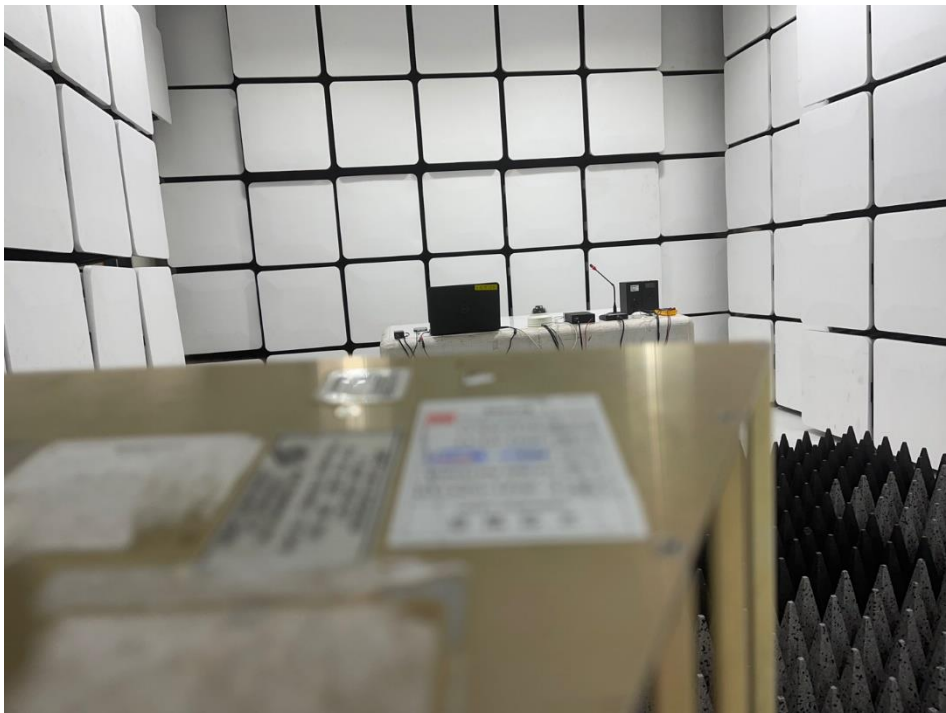
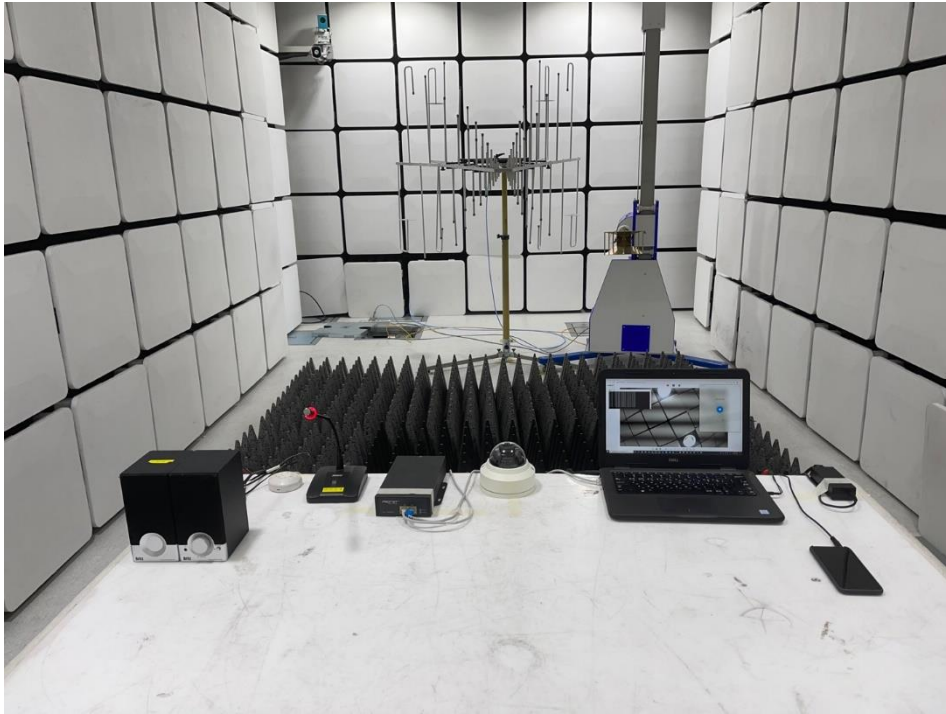
Radiated Electric Field Emissions(Above 1 GHz)

■ DC Mode



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■ PoE Mode



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EUT External Photographs

(Top)



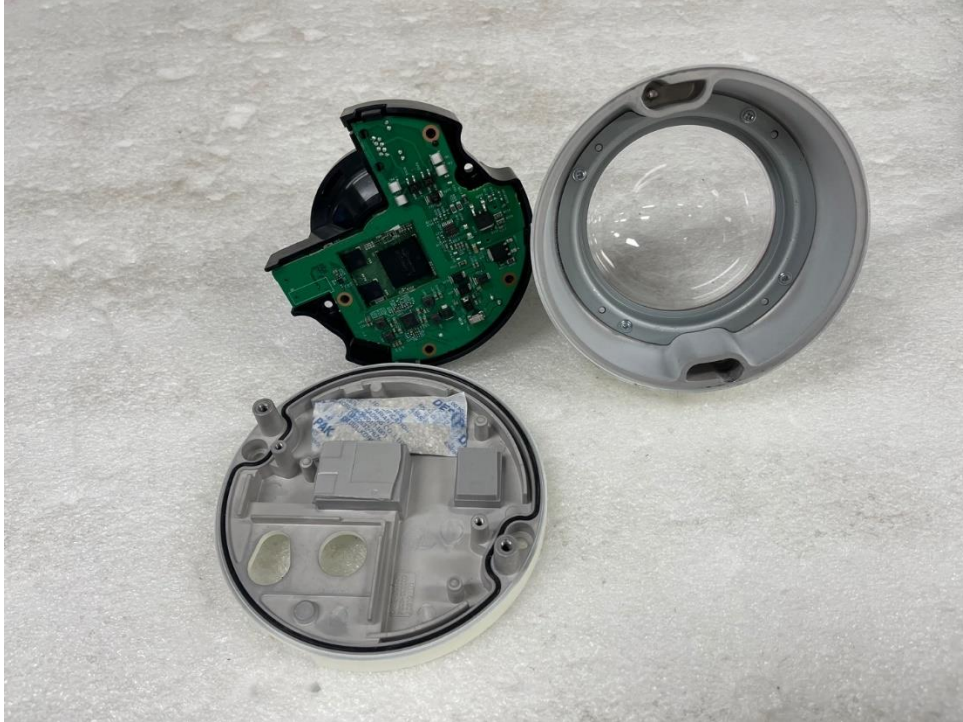
(Bottom)



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EUT Internal Photographs

(Internal View)

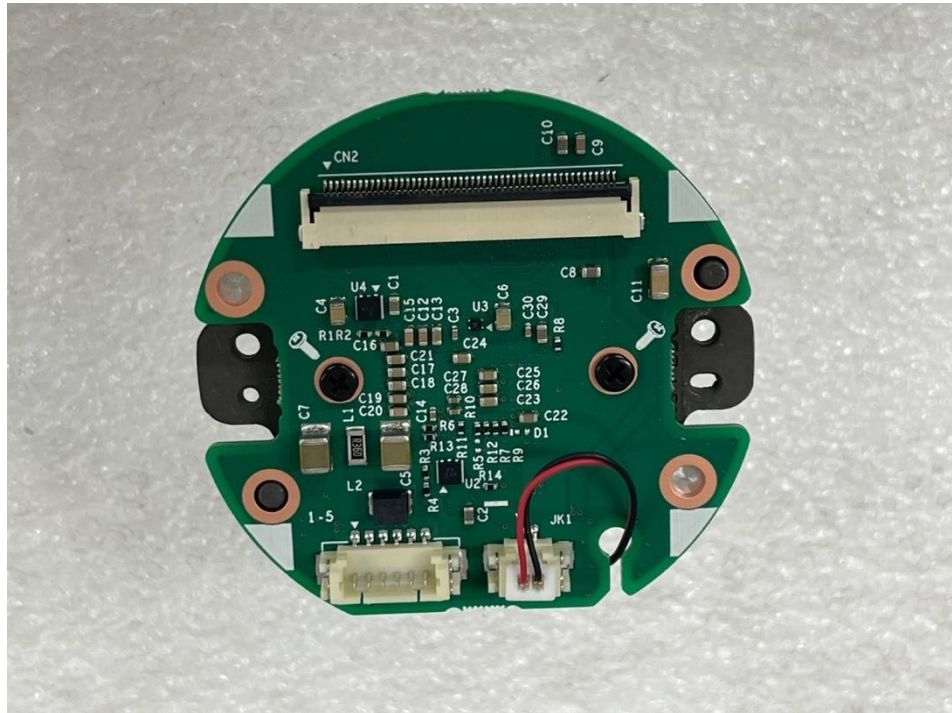


EUT Internal View – Main Board

(Top)



(Bottom)



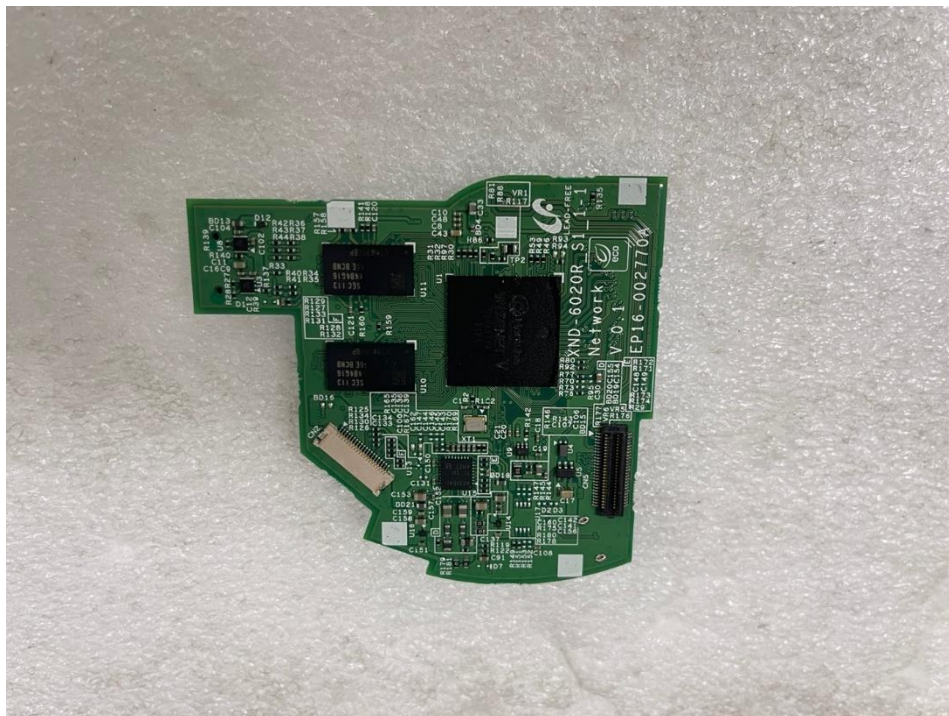
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EUT Internal View – Sub Board 1

(Top)



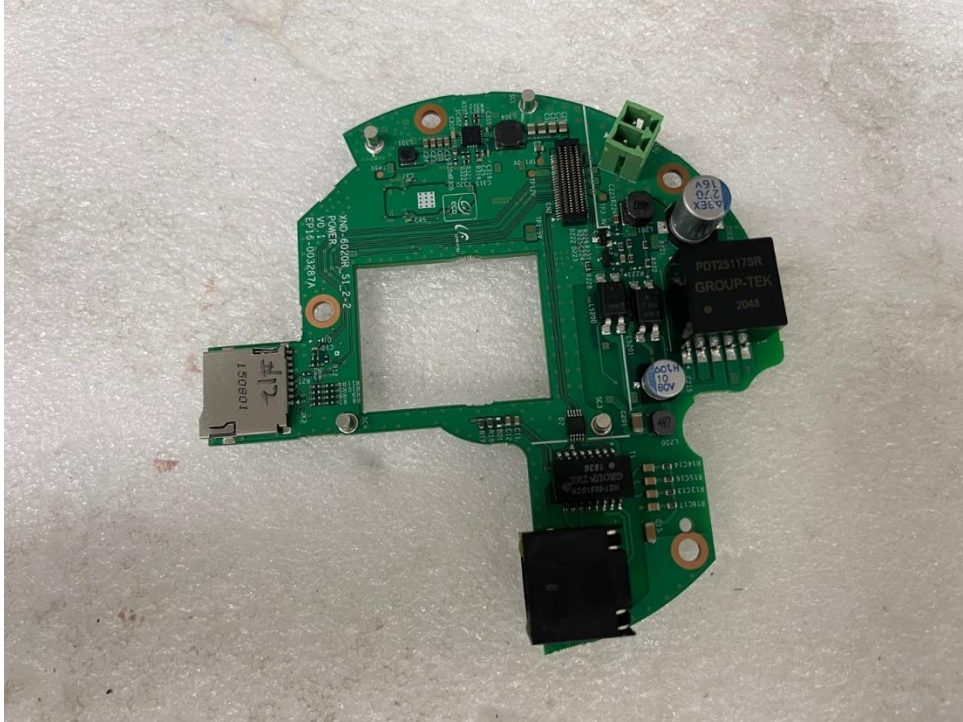
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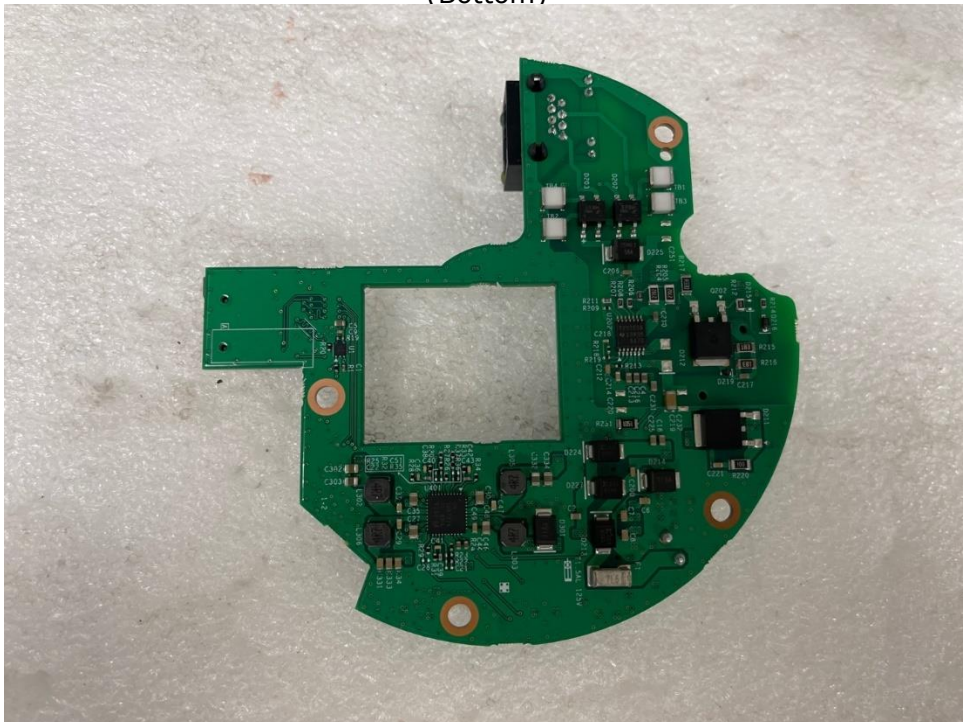
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EUT Internal View – Sub Board 2

(Top)



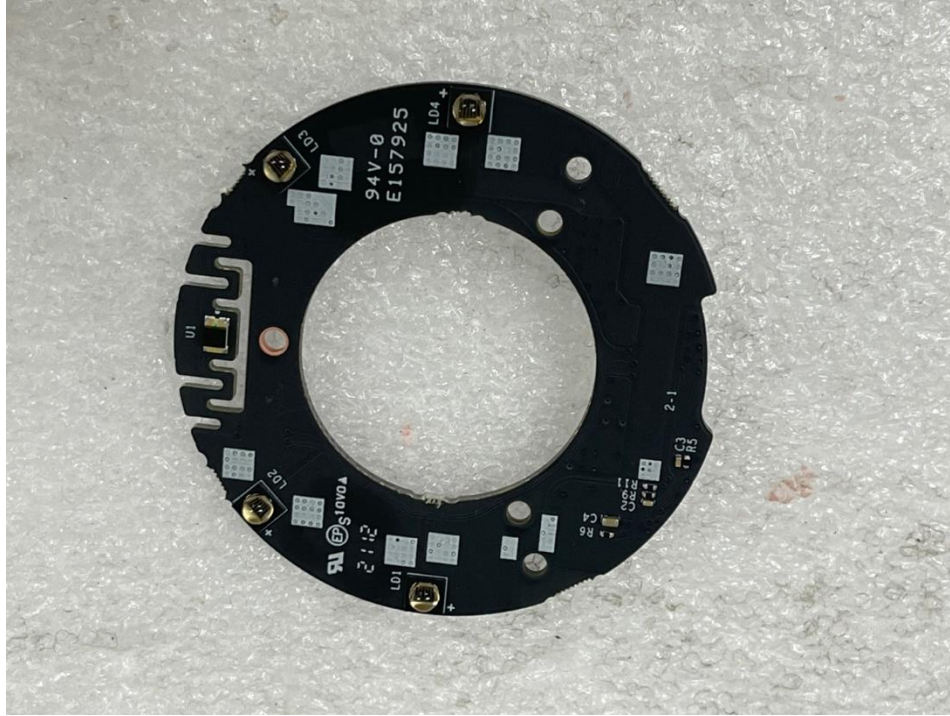
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EUT Internal View – Sub Board 3

(Top)



(Bottom)



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