

**KES Co., Ltd.**

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www.kes.co.kr

Report No.:

KES-EM-20T0313

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EMC TEST REPORT

Test Report No. : KES-EM-20T0313

Date of Issue : May. 12, 2020

Product name : NETWORK CAMERA

Model/Type No. : XNV-9082R

Variant Mode : XNV-8082R

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 : Apr. 03, 2020

Test date : May. 06, 2020 ~ May. 07, 2020

Test Results : ☒ **In Compliance** ☐ **Not in Compliance**

Tested by

Jun Soo, Jung
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
May. 12, 2020	KES-EM-20T0313	Issued

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1.0 General Product Description

Main Specifications of EUT are:

Video	XNV-9082R
Imaging Device	1/2.8" 8.46M CMOS
Effective Pixels	3864(H)x2192(V)
NETD	None
Pixel Size	None
Min. Illumination	Color: 0.05Lux(F1.2, 1/30sec) B/W: 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
Lens	
Focal Length (Zoom Ratio)	2.8~8.4mm(3x) motorized varifocal
Max. Aperture Ratio	F1.2(Wide)~F2.8(Tele)
Angular Field of View	H: 114°(Wide)~40.2°(Tele) / V: 62.0°(Wide)~22.5°(Tele) / D: 133.0°(Wide)~46.3°(Tele)
Min. Object Distance	0.7m (2.23ft)
Focus Control	Simple focus
Lens Type	DC Auto Iris, P iris
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
Azimuth	None
Auto Tracking	None
Operational	
IR Viewable Length	40m(131.23ft)

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Camera Title	Off / On (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), Auto scale by resolution
Day & Night	Auto(ICR)/Color/BW/External/Schedule
Backlight Compensation	BLC, HLC, WDR
Wide Dynamic Range	150dB
Contrast Enhancement	SSDR (Off / On)
Digital Noise Reduction	SSNR V
Digital Image Stabilization	Support(built-in gyro sensor)
Defog	Support
Motion Detection	8ea, 8point Polygonal zones
Privacy Masking	32ea, polygonal zones - Color : Gray, Green, Red, Blue, Black, White - Mosaic
Gain Control	Support
White Balance	ATW / Narrow ATW / AWC / Manual / Indoor / Outdoor
LDC	Support
Electronic Shutter Speed	Minimum / Maximum / Anti flicker (1/5~1/12,000sec)
Digital PTZ	Support(Preset, Group)
Video Rotation	Flip, Mirror, Hallway view(90°/270°)
Analytics	Defocus detection, Directional detection, Motion detection, Digital auto tracking, Appear/Disappear, Enter/Exit, Loitering, Tampering, Virtual line, Audio detection, Sound classification, Shock detection, Face/upper body detection
Business Intelligence	People counting, Queue management, Heatmap
Serial Interface	None
Alarm I/O	2 configurable I/O ports
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

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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 Illuminator (Optional)	None
Wiper	None
Coaxial Protocol	None
Video Transmission Distance	None
Radiometry	
Temperature detect range	None
Temperature accuracy	None
Temperature detection	None
Additional	None
Network	
Ethernet	RJ-45(10/100/1000BASE-T)
Video Compression	H.265/H.264: Main/High, MJPEG
Resolution	3840x2160, 3328x1872, 3072x1728, 2592x1944, 2688x1520, 1920x1080, 1600x1200, 1280x1024, 1280x960, 1280x720, 1024x768, 800x600, 800x448, 720x576, 720x480, 640x480, 640x360, 320x240
Max. Framerate	H.265/H.264: Max. 30fps/25fps(60Hz/50Hz) MJPEG: Max. 15fps/12fps(60Hz/50Hz)
Smart Codec	Manual(5ea area), WiseStream II
Video Quality Adjustment	H.264/H.265: Target bitrate level control MJPEG: Quality level control
Bitrate Control	H.264/H.265: CBR or VBR MJPEG: VBR
Streaming	Unicast(20 users) / Multicast Multiple streaming(Up to 3 profiles)
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
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

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	IP Address Filtering User access log 802.1X Authentication(EAP-TLS, EAP-LEAP) Device Certificate(Hanwha Techwin Root CA)
Edge Storage	Micro SD/SDHC/SDXC 2slot 512GB(256Gx2)
Application Programming Interface	ONVIF Profile S/G/T 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 8.1 or later, Mac OS X 10.13 or later Recommended Browser: Google Chrome Supported Browser: MS Explore11, MS Edge, Mozilla Firefox(Window 64bit only), Apple Safari(Mac OS X only)
Memory	4GB RAM, 512MB Flash
Environmental	
Operating Temperature / Humidity	-50°C~+60°C(-58°F ~ +140°F) / Less than 95% RH(non condensing) * 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/IP6K9K, IK10+, NEMA4X
Electrical	
Input Voltage	PoE(IEEE802.3af), 12VDC, 24VAC(액세서리)
Power Consumption	PoE : typ 10.7W, max 12.95W 12VDC : typ 9.0W, max 11.5W 24VAC : typ 11.0W, max13.5W
Mechanical	
Color / Material	White / Aluminum
RAL Code	RAL9003
Product dimensions / weight	Ø180x125mm(7.09x4.92"), Weight : 1.9kg
Conduit hole	3/4"
Hanging mount(Dome)	SBP-187HMW, SBP-187HM
Skin cover(Dome)	SBC-180B
Weather cap(Dome)	-
Power module	SPC-100AC
Backbox	-

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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.

Voltage ☐ 230 Vac ☒ 120 Vac ☐ 24 Vac ☐ 12 Vdc ☐ PoE

Frequency ☐ 50 Hz ☒ 60 Hz ☐ Hz

1.2 Variant Model Differences

Added a simple variant model for the purpose of the vendor management and a country of origin for the dualization.

1.3 Device Modifications

Not applicable

1.4 Equipment Under Test

Description	Model Number	Serial Number	Manufacturer	Remarks
NETWORK CAMERA	XNV-9082R	-	HANWHA TECHWIN SECURITY VIETNAM CO.,LTD.	EUT
AC accessories	-	-	-	-

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1.5 Support Equipments

Description	Model Number	Serial Number	Manufacturer	Remarks
AC/DC Adapter	2ACB022F	-	Channel Well Technology (Guangzhou) Co.,Ltd.	-
AC/AC Adapter	DRL-246000AC	-	Dream Electronics Co., Ltd.	-
PoE Adapter	ANY4805C-LT1	-	ANY ELECTRONICS CO.,LTD.	-
Notebook	LG15N54	410NZXE015458	LG Electronics Co., Ltd.	-
Notebook Adapter	ADP-90WH B	84ZW19F1747	DELTA ELECTRONICS(JIANGSU) LTD.	-
Speaker	BR1000A Cuve Black 2	-	DONGGUAN EDIFIER TECHNOLOGY Co., Ltd	-
MIC	CMK-303	-	-	-
Alarm	-	-	-	-
Button Alarm	-	-	-	-
Alarm Adapter	HN1220	-	Wifitech	-
IPhone	A1586	-	APPLE .Inc	-
Micro SD Card	-	-	SanDisk	8 GB

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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)	RJ-45	Notebook	RJ-45	3.0	U
	Audio Out	Speaker	3.5 mm	1.4	U
	Audio In	MIC	3.5 mm	1.4	U
	Alarm Out	Alarm	Alarm In	3.0	U
	Alarm In	Button Alarm	Alarm Out	3.0	U
	SLOT	Micro SD Card	SLOT	-	-
Notebook	3.5 mm	IPhone	3.5 mm	0.5	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 Adapter	RJ-45	3.0	S
	Audio Out	Speaker	3.5 mm	1.4	U
	Audio In	MIC	3.5 mm	1.4	U
	Alarm Out	Alarm	Alarm In	3.0	U
	Alarm In	Button Alarm	Alarm Out	3.0	U
	SLOT	Micro SD Card	SLOT	-	-
Notebook	RJ-45	PoE Adapter	RJ-45	3.0	S
	3.5 mm	IPhone	3.5 mm	0.5	U

* Unshielded=U, Shielded=S

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■ AC Mode

Start		END		Cable Spec.	
Description	I/O Port	Description	I/O Port	Length	Shield
NETWORK CAMERA (EUT)	RJ-45	Note book	RJ-45	3.0	U
	Audio Out	Speaker	3.5 mm	1.4	U
	Audio In	MIC	3.5 mm	1.4	U
	Alarm Out	Alarm	Alarm In	3.0	U
	Alarm In	Button Alarm	Alarm Out	3.0	U
	SLOT	Micro SD Card	SLOT	-	-
	SLOT	AC Accessories	SLOT	-	-
Notebook	3.5 mm	IPhone	3.5 mm	0.5	U

* Unshielded=U, Shielded=S

1.7 EUT Operating Mode(s)

Test mode	operating
DC / PoE / AC Mode	Checked the normal operated of the web viewer and network ping tested.

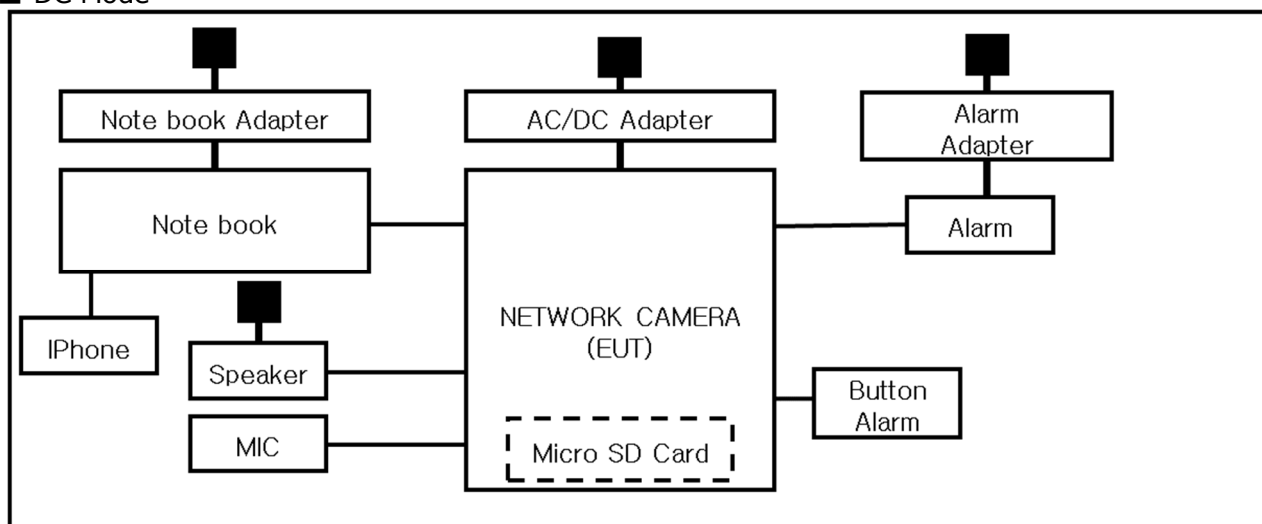
EUT Test operating S/W		
Name	Version	Manufacture Company
Web Viewer	-	-

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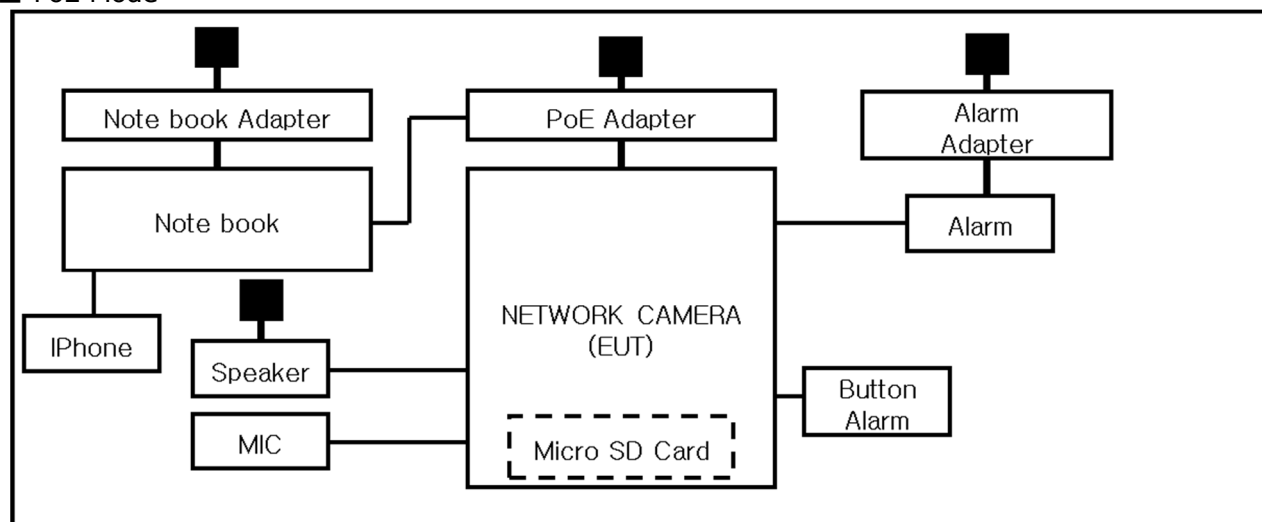
1.8 Configuration

■ AC Main
 □ DC Main

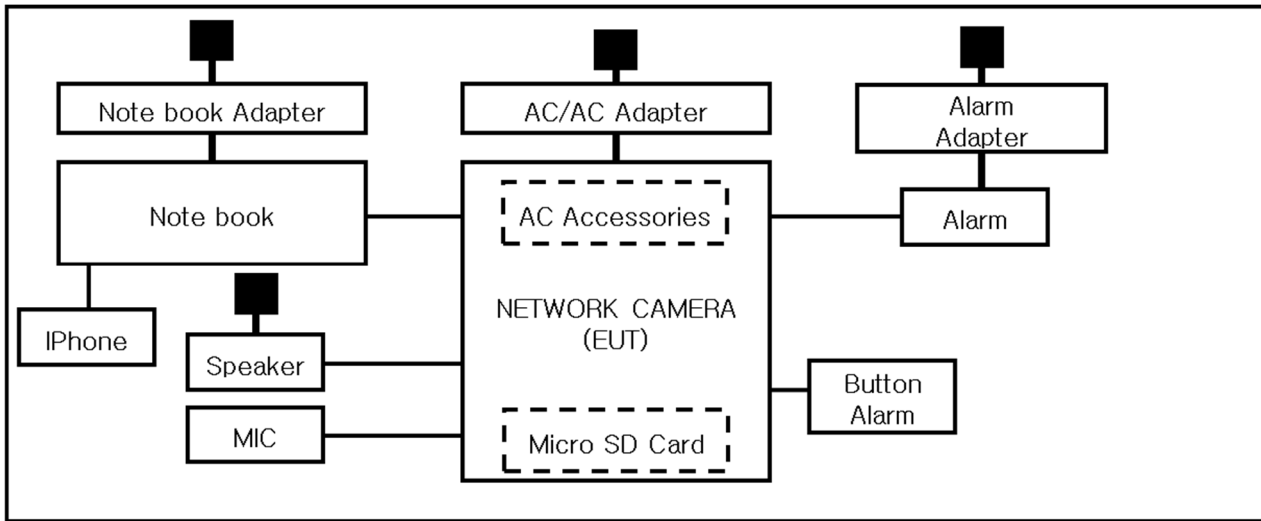
■ DC Mode



■ PoE Mode



■ AC Mode



1.9 Remarks when standards applied

The USB port and VIDEO port are excluded for testing as the manager port.

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. The sites are constructed in conformance with the requirements of ANSI C63.4:2014 and CISPR 16-1-4:2012

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	 23298-1
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 0003



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 C63.4-2014 | ☒ Class A | ☐ Class B |
| ☒ IC Regulation ICES-003 : 2016 | | |
| ☐ CAN/CSA CISPR 22-10 | ☐ Class A | ☐ Class B |
| ☒ ANSI C63.4-2014 | ☒ Class A | ☐ Class B |
| ☐ 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

May. 06, 2020

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	ESU26	R & S	100552	04, 01, 2021
☒	LISN	ENV216	R & S	101787	01, 02, 2021
☒	LISN	ESH2-Z5	R & S	100450	01, 02, 2021
☒	PULSE LIMITER	ESH3-Z2	R & S	101915	01, 02, 2021

Test Conditions

Temperature: 23,3 °C

Relative Humidity: 51,5 % 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

RemarksSee Appendix A for test data.

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2.2 Radiated Electric Field Emissions(Below 1 GHz)

Test Date

May. 07, 2020

Test Location☐ OPEN AREA TEST SITE #2 ☒ SEMI ANECHOIC CHAMBER #4(10 m)**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, 2021
☒	AMPLIFIER	SCU 01	R & S	100603	11, 25, 2020
☒	TRILOG-BROADBAND ANTENNA	VULB9163	Schwarzbeck	715	11, 29, 2020
☒	ATTENUATOR	8491A	HP	32173	03, 10, 2021

Test Conditions

Temperature: 23,9 °C
Relative Humidity: 49,4 % 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

RemarksSee Appendix A for test data.

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Report No.:

KES-EM-20T0313

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2.3 Radiated Electric Field Emissions(Above 1 GHz)

Test Date

May. 07, 2020

Test Location

SEMI ANECHOIC CHAMBER #4(10 m)

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, 2021
☒	PREAMPLIFIER	8449B	AGILENT	3008A01742	01, 02, 2021
☐	ATTENUATOR	8491A	HP	35496	03, 10, 2021
☒	HORN ANTENNA	BBHA 9120D	SCHWARZBECK	9120D-1802	12, 13, 2020

Test Conditions

Temperature: 23,9 °C
Relative Humidity: 49,4 % 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

RemarksSee Appendix A for test data.

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APPENDIX A – TEST DATA

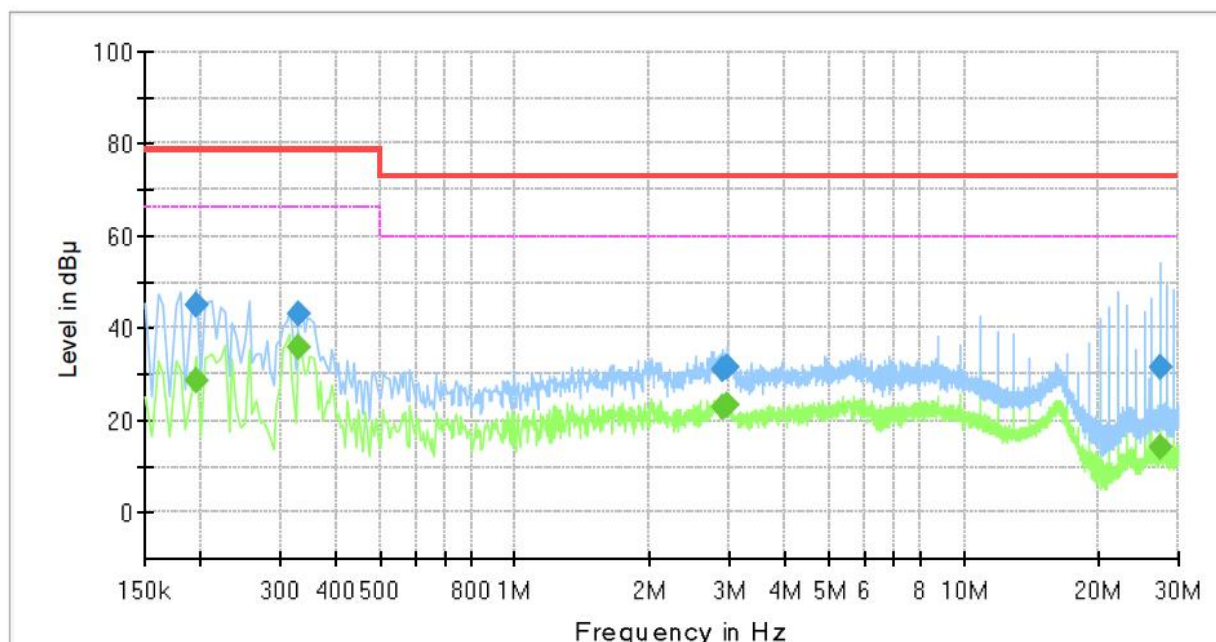
Conducted Emissions at Mains Power Ports

■ DC Mode

HOT LINE

Common Information

Test Description:	Conducted Emission
Model No.:	XNV-9082R
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)
0.195000	---	28.52	66.00	37.48	1000.0	9.000	L1	19.5
0.195000	44.86	---	79.00	34.14	1000.0	9.000	L1	19.5
0.330000	---	36.03	66.00	29.97	1000.0	9.000	L1	19.6
0.330000	43.01	---	79.00	35.99	1000.0	9.000	L1	19.6
2.905000	---	22.96	60.00	37.04	1000.0	9.000	L1	19.7
2.905000	30.96	---	73.00	42.04	1000.0	9.000	L1	19.7
2.965000	---	23.17	60.00	36.83	1000.0	9.000	L1	19.7
2.965000	31.29	---	73.00	41.71	1000.0	9.000	L1	19.7
27.305000	---	14.16	60.00	45.84	1000.0	9.000	L1	20.4
27.305000	31.72	---	73.00	41.28	1000.0	9.000	L1	20.4



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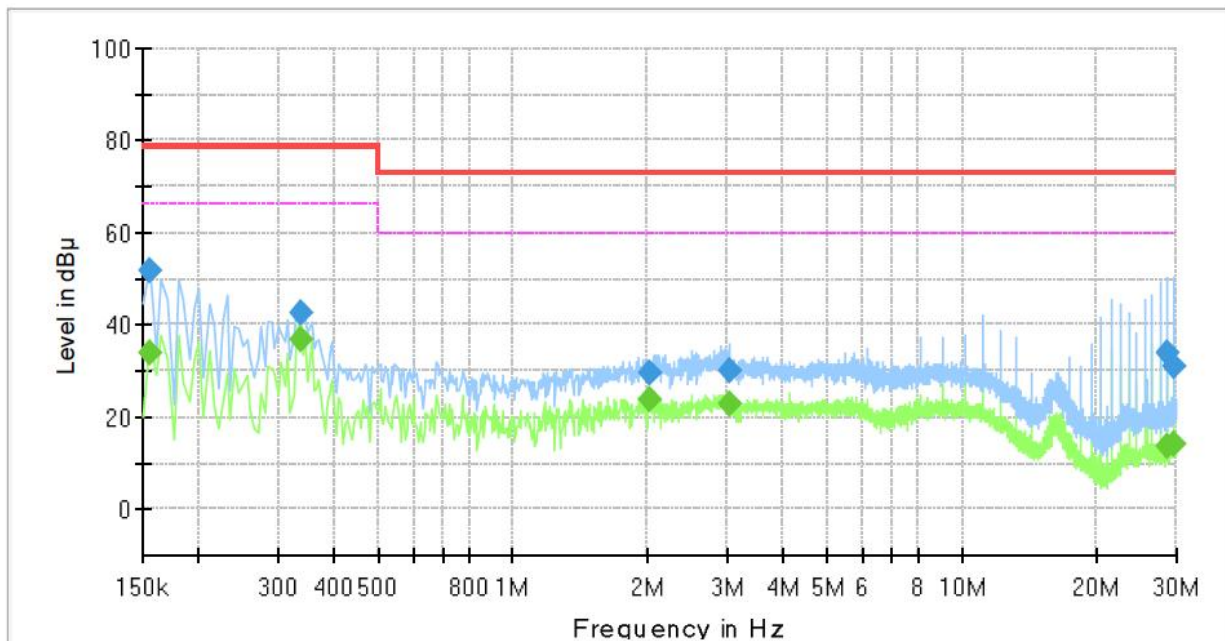
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NEUTRAL LINE

Common Information

Test Description:	Conducted Emission
Model No.:	XNV-9082R
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	---	33.73	66.00	32.27	1000.0	9.000	N	19.5
0.155000	51.63	---	79.00	27.37	1000.0	9.000	N	19.5
0.335000	---	36.56	66.00	29.44	1000.0	9.000	N	19.6
0.335000	42.68	---	79.00	36.32	1000.0	9.000	N	19.6
2.015000	---	23.71	60.00	36.29	1000.0	9.000	N	19.7
2.015000	29.78	---	73.00	43.22	1000.0	9.000	N	19.7
3.030000	---	22.73	60.00	37.27	1000.0	9.000	N	19.7
3.030000	30.02	---	73.00	42.98	1000.0	9.000	N	19.7
28.670000	---	13.49	60.00	46.51	1000.0	9.000	N	20.5
28.670000	34.10	---	73.00	38.90	1000.0	9.000	N	20.5
29.695000	---	14.36	60.00	45.64	1000.0	9.000	N	20.5
29.695000	30.89	---	73.00	42.11	1000.0	9.000	N	20.5

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■ AC Mode

HOT LINE

Common Information

Test Description:

Model No.:

Phase:

Mode:

Operator Name:

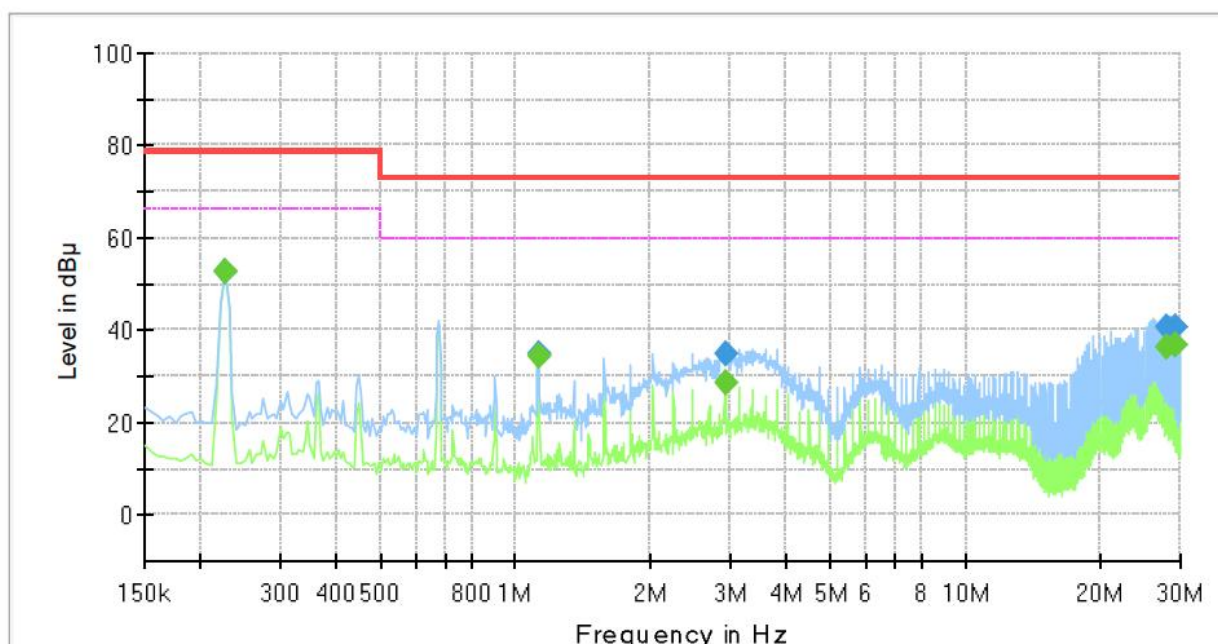
Conducted Emission

XNV-9082R

L1

AC

KES



Final Result

Frequency (MHz)	QuasiPeak (dBμV)	CAverage (dBμV)	Limit (dBμV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.225000	---	52.54	66.00	13.46	1000.0	9.000	L1	19.6
0.225000	52.53	---	79.00	26.47	1000.0	9.000	L1	19.6
1.125000	---	34.17	60.00	25.83	1000.0	9.000	L1	19.7
1.125000	34.79	---	73.00	38.21	1000.0	9.000	L1	19.7
2.920000	---	28.39	60.00	31.61	1000.0	9.000	L1	19.7
2.920000	34.88	---	73.00	38.12	1000.0	9.000	L1	19.7
27.865000	---	36.48	60.00	23.52	1000.0	9.000	L1	20.4
27.865000	40.78	---	73.00	32.22	1000.0	9.000	L1	20.4
29.210000	---	36.91	60.00	23.09	1000.0	9.000	L1	20.4
29.210000	40.58	---	73.00	32.42	1000.0	9.000	L1	20.4

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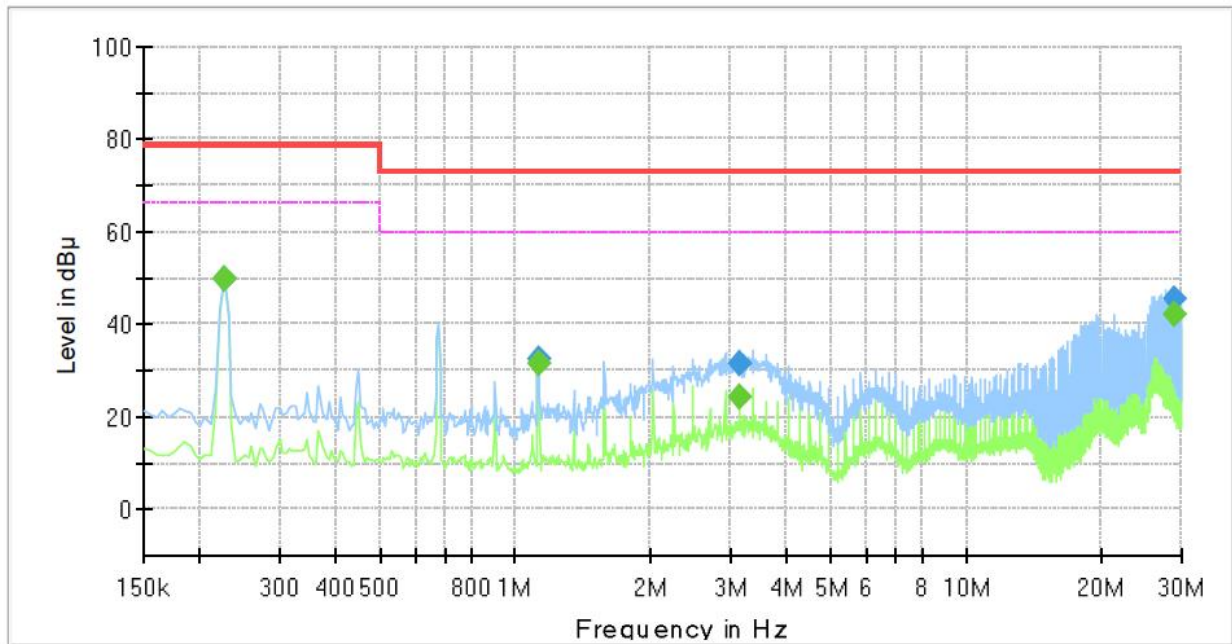
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NEUTRAL LINE

Common Information

Test Description:	Conducted Emission
Model No.:	XNV-9082R
Phase:	N
Mode:	AC
Operator Name:	KES



Final Result

Frequency (MHz)	QuasiPeak (dBμV)	CAverage (dBμV)	Limit (dBμV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.225000	---	49.74	66.00	16.26	1000.0	9.000	N	19.5
0.225000	49.73	---	79.00	29.27	1000.0	9.000	N	19.5
1.125000	---	31.70	60.00	28.30	1000.0	9.000	N	19.7
1.125000	32.44	---	73.00	40.56	1000.0	9.000	N	19.7
3.145000	---	24.20	60.00	35.80	1000.0	9.000	N	19.7
3.145000	31.66	---	73.00	41.34	1000.0	9.000	N	19.7
28.985000	---	41.99	60.00	18.01	1000.0	9.000	N	20.5
28.985000	45.58	---	73.00	27.42	1000.0	9.000	N	20.5

◆ Calculation

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

QuasiPeak / CAverage : The Final Value

Reading Value : Not shown in the table.

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



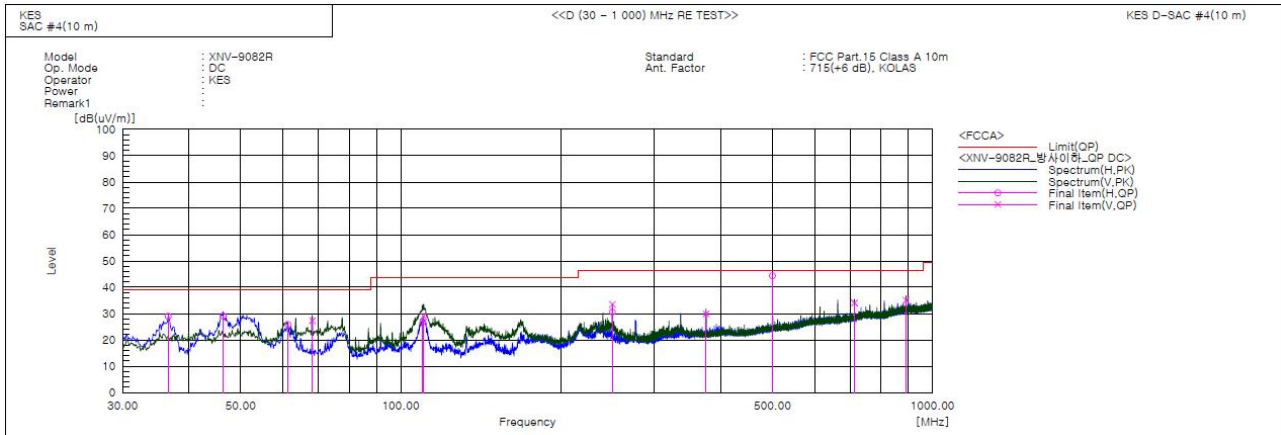
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Radiated Electric Field Emissions(Below 1 GHz)

■ 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	36.548	H	53.6	-24.6	29.0	39.0	10.0	400.0	98.0	
2	46.369	H	50.8	-21.7	29.1	39.0	9.9	371.0	288.0	
3	61.404	H	48.5	-22.7	25.8	39.0	13.2	387.0	249.0	
4	68.194	V	51.8	-24.5	27.3	39.0	11.7	111.0	62.0	
5	110.025	H	49.5	-22.6	26.9	43.5	16.6	385.0	358.0	
6	110.389	V	51.7	-22.6	29.1	43.5	14.4	151.0	324.0	
7	249.948	V	53.4	-19.9	33.5	46.5	13.0	109.0	165.0	
8	249.948	H	50.5	-19.9	30.6	46.5	15.9	334.0	272.0	
9	374.956	V	45.5	-15.6	29.9	46.5	16.6	121.0	233.0	
10	499.965	H	56.9	-12.5	44.4	46.5	2.1	154.0	125.0	
11	712.638	V	42.2	-8.1	34.1	46.5	12.4	124.0	213.0	
12	890.996	V	40.5	-5.4	35.1	46.5	11.4	151.0	141.0	

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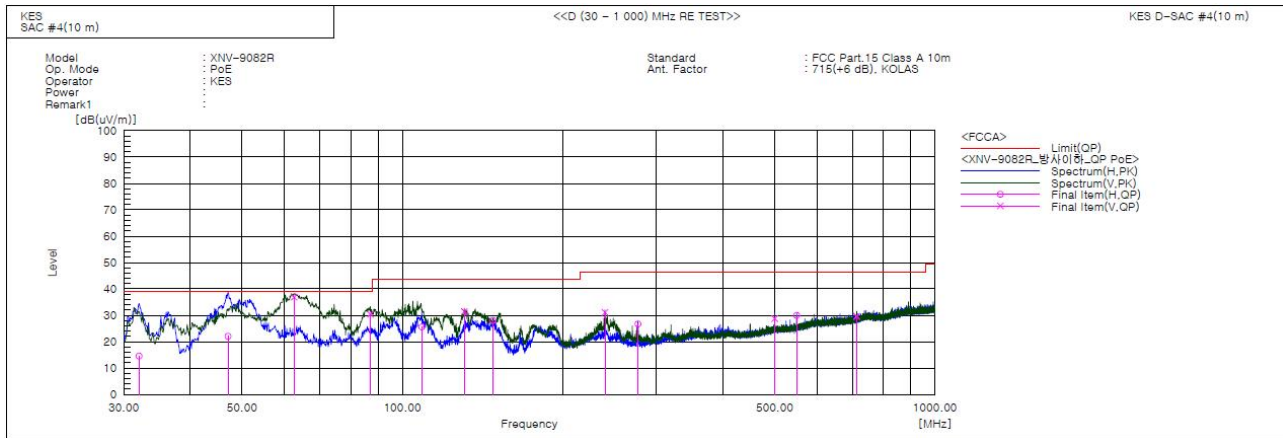


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■ PoE Mode



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	32.061	H	39.7	-25.1	14.6	39.0	24.4	388.0	309.0	
2	47.096	H	43.7	-21.6	22.1	39.0	16.9	400.0	349.0	
3	62.616	V	59.9	-23.0	36.9	39.0	2.1	100.0	233.0	
4	87.109	V	56.0	-25.6	30.4	39.0	8.6	143.0	205.0	
5	108.813	H	48.1	-22.5	25.6	43.5	17.9	391.0	344.0	
6	130.759	V	57.0	-25.5	31.5	43.5	12.0	112.0	165.0	
7	147.855	H	54.0	-25.9	28.1	43.5	15.4	367.0	234.0	
8	240.005	V	51.1	-20.0	31.1	46.5	15.4	107.0	122.0	
9	276.986	H	46.1	-19.4	26.7	46.5	19.8	375.0	98.0	
10	499.965	V	41.3	-12.5	28.8	46.5	17.7	111.0	23.0	
11	550.041	H	41.6	-11.6	30.0	46.5	16.5	345.0	344.0	
12	712.638	V	37.7	-8.1	29.6	46.5	16.9	122.0	197.0	

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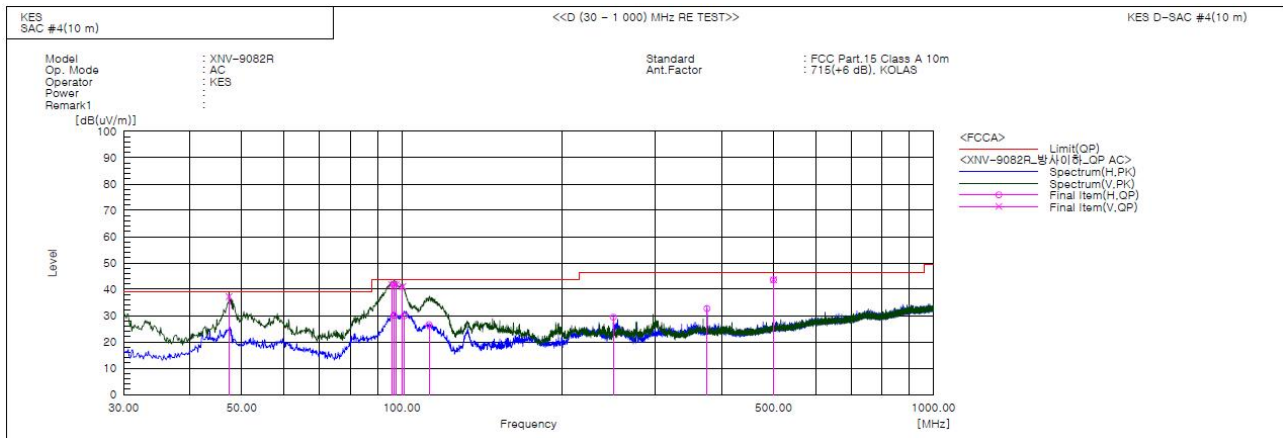


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AC Mode



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	47.339	V	59.0	-21.7	37.3	39.0	1.7	103.0	113.0	
2	95.718	V	65.1	-23.3	41.8	43.5	1.7	141.0	269.0	
3	96.688	H	53.2	-23.1	30.1	43.5	13.4	387.0	281.0	
4	96.809	V	65.0	-23.0	42.0	43.5	1.5	100.0	247.0	
5	97.536	V	64.6	-22.9	41.7	43.5	1.8	139.0	265.0	
6	100.325	V	63.6	-22.6	41.0	43.5	2.5	122.0	269.0	
7	101.053	H	52.5	-22.6	29.9	43.5	13.6	400.0	303.0	
8	112.571	H	49.6	-23.0	26.6	43.5	16.9	392.0	303.0	
9	249.948	H	49.5	-20.1	29.4	46.5	17.1	394.0	13.0	
10	374.956	H	48.6	-15.9	32.7	46.5	13.8	232.0	45.0	
11	499.965	V	56.5	-12.9	43.6	46.5	2.9	111.0	332.0	
12	499.965	H	56.5	-12.9	43.6	46.5	2.9	199.0	234.0	

◆ Calculation – SAC #4(10 m)

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

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

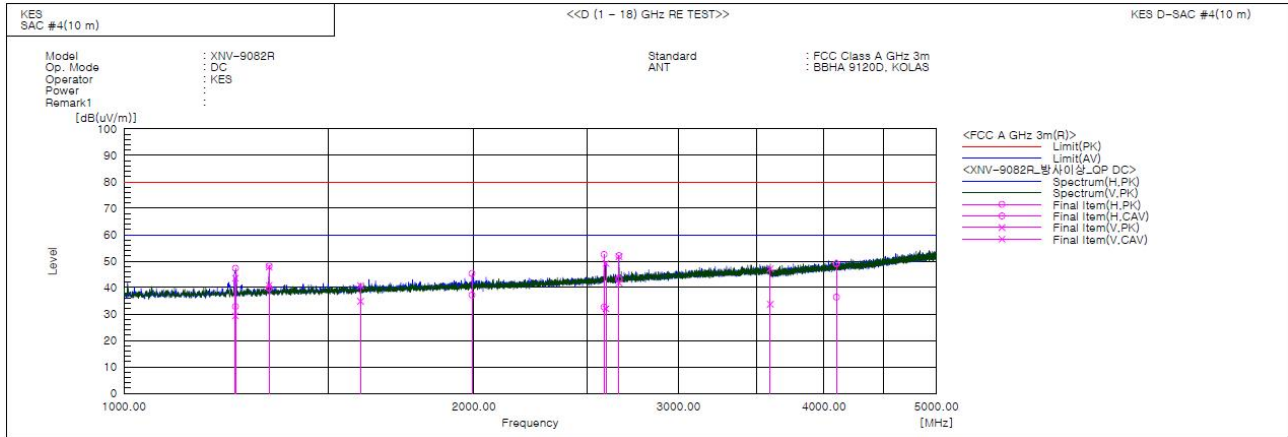
Reading(QP) : Reading value, Result(QP) : Reading value + Factor value

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



Radiated Electric Field Emissions(Above 1 GHz)

■ DC Mode



Final Result

No.	Frequency [MHz]	(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	1246.525	V	47.3	33.0	-3.7	43.6	29.3	80.0	60.0	36.4	30.7	100.0	40.0	
2	1247.115	H	51.0	36.6	-3.7	47.3	32.9	80.0	60.0	32.7	27.1	100.0	312.0	
3	1332.825	V	51.0	44.1	-3.2	47.8	40.9	80.0	60.0	32.2	19.1	100.0	111.0	
4	1332.940	H	51.3	43.1	-3.2	48.1	39.9	80.0	60.0	31.9	20.1	100.0	148.0	
5	1597.500	V	42.7	36.8	-1.9	40.8	34.9	80.0	60.0	39.2	25.1	100.0	5.0	
6	1992.000	H	45.4	37.3	-0.1	45.3	37.2	80.0	60.0	34.7	22.8	100.0	96.0	
7	2588.335	H	49.8	30.0	2.7	52.5	32.7	80.0	60.0	27.5	27.3	100.0	19.0	
8	2597.410	V	46.5	29.4	2.7	49.2	32.1	80.0	60.0	30.8	27.9	100.0	145.0	
9	2665.785	V	48.7	38.7	3.1	51.8	41.8	80.0	60.0	28.2	18.2	100.0	93.0	
10	2666.045	H	49.0	40.2	3.1	52.1	43.3	80.0	60.0	27.9	16.7	100.0	146.0	
11	3597.500	V	41.0	27.5	6.2	47.2	33.7	80.0	60.0	32.8	26.3	100.0	149.0	
12	4100.500	H	40.3	27.6	8.8	49.1	36.4	80.0	60.0	30.9	23.6	100.0	264.0	

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PoE Mode



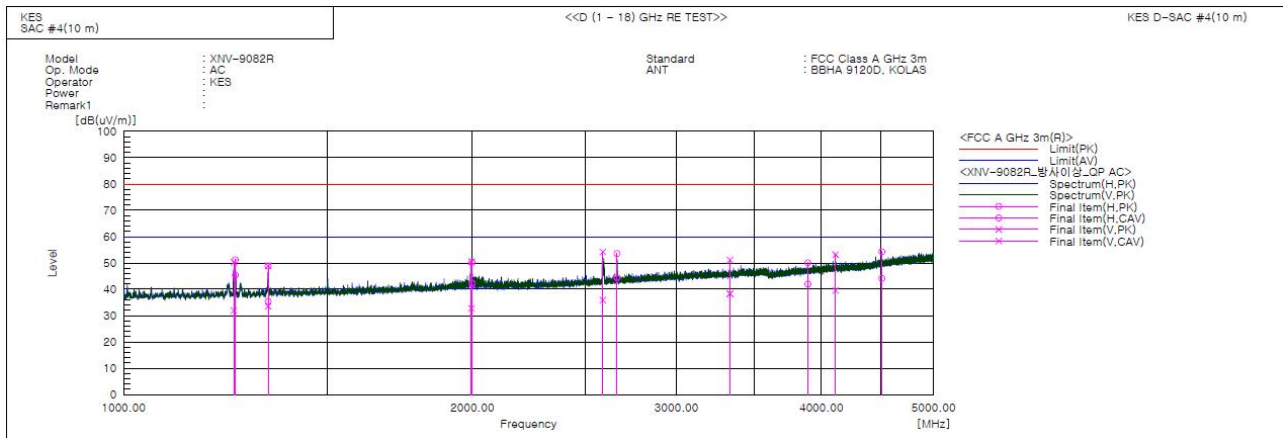
Final Result

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	1248.230	H	50.9	36.8	-3.7	47.2	33.1	80.0	60.0	32.8	26.9	271.0	298.0	
2	1249.515	V	46.9	32.5	-3.7	43.2	28.8	80.0	60.0	36.8	31.2	114.0	39.0	
3	1332.500	H	44.1	36.3	-3.2	40.9	33.1	80.0	60.0	39.1	26.9	382.0	56.0	
4	1691.000	V	41.7	35.4	-1.5	40.2	33.9	80.0	60.0	39.8	26.1	122.0	290.0	
5	1994.000	H	43.5	32.7	-0.1	43.4	32.6	80.0	60.0	36.6	27.4	297.0	85.0	
6	2357.000	V	40.0	30.7	1.5	41.5	32.2	80.0	60.0	38.5	27.8	141.0	282.0	
7	2588.930	H	49.1	31.3	2.7	51.8	34.0	80.0	60.0	28.2	26.0	100.0	10.0	
8	2598.980	V	46.0	29.4	2.7	48.7	32.1	80.0	60.0	31.3	27.9	109.0	130.0	
9	2993.500	V	40.6	26.9	4.7	45.3	31.6	80.0	60.0	34.7	28.4	127.0	166.0	
10	3578.500	V	40.2	22.7	6.2	46.4	28.9	80.0	60.0	33.6	31.1	129.0	103.0	
11	4108.500	H	38.0	25.5	8.8	46.8	34.3	80.0	60.0	33.2	25.7	399.0	237.0	
12	4496.755	H	37.2	24.0	10.6	47.8	34.6	80.0	60.0	32.2	25.4	344.0	204.0	

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AC 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	1245.000	V	54.0	35.7	-3.7	50.3	32.0	80.0	60.0	29.7	28.0	151.0	185.0	
2	1248.500	H	54.9	49.1	-3.7	51.2	45.4	80.0	60.0	28.8	14.6	389.0	179.0	
3	1332.500	V	52.2	36.8	-3.2	49.0	33.6	80.0	60.0	31.0	26.4	163.0	344.0	
4	1332.500	H	52.0	38.7	-3.2	48.8	35.5	80.0	60.0	31.2	24.5	391.0	338.0	
5	1996.000	V	50.7	32.9	-0.1	50.6	32.8	80.0	60.0	29.4	27.2	111.0	15.0	
6	1998.000	H	50.3	42.4	-0.1	50.2	42.3	80.0	60.0	29.8	17.7	382.0	2.0	
7	2590.775	V	51.5	33.2	2.7	54.2	35.9	80.0	60.0	25.8	24.1	266.4	69.0	
8	2665.700	H	50.5	41.4	3.1	53.6	44.5	80.0	60.0	26.4	15.5	374.9	24.0	
9	3336.000	V	45.3	32.5	5.8	51.1	38.3	80.0	60.0	28.9	21.7	172.0	259.0	
10	3895.000	H	42.2	34.1	7.9	50.1	42.0	80.0	60.0	29.9	18.0	399.0	314.0	
11	4113.500	V	44.4	30.8	8.8	53.2	39.6	80.0	60.0	26.8	20.4	107.0	286.0	
12	4510.500	H	43.6	33.4	10.7	54.3	44.1	80.0	60.0	25.7	15.9	377.0	105.0	

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

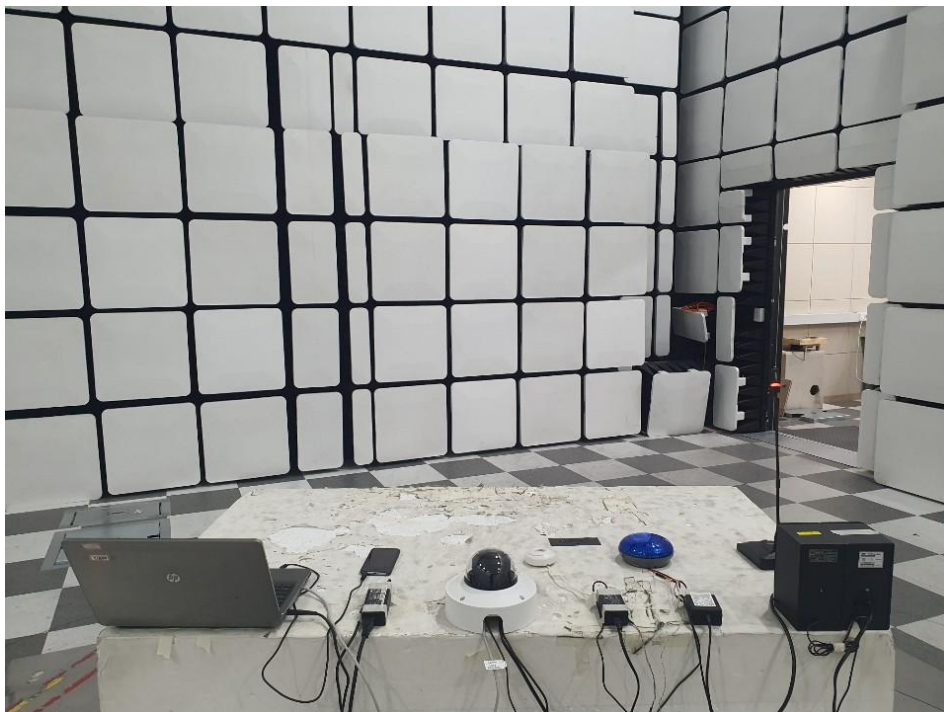
■ DC / AC Mode



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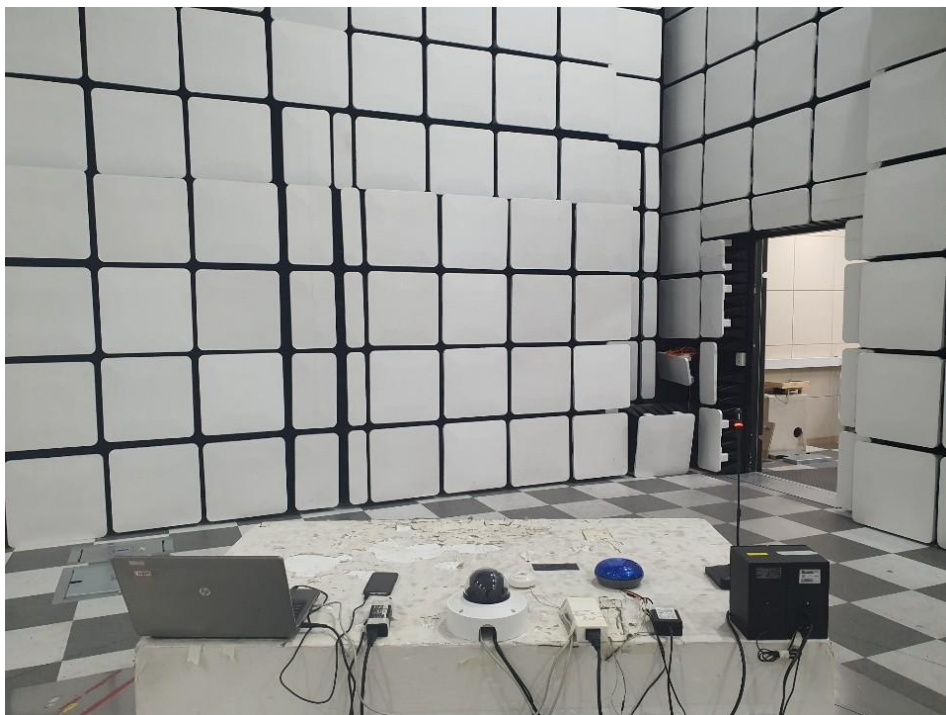
Radiated Electric Field Emissions(Below 1 GHz)

■ DC / AC Mode



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■ PoE Mode



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Radiated Electric Field Emissions(Above 1 GHz)

■ DC / AC Mode



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■ PoE Mode



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EUT External Photographs

(Top)



(Bottom)



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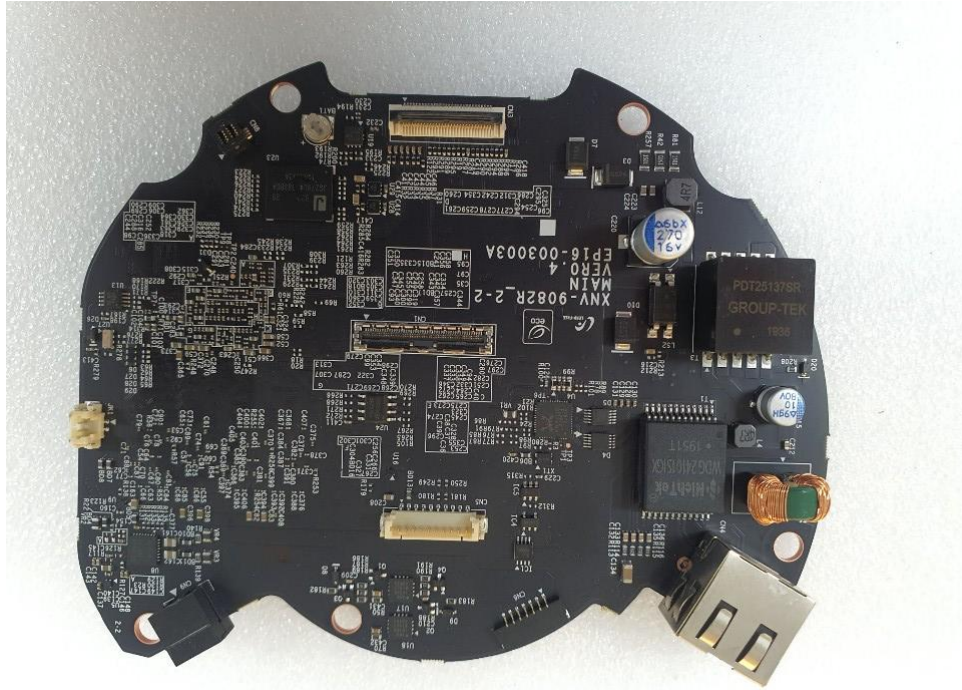
EUT Internal Photographs

(Internal View)

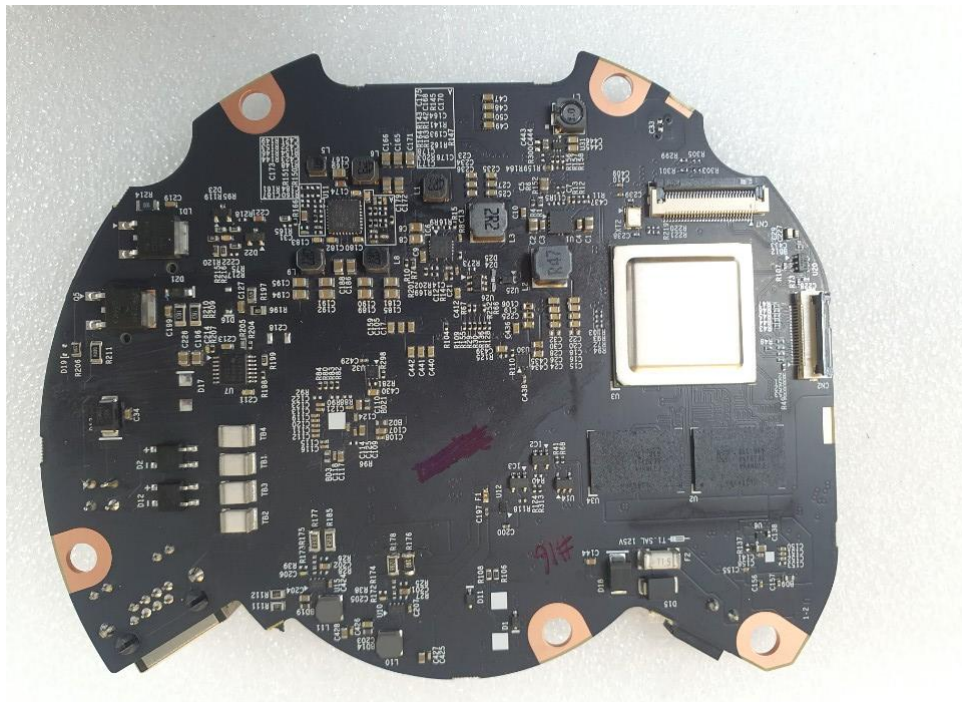


EUT Internal View – Main Board

(Top)



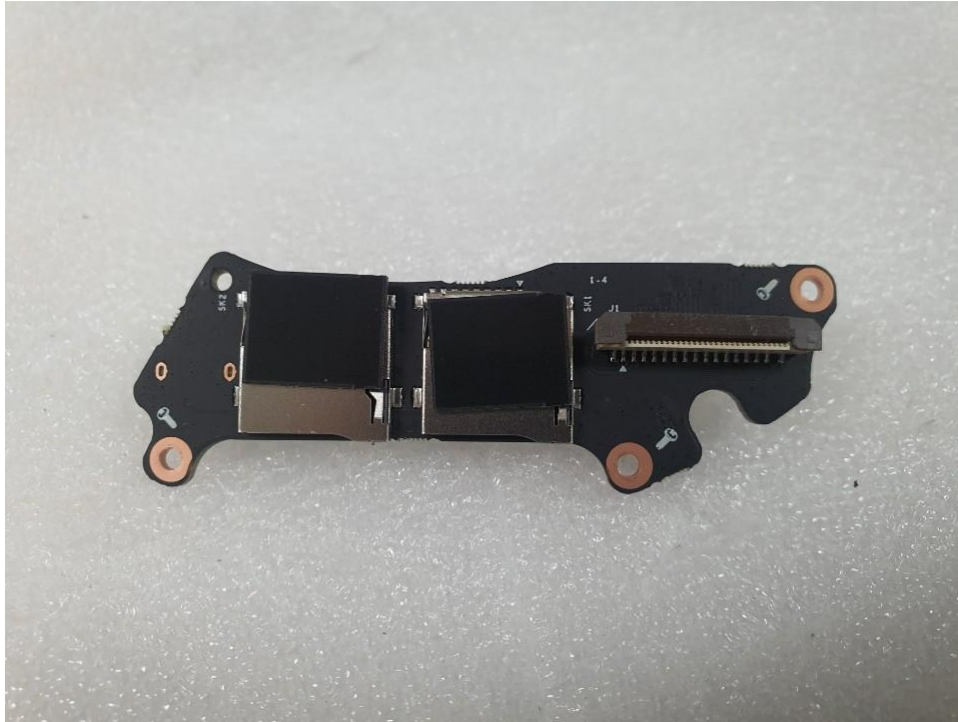
(Bottom)



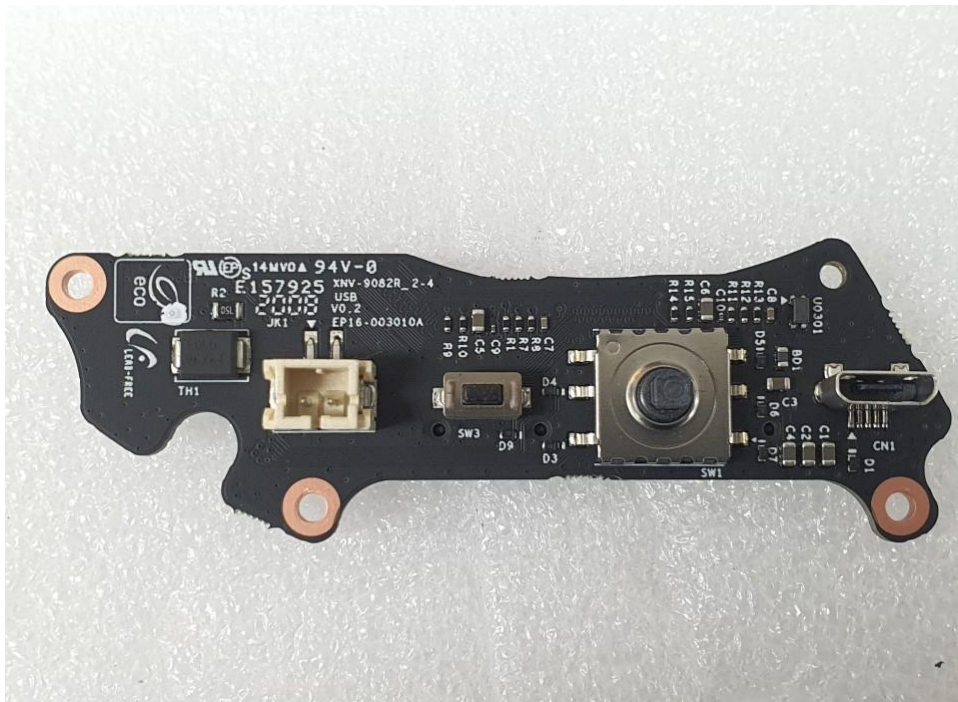
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EUT Internal View – SUB Board 1

(Top)



(Bottom)



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EUT Internal View – SUB Board 2

(Top)



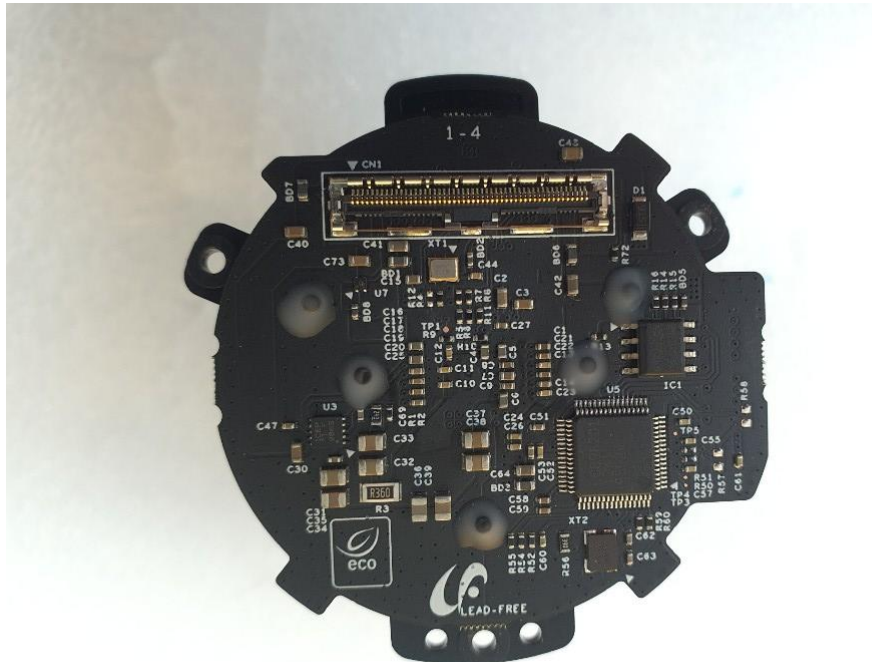
(Bottom)



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EUT Internal View – SUB Board 3

(Top)

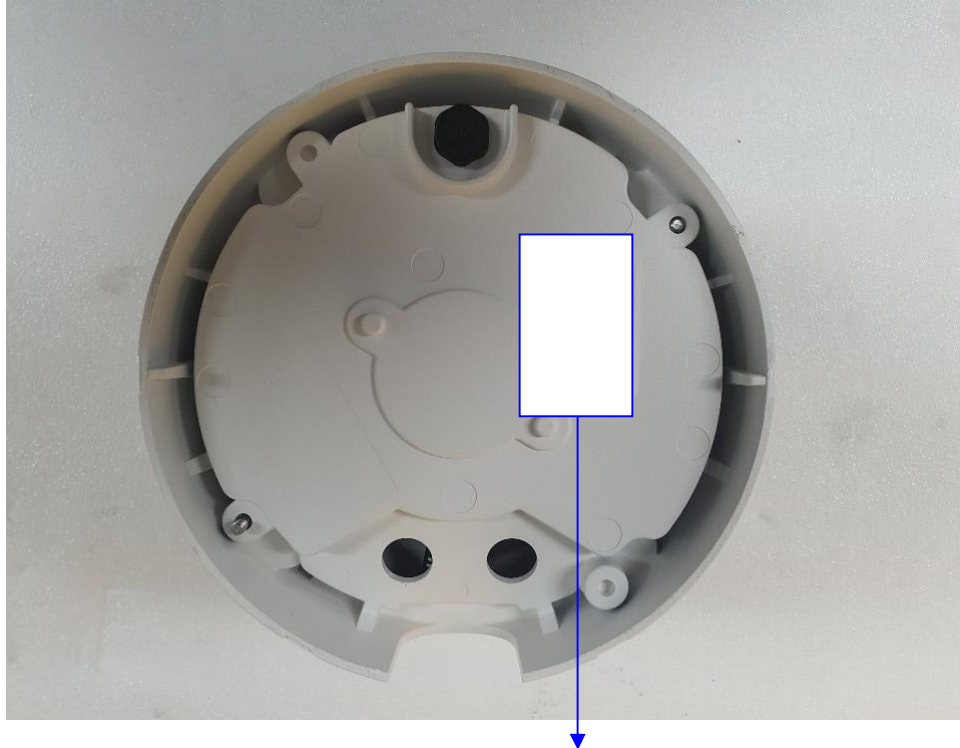


(Bottom)



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Label Photographs



CAN ICES-3(A) / NMB-3(A)

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation

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.