



EMC TEST REPORT

Test Report No. : KES-E1-19T0112-R2
Date of Issue : Feb. 24, 2023
Product name : Network Camera
Model/Type No. : XNV-6081R
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 : Jan. 21, 2019
Test date : Jan. 30, 2019 ~ Feb. 06, 2019
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
Feb. 21, 2019	KES-E1-19T0112	Issued
Jun. 08, 2022	KES-E1-19T0112-R1	Factory deletion and Test Regulations update due to customer request.
Feb. 24, 2023	KES-E1-19T0112-R2	- 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:

Items		Description		
		XNV-6081/XNV-6081R	XND-6081V/XND-6081RV	XND-6081F/XND-6081RF
Video	Imaging Device	1/2.8" 2MP CMOS		
	Effective Pixels	1945(H) x 1097(V)		
	NETD	None		
	Pixel Size	None		
	Min. Illumination	XNV-6081/XND-6081V/XND-6081F - Color : 0.015 Lux(F1.4, 1/30sec), B/W : 0.0015 Lux(F1.4, 1/30sec) XNV-6081R/XND-6081RV/XND-6081RF - Color : 0.015 Lux(F1.4, 1/30sec), B/W : 0 Lux(IR LED on)		
Lens	Video Out	CVBS: 1.0 Vp-p / 75Ω composite, 720x480(N), 720x576(P) for installation USB : Micro USB type B, 1280x720 for installation		
	Focal Length (Zoom Ratio)	2.8~12mm(4.3x) motorized varifocal		
	Max. Aperture Ratio	F1.4(Wide) ~ F3.6(Tele)		
	Angular Field of View	H : 119.5°(Wide) ~ 27.9°(Tele) V : 62.8°(Wide) ~ 15.7°(Tele) D : 142.1°(Wide) ~ 32.0°(Tele)		
	Min. Object Distance	0.5m (1.64ft)		
	Focus Control	Simple focus		
	Lens Type	DC Auto Iris, P-iris		
	Mount Type	None		
	Optional Lens	None		
	Pan / Tilt / Rotate range	0°~360° / -45°~85° / 0°~355°		
Pan / Tilt / Rotate	Pan Range	Remote adjustment (Max. 200 cycles)		
	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	50m(164.04ft)		
	Camera Title	Displayed up to 85 characters		
	Day & Night	Auto (ICR)		
	Backlight Compensation	BLC, HLC, WDR, SSDR		
	Wide Dynamic Range	150dB		
	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	Low / Middle / High		
	White Balance	ATW / AWC / Manual / Indoor / Outdoor		
	LDC	Support		
	Electronic Shutter Speed	Minimum / Maximum / Anti flicker (2 ~ 1/12,000sec)		
	Video Rotation	Flip, Mirror, Hallway view(90°/270°)		
	Analytics	Defocus detection, Directional detection, Fog detection, Face detection, Motion detection, Digital auto tracking, Appear/Disappear, Enter/Exit, Loitering, Tampering, Virtual line, Audio detection, Sound classification, Shock detection		
	Business Intelligence	People counting, Queue management, Heatmap		
	Serial Interface	None		
	Alarm I/O	Input 1ea / Output 1ea		
	Alarm Triggers	Analytics, Network disconnect, Alarm input		

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Items	Description		
	XNV-6081/XNV-6081R	XND-6081V/XND-6081RV	XND-6081F/XND-6081RF
Operational	Alarm events	• File upload via FTP, 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: approx. 2K Ohm	Selectable (Mic IN/Line IN/Built-in mic) Supply voltage: 2.5VDC(4mA), Input impedance: approx. 2K Ohm
	Audio out	Line out, Max output level: 1 Vrms	
	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 (10/100BASE-T)	
	Video Compression	H.265/H.264: Main/Baseline/High, MJPEG	
	Resolution	1920x1080, 1280x1024, 1280x960, 1280x720, 1024x768, 800x600, 800x448, 720x576, 720x480, 640x480, 640x360, 320x240	
	Max. Framerate	H.265/H.264: Max. 60fps/50fps(60Hz/50Hz) MJPEG: Max. 30fps/25fps(60Hz/50Hz)	
Network	Smart Codec	Manual(Sea area), WiseStream II	
	Bitrate Control	H.264/H.265 : CBR or VBR MJPEG : VBR	
	Streaming	Unicast(20 users) / Multicast Multiple streaming(Up to 10 profiles)	
	Audio Compression	G.711 μ -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, PIM-SM, UPnP, Bonjour, LLDP	
	Security	HTTPS(SSL) Login Authentication Digest Login Authentication IP Address Filtering User access Log 802.1x Authentication (EAP-TLS, EAP-LEAP)	
	Edge Storage	Micro SD/SDHC/SDXC 2slot 512GB	
	Application Programming Interface	ONVIF Profile S/G/T SUNAPI(HTTP API) Wisenet Open Platform	
	Web Viewer	Supported OS : Windows 7 / 8.1 / 10, MAC OS X 10.10, 10.11, 10.12 Recommended Browser : Google Chrome Supported web browsers : MS Explorer11, MS Edge, Mozilla Firefox (Window 64bit only), Apple Safari (Mac OS X only)	
	Memory	1024MB RAM, 256MB Flash	

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Items		Description		
		XNV-6081/XNV-6081R	XND-6081V/XND-6081RV	XND-6081F/XND-6081RF
Environmental	Operating Temperature / Humidity	-50°C ~ +60°C (-58°F ~ +140°F) / Less than 90% RH * Start up should be done at above -35°C	-25°C ~ +60°C (-13°F ~ +140°F) / Less than 90% RH	
	Storage Temperature / Humidity	-50°C ~ +60°C (-58°F ~ +140°F) / Less than 90% RH		
	Certification	IP66/IP67, IK10+, NEMA4X	IP52, IK10	IP52, Plenum rate(UL2820)
Electrical	Input Voltage	PoE(IEEE802.3af, Class3), 24VAC, 12VDC	PoE(IEEE802.3af, Class3), 12VDC	
	Power Consumption	XNV-6081 - PoE: Max 7.0W, typical 4.90W 12VDC: Max 5.4W, typical 3.70W 24VAC: Max 7.1W, typical 4.90W XNV-6081R - PoE: Max 12.95W, typical 10.30W 12VDC: Max 10.8W, typical 8.40W 24VAC: Max 13.3W, typical 10.40W XND-6081V/XND-6081F - PoE: Max 7.0W, typical 4.20W 12VDC: Max 5.4W, typical 3.10W XND-6081RV/XND-6081RF - PoE: Max 12.95W, typical 9.4W 12VDC: Max 10.8W, typical 7.6W		
Mechanical	Color / Material	White / Aluminum		
	RAL Code	RAL9003		
	Product dimensions / weight	XNV-6081 : Ø180x125mm(7.09x4.92"), 1.45kg(3.20 lb) XNV-6081R : Ø180x125mm(7.09x4.92"), 1.75kg(3.86 lb)	Ø160x125mm (6.30x4.92"), 1.45kg(3.20 lb)	Ø205x155mm(8.07x6.10"), 1.80kg(3.97 lb)

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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 ☐ 230Vac ☐ 100 Vac ☒ 24 Vac ☒ 12 Vdc ☒ PoE
Frequency ☐ 50 Hz ☐ 60 Hz ☐ Hz

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-6081R	-	HANWHA VISION VIETNAM COMPANY LIMITED	EUT
AC module	SPC-100AC	-	-	AC 24 V

1.5 Support Equipments

Description	Model Number	Serial Number	Manufacturer	Remarks
POE Adapter	PD-9501GR/AC	-	CHANGZHOU WUJIN HONGGUANG RADIO CO., LTD.	-
Notebook	X56K	HN11N5151FJ0045W	HANSUNG	-
Notebook Adapter	A12-120P1A	F180271552011758	CHICONY POWER TECHNOLOGY CO.,LTD.	-
Speaker	BR1000A Cuve Black 2	-	DONGGUAN EDIFIER TECHNOLOGY Co., Ltd	-
Mike	MP1000	-	-	-
Gpad	LG-V480	-	LG	-
Alarm button	-	-	-	-
Alarm	SIP-1201DD D0	-	SAMSUNG TECHWIN CO., LTD.	-

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1.6 External I/O Cabling

■ AC 24 V, DC 12 V

Start		END		Cable Spec.	
Description	I/O Port	Description	I/O Port	Length	Shield
Network Camera (EUT)	RJ-45	Notebook	RJ-45	4.0	U
	3.5 mm	Speaker	3.5 mm	1.4	U
	3.5 mm	Mike	3.5 mm	1.7	U
	2Pin	Alarm IN	2Pin	3.0	U
	2Pin	Alarm Out	2Pin	3.0	U
Notebook	3.5 mm	Gpad	3.5 mm	1.6	U

* Unshielded=U, Shielded=S

■ PoE

Start		END		Cable Spec.	
Description	I/O Port	Description	I/O Port	Length	Shield
Network Camera (EUT)	RJ-45	POE Adapter	RJ-45	4.0	U
	3.5 mm	Speaker	3.5 mm	1.4	U
	3.5 mm	Mike	3.5 mm	1.7	U
	2Pin	Alarm IN	2Pin	3.0	U
	2Pin	Alarm Out	2Pin	3.0	U
Notebook	3.5 mm	Gpad	3.5 mm	1.6	U
	RJ-45	POE Adapter	RJ-45	4.0	U

* Unshielded=U, Shielded=S

1.7 EUT Operating Mode(s)

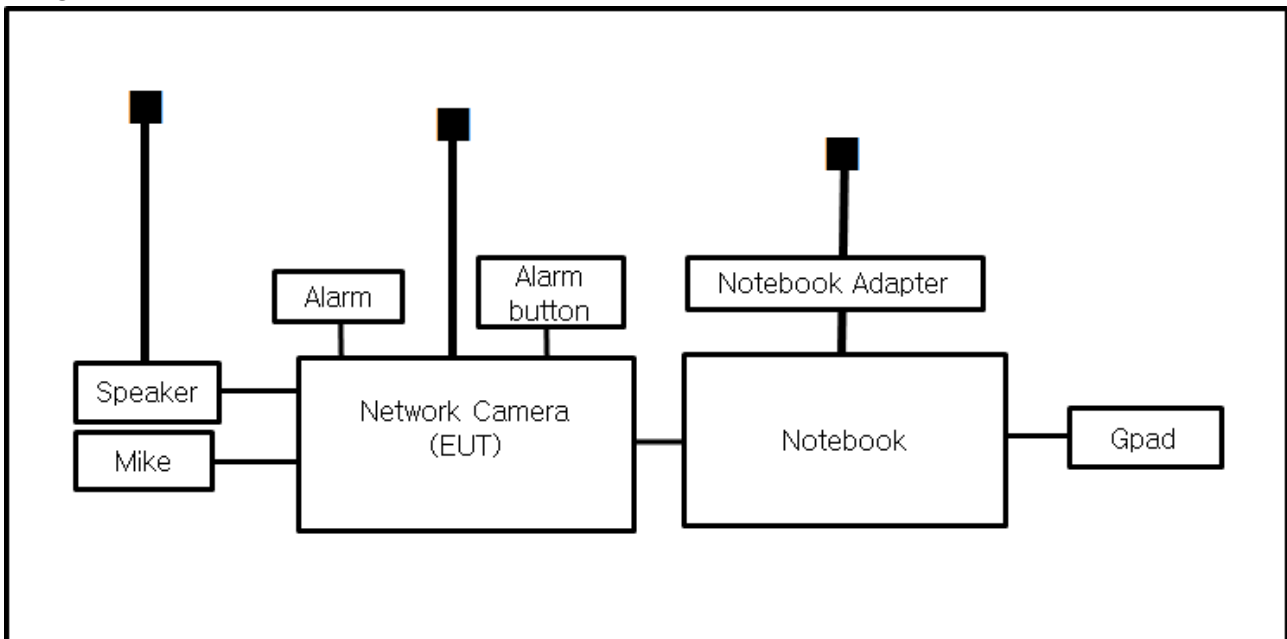
Test Mode	operating
AC 24 V, DC 12 V, POE	EUT Monitoring, Ping Test

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

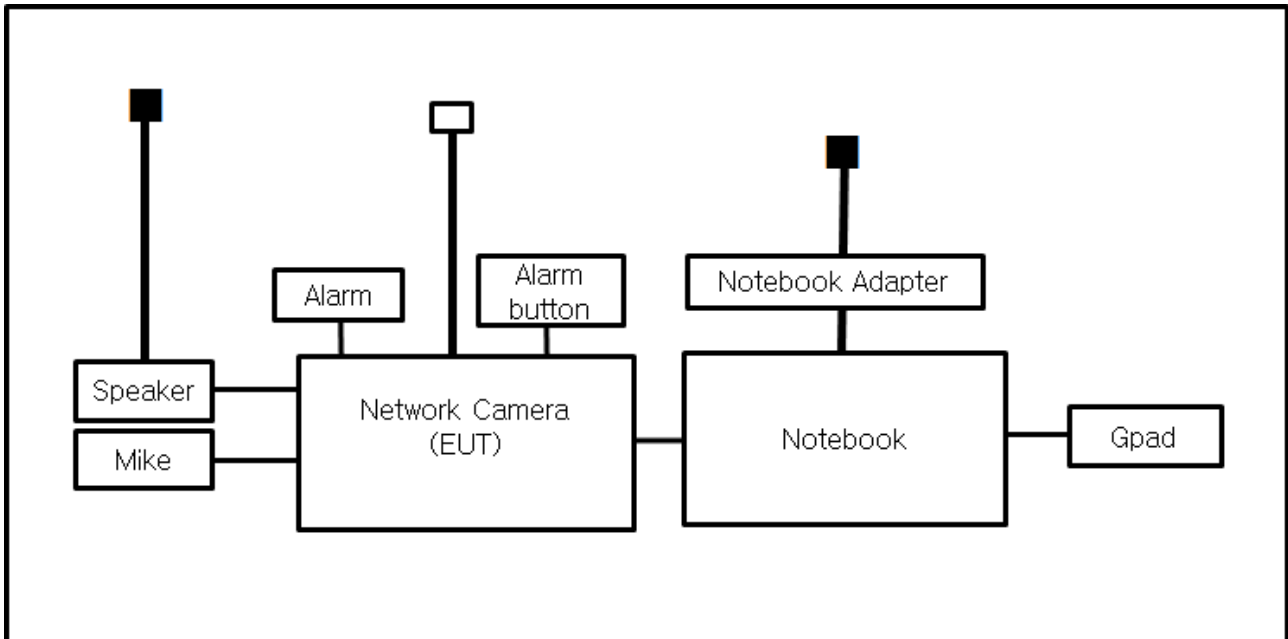
1.8 Configuration

■ AC Main
 □ DC Main

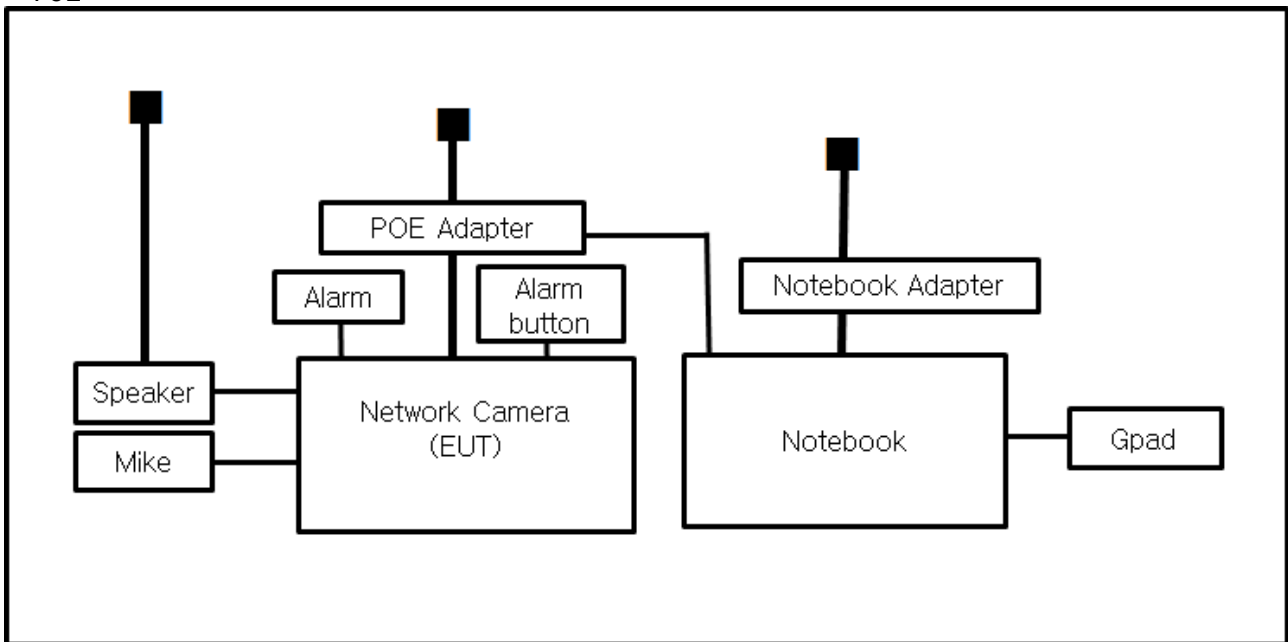
■ AC 24 V



■ DC 12 V



■ PoE



1.9 Remarks when standards applied

N/A

1.10 Calibration Details of Equipment Used for Measurement

Test equipment and test accessories are calibrated on regular basis. The maximum time between calibrations is one year or what is recommended by the manufacturer, whichever is less.

1.11 Test Facility

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

1.12 Laboratory Accreditations and Listings

Country	Agency	Scope of Accreditation	Logo
KOREA	RRA	EMI (3 m & 10 m Semi-Anechoic Chamber 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 55032:2015/A11:2020

☒ Class A

☐ Class B

☒ EN 50130-4:2011

☒ EN 61000-3-2:2014

☒ EN 61000-3-3:2013

☒ **EMC – Regulations 2016**

☒ EN 55032:2015/A11:2020

☒ Class A

☐ Class B

☒ EN 50130-4:2011

☒ EN 61000-3-2:2014

☒ EN 61000-3-3:2013

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2.1 Conducted Emissions at Mains Power Ports

Test Date

Jan. 30, 2019

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	101781	04, 25, 2019
☒	LISN	ENV216	R & S	101787	01, 04, 2020
☒	LISN	ESH2-Z5	R & S	100450	04, 25, 2019
☒	PULSE LIMITER	ESH3-Z2	R & S	101915	11, 26, 2019

Test Conditions

Temperature: 24,1 °C
Relative Humidity: 54,0 % 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 Conducted Emissions at Telecommunication Ports

Test Date

Jan. 30, 2019

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	101781	04, 25, 2019
☒	LISN	ENV216	R & S	101787	01, 04, 2020
☒	LISN	ESH2-Z5	R & S	100450	04, 25, 2019
☒	PULSE LIMITER	ESH3-Z2	R & S	101915	11, 26, 2019
☒	8-WIRE ISN CAT3,5	ENY81	R & S	100174	01, 07, 2020
☐	8-WIRE ISN CAT6	ENY81-CAT6	R & S	101665	01, 07, 2020

Test Conditions

Temperature: 24,1 °C
Relative Humidity: 54,0 % 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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2.3 Radiated Electric Field Emissions(Below 1 GHz)

Test Date

Jan. 30, 2019

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, 11, 2019
☒	AMPLIFIER	SCU 01	R & S	100603	11, 26, 2019
☒	ATTENUATOR	8491A	HP	32173	03, 21, 2019
☒	TRILOG-BROADBAND ANTENNA	VULB9163	Schwarzbeck	715	11, 29, 2020

Test Conditions

Temperature: 22,4 °C
Relative Humidity: 46,2 % 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

Feb. 01, 2019

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, 06, 2019
☒	PREAMPLIFIER	8449B	AGILENT	3008A01967	05, 31, 2019
☐	ATTENUATOR	8491A	HP	35496	03, 21, 2019
☒	DOUBLE RIDGED HORN ANTENNA	SAS-571	A.H.SYSTEM,INC	781	05, 02, 2019

Test Conditions

Temperature: 22,1 °C
Relative Humidity: 45,2 % 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.



2.5 Harmonic Current Emissions

Test Date

Jan. 31, 2019

Test Location

Electro wave Shieldroom #3

Test Equipment

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
☒	EMI Test S/W	dpa.control	EM TEST	5.4.11.0	-
☒	DIGITAL POWER ANALYZER	DPA 500N	EM TEST	V1024106759	08, 08, 2019
☒	POWER SOURCE	ACS 500N6	EM TEST	V1024106760	-

Test Conditions

Temperature: 22,0 °C
Relative Humidity: 50,9 % R.H.

Classification of Equipment for Harmonic Current Emissions

- ☒ Class A
☐ Class B
☐ Class C(Below 25 W)
☐ Class C(Above 25 W)
☐ Class D

Test Results

The requirements are:

- ☒ PASS
☐ NOT PASS
☐ NOT APPLICABLE

Remarks

See Appendix A for test data.
The test has been tested using the AC / AC Adaptor.



2.6 Voltage Fluctuations and Flicker

Test Date

Jan. 31, 2019

Test Location

Electro wave Shieldroom #3

Test Equipment

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
☒	EMI Test S/W	dpa.control	EM TEST	5.4.11.0	-
☒	DIGITAL POWER ANALYZER	DPA 500N	EM TEST	V1024106759	08, 08, 2019
☒	POWER SOURCE	ACS 500N6	EM TEST	V1024106760	-

Test Conditions

Temperature: 22,0 °C
Relative Humidity: 50,9 % R.H.

Test Results

The requirements are:

- ☒ PASS
☐ NOT PASS
☐ NOT APPLICABLE

Remarks

See Appendix A for test data.
The test has been tested using the AC / AC Adaptor.

3.0 Criteria for compliance

Criteria for compliance was based on the following guidelines:

EN 50130-4:2011 Alarm systems-Part 4: Electromagnetic compatibility Product family
standard: Immunity requirements for components of fire, intruder and social alarm systems

The variety and the diversity of the apparatus within the scope of this document makes it

difficult to define precise criteria for the evaluation of the immunity test results.

If as a result of the application of the tests defined in this standard, the apparatus

becomes dangerous or unsafe then the apparatus shall be deemed to have failed the test.

A functional description and a definition of performance by the manufacture and noted in the test

report, based on the following criteria:

Electrostatic discharge

There shall be no damage, malfunction or change of status due to the conditioning.

Flickering of an indicator during the application of discharge is permissible, providing that is no residual change in the EUT or any change in outputs, which could be interpreted by associated equipment as a change.

Radiated electromagnetic fields

There shall be no damage, malfunction or change of status due to the conditioning.

Flickering of an indicator during the application of discharge is permissible, providing which could be interpreted by associated equipment as a change, and no such

Flickering of indicators occurs at a field strength of 3 V/m.

For components of CCTV systems, where the picture is allowed at 10 V/m, providing.

(a) there is no permanent damage or change to EUT

(e.g. no corruption of memory or changes to programmable setting etc.)

(b) at 3 V/m, any deterioration of the picture is so minor that the system could still be used; and

(c) there is no observable deterioration of the picture at 1 V/m.

Fast transient burst / slow high energy voltage surge

There shall be no damage, malfunction or change of status due to the conditioning.
Flickering of an indicator during the application of discharge is permissible, providing
That there is no residual is permissible, providing that there is no residual change in the EUT or
any
change in outputs, which could be interpreted by associated equipment as a change.

Conducted RF immunity

There shall be no damage, malfunction or change of status due to the conditioning.
Flickering of an indicator during the application of discharge is permissible, providing
That there is no residual is permissible, providing that there is no residual change in the EUT or
any
change in outputs, which could be interpreted by associated equipment as a change,
and no such flickering of indicators oeuvres at $U = 130 \text{ dB}\mu\text{V}$.
For component of CCTV systems, where the status is monitored by observing the TV picture,
then deterioration of the picture is allowed at $U = 140 \text{ dB}\mu\text{V}$, providing:
(a) there is no permanent damage or change to the EUT
(e.g. no corruption of memory or changes to programmable settings etc.)
(b) at $U = 130 \text{ dB}\mu\text{V}$, any deterioration of the picture is so minor that the system could
still be used; and
(c) there in no observable deterioration of the picture at $U = 120 \text{ dB}\mu\text{V}$.

Voltage dip/interruption / Voltage variation

There shall be no damage, malfunction or change of status due to the conditioning.
Flickering of an indicator during the conditioning is permissible, providing that there is no
residual
change in the EUT or any change in outputs, which could be interpreted by associated
equipment
as a change. The EUT shall meet the acceptance criteria for the functional test, after the
conditioning.

3.1 Electrostatic Discharge

Reference Standard

EN 61000-4-2:2009

Test Date

Feb. 06, 2019

Test Location

EMS-ESD: Electro wave Shieldroom #7

Test Equipment

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
☒	ESD SIMULATOR	ESS-2000	Noise Ken	ESS01Z0454	10, 11, 2019
☒	HCP	-	KES	-	-
☒	VCP	-	KES	-	-

Test Conditions

Temperature: 22,7 °C
Relative Humidity: 45,0 % R.H.
Atmospheric Pressure: 100,8 kPa

Test Specifications

Discharge Factor: ≥ 1 s

Discharge Impedance: 330 ohm / 150 pF

Kind of Discharge: Air, Contact (direct and indirect)

Polarity: Positive and Negative

Number of Discharge: 10 at all locations for Air discharge
10 at all locations for Contact discharge

Discharge Voltage:	Contact ☐ 2 kV ☐ 4 kV ☒ 6 kV ☐ 8 kV ☐ 15 kV	Air ☒ 2 kV ☒ 4 kV ☐ 6 kV ☒ 8 kV ☐ 15 kV	HCP ☐ 2 kV ☐ 4 kV ☒ 6 kV ☐ 8 kV ☐ 15 kV	VCP ☐ 2 kV ☐ 4 kV ☒ 6 kV ☐ 8 kV ☐ 15 kV
--------------------	---	---	---	---

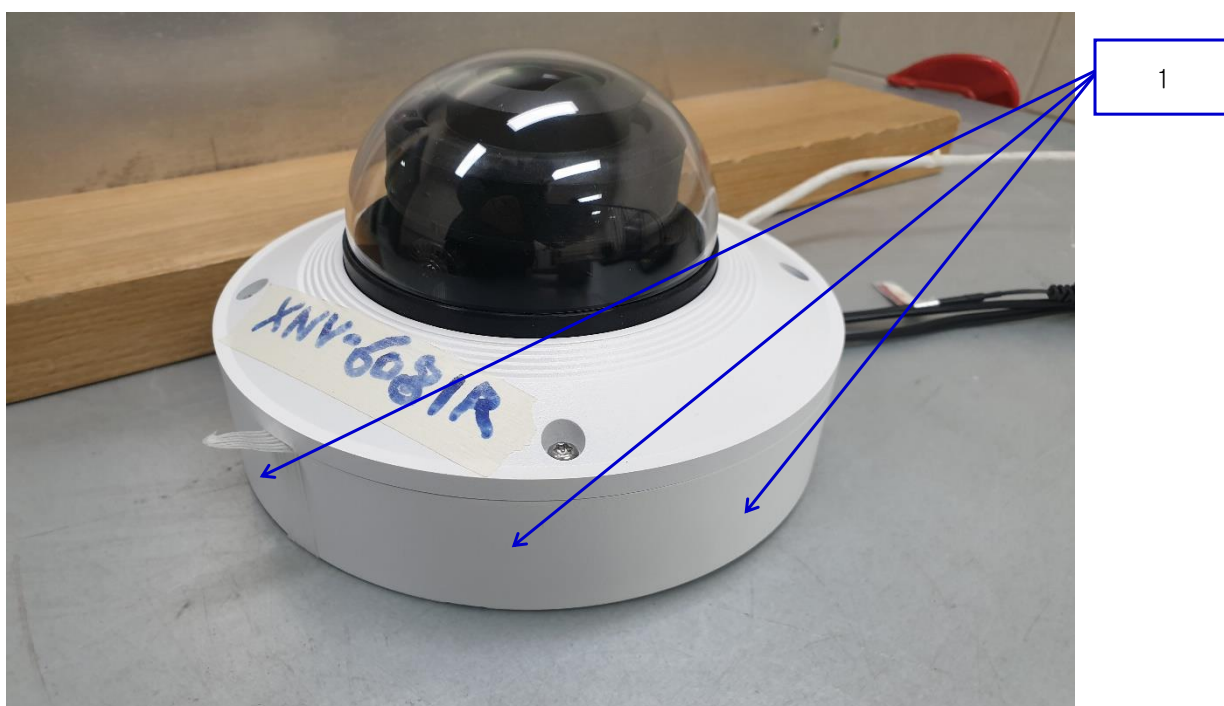
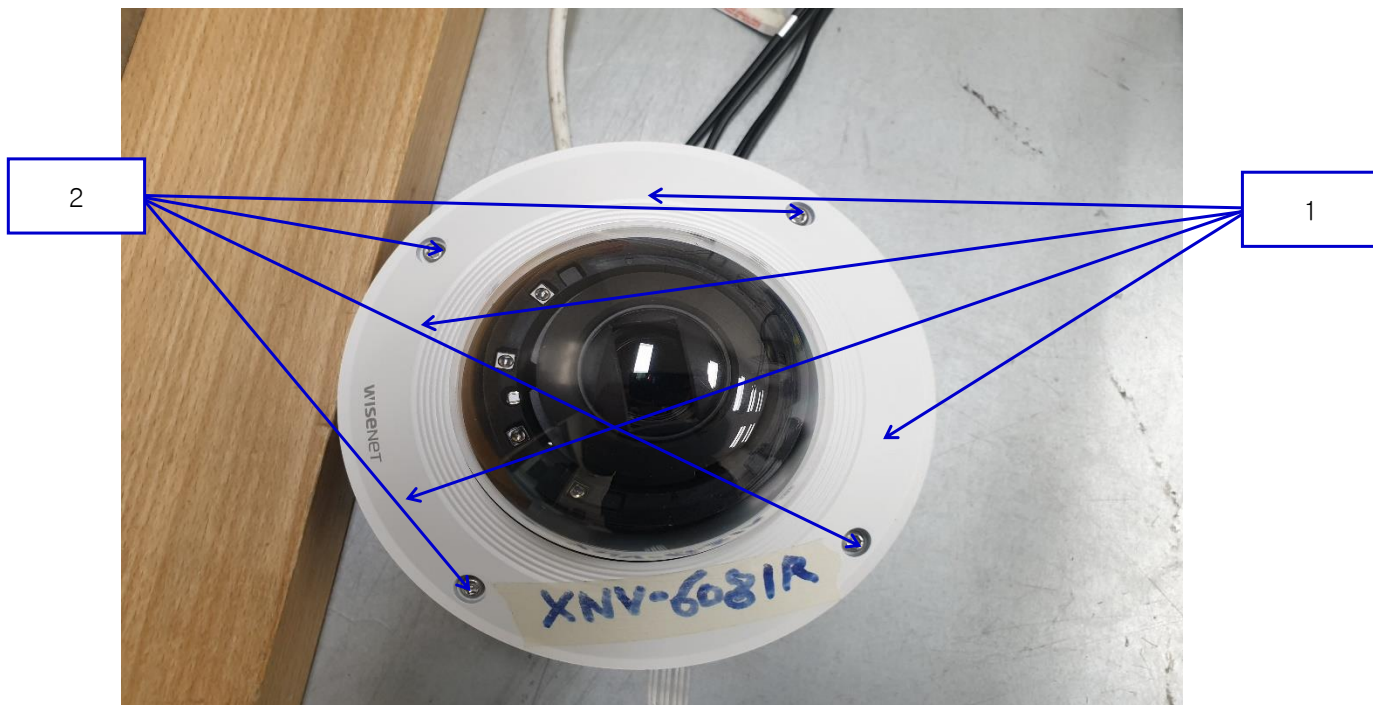
Notes: HCP: Horizontal coupling plane
VCP: Vertical coupling plane

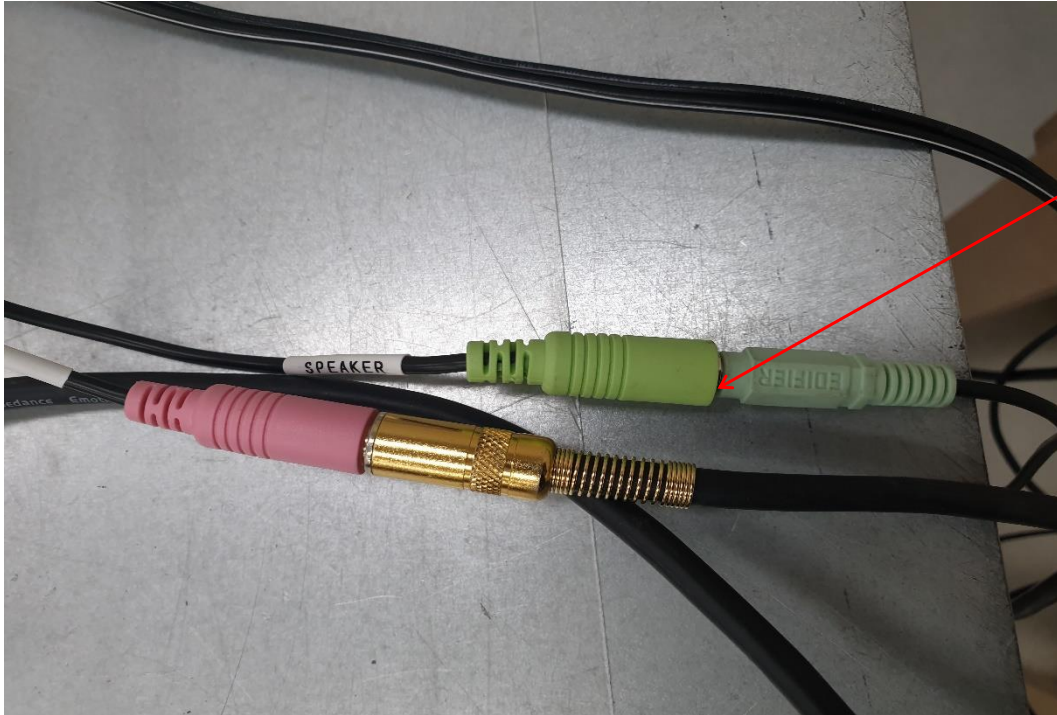
Required Performance Criteria: ☒ Complied

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Location of Discharge:

Air
Contact





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Test Data**■ AC 24 V****Indirect Discharge**

No.	Test Point	Discharge Method	Observations	Remarks
1	HCP Contact	Contact Discharge	Complied	-
2	VCP Contact	Contact Discharge	Complied	-

Direct Discharge

No.	Test Point	Discharge Method	Observations	Remarks
1	Enclosure	Contact Discharge	Complied	-
2	Screw	Contact Discharge	Complied	-
3	3.5 mm	Air Discharge	Complied	-

Note: "Blank" = Not performed

■ DC 12 V**Indirect Discharge**

No.	Test Point	Discharge Method	Observations	Remarks
1	HCP Contact	Contact Discharge	Complied	-
2	VCP Contact	Contact Discharge	Complied	-

Direct Discharge

No.	Test Point	Discharge Method	Observations	Remarks
1	Enclosure	Contact Discharge	Complied	-
2	Screw	Contact Discharge	Complied	-
3	3.5 mm	Air Discharge	Complied	-

Note: "Blank" = Not performed

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■ PoE

Indirect Discharge

No.	Test Point	Discharge Method	Observations	Remarks
1	HCP Contact	Contact Discharge	Complied	-
2	VCP Contact	Contact Discharge	Complied	-

Direct Discharge

No.	Test Point	Discharge Method	Observations	Remarks
1	Enclosure	Contact Discharge	Complied	-
2	Screw	Contact Discharge	Complied	-
3	3.5 mm	Air Discharge	Complied	-

Note: "Blank" = Not performed

Observations:

Complied – No degradation of function

Test Results

- ☒ PASS Required Performance Criteria
☐ NOT PASS Required Performance Criteria

Remarks

PASS Required Performance Criteria



3.2 Radiated Electric Field Immunity

Reference Standard

EN IEC 61000-4-3:2020

Test Date

Feb. 01, 2019

Test Location

EMS-RS: ☐ SEMI ANECHOIC CHAMBER #2 ☒ SEMI ANECHOIC CHAMBER #3

Test Equipment

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
☒	EMS Test S/W	EMC32	R & S	10.10.02	-
☒	SIGNAL GENERATOR	SMB 100A	R & S	177586	08, 06, 2019
☒	BROADBAND AMPLIFIER	BBA100	R & S	101239	08, 06, 2019
☒	BROADBAND AMPLIFIER	100S1G6M1	AR	579931	08, 06, 2019
☒	POWER METER	NRP2	R & S	103475	08, 06, 2019
☒	AVG POWER SENSOR	NRP-Z91	R & S	102526	08, 06, 2019
☒	AVG POWER SENSOR	NRP-Z91	R & S	102527	08, 06, 2019
☒	STACKED DOUBLE LOG-PER- ANTENNA	STPL9128 E	Schwarzbeck	9128ES-121	-
☒	DIRECTIONAL COUPLER	KYDC-D1070-DX40	KY TELECOM	KY150001	08, 06, 2019
☒	DOUBLE RIDGED HORN ANTENNA	SAS-571	A.H.SYSTEM, INC	781	05, 02, 2019

Test Conditions

Temperature: 22,1 °C
Relative Humidity: 45,2 % R.H.
Atmospheric Pressure: 101,5 kPa



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Test Specifications

Antenna Polarization: Horizontal & vertical unless indicated otherwise

Antenna Distance: ☒ 3 m

Field Strength: ☐ 1 V/m ☐ 3 V/m
☒ 10 V/m

Frequency Range: ☐ 80 MHz to 1 GHz ☐ 1,4 GHz to 2,7 GHz
☒ 80 MHz to 2,7 GHz

Modulation: ☒ AM, 80 %, 1 kHz sine wave
☒ PM, 1 Hz (0,5 s ON : 0,5 s OFF)

Frequency step: ☒ 1 % step

Dwell Time: ☒ 1 s ☐ 3 s

of Sides Radiated: ☒ 4

Required Performance Criteria: ☒ Complied

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Test Data

■ AC 24 V

Side Exposed	Observations	
	Horizontal	Vertical
Front	Complied	Complied
Right	Complied	Complied
Back	Complied	Complied
Left	Complied	Complied

■ DC 12 V

Side Exposed	Observations	
	Horizontal	Vertical
Front	Complied	Complied
Right	Complied	Complied
Back	Complied	Complied
Left	Complied	Complied

■ PoE

Side Exposed	Observations	
	Horizontal	Vertical
Front	Complied	Complied
Right	Complied	Complied
Back	Complied	Complied
Left	Complied	Complied

Note: "Blank" = Not performed

Observations:
Complied – No degradation of function

Test Results

- ☒ PASS Required Performance Criteria
☐ NOT PASS Required Performance Criteria

Remarks

PASS Required Performance Criteria

3.3 Electrical Fast Transients/Bursts

Reference Standard

EN 61000-4-4:2012

Test Date

Feb. 06, 2019

Test Location

EMS-EFT: Electro wave Shieldroom #7

Test Equipment

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
☒	EMS Test S/W	iec.control	EM TEST	5.4.7	-
☒	ULTRA COMPACT SIMULATOR	UCS 500N7	EM TEST	P1608172950	11, 27, 2019
☒	MOTOR VARIAC	MV2616	EM TEST	P1552169719	11, 27, 2019
☒	CAPACITIVE COUPLING CLAMP	HFK	EM TEST	P1633183115	11, 26, 2019

Test Conditions

Temperature: 22,7 °C
Relative Humidity: 45,0 % R.H.
Atmospheric Pressure: 100,8 kPa

Test Specifications

Pulse Amplitude & Polarity: (AC Power Lines)	☐ ± 1.0 kV ☐ ± 4.0 kV	☒ ± 2.0 kV
Pulse Amplitude & Polarity: (Other supply / Signal Lines)	☐ ± 0.5 kV ☐ ± 2.0 kV	☒ ± 1.0 kV
Burst Period:	☒ 300 ms	☐ 2 s
Repetition Rate:	☐ 5 kHz	☒ 100 kHz
Duration of Test Voltage:	☒ ≥ 1 min	
Required Performance Criteria:	☒ Complied	

Test Data

■ AC 24 V

☒ Input a.c. power ports – Coupling/Decoupling Network used

Mode of Application	Observations	
	(+) Burst (kV)	(-) Burst (kV)
L	Complied	Complied
N	Complied	Complied
L - N	Complied	Complied

☐ Input d.c. power ports – Coupling/Decoupling Network used

Mode of Application	Observations	
	(+) Burst (kV)	(-) Burst (kV)
-	-	-

☒ Signal ports and telecommunication ports – Coupling Clamp used

Mode of Application	Observations	
	(+) Burst (kV)	(-) Burst (kV)
RJ-45	Complied	Complied
Alarm In, Out	Complied	Complied

■ DC 12 V

☐ Input a.c. power ports – Coupling/Decoupling Network used

Mode of Application	Observations	
	(+) Burst (kV)	(-) Burst (kV)
-	-	-

☒ Input d.c. power ports – Coupling/Decoupling Network used

Mode of Application	Observations	
	(+) Burst (kV)	(-) Burst (kV)
L1	Complied	Complied
L2	Complied	Complied
L1 – L2	Complied	Complied

☒ Signal ports and telecommunication ports – Coupling Clamp used

Mode of Application	Observations	
	(+) Burst (kV)	(-) Burst (kV)
RJ-45	Complied	Complied
Alarm In, Out	Complied	Complied

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■ PoE

☐ Input a.c. power ports – Coupling/Decoupling Network used

Mode of Application	Observations	
	(+) Burst (kV)	(-) Burst (kV)
-	-	-

☐ Input d.c. power ports – Coupling/Decoupling Network used

Mode of Application	Observations	
	(+) Burst (kV)	(-) Burst (kV)
-	-	-

☒ Signal ports and telecommunication ports – Coupling Clamp used

Mode of Application	Observations	
	(+) Burst (kV)	(-) Burst (kV)
RJ-45	Complied	Complied
Alarm In, Out	Complied	Complied

Note: “Blank” = Not performed

Observations:

Complied – No degradation of function

Test Results☒ PASS Required Performance Criteria☐ NOT PASS Required Performance Criteria**Remarks**PASS Required Performance Criteria

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3.4 Surge Transients

Reference Standard

EN 61000-4-5:2014/A1:2017

Test Date

Feb. 06, 2019

Test Location

EMS-Surge: Electro wave Shieldroom #7

Test Equipment

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
☒	EMS Test S/W	iec.control	EM TEST	5.4.7	-
☒	ULTRA COMPACT SIMULATOR	UCS 500N7	EM TEST	P1608172950	11, 26, 2019
☒	MOTOR VARIAC	MV2616	EM TEST	P1552169719	11, 27, 2019
☐	CDN	CNV 508N1	EM TEST	P1610176296	11, 28, 2019

Test Conditions

Temperature: 22,7 °C
Relative Humidity: 45,0 % R.H.
Atmospheric Pressure: 100,8 kPa

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Test Specifications

AC Power Lines

Source Impedance: 12 ohm for common Mode and 2 ohm for differential Mode

Surge Amplitude :

Common Mode

☐ (0,5 / 1,0 / 2,0) kV

Differential Mode

☒ (0,5 / 1,0) kV

Number of Surges:

☒ 5 surges per angle

Angle:

☒ 0°, 90°, 180°, 270° (input a.c. power port)

Polarity:

☒ Positive & Negative

Repetition Rate:

☐ 1 surge per min ☒ 1 surge per 30 sec.

Required Performance Criteria: ☒ Complied

Other supply / Signal Lines

Source Impedance:

42 ohm for common Mode

Surge Amplitude:

Common Mode

☐ (0,5 / 1,0) kV

Number of Surges:

☐ 5 Surges

Polarity:

☐ Positive & Negative

Repetition Rate:

☐ 1 surge per min ☐ 1 surge per 30 sec.

Required Performance Criteria: ☐ Complied

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Test Data

■ AC 24 V

☒ Line to Line – Differential Mode

Mode of Application	Observations	
	(+) Surge (kV)	(-) Surge (kV)
L - N	Complied	Complied

☐ Line to Earth – Common Mode

Mode of Application	Observations	
	(+) Surge (kV)	(-) Surge (kV)
-	-	-

Signal Lines☐ Line to Earth – Common Mode

Mode of Application	Observations	
	(+) Surge (kV)	(-) Surge (kV)
-	-	-

Note: "Blank" = Not performed

Observations:

Complied – No degradation of function

Test Results☒ PASS Required Performance Criteria☐ NOT PASS Required Performance Criteria**Remarks**PASS Required Performance Criteria

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3.5 Conducted Disturbance

Reference Standard

EN 61000-4-6:2014

Test Date

Jan. 30, 2019

Test Location

EMS-CS: Electro wave Shieldroom #6

Test Equipment

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
☒	EMS Test S/W	icd.control	EM TEST	5.3.11	-
☒	CONTINUOUS WAVE SIMULATOR	CWS 500N1.4	EM TEST	P1602169880	11, 26, 2019
☒	ATTENUATOR	ATT 6/80	EM TEST	P1614178148	11, 26, 2019
☒	CDN	CDN M016	TESEQ	43694	11, 26, 2019
☐	CDN	CDN M016	TESEQ	43697	11, 26, 2019
☒	CDN	CDN T800	TESEQ	42800	11, 26, 2019
☒	EM CLAMP	KEMZ 801A	TESEQ	44099	11, 27, 2019

Test Conditions

Temperature: 24,1 °C
Relative Humidity: 54,0 % R.H.
Atmospheric Pressure: 101,4 kPa

Test Specifications

Frequency range: ☒ 150 kHz to 100 MHz ☐ 150 kHz to 80 MHz

Voltage Level: ☐ 1 Vrms ☐ 3 Vrms
☒ 10 Vrms

Modulation: ☒ AM, 80 %, 1 kHz sine wave
☒ PM, 1 Hz (0,5 s ON : 0,5 s OFF)

Frequency step: ☒ 1 % step

Dwell Time: ☒ 1 s ☐ 3 s

Required Performance Criteria: ☒ Complied

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Test Data

■ AC 24 V

☒ Input a.c. power ports

Coupling Location (Line Stressed)	Coupling Method	Observations
L - N	CDN	Complied

☐ Input d.c. power ports

Coupling Location (Line Stressed)	Coupling Method	Observations
-	-	-

☒ Signal ports and telecommunication ports

Coupling Location (Line Stressed)	Coupling Method	Observations
RJ-45	CDN T800	Complied
Alarm In, Out	Clamp	Complied

■ DC 12 V

☐ Input a.c. power ports

Coupling Location (Line Stressed)	Coupling Method	Observations
-	-	-

☒ Input d.c. power ports

Coupling Location (Line Stressed)	Coupling Method	Observations
L1 - L2	Complied	Complied

☒ Signal ports and telecommunication ports

Coupling Location (Line Stressed)	Coupling Method	Observations
RJ-45	CDN T800	Complied
Alarm In, Out	Clamp	Complied

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■ PoE

☐ Input a.c. power ports

Coupling Location (Line Stressed)	Coupling Method	Observations
-	-	-

☐ Input d.c. power ports

Coupling Location (Line Stressed)	Coupling Method	Observations
-	-	-

☒ Signal ports and telecommunication ports

Coupling Location (Line Stressed)	Coupling Method	Observations
RJ-45	CDN T800	Complied
Alarm In, Out	Clamp	Complied

Notes: CDN = Coupling Decoupling Network
"blank" = Not performed

Observations:

Complied – No degradation of function

Test Results

- ☒ PASS Required Performance Criteria
☐ NOT PASS Required Performance Criteria

RemarksPASS Required Performance Criteria

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3.6 Voltage Dips and Short Interruptions

Reference Standard

EN IEC 61000-4-11:2020

Test Date

Feb. 06, 2019

Test Location

EMS-Voltage dip: Electro wave Shieldroom #7

Test Equipment

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
☒	EMS Test S/W	iec.control	EM TEST	5.4.7	-
☒	ULTRA COMPACT SIMULATOR	UCS 500N7	EM TEST	P1608172950	11, 27, 2019
☒	MOTOR VARIAC	MV2616	EM TEST	P1552169719	11, 27, 2019

Test Conditions

Temperature: 22,7 °C
Relative Humidity: 45,0 % R.H.
Atmospheric Pressure: 100,8 kPa

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Test Specifications & Observations/Remarks

■ AC 24 V

<u>Test Level</u>	<u>Duration [in period/ms (50 Hz)]</u>	<u>Results</u>
☒ 20 % dip	☒ 250 / 5 000	<u>Complied</u>
☒ 30 % dip	☒ 25 / 500	<u>Complied</u>
☒ 60 % dip	☒ 10 / 200	<u>Complied</u>
☒ 100 % dip	☒ 250 / 5 000	<u>Complied</u>

- Voltage variations

☒ Unom + 10 %	☒ 253.0 V (ac)	<u>Complied</u>
☒ Unom - 15 %	☒ 195.5 V (ac)	<u>Complied</u>

Observations:

Complied – No degradation of function

Test Results

- ☒ PASS Required Performance Criteria
☐ NOT PASS Required Performance Criteria
☐ NOT APPLICABLE

RemarksPASS Required Performance CriteriaThe test has been tested using the AC / AC Adaptor.

APPENDIX A – TEST DATA

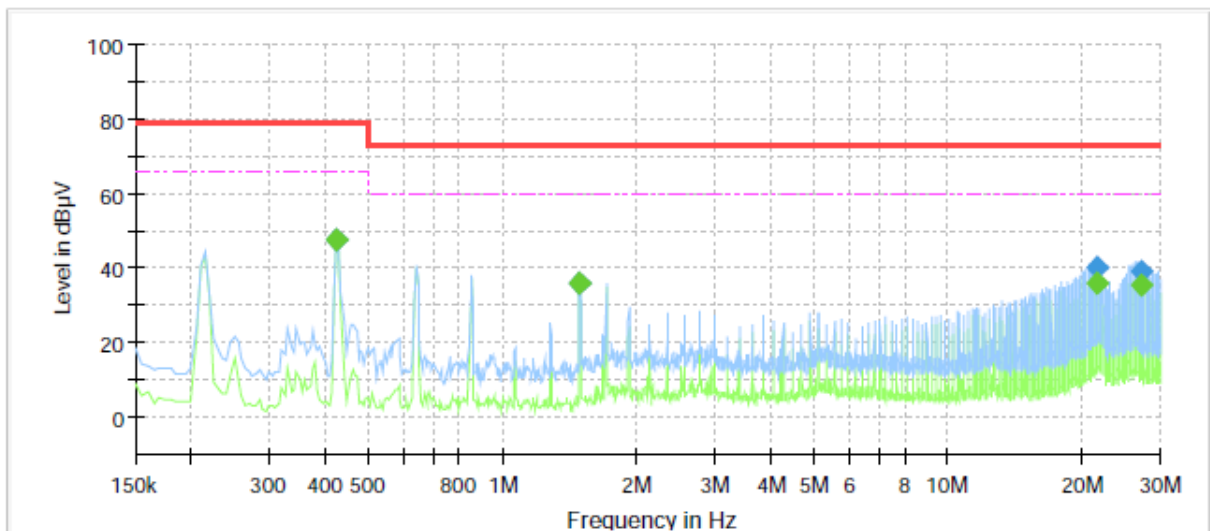
Conducted Emissions at Mains Power Ports

■ AC 24 V

[HOT]

Common Information

Test Description:	Conducted Emission
Model No.:	XNV-6081R
Mode	AC 24 V_H
Operator Name:	KES



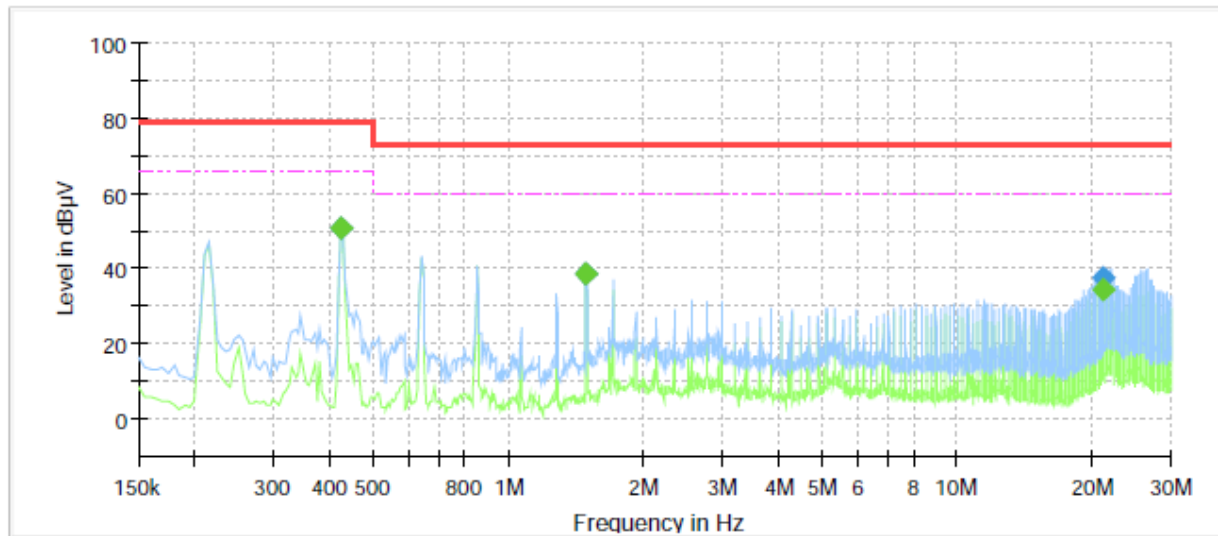
Final Result

Frequency (MHz)	QuasiPeak (dBμV)	CAverage (dBμV)	Limit (dBμV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.425000	---	47.54	66.00	18.46	1000.0	9.000	L1	19.6
0.425000	47.52	---	79.00	31.48	1000.0	9.000	L1	19.6
1.495000	---	35.98	60.00	24.02	1000.0	9.000	L1	19.7
1.495000	36.25	---	73.00	36.75	1000.0	9.000	L1	19.7
21.570000	---	35.94	60.00	24.06	1000.0	9.000	L1	20.2
21.570000	40.26	---	73.00	32.74	1000.0	9.000	L1	20.2
27.120000	---	35.35	60.00	24.65	1000.0	9.000	L1	20.3
27.120000	39.29	---	73.00	33.71	1000.0	9.000	L1	20.3

[NEUTRAL]

Common Information

Test Description: Conducted Emission
Model No.: XNV-6081R
Mode: AC 24 V_N
Operator Name: KES



Final Result

Frequency (MHz)	QuasiPeak (dBμV)	CAverage (dBμV)	Limit (dBμV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.425000	---	50.59	66.00	15.41	1000.0	9.000	N	19.6
0.425000	50.58	---	79.00	28.42	1000.0	9.000	N	19.6
1.495000	---	38.57	60.00	21.43	1000.0	9.000	N	19.7
1.495000	38.89	---	73.00	34.11	1000.0	9.000	N	19.7
21.140000	---	34.21	60.00	25.79	1000.0	9.000	N	20.2
21.140000	37.79	---	73.00	35.21	1000.0	9.000	N	20.2

◆ 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))

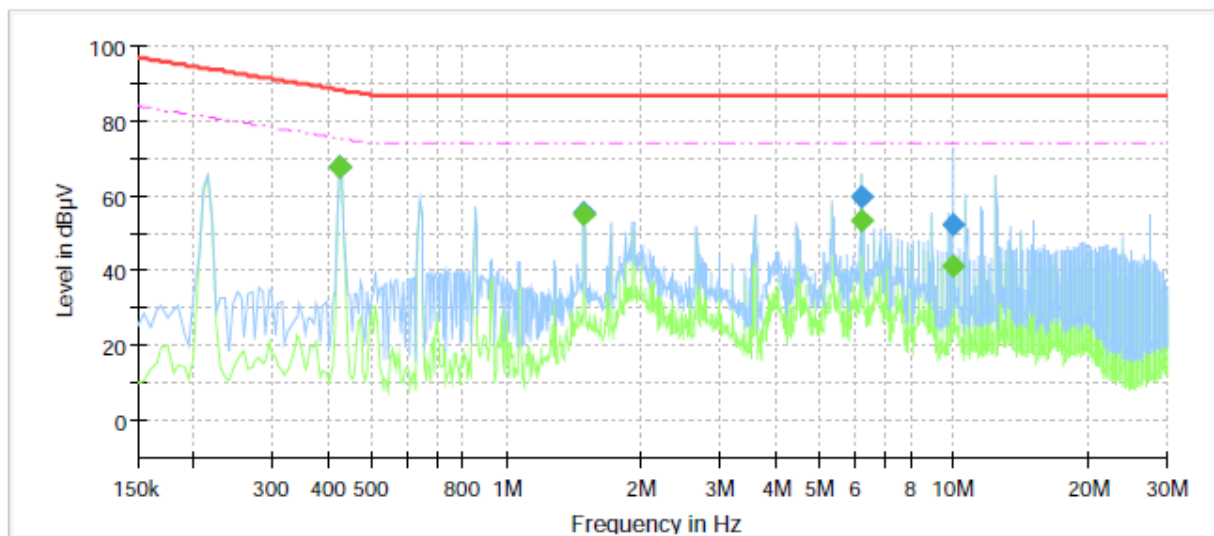
Conducted Emissions at Telecommunication Ports

■ AC 24 V
[10 Mbps]

Common Information

Test Description:
Model No.:
Mode
Operator Name:

Telecommunication Emission
XNV-6081R
AC 24 V_10 Mbps
KES



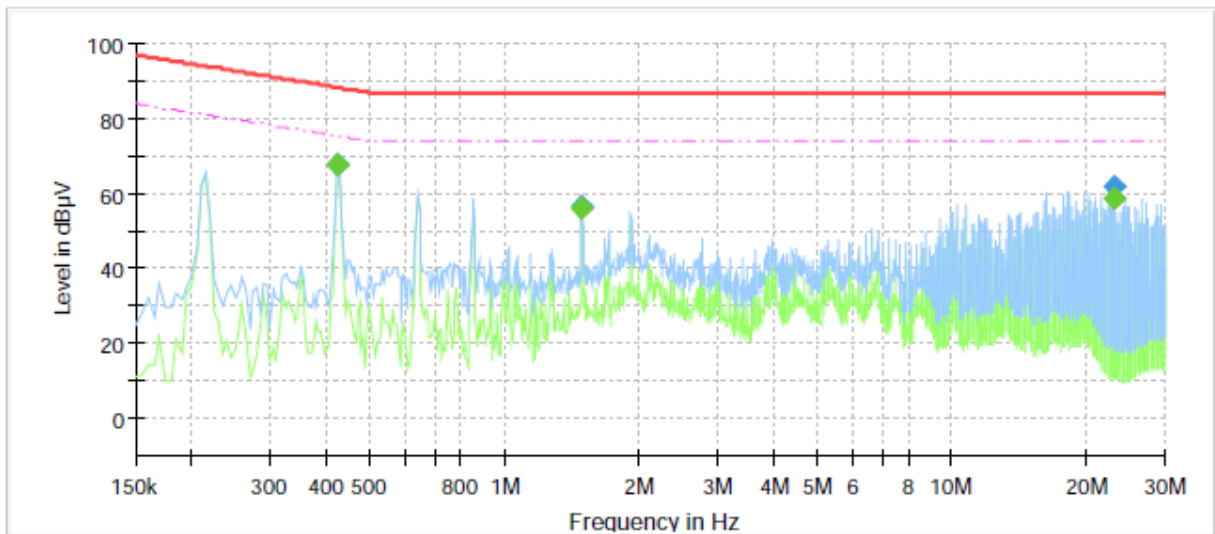
Final Result

Frequency (MHz)	QuasiPeak (dBμV)	CAverage (dBμV)	Limit (dBμV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.425000	---	67.52	75.35	7.83	1000.0	9.000	Single Line	19.8
0.425000	67.53	---	88.35	20.82	1000.0	9.000	Single Line	19.8
1.495000	---	55.24	74.00	18.76	1000.0	9.000	Single Line	19.7
1.495000	55.56	---	87.00	31.44	1000.0	9.000	Single Line	19.7
6.250000	---	53.29	74.00	20.71	1000.0	9.000	Single Line	19.8
6.250000	59.77	---	87.00	27.23	1000.0	9.000	Single Line	19.8
9.995000	---	41.40	74.00	32.60	1000.0	9.000	Single Line	19.9
9.995000	52.35	---	87.00	34.65	1000.0	9.000	Single Line	19.9

[100 Mbps]

Common Information

Test Description:	Telecommunication Emission
Model No.:	XNV-6081R
Mode	AC 24 V_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)
0.425000	---	67.85	75.35	7.50	1000.0	9.000	Single Line	19.7
0.425000	67.87	---	88.35	20.48	1000.0	9.000	Single Line	19.7
1.495000	---	56.15	74.00	17.85	1000.0	9.000	Single Line	19.6
1.495000	56.42	---	87.00	30.58	1000.0	9.000	Single Line	19.6
23.130000	---	58.95	74.00	15.05	1000.0	9.000	Single Line	20.3
23.130000	62.10	---	87.00	24.90	1000.0	9.000	Single Line	20.3



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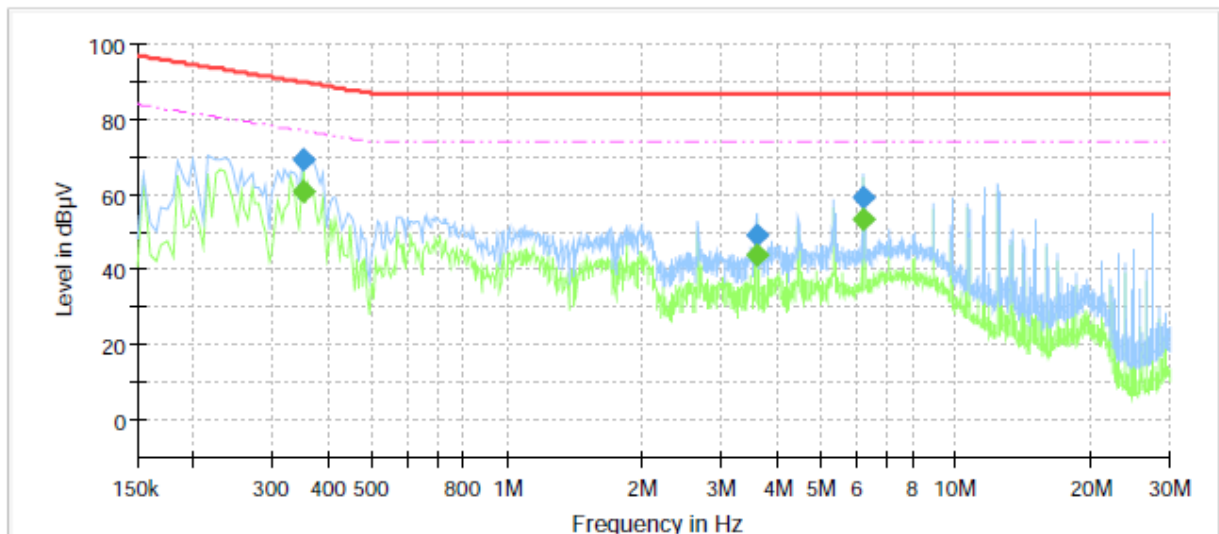
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Report No.:
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■ DC 12 V
[10 Mbps]

Common Information

Test Description: Telecommunication Emission
Model No.: XNV-6081R
Mode: DC 12 V_10 Mbps
Operator Name: KES



Final Result

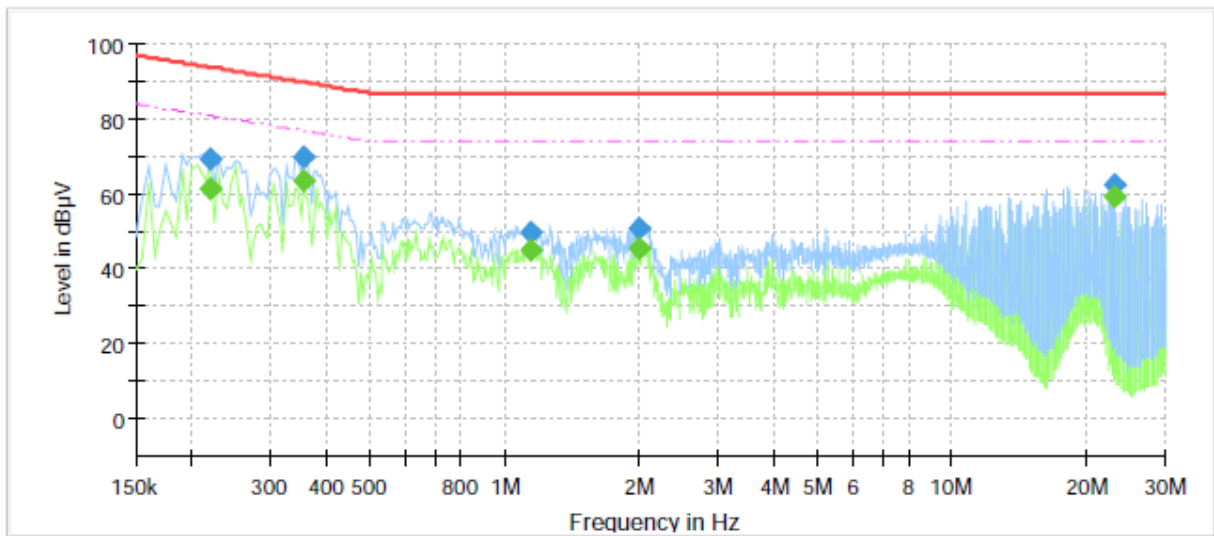
Frequency (MHz)	QuasiPeak (dBμV)	CAverage (dBμV)	Limit (dBμV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.350000	---	61.06	76.96	15.90	1000.0	9.000	Single Line	19.9
0.350000	69.47	---	89.96	20.49	1000.0	9.000	Single Line	19.9
3.585000	---	43.69	74.00	30.31	1000.0	9.000	Single Line	19.7
3.585000	49.24	---	87.00	37.76	1000.0	9.000	Single Line	19.7
6.250000	---	53.30	74.00	20.70	1000.0	9.000	Single Line	19.8
6.250000	59.20	---	87.00	27.80	1000.0	9.000	Single Line	19.8

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[100 Mbps]

Common Information

Test Description:	Telecommunication Emission
Model No.:	XNV-6081R
Mode	DC 12 V_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)
0.220000	---	61.45	80.82	19.37	1000.0	9.000	Single Line	19.8
0.220000	69.36	---	93.82	24.46	1000.0	9.000	Single Line	19.8
0.355000	---	63.41	76.84	13.43	1000.0	9.000	Single Line	19.7
0.355000	69.75	---	89.84	20.09	1000.0	9.000	Single Line	19.7
1.145000	---	44.76	74.00	29.24	1000.0	9.000	Single Line	19.6
1.145000	49.56	---	87.00	37.44	1000.0	9.000	Single Line	19.6
2.000000	---	45.74	74.00	28.26	1000.0	9.000	Single Line	19.6
2.000000	51.00	---	87.00	36.00	1000.0	9.000	Single Line	19.6
23.130000	---	59.28	74.00	14.72	1000.0	9.000	Single Line	20.3
23.130000	62.39	---	87.00	24.61	1000.0	9.000	Single Line	20.3



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Report No.:

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■ PoE
[10 Mbps]

Common Information

Test Description:

Model No.:

Mode

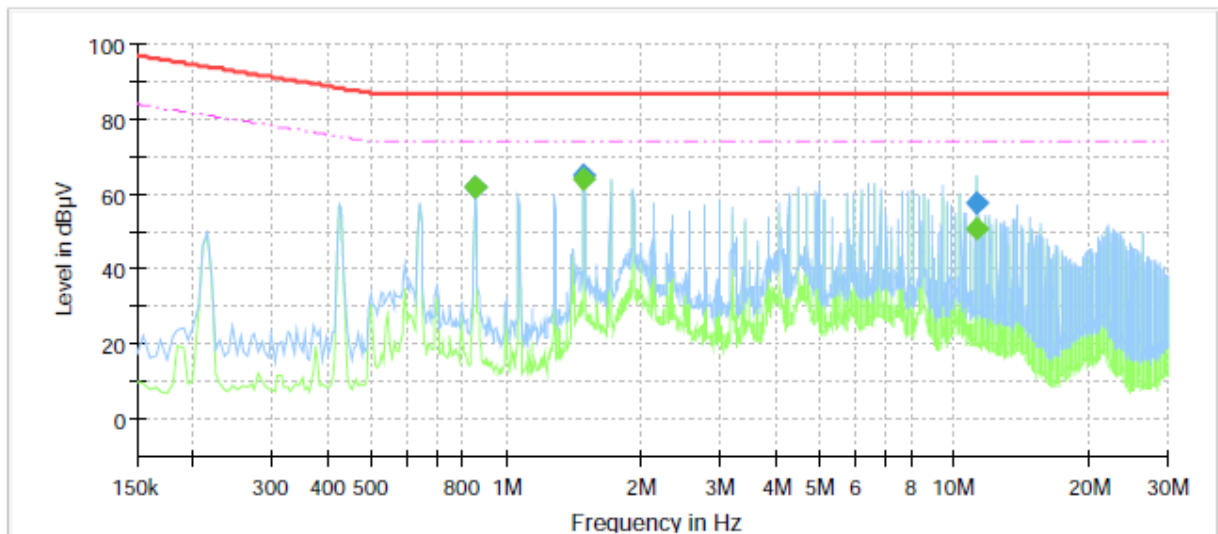
Operator Name:

Telecommunication Emission

XNV-6081R

POE_10 Mbps

KES



Final Result

Frequency (MHz)	QuasiPeak (dBµV)	CAverage (dBµV)	Limit (dBµV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.855000	---	61.71	74.00	12.29	1000.0	9.000	Single Line	19.8
0.855000	61.73	---	87.00	25.27	1000.0	9.000	Single Line	19.8
1.495000	---	63.90	74.00	10.10	1000.0	9.000	Single Line	19.7
1.495000	65.01	---	87.00	21.99	1000.0	9.000	Single Line	19.7
11.195000	---	50.94	74.00	23.06	1000.0	9.000	Single Line	19.9
11.195000	57.83	---	87.00	29.17	1000.0	9.000	Single Line	19.9

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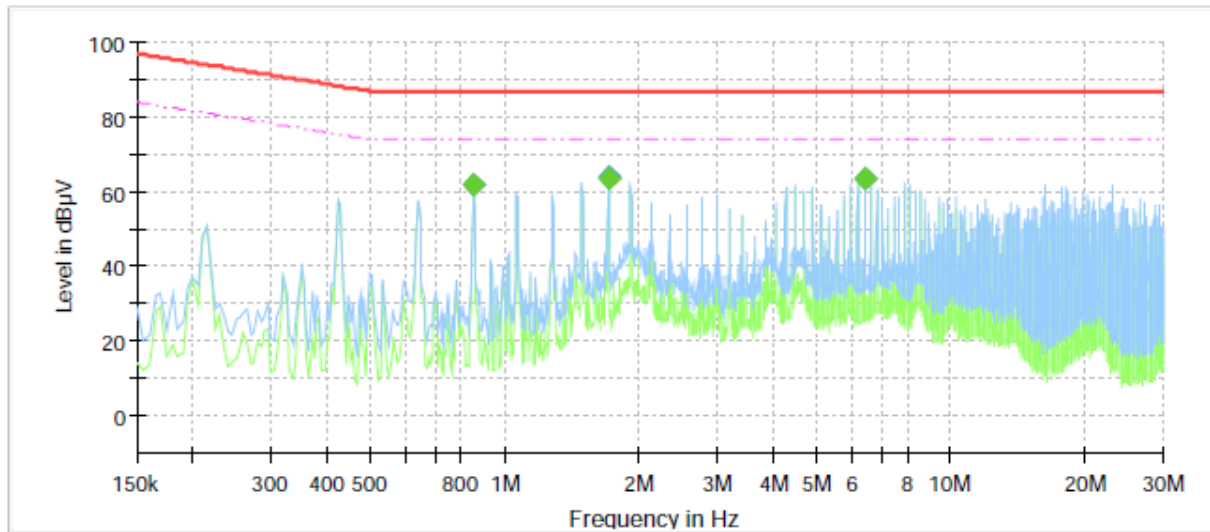
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[100 Mbps]

Common Information

Test Description:	Telecommunication Emission
Model No.:	XNV-6081R
Mode	POE_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)
0.855000	---	62.02	74.00	11.98	1000.0	9.000	Single Line	19.6
0.855000	62.04	---	87.00	24.96	1000.0	9.000	Single Line	19.6
1.710000	---	63.47	74.00	10.53	1000.0	9.000	Single Line	19.6
1.710000	63.79	---	87.00	23.21	1000.0	9.000	Single Line	19.6
6.405000	---	63.25	74.00	10.75	1000.0	9.000	Single Line	19.6
6.405000	63.35	---	87.00	23.65	1000.0	9.000	Single Line	19.6

◆ Calculation

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

QuasiPeak / CAverage : The Final Value

Reading Value : Not shown in the table.

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



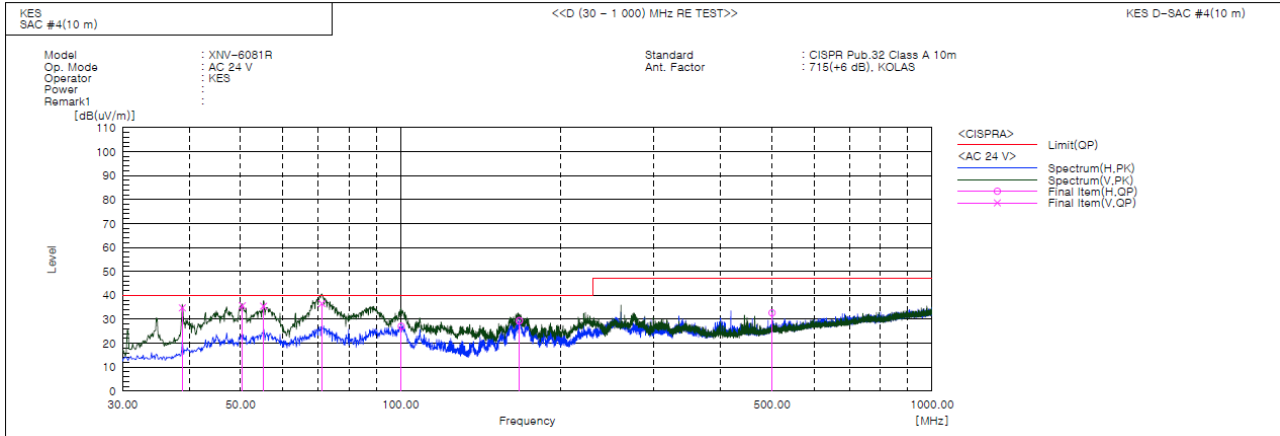
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Radiated Electric Field Emissions(Below 1 GHz)

■ AC 24 V



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	38.851	V	58.4	-23.6	34.8	40.0	5.2	100.0	290.0	
2	50.370	V	57.2	-21.5	35.7	40.0	4.3	121.0	309.0	
3	55.220	V	57.4	-21.9	35.5	40.0	4.5	155.0	281.0	
4	71.104	V	62.2	-25.6	36.6	40.0	3.4	149.0	70.0	
5	100.325	H	49.7	-22.6	27.1	40.0	12.9	400.0	293.0	
6	167.255	H	54.0	-24.6	29.4	40.0	10.6	400.0	70.0	
7	500.086	H	45.5	-12.8	32.7	47.0	14.3	193.0	63.0	

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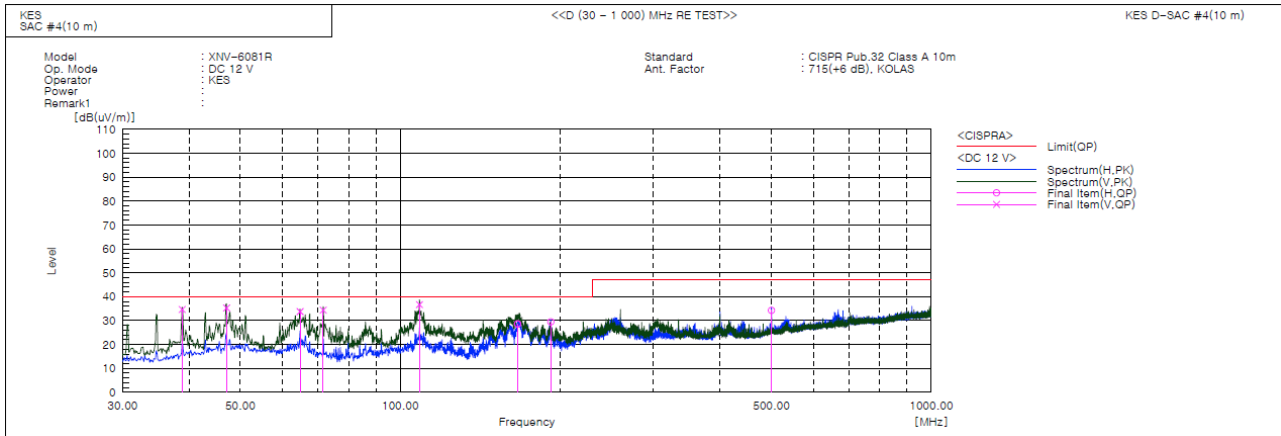
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■ DC 12 V



Final Result

No.	Frequency	(P)	Reading	c.f	Result	Limit	Margin	Height	Angle	Remark
	[MHz]		QP		QP	QP	QP			
			[dB(uV)]	[dB(1/m)]	[dB(uV/m)]	[dB(uV/m)]	[dB]	[cm]	[deg]	
1	38.851	V	58.3	-23.6	34.7	40.0	5.3	100.0	306.0	
2	47.096	V	57.0	-21.7	35.3	40.0	4.7	116.0	241.0	
3	64.799	V	57.4	-23.6	33.8	40.0	6.2	108.0	62.0	
4	71.589	V	60.2	-25.8	34.4	40.0	5.6	155.0	90.0	
5	108.691	V	59.4	-22.7	36.7	40.0	3.3	100.0	124.0	
6	166.406	H	53.3	-24.7	28.6	40.0	11.4	399.0	69.0	
7	192.111	H	52.2	-22.7	29.5	40.0	10.5	396.0	22.0	
8	500.086	H	47.1	-12.8	34.3	47.0	12.7	200.0	255.0	

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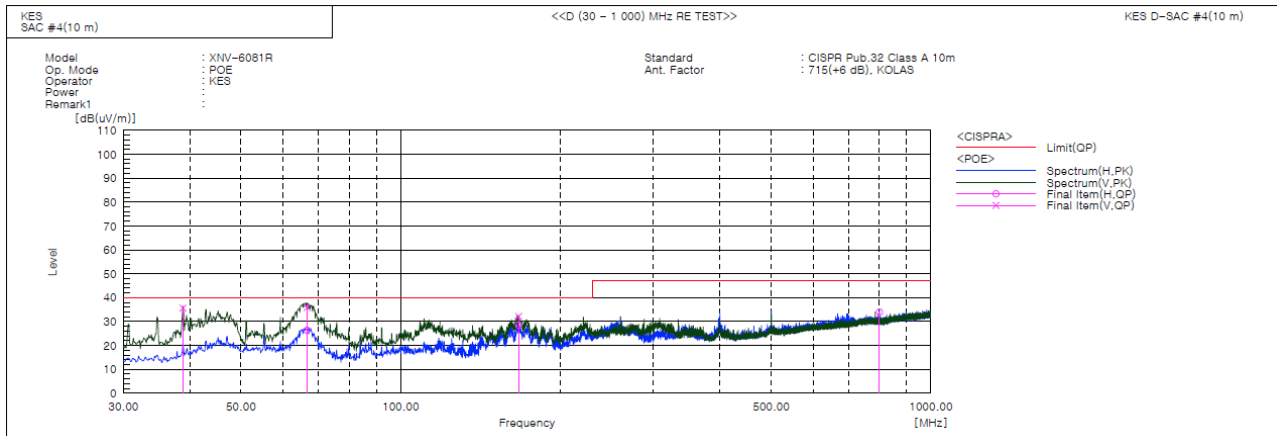


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■ PoE



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	38.851	V	59.2	-23.6	35.6	40.0	4.4	105.0	334.0	
2	66.606	V	60.0	-24.1	35.9	40.0	4.1	100.0	53.0	
3	66.618	H	50.5	-24.1	26.4	40.0	13.6	254.0	163.0	
4	167.010	V	56.8	-24.6	32.2	40.0	7.8	117.0	342.0	
5	167.018	H	53.1	-24.6	28.5	40.0	11.5	400.0	58.0	
6	800.059	H	41.7	-7.7	34.0	47.0	13.0	397.0	251.0	

◆ Calculation – SEMI ANECHOIC CHAMBER #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



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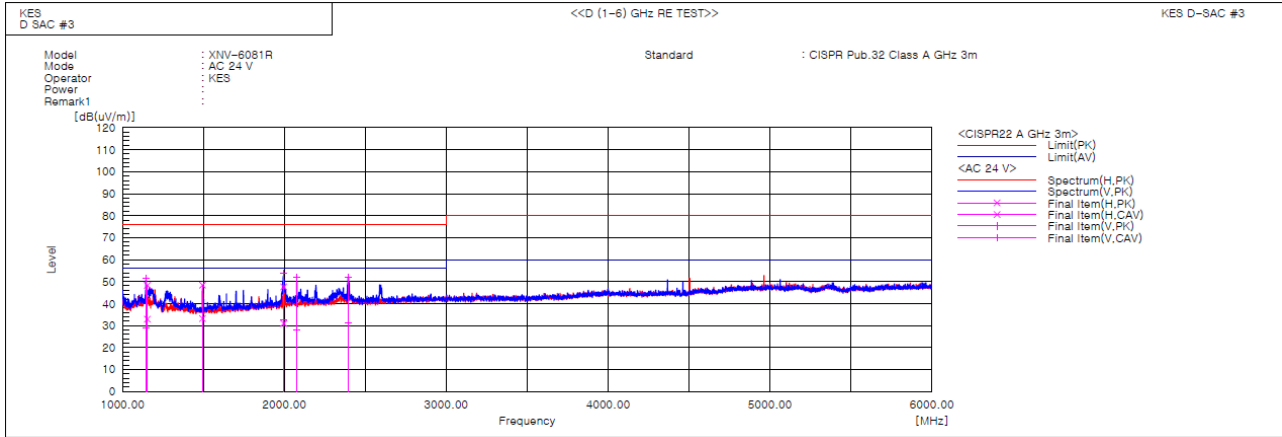
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Radiated Electric Field Emissions(Above 1 GHz)

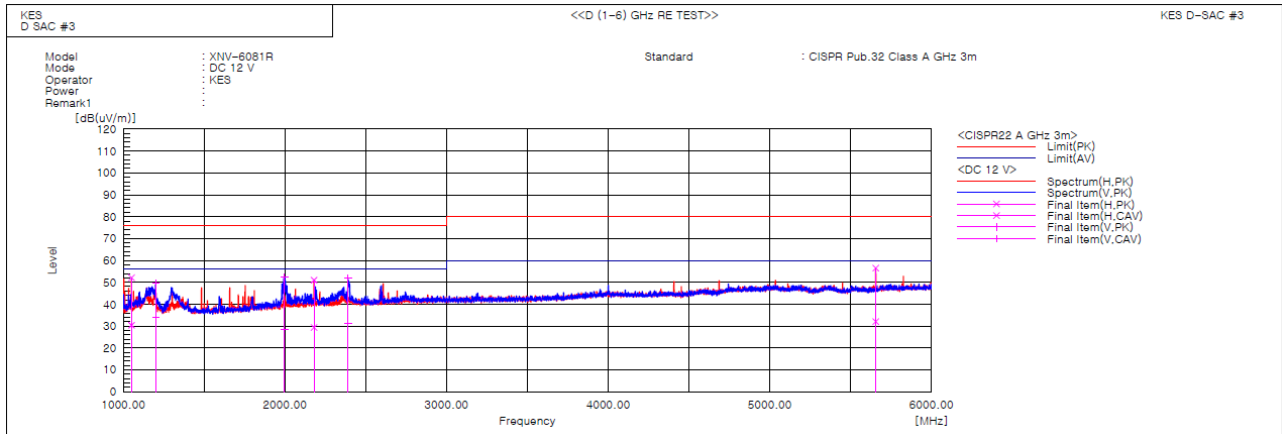
■ AC 24 V



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	1145.088	V	59.1	36.5	-7.4	51.7	29.1	76.0	56.0	24.3	26.9	100.0	146.9	
2	1152.774	H	55.6	40.2	-7.3	48.3	32.9	76.0	56.0	27.7	23.1	100.0	9.2	
3	1493.860	H	54.2	39.0	-5.8	48.4	33.2	76.0	56.0	27.6	22.8	100.0	127.8	
4	1993.947	V	56.0	34.8	-2.1	53.9	32.7	76.0	56.0	22.1	23.3	100.0	1.9	
5	1995.192	H	49.7	33.1	-2.1	47.6	31.0	76.0	56.0	28.4	25.0	100.0	354.5	
6	2077.055	V	53.9	29.7	-1.8	52.1	27.9	76.0	56.0	23.9	28.1	100.0	149.8	
7	2396.692	V	52.1	31.3	-0.3	51.8	31.0	76.0	56.0	24.2	25.0	100.0	28.4	

■ DC 12 V



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	1050.103	H	59.9	38.2	-7.8	52.1	30.4	76.0	56.0	23.9	25.6	100.0	217.7	
2	1199.268	V	56.9	41.2	-7.2	49.7	34.0	76.0	56.0	26.3	22.0	100.0	350.7	
3	1998.183	V	54.4	30.4	-2.1	52.3	28.3	76.0	56.0	23.7	27.7	100.0	5.1	
4	2179.442	H	52.4	30.8	-1.4	51.0	29.4	76.0	56.0	25.0	26.6	100.0	214.8	
5	2391.008	V	52.3	31.5	-0.3	52.0	31.2	76.0	56.0	24.0	24.8	100.0	6.3	
6	5655.269	H	48.1	23.7	8.4	56.5	32.1	80.0	60.0	23.5	27.9	100.0	214.8	

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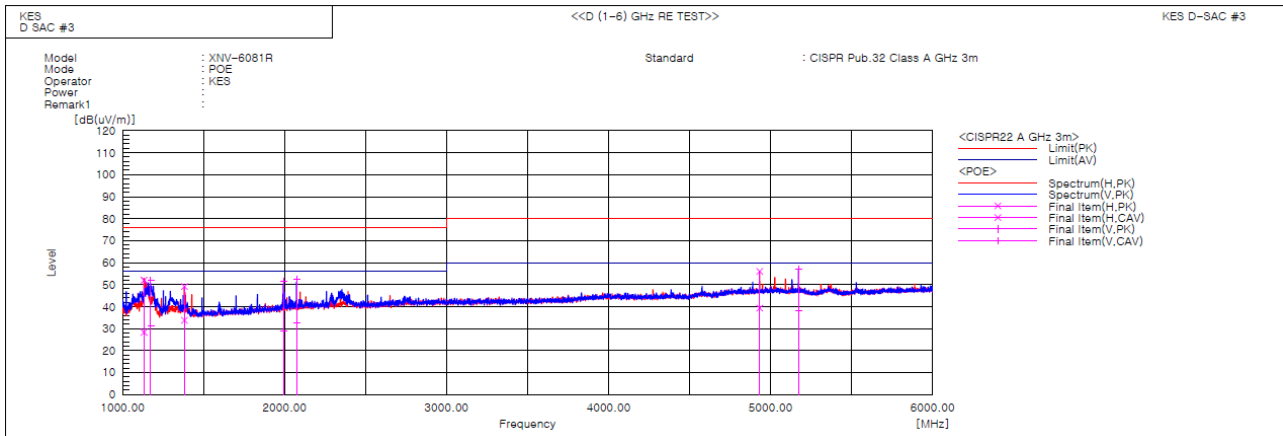
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■ PoE



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	1132.553	H	59.4	35.7	-7.4	52.0	28.3	76.0	56.0	24.0	27.7	100.0	334.1	
2	1173.019	V	59.1	38.4	-7.3	51.8	31.1	76.0	56.0	24.2	24.9	100.0	15.3	
3	1381.264	H	55.5	40.2	-6.4	49.1	33.8	76.0	56.0	26.9	22.2	100.0	110.0	
4	1992.010	V	53.7	31.1	-2.1	51.6	29.0	76.0	56.0	24.4	27.0	100.0	5.1	
5	2073.336	V	54.1	34.5	-1.8	52.3	32.7	76.0	56.0	23.7	23.3	100.0	170.1	
6	4932.337	H	47.7	31.0	8.3	56.0	39.3	80.0	60.0	24.0	20.7	100.0	146.2	
7	5172.634	V	48.5	29.6	8.5	57.0	38.1	80.0	60.0	23.0	21.9	100.0	165.0	

◆ 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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Harmonic Current Emissions and Voltage Fluctuations and Flicker

Average harmonic current results				
Hn	I _{eff} [A]	% of Limit	Limit [A]	Result
1	134.967E-3			
2	3.694E-3			PASS
3	47.153E-3	2.050	2.30	PASS
4	1.820E-3			PASS
5	28.454E-3	2.496	1.14	PASS
6	790.730E-6			PASS
7	9.583E-3	1.245	770.00E-3	PASS
8	1.052E-3			PASS
9	10.546E-3	2.636	400.00E-3	PASS
10	720.034E-6			PASS
11	4.707E-3			PASS
12	760.908E-6			PASS
13	3.074E-3			PASS
14	708.308E-6			PASS
15	1.267E-3			PASS
16	887.910E-6			PASS
17	1.971E-3			PASS
18	699.955E-6			PASS
19	1.185E-3			PASS
20	816.157E-6			PASS
21	1.695E-3			PASS
22	632.927E-6			PASS
23	931.640E-6			PASS
24	716.283E-6			PASS
25	916.540E-6			PASS
26	824.577E-6			PASS
27	850.632E-6			PASS
28	689.397E-6			PASS
29	886.194E-6			PASS
30	767.141E-6			PASS
31	820.129E-6			PASS
32	627.720E-6			PASS
33	887.973E-6			PASS
34	857.277E-6			PASS
35	738.075E-6			PASS
36	776.077E-6			PASS
37	630.462E-6			PASS
38	684.419E-6			PASS
39	634.550E-6			PASS
40	588.625E-6			PASS

Harmonic currents less than 0.6% of the input current measured under the test conditions, or less than 5 mA, whichever is greater, are disregarded.

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Test Data - Harmonics (continued)

Maximum harmonic current results

Hn	I _{eff} [A]	% of Limit	Limit [A]	Result
1	135.059E-3			
2	3.945E-3			PASS
3	47.242E-3	1.369	3.45	PASS
4	1.944E-3			PASS
5	28.629E-3	1.674	1.71	PASS
6	914.363E-6			PASS
7	9.727E-3	0.842	1.15	PASS
8	1.168E-3			PASS
9	10.741E-3	1.790	600.00E-3	PASS
10	824.541E-6			PASS
11	4.782E-3			PASS
12	864.001E-6			PASS
13	3.212E-3			PASS
14	780.091E-6			PASS
15	1.412E-3			PASS
16	969.672E-6			PASS
17	2.071E-3			PASS
18	768.518E-6			PASS
19	1.348E-3			PASS
20	917.406E-6			PASS
21	1.807E-3			PASS
22	693.395E-6			PASS
23	1.001E-3			PASS
24	810.252E-6			PASS
25	1.119E-3			PASS
26	926.446E-6			PASS
27	928.798E-6			PASS
28	770.302E-6			PASS
29	968.815E-6			PASS
30	845.713E-6			PASS
31	893.066E-6			PASS
32	694.979E-6			PASS
33	1.007E-3			PASS
34	941.233E-6			PASS
35	802.388E-6			PASS
36	862.747E-6			PASS
37	709.350E-6			PASS
38	753.648E-6			PASS
39	721.264E-6			PASS
40	648.268E-6			PASS

Harmonic currents less than 0.6% of the input current measured under the test conditions, or less than 5 mA, whichever is greater, are disregarded.

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Test Data - Voltage Fluctuations**Maximum Flicker results**

	EUT values	Limit	Result
Pst	0.028	1.00	PASS
Plt	0.028	0.65	PASS
dc [%]	0.000	3.30	PASS
dmax [%]	0.047	4.00	PASS
Tmax [s]	0.000	0.50	PASS

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Test Setup Photos and Configuration

Conducted Voltage Emissions



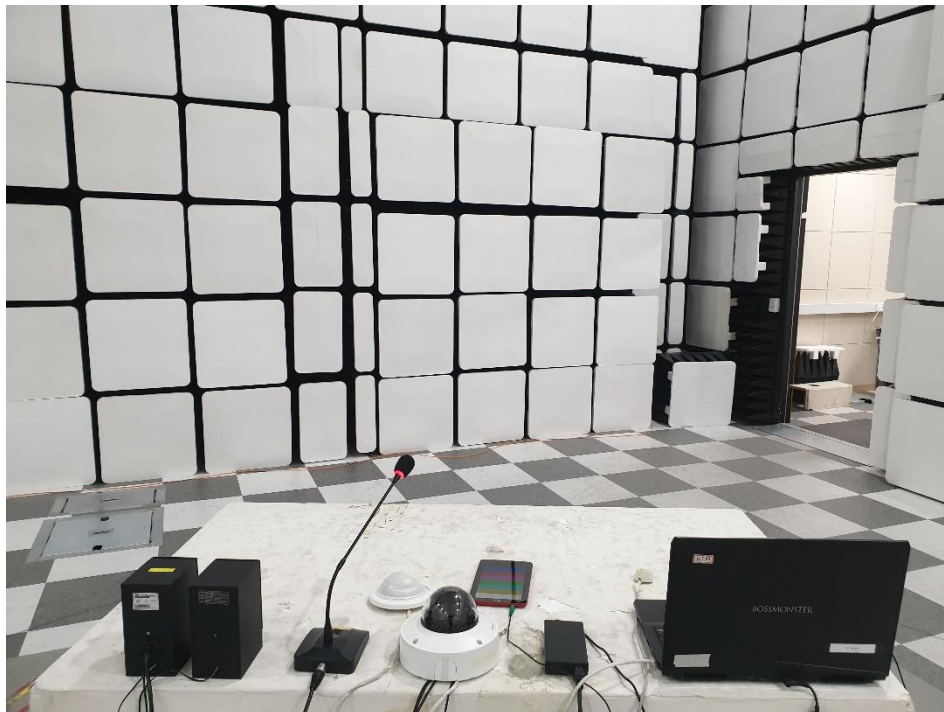
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Conducted Telecommunication Emissions



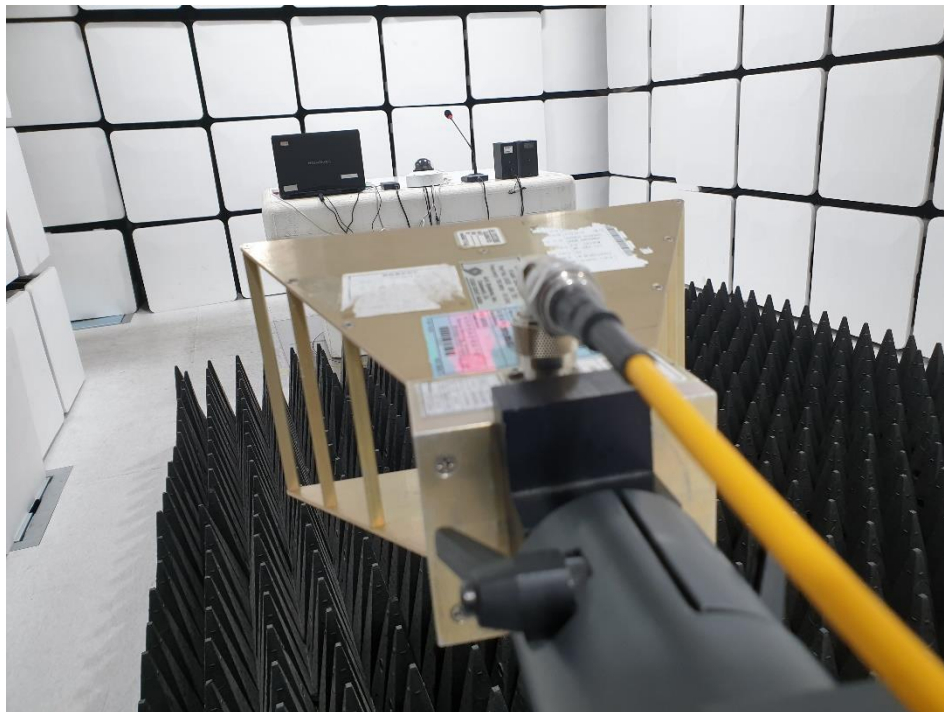
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Radiated Electric Field Emissions(Below 1 GHz)



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Radiated Electric Field Emissions(Above 1 GHz)



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Harmonic Current Emissions and Voltage Fluctuations and Flicker



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Electrostatic Discharge



Radiated Electric Field Immunity



Electrical Fast Transients/Bursts



Surge Transients



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Conducted Disturbance



Voltage Dips and Short Interruptions



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EUT External Photographs

(Top)



(Bottom)



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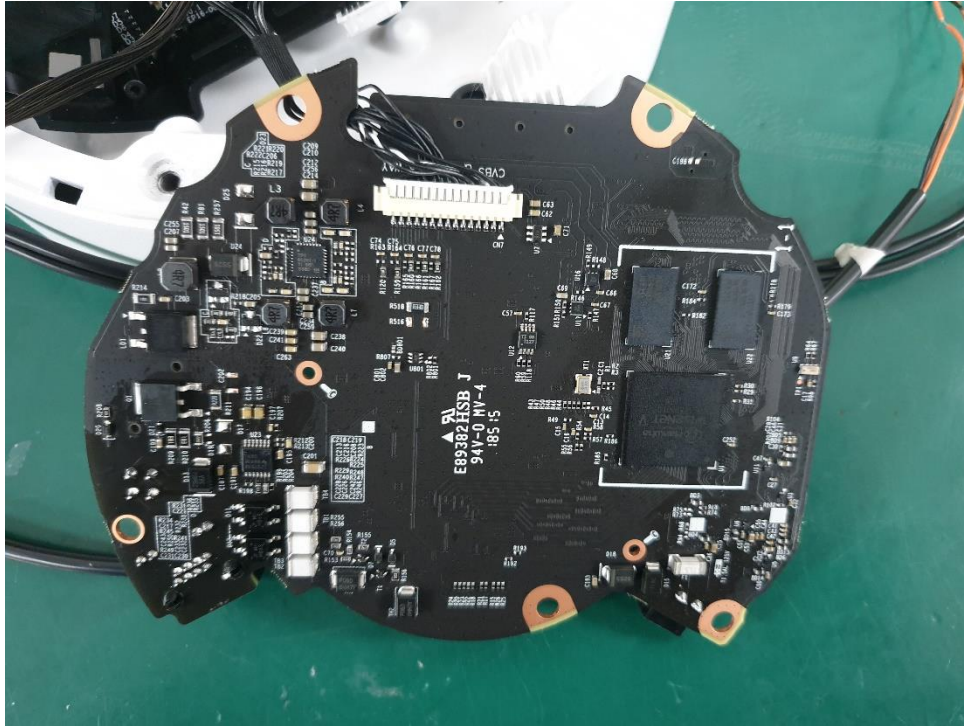
EUT Internal Photographs

(Internal View)

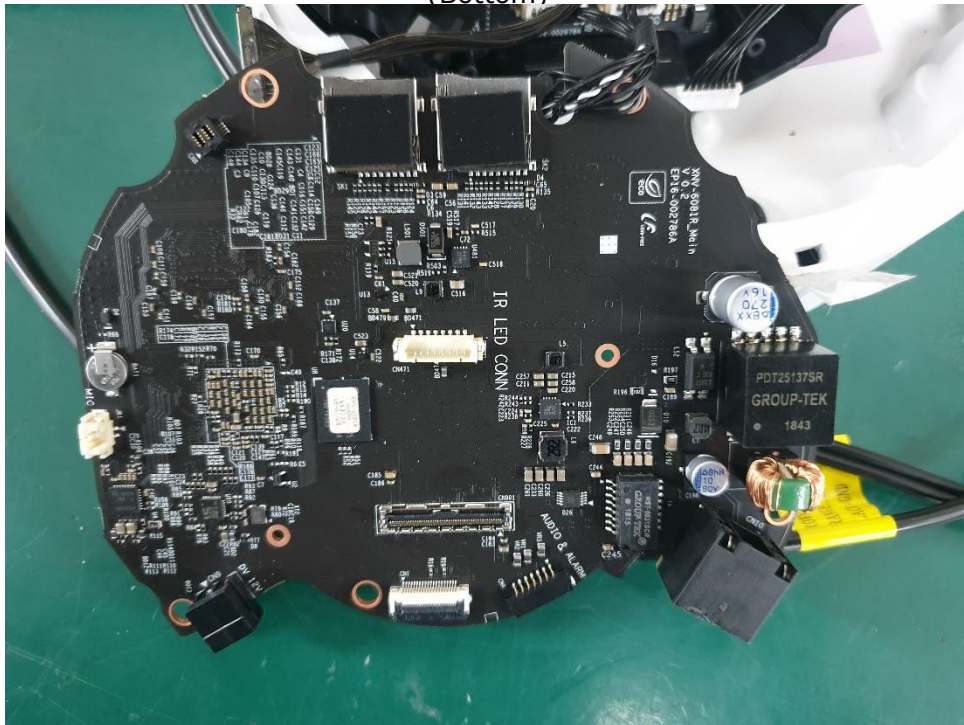


EUT Internal View – Board 1

(Top)



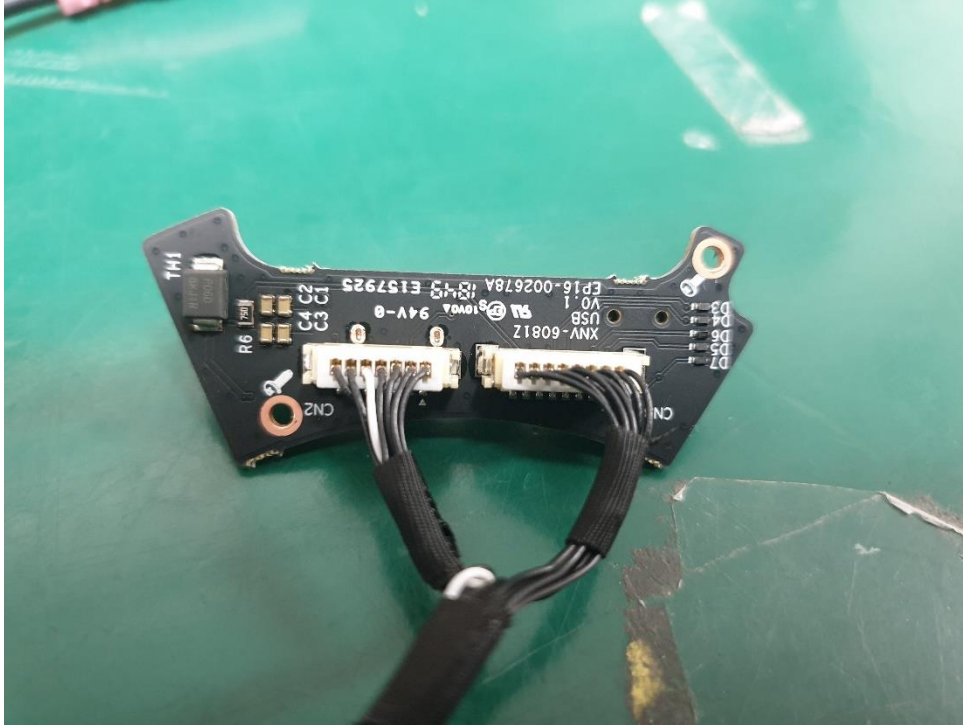
(Bottom)



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EUT Internal View – Board 2

(Top)



(Bottom)



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EUT Internal View – Board 3

(Top)



(Bottom)



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EUT Internal View – Board 4

(Top)



(Bottom)



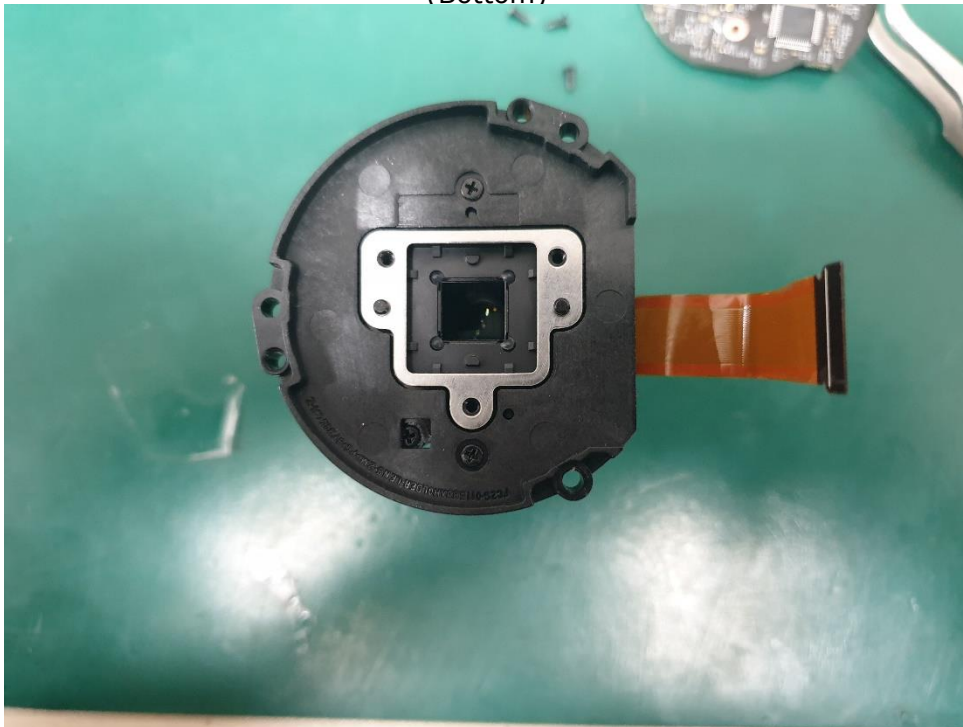
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EUT Internal View – Lens

(Top)



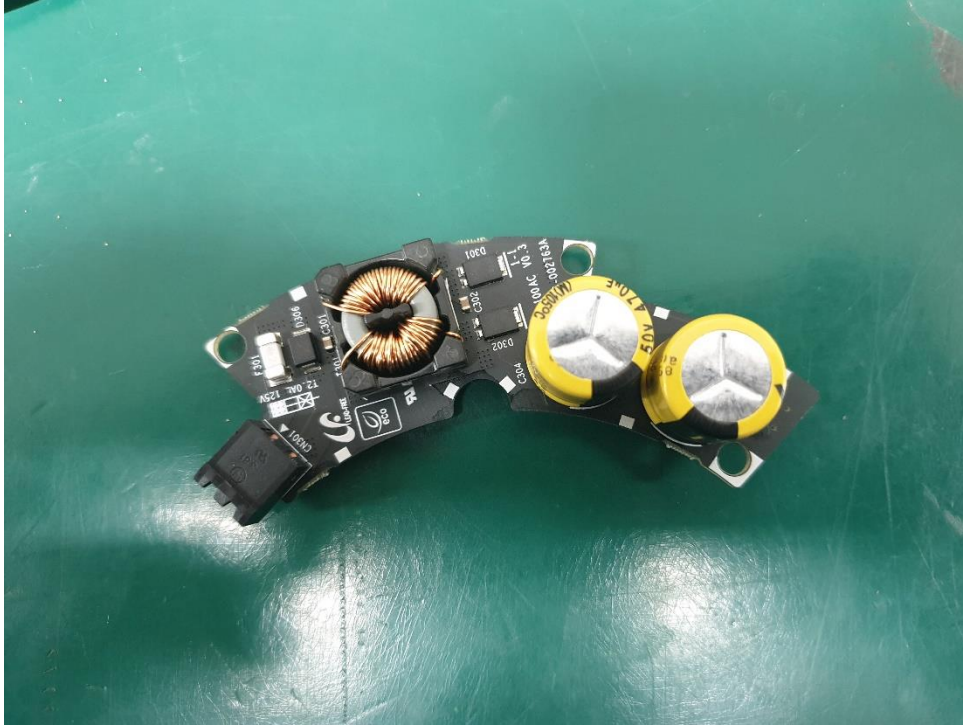
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EUT Internal View – AC Borad

(Top)



(Bottom)



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EUT Internal View – AC Module

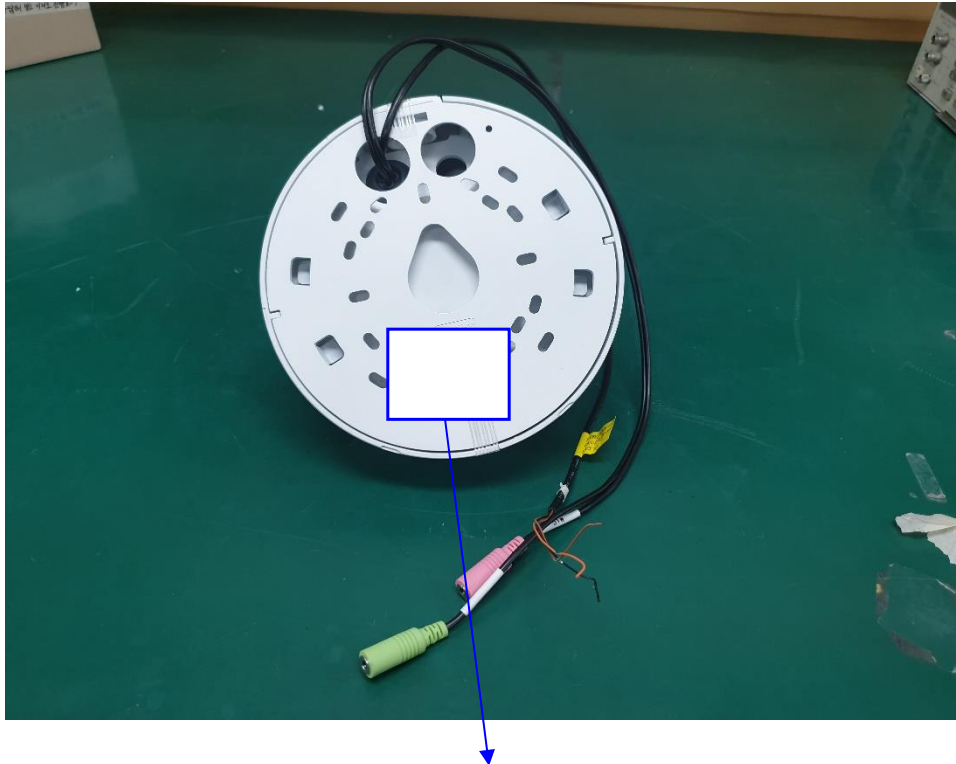
(Top)



(Bottom)



Label and Location



Network Camera

Model No : XNV-6081R

Manufacturer : HANWHA VISION VIETNAM COMPANY LIMITED

Made in Vietnam