



KES Co., Ltd.

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Report No.:

KES-EM-20T0688-R1

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EMC TEST REPORT For CE

Test Report No. : KES-EM-20T0688-R1
Date of Issue : Feb. 24, 2023
Product name : NETWORK CAMERA
Model/Type No. : PNM-9022V
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 : Sep. 16, 2020
Test date : Sep. 21, 2020 ~ Sep. 24, 2020
Test Results : ☒ **In Compliance** ☐ **Not in Compliance**

Tested by

Dong Hyun, Won
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
Oct. 16, 2020	KES-EM-20T0688	Issued
Feb. 24, 2023	KES-EM-20T0688-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:

Imaging Device	1/2.8" CMOS x 4
Resolution	[209° Mode] 4608X1800, 4032X1576, 3456X1352, 2864X1124, 2304X900, 1728X676, 1152X452, 560X224, 720X576 [180° Mode] 4096X1800, 3584X1576, 3072X1352, 2560X1124, 2048X900, 1536X676, 1024X452, 512X224, 720X576
Max. Framerate	H.265/H.264: Max. 30fps/25fps(60Hz/50Hz) MJPEG: Max. 30fps/25fps(60Hz/50Hz)
NETD	None
Pixel Size	None
Min. Illumination	Color: 0.15Lux(F1.6, 1/30sec, 30IRE) BW: 0.015Lux(F1.6, 1/30sec, 30IRE)
Video Out	USB : Micro USB Type B, 1280x720 for installation
Video Transmission Distance	None
Lens	
Focal Length (Zoom Ratio)	2.8mm fixed focal x 4
Max. Aperture Ratio	F1.6
Angular Field of View	H: 209°, V: 83.3°
Min. Object Distance	1.5m
Focus Control	Fixed
Lens Type	None
Mount Type	None
Optional Lens	None
Pan / Tilt / Rotate	
Pan / Tilt / Rotate Range	0°~355° / 0°~60° / -
Pan Range	None
Pan Speed	None
Tilt Range	None
Tilt Speed	None
Rotate Range	None
Sequence	None
Preset Accuracy	None
Operational	
Camera Title	Displayed up to 85 characters
Direction Indicator	None
Day & Night	Auto(ICR)
Backlight Compensation	BLC, HLC, WDR, SDR
Wide Dynamic Range	extreme WDR(120dB)
Digital Noise Reduction	SSNRV
Digital Image Stabilization	None
Defog	Support
Motion Detection	8ea, 8point polygonal zones
Privacy Masking	32ea, polygonal zones - Color: Grey/Green/Red/Blue/Black/White - Mosaic
Gain Control	Low / Middle / High
White Balance	ATW / AWC / Manual / Indoor / Outdoor
LDC	None
Electronic Shutter Speed	Minimum / Maximum / Anti flicker (2~1/12,000sec)
Digital PTZ	Support(2CH)
Video Rotation	Flip, Mirror
Analytics	Defocus detection, Motion detection, Appear/Disappear, Enter/Exit, Tampering, Virtual line, Audio detection

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Business Intelligence	Heatmap
Serial Interface	None
Alarm I/O	Selectable 2 port
Alarm Triggers	Analytics, Network disconnect, Alarm input
Alarm Events	File upload via FTP and e-mail Notification via e-mail SD/SDHC/SDXC recording at event triggers Alarm output
Audio In	Selectable(mic in/line in) Supply voltage: 2.5VDC(4mA), Input impedance: 2K Ohm
Audio Out	Line out, Max.output level: 1Vrms
IR Viewable Length	None
IR Illuminator (Optional)	None
Water Removal	None
Auto Tracking	None
Coaxial Protocol	None
Color Palettes	None
Radiometry	
Temperature detect range	None
Temperature accuracy	None
Temperature detection	None
Additional	None
Network	
Ethernet	Metal shielded RJ-45(10/100/1000BASE-T)
Video Compression	H.265/H.264: Main/Baseline/High, MJPEG
Audio Compression	G.711 u-law /G.726 Selectable G.726(ADPCM) 8KHz, G.711 8KHz G.726: 16Kbps, 24Kbps, 32Kbps, 40Kbps AAC-LC: 48Kbps at 16KHz
Smart Codec	Manual(Sea area), WiseStreamII
Video Quality Adjustment	H.264/H.265: Target bitrate level control MJPEG: Target bitrate level control
Bitrate Control	H.264/H.265: CBR or VBR MJPEG: VBR
Streaming	Unicast(20 users) / Multicast Multiple streaming(Up to 10 profiles)
Protocol	IPv4, IPv6, TCP/IP, UDP/IP, RTP(UDP), RTP(TCP), RTCP,RTSP, NTP, HTTP, HTTPS, SSL/TLS, DHCP, FTP, SMTP, ICMP, IGMP, SNMPv1/v2c/v3(MIB-2), ARP, DNS, DDNS, QoS, PIM-SM, UPnP, Bonjour, LLDP, SRTP
Security	HTTPS(SSL) Login Authentication Digest Login Authentication IP Address Filtering User access log 802.1X Authentication(EAP-TLS, EAP-LEAP) Device Certificate(Hanwha Techwin Root CA)
Application Programming Interface	ONVIF Profile S/G/T SUNAPI(HTTP API) Wisenet open platform
General	
Webpage Language	English, Korean, Chinese, French, Italian, Spanish, German, Japanese, Russian, Swedish,, Portuguese, Czech, Polish, Turkish, Dutch, Hungarian, Greek
Web Viewer	None
Edge Storage	Micro SD/SDHC/SDXC 2slot 1TB(256GB X 2)
Memory	4GB RAM, 512MB Flash
Environmental & Electrical	

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Operating Temperature / Humidity	-40°C ~ +60°C(-40°F ~ +131°F) / Less than 95% RH(Non-condensing) * Maximum temperature : +60°C (intermittent)
Storage Temperature / Humidity	-50°C ~ +60°C(-58°F ~ +140°F) / Less than 90% RH
Certification	IP66, IK10, NEMA4X
Input Voltage	PoE+(IEEE802.3at, Class4), 12VDC
Power Consumption	PoE+: Max 18W, Typical 10.4W 12VDC: Max 16W, Typical 9W
Mechanical	
Color / Material	White / Aluminum
RAL Code	RAL9003
Product dimensions / weight	Ø253x170mm(9.96"x6.69"), 2880g
Conduit hole	3/4"
Hanging mount(Dome)	SBP-276HMMW
Skin cover(Dome)	None
Weather cap(Dome)	None
Power module	None
Backbox	None
DORI (EN62676-4 standard)	
Detect (25PPM/ 8PPF)	
Observe (63PPM/ 19PPF)	
Recognize (125PPM/ 38PPF)	
Identify (250PPM/ 76PPF)	

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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 ☐ 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	PNM-9022V	-	HANWHA VISION VIETNAM COMPANY LIMITED	EUT

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1.5 Support Equipments

Description	Model Number	Serial Number	Manufacturer	Remarks
PoE Adapter	POE36U-1AT-R	-	PHIHONG SWITCHING POWER SUPPLY	-
AC / DC Adapter	FSP060-DIBAN2	-	FSP GROUP INC.	-
Notebook	P95G001	POE36U-1AT-R	Wistron Infocom (Chengdu) Company Limited	-
Notebook Adapter	LA65NS2-01	-	LITE-ON TECHNOLOGY (CHANGZHOU)CO.,LTD.	-
Speaker	BR1000A Cuve Black 2	-	DONGGUAN EDIFIER TECHNOLOGY Co., Ltd	-
MIC	MP1000	-	-	-
Alarm	SIP-1201DD D0	-	SAMSUNG TECHWIN CO., LTD.	-
Alarm Adapter	2ACB022F	-	Channel Well Technology (Guangzhou) Co.,Ltd.	-
Button Alarm	SLE-0001 DO	C64167JDB601268 F	-	-
Smart Phone	SHV-E210L	R33D713KA3F	Samsung Electronics Co.,Ltd.	-
Micro SD Card	-	-	-	16 GB

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1.6 External I/O Cabling

■ DC Adapter Mode

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
	3.5mm	Speaker	3.5mm	1.4	U
	3.5mm	MIC	3.5mm	1.7	U
	Alarm OUT	Alarm	Alarm IN	10.0	U
	Alarm IN	Button Alarm	Alarm OUT	10.0	U
	Slot	Micro SD Card	Slot	-	-
Notebook	3.5mm	Smart Phone	3.5mm	1.0	U

* Unshielded=U, Shielded=S

■ PoE Adapter Mode

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
	3.5mm	Speaker	3.5mm	1.4	U
	3.5mm	MIC	3.5mm	1.4	U
	Alarm OUT	Alarm	Alarm IN	10.0	U
	Alarm IN	Button Alarm	Alarm OUT	10.0	U
	Slot	Micro SD Card	Slot	-	-
Notebook	RJ-45	PoE Adapter	RJ-45	3.0	U
	3.5mm	Smart Phone	3.5mm	1.0	U

* Unshielded=U, Shielded=S

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1.7 EUT Operating Mode(s)

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

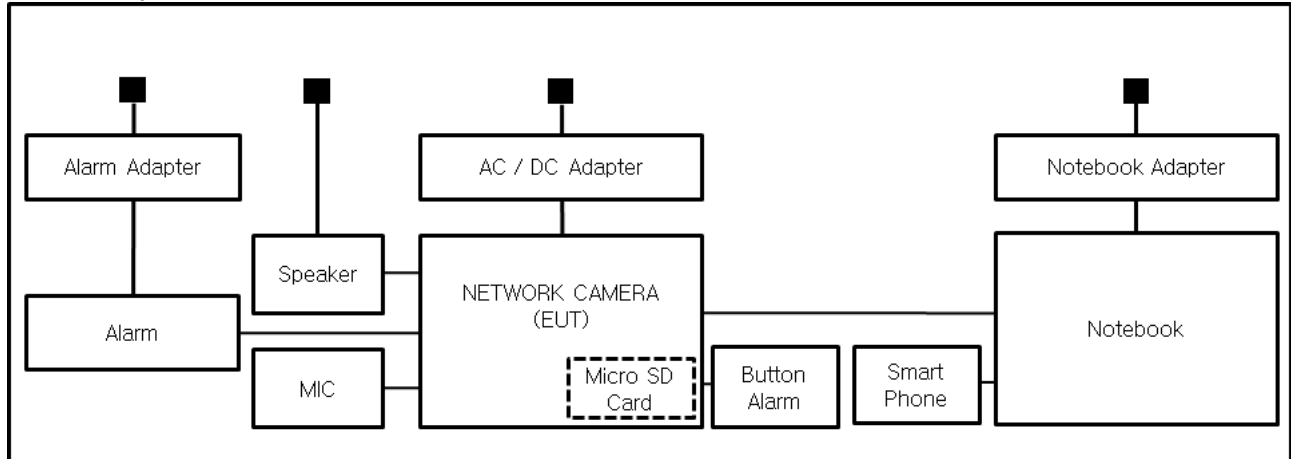
EUT Test operating S/W		
Name	Version	Manufacture Company
Web Viewer	-	Hanwha Vision Co., Ltd

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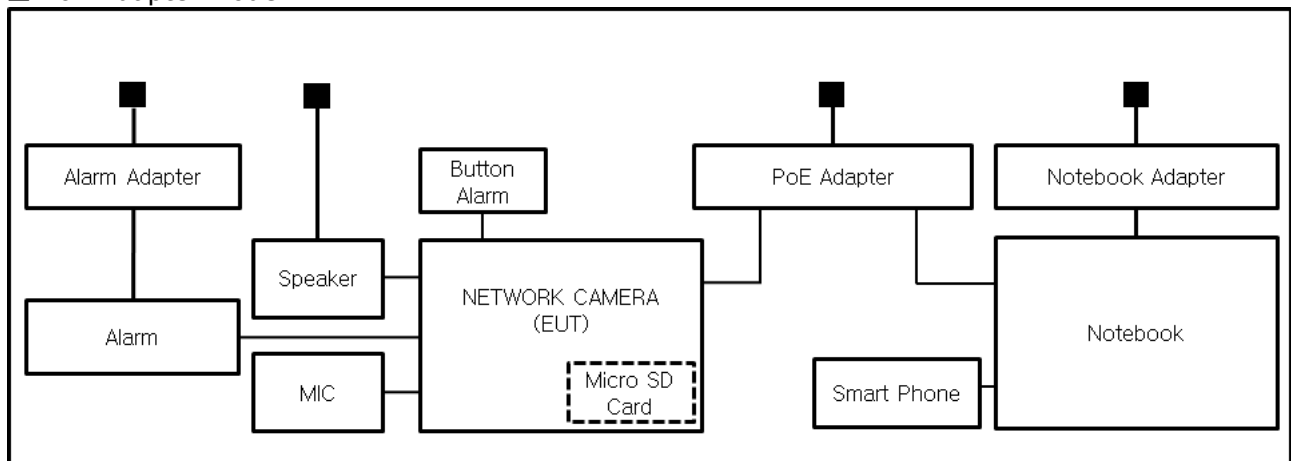
1.8 Configuration

■ AC Main
 □ DC Main

■ DC Adapter Mode



■ PoE Adapter Mode



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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|---|----------------------------------|----------------------------------|
| ☐ 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 | | |
| ☐ 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. 21, 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	ESR3	R & S	101783	01, 20, 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: 22.9 °C
Relative Humidity: 52.7 % 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

Sep. 21, 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	ESR3	R & S	101783	01, 20, 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
☐	8-WIRE ISN CAT3,5	ENY81	R & S	100174	01, 07, 2021
☒	8-WIRE ISN CAT6	ENY81-CAT6	R & S	101665	01, 07, 2021
☐	CDN	CDNS502A	TESEQ	40431	01, 02, 2021

Test Conditions

Temperature: 22,9 °C
Relative Humidity: 52,7 % R.H.

Frequency Range of Measurement

150 kHz to 30 MHz

Instrument Settings

IF Band Width: 9 kHz

Test Results

The requirements are:

- ☒ PASS
☐ NOT PASS
☐ NOT APPLICABLE

Remarks

See Appendix A for test data.

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2.3 Radiated Electric Field Emissions(Below 1 GHz)

Test Date

Sep. 21, 2020

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, 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: 23,2 °C

Relative Humidity: 53,0 % 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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2.4 Radiated Electric Field Emissions(Above 1 GHz)

Test Date

Sep. 21, 2020

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, 05, 2021
☒	PREAMPLIFIER	8449B	AGILENT	3008A01967	04, 20, 2021
☐	ATTENUATOR	8491A	HP	35496	03, 10, 2021
☒	DOUBLE RIDGED HORN ANTENNA	SAS-571	A.H.SYSTEM,INC	781	03, 11, 2021

Test Conditions

Temperature: 23,1 °C
Relative Humidity: 53,1 % 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

RemarksSee Appendix A for test data.

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2.5 Harmonic Current Emissions

Test Date

Sep. 23, 2020

Test Location

Electro wave Shieldroom #3

Test Equipment

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
☒	EMI Test S/W	net.control	EM TEST	2.1.4	-
☒	DIGITAL POWER ANALYZER	DPA 500N	EM TEST	V1024106759	04, 06, 2021
☒	POWER SOURCE	ACS 500N6	EM TEST	V1024106760	-

Test Conditions

Temperature: 23,3 °C
Relative Humidity: 52,4 % 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.



2.6 Voltage Fluctuations and Flicker

Test Date

Sep. 23, 2020

Test Location

Electro wave Shieldroom #3

Test Equipment

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
☒	EMI Test S/W	net.control	EM TEST	2.1.4	-
☒	DIGITAL POWER ANALYZER	DPA 500N	EM TEST	V1024106759	04, 06, 2021
☒	POWER SOURCE	ACS 500N6	EM TEST	V1024106760	-

Test Conditions

Temperature: 23,3 °C
Relative Humidity: 52,4 % R.H.

Test Results

The requirements are:

- ☒ PASS
☐ NOT PASS
☐ NOT APPLICABLE

Remarks

See Appendix A for test data.

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

Sep. 23, 2020

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	ESS05X4620	01, 28, 2021
☒	HCP	-	KES	-	-
☒	VCP	-	Noise Ken	-	-

Test Conditions

Temperature: 22,9 °C
Relative Humidity: 52,1 % R.H.
Atmospheric Pressure: 100,2 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
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Notes: HCP: Horizontal coupling plane
VCP: Vertical coupling plane

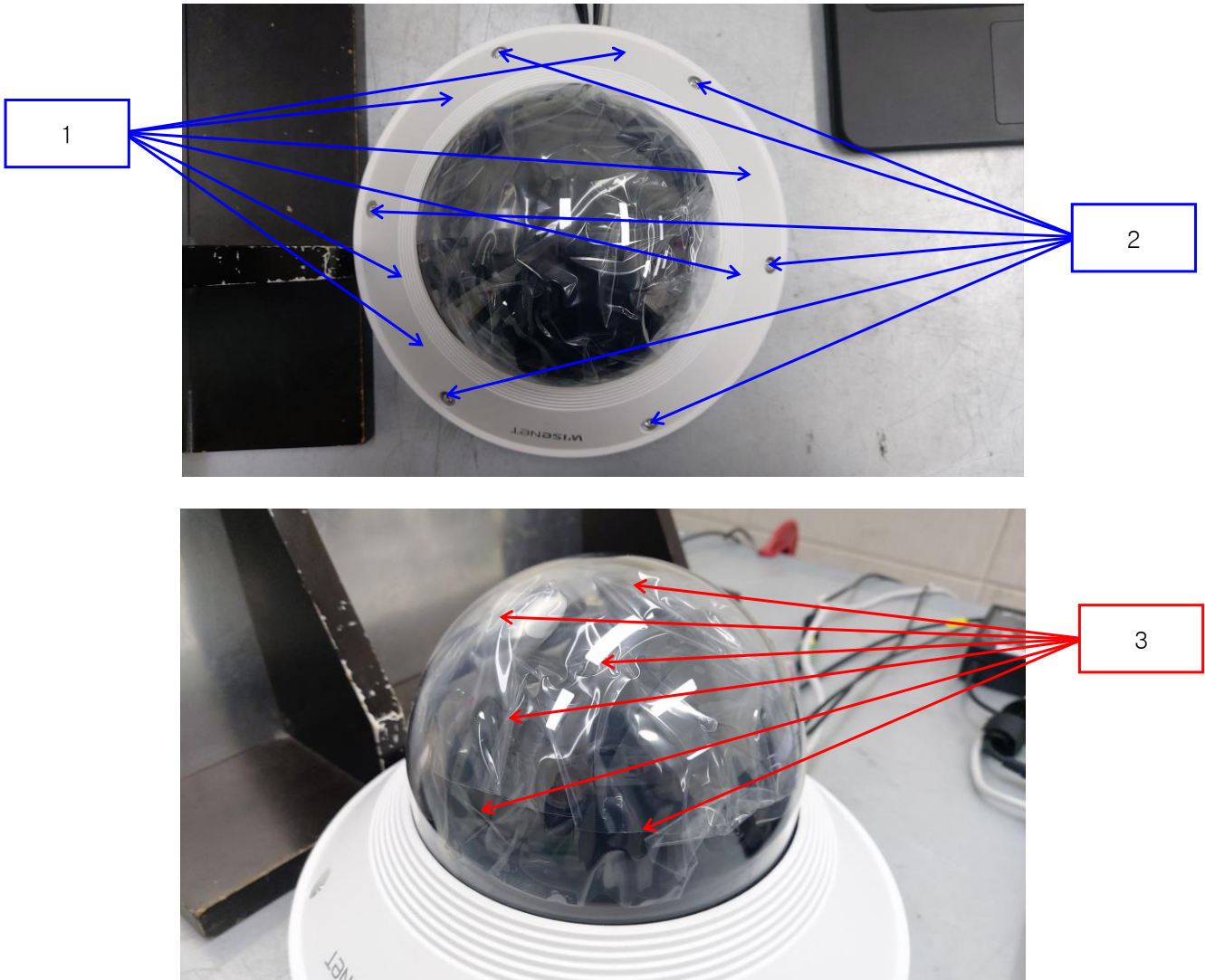
Required Performance Criteria: ☒ Complied

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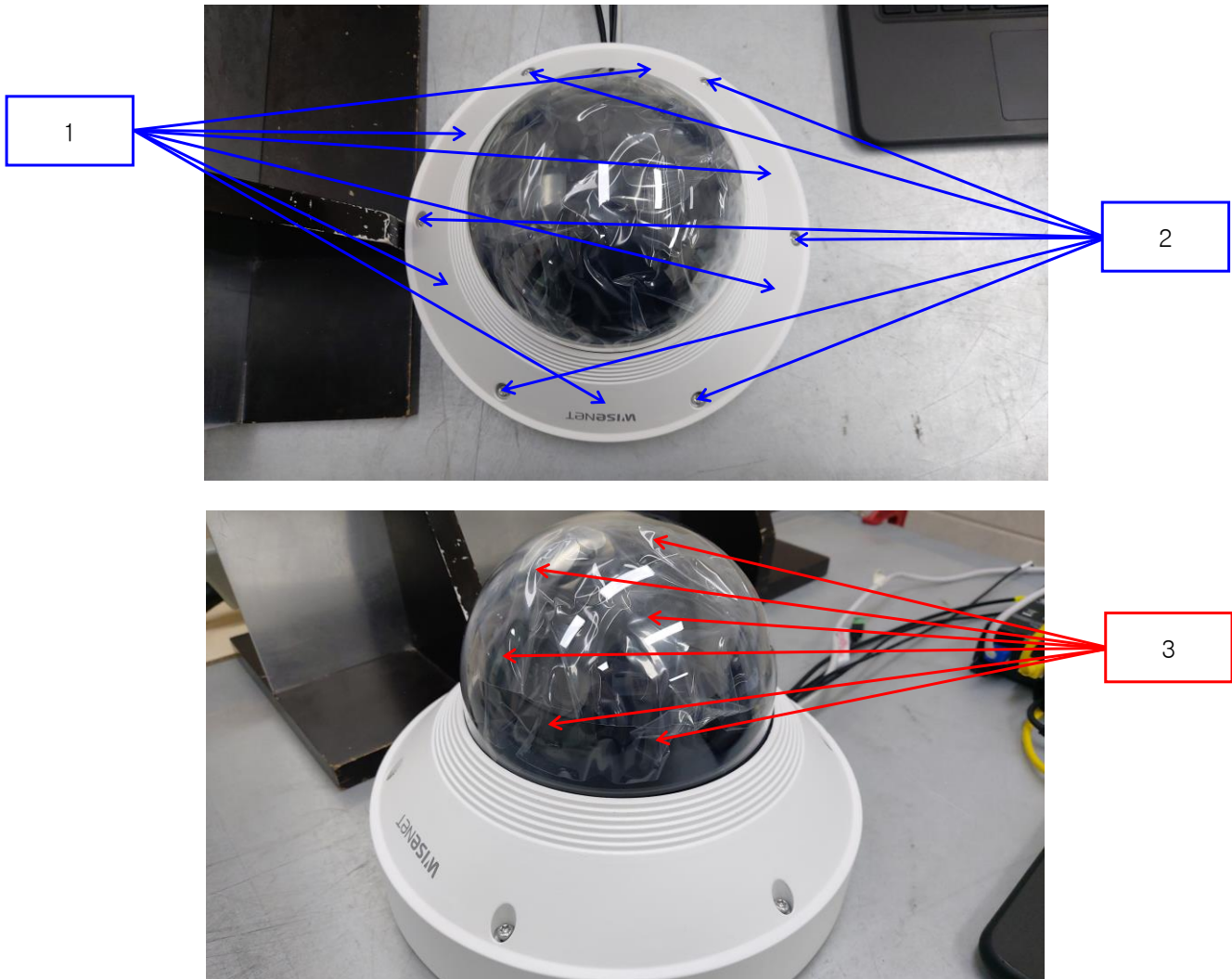
Location of Discharge:

- DC Adapter Mode

Air
Contact



- PoE Adapter Mode



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Test Data

■ DC Adapter Mode

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 1	Contact Discharge	Complied	-
2	Screw	Contact Discharge	Complied	-
3	Enclosure 2	Air Discharge	Complied	-

■ PoE Adapter Mode

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 1	Contact Discharge	Complied	-
2	Screw	Contact Discharge	Complied	-
3	Enclosure 2	Air Discharge	Complied	-

Note: "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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3.2 Radiated Electric Field Immunity

Reference Standard

EN 61000-4-3:2006 +A2:2010

Test Date

Sep. 22, 2020

Test LocationEMS-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	9.12.00	-
☒	SIGNAL GENERATOR	SMB 100A	Rohde & Schwarz	108252	08, 05, 2021
☒	HIGH POWER DUAL AMP	SSA532	SUNGSAN	SSA532-001	-
☒	POWER METER	E4419B	Agilent	GB40203000	04, 20, 2021
☒	CW POWER SENSOR	E4412A	Agilent	US38488240	04, 20, 2021
☒	CW POWER SENSOR	E4412A	Agilent	MY41501662	04, 20, 2021
☒	STACKED DOUBLE LOG-PER- ANTENNA	STPL9128 E	Schwarzbeck	9128ES-121	-
☒	DOUBLE RIDGED HORN ANTENNA	SAS-571	A.H.SYSTEM,INC	781	03, 11, 2021

Test Conditions

Temperature: 23,5 °C
Relative Humidity: 54,0 % R.H.
Atmospheric Pressure: 100,5 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**■ DC Adapter Mode**

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

■ PoE Adapter Mode

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

RemarksPASS Required Performance Criteria

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3.3 Electrical Fast Transients/Bursts

Reference Standard

EN 61000-4-4:2012

Test Date

Sep. 24, 2020

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, 2020
☒	MOTOR VARIAC	MV2616	EM TEST	P1552169719	11, 27, 2020
☒	CAPACITIVE COUPLING CLAMP	HFK	EM TEST	P1633183115	11, 27, 2020

Test Conditions

Temperature: 24,1 °C
Relative Humidity: 53,6 % R.H.
Atmospheric Pressure: 100,0 kPa

Test Specifications

Pulse Amplitude & Polarity:
(AC Power Lines) ☐ ± 1.0 kV ☒ ± 2.0 kV
☐ ± 4.0 kV

Pulse Amplitude & Polarity:
(Other supply / Signal Lines) ☐ ± 0.5 kV ☒ ± 1.0 kV
☐ ± 2.0 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

■ DC Adapter Mode

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

Mode of Application	Observations	
	(+) Burst (kV)	(-) Burst (kV)
L	Complied	Complied
N	Complied	Complied
PE	Complied	Complied
L – N	Complied	Complied
L – PE	Complied	Complied
N – PE	Complied	Complied
L – N – PE	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	Complied	Complied
Alarm OUT	Complied	Complied

☒ PoE Adapter Mode

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

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

☐ 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	Complied	Complied
Alarm 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

Test Date

Sep. 24, 2020

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, 2020
☒	MOTOR VARIAC	MV2616	EM TEST	P1552169719	11, 27, 2020
☒	CDN	CNV 508N1	EM TEST	P1610176296	11, 27, 2020

Test Conditions

Temperature: 24,1 °C
Relative Humidity: 53,6 % R.H.
Atmospheric Pressure: 100,0 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

■ DC Adapter Mode

☒ 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)
L – PE	Complied	Complied
N – PE	Complied	Complied

Signal Lines

☒ Line to Earth – Common Mode

Mode of Application	Coupling Method	Observations	
		(+) Surge (kV)	(-) Surge (kV)
RJ-45	CDN	Complied	Complied
	LINE	Complied	Complied

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☒ PoE Adapter Mode☐ Line to Line – Differential Mode

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

☐ Line to Earth – Common Mode

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

Signal Lines☒ Line to Earth – Common Mode

Mode of Application	Coupling Method	Observations	
		(+) Surge (kV)	(-) Surge (kV)
RJ-45	CDN	Complied	Complied
	LINE	Complied	Complied

Note: "Blank" = Not performed

Observations:

Complied – No degradation of function

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

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3.5 Conducted Disturbance

Reference Standard

EN 61000-4-6:2014

Test Date

Sep. 23, 2020

Test Location

EMS-CS: Electro wave Shieldroom #3

Test Equipment

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
☒	EMS Test S/W	icd.control	EM TEST	5.3.7	-
☒	CONTINUOUS WAVE SIMULATOR	CWS 500N1	EM TEST	V0936105119	08, 05, 2021
☒	ATTENUATOR	ATT6	EM TEST	1208-34	08, 05, 2021
☒	CDN	CDN-M2/M3N	EM TEST	0909-06	08, 05, 2021
☒	CDN	CDN T8RJ45	EM TEST	0909-09	08, 05, 2021
☒	EM INJECTION CLAMP	EM 101	Liithi	35943	08, 06, 2021

Test Conditions

Temperature: 23,3 °C
Relative Humidity: 52,4 % R.H.
Atmospheric Pressure: 100,2 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

■ DC Adapter Mode

☒ Input a.c. power ports

Coupling Location (Line Stressed)	Coupling Method	Observations
L – N – PE	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	Complied
Alarm IN	Clamp	Complied
Alarm OUT	Clamp	Complied

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■ PoE Adapter Mode☐ 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	Complied
Alarm IN	Clamp	Complied
Alarm 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**Remarks**PASS Required Performance Criteria

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3.6 Voltage Dips and Short Interruptions

Reference Standard

EN 61000-4-11:2004

Test Date

Sep. 24, 2020

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, 2020
☒	MOTOR VARIAC	MV2616	EM TEST	P1552169719	11, 27, 2020

Test Conditions

Temperature: 24,1 °C
Relative Humidity: 53,6 % R.H.
Atmospheric Pressure: 100,0 kPa

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Test Specifications & Observations/Remarks**■ DC Adapter Mode****- Voltage Dips and Short Interruptions**

<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>Degradation</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

Degradation - See "Remarks "

Test Results

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

Remarks

During the test(100%, 250cycle), EUT was turned off but after the test, it was recovered by no operator's intervention.

APPENDIX A – TEST DATA

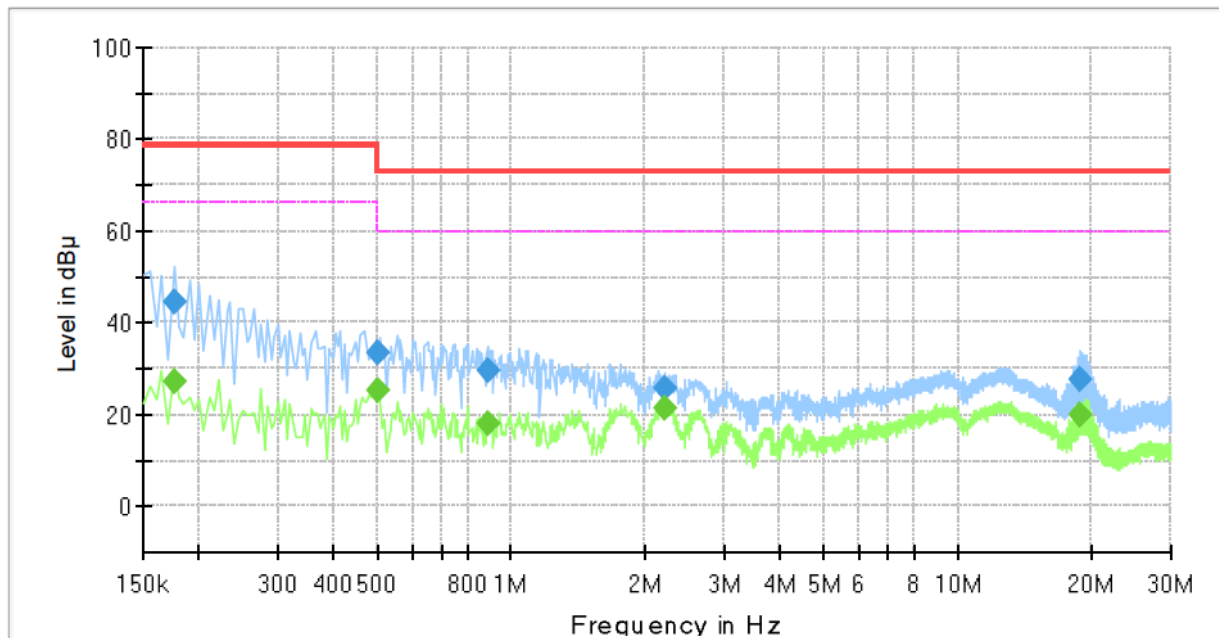
Conducted Emissions at Mains Power Ports

■ DC Adapter Mode

[HOT]

Common Information

Test Description:	Conducted Emission
Model No.:	PNM-9022V
Phase:	
Mode:	DC_H
Operator Name:	KES



Final Result

Frequency (MHz)	QuasiPeak (dBμV)	CAverage (dBμV)	Limit (dBμV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.175000	---	27.01	66.00	38.99	1000.0	9.000	L1	19.5
0.175000	44.30	---	79.00	34.70	1000.0	9.000	L1	19.5
0.500000	---	25.25	66.00	40.75	1000.0	9.000	L1	19.8
0.500000	33.58	---	73.00	39.42	1000.0	9.000	L1	19.8
0.885000	---	18.02	60.00	41.98	1000.0	9.000	L1	20.1
0.885000	29.33	---	73.00	43.67	1000.0	9.000	L1	20.1
2.215000	---	21.53	60.00	38.47	1000.0	9.000	L1	20.2
2.215000	25.73	---	73.00	47.27	1000.0	9.000	L1	20.2
18.820000	---	19.91	60.00	40.09	1000.0	9.000	L1	20.2
18.820000	27.50	---	73.00	45.50	1000.0	9.000	L1	20.2

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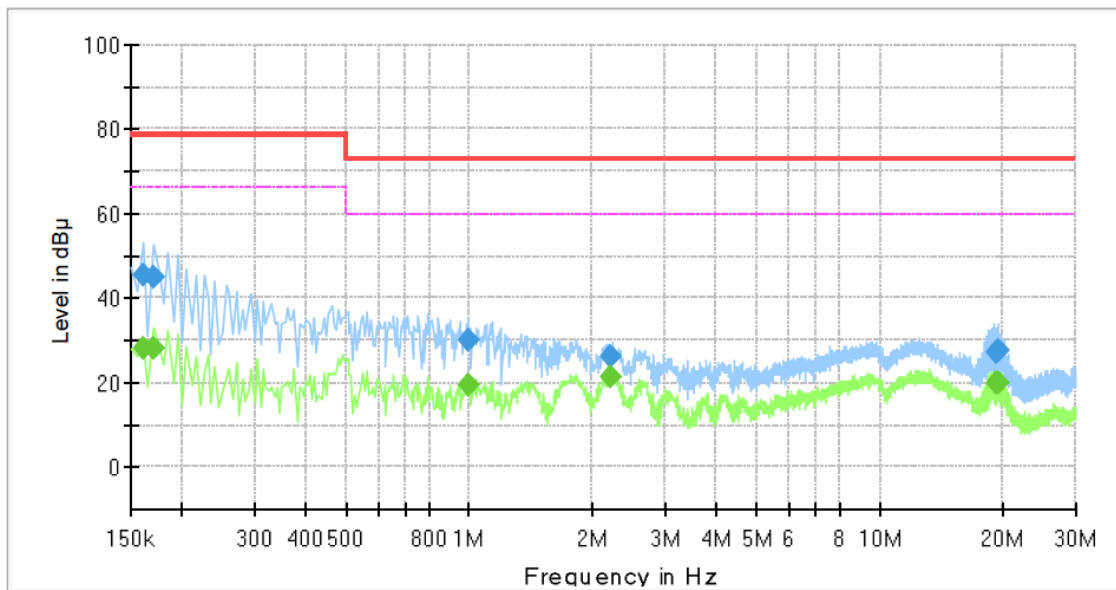
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[NEUTRAL]

Common Information

Test Description:	Conducted Emission
Model No.:	PNM-9022V
Phase:	
Mode:	DC_N
Operator Name:	KES



Final Result

Frequency (MHz)	QuasiPeak (dBμV)	CAverage (dBμV)	Limit (dBμV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.160000	---	28.03	66.00	37.97	1000.0	9.000	N	19.4
0.160000	45.71	---	79.00	33.29	1000.0	9.000	N	19.4
0.170000	---	27.93	66.00	38.07	1000.0	9.000	N	19.5
0.170000	45.23	---	79.00	33.77	1000.0	9.000	N	19.5
0.995000	---	19.27	60.00	40.73	1000.0	9.000	N	20.1
0.995000	29.91	---	73.00	43.09	1000.0	9.000	N	20.1
2.200000	---	21.47	60.00	38.53	1000.0	9.000	N	20.2
2.200000	25.95	---	73.00	47.05	1000.0	9.000	N	20.2
19.165000	---	19.77	60.00	40.23	1000.0	9.000	N	20.3
19.165000	27.29	---	73.00	45.71	1000.0	9.000	N	20.3
19.355000	---	20.15	60.00	39.85	1000.0	9.000	N	20.3
19.355000	27.85	---	73.00	45.15	1000.0	9.000	N	20.3

◆ 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 Adapter Mode

[1 000 Mbps]

Common Information

Test Description:

Telecommunication Emission

Model No.:

PNM-9022V

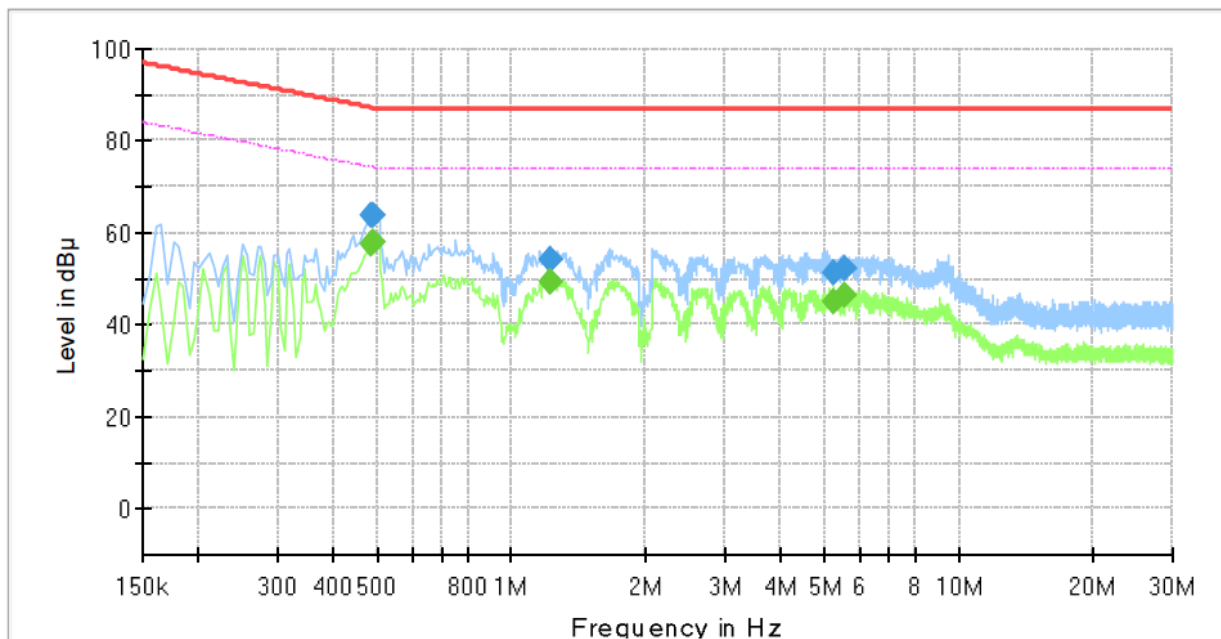
Mode :

DC_ 1 000 Mbps

Speed :

Operator Name:

KES



Final Result

Frequency (MHz)	QuasiPeak (dBμV)	CAverage (dBμV)	Limit (dBμV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.485000	---	57.72	74.25	16.53	1000.0	9.000	Single Line	19.8
0.485000	63.61	---	87.25	23.64	1000.0	9.000	Single Line	19.8
0.490000	---	57.91	74.17	16.26	1000.0	9.000	Single Line	19.8
0.490000	63.73	---	87.17	23.44	1000.0	9.000	Single Line	19.8
1.215000	---	49.50	74.00	24.50	1000.0	9.000	Single Line	20.0
1.215000	54.34	---	87.00	32.66	1000.0	9.000	Single Line	20.0
1.220000	---	49.29	74.00	24.71	1000.0	9.000	Single Line	20.0
1.220000	54.19	---	87.00	32.81	1000.0	9.000	Single Line	20.0
5.245000	---	45.14	74.00	28.86	1000.0	9.000	Single Line	19.3
5.245000	51.09	---	87.00	35.91	1000.0	9.000	Single Line	19.3
5.545000	---	46.44	74.00	27.56	1000.0	9.000	Single Line	19.3
5.545000	52.03	---	87.00	34.97	1000.0	9.000	Single Line	19.3

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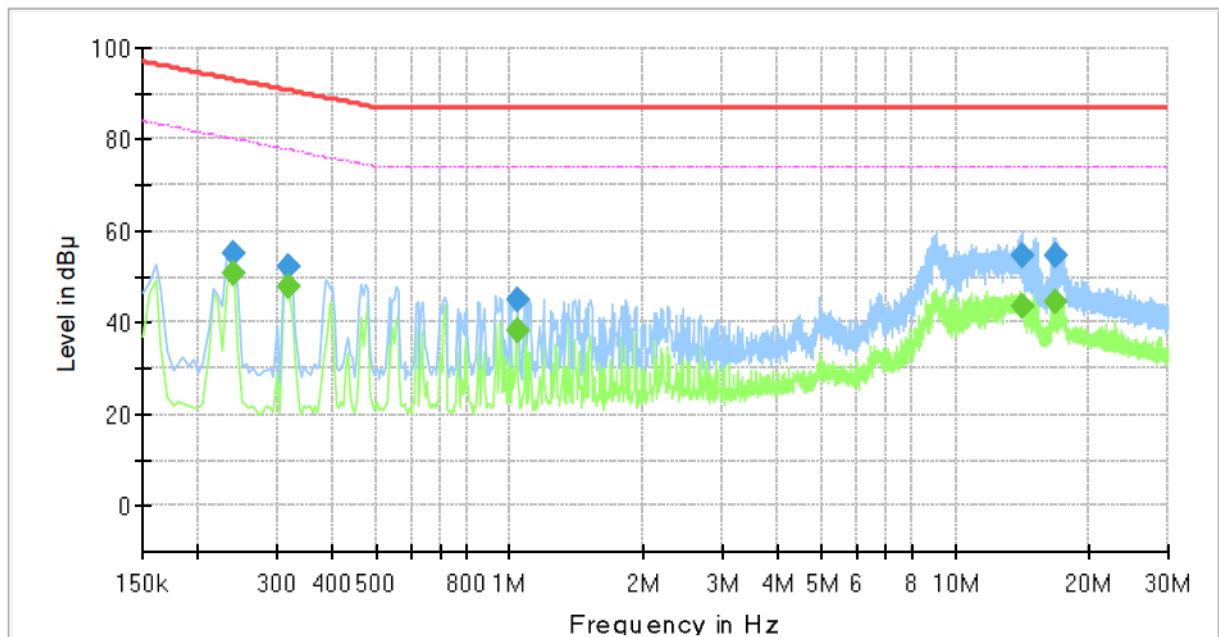
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■ PoE Adapter Mode

[1 000 Mbps]

Common Information

Test Description: Telecommunication Emission
 Model No.: PNM-9022V
 Mode : PoE_ 1 000 Mbps
 Speed :
 Operator Name: KES



Final Result

Frequency (MHz)	QuasiPeak (dBμV)	CAverage (dBμV)	Limit (dBμV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.240000	---	51.01	80.10	29.09	1000.0	9.000	Single Line	19.7
0.240000	54.96	---	93.10	38.14	1000.0	9.000	Single Line	19.7
0.320000	---	47.66	77.71	30.05	1000.0	9.000	Single Line	19.7
0.320000	52.28	---	90.71	38.43	1000.0	9.000	Single Line	19.7
1.035000	---	38.44	74.00	35.56	1000.0	9.000	Single Line	20.0
1.035000	44.83	---	87.00	42.17	1000.0	9.000	Single Line	20.0
14.085000	---	43.53	74.00	30.47	1000.0	9.000	Single Line	19.7
14.085000	54.59	---	87.00	32.41	1000.0	9.000	Single Line	19.7
16.830000	---	44.57	74.00	29.43	1000.0	9.000	Single Line	19.8
16.830000	54.45	---	87.00	32.55	1000.0	9.000	Single Line	19.8

◆ 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 (ISN FACTOR + (Cable Loss + Pulse Limiter FACTOR))

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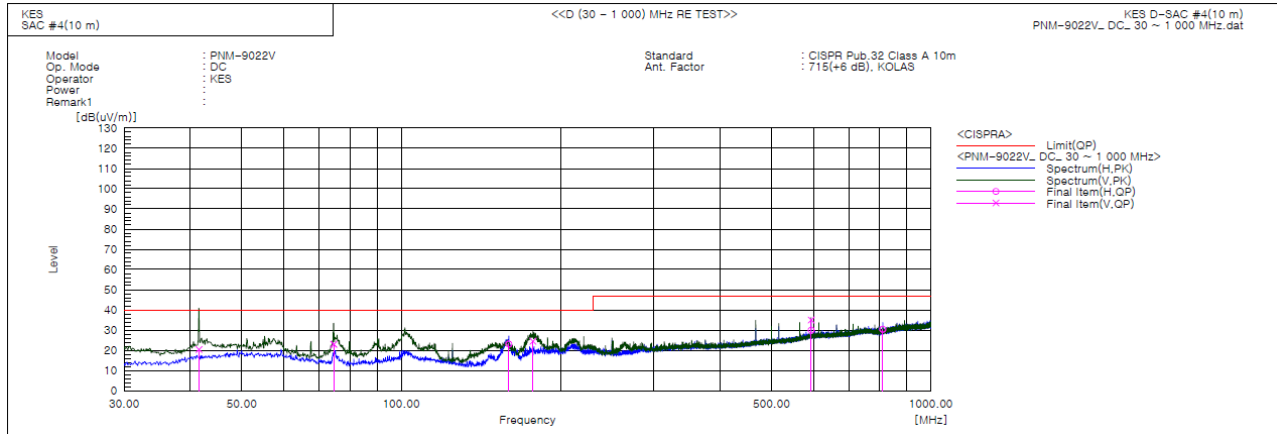
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Radiated Electric Field Emissions(Below 1 GHz)

■ DC Adapter 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	41.519	V	42.8	-22.4	20.4	40.0	19.6	105.0	241.0	
2	74.620	V	49.7	-26.7	23.0	40.0	17.0	120.0	71.0	
3	159.616	H	48.3	-25.2	23.1	40.0	16.9	383.0	88.0	
4	177.319	V	48.5	-24.0	24.5	40.0	15.5	151.0	11.0	
5	593.986	H	39.9	-9.9	30.0	47.0	17.0	279.0	232.0	
6	593.994	V	44.9	-9.9	35.0	47.0	12.0	114.0	332.0	
7	811.093	H	38.2	-7.8	30.4	47.0	16.6	386.0	155.0	

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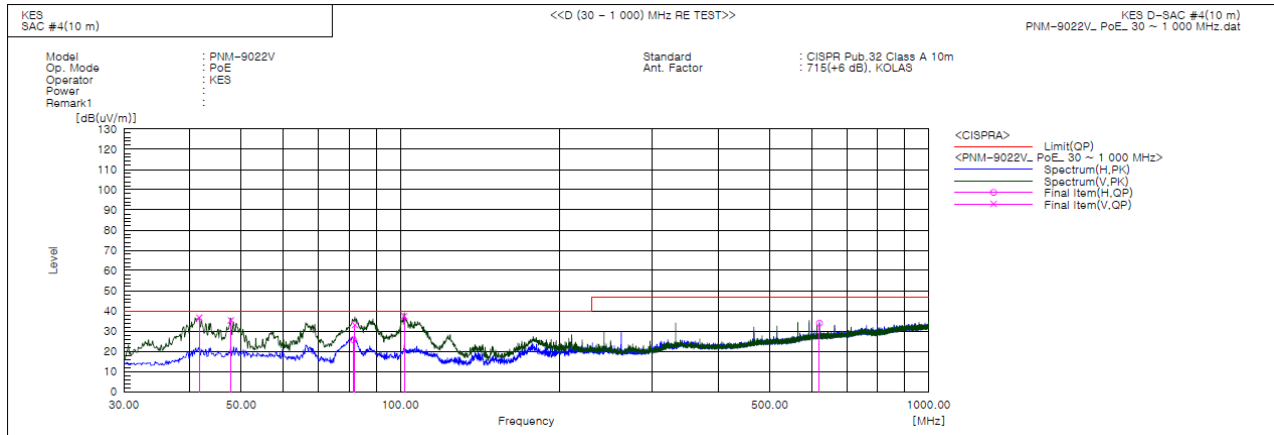
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Report No.:

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PoE Adapter 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	41.640	V	59.1	-22.4	36.7	40.0	3.3	110.0	100.0	
2	47.824	V	56.8	-21.5	35.3	40.0	4.7	124.0	270.0	
3	81.509	H	53.1	-27.4	25.7	40.0	14.3	396.0	118.0	
4	82.016	V	60.3	-27.3	33.0	40.0	7.0	149.0	152.0	
5	101.780	V	59.9	-22.5	37.4	40.0	2.6	105.0	81.0	
6	621.094	H	43.4	-9.5	33.9	47.0	13.1	283.0	162.0	

◆ Calculation – SEMI ANECHOIC CHAMBER #4(10 m)

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

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

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

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

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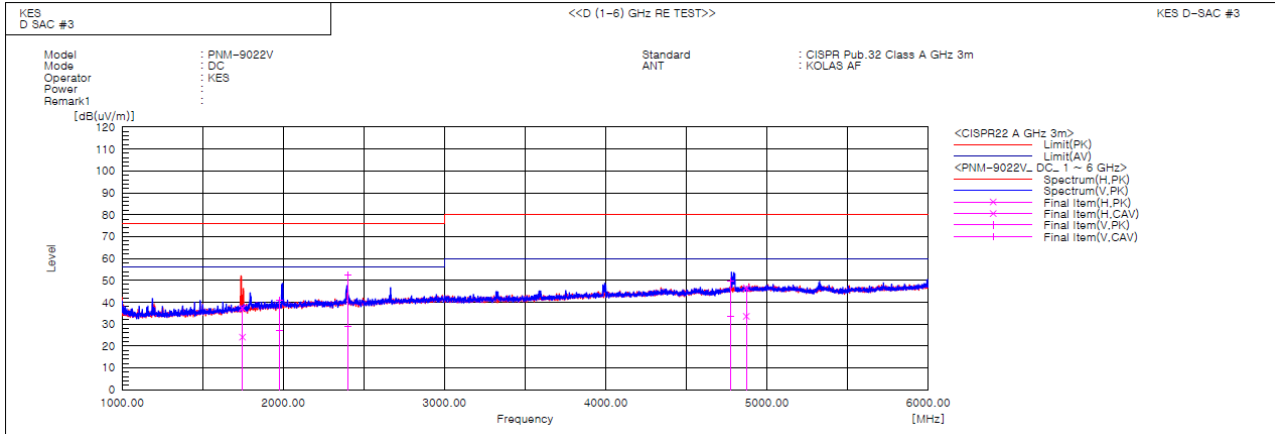
Report No.:

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Radiated Electric Field Emissions(Above 1 GHz)

■ DC Adapter 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	1746.018	H	41.6	28.4	-4.3	37.3	24.1	76.0	56.0	38.7	31.9	100.0	262.6	
2	1973.784	V	43.4	29.3	-2.4	41.0	26.9	76.0	56.0	35.0	29.1	100.0	162.2	
3	2398.859	V	53.1	29.8	-0.7	52.4	29.1	76.0	56.0	23.6	26.9	100.0	221.8	
4	4771.711	V	42.2	26.1	7.4	49.6	33.5	80.0	60.0	30.4	26.5	100.0	170.5	
5	4870.933	H	38.7	25.6	7.9	46.6	33.5	80.0	60.0	33.4	26.5	100.0	5.8	

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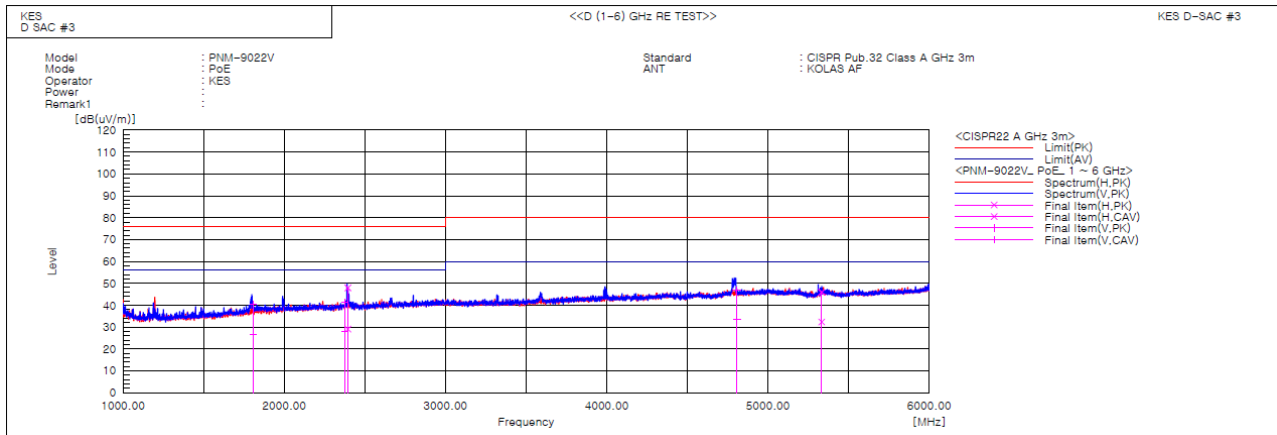
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Report No.:

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PoE Adapter 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	1808.758	V	44.2	30.4	-3.7	40.5	26.7	76.0	56.0	35.5	29.3	100.0	152.7	
2	2377.502	V	42.0	28.7	-0.7	41.3	28.0	76.0	56.0	34.7	28.0	100.0	222.3	
3	2394.559	H	48.7	29.8	-0.7	48.0	29.1	76.0	56.0	28.0	26.9	100.0	112.5	
4	4808.317	V	39.4	25.8	7.5	46.9	33.3	80.0	60.0	33.1	26.7	100.0	39.5	
5	5332.432	H	38.0	24.4	7.9	45.9	32.3	80.0	60.0	34.1	27.7	100.0	48.4	

◆ 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

■ DC Adapter Mode

Average harmonic current results

Hn	I _{eff} [A]	% of Limit	Limit [A]	Result
1	0.050			
2	0.003	0.282	1.080	n/a
3	0.044	1.900	2.300	PASS
4	0.004	1.029	0.430	n/a
5	0.043	3.757	1.140	PASS
6	0.004	1.385	0.300	n/a
7	0.042	5.486	0.770	PASS
8	0.003	1.440	0.230	n/a
9	0.041	10.337	0.400	PASS
10	0.003	1.801	0.184	n/a
11	0.040	12.107	0.330	PASS
12	0.003	2.252	0.153	n/a
13	0.038	18.245	0.210	PASS
14	0.003	2.628	0.131	n/a
15	0.037	24.337	0.150	PASS
16	0.003	2.798	0.115	n/a
17	0.035	26.181	0.132	PASS
18	0.003	3.057	0.102	n/a
19	0.033	27.502	0.118	PASS
20	0.003	3.235	0.092	n/a
21	0.030	18.904	0.161	PASS
22	0.003	3.303	0.084	n/a
23	0.028	19.283	0.147	PASS
24	0.003	3.397	0.077	n/a
25	0.026	19.234	0.135	PASS
26	0.002	3.409	0.071	n/a
27	0.024	18.900	0.125	PASS
28	0.002	3.425	0.066	n/a
29	0.021	18.290	0.116	PASS
30	0.002	3.315	0.061	n/a
31	0.019	17.390	0.109	PASS
32	0.002	3.137	0.058	n/a
33	0.017	16.375	0.102	PASS
34	0.002	3.055	0.054	n/a
35	0.015	15.076	0.096	PASS
36	0.001	2.754	0.051	n/a
37	0.012	13.588	0.091	PASS
38	0.001	2.530	0.048	n/a
39	0.010	12.083	0.087	PASS
40	0.001	2.337	0.046	n/a

Note: 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.

* Application of limits for average is 100% except for odd harmonics from 21 to 39, where 150% applies.



Test Data - Harmonics (continued)

Maximum harmonic current results

Hn	I _{eff} [A]	% of Limit	Limit [A]	Result
1	0.051			
2	0.005	0.287	1.620	n/a
3	0.045	1.299	3.450	PASS
4	0.006	0.859	0.645	PASS
5	0.045	2.607	1.710	PASS
6	0.005	1.114	0.450	PASS
7	0.043	3.745	1.155	PASS
8	0.005	1.382	0.345	n/a
9	0.043	7.095	0.600	PASS
10	0.004	1.557	0.276	n/a
11	0.041	8.276	0.495	PASS
12	0.004	1.789	0.230	n/a
13	0.039	12.446	0.315	PASS
14	0.004	2.062	0.197	n/a
15	0.037	16.596	0.225	PASS
16	0.004	2.272	0.173	n/a
17	0.036	18.015	0.199	PASS
18	0.004	2.471	0.153	n/a
19	0.034	18.863	0.178	PASS
20	0.004	2.618	0.138	n/a
21	0.031	19.265	0.161	PASS
22	0.003	2.694	0.125	n/a
23	0.029	19.708	0.147	PASS
24	0.003	2.779	0.115	n/a
25	0.026	19.615	0.135	PASS
26	0.003	2.808	0.106	n/a
27	0.024	19.246	0.125	PASS
28	0.003	2.797	0.099	n/a
29	0.022	18.625	0.116	PASS
30	0.002	2.703	0.092	n/a
31	0.019	17.751	0.109	PASS
32	0.002	2.638	0.086	n/a
33	0.017	16.645	0.102	PASS
34	0.002	2.509	0.081	n/a
35	0.015	15.311	0.096	PASS
36	0.002	2.441	0.077	n/a
37	0.013	13.774	0.091	PASS
38	0.002	2.204	0.073	n/a
39	0.011	12.335	0.087	PASS
40	0.001	2.110	0.069	n/a

Note: 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.

* Application of limits for average is 100% except for odd harmonics from 21 to 39, where 150% applies.

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Report No.:

KES-EM-20T0688-R1

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Test Data - Voltage Fluctuations

Maximum Flicker results

■ DC Adapter Mode

Flicker Measurements					
	Plt	Max Pst	Max Dc	Max Dmax	Max Tmax
Line 1:	0.028	0.028	0	< 0.2	0
Limits:	0.65	1	3.3	4	0.5
Results:	PASS	PASS	PASS	PASS	PASS

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Test Setup Photos and Configuration

Conducted Emissions at Mains Power Ports

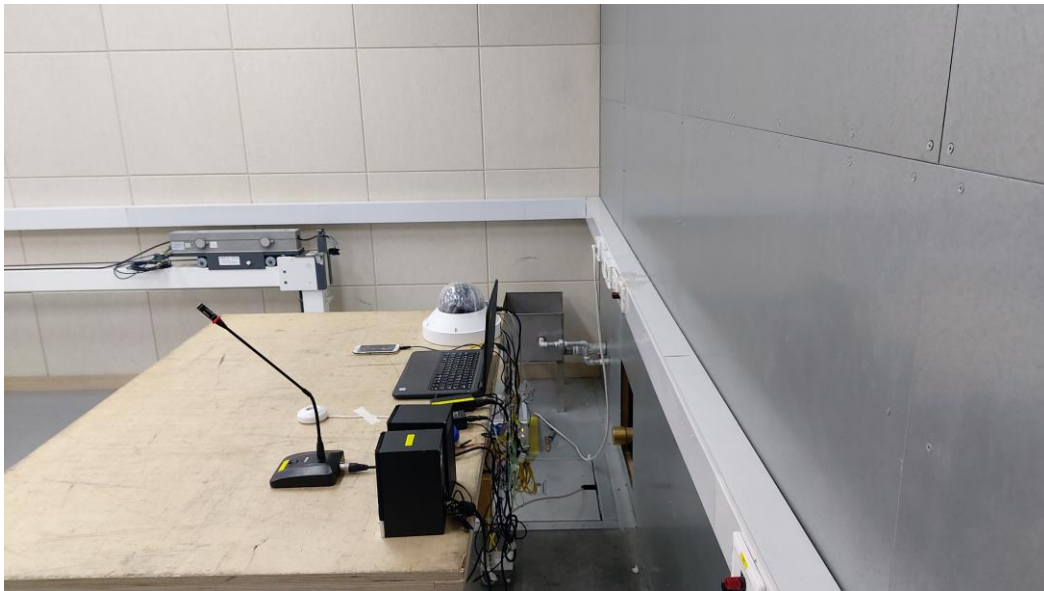
■ DC Adapter Mode



Conducted Emissions at Telecommunication Ports

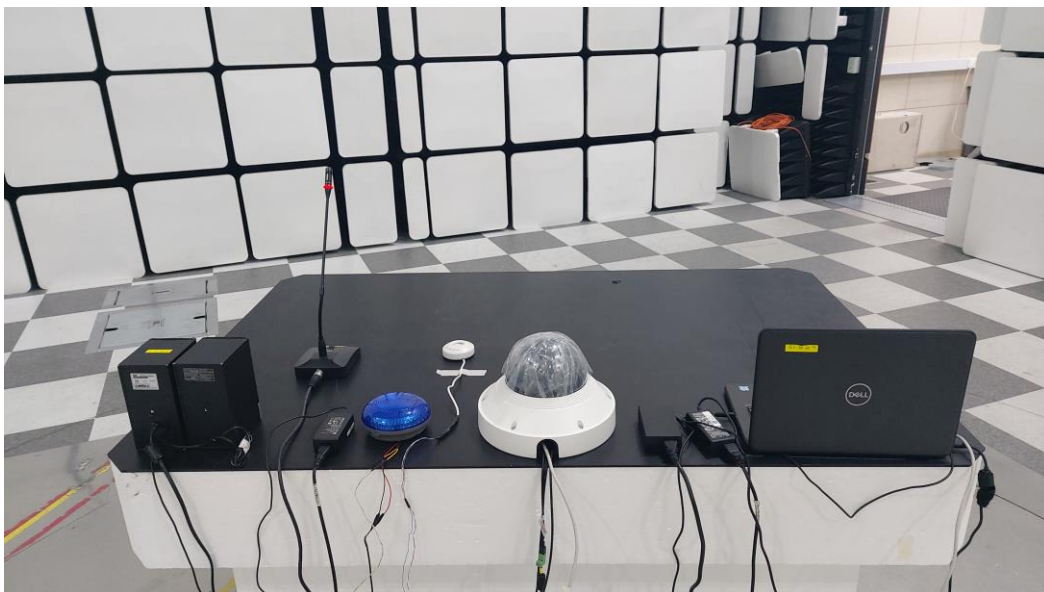
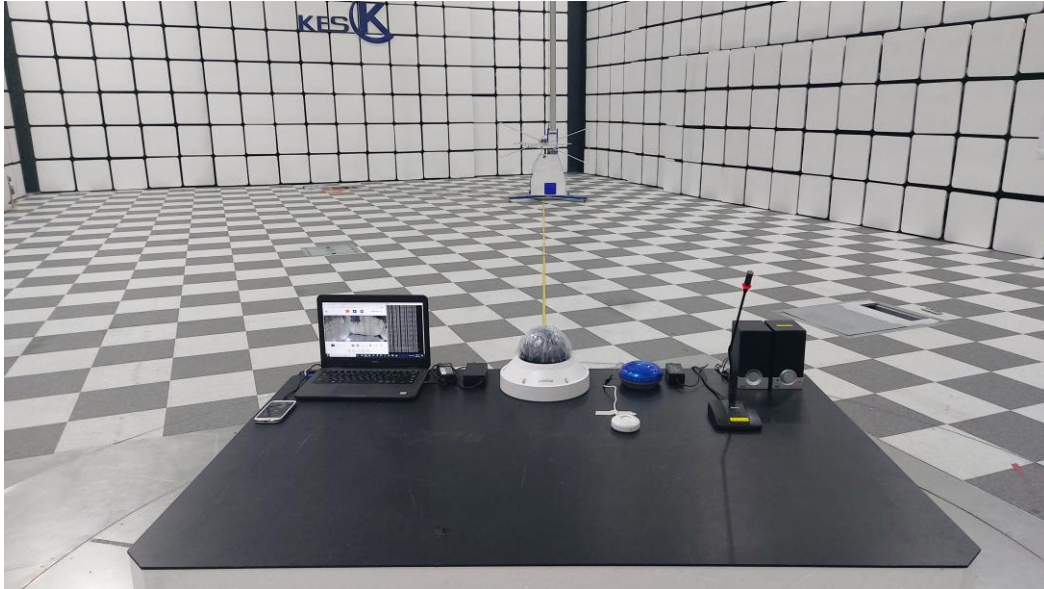
■ DC Adapter Mode



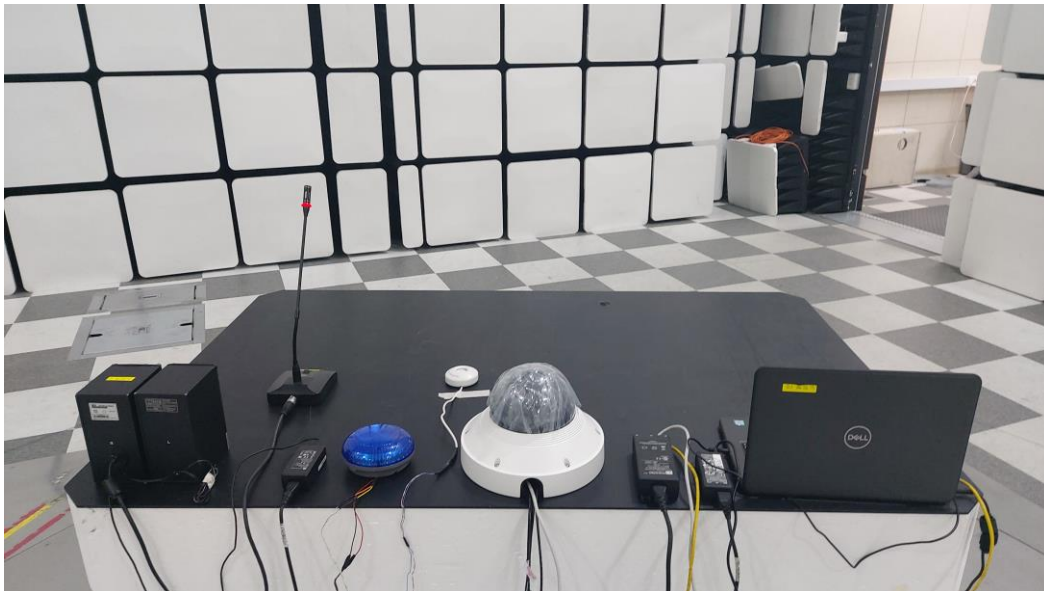
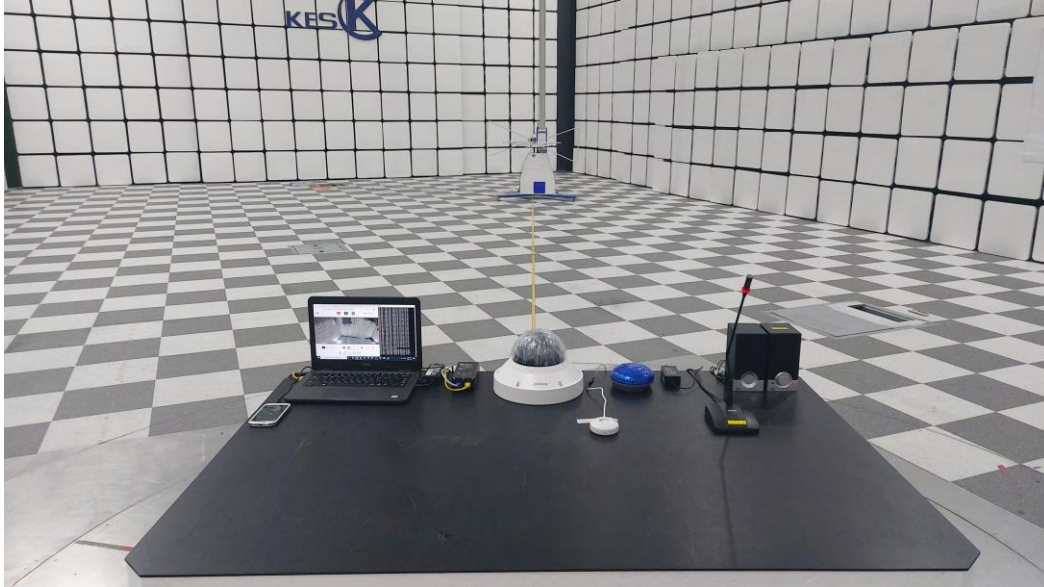
■ PoE Adapter Mode

Radiated Electric Field Emissions(Below 1 GHz)

■ DC Adapter Mode

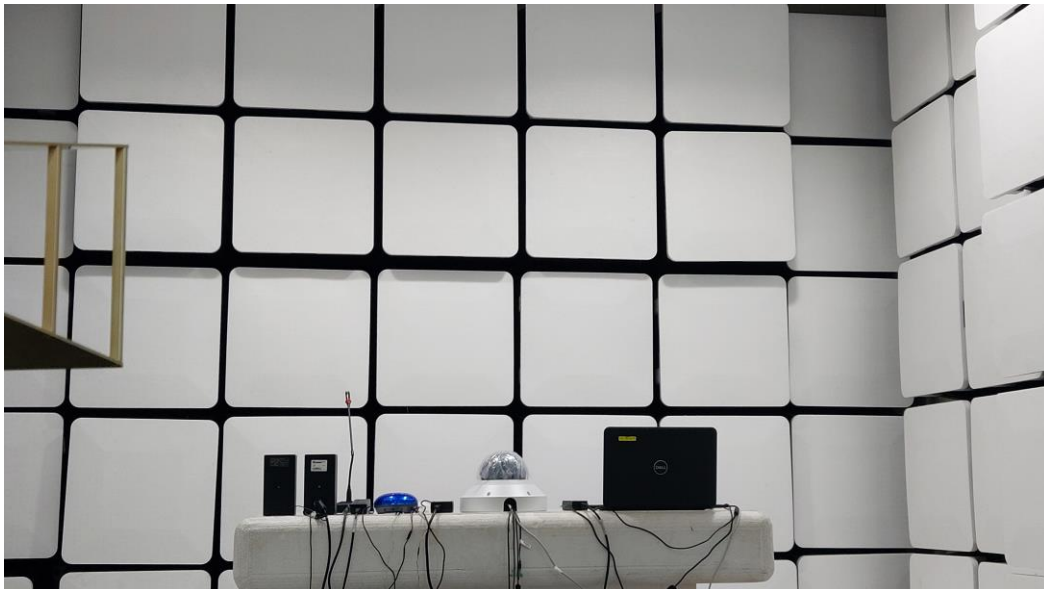


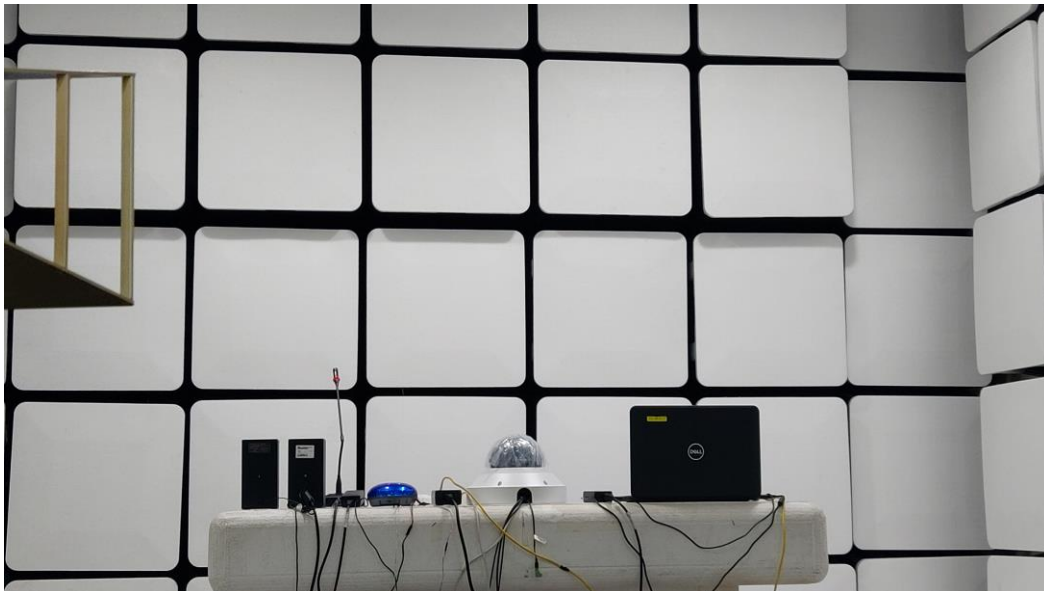
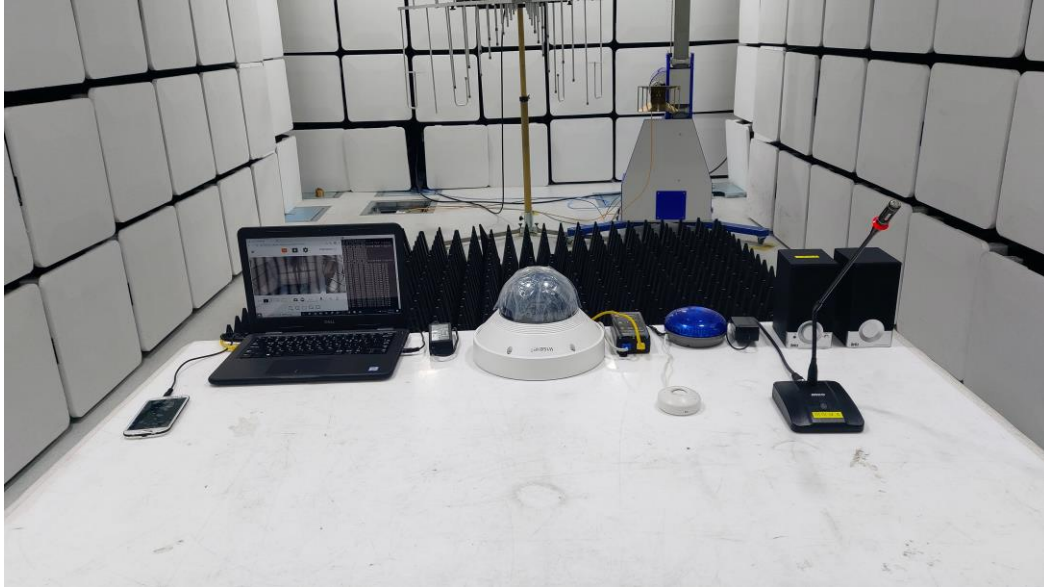
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The authenticity of the test report, contact kes@kes.co.kr

■ PoE Adapter Mode

Radiated Electric Field Emissions(Above 1 GHz)

■ DC Adapter Mode



■ PoE Adapter Mode

Harmonic Current Emissions and Voltage Fluctuations and Flicker

■ DC Adapter Mode



Electrostatic Discharge

■ DC Adapter Mode



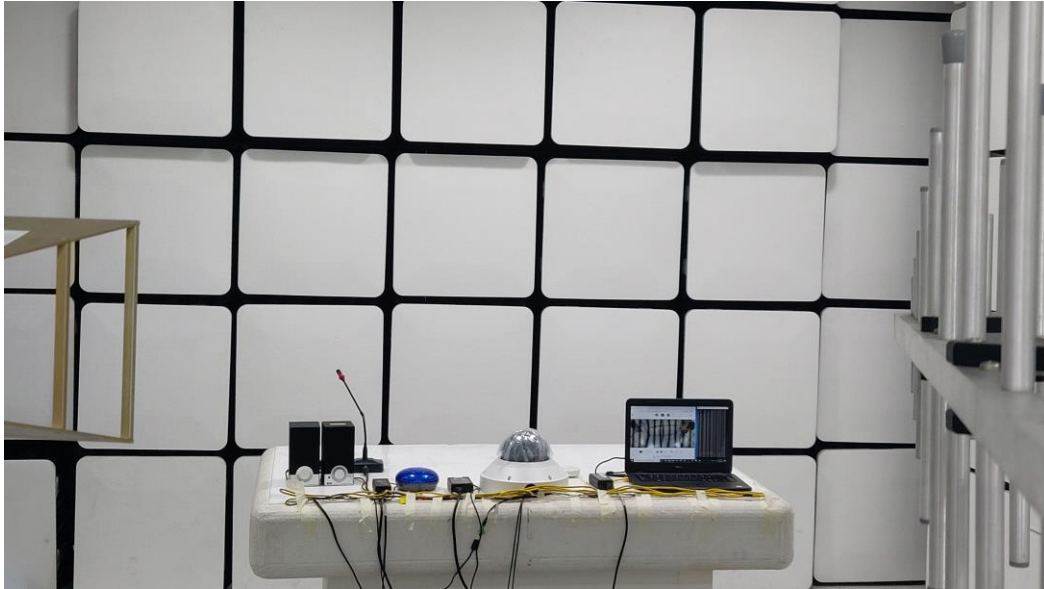
■ PoE Adapter Mode



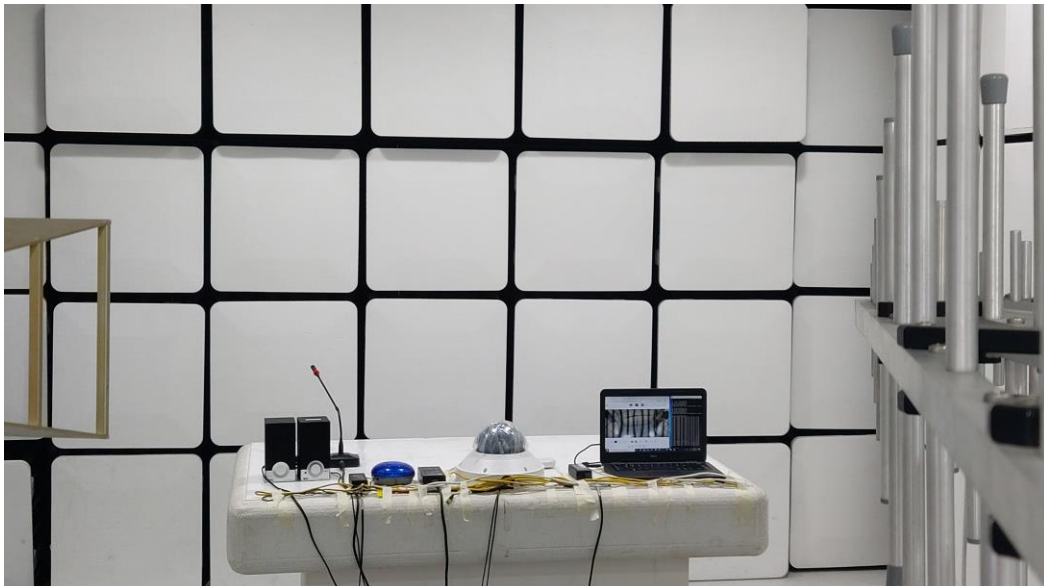
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Radiated Electric Field Immunity

■ DC Adapter Mode



■ PoE Adapter Mode



Electrical Fast Transients/Bursts

■ DC Adapter Mode



■ PoE Adapter Mode

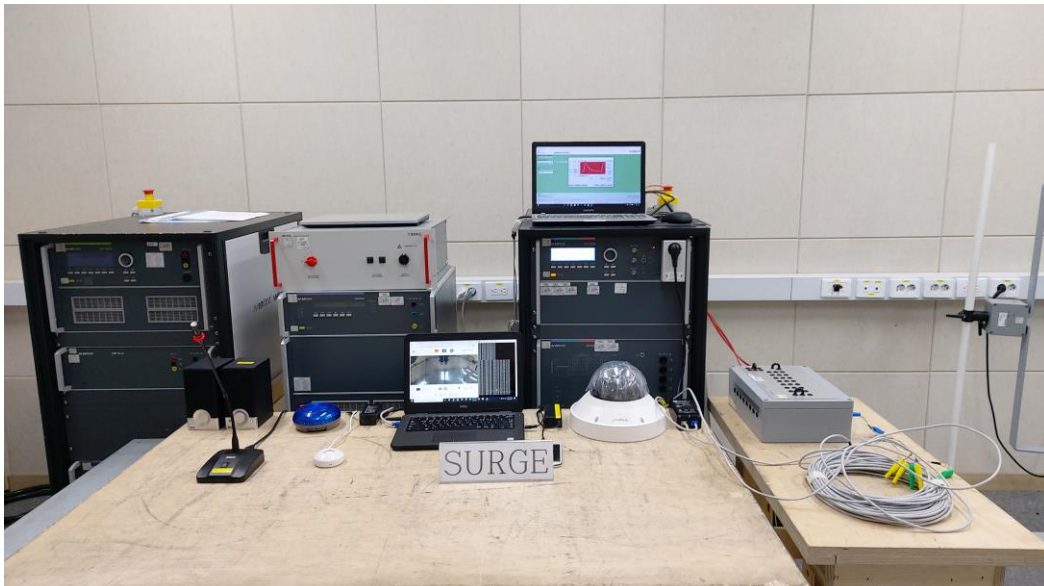


Surge Transients

■ DC Adapter Mode



■ PoE Adapter Mode



Conducted Disturbance

■ DC Adapter Mode



■ PoE Adapter Mode



Voltage Dips and Short Interruptions

■ DC Adapter Mode



EUT External Photographs

(Top)

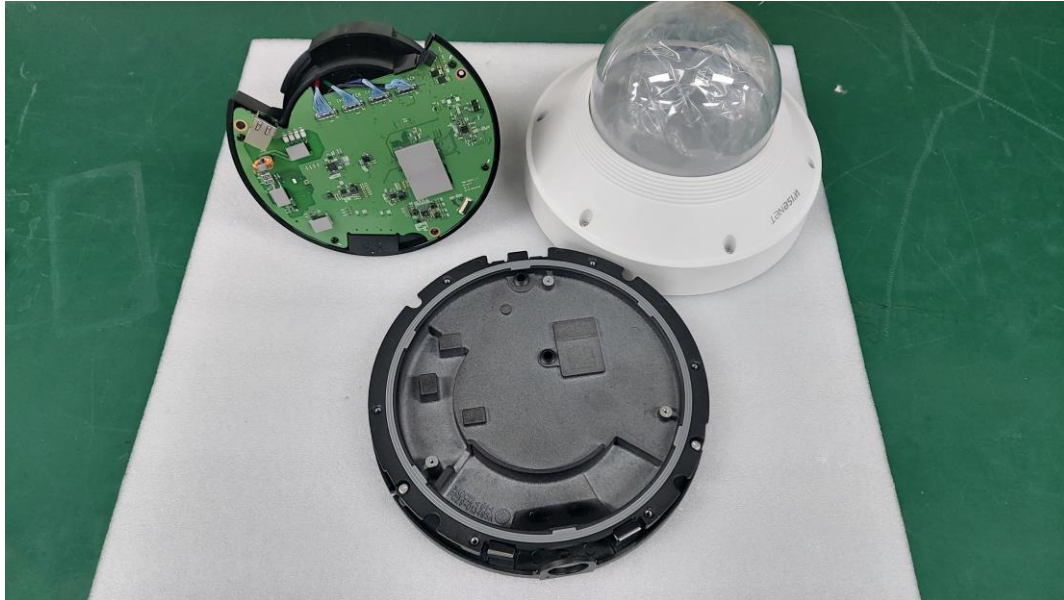


(Bottom)



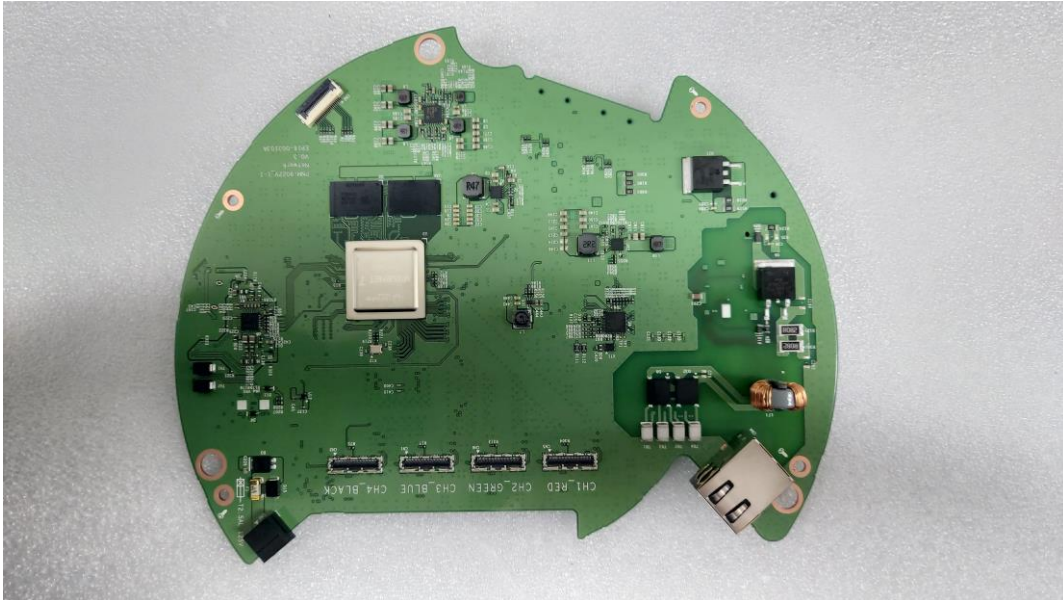
EUT Internal Photographs

(Internal View)

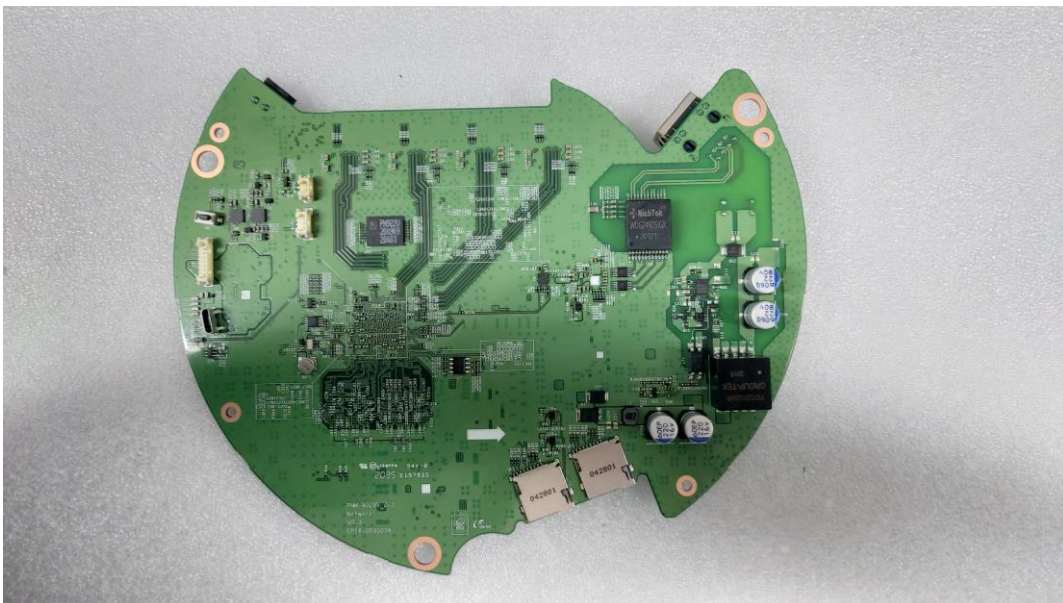


EUT Internal View –Main Board

(Top)

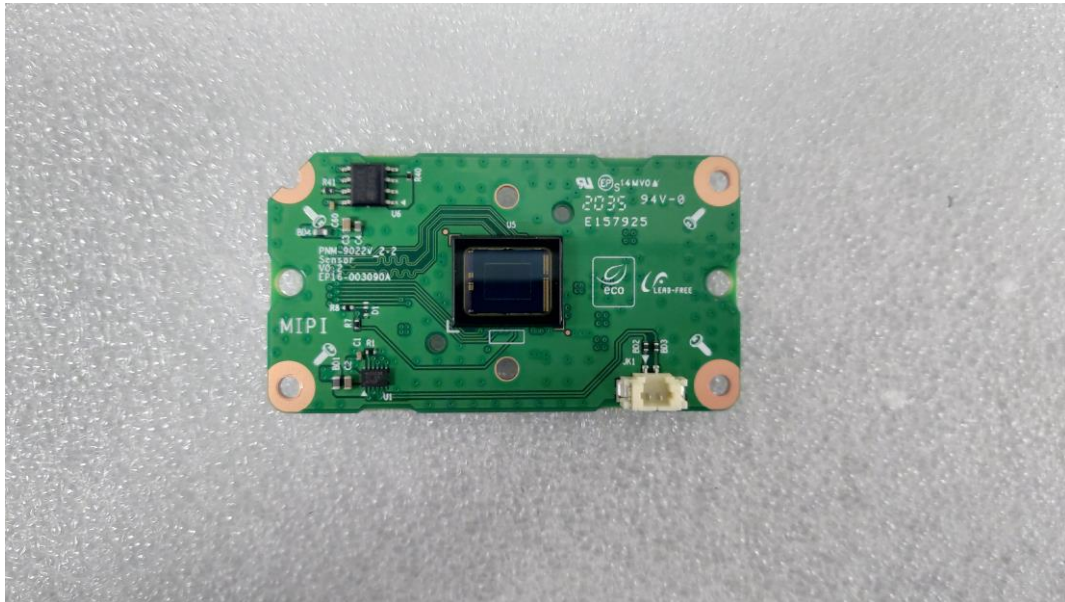


(Bottom)

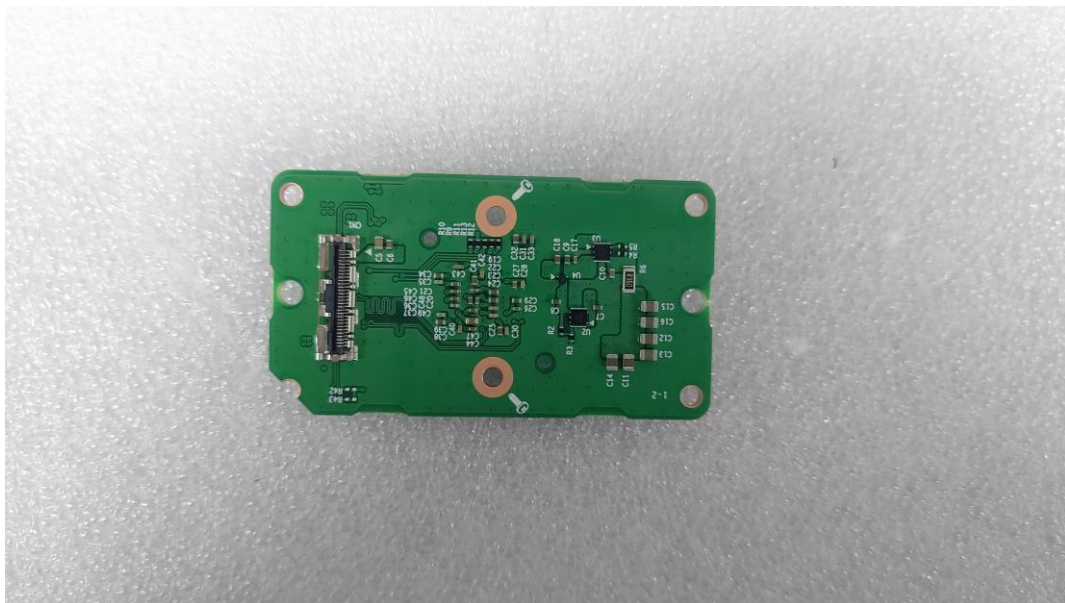


EUT Internal View –Lens Board

(Top)

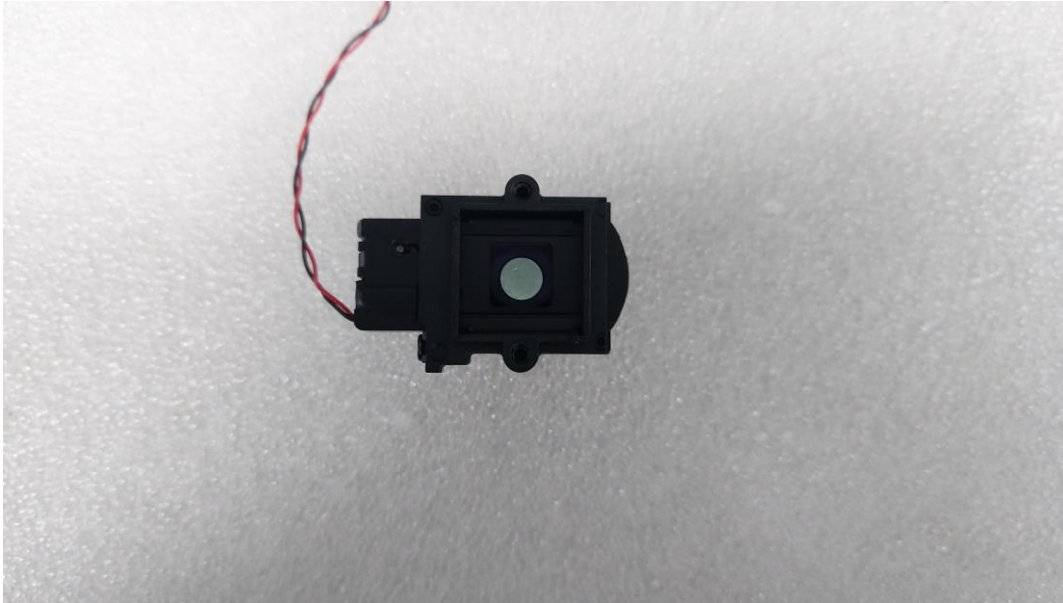


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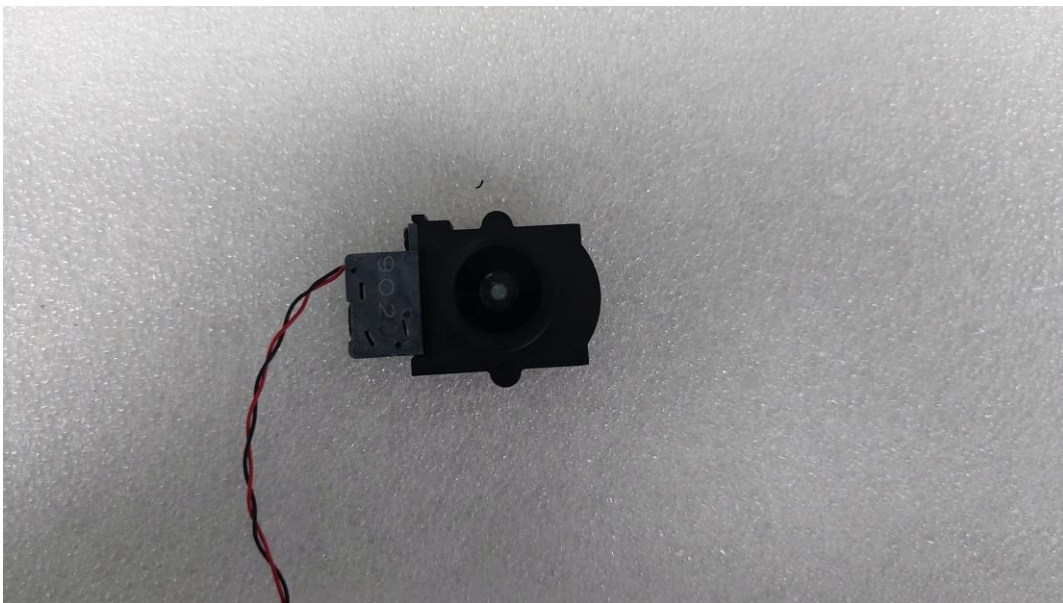


EUT Internal View -Lens

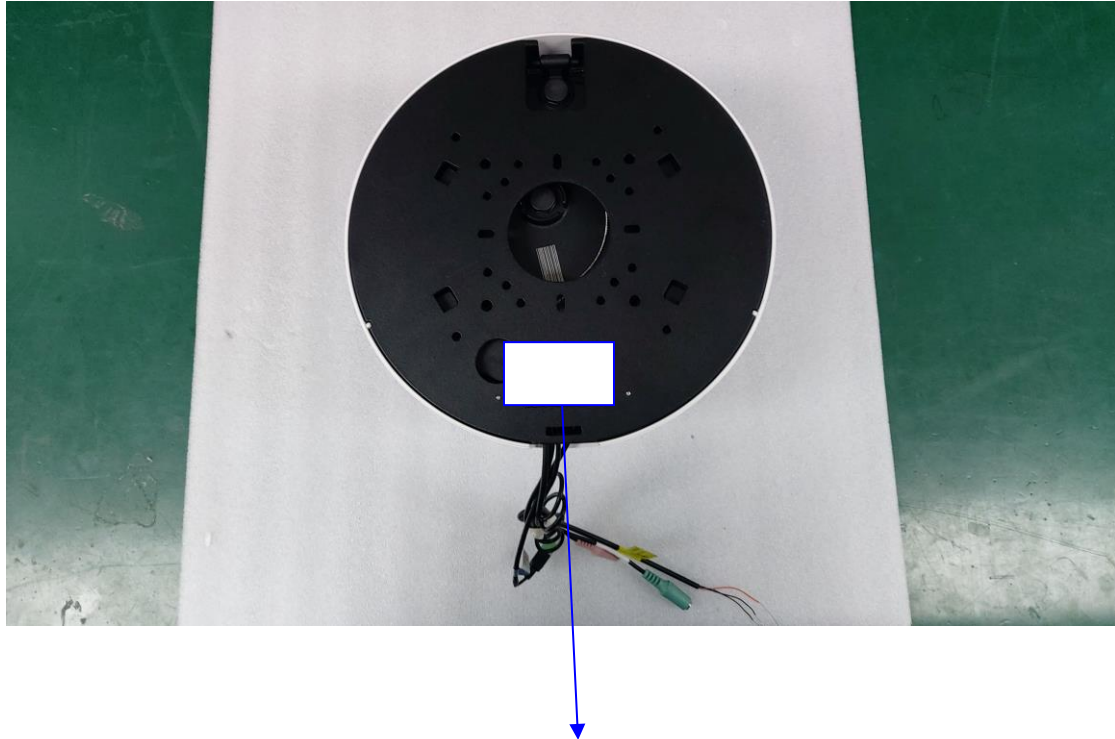
(Top)



(Bottom)



Label and Location



NETWORK CAMERA

Model No : PNM-9022V

Manufacturer : HANWHA VISION VIETNAM COMPANY LIMITED

Made in Vietnam

